



Lakeland Industry & Community Association

NOVEMBER 2021

Monthly Ambient Air Quality Monitoring Report

LICA-202111

Operation and Maintenance:

Bureau Veritas Canada

Data Validation and Report:

Lakeland Industry & Community Association

December 16, 2021

Pages may be left blank for double-sided printing



Lakeland Industry & Community Association

5107 50 St

Bonnyville, AB, T9N 2J7

Phone #: 780-226-7068

E-mail: monitoring@lica.ca

www.lica.ca

December 16, 2021

Alberta Environment and Parks (AEP)

11th Floor, Oxbridge Place

9820 106 Street

Edmonton, AB, T5K 2J6

RE: LICA – November 2021 Monthly Ambient Air Quality Monitoring Report

Enclosed is the November 2021 Monthly Ambient Air Quality Monitoring Report for the continuous ambient air quality monitoring stations of the Lakeland Industry & Community Association (LICA) regional air quality monitoring network.

The representative of the Person Responsible for this monitoring program is

LICA Airshed

Michael Bisaga, Monitoring Programs Manager

5107 50 Street

Bonnyville, AB, T9N 2J7

Phone #: 780-226-7068

E-mail: monitoring@lica.ca

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

TABLE OF CONTECTS

COVER LETTER.....	3
TABLE OF CONTECTS.....	4
LIST OF ACRONYMS.....	5
NETWORK STATION SUMMARY.....	6
Listing of Continuous Monitoring Stations and Integrated Sampling Stations.....	6
List of Contractors performing air monitoring activities.....	7
Monitoring Notes during the Month of November 2021.....	7
Cold Lake South	7
Tamarack	8
St. Lina Station	8
Integrated Sampling	9
Revisions to Alberta’s Ambient Air Quality Data Warehouse.....	10
Deviations from Authorized Monitoring Methods.....	10
Disclaimer.....	10
Certification.....	11
Map of LICA Continuous Monitoring Network.....	12
CONTINUOUS NETWORK EQUIPMENT AND MONITORING RESULTS SUMMARY.....	13
Cold Lake South Station.....	13
Tamarack Station.....	17
St. Lina Station.....	21
TABLES AND CHARTS.....	24
COLD LAKE SOUTH STATION.....	25
TAMARACK STATION.....	95
ST. LINA STATION.....	167
END OF REPORT.....	239

LIST OF ACRONYMS

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

NETWORK STATION SUMMARY

Listing of Continuous Monitoring Stations and Integrated Sampling Stations

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

List of Contractors performing air monitoring activities

Sampling Program	Monitoring Activities Conducted By	Sample Analysis Conducted By	Data/Report Prepared By	Electronic Submission Conducted By
Continuous Monitoring Station	Bureau Veritas Canada	Bureau Veritas Canada	LICA / Bureau Veritas Canada	LICA
Intermittent (VOCs/PAHs)	Bureau Veritas Canada	InnoTech Alberta Inc	InnoTech Alberta Inc	LICA
Partisol	Bureau Veritas Canada	InnoTech Alberta Inc	InnoTech Alberta Inc	LICA
Passive	Bureau Veritas Canada	Bureau Veritas Canada	Bureau Veritas Canada	LICA
PAC	Bureau Veritas Canada	ECCC	AEP	Not Applicable

Monitoring Notes during the Month of November 2021

Cold Lake South

- All data collected this month were compliant with the requirements outlined in the AMD 2016.
- All parameters met the 90% operational uptime requirement.
- Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) and/or Alberta Ambient Air Quality Guidelines (AAAQGs) where applicable, PM2.5. Four 1-hr and one 24-hr exceedances PM2.5 were recorded on November 14. The exceedances were due to stagnant weather conditions under a ridge of high pressure which caused pollutants at the surface to build up with time.

Date	Time (MST)	Parameter	Average Period	AAAQOs / AAAQGs	Concentration	Reference #
November 14	18	PM2.5	1-Hour	80 µg/m3	84 µg/m3	385552
November 14	19	PM2.5	1-Hour	80 µg/m3	91 µg/m3	385552
November 14	20	PM2.5	1-Hour	80 µg/m3	84 µg/m3	385552
November 14	21	PM2.5	1-Hour	80 µg/m3	84 µg/m3	385552
November 14	-	PM2.5	24-Hour	29 µg/m3	30 µg/m3	385552

- **THC/CH4/NMHC:**

- Following by the N2 and span gas cylinders replacement on November 9, a zero-span check was completed to obtain a new expected span value. One hour of downtime was recorded due to the additional quality check.
- Maintenance was completed on the H2 generator on November 25. One hour of downtime was recorded due to this event.

Tamarack (formerly Maskwa)

- All data collected this month were compliant with the requirements outlined in the AMD 2016.
- All parameters met the 90% operational uptime requirement.
- Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) and/or Alberta Ambient Air Quality Guidelines (AAAQGs) where applicable, except PM2.5. Seven 1-hr and one 24-hr exceedances were recorded this month. The exceedances were likely caused by some seasonal roadwork that were being performed in the vicinity of the station.

Date	Time (MST)	Parameter	Average Period	AAAQOs / AAAQGs	Concentration	Reference #
November 1	7	PM2.5	1-Hour	80 µg/m3	82 µg/m3	385135
November 3	6	PM2.5	1-Hour	80 µg/m3	127 µg/m3	385218
November 3	7	PM2.5	1-Hour	80 µg/m3	210 µg/m3	385218
November 3	8	PM2.5	1-Hour	80 µg/m3	148 µg/m3	385218
November 3	9	PM2.5	1-Hour	80 µg/m3	99 µg/m3	385218
November 3	11	PM2.5	1-Hour	80 µg/m3	189 µg/m3	385218
November 3	-	PM2.5	24-Hour	29 µg/m3	51.6 µg/m3	385218
November 4	7	PM2.5	1-Hour	80 µg/m3	85 µg/m3	385304

- No operational issues were identified this month.

St. Lina Station

- All data collected this month were compliant with the requirements outlined in the AMD 2016.
- All parameters met the 90% operational uptime requirement.
- Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) and/or Alberta Ambient Air Quality Guidelines (AAAQGs) where applicable.
- **All parameters:** Hourly data collected on November 8 between hour 13 and hour 15 were invalidated due to a power failure. Furthermore, for THC/CH4/NMHC channels, hourly data collected at hour 16 was also discarded as the analyzer took extra time to recover from the power outage.
- **PM2.5:**
 - The PM unit failed after the power outage on November 8 due to a tape-feed error. Five hours of downtime were recorded.
 - The PM unit failed again on November 12 and November 15 due to tape-feed errors. Sixty-four hours of downtime were recorded as a result.
- **THC/CH4/NMHC:**

- The analyzer started showing injection issues on November 16. On November 17, the Thermo 55i, s/n: 1236656107, analyzer was removed following a successful shut-down calibration, and the Thermo 55i, s/n: 1180030034, analyzer was installed. The analyzer was allowed to stabilize overnight before an installation calibration was completed on November 18. Hourly data that was collected on November 17 at hour 4 was discarded as the 75% of valid 1-minute in an hour requirement was not achieved due to injection issues. Twenty-one hours of downtime were recorded due to this event.
- After completion of the installation on November 18, the NMHC channel showed excessive noise for the remainder of the month. The analyzer was replaced in December. Because the analyzer passed the December's shut-down calibration, all data were considered valid.
- **Nox/NO/NO2:** The analyzer was put offline for two hours on November 18 to obtain reference calibration points for O3 calibration. Two hours of downtime were recorded as a result.

Integrated Sampling

All the integrated sampling analytical results are included in the November 2021 Integrated Sampling Report.

- **VOCs Sampling System:**
 - The VOC sampler is programmed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
 - The Xontech unit was verified and calibrated on November 25. The unit passed the calibration requirements.
 - Five samples were collected this month: on November 6, 12, 18, 24 and 30.
- **PAHs Sampling System:**
 - The PAH sampler is programmed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
 - The TISCH PUF Plus sampler was verified and calibrated on November 25. The sampler passed the calibration requirements.
 - Five samples were collected this month: on November 6, 12, 18, 24 and 30.
- **Partisol Sampling System:**
 - The Partisol sampler is programmed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
 - The Partisol 2000i-D sampler was verified and calibrated on November 25. The sampler passed the calibration requirements.
 - Five samples were collected this month: on November 6, 12, 18, 24 and 30.
 - The sample filters for the sampling date of September 7, which were lost in transit on September 27 were found and shipped to the lab on November 5. As the filters were still in good condition, they were analyzed. The results are included in the November 2021 integrated sampling report.
- **Passive Sampling System:**
 - The passive sample filters were installed at the stations between November 1 and November 3, and were removed between November 30 and December 2.
 - A total of 9 duplicate samples were collected: 2 for H2S, 3 for SO2, 2 for NO2 and 2 for O3.
- **PAC Sampling System:**
 - The PAC sampling program began in November 2019, and is designed to collect a 2-month integrated sample.

- The PAC sample medias were installed in the beginning of November and are scheduled to be removed by the end December 2021 or early January 2022.

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

No deviations from authorized monitoring methods were recorded this month.

Disclaimer

Baseline correction were performed on the 1-minute data. 5-minute and hourly data were calculated based on the post-baseline correction 1-minute data set. Data verification/validation were then performed on the 5-minute and hourly data. Hourly data that are included in this report are the post-validation hourly data set.

Equipment calibration / maintenance records were provided by Bureau Veritas Canada.

Certification

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



Lily Lin, Data & Reporting Specialist, LICA Airshed

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

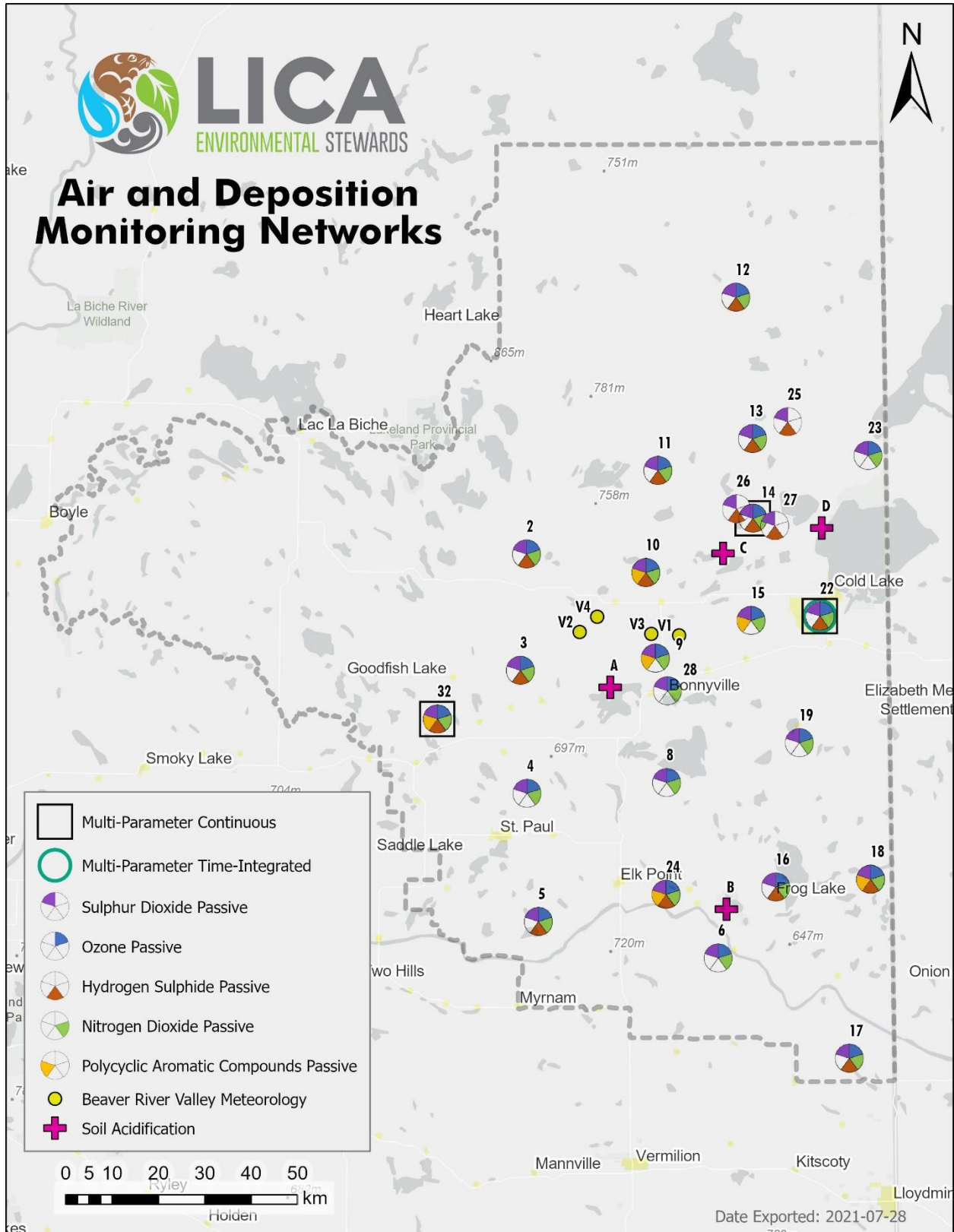
I certify that I have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe and the specified analysis, summarization and reporting requirements. I also certify that at the time of this report's submission, all air data have been electronically uploaded to Alberta's Ambient Air Quality Data Warehouse as required by the AMD, with the exception of electronic submission for the results of intermittent samples, Partisol samples and passive samples. Electronic submission for the intermittent sample, Partisol sample and passive sample results will be performed during the preparation of the November 2021 integrated sampling report. Uploading of VOC data from the canister sampling program was not required at the time of completing this report.



Michael Bisaga, Monitoring Programs Manager, LICA Airshed

December 16, 2021

Map of LICA Continuous Monitoring Network



CONTINUOUS NETWORK EQUIPMENT AND MONITORING RESULTS SUMMARY

Cold Lake South Station

Equipment Operation Summary

Parameter	Make / Model	Serial Number	Calibration Date
Sulphur Dioxide (SO₂)	Thermo / 43i-TLE	1180260018	November 16, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Total Reduced Sulphur (TRS)	Thermo / 450i	812728560	November 16, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Total Hydrocarbons / Methane/ Non-methane Hydrocarbons (THC/CH₄/NMHC)	Thermo / 55i	1180930025	November 16, 2021
<ul style="list-style-type: none"> Following by the N₂ and span gas cylinders replacement on November 9, a zero-span check was completed to obtain a new expected span value. One hour of downtime was recorded due to the additional quality check. Maintenance was completed on the H₂ generator on November 25. One hour of downtime was recorded due to this event. 			
Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NO_x/NO/NO₂)	Thermo / 42i	1505664393	November 16, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Ozone (O₃)	Thermo / 49i	700419951	November 16, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Particulate Matter 2.5 (PM_{2.5})	Teledyne T640	575	November 24, 2021
<ul style="list-style-type: none"> No issues were identified this month. Four 1-hr and one 24-hr exceedances PM_{2.5} were recorded on November 14. The exceedances were due to stagnant weather conditions under a ridge of high pressure which caused pollutants at the surface to build up with time. 			

Parameter	Make / Model	Serial Number	System Check Date
Relative Humidity (RH)	Rotronic HC2A-S3	20257103	July 6, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Barometric Pressure (BP)	Met One / Part 092	Y23368	July 6, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Ambient Temperature (AT)	Rotronic HC2A-S3	20257103	July 6, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Station Temperature (ST)	BV-supplied	n/a	n/a
<ul style="list-style-type: none"> No issues were identified this month. 			
Wind Speed (WS) / Wind Direction (WD)/ Stand Deviation Wind Direction (STDWD)	RM Young 05305AQ	177354	July 6, 2021
<ul style="list-style-type: none"> Wind direction data contained in this report represents where the wind is coming from. The last wind system calibration was completed on April 20, 2021. No issues were identified this month. 			

Monitored Data Summary for Cold Lake South Station

Parameter	Objectives/Guidelines			Exceedances			Monthly Avg.	Min. 1-hr	Max. 1-hr	Date/Time	VWS (km/hr)	VWD (sector)	Max. 24-hr	Date	Operational Uptime (%)	Valid Data (%)
	1-hr	24-hr	30-day	1-hr	24-hr	30-day										
SO2 (ppb)	172	48	11	0	0	0	0.1	0	2	November 8 at hour 14	6.2	WSW	0.3	November 20	100.0	95.0
TRS (ppb)	-	-	-	-	-	-	0.1	0	1	November 3 at hour 6	0.3	SSW	0.8	November 14	100.0	95.0
NOx (ppb)	-	-	-	-	-	-	7.0	0	65	November 3 at hour 8	0	N	18.5	November 3	100.0	94.7
NO (ppb)	-	-	-	-	-	-	1.9	0	45	November 3 at hour 8	0	N	8.5	November 4	100.0	94.7
NO2 (ppb)	159	-	-	0	-	-	5.1	0	24	November 27 at hour 16	1	E	10.2	November 3	100.0	94.7
O3 (ppb)	76	-	-	0	-	-	19.2	0.2	40.8	November 26 at hour 17	11.6	W	31.7	November 27	100.0	94.8
THC (ppm)	-	-	-	-	-	-	1.97	1.80	2.39	November 3 at hour 23	0.3	NE	2.17	November 3	99.7	94.8
CH4 (ppm)	-	-	-	-	-	-	1.97	1.80	2.39	November 3 at hour 23	0.3	NE	2.17	November 3	99.7	94.8
NMHC (ppm)	-	-	-	-	-	-	0.00	0.00	0.01	November 2 at hour 6	0.6	SE	0.00	November 5	99.7	94.8
PM2.5 (µg/m3)	80	29	-	4	1	-	7.3	1	91	November 14 at hour 19	0.3	NE	30.1	November 14	100.0	99.7
RH (%)	-	-	-	-	-	-	77.1	38	99	November 5 at hour 3	2.7	NNW	87.5	November 10	100.0	100.0
BP (millibar)	-	-	-	-	-	-	947	925	965	November 20 at hour 21	3.4	W	961	November 1	100.0	100.0
Ext. Temp. (°C)	-	-	-	-	-	-	-4.9	-21.8	8.9	November 4 at hour 13	3.5	NE	4.5	November 5	100.0	100.0
Stn. Temp. (°C)	-	-	-	-	-	-	22.1	19.9	23.8	November 16 at hour 13	26.6	NNW	23.0	November 16	100.0	100.0
WSV (km/hr)	-	-	-	-	-	-	0.2	0.0	26.6	November 16 at hour 13	26.6	NNW	18.9	November 16	100.0	100.0
WDV (sector)	-	-	-	-	-	-	179 (S)	-	-	-	-	-	-	-	100.0	100.0

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

Alberta Ambient Air Quality Objectives (AAAQOs) and/or Alberta Ambient Air Quality Guidelines (AAAQGs) Exceedances

The following exceedances of AAAQOs were observed at the Cold Lake South Station.

Date	Time (MST)	Parameter	Average Period	AAAQOs	Concentration	Wind speed	Wind Direction	Reference #
November 14	18	PM2.5	1-Hour	80 µg/m ³	84 µg/m ³	2.0 km/hr	54° (NE)	385552
November 14	19	PM2.5	1-Hour	80 µg/m ³	91 µg/m ³	0.3 km/hr	41° (NE)	385552
November 14	20	PM2.5	1-Hour	80 µg/m ³	84 µg/m ³	0.7 km/hr	49° (NE)	385552
November 14	21	PM2.5	1-Hour	80 µg/m ³	84 µg/m ³	1.0 km/hr	158° (SSE)	385552
November 14	-	PM2.5	24-Hour	29 µg/m ³	30 µg/m ³	0.5 km/hr	153° (SSE)	385552

The possible source of the exceedances of the PM2.5 guideline and objective on November 14 were due to stagnant weather conditions under a ridge of high pressure which caused pollutants at the surface to build up with time.

Tamarack Station

Equipment Operation Summary

Parameter	Make / Model	Serial Number	Calibration Date
Sulphur Dioxide (SO₂)	Thermo / 43i-TLE	1180930031	November 5, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Hydrogen Sulphide (H₂S)	Thermo / 450i	CM17360005	November 5, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NO_x/NO/NO₂)	Thermo / 42i	1180930028	November 5, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Ozone (O₃)	Thermo 49iQ	1202068570	November 4, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Total Hydrocarbons / Methane/ Non-methane Hydrocarbons (THC/CH₄/NMHC)	Thermo / 55i	1314057759	November 5, 2021
<ul style="list-style-type: none"> No issues were identified this month. Both the N₂ and span gas cylinders were replaced on November 5. 			
Particulate Matter 2.5 (PM_{2.5})	Thermo / Sharp 5030	CM 2209	November 4, 2021
<ul style="list-style-type: none"> No issues were identified this month. Seven 1-hr and one 24-hr exceedances were recorded this month. The exceedances were likely caused by some seasonal roadwork that were being performed in the vicinity of the station. 			

Parameter	Make / Model	Serial Number	System Check Date
Relative Humidity (RH)	Rotronic / HC2A-S3	20433166	April 13, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Ambient Temperature (AT)	Rotronic / HC2A-S3	20433166	April 13, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Barometric Pressure (BP)	Met One / Part 090D	F4997	February 2, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Station Temperature (ST)	BV-supplied	n/a	n/a
<ul style="list-style-type: none"> No issues were identified this month. 			
Precipitation (PRECIP)	Met One / Part 387	F4481	February 2, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Wind Speed (WS) / Wind Direction (WD)/ Stand Deviation Wind Direction (STDWD)	RM Young / 05305VK	161465	September 20, 2021
<ul style="list-style-type: none"> Wind direction data contained in this report represents where the wind is coming from. An annual wind system calibration was completed on September 20, 2021. No issues were identified this month. 			

Monitored Data Summary for Tamarack Site

Parameter	Objectives/Guidelines			Exceedances			Monthly Avg.	Min. 1-hr	Max. 1-hr	Date/Time	VWS (km/hr)	VWD (sector)	Max. 24-hr	Date	Operational Uptime (%)	Valid Data (%)
	1-hr	24-hr	30-day	1-hr	24-hr	30-day										
SO2 (ppb)	172	48	11	0	0	0	0.5	0	12	November 29 at hour 13	8.6	NW	1.7	November 17	100.0	94.7
H2S (ppb)	10	3	-	0	0	-	0.1	0	4	November 4 at hour 10	3.1	NNE	0.6	November 4	100.0	94.7
NOx (ppb)	-	-	-	-	-	-	5.1	0	41	November 3 at hour 8	1.8	SW	13.9	November 3	100.0	94.6
NO (ppb)	-	-	-	-	-	-	0.8	0	30	November 3 at hour 8	1.8	SW	4.5	November 8	100.0	94.6
NO2 (ppb)	159	-	-	0	-	-	4.3	0	18	November 8 at hour 19	4.2	SSW	10.0	November 3	100.0	94.6
O3 (ppb)	76	-	-	0	-	-	22.5	1.3	44.0	November 26 at hour 16	14.1	W	33.5	November 29	100.0	94.8
THC (ppm)	-	-	-	-	-	-	1.99	1.88	2.82	November 4 at hour 9	1.7	NNE	2.20	November 4	100.0	94.8
CH4 (ppm)	-	-	-	-	-	-	1.98	1.88	2.53	November 8 at hour 16	2.7	SW	2.16	November 4	100.0	94.8
NMHC (ppm)	-	-	-	-	-	-	0.00	0.00	0.31	November 4 at hour 9	1.7	NNE	0.04	November 4	100.0	94.8
PM2.5 (µg/m3)	80	29	-	7	1	-	7.1	0	210	November 3 at hour 7	1.4	SW	51.6	November 3	100.0	99.7
RH (%)	-	-	-	-	-	-	84.7	34	100	November 5 at hour 2	1.4	N	98.4	November 15	100.0	100.0
BP (millibar)	-	-	-	-	-	-	933	912	948	November 1 at hour 0	0.6	S	946	November 1	100.0	100.0
Ext. Temp. (°C)	-	-	-	-	-	-	-4.5	-18.7	9.4	November 4 at hour 13	3.4	E	3.4	November 5	100.0	100.0
Stn. Temp. (°C)	-	-	-	-	-	-	22.5	21.4	24.1	November 20 at hour 22	2.4	N	23.6	November 5	100.0	100.0
Precipitation (mm)*	-	-	-	-	-	-	41.3	0.0	2.1	November 5 at hour 1	1.2	NNW	0.4	November 10	100.0	100.0
WSV (km/hr)	-	-	-	-	-	-	0.9	0.0	19.8	November 16 at hour 3	19.8	NNE	14.1	November 16	100.0	100.0
WDV (sector)	-	-	-	-	-	-	213 (SSW)	-	-	-	-	-	-	-	100.0	100.0

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

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

Alberta Ambient Air Quality Objectives (AAAQOs) and/or Alberta Ambient Air Quality Guidelines (AAAQGs) Exceedances

The following exceedances of AAAQOs were observed at the Tamarack Site.

Date	Time (MST)	Parameter	Average Period	AAAQOs	Concentration	Wind speed	Wind Direction	Reference #
November 1	7	PM2.5	1-Hour	80 µg/m3	82 µg/m3	1.0 km/hr	169° (SSE)	385135
November 3	6	PM2.5	1-Hour	80 µg/m3	127 µg/m3	0.1 km/hr	166° (SSE)	385218
November 3	7	PM2.5	1-Hour	80 µg/m3	210 µg/m3	1.4 km/hr	227° (SW)	385218
November 3	8	PM2.5	1-Hour	80 µg/m3	148 µg/m3	1.8 km/hr	223° (SW)	385218
November 3	9	PM2.5	1-Hour	80 µg/m3	99 µg/m3	1.0 km/hr	235° (SW)	385218
November 3	11	PM2.5	1-Hour	80 µg/m3	189 µg/m3	6.3 km/hr	199° (SSW)	385218
November 3	-	PM2.5	24-Hour	29 µg/m3	52 µg/m3	1.7 km/hr	187° (S)	385218
November 4	7	PM2.5	1-Hour	80 µg/m3	85 µg/m3	0.6 km/hr	208° (SSW)	385304

The source of the exceedances of the PM2.5 guideline and objective was because some seasonal roadwork were being performed in the vicinity of the station.

St. Lina Station

Equipment Operation Summary

Parameter	Make / Model	Serial Number	Calibration Date
Sulphur Dioxide (SO₂)	Thermo / 43i-TLE	1180930030	November 17, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Hydrogen Sulphide (H₂S)	Thermo / 450i	CM18010058	November 17, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NO_x/NO/NO₂)	Thermo / 42i	1180930029	November 17, 2021
<ul style="list-style-type: none"> No issues were identified this month. The analyzer was put offline for two hours on November 18 to obtain reference calibration points for O₃ calibration. Two hours of downtime were recorded as a result. 			
Total Hydrocarbons / Methane/ Non-methane Hydrocarbons (THC/CH₄/NMHC)	Thermo / 55i	1236656107 / 1180030034	November 18, 2021
<ul style="list-style-type: none"> The analyzer started showing injection issues on November 16. On November 17, the Thermo 55i, s/n: 1236656107, analyzer was removed following a successful shut-down calibration, and the Thermo 55i, s/n: 1180030034, analyzer was installed. The analyzer was allowed to stabilize overnight before an installation calibration was completed on November 18. Hourly data that was collected on November 17 at hour 4 was discarded as the 75% of valid 1-minute in an hour requirement was not achieved due to injection issues. Twenty-one hours of downtime were recorded due to this event. After completion of the installation on November 18, the NMHC channel showed excessive noise for the remainder of the month. The analyzer was replaced in December. Because the analyzer passed the December's shut-down calibration, all data were considered valid. 			
Ozone (O₃)	Thermo / 49i	1002240371	November 18, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			

Parameter	Make / Model	Serial Number	Calibration Date
Particulate Matter 2.5 (PM2.5)	Thermo / Sharp 5030i	CM17091001	November 29, 2021
<ul style="list-style-type: none"> The PM unit failed after the power outage on November 8 due to a tape-feed error. Five hours of downtime were recorded. The PM unit failed again on November 12 and November 15 due to tape-feed errors. Sixty-four hours of downtime were recorded as a result. 			
Parameter	Make / Model	Serial Number	System Check Date
Relative Humidity (RH)	Campbell ScientificHC2-S3	20221366	September 20, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Ambient Temperature (AT)	Campbell ScientificHC2-S3	20221366	September 20, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Barometric Pressure (BP)	Met One / Part 090D	F4998	December 23, 2020
<ul style="list-style-type: none"> No issues were identified this month. 			
Station Temperature (ST)	BV-supplied	n/a	n/a
<ul style="list-style-type: none"> No issues were identified this month. 			
Precipitation (PRECIP)	Met One / Part 387D	A23775	September 3, 2021
<ul style="list-style-type: none"> No issues were identified this month. 			
Wind Speed (WS) / Wind Direction (WD)/ Stand Deviation Wind Direction (STDWD)	RM Young / 05305VK	161466	March 16, 2021
<ul style="list-style-type: none"> Wind direction data contained in this report represents where the wind is coming from. The annual wind system calibration was completed on March 16, 2021. No issues were identified this month. 			

Monitored Data Summary for St. Lina Site

Parameter	Objectives/Guidelines			Exceedances			Monthly Avg.	Min. 1-hr	Max. 1-hr	Date/Time	VWS (km/hr)	VWD (sector)	Max. 24-hr	Date	Operational Uptime (%)	Valid Data (%)
	1-hr	24-hr	30-day	1-hr	24-hr	30-day										
SO2 (ppb)	172	48	11	0	0	0	0.2	0	4	November 3 at hour 10	6.8	S	1.3	November 3	99.6	95.0
H2S (ppb)	10	3	-	0	0	-	0.0	0	1	November 4 at hour 6	4.3	SSE	0.3	November 20	99.6	94.7
NOx (ppb)	-	-	-	-	-	-	3.4	0	29	November 3 at hour 9	6.5	SSW	12.4	November 3	99.3	94.3
NO (ppb)	-	-	-	-	-	-	0.3	0	15	November 3 at hour 9	6.5	SSW	2.0	November 3	99.3	94.3
NO2 (ppb)	159	-	-	0	-	-	3.2	0	18	November 3 at hour 17	9.2	SSE	10.4	November 3	99.3	94.3
O3 (ppb)	76	-	-	0	-	-	24.8	3.9	44.2	November 26 at hour 18	13.8	NW	35.2	November 29	99.6	94.7
THC (ppm)	-	-	-	-	-	-	2.01	1.84	2.35	November 24 at hour 23	11.1	ESE	2.17	November 25	96.5	91.6
CH4 (ppm)	-	-	-	-	-	-	1.98	1.86	2.30	November 24 at hour 23	11.1	ESE	2.15	November 4	96.5	91.6
NMHC (ppm)	-	-	-	-	-	-	0.03	0.00	0.18	November 19 at hour 9	10.7	WSW	0.11	November 19	96.5	91.6
PM2.5 (µg/m3)	80	29	-	0	0	-	6.0	0	24	November 10 at hour 8	5.9	NNE	14.1	November 3	90.0	89.4
RH (%)	-	-	-	-	-	-	80.1	33	100	November 6 at hour 1	2.1	WSW	98.0	November 15	99.6	99.6
BP (millibar)	-	-	-	-	-	-	915	895	931	November 20 at hour 20	9	NW	928	November 1	99.6	99.6
Ext. Temp. (°C)	-	-	-	-	-	-	-3.4	-19.1	9.6	November 4 at hour 12	7.8	ESE	3.7	November 4	99.6	99.6
Stn. Temp. (°C)	-	-	-	-	-	-	21.5	18.8	24.1	November 18 at hour 14	2.2	SSW	23.6	November 30	99.6	99.6
Precipitation (mm)*	-	-	-	-	-	-	23.9	0.0	2.1	November 16 at hour 0	17.1	NE	0.5	November 16	99.6	99.6
WSV (km/hr)	-	-	-	-	-	-	3.6	0.4	28.7	November 16 at hour 13	28.7	NNW	22.0	November 16	99.6	99.6
WDV (sector)	-	-	-	-	-	-	225 (SW)	-	-	-	-	-	-	-	99.6	99.6

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

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

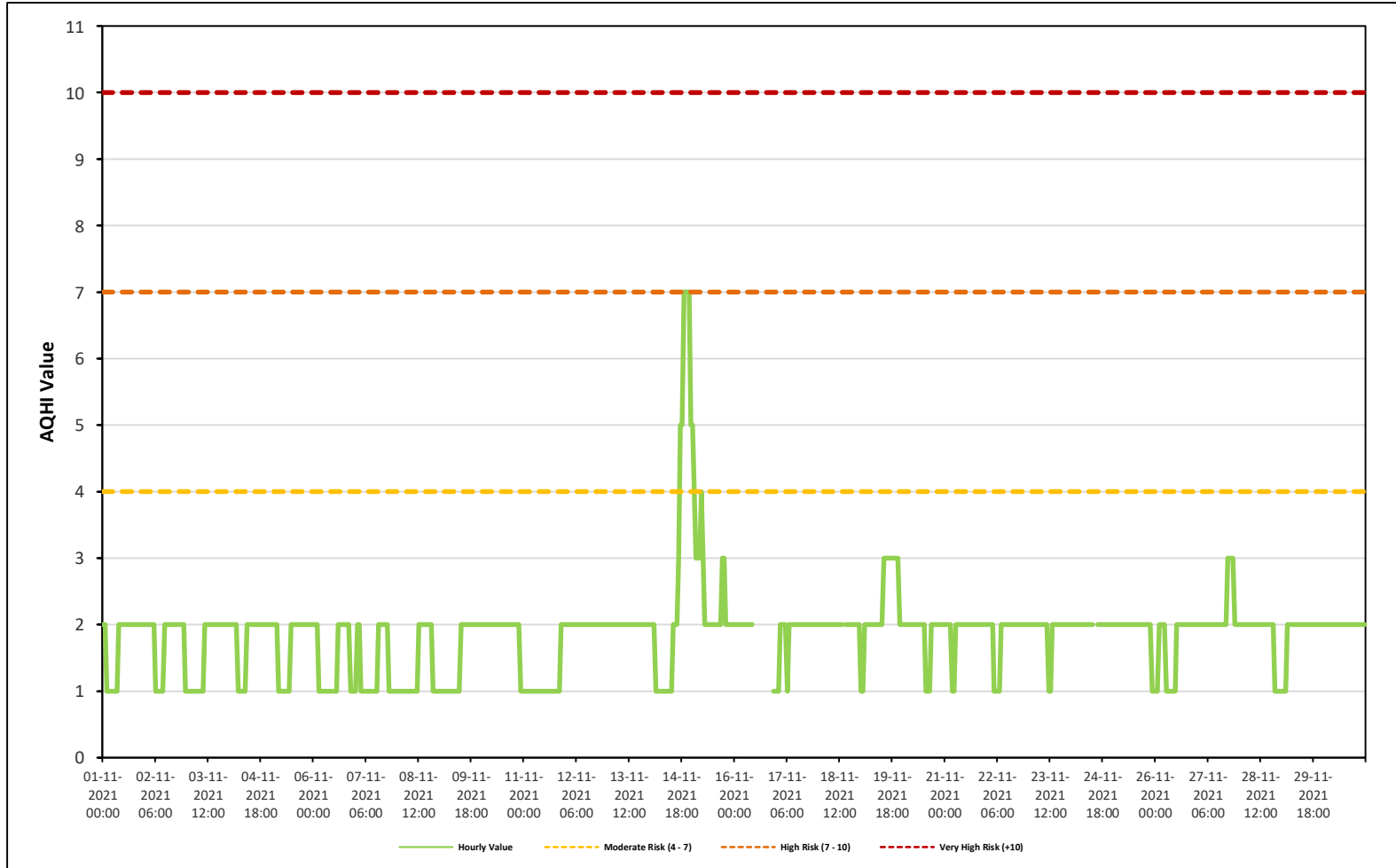
Alberta Ambient Air Quality Objectives (AAAQOs) and/or Alberta Ambient Air Quality Guidelines (AAAQGs) Exceedances

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

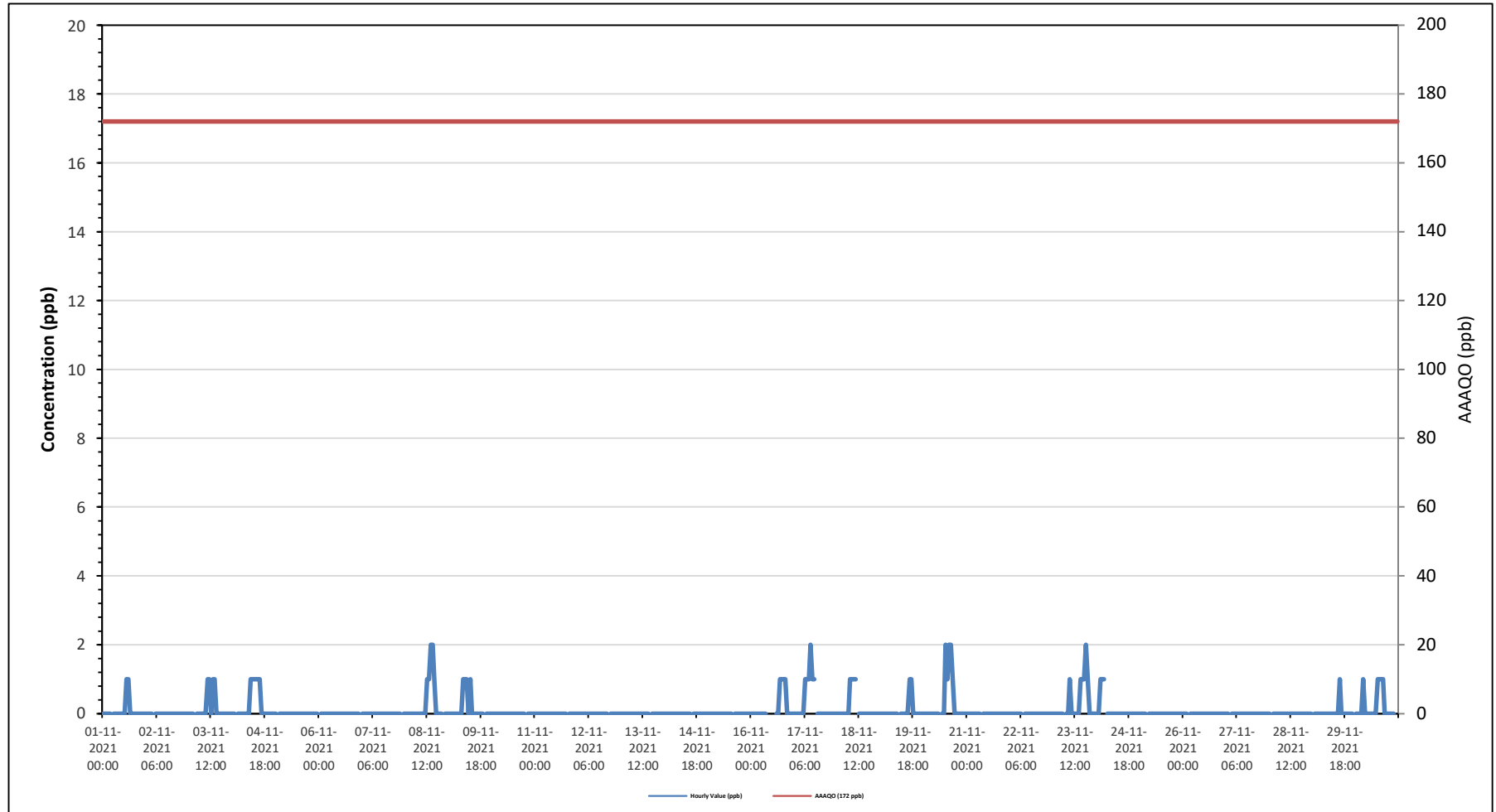
TABLES AND CHARTS

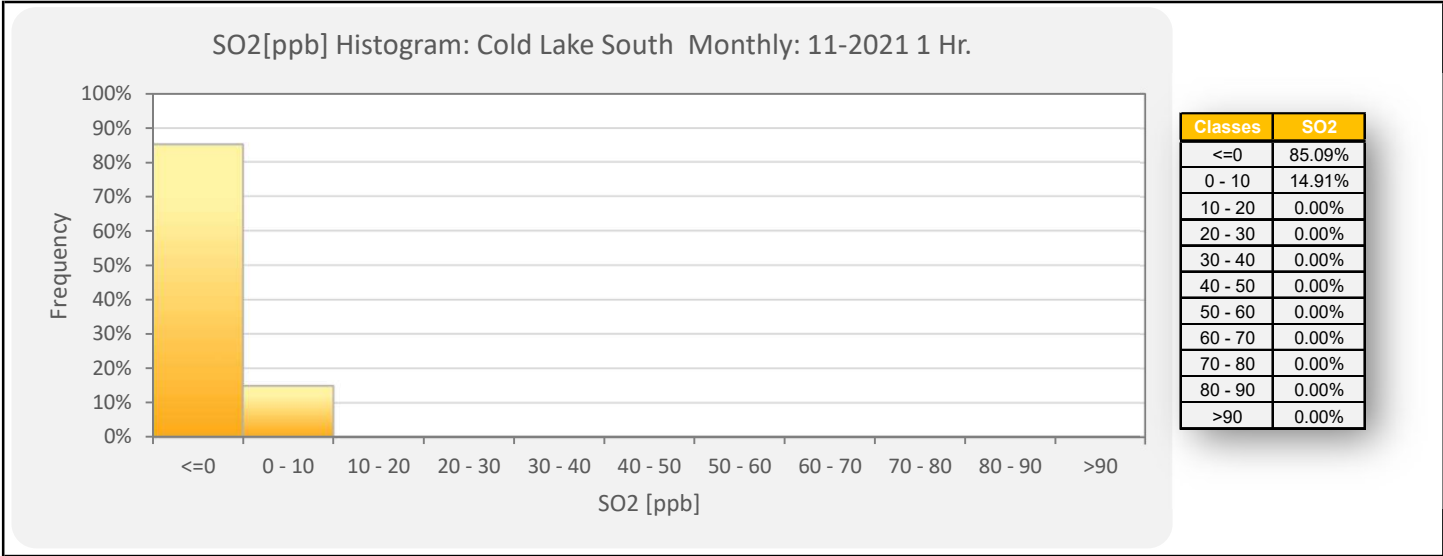
COLD LAKE SOUTH STATION

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



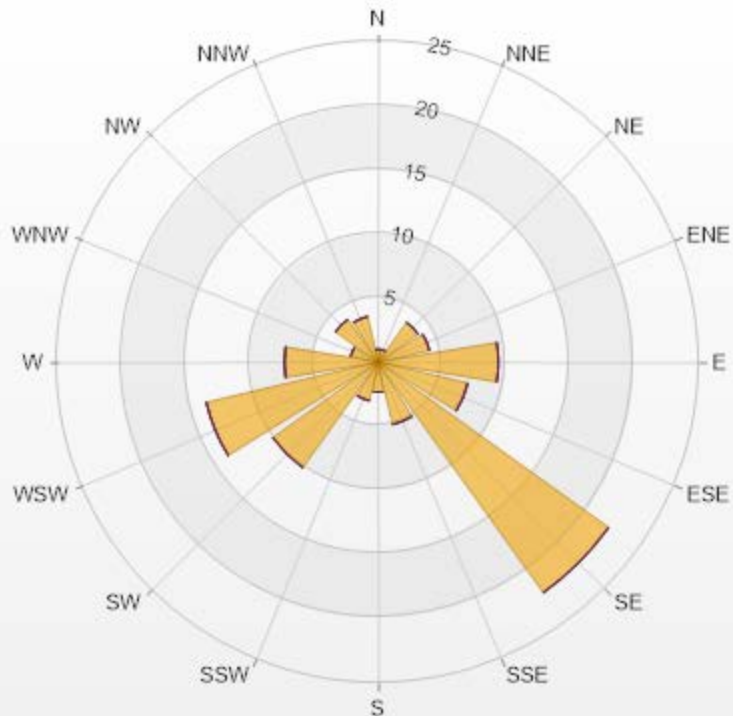
Timeseries Chart of Hourly Average for SO2 - Cold Lake South Station





Wind: Cold Lake South Poll.: Cold Lake South-SO2[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 95.00% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	1.02	0	0	0	0	1.02
NNE	1.02	0	0	0	0	1.02
NE	3.8	0	0	0	0	3.8
ENE	4.09	0	0	0	0	4.09
E	9.36	0	0	0	0	9.36
ESE	7.16	0	0	0	0	7.16
SE	22.08	0	0	0	0	22.08
SSE	4.97	0	0	0	0	4.97
S	2.34	0	0	0	0	2.34
SSW	3.07	0	0	0	0	3.07
SW	10.09	0	0	0	0	10.09
WSW	13.74	0	0	0	0	13.74
W	7.31	0	0	0	0	7.31
WNW	2.19	0	0	0	0	2.19
NW	4.09	0	0	0	0	4.09
NNW	3.65	0	0	0	0	3.65
Summary	100	0	0	0	0	100



LICA-202111

% Icon Classes (ppb)

100 0-10

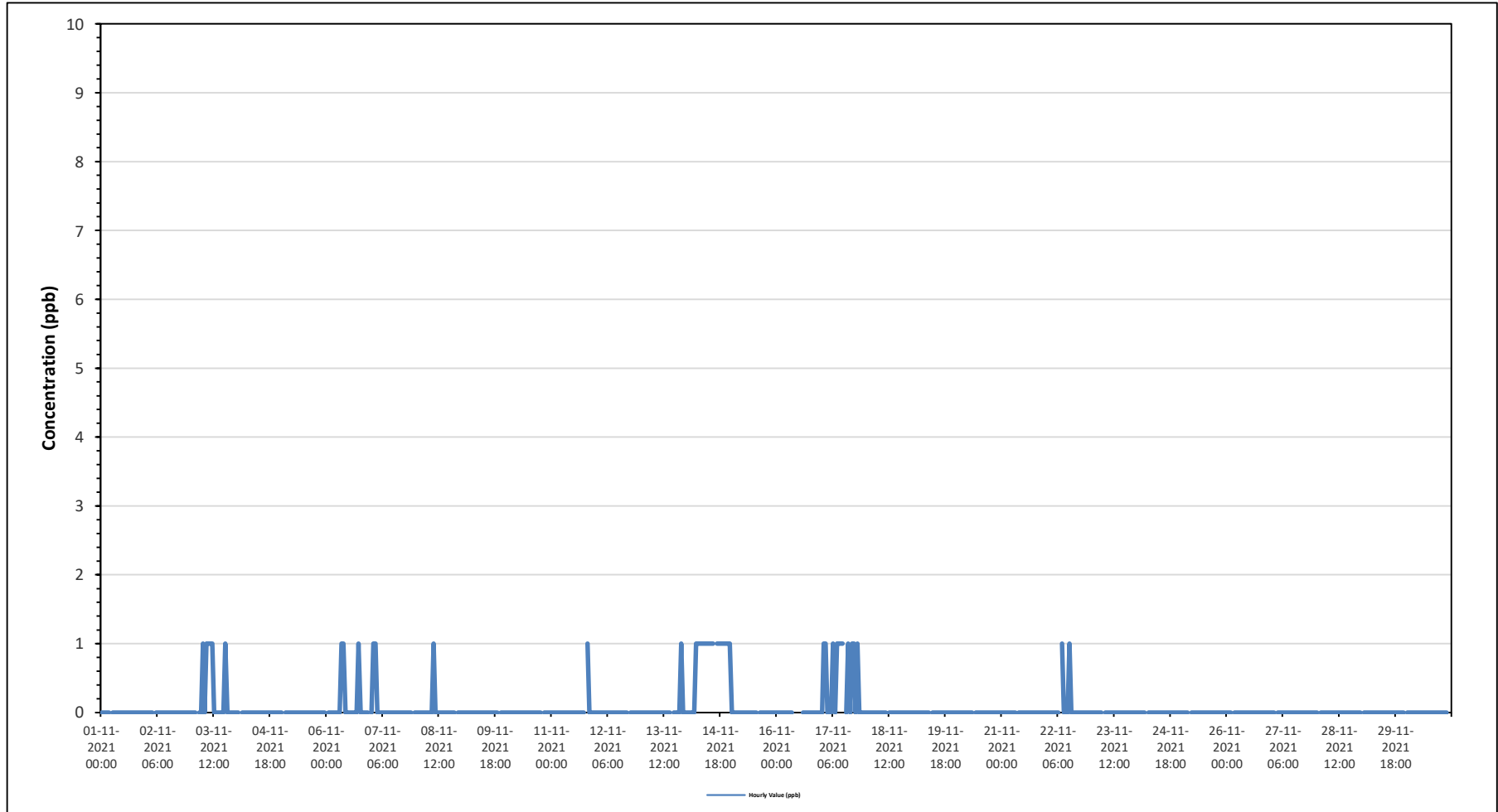
0 10-50

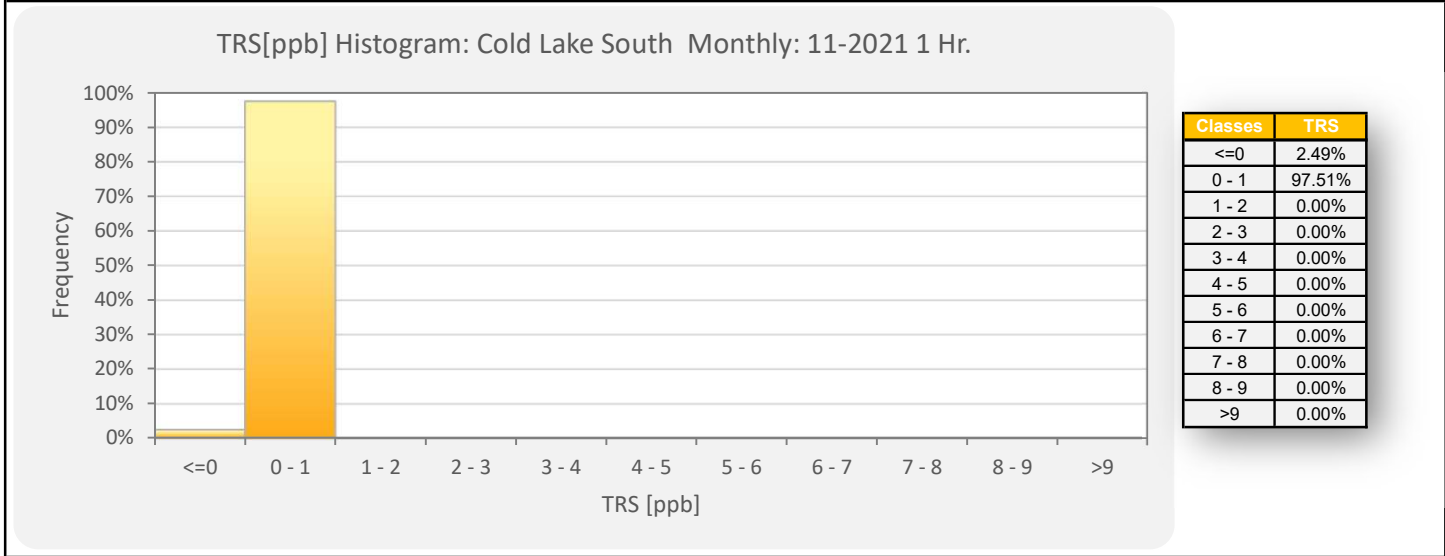
0 50-100

0 100-172

0 >172.0

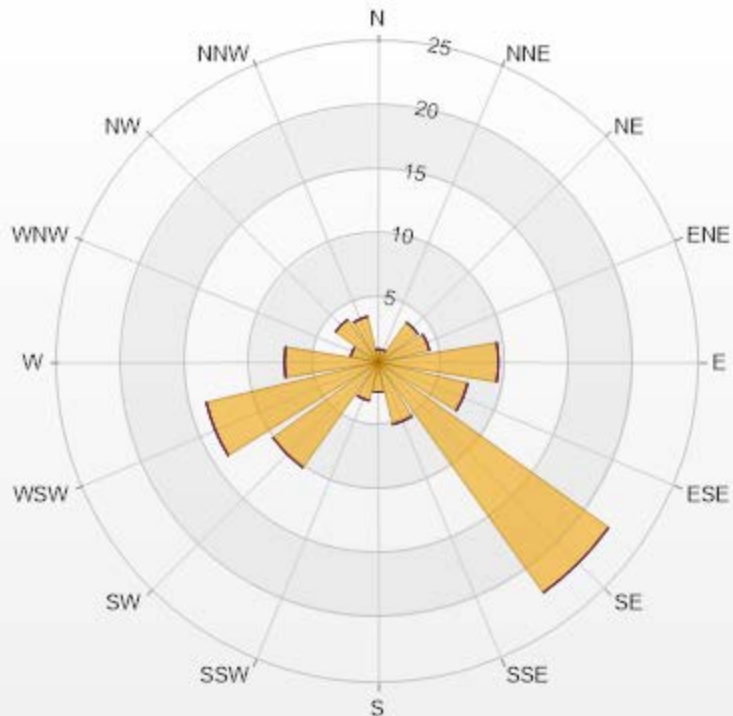
Timeseries Chart of Hourly Average for TRS - Cold Lake South Station





Wind: Cold Lake South Poll.: Cold Lake South-TRS[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 95.00% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	1.02	0	0	0	0	1.02
NNE	1.02	0	0	0	0	1.02
NE	3.8	0	0	0	0	3.8
ENE	4.09	0	0	0	0	4.09
E	9.36	0	0	0	0	9.36
ESE	7.16	0	0	0	0	7.16
SE	22.08	0	0	0	0	22.08
SSE	4.97	0	0	0	0	4.97
S	2.34	0	0	0	0	2.34
SSW	3.07	0	0	0	0	3.07
SW	10.09	0	0	0	0	10.09
WSW	13.74	0	0	0	0	13.74
W	7.31	0	0	0	0	7.31
WNW	2.19	0	0	0	0	2.19
NW	4.09	0	0	0	0	4.09
NNW	3.65	0	0	0	0	3.65
Summary	100	0	0	0	0	100



LICA-202111

% Icon Classes (ppb)

100 0-2

0 2-5

0 5-10

0 10-50

0 >50.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hourly Averages

OXIDES OF NITROGEN (NOx) in ppb

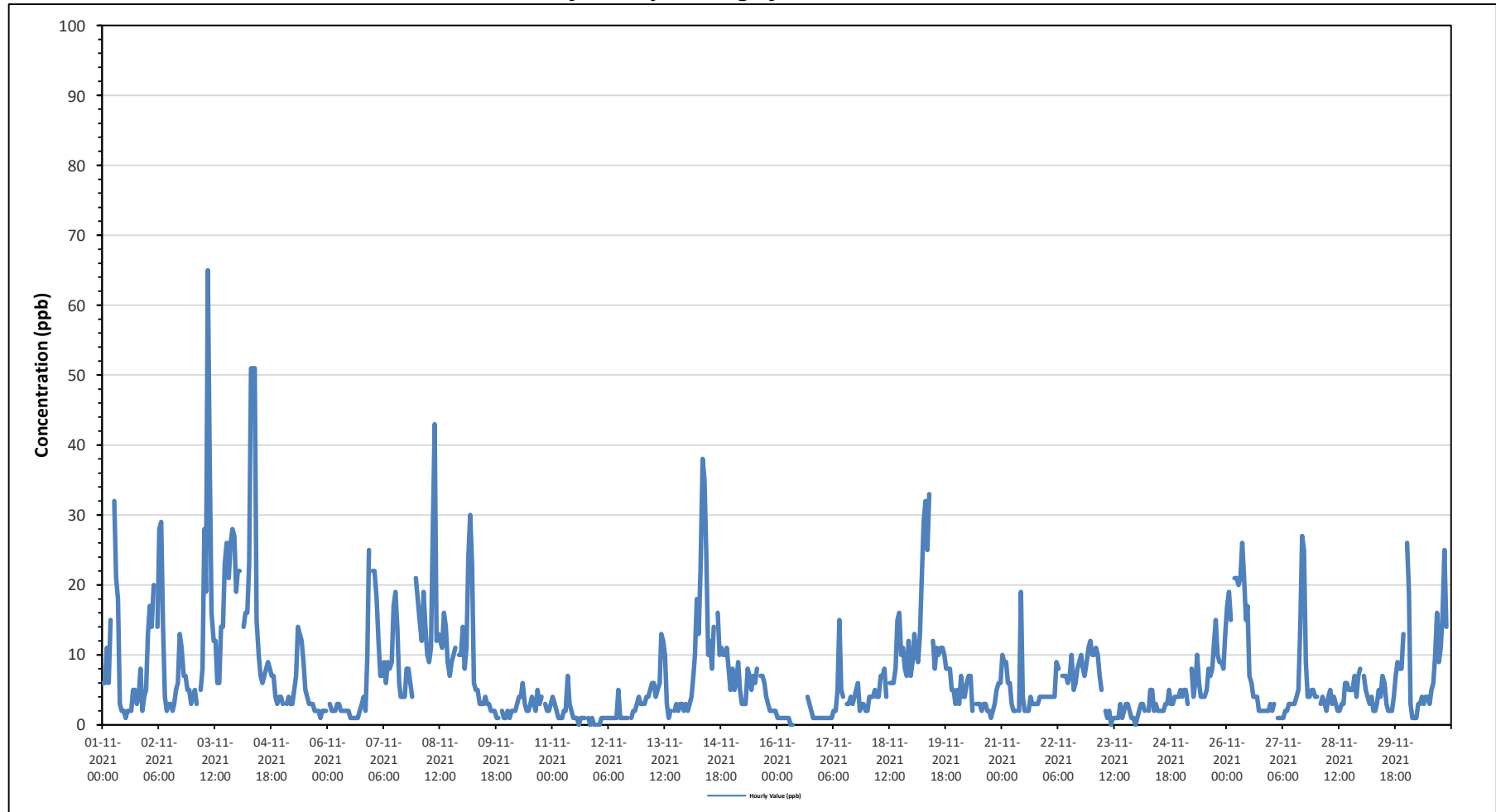
Maximum Hourly Value:	65 ppb on November 3 at hour 8	Hours in Service:	720
Maximum Daily Value:	18.5 ppb on November 3	Hours of Data:	682
Minimum Hourly Value:	0 ppb on November 11 at hour 14	Hours of Missing Data:	0
Minimum Daily Value:	1.5 ppb on November 12	Hours of Calibration:	38
Monthly Average:	7.0 ppb	Operational Uptime:	100.0

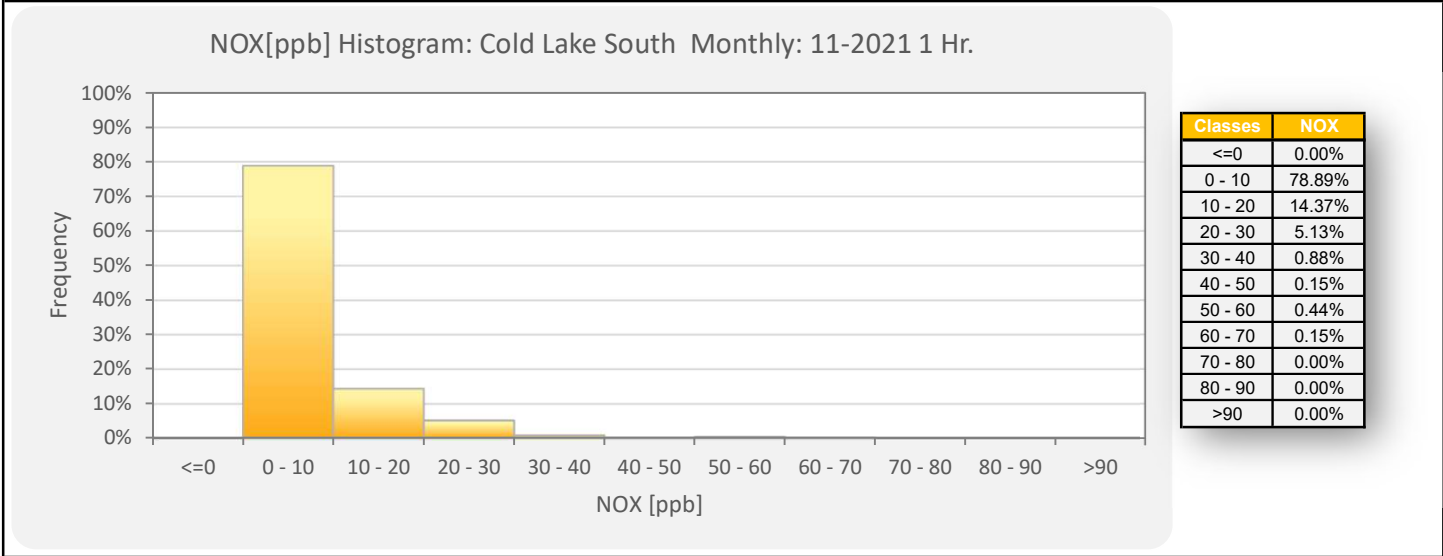
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Nov 1	6	6	11	6	15	S	32	21	18	3	2	2	1	2	2	2	5	5	3	4	8	2	4	5	1	32	7.2
Nov 2	13	17	14	20	S	14	28	29	14	4	2	3	3	2	3	5	6	13	11	7	7	5	5	3	2	29	9.9
Nov 3	4	5	3	S	5	8	28	19	65	38	16	12	12	6	6	14	14	23	26	21	26	28	27	19	3	65	18.5
Nov 4	22	22	S	14	16	16	23	51	51	51	15	10	7	6	7	8	9	8	7	7	4	3	4	4	3	51	15.9
Nov 5	3	S	3	4	3	3	5	7	14	13	12	9	5	4	3	3	3	2	2	2	1	2	2	2	1	14	4.7
Nov 6	S	3	2	2	2	3	3	2	2	2	2	1	1	1	1	1	1	2	3	4	2	10	25	S	1	25	3.5
Nov 7	22	22	18	12	7	7	9	6	9	8	9	17	19	14	6	4	4	4	8	8	6	4	S	21	4	22	10.6
Nov 8	18	15	12	19	14	10	9	11	28	43	12	13	12	11	16	14	9	7	9	10	11	S	10	10	7	43	14.0
Nov 9	14	8	11	24	30	23	6	5	3	3	3	4	3	3	2	2	2	1	1	S	2	1	1	1	1	30	6.8
Nov 10	2	1	2	2	2	3	4	4	6	3	2	2	3	4	3	2	5	3	4	S	3	2	2	3	1	6	2.9
Nov 11	4	3	2	1	1	1	2	2	7	3	2	1	1	1	0	1	1	1	S	1	0	1	0	0	0	7	1.6
Nov 12	0	0	1	1	1	1	1	1	1	1	1	5	1	1	1	1	1	S	1	2	2	3	4	3	0	5	1.5
Nov 13	3	3	4	4	5	6	6	4	5	6	13	12	10	3	1	2	S	7	3	2	3	3	2	3	1	13	4.6
Nov 14	2	3	4	7	10	18	13	22	38	35	24	10	12	8	14	S	16	10	11	10	10	11	8	5	2	38	13.1
Nov 15	8	5	6	9	5	3	3	3	8	7	5	7	6	8	S	7	7	6	4	3	2	2	2	2	2	9	5.1
Nov 16	1	1	1	1	1	1	1	0	0	C	C	C	C	C	C	C	4	3	2	1	1	1	1	1	0	4	-
Nov 17	1	1	1	1	1	1	2	2	5	15	5	4	S	3	3	4	3	4	5	6	2	3	3	2	1	15	3.3
Nov 18	2	4	4	4	5	4	4	7	7	8	4	S	6	6	6	8	15	16	10	11	8	7	12	7	2	16	7.2
Nov 19	9	13	10	9	13	20	29	32	25	33	S	12	8	11	10	11	11	10	8	8	5	5	3	3	3	33	13.2
Nov 20	5	3	7	4	4	6	7	7	2	S	3	3	3	2	3	3	2	2	1	2	3	5	6	6	1	7	3.9
Nov 21	10	9	9	6	6	3	2	2	S	2	19	4	2	2	2	4	3	3	3	3	4	4	4	4	2	19	4.8
Nov 22	4	4	4	4	4	9	8	S	7	7	7	6	7	10	5	6	8	9	10	8	7	9	11	12	4	12	7.2
Nov 23	10	10	11	10	7	5	S	2	1	2	0	1	1	1	1	3	1	2	3	3	2	1	1	0	0	11	3.4
Nov 24	1	2	3	3	2	S	2	5	5	2	3	2	2	2	2	3	3	5	3	3	4	4	4	5	1	5	3.0
Nov 25	4	5	5	3	S	8	4	6	10	6	4	4	4	5	8	7	8	12	15	10	9	9	8	13	3	15	7.3
Nov 26	17	19	15	S	21	21	20	21	26	21	15	17	7	6	4	4	4	2	2	2	2	2	2	3	2	26	11.0
Nov 27	2	3	S	1	1	1	1	2	2	3	3	3	3	4	5	14	27	25	9	4	4	5	5	4	1	27	5.7
Nov 28	4	S	3	4	3	2	4	5	3	4	3	2	2	3	3	6	6	5	5	5	7	4	7	8	2	8	4.3
Nov 29	S	7	5	4	3	4	2	2	3	5	4	7	6	3	2	2	2	4	7	9	8	8	13	S	2	13	5.0
Nov 30	26	19	3	1	1	1	3	3	4	3	4	4	3	5	6	10	16	9	11	16	25	14	S	9	1	26	8.5
Diurnal Maximum	26	22	18	24	30	23	32	51	65	51	24	17	19	14	16	14	27	25	26	21	26	28	27	21			
Dalurnal Average	7.8	7.6	6.2	6.4	6.7	7.2	9.0	9.8	12.8	11.8	6.9	6.3	5.4	4.7	4.5	5.4	6.8	6.9	6.4	6.0	6.2	5.5	6.4	5.6			

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	Invalid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

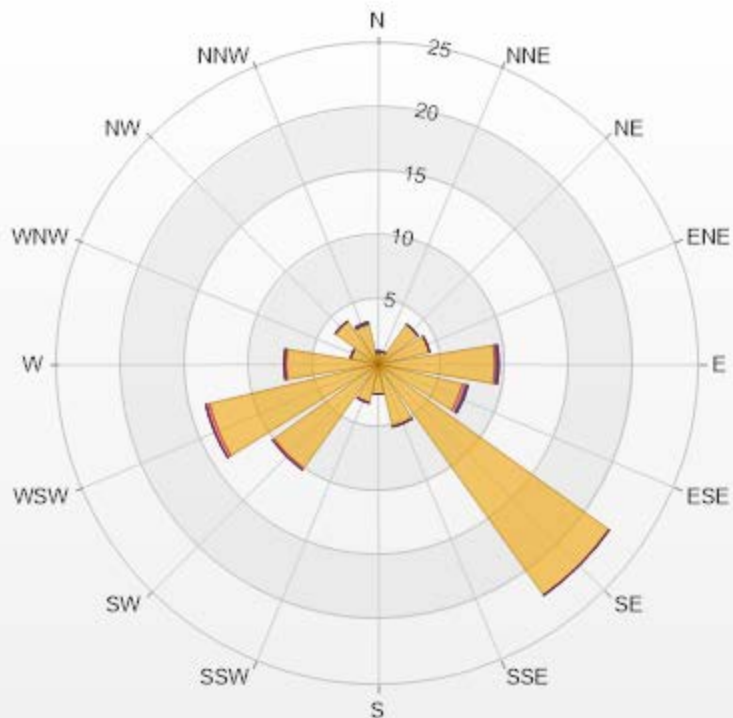
Timeseries Chart of Hourly Average for NOx - Cold Lake South Station





Wind: Cold Lake South Poll.: Cold Lake South-NOX[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.72% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	0.88	0	0.15	0	0	1.03
NNE	1.03	0	0	0	0	1.03
NE	3.81	0	0	0	0	3.81
ENE	4.11	0	0	0	0	4.11
E	9.09	0.15	0.15	0	0	9.39
ESE	6.74	0.29	0.15	0	0	7.18
SE	22.14	0	0	0	0	22.14
SSE	4.99	0	0	0	0	4.99
S	2.35	0	0	0	0	2.35
SSW	3.08	0	0	0	0	3.08
SW	9.97	0.15	0	0	0	10.12
WSW	13.49	0.29	0	0	0	13.78
W	7.18	0.15	0	0	0	7.33
WNW	2.2	0	0	0	0	2.2
NW	4.11	0	0	0	0	4.11
NNW	3.23	0	0.15	0	0	3.38
Summary	98.4	1.03	0.6	0	0	100

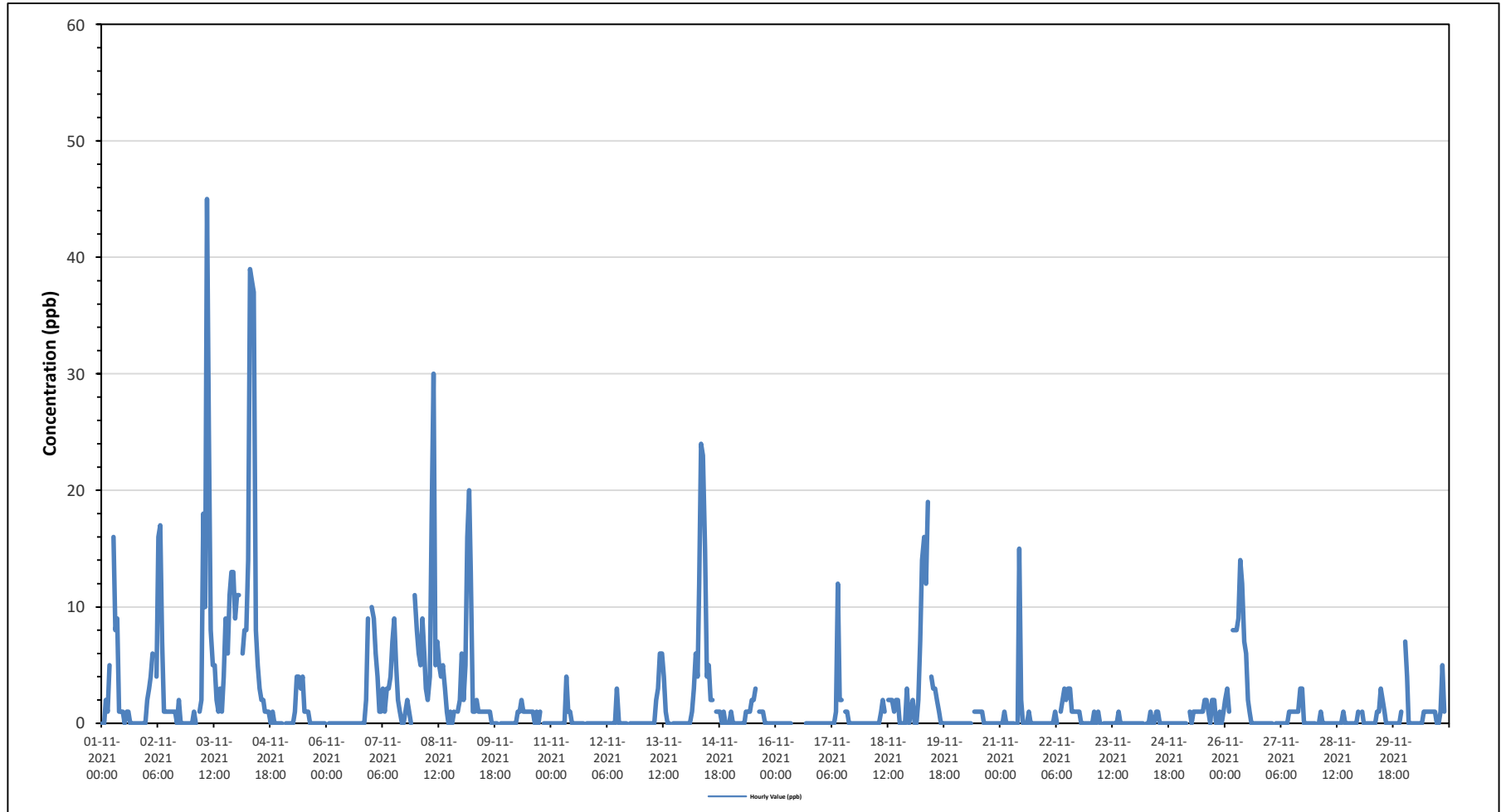


LICA-202111

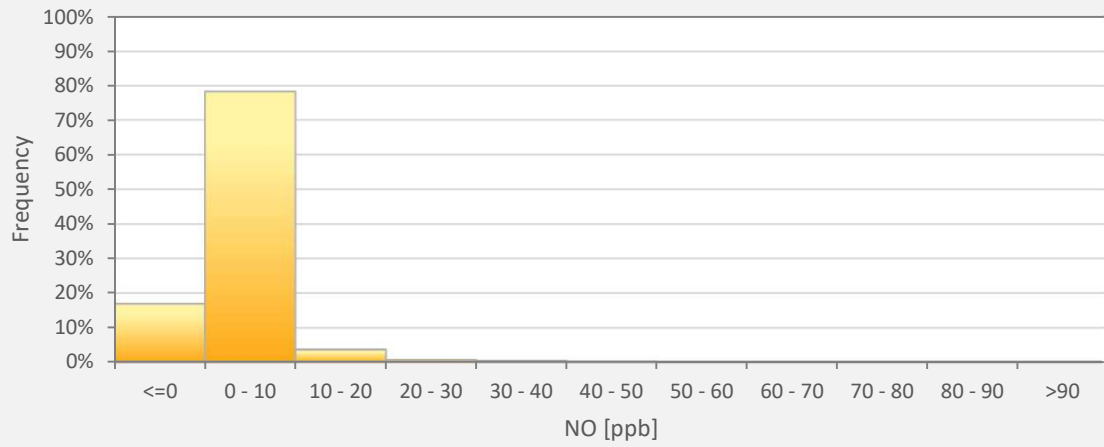
Page 41 of 239

% Icon Classes (ppb)	98	0-30	1	30-50	1	50-76	0	76-159	0	>159.0

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



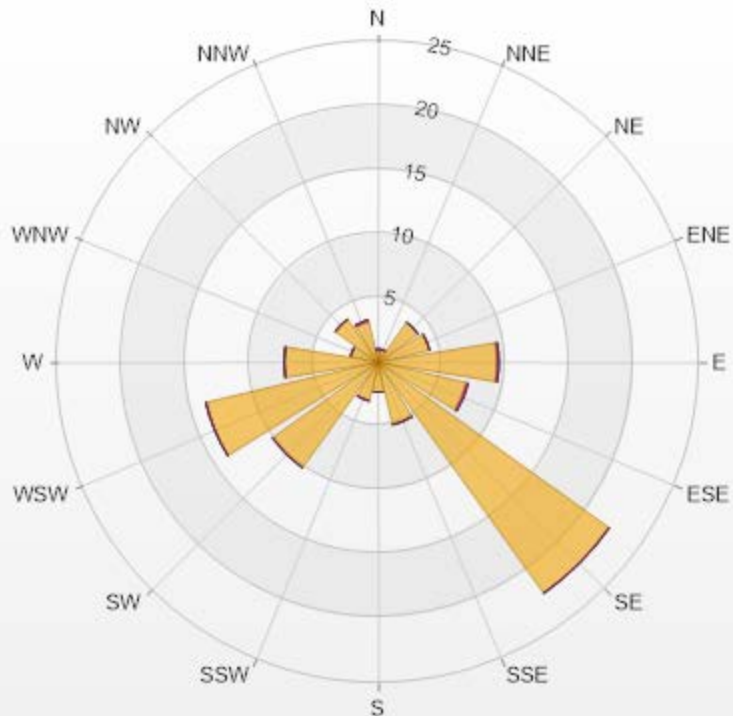
NO[ppb] Histogram: Cold Lake South Monthly: 11-2021 1 Hr.



Classes	NO
<=0	16.86%
0 - 10	78.15%
10 - 20	3.67%
20 - 30	0.73%
30 - 40	0.44%
40 - 50	0.15%
50 - 60	0.00%
60 - 70	0.00%
70 - 80	0.00%
80 - 90	0.00%
>90	0.00%

Wind: Cold Lake South Poll.: Cold Lake South-NO[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.72% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	0.88	0.15	0	0	0	1.03
NNE	1.03	0	0	0	0	1.03
NE	3.81	0	0	0	0	3.81
ENE	4.11	0	0	0	0	4.11
E	9.24	0.15	0	0	0	9.39
ESE	7.04	0.15	0	0	0	7.19
SE	22.14	0	0	0	0	22.14
SSE	4.99	0	0	0	0	4.99
S	2.35	0	0	0	0	2.35
SSW	3.08	0	0	0	0	3.08
SW	10.12	0	0	0	0	10.12
WSW	13.78	0	0	0	0	13.78
W	7.33	0	0	0	0	7.33
WNW	2.2	0	0	0	0	2.2
NW	4.11	0	0	0	0	4.11
NNW	3.23	0.15	0	0	0	3.38
Summary	99.44	0.6	0	0	0	100



LICA-202111

% Icon Classes (ppb)	99	0-30	1	30-50	0	50-76	0	76-159	0	>159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hourly Averages

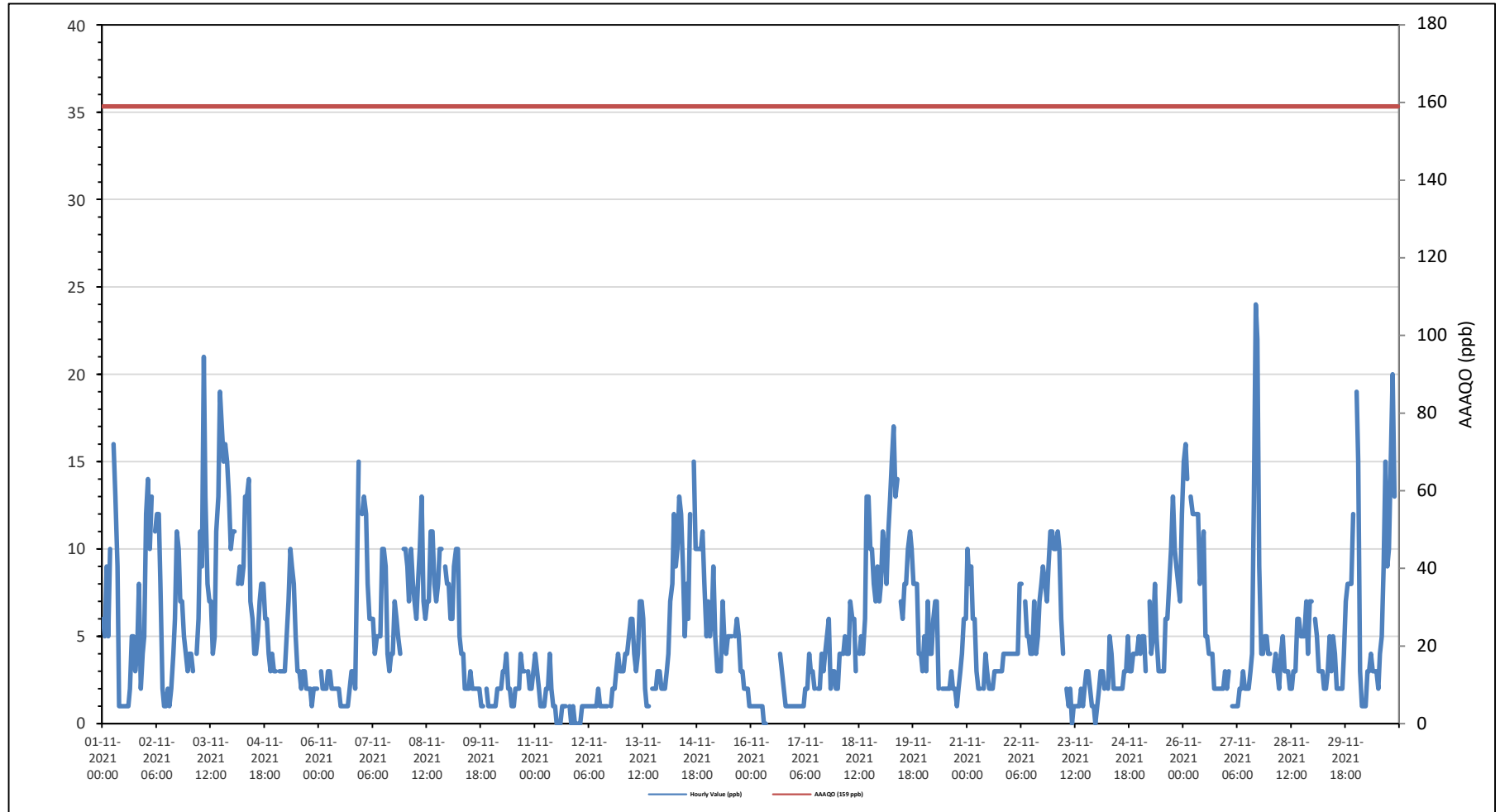
NITROGEN DIOXIDE (NO₂) in ppb

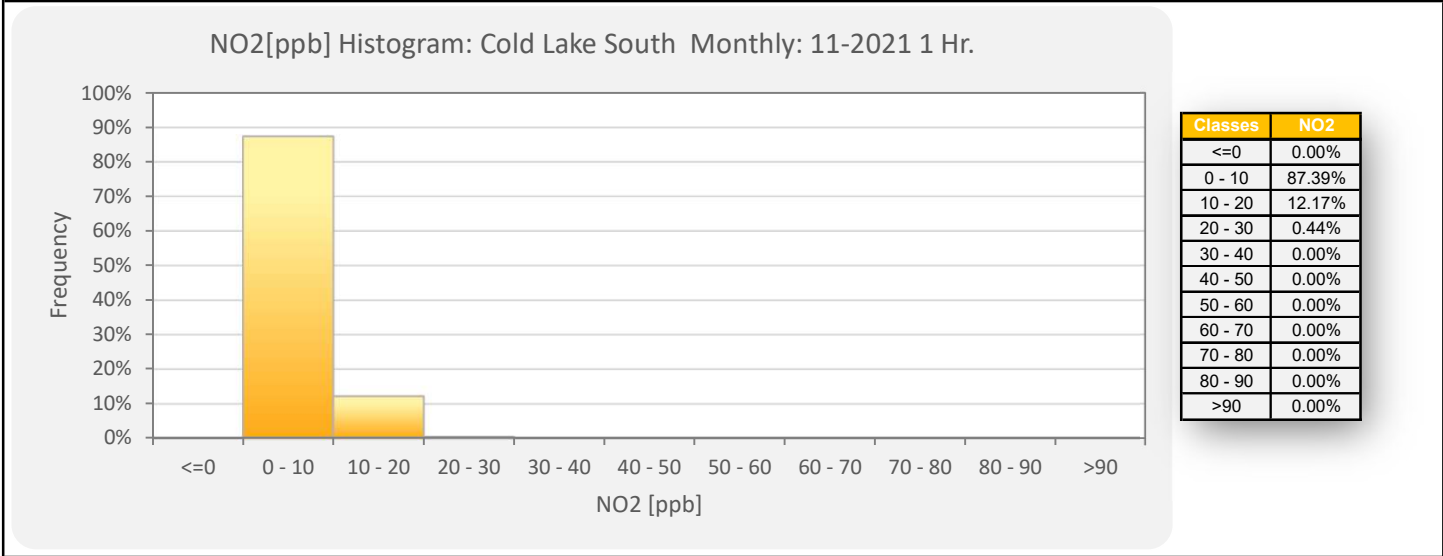
Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 159 ppb																											
Number of 1-Hour Exceedences: 0																											
Maximum Hourly Value: 24 ppb on November 27 at hour 16											Hours in Service: 720																
Maximum Daily Value: 10.2 ppb on November 3											Hours of Data: 682																
Minimum Hourly Value: 0 ppb on November 11 at hour 12											Hours of Missing Data: 0																
Minimum Daily Value: 1.3 ppb on November 11											Hours of Calibration: 38																
Monthly Average: 5.1 ppb											Operational Uptime: 100.0																
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
Nov 1	6	5	9	5	10	S	16	13	9	1	1	1	1	1	2	5	5	3	4	8	2	4	5	1	16	5.1	
Nov 2	12	14	10	13	S	11	12	12	8	2	1	1	2	1	2	4	6	11	10	7	7	5	4	3	1	14	6.9
Nov 3	4	4	3	S	4	6	11	9	21	13	8	7	7	4	5	11	13	19	17	15	13	10	3	21	10.2		
Nov 4	11	11	S	8	9	8	9	13	13	14	7	6	4	4	5	7	8	8	6	6	4	3	4	3	3	14	7.4
Nov 5	3	S	3	3	3	3	5	7	10	9	8	5	3	3	2	3	3	2	2	2	2	2	2	1	10	3.7	
Nov 6	S	3	2	2	2	3	2	2	2	2	2	2	1	1	1	1	2	3	3	2	9	15	S	1	15	2.9	
Nov 7	12	13	12	8	6	6	6	4	5	5	5	10	10	9	4	3	4	4	7	6	5	4	S	10	3	13	6.9
Nov 8	10	9	7	10	8	7	6	8	10	13	7	6	7	7	11	11	8	7	8	10	10	S	9	8	6	13	8.6
Nov 9	8	6	6	9	10	10	5	4	4	2	2	2	3	2	2	2	2	2	1	1	S	2	1	1	1	10	3.8
Nov 10	1	1	1	2	2	2	3	3	4	2	2	1	1	2	2	2	4	3	3	S	3	2	2	3	1	4	2.2
Nov 11	4	3	2	1	1	1	2	2	4	2	1	1	0	0	0	1	1	1	S	1	0	1	0	0	0	4	1.3
Nov 12	0	0	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	S	1	2	2	3	4	3	0	4	1.3
Nov 13	3	3	4	4	5	6	6	4	3	4	7	7	6	2	1	1	S	2	2	2	3	3	2	2	1	7	3.6
Nov 14	2	3	4	7	8	12	9	10	13	12	9	5	8	6	12	S	15	10	10	10	10	11	8	5	2	15	8.7
Nov 15	7	5	6	9	5	3	3	3	7	5	4	5	5	5	S	5	6	5	3	3	2	2	2	1	1	9	4.4
Nov 16	1	1	1	1	1	1	1	0	0	C	C	C	C	C	C	C	4	3	2	1	1	1	1	1	0	4	-
Nov 17	1	1	1	1	1	1	2	2	4	3	3	2	S	2	2	4	3	4	5	6	2	3	3	2	1	6	2.5
Nov 18	2	4	4	4	5	4	4	7	6	6	3	S	4	5	4	6	13	13	10	10	8	7	9	7	2	13	6.3
Nov 19	8	11	10	8	11	13	15	17	13	14	S	7	6	8	8	10	11	10	8	8	4	4	4	3	3	17	9.3
Nov 20	5	3	7	4	4	6	7	7	2	S	2	2	2	2	2	3	2	2	1	2	3	4	6	6	1	7	3.7
Nov 21	10	8	9	6	6	3	2	2	S	2	4	3	2	2	2	3	3	3	3	3	4	4	4	4	2	10	4.0
Nov 22	4	4	4	4	4	8	8	S	7	5	5	4	4	7	4	5	7	8	9	8	7	9	11	11	4	11	6.4
Nov 23	10	10	11	10	6	4	S	2	1	2	0	1	1	1	1	2	1	2	3	3	2	1	1	0	0	11	3.3
Nov 24	1	2	3	3	2	S	2	5	4	2	2	2	2	2	2	3	3	5	3	3	4	4	4	5	1	5	3.0
Nov 25	4	5	5	3	S	7	4	5	8	5	3	3	3	3	6	6	8	10	13	10	9	8	7	12	3	13	6.4
Nov 26	15	16	14	S	13	12	12	12	8	9	11	5	5	4	4	4	2	2	2	2	2	2	3	2	16	7.4	
Nov 27	2	3	S	1	1	1	1	2	2	3	2	2	3	4	13	24	22	9	4	4	5	5	4	1	24	5.2	
Nov 28	4	S	3	4	3	2	4	5	3	3	3	2	2	3	3	6	6	5	5	5	7	4	7	7	2	7	4.2
Nov 29	S	6	5	3	3	3	2	3	5	3	5	3	5	4	2	2	4	7	8	8	8	12	S	2	12	4.5	
Nov 30	19	15	3	1	1	1	3	3	4	3	3	3	2	4	5	9	15	9	10	15	20	13	S	9	1	20	7.4
Diurnal Maximum	19	16	14	13	13	13	16	17	21	14	9	11	10	9	12	13	24	22	17	15	20	15	15	12			
Daiurnal Average	6.0	6.0	5.4	4.8	4.8	5.2	5.7	6.3	5.3	3.8	3.9	3.5	3.3	3.5	4.6	6.3	6.3	5.7	5.5	5.6	4.9	5.2	4.6				
C	Monthly Calibration					S	Daily Zero-Span Check					Q	Quality Assurance														
K	Collection Error					N	No Data (Machine Not in Service)					Y	Routine Maintenance					P	Power Failure								
X	InValid Data (Equipment Malfunction /Recovery)					NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																				

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

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

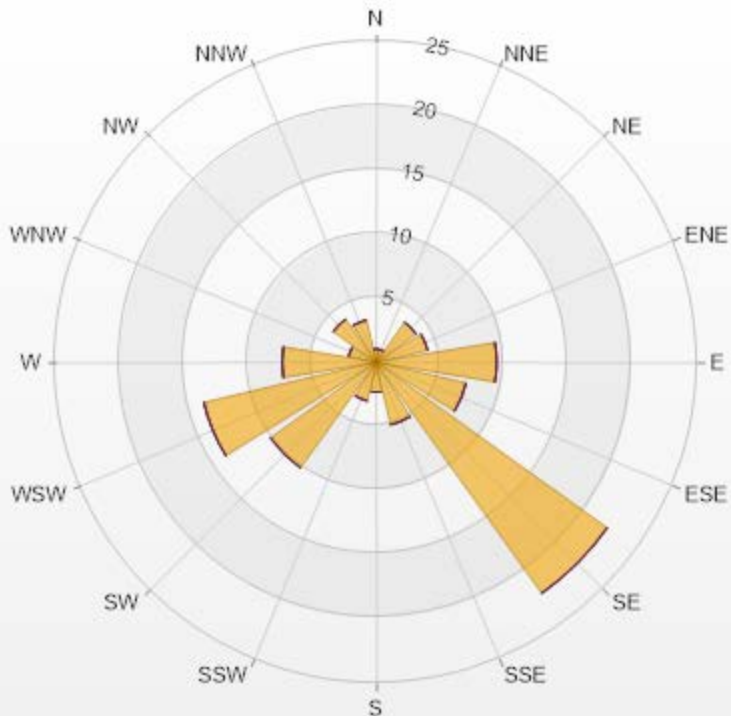
Timeseries Chart of Hourly Average for NO2 - Cold Lake South Station





Wind: Cold Lake South Poll.: Cold Lake South-NO2[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.72% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	1.03	0	0	0	0	1.03
NNE	1.03	0	0	0	0	1.03
NE	3.81	0	0	0	0	3.81
ENE	4.11	0	0	0	0	4.11
E	9.38	0	0	0	0	9.38
ESE	7.18	0	0	0	0	7.18
SE	22.14	0	0	0	0	22.14
SSE	4.99	0	0	0	0	4.99
S	2.35	0	0	0	0	2.35
SSW	3.08	0	0	0	0	3.08
SW	10.12	0	0	0	0	10.12
WSW	13.78	0	0	0	0	13.78
W	7.33	0	0	0	0	7.33
WNW	2.2	0	0	0	0	2.2
NW	4.11	0	0	0	0	4.11
NNW	3.37	0	0	0	0	3.37
Summary	100	0	0	0	0	100



LICA-202111

Page 51 of 239

% Icon Classes (ppb)

100  0-30

0  30-50

0  50-76

0  76-159

0  >159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hourly Averages

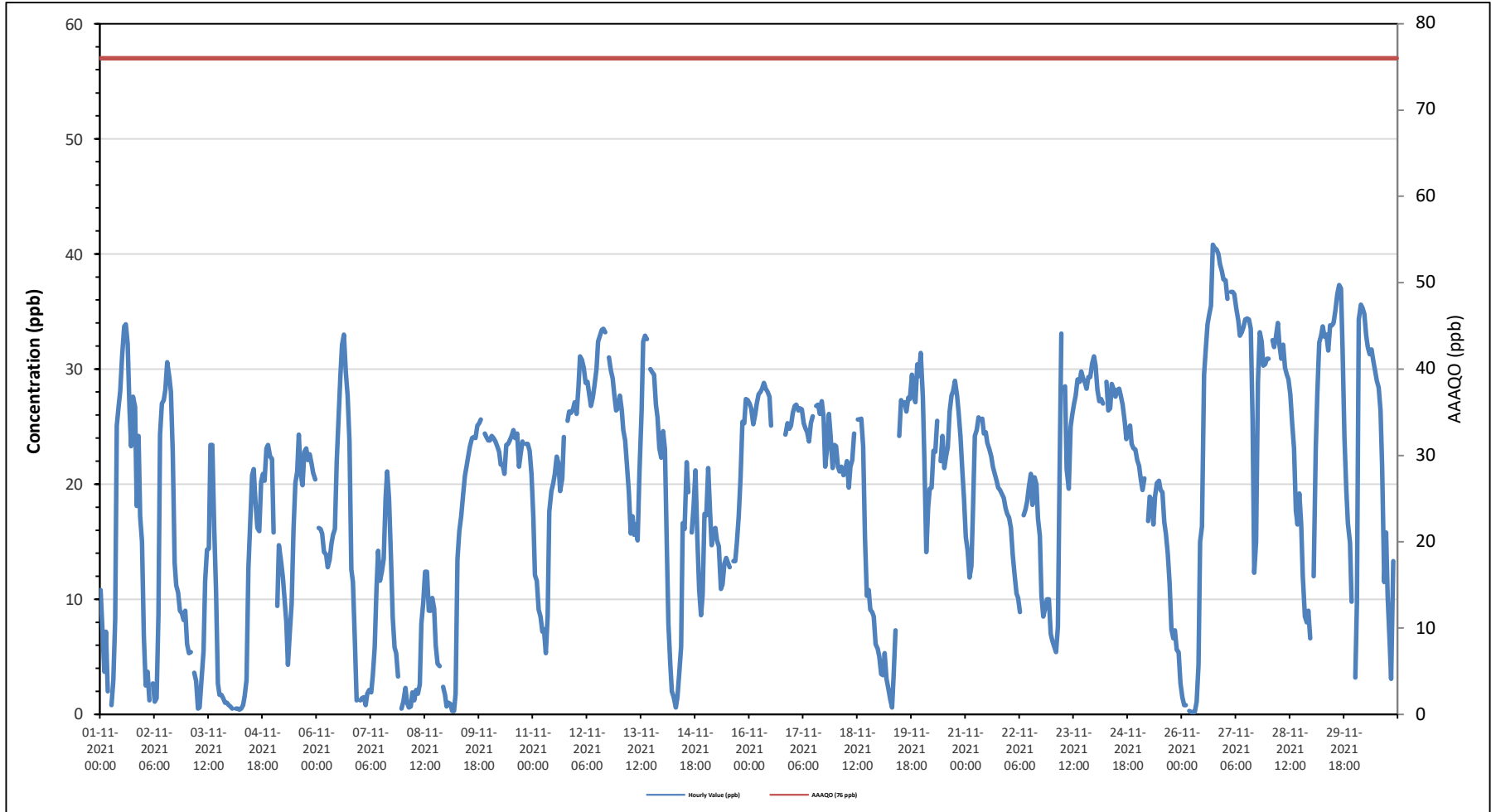
OZONE (O₃) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 76 ppb																												
Number of 1-Hour Exceedences: 0																												
Maximum Hourly Value: 40.8 ppb on November 26 at hour 17											Hours in Service: 720																	
Maximum Daily Value: 31.7 ppb on November 27											Hours of Data: 683																	
Minimum Hourly Value: 0.2 ppb on November 26 at hour 5											Hours of Missing Data: 0																	
Minimum Daily Value: 4.9 ppb on November 8											Hours of Calibration: 37																	
Monthly Average: 19.2 ppb											Operational Uptime: 100.0																	
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
Nov 1	10.8	7.3	3.7	7.2	2.0	S	0.8	3.0	8.3	25.1	26.8	28.1	31.1	33.7	33.9	32.2	26.5	23.3	27.6	26.7	18.1	24.2	17.2	15.0	0.8	33.9	18.8	
Nov 2	6.8	2.5	3.7	1.2	S	2.7	1.1	1.4	8.6	24.3	27.0	27.3	28.2	30.6	29.3	28.0	22.7	13.2	11.2	10.6	9.0	8.8	8.2	9.0	1.1	30.6	13.7	
Nov 3	6.1	5.3	5.4	S	3.6	2.9	0.5	0.6	2.9	5.5	11.6	14.3	14.4	23.4	23.4	16.3	10.8	2.7	1.7	1.7	1.4	1.0	1.0	0.8	0.5	23.4	6.8	
Nov 4	0.7	0.5	S	0.5	0.5	0.4	0.5	0.8	1.6	3.0	12.7	16.7	20.8	21.3	18.3	16.2	15.9	20.2	20.9	20.3	23.1	23.4	22.4	22.2	0.4	23.4	12.3	
Nov 5	15.8	S	9.4	14.7	13.3	11.9	10.1	8.0	4.3	7.1	9.6	16.0	20.1	21.1	24.3	20.9	19.9	22.8	23.1	22.1	22.6	21.8	21.0	20.4	4.3	24.3	16.5	
Nov 6	S	16.2	16.1	15.7	14.1	13.9	12.8	13.4	14.8	15.6	16.1	22.0	25.8	29.5	32.1	33.0	29.8	27.7	23.7	12.6	11.5	6.6	1.2	S	1.2	33.0	18.4	
Nov 7	1.2	1.4	1.5	0.8	1.8	2.1	1.9	3.4	5.8	11.0	14.2	11.6	12.4	13.5	18.7	21.1	18.8	13.9	8.4	5.8	5.3	3.3	S	0.5	0.5	21.1	7.8	
Nov 8	1.1	2.3	1.0	0.6	0.7	1.9	1.2	2.1	1.8	2.6	7.9	9.7	12.4	12.4	9.0	9.0	10.1	9.2	6.0	4.4	4.2	S	2.4	1.7	0.6	12.4	4.9	
Nov 9	0.7	1.0	0.9	0.3	0.3	1.8	13.5	15.9	17.2	19.0	20.7	21.5	22.5	23.3	24.0	24.1	24.0	25.1	25.3	25.6	S	24.4	24.1	23.8	0.3	25.6	16.5	
Nov 10	23.8	24.2	24.0	23.7	23.3	22.8	21.7	20.9	23.4	23.5	23.8	24.2	24.7	24.0	24.4	21.5	22.6	23.7	S	23.5	23.5	22.9	20.9	20.9	20.9	20.9	24.7	23.2
Nov 11	17.1	12.1	11.6	9.1	8.5	7.2	7.4	5.3	8.6	17.6	19.4	20.1	20.9	22.4	21.8	19.4	20.5	24.1	S	25.5	26.3	26.2	26.5	27.1	5.3	27.1	17.6	
Nov 12	26.1	28.4	31.1	30.8	30.1	28.8	28.9	27.9	26.8	27.5	28.5	30.0	32.4	32.9	33.4	33.5	33.2	S	31.0	29.9	29.2	27.8	26.4	26.6	26.1	33.5	29.6	
Nov 13	27.7	26.5	24.7	23.8	21.6	19.3	15.7	17.2	15.6	16.5	15.1	21.1	26.3	32.4	32.9	32.6	S	30.0	29.7	29.5	26.9	25.8	23.1	22.3	15.1	32.9	24.2	
Nov 14	24.6	23.0	14.7	7.9	4.4	2.0	1.5	0.6	1.5	3.6	5.9	16.6	16.1	21.9	19.3	S	15.8	18.1	21.2	15.4	10.8	8.6	10.4	17.4	0.6	24.6	12.2	
Nov 15	17.3	21.4	17.6	14.7	16.0	16.2	15.1	14.6	10.9	11.3	13.1	13.6	13.2	12.8	S	13.3	13.3	14.9	17.2	20.6	25.4	25.3	27.4	27.3	10.9	27.4	17.1	
Nov 16	27.0	26.6	25.2	26.0	27.0	27.8	28.0	28.3	28.8	28.3	28.0	27.6	25.1	S	24.5	C	C	C	C	C	24.3	25.3	24.8	25.1	24.3	28.8	26.5	
Nov 17	26.2	26.8	26.9	26.4	26.6	26.5	25.3	24.9	24.5	23.7	25.3	25.9	S	26.8	26.9	26.1	27.2	25.8	21.5	23.1	26.1	24.3	21.4	23.4	21.4	27.2	25.3	
Nov 18	23.3	21.5	21.1	21.5	20.8	21.2	22.0	19.7	21.5	22.1	24.4	S	25.6	25.6	25.7	23.3	15.3	10.3	10.8	9.1	8.9	8.5	6.1	5.7	5.7	25.7	18.0	
Nov 19	5.0	3.5	3.4	5.3	3.1	2.1	1.3	0.6	3.4	7.3	S	24.2	27.3	26.9	27.1	26.3	27.5	27.4	29.5	27.7	27.1	30.4	29.4	31.4	0.6	31.4	17.3	
Nov 20	27.6	21.9	14.1	18.0	19.6	19.7	22.9	22.8	25.5	S	22.0	24.2	21.4	22.5	23.2	26.3	27.7	28.1	29.0	27.7	26.2	24.1	21.1	18.8	14.1	29.0	23.2	
Nov 21	15.4	14.2	11.9	12.9	17.8	24.2	24.7	25.8	S	25.7	24.4	24.5	23.6	23.0	22.4	21.5	20.9	20.3	19.7	19.5	19.1	18.8	17.9	17.4	11.9	25.8	20.2	
Nov 22	17.1	16.2	13.8	12.1	10.5	10.1	8.9	S	17.3	17.8	18.5	19.8	20.9	18.2	20.6	20.0	17.0	15.5	10.3	8.5	9.2	10.0	10.0	7.0	7.0	20.9	14.3	
Nov 23	6.4	5.9	5.4	7.6	22.0	33.1	S	28.5	21.3	19.6	25.0	26.0	27.0	27.7	29.1	28.9	29.8	29.2	28.8	28.3	29.3	30.5	31.1	5.4	33.1	23.9		
Nov 24	30.3	28.2	27.2	27.4	27.0	S	28.9	26.4	26.6	28.7	28.2	27.6	28.2	28.3	27.7	26.9	25.4	23.9	24.7	25.1	23.5	23.1	23.0	22.1	22.1	30.3	26.5	
Nov 25	21.6	20.5	19.5	20.5	S	16.8	18.9	18.6	16.5	18.9	20.1	20.3	19.5	19.3	16.7	15.7	14.0	11.4	7.4	6.6	7.3	5.6	5.4	2.7	2.7	21.6	14.9	
Nov 26	1.5	0.8	0.8	S	0.3	0.2	0.2	0.2	1.1	4.3	15.0	16.3	29.5	31.6	33.9	34.7	35.5	40.8	40.5	40.4	40.0	39.1	38.5	37.8	0.2	40.8	21.0	
Nov 27	37.7	36.1	S	36.7	36.7	36.5	35.3	34.2	32.9	33.2	33.6	34.3	34.4	34.3	33.5	25.4	12.3	15.0	28.9	33.2	32.4	30.3	30.4	30.9	12.3	37.7	31.7	
Nov 28	30.9	S	32.5	31.9	32.8	34.0	32.1	30.9	32.1	30.1	29.5	29.1	27.8	25.3	23.1	17.7	16.5	19.2	16.5	12.0	8.5	8.0	9.0	6.6	6.6	34.0	23.3	
Nov 29	S	12.0	23.2	28.0	32.3	32.9	33.7	32.8	33.0	31.6	33.8	33.8	34.0	35.1	36.5	37.3	37.0	31.7	24.1	19.5	16.6	14.9	9.8	S	9.8	37.3	28.3	
Nov 30	3.2	9.7	34.3	35.6	35.3	34.8	32.9	31.9	33.0	31.7	30.7	29.8	29.0	28.4	26.4	21.6	11.5	15.8	10.2	6.5	3.1	13.3	S	18.0	3.1	35.6	22.8	
Diurnal Maximum	37.7	36.1	34.3	36.7	36.7	36.5	35.3	34.2	33.0	33.2	33.8	34.3	34.4	35.1	36.5	37.3	37.0	40.8	40.5	40.4	40.0	39.1	38.5	37.8				
Diurnal Average	16.2	14.9	15.2	16.5	16.1	16.2	15.4	15.9	16.0	18.5	21.1	22.6	23.9	25.1	25.6	24.1	21.4	20.8	20.5	19.2	18.6	19.2	18.3	18.3				
C	Monthly Calibration					S	Daily Zero-Span Check					Q	Quality Assurance															
K	Collection Error					N	No Data (Machine Not in Service)					Y	Routine Maintenance					P	Power Failure									
X	Invalid Data (Equipment Malfunction / Recovery)					NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																					

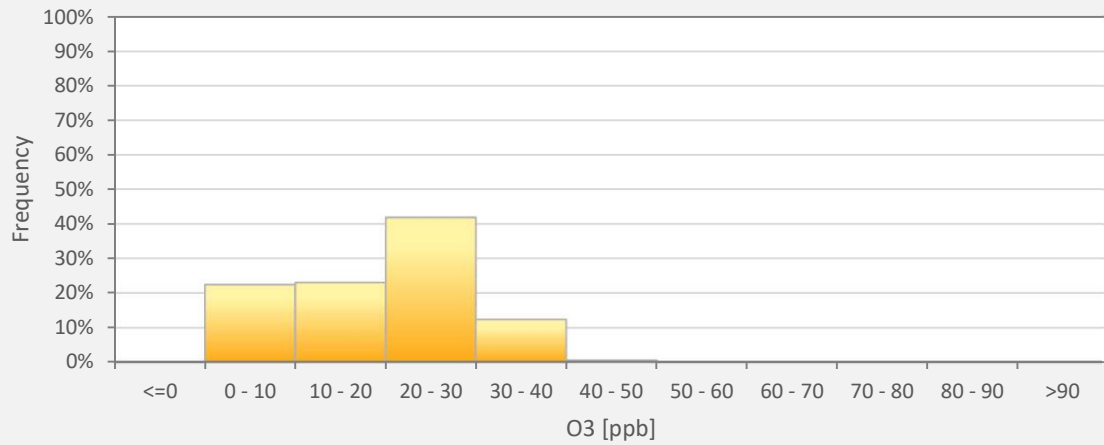
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

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

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



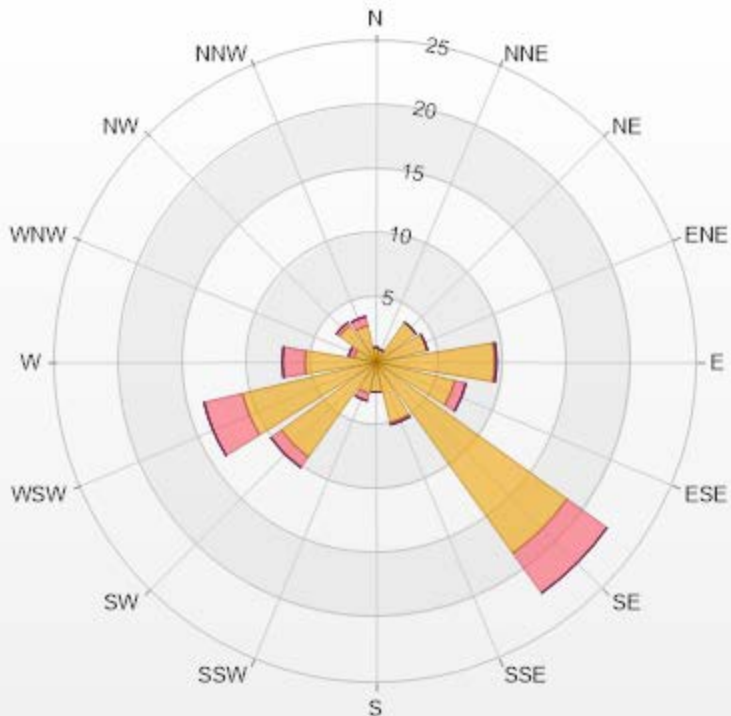
O3[ppb] Histogram: Cold Lake South Monthly: 11-2021 1 Hr.



Classes	O3
<=0	0.00%
0 - 10	22.40%
10 - 20	22.99%
20 - 30	41.73%
30 - 40	12.30%
40 - 50	0.59%
50 - 60	0.00%
60 - 70	0.00%
70 - 80	0.00%
80 - 90	0.00%
>90	0.00%

Wind: Cold Lake South Poll.: Cold Lake South-O3[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.86% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	1.17	0	0	0	0	1.17
NNE	1.02	0	0	0	0	1.02
NE	3.81	0	0	0	0	3.81
ENE	4.1	0	0	0	0	4.1
E	9.22	0.15	0	0	0	9.37
ESE	6.3	0.88	0	0	0	7.18
SE	18.3	3.81	0	0	0	22.11
SSE	4.83	0.15	0	0	0	4.98
S	2.34	0	0	0	0	2.34
SSW	2.49	0.59	0	0	0	3.08
SW	9.08	1.02	0	0	0	10.1
WSW	10.69	3.07	0	0	0	13.76
W	5.56	1.76	0	0	0	7.32
WNW	1.76	0.44	0	0	0	2.2
NW	3.51	0.29	0	0	0	3.8
NNW	2.93	0.73	0	0	0	3.66
Summary	87.11	12.89	0	0	0	100



LICA-202111

Page 56 of 239

% Icon Classes (ppb)

87 0-30

13 30-50

0 50-76

0 76-159

0 >159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hourly Averages

TOTAL HYDROCARBONS (THC) in ppm

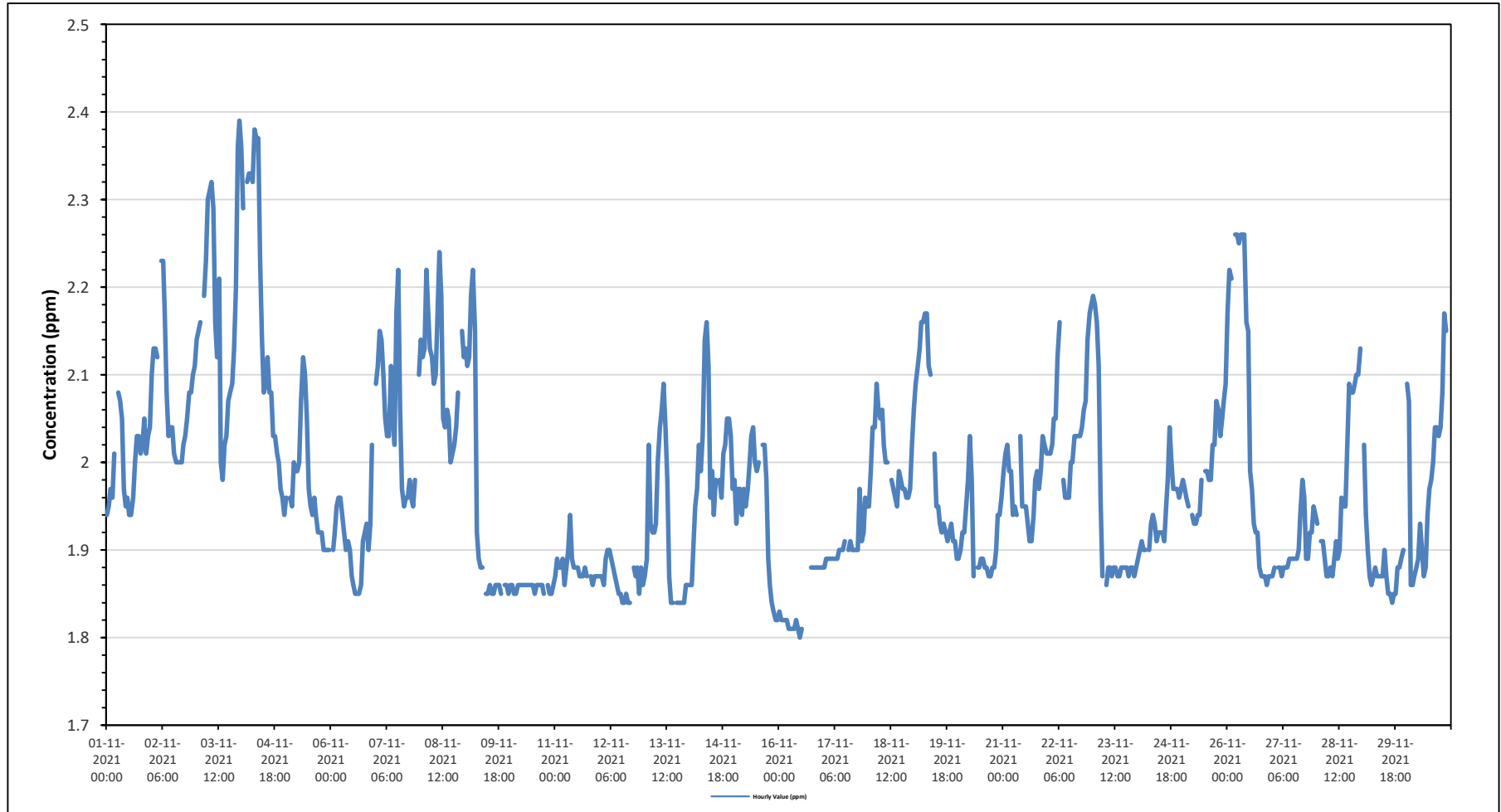
Maximum Hourly Value:	2.39 ppm on November 3 at hour 23	Hours in Service:	720
Maximum Daily Value:	2.17 ppm on November 3	Hours of Data:	683
Minimum Hourly Value:	1.80 ppm on November 16 at hour 11	Hours of Missing Data:	2
Minimum Daily Value:	1.84 ppm on November 16	Hours of Calibration:	35
Monthly Average:	1.97 ppm	Operational Uptime:	99.7

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Nov 1	1.94	1.95	1.97	1.96	2.01	S	2.08	2.07	2.05	1.97	1.95	1.96	1.94	1.94	1.96	2.00	2.03	2.03	2.01	2.02	2.05	2.01	2.03	2.04	1.94	2.08	2.00	
Nov 2	2.10	2.13	2.13	2.12	S	2.23	2.23	2.17	2.08	2.03	2.04	2.04	2.01	2.00	2.00	2.00	2.02	2.03	2.05	2.08	2.08	2.10	2.11	2.00	2.23	2.08		
Nov 3	2.14	2.15	2.16	S	2.19	2.23	2.30	2.31	2.32	2.29	2.16	2.12	2.21	2.00	1.98	2.02	2.03	2.07	2.08	2.09	2.13	2.20	2.36	2.39	1.98	2.39	2.17	
Nov 4	2.36	2.29	S	2.32	2.33	2.33	2.32	2.38	2.37	2.37	2.23	2.14	2.08	2.09	2.12	2.08	2.08	2.03	2.03	2.01	2.00	1.97	1.96	1.94	1.94	2.38	2.17	
Nov 5	1.96	S	1.96	1.95	2.00	1.99	1.99	2.00	2.07	2.12	2.10	2.05	1.97	1.95	1.94	1.96	1.94	1.92	1.92	1.92	1.90	1.90	1.90	1.90	1.90	2.12	1.97	
Nov 6	S	1.90	1.92	1.95	1.96	1.96	1.94	1.92	1.90	1.91	1.90	1.87	1.86	1.85	1.85	1.86	1.86	1.91	1.92	1.93	1.90	1.93	2.02	S	1.85	2.02	1.91	
Nov 7	2.09	2.11	2.15	2.14	2.10	2.05	2.03	2.03	2.11	2.06	2.02	2.17	2.22	2.06	1.97	1.95	1.96	1.96	1.98	1.96	1.95	1.98	S	2.10	1.95	2.22	2.05	
Nov 8	2.14	2.12	2.13	2.22	2.17	2.13	2.12	2.09	2.10	2.17	2.24	2.19	2.05	2.04	2.06	2.05	2.00	2.01	2.02	2.04	2.08	S	2.15	2.12	2.00	2.24	2.11	
Nov 9	2.13	2.11	2.12	2.19	2.22	2.15	1.92	1.89	1.88	1.88	NRM	1.85	1.85	1.86	1.85	1.85	1.86	1.86	1.86	1.85	S	S	1.86	1.86	1.85	2.22	1.94	
Nov 10	1.86	1.86	1.85	1.85	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.85	1.84	1.84	1.84	1.84	1.84	1.84	1.84	S	1.86	1.85	1.85	1.86	1.86	1.86	
Nov 11	1.87	1.89	1.88	1.88	1.89	1.86	1.88	1.90	1.94	1.89	1.88	1.88	1.88	1.87	1.87	1.87	1.88	1.87	S	1.87	1.86	1.87	1.87	1.87	1.86	1.94	1.88	
Nov 12	1.87	1.87	1.86	1.89	1.90	1.90	1.89	1.88	1.87	1.86	1.85	1.85	1.84	1.84	1.85	1.84	1.84	S	1.88	1.87	1.88	1.85	1.88	1.86	1.84	1.90	1.87	
Nov 13	1.87	1.89	2.02	1.93	1.92	1.92	1.93	2.00	2.04	2.06	2.09	2.04	1.98	1.87	1.84	1.84	S	1.84	1.84	1.84	1.84	1.84	1.84	1.86	1.86	1.84	1.92	
Nov 14	1.86	1.86	1.91	1.95	1.97	2.02	1.99	2.03	2.14	2.16	2.11	1.96	1.99	1.94	1.98	S	1.98	1.96	2.01	2.02	2.05	2.05	2.03	1.97	1.86	2.16	2.00	
Nov 15	1.98	1.93	1.97	1.97	1.94	1.97	1.95	1.97	2.00	2.03	2.04	2.00	1.99	2.00	S	2.02	2.02	1.98	1.89	1.86	1.84	1.83	1.82	1.82	1.82	2.04	1.95	
Nov 16	1.83	1.82	1.82	1.82	1.82	1.81	1.81	1.81	1.81	1.82	1.81	1.80	1.81	C	C	C	C	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.84	
Nov 17	1.88	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.90	1.90	1.90	1.91	S	1.90	1.91	1.90	1.90	1.90	1.90	1.90	1.97	1.91	1.92	1.96	1.95	1.88	1.97	
Nov 18	1.95	1.99	2.04	2.04	2.09	2.06	2.05	2.06	2.02	2.00	2.00	S	1.98	1.97	1.96	1.95	1.99	1.98	1.97	1.97	1.96	1.96	1.97	2.02	1.95	2.09	2.00	
Nov 19	2.06	2.09	2.11	2.13	2.16	2.16	2.17	2.17	2.11	2.10	S	2.01	1.95	1.95	1.93	1.92	1.93	1.92	1.91	1.92	1.93	1.91	1.91	1.89	1.89	2.17	2.01	
Nov 20	1.89	1.90	1.92	1.92	1.95	1.98	2.03	1.98	1.87	S	1.88	1.88	1.89	1.89	1.88	1.88	1.87	1.87	1.88	1.88	1.90	1.94	1.94	1.96	1.87	2.03	1.91	
Nov 21	1.99	2.01	2.02	1.99	1.99	1.94	1.95	1.94	S	2.03	1.95	1.95	1.95	1.93	1.91	1.91	1.94	1.98	1.99	1.97	1.99	2.03	2.02	2.01	1.91	2.03	1.97	
Nov 22	2.01	2.01	2.02	2.05	2.05	2.12	2.16	S	1.98	1.96	1.96	1.96	2.00	2.00	2.03	2.03	2.03	2.03	2.04	2.06	2.07	2.14	2.17	2.18	1.96	2.18	2.05	
Nov 23	2.19	2.18	2.16	2.11	1.96	1.87	S	1.86	1.88	1.88	1.87	1.88	1.88	1.87	1.87	1.88	1.88	1.88	1.88	1.88	1.87	1.88	1.88	1.87	1.88	1.86	2.19	1.93
Nov 24	1.89	1.90	1.91	1.90	1.90	S	1.90	1.93	1.94	1.93	1.91	1.92	1.92	1.92	1.91	1.95	1.98	2.04	2.00	1.97	1.97	1.97	1.96	1.97	1.89	2.04	1.94	
Nov 25	1.98	1.97	1.96	1.95	S	1.94	1.93	1.93	1.94	1.94	1.98	Y	1.99	1.99	1.98	1.98	2.02	2.02	2.07	2.06	2.03	2.05	2.07	2.09	1.93	2.09	1.99	
Nov 26	2.17	2.22	2.21	S	2.26	2.26	2.25	2.26	2.26	2.26	2.16	2.15	1.99	1.97	1.93	1.92	1.92	1.88	1.87	1.87	1.87	1.86	1.87	1.87	1.86	2.26	2.06	
Nov 27	1.87	1.88	S	1.88	1.88	1.87	1.88	1.88	1.88	1.89	1.89	1.89	1.89	1.89	1.90	1.94	1.98	1.96	1.89	1.89	1.92	1.92	1.95	1.94	1.87	1.98	1.90	
Nov 28	1.93	S	1.91	1.91	1.89	1.87	1.87	1.88	1.87	1.89	1.91	1.89	1.90	1.96	1.95	1.95	2.02	2.09	2.08	2.08	2.09	2.10	2.10	2.13	1.87	2.13	1.97	
Nov 29	S	2.02	1.94	1.90	1.87	1.86	1.87	1.88	1.87	1.87	1.87	1.87	1.90	1.87	1.85	1.85	1.84	1.85	1.85	1.88	1.88	1.89	1.90	S	1.84	2.02	1.88	
Nov 30	2.09	2.07	1.86	1.86	1.87	1.88	1.89	1.93	1.90	1.87	1.88	1.94	1.97	1.98	2.00	2.04	2.04	2.03	2.04	2.08	2.17	2.15	S	2.02	1.86	2.17	1.98	
Diurnal Maximum	2.36	2.29	2.21	2.32	2.33	2.33	2.32	2.38	2.37	2.37	2.24	2.19	2.22	2.09	2.12	2.08	2.08	2.09	2.08	2.09	2.17	2.20	2.36	2.39				
Dalurnal Average	2.00	2.00	1.99	1.99	2.00	2.00	2.00	2.00	2.00	2.00	1.98	1.97	1.96	1.94	1.93	1.94	1.95	1.95	1.95	1.95	1.96	1.96	1.97	1.98				

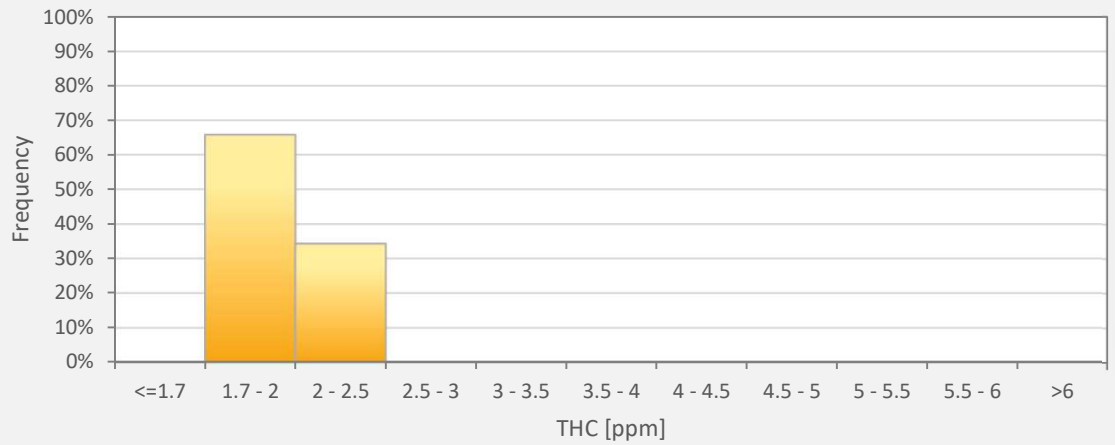
C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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



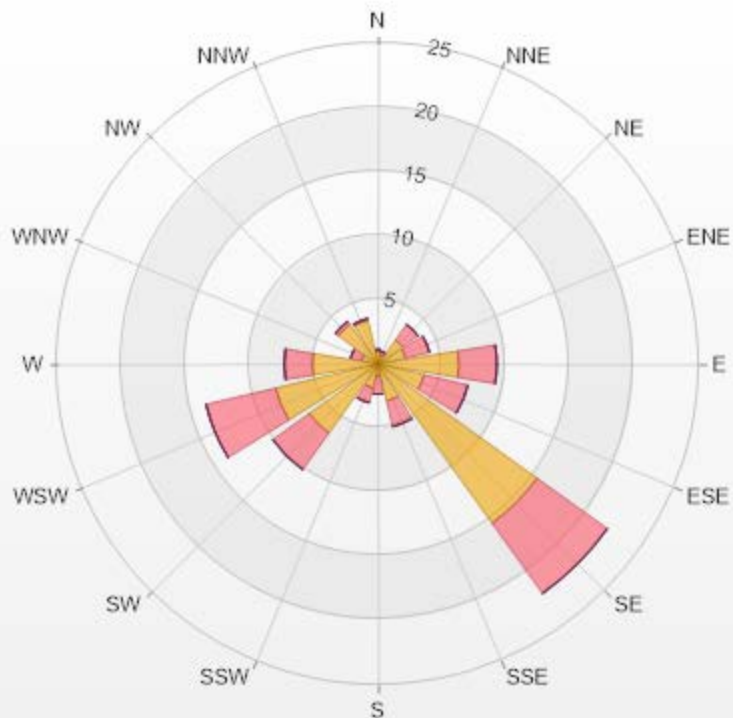
THC55[ppm] Histogram: Cold Lake South Monthly: 11-2021 1 Hr.



Classes	THC55
<=1.7	0.00%
1.7 - 2	65.74%
2 - 2.5	34.26%
2.5 - 3	0.00%
3 - 3.5	0.00%
3.5 - 4	0.00%
4 - 4.5	0.00%
4.5 - 5	0.00%
5 - 5.5	0.00%
5.5 - 6	0.00%
>6	0.00%

Wind: Cold Lake South Poll.: Cold Lake South-THC55[ppm] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.86% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	1.02	0.15	0	0	0	1.17
NNE	0.73	0.29	0	0	0	1.02
NE	2.34	1.46	0	0	0	3.8
ENE	2.2	1.9	0	0	0	4.1
E	6.3	2.93	0	0	0	9.23
ESE	3.66	3.51	0	0	0	7.17
SE	15.23	6.73	0	0	0	21.96
SSE	2.93	2.05	0	0	0	4.98
S	0.88	1.46	0	0	0	2.34
SSW	1.9	1.17	0	0	0	3.07
SW	6.59	3.51	0	0	0	10.1
WSW	8.2	5.56	0	0	0	13.76
W	5.12	2.2	0	0	0	7.32
WNW	1.32	0.88	0	0	0	2.2
NW	3.81	0.29	0	0	0	4.1
NNW	3.51	0.15	0	0	0	3.66
Summary	65.74	34.24	0	0	0	100



LICA-202111

Page 61 of 239

% Icon Classes (ppm)

66

0-2

34

2-5

0

5-10

0

10-40

0

>40.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hourly Averages

METHANE (CH4) in ppm

Maximum Hourly Value:	2.39 ppm on November 3 at hour 23	Hours in Service:	720
Maximum Daily Value:	2.17 ppm on November 3	Hours of Data:	683
Minimum Hourly Value:	1.80 ppm on November 16 at hour 11	Hours of Missing Data:	2
Minimum Daily Value:	1.84 ppm on November 16	Hours of Calibration:	35
Monthly Average:	1.97 ppm	Operational Uptime:	99.7

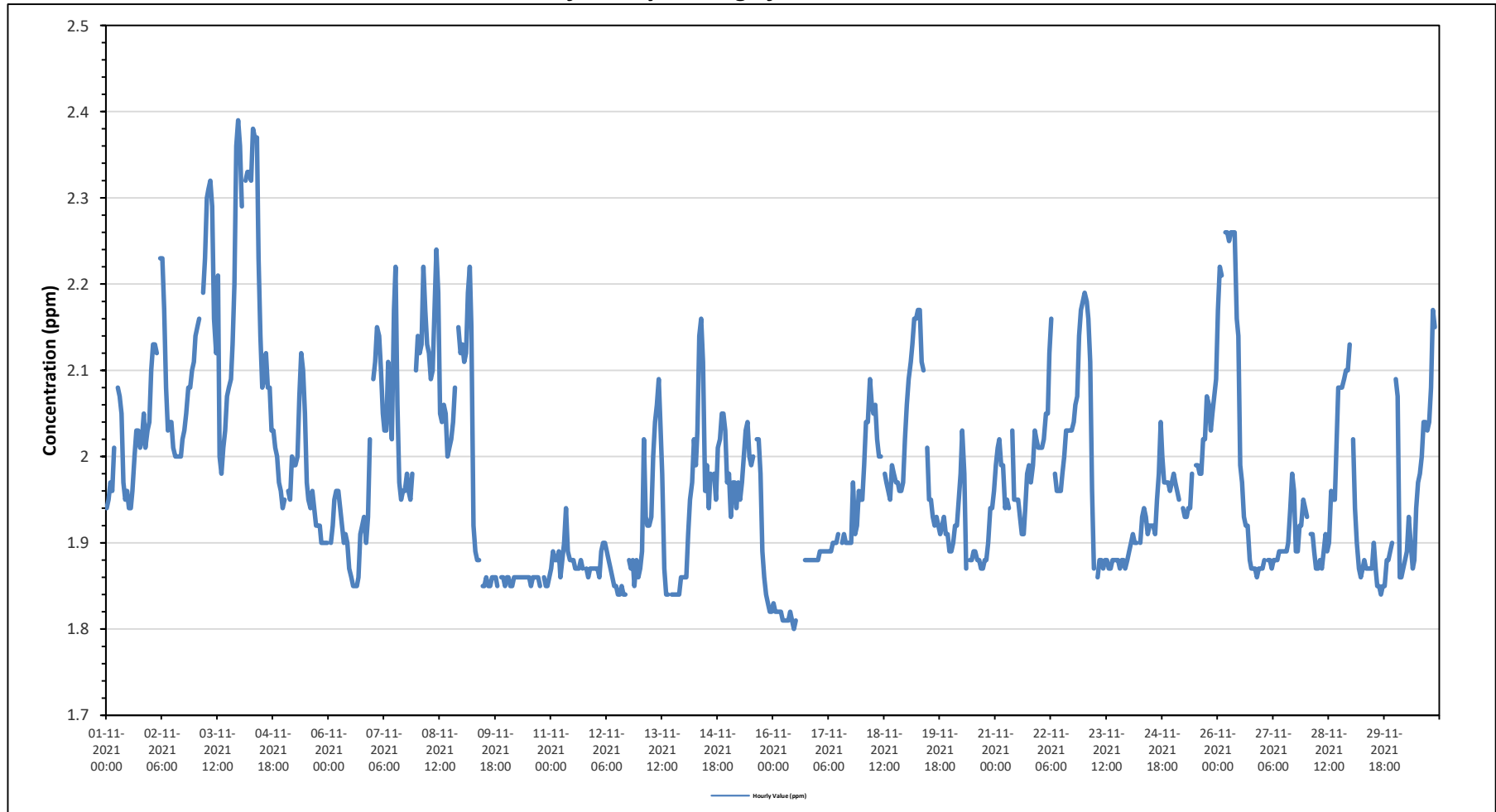
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Nov 1	1.94	1.95	1.97	1.96	2.01	S	2.08	2.07	2.05	1.97	1.95	1.96	1.94	1.94	1.96	2.00	2.03	2.03	2.01	2.02	2.05	2.01	2.03	2.04	1.94	2.08	2.00	
Nov 2	2.10	2.13	2.13	2.12	S	2.23	2.23	2.17	2.08	2.03	2.04	2.04	2.01	2.00	2.00	2.00	2.02	2.03	2.05	2.08	2.08	2.10	2.11	2.00	2.23	2.08		
Nov 3	2.14	2.15	2.16	S	2.19	2.23	2.30	2.31	2.32	2.29	2.16	2.12	2.21	2.00	1.98	2.01	2.03	2.07	2.08	2.09	2.13	2.20	2.36	2.39	1.98	2.39	2.17	
Nov 4	2.36	2.29	S	2.32	2.33	2.33	2.32	2.38	2.37	2.37	2.23	2.14	2.08	2.09	2.12	2.08	2.08	2.03	2.03	2.01	2.00	1.97	1.96	1.94	1.94	2.38	2.17	
Nov 5	1.95	S	1.96	1.95	2.00	1.99	1.99	2.00	2.07	2.12	2.10	2.05	1.97	1.95	1.94	1.96	1.94	1.92	1.92	1.92	1.90	1.90	1.90	1.90	1.90	2.12	1.97	
Nov 6	S	1.90	1.92	1.95	1.96	1.96	1.94	1.92	1.90	1.91	1.90	1.87	1.86	1.85	1.85	1.86	1.86	1.91	1.92	1.93	1.90	1.93	2.02	S	1.85	2.02	1.91	
Nov 7	2.09	2.11	2.15	2.14	2.10	2.05	2.03	2.03	2.11	2.06	2.02	2.17	2.22	2.06	1.97	1.95	1.96	1.96	1.98	1.96	1.95	1.98	S	2.10	1.95	2.22	2.05	
Nov 8	2.14	2.12	2.13	2.22	2.17	2.13	2.12	2.09	2.10	2.17	2.24	2.19	2.05	2.04	2.06	2.05	2.00	2.01	2.02	2.04	2.08	S	2.15	2.12	2.00	2.24	2.11	
Nov 9	2.13	2.11	2.12	2.19	2.22	2.15	1.92	1.89	1.88	1.88	NRM	1.85	1.85	1.86	1.85	1.85	1.86	1.86	1.86	1.85	S	S	1.86	1.86	1.85	2.22	1.94	
Nov 10	1.86	1.86	1.85	1.85	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.85	1.84	1.84	1.84	1.84	1.84	1.84	1.84	S	1.86	1.85	1.85	1.86	1.86	1.86	
Nov 11	1.87	1.89	1.88	1.88	1.89	1.86	1.88	1.90	1.94	1.89	1.88	1.88	1.88	1.87	1.87	1.87	1.88	1.87	S	1.87	1.86	1.87	1.87	1.87	1.86	1.94	1.88	
Nov 12	1.87	1.87	1.86	1.89	1.90	1.90	1.89	1.88	1.87	1.86	1.85	1.85	1.84	1.84	1.85	1.84	1.84	S	1.88	1.87	1.88	1.85	1.88	1.86	1.84	1.90	1.87	
Nov 13	1.87	1.89	2.02	1.93	1.92	1.92	1.93	2.00	2.04	2.06	2.09	2.04	1.98	1.87	1.84	1.84	S	1.84	1.84	1.84	1.84	1.84	1.84	1.86	1.86	1.84	2.09	1.92
Nov 14	1.86	1.86	1.91	1.95	1.97	2.02	1.99	2.03	2.14	2.16	2.11	1.96	1.99	1.94	1.98	S	1.98	1.95	2.01	2.02	2.05	2.05	2.03	1.97	1.86	2.16	2.00	
Nov 15	1.98	1.93	1.97	1.97	1.94	1.97	1.95	1.97	2.00	2.03	2.04	2.00	1.99	2.00	S	2.02	2.02	1.98	1.89	1.86	1.84	1.83	1.82	1.82	1.82	2.04	1.95	
Nov 16	1.83	1.82	1.82	1.82	1.82	1.81	1.81	1.81	1.81	1.82	1.81	1.80	1.81	C	C	C	C	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.84
Nov 17	1.88	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.90	1.90	1.90	1.91	S	1.90	1.91	1.90	1.90	1.90	1.90	1.90	1.97	1.91	1.92	1.96	1.95	1.88	1.97	1.91
Nov 18	1.95	1.99	2.04	2.04	2.09	2.06	2.05	2.06	2.02	2.00	2.00	S	1.98	1.97	1.96	1.95	1.99	1.98	1.97	1.97	1.96	1.96	1.97	2.02	1.95	2.09	2.00	
Nov 19	2.06	2.09	2.11	2.13	2.16	2.16	2.17	2.17	2.11	2.10	S	2.01	1.95	1.95	1.93	1.92	1.93	1.92	1.91	1.92	1.93	1.91	1.91	1.89	1.89	2.17	2.01	
Nov 20	1.89	1.90	1.92	1.92	1.95	1.98	2.03	1.98	1.87	S	1.88	1.88	1.89	1.89	1.88	1.88	1.87	1.87	1.88	1.88	1.90	1.94	1.94	1.96	1.87	2.03	1.91	
Nov 21	1.99	2.01	2.02	1.99	1.99	1.94	1.95	1.94	S	2.03	1.95	1.95	1.95	1.93	1.91	1.91	1.94	1.98	1.99	1.97	1.99	2.03	2.02	2.01	1.91	2.03	1.97	
Nov 22	2.01	2.01	2.02	2.05	2.05	2.12	2.16	S	1.98	1.96	1.96	1.96	1.98	2.00	2.03	2.03	2.03	2.03	2.04	2.06	2.07	2.14	2.17	2.18	1.96	2.18	2.05	
Nov 23	2.19	2.18	2.16	2.11	1.96	1.87	S	1.86	1.88	1.88	1.87	1.88	1.88	1.87	1.87	1.88	1.88	1.88	1.88	1.88	1.87	1.88	1.88	1.87	1.86	2.19	1.93	
Nov 24	1.89	1.90	1.91	1.90	1.90	S	1.90	1.93	1.94	1.93	1.91	1.92	1.92	1.92	1.91	1.95	1.98	2.04	2.00	1.97	1.97	1.97	1.96	1.97	1.89	2.04	1.94	
Nov 25	1.98	1.97	1.96	1.95	S	1.94	1.93	1.93	1.94	1.94	1.98	Y	1.99	1.99	1.98	1.98	2.02	2.02	2.07	2.06	2.03	2.05	2.07	2.09	1.93	2.09	1.99	
Nov 26	2.17	2.22	2.21	S	2.26	2.26	2.25	2.26	2.26	2.26	2.14	1.99	1.97	1.93	1.92	1.92	1.88	1.87	1.87	1.87	1.86	1.87	1.87	1.86	2.26	2.06	2.06	
Nov 27	1.87	1.88	S	1.88	1.88	1.87	1.88	1.88	1.88	1.89	1.89	1.89	1.89	1.89	1.90	1.94	1.98	1.96	1.89	1.89	1.92	1.92	1.95	1.94	1.87	1.98	1.90	
Nov 28	1.93	S	1.91	1.91	1.89	1.87	1.87	1.88	1.87	1.89	1.91	1.89	1.90	1.96	1.95	1.95	2.02	2.08	2.08	2.08	2.09	2.10	2.10	2.13	1.87	2.13	1.97	
Nov 29	S	2.02	1.94	1.90	1.87	1.86	1.87	1.88	1.87	1.87	1.87	1.87	1.90	1.87	1.85	1.85	1.84	1.85	1.85	1.88	1.88	1.89	1.90	S	1.84	2.02	1.88	
Nov 30	2.09	2.07	1.86	1.86	1.87	1.88	1.89	1.93	1.90	1.87	1.88	1.94	1.97	1.98	2.00	2.04	2.04	2.03	2.04	2.08	2.17	2.15	S	2.02	1.86	2.17	1.98	
Diurnal Maximum	2.36	2.29	2.21	2.32	2.33	2.33	2.32	2.38	2.37	2.37	2.24	2.19	2.22	2.09	2.12	2.08	2.08	2.08	2.08	2.09	2.17	2.20	2.36	2.39				
Dalurnal Average	2.00	2.00	1.99	1.99	2.00	2.00	2.00	2.00	2.00	2.00	1.98	1.97	1.96	1.94	1.93	1.94	1.95	1.95	1.95	1.95	1.96	1.96	1.97	1.98				

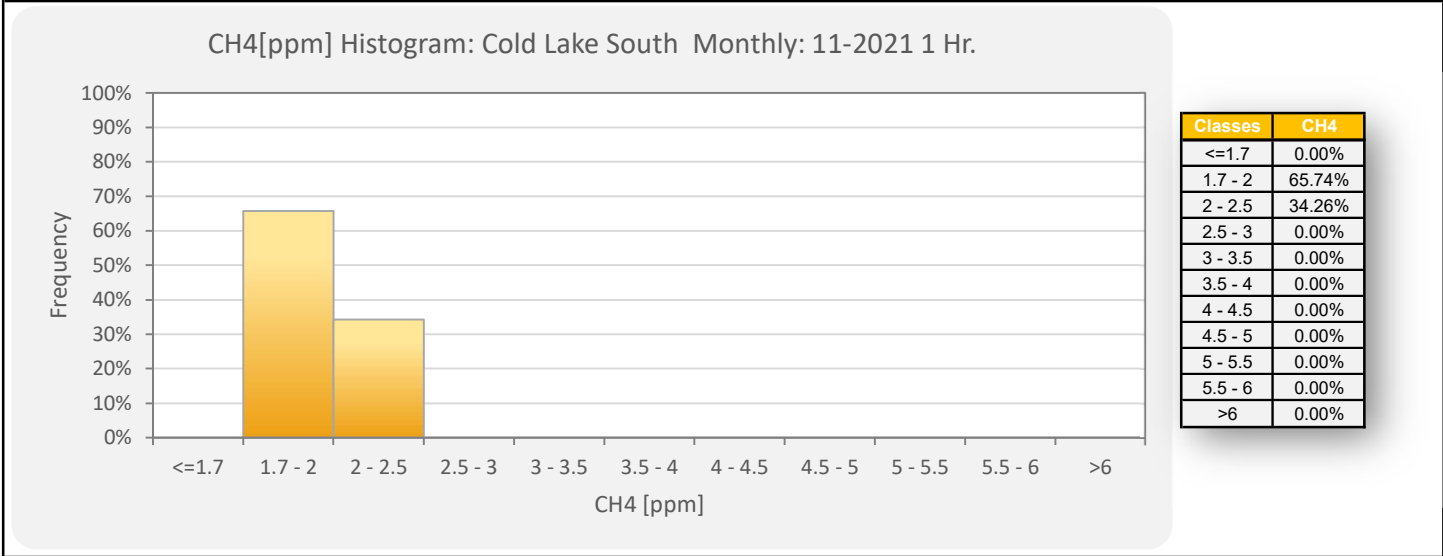
C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	Invalid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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

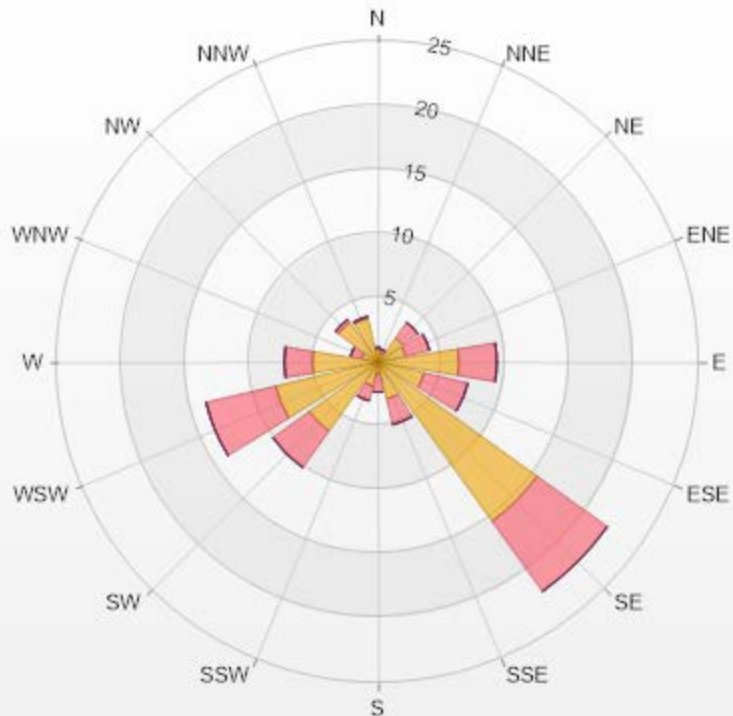
Timeseries Chart of Hourly Average for CH4 - Cold Lake South Station





Wind: Cold Lake South Poll.: Cold Lake South-CH4[ppm] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.86% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-20	>20.0	Total
N	1.02	0.15	0	0	0	1.17
NNE	0.73	0.29	0	0	0	1.02
NE	2.34	1.46	0	0	0	3.8
ENE	2.2	1.9	0	0	0	4.1
E	6.3	2.93	0	0	0	9.23
ESE	3.66	3.51	0	0	0	7.17
SE	15.23	6.73	0	0	0	21.96
SSE	2.93	2.05	0	0	0	4.98
S	0.88	1.46	0	0	0	2.34
SSW	1.9	1.17	0	0	0	3.07
SW	6.59	3.51	0	0	0	10.1
WSW	8.2	5.56	0	0	0	13.76
W	5.12	2.2	0	0	0	7.32
WNW	1.32	0.88	0	0	0	2.2
NW	3.81	0.29	0	0	0	4.1
NNW	3.51	0.15	0	0	0	3.66
Summary	65.74	34.24	0	0	0	100



LICA-202111

Page 66 of 239

% Icon Classes (ppm)

66 0-2

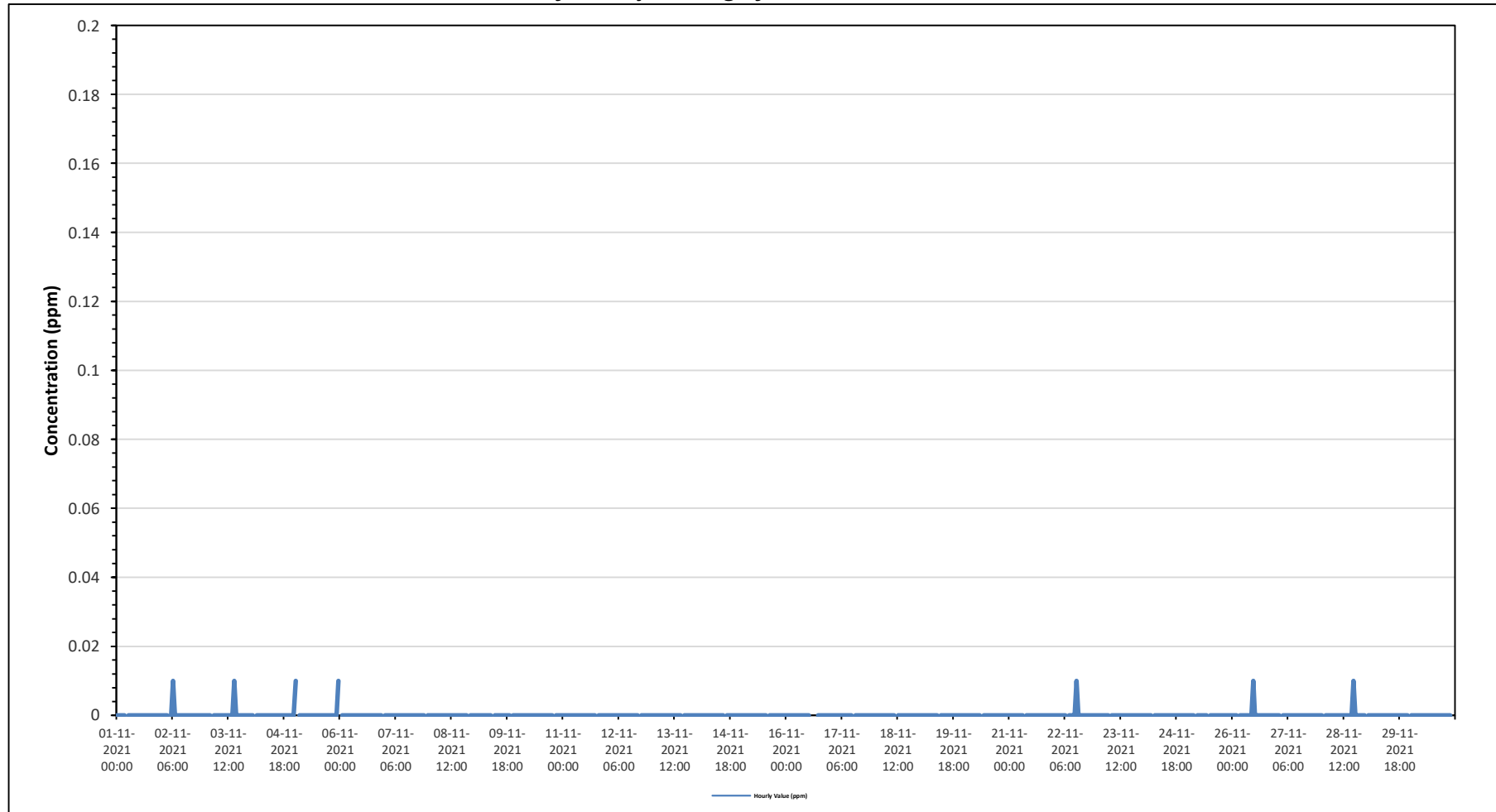
34 2-5

0 5-10

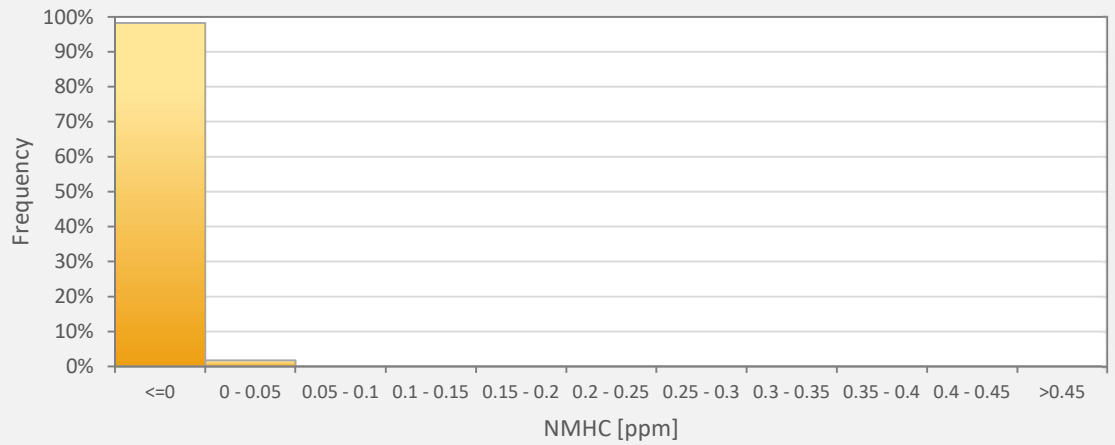
0 10-20

0 >20.0

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



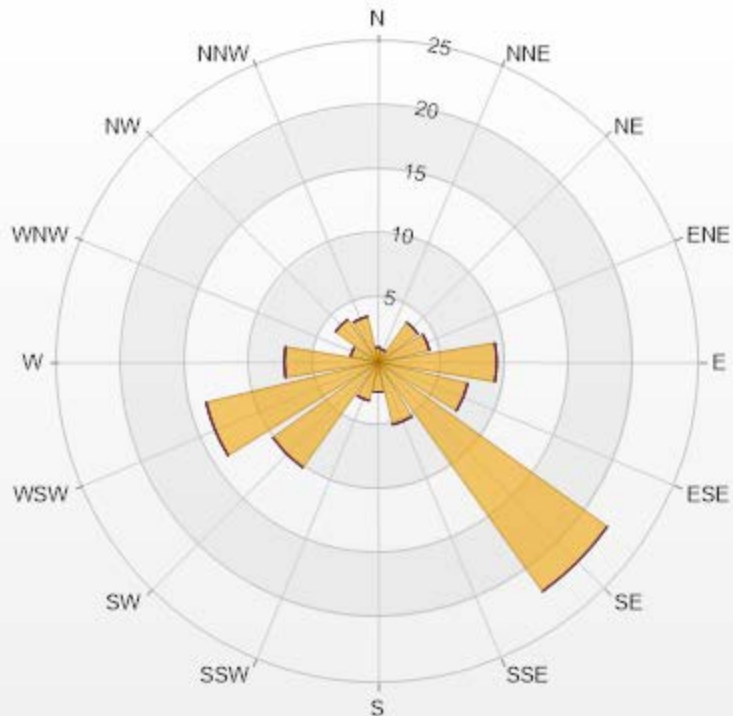
NMHC[ppm] Histogram: Cold Lake South Monthly: 11-2021 1 Hr.



Classes	NMHC
<=0	98.24%
0 - 0.05	1.76%
0.05 - 0.1	0.00%
0.1 - 0.15	0.00%
0.15 - 0.2	0.00%
0.2 - 0.25	0.00%
0.25 - 0.3	0.00%
0.3 - 0.35	0.00%
0.35 - 0.4	0.00%
0.4 - 0.45	0.00%
>0.45	0.00%

Wind: Cold Lake South Poll.: Cold Lake South-NMHC[ppm] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.86% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0	Total
N	1.17	0	0	0	0	1.17
NNE	1.02	0	0	0	0	1.02
NE	3.81	0	0	0	0	3.81
ENE	4.1	0	0	0	0	4.1
E	9.22	0	0	0	0	9.22
ESE	7.17	0	0	0	0	7.17
SE	21.96	0	0	0	0	21.96
SSE	4.98	0	0	0	0	4.98
S	2.34	0	0	0	0	2.34
SSW	3.07	0	0	0	0	3.07
SW	10.1	0	0	0	0	10.1
WSW	13.76	0	0	0	0	13.76
W	7.32	0	0	0	0	7.32
WNW	2.2	0	0	0	0	2.2
NW	4.1	0	0	0	0	4.1
NNW	3.66	0	0	0	0	3.66
Summary	100	0	0	0	0	100





LICA-202111

Page 71 of 239

% Icon Classes (ppm)

100  0-0.1

0  0.1-0.3

0  0.3-0.9

0  0.9-2

0  >2.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hourly Averages

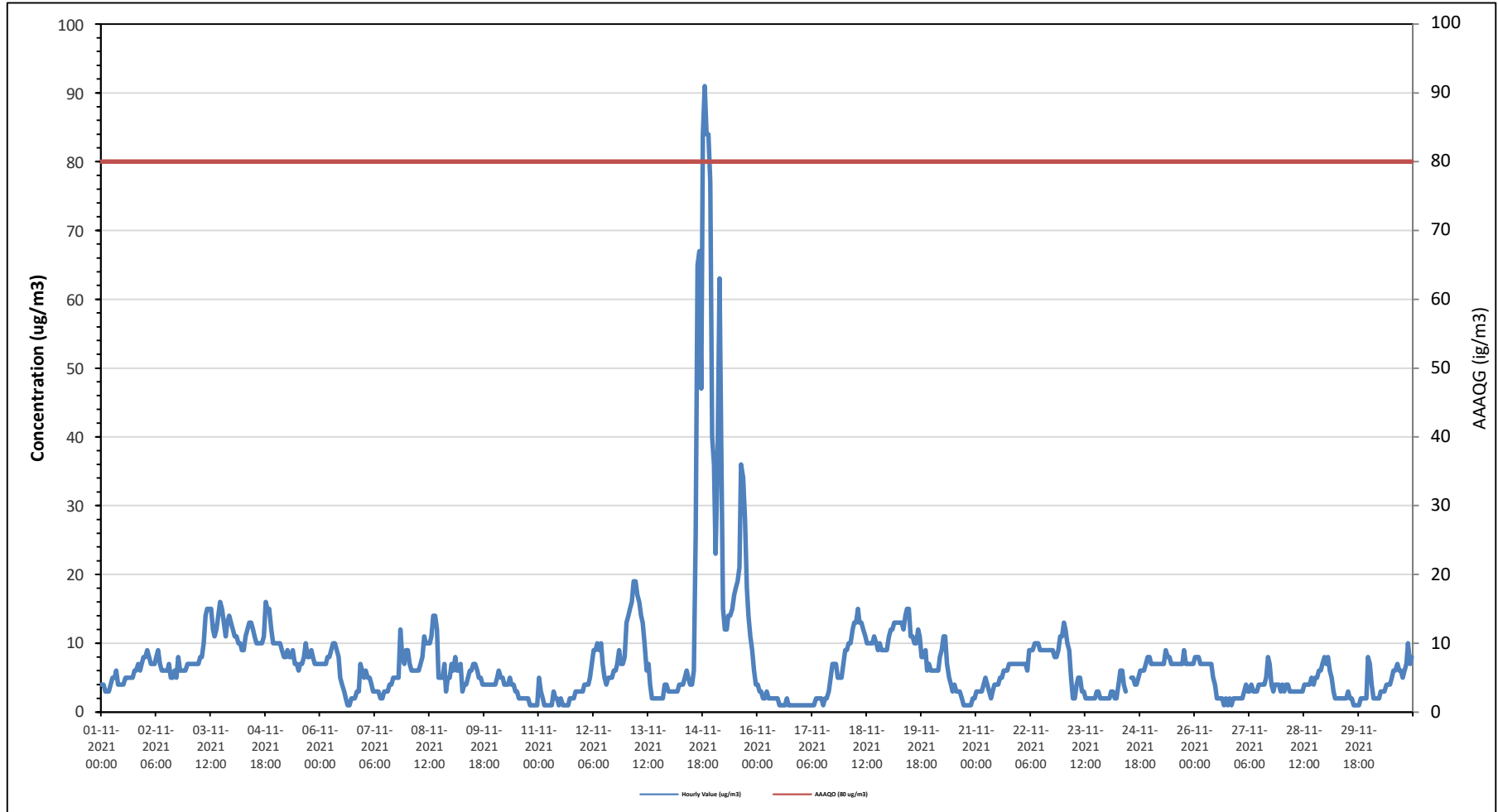
PARTICULATE MATTER 2.5 (PM_{2.5}) in µg/m³

Alberta Ambient Air Quality Guideline (AAAQG): 1-Hour 80 µg/m ³ , Alberta Ambient Air Quality Objective (AAAQO): 24-Hour 29 µg/m ³																																	
Number of 1-Hour Exceedences: 4										Number of 24-Hour Exceedences: 1																							
Maximum Hourly Value: 91 µg/m ³ on November 14 at hour 19										Hours in Service: 720																							
Maximum Daily Value: 30.1 µg/m ³ on November 14										Hours of Data: 718																							
Minimum Hourly Value: 1 µg/m ³ on November 6 at hour 15										Hours of Missing Data: 0																							
Minimum Daily Value: 2 µg/m ³ on November 16										Hours of Calibration: 2																							
Monthly Average: 7.3 µg/m ³										Operational Uptime: 100.0																							
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average							
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23						
Nov 1	4	4	3	3	3	4	5	5	6	4	4	4	4	5	5	5	5	6	6	7	6	7	8	3	8	4.9							
Nov 2	8	9	8	7	7	7	8	9	7	6	6	6	6	7	5	5	6	5	8	6	6	6	6	7	5	9	6.7						
Nov 3	7	7	7	7	7	7	8	8	10	14	15	15	15	12	11	12	14	16	15	13	11	13	14	13	7	16	11.3						
Nov 4	12	11	11	10	10	9	9	11	12	13	13	12	11	10	10	10	10	11	16	15	15	12	10	10	9	16	11.4						
Nov 5	10	10	10	9	8	8	9	8	8	9	7	7	6	7	7	8	10	8	8	9	8	7	7	7	6	10	8.1						
Nov 6	7	7	7	7	8	8	9	10	10	9	8	5	4	3	2	1	1	2	2	2	3	3	7	6	1	10	5.5						
Nov 7	5	6	5	5	4	3	3	3	3	2	2	3	3	4	4	5	5	12	8	7	9	7	9	2	12	4.8							
Nov 8	9	7	6	6	6	6	6	7	8	11	10	10	10	11	14	14	12	5	5	5	7	3	5	5	3	14	7.8						
Nov 9	7	6	8	6	6	7	3	4	4	5	6	6	7	7	6	5	5	4	4	4	4	4	4	3	8	5.3							
Nov 10	4	5	6	5	5	4	4	4	5	4	4	3	3	2	2	2	2	2	2	1	1	1	1	1	1	6	3.0						
Nov 11	5	3	2	1	1	1	1	1	3	2	2	1	2	1	1	1	1	2	2	2	3	3	3	3	1	5	2.0						
Nov 12	3	4	4	4	5	7	9	9	10	9	10	7	5	4	5	5	5	6	6	7	9	7	7	8	3	10	6.5						
Nov 13	13	14	15	16	19	17	19	16	14	13	10	6	7	4	2	2	2	2	2	2	4	4	3	2	19	8.7							
Nov 14	3	3	3	3	3	4	4	4	5	6	5	4	4	6	26	65	67	47	84	91	84	84	77	40	3	91	30.1						
Nov 15	36	23	35	63	40	15	12	12	14	14	15	17	18	19	21	36	34	28	18	14	11	9	6	4	4	63	21.4						
Nov 16	4	3	3	2	2	3	2	2	2	2	2	2	1	1	1	1	2	1	1	1	1	1	1	1	1	4	1.8						
Nov 17	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3	5	7	7	7	5	5	5	7	1	7	3.0						
Nov 18	9	9	10	10	12	13	13	15	13	13	12	11	10	10	10	10	11	10	9	10	9	9	9	9	9	15	10.7						
Nov 19	11	12	12	13	13	13	13	13	12	14	15	15	11	11	10	10	12	11	8	8	9	6	7	6	6	15	11.0						
Nov 20	6	6	6	6	8	9	11	11	7	5	4	3	4	3	3	3	2	1	1	1	1	1	2	2	1	11	4.4						
Nov 21	3	3	3	3	4	5	4	3	2	3	4	4	4	5	5	6	6	6	7	7	7	7	7	7	2	7	4.8						
Nov 22	7	7	7	7	6	9	9	9	10	10	10	9	9	9	9	9	9	9	9	8	8	9	11	11	6	11	8.8						
Nov 23	13	12	10	9	5	2	2	4	5	5	3	3	2	2	2	2	2	3	3	2	2	2	2	2	2	13	4.1						
Nov 24	2	2	3	3	2	2	4	6	6	4	3	C	C	5	5	4	4	5	6	6	6	7	8	8	2	8	4.6						
Nov 25	7	7	7	7	7	7	7	7	9	8	8	7	7	7	7	7	7	7	9	7	7	7	7	7	7	9	7.3						
Nov 26	8	8	8	7	7	7	7	7	7	7	5	4	2	2	2	1	2	1	2	1	2	2	2	2	1	8	4.3						
Nov 27	2	2	2	3	4	3	3	4	3	3	3	4	4	4	4	5	8	7	4	3	4	4	4	3	2	8	3.8						
Nov 28	4	3	4	4	3	3	3	3	3	3	3	3	3	4	4	4	4	5	4	5	5	6	6	7	3	8	4.2						
Nov 29	7	8	6	5	3	2	2	2	2	2	2	2	3	2	2	1	1	1	1	2	2	2	2	8	1	8	2.9						
Nov 30	7	4	2	2	2	2	3	3	3	4	4	4	5	6	6	7	6	6	5	6	7	10	7	8	2	10	5.0						
Diurnal Maximum	36	23	35	63	40	19	17	16	14	14	15	17	18	19	26	65	67	47	84	91	84	84	77	40									
Diurnal Average	7.5	6.9	7.1	7.8	7.0	6.3	6.4	6.7	6.8	6.9	6.6	6.2	5.9	5.8	6.4	8.3	8.7	7.6	8.6	8.6	8.3	8.2	7.2										
C	Monthly Calibration										S	Daily Zero-Span Check										Q	Quality Assurance										
K	Collection Error										N	No Data (Machine Not in Service)										Y	Routine Maintenance					P	Power Failure				
X	Invalid Data (Equipment Malfunction /Recovery)										NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																					

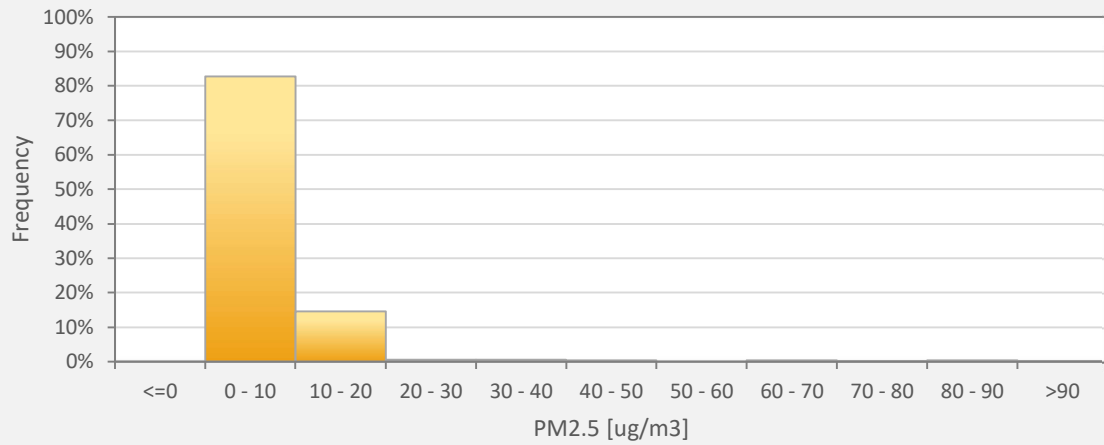
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

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

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



PM2.5[ug/m3(L)] Histogram: Cold Lake South Monthly: 11-2021 1 Hr.



Classes	PM2.5
<=0	0.00%
0 - 10	82.73%
10 - 20	14.62%
20 - 30	0.56%
30 - 40	0.56%
40 - 50	0.42%
50 - 60	0.00%
60 - 70	0.42%
70 - 80	0.14%
80 - 90	0.42%
>90	0.14%

Wind: Cold Lake South Poll.: Cold Lake South-PM2.5[ug/m3(L)] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 99.72% Calm Avg: 0.00 [ug/m3(L)]

Direction	0-50	50-80	80-120	120-240	>240.0	Total
N	1.25	0	0	0	0	1.25
NNE	1.11	0	0	0	0	1.11
NE	3.34	0	0.42	0	0	3.76
ENE	4.18	0.14	0	0	0	4.32
E	9.33	0	0	0	0	9.33
ESE	7.1	0.14	0	0	0	7.24
SE	21.59	0.14	0	0	0	21.73
SSE	4.46	0.14	0.14	0	0	4.74
S	2.23	0	0	0	0	2.23
SSW	3.2	0	0	0	0	3.2
SW	10.03	0	0	0	0	10.03
WSW	13.79	0	0	0	0	13.79
W	7.24	0	0	0	0	7.24
WNW	2.09	0	0	0	0	2.09
NW	3.9	0	0	0	0	3.9
NNW	4.04	0	0	0	0	4.04
Summary	98.88	0.56	0.56	0	0	100



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hourly Averages

RELATIVE HUMIDITY (RH) in %

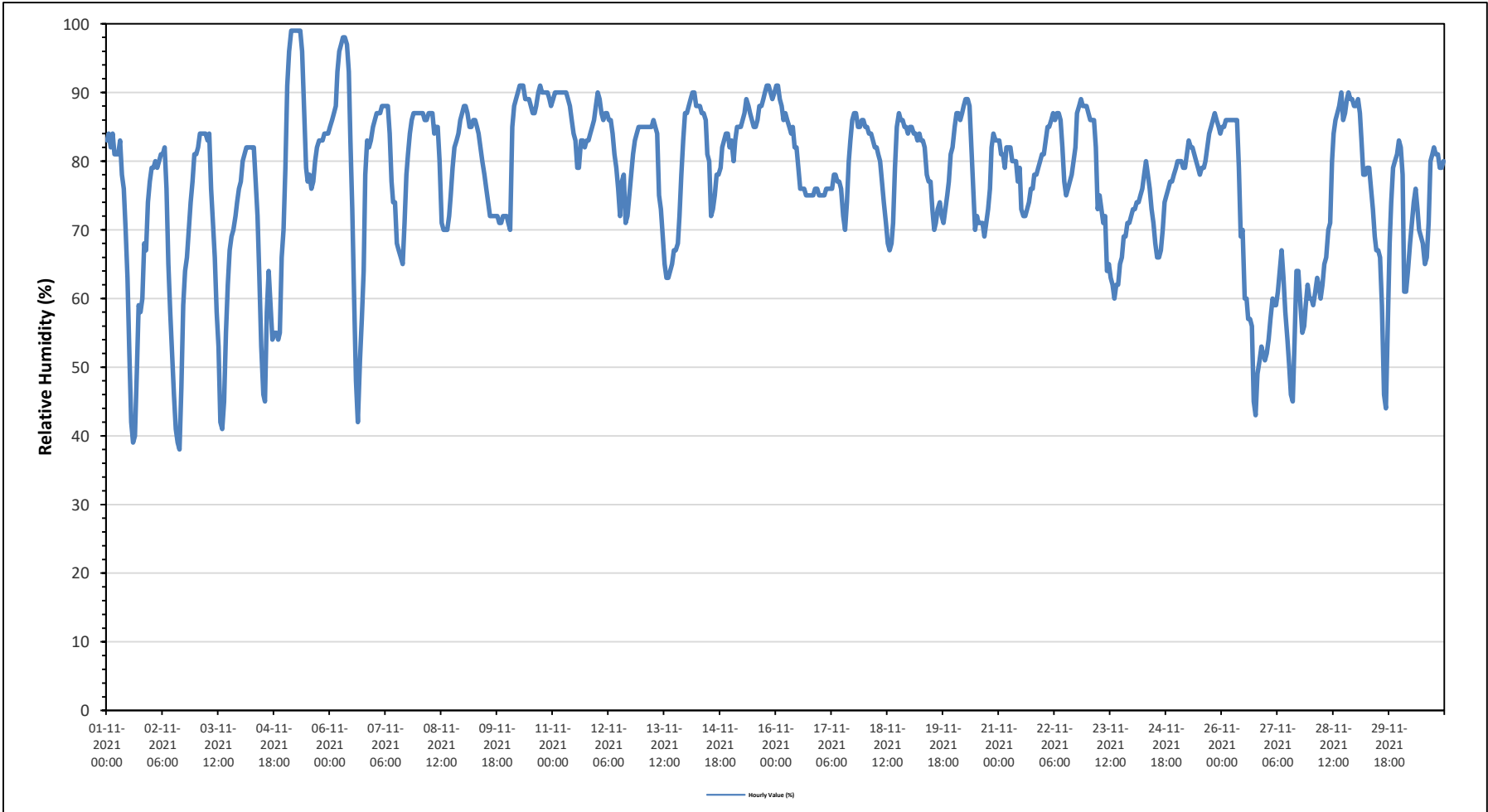
Maximum Hourly Value:	99 %	on November 5 at hour 3	Hours in Service:	720
Maximum Daily Value:	87.5 %	on November 10	Hours of Data:	720
Minimum Hourly Value:	38 %	on November 2 at hour 15	Hours of Missing Data:	0
Minimum Daily Value:	57.6 %	on November 27	Hours of Calibration:	0
Monthly Average:	77.1 %		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average	
Nov 1	83	84	82	84	81	81	81	83	78	76	70	63	52	42	39	40	49	59	58	60	68	67	74	77	39	84	68.0	
Nov 2	79	79	80	79	80	81	81	82	76	65	58	52	46	41	39	38	47	59	64	66	70	74	77	81	38	82	66.4	
Nov 3	81	82	84	84	84	84	83	84	76	71	66	58	53	42	41	45	55	62	67	69	70	72	74	76	41	84	69.3	
Nov 4	77	80	81	82	82	82	82	82	77	72	63	53	46	45	58	64	59	54	55	55	54	55	66	70	45	82	66.4	
Nov 5	79	91	96	99	99	99	99	99	99	96	87	79	77	78	76	77	80	82	83	83	84	84	84	84	76	99	87.2	
Nov 6	85	86	87	88	93	96	97	98	98	97	93	83	73	60	48	42	51	57	64	78	83	83	82	83	85	42	98	79.5
Nov 7	86	87	87	87	88	88	88	88	84	77	74	74	68	67	66	65	71	78	81	84	86	87	87	87	65	88	80.6	
Nov 8	87	87	87	86	86	87	87	87	84	85	85	80	71	70	70	72	75	79	82	83	84	86	87	87	70	87	81.5	
Nov 9	88	88	87	85	85	86	86	85	84	82	80	78	76	74	72	72	72	72	71	71	72	72	72	72	71	88	78.4	
Nov 10	71	70	85	88	89	90	91	91	91	89	89	89	88	87	88	90	91	90	90	90	90	89	88	88	70	91	87.5	
Nov 11	89	90	90	90	90	90	90	89	88	86	84	83	79	79	83	83	82	83	83	84	85	86	88	88	79	90	86.0	
Nov 12	90	89	87	86	87	87	86	86	84	81	79	76	72	77	78	71	72	75	78	81	83	84	85	85	71	90	81.6	
Nov 13	85	85	85	85	85	85	86	85	84	75	73	69	65	63	63	64	65	67	67	68	72	78	83	87	63	87	76.0	
Nov 14	87	88	89	90	90	88	88	88	87	87	86	81	80	72	73	75	78	78	79	82	83	84	84	82	72	90	83.3	
Nov 15	83	80	83	85	85	85	86	87	89	88	87	86	85	85	86	88	88	89	90	91	91	90	89	90	80	91	86.9	
Nov 16	91	91	89	88	86	87	86	85	84	85	82	82	79	76	76	75	75	75	75	75	75	76	76	75	75	91	81.0	
Nov 17	75	75	75	76	76	76	76	78	78	77	77	76	72	70	74	80	83	86	87	87	85	85	86	86	70	87	79.0	
Nov 18	85	85	84	84	83	82	82	81	80	77	74	71	68	67	68	71	79	85	87	86	86	85	84	84	67	87	80.0	
Nov 19	85	85	84	84	83	84	83	83	82	78	77	77	73	70	71	73	74	72	71	73	75	77	81	82	70	85	78.2	
Nov 20	85	87	87	86	87	88	89	89	88	82	76	70	72	71	71	71	69	71	73	76	82	84	83	83	69	89	80.0	
Nov 21	83	81	81	79	82	82	82	80	80	80	77	79	73	72	72	73	74	76	76	78	78	79	80	81	72	83	78.3	
Nov 22	81	83	85	85	86	87	86	87	87	86	82	77	75	76	77	78	80	82	87	88	89	88	88	88	75	89	83.7	
Nov 23	87	86	86	86	82	73	75	73	71	72	64	65	63	62	60	62	62	65	66	69	69	71	71	72	60	87	71.3	
Nov 24	73	73	74	74	75	76	78	80	78	76	73	71	68	66	66	67	70	74	75	76	77	77	78	79	66	80	73.9	
Nov 25	80	80	80	79	79	81	83	82	82	81	80	79	78	79	79	80	82	84	85	86	87	86	85	84	78	87	81.7	
Nov 26	85	85	86	86	86	86	86	86	86	79	69	70	60	60	57	57	56	45	43	49	51	53	52	51	43	86	67.7	
Nov 27	52	54	57	60	59	59	61	64	67	63	58	54	50	46	45	54	64	64	59	55	56	59	62	60	45	67	57.6	
Nov 28	60	59	61	63	62	60	62	65	66	70	71	80	84	86	87	88	90	86	87	89	90	89	89	88	59	90	76.3	
Nov 29	88	89	87	83	78	78	79	79	76	73	69	67	66	59	46	44	56	68	74	79	80	81	83	83	44	89	72.9	
Nov 30	82	78	61	61	64	68	71	74	76	73	70	69	68	65	66	71	80	81	82	81	81	79	79	80	61	82	73.3	
Diurnal Maximum	91	91	96	99	99	99	99	99	99	97	93	89	88	87	87	88	90	91	90	91	90	89	90	90				
Daural Average	81.4	81.9	82.2	82.4	82.4	82.5	83.0	83.4	82.0	79.4	75.8	73.1	69.5	67.1	66.8	67.6	70.5	72.7	74.4	76.2	77.7	78.5	79.8	80.5				

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hourly Averages

BAROMETRIC PRESSURE (BP) in millibar

Maximum Hourly Value:	965	mb	on November 20 at hour 21	Hours in Service:	720
Maximum Daily Value:	961	mb	on November 1	Hours of Data:	720
Minimum Hourly Value:	925	mb	on November 16 at hour 1	Hours of Missing Data:	0
Minimum Daily Value:	938	mb	on November 5	Hours of Calibration:	0
Monthly Average:	947	mb		Operational Uptime:	100.0

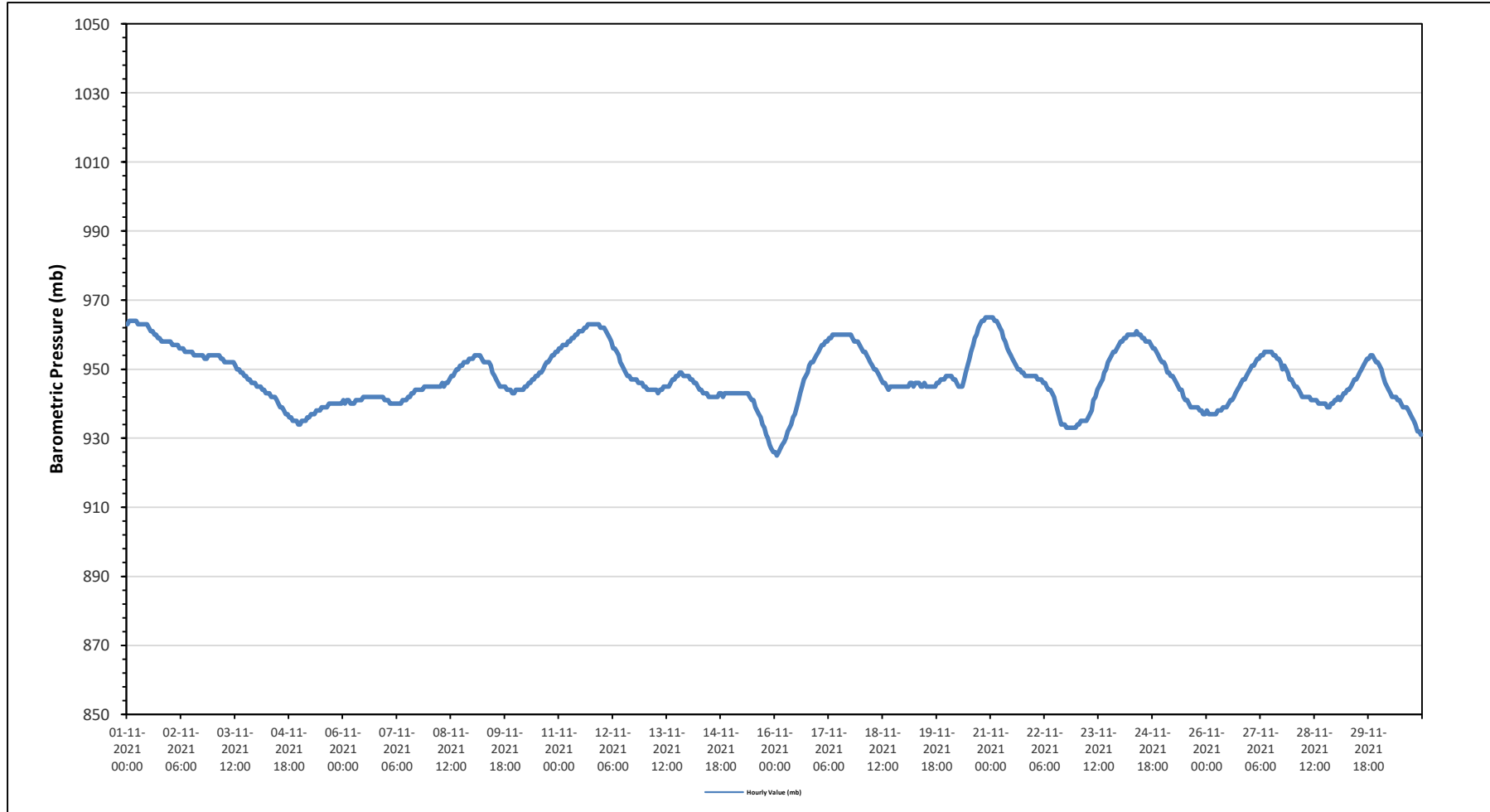
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Nov 1	963	964	964	964	964	964	963	963	963	963	963	962	961	961	960	960	959	959	958	958	958	958	958	958	958	958	964	961.4
Nov 2	958	957	957	957	957	956	956	956	955	955	955	955	955	954	954	954	954	954	953	953	954	954	954	954	954	953	958	955.0
Nov 3	954	954	954	954	953	953	952	952	952	952	952	951	950	950	949	949	948	948	947	947	946	946	946	946	946	946	954	950.5
Nov 4	945	945	945	944	944	943	943	943	942	942	942	941	940	939	939	938	937	937	936	936	935	935	935	934	934	945	940.0	
Nov 5	934	935	935	935	936	936	937	937	937	938	938	938	939	939	939	939	940	940	940	940	940	940	940	940	940	940	940	938.0
Nov 6	941	940	941	941	940	940	940	941	941	941	941	942	942	942	942	942	942	942	942	942	942	942	942	941	940	942	941.3	
Nov 7	941	941	940	940	940	940	940	940	940	941	941	941	942	942	942	943	943	944	944	944	944	944	945	945	945	940	945	942.1
Nov 8	945	945	945	945	945	945	945	946	945	946	946	947	948	948	949	950	950	951	951	952	952	952	953	953	945	953	948.1	
Nov 9	953	954	954	954	954	953	952	952	952	952	951	949	948	947	946	945	945	945	945	944	944	944	943	943	943	943	954	948.7
Nov 10	944	944	944	944	944	945	945	946	946	947	947	948	948	949	949	950	951	952	952	953	954	954	955	955	944	955	948.6	
Nov 11	956	956	957	957	957	958	958	959	959	960	960	961	961	961	962	962	963	963	963	963	963	963	963	962	956	963	960.3	
Nov 12	962	962	961	960	959	958	956	956	955	954	952	951	950	949	948	948	947	947	947	947	946	946	946	945	945	962	952.2	
Nov 13	945	944	944	944	944	944	944	943	944	944	945	945	945	945	946	947	947	948	948	949	949	948	948	948	943	949	945.8	
Nov 14	948	947	947	946	946	945	944	944	943	943	943	942	942	942	942	942	942	943	943	942	943	943	943	943	942	948	943.7	
Nov 15	943	943	943	943	943	943	943	943	943	943	942	941	941	939	938	937	936	934	933	931	930	928	927	926	926	943	938.0	
Nov 16	926	925	926	927	928	929	930	932	933	934	936	937	939	941	943	945	947	948	949	951	952	952	953	954	925	954	939.0	
Nov 17	955	956	957	957	958	958	959	959	960	960	960	960	960	960	960	960	960	960	960	959	958	958	958	957	955	960	958.7	
Nov 18	956	955	955	954	953	952	951	950	950	949	948	947	946	946	945	944	945	945	945	945	945	945	945	945	944	956	948.4	
Nov 19	945	945	945	946	946	945	946	946	945	945	945	946	945	945	945	945	945	945	946	946	947	947	948	945	948	948	945.7	
Nov 20	948	948	948	947	947	946	945	945	945	947	949	951	953	955	957	959	960	962	963	964	964	965	965	965	945	965	954.1	
Nov 21	965	965	964	964	963	962	961	959	958	956	955	954	953	952	951	950	950	949	949	948	948	948	948	948	948	965	955.0	
Nov 22	948	948	947	947	947	946	946	945	944	944	943	942	940	938	936	934	934	934	933	933	933	933	933	933	933	948	940.0	
Nov 23	934	934	935	935	935	935	936	937	938	941	942	944	945	946	947	949	950	952	953	954	955	955	956	957	934	957	944.4	
Nov 24	958	958	959	959	960	960	960	960	960	961	960	960	959	959	958	958	958	957	956	956	955	954	953	952	952	961	957.9	
Nov 25	952	951	949	949	948	948	947	946	945	944	944	942	941	941	940	939	939	939	939	938	938	937	937	937	937	952	943.0	
Nov 26	938	937	937	937	937	937	938	938	938	939	939	939	940	941	941	942	943	944	945	946	947	947	948	949	937	949	941.1	
Nov 27	950	951	951	952	953	953	954	954	955	955	955	955	955	954	954	953	953	952	950	951	950	949	947	947	947	955	952.2	
Nov 28	946	945	945	944	943	942	942	942	942	942	941	941	941	941	940	940	940	940	939	939	940	940	941	939	939	946	941.5	
Nov 29	941	942	941	942	943	943	944	944	945	946	947	947	948	949	950	951	952	953	953	954	954	953	952	952	941	954	947.8	
Nov 30	951	950	948	946	945	944	943	942	942	942	941	941	940	939	939	939	938	937	936	935	934	932	932	931	931	951	940.3	
Diurnal Maximum	965	965	964	964	964	963	963	963	963	963	963	962	961	962	962	963	963	963	963	964	964	965	965	965				
Diurnal Average	948	948	948	948	947	947	947	947	947	948	947	947	947	947	947	947	947	947	947	947	947	947	947	947				

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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

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





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hourly Averages

AMBIENT TEMPERATURE (AT) in Degree Celsius

Maximum Hourly Value:	8.9 °C	on November 4 at hour 13	Hours in Service:	720
Maximum Daily Value:	4.5 °C	on November 5	Hours of Data:	720
Minimum Hourly Value:	-21.8 °C	on November 21 at hour 3	Hours of Missing Data:	0
Minimum Daily Value:	-14.6 °C	on November 24	Hours of Calibration:	0
Monthly Average:	-4.9 °C		Operational Uptime:	100.0

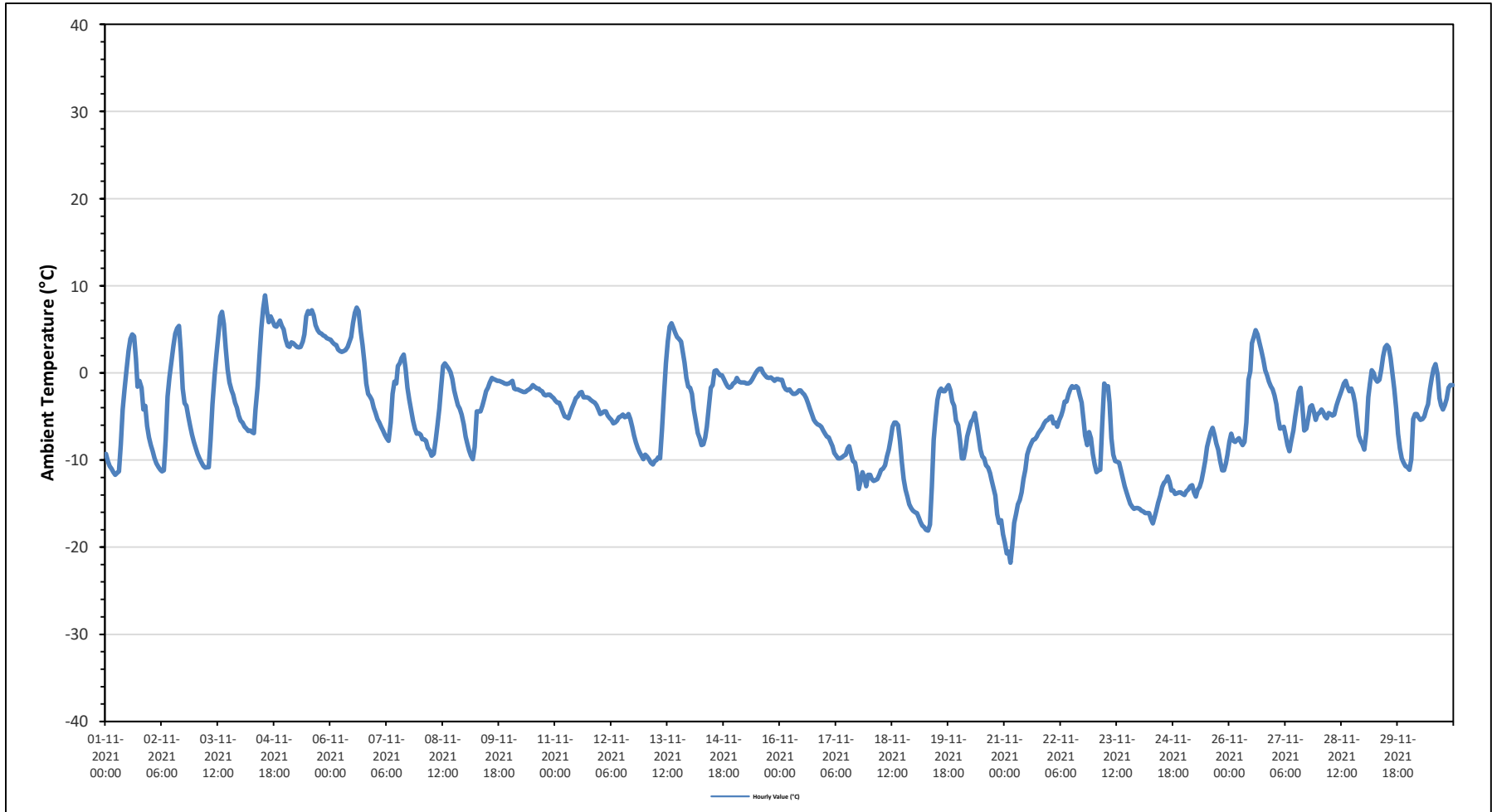
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Nov 1	-9.3	-10.1	-10.7	-11	-11.4	-11.7	-11.5	-11.3	-8.2	-4.2	-1.9	0.2	2.5	3.9	4.4	4.2	1.6	-1.6	-0.9	-1.7	-4.2	-3.8	-6.1	-7.4	-11.7	4.4	-4.6
Nov 2	-8.3	-9	-9.8	-10.4	-10.8	-11.1	-11.3	-11.2	-7.6	-2.7	-0.5	1.4	3.1	4.5	5.1	5.4	2.4	-1.8	-3.5	-3.8	-5	-6.1	-7.1	-7.9	-11.3	5.4	-4.4
Nov 3	-8.6	-9.3	-9.8	-10.3	-10.7	-10.9	-10.8	-10.8	-7.6	-3.6	-0.3	2.1	4.3	6.5	7	5.6	2.8	0.4	-1.1	-2	-2.5	-3.4	-4	-4.9	-10.9	7.0	-3.4
Nov 4	-5.5	-5.7	-6.2	-6.4	-6.7	-6.6	-6.8	-6.9	-4.2	-1.5	1.9	5.1	7.4	8.9	7.1	5.8	6.5	6	5.4	5.3	5.7	6	5.4	5	-6.9	8.9	1.0
Nov 5	3.9	3.1	3	3.5	3.4	3.2	3	2.9	3	3.6	4.4	6.5	7.1	6.8	7.2	6.6	5.5	4.9	4.6	4.5	4.3	4.2	4	3.9	2.9	7.2	4.5
Nov 6	3.8	3.5	3.3	3.2	2.7	2.5	2.4	2.5	2.6	3	3.6	4.1	5.7	6.9	7.5	7.1	4.8	3.2	1.2	-1.2	-2.4	-2.7	-3.1	-4	-4.0	7.5	2.5
Nov 7	-4.6	-5.3	-5.7	-6.2	-6.6	-7.1	-7.5	-7.8	-5.7	-2.4	-1	-1.2	0.8	1.1	1.7	2.1	0.5	-1.7	-3.1	-4.3	-5.5	-6.4	-7	-6.9	-7.8	2.1	-3.7
Nov 8	-7.1	-7.6	-7.6	-7.8	-8.6	-8.9	-9.5	-9.3	-7.8	-6	-4.1	-1.6	0.8	1.1	0.8	0.5	0.1	-0.7	-2	-2.9	-3.7	-4.1	-4.8	-5.9	-9.5	1.1	-4.4
Nov 9	-7.3	-8.2	-8.9	-9.5	-9.9	-8.5	-4.4	-4.4	-4.4	-3.8	-3	-2.1	-1.7	-1.1	-0.6	-0.7	-0.8	-0.9	-0.9	-1	-1.1	-1.2	-1.3	-1.2	-9.9	-0.6	-3.6
Nov 10	-1.1	-0.9	-1.8	-1.9	-1.9	-2	-2.1	-2.2	-2.2	-2	-1.9	-1.7	-1.4	-1.6	-1.8	-2	-2.1	-2.5	-2.6	-2.5	-2.7	-2.9	-2.9	-2.9	-2.9	-0.9	-2.0
Nov 11	-3.2	-3.4	-3.4	-3.9	-4.5	-5	-5.1	-5.2	-4.6	-4	-3.5	-2.9	-2.7	-2.3	-2.2	-2.8	-2.8	-2.8	-2.9	-3.1	-3.3	-3.4	-3.7	-4.2	-5.2	-2.2	-3.5
Nov 12	-4.7	-4.6	-4.4	-4.4	-4.9	-5.2	-5.4	-5.8	-5.7	-5.5	-5.1	-5	-4.8	-5.1	-5	-4.7	-5.3	-6.2	-7.2	-8	-8.6	-9.1	-9.5	-9.9	-9.9	-4.4	-6.0
Nov 13	-9.4	-9.6	-9.9	-10.3	-10.5	-10.1	-10	-9.7	-9.8	-6.6	-2.9	1.1	3.6	5.3	5.7	5.2	4.6	4.1	3.9	3.6	2.5	1.2	-0.6	-1.6	-10.5	5.7	-2.5
Nov 14	-1.7	-2.4	-4.2	-5.6	-6.9	-7.5	-8.3	-8.2	-7.4	-6.2	-3.8	-1.7	-1.4	0.2	0.3	0	-0.3	-0.3	-0.7	-1.2	-1.6	-1.7	-1.6	-1.2	-8.3	0.3	-3.1
Nov 15	-1.1	-0.6	-1	-1.1	-1.1	-1.1	-1.2	-1.2	-1.1	-0.8	-0.4	0	0.3	0.5	0.5	0	-0.3	-0.5	-0.6	-0.5	-0.7	-0.9	-0.7	-0.7	-1.2	0.5	-0.6
Nov 16	-0.8	-0.8	-1.5	-1.9	-2	-1.9	-2.2	-2.4	-2.4	-2.3	-2	-2	-2.3	-2.5	-2.9	-3.5	-4.1	-4.8	-5.4	-5.7	-5.9	-6	-6.2	-6.6	-6.6	-0.8	-3.3
Nov 17	-7	-7.3	-7.4	-7.9	-8.4	-9.2	-9.5	-9.8	-9.8	-9.7	-9.5	-9.4	-8.7	-8.4	-9.3	-10.1	-10.3	-11.5	-13.3	-12.4	-11.4	-12	-13	-11.7	-13.3	-7.0	-9.9
Nov 18	-11.7	-12.2	-12.4	-12.3	-12.2	-11.7	-11.1	-11	-10.6	-9.6	-8.8	-7.6	-6.2	-5.7	-5.7	-6	-7.8	-10.2	-12.2	-13.4	-14.2	-15.1	-15.5	-15.8	-15.8	-5.7	-10.8
Nov 19	-16	-16.1	-16.6	-17.1	-17.5	-17.7	-18	-18.1	-17.4	-13.1	-7.7	-5.2	-3.1	-2.1	-1.8	-2.1	-2.1	-1.7	-1.4	-2	-3.3	-3.8	-5.5	-6	-18.1	-1.4	-9.0
Nov 20	-7.7	-9.8	-9.8	-8.7	-7.3	-6.5	-5.6	-5.3	-4.6	-5.9	-7.3	-8.8	-9.6	-9.8	-10.6	-10.9	-11.5	-12.3	-13.2	-14.1	-16.2	-17.2	-16.9	-18.5	-18.5	-4.6	-10.3
Nov 21	-19.5	-20.7	-20.5	-21.8	-19.8	-17.2	-16.2	-15.1	-14.6	-13.7	-12.2	-11.1	-9.4	-8.7	-8.1	-7.7	-7.6	-7.3	-6.9	-6.6	-6.3	-5.8	-5.5	-5.4	-21.8	-5.4	-12.0
Nov 22	-5.1	-5	-5.8	-5.7	-6.2	-5.4	-4.9	-4.3	-3.3	-3.3	-2.5	-1.9	-1.5	-1.7	-1.5	-1.7	-2.6	-3.4	-5.4	-7.2	-8.3	-6.8	-7.5	-9.3	-9.3	-1.5	-4.6
Nov 23	-10.5	-11.4	-11.2	-11.1	-6.2	-1.2	-1.7	-1.5	-3.4	-7.5	-9.4	-10.1	-10.2	-10.3	-11.2	-12.1	-13	-13.7	-14.4	-15	-15.4	-15.6	-15.5	-15.5	-15.6	-1.2	-10.3
Nov 24	-15.6	-15.8	-15.9	-16.1	-16.1	-16.1	-16.8	-17.3	-16.5	-15.8	-14.9	-14.1	-13.1	-12.6	-12.4	-11.9	-12.5	-13.5	-13.5	-13.9	-13.8	-13.7	-13.7	-13.9	-17.3	-11.9	-14.6
Nov 25	-14	-13.6	-13.4	-13	-12.9	-13.7	-14.2	-13.4	-13.1	-12.4	-11.3	-10.1	-8.5	-7.6	-6.8	-6.3	-7.1	-8.1	-8.8	-10.2	-11.2	-11.2	-10.4	-9.4	-14.2	-6.3	-10.9
Nov 26	-7.9	-7	-7.8	-7.9	-7.7	-7.5	-7.9	-8.3	-7.9	-5.7	-0.8	0.2	3.4	4.1	4.9	4.4	3.5	2.6	1.5	0.3	-0.3	-1	-1.5	-1.9	-8.3	4.9	-2.3
Nov 27	-2.6	-3.6	-5.3	-6.4	-6.3	-6.2	-7.2	-8.3	-9	-7.8	-6.6	-5	-3.6	-2.2	-1.7	-3.9	-6.6	-6.4	-5.2	-3.9	-3.7	-4.4	-5.4	-4.7	-9.0	-1.7	-5.3
Nov 28	-4.6	-4.2	-4.5	-5	-5.2	-4.6	-4.7	-4.9	-4.8	-3.8	-3.1	-2.5	-1.9	-1.2	-0.9	-1.5	-2.1	-1.8	-2.4	-3.5	-5.3	-7.2	-7.8	-8.2	-8.2	-0.9	-4.0
Nov 29	-8.8	-6.7	-2.8	-1.3	0.3	0	-0.7	-1	-0.8	0.4	1.9	2.9	3.2	2.9	1.7	-0.1	-1.9	-4.1	-7	-8.7	-9.8	-10.3	-10.7	-10.8	-10.8	3.2	-3.0
Nov 30	-11.1	-9.9	-5.3	-4.7	-4.7	-5.1	-5.4	-5.3	-5	-4.2	-3.6	-1.9	-0.6	0.5	1	-0.2	-2.9	-3.7	-4.2	-3.7	-3	-1.7	-1.4	-1.4	-11.1	1.0	-3.6
Diurnal Maximum	3.9	3.5	3.3	3.5	3.4	3.2	3.0	2.9	3.0	3.6	4.4	6.5	7.4	8.9	7.5	7.1	6.5	6.0	5.4	5.3	5.7	6.0	5.4	5.0			
Daiurnal Average	-6.9	-7.1	-7.2	-7.4	-7.4	-7.1	-7.2	-7.2	-6.5	-5.2	-2.7	-1.6	-1.0	-0.9	-1.4	-2.4	-3.3	-4.1	-4.6	-5.2	-5.5	-6.0	-6.3				

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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

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





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hourly Averages

STATION TEMPERATURE (ST) in Degree Celsius

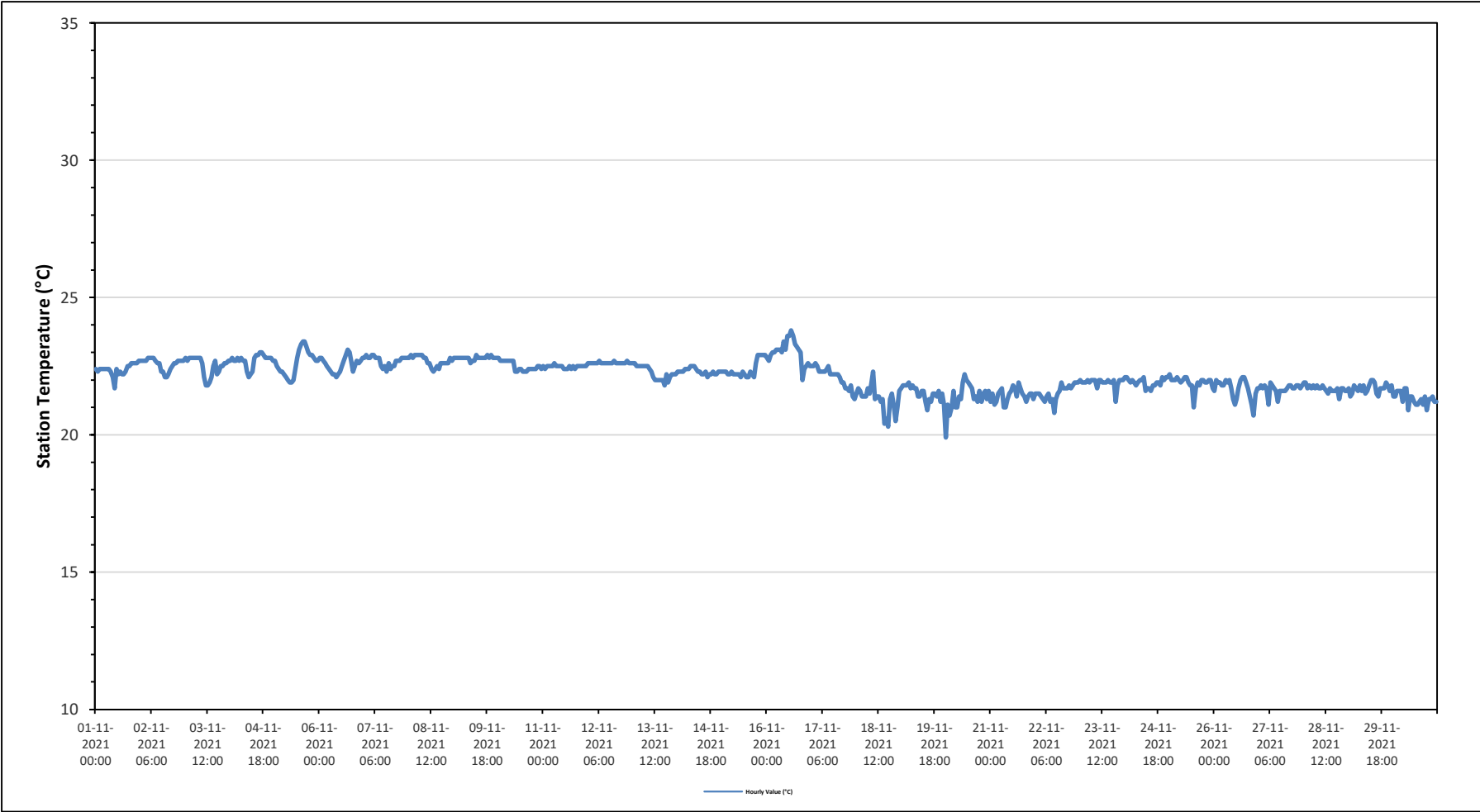
Maximum Hourly Value:	23.8 °C	on November 16 at hour 13	Hours in Service:	720
Maximum Daily Value:	23.0 °C	on November 16	Hours of Data:	720
Minimum Hourly Value:	19.9 °C	on November 20 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	21.3 °C	on November 18	Hours of Calibration:	0
Monthly Average:	22.1 °C		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Nov 1	22.4	22.3	22.4	22.4	22.4	22.4	22.4	22.4	22.3	22.1	21.7	22.4	22.2	22.3	22.2	22.2	22.3	22.5	22.5	22.6	22.6	22.6	22.6	22.7	21.7	22.7	22.4
Nov 2	22.7	22.7	22.7	22.7	22.8	22.8	22.8	22.8	22.8	22.7	22.6	22.6	22.3	22.3	22.1	22.1	22.2	22.4	22.5	22.6	22.6	22.7	22.7	22.7	22.1	22.8	22.6
Nov 3	22.8	22.7	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.6	22.1	21.8	21.8	21.9	22.1	22.5	22.7	22.2	22.3	22.5	22.5	22.6	22.6	21.8	22.8	22.5
Nov 4	22.7	22.8	22.7	22.7	22.8	22.7	22.8	22.7	22.7	22.3	22.1	22.2	22.3	22.8	22.9	22.9	23.0	23.0	22.9	22.8	22.8	22.8	22.8	22.7	22.1	23.0	22.7
Nov 5	22.7	22.5	22.4	22.3	22.3	22.2	22.1	22.0	21.9	21.9	22.0	22.4	22.8	23.1	23.3	23.4	23.4	23.2	23.0	22.9	22.9	22.8	22.7	21.9	23.4	22.6	
Nov 6	22.8	22.8	22.7	22.6	22.5	22.4	22.3	22.2	22.2	22.1	22.2	22.3	22.5	22.7	22.9	23.1	23.0	22.7	22.3	22.5	22.7	22.6	22.7	22.1	23.1	22.6	
Nov 7	22.8	22.9	22.8	22.8	22.9	22.9	22.8	22.8	22.8	22.5	22.4	22.5	22.3	22.6	22.4	22.5	22.5	22.7	22.7	22.7	22.8	22.8	22.8	22.8	22.3	22.9	22.7
Nov 8	22.8	22.9	22.8	22.9	22.9	22.9	22.9	22.9	22.9	22.8	22.8	22.6	22.6	22.4	22.3	22.4	22.5	22.4	22.6	22.6	22.6	22.6	22.6	22.3	22.9	22.7	22.7
Nov 9	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.6	22.7	22.7	22.9	22.8	22.8	22.8	22.8	22.8	22.9	22.8	22.8	22.8	22.8	22.6	22.9	22.9	22.8
Nov 10	22.8	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.3	22.3	22.4	22.4	22.3	22.3	22.3	22.4	22.4	22.4	22.4	22.4	22.5	22.5	22.3	22.8	22.5
Nov 11	22.5	22.4	22.5	22.5	22.5	22.5	22.6	22.5	22.5	22.5	22.5	22.4	22.4	22.4	22.5	22.4	22.5	22.4	22.5	22.5	22.5	22.5	22.5	22.4	22.6	22.5	22.5
Nov 12	22.6	22.6	22.6	22.6	22.6	22.6	22.7	22.6	22.6	22.6	22.6	22.6	22.6	22.7	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.7	22.6
Nov 13	22.6	22.6	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.4	22.3	22.1	22.0	22.0	22.0	22.0	22.0	21.8	22.2	21.9	22.1	22.2	22.2	22.2	21.8	22.6	22.3
Nov 14	22.3	22.3	22.3	22.3	22.4	22.4	22.4	22.5	22.5	22.5	22.4	22.3	22.3	22.2	22.2	22.3	22.1	22.2	22.2	22.3	22.2	22.2	22.3	22.3	22.1	22.5	22.3
Nov 15	22.3	22.3	22.3	22.2	22.2	22.3	22.2	22.2	22.2	22.2	22.1	22.3	22.2	22.1	22.1	22.3	22.2	22.1	22.6	22.9	22.9	22.9	22.9	22.1	22.9	22.9	22.4
Nov 16	22.8	22.7	22.9	23.0	23.0	23.1	23.1	23.1	23.0	23.4	23.1	23.6	23.6	23.8	23.6	23.3	23.2	23.1	23.0	22.0	22.4	22.5	22.6	22.5	22.0	23.8	23.0
Nov 17	22.5	22.5	22.6	22.5	22.3	22.3	22.3	22.3	22.4	22.5	22.2	22.2	22.2	22.2	22.2	22.1	21.9	21.9	21.7	21.7	21.6	21.8	21.4	21.3	21.3	22.6	22.1
Nov 18	21.5	21.7	21.6	21.4	21.4	21.4	21.7	21.5	21.9	22.3	21.3	21.4	21.4	21.2	21.3	20.4	20.6	20.3	21.3	21.5	21.0	20.5	21.0	21.6	20.3	22.3	21.3
Nov 19	21.7	21.8	21.8	21.8	21.9	21.7	21.8	21.7	21.4	21.4	21.6	21.6	21.6	21.2	20.9	21.3	21.2	21.5	21.5	21.4	21.6	21.2	21.5	21.1	20.9	21.9	21.5
Nov 20	19.9	21.1	20.7	21.0	21.6	21.0	21.0	21.4	21.3	21.9	22.2	22.0	21.9	21.8	21.7	21.3	21.4	21.2	21.6	21.2	21.5	21.6	21.3	21.6	19.9	22.2	21.4
Nov 21	21.2	21.5	21.1	21.2	21.5	21.6	21.7	21.0	21.0	21.3	21.5	21.6	21.8	21.7	21.4	21.9	21.7	21.5	21.4	21.2	21.4	21.5	21.5	21.3	21.0	21.9	21.4
Nov 22	21.5	21.5	21.5	21.4	21.3	21.2	21.4	21.5	21.2	21.3	20.8	21.3	21.5	21.6	21.9	21.7	21.7	21.7	21.8	21.7	21.8	21.9	21.9	21.9	20.8	21.9	21.5
Nov 23	22.0	21.9	21.9	21.9	22.0	21.9	22.0	22.0	22.0	21.7	22.0	22.0	21.9	21.9	21.9	22.0	21.9	21.9	22.0	21.2	21.8	22.0	22.0	22.0	21.2	22.0	21.9
Nov 24	22.1	22.1	22.0	21.9	22.0	21.9	21.8	21.9	22.0	22.0	22.1	21.6	21.7	21.7	21.6	21.8	21.8	21.9	21.9	21.8	22.1	22.0	22.1	22.1	21.6	22.1	21.9
Nov 25	22.2	22.0	22.0	22.0	22.1	22.0	21.9	22.0	22.1	22.1	21.9	21.8	21.8	21.0	21.7	21.9	21.8	22.0	22.0	21.9	21.9	22.0	22.0	21.7	21.0	22.2	21.9
Nov 26	21.6	22.0	21.9	21.9	21.8	21.8	22.0	21.9	22.0	22.0	21.7	21.3	21.1	21.3	21.7	22.0	22.1	22.1	21.9	21.7	21.4	21.1	20.7	21.5	20.7	22.1	21.7
Nov 27	21.7	21.8	21.7	21.8	21.7	21.1	21.9	21.8	21.7	21.6	21.2	21.6	21.6	21.6	21.6	21.7	21.8	21.8	21.7	21.7	21.8	21.8	21.7	21.8	21.1	21.9	21.7
Nov 28	21.9	21.9	21.7	21.8	21.7	21.8	21.7	21.8	21.7	21.7	21.8	21.7	21.6	21.5	21.7	21.6	21.6	21.6	21.7	21.3	21.7	21.7	21.6	21.6	21.3	21.9	21.7
Nov 29	21.7	21.4	21.5	21.8	21.7	21.6	21.8	21.6	21.8	21.5	21.6	21.8	22.0	22.0	21.9	21.5	21.4	21.7	21.7	21.7	21.9	21.8	21.6	21.8	21.4	22.0	21.7
Nov 30	21.4	21.4	21.6	21.6	21.6	21.2	21.7	21.7	20.9	21.4	21.4	21.2	21.1	21.1	21.2	21.3	21.1	21.4	20.9	21.3	21.3	21.4	21.2	21.2	20.9	21.7	21.3
Diurnal Maximum	22.8	22.9	22.9	23.0	23.0	23.1	23.1	23.1	23.0	23.4	23.1	23.6	23.6	23.8	23.6	23.4	23.4	23.2	23.0	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9
Daiurnal Average	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.0	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.2

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr

Maximum Hourly Value:	26.6 kph	on November 16 at hour 13	Hours in Service:	720
Maximum Daily Value:	18.9 kph	on November 16	Hours of Data:	720
Minimum Hourly Value:	0.0 kph	on November 1 at hour 1	Hours of Missing Data:	0
Minimum Daily Value:	0.5 kph	on November 14	Hours of Calibration:	0
Monthly Average:	0.2 kph		Operational Uptime:	100.0

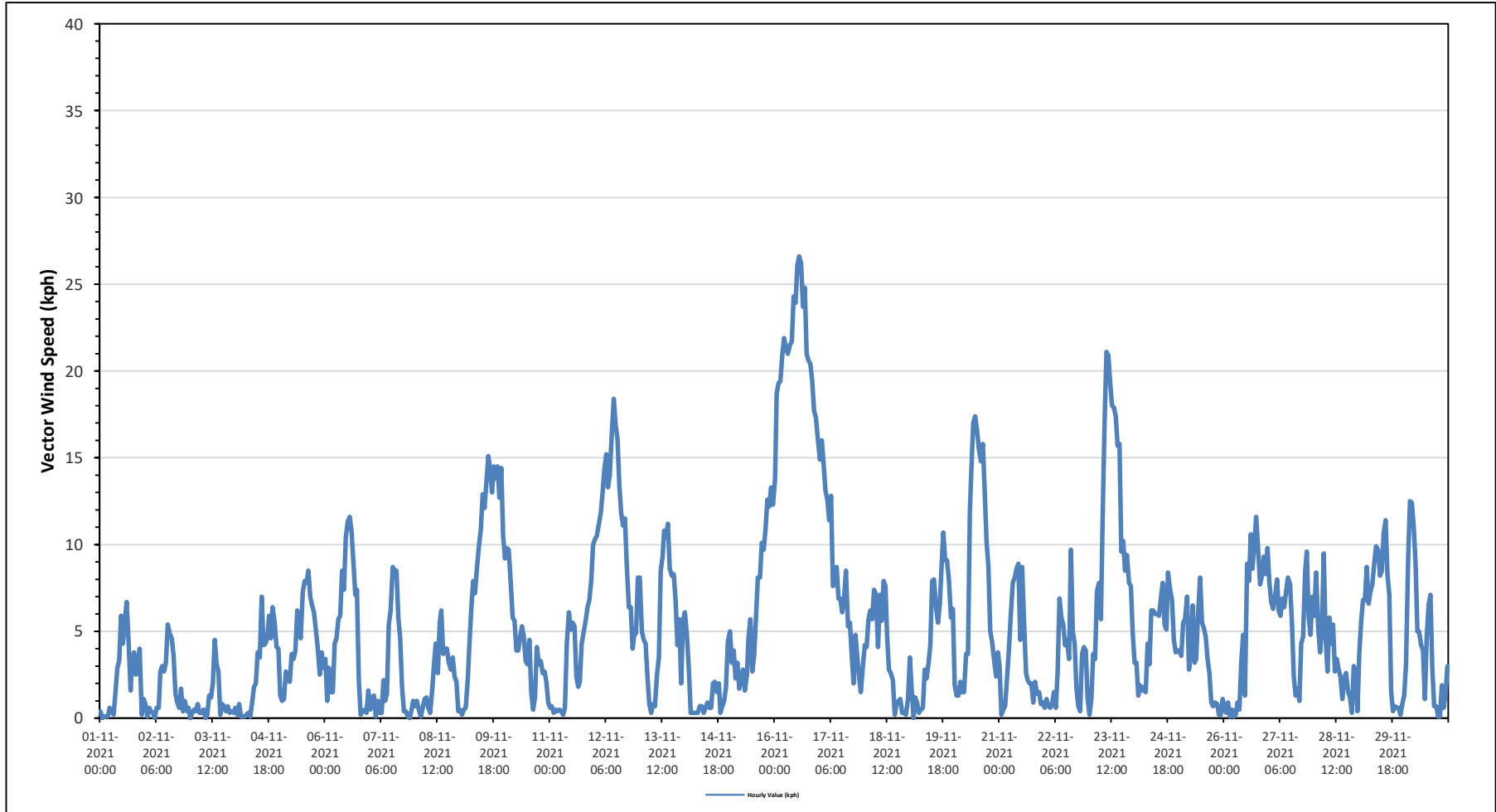
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Nov 1	0.4	0.0	0.1	0.1	0.1	0.6	0.4	0.2	1.5	2.9	3.3	5.9	4.3	5.6	6.7	4.2	1.6	3.4	3.8	2.5	3.1	4.0	0.2	1.1	0.0	6.7	2.0
Nov 2	0.8	0.1	0.6	0.4	0.3	0.0	0.6	0.6	2.7	3.0	2.7	3.2	5.4	4.9	4.6	3.6	1.4	0.9	0.6	1.7	0.4	1.0	0.4	0.6	0.0	5.4	1.4
Nov 3	0.0	0.3	0.5	0.4	0.8	0.3	0.3	0.5	0.0	0.2	1.3	1.2	2.0	4.5	3.1	2.7	0.2	0.8	0.7	0.4	0.7	0.3	0.4	0.3	0.0	4.5	0.6
Nov 4	0.6	0.2	0.8	0.1	0.1	0.1	0.2	0.3	0.1	0.9	1.8	2.0	3.8	3.5	7.0	4.2	4.3	4.6	5.9	4.6	6.4	5.5	4.1	4.0	0.1	7.0	2.5
Nov 5	1.3	1.0	1.1	2.7	2.2	2.1	3.7	3.4	3.9	6.2	5.2	4.6	7.3	7.9	7.8	8.5	7.0	6.5	6.1	5.1	4.1	2.5	3.8	2.9	1.0	8.5	4.2
Nov 6	3.4	1.0	2.9	1.5	1.5	4.3	4.6	5.7	5.9	8.5	7.4	10.4	11.3	11.6	10.7	8.9	7.1	7.4	2.2	0.2	0.4	0.5	0.3	1.6	0.2	11.6	4.5
Nov 7	0.5	1.2	1.3	0.1	1.0	0.3	0.3	2.2	1.0	1.4	5.4	6.2	8.7	8.5	8.5	5.8	4.6	1.8	0.4	0.4	0.1	0.0	0.5	1.0	0.0	8.7	2.2
Nov 8	0.7	1.0	0.5	0.1	0.6	1.1	1.2	0.6	0.3	1.5	3.0	4.3	2.6	5.5	6.2	3.7	4.0	4.0	3.2	2.8	3.5	2.4	2.1	0.4	0.1	6.2	2.0
Nov 9	0.5	0.2	0.5	0.6	2.3	4.3	6.3	7.9	7.2	8.6	9.8	10.9	12.9	12.1	13.6	15.1	14.4	13.0	14.5	13.8	14.5	12.7	14.4	10.5	0.2	15.1	9.1
Nov 10	9.2	9.8	9.7	7.7	5.8	5.6	3.9	3.9	4.7	5.3	4.7	3.3	3.1	4.5	1.5	0.5	1.2	4.1	3.1	3.3	2.6	2.7	2.1	0.9	0.5	9.8	4.1
Nov 11	0.6	0.7	0.3	0.5	0.4	0.5	0.4	0.2	0.6	4.3	6.1	5.1	5.5	5.3	2.4	1.8	2.1	4.3	5.0	5.6	6.4	6.8	7.9	10.0	0.2	10.0	3.3
Nov 12	10.3	10.5	11.2	11.8	13.0	14.4	15.2	13.3	14.0	16.5	18.4	16.9	16.1	13.4	11.8	11.1	11.5	8.8	6.4	6.4	4.0	4.9	4.9	8.1	4.0	18.4	11.4
Nov 13	8.1	5.0	4.5	4.3	2.4	0.8	0.3	0.8	0.7	2.5	3.5	8.5	9.3	10.8	10.4	11.2	8.6	8.2	8.3	6.8	4.2	5.7	2.0	5.6	0.3	11.2	3.8
Nov 14	6.1	4.7	2.8	0.3	0.3	0.3	0.3	0.3	0.7	0.7	0.3	0.6	0.9	0.6	0.6	2.0	2.1	1.5	2.0	0.3	0.7	1.0	1.8	4.4	0.3	6.1	0.5
Nov 15	5.0	3.2	3.9	2.3	3.2	1.7	2.2	2.8	1.6	2.5	4.7	5.7	2.7	3.6	5.8	8.1	8.1	10.1	9.7	10.9	12.6	12.2	13.3	12.3	1.6	13.3	5.7
Nov 16	13.8	18.7	19.3	19.4	20.9	21.9	21.3	21.0	21.5	21.7	24.3	23.9	26.1	26.6	26.2	23.7	24.8	21.0	20.6	20.4	19.4	17.7	17.3	16.1	13.8	26.6	18.9
Nov 17	14.9	16.0	14.6	13.1	12.6	11.4	12.8	7.6	7.7	8.7	6.9	6.9	6.1	6.9	8.5	5.3	5.5	3.6	2.0	4.8	3.5	2.3	1.5	3.0	1.5	16.0	5.2
Nov 18	4.2	4.1	5.7	6.2	5.7	7.4	7.1	4.1	7.1	5.6	7.9	7.6	4.8	2.8	2.6	2.2	0.2	0.8	1.0	1.1	0.3	0.3	0.2	1.1	0.2	7.9	3.5
Nov 19	3.5	1.6	0.0	1.2	0.9	0.3	0.5	0.6	2.8	2.3	3.1	4.2	7.9	8.0	6.5	5.5	6.6	8.9	10.7	9.1	9.1	8.0	5.8	6.3	0.0	10.7	4.6
Nov 20	1.9	1.3	1.3	2.1	1.5	1.5	3.7	3.7	11.8	14.4	17.0	17.4	16.6	15.5	14.8	15.8	13.1	10.2	8.7	5.0	4.4	3.4	2.4	3.8	1.3	17.4	6.3
Nov 21	3.0	0.2	0.5	0.7	2.3	3.9	6.1	7.8	8.1	8.6	8.9	4.5	8.7	5.7	2.6	2.2	2.0	2.0	0.9	2.1	1.4	1.5	0.8	0.9	0.2	8.9	3.0
Nov 22	0.6	1.1	0.7	0.6	0.8	1.5	0.6	2.7	6.9	5.8	5.4	4.2	4.5	3.4	9.7	5.0	4.3	1.7	0.7	0.4	3.7	4.1	3.9	1.1	0.4	9.7	2.1
Nov 23	0.2	1.1	3.7	3.4	7.3	7.8	5.7	11.9	17.1	21.1	20.9	19.3	18.0	17.9	17.4	15.7	15.8	9.6	10.2	8.5	9.4	7.8	7.6	4.9	0.2	21.1	9.9
Nov 24	3.2	3.2	1.3	1.9	1.6	1.8	1.5	4.3	3.1	6.2	6.2	6.0	6.0	5.9	6.9	7.8	5.4	5.1	8.4	7.5	6.8	4.5	3.8	3.9	1.3	8.4	3.8
Nov 25	3.9	3.6	5.5	5.7	7.0	2.8	3.8	6.5	3.2	3.4	6.0	8.1	5.5	5.2	4.7	3.4	2.6	0.9	0.7	0.9	0.8	0.2	0.2	1.1	0.2	8.1	3.3
Nov 26	0.6	0.3	0.9	0.1	0.5	0.1	0.2	0.9	0.5	3.2	4.8	1.3	8.9	7.9	10.6	8.6	9.9	11.6	9.9	7.7	8.2	9.3	8.3	9.8	0.1	11.6	5.0
Nov 27	7.8	6.7	6.3	7.1	8.0	6.2	5.9	6.9	6.4	7.3	8.1	7.7	5.5	2.4	1.3	1.7	1.0	4.3	4.7	8.5	9.6	5.9	4.8	7.0	1.0	9.6	3.5
Nov 28	5.9	8.4	5.2	3.8	5.2	9.5	4.6	2.7	5.8	4.3	5.4	2.7	3.4	2.8	2.4	1.1	2.3	2.6	1.5	1.2	0.3	3.0	2.7	0.4	0.3	9.5	2.8
Nov 29	3.8	5.6	6.8	6.8	8.7	6.6	7.3	7.7	8.9	9.9	9.7	8.2	8.5	10.7	11.4	8.3	7.1	1.5	0.4	0.7	0.6	0.6	0.2	0.8	0.2	11.4	4.7
Nov 30	1.3	3.1	9.2	12.5	12.4	11.0	8.9	5.0	5.0	4.2	3.9	1.1	4.7	6.5	7.1	2.9	0.7	0.7	0.1	0.1	1.9	0.6	1.4	3.0	0.1	12.5	3.3
Diurnal Maximum	15	19	19	19	21	22	21	21	22	22	24	24	26	27	26	24	25	21	21	20	19	18	17	16			
Dalurnal Average	3.9	3.8	4.1	3.9	4.3	4.3	4.3	4.5	5.4	6.4	7.2	7.1	7.7	7.7	7.8	6.7	6.0	5.5	5.1	4.8	4.8	4.4	4.0	4.2			

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	inValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

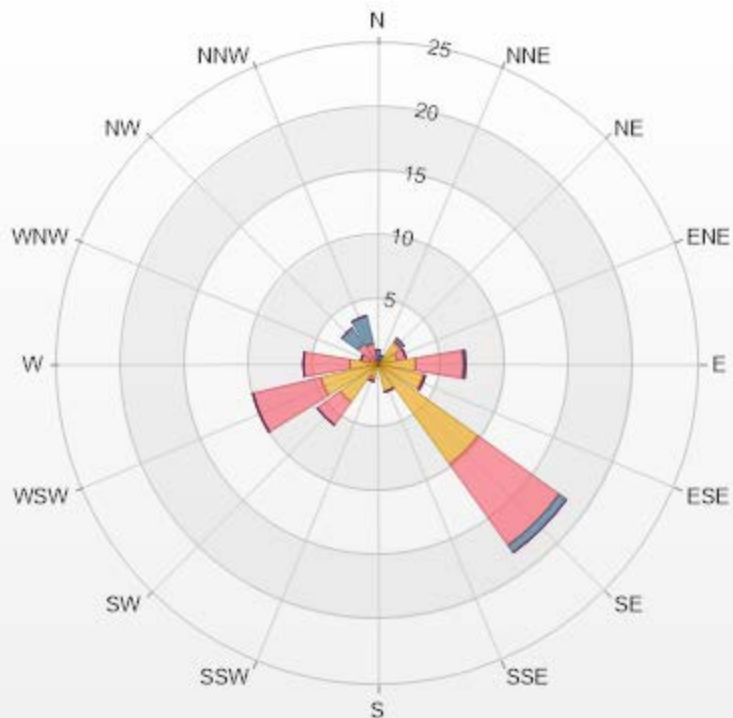
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

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



Wind: Cold Lake South Monitor: WDS [kph] Monthly: 11-2021 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 30.69% Valid Data: 100.00%

Direction	1.8-6.0	6.0-15.0	15.0-29.0	29.0-39.0	>39.0	Total
N	0	0.28	0.83	0	0	1.11
NNE	0.14	0.14	0.42	0	0	0.7
NE	2.08	0.14	0.28	0	0	2.5
ENE	1.53	0.69	0	0	0	2.22
E	2.92	3.75	0.14	0	0	6.81
ESE	3.61	0.14	0	0	0	3.75
SE	9.58	7.78	0.69	0	0	18.05
SSE	2.22	0	0	0	0	2.22
S	0.14	0	0	0	0	0.14
SSW	1.11	0.28	0	0	0	1.39
SW	3.61	2.22	0	0	0	5.83
WSW	4.58	5.42	0	0	0	10
W	2.22	3.61	0	0	0	5.83
WNW	0.69	0.69	0	0	0	1.38
NW	0.28	1.67	1.53	0	0	3.48
NNW	0.28	1.39	2.22	0	0	3.89
Summary	34.99	28.2	6.11	0	0	69.3



LICA-202111

Page 88 of 239

% Icon Classes (kph)

35 1.8-6.0

28 6.0-15.0

6 15.0-29.0

0 29.0-39.0

0 >39.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

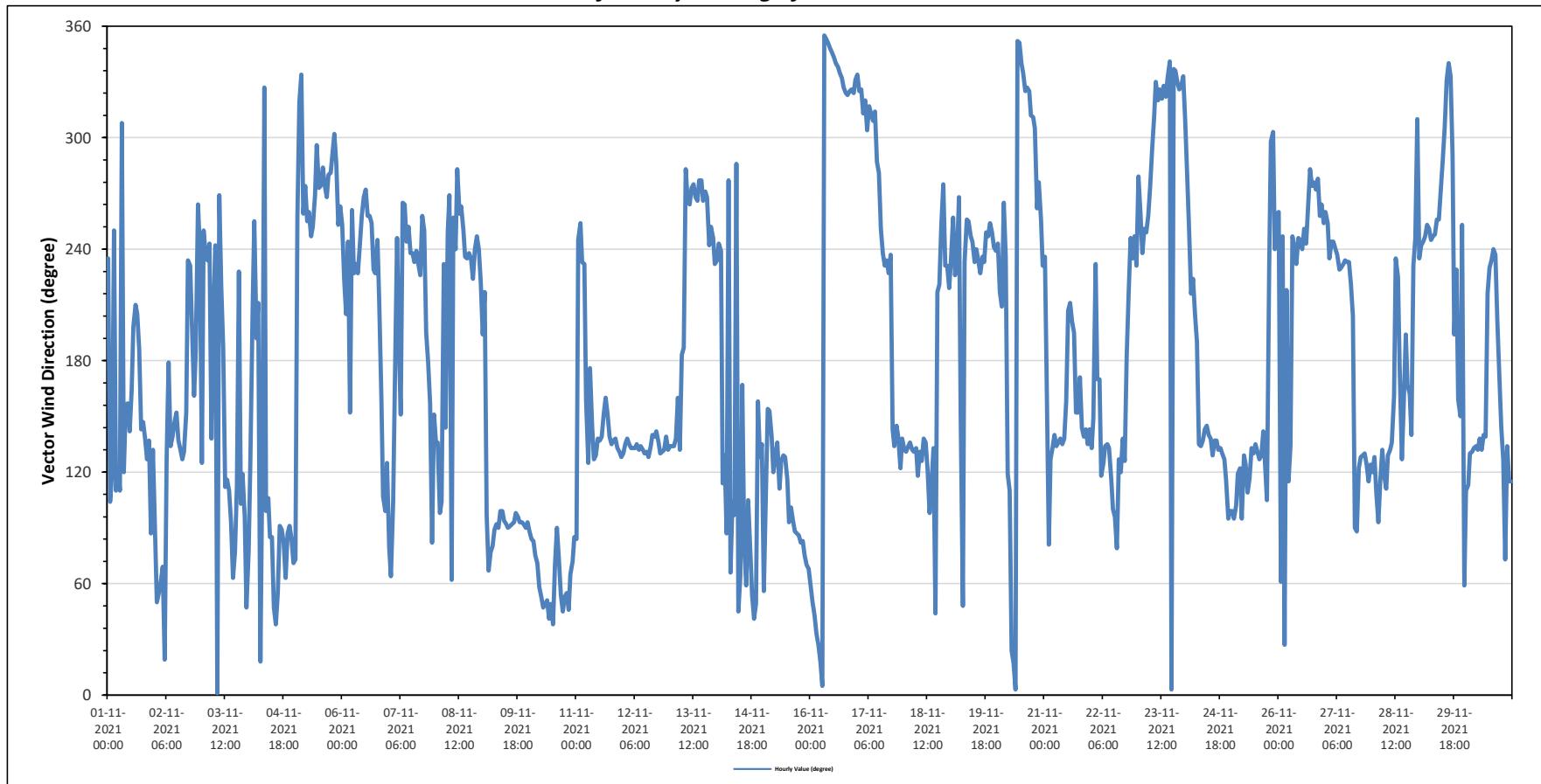
Cold Lake South Station - November 2021

Summary of Hourly Averages

WIND DIRECTION (VWD) in sector

Monthly Average:		179 (S) degree										Hours in Service:		720													
												Hours of Data:		720													
												Hours of Missing Data:		0													
												Hours of Calibration:		0													
												Operational Uptime:		100.0													
Day	Hourly Period Starting at (MST)																							Daily Average			
Nov 1	SW	ESE	ESE	WSW	ESE	ESE	ESE	NW	ESE	SSE	SSE	SE	SSE	SSW	SSW	SSW	S	SE	SE	SE	SE	E	SE	163	SSE		
Nov 2	E	NE	NE	ENE	ENE	NNE	SE	S	SE	SE	SE	SSE	SE	SE	SE	SE	SSE	SW	SW	SSW	SSE	S	W	WSW	143	SE	
Nov 3	SE	WSW	SW	SW	WSW	SE	SSW	WSW	N	W	SW	S	ESE	ESE	ESE	E	ENE	ENE	ESE	SW	ESE	ESE	E	NE	127	SE	
Nov 4	ENE	SE	SSW	WSW	S	SSW	NNE	ESE	NW	E	ESE	E	E	NE	NE	NE	E	E	E	ENE	E	E	E	ENE	76	ENE	
Nov 5	ENE	WSW	NW	NNW	WSW	W	WSW	WSW	WSW	WSW	W	WNW	W	W	WNW	W	W	W	W	WNW	WNW	WNW	WSW	W	275	W	
Nov 6	WSW	SW	SSW	WSW	SSE	W	SW	SW	WSW	WSW	W	W	WSW	WSW	WSW	SW	SW	WSW	SSW	SSE	ESE	E	SE	WSW	247	WSW	
Nov 7	ENE	ENE	ESE	SSE	WSW	S	SSE	W	W	WSW	WSW	SW	SW	SW	WSW	SW	SW	WSW	WSW	SSW	S	SSE	E	SSE	236	SW	
Nov 8	SE	SE	E	ESE	SW	SE	WSW	W	ENE	WSW	WSW	W	WSW	W	WSW	SW	SW	SW	SW	WSW	WSW	WSW	SW	WSW	244	WSW	
Nov 9	SSW	SW	E	ENE	ENE	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	93	E	
Nov 10	E	E	E	ENE	ENE	ENE	NE	NE	NE	NE	NE	NE	NE	ENE	E	ENE	NE	NE	NE	NE	NE	ENE	ENE	E	65	ENE	
Nov 11	E	WSW	WSW	SW	SW	SSE	SE	S	SE	SE	SE	SE	SE	SE	SE	SSE	SSE	SSE	SE	SE	SE	SE	SE	SE	136	SE	
Nov 12	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	134	SE	
Nov 13	SE	SE	SE	SE	SSE	SE	S	S	W	W	W	W	W	W	W	W	W	W	W	W	WSW	WSW	WSW	SW	254	WSW	
Nov 14	SW	WSW	WSW	ESE	SE	E	W	ENE	ESE	E	WNW	NE	ENE	SSE	E	ENE	ESE	E	NE	NE	NE	SSE	SE	SE	153	SSE	
Nov 15	NE	E	SSE	SSE	SE	ESE	SE	SE	ESE	SE	SE	ESE	E	E	E	E	E	E	E	E	E	ENE	ENE	ENE	92	E	
Nov 16	ENE	NE	NE	NNE	NNE	NNE	N	N	N	N	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	351	N	
Nov 17	NNW	NW	NW	NW	NW	WNW	NW	NW	NW	NW	NW	WNW	W	WSW	SW	SW	SW	SW	SE	SE	SE	ESE	SE	SE	299	WNW	
Nov 18	SE	SE	SE	SE	SE	SE	SE	ESE	SE	SE	SE	SE	ESE	E	ESE	SE	NE	SW	SW	WSW	W	SW	SW	SW	133	SE	
Nov 19	SW	WSW	SW	SW	W	SSE	NE	SW	WSW	WSW	WSW	SW	WSW	SW	WSW	SW	SW	SW	WSW	WSW	WSW	WSW	WSW	WSW	242	WSW	
Nov 20	WSW	SW	SSW	W	SW	ESE	ESE	NNE	NNE	N	N	NNW	NNW	NW	NW	NW	NW	NW	NW	NW	WNW	W	WSW	SW	333	NNW	
Nov 21	SW	S	E	SE	SE	SE	SE	SE	SE	SE	SE	SSE	SSW	SSW	SSW	SSW	SSE	SSE	S	SE	SE	SE	SE	SE	156	SSE	
Nov 22	SE	SSE	SW	SSE	SSE	ESE	SE	SE	SE	SE	ESE	E	E	ENE	SE	ESE	SE	SE	S	SW	WSW	SW	WSW	SW	137	SE	
Nov 23	W	WSW	SW	WSW	WSW	WSW	W	WNW	NW	NNW	NW	NNW	NW	NNW	NW	NNW	NW	NNW	NW	NNW	NNW	NW	NNW	NNW	320	NW	
Nov 24	NW	W	WSW	SW	SW	SSW	S	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	E	E	138	SE	
Nov 25	E	E	E	ESE	ESE	E	SE	ESE	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	ESE	SW	WNW	WNW	WSW	123	ESE	
Nov 26	WSW	ENE	WSW	NNE	WSW	ESE	SE	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W	WSW	W	WSW	261	W	
Nov 27	WSW	WSW	SW	WSW	WSW	WSW	SW	SW	SW	SW	SW	SW	SW	SW	SSW	E	E	ESE	SE	SE	SE	ESE	ESE	ESE	208	SSW	
Nov 28	ESE	SE	ESE	E	ESE	SE	ESE	ESE	SE	SE	SE	SSE	SW	SW	S	SE	SSE	SSW	SSE	SE	SE	SW	WSW	NW	140	SE	
Nov 29	SW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	WNW	NW	NNW	NNW	NNW	NNW	NNW	SSW	SW	SSE	SSE	WSW	271	W	
Nov 30	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SW	SW	SW	WSW	SW	SSW	S	SE	SE	ENE	SE	ESE	146	SE	
C	Monthly Calibration										S	Daily Zero-Span Check										Q	Quality Assurance				
K	Collection Error										N	No Data (Machine Not in Service)										Y	Routine Maintenance		P	Power Failure	
X	Invalid Data (Machine Malfunction /Recovery)										NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)															
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																											
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																											

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





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr & WIND DIRECTION (VWD) in sector

WIND SPEED																											
Maximum Hourly Value:	26.6	kph	on November 16 at hour 13												Hours in Service:	720											
Maximum Daily Value:	18.9	kph	on November 16												Hours of Data:	720											
Minimum Hourly Value:	0.0	kph	on November 1 at hour 1												Hours of Missing Data:	0											
Minimum Daily Value:	0.5	kph	on November 14												Hours of Calibration:	0											
Monthly Average:	0.2	kph													Operational Uptime:	100											
WIND DIRECTION																											
Monthly Average:	179	(S)	degree																								
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
Nov 1	0.4	0.0	0.1	0.1	0.1	0.6	0.4	0.2	1.5	2.9	3.3	5.9	4.3	5.6	6.7	4.2	1.6	3.4	3.8	2.5	3.1	4.0	0.2	1.1	0.0	6.7	2.0
	SW	ESE	ESE	WSW	ESE	ESE	NW	ESE	SSE	SSE	SE	SSE	SSW	SSW	SSW	S	SE	SE	SE	SE	SE	SE	E	SE			
Nov 2	0.8	0.1	0.6	0.4	0.3	0.0	0.6	0.6	2.7	3.0	2.7	3.2	5.4	4.9	4.6	3.6	1.4	0.9	0.6	1.7	0.4	1.0	0.4	0.6	0.0	5.4	1.4
	E	NE	NE	ENE	ENE	NNE	SE	S	SE	SE	SSE	SE	SE	SE	SE	SSE	SW	SSW	SSE	S	W	WSW					
Nov 3	0.0	0.3	0.5	0.4	0.8	0.3	0.3	0.5	0.0	0.2	1.3	1.2	2.0	4.5	3.1	2.7	0.2	0.8	0.7	0.4	0.7	0.3	0.4	0.3	0.0	4.5	0.6
	SE	WSW	SW	SW	WSW	SE	SSW	WSW	N	W	SW	S	ESE	ESE	ESE	E	ENE	ENE	ESE	SW	ESE	E	NE				
Nov 4	0.6	0.2	0.8	0.1	0.1	0.1	0.2	0.3	0.1	0.9	1.8	2.0	3.8	3.5	7.0	4.2	4.3	4.6	5.9	4.6	6.4	5.5	4.1	4.0	0.1	7.0	2.5
	ENE	SE	SSW	WSW	S	SSW	NNE	ESE	NW	E	ESE	E	NE	NE	NE	E	E	ENE	E	E	ENE	E	E	ENE			
Nov 5	1.3	1.0	1.1	2.7	2.2	2.1	3.7	3.4	3.9	6.2	5.2	4.6	7.3	7.9	7.8	8.5	7.0	6.5	6.1	5.1	4.1	2.5	3.8	2.9	1.0	8.5	4.2
	ENE	WSW	NW	NNW	WSW	W	WSW	WSW	WSW	W	WNW	W	W	WNW	W	W	W	W	WNW	WNW	WNW	WSW	W				
Nov 6	3.4	1.0	2.9	1.5	1.5	4.3	4.6	5.7	5.9	8.5	7.4	10.4	11.3	11.6	10.7	8.9	7.1	7.4	2.2	0.2	0.4	0.5	0.3	1.6	0.2	11.6	4.5
	WSW	SW	SSW	WSW	SSE	W	SW	SW	SW	WSW	WSW	W	WSW	WSW	WSW	WSW	SW	WSW	SSW	SSE	ESE	E	SE				
Nov 7	0.5	1.2	1.3	0.1	1.0	0.3	0.3	2.2	1.0	1.4	5.4	6.2	8.7	8.5	8.5	5.8	4.6	1.8	0.4	0.4	0.1	0.0	0.5	1.0	0.0	8.7	2.2
	ENE	ENE	ESE	SSE	WSW	S	SSE	W	W	WSW	WSW	SW	SW	SW	WSW	SW	SW	WSW	WSW	SSW	S	SSE	E	SSE			
Nov 8	0.7	1.0	0.5	0.1	0.6	1.1	1.2	0.6	0.3	1.5	3.0	4.3	2.6	5.5	6.2	3.7	4.0	4.0	3.2	2.8	3.5	2.4	2.1	0.4	0.1	6.2	2.0
	SE	SE	E	ESE	SW	SE	WSW	W	ENE	WSW	WSW	W	WSW	W	WSW	SW	SW	SW	WSW	WSW	WSW	WSW	WSW	SW			
Nov 9	0.5	0.2	0.5	0.6	2.3	4.3	6.3	7.9	7.2	8.6	9.8	10.9	12.9	12.1	13.6	15.1	14.4	13.0	14.5	13.8	14.5	12.7	14.4	10.5	0.2	15.1	9.1
	SSW	SW	E	ENE	ENE	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
Nov 10	9.2	9.8	9.7	7.7	5.8	5.6	3.9	3.9	4.7	5.3	4.7	3.3	3.1	4.5	1.5	0.5	1.2	4.1	3.1	3.3	2.6	2.7	2.1	0.9	0.5	9.8	4.1
	E	E	E	ENE	ENE	ENE	NE	NE	NE	NE	NE	NE	NE	ENE	E	ENE	NE	NE	NE	NE	ENE	ENE	ENE	E			
Nov 11	0.6	0.7	0.3	0.5	0.4	0.5	0.4	0.2	0.6	4.3	6.1	5.1	5.5	5.3	2.4	1.8	2.1	4.3	5.0	5.6	6.4	6.8	7.9	10.0	0.2	10.0	3.3
	E	WSW	WSW	SW	SW	SSE	SE	S	SE	SE	SE	SE	SE	SE	SSE	SSE	SE	SE	SE	SE	SE	SE	SE	SE			
Nov 12	10.3	10.5	11.2	11.8	13.0	14.4	15.2	13.3	14.0	16.5	18.4	16.9	16.1	13.4	11.8	11.1	11.5	8.8	6.4	6.4	4.0	4.9	4.9	8.1	4.0	18.4	11.4
	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE			
Nov 13	8.1	5.0	4.5	4.3	2.4	0.8	0.3	0.8	0.7	2.5	3.5	8.5	9.3	10.8	10.4	11.2	8.6	8.2	8.3	6.8	4.2	5.7	2.0	5.6	0.3	11.2	3.8
	SE	SE	SE	SE	SSE	SE	S	W	W	W	W	W	W	W	W	W	W	W	W	W	WSW	WSW	WSW	SW			
Nov 14	6.1	4.7	2.8	0.3	0.3	0.3	0.3	0.3	0.7	0.7	0.3	0.6	0.9	0.6	0.6	2.0	2.1	1.5	2.0	0.3	0.7	1.0	1.8	4.4	0.3	6.1	0.5
	SW	WSW	WSW	ESE	SE	E	W	ENE	ESE	E	WNW	NE	ENE	SSE	E	ENE	ESE	E	NE	NE	NE	SSE	SE	SE			
Nov 15	5.0	3.2	3.9	2.3	3.2	1.7	2.2	2.8	1.6	2.5	4.7	5.7	2.7	3.6	5.8	8.1	8.1	10.1	9.7	10.9	12.6	12.2	13.3	12.3	1.6	13.3	5.7
	NE	E	SSE	SSE	SE	ESE	SE	SE	ESE	SE	SE	SE	ESE	E	E	E	E	E	E	E	E	ENE	ENE	ENE			
Nov 16	13.8	18.7	19.3	19.4	20.9	21.9	21.3	21.0	21.5	21.7	24.3	23.9	26.1	26.6	26.2	23.7	24.8	21.0	20.6	20.4	19.4	17.7	17.3	16.1	13.8	26.6	18.9
	ENE	NE	NE	NNE	NNE	NNE	N	N	N	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW			
Nov 17	14.9	16.0	14.6	13.1	12.6	11.4	12.8	7.6	7.7	8.7	6.9	6.9	6.1	6.9	8.5	5.3	5.5	3.6	2.0	4.8	3.5	2.3	1.5	3.0	1.5	16.0	5.2
	NNW	NW	NW	NW	WNW	NW	NW	NW	NW	NNW	NW	NNW	NW	WSW	SW	SW	SW	SE	SE	SE	ESE	ESE	SE	SE			
Nov 18	4.2	4.1	5.7	6.2	5.7	7.4	7.1	4.1	7.1	5.6	7.9	7.6	4.8	2.8	2.6	2.2	0.2	0.8	1.0	1.1	0.3	0.3	0.2	1.1	0.2	7.9	3.5
	SE	SE	SE	SE	SE	SE	ESE	SE	SE	ESE	SE	ESE	E	ESE	E	ESE	NE	SW	WSW	W	SW	SW	SW	SW			
Nov 19	3.5	1.6	0.0	1.2	0.9	0.3	0.5	0.6	2.8	2.3	3.1	4.2	7.9	8.0	6.5	5.5	6.6	8.9	10.7	9.1	9.1	8.0	5.8	6.3	0.0	10.7	4.6
	SW	WSW	SW	SW	W	SSE	NE	SW	WSW	WSW	WSW	WSW	SW	SW	SW	SW	SW	SW	WSW	WSW	WSW	WSW	WSW	WSW			
Nov 20	1.9	1.3	1.3	2.1	1.5	1.5	3.7	3.7	11.8	14.4	17.0	17.4	16.6	15.5	14.8	15.8	13.1	10.2	8.7	5.0	4.4	3.4	2.4	3.8	1.3	17.4	6.3
	WSW	SW	SSW	W	SW	ESE	ESE	NNE	NNE	N	N	N	NNW	NNW	NW	NW	NW	NW	NW	WNW	W	W	WSW	SW			



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr & WIND DIRECTION (VWD) in sector

WIND SPEED																												
Maximum Hourly Value:	26.6	kph	on November 16 at hour 13	Hours in Service:	720																							
Maximum Daily Value:	18.9	kph	on November 16	Hours of Data:	720																							
Minimum Hourly Value:	0.0	kph	on November 1 at hour 1	Hours of Missing Data:	0																							
Minimum Daily Value:	0.5	kph	on November 14	Hours of Calibration:	0																							
Monthly Average:	0.2	kph		Operational Uptime:	100																							
WIND DIRECTION																												
Monthly Average:	179	(S)	degree																									
Day	Hourly Period Starting at (MST)																								Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
Nov 21	3.0	0.2	0.5	0.7	2.3	3.9	6.1	7.8	8.1	8.6	8.9	4.5	8.7	5.7	2.6	2.2	2.0	2.0	0.9	2.1	1.4	1.5	0.8	0.9	0.2	8.9	3.0	
	SW	S	E	SE	SE	SE	SE	SE	SE	SE	SE	SSE	SSW	SSW	SSW	SSW	SSE	SSE	S	SE	SE	SE	SE					
Nov 22	0.6	1.1	0.7	0.6	0.8	1.5	0.6	2.7	6.9	5.8	5.4	4.2	4.5	3.4	9.7	5.0	4.3	1.7	0.7	0.4	3.7	4.1	3.9	1.1	0.4	9.7	2.1	
	SE	SSE	SW	SSE	SSE	ESE	SE	SE	SE	SE	ESE	E	E	ENE	SE	ESE	SE	SE	S	SW	WSW	SW	WSW	SW				
Nov 23	0.2	1.1	3.7	3.4	7.3	7.8	5.7	11.9	17.1	21.1	20.9	19.3	18.0	17.9	17.4	15.7	15.8	9.6	10.2	8.5	9.4	7.8	7.6	4.9	0.2	21.1	9.9	
	W	WSW	SW	WSW	WSW	WSW	W	WNW	NW	NNW	NW	NW	NW	NNW	NW	NNW	NNW	N	NNW	NNW	NNW	NW	NNW	NNW				
Nov 24	3.2	3.2	1.3	1.9	1.6	1.8	1.5	4.3	3.1	6.2	6.2	6.0	6.0	5.9	6.9	7.8	5.4	5.1	8.4	7.5	6.8	4.5	3.8	3.9	1.3	8.4	3.8	
	NW	W	WSW	SW	SW	SSW	S	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	E	E			
Nov 25	3.9	3.6	5.5	5.7	7.0	2.8	3.8	6.5	3.2	3.4	6.0	8.1	5.5	5.2	4.7	3.4	2.6	0.9	0.7	0.9	0.8	0.2	0.2	1.1	0.2	8.1	3.3	
	E	E	E	ESE	ESE	E	SE	ESE	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	ESE	ESE	SW	WNW	WNW	WSW	WSW				
Nov 26	0.6	0.3	0.9	0.1	0.5	0.1	0.2	0.9	0.5	3.2	4.8	1.3	8.9	7.9	10.6	8.6	9.9	11.6	9.9	7.7	8.2	9.3	8.3	9.8	0.1	11.6	5.0	
	WSW	ENE	WSW	NNE	SW	ESE	SE	WSW	WSW	SW	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W	W	WSW	W	WSW				
Nov 27	7.8	6.7	6.3	7.1	8.0	6.2	5.9	6.9	6.4	7.3	8.1	7.7	5.5	2.4	1.3	1.7	1.0	4.3	4.7	8.5	9.6	5.9	4.8	7.0	1.0	9.6	3.5	
	WSW	WSW	SW	WSW	WSW	WSW	SW	SW	SW	SW	SW	SW	SW	SSW	E	E	ESE	SE	SE	SE	ESE	ESE	ESE	ESE				
Nov 28	5.9	8.4	5.2	3.8	5.2	9.5	4.6	2.7	5.8	4.3	5.4	2.7	3.4	2.8	2.4	1.1	2.3	2.6	1.5	1.2	0.3	3.0	2.7	0.4	0.3	9.5	2.8	
	ESE	SE	ESE	E	ESE	SE	ESE	ESE	SE	SE	SE	SSE	SW	SW	S	SE	SSE	SSW	SSE	SE	SW	WSW	NW					
Nov 29	3.8	5.6	6.8	6.8	8.7	6.6	7.3	7.7	8.9	9.9	9.7	8.2	8.5	10.7	11.4	8.3	7.1	1.5	0.4	0.7	0.6	0.6	0.2	0.8	0.2	11.4	4.7	
	SW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	WNW	NW	NNW	NNW	NNW	WNW	SSW	SW	SSE	SSE	WSW	ENE				
Nov 30	1.3	3.1	9.2	12.5	12.4	11.0	8.9	5.0	4.2	3.9	1.1	4.7	6.5	7.1	2.9	0.7	0.7	0.1	0.1	1.9	0.6	1.4	3.0	3.0	0.1	12.5	3.3	
	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SW	SW	SW	WSW	SW	S	SE	SE	ENE	SE	ESE	ESE				
C	Monthly Calibration							S	Daily Zero-Span Check							Q	Quality Assurance											
K	Collection Error							N	No Data (Machine Not in Service)							Y	Routine Maintenance							P	Power Failure			
X	Invalid Data (Equipment Malfunction/Recovery)							NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																			
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																												
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																												



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - November 2021

Summary of Hour Standard Deviations

STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree

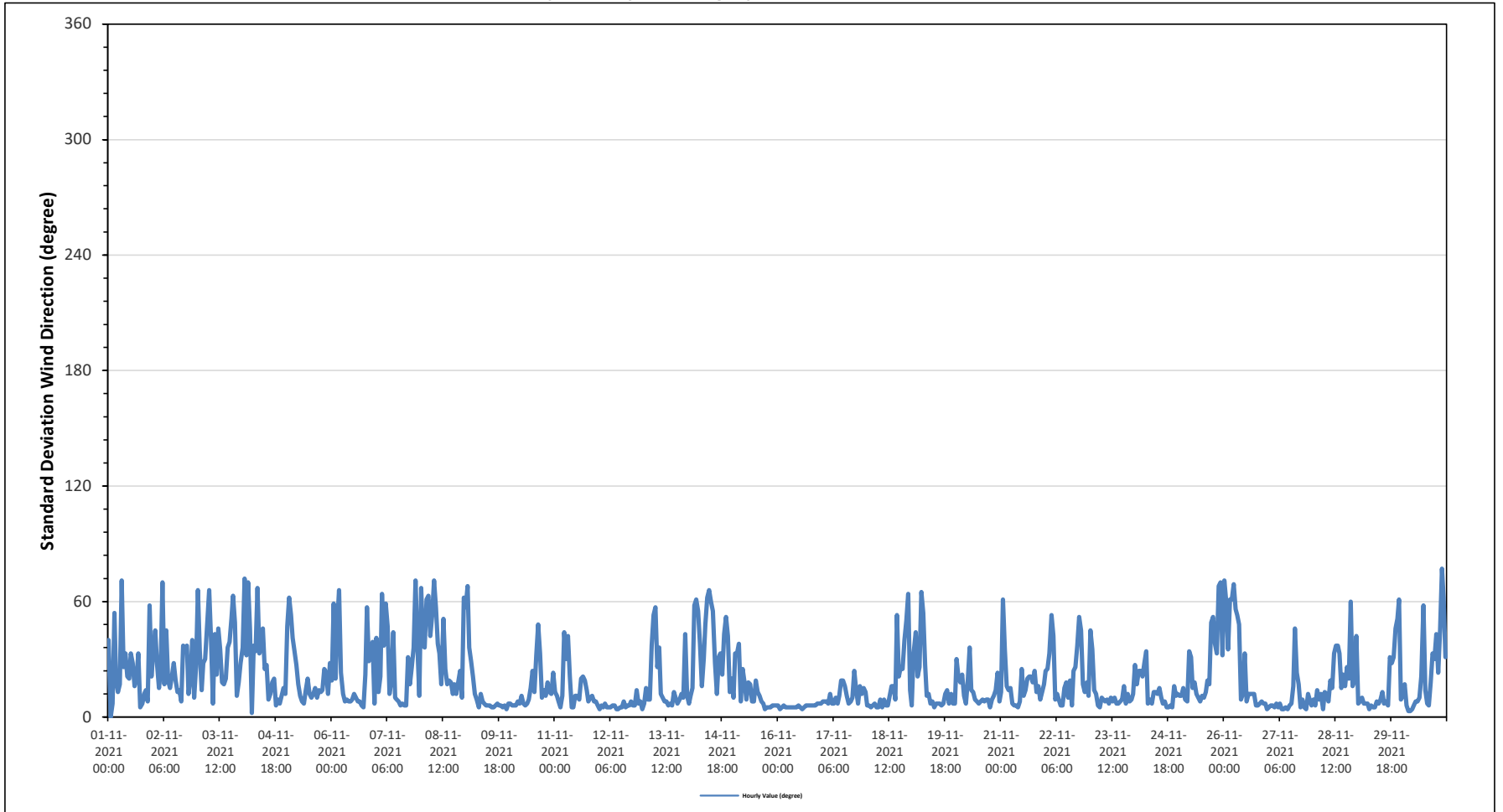
Maximum Hourly Value:	77 degree on November 30 at hour 21	Hours in Service:	720
Minimum Hourly Value:	0 degree on November 1 at hour 1	Hours of Data:	720
		Hours of Missing Data:	0
		Hours of Calibration:	0
		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum
Nov 1	40	0	7	54	19	13	17	71	26	33	21	20	33	28	16	20	33	5	7	12	14	8	58	21	0	71
Nov 2	34	45	27	15	24	70	17	45	19	15	21	28	19	13	14	8	37	36	37	12	20	40	10	26	8	70
Nov 3	66	34	14	28	30	49	66	40	7	43	22	46	35	18	17	20	36	39	51	63	49	11	18	28	7	66
Nov 4	36	72	32	70	46	2	37	34	67	33	36	46	25	27	9	12	18	20	6	9	7	11	15	12	2	72
Nov 5	47	62	53	41	34	27	17	11	8	7	14	20	12	10	12	15	10	14	13	14	25	23	12	28	7	62
Nov 6	19	59	20	48	66	23	12	8	9	8	8	9	12	10	8	8	6	5	22	57	29	32	39	7	5	66
Nov 7	41	13	21	64	37	59	47	12	19	44	10	9	8	6	7	6	6	31	17	26	36	71	37	11	6	71
Nov 8	67	37	36	61	63	42	53	71	57	38	33	17	51	25	17	19	18	12	17	12	18	24	10	62	10	71
Nov 9	57	68	36	29	21	12	9	5	12	8	7	6	6	5	5	6	7	6	6	5	6	4	7	4	4	68
Nov 10	7	6	6	6	8	7	11	7	6	7	9	15	24	13	32	48	33	10	14	11	18	13	12	23	6	48
Nov 11	13	11	8	5	11	44	30	42	21	5	5	11	11	9	20	21	19	14	8	10	11	8	8	6	5	44
Nov 12	4	6	5	7	5	5	5	6	6	4	4	5	5	8	5	6	6	8	6	6	14	7	8	4	4	14
Nov 13	7	15	9	9	37	53	57	26	36	12	10	8	8	6	7	6	13	10	7	9	12	10	43	11	6	57
Nov 14	7	11	15	58	61	55	38	16	30	48	62	66	60	55	28	12	31	33	22	43	52	42	13	20	7	66
Nov 15	10	33	33	38	8	25	18	9	18	17	8	8	19	13	11	8	7	4	5	5	5	6	6	6	4	38
Nov 16	6	4	5	6	5	5	5	5	5	5	5	6	5	4	5	6	6	6	6	6	6	7	7	7	4	7
Nov 17	8	8	8	7	12	7	7	10	7	11	19	19	16	11	7	8	10	24	14	7	16	12	15	13	7	24
Nov 18	6	6	5	6	7	5	5	9	5	9	6	6	11	16	16	9	53	21	26	25	40	50	64	14	5	64
Nov 19	6	33	44	21	26	65	54	27	11	12	7	8	5	7	7	6	7	12	14	7	12	7	7	7	5	65
Nov 20	30	21	18	22	11	7	19	36	14	13	9	8	7	8	9	8	9	9	5	9	11	14	23	8	5	36
Nov 21	13	61	35	16	14	15	7	6	6	5	8	25	11	14	20	21	21	18	24	13	16	9	13	17	5	61
Nov 22	24	25	33	53	42	9	12	9	6	6	15	18	10	19	6	24	26	37	52	45	17	13	18	11	6	53
Nov 23	45	35	14	12	6	5	10	9	8	9	7	10	8	10	7	7	8	9	16	7	12	8	9	12	5	45
Nov 24	27	17	24	24	21	28	34	7	9	7	13	13	12	15	10	7	8	5	5	6	5	16	11	12	5	34
Nov 25	11	11	15	9	8	34	31	15	18	12	10	8	11	10	13	19	17	49	52	38	33	68	70	32	8	70
Nov 26	71	60	35	61	61	69	56	53	48	9	12	33	8	12	12	12	12	6	6	7	8	7	7	4	4	71
Nov 27	5	6	6	5	7	5	7	4	4	5	4	6	7	16	46	23	17	5	9	5	4	12	9	6	4	46
Nov 28	9	6	14	9	12	4	13	12	8	19	15	33	37	37	33	15	22	16	26	20	60	16	19	42	4	60
Nov 29	7	8	10	7	7	7	4	6	5	8	7	9	13	7	8	6	31	28	31	46	51	61	9	4	61	
Nov 30	11	17	6	3	3	4	6	8	8	10	21	58	14	7	6	18	33	30	43	23	45	77	62	31	3	77
Diurnal Minimum	4	0	5	3	3	2	4	4	4	4	4	5	5	4	5	5	6	4	5	5	4	6	4	4		
Diurnal Maximum	71	72	53	70	66	70	66	71	67	48	62	66	60	55	46	48	53	49	52	63	60	77	70	62		

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Machine Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

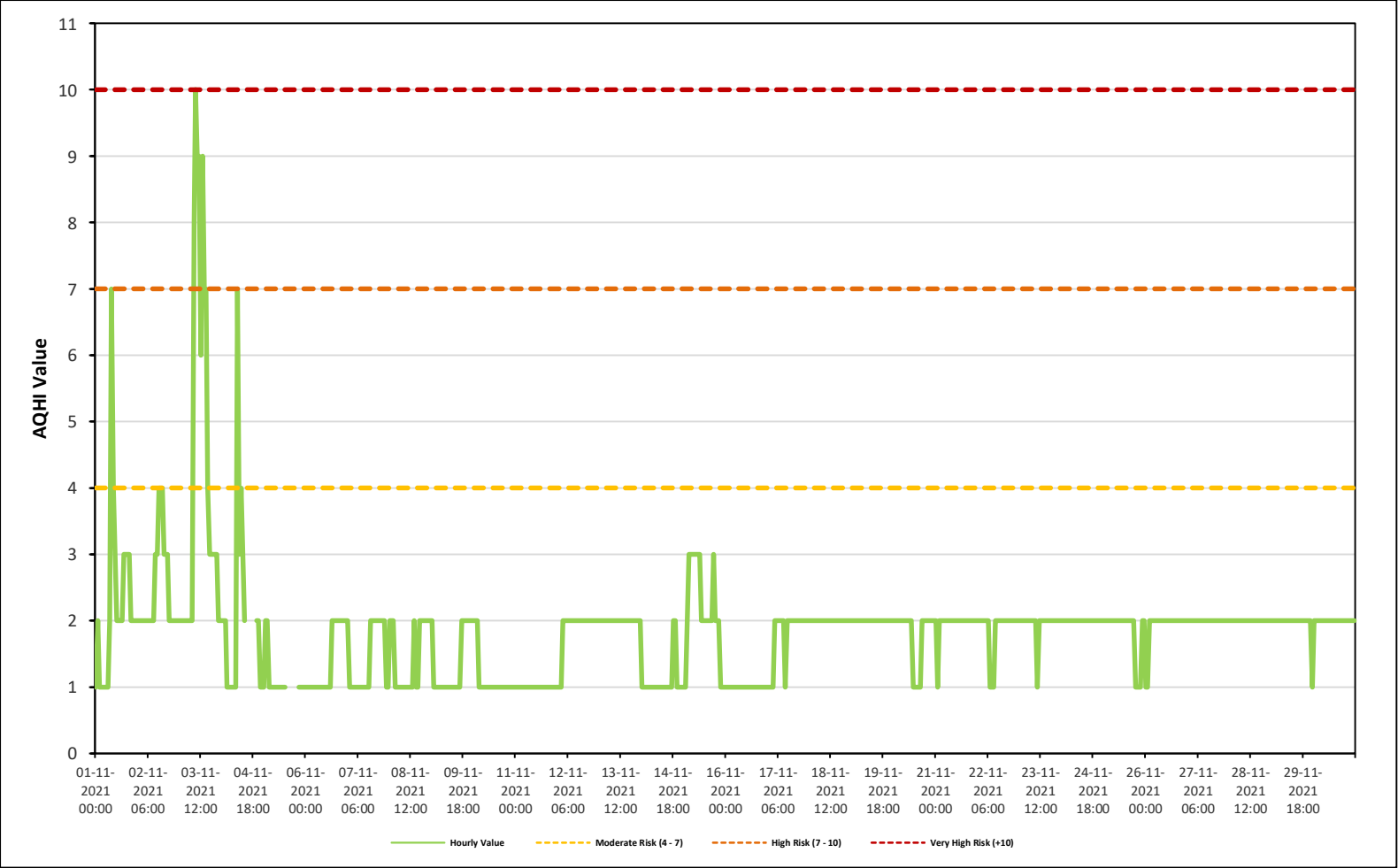
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

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



TAMARACK STATION

Timeseries Chart of Hourly Average for AQHI - Tamarack Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

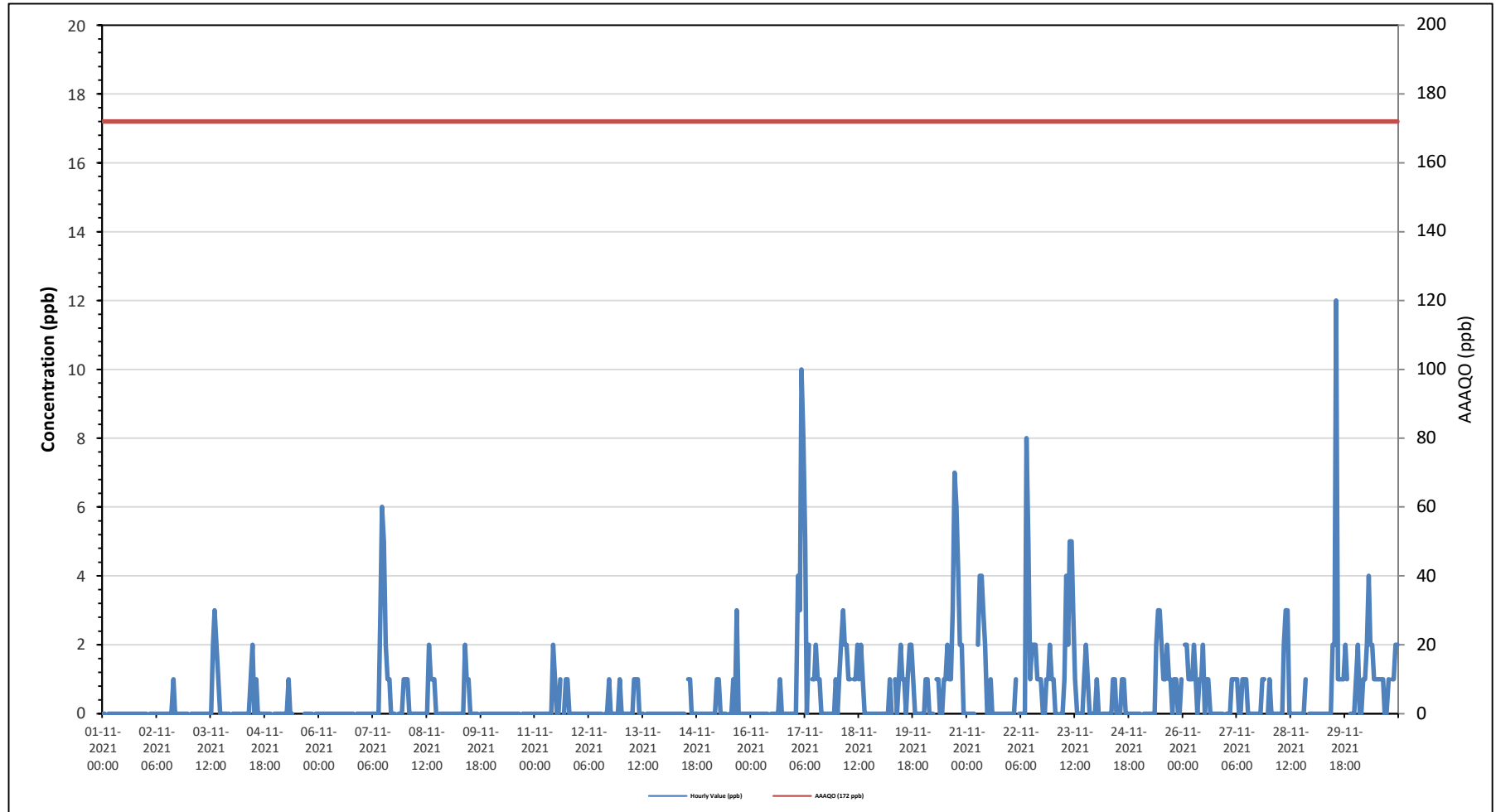
Summary of Hourly Averages

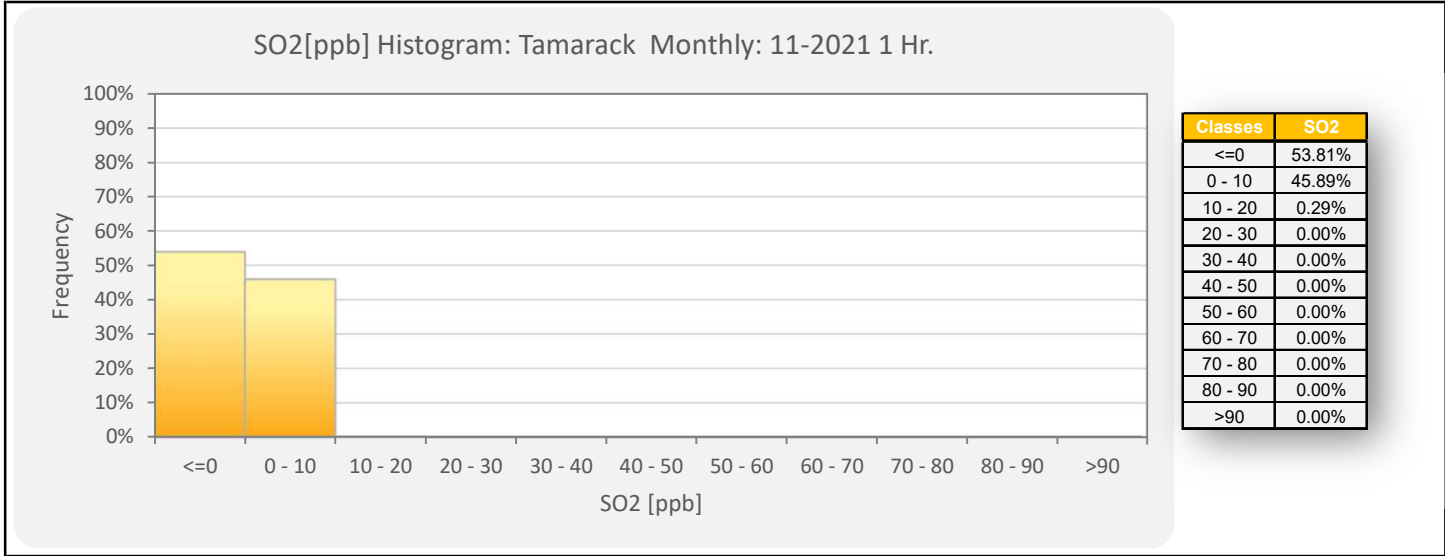
SULPHUR DIOXIDE (SO₂) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 172 ppb, 24-Hour 48 ppb, 30-Day 11 ppb																															
Number of 1-Hour Exceedences: 0						Number of 24-Hour Exceedences: 0						30-Day Exceedence: 0																			
Maximum Hourly Value: 12 ppb on November 29 at hour 13												Hours in Service: 720																			
Maximum Daily Value: 1.7 ppb on November 17												Hours of Data: 682																			
Minimum Hourly Value: 0 ppb on November 1 at hour 0												Hours of Missing Data: 0																			
Minimum Daily Value: 0.0 ppb on November 1												Hours of Calibration: 38																			
Monthly Average: 0.5 ppb												Operational Uptime: 100.0																			
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
Nov 1	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			
Nov 2	0	S	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			
Nov 3	S	0	0	0	0	0	0	0	0	0	0	0	0	2	3	2	1	0	0	0	0	0	0	0	0	S	0	0.4			
Nov 4	0	0	0	0	0	0	0	0	0	0	1	2	0	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0.2			
Nov 5	0	0	0	0	0	0	0	1	0	0	C	C	C	C	C	C	0	0	0	0	0	S	0	0	0	0	-				
Nov 6	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				
Nov 7	0	0	0	0	0	0	0	0	0	0	3	6	5	2	1	1	0	0	0	S	0	0	0	0	1	0	0.8				
Nov 8	1	1	0	0	0	0	0	0	0	0	0	0	0	2	1	1	1	0	S	0	0	0	0	0	0	0	0.3				
Nov 9	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0.2				
Nov 10	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				
Nov 11	0	0	0	0	0	0	0	0	0	2	1	0	0	0	1	S	0	1	1	0	0	0	0	0	0	0	0.3				
Nov 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0	0	0	0	0	1	0	1	0.1				
Nov 13	0	0	0	0	0	0	0	1	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0.1				
Nov 14	0	0	0	0	0	0	0	0	0	0	0	S	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0.1				
Nov 15	0	0	0	0	0	1	1	0	0	0	0	S	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0.3				
Nov 16	0	0	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				
Nov 17	0	0	4	3	10	8	5	0	2	S	1	1	2	1	1	0	0	0	0	0	0	0	0	0	1	0	1.7				
Nov 18	0	1	2	3	2	2	1	1	S	1	1	2	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0.9				
Nov 19	0	0	0	0	0	1	0	S	1	0	1	2	1	1	0	1	2	2	1	0	0	0	0	0	0	0	0.6				
Nov 20	0	1	1	0	0	0	S	1	1	0	0	1	1	2	1	1	3	7	6	4	2	2	0	0	0	0	1.5				
Nov 21	0	0	0	0	0	S	2	4	4	3	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.7				
Nov 22	0	0	0	0	S	0	0	0	0	8	5	1	2	2	2	1	1	1	0	0	1	1	2	1	0	8	1.3				
Nov 23	1	0	0	S	0	0	1	4	2	5	5	3	1	0	0	0	0	1	2	1	0	0	0	0	0	0	1.1				
Nov 24	1	0	S	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0.2				
Nov 25	0	S	0	0	0	0	0	0	0	2	3	3	2	1	1	2	1	1	0	1	1	0	0	1	0	3	0.8				
Nov 26	S	2	2	1	1	2	1	0	1	2	0	1	1	0	0	0	0	0	0	0	0	0	0	S	0	2	0.7				
Nov 27	0	0	0	1	1	1	1	0	0	1	1	1	0	0	0	0	0	0	0	0	1	1	S	0	0	1	0.4				
Nov 28	1	0	0	0	0	0	0	0	2	3	3	0	0	0	0	0	0	0	0	0	1	S	0	0	0	0	0.4				
Nov 29	0	0	0	0	0	0	0	0	0	0	2	2	12	1	1	1	1	2	1	1	S	0	0	0	0	12	1.0				
Nov 30	1	2	0	0	1	1	2	4	2	2	1	1	1	1	1	1	0	0	1	S	1	1	2	2	0	4	1.2				
Diurnal Maximum	1	2	4	3	10	8	5	4	4	8	5	6	5	12	3	2	3	7	6	4	2	2	2	2	2	2					
Dairurnal Average	0.2	0.3	0.3	0.3	0.5	0.5	0.5	0.6	0.5	1.0	1.1	1.0	0.6	1.1	0.6	0.5	0.5	0.5	0.4	0.3	0.3	0.2	0.1	0.3							
C	Monthly Calibration										S	Daily Zero-Span Check										Q	Quality Assurance								
K	Collection Error										N	No Data (Machine Not in Service)										Y	Routine Maintenance				P	Power Failure			
X	Invalid Data (Equipment Malfunction /Recovery)										NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																			

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

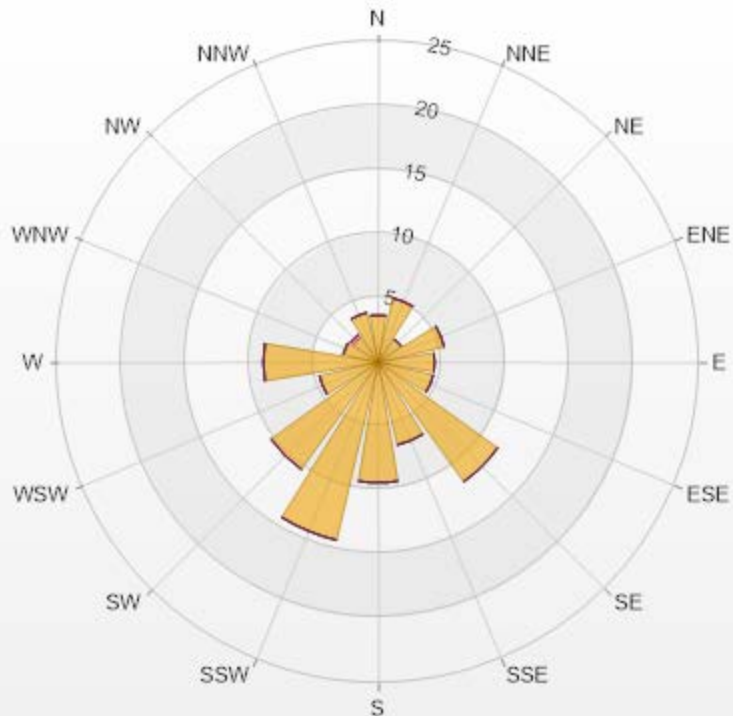
Timeseries Chart of Hourly Average for SO₂ - Tamarack Site





Wind: Tamarack Poll.: Tamarack-SO2[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.72% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	3.67	0	0	0	0	3.67
NNE	5.13	0	0	0	0	5.13
NE	2.2	0	0	0	0	2.2
ENE	5.28	0	0	0	0	5.28
E	4.4	0	0	0	0	4.4
ESE	4.4	0	0	0	0	4.4
SE	11.44	0	0	0	0	11.44
SSE	6.6	0	0	0	0	6.6
S	9.38	0	0	0	0	9.38
SSW	14.22	0	0	0	0	14.22
SW	10.26	0	0	0	0	10.26
WSW	4.69	0	0	0	0	4.69
W	8.94	0	0	0	0	8.94
WNW	2.79	0	0	0	0	2.79
NW	2.35	0.29	0	0	0	2.64
NNW	3.96	0	0	0	0	3.96
Summary	100	0.29	0	0	0	100



LICA-202111

% Icon Classes (ppb)

100 0-10

0 10-50

0 50-100

0 100-172

0 >172.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

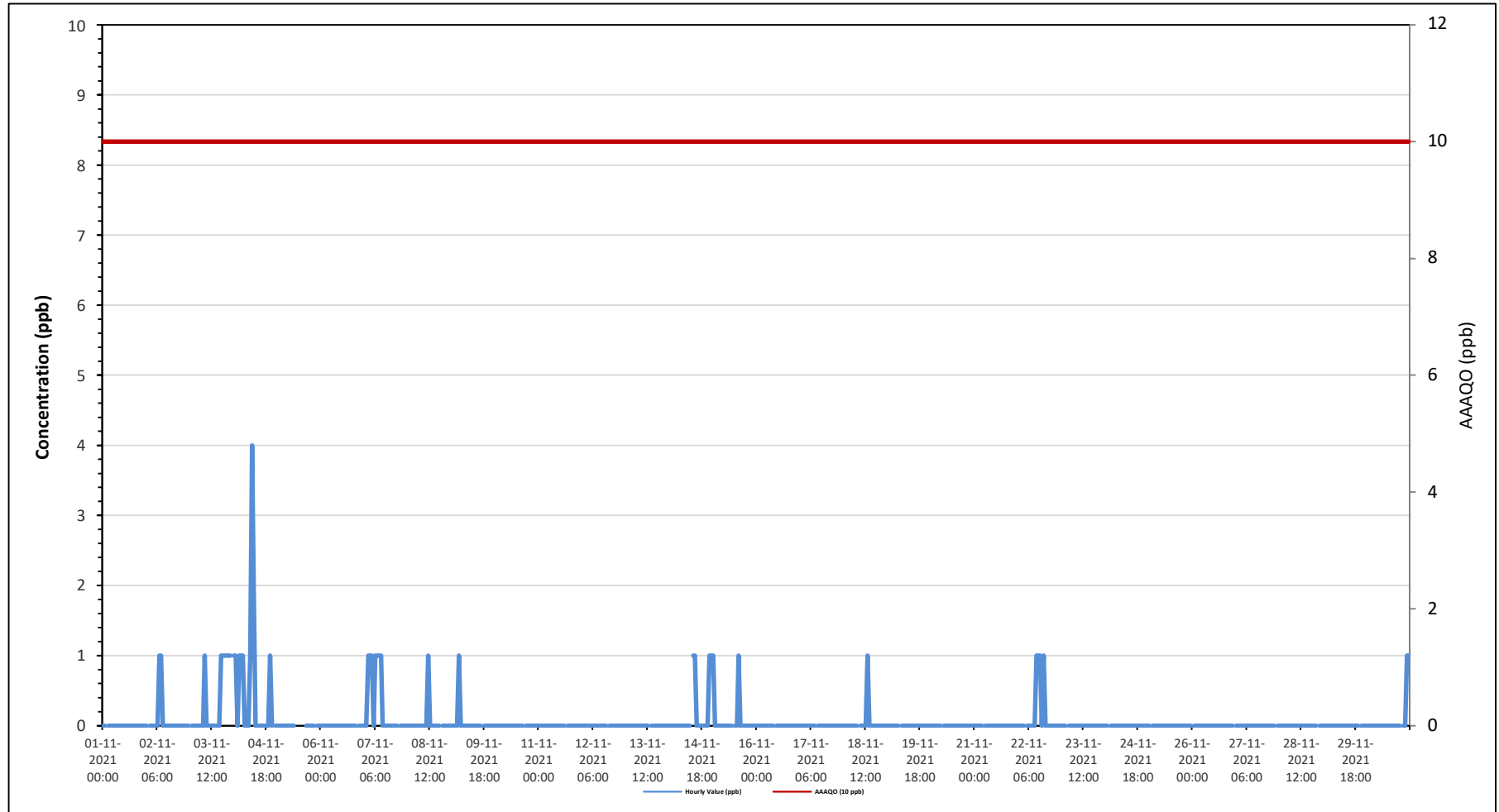
HYDROGEN SULPHIDE (H₂S) in ppb

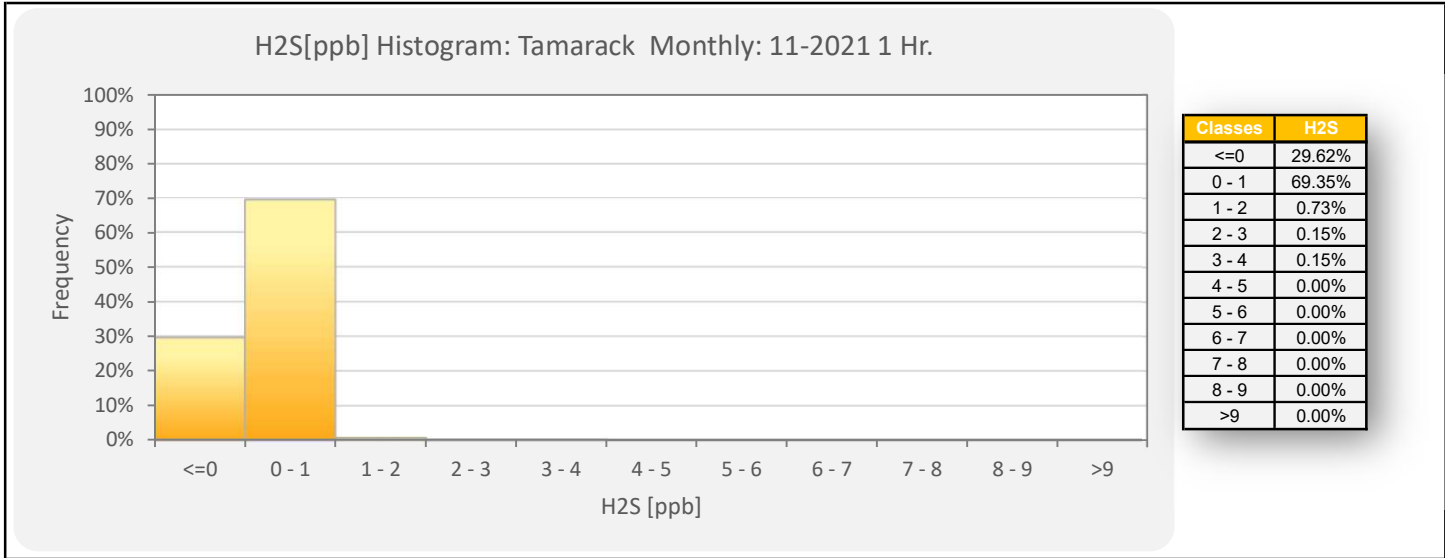
Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 10 ppb, 24-Hour 3 ppb																																											
Number of 1-Hour Exceedances: 0												Number of 24-Hour Exceedances: 0																															
Maximum Hourly Value: 4 ppb on November 4 at hour 10												Hours in Service: 720																															
Maximum Daily Value: 0.6 ppb on November 4												Hours of Data: 682																															
Minimum Hourly Value: 0 ppb on November 1 at hour 0												Hours of Missing Data: 0																															
Minimum Daily Value: 0.0 ppb on November 1												Hours of Calibration: 38																															
Monthly Average: 0.1 ppb												Operational Uptime: 100.0																															
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average																	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23																			
Nov 1	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															
Nov 2	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	0	0	0.1															
Nov 3	S	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	S	0	0.3																
Nov 4	1	1	0	1	1	1	0	0	0	1	4	2	0	0	0	0	0	0	0	0	1	0	1	0	S	0	4	0.6															
Nov 5	0	0	0	0	0	0	0	0	0	0	C	C	C	C	C	C	0	0	0	0	0	0	S	0	0	0	-																
Nov 6	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																
Nov 7	0	0	1	1	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0.3															
Nov 8	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0.0															
Nov 9	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0.0															
Nov 10	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															
Nov 11	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															
Nov 12	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															
Nov 13	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															
Nov 14	0	0	0	0	0	0	0	0	0	0	0	S	1	1	0	0	0	0	0	0	0	0	0	1	1	0	1	0.2															
Nov 15	1	0	0	0	0	0	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1															
Nov 16	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															
Nov 17	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0															
Nov 18	0	0	0	0	0	0	0	S	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0															
Nov 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															
Nov 20	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															
Nov 21	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															
Nov 22	0	0	0	0	S	0	0	0	0	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0.2															
Nov 23	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															
Nov 24	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															
Nov 25	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															
Nov 26	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	S	0	0.0															
Nov 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	S	0	0.0															
Nov 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	S	0	0.0															
Nov 29	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															
Nov 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	1	0	1	1	0.1															
Diurnal Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	4.0	2.0	1.0	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0																
Diurnal Average	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1																
C	Monthly Calibration										S	Daily Zero-Span Check										Q	Quality Assurance																				
K	Collection Error										N	No Data (Machine Not in Service)										Y	Routine Maintenance										P	Power Failure									
X	Invalid Data (Equipment Malfunction/Recovery)										NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																															

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

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

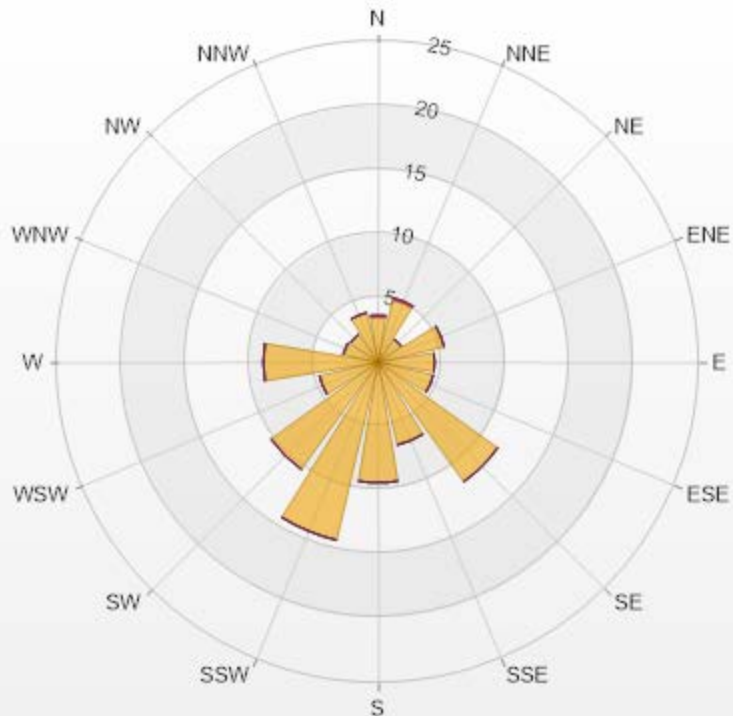
Timeseries Chart of Hourly Average for H2S - Tamarack Site





Wind: Tamarack Poll.: Tamarack-H2S[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.72% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	3.52	0.15	0	0	0	3.67
NNE	4.99	0.15	0	0	0	5.14
NE	2.2	0	0	0	0	2.2
ENE	5.28	0	0	0	0	5.28
E	4.4	0	0	0	0	4.4
ESE	4.4	0	0	0	0	4.4
SE	11.44	0	0	0	0	11.44
SSE	6.6	0	0	0	0	6.6
S	9.38	0	0	0	0	9.38
SSW	14.22	0	0	0	0	14.22
SW	10.26	0	0	0	0	10.26
WSW	4.69	0	0	0	0	4.69
W	8.94	0	0	0	0	8.94
WNW	2.79	0	0	0	0	2.79
NW	2.64	0	0	0	0	2.64
NNW	3.96	0	0	0	0	3.96
Summary	100	0.3	0	0	0	100



LICA-202111

% Icon Classes (ppb)

100 0-2

0 2-5

0 5-10

0 10-50

0 >50.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

OXIDES OF NITROGEN (NOx) in ppb

Maximum Hourly Value:	41 ppb on November 3 at hour 8	Hours in Service:	720
Maximum Daily Value:	13.9 ppb on November 3	Hours of Data:	681
Minimum Hourly Value:	0 ppb on November 6 at hour 14	Hours of Missing Data:	0
Minimum Daily Value:	0.8 ppb on November 10	Hours of Calibration:	39
Monthly Average:	5.1 ppb	Operational Uptime:	100.0

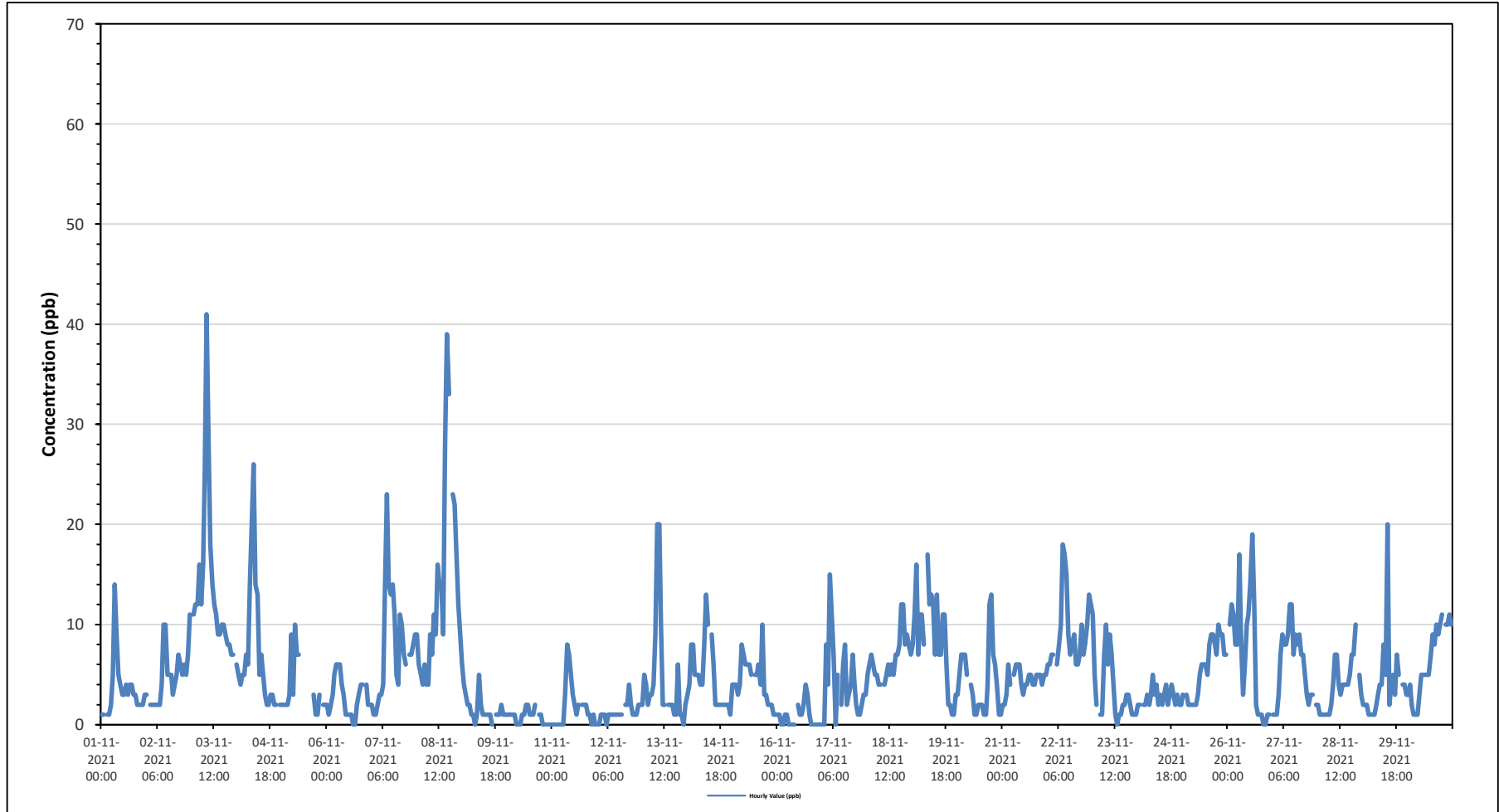
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Nov 1	1	1	S	1	1	2	5	14	9	5	4	3	3	4	3	4	4	3	3	2	2	2	2	3	1	14	3.5
Nov 2	3	S	2	2	2	2	2	2	4	10	10	5	5	5	3	4	5	7	6	5	6	5	7	11	2	11	4.9
Nov 3	S	11	12	12	16	12	16	25	41	29	18	14	12	11	9	9	10	10	9	8	8	7	7	S	7	41	13.9
Nov 4	6	5	4	5	5	7	6	14	20	26	14	13	5	7	5	3	2	2	3	3	2	2	S	2	2	26	7.0
Nov 5	2	2	2	2	3	9	3	10	7	7	C	C	C	C	C	C	C	3	1	1	3	S	2	2	1	10	-
Nov 6	2	1	2	3	5	6	6	6	4	3	1	1	1	1	0	0	2	3	4	4	S	4	2	2	0	6	2.7
Nov 7	2	1	1	2	3	3	4	14	23	14	13	14	11	5	4	11	10	7	6	S	7	7	8	9	1	23	7.8
Nov 8	9	6	5	4	6	4	4	9	7	11	9	16	14	14	9	28	39	33	S	23	22	17	12	9	4	39	13.5
Nov 9	6	4	3	2	2	1	1	0	1	5	2	1	1	1	1	1	0	S	1	1	1	2	1	1	0	6	1.7
Nov 10	1	1	1	1	1	0	0	0	1	1	2	2	1	1	1	2	S	1	1	0	0	0	0	0	0	2	0.8
Nov 11	0	0	0	0	0	0	0	3	8	7	5	3	2	1	2	S	2	2	2	1	1	0	1	0	0	8	1.7
Nov 12	0	0	1	1	1	0	1	1	1	1	1	1	1	1	S	2	2	4	2	1	1	1	2	2	0	4	1.2
Nov 13	2	5	4	2	3	3	4	9	20	20	10	2	2	S	2	2	2	1	1	6	1	1	0	2	0	20	4.5
Nov 14	3	4	8	8	5	5	5	4	4	8	13	10	S	9	6	2	2	2	2	2	2	2	2	1	1	13	4.7
Nov 15	4	4	4	3	4	8	7	6	6	6	5	S	5	5	6	4	10	3	3	2	2	2	1	1	1	10	4.4
Nov 16	1	1	0	0	1	1	0	0	0	0	S	2	1	1	2	4	3	1	0	0	0	0	0	0	0	4	0.8
Nov 17	0	0	8	4	15	11	7	0	5	S	2	6	8	2	3	4	7	4	2	1	1	2	3	3	0	15	4.3
Nov 18	5	6	7	6	5	5	4	4	S	4	5	6	5	6	5	7	7	8	12	12	8	9	8	7	4	12	6.6
Nov 19	8	11	16	7	11	11	8	S	17	12	13	12	7	13	7	7	11	11	6	2	2	1	1	3	1	17	8.6
Nov 20	3	5	7	7	7	5	S	4	3	1	1	2	2	2	1	1	4	12	13	7	6	4	1	1	1	13	4.3
Nov 21	2	2	3	6	4	S	5	6	6	6	4	3	4	4	5	5	4	4	5	5	5	4	5	5	2	6	4.4
Nov 22	6	6	7	7	S	6	8	10	18	17	15	9	7	8	9	6	7	10	7	8	10	13	12	6	18	9.2	
Nov 23	11	5	2	S	1	1	7	10	6	9	7	4	1	0	1	2	2	3	3	2	1	1	1	1	0	11	3.5
Nov 24	2	2	S	2	2	3	2	3	5	3	4	2	3	2	3	4	2	3	4	3	2	3	2	2	2	5	2.7
Nov 25	3	S	3	2	2	2	2	2	3	5	6	6	6	5	8	9	9	8	7	10	9	9	7	7	2	10	5.7
Nov 26	S	10	12	11	8	8	17	8	3	6	10	11	14	19	12	2	1	1	1	0	0	1	1	S	0	19	7.1
Nov 27	1	1	1	3	7	9	8	8	9	12	12	7	9	8	9	7	7	5	3	2	3	3	S	2	1	12	5.9
Nov 28	2	1	1	1	1	1	1	2	4	7	7	4	3	4	4	4	5	7	7	7	10	S	5	3	1	10	3.8
Nov 29	2	2	2	1	1	1	1	2	3	4	4	8	5	20	2	4	5	3	7	5	S	4	4	3	1	20	4.0
Nov 30	3	4	2	1	1	1	3	5	5	5	5	5	7	9	8	10	9	10	11	S	10	10	11	10	1	11	6.3
Diurnal Maximum	11	11	16	12	16	12	17	25	41	29	18	16	14	20	12	28	39	33	13	23	22	17	13	12			
Dalurnal Average	3.2	3.6	4.3	3.7	4.2	4.4	4.7	6.2	8.4	8.4	7.2	6.1	5.2	6.0	4.6	5.3	6.1	5.7	4.7	4.4	4.4	4.0	3.9	3.7			

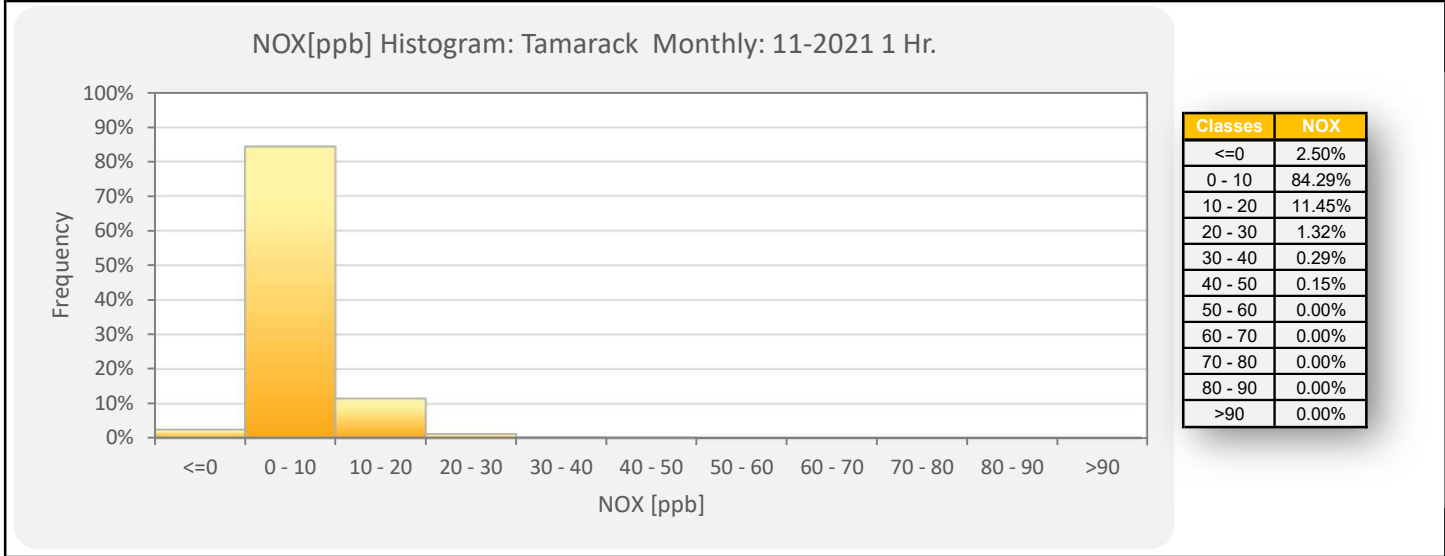
C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	Invalid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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

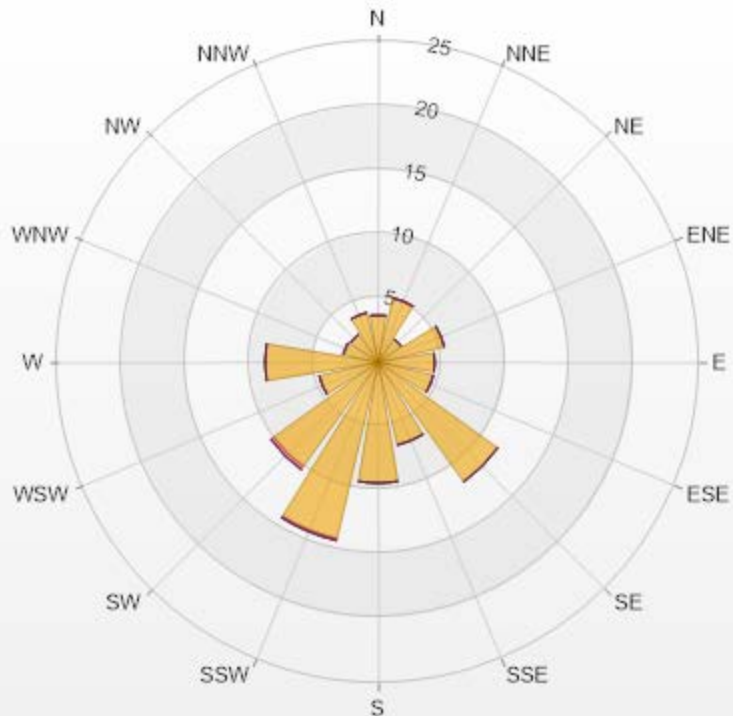
Timeseries Chart of Hourly Average for NOx - Tamarack Site





Wind: Tamarack Poll.: Tamarack-NOX[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.58% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	3.67	0	0	0	0	3.67
NNE	5.14	0	0	0	0	5.14
NE	2.2	0	0	0	0	2.2
ENE	5.29	0	0	0	0	5.29
E	4.41	0	0	0	0	4.41
ESE	4.41	0	0	0	0	4.41
SE	11.45	0	0	0	0	11.45
SSE	6.61	0	0	0	0	6.61
S	9.4	0	0	0	0	9.4
SSW	14.1	0.15	0	0	0	14.25
SW	9.99	0.29	0	0	0	10.28
WSW	4.7	0	0	0	0	4.7
W	8.81	0	0	0	0	8.81
WNW	2.79	0	0	0	0	2.79
NW	2.64	0	0	0	0	2.64
NNW	3.96	0	0	0	0	3.96
Summary	100	0.44	0	0	0	100




LICA-202111


Page 111 of 239

% Icon Classes (ppb)

100  0-30

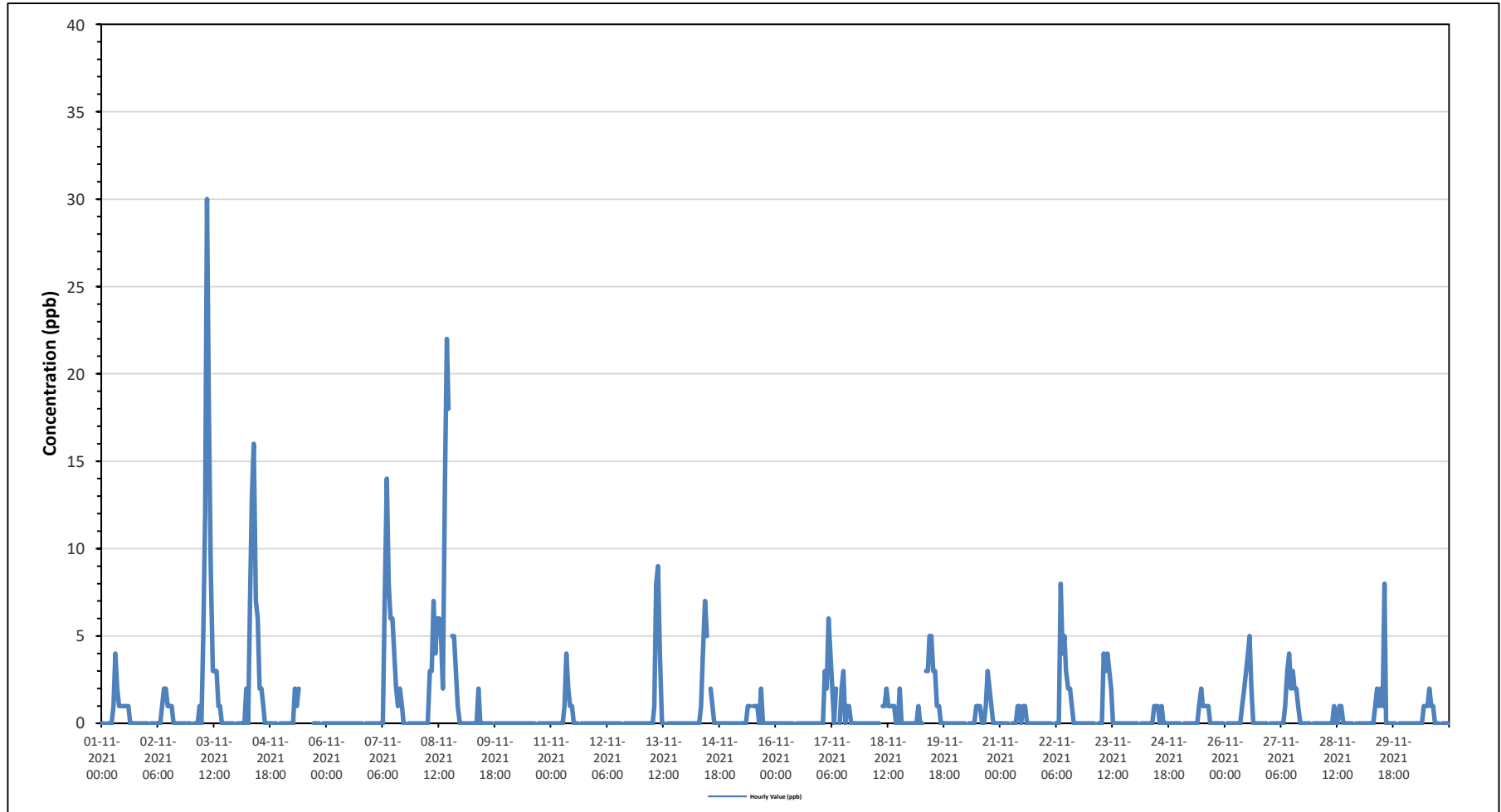
0  30-50

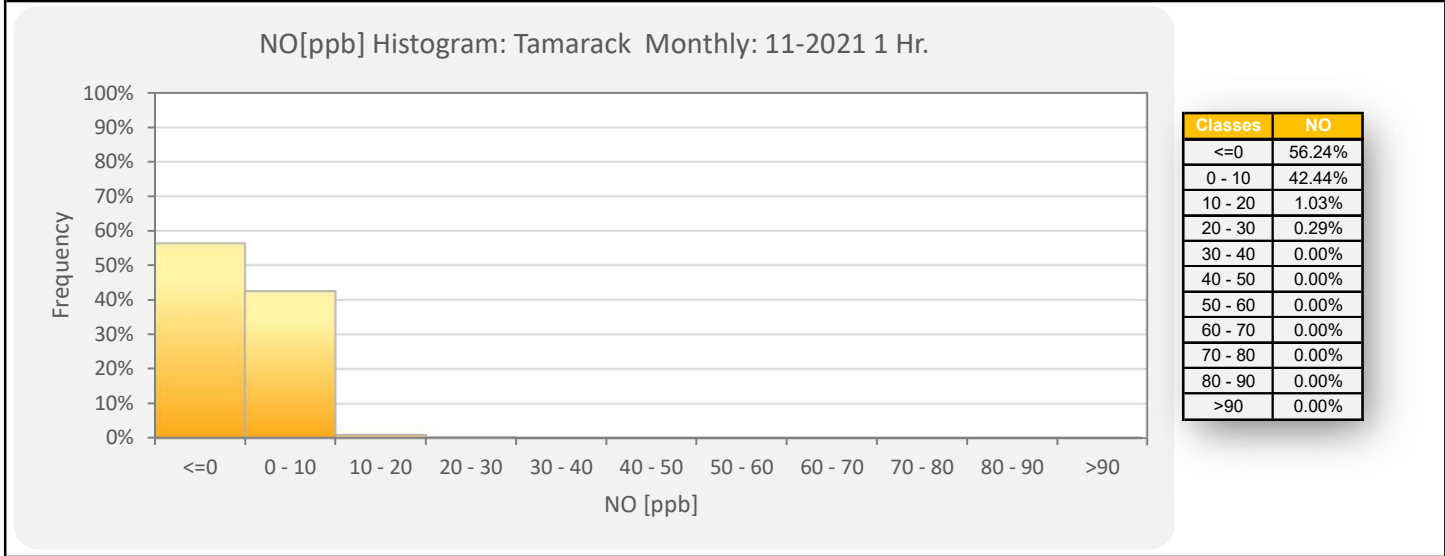
0  50-76

0  76-159

0  >159.0

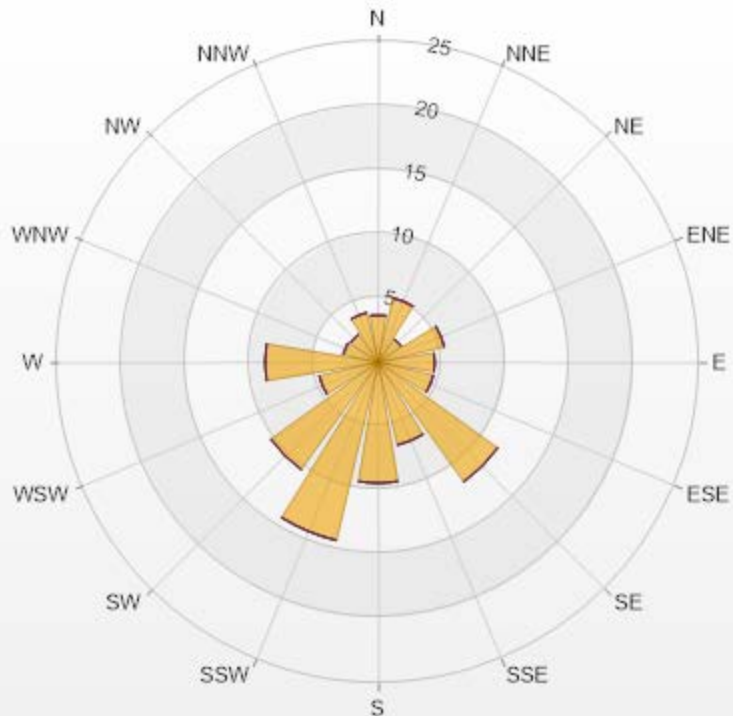
Timeseries Chart of Hourly Average for NO - Tamarack Site





Wind: Tamarack Poll.: Tamarack-NO[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.58% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	3.67	0	0	0	0	3.67
NNE	5.14	0	0	0	0	5.14
NE	2.2	0	0	0	0	2.2
ENE	5.29	0	0	0	0	5.29
E	4.41	0	0	0	0	4.41
ESE	4.41	0	0	0	0	4.41
SE	11.45	0	0	0	0	11.45
SSE	6.61	0	0	0	0	6.61
S	9.4	0	0	0	0	9.4
SSW	14.24	0	0	0	0	14.24
SW	10.28	0	0	0	0	10.28
WSW	4.7	0	0	0	0	4.7
W	8.81	0	0	0	0	8.81
WNW	2.79	0	0	0	0	2.79
NW	2.64	0	0	0	0	2.64
NNW	3.96	0	0	0	0	3.96
Summary	100	0	0	0	0	100



LICA-202111

% Icon Classes (ppb)	100	0-30	0	30-50	0	50-76	0	76-159	0	>159.0
----------------------	-----	------	---	-------	---	-------	---	--------	---	--------



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

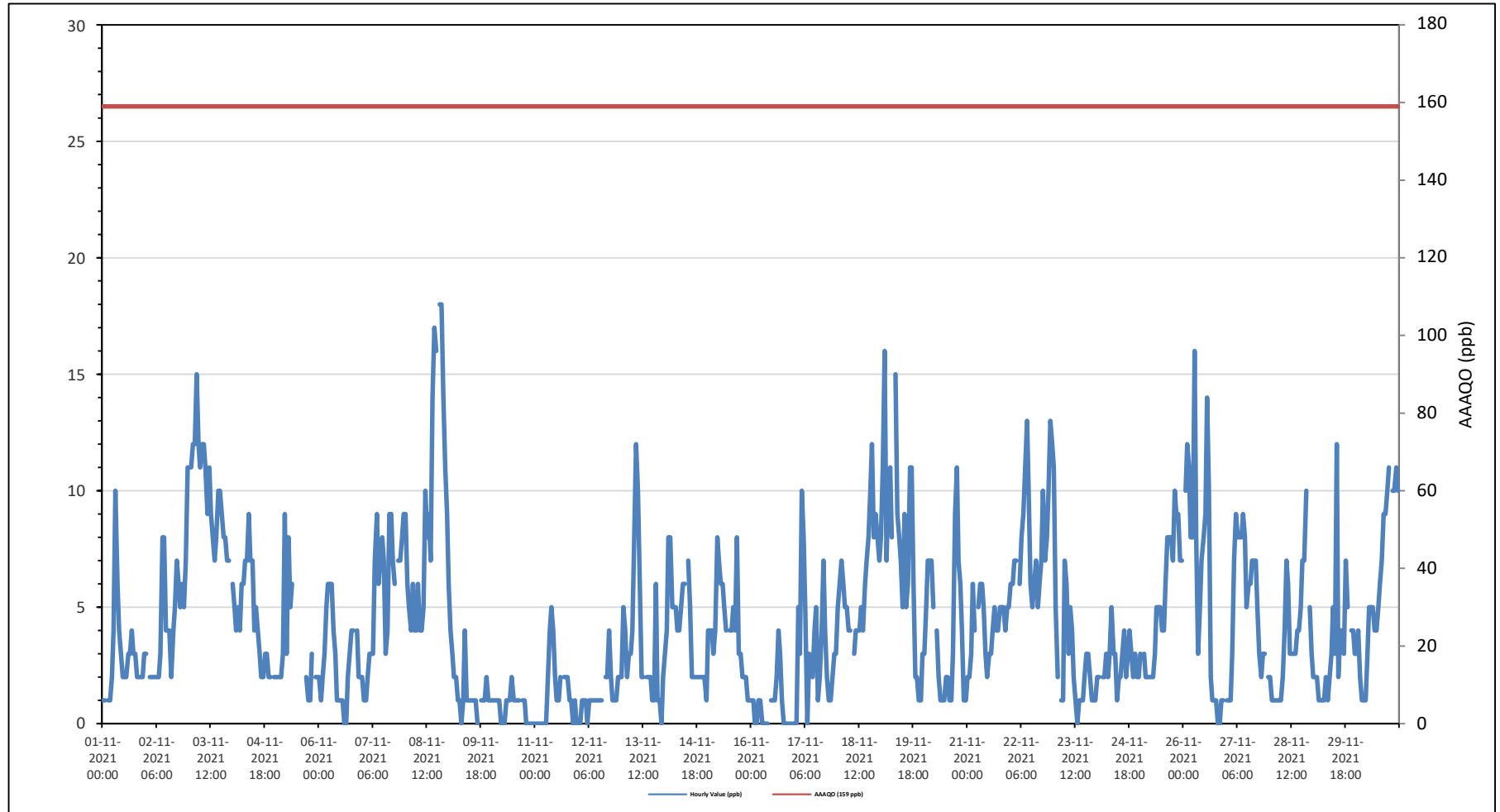
NITROGEN DIOXIDE (NO₂) in ppb

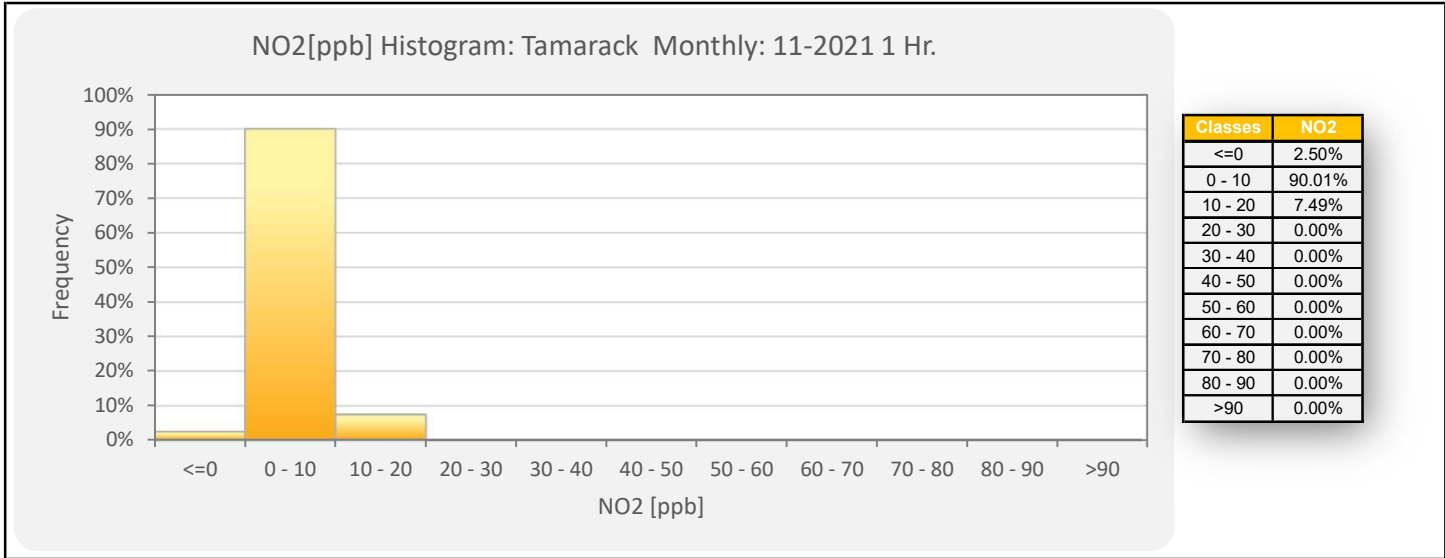
Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 159 ppb																																															
Number of 1-Hour Exceedences: 0																																															
Maximum Hourly Value: 18 ppb on November 8 at hour 19												Hours in Service: 720																																			
Maximum Daily Value: 10.0 ppb on November 3												Hours of Data: 681																																			
Minimum Hourly Value: 0 ppb on November 6 at hour 14												Hours of Missing Data: 0																																			
Minimum Daily Value: 0.7 ppb on November 10												Hours of Calibration: 39																																			
Monthly Average: 4.3 ppb												Operational Uptime: 100.0																																			
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average																					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23																							
Nov 1	1	1	S	1	1	2	4	10	6	4	3	2	2	2	3	3	4	3	3	2	2	2	2	3	1	10	2.9																				
Nov 2	3	S	2	2	2	2	2	2	3	8	8	4	4	4	2	4	5	7	6	5	6	5	7	11	2	11	4.5																				
Nov 3	S	11	12	12	15	12	11	12	12	11	9	11	9	8	7	8	10	10	9	8	8	7	7	S	11	7	15	10.0																			
Nov 4	6	5	4	5	4	6	6	7	7	9	7	7	4	5	4	3	2	2	3	3	2	2	S	2	2	9	4.6																				
Nov 5	2	2	2	2	3	9	3	8	5	6	C	C	C	C	C	C	C	2	1	1	3	S	2	2	1	9	-																				
Nov 6	2	1	2	3	5	6	6	6	4	3	1	1	1	1	0	0	2	3	4	4	S	4	2	2	0	6	2.7																				
Nov 7	2	1	1	2	3	3	3	7	9	6	7	8	7	3	4	9	9	7	6	S	7	7	8	9	1	9	5.6																				
Nov 8	9	6	5	4	6	4	4	6	4	4	5	10	8	9	7	14	17	16	S	18	18	14	11	9	4	18	9.0																				
Nov 9	6	4	3	2	2	1	1	0	1	4	1	1	1	1	1	1	0	S	1	1	1	2	1	1	0	6	1.6																				
Nov 10	1	1	1	1	1	0	0	0	1	1	1	2	1	1	1	1	S	1	1	0	0	0	0	0	0	2	0.7																				
Nov 11	0	0	0	0	0	0	0	2	4	5	4	2	1	1	2	S	2	2	2	1	1	0	1	0	0	5	1.3																				
Nov 12	0	0	1	1	1	0	1	1	1	1	1	1	1	1	S	2	2	4	2	1	1	1	2	2	0	4	1.2																				
Nov 13	2	5	4	2	3	4	8	12	10	6	2	2	S	2	2	2	2	1	1	6	1	1	0	2	0	12	3.5																				
Nov 14	3	4	8	8	5	5	5	4	4	5	6	6	S	7	5	2	2	2	2	2	2	2	2	1	1	8	4.0																				
Nov 15	4	4	4	3	4	8	7	6	6	5	4	S	4	4	5	4	8	3	3	2	2	2	1	1	1	8	4.1																				
Nov 16	1	1	0	0	1	1	0	0	0	0	S	1	1	1	2	4	3	1	0	0	0	0	0	0	0	4	0.7																				
Nov 17	0	0	5	3	10	8	5	0	3	S	2	4	5	1	2	4	7	4	2	1	1	2	3	3	0	10	3.3																				
Nov 18	5	6	7	6	5	5	4	4	S	3	4	4	4	5	4	6	7	8	10	12	8	9	8	7	3	12	6.1																				
Nov 19	8	11	16	7	10	11	8	S	15	9	8	7	5	9	5	6	11	11	6	2	2	1	1	3	1	16	7.5																				
Nov 20	3	5	7	7	7	5	S	4	2	1	1	1	2	2	1	1	3	9	11	7	6	4	1	1	1	11	4.0																				
Nov 21	2	2	3	6	4	S	5	6	6	5	3	2	3	3	4	5	4	4	5	5	5	4	5	5	2	6	4.2																				
Nov 22	6	6	7	7	S	6	8	9	11	13	10	6	5	6	7	5	6	7	10	7	8	10	13	12	5	13	8.0																				
Nov 23	11	5	2	S	1	1	7	6	3	5	4	2	1	0	1	1	2	3	3	2	1	1	1	1	0	11	2.8																				
Nov 24	2	2	S	2	2	3	2	3	5	3	3	1	2	2	3	4	2	3	4	3	2	3	2	2	1	5	2.6																				
Nov 25	3	S	3	2	2	2	2	2	3	5	5	5	4	4	6	8	8	8	7	10	9	9	7	7	2	10	5.3																				
Nov 26	S	10	12	11	8	8	16	8	3	5	7	8	9	14	10	2	1	1	1	0	0	1	1	S	0	16	6.2																				
Nov 27	1	1	1	3	7	9	8	8	8	9	8	5	6	6	7	7	7	5	3	2	3	3	S	2	1	9	5.2																				
Nov 28	2	1	1	1	1	1	1	2	4	7	6	3	3	3	3	4	4	5	7	7	10	S	5	3	1	10	3.7																				
Nov 29	2	2	2	1	1	1	1	2	1	2	3	5	3	12	2	4	4	3	7	5	S	4	4	3	1	12	3.2																				
Nov 30	3	4	2	1	1	1	3	5	5	5	4	4	5	6	7	9	9	10	11	S	10	10	11	10	1	11	5.9																				
Diurnal Maximum	11	11	16	12	15	12	16	12	15	13	10	11	9	14	10	14	17	16	11	18	18	14	13	12																							
Daiurnal Average	3.2	3.6	4.2	3.6	4.0	4.2	4.4	4.8	5.1	5.3	4.7	4.1	3.7	4.3	3.8	4.4	5.1	5.0	4.5	4.2	4.3	3.9	3.9	3.7																							
C	Monthly Calibration											S	Daily Zero-Span Check											Q	Quality Assurance																						
K	Collection Error											N	No Data (Machine Not in Service)											Y	Routine Maintenance											P	Power Failure										
X	InValid Data (Equipment Malfunction/Recovery)											NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																																		

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

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

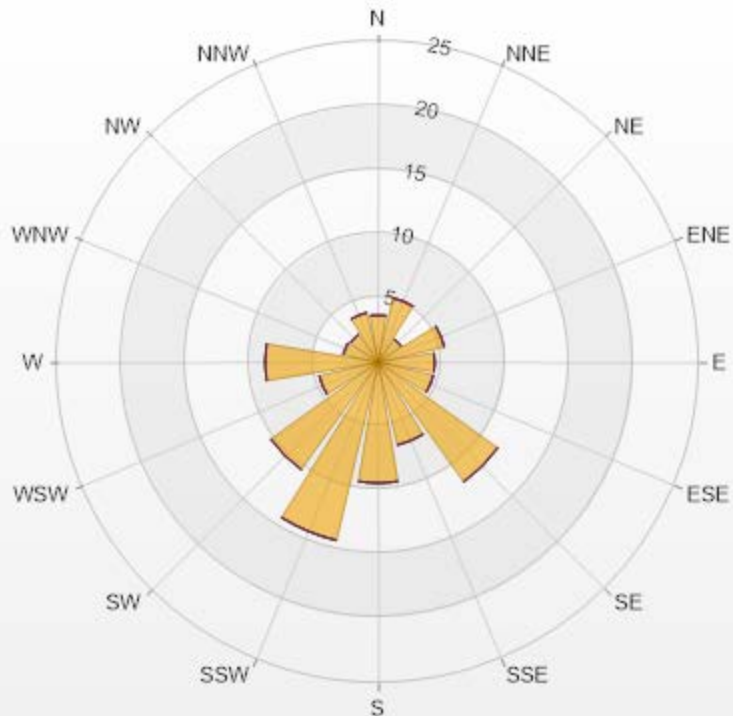
Timeseries Chart of Hourly Average for NO2 - Tamarack Site





Wind: Tamarack Poll.: Tamarack-NO2[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.58% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	3.67	0	0	0	0	3.67
NNE	5.14	0	0	0	0	5.14
NE	2.2	0	0	0	0	2.2
ENE	5.29	0	0	0	0	5.29
E	4.41	0	0	0	0	4.41
ESE	4.41	0	0	0	0	4.41
SE	11.45	0	0	0	0	11.45
SSE	6.61	0	0	0	0	6.61
S	9.4	0	0	0	0	9.4
SSW	14.24	0	0	0	0	14.24
SW	10.28	0	0	0	0	10.28
WSW	4.7	0	0	0	0	4.7
W	8.81	0	0	0	0	8.81
WNW	2.79	0	0	0	0	2.79
NW	2.64	0	0	0	0	2.64
NNW	3.96	0	0	0	0	3.96
Summary	100	0	0	0	0	100



LICA-202111

% Icon Classes (ppb)	100	0-30	0	30-50	0	50-76	0	76-159	0	>159.0
----------------------	-----	------	---	-------	---	-------	---	--------	---	--------



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

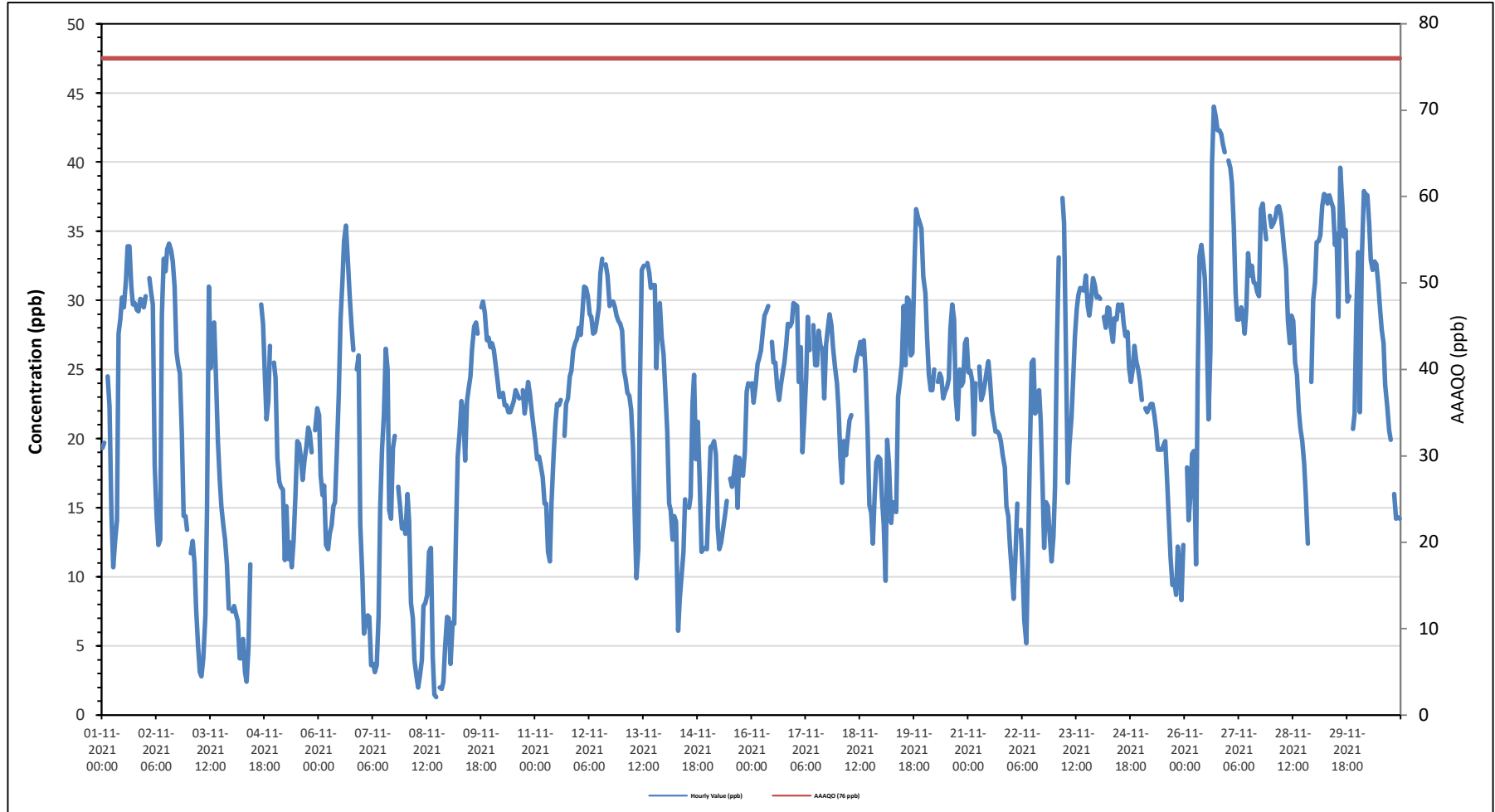
OZONE (O₃) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 76 ppb																															
Number of 1-Hour Exceedences: 0																															
Maximum Hourly Value: 44.0 ppb on November 26 at hour 16												Hours in Service: 720																			
Maximum Daily Value: 33.5 ppb on November 29												Hours of Data: 683																			
Minimum Hourly Value: 1.3 ppb on November 8 at hour 17												Hours of Missing Data: 0																			
Minimum Daily Value: 6.4 ppb on November 8												Hours of Calibration: 37																			
Monthly Average: 22.5 ppb												Operational Uptime: 100.0																			
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
Nov 1	19.3	19.7	S	24.5	22.3	14.6	10.7	12.6	14.1	27.6	28.7	30.2	29.5	31.5	33.9	33.9	31.0	29.7	29.8	29.3	29.2	30.1	30.0	29.5	10.7	33.9	25.7				
Nov 2	30.3	S	31.6	30.5	29.7	18.1	14.5	12.3	12.7	28.9	33.0	32.1	33.7	34.1	33.6	32.8	31.0	26.3	25.4	24.7	20.5	14.4	14.4	13.4	12.3	34.1	25.1				
Nov 3	S	11.7	12.6	11.0	7.7	5.1	3.1	2.8	4.1	7.2	14.8	31.0	25.1	27.0	28.4	24.3	19.8	17.0	15.1	13.8	12.7	10.9	7.7	S	2.8	31.0	14.2				
Nov 4	7.5	7.9	7.4	6.8	4.1	4.1	5.5	3.1	2.4	4.8	10.9	C	C	C	C	C	29.7	28.3	24.5	21.4	22.7	26.7	S	25.5	2.4	29.7	13.5				
Nov 5	24.4	18.6	16.9	16.5	16.3	11.2	15.1	11.3	12.5	10.7	12.6	15.9	19.8	19.6	18.7	17.0	18.4	19.4	20.8	20.4	19.0	S	20.6	22.2	10.7	24.4	17.3				
Nov 6	21.7	17.3	15.9	16.6	12.3	12.0	13.1	13.7	15.1	15.4	19.1	23.1	28.7	31.4	34.3	35.4	33.0	30.4	28.2	26.4	S	25.0	26.0	13.8	12.0	35.4	22.1				
Nov 7	10.0	5.9	6.7	7.2	7.1	3.6	3.7	3.1	3.6	7.1	14.9	19.2	21.7	26.5	25.0	14.8	14.2	19.3	20.2	S	16.5	15.1	13.5	13.9	3.1	26.5	12.7				
Nov 8	13.1	16.0	14.0	8.1	7.0	4.0	2.9	2.0	2.9	4.0	7.9	8.1	8.7	11.8	12.1	4.2	1.5	1.3	S	2.0	1.9	2.4	5.1	7.1	1.3	16.0	6.4				
Nov 9	7.0	3.7	6.7	6.6	13.6	18.7	20.4	22.7	22.0	18.4	22.7	23.6	24.5	26.5	28.1	28.4	27.6	S	29.5	29.9	29.1	27.1	27.3	26.6	3.7	29.9	21.3				
Nov 10	26.9	26.4	25.3	24.2	23.0	23.1	23.3	22.4	22.4	21.9	21.9	22.3	22.7	23.5	23.2	22.9	S	23.5	21.8	22.8	24.1	23.2	21.9	20.8	20.8	26.9	23.2				
Nov 11	19.7	18.5	18.7	18.0	17.2	15.3	15.3	11.8	11.1	15.3	18.8	21.2	22.5	22.4	22.8	S	20.2	22.5	22.9	24.5	24.9	26.4	26.9	27.2	11.1	27.2	20.2				
Nov 12	28.0	27.5	29.0	31.0	30.9	30.3	29.0	28.8	27.6	27.7	28.4	29.4	31.9	33.0	S	32.6	31.8	29.6	29.9	29.9	29.5	28.9	28.5	28.3	27.5	33.0	29.6				
Nov 13	27.8	24.9	24.3	23.3	23.1	22.1	19.4	14.0	9.9	12.0	23.7	32.2	32.5	S	32.7	32.0	30.9	31.1	31.1	25.1	29.0	29.8	27.3	26.1	9.9	32.7	25.4				
Nov 14	23.3	20.5	15.3	14.8	12.7	14.4	14.0	6.1	8.4	10.1	11.8	15.6	S	15.0	15.8	22.5	24.6	18.5	21.2	17.0	11.8	12.0	12.1	12.0	6.1	24.6	15.2				
Nov 15	15.7	19.4	19.5	19.8	18.9	13.5	12.0	12.5	13.6	14.4	15.5	S	17.1	16.5	17.5	18.7	15.0	18.6	18.1	17.3	19.0	23.4	24.0	23.8	12.0	24.0	17.6				
Nov 16	24.0	22.6	23.9	25.4	25.8	26.4	27.8	28.9	29.2	29.6	S	27.0	25.5	25.5	23.7	22.8	23.9	24.8	25.5	26.8	28.3	28.1	28.4	29.8	22.6	29.8	26.2				
Nov 17	29.7	29.6	24.1	26.6	19.0	21.5	24.4	28.8	26.4	S	28.2	25.3	25.3	27.8	26.7	26.5	22.9	26.8	27.9	29.0	28.2	26.6	25.1	24.0	19.0	29.7	26.1				
Nov 18	22.1	18.6	16.8	19.8	18.8	20.0	21.3	21.7	S	24.9	25.8	26.3	27.0	26.1	27.1	24.7	20.7	15.2	14.6	12.4	15.9	18.3	18.7	18.5	12.4	27.1	20.7				
Nov 19	15.8	13.8	9.7	19.9	18.1	13.9	15.4	S	14.7	23.0	24.1	25.4	29.6	25.3	30.2	30.0	26.0	26.2	32.7	36.6	36.0	35.6	35.2	31.7	9.7	36.6	24.7				
Nov 20	30.5	27.4	24.6	23.5	23.5	25.0	S	24.1	24.7	24.4	22.9	23.4	23.7	24.3	27.9	29.7	28.6	23.0	21.4	25.0	23.8	24.1	26.9	27.2	21.4	30.5	25.2				
Nov 21	24.8	24.9	24.2	20.3	24.0	S	25.2	22.8	23.2	24.0	24.8	25.6	24.3	22.0	21.2	20.5	20.5	20.3	19.8	18.8	17.9	15.1	14.4	12.3	12.3	25.6	21.3				
Nov 22	10.4	8.4	11.5	15.3	S	13.4	10.5	6.9	5.2	12.3	18.7	25.5	25.7	21.8	22.2	23.5	21.3	16.7	12.1	15.4	15.1	13.0	11.1	12.9	5.2	25.7	15.2				
Nov 23	16.5	26.7	33.1	S	37.4	35.6	26.5	16.8	19.5	21.5	24.6	27.4	29.4	30.4	30.9	30.8	30.7	31.8	29.6	28.9	30.0	31.6	31.1	30.2	16.5	37.4	28.3				
Nov 24	30.3	30.1	S	28.8	28.0	29.5	29.4	27.9	27.0	28.7	28.6	29.7	29.3	29.7	28.4	27.4	27.7	25.1	24.1	25.1	26.7	25.6	25.0	24.1	24.1	30.3	27.7				
Nov 25	22.8	S	22.2	21.9	22.2	22.5	22.5	21.7	20.6	19.2	19.2	19.2	19.5	19.8	17.0	14.4	11.4	9.4	9.7	8.7	12.2	10.9	8.3	12.3	8.3	22.8	16.9				
Nov 26	S	17.9	14.1	15.9	18.9	19.1	10.9	24.2	33.2	34.0	33.0	31.6	27.1	21.4	26.4	39.8	44.0	43.3	42.3	42.3	42.0	41.3	40.7	S	10.9	44.0	30.2				
Nov 27	40.1	39.6	38.5	35.4	30.5	28.6	28.6	29.5	29.0	27.6	29.3	33.4	31.8	32.5	31.3	31.2	30.6	30.3	36.6	37.0	35.4	34.4	S	36.1	27.6	40.1	32.9				
Nov 28	35.3	35.6	36.0	36.7	36.8	36.2	35.1	33.6	32.3	28.5	26.9	28.9	28.5	25.5	24.6	22.0	20.7	19.8	18.2	16.0	12.4	S	24.1	30.0	12.4	36.8	28.0				
Nov 29	31.3	34.2	34.3	34.7	36.8	37.7	37.6	37.0	37.6	37.1	36.7	34.0	34.8	28.8	39.6	37.2	34.6	35.1	29.9	30.3	S	20.7	21.8	29.7	20.7	39.6	33.5				
Nov 30	33.5	21.9	32.9	37.9	37.7	37.6	35.5	32.9	32.2	32.8	32.6	31.2	29.6	27.9	26.9	23.9	22.3	20.6	19.9	S	16.0	14.2	14.3	14.2	14.2	37.9	27.3				
Diurnal Maximum	40.1	39.6	38.5	37.9	37.7	37.7	37.6	37.0	37.6	37.1	36.7	34.0	34.8	34.1	39.6	39.8	44.0	43.3	42.3	42.3	42.0	41.3	40.7	36.1							
Diurnal Average	22.9	21.0	21.1	21.4	21.5	19.9	19.1	18.5	18.5	20.5	22.8	25.6	26.1	25.3	26.1	25.9	24.6	23.6	24.2	23.5	22.5	22.7	21.8	22.3							
C	Monthly Calibration							S	Daily Zero-Span Check							Q	Quality Assurance														
K	Collection Error							N	No Data (Machine Not in Service)							Y	Routine Maintenance							P	Power Failure						
X	Invalid Data (Equipment Malfunction / Recovery)							NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																						

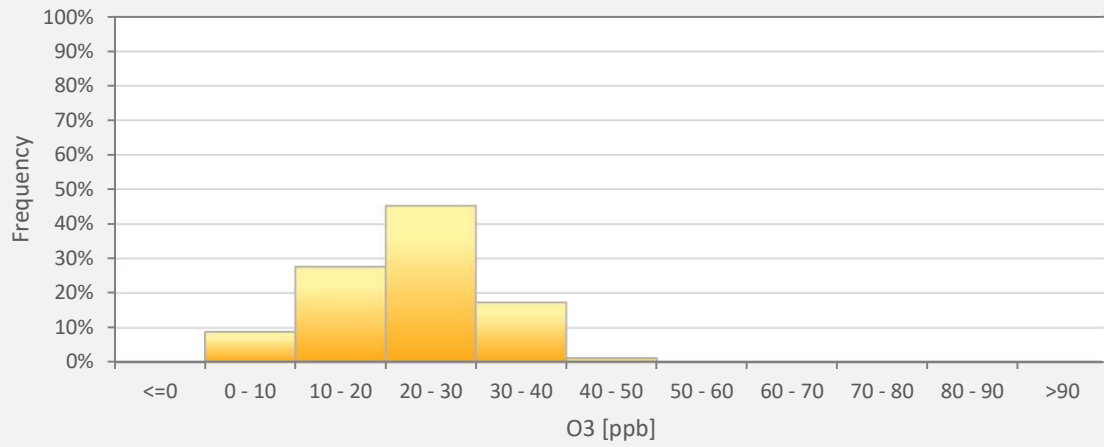
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

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

Timeseries Chart of Hourly Average for O3 - Tamarack Site



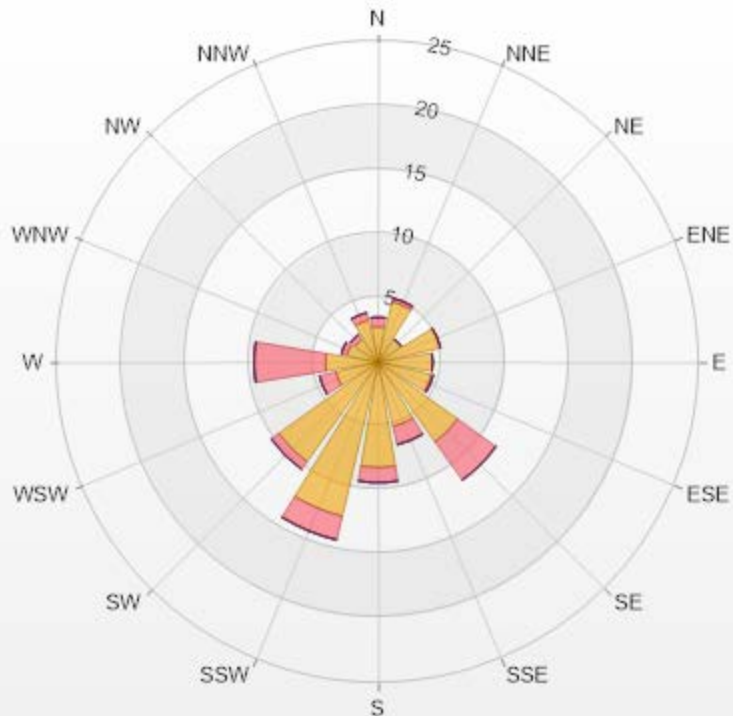
O3[ppb] Histogram: Tamarack Monthly: 11-2021 1 Hr.



Classes	O3
<=0	0.00%
0 - 10	8.78%
10 - 20	27.53%
20 - 30	45.24%
30 - 40	17.28%
40 - 50	1.17%
50 - 60	0.00%
60 - 70	0.00%
70 - 80	0.00%
80 - 90	0.00%
>90	0.00%

Wind: Tamarack Poll.: Tamarack-O3[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.86% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	2.78	0.73	0	0	0	3.51
NNE	4.83	0.29	0	0	0	5.12
NE	2.2	0	0	0	0	2.2
ENE	4.98	0	0	0	0	4.98
E	4.25	0	0	0	0	4.25
ESE	4.25	0.15	0	0	0	4.4
SE	7.61	3.66	0	0	0	11.27
SSE	5.12	1.46	0	0	0	6.58
S	8.2	1.17	0	0	0	9.37
SSW	12.3	1.9	0	0	0	14.2
SW	9.52	0.73	0	0	0	10.25
WSW	3.37	1.32	0	0	0	4.69
W	4.1	5.56	0	0	0	9.66
WNW	2.49	0.44	0	0	0	2.93
NW	2.2	0.44	0	0	0	2.64
NNW	3.37	0.59	0	0	0	3.96
Summary	81.57	18.44	0	0	0	100



LICA-202111

Page 126 of 239

% Icon Classes (ppb)	82	0-30	18	30-50	0	50-76	0	76-159	0	>159.0
----------------------	----	------	----	-------	---	-------	---	--------	---	--------



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

TOTAL HYDROCARBONS (THC) in ppm

Maximum Hourly Value:	2.82 ppm on November 4 at hour 9	Hours in Service:	720
Maximum Daily Value:	2.20 ppm on November 4	Hours of Data:	683
Minimum Hourly Value:	1.88 ppm on November 6 at hour 12	Hours of Missing Data:	0
Minimum Daily Value:	1.89 ppm on November 16	Hours of Calibration:	37
Monthly Average:	1.99 ppm	Operational Uptime:	100.0

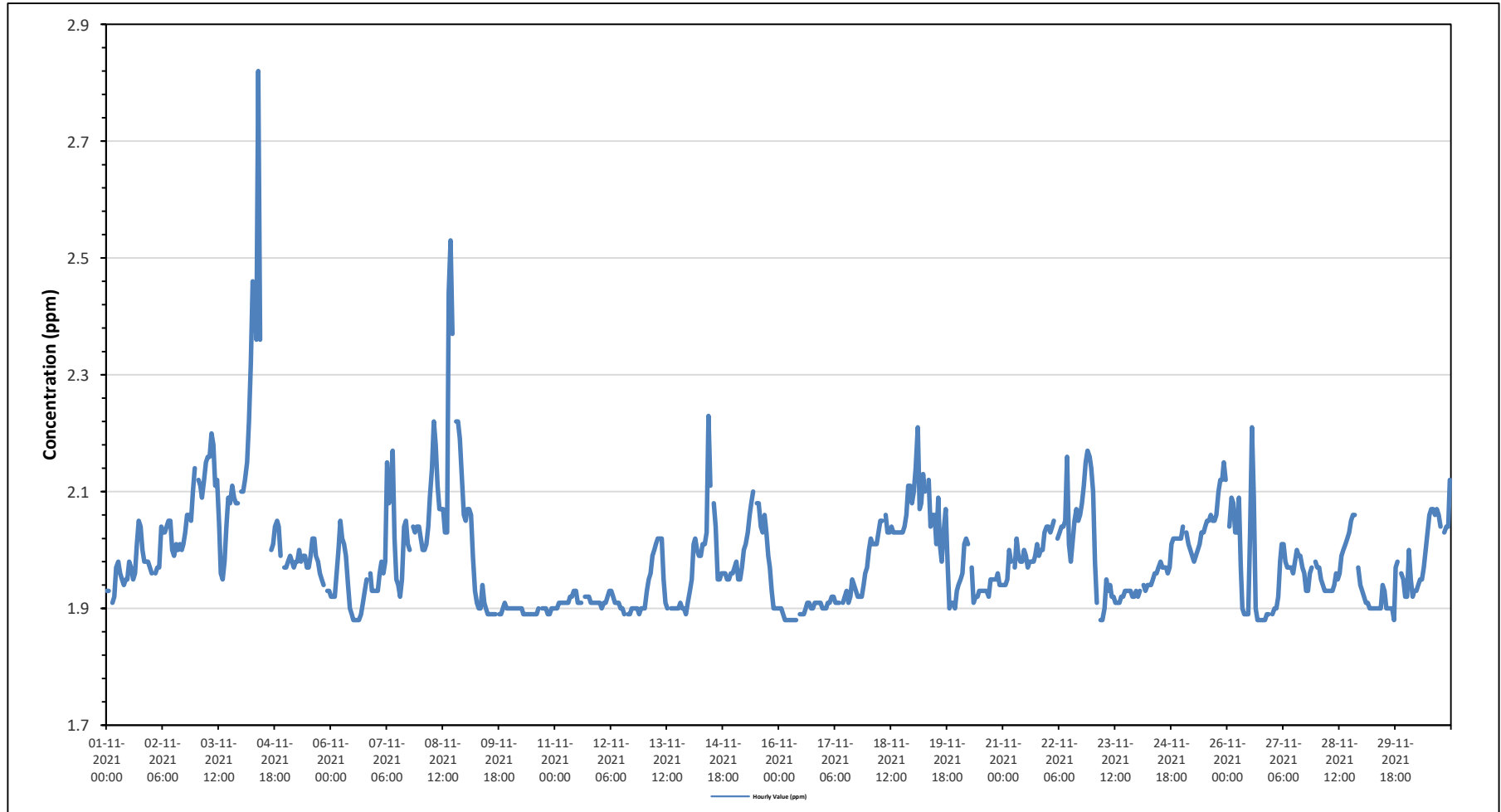
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Nov 1	1.93	1.93	S	1.91	1.92	1.97	1.98	1.96	1.95	1.94	1.95	1.95	1.98	1.97	1.95	1.96	2.01	2.05	2.04	2.00	1.98	1.98	1.98	1.97	1.91	2.05	1.97
Nov 2	1.96	S	1.96	1.97	1.97	2.04	2.03	2.03	2.04	2.05	2.05	2.00	1.99	2.01	2.00	2.01	2.01	2.03	2.06	2.06	2.05	2.10	2.14	1.96	2.14	2.02	
Nov 3	S	2.12	2.11	2.09	2.12	2.15	2.16	2.16	2.20	2.18	2.11	2.12	2.04	1.96	1.95	1.98	2.04	2.09	2.08	2.11	2.09	2.08	2.08	S	1.95	2.20	2.09
Nov 4	2.10	2.10	2.12	2.15	2.22	2.32	2.46	2.43	2.36	2.82	2.36	C	C	C	C	C	2.00	2.01	2.04	2.05	2.04	1.99	S	1.97	1.97	2.82	2.20
Nov 5	1.97	1.98	1.99	1.98	1.97	1.98	1.98	2.00	1.98	1.99	1.99	1.97	1.97	1.99	2.02	2.02	1.99	1.98	1.96	1.95	1.94	S	1.93	1.93	1.93	2.02	1.98
Nov 6	1.92	1.92	1.92	1.96	2.00	2.05	2.02	2.01	1.99	1.94	1.90	1.89	1.88	1.88	1.88	1.89	1.91	1.93	1.95	S	1.96	1.93	1.93	1.88	2.05	1.94	
Nov 7	1.93	1.93	1.96	1.98	1.96	1.98	2.15	2.08	2.10	2.17	2.02	1.95	1.94	1.92	1.95	2.04	2.05	2.01	2.00	S	2.04	2.03	2.04	2.04	1.92	2.17	2.01
Nov 8	2.02	2.00	2.00	2.01	2.04	2.09	2.14	2.22	2.18	2.11	2.07	2.07	2.07	2.03	2.03	2.44	2.53	2.37	S	2.22	2.22	2.19	2.12	2.06	2.00	2.53	2.14
Nov 9	2.05	2.07	2.07	2.06	1.99	1.93	1.91	1.90	1.90	1.94	1.91	1.90	1.89	1.89	1.89	1.89	1.89	S	1.89	1.89	1.90	1.91	1.90	1.90	1.89	2.07	1.93
Nov 10	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.90	S	1.90	1.90	1.90	1.90	1.90	1.89	1.89	1.90	1.89	1.90	1.90
Nov 11	1.90	1.90	1.91	1.91	1.91	1.91	1.91	1.91	1.92	1.92	1.93	1.93	1.91	1.91	1.91	S	1.92	1.92	1.92	1.91	1.91	1.91	1.91	1.91	1.90	1.93	1.91
Nov 12	1.91	1.90	1.91	1.91	1.92	1.93	1.93	1.92	1.91	1.91	1.91	1.90	1.90	1.89	S	1.89	1.89	1.90	1.90	1.90	1.90	1.90	1.89	1.90	1.89	1.93	1.91
Nov 13	1.90	1.93	1.95	1.96	1.99	2.00	2.01	2.02	2.02	2.02	1.95	1.91	1.90	S	1.90	1.90	1.90	1.90	1.90	1.91	1.90	1.89	1.89	1.91	1.89	2.02	1.94
Nov 14	1.93	1.95	2.01	2.02	2.00	1.99	1.99	2.01	2.01	2.03	2.23	2.11	S	2.08	2.04	1.95	1.95	1.96	1.96	1.96	1.95	1.95	1.96	1.96	1.93	2.23	2.00
Nov 15	1.97	1.98	1.95	1.95	1.97	2.00	2.01	2.03	2.06	2.08	2.10	S	2.08	2.08	2.04	2.03	2.06	2.03	1.99	1.97	1.93	1.90	1.90	1.90	1.90	2.10	2.00
Nov 16	1.90	1.90	1.89	1.88	1.88	1.88	1.88	1.88	1.88	1.88	S	1.89	1.89	1.89	1.90	1.91	1.91	1.90	1.90	1.91	1.91	1.91	1.91	1.90	1.88	1.91	1.89
Nov 17	1.90	1.90	1.91	1.91	1.92	1.92	1.91	1.91	1.91	S	1.91	1.92	1.93	1.91	1.92	1.95	1.94	1.93	1.92	1.92	1.92	1.94	1.96	1.97	1.90	1.97	1.92
Nov 18	2.00	2.02	2.01	2.01	2.01	2.03	2.05	2.05	S	2.06	2.03	2.03	2.04	2.03	2.03	2.03	2.03	2.03	2.03	2.04	2.06	2.11	2.11	2.08	2.00	2.11	2.04
Nov 19	2.10	2.14	2.21	2.07	2.08	2.13	2.10	S	2.12	2.04	2.06	2.06	2.01	2.09	2.01	1.98	2.03	2.07	1.98	1.90	1.91	1.91	1.90	1.93	1.90	2.21	2.04
Nov 20	1.94	1.95	1.96	2.01	2.02	2.01	S	1.97	1.91	1.92	1.92	1.93	1.93	1.93	1.93	1.92	1.95	1.95	1.95	1.95	1.96	1.94	1.94	1.91	2.02	1.95	
Nov 21	1.94	1.94	1.95	2.00	1.98	S	1.97	2.02	1.99	1.98	1.98	2.00	1.99	1.97	1.98	1.98	1.98	1.99	2.01	1.99	2.00	2.00	2.03	2.04	1.94	2.04	1.99
Nov 22	2.04	2.03	2.04	2.05	S	2.02	2.03	2.04	2.04	2.05	2.16	2.01	1.98	2.01	2.05	2.07	2.05	2.06	2.08	2.11	2.15	2.17	2.16	2.14	1.98	2.17	2.07
Nov 23	2.10	1.98	1.91	S	1.88	1.88	1.90	1.95	1.93	1.94	1.92	1.92	1.91	1.91	1.91	1.92	1.92	1.93	1.93	1.93	1.92	1.92	1.92	1.93	1.88	2.10	1.93
Nov 24	1.92	1.93	S	1.94	1.93	1.94	1.94	1.94	1.95	1.96	1.96	1.97	1.98	1.97	1.97	1.97	1.96	1.97	2.01	2.02	2.02	2.02	2.02	2.02	1.92	2.02	1.97
Nov 25	2.04	S	2.03	2.01	2.00	1.99	1.98	1.99	2.00	2.01	2.03	2.03	2.04	2.05	2.06	2.05	2.06	2.05	2.06	2.10	2.12	2.12	2.15	2.12	1.98	2.15	2.05
Nov 26	S	2.04	2.09	2.08	2.03	2.03	2.09	1.97	1.90	1.89	1.89	1.89	2.03	2.21	2.09	1.90	1.88	1.88	1.88	1.88	1.88	1.89	1.89	S	1.88	2.21	1.97
Nov 27	1.89	1.90	1.90	1.92	1.98	2.01	2.01	1.98	1.97	1.97	1.97	1.96	1.98	2.00	1.99	1.99	1.97	1.96	1.93	1.93	1.96	1.97	S	1.98	1.89	2.01	1.96
Nov 28	1.97	1.97	1.95	1.94	1.93	1.93	1.93	1.93	1.94	1.96	1.95	1.96	1.99	2.00	2.01	2.02	2.03	2.05	2.06	2.06	S	1.97	1.94	1.93	2.06	1.97	1.97
Nov 29	1.93	1.92	1.91	1.91	1.90	1.90	1.90	1.90	1.90	1.90	1.94	1.93	1.90	1.90	1.90	1.90	1.88	1.97	1.98	S	1.96	1.95	1.92	1.88	1.98	1.92	1.92
Nov 30	1.92	2.00	1.95	1.92	1.93	1.93	1.94	1.95	1.95	1.97	2.00	2.03	2.06	2.07	2.06	2.07	2.06	2.04	S	2.03	2.04	2.04	2.12	1.92	2.12	2.01	2.01
Diurnal Maximum	2.10	2.14	2.21	2.15	2.22	2.32	2.46	2.43	2.36	2.82	2.36	2.12	2.08	2.21	2.09	2.44	2.53	2.37	2.08	2.22	2.22	2.19	2.16	2.14			
Dalurnal Average	1.96	1.97	1.98	1.98	1.98	1.99	2.01	2.00	2.00	2.02	2.00	1.97	1.97	1.98	1.97	1.98	1.99	1.99	1.98	1.98	1.99	1.98	1.98	1.98			

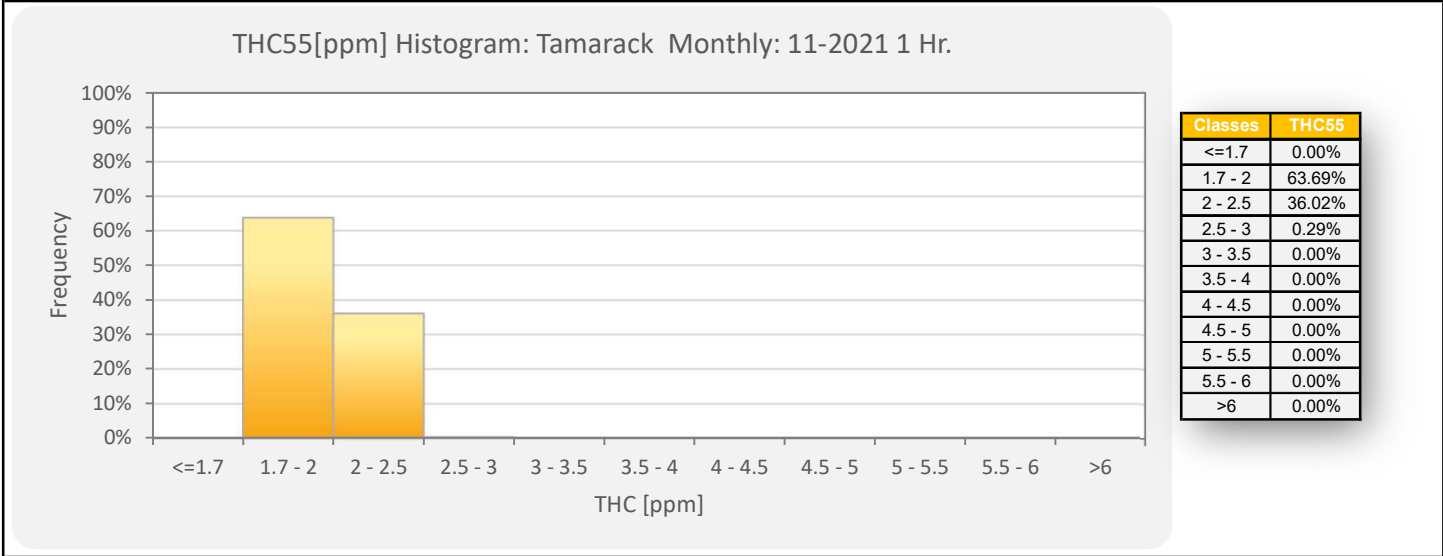
C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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

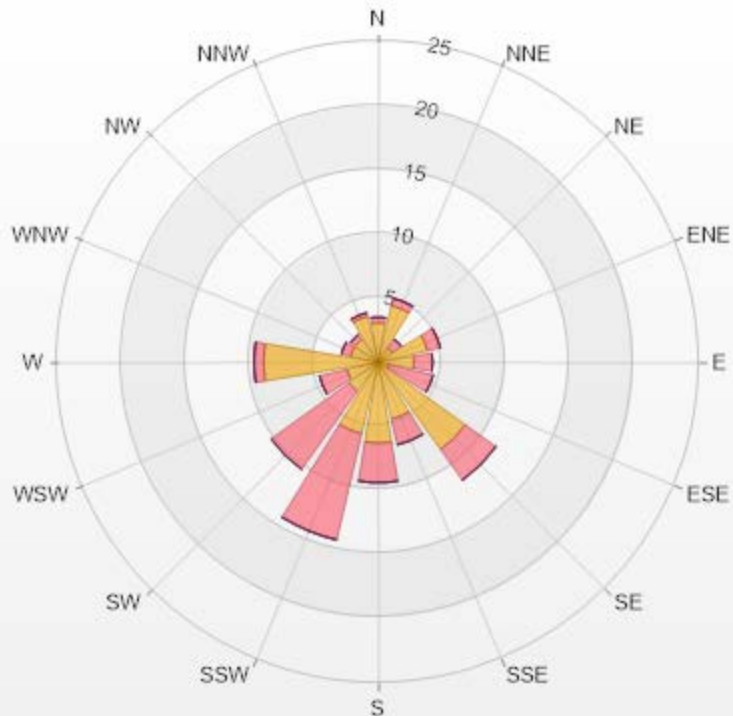
Timeseries Chart of Hourly Average for THC - Tamarack Site





Wind: Tamarack Poll.: Tamarack-THC55[ppm] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.86% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	3.07	0.44	0	0	0	3.51
NNE	4.54	0.59	0	0	0	5.13
NE	1.32	0.88	0	0	0	2.2
ENE	3.95	1.02	0	0	0	4.97
E	2.78	1.46	0	0	0	4.24
ESE	0.88	3.51	0	0	0	4.39
SE	8.35	2.93	0	0	0	11.28
SSE	4.54	2.05	0	0	0	6.59
S	6.3	3.07	0	0	0	9.37
SSW	5.71	8.49	0	0	0	14.2
SW	2.78	7.47	0	0	0	10.25
WSW	2.49	2.2	0	0	0	4.69
W	8.93	0.73	0	0	0	9.66
WNW	2.2	0.73	0	0	0	2.93
NW	2.2	0.44	0	0	0	2.64
NNW	3.66	0.29	0	0	0	3.95
Summary	63.7	36.3	0	0	0	100



LICA-202111

% Icon Classes (ppm)

64 0-2

36 2-5

0 5-10

0 10-40

0 >40.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

METHANE (CH4) in ppm

Maximum Hourly Value:	2.53 ppm on November 8 at hour 16	Hours in Service:	720
Maximum Daily Value:	2.16 ppm on November 4	Hours of Data:	683
Minimum Hourly Value:	1.88 ppm on November 6 at hour 12	Hours of Missing Data:	0
Minimum Daily Value:	1.89 ppm on November 16	Hours of Calibration:	37
Monthly Average:	1.98 ppm	Operational Uptime:	100.0

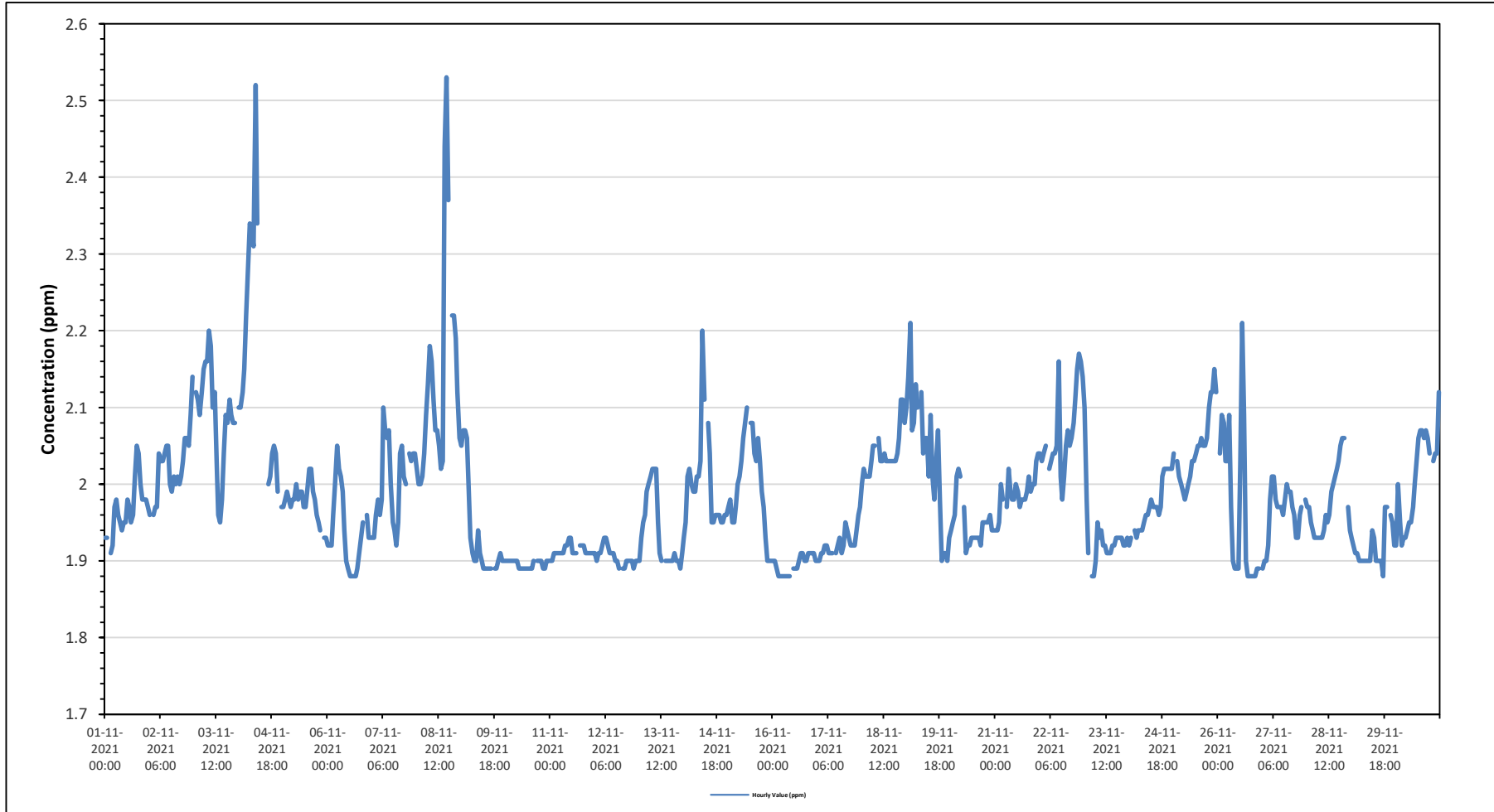
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Nov 1	1.93	1.93	S	1.91	1.92	1.97	1.98	1.96	1.95	1.94	1.95	1.95	1.98	1.97	1.95	1.96	2.01	2.05	2.04	2.00	1.98	1.98	1.98	1.97	1.91	2.05	1.97
Nov 2	1.96	S	1.96	1.97	1.97	2.04	2.03	2.03	2.04	2.05	2.05	2.00	1.99	2.01	2.00	2.01	2.01	2.03	2.06	2.06	2.05	2.09	2.14	1.96	2.14	2.02	
Nov 3	S	2.12	2.11	2.09	2.12	2.15	2.16	2.16	2.20	2.18	2.10	2.12	2.03	1.96	1.95	1.98	2.04	2.09	2.08	2.11	2.09	2.08	2.08	S	1.95	2.20	2.09
Nov 4	2.10	2.10	2.12	2.15	2.22	2.28	2.34	2.33	2.31	2.52	2.34	C	C	C	C	C	2.00	2.01	2.04	2.05	2.04	1.99	S	1.97	1.97	2.52	2.16
Nov 5	1.97	1.98	1.99	1.98	1.97	1.98	1.98	2.00	1.98	1.99	1.99	1.97	1.97	1.99	2.02	2.02	1.99	1.98	1.96	1.95	1.94	S	1.93	1.93	1.93	2.02	1.98
Nov 6	1.92	1.92	1.92	1.96	2.00	2.05	2.02	2.01	1.99	1.94	1.90	1.89	1.88	1.88	1.88	1.88	1.89	1.91	1.93	1.95	S	1.96	1.93	1.93	1.88	2.05	1.94
Nov 7	1.93	1.93	1.96	1.98	1.96	1.98	2.10	2.07	2.06	2.07	2.00	1.95	1.94	1.92	1.95	2.04	2.05	2.01	2.00	S	2.04	2.03	2.04	2.04	1.92	2.10	2.00
Nov 8	2.02	2.00	2.00	2.01	2.04	2.09	2.13	2.18	2.16	2.11	2.07	2.07	2.05	2.02	2.03	2.44	2.53	2.37	S	2.22	2.22	2.19	2.12	2.06	2.00	2.53	2.14
Nov 9	2.05	2.07	2.07	2.06	1.99	1.93	1.91	1.90	1.90	1.94	1.91	1.90	1.89	1.89	1.89	1.89	1.89	S	1.89	1.89	1.90	1.90	1.90	1.90	1.89	2.07	1.93
Nov 10	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.90	S	1.90	1.90	1.90	1.90	1.89	1.89	1.90	1.90	1.89	1.90	1.90
Nov 11	1.90	1.90	1.91	1.91	1.91	1.91	1.91	1.91	1.92	1.92	1.93	1.93	1.91	1.91	1.91	S	1.92	1.92	1.92	1.91	1.91	1.91	1.91	1.91	1.90	1.93	1.91
Nov 12	1.91	1.90	1.91	1.91	1.92	1.93	1.93	1.92	1.91	1.91	1.91	1.90	1.90	1.89	S	1.89	1.89	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.89	1.93	1.91
Nov 13	1.90	1.93	1.95	1.96	1.99	2.00	2.01	2.02	2.02	2.02	1.95	1.91	1.90	S	1.90	1.90	1.90	1.90	1.90	1.91	1.90	1.89	1.90	1.90	1.89	2.02	1.94
Nov 14	1.93	1.95	2.01	2.02	2.00	1.99	1.99	2.01	2.01	2.03	2.20	2.11	S	2.08	2.04	1.95	1.95	1.96	1.96	1.96	1.95	1.95	1.96	1.96	1.93	2.20	2.00
Nov 15	1.97	1.98	1.95	1.95	1.97	2.00	2.01	2.03	2.06	2.08	2.10	S	2.08	2.08	2.04	2.03	2.06	2.03	1.99	1.97	1.93	1.90	1.90	1.90	1.90	2.10	2.00
Nov 16	1.90	1.90	1.89	1.88	1.88	1.88	1.88	1.88	1.88	1.88	S	1.89	1.89	1.89	1.90	1.91	1.91	1.90	1.90	1.91	1.91	1.91	1.91	1.90	1.88	1.91	1.89
Nov 17	1.90	1.90	1.91	1.91	1.92	1.92	1.91	1.91	1.91	S	1.91	1.92	1.93	1.91	1.92	1.95	1.94	1.93	1.92	1.92	1.92	1.94	1.96	1.97	1.90	1.97	1.92
Nov 18	2.00	2.02	2.01	2.01	2.01	2.03	2.05	2.05	S	2.06	2.03	2.03	2.04	2.03	2.03	2.03	2.03	2.03	2.03	2.04	2.06	2.11	2.11	2.08	2.00	2.11	2.04
Nov 19	2.10	2.14	2.21	2.07	2.08	2.13	2.10	S	2.12	2.04	2.06	2.06	2.01	2.09	2.01	1.98	2.03	2.07	1.98	1.90	1.91	1.91	1.90	1.93	1.90	2.21	2.04
Nov 20	1.94	1.95	1.96	2.01	2.02	2.01	S	1.97	1.91	1.92	1.92	1.93	1.93	1.93	1.93	1.92	1.95	1.95	1.95	1.95	1.96	1.94	1.94	1.91	2.02	1.95	
Nov 21	1.94	1.94	1.95	2.00	1.98	S	1.97	2.02	1.99	1.98	1.98	2.00	1.99	1.97	1.98	1.98	1.98	1.99	2.01	1.99	2.00	2.00	2.03	2.04	1.94	2.04	1.99
Nov 22	2.04	2.03	2.04	2.05	S	2.02	2.03	2.04	2.04	2.05	2.16	2.01	1.98	2.01	2.05	2.07	2.05	2.06	2.08	2.11	2.15	2.17	2.16	2.14	1.98	2.17	2.07
Nov 23	2.10	1.98	1.91	S	1.88	1.88	1.90	1.95	1.93	1.94	1.92	1.92	1.91	1.91	1.91	1.92	1.92	1.93	1.93	1.93	1.92	1.92	1.92	1.93	1.88	2.10	1.93
Nov 24	1.92	1.93	S	1.94	1.93	1.94	1.94	1.94	1.95	1.96	1.96	1.97	1.98	1.97	1.97	1.97	1.96	1.97	2.01	2.02	2.02	2.02	2.02	2.02	1.92	2.02	1.97
Nov 25	2.04	S	2.03	2.01	2.00	1.99	1.98	1.99	2.00	2.01	2.03	2.03	2.04	2.05	2.05	2.06	2.05	2.05	2.06	2.10	2.12	2.12	2.15	2.12	1.98	2.15	2.05
Nov 26	S	2.04	2.09	2.08	2.03	2.03	2.09	1.97	1.90	1.89	1.89	1.89	2.03	2.21	2.09	1.90	1.88	1.88	1.88	1.88	1.88	1.89	1.89	S	1.88	2.21	1.97
Nov 27	1.89	1.90	1.90	1.92	1.98	2.01	2.01	1.98	1.97	1.97	1.97	1.96	1.98	2.00	1.99	1.99	1.97	1.96	1.93	1.93	1.96	1.97	S	1.98	1.89	2.01	1.96
Nov 28	1.97	1.97	1.95	1.94	1.93	1.93	1.93	1.93	1.94	1.96	1.95	1.96	1.96	1.99	2.00	2.01	2.02	2.03	2.05	2.06	2.06	S	1.97	1.94	1.93	2.06	1.97
Nov 29	1.93	1.92	1.91	1.91	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.94	1.93	1.90	1.90	1.90	1.88	1.97	1.97	S	1.96	1.95	1.92	1.88	1.97	1.92	
Nov 30	1.92	2.00	1.95	1.92	1.93	1.93	1.94	1.95	1.95	1.97	2.00	2.03	2.06	2.07	2.07	2.06	2.07	2.06	2.04	S	2.03	2.04	2.04	2.12	1.92	2.12	2.01
Diurnal Maximum	2.10	2.14	2.21	2.15	2.22	2.28	2.34	2.33	2.31	2.52	2.34	2.12	2.08	2.21	2.09	2.44	2.53	2.37	2.08	2.22	2.22	2.19	2.16	2.14			
Dalurnal Average	1.96	1.97	1.98	1.98	1.99	2.00	2.00	2.00	1.99	2.00	2.00	1.97	1.97	1.98	1.97	1.98	1.99	1.99	1.98	1.98	1.99	1.98	1.98	1.98			

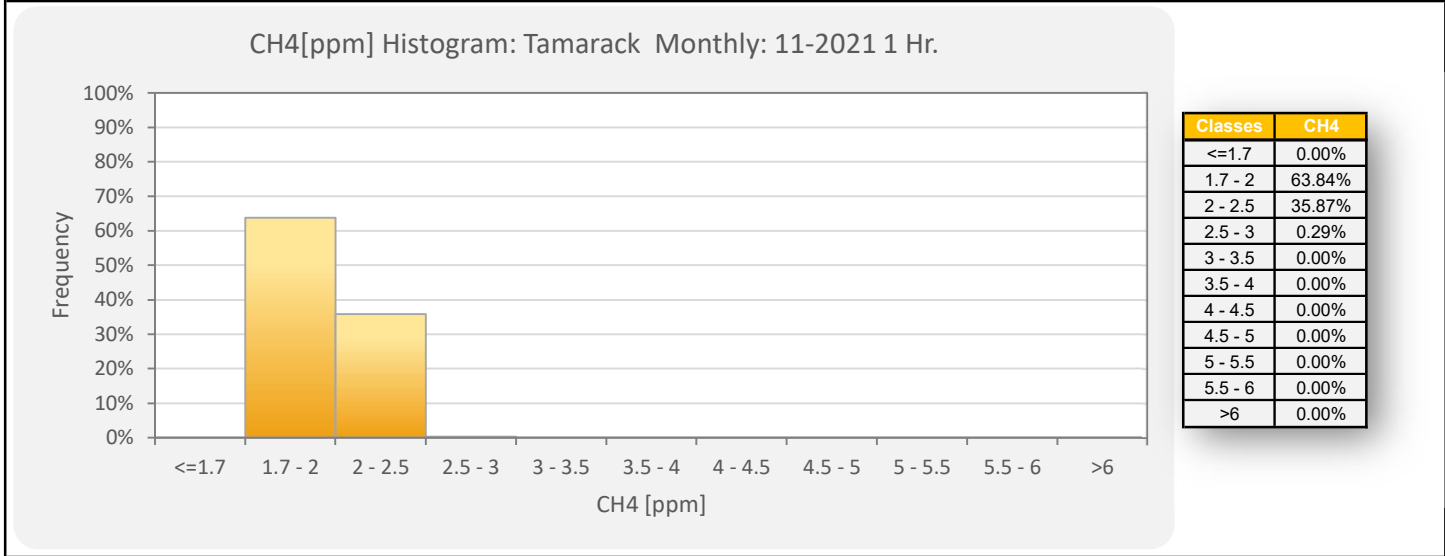
C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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

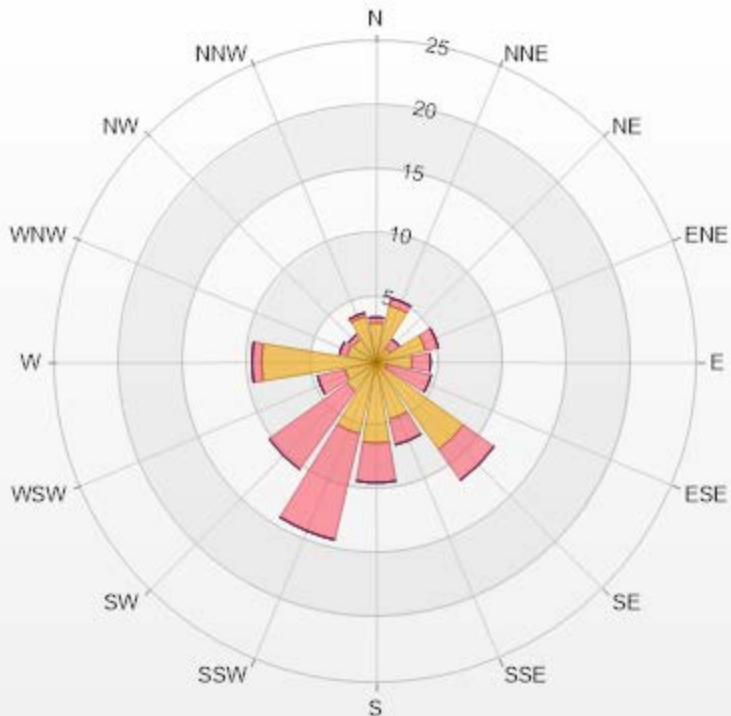
Timeseries Chart of Hourly Average for CH4 - Tamarack Site





Wind: Tamarack Poll.: Tamarack-CH4[ppm] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.86% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-20	>20.0	Total
N	3.07	0.44	0	0	0	3.51
NNE	4.54	0.59	0	0	0	5.13
NE	1.32	0.88	0	0	0	2.2
ENE	3.95	1.02	0	0	0	4.97
E	2.78	1.46	0	0	0	4.24
ESE	0.88	3.51	0	0	0	4.39
SE	8.35	2.93	0	0	0	11.28
SSE	4.54	2.05	0	0	0	6.59
S	6.3	3.07	0	0	0	9.37
SSW	5.71	8.49	0	0	0	14.2
SW	2.78	7.47	0	0	0	10.25
WSW	2.49	2.2	0	0	0	4.69
W	8.93	0.73	0	0	0	9.66
WNW	2.34	0.59	0	0	0	2.93
NW	2.2	0.44	0	0	0	2.64
NNW	3.66	0.29	0	0	0	3.95
Summary	63.84	36.16	0	0	0	100



LICA-202111

% Icon Classes (ppm)

64

0-2

36

2-5

0

5-10

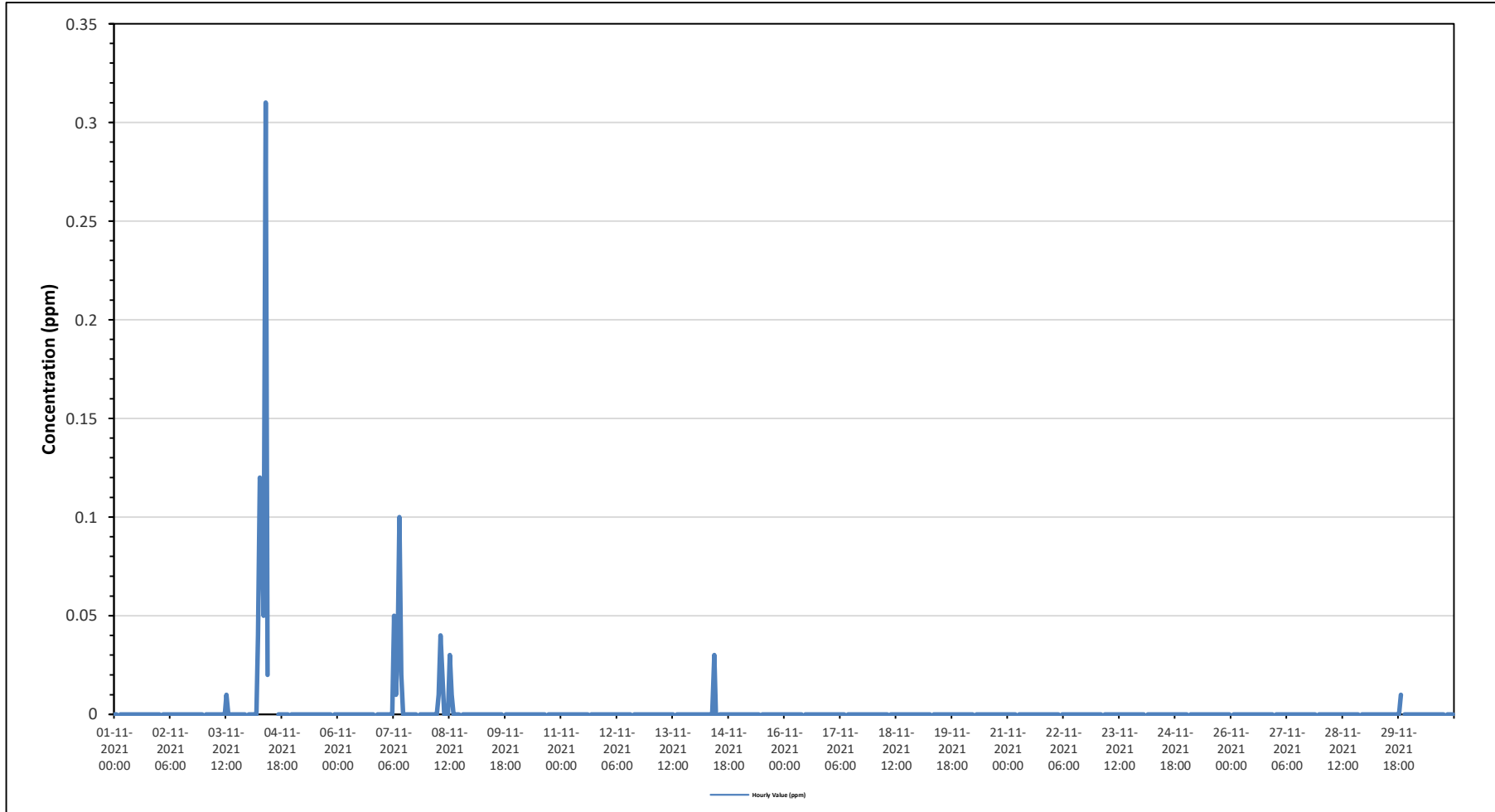
0

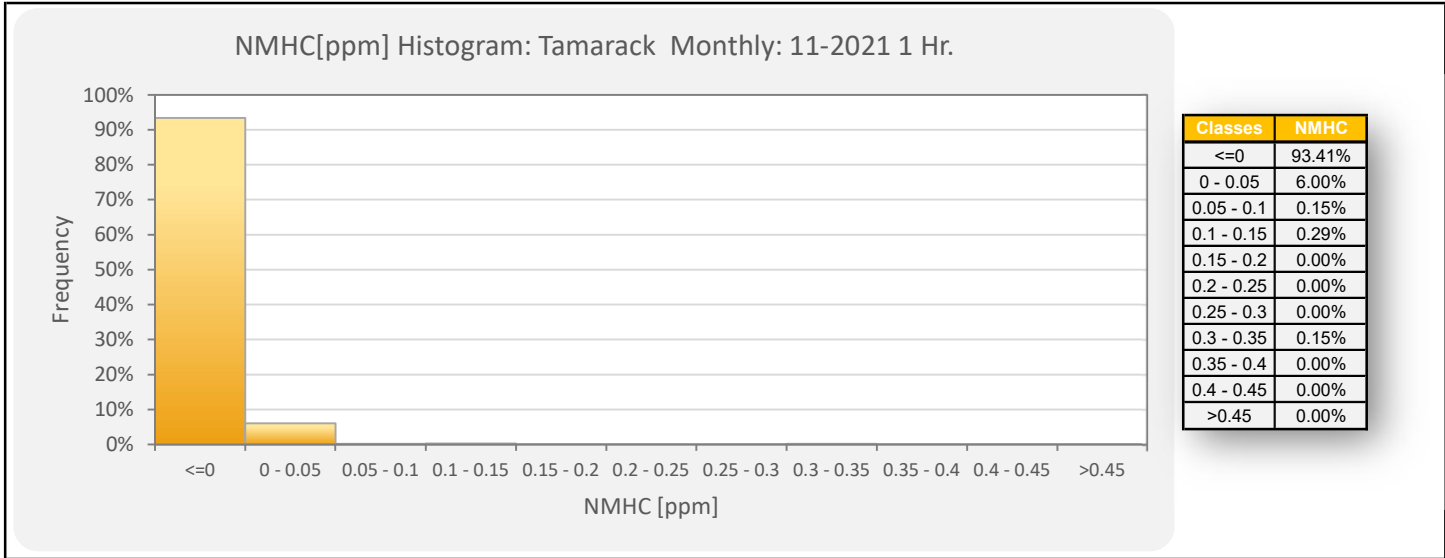
10-20

0

>20.0

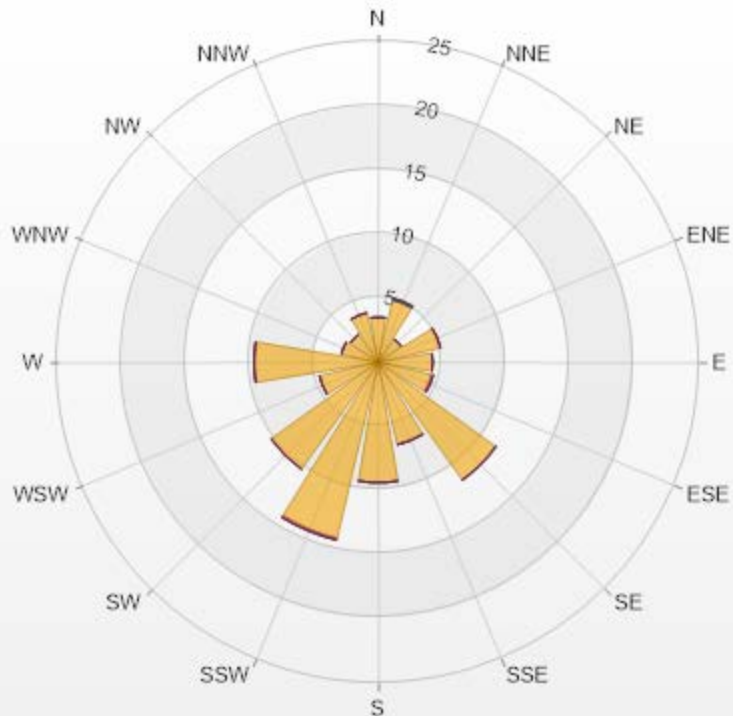
Timeseries Chart of Hourly Average for NMHC - Tamarack Site





Wind: Tamarack Poll.: Tamarack-NMHC[ppm] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.86% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0	Total
N	3.51	0	0	0	0	3.51
NNE	4.98	0	0.15	0	0	5.13
NE	2.2	0	0	0	0	2.2
ENE	4.98	0	0	0	0	4.98
E	4.25	0	0	0	0	4.25
ESE	4.25	0.15	0	0	0	4.4
SE	11.27	0	0	0	0	11.27
SSE	6.59	0	0	0	0	6.59
S	9.37	0	0	0	0	9.37
SSW	14.06	0.15	0	0	0	14.21
SW	10.25	0	0	0	0	10.25
WSW	4.69	0	0	0	0	4.69
W	9.66	0	0	0	0	9.66
WNW	2.93	0	0	0	0	2.93
NW	2.64	0	0	0	0	2.64
NNW	3.95	0	0	0	0	3.95
Summary	100	0.3	0.15	0	0	100



LICA-202111

Page 141 of 239

% Icon Classes (ppm)

100 ■ 0-0.1

0 ■ 0.1-0.3

0 ■ 0.3-0.9

0 ■ 0.9-2

0 ■ >2.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

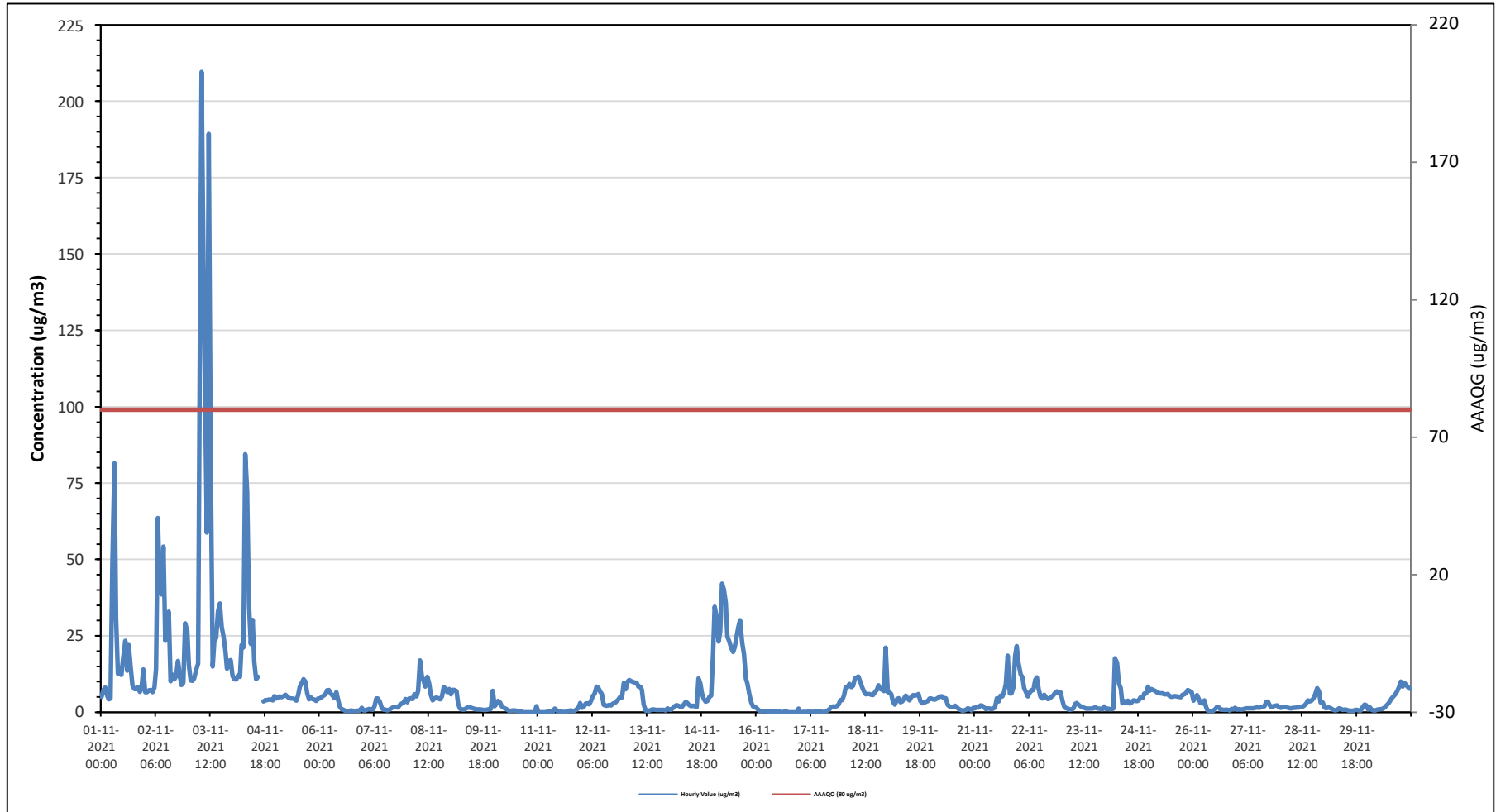
PARTICULATE MATTER 2.5 (PM_{2.5}) in µg/m³

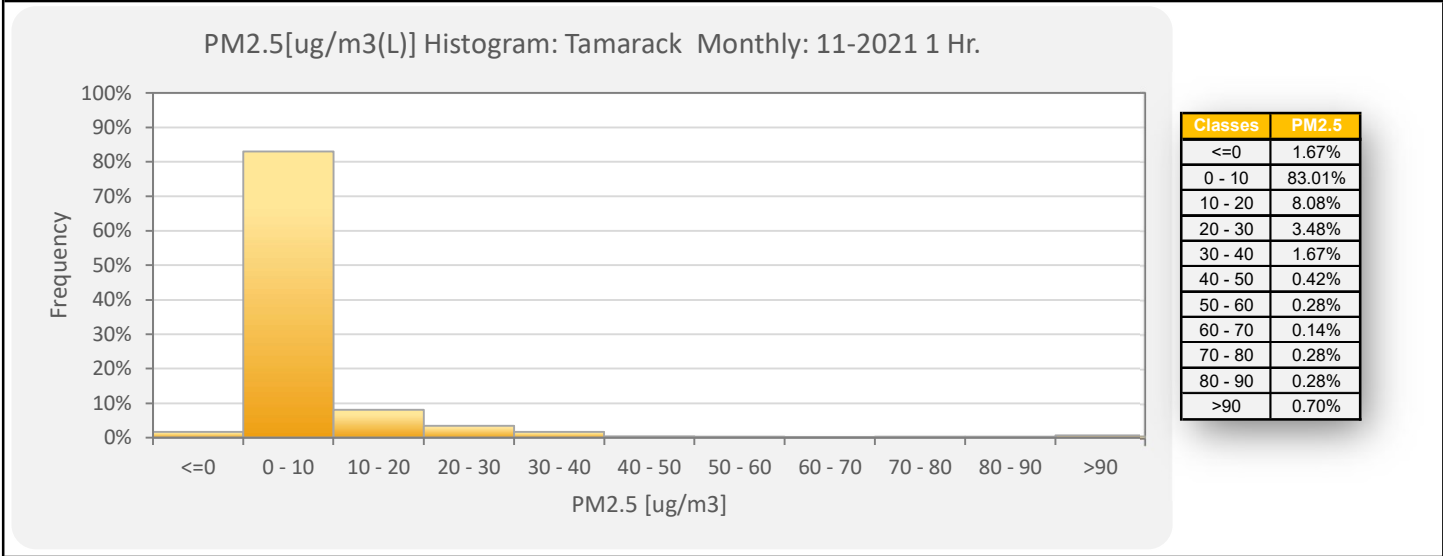
Alberta Ambient Air Quality Guideline (AAAQG): 1-Hour 80 µg/m ³ , Alberta Ambient Air Quality Objective (AAAO): 24-Hour 29 µg/m ³																												
Number of 1-Hour Exceedences: 7							Number of 24-Hour Exceedences: 1																					
Maximum Hourly Value: 210 µg/m ³ on November 3 at hour 7													Hours in Service: 720															
Maximum Daily Value: 51.6 µg/m ³ on November 3													Hours of Data: 718															
Minimum Hourly Value: 0 µg/m ³ on November 10 at hour 16													Hours of Missing Data: 0															
Minimum Daily Value: 0 µg/m ³ on November 16													Hours of Calibration: 2															
Monthly Average: 7.1 µg/m ³													Operational Uptime: 100.0															
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Nov 1	5	7	8	6	4	5	48	82	31	13	14	12	18	23	14	22	15	9	8	8	8	7	8	14	4	82	16.1	
Nov 2	7	7	7	7	7	8	14	64	40	39	54	23	29	33	10	12	11	12	17	12	9	10	29	27	7	64	20.2	
Nov 3	15	10	10	11	14	16	127	210	148	99	59	189	78	15	23	24	33	36	28	25	20	14	17	17	10	210	51.6	
Nov 4	12	11	11	12	12	22	21	85	72	35	22	30	16	11	12	C	C	4	4	4	4	4	4	5	4	85	18.7	
Nov 5	5	5	5	5	5	6	5	5	5	5	4	4	6	8	10	11	10	6	4	5	4	4	4	4	4	4	11	5.6
Nov 6	4	5	5	6	7	7	6	5	5	7	4	2	1	1	0	0	0	1	1	0	1	1	1	1	0	7	3.0	
Nov 7	1	1	1	1	1	1	2	4	5	3	1	1	1	1	1	1	2	2	2	2	3	3	4	4	1	5	1.8	
Nov 8	3	4	5	4	6	5	7	17	12	10	8	12	9	6	4	4	5	5	4	5	8	8	7	8	3	17	6.9	
Nov 9	6	7	7	7	3	1	1	1	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	7	1	7	2.3	
Nov 10	2	3	4	3	2	1	1	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	2	0	4	0.9		
Nov 11	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	1	1	3	0	3	0.4		
Nov 12	1	2	3	3	3	4	5	6	8	8	7	6	2	2	2	2	3	3	4	4	5	5	10	1	10	4.1		
Nov 13	8	10	11	10	10	10	10	8	8	7	3	1	0	1	1	1	1	1	1	1	1	1	1	0	11	4.3		
Nov 14	1	1	1	2	2	2	2	2	3	3	3	2	2	2	2	2	11	9	6	4	3	4	5	5	1	11	3.4	
Nov 15	19	35	32	23	26	42	40	36	25	23	21	20	21	25	28	30	23	19	11	9	6	3	2	2	2	42	21.7	
Nov 16	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.3		
Nov 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	3	4	4	0	4	0.9		
Nov 18	6	8	8	9	8	9	11	11	12	10	8	7	6	6	6	6	6	7	7	9	8	7	7	21	6	21	8.4	
Nov 19	7	6	6	3	3	4	5	3	4	5	5	5	4	5	6	5	6	6	4	3	3	4	5	3	7	4.5		
Nov 20	5	4	4	4	5	5	4	5	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	5	2.5	
Nov 21	1	2	2	2	2	2	1	1	1	1	1	2	5	4	5	5	7	9	19	6	6	8	18	22	1	22	5.4	
Nov 22	16	12	11	8	7	5	6	7	7	11	11	8	5	5	6	5	4	4	5	6	6	7	6	6	4	16	7.3	
Nov 23	4	2	1	1	1	1	1	3	3	2	2	2	1	1	1	1	1	2	1	1	1	1	2	1	4	1.6		
Nov 24	1	1	1	1	1	18	16	9	8	3	4	3	4	3	3	4	4	4	5	5	6	6	8	1	18	5.1		
Nov 25	7	8	7	7	6	6	6	6	6	6	6	5	5	5	5	5	5	5	6	6	6	7	7	7	5	8	6.1	
Nov 26	4	5	6	4	3	3	4	2	1	0	0	1	1	2	2	1	1	1	1	1	1	1	1	0	6	1.8		
Nov 27	1	1	1	1	1	1	1	1	1	1	1	2	1	2	2	2	3	3	2	2	2	2	2	2	1	3	1.6	
Nov 28	1	2	2	2	1	1	1	1	1	2	2	2	2	2	3	4	4	4	5	6	8	7	3	3	1	8	2.8	
Nov 29	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	2	1	3	1.0		
Nov 30	1	2	1	1	1	1	1	1	1	2	2	3	4	4	5	6	7	8	10	8	10	9	8	8	1	10	4.2	
Diurnal Maximum	19	35	32	23	26	42	127	210	148	99	59	189	78	33	28	30	33	36	28	25	20	14	29	27				
Diurnal Average	4.8	5.4	5.4	4.9	4.7	6.2	11.7	19.2	13.8	10.0	8.3	11.4	7.5	5.6	5.1	5.4	5.6	5.4	5.2	4.5	4.4	4.3	5.2	6.8				
C	Monthly Calibration							S	Daily Zero-Span Check							Q	Quality Assurance											
K	Collection Error							N	No Data (Machine Not in Service)							Y	Routine Maintenance							P	Power Failure			
X	Invalid Data (Equipment Malfunction /Recovery)							NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																			

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

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

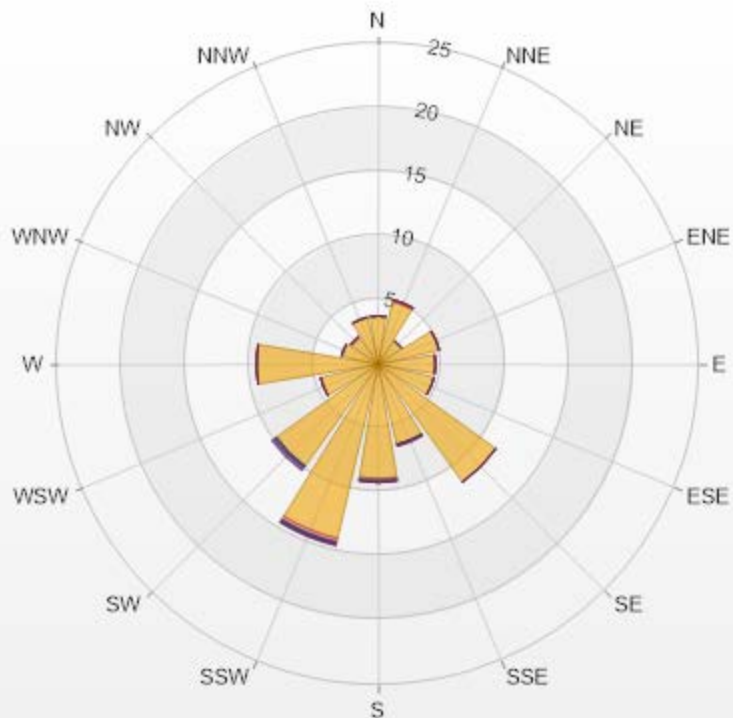
Timeseries Chart of Hourly Average for PM2.5 - Tamarack Site





Wind: Tamarack Poll.: Tamarack-PM2.5[ug/m3(L)] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 99.72% Calm Avg: 0.00 [ug/m3(L)]

Direction	0-50	50-80	80-120	120-240	>240.0	Total
N	3.76	0	0	0	0	3.76
NNE	5.01	0.14	0	0	0	5.15
NE	2.23	0	0	0	0	2.23
ENE	4.87	0	0	0	0	4.87
E	4.46	0	0	0	0	4.46
ESE	4.46	0	0	0	0	4.46
SE	11.28	0	0	0	0	11.28
SSE	6.41	0	0	0.14	0	6.55
S	8.91	0.14	0.14	0	0	9.19
SSW	13.93	0.28	0.14	0.14	0	14.49
SW	9.75	0	0.14	0.28	0	10.17
WSW	4.6	0	0	0	0	4.6
W	9.47	0	0	0	0	9.47
WNW	2.92	0	0	0	0	2.92
NW	2.51	0.14	0	0	0	2.65
NNW	3.76	0	0	0	0	3.76
Summary	98.33	0.7	0.42	0.56	0	100



LICA-202111

Page 146 of 239

% Icon Classes (ug/m3(L))	98	0-50	1	50-80	0	80-120	1	120-240	0	>240.0
---------------------------	----	------	---	-------	---	--------	---	---------	---	--------



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

RELATIVE HUMIDITY (RH) in %

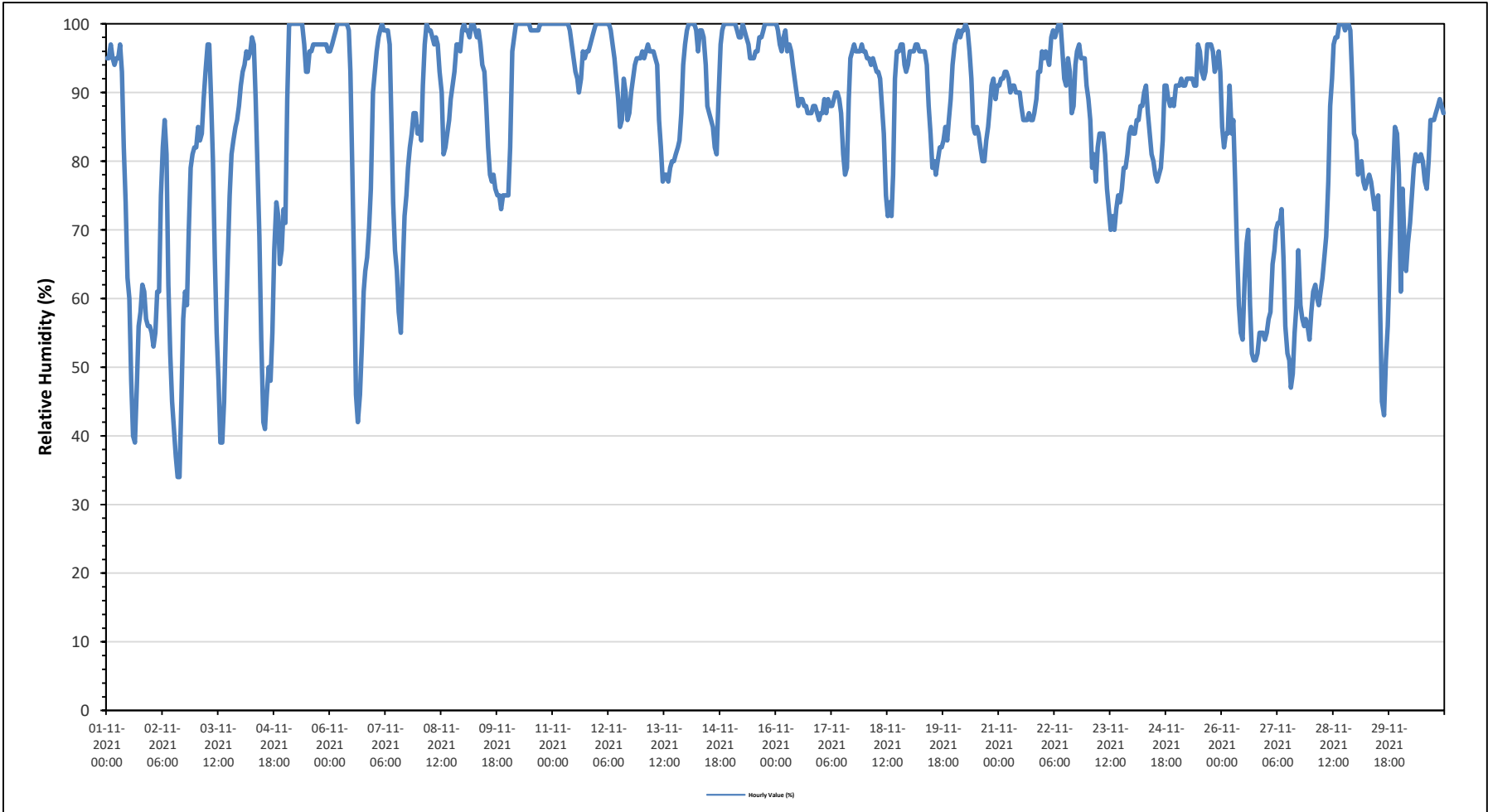
Maximum Hourly Value:	100 %	on November 5 at hour 2	Hours in Service:	720
Maximum Daily Value:	98.4 %	on November 15	Hours of Data:	720
Minimum Hourly Value:	34 %	on November 2 at hour 14	Hours of Missing Data:	0
Minimum Daily Value:	59.5 %	on November 27	Hours of Calibration:	0
Monthly Average:	84.7 %		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Nov 1	95	95	97	95	94	95	95	97	93	82	74	63	60	48	40	39	47	56	58	62	61	57	56	56	39	97	71.5	
Nov 2	55	53	55	61	61	75	82	86	81	62	52	45	41	37	34	34	45	57	61	59	70	79	81	82	34	86	60.3	
Nov 3	82	85	83	84	89	93	97	97	89	80	66	55	48	39	39	45	56	66	75	81	83	85	86	88	39	97	74.6	
Nov 4	91	93	94	96	95	96	98	97	89	79	69	54	42	41	46	50	48	55	67	74	72	65	67	73	41	98	73.0	
Nov 5	71	89	100	100	100	100	100	100	100	100	97	93	93	96	96	97	97	97	97	97	97	97	97	96	71	100	96.1	
Nov 6	96	97	98	99	100	100	100	100	100	100	99	93	79	64	46	42	46	53	61	64	66	70	76	90	42	100	80.8	
Nov 7	93	96	98	99	100	99	99	99	97	85	74	67	64	58	55	64	72	75	79	82	84	87	87	84	55	100	83.2	
Nov 8	85	83	91	97	100	99	99	98	97	98	97	93	90	81	82	84	86	89	91	93	97	97	96	99	81	100	92.6	
Nov 9	100	99	99	98	100	100	99	98	99	97	94	93	88	82	78	77	78	76	75	75	73	75	75	75	73	100	87.6	
Nov 10	75	82	96	98	100	100	100	100	100	100	100	100	99	99	99	99	99	100	100	100	100	100	100	100	75	100	97.8	
Nov 11	100	100	100	100	100	100	100	100	100	99	97	95	93	92	90	92	96	95	96	96	97	98	99	100	90	100	97.3	
Nov 12	100	100	100	100	100	100	100	99	97	95	92	89	85	86	92	90	86	87	90	92	94	95	95	95	85	100	94.1	
Nov 13	96	95	96	97	96	96	96	95	94	86	82	77	78	78	77	79	80	80	81	82	83	87	94	97	77	97	87.6	
Nov 14	99	100	100	100	100	99	96	99	99	98	94	88	87	86	85	82	81	89	97	99	100	100	100	100	81	100	94.9	
Nov 15	100	100	100	99	98	98	100	99	98	97	95	95	95	96	96	98	98	99	100	100	100	100	100	100	95	100	98.4	
Nov 16	100	99	97	96	98	99	96	97	96	94	92	90	88	89	89	88	88	87	87	87	88	88	87	86	86	100	91.9	
Nov 17	87	87	89	87	89	88	88	89	90	90	89	87	81	78	79	89	95	96	97	96	96	96	97	96	78	97	89.8	
Nov 18	96	95	95	94	95	94	93	93	92	88	84	75	72	74	72	78	92	96	96	97	97	94	93	94	72	97	89.5	
Nov 19	96	96	96	97	97	96	96	96	94	88	84	79	80	78	80	82	82	83	85	83	86	89	94	78	97	88.9		
Nov 20	97	98	99	98	99	99	100	99	96	92	85	84	85	84	82	80	80	83	85	88	91	92	89	91	80	100	90.7	
Nov 21	91	92	92	93	93	92	90	91	91	90	90	90	88	86	86	86	87	86	86	87	89	93	93	96	86	96	89.9	
Nov 22	95	96	95	94	98	99	98	99	100	100	96	92	91	95	93	87	88	94	96	97	95	95	91	87	100	95.0		
Nov 23	89	86	79	81	77	82	84	84	84	81	76	73	70	72	70	73	75	74	76	79	79	81	84	85	70	89	78.9	
Nov 24	84	84	86	86	88	88	90	91	87	84	81	80	78	77	78	79	83	91	91	89	88	89	88	91	77	91	85.5	
Nov 25	91	91	92	91	91	92	92	92	92	91	91	97	96	93	92	93	97	97	97	96	93	94	96	93	91	97	93.3	
Nov 26	85	82	84	84	91	84	86	77	67	59	55	54	63	68	70	59	52	51	51	52	55	55	54	51	91	97	66.4	
Nov 27	55	57	58	65	67	70	71	71	73	66	56	52	51	47	49	55	59	67	59	57	56	57	56	54	47	73	59.5	
Nov 28	58	61	62	60	59	61	63	66	69	77	88	92	97	98	98	100	100	100	99	100	100	99	92	84	58	100	82.6	
Nov 29	83	78	79	80	77	76	77	78	77	75	73	74	75	59	45	43	51	56	65	71	78	85	84	78	43	85	71.5	
Nov 30	61	76	69	64	68	71	75	79	81	80	80	81	80	77	76	80	86	86	86	87	88	89	88	87	61	89	79.0	
Diurnal Maximum	100	100	100	100	100	100	100	100	100	100	100	99	99	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Daiurnal Average	86.9	88.2	89.3	89.8	90.7	91.4	92.0	92.2	90.8	87.3	83.5	80.2	77.9	75.3	73.7	74.7	77.7	80.7	82.7	84.1	85.1	86.2	86.5	87.0				

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

Timeseries Chart of Hourly Average for RH - Tamarack Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

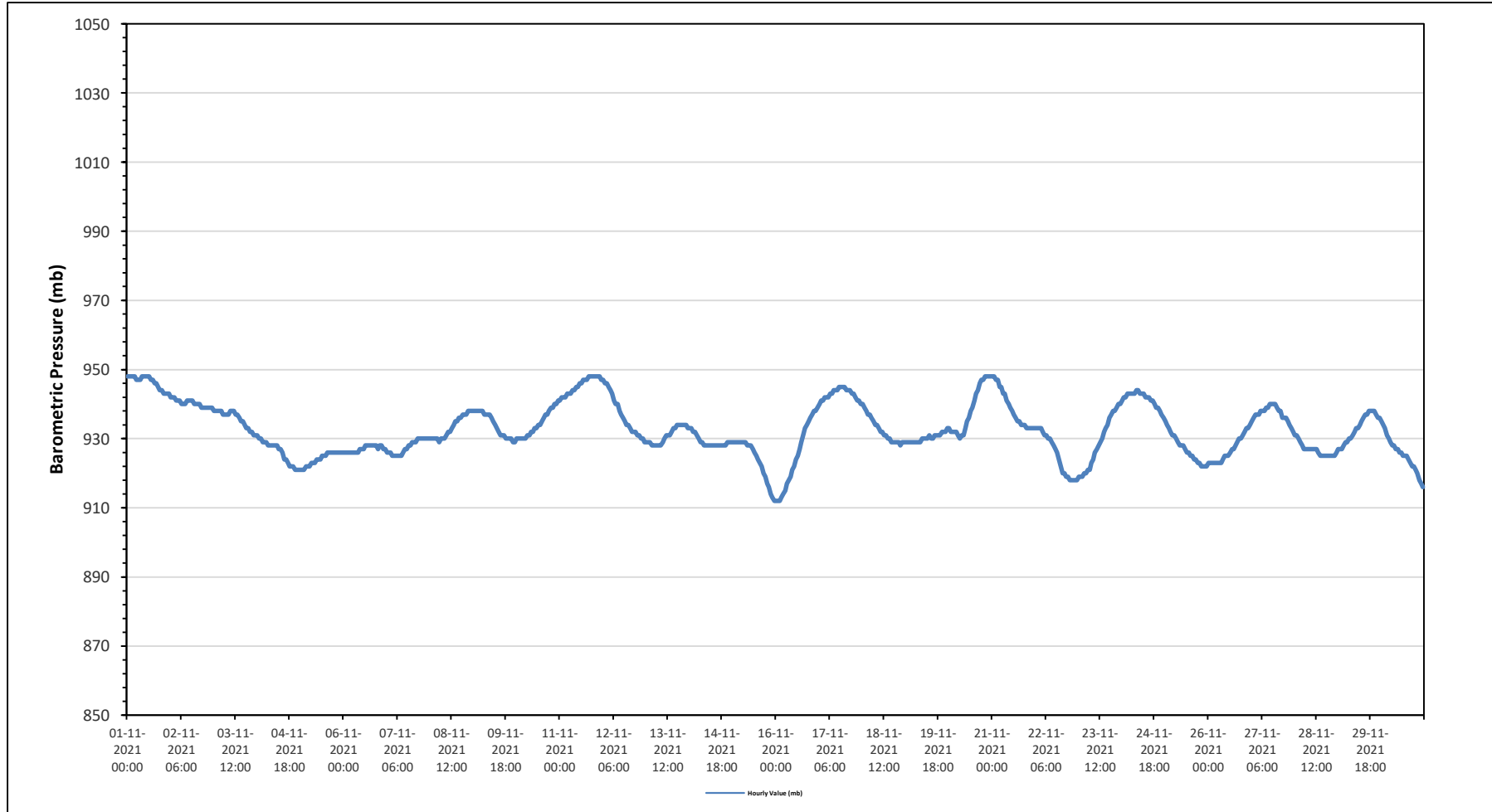
BAROMETRIC PRESSURE (BP) in millibar

Maximum Hourly Value:	948 mb	on November 1 at hour 0	Hours in Service:	720																																				
Maximum Daily Value:	946 mb	on November 1	Hours of Data:	720																																				
Minimum Hourly Value:	912 mb	on November 15 at hour 23	Hours of Missing Data:	0																																				
Minimum Daily Value:	924 mb	on November 15	Hours of Calibration:	0																																				
Monthly Average:	933 mb		Operational Uptime:	100.0																																				
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average														
Nov 1	948	948	948	948	948	947	947	947	948	948	948	948	948	947	947	946	946	945	944	944	943	943	943	943	943	943	943	948	946.3											
Nov 2	942	942	942	941	941	941	940	940	940	941	941	941	941	940	940	940	940	939	939	939	939	939	939	939	939	939	939	942	940.3											
Nov 3	938	938	938	938	938	937	937	937	937	938	938	938	937	937	936	935	935	934	933	933	932	932	931	931	931	931	931	938	935.8											
Nov 4	931	930	930	929	929	929	928	928	928	928	928	928	927	927	926	924	924	923	922	922	922	921	921	921	921	921	921	931	926.1											
Nov 5	921	921	921	922	922	922	923	923	923	924	924	924	925	925	925	926	926	926	926	926	926	926	926	926	926	926	926	926	924.1											
Nov 6	926	926	926	926	926	926	926	926	926	927	927	927	928	928	928	928	928	928	928	927	927	928	928	927	927	927	926	928	927.0											
Nov 7	926	926	926	925	925	925	925	925	925	926	927	927	928	928	929	929	929	930	930	930	930	930	930	930	930	930	925	930	927.5											
Nov 8	930	930	930	930	930	929	930	930	930	931	932	932	933	934	935	935	936	936	937	937	937	938	938	938	938	938	929	938	933.3											
Nov 9	938	938	938	938	938	938	937	937	937	937	936	935	934	933	932	931	931	931	930	930	930	929	929	929	929	929	929	938	934.0											
Nov 10	930	930	930	930	930	930	931	931	932	932	933	933	934	934	935	936	937	937	938	939	939	940	940	941	941	941	930	941	934.3											
Nov 11	941	942	942	942	943	943	943	944	944	945	945	946	946	947	947	948	948	948	948	948	948	948	948	948	947	947	941	948	945.4											
Nov 12	947	946	946	945	944	943	941	940	940	938	937	936	935	934	934	933	932	932	931	931	930	930	929	929	929	929	929	947	936.9											
Nov 13	929	929	929	928	928	928	928	928	928	928	929	930	931	931	931	932	933	933	934	934	934	934	934	934	934	933	928	934	930.9											
Nov 14	933	933	932	932	931	930	929	929	928	928	928	928	928	928	928	928	928	928	928	928	928	928	929	929	929	929	928	933	929.2											
Nov 15	929	929	929	929	929	929	929	929	928	928	928	927	926	925	924	923	922	920	919	917	916	914	913	912	912	912	929	923.9												
Nov 16	912	912	912	913	914	915	917	918	919	921	922	924	925	927	929	931	933	934	935	936	937	938	938	939	939	912	939	925.0												
Nov 17	940	941	941	942	942	942	943	943	944	944	944	945	945	945	945	944	944	944	943	943	942	941	941	940	940	940	945	942.8												
Nov 18	940	939	938	937	937	936	935	934	934	933	932	932	931	931	930	930	929	929	929	929	929	928	929	929	929	929	928	940	932.5											
Nov 19	929	929	929	929	929	929	929	929	929	930	930	930	931	931	930	931	931	931	931	931	932	932	932	933	933	929	933	930.2												
Nov 20	933	932	932	932	932	931	930	931	931	933	935	936	938	939	941	943	944	946	947	947	948	948	948	948	948	930	948	938.5												
Nov 21	948	948	947	947	945	945	943	943	941	940	939	938	937	936	935	935	934	934	934	933	933	933	933	933	933	933	948	938.9												
Nov 22	933	933	933	933	932	931	931	930	929	928	927	926	924	922	920	920	919	919	918	918	918	918	918	918	918	918	933	925.4												
Nov 23	919	919	919	920	920	921	921	923	924	926	927	928	929	930	932	933	934	936	937	938	938	939	940	940	940	919	940	928.9												
Nov 24	941	942	942	943	943	943	943	943	944	944	943	943	943	942	942	942	941	941	940	939	939	938	937	936	936	936	944	941.4												
Nov 25	935	934	933	932	931	931	930	929	928	928	928	927	926	926	925	924	924	923	923	922	922	922	922	922	922	922	935	927.1												
Nov 26	923	923	923	923	923	923	923	924	925	925	925	926	927	927	928	929	930	930	931	932	933	933	934	934	934	923	934	926.8												
Nov 27	935	936	937	937	937	938	938	938	939	939	940	940	940	940	939	938	938	936	936	936	936	935	934	933	932	932	940	937.1												
Nov 28	931	931	930	929	928	927	927	927	927	927	927	927	927	926	925	925	925	925	925	925	925	925	925	925	925	925	931	926.8												
Nov 29	927	927	927	928	929	929	930	931	932	933	933	934	935	936	937	937	938	938	938	938	937	936	936	936	936	927	938	933.2												
Nov 30	935	934	933	931	930	929	928	928	927	927	926	926	925	925	925	924	923	922	922	921	920	918	917	916	916	916	935	925.5												
Diurnal Maximum	948	948	948	948	948	947	947	947	948	948	948	948	948	947	947	947	948	948	948	948	948	948	948	948	948	943	948	946.3												
Diurnal Average	933	933	933	932	932	932	932	932	933	933	933	933	933	933	933	933	933	933	932	932	932	932	932	932	932	933	948	938.9												
C	Monthly Calibration										S Daily Zero-Span Check										Q Quality Assurance																			
K	Collection Error										N No Data (Machine Not in Service)										Y Routine Maintenance										P Power Failure									
X	Invalid Data (Equipment Malfunction/Recovery)										NRM UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																													

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

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

Timeseries Chart of Hourly Average for BP - Tamarack Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

AMBIENT TEMPERATURE (AT) in Degree Celsius

Maximum Hourly Value:	9.4 °C	on November 4 at hour 13	Hours in Service:	720
Maximum Daily Value:	3.4 °C	on November 5	Hours of Data:	720
Minimum Hourly Value:	-18.7 °C	on November 21 at hour 3	Hours of Missing Data:	0
Minimum Daily Value:	-15.9 °C	on November 24	Hours of Calibration:	0
Monthly Average:	-4.5 °C		Operational Uptime:	100.0

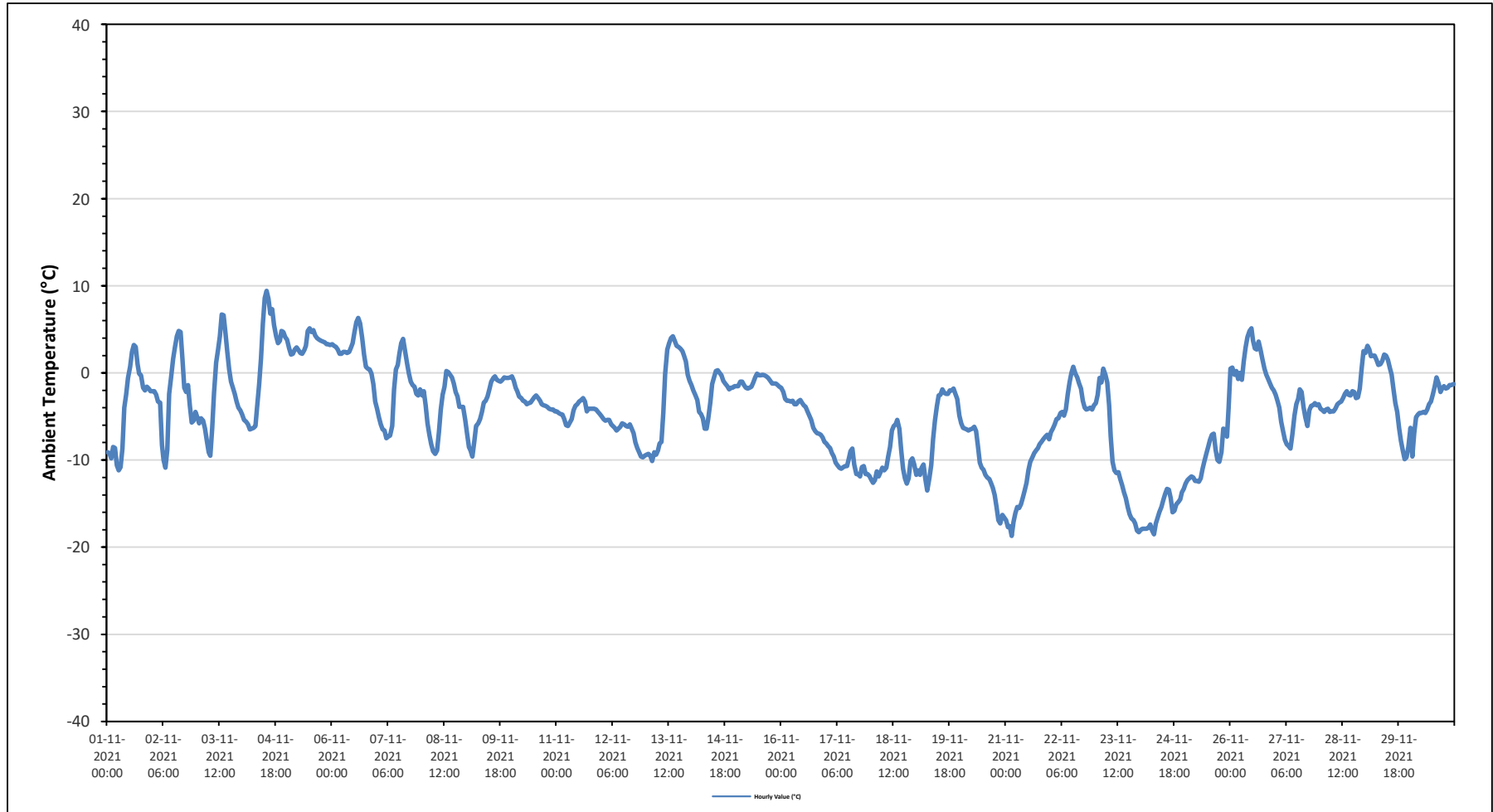
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Nov 1	-9.1	-9.2	-9.8	-8.5	-8.6	-10.6	-11.2	-10.8	-8.7	-4	-2.5	-0.6	0.7	2.4	3.2	3	1	-0.1	-0.3	-1.7	-2	-1.6	-1.8	-2.1	-11.2	3.2	-3.9
Nov 2	-2.1	-2.1	-2.5	-3.3	-3.4	-8.3	-10	-10.9	-8.8	-2.4	-0.6	1.6	3	4.2	4.8	4.7	1.6	-1.7	-2.2	-1.4	-3.8	-5.7	-5.5	-4.5	-10.9	4.8	-2.5
Nov 3	-5.1	-5.8	-5.2	-5.5	-6.4	-7.8	-9.1	-9.5	-6.4	-2.3	1.2	2.6	4.2	6.7	6.6	4.6	2.4	0.4	-1	-1.8	-2.4	-3.3	-4	-4.3	-9.5	6.7	-2.1
Nov 4	-4.8	-5.4	-5.6	-5.9	-6.5	-6.4	-6.3	-6.1	-4	-1.3	1.7	5.7	8.6	9.4	8.5	6.8	7.3	5.5	4.2	3.4	3.7	4.8	4.7	4.1	-6.5	9.4	1.1
Nov 5	3.8	2.8	2.1	2.2	2.7	2.9	2.6	2.3	2.2	2.6	3.1	4.8	5.1	4.7	4.9	4.3	4	3.8	3.7	3.6	3.5	3.3	3.3	3.2	2.1	5.1	3.4
Nov 6	3.3	3.1	3	2.7	2.2	2.2	2.4	2.4	2.3	2.4	2.9	3.4	4.7	5.8	6.3	5.7	4	2.1	0.7	0.5	0.4	-0.1	-1.3	-3.3	-3.3	6.3	2.4
Nov 7	-4.1	-5.1	-5.9	-6.5	-6.6	-7.5	-7.3	-7.2	-6.1	-1.9	0.4	0.9	2.2	3.4	3.9	2.4	1.1	-0.1	-1	-1.4	-1.6	-2.4	-2.6	-1.9	-7.5	3.9	-2.3
Nov 8	-2.6	-2.1	-3.7	-5.8	-7.1	-8.2	-9	-9.3	-8.9	-6.8	-4.2	-2.5	-1.6	0.2	0.1	-0.2	-0.5	-1.2	-2.2	-2.7	-3.9	-3.9	-3.9	-5.4	-9.3	0.2	-4.0
Nov 9	-7	-8.5	-8.9	-9.6	-7.9	-6.1	-5.8	-5.3	-4.5	-3.4	-3.2	-2.7	-1.9	-1	-0.6	-0.4	-0.8	-0.9	-1	-0.8	-0.5	-0.6	-0.6	-0.5	-9.6	-0.4	-3.4
Nov 10	-0.4	-0.9	-1.7	-2.1	-2.7	-2.9	-3.2	-3.3	-3.6	-3.5	-3.4	-3.1	-2.8	-2.6	-2.9	-3.2	-3.6	-3.7	-3.8	-3.9	-4.1	-4.2	-4.2	-4.4	-4.4	-0.4	-3.1
Nov 11	-4.4	-4.6	-4.7	-4.8	-5.3	-6	-6.1	-5.7	-5.3	-4.3	-3.8	-3.6	-3.3	-3.1	-2.9	-3.3	-4.4	-4.1	-4.1	-4.1	-4.1	-4.2	-4.5	-4.7	-6.1	-2.9	-4.4
Nov 12	-5	-5.3	-5.5	-5.4	-5.4	-5.9	-6.1	-6.3	-6.6	-6.4	-6.2	-5.8	-5.9	-6.1	-6.2	-5.9	-6.4	-6.9	-8	-8.6	-9.1	-9.6	-9.7	-9.5	-9.7	-5.0	-6.7
Nov 13	-9.4	-9.3	-9.5	-10.1	-9.1	-9.4	-8.9	-8.1	-7.9	-4.6	-0.1	2.7	3.4	4	4.2	3.7	3.1	3	2.8	2.5	2	1.3	-0.2	-0.9	-10.1	4.2	-2.3
Nov 14	-1.4	-2	-2.5	-3.1	-4.5	-4.7	-5.2	-6.4	-6.4	-5.3	-3.4	-1.3	-0.5	0.2	0.3	0	-0.3	-0.9	-1.2	-1.5	-1.9	-1.7	-1.7	-1.5	-6.4	0.3	-2.4
Nov 15	-1.5	-1.5	-1	-1	-1.4	-1.7	-1.8	-1.7	-1.6	-1.1	-0.5	-0.1	-0.3	-0.3	-0.2	-0.3	-0.4	-0.6	-0.9	-1.2	-1.2	-1.2	-1.4	-1.6	-1.8	-0.1	-1.0
Nov 16	-1.7	-2.2	-3	-3.2	-3.2	-3.3	-3.2	-3.6	-3.6	-3.3	-3.1	-3.4	-3.7	-3.9	-4.4	-4.9	-5.4	-6.3	-6.7	-6.9	-7	-7.1	-7.4	-7.9	-7.9	-1.7	-4.5
Nov 17	-8.1	-8.4	-8.6	-9.2	-9.6	-10.3	-10.6	-10.9	-11	-10.8	-10.7	-10.7	-9.8	-9	-8.7	-10.5	-11.6	-11.6	-11.9	-10.8	-10.7	-11.6	-11.6	-11.8	-11.9	-8.1	-10.4
Nov 18	-12.3	-12.6	-12.3	-11.3	-11.9	-11.4	-10.9	-11.2	-10.9	-9.6	-8.5	-6.6	-6.1	-5.9	-5.4	-6.4	-8.9	-11	-12.1	-12.7	-12.1	-10.1	-9.8	-10.5	-12.7	-5.4	-10.0
Nov 19	-11.7	-11.2	-11.7	-10.9	-10.5	-12.2	-13.5	-12.1	-10.6	-7.6	-5.5	-3.9	-2.6	-2.5	-1.9	-2.3	-2.4	-2.4	-2	-2	-1.8	-2.4	-3	-4.9	-13.5	-1.8	-6.3
Nov 20	-5.8	-6.3	-6.4	-6.5	-6.6	-6.5	-6.4	-6.2	-6.7	-8.4	-10.3	-10.9	-11.1	-11.7	-12	-12.2	-12.7	-13.2	-14	-15.4	-16.9	-17.3	-16.3	-16.6	-17.3	-5.8	-10.7
Nov 21	-16.9	-17.7	-17.6	-18.7	-17.1	-16.1	-15.4	-15.5	-15.1	-14.3	-13.5	-12.6	-11.2	-10.2	-9.7	-9.2	-8.9	-8.6	-8.2	-7.9	-7.6	-7.3	-7.1	-7.6	-18.7	-7.1	-12.3
Nov 22	-6.8	-6.4	-5.9	-5.3	-5.2	-4.6	-4.5	-4.9	-4.2	-2.5	-1.1	0	0.7	-0.1	-0.5	-1.2	-1.8	-3.2	-4	-4.2	-4.1	-4	-4.2	-3.7	-6.8	0.7	-3.4
Nov 23	-3.5	-2.5	-0.6	-1.1	0.5	-0.2	-1.1	-3.7	-7.3	-10.2	-11.2	-11.5	-11.4	-12.2	-12.9	-13.7	-14.4	-15.4	-16.2	-16.7	-16.9	-17.3	-18.1	-18.3	-18.3	0.5	-9.8
Nov 24	-18	-17.9	-17.9	-17.9	-17.8	-17.4	-18.1	-18.5	-17.3	-16.7	-16	-15.4	-14.6	-13.9	-13.3	-13.4	-14.4	-16	-15.8	-15.1	-14.8	-14.5	-13.7	-13.3	-18.5	-13.3	-15.9
Nov 25	-12.7	-12.3	-12.1	-11.9	-12	-12.4	-12.5	-12.1	-11	-10.1	-9.3	-8.5	-7.7	-7.1	-7	-8.8	-10	-10.2	-9.1	-6.4	-6.5	-7.3	-4	-12.7	-4.0	-9.7	
Nov 26	0.5	0.6	-0.2	0.2	-0.7	0	-0.8	1.3	2.9	4.1	4.8	5.1	3.7	2.8	2.7	3.6	2.7	1.6	0.5	-0.2	-0.7	-1.2	-1.7	-2	-2.0	5.1	1.2
Nov 27	-2.5	-3.2	-4	-5.6	-6.7	-7.7	-8.2	-8.4	-8.7	-7.1	-4.9	-3.6	-3	-1.9	-2.2	-3.9	-5.1	-6.1	-4.3	-3.8	-3.7	-3.5	-3.7	-3.6	-8.7	-1.9	-4.8
Nov 28	-4.1	-4.3	-4.5	-4.2	-4.1	-4.5	-4.4	-4.4	-4.1	-3.6	-3.4	-3.3	-2.9	-2.4	-2.1	-2.5	-2.6	-2.1	-2.2	-2.9	-2.8	-1.8	0.5	2.5	-4.5	2.5	-2.9
Nov 29	2.3	3.1	2.7	1.9	2	1.5	0.9	1	1.4	2.1	2	1.5	0.6	-0.2	-1.9	-3.5	-4.5	-6.3	-7.8	-8.9	-9.9	-9.7	-8.5	-9.9	-3.1	-1.5	
Nov 30	-6.3	-9.6	-6.9	-5.1	-4.8	-4.6	-4.6	-4.5	-4.6	-4.2	-3.6	-3.3	-2.5	-1.6	-0.5	-1.2	-2.2	-1.8	-1.5	-1.8	-1.7	-1.4	-1.4	-1.3	-9.6	-0.5	-3.4
Diurnal Maximum	3.8	3.1	3.0	2.7	2.7	2.9	2.6	2.4	2.9	4.1	4.8	5.7	8.6	9.4	8.5	6.8	7.3	5.5	4.2	3.6	3.7	4.8	4.7	4.1			
Daiurnal Average	-5.2	-5.6	-5.7	-5.9	-5.9	-6.3	-6.6	-6.7	-6.2	-4.9	-2.8	-2.2	-1.7	-1.6	-2.2	-3.1	-3.9	-4.3	-4.5	-4.7	-4.8	-4.9	-5.0				

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

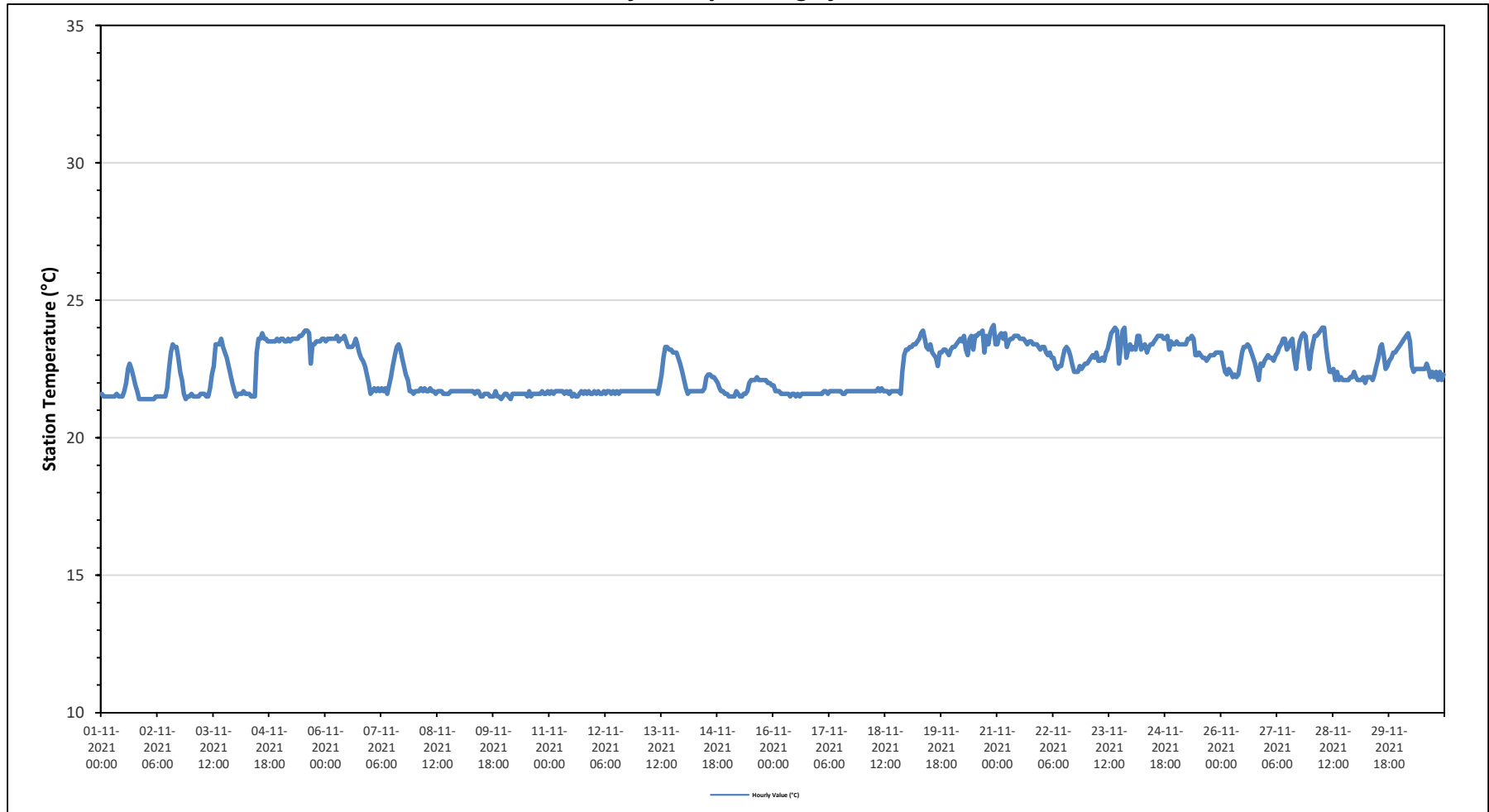
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

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

Timeseries Chart of Hourly Average for AT - Tamarack Site



Timeseries Chart of Hourly Average for ST - Tamarack Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

PRECIPITATION in mm

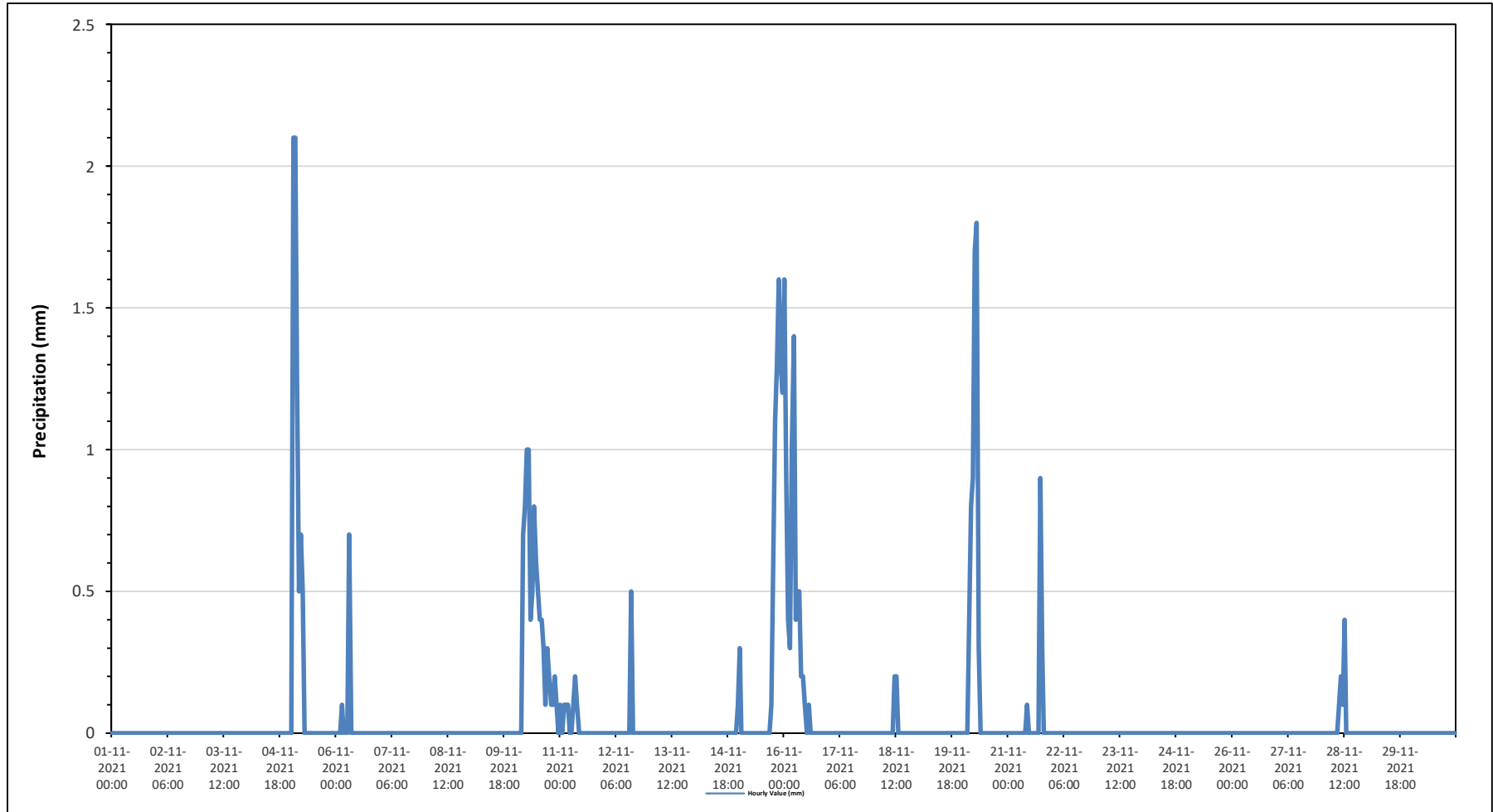
Maximum Hourly Value:	2.1 mm on November 5 at hour 1	Hours in Service:	720
Maximum Daily Value:	0.4 mm on November 10	Hours of Data:	720
Minimum Hourly Value:	0.0 mm on November 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 mm on November 1	Hours of Calibration:	0
Monthly Total:	41.3 mm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Total		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Nov 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	
Nov 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	
Nov 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	
Nov 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	
Nov 5	0	2.1	2.1	1.2	0.5	0.7	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	2.1	0.3	
Nov 6	0	0	0	0.1	0	0	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.7	0.0	
Nov 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	
Nov 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	
Nov 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	
Nov 10	0	0	0	0	0.7	0.8	1	1	0.4	0.5	0.8	0.6	0.5	0.4	0.4	0.3	0.1	0.3	0.2	0.1	0.1	0.2	0.1	0	0.0	1.0	0.4	
Nov 11	0.1	0	0.1	0.1	0.1	0	0	0.1	0.2	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.2	0.0	
Nov 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0.0	0.5	0.0	
Nov 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	
Nov 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.0	0.1	0.0	
Nov 15	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.6	1.1	1.3	1.6	1.3	1.2	0.0	1.6	0.3
Nov 16	1.6	0.9	0.4	0.3	1	1.4	0.4	0.5	0.5	0.2	0.2	0.1	0	0.1	0	0	0	0	0	0	0	0	0	0	0.0	1.6	0.3	
Nov 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	
Nov 18	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.2	0	0	0	0	0	0	0	0	0	0	0.0	0.2	0.0	
Nov 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	
Nov 20	0	0	0	0.4	0.8	0.9	1.7	1.8	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	1.8	0.2	
Nov 21	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0.9	0.3	0	0	0	0	0	0.0	0.9	0.1	
Nov 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	
Nov 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	
Nov 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	
Nov 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	
Nov 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	
Nov 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	
Nov 28	0	0	0	0	0	0	0	0	0	0.1	0.2	0.1	0.4	0	0	0	0	0	0	0	0	0	0	0	0.0	0.4	0.0	
Nov 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	
Nov 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	
Diurnal Maximum	1.6	2.1	2.1	1.2	1.0	1.4	1.7	1.8	0.5	0.5	0.8	0.6	0.5	0.4	0.5	0.3	0.1	0.9	0.6	1.1	1.3	1.6	1.3	1.2				
Diurnal Average	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0					

C Monthly Calibration	S Daily Zero-Span Check	Q Quality Assurance
K Collection Error	N No Data (Machine Not in Service)	Y Routine Maintenance
X InValid Data (Equipment Malfunction /Recovery)	NRM UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P Power Failure

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

Timeseries Chart of Hourly Average for Precipitation - Tamarack Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

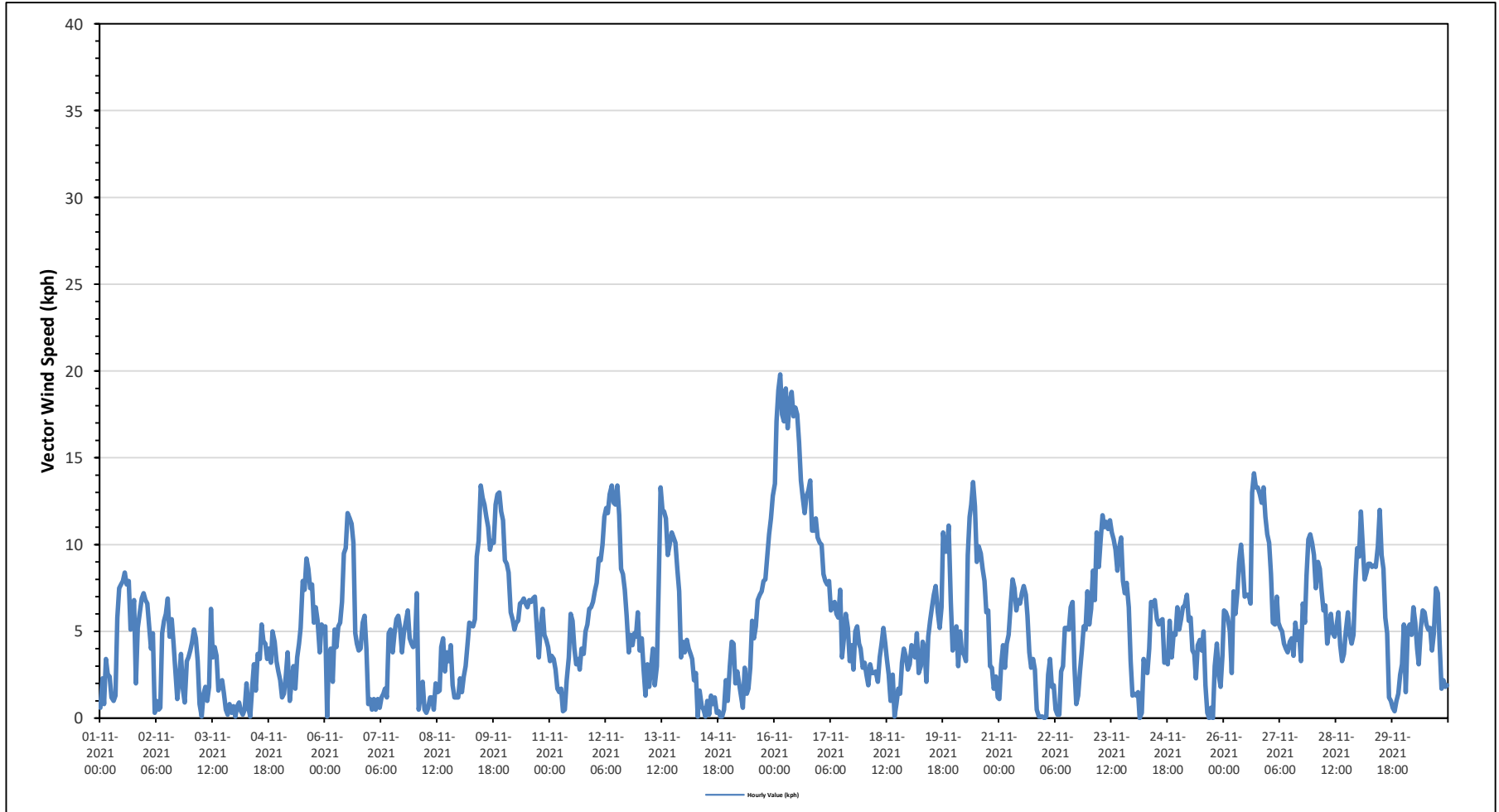
VECTOR WIND SPEED (VWS) in km/hr

Maximum Hourly Value:	19.8 kph	on November 16 at hour 3	Hours in Service:	720
Maximum Daily Value:	14.1 kph	on November 16	Hours of Data:	720
Minimum Hourly Value:	0.0 kph	on November 22 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.7 kph	on November 14	Hours of Calibration:	0
Monthly Average:	0.9 kph		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average
Nov 1	0.6	2.3	0.8	3.4	2.5	2.4	1.2	1.0	1.3	5.8	7.5	7.7	7.9	8.4	7.7	7.9	5.1	6.1	6.8	2.0	5.2	6.0	6.9	7.2	0.6	8.4	4.7
Nov 2	6.8	6.6	5.3	4.0	4.9	0.3	1.0	0.5	0.6	4.9	5.6	6.0	6.9	4.7	5.7	4.3	2.7	1.1	2.3	3.7	1.7	0.9	3.3	3.5	0.3	6.9	3.4
Nov 3	3.9	4.4	5.1	4.6	3.3	0.8	0.1	1.4	1.8	1.0	1.8	6.3	3.5	4.1	3.6	1.6	2.0	2.2	1.4	0.5	0.2	0.8	0.3	0.7	0.1	6.3	1.7
Nov 4	0.1	0.7	0.9	0.4	0.2	0.5	2.0	0.6	0.1	1.7	3.1	1.6	3.7	3.4	5.4	4.4	4.3	3.4	4.0	3.2	5.0	4.4	3.3	2.7	0.1	5.4	2.0
Nov 5	2.2	1.2	1.4	2.4	3.8	1.0	2.1	3.0	1.7	3.5	4.3	5.2	7.9	7.4	9.2	8.6	7.5	7.7	5.5	6.4	5.6	3.8	5.4	5.2	1.0	9.2	4.2
Nov 6	5.3	0.1	3.4	4.0	2.1	5.1	4.1	5.3	5.5	6.7	9.5	9.8	11.8	11.5	11.2	10.1	4.9	4.3	3.9	4.0	5.5	5.9	4.0	0.8	0.1	11.8	5.2
Nov 7	1.1	0.5	1.1	0.5	1.1	0.6	1.2	1.4	1.7	1.2	4.9	5.1	3.8	4.9	5.7	5.9	5.2	3.8	4.9	5.5	6.2	4.6	4.3	4.1	0.5	6.2	2.4
Nov 8	4.2	7.2	0.5	1.4	2.1	0.5	0.3	0.6	1.2	1.2	0.5	2.0	1.5	1.6	4.1	4.6	2.7	3.8	3.3	4.2	1.9	1.2	1.2	1.2	0.3	7.2	1.7
Nov 9	2.3	1.5	2.4	3.0	4.4	5.5	5.4	5.3	5.7	9.3	10.2	13.4	12.7	12.3	11.6	11.0	9.7	10.2	10.1	12.3	12.9	13.0	11.9	11.4	1.5	13.4	8.5
Nov 10	9.1	8.9	8.4	6.1	5.7	5.1	5.5	5.6	6.6	6.7	6.9	6.6	6.4	6.8	6.7	6.9	7.0	5.3	3.5	5.3	6.3	4.8	4.5	4.1	3.5	9.1	5.6
Nov 11	3.3	3.6	3.4	2.8	1.7	1.5	1.7	0.4	0.5	2.2	3.5	6.0	5.6	4.0	3.1	3.4	2.8	4.0	3.7	5.0	5.4	6.3	6.4	6.7	0.4	6.7	2.5
Nov 12	7.3	7.8	9.2	9.1	10.0	11.6	12.1	11.8	12.9	13.4	12.4	12.3	13.4	11.7	8.6	8.3	7.4	5.9	3.8	4.8	4.2	4.9	4.7	6.1	3.8	13.4	8.8
Nov 13	3.9	4.6	2.8	1.3	3.1	1.8	2.9	4.0	1.9	3.0	7.8	13.3	12.0	11.9	11.5	9.4	10.0	10.7	10.4	10.1	8.6	7.3	3.5	4.4	1.3	13.3	5.7
Nov 14	3.8	4.5	4.0	3.7	3.4	2.2	2.6	0.1	1.6	0.7	0.5	0.1	1.0	0.2	1.3	0.8	1.2	0.3	0.4	0.1	0.1	0.5	2.2	1.0	0.1	4.5	0.7
Nov 15	3.0	4.4	4.3	2.0	2.7	2.0	1.3	0.6	2.9	1.4	1.7	2.9	5.6	4.6	5.3	6.8	7.1	7.3	7.9	8.0	9.3	10.6	11.5	12.8	0.6	12.8	4.4
Nov 16	13.5	17.1	18.9	19.8	17.5	17.1	19.0	16.7	18.2	18.8	17.4	17.9	17.5	15.9	13.7	12.7	11.8	12.8	13.1	13.7	10.8	10.8	11.5	10.4	10.4	19.8	14.1
Nov 17	10.1	10.0	8.3	7.9	7.7	7.9	6.2	6.5	6.7	6.0	5.8	7.4	3.5	4.6	6.0	5.2	3.3	4.2	2.8	5.0	5.3	4.3	4.0	2.9	2.8	10.1	3.3
Nov 18	3.2	2.5	1.9	3.1	2.6	2.7	2.1	3.5	4.3	5.2	4.3	3.4	2.5	1.0	2.5	0.1	0.8	1.7	1.4	3.2	4.0	3.6	2.8	0.1	5.2	1.9	
Nov 19	3.1	4.2	4.0	3.5	4.9	2.6	3.0	4.4	4.0	2.1	4.7	5.6	6.4	7.1	7.6	6.1	5.2	6.4	10.7	9.6	9.6	11.1	6.7	3.9	2.1	11.1	5.1
Nov 20	4.7	5.3	3.0	5.0	3.8	3.7	3.3	9.4	11.6	12.3	13.6	12.2	9.0	9.9	9.5	8.6	7.9	6.1	6.2	3.0	2.9	1.7	2.4	1.2	1.2	13.6	4.0
Nov 21	1.1	3.1	4.2	2.9	4.3	4.8	6.6	8.0	7.5	6.2	6.8	6.6	7.2	7.6	7.1	5.9	3.8	2.9	3.4	2.8	0.5	0.1	0.1	0.1	0.1	8.0	4.1
Nov 22	0.0	0.1	2.5	3.4	1.8	1.9	0.5	0.2	0.2	2.7	3.0	5.2	5.2	5.1	6.4	6.7	3.0	0.8	1.3	2.7	3.9	5.3	5.1	7.3	0.0	7.3	2.0
Nov 23	5.4	6.3	8.5	6.8	10.7	8.7	10.3	11.7	11.0	11.3	10.9	11.4	10.7	10.3	9.7	8.5	9.8	10.4	7.9	7.2	7.8	6.4	3.3	1.3	1.3	11.7	6.7
Nov 24	1.4	1.3	1.5	0.0	0.3	3.4	2.7	2.6	4.0	6.7	6.5	6.8	5.7	5.4	5.6	5.7	3.2	3.3	3.1	5.6	3.5	4.9	4.8	6.4	0.0	6.8	3.4
Nov 25	5.1	5.7	6.4	6.5	7.1	5.6	5.8	3.9	3.7	2.3	4.2	4.5	3.9	5.0	1.9	0.3	0.0	0.6	0.0	3.0	4.3	2.5	1.8	3.6	0.0	7.1	2.9
Nov 26	6.2	6.1	5.8	5.0	2.6	7.3	6.0	7.2	9.0	10.0	8.7	7.0	7.1	7.1	6.6	13.0	14.1	13.3	13.3	12.9	12.4	13.3	11.6	10.6	2.6	14.1	8.1
Nov 27	10.1	8.3	5.5	5.4	7.0	5.5	5.2	5.0	4.3	4.0	3.8	4.4	4.6	3.6	5.5	4.5	5.0	3.3	6.6	5.5	8.2	10.3	10.6	10.1	3.3	10.6	4.1
Nov 28	9.4	7.5	9.0	8.6	7.3	6.2	6.5	4.3	5.1	6.0	4.9	4.7	5.3	6.1	4.2	3.3	3.7	5.0	6.1	4.8	4.3	4.8	7.8	9.8	3.3	9.8	4.2
Nov 29	9.3	11.9	9.9	8.0	8.4	8.9	8.9	8.7	8.8	8.7	9.9	12.0	9.4	8.6	5.8	4.9	1.2	1.0	0.6	0.4	1.0	1.4	2.5	3.1	0.4	12.0	5.4
Nov 30	5.4	1.5	5.2	5.4	4.8	6.4	5.5	4.0	3.1	5.2	6.2	6.1	5.4	5.1	5.2	3.9	4.9	7.5	7.2	4.2	1.7	2.2	1.8	1.9	1.5	7.5	3.6
Diurnal Maximum	14	17	19	20	18	17	19	17	18	19	17	18	18	16	14	13	14	13	13	14	13	13	12	13			
Dalurnal Average	4.8	5.0	4.9	4.7	4.5	4.5	4.5	4.5	4.9	5.6	6.4	7.1	6.9	6.7	6.6	6.2	5.2	5.2	5.2	5.2	5.3	5.3	5.0	4.9			
C	Monthly Calibration							S	Daily Zero-Span Check							Q	Quality Assurance										
K	Collection Error							N	No Data (Machine Not in Service)							Y	Routine Maintenance							P	Power Failure		
X	InValid Data (Equipment Malfunction /Recovery)							NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																		

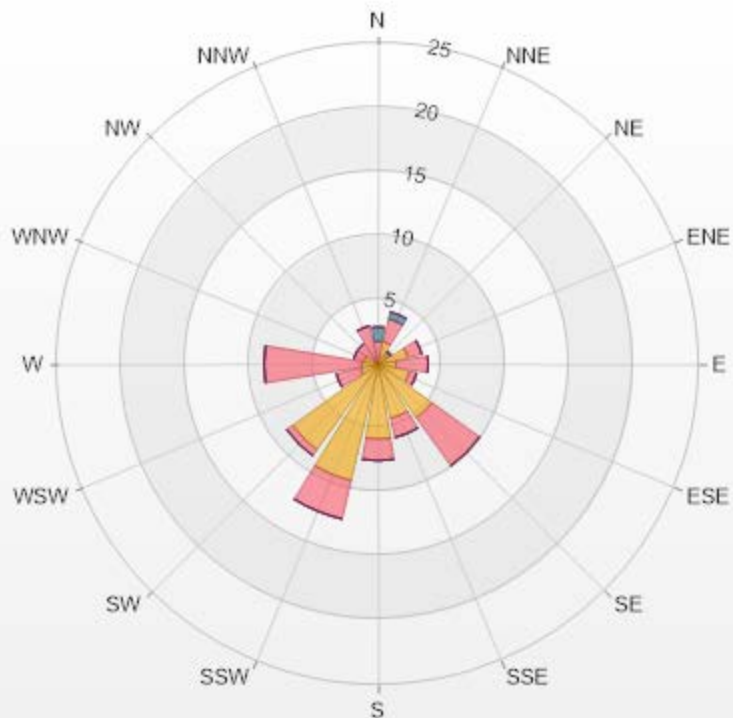
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for VWS - Tamarack Site



Wind: Tamarack Monitor: WDS [kph] Monthly: 11-2021 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 17.92% Valid Data: 100.00%

Direction	1.8-6.0	6.0-15.0	15.0-29.0	29.0-39.0	>39.0	Total
N	0.56	1.25	1.11	0	0	2.92
NNE	1.81	1.81	0.56	0	0	4.18
NE	0.83	0.28	0.14	0	0	1.25
ENE	2.36	1.11	0	0	0	3.47
E	1.39	2.5	0	0	0	3.89
ESE	2.5	0.56	0	0	0	3.06
SE	5.14	4.58	0	0	0	9.72
SSE	4.31	1.53	0	0	0	5.84
S	5.83	1.67	0	0	0	7.5
SSW	9.31	3.06	0	0	0	12.37
SW	8.19	0.56	0	0	0	8.75
WSW	1.39	1.94	0	0	0	3.33
W	1.25	7.64	0	0	0	8.89
WNW	1.11	0.83	0	0	0	1.94
NW	0.28	1.67	0	0	0	1.95
NNW	0.14	2.92	0	0	0	3.06
Summary	46.4	33.91	1.81	0	0	82.12



LICA-202111

Page 160 of 239

% Icon Classes (kph)

46

1.8-6.0

34

6.0-15.0

2

15.0-29.0

0

29.0-39.0

0

>39.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

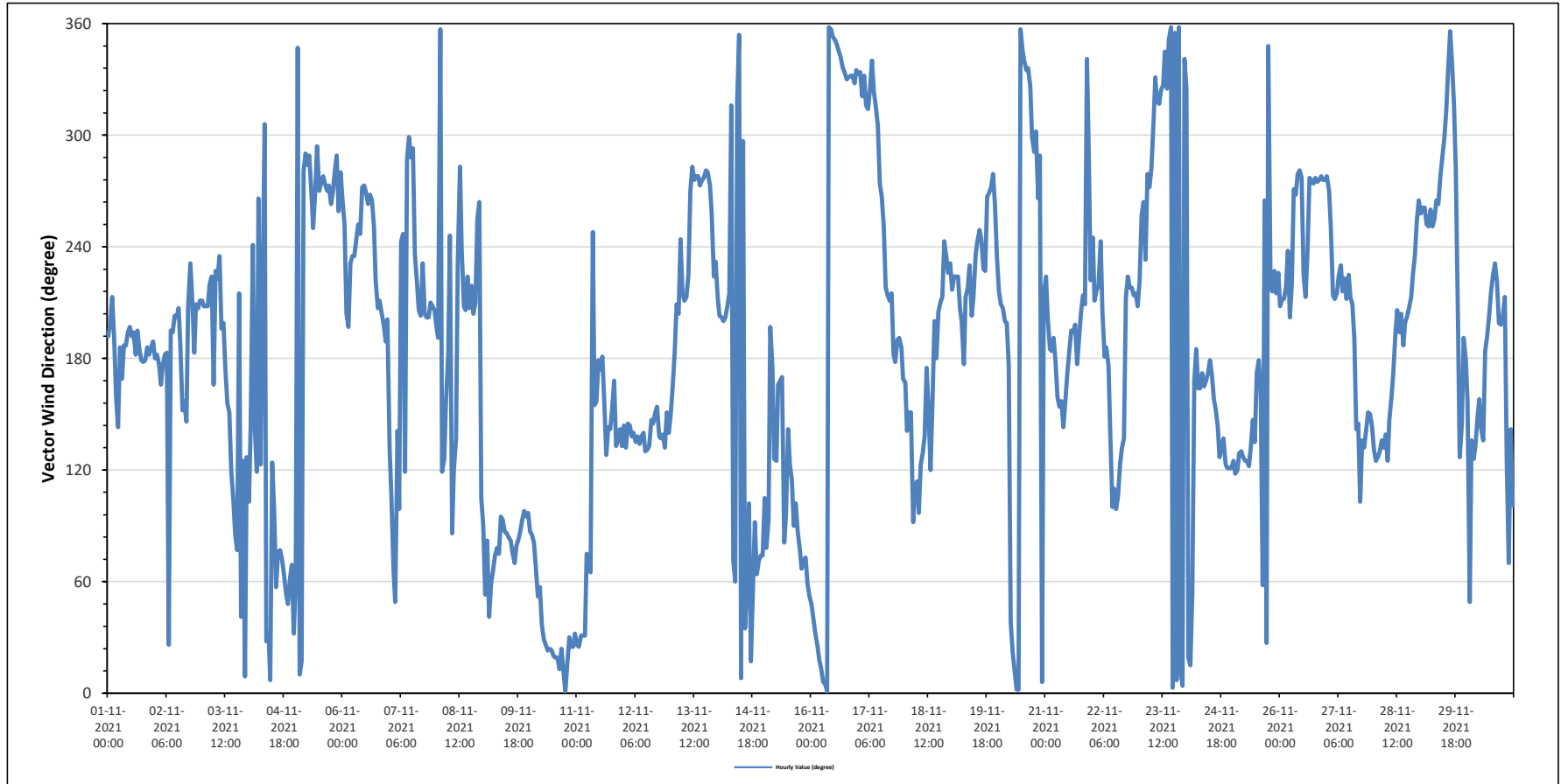
Tamarack Site - November 2021

Summary of Hourly Averages

WIND DIRECTION (VWD) in sector

Monthly Average:		213 (SSW) degree														Hours in Service:		720								
																Hours of Data:		720								
																Hours of Missing Data:		0								
																Hours of Calibration:		0								
																Operational Uptime:		100.0								
Day	Hourly Period Starting at (MST)																							Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Degree	Quadrant
Nov 1	S	SSW	SSW	S	SSE	SE	S	SSE	S	S	SSW	SSW	S	SSW	S	SSW	S	S	S	S	S	S	S	187	S	
Nov 2	S	S	S	SSE	S	S	S	NNE	SSW	SSW	SSW	SSW	SSW	S	SSE	SSE	SE	SSW	SW	SSW	S	SSW	SSW	SSW	188	S
Nov 3	SSW	SSW	SSW	SSW	SW	SW	SSE	SW	SW	SSW	SSW	SSW	S	SSE	SSE	ESE	ESE	E	ENE	SSW	NE	SE	N	SE	187	S
Nov 4	ESE	SE	WSW	SE	ESE	W	ESE	SSW	NW	NNE	NNE	N	ESE	E	ENE	ENE	ENE	ENE	ENE	NE	NE	ENE	ENE	NNE	67	ENE
Nov 5	ENE	NNW	N	NNE	W	WNW	WNW	WNW	W	WSW	W	WNW	W	W	W	W	W	W	W	W	W	WNW	WSW	W	278	W
Nov 6	W	WSW	SSW	SSW	SW	SW	SW	WSW	WSW	WSW	W	W	W	W	W	W	WSW	SW	SSW	SSW	SSW	S	SSW	246	WSW	
Nov 7	SE	ESE	ENE	NE	SE	E	WSW	WSW	ESE	WNW	WNW	WNW	WNW	SW	SW	SSW	SSW	SW	SSW	SSW	SSW	SSW	SSW	SSW	222	SW
Nov 8	SSW	S	N	ESE	SE	SSE	S	WSW	E	ESE	SE	SW	W	WSW	SSW	SSW	SW	SSW	SW	SSW	SSW	WSW	W	ESE	202	SSW
Nov 9	E	NE	E	NE	ENE	ENE	ENE	ENE	ENE	E	E	E	E	E	E	ENE	ENE	ENE	E	E	E	E	E	E	85	E
Nov 10	E	E	E	ENE	NE	ENE	NE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	N	NNE	NNE	NNE	NNE	NNE	37	NE
Nov 11	NNE	NNE	NNE	NNE	ENE	ENE	ENE	ENE	WSW	SSE	SSE	S	S	S	SSE	SE	SE	SE	SSE	SE	SE	SE	SE	SE	137	SE
Nov 12	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SSE	SSE	SE	SE	SE	SE	SSE	SE	139	SE
Nov 13	SSE	SSE	S	SSW	SSW	WSW	SSW	SSW	SSW	SW	W	W	W	W	W	W	W	W	W	W	W	WSW	SW	SW	263	W
Nov 14	SSW	SSW	SSW	SSW	SSW	SSW	SSW	NW	ENE	ENE	NW	N	N	WNW	NE	ENE	E	NNE	NE	E	ENE	ENE	ENE	ENE	186	S
Nov 15	ESE	ENE	E	SSW	S	SE	SE	SSE	SSE	SSE	E	E	SE	ESE	ESE	E	E	E	ENE	ENE	ENE	ENE	ENE	NE	88	E
Nov 16	NE	NE	NNE	NNE	NNE	NNE	N	N	N	N	N	N	N	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	359	N
Nov 17	NNW	NNW	NW	NNW	NW	NW	NNW	NNW	NW	NNW	NW	WNW	W	WSW	SW	SSW	SSW	SSW	S	S	S	S	S	SSE	289	WNW
Nov 18	SSE	SE	SSE	SSE	E	ESE	ESE	E	ESE	SE	SE	S	SSE	ESE	SSE	SSW	S	SSW	SSW	SSW	SSW	WSW	SW	SW	161	SSE
Nov 19	SW	SW	SW	SW	SSW	SSW	S	SSW	SW	SW	SSW	SSW	SW	WSW	WSW	WSW	SW	SW	W	W	W	W	W	SW	241	WSW
Nov 20	SW	SSW	SSW	SSW	SSW	S	NE	NNE	NNE	N	N	NNW	NNW	NNW	NNW	NNW	NW	WNW	WNW	W	WNW	N	SSW	337	NNW	
Nov 21	SW	SSW	S	S	S	S	SSE	SSE	SSE	SE	SSE	S	S	SSW	SSW	SSW	S	S	SSW	SSW	SSW	NNW	WNW	SW	178	S
Nov 22	WSW	SSW	SW	SW	WSW	SSW	S	S	SE	E	ESE	E	ESE	ESE	SE	SE	SSW	SW	SW	SW	SSW	SSW	SSW	167	SSE	
Nov 23	SW	WSW	W	SW	W	W	WNW	NNW	NW	NW	NW	NNW	NW	N	N	N	N	N	N	N	NNE	N	NNW	320	NW	
Nov 24	NW	NNE	NNE	NE	SSE	S	SSE	SSE	S	SSE	SSE	S	S	S	SSE	SSE	SE	SE	SE	SE	ESE	ESE	ESE	ESE	151	SSE
Nov 25	SE	ESE	ESE	SE	SE	SE	SE	SE	ESE	SE	SE	SE	S	S	SSE	ENE	W	NNE	NNW	SW	SW	SW	SSW	SW	146	SE
Nov 26	SSW	SSW	SSW	SSW	SW	SW	SSW	SW	W	W	W	W	W	SSW	SW	W	W	W	W	W	W	W	W	W	261	W
Nov 27	W	W	WSW	SSW	SSW	SSW	SW	SW	SW	SW	SSW	SW	SSW	SSW	S	SE	SE	ESE	SE	SE	SE	SSE	SSE	SE	190	S
Nov 28	SE	SE	SE	SE	SE	SE	SE	SE	SE	SSE	S	SSW	SSW	SSW	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	WSW	W	174	S
Nov 29	WSW	W	W	WSW	WSW	WSW	WSW	WSW	W	W	W	WNW	WNW	NW	NNW	N	NNW	NW	W	SSW	SE	SE	S	S	270	W
Nov 30	SSE	NE	SE	SE	SE	SSE	SSE	SE	SE	S	S	SSW	SW	SW	SW	SW	SSW	SSW	SSW	SSW	ESE	ENE	SE	E	177	S
C	Monthly Calibration							S	Daily Zero-Span Check							Q	Quality Assurance									
K	Collection Error							N	No Data (Machine Not in Service)							Y	Routine Maintenance							P	Power Failure	
X	Invalid Data (Machine Malfunction /Recovery)							NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																	
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																										
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																										

Timeseries Chart of Hourly Average for VWD - Tamarack Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr & WIND DIRECTION (VWD) in sector

WIND SPEED																											
Maximum Hourly Value: 19.8 kph on November 16 at hour 3												Hours in Service: 720															
Maximum Daily Value: 14.1 kph on November 16												Hours of Data: 720															
Minimum Hourly Value: 0.0 kph on November 22 at hour 0												Hours of Missing Data: 0															
Minimum Daily Value: 0.7 kph on November 14												Hours of Calibration: 0															
Monthly Average: 0.9 kph												Operational Uptime: 100															
WIND DIRECTION																											
Monthly Average: 213 (SSW) degree																											
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Nov 1	0.6	2.3	0.8	3.4	2.5	2.4	1.2	1.0	1.3	5.8	7.5	7.7	7.9	8.4	7.7	7.9	5.1	6.1	6.8	2.0	5.2	6.0	6.9	7.2	0.6	8.4	4.7
Nov 2	6.8	6.6	5.3	4.0	4.9	0.3	1.0	0.5	0.6	4.9	5.6	6.0	6.9	4.7	5.7	4.3	2.7	1.1	2.3	3.7	1.7	0.9	3.3	3.5	0.3	6.9	3.4
Nov 3	3.9	4.4	5.1	4.6	3.3	0.8	0.1	1.4	1.8	1.0	1.8	6.3	3.5	4.1	3.6	1.6	2.0	2.2	1.4	0.5	0.2	0.8	0.3	0.7	0.1	6.3	1.7
Nov 4	0.1	0.7	0.9	0.4	0.2	0.5	2.0	0.6	0.1	1.7	3.1	1.6	3.7	3.4	5.4	4.4	4.3	3.4	4.0	3.2	5.0	4.4	3.3	2.7	0.1	5.4	2.0
Nov 5	2.2	1.2	1.4	2.4	3.8	1.0	2.1	3.0	1.7	3.5	4.3	5.2	7.9	7.4	9.2	8.6	7.5	7.7	5.5	6.4	5.6	3.8	5.4	5.2	1.0	9.2	4.2
Nov 6	5.3	0.1	3.4	4.0	2.1	5.1	4.1	5.3	5.5	6.7	9.5	9.8	11.8	11.5	11.2	10.1	4.9	4.3	3.9	4.0	5.5	5.9	4.0	0.8	0.1	11.8	5.2
Nov 7	1.1	0.5	1.1	0.5	1.1	0.6	1.2	1.4	1.7	1.2	4.9	5.1	3.8	4.9	5.7	5.9	5.2	3.8	4.9	5.5	6.2	4.6	4.3	4.1	0.5	6.2	2.4
Nov 8	4.2	7.2	0.5	1.4	2.1	0.5	0.3	0.6	1.2	1.2	0.5	2.0	1.5	1.6	4.1	4.6	2.7	3.8	3.3	4.2	1.9	1.2	1.2	1.2	0.3	7.2	1.7
Nov 9	2.3	1.5	2.4	3.0	4.4	5.5	5.4	5.3	5.7	9.3	10.2	13.4	12.7	12.3	11.6	11.0	9.7	10.2	10.1	12.3	12.9	13.0	11.9	11.4	1.5	13.4	8.5
Nov 10	9.1	8.9	8.4	6.1	5.7	5.1	5.5	5.6	6.6	6.7	6.9	6.6	6.4	6.8	6.7	6.9	7.0	5.3	3.5	5.3	6.3	4.8	4.5	4.1	3.5	9.1	5.6
Nov 11	3.3	3.6	3.4	2.8	1.7	1.5	1.7	0.4	0.5	2.2	3.5	6.0	5.6	4.0	3.1	3.4	2.8	4.0	3.7	5.0	5.4	6.3	6.4	6.7	0.4	6.7	2.5
Nov 12	7.3	7.8	9.2	9.1	10.0	11.6	12.1	11.8	12.9	13.4	12.4	12.3	13.4	11.7	8.6	8.3	7.4	5.9	3.8	4.8	4.8	4.2	4.9	4.7	3.8	13.4	8.8
Nov 13	3.9	4.6	2.8	1.3	3.1	1.8	2.9	4.0	1.9	3.0	7.8	13.3	12.0	11.9	11.5	9.4	10.0	10.7	10.4	10.1	8.6	7.3	3.5	4.4	1.3	13.3	5.7
Nov 14	3.8	4.5	4.0	3.7	3.4	2.2	2.6	0.1	1.6	0.7	0.5	0.1	1.0	0.2	1.3	0.8	1.2	0.3	0.4	0.1	0.1	0.5	2.2	1.0	0.1	4.5	0.7
Nov 15	3.0	4.4	4.3	2.0	2.7	2.0	1.3	0.6	2.9	1.4	1.7	2.9	5.6	4.6	5.3	6.8	7.1	7.3	7.9	8.0	9.3	10.6	11.5	12.8	0.6	12.8	4.4
Nov 16	13.5	17.1	18.9	19.8	17.5	17.1	19.0	16.7	18.2	18.8	17.4	17.9	17.5	15.9	13.7	12.7	11.8	12.8	13.1	13.7	10.8	10.8	11.5	10.4	10.4	19.8	14.1
Nov 17	10.1	10.0	8.3	7.9	7.7	7.9	6.2	6.5	6.7	6.0	5.8	7.4	3.5	4.6	6.0	5.2	3.3	4.2	2.8	5.0	5.3	4.3	4.0	2.9	2.8	10.1	3.3
Nov 18	3.2	2.5	1.9	3.1	2.6	2.6	2.7	2.1	3.5	4.3	5.2	4.3	3.4	2.5	1.0	2.5	0.1	0.8	1.7	1.4	3.2	4.0	3.6	2.8	0.1	5.2	1.9
Nov 19	3.1	4.2	4.0	3.5	4.9	2.6	3.0	4.4	4.0	2.1	4.7	5.6	6.4	7.1	7.6	6.1	5.2	6.4	10.7	9.6	9.6	11.1	6.7	3.9	2.1	11.1	5.1
Nov 20	4.7	5.3	3.0	5.0	3.8	3.7	3.3	9.4	11.6	12.3	13.6	12.2	9.0	9.9	9.5	8.6	7.9	6.1	6.2	3.0	2.9	1.7	2.4	1.2	1.2	13.6	4.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr & WIND DIRECTION (VWD) in sector

WIND SPEED																															
Maximum Hourly Value:	19.8	kph	on November 16	at hour 3	Hours in Service:	720																									
Maximum Daily Value:	14.1	kph	on November 16	Hours of Data:		720																									
Minimum Hourly Value:	0.0	kph	on November 22	at hour 0	Hours of Missing Data:	0																									
Minimum Daily Value:	0.7	kph	on November 14	Hours of Calibration:		0																									
Monthly Average:	0.9	kph			Operational Uptime:	100																									
WIND DIRECTION																															
Monthly Average:	213	(SSW)	degree																												
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
Nov 21	1.1	3.1	4.2	2.9	4.3	4.8	6.6	8.0	7.5	6.2	6.8	6.6	7.2	7.6	7.1	5.9	3.8	2.9	3.4	2.8	0.5	0.1	0.1	0.1	0.1	8.0	4.1				
	SW	SSW	S	S	S	SSE	SSE	SSE	SE	SSE	S	S	SSW	SSW	SSW	S	S	SSW	SSW	SSW	NNW	WNW	SW								
Nov 22	0.0	0.1	2.5	3.4	1.8	1.9	0.5	0.2	0.2	2.7	3.0	5.2	5.2	5.1	6.4	6.7	3.0	0.8	1.3	2.7	3.9	5.3	5.1	7.3	0.0	7.3	2.0				
	WSW	SSW	SW	SW	WSW	SSW	S	S	S	SE	E	ESE	E	ESE	ESE	SE	SE	SSW	SW	SW	SW	SSW	SSW								
Nov 23	5.4	6.3	8.5	6.8	10.7	8.7	10.3	11.7	11.0	11.3	10.9	11.4	10.7	10.3	9.7	8.5	9.8	10.4	7.9	7.2	7.8	6.4	3.3	1.3	1.3	11.7	6.7				
	SW	WSW	W	SW	W	W	WNW	NNW	NW	NW	NW	NW	NNW	NW	N	N	N	N	N	N	N	NNE	N	NNW							
Nov 24	1.4	1.3	1.5	0.0	0.3	3.4	2.7	2.6	4.0	6.7	6.5	6.8	5.7	5.4	5.6	5.7	3.2	3.3	3.1	5.6	3.5	4.9	4.8	6.4	0.0	6.8	3.4				
	NW	NNE	NNE	NE	SSE	S	SSE	SSE	S	SSE	SSE	S	S	S	SSE	SSE	SE	SE	SE	SE	ESE	ESE	ESE	ESE							
Nov 25	5.1	5.7	6.4	6.5	7.1	5.6	5.8	3.9	3.7	2.3	4.2	4.5	3.9	5.0	1.9	0.3	0.0	0.6	0.0	3.0	4.3	2.5	1.8	3.6	0.0	7.1	2.9				
	SE	ESE	ESE	SE	SE	SE	SE	SE	ESE	SE	SE	SE	S	S	SSE	ENE	W	NNE	NNW	SW	SW	SW	SSW	SW							
Nov 26	6.2	6.1	5.8	5.0	2.6	7.3	6.0	7.2	9.0	10.0	8.7	7.0	7.1	7.1	6.6	13.0	14.1	13.3	13.3	12.9	12.4	13.3	11.6	10.6	2.6	14.1	8.1				
	SSW	SSW	SSW	SW	SW	SSW	SW	W	W	W	W	W	SSW	SSW	SW	W	W	W	W	W	W	W	W	W							
Nov 27	10.1	8.3	5.5	5.4	7.0	5.5	5.2	5.0	4.3	4.0	3.8	4.4	4.6	3.6	5.5	4.5	5.0	3.3	6.6	5.5	8.2	10.3	10.6	10.1	3.3	10.6	4.1				
	W	W	WSW	SSW	SSW	SSW	SW	SW	SW	SW	SSW	SW	SSW	SSW	S	SE	SE	ESE	SE	SE	SE	SSE	SSE	SE							
Nov 28	9.4	7.5	9.0	8.6	7.3	6.2	6.5	4.3	5.1	6.0	4.9	4.7	5.3	6.1	4.2	3.3	3.7	5.0	6.1	4.8	4.3	4.8	7.8	9.8	3.3	9.8	4.2				
	SE	SE	SE	SE	SE	SE	SE	SE	SSE	S	SSW	SSW	SSW	SSW	S	SSW	SSW	SSW	SSW	SSW	SSW	SW	WSW	W							
Nov 29	9.3	11.9	9.9	8.0	8.4	8.9	8.9	8.7	8.8	8.7	9.9	12.0	9.4	8.6	5.8	4.9	1.2	1.0	0.6	0.4	1.0	1.4	2.5	3.1	0.4	12.0	5.4				
	WSW	W	W	WSW	WSW	WSW	WSW	WSW	W	W	WNW	WNW	NW	NNW	N	NNW	NW	W	SSW	SE	SE	S	S								
Nov 30	5.4	1.5	5.2	5.4	4.8	6.4	5.5	4.0	3.1	5.2	6.2	6.1	5.4	5.1	5.2	3.9	4.9	7.5	7.2	4.2	1.7	2.2	1.8	1.9	1.5	7.5	3.6				
	SSE	NE	SE	SE	SSE	SSE	SE	SE	S	S	SSW	SW	SW	SW	SW	SSW	SSW	SSW	SSW	ESE	ENE	SE	E								
C	Monthly Calibration							S	Daily Zero-Span Check							Q	Quality Assurance														
K	Collection Error							N	No Data (Machine Not in Service)							Y	Routine Maintenance							P	Power Failure						
X	Invalid Data (Equipment Malfunction/Recovery)							NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																						
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																															
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																															



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - November 2021

Summary of Hour Standard Deviations

STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree

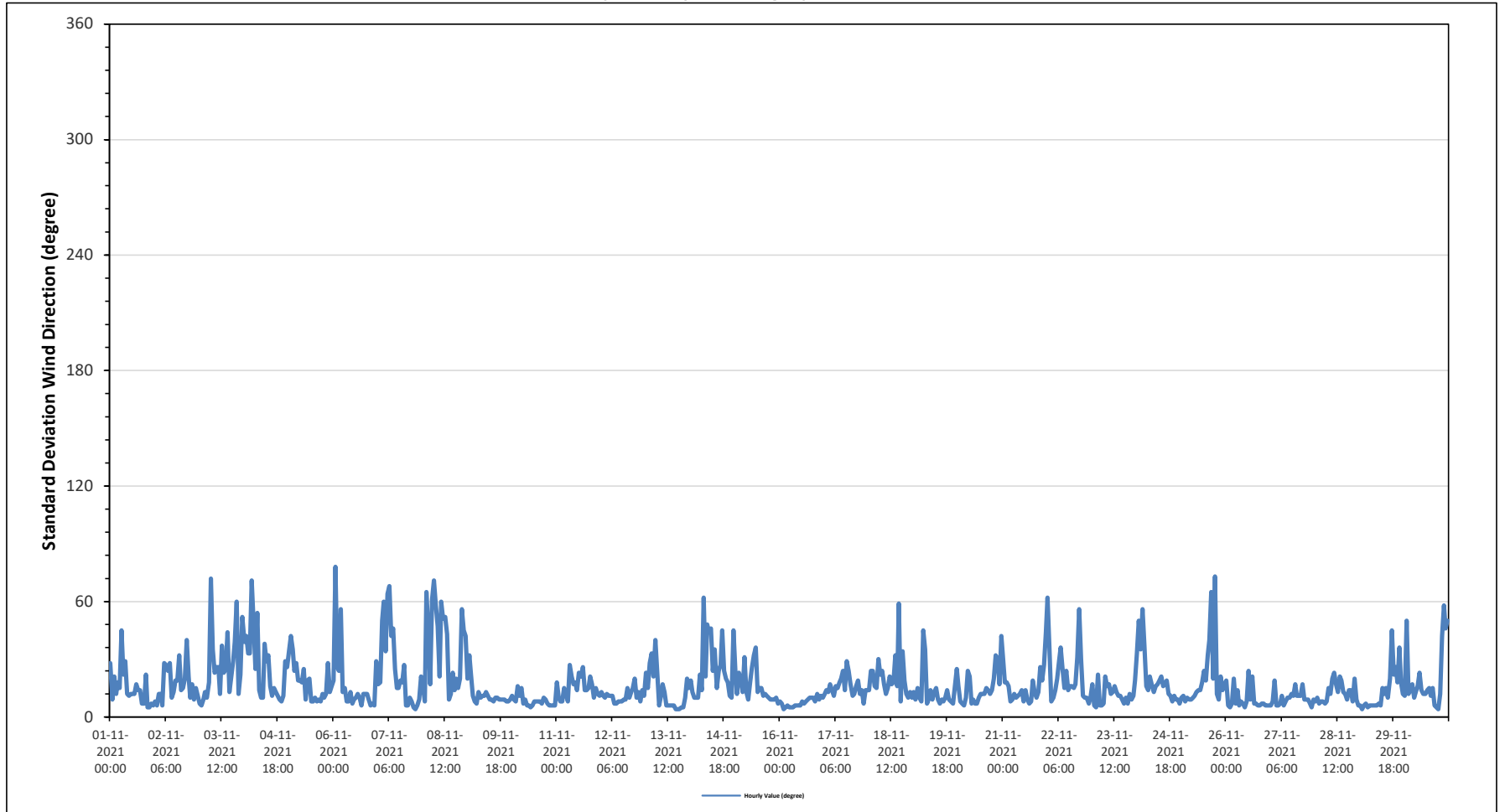
Maximum Hourly Value:	78 degree on November 6 at hour 1	Hours in Service:	720
Minimum Hourly Value:	4 degree on November 7 at hour 20	Hours of Data:	720
		Hours of Missing Data:	0
		Hours of Calibration:	0
		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum
Nov 1	28	9	21	12	18	15	45	22	29	12	11	12	12	12	17	14	14	7	7	22	5	5	7	6	5	45
Nov 2	8	6	12	12	6	28	27	24	28	10	13	19	19	32	14	15	20	40	21	10	17	9	15	11	6	40
Nov 3	7	6	9	13	10	18	72	35	23	26	26	12	37	23	25	44	13	21	29	39	60	12	22	52	6	72
Nov 4	39	42	33	33	71	49	25	54	14	10	10	38	29	32	16	11	15	13	11	9	8	11	29	26	8	71
Nov 5	34	42	35	24	28	19	19	18	25	9	19	20	8	8	10	8	9	8	12	10	12	28	13	16	8	42
Nov 6	19	78	26	24	56	13	15	8	8	13	7	9	10	12	10	6	12	12	12	9	6	7	6	29	6	78
Nov 7	17	18	50	60	34	64	68	42	46	25	15	15	19	18	27	6	6	10	8	5	4	6	9	21	4	68
Nov 8	16	8	65	45	17	61	71	58	47	21	60	51	52	43	9	12	23	14	20	15	20	56	45	42	8	71
Nov 9	20	32	22	11	8	7	13	10	11	11	13	11	9	9	8	10	10	9	9	9	9	8	8	9	7	32
Nov 10	11	9	8	16	11	15	7	9	6	6	5	6	8	8	8	8	7	10	9	7	6	6	6	6	5	16
Nov 11	18	10	8	8	15	12	8	27	21	17	18	14	23	21	26	14	14	15	21	17	10	15	12	11	8	27
Nov 12	13	11	10	12	11	11	11	7	7	8	8	8	9	9	15	10	13	15	20	10	13	8	14	11	7	20
Nov 13	23	15	28	33	21	40	23	6	11	17	13	6	6	6	6	6	4	4	4	5	5	10	20	15	4	40
Nov 14	19	13	10	10	10	22	14	62	21	48	44	46	24	35	15	24	27	45	24	20	18	11	10	45	10	62
Nov 15	24	12	23	20	13	31	13	9	18	26	32	36	13	15	15	11	12	11	10	9	9	9	10	7	7	36
Nov 16	8	7	4	5	6	5	5	5	6	6	6	6	8	7	8	9	10	10	8	12	9	11	10	7	4	12
Nov 17	12	14	13	17	14	11	16	15	18	20	24	14	29	24	17	11	12	16	19	12	14	7	14	14	7	29
Nov 18	14	24	24	16	15	30	22	24	17	12	15	21	17	18	32	16	59	8	34	19	12	10	13	10	8	59
Nov 19	13	9	15	10	8	45	35	7	9	14	9	13	15	9	7	9	8	10	14	9	8	7	16	25	7	45
Nov 20	16	8	7	6	10	24	21	7	9	7	7	10	12	12	12	15	14	12	14	20	32	30	17	42	6	42
Nov 21	31	18	18	16	8	9	12	10	11	12	14	8	14	9	7	8	19	13	10	13	26	19	27	44	7	44
Nov 22	62	36	8	10	14	20	29	36	25	15	24	14	16	16	15	17	31	56	30	11	10	10	7	10	7	62
Nov 23	17	6	5	22	6	6	7	21	16	17	12	13	16	13	11	11	9	7	10	7	12	9	11	19	5	22
Nov 24	33	50	35	56	37	16	14	21	17	13	16	17	19	21	16	17	19	12	11	8	11	9	9	7	7	56
Nov 25	10	11	8	10	9	9	10	11	13	14	14	18	24	19	32	40	65	20	73	12	9	21	14	17	8	73
Nov 26	19	6	5	7	20	7	14	6	8	7	5	8	24	9	21	7	7	6	6	7	7	6	6	6	5	24
Nov 27	6	8	19	6	6	7	11	6	8	10	10	12	11	17	11	11	11	17	9	9	9	7	5	9	5	19
Nov 28	8	10	7	8	8	7	8	15	12	20	23	17	13	21	19	13	12	9	14	14	8	20	9	6	6	23
Nov 29	6	4	6	7	5	6	6	6	6	6	7	6	15	12	15	10	20	45	22	26	18	36	18	12	4	45
Nov 30	11	50	12	14	17	10	13	16	23	14	12	12	14	15	11	15	6	5	4	12	42	58	46	50	4	58
Diurnal Minimum	6	4	4	5	5	5	5	5	6	6	5	6	6	6	6	6	4	4	4	5	4	5	5	6		
Diurnal Maximum	62	78	65	60	71	64	72	62	47	48	60	51	52	43	32	44	65	56	73	39	60	58	46	52		

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Machine Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

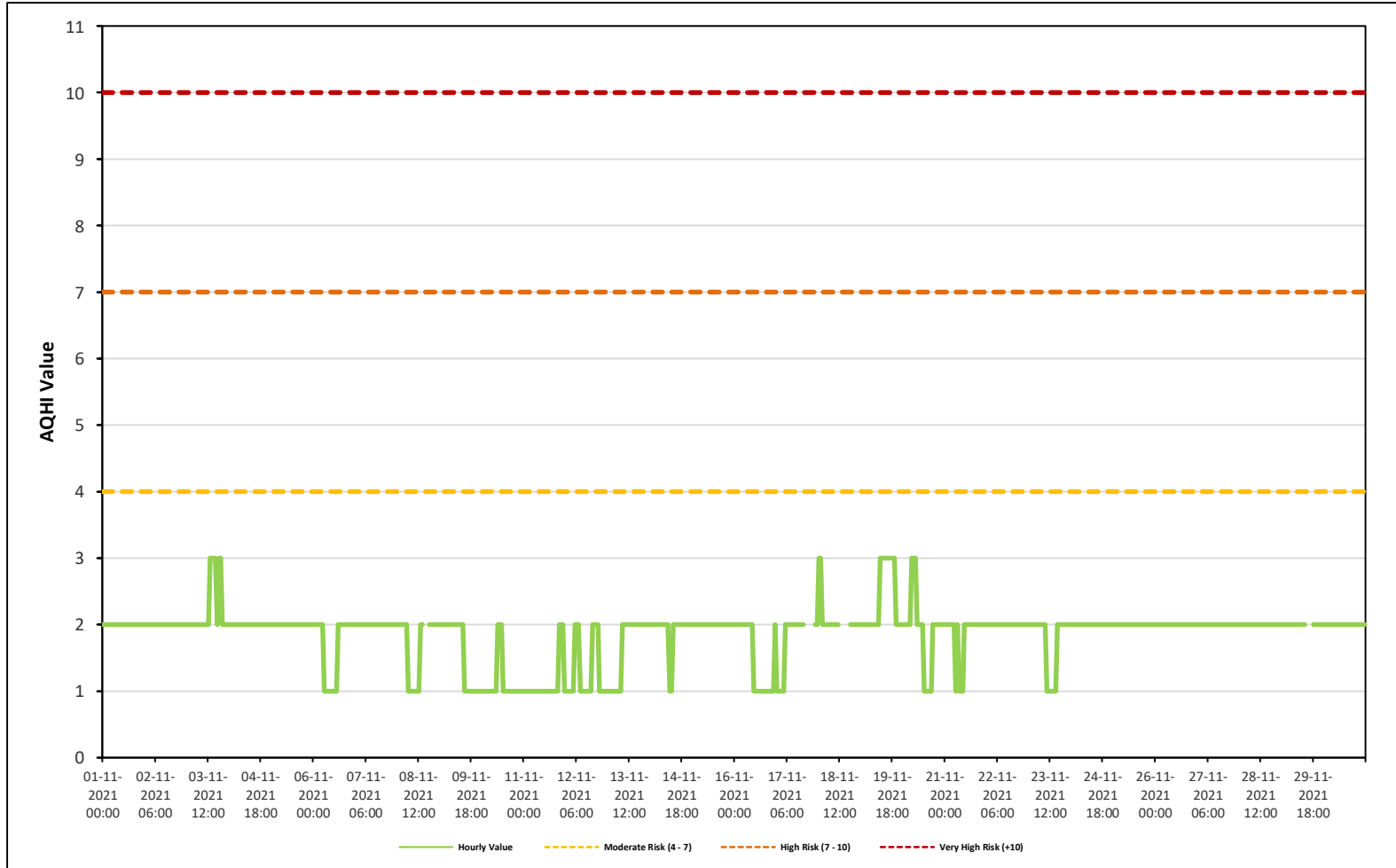
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for STDWD - Tamarack Site



ST. LINA STATION

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





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

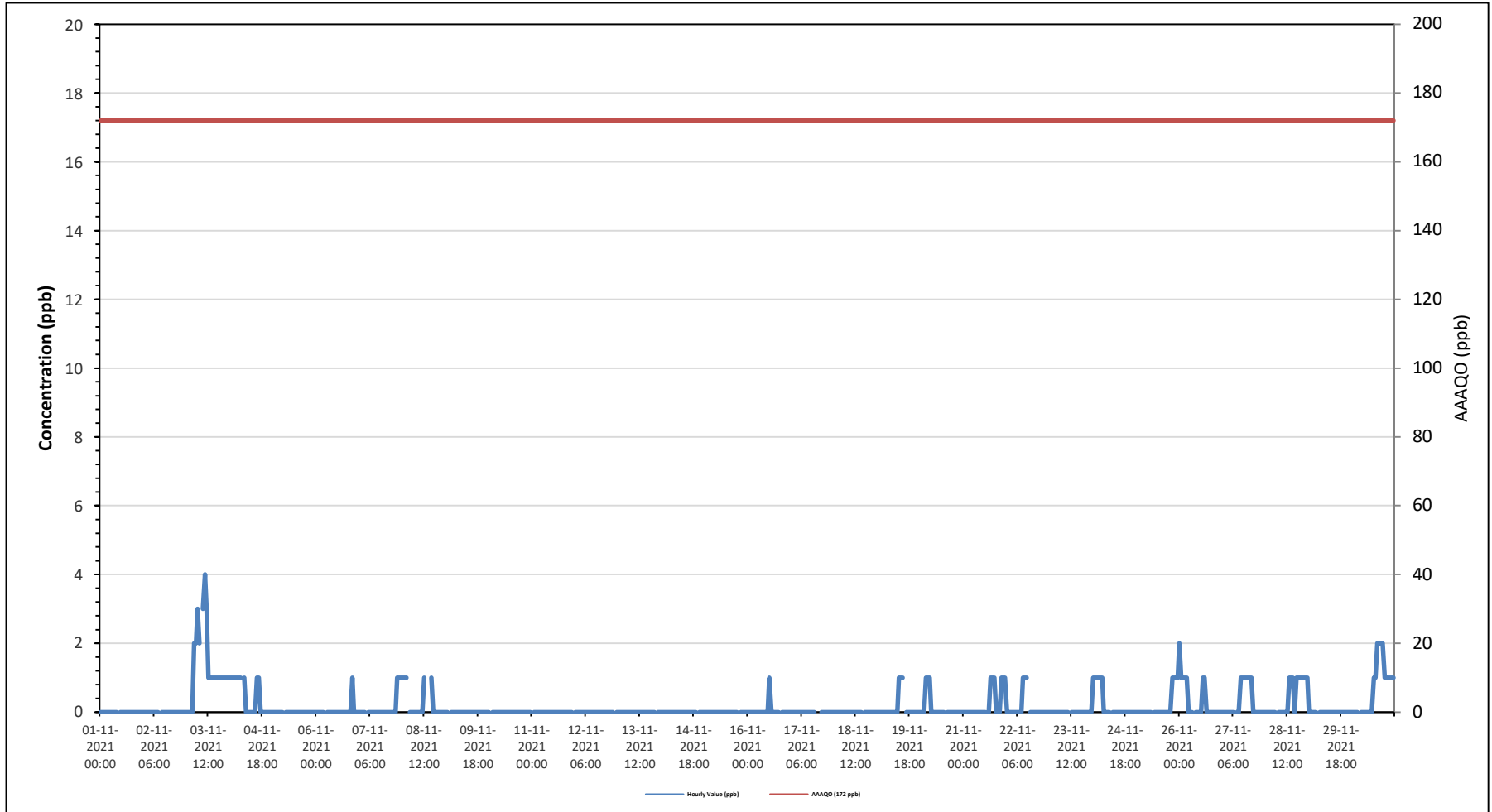
Summary of Hourly Averages

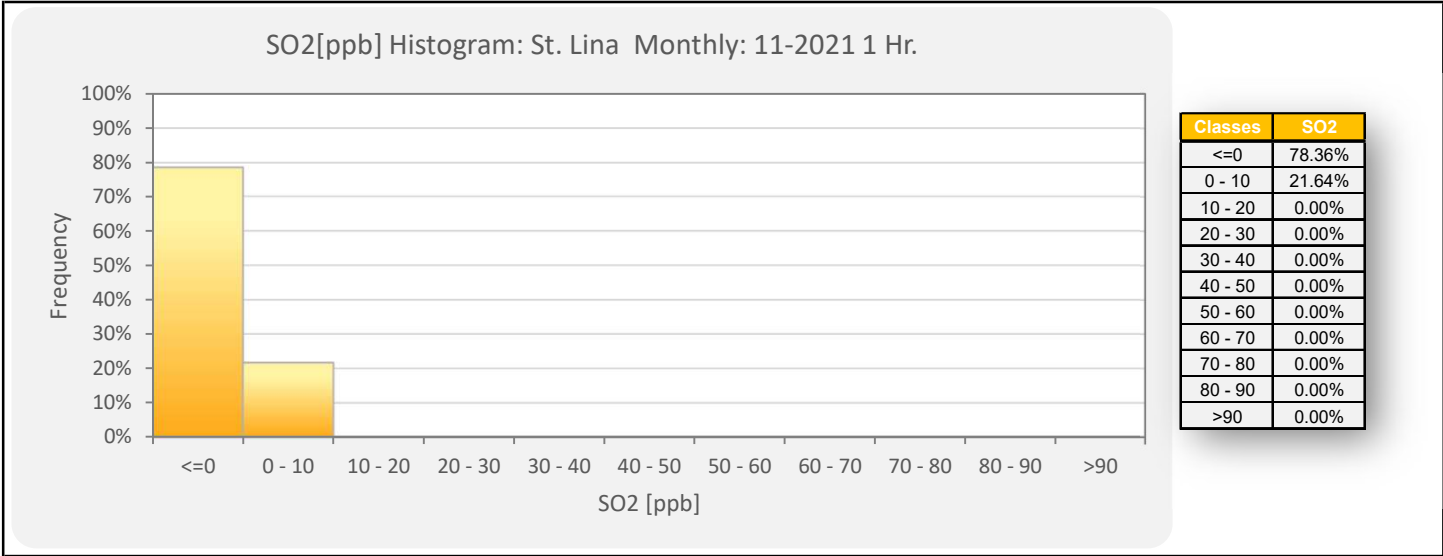
SULPHUR DIOXIDE (SO₂) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 172 ppb, 24-Hour 48 ppb, 30-Day 11 ppb																																							
Number of 1-Hour Exceedences: 0									Number of 24-Hour Exceedences: 0									30-Day Exceedence: 0																					
Maximum Hourly Value: 4 ppb on November 3 at hour 10													Hours in Service: 720																										
Maximum Daily Value: 1.3 ppb on November 3													Hours of Data: 684																										
Minimum Hourly Value: 0 ppb on November 1 at hour 0													Hours of Missing Data: 3																										
Minimum Daily Value: 0.0 ppb on November 1													Hours of Calibration: 33																										
Monthly Average: 0.2 ppb													Operational Uptime: 99.6																										
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23															
Nov 1	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0				
Nov 2	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0				
Nov 3	0	0	0	0	2	2	3	2	S	S	3	4	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.3	1.3					
Nov 4	1	1	1	1	1	1	1	S	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4				
Nov 5	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0				
Nov 6	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0				
Nov 7	0	0	0	0	S	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				
Nov 8	1	1	1	S	0	0	0	0	0	0	0	0	0	1	P	P	P	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3				
Nov 9	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0				
Nov 10	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0				
Nov 11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0				
Nov 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			
Nov 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			
Nov 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			
Nov 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			
Nov 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			
Nov 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			
Nov 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			
Nov 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			
Nov 20	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1			
Nov 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	0.1			
Nov 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	0.1			
Nov 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			
Nov 24	1	1	1	1	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3			
Nov 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	0	0	0	0	0	0	0	0.2			
Nov 26	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3			
Nov 27	0	0	0	0	0	0	0	S	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3			
Nov 28	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.4				
Nov 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	0	0	0	0	0.0			
Nov 30	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0.7			
Diurnal Maximum	2	1	1	1	2	2	3	2	1	3	4	3	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Dairurnal Average	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2			
C	Monthly Calibration														S	Daily Zero-Span Check										Q	Quality Assurance												
K	Collection Error														N	No Data (Machine Not in Service)										Y	Routine Maintenance						P	Power Failure					
X	Invalid Data (Equipment Malfunction /Recovery)														NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																							

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

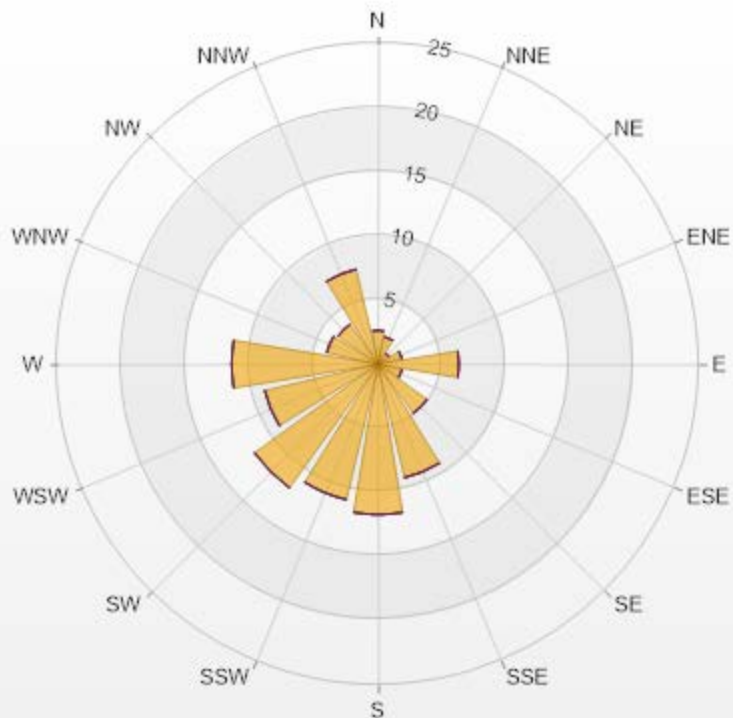
Timeseries Chart of Hourly Average for SO2 - St. Lina Site





Wind: St. Lina Poll.: St. Lina-SO2[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 95.00% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	2.63	0	0	0	0	2.63
NNE	2.19	0	0	0	0	2.19
NE	1.02	0	0	0	0	1.02
ENE	1.9	0	0	0	0	1.9
E	6.29	0	0	0	0	6.29
ESE	1.9	0	0	0	0	1.9
SE	4.68	0	0	0	0	4.68
SSE	9.06	0	0	0	0	9.06
S	11.7	0	0	0	0	11.7
SSW	10.82	0	0	0	0	10.82
SW	11.84	0	0	0	0	11.84
WSW	9.06	0	0	0	0	9.06
W	11.4	0	0	0	0	11.4
WNW	4.09	0	0	0	0	4.09
NW	3.8	0	0	0	0	3.8
NNW	7.6	0	0	0	0	7.6
Summary	100	0	0	0	0	100



LICA-202111

% Icon Classes (ppb)

100 0-10

0 10-50

0 50-100

0 100-172

0 >172.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

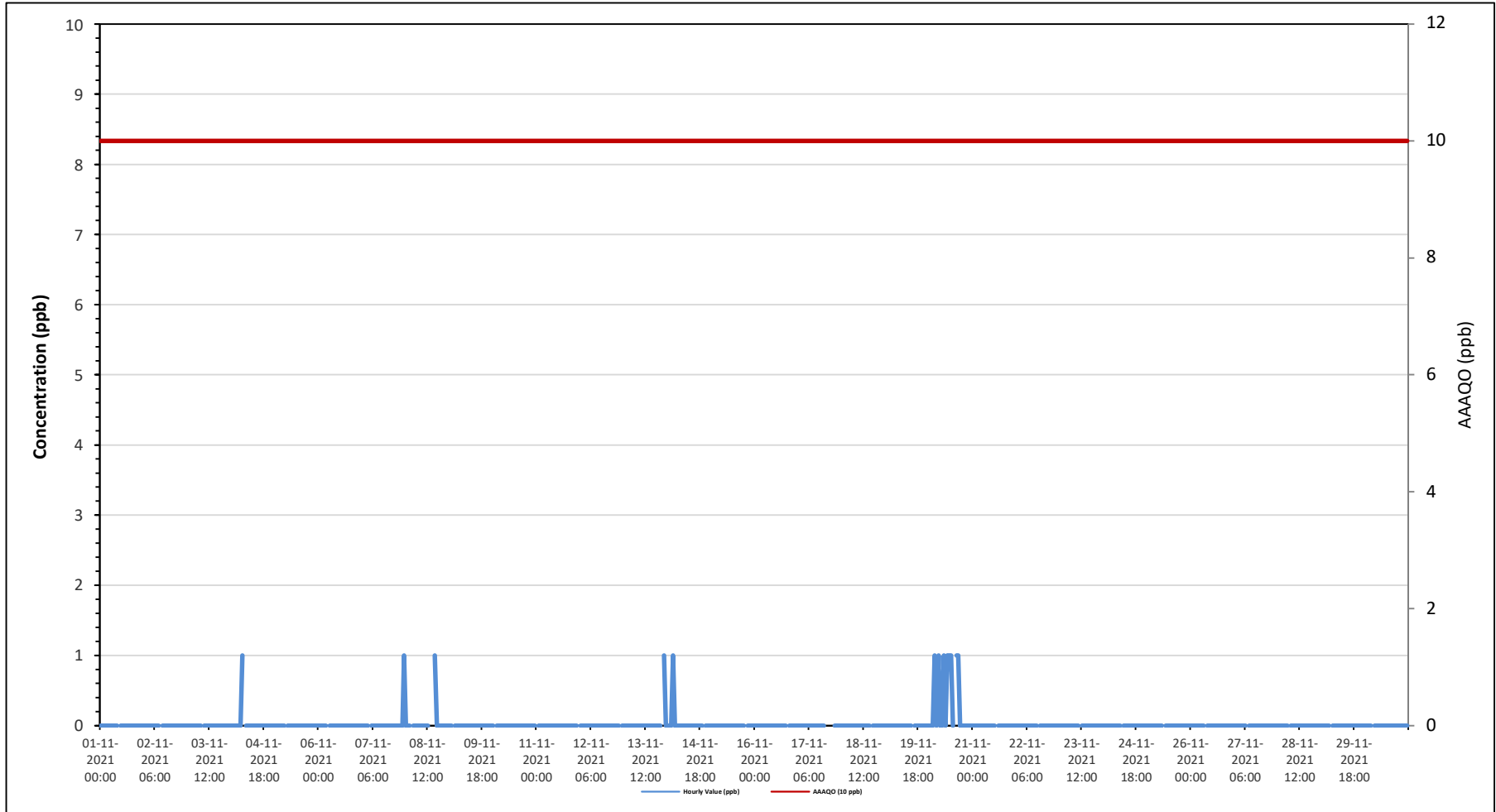
HYDROGEN SULPHIDE (H₂S) in ppb

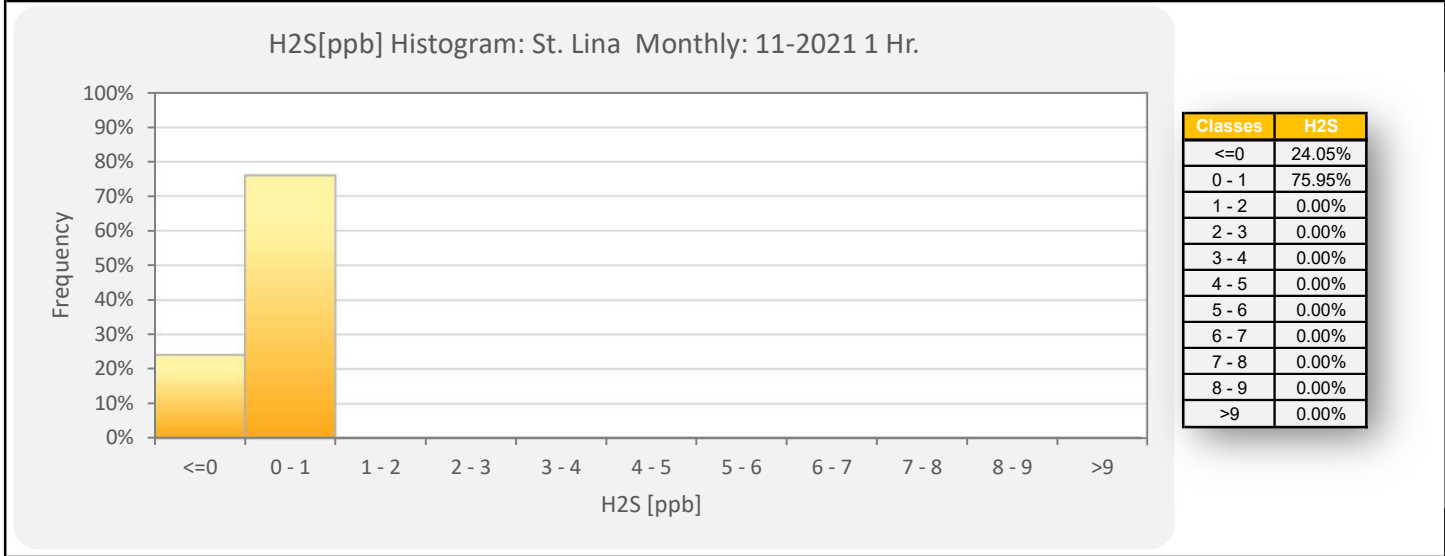
Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 10 ppb, 24-Hour 3 ppb																														
Number of 1-Hour Exceedances: 0					Number of 24-Hour Exceedances: 0																									
Maximum Hourly Value: 1 ppb on November 4 at hour 6					Hours in Service: 720																									
Maximum Daily Value: 0.3 ppb on November 20					Hours of Data: 682																									
Minimum Hourly Value: 0 ppb on November 1 at hour 0					Hours of Missing Data: 3																									
Minimum Daily Value: 0.0 ppb on November 1					Hours of Calibration: 35																									
Monthly Average: 0.0 ppb					Operational Uptime: 99.6																									
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average				
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
Nov 1	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0
Nov 2	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
Nov 3	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Nov 4	0	0	0	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Nov 5	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
Nov 6	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
Nov 7	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	0	1	0.0	
Nov 8	0	0	0	S	0	0	0	0	0	0	0	0	0	P	P	P	1	0	0	0	0	0	0	0	0	0	0	1	0.1	
Nov 9	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
Nov 10	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Nov 11	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	0	0.0
Nov 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
Nov 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0.0	
Nov 14	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0.0	
Nov 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	0	0	0.0
Nov 16	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
Nov 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0.0
Nov 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Nov 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Nov 20	0	0	0	1	0	1	0	0	1	0	1	1	1	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0.3
Nov 21	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
Nov 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	0	0	0.0
Nov 23	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
Nov 24	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
Nov 25	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Nov 26	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Nov 27	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
Nov 28	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
Nov 29	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
Nov 30	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
Diurnal Maximum	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0						
Diurnal Average	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0						

C Monthly Calibration	S Daily Zero-Span Check	Q Quality Assurance
K Collection Error	N No Data (Machine Not in Service)	Y Routine Maintenance
X InValid Data (Equipment Malfunction/Recovery)	NRM UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P Power Failure

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

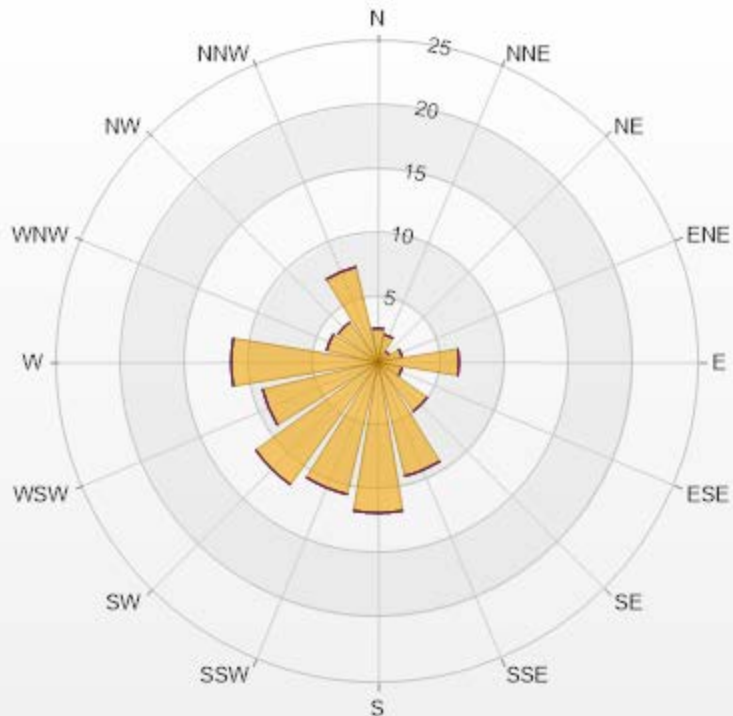
Timeseries Chart of Hourly Average for H2S - St. Lina Site





Wind: St. Lina Poll.: St. Lina-H2S[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.72% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	2.64	0	0	0	0	2.64
NNE	2.2	0	0	0	0	2.2
NE	1.03	0	0	0	0	1.03
ENE	1.91	0	0	0	0	1.91
E	6.3	0	0	0	0	6.3
ESE	1.91	0	0	0	0	1.91
SE	4.69	0	0	0	0	4.69
SSE	9.09	0	0	0	0	9.09
S	11.73	0	0	0	0	11.73
SSW	10.56	0	0	0	0	10.56
SW	11.73	0	0	0	0	11.73
WSW	9.24	0	0	0	0	9.24
W	11.44	0	0	0	0	11.44
WNW	4.11	0	0	0	0	4.11
NW	3.81	0	0	0	0	3.81
NNW	7.62	0	0	0	0	7.62
Summary	100	0	0	0	0	100



LICA-202111

% Icon Classes (ppb)

100 0-2

0 2-5

0 5-10

0 10-50

0 >50.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

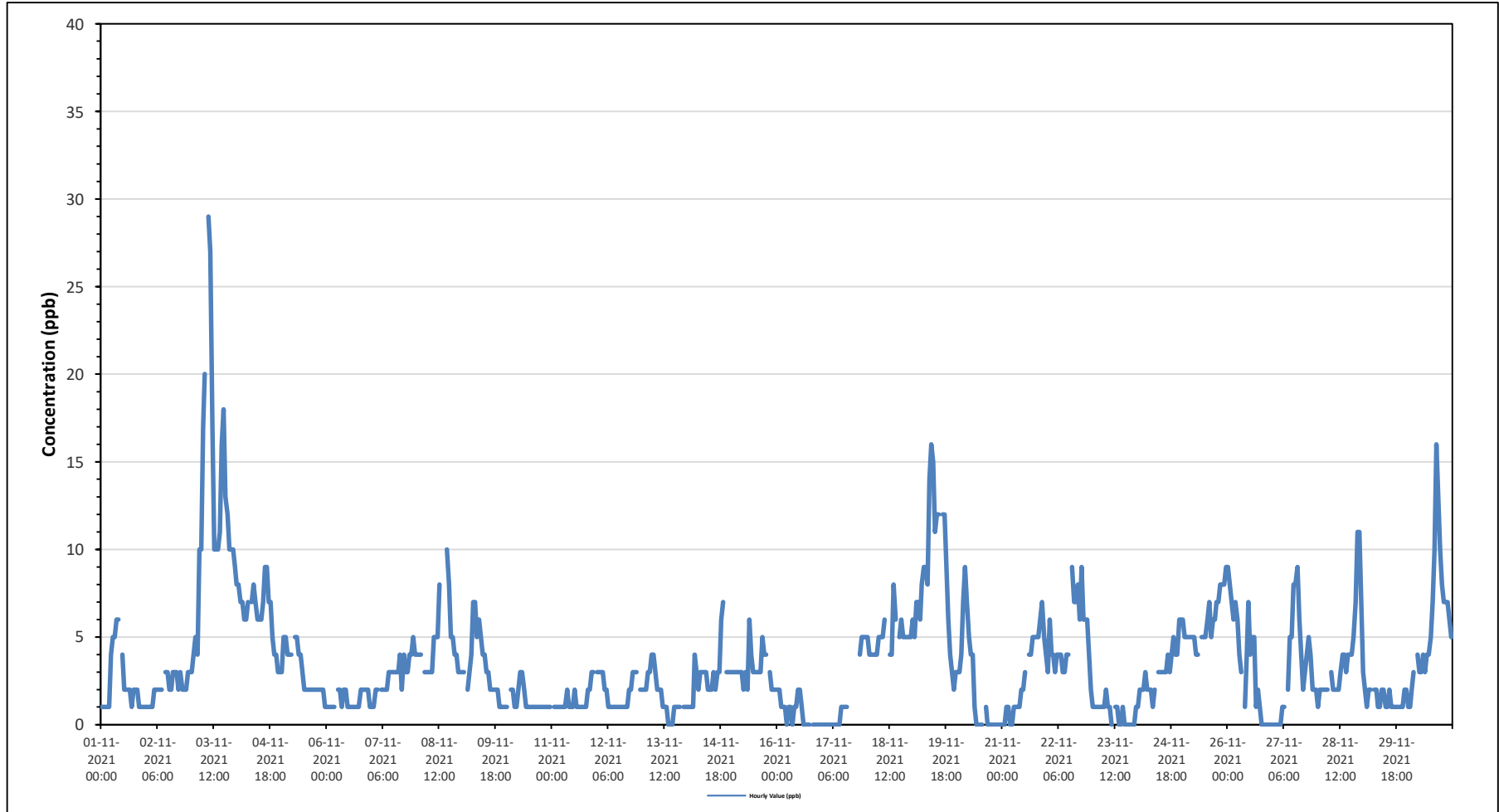
OXIDES OF NITROGEN (NOx) in ppb

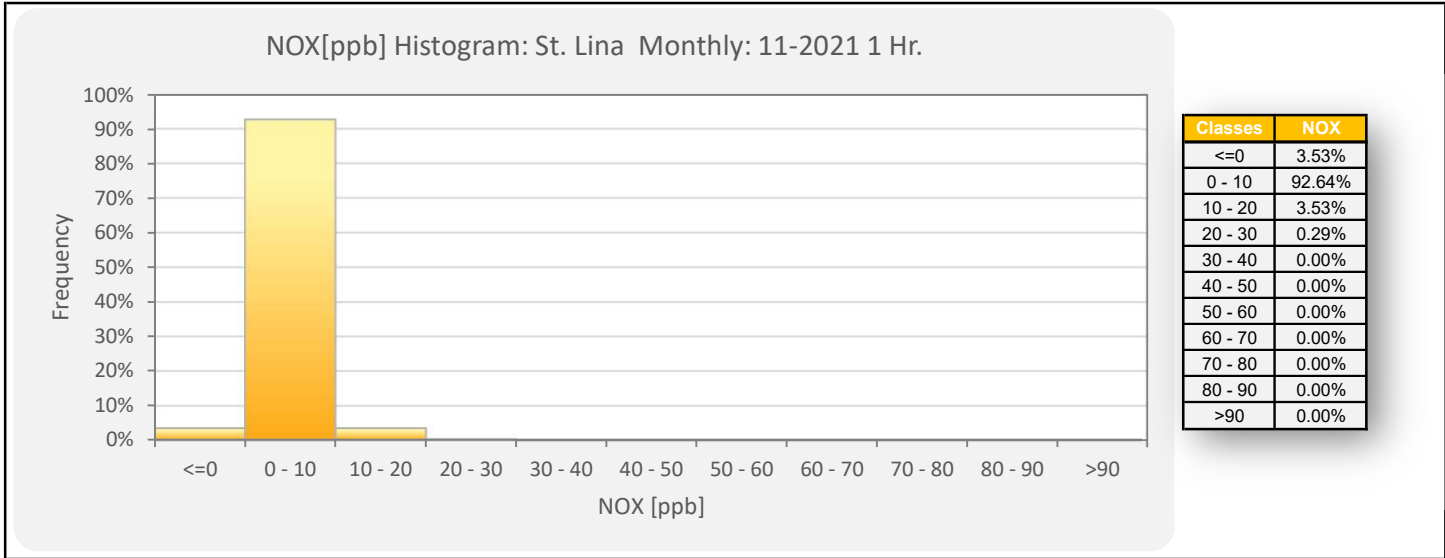
Maximum Hourly Value:	29	ppb	on November 3 at hour 9	Hours in Service:	720
Maximum Daily Value:	12.4	ppb	on November 3	Hours of Data:	679
Minimum Hourly Value:	0	ppb	on November 13 at hour 14	Hours of Missing Data:	5
Minimum Daily Value:	0.7	ppb	on November 23	Hours of Calibration:	36
Monthly Average:	3.4	ppb		Operational Uptime:	99.3

Day	Hourly Period Starting at (MST)																							Daily				
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average	
Nov 1	1	1	1	1	1	4	5	5	6	6	S	4	2	2	2	1	2	2	2	1	1	1	1	1	1	1	6	2.3
Nov 2	1	1	1	1	2	2	2	2	2	S	3	3	2	2	3	3	3	2	3	2	2	2	3	3	3	1	3	2.2
Nov 3	3	4	5	4	10	10	17	20	S	29	27	17	10	10	10	11	16	18	13	12	10	10	10	9	3	29	12.4	
Nov 4	8	8	7	7	6	6	7	S	7	7	6	6	6	6	7	9	9	7	7	5	4	4	3	3	3	9	6.4	
Nov 5	3	5	5	4	4	4	S	5	5	4	4	3	2	2	2	2	2	2	2	2	2	2	2	1	1	5	3.0	
Nov 6	1	1	1	1	1	S	2	2	2	1	2	2	1	1	1	1	1	1	2	2	2	2	2	1	1	2	1.4	
Nov 7	1	1	2	2	S	2	2	2	2	3	3	3	3	3	3	4	2	4	3	3	4	4	5	4	1	5	2.8	
Nov 8	4	4	4	S	3	3	3	3	3	5	5	5	8	P	P	P	10	8	5	5	4	4	3	3	3	10	4.6	
Nov 9	3	3	S	2	3	4	7	7	5	6	5	4	4	3	3	2	2	2	2	2	1	1	1	1	1	7	3.2	
Nov 10	1	S	2	2	1	1	2	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.3	
Nov 11	S	1	1	1	1	1	1	1	2	1	1	1	2	1	1	1	1	1	1	2	2	3	3	S	1	3	1.4	
Nov 12	3	3	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	2	2	3	3	S	2	1	1	3	1.8	
Nov 13	2	2	2	3	3	4	4	3	2	2	2	1	1	1	0	0	0	1	1	1	1	S	1	1	1	0	4	1.7
Nov 14	1	1	1	1	4	3	2	3	3	3	3	2	2	2	3	2	3	3	6	7	S	3	3	3	1	7	2.8	
Nov 15	3	3	3	3	3	3	2	3	2	6	4	3	3	3	3	5	4	4	S	3	2	2	2	2	2	6	3.1	
Nov 16	2	2	1	1	1	0	1	1	0	1	1	2	2	1	0	0	0	0	S	0	0	0	0	0	0	0	2	0.7
Nov 17	0	0	0	0	0	0	0	0	0	0	1	1	1	1	C	C	C	C	C	C	4	5	5	5	0	5	1.3	
Nov 18	5	4	4	4	4	4	5	5	5	6	Y	Y	4	4	8	6	S	5	6	5	5	5	5	5	4	8	5.0	
Nov 19	6	5	7	7	6	8	9	9	8	14	16	15	11	12	12	S	12	12	9	6	4	3	2	3	2	16	8.5	
Nov 20	3	3	4	7	9	7	5	4	4	1	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	9	2.1
Nov 21	0	0	1	1	0	0	1	1	1	1	2	2	3	S	4	4	5	5	5	5	6	7	5	4	0	7	2.7	
Nov 22	3	6	4	4	3	4	4	4	3	3	4	4	S	9	7	7	8	6	9	6	6	6	4	2	2	9	5.0	
Nov 23	1	1	1	1	1	1	1	2	1	1	0	S	1	1	0	0	1	0	0	0	0	0	0	1	0	2	0.7	
Nov 24	1	2	2	2	3	2	2	2	1	2	S	3	3	3	3	3	4	3	4	5	4	4	6	6	1	6	3.0	
Nov 25	6	5	5	5	5	5	5	4	4	S	5	5	5	6	7	5	6	6	7	7	8	8	8	9	4	9	5.9	
Nov 26	9	8	7	6	7	6	4	3	S	1	4	7	4	5	5	1	2	1	0	0	0	0	0	0	0	0	9	3.5
Nov 27	0	0	0	0	0	1	1	S	2	5	5	8	8	9	6	4	2	3	4	5	4	2	2	2	0	9	3.2	
Nov 28	1	2	2	2	2	2	S	3	2	2	2	2	3	4	4	3	4	4	4	5	7	11	11	7	1	11	3.9	
Nov 29	3	2	1	2	2	S	2	2	1	1	2	2	1	1	2	1	1	1	1	1	1	2	2	1	1	3	1.5	
Nov 30	1	1	2	3	S	4	3	3	4	3	4	4	4	5	7	10	16	13	10	8	7	7	6	5	1	16	5.8	
Diurnal Maximum	9	8	7	7	10	10	17	20	8	29	27	17	11	12	12	16	16	18	13	12	10	11	11	9				
Dalurnal Average	2.6	2.7	2.7	2.8	3.1	3.3	3.6	3.7	2.9	4.3	4.2	3.9	3.4	3.6	4.0	3.4	4.1	3.9	4.0	3.6	3.3	3.5	3.3	3.0				
C	Monthly Calibration				S				Daily Zero-Span Check				Q				Quality Assurance											
K	Collection Error				N				No Data (Machine Not in Service)				Y				Routine Maintenance				P				Power Failure			
X	Invalid Data (Equipment Malfunction /Recovery)				NRM				UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																			

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

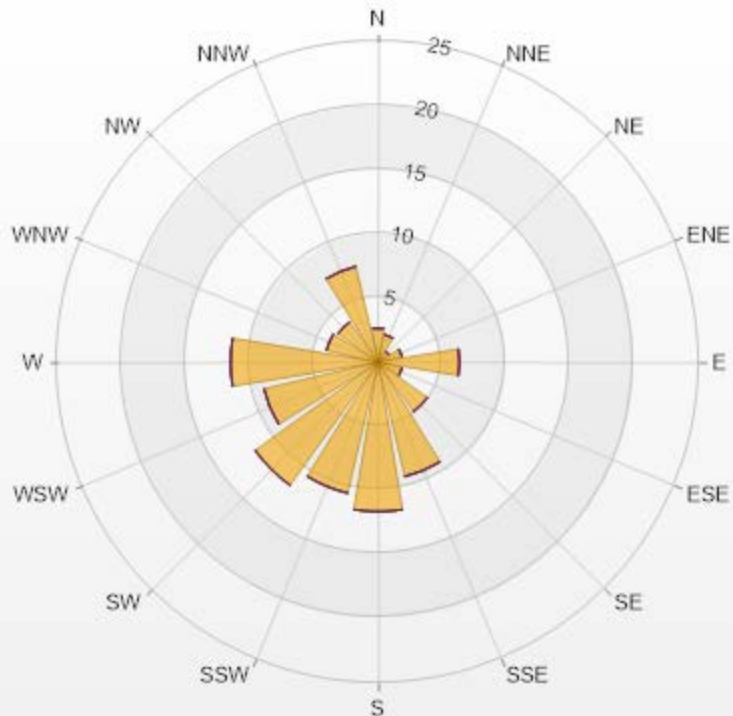
Timeseries Chart of Hourly Average for NOx - St. Lina Site





Wind: St. Lina Poll.: St. Lina-NOX[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.31% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	2.65	0	0	0	0	2.65
NNE	2.21	0	0	0	0	2.21
NE	1.03	0	0	0	0	1.03
ENE	1.91	0	0	0	0	1.91
E	6.33	0	0	0	0	6.33
ESE	1.91	0	0	0	0	1.91
SE	4.71	0	0	0	0	4.71
SSE	9.13	0	0	0	0	9.13
S	11.63	0	0	0	0	11.63
SSW	10.46	0	0	0	0	10.46
SW	11.78	0	0	0	0	11.78
WSW	9.13	0	0	0	0	9.13
W	11.49	0	0	0	0	11.49
WNW	4.12	0	0	0	0	4.12
NW	3.83	0	0	0	0	3.83
NNW	7.66	0	0	0	0	7.66
Summary	100	0	0	0	0	100



LICA-202111

Page 183 of 239

% Icon Classes (ppb)

100

0-30

0

30-50

0

50-76

0

76-159

0

>159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

NITRIC OXIDE (NO) in ppb

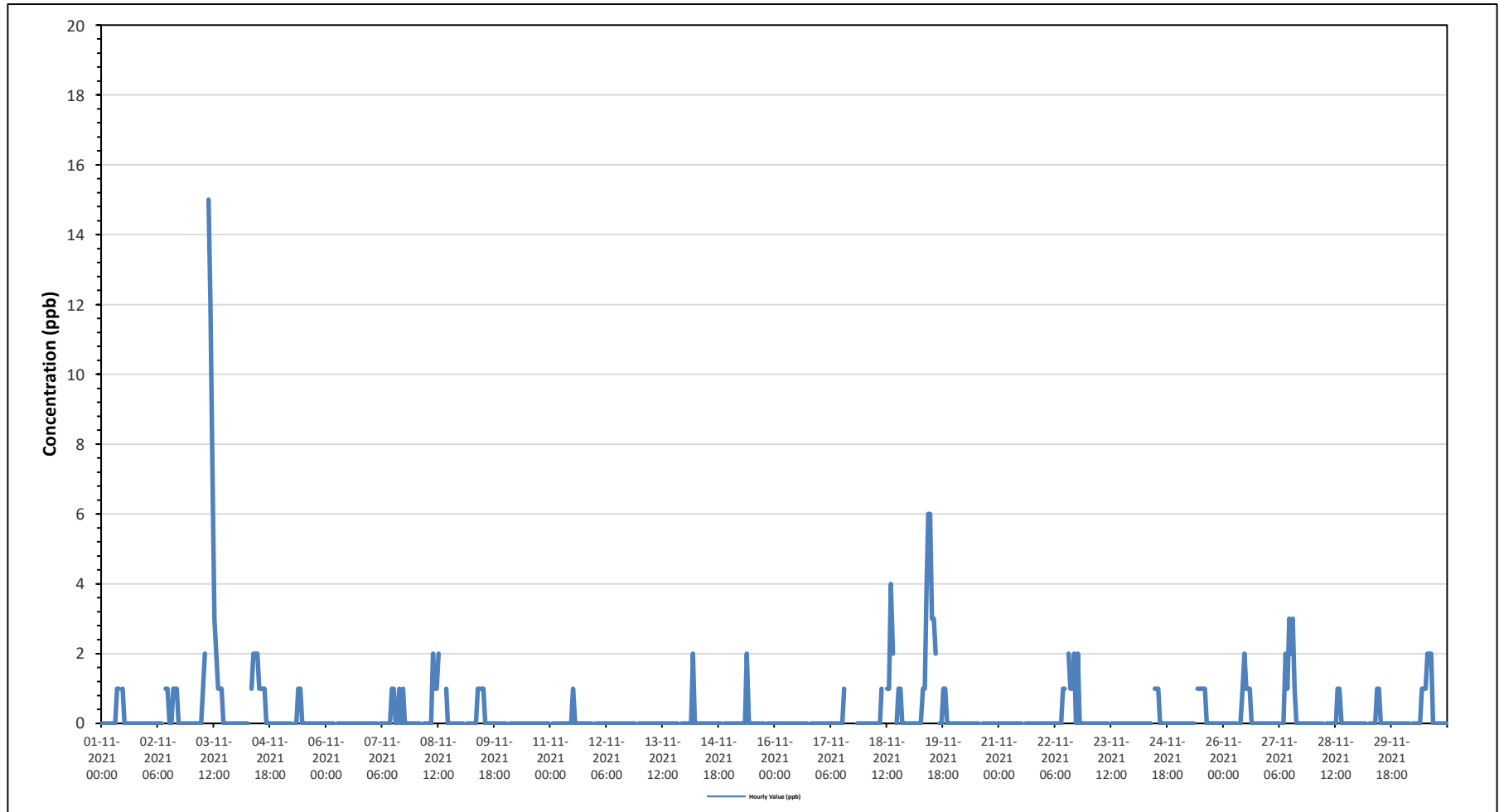
Maximum Hourly Value:	15 ppb	on November 3 at hour 9	Hours in Service:	720
Maximum Daily Value:	2.0 ppb	on November 3	Hours of Data:	679
Minimum Hourly Value:	0 ppb	on November 1 at hour 0	Hours of Missing Data:	5
Minimum Daily Value:	0.0 ppb	on November 6	Hours of Calibration:	36
Monthly Average:	0.3 ppb		Operational Uptime:	99.3

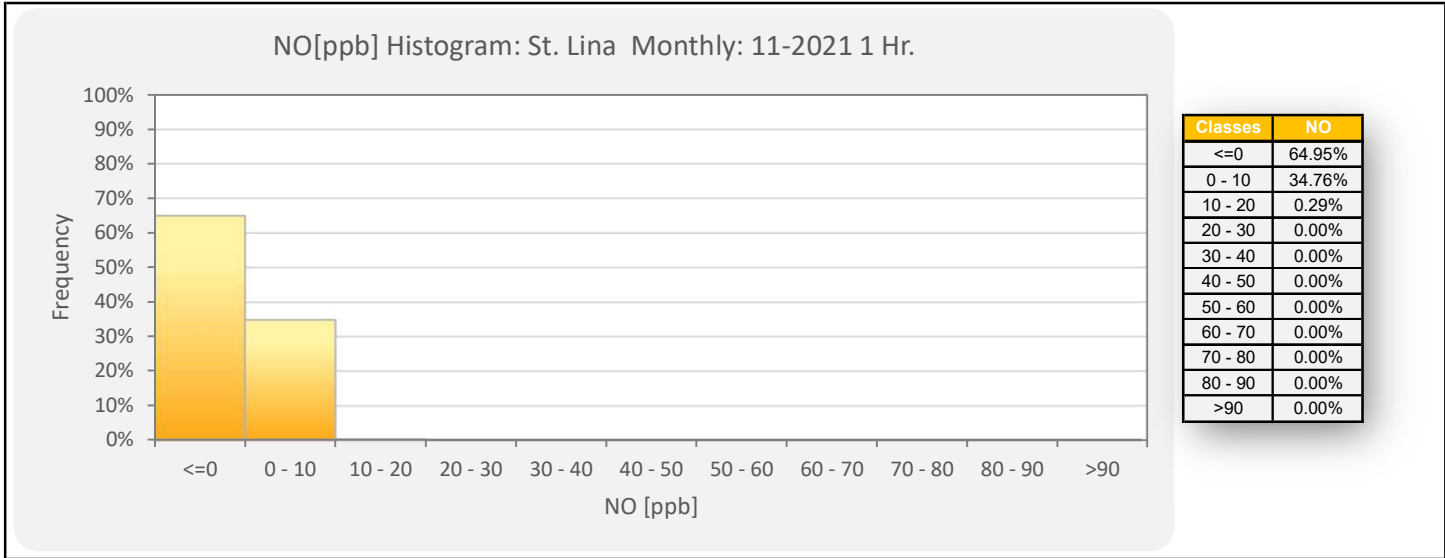
Day	Hourly Period Starting at (MST)																								Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
Nov 1	0	0	0	0	0	0	0	0	1	1	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Nov 2	0	0	0	0	0	0	0	0	0	S	1	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0.2
Nov 3	0	0	0	0	0	0	1	2	S	15	12	7	3	2	1	1	1	0	0	0	0	0	0	0	0	0	0	15	2.0	
Nov 4	0	0	0	0	0	0	0	S	1	2	2	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0.5	
Nov 5	0	0	0	0	0	0	S	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Nov 6	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
Nov 7	0	0	0	0	S	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0.2	
Nov 8	0	0	0	S	0	0	0	0	0	2	1	1	2	P	P	P	1	0	0	0	0	0	0	0	0	0	2	0.4		
Nov 9	0	0	S	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2		
Nov 10	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	
Nov 11	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	0	S	1	0.0	
Nov 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
Nov 13	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
Nov 14	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	2	0.1	
Nov 15	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	2	0.1	
Nov 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
Nov 17	0	0	0	0	0	0	0	0	0	0	0	0	1	C	C	C	C	C	C	C	0	0	0	0	0	0	0	1	0.1	
Nov 18	0	0	0	0	0	0	0	0	0	1	Y	Y	1	1	4	2	S	0	1	1	0	0	0	0	0	0	0	4	0.5	
Nov 19	0	0	0	0	0	0	0	1	1	4	6	6	3	3	2	S	0	0	1	1	0	0	0	0	0	0	0	6	1.2	
Nov 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Nov 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Nov 22	0	0	0	0	0	0	0	0	0	1	1	S	2	1	1	2	0	2	0	0	0	0	0	0	0	0	0	2	0.4	
Nov 23	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
Nov 24	0	0	0	0	0	0	0	0	0	0	S	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Nov 25	0	0	0	0	0	0	0	0	0	0	S	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	
Nov 26	0	0	0	0	0	0	0	0	S	0	1	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3	
Nov 27	0	0	0	0	0	0	0	S	0	2	1	3	2	3	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0.5	
Nov 28	0	0	0	0	0	0	S	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Nov 29	0	0	0	0	0	S	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Nov 30	0	0	0	0	S	0	0	0	0	0	1	1	1	2	2	2	0	0	0	0	0	0	0	0	0	0	0	2	0.4	
Diurnal Maximum	0	0	0	0	2	0	1	2	1	15	12	7	3	3	4	2	2	1	2	1	0	0	0	0	0	0	0	0	0	
Dalurnal Average	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	1.1	1.1	0.7	0.7	0.6	0.3	0.2	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

C Monthly Calibration
 S Daily Zero-Span Check
 Q Quality Assurance
K Collection Error
 N No Data (Machine Not in Service)
 Y Routine Maintenance
P Power Failure
X InValid Data (Equipment Malfunction /Recovery)
NRM UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)

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

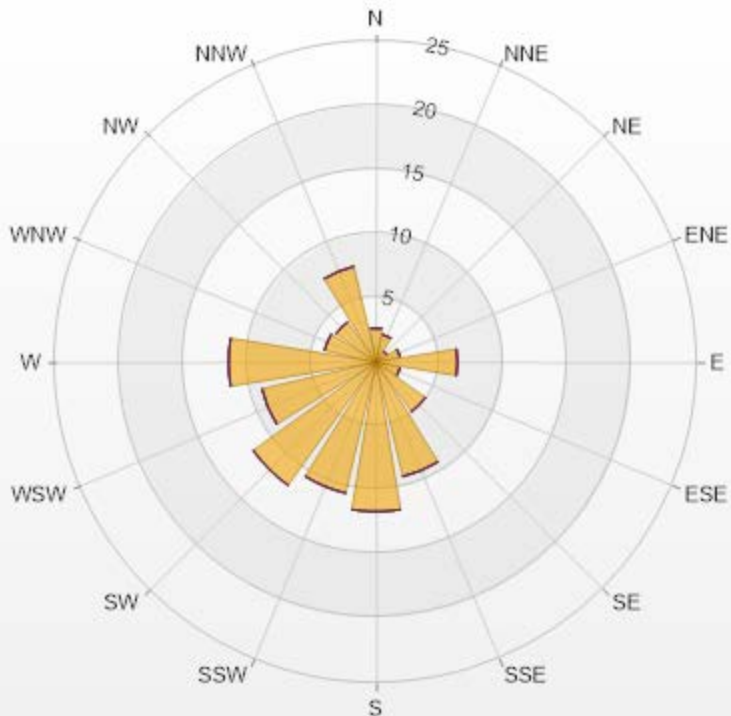
Timeseries Chart of Hourly Average for NO - St. Lina Site





Wind: St. Lina Poll.: St. Lina-NO[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.31% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	2.65	0	0	0	0	2.65
NNE	2.21	0	0	0	0	2.21
NE	1.03	0	0	0	0	1.03
ENE	1.91	0	0	0	0	1.91
E	6.33	0	0	0	0	6.33
ESE	1.91	0	0	0	0	1.91
SE	4.71	0	0	0	0	4.71
SSE	9.13	0	0	0	0	9.13
S	11.63	0	0	0	0	11.63
SSW	10.46	0	0	0	0	10.46
SW	11.78	0	0	0	0	11.78
WSW	9.13	0	0	0	0	9.13
W	11.49	0	0	0	0	11.49
WNW	4.12	0	0	0	0	4.12
NW	3.83	0	0	0	0	3.83
NNW	7.66	0	0	0	0	7.66
Summary	100	0	0	0	0	100



LICA-202111

% Icon Classes (ppb)

100

0-30

0

30-50

50-76

0

76-159

0

>159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

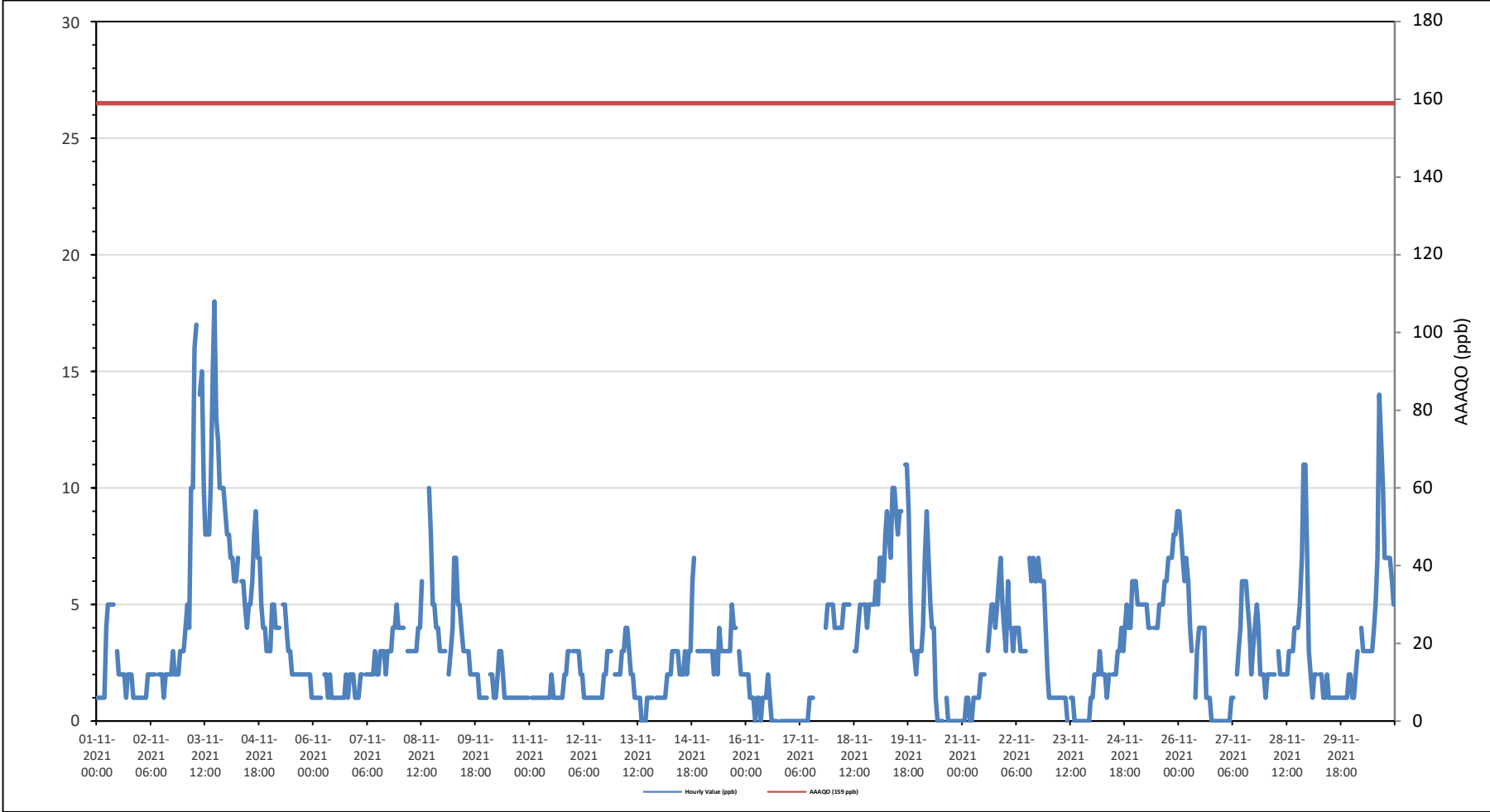
NITROGEN DIOXIDE (NO₂) in ppb

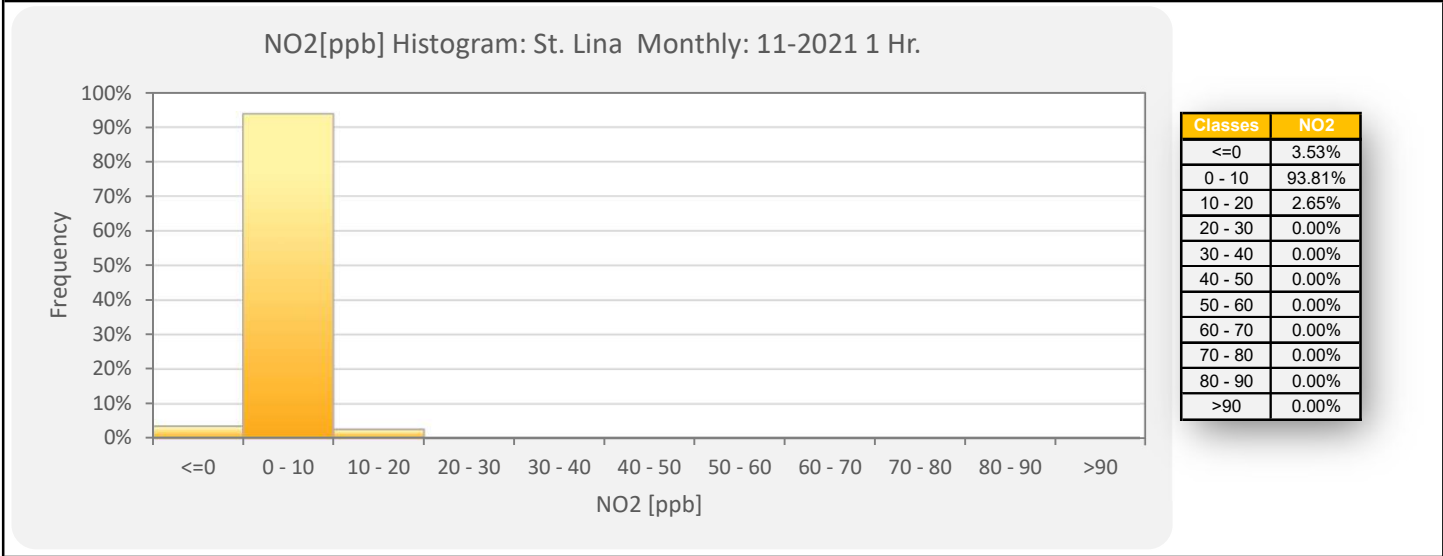
Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 159 ppb																																	
Number of 1-Hour Exceedences: 0																																	
Maximum Hourly Value: 18 ppb on November 3 at hour 17													Hours in Service: 720																				
Maximum Daily Value: 10.4 ppb on November 3													Hours of Data: 679																				
Minimum Hourly Value: 0 ppb on November 13 at hour 14													Hours of Missing Data: 5																				
Minimum Daily Value: 0.6 ppb on November 23													Hours of Calibration: 36																				
Monthly Average: 3.2 ppb													Operational Uptime: 99.3																				
Day	Hourly Period Starting at (MST)																								Daily Minimum	Daily Maximum	Daily Average						
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23									
Nov 1	1	1	1	1	1	4	5	5	5	5	S	3	2	2	2	1	2	2	2	1	1	1	1	1	1	1	1	5	2.2				
Nov 2	1	1	1	1	2	2	2	2	2	2	S	2	2	2	1	2	2	2	3	2	2	2	3	3	3	3	1	3	1.9				
Nov 3	3	4	5	4	10	10	16	17	S	14	15	10	8	8	8	10	15	18	13	12	10	10	9	9	3	18	10.4	5.9					
Nov 4	8	8	7	7	6	6	7	S	6	6	5	4	5	5	6	8	9	7	7	5	4	4	3	3	3	3	9	5.9					
Nov 5	3	5	5	4	4	4	S	5	5	4	3	3	2	2	2	2	2	2	2	2	2	2	2	1	1	5	3.0	3.0					
Nov 6	1	1	1	1	1	S	2	2	1	2	1	1	1	1	1	1	1	1	2	1	2	2	2	1	1	2	2	1.3					
Nov 7	1	1	2	2	S	2	2	2	2	2	3	2	2	3	3	3	2	3	3	3	4	4	5	4	1	5	2.6	2.6					
Nov 8	4	4	4	S	3	3	3	3	3	3	4	4	6	P	P	P	10	8	5	5	4	4	3	3	3	10	4.3	4.3					
Nov 9	3	3	S	2	3	4	7	7	5	5	4	3	3	3	3	2	2	2	2	2	1	1	1	1	1	7	3.0	3.0					
Nov 10	1	S	2	2	1	1	2	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.3	1.3				
Nov 11	S	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	2	2	3	3	S	1	3	1.3	1.3					
Nov 12	3	3	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	2	2	3	3	3	S	2	1	3	1.8	1.8					
Nov 13	2	2	2	3	3	4	4	3	2	2	1	1	1	1	0	0	0	1	1	1	1	S	1	1	0	4	1.6	1.6					
Nov 14	1	1	1	1	2	2	2	3	3	3	3	2	2	2	3	2	3	3	6	7	S	3	3	3	1	7	2.7	2.7					
Nov 15	3	3	3	3	3	3	2	3	2	4	3	3	3	3	3	3	5	4	4	S	3	2	2	2	2	5	3.0	3.0					
Nov 16	2	2	1	1	1	0	1	0	1	1	1	2	1	0	0	0	0	0	4	S	0	0	0	0	0	2	0.7	0.7					
Nov 17	0	0	0	0	0	0	0	0	0	0	0	1	1	1	C	C	C	C	C	C	C	4	5	5	5	5	1.2	1.2					
Nov 18	5	4	4	4	4	4	5	5	5	5	Y	Y	3	3	4	5	S	5	5	4	5	5	5	5	3	5	4.5	4.5					
Nov 19	6	5	7	7	6	8	9	8	7	10	10	9	8	9	9	S	11	11	9	5	3	3	2	3	2	11	7.2	7.2					
Nov 20	3	3	4	7	9	7	5	4	4	1	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	9	2.1	2.1					
Nov 21	0	0	1	1	0	0	1	1	1	1	2	2	2	S	3	4	5	5	4	5	6	7	5	4	0	7	2.6	2.6					
Nov 22	3	6	4	4	3	4	4	4	3	3	3	3	S	7	6	7	6	6	7	6	6	6	4	2	2	7	4.7	4.7					
Nov 23	1	1	1	1	1	1	1	1	1	1	0	S	1	1	0	0	0	0	0	0	0	0	0	1	0	1	0.6	0.6					
Nov 24	1	2	2	2	3	2	2	2	1	2	S	2	2	2	3	3	4	3	4	5	4	4	6	6	1	6	2.9	2.9					
Nov 25	6	5	5	5	5	5	5	4	4	S	4	4	4	5	5	5	6	6	7	7	7	8	8	9	4	9	5.6	5.6					
Nov 26	9	8	7	6	7	6	4	3	S	1	3	4	4	4	4	1	1	0	0	0	0	0	0	0	0	9	3.2	3.2					
Nov 27	0	0	0	0	0	1	S	2	3	4	6	6	6	5	4	2	3	4	5	4	2	2	2	2	0	6	2.7	2.7					
Nov 28	1	2	2	2	2	2	S	3	2	2	2	2	2	3	3	3	4	4	4	5	7	11	11	7	1	11	3.7	3.7					
Nov 29	3	2	1	2	2	S	2	2	1	1	2	1	1	1	1	1	1	1	1	1	1	2	2	1	3	1	1.4	1.4					
Nov 30	1	1	2	3	S	4	3	3	3	3	3	3	4	5	7	14	12	10	7	7	7	6	5	1	14	5.2	5.2						
Diurnal Maximum	9	8	7	7	10	10	16	17	7	14	15	10	8	9	9	14	15	18	13	12	10	11	11	9									
Daiurnal Average	2.6	2.7	2.7	2.8	3.0	3.3	3.5	3.5	2.7	3.1	3.0	2.8	2.8	2.9	3.2	3.2	3.8	3.9	3.8	3.5	3.2	3.5	3.3	3.0									
C	Monthly Calibration										S	Daily Zero-Span Check										Q	Quality Assurance										
K	Collection Error										N	No Data (Machine Not in Service)										Y	Routine Maintenance					P	Power Failure				
X	InValid Data (Equipment Malfunction/Recovery)										NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																					

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

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

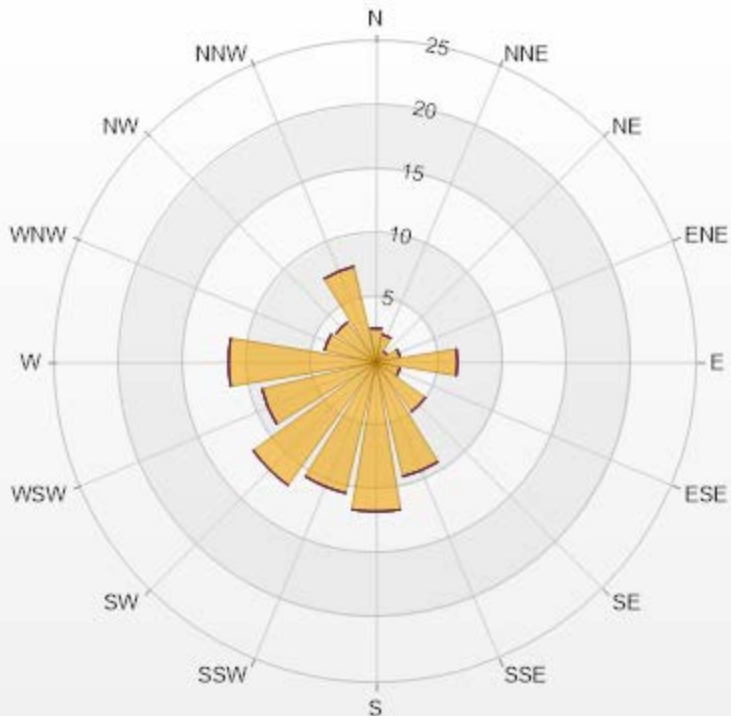
Timeseries Chart of Hourly Average for NO2 - St. Lina Site





Wind: St. Lina Poll.: St. Lina-NO2[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.31% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	2.65	0	0	0	0	2.65
NNE	2.21	0	0	0	0	2.21
NE	1.03	0	0	0	0	1.03
ENE	1.91	0	0	0	0	1.91
E	6.33	0	0	0	0	6.33
ESE	1.91	0	0	0	0	1.91
SE	4.71	0	0	0	0	4.71
SSE	9.13	0	0	0	0	9.13
S	11.63	0	0	0	0	11.63
SSW	10.46	0	0	0	0	10.46
SW	11.78	0	0	0	0	11.78
WSW	9.13	0	0	0	0	9.13
W	11.49	0	0	0	0	11.49
WNW	4.12	0	0	0	0	4.12
NW	3.83	0	0	0	0	3.83
NNW	7.66	0	0	0	0	7.66
Summary	100	0	0	0	0	100



LICA-202111

Page 193 of 239

% Icon Classes (ppb)

100

0-30

0

30-50

0

50-76

0

76-159

0

>159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

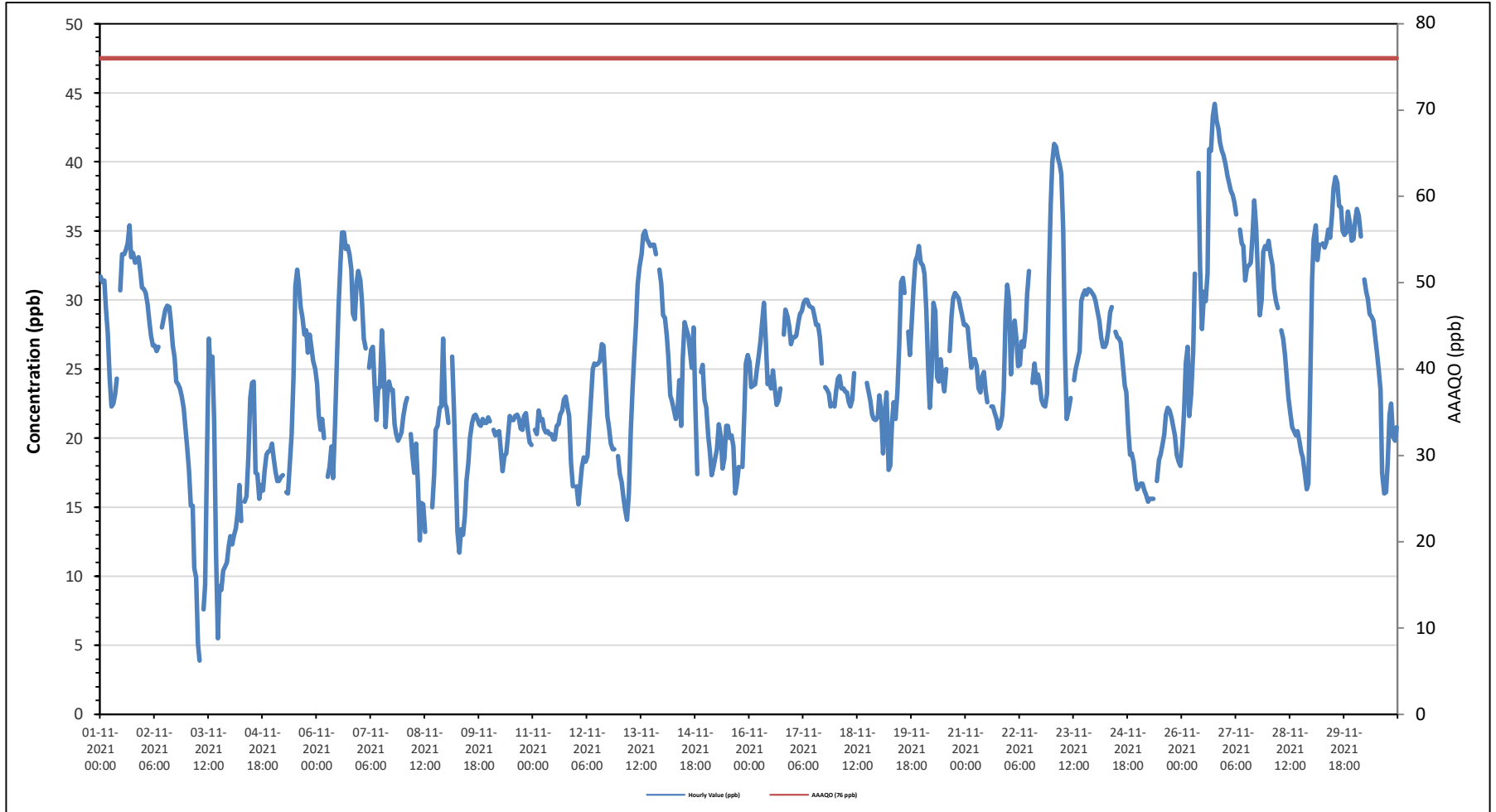
St. Lina Site - November 2021

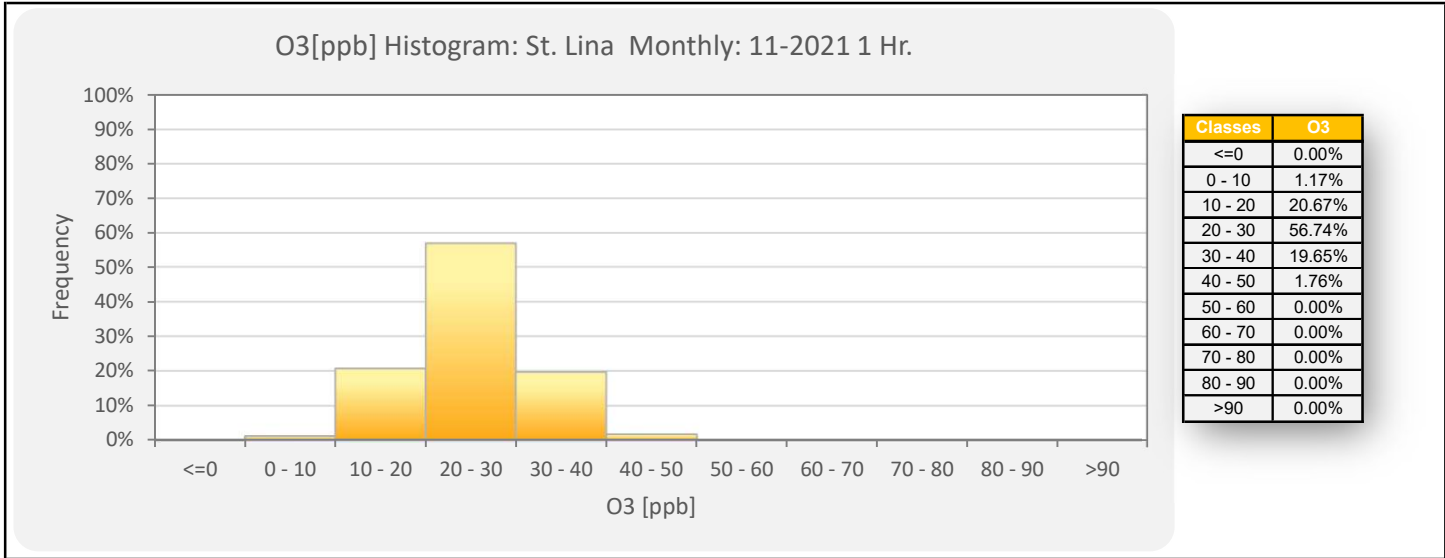
Summary of Hourly Averages

OZONE (O₃) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 76 ppb																																											
Number of 1-Hour Exceedences: 0																																											
Maximum Hourly Value: 44.2 ppb on November 26 at hour 18												Hours in Service: 720																															
Maximum Daily Value: 35.2 ppb on November 29												Hours of Data: 682																															
Minimum Hourly Value: 3.9 ppb on November 3 at hour 7												Hours of Missing Data: 3																															
Minimum Daily Value: 13.5 ppb on November 3												Hours of Calibration: 35																															
Monthly Average: 24.8 ppb												Operational Uptime: 99.6																															
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average																	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23																
Nov 1	31.7	31.3	31.4	29.4	27.6	24.4	22.3	22.5	23.2	24.3	S	30.7	33.3	33.3	33.6	34.1	35.4	33.1	33.4	32.7	32.9	33.1	32.2	30.9	22.3	35.4	30.3																
Nov 2	30.8	30.5	29.7	28.4	27.4	26.7	26.7	26.6	26.6	S	28.0	28.7	29.3	29.6	29.5	28.4	26.7	25.8	24.1	23.9	23.6	23.0	22.2	20.9	20.9	30.8	26.8																
Nov 3	19.4	17.7	15.1	15.1	10.6	9.9	5.1	3.9	S	7.6	9.4	18.8	27.2	24.9	25.9	21.2	11.7	5.5	9.3	9.0	10.4	10.7	11.0	12.2	3.9	27.2	13.5																
Nov 4	12.9	12.3	12.9	13.5	14.7	16.6	14.0	S	15.4	15.8	18.7	22.9	24.0	24.1	17.5	17.4	15.6	16.6	16.2	17.6	18.8	19.0	19.1	19.6	12.3	24.1	17.2																
Nov 5	18.6	17.6	16.9	16.9	17.2	17.3	S	16.1	16.0	18.1	20.3	24.4	31.0	32.2	31.2	29.5	28.7	27.5	27.8	26.2	27.5	26.5	25.6	25.0	16.0	32.2	23.4																
Nov 6	23.9	21.7	20.6	21.4	20.0	S	17.2	17.9	19.4	17.1	20.7	25.3	29.6	32.7	34.9	34.9	33.7	33.9	33.3	32.2	29.0	28.6	31.3	32.1	17.1	34.9	26.6																
Nov 7	31.4	29.9	27.2	26.5	S	25.1	26.4	26.6	23.7	21.3	23.6	23.7	27.8	25.3	20.8	22.9	24.1	23.5	23.5	21.0	20.3	19.8	20.1	20.4	19.8	31.4	24.1																
Nov 8	21.6	22.5	22.9	S	20.3	18.8	17.5	19.6	16.7	12.6	15.3	15.2	13.2	P	P	P	15.0	17.3	20.6	20.9	22.2	22.3	27.2	22.5	12.6	27.2	19.2																
Nov 9	22.2	21.1	S	25.9	21.9	17.9	13.2	11.7	13.4	13.0	14.4	16.9	18.2	20.0	21.1	21.6	21.7	21.4	21.0	20.9	21.4	21.1	21.1	21.5	11.7	25.9	19.2																
Nov 10	21.2	S	20.6	20.2	20.4	20.5	19.2	17.6	18.7	18.9	20.3	21.6	21.3	21.3	21.6	21.7	21.4	20.7	20.6	21.6	21.8	20.6	19.7	19.5	17.6	21.8	20.5																
Nov 11	S	20.6	20.3	22.0	21.3	21.4	20.7	20.4	20.5	20.3	20.3	19.9	19.9	20.9	21.0	21.7	22.0	22.8	23.0	22.2	21.6	18.2	16.5	S	16.5	23.0	20.8																
Nov 12	16.5	15.2	16.5	17.9	18.6	18.3	18.7	20.6	22.8	25.0	25.4	25.3	25.4	25.6	26.8	26.7	24.4	21.6	20.8	19.6	19.2	19.2	S	18.7	15.2	26.8	21.3																
Nov 13	17.4	16.8	15.8	14.8	14.1	16.0	20.4	23.6	25.9	28.3	31.1	32.4	33.3	34.7	35.0	34.4	34.2	33.9	34.0	34.0	33.3	S	32.2	31.2	14.1	35.0	27.3																
Nov 14	28.9	28.7	27.4	25.8	23.1	22.7	22.1	21.4	21.8	24.2	20.9	25.7	28.4	27.8	27.4	26.2	25.1	28.0	22.0	17.4	S	24.8	25.3	22.8	17.4	28.9	24.7																
Nov 15	22.2	20.2	18.9	17.3	17.9	18.6	19.2	21.0	20.1	17.8	18.5	20.9	20.9	20.0	20.2	19.4	16.0	16.7	17.9	S	17.9	21.7	25.4	26.0	16.0	26.0	19.8																
Nov 16	25.5	23.7	23.8	23.9	24.9	25.9	27.0	28.3	29.8	27.1	23.9	24.4	23.6	24.9	23.6	22.4	23.6	S	27.5	29.3	28.8	28.0	26.8	22.4	29.8	25.6																	
Nov 17	27.3	27.3	27.4	28.4	29.0	29.2	29.8	30.0	30.0	29.6	29.5	29.4	28.8	28.2	28.2	27.3	25.4	S	23.7	23.5	23.2	22.3	22.5	22.3	22.3	30.0	27.1																
Nov 18	23.4	24.3	24.5	23.6	23.6	23.4	23.3	22.6	22.3	22.8	24.7	C	C	C	C	23.8	S	24.0	23.3	22.7	21.7	21.4	21.3	21.5	21.3	24.7	23.1																
Nov 19	23.1	22.0	18.9	21.5	23.3	17.7	18.0	21.2	22.6	21.4	23.3	26.7	31.3	31.6	30.5	S	27.7	26.0	28.7	30.9	32.8	33.2	33.9	32.7	17.7	33.9	26.0																
Nov 20	32.5	31.9	29.3	25.1	22.2	24.6	29.8	29.2	24.4	24.1	25.7	24.3	23.4	25.0	S	26.3	28.8	30.1	30.5	30.3	30.1	29.4	28.8	28.2	22.2	32.5	27.6																
Nov 21	28.2	28.0	26.5	25.1	25.7	25.7	25.2	23.6	23.3	24.5	24.8	23.4	22.6	S	22.3	22.3	21.8	21.4	20.7	20.9	21.6	23.5	29.0	31.1	20.7	31.1	24.4																
Nov 22	30.0	24.6	27.7	28.5	27.1	25.2	25.3	27.0	26.6	27.8	30.4	32.1	S	24.0	25.4	24.0	24.6	23.9	22.8	22.4	22.3	23.2	31.6	36.9	22.3	36.9	26.7																
Nov 23	40.0	41.3	41.1	40.3	39.8	39.1	35.1	26.1	21.4	22.1	22.9	S	24.2	25.0	25.6	26.3	29.9	30.4	30.7	30.4	30.8	30.7	30.5	30.3	21.4	41.3	31.0																
Nov 24	29.9	29.2	28.5	27.3	26.6	26.6	26.9	27.8	29.1	29.5	S	27.7	27.3	27.2	26.9	25.5	23.8	23.3	20.7	18.8	18.9	18.3	17.0	16.3	16.3	29.9	24.9																
Nov 25	16.5	16.7	16.7	16.2	15.9	15.4	15.6	15.6	15.6	S	16.9	18.4	18.8	19.5	20.3	21.7	22.2	22.0	21.5	20.8	20.2	18.8	18.3	18.0	15.4	22.2	18.3																
Nov 26	19.6	22.1	25.4	26.6	21.6	23.1	26.3	31.9	S	39.2	32.3	27.9	30.6	29.9	31.9	40.9	40.8	43.3	44.2	43.0	42.4	41.4	40.8	40.5	19.6	44.2	33.3																
Nov 27	39.8	39.0	38.5	37.9	37.6	37.1	36.2	S	35.1	34.1	33.9	31.4	32.4	32.5	32.7	34.8	37.2	35.3	31.8	28.9	30.0	33.5	33.9	33.7	28.9	39.8	34.7																
Nov 28	34.3	33.2	32.5	30.8	29.9	29.4	S	27.8	27.2	26.0	24.3	22.9	21.8	20.8	20.5	20.2	20.5	19.8	19.0	18.6	17.4	16.3	16.7	23.9	16.3	34.3	24.1																
Nov 29	31.4	34.4	35.4	32.9	34.0	S	34.1	33.8	34.2	35.1	34.5	36.1	38.1	38.9	38.5	36.8	36.7	35.0	34.7	34.9	36.4	35.5	34.3	34.4	31.4	38.9	35.2																
Nov 30	35.8	36.6	36.1	34.6	S	31.5	30.6	30.1	29.0	28.8	28.5	27.3	26.3	25.0	23.5	17.5	16.0	16.1	18.2	21.7	22.5	20.1	19.8	20.8	16.0	36.6	25.9																
Diurnal Maximum	40.0	41.3	41.1	40.3	39.8	39.1	36.2	33.8	35.1	39.2	34.5	36.1	38.1	38.9	38.5	40.9	40.8	43.3	44.2	43.0	42.4	41.4	40.8	40.5																			
Diurnal Average	26.1	25.5	25.1	24.8	23.4	23.1	23.1	23.0	23.4	23.4	23.7	25.2	26.1	26.8	26.5	26.1	25.3	24.9	24.8	24.6	24.8	24.3	25.4	25.5																			
C	Monthly Calibration										S	Daily Zero-Span Check										Q	Quality Assurance																				
K	Collection Error										N	No Data (Machine Not in Service)										Y	Routine Maintenance										P	Power Failure									
X	Invalid Data (Equipment Malfunction /Recovery)										NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																															
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																																											
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																																											

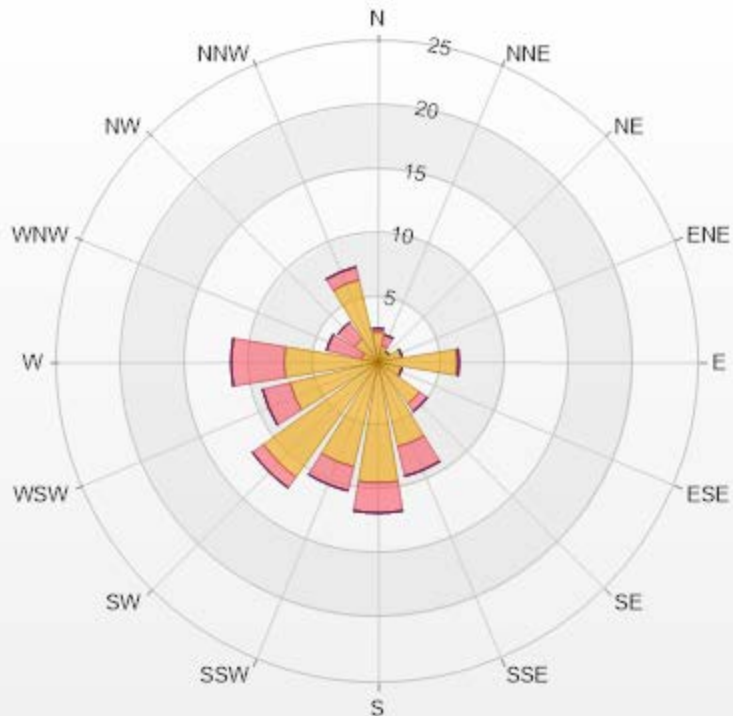
Timeseries Chart of Hourly Average for O3 - St. Lina Site





Wind: St. Lina Poll.: St. Lina-O3[ppb] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.72% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	2.35	0.29	0	0	0	2.64
NNE	1.32	0.88	0	0	0	2.2
NE	1.03	0	0	0	0	1.03
ENE	1.91	0	0	0	0	1.91
E	6.16	0.15	0	0	0	6.31
ESE	1.91	0	0	0	0	1.91
SE	3.96	0.73	0	0	0	4.69
SSE	6.74	2.35	0	0	0	9.09
S	9.38	2.35	0	0	0	11.73
SSW	8.36	1.91	0	0	0	10.27
SW	11	1.03	0	0	0	12.03
WSW	7.04	2.2	0	0	0	9.24
W	7.33	4.11	0	0	0	11.44
WNW	1.32	2.79	0	0	0	4.11
NW	2.2	1.61	0	0	0	3.81
NNW	6.6	1.03	0	0	0	7.63
Summary	78.61	21.43	0	0	0	100



LICA-202111

Page 198 of 239

% Icon Classes (ppb)

79

0-30

21

30-50

0

50-76

0

76-159

0

>159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

TOTAL HYDROCARBONS (THC) in ppm

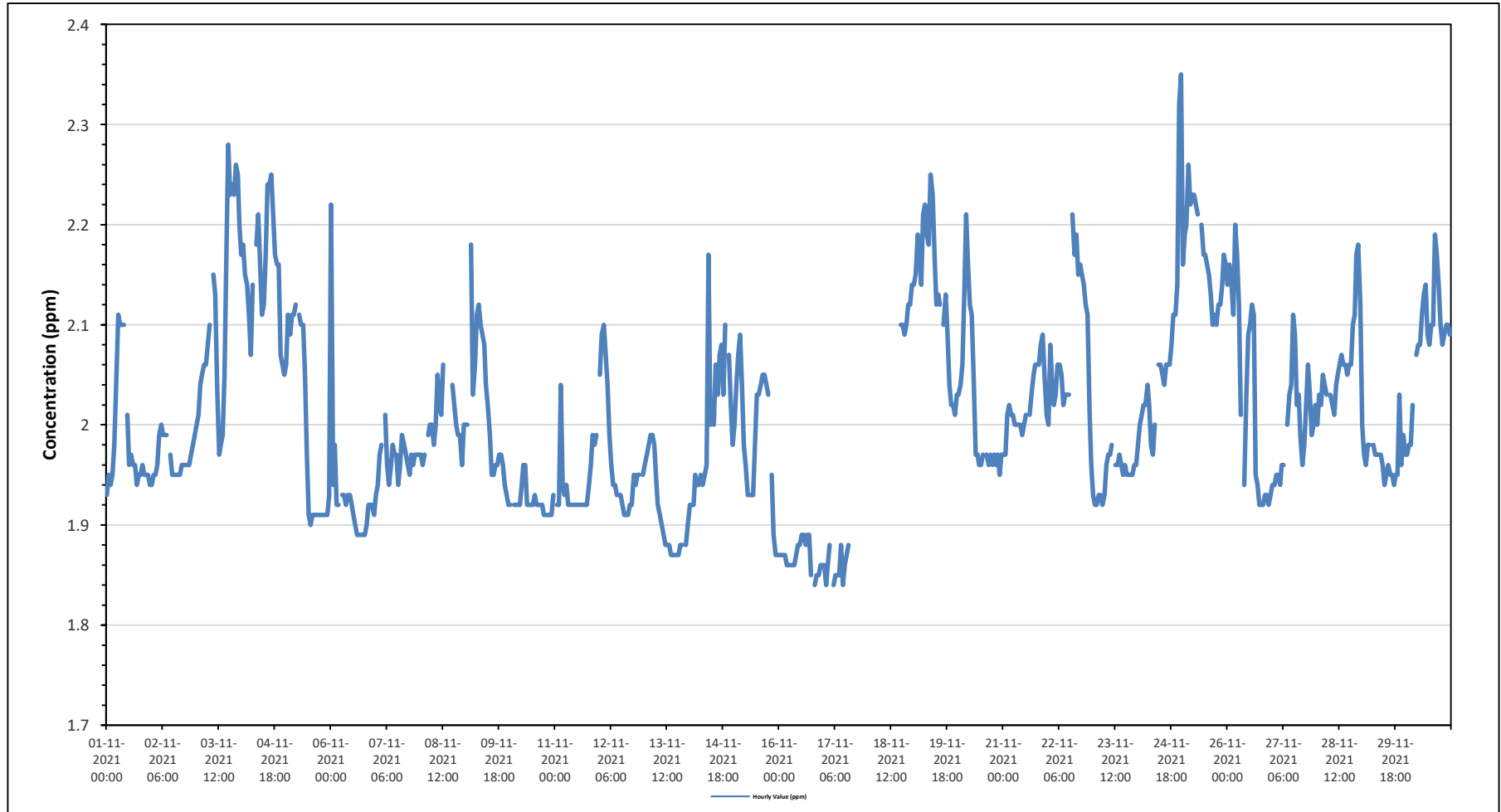
Maximum Hourly Value:	2.35 ppm	on November 24 at hour 23	Hours in Service:	720
Maximum Daily Value:	2.17 ppm	on November 25	Hours of Data:	660
Minimum Hourly Value:	1.84 ppm	on November 16 at hour 19	Hours of Missing Data:	25
Minimum Daily Value:	1.87 ppm	on November 16	Hours of Calibration:	35
Monthly Average:	2.01 ppm		Operational Uptime:	96.5

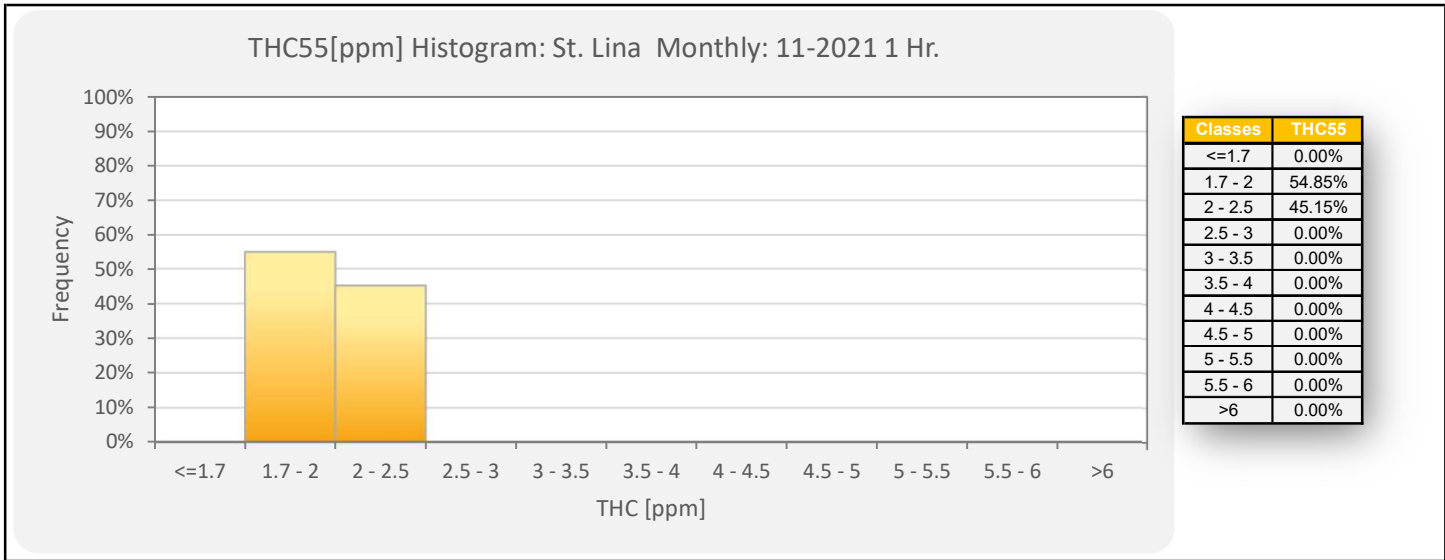
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Nov 1	1.93	1.95	1.94	1.95	1.98	2.04	2.11	2.10	2.10	2.10	S	2.01	1.96	1.97	1.96	1.96	1.94	1.95	1.95	1.96	1.95	1.95	1.94	1.93	2.11	1.98		
Nov 2	1.94	1.95	1.95	1.96	1.99	2.00	1.99	1.99	1.99	S	2.15	2.13	2.04	1.97	1.98	1.99	2.05	2.17	2.28	2.23	2.24	2.23	2.26	2.25	2.20	1.97	2.28	2.11
Nov 3	2.00	2.01	2.04	2.05	2.06	2.06	2.08	2.10	S	2.15	2.13	2.04	1.97	1.98	1.99	2.05	2.17	2.28	2.23	2.24	2.23	2.26	2.25	2.20	1.97	2.28	2.11	
Nov 4	2.17	2.18	2.15	2.14	2.11	2.11	2.12	S	2.11	2.10	2.10	2.05	1.97	1.91	1.90	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.93	1.90	2.12	1.99	
Nov 5	2.06	2.11	2.09	2.11	2.11	2.12	S	2.11	2.10	2.10	2.05	1.97	1.91	1.90	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.93	1.90	2.12	1.99	
Nov 6	2.22	1.94	1.98	1.92	S	1.93	1.93	1.93	1.92	1.93	1.93	1.92	1.91	1.90	1.89	1.89	1.89	1.89	1.89	1.89	1.90	1.92	1.92	1.92	1.91	1.89	2.22	1.93
Nov 7	1.93	1.94	1.97	1.98	S	2.01	1.96	1.94	1.96	1.98	1.97	1.97	1.94	1.96	1.99	1.98	1.97	1.96	1.95	1.97	1.96	1.97	1.97	1.97	1.93	2.01	1.97	
Nov 8	1.97	1.96	1.97	S	1.99	2.00	2.00	1.98	2.00	2.05	2.02	2.01	2.06	P	P	P	X	2.04	2.02	2.00	1.99	1.99	1.96	2.00	1.96	2.06	2.00	
Nov 9	2.00	2.00	S	2.18	2.03	2.06	2.11	2.12	2.10	2.09	2.08	2.04	2.02	1.99	1.95	1.95	1.96	1.96	1.97	1.97	1.96	1.94	1.93	1.92	1.92	2.18	2.01	
Nov 10	1.92	S	1.92	1.92	1.92	1.92	1.94	1.96	1.96	1.92	1.92	1.92	1.92	1.93	1.92	1.92	1.92	1.92	1.91	1.91	1.91	1.91	1.91	1.93	1.91	1.96	1.92	
Nov 11	S	1.92	1.92	2.04	1.94	1.93	1.94	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.94	1.96	1.99	1.98	1.99	S	1.92	2.04	1.94
Nov 12	2.05	2.09	2.10	2.07	2.04	1.99	1.96	1.94	1.94	1.93	1.93	1.93	1.92	1.91	1.91	1.91	1.92	1.92	1.95	1.94	1.95	1.95	S	1.95	1.91	2.10	1.97	
Nov 13	1.96	1.97	1.98	1.99	1.99	1.98	1.95	1.92	1.91	1.90	1.89	1.88	1.88	1.88	1.87	1.87	1.87	1.87	1.87	1.88	1.88	S	1.88	1.90	1.87	1.99	1.91	
Nov 14	1.92	1.92	1.92	1.95	1.94	1.94	1.95	1.94	1.95	1.96	2.17	2.00	2.01	2.00	2.06	2.03	2.07	2.08	2.03	2.10	S	2.07	2.02	1.98	1.92	2.17	2.00	
Nov 15	2.00	2.04	2.07	2.09	2.04	1.98	1.96	1.93	1.93	1.93	1.93	1.98	2.03	2.03	2.04	2.05	2.05	2.04	2.03	S	1.95	1.89	1.87	1.87	1.87	2.09	1.99	
Nov 16	1.87	1.87	1.87	1.87	1.86	1.86	1.86	1.86	1.86	1.87	1.88	1.88	1.89	1.89	1.88	1.89	1.89	1.89	1.85	S	1.84	1.85	1.85	1.86	1.86	1.84	1.89	1.87
Nov 17	1.86	1.84	1.86	1.88	X	1.84	1.85	1.85	1.85	1.88	1.84	1.86	1.87	1.88	C	C	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	1.84	1.88	-	
Nov 18	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	C	C	C	2.09	S	2.10	2.10	2.09	2.10	2.12	2.12	2.14	2.09	2.14	-	
Nov 19	2.14	2.15	2.19	2.17	2.14	2.21	2.22	2.19	2.18	2.25	2.23	2.17	2.12	2.13	2.12	S	2.10	2.13	2.09	2.04	2.02	2.02	2.01	2.03	2.01	2.25	2.13	
Nov 20	2.03	2.04	2.06	2.13	2.21	2.16	2.12	2.11	2.05	1.97	1.97	1.96	1.96	1.97	S	1.97	1.96	1.97	1.96	1.97	1.96	1.97	1.95	1.97	1.95	2.21	2.02	
Nov 21	1.97	1.97	2.01	2.02	2.01	2.01	2.00	2.00	2.00	2.00	2.00	1.99	2.00	2.01	S	2.01	2.03	2.05	2.06	2.06	2.06	2.08	2.09	2.05	2.01	1.97	2.09	2.02
Nov 22	2.00	2.08	2.04	2.02	2.03	2.06	2.06	2.05	2.02	2.03	2.03	S	2.21	2.17	2.19	2.15	2.16	2.15	2.14	2.12	2.11	2.01	1.96	1.96	1.96	2.21	2.08	
Nov 23	1.93	1.92	1.92	1.93	1.93	1.92	1.93	1.96	1.97	1.97	1.98	S	1.96	1.96	1.97	1.96	1.95	1.96	1.95	1.95	1.95	1.96	1.96	1.96	1.92	1.98	1.95	
Nov 24	1.98	2.00	2.01	2.02	2.02	2.04	2.02	1.98	1.97	2.00	S	2.06	2.06	2.05	2.04	2.06	2.06	2.06	2.08	2.11	2.11	2.14	2.32	2.35	1.97	2.35	2.07	
Nov 25	2.16	2.19	2.20	2.26	2.22	2.23	2.23	2.22	2.21	S	2.20	2.17	2.17	2.16	2.15	2.13	2.10	2.11	2.10	2.12	2.12	2.14	2.17	2.16	2.10	2.26	2.17	
Nov 26	2.14	2.16	2.14	2.11	2.20	2.17	2.12	2.01	S	1.94	2.03	2.09	2.10	2.12	2.11	1.95	1.94	1.92	1.92	1.92	1.93	1.93	1.92	1.93	1.92	2.20	2.03	
Nov 27	1.94	1.94	1.95	1.95	1.94	1.96	1.96	S	2.00	2.03	2.04	2.11	2.09	2.02	2.03	1.99	1.96	1.98	2.02	2.06	2.03	1.99	2.00	2.02	1.94	2.11	2.00	
Nov 28	2.00	2.03	2.02	2.05	2.04	2.03	S	2.03	2.02	2.01	2.04	2.05	2.06	2.07	2.06	2.06	2.05	2.06	2.06	2.10	2.11	2.17	2.18	2.12	2.00	2.18	2.06	
Nov 29	2.00	1.97	1.96	1.98	S	1.98	1.97	1.97	1.97	1.97	1.96	1.94	1.95	1.96	1.95	1.95	1.94	1.95	1.95	2.03	1.96	1.99	1.97	1.94	2.03	1.97		
Nov 30	1.97	1.98	1.98	2.02	S	2.07	2.08	2.08	2.11	2.13	2.14	2.09	2.08	2.10	2.10	2.19	2.17	2.14	2.10	2.08	2.09	2.10	2.10	2.09	1.97	2.19	2.09	
Diurnal Maximum	2.22	2.19	2.20	2.26	2.22	2.23	2.23	2.22	2.21	2.25	2.23	2.17	2.17	2.21	2.24	2.24	2.25	2.28	2.23	2.24	2.23	2.26	2.32	2.35				
Dalurnal Average	2.00	2.00	2.01	2.03	2.02	2.02	2.02	2.01	2.01	2.01	2.02	2.00	1.99	2.00	2.01	2.00	2.00	2.01	2.01	2.01	2.01	2.01	2.01	2.00				

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	Invalid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

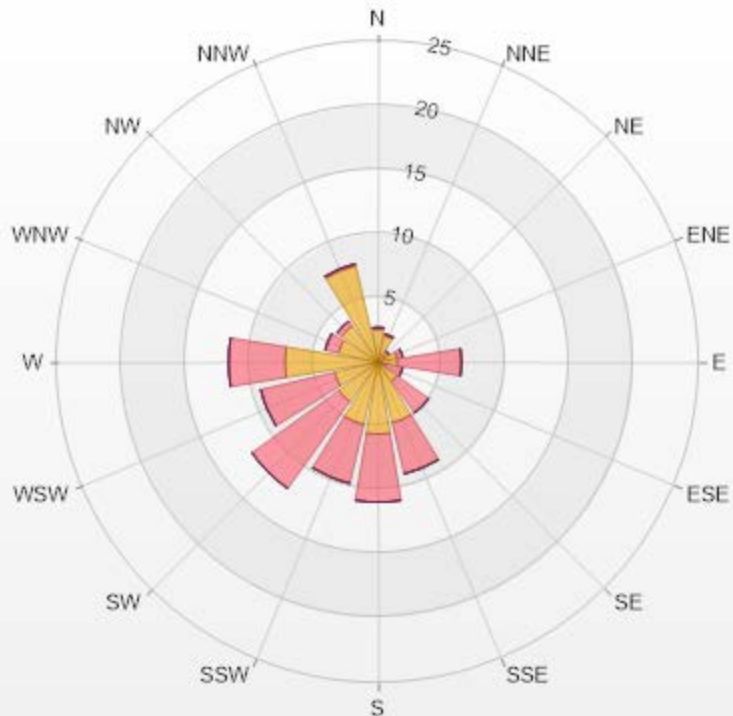
Timeseries Chart of Hourly Average for THC - St. Lina Site





Wind: St. Lina Poll.: St. Lina-THC55[ppm] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 91.67% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	2.58	0.15	0	0	0	2.73
NNE	2.12	0.15	0	0	0	2.27
NE	0.61	0.45	0	0	0	1.06
ENE	1.52	0.45	0	0	0	1.97
E	1.52	5	0	0	0	6.52
ESE	0.3	1.67	0	0	0	1.97
SE	1.82	3.03	0	0	0	4.85
SSE	4.85	4.09	0	0	0	8.94
S	5.61	5.3	0	0	0	10.91
SSW	5	4.7	0	0	0	9.7
SW	3.79	8.33	0	0	0	12.12
WSW	3.48	5.91	0	0	0	9.39
W	7.27	4.39	0	0	0	11.66
WNW	3.18	1.06	0	0	0	4.24
NW	3.48	0.45	0	0	0	3.93
NNW	7.58	0.15	0	0	0	7.73
Summary	54.71	45.28	0	0	0	100



LICA-202111

% Icon Classes (ppm)

55 0-2

45 2-5

0 5-10

0 10-40

0 >40.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

METHANE (CH4) in ppm

Maximum Hourly Value:	2.30 ppm on November 24 at hour 23	Hours in Service:	720
Maximum Daily Value:	2.15 ppm on November 4	Hours of Data:	660
Minimum Hourly Value:	1.86 ppm on November 16 at hour 4	Hours of Missing Data:	25
Minimum Daily Value:	1.87 ppm on November 16	Hours of Calibration:	35
Monthly Average:	1.98 ppm	Operational Uptime:	96.5

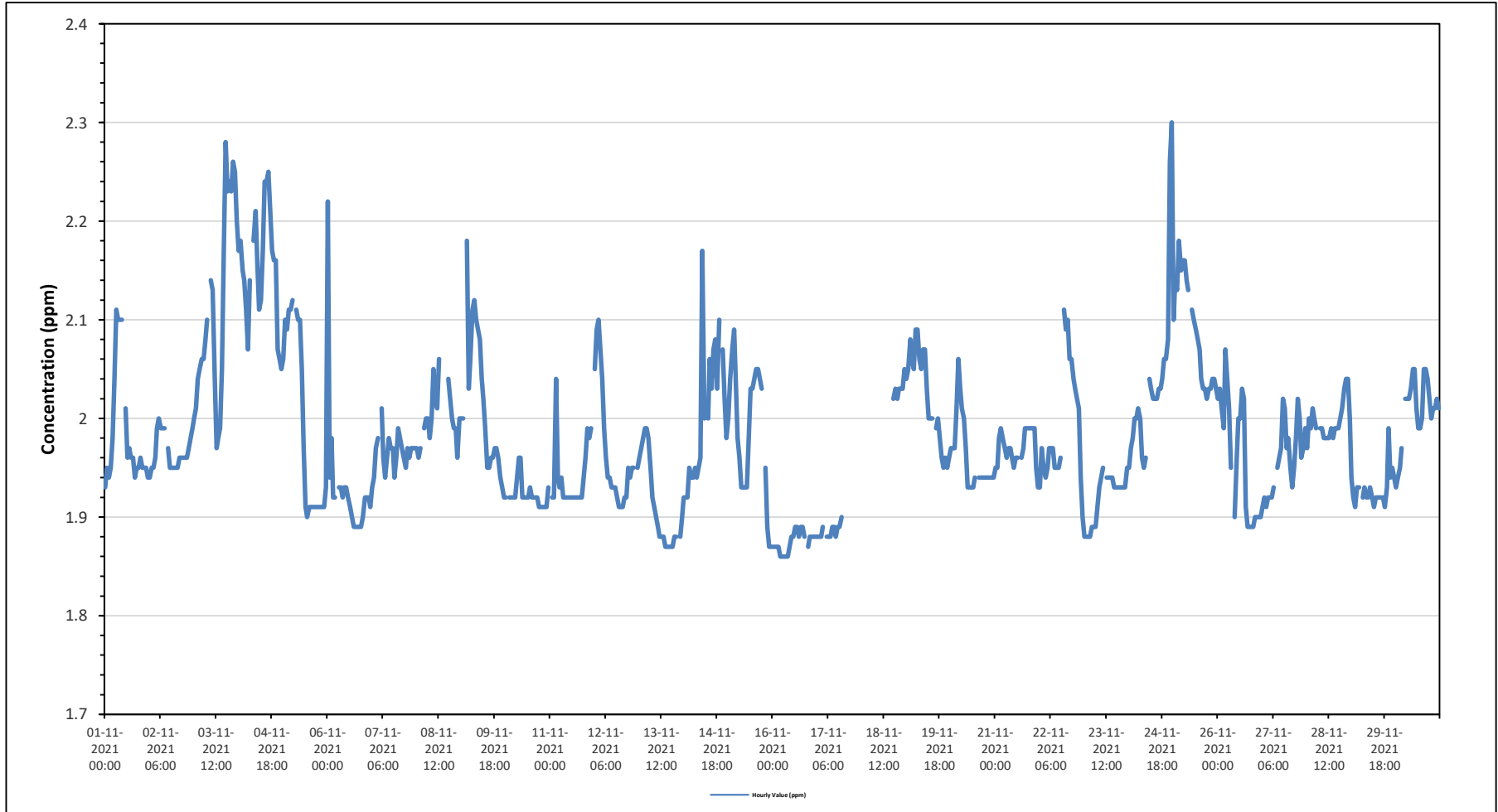
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Nov 1	1.93	1.95	1.94	1.95	1.98	2.04	2.11	2.10	2.10	2.10	S	2.01	1.96	1.97	1.96	1.96	1.94	1.95	1.95	1.96	1.95	1.95	1.94	1.93	2.11	1.98		
Nov 2	1.94	1.95	1.95	1.96	1.99	2.00	1.99	1.99	1.99	S	1.97	1.95	1.95	1.95	1.95	1.95	1.96	1.96	1.96	1.96	1.96	1.97	1.98	1.99	1.94	2.00	1.97	
Nov 3	2.00	2.01	2.04	2.05	2.06	2.06	2.08	2.10	S	2.14	2.13	2.04	1.97	1.98	1.99	2.05	2.17	2.28	2.23	2.24	2.23	2.26	2.25	2.20	1.97	2.28	2.11	
Nov 4	2.17	2.18	2.15	2.14	2.11	2.07	2.14	S	2.18	2.21	2.16	2.11	2.12	2.17	2.24	2.24	2.25	2.21	2.17	2.16	2.16	2.07	2.06	2.05	2.05	2.25	2.15	
Nov 5	2.06	2.10	2.09	2.11	2.11	2.12	S	2.11	2.10	2.10	2.05	1.97	1.91	1.90	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.93	1.90	2.12	1.99	
Nov 6	2.22	1.94	1.98	1.92	S	1.93	1.93	1.93	1.92	1.93	1.93	1.92	1.91	1.90	1.89	1.89	1.89	1.89	1.89	1.90	1.92	1.92	1.92	1.91	1.89	2.22	1.93	
Nov 7	1.93	1.94	1.97	1.98	S	2.01	1.96	1.94	1.96	1.98	1.97	1.97	1.94	1.96	1.99	1.98	1.97	1.96	1.95	1.97	1.96	1.97	1.97	1.97	1.93	2.01	1.97	
Nov 8	1.97	1.96	1.97	S	1.99	2.00	2.00	1.98	2.00	2.05	2.02	2.01	2.06	P	P	P	X	2.04	2.02	2.00	1.99	1.99	1.96	2.00	1.96	2.06	2.00	
Nov 9	2.00	2.00	S	2.18	2.03	2.06	2.11	2.12	2.10	2.09	2.08	2.04	2.02	1.99	1.95	1.95	1.96	1.96	1.97	1.97	1.96	1.94	1.93	1.92	1.92	2.18	2.01	
Nov 10	1.92	S	1.92	1.92	1.92	1.92	1.94	1.96	1.96	1.92	1.92	1.92	1.92	1.92	1.93	1.92	1.92	1.92	1.92	1.91	1.91	1.91	1.91	1.91	1.91	1.96	1.92	
Nov 11	S	1.92	1.92	2.04	1.94	1.93	1.94	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.94	1.96	1.99	1.98	1.99	S	1.92	2.04	1.94
Nov 12	2.05	2.09	2.10	2.07	2.04	1.99	1.96	1.94	1.94	1.93	1.93	1.93	1.92	1.91	1.91	1.91	1.92	1.92	1.95	1.94	1.95	1.95	S	1.95	1.91	2.10	1.97	
Nov 13	1.96	1.97	1.98	1.99	1.99	1.98	1.95	1.92	1.91	1.90	1.89	1.88	1.88	1.88	1.87	1.87	1.87	1.87	1.87	1.88	1.88	S	1.88	1.90	1.87	1.99	1.91	
Nov 14	1.92	1.92	1.92	1.95	1.94	1.94	1.95	1.94	1.95	1.96	2.17	2.00	2.01	2.00	2.06	2.03	2.07	2.08	2.03	2.10	S	2.07	2.02	1.98	1.92	2.17	2.00	
Nov 15	2.00	2.04	2.07	2.09	2.04	1.98	1.96	1.93	1.93	1.93	1.98	2.03	2.03	2.04	2.05	2.05	2.04	2.03	S	1.95	1.89	1.87	1.87	1.87	1.87	2.09	1.99	
Nov 16	1.87	1.87	1.87	1.87	1.86	1.86	1.86	1.86	1.86	1.87	1.88	1.88	1.89	1.89	1.88	1.89	1.89	1.88	S	1.87	1.88	1.88	1.88	1.88	1.86	1.89	1.87	
Nov 17	1.88	1.88	1.88	1.89	X	1.88	1.88	1.88	1.89	1.89	1.88	1.89	1.89	1.90	C	C	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	1.88	1.90	-	
Nov 18	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	C	C	C	2.00	S	2.02	2.03	2.02	2.03	2.03	2.03	2.03	2.05	2.00	2.05	-
Nov 19	2.04	2.05	2.08	2.06	2.05	2.09	2.09	2.06	2.05	2.07	2.07	2.03	2.00	2.00	2.00	S	1.99	2.00	1.98	1.96	1.95	1.96	1.95	1.96	1.95	2.09	2.02	
Nov 20	1.97	1.97	1.97	2.01	2.06	2.03	2.01	2.00	1.97	1.93	1.93	1.93	1.93	1.94	S	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.93	2.06	1.96	
Nov 21	1.95	1.95	1.98	1.99	1.98	1.97	1.96	1.97	1.97	1.96	1.95	1.96	1.96	S	1.96	1.97	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.95	1.93	1.93	1.99	1.97
Nov 22	1.93	1.97	1.95	1.94	1.95	1.97	1.97	1.97	1.95	1.95	1.96	S	2.11	2.09	2.10	2.06	2.06	2.04	2.03	2.02	2.02	2.01	1.94	1.90	1.90	2.11	1.99	
Nov 23	1.88	1.88	1.88	1.88	1.89	1.89	1.89	1.91	1.93	1.94	1.95	S	1.94	1.94	1.94	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.95	1.88	1.95	1.92	
Nov 24	1.95	1.97	1.98	2.00	2.00	2.01	2.00	1.96	1.95	1.96	S	2.04	2.03	2.02	2.02	2.02	2.03	2.03	2.04	2.06	2.06	2.08	2.26	2.30	1.95	2.30	2.03	
Nov 25	2.10	2.14	2.13	2.18	2.15	2.16	2.16	2.14	2.13	S	2.11	2.10	2.09	2.08	2.07	2.04	2.03	2.02	2.03	2.02	2.03	2.03	2.04	2.03	2.02	2.18	2.09	
Nov 26	2.02	2.03	2.01	1.99	2.07	2.04	2.01	1.95	S	1.90	1.96	2.00	2.00	2.03	2.02	1.91	1.89	1.89	1.89	1.89	1.90	1.90	1.90	1.90	1.89	2.07	1.96	
Nov 27	1.91	1.92	1.91	1.92	1.92	1.92	1.93	S	1.95	1.96	1.97	2.02	2.01	1.97	1.98	1.95	1.93	1.95	1.98	2.02	2.00	1.96	1.97	1.99	1.91	2.02	1.96	
Nov 28	1.97	2.00	1.99	2.01	2.00	1.99	S	1.99	1.99	1.98	1.98	1.98	1.98	1.99	1.98	1.99	1.99	1.99	2.00	2.01	2.03	2.04	2.04	2.00	1.97	2.04	2.00	
Nov 29	1.94	1.92	1.91	1.93	1.93	S	1.92	1.93	1.92	1.92	1.92	1.92	1.91	1.92	1.92	1.92	1.92	1.91	1.93	1.99	1.94	1.95	1.94	1.91	1.99	1.93	1.93	
Nov 30	1.93	1.94	1.95	1.97	S	2.02	2.02	2.02	2.03	2.05	2.05	2.01	1.99	1.99	2.00	2.05	2.05	2.04	2.02	2.00	2.01	2.01	2.02	2.01	1.93	2.05	2.01	
Diurnal Maximum	2.22	2.18	2.15	2.18	2.15	2.16	2.16	2.14	2.18	2.21	2.17	2.11	2.12	2.17	2.24	2.24	2.25	2.28	2.23	2.24	2.23	2.26	2.26	2.30				
Dalurnal Average	1.98	1.98	1.98	2.00	2.00	2.00	1.99	1.98	1.98	1.99	1.98	1.97	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98

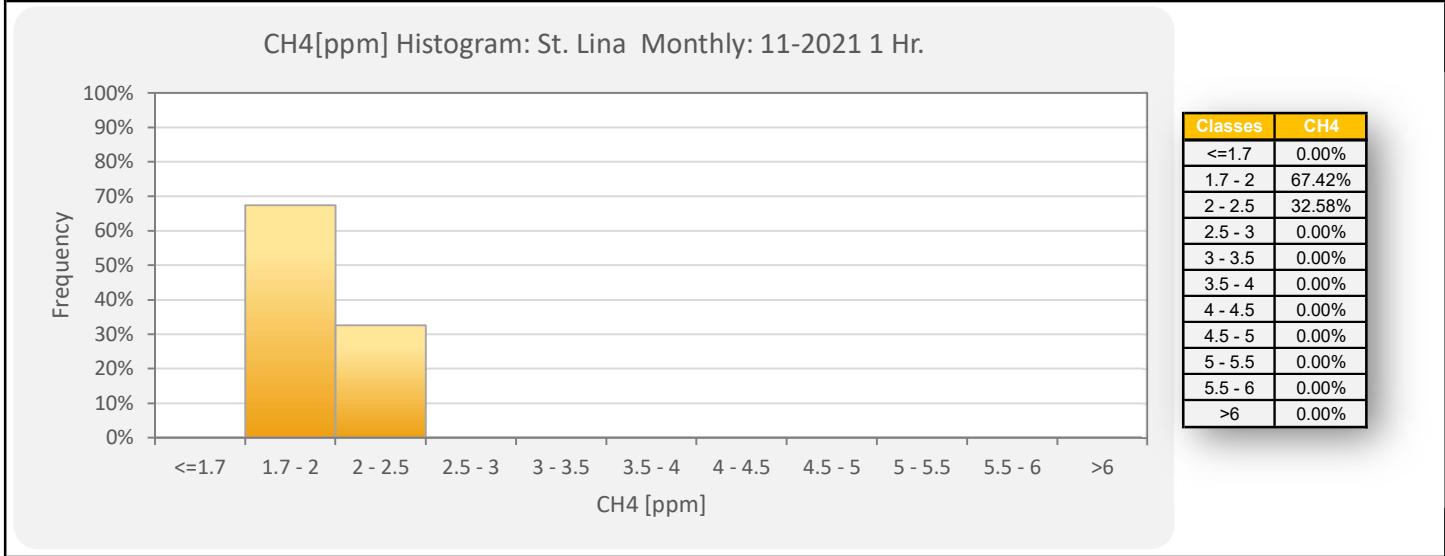
C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	Invalid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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

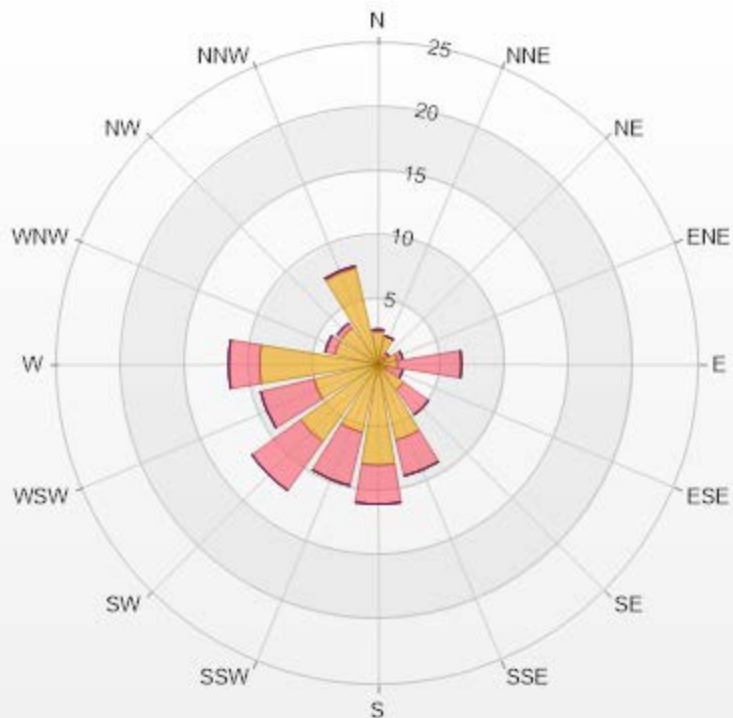
Timeseries Chart of Hourly Average for CH4 - St. Lina Site





Wind: St. Lina Poll.: St. Lina-CH4[ppm] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 91.67% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-20	>20.0	Total
N	2.58	0.15	0	0	0	2.73
NNE	2.27	0	0	0	0	2.27
NE	0.61	0.45	0	0	0	1.06
ENE	1.52	0.45	0	0	0	1.97
E	1.52	5	0	0	0	6.52
ESE	0.61	1.36	0	0	0	1.97
SE	2.42	2.42	0	0	0	4.84
SSE	6.06	2.88	0	0	0	8.94
S	7.88	3.03	0	0	0	10.91
SSW	5.45	4.24	0	0	0	9.69
SW	7.42	4.7	0	0	0	12.12
WSW	5.15	4.24	0	0	0	9.39
W	9.24	2.42	0	0	0	11.66
WNW	3.48	0.76	0	0	0	4.24
NW	3.48	0.45	0	0	0	3.93
NNW	7.58	0.15	0	0	0	7.73
Summary	67.27	32.7	0	0	0	100



LICA-202111

Page 208 of 239

% Icon Classes (ppm)

67 0-2

33 2-5

0 5-10

0 10-20

0 >20.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

NON-METHANE HYDROCARBONS (NMHC) in ppm

Maximum Hourly Value:	0.18 ppm	on November 19 at hour 9	Hours in Service:	720
Maximum Daily Value:	0.11 ppm	on November 19	Hours of Data:	660
Minimum Hourly Value:	0.00 ppm	on November 1 at hour 0	Hours of Missing Data:	25
Minimum Daily Value:	0.00 ppm	on November 1	Hours of Calibration:	35
Monthly Average:	0.03 ppm		Operational Uptime:	96.5

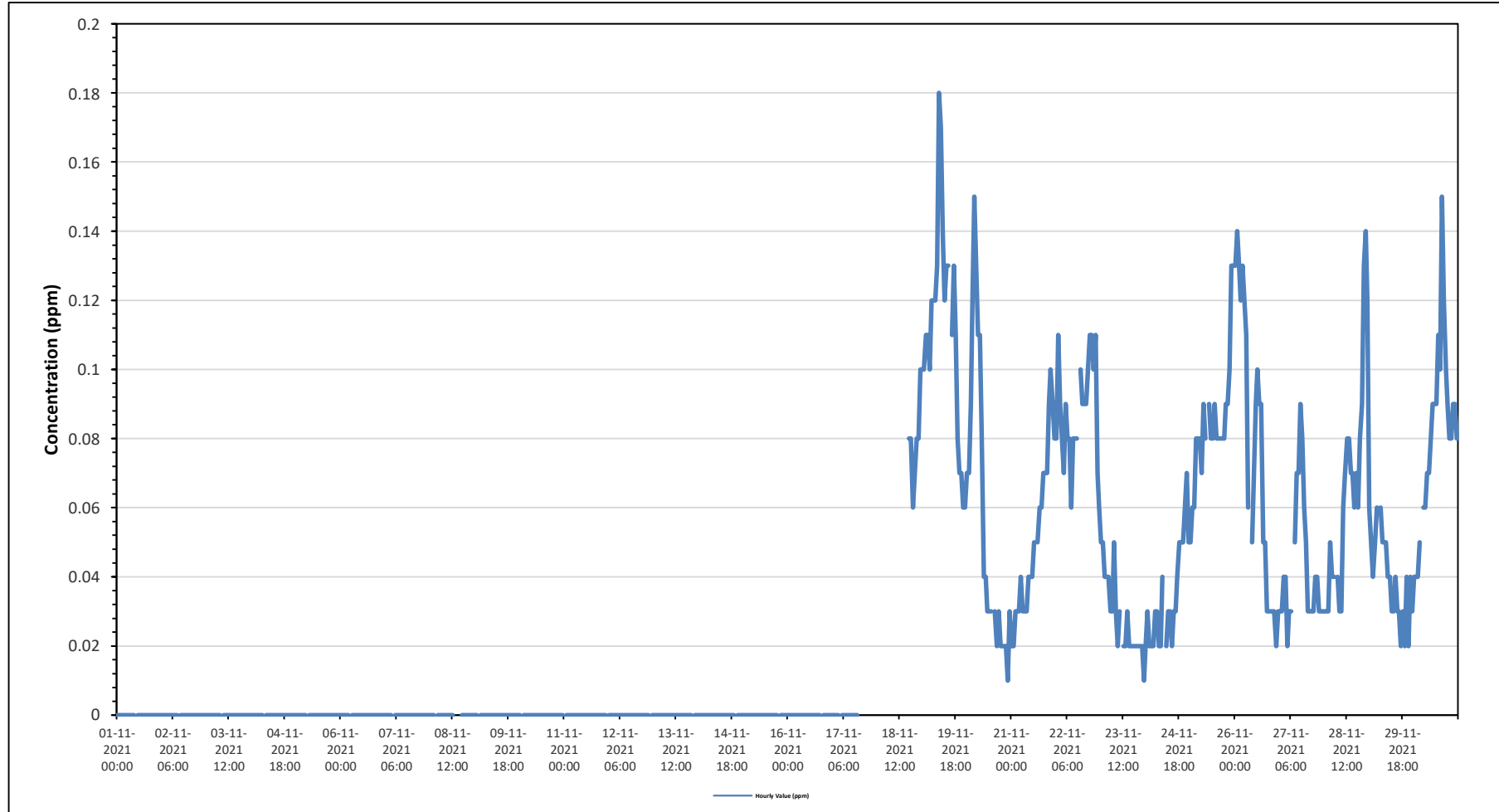
Day	Hourly Period Starting at (MST)																									Daily Minimum	Daily Maximum	Daily Average									
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23													
Nov 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Nov 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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov 6	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov 7	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov 8	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	P	P	P	X	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov 9	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov 10	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov 11	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	
Nov 12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	
Nov 13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov 14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov 16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
Nov 17	0.00	0.00	0.00	0.00	X	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	0.00	
Nov 18	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	C	C	C	0.09	S	0.08	0.08	0.06	0.07	0.08	0.08	0.10	0.06	0.07	0.08	0.08	0.10	0.06	0.10	0.06	0.10	0.06	0.10	-	
Nov 19	0.10	0.10	0.11	0.11	0.10	0.12	0.12	0.12	0.13	0.18	0.17	0.14	0.12	0.13	0.13	0.13	S	0.11	0.13	0.11	0.08	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.18	0.11	0.06	0.11	0.06	0.11	0.06	0.11	
Nov 20	0.07	0.07	0.09	0.12	0.15	0.13	0.11	0.11	0.08	0.04	0.04	0.03	0.03	0.03	S	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.03	0.01	0.15	0.06	0.06		
Nov 21	0.02	0.02	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.04	0.04	0.04	0.05	S	0.05	0.06	0.06	0.07	0.07	0.07	0.07	0.09	0.10	0.09	0.08	0.02	0.10	0.09	0.08	0.02	0.10	0.05	0.03	0.05	0.02		
Nov 22	0.08	0.11	0.09	0.08	0.07	0.09	0.08	0.08	0.06	0.08	0.08	S	0.10	0.09	0.09	0.09	0.10	0.11	0.11	0.11	0.10	0.11	0.07	0.06	0.06	0.06	0.11	0.10	0.07	0.06	0.11	0.09	0.09	0.09	0.09		
Nov 23	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.05	0.03	0.02	0.03	S	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.05	0.03	0.01	0.05	0.03		
Nov 24	0.02	0.03	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.04	S	0.02	0.03	0.03	0.02	0.03	0.03	0.04	0.05	0.05	0.05	0.06	0.07	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
Nov 25	0.05	0.06	0.06	0.08	0.08	0.08	0.07	0.09	0.08	S	0.09	0.08	0.08	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.10	0.13	0.13	0.05	0.13	0.13	0.05	0.13	0.08	0.13	0.08	0.05	0.13	0.08	
Nov 26	0.13	0.14	0.13	0.12	0.13	0.12	0.11	0.06	S	0.05	0.07	0.09	0.10	0.09	0.09	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.14	0.08	0.02	0.14	0.08	0.02		
Nov 27	0.03	0.03	0.04	0.04	0.02	0.03	0.03	S	0.05	0.07	0.07	0.09	0.08	0.06	0.05	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.09	0.04	0.04	
Nov 28	0.03	0.03	0.03	0.05	0.04	0.04	S	0.04	0.03	0.03	0.06	0.07	0.08	0.08	0.07	0.07	0.06	0.07	0.06	0.08	0.09	0.13	0.14	0.12	0.03	0.14	0.14	0.12	0.03	0.14	0.07	0.14	0.07	0.03	0.14	0.07	
Nov 29	0.06	0.05	0.04	0.05	0.06	S	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.04	0.03	0.03	0.02	0.03	0.02	0.04	0.02	0.04	0.03	0.02	0.04	0.02	0.04	0.03	0.02	0.06	0.04	0.03	0.02	0.06	0.04	
Nov 30	0.04	0.04	0.04	0.05	S	0.06	0.06	0.07	0.07	0.08	0.09	0.09	0.09	0.11	0.10	0.15	0.12	0.10	0.09	0.08	0.08	0.09	0.09	0.08	0.08	0.09	0.08	0.09	0.09	0.08	0.08	0.09	0.08	0.08	0.04	0.15	0.08
Diurnal Maximum	0.13	0.14	0.13	0.12	0.15	0.13	0.12	0.12	0.13	0.18	0.17	0.14	0.12	0.13	0.13	0.13	0.15	0.12	0.13	0.11	0.11	0.10	0.13	0.14	0.13	0.06	0.10	0.13	0.14	0.13	0.06	0.10	0.06	0.10	0.06	0.10	
Dalurnal Average	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	

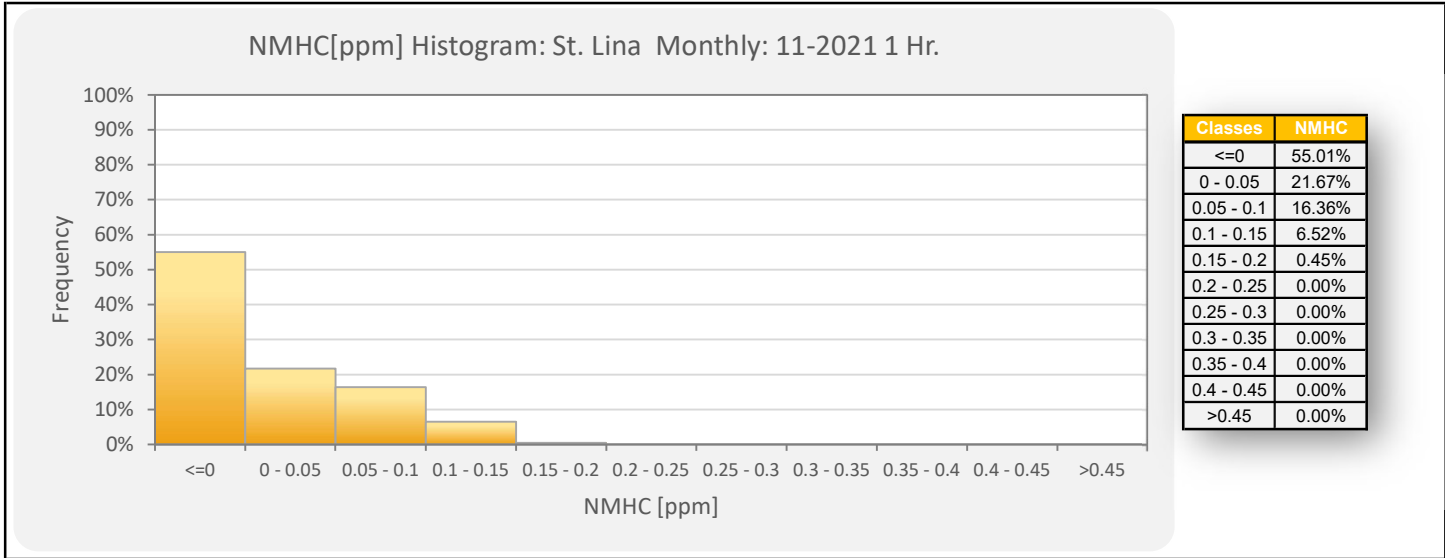
C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	inValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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

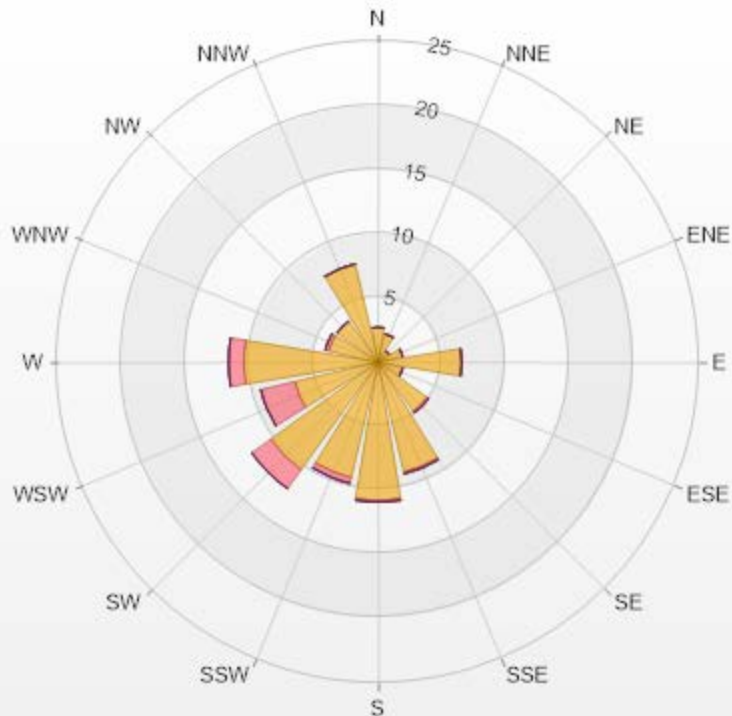
Timeseries Chart of Hourly Average for NMHC - St. Lina Site





Wind: St. Lina Poll.: St. Lina-NMHC[ppm] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 91.67% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0	Total
N	2.73	0	0	0	0	2.73
NNE	2.27	0	0	0	0	2.27
NE	1.06	0	0	0	0	1.06
ENE	1.97	0	0	0	0	1.97
E	6.52	0	0	0	0	6.52
ESE	1.97	0	0	0	0	1.97
SE	4.7	0.15	0	0	0	4.85
SSE	8.79	0.15	0	0	0	8.94
S	10.76	0.15	0	0	0	10.91
SSW	9.24	0.45	0	0	0	9.69
SW	10.3	1.82	0	0	0	12.12
WSW	6.67	2.73	0	0	0	9.4
W	10.45	1.21	0	0	0	11.66
WNW	3.94	0.3	0	0	0	4.24
NW	3.94	0	0	0	0	3.94
NNW	7.73	0	0	0	0	7.73
Summary	93.04	6.96	0	0	0	100



LICA-202111

% Icon Classes (ppm)	93	0-0.1	7	0.1-0.3	0	0.3-0.9	0	0.9-2	0	>2.0
----------------------	----	-------	---	---------	---	---------	---	-------	---	------



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

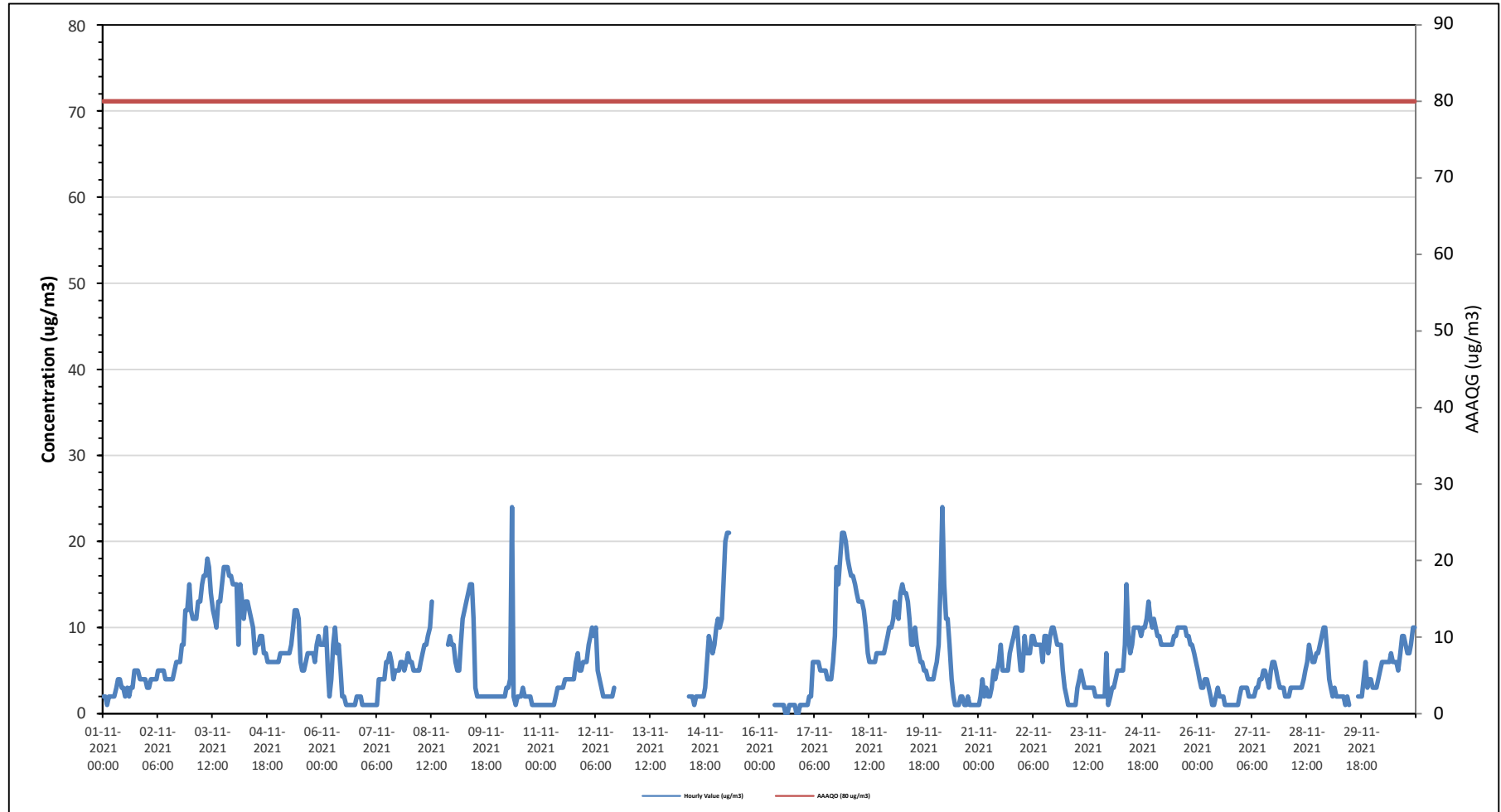
St. Lina Site - November 2021

Summary of Hourly Averages

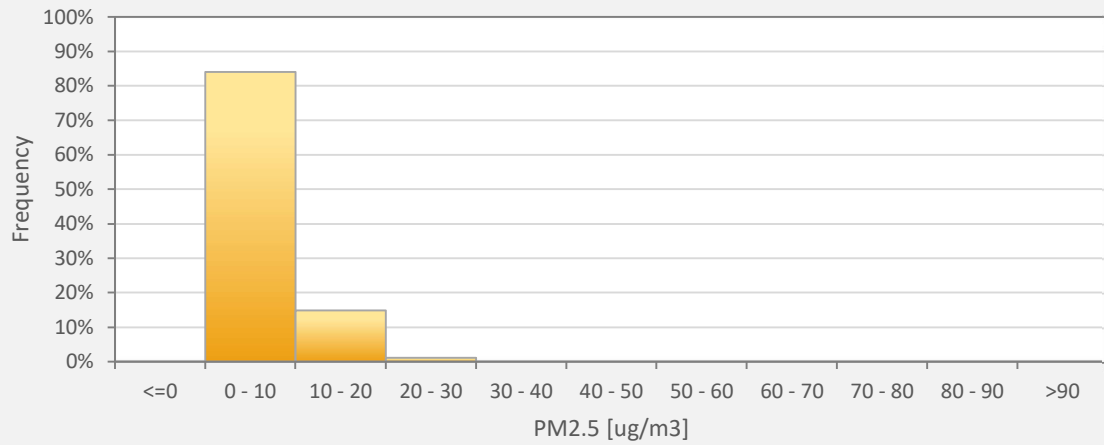
PARTICULATE MATTER 2.5 (PM_{2.5}) in µg/m³

Alberta Ambient Air Quality Guideline (AAAQG): 1-Hour 80 µg/m ³ , Alberta Ambient Air Quality Objective (AAAO): 24-Hour 29 µg/m ³																																	
Number of 1-Hour Exceedences: 0										Number of 24-Hour Exceedences: 0																							
Maximum Hourly Value: 24 µg/m ³ on November 10 at hour 8										Hours in Service: 720																							
Maximum Daily Value: 14.1 µg/m ³ on November 3										Hours of Data: 644																							
Minimum Hourly Value: 0 µg/m ³ on November 13 at hour 14										Hours of Missing Data: 72																							
Minimum Daily Value: 2 µg/m ³ on November 26										Hours of Calibration: 4																							
Monthly Average: 6.0 µg/m ³										Operational Uptime: 90.0																							
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average							
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23						
Nov 1	2	2	1	2	2	2	2	3	4	4	3	3	2	3	2	3	3	5	5	5	4	4	4	4	1	5	3.1						
Nov 2	3	3	4	4	4	4	5	5	5	5	4	4	4	4	4	5	6	6	6	8	8	12	12	15	3	15	5.8						
Nov 3	12	11	11	11	13	13	15	16	16	18	17	14	12	11	10	13	13	15	17	17	16	16	15	10	18	14.1							
Nov 4	15	15	8	15	13	11	13	13	12	11	10	7	8	8	9	9	7	7	6	6	6	6	6	6	6	15	9.5						
Nov 5	6	7	7	7	7	7	7	8	10	12	12	11	6	5	5	6	7	7	7	7	6	8	9	8	5	12	7.6						
Nov 6	8	8	10	5	2	4	8	10	7	8	5	2	2	1	1	1	1	1	2	2	2	1	1	1	1	10	3.9						
Nov 7	1	1	1	1	1	1	1	4	4	4	4	6	6	7	6	4	5	5	6	6	5	6	7	1	7	4.0							
Nov 8	6	6	5	5	5	5	6	7	8	8	9	10	13	P	P	P	X	X	X	X	X	8	9	8	5	13	-						
Nov 9	8	6	5	5	8	11	12	13	14	15	15	11	3	2	2	2	2	2	2	2	2	2	2	2	2	15	6.2						
Nov 10	2	2	2	2	2	3	3	4	24	2	1	2	2	2	3	2	2	2	2	1	1	1	1	1	1	24	2.9						
Nov 11	1	1	1	1	1	1	1	1	2	3	3	3	3	4	4	4	4	4	4	6	7	5	5	6	1	7	3.1						
Nov 12	6	6	8	9	10	9	10	5	4	3	2	2	2	2	2	2	3	X	X	X	X	X	X	X	2	10	-						
Nov 13	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	0	-						
Nov 14	X	X	X	X	X	X	X	X	X	2	2	2	1	2	2	2	2	2	3	6	9	8	7	8	1	9	-						
Nov 15	10	11	10	11	15	20	21	21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	10	21	-						
Nov 16	X	X	X	X	X	X	X	X	1	1	1	1	1	0	0	1	1	1	1	0	0	1	1	0	1	1	-						
Nov 17	1	1	1	2	2	6	6	6	6	5	5	5	5	4	4	4	6	9	17	15	18	21	21	20	1	21	7.9						
Nov 18	18	17	16	16	15	14	13	13	13	12	10	7	6	6	6	6	7	7	7	7	7	8	9	10	6	18	10.4						
Nov 19	10	11	13	12	11	14	15	14	14	13	11	8	8	10	8	7	6	6	5	5	4	4	4	4	4	15	9.0						
Nov 20	5	6	8	16	24	15	11	11	8	4	2	1	1	1	2	2	1	1	2	1	1	1	1	1	1	24	5.3						
Nov 21	1	2	4	2	3	2	2	3	5	4	5	6	8	5	5	5	5	7	8	9	10	10	7	5	1	10	5.1						
Nov 22	5	9	7	7	7	9	9	8	8	8	8	6	9	9	7	9	10	10	9	8	8	8	5	3	3	10	7.8						
Nov 23	2	1	1	1	1	1	3	4	5	4	3	3	3	3	3	2	2	2	2	2	2	7	1	1	7	2.5							
Nov 24	2	3	3	4	5	5	5	5	8	15	9	7	8	10	10	10	10	9	10	10	11	13	11	10	2	15	8.0						
Nov 25	11	10	9	9	8	8	8	8	8	8	8	8	8	9	9	10	10	10	10	9	9	8	8	7	6	6	11	8.8					
Nov 26	5	4	3	3	4	4	3	2	1	1	2	3	2	2	1	1	1	1	1	1	1	1	1	2	1	5	2.1						
Nov 27	3	3	3	3	2	2	2	2	3	3	4	4	5	5	4	3	5	6	6	5	4	3	3	3	2	6	3.6						
Nov 28	2	2	2	3	3	3	3	3	3	3	4	5	6	8	7	6	6	7	7	8	9	10	10	7	2	10	5.3						
Nov 29	4	3	2	3	2	2	2	2	2	1	2	1	C	C	C	C	2	2	2	4	6	3	4	4	1	6	2.7						
Nov 30	3	3	3	4	5	6	6	6	6	6	7	6	6	6	5	7	9	9	8	7	7	8	10	10	3	10	6.4						
Diurnal Maximum	18	17	16	16	24	20	21	21	24	18	17	14	13	11	10	13	13	15	17	17	18	21	21	20									
Diurnal Average	5.6	5.7	5.5	6.0	6.5	6.7	7.1	7.3	7.4	6.5	6.0	5.3	5.2	5.0	4.7	4.8	5.0	5.5	5.8	6.1	6.3	6.6	6.6	6.2									
C	Monthly Calibration										S	Daily Zero-Span Check										Q	Quality Assurance										
K	Collection Error										N	No Data (Machine Not in Service)										Y	Routine Maintenance					P	Power Failure				
X	Invalid Data (Equipment Malfunction /Recovery)										NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																					
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																																	
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																																	

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



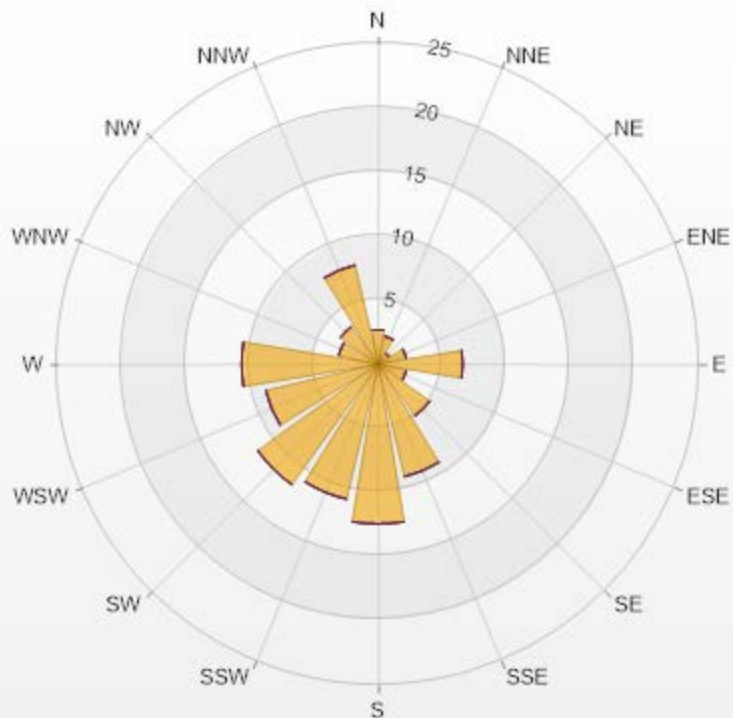
PM2.5[ug/m3(L)] Histogram: St. Lina Monthly: 11-2021 1 Hr.



Classes	PM2.5
<=0	0.00%
0 - 10	84.01%
10 - 20	14.91%
20 - 30	1.09%
30 - 40	0.00%
40 - 50	0.00%
50 - 60	0.00%
60 - 70	0.00%
70 - 80	0.00%
80 - 90	0.00%
>90	0.00%

Wind: St. Lina Poll.: St. Lina-PM2.5[ug/m3(L)] Monthly: 11-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 89.44% Calm Avg: 0.00 [ug/m3(L)]

Direction	0-50	50-80	80-120	120-240	>240.0	Total
N	2.33	0	0	0	0	2.33
NNE	1.71	0	0	0	0	1.71
NE	0.93	0	0	0	0	0.93
ENE	1.55	0	0	0	0	1.55
E	5.9	0	0	0	0	5.9
ESE	2.02	0	0	0	0	2.02
SE	5.12	0	0	0	0	5.12
SSE	9.32	0	0	0	0	9.32
S	12.73	0	0	0	0	12.73
SSW	11.18	0	0	0	0	11.18
SW	11.8	0	0	0	0	11.8
WSW	9.32	0	0	0	0	9.32
W	10.87	0	0	0	0	10.87
WNW	3.26	0	0	0	0	3.26
NW	3.73	0	0	0	0	3.73
NNW	8.23	0	0	0	0	8.23
Summary	100	0	0	0	0	100



LICA-202111

% Icon Classes (ug/m3(L))

100 0-50

0 50-80

0 80-120

0 120-240

0 >240.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

RELATIVE HUMIDITY (RH) in %

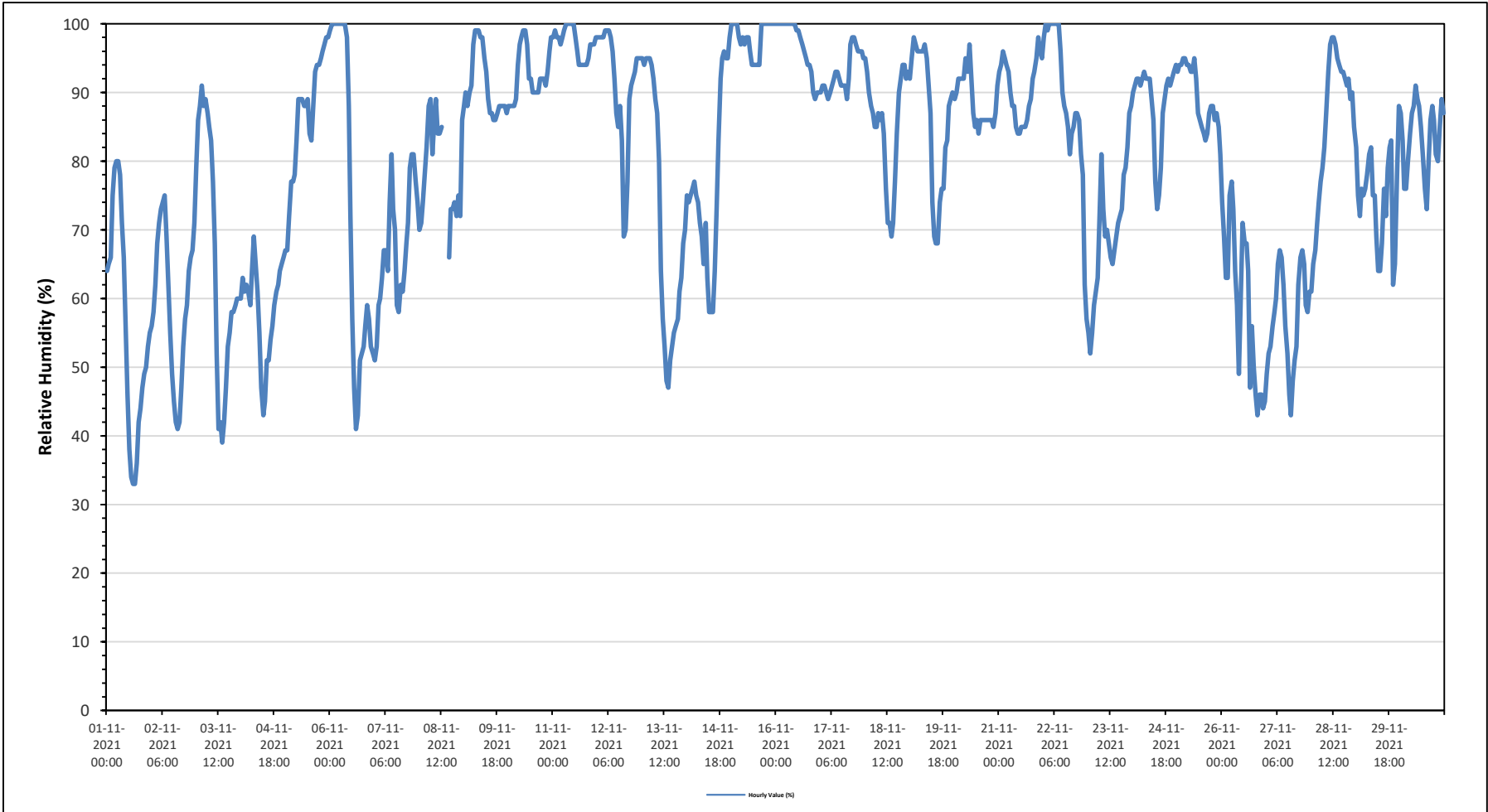
Maximum Hourly Value:	100 %	on November 6 at hour 1	Hours in Service:	720
Maximum Daily Value:	98.0 %	on November 15	Hours of Data:	717
Minimum Hourly Value:	33 %	on November 1 at hour 14	Hours of Missing Data:	3
Minimum Daily Value:	55.8 %	on November 1	Hours of Calibration:	0
Monthly Average:	80.1 %		Operational Uptime:	99.6

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Nov 1	64	65	66	75	79	80	80	78	71	66	56	46	38	34	33	33	36	42	44	47	49	50	53	55	33	80	55.8
Nov 2	56	58	62	68	71	73	74	75	69	62	55	49	45	42	41	42	47	53	57	59	64	66	67	71	41	75	59.4
Nov 3	79	86	88	91	88	89	87	85	83	77	68	52	41	42	39	42	47	53	55	58	58	59	60	60	39	91	66.1
Nov 4	60	63	61	62	61	59	64	69	65	61	55	47	43	45	51	51	54	56	59	61	62	64	65	66	43	69	58.5
Nov 5	67	67	72	77	77	78	83	89	89	89	88	88	89	84	83	88	93	94	94	95	96	97	98	98	67	98	86.4
Nov 6	99	100	100	100	100	100	100	100	100	98	88	72	57	47	41	43	51	52	53	56	59	57	53	52	41	100	74.1
Nov 7	51	53	59	60	63	67	67	64	74	81	73	70	59	58	62	61	64	68	71	79	81	81	77	74	51	81	67.4
Nov 8	70	71	74	78	82	88	89	81	86	89	84	84	85	P	P	P	66	73	73	74	72	75	72	86	66	89	78.7
Nov 9	88	90	88	90	91	97	99	99	99	98	98	95	93	89	87	87	86	86	87	88	88	88	88	87	86	99	91.1
Nov 10	88	88	88	88	89	94	97	98	99	99	97	92	92	90	90	90	90	92	92	92	91	93	96	98	88	99	92.6
Nov 11	98	99	98	98	97	98	99	100	100	100	100	100	98	96	94	94	94	94	94	95	97	97	97	98	94	100	97.3
Nov 12	98	98	98	98	99	99	99	98	96	92	87	85	88	83	69	70	77	89	91	92	93	95	95	95	69	99	91.0
Nov 13	95	94	95	95	95	94	92	89	87	80	64	57	53	48	47	51	53	55	56	57	61	63	68	70	47	95	71.6
Nov 14	75	74	75	76	77	75	74	71	69	65	71	63	58	58	58	64	73	83	92	95	96	95	95	98	58	98	76.3
Nov 15	100	100	100	100	98	97	98	97	98	98	96	94	94	94	94	94	100	100	100	100	100	100	100	100	94	100	98.0
Nov 16	100	100	100	100	100	100	100	100	100	100	100	99	99	98	97	96	95	94	94	93	90	89	90	90	89	100	96.8
Nov 17	90	91	91	90	89	90	91	92	93	93	92	91	91	91	89	92	97	98	98	97	96	96	96	95	89	98	92.9
Nov 18	95	93	90	88	87	85	85	87	86	87	84	76	71	71	69	71	77	84	90	92	94	94	92	93	69	95	85.0
Nov 19	92	95	98	97	96	96	96	96	97	95	91	87	74	69	68	68	74	76	76	82	83	88	89	90	68	98	86.4
Nov 20	89	90	92	92	92	92	95	93	97	92	87	85	86	84	86	86	86	86	86	86	86	85	87	91	84	97	88.8
Nov 21	93	94	96	95	94	93	90	88	88	85	84	84	85	85	85	86	88	89	92	93	95	98	96	95	84	98	90.5
Nov 22	98	100	99	100	100	100	100	100	96	90	88	87	85	81	84	85	87	87	86	81	78	62	57	57	57	100	88.8
Nov 23	55	52	55	59	61	63	72	81	73	69	70	68	66	65	67	69	71	72	73	78	79	82	87	88	52	88	69.8
Nov 24	90	91	92	92	91	92	93	92	92	92	89	86	77	73	75	79	87	89	91	92	91	92	93	94	73	94	88.5
Nov 25	93	94	94	95	95	94	94	93	93	95	92	87	86	85	84	83	84	87	88	88	86	87	85	81	81	95	89.3
Nov 26	74	69	63	63	75	77	73	64	59	49	60	71	68	68	64	47	56	50	46	43	46	46	44	45	43	77	59.2
Nov 27	49	52	53	56	58	60	65	67	66	62	56	52	46	43	48	51	53	62	66	67	65	59	58	61	43	67	57.3
Nov 28	61	65	67	71	74	77	79	82	87	93	97	98	98	97	95	94	93	93	92	91	92	89	90	85	61	98	85.8
Nov 29	82	75	72	76	75	76	78	81	82	75	75	69	64	64	68	76	72	79	82	83	62	65	78	88	62	88	74.9
Nov 30	87	83	76	76	80	84	87	88	91	89	88	85	81	76	73	80	86	88	86	81	80	85	89	87	73	91	83.6
Diurnal Maximum	100	100	100	100	100	100	100	100	100	100	100	99	98	97	96	100	100	100	100	100	100	100	100	100	94	100	98.0
Daiurnal Average	81.2	81.7	82.1	83.5	84.5	85.6	86.7	86.6	86.3	84.2	81.2	77.3	73.7	71.2	70.3	71.4	74.5	77.5	78.8	80.0	79.8	80.4	80.7	81.6	81.2	88.8	83.6

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

BAROMETRIC PRESSURE (BP) in millibar

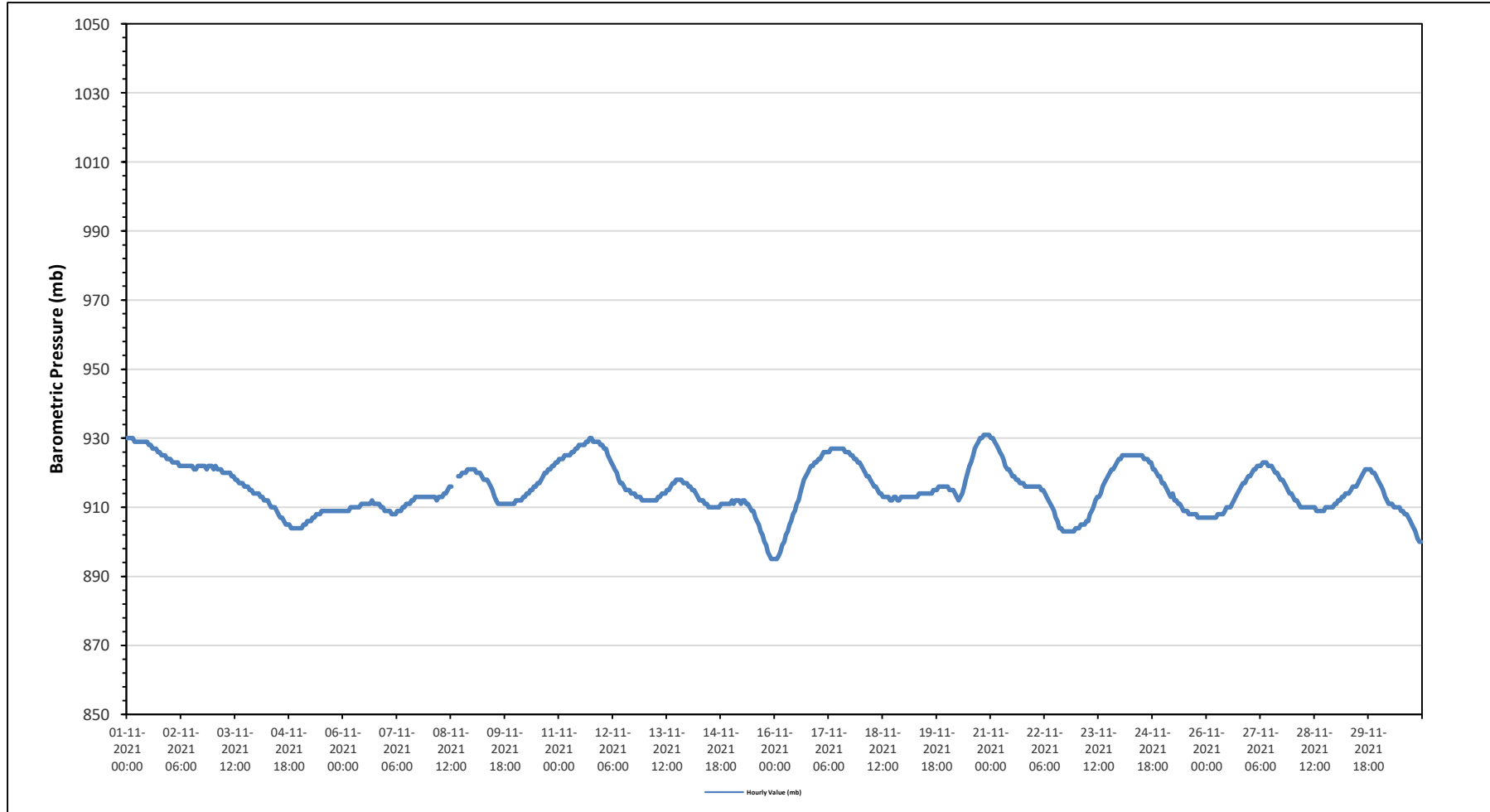
Maximum Hourly Value:	931	mb	on November 20 at hour 20	Hours in Service:	720
Maximum Daily Value:	928	mb	on November 1	Hours of Data:	717
Minimum Hourly Value:	895	mb	on November 15 at hour 22	Hours of Missing Data:	3
Minimum Daily Value:	906	mb	on November 15	Hours of Calibration:	0
Monthly Average:	915	mb		Operational Uptime:	99.6

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Nov 1	930	930	930	930	929	929	929	929	929	929	929	929	928	928	927	927	927	926	926	925	925	925	924	924	924	930	927.7
Nov 2	924	923	923	923	923	922	922	922	922	922	922	922	921	921	922	922	922	922	922	921	922	922	922	922	922	921	922.1
Nov 3	921	922	921	921	921	920	920	920	920	920	919	919	918	918	917	917	917	916	916	916	915	915	914	914	914	914	918.2
Nov 4	914	914	913	913	912	912	912	911	910	910	910	909	908	907	907	906	905	905	905	904	904	904	904	904	904	904	908.5
Nov 5	904	904	905	905	906	906	906	907	907	908	908	908	909	909	909	909	909	909	909	909	909	909	909	909	909	907.6	
Nov 6	909	909	909	909	910	910	910	910	910	911	911	911	911	911	911	912	911	911	911	911	911	910	910	909	909	910.3	
Nov 7	909	909	909	908	908	908	909	909	909	910	910	911	911	911	911	912	913	913	913	913	913	913	913	913	913	910.8	
Nov 8	913	913	913	913	912	913	913	913	914	914	915	916	916	P	P	P	919	919	920	920	920	921	921	921	921	916.1	
Nov 9	921	921	920	920	920	919	918	918	918	917	916	915	913	912	911	911	911	911	911	911	911	911	911	911	911	914.9	
Nov 10	912	912	912	912	913	913	914	914	915	915	916	916	917	917	918	919	920	920	921	921	922	922	923	923	923	917.0	
Nov 11	924	924	924	925	925	925	925	926	926	927	927	927	928	928	928	929	929	930	930	929	929	929	929	928	924	927.2	
Nov 12	928	927	927	925	924	923	922	921	920	918	917	917	916	915	915	915	914	914	914	913	913	913	912	912	912	918.1	
Nov 13	912	912	912	912	912	912	912	913	913	914	914	914	915	915	916	917	917	918	918	918	918	917	917	917	917	914.8	
Nov 14	916	916	915	915	914	913	912	912	912	911	911	910	910	910	910	910	910	910	911	911	911	911	911	911	911	911.8	
Nov 15	912	911	912	912	912	911	912	912	911	911	910	909	909	907	906	905	903	902	900	899	897	896	895	895	895	906.2	
Nov 16	895	895	896	897	899	900	902	903	905	906	908	909	911	912	914	916	918	919	920	921	922	922	923	923	895	909.8	
Nov 17	924	924	925	926	926	926	926	927	927	927	927	927	927	927	927	926	926	926	925	925	924	924	923	923	923	925.6	
Nov 18	922	921	920	919	919	918	917	916	916	915	914	914	913	913	913	912	912	912	913	912	912	913	913	913	912	915.1	
Nov 19	913	913	913	913	913	913	913	913	914	914	914	914	914	914	914	915	915	915	916	916	916	916	916	916	916	914.2	
Nov 20	916	915	915	915	914	913	912	913	914	916	918	920	922	923	925	927	928	929	930	930	931	931	931	931	912	921.6	
Nov 21	930	930	929	928	927	926	925	924	922	921	921	920	919	919	918	918	917	917	917	916	916	916	916	916	916	921.2	
Nov 22	916	916	916	916	915	915	914	913	912	911	910	909	907	906	904	904	903	903	903	903	903	903	903	904	903	908.7	
Nov 23	904	904	905	905	905	906	906	908	909	910	912	913	913	914	916	917	918	919	920	921	921	922	923	924	904	913.1	
Nov 24	924	925	925	925	925	925	925	925	925	925	925	925	925	924	924	924	923	923	921	921	920	919	919	917	917	923.3	
Nov 25	917	916	915	914	913	914	912	912	911	911	910	909	909	909	908	908	908	908	907	907	907	907	907	907	907	910.3	
Nov 26	907	907	907	907	907	908	908	908	908	908	909	910	910	910	911	912	913	914	915	916	917	917	918	919	907	911.0	
Nov 27	919	920	921	921	922	922	922	923	923	923	922	922	922	921	920	920	919	918	918	917	916	915	914	914	914	919.8	
Nov 28	913	912	912	911	910	910	910	910	910	910	910	910	909	909	909	909	909	910	910	910	910	910	911	911	909	910.2	
Nov 29	911	912	912	913	913	914	914	914	915	916	916	916	917	918	919	920	921	921	921	920	920	919	918	918	911	916.7	
Nov 30	917	916	915	913	912	911	911	911	910	910	910	910	909	909	908	908	907	906	905	904	903	901	900	900	900	908.6	
Diurnal Maximum	930	930	930	930	929	929	929	929	929	929	929	929	928	928	928	929	929	930	930	930	931	931	931	931			
Diurnal Average	916	916	916	916	915	915	915	915	915	915	915	915	915	915	915	916	916	916	915	915	915	915	915				

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Equipment Malfunction/Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

AMBIENT TEMPERATURE (AT) in Degree Celsius

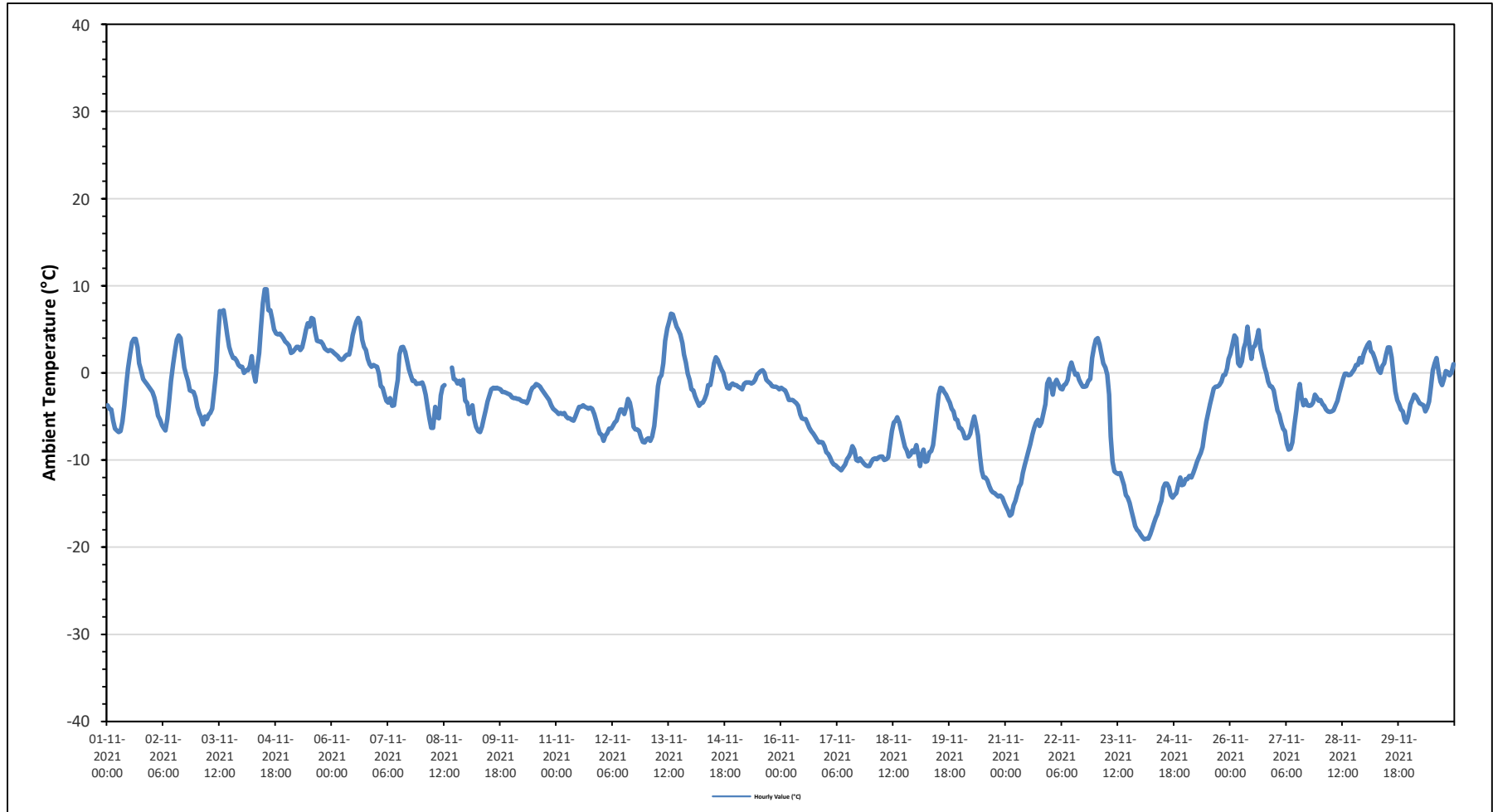
Maximum Hourly Value:	9.6 °C	on November 4 at hour 12	Hours in Service:	720
Maximum Daily Value:	3.7 °C	on November 4	Hours of Data:	717
Minimum Hourly Value:	-19.1 °C	on November 24 at hour 2	Hours of Missing Data:	3
Minimum Daily Value:	-15.4 °C	on November 24	Hours of Calibration:	0
Monthly Average:	-3.4 °C		Operational Uptime:	99.6

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Nov 1	-3.7	-4.1	-4.2	-5.5	-6.4	-6.6	-6.8	-6.7	-5.6	-3.8	-1.5	0.5	2.2	3.5	3.9	3.9	2.9	1.1	0.3	-0.7	-1	-1.3	-1.6	-1.9	-6.8	3.9	-1.8
Nov 2	-2.2	-2.8	-3.7	-4.9	-5.4	-6	-6.3	-6.6	-5.3	-3.2	-0.9	1	2.5	3.8	4.3	4	2.3	0.6	-0.2	-0.9	-2	-2.1	-2.2	-2.8	-6.6	4.3	-1.6
Nov 3	-3.9	-4.6	-5.1	-5.9	-5	-5.3	-4.8	-4.6	-4.1	-2.2	0.1	4	7.1	7	7.2	5.8	4.3	3	2.3	1.7	1.7	1.4	0.9	0.7	-5.9	7.2	0.1
Nov 4	0.7	0	0.3	0.3	0.8	1.9	0	-1	0.5	2.3	5.3	8	9.6	9.6	7.2	7.2	6.2	5	4.5	4.4	4.5	4.3	4	3.6	-1.0	9.6	3.7
Nov 5	3.4	3.1	2.3	2.4	2.7	3	3	2.6	2.9	4	4.9	5.7	5.3	6.3	6.2	4.7	3.7	3.6	3.6	3.3	2.8	2.6	2.5	2.6	2.3	6.3	3.6
Nov 6	2.5	2.3	2.1	1.9	1.6	1.5	1.6	1.9	2.1	2.1	3.1	4.3	5.2	5.9	6.3	5.8	3.8	3	2.6	1.6	1	0.7	0.9	0.8	0.7	6.3	2.7
Nov 7	0.7	-0.1	-1.5	-1.7	-2.5	-3.2	-3.4	-2.9	-3.8	-3.7	-2.1	-0.8	2.1	2.9	3	2.4	1.4	0.4	-0.3	-0.9	-0.9	-1.3	-1.2	-1.2	-3.8	3.0	-0.8
Nov 8	-1.1	-1.6	-2.5	-3.9	-5.2	-6.3	-6.3	-3.9	-5.1	-5.2	-2.6	-1.6	-1.4	P	P	P	0.6	-0.7	-0.8	-1.2	-0.9	-1.4	-0.8	-3.2	-6.3	0.6	-2.6
Nov 9	-3.4	-4.7	-4.3	-3.7	-5.3	-6.2	-6.7	-6.8	-6.2	-5.2	-4.3	-3.3	-2.6	-1.9	-1.7	-1.8	-1.7	-1.8	-1.9	-2.2	-2.2	-2.3	-2.4	-2.5	-6.8	-1.7	-3.5
Nov 10	-2.8	-2.9	-2.9	-3	-3	-3.2	-3.3	-3.3	-3.5	-3	-2.2	-1.7	-1.6	-1.3	-1.4	-1.6	-1.9	-2.2	-2.5	-2.8	-3.1	-3.7	-4.1	-4.3	-4.3	-1.3	-2.7
Nov 11	-4.5	-4.7	-4.6	-4.7	-4.6	-5	-5.2	-5.2	-5.4	-5.5	-5	-4.4	-3.9	-3.9	-3.7	-3.9	-4	-4.1	-4	-4.1	-4.7	-5.5	-6.3	-7	-7.0	-3.7	-4.7
Nov 12	-7.1	-7.8	-7.2	-6.9	-6.4	-6.4	-6.1	-5.7	-5.5	-4.8	-4.2	-4.2	-4.7	-4	-3	-3.4	-4.5	-6.2	-6.5	-6.5	-6.7	-7.4	-7.9	-8	-8.0	-3.0	-5.9
Nov 13	-7.6	-7.5	-7.8	-7.3	-6.1	-3.9	-1.5	-0.6	-0.3	1.1	3.7	5.1	5.9	6.8	6.7	6	5.3	4.9	4.4	3.4	2.1	1.2	-0.1	-0.8	-7.8	6.8	0.5
Nov 14	-1.9	-2	-2.7	-3.3	-3.8	-3.5	-3.4	-3	-2.4	-1.4	-1.4	-0.3	1.1	1.8	1.5	0.9	0.4	0	-0.9	-1.7	-1.8	-1.4	-1.2	-1.4	-3.8	1.8	-1.3
Nov 15	-1.4	-1.6	-1.7	-1.9	-1.3	-1.1	-1.1	-1.1	-1.2	-1.1	-0.8	-0.2	0	0.2	0.3	0	-0.8	-1	-1.2	-1.5	-1.6	-1.6	-1.7	-1.9	-1.9	0.3	-1.1
Nov 16	-1.7	-1.9	-2	-2.5	-3.1	-3.1	-3.1	-3.3	-3.5	-3.8	-4.8	-5.2	-5.3	-5.3	-5.8	-6.3	-6.7	-7	-7.3	-7.7	-8	-7.9	-8	-8.4	-8.4	-1.7	-5.1
Nov 17	-9.1	-9.3	-9.7	-10.2	-10.5	-10.6	-10.8	-11	-11.2	-10.8	-10.5	-9.9	-9.6	-9.2	-8.4	-8.8	-10	-10.1	-9.8	-10.1	-10.4	-10.6	-10.7	-10.7	-11.2	-8.4	-10.1
Nov 18	-10.2	-9.9	-9.8	-9.9	-9.7	-9.6	-9.6	-10	-9.9	-9.7	-8.2	-6.7	-5.7	-5.5	-5.1	-5.7	-6.7	-7.6	-8.5	-8.9	-9.6	-9.4	-8.9	-9.1	-10.2	-5.1	-8.5
Nov 19	-8.3	-9.4	-10.7	-9.4	-8.8	-10.2	-10.1	-9.1	-9	-8.3	-6.5	-4.4	-2.5	-1.7	-1.8	-2.2	-2.5	-3	-3.4	-4.1	-4.4	-5.3	-5.4	-6.3	-10.7	-1.7	-6.1
Nov 20	-6.4	-6.8	-7.5	-7.5	-7.4	-7	-5.8	-5	-6	-7.2	-9.4	-11.2	-12	-12	-12.3	-13	-13.5	-13.7	-13.8	-14	-14.2	-14.1	-14.3	-14.9	-14.9	-5.0	-10.4
Nov 21	-15.4	-15.8	-16.4	-16.2	-15.2	-14.7	-13.9	-13.1	-12.7	-11.5	-10.6	-9.8	-9	-8.2	-7.1	-6.3	-5.7	-5.4	-6.1	-5.7	-4.7	-3.6	-1.2	-0.7	-16.4	-0.7	-9.5
Nov 22	-1.4	-2.5	-1.2	-0.8	-1.3	-1.8	-1.9	-1.4	-1.3	-0.8	0.5	1.2	0.5	-0.2	-0.1	-0.8	-1.2	-1.6	-1.6	-1.5	-0.9	-0.7	1.7	2.9	-2.5	2.9	-0.7
Nov 23	3.8	4	3.3	2.2	1.1	0.6	-0.2	-2.5	-7.3	-10.2	-11.3	-11.5	-11.6	-11.5	-12.2	-12.9	-14	-14.3	-14.9	-15.8	-16.8	-17.6	-18	-18.2	-18.2	4.0	-8.6
Nov 24	-18.6	-18.9	-19.1	-19	-19	-18.5	-17.9	-17.2	-16.6	-16.2	-15.4	-14.7	-13.2	-12.7	-12.7	-13.1	-14	-14.3	-14	-13.8	-12.7	-12	-12.9	-12.8	-19.1	-12.0	-15.4
Nov 25	-12.2	-12.2	-11.8	-12	-11.5	-10.9	-10.2	-9.7	-9.2	-8.5	-7	-5.6	-4.6	-3.6	-2.7	-1.8	-1.6	-1.6	-1.4	-1	-0.3	-0.2	0.5	1.6	-12.2	1.6	-5.7
Nov 26	2.2	3.2	4.3	4	1.1	0.8	1.3	2.8	3.5	5.3	3	1.6	2.9	3.1	3.9	4.9	2.8	1.9	0.7	0	-1	-1.5	-1.6	-2	-2.0	5.3	2.0
Nov 27	-3.2	-4.3	-4.8	-5.7	-6.4	-6.7	-8.1	-8.8	-8.7	-8	-5.9	-4.3	-2.2	-1.3	-2.9	-3.7	-3.1	-3.7	-3.8	-3.7	-3.4	-2.5	-2.8	-3.2	-8.8	-1.3	-4.6
Nov 28	-3.1	-3.6	-3.8	-4.2	-4.4	-4.5	-4.4	-4.3	-3.8	-3.2	-2.3	-1.5	-0.7	-0.1	-0.3	-0.2	0.1	0.4	0.9	0.9	1.7	1.2	2.1	-4.5	2.1	-1.6	
Nov 29	2.7	3.2	3.5	2.5	2.3	1.7	1	0.3	0	0.8	1.1	2.1	2.9	1.8	-0.2	-2.1	-3.1	-3.6	-4.2	-4.4	-5.4	-5.7	-4.9	-5.7	3.5	-0.2	
Nov 30	-3.6	-3.1	-2.5	-2.7	-3.1	-3.5	-3.6	-3.7	-4.4	-4	-3.3	-1.6	0.3	1.1	1.7	0.1	-1	-1.4	-0.7	0.2	0.1	-0.3	0	1	-4.4	1.7	-1.6
Diurnal Maximum	3.8	4.0	4.3	4.0	2.7	3.0	3.0	2.8	3.5	5.3	5.3	8.0	9.6	9.6	7.2	7.2	6.2	5.0	4.5	4.4	4.5	4.3	4.0	3.6			
Daiurnal Average	-3.9	-4.2	-4.4	-4.7	-4.9	-4.9	-4.9	-4.8	-4.8	-4.2	-2.3	-1.4	-0.9	-0.9	-1.4	-2.1	-2.6	-2.9	-3.3	-3.4	-3.6	-3.6	-3.7				

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

STATION TEMPERATURE (ST) in Degree Celsius

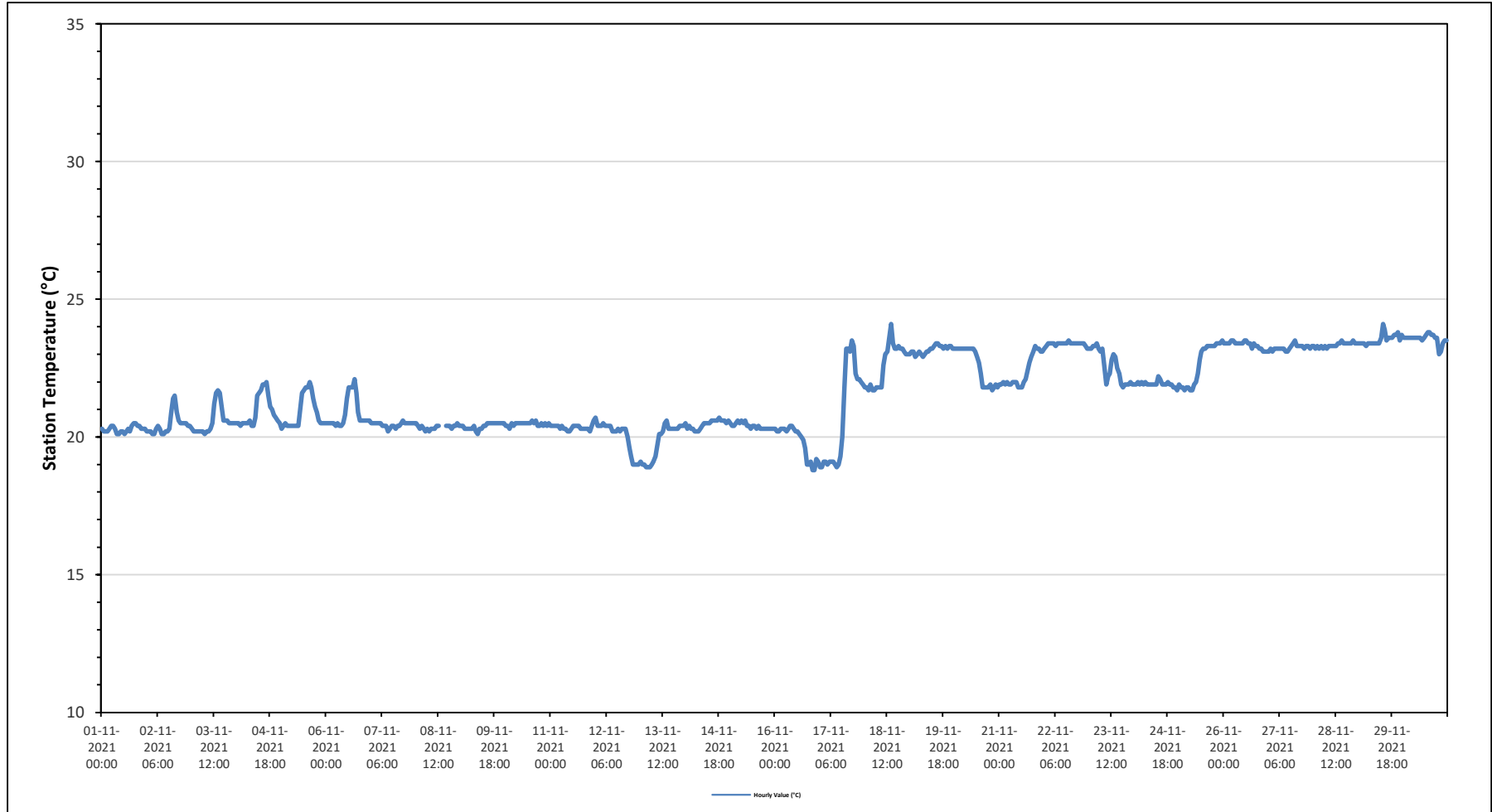
Maximum Hourly Value:	24.1 °C	on November 18 at hour 14	Hours in Service:	720
Maximum Daily Value:	23.6 °C	on November 30	Hours of Data:	717
Minimum Hourly Value:	18.8 °C	on November 16 at hour 20	Hours of Missing Data:	3
Minimum Daily Value:	19.8 °C	on November 13	Hours of Calibration:	0
Monthly Average:	21.5 °C		Operational Uptime:	99.6

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Nov 1	20.3	20.2	20.2	20.2	20.3	20.4	20.4	20.3	20.1	20.1	20.2	20.2	20.1	20.2	20.3	20.2	20.4	20.5	20.5	20.4	20.4	20.3	20.3	20.3	20.1	20.5	20.3	
Nov 2	20.2	20.2	20.2	20.1	20.1	20.3	20.4	20.3	20.1	20.1	20.2	20.2	20.3	20.9	21.4	21.5	20.9	20.6	20.5	20.5	20.5	20.4	20.4	20.1	21.5	20.5		
Nov 3	20.3	20.2	20.2	20.2	20.2	20.2	20.2	20.1	20.2	20.2	20.3	20.5	21.2	21.6	21.7	21.6	21.1	20.6	20.6	20.5	20.5	20.5	20.5	20.1	21.7	20.6		
Nov 4	20.5	20.5	20.4	20.5	20.5	20.5	20.5	20.6	20.4	20.4	20.7	21.5	21.6	21.7	21.9	21.9	22.0	21.5	21.1	21.0	20.8	20.7	20.6	20.4	22.0	20.9		
Nov 5	20.3	20.4	20.5	20.4	20.4	20.4	20.4	20.4	20.4	20.4	21.0	21.6	21.7	21.8	21.8	22.0	21.8	21.4	21.1	20.9	20.6	20.5	20.5	20.3	22.0	20.9		
Nov 6	20.5	20.5	20.5	20.5	20.5	20.4	20.5	20.4	20.4	20.5	20.8	21.4	21.8	21.8	21.8	22.1	21.6	20.9	20.6	20.6	20.6	20.6	20.6	20.4	22.1	20.9		
Nov 7	20.5	20.5	20.5	20.5	20.5	20.5	20.4	20.4	20.4	20.2	20.3	20.4	20.4	20.3	20.4	20.4	20.5	20.6	20.5	20.5	20.5	20.5	20.5	20.2	20.6	20.4		
Nov 8	20.5	20.4	20.3	20.4	20.3	20.2	20.3	20.2	20.3	20.3	20.3	20.4	20.4	P	P	P	20.4	20.4	20.4	20.3	20.4	20.4	20.5	20.4	20.2	20.5	20.4	
Nov 9	20.4	20.4	20.3	20.3	20.3	20.3	20.3	20.4	20.2	20.1	20.3	20.3	20.4	20.4	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.1	20.5	20.4		
Nov 10	20.4	20.4	20.3	20.5	20.4	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.6	20.5	20.6	20.4	20.4	20.5	20.4	20.5	20.4	20.5	20.3	20.6	20.5	
Nov 11	20.4	20.4	20.4	20.4	20.4	20.3	20.4	20.3	20.3	20.2	20.2	20.3	20.4	20.4	20.4	20.4	20.3	20.3	20.3	20.3	20.3	20.3	20.2	20.4	20.6	20.2	20.6	20.3
Nov 12	20.7	20.4	20.4	20.4	20.5	20.4	20.4	20.4	20.4	20.2	20.2	20.2	20.3	20.2	20.3	20.3	20.3	20.0	19.6	19.3	19.0	19.0	19.0	19.0	19.0	20.7	20.0	
Nov 13	19.1	19.0	19.0	18.9	18.9	18.9	19.0	19.1	19.3	19.7	20.1	20.1	20.2	20.5	20.6	20.3	20.3	20.3	20.3	20.3	20.4	20.4	20.4	18.9	20.6	19.8		
Nov 14	20.5	20.3	20.4	20.3	20.3	20.2	20.2	20.2	20.3	20.4	20.5	20.5	20.5	20.5	20.6	20.6	20.6	20.6	20.7	20.6	20.6	20.6	20.5	20.6	20.2	20.7	20.5	
Nov 15	20.5	20.4	20.4	20.5	20.6	20.5	20.6	20.5	20.6	20.4	20.4	20.3	20.4	20.4	20.3	20.4	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.6	20.4	
Nov 16	20.3	20.2	20.2	20.3	20.3	20.3	20.2	20.3	20.4	20.4	20.3	20.2	20.2	20.1	20.0	19.9	19.6	19.0	19.0	19.1	18.8	18.8	19.2	19.1	18.8	20.4	19.8	
Nov 17	18.9	18.9	19.1	19.1	19.0	19.1	19.1	19.1	19.0	18.9	19.0	19.3	20.0	21.8	23.2	23.2	23.1	23.5	23.3	22.3	22.1	22.1	22.0	21.9	18.9	23.5	20.7	
Nov 18	21.8	21.8	21.7	21.9	21.7	21.7	21.8	21.8	21.8	21.8	22.6	23.0	23.1	23.6	24.1	23.4	23.2	23.2	23.3	23.2	23.2	23.1	23.0	23.0	21.7	24.1	22.6	
Nov 19	23.0	23.1	23.1	22.9	23.0	23.1	23.0	22.9	23.0	23.1	23.1	23.2	23.2	23.3	23.4	23.4	23.3	23.3	23.2	23.2	23.3	23.2	23.3	23.2	22.9	23.4	23.2	
Nov 20	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.1	22.9	22.7	22.3	21.8	21.8	21.8	21.8	21.9	21.7	21.8	21.9	21.8	21.7	23.2	22.6	
Nov 21	21.9	21.9	22.0	21.9	22.0	21.9	21.9	22.0	22.0	22.0	21.8	21.8	21.8	22.0	22.1	22.4	22.7	22.9	23.1	23.3	23.2	23.2	23.1	23.1	21.8	23.3	22.3	
Nov 22	23.2	23.3	23.4	23.4	23.4	23.4	23.3	23.4	23.4	23.4	23.4	23.4	23.4	23.5	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.3	23.2	23.2	23.5	23.4	
Nov 23	23.2	23.2	23.3	23.3	23.4	23.2	23.1	23.2	22.6	21.9	22.2	22.3	22.8	23.0	22.9	22.5	22.3	21.9	21.8	21.9	21.9	21.9	22.0	21.9	21.8	23.4	22.6	
Nov 24	21.9	21.9	22.0	21.9	22.0	21.9	22.0	21.9	21.9	21.9	21.9	21.9	21.9	22.2	22.1	21.9	21.9	21.9	22.0	21.9	21.9	21.8	21.8	21.7	21.7	22.2	21.9	
Nov 25	21.9	21.8	21.8	21.7	21.8	21.8	21.7	21.7	21.9	22.0	22.3	22.8	23.1	23.2	23.2	23.3	23.3	23.3	23.3	23.3	23.3	23.4	23.4	23.5	21.7	23.5	22.6	
Nov 26	23.4	23.4	23.4	23.4	23.5	23.5	23.4	23.4	23.4	23.4	23.4	23.5	23.5	23.4	23.4	23.2	23.4	23.3	23.3	23.2	23.2	23.1	23.1	23.1	23.1	23.1	23.5	23.3
Nov 27	23.1	23.2	23.1	23.2	23.2	23.2	23.2	23.2	23.2	23.1	23.1	23.2	23.3	23.4	23.5	23.3	23.3	23.3	23.3	23.3	23.2	23.3	23.3	23.2	23.1	23.5	23.2	
Nov 28	23.3	23.2	23.3	23.2	23.3	23.2	23.3	23.2	23.3	23.2	23.3	23.3	23.3	23.3	23.4	23.4	23.5	23.4	23.4	23.4	23.4	23.5	23.4	23.4	23.2	23.5	23.3	
Nov 29	23.4	23.4	23.4	23.4	23.3	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.6	24.1	23.9	23.5	23.6	23.6	23.6	23.7	23.7	23.8	23.5	23.7	23.0	24.1	23.5	
Nov 30	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.5	23.6	23.7	23.8	23.8	23.7	23.7	23.6	23.6	23.0	23.1	23.4	23.5	23.5	23.3	23.8	
Diurnal Maximum	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.5	23.6	23.7	24.1	24.1	23.7	23.7	23.6	23.6	23.7	23.7	23.8	23.5	23.7	23.7	23.8	23.5	
Daiurnal Average	21.4	21.3	21.4	21.4	21.4	21.4	21.4	21.3	21.3	21.3	21.4	21.5	21.7	21.9	22.0	21.9	21.8	21.7	21.6	21.6	21.5	21.5	21.5	21.5	21.5	21.5	21.5	

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

PRECIPITATION in mm

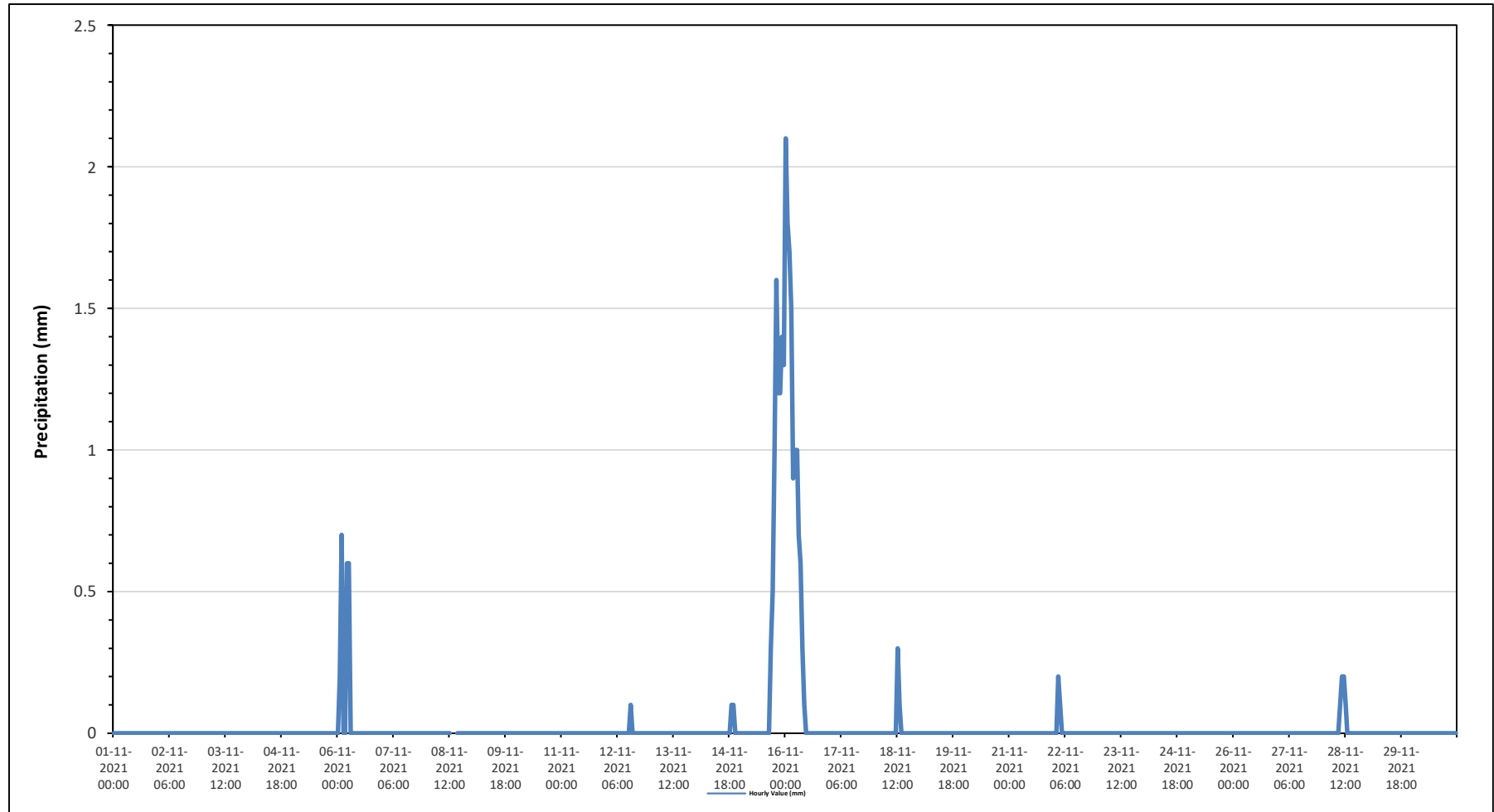
Maximum Hourly Value:	2.1 mm on November 16 at hour 0	Hours in Service:	720
Maximum Daily Value:	0.5 mm on November 16	Hours of Data:	717
Minimum Hourly Value:	0.0 mm on November 1 at hour 0	Hours of Missing Data:	3
Minimum Daily Value:	0.0 mm on November 1	Hours of Calibration:	0
Monthly Total:	23.9 mm	Operational Uptime:	99.6

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Total		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Nov 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	
Nov 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	
Nov 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	
Nov 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	
Nov 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	
Nov 6	0	0.2	0.7	0	0	0.6	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.7	0.1	
Nov 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	
Nov 8	0	0	0	0	0	0	0	0	0	0	0	0	0	P	P	P	0	0	0	0	0	0	0	0	0.0	0.0	0.0	
Nov 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	
Nov 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	
Nov 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	
Nov 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	0.1	0.0	
Nov 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	
Nov 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	0	0	0.0	0.1	0.0	
Nov 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.5	1	1.6	1.2	1.2	1.4	1.3	0.0	1.6	0.4
Nov 16	2.1	1.8	1.7	1.5	0.9	1	1	0.7	0.6	0.3	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	2.1	0.5	
Nov 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	
Nov 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.1	0	0	0	0	0	0	0	0	0	0.0	0.3	0.0	
Nov 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	
Nov 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	
Nov 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	
Nov 22	0	0	0.2	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.2	0.0	
Nov 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	
Nov 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	
Nov 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	
Nov 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	
Nov 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	
Nov 28	0	0	0	0	0	0	0	0	0	0	0.1	0.2	0.2	0.1	0	0	0	0	0	0	0	0	0	0	0.0	0.2	0.0	
Nov 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	
Nov 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	
Diurnal Maximum	2.1	1.8	1.7	1.5	0.9	1.0	1.0	0.7	0.6	0.3	0.2	0.2	0.3	0.1	0.0	0.0	0.3	0.5	1.0	1.6	1.2	1.2	1.4	1.3				
Diurnal Average	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0				

C Monthly Calibration	S Daily Zero-Span Check	Q Quality Assurance
K Collection Error	N No Data (Machine Not in Service)	Y Routine Maintenance
X InValid Data (Equipment Malfunction /Recovery)	NRM UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P Power Failure

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

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





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr

Maximum Hourly Value:	28.7 kph	on November 16 at hour 13	Hours in Service:	720
Maximum Daily Value:	22.0 kph	on November 16	Hours of Data:	717
Minimum Hourly Value:	0.4 kph	on November 4 at hour 5	Hours of Missing Data:	3
Minimum Daily Value:	4.8 kph	on November 14	Hours of Calibration:	0
Monthly Average:	3.6 kph		Operational Uptime:	99.6

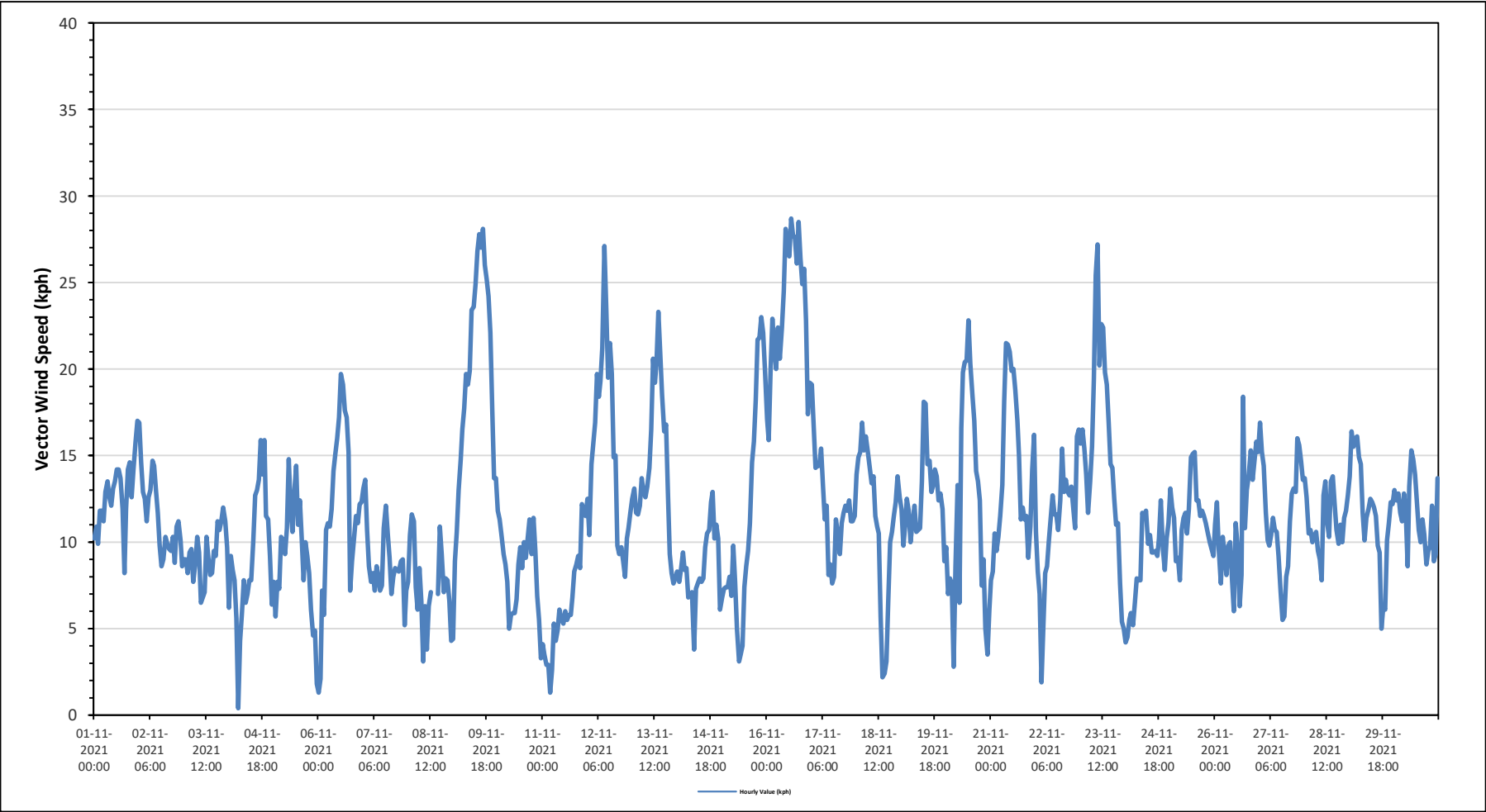
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Nov 1	10.2	10.9	9.9	11.8	11.8	11.2	12.9	13.5	12.6	12.1	13.1	13.5	14.2	14.2	13.7	11.9	8.2	11.9	14.2	14.6	12.6	14.2	15.8	17.0	8.2	17.0	12.3
Nov 2	16.9	14.6	12.9	12.5	11.2	12.6	13.0	14.7	14.4	13.0	11.7	9.8	8.6	9.0	10.3	9.9	9.6	9.5	10.3	8.8	10.9	11.2	10.1	8.6	8.6	16.9	9.0
Nov 3	9.0	9.0	8.2	9.4	9.6	7.7	8.8	10.3	9.4	6.5	6.8	7.1	10.3	9.1	8.1	8.2	9.5	9.2	11.2	10.7	11.2	12.0	11.2	9.7	6.5	12.0	7.6
Nov 4	6.2	9.2	8.4	7.8	5.6	0.4	4.3	5.9	7.8	6.5	7.0	7.8	7.8	10.1	12.7	13.0	13.6	15.9	13.9	15.9	11.5	11.3	9.2	6.4	0.4	15.9	5.9
Nov 5	7.7	5.7	7.7	7.3	10.3	10.1	9.3	10.8	14.8	11.9	10.6	12.7	14.4	11.0	12.4	10.2	7.8	10.0	9.2	8.2	6.1	4.6	4.9	1.8	1.8	14.8	8.5
Nov 6	1.3	2.1	7.2	5.8	10.7	11.1	10.9	11.9	14.1	15.1	16.0	17.2	19.7	19.1	17.6	17.2	15.2	7.2	8.9	10.1	11.5	11.1	12.2	12.3	1.3	19.7	9.6
Nov 7	13.1	13.6	10.7	8.6	7.7	8.2	7.2	8.6	8.1	7.2	7.5	10.8	12.1	10.5	9.1	7.0	8.0	8.5	8.4	8.3	8.9	9.0	5.2	7.2	5.2	13.6	7.2
Nov 8	7.7	10.4	11.6	11.2	7.4	6.1	8.5	6.6	3.1	6.3	3.8	6.3	7.1	P	P	P	7.0	10.9	9.3	7.1	7.9	7.8	6.6	4.3	3.1	11.6	5.9
Nov 9	4.4	8.9	10.6	13.0	14.8	16.5	17.7	19.7	19.1	19.9	23.4	23.6	24.9	26.8	27.8	27.0	28.1	26.0	25.2	24.2	22.1	17.7	13.7	13.7	4.4	28.1	19.1
Nov 10	11.8	11.3	10.4	9.3	8.7	7.7	5.0	5.8	5.9	6.7	8.7	9.7	8.5	10.0	9.1	10.2	11.3	9.3	11.4	9.5	6.9	5.5	3.3	3.3	3.3	11.8	7.2
Nov 11	4.1	3.5	2.9	2.9	1.3	2.6	5.3	4.3	4.9	6.1	5.5	5.3	6.0	5.5	5.8	5.8	6.8	8.3	8.7	9.2	8.5	12.2	11.8	11.5	1.3	12.2	5.3
Nov 12	12.5	10.4	14.5	15.7	16.9	19.7	18.4	19.3	21.2	27.1	23.5	19.5	21.5	19.7	14.9	15.0	9.8	9.3	9.7	8.9	8.0	10.2	10.8	11.7	8.0	27.1	15.0
Nov 13	12.5	13.1	11.7	11.6	12.1	13.7	12.9	12.6	13.2	14.3	16.5	20.6	19.2	20.4	23.3	20.9	18.5	16.4	16.8	12.9	9.3	8.2	7.6	7.9	7.6	23.3	12.4
Nov 14	8.3	7.7	8.5	9.4	8.4	8.5	6.8	6.9	7.1	3.8	7.3	7.6	7.9	7.7	7.9	9.7	10.5	10.7	12.3	12.9	10.2	11.0	10.2	6.1	3.8	12.9	4.8
Nov 15	6.8	7.3	7.4	7.4	8.0	6.9	9.8	7.7	5.0	3.1	3.5	4.0	7.4	8.6	9.5	11.1	14.6	15.8	18.2	21.7	21.8	23.0	22.1	19.9	3.1	23.0	6.1
Nov 16	17.1	15.9	19.9	22.9	21.2	20.0	22.4	20.6	22.4	24.5	28.1	26.7	26.5	28.7	27.7	27.6	26.1	28.5	26.4	24.9	25.8	22.8	17.4	19.2	15.9	28.7	22.0
Nov 17	19.1	16.7	14.3	14.4	14.4	15.4	13.3	11.3	12.1	8.1	8.7	7.6	8.0	11.3	10.5	9.3	11.1	11.7	12.1	11.8	12.4	11.2	11.2	11.5	7.6	19.1	6.8
Nov 18	13.9	14.9	15.2	16.9	15.3	16.1	15.3	14.3	13.4	13.8	11.5	10.9	10.5	5.7	2.2	2.4	3.1	6.7	10.0	10.6	11.5	12.3	13.8	12.6	2.2	16.9	9.4
Nov 19	11.9	9.8	11.0	12.5	11.8	10.0	11.2	12.1	10.6	10.7	10.8	13.5	18.1	18.0	14.5	14.7	12.9	13.3	14.2	13.8	12.4	12.8	11.9	8.9	8.9	18.1	12.4
Nov 20	9.7	7.0	7.9	7.6	2.8	8.6	13.3	6.5	16.6	19.8	20.4	20.5	22.8	20.3	18.5	17.0	14.1	13.5	12.4	7.5	9.0	5.0	3.5	6.1	2.8	22.8	8.1
Nov 21	7.8	8.3	10.5	9.5	10.3	11.5	13.3	18.1	21.5	21.4	21.0	19.9	20.0	18.8	17.0	15.0	11.3	12.0	11.3	11.5	9.1	10.9	14.2	16.2	7.8	21.5	13.0
Nov 22	10.6	8.3	7.0	1.9	5.1	8.2	8.6	10.1	11.4	12.7	11.6	10.7	12.4	15.4	12.9	13.6	12.9	12.7	13.2	12.0	10.8	16.1	16.5	1.9	16.5	7.7	
Nov 23	15.7	16.5	15.4	13.9	11.7	13.5	15.5	19.4	25.4	27.2	20.2	22.6	22.4	19.8	19.1	16.9	14.5	14.3	12.5	11.0	11.1	7.6	5.4	5.0	5.0	27.2	13.8
Nov 24	4.2	4.5	5.5	5.9	5.2	6.5	7.9	7.8	7.8	11.7	11.4	11.8	9.9	10.4	9.4	9.4	9.5	9.2	10.2	12.4	9.6	8.4	10.2	11.1	4.2	12.4	7.6
Nov 25	13.1	12.0	11.4	8.9	9.1	7.8	10.7	11.4	11.7	10.5	11.9	14.9	15.1	15.2	12.4	12.4	11.5	11.8	11.5	11.1	10.5	10.0	9.6	9.2	7.8	15.2	9.5
Nov 26	11.0	12.3	9.6	7.6	10.3	9.3	8.1	9.8	10.0	7.9	6.0	11.1	9.6	6.3	8.1	18.4	10.8	13.0	13.8	15.3	13.6	14.7	15.8	15.2	6.0	18.4	9.5
Nov 27	16.9	15.2	14.4	11.7	10.1	9.8	10.4	11.4	10.7	10.6	9.2	7.1	5.5	5.7	8.0	8.6	11.2	12.8	13.1	12.9	16.0	15.6	14.7	13.6	5.5	16.9	7.8
Nov 28	13.7	12.6	10.5	10.7	10.0	10.3	10.6	9.5	9.0	7.8	12.7	13.5	11.1	10.3	13.5	13.8	12.2	10.7	9.9	11.0	10.0	11.4	11.8	12.7	7.8	13.8	8.9
Nov 29	13.8	16.4	15.5	16.0	16.1	14.9	14.5	11.7	10.1	11.4	11.9	12.5	12.3	12.0	11.5	9.8	9.4	5.0	6.3	6.1	10.1	11.1	12.3	12.2	5.0	16.4	7.1
Nov 30	13.0	12.4	12.8	11.7	11.2	12.8	11.7	8.6	13.2	15.3	14.8	13.9	12.3	10.7	10.0	11.3	10.4	8.7	9.5	9.8	12.1	8.9	9.3	13.7	8.6	15.3	10.4
Diurnal Maximum	19	17	20	23	21	20	22	21	25	27	28	27	27	29	28	28	28	29	26	25	26	23	22	20			
Dalurnal Average	10.8	10.7	10.8	10.5	10.3	10.6	11.3	11.4	12.2	12.4	13.1	13.5	13.3	13.1	12.9	12.0	12.2	12.4	12.3	11.8	11.5	11.1	10.8				

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	Invalid Data (Equipment Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

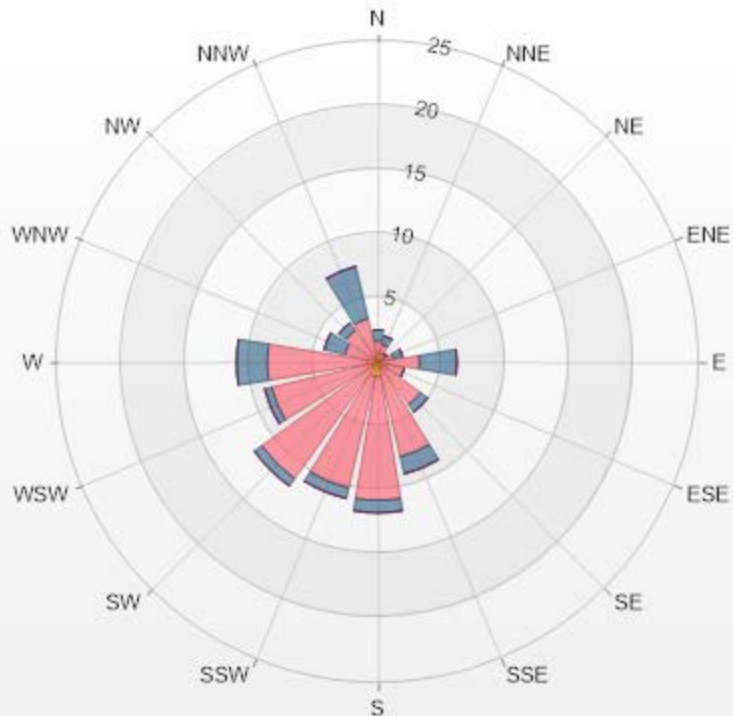
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

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



Wind: St. Lina Monitor: WDS [kph] Monthly: 11-2021 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.42% Valid Data: 99.58%

Direction	1.8-6.0	6.0-15.0	15.0-29.0	29.0-39.0	>39.0	Total
N	0.7	0.98	0.84	0	0	2.52
NNE	0.7	0.7	0.7	0	0	2.1
NE	0.14	0.56	0.14	0	0	0.84
ENE	0.14	1.12	0.7	0	0	1.96
E	0	3.21	2.93	0	0	6.14
ESE	0.7	1.39	0	0	0	2.09
SE	0.42	3.63	0.7	0	0	4.75
SSE	0.42	7.11	1.39	0	0	8.92
S	1.12	9.62	0.98	0	0	11.72
SSW	1.12	8.93	0.84	0	0	10.89
SW	0.56	10.6	0.7	0	0	11.86
WSW	0.42	8.09	0.56	0	0	9.07
W	0.84	7.81	2.37	0	0	11.02
WNW	0.14	2.51	1.67	0	0	4.32
NW	0.14	2.93	0.7	0	0	3.77
NNW	0.42	3.07	4.18	0	0	7.67
Summary	7.98	72.26	19.4	0	0	100



LICA-202111

% Icon Classes (kph)

8 1.8-6.0

72 6.0-15.0

19 15.0-29.0

0 29.0-39.0

0 >39.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

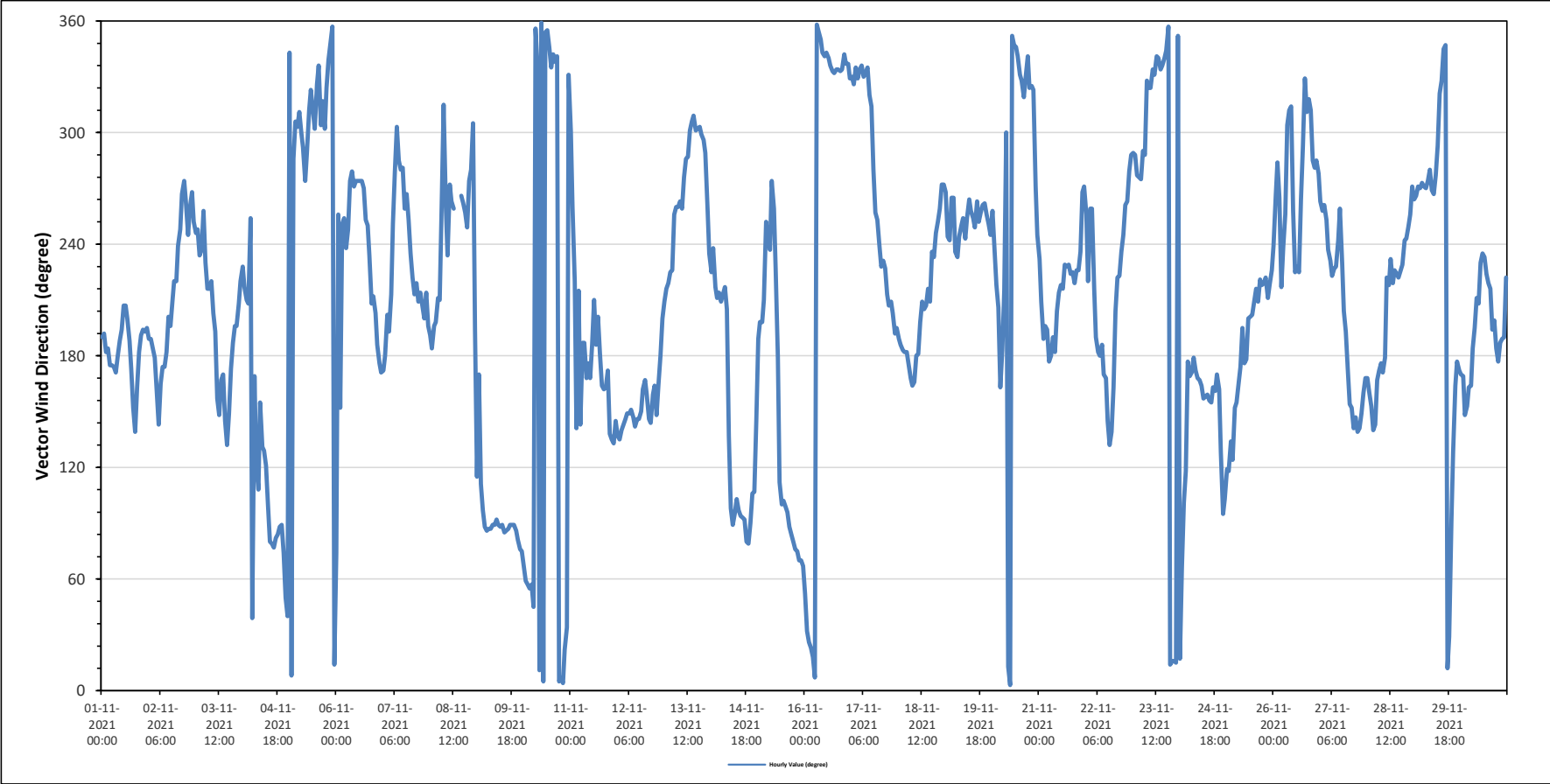
St. Lina Site - November 2021

Summary of Hourly Averages

WIND DIRECTION (VWD) in sector

Monthly Average:		225 (SW) degree														Hours in Service:		720																									
																Hours of Data:		717																									
																Hours of Missing Data:		3																									
																Hours of Calibration:		0																									
																Operational Uptime:		99.6																									
Day	Hourly Period Starting at (MST)																							Daily Average																			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Degree	Quadrant																	
Nov 1	S	S	S	S	S	S	S	S	S	S	SSW	SSW	SSW	SSW	S	S	SSE	SE	SSE	S	S	SSW	S	SSW	184	S																	
Nov 2	S	S	S	S	SSE	SE	SSE	S	S	S	SSW	SSW	SSW	SW	SW	WSW	WSW	W	W	W	WSW	WSW	W	WSW	207	SSW																	
Nov 3	WSW	WSW	SW	SW	WSW	SW	SW	SW	SW	SSW	S	SSE	SE	SSE	SE	SE	SSE	S	S	SSW	SSW	SSW	SW	SSW	198	SSW																	
Nov 4	SW	SW	SSW	SSW	WSW	NE	SSE	ESE	ESE	SSE	SE	SE	ESE	E	E	ENE	ENE	E	E	E	E	ENE	NE	NE	103	ESE																	
Nov 5	NNW	N	WNW	NW	WNW	NW	WNW	WNW	W	WNW	NW	NW	NW	WNW	NW	NNW	WNW	NW	WNW	NW	NNW	NNW	N	NNE	312	NW																	
Nov 6	ENE	WSW	SSE	WSW	WSW	SW	WSW	W	W	W	W	W	W	W	W	WSW	WSW	SW	SSW	SSW	SSW	S	S	S	247	WSW																	
Nov 7	S	S	SSW	S	SSW	WSW	W	WNW	WNW	W	W	WSW	W	WSW	SW	SW	SSW	SW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	228	SW																
Nov 8	S	S	SSW	SSW	SSW	SSW	W	NW	WSW	SW	W	W	WSW	P	P	P	W	W	WSW	WSW	W	W	WNW	SSW	242	WSW																	
Nov 9	ESE	SSE	ESE	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	ENE	ENE	89	E																
Nov 10	ENE	ENE	ENE	NE	ENE	NE	N	NNW	NNE	N	N	N	N	NNW	NNW	NNW	NNW	NNW	N	N	N	NNE	NE	NNW	12	NNE																	
Nov 11	WNW	WSW	SW	SE	SSW	SE	S	SSE	S	SSE	S	SSW	S	SSW	S	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SE	SE	SE	168	SSE																
Nov 12	SE	SE	SE	SE	SE	SSE	SSE	SSE	SE	SE	SE	SE	SE	SSE	SSE	SSE	SSE	SE	SE	SSE	SSE	SE	SSE	S	SSW	152	SSE																
Nov 13	SSW	SW	SW	SW	SW	WSW	WSW	WSW	W	WSW	W	WNW	WNW	WNW	NW	NW	WNW	WNW	WNW	WNW	WNW	WNW	WSW	SW	275	W																	
Nov 14	SW	SW	SW	SSW	SSW	SSW	SSW	SW	SSW	SE	E	E	E	E	E	E	E	E	E	E	ENE	E	ESE	ESE	SE	129	SE																
Nov 15	S	SSW	SSW	SSW	WSW	WSW	SW	W	WSW	SW	S	ESE	E	E	E	E	E	E	E	E	ENE	ENE	ENE	ENE	ENE	95	E																
Nov 16	NE	NNE	NNE	NNE	NNE	N	N	N	N	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	348	NNW																
Nov 17	NNW	NW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NW	NW	W	WSW	WSW	WSW	SW	SW	SSW	SSW	SSW	SSW	SSW	S	SSW	282	W																	
Nov 18	S	S	S	S	S	S	SSE	SSE	SSE	S	S	SSW	SSW	SSW	SSW	SW	SSW	SW	SW	WSW	WSW	WSW	W	W	201	SSW																	
Nov 19	W	WSW	WSW	W	W	SW	SW	WSW	WSW	WSW	WSW	W	WSW	WSW	WSW	W	WSW	WSW	W	W	WSW	WSW	WSW	WSW	WSW	254	WSW																
Nov 20	WSW	SW	SW	SSW	SSE	S	SSW	WNW	NNE	N	N	NNW	NNW	NNW	NNW	NW	NNW	NNW	NNW	NNW	NNW	NW	NW	W	WSW	325	NW																
Nov 21	SW	SSW	S	SSW	SSW	S	S	S	S	SSW	SSW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	W	W	215	SSW																
Nov 22	WSW	SW	WSW	WSW	SW	S	S	S	S	SSE	SSE	SE	SE	SE	SSE	SSW	SW	SW	SW	WSW	W	W	W	WNW	212	SSW																	
Nov 23	WNW	WNW	W	W	W	WNW	WNW	NNW	NW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	N	NNE	NNE	NNE	NNE	N	325	NW																	
Nov 24	NNE	ENE	E	ESE	S	SSE	S	S	S	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SE	E	ESE	152	SSE																
Nov 25	ESE	ESE	SE	ESE	SSE	SSE	SSE	S	SSW	S	S	SSW	SSW	SSW	SSW	SSW	SW	SSW	SW	SW	SW	SW	SSW	SW	SW	189	S																
Nov 26	WSW	W	WNW	W	SW	WSW	WSW	WNW	NW	NW	WSW	SW	SW	W	WNW	NNW	NNW	NNW	NNW	NNW	NNW	W	WNW	W	WNW	279	W																
Nov 27	W	WSW	W	WSW	SW	SW	SW	SW	SW	WSW	WSW	SW	SSW	S	S	SSE	SSE	SE	SE	SE	SE	SE	SSE	SSE	SSE	200	SSW																
Nov 28	SSE	SSE	SSE	SE	SE	SSE	S	S	S	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	WSW	WSW	WSW	WSW	W	207	SSW																	
Nov 29	W	W	W	W	W	W	W	W	W	W	W	W	W	W	WNW	NW	NNW	NNW	NNW	NNW	NNE	NNE	E	SE	SSE	S	S	274	W														
Nov 30	SSE	SSE	SE	SSE	SSE	SSE	S	SSW	SSW	SSW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	S	S	S	S	SW	195	SSW																
C	Monthly Calibration										S	Daily Zero-Span Check										Q	Quality Assurance																				
K	Collection Error										N	No Data (Machine Not in Service)										Y	Routine Maintenance										P	Power Failure									
X	Invalid Data (Machine Malfunction /Recovery)										NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																															
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																																											
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																																											

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





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr & WIND DIRECTION (VWD) in sector

WIND SPEED																												
Maximum Hourly Value:	28.7	kph	on November 16 at hour 13	Hours in Service:	720																							
Maximum Daily Value:	22.0	kph	on November 16	Hours of Data:	717																							
Minimum Hourly Value:	0.4	kph	on November 4 at hour 5	Hours of Missing Data:	3																							
Minimum Daily Value:	4.8	kph	on November 14	Hours of Calibration:	0																							
Monthly Average:	3.6	kph		Operational Uptime:	99.6																							
WIND DIRECTION																												
Monthly Average:	225	(SW)	degree																									
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
Nov 1	10.2	10.9	9.9	11.8	11.8	11.2	12.9	13.5	12.6	12.1	13.1	13.5	14.2	14.2	13.7	11.9	8.2	11.9	14.2	14.6	12.6	14.2	15.8	17.0	8.2	17.0	12.3	
	S	S	S	S	S	S	S	S	S	SSW	SSW	SSW	SSW	S	S	SSE	SE	SSE	S	S	SSW	S	SSW	S				
Nov 2	16.9	14.6	12.9	12.5	11.2	12.6	13.0	14.7	14.4	13.0	11.7	9.8	8.6	9.0	10.3	9.9	9.6	9.5	10.3	8.8	10.9	11.2	10.1	8.6	8.6	16.9	9.0	
	S	S	S	S	SSE	SE	SSE	S	S	S	SSW	SSW	SSW	SW	WSW	WSW	W	W	WSW	WSW	W	WSW	WSW	W				
Nov 3	9.0	9.0	8.2	9.4	9.6	7.7	8.8	10.3	9.4	6.5	6.8	7.1	10.3	9.1	8.1	8.2	9.5	9.2	11.2	10.7	11.2	12.0	11.2	9.7	6.5	12.0	7.6	
	WSW	WSW	SW	SW	WSW	SW	SW	SW	SSW	S	SSE	SE	SSE	SE	SE	SSE	S	S	SSW	SSW	SSW	SSW	SSW	SSW				
Nov 4	6.2	9.2	8.4	7.8	5.6	0.4	4.3	5.9	7.8	6.5	7.0	7.8	7.8	10.1	12.7	13.0	13.6	15.9	13.9	15.9	11.5	11.3	9.2	6.4	0.4	15.9	5.9	
	SW	SW	SSW	SSW	WSW	NE	SSE	ESE	ESE	SSE	SE	ESE	E	E	ENE	ENE	E	E	E	E	E	ENE	NE	NE				
Nov 5	7.7	5.7	7.7	7.3	10.3	10.1	9.3	10.8	14.8	11.9	10.6	12.7	14.4	11.0	12.4	10.2	7.8	10.0	9.2	8.2	6.1	4.6	4.9	1.8	1.8	14.8	8.5	
	NNW	N	WNW	NW	WNW	NW	WNW	WNW	W	WNW	NW	NW	NNW	NW	NNW	WNW	NW	WNW	NW	WNW	NW	NNW	NNW	N				
Nov 6	1.3	2.1	7.2	5.8	10.7	11.1	10.9	11.9	14.1	15.1	16.0	17.2	19.7	19.1	17.6	17.2	15.2	7.2	8.9	10.1	11.5	11.1	12.2	12.3	1.3	19.7	9.6	
	ENE	WSW	SSE	WSW	WSW	SW	WSW	W	W	W	W	W	W	W	W	WSW	WSW	SW	SSW	SSW	SSW	S	S	S				
Nov 7	13.1	13.6	10.7	8.6	7.7	8.2	7.2	8.6	8.1	7.2	7.5	10.8	12.1	10.5	9.1	7.0	8.0	8.5	8.4	8.3	8.9	9.0	5.2	7.2	5.2	13.6	7.2	
	S	S	SSW	S	SSW	WSW	W	WNW	WNW	W	W	WSW	W	WSW	SW	SW	SSW	SW	SSW	SSW	SSW	SSW	SSW	SSW				
Nov 8	7.7	10.4	11.6	11.2	7.4	6.1	8.5	6.6	3.1	6.3	3.8	6.3	7.1		P	P	P	7.0	10.9	9.3	7.1	7.9	7.8	6.6	4.3	3.1	11.6	5.9
	S	S	SSW	SSW	SSW	W	NW	WSW	SW	W	W	WSW			P	P	P	W	W	WSW	WSW	W	W	WNW	SSW			
Nov 9	4.4	8.9	10.6	13.0	14.8	16.5	17.7	19.7	19.1	19.9	23.4	23.6	24.9	26.8	27.8	27.0	28.1	26.0	25.2	24.2	22.1	17.7	13.7	13.7	4.4	28.1	19.1	
	ESE	SSE	ESE	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	ENE	ENE				
Nov 10	11.8	11.3	10.4	9.3	8.7	7.7	5.0	5.8	5.9	5.9	6.7	8.7	9.7	8.5	10.0	9.1	10.2	11.3	9.3	11.4	9.5	6.9	5.5	3.3	3.3	11.8	7.2	
	ENE	ENE	ENE	NE	ENE	NE	N	NNW	NNE	N	N	N	NNW	NNW	NNW	NNW	NNW	N	N	N	NNE	NE	NNW	NNW				
Nov 11	4.1	3.5	2.9	2.9	1.3	2.6	5.3	4.3	4.9	6.1	5.5	5.3	6.0	5.5	5.8	5.8	6.8	8.3	8.7	9.2	8.5	12.2	11.8	11.5	1.3	12.2	5.3	
	WNW	WSW	SW	SE	SSW	SE	S	S	SSE	S	SSE	S	SSW	S	SSW	S	SSE	SSE	SSE	S	SE	SE	SE	SE				
Nov 12	12.5	10.4	14.5	15.7	16.9	19.7	18.4	19.3	21.2	27.1	23.5	19.5	21.5	19.7	14.9	15.0	9.8	9.3	9.7	8.9	8.0	10.2	10.8	11.7	8.0	27.1	15.0	
	SE	SE	SE	SE	SE	SSE	SSE	SSE	SE	SE	SE	SE	SSE	SSE	SSE	SSE	SE	SE	SSE	SSE	SE	SSE	S	SSW				
Nov 13	12.5	13.1	11.7	11.6	12.1	13.7	12.9	12.6	13.2	14.3	16.5	20.6	19.2	20.4	23.3	20.9	18.5	16.4	16.8	12.9	9.3	8.2	7.6	7.9	7.6	23.3	12.4	
	SSW	SW	SW	SW	SW	WSW	WSW	WSW	W	WSW	W	WNW	WNW	WNW	NW	NW	WNW	WNW	WNW	WNW	WNW	WNW	WSW	SW				
Nov 14	8.3	7.7	8.5	9.4	8.4	8.5	6.8	6.9	7.1	3.8	7.3	7.6	7.9	7.7	7.9	9.7	10.5	10.7	12.3	12.9	10.2	11.0	10.2	6.1	3.8	12.9	4.8	
	SW	SW	SW	SSW	SSW	SSW	SW	SSW	SE	E	E	ESE	E	E	E	E	E	E	ENE	E	ESE	ESE	SE	SE				
Nov 15	6.8	7.3	7.4	7.4	8.0	6.9	9.8	7.7	5.0	3.1	3.5	4.0	7.4	8.6	9.5	11.1	14.6	15.8	18.2	21.7	21.8	23.0	22.1	19.9	3.1	23.0	6.1	
	S	SSW	SSW	SSW	WSW	WSW	SW	W	WSW	SW	S	ESE	E	E	E	E	E	E	E	E	ENE	ENE	ENE	ENE				
Nov 16	17.1	15.9	19.9	22.9	21.2	20.0	22.4	20.6	22.4	24.5	28.1	26.7	26.5	28.7	27.7	27.6	26.1	28.5	26.4	24.9	25.8	22.8	17.4	19.2	15.9	28.7	22.0	
	NE	NNE	NNE	NNE	NNE	N	N	N	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW				
Nov 17	19.1	16.7	14.3	14.4	14.4	15.4	13.3	11.3	12.1	8.1	8.7	7.6	8.0	11.3	10.5	9.3	11.1	11.7	12.1	11.8	12.4	11.2	11.2	11.5	7.6	19.1	6.8	
	NNW	NW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NW	NW	W	WSW	WSW	WSW	SW	SW	SSW	SSW	SSW	SSW	S	SSW	SSW				
Nov 18	13.9	14.9	15.2	16.9	15.3	16.1	15.3	14.3	13.4	13.8	11.5	10.9	10.5	5.7	2.2	2.4	3.1	6.7	10.0	10.6	11.5	12.3	13.8	12.6	2.2	16.9	9.4	
	S	S	S	S	S	S	SSE	SSE	SSE	S	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	W				
Nov 19	11.9	9.8	11.0	12.5	11.8	10.0	11.2	12.1	10.6	10.7	10.8	13.5	18.1	18.0	14.5	14.7	12.9	13.3	14.2	13.8	12.4	12.8	11.9	8.9	8.9	18.1	12.4	
	W	WSW	WSW	W	W	SW	SW	WSW	WSW	WSW	WSW	WSW	W	WSW	WSW	WSW	W	WSW	WSW	W	W	WSW	WSW	WSW				
Nov 20	9.7	7.0	7.9	7.6	2.8	8.6	13.3	6.5	16.6	19.8	20.4	20.5	22.8	20.3	18.5	17.0	14.1	13.5	12.4	7.5	9.0	5.0	3.5	6.1	2.8	22.8	8.1	
	WSW	SW	SW	SSW	SSE	S	SSW	WNW	NNE	N	N	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	W	WSW				



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr & WIND DIRECTION (VWD) in sector

WIND SPEED																											
Maximum Hourly Value:	28.7	kph	on November 16	at hour 13	Hours in Service:	720																					
Maximum Daily Value:	22.0	kph	on November 16	Hours of Data:	717																						
Minimum Hourly Value:	0.4	kph	on November 4	at hour 5	Hours of Missing Data:	3																					
Minimum Daily Value:	4.8	kph	on November 14	Hours of Calibration:	0																						
Monthly Average:	3.6	kph	Operational Uptime:	99.6																							
WIND DIRECTION																											
Monthly Average:	225	(SW)	degree																								
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
Nov 21	7.8	8.3	10.5	9.5	10.3	11.5	13.3	18.1	21.5	21.4	21.0	19.9	20.0	18.8	17.0	15.0	11.3	12.0	11.3	11.5	9.1	10.9	14.2	16.2	7.8	21.5	13.0
	SW	SSW	S	SSW	SSW	S	S	S	S	SSW	SSW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	W	W			
Nov 22	10.6	8.3	7.0	1.9	5.1	8.2	8.6	10.1	11.4	12.7	11.6	11.6	10.7	12.4	15.4	12.9	13.6	12.9	12.7	13.2	12.0	10.8	16.1	16.5	1.9	16.5	7.7
	WSW	SW	WSW	WSW	SW	S	S	S	S	SSE	SSE	SE	SE	SE	SSE	SSW	SW	SW	SW	WSW	W	W	W	WNW			
Nov 23	15.7	16.5	15.4	13.9	11.7	13.5	15.5	19.4	25.4	27.2	20.2	22.6	22.4	19.8	19.1	16.9	14.5	14.3	12.5	11.0	11.1	7.6	5.4	5.0	5.0	27.2	13.8
	WNW	WNW	W	W	W	WNW	WNW	NNW	NW	NW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	N	NNE	NNE	NNE	NNE	N			
Nov 24	4.2	4.5	5.5	5.9	5.2	6.5	7.9	7.8	7.8	11.7	11.4	11.8	9.9	10.4	9.4	9.4	9.5	9.2	10.2	12.4	9.6	8.4	10.2	11.1	4.2	12.4	7.6
	NNE	ENE	E	ESE	S	SSE	S	S	S	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	E	ESE			
Nov 25	13.1	12.0	11.4	8.9	9.1	7.8	10.7	11.4	11.7	10.5	11.9	14.9	15.1	15.2	12.4	12.4	11.5	11.8	11.5	11.1	10.5	10.0	9.6	9.2	7.8	15.2	9.5
	ESE	ESE	SE	ESE	SSE	SSE	SSE	S	SSW	S	S	SSW	SSW	SSW	SSW	SW	SSW	SW	SW	SW	SW	SSW	SW	SW			
Nov 26	11.0	12.3	9.6	7.6	10.3	9.3	8.1	9.8	10.0	7.9	6.0	11.1	9.6	6.3	8.1	18.4	10.8	13.0	13.8	15.3	13.6	14.7	15.8	15.2	6.0	18.4	9.5
	WSW	W	WNW	W	SW	WSW	WSW	WNW	NW	NW	WSW	SW	SW	W	WNW	NNW	NW	NW	NW	WNW	W	WNW	W	W			
Nov 27	16.9	15.2	14.4	11.7	10.1	9.8	10.4	11.4	10.7	10.6	9.2	7.1	5.5	5.7	8.0	8.6	11.2	12.8	13.1	12.9	16.0	15.6	14.7	13.6	5.5	16.9	7.8
	W	WSW	W	WSW	SW	SW	SW	SW	WSW	WSW	SW	SSW	S	S	SSE	SSE	SE	SE	SE	SE	SE	SSE	SSE	SSE			
Nov 28	13.7	12.6	10.5	10.7	10.0	10.3	10.6	9.5	9.0	7.8	12.7	13.5	11.1	10.3	13.5	13.8	12.2	10.7	9.9	11.0	10.0	11.4	11.8	12.7	7.8	13.8	8.9
	SSE	SSE	SSE	SE	SE	SSE	S	S	S	S	SW	SW	SW	SW	SW	SW	SW	SW	SW	WSW	WSW	WSW	WSW	W			
Nov 29	13.8	16.4	15.5	16.0	16.1	14.9	14.5	11.7	10.1	11.4	11.9	12.5	12.3	12.0	11.5	9.8	9.4	5.0	6.3	6.1	10.1	11.1	12.3	12.2	5.0	16.4	7.1
	W	W	W	W	W	W	W	W	W	W	W	WNW	NW	NNW	NNW	NNW	NNW	NNE	NNE	E	SE	SSE	S	S			
Nov 30	13.0	12.4	12.8	11.7	11.2	12.8	11.7	8.6	13.2	15.3	14.8	13.9	12.3	10.7	10.0	11.3	10.4	8.7	9.5	9.8	12.1	8.9	9.3	13.7	8.6	15.3	10.4
	SSE	SSE	SSE	SSE	SSE	S	SSW	SSW	SSW	SW	SW	SW	SW	SW	SW	SW	SSW	SSW	S	S	S	S	SW	SW			
C	Monthly Calibration							S	Daily Zero-Span Check							Q	Quality Assurance										
K	Collection Error							N	No Data (Machine Not in Service)							Y	Routine Maintenance										
X	Invalid Data (Equipment Malfunction/Recovery)							NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)							P	Power Failure										
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																											
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																											



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - November 2021

Summary of Hour Standard Deviations

STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree

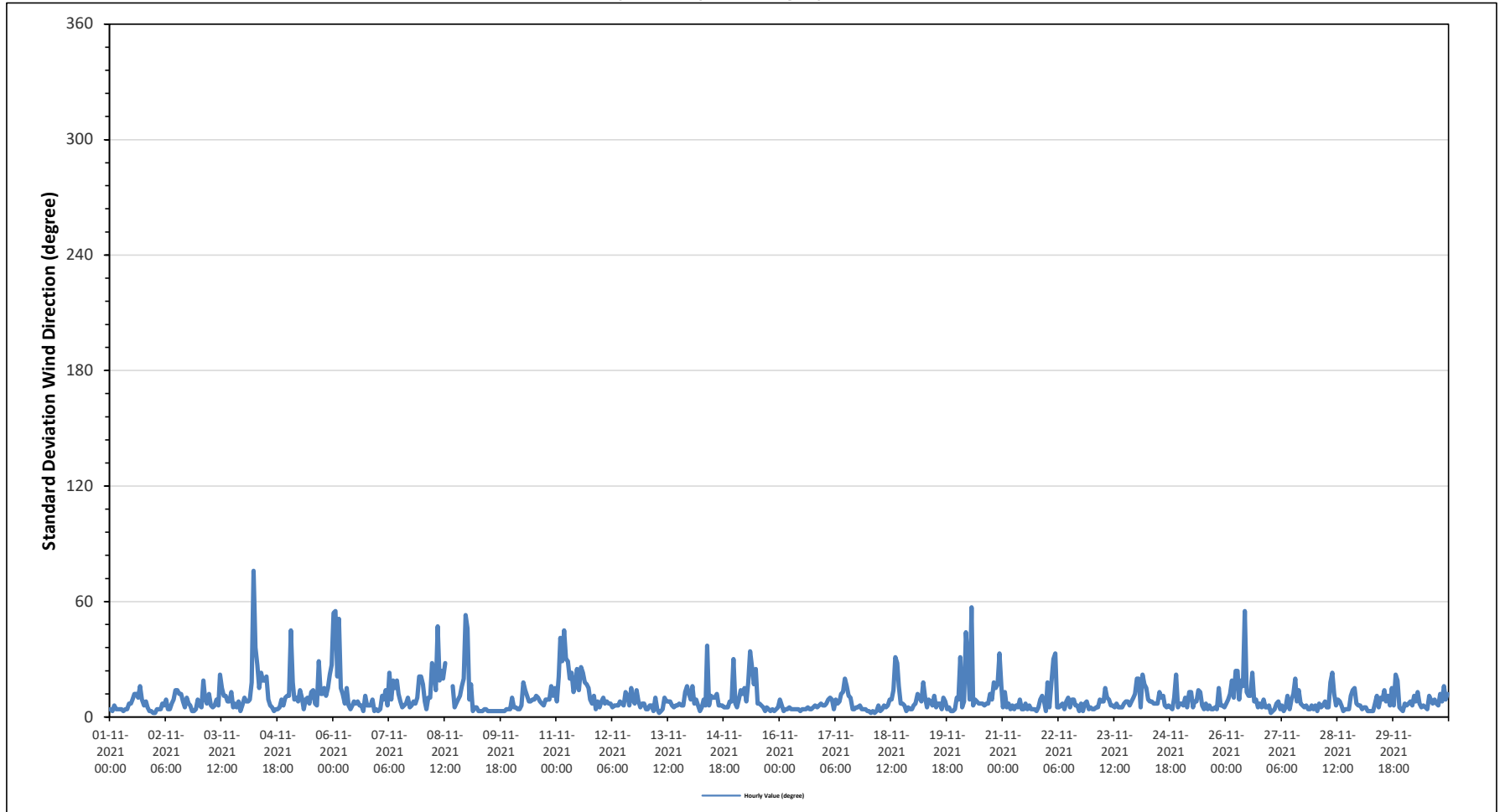
Maximum Hourly Value:	76 degree on November 4 at hour 5	Hours in Service:	720
Minimum Hourly Value:	2 degree on November 1 at hour 23	Hours of Data:	717
		Hours of Missing Data:	3
		Hours of Calibration:	0
		Operational Uptime:	99.6

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22			23
Nov 1	4	3	6	4	4	4	4	3	4	4	7	7	9	12	12	10	16	9	6	8	5	3	3	2	2	16
Nov 2	2	4	4	4	7	6	9	4	4	7	9	14	14	12	12	8	5	10	7	6	3	3	4	9	2	14
Nov 3	6	5	19	10	7	12	6	5	6	9	6	22	15	11	11	8	8	13	5	7	5	8	3	6	3	22
Nov 4	10	8	8	9	18	76	36	27	15	23	19	19	21	9	6	5	3	4	4	5	9	6	10	11	3	76
Nov 5	11	45	18	9	10	8	14	10	4	9	10	7	13	14	7	6	29	12	12	15	11	15	22	27	4	45
Nov 6	54	55	21	51	15	12	7	15	6	4	6	8	7	8	6	6	3	11	6	6	6	9	3	4	3	55
Nov 7	3	4	11	9	14	6	23	9	19	15	19	12	8	5	6	7	10	5	6	8	7	10	21	21	3	23
Nov 8	17	8	4	10	10	28	24	14	47	19	24	20	28	P	P	P	16	5	7	9	11	16	20	53	4	53
Nov 9	46	9	17	3	5	5	3	3	3	4	4	3	3	3	3	3	3	3	3	3	3	4	4	4	3	46
Nov 10	10	5	5	4	4	6	18	14	11	8	8	9	9	11	10	8	7	6	9	9	9	16	11	15	4	18
Nov 11	8	21	41	29	45	30	29	20	23	13	16	25	14	26	23	18	17	15	9	7	11	4	8	5	4	45
Nov 12	8	10	7	8	7	7	5	6	6	6	8	7	6	13	11	6	15	9	7	14	8	5	7	7	5	15
Nov 13	4	4	6	6	3	10	4	2	3	4	10	8	8	8	6	5	6	6	7	6	6	13	16	12	2	16
Nov 14	9	16	7	9	6	3	5	9	6	37	6	11	10	10	12	6	6	6	5	5	5	8	8	30	3	37
Nov 15	7	5	9	14	12	15	8	18	34	26	17	25	7	7	6	5	3	5	4	3	4	3	4	5	3	34
Nov 16	9	6	3	4	4	5	4	4	4	4	4	3	4	4	4	5	4	4	5	6	5	6	7	6	3	9
Nov 17	6	7	9	10	9	4	9	7	8	12	13	20	16	11	10	4	4	5	5	6	4	4	4	3	3	20
Nov 18	3	2	3	2	3	6	3	4	6	5	6	9	9	14	31	28	16	7	7	6	3	5	4	4	2	31
Nov 19	6	7	12	10	8	18	10	5	9	8	6	11	5	7	7	4	10	8	4	5	3	3	4	10	3	18
Nov 20	9	31	5	8	44	28	9	57	6	9	8	7	7	7	6	7	7	12	9	18	15	17	33	16	5	57
Nov 21	5	13	5	7	4	6	4	6	5	9	4	4	7	4	6	4	4	4	3	5	9	11	8	3	3	13
Nov 22	18	5	17	30	33	5	5	6	7	4	8	10	5	9	9	6	6	3	7	3	7	8	4	5	3	33
Nov 23	4	4	5	5	9	8	8	15	10	9	6	6	5	7	5	5	5	7	8	8	6	8	10	12	4	15
Nov 24	20	20	5	22	17	15	9	8	8	7	7	7	13	10	11	6	5	6	5	4	10	22	5	7	4	22
Nov 25	7	6	10	5	13	13	5	8	8	14	13	6	4	7	4	6	4	4	5	4	15	6	6	5	4	15
Nov 26	7	9	12	19	10	24	24	9	19	16	55	13	11	11	23	8	9	5	7	5	9	5	5	6	5	55
Nov 27	2	3	4	7	8	4	6	3	5	11	4	9	12	20	8	14	7	6	5	6	4	4	6	4	2	20
Nov 28	6	3	7	5	6	8	5	5	18	23	12	6	9	8	6	3	4	4	4	11	14	15	7	6	3	23
Nov 29	6	4	5	5	3	3	3	3	7	11	5	10	9	14	8	11	6	15	6	22	19	5	4	3	3	22
Nov 30	7	6	7	8	6	11	8	13	7	5	6	5	4	11	9	7	9	7	6	12	8	16	9	12	4	16
Diurnal Minimum	2	2	3	2	3	3	3	2	3	4	4	3	3	3	3	3	3	3	3	3	3	3	3	2		
Diurnal Maximum	54	55	41	51	45	76	36	57	47	37	55	25	28	26	31	28	29	15	12	22	19	22	33	53		

C	Monthly Calibration	S	Daily Zero-Span Check	Q	Quality Assurance
K	Collection Error	N	No Data (Machine Not in Service)	Y	Routine Maintenance
X	InValid Data (Machine Malfunction /Recovery)	NRM	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	P	Power Failure

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

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



END OF REPORT

This page, 239 of 239, ends the November 2021 Monthly Ambient Air Quality Monitoring Report.



Lakeland Industry & Community Association

NOVEMBER 2021
Ambient Air Monitoring Calibration Report
- COLD LAKE SOUTH STATION-
CAL-LICA-202111-01174

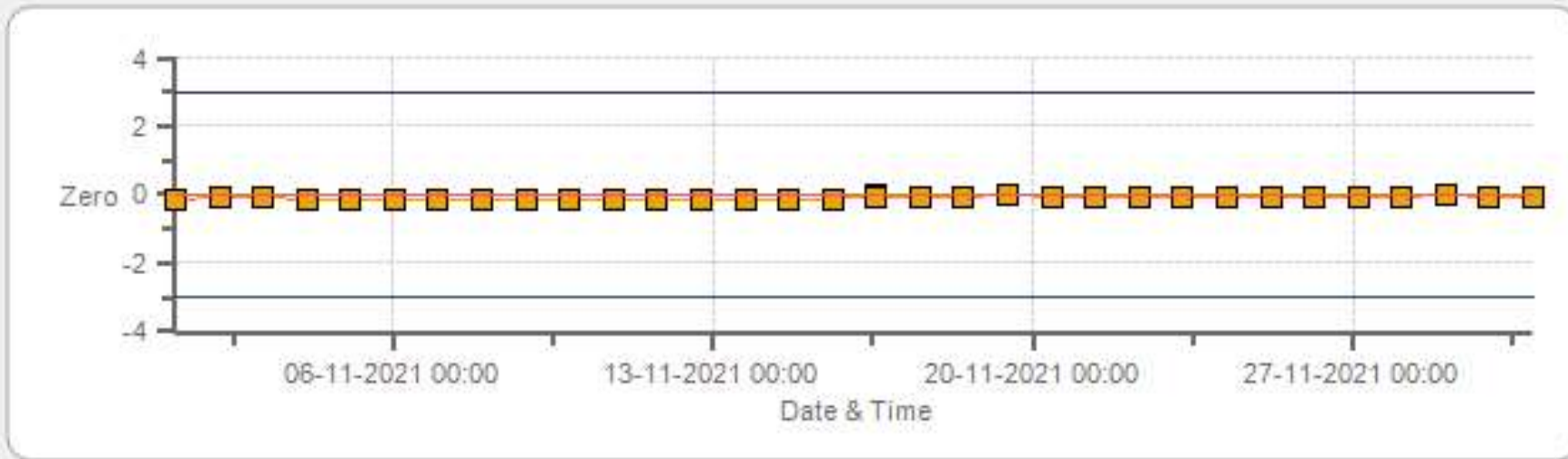
Station Operation and Maintenance:
Bureau Veritas Canada

Data Validation and Report:
LICA / Bureau Veritas Canada

December 16, 2021

DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

SO2[ppb] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Zero



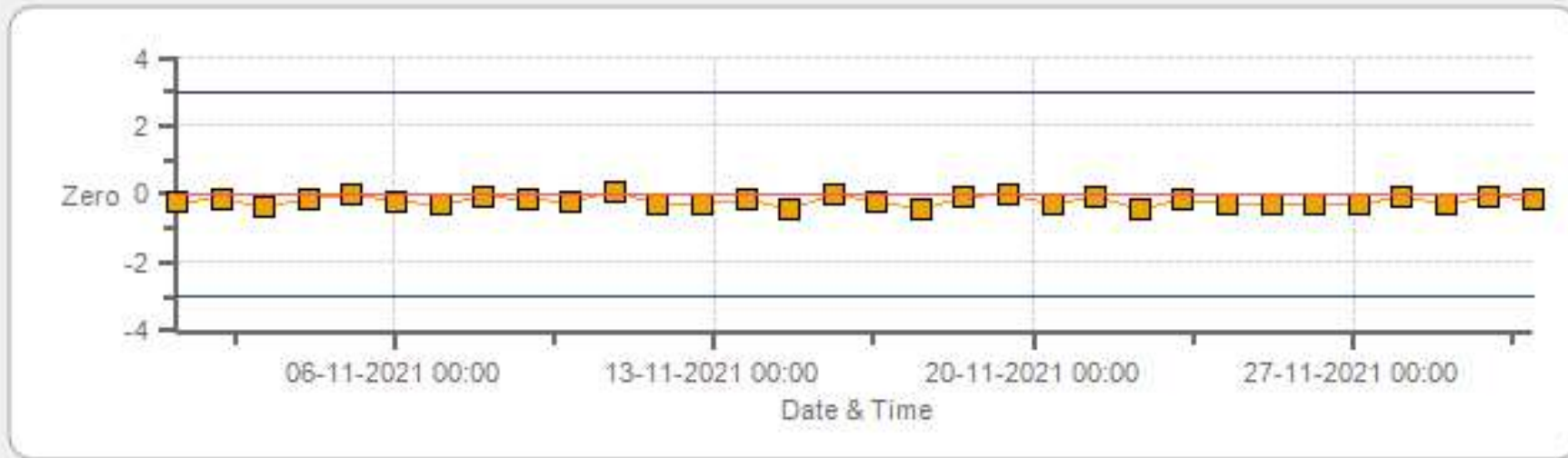
Zero Zero Ref Zero Low Zero High

SO2[ppb] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

TRS[ppb] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Zero



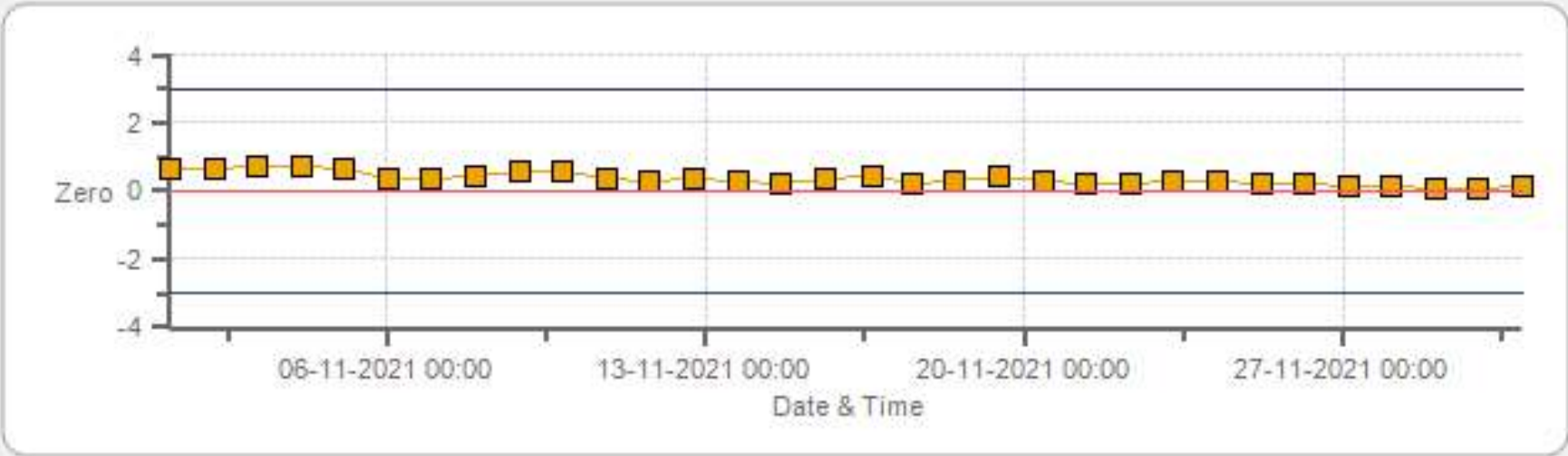
Zero Zero Ref Zero Low Zero High

TRS[ppb] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

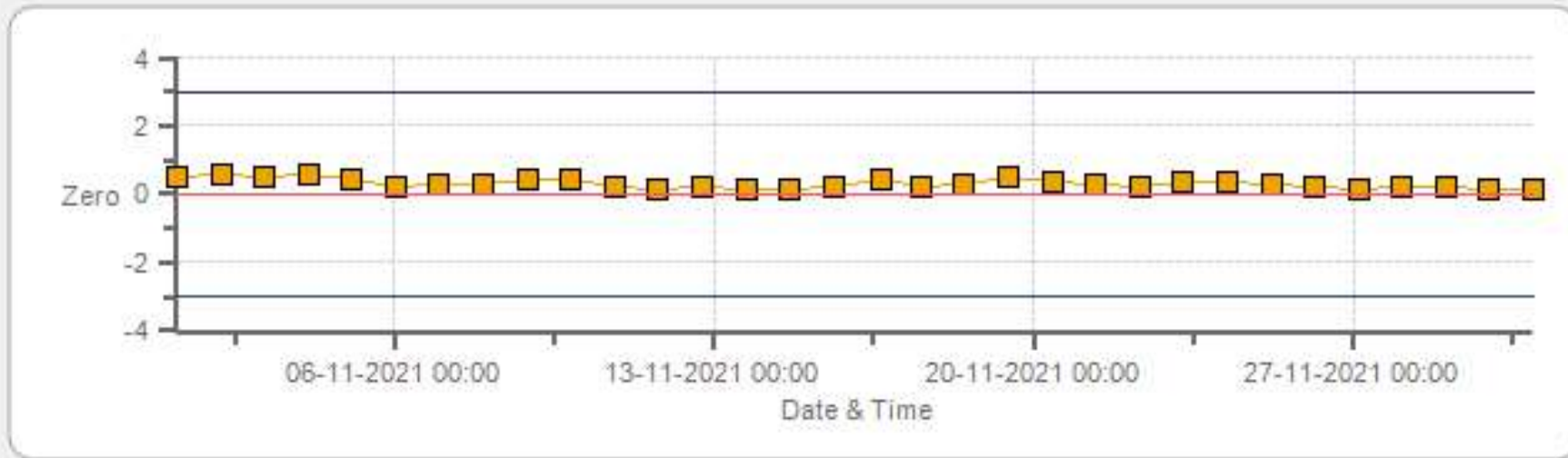
NOX[ppb] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Zero



NOX[ppb] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Span

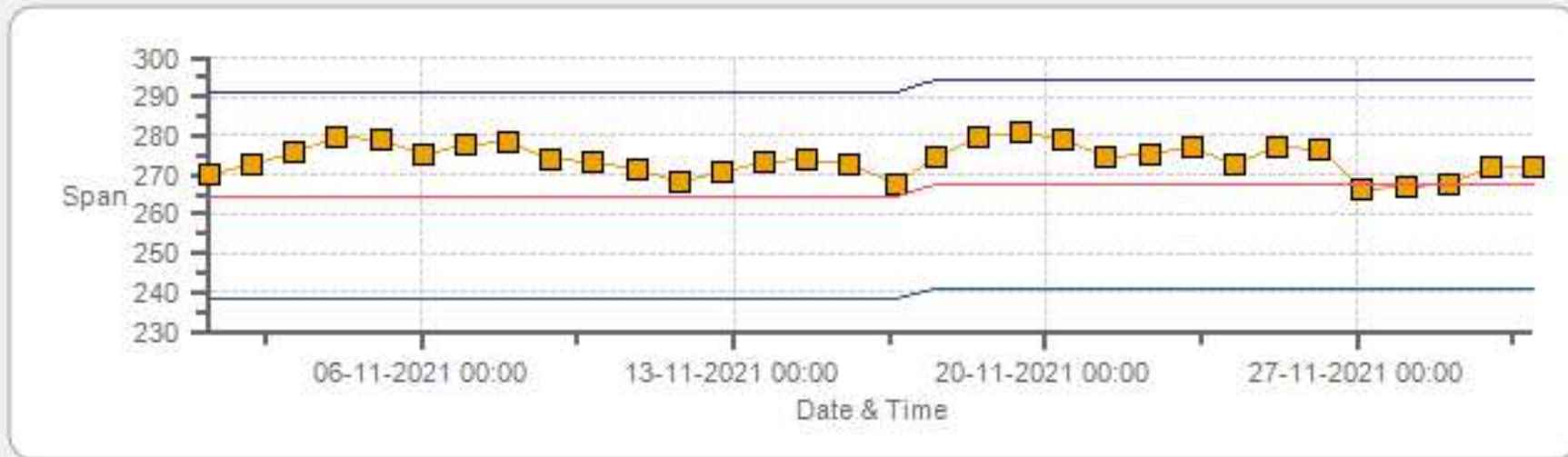


NO2[ppb] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Zero



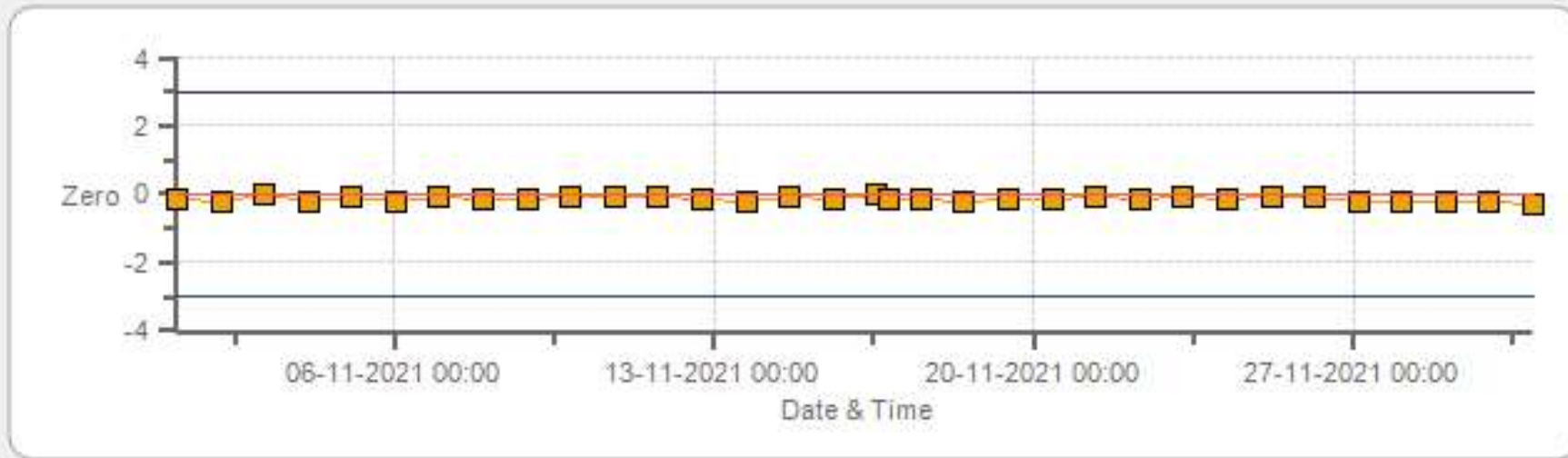
Zero Zero Ref Zero Low Zero High

NO2[ppb] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Span



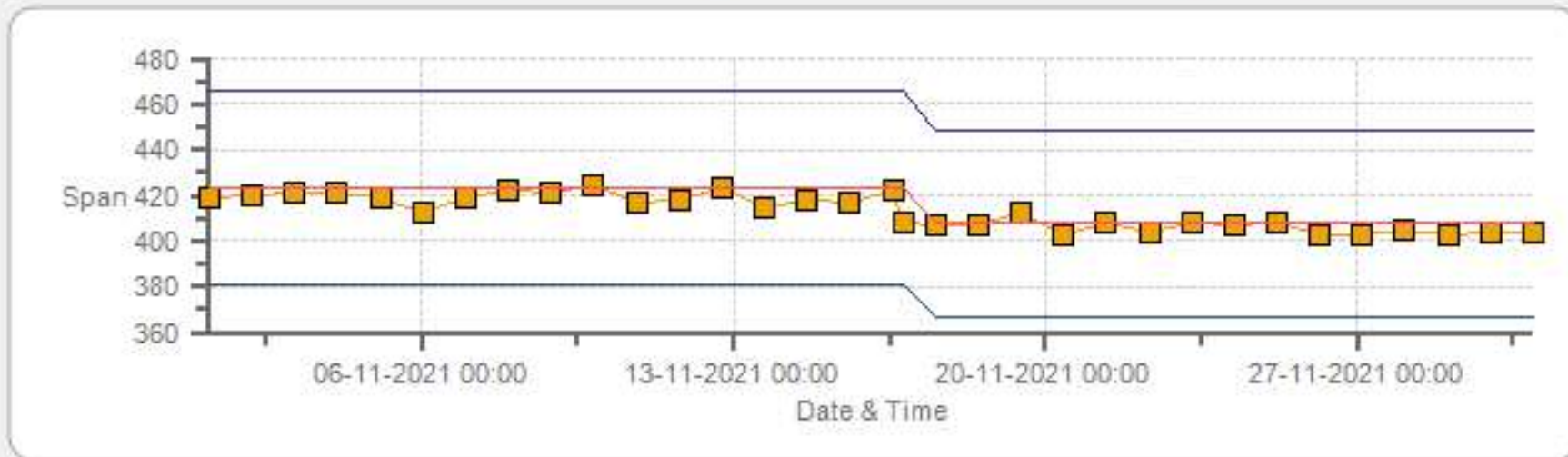
Span SpanRef Span Low Span High

O3[ppb] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Zero



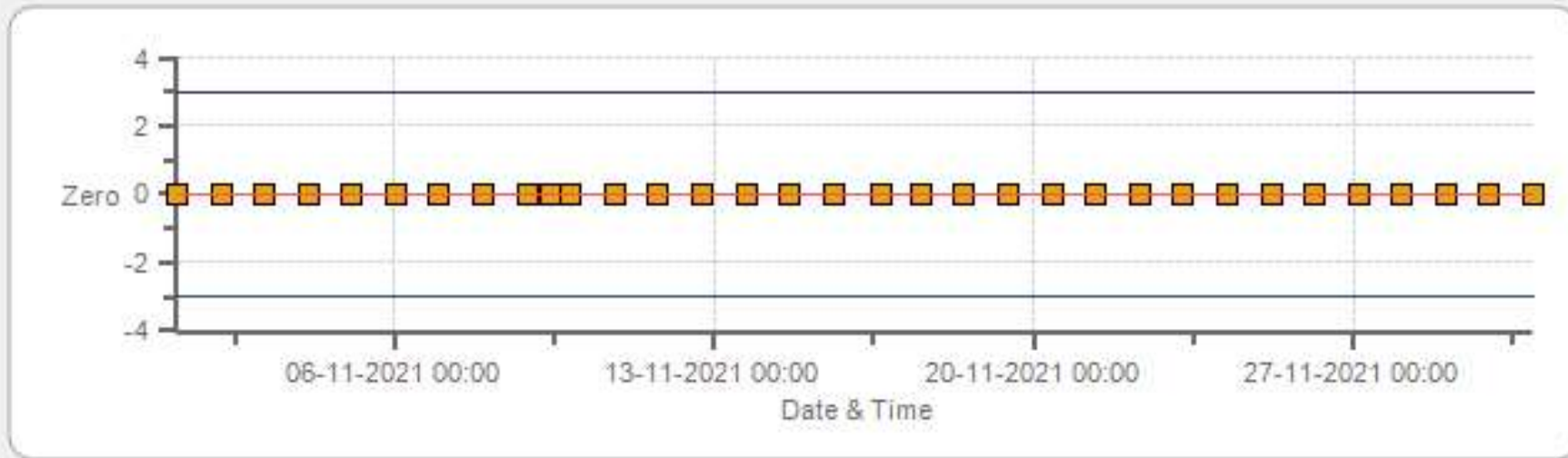
Zero Zero Ref Zero Low Zero High

O3[ppb] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Span



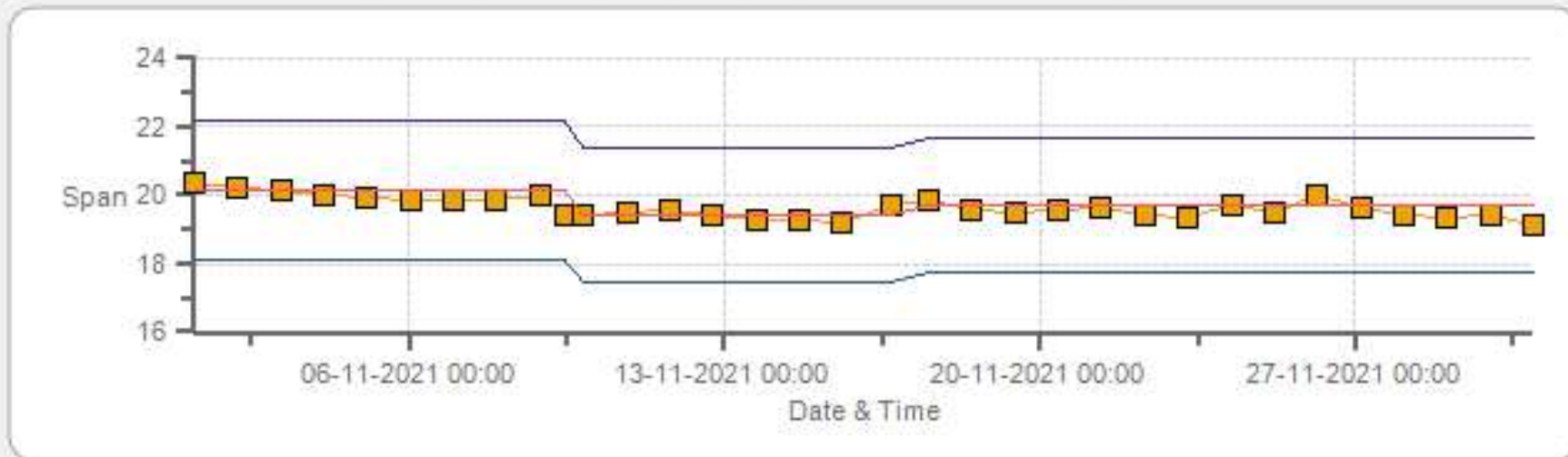
Span SpanRef Span Low Span High

THC55[ppm] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Zero



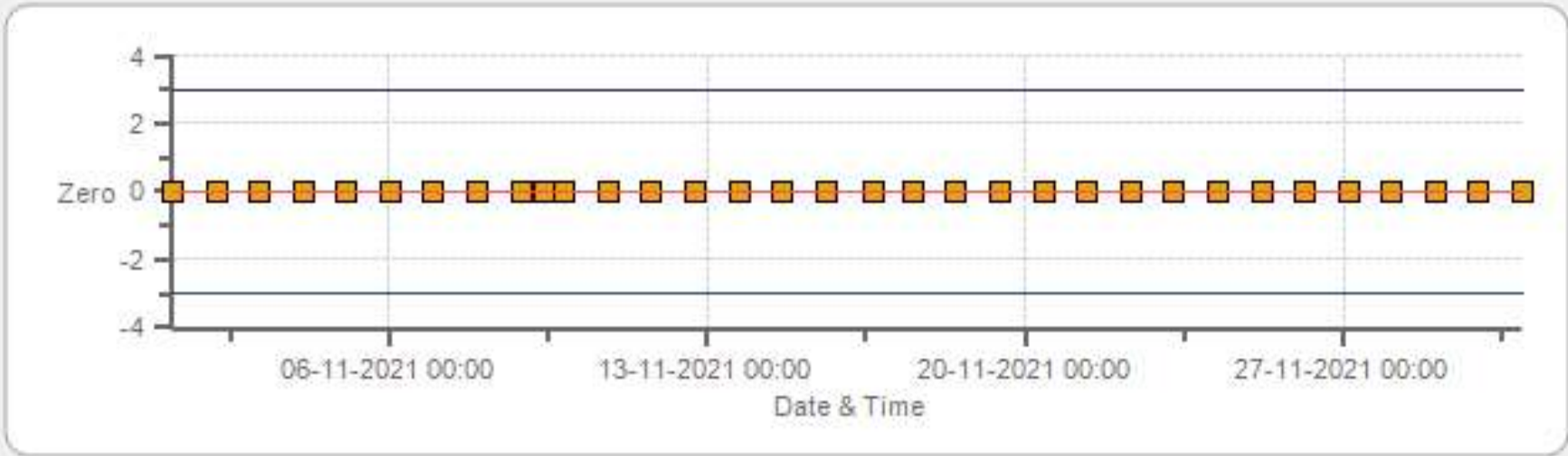
Zero Zero Ref Zero Low Zero High

THC55[ppm] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Span



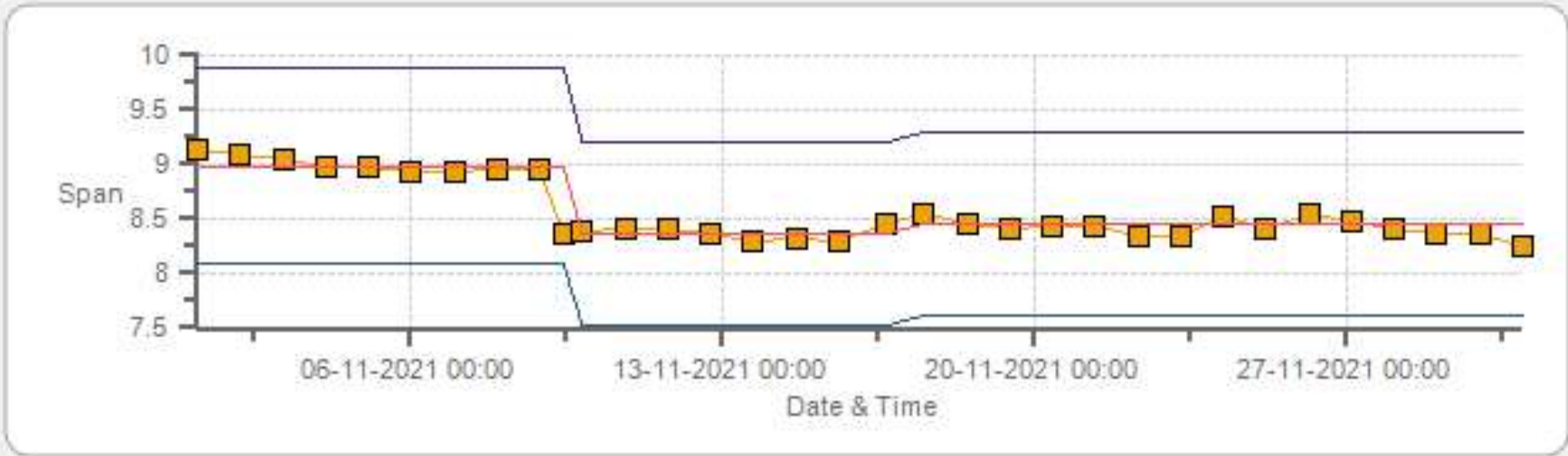
Span SpanRef Span Low Span High

CH4[ppm] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Zero



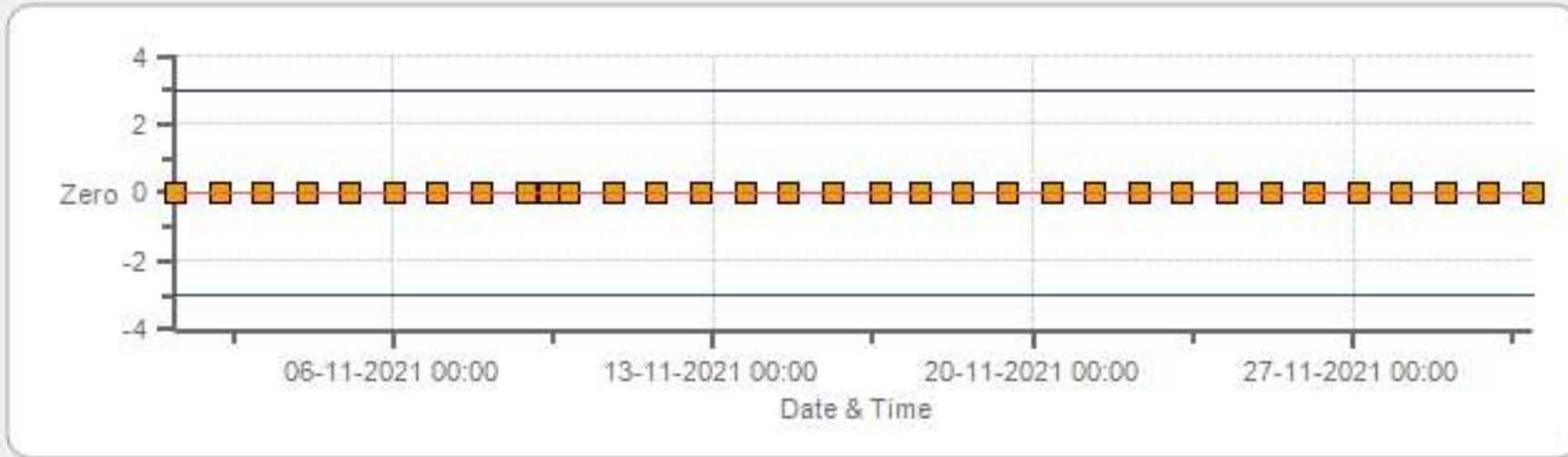
Zero Zero Ref Zero Low Zero High

CH4[ppm] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Span



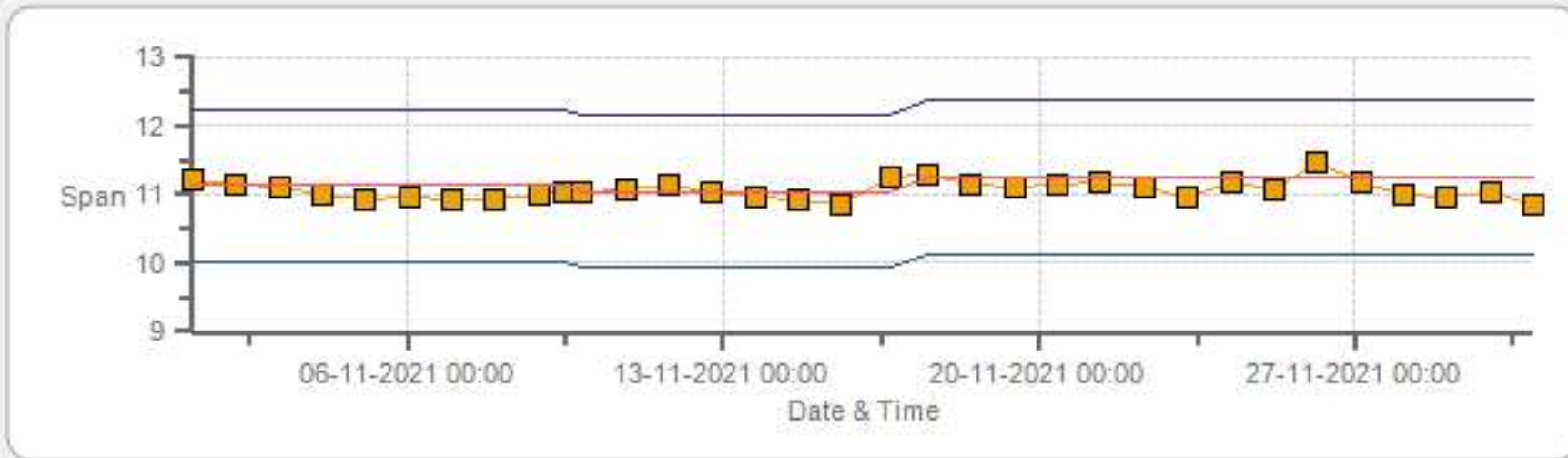
Span SpanRef Span Low Span High

NMHC[ppm] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Zero



Zero Zero Ref Zero Low Zero High

NMHC[ppm] Calibration: Cold Lake South Monthly: 11-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

MULTI-POINT CALIBRATION RECORDS

SO2 Analyzer Calibration by Dilution



DATE:	16-Nov-2021	PREVIOUS CALIBRATION DATE:	08-Oct-2021
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.6
LOCATION:	CLS	BAROMETRIC (mBar):	934
PURPOSE:	Routine	START TIME (MST):	09:18
PERFORMED BY:	Limin Li	END TIME (MST):	12:53

ANALYZER:

MAKE/MODEL	Thermo 431-TLE	RANGE	500 ppb
SERIAL #	1180260018	FLOW (mL/min)	435
INITIAL		FINAL	
BKG/OFFSET	2.19	BKG/OFFSET	2.13
COEF/SLOPE	0.971	COEF/SLOPE	0.985
Expected (reference) Value	264.7	Expected (reference) Value	271

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	Sabio	MAKE:	Teledyne
MODEL:	2010	MODEL:	T701
ID:	17200415	ID:	132
MFC CALIBRATION DATE:	20-Sep-2021	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY 0000647	HIGH ID	n/a
CONC (ppm):	51.60	EXPIRY DATE	n/a
CYLINDER (psi):	1300	LOW ID	n/a
EXPIRY DATE	24-Feb-2028	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

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

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

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

CALIBRATION:

FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
6000	46.00	6000	0.00	-0.1	0	1.025	1.000
5954	46.00	6000	395.60	385.7	395.7	1.025	1.000
5979	21.20	6000	182.32	n/a	182.2	n/a	1.001
5989	10.60	6000	91.16	n/a	90.8	n/a	1.004

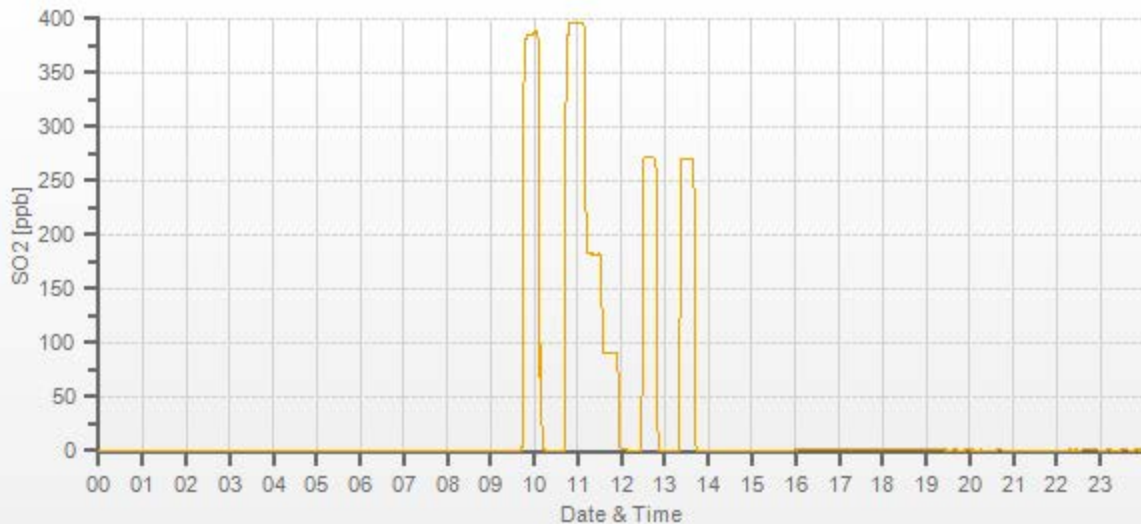
LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.001	0.0%

COMMENTS:

Sample inlet filter was changed.

SO2[ppb] Station: Cold Lake South Daily: 16-11-2021 Type: AVG 1 Min. [1 Min.]



CAL-LICA-202111-01174

TRS Analyzer Calibration by Dilution



DATE:	16-Nov-2021	PREVIOUS CALIBRATION DATE:	08-Oct-2021
PARAMETER:	TRS	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.6
LOCATION:	CLS	BAROMETRIC (mBar):	934
PURPOSE:	Routine	START TIME (MST):	09:18
PERFORMED BY:	Limin Li	END TIME (MST):	13:40

ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	812728560	FLOW (mL/min)	484
INITIAL		FINAL	
BKG/OFFSET	22.4	BKG/OFFSET	21.7
COEF/SLOPE	1.062	COEF/SLOPE	1.039
Expected (reference) Value	38	Expected (reference) Value	38.5

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	EnviroNics	MAKE:	Teledyne
MODEL:	6100	MODEL:	T701
ID:	5212	ID:	132
MFC CALIBRATION DATE:	21-Sep-2021	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY0002272	HIGH ID	n/a
CONC (ppm):	10.20	EXPIRY DATE	n/a
CYLINDER (psi):	1950	LOW ID	n/a
EXPIRY DATE	14-Sep-2024	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

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

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

START TIME:	09:43	SO2 Conc (ppb)	380
END TIME:	10:06	Analyzer Response (ppb)	0.0

CALIBRATION:

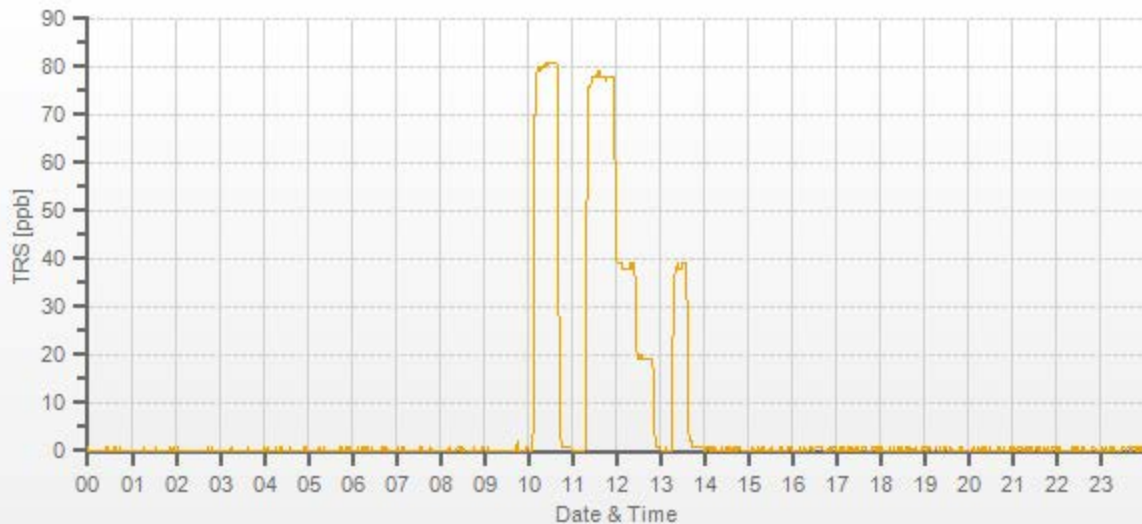
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	7500	7500	0.00	0	0	0.964	1.000
7443	57.35	7500	78.00	80.9	78	0.964	1.000
7472	27.94	7500	38.00	n/a	38	n/a	1.000
7486	13.97	7500	19.00	n/a	18.8	n/a	1.011

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.001	-0.1%

COMMENTS:

Sample inlet filter was changed.
 Converter: CDNova CDN-101 #501



NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	16-Nov-2021	PREVIOUS CALIBRATION DATE:	08-Oct-2021	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	22.6	SERIAL #:	1505664393	NOx	1.001
LOCATION:	CLS	BAROMETRIC (mBar):	934	FLOW (mL/min):	763	NO	1.001
PURPOSE:	Routine	START TIME (MST):	09:18	RANGE (ppb):	500	NO2	1.000
PERFORMED BY:	Limin Li	END TIME (MST):	15:41	GPT FOR O3?		Yes	

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	SABIO	MAKE:	Teledyne	CYLINDER ID:	EY 0000647	HIGH ID:	n/a
MODEL:	2010	MODEL:	T701	NO/NOx (PPM):	50.9 51.1	HIGH EXPIRY:	n/a
ID:	17200415	ID:	132	CYLINDER (psi):	1300	LOW ID:	n/a
MFC CALIBRATION DATE:	20-Sep-2021	OXIDIZER ID:	n/a	EXPIRY DATE:	24-Feb-2028	LOW EXPIRY:	n/a

CALIBRATION SETTINGS:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
BKG/OFFSET:	4.2	4.1	n/a	BKG/OFFSET:	4.5	4.3	n/a
SLOPE/COEF/CE:	1	0.957	0.999	SLOPE/COEF/CE:	1.003	0.979	0.999

EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	267.4	2.8	264.6		270.2	2.7	267.5

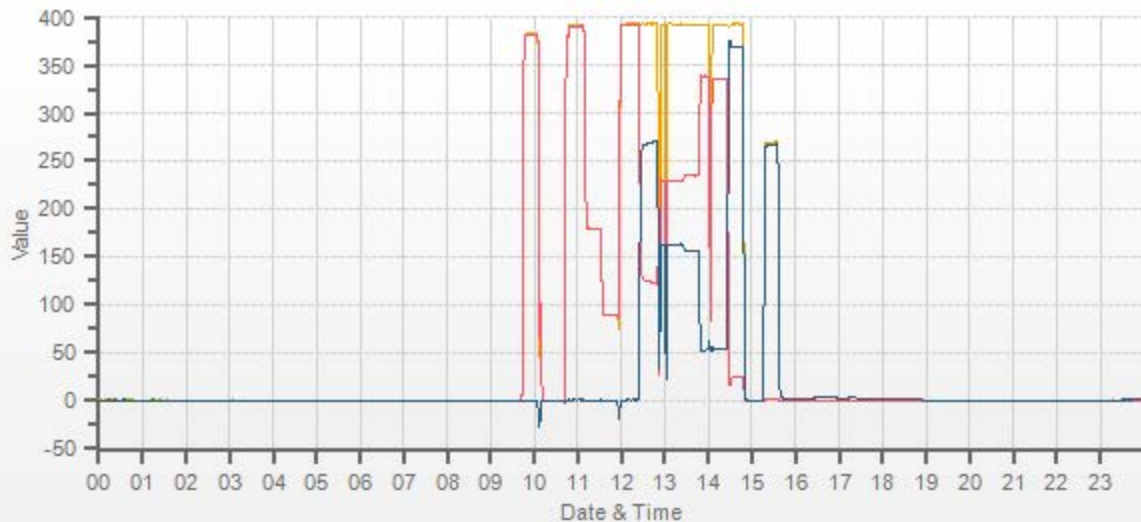
CALIBRATION PARAMETERS:				
POINT	NO TARGET (PPB)	NO2 TARGET (PPB)	NO2 RANGE	O3 POINT
HIGH	395	250	240-275	n/a
MID	180	154	150-157	Mid
LOW	90	54	50-58	Low
EXTRA 1	n/a	340	300-370	High

FLOW RATE			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2
6000	46.00	6000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.023	1.023	1.004	1.000	0.999	1.000
5954	46.00	6000	390.2	391.8	1.5	381.5	383.1	1.6	390.2	392.2	2.0	1.023	1.023	1.004	1.000	0.999	1.000
5979	21.20	6000	179.8	180.6	0.7	n/a	n/a	n/a	179.6	180.6	1.0	n/a	n/a	1.004	1.001	1.000	1.000
5989	10.60	6000	89.9	90.3	0.4	n/a	n/a	n/a	89.6	89.9	0.3	n/a	n/a	1.004	1.004	1.004	1.000

GPT CALIBRATION:										
Point	CALIBRATOR			INDICATED (ppb)			NO DROP / O3 Conc (ppb)	NO2 GAIN (ppb)	NO2 Corr. FACTOR	CONV. EFFICIENCY
	GAS	TOTAL	O3 SETPOINT	NO	NOx	NO2				
REFERENCE	38.30	5000	0	391.3	393.4	2.0	268.7	268.7	1.000	100.00%
AS-FOUND HIGH	38.30	5000	240	122.6	393.4	270.7	268.7	268.7	1.000	100.00%
ADJUSTED HIGH	n/a	5000	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MID	38.30	5000	138	235.0	392.0	157.0	156.3	155	1.008	99.17%
LOW	38.30	5000	47	335.9	391.4	55.5	55.4	53.5	1.036	96.57%
NO2 adjustment not required.									AVERAGE:	98.58%

LINEAR REGRESSION ANALYSIS:				COMMENTS:
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	1.000	-0.04%	
NOx	1.000	1.002	-0.04%	
NO2	1.000	1.009	-0.50%	

Sample inlet filter was changed.
 12:51 = calibrator reset itself.
 13:00 = Daily Z/S check canceled.
 14:01 = Transitory Power fail.
 Extra GPT point: O3= 325ppb; NO = 24; NO2= 368.7; NOx= 392.8



CAL-LICA-202111-01174

Ozone Calibration by Photometer (Varying UV Lamp)



DATE:	16-Nov-2021	PREVIOUS CALIBRATION DATE:	06-Oct-2021
PARAMETER:	O3	PREVIOUS CORRECTION FACTOR:	0.997
CLIENT:	LICA	TEMPERATURE (°C):	24.0
LOCATION:	CLS	BAROMETRIC (mBar):	942
PURPOSE:	Routine	START TIME (MST):	14:50
PERFORMED BY:	Limin Li	END TIME (MST):	19:18

ANALYZER:

MAKE/MODEL	Thermo 49i	RANGE	500 ppb
SERIAL #	700419951	FLOW (mL/min)	1458
INITIAL		FINAL	
BKG/OFFSET	0	BKG/OFFSET	0
COEF/SLOPE	1.072	COEF/SLOPE	1.032
Expected (reference) Value	423.6	Expected (reference) Value	407.8

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010	MODEL:	T701
ID:	17200415	ID:	132
MFC CALIBRATION DATE:	20-Sep-2021	OXIDIZER ID:	n/a
CALIBRATION METHOD:		Photometer (Varying UV Lamp)	
GPT DATE:	n/a	GPT END TIME:	n/a

CALIBRATION PARAMETERS:

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

CALIBRATION:

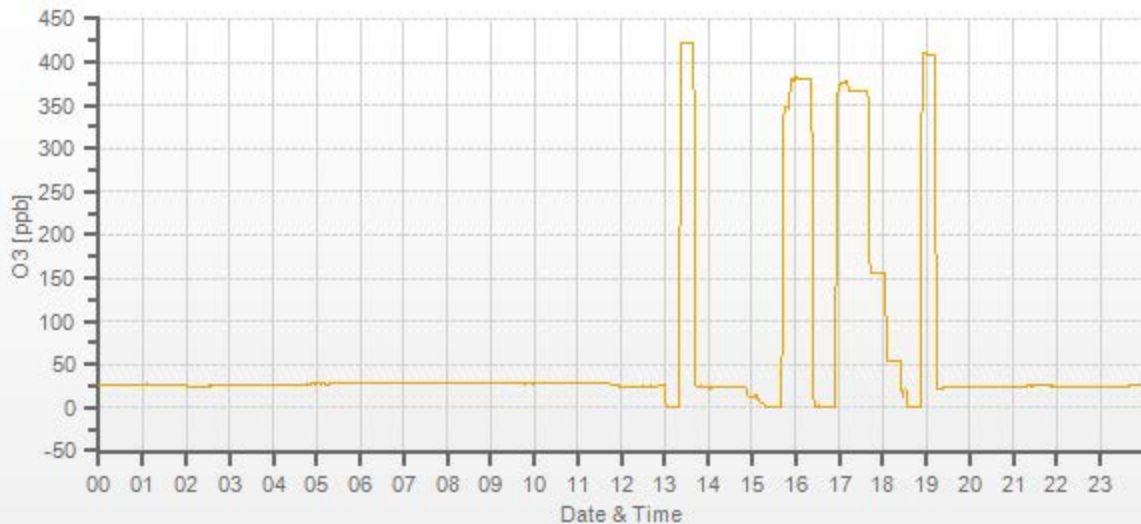
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	5000	5000	0.0	0.0	0.0	0.966	1.001
5000	5000	5000	367.3	380.3	367.1	0.966	1.001
5000	5000	5000	156.3	n/a	155.9	n/a	1.003
5000	5000	5000	55.4	n/a	54.8	n/a	1.011

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	-0.1%

COMMENTS:

Sample inlet filter was changed.



Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	16-Nov-2021	PREVIOUS CALIBRATION DATE:	06-Oct-2021	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	23.5		Thermo 55i	1180930025	1170
LOCATION:	CLS	BAROMETRIC (mBar):	940	PARAMETER:	CH4	NMHC	THC
PURPOSE:	Routine	START TIME (MST):	12:52	RANGE (ppm):	20	20	40
PERFORMED BY:	Limin Li	END TIME (MST):	16:33	PREVIOUS CF:	0.996	1.002	0.999

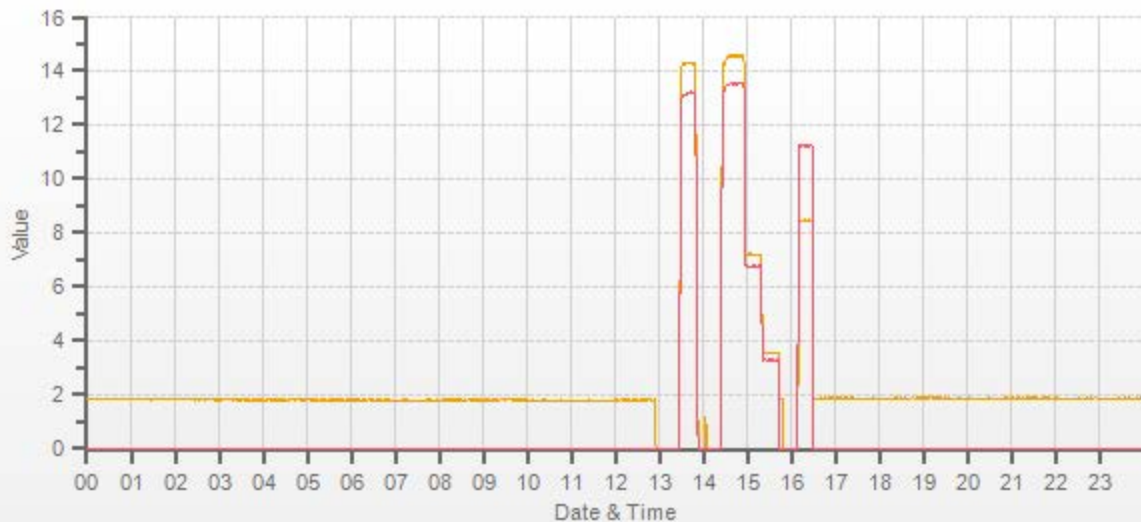
CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	EnviroNics	MAKE:	Teledyne	CYLINDER ID:	LL 70331	HIGH ID:	n/a
MODEL:	6100	MODEL:	T701	CH ₄ /C ₃ H ₈ (ppm):	909.0 308.0	HIGH EXPIRY:	n/a
ID:	5212	ID:	132	CYLINDER (psi):	1100	LOW ID:	n/a
MFC CALIBRATION DATE:	21-Sep-2021	OXIDIZER ID:	115	EXPIRY DATE	21-Jan-2028	LOW EXPIRY:	n/a

CALIBRATION PARAMETERS:				CH ₄ EQUIVILANCE	
POINT (CH ₄ /NMHC)	HIGH	MID	LOW	C ₃ H ₈ as CH ₄	847.0
TARGET	14	7	3.5	THC as CH ₄	1756.0
RANGE	12 - 16	6 - 8	2 - 4		

EXPECTED (REFERENCE) VALUE:							
INITIAL	CH ₄	NMHC	THC	FINAL	CH ₄	NMHC	THC
		8.36	11.05		19.41		8.45

FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC
3500	3500	3500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.012	1.021	1.016	0.996	0.999	0.997
3444	55.80	3500	14.49	13.50	28.00	14.32	13.23	27.55	14.55	13.52	28.07	1.012	1.021	1.016	0.996	0.999	0.997
3472	27.90	3500	7.25	6.75	14.00	n/a	n/a	n/a	7.20	6.74	13.94	n/a	n/a	n/a	1.006	1.002	1.004
3486	13.95	3500	3.62	3.38	7.00	n/a	n/a	n/a	3.56	3.29	6.85	n/a	n/a	n/a	1.018	1.026	1.022

LINEAR REGRESSION ANALYSIS:				Comments:	
	CORRELATION	SLOPE	INTERCEPT	Sample inlet filter was changed. Power fail a moment at 14:01pm.	
CH ₄	1.000	1.005	-0.2%		
NMHC	1.000	1.003	-0.2%		
THC	1.000	1.004	-0.2%	Use Zero Chrom?	Yes



CAL-LICA-202111-01174



Teledyne T640 Audit/Calibration

Date/Previous Audit Date:	November 24, 2021 October 8, 2021	Weather Conditions:	Cloudy/Overcast		
Company:	LICA	Start Time (mst):	11:30		
Station:	Cold Lake South	End Time (mst):	12:33		
Parameter:	PM 2.5	Performed By/Reviewer:	Alex Yakupov Chris Wesson		
Instrument Data:					
Make/Model:	Teledyne T640	Serial Number:	575		
Owner:	LICA	Alarms (detail in comments):	No		
Reference Standards/I.D./Expiry Date:					
Flow Standard: DeltaCal DC1 S/N177246 / Jul 12, 2022		Temperature: VAISALA HMP76B / SN: T1640130			
Digital Manometer: DeltaCal DC1 S/N177246 / Jul 12, 2022		Pressure: FS FB61291 / SN: 130168457 / Feb 17, 2022			
DIAGNOSTICS:					
Ambient Pressure (mmHg)	718.5	Ambient Temp (°C)	-13.3	ASC Heater Duty (%)	0.0
Box Temp (°C)	26.0	Current PMT HV (V)	1439	LED Temp (°C)	34.87
P3 Value	46	PMT Setting (V)	1444	Pump PWM (%)	56
Sample Flow (L/min)	5.01	Sample RH (%RH)	5.0	Sample Temp (°C)	22.9
Monthly Audit/Calibration:					
Item:	As-found		As-left		Tolerance
	Reference	T640x	Reference	T640x	
Zero Test (Leak Check)	PM10	0.0	PM10	0.0	0.0 to 0.2
	PM2.5	0.0	PM2.5	0.0	
Ambient Pressure (mmHg)	719.0	718.5	719	718.5	+/- 10 mm Hg
Ambient Temperature (°C)	-13.70	-13.3	n/a		+/- 2°C
Sample Flow (L/min)	5.04	5.01	5.02	5	+/-5% of T640x (e.g., 4.75 – 5.25 lpm)
Additional Monthly Maintenance :					Completed
Inlet cleaned?					Yes
Sample tubing inspected (inner and outer)?					Yes
Quarterly Audit/Calibration:					
SpanDust™ Standard	Peak at Channel		Lot No:		Expiry:
	10.9		100128-050-032		16-Dec-2022
Item:	Verification:		Calibration (if needed):		Tolerance
	Reference	T640x	Reference	T640x	
Peak Channel	10.9	10.9	n/a	n/a	± 0.5
PMT Setting (V)	n/a	1444	n/a	n/a	n/a
Peak Channel Counts:	n/a	844	n/a	n/a	n/a
Comments:					
n/a					



Meteorological Sensor Audit/Calibration

Location Information

Company: LICA
 Audit Location: Cold Lake South
 Audit Date: April 20, 2021
 Calibration Purpose: installation

Performed By: Alex Yakupov
 Reviewed By: Chris Wesson
 Start/End Time (mst): 10:19 / 14:44
 Weather Conditions: Mix of sun and clouds

Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	n/a
Sensor Model:	05305AQ	Velocity Unit Output Range:	0-180
Serial #:	177354	Direction Voltage Output Range:	n/a
Previous Cal/Audit Date:	September 25, 2021	Direction Unit Output Range:	0-360

Wind Calibrator Information

Calibrator I.D. and Expiry Date: RM Young 18802 id# CA4744 expires Aug 6, 2022

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	18.2	18.2	1.013
2000	36.9	36.6	36.6	1.007
3000	55.3	55.1	55.1	1.003
4000	73.7	73.5	73.5	1.003
5000	92.2	92.0	92.0	1.002
6000	110.6	110.4	110.4	1.002
7000	129.0	128.8	128.8	1.002
8000	147.4	147.3	147.3	1.001
9000	165.9	165.7	165.7	1.001
10000	184.3	184.2	184.2	1.001
The audit meets AMD requirements.			Average Correction Factor=	1.003

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	0.1	0.0	0.1
30	330	28	328	1.6	1.7	1.7
60	300	58	299	1.6	1.5	1.6
90	270	89	267	0.6	3.0	1.8
120	240	120	237	0.5	3.3	1.9
150	210	148	207	1.6	3.2	2.4
180	180	177	179	2.9	1.4	2.2
210	150	206	149	3.8	1.3	2.6
240	120	237	119	3.1	0.7	1.9
270	90	267	89	2.8	0.7	1.8
300	60	297	58	2.8	1.7	2.3
330	30	328	28	1.7	2.0	1.8
355	0	355	0	0.0	0.1	0.1
The audit meets AMD requirements.				Average Absolute Degrees Difference=		1.7

Comments:

Bearing Torque was also tested. Still at minimum threshold (like new) = No problem.

End of Report



Lakeland Industry & Community Association

NOVEMBER 2021

Ambient Air Monitoring Calibration Report

- TAMARACK STATION-

(Formerly Maskwa Station)

CAL-LICA-202111-01248

Station Operation and Maintenance:

Bureau Veritas Canada

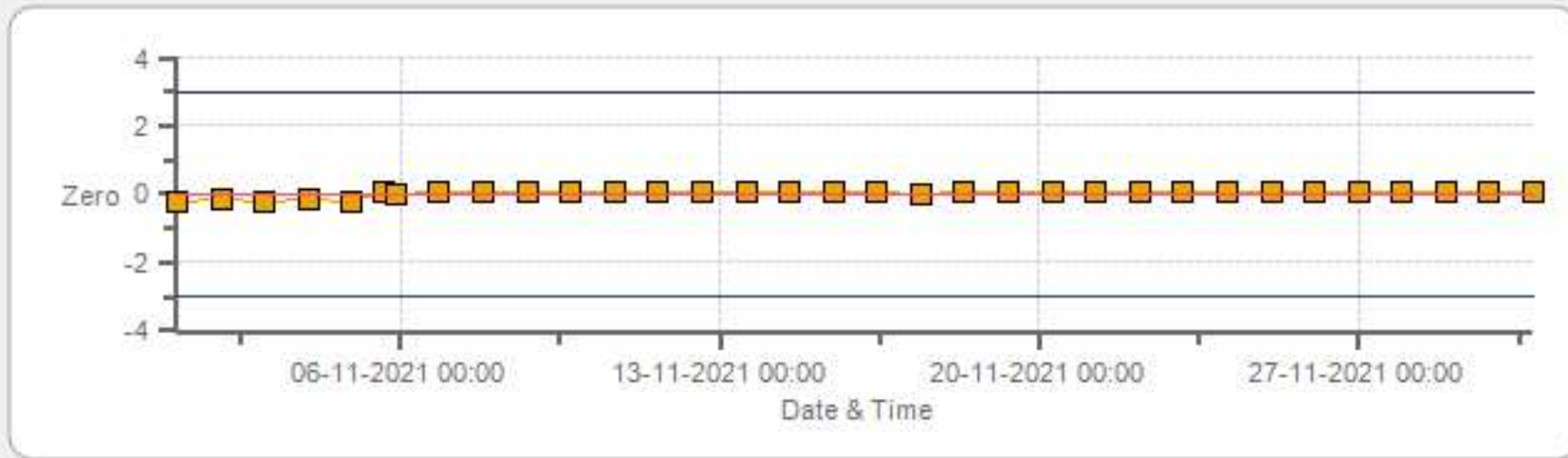
Data Validation and Report:

LICA / Bureau Veritas Canada

December 16, 2021

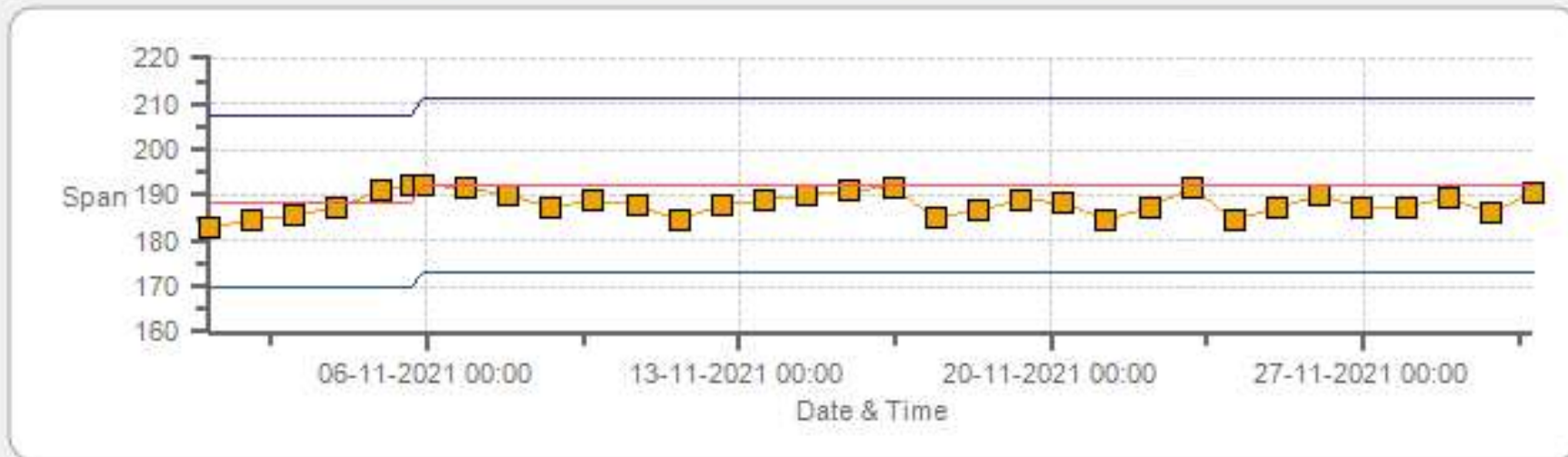
DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

SO2[ppb] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Zero



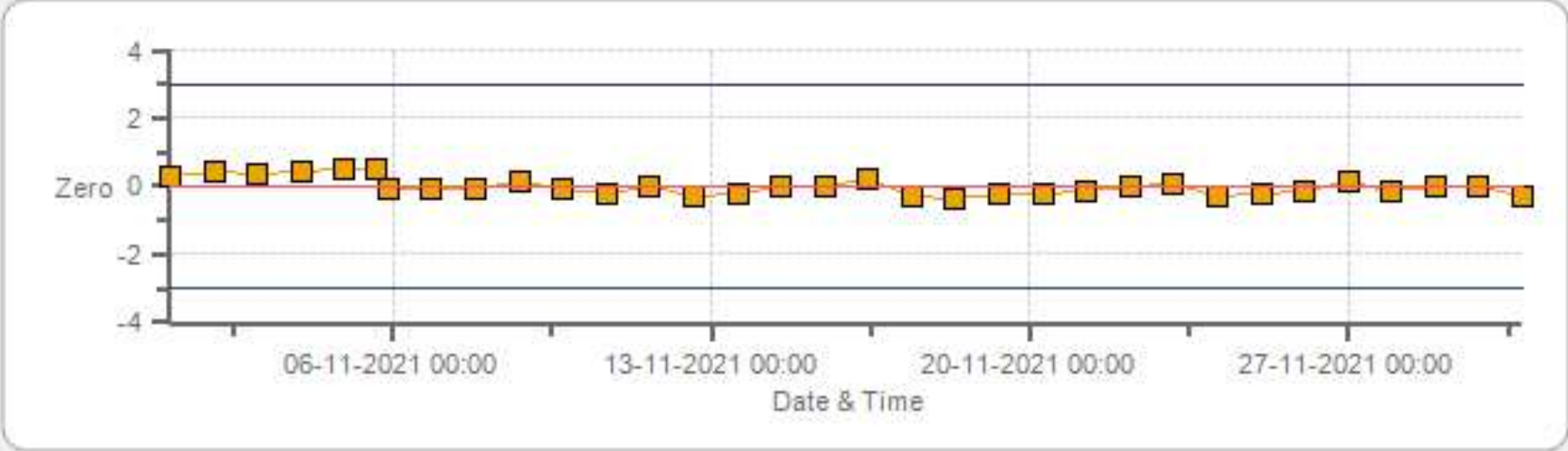
Zero Zero Ref Zero Low Zero High

SO2[ppb] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Span



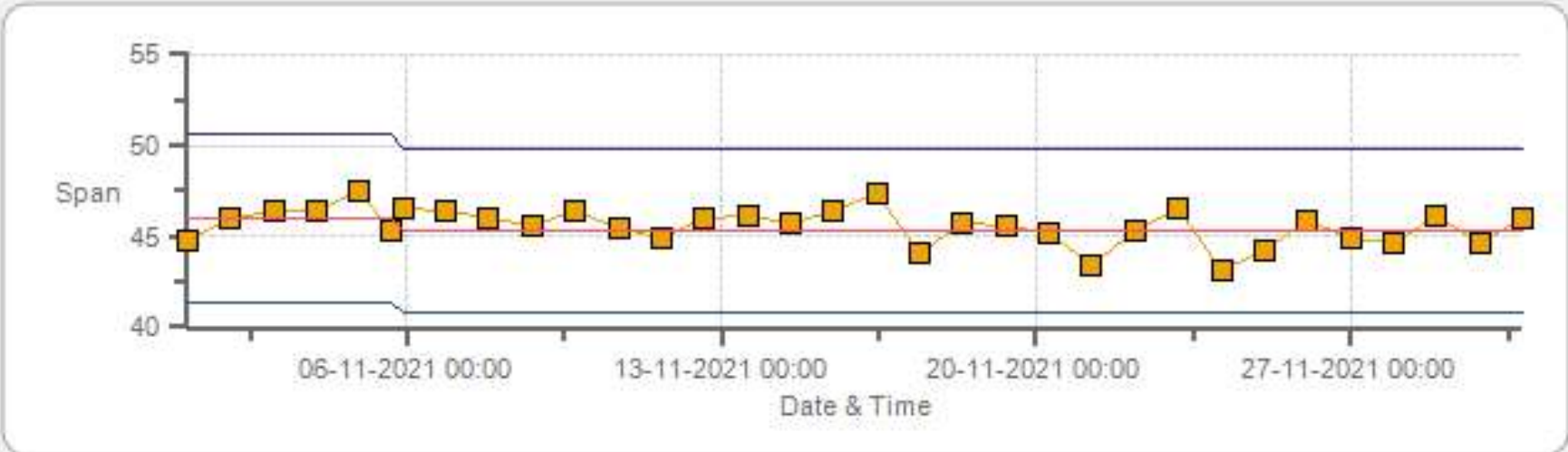
Span SpanRef Span Low Span High

H2S[ppb] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Zero



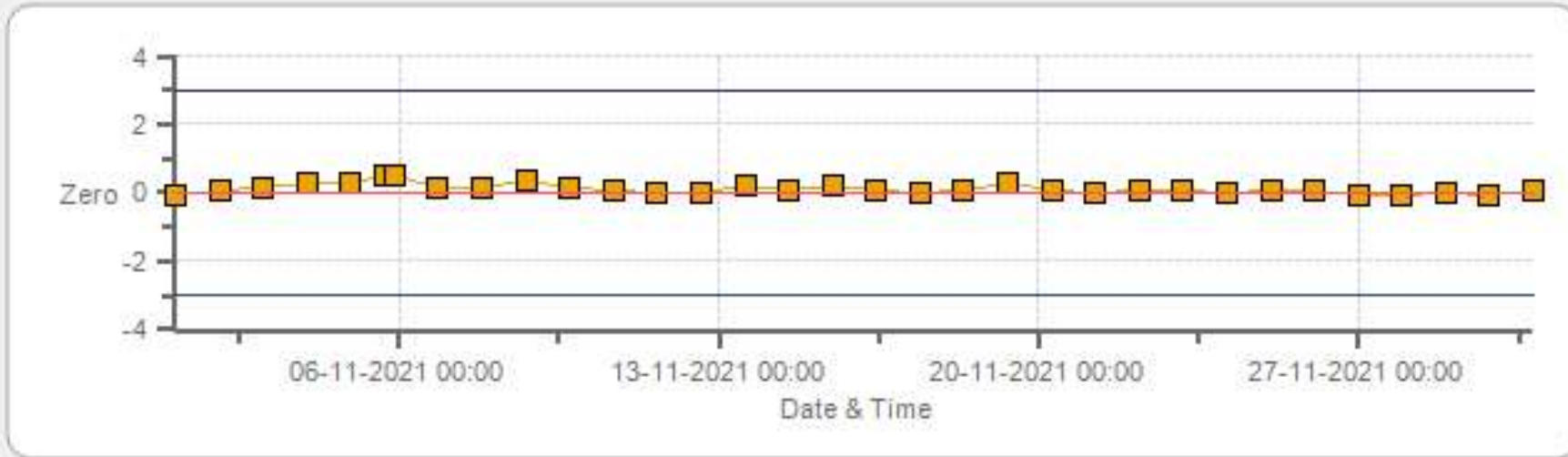
Zero Zero Ref Zero Low Zero High

H2S[ppb] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Span



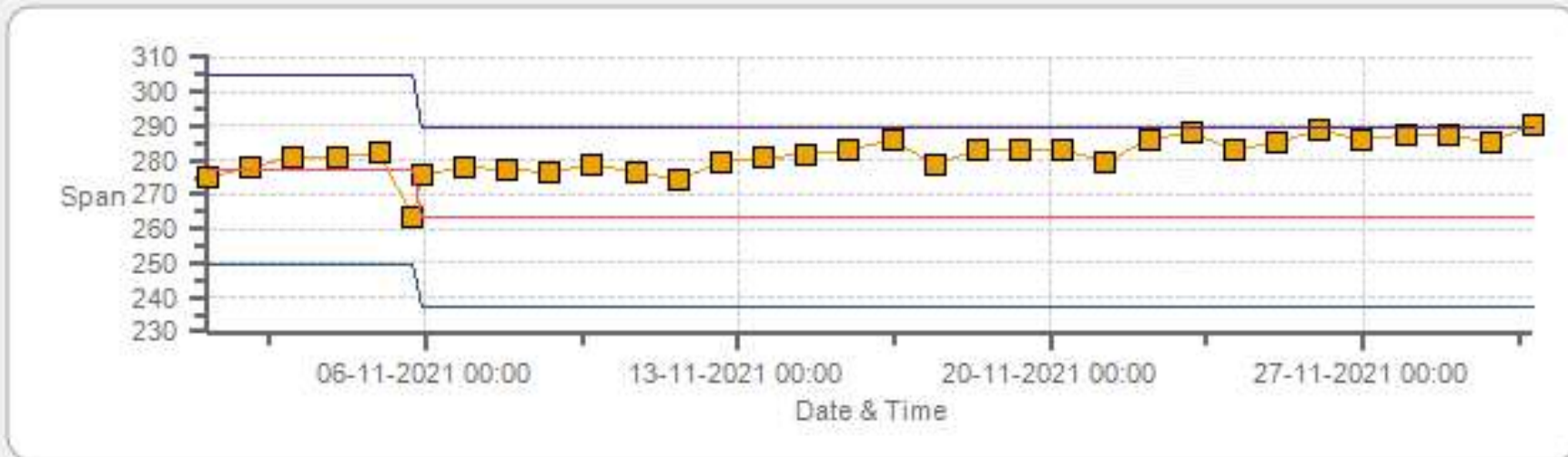
Span SpanRef Span Low Span High

NOX[ppb] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Zero



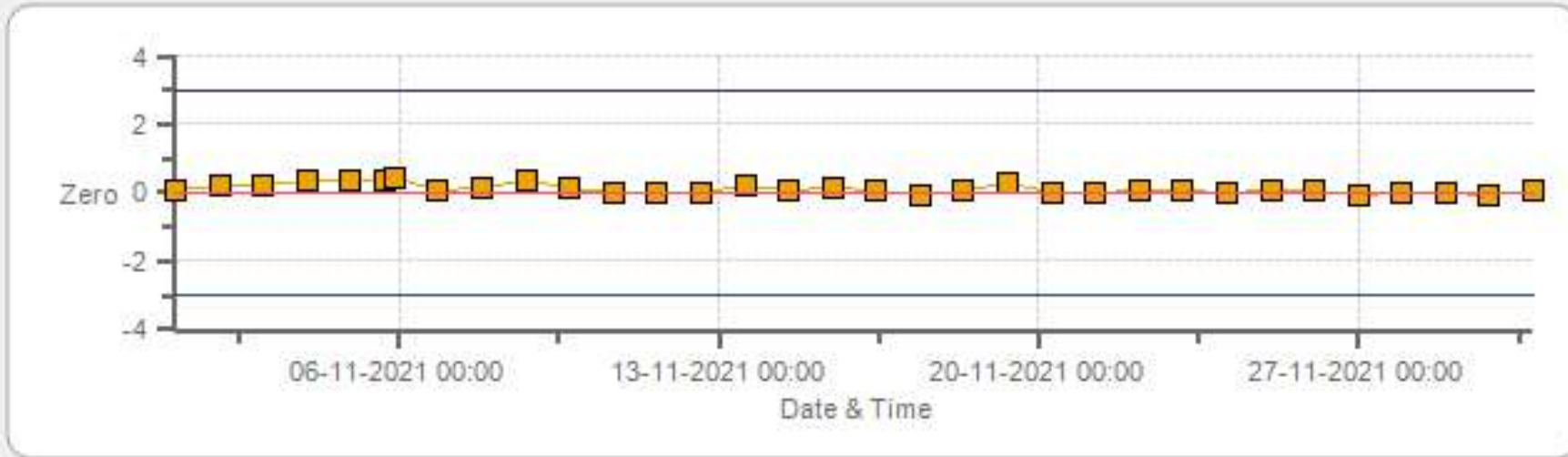
Zero Zero Ref Zero Low Zero High

NOX[ppb] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Span



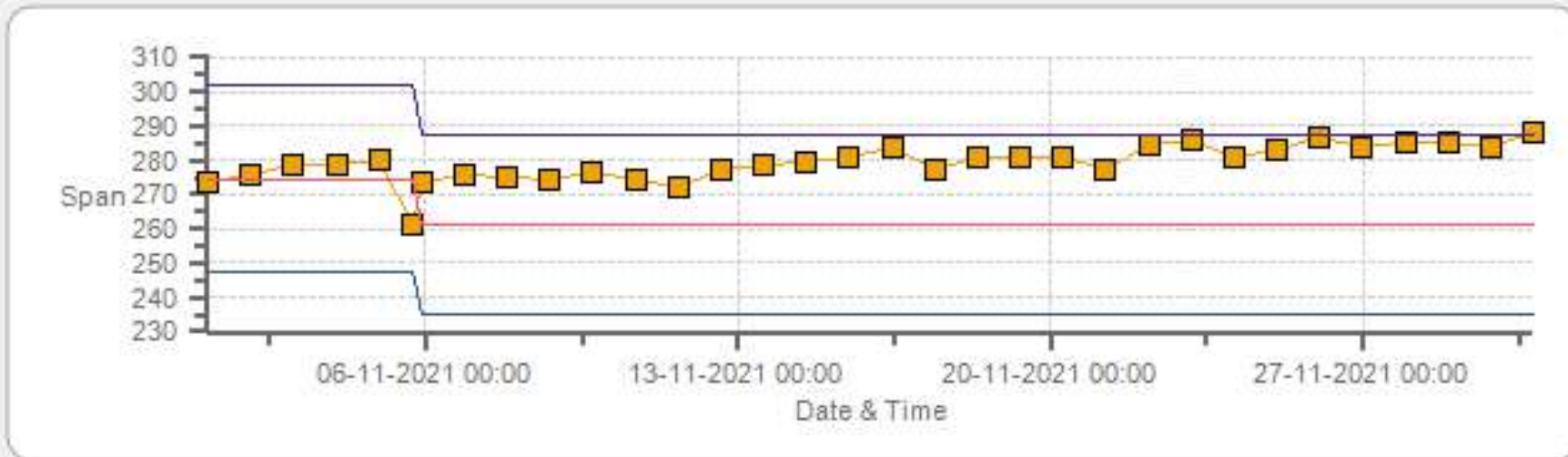
Span SpanRef Span Low Span High

NO2[ppb] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Zero



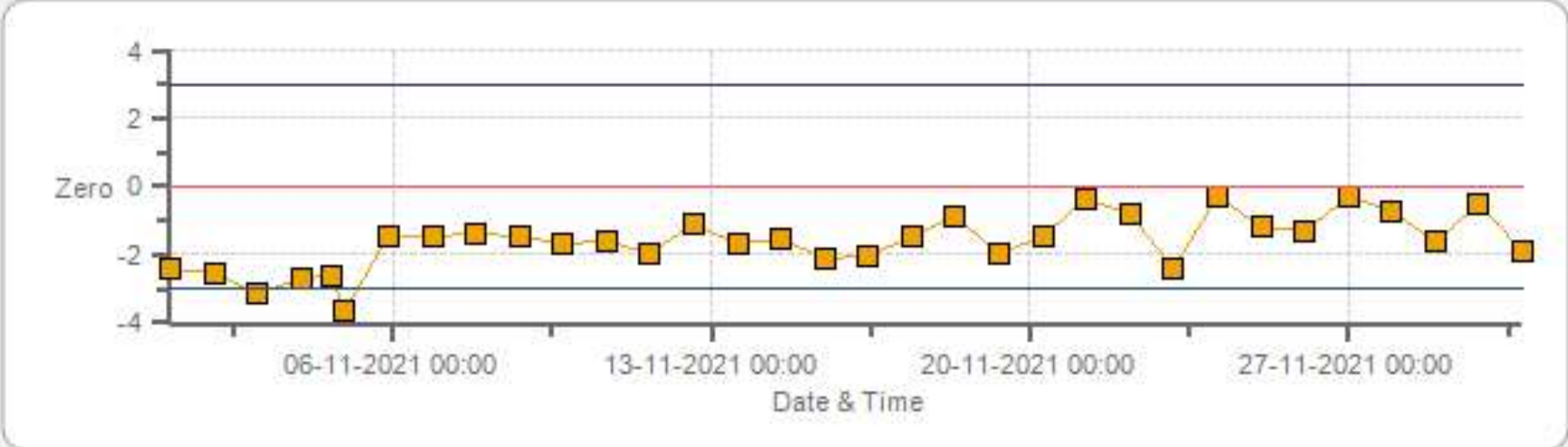
Zero Zero Ref Zero Low Zero High

NO2[ppb] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Span



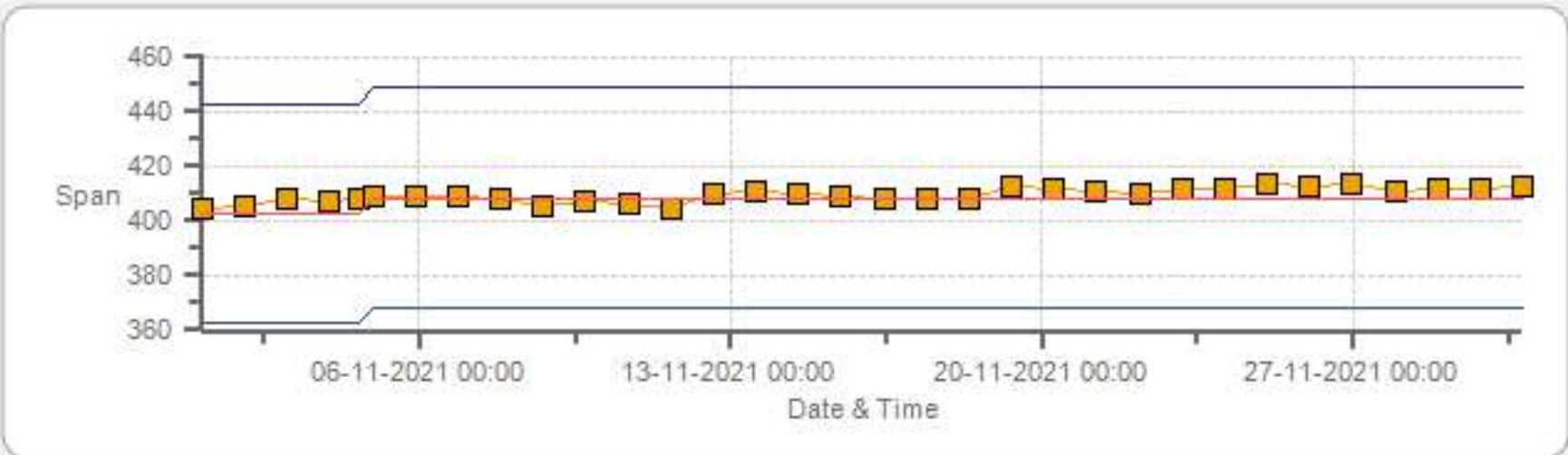
Span SpanRef Span Low Span High

O3[ppb] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Zero



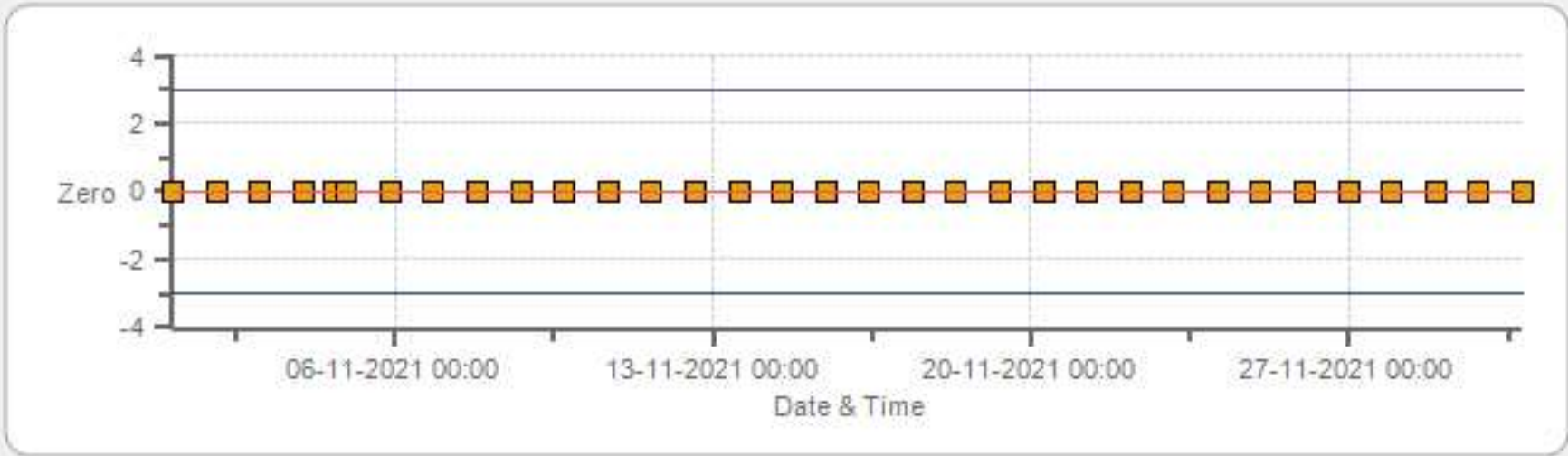
Zero Zero Ref Zero Low Zero High

O3[ppb] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Span



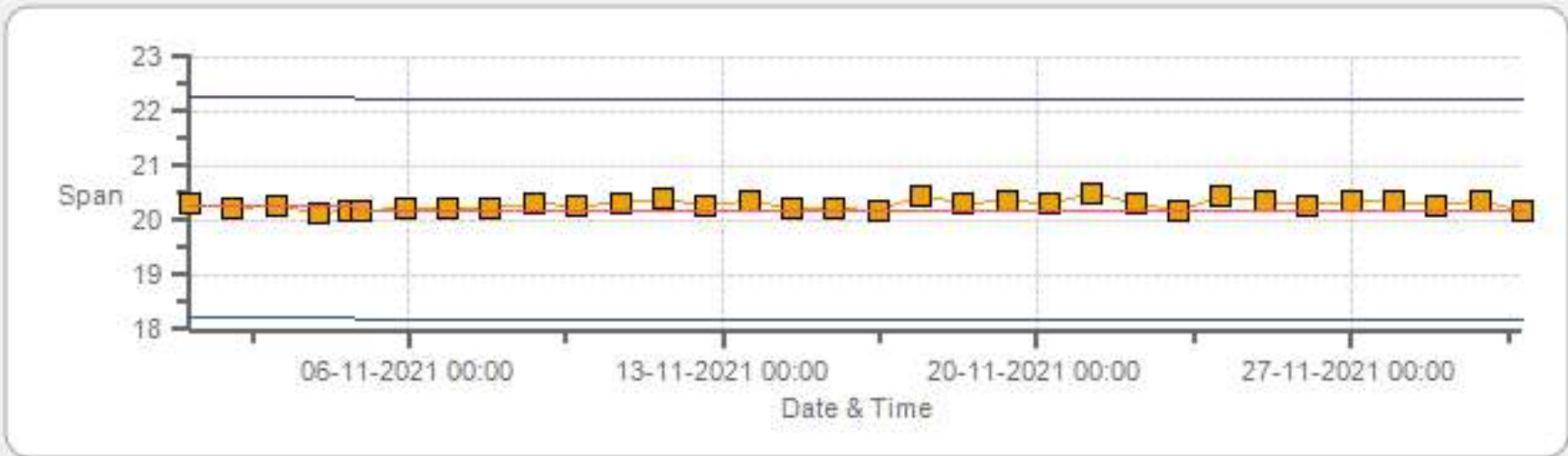
Span SpanRef Span Low Span High

THC55[ppm] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Zero



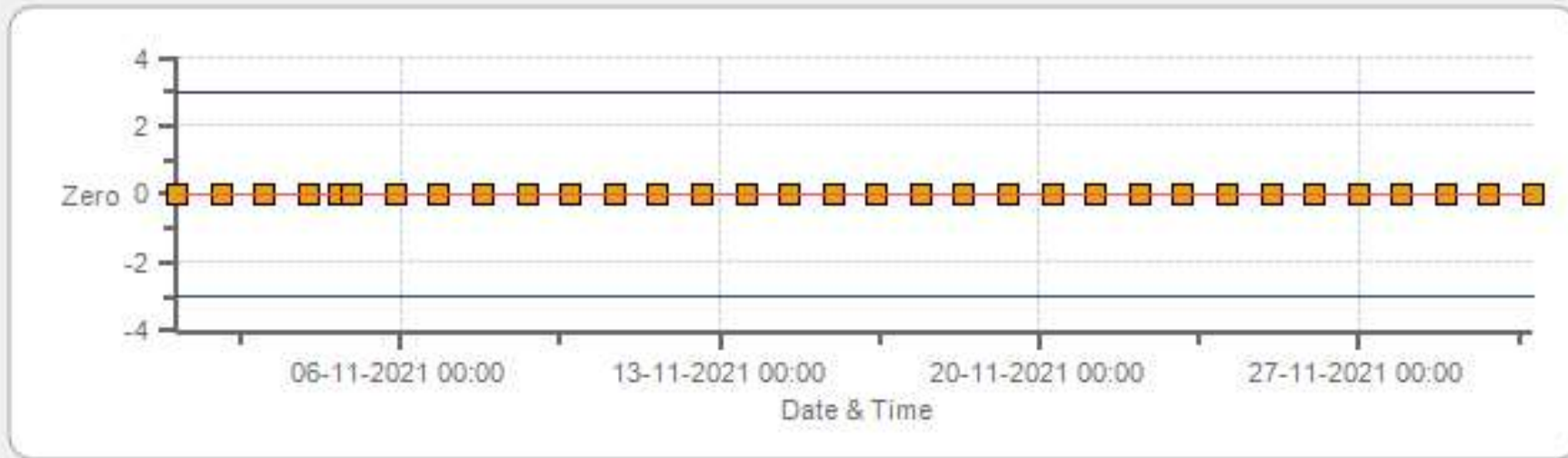
Zero Zero Ref Zero Low Zero High

THC55[ppm] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Span



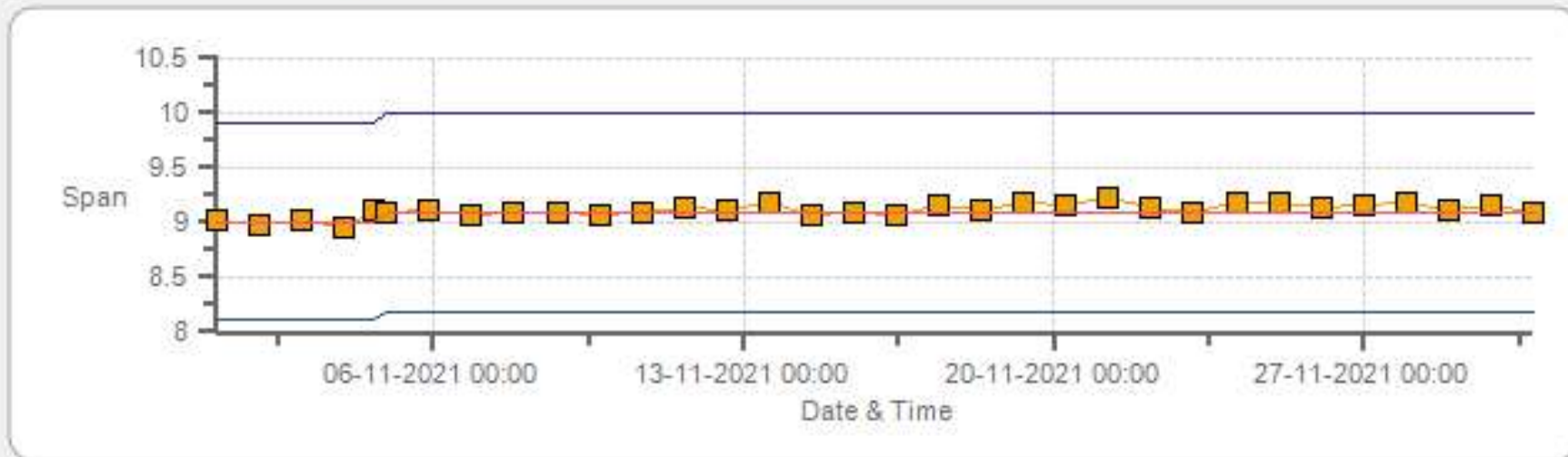
Span SpanRef Span Low Span High

CH4[ppm] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Zero



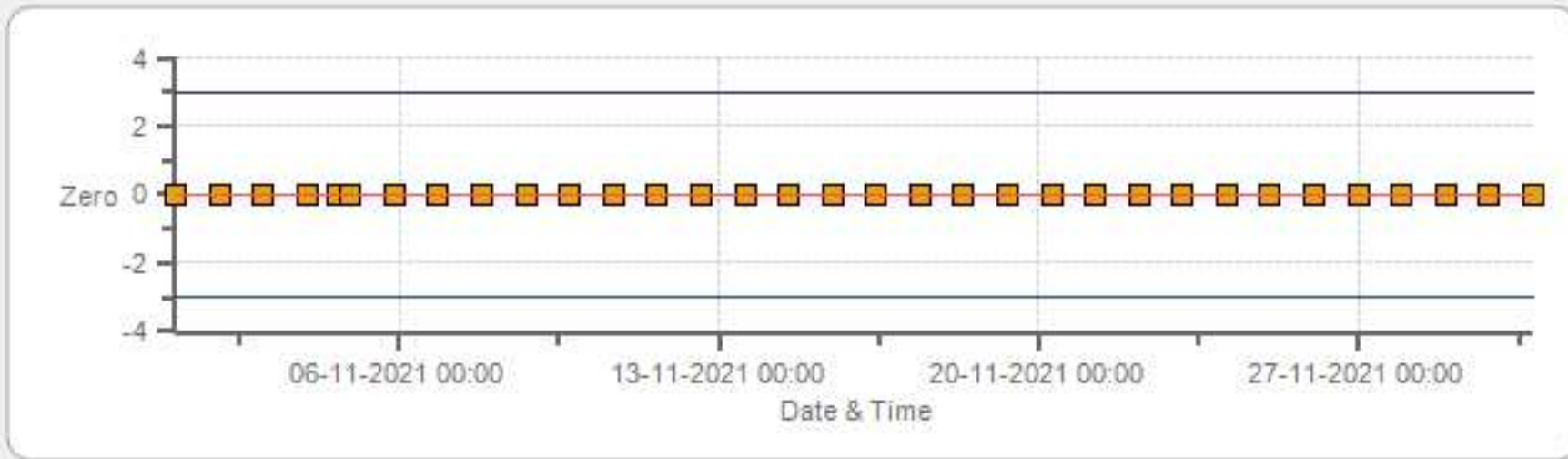
Zero Zero Ref Zero Low Zero High

CH4[ppm] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Span



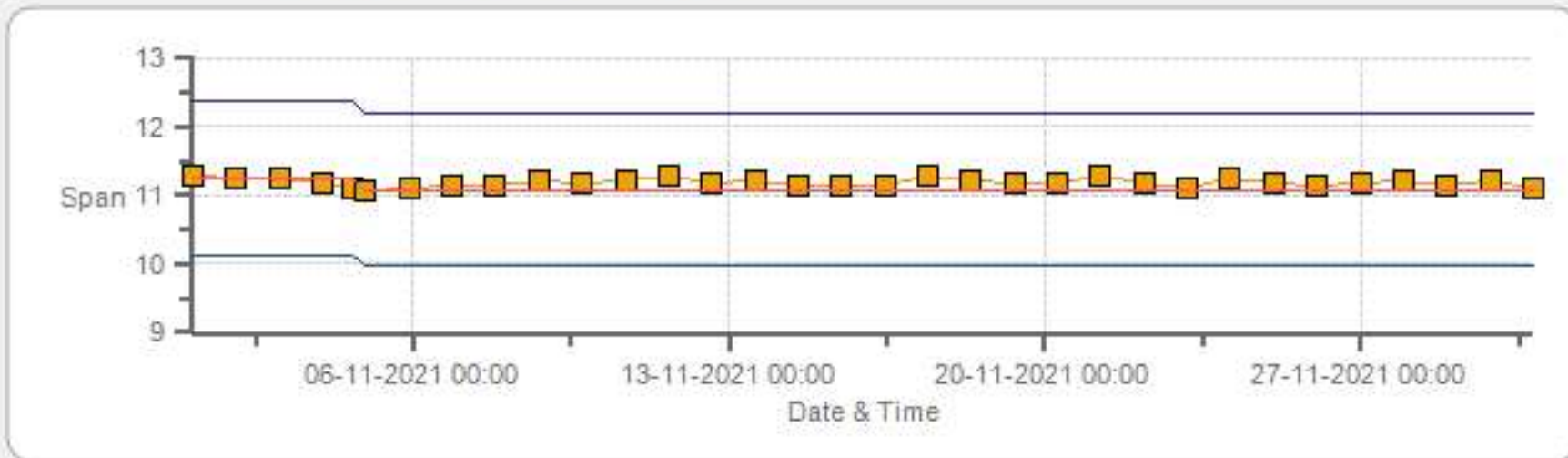
Span SpanRef Span Low Span High

NMHC[ppm] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Zero



Zero Zero Ref Zero Low Zero High

NMHC[ppm] Calibration: Tamarack Monthly: 11-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

MULTI-POINT CALIBRATION RECORDS

SO2 Analyzer Calibration by Dilution



DATE:	05-Nov-2021	PREVIOUS CALIBRATION DATE:	04-Oct-2021
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	1.001
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Tamarack	BAROMETRIC (mBar):	924
PURPOSE:	Routine	START TIME (MST):	10:39
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:05

ANALYZER:

MAKE/MODEL	Thermo 431-TLE	RANGE	500 ppb
SERIAL #	1180930031	FLOW (mL/min)	448
INITIAL		FINAL	
BKG/OFFSET	2.71	BKG/OFFSET	2.47
COEF/SLOPE	0.967	COEF/SLOPE	0.969
Expected (reference) Value	188.6	Expected (reference) Value	192.2

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010	MODEL:	T701
ID:	26801218	ID:	132
MFC CALIBRATION DATE:	19-Oct-2021	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	LL 105146	HIGH ID	n/a
CONC (ppm):	50.80	EXPIRY DATE	n/a
CYLINDER (psi):	1600	LOW ID	n/a
EXPIRY DATE	09-Jun-2029	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

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

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

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

CALIBRATION:

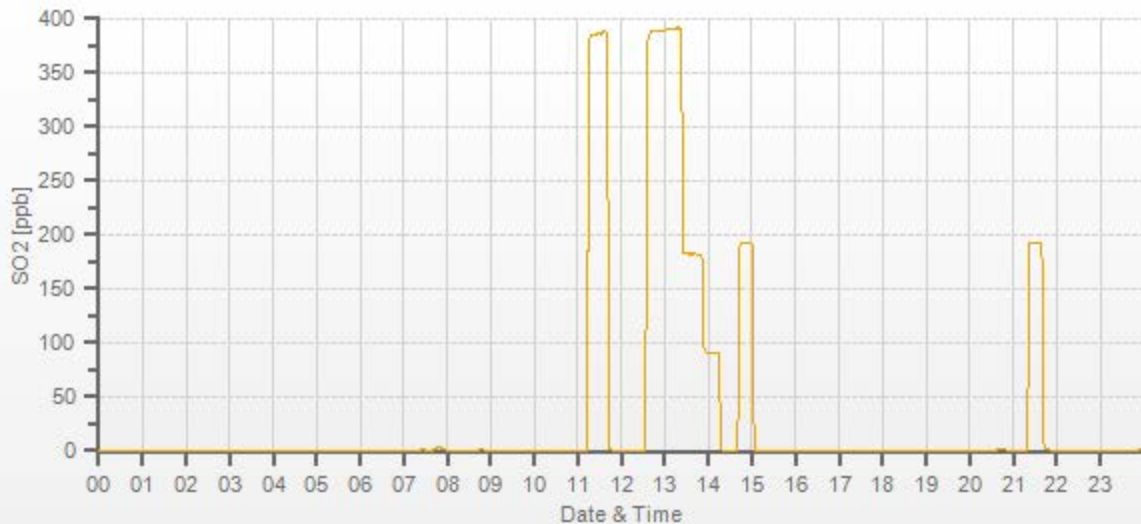
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	38.50	5000	0.00	-0.2	0	1.011	0.999
4962	38.50	5000	391.16	386.8	391.5	1.011	0.999
4982	18.00	5000	182.88	n/a	182.7	n/a	1.001
4991	9.00	5000	91.44	n/a	91.2	n/a	1.003

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.001	0.0%

COMMENTS:

Sample inlet filter was changed.



H2S Analyzer Calibration by Dilution



DATE:	05-Nov-2021	PREVIOUS CALIBRATION DATE:	04-Oct-2021
PARAMETER:	H2S	PREVIOUS CORRECTION FACTOR:	0.999
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Tamarack	BAROMETRIC (mBar):	924
PURPOSE:	Routine	START TIME (MST):	10:34
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:15

ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	CM 17360005	FLOW (mL/min)	925
INITIAL		FINAL	
BKG/OFFSET	29.7	BKG/OFFSET	30.3
COEF/SLOPE	0.828	COEF/SLOPE	0.825
Expected (reference) Value	46	Expected (reference) Value	45.3

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	19-Oct-2021	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY 0000644	HIGH ID	n/a
CONC (ppm):	10.00	EXPIRY DATE	n/a
CYLINDER (psi):	700	LOW ID	n/a
EXPIRY DATE	16-Jun-2022	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

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

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

START TIME:	10:38	SO2 Conc (ppb)	380
END TIME:	10:53	Analyzer Response (ppb)	0.0

CALIBRATION:

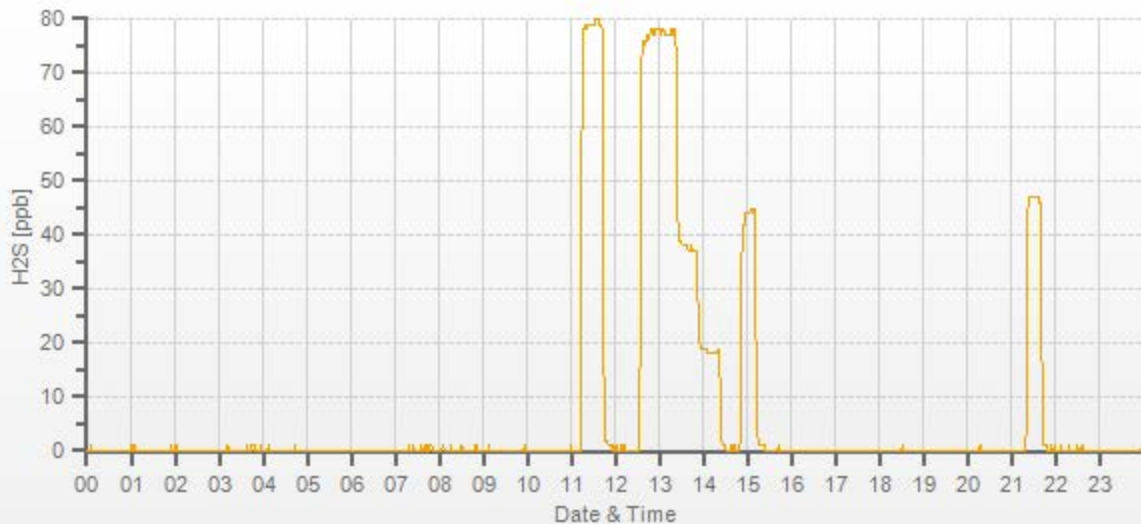
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	7500	7500	0.00	0.5	0	0.999	1.000
7442	58.50	7500	78.00	80.1	78.1	0.980	0.999
7472	28.50	7500	38.00	n/a	38	n/a	1.000
7486	14.20	7500	18.93	n/a	18.5	n/a	1.023

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.003	-0.2%

COMMENTS:

Sample inlet filter was changed.



NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	05-Nov-2021	PREVIOUS CALIBRATION DATE:	20-Oct-2021	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	22.0	SERIAL #:	1180930028	NOx	0.998
LOCATION:	Tamarack	BAROMETRIC (mBar):	924	FLOW (mL/min):	842	NO	0.999
PURPOSE:	Routine	START TIME (MST):	10:24	RANGE (ppb):	500	NO2	0.998
PERFORMED BY:	Alex Yakupov	END TIME (MST):	16:55	GPT FOR O3?		No	

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	SABIO	MAKE:	Teledyne	CYLINDER ID:	LL 105146	HIGH ID:	n/a
MODEL:	2010	MODEL:	T701	NO/NOx (PPM):	50.0 50.1	HIGH EXPIRY:	n/a
ID:	26801218	ID:	132	CYLINDER (psi):	1600	LOW ID:	n/a
MFC CALIBRATION DATE:	19-Oct-2021	OXIDIZER ID:	n/a	EXPIRY DATE	09-Jun-2029	LOW EXPIRY:	n/a

CALIBRATION SETTINGS:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
BKG/OFFSET:	1.9	1.7	n/a	BKG/OFFSET:	1.7	1.5	n/a
SLOPE/COEF/CE:	1.003	1.003	1.005	SLOPE/COEF/CE:	1.002	0.989	1.005

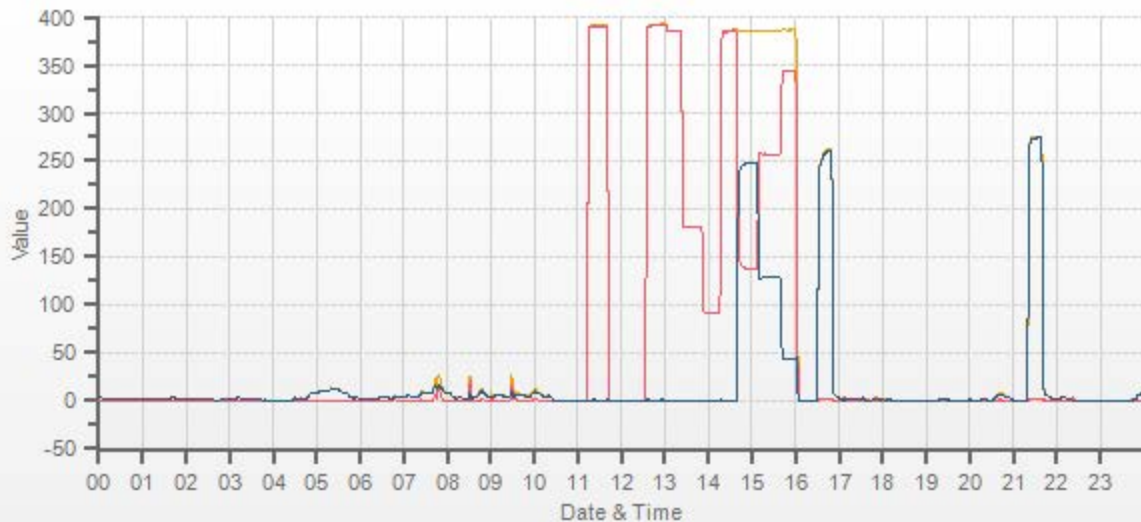
EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	277.1	2.4	274.7		263.4	2.3	261.1

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

FLOW RATE			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2
5000	38.50	5000	0.0	0.0	0.0	-0.1	-0.1	0.1	0.0	0.0	0.0	0.986	0.984	0.999	0.999	0.993	0.993
4962	38.50	5000	385.0	385.8	0.8	390.3	391.9	1.6	385.2	386.0	0.8	0.986	0.984	0.999	0.999	0.993	0.993
4982	18.00	5000	180.0	180.4	0.4	n/a	n/a	n/a	181.2	181.6	0.4	n/a	n/a	0.993	0.993	0.986	0.987
4991	9.00	5000	90.0	90.2	0.2	n/a	n/a	n/a	91.3	91.4	0.1	n/a	n/a	0.986	0.987	0.986	0.987

GPT CALIBRATION:										
Point	CALIBRATOR			INDICATED (ppb)			NO DROP / O3 Conc (ppb)	NO2 GAIN (ppb)	NO2 Corr. FACTOR	CONV. EFFICIENCY
	GAS	TOTAL	O3 SETPOINT	NO	NOx	NO2				
REFERENCE	38.50	5000	0	386.1	386.8	0.7	248.9	247.9	1.004	99.60%
AS-FOUND HIGH	38.50	5000	240	137.2	385.8	248.6	248.9	247.9	1.004	99.60%
ADJUSTED HIGH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MID	38.50	5000	125	256.7	386.5	129.8	129.4	129.1	1.002	99.77%
LOW	38.50	5000	45	343.5	387.4	43.9	42.6	43.2	0.986	101.41%
NO2 adjustment not required.									AVERAGE:	100.26%

LINEAR REGRESSION ANALYSIS:				COMMENTS: Sample inlet filter was changed.
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	1.000	0.15%	
NOx	1.000	1.000	0.14%	
NO2	1.000	0.992	0.17%	



CAL-LICA-202111-01248

Ozone Calibration by Photometer (Varying UV Lamp)



DATE:	04-Nov-2021	PREVIOUS CALIBRATION DATE:	05-Oct-2021
PARAMETER:	O3	PREVIOUS CORRECTION FACTOR:	1.002
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Tamarack	BAROMETRIC (mBar):	927
PURPOSE:	Routine	START TIME (MST):	11:28
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:31

ANALYZER:

MAKE/MODEL	Thermo 49iQ	RANGE	500 ppb
SERIAL #	1202068570	FLOW (mL/min)	1340
INITIAL		FINAL	
BKG/OFFSET	4.4	BKG/OFFSET	3.6
COEF/SLOPE	1.033	COEF/SLOPE	1.028
Expected (reference) Value	402.7	Expected (reference) Value	408.6

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	19-Oct-2021	OXIDIZER ID:	n/a
CALIBRATION METHOD:		Photometer (Varying UV Lamp)	
GPT DATE:	n/a	GPT END TIME:	n/a

CALIBRATION PARAMETERS:

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

CALIBRATION:

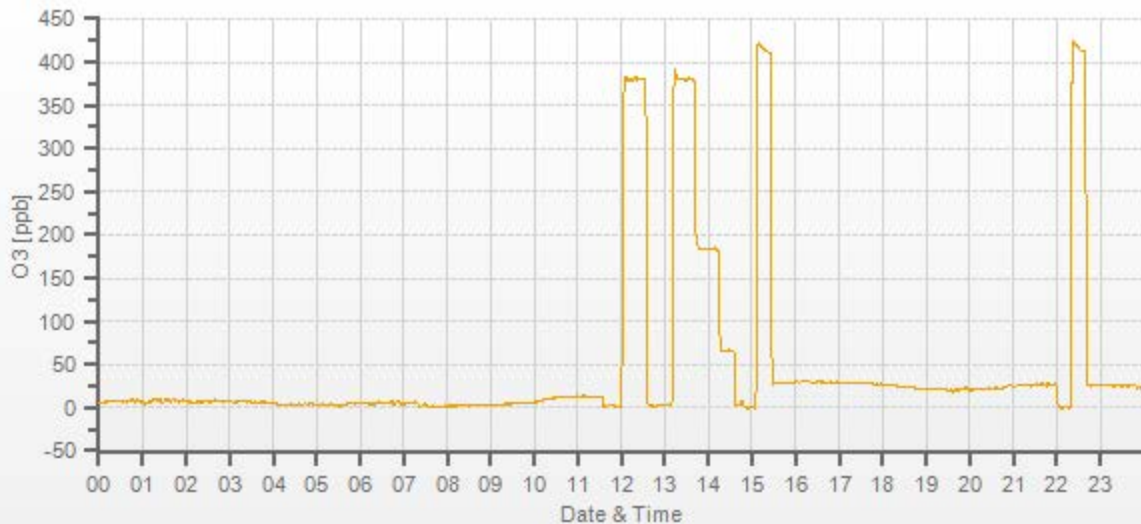
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	5000	5000	0.0	-0.7	0.0	0.999	0.999
5000	5000	5000	378.0	377.8	378.2	0.999	0.999
5000	5000	5000	180.0	n/a	181.4	n/a	0.992
5000	5000	5000	61.0	n/a	63.7	n/a	0.958

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	0.998	0.3%

COMMENTS:

Sample inlet filter was changed.



Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	04-Nov-2021	PREVIOUS CALIBRATION DATE:	05-Oct-2021	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	22.0		Thermo 55i	1314057759	1009
LOCATION:	Tamarack	BAROMETRIC (mBar):	927	PARAMETER:	CH4	NMHC	THC
PURPOSE:	Routine	START TIME (MST):	11:26	RANGE (ppm):	20	20	40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:31	PREVIOUS CF:	1.000	1.000	1.000

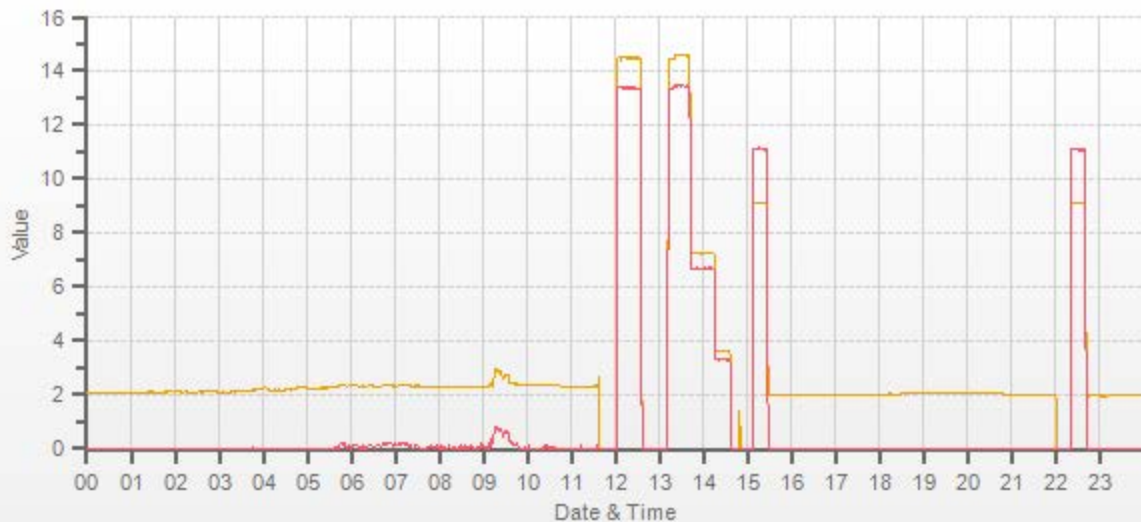
CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	SABIO	MAKE:	Teledyne	CYLINDER ID:	LL 168375	HIGH ID:	n/a
MODEL:	2010	MODEL:	T701	CH ₄ /C ₃ H ₈ (ppm):	914.0 307.0	HIGH EXPIRY:	n/a
ID:	26801218	ID:	132	CYLINDER (psi):	900	LOW ID:	n/a
MFC CALIBRATION DATE:	19-Oct-2021	OXIDIZER ID:	115	EXPIRY DATE	21-Jan-2028	LOW EXPIRY:	n/a

CALIBRATION PARAMETERS:				CH ₄ EQUIVILANCE	
POINT (CH ₄ /NMHC)	HIGH	MID	LOW	C ₃ H ₈ as CH ₄	844.3
TARGET	14	7	3.5	THC as CH ₄	1758.3
RANGE	12 - 16	6 - 8	2 - 4		

EXPECTED (REFERENCE) VALUE:							
INITIAL	CH ₄	NMHC	THC	FINAL	CH ₄	NMHC	THC
		9.01	11.25		20.26		9.10

FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC
		3100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
	49.40	3100	14.57	13.45	28.02	14.48	13.36	27.84	14.57	13.43	27.99	1.006	1.007	1.006	1.000	1.002	1.001
	24.70	3100	7.28	6.73	14.01	n/a	n/a	n/a	7.26	6.70	13.96	n/a	n/a	n/a	1.003	1.004	1.004
	12.40	3100	3.66	3.38	7.03	n/a	n/a	n/a	3.60	3.31	6.91	n/a	n/a	n/a	1.016	1.020	1.018

LINEAR REGRESSION ANALYSIS:				Comments: Sample inlet filter was changed. New span and N2 gas cylinders were connected.
	CORRELATION	SLOPE	INTERCEPT	
CH ₄	1.000	1.001	-0.1%	
NMHC	1.000	1.000	-0.1%	
THC	1.000	1.000	-0.1%	
				Use Zero Chrom? Yes



CAL-LICA-202111-01248



Thermo 5030 SHARP Monitor Calibration

Date:	November 4, 2021	Performed By/Reviewer:	Alex Yakupov	Chris Wesson
Company:	LICA	Start Time (mst):	14:57	
Station Name/Location:	Tamarack	End Time (mst):	16:18	
Previous Audit Date:	October 7, 2021	Calibration Purpose:	quarterly	
Parameter:	PM 2.5	Weather Conditions:	Mix of sun and clouds	

SHARP Information and Status:				
Serial Number/Owner:	CM - 2209	LICA	Status Code	0
Approx. % Tape Reaming	3/10		Error Code	0

Reference Standards/I.D./Cert. Date:	
High Flow:	DeltaCal / DC-1 / s/n 177246 / July 12, 2021
Digital Manometer:	DeltaCal / DC-1 / s/n 177246 / July 12, 2021
Temperature:	VAISALA / HMP76B / T1640130 / April 22, 2021
Pressure:	FS / FB61291 / s/n 130168457 / Feb 17, 2021

As Found Temperatures, Pressure, Humidity:						
	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)	P3 (hPa)	RH (%)
SHARP:	8	22	23	22	928	34
Reference:	6.0	22.0	22.0	22.0	927.0	34.0
Difference:	2.0	0.0	1.0	0.0	1.0	0.0
	Temp Limit: ± 4 °C					
	Pressure Limit: ± 13.33 hPa					
	RH Limit: ± 2%					

As Left Temperature and Pressure (same as above if as found adequate):						
	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)	P3 (hPa)	RH (%)
SHARP:	6	22	22	22	927	34
Reference:	6.0	22.0	22.0	22.0	927.0	34.0
Difference:	0.0	0.0	0.0	0.0	0.0	0.0%
	Temp Limit: ± 4 °C					
	Pressure Limit: ± 13.33 hPa					
	RH Limit: ± 2%					

Mass Foil Calibration:			
	Mass Foil:	ZERO:	Span Sensitivity
Mass Foil ID:	9015	QLF:	15
Spanfoil Value (µg):	1294	CONFID:	9
		OLD:	6975
		NEW:	7013

Nephelometer Zero:						
	As Found			As Left		
Analog	163.00			167.00		
NEPH	5.40			0.00		
C14	12.00			24.00		
Conc	4.40			0.00		

Flow rate:						
	As Found			As Left		
SHARP AirFlow l/hr	1000			1000		
Reference AirFlow (l/min)	16.61			16.67		
Reference AirFlow (l/hr)	997			1000		
% Difference:	0.3%			0.0%		
	$\%D = 100 \times \frac{Q_m - Q_i}{Q_i}$					
	Tolerance +/- 5%					

Inlet Assembly:		
	Yes/No?	If no, explain:
PM10 Inlet Cleaned	yes	
PM2.5 Cyclone Cleaned	yes	

Pump Assembly:		
	Yes/No?	If no, explain:
Pump Inspected / Cleaned	yes	
Pump Vanes Replaced	no	Not required

Comments:

Leak check: 16.64 vs 16.55, 0.09 < 0.80 lpm, passed.



Meteorological Sensor Audit/Calibration

Location Information

Company: LICA
 Audit Location: Tamarack
 Audit Date: September 20, 2021
 Calibration Purpose: routine annual

Performed By: Alex Yakupov
 Reviewed By: Chris Wesson
 Start/End Time (mst): 14:10 / 15:19
 Weather Conditions: Mainly sunny

Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	0-1
Sensor Model:	05305VK	Velocity Unit Output Range:	0-200
Serial #:	161465	Direction Voltage Output Range:	0-1
Previous Cal/Audit Date:	September 10, 2020	Direction Unit Output Range:	0-360

Wind Calibrator Information

Calibrator I.D. and Expiry Date: Model 18860-90/18802 SN: CA 4744, expires - Aug 6, 2022

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	0.996
2000	36.9	37.0	37.0	0.996
3000	55.3	55.5	55.5	0.996
4000	73.7	74.0	74.0	0.996
5000	92.2	92.5	92.5	0.996
6000	110.6	111.0	111.0	0.996
7000	129.0	129.6	129.6	0.995
8000	147.4	148.2	148.1	0.995
9000	165.9	166.8	166.8	0.994
10000	184.3	185.3	185.4	0.994
The audit meets AMD requirements.			Average Correction Factor=	0.996

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	354	0.4	0.9	0.6
30	330	32	330	-1.6	0.2	0.9
60	300	63	300	-3.1	0.1	1.6
90	270	93	270	-3.4	0.0	1.7
120	240	123	241	-3.4	-1.3	2.4
150	210	153	212	-2.8	-2.3	2.6
180	180	181	183	-1.1	-2.9	2.0
210	150	212	153	-2.3	-3.4	2.9
240	120	241	124	-1.2	-3.8	2.5
270	90	269	94	0.6	-4.0	2.3
300	60	299	64	0.6	-3.9	2.3
330	30	329	33	0.6	-2.7	1.7
355	0	354	1	0.9	0.7	0.8
The audit meets AMD requirements.				Average Absolute Degrees Difference=		1.9

Comments:

n/a

End of Report



Lakeland Industry & Community Association

NOVEMBER 2021

Ambient Air Monitoring Calibration Report

- ST. LINA STATION-

CAL-LICA-202111-01250

Station Operation and Maintenance:

Bureau Veritas Canada

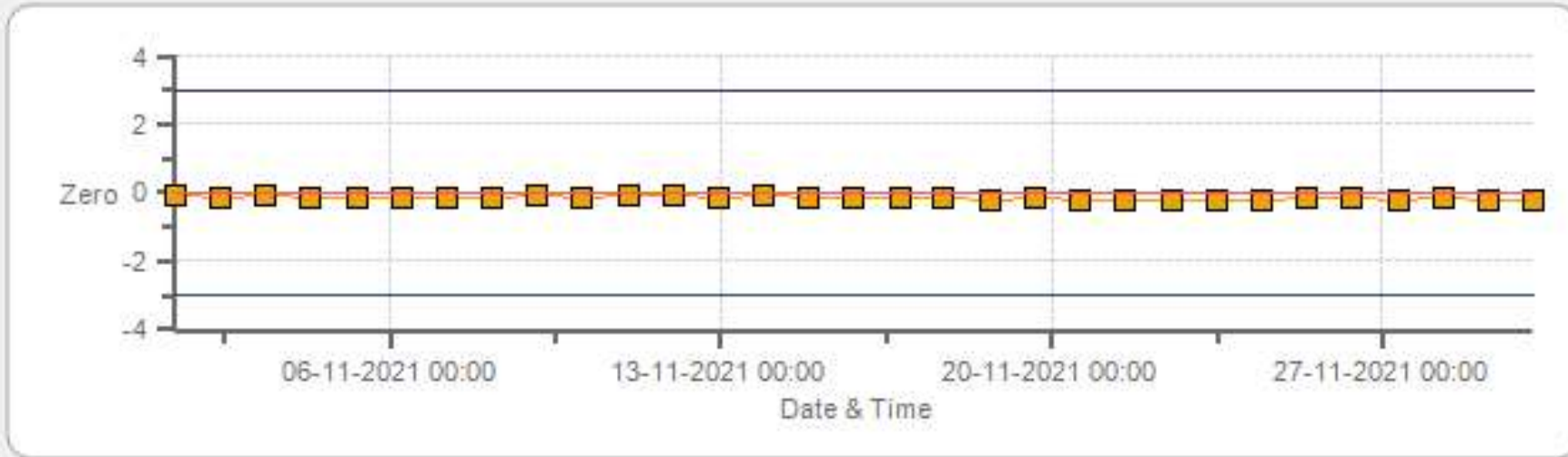
Data Validation and Report:

LICA / Bureau Veritas Canada

December 16, 2021

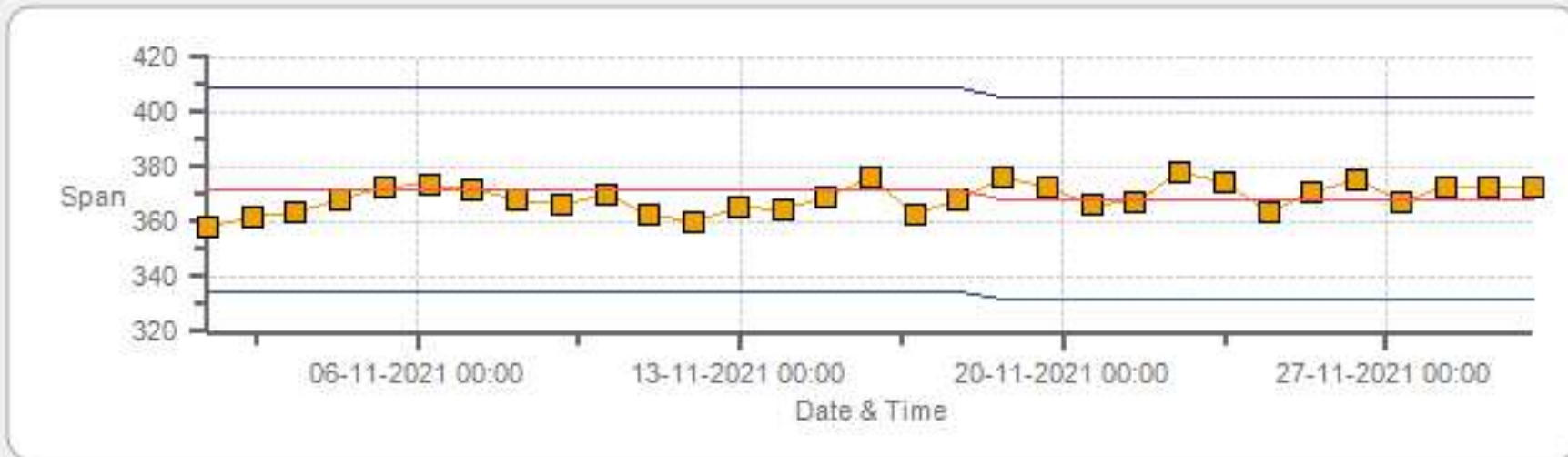
DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

SO2[ppb] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Zero



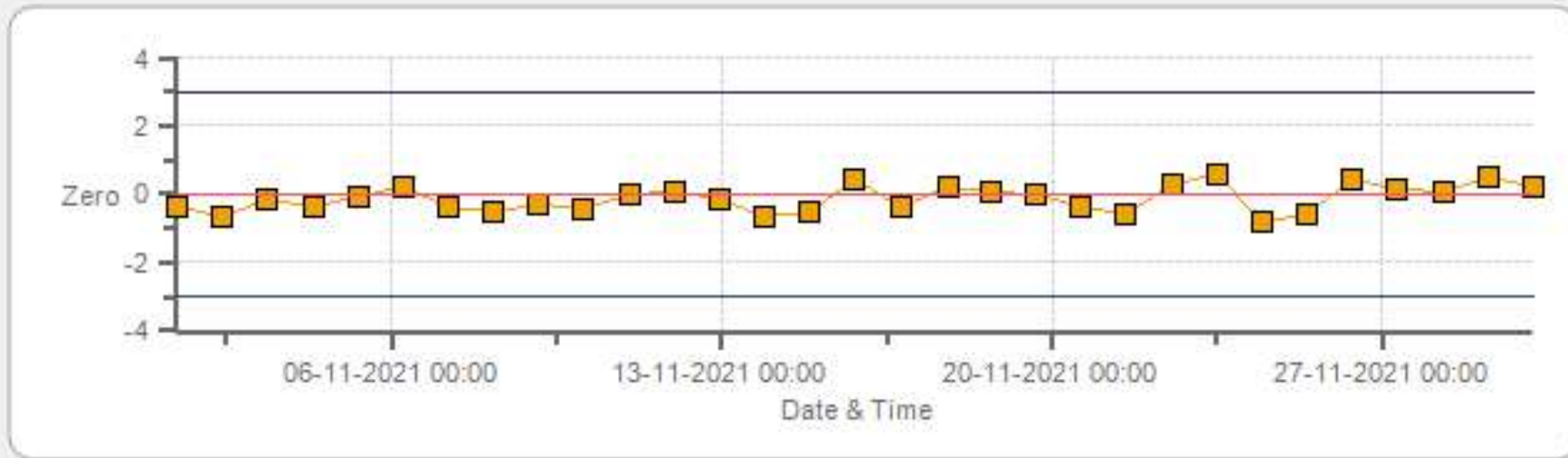
Zero Zero Ref Zero Low Zero High

SO2[ppb] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

H2S[ppb] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Zero



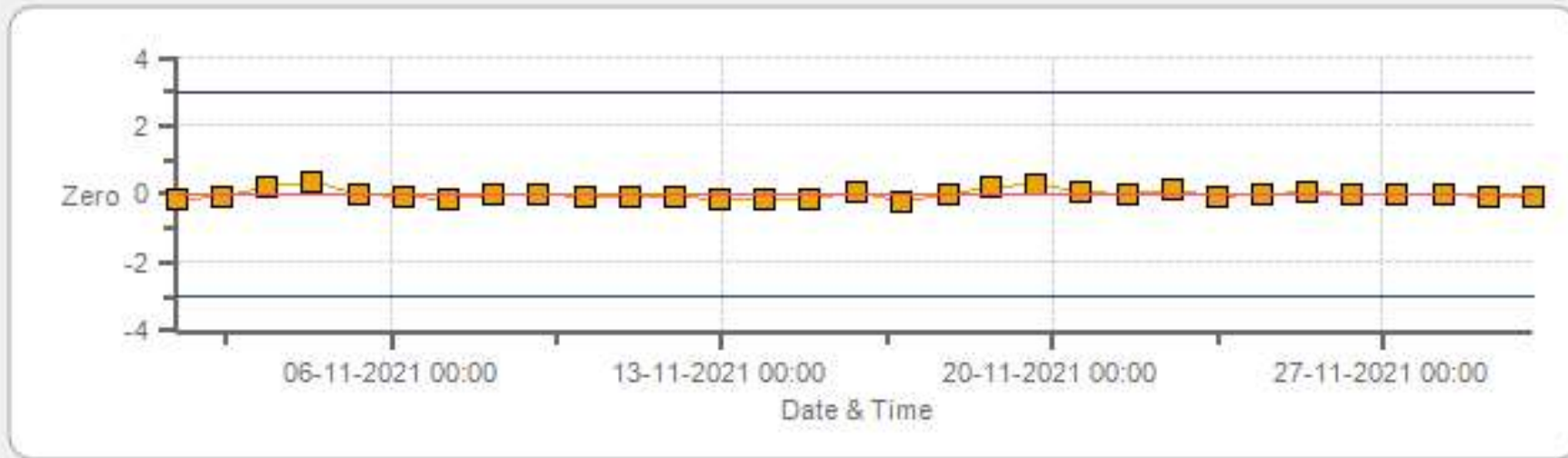
Zero Zero Ref Zero Low Zero High

H2S[ppb] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

NOX[ppb] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Zero



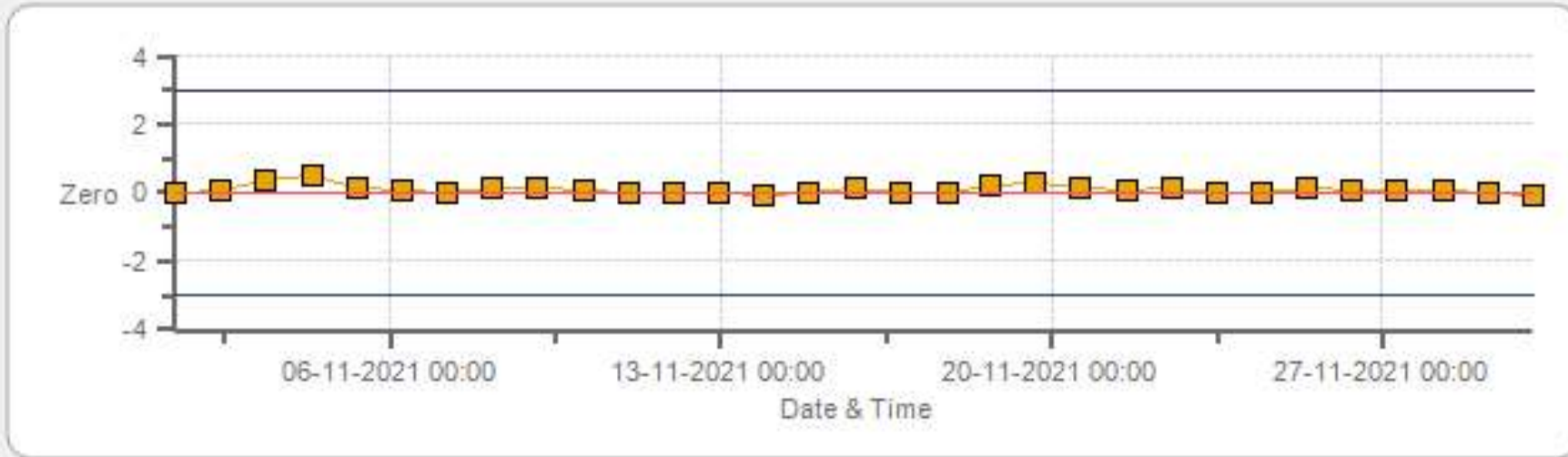
Zero Zero Ref Zero Low Zero High

NOX[ppb] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

NO2[ppb] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Zero



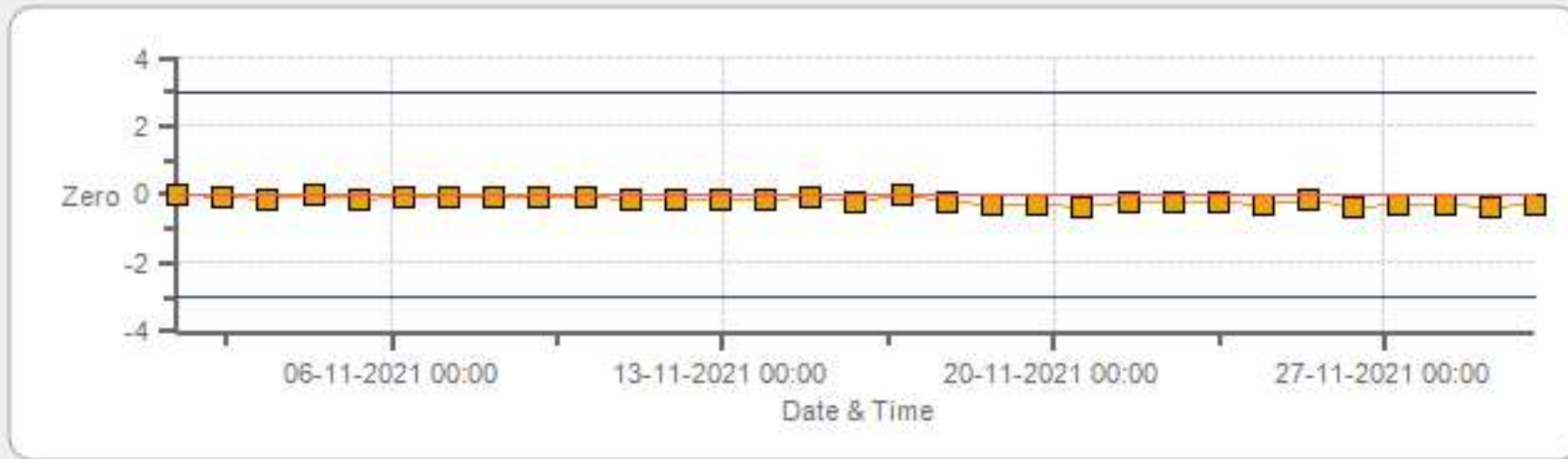
Zero Zero Ref Zero Low Zero High

NO2[ppb] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Span



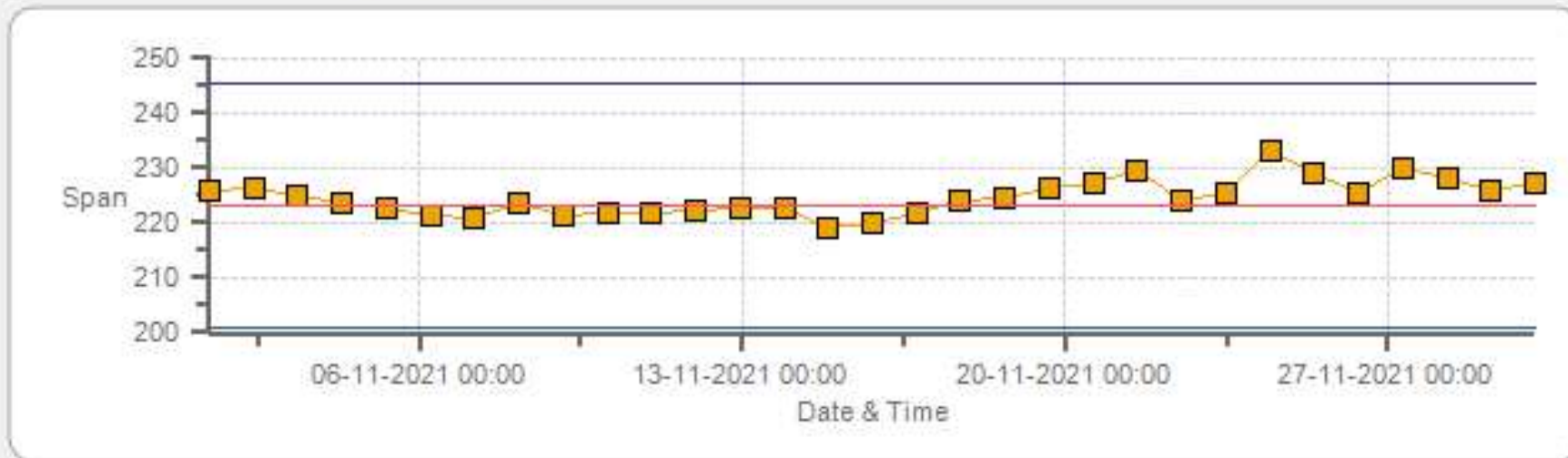
Span SpanRef Span Low Span High

O3[ppb] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Zero



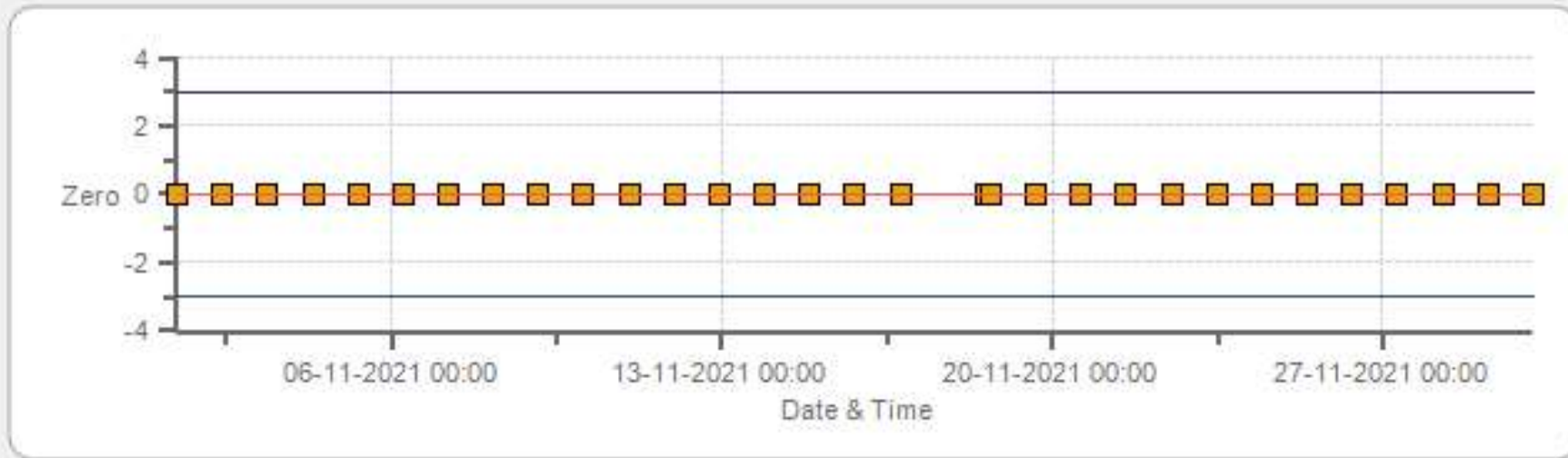
Zero Zero Ref Zero Low Zero High

O3[ppb] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Span



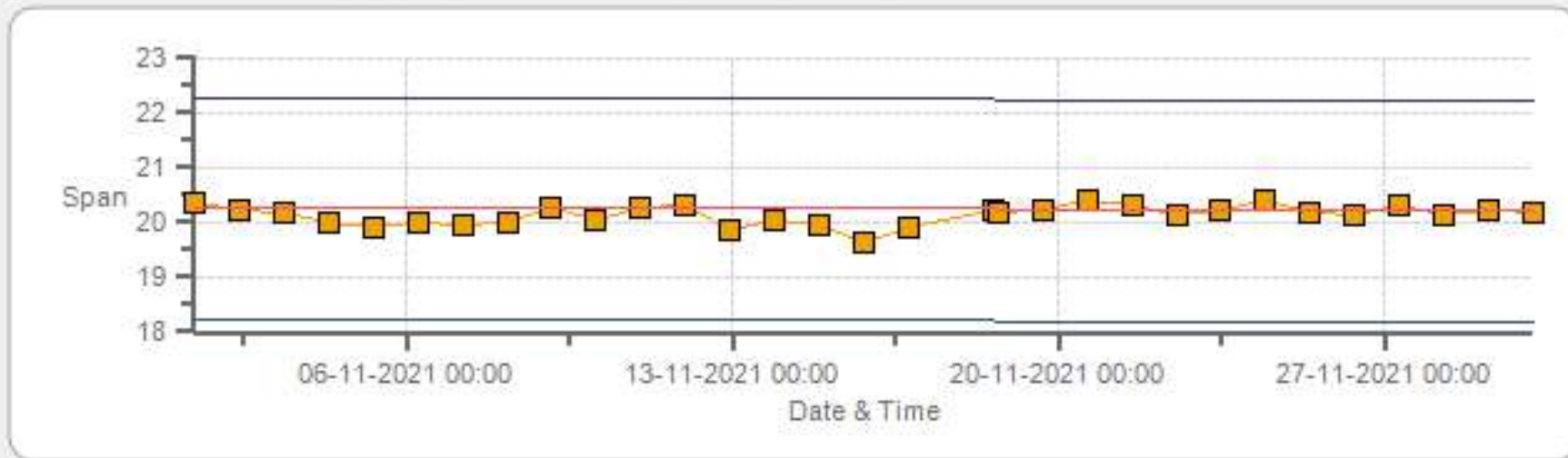
Span SpanRef Span Low Span High

THC55[ppm] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Zero



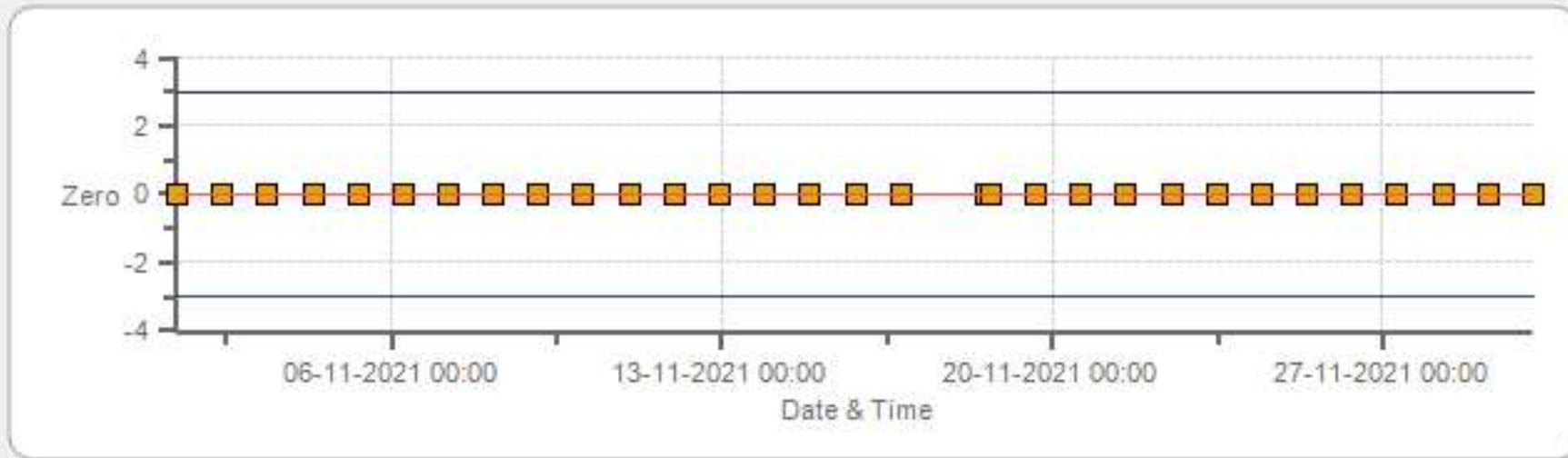
Zero Zero Ref Zero Low Zero High

THC55[ppm] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Span



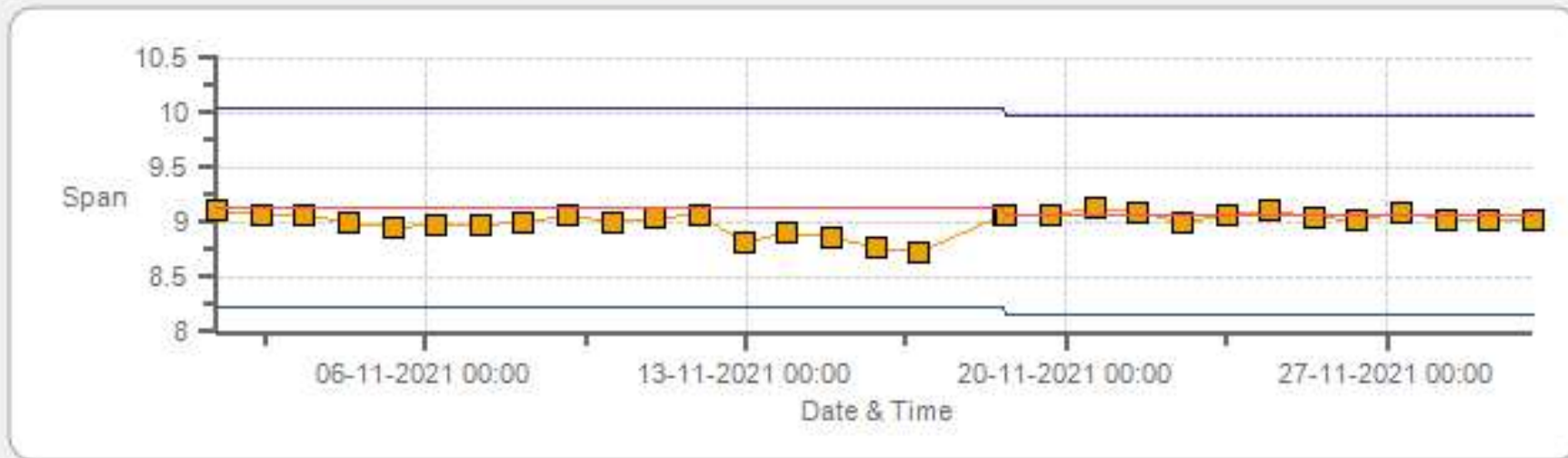
Span SpanRef Span Low Span High

CH4[ppm] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Zero



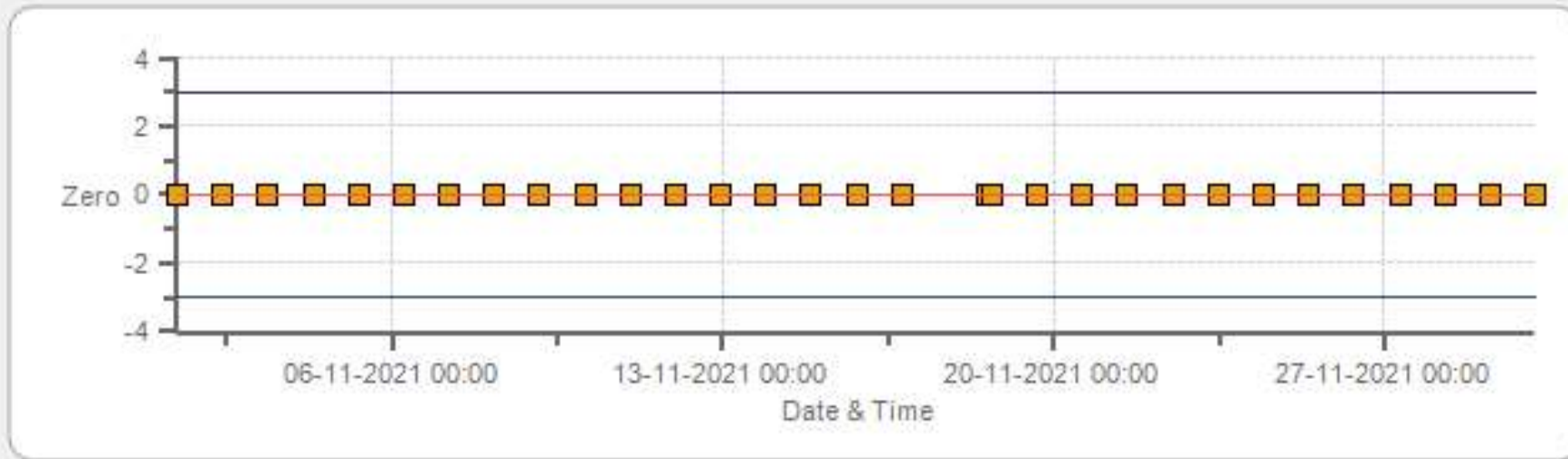
Zero Zero Ref Zero Low Zero High

CH4[ppm] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Span



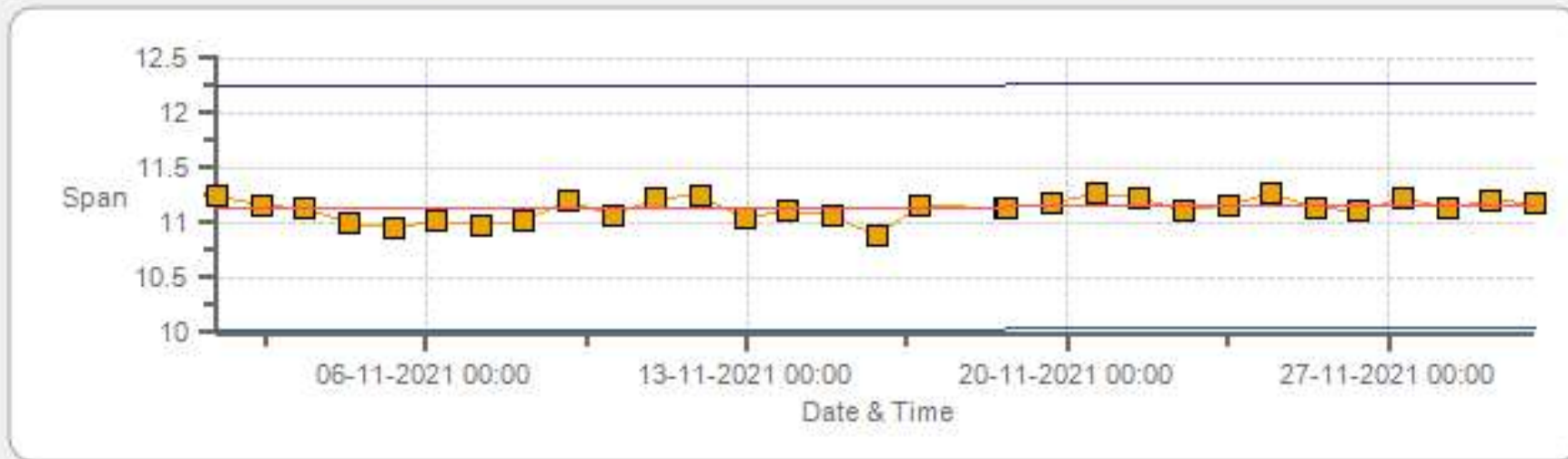
Span SpanRef Span Low Span High

NMHC[ppm] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Zero



Zero Zero Ref Zero Low Zero High

NMHC[ppm] Calibration: St. Lina Monthly: 11-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

MULTI-POINT CALIBRATION RECORDS

SO2 Analyzer Calibration by Dilution



DATE:	17-Nov-2021	PREVIOUS CALIBRATION DATE:	22-Oct-2021
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	0.999
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	St. Lina	BAROMETRIC (mBar):	942
PURPOSE:	Routine	START TIME (MST):	13:50
PERFORMED BY:	Limin Li	END TIME (MST):	17:06

ANALYZER:

MAKE/MODEL	Thermo 431-TLE	RANGE	500 ppb
SERIAL #	1180930030	FLOW (mL/min)	441
INITIAL		FINAL	
BKG/OFFSET	4.51	BKG/OFFSET	4.67
COEF/SLOPE	1.15	COEF/SLOPE	1.172
Expected (reference) Value	371.6	Expected (reference) Value	368.5

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	Sabio	MAKE:	Teledyne
MODEL:	2010	MODEL:	701
ID:	17200415	ID:	1105
MFC CALIBRATION DATE:	20-Sep-2021	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY 0000647	HIGH ID	n/a
CONC (ppm):	51.60	EXPIRY DATE	n/a
CYLINDER (psi):	1300	LOW ID	n/a
EXPIRY DATE	24-Feb-2028	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

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

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

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

CALIBRATION:

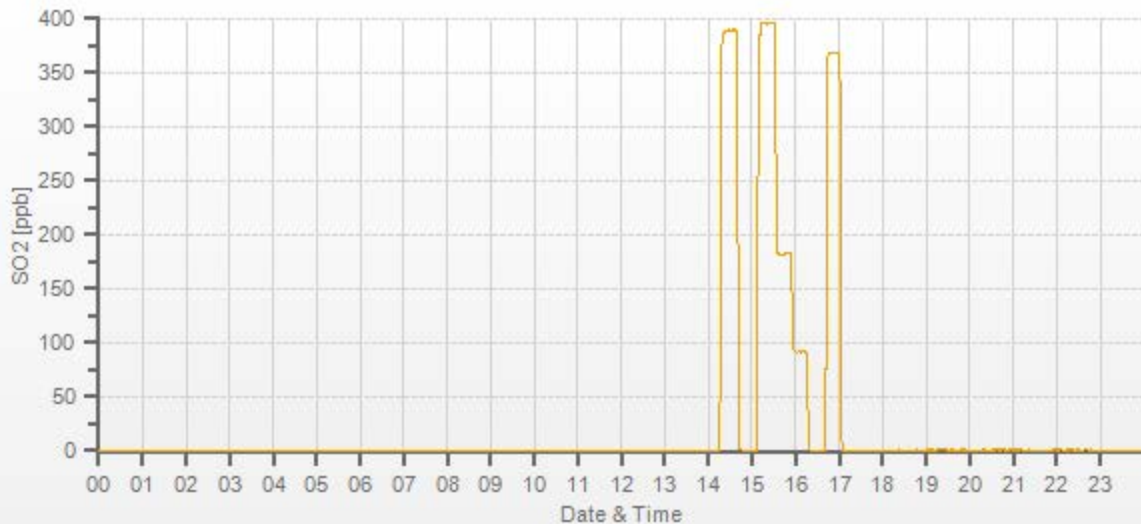
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
6000	46.00	6000	0.00	-0.1	0	1.017	0.998
5954	46.00	6000	395.60	388.8	396.3	1.017	0.998
5979	21.20	6000	182.32	n/a	183.5	n/a	0.994
5989	10.60	6000	91.16	n/a	91.2	n/a	1.000

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.002	0.0%

COMMENTS:

Sample inlet filter was changed.



H2S Analyzer Calibration by Dilution



DATE:	17-Nov-2021	PREVIOUS CALIBRATION DATE:	22-Oct-2021
PARAMETER:	H2S	PREVIOUS CORRECTION FACTOR:	0.994
CLIENT:	LICA	TEMPERATURE (°C):	22.7
LOCATION:	St. Lina	BAROMETRIC (mBar):	941
PURPOSE:	Routine	START TIME (MST):	15:20
PERFORMED BY:	Limin Li	END TIME (MST):	19:30

ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	CM 18010058	FLOW (mL/min)	818
INITIAL		FINAL	
BKG/OFFSET	56.2	BKG/OFFSET	52.4
COEF/SLOPE	0.864	COEF/SLOPE	0.861
Expected (reference) Value	56.4	Expected (reference) Value	54.2

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	EnviroNics	MAKE:	Teledyne
MODEL:	6100	MODEL:	701
ID:	5212	ID:	1105
MFC CALIBRATION DATE:	21-Sep-2021	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY0002272	HIGH ID	n/a
CONC (ppm):	10.20	EXPIRY DATE	n/a
CYLINDER (psi):	1950	LOW ID	n/a
EXPIRY DATE	14-Sep-2024	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

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

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

START TIME:	15:43	SO2 Conc (ppb)	380
END TIME:	16:02	Analyzer Response (ppb)	0.0

CALIBRATION:

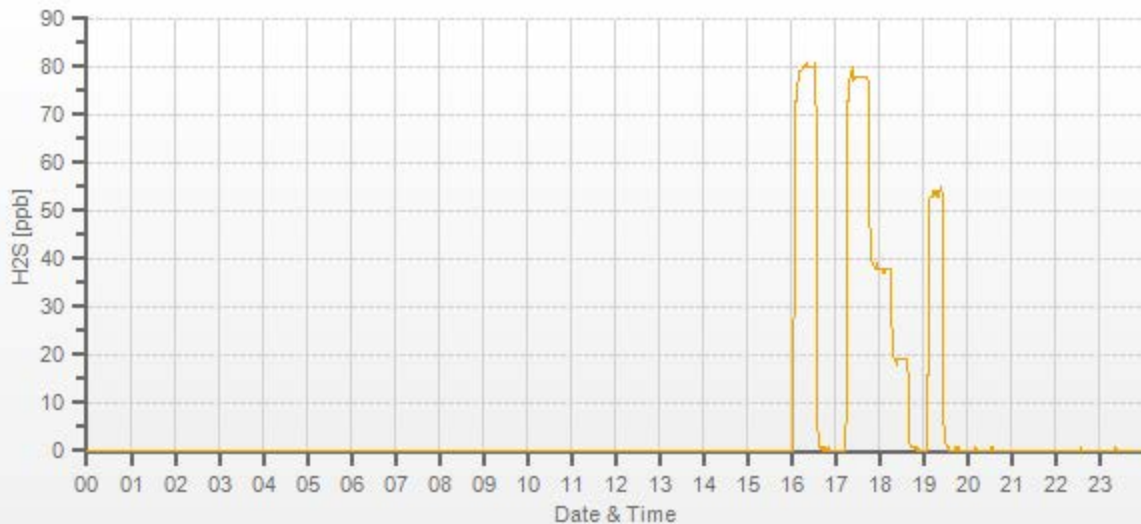
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	7500	7500	0.00	-0.9	0	0.994	1.000
7443	57.35	7500	78.00	80.4	78	0.959	1.000
7472	27.94	7500	38.00	n/a	37.9	n/a	1.003
7486	13.97	7500	19.00	n/a	19.2	n/a	0.990

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	0.999	0.1%

COMMENTS:

Sample inlet filter was changed.



NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	17-Nov-2021	PREVIOUS CALIBRATION DATE:	22-Oct-2021	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	22.0	SERIAL #:	1180930029	NOx	1.002
LOCATION:	St. Lina	BAROMETRIC (mBar):	942	FLOW (mL/min):	830	NO	1.002
PURPOSE:	Routine	START TIME (MST):	13:50	RANGE (ppb):	500	NO2	1.003
PERFORMED BY:	Limin Li	END TIME (MST):	19:20	GPT FOR O3?		Yes	

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	SABIO	MAKE:	Teledyne	CYLINDER ID:	EY 0000647	HIGH ID:	n/a
MODEL:	2010	MODEL:	701	NO/NOx (PPM):	50.9 51.1	HIGH EXPIRY:	n/a
ID:	17200415	ID:	1105	CYLINDER (psi):	1300	LOW ID:	n/a
MFC CALIBRATION DATE:	20-Sep-2021	OXIDIZER ID:	n/a	EXPIRY DATE:	24-Feb-2028	LOW EXPIRY:	n/a

CALIBRATION SETTINGS:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
BKG/OFFSET:	4.1	3.9	n/a	BKG/OFFSET:	4.2	4	n/a
SLOPE/COEF/CE:	1.002	0.834	1.002	SLOPE/COEF/CE:	1.005	0.868	0.995

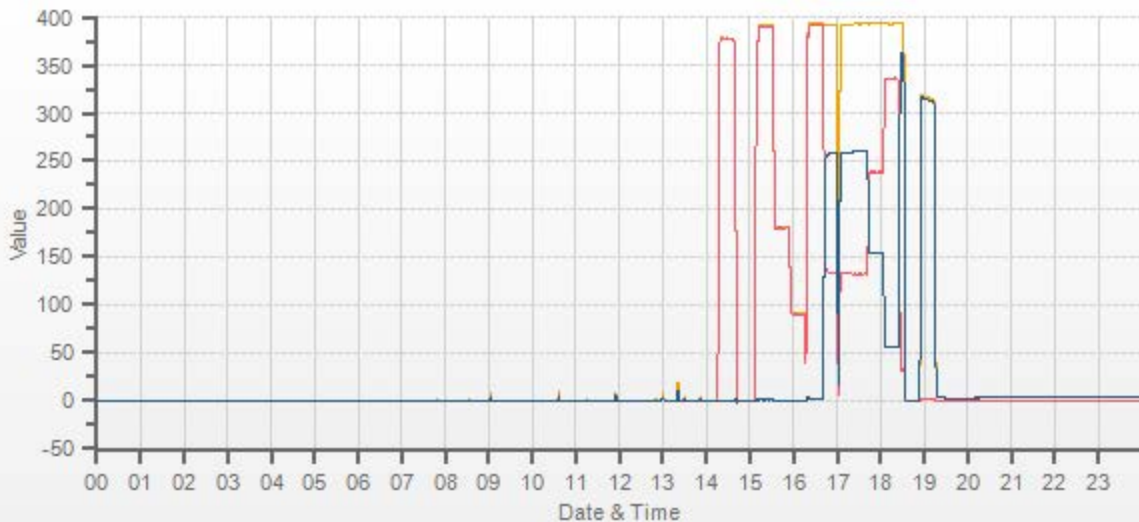
EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	291.7	3.0	288.7		314.9	2.2	312.7

CALIBRATION PARAMETERS:				
POINT	NO TARGET (PPB)	NO2 TARGET (PPB)	NO2 RANGE	O3 POINT
HIGH	395	250	240-275	n/a
MID	180	154	150-157	Mid
LOW	90	54	50-58	Low
EXTRA 1	n/a	340	300-370	High

FLOW RATE			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2
6000	46.00	6000	0.0	0.0	0.0	-0.2	-0.2	-0.1	0.0	0.0	0.0	1.035	1.036	0.999	1.001	0.999	0.999
5954	46.00	6000	390.2	391.8	1.5	377.0	377.8	0.7	390.0	392.0	2.0	1.035	1.036	0.999	1.001	0.999	0.999
5979	21.20	6000	179.8	180.6	0.7	n/a	n/a	n/a	180.3	181.3	1.0	n/a	n/a	0.997	0.996	0.996	0.996
5989	10.60	6000	89.9	90.3	0.4	n/a	n/a	n/a	90.4	90.9	0.5	n/a	n/a	0.995	0.993	0.993	0.993

GPT CALIBRATION:										
Point	CALIBRATOR			INDICATED (ppb)			NO DROP / O3 Conc (ppb)	NO2 GAIN (ppb)	NO2 Corr. FACTOR	CONV. EFFICIENCY
	GAS	TOTAL	O3 SETPOINT	NO	NOx	NO2				
REFERENCE	38.30	5000	0	391.0	393.0	2.0	259	257	1.008	99.23%
AS-FOUND HIGH	38.30	5000	235	132.0	391.0	259.0	259	257	1.008	99.23%
ADJUSTED HIGH	38.30	5000	235	133.0	393.0	260.0	258	258	1.000	100.00%
MID	38.30	5000	138	238.0	393.0	155.0	153	153	1.000	100.00%
LOW	38.30	5000	48	336.0	393.0	57.0	55	55	1.000	100.00%
NO2 COEF/CONVERTER EFFICIENCY ADJUSTED									AVERAGE:	100.00%

LINEAR REGRESSION ANALYSIS:				COMMENTS:
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	0.999	0.07%	
NOx	1.000	1.000	0.07%	
NO2	1.000	1.000	0.00%	Sample inlet filter was changed. Daily Z/S start (17:00pm) to interrupt GPT high point.



CAL-LICA-202111-01250

Ozone Calibration by Direct GPT



DATE:	18-Nov-2021	PREVIOUS CALIBRATION DATE:	17-Nov-2021
PARAMETER:	O3	PREVIOUS CORRECTION FACTOR:	0.999
CLIENT:	LICA	TEMPERATURE (°C):	23.4
LOCATION:	St. Lina	BAROMETRIC (mBar):	929
PURPOSE:	Routine	START TIME (MST):	11:26
PERFORMED BY:	Limin Li	END TIME (MST):	15:05

ANALYZER:

MAKE/MODEL	Thermo 49i	RANGE	500 ppb
SERIAL #	1002240371	FLOW (mL/min)	1487
INITIAL		FINAL	
BKG/OFFSET	0.1	BKG/OFFSET	0.3
COEF/SLOPE	1.004	COEF/SLOPE	1.006
Expected (reference) Value	223.1	Expected (reference) Value	223.1

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010	MODEL:	701
ID:	17200415	ID:	1105
MFC CALIBRATION DATE:	20-Sep-2021	OXIDIZER ID:	n/a
CALIBRATION METHOD:		Direct GPT	
GPT DATE:	18-Nov-2021	GPT END TIME:	11:40

CALIBRATION PARAMETERS:

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

CALIBRATION:

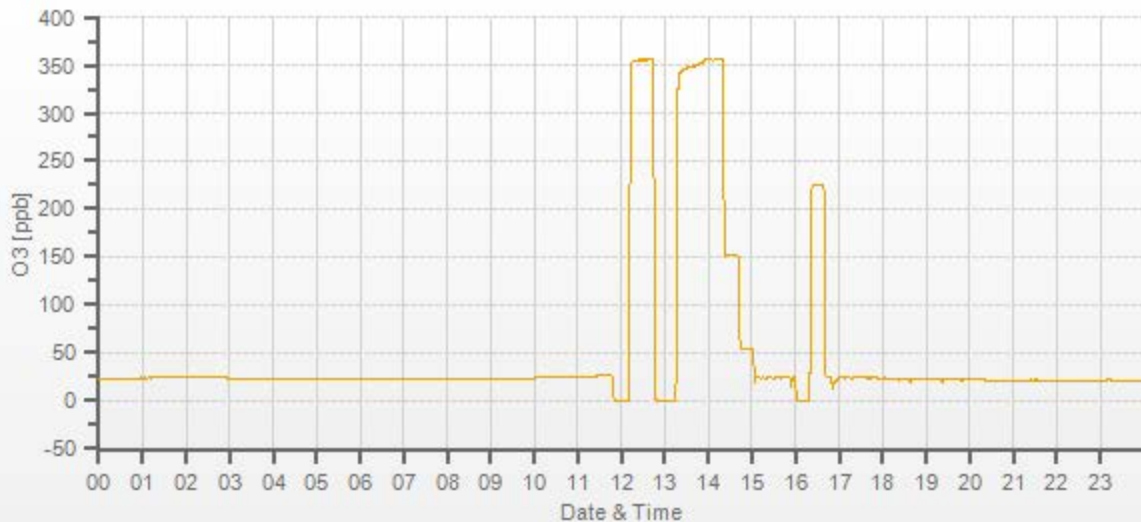
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	5000	5000	0.0	0.1	0.0	0.999	1.000
5000	5000	5000	355.1	355.5	355.0	0.999	1.000
5000	5000	5000	151.1	n/a	151.2	n/a	0.999
5000	5000	5000	54.1	n/a	53.6	n/a	1.009

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

COMMENTS:

Sample inlet filter was changed.



Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	17-Nov-2021	PREVIOUS CALIBRATION DATE:	21-Oct-2021	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	22.0		Thermo 55i	1236656107	1182
LOCATION:	St. Lina	BAROMETRIC (mBar):	942	PARAMETER:	CH4	NMHC	THC
PURPOSE	Removal/Shut-down	START TIME (MST):	13:50	RANGE (ppm):	20	20	40
PERFORMED BY:	Limin Li	END TIME (MST):	15:20	PREVIOUS CF:	0.999	0.999	0.999

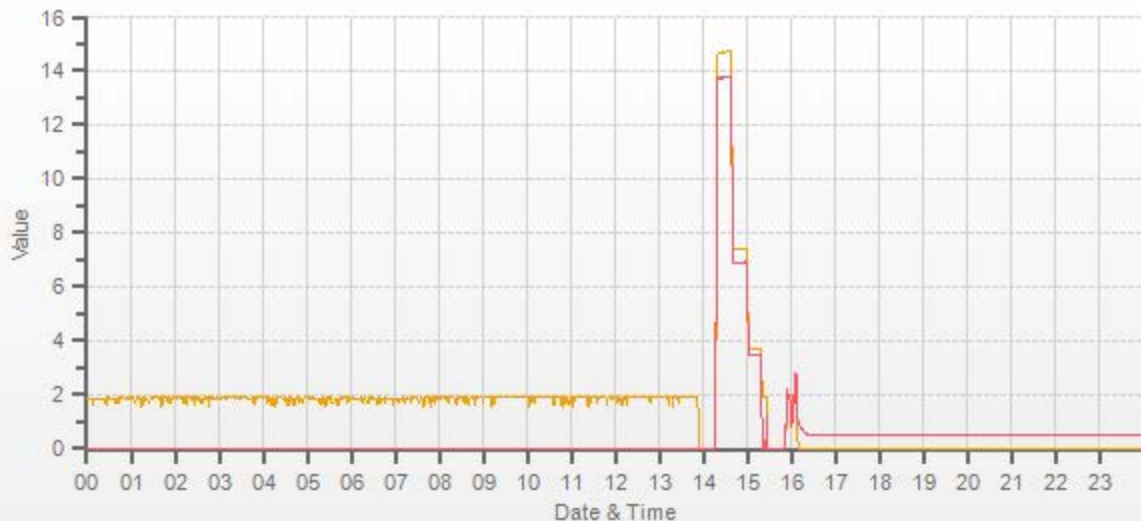
CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	EnviroNics	MAKE:	Teledyne	CYLINDER ID:	LL 70331	HIGH ID:	n/a
MODEL:	6100	MODEL:	701	CH ₄ /C ₃ H ₈ (ppm):	909.0 308.0	HIGH EXPIRY:	n/a
ID:	5212	ID:	1105	CYLINDER (psi):	1100	LOW ID:	n/a
MFC CALIBRATION DATE:	21-Sep-2021	OXIDIZER ID:	111	EXPIRY DATE	21-Jan-2028	LOW EXPIRY:	n/a

CALIBRATION PARAMETERS:				CH ₄ EQUIVILANCE	
POINT (CH ₄ /NMHC)	HIGH	MID	LOW		
TARGET	14	7	3.5	C ₃ H ₈ as CH ₄	847.0
RANGE	12 - 16	6 - 8	2 - 4	THC as CH ₄	1756.0

EXPECTED (REFERENCE) VALUE:							
INITIAL	CH ₄	NMHC	THC	FINAL	CH ₄	NMHC	THC
		9.13	11.13		20.26		9.13

FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC
3500	3500	3500	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a	0.985	0.981	0.983	n/a	n/a	n/a
3444	55.80	3500	14.49	13.50	28.00	14.71	13.76	28.47	n/a	n/a	n/a	0.985	0.981	0.983	n/a	n/a	n/a
3472	27.90	3500	7.25	6.75	14.00	7.43	6.91	14.34	n/a	n/a	n/a	0.975	0.977	0.976	n/a	n/a	n/a
3486	13.95	3500	3.62	3.38	7.00	3.67	3.37	7.04	n/a	n/a	n/a	0.987	1.002	0.994	n/a	n/a	n/a

LINEAR REGRESSION ANALYSIS:				Comments:	
	CORRELATION	SLOPE	INTERCEPT		
CH ₄	1.000	1.016	0.1%	Removal calibration due to Injection issues.	
NMHC	1.000	1.021	-0.1%		
THC	1.000	1.018	0.0%		
				Use Zero Chrom?	Yes



CAL-LICA-202111-01250

Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	18-Nov-2021	PREVIOUS CALIBRATION DATE:	n/a	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	23.2		Thermo 55i	1180030034	1100
LOCATION:	St. Lina	BAROMETRIC (mBar):	929	PARAMETER:	CH4	NMHC	THC
PURPOSE	Install/Post-Repair	START TIME (MST):	11:56	RANGE (ppm):	20	20	40
PERFORMED BY:	Limin Li	END TIME (MST):	14:27	PREVIOUS CF:	n/a	n/a	n/a

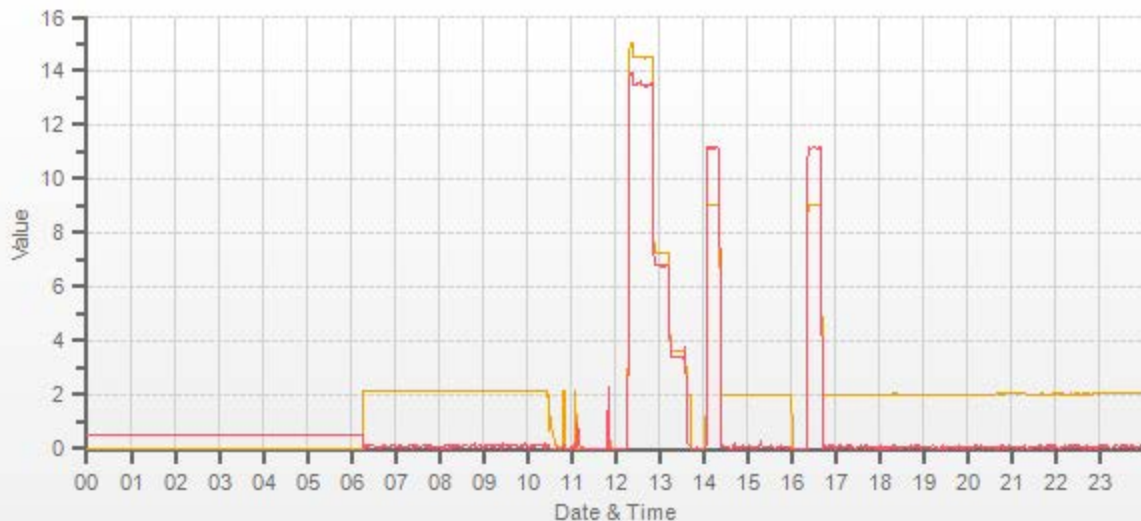
CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	EnviroNics	MAKE:	Teledyne	CYLINDER ID:	LL 70331	HIGH ID:	n/a
MODEL:	6100	MODEL:	701	CH ₄ /C ₃ H ₈ (ppm):	909.0 308.0	HIGH EXPIRY:	n/a
ID:	5212	ID:	1105	CYLINDER (psi):	1100	LOW ID:	n/a
MFC CALIBRATION DATE:	21-Sep-2021	OXIDIZER ID:	111	EXPIRY DATE	21-Jan-2028	LOW EXPIRY:	n/a

CALIBRATION PARAMETERS:				CH ₄ EQUIVILANCE	
POINT (CH ₄ /NMHC)	HIGH	MID	LOW	C ₃ H ₈ as CH ₄	847.0
TARGET	14	7	3.5	THC as CH ₄	1756.0
RANGE	12 - 16	6 - 8	2 - 4		

EXPECTED (REFERENCE) VALUE:							
INITIAL	CH ₄	NMHC	THC	FINAL	CH ₄	NMHC	THC
	n/a	n/a	n/a		n/a	9.06	11.15

FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC
	3500	3500	0.00	0.00	0.00	n/a	n/a	n/a	0.00	0.00	0.00	n/a	n/a	n/a	1.000	1.000	1.000
	55.80	3500	14.49	13.50	28.00	n/a	n/a	n/a	14.49	13.51	28.00	n/a	n/a	n/a	1.000	1.000	1.000
	27.90	3500	7.25	6.75	14.00	n/a	n/a	n/a	7.29	6.78	14.07	n/a	n/a	n/a	0.994	0.996	0.995
	13.95	3500	3.62	3.38	7.00	n/a	n/a	n/a	3.65	3.40	7.05	n/a	n/a	n/a	0.993	0.993	0.993

LINEAR REGRESSION ANALYSIS:				Comments: Install calibration.
	CORRELATION	SLOPE	INTERCEPT	
CH ₄	1.000	1.000	0.1%	
NMHC	1.000	1.000	0.1%	
THC	1.000	1.000	0.1%	
				Use Zero Chrom? Yes



CAL-LICA-202111-01250

Thermo 5030i SHARP Monitor Calibration

Date: <u>November 29, 2021</u>	Performed By/Reviewer: <u>Alex Yakupov</u> <u>Chris Wesson</u>
Company: <u>LICA</u>	Start Time (mst): <u>12:38</u>
Station Name/Location: <u>St. Lina</u>	End Time (mst): <u>15:23</u>
Previous Audit Date: <u>October 21, 2021</u>	Calibration Purpose: <u>Quarterly</u>
Parameter: <u>PM 2.5</u>	Weather Conditions: <u>Mainly sunny</u>

SHARP 5030i Information and Status:		
Serial Number: <u>CM 17091001</u>	Filter Tape Counter	<u>116</u>

Reference Standards: Air Flow						
	Manometer	Orifice	Pressure:		Temp / RH:	
Make:	<u>DeltaCal</u>	<u>DeltaCal</u>	<u>Fisher Scientific</u>		<u>VAISALA</u>	
Model:	<u>DC1</u>	<u>DC1</u>	<u>FB 61291</u>		<u>HMP76B</u>	
Serial Number:	<u>177246</u>	<u>177246</u>	<u>130168457</u>		<u>SN: T1640130</u>	
Expiry Date:	<u>July 12, 2022</u>	<u>July 12, 2022</u>	<u>February 17, 2022</u>		<u>April 22, 2022</u>	

Ambient Temperature (°C)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	<u>2.60</u>	<u>2.4</u>	<u>0.2</u>	<u>2.60</u>	<u>2.6</u>	<u>0.0</u>
#2	<u>2.62</u>	<u>2.4</u>	<u>0.2</u>	<u>2.60</u>	<u>2.6</u>	<u>0.0</u>
#3	<u>2.62</u>	<u>2.4</u>	<u>0.2</u>	<u>2.60</u>	<u>2.6</u>	<u>0.0</u>
Average	<u>2.6</u>	<u>2.4</u>	<u>0.2</u>	<u>2.6</u>	<u>2.6</u>	<u>0.0</u>
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	<u>60.60</u>	<u>60.2</u>	<u>0.4</u>	<u>60.60</u>	<u>60.6</u>	<u>0.0</u>
#2	<u>60.70</u>	<u>60.3</u>	<u>0.4</u>	<u>60.60</u>	<u>60.6</u>	<u>0.0</u>
#3	<u>60.60</u>	<u>60.3</u>	<u>0.3</u>	<u>60.60</u>	<u>60.6</u>	<u>0.0</u>
Average	<u>60.6</u>	<u>60.3</u>	<u>0.4</u>	<u>60.6</u>	<u>60.6</u>	<u>0.0</u>
RH Limit: ± 2 %RH						

Flow Temperature (°C)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	<u>22.60</u>	<u>21.7</u>	<u>0.9</u>	<u>22.60</u>	<u>21.7</u>	<u>0.9</u>
#2	<u>22.60</u>	<u>21.7</u>	<u>0.9</u>	<u>22.60</u>	<u>21.7</u>	<u>0.9</u>
#3	<u>22.70</u>	<u>21.8</u>	<u>0.9</u>	<u>22.70</u>	<u>21.8</u>	<u>0.9</u>
Average	<u>22.6</u>	<u>21.7</u>	<u>0.9</u>	<u>22.6</u>	<u>21.7</u>	<u>0.9</u>
Temp Limit: ± 2°C						

Barometric Pressure (mmHg)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	<u>697.0</u>	<u>697.0</u>		<u>697.0</u>	<u>697.0</u>	<u>0.0</u>
BP Limit: ± 2 mmHg						

Nephelometer Relative Humidity (%RH)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	<u>19.10</u>	<u>18.3</u>	<u>0.8</u>	<u>19.10</u>	<u>18.3</u>	<u>0.8</u>
RH Limit: ± 2 %RH						

Nephelometer Temperature (%RH)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	<u>24.10</u>	<u>23.8</u>	<u>0.3</u>	<u>24.10</u>	<u>23.8</u>	<u>0.3</u>
Temp Limit: ± 2°C						

Nephelometer Source Level						
As Found:			As Left: (same as found if acceptable)			
	Variable	Value		Variable	Value	
	<u>IRED</u>	<u>66</u>		<u>IRED</u>	<u>66</u>	
	<u>SRC LEVEL</u>	<u>47</u>		<u>SRC LEVEL</u>	<u>47</u>	
IRED Limit (as found): 60-70 mA Adjusted IRED Limit (as left): 65 mA						

Detector Calibration (Auto)						
Detector Auto Calibration Completed: <u>YES</u>			As Left:			
			Variable	Value		
			<u>HIGH VOLT</u>	<u>n/a</u>		
			<u>BETA REF TH</u>	<u>n/a</u>		
			<u>ALPHA TH</u>	<u>n/a</u>		
			<u>DIFF HV</u>	<u>n/a</u>		

Mass Coefficient (Auto)						
Zero			Span			
	Variable	Value		Variable	Value	
	<u>MASS COEF</u>	<u>7096.9</u>		<u>MASS COEF</u>	<u>7112.5</u>	
	<u>FOIL VALUE</u>	<u>1045</u>		<u>FOIL VALUE</u>	<u>1045</u>	
	<u>Beta Avg</u>	<u>9287</u>		<u>Beta Avg</u>	<u>8018</u>	
	<u>difference</u>	<u>Foil set # 4804</u>		<u>difference</u>	<u>0.2</u>	
Foil Set: CM1597						

Flow Calibration (L/min)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	<u>16.82</u>	<u>16.67</u>	<u>0.15</u>	<u>16.67</u>	<u>16.67</u>	<u>0.00</u>
#2	<u>16.81</u>	<u>16.66</u>	<u>0.15</u>	<u>16.67</u>	<u>16.67</u>	<u>0.00</u>
#3	<u>16.82</u>	<u>16.67</u>	<u>0.15</u>	<u>16.67</u>	<u>16.67</u>	<u>0.00</u>
Average	<u>16.82</u>	<u>16.67</u>	<u>0.15</u>	<u>16.67</u>	<u>16.67</u>	<u>0.00</u>
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	<u>16.67</u>	<u>16.67</u>	<u>0.00</u>	<u>16.62</u>	<u>16.64</u>	<u>-0.02</u>
Leak Limit: 0.08 L/min						
LEAK RATE: <u>-0.02</u>						



Meteorological Sensor Audit/Calibration

Location Information

Company: LICA
 Audit Location: St. Lina
 Audit Date: March 16, 2021
 Calibration Purpose: routine annual
 Performed By: Alex Yakupov
 Reviewed By: Chris Wesson
 Start/End Time (mst): 12:17 / 14:32
 Weather Conditions: Mainly sunny

Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	0-1
Sensor Model:	05305VK	Velocity Unit Output Range:	0-200
Serial #:	161466	Direction Voltage Output Range:	0-1
Previous Cal/Audit Date:	February 26, 2020	Direction Unit Output Range:	0-360

Wind Calibrator Information

Calibrator I.D. and Expiry Date: Model 18860-90/18802 SN: CA 4744, expires - Aug 6, 2022

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	0.996
2000	36.9	37.0	37.0	0.996
3000	55.3	55.5	55.5	0.996
4000	73.7	74.0	74.1	0.996
5000	92.2	92.6	92.6	0.995
6000	110.6	111.2	111.2	0.994
7000	129.0	129.7	129.7	0.995
8000	147.4	148.3	148.3	0.994
9000	165.9	167.0	167.0	0.993
10000	184.3	185.6	185.6	0.993
The audit meets AMD requirements.			Average Correction Factor=	0.995

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	1	355	0.8	0.0	0.4
30	330	31	331	-0.6	-0.9	0.7
60	300	61	300	-1.4	-0.4	0.9
90	270	93	270	-2.8	0.0	1.4
120	240	123	242	-3.2	-1.8	2.5
150	210	153	212	-2.7	-2.3	2.5
180	180	183	183	-2.6	-2.9	2.8
210	150	212	154	-1.7	-3.8	2.8
240	120	241	124	-1.2	-4.1	2.6
270	90	270	94	-0.1	-4.0	2.1
300	60	301	64	-0.6	-3.6	2.1
330	30	330	32	0.3	-2.2	1.3
355	0	355	1	0.0	1.3	0.7
The audit meets AMD requirements.				Average Absolute Degrees Difference=		1.7

Comments:

n/a

End of Report