



**Lakeland Industry & Community Association**

**OCTOBER 2021**

**Monthly Ambient Air Quality Monitoring Report**

**LICA-202110**

**Operation and Maintenance:**

Bureau Veritas Canada

**Data Validation and Report:**

Lakeland Industry & Community Association

November 19, 2021

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**November 19, 2021**

Alberta Environment and Parks (AEP)

11th Floor, Oxbridge Place

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Edmonton, AB, T5K 2J6

**RE: LICA – October 2021 Monthly Ambient Air Quality Monitoring Report**

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Enclosed is the October 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

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

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## LIST OF ACRONYMS

AAAQOs	Alberta Ambient Air Quality Objectives
AEP	Alberta Environment and Parks
AMD	Air Monitoring Directive
AT	Ambient Temperature
BP	Barometric Pressure
CH <sub>4</sub>	Methane
EPEA	Environmental Protection and Enhancement Act
H <sub>2</sub> S	Hydrogen Sulphide
kph	kilometers per hour
LICA	Lakeland Industry & Community Association
mb	millibar
mm	millimeter
NMHC	Non-Methane Hydrocarbons
NO	Nitric Oxide
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxide of Nitrogen
PAC	Polycyclic Aromatic Compounds
ppb	parts per billion
ppm	parts per million
RH	Relative Humidity
SO <sub>2</sub>	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 October 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, except O3 and PM2.5. One 1-hr exceedance of O3 was recorded on October 1. The exceedance was likely due to welding activities that were being performed at a nearby construction site. Ten 1-hr and one 24-hr exceedances PM2.5 were recorded on October 6. Smoke from the Hudson Bay area (Saskatchewan) wildfire was likely the source.

Date	Time (MST)	Parameter	Average Period	AAAQOs / AAAQGs	Concentration	Reference #
October 1	6	O3	1-Hour	76 ppb	93.3 ppb	384145
October 6	0	PM2.5	1-Hour	80 µg/m3	98 µg/m3	384279
October 6	1	PM2.5	1-Hour	80 µg/m3	109 µg/m3	384279
October 6	2	PM2.5	1-Hour	80 µg/m3	118 µg/m3	384279
October 6	3	PM2.5	1-Hour	80 µg/m3	108 µg/m3	384279
October 6	4	PM2.5	1-Hour	80 µg/m3	104 µg/m3	384279

October 6	5	PM2.5	1-Hour	80 µg/m3	100 µg/m3	384279
October 6	6	PM2.5	1-Hour	80 µg/m3	97 µg/m3	384279
October 6	7	PM2.5	1-Hour	80 µg/m3	81 µg/m3	384279
October 6	10	PM2.5	1-Hour	80 µg/m3	84 µg/m3	384279
October 6	11	PM2.5	1-Hour	80 µg/m3	86 µg/m3	384279
October 6	-	PM2.5	24-Hour	29 µg/m3	66.4 µg/m3	384279

- **O3:** The analyzer failed the daily zero-span check on October 8. The zero-span pump was rebuilt, and a control zero-span check was completed afterwards to correct the issue. As the issue was from the zero-span system, the data quality was not affected. No data were discarded as a result. However, one hour of downtime was recorded due to additional quality check.
- **NOx/NO/NO2:** The analyzer failed the daily zero-span check on October 26. A repeat zero-span check was completed on October 27, and the results were within the acceptable range. No further actions were required. One hour of downtime was recorded due to the additional quality check.
- **THC/CH4/NMHC:** Elevated concentrations were recorded on October 26 hour 12. After reviewing 1-minute dataset, data deem to be real. Although the source of the pollutants cannot be confirmed, it was likely due to vehicle exhaust around the station.

#### 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. Five 1-hr and two 24-hr exceedances was recorded this month. The exceedances recorded on October 4 were likely caused by dust from the nearby unsurfaced road, and the exceedances recorded on October 6 was likely due to smoke from the Hudson Bay area (Saskatchewan) wildfire.

Date	Time (MST)	Parameter	Average Period	AAAQOs / AAAQGs	Concentration	Reference #
October 4	6	PM2.5	1-Hour	80 µg/m3	94 µg/m3	384194
October 4	7	PM2.5	1-Hour	80 µg/m3	83 µg/m3	384194
October 4	8	PM2.5	1-Hour	80 µg/m3	106 µg/m3	384194
October 4	9	PM2.5	1-Hour	80 µg/m3	141 µg/m3	384194
October 4	-	PM2.5	24-Hour	29 µg/m3	34.2 µg/m3	384194
October 6	13	PM2.5	1-Hour	80 µg/m3	91 µg/m3	384343
October 6	-	PM2.5	24-Hour	29 µg/m3	36.0 µg/m3	384343

- **NO<sub>x</sub>/NO/NO<sub>2</sub>:**
  - The analyzer failed both the scheduled and repeat zero-span check October 1 due to the permeation tube depletion. A new permeation tube was installed during the monthly calibration on October 4. The expected span value was updated on October 9. One hour of downtime was recorded due to the additional quality check.
  - The analyzer failed the daily span check on October 19. A successful shut-down calibration was completed before analyzer maintenance on October 20. A post-repair calibration was completed afterwards. The expected span value was adjusted after the post-repair calibration and was adjusted again on October 25. Nine hours of downtime were recorded due to this event.

### 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.
- **THC/CH<sub>4</sub>/NMHC:**
  - Two hours of data collected on October 15 were discarded as the 75% of valid 1-minute in an hour requirement were not achieved due to injection issues.
  - On October 21, both a new span gas cylinder and a new carrier gas cylinder were installed. A repeat multi-point calibration was completed afterwards. Five hours of downtime were recorded due to this additional quality check.
  - Elevated NMHC concentrations were recorded on October 22 hour 11. The St. Lina driveway was being repaired and heavy equipment was onsite including a dump truck that was parked beside the station for a short period of time. Diesel exhaust emissions from the equipment used in the driveway repair work likely caused elevated NMHC concentrations.

### Integrated Sampling

All the integrated sampling analytical results are included in the October 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).
  - Six samples were collected this month: on October 1, 7, 13, 19, 25 and 31.
- **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).
  - Six samples were collected this month: on October 1, 7, 13, 19, 25 and 31.
- **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).
  - Six samples were collected this month: on October 1, 7, 13, 19, 25 and 31.
- **Passive Sampling System:**

- The passive sample filters were installed at the stations between September 29 and October 1, and were removed between November 1 and November 3.
- A total of 9 duplicate samples were collected: 2 for H<sub>2</sub>S, 3 for SO<sub>2</sub>, 2 for NO<sub>2</sub> and 2 for O<sub>3</sub>.
- **PAC Sampling System:**
  - The PAC sampling program began in October 2019, and is designed to collect a 2-month integrated sample.
  - The PAC sampling program which was temporary paused as the EC laboratory was closed due to COVID has been restarted. The sample medias were installed in early November.

### **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).

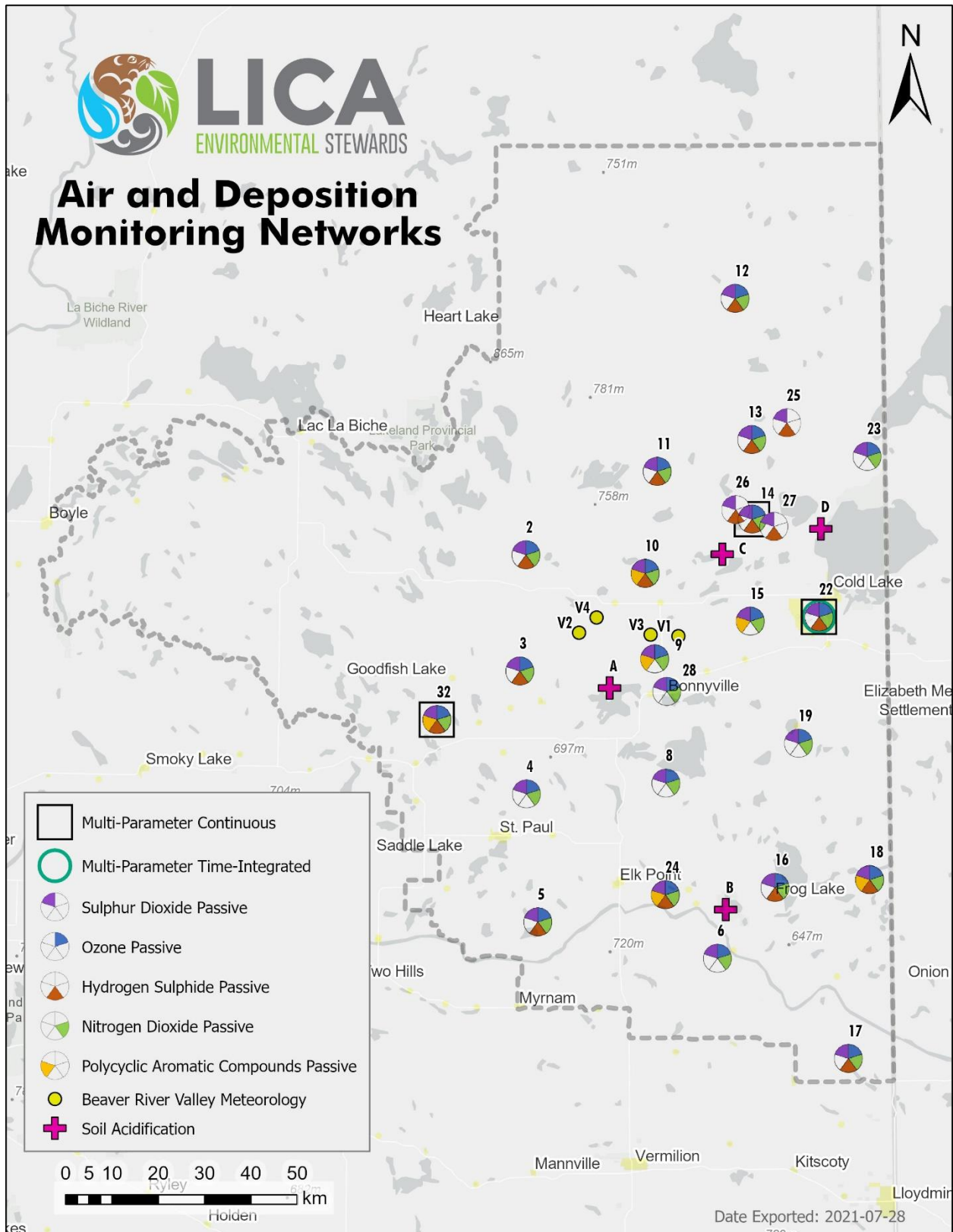
I certify that I have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe and the specified analysis, summarization and reporting requirements. I also certify that at the time of this report's submission, all 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 October 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

November 19, 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
<b>Sulphur Dioxide (SO<sub>2</sub>)</b>	<b>Thermo / 43i-TLE</b>	<b>1180260018</b>	<b>October 8, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Total Reduced Sulphur (TRS)</b>	<b>Thermo / 450i</b>	<b>812728560</b>	<b>October 8, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Total Hydrocarbons / Methane/ Non-methane Hydrocarbons (THC/CH<sub>4</sub>/NMHC)</b>	<b>Thermo / 55i</b>	<b>1180930025</b>	<b>October 6, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> <li>Elevated concentrations were recorded on October 26 hour 12. After reviewing 1-minute data, data deem to be real. Although the source of the pollutants cannot be confirmed, it was likely due to vehicle exhaust around the station.</li> </ul>			
<b>Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NO<sub>x</sub>/NO/NO<sub>2</sub>)</b>	<b>Thermo / 42i</b>	<b>1505664393</b>	<b>October 8, 2021</b>
<ul style="list-style-type: none"> <li>The analyzer failed the daily zero-span check on October 26. A repeat zero-span check was completed on October 27, and the results were within the acceptable range. No further actions were required. One hour of downtime was recorded due to the additional quality check.</li> </ul>			
<b>Ozone (O<sub>3</sub>)</b>	<b>Thermo / 49i</b>	<b>700419951</b>	<b>October 6, 2021</b>
<ul style="list-style-type: none"> <li>One 1-hr exceedance of O<sub>3</sub> was recorded on October 1. The exceedance was likely due to welding activities that were being performed at a nearby construction site.</li> <li>The analyzer failed the daily zero-span check on October 8. The zero-span pump was rebuilt, and a control zero-span check was completed afterwards to correct the issue. As the issue was from the zero-span system, the data quality was not affected. No data were discarded as a result. However, one hour of downtime was recorded due to additional quality check.</li> </ul>			

Parameter	Make / Model	Serial Number	Calibration Date
<b>Particulate Matter 2.5 (PM2.5)</b>	<b>Teledyne T640</b>	<b>575</b>	<b>October 8, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> <li>Ten 1-hr and one 24-hr exceedances PM2.5 were recorded on October 6. Smoke from the Hudson Bay area (Saskatchewan) wildfire was likely the source.</li> </ul>			
Parameter	Make / Model	Serial Number	System Check Date
<b>Relative Humidity (RH)</b>	<b>Rotronic HC2A-S3</b>	<b>20257103</b>	<b>July 6, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Barometric Pressure (BP)</b>	<b>Met One / Part 092</b>	<b>Y23368</b>	<b>July 6, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Ambient Temperature (AT)</b>	<b>Rotronic HC2A-S3</b>	<b>20257103</b>	<b>July 6, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Station Temperature (ST)</b>	<b>BV-supplied</b>	<b>n/a</b>	<b>n/a</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Wind Speed (WS) / Wind Direction (WD)/ Standard Deviation Wind Direction (STDWD)</b>	<b>RM Young 05305AQ</b>	<b>177354</b>	<b>July 6, 2021</b>
<ul style="list-style-type: none"> <li>Wind direction data contained in this report represents where the wind is coming from.</li> <li>The last wind system calibration was completed on April 20, 2021.</li> <li>No issues were identified this month.</li> </ul>			

### 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	3	October 17 at hour 21	11.4	NE	0.7	October 17	100.0	95.0
TRS (ppb)	-	-	-	-	-	-	0.1	0	1	October 1 at hour 2	2.5	WSW	0.5	October 6	100.0	95.0
NOx (ppb)	-	-	-	-	-	-	3.9	0	42	October 19 at hour 7	2.1	ESE	11.8	October 26	99.9	94.6
NO (ppb)	-	-	-	-	-	-	1.1	0	31	October 26 at hour 8	0.5	SE	7.4	October 26	99.9	94.6
NO2 (ppb)	159	-	-	0	-	-	2.8	0	18	October 19 at hour 7	2.1	ESE	5.0	October 31	99.9	94.6
O3 (ppb)	76	-	-	1	-	-	23.0	0.2	93.3	October 1 at hour 6	5.3	WSW	35.2	October 5	99.9	94.7
THC (ppm)	-	-	-	-	-	-	1.94	1.81	6.31	October 26 at hour 12	4.1	ESE	2.28	October 26	100.0	94.9
CH4 (ppm)	-	-	-	-	-	-	1.94	1.81	5.83	October 26 at hour 12	4.1	ESE	2.25	October 26	100.0	94.9
NMHC (ppm)	-	-	-	-	-	-	0.00	0.00	0.48	October 26 at hour 12	4.1	ESE	0.02	October 26	100.0	94.9
PM2.5 (µg/m3)	80	29	-	10	1	-	7.8	1	118	October 6 at hour 2	7	E	66.4	October 6	100.0	99.9
RH (%)	-	-	-	-	-	-	63.2	19	94	October 14 at hour 10	4.4	SW	82.9	October 26	100.0	100.0
BP (millibar)	-	-	-	-	-	-	948	931	964	October 19 at hour 9	11.2	SE	962	October 31	100.0	100.0
Ext. Temp. (°C)	-	-	-	-	-	-	4.1	-9.5	18.1	October 2 at hour 14	9.8	S	10.6	October 1	100.0	100.0
Stn. Temp. (°C)	-	-	-	-	-	-	22.3	21.1	23.8	October 26 at hour 13	4.3	E	22.8	October 17	100.0	100.0
WSV (km/hr)	-	-	-	-	-	-	1.5	0.0	19.8	October 25 at hour 11	19.8	SE	11.9	October 25	100.0	100.0
WDV (sector)	-	-	-	-	-	-	147 (SE)	-	-	-	-	-	-	-	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 / AAAQGs	Concentration	Wind speed	Wind Direction	Reference #
October 1	6	O3	1-Hour	76 ppb	93.3 ppb	5.3 km/hr	239° (WSW)	384145
October 6	0	PM2.5	1-Hour	80 µg/m3	98 µg/m3	7.6 km/hr	89° (E)	384279
October 6	1	PM2.5	1-Hour	80 µg/m3	109 µg/m3	6.5 km/hr	81° (E)	384279
October 6	2	PM2.5	1-Hour	80 µg/m3	118 µg/m3	7.0 km/hr	86° (E)	384279
October 6	3	PM2.5	1-Hour	80 µg/m3	108 µg/m3	3.3 km/hr	83° (E)	384279
October 6	4	PM2.5	1-Hour	80 µg/m3	104 µg/m3	0.3 km/hr	157° (SSE)	384279
October 6	5	PM2.5	1-Hour	80 µg/m3	100 µg/m3	0.4 km/hr	155° (SSE)	384279
October 6	6	PM2.5	1-Hour	80 µg/m3	97 µg/m3	0.6 km/hr	17° (NNE)	384279
October 6	7	PM2.5	1-Hour	80 µg/m3	81 µg/m3	0.9 km/hr	59° (ENE)	384279
October 6	10	PM2.5	1-Hour	80 µg/m3	84 µg/m3	5.5 km/hr	255° (WSW)	384279
October 6	11	PM2.5	1-Hour	80 µg/m3	86 µg/m3	5.8 km/hr	285° (WNW)	384279
October 6	-	PM2.5	24-Hour	29 µg/m3	66.4 µg/m3	3.5 km/hr	317° (NW)	384279

- The exceedance of the O3 objective on October 1 is believed to have been caused by welding at a nearby construction site.
- The exceedances of the PM2.5 guideline and objective on October 6 is believed to be the result of smoke from the Hudson Bay area (Saskatchewan) wildfire.

## Tamarack Station

### Equipment Operation Summary

Parameter	Make / Model	Serial Number	Calibration Date
<b>Sulphur Dioxide (SO2)</b>	<b>Thermo / 43i-TLE</b>	<b>1180930031</b>	<b>October 4, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Hydrogen Sulphide (H2S)</b>	<b>Thermo / 450i</b>	<b>CM17360005</b>	<b>October 4, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NOx/NO/NO2)</b>	<b>Thermo / 42i</b>	<b>1180930028</b>	<b>October 20, 2021</b>
<ul style="list-style-type: none"> <li>The analyzer failed both the scheduled and repeat zero-span check October 1 due to the permeation tube depletion. A new permeation tube was installed during the monthly calibration on October 4.</li> <li>The analyzer failed the daily span check on October 19. A successful shut-down calibration was completed before analyzer maintenance on October 20. A 0.22 stroke sample pump was installed, the PMT was adjusted and the BKG and calibration coefficients were reset on October 20. A post-repair calibration was completed afterwards. The expected span value was adjusted after the post-repair calibration and was adjusted again on October 25. Nine hours of downtime were recorded due to this event.</li> </ul>			
<b>Ozone (O3)</b>	<b>Thermo 49iQ</b>	<b>1202068570</b>	<b>October 5, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Total Hydrocarbons / Methane/ Non-methane Hydrocarbons (THC/CH4/NMHC)</b>	<b>Thermo / 55i</b>	<b>1314057759</b>	<b>October 5, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Particulate Matter 2.5 (PM2.5)</b>	<b>Thermo / Sharp 5030</b>	<b>CM 2209</b>	<b>October 7, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			

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



### 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	0.9	0	19	October 1 at hour 4	6.1	WNW	4.7	October 23	100.0	94.9
H2S (ppb)	10	3	-	0	0	-	0.2	0	4	October 20 at hour 23	8.2	ESE	1.5	October 22	100.0	94.9
NOx (ppb)	-	-	-	-	-	-	4.4	0	34	October 1 at hour 4	6.1	WNW	9.2	October 30	98.7	93.5
NO (ppb)	-	-	-	-	-	-	0.9	0	15	October 17 at hour 6	0.4	S	2.1	October 6	98.7	93.5
NO2 (ppb)	159	-	-	0	-	-	3.5	0	25	October 30 at hour 21	7.4	WNW	8.0	October 30	98.7	93.5
O3 (ppb)	76	-	-	0	-	-	23.0	0.0	44.0	October 9 at hour 15	10.3	SW	32.0	October 5	100.0	95.0
THC (ppm)	-	-	-	-	-	-	1.94	1.87	2.29	October 26 at hour 15	5.1	ESE	2.00	October 26	100.0	95.0
CH4 (ppm)	-	-	-	-	-	-	1.94	1.87	2.28	October 26 at hour 15	5.1	ESE	2.00	October 26	100.0	95.0
NMHC (ppm)	-	-	-	-	-	-	0.00	0.00	0.18	October 19 at hour 1	0.5	ESE	0.02	October 29	100.0	95.0
PM2.5 (µg/m3)	80	29	-	5	2	-	8.3	2	141	October 4 at hour 9	4.5	W	36.0	October 6	100.0	99.6
RH (%)	-	-	-	-	-	-	68.5	19	100	October 2 at hour 3	0.8	ESE	94.0	October 26	100.0	100.0
BP (millibar)	-	-	-	-	-	-	934	917	949	October 19 at hour 8	8.7	SE	947	October 31	100.0	100.0
Ext. Temp. (°C)	-	-	-	-	-	-	3.8	-8.3	16.9	October 2 at hour 14	13.4	S	10.5	October 1	100.0	100.0
Stn. Temp. (°C)	-	-	-	-	-	-	23.1	20.8	25.6	October 20 at hour 11	10	SE	24.6	October 20	100.0	100.0
Precipitation (mm)*	-	-	-	-	-	-	10.7	0.0	1.9	October 10 at hour 23	9.4	NNW	6.6	October 10	100.0	100.0
WSV (km/hr)	-	-	-	-	-	-	1.6	0.0	15.0	October 5 at hour 11	15	E	10.9	October 23	100.0	100.0
WDV (sector)	-	-	-	-	-	-	169 (SSE)	-	-	-	-	-	-	-	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 (AAAOs) 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	AAAOs / AAAQGs	Concentration	Wind speed	Wind Direction	Reference #
October 4	6	PM2.5	1-Hour	80 µg/m3	94 µg/m3	4.6 km/hr	212° (SSW)	384194
October 4	7	PM2.5	1-Hour	80 µg/m3	83 µg/m3	6.4 km/hr	201° (SSW)	384194
October 4	8	PM2.5	1-Hour	80 µg/m3	106 µg/m3	4.3 km/hr	216° (SW)	384194
October 4	9	PM2.5	1-Hour	80 µg/m3	141 µg/m3	4.5 km/hr	268° (W)	384194
October 4	-	PM2.5	24-Hour	29 µg/m3	34.2 µg/m3	1.5 km/hr	208° (SSW)	384194
October 6	13	PM2.5	1-Hour	80 µg/m3	91 µg/m3	4.9 km/hr	307° (NW)	384343
October 6	-	PM2.5	24-Hour	29 µg/m3	36.0 µg/m3	3.3 km/hr	336° (NNW)	384343

- The exceedances of the PM2.5 guideline and objective on October 4 are believed to have been caused by dust from the nearby unsurfaced road. This was observed and confirmed by the field technician.
- The exceedances of the PM2.5 guideline and objective on October 6 is believed to be the result of smoke from the Hudson Bay area (Saskatchewan) wildfire.

## St. Lina Station

### Equipment Operation Summary

Parameter	Make / Model	Serial Number	Calibration Date
<b>Sulphur Dioxide (SO<sub>2</sub>)</b>	<b>Thermo / 43i-TLE</b>	<b>1180930030</b>	<b>October 22, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Hydrogen Sulphide (H<sub>2</sub>S)</b>	<b>Thermo / 450i</b>	<b>CM18010058</b>	<b>October 22, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NO<sub>x</sub>/NO/NO<sub>2</sub>)</b>	<b>Thermo / 42i</b>	<b>1180930029</b>	<b>October 22, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Total Hydrocarbons / Methane/ Non-methane Hydrocarbons (THC/CH<sub>4</sub>/NMHC)</b>	<b>Thermo / 55i</b>	<b>1236656107</b>	<b>October 15, 2021</b>
<ul style="list-style-type: none"> <li>Occasional bad injections were recorded, commencing October 19, and it was becoming frequent on October 14. A successful shut-down calibration was completed on October 15 prior to analyzer maintenance. The N<sub>2</sub> pressure was increased from 34.0 psi to 35.0 psi to correct injection issues. A zero chromatogram was then performed. A post-repair calibration was completed afterwards. After reviewing 1-minute dataset, two hours of data collected on October 15 were discarded as the 75% of valid 1-minute in an hour requirement were not achieved due to injection issues.</li> <li>On October 21, both a new span gas cylinder and a new carrier gas cylinder were installed. A repeat multi-point calibration was completed afterwards. Five hours of downtime were recorded due to this additional quality check.</li> <li>Elevated NMHC concentrations were recorded on October 22 hour 11. The St. Lina driveway was being repaired and heavy equipment was onsite including a dump truck that was parked beside the station for a short period of time. Diesel exhaust emissions from the equipment used in the driveway repair work likely caused elevated NMHC concentrations.</li> </ul>			
<b>Ozone (O<sub>3</sub>)</b>	<b>Thermo / 49i</b>	<b>1002240371</b>	<b>October 21, 2021</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			

Parameter	Make / Model	Serial Number	Calibration Date
Particulate Matter 2.5 (PM2.5)	Thermo / Sharp 5030i	CM17091001	October 21, 2021
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
Parameter	Make / Model	Serial Number	System Check Date
Relative Humidity (RH)	Campbell ScientificHC2-S3	20221366	September 20, 2021
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
Ambient Temperature (AT)	Campbell ScientificHC2-S3	20221366	September 20, 2021
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
Barometric Pressure (BP)	Met One / Part 090D	F4998	December 23, 2020
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
Station Temperature (ST)	BV-supplied	n/a	n/a
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
Precipitation (PRECIP)	Met One / Part 387D	A23775	September 3, 2021
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
Wind Speed (WS) / Wind Direction (WD)/ Standard Deviation Wind Direction (STDWD)	RM Young / 05305VK	161466	March 16, 2021
<ul style="list-style-type: none"> <li>Wind direction data contained in this report represents where the wind is coming from.</li> <li>The annual wind system calibration was completed on March 16, 2021.</li> <li>No issues were identified this month.</li> </ul>			

### 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	0.1	0	6	October 2 at hour 22	9.3	WNW	0.7	October 2	100.0	95.0
H2S (ppb)	10	3	-	0	0	-	0.0	0	1	October 1 at hour 0	11.1	WSW	0.5	October 21	100.0	95.0
NOx (ppb)	-	-	-	-	-	-	1.6	0	10	October 15 at hour 8	9.2	SW	4.3	October 26	100.0	94.7
NO (ppb)	-	-	-	-	-	-	0.1	0	3	October 15 at hour 8	9.2	SW	0.4	October 15	100.0	94.7
NO2 (ppb)	159	-	-	0	-	-	1.4	0	8	October 15 at hour 7	10.5	SW	3.9	October 26	100.0	94.7
O3 (ppb)	76	-	-	0	-	-	28.5	6.6	44.3	October 8 at hour 13	3.7	W	37.0	October 2	100.0	95.0
THC (ppm)	-	-	-	-	-	-	1.91	1.81	2.21	October 26 at hour 21	9.9	S	2.05	October 26	98.9	93.9
CH4 (ppm)	-	-	-	-	-	-	1.91	1.81	2.21	October 26 at hour 21	9.9	S	2.05	October 26	98.9	93.9
NMHC (ppm)	-	-	-	-	-	-	0.00	0.00	0.00	October 1 at hour 0	11.1	WSW	0.00	October 1	98.9	93.9
PM2.5 (µg/m3)	80	29	-	0	0	-	4.9	0	68	October 5 at hour 15	12	ENE	27.9	October 5	100.0	99.9
RH (%)	-	-	-	-	-	-	63.3	20	100	October 7 at hour 6	7.7	SW	90.7	October 25	100.0	100.0
BP (millibar)	-	-	-	-	-	-	916	899	930	October 31 at hour 6	10	NW	930	October 31	100.0	100.0
Ext. Temp. (°C)	-	-	-	-	-	-	4.6	-5.4	16.8	October 2 at hour 13	19.5	SSW	12.3	October 1	100.0	100.0
Stn. Temp. (°C)	-	-	-	-	-	-	21.3	19.0	23.8	October 1 at hour 16	10.7	WNW	23.6	October 1	100.0	100.0
Precipitation (mm)*	-	-	-	-	-	-	6.6	0.0	1.7	October 23 at hour 14	16.8	ESE	4.1	October 23	100.0	100.0
WSV (km/hr)	-	-	-	-	-	-	2.9	1.3	25.7	October 25 at hour 6	25.7	SE	19.4	October 22	100.0	100.0
WDV (sector)	-	-	-	-	-	-	182 (S)	-	-	-	-	-	-	-	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

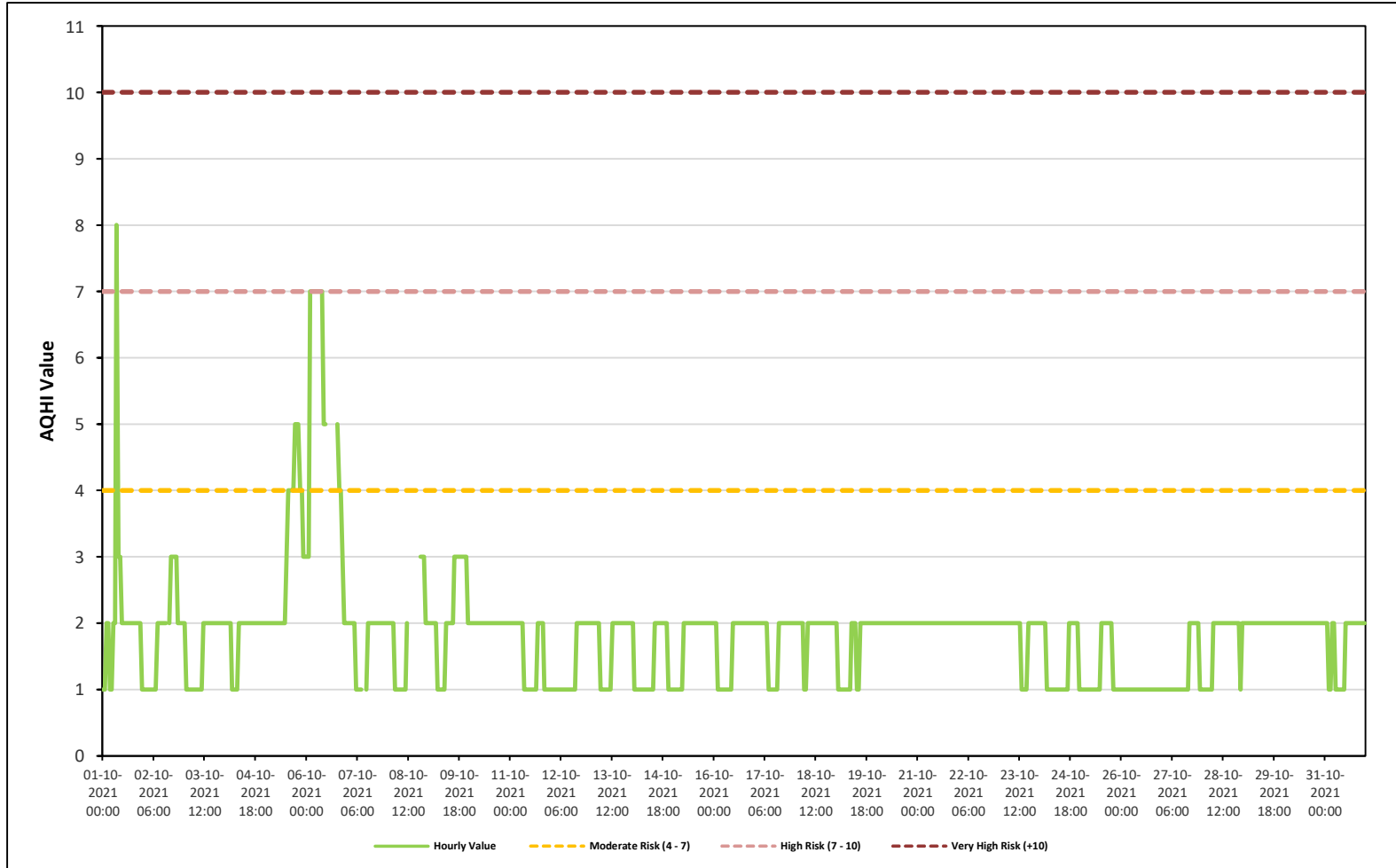
### Alberta Ambient Air Quality Objectives (AAAQOs) and/or Alberta Ambient Air Quality Guidelines (AAAQGs) Exceedances

The 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**







## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

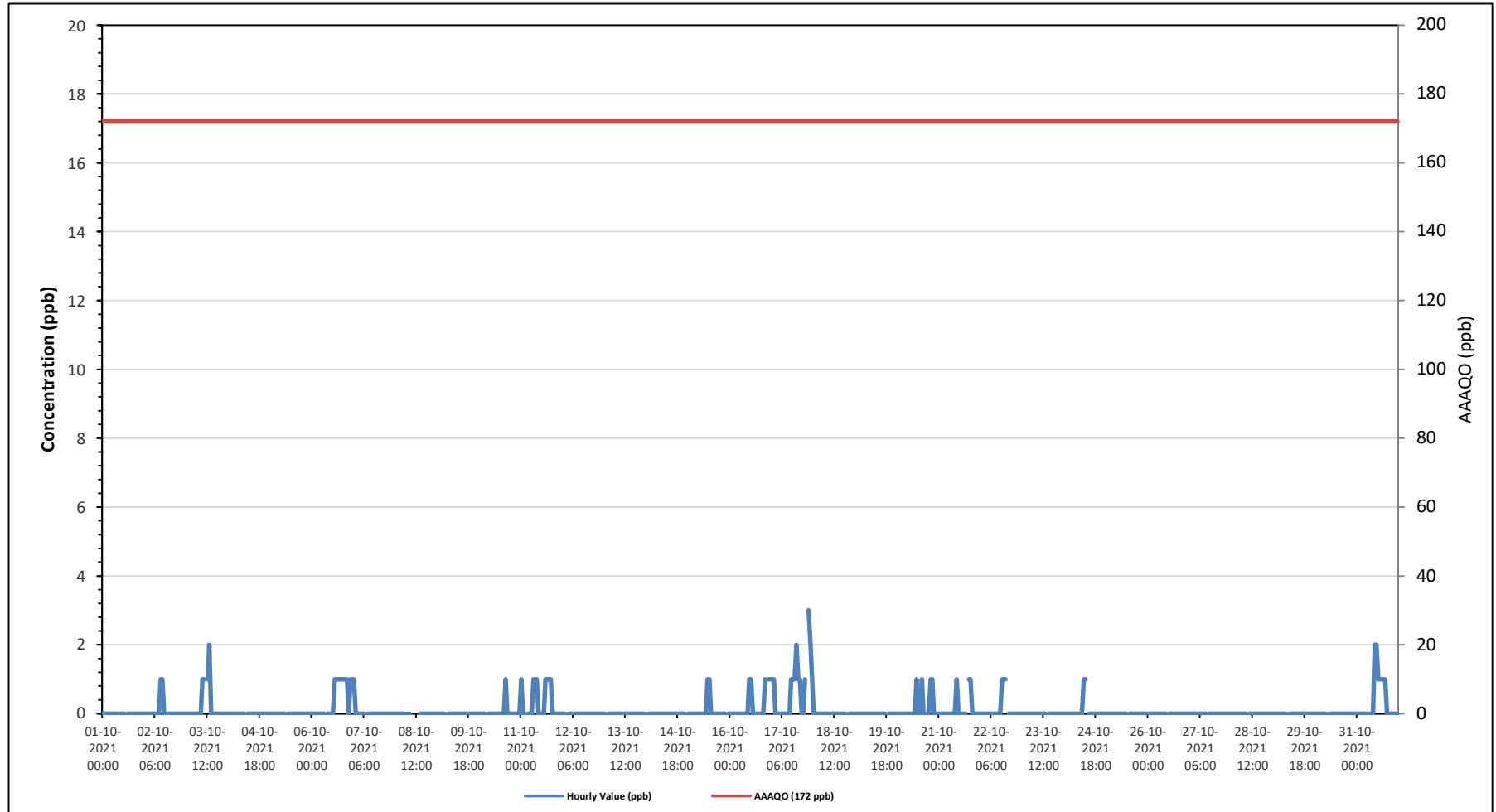
Cold Lake South Station - October 2021

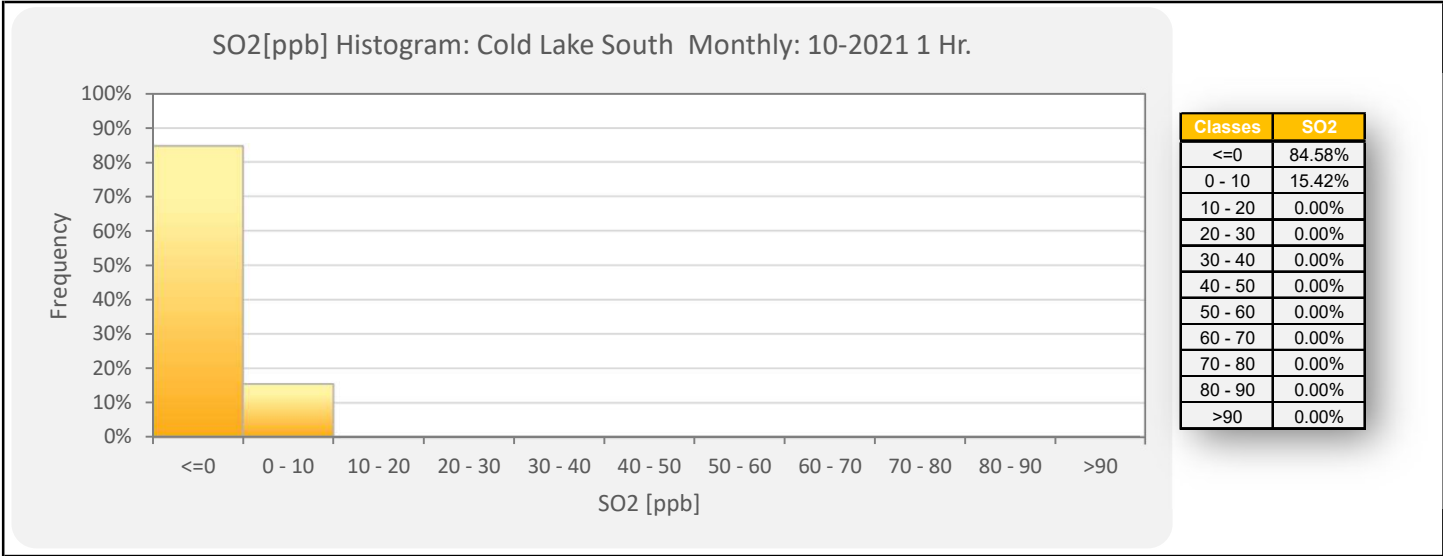
Summary of Hourly Averages

**SULPHUR DIOXIDE (SO<sub>2</sub>) in ppb**

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 172 ppb, 24-Hour 48 ppb, 30-Day 11 ppb																																						
Number of 1-Hour Exceedences: 0											Number of 24-Hour Exceedences: 0											30-Day Exceedence: 0																
Maximum Hourly Value: 3 ppb on October 17 at hour 21																Hours in Service: 744																						
Maximum Daily Value: 0.7 ppb on October 17																Hours of Data: 707																						
Minimum Hourly Value: 0 ppb on October 1 at hour 0																Hours of Missing Data: 0																						
Minimum Daily Value: 0.0 ppb on October 1																Hours of Calibration: 37																						
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											
Oct 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Oct 2	0	0	0	0	0	0	0	0	0	0	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 3	0	0	0	0	0	0	0	0	0	0	1	1	S	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 4	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 5	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 6	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	0	1	1	0	1	1	0	0	0	0	0	
Oct 7	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 8	0	0	0	0	0	0	S	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 9	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 10	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 11	1	0	0	S	0	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 12	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 13	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 14	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 15	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oct 16	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	S	1	1	0	1	1	0	1	1	0	0	0	
Oct 17	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	2	1	1	0	0	1	1	S	3	2	1	0	3	0.7	0	0	0	0	0	0	0		
Oct 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 20	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	S	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 21	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 22	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 24	0	0	0	0	0	0	0	0	0	0	0	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 25	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 26	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 27	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 28	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 29	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 30	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct 31	0	0	0	0	0	0	S	0	0	2	2	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Diurnal Maximum	1	1	0	0	0	0	0	1	1	1	2	2	1	2	2	1	1	1	1	1	1	1	1	3	2	1	0	2	0	0	0	0	0	0	0	0		
Diurnal Average	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
<b>C</b>	Monthly Calibration											<b>S</b>	Daily Zero-Span Check								<b>Q</b>	Quality Assurance																
<b>K</b>	Collection Error											<b>N</b>	No Data (Machine Not in Service)								<b>Y</b>	Routine Maintenance					<b>P</b>	Power Failure										
<b>X</b>	Invalid Data (Equipment Malfunction /Recovery)											<b>NRM</b>	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.																																						

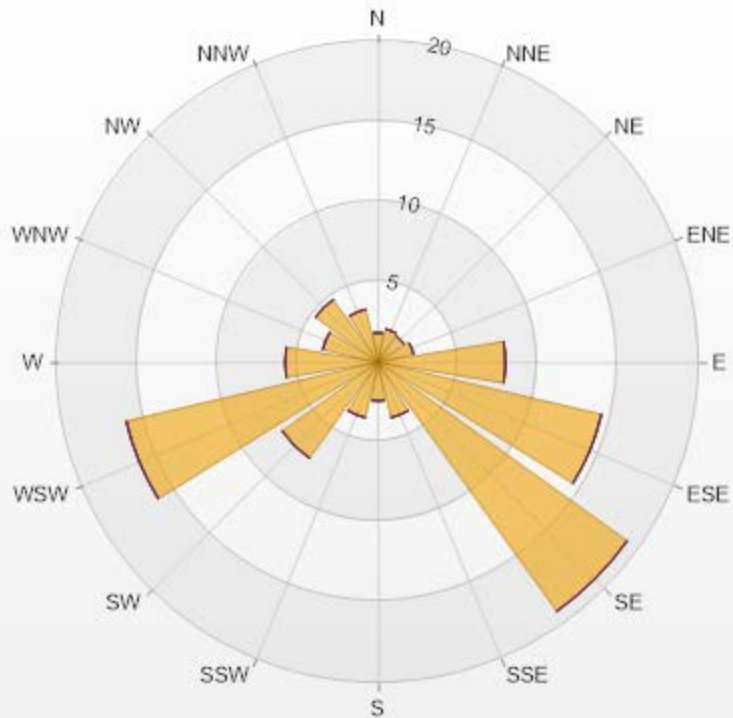
**Timeseries Chart of Hourly Average for SO<sub>2</sub> - Cold Lake South Station**





Wind: Cold Lake South Poll.: Cold Lake South-SO2[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	1.84	0	0	0	0	1.84
NNE	2.12	0	0	0	0	2.12
NE	1.98	0	0	0	0	1.98
ENE	2.26	0	0	0	0	2.26
E	7.92	0	0	0	0	7.92
ESE	14.29	0	0	0	0	14.29
SE	19.09	0	0	0	0	19.09
SSE	3.54	0	0	0	0	3.54
S	2.4	0	0	0	0	2.4
SSW	3.54	0	0	0	0	3.54
SW	7.36	0	0	0	0	7.36
WSW	16.12	0	0	0	0	16.12
W	5.8	0	0	0	0	5.8
WNW	3.54	0	0	0	0	3.54
NW	4.81	0	0	0	0	4.81
NNW	3.39	0	0	0	0	3.39
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)

100 0-10

0 10-50

0 50-100

0 100-172

0 >172.0



**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

**Cold Lake South Station - October 2021**

**Summary of Hourly Averages**

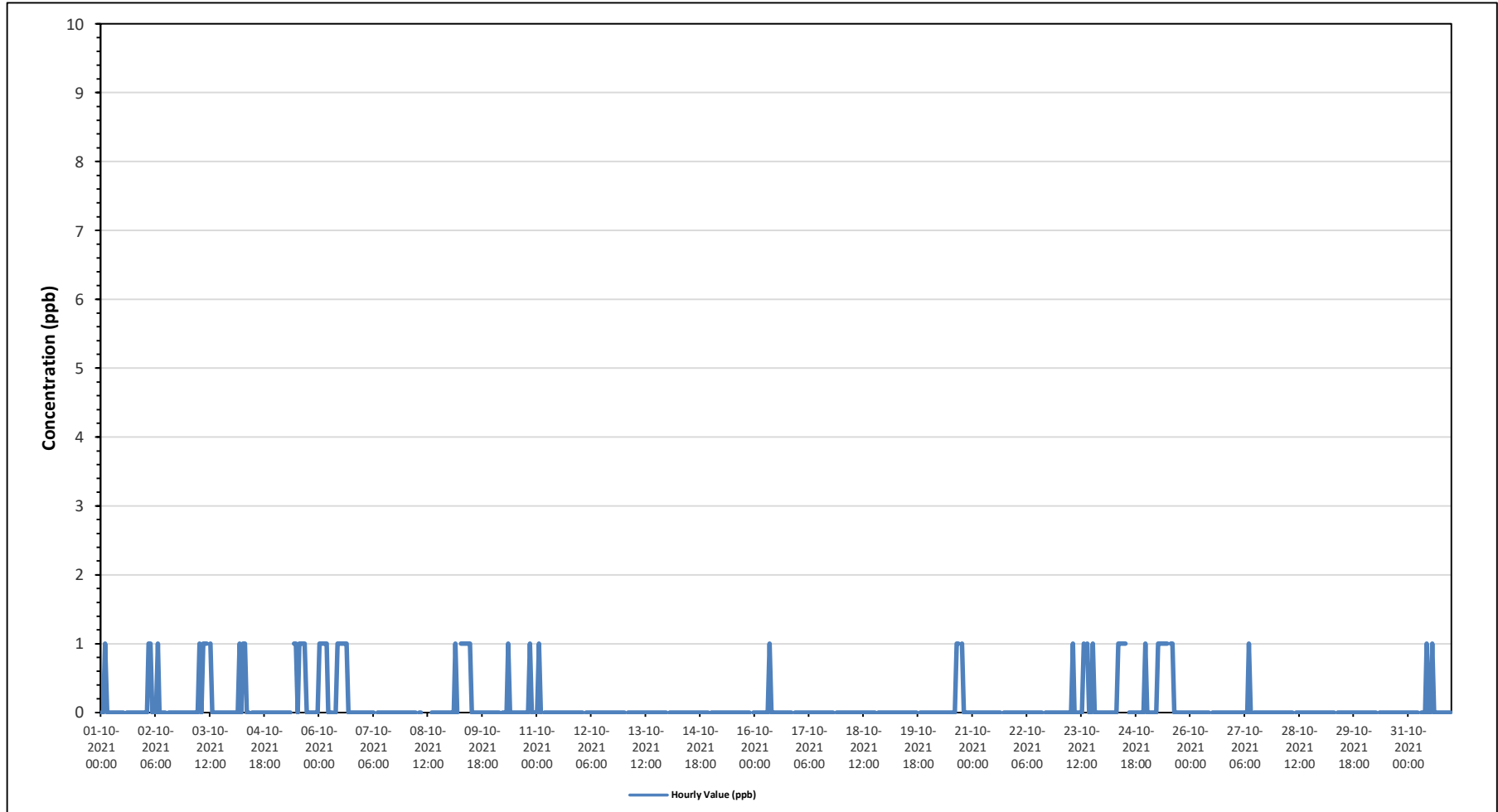
**TOTAL REDUCED SULPHUR (TRS) in ppb**

Maximum Hourly Value:	1 ppb on October 1 at hour 2	Hours in Service:	744
Maximum Daily Value:	0.5 ppb on October 6	Hours of Data:	707
Minimum Hourly Value:	0 ppb on October 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 ppb on October 7	Hours of Calibration:	37
Monthly Average:	0.1 ppb	Operational Uptime:	100.0

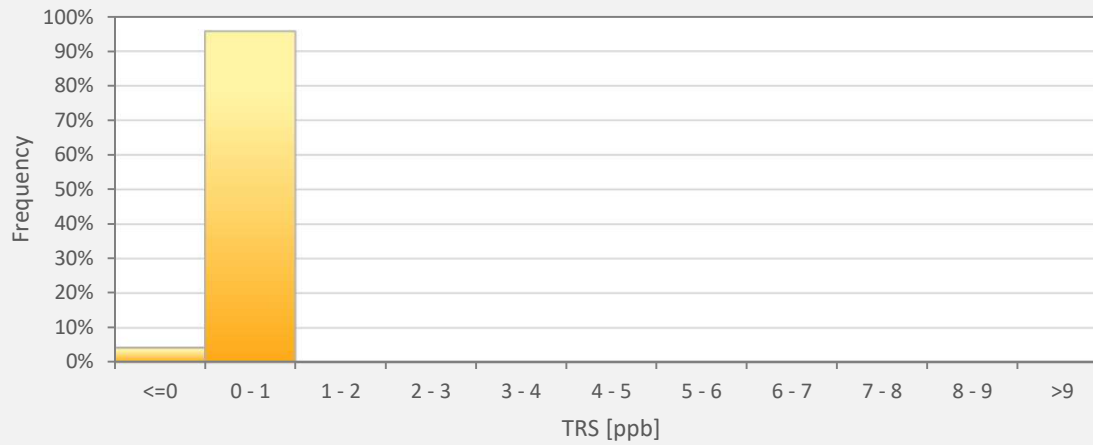
  

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average																	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23																
Oct 1	0	0	1	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0													
Oct 2	0	0	1	1	0	0	0	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1													
Oct 3	0	0	0	0	0	0	1	0	1	1	1	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2													
Oct 4	0	0	0	0	1	0	1	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1													
Oct 5	0	0	0	0	0	0	0	0	0	0	S	1	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0.3													
Oct 6	1	1	1	1	1	0	0	0	S	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.5													
Oct 7	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													
Oct 8	0	0	0	0	0	0	S	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0													
Oct 9	0	0	0	1	0	S	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3													
Oct 10	0	0	0	0	S	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0.1													
Oct 11	0	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0													
Oct 12	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													
Oct 13	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													
Oct 14	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	S	0.0													
Oct 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	S	0.0													
Oct 16	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0													
Oct 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													
Oct 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0.0													
Oct 19	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													
Oct 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	S	1	0	0	0	0	0	0	0	0	0	1	0.1													
Oct 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0													
Oct 22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0													
Oct 23	0	0	0	0	0	0	0	1	0	0	0	0	0	1	S	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0.2													
Oct 24	0	0	0	0	0	0	0	0	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.3													
Oct 25	0	0	0	0	0	0	1	1	1	1	1	1	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3													
Oct 26	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0													
Oct 27	0	0	0	0	0	0	0	0	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0													
Oct 28	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													
Oct 29	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0													
Oct 30	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													
Oct 31	0	0	0	0	0	0	S	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1													
Diurnal Maximum	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00													
Diurnal Average	0.03	0.07	0.10	0.10	0.07	0.00	0.14	0.17	0.24	0.14	0.25	0.18	0.11	0.18	0.10	0.13	0.07	0.00	0.07	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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										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 TRS - Cold Lake South Station***



TRS[ppb] Histogram: Cold Lake South Monthly: 10-2021 1 Hr.

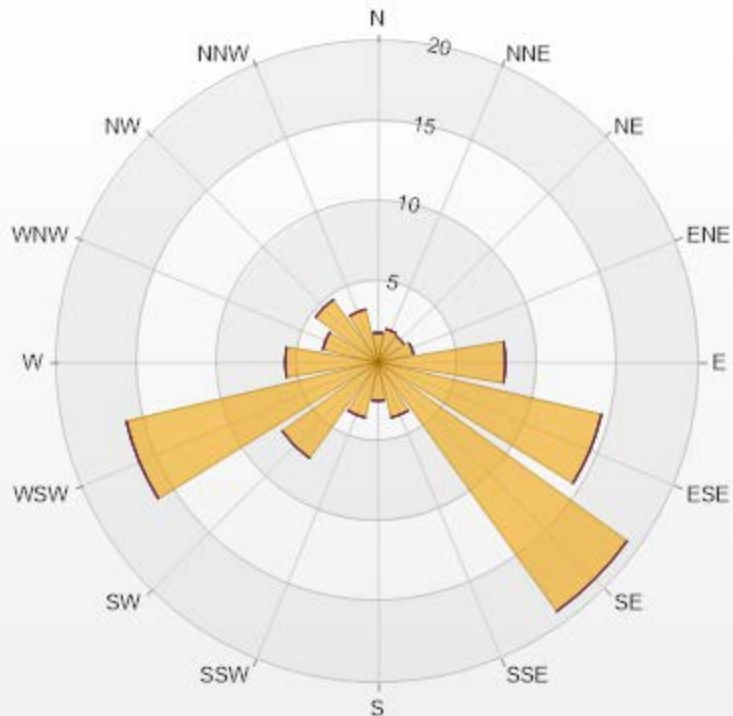


Classes	TRS
<=0	4.24%
0 - 1	95.76%
1 - 2	0.00%
2 - 3	0.00%
3 - 4	0.00%
4 - 5	0.00%
5 - 6	0.00%
6 - 7	0.00%
7 - 8	0.00%
8 - 9	0.00%
>9	0.00%



Wind: Cold Lake South Poll.: Cold Lake South-TRS[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	1.84	0	0	0	0	1.84
NNE	2.12	0	0	0	0	2.12
NE	1.98	0	0	0	0	1.98
ENE	2.26	0	0	0	0	2.26
E	7.92	0	0	0	0	7.92
ESE	14.29	0	0	0	0	14.29
SE	19.09	0	0	0	0	19.09
SSE	3.54	0	0	0	0	3.54
S	2.4	0	0	0	0	2.4
SSW	3.54	0	0	0	0	3.54
SW	7.36	0	0	0	0	7.36
WSW	16.12	0	0	0	0	16.12
W	5.8	0	0	0	0	5.8
WNW	3.54	0	0	0	0	3.54
NW	4.81	0	0	0	0	4.81
NNW	3.39	0	0	0	0	3.39
Summary	100	0	0	0	0	100



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% 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 - October 2021

Summary of Hourly Averages

OXIDES OF NITROGEN (NOx) in ppb

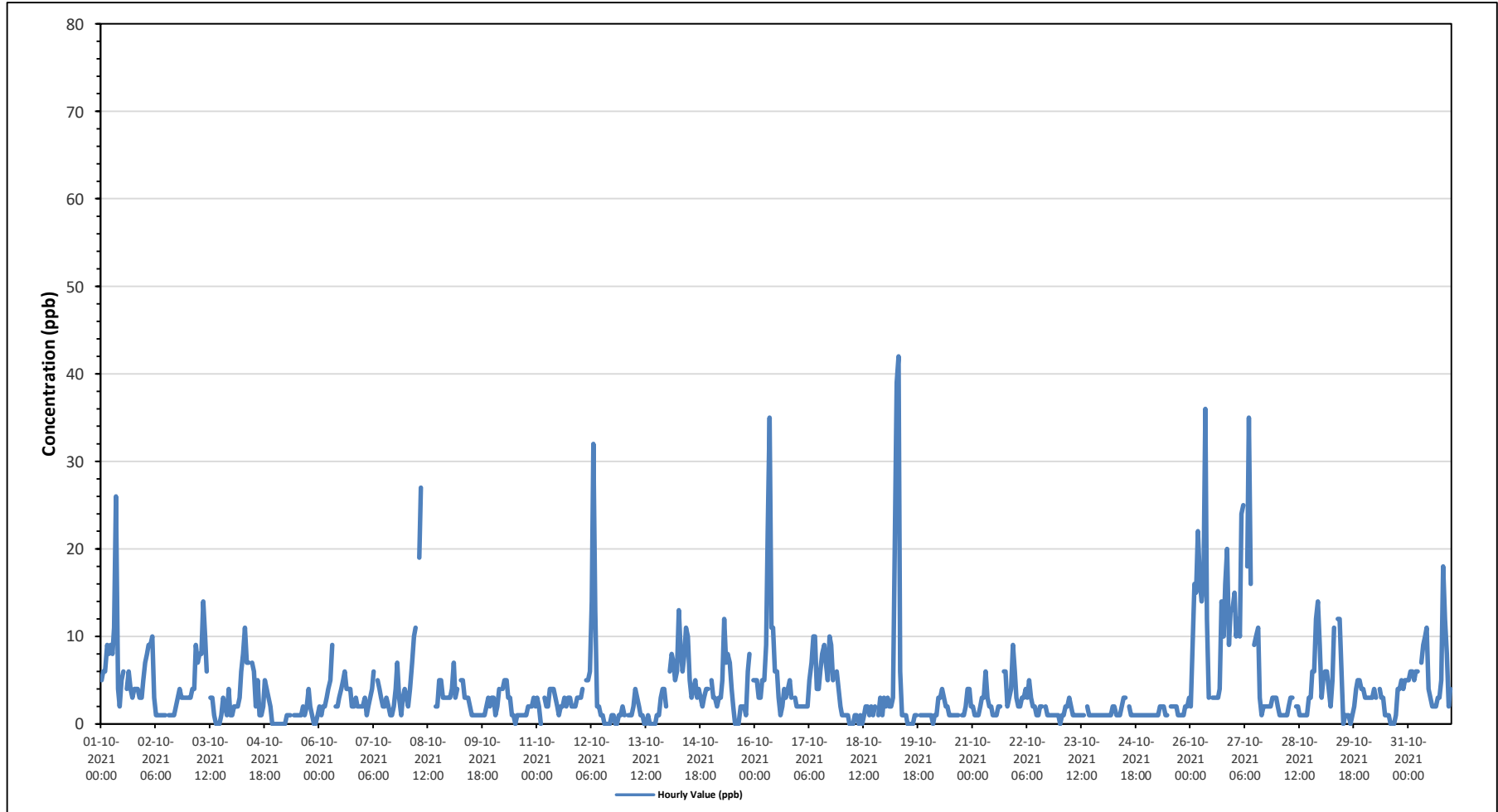
Maximum Hourly Value:	42 ppb on October 19 at hour 7	Hours in Service:	744
Maximum Daily Value:	11.8 ppb on October 26	Hours of Data:	704
Minimum Hourly Value:	0 ppb on October 3 at hour 15	Hours of Missing Data:	1
Minimum Daily Value:	0.9 ppb on October 5	Hours of Calibration:	39
Monthly Average:	3.9 ppb	Operational Uptime:	99.9

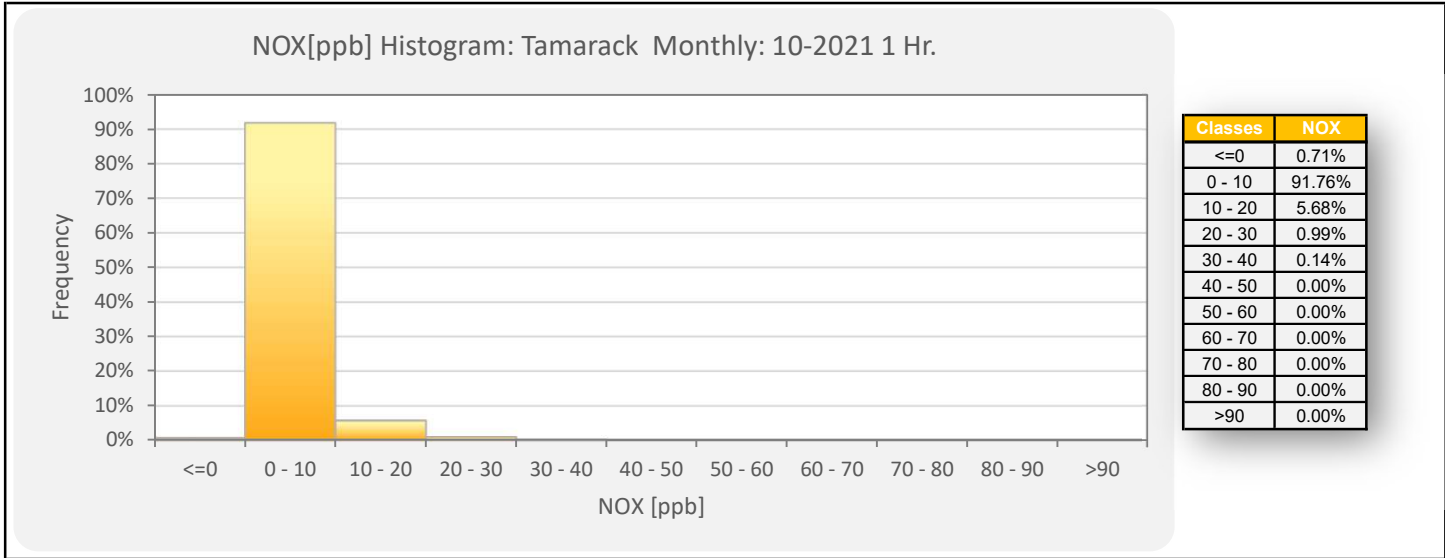
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Oct 1	5	6	6	9	8	9	8	11	26	4	2	5	6	S	4	6	4	3	4	4	4	3	3	5	2	26	6.3	
Oct 2	7	8	9	9	10	3	1	1	1	1	1	1	S	1	1	1	1	2	3	4	3	3	3	3	1	10	3.3	
Oct 3	3	3	4	4	9	7	8	8	14	10	6	S	3	3	1	0	0	0	1	3	2	1	4	1	0	14	4.1	
Oct 4	1	2	2	2	3	6	8	11	7	7	S	7	6	2	5	1	1	2	5	4	3	2	0	0	0	11	3.8	
Oct 5	0	0	0	0	0	0	1	1	1	1	S	1	1	1	1	2	1	2	4	2	1	0	0	1	0	4	0.9	
Oct 6	2	1	2	2	3	4	5	9	S	2	2	3	4	5	6	4	4	4	2	2	3	2	2	2	1	9	3.3	
Oct 7	2	3	1	2	3	4	6	S	5	4	3	2	2	3	2	1	1	2	4	7	3	1	3	4	1	7	3.0	
Oct 8	3	2	4	7	10	11	S	19	27	C	C	C	C	C	C	C	2	2	5	5	3	3	3	3	2	27	-	
Oct 9	3	4	7	3	4	S	5	5	3	3	3	2	1	1	1	1	1	1	1	1	2	3	2	3	1	7	2.6	
Oct 10	3	1	2	4	S	4	5	5	3	3	1	1	0	1	1	1	1	1	1	1	2	2	3	2	0	5	2.1	
Oct 11	3	2	0	S	3	2	2	4	4	4	3	2	1	2	2	3	2	3	3	2	2	2	3	3	0	4	2.5	
Oct 12	3	4	S	5	5	6	14	32	13	2	2	1	1	0	0	0	1	1	0	0	1	1	1	2	0	32	4.1	
Oct 13	1	S	1	1	1	2	4	3	2	1	1	0	0	1	0	0	0	0	1	1	3	4	4	2	0	4	1.4	
Oct 14	S	6	8	7	5	6	13	9	6	8	11	10	5	3	4	5	3	4	3	2	3	4	4	S	2	13	5.9	
Oct 15	5	3	3	2	3	3	5	12	7	8	7	4	2	0	0	2	2	2	1	6	8	S	5	0	0	12	3.9	
Oct 16	5	5	3	3	5	5	9	22	35	11	11	6	6	3	1	2	4	3	4	5	3	S	3	2	1	35	6.8	
Oct 17	2	2	2	2	2	2	5	7	10	10	4	4	6	8	9	7	5	10	9	5	S	6	4	2	2	10	5.3	
Oct 18	1	1	1	1	0	0	0	1	1	0	1	0	1	2	2	1	2	1	2	1	S	1	3	1	3	0	3	1.1
Oct 19	2	3	2	2	3	21	39	42	6	1	1	1	0	0	0	0	1	1	S	1	1	1	1	1	0	42	5.7	
Oct 20	1	1	0	1	1	3	3	4	3	2	2	1	1	1	1	1	1	S	1	1	2	4	4	2	0	4	1.8	
Oct 21	2	1	1	1	2	3	3	6	3	2	2	1	1	1	2	2	S	6	6	2	3	4	9	6	1	9	3.0	
Oct 22	3	2	2	3	3	4	3	5	3	2	2	1	1	2	2	S	2	1	1	1	1	1	1	1	1	5	2.0	
Oct 23	0	1	1	2	2	3	2	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	0	3	1.2	
Oct 24	1	1	1	1	1	2	2	1	1	1	2	3	3	S	2	1	1	1	1	1	1	1	1	1	1	3	1.3	
Oct 25	1	1	1	1	1	1	1	2	2	2	1	1	S	2	2	2	2	1	1	1	1	2	2	3	1	3	1.5	
Oct 26	2	9	16	15	22	16	14	16	36	12	3	S	3	3	3	3	4	14	10	16	20	9	13	13	2	36	11.8	
Oct 27	15	10	12	10	24	25	NRM	18	35	16	S	9	10	11	3	1	2	2	2	2	2	3	3	3	1	35	9.9	
Oct 28	2	1	1	1	1	1	2	3	3	S	2	2	1	1	1	1	1	3	3	6	6	12	14	9	1	14	3.3	
Oct 29	3	5	6	6	4	2	5	11	S	12	12	6	0	1	1	1	0	1	2	4	5	5	4	4	0	12	4.3	
Oct 30	3	3	3	3	3	4	3	S	4	3	3	1	1	1	0	0	1	4	4	5	4	5	5	0	5	2.7		
Oct 31	5	6	6	5	6	6	S	7	9	10	11	4	3	2	2	3	3	5	18	12	8	2	4	2	18	6.0		
Diurnal Maximum	15	10	16	15	24	25	39	42	36	16	12	10	10	11	9	7	5	14	10	18	20	12	14	13				
Diurnal Average	3.0	3.2	3.6	3.8	4.9	5.5	6.3	9.5	9.3	5.1	3.6	2.9	2.5	2.2	2.0	1.8	1.7	2.6	3.1	3.6	3.5	3.4	3.4	3.2				

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

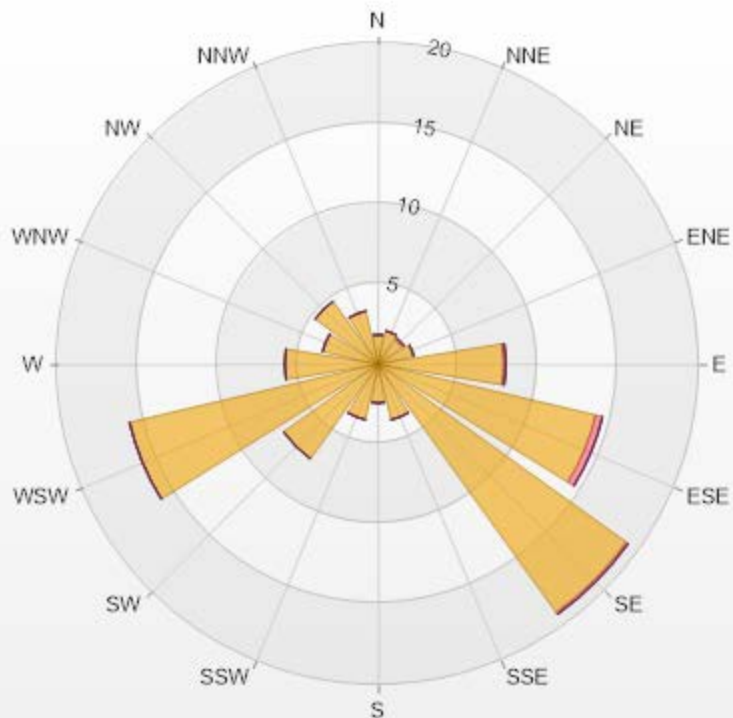
*Timeseries Chart of Hourly Average for NOx - Cold Lake South Station*





Wind: Cold Lake South Poll.: Cold Lake South-NOX[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.62% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	1.85	0	0	0	0	1.85
NNE	2.13	0	0	0	0	2.13
NE	1.85	0.14	0	0	0	1.99
ENE	2.27	0	0	0	0	2.27
E	7.81	0.14	0	0	0	7.95
ESE	13.92	0.43	0	0	0	14.35
SE	19.03	0.14	0	0	0	19.17
SSE	3.55	0	0	0	0	3.55
S	2.41	0	0	0	0	2.41
SSW	3.55	0	0	0	0	3.55
SW	7.24	0	0	0	0	7.24
WSW	15.91	0	0	0	0	15.91
W	5.82	0	0	0	0	5.82
WNW	3.55	0	0	0	0	3.55
NW	4.83	0	0	0	0	4.83
NNW	3.41	0	0	0	0	3.41
Summary	99.13	0.85	0	0	0	100



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% 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 - October 2021

Summary of Hourly Averages

NITRIC OXIDE (NO) in ppb

Maximum Hourly Value:	31 ppb on October 26 at hour 8	Hours in Service:	744
Maximum Daily Value:	7.4 ppb on October 26	Hours of Data:	704
Minimum Hourly Value:	0 ppb on October 1 at hour 0	Hours of Missing Data:	1
Minimum Daily Value:	0.0 ppb on October 5	Hours of Calibration:	39
Monthly Average:	1.1 ppb	Operational Uptime:	99.9

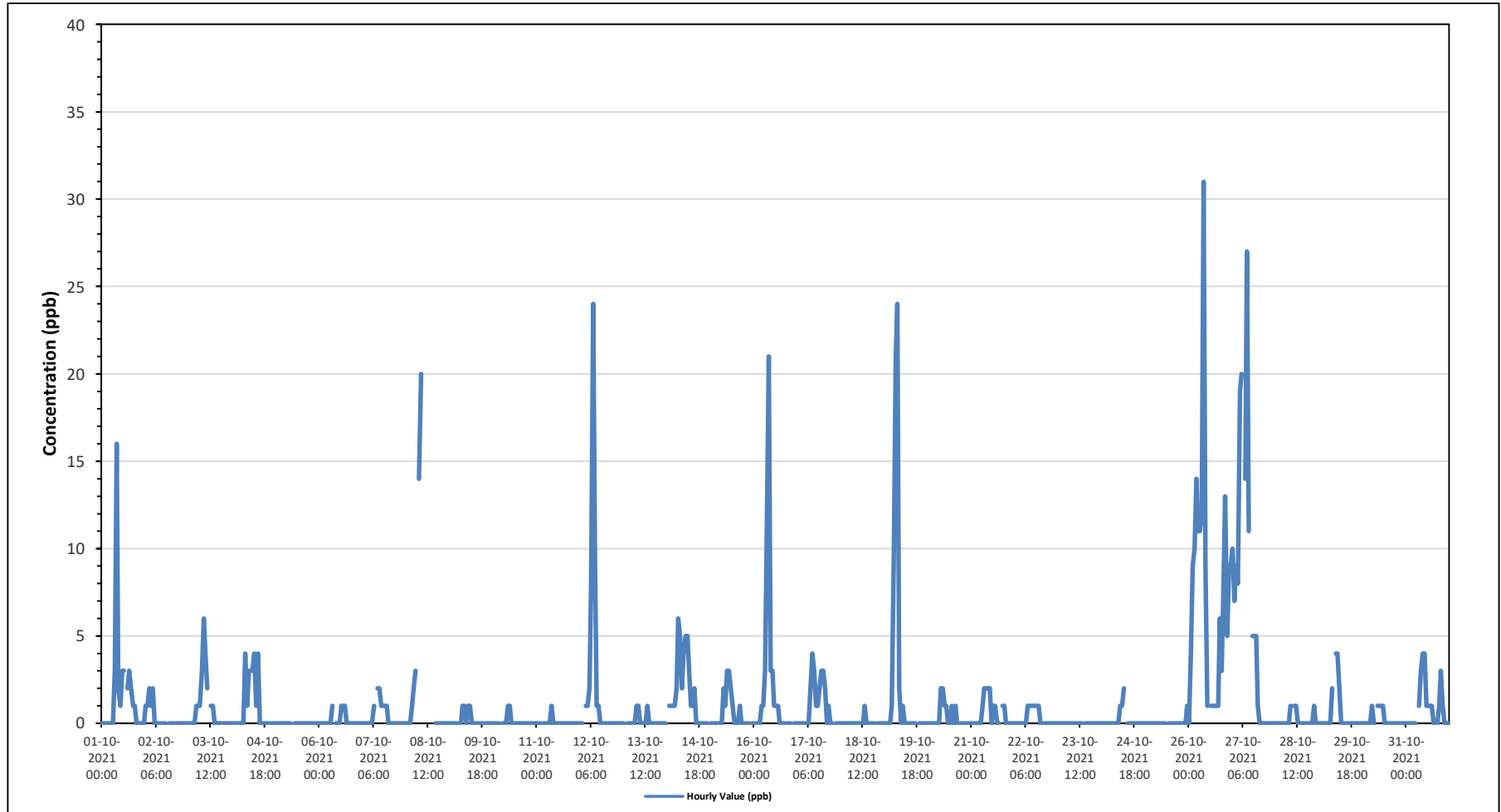
Day	Hourly Period Starting at (MST)																								Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
Oct 1	0	0	0	0	0	0	0	3	16	2	1	3	3	S	2	3	2	1	1	0	0	0	0	0	0	0	0	16	1.6
Oct 2	1	1	2	1	2	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3	
Oct 3	0	0	0	0	1	1	1	3	6	4	2	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	6	0.9	
Oct 4	0	0	0	0	0	0	0	4	1	3	S	3	4	1	4	0	0	0	0	0	0	0	0	0	0	0	4	0.9	
Oct 5	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	
Oct 6	0	0	0	0	0	0	0	1	S	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0.2	
Oct 7	0	0	0	0	0	0	1	S	2	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0.4	
Oct 8	0	0	0	1	2	3	S	14	20	C	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	20	-	
Oct 9	0	0	0	0	0	S	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	
Oct 10	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	
Oct 11	0	0	0	S	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	
Oct 12	0	0	S	1	1	2	8	24	9	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	2.0	
Oct 13	0	S	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Oct 14	S	1	1	1	1	2	6	5	2	4	5	5	3	1	1	2	0	0	0	0	0	0	0	0	0	0	6	1.8	
Oct 15	0	0	0	0	0	0	0	2	1	3	3	2	1	0	0	1	0	0	0	0	0	0	0	0	0	S	0	0.6	
Oct 16	0	0	0	0	1	1	3	13	21	3	3	1	1	1	0	0	0	0	0	0	0	0	0	0	S	0	21	2.1	
Oct 17	0	0	0	0	0	0	0	2	4	3	1	1	2	3	3	2	0	1	0	0	0	0	0	0	S	0	4	1.0	
Oct 18	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	S	0	1	0.0	
Oct 19	0	0	0	0	1	10	21	24	2	0	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	24	2.6	
Oct 20	0	0	0	0	0	0	0	2	2	1	1	0	0	1	0	1	0	0	S	0	0	0	0	0	0	0	2	0.3	
Oct 21	0	0	0	0	0	0	1	2	2	2	2	0	1	1	0	0	0	0	S	1	1	0	0	0	0	0	2	0.6	
Oct 22	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	1	0.3	
Oct 23	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	
Oct 24	0	0	0	0	0	0	0	0	0	0	1	1	2	S	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2	
Oct 25	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	1	1	0.0	
Oct 26	0	4	9	10	14	11	11	12	31	9	1	S	1	1	1	1	1	6	3	8	13	5	9	9	0	31	7.4		
Oct 27	10	7	9	8	19	20	NRM	14	27	11	S	5	5	5	1	0	0	0	0	0	0	0	0	0	0	0	27	6.4	
Oct 28	0	0	0	0	0	0	0	0	1	S	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0.2	
Oct 29	0	0	0	0	0	0	0	2	S	4	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.5	
Oct 30	0	0	0	0	0	1	0	S	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	
Oct 31	0	0	0	0	0	0	S	3	4	4	1	1	1	1	0	0	0	1	3	1	0	0	0	0	0	0	4	0.9	
Diurnal Maximum	10	7	9	10	19	20	21	24	31	11	5	5	5	5	4	3	2	6	3	8	13	5	9	9					
Daiurnal Average	0.4	0.4	0.7	0.7	1.4	1.7	1.9	4.5	5.4	2.1	1.3	1.0	1.0	0.8	0.5	0.3	0.1	0.3	0.2	0.4	0.5	0.2	0.3	0.3					

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

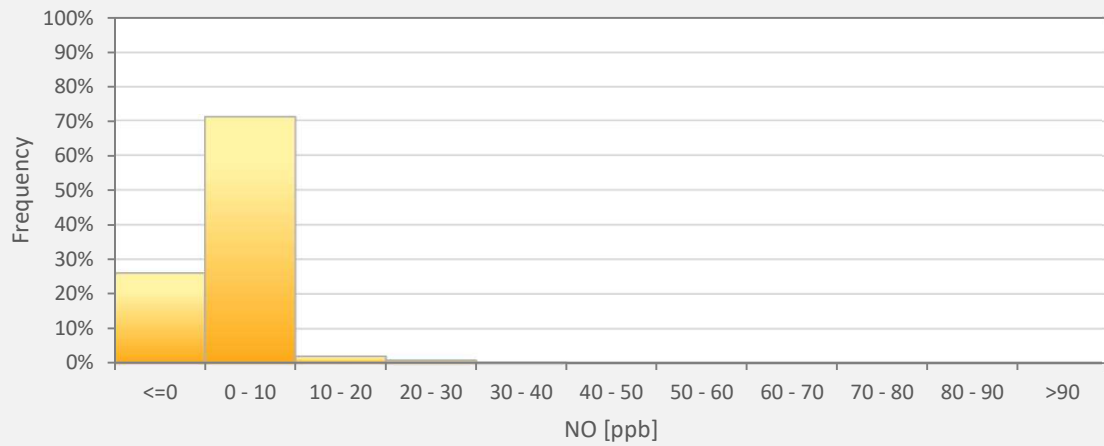
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.



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



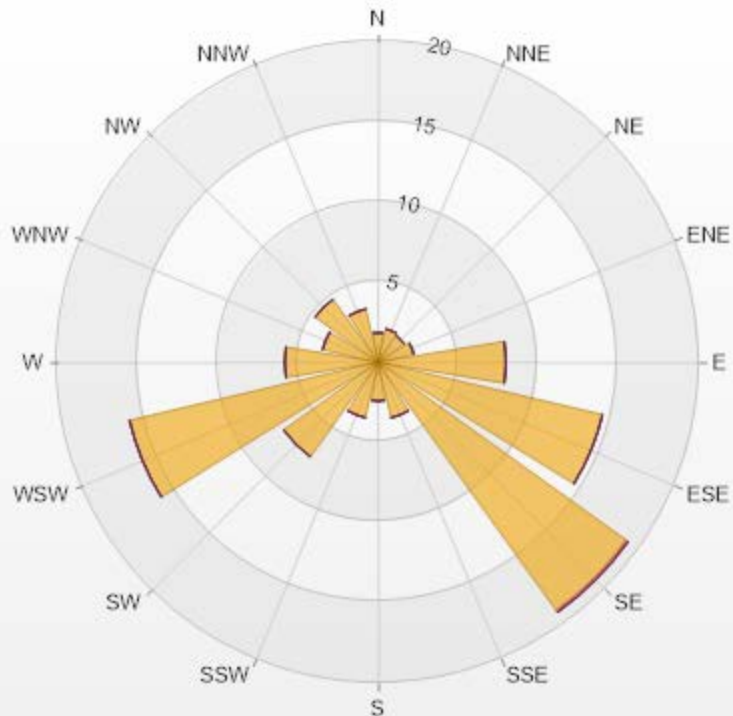
NO[ppb] Histogram: Cold Lake South Monthly: 10-2021 1 Hr.



Classes	NO
<=0	25.99%
0 - 10	71.02%
10 - 20	1.99%
20 - 30	0.85%
30 - 40	0.14%
40 - 50	0.00%
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: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.62% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	1.85	0	0	0	0	1.85
NNE	2.13	0	0	0	0	2.13
NE	1.99	0	0	0	0	1.99
ENE	2.27	0	0	0	0	2.27
E	7.95	0	0	0	0	7.95
ESE	14.35	0	0	0	0	14.35
SE	19.03	0.14	0	0	0	19.17
SSE	3.55	0	0	0	0	3.55
S	2.41	0	0	0	0	2.41
SSW	3.55	0	0	0	0	3.55
SW	7.24	0	0	0	0	7.24
WSW	15.91	0	0	0	0	15.91
W	5.82	0	0	0	0	5.82
WNW	3.55	0	0	0	0	3.55
NW	4.83	0	0	0	0	4.83
NNW	3.41	0	0	0	0	3.41
Summary	100	0.14	0	0	0	100




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% Icon Classes (ppb)

100  0-30

0  30-50

0  50-76

0  76-159

0  >159.0



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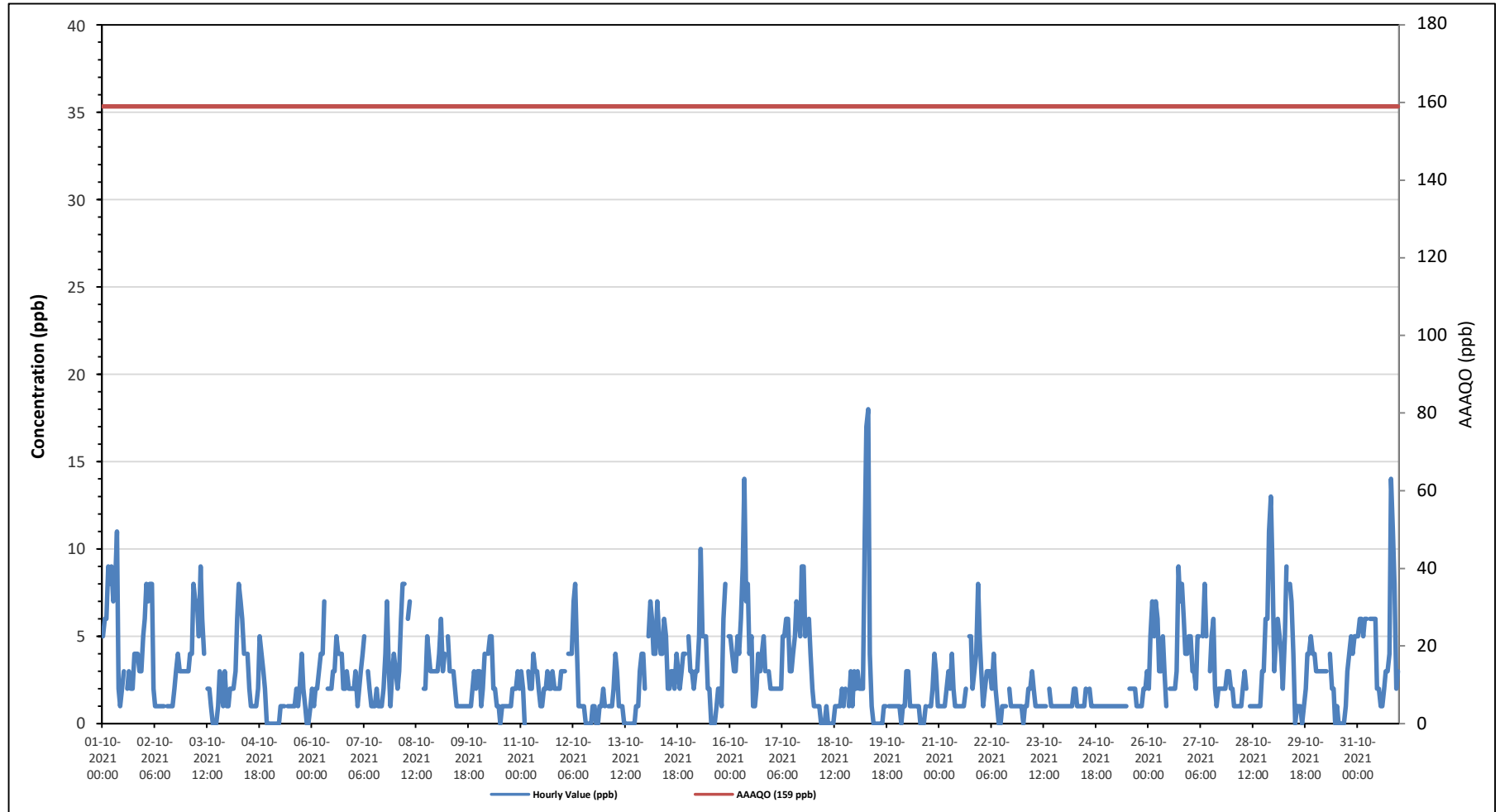
Cold Lake South Station - October 2021

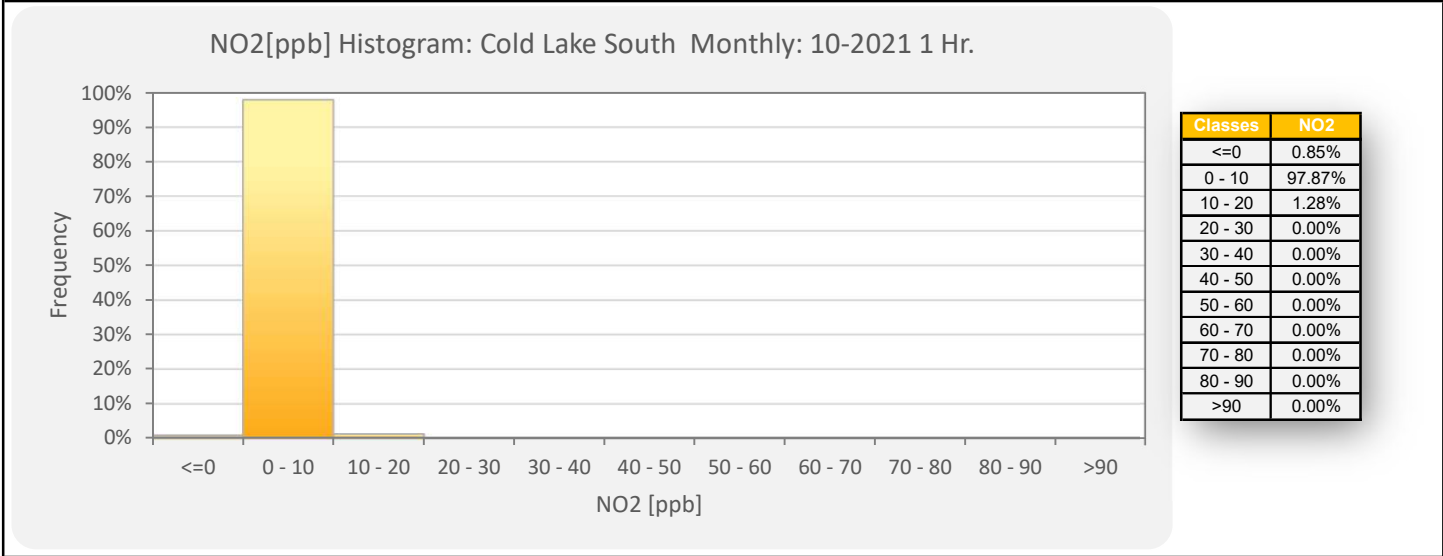
Summary of Hourly Averages

NITROGEN DIOXIDE (NO<sub>2</sub>) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 159 ppb																															
Number of 1-Hour Exceedences: 0																															
Maximum Hourly Value: 18 ppb on October 19 at hour 7												Hours in Service: 744																			
Maximum Daily Value: 5.0 ppb on October 31												Hours of Data: 704																			
Minimum Hourly Value: 0 ppb on October 3 at hour 15												Hours of Missing Data: 1																			
Minimum Daily Value: 0.9 ppb on October 5												Hours of Calibration: 39																			
Monthly Average: 2.8 ppb												Operational Uptime: 99.9																			
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23				
Oct 1	5	6	6	9	8	9	7	8	11	2	1	2	3	S	2	3	2	2	4	4	4	3	3	5	1	11	4.7				
Oct 2	6	8	7	8	8	2	1	1	1	1	1	1	S	1	1	1	1	2	3	4	3	3	3	3	1	8	3.0				
Oct 3	3	3	4	4	8	7	7	5	9	6	4	S	2	2	1	0	0	0	1	3	2	1	3	1	0	9	3.3				
Oct 4	1	2	2	2	3	6	8	7	6	4	S	4	2	1	1	1	1	2	5	4	3	2	0	0	0	8	2.9				
Oct 5	0	0	0	0	0	0	1	1	1	S	1	1	1	1	1	2	1	2	4	2	1	0	0	1	0	4	0.9				
Oct 6	2	1	2	2	3	4	4	7	S	2	2	2	3	3	5	4	4	4	2	2	3	2	2	2	1	7	2.9				
Oct 7	2	3	1	2	3	4	5	S	3	2	1	1	1	2	1	1	1	2	4	7	3	1	3	4	1	7	2.5				
Oct 8	3	2	3	6	8	8	S	6	7	C	C	C	C	C	C	C	C	2	2	5	4	3	3	3	2	8	-				
Oct 9	3	4	6	3	4	S	5	3	3	3	2	1	1	1	1	1	1	1	1	1	2	3	2	3	1	6	2.4				
Oct 10	3	1	2	4	S	4	5	5	2	2	1	1	0	1	1	1	1	1	1	2	2	2	3	2	0	5	2.0				
Oct 11	3	2	0	S	3	2	2	4	3	3	2	1	1	2	2	3	2	2	3	2	2	2	3	0	4	2.2					
Oct 12	3	3	S	4	4	4	4	7	8	4	1	1	1	0	0	0	0	1	1	0	0	1	1	2	0	8	2.0				
Oct 13	1	S	1	1	1	2	4	3	1	1	1	0	0	0	0	0	0	0	1	1	3	4	4	2	0	4	1.3				
Oct 14	S	5	7	6	4	4	7	5	4	4	6	5	2	2	3	3	2	4	3	2	3	4	4	S	2	7	4.0				
Oct 15	5	3	3	2	3	3	5	10	5	5	2	2	0	0	0	1	2	2	1	6	8	S	5	0	10	3.4					
Oct 16	5	4	3	3	5	4	6	9	14	7	8	4	5	1	1	2	4	3	4	5	3	S	3	2	1	14	4.6				
Oct 17	2	2	2	2	2	2	5	5	6	6	3	3	4	5	7	6	5	9	9	5	S	6	4	2	2	9	4.4				
Oct 18	1	1	1	1	0	0	1	0	0	0	0	0	1	1	1	2	1	1	2	1	S	1	3	1	3	0	3	1.0			
Oct 19	2	3	2	2	2	11	17	18	4	1	0	0	0	0	0	0	1	1	1	S	1	1	1	1	0	18	3.0				
Oct 20	1	1	0	1	1	3	3	1	1	1	1	1	1	0	0	0	1	S	1	1	2	4	3	1	0	4	1.3				
Oct 21	1	1	1	1	2	3	2	4	2	1	1	1	1	1	1	2	S	5	5	2	3	4	8	5	1	8	2.5				
Oct 22	3	1	2	3	3	3	2	4	2	1	0	0	1	1	1	S	2	1	1	1	1	1	1	1	0	4	1.6				
Oct 23	0	1	1	2	2	3	2	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	0	3	1.2				
Oct 24	1	1	1	1	1	2	2	1	1	1	1	1	2	S	2	1	1	1	1	1	1	1	1	1	1	2	1.2				
Oct 25	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	2	2	1	1	1	2	2	3	1	3	1.3				
Oct 26	2	5	7	5	7	6	3	3	5	3	1	S	2	2	2	3	9	7	8	6	4	4	5	1	9	4.4					
Oct 27	5	3	3	2	5	5	NRM	5	8	5	S	3	5	6	2	1	2	2	2	2	2	3	2	1	8	3.5					
Oct 28	2	1	1	1	1	2	3	2	S	1	1	1	1	1	1	1	3	3	6	6	11	13	9	1	13	3.1					
Oct 29	3	5	6	5	4	2	5	9	S	8	7	4	0	1	1	1	0	1	2	4	4	5	4	0	9	3.7					
Oct 30	3	3	3	3	3	3	3	S	4	2	2	0	1	0	0	0	1	3	4	5	4	5	5	0	5	2.5					
Oct 31	5	6	6	5	6	6	S	6	6	6	2	2	1	1	2	3	3	4	14	11	8	2	3	1	14	5.0					
Diurnal Maximum	6	8	7	9	8	11	17	18	14	8	8	5	5	6	7	6	5	9	9	14	11	11	13	9							
Daiurnal Average	2.6	2.7	2.8	3.0	3.5	3.8	4.3	5.0	4.0	2.9	2.2	1.6	1.6	1.4	1.4	1.5	1.6	2.3	2.9	3.2	2.9	3.2	3.0	2.8							
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 NO2 - Cold Lake South Station**

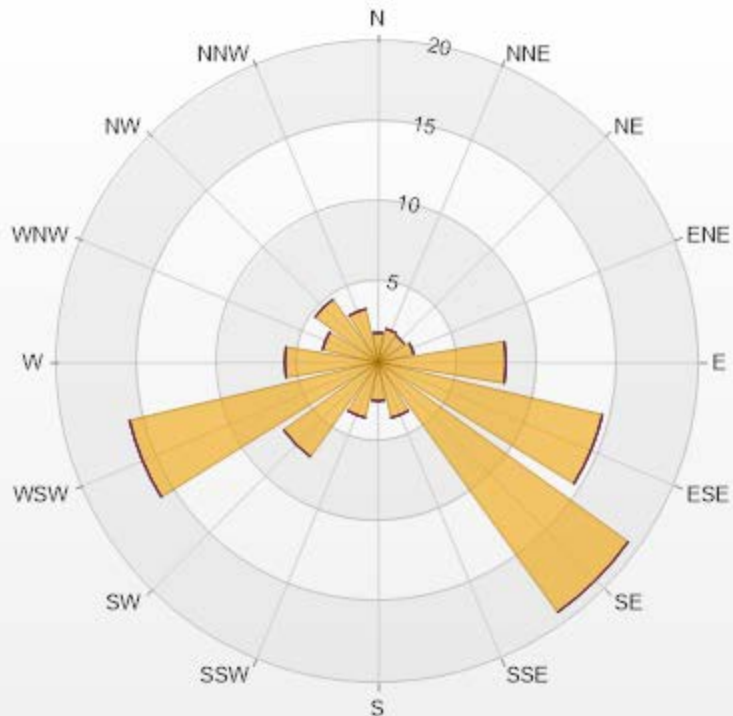




Wind: Cold Lake South Poll.: Cold Lake South-NO2[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.62% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	1.85	0	0	0	0	1.85
NNE	2.13	0	0	0	0	2.13
NE	1.99	0	0	0	0	1.99
ENE	2.27	0	0	0	0	2.27
E	7.95	0	0	0	0	7.95
ESE	14.35	0	0	0	0	14.35
SE	19.18	0	0	0	0	19.18
SSE	3.55	0	0	0	0	3.55
S	2.41	0	0	0	0	2.41
SSW	3.55	0	0	0	0	3.55
SW	7.24	0	0	0	0	7.24
WSW	15.91	0	0	0	0	15.91
W	5.82	0	0	0	0	5.82
WNW	3.55	0	0	0	0	3.55
NW	4.83	0	0	0	0	4.83
NNW	3.41	0	0	0	0	3.41
Summary	100	0	0	0	0	100





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% Icon Classes (ppb)

100  0-30

0  30-50

0  50-76

0  76-159

0  >159.0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

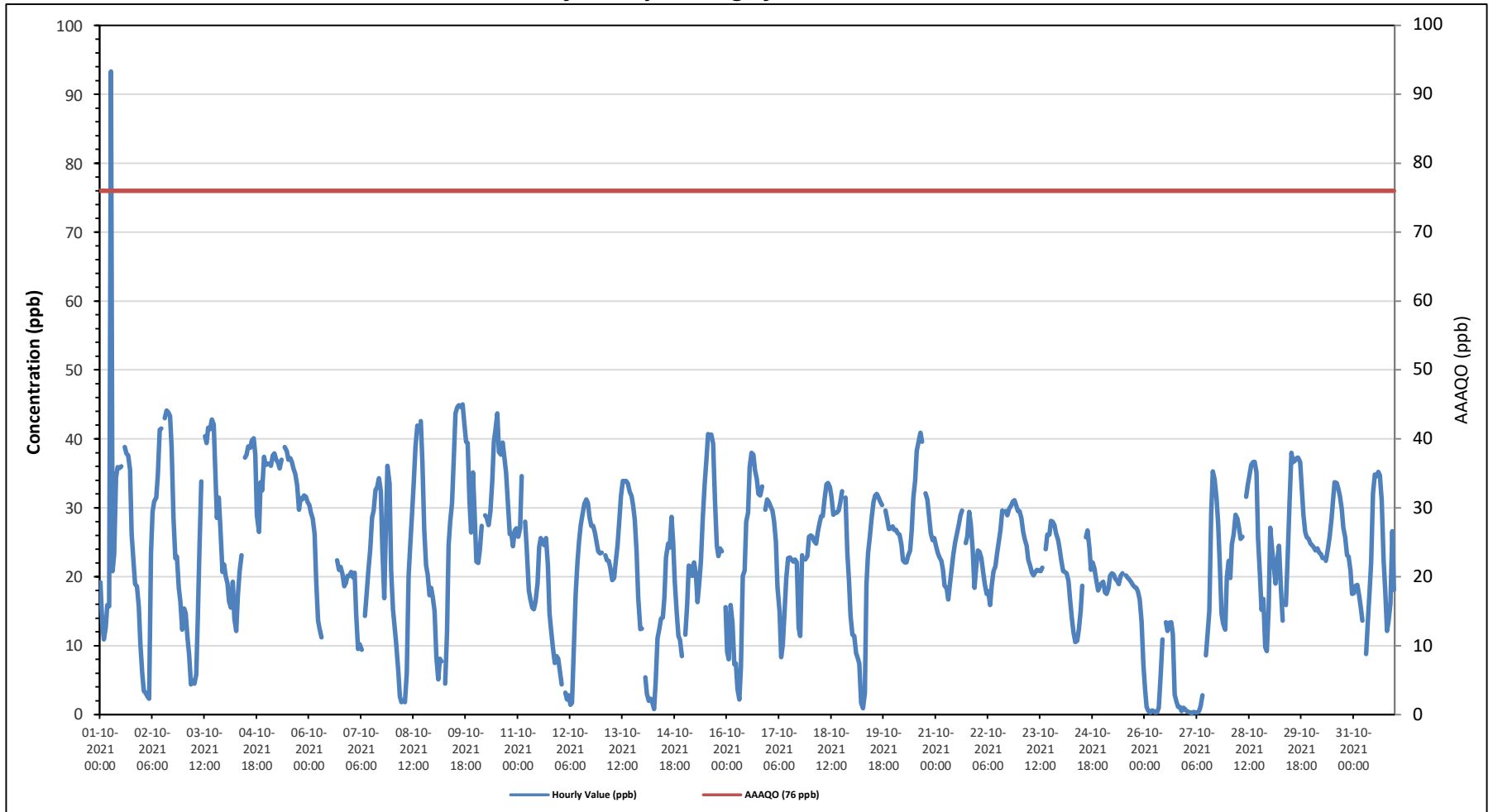
Cold Lake South Station - October 2021

Summary of Hourly Averages

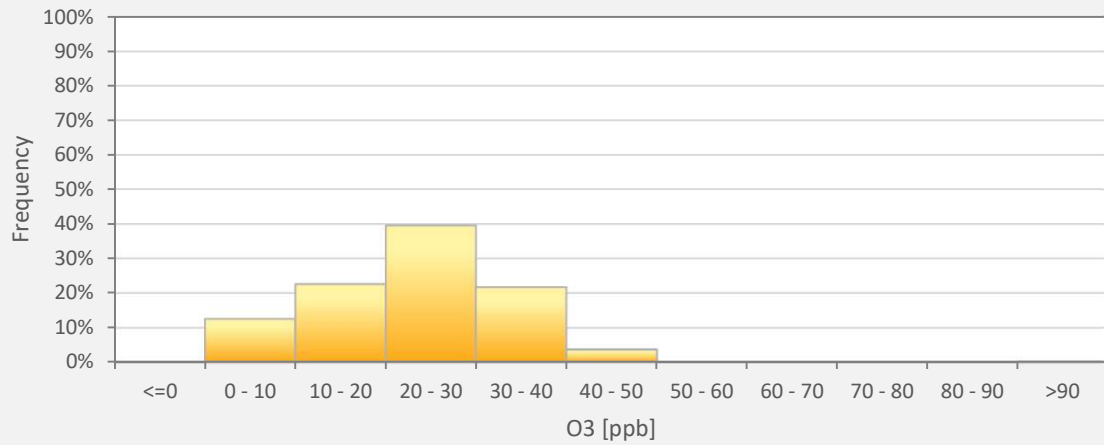
OZONE (O<sub>3</sub>) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 76 ppb																																															
Number of 1-Hour Exceedences: 1																																															
Maximum Hourly Value: 93.3 ppb on October 1 at hour 6												Hours in Service: 744																																			
Maximum Daily Value: 35.2 ppb on October 5												Hours of Data: 705																																			
Minimum Hourly Value: 0.2 ppb on October 27 at hour 3												Hours of Missing Data: 1																																			
Minimum Daily Value: 4.3 ppb on October 26												Hours of Calibration: 38																																			
Monthly Average: 23.0 ppb												Operational Uptime: 99.9																																			
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average																					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23																				
Oct 1	19.2	13.2	10.9	12.6	15.9	15.7	93.3	20.8	23.3	34.4	35.9	35.8	36	S	38.8	37.9	37.6	35.5	26.2	22.2	18.9	18.6	15.7	10.2	10.2	93.3	27.3																				
Oct 2	6	3.4	3.2	2.6	2.3	23.4	29.4	30.9	31.5	34.8	41.3	41.5	S	43	44.1	43.8	43.3	38.7	28.5	22.7	22.9	18.4	16.4	12.3	2.3	44.1	25.4																				
Oct 3	15.4	14.7	11.1	8.7	4.4	5	4.5	5.8	14.3	23.9	33.8	S	40.4	39.4	41.6	41.4	42.8	42.1	35.3	28.5	31.5	27.2	20.7	21.8	4.4	42.8	24.1																				
Oct 4	20.1	19	16.4	15.5	19.3	13.9	12.1	17.2	20.9	23.1	S	37.3	37.7	38.9	38.7	39.8	40.1	37.7	28.9	26.5	33.7	32.5	37.4	36.2	12.1	40.1	28.0																				
Oct 5	36.4	36.4	36.1	37.6	37.9	37	36.5	35.7	37	S	38.8	38.2	37	37.2	36.7	35.7	34.9	33.3	29.7	31.4	31.2	31.8	31.6	30.8	29.7	38.8	35.2																				
Oct 6	30.4	29.3	28.4	26.2	19.4	13.6	12.4	11.2	S	21.9	C	C	C	C	C	C	22.4	21	21.4	20.4	18.6	19.1	20.1	20.1	11.2	30.4	-																				
Oct 7	20.7	19.9	20.6	14.5	9.5	10.2	9.4	S	14.3	17.8	20.9	23.9	28.6	29.6	32.6	33	34.3	32.4	23.9	16.9	26.8	36.1	33.5	20.9	9.4	36.1	23.1																				
Oct 8	15.2	12.8	10.3	6.3	2.6	1.8	S	1.8	6	20.2	24.5	29.2	33.4	38.9	41.9	NRM	42.6	36.7	26.8	21.6	20.3	17.3	18.4	17.1	1.8	42.6	20.3																				
Oct 9	15	8.2	5.1	8.1	7.7	S	4.5	11.9	24.6	28	30.7	37.6	43.7	44.6	44.6	45	45.4	39.6	39.4	30.9	26.4	35.1	28.4	4.5	45.0	28.1																					
Oct 10	22.2	22	23.9	27.4	S	28.9	28.5	27.5	29.5	34	39.6	41.3	43.7	38.1	37.7	39.5	37.5	35.1	31.3	26.2	26.3	24.4	26.7	27	22.0	43.7	31.2																				
Oct 11	25.8	27	34.6	S	28	24.1	18	16.7	15.5	15.3	16.3	19.1	24.3	25.6	25.1	24.6	25.6	21.6	14.7	11.9	9.7	7.5	8.5	8.1	7.5	34.6	19.5																				
Oct 12	6.1	4.4	S	3.2	2.2	2.8	1.4	1.7	9.7	17.6	22.3	25.3	27.5	29.1	30.6	31.2	30.7	28.7	27.4	26.3	25	23.7	23.4	1.4	31.2	18.6																					
Oct 13	23.5	S	23.1	22.4	22.3	21.2	19.5	19.8	22.1	24.6	27.8	31.7	33.9	33.8	33.9	33.5	32.3	31.7	30.3	28.3	23.6	17	12.4	12.5	12.4	33.9	25.3																				
Oct 14	S	5.4	3	2	2.3	1.8	0.8	4.7	11.1	12.5	13.9	14.1	17	22.8	24.8	24.2	28.7	25	19.4	14.5	11.4	10.8	8.5	S	0.8	28.7	12.7																				
Oct 15	11.6	16	21.6	21.5	20.1	22.1	20.3	16.3	19.3	22.4	28.6	33.4	36.6	40.7	40.4	40.6	39.3	31	24.5	23	24.1	23.7	S	15.6	11.6	40.7	25.8																				
Oct 16	9.1	8	15.9	13.3	7.3	7.4	3.7	2.2	6.9	20.1	20.9	28	29.3	35.9	38	37.7	35.5	34.2	32	31.8	33.1	S	29.7	31.2	2.2	38.0	22.2																				
Oct 17	30.8	30.1	29.6	28.1	25.1	18.5	14.9	8.3	10.1	15.1	19.7	22.7	22.8	22.5	22.2	22.5	22.1	12.6	11.4	23.1	S	22.5	23	25.8	8.3	30.8	21.0																				
Oct 18	26	25.8	25.2	24.8	26.4	27.8	28.8	31.3	33.4	33.6	33	31.6	29	29.3	29.3	29.6	30.7	32.4	S	31.5	23.3	19.5	14.3	14.3	33.6	28.1																					
Oct 19	11.6	11.4	8.9	8.2	7.4	1.7	0.9	3.1	18.8	23.4	25.9	28.7	30.9	31.8	32	31.5	30.9	30.4	S	29.6	28.2	26.9	27	27.3	0.9	32.0	20.7																				
Oct 20	26.8	26.8	26.3	26.1	24.7	22.4	22.1	23	23.8	26.7	31.4	34	38.3	39.8	40.9	39.6	S	32.1	31.2	28.6	26.3	25.3	25.6	22.1	40.9	28.9																					
Oct 21	24.4	23.4	22.8	22.3	21	18.7	18.3	16.7	19.2	21.2	23.2	25	26.3	27.6	28.9	29.6	S	24.9	25.9	29.4	27.7	24.1	18.4	21.2	16.7	29.6	23.5																				
Oct 22	23.8	23.6	22.7	20.6	18.9	17.5	17.9	15.9	18.7	20.8	21.5	23.3	24.9	26.7	29.6	S	29.5	28.9	29.9	30.3	30.9	31.1	30.4	29.5	15.9	31.1	24.6																				
Oct 23	29.5	28.5	26.5	25.4	24.5	22.5	21.6	20.6	20.2	20.7	21	20.9	20.8	21.3	S	24	26.1	26.1	28.1	28	27.5	26.3	25.3	23.9	20.2	29.5	24.3																				
Oct 24	22.3	20.8	20.7	20.5	19.4	16.7	13.9	11.9	10.5	10.7	12.3	15	18.7	S	25.7	26.7	24.2	21	22.1	21.2	19.5	18	18.6	19	10.5	26.7	18.7																				
Oct 25	19.3	17.7	17.5	18.3	20.1	20.5	20.3	19.7	19.4	18.9	20.1	20.5	S	20.2	19.9	19.6	19.3	18.8	18.5	18.4	17.9	16.7	13.5	7.2	7.2	20.5	18.4																				
Oct 26	3.8	1.1	0.5	0.3	0.6	0.5	0.3	0.4	1	6.3	10.9	S	13.4	12.1	13.3	13.4	11.7	2.9	2	1.1	1.1	0.5	1	0.8	0.3	13.4	4.3																				
Oct 27	0.5	0.4	0.3	0.2	0.4	0.3	0.3	0.5	1.2	2.8	S	8.6	12	15.1	29.2	35.3	34.1	31.4	27.9	21.3	14.6	13.2	12.3	19.9	0.2	35.3	12.3																				
Oct 28	22.3	19.8	24.7	26.2	29	28.4	27.1	25.5	25.8	S	31.6	33.3	34.6	36.2	36.6	36.7	35.1	25.5	20.3	15.2	16.8	9.8	9.2	15.4	9.2	36.7	25.4																				
Oct 29	27.1	24	21.3	19	22.2	24.5	18.5	13.6	S	15.9	23.1	30.9	38	36.6	36.8	37.2	37.3	36.6	32.9	29.1	26.5	25.7	25.5	24.8	13.6	38.0	27.3																				
Oct 30	24.6	24.2	23.8	24.1	23.5	23.3	22.7	S	22.3	24.1	25.7	28.2	31	33.7	33.6	32.8	31.7	29.8	27.1	25.7	23.1	22.9	20.9	17.5	17.5	33.7	25.9																				
Oct 31	17.6	18.7	18.8	17.2	15.5	13.6	S	8.8	13.8	17.8	22.1	32.1	34.8	34.6	35.2	34.7	31	22.5	17.4	12.1	13.6	16.1	26.6	18.1	8.8	35.2	21.4																				
Diurnal Maximum	36	36	36	38	38	37	93	36	37	35	41	42	44	45	45	45	45	42	40	39	34	36	37	36																							
Diurnal Average	19.6	17.9	18.5	16.8	16.0	16.2	18.0	14.5	18.0	20.9	25.5	28.2	30.1	31.5	33.2	32.9	32.5	29.0	25.6	23.6	23.2	21.3	21.2	20.2																							
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 O3 - Cold Lake South Station**



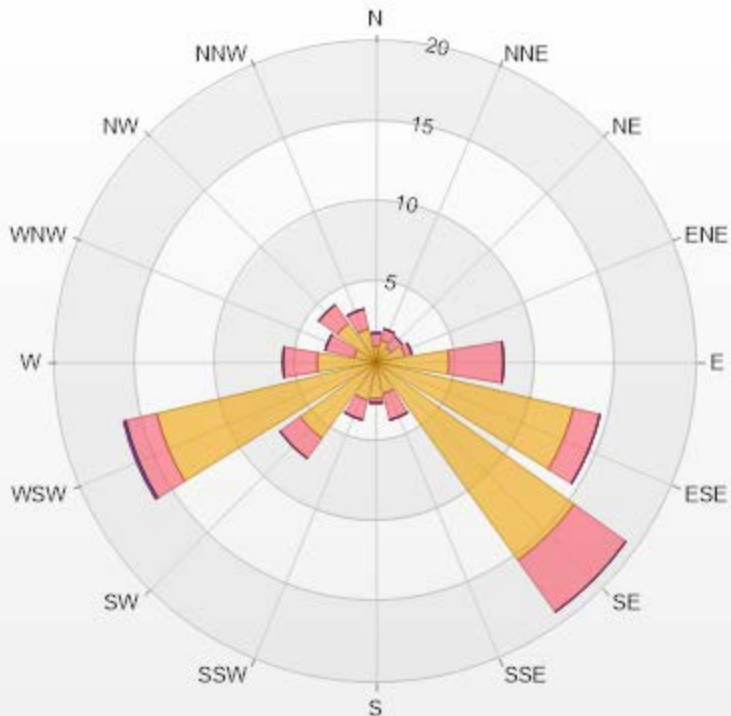
O3[ppb] Histogram: Tamarack Monthly: 10-2021 1 Hr.



Classes	O3
<=0	0.00%
0 - 10	12.48%
10 - 20	22.55%
20 - 30	39.43%
30 - 40	21.70%
40 - 50	3.69%
50 - 60	0.00%
60 - 70	0.00%
70 - 80	0.00%
80 - 90	0.00%
>90	0.14%

Wind: Cold Lake South Poll.: Cold Lake South-O3[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.76% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	0.99	0.85	0	0	0	1.84
NNE	1.42	0.71	0	0	0	2.13
NE	1.13	0.85	0	0	0	1.98
ENE	1.84	0.43	0	0	0	2.27
E	4.54	3.4	0	0	0	7.94
ESE	12.62	1.7	0	0	0	14.32
SE	15.18	3.97	0	0	0	19.15
SSE	1.99	1.7	0	0	0	3.69
S	2.27	0.28	0	0	0	2.55
SSW	2.41	1.28	0	0	0	3.69
SW	5.82	1.56	0	0	0	7.38
WSW	14.04	1.99	0	0.14	0	16.17
W	3.69	2.13	0	0	0	5.82
WNW	1.42	1.84	0	0	0	3.26
NW	2.98	1.42	0	0	0	4.4
NNW	2.13	1.28	0	0	0	3.41
Summary	74.47	25.39	0	0.14	0	100



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% Icon Classes (ppb)	74	0-30	25	30-50	0	50-76	0	76-159	0	>159.0
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LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - October 2021

Summary of Hourly Averages

TOTAL HYDROCARBONS (THC) in ppm

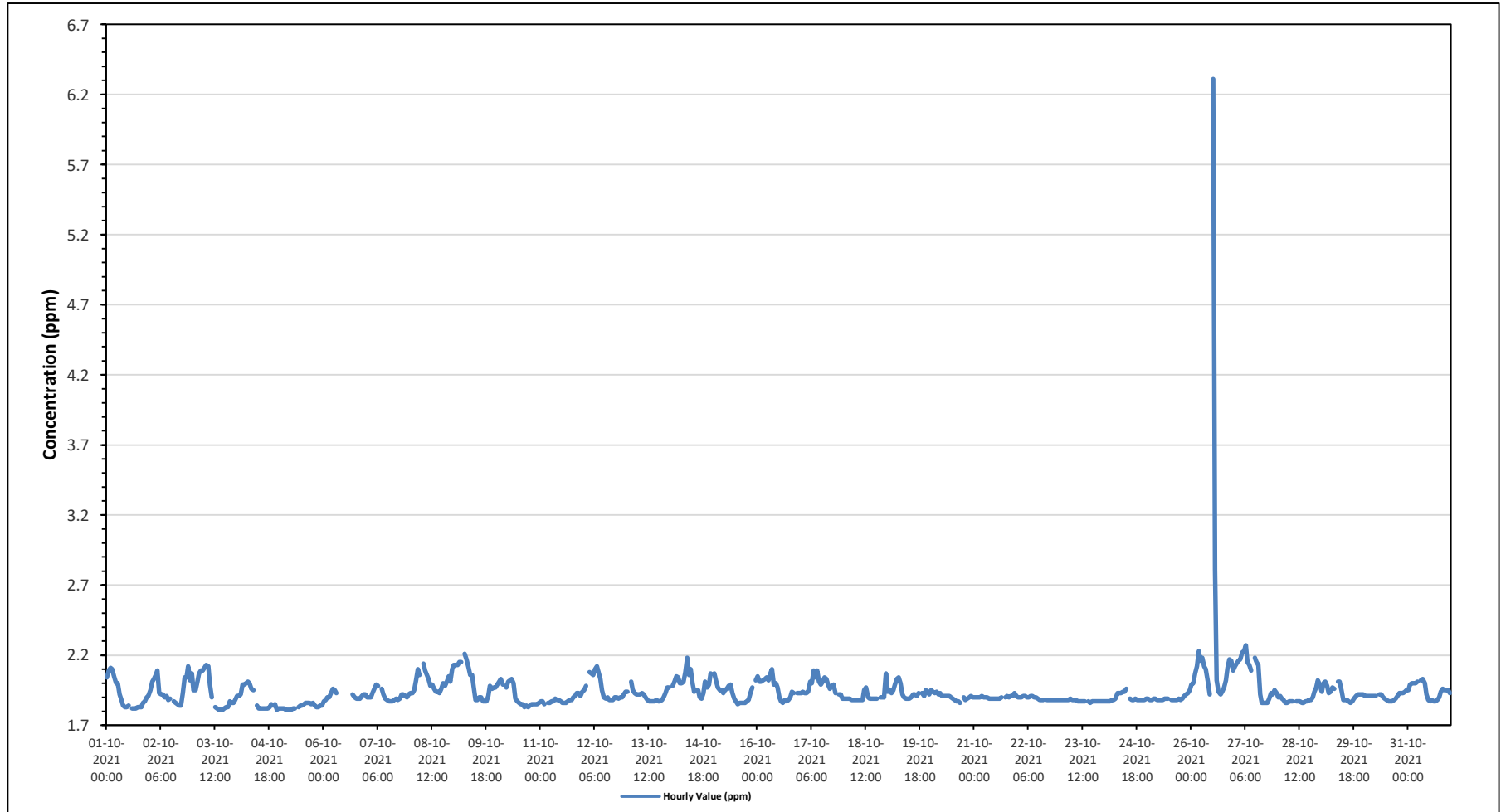
Maximum Hourly Value:	6.31 ppm on October 26 at hour 12	Hours in Service:	744
Maximum Daily Value:	2.28 ppm on October 26	Hours of Data:	706
Minimum Hourly Value:	1.81 ppm on October 3 at hour 14	Hours of Missing Data:	0
Minimum Daily Value:	1.83 ppm on October 5	Hours of Calibration:	38
Monthly Average:	1.94 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	
Oct 1	2.04	2.09	2.11	2.10	2.05	2.00	2.00	1.92	1.88	1.84	1.83	1.83	1.84	S	1.82	1.82	1.82	1.83	1.83	1.86	1.87	1.90	1.91	1.82	2.11	1.91		
Oct 2	1.95	2.01	2.03	2.06	2.09	1.93	1.92	1.92	1.90	1.91	1.88	1.89	S	1.87	1.86	1.85	1.84	1.84	1.93	2.04	2.04	2.12	2.02	2.07	1.84	2.12	1.96	
Oct 3	1.95	1.95	2.01	2.07	2.09	2.09	2.11	2.13	2.12	1.99	1.90	S	1.83	1.82	1.81	1.81	1.81	1.82	1.83	1.83	1.87	1.86	1.86	1.88	1.81	2.13	1.93	
Oct 4	1.91	1.91	1.92	1.99	1.99	2.00	2.01	2.00	1.96	1.95	S	1.84	1.82	1.82	1.82	1.82	1.82	1.82	1.83	1.85	1.84	1.85	1.81	1.82	1.81	2.01	1.89	
Oct 5	1.82	1.82	1.82	1.81	1.81	1.81	1.81	1.82	1.82	1.82	S	1.83	1.84	1.84	1.85	1.86	1.86	1.86	1.85	1.86	1.84	1.83	1.83	1.84	1.84	1.81	1.86	1.83
Oct 6	1.87	1.88	1.90	1.90	1.93	1.96	1.95	1.93	S	1.95	C	C	C	C	C	C	C	1.92	1.90	1.89	1.89	1.89	1.91	1.92	1.92	1.87	1.96	-
Oct 7	1.90	1.90	1.90	1.93	1.96	1.99	1.98	S	1.96	1.92	1.89	1.88	1.87	1.87	1.87	1.88	1.89	1.88	1.89	1.92	1.92	1.91	1.90	1.92	1.87	1.99	1.91	
Oct 8	1.93	1.93	1.95	2.02	2.10	2.06	S	2.14	2.09	2.06	2.03	1.98	1.99	1.96	1.94	1.94	1.93	1.96	2.00	1.98	2.01	2.05	2.01	2.10	1.93	2.14	2.01	
Oct 9	2.13	2.13	2.13	2.15	2.15	S	2.21	2.17	2.11	2.06	2.06	1.96	1.88	1.90	1.90	1.87	1.87	1.87	1.91	1.98	1.96	1.97	1.97	1.87	2.21	2.01	2.01	
Oct 10	1.99	2.01	2.03	1.99	S	1.97	2.01	2.02	2.03	2.00	1.89	1.87	1.86	1.85	1.85	1.83	1.84	1.83	1.84	1.85	1.85	1.85	1.85	1.86	1.83	2.03	1.91	
Oct 11	1.87	1.87	1.85	S	1.86	1.86	1.87	1.87	1.89	1.88	1.88	1.87	1.86	1.86	1.87	1.88	1.88	1.88	1.90	1.91	1.93	1.93	1.91	1.94	1.85	1.94	1.88	
Oct 12	1.95	1.98	S	2.08	2.07	2.06	2.10	2.12	2.08	2.03	1.95	1.90	1.89	1.90	1.88	1.88	1.88	1.90	1.90	1.89	1.90	1.90	1.92	1.94	1.88	2.12	1.96	
Oct 13	1.94	S	2.01	1.95	1.93	1.92	1.92	1.92	1.93	1.92	1.90	1.88	1.87	1.87	1.87	1.87	1.88	1.87	1.87	1.88	1.90	1.93	1.97	1.97	1.87	2.01	1.91	
Oct 14	S	1.98	2.01	2.05	2.04	2.00	2.00	2.01	2.08	2.18	2.06	2.10	2.00	1.94	1.95	1.95	1.90	1.89	1.93	2.01	1.97	1.99	2.07	S	1.89	2.18	2.01	
Oct 15	2.07	2.02	1.97	1.95	1.95	1.93	1.95	1.96	1.98	1.99	1.93	1.89	1.87	1.85	1.86	1.86	1.86	1.86	1.87	1.88	1.93	1.97	S	2.02	1.85	2.07	1.93	
Oct 16	2.05	2.01	2.01	2.02	2.03	2.04	2.02	2.07	2.10	1.99	2.00	1.97	1.90	1.87	1.86	1.88	1.87	1.88	1.90	1.94	1.93	S	1.93	1.93	1.86	2.10	1.97	
Oct 17	1.93	1.94	1.93	1.93	1.94	2.01	2.00	2.09	2.04	2.09	2.01	1.99	2.01	2.04	2.03	1.99	1.96	1.98	1.99	1.93	S	1.92	1.92	1.89	1.89	2.09	1.98	
Oct 18	1.89	1.89	1.89	1.89	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.95	1.97	1.90	1.89	1.89	1.89	1.89	1.89	1.89	S	1.90	1.90	1.90	2.07	1.88	1.90	
Oct 19	1.94	1.95	1.93	1.95	1.99	2.03	2.04	2.00	1.92	1.90	1.89	1.89	1.89	1.90	1.92	1.91	1.93	S	1.93	1.91	1.95	1.94	1.92	1.89	2.04	1.94	1.94	
Oct 20	1.95	1.94	1.93	1.94	1.92	1.93	1.91	1.91	1.91	1.91	1.91	1.90	1.89	1.88	1.87	1.87	1.86	S	1.90	1.88	1.89	1.90	1.91	1.90	1.86	1.95	1.90	
Oct 21	1.90	1.90	1.90	1.90	1.91	1.90	1.90	1.90	1.89	1.89	1.89	1.89	1.89	1.89	1.90	S	1.90	1.91	1.90	1.91	1.91	1.91	1.93	1.91	1.89	1.93	1.90	
Oct 22	1.90	1.90	1.90	1.91	1.91	1.90	1.90	1.91	1.91	1.90	1.90	1.89	1.88	1.88	1.88	S	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.89
Oct 23	1.88	1.88	1.88	1.88	1.88	1.89	1.88	1.88	1.88	1.88	1.87	1.87	1.87	1.87	1.87	S	1.87	1.86	1.87	1.87	1.87	1.87	1.87	1.87	1.86	1.89	1.87	
Oct 24	1.87	1.87	1.87	1.87	1.88	1.88	1.89	1.93	1.93	1.93	1.94	1.94	1.96	S	1.89	1.88	1.88	1.88	1.89	1.88	1.88	1.88	1.88	1.88	1.87	1.96	1.90	
Oct 25	1.89	1.88	1.88	1.89	1.89	1.88	1.88	1.88	1.88	1.89	1.89	1.89	S	1.88	1.88	1.88	1.88	1.89	1.88	1.89	1.91	1.92	1.93	1.95	1.88	1.95	1.89	
Oct 26	1.99	2.00	2.07	2.12	2.23	2.16	2.18	2.12	2.10	2.01	1.92	S	6.31	2.81	2.02	1.94	1.92	1.94	1.97	2.02	2.11	2.17	2.16	2.09	1.92	6.31	2.28	
Oct 27	2.12	2.14	2.16	2.17	2.22	2.23	2.27	2.15	2.13	2.09	S	2.18	2.15	2.13	1.92	1.86	1.86	1.86	1.86	1.89	1.93	1.92	1.95	1.93	1.86	2.27	2.05	
Oct 28	1.90	1.91	1.89	1.88	1.86	1.86	1.87	1.87	1.87	S	1.87	1.87	1.87	1.86	1.86	1.87	1.87	1.88	1.88	1.90	1.94	1.97	2.02	1.99	1.86	2.02	1.89	
Oct 29	1.94	2.00	2.01	1.98	1.93	1.94	1.97	1.96	S	2.01	2.01	1.95	1.88	1.88	1.88	1.87	1.86	1.87	1.89	1.91	1.92	1.92	1.92	1.92	1.86	2.01	1.93	
Oct 30	1.91	1.91	1.91	1.91	1.91	1.91	1.91	S	1.92	1.92	1.90	1.89	1.88	1.87	1.87	1.87	1.88	1.89	1.91	1.93	1.93	1.93	1.94	1.95	1.87	1.95	1.91	
Oct 31	1.95	1.99	2.00	2.00	2.00	2.01	S	2.02	2.03	2.00	1.92	1.88	1.87	1.88	1.87	1.87	1.88	1.90	1.94	1.96	1.95	1.95	1.93	1.87	2.03	1.95		
Diurnal Maximum	2.13	2.14	2.16	2.17	2.23	2.23	2.27	2.17	2.13	2.18	2.06	2.18	6.31	2.81	2.03	1.99	1.96	1.98	2.00	2.04	2.11	2.17	2.16	2.10				
Diurnal Average	1.94	1.95	1.96	1.98	1.98	1.97	1.98	1.98	1.97	1.96	1.92	1.92	2.06	1.92	1.89	1.88	1.88	1.88	1.89	1.91	1.92	1.93	1.93	1.94				

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

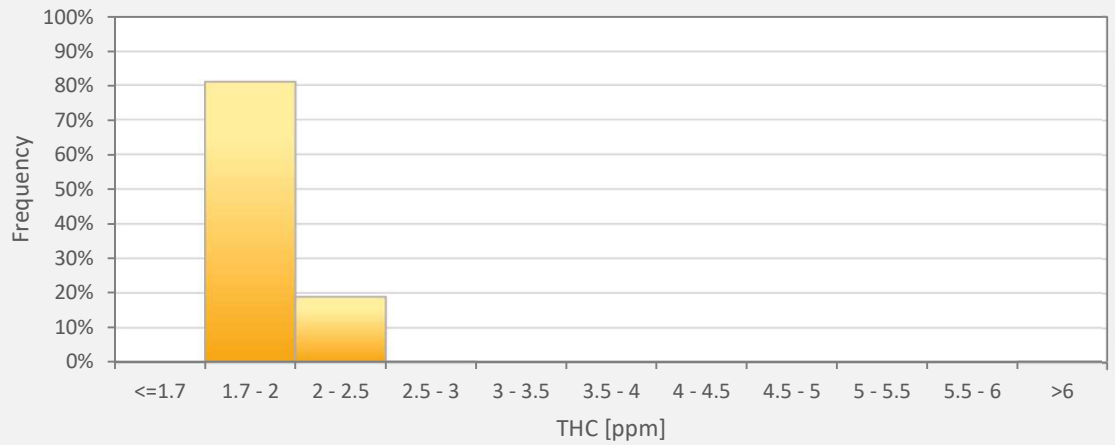
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

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





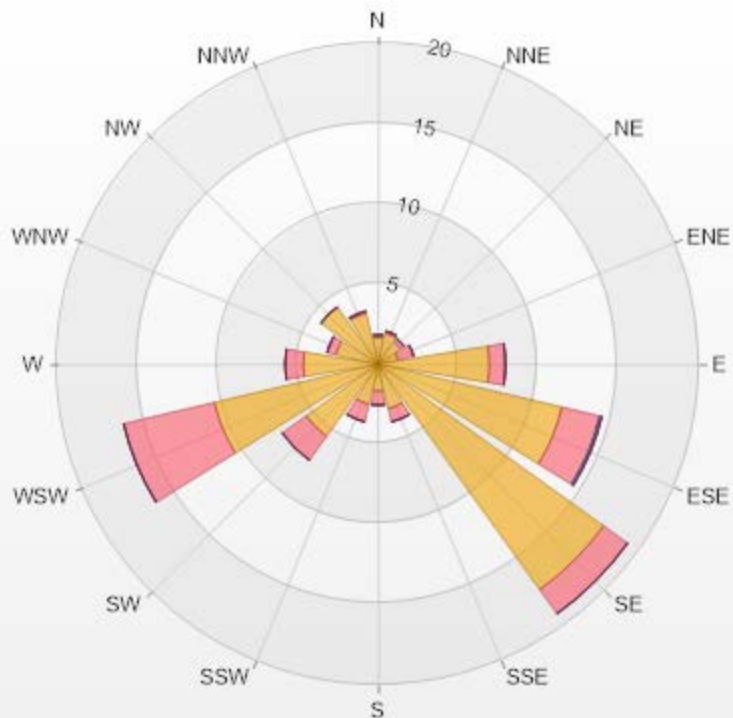
THC55[ppm] Histogram: Cold Lake South Monthly: 10-2021 1 Hr.



Classes	THC55
<=1.7	0.00%
1.7 - 2	80.88%
2 - 2.5	18.84%
2.5 - 3	0.14%
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	0.14%

Wind: Cold Lake South Poll.: Cold Lake South-THC55[ppm] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.89% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	1.7	0.14	0	0	0	1.84
NNE	1.98	0.14	0	0	0	2.12
NE	1.7	0.28	0	0	0	1.98
ENE	1.27	0.99	0	0	0	2.26
E	6.94	0.99	0	0	0	7.93
ESE	11.76	2.41	0.14	0	0	14.31
SE	17.28	1.84	0	0	0	19.12
SSE	2.83	0.85	0	0	0	3.68
S	1.7	0.85	0	0	0	2.55
SSW	2.55	1.13	0	0	0	3.68
SW	5.52	1.84	0	0	0	7.36
WSW	10.48	5.81	0	0	0	16.29
W	4.67	1.13	0	0	0	5.8
WNW	2.69	0.57	0	0	0	3.26
NW	4.39	0	0	0	0	4.39
NNW	3.26	0.14	0	0	0	3.4
Summary	80.72	19.11	0.14	0	0	100



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% Icon Classes (ppm)

81

0-2

19

2-5

0

5-10

0

10-40

0

>40.0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - October 2021

### Summary of Hourly Averages

#### METHANE (CH4) in ppm

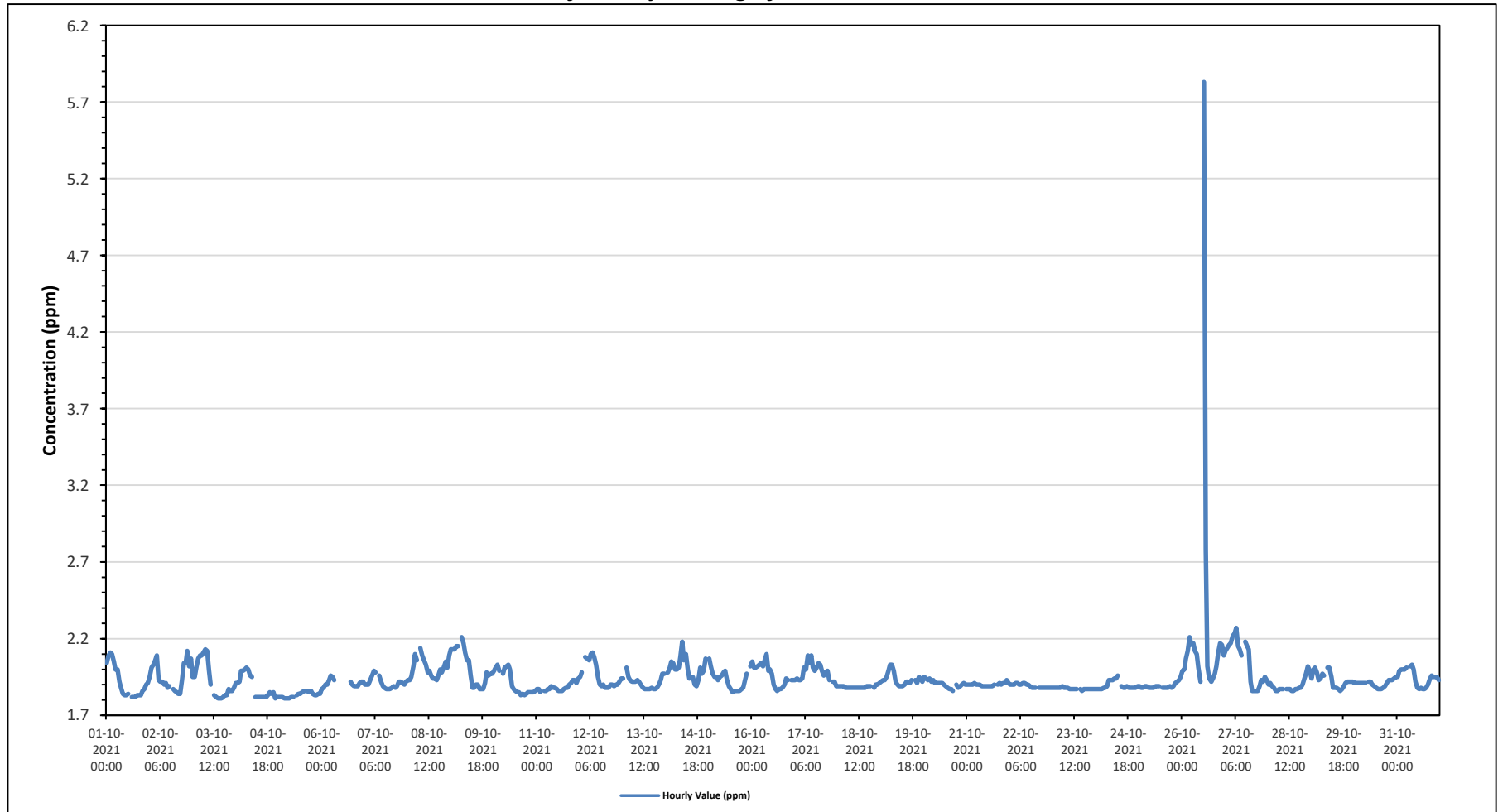
Maximum Hourly Value:	5.83 ppm on October 26 at hour 12	Hours in Service:	744
Maximum Daily Value:	2.25 ppm on October 26	Hours of Data:	706
Minimum Hourly Value:	1.81 ppm on October 3 at hour 14	Hours of Missing Data:	0
Minimum Daily Value:	1.83 ppm on October 5	Hours of Calibration:	38
Monthly Average:	1.94 ppm	Operational Uptime:	100.0

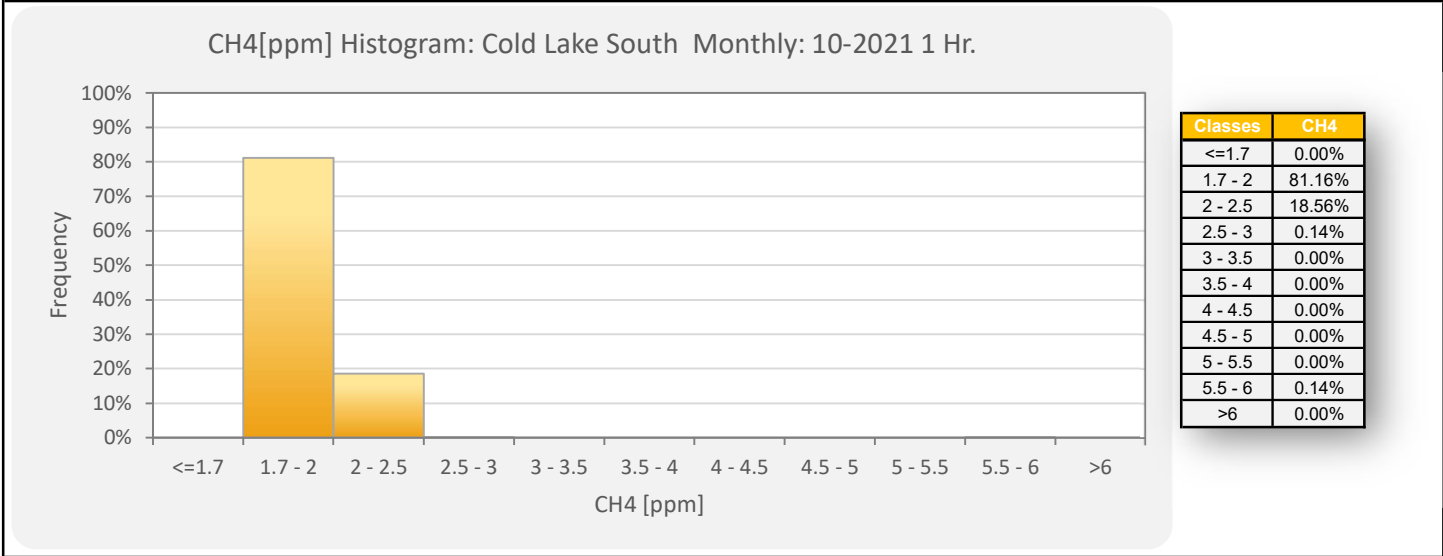
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Oct 1	2.04	2.09	2.11	2.10	2.05	2.00	2.00	1.92	1.88	1.84	1.83	1.83	1.84	S	1.82	1.82	1.82	1.83	1.83	1.86	1.87	1.90	1.91	1.82	2.11	1.91		
Oct 2	1.95	2.01	2.03	2.06	2.09	1.93	1.92	1.92	1.90	1.91	1.88	1.89	S	1.87	1.86	1.85	1.84	1.84	1.93	2.04	2.04	2.12	2.02	2.07	1.84	2.12	1.96	
Oct 3	1.95	1.95	2.01	2.07	2.09	2.09	2.11	2.13	2.12	1.99	1.90	S	1.83	1.82	1.81	1.81	1.81	1.82	1.83	1.83	1.87	1.86	1.86	1.88	1.81	2.13	1.93	
Oct 4	1.91	1.91	1.92	1.99	1.99	2.00	2.01	2.00	1.96	1.95	S	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.83	1.85	1.84	1.85	1.81	1.82	1.81	2.01	1.89	
Oct 5	1.82	1.82	1.82	1.81	1.81	1.81	1.81	1.82	1.82	S	1.83	1.84	1.84	1.85	1.86	1.86	1.86	1.85	1.86	1.84	1.83	1.83	1.84	1.84	1.81	1.86	1.83	
Oct 6	1.87	1.88	1.90	1.90	1.93	1.96	1.95	1.93	S	1.95	C	C	C	C	C	C	C	1.92	1.90	1.89	1.89	1.89	1.91	1.92	1.92	1.87	1.96	-
Oct 7	1.90	1.90	1.90	1.93	1.96	1.99	1.98	S	1.96	1.92	1.89	1.88	1.87	1.87	1.87	1.88	1.89	1.88	1.89	1.92	1.92	1.91	1.90	1.92	1.87	1.99	1.91	
Oct 8	1.93	1.93	1.95	2.02	2.10	2.06	S	2.14	2.09	2.06	2.03	1.98	1.99	1.96	1.94	1.94	1.93	1.96	2.00	1.98	2.01	2.05	2.01	2.09	1.93	2.14	2.01	
Oct 9	2.13	2.13	2.13	2.15	2.15	S	2.21	2.17	2.11	2.06	2.06	1.96	1.88	1.90	1.90	1.87	1.87	1.87	1.91	1.98	1.96	1.97	1.97	1.87	2.21	2.01	2.01	
Oct 10	1.99	2.01	2.03	1.99	S	1.97	2.01	2.02	2.03	2.00	1.89	1.87	1.86	1.85	1.85	1.83	1.84	1.83	1.84	1.85	1.85	1.85	1.85	1.86	1.83	2.03	1.91	
Oct 11	1.87	1.87	1.85	S	1.86	1.86	1.87	1.87	1.89	1.88	1.88	1.87	1.86	1.86	1.86	1.87	1.88	1.88	1.90	1.91	1.93	1.93	1.91	1.94	1.85	1.94	1.88	
Oct 12	1.95	1.98	S	2.08	2.07	2.06	2.10	2.11	2.08	2.03	1.95	1.90	1.89	1.90	1.88	1.88	1.88	1.90	1.90	1.89	1.90	1.90	1.92	1.94	1.88	2.11	1.96	
Oct 13	1.94	S	2.01	1.95	1.93	1.92	1.92	1.92	1.93	1.92	1.90	1.88	1.87	1.87	1.87	1.87	1.88	1.87	1.87	1.88	1.90	1.93	1.97	1.97	1.87	2.01	1.91	
Oct 14	S	1.98	2.01	2.05	2.04	2.00	2.00	2.01	2.08	2.18	2.06	2.10	2.00	1.94	1.95	1.95	1.90	1.89	1.93	2.01	1.97	1.99	2.07	S	1.89	2.18	2.01	
Oct 15	2.07	2.02	1.97	1.95	1.95	1.93	1.95	1.96	1.98	1.99	1.93	1.89	1.87	1.85	1.86	1.86	1.86	1.86	1.87	1.88	1.93	1.97	S	2.02	1.85	2.07	1.93	
Oct 16	2.05	2.01	2.01	2.02	2.03	2.04	2.02	2.06	2.10	1.99	2.00	1.97	1.90	1.87	1.86	1.87	1.87	1.88	1.90	1.94	1.93	S	1.93	1.93	1.86	2.10	1.96	
Oct 17	1.93	1.94	1.93	1.93	1.94	2.01	2.00	2.09	2.04	2.09	2.01	1.99	2.01	2.04	2.03	1.99	1.96	1.98	1.99	1.93	S	1.92	1.92	1.89	1.89	2.09	1.98	
Oct 18	1.89	1.89	1.89	1.89	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.89	1.89	1.89	S	1.88	1.90	1.90	1.91	1.88	1.91	1.89		
Oct 19	1.92	1.93	1.93	1.95	1.99	2.03	2.03	1.99	1.92	1.90	1.89	1.89	1.89	1.90	1.92	1.91	1.93	S	1.93	1.91	1.95	1.94	1.92	1.89	2.03	1.93		
Oct 20	1.95	1.94	1.93	1.94	1.92	1.93	1.91	1.91	1.91	1.91	1.91	1.90	1.89	1.88	1.87	1.86	S	1.90	1.88	1.89	1.90	1.91	1.90	1.86	1.95	1.90		
Oct 21	1.90	1.90	1.90	1.90	1.91	1.90	1.90	1.90	1.89	1.89	1.89	1.89	1.89	1.89	1.90	S	1.90	1.91	1.90	1.91	1.91	1.93	1.91	1.89	1.93	1.90		
Oct 22	1.90	1.90	1.90	1.91	1.91	1.90	1.90	1.91	1.91	1.90	1.90	1.89	1.88	1.88	S	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.91	1.89	
Oct 23	1.88	1.88	1.88	1.88	1.88	1.89	1.88	1.88	1.88	1.88	1.87	1.87	1.87	1.87	S	1.87	1.86	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.86	1.89	1.87	
Oct 24	1.87	1.87	1.87	1.87	1.88	1.88	1.89	1.93	1.93	1.93	1.94	1.94	1.96	S	1.89	1.88	1.88	1.89	1.88	1.88	1.88	1.88	1.88	1.89	1.87	1.96	1.90	
Oct 25	1.89	1.88	1.88	1.89	1.89	1.88	1.88	1.88	1.88	1.89	1.89	1.89	S	1.88	1.88	1.88	1.88	1.89	1.88	1.89	1.91	1.92	1.93	1.95	1.88	1.95	1.89	
Oct 26	1.99	2.00	2.07	2.12	2.21	2.16	2.17	2.12	2.10	2.01	1.92	S	5.83	2.78	2.02	1.94	1.92	1.94	1.97	2.02	2.11	2.17	2.16	2.09	1.92	5.83	2.25	
Oct 27	2.12	2.14	2.16	2.17	2.22	2.23	2.27	2.15	2.13	2.09	S	2.18	2.15	2.13	1.92	1.86	1.86	1.86	1.86	1.89	1.93	1.92	1.95	1.93	1.86	2.27	2.05	
Oct 28	1.90	1.91	1.89	1.88	1.86	1.86	1.87	1.87	1.87	S	1.87	1.87	1.87	1.86	1.86	1.87	1.87	1.88	1.88	1.90	1.94	1.97	2.02	1.99	1.86	2.02	1.89	
Oct 29	1.94	2.00	2.01	1.98	1.93	1.94	1.97	1.96	S	2.01	2.01	1.95	1.88	1.88	1.88	1.87	1.86	1.87	1.89	1.91	1.92	1.92	1.92	1.86	2.01	1.93		
Oct 30	1.91	1.91	1.91	1.91	1.91	1.91	1.91	S	1.92	1.92	1.90	1.89	1.88	1.87	1.87	1.87	1.88	1.89	1.91	1.93	1.93	1.93	1.94	1.95	1.87	1.95	1.91	
Oct 31	1.95	1.99	2.00	2.00	2.00	2.01	S	2.02	2.03	2.00	1.92	1.88	1.87	1.88	1.87	1.88	1.87	1.88	1.90	1.94	1.96	1.95	1.95	1.93	1.87	2.03	1.95	
Diurnal Maximum	2.13	2.14	2.16	2.17	2.22	2.23	2.27	2.17	2.13	2.18	2.06	2.18	5.83	2.78	2.03	1.99	1.96	1.98	2.00	2.04	2.11	2.17	2.16	2.09				
Diurnal Average	1.94	1.95	1.96	1.98	1.98	1.97	1.98	1.98	1.97	1.96	1.92	1.91	2.04	1.92	1.89	1.88	1.88	1.88	1.89	1.91	1.92	1.93	1.93	1.93				

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

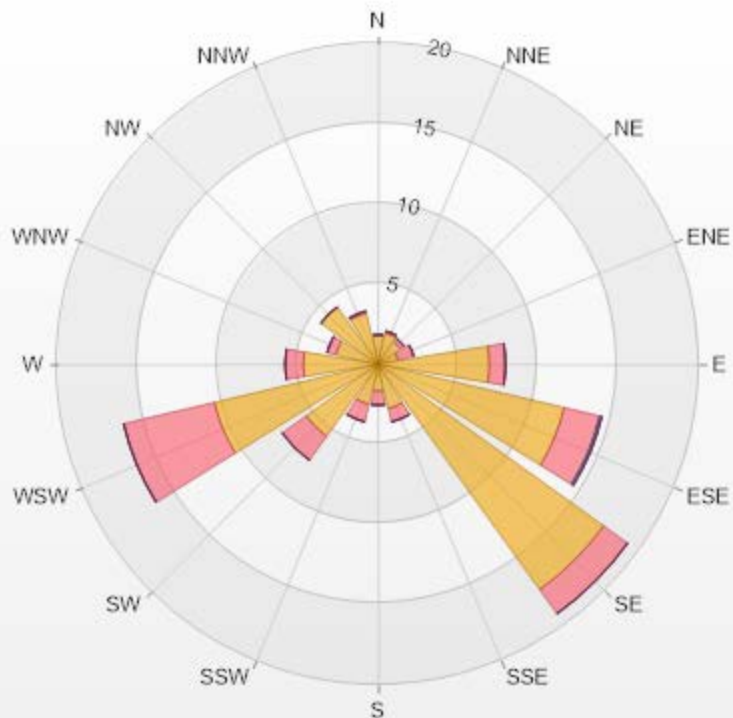
**Timeseries Chart of Hourly Average for CH4 - Cold Lake South Station**





Wind: Cold Lake South Poll.: Cold Lake South-CH4[ppm] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.89% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-20	>20.0	Total
N	1.84	0	0	0	0	1.84
NNE	1.98	0.14	0	0	0	2.12
NE	1.7	0.28	0	0	0	1.98
ENE	1.27	0.99	0	0	0	2.26
E	6.94	0.99	0	0	0	7.93
ESE	11.9	2.27	0.14	0	0	14.31
SE	17.28	1.84	0	0	0	19.12
SSE	2.83	0.85	0	0	0	3.68
S	1.7	0.85	0	0	0	2.55
SSW	2.55	1.13	0	0	0	3.68
SW	5.52	1.84	0	0	0	7.36
WSW	10.48	5.81	0	0	0	16.29
W	4.67	1.13	0	0	0	5.8
WNW	2.69	0.57	0	0	0	3.26
NW	4.39	0	0	0	0	4.39
NNW	3.26	0.14	0	0	0	3.4
Summary	81	18.83	0.14	0	0	100



LICA-202110

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% Icon Classes (ppm)

81 0-2

19 2-5

0 5-10

0 10-20

0 >20.0





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### Cold Lake South Station - October 2021

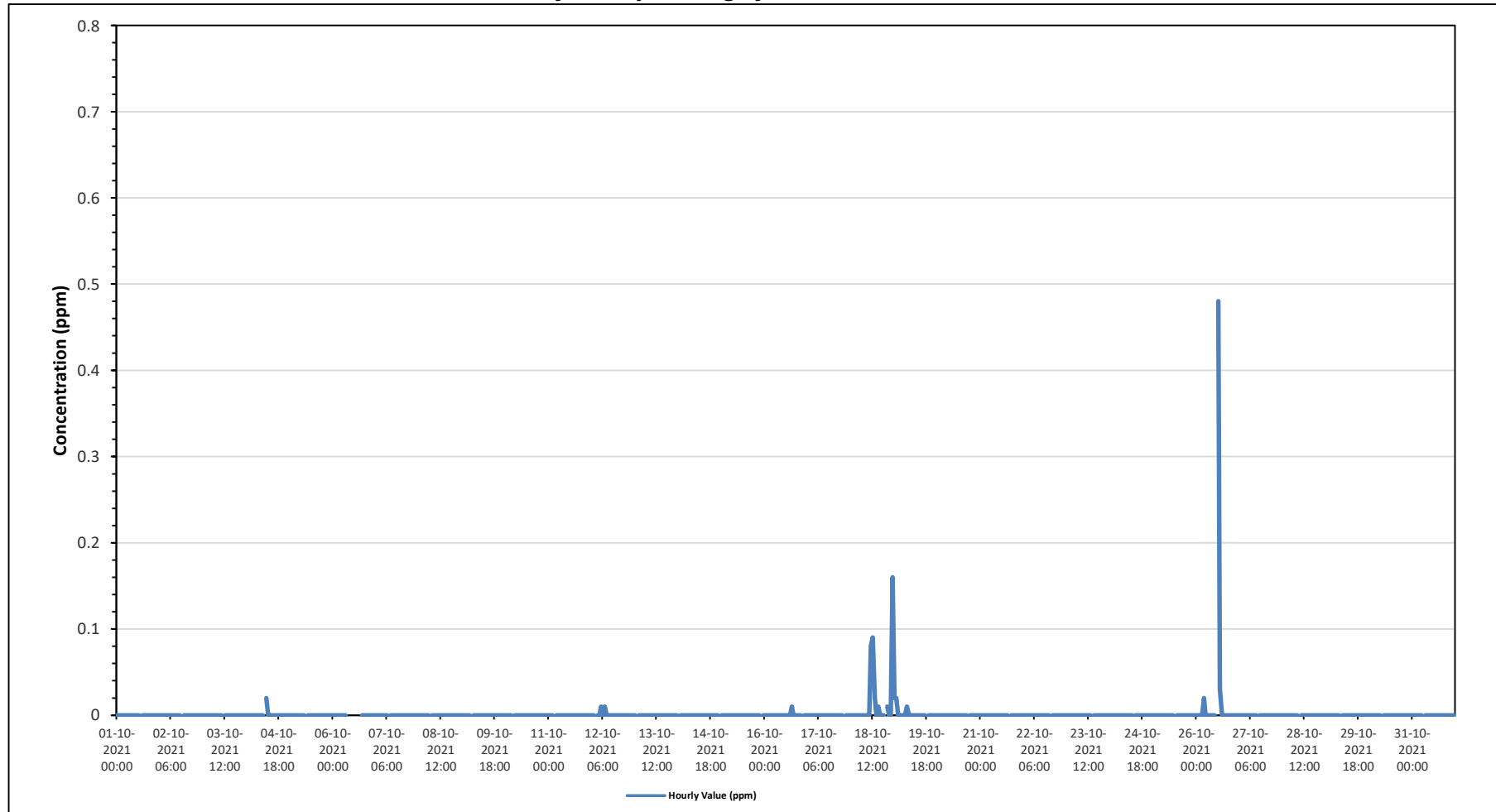
#### Summary of Hourly Averages

#### NON-METHANE HYDROCARBONS (NMHC) in ppm

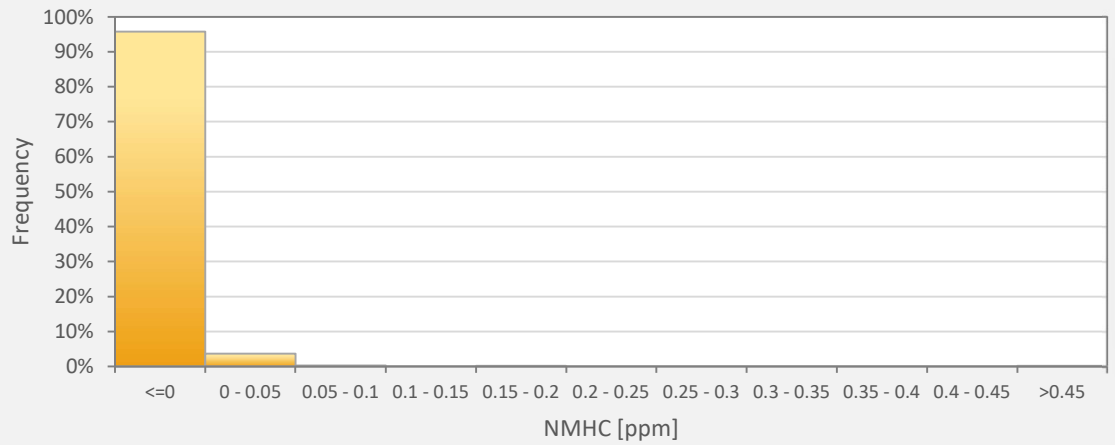
Maximum Hourly Value:	0.48 ppm on October 26 at hour 12	Hours in Service:	744
Maximum Daily Value:	0.02 ppm on October 26	Hours of Data:	706
Minimum Hourly Value:	0.00 ppm on October 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.00 ppm on October 1	Hours of Calibration:	38
Monthly Average:	0.00 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							
Oct 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
Oct 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Oct 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	
Oct 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Oct 5	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	
Oct 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	C	C	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	
Oct 7	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		
Oct 8	0.00	0.00	0.00	0.00	0.00	S	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Oct 9	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	
Oct 10	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	
Oct 11	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	
Oct 12	0.00	0.00	S	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Oct 13	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	
Oct 14	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	S	0.00	0.00	0.00	
Oct 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	0.00	0.00	S	0.00	0.00	0.00	
Oct 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	0.01	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	
Oct 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	
Oct 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.09	0.02	0.00	0.01	0.00	0.00	0.00	S	S	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.16	0.02
Oct 19	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	
Oct 20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct 21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
Oct 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
Oct 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
Oct 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
Oct 25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
Oct 26	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.48	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.02	
Oct 27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Oct 28	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
Oct 29	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
Oct 30	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
Oct 31	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
Diurnal Maximum	0.02	0.02	0.00	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.08	0.48	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.16	
Diurnal Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	
<b>C</b>	Monthly Calibration							<b>S</b>	Daily Zero-Span Check							<b>Q</b>	Quality Assurance																	
<b>K</b>	Collection Error							<b>N</b>	No Data (Machine Not in Service)							<b>Y</b>	Routine Maintenance																	
<b>X</b>	Invalid Data (Equipment Malfunction /Recovery)							<b>NRM</b>	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)							<b>P</b>	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 - Cold Lake South Station**



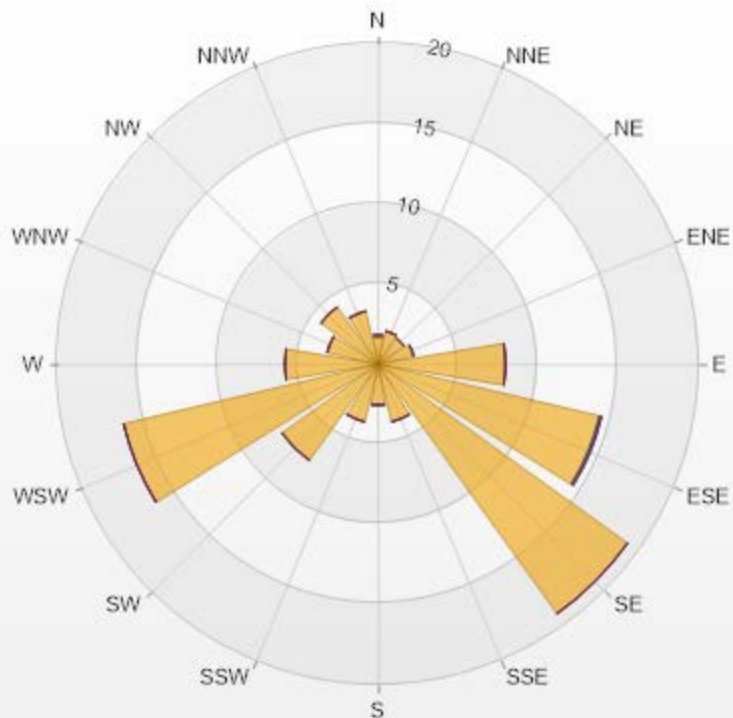
NMHC[ppm] Histogram: Cold Lake South Monthly: 10-2021 1 Hr.



Classes	NMHC
<=0	95.75%
0 - 0.05	3.68%
0.05 - 0.1	0.28%
0.1 - 0.15	0.00%
0.15 - 0.2	0.14%
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	0.14%

Wind: Cold Lake South Poll.: Cold Lake South-NMHC[ppm] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.89% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0	Total
N	1.7	0.14	0	0	0	1.84
NNE	2.12	0	0	0	0	2.12
NE	1.98	0	0	0	0	1.98
ENE	2.27	0	0	0	0	2.27
E	7.93	0	0	0	0	7.93
ESE	14.16	0	0.14	0	0	14.3
SE	19.12	0	0	0	0	19.12
SSE	3.68	0	0	0	0	3.68
S	2.55	0	0	0	0	2.55
SSW	3.68	0	0	0	0	3.68
SW	7.37	0	0	0	0	7.37
WSW	16.29	0	0	0	0	16.29
W	5.81	0	0	0	0	5.81
WNW	3.26	0	0	0	0	3.26
NW	4.39	0	0	0	0	4.39
NNW	3.4	0	0	0	0	3.4
Summary	100	0.14	0.14	0	0	100




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% 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

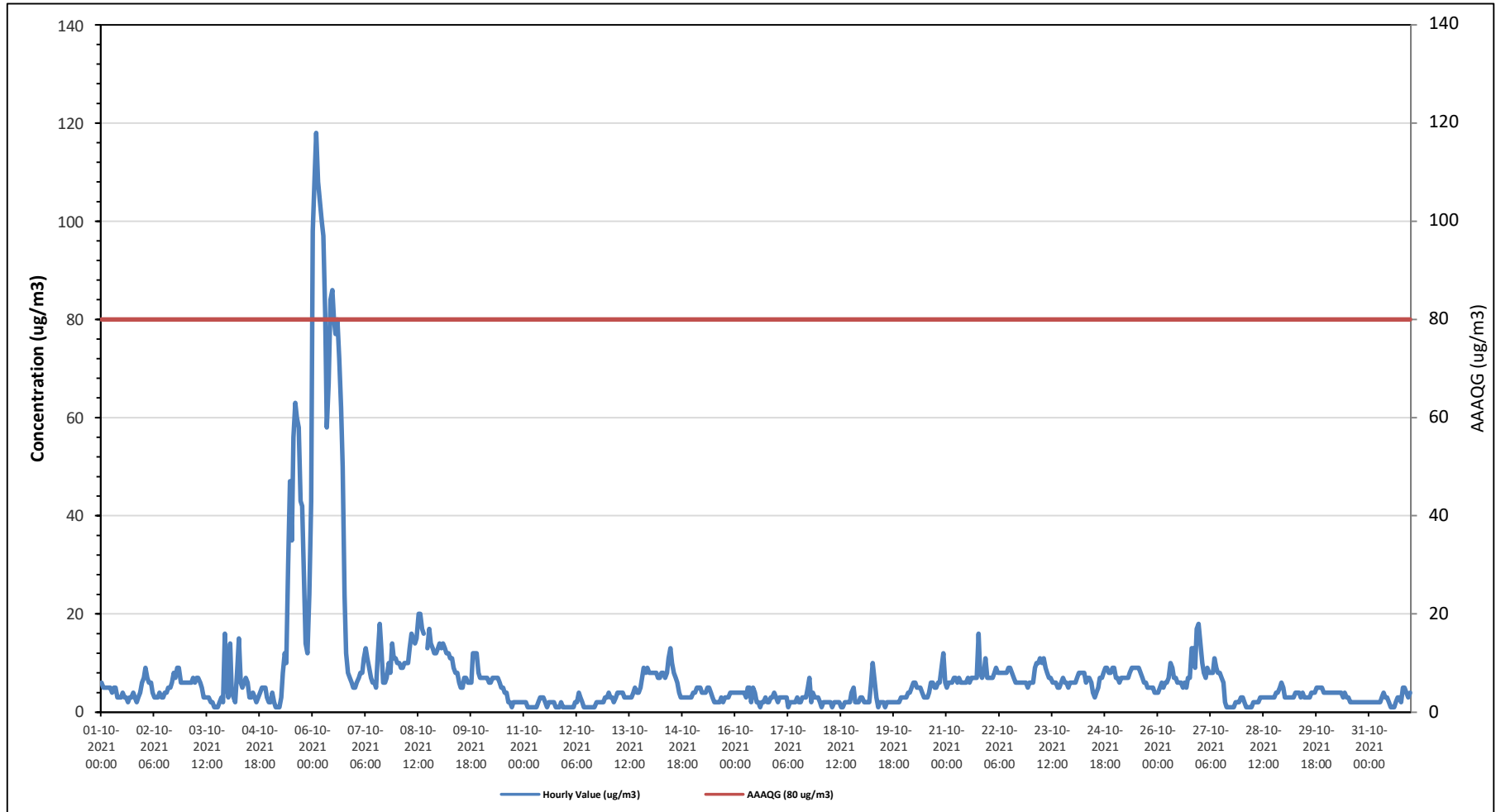
Cold Lake South Station - October 2021

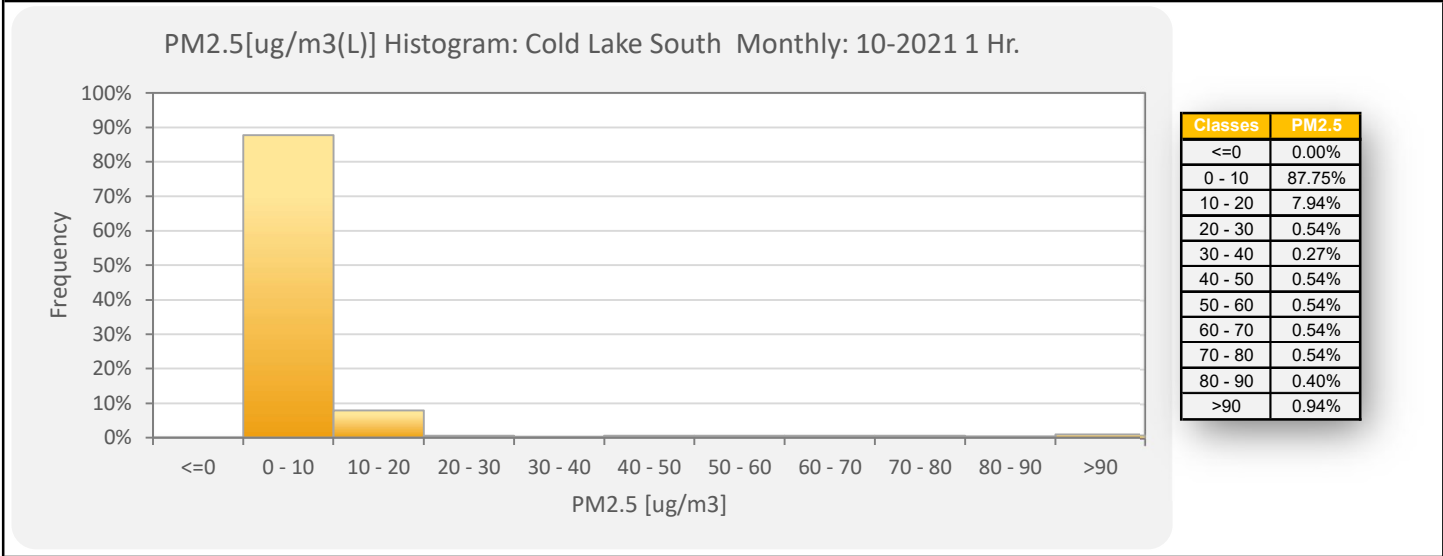
Summary of Hourly Averages

### PARTICULATE MATTER 2.5 (PM<sub>2.5</sub>) in µg/m<sup>3</sup>

Alberta Ambient Air Quality Guideline (AAAQG): 1-Hour 80 µg/m <sup>3</sup> , Alberta Ambient Air Quality Objective (AAAQO): 24-Hour 29 µg/m <sup>3</sup>																																											
Number of 1-Hour Exceedences: 10													Number of 24-Hour Exceedences: 1																														
Maximum Hourly Value: 118 µg/m <sup>3</sup> on October 6 at hour 2													Hours in Service: 744																														
Maximum Daily Value: 66.4 µg/m <sup>3</sup> on October 6													Hours of Data: 743																														
Minimum Hourly Value: 1 µg/m <sup>3</sup> on October 3 at hour 16													Hours of Missing Data: 0																														
Minimum Daily Value: 2 µg/m <sup>3</sup> on October 11													Hours of Calibration: 1																														
Monthly Average: 7.8 µg/m <sup>3</sup>													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																
Oct 1	6	5	5	5	5	5	4	5	5	3	3	3	4	3	3	2	3	3	4	3	2	3	4	6	2	6	3.9																
Oct 2	7	9	7	6	6	4	3	3	3	4	3	3	4	4	5	5	6	8	7	9	9	6	6	6	3	9	5.5																
Oct 3	6	6	6	6	7	6	7	7	6	5	3	3	3	3	2	2	1	1	1	2	3	2	16	6	1	16	4.6																
Oct 4	3	14	4	3	2	8	15	6	5	6	7	6	3	3	4	3	2	3	4	5	5	5	3	2	2	15	5.0																
Oct 5	2	4	2	1	1	1	3	8	12	10	30	47	35	56	63	60	58	43	42	27	14	12	24	43	1	63	24.9																
Oct 6	98	109	118	108	104	100	97	81	58	67	84	86	80	77	80	72	62	50	24	12	8	7	6	5	5	118	66.4																
Oct 7	5	6	7	8	8	11	13	11	9	7	6	6	5	12	18	12	6	6	7	10	8	14	11	11	5	18	9.0																
Oct 8	10	10	9	9	10	10	10	13	16	15	14	15	20	20	17	16	C	13	17	14	13	12	12	13	9	20	13.4																
Oct 9	14	13	14	13	12	12	11	11	9	8	8	6	5	5	7	6	6	6	12	12	12	8	7	5	14	9.3																	
Oct 10	7	7	7	7	6	6	7	7	7	7	6	5	5	4	4	2	2	1	2	2	2	2	2	2	1	7	4.5																
Oct 11	2	2	1	1	1	1	1	1	2	3	3	3	2	1	2	2	2	2	1	1	2	1	1	1	1	3	1.6																
Oct 12	1	1	1	1	1	2	2	4	3	2	1	1	1	1	1	1	1	2	2	2	2	3	3	3	1	4	1.7																
Oct 13	4	3	3	2	3	4	4	4	4	3	3	3	3	3	4	5	4	4	5	7	9	8	9	8	2	9	4.5																
Oct 14	8	8	8	8	7	7	8	8	7	8	11	13	10	8	7	6	4	3	3	3	3	3	3	3	3	13	6.5																
Oct 15	4	4	5	5	5	4	4	4	5	5	4	3	2	2	2	3	2	3	3	3	3	4	4	4	2	5	3.6																
Oct 16	4	4	4	4	4	4	3	5	5	2	5	4	2	2	1	2	2	3	2	2	3	3	4	3	1	5	3.2																
Oct 17	2	3	3	3	3	3	1	2	2	2	2	3	2	2	3	3	3	5	7	2	4	3	3	3	1	7	2.9																
Oct 18	2	1	2	2	2	2	2	1	2	2	2	2	1	1	2	2	2	2	4	5	2	2	2	3	1	5	2.1																
Oct 19	3	2	2	2	2	6	10	6	3	1	2	2	2	1	2	2	2	2	2	2	2	2	3	3	1	10	2.8																
Oct 20	3	3	4	4	5	6	6	5	5	5	4	3	3	3	4	6	6	5	5	6	6	9	12	6	3	12	5.2																
Oct 21	5	6	6	6	7	7	6	7	6	6	6	6	7	6	7	7	7	16	8	7	8	11	7	5	16	7.2																	
Oct 22	7	7	7	8	9	8	8	8	8	8	9	9	9	8	7	6	6	6	6	6	6	6	5	6	5	9	7.2																
Oct 23	6	6	9	10	10	11	10	11	9	8	7	7	6	6	6	5	5	6	7	6	6	5	6	6	5	11	7.3																
Oct 24	6	6	7	8	8	8	8	8	6	7	7	6	4	3	4	5	7	7	8	9	9	8	8	9	3	9	7.0																
Oct 25	7	7	6	7	7	7	7	7	8	9	9	9	9	8	7	6	6	5	5	5	4	4	4	4	4	9	6.8																
Oct 26	4	5	6	5	6	6	7	10	9	7	7	6	6	6	5	6	5	7	7	13	13	9	17	18	4	18	7.9																
Oct 27	14	10	8	7	9	8	8	8	11	9	8	8	7	6	2	1	1	1	1	1	2	2	2	3	1	14	5.7																
Oct 28	3	2	1	1	1	1	2	2	2	2	3	3	3	3	3	3	3	3	3	4	4	5	6	5	1	6	2.8																
Oct 29	3	3	3	3	3	3	4	4	4	3	4	3	3	3	3	4	4	4	5	5	5	4	4	4	3	5	3.7																
Oct 30	4	4	4	4	4	4	4	4	4	3	4	3	3	2	2	2	2	2	2	2	2	2	2	2	2	4	3.0																
Oct 31	2	2	2	2	2	2	2	3	4	3	3	2	1	1	2	3	3	2	5	5	4	3	4	1	5	2.6																	
Diurnal Maximum	98	109	118	108	104	100	97	81	58	67	84	86	80	77	80	72	62	50	42	27	14	14	24	43																			
Diurnal Average	8.1	8.8	8.7	8.4	8.4	8.6	8.9	8.5	7.7	7.4	8.6	8.9	8.0	8.5	9.0	8.5	7.5	7.0	6.8	6.2	5.6	5.5	6.6	6.6																			
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 PM2.5 - Cold Lake South Station**

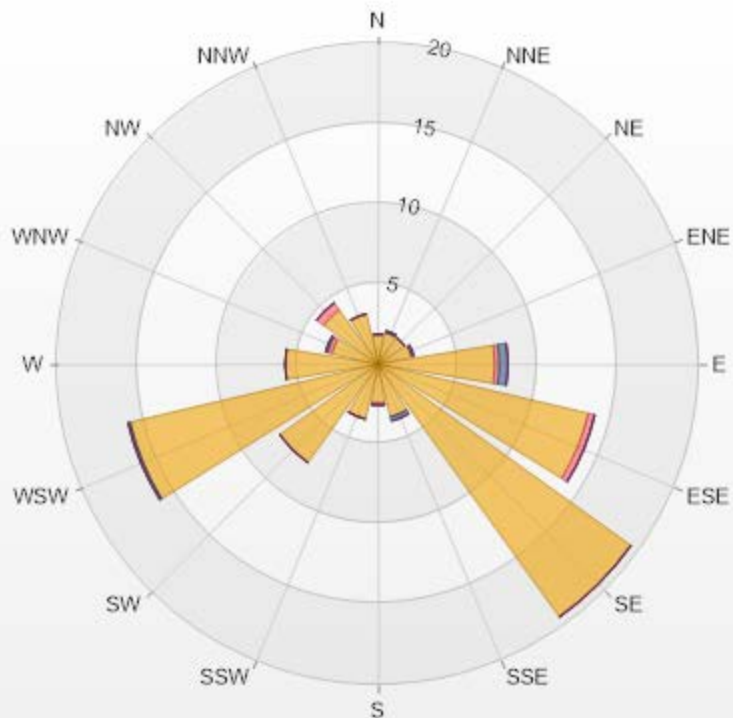






Wind: Cold Lake South Poll.: Cold Lake South-PM2.5[ug/m3(L)] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 99.87% Calm Avg: 0.00 [ug/m3(L)]

Direction	0-50	50-80	80-120	120-240	>240.0	Total
N	1.88	0	0	0	0	1.88
NNE	2.02	0	0.13	0	0	2.15
NE	2.02	0	0	0	0	2.02
ENE	2.15	0	0.13	0	0	2.28
E	7.27	0.27	0.54	0	0	8.08
ESE	13.46	0.4	0	0	0	13.86
SE	19.38	0	0	0	0	19.38
SSE	3.36	0	0.27	0	0	3.63
S	2.42	0.13	0	0	0	2.55
SSW	3.5	0	0	0	0	3.5
SW	7.54	0	0	0	0	7.54
WSW	15.88	0	0.13	0	0	16.01
W	5.79	0	0	0	0	5.79
WNW	2.96	0.27	0.13	0	0	3.36
NW	4.17	0.54	0	0	0	4.71
NNW	3.23	0	0	0	0	3.23
Summary	97.03	1.61	1.33	0	0	100



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% Icon Classes ( $\mu\text{g}/\text{m}^3(\text{L})$ )	97	0-50	2	50-80	1	80-120	0	120-240	0	>240.0
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## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - October 2021

Summary of Hourly Averages

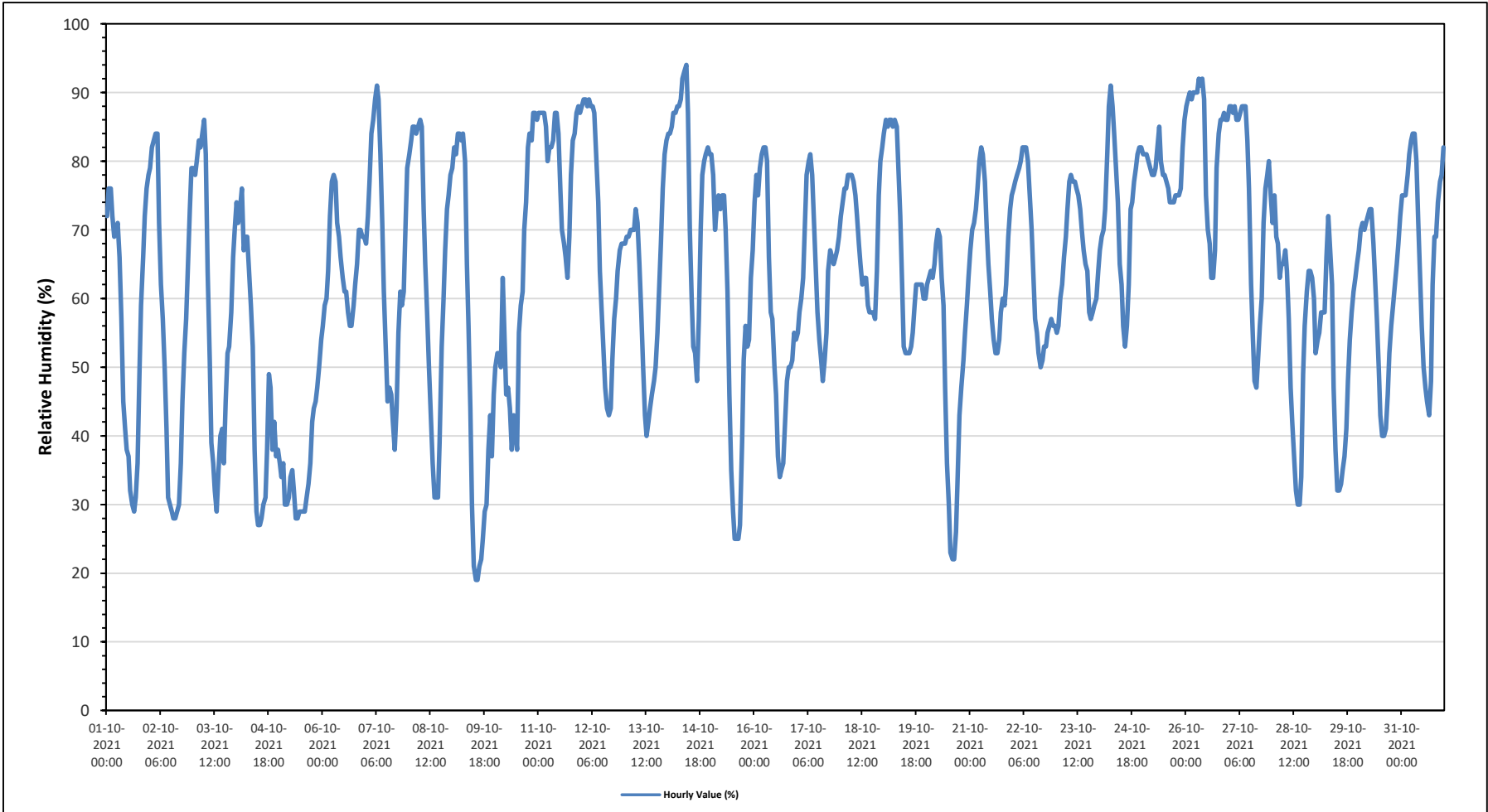
RELATIVE HUMIDITY (RH) in %

Maximum Hourly Value:	94 %	on October 14 at hour 10	Hours in Service:	744
Maximum Daily Value:	82.9 %	on October 26	Hours of Data:	744
Minimum Hourly Value:	19 %	on October 9 at hour 13	Hours of Missing Data:	0
Minimum Daily Value:	35.5 %	on October 5	Hours of Calibration:	0
Monthly Average:	63.2 %		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
Oct 1	72	76	76	72	69	70	71	66	57	45	41	38	37	32	30	29	31	36	49	59	66	72	76	78	29	78	56.2
Oct 2	79	82	83	84	84	71	62	57	50	41	31	30	29	28	28	29	30	36	45	52	57	65	73	79	28	84	54.4
Oct 3	79	78	80	83	82	84	86	81	64	51	39	36	32	29	35	40	41	36	45	52	53	58	66	70	29	86	58.3
Oct 4	74	71	73	76	67	69	69	64	59	53	38	29	27	27	28	30	31	38	49	47	38	42	37	38	27	76	48.9
Oct 5	36	34	36	30	30	31	34	35	32	28	28	29	29	29	29	31	33	36	42	44	45	47	50	54	28	54	35.5
Oct 6	56	59	60	64	72	77	78	77	71	69	66	63	61	61	58	56	56	59	62	65	70	70	69	69	56	78	65.3
Oct 7	68	72	77	84	86	89	91	89	81	71	61	53	45	47	46	42	38	44	55	61	59	61	71	79	38	91	65.4
Oct 8	81	83	85	85	84	85	86	85	73	65	58	50	43	36	31	31	31	39	53	60	67	73	75	78	31	86	64.0
Oct 9	79	82	81	84	84	83	84	80	65	56	44	30	21	19	19	21	22	25	29	30	38	43	37	46	19	84	50.1
Oct 10	50	52	52	50	63	54	46	47	44	38	43	41	38	55	59	61	70	74	82	84	83	87	87	86	38	87	60.3
Oct 11	87	87	87	87	85	80	82	82	83	87	87	84	76	70	68	66	63	69	78	83	84	87	88	87	63	88	80.7
Oct 12	88	89	89	88	89	88	88	87	81	74	64	58	53	47	44	43	44	51	57	60	64	67	68	68	43	89	68.7
Oct 13	68	69	69	70	70	70	73	71	65	58	50	43	40	42	44	46	48	50	55	61	68	76	81	83	40	83	61.3
Oct 14	84	84	85	87	87	88	88	89	92	93	94	87	70	60	53	52	48	57	70	78	80	81	82	81	48	94	77.9
Oct 15	81	78	70	73	75	73	75	75	70	61	46	35	29	25	25	25	27	39	51	56	53	54	63	67	25	81	55.3
Oct 16	74	78	75	79	81	82	82	80	66	58	57	50	46	37	34	35	36	42	48	50	50	51	55	54	34	82	58.3
Oct 17	55	58	60	63	70	78	80	81	78	72	65	58	54	51	48	51	55	64	67	66	65	66	67	69	48	81	64.2
Oct 18	72	74	76	76	78	78	78	77	75	72	68	65	62	63	63	59	58	58	58	57	64	75	80	82	57	82	69.5
Oct 19	84	86	85	86	86	85	86	85	79	72	62	53	52	52	52	53	55	59	62	62	62	62	60	60	52	86	68.3
Oct 20	62	63	64	63	65	68	70	69	63	59	47	36	30	23	22	22	26	35	43	47	51	55	59	63	22	70	50.2
Oct 21	67	70	71	73	76	80	82	81	77	70	65	61	57	54	52	52	54	58	60	59	62	69	73	75	52	82	66.6
Oct 22	76	77	78	79	80	82	82	82	80	75	70	63	57	55	52	50	51	53	53	55	56	57	56	56	50	82	65.6
Oct 23	55	56	60	62	66	69	73	77	78	77	77	76	75	73	70	67	65	64	58	57	58	59	60	64	55	78	66.5
Oct 24	67	69	70	73	81	88	91	88	84	79	74	65	62	56	53	56	62	73	74	77	79	81	82	82	53	91	73.6
Oct 25	81	81	81	80	79	78	78	79	82	85	80	78	78	77	76	74	74	74	75	75	75	76	82	86	74	86	78.5
Oct 26	88	89	90	89	90	90	90	92	91	92	89	75	70	68	63	63	67	79	84	86	86	87	86	86	63	92	82.9
Oct 27	88	88	87	88	86	86	87	88	88	88	83	76	62	54	48	47	51	56	60	71	76	78	80	75	47	88	74.6
Oct 28	71	75	69	68	63	65	65	67	64	57	47	42	37	32	30	30	34	49	56	61	64	64	63	60	30	75	55.5
Oct 29	52	54	55	58	58	58	66	72	67	62	47	38	32	32	33	35	37	41	48	54	58	61	63	65	32	72	51.9
Oct 30	67	70	71	70	71	72	73	73	68	63	57	50	43	40	40	41	46	52	56	59	62	65	68	72	40	73	60.4
Oct 31	75	75	75	78	81	83	84	84	80	71	63	56	50	47	45	43	48	62	69	69	74	77	78	82	43	84	68.7
Diurnal Maximum	88	89	90	89	90	90	91	92	92	93	94	87	78	77	76	74	74	79	84	86	86	87	88	87			
Diurnal Average	71.5	72.9	73.2	74.3	75.4	75.9	76.8	76.1	71.2	65.9	59.4	53.2	48.3	45.8	44.5	44.5	46.2	51.9	57.8	61.2	63.5	66.6	68.9	70.8			
<b>C</b>	Monthly Calibration		<b>S</b>	Daily Zero-Span Check		<b>Q</b>	Quality Assurance												<b>Y</b>	Routine Maintenance		<b>P</b>	Power Failure				
<b>K</b>	Collection Error		<b>N</b>	No Data (Machine Not in Service)																							
<b>X</b>	Invalid Data (Equipment Malfunction /Recovery)		<b>NRM</b>	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 RH - Cold Lake South Station**





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - October 2021

Summary of Hourly Averages

BAROMETRIC PRESSURE (BP) in millibar

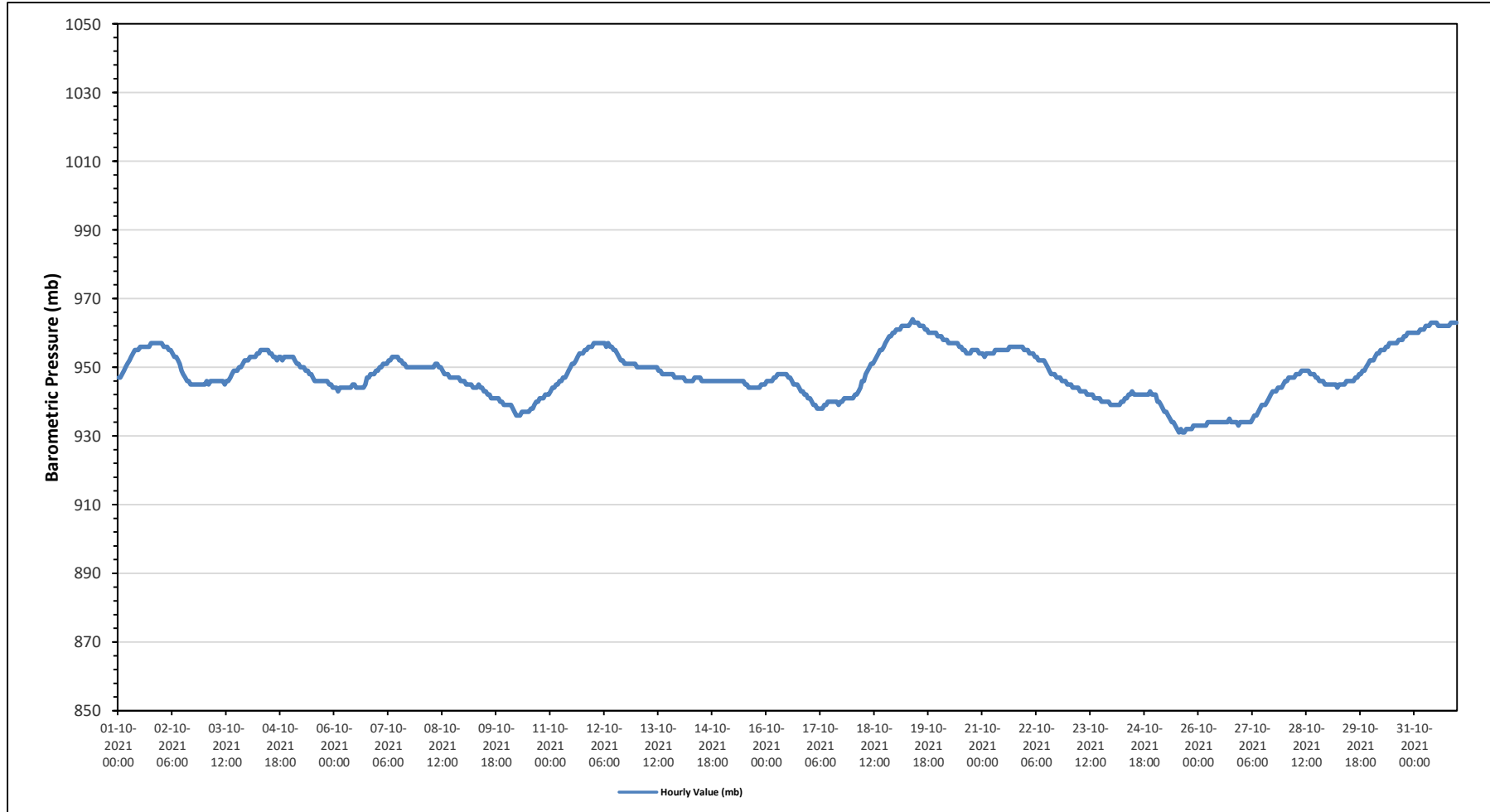
Maximum Hourly Value:	964 mb on October 19 at hour 9	Hours in Service:	744
Maximum Daily Value:	962 mb on October 31	Hours of Data:	744
Minimum Hourly Value:	931 mb on October 25 at hour 13	Hours of Missing Data:	0
Minimum Daily Value:	934 mb on October 26	Hours of Calibration:	0
Monthly Average:	948 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	
Oct 1	947	947	948	949	950	951	952	953	954	955	955	955	956	956	956	956	956	956	957	957	957	957	957	957	947	957	954	
Oct 2	957	956	956	956	955	955	954	953	953	952	951	949	948	947	946	946	945	945	945	945	945	945	945	945	945	945	957	950
Oct 3	945	946	945	946	946	946	946	946	946	946	946	945	946	946	947	948	949	949	949	949	950	950	951	952	952	945	947	
Oct 4	952	953	953	953	953	954	954	955	955	955	955	955	954	954	953	953	952	953	953	952	953	953	953	953	952	955	953	
Oct 5	953	953	952	951	951	950	950	950	949	949	948	948	947	946	946	946	946	946	946	946	946	945	945	944	944	953	948	
Oct 6	944	944	943	944	944	944	944	944	944	944	945	945	944	944	944	944	944	945	947	947	948	948	948	949	943	949	945	
Oct 7	949	950	950	951	951	951	952	952	953	953	953	953	952	952	951	951	950	950	950	950	950	950	950	950	949	953	951	
Oct 8	950	950	950	950	950	950	950	950	951	951	950	950	949	948	948	948	947	947	947	947	947	947	947	946	946	951	949	
Oct 9	946	945	945	945	945	944	944	944	945	944	944	943	943	942	942	941	941	941	941	941	940	940	939	939	939	946	943	
Oct 10	939	939	939	938	937	936	936	936	937	937	937	937	937	938	938	939	940	940	941	941	941	942	942	942	936	942	939	
Oct 11	943	944	944	945	945	946	946	947	947	948	949	950	951	951	952	953	954	954	955	955	956	956	956	943	956	950		
Oct 12	957	957	957	957	957	957	957	956	957	956	956	955	955	954	953	952	952	951	951	951	951	951	951	951	951	957	954	
Oct 13	950	950	950	950	950	950	950	950	950	950	950	949	949	948	948	948	948	948	948	948	948	948	947	947	947	950	949	
Oct 14	947	947	947	946	946	946	946	946	947	947	947	947	946	946	946	946	946	946	946	946	946	946	946	946	946	947	946	
Oct 15	946	946	946	946	946	946	946	946	946	946	946	946	945	945	944	944	944	944	944	944	944	944	945	944	946	945	945	
Oct 16	946	946	946	946	947	947	948	948	948	948	948	948	947	947	946	945	945	945	944	943	943	942	942	941	941	948	946	
Oct 17	941	940	939	939	938	938	938	938	939	939	940	940	940	940	940	939	940	940	941	941	941	941	941	941	938	941	940	
Oct 18	941	942	942	943	944	946	946	948	949	950	951	951	952	953	954	955	955	956	957	958	959	959	960	960	941	960	951	
Oct 19	961	961	961	962	962	962	962	962	963	964	963	963	963	962	962	962	961	961	960	960	960	960	960	959	959	964	962	
Oct 20	959	959	958	958	958	957	957	957	957	957	957	956	956	955	955	954	954	954	955	955	955	955	954	954	954	959	956	
Oct 21	954	953	954	954	954	954	954	955	955	955	955	955	955	955	955	956	956	956	956	956	956	956	956	955	953	956	955	
Oct 22	955	955	954	954	954	953	953	952	952	952	951	950	949	948	948	948	947	947	947	947	946	946	946	945	945	955	950	
Oct 23	945	945	944	944	944	944	943	943	943	943	942	942	942	942	941	941	941	941	940	940	940	940	939	939	945	942		
Oct 24	939	939	939	939	939	940	940	941	941	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	939	943	941	
Oct 25	942	940	940	939	938	937	937	936	935	934	934	933	932	931	932	931	931	932	932	932	932	933	933	933	931	942	935	
Oct 26	933	933	933	933	933	934	934	934	934	934	934	934	934	934	934	934	934	935	934	934	934	934	934	933	933	935	934	
Oct 27	934	934	934	934	934	934	935	936	936	937	938	939	939	939	940	941	942	943	943	943	944	944	945	934	945	939		
Oct 28	946	946	947	947	947	947	948	948	948	949	949	949	949	948	948	948	947	947	946	946	946	945	945	945	945	949	947	
Oct 29	945	945	945	945	945	944	945	945	945	945	946	946	946	946	946	947	947	948	948	949	949	950	951	952	944	952	947	
Oct 30	952	952	953	954	954	955	955	955	956	956	957	957	957	957	957	958	958	958	959	959	960	960	960	952	960	957		
Oct 31	960	960	960	961	961	961	962	962	962	963	963	963	963	962	962	962	962	962	962	962	962	963	963	963	960	963	962	
Diurnal Maximum	961	961	961	962	962	962	962	962	963	964	963	963	963	962	962	962	962	962	962	962	963	963	963	963				
Diurnal Average	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948				

<b>C</b>	Monthly Calibration	<b>S</b>	Daily Zero-Span Check	<b>Q</b>	Quality Assurance
<b>K</b>	Collection Error	<b>N</b>	No Data (Machine Not in Service)	<b>Y</b>	Routine Maintenance
<b>X</b>	InValid Data (Equipment Malfunction /Recovery)	<b>NRM</b>	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	<b>P</b>	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 - October 2021

#### Summary of Hourly Averages

#### AMBIENT TEMPERATURE (AT) in Degree Celsius

Maximum Hourly Value:	18.1 °C on October 2 at hour 14	Hours in Service:	744
Maximum Daily Value:	10.6 °C on October 1	Hours of Data:	744
Minimum Hourly Value:	-9.5 °C on October 31 at hour 7	Hours of Missing Data:	0
Minimum Daily Value:	-3.6 °C on October 31	Hours of Calibration:	0
Monthly Average:	4.1 °C	Operational Uptime:	100.0

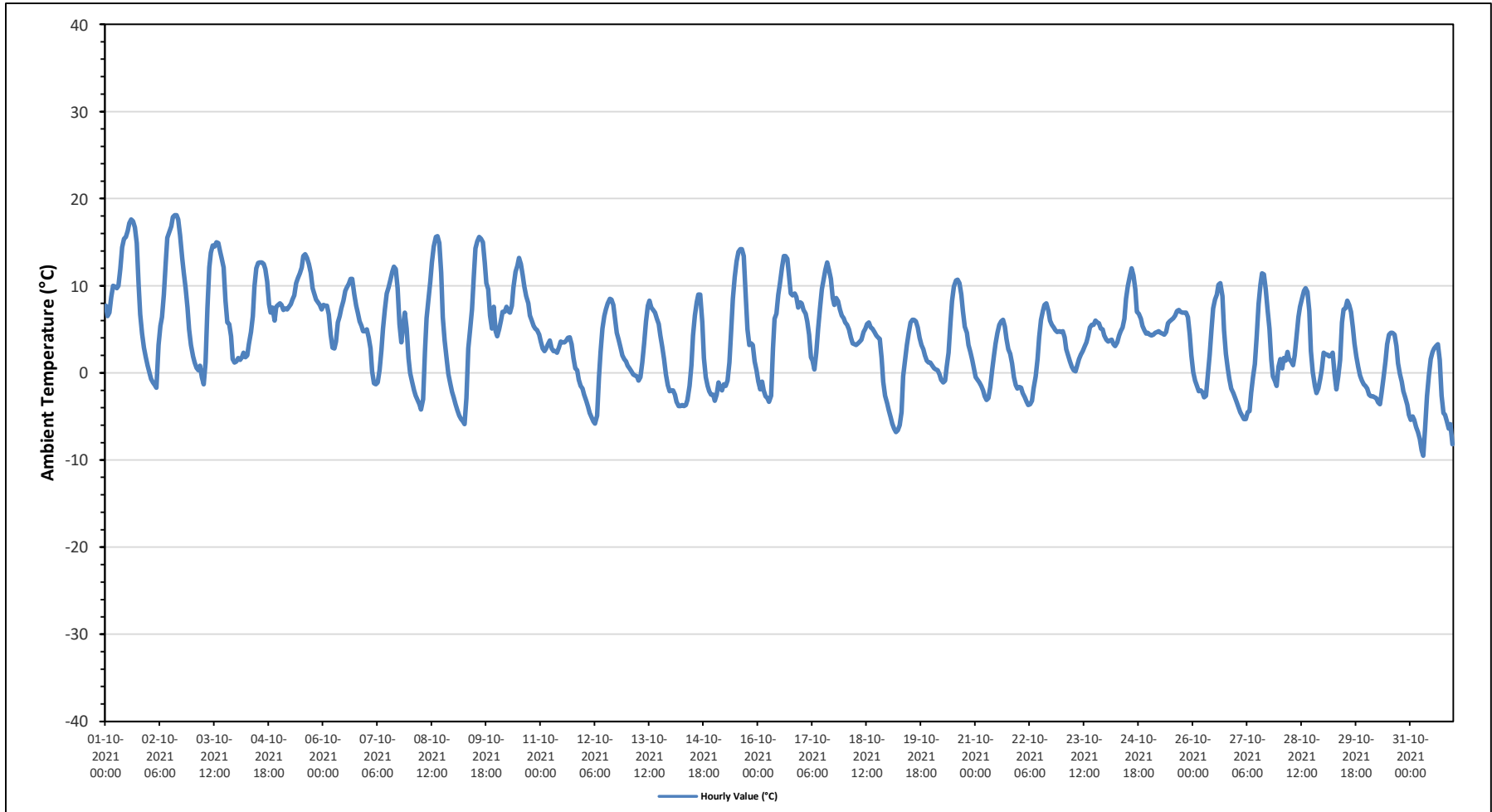
Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average
Oct 1	7.7	6.5	6.9	8.7	10	9.9	9.7	10	11.9	14.4	15.4	15.6	16.3	17.2	17.6	17.4	16.7	14.9	10.1	6.7	4.5	2.9	1.8	0.8	0.8	17.6	10.6
Oct 2	0	-0.7	-1.1	-1.4	-1.7	3.2	5.4	6.4	9	12.6	15.5	16.2	16.8	17.9	18.1	18.1	17.6	15.8	13.2	11.5	9.7	7.5	5	3.2	-1.7	18.1	9.1
Oct 3	1.9	1.2	0.6	0.3	0.8	-0.5	-1.3	1.2	7.4	12.1	13.8	14.6	14.5	15	14.9	13.9	13.1	12.1	8.3	5.8	5.6	4.2	1.6	1.2	-1.3	15.0	6.8
Oct 4	1.3	1.7	1.5	1.8	2.3	1.8	2	3.3	4.7	6.5	9.9	12	12.6	12.7	12.7	12.5	11.9	10.5	7.9	6.9	7.5	6	7.6	7.8	1.3	12.7	6.9
Oct 5	8	7.8	7.2	7.4	7.3	7.6	7.9	8.4	8.9	10.3	10.9	11.4	12.1	13.4	13.6	13.2	12.5	11.5	9.7	9.1	8.4	8.1	7.8	7.3	7.2	13.6	9.6
Oct 6	7.8	7.7	7.7	6.7	4.4	2.9	2.8	3.6	5.8	6.5	7.4	8.3	9.4	9.8	10.2	10.8	10.8	9	7.7	6.9	5.9	5.4	4.8	4.8	2.8	10.8	7.0
Oct 7	5	4.1	2.8	0.2	-1.2	-1.3	-1.1	0.3	2.6	5.1	7.3	9.1	9.8	10.7	11.6	12.2	11.9	9.7	5.6	3.5	5.5	6.9	5.1	1.7	-1.3	12.2	5.3
Oct 8	0	-1.1	-2	-2.6	-3.1	-3.6	-4.2	-3	2.5	6.3	8.4	10.5	12.7	14.5	15.6	15.7	14.9	11.5	6.4	3.7	1.5	-0.1	-1.2	-2.2	-4.2	15.7	4.2
Oct 9	-2.8	-3.6	-4.3	-4.9	-5.3	-5.6	-5.9	-2.9	2.8	5	7.3	11.2	14.3	15.1	15.6	15.4	15	12.7	10.3	9.6	6.6	5.1	7.6	4.8	-5.9	15.6	5.1
Oct 10	4.2	5	6	7	7	7.6	7.1	6.9	7.7	9.8	11.6	12.3	13.2	12.5	11.2	9.9	8.8	8	6.6	6	5.4	5.1	4.9	4.4	4.2	13.2	7.8
Oct 11	3.6	2.8	2.5	2.8	3.3	3.7	2.8	2.5	2.5	2.3	2.9	3.6	3.5	3.5	3.7	4	4.1	3.3	1.7	0.5	0.3	-0.8	-1.5	-1.8	-1.8	4.1	2.3
Oct 12	-2.5	-3.2	-3.9	-4.6	-5.1	-5.6	-5.8	-4.9	-0.5	2.4	5.1	6.5	7.3	8	8.5	8.4	7.8	6.1	4.6	3.8	2.8	2	1.6	1.3	-5.8	8.5	1.7
Oct 13	0.8	0.5	0.2	-0.2	-0.3	-0.4	-0.9	-0.5	1.2	3.4	5.9	7.7	8.3	7.5	7.2	6.9	6.2	5.6	4.3	3	1.6	-0.2	-1.4	-2.1	-2.1	8.3	2.7
Oct 14	-2	-2	-2.5	-3.3	-3.8	-3.8	-3.7	-3.8	-3.7	-3.1	-1.5	0.9	4.3	6.6	8.1	9	9	5.8	1.7	-0.5	-1.5	-2.1	-2.5	-2.5	-3.8	9.0	0.1
Oct 15	-3.2	-2.5	-1.1	-1.7	-2	-1.3	-1.5	-0.9	1.2	4.5	8.5	11	12.8	13.9	14.2	14.2	13.4	9.1	5	3.2	3.4	3.2	1.3	0.3	-3.2	14.2	4.4
Oct 16	-1	-1.9	-1	-2	-2.7	-2.9	-3.3	-2.6	2.8	6.2	6.8	9	10.2	12.1	13.4	13.4	13.1	11	9.1	8.9	9.1	8.7	7.5	8.1	-3.3	13.4	5.5
Oct 17	8	7.2	6.8	5.9	4.4	1.8	1.4	0.4	2.3	5.1	7.4	9.6	10.6	11.8	12.7	11.8	10.8	8.6	7.8	8.6	8.2	7.3	6.6	6.3	0.4	12.7	7.1
Oct 18	5.8	5.5	5	4.1	3.4	3.3	3.2	3.4	3.6	3.8	4.7	5.1	5.6	5.8	5.2	5.1	4.7	4.3	4.1	3.9	1.7	-1	-2.6	-3.5	-3.5	5.8	3.5
Oct 19	-4.3	-5.1	-5.8	-6.4	-6.8	-6.6	-6	-4.5	-0.4	1.4	3.2	4.6	5.8	6.1	6.1	5.9	5.2	4	3.2	2.7	2	1.4	1.2	1.2	-6.8	6.1	0.3
Oct 20	0.8	0.5	0.4	0.3	-0.2	-0.8	-1.1	-0.9	0.7	2.3	5.7	8.2	9.9	10.6	10.7	10.3	9	7.1	5.3	4.6	3.2	2.4	1.5	0.6	-1.1	10.7	3.8
Oct 21	-0.5	-0.8	-1.1	-1.5	-2	-2.7	-3.1	-2.9	-1.6	0.3	2	3.4	4.6	5.5	5.9	6.1	5.3	3.9	2.7	2.2	1.1	-0.5	-1.4	-1.8	-3.1	6.1	1.0
Oct 22	-1.6	-1.7	-2.3	-2.8	-3.3	-3.7	-3.6	-3.2	-1.8	-0.4	1.6	4.1	6.1	7.1	7.8	8	7.1	6	5.5	5.2	4.9	4.7	4.8	4.7	-3.7	8.0	2.2
Oct 23	4.8	4.1	2.7	2	1.3	0.7	0.3	0.2	0.8	1.6	2.1	2.5	3	3.5	4.2	5.2	5.5	5.5	6	5.8	5.7	5.1	5	4.3	0.2	6.0	3.4
Oct 24	3.8	3.6	3.7	3.8	3.3	3.1	3.5	4.3	4.8	5.2	6.2	8.5	10	11.2	12	11.2	9.6	7	6.8	6.2	5.4	4.9	4.5	4.6	3.1	12.0	6.1
Oct 25	4.4	4.3	4.4	4.6	4.7	4.8	4.6	4.5	4.4	4.7	5.7	5.9	6.1	6.3	6.6	7.1	7.2	7	6.9	6.9	6.9	6.4	4.4	2	2.0	7.2	5.5
Oct 26	0.1	-0.9	-1.4	-2.1	-2	-2.2	-2.8	-2.6	-0.6	2.1	5.1	7.4	8.4	9	10.1	10.3	8.8	4.9	2.2	0.5	-0.7	-1.8	-2.3	-2.8	-2.8	10.3	1.9
Oct 27	-3.4	-4	-4.5	-4.9	-5.3	-5.3	-4.5	-4.4	-2.3	-0.5	1	4.2	7.9	10.1	11.4	11.3	9.6	7.2	5.1	1.5	-0.4	-0.9	-1.5	0.7	-5.3	11.4	1.2
Oct 28	1.6	0.5	1.7	1.4	2.4	1.6	1.3	0.9	2	4.2	6.4	7.6	8.6	9.4	9.7	9.3	7.1	2.5	0.1	-1.5	-2.3	-1.8	-0.7	0.4	-2.3	9.7	3.0
Oct 29	2.3	2.1	2.1	1.9	2	2.3	-0.1	-1.9	-0.4	1.5	5.8	7.3	7.4	8.3	7.8	7	5.2	3.4	1.9	0.7	-0.3	-0.9	-1.3	-1.5	-1.9	8.3	2.6
Oct 30	-1.8	-2.5	-2.7	-2.7	-2.8	-2.9	-3.4	-3.6	-2.3	-0.4	1.4	3.3	4.4	4.6	4.6	4.4	3.1	1.1	-0.1	-1	-2.1	-2.8	-3.7	-4.8	-4.8	4.6	-0.5
Oct 31	-5.4	-5	-5.4	-6.2	-6.8	-7.6	-8.9	-9.5	-6.3	-2.7	-0.3	1.6	2.4	2.8	3.1	3.3	1.5	-2.6	-4.6	-4.8	-5.6	-6.4	-5.9	-8.2	-9.5	3.3	-3.6
Diurnal Maximum	8.0	7.8	7.7	8.7	10.0	9.9	9.7	10.0	11.9	14.4	15.5	16.2	16.8	17.9	18.1	18.1	17.6	15.8	13.2	11.5	9.7	8.7	7.8	8.1			
Diurnal Average	1.4	1.0	0.7	0.4	0.1	-0.1	-0.3	0.1	2.2	4.3	6.2	7.8	9.0	9.8	10.1	10.0	9.2	7.3	5.3	4.2	3.4	2.5	1.9	1.3			

<b>C</b> Monthly Calibration	<b>S</b> Daily Zero-Span Check	<b>Q</b> Quality Assurance
<b>K</b> Collection Error	<b>N</b> No Data (Machine Not in Service)	<b>Y</b> Routine Maintenance
<b>X</b> InValid Data (Equipment Malfunction /Recovery)	<b>NRM</b> UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	<b>P</b> 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 - October 2021

#### Summary of Hourly Averages

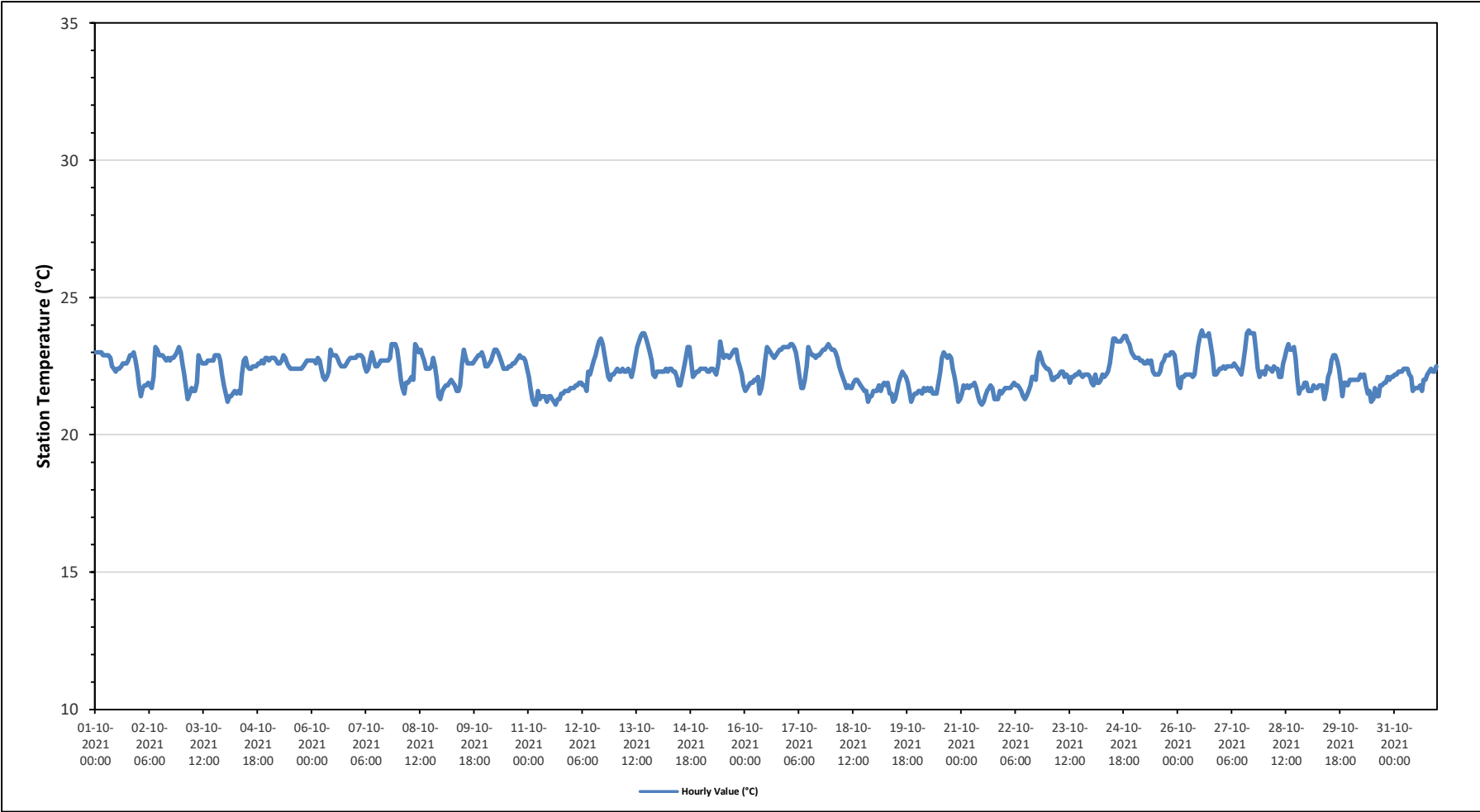
#### STATION TEMPERATURE (ST) in Degree Celsius

Maximum Hourly Value:	23.8 °C	on October 26 at hour 13	Hours in Service:	744
Maximum Daily Value:	22.8 °C	on October 17	Hours of Data:	744
Minimum Hourly Value:	21.1 °C	on October 11 at hour 3	Hours of Missing Data:	0
Minimum Daily Value:	21.4 °C	on October 11	Hours of Calibration:	0
Monthly Average:	22.3 °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				
Oct 1	23.0	23.0	23.0	23.0	22.9	22.9	22.9	22.9	22.8	22.5	22.4	22.3	22.4	22.4	22.5	22.6	22.6	22.6	22.7	22.9	22.9	23.0	22.7	22.3	22.3	23.0	22.7				
Oct 2	21.8	21.4	21.7	21.8	21.8	21.9	21.8	21.7	22.1	23.2	23.1	22.9	22.9	22.9	22.8	22.7	22.8	22.7	22.8	22.8	22.9	23.0	23.2	23.0	21.4	23.2	22.5				
Oct 3	22.6	22.2	21.7	21.3	21.5	21.7	21.6	21.6	21.9	22.9	22.7	22.6	22.6	22.6	22.7	22.7	22.7	22.7	22.9	22.9	22.9	22.7	22.2	21.8	21.3	22.9	22.3				
Oct 4	21.5	21.2	21.4	21.4	21.5	21.6	21.5	21.6	21.5	22.2	22.7	22.8	22.5	22.4	22.4	22.5	22.5	22.5	22.6	22.6	22.7	22.6	22.8	22.8	21.2	22.8	22.2				
Oct 5	22.7	22.8	22.8	22.8	22.7	22.6	22.6	22.7	22.9	22.8	22.6	22.5	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.5	22.6	22.7	22.7	22.7	22.4	22.9	22.6				
Oct 6	22.7	22.7	22.6	22.8	22.7	22.4	22.1	22.0	22.1	22.3	23.1	22.9	22.9	22.9	22.8	22.6	22.5	22.5	22.5	22.6	22.7	22.8	22.8	22.8	22.0	23.1	22.6				
Oct 7	22.8	22.9	22.9	22.9	22.8	22.5	22.3	22.4	22.7	23.0	22.7	22.5	22.5	22.6	22.7	22.7	22.7	22.7	22.7	22.8	23.3	23.3	23.3	23.1	22.3	23.3	22.8				
Oct 8	22.6	22.0	21.7	21.5	21.9	21.9	22.0	22.1	22.0	23.3	23.2	23.0	23.1	22.9	22.7	22.4	22.4	22.4	22.5	22.8	22.5	22.0	21.4	21.3	21.3	23.3	22.3				
Oct 9	21.6	21.7	21.8	21.8	21.9	22.0	21.9	21.8	21.6	21.6	21.8	22.6	23.1	22.8	22.6	22.6	22.6	22.6	22.7	22.8	22.9	22.9	23.0	22.8	21.6	23.1	22.3				
Oct 10	22.5	22.5	22.6	22.7	22.9	23.1	23.1	23.0	22.8	22.6	22.4	22.4	22.4	22.5	22.5	22.6	22.6	22.7	22.8	22.9	22.8	22.8	22.7	22.4	22.4	23.1	22.7				
Oct 11	22.1	21.7	21.3	21.1	21.1	21.6	21.3	21.4	21.4	21.2	21.4	21.4	21.3	21.2	21.1	21.3	21.3	21.5	21.5	21.6	21.6	21.6	21.7	21.1	22.1	21.4	21.4				
Oct 12	21.7	21.7	21.8	21.8	21.9	21.9	21.8	21.8	21.6	22.3	22.2	22.5	22.7	22.9	23.2	23.4	23.5	23.3	22.9	22.5	22.1	22.0	22.2	22.2	21.6	23.5	22.3				
Oct 13	22.3	22.4	22.3	22.3	22.4	22.3	22.3	22.4	22.3	22.1	22.4	22.8	23.2	23.4	23.6	23.7	23.7	23.5	23.3	23.0	22.7	22.2	22.1	22.3	22.1	23.7	22.7				
Oct 14	22.3	22.3	22.3	22.3	22.4	22.3	22.4	22.4	22.3	22.3	22.1	21.8	21.8	22.1	22.5	22.8	23.2	23.2	22.7	22.1	22.2	22.3	22.3	22.4	21.8	23.2	22.4				
Oct 15	22.4	22.4	22.4	22.3	22.3	22.4	22.4	22.3	22.2	22.6	23.4	23.1	22.8	22.9	22.9	22.8	22.9	23.0	23.1	22.7	22.5	22.2	21.8	21.8	23.4	22.6	22.6				
Oct 16	21.6	21.7	21.8	21.9	21.9	22.0	22.0	22.1	21.5	21.7	22.1	22.7	23.2	23.1	23.0	22.9	22.8	22.9	23.0	23.1	23.1	23.2	23.2	23.2	21.5	23.2	22.5				
Oct 17	23.2	23.3	23.3	23.2	23.0	22.6	22.1	21.7	21.7	22.0	22.5	23.2	23.0	22.9	22.9	22.8	22.9	22.9	23.0	23.1	23.1	23.2	23.3	23.2	21.7	23.3	22.8				
Oct 18	23.1	23.1	23.0	22.8	22.5	22.3	22.1	21.9	21.7	21.8	21.7	21.7	21.9	22.0	22.0	21.9	21.8	21.7	21.6	21.6	21.6	21.4	21.4	21.6	21.2	23.1	22.0				
Oct 19	21.6	21.6	21.8	21.6	21.8	21.9	21.8	21.9	21.5	21.5	21.2	21.3	21.6	21.9	22.1	22.3	22.2	22.1	21.9	21.6	21.2	21.4	21.5	21.5	21.2	22.3	21.7				
Oct 20	21.6	21.6	21.5	21.7	21.6	21.7	21.6	21.7	21.5	21.5	21.5	21.9	22.3	22.8	23.0	22.9	22.8	22.9	22.8	22.4	22.1	21.7	21.2	21.3	21.2	23.0	22.0				
Oct 21	21.5	21.8	21.7	21.8	21.7	21.8	21.8	21.9	21.7	21.4	21.2	21.1	21.2	21.4	21.6	21.7	21.8	21.7	21.3	21.3	21.6	21.5	21.6	21.1	21.9	21.6	21.6				
Oct 22	21.7	21.7	21.7	21.7	21.8	21.9	21.8	21.8	21.7	21.6	21.4	21.3	21.4	21.6	21.8	22.1	22.1	22.0	22.7	23.0	22.8	22.6	22.5	22.4	21.3	23.0	22.0				
Oct 23	22.4	22.3	22.0	22.0	22.1	22.1	22.2	22.3	22.3	22.1	22.2	22.1	21.9	22.1	22.1	22.2	22.2	22.3	22.2	22.1	22.2	22.2	22.2	22.1	21.9	22.4	22.2				
Oct 24	21.9	21.8	22.2	21.9	21.9	22.0	22.2	22.1	22.2	22.3	22.6	23.1	23.5	23.5	23.4	23.4	23.5	23.6	23.6	23.4	23.3	23.0	22.9	21.8	23.6	22.8	22.8				
Oct 25	22.8	22.8	22.8	22.7	22.7	22.6	22.6	22.7	22.6	22.7	22.6	22.3	22.2	22.2	22.3	22.6	22.7	22.9	22.9	22.9	23.0	23.0	22.9	22.4	22.2	23.0	22.6				
Oct 26	21.8	21.7	22.1	22.1	22.2	22.2	22.2	22.2	22.1	22.2	22.7	23.2	23.6	23.8	23.6	23.6	23.6	23.7	23.3	22.8	22.2	22.2	22.3	22.4	21.7	23.8	22.7				
Oct 27	22.4	22.5	22.4	22.5	22.5	22.5	22.6	22.5	22.4	22.3	22.2	22.6	23.1	23.7	23.8	23.7	23.7	23.7	23.7	23.1	22.4	22.1	22.3	22.3	22.1	23.8	22.7				
Oct 28	22.2	22.5	22.4	22.4	22.3	22.5	22.4	22.4	22.1	22.1	22.6	22.8	23.1	23.3	23.1	23.1	23.2	22.8	22.0	21.5	21.7	21.9	21.9	21.5	23.3	22.4	22.4				
Oct 29	21.6	21.6	21.6	21.8	21.7	21.7	21.8	21.8	21.8	21.3	21.6	22.1	22.3	22.7	22.9	22.9	22.7	22.4	21.9	21.4	21.9	21.9	21.8	22.0	21.3	22.9	22.0				
Oct 30	22.0	22.0	22.0	22.0	22.0	22.2	22.1	22.2	21.8	21.5	21.6	21.2	21.3	21.7	21.4	21.4	21.8	21.8	21.9	21.9	22.1	22.0	22.1	22.1	21.2	22.2	21.8				
Oct 31	22.2	22.2	22.3	22.3	22.3	22.4	22.4	22.4	22.2	22.1	21.6	21.7	21.7	21.7	21.8	21.6	22.0	22.0	22.2	22.3	22.4	22.3	22.5	21.6	22.5	22.1	22.1				
Diurnal Maximum	23.2	23.3	23.3	23.2	23.0	23.1	23.1	23.0	22.9	23.3	23.4	23.2	23.6	23.8	23.7	23.8	23.7	23.7	23.7	23.6	23.4	23.3	23.3	23.2							
Diurnal Average	22.2	22.2	22.2	22.1	22.2	22.2	22.1	22.1	22.0	22.2	22.2	22.3	22.4	22.5	22.6	22.6	22.6	22.6	22.6	22.5	22.4	22.4	22.3	22.3							
<b>C</b>	Monthly Calibration							<b>S</b>	Daily Zero-Span Check							<b>Q</b>	Quality Assurance														
<b>K</b>	Collection Error							<b>N</b>	No Data (Machine Not in Service)							<b>Y</b>	Routine Maintenance							<b>P</b>	Power Failure						
<b>X</b>	Invalid Data (Equipment Malfunction /Recovery)							<b>NRM</b>	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 ST - Cold Lake South Station**





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - October 2021

Summary of Hourly Averages

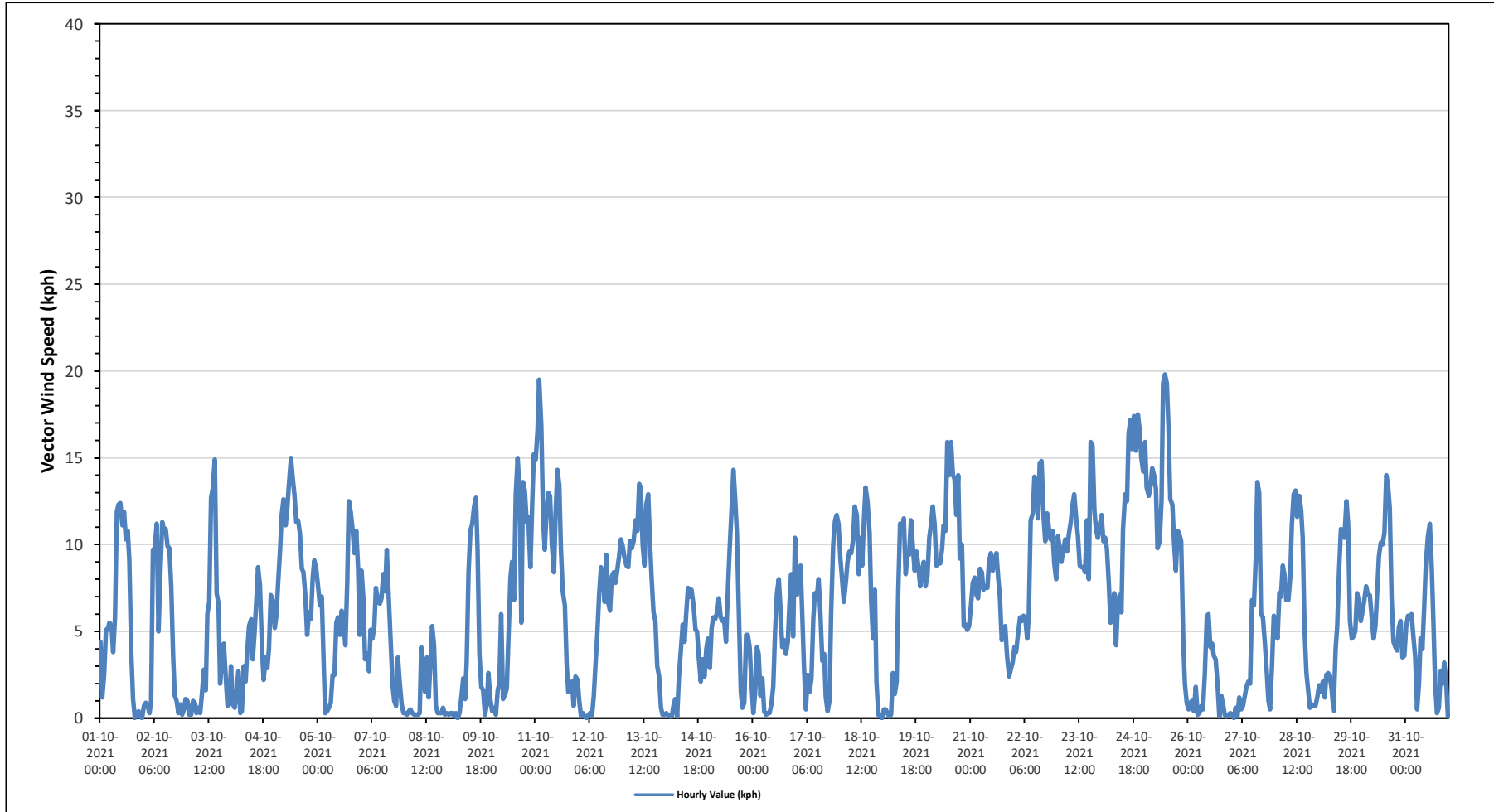
VECTOR WIND SPEED (VWS) in km/hr

Maximum Hourly Value:	19.8 kph on October 25 at hour 11	Hours in Service:	744
Maximum Daily Value:	11.9 kph on October 25	Hours of Data:	744
Minimum Hourly Value:	0.0 kph on October 1 at hour 19	Hours of Missing Data:	0
Minimum Daily Value:	1.0 kph on October 4	Hours of Calibration:	0
Monthly Average:	1.5 kph	Operational Uptime:	100.0

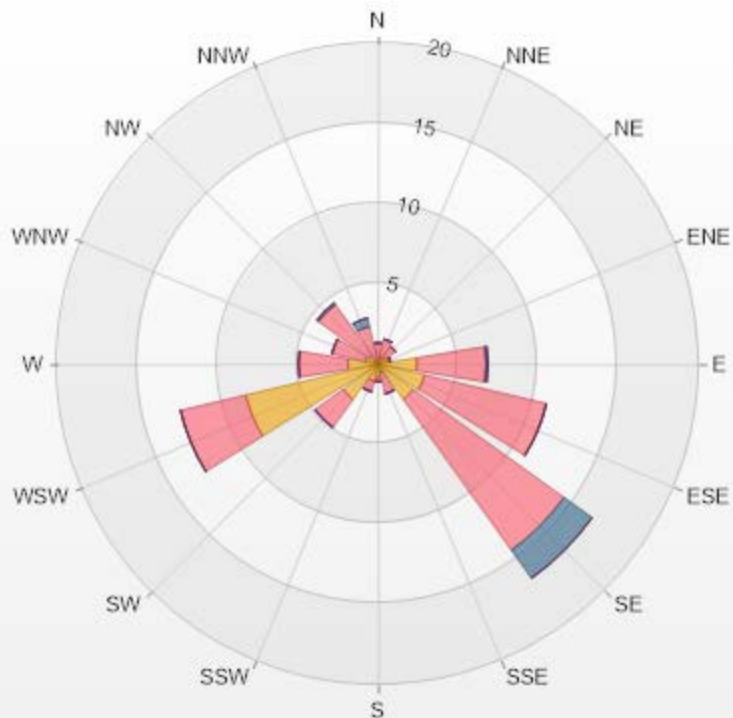
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Oct 1	4.4	1.2	2.5	5.1	5.1	5.5	5.3	3.8	5.8	11.9	12.3	12.4	11.1	11.9	10.3	10.8	9.1	3.9	1.1	0.0	0.2	0.4	0.1	0.0	0.0	12.4	5.2
Oct 2	0.7	0.9	0.7	0.3	1.0	9.7	9.8	11.2	5.0	8.4	11.3	10.9	10.9	9.9	9.8	7.5	3.6	1.3	1.0	0.3	0.8	0.2	0.5	1.1	0.2	11.3	4.3
Oct 3	1.0	0.2	0.2	1.0	0.9	0.3	0.6	0.3	1.3	2.8	1.6	6.0	6.7	12.7	13.2	14.9	7.2	6.6	2.0	3.3	4.3	2.7	0.7	0.8	0.2	14.9	2.6
Oct 4	3.0	0.8	0.6	1.4	2.7	0.3	0.4	3.0	2.1	3.8	5.3	5.7	3.4	5.0	6.9	8.7	7.7	4.0	2.2	3.5	2.9	4.0	7.1	6.8	0.3	8.7	1.0
Oct 5	5.2	5.9	7.9	9.7	11.7	12.6	11.1	12.1	13.6	15.0	13.9	12.9	11.3	11.4	10.6	8.6	8.4	7.1	4.8	6.1	5.7	8.1	9.1	8.6	4.8	15.0	9.5
Oct 6	7.6	6.5	7.0	3.3	0.3	0.4	0.6	0.9	2.5	2.5	5.5	5.8	4.8	6.2	5.5	4.2	7.8	12.5	11.9	10.9	9.5	10.8	8.6	4.8	0.3	12.5	3.5
Oct 7	8.5	6.8	3.4	3.7	2.7	5.1	4.6	5.3	7.5	6.7	6.6	6.9	8.3	7.3	9.7	7.1	4.3	1.9	1.0	0.7	3.5	2.2	0.8	0.3	0.3	9.7	3.9
Oct 8	0.3	0.2	0.4	0.5	0.3	0.2	0.2	0.3	4.1	2.1	1.5	3.5	1.2	3.4	5.3	4.2	0.7	0.3	0.3	0.3	0.6	0.2	0.3	0.2	5.3	1.0	
Oct 9	0.2	0.3	0.3	0.1	0.3	0.0	0.3	1.2	2.3	1.1	3.2	8.4	10.8	11.2	12.2	12.7	9.7	3.7	1.8	1.6	0.2	0.8	2.6	1.1	0.0	12.7	3.3
Oct 10	0.4	0.6	0.2	1.6	2.0	6.0	1.1	1.3	1.7	4.9	8.1	9.0	6.8	12.9	15.0	13.2	5.5	13.6	13.1	11.3	11.6	8.7	12.4	15.2	0.2	15.2	5.8
Oct 11	14.9	16.6	19.5	16.9	11.5	9.7	12.0	13.0	12.8	10.0	8.4	11.8	14.3	13.4	9.8	7.3	6.5	3.0	1.5	1.6	2.1	0.7	2.4	2.2	0.7	19.5	8.8
Oct 12	1.0	0.1	0.3	0.1	0.0	0.2	0.3	0.1	1.3	3.0	4.8	7.1	8.7	8.2	6.7	9.4	6.7	6.2	8.2	8.4	7.8	8.5	9.3	10.3	0.0	10.3	4.3
Oct 13	9.9	9.2	8.8	8.7	10.2	9.8	10.2	11.4	10.8	13.5	13.3	10.0	8.8	12.3	12.9	10.0	8.0	6.1	5.6	3.0	2.4	0.6	0.2	0.2	0.2	13.5	8.1
Oct 14	0.3	0.2	0.1	0.1	0.7	1.1	0.1	2.5	3.9	5.4	4.4	6.0	7.5	7.0	7.4	6.5	5.1	5.0	3.4	2.1	3.4	2.4	4.0	4.6	0.1	7.5	3.3
Oct 15	2.9	5.2	5.8	5.7	6.1	6.9	5.8	5.6	5.7	4.4	7.7	9.8	12.0	14.3	12.8	10.7	6.4	1.5	0.6	0.9	4.8	4.8	4.1	1.8	0.6	14.3	6.0
Oct 16	0.3	1.5	4.1	3.7	1.3	2.3	0.4	0.2	0.3	0.3	0.8	1.8	5.0	7.2	8.0	6.4	4.1	4.5	3.7	4.4	6.8	8.3	4.7	10.4	0.2	10.4	2.7
Oct 17	7.1	7.9	8.8	5.7	2.9	0.5	2.5	1.5	2.3	5.7	7.2	6.9	8.0	6.3	3.3	3.7	1.2	0.4	1.0	6.0	10.0	11.4	11.7	11.2	0.4	11.7	1.6
Oct 18	9.2	8.1	6.7	7.9	9.0	9.6	9.5	10.3	12.2	11.7	8.3	10.4	8.8	11.5	13.3	12.5	10.7	6.8	4.6	7.4	2.1	0.2	0.1	0.0	0.0	13.3	7.7
Oct 19	0.5	0.5	0.3	0.1	0.2	2.6	1.4	2.1	7.3	11.2	10.9	11.5	8.3	9.5	9.4	11.4	9.9	8.5	9.6	8.7	7.6	8.4	9.0	7.6	0.1	11.5	6.4
Oct 20	8.2	10.4	11.2	12.2	11.2	8.8	9.1	8.9	9.7	11.1	10.8	15.9	14.0	15.9	14.0	13.8	11.7	14.0	9.2	10.0	5.3	5.4	5.1	5.3	5.1	15.9	10.4
Oct 21	6.5	7.8	8.1	7.1	6.9	8.6	8.4	7.4	7.6	7.5	9.0	9.5	8.5	9.1	9.5	8.0	7.0	4.5	4.9	5.3	3.6	2.4	2.8	3.2	2.4	9.5	6.7
Oct 22	4.1	3.8	4.8	5.8	5.6	5.9	5.7	4.6	6.0	11.4	11.8	13.9	12.8	11.5	14.7	14.8	11.5	10.2	11.8	10.9	10.3	10.8	8.9	8.0	3.8	14.8	9.0
Oct 23	10.5	9.7	9.0	9.7	10.3	9.6	10.6	11.3	12.2	12.9	11.6	10.5	8.8	8.7	8.7	8.4	11.4	8.0	15.9	15.7	12.0	10.9	10.4	11.1	8.0	15.9	10.6
Oct 24	11.7	10.2	10.4	9.8	7.9	5.5	6.4	7.2	4.2	6.4	7.1	6.1	10.9	12.9	12.5	16.4	17.2	15.5	17.4	15.4	17.5	16.7	15.0	14.2	4.2	17.5	11.0
Oct 25	15.9	13.3	12.8	13.4	14.4	14.0	13.2	9.8	10.2	12.5	19.3	19.8	19.3	16.9	12.6	12.3	10.2	8.5	10.8	10.6	10.2	4.4	2.0	0.9	0.9	19.8	11.9
Oct 26	0.5	0.9	1.0	0.4	1.8	0.2	0.3	0.7	0.5	2.5	5.9	6.0	4.1	4.3	3.6	3.4	2.0	0.1	1.3	0.8	0.2	0.1	0.2	0.3	0.1	6.0	1.6
Oct 27	0.2	0.0	0.6	0.1	1.2	0.5	0.7	1.3	1.8	2.1	2.0	6.8	6.5	9.1	13.6	13.0	6.0	5.8	4.4	2.8	1.0	0.5	2.9	5.9	0.0	13.6	3.2
Oct 28	5.6	4.6	7.2	7.0	8.8	8.2	6.8	6.8	8.1	11.1	12.9	13.1	11.6	12.8	12.0	10.4	5.1	2.6	1.7	0.6	0.8	0.7	0.7	1.2	0.6	13.1	6.2
Oct 29	1.9	1.5	2.1	1.2	2.5	2.6	2.3	1.7	0.4	4.0	5.3	8.5	10.9	10.8	10.4	12.5	11.2	5.6	4.6	4.7	5.0	7.2	6.7	5.6	0.4	12.5	4.3
Oct 30	6.2	6.8	7.6	7.1	7.1	5.8	4.6	5.3	7.1	9.3	10.1	10.0	10.7	14.0	13.5	12.1	6.9	4.4	4.1	3.9	5.2	5.6	3.5	3.6	3.5	14.0	6.9
Oct 31	5.3	5.9	5.7	6.0	4.7	3.5	0.5	2.0	4.6	4.0	6.5	8.9	10.5	11.2	8.8	5.8	2.0	0.3	0.6	2.7	2.0	3.2	2.3	0.1	0.1	11.2	2.7
Diurnal Maximum	16	17	20	17	14	14	13	13	14	15	19	20	19	17	15	16	17	16	17	16	18	17	15	15			
Diurnal Average	5.0	4.8	5.1	5.0	4.9	5.0	4.7	4.9	5.5	7.1	8.0	9.2	9.3	10.2	10.1	9.7	7.4	5.7	5.3	5.3	5.1	4.9	4.8	4.7			
<b>C</b>	Monthly Calibration						<b>S</b>	Daily Zero-Span Check						<b>Q</b>	Quality Assurance												
<b>K</b>	Collection Error						<b>N</b>	No Data (Machine Not in Service)						<b>Y</b>	Routine Maintenance						<b>P</b>	Power Failure					
<b>X</b>	InValid Data (Equipment Malfunction /Recovery)						<b>NRM</b>	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 - Cold Lake South Station*



Wind: Cold Lake South Monitor: WDS [kph] Monthly: 10-2021 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 23.12% 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	0.13	1.21	0	0	0	1.34
NNE	0.4	1.21	0	0	0	1.61
NE	0.54	0.81	0	0	0	1.35
ENE	0.67	0.13	0	0	0	0.8
E	2.42	4.3	0.13	0	0	6.85
ESE	2.96	7.8	0	0	0	10.76
SE	2.69	11.56	2.15	0	0	16.4
SSE	0.54	1.34	0	0	0	1.88
S	0.81	0.27	0	0	0	1.08
SSW	1.08	0.67	0	0	0	1.75
SW	2.69	2.15	0	0	0	4.84
WSW	8.47	4.17	0	0	0	12.64
W	1.88	3.09	0	0	0	4.97
WNW	0.81	2.15	0	0	0	2.96
NW	0.67	3.9	0.13	0	0	4.7
NNW	0.27	2.15	0.54	0	0	2.96
Summary	27.03	46.91	2.95	0	0	76.89



LICA-202110

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% Icon Classes (kph)

27



1.8-6.0

47



6.0-15.0

3



15.0-29.0

0



29.0-39.0

0



>39.0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

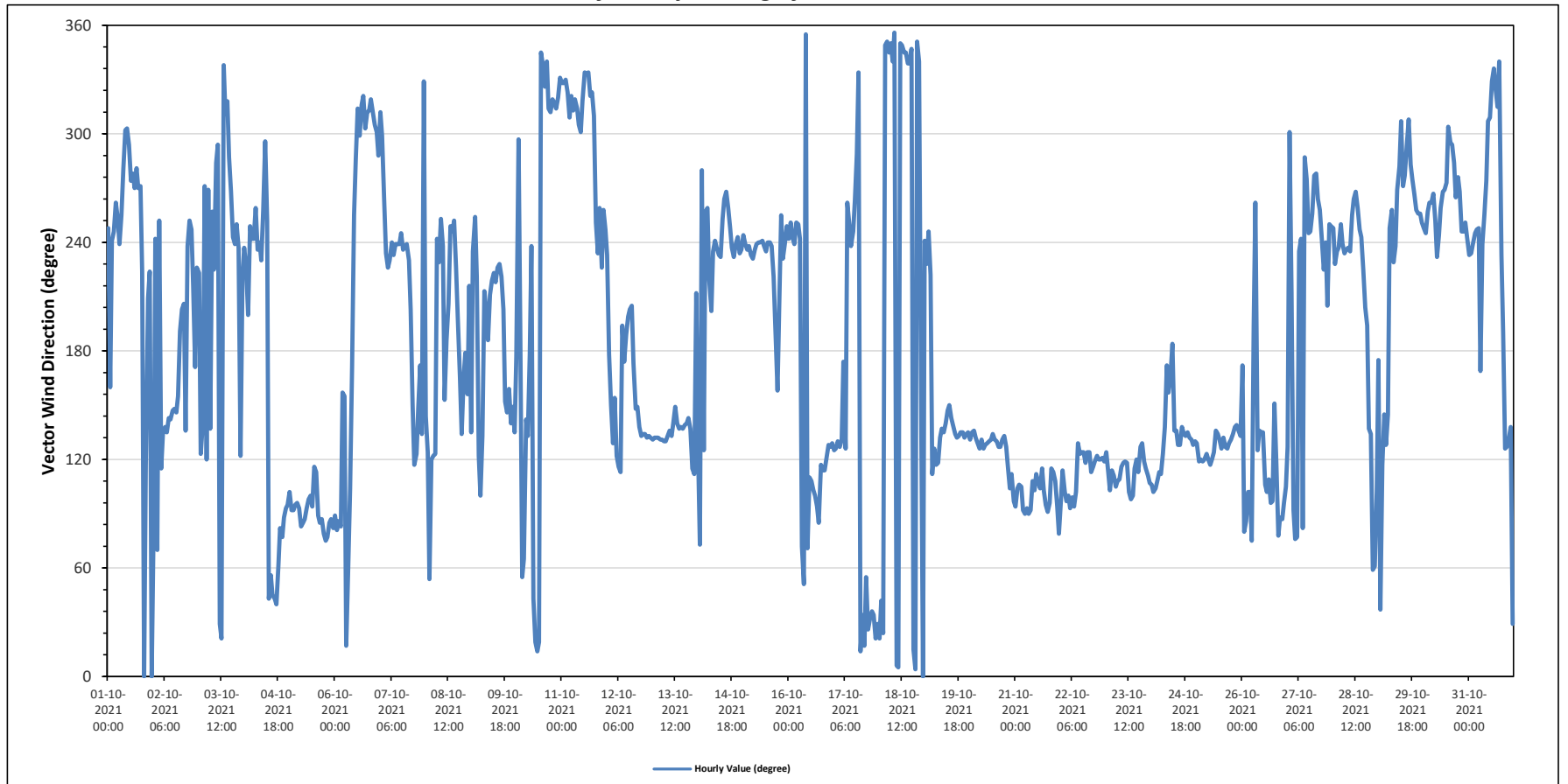
Cold Lake South Station - October 2021

Summary of Hourly Averages

WIND DIRECTION (VWD) in sector

Monthly Average: 147 (SE) degree										Hours in Service: 744																																	
										Hours of Data: 744																																	
										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																	
Oct 1	WSW	SSE	WSW	WSW	W	WSW	WSW	WSW	W	WNW	WNW	WNW	W	W	W	W	W	SW	N	ESE	SSW	SW	N	275	W																		
Oct 2	E	WSW	ENE	WSW	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SSE	S	SSW	SSW	SE	SW	WSW	WSW	SW	S	SW	154	SSE																	
Oct 3	SW	ESE	SE	W	ESE	W	SE	WSW	SW	WNW	WNW	NNE	NNE	NNW	NW	NW	WNW	W	WSW	WSW	WSW	SW	ESE	SW	307	NW																	
Oct 4	SW	SW	SSW	WSW	WSW	WSW	WSW	SW	WSW	SW	WSW	WNW	WSW	NE	NE	NE	NE	ENE	E	ENE	E	E	E	55	NE																		
Oct 5	E	E	E	E	E	E	E	E	E	E	E	E	E	ESE	ESE	E	E	E	ENE	ENE	ENE	E	E	E	92	E																	
Oct 6	E	E	E	E	SSE	SSE	NNE	ENE	ESE	S	WSW	WNW	NW	WNW	NW	NW	WNW	NW	NW	NW	NW	WNW	WNW	WNW	317	NW																	
Oct 7	NW	WNW	W	SW	SW	SW	WSW	SW	WSW	WSW	WSW	WSW	SW	SW	WSW	SW	SSW	SSE	ESE	ESE	SE	S	SE	NNW	239	WSW																	
Oct 8	SE	ESE	NE	ESE	ESE	ESE	WSW	SW	WSW	SW	SSE	S	SSW	WSW	WSW	WSW	SW	SSW	SSE	SE	SSE	S	SSE	SW	220	SW																	
Oct 9	SE	SW	WSW	SW	ESE	E	SE	SSW	SSW	S	SSW	SW	SW	SW	SW	SW	SSW	SSE	SE	SSE	SE	SSE	SE	SE	214	SSW																	
Oct 10	S	WNW	SSW	NE	ENE	SE	SE	S	SW	NE	NNE	NNE	NNE	NNW	NNW	NW	NNW	NW	NW	NW	NW	NW	NW	NNW	335	NNW																	
Oct 11	NNW	NNW	NNW	NW	NW	NW	NW	NW	WNW	WNW	NNW	NNW	NNW	NNW	NNW	NW	NW	WSW	SW	WSW	SW	WSW	WSW	WSW	319	NW																	
Oct 12	SW	S	SSE	SE	SSE	ESE	ESE	ESE	SSW	S	S	SSW	SSW	S	SE	SSE	SE	SE	SE	SE	SE	SE	SE	SE	156	SSE																	
Oct 13	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	ESE	SSW	135	SE																	
Oct 14	SE	ENE	W	SE	WSW	WSW	SW	SSW	SW	WSW	SW	SW	SW	WSW	W	W	WSW	WSW	SW	SW	WSW	WSW	SW	SW	244	WSW																	
Oct 15	WSW	WSW	SW	SW	SW	SW	WSW	WSW	WSW	WSW	WSW	SW	SW	WSW	WSW	SW	SSW	SSE	SSW	WSW	SW	WSW	WSW	WSW	237	SW																	
Oct 16	WSW	WSW	WSW	WSW	WSW	WSW	WSW	ENE	NE	N	ENE	ESE	ESE	E	E	E	ESE	ESE	ESE	ESE	SE	SE	SE	SE	121	ESE																	
Oct 17	SE	SE	SE	SE	SE	S	SE	W	WSW	SW	WSW	W	WNW	NNW	NNE	NE	NNE	NE	NNE	NNE	NE	NE	NNE	NNE	39	NE																	
Oct 18	NNE	NE	NNE	NNW	N	NNW	N	NNW	N	N	N	NNW	NNW	NNW	NNW	NNW	NNW	NNE	N	N	NNW	SSE	N	355	N																		
Oct 19	WSW	SW	WSW	SW	ESE	SE	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	137	SE																	
Oct 20	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	ESE	ESE	E	128	SE																
Oct 21	E	ESE	ESE	ESE	E	E	E	E	E	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	101	E																	
Oct 22	E	ESE	E	E	E	E	E	E	E	SE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	117	ESE																	
Oct 23	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	E	E	E	ESE	ESE	ESE	SE	SE	ESE	ESE	ESE	ESE	114	ESE																	
Oct 24	ESE	E	ESE	ESE	ESE	ESE	ESE	SE	S	SSE	SSE	S	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	130	SE																	
Oct 25	SE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	127	SE																	
Oct 26	S	E	E	E	E	ENE	SSW	W	SE	SE	SE	SE	ESE	E	ESE	E	E	SSE	ESE	ENE	E	E	E	ESE	115	ESE																	
Oct 27	SE	WNW	SSW	E	ENE	ENE	SW	WSW	E	WNW	W	WSW	WSW	W	W	WSW	WSW	SW	WSW	WSW	SW	WSW	SSW	WSW	259	WSW																	
Oct 28	WSW	SW	SW	SW	WSW	WSW	SW	SW	SW	SW	SW	WSW	W	W	WSW	WSW	WSW	SW	SSW	SSW	SE	SE	ENE	ENE	E	245	WSW																
Oct 29	S	NE	ESE	SE	SE	SE	WSW	WSW	SW	SW	W	W	NW	W	W	WNW	NW	W	W	W	WSW	WSW	WSW	WSW	274	W																	
Oct 30	WSW	WSW	WSW	W	W	W	WSW	SW	WSW	WSW	W	W	W	WNW	WNW	WNW	WNW	WNW	W	W	W	WSW	WSW	WSW	WSW	268	W																
Oct 31	SW	SW	WSW	WSW	WSW	WSW	SSE	WSW	WSW	W	NW	NW	NNW	NNW	NW	NNW	SW	S	SE	SE	SE	SE	NNE	285	WNW																		
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 - October 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 October 25 at hour 11													Hours in Service: 744														
Maximum Daily Value: 11.9 kph on October 25													Hours of Data: 744														
Minimum Hourly Value: 0.0 kph on October 1 at hour 19													Hours of Missing Data: 0														
Minimum Daily Value: 1.0 kph on October 4													Hours of Calibration: 0														
Monthly Average: 1.5 kph													Operational Uptime: 100														
WIND DIRECTION																											
Monthly Average: 147 (SE) 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
Oct 1	4.4	1.2	2.5	5.1	5.1	5.5	5.3	3.8	5.8	11.9	12.3	12.4	11.1	11.9	10.3	10.8	9.1	3.9	1.1	0.0	0.2	0.4	0.1	0.0	0.0	12.4	5.2
Oct 2	0.7	0.9	0.7	0.3	1.0	9.7	9.8	11.2	5.0	8.4	11.3	10.9	10.9	9.9	9.8	7.5	3.6	1.3	1.0	0.3	0.8	0.2	0.5	1.1	0.2	11.3	4.3
Oct 3	1.0	0.2	0.2	1.0	0.9	0.3	0.6	0.3	1.3	2.8	1.6	6.0	6.7	12.7	13.2	14.9	7.2	6.6	2.0	3.3	4.3	2.7	0.7	0.8	0.2	14.9	2.6
Oct 4	3.0	0.8	0.6	1.4	2.7	0.3	0.4	3.0	2.1	3.8	5.3	5.7	3.4	5.0	6.9	8.7	7.7	4.0	2.2	3.5	2.9	4.0	7.1	6.8	0.3	8.7	1.0
Oct 5	5.2	5.9	7.9	9.7	11.7	12.6	11.1	12.1	13.6	15.0	13.9	12.9	11.3	11.4	10.6	8.6	8.4	7.1	4.8	6.1	5.7	8.1	9.1	8.6	4.8	15.0	9.5
Oct 6	7.6	6.5	7.0	3.3	0.3	0.4	0.6	0.9	2.5	2.5	5.5	5.8	4.8	6.2	5.5	4.2	7.8	12.5	11.9	10.9	9.5	10.8	8.6	4.8	0.3	12.5	3.5
Oct 7	8.5	6.8	3.4	3.7	2.7	5.1	4.6	5.3	7.5	6.7	6.6	6.9	8.3	7.3	9.7	7.1	4.3	1.9	1.0	0.7	3.5	2.2	0.8	0.3	0.3	9.7	3.9
Oct 8	0.3	0.2	0.4	0.5	0.3	0.2	0.2	0.3	4.1	2.1	1.5	3.5	1.2	3.4	5.3	4.2	0.7	0.3	0.3	0.3	0.6	0.2	0.3	0.2	5.3	1.0	
Oct 9	0.2	0.3	0.3	0.1	0.3	0.0	0.3	1.2	2.3	1.1	3.2	8.4	10.8	11.2	12.2	12.7	9.7	3.7	1.8	1.6	0.2	0.8	2.6	1.1	0.0	12.7	3.3
Oct 10	0.4	0.6	0.2	1.6	2.0	6.0	1.1	1.3	1.7	4.9	8.1	9.0	6.8	12.9	15.0	13.2	5.5	13.6	13.1	11.3	11.6	8.7	12.4	15.2	0.2	15.2	5.8
Oct 11	14.9	16.6	19.5	16.9	11.5	9.7	12.0	13.0	12.8	10.0	8.4	11.8	14.3	13.4	9.8	7.3	6.5	3.0	1.5	1.6	2.1	0.7	2.4	2.2	0.7	19.5	8.8
Oct 12	1.0	0.1	0.3	0.1	0.0	0.2	0.3	0.1	1.3	3.0	4.8	7.1	8.7	8.2	6.7	9.4	6.7	6.2	8.2	8.4	7.8	8.5	9.3	10.3	0.0	10.3	4.3
Oct 13	9.9	9.2	8.8	8.7	10.2	9.8	10.2	11.4	10.8	13.5	13.3	10.0	8.8	12.3	12.9	10.0	8.0	6.1	5.6	3.0	2.4	0.6	0.2	0.2	0.2	13.5	8.1
Oct 14	0.3	0.2	0.1	0.1	0.7	1.1	0.1	2.5	3.9	5.4	4.4	6.0	7.5	7.0	7.4	6.5	5.1	5.0	3.4	2.1	3.4	2.4	4.0	4.6	0.1	7.5	3.3
Oct 15	2.9	5.2	5.8	5.7	6.1	6.9	5.8	5.6	5.7	4.4	7.7	9.8	12.0	14.3	12.8	10.7	6.4	1.5	0.6	0.9	4.8	4.8	4.1	1.8	0.6	14.3	6.0
Oct 16	0.3	1.5	4.1	3.7	1.3	2.3	0.4	0.2	0.3	0.3	0.8	1.8	5.0	7.2	8.0	6.4	4.1	4.5	3.7	4.4	6.8	8.3	4.7	10.4	0.2	10.4	2.7
Oct 17	7.1	7.9	8.8	5.7	2.9	0.5	2.5	1.5	2.3	5.7	7.2	6.9	8.0	6.3	3.3	3.7	1.2	0.4	1.0	6.0	10.0	11.4	11.7	11.2	0.4	11.7	1.6
Oct 18	9.2	8.1	6.7	7.9	9.0	9.6	9.5	10.3	12.2	11.7	8.3	10.4	8.8	11.5	13.3	12.5	10.7	6.8	4.6	7.4	2.1	0.2	0.1	0.0	0.0	13.3	7.7
Oct 19	0.5	0.5	0.3	0.1	0.2	2.6	1.4	2.1	7.3	11.2	10.9	11.5	8.3	9.5	9.4	11.4	9.9	8.5	9.6	8.7	7.6	8.4	9.0	7.6	0.1	11.5	6.4
Oct 20	8.2	10.4	11.2	12.2	11.2	8.8	9.1	8.9	9.7	11.1	10.8	15.9	14.0	15.9	14.0	13.8	11.7	14.0	9.2	10.0	5.3	5.4	5.1	5.3	5.1	15.9	10.4



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - October 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 October 25 at hour 11		Hours in Service: 744																																							
		Maximum Daily Value: 11.9 kph on October 25		Hours of Data: 744																																							
		Minimum Hourly Value: 0.0 kph on October 1 at hour 19		Hours of Missing Data: 0																																							
		Minimum Daily Value: 1.0 kph on October 4		Hours of Calibration: 0																																							
		Monthly Average: 1.5 kph		Operational Uptime: 100																																							
WIND DIRECTION		Monthly Average: 147 (SE) degree																																									
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average																	
Oct 21	6.5	7.8	8.1	7.1	6.9	8.6	8.4	7.4	7.6	7.5	9.0	9.5	8.5	9.1	9.5	8.0	7.0	4.5	4.9	5.3	3.6	2.4	2.8	3.2	2.4	9.5	6.7																
	E	ESE	ESE	ESE	E	E	E	E	E	ESE	ESE	ESE	ESE	ESE	ESE	ESE	E	E	E	ESE	ESE	ESE	ESE	ESE	E	ESE	ESE																
Oct 22	4.1	3.8	4.8	5.8	5.6	5.9	5.7	4.6	6.0	11.4	11.8	13.9	12.8	11.5	14.7	14.8	11.5	10.2	11.8	10.9	10.3	10.8	8.9	8.0	3.8	14.8	9.0																
	E	ESE	E	E	E	E	E	E	E	SE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE																
Oct 23	10.5	9.7	9.0	9.7	10.3	9.6	10.6	11.3	12.2	12.9	11.6	10.5	8.8	8.7	8.7	8.4	11.4	8.0	15.9	15.7	12.0	10.9	10.4	11.1	8.0	15.9	10.6																
	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	E	E	E	ESE	ESE	ESE	SE	SE	ESE	ESE	ESE	ESE	ESE	ESE																
Oct 24	11.7	10.2	10.4	9.8	7.9	5.5	6.4	7.2	4.2	6.4	7.1	6.1	10.9	12.9	12.5	16.4	17.2	15.5	17.4	15.4	17.5	16.7	15.0	14.2	4.2	17.5	11.0																
	ESE	E	ESE	ESE	ESE	ESE	ESE	SE	SSE	SSE	S	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE																
Oct 25	15.9	13.3	12.8	13.4	14.4	14.0	13.2	9.8	10.2	12.5	19.3	19.8	19.3	16.9	12.6	12.3	10.2	8.5	10.8	10.6	10.2	4.4	2.0	0.9	0.9	19.8	11.9																
	SE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE																
Oct 26	0.5	0.9	1.0	0.4	1.8	0.2	0.3	0.7	0.5	2.5	5.9	6.0	4.1	4.3	3.6	3.4	2.0	0.1	1.3	0.8	0.2	0.1	0.2	0.3	0.1	6.0	1.6																
	S	E	E	E	E	ENE	SSW	W	SE	SE	SE	SE	ESE	E	ESE	E	SSE	ESE	ENE	E	E	E	ESE	ESE	ESE	ESE	ESE																
Oct 27	0.2	0.0	0.6	0.1	1.2	0.5	0.7	1.3	1.8	2.1	2.0	6.8	6.5	9.1	13.6	13.0	6.0	5.8	4.4	2.8	1.0	0.5	2.9	5.9	0.0	13.6	3.2																
	SE	WNW	SSW	E	ENE	ENE	SW	WSW	E	WNW	W	WSW	WSW	WSW	W	W	W	WSW	WSW	SW	WSW	SSW	WSW	WSW	WSW	WSW	WSW																
Oct 28	5.6	4.6	7.2	7.0	8.8	8.2	6.8	6.8	8.1	11.1	12.9	13.1	11.6	12.8	12.0	10.4	5.1	2.6	1.7	0.6	0.8	0.7	0.7	1.2	0.6	13.1	6.2																
	WSW	SW	SW	SW	WSW	WSW	SW	SW	SW	WSW	W	W	WSW	WSW	SW	SSW	SSW	SE	SE	ENE	ENE	E	E	E	E	E	E																
Oct 29	1.9	1.5	2.1	1.2	2.5	2.6	2.3	1.7	0.4	4.0	5.3	8.5	10.9	10.8	10.4	12.5	11.2	5.6	4.6	4.7	5.0	7.2	6.7	5.6	0.4	12.5	4.3																
	S	NE	ESE	SE	SE	SE	WSW	WSW	SW	SW	W	W	NW	W	W	WNW	NW	W	W	W	WSW	WSW	WSW	WSW	WSW	WSW	WSW																
Oct 30	6.2	6.8	7.6	7.1	5.8	4.6	5.3	7.1	9.3	10.1	10.0	10.7	14.0	13.5	12.1	6.9	4.4	4.1	3.9	5.2	5.6	3.5	3.6	3.6	3.5	14.0	6.9																
	WSW	WSW	WSW	W	W	W	WSW	SW	WSW	WSW	W	W	WNW	WNW	WNW	WNW	WNW	W	W	W	WSW	WSW	WSW	WSW	WSW	WSW	WSW																
Oct 31	5.3	5.9	5.7	6.0	4.7	3.5	0.5	2.0	4.6	4.0	6.5	8.9	10.5	11.2	8.8	5.8	2.0	0.3	0.6	2.7	2.0	3.2	2.3	0.1	0.1	11.2	2.7																
	SW	SW	WSW	WSW	WSW	WSW	SSE	WSW	WSW	W	NW	NW	NNW	NNW	NW	NW	NNW	SW	S	SE	SE	SE	SE	NNE	NNE	NNE	NNE																
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 - October 2021

Summary of Hour Standard Deviations

### STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree

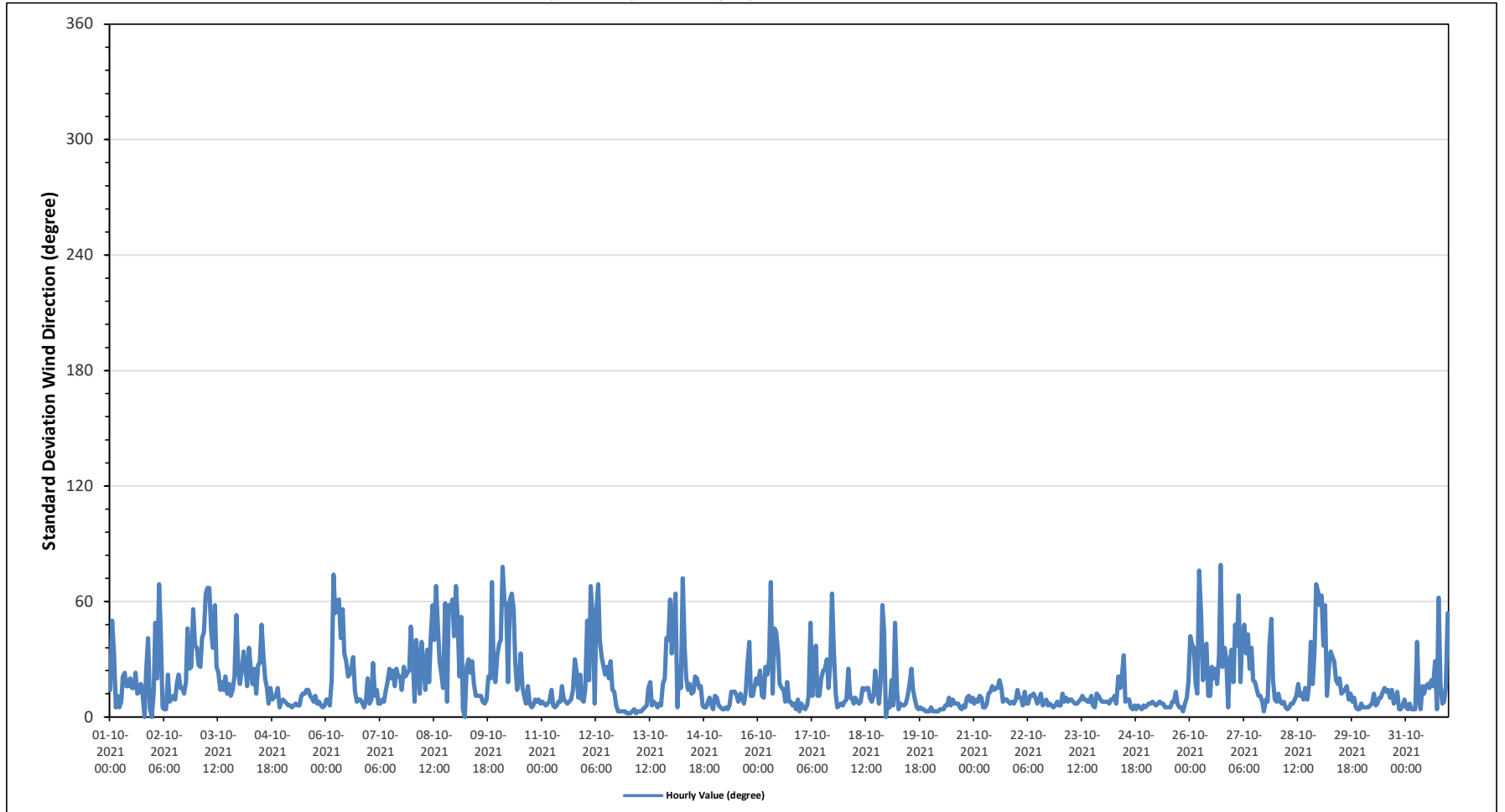
Maximum Hourly Value:	79 degree on October 26 at hour 17	Hours in Service:	744
Minimum Hourly Value:	0 degree on October 1 at hour 19	Hours of Data:	744
		Hours of Missing Data:	0
		Hours of Calibration:	0
		Operational Uptime:	100.0

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							
Oct 1	14	50	33	5	11	5	8	21	23	16	16	20	15	15	23	12	13	17	11	0	24	41	4	0	0	50							
Oct 2	13	49	20	69	45	5	4	4	22	8	9	11	9	18	22	15	15	12	18	46	25	26	56	37	4	69							
Oct 3	36	27	26	41	44	64	67	67	45	36	58	26	23	14	18	14	21	12	17	11	14	21	53	24	11	67							
Oct 4	17	24	34	27	16	36	26	17	25	12	27	28	48	33	20	15	7	15	9	10	11	15	5	8	5	48							
Oct 5	9	8	7	6	6	5	6	7	6	6	11	12	12	14	14	11	10	8	11	7	8	6	5	6	5	14							
Oct 6	9	9	6	19	74	54	60	61	41	56	33	29	21	22	26	31	13	8	9	9	7	5	9	20	5	74							
Oct 7	7	9	28	11	14	7	7	9	8	14	18	25	20	24	16	25	21	21	14	26	21	23	24	47	7	47							
Oct 8	31	8	40	27	12	39	27	14	35	18	41	58	40	68	46	29	22	15	59	8	58	55	61	42	8	68							
Oct 9	68	52	21	52	4	0	26	30	23	29	17	11	11	11	11	8	7	9	21	20	70	21	18	32	0	70							
Oct 10	38	40	78	59	59	18	61	64	56	28	14	20	33	15	11	7	16	7	5	6	9	8	9	7	5	78							
Oct 11	8	7	6	7	8	14	6	5	6	8	8	16	9	8	7	8	9	14	30	24	10	22	9	8	5	30							
Oct 12	15	50	19	68	50	7	55	69	40	31	26	22	26	20	29	14	13	6	3	3	3	3	3	2	2	69							
Oct 13	2	2	3	4	2	3	3	3	4	5	6	15	18	6	8	7	5	7	6	17	20	41	40	61	2	61							
Oct 14	33	50	64	5	26	15	72	36	20	14	17	12	13	21	20	15	16	6	5	5	8	10	6	4	4	72							
Oct 15	11	10	6	5	4	4	5	4	6	13	13	13	11	8	12	10	7	13	27	39	11	11	16	20	4	39							
Oct 16	17	24	11	10	26	22	30	70	12	46	44	34	17	15	14	8	18	8	8	6	7	4	9	3	3	70							
Oct 17	7	5	4	6	11	49	11	29	37	11	11	20	24	25	30	15	29	64	34	12	5	6	7	6	4	64							
Oct 18	8	9	25	10	7	10	8	7	8	15	14	15	15	10	8	11	24	16	7	18	58	45	0	0	58	58							
Oct 19	8	5	19	6	49	14	4	7	6	6	7	11	17	25	14	9	5	4	5	4	4	3	3	3	3	49							
Oct 20	5	3	3	3	3	4	4	4	6	6	10	6	9	7	7	5	4	6	5	10	11	8	10	3	3	11							
Oct 21	7	9	8	11	10	5	5	7	12	13	16	14	15	15	19	15	8	9	9	8	7	8	7	9	5	19							
Oct 22	14	10	10	6	13	7	7	11	11	12	10	7	9	12	6	7	9	6	7	6	5	6	8	6	5	14							
Oct 23	6	12	8	10	8	9	9	8	7	7	8	9	11	9	9	8	8	11	6	5	12	11	9	8	5	12							
Oct 24	8	8	8	7	9	9	11	7	21	15	21	32	8	9	5	4	6	4	6	5	4	6	5	4	4	32							
Oct 25	6	7	7	8	7	6	7	8	7	7	5	5	5	5	8	8	13	7	5	5	3	7	10	18	3	18							
Oct 26	42	38	36	17	12	76	54	19	34	38	11	11	26	20	25	17	32	79	26	36	30	5	28	35	5	79							
Oct 27	18	48	37	63	18	43	48	33	43	25	36	19	18	14	11	11	8	3	9	8	37	51	19	9	3	63							
Oct 28	8	12	8	7	8	5	4	5	7	7	9	11	17	11	12	9	15	9	17	39	17	35	69	65	4	69							
Oct 29	58	63	37	58	11	25	34	31	29	19	17	20	12	13	14	16	9	12	8	10	5	4	4	7	4	63							
Oct 30	5	5	5	5	6	7	12	6	7	10	10	13	15	13	14	10	14	7	8	13	4	4	6	9	4	15							
Oct 31	5	4	7	4	4	4	39	10	4	16	12	16	17	15	19	16	29	4	62	17	7	8	15	54	4	62							
Diurnal Minimum	2	2	3	3	2	0	3	3	4	5	5	5	5	5	6	5	4	3	3	0	3	3	3	0									
Diurnal Maximum	68	63	78	69	74	76	72	70	56	56	58	58	48	68	46	31	32	79	62	46	70	58	69	65									
<b>C</b>	Monthly Calibration										<b>S</b>	Daily Zero-Span Check										<b>Q</b>	Quality Assurance										
<b>K</b>	Collection Error										<b>N</b>	No Data (Machine Not in Service)										<b>Y</b>	Routine Maintenance					<b>P</b>	Power Failure				
<b>X</b>	Invalid Data (Machine Malfunction /Recovery)										<b>NRM</b>	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)																					

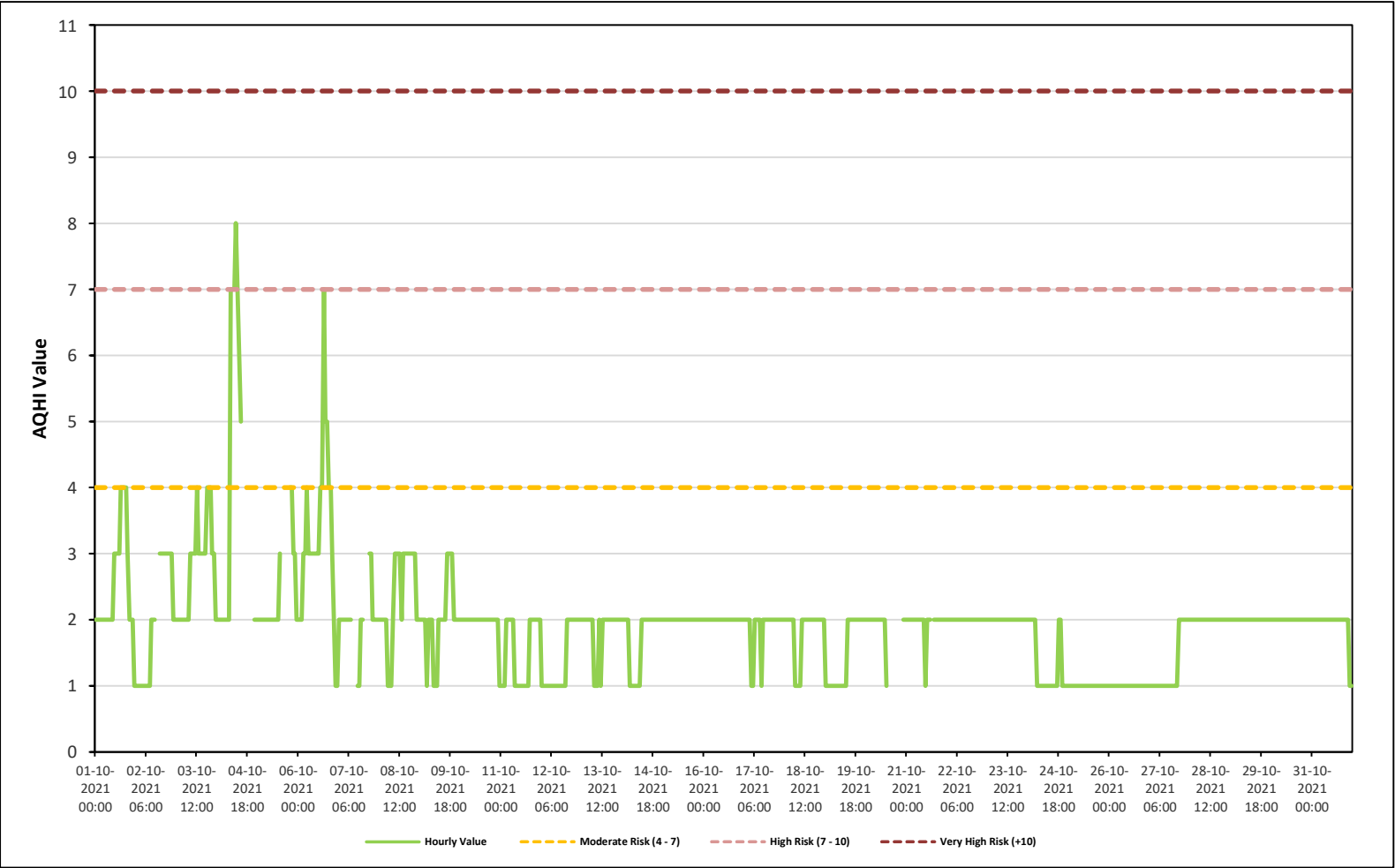
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

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



**TAMARACK STATION**

Timeseries Chart of Hourly Average for AQHI - Tamarack Site





**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

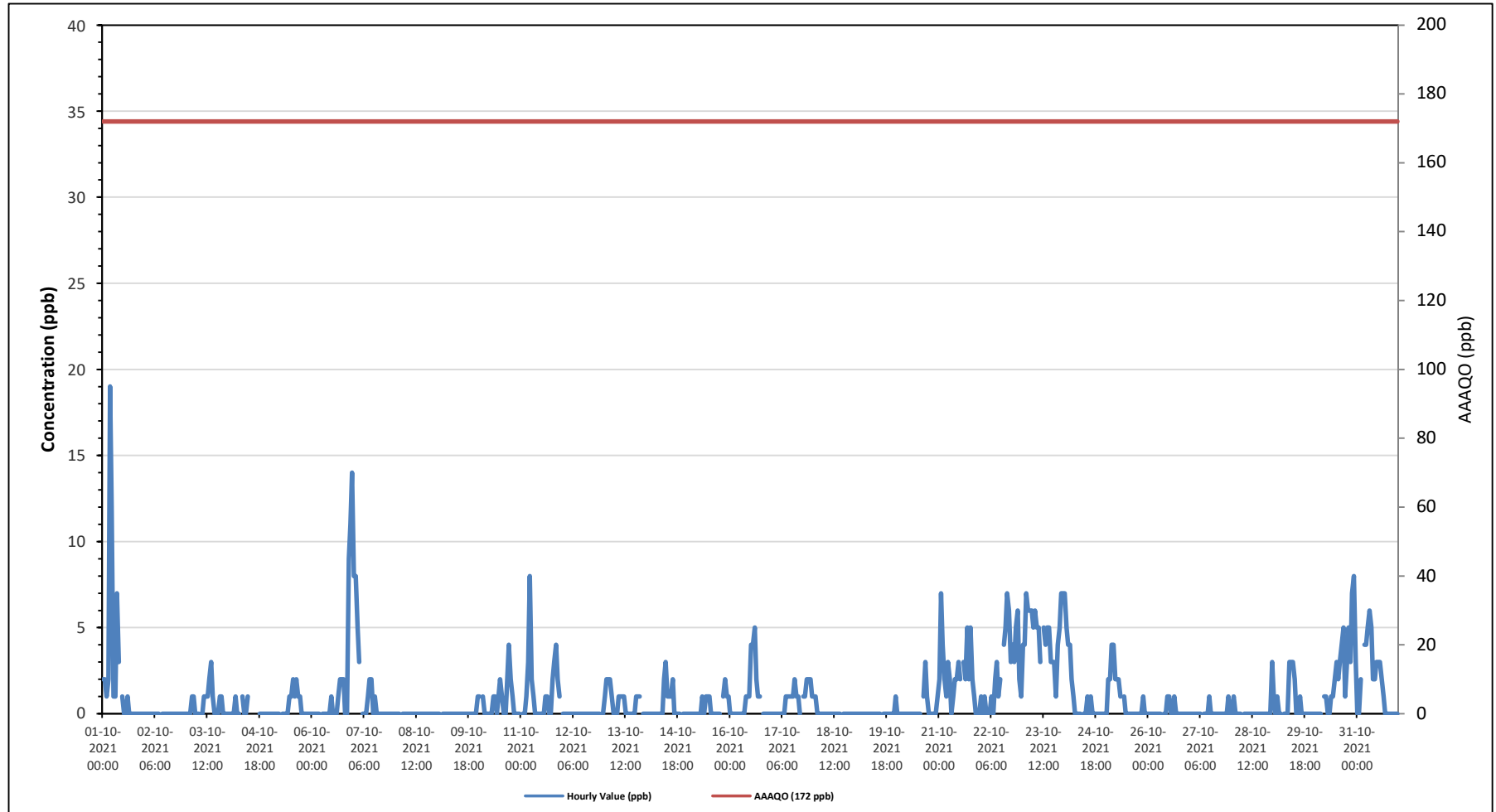
**Tamarack Site - October 2021**

**Summary of Hourly Averages**

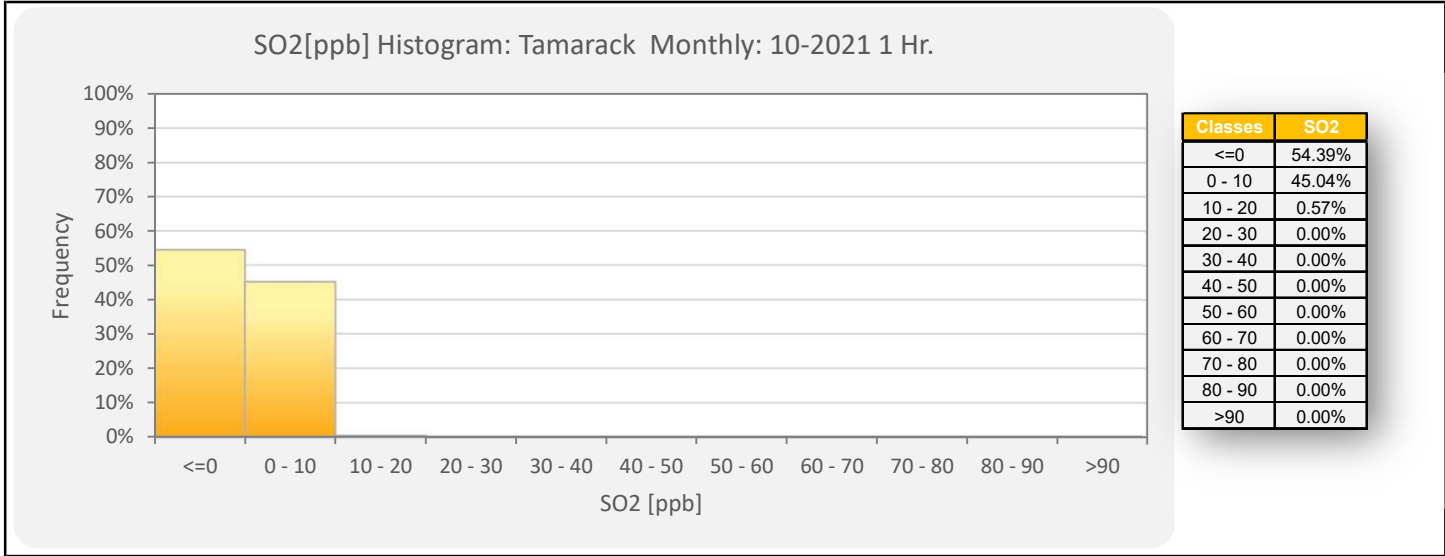
**SULPHUR DIOXIDE (SO<sub>2</sub>) in ppb**

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: 19 ppb on October 1 at hour 4										Hours in Service: 744																			
Maximum Daily Value: 4.7 ppb on October 23										Hours of Data: 706																			
Minimum Hourly Value: 0 ppb on October 1 at hour 12										Hours of Missing Data: 0																			
Minimum Daily Value: 0.0 ppb on October 2										Hours of Calibration: 38																			
Monthly Average: 0.9 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					
Oct 1	2	2	1	2	19	12	1	1	7	3	S	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	19	2.3
Oct 2	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
Oct 3	0	0	0	1	1	0	0	0	S	0	1	1	1	2	3	1	0	0	0	1	1	0	0	0	0	0	0	3	0.6
Oct 4	0	0	0	0	1	0	0	S	1	0	0	1	C	C	C	C	C	C	0	0	0	0	0	0	0	0	1	-	
Oct 5	0	0	0	0	0	S	S	0	0	0	0	1	1	2	1	2	1	1	0	0	0	0	0	0	0	0	2	0.4	
Oct 6	0	0	0	0	0	S	0	0	0	0	0	1	0	0	0	1	2	2	2	0	0	9	11	14	0	14	1.8		
Oct 7	8	8	5	3	S	0	0	0	1	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1.3	
Oct 8	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	
Oct 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	1	0	1	0.0	
Oct 10	1	S	1	0	0	0	0	0	1	1	0	1	2	1	0	0	2	4	2	1	0	0	0	0	0	0	4	0.7	
Oct 11	S	0	0	1	3	8	2	1	0	0	0	0	0	0	1	1	0	0	2	3	4	2	1	S	0	8	1.3		
Oct 12	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	
Oct 13	1	2	2	2	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	1	1	1	S	S	0	0	2	0.7	
Oct 14	0	0	0	0	0	0	0	0	0	0	2	3	1	1	1	2	0	0	0	0	S	S	0	0	0	0	3	0.4	
Oct 15	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	0	S	S	1	2	1	1	1	2	0.4	
Oct 16	0	0	0	0	0	0	0	0	0	1	1	1	4	4	5	2	1	1	S	0	0	0	0	0	0	0	5	0.9	
Oct 17	0	0	0	0	0	0	0	0	1	1	1	1	1	2	1	1	0	S	1	1	2	2	2	1	0	2	0.8		
Oct 18	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0.1	
Oct 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	1	0	1	0.0	
Oct 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	3	1	0	0	0	0	0	1	0	3	0.3		
Oct 21	2	7	4	2	1	3	2	0	1	2	2	3	2	S	3	2	5	2	5	2	1	0	0	0	0	7	2.2		
Oct 22	1	0	1	0	0	0	1	0	2	3	1	2	S	4	5	7	6	3	4	3	5	6	2	1	0	7	2.5		
Oct 23	4	4	7	6	6	6	5	6	5	5	3	S	5	4	5	5	3	3	3	1	4	5	7	7	1	7	4.7		
Oct 24	7	5	4	4	2	1	0	0	0	0	S	0	0	1	0	1	0	0	0	0	0	0	0	0	0	7	1.1		
Oct 25	0	2	2	4	4	2	2	2	1	S	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0.9		
Oct 26	0	0	0	0	0	0	0	0	S	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0.1		
Oct 27	0	0	0	0	0	0	0	S	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0.1		
Oct 28	0	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0.2		
Oct 29	1	0	1	0	0	S	0	0	0	3	3	3	2	0	0	1	0	0	0	0	0	0	0	0	0	3	0.6		
Oct 30	0	0	0	0	S	1	1	0	0	1	1	2	3	2	3	4	5	1	3	5	3	7	8	3	0	8	2.3		
Oct 31	0	0	2	S	4	4	5	6	5	2	2	3	3	3	2	1	0	0	0	0	0	0	0	0	0	6	1.8		
Diurnal Maximum	8	8	7	6	19	12	5	6	7	5	3	3	5	4	5	7	6	4	5	5	5	9	11	14					
Diurnal Average	0.9	1.1	1.0	0.9	1.4	1.3	0.7	0.6	0.9	0.9	0.8	0.9	1.0	0.9	1.1	1.1	1.0	0.6	0.8	0.6	0.7	1.1	1.1	1.1					
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 SO<sub>2</sub> - Tamarack Site**

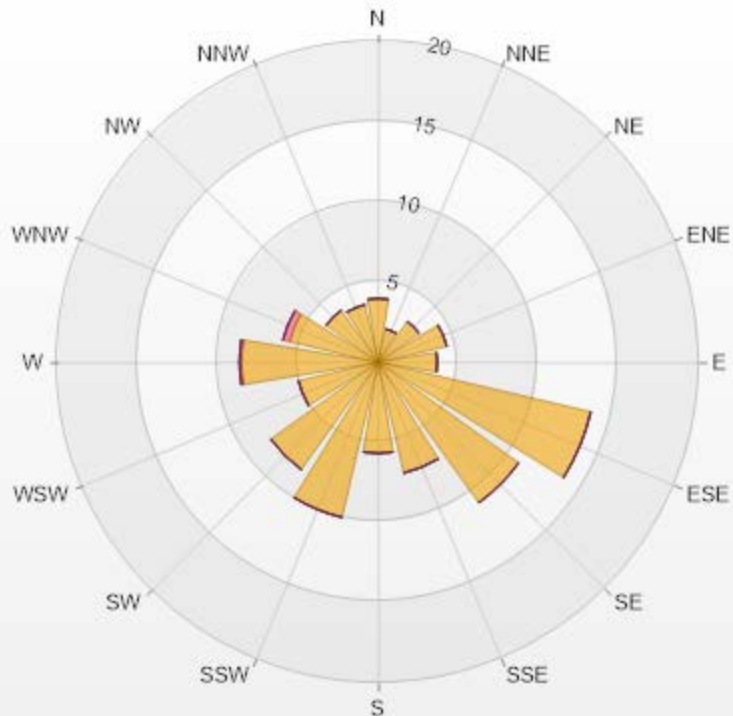






Wind: Tamarack Poll.: Tamarack-SO2[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.89% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	3.97	0	0	0	0	3.97
NNE	2.12	0	0	0	0	2.12
NE	3.12	0	0	0	0	3.12
ENE	4.39	0	0	0	0	4.39
E	3.68	0	0	0	0	3.68
ESE	13.6	0	0	0	0	13.6
SE	10.76	0	0	0	0	10.76
SSE	7.08	0	0	0	0	7.08
S	5.67	0	0	0	0	5.67
SSW	9.92	0	0	0	0	9.92
SW	8.22	0	0	0	0	8.22
WSW	5.1	0	0	0	0	5.1
W	8.5	0.14	0	0	0	8.64
WNW	5.67	0.42	0	0	0	6.09
NW	3.97	0	0	0	0	3.97
NNW	3.68	0	0	0	0	3.68
Summary	99.45	0.56	0	0	0	100



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% Icon Classes (ppb)

99 0-10

1 10-50

0 50-100

0 100-172

0 >172.0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

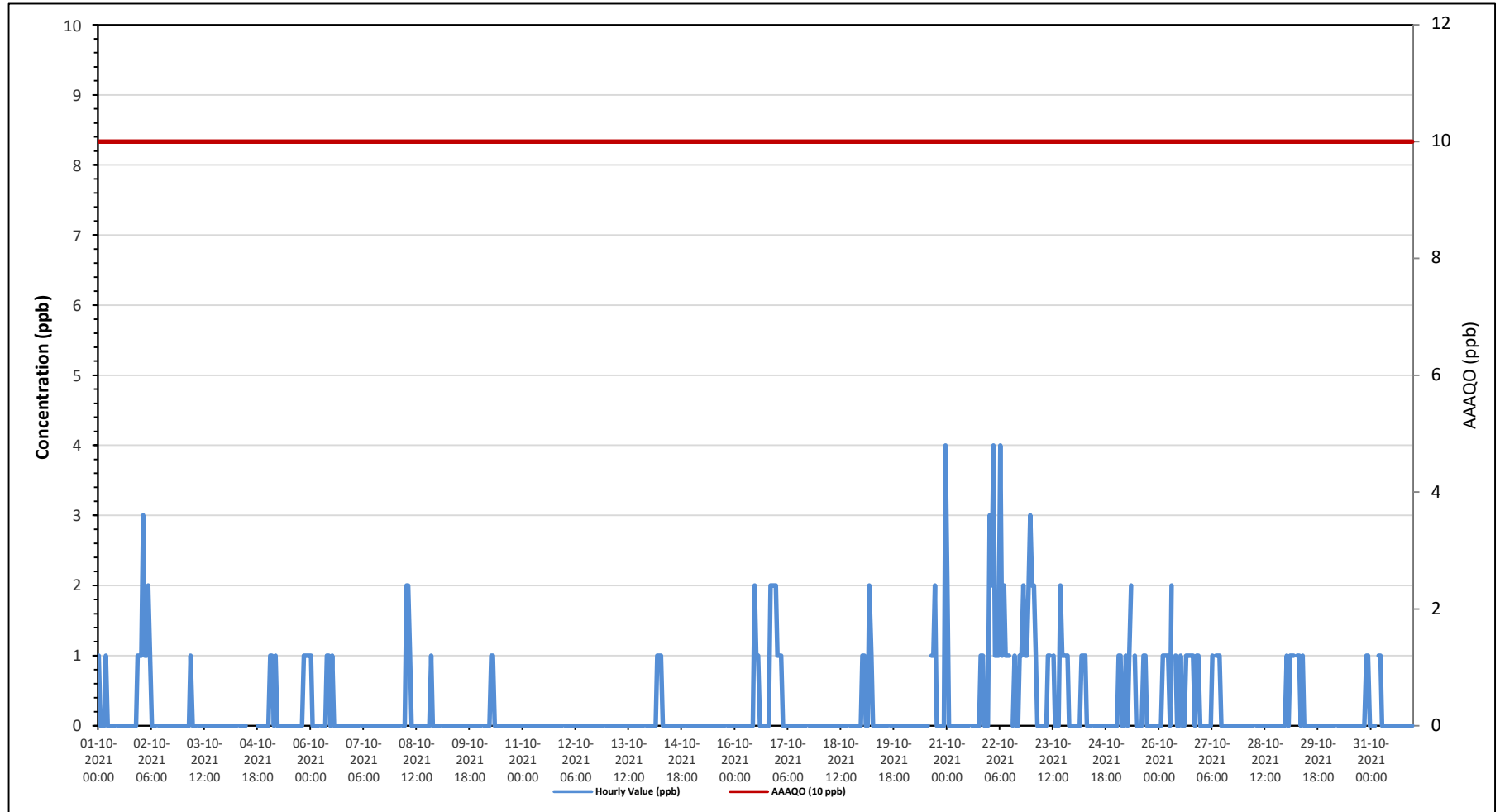
Tamarack Site - October 2021

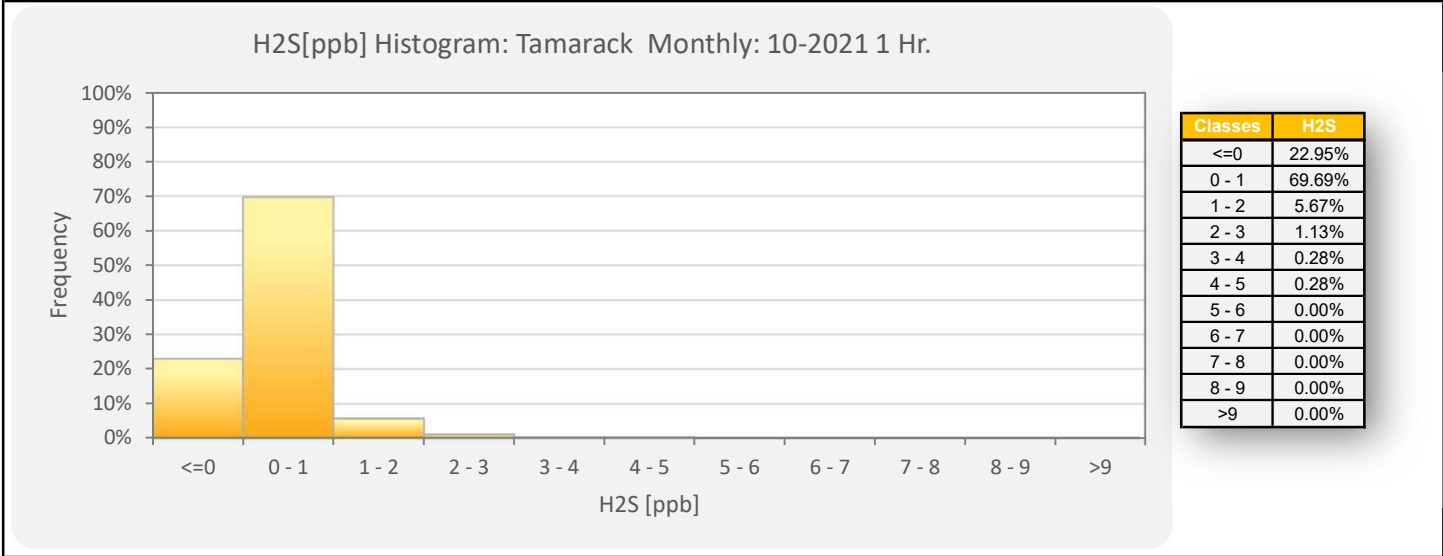
Summary of Hourly Averages

HYDROGEN SULPHIDE (H<sub>2</sub>S) 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 October 20 at hour 23													Hours in Service: 744																																										
Maximum Daily Value: 1.5 ppb on October 22													Hours of Data: 706																																										
Minimum Hourly Value: 0 ppb on October 1 at hour 1													Hours of Missing Data: 0																																										
Minimum Daily Value: 0.0 ppb on October 7													Hours of Calibration: 38																																										
Monthly Average: 0.2 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																															
Oct 1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0.2																												
Oct 2	1	3	1	1	2	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4																												
Oct 3	0	0	0	0	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0																												
Oct 4	0	0	0	0	0	0	0	0	S	0	0	0	0	C	C	C	C	C	C	0	0	0	0	0	0	0	-																												
Oct 5	0	1	1	0	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0.3																													
Oct 6	1	0	0	0	0	S	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2																												
Oct 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	0	0	0.0																												
Oct 8	0	0	0	S	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0.3																												
Oct 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																												
Oct 10	0	S	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																												
Oct 11	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0.0																												
Oct 12	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																												
Oct 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0.0																												
Oct 14	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0.1																												
Oct 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																												
Oct 16	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	S	0	2	2	2	2	0	0	0.5																												
Oct 17	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0.1																												
Oct 18	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																												
Oct 19	1	1	0	0	2	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0.2																												
Oct 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	2	0	0	0	0	0	4	0	0	0.3																												
Oct 21	2	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	1	0	0	0	0	0	0.2																												
Oct 22	3	2	4	1	1	1	4	1	2	1	1	1	S	0	1	0	0	1	1	2	1	1	2	3	0	0	1.5																												
Oct 23	2	2	1	0	0	0	0	0	0	1	1	S	1	0	0	0	2	1	1	1	1	1	0	0	0	0	0.6																												
Oct 24	0	0	0	0	1	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1																												
Oct 25	0	1	1	0	0	1	0	1	2	S	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0.4																												
Oct 26	0	0	1	1	1	1	0	2	S	1	0	0	1	0	0	1	1	1	1	1	0	1	1	0	0	0	0.7																												
Oct 27	0	0	0	0	0	0	1	S	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2																												
Oct 28	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																												
Oct 29	1	0	1	1	1	S	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3																												
Oct 30	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0.1																												
Oct 31	0	0	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1																												
Diurnal Maximum	3	3	4	1	2	1	4	2	2	1	1	2	1	1	1	1	2	2	1	2	2	2	2	4	0	0	0																												
Diurnal Average	0.4	0.4	0.4	0.1	0.4	0.3	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.4	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.																																																							

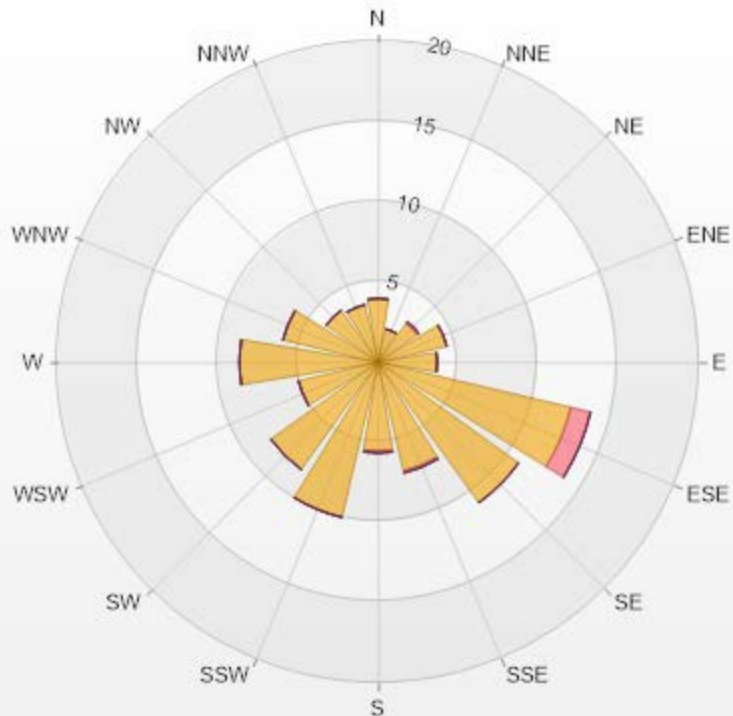
**Timeseries Chart of Hourly Average for H2S - Tamarack Site**





Wind: Tamarack Poll.: Tamarack-H2S[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.89% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	3.97	0	0	0	0	3.97
NNE	2.12	0	0	0	0	2.12
NE	2.97	0.14	0	0	0	3.11
ENE	4.39	0	0	0	0	4.39
E	3.68	0	0	0	0	3.68
ESE	12.32	1.27	0	0	0	13.59
SE	10.76	0	0	0	0	10.76
SSE	6.94	0.14	0	0	0	7.08
S	5.52	0.14	0	0	0	5.66
SSW	9.92	0	0	0	0	9.92
SW	8.22	0	0	0	0	8.22
WSW	5.1	0	0	0	0	5.1
W	8.64	0	0	0	0	8.64
WNW	6.09	0	0	0	0	6.09
NW	3.97	0	0	0	0	3.97
NNW	3.68	0	0	0	0	3.68
Summary	98.29	1.69	0	0	0	100



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% Icon Classes (ppb)

98

0-2

2

2-5

0

5-10

0

10-50

0

>50.0





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Tamarack Site - October 2021

Summary of Hourly Averages

OXIDES OF NITROGEN (NOx) in ppb

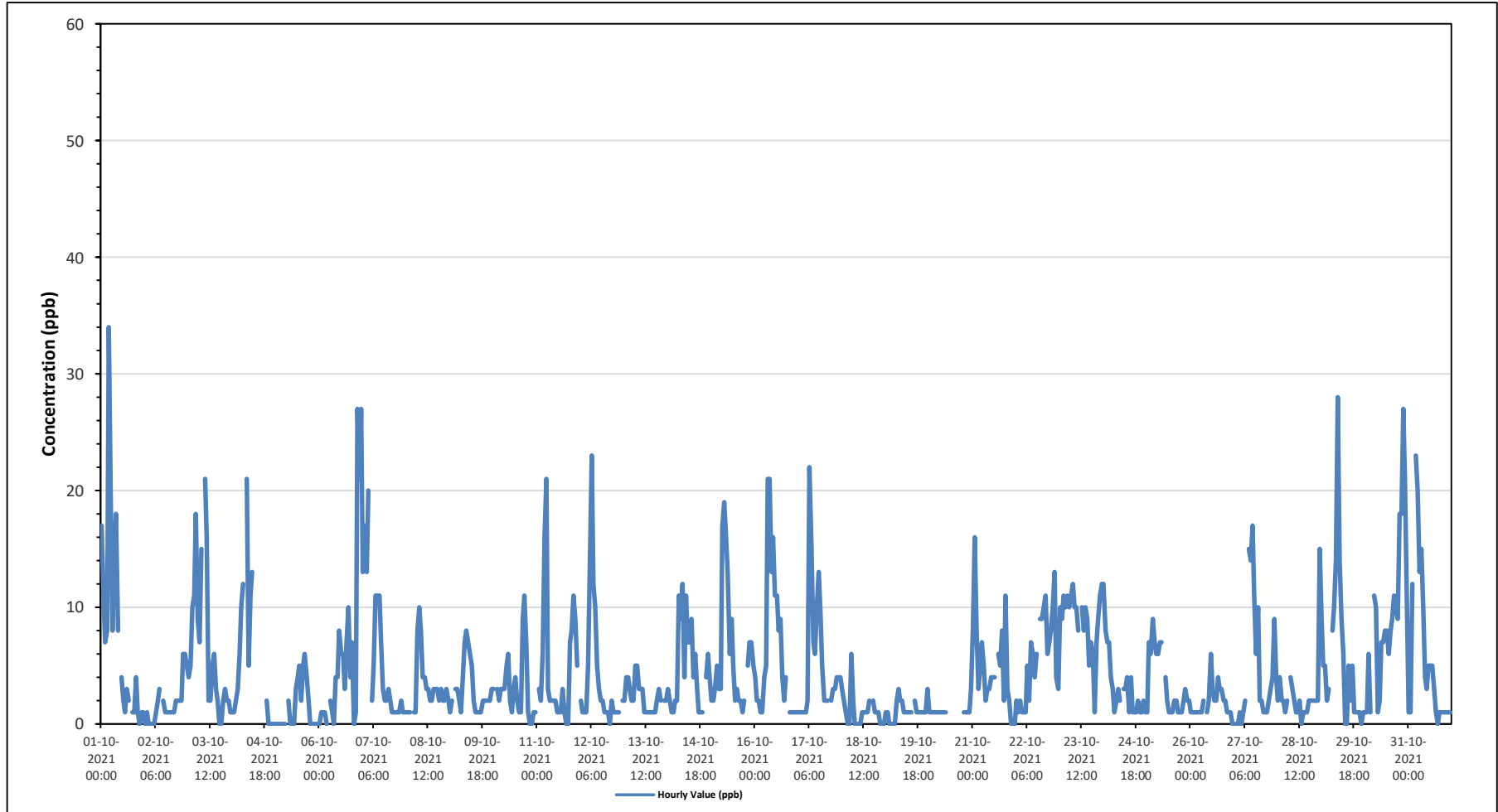
Maximum Hourly Value:	34 ppb on October 1 at hour 4	Hours in Service:	744
Maximum Daily Value:	9.2 ppb on October 30	Hours of Data:	696
Minimum Hourly Value:	0 ppb on October 1 at hour 21	Hours of Missing Data:	10
Minimum Daily Value:	1.1 ppb on October 18	Hours of Calibration:	38
Monthly Average:	4.4 ppb	Operational Uptime:	98.7

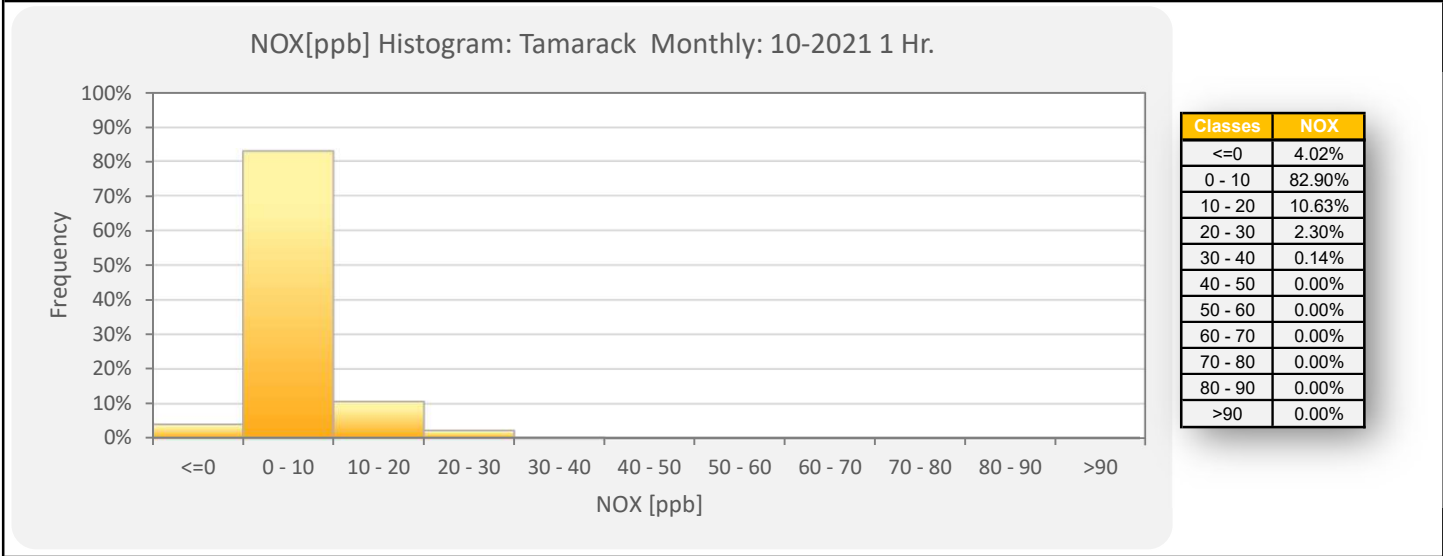
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Oct 1	17	12	7	8	34	20	8	14	18	8	S	4	2	1	3	2	NRM	1	1	4	1	0	1	1	0	34	7.6
Oct 2	0	1	0	0	0	0	1	2	3	S	2	1	1	1	1	1	1	2	2	2	2	6	6	5	0	6	1.7
Oct 3	4	5	10	11	18	9	7	15	S	21	16	2	2	5	6	3	2	0	0	2	3	2	2	1	0	21	6.3
Oct 4	1	1	2	3	6	10	12	S	21	5	11	13	C	C	C	C	C	C	C	2	0	0	0	0	0	21	-
Oct 5	0	0	0	0	0	0	S	2	2	0	0	3	4	5	2	5	6	4	2	2	0	0	0	0	0	6	1.4
Oct 6	0	1	1	1	0	S	2	1	0	4	4	8	6	6	3	7	10	4	7	0	1	27	21	27	0	27	6.1
Oct 7	13	17	13	20	S	2	5	11	11	11	7	3	2	2	3	2	1	1	1	1	1	2	1	1	1	20	5.7
Oct 8	1	1	1	S	1	1	8	10	8	4	4	3	3	2	2	3	3	3	2	3	2	2	3	2	1	10	3.1
Oct 9	1	2	S	3	3	2	1	4	7	8	7	6	5	2	1	1	1	1	2	2	2	2	2	3	1	8	3.0
Oct 10	3	S	3	2	3	3	3	5	6	2	1	3	4	2	1	1	9	11	7	1	0	0	1	1	0	11	3.1
Oct 11	S	3	2	6	16	21	3	2	2	2	2	1	1	1	3	1	0	0	7	8	11	9	5	S	0	21	4.8
Oct 12	2	1	1	1	5	14	23	12	10	5	3	2	2	1	1	1	0	2	1	1	1	1	S	2	0	23	4.0
Oct 13	2	4	4	3	2	2	5	5	3	3	3	1	1	1	1	1	1	1	2	3	2	S	2	2	1	5	2.3
Oct 14	3	2	1	1	2	2	11	9	12	4	11	7	7	9	4	6	3	1	1	1	S	4	6	4	1	12	4.8
Oct 15	2	2	3	5	3	3	17	19	16	13	6	9	5	2	3	2	2	1	2	S	5	7	7	5	1	19	6.0
Oct 16	4	2	2	1	1	4	5	21	21	13	16	11	11	8	9	4	2	4	S	1	1	1	1	1	1	21	6.3
Oct 17	1	1	1	1	1	2	22	15	7	6	10	13	10	5	2	2	2	S	2	3	3	4	4	4	1	22	5.3
Oct 18	3	2	1	0	0	6	2	0	0	0	0	1	1	1	1	1	S	2	1	1	1	0	0	0	0	6	1.1
Oct 19	1	1	0	0	0	0	2	3	2	2	1	1	1	1	1	S	2	1	1	1	1	1	1	3	0	3	1.2
Oct 20	1	1	1	1	1	1	1	1	1	1	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	1	1	1	1	3	1	3	-
Oct 21	8	16	8	3	5	7	5	2	3	3	4	4	4	S	6	5	8	2	11	3	2	0	0	0	0	16	4.7
Oct 22	2	1	2	1	1	1	5	2	7	6	4	6	S	9	9	10	11	6	7	8	10	13	4	3	1	13	5.6
Oct 23	10	9	11	10	11	10	11	12	10	10	8	S	10	8	10	9	5	7	6	1	7	9	11	12	1	12	9.0
Oct 24	12	8	7	7	4	3	1	2	3	2	S	3	3	4	1	4	1	1	1	2	1	1	2	1	1	12	3.2
Oct 25	1	7	6	9	7	6	6	7	7	S	4	2	1	1	1	2	2	1	1	1	2	3	2	2	1	9	3.5
Oct 26	1	1	1	1	1	1	1	2	S	1	2	6	3	2	2	4	3	3	2	2	1	1	1	0	0	6	1.8
Oct 27	0	0	0	1	0	1	2	S	15	14	17	11	6	10	2	2	1	1	1	2	3	4	9	4	0	17	4.6
Oct 28	2	4	2	2	1	2	S	4	3	2	1	1	2	0	1	1	1	2	2	2	2	2	15	0	15	2.4	
Oct 29	9	5	5	2	3	S	8	10	14	28	14	9	6	0	0	5	2	5	1	1	1	0	1	0	28	5.7	
Oct 30	1	1	6	1	S	11	10	1	2	7	7	8	8	6	8	9	11	10	9	18	18	27	21	11	1	27	9.2
Oct 31	1	1	12	S	23	20	13	15	10	4	3	5	5	5	3	1	0	1	1	1	1	1	1	1	0	23	5.6
Diurnal Maximum	17	17	13	20	34	21	23	21	21	28	17	13	11	10	10	10	11	11	11	18	18	27	21	27	0	27	
Diurnal Average	3.5	3.7	3.8	3.6	5.2	5.7	6.9	7.2	7.7	6.5	6.0	5.1	4.1	3.6	3.1	3.4	3.3	2.8	3.0	2.6	2.9	4.4	3.9	3.8	0	3.8	

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

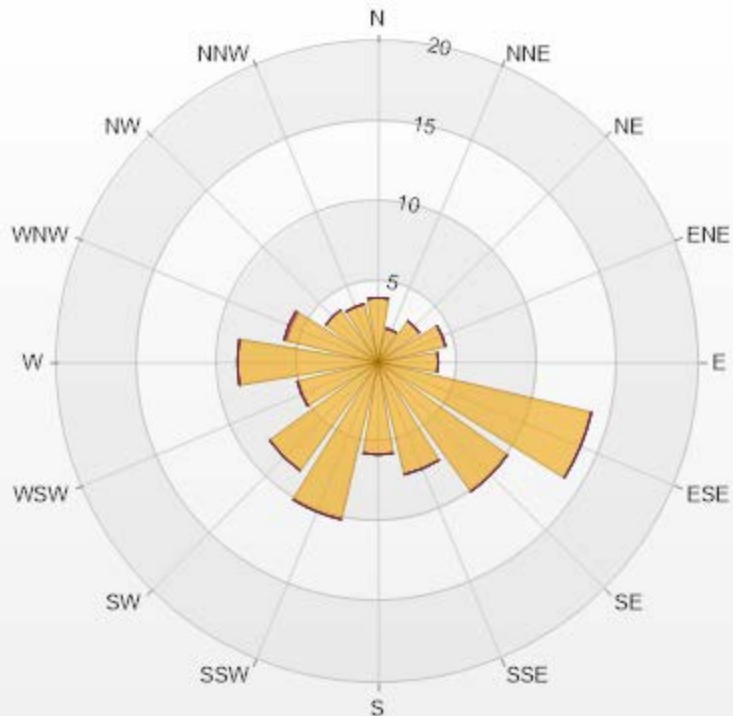
*Timeseries Chart of Hourly Average for NOx - Tamarack Site*





Wind: Tamarack Poll.: Tamarack-NOX[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.55% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	4.02	0	0	0	0	4.02
NNE	2.16	0	0	0	0	2.16
NE	3.16	0	0	0	0	3.16
ENE	4.31	0	0	0	0	4.31
E	3.74	0	0	0	0	3.74
ESE	13.65	0	0	0	0	13.65
SE	9.91	0	0	0	0	9.91
SSE	7.18	0	0	0	0	7.18
S	5.75	0	0	0	0	5.75
SSW	10.06	0	0	0	0	10.06
SW	8.33	0	0	0	0	8.33
WSW	5.17	0	0	0	0	5.17
W	8.76	0	0	0	0	8.76
WNW	5.89	0.14	0	0	0	6.03
NW	4.02	0	0	0	0	4.02
NNW	3.74	0	0	0	0	3.74
Summary	100	0.14	0	0	0	100



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% Icon Classes (ppb)

100  0-30

0  30-50

0  50-76

0  76-159

0  >159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - October 2021

Summary of Hourly Averages

NITRIC OXIDE (NO) in ppb

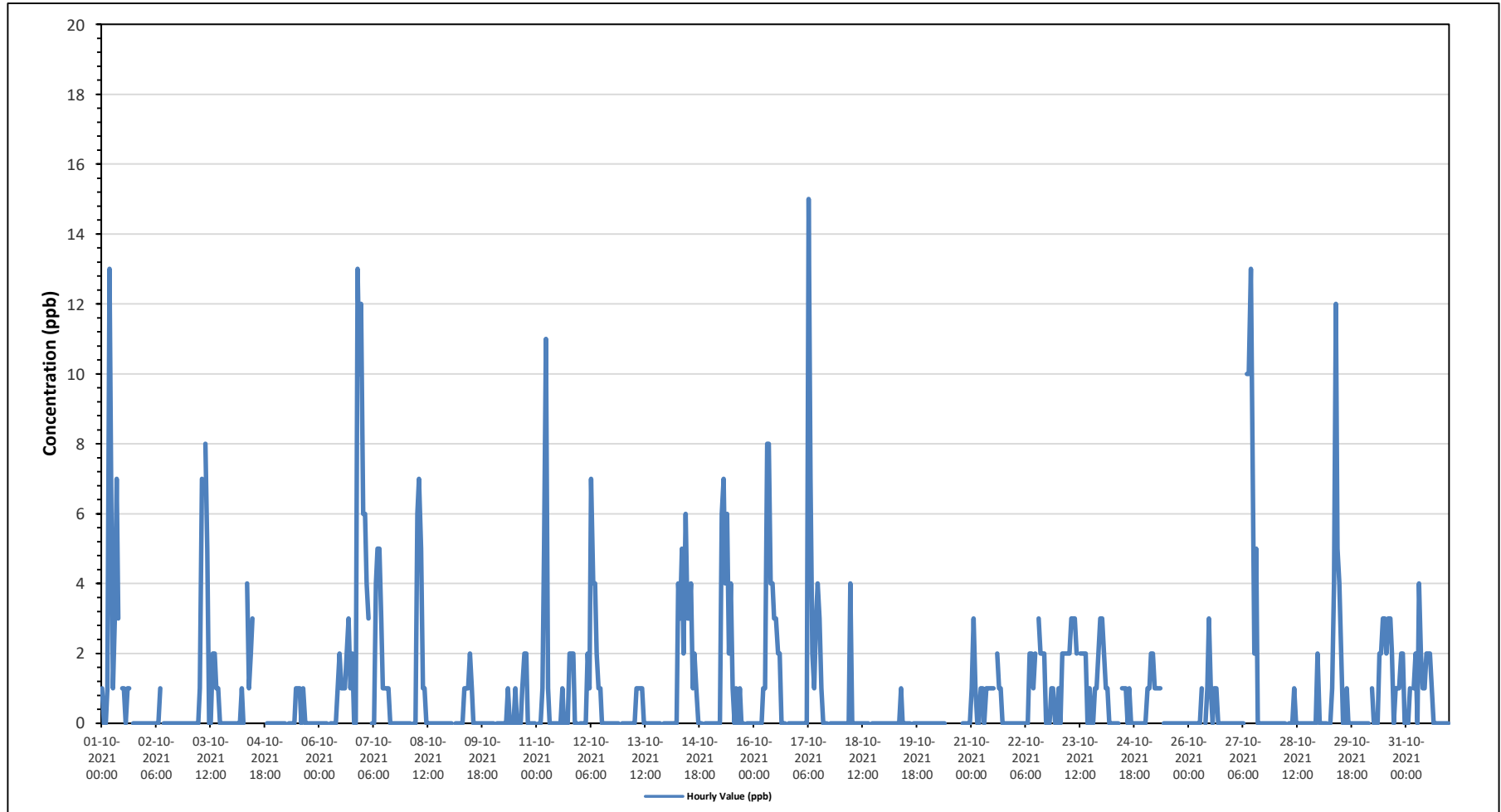
Maximum Hourly Value:	15 ppb on October 17 at hour 6	Hours in Service:	744
Maximum Daily Value:	2.1 ppb on October 6	Hours of Data:	696
Minimum Hourly Value:	0 ppb on October 1 at hour 1	Hours of Missing Data:	10
Minimum Daily Value:	0.0 ppb on October 2	Hours of Calibration:	38
Monthly Average:	0.9 ppb	Operational Uptime:	98.7

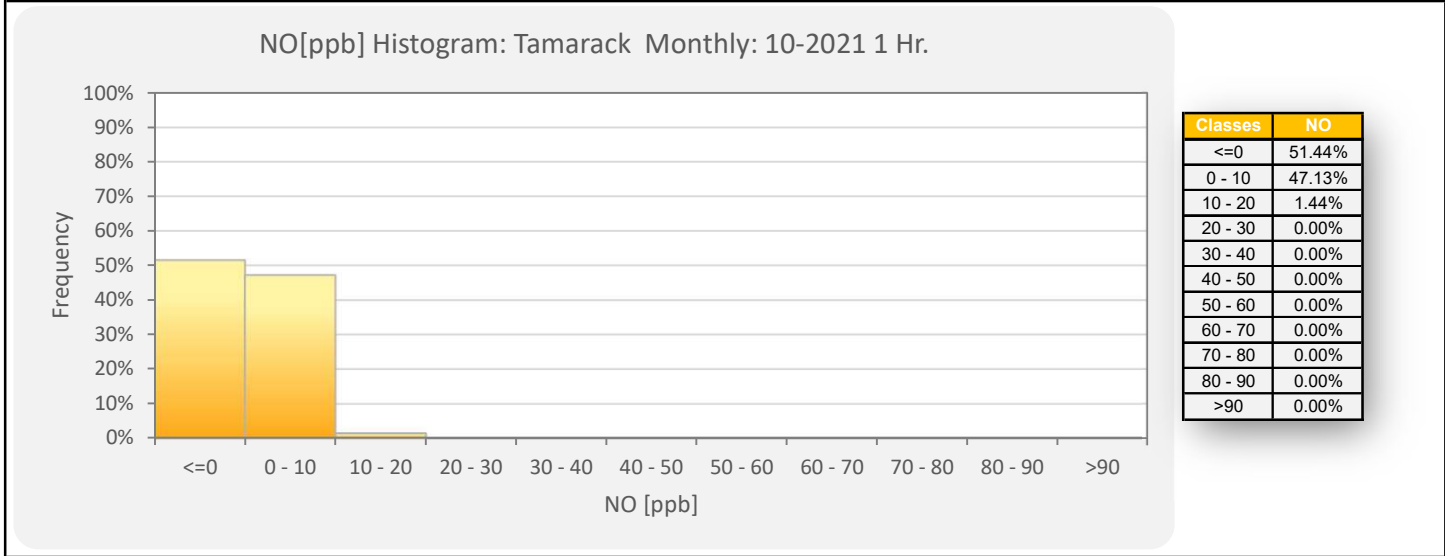
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Oct 1	1	0	0	1	13	6	1	3	7	3	S	1	1	0	1	1	NRM	0	0	0	0	0	0	0	0	0	13	1.8
Oct 2	0	0	0	0	0	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Oct 3	0	0	0	0	0	0	1	7	S	8	5	0	0	2	2	1	1	0	0	0	0	0	0	0	0	0	8	1.2
Oct 4	0	0	0	0	0	1	0	S	4	1	2	3	C	C	C	C	C	C	C	0	0	0	0	0	0	4	-	
Oct 5	0	0	0	0	0	0	0	S	0	0	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0	1	0.2	
Oct 6	0	0	0	0	0	S	0	0	0	0	1	2	1	1	1	2	3	1	2	0	0	13	10	12	0	13	2.1	
Oct 7	6	6	4	3	S	0	0	4	5	5	3	1	1	1	1	0	0	0	0	0	0	0	0	0	0	6	1.7	
Oct 8	0	0	0	S	0	0	6	7	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0.9	
Oct 9	0	0	S	0	0	0	0	0	1	1	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	2	0.3	
Oct 10	0	S	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	2	2	0	0	0	0	0	0	2	0.3	
Oct 11	S	0	0	1	5	11	1	0	0	0	0	0	0	1	0	0	0	0	2	2	2	0	0	S	0	11	1.1	
Oct 12	0	0	0	0	2	1	7	4	4	2	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	7	1.0	
Oct 13	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0.2	
Oct 14	0	0	0	0	0	0	4	3	5	2	6	3	3	4	1	2	1	0	0	0	0	S	0	0	0	6	1.5	
Oct 15	0	0	0	0	0	0	6	7	4	6	2	4	1	0	1	0	1	0	0	S	0	0	0	0	0	7	1.4	
Oct 16	0	0	0	0	0	1	1	8	8	4	4	3	3	2	2	0	0	0	S	0	0	0	0	0	0	8	1.6	
Oct 17	0	0	0	0	0	0	15	7	2	1	3	4	3	1	0	0	0	0	S	0	0	0	0	0	0	15	1.6	
Oct 18	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	4	0.2	
Oct 19	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	S	NRM	NRM	0	0	0	0	0	0	0	1	0.0	
Oct 20	0	0	0	0	0	0	0	0	0	0	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	0	0	0	0	0	0	0	-
Oct 21	1	3	1	0	0	1	1	0	1	1	1	1	1	S	2	1	1	0	0	0	0	0	0	0	0	3	0.7	
Oct 22	0	0	0	0	0	0	0	0	2	2	1	2	S	3	2	2	2	0	0	0	1	1	0	0	0	3	0.8	
Oct 23	1	0	2	2	2	2	2	3	3	3	2	S	2	2	2	2	0	1	0	0	1	1	2	3	0	3	1.7	
Oct 24	3	2	1	1	0	0	0	0	0	0	S	1	1	1	0	1	0	0	0	0	0	0	0	0	0	3	0.5	
Oct 25	0	1	1	2	2	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.4	
Oct 26	0	0	0	0	0	0	0	1	S	0	1	3	1	0	1	1	0	0	0	0	0	0	0	0	0	3	0.3	
Oct 27	0	0	0	0	0	0	0	S	10	10	13	8	2	5	0	0	0	0	0	0	0	0	0	0	0	13	2.1	
Oct 28	0	0	0	0	0	0	S	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0.1	
Oct 29	0	0	0	0	0	S	0	1	4	12	5	4	2	0	0	1	0	0	0	0	0	0	0	0	0	12	1.3	
Oct 30	0	0	0	0	S	1	0	0	0	2	2	3	3	2	3	3	2	0	1	1	1	1	2	2	0	3	1.2	
Oct 31	0	0	1	S	1	2	0	4	2	1	1	2	2	2	1	0	0	0	0	0	0	0	0	0	0	4	0.8	
Diurnal Maximum	6	6	4	3	13	11	15	8	10	12	13	8	3	5	3	3	3	2	2	2	2	2	13	10	12			
Daiurnal Average	0.4	0.4	0.3	0.3	0.9	1.1	1.6	2.1	2.4	2.3	2.0	1.7	1.1	1.0	0.7	0.6	0.4	0.1	0.3	0.1	0.2	0.6	0.5	0.6				

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 NO - Tamarack Site*

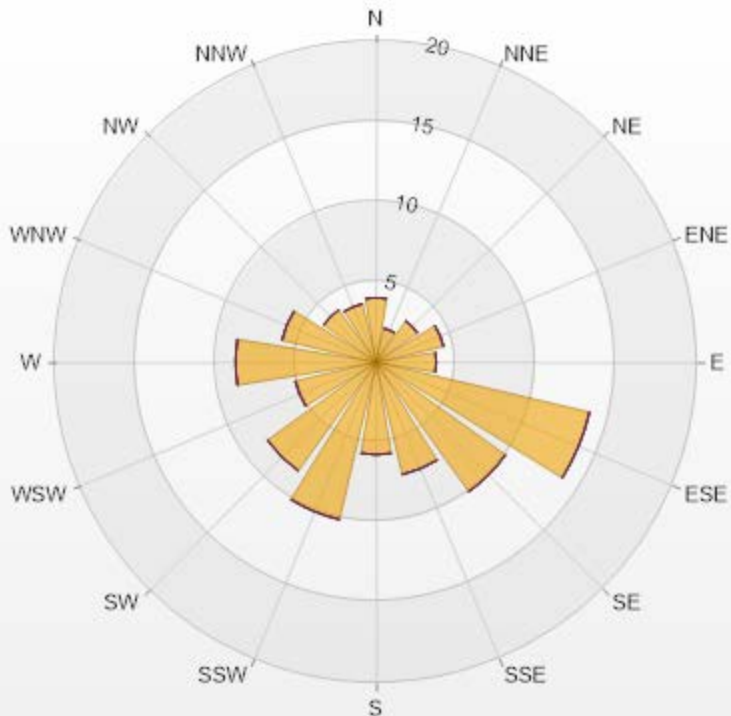






Wind: Tamarack Poll.: Tamarack-NO[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.55% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	4.02	0	0	0	0	4.02
NNE	2.16	0	0	0	0	2.16
NE	3.16	0	0	0	0	3.16
ENE	4.31	0	0	0	0	4.31
E	3.74	0	0	0	0	3.74
ESE	13.65	0	0	0	0	13.65
SE	9.91	0	0	0	0	9.91
SSE	7.18	0	0	0	0	7.18
S	5.75	0	0	0	0	5.75
SSW	10.06	0	0	0	0	10.06
SW	8.33	0	0	0	0	8.33
WSW	5.17	0	0	0	0	5.17
W	8.76	0	0	0	0	8.76
WNW	6.03	0	0	0	0	6.03
NW	4.02	0	0	0	0	4.02
NNW	3.74	0	0	0	0	3.74
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)	100	0-30	0	30-50	0	50-76	0	76-159	0	>159.0
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LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - October 2021

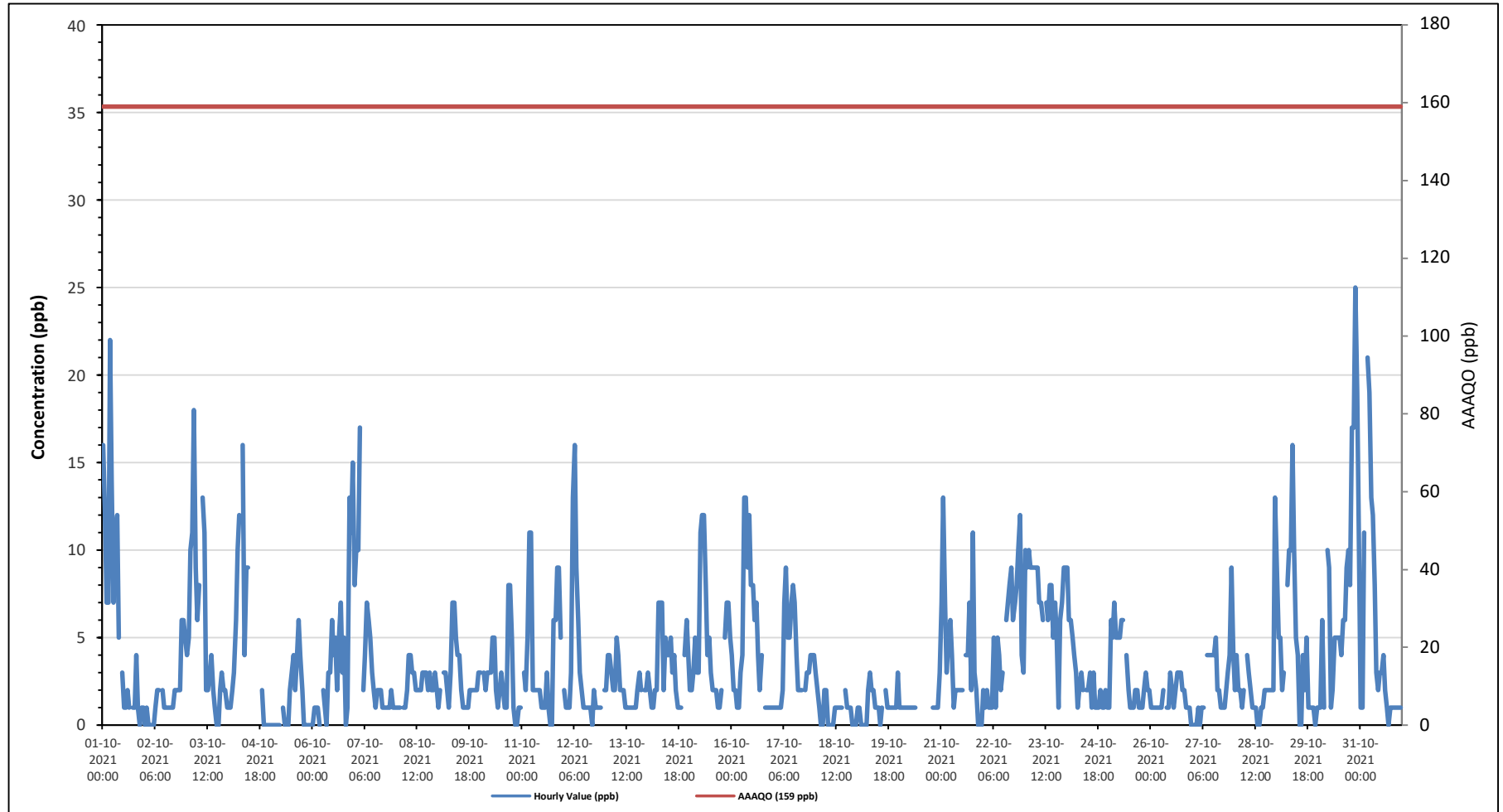
Summary of Hourly Averages

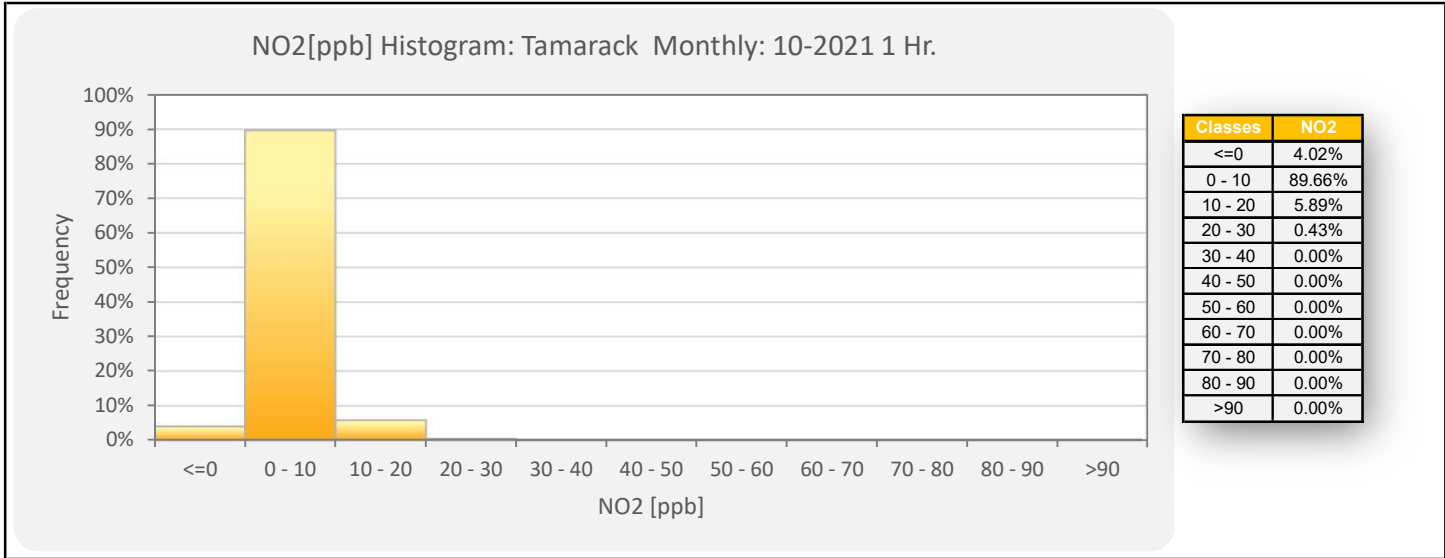
NITROGEN DIOXIDE (NO<sub>2</sub>) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 159 ppb																																											
Number of 1-Hour Exceedences: 0																																											
Maximum Hourly Value: 25 ppb on October 30 at hour 21												Hours in Service: 744																															
Maximum Daily Value: 8.0 ppb on October 30												Hours of Data: 696																															
Minimum Hourly Value: 0 ppb on October 1 at hour 21												Hours of Missing Data: 10																															
Minimum Daily Value: 0.9 ppb on October 18												Hours of Calibration: 38																															
Monthly Average: 3.5 ppb												Operational Uptime: 98.7																															
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																
Oct 1	16	12	7	7	22	14	7	11	12	5	S	3	1	1	2	1	NRM	1	1	4	1	0	1	1																			
Oct 2	0	1	0	0	0	0	1	2	2	S	2	1	1	1	1	1	1	1	2	2	2	6	6	5																			
Oct 3	4	5	10	11	18	9	6	8	S	13	11	2	2	3	4	2	1	0	0	2	3	2	2	1																			
Oct 4	1	1	2	3	6	10	12	S	16	4	9	9	C	C	C	C	C	C	C	2	0	0	0	0																			
Oct 5	0	0	0	0	0	0	S	1	0	0	0	2	3	4	2	4	6	4	2	0	0	0	0	0																			
Oct 6	0	1	1	1	0	0	S	2	1	0	3	3	6	4	5	2	5	7	3	5	0	1	13	11																			
Oct 7	8	10	10	17	S	2	4	7	6	5	3	2	1	2	2	2	1	1	1	1	1	2	1	1																			
Oct 8	1	1	1	S	1	1	2	4	4	3	3	2	2	2	2	3	3	3	2	3	2	2	3	2																			
Oct 9	1	2	S	3	3	2	1	3	7	7	5	4	4	2	1	1	1	1	2	2	2	2	2	3																			
Oct 10	3	S	3	2	3	3	3	5	5	2	1	2	3	2	1	1	8	8	5	1	0	0	1	1																			
Oct 11	S	3	2	5	11	11	2	2	2	2	2	1	1	1	3	1	0	0	6	6	9	9	5	S																			
Oct 12	2	1	1	1	3	13	16	9	6	3	2	1	1	1	1	1	0	2	1	1	1	1	S	2																			
Oct 13	2	4	4	3	2	2	5	4	2	2	2	1	1	1	1	1	1	1	2	3	2	S	2	2																			
Oct 14	3	2	1	1	2	2	7	7	7	2	5	4	4	5	3	4	2	1	1	1	S	4	6	4																			
Oct 15	2	2	3	5	3	11	12	12	8	4	5	3	2	2	2	1	1	2	S	5	7	7	5	1																			
Oct 16	4	2	2	1	1	3	4	13	13	9	12	8	8	6	7	4	2	4	S	1	1	1	1	1																			
Oct 17	1	1	1	1	1	2	7	9	5	5	7	8	7	4	2	2	2	S	2	3	3	4	4	4																			
Oct 18	3	2	1	0	0	2	2	0	0	0	0	1	1	1	1	1	S	2	1	1	1	0	0	0																			
Oct 19	1	1	0	0	0	0	2	3	2	2	2	1	1	1	0	1	S	2	1	1	1	1	1	3																			
Oct 20	1	1	1	1	1	1	1	1	1	1	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	NRM	1	1	1	1	3																			
Oct 21	7	13	7	3	5	6	4	1	2	2	2	2	S	4	4	7	2	11	3	2	0	0	0	0																			
Oct 22	2	1	2	1	1	1	5	1	5	4	2	3	S	6	7	8	9	6	7	8	10	12	4	3																			
Oct 23	10	9	10	9	9	9	9	9	7	7	6	S	7	6	8	8	5	7	5	1	6	7	9	9																			
Oct 24	9	6	6	5	4	3	1	2	3	2	S	2	2	3	1	3	1	1	1	2	1	1	2	1																			
Oct 25	1	6	5	7	5	5	5	6	6	S	4	2	1	1	1	2	2	1	1	1	2	3	2	2																			
Oct 26	1	1	1	1	1	1	1	2	S	1	1	3	2	1	2	3	3	3	2	2	1	1	1	0																			
Oct 27	0	0	0	1	0	1	1	S	4	4	4	4	4	5	2	2	1	1	1	2	3	4	9	4																			
Oct 28	2	4	2	2	1	2	S	4	3	2	1	1	0	0	1	1	2	2	2	2	2	2	13	0																			
Oct 29	9	5	5	2	3	S	8	10	16	10	5	4	0	0	4	2	5	1	1	1	1	0	1	0																			
Oct 30	1	1	6	1	S	10	9	1	2	5	5	5	5	4	6	6	9	10	8	17	17	25	19	11																			
Oct 31	1	1	11	S	21	19	13	12	8	3	2	3	3	4	2	1	0	1	1	1	1	1	1	1																			
Diurnal Maximum	16	13	11	17	22	19	16	13	16	16	12	9	8	6	8	8	9	10	11	17	17	25	19	15																			
Diurnal Average	3.2	3.3	3.5	3.2	4.4	4.7	5.2	5.2	5.2	4.2	3.9	3.2	2.8	2.6	2.4	2.8	2.9	2.6	2.7	2.5	2.7	3.7	3.4	3.3																			
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.

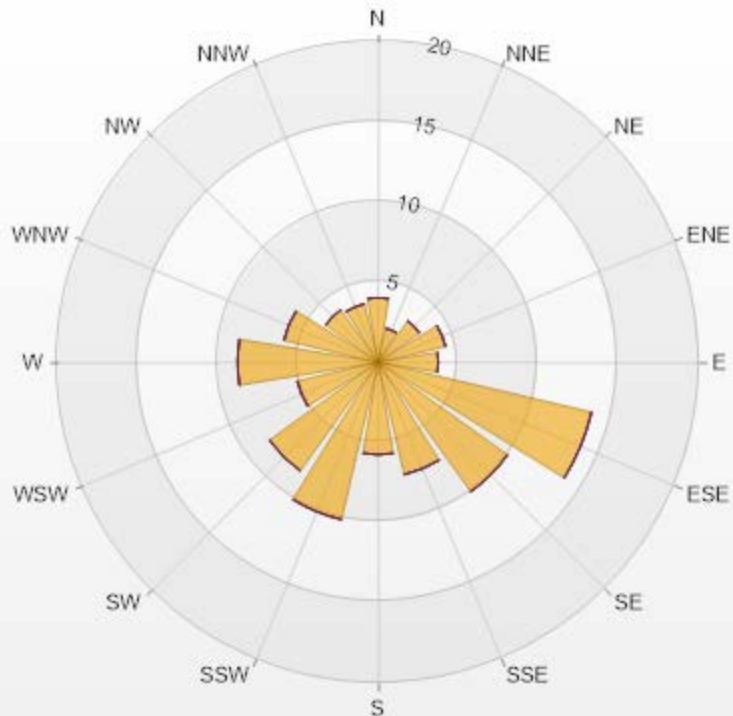
**Timeseries Chart of Hourly Average for NO2 - Tamarack Site**





Wind: Tamarack Poll.: Tamarack-NO2[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.55% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	4.02	0	0	0	0	4.02
NNE	2.16	0	0	0	0	2.16
NE	3.16	0	0	0	0	3.16
ENE	4.31	0	0	0	0	4.31
E	3.74	0	0	0	0	3.74
ESE	13.65	0	0	0	0	13.65
SE	9.91	0	0	0	0	9.91
SSE	7.18	0	0	0	0	7.18
S	5.75	0	0	0	0	5.75
SSW	10.06	0	0	0	0	10.06
SW	8.33	0	0	0	0	8.33
WSW	5.17	0	0	0	0	5.17
W	8.76	0	0	0	0	8.76
WNW	6.03	0	0	0	0	6.03
NW	4.02	0	0	0	0	4.02
NNW	3.74	0	0	0	0	3.74
Summary	100	0	0	0	0	100




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% Icon Classes (ppb)

100  0-30

0  30-50

0  50-76

0  76-159

0  >159.0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - October 2021

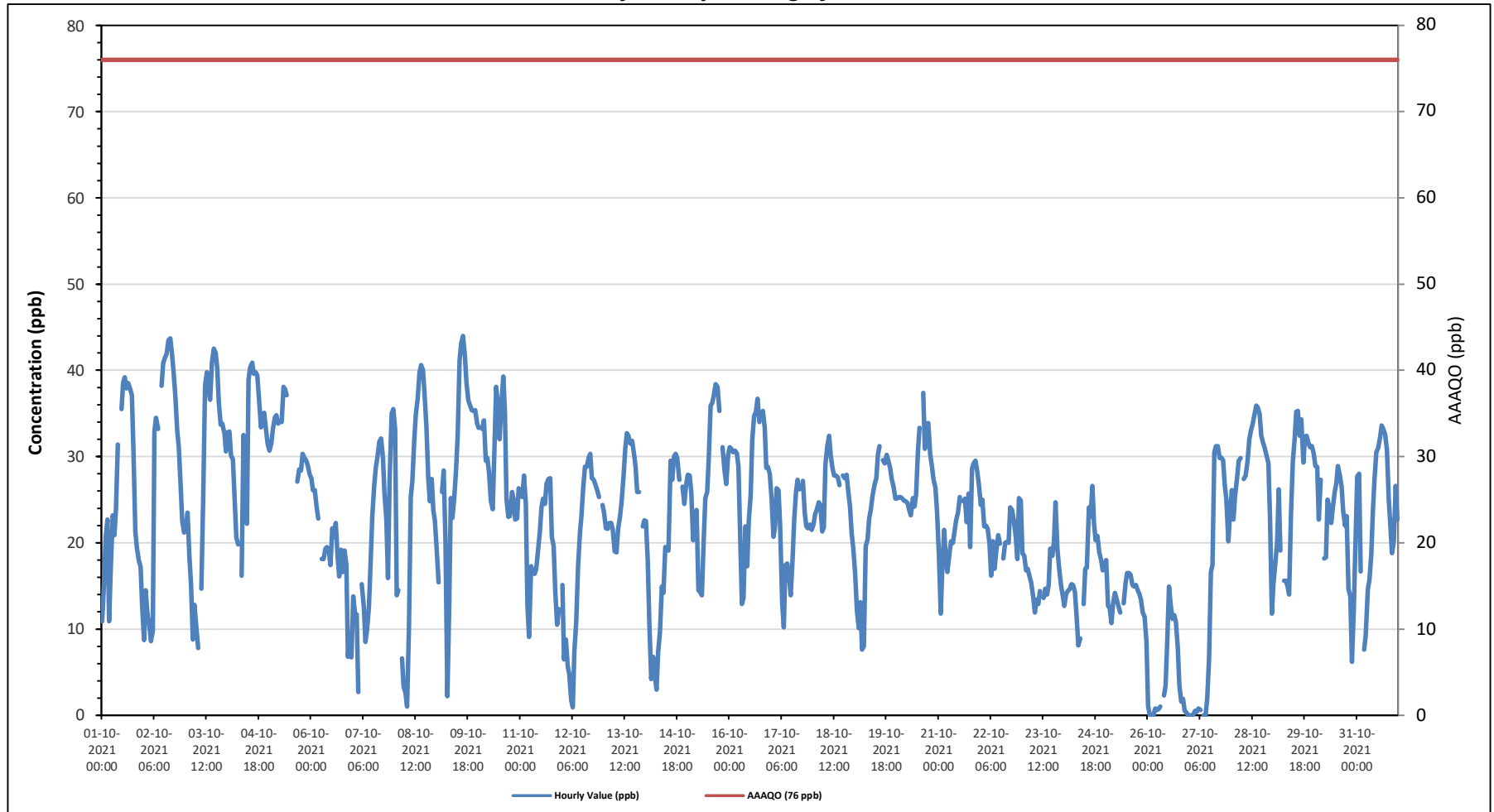
Summary of Hourly Averages

OZONE (O<sub>3</sub>) in ppb

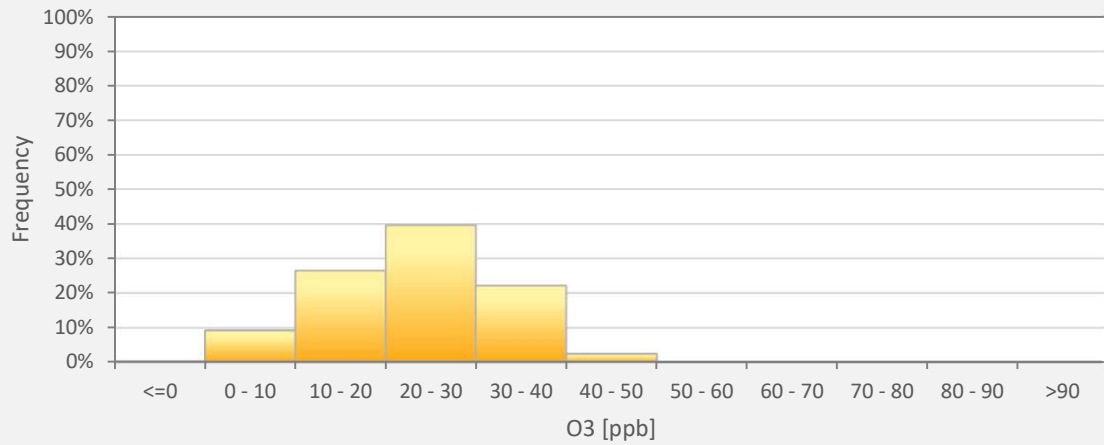
Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 76 ppb																																																		
Number of 1-Hour Exceedences: 0																																																		
Maximum Hourly Value: 44.0 ppb on October 9 at hour 15													Hours in Service: 744																																					
Maximum Daily Value: 32.0 ppb on October 5													Hours of Data: 707																																					
Minimum Hourly Value: 0.0 ppb on October 26 at hour 2													Hours of Missing Data: 0																																					
Minimum Daily Value: 4.1 ppb on October 26													Hours of Calibration: 37																																					
Monthly Average: 23.0 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																							
Oct 1	10.9	15.4	20.6	22.7	10.9	17.6	23.2	20.9	23.9	31.4	S	35.5	38.6	39.2	37.9	38.5	37.9	37.1	30.7	21.3	19.4	18	17.2	12.5	10.9	39.2	25.3																							
Oct 2	8.7	14.5	12.1	10.3	8.6	9.8	32.9	34.5	33.2	S	38.2	40.8	41.4	41.9	43.5	43.7	42	39.9	37	33	31.1	26.6	22.5	21.2	8.6	43.7	29.0																							
Oct 3	21.9	23.5	18.4	15.3	8.8	12.8	10.3	7.8	S	14.7	25.1	38.2	39.8	37.8	36.6	40.9	42.5	42	40.2	36.2	33.7	33.8	32.7	30.6	7.8	42.5	28.0																							
Oct 4	32.8	32.9	30.1	29.7	24.8	20.6	19.8	S	16.2	32.5	24.9	22.2	38.9	40.3	40.9	39.6	39.8	39.4	36.9	33.4	34.4	35.1	33.1	31.5	16.2	40.9	31.7																							
Oct 5	30.7	31.5	33.2	34.5	34.8	33.8	S	34	38.1	37.8	37.1	C	C	C	C	C	27.1	28.5	28.4	30.3	29.9	29.6	28.9	27.9	27.1	38.1	32.0																							
Oct 6	27.5	26.1	26.1	24.1	22.8	S	18.1	18.1	19.3	19.5	19.1	17.4	21.7	20.7	22.3	18.4	16.1	19.2	16.6	19.1	17.5	6.8	9.4	6.7	6.7	27.5	18.8																							
Oct 7	13.8	11.7	11.7	2.7	S	15.2	12.5	8.5	9.9	12.5	17.3	23.2	26.6	28.7	30.1	31.7	32.1	29.9	25.6	22.7	15.9	27.2	35	35.5	2.7	35.5	20.9																							
Oct 8	33.2	13.9	14.5	S	6.6	3.3	2.6	1	10	25.3	27.2	31.8	34.9	36.7	39.8	40.6	40	37.2	33.5	27.5	24.8	27.4	23.8	22.5	1.0	40.6	24.3																							
Oct 9	19.1	15.4	S	25.9	28.4	20.1	2.2	12.7	25.2	22.9	25.2	28.6	32.5	41.1	43.1	44	41.7	38.6	36.5	36	35.4	35.3	35.4	33.9	2.2	44.0	29.5																							
Oct 10	33.3	S	33.2	34.2	29.5	29.8	28.2	24.9	23.9	31.4	38.1	36.2	32	35.7	39.3	35.2	25.1	23	23.1	25.9	25	22.7	22.8	26.3	22.7	39.3	29.5																							
Oct 11	S	25.3	27.8	24.5	12.8	9.1	17.3	16.7	16.4	16.9	18.8	21.3	24.1	25.1	24.5	26.8	27.4	27.5	20.7	19.6	14.4	10.5	12.3	S	9.1	27.8	20.0																							
Oct 12	15.1	6.5	8.8	5.7	4.7	1.8	0.9	7.4	10.8	17.3	21.1	23.2	26.2	28.8	28.8	29.9	30.3	27.5	27.3	26.7	26	25.3	S	24.4	0.9	30.3	18.5																							
Oct 13	23.5	21.7	21.6	22.3	22.3	21.5	19	18.9	21.6	23	24.7	27.5	30.9	32.7	32.4	31.5	31.8	30.3	28.8	25.9	25.9	S	21.9	22.6	18.9	32.7	25.3																							
Oct 14	22.5	17.8	10.5	4.2	6.8	4.7	3	7.3	9.7	14.9	14.2	19.5	19.2	19.1	29.5	27.3	30	30.3	29.8	27.3	S	26.5	24.5	26.6	3.0	30.3	18.5																							
Oct 15	27.9	27.8	25.9	20.3	22.9	23.8	14.5	14.3	13.9	19.6	25.2	25.9	29.8	35.9	36.2	37.1	38.4	38.1	35.3	S	31.1	28.5	26.8	30.2	13.9	38.4	27.4																							
Oct 16	31.1	30.9	30.5	30.7	30.4	28.8	21.4	12.9	13.6	21.9	17.3	22.6	25.5	31.9	34.7	35.2	36.7	34	S	35.3	33.4	28.7	28.8	28	12.9	36.7	28.0																							
Oct 17	25.1	20.7	21.8	26.3	26.1	22.1	13	10.2	17.4	17.6	16.5	13.9	18	22.5	25.9	27.3	26.2	S	27.2	23.5	21.9	21.7	22.1	21.5	10.2	27.3	21.2																							
Oct 18	22.1	23.3	23.8	24.7	24.4	21.3	21.8	29.1	31.2	32.4	30.1	28.6	27.8	27.8	27.6	26.7	S	27.8	27.5	27.9	26	24.1	21.1	19.4	19.4	32.4	25.9																							
Oct 19	16.5	12.1	10.1	13.1	7.6	8	19.6	20.4	22.8	23.8	25.5	26.7	27.5	30.2	31.2	S	29.6	29.2	30.2	29.6	28.7	27.4	26.5	25.1	7.6	31.2	22.7																							
Oct 20	25.1	25.3	25.3	25.1	24.9	24.8	24.6	23.8	23.2	25.2	24.2	25.6	30.6	33.3	S	37.4	30.9	33.8	33.9	30.3	28.8	27.3	26.4	23.6	23.2	37.4	27.5																							
Oct 21	18.7	11.8	17.1	21.5	18.1	16.6	18.8	20.2	20	21.3	22.6	23.5	25.3	S	24.8	25.1	22.4	25.7	19.5	28.6	29.2	29.5	28.2	26.7	11.8	29.5	22.4																							
Oct 22	24.4	25	21.9	22	21.6	19.9	16.2	20.2	17	19.2	20.9	19.9	S	18.2	20	20.1	20	24.1	23.8	22.5	20.7	18.1	25.2	24.9	16.2	25.2	21.1																							
Oct 23	18.8	18.5	16.8	17	16.1	15.4	13.9	11.9	13.4	12.9	14.4	S	13.6	14.7	14	15.1	19.3	18.5	20.1	24.7	19.3	17.2	15	13.9	11.9	24.7	16.3																							
Oct 24	12.7	14.1	14.4	14.6	15.2	15.1	14.3	11.7	8.1	8.9	S	12.9	17	17.1	24.1	23	26.6	22.3	20.3	20.8	18.9	18	16.8	17.2	8.1	26.6	16.7																							
Oct 25	18	12.7	12.5	10.7	13	14.2	13.4	12.7	11.9	S	13	15.3	16.5	16.5	16.3	15.1	14.9	15.1	14.5	14.1	13.4	11.9	11.4	8.5	8.5	18.0	13.7																							
Oct 26	1.1	0.1	0	0	0.8	0.6	0.7	1	S	2.3	3.4	8.3	14.9	12.9	11.2	11.6	10.8	7.9	3.5	1.6	1.9	0.5	0.3	0	0.0	14.9	4.1																							
Oct 27	0	0	0.1	0.5	0.4	0.8	0.6	S	0	0	1.9	6.5	16.6	17.4	30.5	31.2	31.2	29.8	29.9	29.6	26.8	25.1	20.2	23.4	0.0	31.2	14.0																							
Oct 28	26.1	22.7	25.4	27.3	29.5	29.8	S	27.4	27.8	29.4	32	33	33.7	34.8	35.9	35.7	34.9	32.4	31.6	31	30.1	29.2	22.9	11.8	11.8	35.9	29.3																							
Oct 29	15.3	17.6	20.2	26.2	19.1	S	15.6	15.6	15	14	23.2	29.4	32.1	35.2	35.3	32.4	34.3	29.3	32.3	32.4	31.6	31.1	31.2	30.3	14.0	35.3	26.0																							
Oct 30	28.9	28.8	22.7	27.3	S	18.2	18.3	25	24.2	22.3	24.1	25.9	26.9	28.9	27.7	26.5	23.7	22	23.1	14.6	13.8	6.2	12.3	19.6	6.2	28.9	22.2																							
Oct 31	27.7	28	16.7	S	7.6	9.3	14.6	15.7	18.6	23.7	27.3	30.5	31	32.2	33.6	33.2	32.6	30.8	25	22	18.8	20.2	26.6	22.7	7.6	33.6	23.8																							
Diurnal Maximum	33	33	33	35	35	34	33	35	38	38	38	41	41	42	44	44	43	42	40	36	35	35	35	36																										
Diurnal Average	21.1	19.2	19.1	19.4	17.2	16.2	14.9	16.7	18.5	20.5	22.5	24.6	27.4	28.9	30.3	30.4	29.9	29.0	27.1	25.8	24.3	23.0	22.7	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*



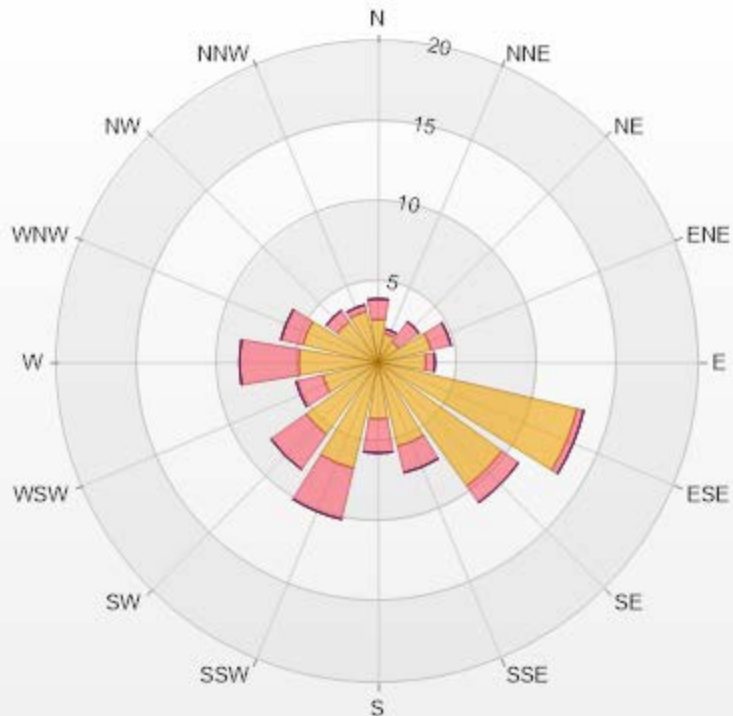
O3[ppb] Histogram: Tamarack Monthly: 10-2021 1 Hr.



Classes	O3
<=0	0.28%
0 - 10	9.19%
10 - 20	26.45%
20 - 30	39.60%
30 - 40	22.07%
40 - 50	2.40%
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: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	2.69	1.27	0	0	0	3.96
NNE	1.84	0.28	0	0	0	2.12
NE	1.56	1.56	0	0	0	3.12
ENE	3.39	1.27	0	0	0	4.66
E	2.97	0.57	0	0	0	3.54
ESE	12.73	0.42	0	0	0	13.15
SE	9.48	1.27	0	0	0	10.75
SSE	5.37	1.7	0	0	0	7.07
S	3.54	2.12	0	0	0	5.66
SSW	6.79	3.25	0	0	0	10.04
SW	5.52	2.69	0	0	0	8.21
WSW	3.54	1.7	0	0	0	5.24
W	4.95	3.68	0	0	0	8.63
WNW	4.81	1.41	0	0	0	6.22
NW	3.11	0.85	0	0	0	3.96
NNW	3.25	0.42	0	0	0	3.67
Summary	75.54	24.46	0	0	0	100



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% Icon Classes (ppb)	76	24	0	0	0
0-30	76	24	0	0	0
30-50	0	24	0	0	0
50-76	0	0	0	0	0
76-159	0	0	0	0	0
>159.0	0	0	0	0	0



**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

**Tamarack Site - October 2021**

**Summary of Hourly Averages**

**TOTAL HYDROCARBONS (THC) in ppm**

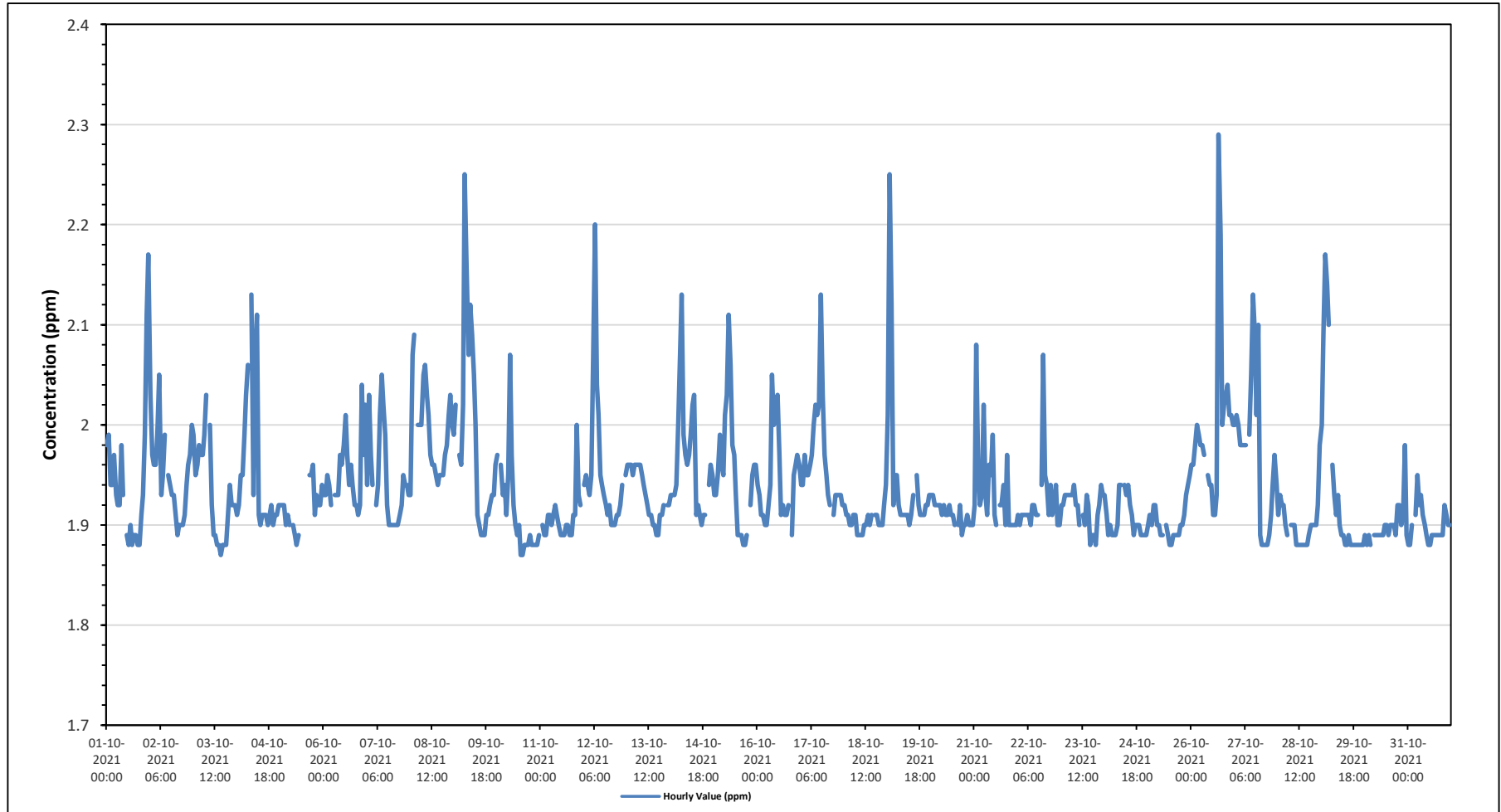
Maximum Hourly Value:	2.29 ppm on October 26 at hour 15	Hours in Service:	744
Maximum Daily Value:	2.00 ppm on October 26	Hours of Data:	707
Minimum Hourly Value:	1.87 ppm on October 3 at hour 15	Hours of Missing Data:	0
Minimum Daily Value:	1.90 ppm on October 30	Hours of Calibration:	37
Monthly Average:	1.94 ppm	Operational Uptime:	100.0

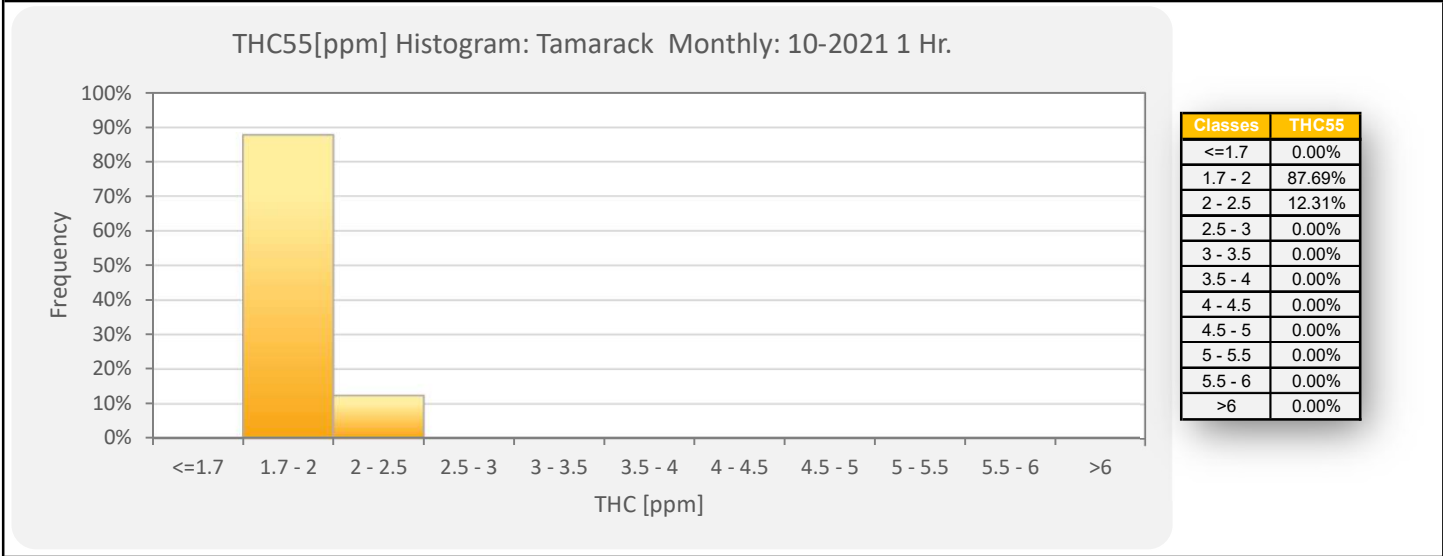
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Oct 1	1.98	1.99	1.94	1.94	1.97	1.93	1.92	1.92	1.98	1.93	S	1.89	1.88	1.90	1.88	1.89	1.89	1.88	1.88	1.91	1.93	1.99	2.11	2.17	1.88	2.17	1.94
Oct 2	2.03	1.97	1.96	1.96	1.99	2.05	1.93	1.95	1.99	S	1.95	1.94	1.93	1.93	1.91	1.89	1.90	1.90	1.90	1.91	1.94	1.96	1.97	2.00	1.89	2.05	1.95
Oct 3	1.99	1.95	1.96	1.98	1.97	1.97	1.99	2.03	S	2.00	1.92	1.89	1.89	1.88	1.88	1.87	1.88	1.88	1.88	1.91	1.94	1.92	1.92	1.92	1.87	2.03	1.93
Oct 4	1.91	1.92	1.95	1.95	1.99	2.03	2.06	S	2.13	1.93	2.07	2.11	1.91	1.90	1.91	1.91	1.91	1.91	1.91	1.92	1.90	1.91	1.91	1.92	1.90	2.13	1.95
Oct 5	1.92	1.92	1.92	1.90	1.91	1.90	S	1.90	1.89	1.88	1.89	C	C	C	C	C	1.95	1.95	1.96	1.91	1.93	1.92	1.92	1.94	1.88	1.96	1.92
Oct 6	1.93	1.93	1.95	1.94	1.92	S	1.93	1.93	1.93	1.97	1.96	1.98	2.01	1.97	1.94	1.96	1.94	1.92	1.92	1.91	1.92	2.04	1.97	2.02	1.91	2.04	1.95
Oct 7	1.94	2.03	1.97	1.94	S	1.92	1.94	2.01	2.05	2.02	1.99	1.92	1.90	1.90	1.90	1.90	1.90	1.90	1.91	1.92	1.95	1.94	1.94	1.93	1.90	2.05	1.94
Oct 8	1.93	2.07	2.09	S	2.00	2.00	2.00	2.05	2.06	2.03	2.01	1.97	1.96	1.96	1.95	1.94	1.95	1.95	1.95	1.97	1.98	2.01	2.03	2.00	1.93	2.09	1.99
Oct 9	1.99	2.02	S	1.97	1.96	2.02	2.25	2.16	2.07	2.12	2.09	2.05	2.00	1.91	1.90	1.89	1.89	1.89	1.91	1.91	1.92	1.93	1.93	1.96	1.89	2.25	1.99
Oct 10	1.97	S	1.96	1.93	1.94	1.91	1.95	2.07	1.97	1.92	1.90	1.89	1.90	1.87	1.87	1.88	1.88	1.88	1.89	1.88	1.88	1.88	1.88	1.89	1.87	2.07	1.91
Oct 11	S	1.90	1.89	1.89	1.91	1.91	1.90	1.91	1.92	1.91	1.90	1.89	1.89	1.90	1.90	1.89	1.89	1.91	1.91	1.91	2.00	1.93	1.92	S	1.89	2.00	1.91
Oct 12	1.94	1.95	1.94	1.93	1.95	2.07	2.20	2.04	2.01	1.95	1.94	1.93	1.92	1.91	1.92	1.90	1.90	1.90	1.91	1.91	1.92	1.94	S	1.95	1.90	2.20	1.95
Oct 13	1.96	1.96	1.96	1.95	1.96	1.96	1.96	1.96	1.95	1.94	1.93	1.92	1.91	1.91	1.91	1.90	1.89	1.89	1.91	1.91	1.92	S	1.92	1.92	1.89	1.96	1.93
Oct 14	1.93	1.93	1.93	1.94	2.00	2.06	2.13	1.99	1.97	1.96	1.97	1.99	2.02	2.03	1.91	1.92	1.91	1.90	1.91	1.91	S	1.94	1.96	1.95	1.90	2.13	1.96
Oct 15	1.93	1.93	1.95	1.99	1.96	1.95	2.01	2.03	2.11	2.06	1.98	1.97	1.93	1.89	1.89	1.89	1.88	1.88	1.89	S	1.92	1.95	1.96	1.96	1.88	2.11	1.95
Oct 16	1.94	1.93	1.91	1.91	1.90	1.90	1.92	1.94	2.05	2.00	2.01	2.03	1.97	1.91	1.92	1.91	1.91	1.92	S	1.89	1.95	1.96	1.97	1.96	1.89	2.05	1.94
Oct 17	1.94	1.94	1.97	1.95	1.95	1.96	1.97	2.00	2.02	2.01	2.02	2.13	2.03	1.97	1.95	1.93	1.92	S	1.91	1.93	1.93	1.93	1.93	1.92	1.91	2.13	1.97
Oct 18	1.92	1.91	1.91	1.90	1.90	1.91	1.91	1.89	1.89	1.89	1.89	1.90	1.90	1.91	1.90	1.91	S	1.91	1.91	1.90	1.90	1.90	1.92	1.94	1.89	1.94	1.91
Oct 19	2.01	2.25	2.12	1.92	1.95	1.95	1.92	1.91	1.91	1.91	1.91	1.91	1.90	1.91	1.93	S	1.95	1.92	1.91	1.91	1.91	1.92	1.92	1.93	1.90	2.25	1.95
Oct 20	1.93	1.93	1.92	1.92	1.92	1.92	1.91	1.92	1.91	1.91	1.92	1.91	1.91	1.90	S	1.90	1.92	1.89	1.90	1.90	1.91	1.90	1.90	1.90	1.89	1.93	1.91
Oct 21	1.92	2.08	1.96	1.92	1.93	2.02	1.93	1.91	1.96	1.95	1.99	1.91	1.90	S	1.92	1.92	1.94	1.90	1.97	1.90	1.90	1.90	1.90	1.90	1.90	2.08	1.94
Oct 22	1.91	1.90	1.91	1.91	1.91	1.91	1.91	1.90	1.92	1.92	1.91	1.91	S	1.94	2.07	1.95	1.94	1.91	1.94	1.91	1.92	1.94	1.90	1.90	1.90	2.07	1.92
Oct 23	1.92	1.92	1.93	1.93	1.93	1.93	1.93	1.94	1.92	1.92	1.90	S	1.91	1.90	1.93	1.92	1.88	1.89	1.89	1.88	1.91	1.92	1.94	1.93	1.88	1.94	1.92
Oct 24	1.93	1.91	1.89	1.90	1.89	1.89	1.89	1.90	1.94	1.94	S	1.94	1.93	1.94	1.92	1.91	1.89	1.90	1.90	1.90	1.89	1.89	1.89	1.89	1.89	1.94	1.91
Oct 25	1.90	1.91	1.90	1.92	1.92	1.90	1.90	1.89	1.89	S	1.90	1.89	1.88	1.88	1.89	1.89	1.89	1.89	1.90	1.90	1.91	1.93	1.94	1.95	1.88	1.95	1.90
Oct 26	1.96	1.96	1.98	2.00	1.99	1.98	1.98	1.97	S	1.95	1.94	1.94	1.91	1.91	1.93	2.29	2.19	2.00	2.02	2.03	2.04	2.01	2.01	2.00	1.91	2.29	2.00
Oct 27	2.00	2.01	2.00	1.98	1.98	1.98	1.98	S	1.99	2.05	2.13	2.09	2.01	2.10	1.89	1.88	1.88	1.88	1.88	1.89	1.91	1.94	1.97	1.94	1.88	2.13	1.97
Oct 28	1.91	1.93	1.92	1.92	1.90	1.89	S	1.90	1.90	1.90	1.88	1.88	1.88	1.88	1.88	1.88	1.89	1.90	1.90	1.90	1.92	1.92	1.98	1.88	1.98	1.90	
Oct 29	2.00	2.09	2.17	2.14	2.10	S	1.96	1.93	1.91	1.93	1.90	1.89	1.89	1.88	1.88	1.89	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	2.17	1.94
Oct 30	1.89	1.88	1.89	1.88	S	1.89	1.89	1.89	1.89	1.89	1.89	1.90	1.90	1.89	1.90	1.90	1.89	1.92	1.92	1.90	1.91	1.98	1.89	1.88	1.98	1.90	
Oct 31	1.88	1.88	1.90	S	1.91	1.95	1.92	1.93	1.91	1.90	1.89	1.88	1.88	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.92	1.91	1.90	1.90	1.88	1.95	1.90
Diurnal Maximum	2.03	2.25	2.17	2.14	2.10	2.07	2.25	2.16	2.13	2.12	2.13	2.03	2.10	2.07	2.29	2.19	2.00	2.02	2.03	2.04	2.04	2.11	2.17				
Diurnal Average	1.94	1.96	1.96	1.94	1.95	1.95	1.97	1.96	1.97	1.95	1.95	1.95	1.93	1.92	1.91	1.92	1.91	1.90	1.91	1.91	1.92	1.93	1.94	1.94			

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

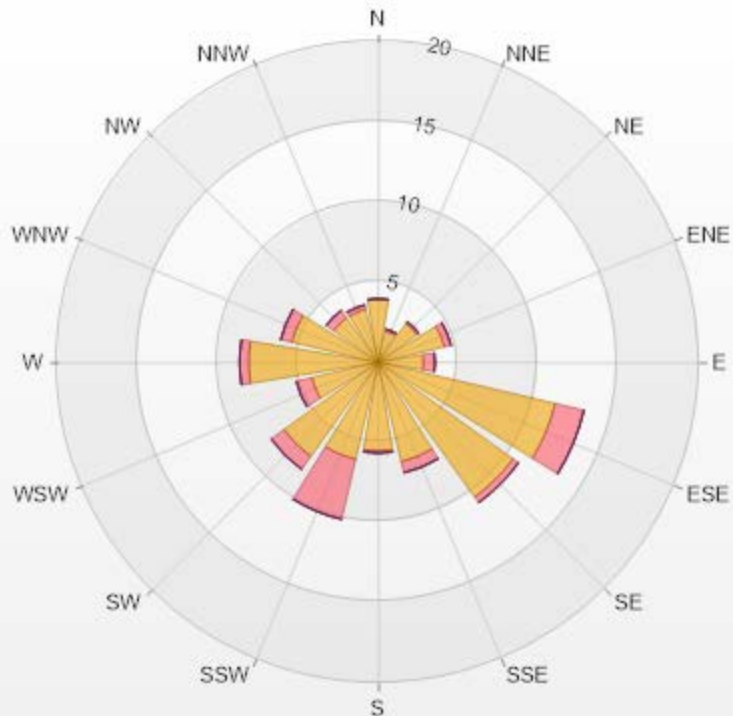




Wind: Tamarack Poll.: Tamarack-THC55[ppm] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	3.96	0	0	0	0	3.96
NNE	1.98	0.14	0	0	0	2.12
NE	2.97	0.14	0	0	0	3.11
ENE	4.24	0.42	0	0	0	4.66
E	2.83	0.71	0	0	0	3.54
ESE	11.32	1.84	0	0	0	13.16
SE	10.33	0.42	0	0	0	10.75
SSE	6.36	0.71	0	0	0	7.07
S	5.52	0.14	0	0	0	5.66
SSW	6.22	3.82	0	0	0	10.04
SW	7.21	0.99	0	0	0	8.2
WSW	4.24	0.99	0	0	0	5.23
W	8.06	0.57	0	0	0	8.63
WNW	5.52	0.71	0	0	0	6.23
NW	3.39	0.57	0	0	0	3.96
NNW	3.39	0.28	0	0	0	3.67
Summary	87.54	12.45	0	0	0	100





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% Icon Classes (ppm)

88 0-2

12 2-5

0 5-10

0 10-40

0 >40.0



**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

**Tamarack Site - October 2021**

**Summary of Hourly Averages**

**METHANE (CH4) in ppm**

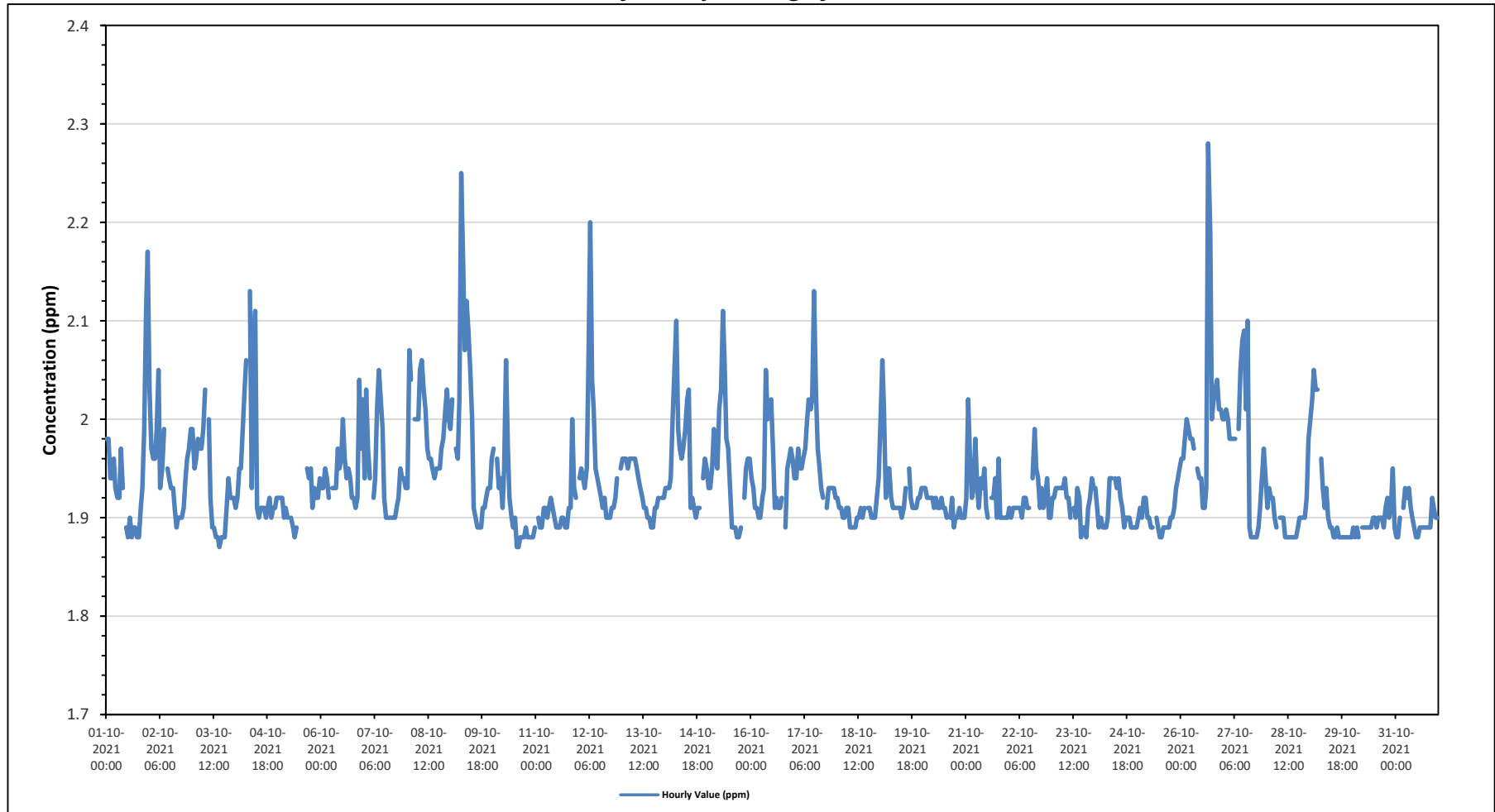
Maximum Hourly Value:	2.28 ppm on October 26 at hour 15	Hours in Service:	744
Maximum Daily Value:	2.00 ppm on October 26	Hours of Data:	707
Minimum Hourly Value:	1.87 ppm on October 3 at hour 15	Hours of Missing Data:	0
Minimum Daily Value:	1.90 ppm on October 30	Hours of Calibration:	37
Monthly Average:	1.94 ppm	Operational Uptime:	100.0

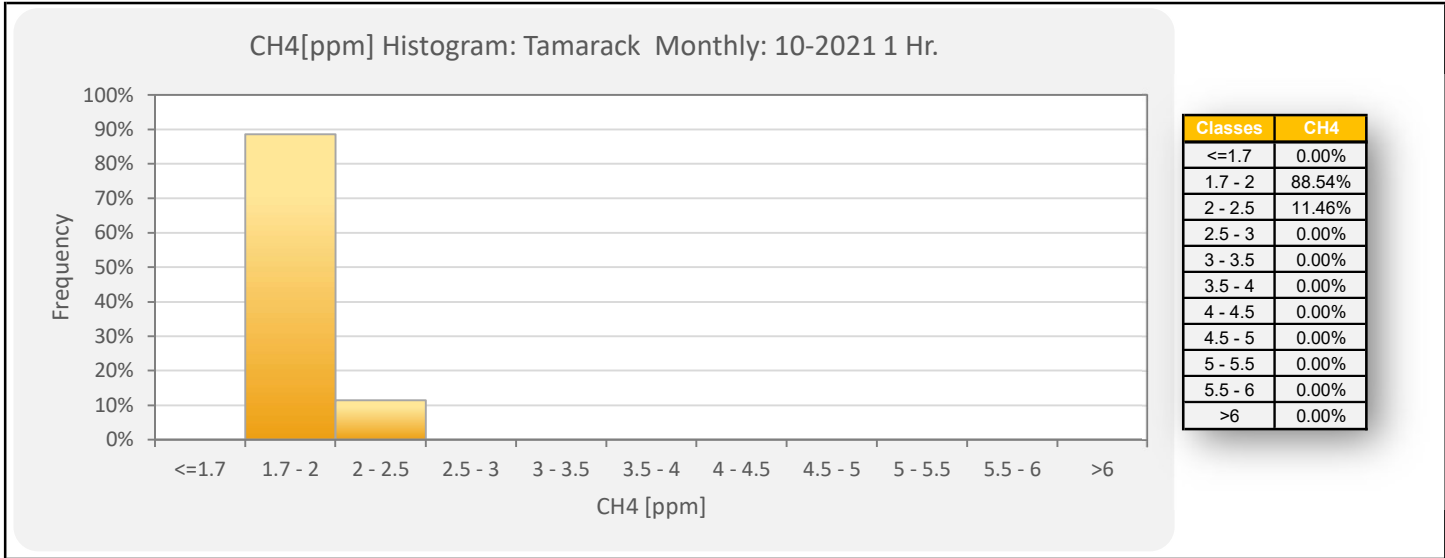
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Oct 1	1.98	1.98	1.94	1.94	1.96	1.93	1.92	1.92	1.97	1.93	S	1.89	1.88	1.90	1.88	1.89	1.89	1.88	1.88	1.91	1.93	1.99	2.11	2.17	1.88	2.17	1.94
Oct 2	2.03	1.97	1.96	1.96	1.99	2.05	1.93	1.95	1.99	S	1.95	1.94	1.93	1.93	1.91	1.89	1.90	1.90	1.90	1.91	1.94	1.96	1.97	1.99	1.89	2.05	1.95
Oct 3	1.99	1.95	1.96	1.98	1.97	1.97	1.99	2.03	S	2.00	1.92	1.89	1.89	1.88	1.88	1.87	1.88	1.88	1.88	1.91	1.94	1.92	1.92	1.92	1.87	2.03	1.93
Oct 4	1.91	1.92	1.95	1.95	1.99	2.03	2.06	S	2.13	1.93	2.07	2.11	1.91	1.90	1.91	1.91	1.91	1.91	1.91	1.92	1.90	1.91	1.91	1.92	1.90	2.13	1.95
Oct 5	1.92	1.92	1.92	1.90	1.91	1.90	S	1.90	1.89	1.88	1.89	C	C	C	C	C	1.95	1.94	1.95	1.91	1.93	1.92	1.92	1.94	1.88	1.95	1.92
Oct 6	1.93	1.93	1.95	1.94	1.92	S	1.93	1.93	1.93	1.97	1.95	1.96	2.00	1.96	1.94	1.95	1.94	1.92	1.92	1.91	1.92	2.04	1.97	2.02	1.91	2.04	1.95
Oct 7	1.94	2.03	1.97	1.94	S	1.92	1.94	2.01	2.05	2.02	1.99	1.92	1.90	1.90	1.90	1.90	1.90	1.90	1.91	1.92	1.95	1.94	1.94	1.93	1.90	2.05	1.94
Oct 8	1.93	2.07	2.04	S	2.00	2.00	2.00	2.05	2.06	2.03	2.01	1.97	1.96	1.96	1.95	1.94	1.95	1.95	1.95	1.97	1.98	2.01	2.03	2.00	1.93	2.07	1.99
Oct 9	1.99	2.02	S	1.97	1.96	2.02	2.25	2.16	2.07	2.12	2.09	2.05	2.00	1.91	1.90	1.89	1.89	1.89	1.91	1.91	1.92	1.93	1.93	1.96	1.89	2.25	1.99
Oct 10	1.97	S	1.96	1.93	1.94	1.91	1.95	2.06	1.97	1.92	1.90	1.89	1.90	1.87	1.87	1.88	1.88	1.88	1.89	1.88	1.88	1.88	1.88	1.89	1.87	2.06	1.91
Oct 11	S	1.90	1.89	1.89	1.91	1.91	1.90	1.91	1.92	1.91	1.90	1.89	1.89	1.90	1.90	1.89	1.89	1.91	1.91	1.91	2.00	1.93	1.92	S	1.89	2.00	1.91
Oct 12	1.94	1.95	1.94	1.93	1.95	2.07	2.20	2.04	2.01	1.95	1.94	1.93	1.92	1.91	1.92	1.90	1.90	1.90	1.91	1.91	1.92	1.94	S	1.95	1.90	2.20	1.95
Oct 13	1.96	1.96	1.96	1.95	1.96	1.96	1.96	1.96	1.95	1.94	1.93	1.92	1.91	1.91	1.90	1.90	1.89	1.89	1.91	1.91	1.92	S	1.92	1.92	1.89	1.96	1.93
Oct 14	1.93	1.93	1.93	1.94	2.00	2.05	2.10	1.99	1.97	1.96	1.97	1.99	2.02	2.03	1.91	1.92	1.91	1.90	1.91	1.91	S	1.94	1.96	1.95	1.90	2.10	1.96
Oct 15	1.93	1.93	1.95	1.99	1.96	1.95	2.01	2.03	2.11	2.06	1.98	1.97	1.93	1.89	1.89	1.89	1.88	1.88	1.89	S	1.92	1.95	1.96	1.96	1.88	2.11	1.95
Oct 16	1.94	1.93	1.91	1.91	1.90	1.90	1.92	1.93	2.05	2.00	2.01	2.02	1.97	1.91	1.92	1.91	1.91	1.92	S	1.89	1.95	1.96	1.97	1.96	1.89	2.05	1.94
Oct 17	1.94	1.94	1.97	1.95	1.95	1.96	1.97	2.00	2.02	2.01	2.02	2.13	2.03	1.97	1.95	1.93	1.92	S	1.91	1.93	1.93	1.93	1.93	1.92	1.91	2.13	1.97
Oct 18	1.92	1.91	1.91	1.90	1.90	1.91	1.91	1.89	1.89	1.89	1.89	1.90	1.90	1.91	1.90	1.91	S	1.91	1.91	1.90	1.90	1.90	1.92	1.94	1.89	1.94	1.91
Oct 19	1.99	2.06	2.01	1.92	1.95	1.95	1.92	1.91	1.91	1.91	1.91	1.91	1.90	1.91	1.93	S	1.95	1.92	1.91	1.91	1.91	1.92	1.92	1.93	1.90	2.06	1.93
Oct 20	1.93	1.93	1.92	1.92	1.92	1.92	1.91	1.92	1.91	1.91	1.92	1.91	1.91	1.90	S	1.90	1.92	1.89	1.90	1.90	1.91	1.90	1.90	1.90	1.89	1.93	1.91
Oct 21	1.92	2.02	1.96	1.92	1.93	1.98	1.93	1.91	1.94	1.93	1.95	1.91	1.90	S	1.92	1.92	1.94	1.90	1.96	1.90	1.90	1.90	1.90	1.90	1.90	2.02	1.93
Oct 22	1.91	1.90	1.91	1.91	1.91	1.91	1.91	1.90	1.92	1.92	1.91	1.91	S	1.94	1.99	1.95	1.94	1.91	1.93	1.91	1.92	1.94	1.90	1.90	1.90	1.99	1.92
Oct 23	1.92	1.92	1.93	1.93	1.93	1.93	1.93	1.94	1.92	1.92	1.90	S	1.91	1.90	1.93	1.92	1.88	1.89	1.89	1.88	1.91	1.92	1.94	1.93	1.88	1.94	1.92
Oct 24	1.93	1.91	1.89	1.90	1.89	1.89	1.89	1.90	1.94	1.94	S	1.94	1.93	1.94	1.92	1.91	1.89	1.90	1.90	1.90	1.89	1.89	1.89	1.89	1.89	1.94	1.91
Oct 25	1.90	1.91	1.90	1.92	1.92	1.90	1.90	1.89	1.89	S	1.90	1.89	1.88	1.88	1.89	1.89	1.89	1.89	1.90	1.90	1.91	1.93	1.94	1.95	1.88	1.95	1.90
Oct 26	1.96	1.96	1.98	2.00	1.99	1.98	1.98	1.97	S	1.95	1.94	1.94	1.91	1.91	1.93	2.28	2.19	2.00	2.02	2.03	2.04	2.01	2.01	2.00	1.91	2.28	2.00
Oct 27	2.00	2.01	2.00	1.98	1.98	1.98	1.98	S	1.99	2.05	2.08	2.09	2.01	2.10	1.89	1.88	1.88	1.88	1.88	1.89	1.91	1.94	1.97	1.94	1.88	2.10	1.97
Oct 28	1.91	1.93	1.92	1.92	1.90	1.89	S	1.90	1.90	1.90	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.89	1.90	1.90	1.90	1.92	1.98	1.88	1.98	1.90	
Oct 29	2.00	2.02	2.05	2.03	2.03	S	1.96	1.93	1.91	1.93	1.90	1.89	1.89	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	2.05	1.92
Oct 30	1.89	1.88	1.89	1.88	S	1.89	1.89	1.89	1.89	1.89	1.89	1.90	1.90	1.89	1.90	1.90	1.89	1.91	1.92	1.90	1.91	1.95	1.89	1.88	1.95	1.90	
Oct 31	1.88	1.88	1.90	S	1.91	1.93	1.92	1.93	1.91	1.90	1.89	1.88	1.88	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.92	1.91	1.90	1.90	1.88	1.93	1.90
Diurnal Maximum	2.03	2.07	2.05	2.03	2.03	2.07	2.25	2.16	2.13	2.12	2.09	2.13	2.03	2.10	1.99	2.28	2.19	2.00	2.02	2.03	2.04	2.04	2.11	2.17			
Diurnal Average	1.94	1.95	1.95	1.94	1.95	1.95	1.97	1.96	1.97	1.95	1.95	1.95	1.93	1.92	1.91	1.92	1.91	1.90	1.91	1.91	1.92	1.93	1.94	1.94			

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

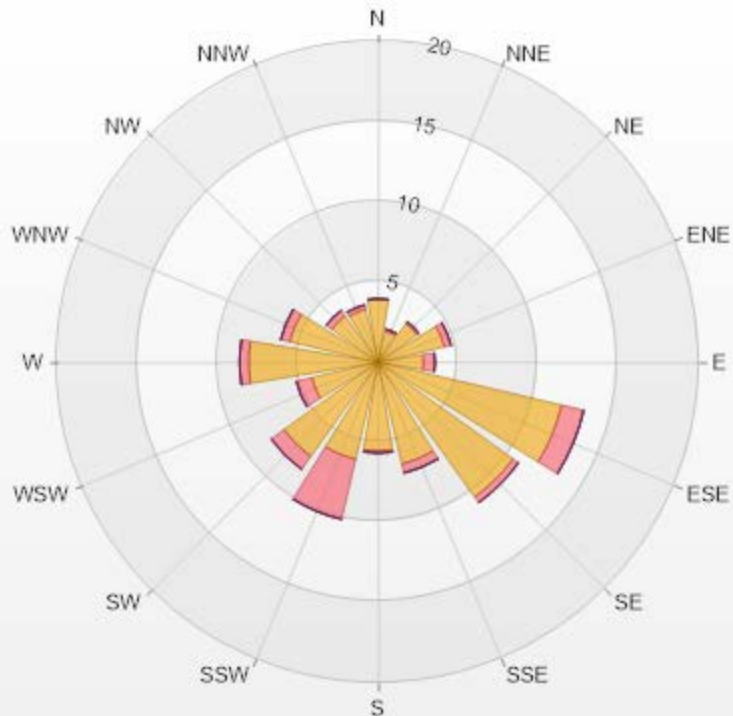
**Timeseries Chart of Hourly Average for CH4 - Tamarack Site**





Wind: Tamarack Poll.: Tamarack-CH4[ppm] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-20	>20.0	Total
N	3.96	0	0	0	0	3.96
NNE	1.98	0.14	0	0	0	2.12
NE	2.97	0.14	0	0	0	3.11
ENE	4.24	0.42	0	0	0	4.66
E	2.83	0.71	0	0	0	3.54
ESE	11.74	1.41	0	0	0	13.15
SE	10.33	0.42	0	0	0	10.75
SSE	6.51	0.57	0	0	0	7.08
S	5.52	0.14	0	0	0	5.66
SSW	6.22	3.82	0	0	0	10.04
SW	7.21	0.99	0	0	0	8.2
WSW	4.24	0.99	0	0	0	5.23
W	8.06	0.57	0	0	0	8.63
WNW	5.66	0.57	0	0	0	6.23
NW	3.54	0.42	0	0	0	3.96
NNW	3.39	0.28	0	0	0	3.67
Summary	88.4	11.59	0	0	0	100



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% Icon Classes (ppm)

88 0-2

12 2-5

0 5-10

0 10-20

0 >20.0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - October 2021

Summary of Hourly Averages

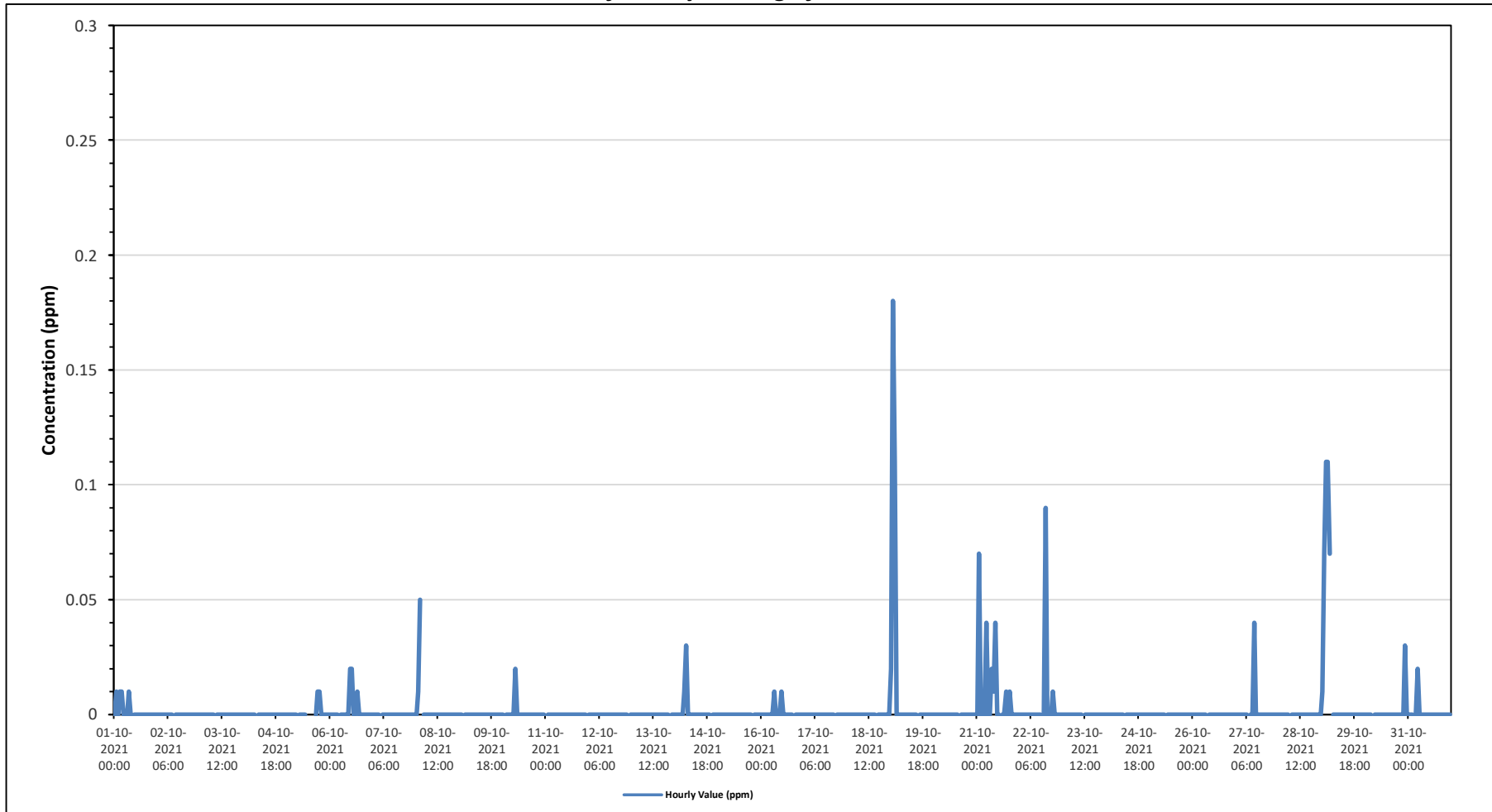
### NON-METHANE HYDROCARBONS (NMHC) in ppm

Maximum Hourly Value:	0.18 ppm	on October 19 at hour 1	Hours in Service:	744
Maximum Daily Value:	0.02 ppm	on October 29	Hours of Data:	707
Minimum Hourly Value:	0.00 ppm	on October 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.00 ppm	on October 2	Hours of Calibration:	37
Monthly Average:	0.00 ppm		Operational Uptime:	100.0

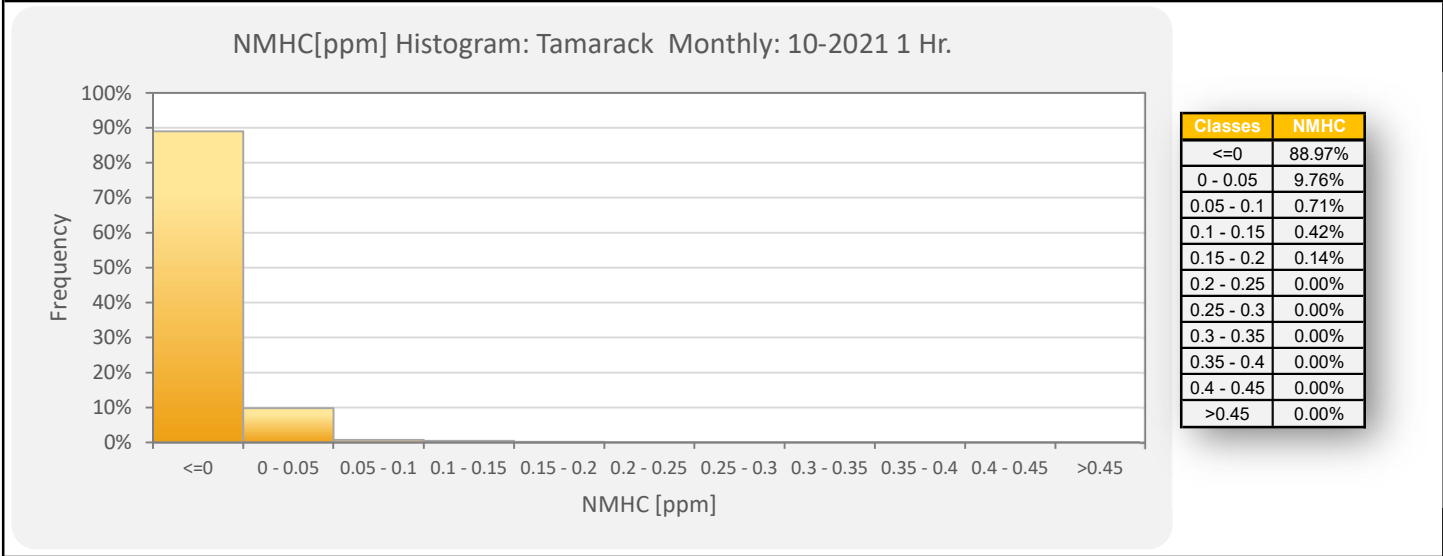
  

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Oct 1	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Oct 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
Oct 3	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
Oct 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
Oct 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	C	C	C	C	C	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Oct 6	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Oct 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
Oct 8	0.00	0.01	0.05	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	0.05	0.00
Oct 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
Oct 10	0.00	S	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Oct 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	S	0.00
Oct 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	S	0.00
Oct 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	S	0.00
Oct 14	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.03	0.00
Oct 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct 16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Oct 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct 19	0.02	0.18	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct 20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
Oct 21	0.00	0.07	0.00	0.00	0.00	0.04	0.00	0.00	0.02	0.01	0.04	0.00	0.00	S	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.09	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct 25	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
Oct 26	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
Oct 27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00
Oct 28	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
Oct 29	0.01	0.07	0.11	0.11	0.07	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	0.11	0.02
Oct 30	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	0.03	0.00	0.00
Oct 31	0.00	0.00	0.00	S	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Diurnal Maximum	0.02	0.18	0.11	0.11	0.07	0.04	0.03	0.02	0.02	0.01	0.04	0.02	0.02	0.00	0.09	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00
Diurnal Average	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
C	Monthly Calibration							S	Daily Zero-Span Check							Q	Quality Assurance											
K	Collection Error							N	No Data (Machine Not in Service)							Y	Routine Maintenance							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 NMHC - Tamarack Site*

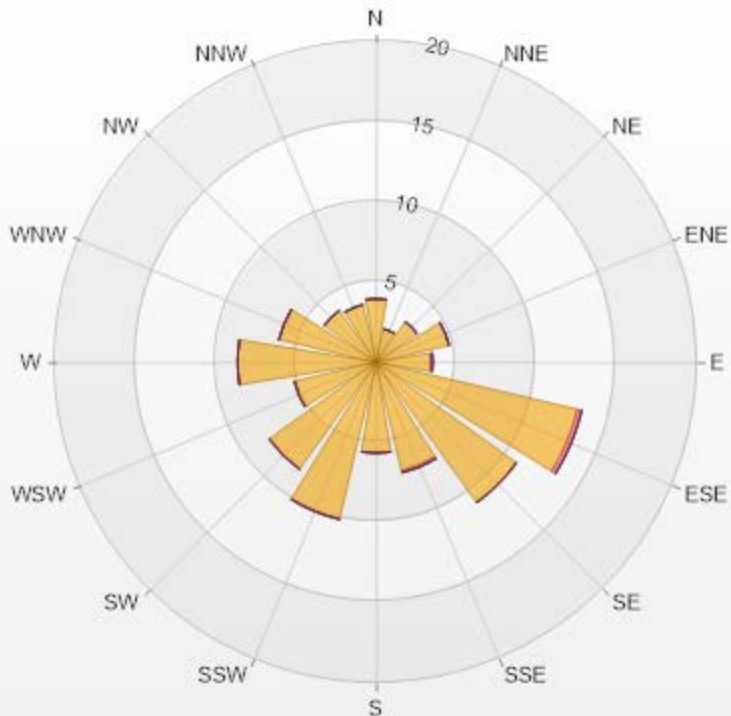






Wind: Tamarack Poll.: Tamarack-NMHC[ppm] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0	Total
N	3.96	0	0	0	0	3.96
NNE	2.12	0	0	0	0	2.12
NE	3.11	0	0	0	0	3.11
ENE	4.67	0	0	0	0	4.67
E	3.39	0.14	0	0	0	3.53
ESE	12.87	0.28	0	0	0	13.15
SE	10.75	0	0	0	0	10.75
SSE	6.93	0.14	0	0	0	7.07
S	5.66	0	0	0	0	5.66
SSW	10.04	0	0	0	0	10.04
SW	8.2	0	0	0	0	8.2
WSW	5.23	0	0	0	0	5.23
W	8.63	0	0	0	0	8.63
WNW	6.22	0	0	0	0	6.22
NW	3.96	0	0	0	0	3.96
NNW	3.68	0	0	0	0	3.68
Summary	99.42	0.56	0	0	0	100




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% Icon Classes (ppm)

99  0-0.1

1  0.1-0.3

0  0.3-0.9

0  0.9-2

0  >2.0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

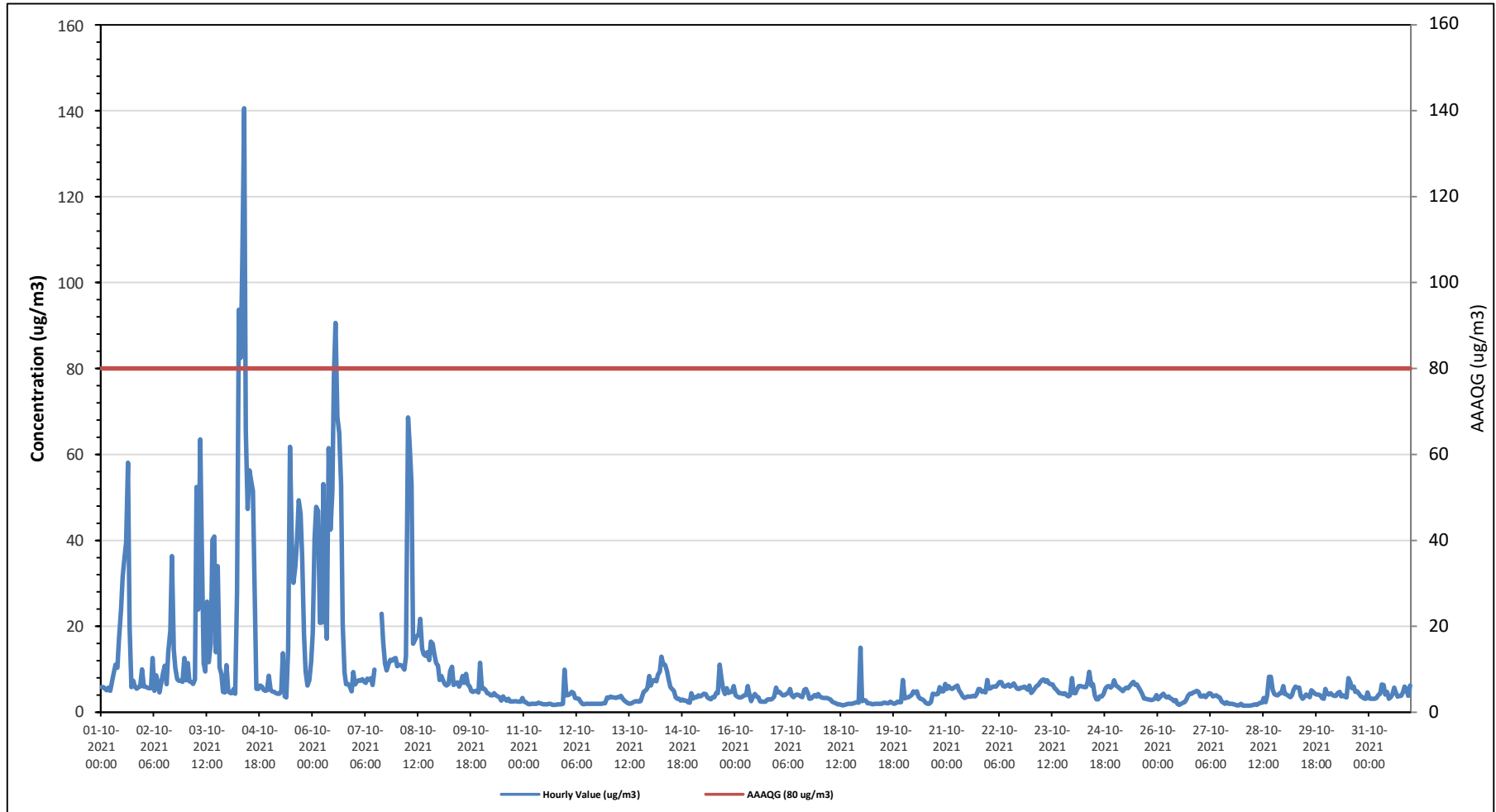
Tamarack Site - October 2021

Summary of Hourly Averages

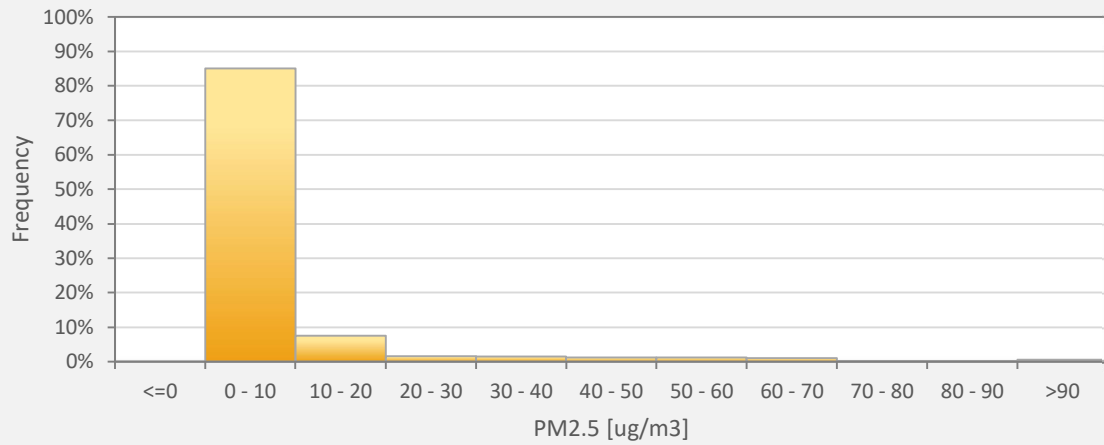
### PARTICULATE MATTER 2.5 (PM<sub>2.5</sub>) in µg/m<sup>3</sup>

Alberta Ambient Air Quality Guideline (AAQG): 1-Hour 80 µg/m <sup>3</sup> , Alberta Ambient Air Quality Objective (AAQO): 24-Hour 29 µg/m <sup>3</sup>																																	
Number of 1-Hour Exceedences: 5										Number of 24-Hour Exceedences: 2																							
Maximum Hourly Value: 141 µg/m <sup>3</sup> on October 4 at hour 9										Hours in Service: 744																							
Maximum Daily Value: 36.0 µg/m <sup>3</sup> on October 6										Hours of Data: 741																							
Minimum Hourly Value: 2 µg/m <sup>3</sup> on October 28 at hour 0										Hours of Missing Data: 0																							
Minimum Daily Value: 2 µg/m <sup>3</sup> on October 11										Hours of Calibration: 3																							
Monthly Average: 8.3 µg/m <sup>3</sup>										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						
Oct 1	6	6	6	5	6	5	7	9	11	10	17	24	32	36	40	58	20	6	7	6	6	6	6	10	5	58	14.3						
Oct 2	6	6	6	6	6	13	5	9	7	5	7	9	11	7	14	19	36	15	10	8	7	7	7	13	5	36	9.9						
Oct 3	7	11	7	7	7	8	52	24	64	38	11	10	26	12	16	40	41	14	34	11	9	5	5	11	5	64	19.5						
Oct 4	5	5	4	5	4	28	94	83	106	141	66	47	56	54	52	27	6	5	6	6	5	5	5	9	4	141	34.2						
Oct 5	5	5	5	5	4	4	5	14	4	3	15	62	39	30	34	39	49	46	36	18	10	6	7	12	3	62	19.0						
Oct 6	19	41	48	47	21	21	53	24	17	62	43	51	79	91	69	65	53	21	9	7	6	5	9	5	91	36.0							
Oct 7	6	7	7	7	8	7	7	8	8	8	6	10	C	C	C	23	16	11	10	11	12	12	12	13	6	23	10.0						
Oct 8	11	11	11	11	10	13	69	62	53	16	17	18	18	22	15	14	13	14	12	16	16	14	11	11	10	69	19.8						
Oct 9	8	8	7	7	6	7	10	11	6	7	7	6	7	8	7	9	6	6	5	5	5	5	12	5	12	7.0							
Oct 10	6	6	5	4	4	4	4	4	4	4	3	3	4	3	3	3	3	3	3	3	3	2	2	3	2	6	3.5						
Oct 11	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	10	2	10	2.3							
Oct 12	4	4	4	5	5	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	5	2.7							
Oct 13	3	4	4	3	3	4	4	4	3	3	2	2	2	2	2	3	3	2	3	4	5	5	6	8	2	8	3.4						
Oct 14	6	7	8	7	9	10	13	11	11	10	8	6	5	5	3	3	3	3	3	3	3	3	2	4	2	13	6.0						
Oct 15	3	4	4	4	4	4	4	4	3	3	3	4	4	5	4	11	8	5	4	6	5	5	6	3	11	4.6							
Oct 16	4	4	3	3	4	4	4	6	4	3	4	4	4	4	3	2	2	2	3	3	3	3	4	6	2	6	3.5						
Oct 17	5	5	4	4	4	4	5	5	4	4	4	4	4	4	4	5	5	4	3	3	4	4	4	4	3	5	4.1						
Oct 18	4	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	15	2	15	2.9							
Oct 19	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	8	2	8	2.4							
Oct 20	3	3	3	4	4	5	5	5	4	3	3	3	2	2	2	4	4	4	4	4	6	5	5	7	2	7	3.8						
Oct 21	5	6	6	5	6	6	6	5	5	4	3	4	4	4	4	4	4	5	5	5	5	5	8	3	8	4.8							
Oct 22	6	6	6	6	6	7	7	7	6	6	6	6	6	6	7	6	6	5	6	6	6	6	5	6	5	7	6.0						
Oct 23	5	5	6	6	6	7	8	8	7	7	7	7	6	6	5	5	4	4	4	4	4	4	8	4	8	5.7							
Oct 24	5	4	5	6	6	6	6	6	7	9	6	7	4	3	3	4	4	4	6	6	6	6	7	3	9	5.5							
Oct 25	6	6	6	5	5	6	6	6	6	7	7	6	6	5	4	3	3	3	3	3	3	3	4	3	7	4.9							
Oct 26	3	3	4	4	4	3	4	3	3	3	3	2	2	2	2	3	4	4	4	5	5	5	5	2	5	3.4							
Oct 27	4	4	4	4	4	4	4	4	4	4	4	3	3	2	2	2	2	2	2	2	2	2	2	2	2	4	2.9						
Oct 28	2	2	2	2	2	2	2	2	2	2	2	2	3	2	4	8	5	4	4	4	4	4	6	2	8	3.3							
Oct 29	4	4	4	4	4	5	6	6	6	4	3	4	4	4	4	5	5	4	4	4	4	3	3	5	3	6	4.3						
Oct 30	4	4	4	4	4	4	4	5	4	4	4	3	8	7	6	6	5	5	4	4	4	3	3	5	3	8	4.4						
Oct 31	3	3	3	3	3	4	4	6	6	4	5	3	4	4	6	5	4	4	4	5	6	5	4	6	3	6	4.3						
Diurnal Maximum	19	41	48	47	21	28	94	83	106	141	66	62	79	91	69	65	53	46	36	18	16	14	12	15									
Diurnal Average	5.2	6.2	6.2	6.1	5.3	6.5	13.1	11.2	12.0	12.2	8.8	10.2	11.6	11.2	10.7	12.3	10.5	6.9	6.6	5.4	5.1	4.7	4.6	7.6									
<b>C</b>	Monthly Calibration										<b>S</b>	Daily Zero-Span Check										<b>Q</b>	Quality Assurance										
<b>K</b>	Collection Error										<b>N</b>	No Data (Machine Not in Service)										<b>Y</b>	Routine Maintenance					<b>P</b>	Power Failure				
<b>X</b>	Invalid Data (Equipment Malfunction/Recovery)										<b>NRM</b>	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



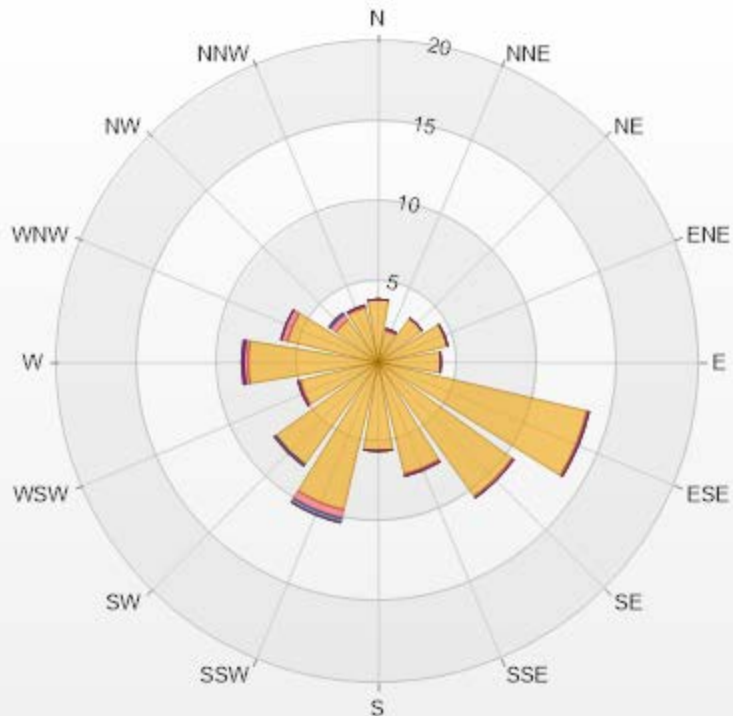
PM2.5[ug/m3(L)] Histogram: Tamarack Monthly: 10-2021 1 Hr.



Classes	PM2.5
<=0	0.00%
0 - 10	85.02%
10 - 20	7.56%
20 - 30	1.62%
30 - 40	1.48%
40 - 50	1.21%
50 - 60	1.21%
60 - 70	1.08%
70 - 80	0.13%
80 - 90	0.13%
>90	0.54%

Wind: Tamarack Poll.: Tamarack-PM2.5[ug/m3(L)] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 99.60% Calm Avg: 0.00 [ug/m3(L)]

Direction	0-50	50-80	80-120	120-240	>240.0	Total
N	3.91	0	0	0	0	3.91
NNE	2.02	0.13	0	0	0	2.15
NE	3.37	0	0	0	0	3.37
ENE	4.45	0	0	0	0	4.45
E	3.91	0	0	0	0	3.91
ESE	13.36	0.13	0	0	0	13.49
SE	10.26	0.13	0	0	0	10.39
SSE	7.15	0.13	0	0	0	7.28
S	5.53	0	0	0	0	5.53
SSW	9.45	0.54	0.27	0	0	10.26
SW	7.83	0	0.13	0	0	7.96
WSW	4.99	0.13	0	0	0	5.12
W	8.1	0.27	0	0.13	0	8.5
WNW	5.8	0.4	0	0	0	6.2
NW	3.24	0.4	0.13	0	0	3.77
NNW	3.51	0.13	0	0	0	3.64
Summary	96.88	2.39	0.53	0.13	0	100



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% Icon Classes (ug/m3(L))	97	0-50	2	50-80	1	80-120	0	120-240	0	>240.0
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## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### Tamarack Site - October 2021

### Summary of Hourly Averages

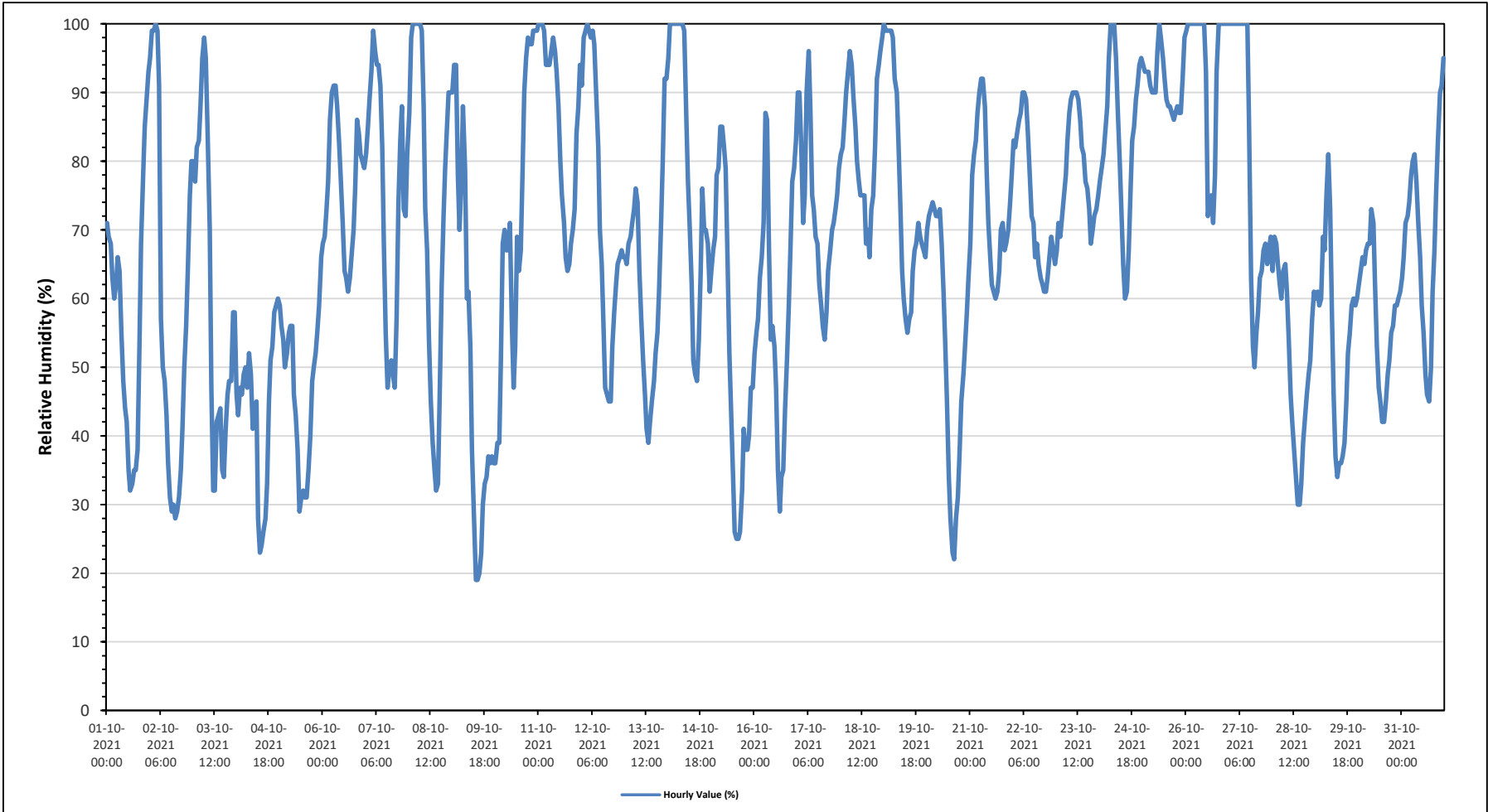
### RELATIVE HUMIDITY (RH) in %

Maximum Hourly Value:	100 %	on October 2 at hour 3	Hours in Service:	744
Maximum Daily Value:	94.0 %	on October 26	Hours of Data:	744
Minimum Hourly Value:	19 %	on October 9 at hour 13	Hours of Missing Data:	0
Minimum Daily Value:	43.6 %	on October 4	Hours of Calibration:	0
Monthly Average:	68.5 %		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	
Oct 1	71	69	68	63	60	62	66	64	55	48	44	42	35	32	33	35	35	38	53	68	78	85	89	93	32	93	57.8	
Oct 2	95	99	99	100	99	91	57	50	48	43	36	31	29	30	28	29	31	35	41	50	56	65	75	80	28	100	58.2	
Oct 3	80	77	82	83	88	95	98	95	84	70	47	32	32	42	43	44	35	34	41	46	48	48	58	58	32	98	60.8	
Oct 4	46	43	47	46	49	50	47	52	49	41	44	45	28	23	24	26	28	33	45	51	53	58	59	60	23	60	43.6	
Oct 5	59	56	54	50	52	55	56	56	46	43	38	29	31	32	31	31	35	40	48	50	52	55	59	66	29	66	46.8	
Oct 6	68	69	73	77	86	90	91	91	88	83	78	71	64	63	61	63	66	70	76	86	84	81	80	79	61	91	76.6	
Oct 7	81	85	89	93	99	96	94	94	91	82	68	55	47	50	51	49	47	57	74	83	88	73	72	81	47	99	75.0	
Oct 8	87	98	100	100	100	100	100	99	88	73	67	54	45	39	35	32	33	45	62	72	79	85	90	90	32	100	73.9	
Oct 9	90	94	94	78	70	77	88	79	60	61	53	38	29	19	19	20	23	30	33	34	37	36	37	36	19	94	51.5	
Oct 10	36	39	39	51	68	70	67	67	71	57	47	53	69	64	67	79	90	95	98	97	97	99	99	99	36	99	71.6	
Oct 11	100	100	100	99	94	94	94	96	98	96	93	88	80	75	71	66	64	65	68	70	73	84	88	94	64	100	85.4	
Oct 12	91	98	99	100	99	98	99	97	90	82	70	65	57	47	46	45	45	53	58	62	65	66	67	66	45	100	73.5	
Oct 13	66	65	68	69	71	73	76	74	64	57	51	46	41	39	42	45	48	52	55	61	70	80	92	92	39	92	62.4	
Oct 14	95	100	100	100	100	100	100	100	100	99	86	77	70	62	51	49	48	54	64	76	70	70	68	61	48	100	79.2	
Oct 15	64	67	69	78	79	85	85	82	79	66	52	43	34	26	25	25	26	32	41	38	38	40	47	47	25	85	52.8	
Oct 16	52	55	57	63	66	71	87	86	68	54	56	53	47	35	29	34	35	44	51	59	67	77	79	83	29	87	58.7	
Oct 17	90	90	82	71	75	90	96	88	75	73	69	68	62	59	56	54	58	64	67	70	71	73	75	79	54	96	73.1	
Oct 18	81	82	86	90	93	96	94	89	85	80	77	75	75	68	70	66	73	75	82	92	94	96	98	66	98	83.0		
Oct 19	100	99	99	99	99	98	92	90	83	74	64	60	57	55	57	58	64	67	68	71	69	68	67	66	55	100	76.0	
Oct 20	70	72	73	74	73	72	72	73	68	61	54	45	34	28	23	22	28	31	37	45	49	53	58	63	22	74	53.3	
Oct 21	68	78	81	83	87	90	92	92	88	78	71	66	62	61	60	61	64	70	71	67	68	70	74	78	60	92	74.2	
Oct 22	83	82	84	86	87	90	90	89	84	78	72	71	66	68	65	63	62	61	61	63	66	69	67	65	61	90	73.8	
Oct 23	67	71	69	72	75	78	83	87	89	90	90	89	86	82	81	77	76	73	68	70	72	73	75	67	90	78.5		
Oct 24	77	79	81	84	88	95	100	100	100	95	87	80	72	65	60	61	67	76	83	85	89	91	94	95	60	100	83.5	
Oct 25	94	93	93	93	91	90	90	90	96	100	98	95	92	89	88	88	87	86	87	88	87	87	92	98	86	100	91.3	
Oct 26	99	100	100	100	100	100	100	100	100	100	100	100	93	72	74	75	71	78	93	100	100	100	100	100	71	100	94.0	
Oct 27	100	100	100	100	100	100	100	100	100	100	100	100	86	63	53	50	55	58	63	64	67	68	65	67	50	100	80.3	
Oct 28	64	69	68	65	62	60	64	65	61	54	46	42	38	34	30	30	33	39	42	46	49	51	57	61	30	69	51.3	
Oct 29	60	61	59	60	69	67	75	81	73	57	46	37	34	36	36	37	39	45	52	55	59	60	59	60	34	81	54.9	
Oct 30	62	64	66	65	67	68	68	73	71	62	53	47	45	42	42	45	49	51	55	56	59	59	60	61	42	73	57.9	
Oct 31	63	66	71	72	74	78	80	81	77	71	66	59	55	49	46	45	50	61	67	75	83	90	91	95	45	95	69.4	
Diurnal Maximum	100	100	100	100	100	100	100	100	100	100	100	95	92	89	88	88	90	95	100	100	100	100	100	100	100	100	100	100
Diurnal Average	76.1	78.1	79.0	79.5	81.3	83.2	83.9	83.2	78.4	71.9	65.3	59.2	53.4	50.1	48.2	48.8	50.6	55.9	61.6	65.8	68.8	71.1	73.8	75.7				
<b>C</b>	Monthly Calibration		<b>S</b>	Daily Zero-Span Check		<b>Q</b>	Quality Assurance																					
<b>K</b>	Collection Error		<b>N</b>	No Data (Machine Not in Service)		<b>Y</b>	Routine Maintenance		<b>P</b>	Power Failure																		
<b>X</b>	Invalid Data (Equipment Malfunction /Recovery)		<b>NRM</b>	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 RH - Tamarack Site*





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - October 2021

Summary of Hourly Averages

### BAROMETRIC PRESSURE (BP) in millibar

Maximum Hourly Value:	949	mb	on October 19 at hour 8	Hours in Service:	744
Maximum Daily Value:	947	mb	on October 31	Hours of Data:	744
Minimum Hourly Value:	917	mb	on October 25 at hour 13	Hours of Missing Data:	0
Minimum Daily Value:	920	mb	on October 26	Hours of Calibration:	0
Monthly Average:	934	mb		Operational Uptime:	100.0

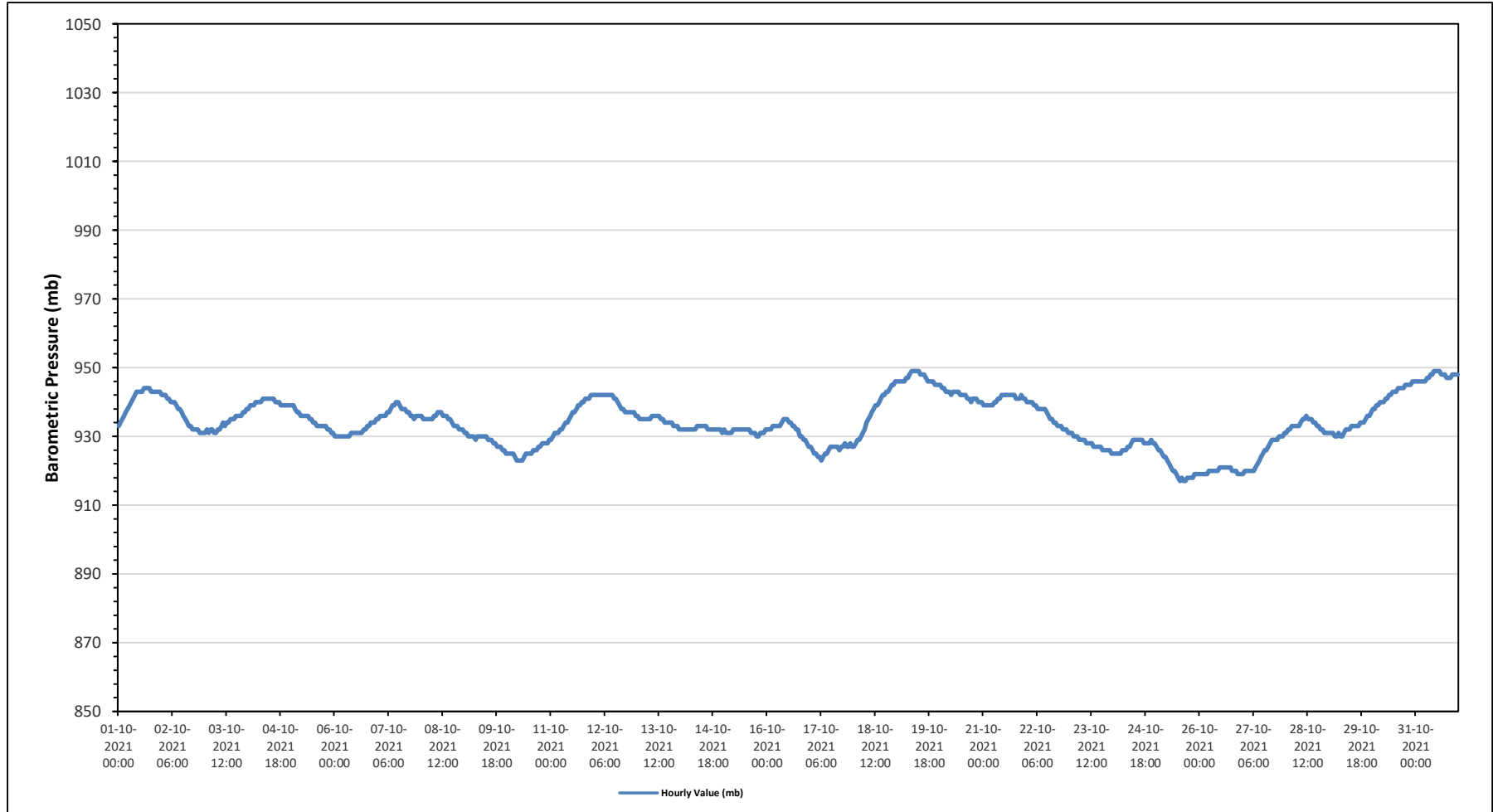
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Oct 1	933	934	935	936	937	938	939	940	941	942	943	943	943	943	944	944	944	944	943	943	943	943	943	943	933	944	941	
Oct 2	942	942	942	941	941	940	940	940	939	938	938	937	936	935	934	933	933	933	932	932	932	932	931	931	931	931	942	936
Oct 3	931	932	931	932	932	931	931	932	932	933	934	933	934	934	935	935	935	936	936	936	936	937	937	938	931	938	934	
Oct 4	938	939	939	939	940	940	940	940	941	941	941	941	941	941	940	940	940	939	939	939	939	939	939	939	938	941	940	
Oct 5	939	939	938	937	937	936	936	936	936	936	935	935	934	934	933	933	933	933	933	933	932	932	931	931	931	939	935	
Oct 6	930	930	930	930	930	930	930	930	930	931	931	931	931	931	931	931	932	932	933	933	934	934	934	935	930	935	931	
Oct 7	935	936	936	936	936	937	937	938	939	939	940	940	939	938	938	938	937	937	936	936	935	936	936	936	935	940	937	
Oct 8	936	935	935	935	935	935	935	936	936	937	937	937	936	936	935	935	935	934	933	933	933	932	932	932	932	937	935	
Oct 9	931	931	930	930	930	930	929	930	930	930	930	930	929	929	929	928	928	927	927	927	927	926	926	925	925	931	929	
Oct 10	925	925	925	925	924	923	923	923	923	924	925	925	925	925	926	926	926	927	927	928	928	928	928	929	923	929	926	
Oct 11	929	930	931	931	931	932	932	933	934	934	935	936	937	937	938	939	939	940	940	941	941	941	942	942	929	942	936	
Oct 12	942	942	942	942	942	942	942	942	942	942	942	941	941	940	939	938	938	937	937	937	937	937	937	936	936	942	940	
Oct 13	936	935	935	935	935	935	935	935	936	936	936	936	936	935	935	934	934	934	934	934	933	933	933	932	932	936	935	
Oct 14	932	932	932	932	932	932	932	932	932	933	933	933	933	933	933	932	932	932	932	932	932	932	931	931	933	932	932	
Oct 15	932	931	931	931	931	932	932	932	932	932	932	932	932	932	932	931	931	930	930	931	931	931	932	930	932	931	931	
Oct 16	932	932	932	933	933	933	933	933	934	935	935	935	934	934	933	933	932	932	930	930	929	929	928	927	927	935	932	
Oct 17	927	926	925	925	924	924	923	924	925	925	926	927	927	927	927	927	926	927	927	928	927	927	928	927	923	928	926	
Oct 18	927	928	929	929	930	931	932	934	935	936	937	938	939	939	940	941	942	942	943	943	944	945	945	946	927	946	937	
Oct 19	946	946	946	946	946	947	947	948	949	949	949	949	949	948	948	948	947	946	946	946	946	945	945	945	945	949	947	
Oct 20	945	944	944	943	943	943	942	943	943	943	943	942	942	942	942	941	941	940	941	941	941	940	940	940	940	945	942	
Oct 21	939	939	939	939	939	939	940	940	941	941	942	942	942	942	942	942	942	942	941	941	941	942	941	941	939	942	941	
Oct 22	940	940	940	940	939	939	938	938	938	938	938	937	936	935	935	934	934	933	933	933	932	932	932	931	931	940	936	
Oct 23	931	931	930	930	930	929	929	929	929	928	928	928	928	927	927	927	927	927	926	926	926	926	925	925	925	931	928	
Oct 24	925	925	925	925	925	926	926	926	927	927	928	929	929	929	929	929	929	928	928	928	928	929	928	928	925	929	927	
Oct 25	927	926	926	925	924	924	923	922	921	920	920	919	918	917	917	917	918	918	918	918	918	919	919	919	915	927	921	
Oct 26	919	919	919	919	919	920	920	920	920	920	920	921	921	921	921	921	921	920	920	920	919	919	919	919	919	921	920	
Oct 27	919	920	920	920	920	920	921	922	923	924	925	926	926	927	928	929	929	929	929	929	930	930	931	919	931	925	925	
Oct 28	931	932	932	933	933	933	933	934	935	935	936	936	935	935	934	934	933	933	932	932	931	931	931	931	931	936	933	
Oct 29	931	931	931	930	930	931	930	930	931	932	932	932	933	933	933	933	933	934	934	934	935	936	936	937	930	937	933	
Oct 30	938	938	939	939	940	940	940	941	941	942	942	943	943	943	944	944	944	944	945	945	945	945	946	946	938	946	942	
Oct 31	946	946	946	946	946	947	947	948	948	949	949	949	949	949	948	948	948	947	947	947	948	948	948	948	946	949	947	
Diurnal Maximum	946	946	946	946	946	947	947	948	949	949	949	949	949	948	948	948	947	947	947	948	948	948	948	948	948	948	948	
Diurnal Average	933	933	933	933	933	933	933	934	934	935	935	935	935	935	935	934	934	934	934	934	934	934	934	934	934	934	934	

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





**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

**Tamarack Site - October 2021**

**Summary of Hourly Averages**

**AMBIENT TEMPERATURE (AT) in Degree Celsius**

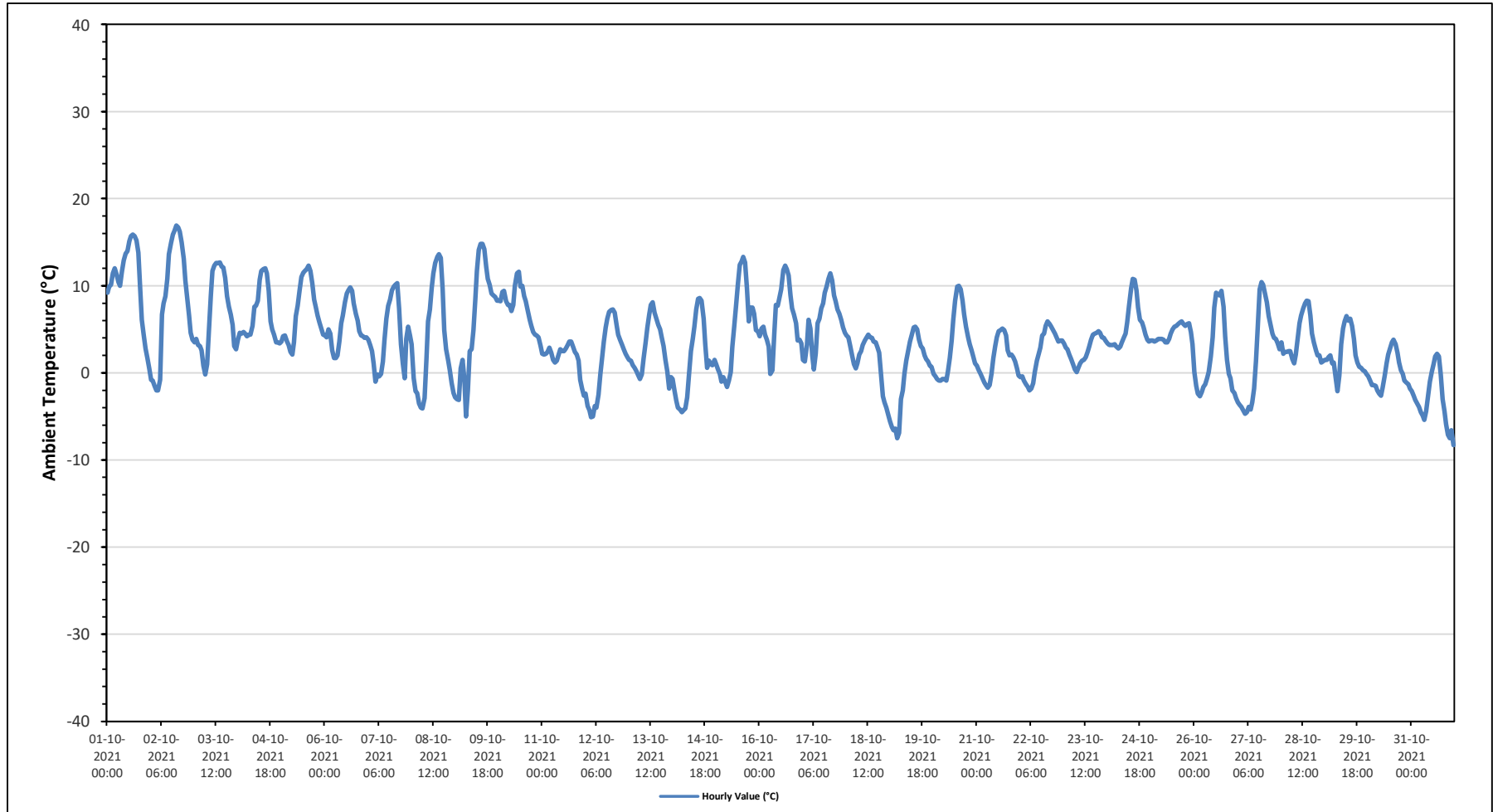
Maximum Hourly Value:	16.9 °C	on October 2 at hour 14	Hours in Service:	744
Maximum Daily Value:	10.5 °C	on October 1	Hours of Data:	744
Minimum Hourly Value:	-8.3 °C	on October 31 at hour 23	Hours of Missing Data:	0
Minimum Daily Value:	-3.1 °C	on October 31	Hours of Calibration:	0
Monthly Average:	3.8 °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
Oct 1	9.2	9.9	10.1	11.4	12	11.3	10.4	10	11.6	12.9	13.7	14	15.1	15.7	15.9	15.7	15.2	13.8	9.6	6.1	4.4	2.8	1.7	0.5	0.5	15.9	10.5
Oct 2	-0.8	-0.9	-1.5	-2	-2	-0.8	6.7	8	8.8	10.8	13.6	14.9	15.9	16.3	16.9	16.7	16.2	15	13.1	10.6	8.6	6.6	4.6	3.8	-2.0	16.9	8.3
Oct 3	3.5	3.9	3.2	3.1	2.6	0.8	-0.2	1	5	8.9	11.7	12.3	12.6	12.6	12.7	12.2	12.1	10.9	8.8	7.6	6.7	5.5	3.1	2.7	-0.2	12.7	6.8
Oct 4	3.8	4.6	4.5	4.7	4.5	4.2	4.4	4.4	5.4	7.6	7.7	8.3	10.7	11.7	11.9	12	11.4	9.4	5.9	5	4.4	3.5	3.5	3.4	3.4	12.0	6.5
Oct 5	3.6	4.2	4.3	3.6	3.2	2.4	2.1	3.5	6.5	7.7	9.4	11	11.5	11.7	11.9	12.3	11.7	10.3	8.4	7.6	6.6	5.8	5.1	4.4	2.1	12.3	7.0
Oct 6	4.3	4.1	5	4.5	2.6	1.7	1.7	2	3.6	5.7	6.6	8.1	9.1	9.5	9.8	9.4	8	6.8	6	4.8	4.3	4.2	4	4.1	1.7	9.8	5.4
Oct 7	3.8	3.2	2.5	1.1	-1	-0.2	-0.4	-0.1	1.3	3.8	6.2	7.7	8.4	9.5	9.9	10.1	10.3	7.4	3.3	1.1	-0.6	3.9	5.3	4.3	-1.0	10.3	4.2
Oct 8	3.3	-0.6	-2.1	-2.3	-3.5	-4	-4.1	-2.9	1.6	5.9	7.3	9.8	11.4	12.6	13.3	13.6	13.2	9.6	4.9	2.7	1.4	0.3	-1.2	-2.3	-4.1	13.6	3.7
Oct 9	-2.8	-3	-3.1	0.5	1.5	-0.8	-5	-2	2.5	2.7	4.9	8.4	11.7	14.1	14.8	14.8	14.2	12.2	10.8	10.1	9.1	8.9	8.7	8.3	-5.0	14.8	5.9
Oct 10	8.3	8.2	9.3	9.4	8.2	7.8	7.8	7.1	7.8	10	11.4	11.6	9.9	10	8.8	8.2	7.2	6.1	5.4	4.7	4.4	4.3	4.1	3.1	3.1	11.6	7.6
Oct 11	2.2	2.1	2.2	2.4	2.9	2.3	1.5	1.2	1.4	2	2.7	2.5	2.5	2.8	3.2	3.6	3.6	3	2.4	2.1	1.4	-0.8	-1.8	-2.6	-2.6	3.6	1.9
Oct 12	-2.4	-3.8	-4.3	-5.1	-5	-3.8	-4	-2.5	-0.1	1.6	3.6	5.2	6.2	7	7.2	7.3	6.9	5.5	4.4	3.8	3.2	2.7	2.2	1.8	-5.1	7.3	1.6
Oct 13	1.5	1.4	0.9	0.6	0.2	-0.3	-0.7	-0.2	1.7	3.4	5.2	6.7	7.8	8.1	6.9	6.2	5.5	5	4.1	3.1	1.5	0.2	-1.8	-0.5	-1.8	8.1	2.8
Oct 14	-0.7	-2	-3.2	-4	-4.2	-4.5	-4.3	-4.1	-2.8	-0.5	2.5	3.9	5.3	7.3	8.5	8.6	8.3	6.2	3.3	0.6	1.4	1	0.9	1.5	-4.5	8.6	1.2
Oct 15	1	0.4	-0.1	-1	-0.5	-1	-1.6	-0.9	0.1	3	5.3	7.7	10.2	12.4	12.8	13.3	12.7	9.7	5.9	7.5	7.5	6.8	4.9	4.8	-1.6	13.3	5.0
Oct 16	4.2	5.1	5.3	4.4	3.8	3	-0.1	0.3	4.5	7.8	7.7	8.7	9.6	11.8	12.3	11.9	11.2	8.9	7.4	6.7	5.7	3.7	3.8	3.4	-0.1	12.3	6.3
Oct 17	1.5	1.3	3.2	6.1	5.1	2	0.4	2.2	5.7	6.2	7.4	8	9.2	9.9	10.8	11.4	10.6	8.9	8.2	7.3	6.8	6.1	5.2	4.6	0.4	11.4	6.2
Oct 18	4.3	4.1	3.1	2	1	0.5	1.1	2.1	2.5	3.2	3.7	4.1	4.4	4.1	4	3.6	3.5	2.9	2.3	-0.2	-2.7	-3.4	-4	-4.9	-4.9	4.4	1.7
Oct 19	-5.6	-6.2	-6.6	-6.4	-7.5	-6.9	-3	-2	-0.1	1.4	2.5	3.6	4.4	5.2	5.3	5	3.8	3.1	2.8	2	1.6	1.3	0.8	0.7	-7.5	5.3	0.0
Oct 20	-0.1	-0.4	-0.7	-0.9	-0.9	-0.7	-0.7	-0.9	0.2	1.7	3.7	6.1	8.3	9.9	10	9.6	8.3	6.7	5.3	4.1	3.3	2.6	1.8	1.1	-0.9	10.0	3.2
Oct 21	0.8	0.3	-0.1	-0.6	-1.1	-1.4	-1.7	-1.4	-0.1	1.7	3.1	4.1	4.8	4.9	5.1	4.9	4.3	2.6	2	2.1	1.8	1.3	0.5	-0.3	-1.7	5.1	1.6
Oct 22	-0.5	-0.4	-0.9	-1.3	-1.6	-2	-1.8	-1.2	0.1	1.4	2.2	2.9	4.3	4.5	5.4	5.9	5.6	5.3	4.9	4.5	4.1	3.6	3.7	3.7	-2.0	5.9	2.2
Oct 23	3.4	2.9	2.7	2.1	1.6	1	0.4	0.1	0.6	1.1	1.4	1.5	1.8	2.4	3	3.8	4.4	4.5	4.6	4.8	4.6	4.1	4	3.7	0.1	4.8	2.7
Oct 24	3.4	3.2	3.2	3.2	3.3	3	2.8	3	3.5	4	4.5	5.8	7.7	9.7	10.8	10.7	9.5	7.5	6.1	5.8	5.2	4.4	3.8	3.6	2.8	10.8	5.3
Oct 25	3.7	3.7	3.6	3.7	3.9	3.9	3.9	3.8	3.5	3.5	3.9	4.5	5	5.3	5.4	5.6	5.8	5.9	5.6	5.4	5.6	5.7	4.7	3.3	3.3	5.9	4.5
Oct 26	0.1	-1.5	-2.4	-2.7	-2.2	-1.6	-1.3	-0.6	0.1	1.9	4.1	7.5	9.2	9	8.9	9.4	7.6	4.2	1.5	-0.1	-0.6	-2	-2.3	-2.9	-2.9	9.4	1.8
Oct 27	-3.4	-3.7	-3.9	-4.3	-4.7	-4.5	-3.9	-4.2	-3.4	-1.8	1.3	5.4	9.6	10.4	10.1	9.1	8.1	6.5	5.5	4.5	4	3.9	3.4	2.7	-4.7	10.4	1.9
Oct 28	3.5	2.2	2.4	2.4	2.5	2.5	1.6	1.1	2.1	3.9	5.7	6.6	7.4	8	8.3	8.2	6.6	4.5	3.5	2.6	2	2	1.2	1.3	1.1	8.3	3.8
Oct 29	1.5	1.5	1.8	2	1.1	1.2	-0.5	-2.1	-0.3	3.3	5.1	5.9	6.5	6	6.2	5.4	3.9	2	1.2	0.7	0.6	0.3	0.2	-0.1	-2.1	6.5	2.2
Oct 30	-0.4	-0.9	-1.4	-1.4	-1.5	-2	-2.4	-2.6	-1.7	-0.3	1.1	2.1	2.8	3.5	3.8	3.3	2.3	1.2	0.3	-0.1	-0.9	-1.1	-1.3	-1.8	-2.6	3.8	0.0
Oct 31	-2.1	-2.6	-3.1	-3.5	-3.9	-4.5	-4.9	-5.4	-4.4	-2.7	-1	0.1	1	1.9	2.2	1.9	-0.2	-3	-4.4	-5.9	-7.1	-7.5	-6.6	-8.3	-8.3	2.2	-3.1
Diurnal Maximum	9.2	9.9	10.1	11.4	12.0	11.3	10.4	10.0	11.6	12.9	13.7	14.9	15.9	16.3	16.9	16.7	16.2	15.0	13.1	10.6	9.1	8.9	8.7	8.3			
Diurnal Average	1.7	1.3	1.1	1.0	0.7	0.3	0.1	0.5	2.2	3.9	5.4	6.7	7.9	8.6	8.9	8.8	8.1	6.5	4.9	3.9	3.2	2.6	2.0	1.5			

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





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - October 2021

Summary of Hourly Averages

### STATION TEMPERATURE (ST) in Degree Celsius

Maximum Hourly Value:	25.6 °C	on October 20 at hour 11	Hours in Service:	744
Maximum Daily Value:	24.6 °C	on October 20	Hours of Data:	744
Minimum Hourly Value:	20.8 °C	on October 9 at hour 6	Hours of Missing Data:	0
Minimum Daily Value:	21.9 °C	on October 31	Hours of Calibration:	0
Monthly Average:	23.1 °C		Operational Uptime:	100.0

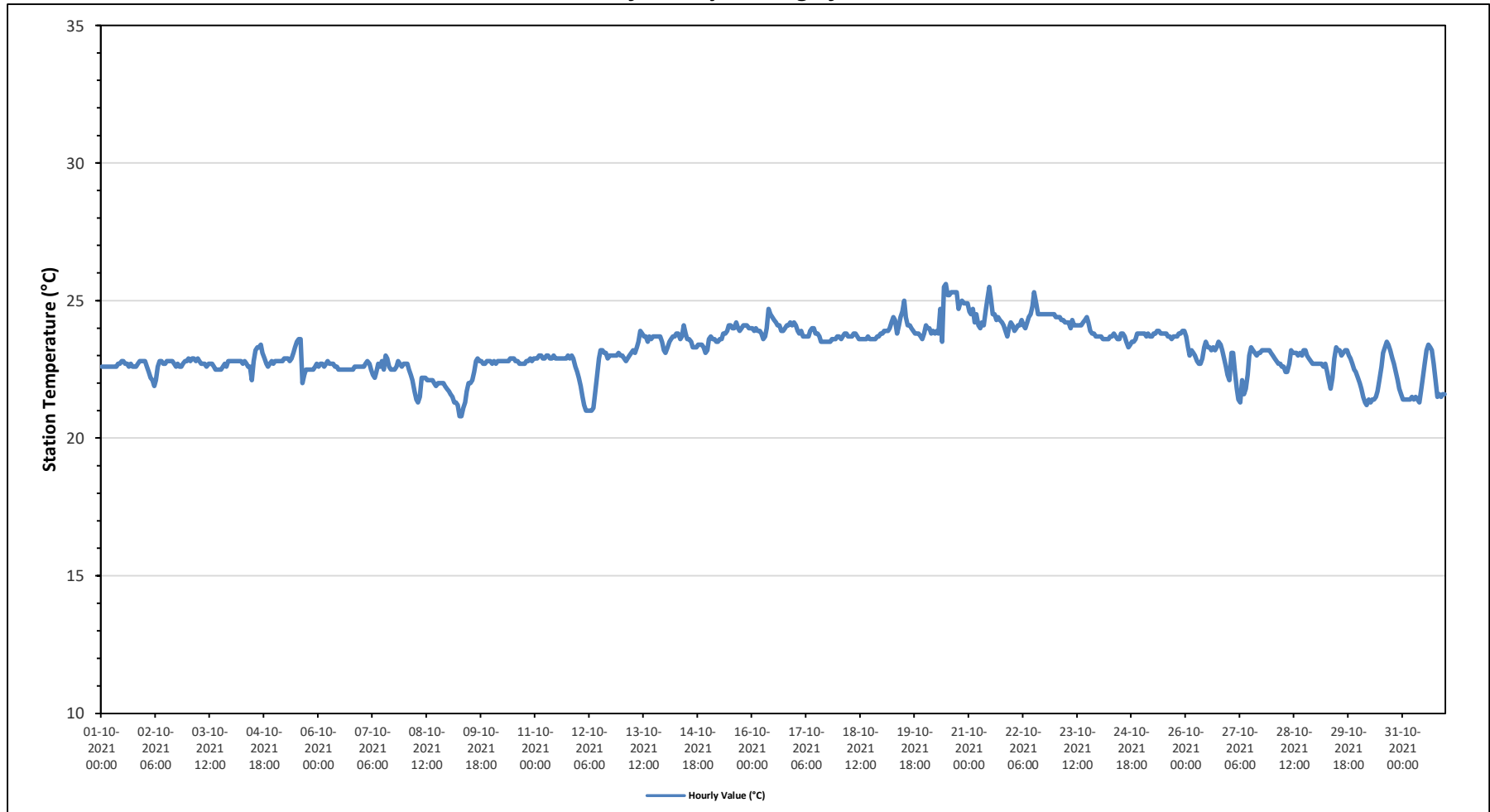
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Oct 1	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.7	22.7	22.8	22.8	22.7	22.7	22.6	22.7	22.6	22.6	22.6	22.7	22.8	22.8	22.8	22.6	22.8	22.7	
Oct 2	22.8	22.6	22.4	22.2	22.1	21.9	22.1	22.6	22.8	22.8	22.7	22.7	22.8	22.8	22.8	22.8	22.7	22.6	22.7	22.6	22.6	22.7	22.8	22.8	21.9	22.8	22.6	
Oct 3	22.9	22.8	22.9	22.9	22.8	22.9	22.8	22.7	22.7	22.7	22.6	22.7	22.7	22.7	22.6	22.5	22.5	22.5	22.5	22.6	22.7	22.6	22.8	22.8	22.5	22.9	22.7	
Oct 4	22.8	22.8	22.8	22.8	22.8	22.8	22.9	22.9	22.9	22.8	22.9	23.1	23.3	23.5	23.6	23.6	22.0	22.3	22.5	22.5	22.5	22.6	22.7	22.8	22.7	22.0	23.4	22.8
Oct 5	22.8	22.8	22.8	22.8	22.8	22.9	22.9	22.9	22.8	22.9	23.1	23.3	23.5	23.6	23.6	22.0	22.3	22.5	22.5	22.5	22.5	22.6	22.7	22.8	22.7	22.0	23.6	22.8
Oct 6	22.6	22.7	22.7	22.6	22.7	22.8	22.7	22.7	22.7	22.6	22.6	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.6	22.6	22.6	22.6	22.5	22.8	22.6	
Oct 7	22.6	22.6	22.7	22.8	22.7	22.5	22.3	22.2	22.4	22.7	22.6	22.8	22.5	23.0	22.9	22.6	22.5	22.5	22.5	22.6	22.8	22.7	22.6	22.7	22.2	23.0	22.6	
Oct 8	22.7	22.7	22.5	22.3	22.1	21.7	21.4	21.3	21.5	22.2	22.2	22.2	22.1	22.1	22.1	22.1	22.0	21.9	22.0	22.0	22.0	21.9	21.8	21.8	21.3	22.7	22.0	
Oct 9	21.7	21.6	21.5	21.3	21.3	21.2	<b>20.8</b>	<b>20.8</b>	21.1	21.3	21.1	21.3	21.7	22.0	22.1	22.4	22.8	22.9	22.8	22.8	22.7	22.7	22.8	22.8	<b>20.8</b>	22.9	22.0	
Oct 10	22.7	22.8	22.7	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.9	22.9	22.9	22.8	22.8	22.7	22.7	22.7	22.7	22.8	22.8	22.9	22.8	22.9	22.7	22.9	22.8	
Oct 11	22.9	22.9	23.0	23.0	22.9	22.9	23.0	23.0	22.9	22.9	23.0	22.9	22.9	22.9	22.9	22.9	22.9	22.9	23.0	22.9	23.0	22.9	23.0	22.9	22.6	22.4	22.9	
Oct 12	22.2	21.9	21.5	21.2	21.0	21.0	21.0	21.1	21.6	22.2	22.2	22.9	23.2	23.2	23.1	23.1	22.9	23.0	23.0	23.0	23.0	23.0	23.1	23.0	21.0	23.2	22.3	
Oct 13	23.0	22.9	22.8	22.9	23.0	23.1	23.2	23.1	23.3	23.5	23.9	23.8	23.7	23.7	23.5	23.7	23.6	23.7	23.7	23.7	23.7	23.7	23.7	23.7	22.8	23.9	23.4	
Oct 14	23.1	23.3	23.5	23.6	23.7	23.7	23.8	23.8	23.6	23.7	24.1	23.8	23.6	23.6	23.5	23.3	23.3	23.4	23.4	23.4	23.3	23.1	23.2	23.1	23.1	24.1	23.5	
Oct 15	23.6	23.7	23.6	23.6	23.5	23.5	23.6	23.6	23.8	23.8	23.9	24.1	24.1	24.0	24.0	24.2	24.0	23.9	24.0	24.1	24.1	24.1	24.0	24.0	23.5	24.2	23.9	
Oct 16	24.0	23.9	24.0	23.9	23.9	23.8	23.6	23.7	24.0	24.7	24.5	24.4	24.3	24.2	24.1	24.1	23.9	23.9	24.0	24.1	24.1	24.2	24.1	24.2	23.6	24.7	24.1	
Oct 17	24.1	23.9	23.8	23.9	23.7	23.7	23.7	23.7	23.9	24.0	24.0	23.8	23.8	23.7	23.5	23.5	23.5	23.5	23.5	23.5	23.6	23.6	23.6	23.7	23.5	24.1	23.7	
Oct 18	23.7	23.6	23.7	23.8	23.8	23.7	23.7	23.8	23.8	23.7	23.6	23.6	23.6	23.6	23.6	23.6	23.7	23.6	23.6	23.6	23.6	23.7	23.7	23.8	23.6	23.8	23.7	
Oct 19	23.8	23.9	23.9	23.9	24.0	24.2	24.4	24.3	23.8	24.1	24.4	24.6	25.0	24.4	24.1	24.1	24.0	23.9	23.8	23.8	23.8	23.7	23.6	23.8	23.6	25.0	24.1	
Oct 20	24.1	24.0	24.0	23.8	23.9	23.8	23.9	23.8	24.7	23.5	25.5	<b>25.6</b>	25.2	25.2	25.3	25.3	25.3	25.3	24.7	24.9	25.0	24.9	24.9	24.9	23.5	<b>25.6</b>	<b>24.6</b>	
Oct 21	24.6	24.5	24.7	24.2	24.5	24.1	24.0	24.2	24.1	24.6	25.0	25.5	25.0	24.5	24.5	24.3	24.4	24.3	24.2	24.1	23.9	23.7	24.0	24.2	23.7	25.5	24.4	
Oct 22	24.1	23.9	24.0	24.1	24.1	24.3	24.1	24.0	24.2	24.4	24.5	24.8	25.3	24.9	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5	23.9	25.3	24.4	
Oct 23	24.4	24.4	24.4	24.3	24.3	24.2	24.2	24.2	24.0	24.3	24.1	24.1	24.1	24.1	24.1	24.2	24.3	24.4	24.2	23.9	23.8	23.8	23.7	23.7	23.7	24.4	24.1	
Oct 24	23.7	23.7	23.6	23.6	23.6	23.6	23.7	23.7	23.8	23.7	23.6	23.6	23.8	23.8	23.7	23.5	23.3	23.4	23.5	23.5	23.6	23.8	23.8	23.8	23.3	23.8	23.6	
Oct 25	23.8	23.8	23.7	23.8	23.7	23.7	23.8	23.8	23.9	23.9	23.8	23.8	23.8	23.8	23.7	23.7	23.6	23.7	23.7	23.7	23.8	23.8	23.9	23.9	23.6	23.9	23.8	
Oct 26	23.7	23.3	23.0	23.2	23.1	23.0	22.8	22.7	22.7	22.9	23.3	23.5	23.3	23.3	23.2	23.3	23.2	23.3	23.5	23.4	23.2	22.9	22.6	22.3	22.3	23.7	23.1	
Oct 27	22.1	23.1	23.1	22.4	21.8	21.4	21.3	22.1	21.6	21.8	22.3	23.0	23.3	23.2	23.1	23.0	23.1	23.1	23.2	23.2	23.2	23.2	23.2	23.1	21.3	23.3	22.7	
Oct 28	23.0	22.9	22.8	22.7	22.7	22.6	22.4	22.4	22.4	22.7	23.2	23.1	23.1	23.1	23.0	23.1	23.0	23.2	23.2	23.0	22.9	22.8	22.7	22.7	22.4	23.2	22.9	
Oct 29	22.7	22.7	22.7	22.7	22.6	22.7	22.4	22.1	21.8	22.2	22.9	23.3	23.2	23.2	23.0	23.1	23.2	23.2	23.0	22.9	22.7	22.5	22.4	22.2	21.8	23.3	22.7	
Oct 30	22.0	21.8	21.5	21.3	21.2	21.4	21.3	21.4	21.4	21.5	21.7	22.1	22.6	23.1	23.3	23.5	23.4	23.2	22.9	22.7	22.4	22.1	21.8	21.6	21.2	23.5	22.1	
Oct 31	21.4	21.4	21.4	21.4	21.4	21.5	21.4	21.5	21.4	21.3	21.7	22.2	22.7	23.2	23.4	23.3	23.2	22.7	22.1	21.5	21.6	21.5	21.6	21.6	21.3	23.4	21.9	
Diurnal Maximum	24.6	24.5	24.7	24.3	24.5	24.3	24.4	24.3	24.7	24.7	25.5	25.6	25.3	25.2	25.3	25.3	25.3	25.3	24.7	24.9	25.0	24.9	24.9	24.9				
Diurnal Average	23.1	23.1	23.0	23.0	22.9	22.9	22.9	22.9	22.9	23.0	23.3	23.4	23.4	23.4	23.4	23.3	23.3	23.3	23.2	23.2	23.2	23.2	23.1	23.1				

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







LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - October 2021

Summary of Hourly Averages

PRECIPITATION in mm

Maximum Hourly Value:	1.9 mm on October 10 at hour 23	Hours in Service:	744
Maximum Daily Value:	6.6 mm on October 10	Hours of Data:	744
Minimum Hourly Value:	0.0 mm on October 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 mm on October 1	Hours of Calibration:	0
Monthly Total:	10.7 mm	Operational Uptime:	100.0

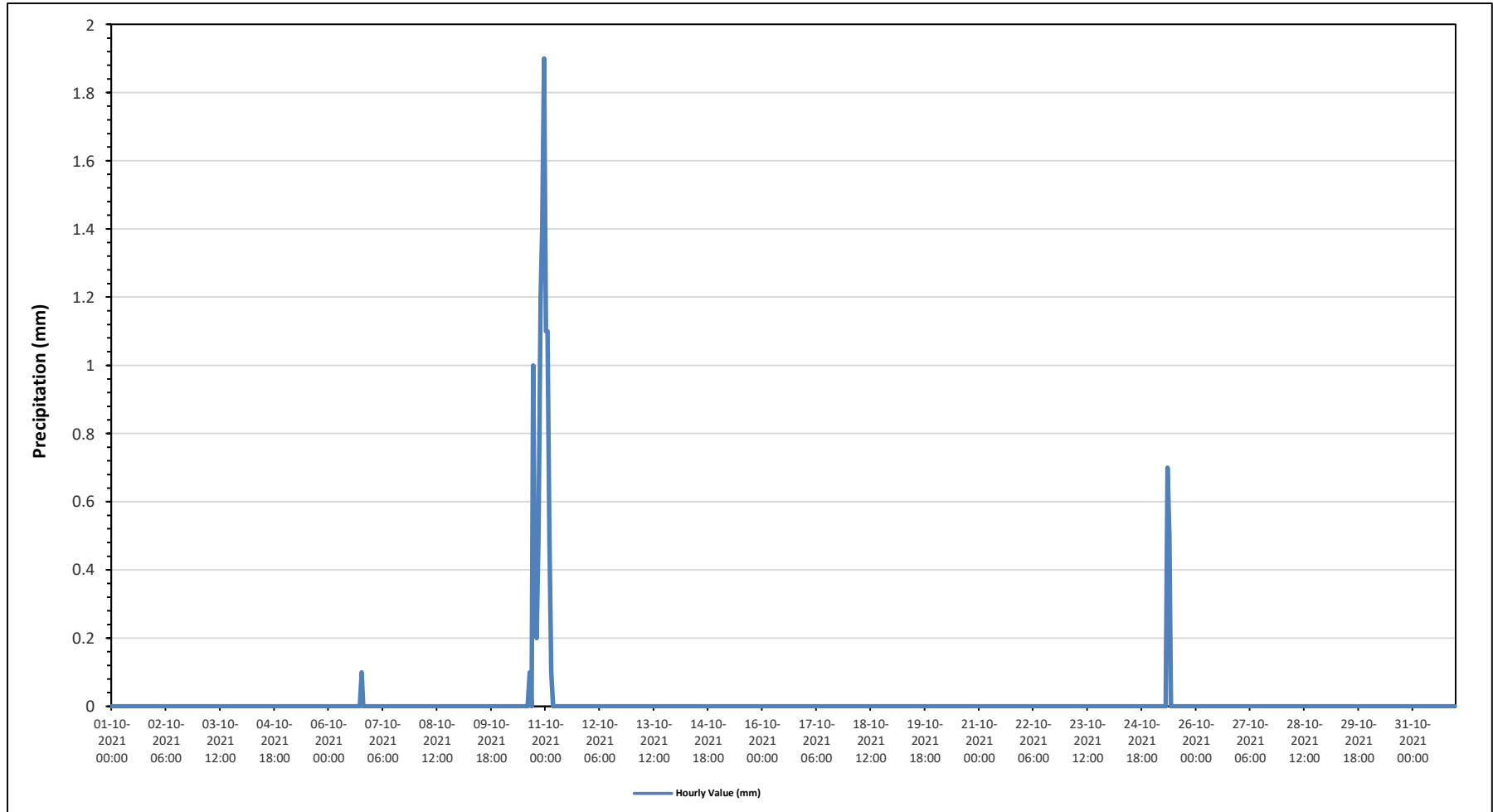
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Total		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Oct 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	
Oct 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Oct 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Oct 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Oct 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Oct 6	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	0.1	0.1
Oct 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Oct 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Oct 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Oct 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	1	0.3	0.2	0.5	1.2	1.4	1.9	0.0	1.9	6.6	
Oct 11	1.1	1.1	0.5	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	1.1	2.8	
Oct 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	
Oct 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	
Oct 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	
Oct 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	
Oct 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	
Oct 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	
Oct 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	
Oct 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	
Oct 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	
Oct 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	
Oct 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	
Oct 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	
Oct 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	
Oct 25	0	0	0	0	0	0	0	0	0.7	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.7	1.2	
Oct 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	
Oct 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	
Oct 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	
Oct 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	
Oct 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	
Oct 31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	
Diurnal Maximum	1.1	1.1	0.5	0.1	0.0	0.0	0.0	0.0	0.7	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.0	0.3	0.2	0.5	1.2	1.4	1.9				
Diurnal Average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1				

<b>C</b>	Monthly Calibration	<b>S</b>	Daily Zero-Span Check	<b>Q</b>	Quality Assurance
<b>K</b>	Collection Error	<b>N</b>	No Data (Machine Not in Service)	<b>Y</b>	Routine Maintenance
<b>X</b>	InValid Data (Equipment Malfunction /Recovery)	<b>NRM</b>	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	<b>P</b>	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 - October 2021

### Summary of Hourly Averages

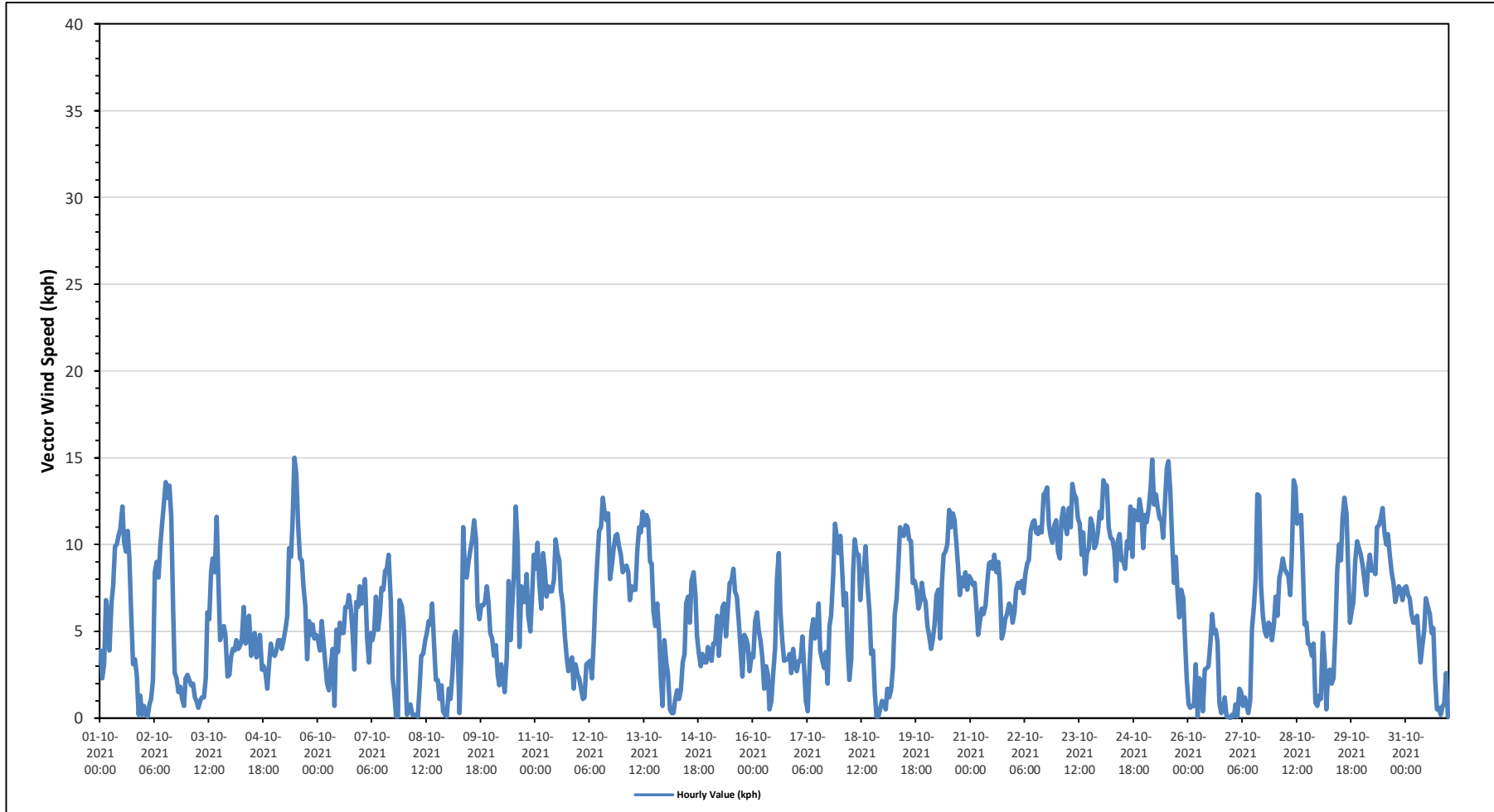
### VECTOR WIND SPEED (VWS) in km/hr

Maximum Hourly Value:	15.0 kph on October 5 at hour 11	Hours in Service:	744
Maximum Daily Value:	10.9 kph on October 23	Hours of Data:	744
Minimum Hourly Value:	0.0 kph on October 26 at hour 23	Hours of Missing Data:	0
Minimum Daily Value:	1.1 kph on October 16	Hours of Calibration:	0
Monthly Average:	1.6 kph	Operational Uptime:	100.0

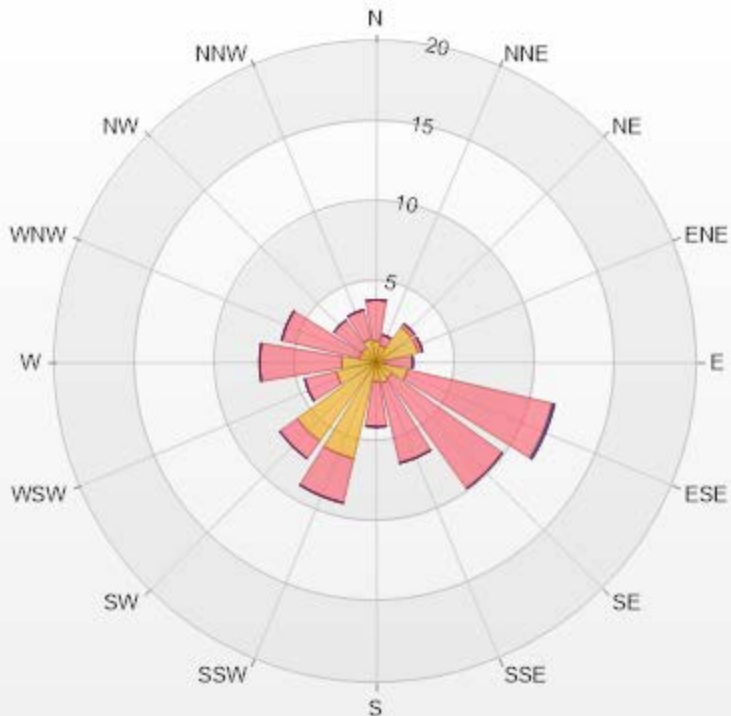
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average																	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23																
Oct 1	3.9	2.3	3.1	6.8	6.1	3.9	6.7	7.6	9.9	10.0	10.5	10.9	12.2	10.2	9.6	10.8	9.3	6.0	3.1	3.4	2.5	0.2	1.3	0.2	0.2	12.2	5.9																
Oct 2	0.7	0.2	0.1	0.8	1.1	2.2	8.4	9.0	8.1	10.0	11.3	12.3	13.6	12.7	13.4	11.6	6.3	2.6	2.3	1.5	1.8	1.1	0.7	2.3	0.1	13.6	5.2																
Oct 3	2.5	2.2	1.9	2.0	1.2	1.0	0.6	1.0	1.2	1.2	2.3	6.1	5.7	8.4	9.2	8.4	11.6	7.7	4.5	4.9	5.3	4.8	2.4	2.5	0.6	11.6	3.0																
Oct 4	3.5	4.0	3.9	4.5	4.0	4.2	4.6	6.4	4.3	4.5	5.9	3.6	3.8	4.9	3.5	3.7	4.8	2.8	3.0	2.6	1.7	3.0	4.3	3.7	1.7	6.4	1.5																
Oct 5	3.6	3.9	4.5	4.5	4.0	4.5	5.2	5.9	9.8	9.3	11.3	15.0	14.1	11.1	9.2	9.1	7.6	6.5	3.4	5.6	4.8	5.4	4.6	4.8	3.4	15.0	6.2																
Oct 6	4.5	3.9	5.6	4.3	3.2	2.0	1.6	3.0	4.0	0.7	5.1	3.8	5.5	4.9	4.9	6.4	6.4	7.1	6.4	5.0	2.8	6.7	6.4	7.6	0.7	7.6	3.3																
Oct 7	6.6	7.3	8.0	4.6	3.2	4.9	4.5	5.1	7.0	5.1	6.0	7.5	7.4	8.5	8.6	9.4	6.8	2.3	1.5	0.1	0.1	6.8	6.5	5.6	0.1	9.4	4.4																
Oct 8	3.3	0.2	0.6	0.8	0.2	0.2	0.2	0.1	1.9	3.6	3.7	4.5	4.9	5.6	5.4	6.6	4.3	2.2	2.2	1.1	1.9	0.4	0.2	0.1	0.1	6.6	2.0																
Oct 9	1.7	1.1	2.5	4.7	5.0	3.9	0.3	3.7	11.0	8.2	8.1	9.0	9.7	10.3	11.4	10.3	6.5	5.7	6.5	6.5	6.9	7.6	6.7	4.9	0.3	11.4	6.2																
Oct 10	4.6	3.6	4.2	2.5	1.9	3.1	2.4	1.5	3.5	7.9	4.5	6.3	8.3	12.2	10.0	4.1	7.6	6.7	6.7	8.3	5.9	5.0	7.2	9.4	1.5	12.2	3.8																
Oct 11	8.6	10.1	7.9	6.3	9.5	8.6	7.0	7.6	7.3	7.3	8.0	10.3	9.5	9.1	7.3	6.6	4.7	3.5	2.7	3.2	3.5	1.7	3.1	2.5	1.7	10.3	5.9																
Oct 12	2.3	1.7	1.1	1.2	3.1	3.2	3.3	2.3	4.5	7.0	9.0	10.8	11.0	12.7	11.8	11.4	11.8	8.0	8.8	9.8	10.5	10.6	9.9	9.4	1.1	12.7	6.8																
Oct 13	8.4	8.6	8.8	8.4	6.8	7.6	7.4	7.4	9.7	11.0	10.7	11.9	11.1	11.7	11.4	9.0	8.9	6.1	5.3	6.6	4.9	2.3	0.7	4.5	0.7	11.9	7.8																
Oct 14	3.2	2.6	0.5	0.3	0.3	1.1	1.6	1.1	1.6	3.2	3.7	6.6	7.0	5.5	7.9	8.4	7.1	4.7	3.7	3.0	3.7	3.2	3.2	4.1	0.3	8.4	3.0																
Oct 15	3.5	3.3	4.3	4.3	5.9	3.6	5.1	6.4	6.6	4.7	6.5	7.8	7.9	8.6	7.3	7.0	5.6	3.8	2.4	4.8	4.6	4.2	2.7	3.7	2.4	8.6	5.0																
Oct 16	3.5	5.6	6.1	5.1	4.5	3.5	1.7	3.0	2.5	0.5	1.0	2.6	4.0	8.0	9.5	6.2	4.5	3.3	3.4	3.4	3.7	2.6	4.0	3.0	0.5	9.5	1.1																
Oct 17	2.7	3.3	3.3	4.7	3.0	1.0	0.4	3.0	5.0	5.7	4.6	5.0	6.6	3.9	3.3	2.9	3.8	2.0	5.3	5.9	8.2	11.2	10.5	9.5	0.4	11.2	2.0																
Oct 18	10.5	8.8	6.5	7.2	4.2	2.2	3.4	8.4	10.3	9.4	9.4	6.8	8.4	8.7	9.9	7.7	6.1	3.7	3.9	1.4	0.1	0.6	1.0	0.1	0.1	10.5	5.6																
Oct 19	0.9	0.5	1.7	1.2	1.6	2.9	6.0	6.9	8.7	11.0	10.6	10.5	11.1	11.0	10.3	10.2	7.8	7.9	7.4	6.3	6.7	7.8	7.0	6.7	0.5	11.1	6.6																
Oct 20	5.3	4.7	4.0	4.5	5.4	7.1	7.4	4.6	7.9	9.4	9.6	10.0	12.0	11.0	11.8	11.4	10.1	8.6	7.1	8.1	7.6	8.4	7.4	8.2	4.0	12.0	7.9																
Oct 21	8.0	7.7	7.8	6.3	4.8	5.6	6.3	6.0	6.5	7.9	8.9	9.0	8.6	9.4	8.4	9.0	7.8	4.6	5.0	5.7	6.0	6.6	6.4	5.5	4.6	9.4	6.8																
Oct 22	6.1	7.4	7.8	7.5	7.9	7.2	8.3	8.9	9.1	10.8	11.3	11.4	10.7	10.6	11.0	10.7	12.9	13.0	13.3	11.1	10.5	10.1	11.1	11.4	6.1	13.3	9.9																
Oct 23	9.6	9.2	11.4	12.1	11.1	10.6	12.1	11.0	13.5	12.9	12.7	11.5	11.2	9.4	10.7	8.3	9.5	9.8	11.5	11.1	9.8	10.0	10.7	11.9	8.3	13.5	10.9																
Oct 24	11.5	13.7	13.4	13.4	11.0	10.4	10.3	9.7	7.9	10.2	10.6	9.1	9.1	8.6	10.2	9.8	12.2	9.3	12.0	11.8	11.4	12.6	11.9	9.8	7.9	13.7	10.1																
Oct 25	11.7	11.3	12.1	13.3	14.9	12.3	12.9	12.2	11.5	11.4	10.4	12.4	14.4	14.8	13.1	9.9	7.8	9.3	7.1	5.8	7.4	6.9	4.7	2.3	2.3	14.9	10.1																
Oct 26	0.8	0.6	0.7	0.7	3.1	0.1	2.3	1.5	0.4	2.8	2.9	3.0	4.3	6.0	4.9	5.1	4.4	0.9	0.3	0.5	1.2	0.1	0.1	0.0	0.0	6.0	1.7																
Oct 27	0.2	0.1	0.8	0.1	1.7	1.5	0.7	1.2	0.8	0.3	1.0	5.2	6.4	8.1	12.9	12.8	7.6	5.9	5.0	4.7	5.5	5.4	4.5	5.3	0.1	12.9	3.2																
Oct 28	7.0	5.9	8.1	8.5	9.2	8.6	8.4	8.2	7.1	9.4	13.7	13.3	11.2	11.6	11.7	9.0	5.4	5.5	4.3	4.2	3.6	4.3	0.9	0.7	0.7	13.7	7.0																
Oct 29	1.3	1.1	4.9	3.3	0.5	2.7	2.8	2.0	2.3	5.4	8.5	10.0	9.1	11.5	12.7	11.8	8.8	5.5	6.2	6.7	9.1	10.2	9.8	9.4	0.5	12.7	5.5																
Oct 30	8.8	8.0	7.1	8.6	9.4	8.5	8.6	8.3	11.0	11.1	11.5	12.1	10.7	10.0	10.6	9.4	8.4	7.8	6.7	7.2	7.6	7.4	6.8	7.5	6.7	12.1	8.8																
Oct 31	7.6	7.1	6.9	6.0	5.5	5.5	5.9	4.4	3.2	4.2	5.1	6.9	6.4	6.0	4.9	5.2	2.2	0.5	0.6	0.2	0.7	0.8	2.6	0.1	0.1	7.6	3.4																
Diurnal Maximum	12	14	13	13	15	12	13	12	14	13	14	15	14	15	13	13	13	13	13	12	11	13	12	12																			
Diurnal Average	5.0	4.8	5.1	5.1	4.9	4.6	5.0	5.4	6.4	7.0	7.7	8.6	8.9	9.2	9.3	8.5	7.4	5.6	5.2	5.2	5.2	5.4	5.1	5.1																			
<b>C</b>	Monthly Calibration										<b>S</b>	Daily Zero-Span Check										<b>Q</b>	Quality Assurance																				
<b>K</b>	Collection Error										<b>N</b>	No Data (Machine Not in Service)										<b>Y</b>	Routine Maintenance										<b>P</b>	Power Failure									
<b>X</b>	InValid Data (Equipment Malfunction /Recovery)										<b>NRM</b>	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: 10-2021 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 13.71% 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	1.34	2.55	0	0	0	3.89
NNE	1.08	0.67	0	0	0	1.75
NE	2.69	0.27	0	0	0	2.96
ENE	2.69	0.27	0	0	0	2.96
E	0.54	1.75	0	0	0	2.29
ESE	2.02	9.27	0.13	0	0	11.42
SE	1.21	8.47	0	0	0	9.68
SSE	1.34	5.11	0	0	0	6.45
S	1.21	2.82	0	0	0	4.03
SSW	6.18	2.82	0	0	0	9
SW	6.05	1.34	0	0	0	7.39
WSW	2.55	2.02	0	0	0	4.57
W	2.15	5.11	0	0	0	7.26
WNW	1.08	4.97	0	0	0	6.05
NW	1.08	2.15	0	0	0	3.23
NNW	1.48	1.88	0	0	0	3.36
Summary	34.69	51.47	0.13	0	0	86.29



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% Icon Classes (kph)

35 1.8-6.0

51 6.0-15.0

0 15.0-29.0

0 29.0-39.0

0 >39.0



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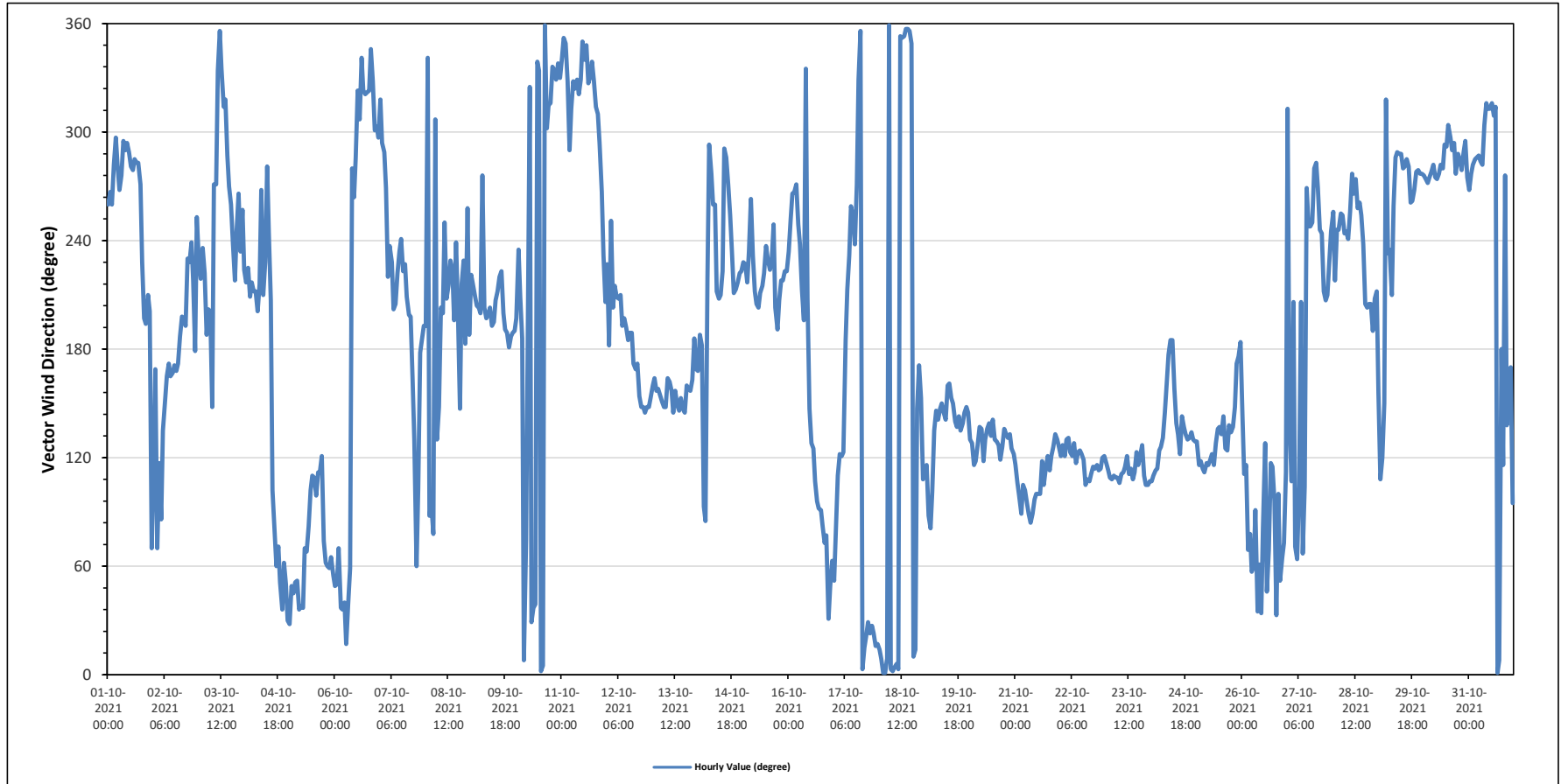
**Tamarack Site - October 2021**

**Summary of Hourly Averages**

**WIND DIRECTION (VWD) in sector**

Monthly Average:		169 (SSE) degree														Hours in Service:		744									
																Hours of Data:		744									
																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	
Oct 1	WSW	W	WSW	W	WNW	W	W	W	WNW	WNW	WNW	WNW	W	W	WNW	W	W	W	SW	SSW	SSW	SSW	SSW	ENE	279	W	
Oct 2	ESE	SSE	ENE	ESE	E	SE	SSE	SSE	S	SSE	SSE	S	SSE	S	S	SSW	SSW	S	SW	SW	WSW	SW	S	WSW	176	S	
Oct 3	SW	SW	SW	SW	S	SSW	SSW	SE	W	W	NNW	N	NNW	NW	NW	WNW	W	WSW	SW	SW	WSW	W	SW	WSW	275	W	
Oct 4	SW	SW	SW	SSW	SW	SSW	SSW	SSW	SW	W	SSW	SW	W	WSW	SSW	E	ENE	ENE	ENE	NE	NE	ENE	NE	NNE	208	SSW	
Oct 5	NNE	NE	NE	NE	NE	NE	NE	NE	ENE	ENE	E	E	ESE	ESE	E	ESE	ESE	ESE	ENE	ENE	ENE	ENE	ENE	NE	80	E	
Oct 6	NE	NE	ENE	NE	NE	NE	NNE	NE	ENE	W	W	WNW	NW	NW	NNW	NW	NW	NW	NW	NNW	NNW	WNW	WNW	WNW	336	NNW	
Oct 7	NW	WNW	WNW	W	SW	SW	SW	SSW	SSW	SW	SW	WSW	SW	SW	SSW	SSW	SSW	SSE	SE	ENE	ESE	S	S	S	224	SW	
Oct 8	S	NNW	E	E	ENE	NW	SE	SE	SSW	SSW	WSW	SSW	SSW	SW	SW	SSW	SSW	SSW	SSW	SW	SW	S	WSW	S	212	SSW	
Oct 9	SW	SW	SSW	SSW	SSW	SSW	W	SSW	SSW	SSW	SSW	S	SSW	SSW	SSW	SW	SW	SSW	S	S	S	S	S	S	201	SSW	
Oct 10	SSW	SW	SSW	S	N	ENE	S	NW	NNE	NE	NE	NNW	NNW	N	N	N	WNW	NW	NW	NNW	NNW	NNW	NNW	NNW	340	NNW	
Oct 11	NNW	N	NNW	NNW	WNW	NW	NNW	NW	NNW	NW	NNW	N	NNW	NNW	NW	NNW	NNW	NNW	NNW	NW	WNW	W	SW	SSW	328	NNW	
Oct 12	SW	S	WSW	SSW	SSW	SSW	SSW	SSW	S	SSW	S	S	S	S	S	SSE	S	SSE	SE	SE	SE	SE	SE	SE	173	S	
Oct 13	SSE	SSE	SSE	SSE	SSE	SSE	SE	SE	SSE	SSE	SSE	SE	SSE	SSE	SE	SSE	SE	SE	SSE	SSE	SSE	SSE	SSE	SSE	155	SSE	
Oct 14	SSE	S	S	E	E	SW	WNW	W	WSW	WSW	SSW	SSW	SSW	SSW	SW	WNW	WNW	W	WSW	SW	SSW	SSW	SW	SW	238	SW	
Oct 15	SW	SW	SW	SW	W	SW	SSW	SSW	SSW	SSW	SSW	SSW	SW	SW	SW	SW	WSW	SSW	S	SSW	SW	SW	SW	SW	223	SW	
Oct 16	SW	WSW	W	W	W	WSW	SW	SSW	SSW	NNW	SSW	SE	SE	ESE	E	E	E	ENE	ENE	NNE	NE	ENE	ENE	ENE	130	SE	
Oct 17	NE	ENE	ESE	ESE	ESE	ESE	S	SSW	SW	WSW	WSW	SW	W	NNW	N	N	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	9	N	
Oct 18	NNE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	NNW	N	NNE	SE	S	SSE	ESE	2	N	
Oct 19	ESE	ESE	E	E	E	SE	SE	SE	SE	SSE	SE	SE	SSE	SSE	SSE	SSE	SE	SE	SE	SE	SE	SE	SE	SE	145	SE	
Oct 20	SE	SE	ESE	ESE	SE	SE	SE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	SE	SE	SE	SE	SE	SE	130	SE	
Oct 21	ESE	ESE	E	E	ESE	E	E	E	E	E	E	E	E	E	E	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	107	ESE	
Oct 22	ESE	SE	ESE	SE	SE	ESE	ESE	SE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	118	ESE	
Oct 23	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	112	ESE	
Oct 24	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	SSE	S	S	S	SSE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	135	SE	
Oct 25	SE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	SE	SE	SE	ESE	SE	SE	SE	SE	S	S	S	128	SE	
Oct 26	SE	ESE	ESE	ENE	ENE	ENE	ENE	E	NE	ENE	NE	E	SE	NE	ENE	ESE	ESE	E	NNE	E	NE	ENE	ENE	ESE	82	E	
Oct 27	NW	SE	ESE	SSW	ENE	ENE	ESE	SSW	ENE	ESE	W	WSW	WSW	WSW	W	W	WSW	WSW	SSW	SSW	SSW	SSW	SSW	SSW	251	WSW	
Oct 28	WSW	SW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	W	W	WSW	W	W	WSW	W	WSW	SSW	SSW	SSW	SSW	S	SSW	249	WSW
Oct 29	SSE	ESE	ESE	SSE	NW	SW	SW	SSW	WSW	WNW	WNW	WNW	W	W	WNW	W	W	W	W	W	W	W	W	W	274	W	
Oct 30	W	W	W	W	W	W	W	W	W	W	W	W	W	W	WNW	WNW	WNW	WNW	W	WNW	WNW	W	WNW	WNW	W	284	WNW
Oct 31	W	W	W	WNW	WNW	WNW	WNW	W	WNW	NW	NW	NW	NW	NW	NW	N	N	S	ESE	W	SE	SSE	SSE	E	297	WNW	
<b>C</b>	Monthly Calibration							<b>S</b>	Daily Zero-Span Check							<b>Q</b>	Quality Assurance										
<b>K</b>	Collection Error							<b>N</b>	No Data (Machine Not in Service)							<b>Y</b>	Routine Maintenance							<b>P</b>	Power Failure		
<b>X</b>	Invalid Data (Machine Malfunction /Recovery)							<b>NRM</b>	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 - October 2021

Summary of Hourly Averages

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

WIND SPEED																											
Maximum Hourly Value:		15.0 kph on October 5 at hour 11														Hours in Service:		744									
Maximum Daily Value:		10.9 kph on October 23														Hours of Data:		744									
Minimum Hourly Value:		0.0 kph on October 26 at hour 23														Hours of Missing Data:		0									
Minimum Daily Value:		1.1 kph on October 16														Hours of Calibration:		0									
Monthly Average:		1.6 kph														Operational Uptime:		100									
WIND DIRECTION																											
Monthly Average:		169 (SSE) 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
Oct 1	3.9	2.3	3.1	6.8	6.1	3.9	6.7	7.6	9.9	10.0	10.5	10.9	12.2	10.2	9.6	10.8	9.3	6.0	3.1	3.4	2.5	0.2	1.3	0.2	0.2	12.2	5.9
Oct 2	0.7	0.2	0.1	0.8	1.1	2.2	8.4	9.0	8.1	10.0	11.3	12.3	13.6	12.7	13.4	11.6	6.3	2.6	2.3	1.5	1.8	1.1	0.7	2.3	0.1	13.6	5.2
Oct 3	2.5	2.2	1.9	2.0	1.2	1.0	0.6	1.0	1.2	1.2	2.3	6.1	5.7	8.4	9.2	8.4	11.6	7.7	4.5	4.9	5.3	4.8	2.4	2.5	0.6	11.6	3.0
Oct 4	3.5	4.0	3.9	4.5	4.0	4.2	4.6	6.4	4.3	4.5	5.9	3.6	3.8	4.9	3.5	3.7	4.8	2.8	3.0	2.6	1.7	3.0	4.3	3.7	1.7	6.4	1.5
Oct 5	3.6	3.9	4.5	4.5	4.0	4.5	5.2	5.9	9.8	9.3	11.3	15.0	14.1	11.1	9.2	9.1	7.6	6.5	3.4	5.6	4.8	5.4	4.6	4.8	3.4	15.0	6.2
Oct 6	4.5	3.9	5.6	4.3	3.2	2.0	1.6	3.0	4.0	0.7	5.1	3.8	5.5	4.9	4.9	6.4	6.4	7.1	6.4	5.0	2.8	6.7	6.4	7.6	0.7	7.6	3.3
Oct 7	6.6	7.3	8.0	4.6	3.2	4.9	4.5	5.1	7.0	5.1	6.0	7.5	7.4	8.5	8.6	9.4	6.8	2.3	1.5	0.1	0.1	6.8	6.5	5.6	0.1	9.4	4.4
Oct 8	3.3	0.2	0.6	0.8	0.2	0.2	0.1	1.9	3.6	3.7	4.5	4.9	5.6	5.4	6.6	4.3	2.2	2.2	1.1	1.9	0.4	0.2	0.1	0.1	6.6	2.0	
Oct 9	1.7	1.1	2.5	4.7	5.0	3.9	0.3	3.7	11.0	8.2	8.1	9.0	9.7	10.3	11.4	10.3	6.5	5.7	6.5	6.5	6.7	7.6	6.7	4.9	0.3	11.4	6.2
Oct 10	4.6	3.6	4.2	2.5	1.9	3.1	2.4	1.5	3.5	7.9	4.5	6.3	8.3	12.2	10.0	4.1	7.6	6.7	6.7	8.3	5.9	5.0	7.2	9.4	1.5	12.2	3.8
Oct 11	8.6	10.1	7.9	6.3	9.5	8.6	7.0	7.6	7.3	7.3	8.0	10.3	9.5	9.1	7.3	6.6	4.7	3.5	2.7	3.2	3.5	1.7	3.1	2.5	1.7	10.3	5.9
Oct 12	2.3	1.7	1.1	1.2	3.1	3.2	3.3	2.3	4.5	7.0	9.0	10.8	11.0	12.7	11.8	11.4	11.8	8.0	8.8	9.8	10.5	10.6	9.9	9.4	1.1	12.7	6.8
Oct 13	8.4	8.6	8.8	8.4	6.8	7.6	7.4	7.4	9.7	11.0	10.7	11.9	11.1	11.7	11.4	9.0	8.9	6.1	5.3	6.6	4.9	2.3	0.7	4.5	0.7	11.9	7.8
Oct 14	3.2	2.6	0.5	0.3	0.3	1.1	1.6	1.1	1.6	3.2	3.7	6.6	7.0	5.5	7.9	8.4	7.1	4.7	3.7	3.0	3.7	3.2	3.2	4.1	0.3	8.4	3.0
Oct 15	3.5	3.3	4.3	4.3	5.9	3.6	5.1	6.4	6.6	4.7	6.5	7.8	7.9	8.6	7.3	7.0	5.6	3.8	2.4	4.8	4.6	4.2	2.7	3.7	2.4	8.6	5.0
Oct 16	3.5	5.6	6.1	5.1	4.5	3.5	1.7	3.0	2.5	0.5	1.0	2.6	4.0	8.0	9.5	6.2	4.5	3.3	3.4	3.4	3.7	2.6	4.0	3.0	0.5	9.5	1.1
Oct 17	2.7	3.3	3.3	4.7	3.0	1.0	0.4	3.0	5.0	5.7	4.6	5.0	6.6	3.9	3.3	2.9	3.8	2.0	5.3	5.9	8.2	11.2	10.5	9.5	0.4	11.2	2.0
Oct 18	10.5	8.8	6.5	7.2	4.2	2.2	3.4	8.4	10.3	9.4	9.4	6.8	8.4	8.7	9.9	7.7	6.1	3.7	3.9	1.4	0.1	0.1	0.6	1.0	0.1	10.5	5.6
Oct 19	0.9	0.5	1.7	1.2	1.6	2.9	6.0	6.9	8.7	11.0	10.6	10.5	11.1	11.0	10.3	10.2	7.8	7.9	7.4	6.3	6.7	7.8	7.0	6.7	0.5	11.1	6.6
Oct 20	5.3	4.7	4.0	4.5	5.4	7.1	7.4	4.6	7.9	9.4	9.6	10.0	12.0	11.0	11.8	11.4	10.1	8.6	7.1	8.1	7.6	8.4	7.4	8.2	4.0	12.0	7.9



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Tamarack Site - October 2021

Summary of Hourly Averages

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

WIND SPEED		Maximum Hourly Value: 15.0 kph on October 5 at hour 11		Hours in Service: 744																							
		Maximum Daily Value: 10.9 kph on October 23		Hours of Data: 744																							
		Minimum Hourly Value: 0.0 kph on October 26 at hour 23		Hours of Missing Data: 0																							
		Minimum Daily Value: 1.1 kph on October 16		Hours of Calibration: 0																							
		Monthly Average: 1.6 kph		Operational Uptime: 100																							
WIND DIRECTION		Monthly Average: 169 (SSE) 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			
Oct 21	8.0	7.7	7.8	6.3	4.8	5.6	6.3	6.0	6.5	7.9	8.9	9.0	8.6	9.4	8.4	9.0	7.8	4.6	5.0	5.7	6.0	6.6	6.4	5.5	4.6	9.4	6.8
	ESE	ESE	E	E	ESE	E	E	E	E	E	E	E	E	ESE	ESE	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	SE			
Oct 22	6.1	7.4	7.8	7.5	7.9	7.2	8.3	8.9	9.1	10.8	11.3	11.4	10.7	10.6	11.0	10.7	12.9	13.0	13.3	11.1	10.5	10.1	11.1	11.4	6.1	13.3	9.9
	ESE	SE	ESE	SE	SE	ESE	ESE	SE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE			
Oct 23	9.6	9.2	11.4	12.1	11.1	10.6	12.1	11.0	13.5	12.9	12.7	11.5	11.2	9.4	10.7	8.3	9.5	9.8	11.5	11.1	9.8	10.0	10.7	11.9	8.3	13.5	10.9
	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	SE	ESE	ESE	ESE	ESE			
Oct 24	11.5	13.7	13.4	13.4	11.0	10.4	10.3	9.7	7.9	10.2	10.6	9.1	9.1	8.6	10.2	9.8	12.2	9.3	12.0	11.8	11.4	12.6	11.9	9.8	7.9	13.7	10.1
	ESE	ESE	ESE	ESE	SE	SE	SE	SSE	S	S	S	SSE	SE	SE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE			
Oct 25	11.7	11.3	12.1	13.3	14.9	12.3	12.9	12.2	11.5	11.4	10.4	12.4	14.4	14.8	13.1	9.9	7.8	9.3	7.1	5.8	7.4	6.9	4.7	2.3	2.3	14.9	10.1
	SE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	SE	SE	SE	ESE	SE	SE	SE	SE	S	S	S	S			
Oct 26	0.8	0.6	0.7	0.7	3.1	0.1	2.3	1.5	0.4	2.8	2.9	3.0	4.3	6.0	4.9	5.1	4.4	0.9	0.3	0.5	1.2	0.1	0.1	0.0	0.0	6.0	1.7
	SE	ESE	ESE	ENE	ENE	ENE	ENE	E	NE	ENE	NE	E	SE	NE	ENE	ESE	ESE	E	NNE	E	NE	ENE	ENE	ESE			
Oct 27	0.2	0.1	0.8	0.1	1.7	1.5	0.7	1.2	0.8	0.3	1.0	5.2	6.4	8.1	12.9	12.8	7.6	5.9	5.0	4.7	5.5	5.4	4.5	5.3	0.1	12.9	3.2
	NW	SE	ESE	SSW	ENE	ENE	ESE	SSW	ENE	ESE	W	WSW	WSW	WSW	W	W	W	WSW	WSW	SSW	SSW	SSW	SSW	SSW			
Oct 28	7.0	5.9	8.1	8.5	9.2	8.6	8.4	8.2	7.1	9.4	13.7	13.3	11.2	11.6	11.7	9.0	5.4	5.5	4.3	4.2	3.6	4.3	0.9	0.7	0.7	13.7	7.0
	WSW	SW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	W	WSW	W	WSW	SW	SSW	SSW	SSW	SSW	SSW	S	SSW	SSW			
Oct 29	1.3	1.1	4.9	3.3	0.5	2.7	2.8	2.0	2.3	5.4	8.5	10.0	9.1	11.5	12.7	11.8	8.8	5.5	6.2	6.7	9.1	10.2	9.8	9.4	0.5	12.7	5.5
	SSE	ESE	ESE	SSE	NW	SW	SSW	WSW	WNW	WNW	WNW	WNW	W	W	WNW	W	W	W	W	W	W	W	W	W			
Oct 30	8.8	8.0	7.1	8.6	9.4	8.5	8.6	8.3	11.0	11.1	11.5	12.1	10.7	10.0	10.6	9.4	8.4	7.8	6.7	7.2	7.6	7.4	6.8	7.5	6.7	12.1	8.8
	W	W	W	W	W	W	W	W	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	W	WNW	WNW	W	WNW	WNW	W			
Oct 31	7.6	7.1	6.9	6.0	5.5	5.5	5.9	4.4	3.2	4.2	5.1	6.9	6.4	6.0	4.9	5.2	2.2	0.5	0.6	0.2	0.7	0.8	2.6	0.1	0.1	7.6	3.4
	W	W	W	WNW	WNW	WNW	WNW	W	WNW	NW	NW	NW	NW	NW	NW	N	N	S	ESE	W	SE	SSE	SSE	E			
<b>C</b>	Monthly Calibration										<b>S</b> Daily Zero-Span Check										<b>Q</b> Quality Assurance						
<b>K</b>	Collection Error										<b>N</b> No Data (Machine Not in Service)										<b>Y</b> Routine Maintenance						
<b>X</b>	Invalid Data (Equipment Malfunction/Recovery)										<b>NRM</b> UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)										<b>P</b> 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**

**Tamarack Site - October 2021**

**Summary of Hour Standard Deviations**

**STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree**

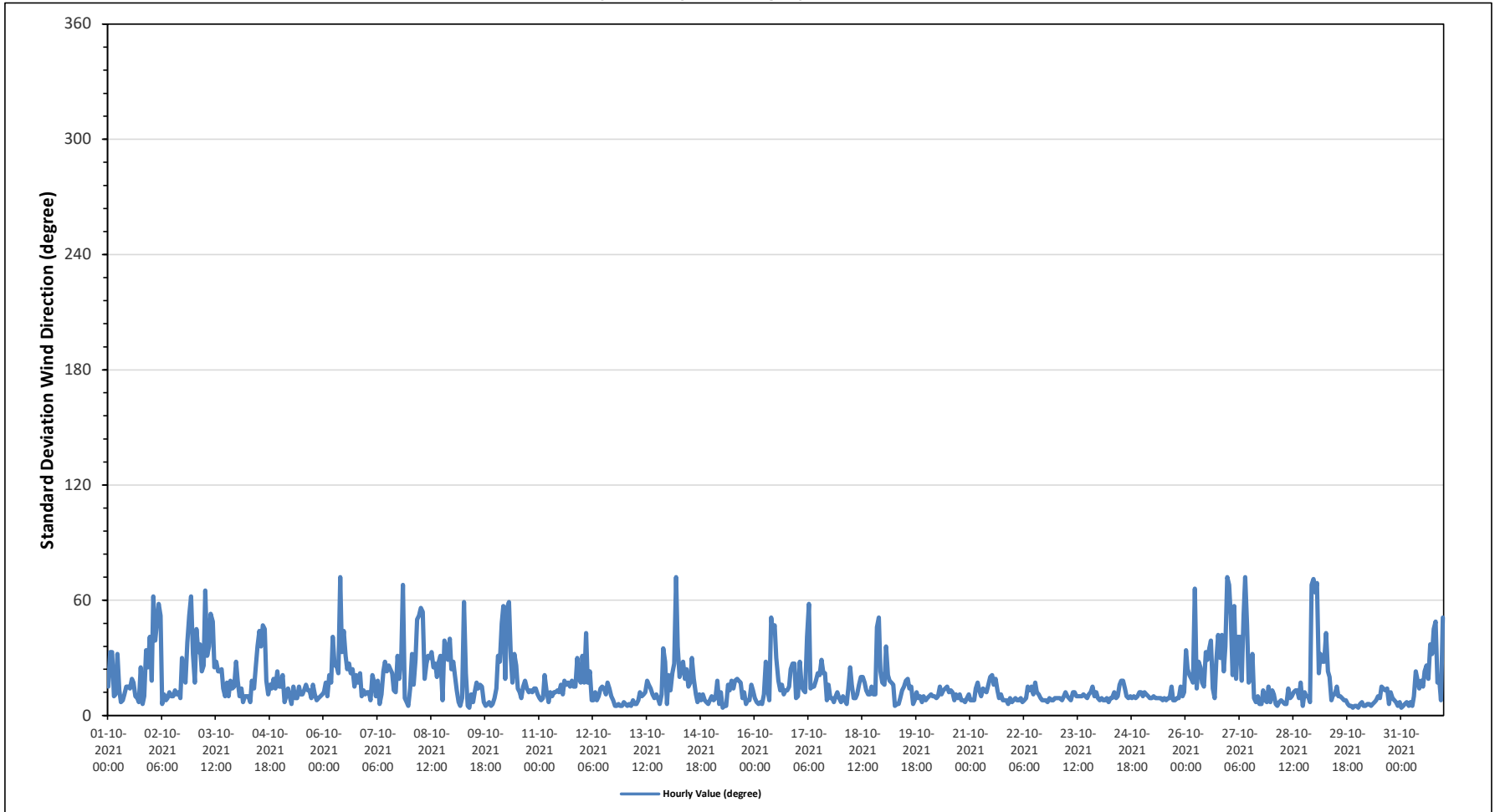
Maximum Hourly Value:	72 degree on October 6 at hour 9	Hours in Service:	744
Minimum Hourly Value:	4 degree on October 9 at hour 9	Hours of Data:	744
		Hours of Missing Data:	0
		Hours of Calibration:	0
		Operational Uptime:	100.0

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
Oct 1	15	33	33	10	11	32	13	7	8	11	15	15	14	19	17	10	9	7	25	6	10	34	25	41	6	41
Oct 2	18	62	39	49	58	52	6	11	8	9	12	10	10	13	11	12	9	30	22	17	38	52	62	32	6	62
Oct 3	17	45	33	37	23	26	65	31	36	53	49	25	28	23	23	24	14	10	17	10	18	14	15	28	10	65
Oct 4	18	10	14	7	10	10	10	7	18	14	26	36	44	36	47	45	18	11	16	14	19	14	23	15	7	47
Oct 5	15	21	7	10	14	10	6	15	9	9	15	11	11	13	16	13	13	9	16	11	8	9	10	11	6	21
Oct 6	12	17	10	21	17	41	26	26	22	72	33	44	31	24	27	22	24	15	21	17	22	10	13	11	10	72
Oct 7	12	12	8	21	17	10	18	6	11	23	28	23	26	24	22	13	12	31	19	31	68	9	7	5	5	68
Oct 8	14	32	16	29	50	52	56	54	19	27	31	30	33	25	27	20	28	31	8	39	36	29	40	24	8	56
Oct 9	28	21	13	7	5	9	59	22	5	4	11	7	12	17	14	16	15	7	5	6	7	5	6	9	4	59
Oct 10	14	31	28	48	57	19	56	59	30	17	32	26	14	12	9	15	18	14	12	13	12	14	14	11	9	59
Oct 11	9	8	9	21	13	7	12	10	12	12	13	12	16	11	18	16	17	15	18	15	15	30	19	17	7	30
Oct 12	31	17	43	17	23	8	8	12	8	10	14	15	14	11	17	14	10	8	5	5	6	5	5	7	5	43
Oct 13	6	5	6	5	8	6	6	8	12	10	11	12	18	16	14	11	9	11	9	6	11	35	28	6	5	35
Oct 14	21	13	22	27	72	36	20	24	28	19	24	15	17	30	19	11	7	11	8	11	8	7	6	8	6	72
Oct 15	10	8	9	18	6	12	4	5	5	16	13	18	14	18	19	18	17	9	12	6	8	8	16	13	4	19
Oct 16	9	7	6	7	6	11	28	14	8	51	44	47	30	18	13	16	11	13	13	15	24	27	27	9	6	51
Oct 17	10	28	15	13	12	41	58	14	15	15	18	22	21	29	22	22	8	16	9	9	7	10	12	9	7	58
Oct 18	7	10	8	6	14	25	16	9	9	11	16	20	20	17	13	11	11	15	11	11	46	51	23	17	6	51
Oct 19	16	36	21	18	17	16	5	6	6	9	13	15	18	19	14	15	6	8	12	9	10	7	10	8	5	36
Oct 20	9	10	11	10	10	9	10	15	11	13	14	15	12	13	12	8	11	9	11	8	8	7	9	11	7	15
Oct 21	8	8	8	14	17	13	10	14	13	12	16	20	21	16	19	13	9	11	8	8	8	6	9	7	6	21
Oct 22	8	9	8	8	9	7	8	9	15	13	15	11	17	12	11	9	8	8	8	7	9	8	8	9	7	17
Oct 23	9	9	9	8	10	12	10	9	8	12	12	10	10	10	10	11	10	9	11	12	15	10	12	9	8	15
Oct 24	8	9	8	8	9	7	9	9	12	9	10	16	18	18	14	10	9	10	9	10	9	10	12	12	7	18
Oct 25	10	12	11	10	9	9	10	9	9	9	9	8	9	8	9	9	15	8	8	9	9	15	10	12	8	15
Oct 26	34	24	21	19	17	66	14	28	25	17	15	33	29	35	39	14	9	28	42	30	42	23	36	72	9	72
Oct 27	68	52	21	57	19	41	41	18	52	72	47	17	19	32	9	7	10	6	6	13	8	7	15	7	6	72
Oct 28	13	11	6	5	7	8	7	6	6	14	9	10	12	13	13	9	17	5	12	10	10	7	68	71	5	71
Oct 29	64	69	22	32	28	28	43	23	20	8	11	11	15	10	10	9	8	8	6	5	5	4	5	5	4	69
Oct 30	4	6	7	5	5	6	6	5	6	7	8	10	9	15	14	13	14	6	12	9	8	7	5	7	4	15
Oct 31	4	5	6	7	5	7	5	10	23	18	14	18	15	23	26	19	37	32	45	49	17	20	8	51	4	51
Diurnal Minimum	4	5	6	5	5	6	4	5	4	8	7	9	8	9	7	6	5	5	5	5	4	5	5	5	5	5
Diurnal Maximum	68	69	43	57	72	66	65	59	52	72	49	47	44	36	47	45	37	32	45	49	68	52	68	72	72	72

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

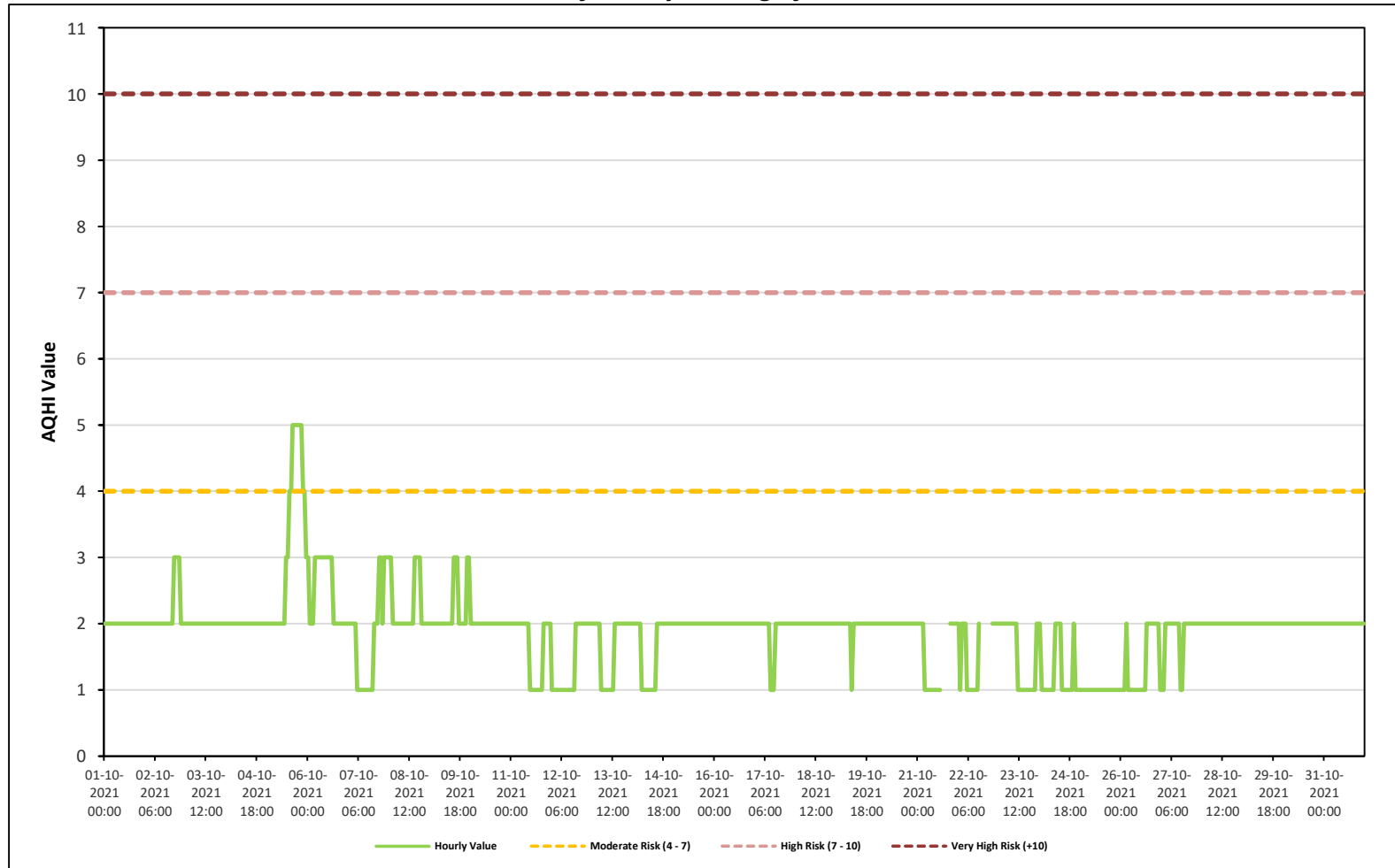
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**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

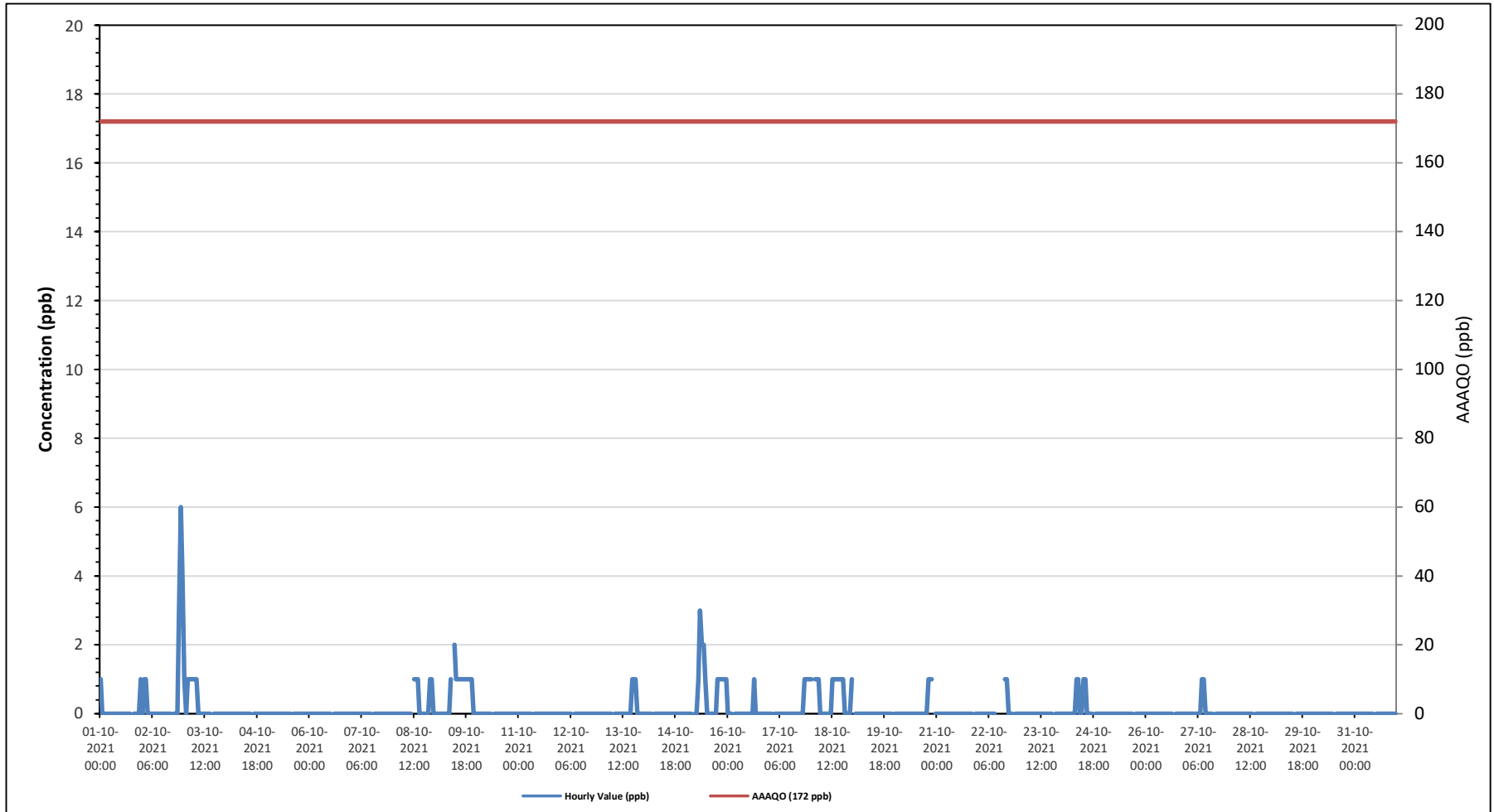
St. Lina Site - October 2021

Summary of Hourly Averages

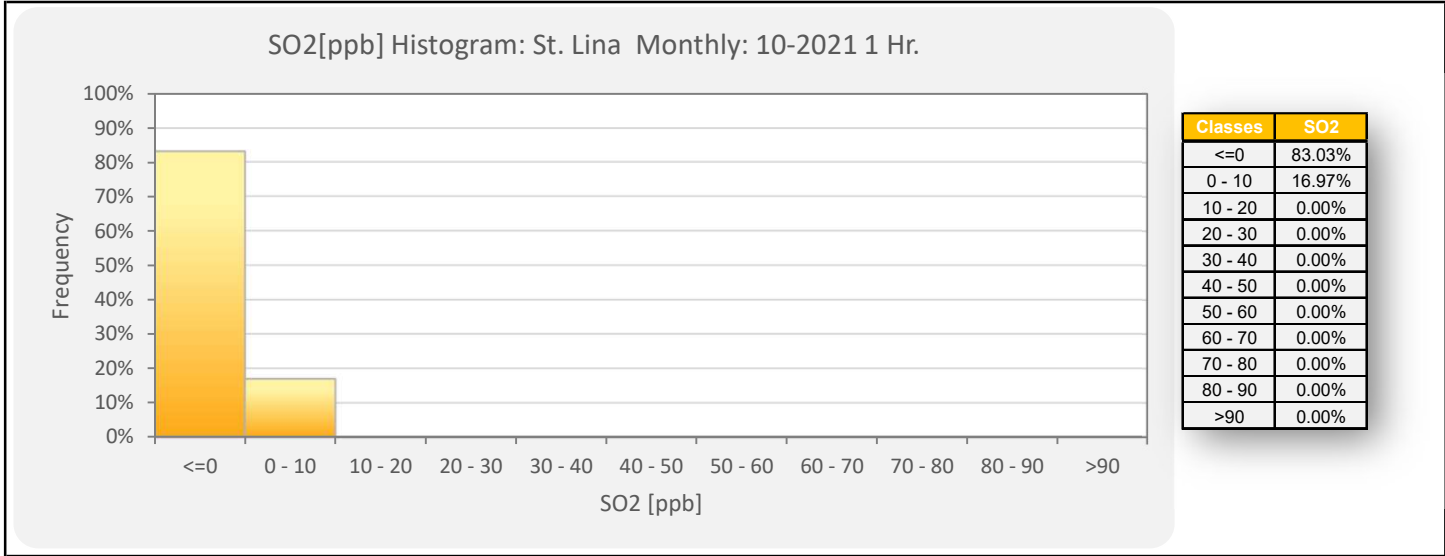
SULPHUR DIOXIDE (SO<sub>2</sub>) in ppb

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: 6 ppb on October 2 at hour 22										Hours in Service: 744																					
Maximum Daily Value: 0.7 ppb on October 2										Hours of Data: 707																					
Minimum Hourly Value: 0 ppb on October 1 at hour 1										Hours of Missing Data: 0																					
Minimum Daily Value: 0.0 ppb on October 4										Hours of Calibration: 37																					
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							
Oct 1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0	1	0.1				
Oct 2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	3	6	4	0	6	0.7				
Oct 3	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0.3				
Oct 4	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				
Oct 5	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				
Oct 6	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				
Oct 7	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				
Oct 8	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	0	0	0	0	0	0	1	1	0	0	1	0.2				
Oct 9	0	0	0	0	0	0	0	0	0	1	S	2	1	1	1	1	1	1	1	1	1	1	1	0	0	2	0.6				
Oct 10	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				
Oct 11	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				
Oct 12	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				
Oct 13	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0.1				
Oct 14	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				
Oct 15	0	0	0	0	S	0	0	1	3	2	2	1	0	0	0	0	0	1	1	1	1	1	1	1	1	3	0.7				
Oct 16	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0.0				
Oct 17	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0.2				
Oct 18	1	S	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	0.5				
Oct 19	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				
Oct 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	S	0	1	0.1				
Oct 21	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				
Oct 22	0	0	0	0	0	0	0	0	0	0	C	C	C	C	C	1	1	0	0	0	0	S	0	0	0	1	0.1				
Oct 23	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				
Oct 24	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	S	0	0	0	0	0	1	0.2			
Oct 25	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				
Oct 26	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				
Oct 27	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0.1				
Oct 28	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				
Oct 29	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				
Oct 30	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				
Oct 31	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				
Diurnal Maximum	1	1	1	1	1	1	1	1	3	2	2	2	1	1	1	1	1	1	1	1	1	3	6	4							
Diurnal Average	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	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 - St. Lina Site**

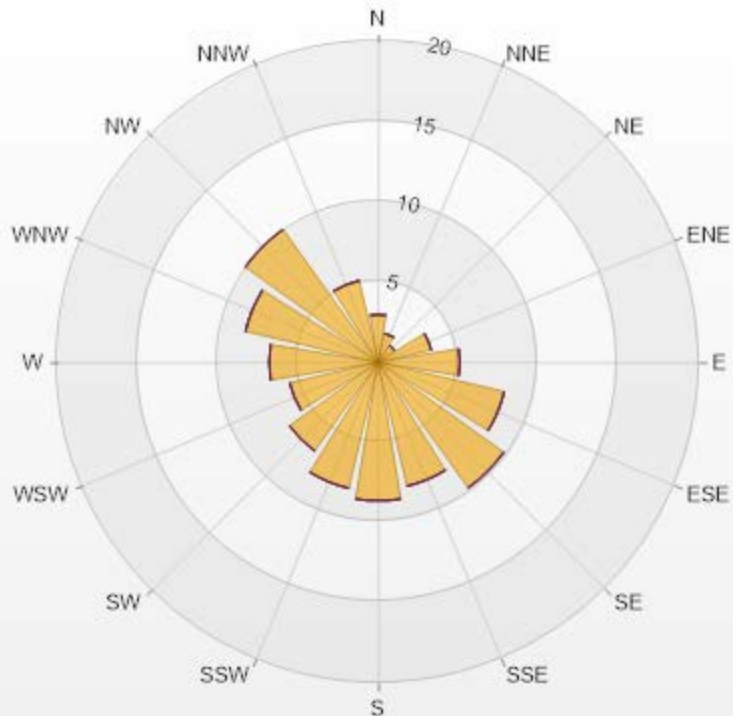






Wind: St. Lina Poll.: St. Lina-SO2[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	2.97	0	0	0	0	2.97
NNE	1.84	0	0	0	0	1.84
NE	1.27	0	0	0	0	1.27
ENE	3.39	0	0	0	0	3.39
E	5.09	0	0	0	0	5.09
ESE	8.06	0	0	0	0	8.06
SE	9.62	0	0	0	0	9.62
SSE	7.92	0	0	0	0	7.92
S	8.63	0	0	0	0	8.63
SSW	8.06	0	0	0	0	8.06
SW	6.79	0	0	0	0	6.79
WSW	5.66	0	0	0	0	5.66
W	6.79	0	0	0	0	6.79
WNW	8.49	0	0	0	0	8.49
NW	10.18	0	0	0	0	10.18
NNW	5.23	0	0	0	0	5.23
Summary	100	0	0	0	0	100



LICA-202110

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% Icon Classes (ppb)

100 0-10

0 10-50

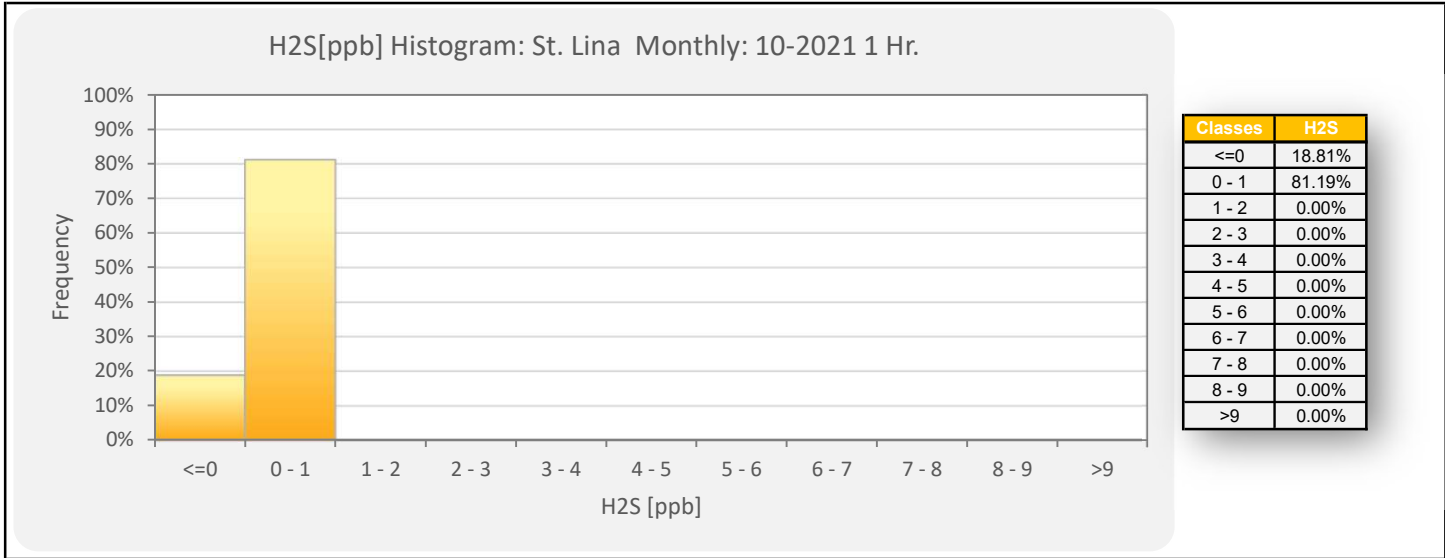
0 50-100

0 100-172

0 >172.0

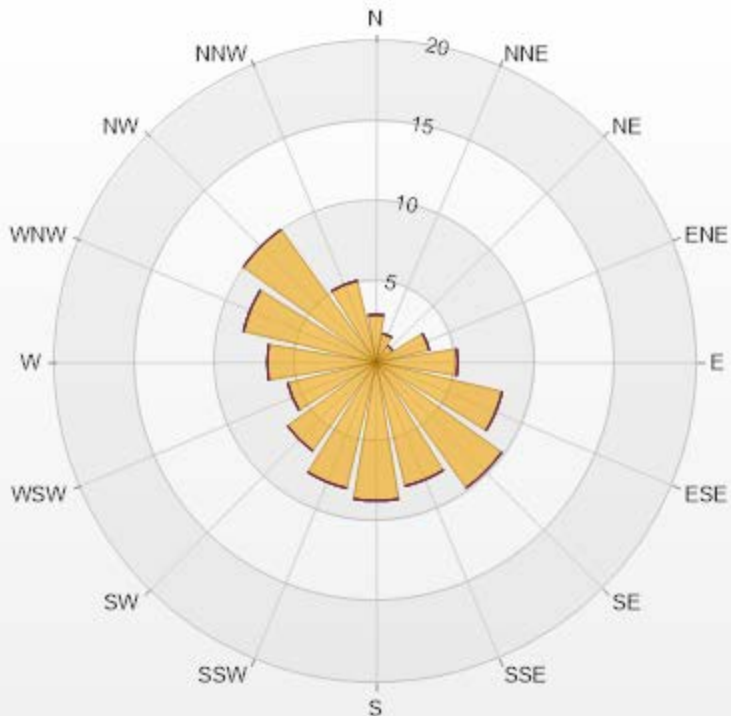






Wind: St. Lina Poll.: St. Lina-H2S[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	2.97	0	0	0	0	2.97
NNE	1.84	0	0	0	0	1.84
NE	1.27	0	0	0	0	1.27
ENE	3.39	0	0	0	0	3.39
E	5.09	0	0	0	0	5.09
ESE	8.06	0	0	0	0	8.06
SE	9.62	0	0	0	0	9.62
SSE	7.92	0	0	0	0	7.92
S	8.63	0	0	0	0	8.63
SSW	8.06	0	0	0	0	8.06
SW	6.79	0	0	0	0	6.79
WSW	5.66	0	0	0	0	5.66
W	6.79	0	0	0	0	6.79
WNW	8.49	0	0	0	0	8.49
NW	10.18	0	0	0	0	10.18
NNW	5.23	0	0	0	0	5.23
Summary	100	0	0	0	0	100



LICA-202110

% 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 - October 2021**

**Summary of Hourly Averages**

**OXIDES OF NITROGEN (NOx) in ppb**

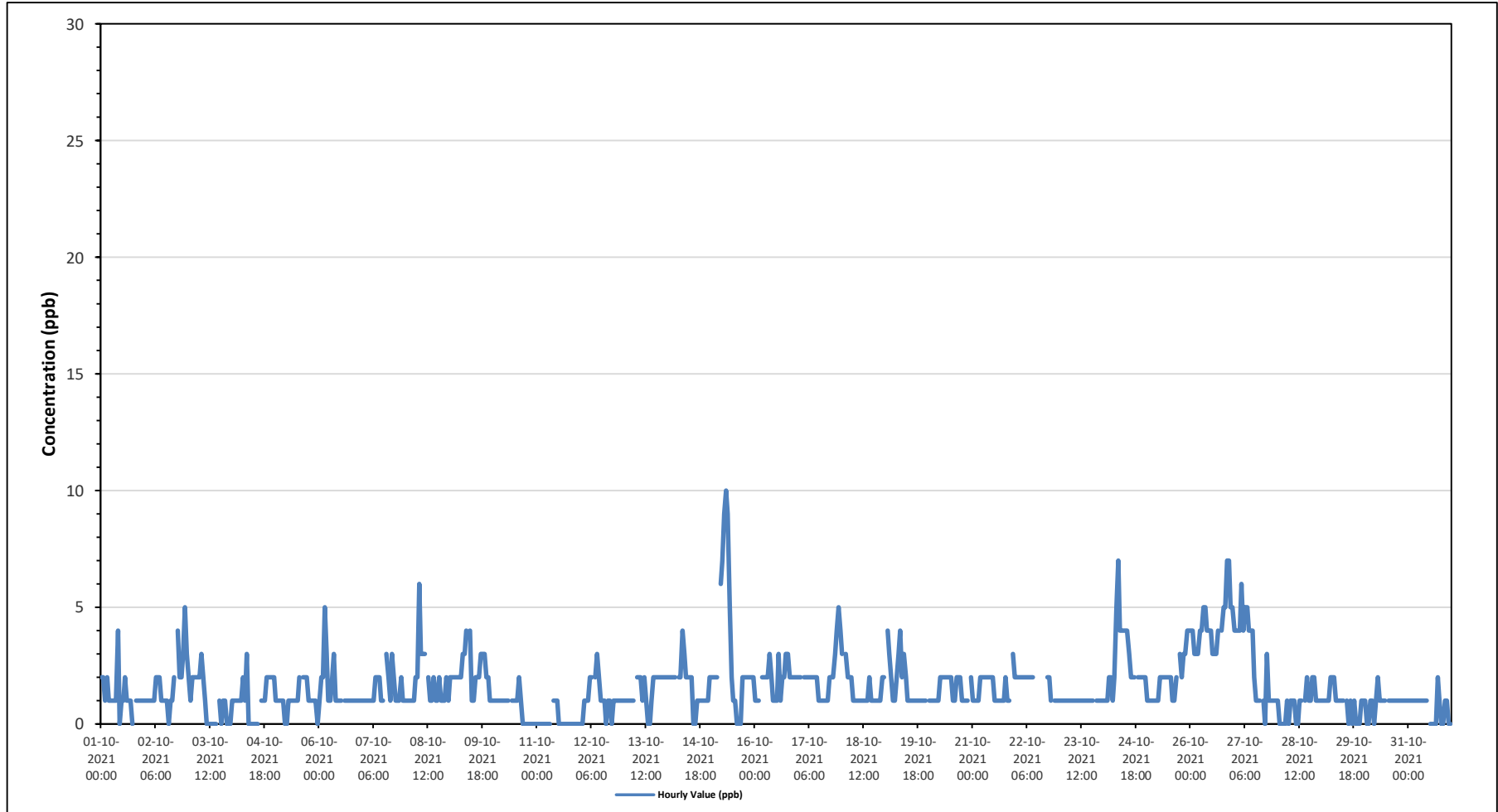
Maximum Hourly Value:	10 ppb on October 15 at hour 8	Hours in Service:	744
Maximum Daily Value:	4.3 ppb on October 26	Hours of Data:	705
Minimum Hourly Value:	0 ppb on October 1 at hour 10	Hours of Missing Data:	0
Minimum Daily Value:	0.1 ppb on October 11	Hours of Calibration:	39
Monthly Average:	1.6 ppb	Operational Uptime:	100.0

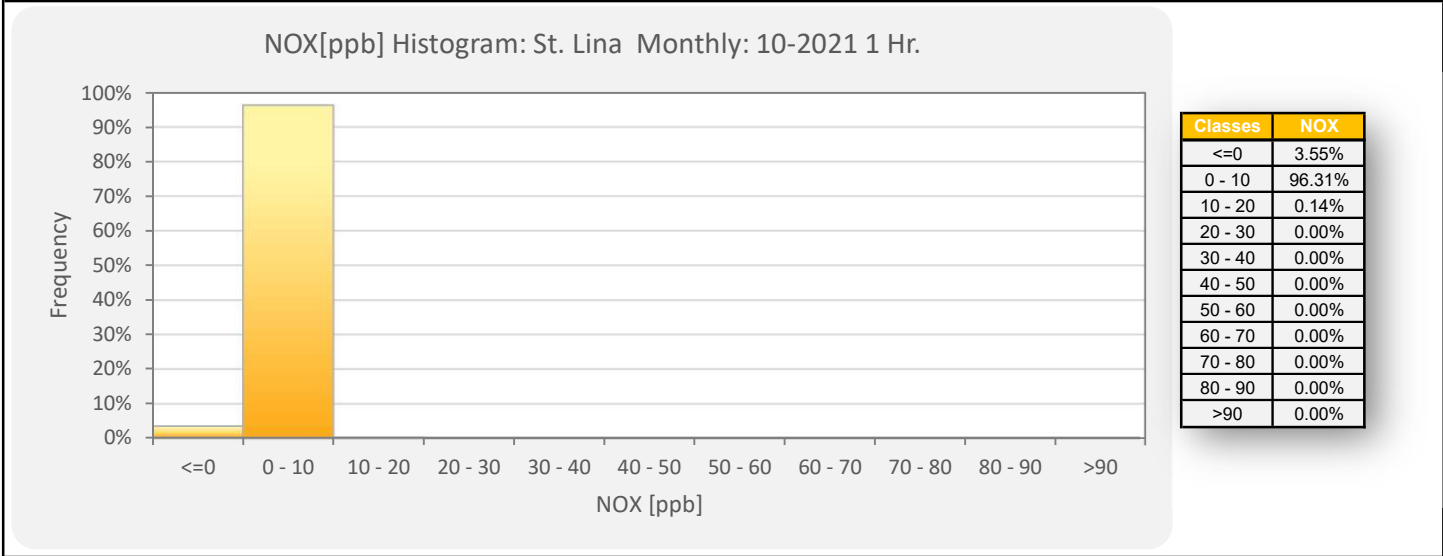
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Oct 1	2	2	1	2	1	1	1	1	1	4	0	1	1	2	1	1	1	0	S	1	1	1	1	0	4	1.2		
Oct 2	1	1	1	1	1	1	2	2	2	1	1	1	1	0	1	1	2	S	4	2	2	3	5	3	0	5	1.7	
Oct 3	2	1	2	2	2	2	2	3	2	1	0	0	0	0	0	0	S	1	0	1	1	0	0	0	0	3	1.0	
Oct 4	1	1	1	1	1	1	2	1	3	0	0	0	0	0	0	S	1	1	1	2	2	2	2	2	0	3	1.1	
Oct 5	1	1	1	1	1	0	0	1	1	1	1	1	1	2	S	2	2	2	1	1	1	1	1	1	0	2	1.0	
Oct 6	1	2	2	5	3	1	1	2	3	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	5	1.5	
Oct 7	1	1	1	1	1	1	1	2	2	2	1	1	S	3	2	1	3	2	1	1	1	2	1	1	1	3	1.4	
Oct 8	1	1	1	1	1	2	2	6	3	3	3	S	2	1	1	2	1	1	2	1	1	1	2	1	1	6	1.7	
Oct 9	2	2	2	2	2	2	2	3	3	4	S	4	1	1	2	2	2	3	3	3	2	2	1	1	1	4	2.2	
Oct 10	1	1	1	1	1	1	1	1	1	S	1	1	1	1	2	1	0	0	0	0	0	0	0	0	0	2	0.7	
Oct 11	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	
Oct 12	0	0	1	1	1	2	2	S	2	3	2	1	1	1	0	1	1	0	1	1	1	1	1	1	1	3	1.1	
Oct 13	1	1	1	1	1	1	S	2	2	2	1	2	1	0	0	1	2	2	2	2	2	2	2	2	2	2	1.4	
Oct 14	2	2	2	2	2	S	2	2	4	3	2	2	2	2	0	0	1	1	1	1	1	1	1	2	0	4	1.7	
Oct 15	2	2	2	2	S	6	7	9	10	9	5	2	1	1	0	0	0	2	2	2	2	2	2	2	0	10	3.1	
Oct 16	1	1	1	S	2	2	2	2	3	2	1	1	1	3	1	2	2	3	3	2	2	2	2	2	1	3	1.9	
Oct 17	2	2	S	2	2	2	2	2	2	2	2	1	1	1	1	1	1	2	2	2	2	3	4	5	4	5	2.1	
Oct 18	3	S	3	2	2	2	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2	2	3	1.4	
Oct 19	S	4	3	2	1	1	2	3	4	2	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.7	
Oct 20	1	1	1	1	1	1	2	2	2	2	2	2	2	1	1	2	2	2	2	1	1	1	1	S	2	1	2	1.5
Oct 21	1	1	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	2	1	1	1	S	3	2	1	3	1.5
Oct 22	2	2	2	2	2	2	2	2	2	2	C	C	C	C	C	C	C	C	2	2	1	S	1	1	1	1	2	-
Oct 23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1.0
Oct 24	1	1	1	2	2	1	2	5	7	4	4	4	4	4	3	2	2	2	S	2	2	2	2	2	2	1	7	2.7
Oct 25	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1	1	2	S	3	2	3	3	4	4	1	4	1.9	
Oct 26	4	4	3	3	3	4	4	5	5	4	4	4	3	3	3	4	S	4	5	5	7	7	5	5	3	7	4.3	
Oct 27	4	4	4	4	6	4	5	5	4	4	4	2	1	1	1	S	1	0	3	1	1	1	1	1	0	6	2.7	
Oct 28	1	0	0	0	1	0	1	0	1	1	1	0	0	1	1	S	1	2	1	1	2	2	1	1	1	0	2	0.8
Oct 29	1	1	1	1	1	2	2	2	1	1	1	1	1	1	S	1	0	1	0	1	0	0	0	1	1	0	2	0.9
Oct 30	1	0	0	1	1	0	1	2	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	0	2	0.9
Oct 31	1	1	1	1	1	1	1	1	1	1	1	S	0	0	0	0	2	1	0	0	1	1	0	0	0	2	0.7	
Diurnal Maximum	4	4	4	5	6	6	7	9	10	9	5	4	4	4	3	4	3	4	5	5	7	7	5	5				
Daiurnal Average	1.4	1.4	1.4	1.6	1.5	1.6	1.8	2.4	2.6	2.2	1.7	1.5	1.2	1.3	1.0	1.1	1.3	1.3	1.6	1.4	1.5	1.5	1.7	1.5				

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

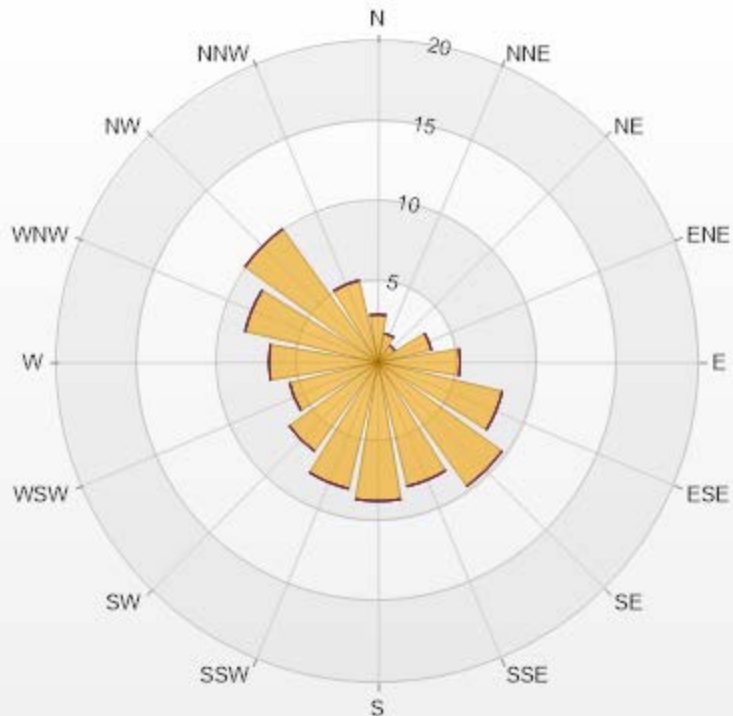
**Timeseries Chart of Hourly Average for NOx - St. Lina Site**





Wind: St. Lina Poll.: St. Lina-NOX[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.76% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	2.98	0	0	0	0	2.98
NNE	1.84	0	0	0	0	1.84
NE	1.28	0	0	0	0	1.28
ENE	3.4	0	0	0	0	3.4
E	5.11	0	0	0	0	5.11
ESE	7.94	0	0	0	0	7.94
SE	9.5	0	0	0	0	9.5
SSE	7.94	0	0	0	0	7.94
S	8.65	0	0	0	0	8.65
SSW	8.09	0	0	0	0	8.09
SW	6.81	0	0	0	0	6.81
WSW	5.67	0	0	0	0	5.67
W	6.81	0	0	0	0	6.81
WNW	8.51	0	0	0	0	8.51
NW	10.21	0	0	0	0	10.21
NNW	5.25	0	0	0	0	5.25
Summary	100	0	0	0	0	100



LICA-202110

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



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St. Lina Site - October 2021  
Summary of Hourly Averages

NITRIC OXIDE (NO) in ppb

Maximum Hourly Value:	3 ppb on October 15 at hour 8	Hours in Service:	744
Maximum Daily Value:	0.4 ppb on October 15	Hours of Data:	705
Minimum Hourly Value:	0 ppb on October 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 ppb on October 3	Hours of Calibration:	39
Monthly Average:	0.1 ppb	Operational Uptime:	100.0

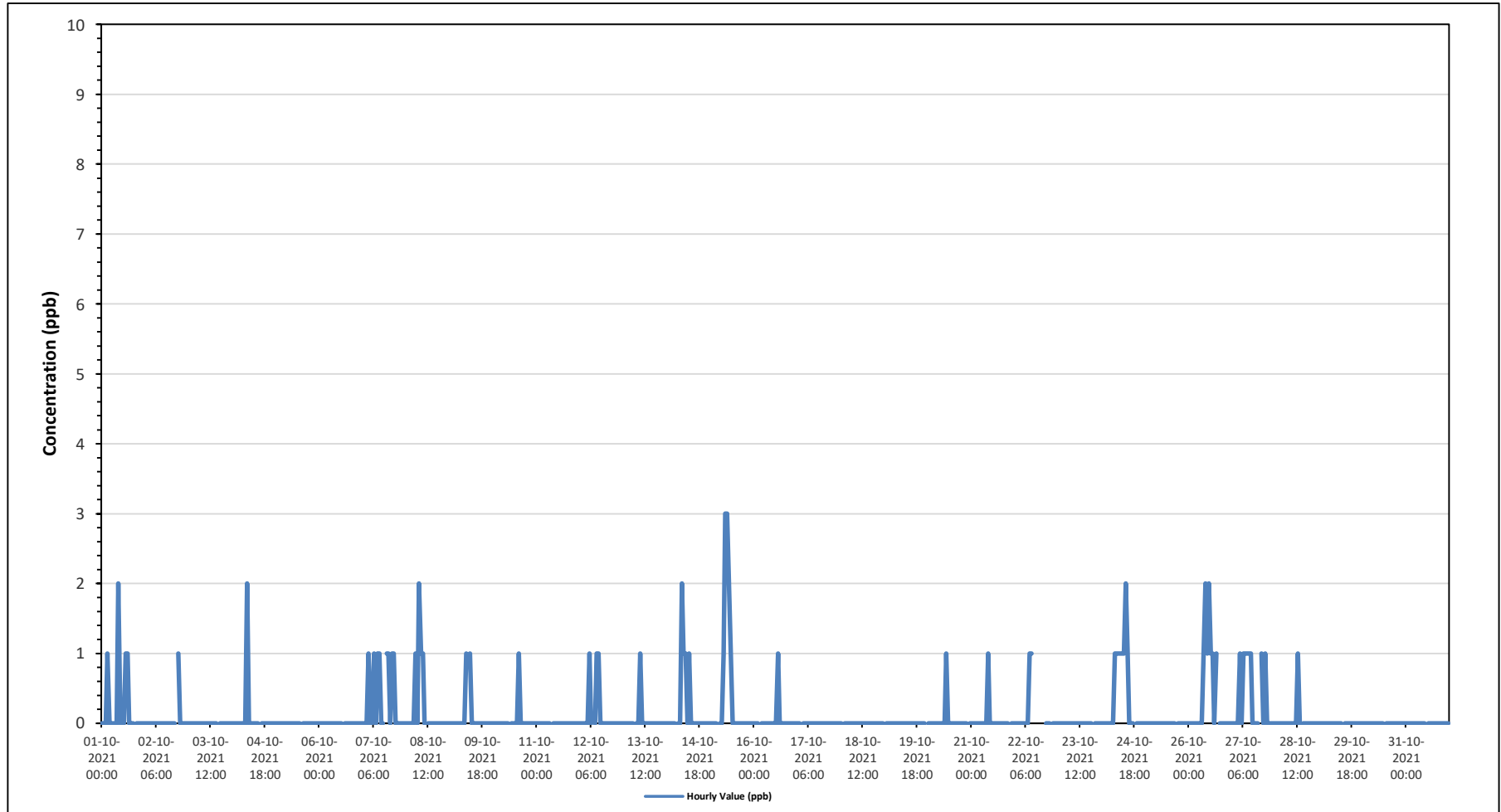
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average									
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23								
Oct 1	0	0	0	1	0	0	0	0	0	2	0	0	0	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2
Oct 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0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

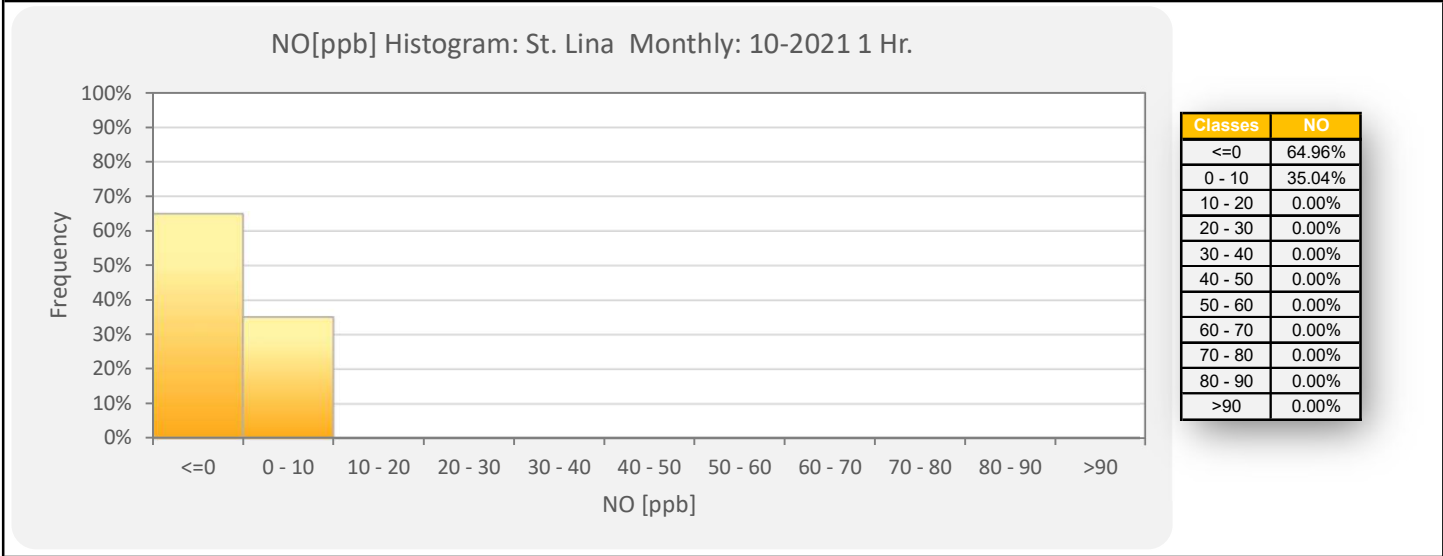
<b>C</b>	Monthly Calibration	<b>S</b>	Daily Zero-Span Check	<b>Q</b>	Quality Assurance
<b>K</b>	Collection Error	<b>N</b>	No Data (Machine Not in Service)	<b>Y</b>	Routine Maintenance
<b>X</b>	InValid Data (Equipment Malfunction /Recovery)	<b>NRM</b>	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	<b>P</b>	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 NO - St. Lina Site*

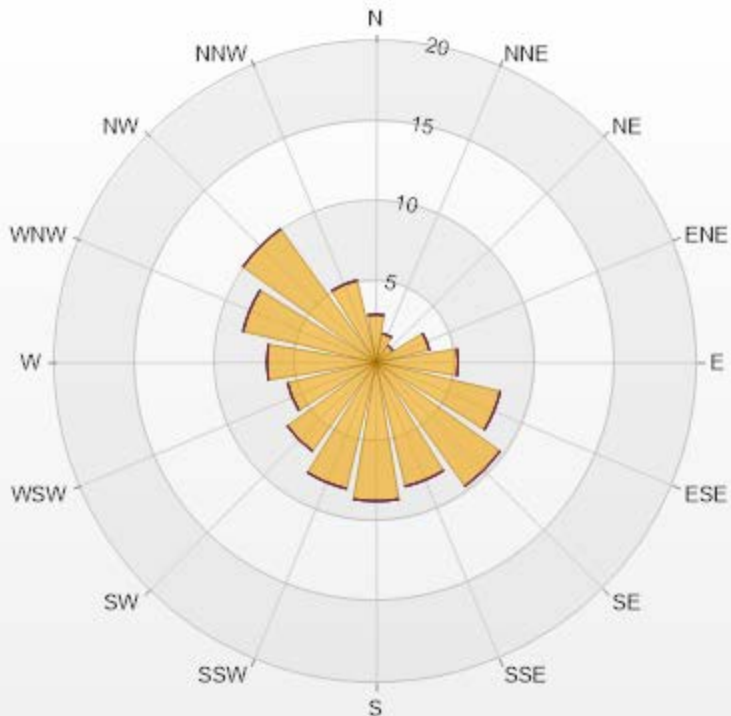






Wind: St. Lina Poll.: St. Lina-NO[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.76% Calm Avg: 0.00 [ppb]


Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	2.98	0	0	0	0	2.98
NNE	1.84	0	0	0	0	1.84
NE	1.28	0	0	0	0	1.28
ENE	3.4	0	0	0	0	3.4
E	5.11	0	0	0	0	5.11
ESE	7.94	0	0	0	0	7.94
SE	9.5	0	0	0	0	9.5
SSE	7.94	0	0	0	0	7.94
S	8.65	0	0	0	0	8.65
SSW	8.09	0	0	0	0	8.09
SW	6.81	0	0	0	0	6.81
WSW	5.67	0	0	0	0	5.67
W	6.81	0	0	0	0	6.81
WNW	8.51	0	0	0	0	8.51
NW	10.21	0	0	0	0	10.21
NNW	5.25	0	0	0	0	5.25
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)

100  0-30

0  30-50

0  50-76

0  76-159

0  >159.0



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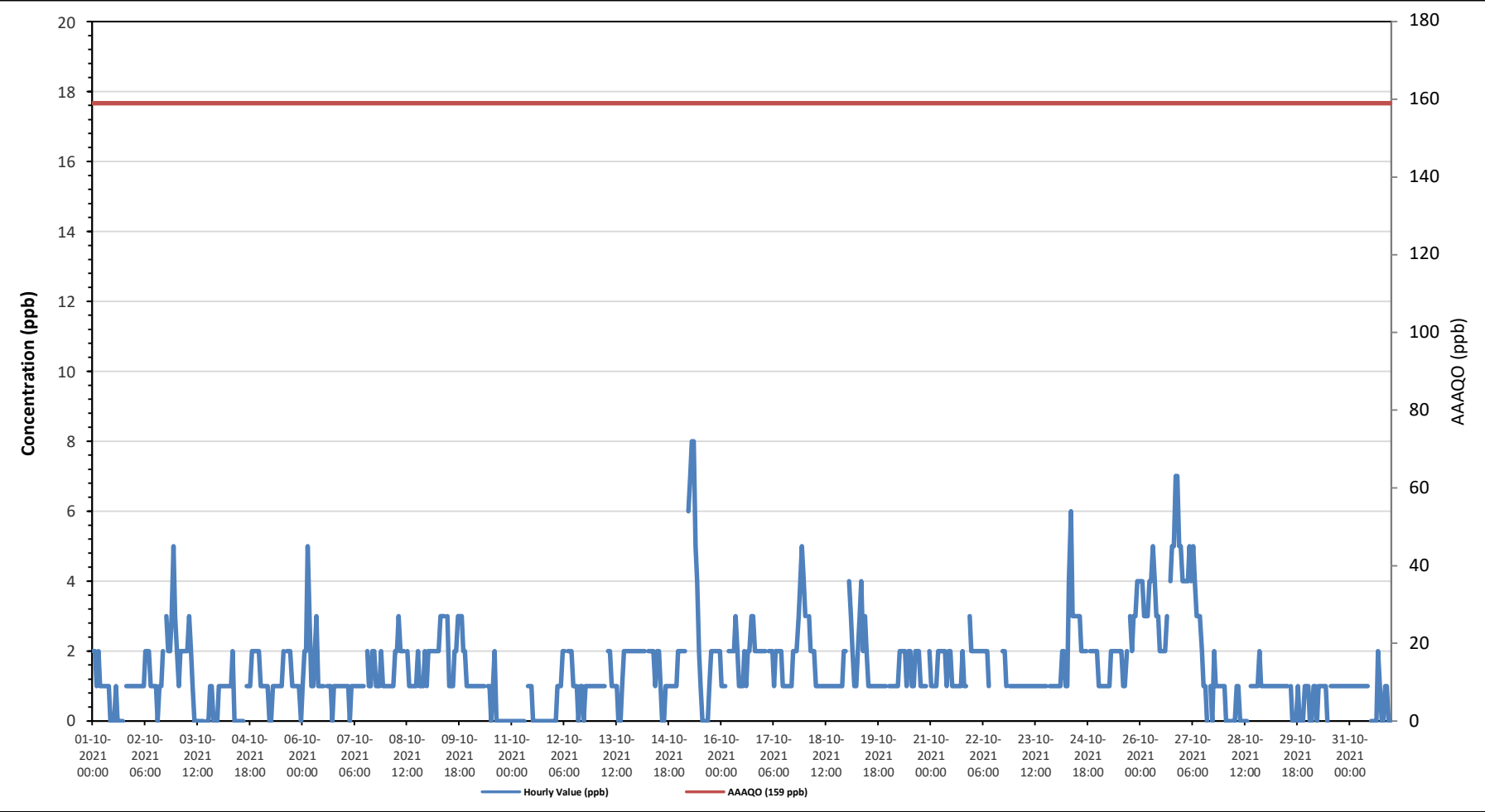
St. Lina Site - October 2021

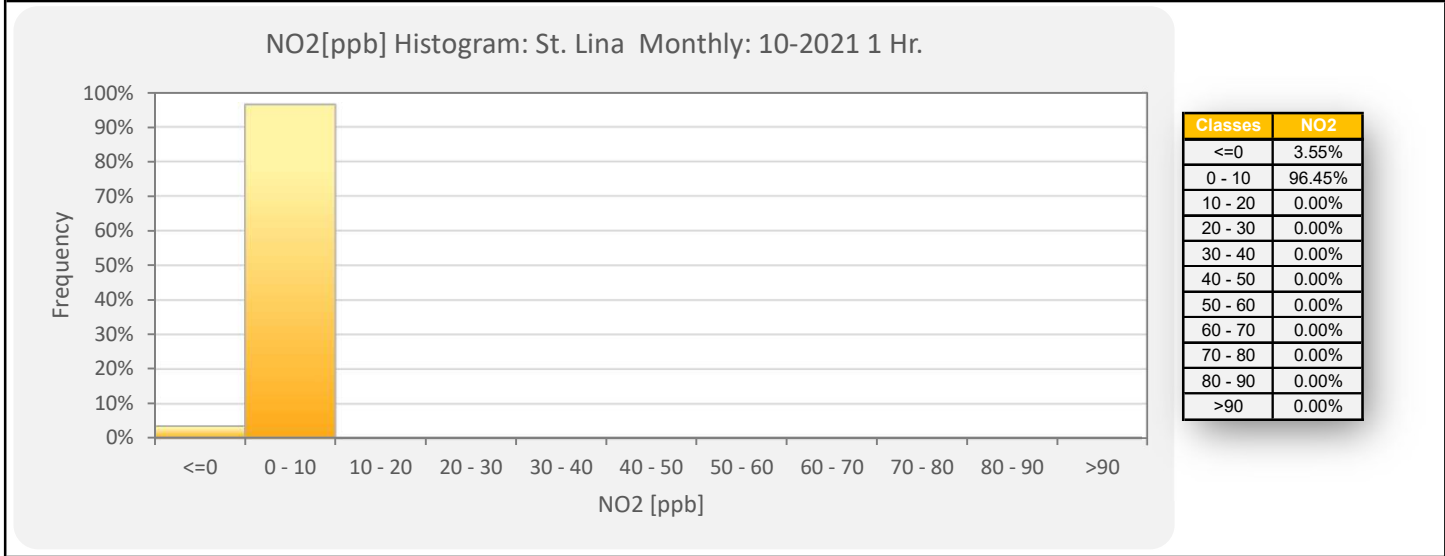
Summary of Hourly Averages

NITROGEN DIOXIDE (NO<sub>2</sub>) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 159 ppb																															
Number of 1-Hour Exceedences: 0																															
Maximum Hourly Value: 8 ppb on October 15 at hour 7												Hours in Service: 744																			
Maximum Daily Value: 3.9 ppb on October 26												Hours of Data: 705																			
Minimum Hourly Value: 0 ppb on October 1 at hour 10												Hours of Missing Data: 0																			
Minimum Daily Value: 0.1 ppb on October 11												Hours of Calibration: 39																			
Monthly Average: 1.4 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							
Oct 1	2	2	1	2	1	1	1	1	1	1	0	0	0	1	0	0	0	0	S	1	1	1	1	1	0	2	0.8				
Oct 2	1	1	1	1	1	1	2	2	1	1	1	1	1	0	1	1	2	S	3	2	2	3	5	3	0	5	1.7				
Oct 3	2	1	2	2	2	2	2	3	2	1	0	0	0	0	0	0	S	0	0	1	1	0	0	0	0	3	0.9				
Oct 4	1	1	1	1	1	1	1	1	2	0	0	0	0	0	0	S	1	1	1	2	2	2	2	2	2	2	1.0				
Oct 5	1	1	1	1	1	0	0	1	1	1	1	1	2	S	2	2	2	2	1	1	1	1	1	0	0	2	1.0				
Oct 6	1	2	2	5	3	1	1	2	3	1	1	1	1	S	1	1	1	0	1	1	1	1	1	1	0	5	1.4				
Oct 7	1	1	1	0	1	1	1	1	1	1	1	1	S	2	1	1	2	2	1	1	1	2	1	1	0	2	1.1				
Oct 8	1	1	1	1	1	2	2	3	2	2	S	2	1	1	1	1	1	2	1	1	1	2	1	1	1	3	1.4				
Oct 9	2	2	2	2	2	2	2	3	3	S	3	1	1	1	2	2	3	3	3	2	2	2	1	1	1	3	2.1				
Oct 10	1	1	1	1	1	1	1	1	1	S	1	1	0	1	2	0	0	0	0	0	0	0	0	0	0	2	0.6				
Oct 11	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				
Oct 12	0	0	1	1	1	2	2	S	2	2	2	1	1	1	0	1	1	0	1	1	1	1	1	1	0	2	1.0				
Oct 13	1	1	1	1	1	1	S	2	2	1	1	1	1	0	0	1	2	2	2	2	2	2	2	2	0	2	1.3				
Oct 14	2	2	2	2	2	S	2	2	2	2	1	2	2	1	0	0	1	1	1	1	1	1	1	2	0	2	1.4				
Oct 15	2	2	2	2	S	6	7	8	8	5	4	2	1	0	0	0	0	1	2	2	2	2	2	2	0	8	2.7				
Oct 16	1	1	1	S	2	2	2	2	3	2	1	1	1	2	1	2	2	3	3	2	2	2	2	2	1	3	1.8				
Oct 17	2	2	S	2	2	2	1	2	2	2	2	1	1	1	1	1	1	2	2	2	3	4	5	4	1	5	2.0				
Oct 18	3	S	3	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	3	1.4				
Oct 19	S	4	3	2	1	1	2	3	4	2	3	2	1	1	1	1	1	1	1	1	1	1	1	S	1	4	1.7				
Oct 20	1	1	1	1	1	1	2	2	2	2	1	2	2	1	1	1	1	2	2	1	1	1	1	S	2	1	1.4				
Oct 21	1	1	1	1	2	2	2	2	2	1	2	2	1	1	1	1	1	2	2	1	1	1	S	3	2	1	1.5				
Oct 22	2	2	2	2	2	2	2	2	2	1	C	C	C	C	C	C	C	2	2	1	S	1	1	1	1	2	-				
Oct 23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1.0				
Oct 24	1	1	1	2	2	1	1	4	6	3	3	3	3	2	2	2	2	S	2	2	2	2	2	2	1	6	2.3				
Oct 25	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1	1	2	S	3	2	3	3	4	4	1	4	1.9				
Oct 26	4	4	3	3	3	4	4	5	4	3	3	2	2	2	2	3	S	4	5	5	7	7	5	5	2	7	3.9				
Oct 27	4	4	4	4	5	4	5	4	3	3	3	2	1	1	0	S	1	0	2	1	1	1	1	1	0	5	2.4				
Oct 28	1	0	0	0	0	0	0	1	1	0	0	0	0	0	S	1	1	1	1	1	2	1	1	1	0	2	0.6				
Oct 29	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	0	0	0	1	0	0	0	1	1	0	1	0.7				
Oct 30	1	0	0	1	1	0	1	1	1	1	1	1	0	S	1	1	1	1	1	1	1	1	1	1	0	1	0.8				
Oct 31	1	1	1	1	1	1	1	1	1	1	S	0	0	0	0	2	1	0	0	1	1	0	0	0	0	2	0.7				
Diurnal Maximum	4	4	4	5	5	6	7	8	8	5	4	3	3	3	2	3	2	4	5	5	7	7	5	5							
Diurnal Average	1.4	1.4	1.4	1.5	1.5	1.5	1.7	2.1	2.3	1.6	1.4	1.3	1.0	1.0	0.8	1.0	1.2	1.2	1.5	1.3	1.5	1.5	1.7	1.5							
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.																															

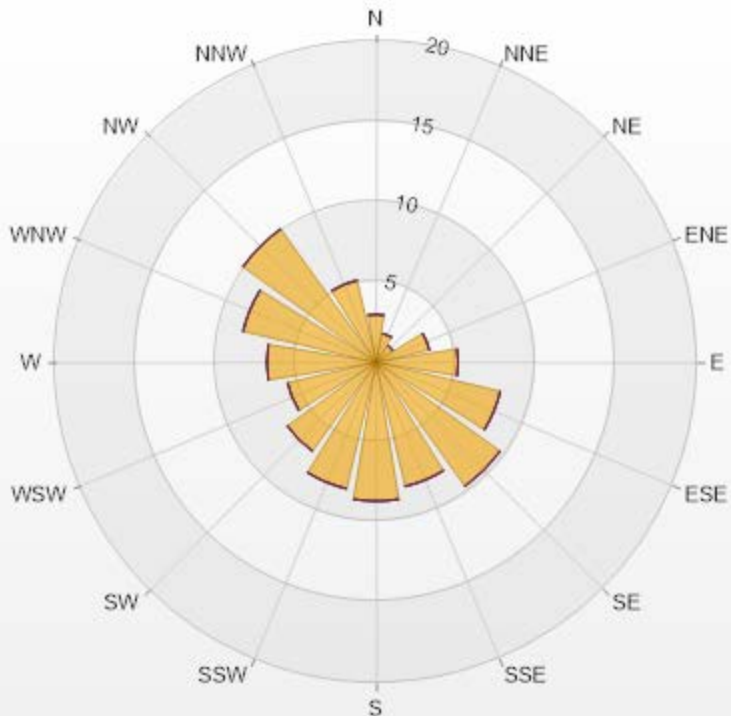
Timeseries Chart of Hourly Average for NO2 - St. Lina Site










Wind: St. Lina Poll.: St. Lina-NO2[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.76% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	2.98	0	0	0	0	2.98
NNE	1.84	0	0	0	0	1.84
NE	1.28	0	0	0	0	1.28
ENE	3.4	0	0	0	0	3.4
E	5.11	0	0	0	0	5.11
ESE	7.94	0	0	0	0	7.94
SE	9.5	0	0	0	0	9.5
SSE	7.94	0	0	0	0	7.94
S	8.65	0	0	0	0	8.65
SSW	8.09	0	0	0	0	8.09
SW	6.81	0	0	0	0	6.81
WSW	5.67	0	0	0	0	5.67
W	6.81	0	0	0	0	6.81
WNW	8.51	0	0	0	0	8.51
NW	10.21	0	0	0	0	10.21
NNW	5.25	0	0	0	0	5.25
Summary	100	0	0	0	0	100



LICA-202110

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



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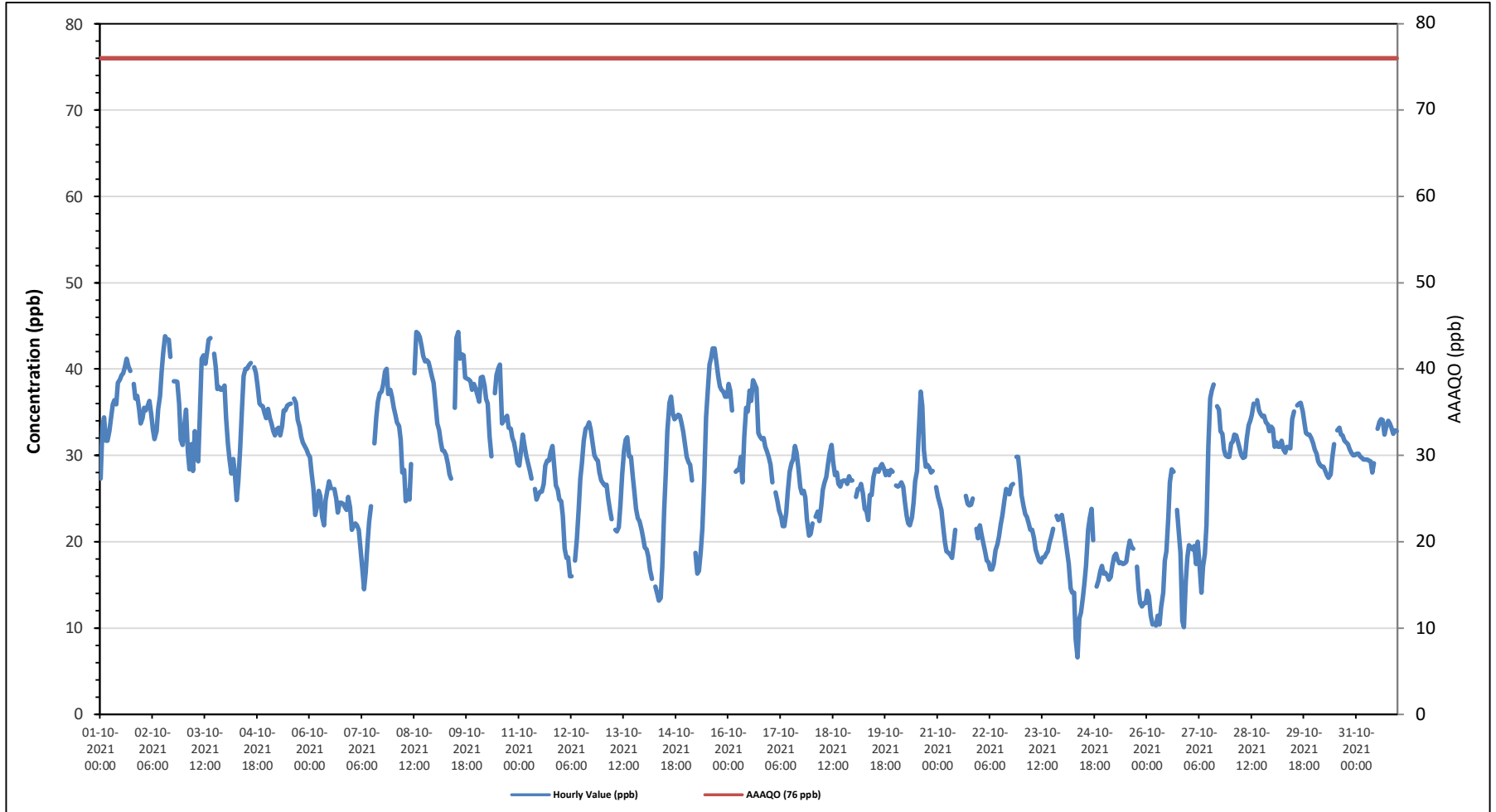
St. Lina Site - October 2021  
Summary of Hourly Averages

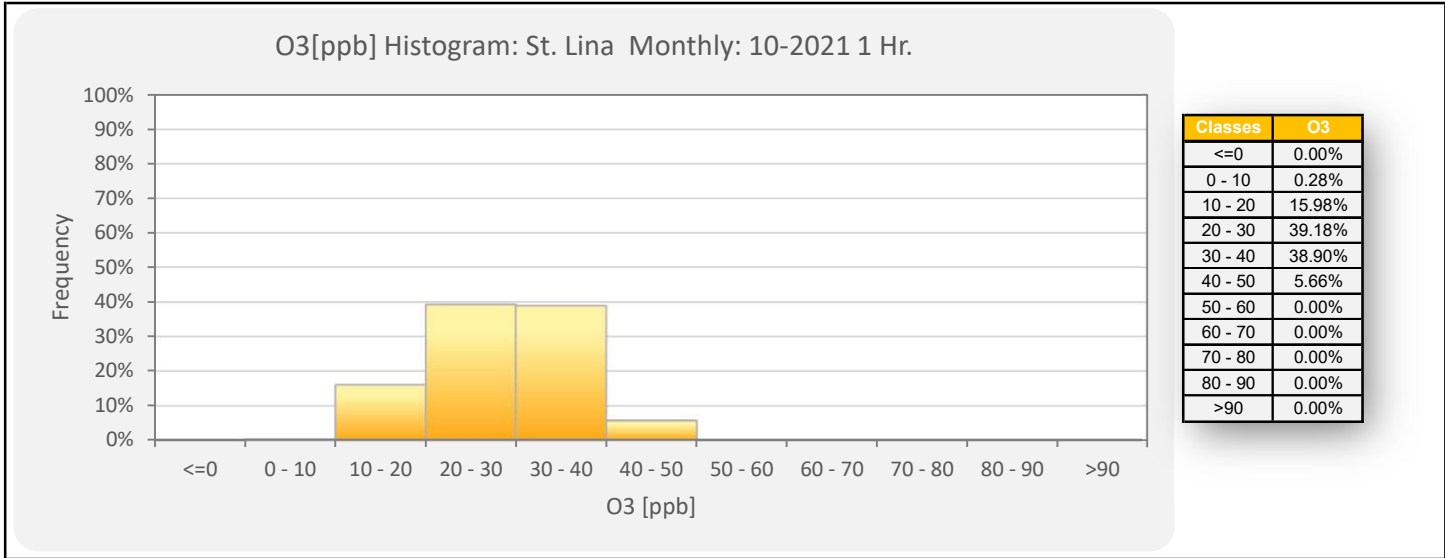
### OZONE (O<sub>3</sub>) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 76 ppb																															
Number of 1-Hour Exceedences: 0																															
Maximum Hourly Value: 44.3 ppb on October 8 at hour 13												Hours in Service: 744																			
Maximum Daily Value: 37.0 ppb on October 2												Hours of Data: 707																			
Minimum Hourly Value: 6.6 ppb on October 24 at hour 8												Hours of Missing Data: 0																			
Minimum Daily Value: 16.3 ppb on October 24												Hours of Calibration: 37																			
Monthly Average: 28.5 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							
Oct 1	27.3	33.4	34.4	31.7	31.7	32.8	34.5	35.9	36.4	35.9	38.4	38.8	39.3	39.5	40.3	41.2	40.3	39.8	S	38.3	36.6	36.9	35.4	33.7	27.3	41.2	36.2				
Oct 2	34.3	35.5	35.2	35.8	36.3	34.7	33	31.9	32.8	35.4	36.9	39.7	41.9	43.8	43.4	43.4	41.4	S	38.6	38.6	38.5	36	31.8	31.2	31.2	43.8	37.0				
Oct 3	33.6	35.3	30.4	28.4	31.3	28.2	32.8	29.7	29.3	34.7	41.2	41.6	40.6	41.9	43.4	43.6	S	41.8	40.2	37.7	37.9	37.6	37.7	38.1	28.2	43.6	36.4				
Oct 4	34.3	31.3	29.5	27.9	29.6	27.9	24.8	27	30.8	35.5	39.2	40	40	40.4	40.7	S	40.2	39.6	38.2	36	35.8	35.7	34.9	34.3	24.8	40.7	34.5				
Oct 5	35.4	34.3	33.7	32.8	32.3	33	33.2	32.3	33.4	35.2	35.2	35.8	35.9	36	S	36.6	36.1	34.1	33.3	32.2	31.5	31.1	30.7	30.1	30.1	36.6	33.7				
Oct 6	29.8	28	26.2	23.1	24	25.9	25.3	22.9	21.9	24.8	26	27	26.2	S	26.1	25	23.4	24.5	24.5	24.4	24	23.7	25.2	24	21.9	29.8	25.0				
Oct 7	21.4	21.9	22.1	21.9	21.4	19.4	16.7	14.5	16.4	19.8	22.3	24.1	S	31.4	34.4	36.2	37.2	37.4	38.2	39.7	40	37.1	37.6	36.8	14.5	40.0	28.2				
Oct 8	35.5	34.7	33.8	33.4	31.8	28	28.3	24.7	25.9	24.9	29	S	39.5	44.3	44.1	43.7	42.6	41.5	40.9	41	40.8	39.9	39.1	38.4	24.7	44.3	35.9				
Oct 9	36.1	33.7	32.9	31.6	30.6	30.5	30	29	27.8	27.3	S	35.5	43.6	44.3	41.2	41.7	41.6	39	38.9	38.8	38.6	37.6	38.3	37.7	27.3	44.3	35.9				
Oct 10	37	36.2	39	39.1	38.1	36.5	36	32.2	29.9	S	37.2	39.3	40.1	40.5	33.7	34	34.3	34.6	33.2	33.1	32	31.5	30.3	29.1	29.1	40.5	35.1				
Oct 11	28.8	30.7	32.4	31.1	30	29.2	28.2	27.3	S	26.1	24.9	25.5	25.8	25.8	26.7	28.8	29.4	29.4	30.4	31.1	29	26.5	26	24.9	24.9	32.4	28.2				
Oct 12	24.7	23	19.2	18.1	18.2	16	16	S	17.8	20.3	23.8	27.3	29.1	31.7	33.1	33.3	33.8	33	31.5	30	29.6	29.4	28	27.1	16.0	33.8	25.8				
Oct 13	26.8	26.5	26.6	25	23.6	22.6	S	21.4	21.2	21.7	24.2	27.9	30.6	31.8	32.1	29.9	29.8	27.5	25.7	23.8	22.7	22.4	21.4	20.4	20.4	32.1	25.5				
Oct 14	19.3	19.1	18.3	16.7	15.7	S	14.8	14.1	13.2	13.5	17.1	23.6	27.8	32.8	36.1	36.8	34.8	34.2	34.4	34.7	34.6	33.8	32.7	31.4	13.2	36.8	25.6				
Oct 15	29.8	29.2	28.9	27.1	S	18.7	16.3	16.6	18.9	21.5	27.1	34.4	37.3	40.5	41.3	42.4	42.4	40.8	39.1	38	37.6	37.4	36.8	36.8	16.3	42.4	32.1				
Oct 16	38.3	37.5	35.2	S	28.1	28.3	28.3	29.8	26.9	32.2	35.5	35.1	37.5	36.3	38.7	38.2	37.8	32.6	32.2	31.9	32	31	30.5	29.8	26.9	38.7	33.2				
Oct 17	28.9	26.9	S	25.7	24.7	23.6	22.9	21.8	21.8	23.3	25.8	28.1	29.1	29.5	31.1	30.3	28.5	26.3	25.6	25.9	25.1	22.6	20.7	20.9	20.7	31.1	25.6				
Oct 18	22.1	S	22.9	23.5	22.4	24.1	26	26.8	27.5	29.1	30.3	31.2	29.2	27.7	28	26.7	26.4	27	27.1	27.1	26.7	27.6	27.1	27.1	22.1	31.2	26.7				
Oct 19	S	25.2	26.1	26.1	26.7	25.6	23.8	23.5	22.5	25.4	25.4	27.5	28.4	28.4	28.1	28.7	29	28.5	27.7	28.2	27.7	28.3	28.1	S	22.5	29.0	26.8				
Oct 20	26.5	26.4	26.5	26.9	26.4	24.7	23	22.1	21.9	22.8	24.5	27	28.2	32.3	37.4	35.7	30.6	28.7	28.9	28.6	28	28.2	S	26.3	21.9	37.4	27.5				
Oct 21	25.2	24.4	23.7	21.6	20	18.9	18.7	18.5	18.1	19.7	21.4	C	C	C	C	C	25.3	24.4	24.2	24.3	25	S	21.5	20.4	18.1	25.3	22.0				
Oct 22	21.9	20.9	19.8	18.8	17.8	17.6	16.8	16.8	17.4	19	19.7	20.6	21.9	23.1	24.7	26.1	25.7	25.5	26.5	26.7	S	29.8	29.8	27.8	16.8	29.8	22.4				
Oct 23	25.4	24.2	23.2	22.9	22.1	21.4	21.4	20.4	19.1	18.4	17.8	17.6	18.2	18.2	18.6	18.9	19.8	20.7	21.5	S	23	22.5	22.9	23.1	17.6	25.4	20.9				
Oct 24	21.9	20.4	19	17.4	14.6	14.1	14.1	8.7	6.6	11.1	11.8	13.5	15.2	17.2	21.4	22.7	23.8	20.2	S	14.8	15.5	16.6	17.2	16.3	6.6	23.8	16.3				
Oct 25	16.4	16.1	15.6	15.9	17.2	18.3	18.6	17.9	17.5	17.6	17.4	17.5	17.7	19.2	20.1	19.4	19.2	S	17.1	14.5	12.9	12.5	12.9	12.9	12.5	20.1	16.7				
Oct 26	14.3	13.7	11.4	10.4	10.5	10.3	11.4	10.4	12.4	14.1	17.8	18.9	22.7	26.9	28.4	28.1	S	23.7	21.4	18.7	10.8	10.1	15.4	18.2	10.1	28.4	16.5				
Oct 27	19.6	19.3	19.1	19.5	17.4	20	16.8	14.1	17.1	18.6	21.9	31	36.6	37.5	38.2	S	35.7	35.3	32.8	32.5	30.7	30	29.8	29.8	14.1	38.2	26.2				
Oct 28	31.4	31.6	32.4	32.3	31.5	30.7	30	29.7	29.8	32	33.5	34	34.7	36	S	36.4	35.2	34.8	34.5	34.6	33.8	33.6	32.8	33.3	29.7	36.4	33.0				
Oct 29	33.1	31	31.5	31	31	31.7	30.7	30.3	31	30.9	30.8	34.2	35.1	S	35.8	36	36.1	35.1	33.8	32.6	33.4	32.4	32	31.4	30.3	36.1	32.6				
Oct 30	30.7	30.2	29.3	28.9	28.7	28.7	28.2	27.4	27.4	27.8	29.7	31.3	S	32.9	33.2	32.4	32.3	31.7	31.5	31.3	30.7	30.3	30	30	27.4	33.2	30.2				
Oct 31	30.2	30.2	29.9	29.7	29.5	29.5	29.4	29.3	28	29.1	S	33.1	33.9	34.2	34.1	32.4	33.4	33.4	34	33.7	33.2	32.5	32.9	32.8	28.0	34.2	31.5				
Diurnal Maximum	38	38	39	39	38	37	36	36	36	36	41	42	44	44	44	44	43	42	41	41	41	40	39	38							
Diurnal Average	28.0	27.7	26.9	25.8	25.4	25.0	24.3	23.6	23.4	24.9	27.2	29.6	31.6	33.0	33.4	33.2	32.6	31.9	31.2	30.8	29.9	29.5	29.0	28.5							
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.																															



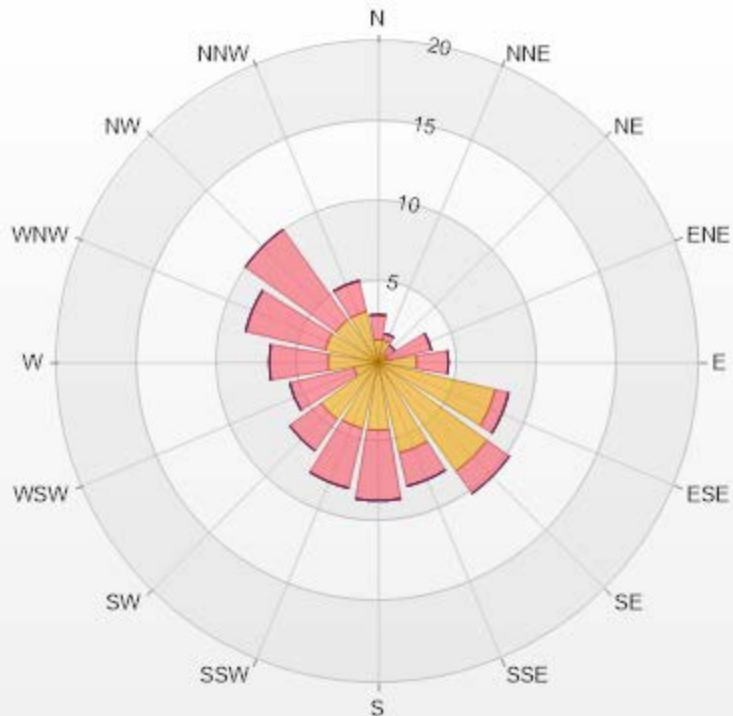
**Timeseries Chart of Hourly Average for O3 - St. Lina Site**





Wind: St. Lina Poll.: St. Lina-O3[ppb] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-76	76-159	>159.0	Total
N	1.41	1.56	0	0	0	2.97
NNE	1.41	0.42	0	0	0	1.83
NE	0.57	0.71	0	0	0	1.28
ENE	0.57	2.83	0	0	0	3.4
E	2.4	1.98	0	0	0	4.38
ESE	7.5	0.85	0	0	0	8.35
SE	8.35	1.7	0	0	0	10.05
SSE	5.8	2.12	0	0	0	7.92
S	4.24	4.38	0	0	0	8.62
SSW	4.24	3.82	0	0	0	8.06
SW	4.38	2.4	0	0	0	6.78
WSW	1.56	4.1	0	0	0	5.66
W	3.11	3.68	0	0	0	6.79
WNW	3.39	5.09	0	0	0	8.48
NW	3.25	6.93	0	0	0	10.18
NNW	3.25	1.98	0	0	0	5.23
Summary	55.43	44.55	0	0	0	100



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% Icon Classes (ppb)

55

0-30

45

30-50

0 50-76

0

76-159

0

>159.0



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St. Lina Site - October 2021

Summary of Hourly Averages

TOTAL HYDROCARBONS (THC) in ppm

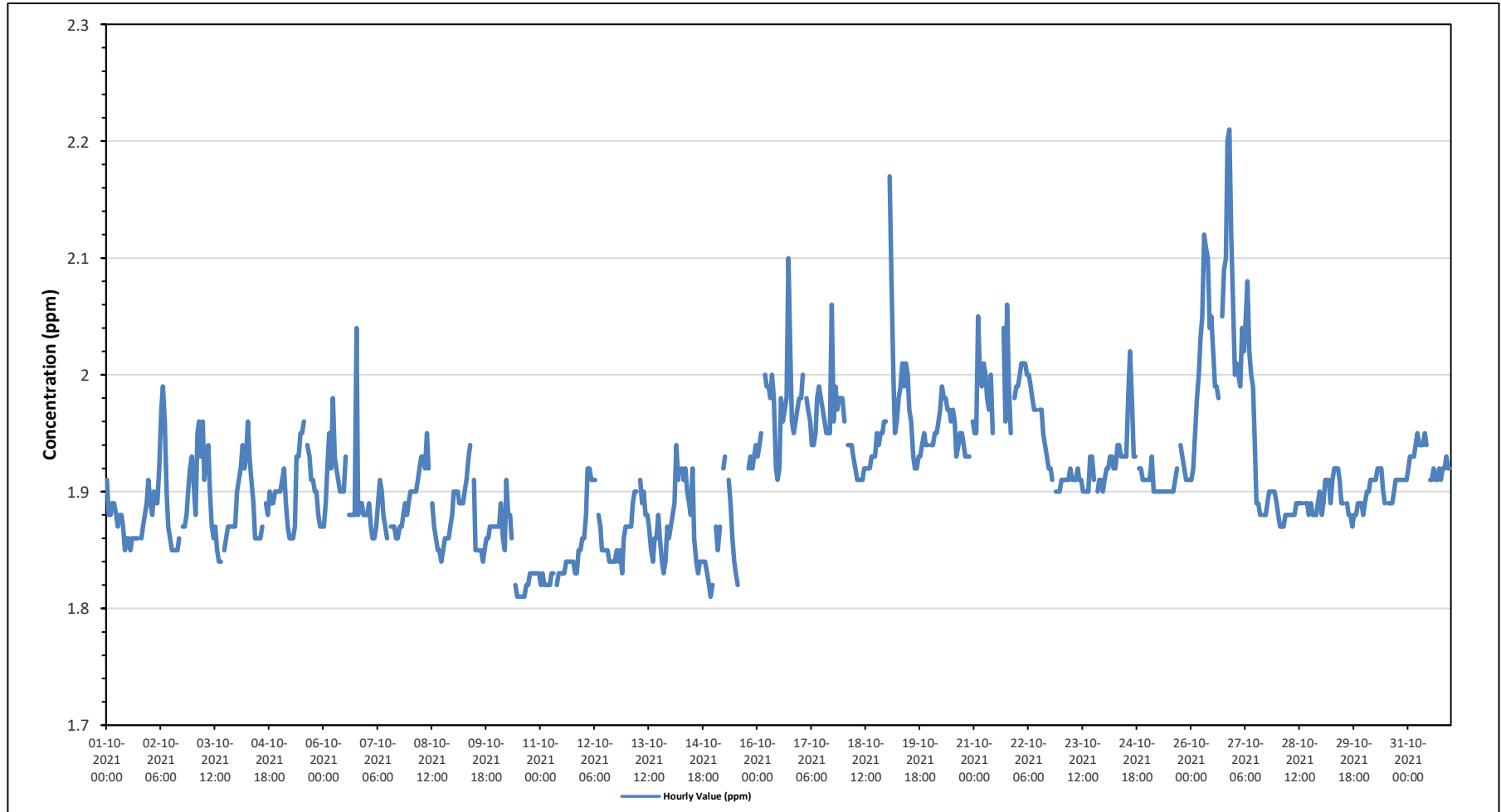
Maximum Hourly Value:	2.21 ppm on October 26 at hour 21	Hours in Service:	744
Maximum Daily Value:	2.05 ppm on October 26	Hours of Data:	699
Minimum Hourly Value:	1.81 ppm on October 10 at hour 11	Hours of Missing Data:	8
Minimum Daily Value:	1.83 ppm on October 11	Hours of Calibration:	37
Monthly Average:	1.91 ppm	Operational Uptime:	98.9

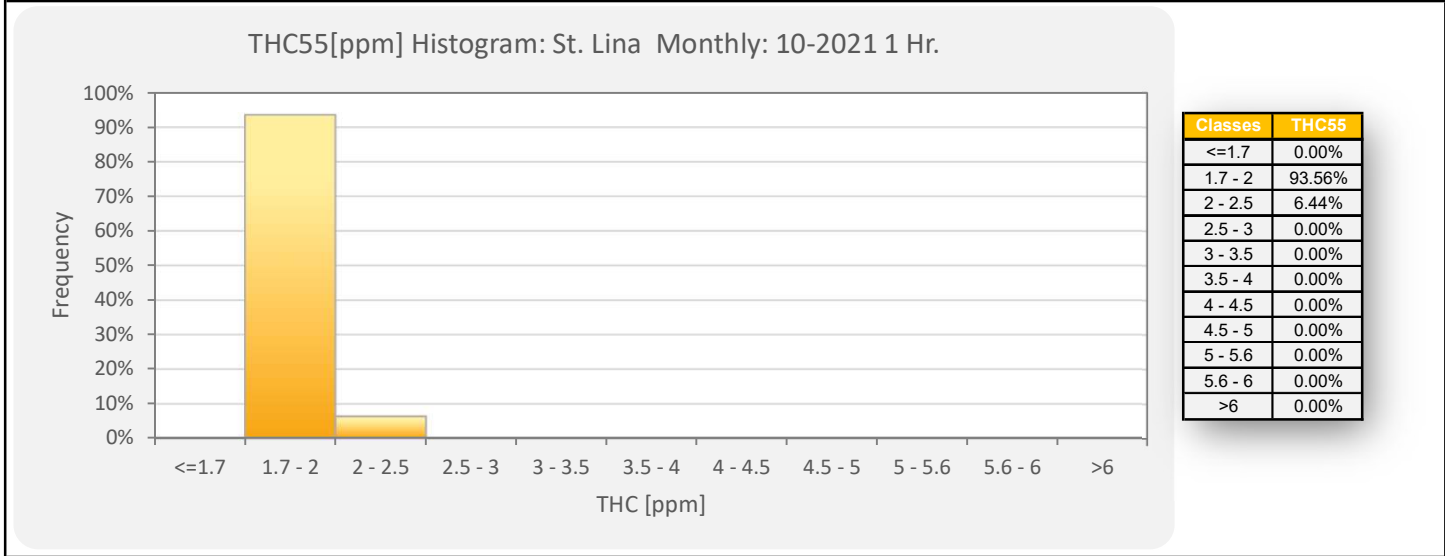
  

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average																	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23																
Oct 1	1.91	1.88	1.88	1.89	1.89	1.88	1.87	1.88	1.88	1.87	1.85	1.86	1.86	1.85	1.86	1.86	1.86	1.86	1.86	S	1.86	1.87	1.88	1.89	1.91	1.85	1.91	1.87															
Oct 2	1.89	1.88	1.90	1.89	1.89	1.92	1.97	1.99	1.96	1.90	1.87	1.86	1.85	1.85	1.85	1.85	1.86	S	1.87	1.87	1.88	1.90	1.92	1.93	1.85	1.99	1.89																
Oct 3	1.91	1.88	1.95	1.96	1.93	1.96	1.91	1.93	1.94	1.90	1.87	1.86	1.87	1.85	1.84	1.84	S	1.85	1.86	1.87	1.87	1.87	1.87	1.87	1.84	1.96	1.89																
Oct 4	1.90	1.91	1.92	1.94	1.92	1.93	1.96	1.93	1.91	1.89	1.86	1.86	1.86	1.87	S	1.89	1.88	1.90	1.89	1.89	1.90	1.90	1.90	1.90	1.86	1.96	1.90																
Oct 5	1.90	1.91	1.92	1.89	1.87	1.86	1.86	1.86	1.87	1.93	1.93	1.95	1.96	S	1.94	1.93	1.91	1.91	1.90	1.90	1.88	1.87	1.87	1.87	1.86	1.96	1.90																
Oct 6	1.87	1.89	1.92	1.95	1.92	1.98	1.93	1.92	1.91	1.90	1.90	1.90	1.93	S	1.88	1.88	1.88	1.88	2.04	1.88	1.89	1.89	1.88	1.88	1.87	2.04	1.91																
Oct 7	1.88	1.89	1.87	1.86	1.86	1.87	1.89	1.91	1.90	1.88	1.87	1.86	S	1.87	1.87	1.87	1.86	1.86	1.87	1.87	1.88	1.89	1.88	1.89	1.86	1.91	1.88																
Oct 8	1.90	1.90	1.90	1.90	1.91	1.92	1.93	1.93	1.92	1.95	1.92	S	1.89	1.87	1.86	1.85	1.85	1.84	1.85	1.86	1.86	1.86	1.87	1.88	1.84	1.95	1.89																
Oct 9	1.90	1.90	1.90	1.89	1.89	1.89	1.90	1.91	1.93	1.94	S	1.91	1.85	1.85	1.85	1.85	1.84	1.85	1.86	1.86	1.87	1.87	1.87	1.87	1.84	1.94	1.88																
Oct 10	1.87	1.87	1.89	1.86	1.85	1.91	1.88	1.88	1.86	S	1.82	1.81	1.81	1.81	1.81	1.81	1.82	1.82	1.83	1.83	1.83	1.83	1.83	1.83	1.81	1.91	1.84																
Oct 11	1.82	1.83	1.82	1.82	1.82	1.83	1.83	1.83	S	1.82	1.83	1.83	1.83	1.83	1.84	1.84	1.84	1.84	1.84	1.83	1.83	1.85	1.85	1.86	1.82	1.86	1.83																
Oct 12	1.86	1.88	1.92	1.92	1.91	1.91	1.91	S	1.88	1.87	1.85	1.85	1.85	1.84	1.84	1.84	1.84	1.84	1.85	1.84	1.85	1.83	1.86	1.87	1.83	1.92	1.87																
Oct 13	1.87	1.87	1.87	1.89	1.90	1.90	S	1.91	1.89	1.90	1.88	1.88	1.87	1.85	1.84	1.86	1.86	1.88	1.86	1.84	1.83	1.84	1.87	1.86	1.83	1.91	1.87																
Oct 14	1.87	1.88	1.89	1.94	1.91	S	1.92	1.91	1.92	1.90	1.89	1.88	1.92	1.86	1.84	1.83	1.84	1.84	1.84	1.84	1.84	1.83	1.82	1.81	1.82	1.94	1.87																
Oct 15	X	1.87	1.85	1.87	S	1.92	1.93	X	1.91	1.89	1.86	1.84	1.83	1.82	C	C	C	C	C	1.92	1.93	1.92	1.93	1.94	1.82	1.94	-																
Oct 16	1.93	1.94	1.95	S	2.00	1.99	1.99	1.98	2.00	1.98	1.92	1.91	1.92	1.98	1.96	1.97	1.98	2.10	2.02	1.96	1.95	1.96	1.97	1.98	1.91	2.10	1.97																
Oct 17	1.98	2.00	S	1.98	1.97	1.96	1.94	1.94	1.95	1.98	1.99	1.98	1.97	1.96	1.95	1.95	2.06	1.96	1.99	1.97	1.98	1.98	1.98	1.94	2.06	1.97																	
Oct 18	1.96	S	1.94	1.94	1.94	1.93	1.92	1.91	1.91	1.91	1.91	1.92	1.92	1.92	1.93	1.93	1.93	1.95	1.94	1.95	1.95	1.96	1.96	1.91	1.96	1.93																	
Oct 19	S	2.17	2.08	2.00	1.95	1.96	1.98	1.99	2.01	1.99	2.01	2.00	1.97	1.96	1.93	1.92	1.92	1.93	1.93	1.94	1.95	1.94	1.94	S	1.92	2.17	1.98																
Oct 20	1.94	1.94	1.95	1.95	1.96	1.97	1.99	1.98	1.98	1.97	1.97	1.96	1.97	1.96	1.93	1.94	1.95	1.95	1.94	1.93	1.93	1.93	S	1.96	1.93	1.99	1.95																
Oct 21	1.95	1.95	2.05	2.00	1.99	2.01	2.00	1.98	1.97	2.00	1.95	NRM	NRM	NRM	NRM	NRM	2.04	1.96	2.06	1.99	1.95	S	1.98	1.99	1.95	2.06	1.99																
Oct 22	1.99	2.00	2.01	2.01	2.01	2.00	2.00	1.99	1.98	1.97	1.97	X	1.97	1.97	1.95	1.94	1.93	1.92	1.92	1.91	S	1.90	1.90	1.90	1.90	2.01	1.96																
Oct 23	1.91	1.91	1.91	1.91	1.91	1.92	1.91	1.91	1.91	1.92	1.91	1.91	1.90	1.90	1.90	1.90	1.93	1.93	1.91	S	1.90	1.91	1.91	1.90	1.90	1.93	1.91																
Oct 24	1.91	1.92	1.92	1.93	1.93	1.92	1.92	1.94	1.94	1.93	1.93	1.93	1.93	1.98	2.02	1.98	1.93	1.93	S	1.92	1.92	1.91	1.91	1.91	1.91	1.91	2.02	1.93															
Oct 25	1.91	1.91	1.93	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.91	1.92	S	1.94	1.93	1.92	1.91	1.91	1.91	1.91	1.90	1.94	1.91																
Oct 26	1.91	1.92	1.95	1.98	2.00	2.03	2.05	2.12	2.11	2.10	2.04	2.05	2.02	1.99	1.99	1.98	S	2.05	2.09	2.10	2.20	2.21	2.12	2.06	1.91	2.21	2.05																
Oct 27	2.00	2.01	2.00	1.99	2.04	2.02	2.05	2.08	2.02	2.00	1.99	1.94	1.89	1.89	1.88	S	1.88	1.88	1.89	1.90	1.90	1.90	1.89	1.88	2.08	1.95	1.95																
Oct 28	1.88	1.87	1.87	1.87	1.88	1.88	1.88	1.88	1.88	1.88	1.89	1.89	1.89	1.89	1.89	S	1.89	1.89	1.88	1.89	1.88	1.88	1.88	1.89	1.87	1.90	1.88																
Oct 29	1.88	1.89	1.91	1.91	1.91	1.89	1.91	1.92	1.92	1.92	1.91	1.89	1.89	S	1.89	1.88	1.88	1.87	1.88	1.88	1.89	1.89	1.89	1.88	1.87	1.92	1.89																
Oct 30	1.89	1.90	1.90	1.91	1.91	1.91	1.91	1.92	1.92	1.92	1.90	1.89	S	1.89	1.89	1.89	1.90	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.89	1.92	1.91																
Oct 31	1.92	1.93	1.93	1.93	1.94	1.95	1.94	1.94	1.95	1.94	S	1.91	1.91	1.92	1.91	1.91	1.92	1.91	1.92	1.91	1.92	1.92	1.92	1.92	1.91	1.95	1.93																
Diurnal Maximum	2.00	2.17	2.08	2.01	2.04	2.03	2.05	2.12	2.11	2.10	2.04	2.05	2.02	1.99	2.02	1.98	2.04	2.10	2.09	2.10	2.20	2.21	2.12	2.06																			
Diurnal Average	1.91	1.92	1.92	1.92	1.92	1.93	1.93	1.94	1.93	1.93	1.91	1.90	1.90	1.90	1.89	1.89	1.90	1.91	1.91	1.90	1.91	1.91	1.91																				
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 THC - St. Lina Site*

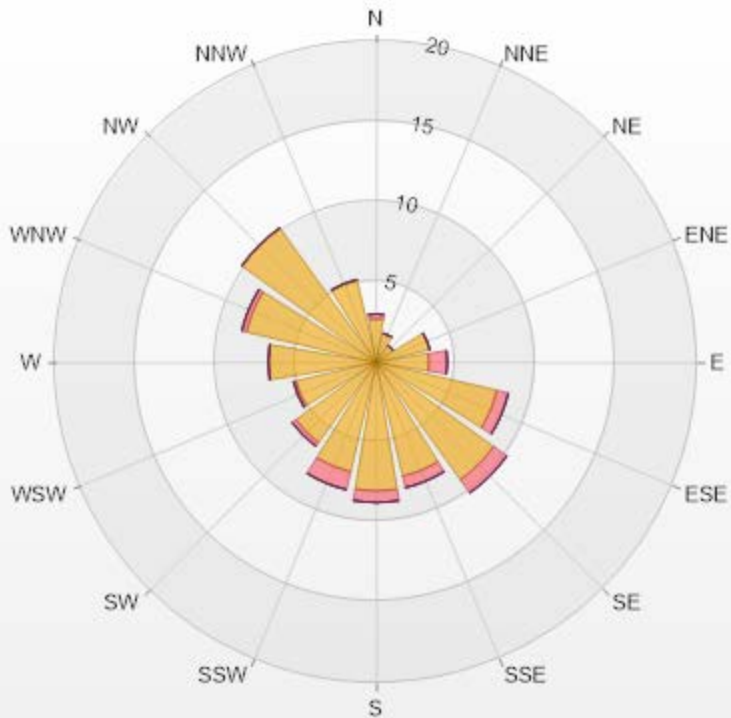




Wind: St. Lina Poll.: St. Lina-THC55[ppm] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.95% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	2.72	0.29	0	0	0	3.01
NNE	1.86	0	0	0	0	1.86
NE	1.29	0	0	0	0	1.29
ENE	3.43	0	0	0	0	3.43
E	3.29	1.14	0	0	0	4.43
ESE	7.73	0.72	0	0	0	8.45
SE	9.01	1	0	0	0	10.01
SSE	7.3	0.72	0	0	0	8.02
S	8.01	0.72	0	0	0	8.73
SSW	7.01	1.14	0	0	0	8.15
SW	6.15	0.29	0	0	0	6.44
WSW	5.15	0.14	0	0	0	5.29
W	6.72	0	0	0	0	6.72
WNW	8.3	0.29	0	0	0	8.59
NW	10.3	0	0	0	0	10.3
NNW	5.29	0	0	0	0	5.29
Summary	93.56	6.45	0	0	0	100





LICA-202110

% Icon Classes (ppm)

94 0-2

6 2-5

0 5-10

0 10-40

0 >40.0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - October 2021

Summary of Hourly Averages

METHANE (CH4) in ppm

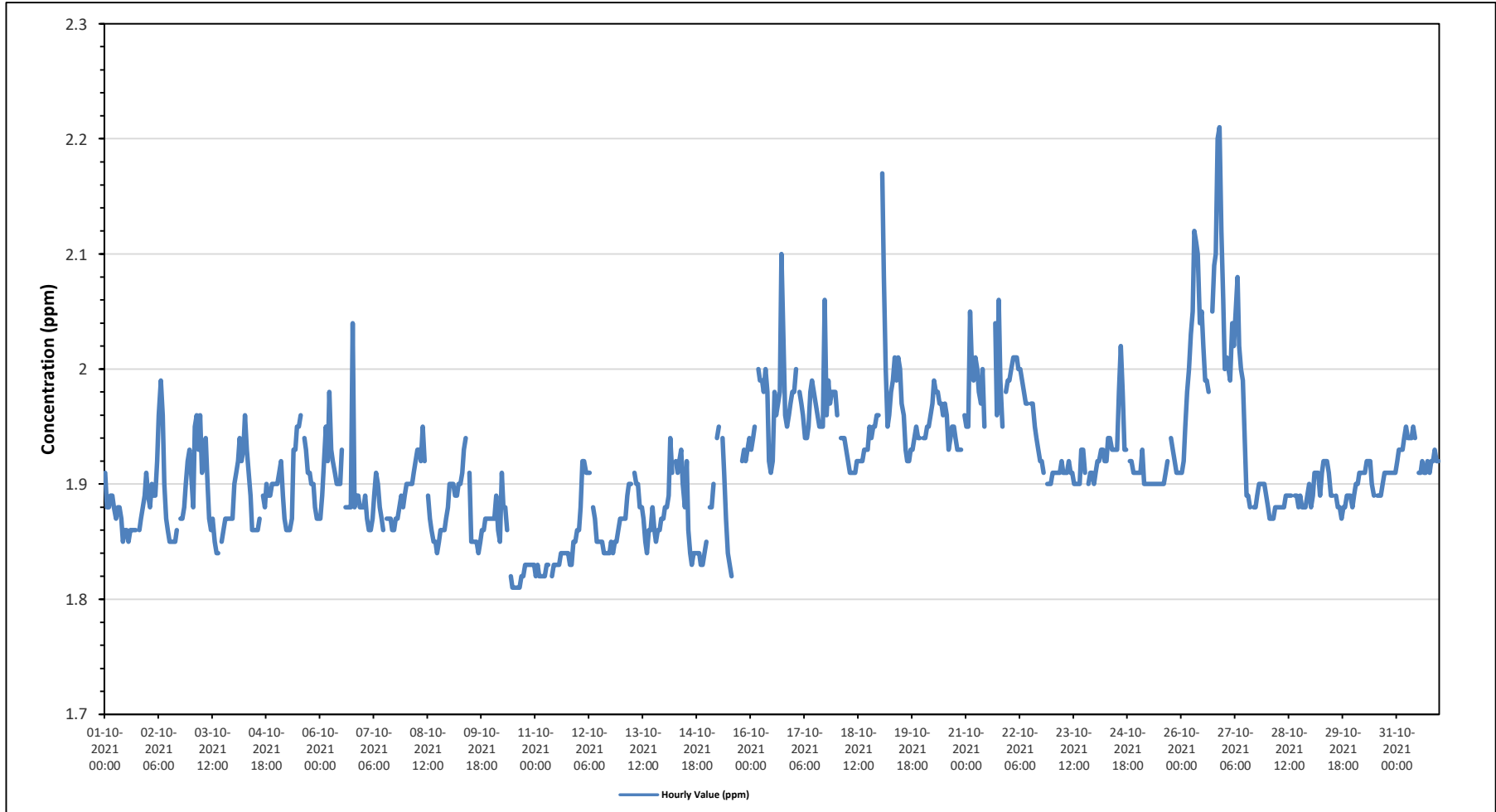
Maximum Hourly Value:	2.21 ppm on October 26 at hour 21	Hours in Service:	744
Maximum Daily Value:	2.05 ppm on October 26	Hours of Data:	699
Minimum Hourly Value:	1.81 ppm on October 10 at hour 11	Hours of Missing Data:	8
Minimum Daily Value:	1.83 ppm on October 11	Hours of Calibration:	37
Monthly Average:	1.91 ppm	Operational Uptime:	98.9

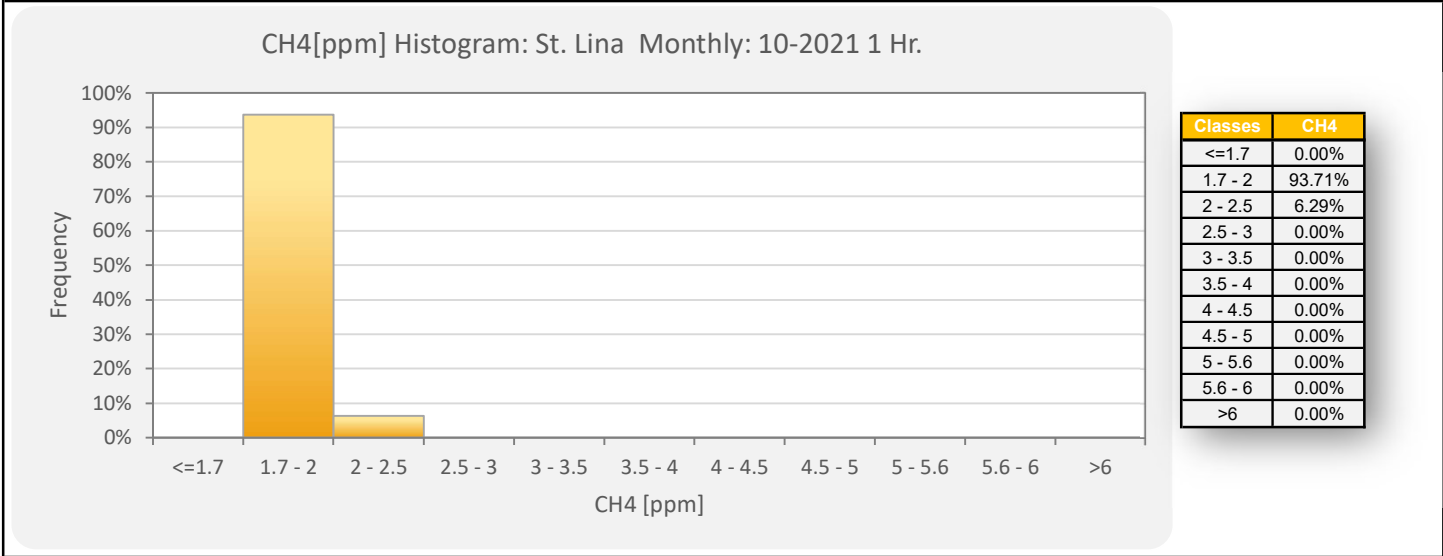
  

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average																	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23																
Oct 1	1.91	1.88	1.88	1.89	1.89	1.88	1.87	1.88	1.88	1.87	1.85	1.86	1.86	1.85	1.86	1.86	1.86	1.86	S	1.86	1.87	1.88	1.89	1.91	1.85	1.91	1.87																
Oct 2	1.89	1.88	1.90	1.89	1.89	1.92	1.96	1.99	1.96	1.90	1.87	1.86	1.85	1.85	1.85	1.85	1.86	S	1.87	1.87	1.88	1.90	1.92	1.93	1.85	1.99	1.89																
Oct 3	1.91	1.88	1.95	1.96	1.93	1.96	1.91	1.93	1.94	1.90	1.87	1.86	1.87	1.85	1.84	1.84	S	1.85	1.86	1.87	1.87	1.87	1.87	1.87	1.84	1.96	1.89																
Oct 4	1.90	1.91	1.92	1.94	1.92	1.93	1.96	1.93	1.91	1.89	1.86	1.86	1.86	1.87	S	1.89	1.88	1.90	1.89	1.89	1.90	1.90	1.90	1.90	1.86	1.96	1.90																
Oct 5	1.90	1.91	1.92	1.89	1.87	1.86	1.86	1.86	1.87	1.93	1.93	1.95	1.96	S	1.94	1.93	1.91	1.91	1.90	1.90	1.88	1.87	1.87	1.87	1.86	1.96	1.90																
Oct 6	1.87	1.89	1.92	1.95	1.92	1.98	1.93	1.92	1.91	1.90	1.90	1.90	1.93	S	1.88	1.88	1.88	1.88	2.04	1.88	1.89	1.89	1.88	1.88	1.87	2.04	1.91																
Oct 7	1.88	1.89	1.87	1.86	1.86	1.87	1.89	1.91	1.90	1.88	1.87	1.86	S	1.87	1.87	1.87	1.86	1.86	1.87	1.87	1.88	1.89	1.88	1.89	1.86	1.91	1.88																
Oct 8	1.90	1.90	1.90	1.90	1.91	1.92	1.93	1.93	1.92	1.95	1.92	S	1.89	1.87	1.86	1.85	1.85	1.84	1.85	1.86	1.86	1.86	1.87	1.88	1.84	1.95	1.89																
Oct 9	1.90	1.90	1.90	1.89	1.89	1.90	1.90	1.91	1.93	1.94	S	1.91	1.85	1.85	1.85	1.85	1.84	1.85	1.86	1.86	1.87	1.87	1.87	1.87	1.84	1.94	1.88																
Oct 10	1.87	1.87	1.89	1.86	1.85	1.91	1.88	1.88	1.86	S	1.82	1.81	1.81	1.81	1.81	1.81	1.82	1.82	1.83	1.83	1.83	1.83	1.83	1.83	1.81	1.91	1.84																
Oct 11	1.82	1.83	1.82	1.82	1.82	1.83	1.83	S	1.82	1.83	1.83	1.83	1.83	1.83	1.84	1.84	1.84	1.84	1.84	1.83	1.83	1.85	1.85	1.85	1.86	1.82	1.83																
Oct 12	1.86	1.88	1.92	1.92	1.91	1.91	1.91	S	1.88	1.87	1.85	1.85	1.85	1.84	1.84	1.84	1.84	1.84	1.85	1.84	1.85	1.85	1.86	1.87	1.84	1.92	1.87																
Oct 13	1.87	1.87	1.87	1.89	1.90	1.90	S	1.91	1.90	1.90	1.88	1.88	1.87	1.85	1.84	1.86	1.86	1.88	1.86	1.85	1.86	1.86	1.87	1.87	1.84	1.91	1.87																
Oct 14	1.88	1.88	1.89	1.94	1.91	S	1.92	1.91	1.92	1.93	1.90	1.88	1.92	1.86	1.84	1.83	1.84	1.84	1.84	1.84	1.84	1.83	1.83	1.84	1.85	1.83	1.94	1.87															
Oct 15	X	1.88	1.88	1.90	S	1.94	1.95	X	1.94	1.91	1.87	1.84	1.83	1.82	C	C	C	C	C	1.92	1.93	1.92	1.93	1.94	1.82	1.95	-																
Oct 16	1.93	1.94	1.95	S	2.00	1.99	1.99	1.98	2.00	1.98	1.92	1.91	1.92	1.98	1.96	1.97	1.98	2.10	2.02	1.96	1.95	1.96	1.97	1.98	1.91	2.10	1.97																
Oct 17	1.98	2.00	S	1.98	1.97	1.96	1.94	1.94	1.95	1.98	1.99	1.98	1.97	1.96	1.95	1.95	1.95	2.06	1.96	1.99	1.97	1.98	1.98	1.98	1.94	2.06	1.97																
Oct 18	1.96	S	1.94	1.94	1.94	1.93	1.92	1.91	1.91	1.91	1.91	1.92	1.92	1.92	1.93	1.93	1.93	1.95	1.94	1.95	1.95	1.96	1.96	1.96	1.91	1.96	1.93																
Oct 19	S	2.17	2.08	2.00	1.95	1.96	1.98	1.99	2.01	1.99	2.01	2.00	1.97	1.96	1.93	1.92	1.92	1.93	1.93	1.94	1.95	1.94	1.94	S	1.92	2.17	1.98																
Oct 20	1.94	1.94	1.95	1.95	1.96	1.97	1.99	1.98	1.98	1.97	1.97	1.96	1.97	1.96	1.93	1.94	1.95	1.95	1.94	1.93	1.93	1.93	S	1.96	1.93	1.99	1.95																
Oct 21	1.95	1.95	2.05	2.00	1.99	2.01	2.00	1.98	1.97	2.00	1.95	NRM	NRM	NRM	NRM	NRM	2.04	1.96	2.06	1.99	1.95	S	1.98	1.99	1.95	2.06	1.99																
Oct 22	1.99	2.00	2.01	2.01	2.01	2.00	2.00	1.99	1.98	1.97	1.97	X	1.97	1.97	1.95	1.94	1.93	1.92	1.92	1.91	S	1.90	1.90	1.90	1.90	2.01	1.96																
Oct 23	1.91	1.91	1.91	1.91	1.91	1.92	1.91	1.91	1.91	1.92	1.91	1.91	1.90	1.90	1.90	1.90	1.93	1.93	1.91	S	1.90	1.91	1.91	1.90	1.90	1.93	1.91																
Oct 24	1.91	1.92	1.92	1.93	1.93	1.92	1.92	1.94	1.94	1.93	1.93	1.93	1.93	1.98	2.02	1.98	1.93	1.93	S	1.92	1.92	1.91	1.91	1.91	1.91	1.91	2.02	1.93															
Oct 25	1.91	1.91	1.93	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.91	1.92	S	1.94	1.93	1.92	1.91	1.91	1.91	1.91	1.90	1.94	1.91																
Oct 26	1.91	1.92	1.95	1.98	2.00	2.03	2.05	2.12	2.11	2.10	2.04	2.05	2.02	1.99	1.99	1.98	S	2.05	2.09	2.10	2.20	2.21	2.12	2.06	1.91	2.21	2.05																
Oct 27	2.00	2.01	2.00	1.99	2.04	2.02	2.05	2.08	2.02	2.00	1.99	1.94	1.89	1.89	1.88	S	1.88	1.88	1.89	1.90	1.90	1.90	1.89	1.88	2.08	1.95	1.95																
Oct 28	1.88	1.87	1.87	1.87	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.89	1.89	1.89	1.89	S	1.89	1.89	1.88	1.88	1.88	1.88	1.89	1.90	1.87	1.90	1.88																
Oct 29	1.88	1.89	1.91	1.91	1.91	1.89	1.91	1.92	1.92	1.92	1.91	1.89	1.89	S	1.89	1.88	1.88	1.87	1.88	1.88	1.89	1.89	1.89	1.88	1.87	1.92	1.89																
Oct 30	1.89	1.90	1.90	1.91	1.91	1.91	1.91	1.92	1.92	1.92	1.90	1.89	S	1.89	1.89	1.89	1.90	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.89	1.92	1.91																
Oct 31	1.92	1.93	1.93	1.93	1.94	1.95	1.94	1.94	1.95	1.94	S	1.91	1.91	1.92	1.91	1.91	1.92	1.91	1.92	1.91	1.92	1.92	1.92	1.92	1.91	1.95	1.93																
Diurnal Maximum	2.00	2.17	2.08	2.01	2.04	2.03	2.05	2.12	2.11	2.10	2.04	2.05	2.02	1.99	2.02	1.98	2.04	2.10	2.09	2.10	2.20	2.21	2.12	2.06																			
Diurnal Average	1.91	1.92	1.92	1.92	1.92	1.93	1.93	1.94	1.94	1.93	1.91	1.90	1.90	1.90	1.89	1.89	1.90	1.91	1.91	1.90	1.91	1.91	1.91	1.91																			
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.

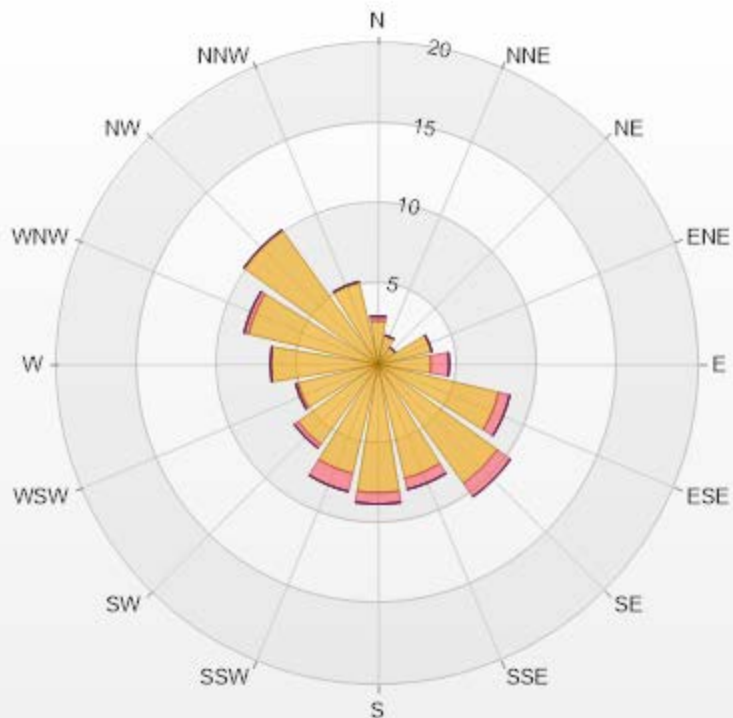
**Timeseries Chart of Hourly Average for CH4 - St. Lina Site**





Wind: St. Lina Poll.: St. Lina-CH4[ppm] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.09% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-20	>20.0	Total
N	2.71	0.29	0	0	0	3
NNE	1.86	0	0	0	0	1.86
NE	1.29	0	0	0	0	1.29
ENE	3.43	0	0	0	0	3.43
E	3.29	1.14	0	0	0	4.43
ESE	7.71	0.71	0	0	0	8.42
SE	9.14	1	0	0	0	10.14
SSE	7.29	0.71	0	0	0	8
S	8	0.71	0	0	0	8.71
SSW	7	1.14	0	0	0	8.14
SW	6.14	0.29	0	0	0	6.43
WSW	5.14	0.14	0	0	0	5.28
W	6.71	0	0	0	0	6.71
WNW	8.29	0.29	0	0	0	8.58
NW	10.29	0	0	0	0	10.29
NNW	5.29	0	0	0	0	5.29
Summary	93.58	6.42	0	0	0	100



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% Icon Classes (ppm)

94 0-2

6 2-5

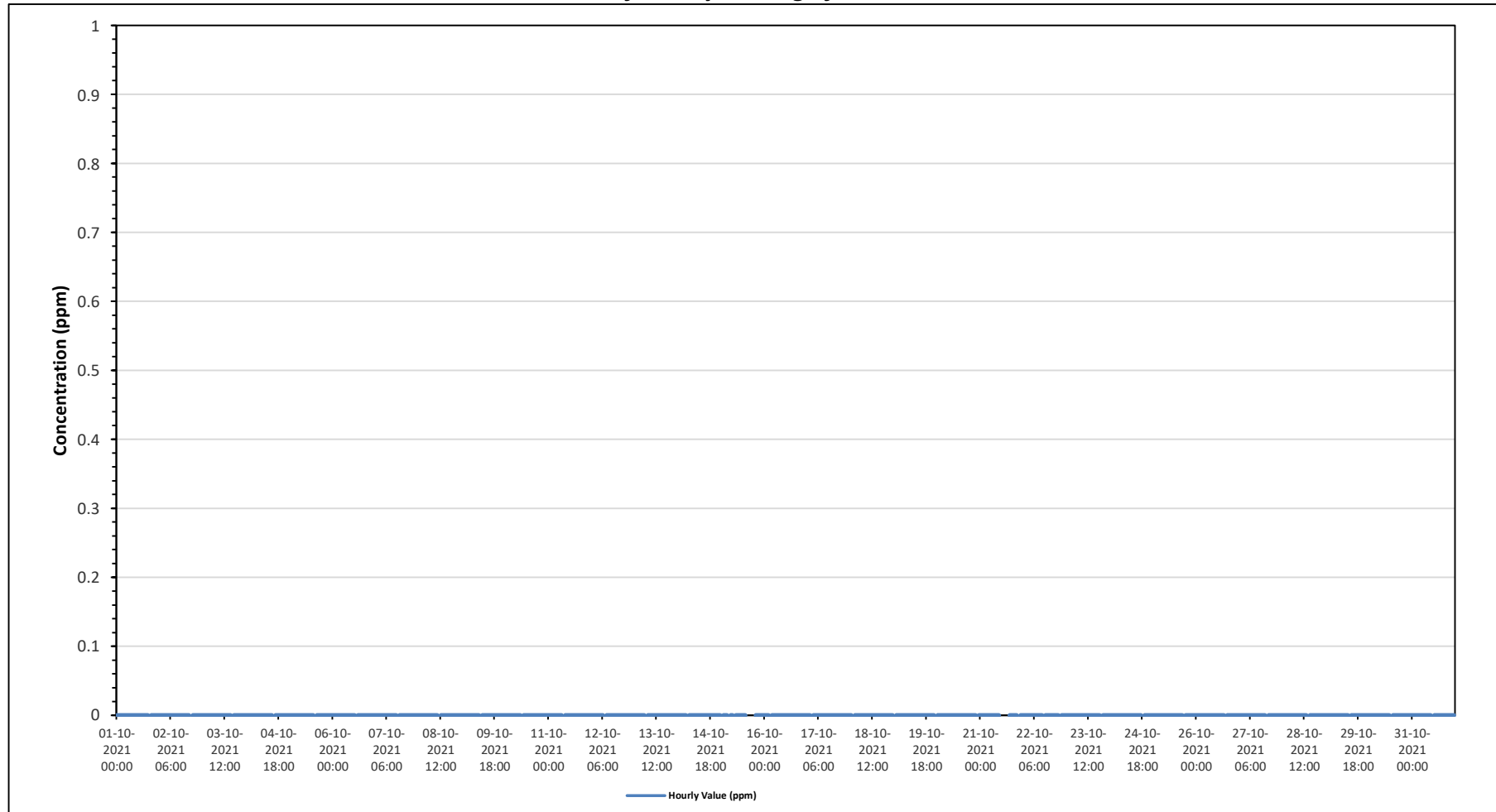
0 5-10

0 10-20

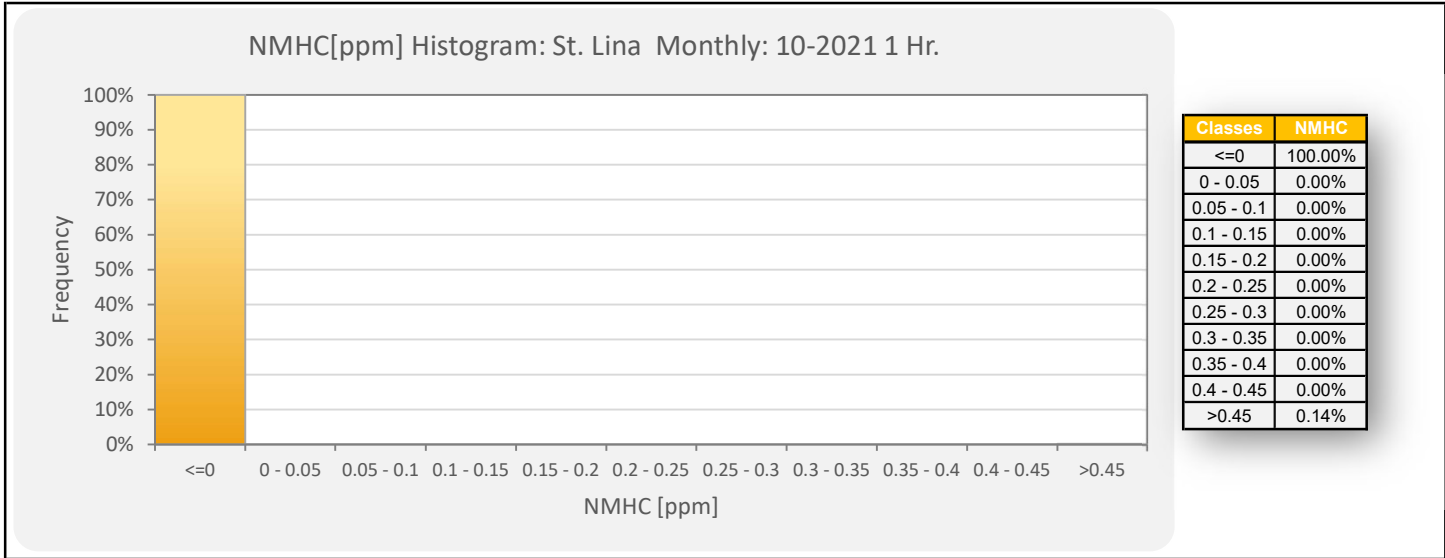
0 >20.0



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

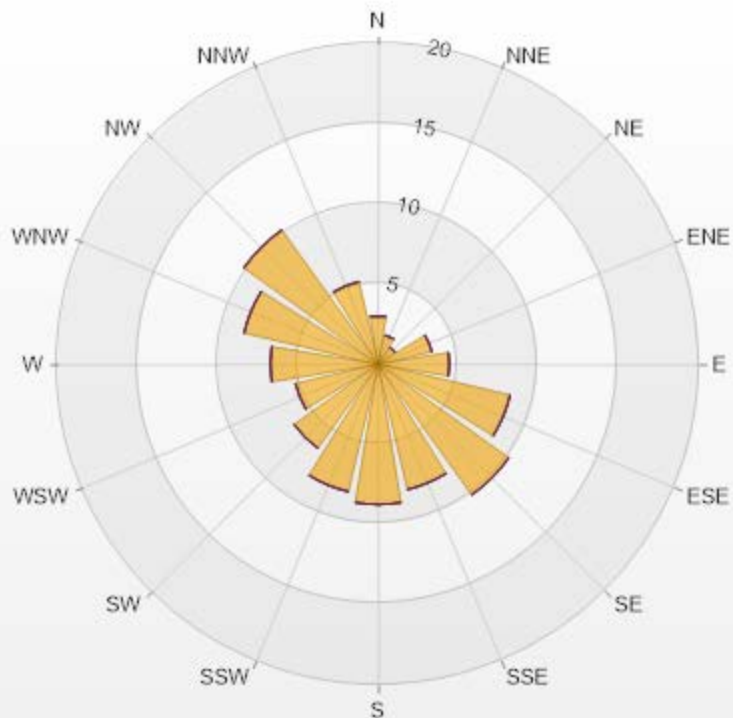






Wind: St. Lina Poll.: St. Lina-NMHC[ppm] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.95% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0	Total
N	3	0	0	0	0	3
NNE	1.86	0	0	0	0	1.86
NE	1.29	0	0	0	0	1.29
ENE	3.43	0	0	0	0	3.43
E	4.43	0	0	0	0	4.43
ESE	8.44	0	0	0	0	8.44
SE	10.01	0	0	0	0	10.01
SSE	8.01	0	0	0	0	8.01
S	8.73	0	0	0	0	8.73
SSW	8.15	0	0	0	0	8.15
SW	6.44	0	0	0	0	6.44
WSW	5.29	0	0	0	0	5.29
W	6.72	0	0	0	0	6.72
WNW	8.58	0	0	0	0	8.58
NW	10.3	0	0	0	0	10.3
NNW	5.29	0	0	0	0	5.29
Summary	100	0	0	0	0	100




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% 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

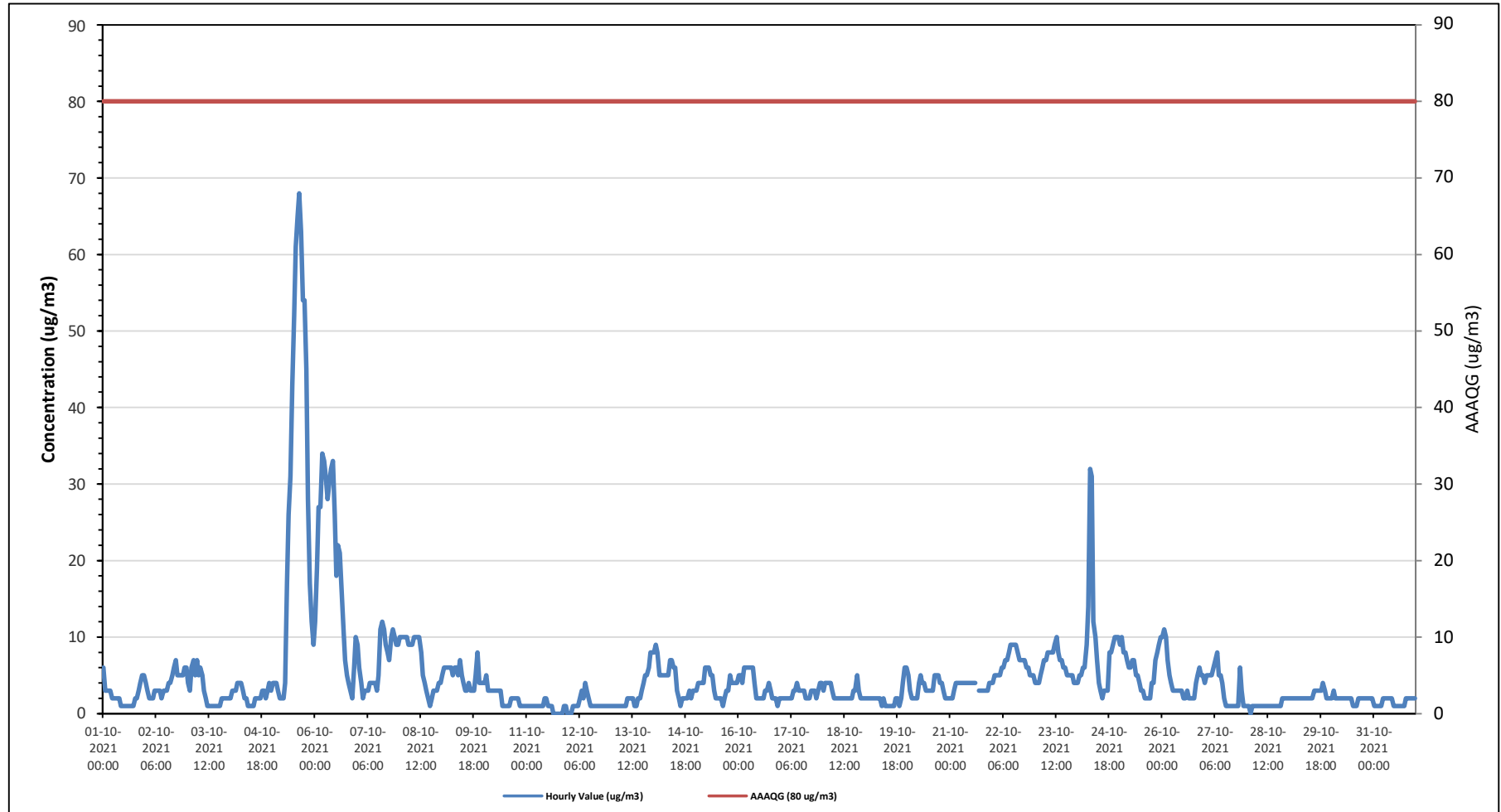
St. Lina Site - October 2021

Summary of Hourly Averages

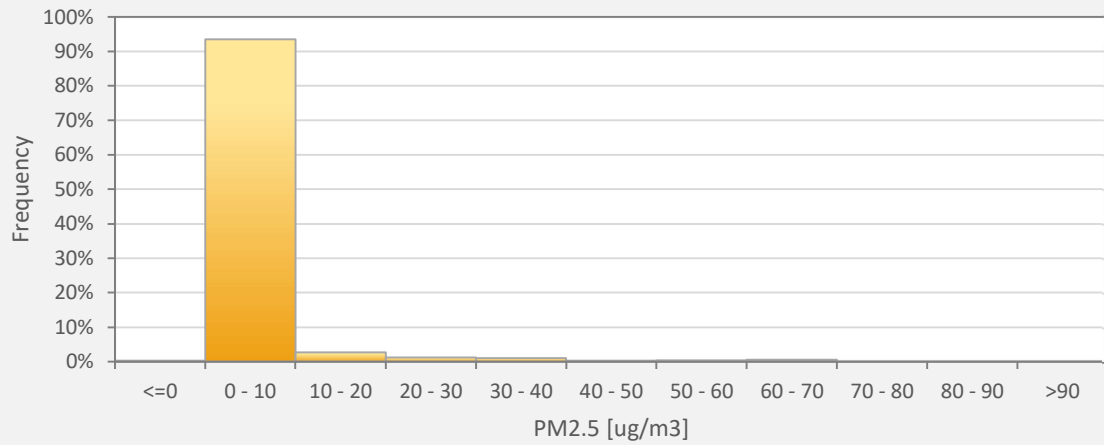
### PARTICULATE MATTER 2.5 (PM<sub>2.5</sub>) in µg/m<sup>3</sup>

Alberta Ambient Air Quality Guideline (AAAQG): 1-Hour 80 µg/m <sup>3</sup> , Alberta Ambient Air Quality Objective (AAAQO): 24-Hour 29 µg/m <sup>3</sup>																																											
Number of 1-Hour Exceedences: 0													Number of 24-Hour Exceedences: 0																														
Maximum Hourly Value: 68 µg/m <sup>3</sup> on October 5 at hour 15													Hours in Service: 744																														
Maximum Daily Value: 27.9 µg/m <sup>3</sup> on October 5													Hours of Data: 743																														
Minimum Hourly Value: 0 µg/m <sup>3</sup> on October 11 at hour 15													Hours of Missing Data: 0																														
Minimum Daily Value: 1 µg/m <sup>3</sup> on October 11													Hours of Calibration: 1																														
Monthly Average: 4.9 µg/m <sup>3</sup>													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																
Oct 1	6	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	3	4	5	5	1	6	2.4																
Oct 2	4	3	2	2	2	3	3	3	3	2	3	3	3	4	4	5	6	7	5	5	5	5	6	6	2	7	3.9																
Oct 3	4	3	6	7	5	7	5	6	5	3	2	1	1	1	1	1	1	1	1	2	2	2	2	2	1	7	3.0																
Oct 4	2	3	3	3	4	4	4	3	2	2	1	1	1	1	2	2	2	2	3	3	2	3	4	3	1	4	2.5																
Oct 5	4	4	4	3	2	2	2	4	17	26	31	43	52	61	65	68	63	54	54	45	28	17	12	9	2	68	27.9																
Oct 6	12	19	27	27	34	33	31	28	30	32	33	26	18	22	21	16	11	7	5	4	3	2	6	10	2	34	19.0																
Oct 7	9	6	4	2	3	3	3	4	4	4	4	3	5	11	12	11	9	8	7	10	11	10	9	9	2	12	6.7																
Oct 8	10	10	10	10	10	9	9	9	10	10	10	10	8	5	4	3	2	1	2	3	3	3	4	4	1	10	6.6																
Oct 9	5	6	6	6	6	5	6	5	6	5	7	5	4	3	3	4	3	3	5	8	4	4	4	4	3	8	4.9																
Oct 10	4	5	3	3	3	3	3	3	3	3	1	1	1	1	1	2	2	2	2	2	1	1	1	1	1	5	2.2																
Oct 11	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	0	0	0	0	0	0	1	1	0	0	2	0.8																
Oct 12	0	0	1	1	1	1	2	3	2	4	3	2	1	1	1	1	1	1	1	1	1	1	1	1	0	4	1.3																
Oct 13	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1	2	2	3	4	5	5	6	8	8	1	8	2.6																
Oct 14	8	9	8	5	5	5	5	5	5	7	7	6	6	3	2	1	2	2	2	2	3	2	3	3	1	9	4.4																
Oct 15	3	4	4	4	4	6	6	6	5	5	3	2	2	2	2	1	2	3	3	5	4	4	4	4	1	6	3.7																
Oct 16	5	5	4	6	6	6	6	6	6	4	2	2	2	2	2	3	3	4	3	2	2	2	1	2	1	6	3.6																
Oct 17	2	2	2	2	2	2	2	3	3	4	3	3	3	3	2	2	2	3	3	3	2	3	4	4	2	4	2.7																
Oct 18	3	4	4	4	4	3	2	2	2	2	2	2	2	2	2	2	3	3	5	3	2	2	2	2	2	5	2.7																
Oct 19	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	1	2	2	1	2	4	6	6	1	6	2.1																
Oct 20	5	3	2	2	2	4	5	4	4	4	3	3	3	3	3	5	5	5	4	4	3	2	2	2	2	5	3.3																
Oct 21	2	2	3	4	4	4	4	4	4	4	4	4	4	4	4	C	3	3	3	3	3	3	4	4	2	4	3.5																
Oct 22	4	5	5	5	5	6	6	7	7	8	9	9	9	9	8	7	7	7	6	6	5	5	5	5	4	9	6.5																
Oct 23	4	4	4	5	6	7	7	8	8	8	8	9	10	8	7	7	6	6	5	5	5	4	4	4	4	10	6.3																
Oct 24	4	5	5	6	6	9	14	32	31	12	10	7	4	3	2	3	3	3	8	8	9	10	10	10	2	32	8.9																
Oct 25	9	10	8	8	7	6	6	7	7	5	4	3	3	2	2	2	2	4	4	7	8	9	10	2	10	5.8																	
Oct 26	10	11	10	7	5	4	3	3	3	3	3	2	2	3	2	2	2	2	4	5	6	5	5	2	11	4.4																	
Oct 27	4	5	5	5	5	6	7	8	5	5	4	2	1	1	1	1	1	1	1	1	6	3	1	1	1	8	3.3																
Oct 28	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	0	2	1.1																
Oct 29	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	4	3	2	2	2	2	2	4	2.3																
Oct 30	2	3	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2	2	2	2	2	2	1	3	1.9																
Oct 31	1	1	1	1	1	2	2	2	2	2	2	1	1	1	1	1	1	1	2	2	2	2	2	2	1	2	1.5																
Diurnal Maximum	12	19	27	27	34	33	31	32	31	32	33	43	52	61	65	68	63	54	54	45	28	17	12	10																			
Dalurnal Average	4.3	4.6	4.6	4.5	4.6	4.8	4.9	5.7	6.0	5.6	5.5	5.3	5.0	5.3	5.3	5.3	4.9	4.6	4.7	4.8	4.5	4.1	4.2	4.3																			
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 PM2.5 - St. Lina Site**



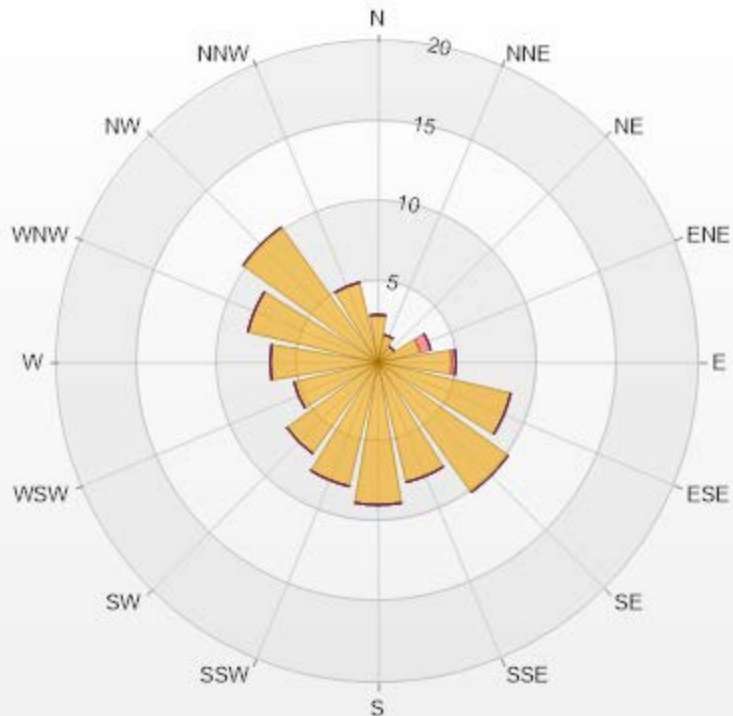
PM2.5[ug/m3(L)] Histogram: St. Lina Monthly: 10-2021 1 Hr.



Classes	PM2.5
<=0	0.27%
0 - 10	93.54%
10 - 20	2.69%
20 - 30	1.21%
30 - 40	1.08%
40 - 50	0.27%
50 - 60	0.40%
60 - 70	0.54%
70 - 80	0.00%
80 - 90	0.00%
>90	0.00%

Wind: St. Lina Poll.: St. Lina-PM2.5[ug/m3(L)] Monthly: 10-2021 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 99.87% Calm Avg: 0.00 [ug/m3(L)]

Direction	0-50	50-80	80-120	120-240	>240.0	Total
N	2.96	0	0	0	0	2.96
NNE	1.75	0	0	0	0	1.75
NE	1.21	0	0	0	0	1.21
ENE	2.69	0.67	0	0	0	3.36
E	4.58	0.27	0	0	0	4.85
ESE	8.48	0	0	0	0	8.48
SE	9.96	0	0	0	0	9.96
SSE	7.67	0	0	0	0	7.67
S	8.88	0	0	0	0	8.88
SSW	7.94	0	0	0	0	7.94
SW	7	0	0	0	0	7
WSW	5.38	0	0	0	0	5.38
W	6.73	0	0	0	0	6.73
WNW	8.34	0	0	0	0	8.34
NW	10.36	0	0	0	0	10.36
NNW	5.11	0	0	0	0	5.11
Summary	99.04	0.94	0	0	0	100



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% Icon Classes (ug/m3(L))

99 0-50

1 50-80

0 80-120

0 120-240

0 >240.0





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - October 2021

Summary of Hourly Averages

RELATIVE HUMIDITY (RH) in %

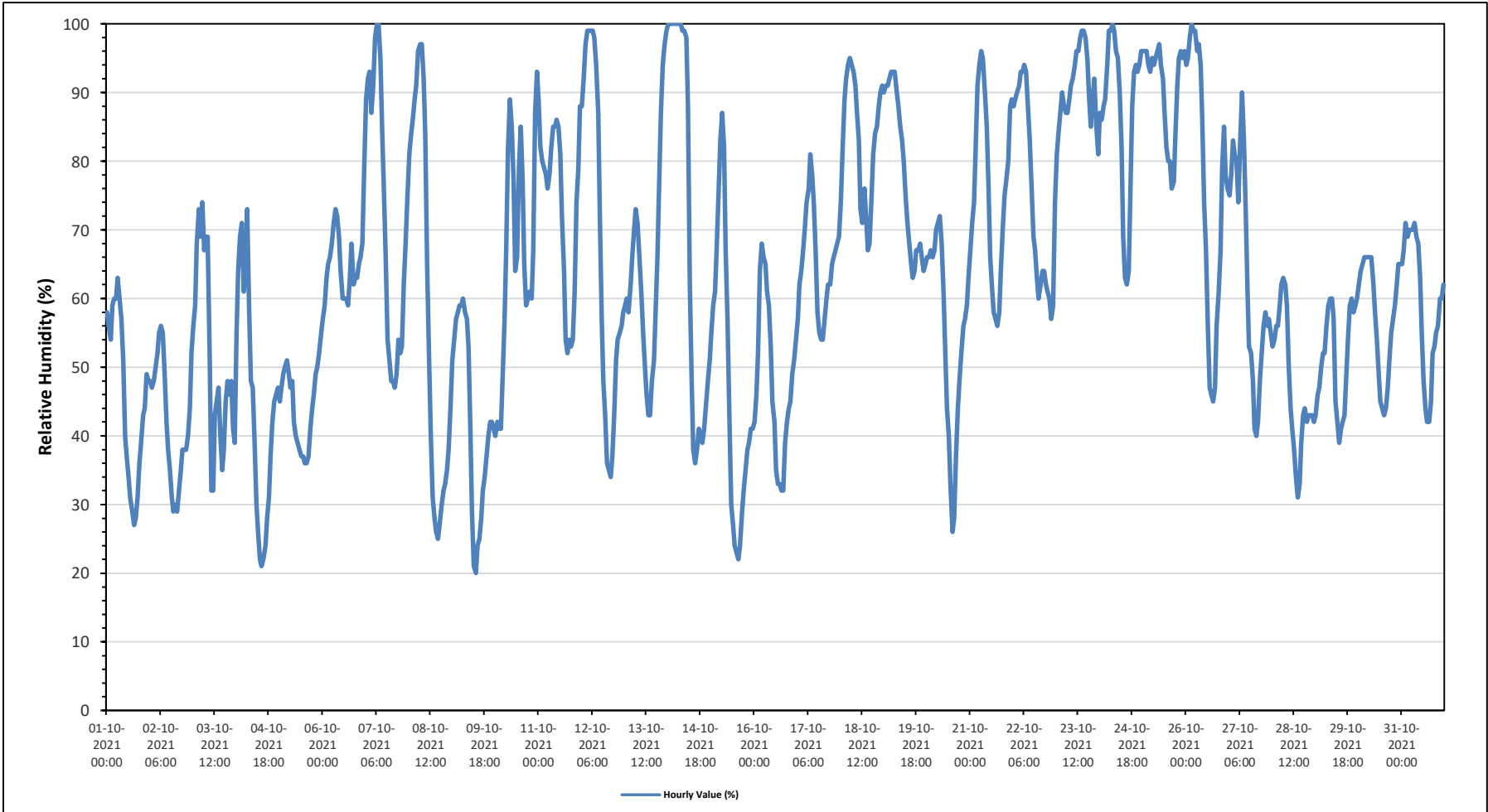
Maximum Hourly Value:	100 %	on October 7 at hour 6	Hours in Service:	744
Maximum Daily Value:	90.7 %	on October 25	Hours of Data:	744
Minimum Hourly Value:	20 %	on October 9 at hour 13	Hours of Missing Data:	0
Minimum Daily Value:	42.1 %	on October 2	Hours of Calibration:	0
Monthly Average:	63.3 %		Operational 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	
Oct 1	58	56	54	59	60	60	63	60	57	51	40	37	34	31	29	27	28	31	36	39	43	44	49	48	27	63	45.6	
Oct 2	48	47	48	50	52	55	56	55	49	42	38	35	31	29	30	29	32	35	38	38	38	40	44	52	29	56	42.1	
Oct 3	56	59	68	73	69	74	67	69	69	51	32	32	43	45	47	40	35	38	45	48	46	48	41	39	32	74	51.4	
Oct 4	55	64	69	71	61	64	73	59	48	47	39	30	26	22	21	22	24	28	31	37	42	45	46	47	21	73	44.6	
Oct 5	45	47	49	50	51	49	47	48	42	40	39	38	37	37	36	36	37	41	44	46	49	50	52	55	36	55	44.4	
Oct 6	57	59	63	65	66	68	71	73	72	69	64	60	60	60	59	63	68	62	63	63	65	66	68	79	57	79	65.1	
Oct 7	89	92	93	87	91	98	100	100	95	84	76	66	54	51	48	48	47	49	54	52	53	62	68	74	47	100	72.1	
Oct 8	81	84	86	89	91	96	97	97	92	84	65	52	40	31	28	26	25	27	30	32	33	35	38	44	25	97	58.5	
Oct 9	51	54	57	58	59	59	60	58	57	53	41	29	21	20	24	25	28	32	34	37	40	42	42	41	20	60	42.6	
Oct 10	40	42	41	41	49	57	67	82	89	85	77	64	66	79	85	77	65	59	60	61	60	67	87	93	40	93	66.4	
Oct 11	89	82	80	79	78	76	78	82	85	85	86	85	81	72	64	54	52	54	53	54	61	74	79	88	52	89	73.8	
Oct 12	88	92	97	99	99	99	99	98	94	87	72	57	48	43	36	35	34	37	43	51	54	55	56	58	34	99	68.0	
Oct 13	59	60	58	62	66	70	73	71	66	61	55	50	46	43	43	48	51	58	66	76	87	94	97	99	43	99	65.0	
Oct 14	100	100	100	100	100	100	100	100	99	99	99	98	88	62	48	38	36	38	41	40	39	41	44	48	51	36	100	71.3
Oct 15	55	59	61	67	75	83	87	82	67	57	43	30	27	24	23	22	24	29	32	35	38	39	41	41	22	87	47.5	
Oct 16	42	46	52	64	68	66	65	61	59	53	45	42	35	33	33	32	32	39	42	44	45	49	51	54	32	68	48.0	
Oct 17	57	62	64	67	70	74	76	81	78	74	67	58	55	54	54	57	60	62	62	65	66	67	68	69	54	81	65.3	
Oct 18	74	82	89	92	94	95	94	93	91	87	83	73	71	76	72	67	68	74	81	84	85	88	90	91	67	95	83.1	
Oct 19	90	91	91	92	93	93	93	90	88	85	83	80	75	71	68	65	63	64	67	67	68	66	64	65	63	93	78.0	
Oct 20	66	66	67	66	67	70	71	72	68	61	53	44	40	33	26	28	37	44	48	52	56	57	59	63	26	72	54.8	
Oct 21	67	71	74	83	91	94	96	95	90	85	77	66	62	58	57	56	58	64	70	75	77	80	88	89	56	96	76.0	
Oct 22	88	89	90	91	93	93	94	93	88	83	76	69	67	63	60	62	64	64	62	61	60	57	59	74	57	94	75.0	
Oct 23	81	84	87	90	88	87	87	89	91	92	94	96	96	98	99	99	98	95	89	85	89	92	85	81	81	99	90.5	
Oct 24	87	86	88	89	94	99	99	100	99	96	95	90	82	69	63	62	64	77	88	93	94	93	94	96	62	100	87.4	
Oct 25	96	96	96	94	93	95	94	95	96	97	94	92	87	82	80	80	76	77	84	91	95	96	95	96	76	97	90.7	
Oct 26	94	95	98	100	99	99	96	97	94	86	74	67	56	47	46	45	47	56	61	67	79	85	78	76	45	100	76.8	
Oct 27	75	78	83	81	80	74	83	90	83	74	62	53	52	48	41	40	42	48	52	56	58	56	57	55	40	90	63.4	
Oct 28	53	54	56	56	59	62	63	62	59	50	44	41	38	34	31	33	39	43	44	42	43	43	43	42	31	63	47.3	
Oct 29	43	46	47	50	52	52	56	59	60	60	57	45	42	39	41	42	43	49	54	59	60	58	59	60	39	60	51.4	
Oct 30	62	64	65	66	66	66	66	66	62	58	54	49	45	44	43	44	47	51	55	57	59	62	65	65	43	66	57.5	
Oct 31	65	67	71	69	70	70	70	71	69	68	63	55	48	44	42	42	45	52	53	55	56	60	60	62	42	71	59.5	
Diurnal Maximum	100	100	100	100	100	100	100	100	99	99	98	96	96	98	99	99	98	95	89	93	95	96	97	99				
Diurnal Average	68.1	70.1	72.3	74.2	75.6	77.3	78.7	79.0	76.0	71.1	64.1	57.2	52.5	49.3	47.3	46.5	47.5	51.0	54.2	56.8	59.4	61.7	63.6	66.0				
<b>C</b>	Monthly Calibration		<b>S</b>	Daily Zero-Span Check		<b>Q</b>	Quality Assurance																					
<b>K</b>	Collection Error		<b>N</b>	No Data (Machine Not in Service)		<b>Y</b>	Routine Maintenance		<b>P</b>	Power Failure																		
<b>X</b>	Invalid Data (Equipment Malfunction /Recovery)		<b>NRM</b>	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 RH - St. Lina Site**





**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

**St. Lina Site - October 2021**

**Summary of Hourly Averages**

**BAROMETRIC PRESSURE (BP) in millibar**

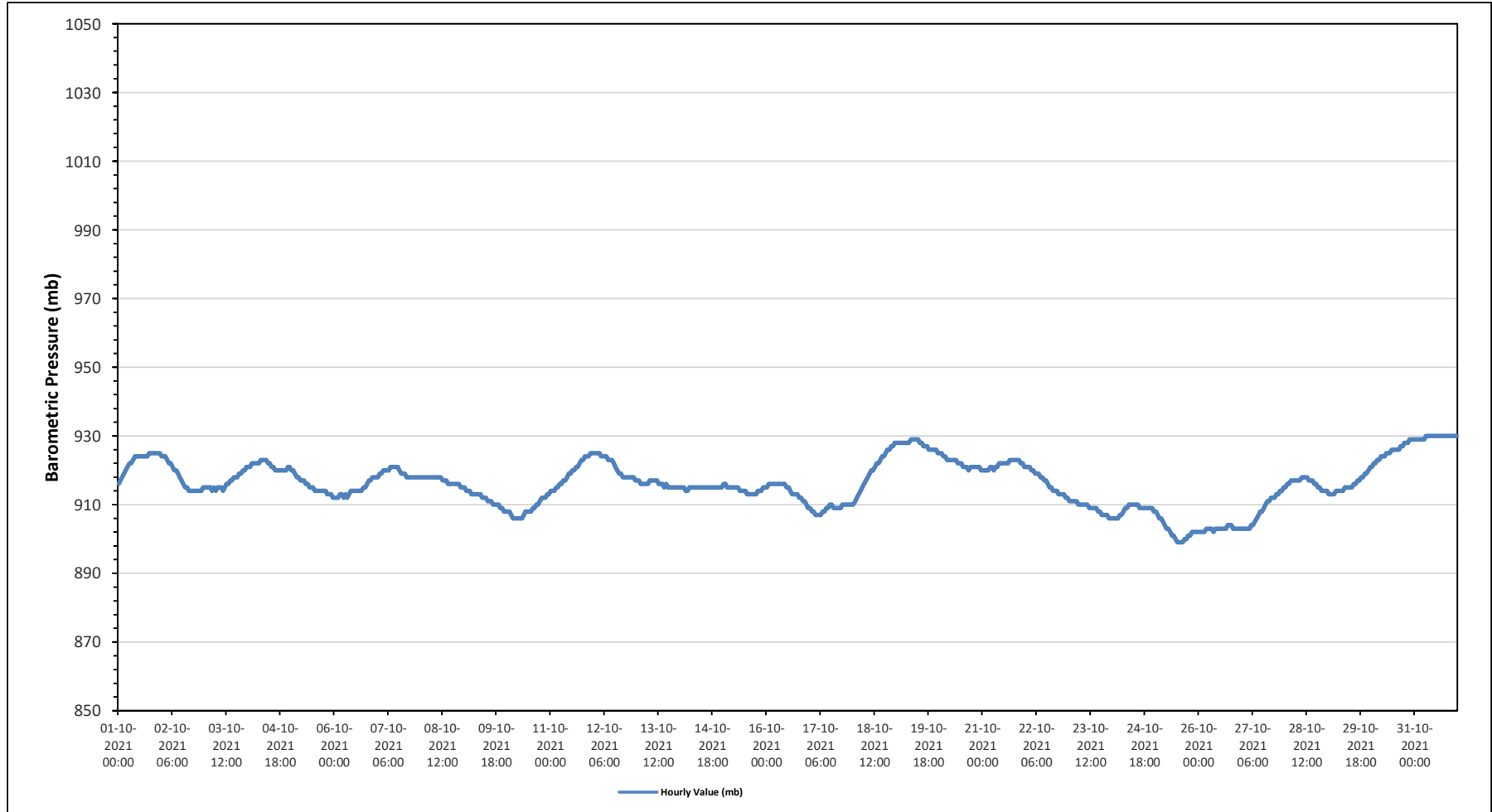
Maximum Hourly Value:	930 mb on October 31 at hour 6	Hours in Service:	744
Maximum Daily Value:	930 mb on October 31	Hours of Data:	744
Minimum Hourly Value:	899 mb on October 25 at hour 12	Hours of Missing Data:	0
Minimum Daily Value:	902 mb on October 25	Hours of Calibration:	0
Monthly Average:	916 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
Oct 1	916	917	918	919	920	921	922	922	923	924	924	924	924	924	924	924	924	925	925	925	925	925	925	925	916	925	923
Oct 2	924	924	924	923	922	922	921	920	920	919	918	917	916	915	915	914	914	914	914	914	914	914	914	915	914	924	918
Oct 3	915	915	915	915	914	915	914	915	915	915	914	915	916	916	917	917	918	918	918	919	919	920	920	921	920	923	921
Oct 4	921	921	922	922	922	922	923	923	923	923	923	922	922	921	921	920	920	920	920	920	920	920	921	921	920	923	921
Oct 5	920	920	919	918	918	917	917	917	916	916	915	915	915	914	914	914	914	914	914	913	913	913	912	912	912	920	916
Oct 6	912	912	912	913	913	912	913	912	913	914	914	914	914	914	914	914	915	915	916	917	917	918	918	918	912	918	914
Oct 7	918	919	919	920	920	920	920	921	921	921	921	920	919	919	919	919	918	918	918	918	918	918	918	918	918	921	919
Oct 8	918	918	918	918	918	918	918	918	918	918	918	918	917	917	917	916	916	916	916	916	916	916	915	915	915	918	917
Oct 9	915	914	914	914	913	913	913	913	913	913	912	912	912	911	911	910	910	910	910	909	909	908	908	908	908	915	912
Oct 10	908	908	907	906	906	906	906	906	906	907	908	908	908	908	909	909	910	910	911	912	912	912	913	913	906	913	909
Oct 11	914	914	914	915	915	916	916	916	917	917	918	919	919	920	920	921	921	922	923	923	924	924	925	925	914	925	919
Oct 12	925	925	925	925	924	924	924	924	923	923	923	922	921	920	919	919	918	918	918	918	918	918	917	917	917	925	921
Oct 13	917	917	916	916	916	916	916	917	917	917	917	917	916	916	916	915	916	915	915	915	915	915	915	915	915	917	916
Oct 14	915	915	915	914	914	915	915	915	915	915	915	915	915	915	915	915	915	915	915	915	915	915	915	915	914	915	915
Oct 15	916	916	915	915	915	915	915	915	915	914	914	914	914	913	913	913	913	913	913	914	914	914	915	915	913	916	914
Oct 16	915	916	916	916	916	916	916	916	916	916	916	915	915	914	913	913	913	913	912	912	911	911	910	909	909	916	914
Oct 17	909	908	908	907	907	907	907	908	908	909	909	910	910	909	909	909	909	909	910	910	910	910	910	910	907	910	909
Oct 18	910	911	912	913	914	915	916	917	918	919	920	920	921	922	922	923	924	924	925	926	926	927	927	928	910	928	920
Oct 19	928	928	928	928	928	928	928	928	928	929	929	929	929	929	928	927	927	926	926	926	926	926	925	925	925	929	928
Oct 20	925	925	924	924	923	923	923	923	923	923	922	922	922	921	921	920	921	921	921	921	921	921	920	920	920	925	922
Oct 21	920	920	920	920	921	921	920	921	922	922	922	922	922	922	923	923	923	923	923	923	923	922	922	921	920	923	922
Oct 22	921	921	921	920	920	919	919	919	918	918	917	917	916	915	915	914	914	914	913	913	913	913	912	912	912	921	916
Oct 23	911	911	911	911	911	910	910	910	910	910	910	909	909	909	909	909	908	908	907	907	907	907	906	906	906	911	909
Oct 24	906	906	906	906	907	907	908	909	909	910	910	910	910	910	909	909	909	909	909	909	909	909	908	908	906	910	909
Oct 25	908	907	906	906	905	904	903	903	902	901	901	900	899	899	899	900	900	901	901	902	902	902	902	899	908	902	
Oct 26	902	902	902	902	903	903	903	903	902	903	903	903	903	903	903	904	904	904	903	903	903	903	903	902	904	903	
Oct 27	903	903	903	903	904	904	905	906	907	908	908	909	910	911	911	912	912	912	913	913	914	914	915	903	915	908	
Oct 28	915	916	916	917	917	917	917	917	917	918	918	918	918	917	917	916	916	915	915	914	914	914	914	914	914	918	916
Oct 29	913	913	913	913	914	914	914	914	914	915	915	915	915	915	916	916	917	917	918	918	919	919	920	921	913	921	916
Oct 30	921	922	922	923	923	924	924	924	925	925	925	926	926	926	926	927	927	928	928	928	929	929	929	921	929	926	
Oct 31	929	929	929	929	929	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	929	930	930	
Diurnal Maximum	929	929	929	929	929	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930
Diurnal Average	916	916	916	916	916	916	916	916	916	916	916	916	916	916	916	916	916	916	916	916	916	916	916	916	916	916	916

<b>C</b>	Monthly Calibration	<b>S</b>	Daily Zero-Span Check	<b>Q</b>	Quality Assurance
<b>K</b>	Collection Error	<b>N</b>	No Data (Machine Not in Service)	<b>Y</b>	Routine Maintenance
<b>X</b>	InValid Data (Equipment Malfunction /Recovery)	<b>NRM</b>	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	<b>P</b>	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 - October 2021

Summary of Hourly Averages

AMBIENT TEMPERATURE (AT) in Degree Celsius

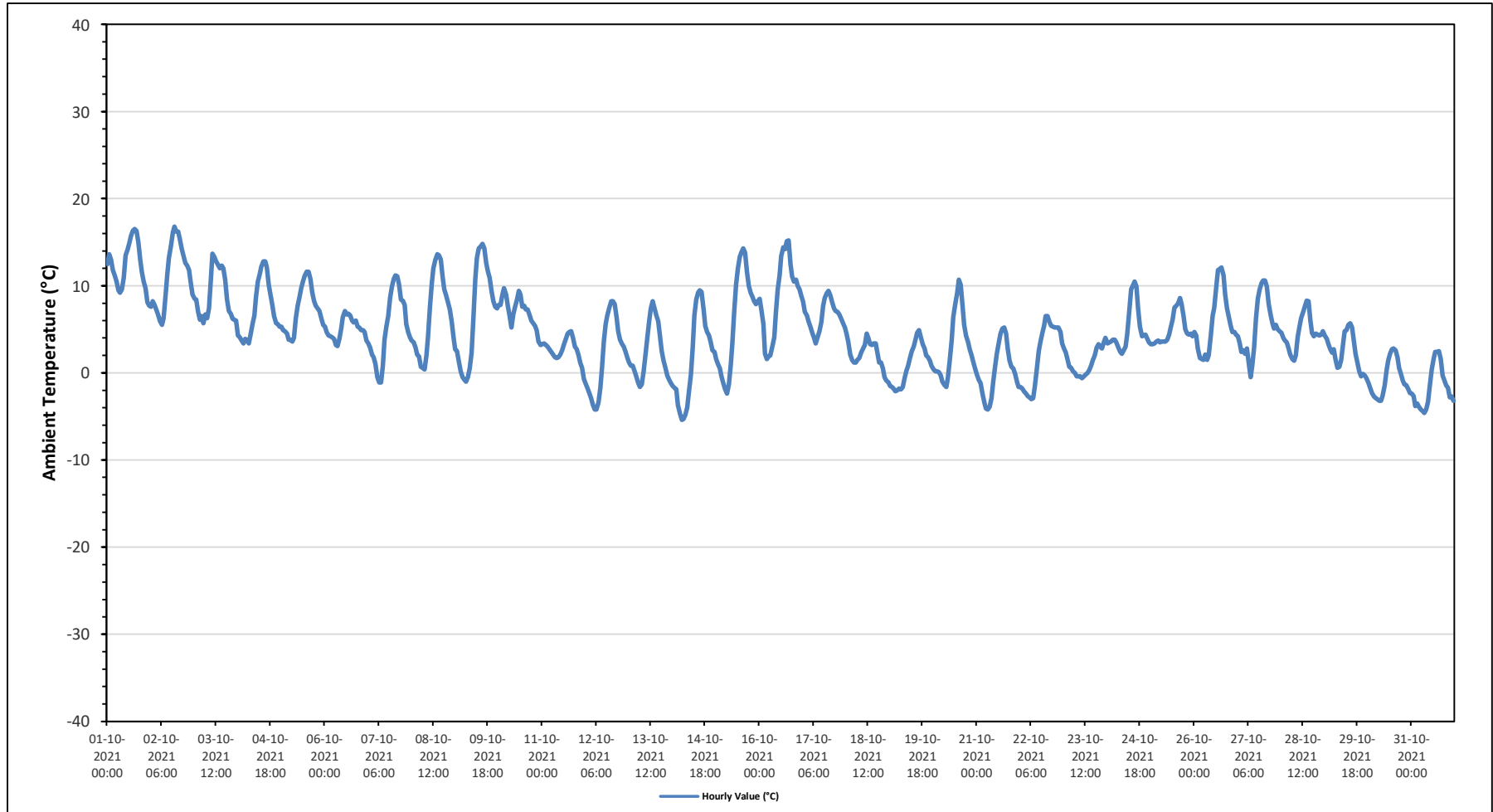
Maximum Hourly Value:	16.8 °C	on October 2 at hour 13	Hours in Service:	744
Maximum Daily Value:	12.3 °C	on October 1	Hours of Data:	744
Minimum Hourly Value:	-5.4 °C	on October 14 at hour 5	Hours of Missing Data:	0
Minimum Daily Value:	-1.7 °C	on October 31	Hours of Calibration:	0
Monthly Average:	4.6 °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
Oct 1	12.5	13.6	13	11.8	11.2	10.5	9.5	9.2	9.6	10.9	13.5	14.1	14.9	15.7	16.3	16.5	16.3	15	13	11.6	10.5	9.7	8.1	7.7	7.7	16.5	12.3
Oct 2	7.6	8.2	7.8	7.2	6.7	5.9	5.5	6.3	8.7	11.3	13.2	14.6	16.1	16.8	16.2	16.2	15.4	14.3	13.3	12.6	12.3	11.8	10.4	9	5.5	16.8	11.1
Oct 3	8.5	8.4	7	6.1	6.5	5.7	6.7	6.3	7.4	10.7	13.7	13.3	12.8	12.4	12	12.3	12	10.7	8.4	7.1	6.8	6.2	6.1	6	5.7	13.7	8.9
Oct 4	4.3	4.1	3.7	3.4	3.9	3.8	3.4	4.3	5.6	6.6	8.7	10.5	11.3	12.2	12.8	12.8	12.1	10.1	8.9	7.9	6.5	5.7	5.6	5.3	3.4	12.8	7.2
Oct 5	5.3	4.9	4.8	4.5	3.8	3.8	3.6	4	6.3	7.7	8.7	9.8	10.6	11.2	11.6	11.6	10.8	9.2	8.2	7.7	7.4	7.1	6.3	5.5	3.6	11.6	7.3
Oct 6	5.3	4.7	4.3	4.2	4.1	3.9	3.2	3.1	3.9	5.1	6.4	7.1	6.7	6.8	6.6	6	5.8	6	5.3	5.2	4.9	4.9	4.7	3.7	3.1	7.1	5.1
Oct 7	3.4	2.9	2.1	1.8	1	-0.5	-1.1	-1.1	0.9	3.8	5.3	6.5	8.6	9.9	10.8	11.2	11.1	10.1	8.4	8.3	7.8	5.6	4.7	4.1	-1.1	11.2	5.2
Oct 8	3.7	3.5	2.9	2.1	1.9	0.7	0.6	0.4	2	4.2	7.5	10.2	12	12.9	13.6	13.5	13	11	9.6	8.9	8	7.3	5.9	4.1	0.4	13.6	6.6
Oct 9	2.7	2.5	1.3	0.2	-0.5	-0.8	-1	-0.5	0.5	2.3	6.4	10.8	13.2	14.3	14.5	14.8	14.3	12.6	11.7	10.9	9.4	8.2	7.6	7.4	-1.0	14.8	6.8
Oct 10	7.8	7.8	9	9.7	9	7.6	6.6	5.2	6.7	7.5	8.4	9.4	9	7.6	7.7	7.3	7.3	6.6	6	5.7	5.4	4.9	3.6	3.2	3.2	9.7	7.0
Oct 11	3.3	3.4	3.2	3	2.7	2.4	2.1	1.8	1.7	1.8	2.1	2.6	3.3	3.9	4.5	4.7	4.8	4	3	2.7	2	1.2	0.6	-0.7	-0.7	4.8	2.7
Oct 12	-1.2	-1.8	-2.4	-2.9	-3.7	-4.2	-4.2	-3.4	-1.7	0.5	3.6	5.6	6.6	7.4	8.2	8.2	7.9	6.4	4.8	3.8	3.3	3	2.4	1.7	-4.2	8.2	2.0
Oct 13	1.2	0.8	0.8	0.2	-0.5	-1.2	-1.6	-1.3	0.2	2.1	4.1	6	7.4	8.2	7.4	6.6	5.9	4.1	2.5	1.4	0.6	-0.3	-0.8	-1.2	-1.6	8.2	2.2
Oct 14	-1.5	-1.7	-1.9	-3.7	-4.7	-5.4	-5.3	-4.8	-4	-2.3	-0.2	3	6.6	8.4	9.2	9.5	9.3	7.2	5.4	4.7	4.3	3.6	2.6	2.4	-5.4	9.5	1.7
Oct 15	1.6	1	0.5	-0.4	-1.2	-1.9	-2.4	-1.3	0.9	3.4	7	10.1	12	13.3	13.9	14.3	13.8	11.6	10	9.2	8.7	8.2	7.9	8.2	-2.4	14.3	6.2
Oct 16	8.5	7.1	5.6	2.2	1.6	1.9	2	3.1	4.1	6.9	9.6	11.2	13.4	14.4	14.2	15.1	15.2	12.5	11.1	10.5	10.7	10	9.6	8.8	1.6	15.2	8.7
Oct 17	8.2	7	6.6	5.9	5.3	4.6	4.1	3.4	4.1	4.8	5.8	7.7	8.6	9.1	9.4	8.9	8.1	7.4	7.1	7	6.7	6.2	5.7	5.2	3.4	9.4	6.5
Oct 18	4.5	3.5	2.1	1.5	1.2	1.2	1.5	1.7	2.3	2.7	3.2	4.5	4	3.3	3.2	3.4	3.4	2.2	1.2	1.2	0.5	-0.5	-0.9	-1.1	-1.1	4.5	2.1
Oct 19	-1.5	-1.6	-1.8	-2.1	-2	-1.8	-1.9	-1.6	-0.7	0.2	0.8	1.7	2.5	3	3.7	4.6	4.9	4.1	3.3	2.8	2	1.8	1.4	0.8	-2.1	4.9	0.9
Oct 20	0.4	0.2	0.2	0.1	-0.3	-1	-1.4	-1.6	-0.5	1.5	3.7	6.4	7.8	9.2	10.7	10.1	7.7	5.5	4.3	3.5	2.7	2	1.2	0.5	-1.6	10.7	3.0
Oct 21	-0.2	-0.8	-1.2	-2.4	-3.4	-4.1	-4.2	-3.9	-2.9	-0.9	0.8	2.2	3.4	4.5	5.1	5.2	4.5	2.8	1.4	0.7	0.5	-0.1	-1	-1.6	-4.2	5.2	0.2
Oct 22	-1.6	-1.8	-2.1	-2.4	-2.7	-2.8	-3	-2.9	-1.6	0.5	2.5	3.5	4.5	5.4	6.5	6.5	5.8	5.4	5.3	5.2	5.2	5.2	4.7	3.4	-3.0	6.5	2.0
Oct 23	2.8	2.3	1.6	0.7	0.6	0.2	0	-0.4	-0.4	-0.4	-0.6	-0.4	-0.2	0	0.3	0.8	1.5	2	2.9	3.3	3	2.8	3.5	4	-0.6	4.0	1.2
Oct 24	3.4	3.5	3.6	3.8	3.8	3.5	2.9	2.4	2.2	2.6	3	4.4	6.8	9.6	10	10.5	9.9	7.4	5.3	4.2	4.3	4.4	3.9	3.5	2.2	10.5	5.0
Oct 25	3.3	3.3	3.4	3.6	3.7	3.5	3.6	3.6	3.6	3.8	4.4	5.2	6.1	7.5	7.7	8	8.6	7.9	6.6	5	4.5	4.4	4.5	4.2	3.3	8.6	5.0
Oct 26	4.7	4.3	2.8	1.7	1.6	1.5	2.1	1.5	2	4.3	6.6	7.5	9.7	11.8	11.9	12.1	11.2	9	7.4	6.4	5.5	4.7	4.7	4.4	1.5	12.1	5.8
Oct 27	4.2	3.4	2.4	2.6	2.2	2.8	1.1	-0.5	0.8	2.9	6.2	8.5	9.6	10.3	10.6	10.6	9.9	7.9	6.7	5.7	5.1	5.5	5	4.8	-0.5	10.6	5.3
Oct 28	4.6	4	3.7	3.5	2.8	2.1	1.6	1.4	2	4.1	5.3	6.3	7	7.7	8.3	8.2	6	4.6	4.2	4.5	4.4	4.3	4.4	4.8	1.4	8.3	4.6
Oct 29	4.3	3.9	3.3	2.7	2.3	2.7	1.5	0.6	0.7	1.5	3.3	4.8	4.9	5.5	5.7	5.2	3.6	2.2	1.2	0.2	-0.4	-0.1	-0.3	-0.6	-0.6	5.7	2.4
Oct 30	-1.1	-1.7	-2.3	-2.7	-2.9	-3	-3.2	-3.2	-2.6	-1.4	0.3	1.4	2.2	2.7	2.8	2.6	1.8	0.6	-0.1	-0.9	-1.3	-1.4	-1.9	-2.3	-3.2	2.8	-0.7
Oct 31	-2.4	-2.7	-3.8	-3.5	-3.9	-4.2	-4.4	-4.6	-4.2	-3.3	-1.4	0.4	1.6	2.4	2.4	2.5	1.6	-0.3	-0.9	-1.4	-1.7	-2.8	-2.7	-3.2	-4.6	2.5	-1.7
Diurnal Maximum	12.5	13.6	13.0	11.8	11.2	10.5	9.5	9.2	9.6	11.3	13.7	14.6	16.1	16.8	16.3	16.5	16.3	15.0	13.3	12.6	12.3	11.8	10.4	9.0			
Diurnal Average	3.4	3.1	2.6	2.0	1.6	1.2	0.9	0.9	1.9	3.4	5.2	6.7	7.8	8.6	9.0	9.0	8.5	7.1	6.0	5.3	4.8	4.3	3.8	3.3			

<b>C</b>	Monthly Calibration	<b>S</b>	Daily Zero-Span Check	<b>Q</b>	Quality Assurance
<b>K</b>	Collection Error	<b>N</b>	No Data (Machine Not in Service)	<b>Y</b>	Routine Maintenance
<b>X</b>	InValid Data (Equipment Malfunction /Recovery)	<b>NRM</b>	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	<b>P</b>	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 - October 2021

Summary of Hourly Averages

### STATION TEMPERATURE (ST) in Degree Celsius

Maximum Hourly Value:	23.8 °C	on October 1 at hour 16	Hours in Service:	744
Maximum Daily Value:	23.6 °C	on October 1	Hours of Data:	744
Minimum Hourly Value:	19.0 °C	on October 9 at hour 5	Hours of Missing Data:	0
Minimum Daily Value:	20.5 °C	on October 23	Hours of Calibration:	0
Monthly Average:	21.3 °C		Operational Uptime:	100.0

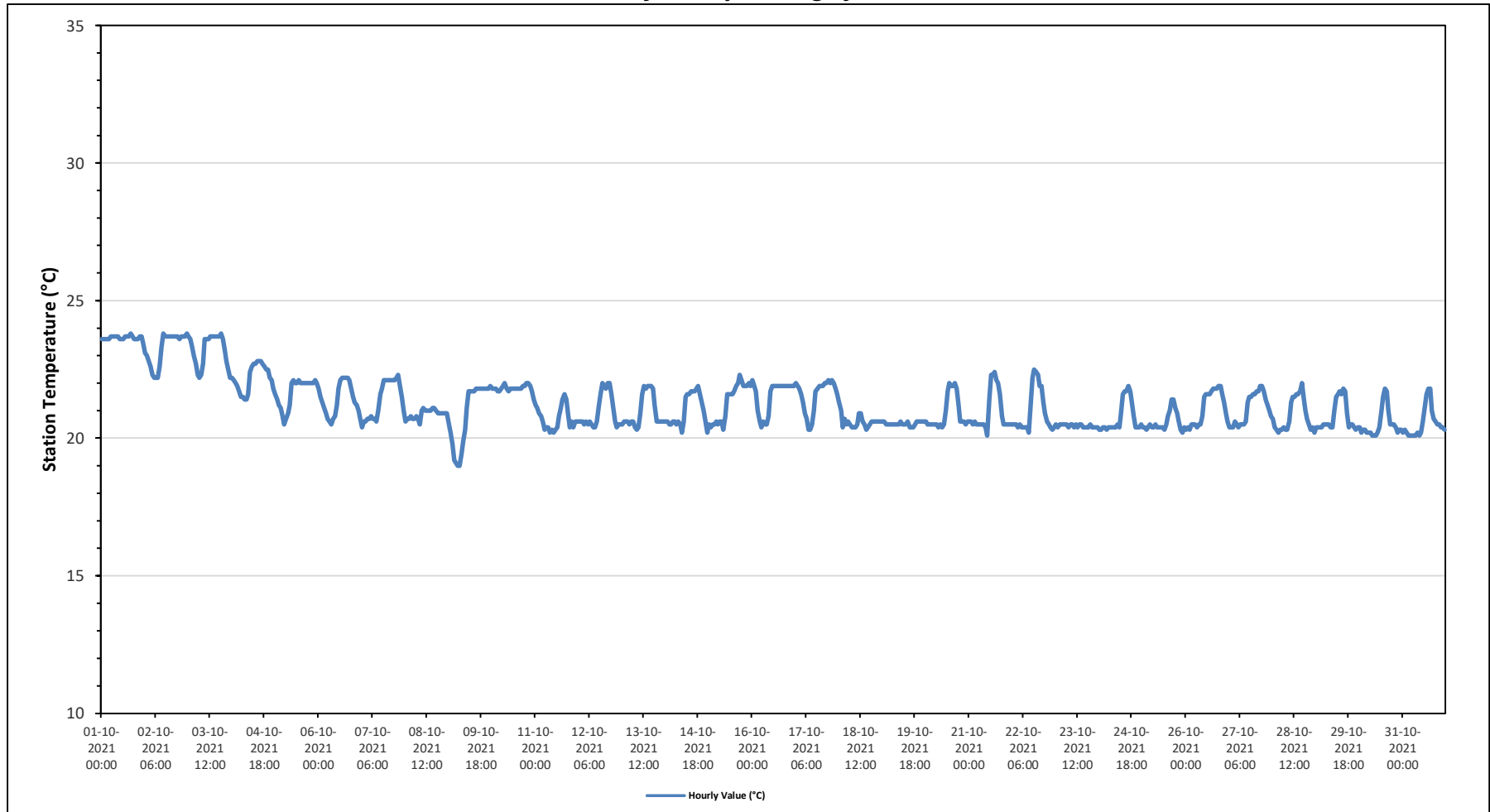
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Oct 1	23.6	23.6	23.6	23.6	23.6	23.7	23.7	23.7	23.7	23.7	23.6	23.6	23.6	23.7	23.7	23.7	23.7	23.7	23.7	23.6	23.6	23.7	23.7	23.4	23.8	23.6		
Oct 2	23.1	23.0	22.8	22.6	22.3	22.2	22.2	22.2	22.6	23.3	23.8	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.7	23.6	23.7	23.7	23.7	22.2	23.8	23.3		
Oct 3	23.7	23.6	23.3	23.0	22.7	22.3	22.2	22.3	22.7	23.6	23.6	23.6	23.7	23.7	23.7	23.7	23.7	23.7	23.8	23.6	23.2	22.8	22.5	22.2	22.2	23.8	23.2	
Oct 4	22.2	22.1	22.0	21.9	21.7	21.5	21.5	21.4	21.4	21.6	22.4	22.6	22.7	22.7	22.8	22.8	22.8	22.7	22.6	22.5	22.5	22.2	22.1	21.8	21.4	22.8	22.2	
Oct 5	21.6	21.4	21.2	21.1	20.8	20.5	20.7	20.9	21.2	22.0	22.1	22.0	22.0	22.1	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.1	22.0	20.5	22.1	21.7	
Oct 6	21.8	21.5	21.3	21.1	20.9	20.7	20.6	20.5	20.7	20.8	21.2	21.8	22.1	22.2	22.2	22.2	22.2	22.1	21.8	21.5	21.3	21.2	21.0	20.7	20.5	22.2	21.4	
Oct 7	20.4	20.6	20.6	20.7	20.7	20.8	20.7	20.7	20.6	21.0	21.6	21.8	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.2	22.3	21.9	21.5	21.0	20.4	22.3	21.4	
Oct 8	20.6	20.7	20.7	20.8	20.7	20.7	20.8	20.7	20.5	21.0	21.1	21.0	21.0	21.0	21.0	21.1	21.1	21.0	20.9	20.9	20.9	20.9	20.9	20.9	20.5	21.1	20.9	
Oct 9	20.5	20.2	19.8	19.2	19.1	19.0	19.0	19.4	19.9	20.3	21.1	21.7	21.7	21.7	21.7	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.9	19.0	21.9	20.9	
Oct 10	21.8	21.8	21.8	21.7	21.7	21.8	21.9	22.0	21.8	21.7	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.9	21.9	22.0	22.0	21.9	21.7	21.4	21.4	22.0	21.8	
Oct 11	21.2	21.1	20.9	20.8	20.6	20.3	20.4	20.4	20.2	20.3	20.2	20.3	20.4	20.8	21.1	21.4	21.6	21.4	20.9	20.4	20.6	20.4	20.6	20.6	20.2	21.6	20.7	
Oct 12	20.6	20.6	20.6	20.5	20.6	20.5	20.6	20.5	20.4	20.4	20.6	21.2	21.6	22.0	21.9	21.8	22.0	22.0	21.6	21.1	20.6	20.4	20.5	20.5	20.4	22.0	21.0	
Oct 13	20.5	20.6	20.6	20.6	20.5	20.6	20.6	20.4	20.3	20.4	20.9	21.6	21.9	21.8	21.9	21.9	21.9	21.8	21.2	20.6	20.6	20.6	20.6	20.6	20.3	21.9	21.0	
Oct 14	20.6	20.6	20.5	20.5	20.6	20.6	20.5	20.6	20.5	20.2	20.6	21.5	21.6	21.6	21.7	21.7	21.7	21.8	21.9	21.6	21.3	21.0	20.6	20.2	20.2	21.9	21.0	
Oct 15	20.5	20.4	20.5	20.5	20.6	20.5	20.6	20.6	20.3	20.8	21.6	21.6	21.6	21.6	21.7	21.9	22.0	22.3	22.1	21.9	21.9	22.0	21.9	20.3	22.3	21.3	21.3	
Oct 16	22.1	21.9	21.7	21.0	20.6	20.4	20.6	20.5	20.5	20.8	21.7	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	20.4	22.1	21.5	
Oct 17	22.0	21.9	21.8	21.6	21.3	20.9	20.7	20.3	20.3	20.5	21.0	21.7	21.8	21.9	21.9	21.9	22.0	22.0	22.1	22.0	22.1	22.0	21.8	21.6	20.3	22.1	21.5	
Oct 18	21.3	21.0	20.4	20.7	20.5	20.6	20.5	20.4	20.4	20.4	20.5	20.9	20.9	20.6	20.5	20.3	20.4	20.5	20.6	20.6	20.6	20.6	20.6	20.6	20.3	21.3	20.6	
Oct 19	20.6	20.6	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.6	20.5	20.5	20.5	20.6	20.4	20.4	20.4	20.5	20.6	20.6	20.6	20.6	20.6	20.4	20.6	20.5	
Oct 20	20.6	20.5	20.5	20.5	20.5	20.5	20.5	20.4	20.5	20.4	20.5	21.0	21.7	22.0	21.9	21.9	22.0	21.8	21.2	20.6	20.6	20.6	20.5	20.6	20.4	22.0	20.9	
Oct 21	20.6	20.6	20.5	20.6	20.5	20.5	20.5	20.5	20.4	20.1	21.4	22.3	22.3	22.4	22.1	22.0	21.6	20.8	20.5	20.5	20.5	20.5	20.5	20.1	22.4	20.9		
Oct 22	20.5	20.5	20.5	20.4	20.5	20.4	20.4	20.4	20.4	20.2	21.2	22.2	22.5	22.4	22.3	21.9	21.9	21.3	20.9	20.6	20.5	20.4	20.3	20.4	20.2	22.5	21.0	
Oct 23	20.5	20.4	20.5	20.5	20.5	20.5	20.5	20.4	20.5	20.5	20.4	20.5	20.4	20.5	20.5	20.4	20.4	20.4	20.5	20.4	20.4	20.4	20.4	20.4	20.4	20.5	20.5	
Oct 24	20.3	20.3	20.4	20.4	20.3	20.4	20.4	20.4	20.4	20.4	20.5	20.4	20.4	20.9	21.6	21.7	21.9	21.7	21.3	20.8	20.4	20.4	20.4	20.5	20.3	21.9	20.7	
Oct 25	20.4	20.4	20.3	20.4	20.5	20.4	20.4	20.5	20.4	20.4	20.4	20.4	20.4	20.3	20.5	20.8	21.0	21.4	21.4	21.1	20.9	20.6	20.3	20.2	20.4	20.2	21.4	20.6
Oct 26	20.3	20.4	20.3	20.5	20.5	20.5	20.4	20.5	20.5	20.8	21.5	21.6	21.6	21.6	21.7	21.8	21.8	21.8	21.9	21.9	21.6	21.3	20.9	20.6	20.3	21.9	21.1	
Oct 27	20.4	20.4	20.4	20.6	20.5	20.4	20.5	20.5	20.5	20.6	21.3	21.5	21.5	21.6	21.6	21.7	21.7	21.9	21.9	21.7	21.4	21.2	21.0	20.8	20.4	21.9	21.1	
Oct 28	20.7	20.4	20.3	20.2	20.3	20.3	20.4	20.3	20.3	20.6	21.3	21.5	21.5	21.6	21.6	21.7	22.0	21.5	21.0	20.7	20.5	20.3	20.4	20.2	20.2	22.0	20.8	
Oct 29	20.4	20.4	20.4	20.4	20.5	20.5	20.5	20.5	20.4	20.4	21.0	21.5	21.6	21.7	21.6	21.8	21.7	20.9	20.4	20.5	20.5	20.4	20.3	20.4	20.3	21.8	20.8	
Oct 30	20.4	20.2	20.3	20.3	20.2	20.2	20.2	20.1	20.1	20.1	20.2	20.4	21.0	21.5	21.8	21.7	21.0	20.5	20.5	20.5	20.4	20.2	20.3	20.3	20.1	21.8	20.5	
Oct 31	20.2	20.3	20.2	20.1	20.1	20.1	20.1	20.1	20.2	20.1	20.2	20.6	21.1	21.6	21.8	21.8	21.0	20.7	20.6	20.5	20.5	20.4	20.4	20.3	20.1	21.8	20.5	
Diurnal Maximum	23.7	23.6	23.6	23.6	23.6	23.7	23.7	23.7	23.7	23.7	23.8	23.7	23.7	23.7	23.7	23.7	23.8	23.7	23.8	23.6	23.7	23.7	23.7	23.8	23.4	23.8	23.3	
Diurnal Average	21.1	21.0	20.9	20.8	20.7	20.7	20.7	20.7	20.7	20.9	21.2	21.5	21.7	21.8	21.9	21.9	21.8	21.6	21.4	21.3	21.2	21.2	21.1	21.1	21.1	21.1	21.1	

<b>C</b>	Monthly Calibration	<b>S</b>	Daily Zero-Span Check	<b>Q</b>	Quality Assurance
<b>K</b>	Collection Error	<b>N</b>	No Data (Machine Not in Service)	<b>Y</b>	Routine Maintenance
<b>X</b>	InValid Data (Equipment Malfunction /Recovery)	<b>NRM</b>	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	<b>P</b>	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 - October 2021  
Summary of Hourly Averages**

**PRECIPITATION in mm**

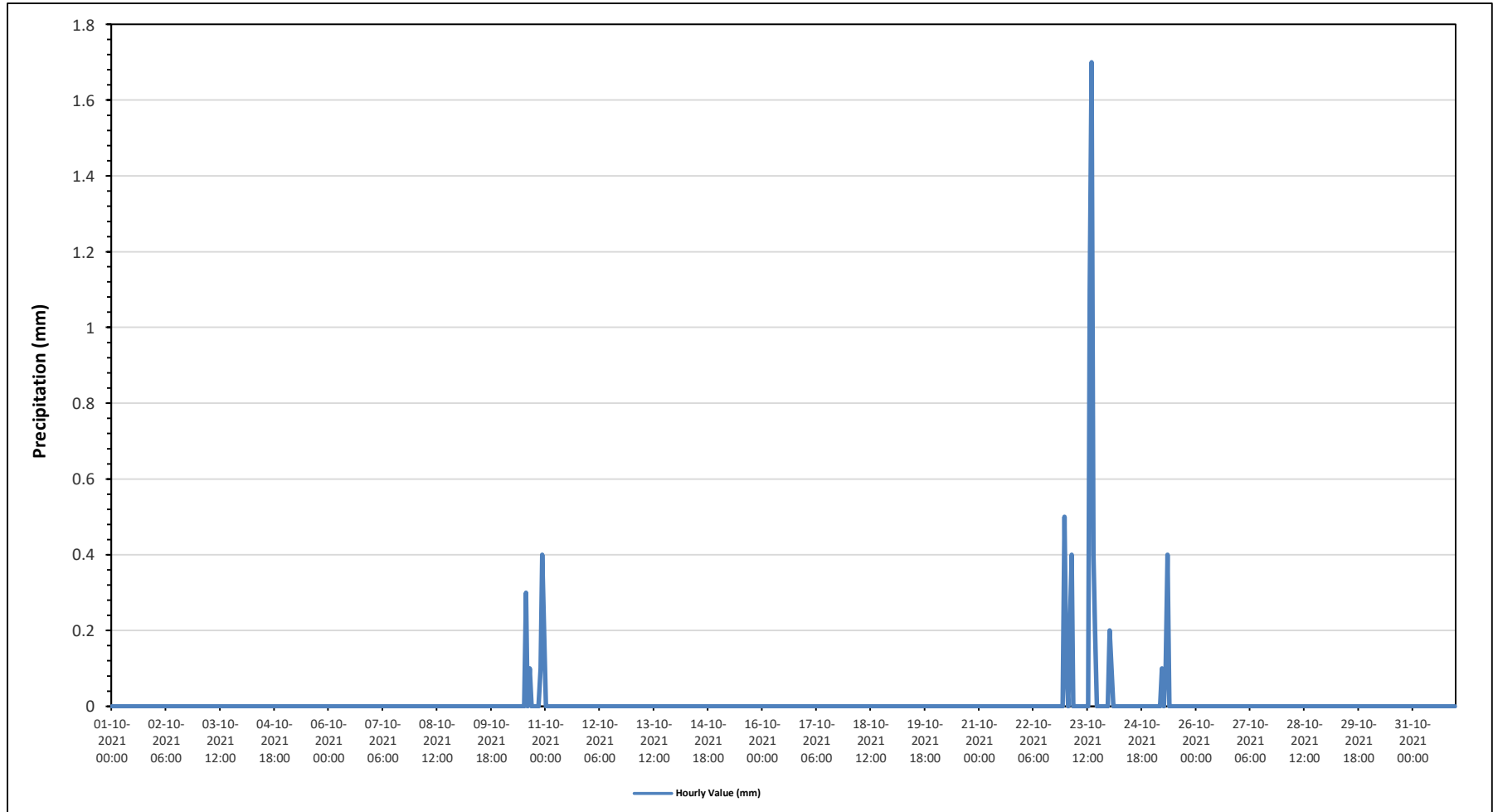
Maximum Hourly Value:	1.7 mm on October 23 at hour 14	Hours in Service:	744
Maximum Daily Value:	4.1 mm on October 23	Hours of Data:	744
Minimum Hourly Value:	0.0 mm on October 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 mm on October 1	Hours of Calibration:	0
Monthly Total:	6.6 mm	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				
Oct 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				
Oct 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				
Oct 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				
Oct 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				
Oct 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				
Oct 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0				
Oct 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				
Oct 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				
Oct 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				
Oct 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0.1	0	0	0	0	0	0	0.1	0.4	0.2	0.0	0.4	1.1			
Oct 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				
Oct 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				
Oct 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				
Oct 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				
Oct 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				
Oct 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				
Oct 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				
Oct 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				
Oct 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				
Oct 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				
Oct 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				
Oct 22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.0	0.5	0.5				
Oct 23	0.1	0	0.2	0.4	0	0	0	0	0	0	0	0	0	1.1	1.7	0.4	0.2	0	0	0	0	0	0	0	0.0	1.7	4.1				
Oct 24	0.2	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.2	0.3				
Oct 25	0	0	0	0	0	0.1	0	0.1	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.4	0.6				
Oct 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				
Oct 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				
Oct 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0				
Oct 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				
Oct 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				
Oct 31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0				
Diurnal Maximum	0.2	0.1	0.2	0.4	0.0	0.1	0.0	0.1	0.4	0.0	0.0	0.0	0.0	1.1	1.7	0.4	0.2	0.0	0.0	0.0	0.0	0.1	0.4	0.5							
Diurnal Average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0							
<b>C</b>	Monthly Calibration							<b>S</b>	Daily Zero-Span Check							<b>Q</b>	Quality Assurance														
<b>K</b>	Collection Error							<b>N</b>	No Data (Machine Not in Service)							<b>Y</b>	Routine Maintenance							<b>P</b>	Power Failure						
<b>X</b>	Invalid Data (Equipment Malfunction /Recovery)							<b>NRM</b>	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 Precipitation - St. Lina Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - October 2021

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr

Maximum Hourly Value:	25.7 kph on October 25 at hour 6	Hours in Service:	744
Maximum Daily Value:	19.4 kph on October 22	Hours of Data:	744
Minimum Hourly Value:	1.3 kph on October 3 at hour 6	Hours of Missing Data:	0
Minimum Daily Value:	2.5 kph on October 4	Hours of Calibration:	0
Monthly Average:	2.9 kph	Operational Uptime:	100.0

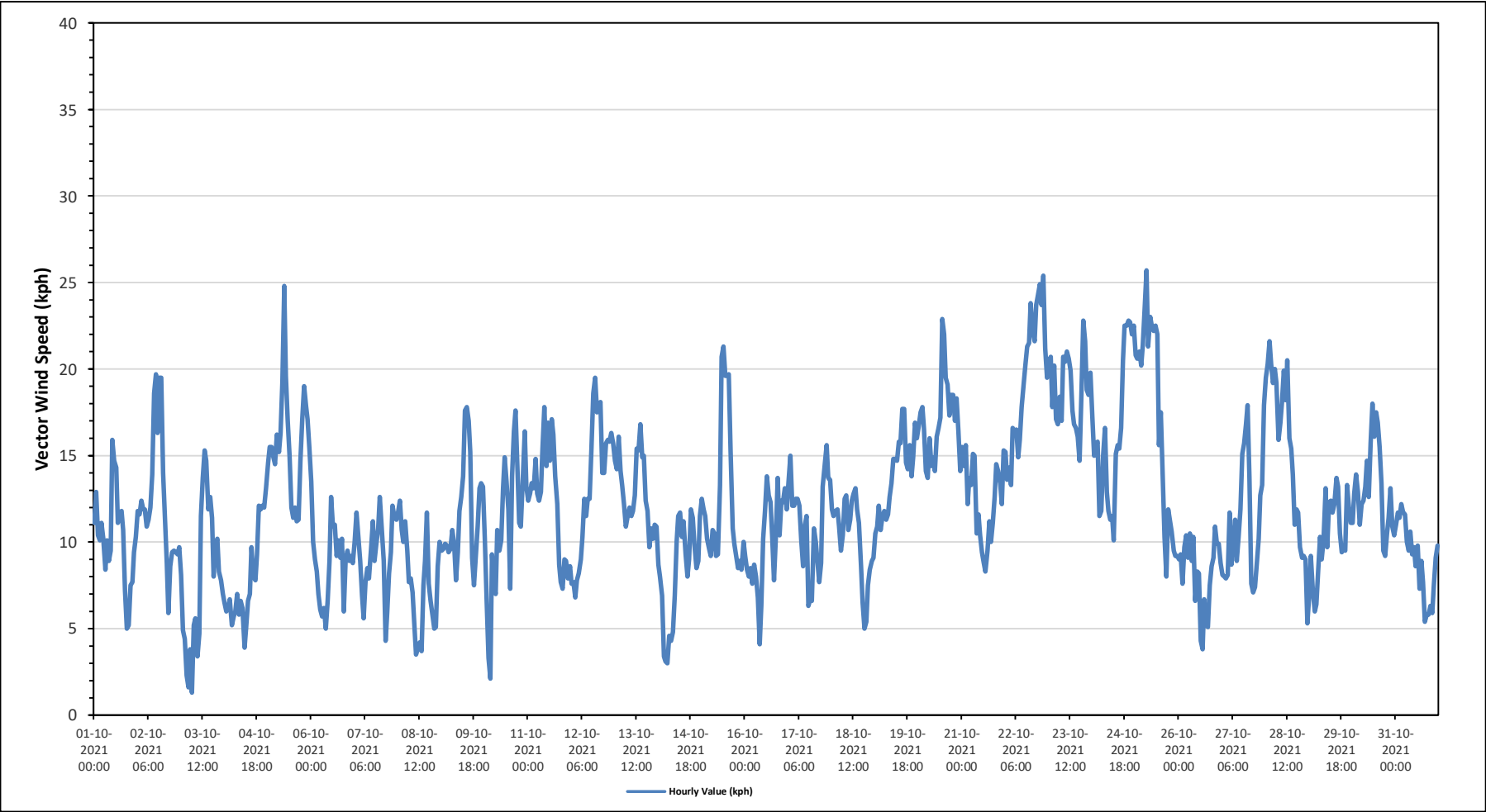
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Oct 1	11.1	12.9	10.4	10.1	11.1	10.2	8.4	10.1	8.9	9.5	15.9	14.7	14.3	11.1	11.7	11.8	10.7	7.2	5.0	5.2	7.5	7.7	9.4	10.3	5.0	15.9	8.2
Oct 2	11.8	11.6	12.4	11.9	11.9	10.9	11.3	12.0	13.9	18.6	19.7	16.3	19.5	19.5	14.0	11.4	8.8	5.9	8.6	9.4	9.5	9.4	9.3	9.7	5.9	19.7	9.8
Oct 3	8.1	4.9	4.4	2.3	1.6	3.8	1.3	5.2	5.6	3.4	4.7	11.5	13.7	15.3	14.7	11.9	12.6	11.4	8.0	9.8	10.2	8.3	7.8	7.0	1.3	15.3	5.8
Oct 4	6.5	6.0	6.2	6.7	5.2	5.7	6.0	7.0	5.8	6.6	6.2	3.9	5.1	6.6	7.0	9.7	8.0	7.8	9.3	12.1	11.9	12.1	12.0	13.1	3.9	13.1	2.5
Oct 5	14.6	15.5	15.5	14.9	14.5	16.2	15.2	16.3	19.3	24.8	19.6	17.0	15.0	12.0	11.4	12.0	11.2	11.3	14.7	17.1	19.0	17.9	17.1	15.4	11.2	24.8	15.6
Oct 6	13.5	10.0	9.0	8.3	7.0	6.1	5.7	6.2	5.0	6.6	8.9	12.6	10.9	11.0	9.2	10.1	9.1	10.2	6.0	9.0	9.5	8.9	9.2	8.8	5.0	13.5	6.8
Oct 7	10.0	11.7	10.5	8.9	6.9	5.6	7.7	8.5	7.9	9.6	11.2	8.9	9.9	10.8	12.6	10.9	8.9	4.3	5.9	8.2	9.4	12.1	11.4	11.3	4.3	12.6	6.3
Oct 8	11.7	12.4	10.7	10.0	11.2	9.5	7.7	7.9	7.1	5.4	3.5	3.9	4.2	3.7	7.5	8.9	11.7	7.6	6.6	5.8	5.0	5.1	8.6	10.0	3.5	12.4	6.9
Oct 9	9.5	9.6	9.9	9.8	9.4	9.6	10.7	9.9	7.8	9.4	11.8	12.6	13.8	17.6	17.8	17.0	15.2	9.1	7.5	9.2	10.9	13.1	13.4	13.2	7.5	17.8	10.9
Oct 10	10.2	6.6	3.3	2.1	9.3	7.5	7.0	10.7	9.5	10.1	13.1	14.9	13.5	11.9	7.3	13.8	16.4	17.6	14.4	11.1	10.9	13.8	16.4	13.2	2.1	17.6	9.6
Oct 11	12.4	12.8	13.4	13.1	14.8	12.8	12.4	12.9	15.4	17.8	14.4	16.9	14.7	17.1	16.2	13.8	12.2	8.7	7.7	7.3	9.0	8.9	7.9	8.6	7.3	17.8	12.1
Oct 12	7.6	7.7	6.8	7.8	8.2	9.0	10.3	12.5	11.5	12.5	12.5	15.4	18.6	19.5	17.5	17.6	18.1	14.0	14.0	15.7	15.9	15.8	16.3	15.7	6.8	19.5	12.4
Oct 13	14.7	14.2	16.1	14.1	13.3	12.2	10.9	11.5	12.0	11.5	11.8	12.7	15.4	15.3	16.8	14.9	15.0	12.4	11.8	9.7	10.8	10.2	11.0	10.9	9.7	16.8	12.6
Oct 14	8.7	8.0	6.9	3.4	3.1	3.0	4.6	4.3	4.8	6.9	10.0	11.5	11.7	10.3	11.2	9.3	8.0	9.0	11.9	11.4	9.9	8.5	8.9	11.5	3.0	11.9	6.8
Oct 15	12.5	11.9	11.5	10.2	9.6	9.2	10.7	10.5	9.2	9.3	13.3	20.7	21.3	19.6	19.6	19.7	15.2	10.8	9.9	9.2	8.5	8.9	8.4	10.0	8.4	21.3	12.1
Oct 16	9.2	8.4	8.0	8.5	7.6	8.7	8.0	6.8	4.1	6.3	10.2	11.8	13.8	12.7	12.3	10.4	7.8	10.3	13.7	10.4	12.4	12.3	13.1	11.9	4.1	13.8	6.2
Oct 17	13.5	15.0	12.1	12.1	12.5	12.5	12.1	10.1	8.6	11.0	11.5	6.3	6.7	6.6	10.8	10.0	8.9	7.7	8.8	13.2	14.5	15.6	13.7	13.6	6.3	15.6	2.6
Oct 18	11.9	11.5	11.8	11.9	10.9	9.5	10.4	12.5	12.7	10.7	11.3	12.4	12.8	13.1	11.9	11.1	8.6	6.5	5.0	5.4	7.5	8.4	8.9	9.1	5.0	13.1	8.9
Oct 19	10.5	10.9	12.1	10.7	11.5	11.8	11.3	11.6	12.6	13.4	14.8	14.8	14.7	15.8	15.7	17.7	17.7	14.6	14.2	15.6	13.8	14.9	16.9	16.0	10.5	17.7	13.3
Oct 20	16.7	17.5	17.8	16.5	14.1	13.7	16.0	14.4	14.9	14.1	16.1	16.6	17.2	22.9	22.0	19.5	19.1	17.3	18.5	18.5	17.0	18.3	16.4	14.1	13.7	22.9	16.3
Oct 21	15.5	14.4	15.6	12.2	13.7	13.3	15.1	15.0	10.5	11.6	10.4	9.4	8.8	8.3	9.5	11.2	10.0	11.1	12.6	14.5	14.1	13.4	12.2	15.3	8.3	15.6	12.1
Oct 22	15.2	13.6	14.3	13.3	16.6	16.4	16.5	14.9	15.9	17.8	19.2	20.2	21.3	21.5	23.8	22.3	21.6	23.7	24.3	24.9	23.7	25.4	21.2	19.5	13.3	25.4	19.4
Oct 23	20.4	20.7	17.8	20.2	17.1	16.8	18.4	17.0	20.7	20.4	21.0	20.6	19.9	17.6	16.8	16.6	16.1	14.7	18.6	22.8	21.6	18.8	18.5	19.8	14.7	22.8	18.8
Oct 24	17.3	15.0	15.6	15.8	11.5	11.8	15.0	16.6	12.9	11.8	11.3	11.5	10.1	15.1	15.6	15.4	16.6	20.5	22.5	22.5	22.8	22.7	22.0	22.5	10.1	22.8	13.3
Oct 25	20.8	20.6	21.0	20.2	21.4	23.5	25.7	21.3	23.0	22.4	22.2	22.5	22.0	15.6	17.5	13.4	10.3	8.0	11.9	11.3	10.6	9.5	9.2	9.2	8.0	25.7	14.9
Oct 26	9.0	9.3	7.6	9.7	10.4	9.1	10.5	8.9	10.3	6.6	8.3	8.2	4.3	3.8	6.7	5.2	5.1	7.5	8.6	9.1	10.9	9.9	9.9	8.8	3.8	10.9	7.0
Oct 27	8.1	8.0	7.9	8.1	11.7	8.7	10.1	11.3	8.9	10.3	11.9	15.1	15.7	16.8	17.9	13.7	7.6	7.1	7.4	8.8	10.2	12.7	13.3	17.9	7.1	17.9	7.7
Oct 28	19.5	20.3	21.6	20.3	19.2	20.0	19.2	15.9	16.9	18.1	19.9	18.2	20.5	16.0	15.4	13.9	11.0	11.9	11.7	9.7	9.1	9.2	9.0	5.3	5.3	21.6	13.8
Oct 29	7.0	9.2	7.1	6.0	6.4	8.4	10.3	9.0	10.1	13.1	9.7	12.3	12.4	11.7	12.2	13.7	13.2	10.5	9.4	9.6	9.5	13.3	12.0	11.1	6.0	13.7	9.1
Oct 30	11.1	12.8	13.9	12.9	11.0	12.2	12.4	13.2	14.7	12.6	15.7	18.0	16.1	17.5	16.9	15.5	13.4	9.5	9.2	10.5	11.4	13.1	10.9	10.4	9.2	18.0	12.7
Oct 31	11.0	11.7	11.4	12.2	11.7	11.6	10.0	9.5	10.6	9.3	9.7	8.6	9.8	7.3	8.9	7.7	5.4	5.8	5.8	6.3	5.9	7.5	9.1	9.8	5.4	12.2	5.5
Diurnal Maximum	21	21	22	20	21	24	26	21	23	25	22	23	22	23	24	22	22	24	24	25	24	25	22	23			
Diurnal Average	12.2	12.1	11.7	11.1	11.1	10.9	11.3	11.4	11.3	12.0	12.9	13.5	13.8	13.7	13.8	13.2	12.0	10.8	11.1	11.7	12.0	12.4	12.4	12.4			

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

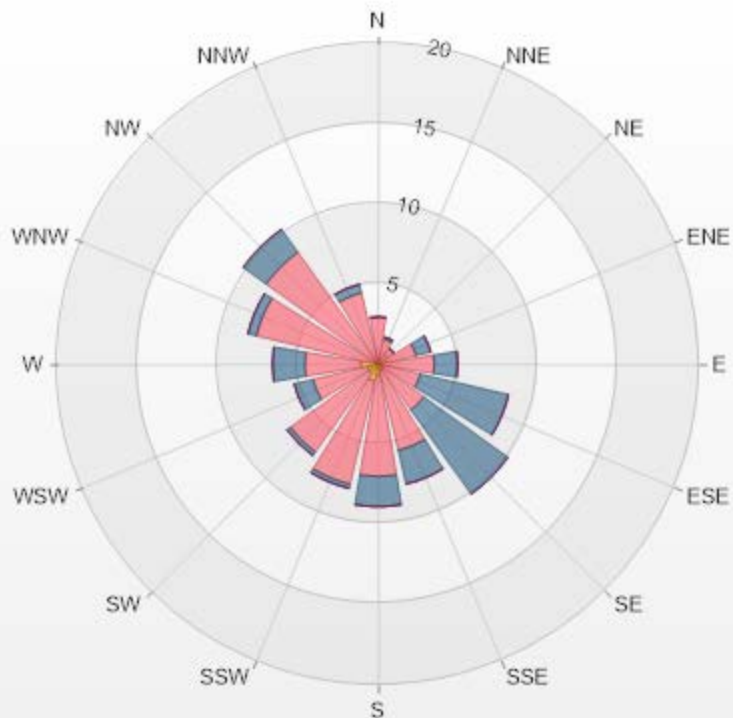
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

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



Wind: St. Lina Monitor: WDS [kph] Monthly: 10-2021 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.27% 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	0.4	2.55	0	0	0	2.95
NNE	0.27	1.34	0.13	0	0	1.74
NE	0.67	0.54	0	0	0	1.21
ENE	0	2.42	0.94	0	0	3.36
E	0.13	3.36	1.48	0	0	4.97
ESE	0.27	2.42	5.65	0	0	8.34
SE	0.27	3.23	6.45	0	0	9.95
SSE	0.4	5.11	2.15	0	0	7.66
S	0.67	6.32	1.88	0	0	8.87
SSW	1.08	6.59	0.27	0	0	7.94
SW	0.67	6.05	0.27	0	0	6.99
WSW	0.67	3.49	1.21	0	0	5.37
W	1.08	3.49	2.02	0	0	6.59
WNW	0.13	7.66	0.54	0	0	8.33
NW	0.13	8.47	1.75	0	0	10.35
NNW	0	4.57	0.54	0	0	5.11
Summary	6.84	67.61	25.28	0	0	100



LICA-202110

% Icon Classes (kph)

7 1.8-6.0

68 6.0-15.0

25 15.0-29.0

0 29.0-39.0

0 >39.0



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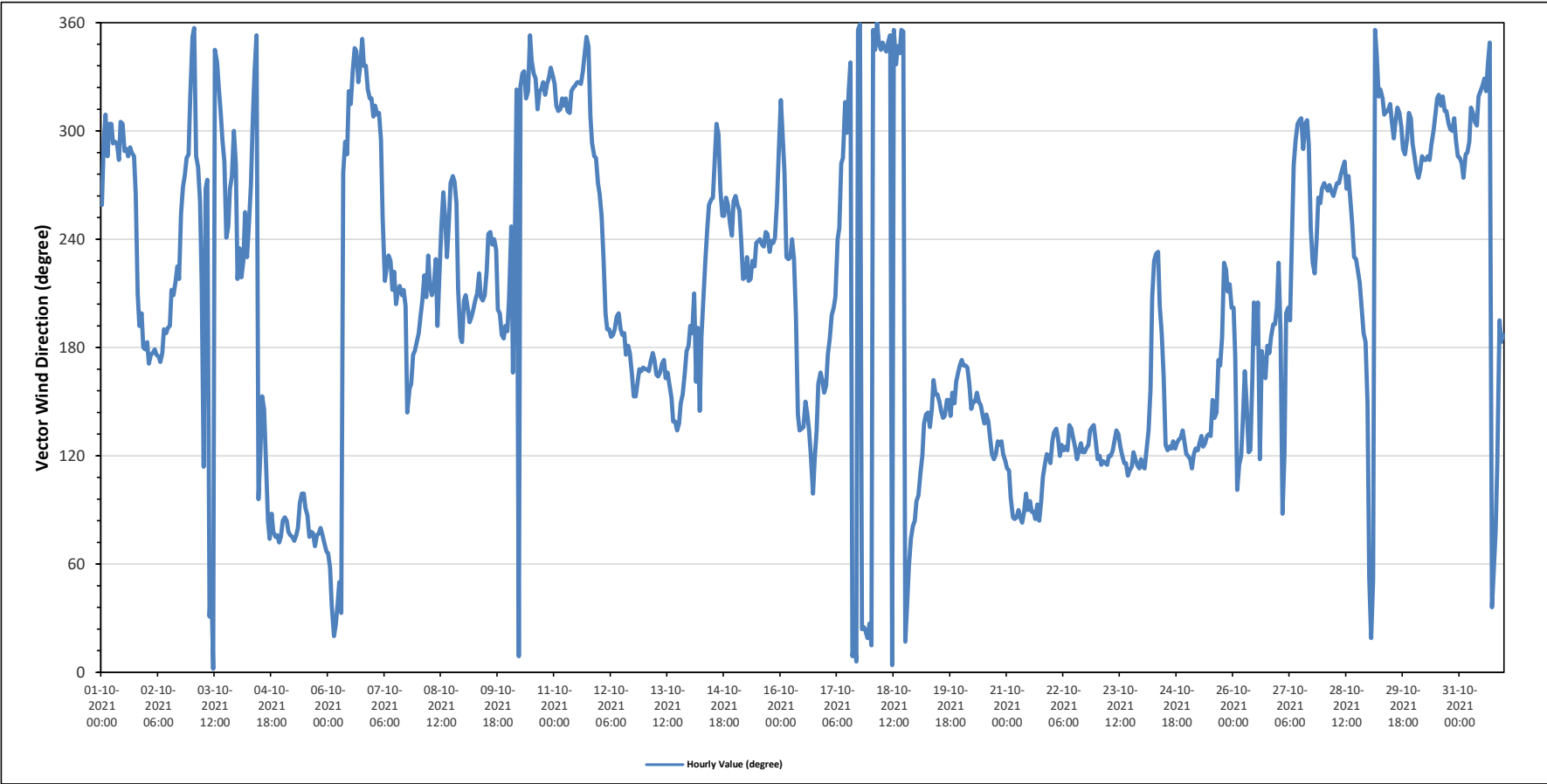
*St. Lina Site - October 2021*

**Summary of Hourly Averages**

**WIND DIRECTION (VWD) in sector**

Monthly Average: 182 (S) degree										Hours in Service: 744																		
										Hours of Data: 744																		
										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		
Oct 1	WSW	WNW	NW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	W	SSW	S	SSW	S	S	281	W		
Oct 2	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	SSW	SSW	SW	SW	SW	WSW	W	W	WNW	WNW	NW	203	SSW
Oct 3	N	N	WNW	W	W	SSW	ESE	W	W	NNE	NE	N	NNW	NNW	NW	NW	WNW	W	WSW	WSW	W	W	WNW	W	306	NW		
Oct 4	SW	SW	SW	SW	WSW	SW	WSW	W	NW	NNW	N	E	ESE	SSE	SE	ESE	E	ENE	E	ENE	ENE	ENE	ENE	ENE	ENE	100	E	
Oct 5	E	E	E	ENE	ENE	ENE	ENE	ENE	E	E	E	E	E	E	E	ENE	ENE	ENE	ENE	ENE	ENE	E	ENE	ENE	ENE	81	E	
Oct 6	ENE	ENE	NE	NNE	NNE	NE	NE	NNE	W	WNW	WNW	NW	NW	NNW	NNW	NNW	NW	NNW	N	NNW	NNW	NW	NW	NW	347	NNW		
Oct 7	NW	NW	NW	NW	WNW	WSW	SW	SW	SW	SW	SSW	SW	SSW	SSW	SSW	SSW	SSW	SSW	SE	SSE	SSE	S	S	S	219	SW		
Oct 8	S	SSW	SSW	SW	SSW	SW	SSW	SSW	SSW	SW	S	SW	WSW	W	WSW	SW	WSW	W	W	WSW	SSW	S	S	S	222	SW		
Oct 9	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SW	SSW	SSW	SSW	SW	WSW	WSW	SW	WSW	SW	SSW	SSW	S	S	S	S	212	SSW		
Oct 10	SSW	WSW	SSE	WSW	NW	N	NW	NNW	NNW	NW	NW	N	NNW	NNW	NNW	NW	NW	NW	NW	NW	NW	NNW	NNW	NNW	325	NW		
Oct 11	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NNW	NNW	N	NNW	NW	WNW	WNW	WNW	W	318	NW	
Oct 12	W	WSW	SW	SSW	S	S	S	S	S	S	SSW	SSW	S	S	S	S	S	S	SSE	SSE	SSE	SSE	SSE	SSE	182	S		
Oct 13	SSE	SSE	SSE	S	S	S	SSE	SSE	SSE	S	S	SSE	SSE	SSE	SSE	SE	SE	SE	SE	SE	SSE	SSE	S	S	161	SSE		
Oct 14	S	S	SSW	SSE	S	SE	S	SSW	SW	WSW	WSW	W	W	WNW	WNW	WNW	W	WSW	WSW	W	WSW	WSW	WSW	W	250	WSW		
Oct 15	W	WSW	WSW	WSW	SW	SW	SW	SW	SW	SW	SW	SW	WSW	WSW	SW	SW	WSW	WSW	SW	WSW	SW	WSW	WSW	WNW	240	WSW		
Oct 16	NW	WNW	W	SW	SW	SW	WSW	SW	SSW	SE	SE	SE	SE	SSE	SE	SE	ESE	E	ESE	SE	SSE	SSE	SSE	SSE	161	SSE		
Oct 17	SSE	S	S	SSW	SSW	SSW	WSW	WSW	W	WNW	NW	WNW	NW	NNW	N	NNE	N	N	N	NNE	NNE	NNE	NNE	NNE	327	NW		
Oct 18	NNE	N	NNW	N	NNW	NNW	NNW	NNW	NNW	N	N	N	N	NNW	NNW	NNW	N	N	NNE	NE	ENE	ENE	E	E	2	N		
Oct 19	E	E	ESE	ESE	SE	SE	SE	SE	SE	SSE	SSE	SSE	SSE	SE	SE	SE	SSE	SSE	SE	SSE	SSE	SSE	SSE	SSE	145	SE		
Oct 20	S	SSE	SSE	SSE	SSE	SE	SSE	SSE	SSE	SSE	SE	SE	SE	SE	SE	SE	ESE	ESE	ESE	SE	SE	SE	ESE	ESE	142	SE		
Oct 21	ESE	ESE	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	ESE	ESE	ESE	ESE	ESE	ESE	98	E		
Oct 22	SE	SE	SE	SE	ESE	SE	ESE	SE	ESE	SE	SE	SE	SE	ESE	ESE	SE	ESE	ESE	ESE	ESE	SE	SE	SE	SE	128	SE		
Oct 23	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	SE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	119	ESE		
Oct 24	ESE	ESE	SE	SE	SSE	SSW	SW	SW	SW	SSW	S	SSE	SE	ESE	SE	ESE	SE	ESE	SE	SE	SE	SE	SE	ESE	142	SE		
Oct 25	ESE	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SSE	SE	SE	SSE	S	SSW	SW	SSW	SSW	SSW	SSW	139	SE		
Oct 26	SSW	S	E	ESE	ESE	SE	SSE	SSE	ESE	ESE	SSE	SSW	S	SSW	ESE	S	S	SSE	S	S	S	S	S	SSW	164	SSE		
Oct 27	SW	S	E	ESE	SSW	SSW	SSW	WSW	W	WNW	WNW	NW	NW	WNW	WNW	NW	WNW	WSW	SW	SW	WSW	W	WSW	W	265	W		
Oct 28	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	WSW	SW	SW	SW	SSW	S	SSE	259	WSW			
Oct 29	NE	NNE	NE	N	NNW	NW	NW	NW	NW	NW	NW	NW	NW	WNW	WNW	NW	NW	WNW	WNW	WNW	WNW	NW	NW	WNW	314	NW		
Oct 30	WNW	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	NW	NW	NW	NW	NW	NW	NW	NW	WNW	WNW	NW	WNW	WNW	298	WNW		
Oct 31	WNW	W	W	WNW	WNW	WNW	NW	WNW	WNW	WNW	NW	NW	NW	NNW	NW	NNW	NNW	NE	NE	ENE	ESE	SSW	S	S	302	WNW		
<b>C</b>	Monthly Calibration										<b>S</b>	Daily Zero-Span Check										<b>Q</b>	Quality Assurance					
<b>K</b>	Collection Error										<b>N</b>	No Data (Machine Not in Service)										<b>Y</b>	Routine Maintenance		<b>P</b>	Power Failure		
<b>X</b>	Invalid Data (Machine Malfunction /Recovery)										<b>NRM</b>	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 - October 2021

Summary of Hourly Averages

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

WIND SPEED																													
Maximum Hourly Value:	25.7	kph	on October 25 at hour 6													Hours in Service:	744												
Maximum Daily Value:	19.4	kph	on October 22													Hours of Data:	744												
Minimum Hourly Value:	1.3	kph	on October 3 at hour 6													Hours of Missing Data:	0												
Minimum Daily Value:	2.5	kph	on October 4													Hours of Calibration:	0												
Monthly Average:	2.9	kph														Operational Uptime:	100												
WIND DIRECTION																													
Monthly Average:	182	(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		
Oct 1	11.1	12.9	10.4	10.1	11.1	10.2	8.4	10.1	8.9	9.5	15.9	14.7	14.3	11.1	11.7	11.8	10.7	7.2	5.0	5.2	7.5	7.7	9.4	10.3	5.0	15.9	8.2		
Oct 2	11.8	11.6	12.4	11.9	11.9	10.9	11.3	12.0	13.9	18.6	19.7	16.3	19.5	19.5	14.0	11.4	8.8	5.9	8.6	9.4	9.5	9.4	9.3	9.7	5.9	19.7	9.8		
Oct 3	8.1	4.9	4.4	2.3	1.6	3.8	1.3	5.2	5.6	3.4	4.7	11.5	13.7	15.3	14.7	11.9	12.6	11.4	8.0	9.8	10.2	8.3	7.8	7.0	1.3	15.3	5.8		
Oct 4	6.5	6.0	6.2	6.7	5.2	5.7	6.0	7.0	5.8	6.6	6.2	3.9	5.1	6.6	7.0	9.7	8.0	7.8	9.3	12.1	11.9	12.1	12.0	13.1	3.9	13.1	2.5		
Oct 5	14.6	15.5	15.5	14.9	14.5	16.2	15.2	16.3	19.3	24.8	19.6	17.0	15.0	12.0	11.4	12.0	11.2	11.3	14.7	17.1	19.0	17.9	17.1	15.4	11.2	24.8	15.6		
Oct 6	13.5	10.0	9.0	8.3	7.0	6.1	5.7	6.2	5.0	6.6	8.9	12.6	10.9	11.0	9.2	10.1	9.1	10.2	6.0	9.0	9.5	8.9	9.2	8.8	5.0	13.5	6.8		
Oct 7	10.0	11.7	10.5	8.9	6.9	5.6	7.7	8.5	7.9	9.6	11.2	8.9	9.9	10.8	12.6	10.9	8.9	4.3	5.9	8.2	9.4	12.1	11.4	11.3	4.3	12.6	6.3		
Oct 8	11.7	12.4	10.7	10.0	11.2	9.5	7.7	7.9	7.1	5.4	3.5	3.9	4.2	3.7	7.5	8.9	11.7	7.6	6.6	5.8	5.0	5.1	8.6	10.0	3.5	12.4	6.9		
Oct 9	9.5	9.6	9.9	9.8	9.4	9.6	10.7	9.9	7.8	9.4	11.8	12.6	13.8	17.6	17.8	17.0	15.2	9.1	7.5	9.2	10.9	13.1	13.4	13.2	7.5	17.8	10.9		
Oct 10	10.2	6.6	3.3	2.1	9.3	7.5	7.0	10.7	9.5	10.1	13.1	14.9	13.5	11.9	7.3	13.8	16.4	17.6	14.4	11.1	10.9	13.8	16.4	13.2	2.1	17.6	9.6		
Oct 11	12.4	12.8	13.4	13.1	14.8	12.8	12.4	12.9	15.4	17.8	14.4	16.9	14.7	17.1	16.2	13.8	12.2	8.7	7.7	7.3	9.0	8.9	7.9	8.6	7.3	17.8	12.1		
Oct 12	7.6	7.7	6.8	7.8	8.2	9.0	10.3	12.5	11.5	12.5	12.5	15.4	18.6	19.5	17.5	17.6	18.1	14.0	14.0	15.7	15.9	15.8	16.3	15.7	6.8	19.5	12.4		
Oct 13	14.7	14.2	16.1	14.1	13.3	12.2	10.9	11.5	12.0	11.5	11.8	12.7	15.4	15.3	16.8	14.9	15.0	12.4	11.8	9.7	10.8	10.2	11.0	10.9	9.7	16.8	12.6		
Oct 14	8.7	8.0	6.9	3.4	3.1	3.0	4.6	4.3	4.8	6.9	10.0	11.5	11.7	10.3	11.2	9.3	8.0	9.0	11.9	11.4	9.9	8.5	8.9	11.5	3.0	11.9	6.8		
Oct 15	12.5	11.9	11.5	10.2	9.6	9.2	10.7	10.5	9.2	9.3	13.3	20.7	21.3	19.6	19.6	19.7	15.2	10.8	9.9	9.2	8.5	8.9	8.4	10.0	8.4	21.3	12.1		
Oct 16	9.2	8.4	8.0	8.5	7.6	8.7	8.0	6.8	4.1	6.3	10.2	11.8	13.8	12.7	12.3	10.4	7.8	10.3	13.7	10.4	12.4	12.3	13.1	11.9	4.1	13.8	6.2		
Oct 17	13.5	15.0	12.1	12.1	12.5	12.5	12.1	10.1	8.6	11.0	11.5	6.3	6.7	6.6	10.8	10.0	8.9	7.7	8.8	13.2	14.5	15.6	13.7	13.6	6.3	15.6	2.6		
Oct 18	11.9	11.5	11.8	11.9	10.9	9.5	10.4	12.5	12.7	10.7	11.3	12.4	12.8	13.1	11.9	11.1	8.6	6.5	5.0	5.4	7.5	8.4	8.9	9.1	5.0	13.1	8.9		
Oct 19	10.5	10.9	12.1	10.7	11.5	11.8	11.3	11.6	12.6	13.4	14.8	14.8	14.7	15.8	15.7	17.7	17.7	14.6	14.2	15.6	13.8	14.9	16.9	16.0	10.5	17.7	13.3		
Oct 20	16.7	17.5	17.8	16.5	14.1	13.7	16.0	14.4	14.9	14.1	16.1	16.6	17.2	22.9	22.0	19.5	19.1	17.3	18.5	18.5	17.0	18.3	16.4	14.1	13.7	22.9	16.3		



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - October 2021

Summary of Hourly Averages

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

WIND SPEED		Maximum Hourly Value:		25.7 kph on October 25 at hour 6		Hours in Service:		744																			
WIND DIRECTION		Maximum Daily Value:		19.4 kph on October 22		Hours of Data:		744																			
		Minimum Hourly Value:		1.3 kph on October 3 at hour 6		Hours of Missing Data:		0																			
		Minimum Daily Value:		2.5 kph on October 4		Hours of Calibration:		0																			
		Monthly Average:		2.9 kph		Operational Uptime:		100																			
Monthly Average:		182 (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			
Oct 21	15.5	14.4	15.6	12.2	13.7	13.3	15.1	15.0	10.5	11.6	10.4	9.4	8.8	8.3	9.5	11.2	10.0	11.1	12.6	14.5	14.1	13.4	12.2	15.3	8.3	15.6	12.1
	ESE	ESE	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	ESE	ESE	ESE	ESE	ESE				
Oct 22	15.2	13.6	14.3	13.3	16.6	16.4	16.5	14.9	15.9	17.8	19.2	20.2	21.3	21.5	23.8	22.3	21.6	23.7	24.3	24.9	23.7	25.4	21.2	19.5	13.3	25.4	19.4
	SE	SE	SE	SE	ESE	SE	ESE	SE	ESE	SE	SE	SE	SE	ESE	ESE	SE	ESE	ESE	ESE	SE	SE	SE	SE	SE			
Oct 23	20.4	20.7	17.8	20.2	17.1	16.8	18.4	17.0	20.7	20.4	21.0	20.6	19.9	17.6	16.8	16.6	16.1	14.7	18.6	22.8	21.6	18.8	18.5	19.8	14.7	22.8	18.8
	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	SE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE			
Oct 24	17.3	15.0	15.6	15.8	11.5	11.8	15.0	16.6	12.9	11.8	11.3	11.5	10.1	15.1	15.6	15.4	16.6	20.5	22.5	22.5	22.8	22.7	22.0	22.5	10.1	22.8	13.3
	ESE	ESE	SE	SE	SSE	SSW	SW	SW	SSW	S	SSE	SE	ESE	SE	ESE	SE	ESE	SE	ESE	SE	SE	SE	SE	ESE			
Oct 25	20.8	20.6	21.0	20.2	21.4	23.5	25.7	21.3	23.0	22.4	22.2	22.5	22.0	15.6	17.5	13.4	10.3	8.0	11.9	11.3	10.6	9.5	9.2	9.2	8.0	25.7	14.9
	ESE	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SSE	SE	SE	SSE	S	SSE	S	SW	SW	SSW	SSW			
Oct 26	9.0	9.3	7.6	9.7	10.4	9.1	10.5	8.9	10.3	6.6	8.3	8.2	4.3	3.8	6.7	5.2	5.1	7.5	8.6	9.1	10.9	9.9	9.9	8.8	3.8	10.9	7.0
	SSW	S	E	ESE	ESE	SE	SSE	SSE	ESE	ESE	SSE	SSW	S	SSW	ESE	S	S	SSE	S	S	S	S	S	SSW			
Oct 27	8.1	8.0	7.9	8.1	11.7	8.7	10.1	11.3	8.9	10.3	11.9	15.1	15.7	16.8	17.9	13.7	7.6	7.1	7.4	8.8	10.2	12.7	13.3	17.9	7.1	17.9	7.7
	SW	S	E	ESE	SSW	SSW	WSW	W	WNW	WNW	NW	NW	WNW	WNW	NW	WNW	WSW	SW	SW	WSW	W	WSW	W	SSW			
Oct 28	19.5	20.3	21.6	20.3	19.2	20.0	19.2	15.9	16.9	18.1	19.9	18.2	20.5	16.0	15.4	13.9	11.0	11.9	11.7	9.7	9.1	9.2	9.0	5.3	5.3	21.6	13.8
	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	WSW	SW	SW	SW	SSW	S	S	SSE				
Oct 29	7.0	9.2	7.1	6.0	6.4	8.4	10.3	9.0	10.1	13.1	9.7	12.3	12.4	11.7	12.2	13.7	13.2	10.5	9.4	9.6	9.5	13.3	12.0	11.1	6.0	13.7	9.1
	NE	NNE	NE	N	NNW	NW	NW	NW	NW	NW	NW	NW	WNW	WNW	WNW	NW	NW	WNW	WNW	WNW	WNW	NW	NW	WNW			
Oct 30	11.1	12.8	13.9	12.9	11.0	12.2	12.4	13.2	14.7	12.6	15.7	18.0	16.1	17.5	16.9	15.5	13.4	9.5	9.2	10.5	11.4	13.1	10.9	10.4	9.2	18.0	12.7
	WNW	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	NW	NW	NW	NW	NW	NW	NW	WNW	WNW	WNW	NW	WNW	WNW			
Oct 31	11.0	11.7	11.4	12.2	11.7	11.6	10.0	9.5	10.6	9.3	9.7	8.6	9.8	7.3	8.9	7.7	5.4	5.8	5.8	6.3	5.9	7.5	9.1	9.8	5.4	12.2	5.5
	WNW	W	W	WNW	WNW	NW	NW	WNW	WNW	NW	NW	NW	NW	NNW	NW	NNW	NNW	NE	NE	ENE	ESE	SSW	S	S			
<b>C</b>	Monthly Calibration						<b>S</b>	Daily Zero-Span Check						<b>Q</b>	Quality Assurance												
<b>K</b>	Collection Error						<b>N</b>	No Data (Machine Not in Service)						<b>Y</b>	Routine Maintenance						<b>P</b>	Power Failure					
<b>X</b>	Invalid Data (Equipment Malfunction/Recovery)						<b>NRM</b>	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

St. Lina Site - October 2021

Summary of Hour Standard Deviations

STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree

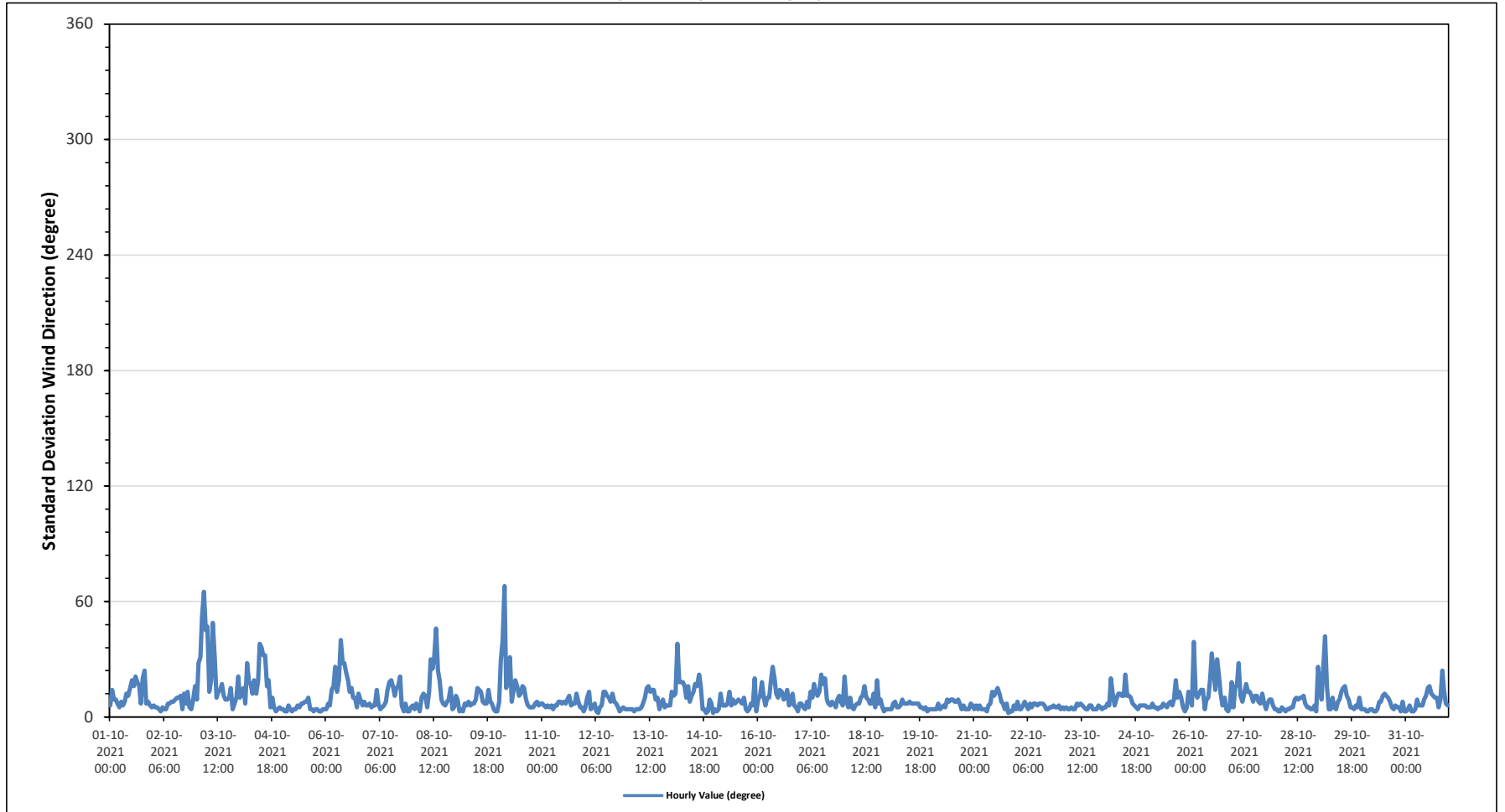
Maximum Hourly Value:	68 degree on October 10 at hour 3	Hours in Service:	744
Minimum Hourly Value:	2 degree on October 12 at hour 7	Hours of Data:	744
		Hours of Missing Data:	0
		Hours of Calibration:	0
		Operational Uptime:	100.0

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
Oct 1	6	14	9	9	7	5	8	6	8	12	11	15	19	16	21	18	16	7	20	24	7	8	6	5	5	24
Oct 2	6	5	5	4	3	5	4	4	7	7	8	8	9	10	10	11	4	12	7	13	5	4	9	16	3	16
Oct 3	9	28	31	52	65	45	47	13	19	49	29	10	13	14	17	11	9	9	10	15	4	7	10	21	4	65
Oct 4	10	14	15	7	28	18	17	12	19	12	19	38	36	32	32	16	19	5	10	5	3	4	5	4	3	38
Oct 5	4	3	3	6	4	3	4	4	6	5	7	7	8	8	10	4	4	3	4	4	3	3	4	4	3	10
Oct 6	4	7	6	14	16	26	13	19	40	28	28	23	19	13	15	10	10	5	12	9	6	8	6	6	4	40
Oct 7	7	5	6	6	14	7	4	5	6	8	14	18	19	16	11	15	16	21	6	3	7	3	3	5	3	21
Oct 8	6	4	7	5	3	10	12	11	5	13	30	25	31	46	24	19	9	7	6	8	9	15	4	5	3	46
Oct 9	11	9	3	4	3	7	6	8	6	7	7	9	15	14	13	8	7	7	14	8	7	4	3	3	3	15
Oct 10	8	29	40	68	15	18	31	8	14	19	16	11	12	16	15	9	6	5	5	5	7	8	6	7	5	68
Oct 11	7	6	5	6	5	6	4	6	6	8	8	7	8	7	9	11	6	7	7	12	8	5	5	3	3	12
Oct 12	5	10	13	4	5	7	3	2	5	6	13	13	11	10	8	12	8	7	5	3	4	5	4	4	2	13
Oct 13	4	4	4	3	4	4	4	5	7	10	15	16	13	14	14	9	10	4	7	9	5	6	6	6	3	16
Oct 14	13	11	12	38	18	18	18	16	10	16	8	11	13	17	16	22	16	4	4	2	3	9	7	2	2	38
Oct 15	4	3	4	12	6	6	6	7	13	6	9	7	8	9	8	7	10	4	3	4	7	6	20	3	3	20
Oct 16	9	11	18	10	6	10	10	18	26	20	12	10	14	13	9	10	14	6	7	12	6	5	3	7	3	26
Oct 17	7	5	4	8	5	13	10	17	13	11	13	22	17	20	9	7	6	8	7	5	9	11	8	6	4	22
Oct 18	21	8	5	10	5	4	6	7	7	10	11	16	10	9	7	7	12	5	19	7	9	5	3	4	4	21
Oct 19	4	4	4	7	8	5	5	6	9	7	7	7	8	7	7	7	7	7	5	5	4	5	3	4	3	9
Oct 20	4	4	4	4	7	4	5	6	5	9	8	9	8	8	9	7	4	6	4	4	4	7	6	4	4	9
Oct 21	4	6	4	6	4	4	4	3	6	7	13	11	13	15	12	8	7	4	7	2	3	3	6	4	2	15
Oct 22	8	4	4	6	8	6	4	7	5	7	7	6	7	7	6	4	4	5	5	6	5	5	6	4	4	8
Oct 23	4	5	4	5	4	4	5	4	4	7	6	7	6	5	4	4	6	6	4	4	4	6	5	4	4	7
Oct 24	5	5	7	6	20	12	6	9	12	12	11	22	11	11	10	7	6	5	4	6	6	6	6	4	4	22
Oct 25	5	5	5	7	5	5	4	5	5	7	6	5	7	8	6	9	19	10	13	10	5	3	5	13	3	19
Oct 26	10	6	39	12	10	12	14	14	4	9	10	20	33	24	14	30	21	12	6	10	4	3	5	18	3	39
Oct 27	5	15	17	28	11	8	12	17	13	13	11	8	11	11	8	7	12	8	4	7	9	9	6	4	4	28
Oct 28	4	3	3	5	4	3	4	4	5	5	9	10	9	10	10	11	7	5	5	4	4	6	3	26	3	26
Oct 29	18	9	27	42	16	4	4	10	5	4	8	9	13	15	16	11	9	5	5	4	6	5	10	4	4	42
Oct 30	4	4	3	3	4	4	3	3	4	8	8	11	12	11	10	8	5	4	6	5	5	3	8	3	3	12
Oct 31	3	4	6	3	3	4	9	6	6	6	9	11	15	16	12	11	10	10	5	9	24	14	7	6	3	24
Diurnal Minimum	3	3	3	3	3	3	3	2	4	4	6	5	6	5	4	4	4	3	3	2	3	3	3	2		
Diurnal Maximum	21	29	40	68	65	45	47	19	40	49	30	38	36	46	32	30	21	21	20	24	24	15	20	26		

<b>C</b>	Monthly Calibration	<b>S</b>	Daily Zero-Span Check	<b>Q</b>	Quality Assurance
<b>K</b>	Collection Error	<b>N</b>	No Data (Machine Not in Service)	<b>Y</b>	Routine Maintenance
<b>X</b>	InValid Data (Machine Malfunction /Recovery)	<b>NRM</b>	UnitMaint (Repeat Calibration / Repeat Daily Zero-Span Check / Non-Routine Maintenance)	<b>P</b>	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 October 2021 Monthly Ambient Air Quality Monitoring Report.



**Lakeland Industry & Community Association**

**OCTOBER 2021**

**Ambient Air Monitoring Calibration Report**

**- COLD LAKE SOUTH STATION-**

**CAL-LICA-202110-01174**

**Station Operation and Maintenance:**

Bureau Veritas Canada

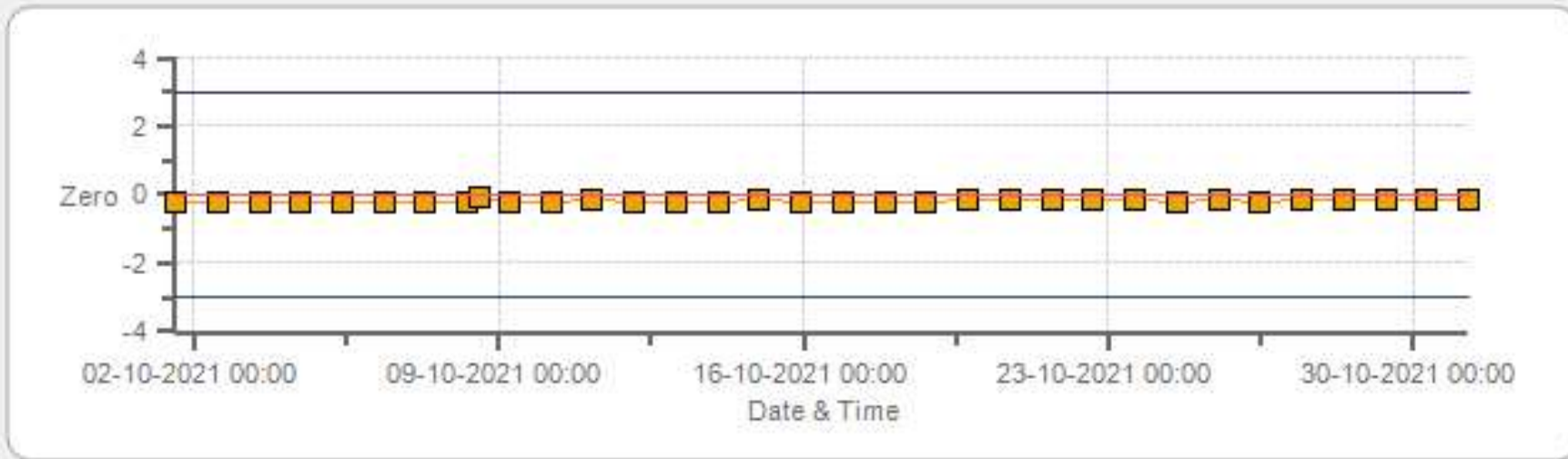
**Data Validation and Report:**

LICA / Bureau Veritas Canada

November 19, 2021

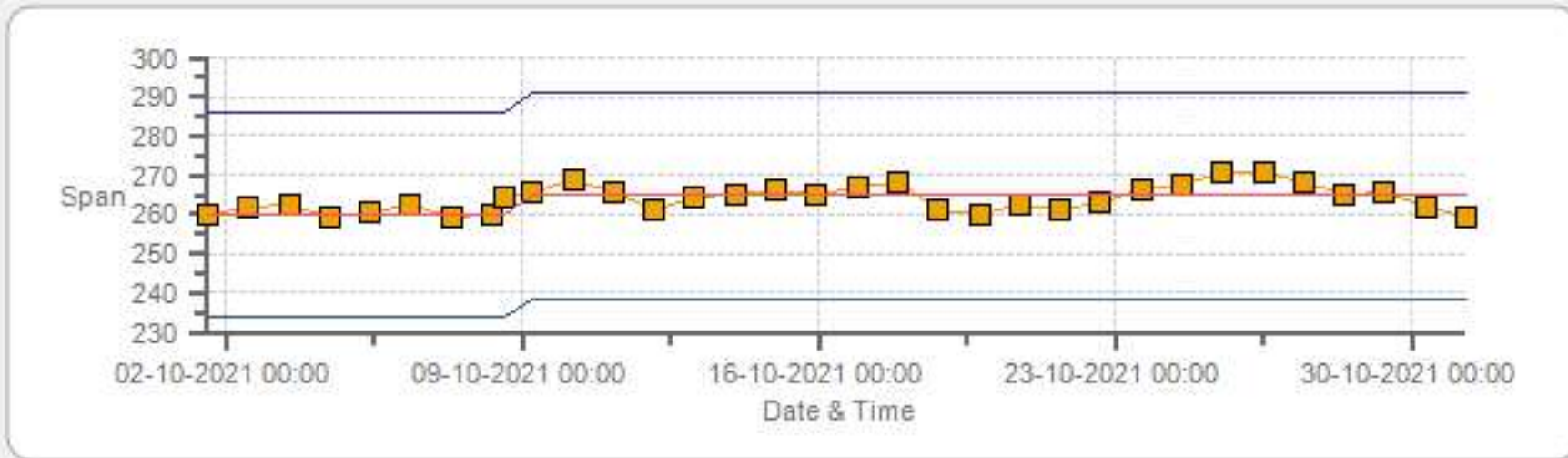
# DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

SO2[ppb] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Zero



Zero Zero Ref Zero Low Zero High

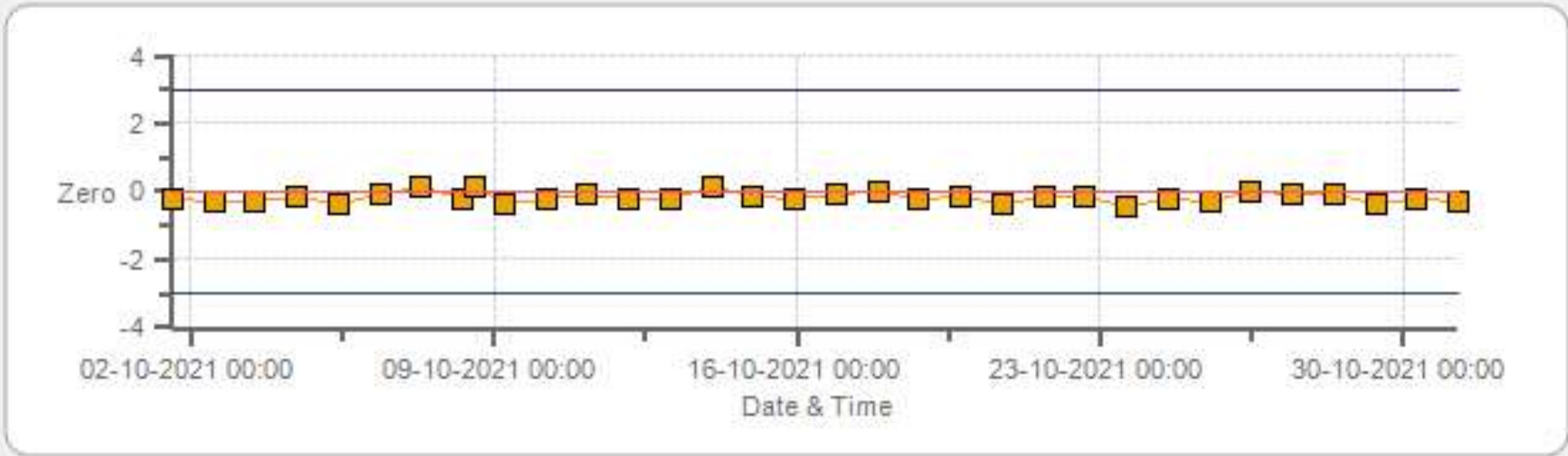
SO2[ppb] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

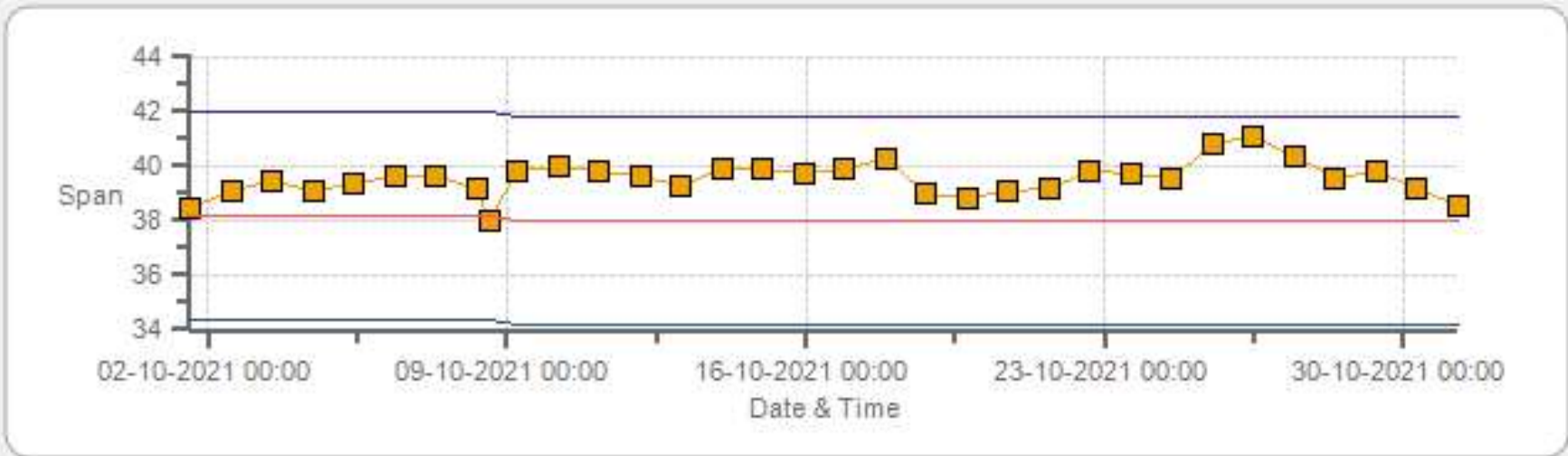


TRS[ppb] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Zero



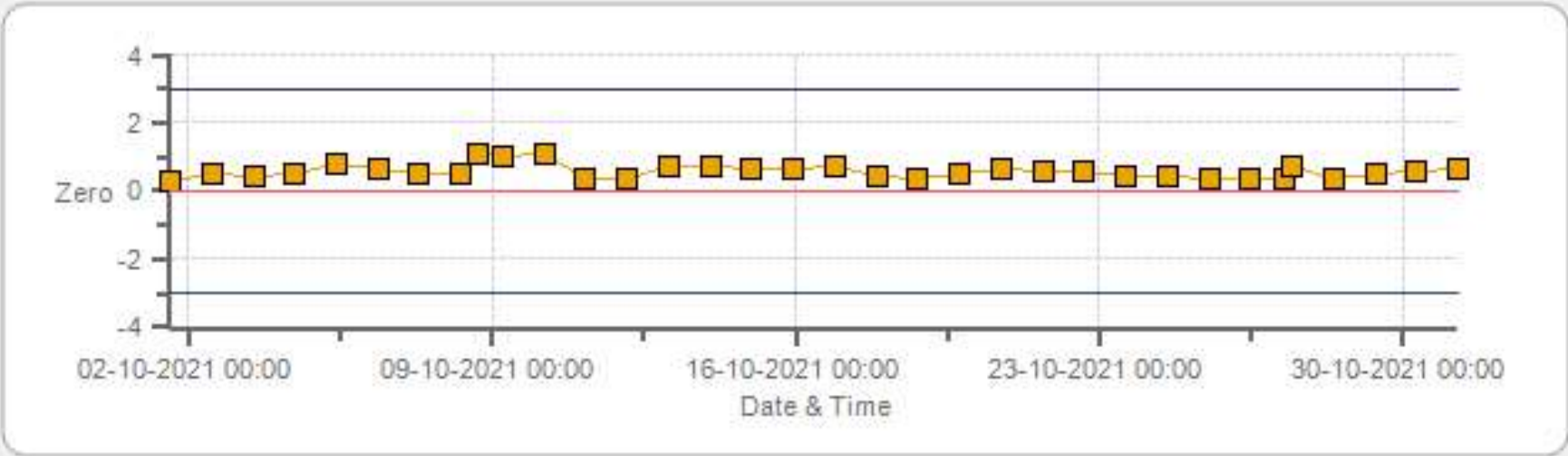
Zero Zero Ref Zero Low Zero High

TRS[ppb] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Span



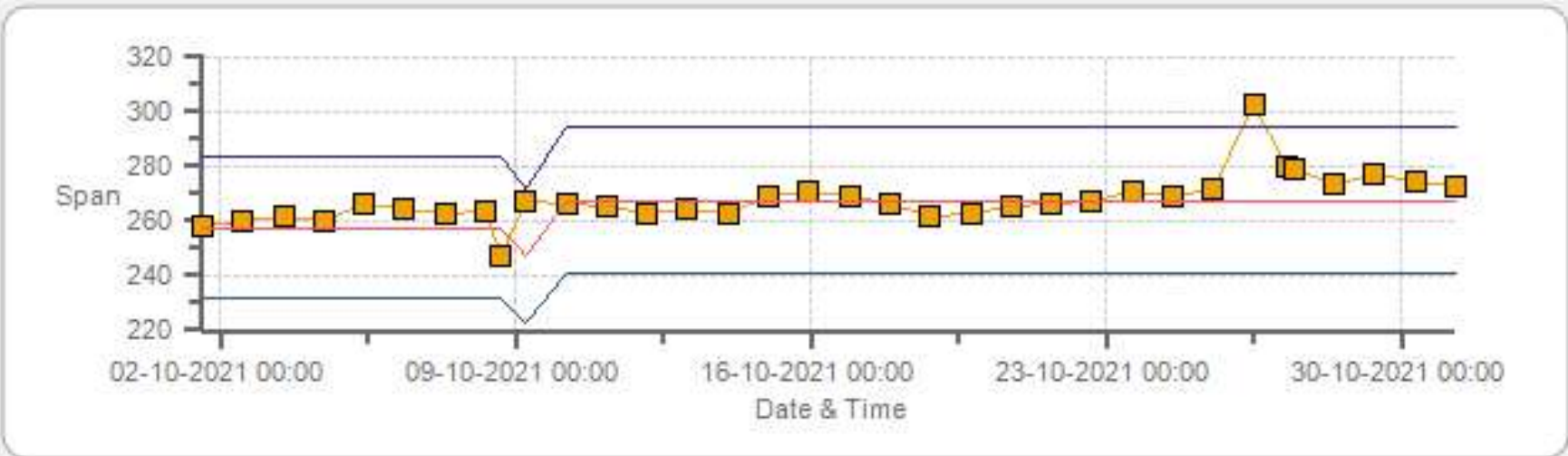
Span SpanRef Span Low Span High

NOX[ppb] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Zero



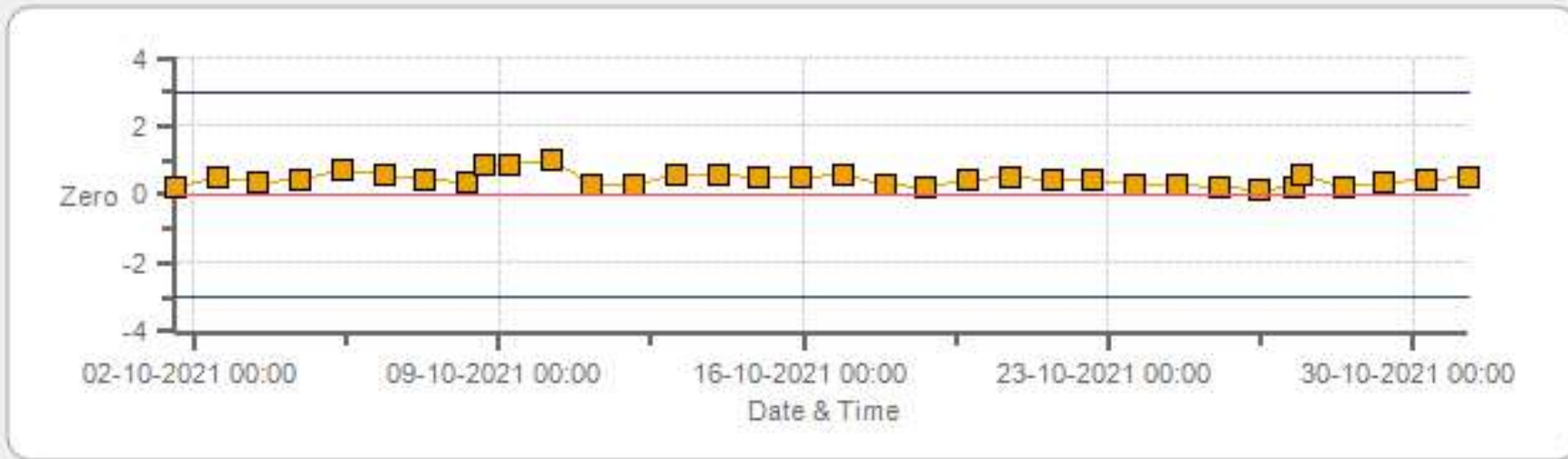
Zero Zero Ref Zero Low Zero High

NOX[ppb] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Span



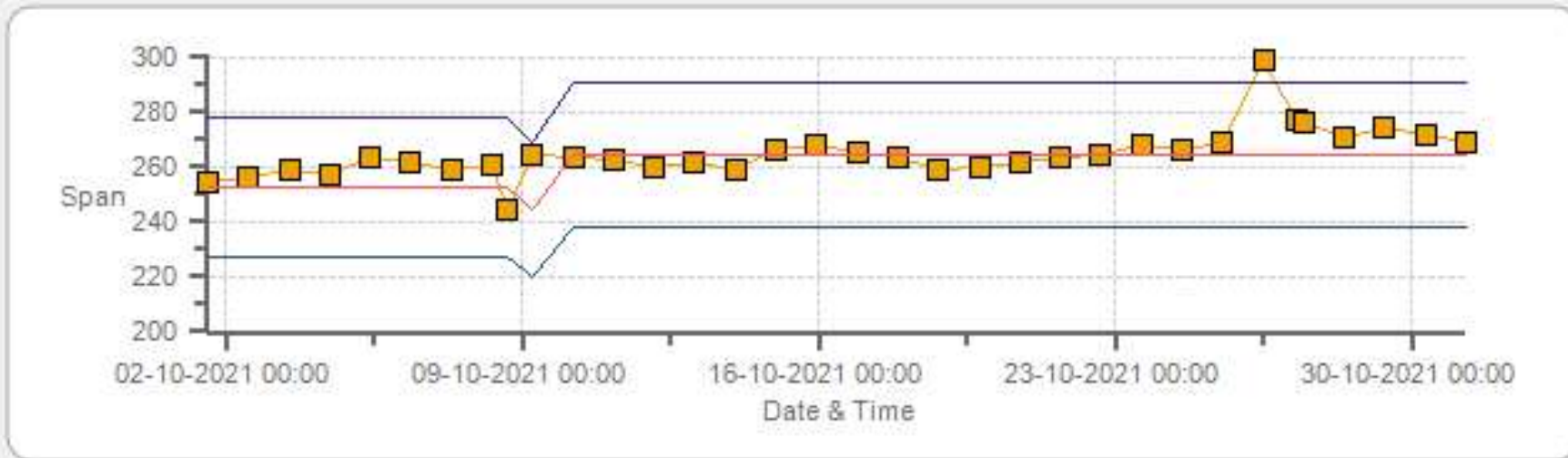
Span SpanRef Span Low Span High

NO2[ppb] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Zero



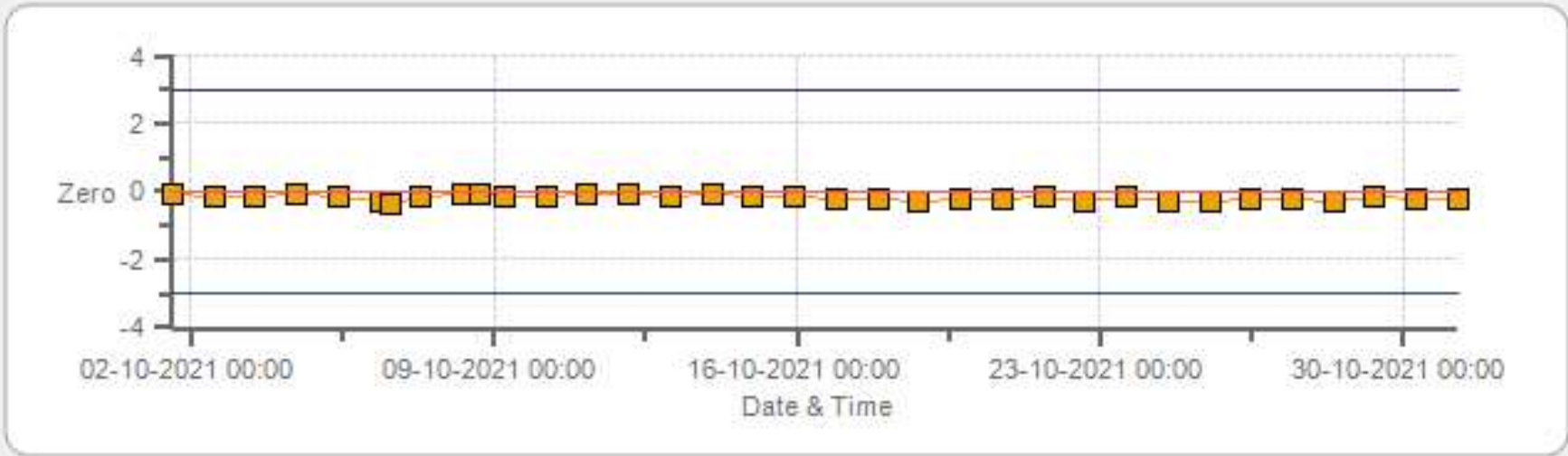
Zero Zero Ref Zero Low Zero High

NO2[ppb] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Span



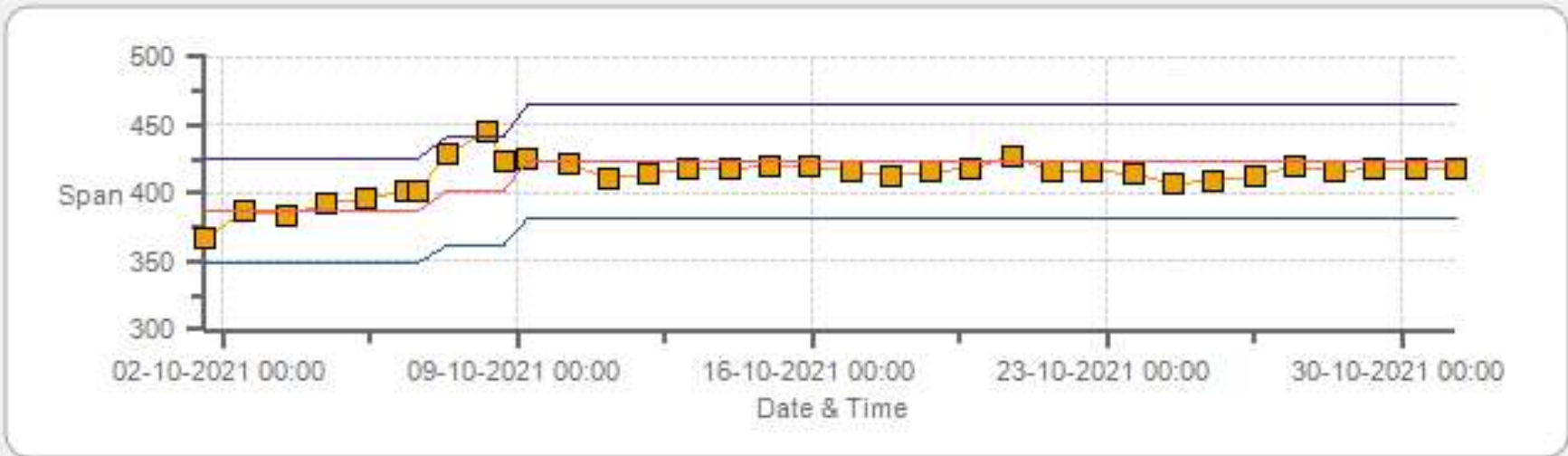
Span SpanRef Span Low Span High

O3[ppb] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Zero



Zero Zero Ref Zero Low Zero High

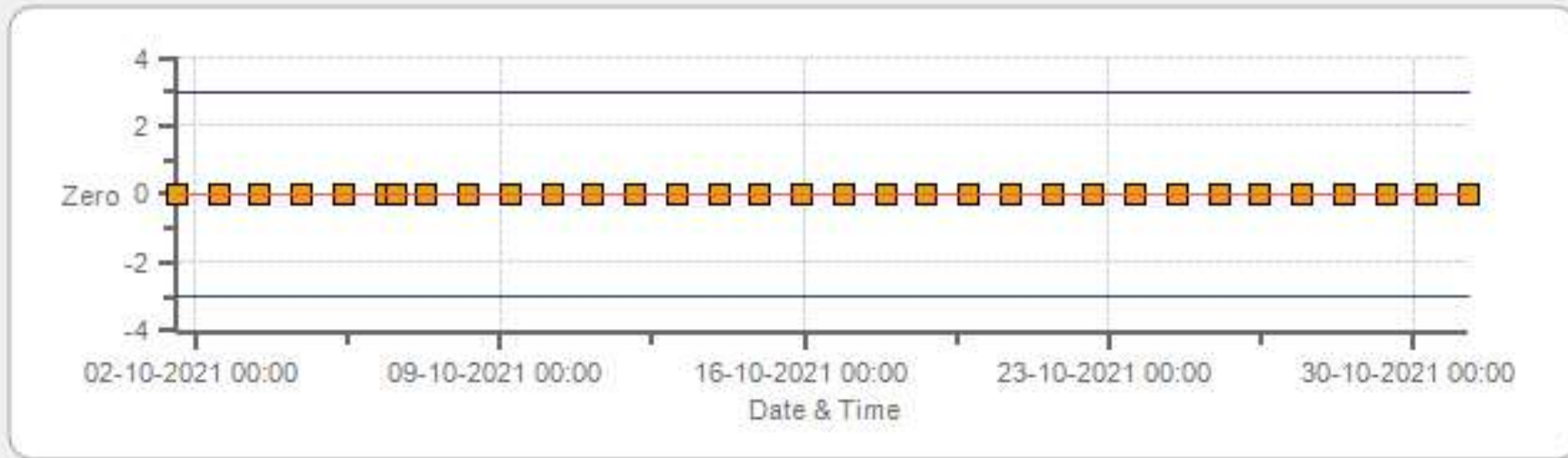
O3[ppb] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

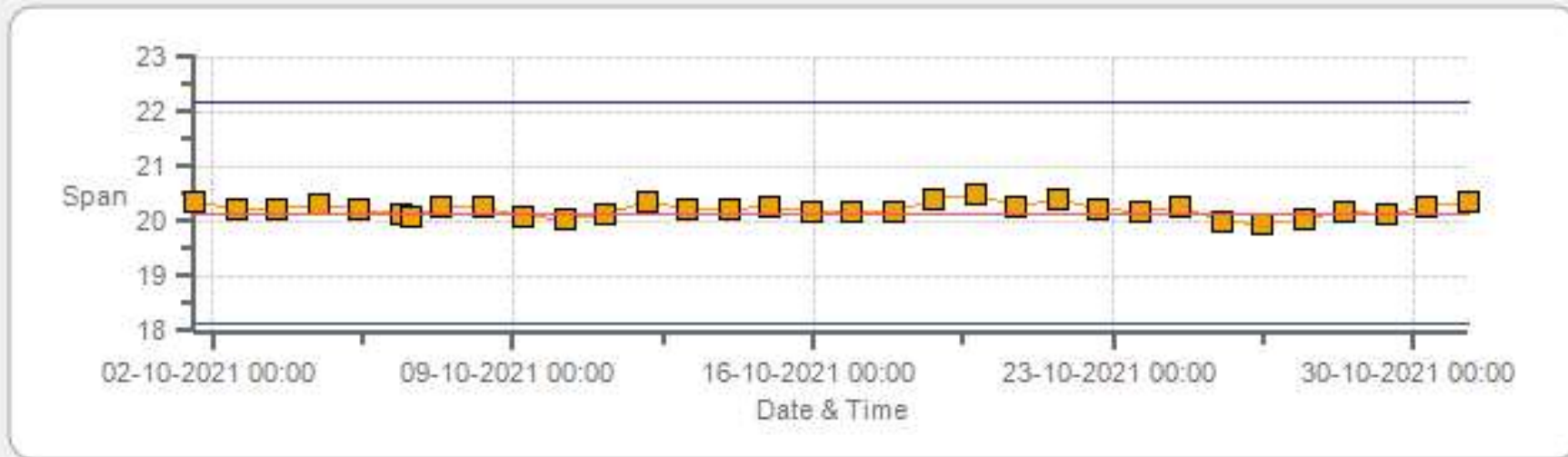


THC55[ppm] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Zero



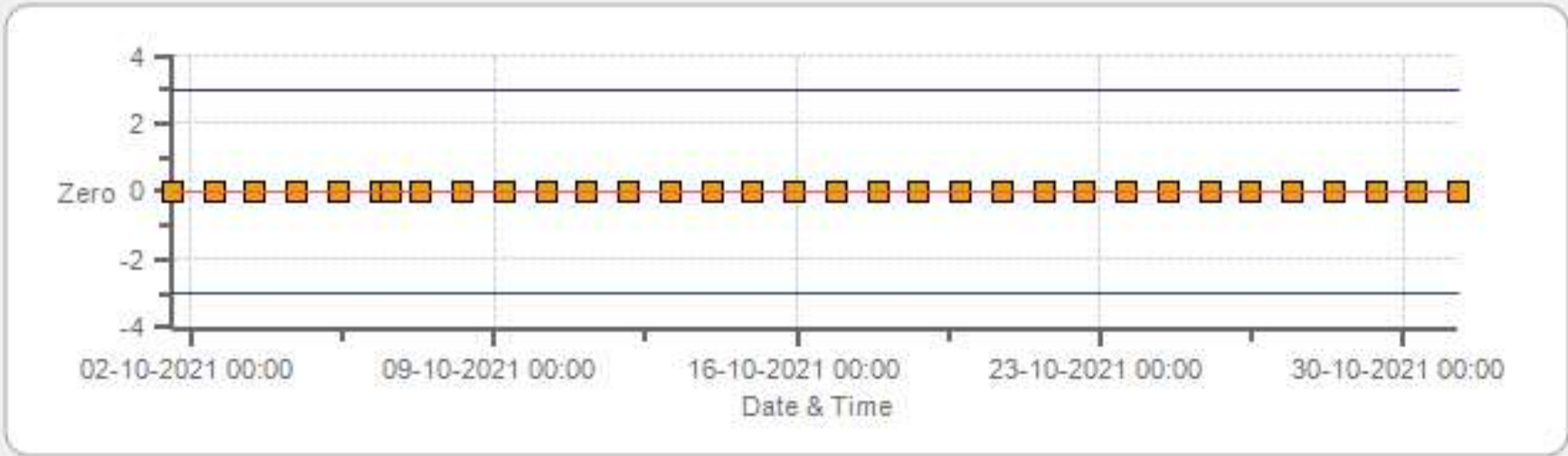
Zero Zero Ref Zero Low Zero High

THC55[ppm] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Span



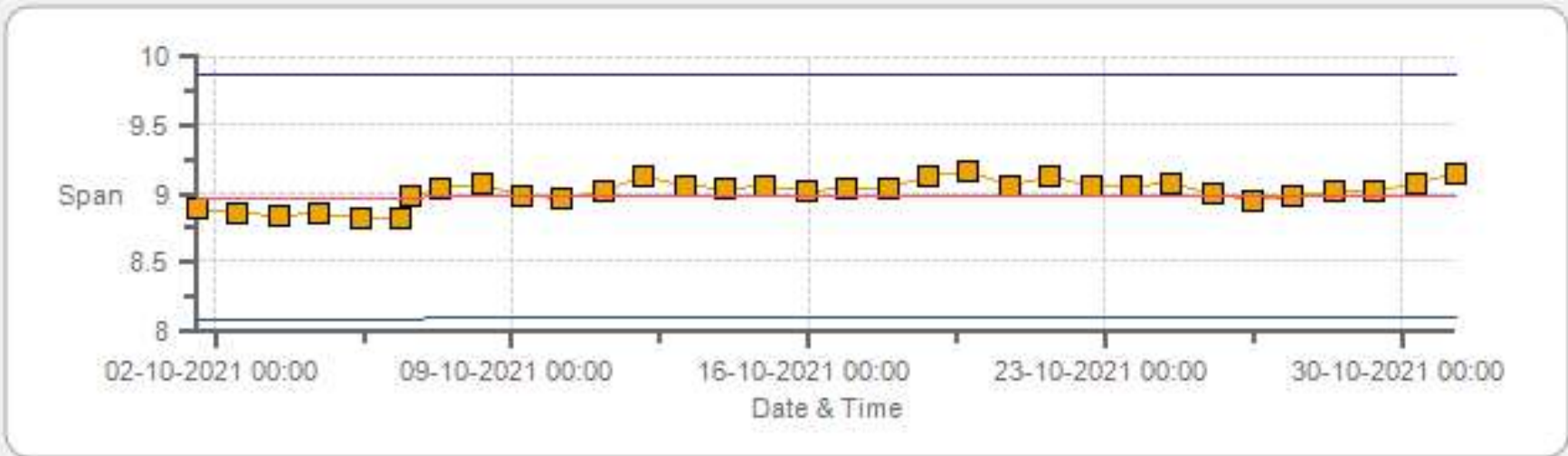
Span SpanRef Span Low Span High

CH4[ppm] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Zero



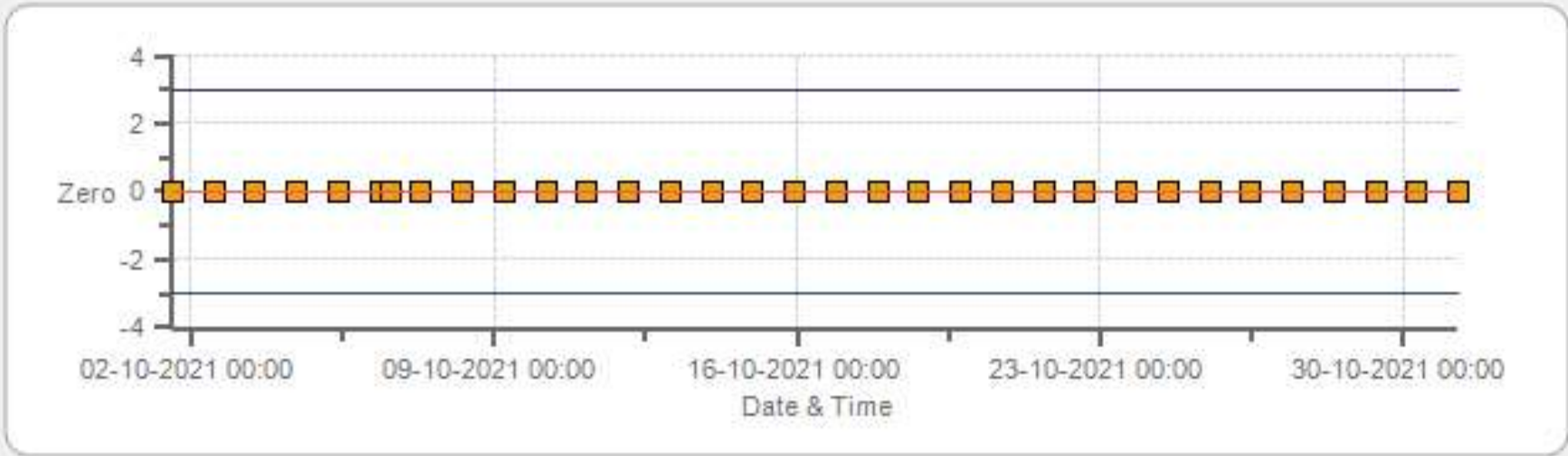
Zero Zero Ref Zero Low Zero High

CH4[ppm] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Span



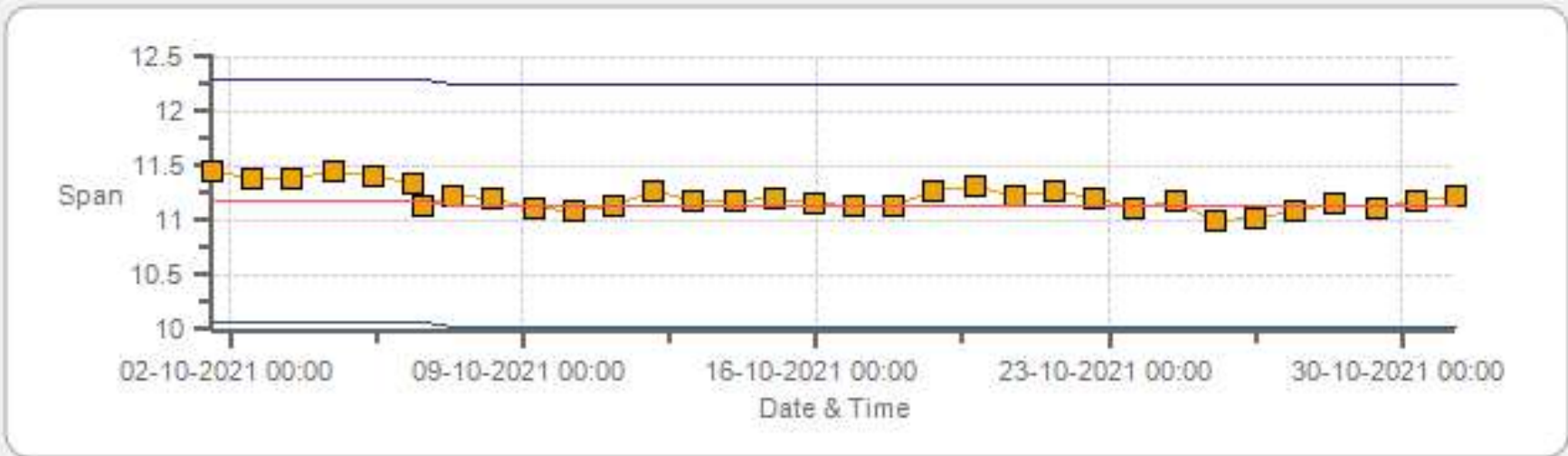
Span SpanRef Span Low Span High

NMHC[ppm] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Zero



Zero Zero Ref Zero Low Zero High

NMHC[ppm] Calibration: Cold Lake South Monthly: 10-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

# MULTI-POINT CALIBRATION RECORDS



# SO2 Analyzer Calibration by Dilution



DATE:	08-Oct-2021	PREVIOUS CALIBRATION DATE:	07-Sep-2021
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	CLS	BAROMETRIC (mBar):	950
PURPOSE:	Routine	START TIME (MST):	08:51
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:45

## ANALYZER:

MAKE/MODEL	Thermo 43I-TLE	RANGE	500 ppb
SERIAL #	1180260018	FLOW (mL/min)	442
INITIAL		FINAL	
BKG/OFFSET	2.14	BKG/OFFSET	2.17
COEF/SLOPE	0.96	COEF/SLOPE	0.971
Expected (reference) Value	260	Expected (reference) Value	264.7

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010	MODEL:	T701
ID:	26801218	ID:	132
MFC CALIBRATION DATE:	07-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	<del>38.50</del>	5000	0.00	-0.1	0	<del>1.019</del>	<del>1.000</del>
4962	38.50	5000	391.16	383.7	391.1	1.019	1.000
4982	18.00	5000	182.88	n/a	182.8	n/a	1.000
4991	9.00	5000	91.44	n/a	91.4	n/a	1.000

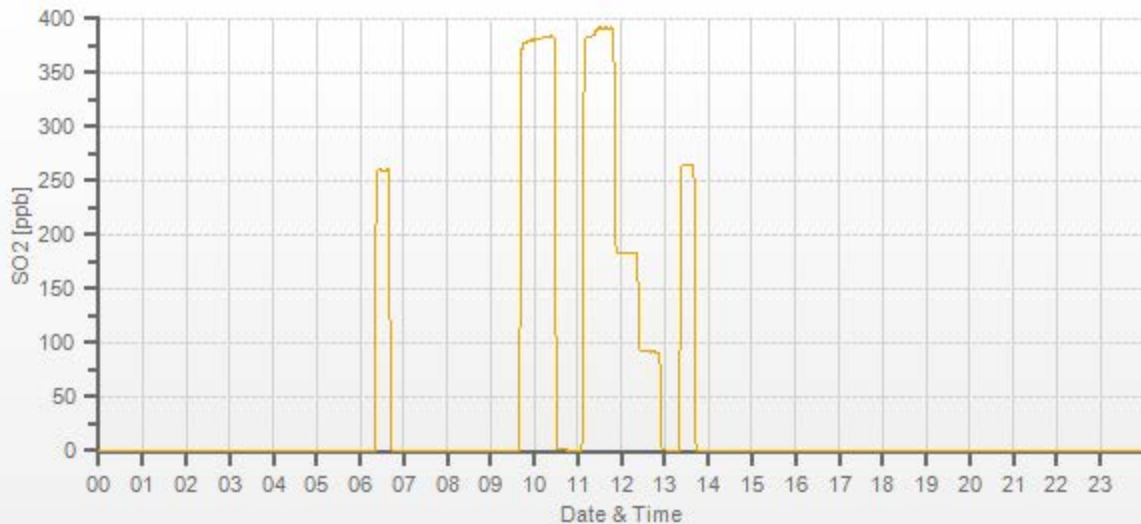
## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

## COMMENTS:

Sample inlet filter was changed.

SO2[ppb] Station: Cold Lake South Daily: 08-10-2021 Type: AVG 1 Min. [1 Min.]



CAL-LICA-202110-01174

# TRS Analyzer Calibration by Dilution



DATE:	08-Oct-2021	PREVIOUS CALIBRATION DATE:	07-Sep-2021
PARAMETER:	TRS	PREVIOUS CORRECTION FACTOR:	0.997
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	CLS	BAROMETRIC (mBar):	950
PURPOSE:	Routine	START TIME (MST):	08:52
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:45

## ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	812728560	FLOW (mL/min)	493
INITIAL		FINAL	
BKG/OFFSET	22	BKG/OFFSET	22.2
COEF/SLOPE	1.058	COEF/SLOPE	1.062
Expected (reference) Value	38.2	Expected (reference) Value	38

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	07-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):	800	LOW ID	n/a
EXPIRY DATE	16-Jul-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:	08:58	SO2 Conc (ppb)	380
END TIME:	09:13	Analyzer Response (ppb)	0.0

## CALIBRATION:

FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	<del>7500</del>	7500	0.00	0	0	<del>1.000</del>	<del>1.000</del>
7442	58.50	7500	78.00	77.5	78	1.006	1.000
7472	28.50	7500	38.00	n/a	37.2	n/a	1.022
7486	14.20	7500	18.93	n/a	19	n/a	0.996

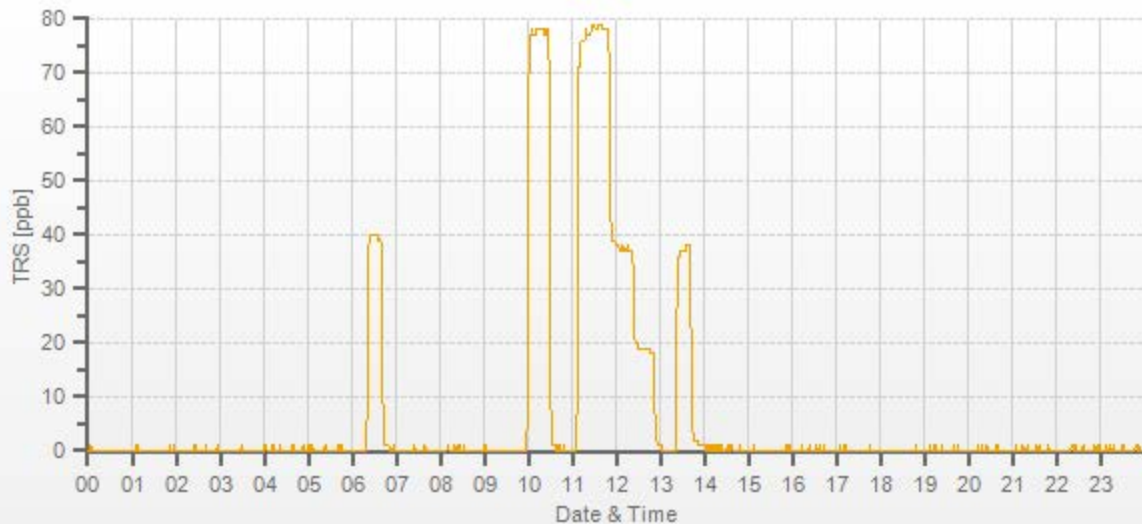
## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	0.999	-0.1%

## COMMENTS:

Sample inlet filter was changed.

TRS[ppb] Station: Cold Lake South Daily: 08-10-2021 Type: AVG 1 Min. [1 Min.]



CAL-LICA-202110-01174

# NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	08-Oct-2021	PREVIOUS CALIBRATION DATE:	07-Sep-2021	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	22.0	SERIAL #:	1505664393	NOx	0.999
LOCATION:	CLS	BAROMETRIC (mBar):	950	FLOW (mL/min)	785	NO	1.000
PURPOSE:	Routine	START TIME (MST):	08:49	RANGE (ppb)	500	NO2	0.998
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:30	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:	07-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:	4.2	4.1	n/a	BKG/OFFSET:	4.2	4.1	n/a
SLOPE/COEF/CE:	0.999	0.959	1	SLOPE/COEF/CE:	1	0.957	0.999

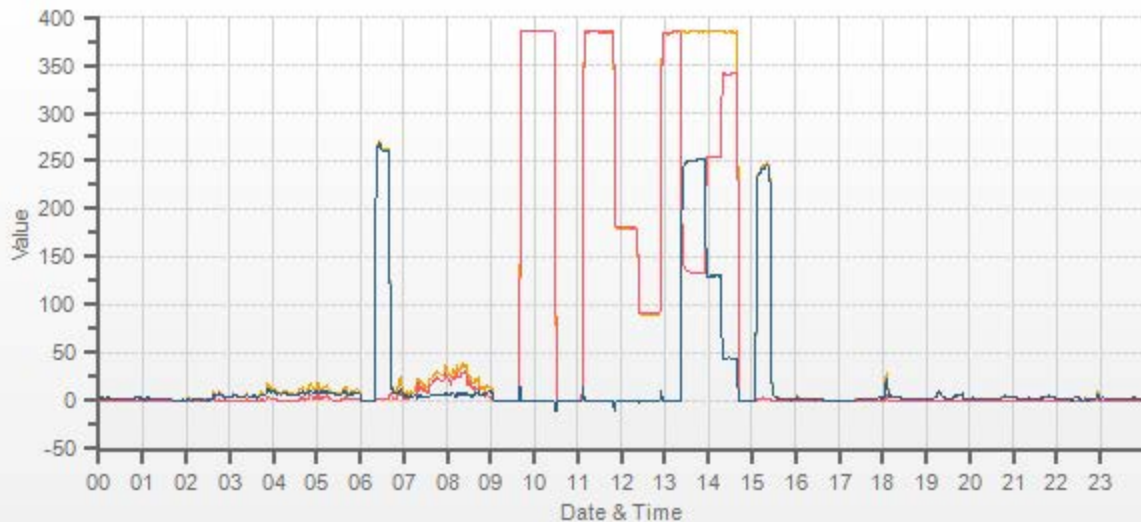
EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	257.7	4.8	252.9		247.2	2.9	244.3

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	<del>38.50</del>	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<del>1.000</del>	<del>0.999</del>	<del>n/a</del>	<del>1.001</del>	<del>1.001</del>	<del>n/a</del>
4962	38.50	5000	385.0	385.8	0.8	385.1	386.2	1.0	384.6	385.4	0.7	1.000	0.999	n/a	1.001	1.001	n/a
4982	18.00	5000	180.0	180.4	0.4	n/a	n/a	n/a	180.6	180.8	0.1	n/a	n/a	n/a	0.997	0.998	n/a
4991	9.00	5000	90.0	90.2	0.2	n/a	n/a	n/a	90.6	90.9	0.2	n/a	n/a	n/a	0.993	0.992	n/a

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	385.3	385.5	0.2	<del>n/a</del>	<del>n/a</del>	<del>n/a</del>	<del>n/a</del>
AS-FOUND HIGH	38.50	5000	240	132.8	385.6	252.7	252.5	252.5	1.000	100.00%
ADJUSTED HIGH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MID	38.50	5000	125	254.0	385.8	131.7	131.3	131.5	0.998	100.15%
LOW	38.50	5000	45	340.6	385.2	45.0	44.7	44.8	0.998	100.22%
NO2 adjustment not required.									AVERAGE:	100.13%

LINEAR REGRESSION ANALYSIS:				COMMENTS:
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	0.998	0.09%	
NOx	1.000	0.998	0.09%	
NO2	1.000	0.999	0.04%	



CAL-LICA-202110-01174

# Ozone Calibration by Photometer (Varying UV Lamp)



DATE:	06-Oct-2021	PREVIOUS CALIBRATION DATE:	08-Sep-2021
PARAMETER:	O3	PREVIOUS CORRECTION FACTOR:	1.001
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	CLS	BAROMETRIC (mBar):	943
PURPOSE:	Routine	START TIME (MST):	09:55
PERFORMED BY:	Alex Yakupov	END TIME (MST):	16:00

## ANALYZER:

MAKE/MODEL	Thermo 49i	RANGE	500 ppb
SERIAL #	700419951	FLOW (mL/min)	1460
INITIAL		FINAL	
BKG/OFFSET	0	BKG/OFFSET	0
COEF/SLOPE	1.054	COEF/SLOPE	1.072
Expected (reference) Value	387.6	Expected (reference) Value	423.6

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	09-Apr-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	<del>XXXX</del>	5000	0.0	0.0	0.0	<del>XXXX</del>	<del>XXXX</del>
5000	<del>XXXX</del>	5000	378.0	371.4	379.0	1.018	0.997
5000	<del>XXXX</del>	5000	180.0	n/a	180.2	n/a	0.999
5000	<del>XXXX</del>	5000	60.0	n/a	61.8	n/a	0.971

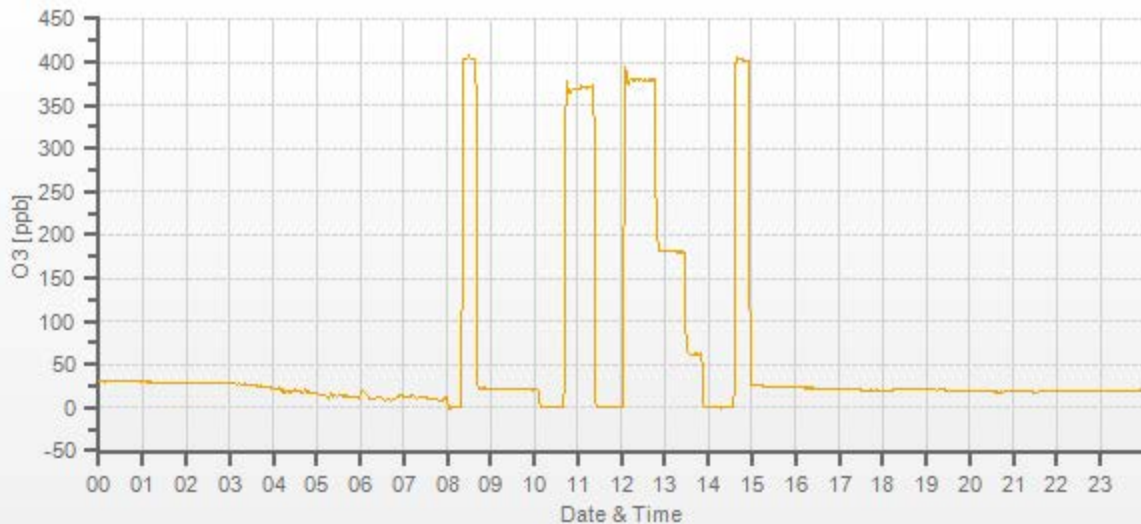
## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.001	0.1%

## COMMENTS:

Sample inlet filter was changed.

O3[ppb] Station: Cold Lake South Daily: 06-10-2021 Type: AVG 1 Min. [1 Min.]



CAL-LICA-202110-01174



# Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	06-Oct-2021	PREVIOUS CALIBRATION DATE:	15-Sep-2021	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	22.0		Thermo 55i	1180930025	n/a
LOCATION:	CLS	BAROMETRIC (mBar):	943	PARAMETER:	CH4	NMHC	THC
PURPOSE	Routine	START TIME (MST):	09:59	RANGE (ppm):	20	20	40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	16:00	PREVIOUS CF:	1.003	1.002	1.002

## CALIBRATION SYSTEM:

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 <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> (ppm):	914.0   307.0	HIGH EXPIRY:	n/a
ID:	26801218	ID:	132	CYLINDER (psi):	900	LOW ID:	n/a
MFC CALIBRATION DATE:	09-Apr-2021	OXIDIZER ID:	115	EXPIRY DATE	21-Jan-2028	LOW EXPIRY:	n/a

## CALIBRATION PARAMETERS:

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

## EXPECTED (REFERENCE) VALUE:

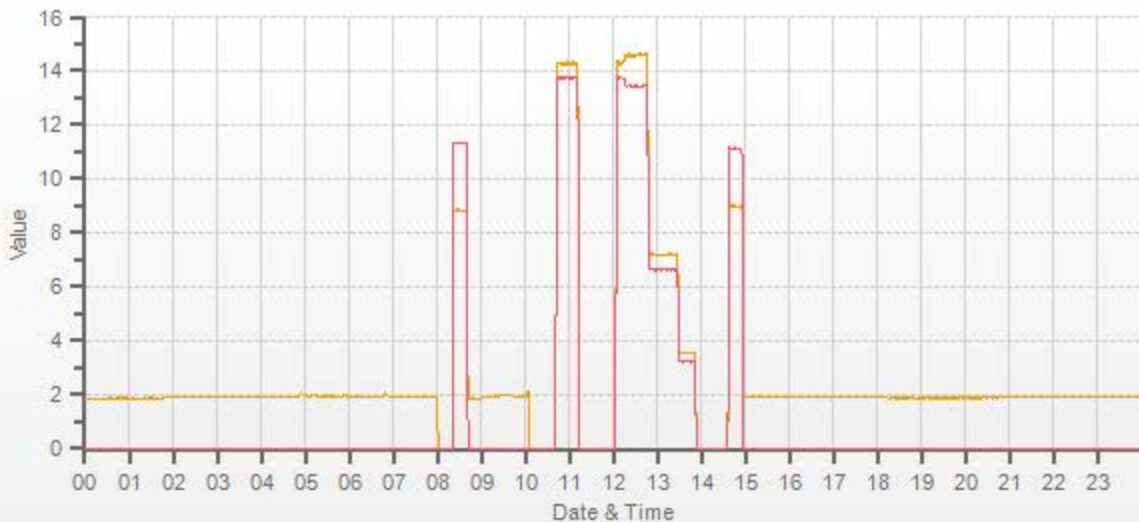
INITIAL	CH <sub>4</sub>	NMHC	THC	FINAL	CH <sub>4</sub>	NMHC	THC
	8.97	11.18	20.15		8.98	11.13	20.15

## CALIBRATION:

FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC
3100	<del>X</del>	3100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>
3051	49.40	3100	14.57	13.45	28.02	14.28	13.75	28.03	14.62	13.43	28.06	1.020	0.978	1.000	0.996	1.002	0.999
3075	24.70	3100	7.28	6.73	14.01	n/a	n/a	n/a	7.20	6.63	13.83	n/a	n/a	n/a	1.011	1.015	1.013
3088	12.40	3100	3.66	3.38	7.03	n/a	n/a	n/a	3.56	3.24	6.80	n/a	n/a	n/a	1.027	1.042	1.034

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT	Comments:	
CH <sub>4</sub>	1.000	1.005	-0.3%	Sample inlet filter was changed.	
NMHC	1.000	1.001	-0.3%		
THC	1.000	1.004	-0.3%		
				Use Zero Chrom?	Yes



CAL-LICA-202110-01174



# Teledyne T640 Audit/Calibration

<b>Date/Previous Audit Date:</b>	October 8, 2021	September 8, 2021	<b>Weather Conditions:</b>	Mainly sunny	
<b>Company:</b>	LICA		<b>Start Time (mst):</b>	16:15	
<b>Station:</b>	Cold Lake South		<b>End Time (mst):</b>	17:03	
<b>Parameter:</b>	PM 2.5		<b>Performed By/Reviewer:</b>	Alex Yakupov      Chris Wesson	
<b>Instrument Data:</b>					
<b>Make/Model:</b>	Teledyne T640		<b>Serial Number:</b>	575	
<b>Owner:</b>	LICA		<b>Alarms (detail in comments):</b>	No	
<b>Reference Standards/I.D./Expiry Date:</b>					
<b>Flow Standard:</b> DeltaCal DC1 S/N177246 / Jul 12, 2022		<b>Temperature:</b> VAISALA HMP76B / SN: T1640130 / Apr 22, 2022			
<b>Digital Manometer:</b> DeltaCal DC1 S/N177246 / Jul 12, 2022		<b>Pressure:</b> FS FB61291 / SN: 130168457 / Feb 17, 2022			
<b>DIAGNOSTICS:</b>					
Ambient Pressure (mmHg)	709.5	Ambient Temp (°C)	15.5	ASC Heater Duty (%)	0.0
Box Temp (°C)	28.1	Current PMT HV (V)	1441	LED Temp (°C)	36.89
P3 Value	47	PMT Setting (V)	1444	Pump PWM (%)	50
Sample Flow (L/min)	5.01	Sample RH (%RH)	14.5	Sample Temp (°C)	25.5
<b>Monthly Audit/Calibration:</b>					
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)	710.0	709.5	710	709.5	+/- 10 mm Hg
Ambient Temperature (°C)	15.00	15.5	n/a		+/- 2°C
Sample Flow (L/min)	5.11	5.01	5.02	5.01	+/-5% of T640x (e.g., 4.75 – 5.25 lpm)
<b>Additional Monthly Maintenance :</b>					<b>Completed</b>
				Inlet cleaned?	Yes
				Sample tubing inspected (inner and outer)?	Yes
<b>Comments:</b>					
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**

**OCTOBER 2021**

**Ambient Air Monitoring Calibration Report**

**- TAMARACK STATION-**

**(Formerly Maskwa Station)**

**CAL-LICA-202110-01248**

**Station Operation and Maintenance:**

Bureau Veritas Canada

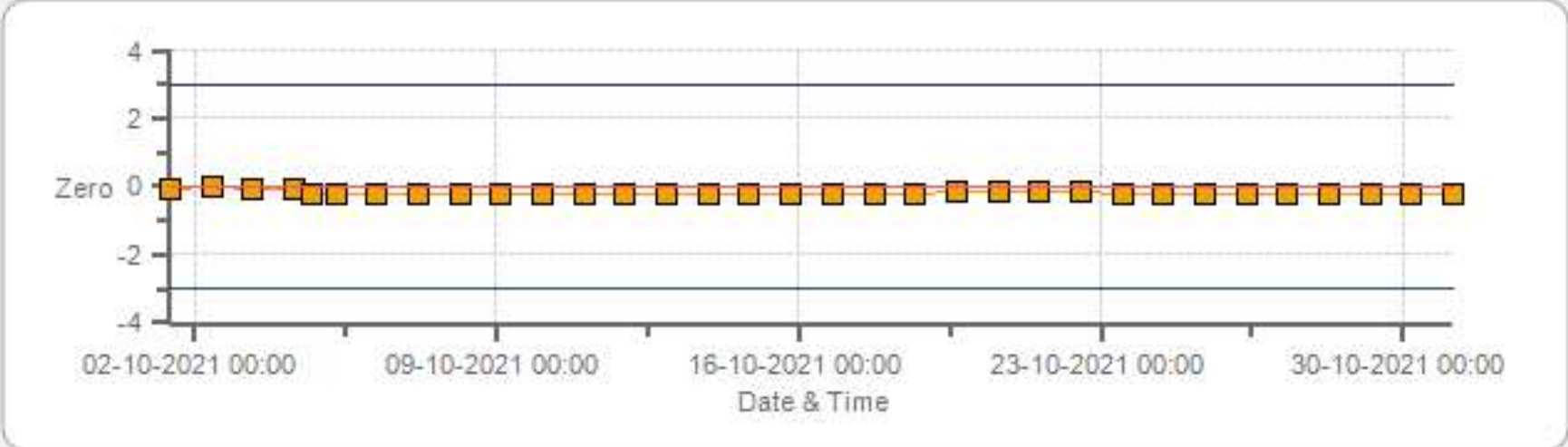
**Data Validation and Report:**

LICA / Bureau Veritas Canada

November 19, 2021

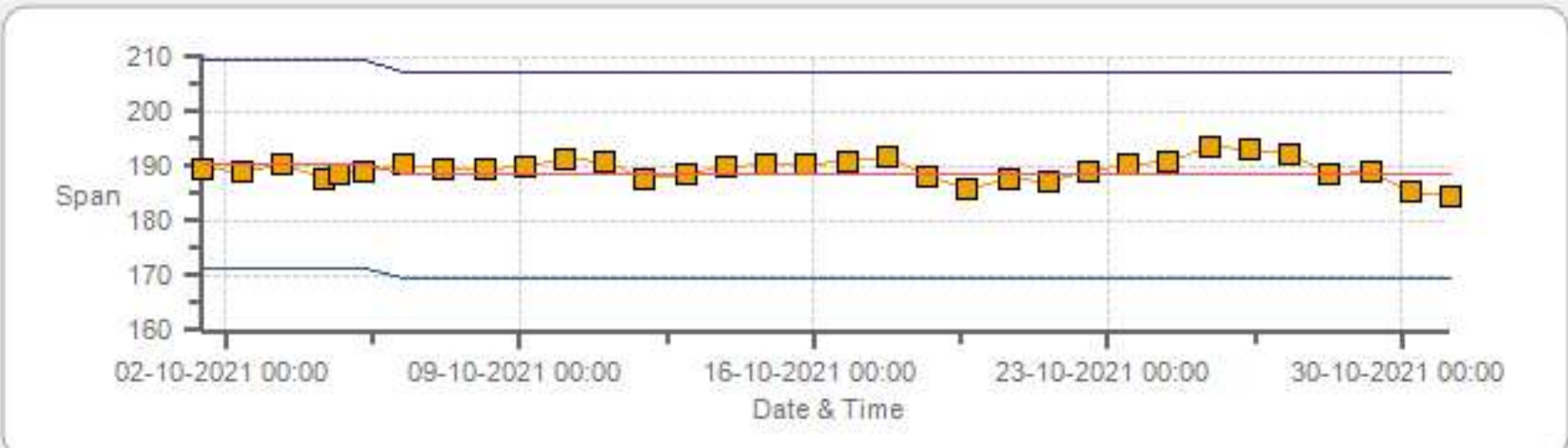
# DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

SO2[ppb] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Zero



Zero Zero Ref Zero Low Zero High

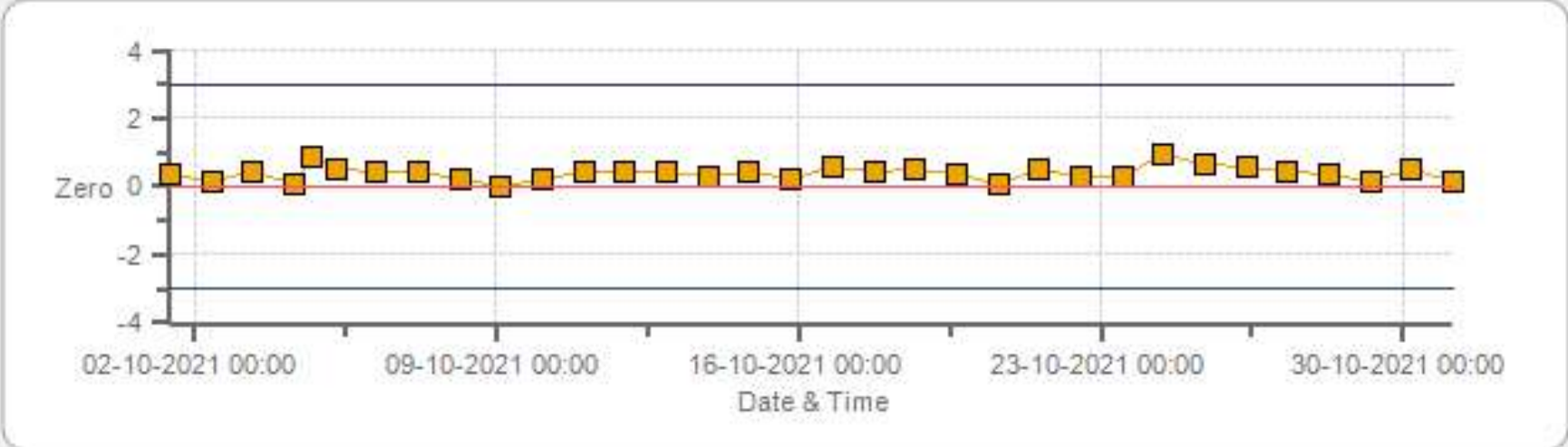
SO2[ppb] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

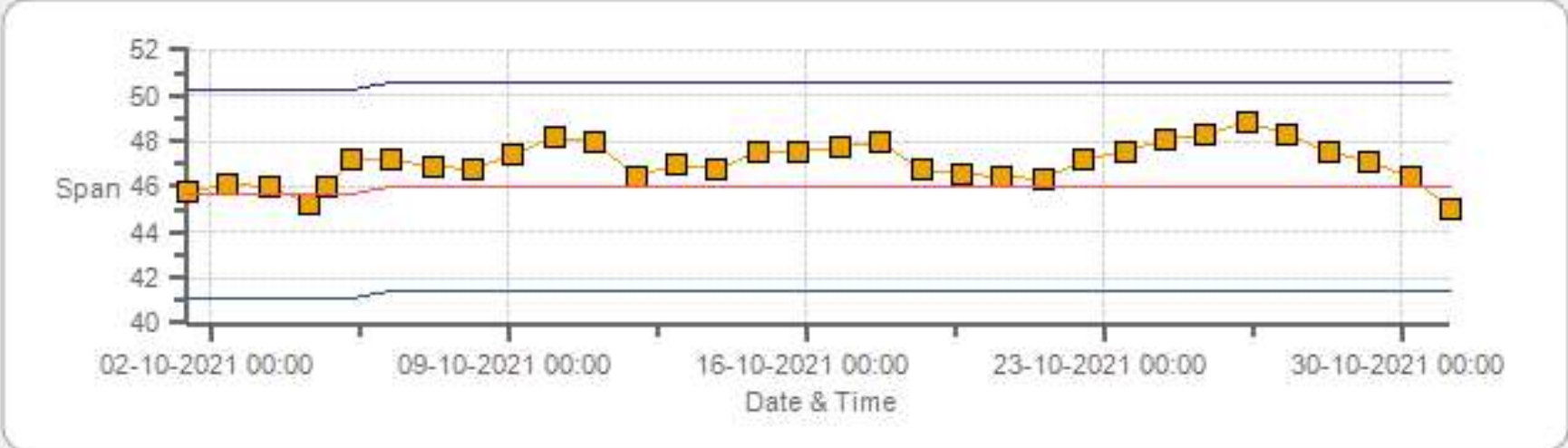


H2S[ppb] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Zero



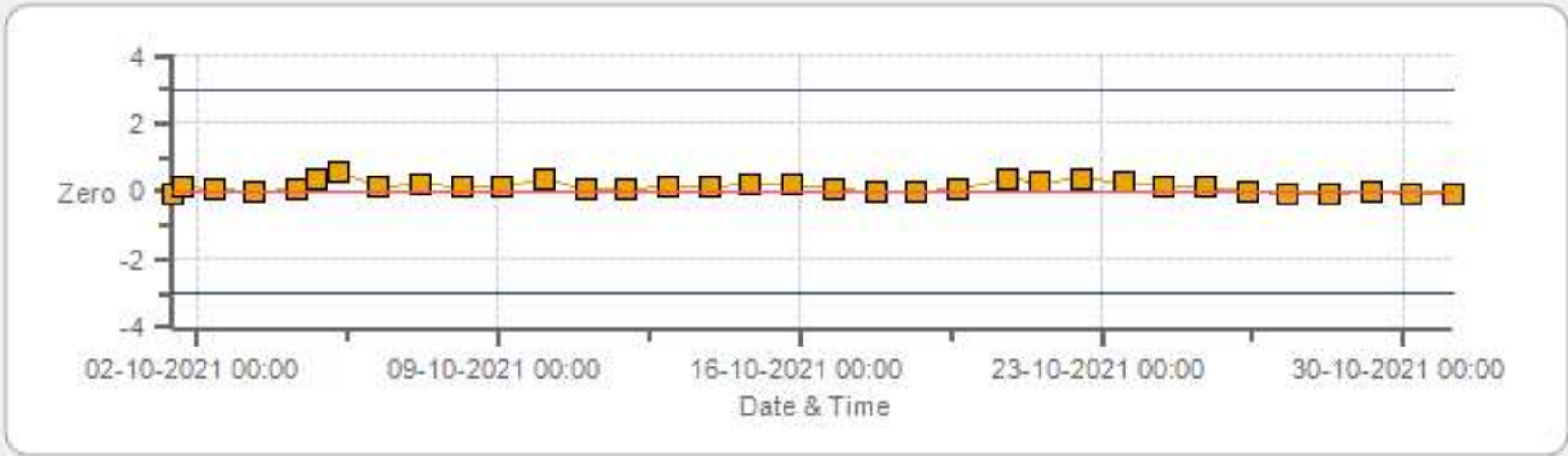
Zero Zero Ref Zero Low Zero High

H2S[ppb] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Span



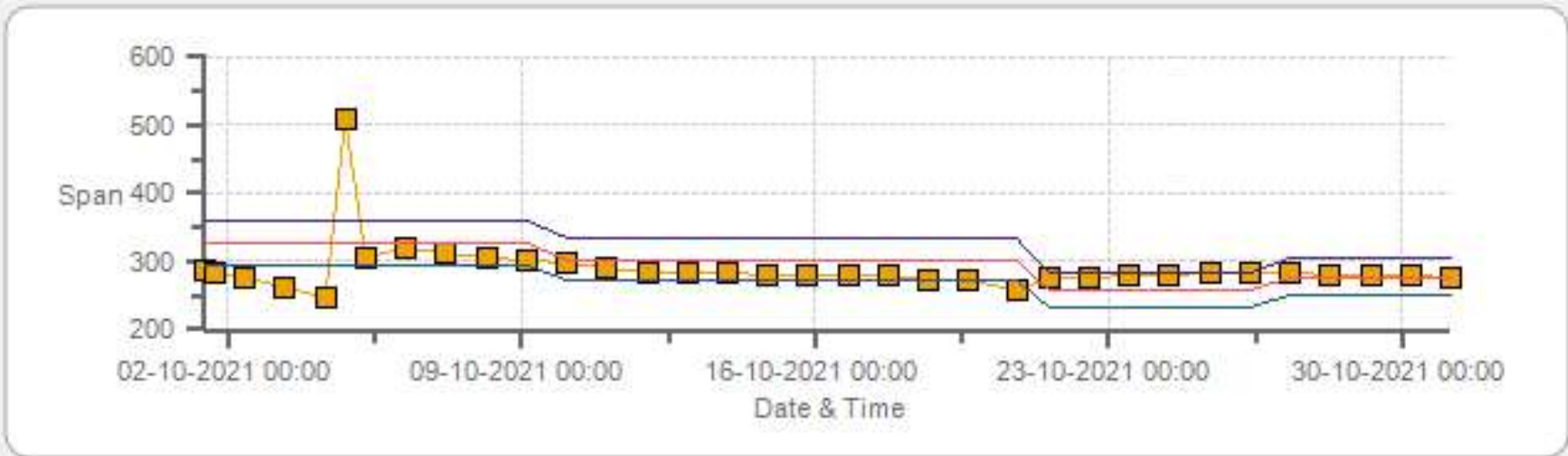
Span SpanRef Span Low Span High

NOX[ppb] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Zero



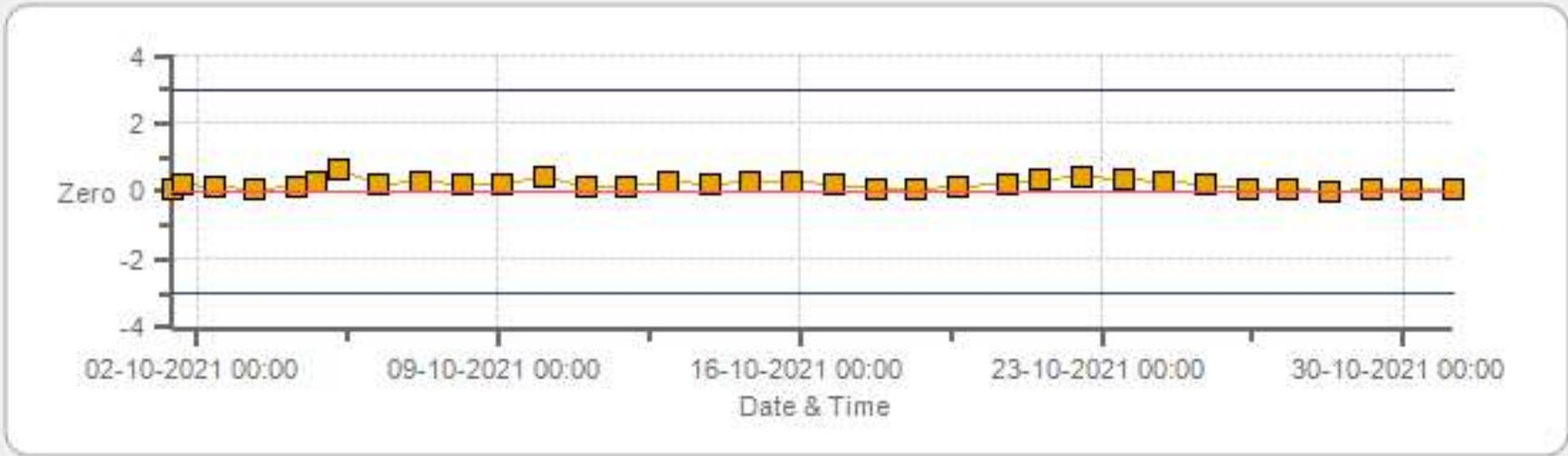
Zero Zero Ref Zero Low Zero High

NOX[ppb] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Span



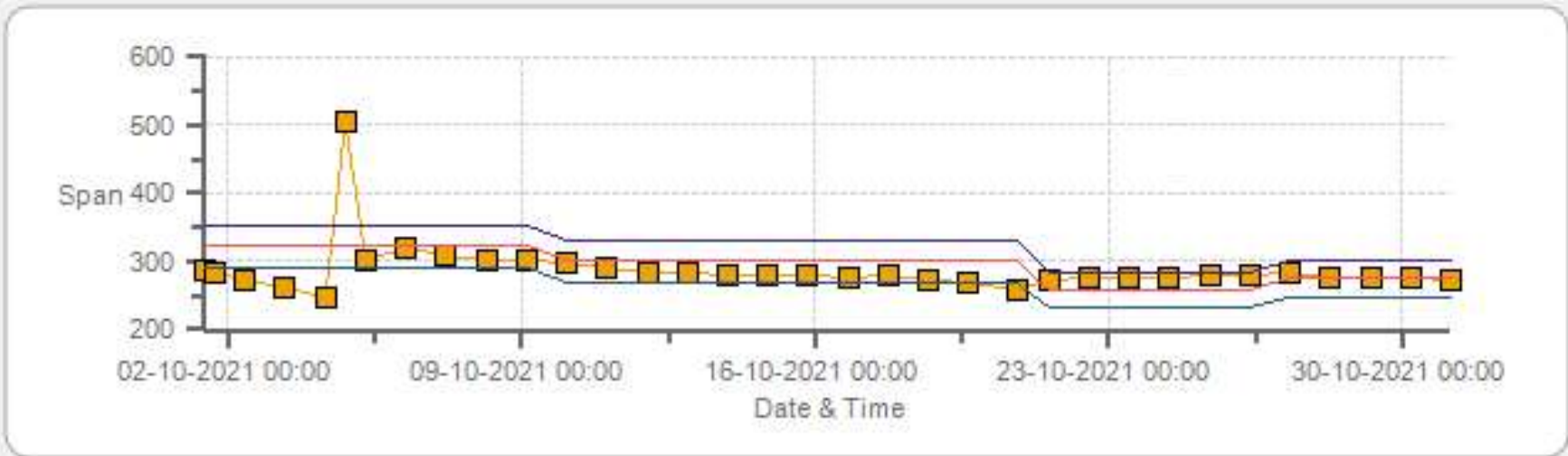
Span SpanRef Span Low Span High

NO2[ppb] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Zero



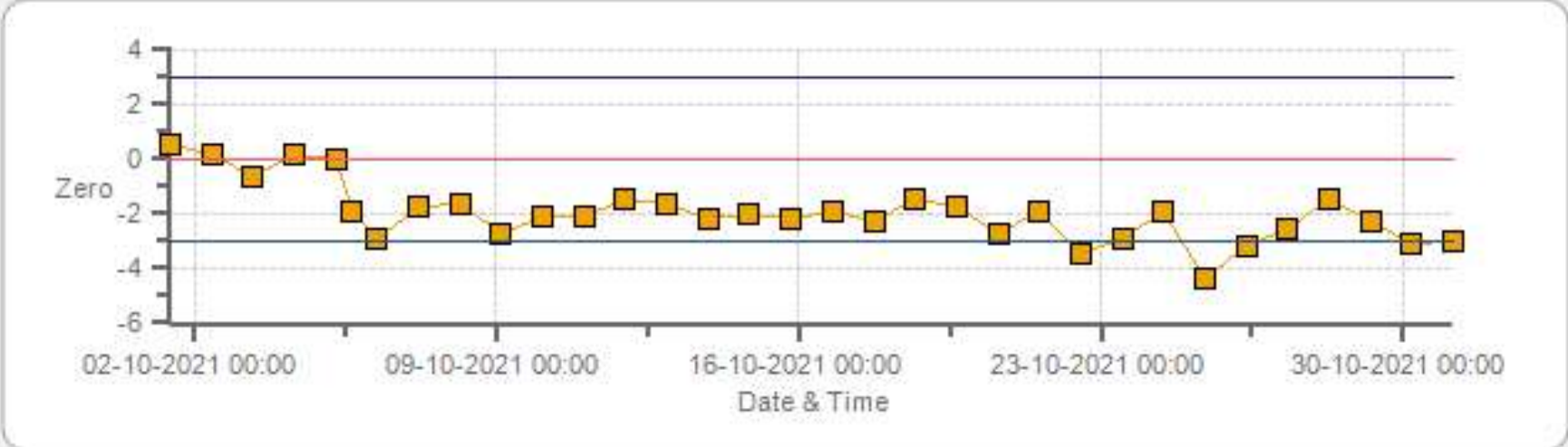
Zero Zero Ref Zero Low Zero High

NO2[ppb] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Span



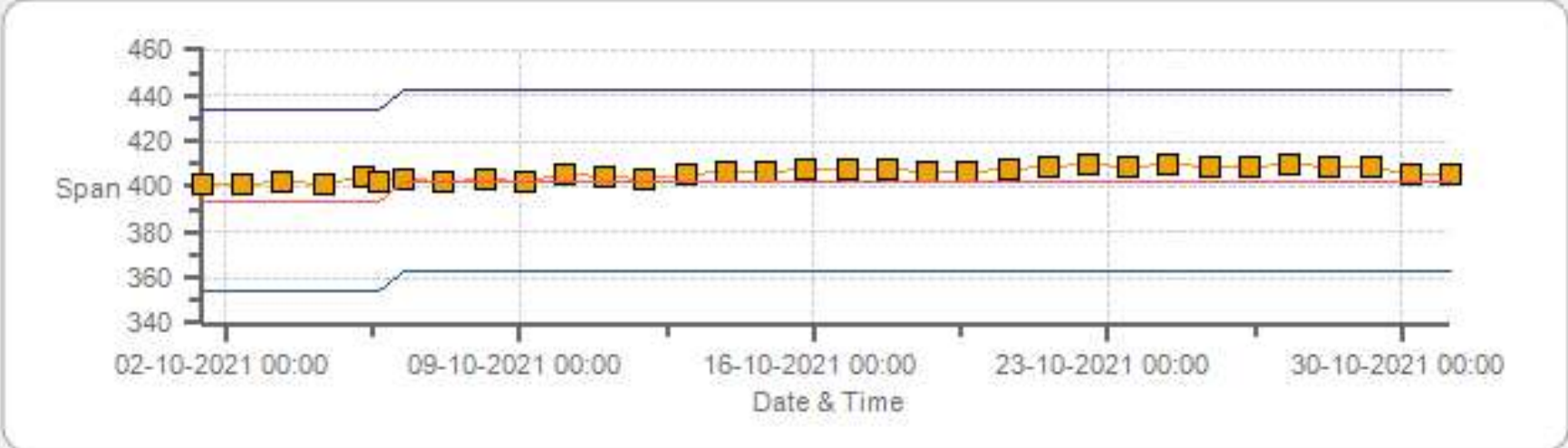
Span Span Ref Span Low Span High

O3[ppb] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Zero



■ Zero    
 — Zero Ref    
 — Zero Low    
 — Zero High

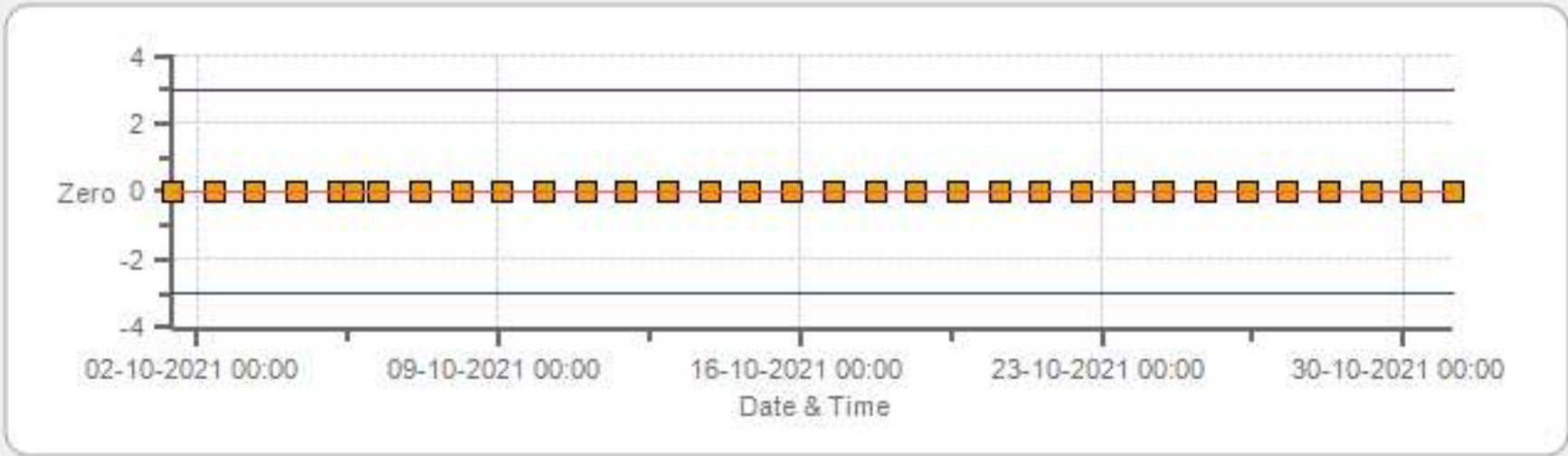
O3[ppb] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Span



■ Span    
 — SpanRef    
 — Span Low    
 — Span High

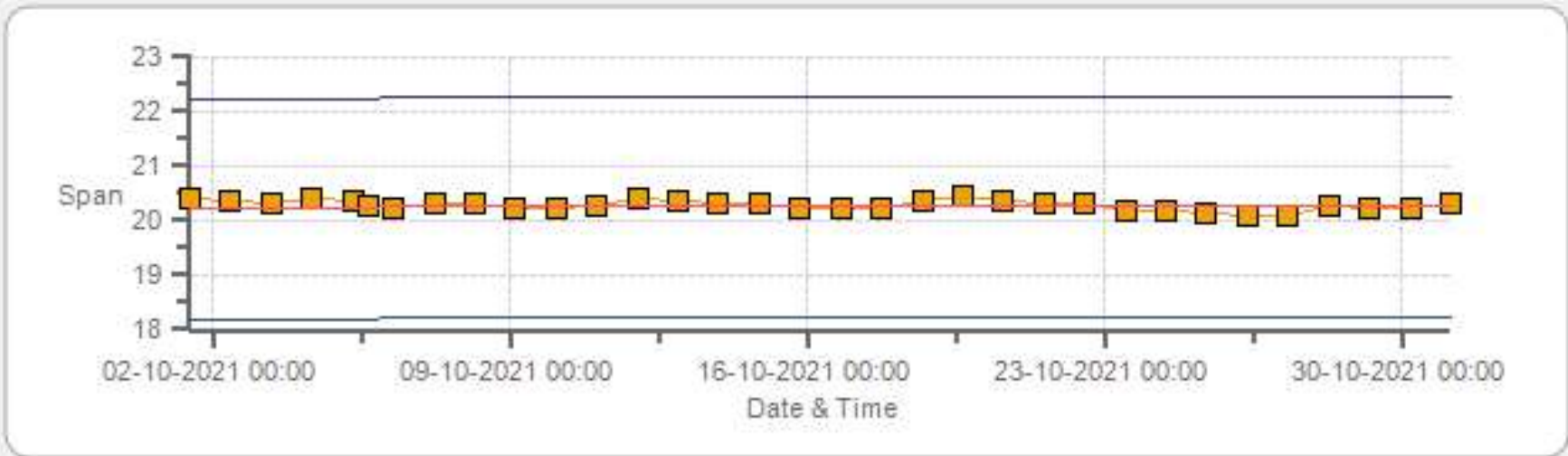


THC55[ppm] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Zero



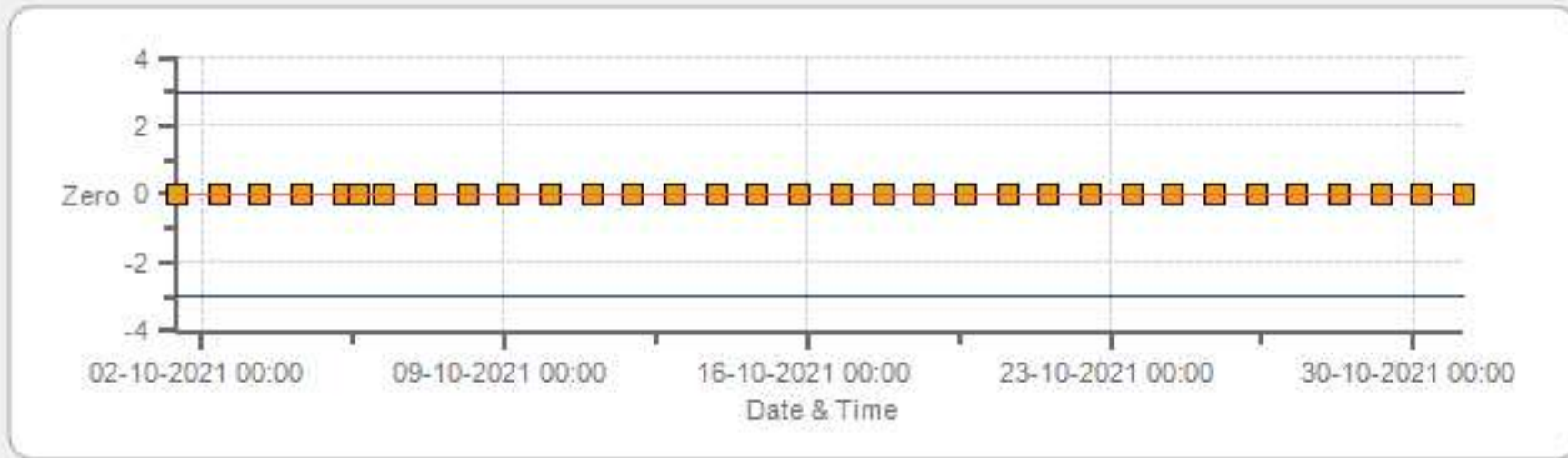
Zero Zero Ref Zero Low Zero High

THC55[ppm] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Span



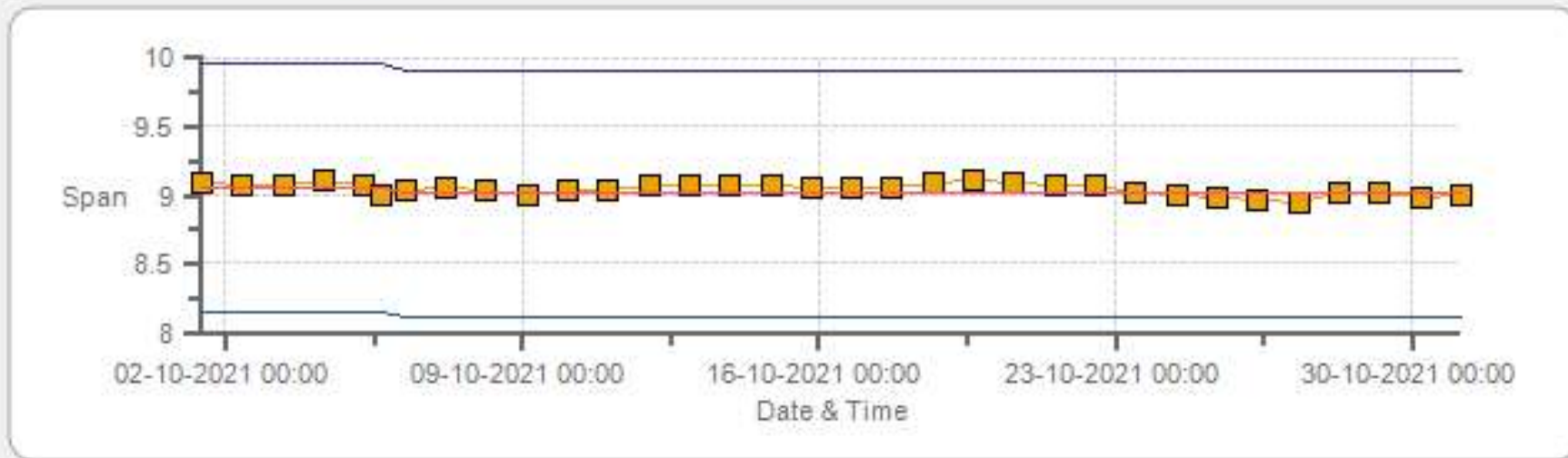
Span SpanRef Span Low Span High

CH4[ppm] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Zero



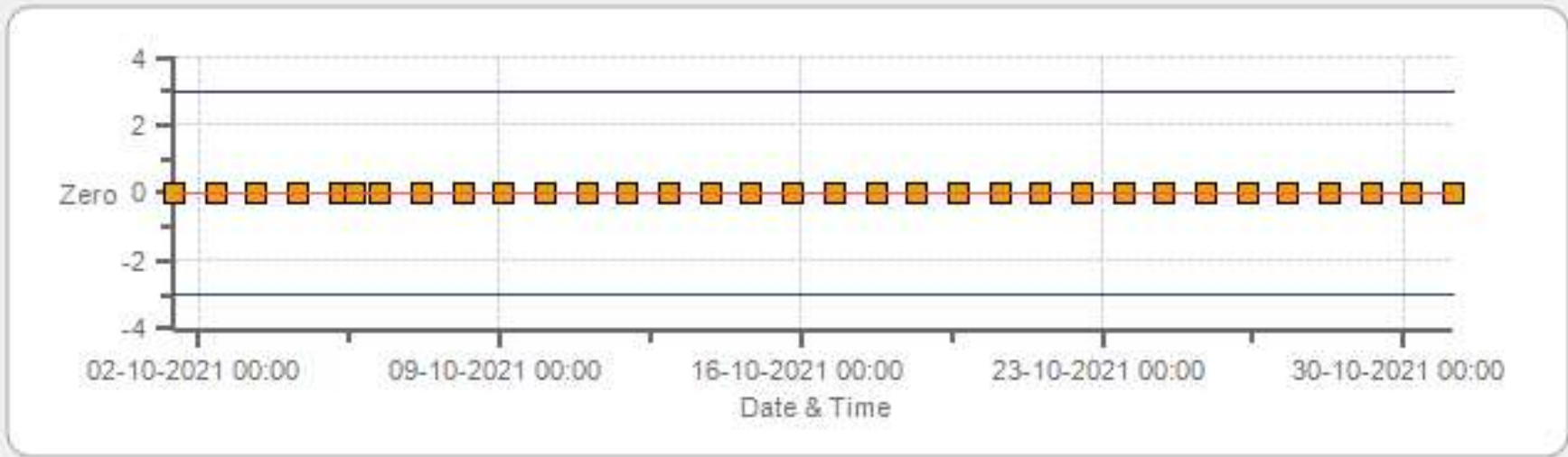
Zero Zero Ref Zero Low Zero High

CH4[ppm] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Span



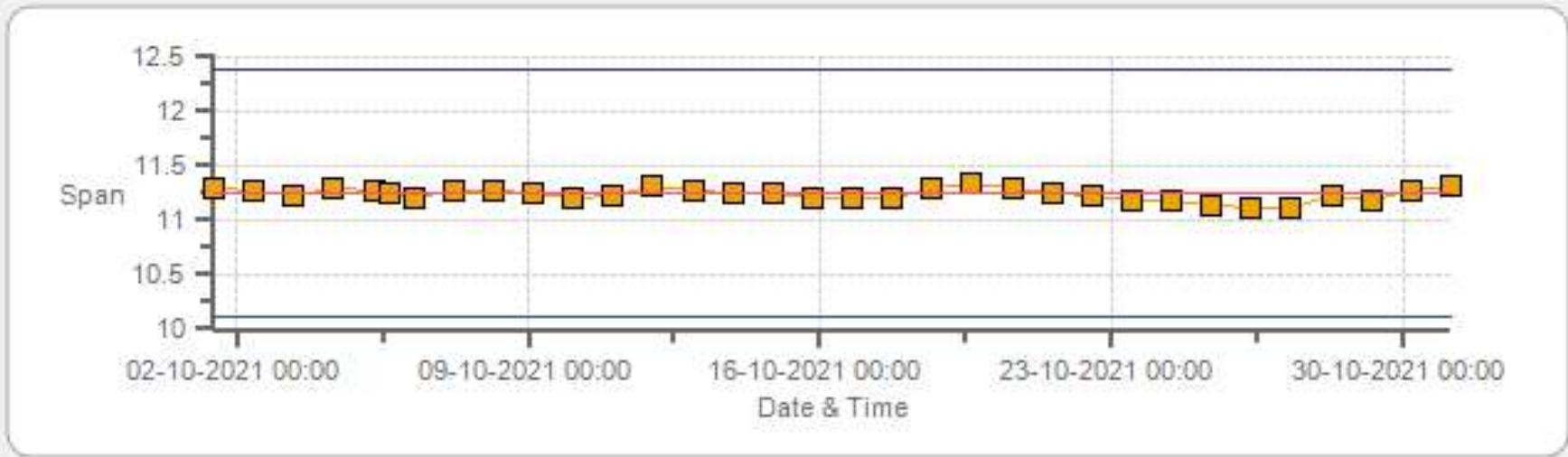
Span SpanRef Span Low Span High

NMHC[ppm] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Zero



Zero Zero Ref Zero Low Zero High

NMHC[ppm] Calibration: Tamarack Monthly: 10-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

# MULTI-POINT CALIBRATION RECORDS



# SO2 Analyzer Calibration by Dilution



DATE:	04-Oct-2021	PREVIOUS CALIBRATION DATE:	21-Sep-2021
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	0.997
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Tamarack	BAROMETRIC (mBar):	941
PURPOSE:	Routine	START TIME (MST):	12:12
PERFORMED BY:	Alex Yakupov	END TIME (MST):	17:24

## ANALYZER:

MAKE/MODEL	Thermo 43I-TLE	RANGE	500 ppb
SERIAL #	1180930031	FLOW (mL/min)	453
INITIAL		FINAL	
BKG/OFFSET	2.54	BKG/OFFSET	2.71
COEF/SLOPE	0.962	COEF/SLOPE	0.967
Expected (reference) Value	190.3	Expected (reference) Value	188.6

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010	MODEL:	T701
ID:	26801218	ID:	132
MFC CALIBRATION DATE:	09-Apr-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):	1700	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:

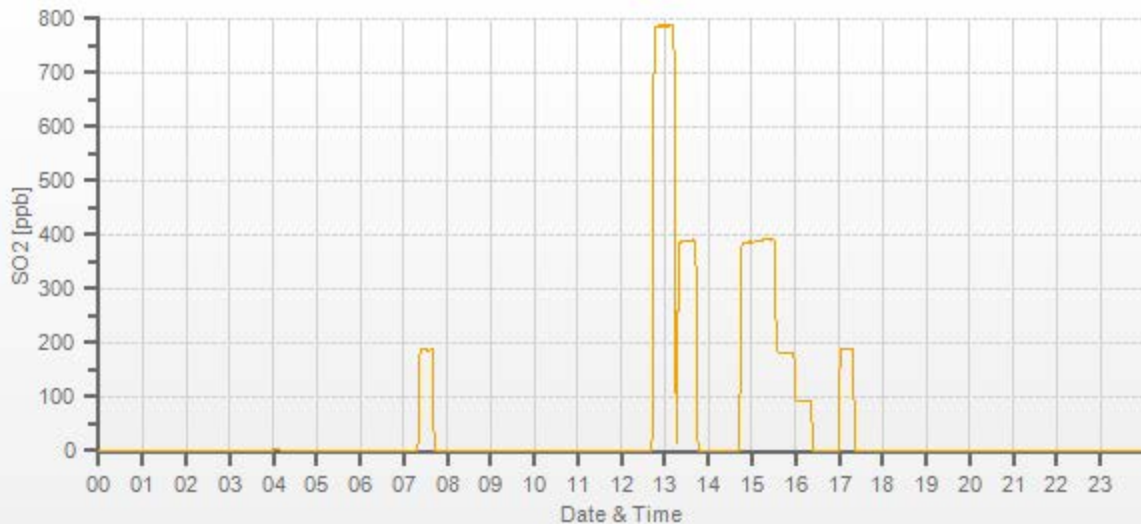
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	<del>38.50</del>	5000	0.00	-0.1	0	<del>1.003</del>	<del>1.001</del>
4962	38.50	5000	391.16	389.9	390.8	1.003	1.001
4982	18.00	5000	182.88	n/a	182.1	n/a	1.004
4991	9.00	5000	91.44	n/a	91.2	n/a	1.003

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	0.999	0.0%

## COMMENTS:

Sample inlet filter was changed. The First High As Found point of 780 ppb was triggered in error. The As Found re-started with 380 ppb as a target.



# H2S Analyzer Calibration by Dilution



DATE:	04-Oct-2021	PREVIOUS CALIBRATION DATE:	20-Sep-2021
PARAMETER:	H2S	PREVIOUS CORRECTION FACTOR:	0.999
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Tamarack	BAROMETRIC (mBar):	941
PURPOSE:	Routine	START TIME (MST):	12:13
PERFORMED BY:	Alex Yakupov	END TIME (MST):	17:50

## ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	CM 17360005	FLOW (mL/min)	937
INITIAL		FINAL	
BKG/OFFSET	28.7	BKG/OFFSET	29.7
COEF/SLOPE	0.801	COEF/SLOPE	0.828
Expected (reference) Value	45.7	Expected (reference) Value	46

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	09-Apr-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):	800	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:	12:24	SO2 Conc (ppb)	380
END TIME:	12:39	Analyzer Response (ppb)	0.0

## CALIBRATION:

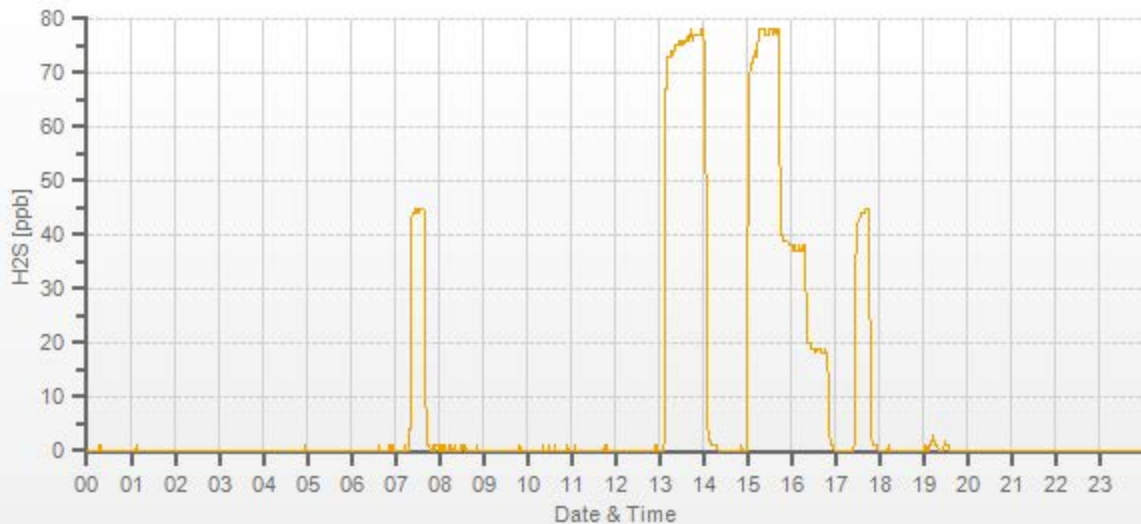
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	<del>7500</del>	7500	0.00	-0.1	0.3	<del>1.000</del>	<del>0.999</del>
7442	58.50	7500	78.00	77.9	78.4	1.000	0.999
7472	28.50	7500	38.00	n/a	38.1	n/a	1.005
7486	14.20	7500	18.93	n/a	19.2	n/a	1.002

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.001	0.2%

## COMMENTS:

Sample inlet filter was changed.



# NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	04-Oct-2021	PREVIOUS CALIBRATION DATE:	21-Sep-2021	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	22.0	SERIAL #:	1180930028	NOx	1.001
LOCATION:	Tamarack	BAROMETRIC (mBar):	941	FLOW (mL/min)	930	NO	1.003
PURPOSE:	Routine	START TIME (MST):	12:09	RANGE (ppb)	500	NO2	0.998
PERFORMED BY:	Alex Yakupov	END TIME (MST):	19:02	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):	1700	LOW ID:	n/a
MFC CALIBRATION DATE:	09-Apr-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:	1.5	1.4	n/a	BKG/OFFSET:	1.6	1.5	n/a
SLOPE/COEF/CE:	1.003	0.5	0.999	SLOPE/COEF/CE:	1.002	0.5	0.999

EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	325.8	3.7	322.1		to be adjusted	to be adjusted	to be adjusted

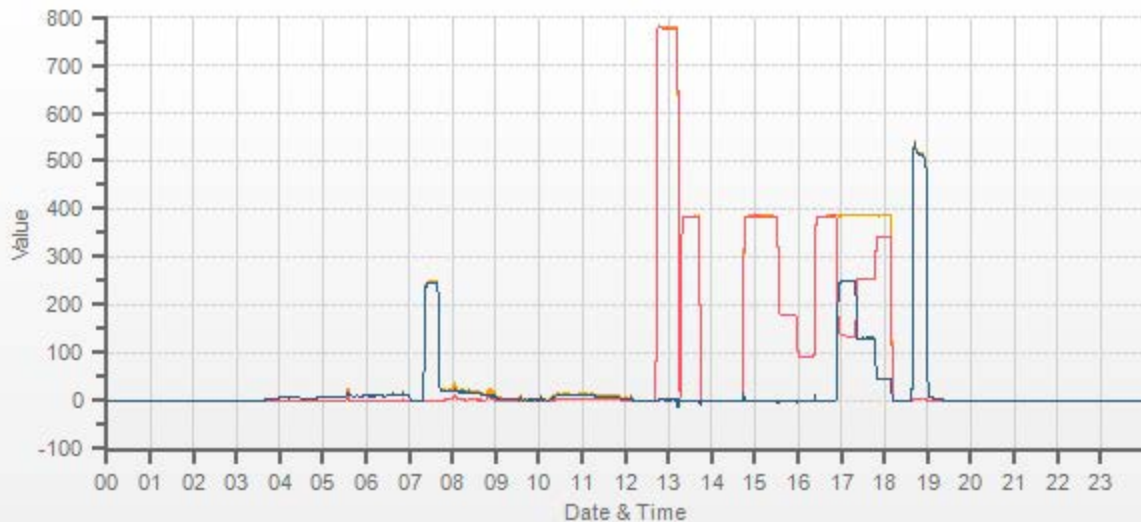
CALIBRATION PARAMETERS:				
POINT	NO TARGET (PPB)	NO2 TARGET (PPB)	NO2 RANGE	O3 POINT
HIGH	380	250	230-265	n/a
MID	180	125	115-150	n/a
LOW	90	45	40-55	n/a
EXTRA 1	n/a	n/a	n/a	n/a

FLOW RATE (mL/min)			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
			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	<del>38.50</del>	5000	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	<del>1.001</del>	<del>0.999</del>	<del>n/a</del>	<del>1.000</del>	<del>0.999</del>	<del>n/a</del>
4962	38.50	5000	385.0	385.8	0.8	384.4	386.2	1.8	385.0	386.0	1.0	1.001	0.999	n/a	1.000	0.999	n/a
4982	18.00	5000	180.0	180.4	0.4	n/a	n/a	n/a	180.8	181.2	0.3	n/a	n/a	n/a	0.996	0.995	n/a
4991	9.00	5000	90.0	90.2	0.2	n/a	n/a	n/a	90.9	91.2	0.3	n/a	n/a	n/a	0.990	0.989	n/a

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	385.7	386.8	1.1	<del>n/a</del>	<del>n/a</del>	<del>n/a</del>	<del>n/a</del>
AS-FOUND HIGH	38.50	5000	240	134.7	386.6	251.9	251	250.8	1.001	99.92%
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	254.6	386.5	131.9	131.1	130.8	1.002	99.77%
LOW	38.50	5000	45	341.3	386.4	45.1	44.4	44	1.009	99.10%
NO2 adjustment not required.									AVERAGE:	99.60%

LINEAR REGRESSION ANALYSIS:				COMMENTS:
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	0.999	0.11%	
NOx	1.000	1.000	0.11%	
NO2	1.000	1.001	-0.09%	

Sample inlet filter was changed. The First High As Found point of 780 ppb was triggered in error. The As Found re-started with 380 ppb as a target. A new permeation device was installed. The EV will be adjusted in 72 hours upon gaining stability.



CAL-LICA-202110-01248

# NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	20-Oct-2021	PREVIOUS CALIBRATION DATE:	04-Oct-2021	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	22.0	SERIAL #:	1180930028	NOx	1.000
LOCATION:	Tamarack	BAROMETRIC (mBar):	942	FLOW (mL/min)	936	NO	0.999
PURPOSE:	Removal/Shut-down	START TIME (MST):	09:57	RANGE (ppb)	500	NO2	1.001
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:28	GPT FOR O3?		No	

CALIBRATION SYSTEM:							
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:	1.6	1.5	n/a	BKG/OFFSET:	n/a	n/a	n/a
SLOPE/COEF/CE:	1.002	0.5	0.999	SLOPE/COEF/CE:	n/a	n/a	n/a

EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	302.7	1.7	301.0		n/a	n/a	n/a

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

NO/NOx CALIBRATION:																	
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	<del>5000</del>	5000	0.0	0.0	0.0	-0.1	-0.1	0.0	n/a	n/a	n/a	<del>1.000</del>	<del>1.000</del>	<del>1.000</del>	<del>n/a</del>	<del>n/a</del>	<del>n/a</del>
4962	38.50	5000	385.0	385.8	0.8	382.8	384.9	2.1	n/a	n/a	n/a	1.005	1.002	<del>1.000</del>	n/a	n/a	<del>n/a</del>
4982	18.00	5000	180.0	180.4	0.4	179.6	180.7	1.1	n/a	n/a	n/a	1.002	0.998	<del>1.000</del>	n/a	n/a	<del>n/a</del>
4991	9.00	5000	90.0	90.2	0.2	90.5	91.1	0.6	n/a	n/a	n/a	0.993	0.989	<del>1.000</del>	n/a	n/a	<del>n/a</del>

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	383.6	385.4	1.8	<del>n/a</del>	<del>n/a</del>	<del>n/a</del>	<del>n/a</del>
AS-FOUND HIGH	38.50	5000	240	132.6	385.5	252.9	251	251.1	1.000	100.04%
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	254.0	386.1	132.1	129.6	130.3	0.995	100.54%
LOW	38.50	5000	45	340.7	386.0	45.3	42.9	43.5	0.986	101.40%
NO2 adjustment not required.									AVERAGE:	100.66%

LINEAR REGRESSION ANALYSIS:				COMMENTS:
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	0.994	0.10%	
NOx	1.000	0.997	0.11%	
NO2	1.000	0.997	0.17%	

Shutdown calibration was completed to exchange a .32 stroke sample pump for .22 stroke pump and adjust PMT and reset the NO calibration coefficient

# NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	20-Oct-2021	PREVIOUS CALIBRATION DATE:	n/a	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	22.0	SERIAL #:	1180930028	NOx	n/a
LOCATION:	Tamarack	BAROMETRIC (mBar):	942	FLOW (mL/min)	842	NO	n/a
PURPOSE:	Install/Post-Repair	START TIME (MST):	14:02	RANGE (ppb)	500	NO2	n/a
PERFORMED BY:	Alex Yakupov	END TIME (MST):	19:01	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:	n/a	n/a	n/a	BKG/OFFSET:	1.9	1.7	n/a
SLOPE/COEF/CE:	n/a	n/a	n/a	SLOPE/COEF/CE:	1.003	1.003	1.005

EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	n/a	n/a	n/a		259.2	2.3	256.9

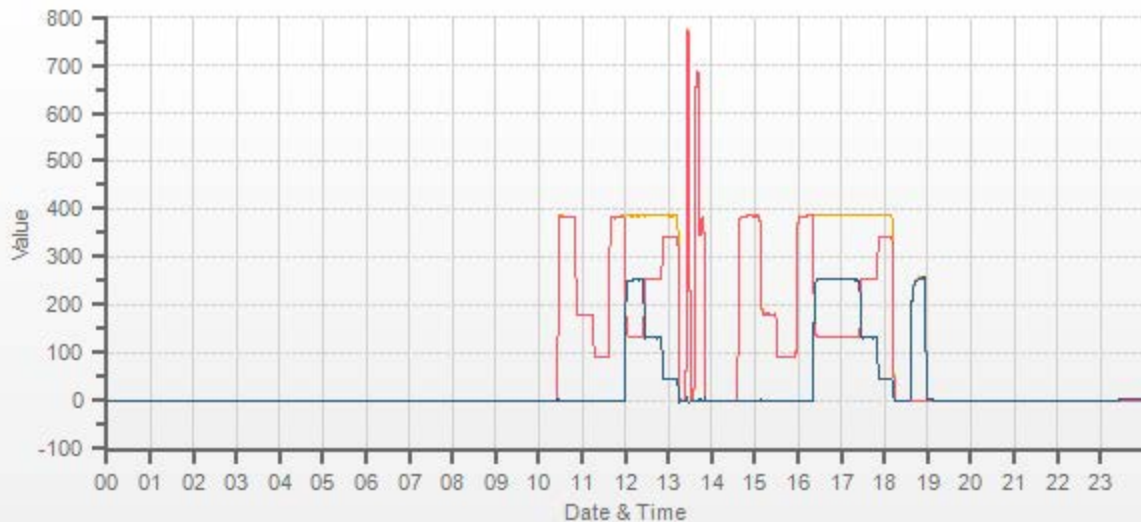
CALIBRATION PARAMETERS:				
POINT	NO TARGET (PPB)	NO2 TARGET (PPB)	NO2 RANGE	O3 POINT
HIGH	380	250	230-265	n/a
MID	180	125	115-150	n/a
LOW	90	45	40-55	n/a
EXTRA 1	n/a	n/a	n/a	n/a

FLOW RATE (mL/min)			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
			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	<del>38.50</del>	5000	0.0	0.0	0.0	n/a	n/a	n/a	0.0	0.0	0.0	<del>n/a</del>	<del>n/a</del>	<del>n/a</del>	<del>n/a</del>	<del>n/a</del>	<del>n/a</del>
4962	38.50	5000	385.0	385.8	0.8	n/a	n/a	n/a	385.4	386.5	1.1	n/a	n/a	<del>n/a</del>	0.999	0.998	<del>n/a</del>
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	<del>n/a</del>	0.993	0.993	<del>n/a</del>
4991	9.00	5000	90.0	90.2	0.2	n/a	n/a	n/a	91.2	91.5	0.3	n/a	n/a	<del>n/a</del>	0.987	0.986	<del>n/a</del>

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	385.0	385.9	0.9	<del>n/a</del>	<del>n/a</del>	<del>n/a</del>	<del>n/a</del>
AS-FOUND HIGH	38.50	5000	240	132.9	387.3	254.4	252.1	253.5	0.994	100.56%
ADJUSTED HIGH	38.50	500	240	133.5	386.5	253.0	251.5	252.1	0.998	100.24%
MID	38.50	5000	125	254.9	386.6	131.8	130.1	130.9	0.994	100.61%
LOW	38.50	5000	45	341.6	387.0	45.4	43.4	44.5	0.975	102.53%
NO2 adjustment not required.									AVERAGE:	101.23%

LINEAR REGRESSION ANALYSIS:				COMMENTS: .22 stroke sample pump was installed, PMT was adjusted, BKG and caibration coefficients were reset.
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	1.000	0.13%	
NOx	1.000	1.001	0.13%	
NO2	1.000	1.002	0.17%	





CAL-LICA-202110-01248

# Ozone Calibration by Photometer (Varying UV Lamp)



DATE:	05-Oct-2021	PREVIOUS CALIBRATION DATE:	16-Sep-2021
PARAMETER:	O3	PREVIOUS CORRECTION FACTOR:	1.001
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Tamarack	BAROMETRIC (mBar):	934
PURPOSE:	Routine	START TIME (MST):	11:12
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:59

## ANALYZER:

MAKE/MODEL	Thermo 49iQ	RANGE	500 ppb
SERIAL #	1202068570	FLOW (mL/min)	1340
INITIAL		FINAL	
BKG/OFFSET	3	BKG/OFFSET	4.4
COEF/SLOPE	1.03	COEF/SLOPE	1.033
Expected (reference) Value	394	Expected (reference) Value	402.7

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	09-Apr-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:

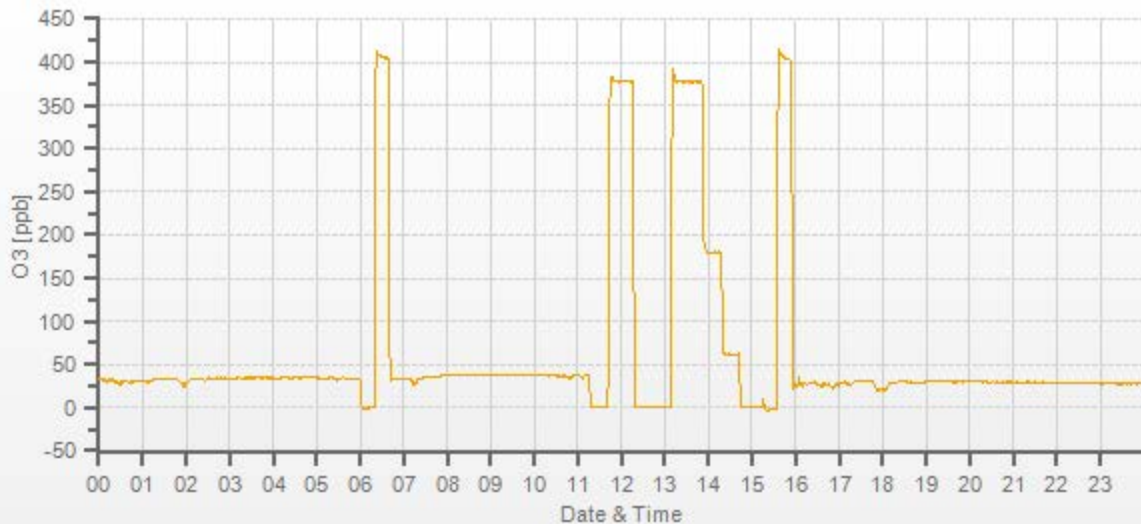
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	<del>XXXX</del>	5000	0.0	0.9	0.0	<del>XXXX</del>	<del>XXXX</del>
5000	<del>XXXX</del>	5000	378.0	377.5	377.2	1.004	1.002
5000	<del>XXXX</del>	5000	180.0	n/a	179.8	n/a	1.001
5000	<del>XXXX</del>	5000	61.0	n/a	60.9	n/a	1.002

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	0.998	0.0%

## COMMENTS:

Sample inlet filter ws changed.



# Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	05-Oct-2021	PREVIOUS CALIBRATION DATE:	21-Sep-2021	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	22.0		Thermo 55i	1314057759	1015
LOCATION:	Tamarack	BAROMETRIC (mBar):	934	PARAMETER:	CH4	NMHC	THC
PURPOSE	Routine	START TIME (MST):	11:10	RANGE (ppm):	20	20	40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:59	PREVIOUS CF:	1.000	0.998	0.999

## CALIBRATION SYSTEM:

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 <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> (ppm):	914.0   307.0	HIGH EXPIRY:	n/a
ID:	26801218	ID:	132	CYLINDER (psi):	1000	LOW ID:	n/a
MFC CALIBRATION DATE:	09-Apr-2021	OXIDIZER ID:	115	EXPIRY DATE	21-Jan-2028	LOW EXPIRY:	n/a

## CALIBRATION PARAMETERS:

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

## EXPECTED (REFERENCE) VALUE:

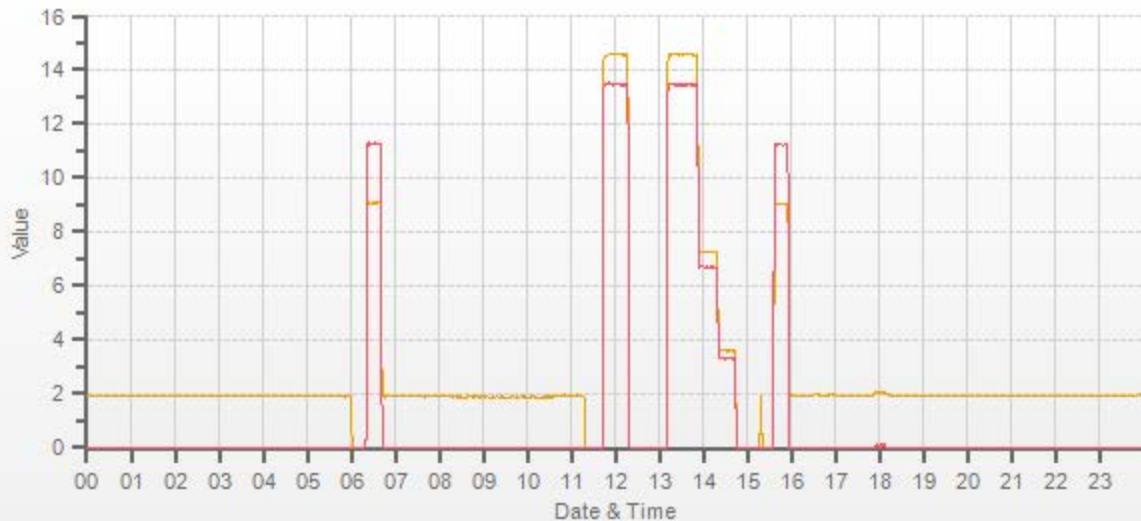
INITIAL	CH <sub>4</sub>	NMHC	THC	FINAL	CH <sub>4</sub>	NMHC	THC
	9.06	11.25	20.22		9.01	11.25	20.26

## CALIBRATION:

FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC
3100	<del>X</del>	3100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>
3051	49.40	3100	14.57	13.45	28.02	14.56	13.44	28.01	14.56	13.46	28.01	1.000	1.001	1.000	1.000	1.000	1.000
3075	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
3088	12.40	3100	3.66	3.38	7.03	n/a	n/a	n/a	3.60	3.32	6.91	n/a	n/a	n/a	1.016	1.017	1.018

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT	Comments:	
CH <sub>4</sub>	1.000	1.001	-0.1%	Sample inlet filter was changed.	
NMHC	1.000	1.002	-0.1%		
THC	1.000	1.001	-0.1%		
				Use Zero Chrom?	Yes



CAL-LICA-202110-01248

## Thermo 5030 SHARP Monitor Monthly Check

**Date:** October 7, 2021  
**Company:** LICA  
**Station Name/Location:** Tamarack  
**Previous Audit Date:** September 21, 2021  
**Parameter:** PM 2.5

**Performed By/Reviewer:** Alex Yakupov | Chris Wesson  
**Start Time (mst):** 12:37  
**End Time (mst):** 14:22  
**Calibration Purpose:** routine monthly  
**Weather Conditions:** Mainly sunny

**SHARP Information and Status:**

**Serial Number:** CM-2209 **Status:** 0.00  
**Approx Tape remaining:** 3/10 **Error Code:** 0.00

**Reference Standards:**

**Air Flow**

	Manometer	Orifice	Pressure:	Temperature:
<b>Make:</b>	Mesa Labs	Mesa Labs	Fisher Scientific	VAISALA
<b>Model:</b>	DeltaCal DC1	DeltaCal DC1	FB61291	HMP76B
<b>Serial Number:</b>	177246	177246	130168457	T1640130
<b>Calibration Expiration Date:</b>	July 12, 2022	July 12, 2022	February 17, 2022	April 22, 2022

**As found temperature and pressure:**

<p style="text-align: center;">Tolerance +/- 4°C</p> <p>SHARP T1 °C: <u>9.0</u></p> <p>Reference °C: <u>10.1</u></p> <p>Difference °C: <u>1.1</u></p>	<p style="text-align: center;">Tolerance +/- 13.33 hPa</p> <p>SHARP P3 (hPa): <u>942.000</u></p> <p>Reference (hPa): <u>941.000</u></p> <p>Difference (hPa) : <u>1.000</u></p>
---	--

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

<p style="text-align: center;">Tolerance +/- 4°C</p> <p>SHARP T1 °C: <u>9.0</u></p> <p>Reference °C: <u>10.1</u></p> <p>Difference °C: <u>1.1</u></p>	<p style="text-align: center;">Tolerance +/- 13.33 hPa</p> <p>SHARP P3 (hPa): <u>942.000</u></p> <p>Reference (hPa): <u>941.000</u></p> <p>Difference : <u>1.000</u></p>
---	--

**As found flows:**

<p>Targets: 1000 l/hr / &lt;90%</p> <p>SHARP AirFlow l/hr <u>1000.00</u></p> <p>Pump Voltage (%) <u>49.10</u></p>	<p>Flow Tolerance 16.67 lpm +/- 0.67 lpm</p> <p>SHARP Airflow (l/min) <u>16.67</u></p> <p>Reference AirFlow (l/min) <u>16.84</u></p> <p>Difference (l/min) <u>0.17</u></p>
---	--

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

<p>Targets: 1000 l/hr / &lt;90%</p> <p>SHARP AirFlow l/hr <u>1000.00</u></p> <p>Pump Voltage (%) <u>46.60</u></p>	<p>Flow Tolerance 16.67 lpm +/- 0.67 lpm</p> <p>SHARP Airflow (l/min) <u>16.67</u></p> <p>Reference AirFlow (l/min) <u>16.67</u></p> <p>Difference (l/min) <u>0.00</u></p>
---	--

**Inlet Assembly:**

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

**Comments:**

Leak check: 16.67 vs 16.58, 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**

**OCTOBER 2021**

**Ambient Air Monitoring Calibration Report**

**- ST. LINA STATION-**

**CAL-LICA-202110-01250**

**Station Operation and Maintenance:**

Bureau Veritas Canada

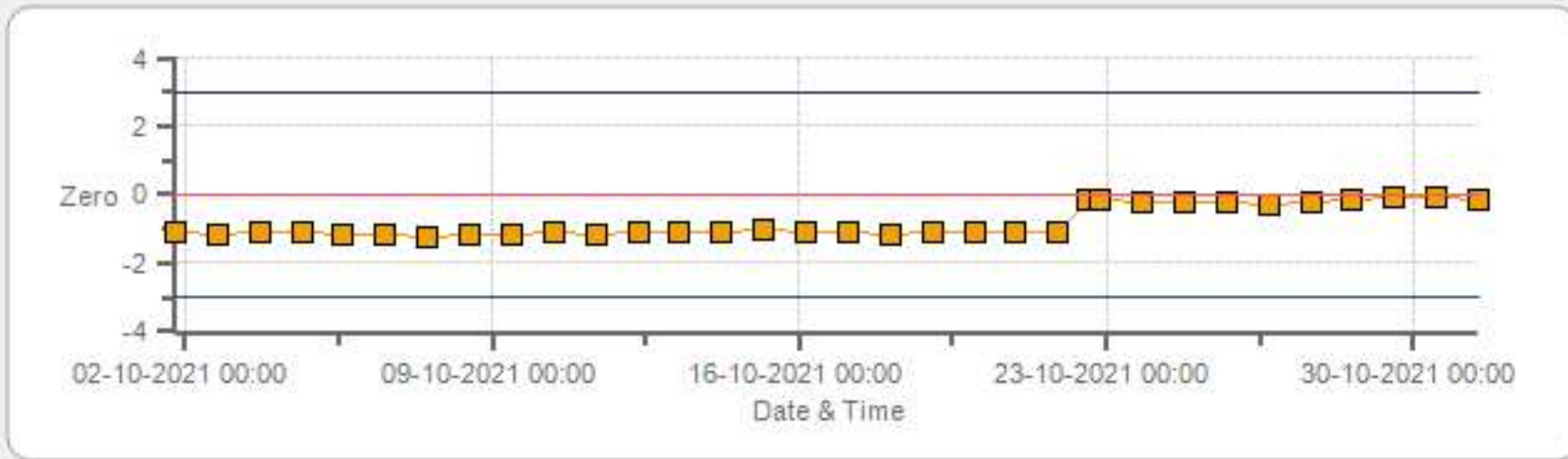
**Data Validation and Report:**

LICA / Bureau Veritas Canada

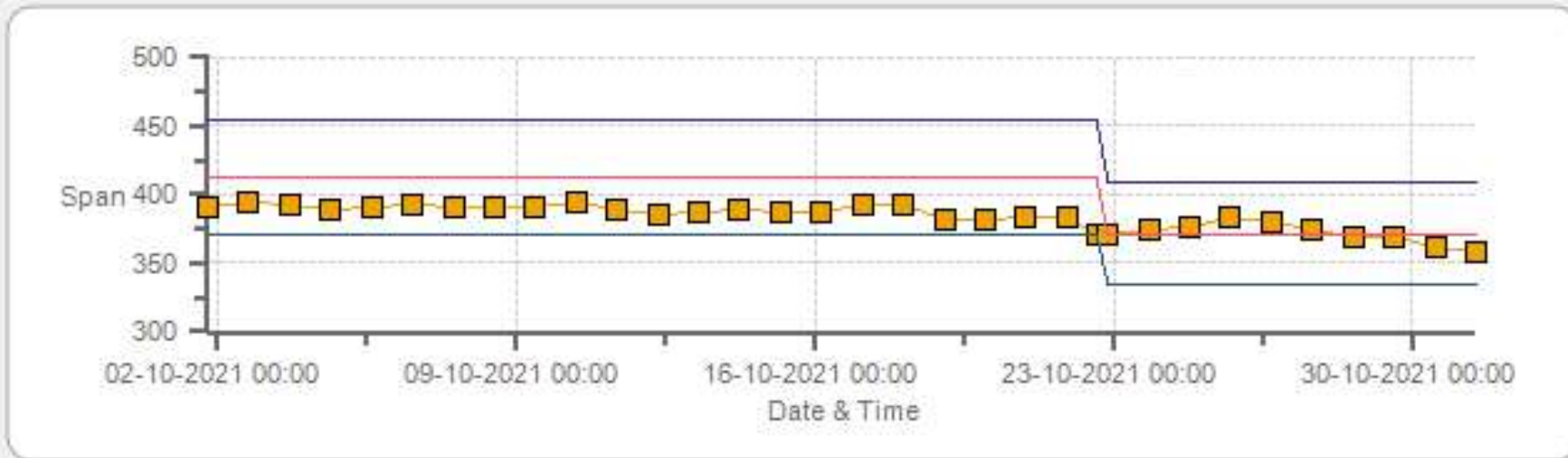
November 19, 2021

# DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

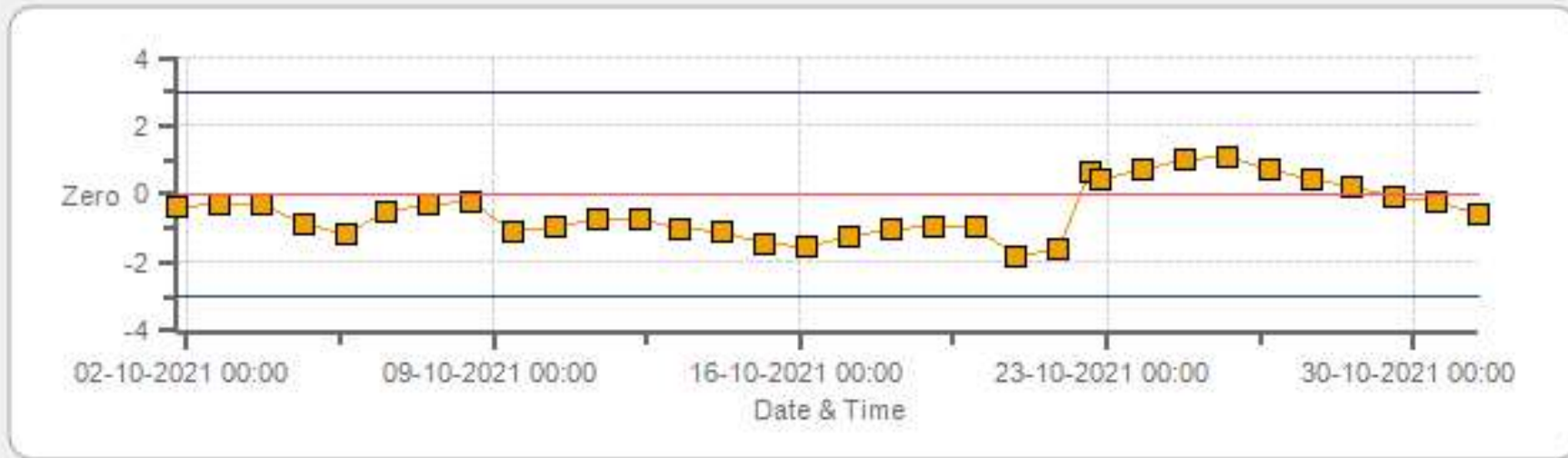
SO2[ppb] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Zero



SO2[ppb] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Span



H2S[ppb] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Zero



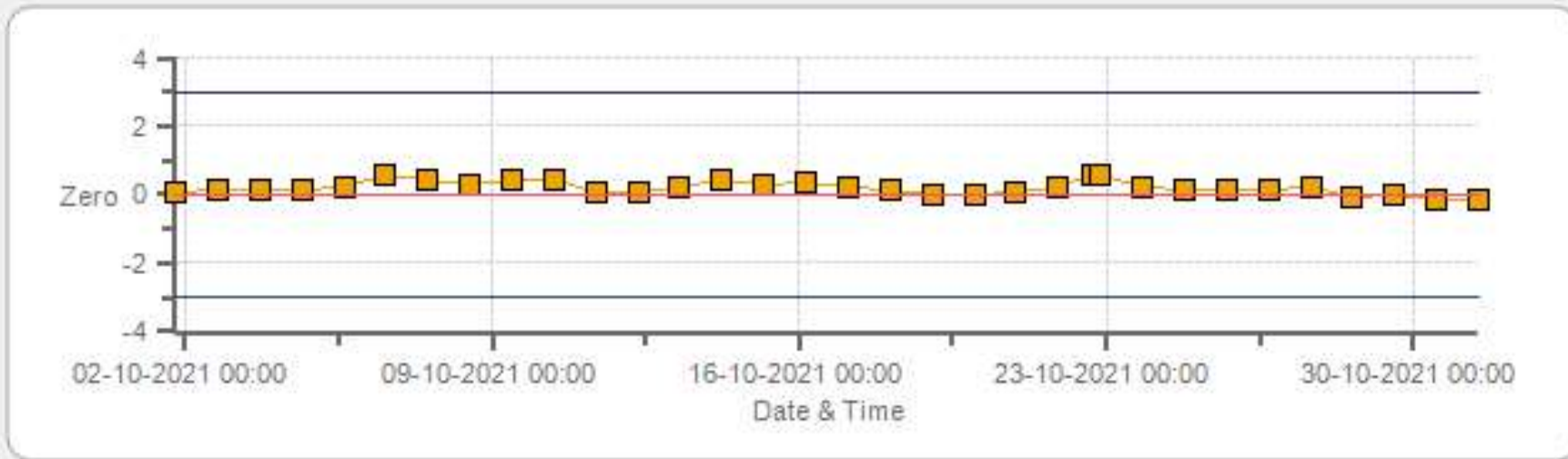
Zero Zero Ref Zero Low Zero High

H2S[ppb] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Span



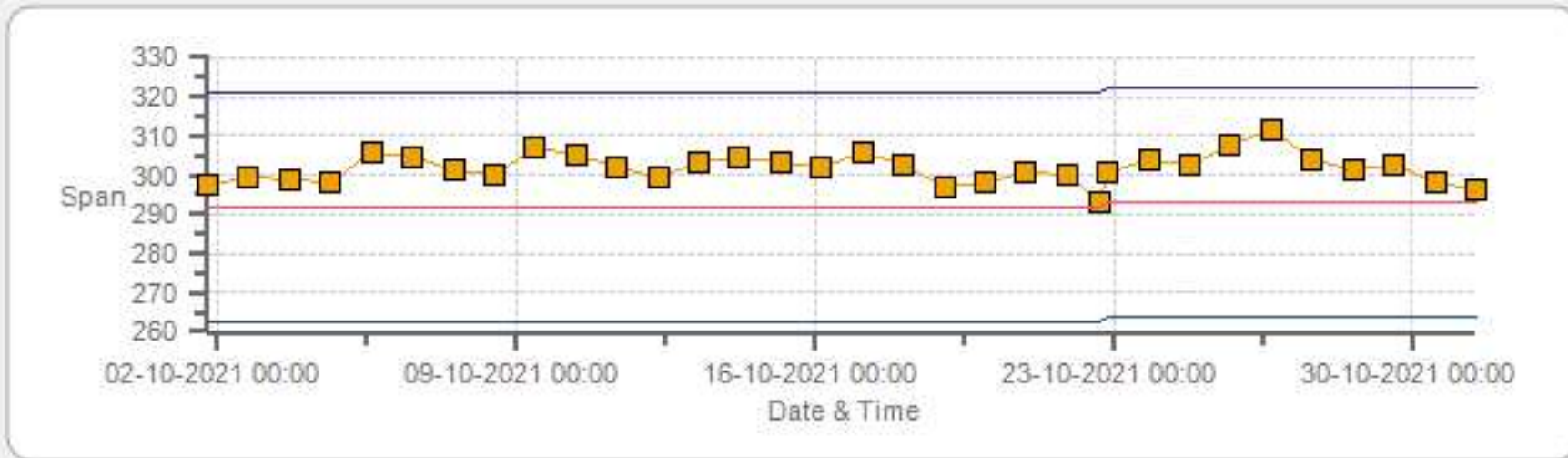
Span SpanRef Span Low Span High

NOX[ppb] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Zero



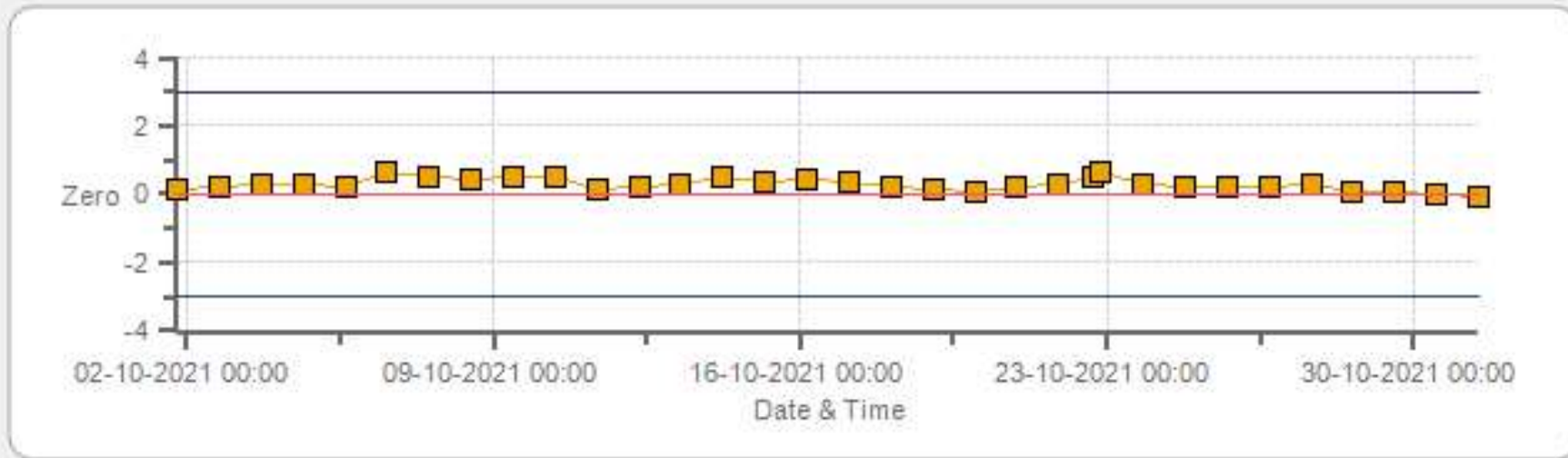
Zero Zero Ref Zero Low Zero High

NOX[ppb] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Span



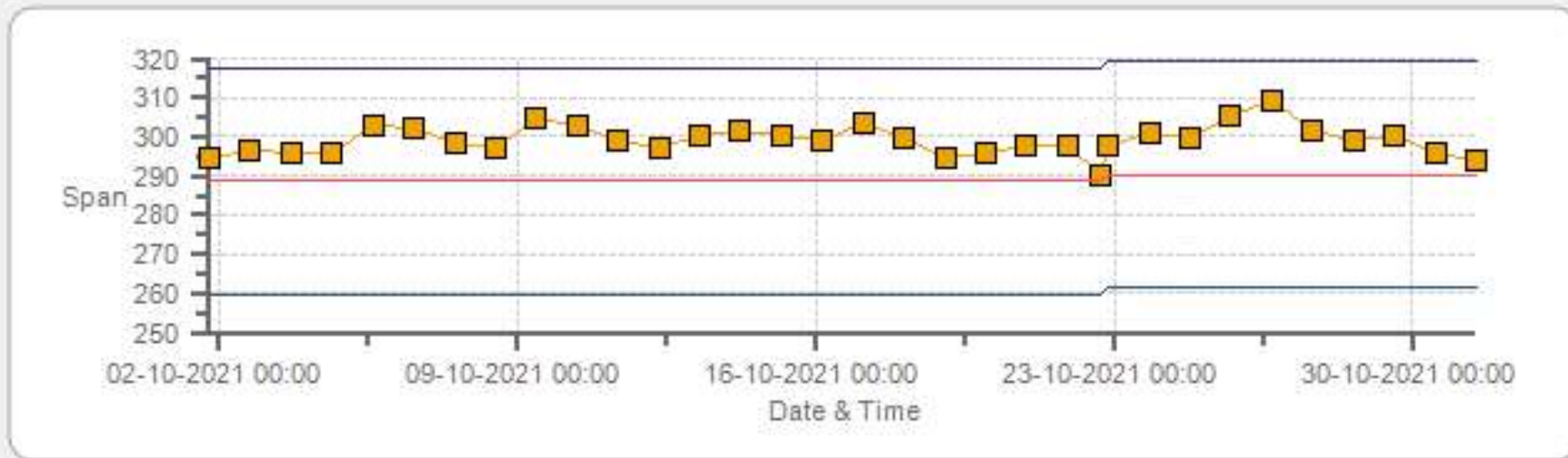
Span SpanRef Span Low Span High

NO2[ppb] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Zero



Zero Zero Ref Zero Low Zero High

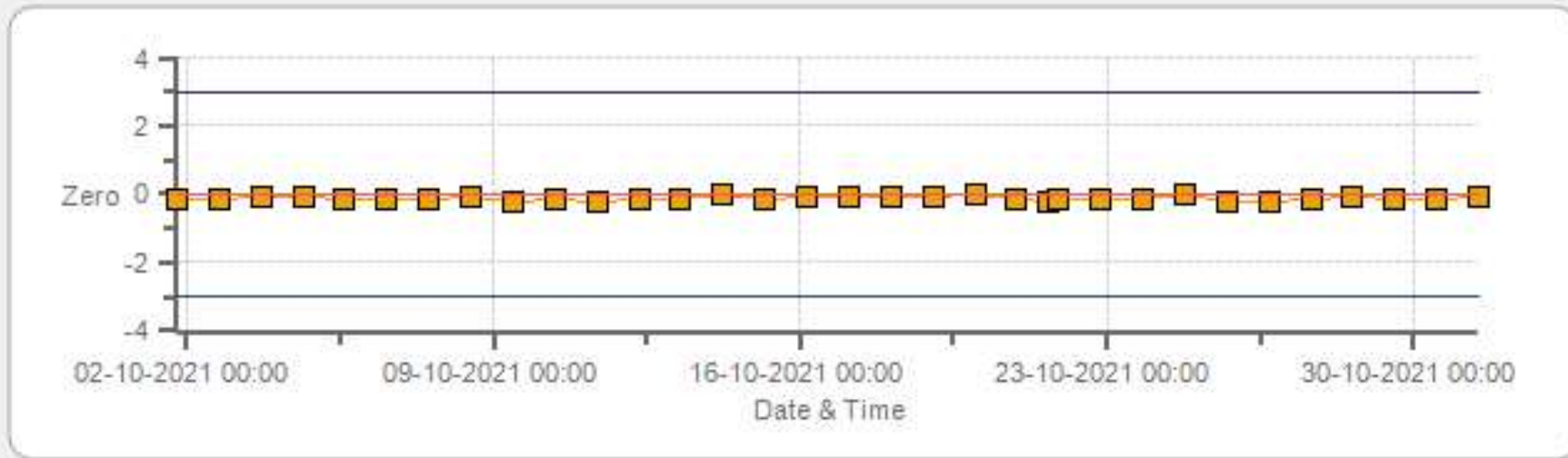
NO2[ppb] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Span



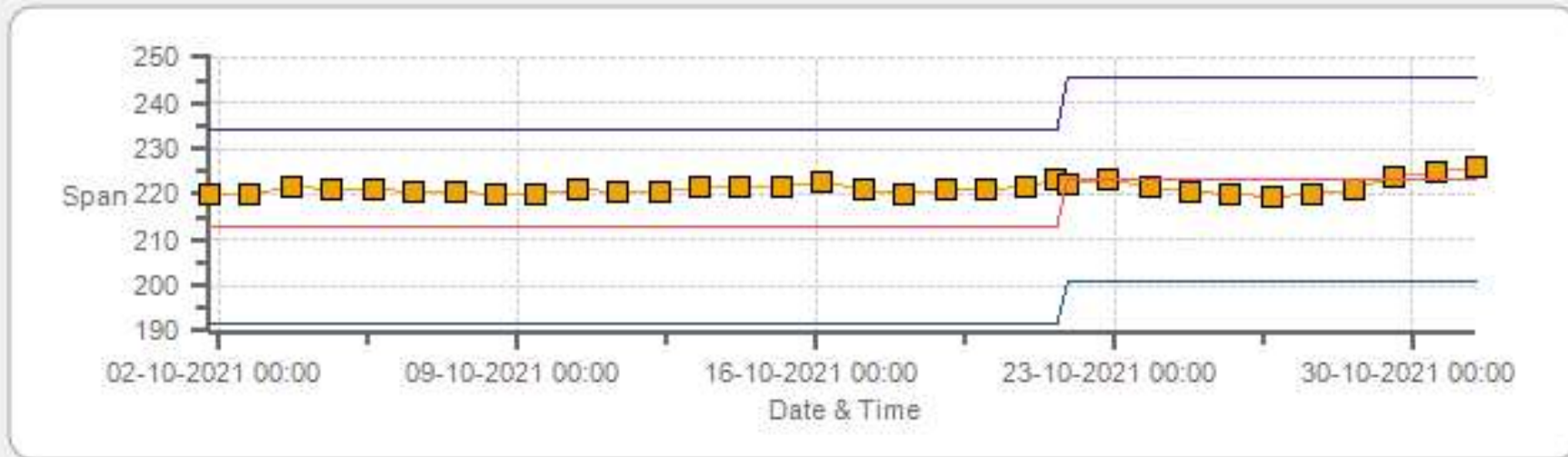
Span SpanRef Span Low Span High



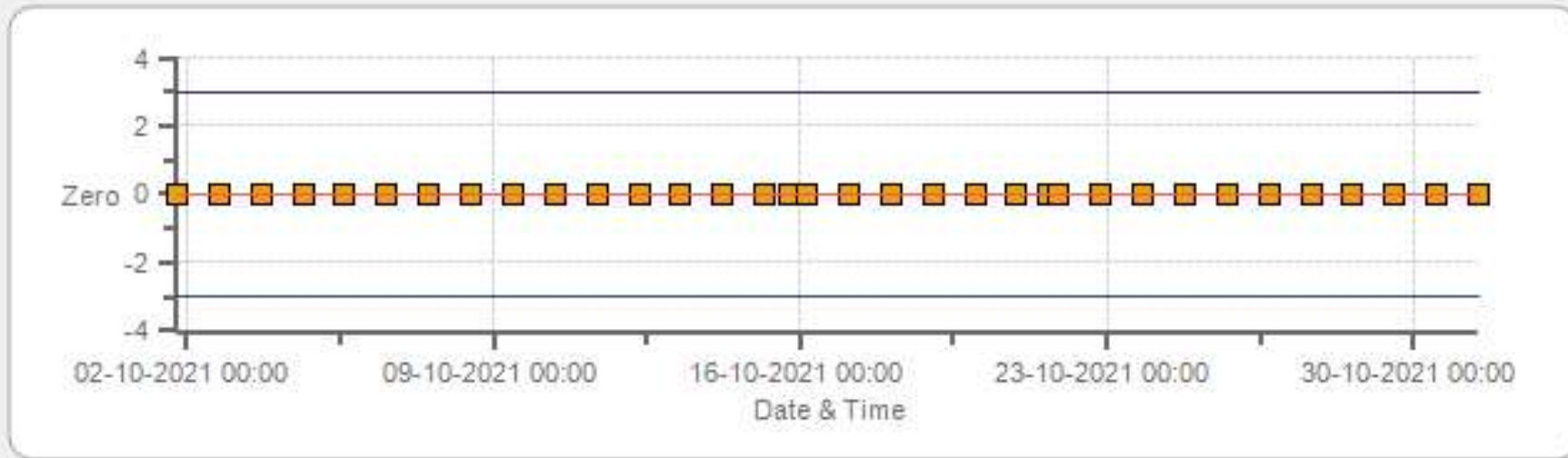
O3[ppb] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Zero



O3[ppb] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Span

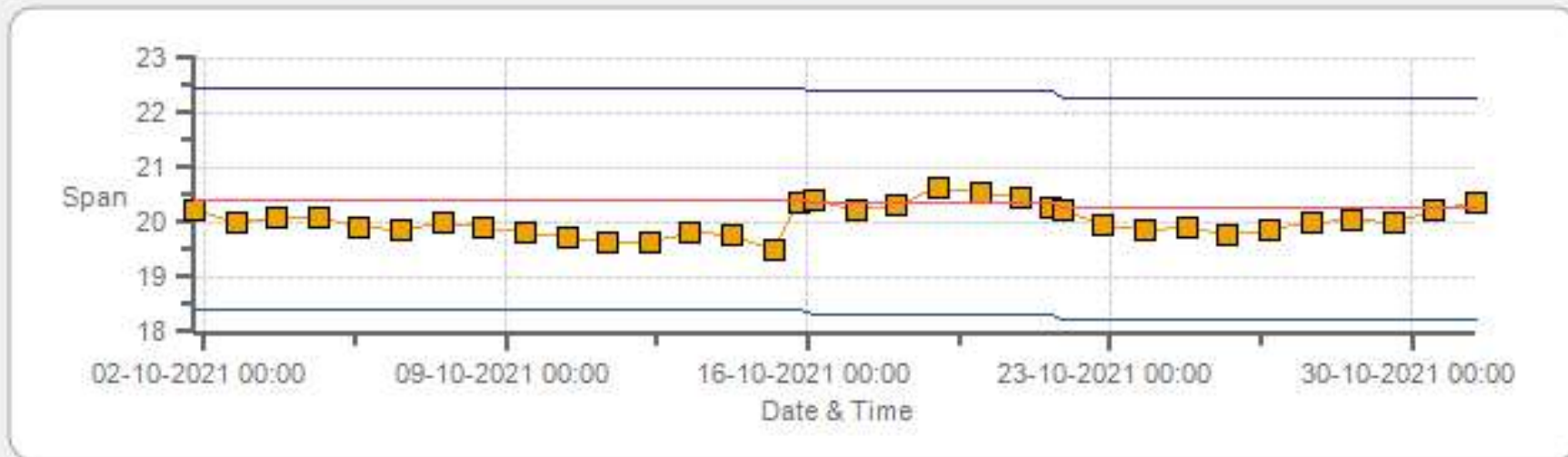


THC55[ppm] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Zero



Zero Zero Ref Zero Low Zero High

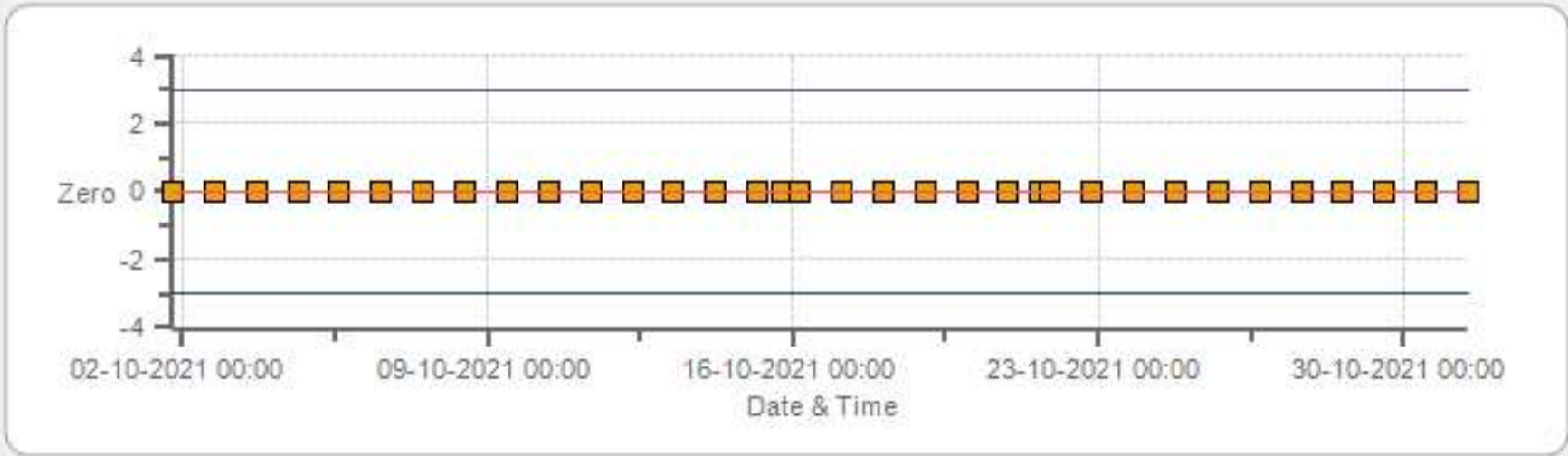
THC55[ppm] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

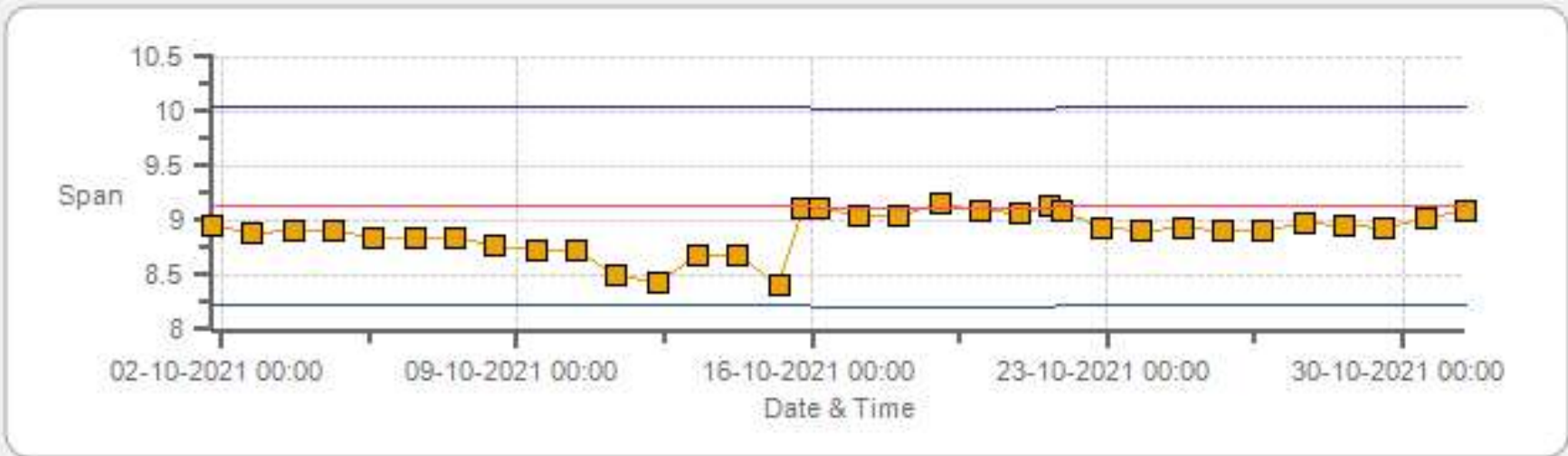


CH4[ppm] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Zero



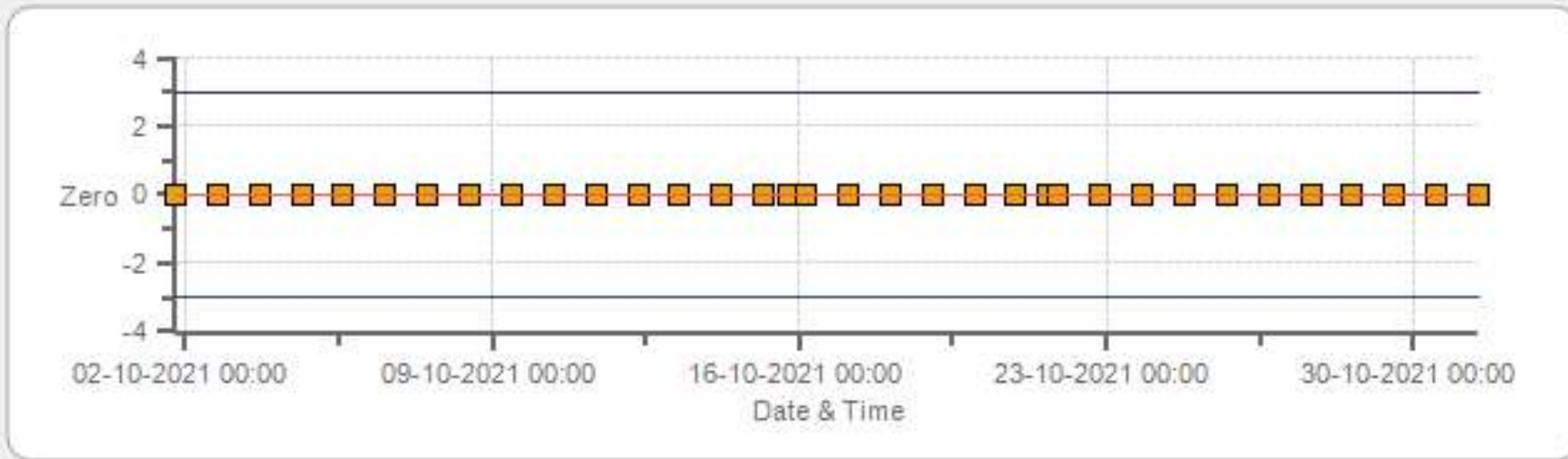
Zero Zero Ref Zero Low Zero High

CH4[ppm] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Span



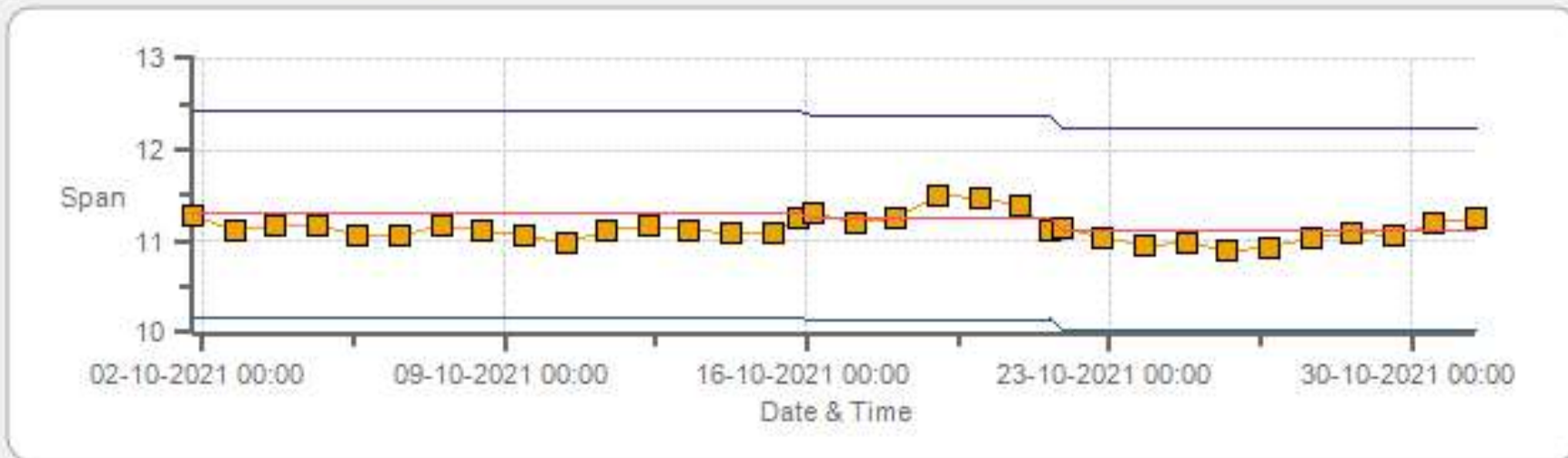
Span SpanRef Span Low Span High

NMHC[ppm] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Zero



Zero Zero Ref Zero Low Zero High

NMHC[ppm] Calibration: St. Lina Monthly: 10-2021 Type: SpanAndZero - Span



Span SpanRef Span Low Span High

# MULTI-POINT CALIBRATION RECORDS

# SO2 Analyzer Calibration by Dilution



DATE:	22-Oct-2021	PREVIOUS CALIBRATION DATE:	17-Sep-2021
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	0.998
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	St. Lina	BAROMETRIC (mBar):	918
PURPOSE:	Routine	START TIME (MST):	10:14
PERFORMED BY:	Alex Yakupov	END TIME (MST):	14:20

## ANALYZER:

MAKE/MODEL	Thermo 43I-TLE	RANGE	500 ppb
SERIAL #	1180930030	FLOW (mL/min)	436
INITIAL		FINAL	
BKG/OFFSET	5.69	BKG/OFFSET	4.55
COEF/SLOPE	1.205	COEF/SLOPE	1.15
Expected (reference) Value	412.4	Expected (reference) Value	371.6

## 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:

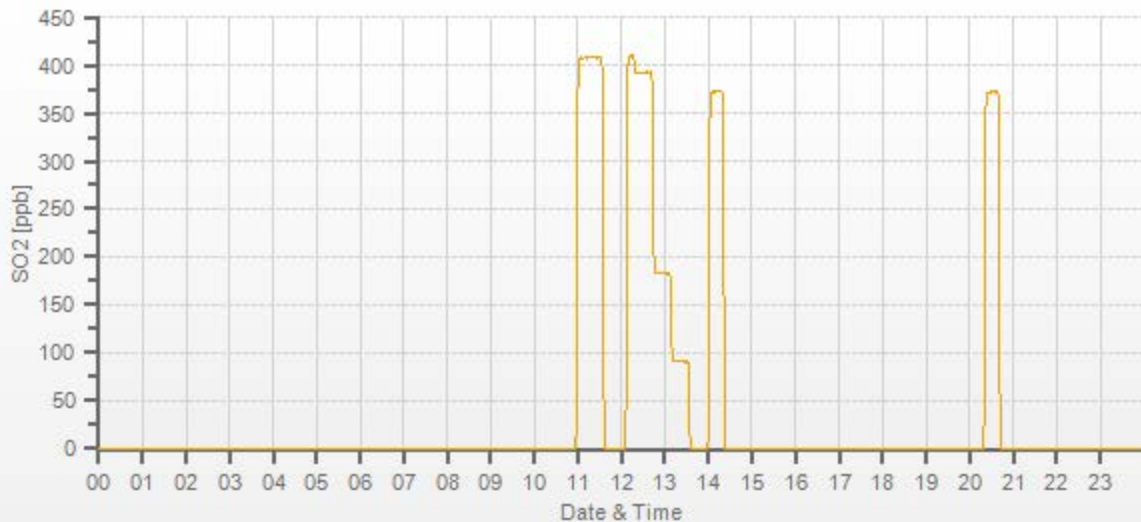
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	<del>38.50</del>	5000	0.00	-1.1	0	<del>0.957</del>	<del>0.999</del>
4959	38.50	4997	391.39	407.7	391.9	0.957	0.999
4981	18.00	4999	182.92	n/a	182.6	n/a	1.002
4990	9.00	4999	91.46	n/a	90.5	n/a	1.011

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.002	-0.1%

## COMMENTS:

Sample inlet filter was changed.



# H2S Analyzer Calibration by Dilution



DATE:	22-Oct-2021	PREVIOUS CALIBRATION DATE:	27-Sep-2021
PARAMETER:	H2S	PREVIOUS CORRECTION FACTOR:	1.003
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	St. Lina	BAROMETRIC (mBar):	918
PURPOSE:	Routine	START TIME (MST):	10:13
PERFORMED BY:	Alex Yakupov	END TIME (MST):	14:20

## ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	CM 18010058	FLOW (mL/min)	814
INITIAL		FINAL	
BKG/OFFSET	57.5	BKG/OFFSET	56.7
COEF/SLOPE	0.848	COEF/SLOPE	0.864
Expected (reference) Value	56.3	Expected (reference) Value	56.4

## 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):	800	LOW ID	n/a
EXPIRY DATE	16-Jul-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:	10:17	SO2 Conc (ppb)	380
END TIME:	10:32	Analyzer Response (ppb)	0.0

## CALIBRATION:

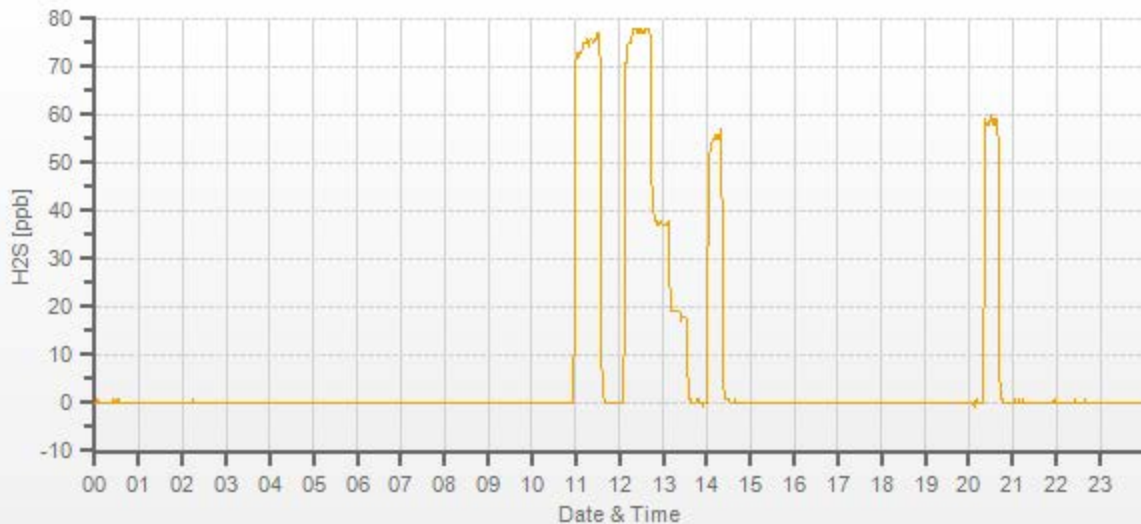
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	<del>7500</del>	7500	0.00	-1.1	0	<del>1.009</del>	<del>0.994</del>
7442	58.50	7500	78.00	76.2	78.5	1.009	0.994
7472	28.50	7500	38.00	n/a	38.3	n/a	0.992
7486	14.30	7500	19.07	n/a	18.5	n/a	1.031

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.010	-0.3%

## COMMENTS:

Sample inlet filter was changed.



# NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	22-Oct-2021	PREVIOUS CALIBRATION DATE:	02-Sep-2021	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	22.0	SERIAL #:	1180930029	NOx	1.001
LOCATION:	St. Lina	BAROMETRIC (mBar):	918	FLOW (mL/min)	821	NO	1.001
PURPOSE:	Routine	START TIME (MST):	10:15	RANGE (ppb)	500	NO2	0.998
PERFORMED BY:	Alex Yakupov	END TIME (MST):	16:15	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:	4	3.9	n/a	BKG/OFFSET:	4.1	3.9	n/a
SLOPE/COEF/CE:	0.999	0.845	1.002	SLOPE/COEF/CE:	1.002	0.834	1.002

EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	291.7	3.0	288.7		292.8	2.6	290.2

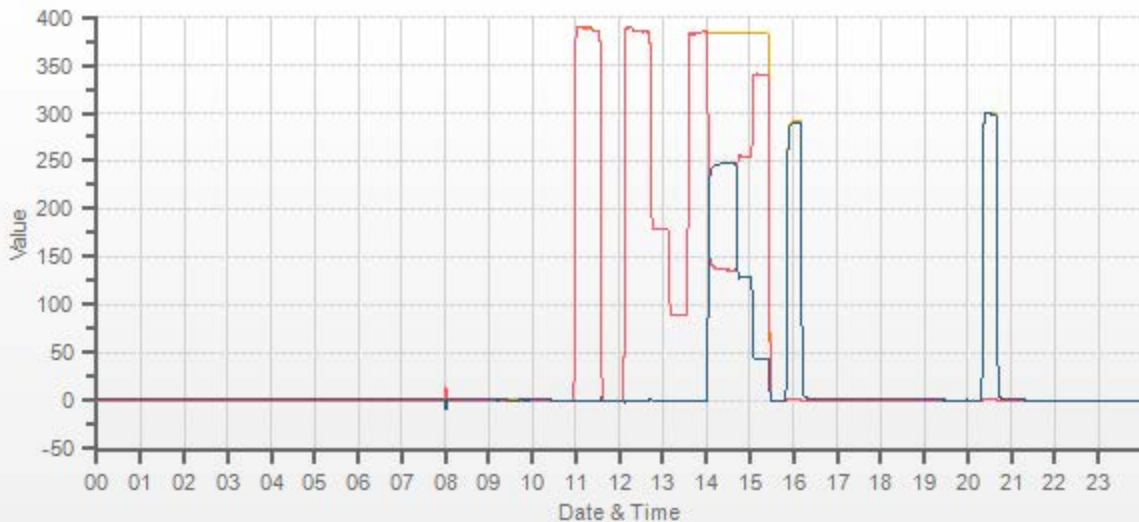
CALIBRATION PARAMETERS:				
POINT	NO TARGET (PPB)	NO2 TARGET (PPB)	NO2 RANGE	O3 POINT
HIGH	380	250	230-265	n/a
MID	180	125	115-150	n/a
LOW	90	45	40-55	n/a
EXTRA 1	n/a	n/a	n/a	n/a

FLOW RATE (mL/min)			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
			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	<del>38.50</del>	5000	0.0	0.0	0.0	-0.1	0.0	0.1	0.0	0.0	0.0	<del>1.000</del>	<del>1.001</del>	<del>1.002</del>	<del>1.002</del>	<del>1.002</del>	<del>1.002</del>
4959	38.50	4997	385.2	386.0	0.8	385.3	385.5	0.2	384.6	385.4	0.8	1.000	1.001	<del>1.002</del>	1.002	1.002	<del>1.002</del>
4981	18.00	4999	180.0	180.4	0.4	n/a	n/a	n/a	180.2	180.6	0.4	n/a	n/a	<del>1.002</del>	0.999	0.999	<del>1.002</del>
4990	9.00	4999	90.0	90.2	0.2	n/a	n/a	n/a	90.1	90.3	0.2	n/a	n/a	<del>1.002</del>	0.999	0.999	<del>1.002</del>

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	4997	0	384.8	385.2	0.4	<del>248.6</del>	<del>247.8</del>	<del>1.003</del>	<del>99.68%</del>
AS-FOUND HIGH	38.50	4997	240	136.2	384.4	248.2	248.6	247.8	1.003	99.68%
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	4997	125	255.0	384.4	129.4	129.8	129	1.006	99.38%
LOW	38.50	4997	45	340.4	384.3	44.0	44.4	43.6	1.018	98.20%
NO2 adjustment not required.									AVERAGE:	99.09%

LINEAR REGRESSION ANALYSIS:				COMMENTS: Sample inlet filter was changed.
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	0.998	0.04%	
NOx	1.000	0.998	0.04%	
NO2	1.000	1.000	-0.16%	





CAL-LICA-202110-01250

# Ozone Calibration by Photometer (Varying UV Lamp)



DATE:	21-Oct-2021	PREVIOUS CALIBRATION DATE:	03-Sep-2021
PARAMETER:	O3	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	St. Lina	BAROMETRIC (mBar):	922
PURPOSE:	Routine	START TIME (MST):	11:26
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:42

## ANALYZER:

MAKE/MODEL	Thermo 49i	RANGE	500 ppb
SERIAL #	1002240371	FLOW (mL/min)	1501
INITIAL		FINAL	
BKG/OFFSET	0.1	BKG/OFFSET	0.1
COEF/SLOPE	1.01	COEF/SLOPE	1.004
Expected (reference) Value	213	Expected (reference) Value	223.1

## 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:

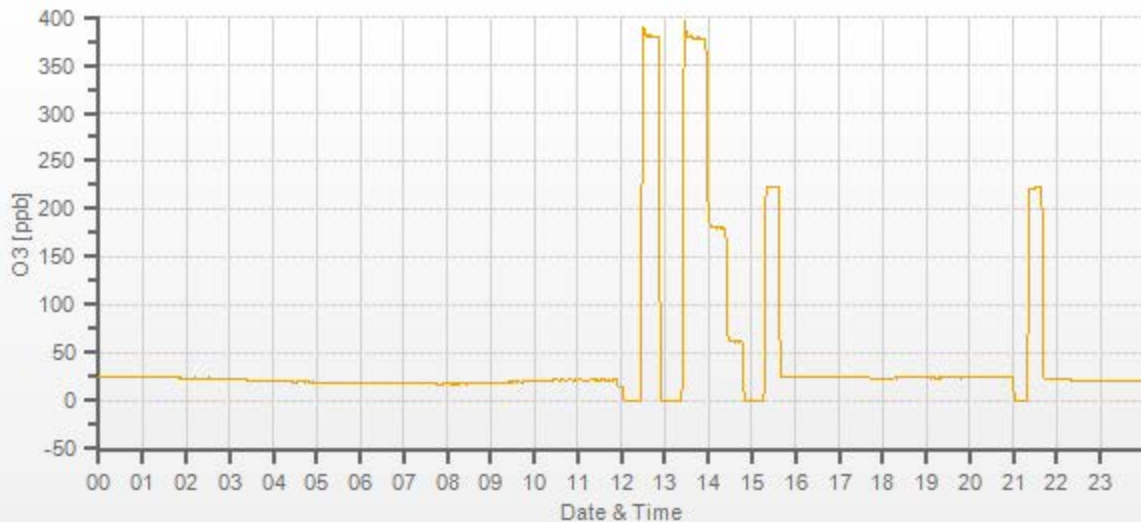
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	<del>XXXX</del>	5000	0.0	0.1	0.0	<del>XXXX</del>	<del>XXXX</del>
5000	<del>XXXX</del>	5000	378.0	379.3	377.1	0.997	1.002
5000	<del>XXXX</del>	5000	180.0	n/a	180.5	n/a	0.997
5000	<del>XXXX</del>	5000	60.0	n/a	61.7	n/a	0.972

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	0.996	0.2%

## COMMENTS:

Sampe inlet filter was changed.



# Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	15-Oct-2021	PREVIOUS CALIBRATION DATE:	03-Sep-2021	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	22.0		Thermo 55i	1236656107	1200
LOCATION:	St. Lina	BAROMETRIC (mBar):	913	PARAMETER:	CH4	NMHC	THC
PURPOSE	Removal/Shut-down	START TIME (MST):	14:25	RANGE (ppm):	20	20	40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:55	PREVIOUS CF:	1.000	0.997	0.999

## CALIBRATION SYSTEM:

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 <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> (ppm):	914.0   307.0	HIGH EXPIRY:	n/a
ID:	26801218	ID:	132	CYLINDER (psi):	900	LOW ID:	n/a
MFC CALIBRATION DATE:	07-Oct-2021	OXIDIZER ID:	115	EXPIRY DATE	21-Jan-2028	LOW EXPIRY:	n/a

## CALIBRATION PARAMETERS:

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

## EXPECTED (REFERENCE) VALUE:

INITIAL	CH <sub>4</sub>	NMHC	THC	FINAL	CH <sub>4</sub>	NMHC	THC
	9.13	11.30	20.43		n/a	n/a	n/a

## CALIBRATION:

FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC
3100	<del>X</del>	3100	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>
3051	49.40	3100	14.57	13.45	28.02	13.96	13.23	27.18	n/a	n/a	n/a	1.043	1.017	1.031	n/a	n/a	n/a
3075	24.70	3100	7.28	6.73	14.01	7.03	6.64	13.66	n/a	n/a	n/a	1.036	1.013	1.026	n/a	n/a	n/a
3088	12.40	3100	3.66	3.38	7.03	3.53	3.33	6.68	n/a	n/a	n/a	1.036	1.014	1.053	n/a	n/a	n/a

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT	Comments:
CH <sub>4</sub>	1.000	0.958	0.1%	<b>Shutdown calibration was completed to increase N2 pressure to fix the bad injection issue.</b>
NMHC	1.000	0.983	0.0%	
THC	1.000	0.972	-0.1%	
				<b>Use Zero Chrom?</b> <b>Yes</b>

# Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	15-Oct-2021	PREVIOUS CALIBRATION DATE:	n/a	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	22.0		Thermo 55i	1236656107	1200
LOCATION:	St. Lina	BAROMETRIC (mBar):	913	PARAMETER:	CH4	NMHC	THC
PURPOSE:	Install/Post-Repair	START TIME (MST):	16:00	RANGE (ppm):	20	20	40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	18:34	PREVIOUS CF:	n/a	n/a	n/a

## CALIBRATION SYSTEM:

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 <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> (ppm):	914.0   307.0	HIGH EXPIRY:	n/a
ID:	26801218	ID:	132	CYLINDER (psi):	900	LOW ID:	n/a
MFC CALIBRATION DATE:	07-Oct-2021	OXIDIZER ID:	115	EXPIRY DATE:	21-Jan-2028	LOW EXPIRY:	n/a

## CALIBRATION PARAMETERS:

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

## EXPECTED (REFERENCE) VALUE:

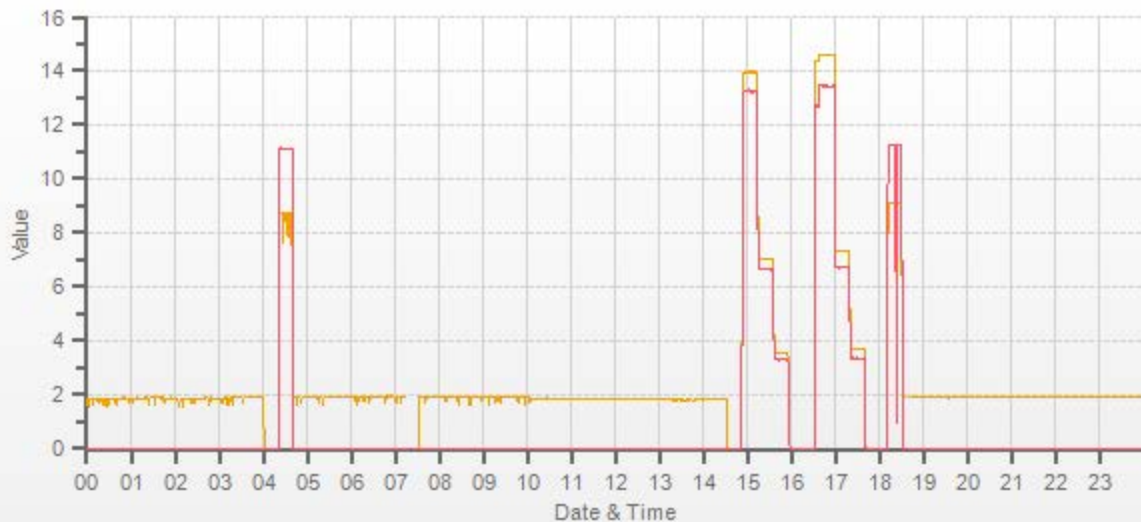
INITIAL	CH <sub>4</sub>	NMHC	THC	FINAL	CH <sub>4</sub>	NMHC	THC
	n/a	n/a	n/a		n/a	9.11	11.25

## CALIBRATION:

FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC
3100	<del>X</del>	3100	0.00	0.00	0.00	n/a	n/a	n/a	0.00	0.00	0.00	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>
3051	49.40	3100	14.57	13.45	28.02	n/a	n/a	n/a	14.58	13.43	28.01	n/a	n/a	n/a	0.999	1.002	1.000
3075	24.70	3100	7.28	6.73	14.01	n/a	n/a	n/a	7.33	6.73	14.06	n/a	n/a	n/a	0.994	1.000	0.996
3088	12.40	3100	3.66	3.38	7.03	n/a	n/a	n/a	3.63	3.37	7.05	n/a	n/a	n/a	1.007	1.002	0.998

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT	Comments:
CH <sub>4</sub>	1.000	1.002	0.0%	<b>Sample inlet filter was changed. N2 running pressure was adjusted from 34.0 to 35.0 psi. Sample inlet filter was changed. Zero chromatogram was performed.</b>
NMHC	1.000	0.998	0.0%	
THC	1.000	1.000	0.0%	
				<b>Use Zero Chrom?</b> Yes



CAL-LICA-202110-01250

# Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	21-Oct-2021	PREVIOUS CALIBRATION DATE:	15-Oct-2021	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	22.0		Thermo 55i	1236656107	1207
LOCATION:	St. Lina	BAROMETRIC (mBar):	922	PARAMETER:	CH4	NMHC	THC
PURPOSE	Repeat	START TIME (MST):	11:24	RANGE (ppm):	20	20	40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:42	PREVIOUS CF:	1.000	1.003	1.002

## CALIBRATION SYSTEM:

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 <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> (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:

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

## EXPECTED (REFERENCE) VALUE:

INITIAL	CH <sub>4</sub>	NMHC	THC	FINAL	CH <sub>4</sub>	NMHC	THC
	9.11	11.25	20.36		9.13	11.13	20.26

## CALIBRATION:

FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC
3100	<del>X</del>	3100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>
3051	49.40	3100	14.57	13.45	28.02	14.61	13.61	28.22	14.58	13.47	28.05	0.997	0.989	0.993	0.999	0.999	0.999
3075	24.70	3100	7.28	6.73	14.01	n/a	n/a	n/a	7.33	6.71	14.04	n/a	n/a	n/a	0.994	1.002	0.998
3088	12.40	3100	3.66	3.38	7.03	n/a	n/a	n/a	3.67	3.34	7.00	n/a	n/a	n/a	0.996	1.011	1.005

## LINEAR REGRESSION ANALYSIS:

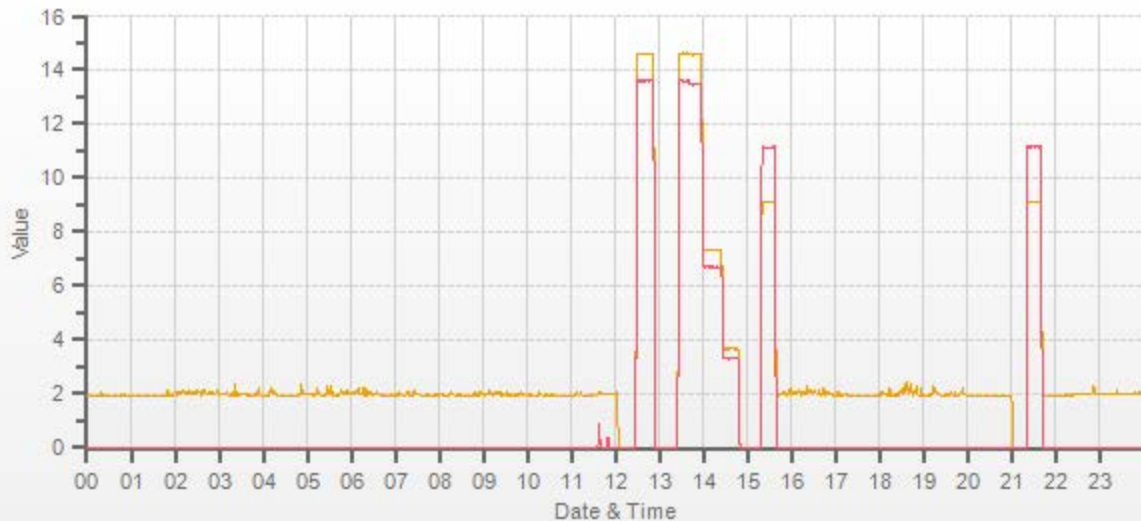
	CORRELATION	SLOPE	INTERCEPT
CH <sub>4</sub>	1.000	1.001	0.1%
NMHC	1.000	1.002	-0.1%
THC	1.000	1.002	0.0%

## Comments:

Sample inlet filter was changed. New N<sub>2</sub> and CH<sub>4</sub>/C<sub>3</sub>H<sub>8</sub> gas cylinders were connected.

Use Zero Chrom?

Yes



CAL-LICA-202110-01250



## Thermo 5030i SHARP Monitor Monthly Check

**Date:** October 21, 2021  
**Company:** LICA  
**Station Name/Location:** St. Lina  
**Previous Audit Date:** September 3, 2021  
**Parameter:** PM 2.5

**Performed By/Reviewer:** Alex Yakupov | Chris Wesson  
**Start Time (mst):** 15:22  
**End Time (mst):** 16:11  
**Calibration Purpose:** routine monthly  
**Weather Conditions:** Sunny

### SHARP 5030i Information and Status:

**Serial Number:** CM 17091001      **Filter Tape Counter**      4

### Reference Standards:

#### Air Flow

	Manometer	Orifice	Pressure:	Temp / RH:
<b>Make:</b>	Delta Cal	Delta Cal	Fisher Scientific	VAISALA
<b>Model:</b>	DC1	DC1	FB61291	HMP76B
<b>Serial Number:</b>	177246	177246	130168457	T1640130
<b>Calibration Expiration Date:</b>	July 12, 2022	July 12, 2022	February 17, 2022	April 22, 2022

### Ambient Temperature (°C)

				Range	Action
	<b>Reference</b>	<b>SHARP</b>	<b>Difference</b>	$< \pm 2^{\circ}\text{C}$	OK
#1	5.30	5.2	0.1	$2-3^{\circ}\text{C}$	Recalibrate
				$> 3^{\circ}\text{C}$	Fail

### Ambient Relative Humidity (%RH)

				Range	Action
<b>As Found:</b>				$< \pm 2\% \text{RH}$	OK
	<b>Reference</b>	<b>SHARP</b>	<b>Difference</b>	$2-5\% \text{RH}$	Recalibrate
#1	53.30	53.0	0.3	$> 5\% \text{RH}$	Fail

### Barometric Pressure (mmHg)

				Range	Action
<b>As Found:</b>				$< \pm 10 \text{ mmHg}$	OK
	<b>Reference</b>	<b>SHARP</b>	<b>Difference</b>	$10-12 \text{ mmHg}$	Recalibrate
#1	700.0	700.0	0.0	$> 12 \text{ mmHg}$	Fail

### Flow Audit (L/min)

				Range	Action
<b>As Found:</b>				$< \pm 4\%$	OK
	<b>Reference</b>	<b>SHARP</b>		$4-5\%$	Recalibrate
#1	16.66	16.66	% Difference      0.04%	$> 5\%$	Fail
#2	16.65	16.66			
#3	16.66	16.67			
Average	16.66	16.66			

### Leak Check (L/min)

Without Leak Check Adapter			With leak Check Adapter			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	16.66	16.66	0.00	16.65	16.67	-0.02
				<b>LEAK RATE:</b>		<b>-0.02</b>

*Leak Limit: 0.80 L/min*



# Meteorological Sensor Audit/Calibration

## Location Information

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