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**AMBIENT AIR MONITORING MONTHLY DATA REPORT**  
**PEACE RIVER AREA MONITORING PROGRAM COMMITTEE**  
**THREE CREEKS 986B STATION**

**JOB #: 8449-2018-12-67-C**

**December 2018**

Prepared for:

**PEACE RIVER AREA MONITORING PROGRAM COMMITTEE**

**Attention: LILY LIN**

**DATE: January 23, 2019**

Prepared by:

A handwritten signature in blue ink, appearing to read "Wunmi Adekanmbi".

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Wunmi Adekanmbi, M.Sc., EPT, PMP  
Project Team Lead, Customer Service, Air Services

Reviewed by:

A handwritten signature in blue ink, appearing to read "Cheri Sinclair".

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Cheri Sinclair, B.Sc.  
Supervisor, Customer Service, Air Services

## SUMMARY

In December 2018, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the Three Creeks 986b Station, near Peace River Oil Sands Area 2, Alberta. The monitoring station provides continuous meteorological measurements and air quality data for non-compliance parameters, as requested by the PRAMP Committee.

All data collected this month was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement.

All data collected this month were within the Alberta Ambient Air Quality Objectives and Guidelines (November, 2018).

**Canister System:** A canister event was recorded on December 9 at 20:25, at an initial concentration of 0.63 ppm. The sample was processed for analysis as outlined in the PRAMP Chain of Custody.

### THC/CH<sub>4</sub>/NMHC:

- An additional zero-span verification was performed as a quality check following a span gas replacement on December 4, incurring one hour of downtime.
- The sample pump was rebuilt on December 12, in response to a "low flow" alarm. Four hours of downtime were incurred as a result.

**Station Temperature:** The station temperature exhibited instability beginning in the November monitoring period. An HVAC company was engaged and the faulty components were ordered. On December 11, the HVAC system was repaired and the temporary portable heaters were removed from site.

The summary of results is presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods are outlined in Section 1.0, Discussion. On this basis, Maxxam Analytics is issuing this completed report to Peace River Area Monitoring Program Committee.

Should you have any questions concerning the results or if we can be of further assistance, please contact us at 403-219-3661 or toll-free at 1-800-386-7247.

### Monthly Continuous Data Summary

Peace River Area Monitoring Program Committee Three Creeks 986b Station						MAXIMUM VALUES							OPERATIONAL TIME (%)
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	READING	DAY	1-HOUR			24-HOUR		
	1-hr	24-hr	1-hr	24-hr				WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY		
SO <sub>2</sub> (ppb)	172	48	0	0	0	2	17	17	6.1	SSW	1	8	100.0
TRS (ppb)	-	-	-	-	0.31	0.63	24	21	2.8	E	0.40	24	100.0
THC (ppm)	-	-	-	-	2.04	2.40	9	20	1.7	W	2.17	28	99.3
CH <sub>4</sub> (ppm)	-	-	-	-	2.04	2.40	28	12	0.3	NNE	2.17	28	99.3
NMHC (ppm)	-	-	-	-	0.00	0.10	9	20	1.7	W	0.00	1	99.3
RELATIVE HUMIDITY (%)	-	-	-	-	79	100	21	3	11.8	WNW	95	1	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	938	955	30	18	6.7	S	951	5	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	-9.3	3.6	18	13	5.6	SW	0.8	13	100.0
STATION TEMPERATURE (°C)	-	-	-	-	21.9	26.7	5	11	3.8	WSW	25.6	9	100.0
VECTOR WS (kph)	-	-	-	-	2.4	18.2	11	14	-	SSE	11.7	11	100.0
VECTOR WD (sec)	-	-	-	-	192 (S)	-	-	-	-	-	-	-	100.0

**SOUR GAS PROCESSING INDUSTRY  
MONTHLY REPORT SUMMARY**

**Three Creeks 986b Station**

**Peace River Area Monitoring Program Committee**

Plant Name / Location

Company

<b>Licence Number</b>	<b>Report Date</b>	
	<b>YEAR</b>	<b>MONTH</b>
N/A	2018	December

<b>CONTINUOUS AMBIENT MONITORING</b>							
PARAMETER	% TIME OPERATIONAL	ONE - HOUR AVERAGE			24 - HOUR AVERAGE		
		MAXIMUM VALUES		NO. READINGS > REGULATION	MAXIMUM VALUES		NO. READINGS > REGULATION
SO <sub>2</sub>	100.0	0.002	ppm	0	0.001	ppm	0
TRS	100.0	0.001	ppm	-	0.000	ppm	-
THC	99.3	2.40	ppm	-	2.17	ppm	-
CH <sub>4</sub>	99.3	2.40	ppm	-	2.17	ppm	-
NMHC	99.3	0.10	ppm	-	0.00	ppm	-
RH	100.0	100	%	-	95	%	-
BP	100.0	955	mb	-	951	mb	-
Ambient TPX	100.0	3.6	°C	-	0.8	°C	-
Station TPX	100.0	26.7	°C	-	25.6	°C	-
Wind Speed	100.0	18.2	kph	-	11.7	kph	-
Wind Direction	100.0	-		-	-		-

SIGNATURE OF COMPANY REPRESENTATIVE
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## Exceedance Summary Report

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### SO<sub>2</sub> 1-Hour Exceedances

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

### SO<sub>2</sub> 24-Hour Exceedances

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

*In accordance with EPEA and the Substance Release Regulation.*

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

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## 1.0 Discussion

This monthly report consists of continuous monitoring results for the following parameters: Sulphur Dioxide (SO<sub>2</sub>), Total Reduced Sulphur (TRS), Total Hydrocarbon (THC), Methane (CH<sub>4</sub>), Non-Methane Hydrocarbon (NMHC), Relative Humidity (RH), Barometric Pressure (BP), Ambient Temperature (AmbTPX), Station Temperature (StnTPX), Wind Speed (WS) and Wind Direction (WD).

The sample inlet filter for all continuous air analyzers are replaced before the calibration begins. The sample manifold is cleaned during the site visit each month.

Control checks, consisting of a zero and span, are conducted daily on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinders) is used for zero checks, and a known concentration of the pollutant being analyzed is used for span checks. These checks are controlled by automatic timers and valves. The total zero span cycle is completed within an hour, the commencement of the zero span cycle is at the beginning of the hour.

Multipoint calibrations are done a minimum of once a month for each continuous air monitor. An additional calibration is required under the following conditions: 1) within three days after the initial start-up and stabilization of a newly installed instrument, 2) prior to shut-down or moving of an instrument which has been working to specification, and 3) when major repair has been done on the instrument.

Time during the first multi-point calibration is not considered downtime (Data is flagged as C). If more than one calibration is performed during the month, the time during the additional calibration is considered as downtime (Data is flagged as C1).

Only one zero/span check is run per day. Time during the zero/span check is not considered as downtime (Data is flagged as S). If an extra zero/span check is performed, the time during the additional check is considered as downtime (Data is flagged as S1).

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time, at a minimum, for each monthly monitoring period.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Data contained in this monthly report has undergone verification and validation based on the requirements of the AMD (December, 2016) Chapter 6: Ambient Data Quality and Chapter 9: Reporting. The descriptions of the data verification and validation process can be found in Section 5 of this report. Instantaneous data, where applicable, is provided for reference purposes and has not undergone zero correction. The minimum and maximum statistics are highlighted in the data table and are for reference only. The highlighted cells are based on the software's interpretation of the exact position of the minimum or maximum value. The visual presentation of these statistics may not be the obvious choice in a data range due to rounding, truncating or analyzer specifications.

Hourly/minute data have been reviewed based on daily zero/span results and multi-point calibration results. Data may be considered invalid if a zero-corrected span check in excess of +/- 10% of the span concentration (established by the previous multi-point calibration) is encountered and/or significant differences in the calibration factor occurs (greater than 10%).



#### **SULPHUR DIOXIDE (SO<sub>2</sub>)**

- Operational time for the monitoring period was 100%.
- The routine monthly calibration was performed on December 12.
- Unstable station temperature was exhibited early in the month. Based on instrument diagnostic information, no impact on data quality was demonstrated. The analyzer manual states the operating temperature thus: 20-30<sup>o</sup>C (*may be safely operated over the range of 0-45<sup>o</sup>C*). Data collected at a station temperature range of 0-45<sup>o</sup>C is therefore considered valid. However, data collected outside the optimum range of 20-30<sup>o</sup>C should be used with caution.

#### **TOTAL REDUCED SULPHUR (TRS)**

- Operational time for the monitoring period was 100%.
- The routine monthly calibration was performed on December 12.
- Unstable station temperature was exhibited early in the month. Based on instrument diagnostic information, no impact on data quality was demonstrated. The analyzer manual states the operating temperature thus: 15-35<sup>o</sup>C (*may be safely operated over the range of 0-45<sup>o</sup>C*). Data collected at a station temperature range of 0-45<sup>o</sup>C is therefore considered valid. All data recorded in the December monitoring period was collected within the optimum temperature range.

#### **TOTAL HYDROCARBONS (THC), METHANE (CH<sub>4</sub>) and NON-METHANE HYDROCARBONS (NMHC)**

- Operational time for the monitoring period was 99.3%, equivalent to five hours of downtime.
- The span gas cylinder was replaced on December 4. A repeat zero-span check was subsequently completed as a quality check. The expected span value was not updated as the span gas concentration did not change significantly. One hour of downtime was recorded due to the additional quality check.
- An immediate site visit was scheduled on December 12 in response to a "low flow" alarm. Following a successful shut-down calibration, the sample pump was rebuilt. A successful post-repair calibration was subsequently completed. As the shut-down calibration met AMD requirements, no data was discarded due to this event. However four hours of downtime were incurred due to the maintenance activity.
- The carrier gas (N<sub>2</sub>) cylinder was replaced during the December 12 site visit.
- Unstable station temperature was exhibited early in the month. Based on instrument diagnostic information, no impact on data quality was demonstrated. The analyzer manual states the operating temperature thus: 15-35<sup>o</sup>C. All monthly data was collected within the operating temperature range and is therefore considered valid.
- The canister sampler is programmed to draw in a whole air sample when the 5-minute average concentration of NMHC is above 0.30 ppm. A representative sample of ambient air is collected over a one-hour period when the canister event is triggered. One canister event was recorded on December 9 at 20:25, at an initial concentration of 0.63 ppm. The sample was processed for analysis as outlined in the PRAMP Chain of Custody.

#### **WIND SPEED (WS) and WIND DIRECTION (WD)**

- Operational time for the monitoring period was 100%.
- An anemometer sensor check was conducted on December 12. The result was satisfactory.
- Wind data is reported as vector wind speed and vector wind direction. Wind direction is defined as the direction from which the wind is blowing from and is measured in degrees from true north.

#### **RELATIVE HUMIDITY (RH)**

- Operational time for the monitoring period was 100%.
- A humidity sensor check was conducted on December 12. The result was satisfactory.

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**BAROMETRIC PRESSURE (BP)**

- Operational time for the monitoring period was 100%.
- A pressure sensor check was conducted on December 12. The result was satisfactory.

**AMBIENT TEMPERATURE (AmbTPX)**

- Operational time for the monitoring period was 100%.
- A temperature sensor check was conducted on December 12. The result was satisfactory.

**STATION TEMPERATURE (StnTPX)**

- Operational time for the monitoring period was 100%.
- The station temperature exhibited instability beginning in the November monitoring period. An HVAC company was engaged and the faulty components were ordered. On December 11, the HVAC system was repaired and the temporary portable heaters were removed from site.

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## **2.0 Project Personnel**

Karla Reesor was the contact for Peace River Area Monitoring Program Committee and the Maxxam field technician was Christopher Wesson.

## **3.0 Plant Monthly Required AMD Summary**

All data collected this month was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement.

All data collected this month were within the Alberta Ambient Air Quality Objectives and Guidelines (November, 2018).

## **4.0 Calculations and Results**

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

## 5.0 Methods and Procedures

The following methods and procedures were used to complete the monitoring program:

Maxxam AIR SOP-00001: Methane, Non-Methane Hydrocarbon Analyzer Monitoring

Maxxam AIR SOP-00013: RM Young Wind Monitor Calibration

Maxxam AIR SOP-00209: Ambient Sulphur Monitoring

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

Sulphur Dioxide - Thermo 43C UV Fluorescent Analyzer

Total Reduced Sulphur - Thermo 43i - TLE UV Fluorescent Analyzer

Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer

Wind System - RM Young Unit

Relative Humidity - RM Young Unit

Barometric Pressure - Met One Unit

Ambient Temperature - RM Young Unit

Datalogger - Envidas Ultimate

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

**Level 0 Preliminary Verification**

Level 0 data are raw data obtained directly from the data acquisition system (DAS). Under the step of Level 0, these data undergo a certain amount of manual or automated screening and flagging. It included a) identification of periods of missing data; b) verification of time stamps against reference time; c) verification that instrument diagnostics/datalogger flags indicate normal operation; d) comparison of data to upper and lower limits; e) rate of change flagging indicating that data changed too rapidly or not at all; and f) verification that zero, span and multipoint performance checks are within specifications. This level of verification is performed on a daily basis.

**Level 1 Primary Validation**

Validation actions under the step of Level 1 include a) review of all screening flags assigned during preliminary verification; b) review of all supporting site information and documentation; c) review of operational acceptance limits for each parameter/analyzer; d) review of daily zero/span and monthly calibration results for all gaseous parameters; and e) application of any necessary adjustments to data (e.g. baseline adjustments, below zero adjustments). This level of validation is performed on a monthly basis.

**Level 2 Final Validation**

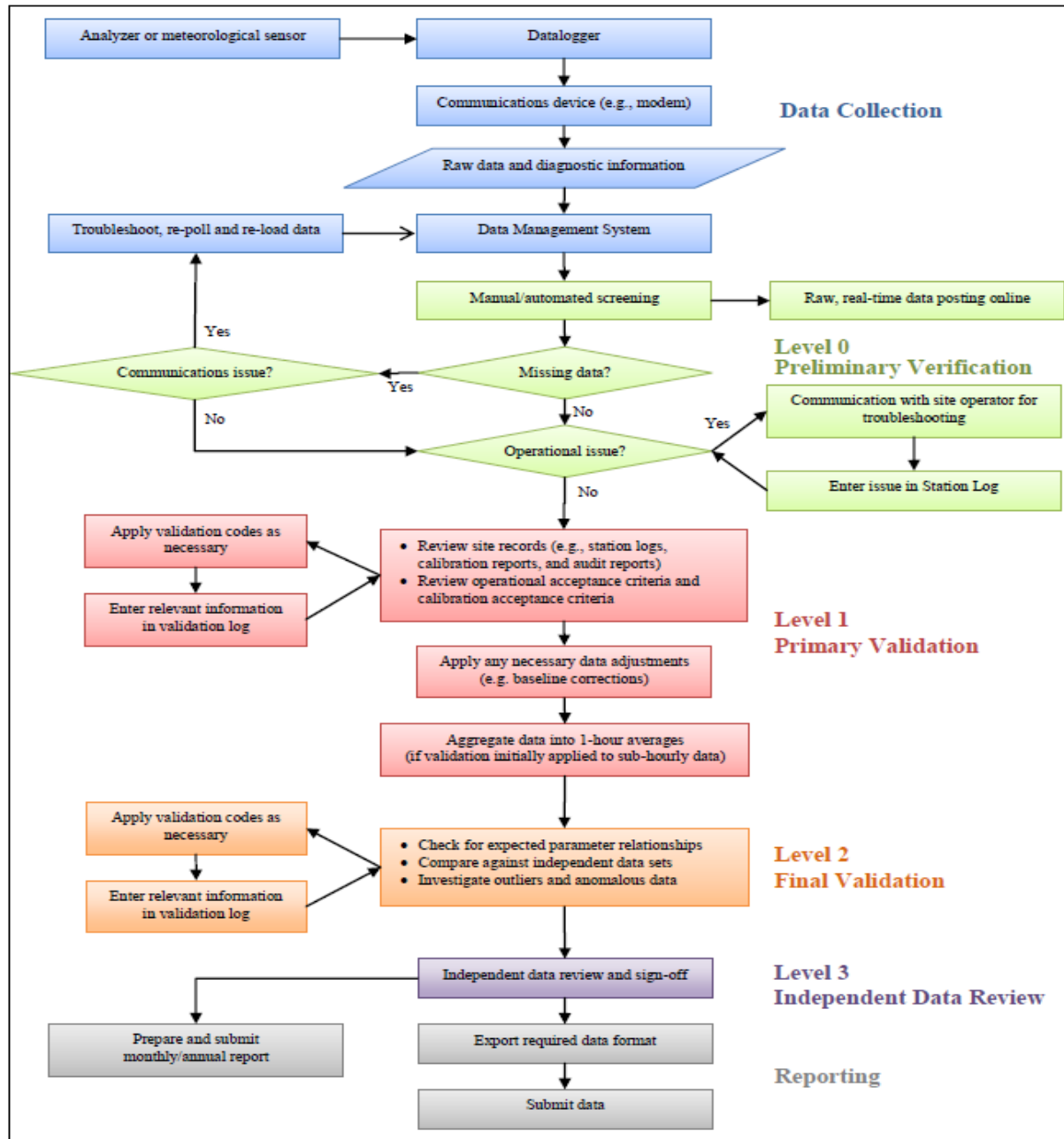
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

**Level 3 Independent Data Review**

Level 3 validation is the last step of data review, and it is completed by an individual that is independent of both field operations and primary data validation. A final independent QA review and endorsement is performed during this step before data is submitted to Alberta Environment.

**Post-Final Validation**

The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. Any data issues or patterns which were not clear on a monthly basis are highlighted during this step. This validation is performed on an annual basis.



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

***APPENDIX I***  
***CONTINUOUS MONITORING DATA RESULTS***

***SULPHUR DIOXIDE***





SULPHUR DIOXIDE Hourly Averages (SO<sub>2</sub> ppb)

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

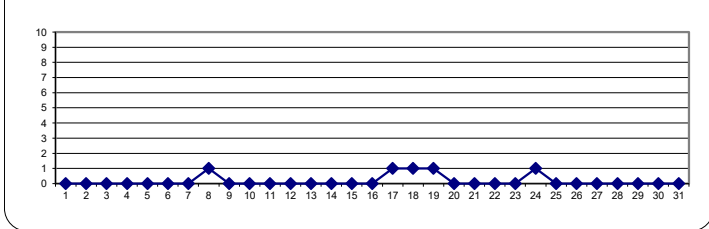
STATUS FLAG CODES

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

OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 172 ppb | 24-HR 48 ppb

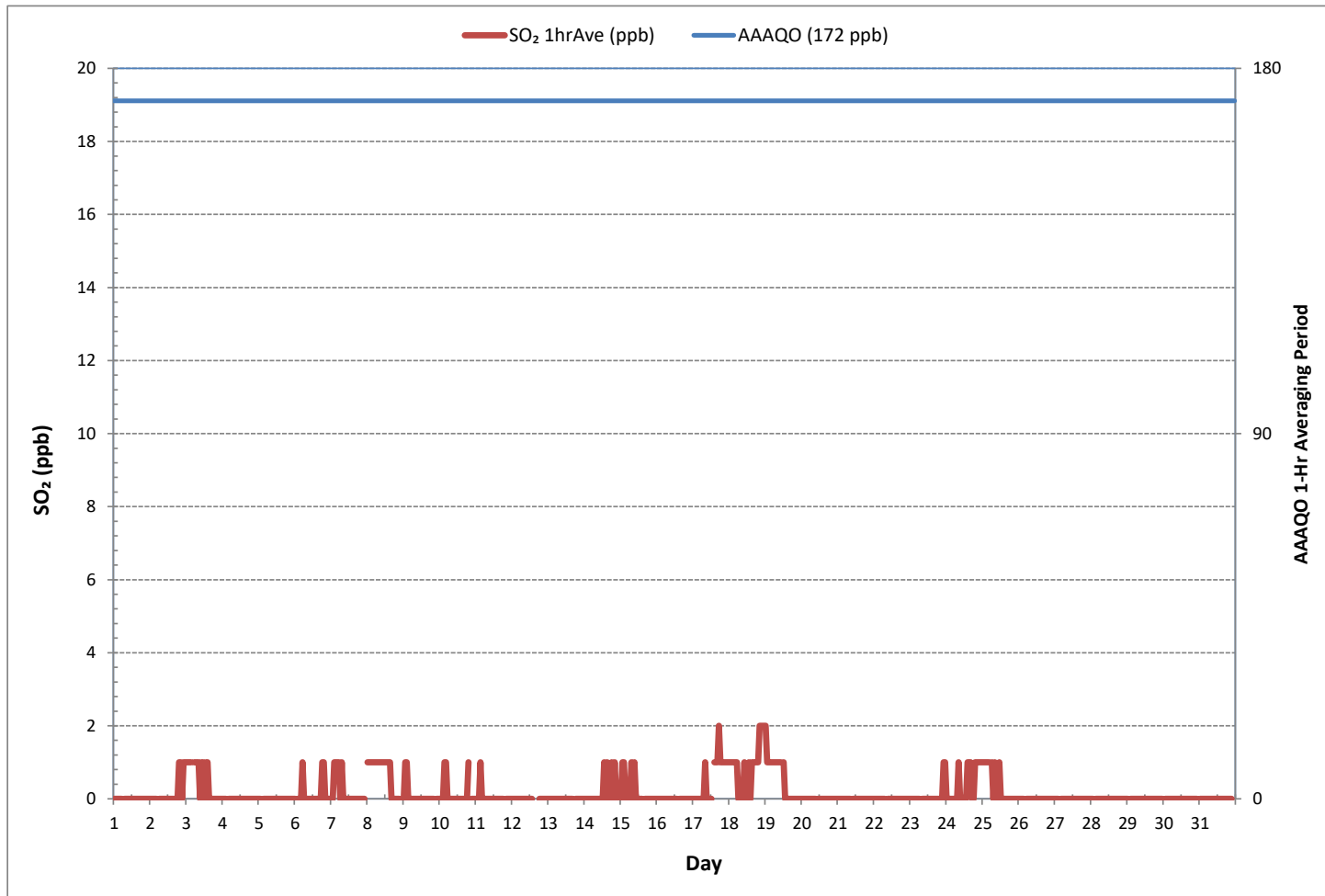
24 HR AVERAGES December 2018



MONTHLY SUMMARY

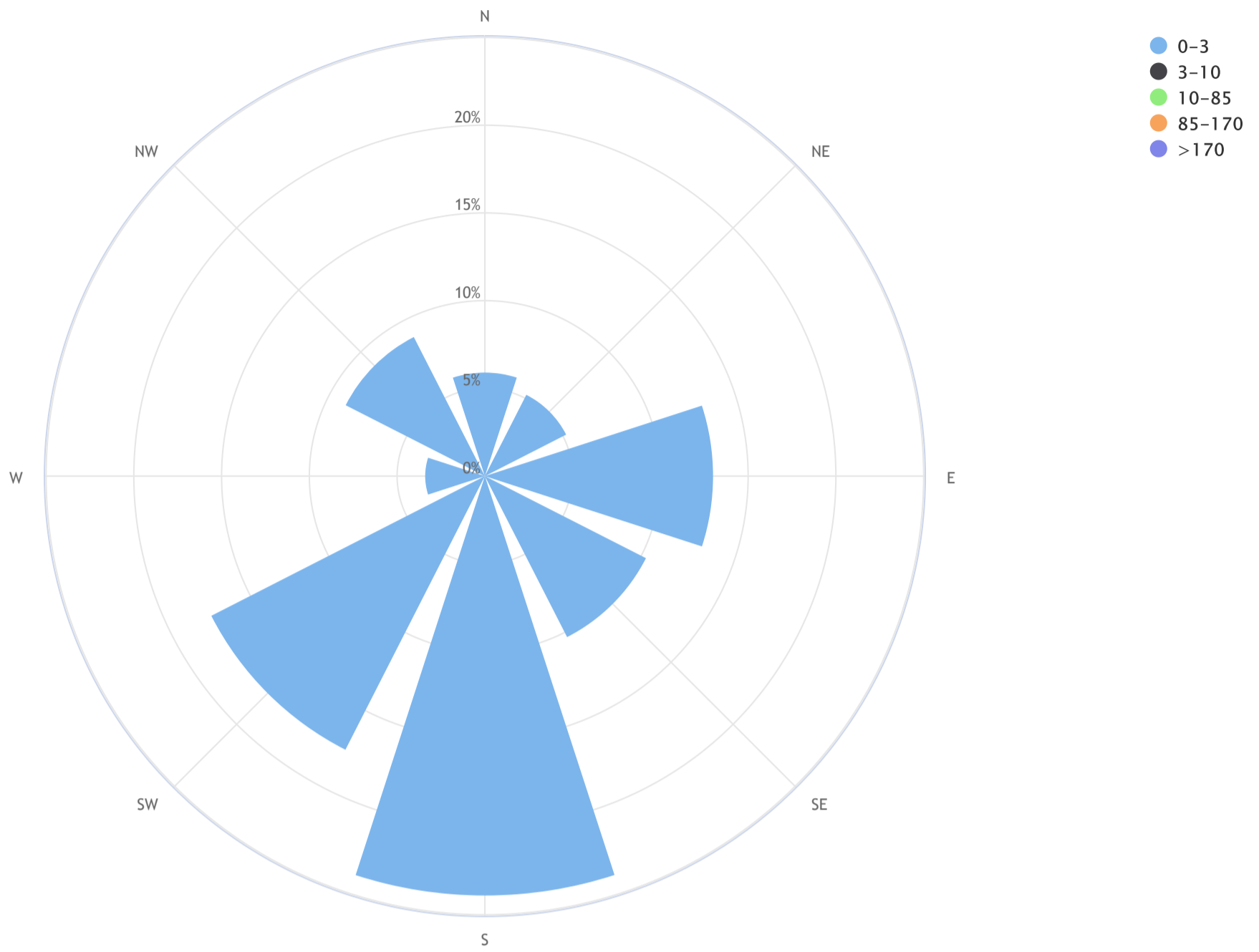
NUMBER OF 1-HR EXCEEDANCES:	0
NUMBER OF 24-HR EXCEEDANCES:	0
NUMBER OF NON-ZERO READINGS:	113
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	2 ppb @ HOUR 17 ON DAY 17
MAXIMUM 24-HR AVERAGE:	1 ppb ON DAY 8
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	4 hrs
OPERATIONAL TIME:	744 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0
MONTHLY AVERAGE:	0 ppb

SULPHUR DIOXIDE Hourly Averages (SO<sub>2</sub> ppb)



Peace River Area Monitoring Program Committee\_Three Creeks 986b Station\_SO<sub>2</sub> (ppb)\_18/12

Pollutant Rose\_Wind Frequency (Blowing From)\_CALM Avg = 0.1\_CALM % = 11.9%



Direction	0-3	3-10	10-85	85-170	>170	TOTAL
N	5.9	0.0	0.0	0.0	0.0	5.9
NE	5.2	0.0	0.0	0.0	0.0	5.2
E	13.0	0.0	0.0	0.0	0.0	13.0
SE	10.3	0.0	0.0	0.0	0.0	10.3
S	23.9	0.0	0.0	0.0	0.0	23.9
SW	17.5	0.0	0.0	0.0	0.0	17.5
W	3.4	0.0	0.0	0.0	0.0	3.4
NW	8.9	0.0	0.0	0.0	0.0	8.9
Summary	88.1	0.0	0.0	0.0	0.0	88.1
CALM	11.9	0.0	0.0	0.0	0.0	11.9

SO2[ppb] Calibration: PRAMP\_986 Monthly: 18/12 Type: Span



Span Meas Span Ref Span Low Span High

***TOTAL REDUCED SULPHUR***

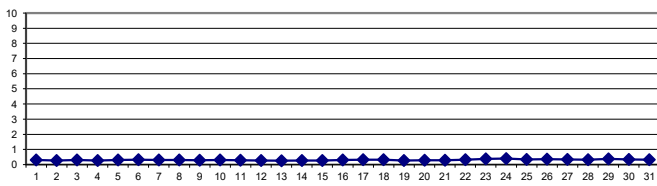
TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	0.30	0.33	0.36	0.34	0.32	0.32	S	0.36	0.36	0.31	0.27	0.26	0.26	0.26	0.26	0.26	0.26	0.27	0.30	0.30	0.30	0.31	0.30	0.28	0.26	0.36	0.30	24	
2	0.27	0.28	0.28	0.26	0.25	S	0.32	0.27	0.27	0.26	0.26	0.26	0.25	0.26	0.26	0.25	0.27	0.28	0.28	0.30	0.30	0.29	0.30	0.29	0.25	0.32	0.27	24	
3	0.29	0.29	0.28	0.28	S	0.35	0.30	0.30	0.31	0.30	0.30	0.32	0.37	0.37	0.49	0.39	0.30	0.29	0.29	0.29	0.29	0.27	0.28	0.29	0.27	0.49	0.31	24	
4	0.28	0.29	0.27	S	0.33	0.29	0.28	0.27	0.26	0.27	0.26	0.24	0.25	0.32	0.25	0.26	0.25	0.27	0.28	0.27	0.29	0.27	0.28	0.24	0.33	0.27	24		
5	0.28	0.28	S	0.35	0.30	0.28	0.30	0.30	0.32	0.32	0.28	0.28	0.29	0.31	0.29	0.30	0.30	0.30	0.29	0.29	0.29	0.31	0.31	0.28	0.24	0.35	0.30	24	
6	0.33	S	0.41	0.36	0.35	0.34	0.34	0.33	0.33	0.34	0.34	0.32	0.34	0.32	0.30	0.31	0.33	0.30	0.31	0.31	0.30	0.29	0.29	0.29	0.29	0.41	0.32	24	
7	S	0.40	0.34	0.34	0.33	0.33	0.33	0.31	0.32	0.32	0.31	0.32	0.30	0.28	0.29	0.29	0.30	0.30	0.29	0.30	0.29	0.28	0.28	S	0.28	0.40	0.31	24	
8	0.40	0.35	0.31	0.33	0.32	0.31	0.31	0.31	0.29	0.28	0.29	0.29	0.27	0.29	0.29	0.29	0.27	0.28	0.28	0.25	0.26	0.26	S	0.33	0.25	0.40	0.30	24	
9	0.29	0.26	0.28	0.29	0.28	0.29	0.29	0.25	0.26	0.27	0.28	0.26	0.25	0.24	0.24	0.25	0.24	0.23	0.24	0.23	0.59	S	0.33	0.28	0.23	0.59	0.28	24	
10	0.27	0.27	0.27	0.31	0.31	0.30	0.29	0.29	0.28	0.29	0.29	0.28	0.27	0.29	0.29	0.29	0.29	0.31	0.33	0.31	S	0.37	0.31	0.30	0.27	0.37	0.30	24	
11	0.31	0.32	0.31	0.32	0.32	0.30	0.31	0.28	0.29	0.28	0.28	0.26	0.28	0.28	0.28	0.29	0.28	0.28	0.26	S	0.34	0.29	0.27	0.27	0.26	0.34	0.29	24	
12	0.27	0.26	0.28	0.27	0.27	0.27	0.26	0.29	0.27	C	C	C	C	C	C	C	0.28	0.25	0.26	S	0.34	0.29	0.26	0.26	0.26	0.25	0.34	0.27	24
13	0.26	0.25	0.25	0.25	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.27	0.27	0.26	0.25	S	0.32	0.27	0.27	0.26	0.26	0.27	0.25	0.32	0.26	24
14	0.26	0.26	0.27	0.27	0.26	0.26	0.26	0.26	0.28	0.33	0.29	0.25	0.26	0.27	0.25	0.27	S	0.30	0.27	0.30	0.32	0.25	0.26	0.32	0.25	0.33	0.27	24	
15	0.32	0.31	0.32	0.28	0.23	0.26	0.27	0.23	0.23	0.26	0.20	0.20	0.22	0.20	0.20	S	0.31	0.25	0.24	0.24	0.43	0.42	0.38	0.34	0.20	0.43	0.27	24	
16	0.37	0.30	0.31	0.29	0.28	0.28	0.27	0.28	0.27	0.31	0.29	0.27	0.28	0.31	S	0.41	0.32	0.28	0.28	0.31	0.40	0.32	0.29	0.27	0.41	0.30	24		
17	0.29	0.30	0.31	0.30	0.30	0.31	0.31	0.31	0.32	0.31	0.32	0.32	0.33	S	0.38	0.36	0.34	0.35	0.34	0.32	0.35	0.38	0.36	0.36	0.29	0.38	0.33	24	
18	0.36	0.34	0.35	0.35	0.36	0.34	0.34	0.35	0.35	0.35	0.36	0.33	S	0.38	0.32	0.32	0.31	0.32	0.30	0.30	0.31	0.30	0.31	0.30	0.30	0.38	0.33	24	
19	0.31	0.30	0.30	0.32	0.32	0.31	0.31	0.26	0.25	0.25	0.24	S	0.30	0.27	0.26	0.25	0.25	0.25	0.25	0.27	0.24	0.26	0.27	0.27	0.24	0.32	0.27	24	
20	0.26	0.27	0.26	0.27	0.27	0.31	0.29	0.31	0.33	0.29	S	0.36	0.29	0.31	0.28	0.26	0.27	0.27	0.30	0.28	0.27	0.27	0.26	0.24	0.24	0.36	0.28	24	
21	0.25	0.26	0.27	0.29	0.28	0.27	0.29	0.28	0.29	S	0.35	0.30	0.28	0.29	0.27	0.28	0.27	0.27	0.26	0.28	0.26	0.26	0.26	0.26	0.25	0.35	0.28	24	
22	0.30	0.30	0.31	0.27	0.27	0.32	0.32	0.33	S	0.42	0.34	0.34	0.32	0.32	0.33	0.32	0.33	0.32	0.32	0.32	0.32	0.35	0.32	0.40	0.27	0.42	0.33	24	
23	0.42	0.56	0.53	0.44	0.44	0.39	0.33	S	0.50	0.38	0.36	0.36	0.35	0.33	0.33	0.33	0.32	0.31	0.31	0.33	0.34	0.33	0.37	0.37	0.31	0.56	0.38	24	
24	0.41	0.33	0.31	0.29	0.27	0.35	S	0.40	0.40	0.31	0.31	0.30	0.31	0.31	0.32	0.39	0.39	0.45	0.54	0.53	0.51	0.63	0.60	0.47	0.27	0.63	0.40	24	
25	0.41	0.38	0.30	0.32	0.33	S	0.41	0.34	0.35	0.35	0.36	0.32	0.33	0.34	0.31	0.29	0.30	0.28	0.27	0.28	0.33	0.36	0.53	0.27	0.53	0.34	24		
26	0.54	0.44	0.41	0.41	S	0.46	0.34	0.31	0.33	0.36	0.49	0.29	0.32	0.33	0.29	0.30	0.32	0.36	0.29	0.29	0.32	0.34	0.33	0.31	0.29	0.54	0.36	24	
27	0.30	0.33	0.35	S	0.62	0.50	0.45	0.36	0.33	0.33	0.33	0.32	0.33	0.31	0.33	0.30	0.31	0.30	0.30	0.29	0.30	0.31	0.32	0.32	0.29	0.62	0.34	24	
28	0.34	0.33	S	0.38	0.38	0.31	0.34	0.32	0.31	0.31	0.31	0.31	0.33	0.33	0.33	0.33	0.30	0.31	0.31	0.31	0.31	0.31	0.32	0.30	0.29	0.68	0.32	24	
29	0.30	S	0.42	0.35	0.43	0.63	0.38	0.41	0.35	0.37	0.40	0.38	0.39	0.37	0.35	0.35	0.35	0.33	0.32	0.31	0.39	0.40	0.36	0.30	0.30	0.63	0.38	24	
30	S	0.40	0.35	0.35	0.35	0.34	0.33	0.33	0.34	0.34	0.34	0.34	0.34	0.34	0.33	0.34	0.34	0.31	0.33	0.34	0.34	0.34	0.34	S	0.31	0.40	0.34	24	
31	0.43	0.35	0.35	0.37	0.37	0.36	0.34	0.34	0.31	0.32	0.32	0.30	0.30	0.29	0.29	0.30	0.30	0.29	0.29	0.27	0.29	0.26	S	0.34	0.26	0.43	0.32	24	
HOURLY MAX	0.54	0.56	0.53	0.44	0.62	0.63	0.45	0.41	0.50	0.42	0.49	0.38	0.39	0.38	0.49	0.41	0.39	0.45	0.54	0.53	0.59	0.63	0.60	0.53					
HOURLY AVG	0.32	0.32	0.32	0.32	0.32	0.33	0.32	0.31	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.32	0.32	0.32	0.32					

STATUS FLAG CODES

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

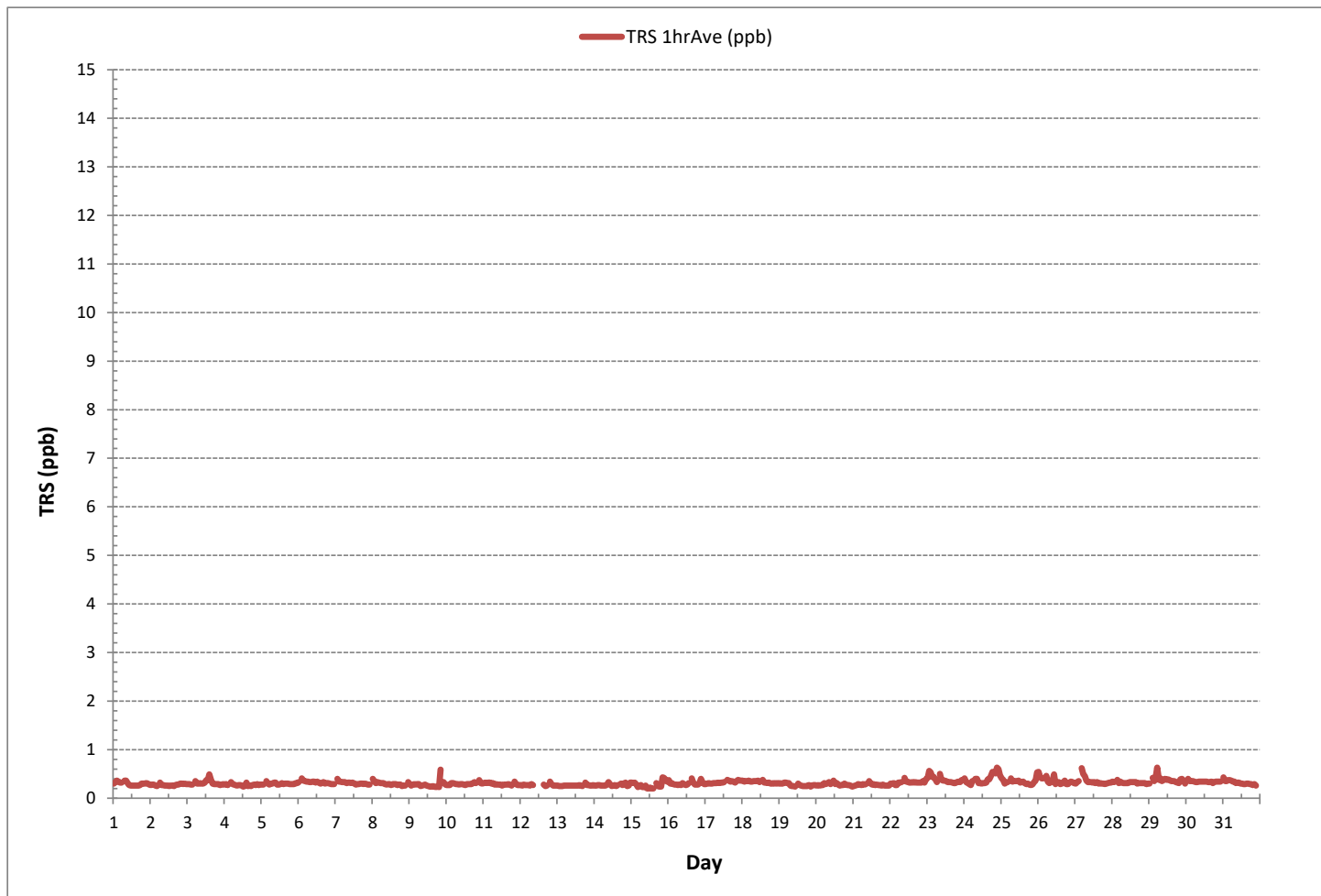
24 HR AVERAGES December 2018



MONTHLY SUMMARY

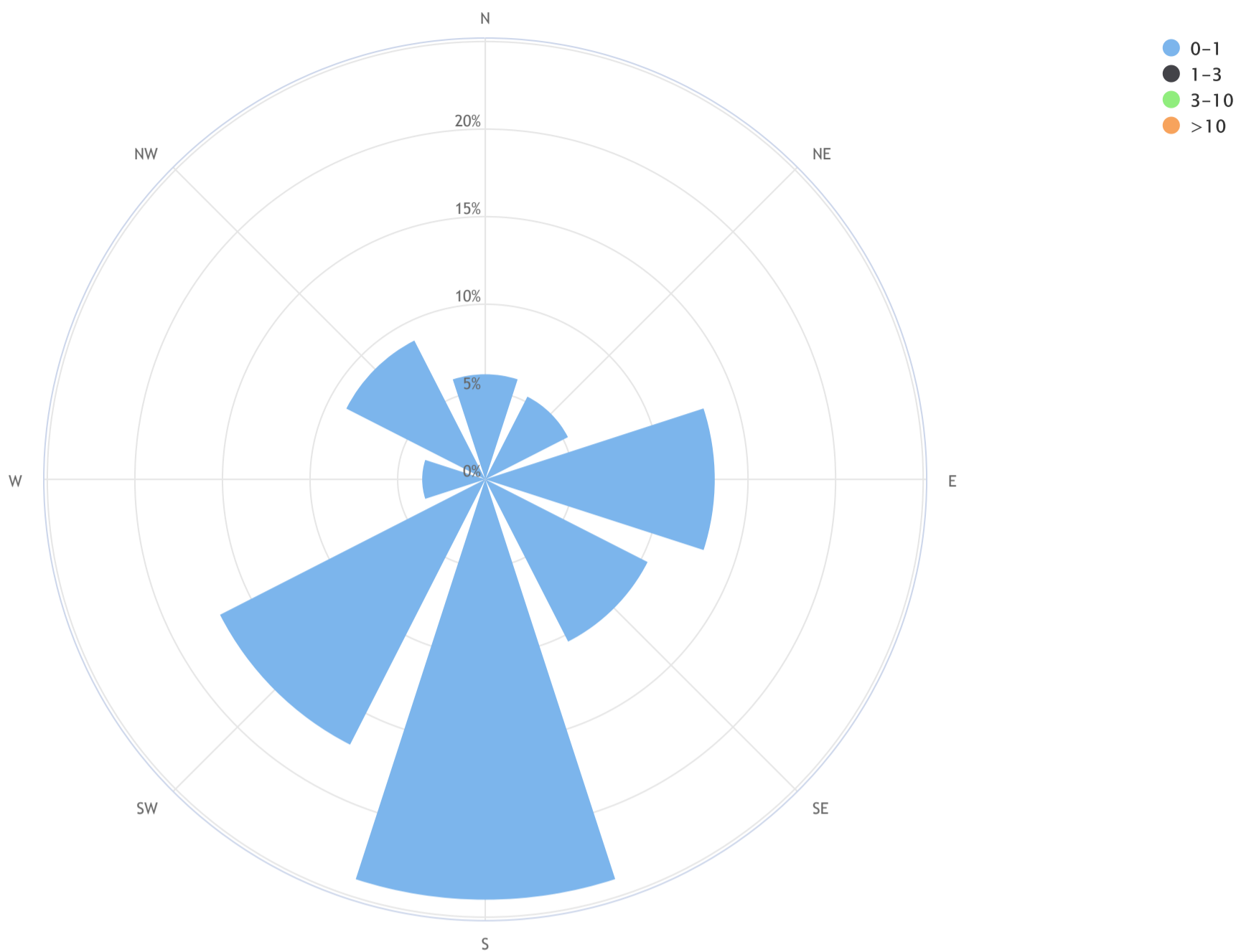
NUMBER OF NON-ZERO READINGS:	705				
MINIMUM 1-HR AVERAGE:	0.20	ppb	@ HOUR	10	ON DAY
MAXIMUM 1-HR AVERAGE:	0.63	ppb	@ HOUR	21	ON DAY
MAXIMUM 24-HR AVERAGE:	0.40	ppb			ON DAY
IZS CALIBRATION TIME:	33	hrs	OPERATIONAL TIME:	744	hrs
MONTHLY CALIBRATION TIME:	6	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.06		MONTHLY AVERAGE:	0.31	ppb

TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)



Peace River Area Monitoring Program Committee\_Three Creeks 986b Station\_TRS (ppb)\_18/12

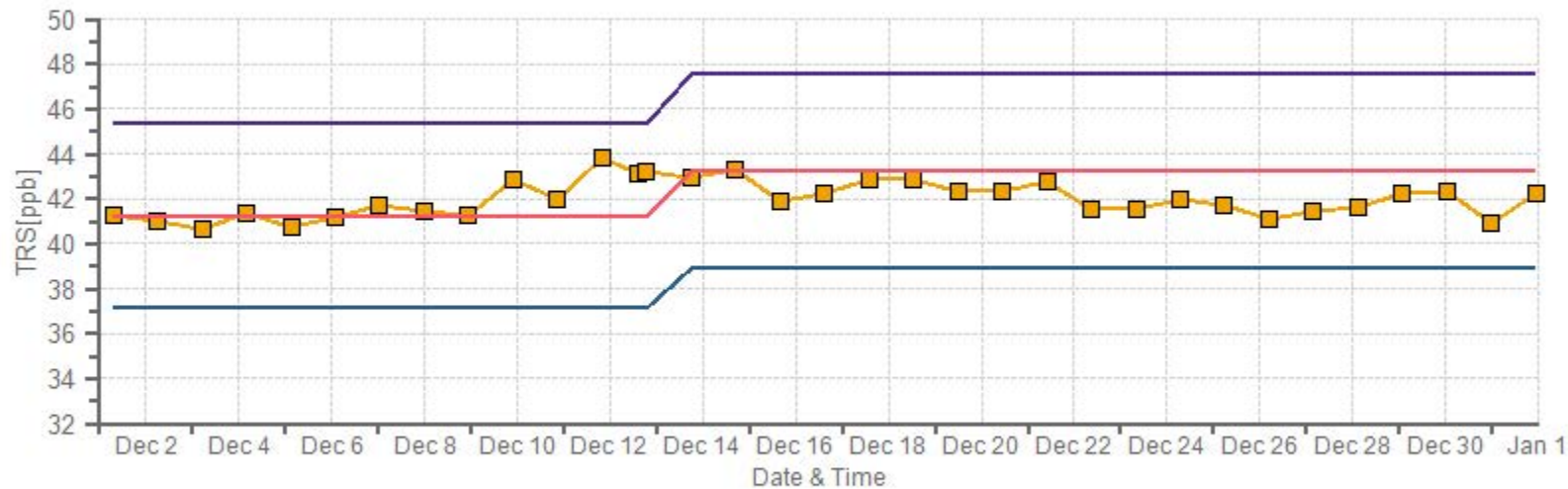
Pollutant Rose\_Wind Frequency (Blowing From)\_CALM Avg = 0.4\_CALM % = 11.9%



Direction	0-1	1-3	3-10	>10	TOTAL
N	6.0	0.0	0.0	0.0	6.0
NE	5.3	0.0	0.0	0.0	5.3
E	13.1	0.0	0.0	0.0	13.1
SE	10.4	0.0	0.0	0.0	10.4
S	24.0	0.0	0.0	0.0	24.0
SW	17.0	0.0	0.0	0.0	17.0
W	3.6	0.0	0.0	0.0	3.6
NW	8.9	0.0	0.0	0.0	8.9
Summary	88.1	0.0	0.0	0.0	88.1
CALM	11.9	0.0	0.0	0.0	11.9



TRS[ppb] Calibration: PRAMP\_986 Monthly; 18/12 Type: Span



Span Meas Span Ref Span Low Span High

***TOTAL HYDROCARBON***



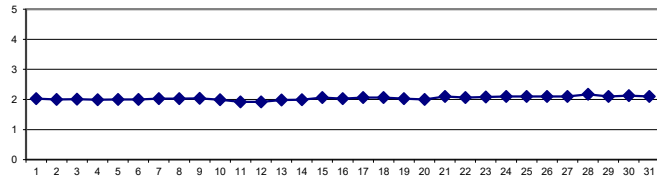
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	2.07	1.97	1.98	2.01	2.04	2.05	S	2.03	2.05	2.05	2.04	2.03	2.02	2.01	2.01	2.02	2.02	2.09	2.05	2.02	2.02	2.02	2.04	2.03	1.97	2.09	2.03	24	
2	2.03	2.01	2.02	2.02	2.07	S	2.01	2.01	2.00	1.98	1.99	1.96	1.96	1.97	1.97	1.97	1.97	1.98	1.99	2.00	2.01	2.02	2.02	1.96	2.02	1.96	2.07	2.00	24
3	2.03	2.03	2.02	2.02	S	2.01	2.01	2.01	2.01	2.01	2.01	2.10	2.17	2.09	2.04	1.98	1.99	1.98	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.96	2.17	2.01	24
4	1.95	1.95	1.96	S	1.98	1.98	1.98	1.98	1.96	S1	1.97	1.97	1.99	2.00	1.99	1.98	1.98	1.98	1.99	2.00	2.01	2.02	2.04	2.06	1.95	2.06	1.99	23	
5	2.05	2.13	S	1.99	1.99	1.99	2.03	2.00	2.06	2.01	1.99	1.98	1.99	1.99	1.98	1.99	1.98	1.97	1.97	1.99	2.00	2.02	1.97	1.98	1.97	2.13	2.00	24	
6	1.98	S	2.00	2.00	1.99	2.00	1.99	2.00	2.00	2.01	2.02	2.01	2.01	2.00	2.00	2.00	2.01	1.99	1.99	1.99	2.01	2.02	2.02	2.02	1.98	2.02	2.00	24	
7	S	2.04	2.04	2.05	2.07	2.07	2.06	2.04	2.03	2.02	2.02	2.03	2.01	2.01	2.02	2.03	2.02	2.02	2.02	2.02	2.01	1.99	2.00	S	1.99	2.07	2.03	24	
8	2.02	2.05	2.03	2.05	2.03	2.06	2.05	2.04	2.04	2.02	2.04	2.03	2.04	2.06	2.05	2.05	2.05	2.05	2.04	2.01	2.00	2.00	S	2.02	2.00	2.06	2.03	24	
9	2.01	1.99	2.01	2.04	2.04	2.03	2.04	2.04	2.03	2.03	2.03	2.01	2.01	2.01	2.00	2.01	2.02	2.05	2.00	2.00	2.40	S	2.01	2.03	1.99	2.40	2.04	24	
10	2.04	2.05	2.03	2.04	2.05	2.04	2.01	2.01	2.00	1.98	1.98	1.97	1.96	1.96	1.96	1.96	1.97	1.97	1.95	1.94	S	1.95	1.95	1.96	1.94	2.05	1.99	24	
11	1.96	1.96	1.95	1.95	1.95	1.95	1.94	1.96	1.95	1.94	1.94	1.93	1.90	1.90	1.90	1.90	1.90	1.89	S	1.89	1.88	1.88	1.88	1.88	1.88	1.96	1.92	24	
12	1.88	1.89	1.89	1.89	1.89	1.90	1.89	1.89	1.89	C	C	C	Y	Y	Y	Y	C	C	C	1.98	1.99	1.99	1.98	1.98	1.88	1.99	1.92	20	
13	1.98	1.98	1.98	1.97	1.98	1.97	1.97	1.98	1.97	1.97	1.98	1.98	1.99	2.00	2.01	1.99	1.99	S	1.99	1.99	1.98	1.98	1.98	1.98	1.97	2.01	1.98	24	
14	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.97	1.99	1.99	1.98	1.97	1.97	1.97	1.96	1.97	S	1.97	1.98	1.99	2.18	2.00	2.01	2.05	1.96	2.18	1.99	24	
15	2.05	2.04	2.06	2.05	2.04	2.04	2.06	2.03	2.03	2.02	2.03	2.04	2.14	2.10	2.13	S	2.02	2.01	2.01	2.03	2.07	2.11	2.15	2.19	2.01	2.19	2.06	24	
16	2.15	2.10	2.07	2.21	2.07	2.02	2.02	2.00	2.00	2.01	2.01	2.01	2.01	2.00	S	2.00	2.00	2.00	2.00	2.01	2.01	2.01	2.01	2.02	2.00	2.21	2.03	24	
17	2.02	2.03	2.04	2.04	2.05	2.09	2.08	2.04	2.04	2.04	2.05	2.06	S	2.08	2.08	2.09	2.09	2.08	2.06	2.09	2.10	2.08	2.07	2.02	2.02	2.10	2.06	24	
18	2.08	2.10	2.09	2.09	2.07	2.13	2.04	2.09	2.05	2.03	2.03	2.02	S	2.00	2.01	2.02	2.02	2.03	2.05	2.05	2.06	2.07	2.06	2.06	2.00	2.13	2.06	24	
19	2.06	2.07	2.06	2.06	2.06	2.08	2.08	2.05	2.03	2.03	2.03	S	2.01	2.00	2.00	2.00	1.99	1.99	2.00	1.99	1.99	2.00	2.00	2.00	1.99	2.08	2.03	24	
20	2.00	2.00	2.01	2.00	2.01	2.02	2.02	2.06	2.04	2.03	S	2.02	1.99	1.98	1.98	1.99	1.99	1.98	1.97	1.98	1.98	1.98	1.98	1.99	1.97	2.06	2.00	24	
21	2.03	2.05	2.07	2.04	2.03	2.02	2.07	2.02	2.02	S	2.05	2.20	2.06	2.08	2.09	2.09	2.06	2.33	2.30	2.21	2.08	2.02	2.02	2.30	2.02	2.33	2.10	24	
22	2.05	2.02	2.01	2.01	2.01	2.06	2.09	2.12	S	2.09	2.09	2.10	2.05	2.04	2.04	2.04	2.04	2.04	2.05	2.06	2.06	2.07	2.12	2.11	2.01	2.12	2.06	24	
23	2.14	2.14	2.14	2.19	2.30	2.23	2.05	S	2.07	2.06	2.07	2.06	2.07	2.05	2.05	2.04	2.04	2.03	2.03	2.03	2.03	2.02	2.02	2.02	2.02	2.30	2.08	24	
24	2.02	2.03	2.03	2.04	2.04	2.04	S	2.05	2.05	2.06	2.07	2.08	2.09	2.11	2.13	2.14	2.14	2.16	2.18	2.19	2.19	2.18	2.17	2.14	2.02	2.19	2.10	24	
25	2.13	2.11	2.07	2.08	2.04	S	2.05	2.06	2.10	2.12	2.21	2.11	2.08	2.12	2.18	2.15	2.15	2.06	2.05	2.05	2.06	2.08	2.12	2.17	2.04	2.21	2.10	24	
26	2.19	2.16	2.13	2.12	S	2.13	2.10	2.10	2.14	2.19	2.10	2.07	2.06	2.05	2.05	2.06	2.07	2.17	2.08	2.10	2.09	2.09	2.10	2.05	2.19	2.10	2.10	24	
27	2.14	2.25	2.09	S	2.14	2.12	2.15	2.13	2.09	2.13	2.09	2.10	2.09	2.09	2.08	2.08	2.08	2.08	2.08	2.07	2.07	2.07	2.07	2.07	2.07	2.25	2.10	24	
28	2.07	2.07	S	2.09	2.09	2.10	2.11	2.12	2.11	2.11	2.11	2.11	2.40	2.32	2.22	2.29	2.21	2.36	2.20	2.15	2.15	2.11	2.35	2.10	2.07	2.40	2.17	24	
29	2.08	S	2.13	2.11	2.12	2.12	2.12	2.12	2.10	2.09	2.09	2.10	2.10	2.10	2.12	2.12	2.11	2.11	2.11	2.11	2.11	2.07	2.07	2.06	2.05	2.05	2.13	2.10	24
30	S	2.07	2.09	2.10	2.09	2.10	2.09	2.10	2.14	2.19	2.19	2.22	2.14	2.14	2.11	2.11	2.12	2.12	2.12	2.14	2.13	2.13	2.13	S	2.07	2.22	2.13	24	
31	2.13	2.14	2.13	2.14	2.14	2.13	2.13	2.14	2.13	2.12	2.12	2.12	2.12	2.11	2.10	2.09	2.09	2.08	2.06	2.05	2.05	2.04	S	2.03	2.03	2.14	2.10	24	
HOURLY MAX	2.19	2.25	2.14	2.21	2.30	2.23	2.15	2.13	2.14	2.19	2.21	2.22	2.40	2.32	2.22	2.29	2.21	2.36	2.30	2.21	2.40	2.18	2.35	2.30					
HOURLY AVG	2.05	2.05	2.04	2.05	2.05	2.05	2.04	2.04	2.04	2.05	2.05	2.05	2.05	2.04	2.04	2.04	2.04	2.05	2.04	2.04	2.05	2.03	2.04	2.05					

STATUS FLAG CODES

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

24 HR AVERAGES December 2018

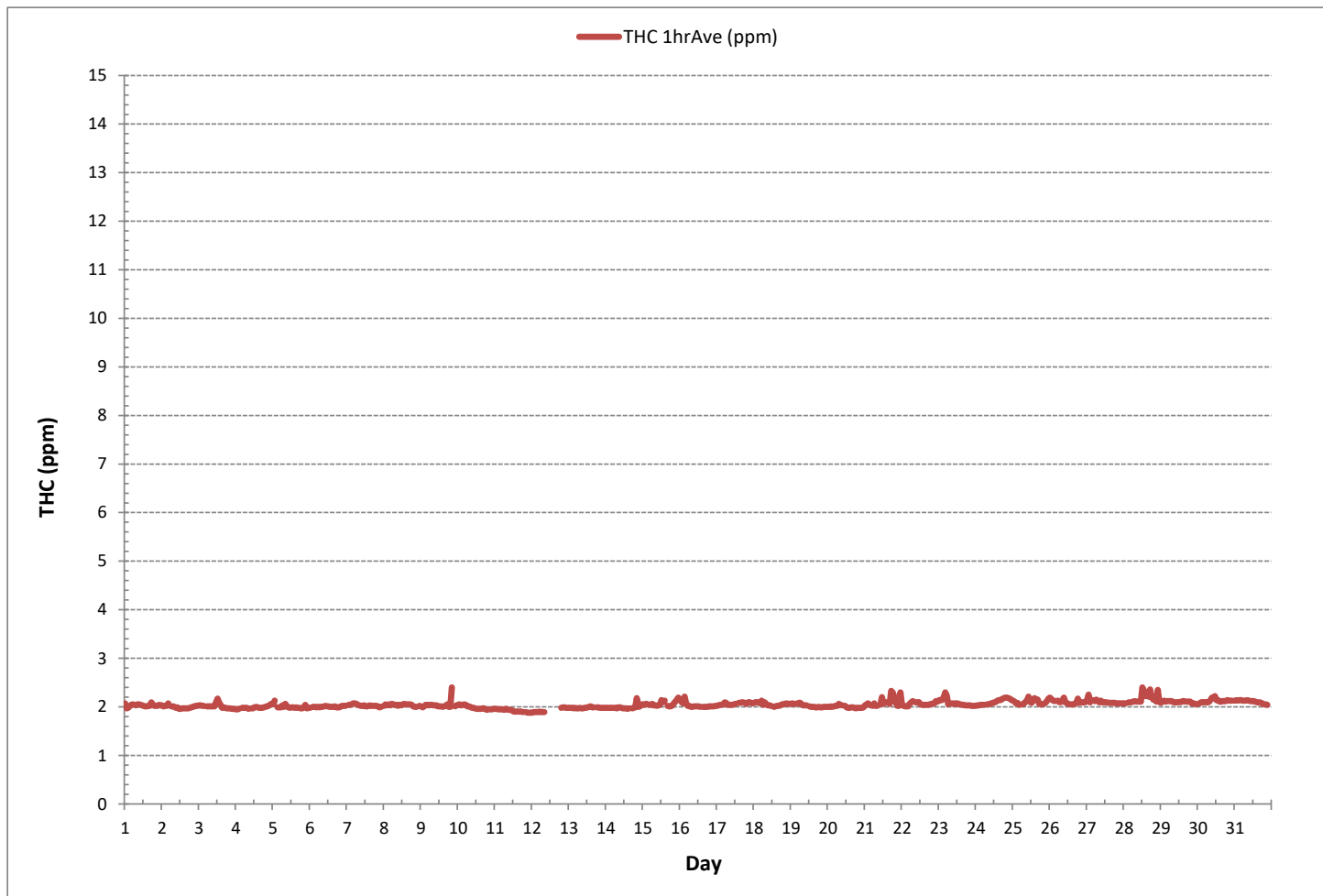


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	701				
MINIMUM 1-HR AVERAGE:	1.88 ppm	@ HOUR	21	ON DAY	11
MAXIMUM 1-HR AVERAGE:	2.40 ppm	@ HOUR	20	ON DAY	9
MAXIMUM 24-HR AVERAGE:	2.17 ppm			ON DAY	28
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	739 hrs		
MONTHLY CALIBRATION TIME:	6 hrs	AMD OPERATION UPTIME:	99.3 %		
STANDARD DEVIATION:	0.07	MONTHLY AVERAGE:	2.04 ppm		

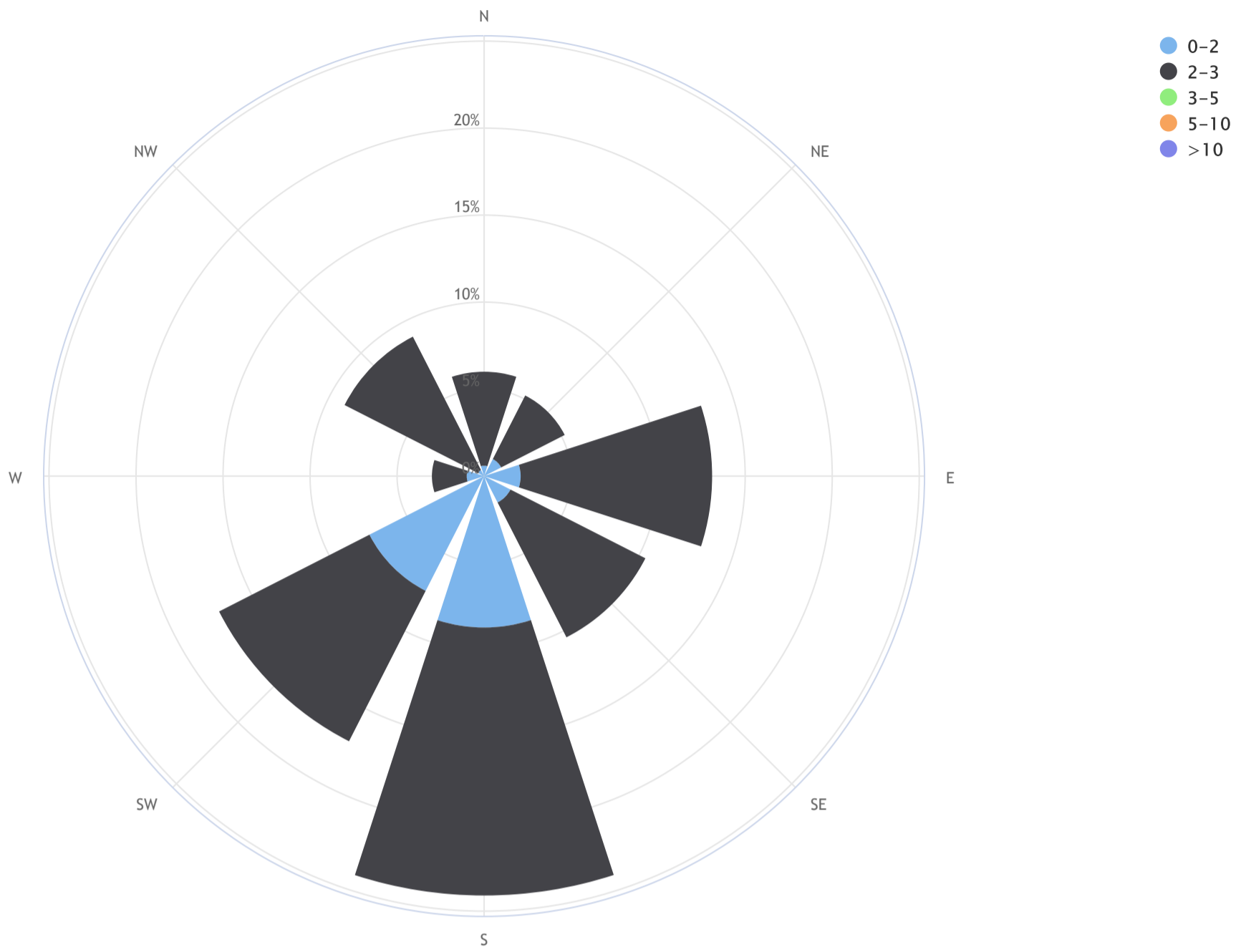


TOTAL HYDROCARBONS Hourly Averages (THC ppm)



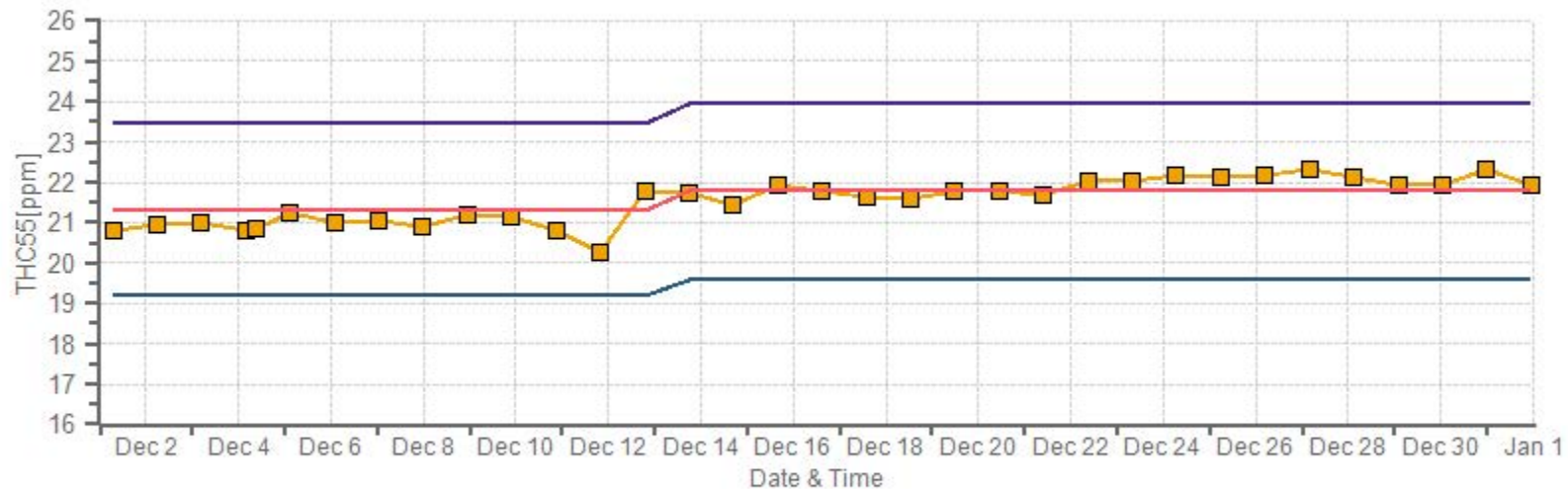
Peace River Area Monitoring Program Committee\_Three Creeks 986b Station\_THC (ppm)\_18/12

Pollutant Rose\_Wind Frequency (Blowing From)\_CALM Avg = 2.1\_CALM % = 12.0%



Direction	0-2	2-3	3-5	5-10	>10	TOTAL
N	0.6	5.4	0.0	0.0	0.0	6.0
NE	1.1	4.1	0.0	0.0	0.0	5.3
E	2.1	11.0	0.0	0.0	0.0	13.1
SE	1.7	8.7	0.0	0.0	0.0	10.4
S	8.7	15.4	0.0	0.0	0.0	24.1
SW	7.4	9.7	0.0	0.0	0.0	17.1
W	1.0	2.0	0.0	0.0	0.0	3.0
NW	0.4	8.6	0.0	0.0	0.0	9.0
Summary	23.1	64.9	0.0	0.0	0.0	88.0
CALM	1.0	11.0	0.0	0.0	0.0	12.0

THC55[ppm] Calibration: PRAMP\_986 Monthly: 18/12 Type: Span



■ Span Meas 
 — Span Ref 
 — Span Low 
 — Span High

***METHANE***



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE  
Three Creeks 986b Station - December 2018

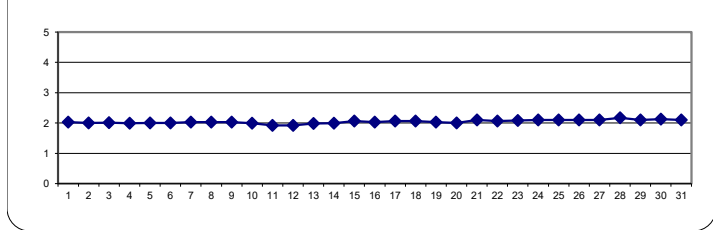
METHANE Hourly Averages (CH<sub>4</sub> ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	2.07	1.97	1.98	2.01	2.04	2.05	S	2.03	2.05	2.05	2.04	2.03	2.02	2.01	2.01	2.02	2.02	2.09	2.05	2.02	2.02	2.02	2.04	2.03	1.97	2.09	2.03	24	
2	2.03	2.01	2.02	2.02	2.07	S	2.01	2.01	2.00	1.98	1.99	1.96	1.96	1.97	1.97	1.97	1.98	1.99	2.00	2.01	2.02	2.02	1.96	2.02	1.96	2.07	2.00	24	
3	2.03	2.03	2.02	2.02	S	2.01	2.01	2.01	2.01	2.01	2.01	2.10	2.17	2.09	2.04	1.98	1.99	1.98	1.97	1.97	1.97	1.96	1.96	1.96	1.96	2.17	2.01	24	
4	1.95	1.95	1.96	S	1.98	1.98	1.98	1.98	1.96	S1	1.97	1.97	1.99	2.00	1.99	1.98	1.98	1.98	1.99	2.00	2.01	2.02	2.04	2.06	1.95	2.06	1.99	23	
5	2.05	2.13	S	1.99	1.99	1.99	2.03	2.00	2.06	2.01	1.99	1.98	1.99	1.99	1.98	1.99	1.98	1.98	1.97	1.97	1.99	2.01	2.02	1.98	1.97	2.13	2.00	24	
6	1.98	S	2.00	2.00	1.99	2.00	1.99	2.00	2.00	2.01	2.02	2.01	2.01	2.00	2.00	2.00	2.01	1.99	1.99	1.99	2.01	2.02	2.02	2.02	1.98	2.02	2.00	24	
7	S	2.04	2.04	2.05	2.07	2.07	2.06	2.04	2.03	2.02	2.02	2.03	2.01	2.01	2.02	2.03	2.02	2.02	2.02	2.02	2.01	1.99	2.00	S	1.99	2.07	2.03	24	
8	2.02	2.05	2.03	2.05	2.03	2.06	2.05	2.04	2.04	2.02	2.04	2.03	2.04	2.06	2.05	2.05	2.05	2.04	2.01	2.00	2.00	S	2.02	2.00	2.06	2.03	24		
9	2.01	1.99	2.01	2.04	2.04	2.03	2.04	2.04	2.03	2.03	2.03	2.01	2.01	2.01	2.00	2.01	2.02	2.05	2.00	2.00	2.30	S	2.01	2.03	1.99	2.30	2.03	24	
10	2.04	2.05	2.03	2.04	2.05	2.04	2.01	2.01	2.00	1.98	1.98	1.97	1.96	1.96	1.96	1.96	1.97	1.97	1.95	1.94	S	1.95	1.95	1.96	1.94	2.05	1.99	24	
11	1.96	1.96	1.95	1.95	1.95	1.95	1.94	1.96	1.95	1.94	1.94	1.93	1.90	1.90	1.90	1.90	1.90	1.90	1.89	S	1.89	1.88	1.88	1.88	1.88	1.96	1.92	24	
12	1.88	1.89	1.89	1.89	1.89	1.90	1.89	1.89	1.89	C	C	C	Y	Y	Y	Y	C	C	C	1.98	1.99	1.99	1.98	1.98	1.98	1.88	1.99	1.92	20
13	1.98	1.98	1.98	1.97	1.98	1.97	1.97	1.98	1.97	1.97	1.98	1.98	1.99	2.00	2.01	1.99	1.99	S	1.99	1.99	1.98	1.98	1.98	1.98	1.97	2.01	1.98	24	
14	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.97	1.99	1.99	1.98	1.97	1.97	1.97	1.96	1.97	S	1.97	1.98	1.99	2.18	2.00	2.01	2.05	1.96	2.18	1.99	24	
15	2.05	2.04	2.06	2.05	2.04	2.04	2.06	2.03	2.03	2.02	2.03	2.04	2.14	2.10	2.13	S	2.02	2.01	2.01	2.03	2.07	2.11	2.15	2.19	2.01	2.19	2.06	24	
16	2.15	2.10	2.07	2.21	2.07	2.02	2.02	2.00	2.00	2.01	2.01	2.01	2.01	2.00	S	2.00	2.00	2.00	2.00	2.01	2.01	2.01	2.01	2.02	2.00	2.21	2.03	24	
17	2.02	2.03	2.04	2.04	2.05	2.09	2.08	2.04	2.04	2.04	2.04	2.05	2.06	S	2.08	2.08	2.09	2.09	2.08	2.06	2.09	2.10	2.08	2.07	2.02	2.10	2.06	24	
18	2.08	2.10	2.09	2.09	2.07	2.13	2.04	2.09	2.05	2.03	2.03	2.02	S	2.00	2.01	2.02	2.02	2.03	2.05	2.05	2.06	2.07	2.06	2.06	2.00	2.13	2.06	24	
19	2.06	2.07	2.06	2.06	2.06	2.08	2.05	2.03	2.03	2.03	S	2.01	2.00	2.00	2.00	1.99	1.99	2.00	1.99	2.00	1.99	2.00	2.00	2.00	1.99	2.08	2.03	24	
20	2.00	2.00	2.01	2.00	2.01	2.02	2.02	2.06	2.04	2.03	S	2.02	1.99	1.98	1.98	1.99	1.99	1.98	1.97	1.98	1.98	1.98	1.98	1.99	1.97	2.06	2.00	24	
21	2.03	2.05	2.07	2.04	2.03	2.02	2.07	2.02	2.02	S	2.05	2.20	2.06	2.08	2.09	2.09	2.06	2.33	2.30	2.21	2.08	2.02	2.02	2.30	2.02	2.33	2.10	24	
22	2.05	2.02	2.01	2.01	2.01	2.06	2.09	2.12	S	2.09	2.09	2.10	2.05	2.04	2.04	2.04	2.04	2.04	2.05	2.06	2.06	2.07	2.12	2.11	2.01	2.12	2.06	24	
23	2.14	2.14	2.14	2.19	2.30	2.23	2.05	S	2.07	2.06	2.07	2.06	2.07	2.05	2.05	2.04	2.04	2.03	2.03	2.03	2.03	2.03	2.02	2.02	2.02	2.30	2.08	24	
24	2.02	2.03	2.03	2.04	2.04	2.04	S	2.05	2.05	2.06	2.07	2.08	2.09	2.11	2.13	2.14	2.14	2.16	2.18	2.19	2.19	2.18	2.17	2.14	2.02	2.19	2.10	24	
25	2.13	2.11	2.07	2.08	2.04	S	2.05	2.06	2.10	2.12	2.21	2.11	2.08	2.12	2.18	2.15	2.15	2.06	2.05	2.05	2.06	2.08	2.12	2.17	2.04	2.21	2.10	24	
26	2.19	2.16	2.13	2.12	S	2.13	2.10	2.10	2.14	2.19	2.10	2.07	2.06	2.05	2.05	2.05	2.06	2.07	2.17	2.08	2.10	2.09	2.09	2.10	2.05	2.19	2.10	24	
27	2.14	2.25	2.09	S	2.14	2.12	2.15	2.13	2.09	2.13	2.09	2.10	2.09	2.09	2.08	2.08	2.08	2.08	2.08	2.07	2.07	2.07	2.07	2.07	2.07	2.25	2.10	24	
28	2.07	2.07	S	2.09	2.09	2.10	2.11	2.12	2.11	2.11	2.11	2.11	2.10	2.40	2.32	2.22	2.29	2.21	2.36	2.20	2.15	2.15	2.11	2.35	2.10	2.07	2.40	2.17	24
29	2.08	S	2.13	2.11	2.12	2.12	2.12	2.12	2.10	2.09	2.09	2.10	2.10	2.10	2.12	2.12	2.11	2.11	2.11	2.11	2.11	2.07	2.07	2.06	2.05	2.05	2.13	2.10	24
30	S	2.07	2.09	2.10	2.09	2.10	2.09	2.10	2.14	2.19	2.19	2.22	2.14	2.14	2.11	2.11	2.12	2.12	2.12	2.14	2.13	2.13	2.13	S	2.07	2.22	2.13	24	
31	2.13	2.14	2.13	2.14	2.14	2.13	2.13	2.13	2.14	2.13	2.12	2.12	2.12	2.12	2.11	2.10	2.09	2.08	2.06	2.05	2.05	2.04	S	2.03	2.03	2.14	2.10	24	
HOURLY MAX	2.19	2.25	2.14	2.21	2.30	2.23	2.15	2.13	2.14	2.19	2.21	2.22	2.40	2.32	2.22	2.29	2.21	2.36	2.30	2.21	2.30	2.18	2.35	2.30					
HOURLY AVG	2.05	2.05	2.04	2.05	2.05	2.05	2.04	2.04	2.04	2.05	2.05	2.05	2.05	2.04	2.04	2.04	2.04	2.05	2.04	2.04	2.04	2.05	2.03	2.04	2.05				

STATUS FLAG CODES

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

24 HR AVERAGES December 2018

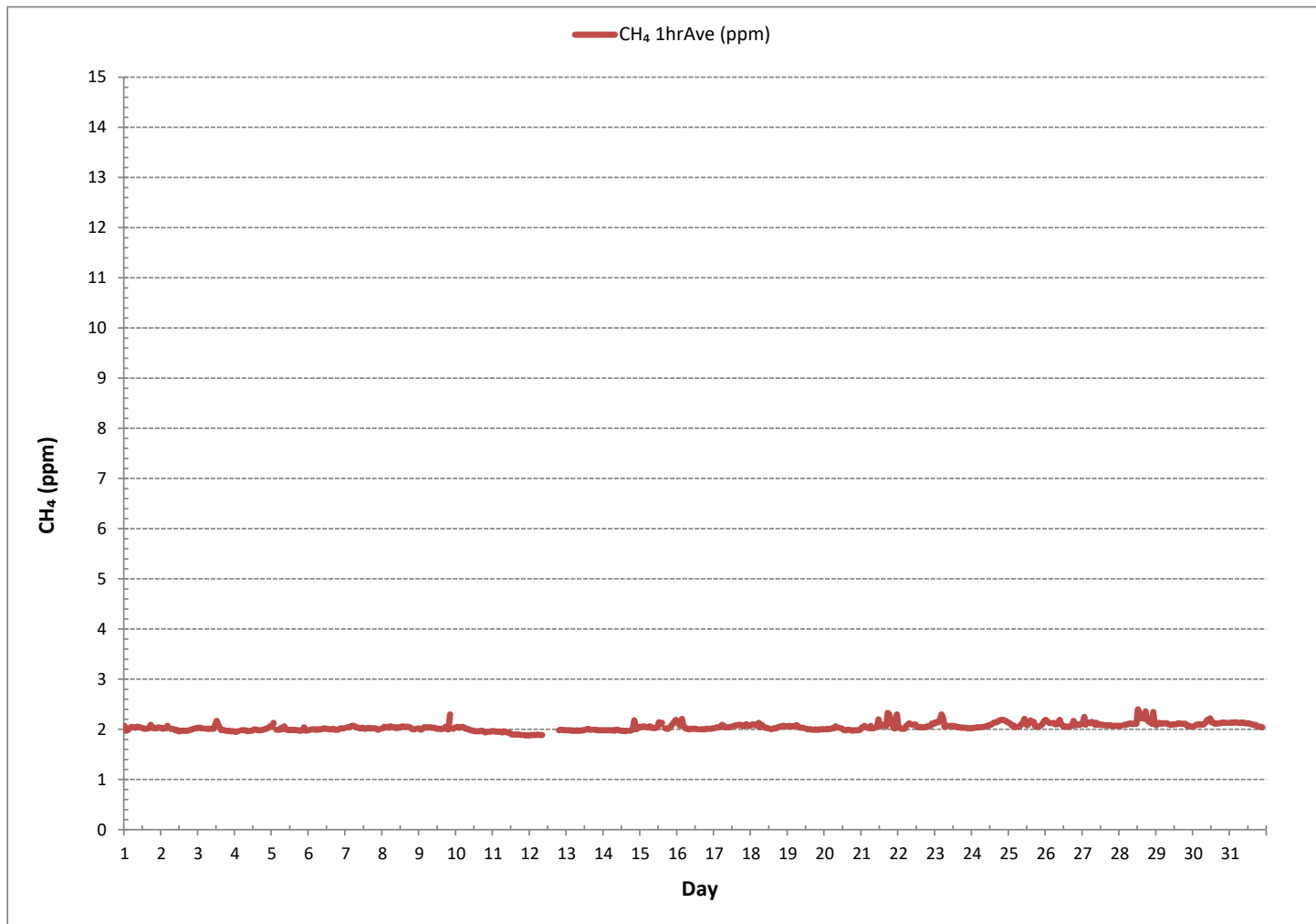


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	701			
MINIMUM 1-HR AVERAGE:	1.88 ppm	@ HOUR	21	ON DAY 11
MAXIMUM 1-HR AVERAGE:	2.40 ppm	@ HOUR	12	ON DAY 28
MAXIMUM 24-HR AVERAGE:	2.17 ppm			ON DAY 28
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	739 hrs	
MONTHLY CALIBRATION TIME:	6 hrs	AMD OPERATION UPTIME:	99.3 %	
STANDARD DEVIATION:	0.07	MONTHLY AVERAGE:	2.04 ppm	

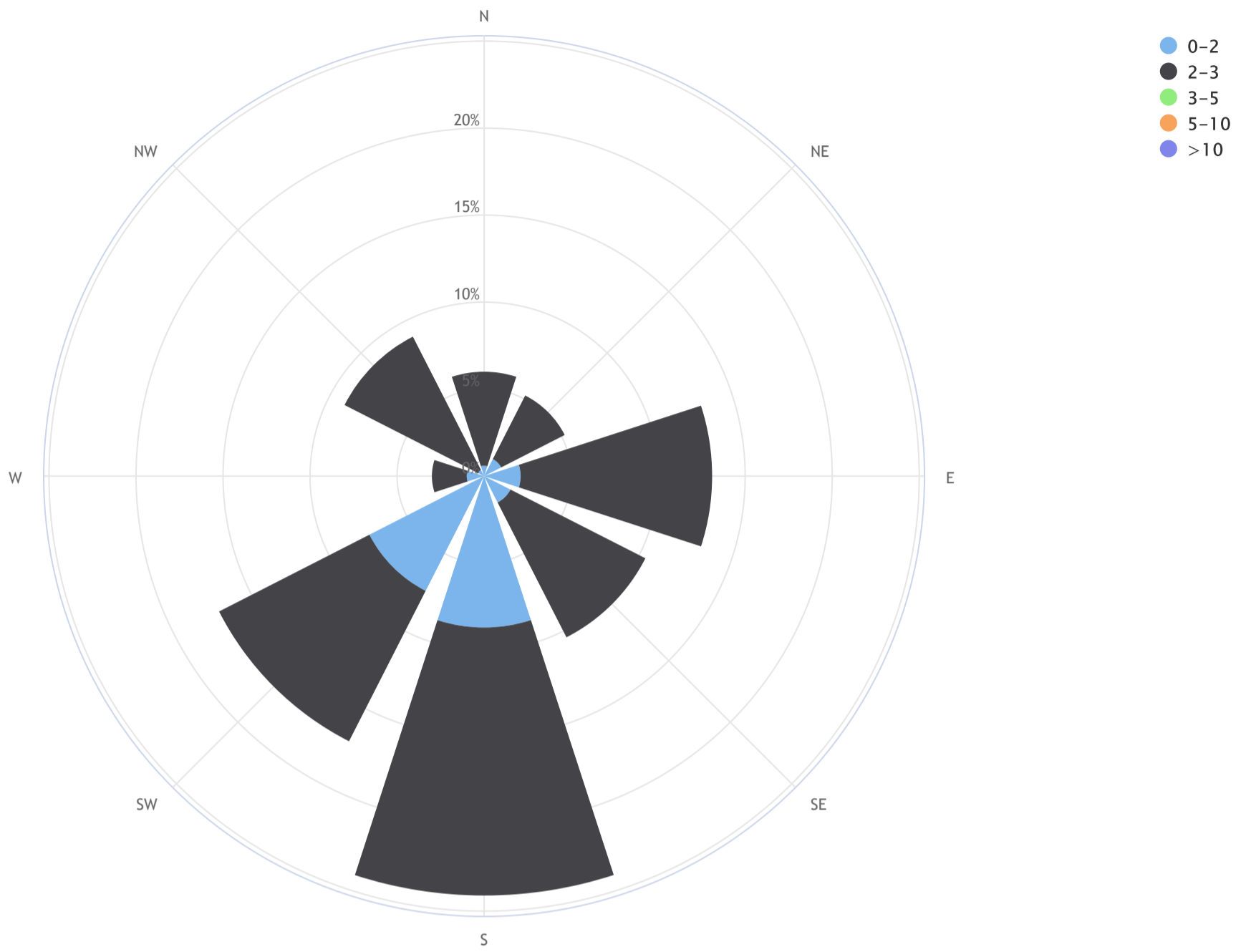


METHANE Hourly Averages (CH<sub>4</sub> ppm)



Peace River Area Monitoring Program Committee\_Three Creeks 986b Station\_CH4 (ppm)\_18/12

Pollutant Rose\_Wind Frequency (Blowing From)\_CALM Avg = 2.1\_CALM % = 12.0%



Direction	0-2	2-3	3-5	5-10	>10	TOTAL
N	0.6	5.4	0.0	0.0	0.0	6.0
NE	1.1	4.1	0.0	0.0	0.0	5.3
E	2.1	11.0	0.0	0.0	0.0	13.1
SE	1.7	8.7	0.0	0.0	0.0	10.4
S	8.7	15.4	0.0	0.0	0.0	24.1
SW	7.4	9.7	0.0	0.0	0.0	17.1
W	1.0	2.0	0.0	0.0	0.0	3.0
NW	0.4	8.6	0.0	0.0	0.0	9.0
Summary	23.1	64.9	0.0	0.0	0.0	88.0
CALM	1.0	11.0	0.0	0.0	0.0	12.0

CH4[ppm] Calibration: PRAMP\_986 Monthly: 18/12 Type: Span



Span Meas Span Ref Span Low Span High

***NON-METHANE HYDROCARBON***



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE  
Three Creeks 986b Station - December 2018

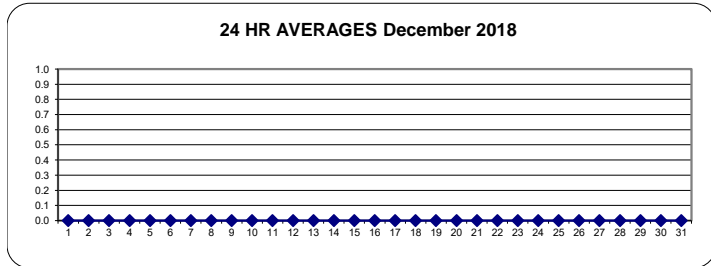
NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
2	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
3	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
4	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	S1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23
5	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
6	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
7	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	24
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	24
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	S	0.00	0.00	0.10	0.00	24
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	24
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	24
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	Y	Y	Y	Y	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
24	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
25	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
26	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
27	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
28	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
29	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
30	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	24
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	24
HOURLY MAX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00			
HOURLY AVG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			

STATUS FLAG CODES

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

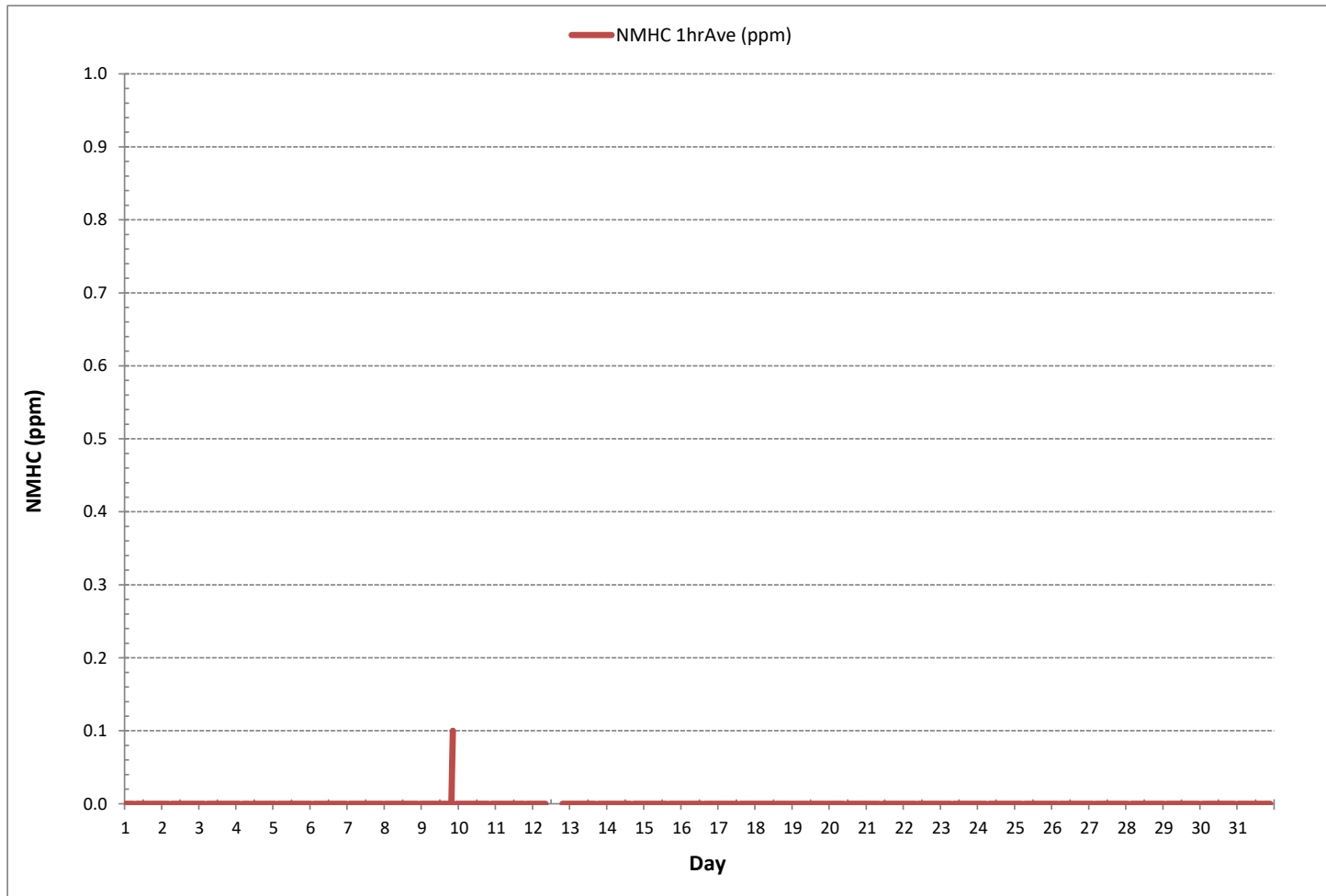
24 HR AVERAGES December 2018



MONTHLY SUMMARY

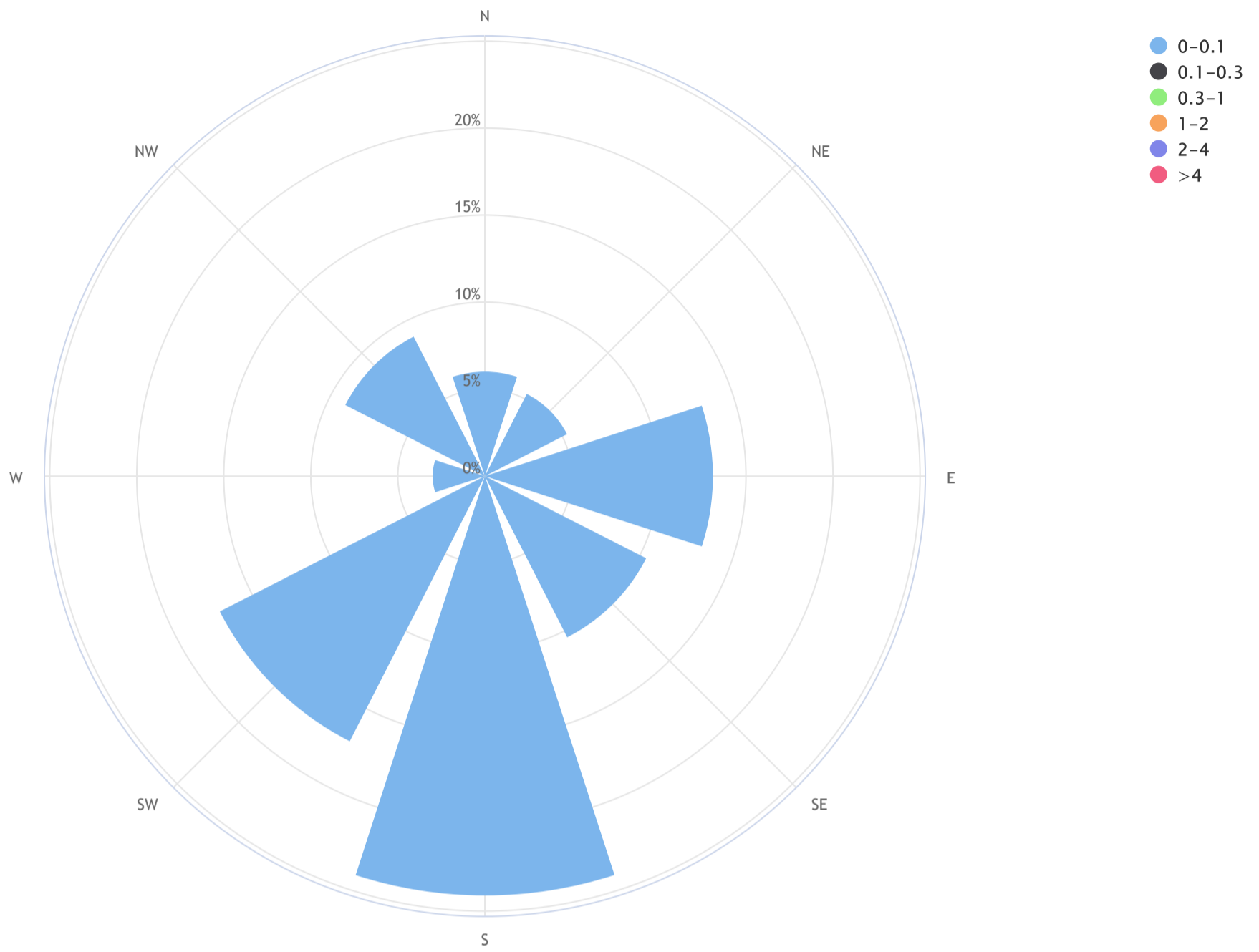
NUMBER OF NON-ZERO READINGS:	1
MINIMUM 1-HR AVERAGE:	0.00 ppm @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	0.10 ppm @ HOUR 20 ON DAY 9
MAXIMUM 24-HR AVERAGE:	0.00 ppm ON DAY 1
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	6 hrs
OPERATIONAL TIME:	739 hrs
AMD OPERATION UPTIME:	99.3 %
STANDARD DEVIATION:	0.00
MONTHLY AVERAGE:	0.00 ppm

NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)



Peace River Area Monitoring Program Committee\_Three Creeks 986b Station\_NMHC (ppm)\_18/12

Pollutant Rose\_Wind Frequency (Blowing From)\_CALM Avg = 0.0\_CALM % = 12.0%



Direction	0-0.1	0.1-0.3	0.3-1	1-2	2-4	>4	TOTAL
N	6.0	0.0	0.0	0.0	0.0	0.0	6.0
NE	5.3	0.0	0.0	0.0	0.0	0.0	5.3
E	13.1	0.0	0.0	0.0	0.0	0.0	13.1
SE	10.4	0.0	0.0	0.0	0.0	0.0	10.4
S	24.1	0.0	0.0	0.0	0.0	0.0	24.1
SW	17.1	0.0	0.0	0.0	0.0	0.0	17.1
W	3.0	0.0	0.0	0.0	0.0	0.0	3.0
NW	9.0	0.0	0.0	0.0	0.0	0.0	9.0
Summary	88.0	0.0	0.0	0.0	0.0	0.0	88.0
CALM	11.8	0.1	0.0	0.0	0.0	0.0	12.0

NMHC[ppm] Calibration: PRAMP\_986 Monthly: 18/12 Type: Span



■ Span Meas 
 — Span Ref 
 — Span Low 
 — Span High



***WIND SPEED***



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE  
Three Creeks 986b Station - December 2018

WIND SPEED Hourly Averages (WS kph)

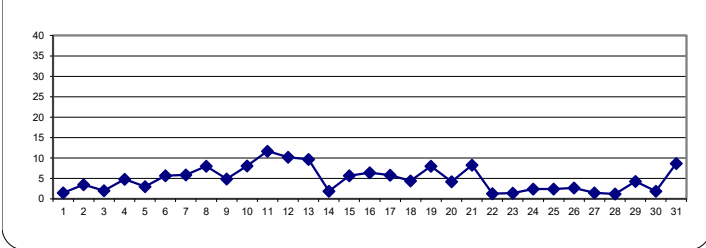
HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	0.7	1.8	1.8	1.7	1.6	2.0	2.7	2.0	3.3	3.1	3.0	2.9	3.0	4.2	4.4	3.2	2.5	1.8	2.4	2.9	4.3	0.8	0.7	0.6	0.6	4.4	1.5	24
2	1.9	1.7	1.9	2.1	1.0	3.1	3.6	3.4	2.1	1.7	2.9	4.6	5.5	4.5	5.4	4.4	4.7	4.7	4.4	5.7	6.3	5.7	5.5	4.8	1.0	6.3	3.5	24
3	4.1	4.4	3.6	3.5	3.1	3.6	1.9	1.1	1.3	0.8	0.7	0.4	3.9	0.6	0.1	0.1	0.1	0.1	0.1	4.2	5.9	5.4	6.1	6.8	0.1	6.8	2.0	24
4	3.5	3.9	5.6	4.2	3.5	1.8	4.8	2.5	4.5	5.5	6.4	7.3	5.1	4.9	12.6	15.0	10.0	11.5	11.0	10.0	7.5	10.4	10.2	8.5	1.8	15.0	4.8	24
5	6.3	1.9	1.8	1.7	1.1	2.0	1.2	1.9	2.3	1.9	2.6	3.8	4.3	5.5	8.4	5.6	6.5	8.0	7.4	6.8	5.0	2.8	4.8	5.6	1.1	8.4	3.0	24
6	4.6	5.0	5.0	3.6	4.3	4.0	3.6	3.9	3.6	3.9	4.2	6.0	7.5	7.5	8.0	10.1	8.5	8.5	6.7	7.4	6.9	5.3	6.6	4.8	3.6	10.1	5.7	24
7	8.6	10.7	9.9	8.1	7.2	7.1	6.1	4.7	4.5	5.2	5.7	6.3	6.9	6.5	6.9	6.6	6.5	5.5	5.2	4.7	5.2	5.9	5.8	7.3	4.5	10.7	5.9	24
8	5.8	4.7	6.2	6.6	7.1	7.0	9.3	8.8	9.0	11.2	10.8	11.6	12.1	11.8	11.3	9.0	8.3	5.9	7.4	6.1	7.6	6.6	8.2	10.6	4.7	12.1	8.0	24
9	6.9	6.7	6.9	7.4	7.2	8.6	10.0	10.3	9.8	7.0	5.9	4.3	7.6	5.9	5.8	4.7	4.3	1.3	2.3	2.0	1.7	3.9	5.2	6.0	1.3	10.3	4.9	24
10	6.0	5.7	7.5	8.6	7.0	8.2	9.5	12.1	8.6	6.0	8.6	10.2	10.7	10.4	10.8	7.4	6.9	6.1	7.5	9.2	10.3	7.6	8.6	8.0	5.7	12.1	8.1	24
11	6.6	6.9	5.9	10.7	14.9	12.0	12.5	13.3	11.1	13.1	13.6	15.9	10.7	15.8	18.2	15.9	16.4	12.7	12.9	11.7	12.3	15.4	13.1	11.6	5.9	18.2	11.7	24
12	10.2	10.4	12.0	12.4	13.5	11.1	8.4	9.4	9.4	9.2	10.5	11.8	14.2	13.3	14.7	12.6	12.2	10.3	8.1	7.4	9.6	7.2	8.5	10.1	7.2	14.7	10.2	24
13	12.2	14.8	14.3	16.8	15.5	12.2	8.8	7.3	10.0	10.7	11.3	11.7	11.7	10.6	11.3	13.4	12.6	12.3	9.7	6.9	5.3	7.1	9.3	9.6	5.3	16.8	9.7	24
14	5.3	6.8	10.5	6.8	6.5	6.5	7.7	4.0	3.2	3.3	4.9	6.4	6.0	6.3	4.5	3.2	3.9	4.4	5.1	4.8	2.4	4.2	4.4	4.7	2.4	10.5	1.9	24
15	5.4	5.6	7.7	14.2	5.1	10.0	12.6	9.2	10.5	15.4	16.6	14.3	16.6	13.4	6.6	3.1	2.0	2.3	3.5	3.9	2.5	3.0	2.6	5.3	2.0	16.6	5.7	24
16	4.7	4.5	2.8	1.4	1.4	5.1	9.4	13.7	13.0	10.0	9.6	9.4	7.6	7.4	6.1	5.8	7.2	6.6	6.2	6.9	4.0	4.0	5.6	4.9	1.4	13.7	6.4	24
17	6.7	4.0	5.3	4.8	7.5	6.6	2.9	5.1	6.2	9.6	11.1	11.7	10.5	10.1	9.0	8.2	7.7	6.1	4.7	6.0	6.5	7.1	2.0	5.2	2.0	11.7	5.8	24
18	7.7	4.7	6.6	5.9	5.7	3.8	6.0	1.2	1.7	4.0	5.3	6.8	5.8	5.6	8.2	6.9	6.1	4.2	6.2	5.1	5.7	6.5	6.6	7.7	1.2	8.2	4.4	24
19	7.5	5.0	7.1	8.5	8.2	7.2	5.1	6.0	9.0	10.0	9.4	8.7	10.7	10.0	10.3	8.4	9.3	9.4	8.0	7.6	6.4	7.1	8.1	5.8	5.0	10.7	8.0	24
20	5.1	6.1	4.5	5.1	3.5	3.6	6.6	4.9	5.8	5.9	4.5	5.3	4.9	7.8	7.3	8.3	10.9	9.6	8.8	7.9	5.2	5.4	3.2	3.1	3.1	10.9	4.2	24
21	4.9	6.3	8.0	11.8	13.4	13.6	14.3	15.8	12.7	10.1	10.4	10.8	15.9	12.5	13.2	7.1	4.5	4.7	4.1	4.7	2.7	1.8	0.6	1.1	0.6	15.9	8.3	24
22	1.5	2.1	1.2	1.9	1.9	2.2	1.6	1.5	1.6	2.4	1.3	1.0	1.7	2.3	2.2	3.0	2.5	1.9	0.9	1.4	1.0	1.3	0.7	0.6	0.6	3.0	1.3	24
23	0.9	1.0	0.7	0.1	0.5	1.5	2.2	2.2	2.1	2.2	1.7	2.0	2.4	2.5	1.9	2.0	1.8	2.0	1.8	1.4	2.8	1.8	1.3	1.5	0.1	2.8	1.4	24
24	1.3	1.6	2.4	3.2	2.3	2.6	1.8	2.1	2.5	2.9	4.1	3.3	3.1	3.3	3.3	3.4	2.2	3.4	3.9	2.3	1.4	2.8	1.9	2.8	1.3	4.1	2.4	24
25	4.0	4.4	4.5	6.1	5.5	5.9	4.1	3.3	2.4	3.3	4.3	1.8	3.1	6.2	6.7	3.1	1.7	1.8	1.9	1.5	2.3	2.0	2.1	2.1	1.5	6.7	2.4	24
26	1.6	1.5	2.2	3.5	3.9	3.5	3.3	2.7	1.5	1.8	2.5	3.8	2.3	3.6	4.9	3.9	4.1	2.9	2.4	1.9	2.1	5.7	5.7	2.6	1.5	5.7	2.7	24
27	1.2	2.1	1.7	2.1	1.0	0.7	1.3	3.1	0.5	2.4	0.9	1.0	2.4	2.5	2.7	2.0	1.9	1.6	1.9	1.9	2.0	1.8	1.9	2.6	0.5	3.1	1.5	24
28	2.0	2.3	2.0	1.1	1.1	3.1	5.6	6.1	5.2	4.7	4.3	3.5	0.3	1.8	3.1	2.0	2.1	1.6	2.4	1.3	0.7	0.5	0.3	1.0	0.3	6.1	1.2	24
29	2.9	3.2	1.8	1.1	1.4	0.6	3.0	3.5	4.6	4.8	7.9	7.0	6.5	6.8	8.0	9.1	9.2	7.9	7.3	6.3	6.9	9.0	9.4	8.2	0.6	9.4	4.3	24
30	8.1	7.5	8.1	7.6	7.2	7.6	6.1	4.7	5.5	4.5	4.1	3.9	4.9	4.7	1.3	2.8	5.8	6.1	6.7	7.3	6.5	8.3	6.5	5.9	1.3	8.3	1.9	24
31	4.3	4.7	6.2	5.5	6.9	7.6	8.2	7.3	10.2	6.4	8.4	10.0	9.4	10.5	10.3	10.0	9.4	9.0	9.6	12.5	12.8	14.9	16.3	11.8	4.3	16.3	8.7	24
HOURLY MAX	12.2	14.8	14.3	16.8	15.5	13.6	14.3	15.8	13.0	15.4	16.6	15.9	16.6	15.8	18.2	15.9	16.4	12.7	12.9	12.5	12.8	15.4	16.3	11.8				

STATUS FLAG CODES

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

LAST CALIBRATION:	April 4, 2018
DECLINATION:	MAGNETIC DECLINATION 15 DEGREE EAST

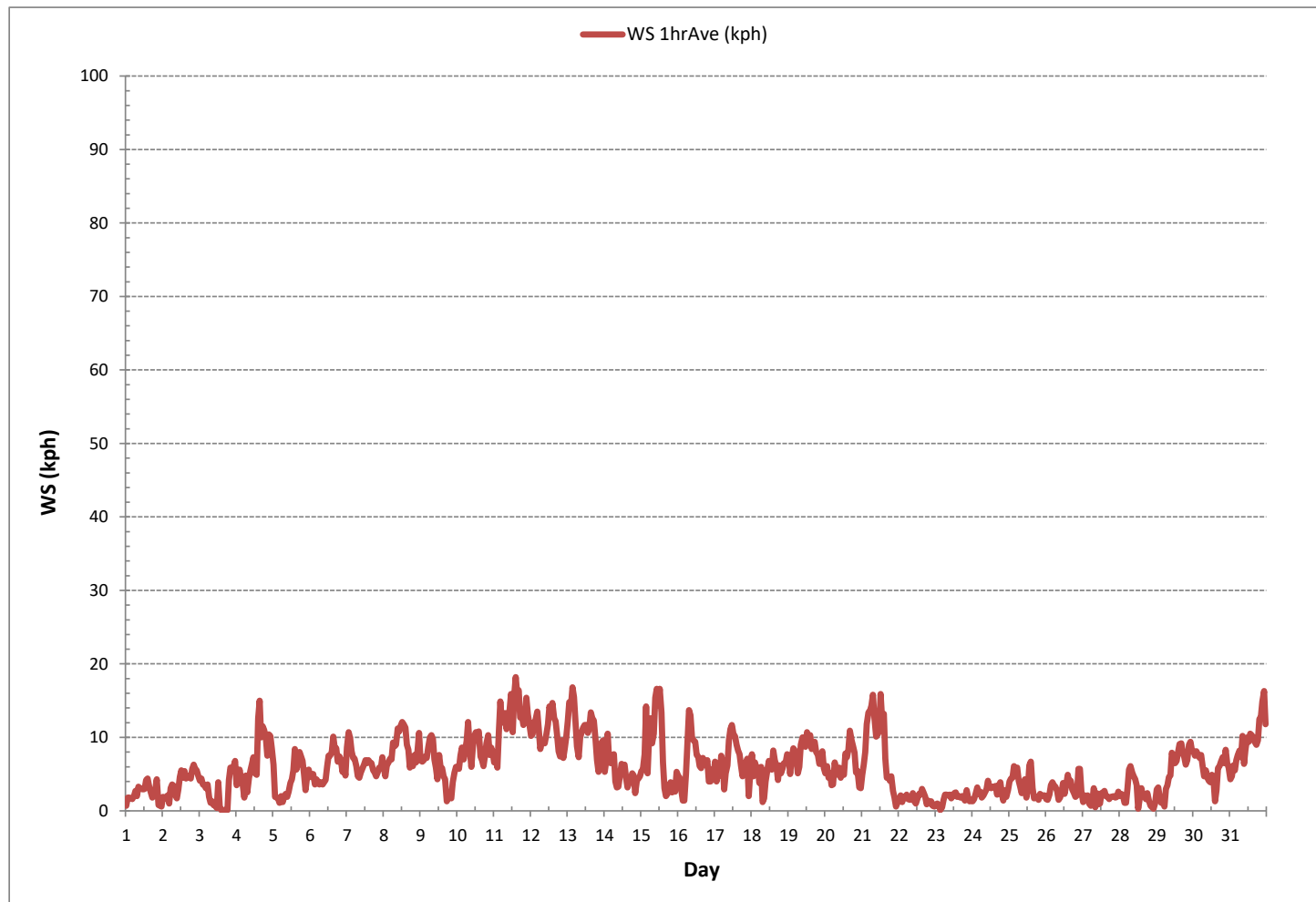
24 HR AVERAGES December 2018



MONTHLY SUMMARY

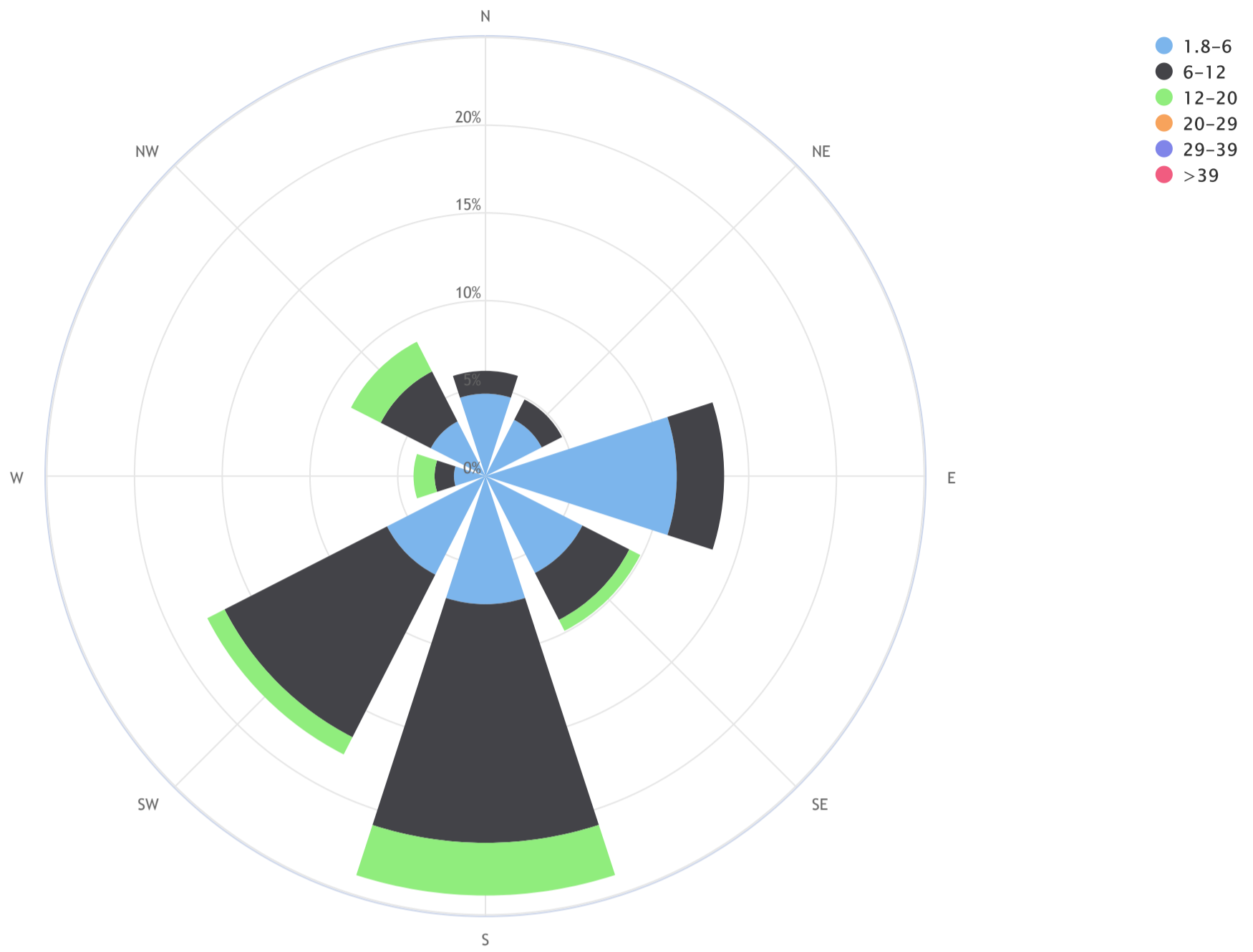
NUMBER OF NON-ZERO READINGS:	744					
MINIMUM 1-HR AVERAGE:	0.1	kph	@ HOUR	14	ON DAY	3
MAXIMUM 1-HR AVERAGE:	18.2	kph	@ HOUR	14	ON DAY	11
MAXIMUM 24-HR AVERAGE:	11.7	kph			ON DAY	11
MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	744 hrs		
STANDARD DEVIATION:	3.7		AMD OPERATION UPTIME:	100.0 %		
			MONTHLY AVERAGE:	2.4 kph		

WIND SPEED Hourly Averages (WS kph)



Peace River Area Monitoring Program Committee\_Three Creeks 986b Station\_18/12

Wind Rose\_Wind Frequency (Blowing From)\_CALM Avg = 1.1\_CALM % = 11.4%



Direction	1.8-6	6-12	12-20	20-29	29-39	>39	TOTAL
N	4.7	1.3	0.0	0.0	0.0	0.0	6.0
NE	3.6	1.3	0.0	0.0	0.0	0.0	5.0
E	10.9	2.7	0.0	0.0	0.0	0.0	13.6
SE	6.2	3.0	0.7	0.0	0.0	0.0	9.8
S	7.3	13.6	3.0	0.0	0.0	0.0	23.8
SW	6.3	10.4	1.1	0.0	0.0	0.0	17.8
W	1.8	1.1	1.2	0.0	0.0	0.0	4.0
NW	3.5	3.2	1.9	0.0	0.0	0.0	8.6
Summary	44.2	36.6	7.8	0.0	0.0	0.0	88.6
CALM	11.4	0.0	0.0	0.0	0.0	0.0	11.4

***WIND DIRECTION***



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE  
Three Creeks 986b Station - December 2018

WIND DIRECTION Hourly Averages (WD)

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

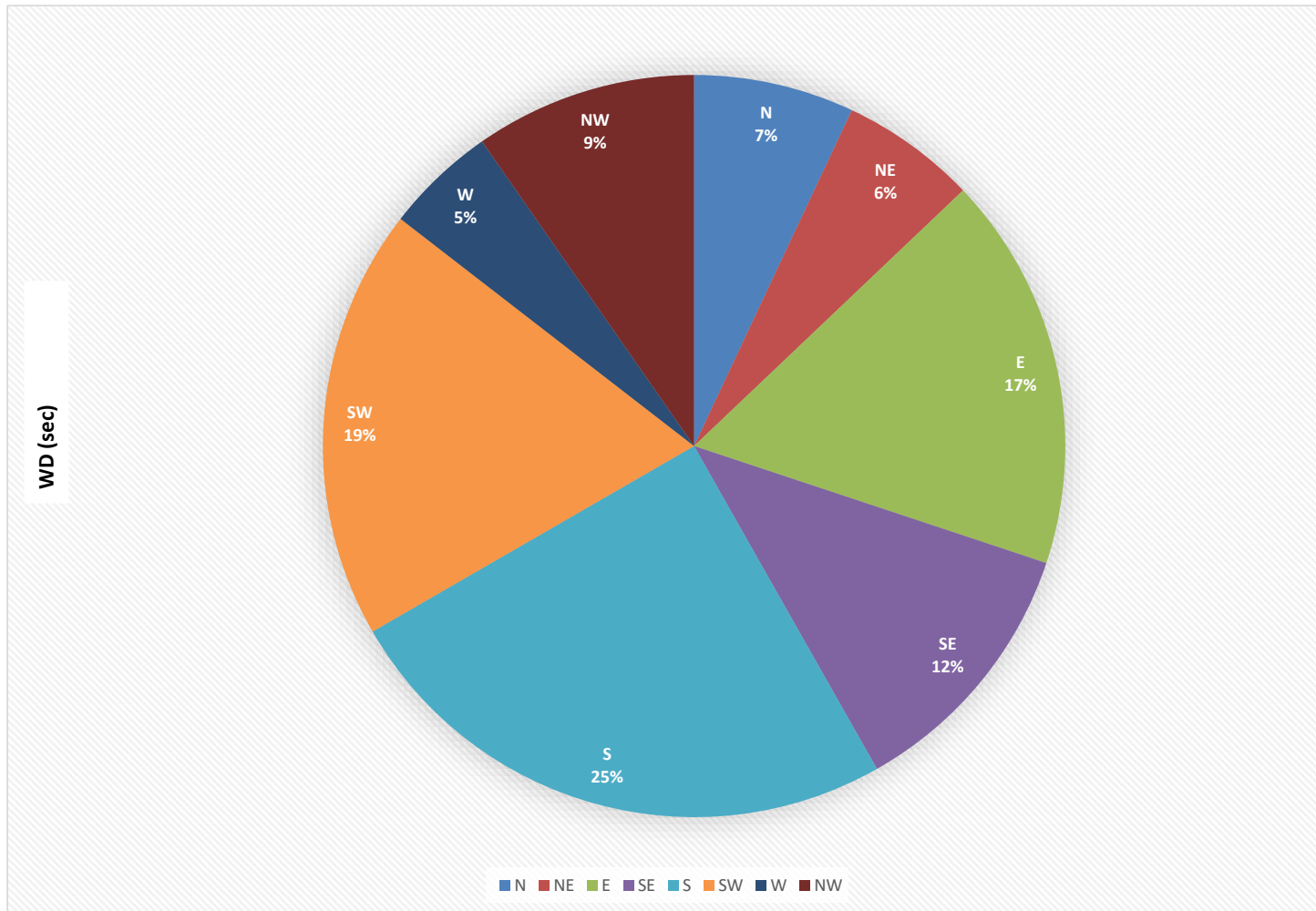
STATUS FLAG CODES

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

LAST CALIBRATION:	April 4, 2018
DECLINATION:	MAGNETIC DECLINATION 15 DEGREE EAST

MONTHLY CALIBRATION TIME:	0 hrs	OPERATIONAL TIME:	744 hrs
STANDARD DEVIATION:	85	AMD OPERATION UPTIME:	100.0 %
		MONTHLY AVERAGE:	192 (S)

WIND DIRECTION Hourly Averages (WD)



WDR[degwdr] Station: PRAMP\_986 Monthly: 18/12 Type: AVG 1 Hr. [1 Hr.]



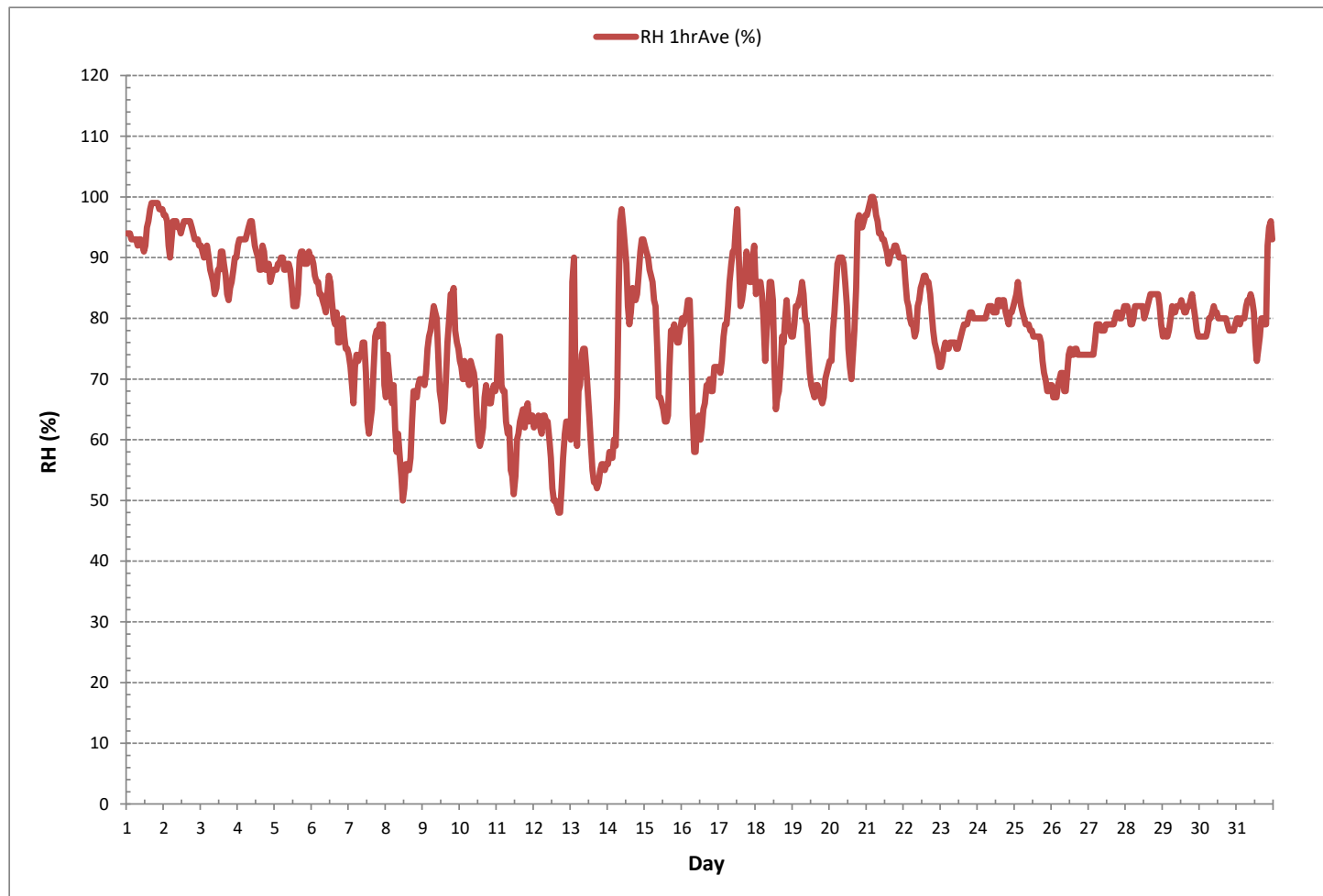
— WDR[degwdr]



***RELATIVE HUMIDITY***



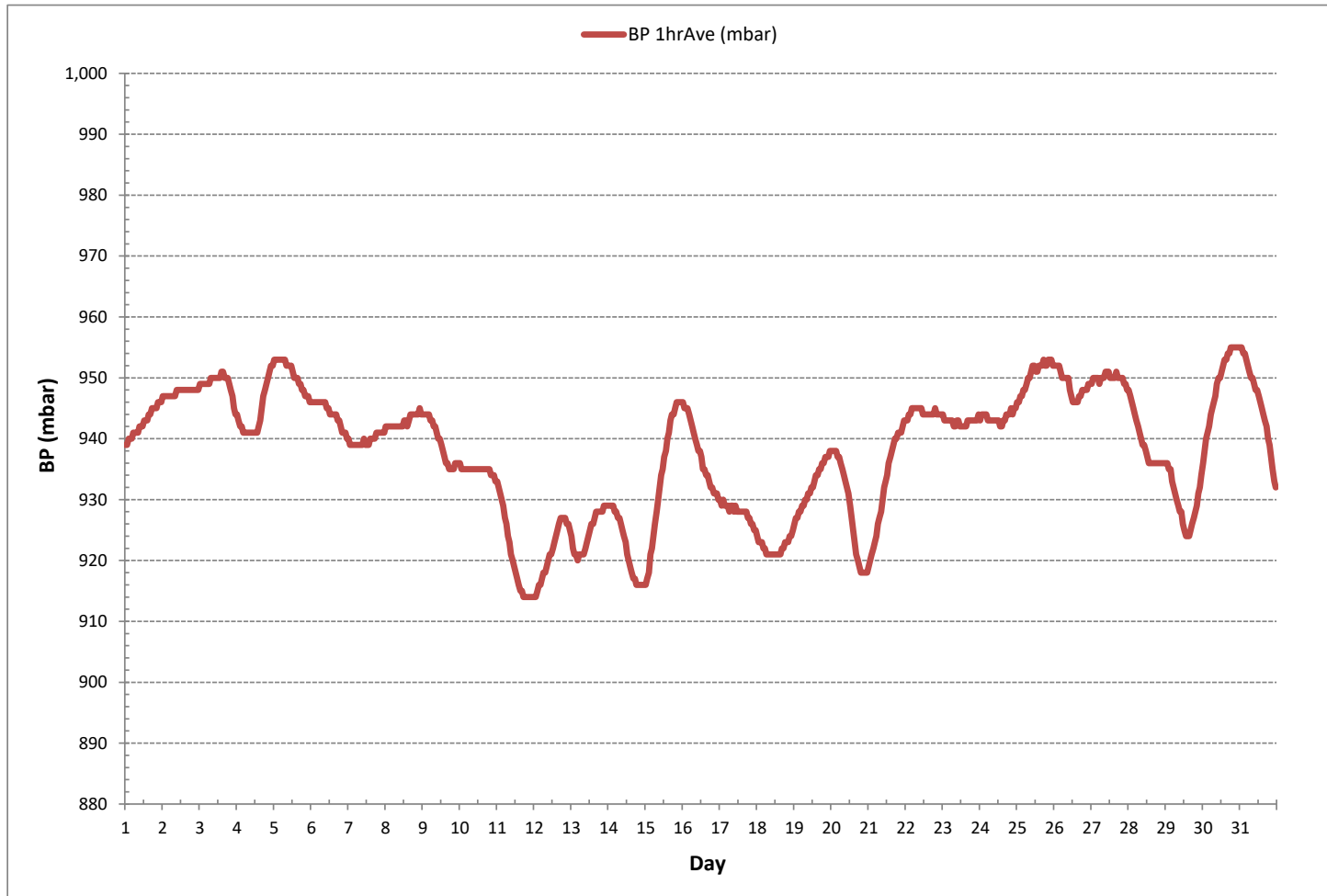
RELATIVE HUMIDITY Hourly Averages (RH %)



## ***BAROMETRIC PRESSURE***



BAROMETRIC PRESSURE Hourly Averages (BP mbar)

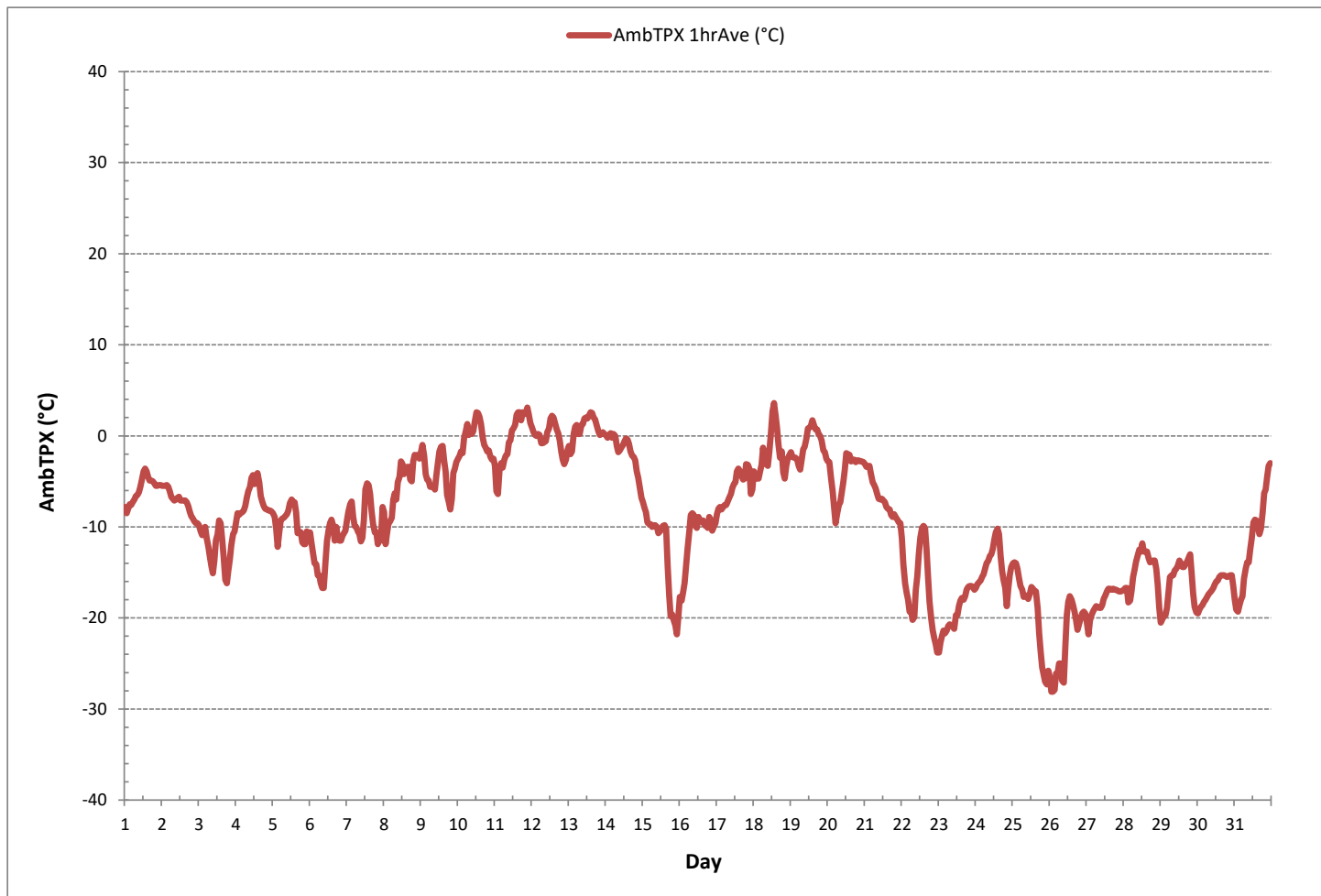


***AMBIENT TEMPERATURE***





AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



***STATION TEMPERATURE***



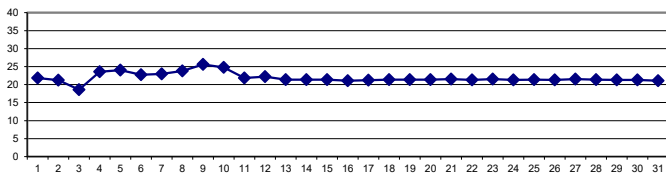
STATION TEMPERATURE Hourly Averages (StnTPX °C)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	21.5	21.1	20.9	21.0	21.0	21.0	21.1	21.2	21.3	21.4	21.6	22.0	22.4	22.8	23.0	22.8	22.6	22.4	22.3	22.1	22.0	21.9	22.0	22.2	20.9	23.0	21.8	24	
2	22.2	22.1	22.1	22.2	22.1	22.0	21.8	21.7	21.4	21.4	21.5	21.6	21.7	21.8	21.8	21.6	21.3	20.9	20.6	20.2	19.8	19.4	19.2	19.1	19.1	22.2	21.2	24	
3	19.0	18.9	18.6	18.5	19.0	18.8	17.9	17.0	17.0	16.3	16.7	17.7	18.9	20.3	20.9	20.2	18.8	17.4	17.2	19.0	20.5	19.2	19.2	19.9	16.3	20.9	18.6	24	
4	19.9	20.6	21.3	22.8	22.6	22.3	22.4	22.4	21.9	22.9	23.5	26.2	26.1	25.7	25.4	25.3	25.1	25.4	24.7	24.3	23.9	23.9	23.9	23.8	19.9	26.2	23.6	24	
5	23.8	24.3	24.1	23.6	23.6	23.9	24.1	24.3	24.3	24.4	24.4	26.7	26.0	25.6	25.0	25.0	23.8	22.8	22.3	24.1	23.0	22.2	22.4	22.9	22.2	26.7	24.0	24	
6	21.9	21.5	22.5	21.5	20.6	20.2	20.2	21.2	21.1	23.1	25.2	25.3	24.4	24.5	24.6	23.8	22.7	21.8	21.9	21.9	23.4	24.1	24.3	24.2	20.2	25.3	22.7	24	
7	22.8	23.0	23.1	23.7	23.4	23.2	22.7	22.6	22.7	22.3	23.0	23.1	23.9	25.3	25.1	24.8	24.1	23.3	22.9	22.8	21.8	21.5	21.1	21.0	21.0	25.3	23.0	24	
8	21.5	21.8	21.8	22.1	21.3	22.8	22.5	22.9	22.6	23.0	23.6	24.3	25.5	25.5	25.8	25.5	25.3	25.0	24.6	24.4	24.7	25.0	25.0	24.9	21.3	25.8	23.8	24	
9	25.0	25.5	25.7	25.4	25.0	24.5	25.1	24.7	23.9	25.9	26.1	26.1	25.6	25.7	25.5	25.6	25.9	26.2	26.2	26.2	26.3	26.0	25.8	25.9	23.9	26.3	25.6	24	
10	25.8	25.7	25.7	25.7	25.7	25.7	25.7	25.4	25.6	25.8	25.7	25.3	25.4	25.2	25.1	25.3	25.1	24.7	22.0	22.6	23.1	23.3	23.1	23.2	22.0	25.8	24.8	24	
11	23.0	22.7	22.2	22.3	22.2	22.2	22.3	22.7	23.1	23.2	24.1	21.9	20.8	21.0	20.8	20.9	20.9	21.0	20.9	21.0	21.3	21.2	21.2	21.2	20.8	24.1	21.8	24	
12	21.3	21.4	21.5	21.5	21.4	21.5	21.4	21.3	21.3	21.8	23.0	23.9	23.7	23.6	24.0	23.9	23.8	23.7	22.4	21.3	21.2	21.3	21.2	21.0	21.0	24.0	22.2	24	
13	21.0	20.9	20.8	20.9	20.9	21.0	21.1	21.2	21.1	21.4	21.6	21.8	21.8	21.9	21.8	22.1	21.8	21.9	21.6	21.5	21.4	21.4	21.1	21.3	20.8	22.1	21.4	24	
14	21.3	21.5	21.2	21.3	21.3	21.4	21.3	21.2	21.5	21.4	21.5	21.6	21.4	21.4	21.3	21.5	21.4	21.3	21.2	21.6	21.6	21.5	21.6	21.5	21.6	21.2	21.6	21.4	24
15	21.5	21.5	21.5	21.4	21.5	21.5	21.3	21.6	21.6	21.8	22.1	22.0	21.4	21.2	21.2	21.2	21.2	21.2	21.4	21.3	21.3	21.4	21.3	21.3	21.2	22.1	21.4	24	
16	21.3	21.2	21.4	21.5	21.4	21.3	20.9	20.9	20.8	20.8	21.1	20.9	20.9	21.1	21.2	21.1	21.1	21.2	21.0	21.1	21.3	21.4	21.2	21.3	20.8	21.5	21.1	24	
17	21.1	21.2	21.2	21.2	21.0	21.1	21.3	21.4	21.3	21.1	21.0	21.0	21.0	21.0	21.0	21.0	21.1	21.2	21.0	21.1	21.3	21.2	21.2	21.6	21.4	21.0	21.6	21.2	24
18	21.3	21.5	21.4	21.4	21.4	21.5	21.3	21.5	21.6	21.5	21.4	21.3	21.4	21.9	21.9	21.2	21.4	21.3	21.5	21.2	21.2	21.3	21.3	21.4	21.2	21.9	21.4	24	
19	21.4	21.4	21.5	21.3	21.4	21.3	21.4	21.3	21.4	21.3	21.4	21.4	21.7	21.6	21.4	21.2	21.3	21.4	21.5	21.6	21.5	21.3	21.4	21.3	21.2	21.7	21.4	24	
20	21.5	21.4	21.4	21.3	21.4	21.4	21.2	21.3	21.3	21.4	21.3	21.3	21.4	21.4	21.4	21.3	21.4	21.1	21.3	21.4	21.1	21.3	21.6	21.6	21.6	21.1	21.6	21.4	24
21	21.6	21.6	21.5	21.6	21.6	21.4	21.3	21.3	21.3	21.4	21.4	21.4	21.5	21.6	21.5	21.4	21.5	21.6	21.5	21.6	21.6	21.5	21.6	21.6	21.3	21.6	21.5	24	
22	21.5	21.4	21.3	21.4	21.4	21.3	21.3	21.4	21.4	21.4	21.4	21.6	21.3	20.9	21.0	21.2	21.3	21.4	21.3	21.2	21.4	21.3	21.3	21.4	20.9	21.6	21.3	24	
23	21.4	21.4	21.4	21.5	21.4	21.5	21.4	21.6	21.4	21.5	21.4	21.7	21.5	21.5	21.5	21.5	21.5	21.4	21.5	21.6	21.4	21.3	21.3	21.5	21.3	21.7	21.5	24	
24	21.4	21.4	21.3	21.2	21.3	21.3	21.4	21.3	21.3	21.2	21.1	21.4	21.4	21.4	21.1	21.3	21.4	21.4	21.4	21.4	21.4	21.5	21.4	21.5	21.1	21.5	21.3	24	
25	21.5	21.5	21.5	21.5	21.4	21.5	21.4	21.5	21.4	21.5	21.4	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.4	21.4	21.4	21.4	21.3	21.6	21.4	24
26	21.3	21.3	21.4	21.4	21.4	21.3	21.3	21.5	21.4	21.4	21.5	21.5	21.5	21.2	21.2	21.2	21.3	21.4	21.4	21.3	21.5	21.1	21.1	21.3	21.1	21.5	21.3	24	
27	21.5	21.4	21.5	21.4	21.4	21.5	21.5	21.4	21.5	21.5	21.4	21.5	21.6	21.6	21.5	21.5	21.5	21.5	21.5	21.4	21.4	21.5	21.5	21.5	21.4	21.6	21.5	24	
28	21.4	21.3	21.3	21.4	21.5	21.4	21.1	21.0	21.2	21.2	21.3	21.5	21.4	21.5	21.5	21.5	21.5	21.5	21.5	21.4	21.5	21.4	21.4	21.4	21.0	21.6	21.4	24	
29	21.3	21.4	21.4	21.4	21.4	21.5	21.5	21.3	21.3	21.3	21.1	21.1	21.2	21.2	21.3	21.3	21.3	21.4	21.4	21.3	21.4	21.5	21.4	21.4	21.1	21.5	21.3	24	
30	21.4	21.3	21.5	21.4	21.4	21.5	21.4	21.4	21.4	21.5	21.5	21.5	21.5	21.5	21.5	21.4	21.2	21.1	21.1	21.2	21.1	21.1	21.1	21.2	21.1	21.5	21.3	24	
31	21.3	21.3	21.3	21.3	21.2	21.3	21.1	21.1	21.0	21.2	21.1	21.0	21.1	21.0	21.1	21.0	21.0	21.1	21.0	21.0	21.0	21.1	21.1	20.9	21.2	20.9	21.3	21.1	24
HOURLY MAX	25.8	25.7	25.7	25.7	25.7	25.7	25.7	25.4	25.6	25.9	26.1	26.7	26.1	25.7	25.8	25.6	25.9	26.2	26.2	26.2	26.3	26.0	25.8	25.9					
HOURLY AVG	21.7	21.8	21.8	21.8	21.7	21.7	21.7	21.7	21.7	21.9	22.1	22.3	22.3	22.4	22.3	22.3	22.1	21.9	21.7	21.8	21.8	21.8	21.7	21.8					

STATUS FLAG CODES

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

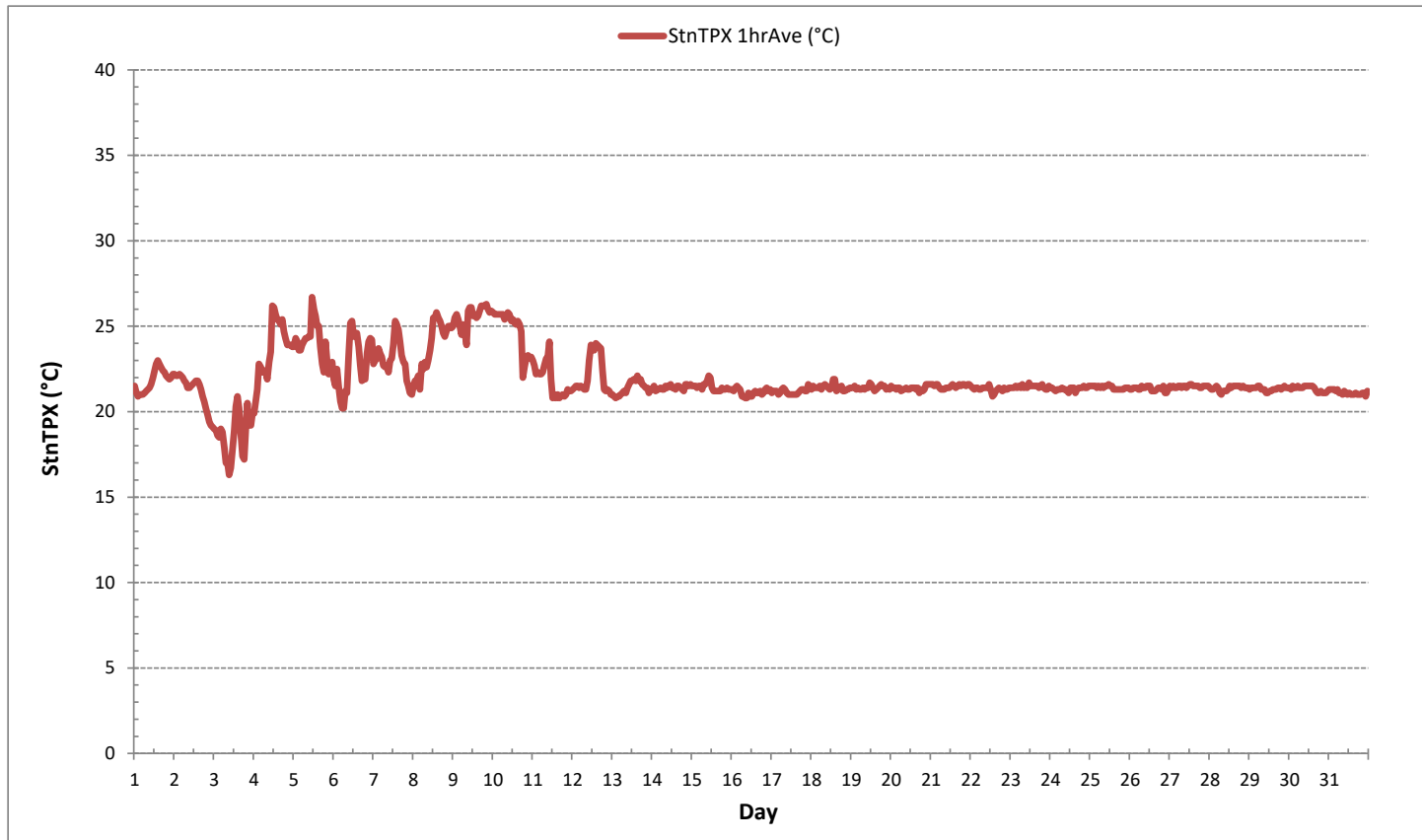
24 HR AVERAGES December 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	16.3 °C	@ HOUR	9	ON DAY	3
MAXIMUM 1-HR AVERAGE:	26.7 °C	@ HOUR	11	ON DAY	5
MAXIMUM 24-HR AVERAGE:	25.6 °C			ON DAY	9
OPERATIONAL TIME:				744	hrs
AMD OPERATION UPTIME:				100.0	%
STANDARD DEVIATION:	1.5	MONTHLY AVERAGE:		21.9	°C

STATION TEMPERATURE Hourly Averages (StnTPX °C)



***APPENDIX II***  
***EQUIPMENT CALIBRATION RESULTS***

***SULPHUR DIOXIDE***



### Thermo 43C Sulphur Dioxide Analyzer Calibration

Date:	December 12, 2018	Barometer/B.P./units:	F.S. 10528 expires January 15, 2019	925	millibars
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 10528 expires January 15, 2019	23	°C
Location/Station Name:	986b	Weather Conditions:	Mainly sunny		
Parameter:	Sulphur Dioxide	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	14:01	Performed By/Reviewer:	Chris Wesson	Rob Fisher	
End Time 24 hr. (mst):	18:05	Cal Gas Expiry Date:	October 24, 2020		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	n/a		
Analyzer:	Serial Number/Owner: 43C-62339-335   Maxxam	Range ppb:	500		
	Last Calibration Date: November 6, 2018	As Found C.F.:	0.995		
	Previous C.F.:	New C.F.:	1.000		

Calibration Standards:	Low Flow Meter ID/Expiry Date: N/A	Standard Calibration Points for Ranges	
	High Flow Meter ID/Expiry Date: N/A	Point	ppb
	Calibrator ID/Expiry Date: Sabio id# 3860808 expires August 21, 2019	High	380
	Cal Gas Cylinder I.D. #: LL108015	Mid	180
	Cal Gas Conc. (ppm): 47.9	Low	90

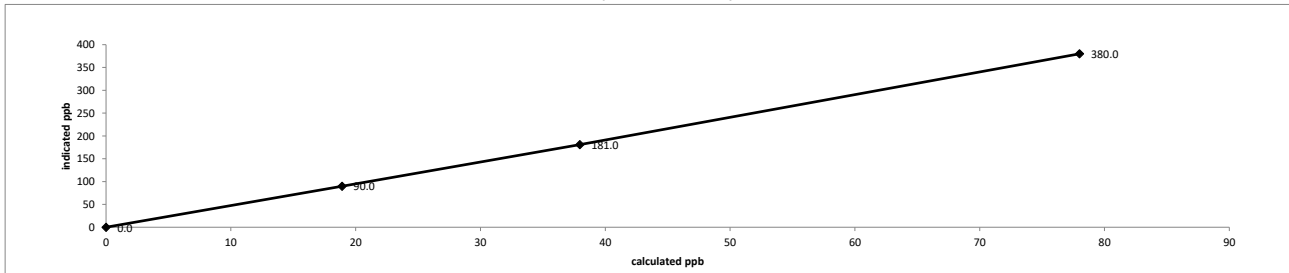
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
	Diluent	Cal Gas	Total			
as found zero	6000	0.00	6000	0.0	-0.1	n/a
as found high	5951	47.60	5999	380.1	382	0.995
adjusted zero	5999	0.00	5999	0.0	0	n/a
adjusted high	5951	47.60	5999	380.1	380	1.000
mid	5974	22.50	5996	179.7	181	0.993
low	5987	11.30	5998	90.2	90	1.003
calibrator zero	6000	0.00	6000	0.0	0.2	n/a
Average C.F. =						0.999

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.000		0.95-1.05
b (Intercept as % of full scale) =	-0.04%		± 3% F.S.
% change in C.F. from last cal =	0.43%		± 10%

#### Thermo 43C Sulphur Dioxide Analyzer Calibration

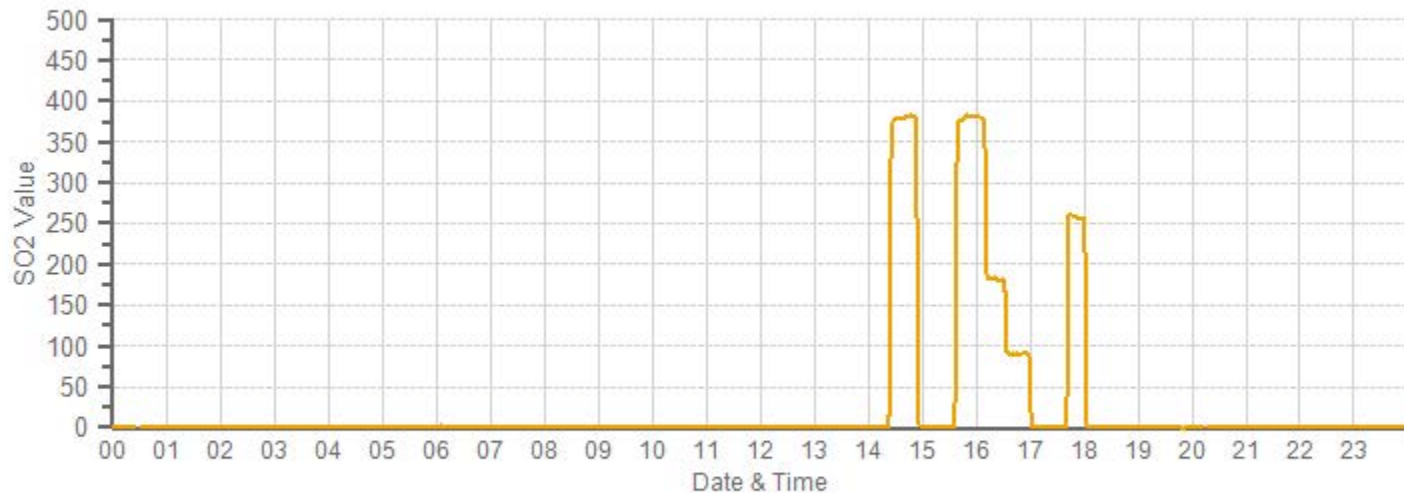


As found:		As left:	
Bkg:	84.7	Bkg:	85.3
Coef:	0.921	Coef:	0.921
Pmt:	-654	Pmt:	-654
0	Lamp=846	0	Lamp=846
Battery:	3.3	Battery:	3.3
Internal:	29.5	Internal:	29.9
Chamber:	45.3	Chamber:	45.3
Pressure:	402.0	Pressure:	404.2
Flow:	0.708	Flow:	0.712
Intensity:	~38000	Intensity:	~38000
Averaging Time:	120	Averaging Time:	120
Expected Value:	246.8	Expected Value:	256.0

Comments:

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

SO2[ppb] Station: PRAMP\_986 Daily: 18/12/12 Type: AVG 1 Min. [1 Min.]



— SO2[ppb]



***TOTAL REDUCED SULPHUR***



### Thermo 431-TLE Total Reduced Sulphur Analyzer Calibration

Date:	December 12, 2018	Barometer/B.P./units:	F.S. 10528 expires January 15, 2019	921	millibars
Company/Airshed:	PRAAMP	Thermometer/Station Temp:	F.S. 10528 expires January 15, 2019	21	°C
Location/Station Name:	986b	Weather Conditions:	Mix of sun and clouds		
Parameter:	Total Reduced Sulphur	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	9:21	Performed By/Reviewer:	Chris Wesson	Rob Fisher	
End Time 24 hr. (mst):	14:21	Cal Gas Expiry Date:	November 7, 2020		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	CD Nova CDN-101 #516		
Analyzer:		Range ppb:	100		
Serial Number/Owner:	1152940011   Maxxam	As Found C.F.:	0.999		
Last Calibration Date:	November 6, 2018	New C.F.:	1.000		
Previous C.F.:	1.001				

Calibration Standards:		Standard Calibration Points for Ranges	SO2 Scrubber Check (10 minutes):
Low Flow Meter ID/Expiry Date:	N/A	Point	Start/End Time 24 hr.:
High Flow Meter ID/Expiry Date:	N/A	High	78
Calibrator ID/Expiry Date:	Sabio id# 3860808 expires August 21, 2019	Mid	38
Cal Gas Cylinder I.D. #:	LL119432	Low	19
Cal Gas Conc. (ppm):	10.3		
			SO2 Analyzer Range:
			500
			Target Concentration (ppb):
			380
			As Found Zero:
			-0.2
			Analyzer Response: (ppb):
			-0.2
			Zero Corrected Result (ppb):
			0.0

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

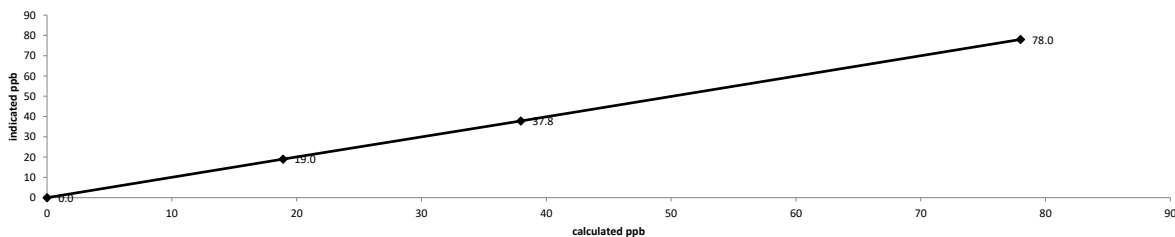
Point	Diluent	Cal Gas	Total	Calculated Concentration (ppb)	Indicated Concentration (ppb)	Correction Factors (C.F.):
as found zero	7499	0.00	7499	0.0	-0.2	n/a
as found high	7441	56.90	7498	78.0	77.92	0.999
adjusted zero	7499	0.00	7499	0.0	0	n/a
adjusted high	7442	56.90	7499	78.0	78	1.000
mid	7473	27.70	7501	38.0	37.8	1.004
low	7487	13.80	7501	18.9	19.01	0.995
calibrator zero	7504	0.00	7504	0.0	0.1	n/a

Average C.F. = 1.000

#### Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.001		0.95-1.05
b (Intercept as % of full scale) =	-0.01%		± 3% F.S.
% change in C.F. from last cal =	0.24%		± 10%

#### Thermo 431-TLE Total Reduced Sulphur Analyzer Calibration

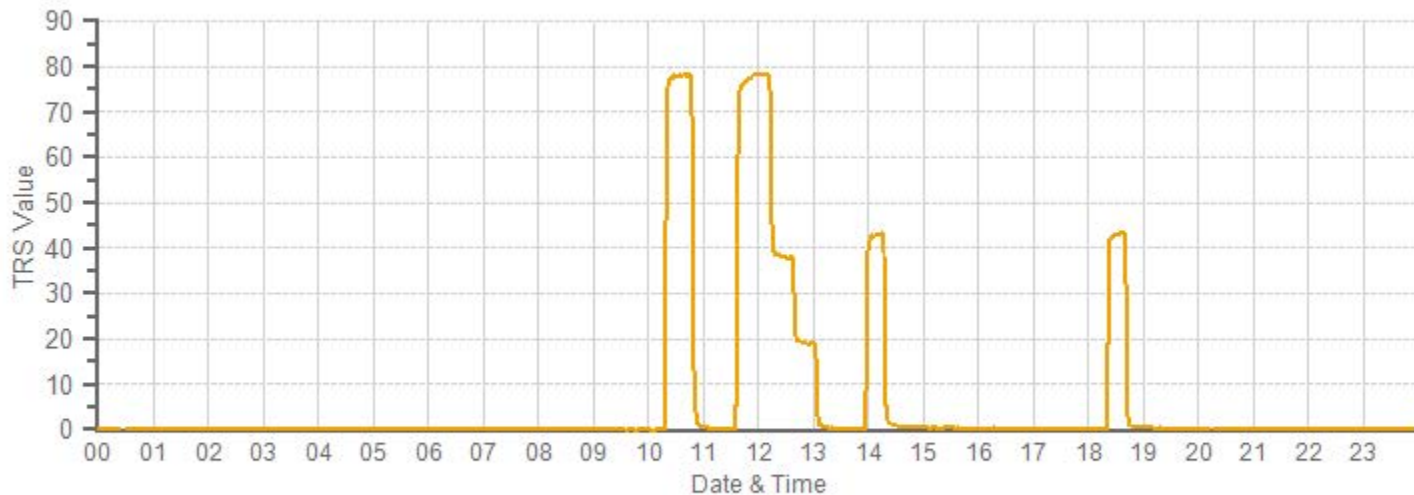


As found:	As left:
Bkg: 2.23	Bkg: 2.21
Coef: 0.979	Coef: 0.984
Pmt: -690.8	Pmt: -690.4
Flash: 964	Flash: 965
Internal: 30.7	Internal: 32.2
Chamber: 45.1	Chamber: 45.1
Perm Oven Gas: 45.00	Perm Oven Gas: 45.00
Perm Oven Heater: 44.25	Perm Oven Heater: 44.25
Pressure: 639.9	Pressure: 641.7
Sample Flow: 0.468	Sample Flow: 0.470
Lamp Intensity: 91	Lamp Intensity: 92
Converter: 820	Converter: 820
Converter Set: 820	Converter Set: 820
Averaging Time: 120	Averaging Time: 120
Expected Value: 41.2	Expected Value: 43.1

#### Comments:

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

TRS[ppb] Station: PRAMP\_986 Daily: 18/12/12 Type: AVG 1 Min. [1 Min.]



— TRS[ppb]

***TOTAL HYDROCARBON***



### Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	December 12, 2018	Barometer/B.P./units:	F.S. 10528 expires January 15, 2019	921	millibars
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 10528 expires January 15, 2019	21	°C
Location/Station Name:	986b	Weather Conditions:	Mix of sun and clouds		
Parameter:	CH4 / NMHC / THC	Calibration Purpose:	shut down		
Start/End Time 24 hr. (mst):	09:21 / 11:19	Performed By/Reviewer:	Chris Wesson	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	October 18, 2025		

Analyzer:	Serial Number/Owner:	1022143392	Maxxam	Correction Factors:	Previous C.F.:	As Found C.F.:	New C.F.:
	Measured Flow:	823 mL/min			CH <sub>4</sub> = 1.001	1.050	n/a
	Last Calibration Date:	November 6, 2018			NMHC = 0.998	1.071	n/a
	Range ppm:	20 CH4/20 NMHC/40 THC			THC = 1.000	1.059	n/a

Calibration Standards:	Low Flow Meter ID/Expiry Date:	N/A	Standard Calibration Points for Analyzer Range of 20/20/40 ppm
	High Flow Meter ID/Expiry Date:	N/A	
	Calibrator ID/Expiry Date:	Sabio id# 17100415 expires August 21, 2019	
	Cal Gas Cylinder I.D. #:	LL107207	
	CH4 Cylinder Conc. =	600.0 207.0 =C <sub>4</sub> H <sub>4</sub> Cylinder Conc.	
	CH <sub>4</sub> expressed as C <sub>4</sub> H <sub>4</sub> =	569.3 1169.3 =total CH4 equivalent	

Point	CH4	NMHC	THC
High	13.00	13.00	26.00
Mid	7.00	7.00	14.00
Low	3.00	3.00	6.00

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

Point	Calibrator Flow Rates (cc/min)			Calculated CH <sub>4</sub> (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH <sub>4</sub> (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:			
	Diluent	Cal Gas	Total Flow							CH <sub>4</sub>	NMHC	THC	
as found zero	2998	0.00	2998	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a	
as found high	2924	73.40	2997	14.69	13.94	28.64	14.00	13.02	27.03	1.050	1.071	1.059	
mid	2963	36.80	3000	7.36	6.98	14.34	7.08	6.54	13.63	1.040	1.068	1.052	
low	2981	18.50	2999	3.70	3.51	7.21	3.56	3.27	6.84	1.040	1.074	1.054	
										Average C.F. =	1.043	1.071	1.055

Linear Regression/Calibration Results:			
	CH <sub>4</sub>	NMHC	THC
Correlation Coefficient =	1.000	1.000	1.000
Slope =	0.952	0.934	0.944
b (Intercept as % of full scale) =	0.14%	0.00%	0.08%
% change in C.F. from last cal =	-4.86%	-7.29%	-5.94%
	LIMITS		
	> or = 0.995		
	0.90-1.10		
	± 3% F.S.		
	± 10%		

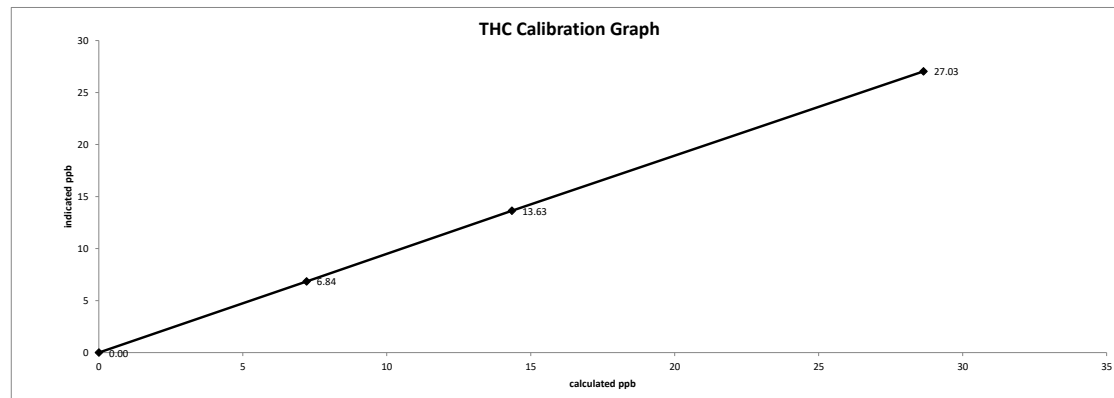
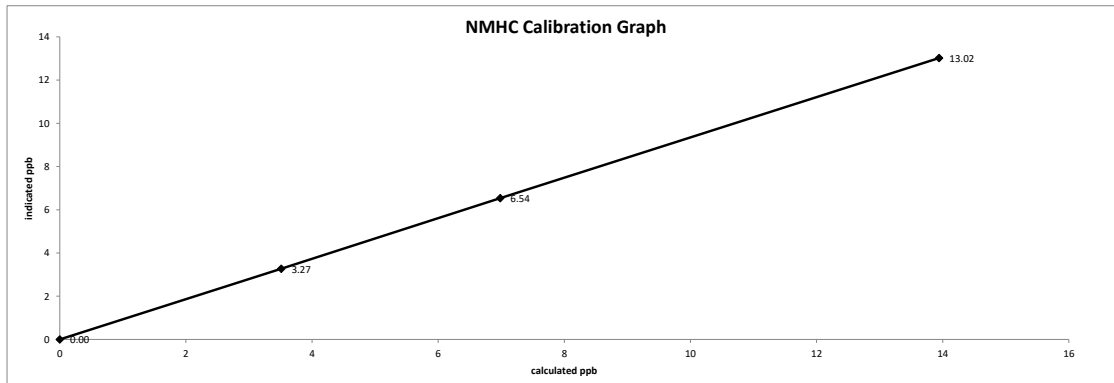
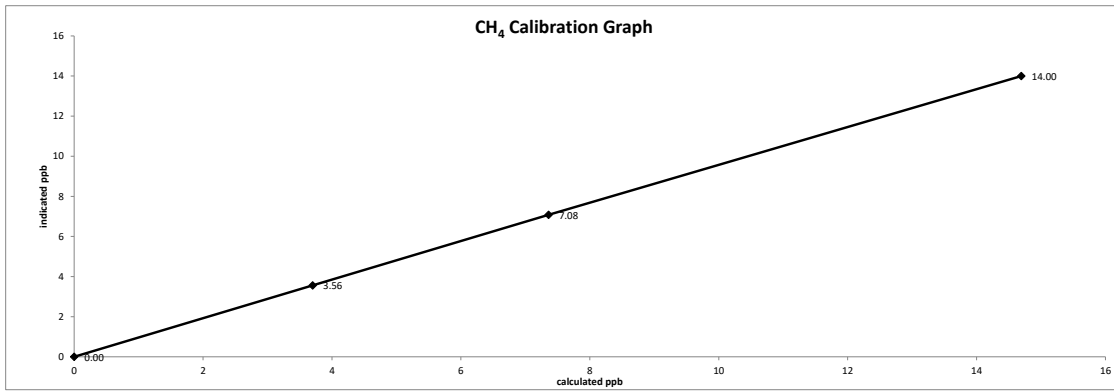
As Left Instrument Diagnostics:					
Interface Board Voltages:	Bias Supply:	-311.6	Calibration History cnt'd:	NM Peak Area:	n/a
Temperatures:	Detector Oven:	175.0	Crucial Settings:	Methane Start:	n/a
	Filter:	175.0		Methane End:	n/a
	Column Oven:	74.9		Backflush:	n/a
	Internal:	36.6		NMHV Start:	n/a
Cylinder Pressures/reg.:	Carrier:	600 50	Run History>1:	NMHC End:	n/a
	Fuel:	1200 50		Date:	n/a
	Span Gas:	1850 18		Time:	n/a
	Zero Air Generator:	50		CH <sub>4</sub> PK HT:	n/a
Internal Pressures:	Carrier:	31.3		CH <sub>4</sub> RT:	n/a
	Fuel:	40.5		CH <sub>4</sub> Baseline:	n/a
	Air:	30.9		CH <sub>4</sub> LOD:	n/a
FID Status:	Status:	LIT		CH <sub>4</sub> SD:	n/a
	Counts:	19787		CH <sub>4</sub> CONC:	n/a
	Flame:	321.0		NM PK HT:	n/a
	Det Base:	175.0		NM Peak Area:	n/a
Flame and Power Stats:	Last Power On:	01Oct2018		NM CONC:	n/a
	Flameouts:	1		NM Base Start:	n/a
	Det Oven at Start:	169.5		NM Base End:	n/a
	Col Oven at Start:	74.8		NM LOD:	n/a
Calibration History:	Time:	n/a		NM Start IDX:	n/a
	Type:	n/a		NM End IDX:	n/a
	Status:	n/a		NM Max Slope:	n/a
	Check/Adjust:	n/a		NM Min Slope:	n/a
	CH <sub>4</sub> Span Conc:	n/a	Expected Values:	NM PT Count:	n/a
	CH <sub>4</sub> SP Ratio:	n/a		Previous CH4:	n/a
	CH <sub>4</sub> RT:	n/a		Previous NMHC:	n/a
	CH <sub>4</sub> PK IDX:	n/a		Previous THC:	n/a
	CH <sub>4</sub> PK HT:	n/a		New CH4:	n/a
	NM Span Conc:	n/a		New NMHC:	n/a
	NM SP Ratio:	n/a		New THC:	n/a

**Comments:**  
The manifold blower was found to be working normally.

A Shut-down calibration was performed to rebuild the pump .

Date: December 12, 2018  
Company/Airshed: PRAMP  
Location/Station Name: 986b

Start/End Time 24 hr. (mst): 09:21 / 11:19  
Calibration Purpose: shut down  
Calibration Method: Gas Dilution





### Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	December 12, 2018	Barometer/B.P./units:	F.S. 10528 expires January 15, 2019	25	millibars
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 10528 expires January 15, 2019	24	°C
Location/Station Name:	986b	Weather Conditions:	Mainly clear		
Parameter:	CH4 / NMHC / THC	Calibration Purpose:	post repair		
Start/End Time 24 hr. (mst):	16:00 / 18:45	Performed By/Reviewer:	Chris Wesson	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	October 18, 2025		

Analyzer:		Correction Factors:		
Serial Number/Owner:	1022143392   Maxxam	Previous C.F.:	As Found C.F.:	New C.F.:
Measured Flow:	903 mL/min	CH <sub>4</sub> =	n/a	0.999
Last Calibration Date:	n/a	NMHC =	n/a	1.000
Range ppm:	20 CH4/20 NMHC/40 THC	THC =	n/a	0.999

Calibration Standards:

Low Flow Meter ID/Expiry Date: N/A  
 High Flow Meter ID/Expiry Date: N/A  
 Calibrator ID/Expiry Date: Sabio id# 17100415 expires August 21, 2019  
 Cal Gas Cylinder I.D. #: LL107207  
 CH4 Cylinder Conc.: 600.0 | 207.0 = C<sub>3</sub>H<sub>8</sub> Cylinder Conc.  
 CH<sub>4</sub> expressed as C<sub>3</sub>H<sub>8</sub>: 569.3 | 1169.3 = total CH4 equivalent

Point	CH4	NMHC	THC
High	13.00	13.00	26.00
Mid	7.00	7.00	14.00
Low	3.00	3.00	6.00

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

Point	Calibrator Flow Rates (cc/min)			Calculated CH <sub>4</sub> (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH <sub>4</sub> (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
	Diluent	Cal Gas	Total Flow							CH <sub>4</sub>	NMHC	THC
adjusted zero	2998	0.00	2998	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	2924	73.40	2997	14.69	13.94	28.64	14.71	13.94	28.66	0.999	1.000	0.999
mid	2963	36.80	3000	7.36	6.98	14.34	7.43	6.98	14.42	0.991	1.000	0.995
low	2981	18.50	2999	3.70	3.51	7.21	3.73	3.49	7.23	0.992	1.006	0.998
calibrator zero	2998	0.00	2998	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
Average C.F.=										0.994	1.002	0.997

**Linear Regression/Calibration Results:**

	CH <sub>4</sub>	NMHC	THC	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.001	1.000	1.001	0.95-1.05
b (Intercept as % of full scale) =	0.11%	-0.04%	0.04%	± 3% F.S.
% change in C.F. from last cal =	n/a	n/a	n/a	n/a

**As Left Instrument Diagnostics:**

Interface Board Voltages:	Bias Supply:	-311.9	Calibration History cnt'd:	NM Peak Area:	75168
Temperatures:	Detector Oven:	175.0	Crucial Settings:	Methane Start:	n/a
	Filter:	175.1		Methane End:	n/a
	Column Oven:	75.1		Backflush:	n/a
	Internal:	38.3		NMHV Start:	n/a
Cylinder Pressures/reg.:	Carrier:	2626   50	Run History-1:	NMHC End:	n/a
	Fuel:	1200   50		Date:	12Dec2018
	Span Gas:	1850   18		Time:	17:43
	Zero Air Generator:	50		CH <sub>4</sub> PK HT:	0
Internal Pressures:	Carrier:	31.3		CH <sub>4</sub> RT:	12.2
	Fuel:	40.5		CH <sub>4</sub> Baseline:	1636
	Air:	30.7		CH <sub>4</sub> LOD:	19
FID Status:	Status:	LIT		CH <sub>4</sub> SD:	6
	Counts:	20400		CH <sub>4</sub> CONC:	0.00
	Flame:	321.9		NM PK HT:	0
	Det Base:	175.0		NM Peak Area:	0
Flame and Power Stats:	Last Power On:	01Oct2018		NM CONC:	0.00
	Flameouts:	1		NM Base Start:	1642
	Det Oven at Start:	169.5		NM Base End:	1631
	Col Oven at Start:	74.8		NM LOD:	9
Calibration History:	Time:	12Dec2018@16:52		NM Start IDX:	40
	Type:	Span		NM End IDX:	42
	Status:	Good		NM Max Slope:	2.1e-01
	Check/Adjust:	Adjust		NM Min Slope:	-2.9e01
	CH <sub>4</sub> Span Conc:	14.69	Expected Values:	NM PT Count:	0
	CH <sub>4</sub> SP Ratio:	0.00077		Previous CH <sub>4</sub> :	10.21
	CH <sub>4</sub> RT:	12.2		Previous NMHC:	11.08
	CH <sub>4</sub> PK IDX:	21		Previous THC:	21.3
	CH <sub>4</sub> PK HT:	19088		New CH <sub>4</sub> :	10.21
	NM Span Conc:	13.94		New NMHC:	11.08
	NM SP Ratio:	0.000185		New THC:	21.30

**Comments:**

The analyzer sample inlet filter was changed.

A new nitrogen cylinder was installed.

No zero adjustment was required/made. As found zero values were copied to adjusted zero values for linearity calculation purposes.

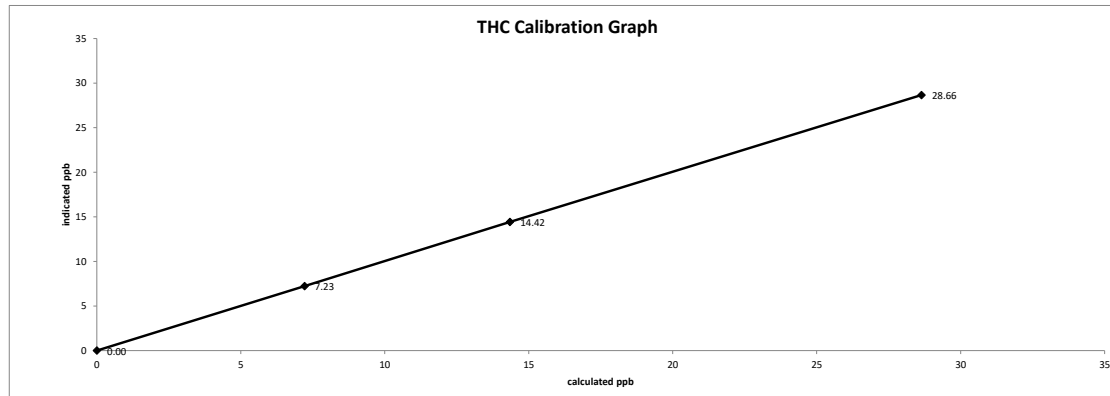
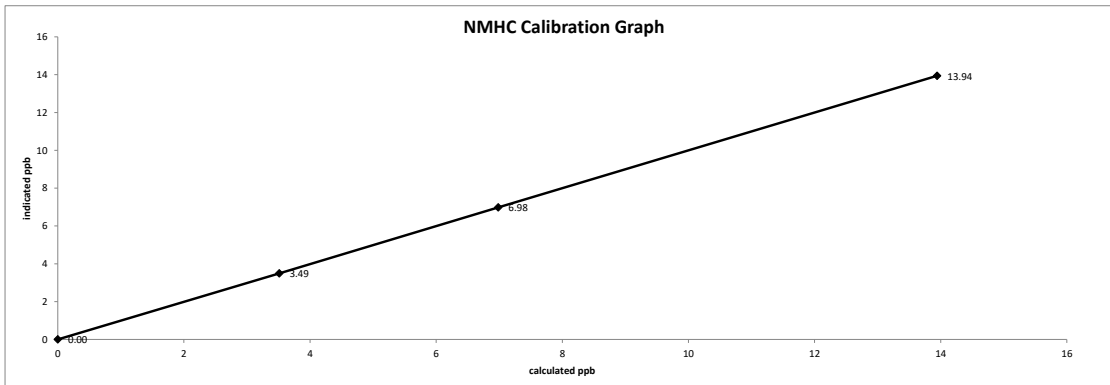
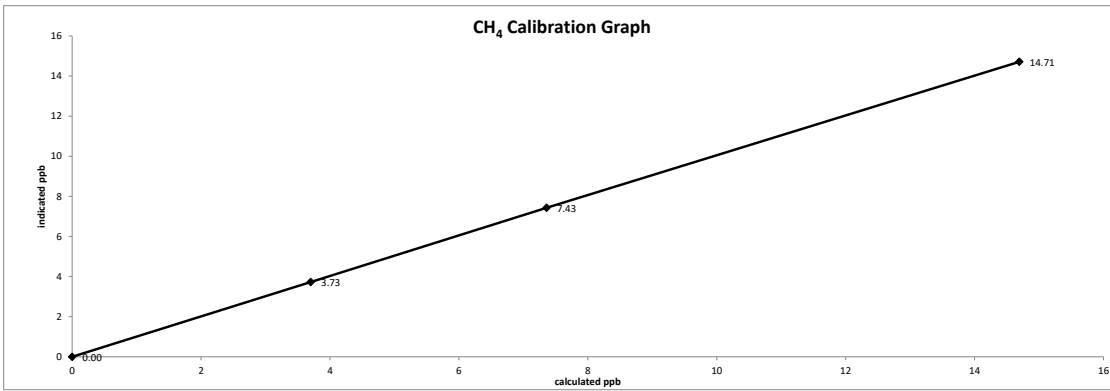
The analyzer cooling fan filter(s) were cleaned.

The manifold blower was found to be working normally.

A Post-repair calibration was performed following the pump rebuild.

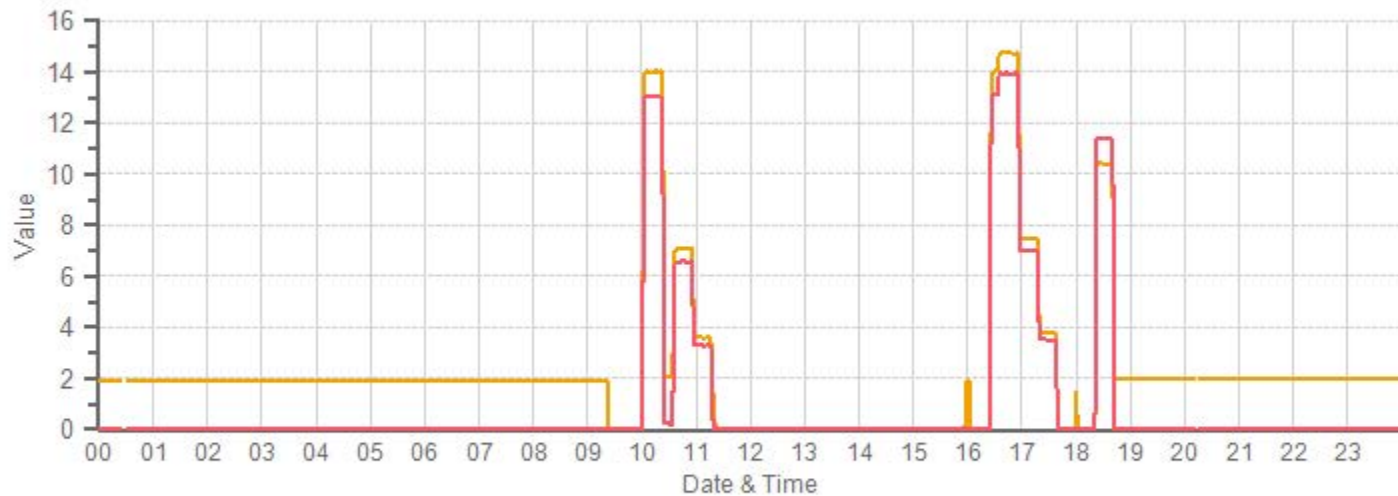
Date: December 12, 2018  
Company/Airshed: PRAMP  
Location/Station Name: 986b

Start/End Time 24 hr. (mst): 16:00 / 18:45  
Calibration Purpose: post repair  
Calibration Method: Gas Dilution





Station: PRAMP\_986 Daily: 18/12/12 Type: AVG 1 Min. [1 Min.]



— CH4[ppm] — NMHC[ppm]

## ***WIND SYSTEM***



# Meteorological Sensor Audit/Calibration

## Location Information

Company:	PRAMP	Performed By:	Limin Li
Audit Location:	986B	Reviewed By:	Tom Bourque
Audit Date:	April 4, 2018	Start/End Time (mst):	16:22/17:42
Calibration Purpose:	routine annual	Weather Conditions:	Mainly sunny

## Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	0-1V
Sensor Model:	5305VK	Velocity Unit Output Range:	0-200 KPH
Serial #:	129612	Direction Voltage Output Range:	0-1 V
Previous Cal/Audit Date:	April 5, 2017	Direction Unit Output Range:	0-360 DEG

## Wind Calibrator Information

Calibrator I.D. and Expiry Date: RM Young 18802 id# CA03309 expires September 25, 2018

## Wind Speed Audit Data **\*\*+/- 2% of the average correction factor is the limit\*\***

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.1	0.1	-
1000	18.4	18.5	18.5	0.996
2000	36.9	36.9	36.9	1.001
3000	55.3	55.3	55.3	1.000
4000	73.7	73.7	73.7	1.000
5000	92.2	92.2	92.2	1.000
6000	110.6	110.7	110.7	0.999
7000	129.0	129.2	129.2	0.998
8000	147.4	147.7	147.7	0.998
9000	165.9	166.2	166.2	0.998
10000	184.3	184.8	184.8	0.997
The audit meets AMD requirements.			Average Correction Factor=	<b>0.999</b>

## 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	0.3	1.4	0.8
30	330	30	330	0.2	0.1	0.1
60	300	61	301	-0.7	-0.9	0.8
90	270	91	271	-1.1	-1.2	1.1
120	240	122	243	-1.7	-2.6	2.2
150	210	153	213	-2.5	-2.9	2.7
180	180	183	183	-2.6	-2.6	2.6
210	150	213	152	-2.6	-1.7	2.1
240	120	243	122	-2.8	-2.0	2.4
270	90	272	91	-2.3	-1.1	1.7
300	60	301	62	-0.8	-1.7	1.2
330	30	331	30	-0.5	-0.3	0.4
355	0	354	0	1.3	0.3	0.8
The audit meets AMD requirements.				Average Absolute Degrees Difference=		<b>1.5</b>

Comments:

***METEOROLOGICAL SYSTEMS CHECK***



## Meteorological System Checklist

Date:	December 12, 2018		
Technician:	Chris Wesson		
Reviewer:	Rob Fisher		
Station:	PRAMP 986b		
<b>Unit:</b>	<b>Make:</b>	<b>Model:</b>	<b>Serial #:</b>
Temperature Sensor:	RM Young	43172VC	61012322
Barometric Pressure Sensor:	MetOne	090D	F3845
Relative Humidity Sensor:	RM Young	43172VC	61012322
Anemometer:	RM Young	05305VK	129612
<b>AMBIENT TEMPERATURE SENSOR CHECK</b>			
Previous check date:	November 1, 2018		
Parameter:	Temperature @ 2 metres (1 C tolerance)		
Reference Thermometer ID:	F.S. 160348895 expires June 19, 2020		
Reference Temperature (°C):	0.0		
Station - Ambient Temperature (°C):	1.0		
Temperature Difference (°C):	-1.0		
<b>BAROMETRIC PRESSURE SENSOR CHECK</b>			
Previous check date:	November 1, 2018		
Reference Barometer ID:	F.S. 10528 expires January 15, 2019		
Reference Pressure - Units/Reading:	mmHg	927	
Station Pressure - Units/Reading:	mmHg	926	
Pressure Tolerance +/- 15% of error:	788 - 1066	0.11%	
<b>RELATIVE HUMIDITY (HYGROMETER) SENSOR CHECK</b>			
Previous check date:	November 1, 2018		
Reference Hygrometer ID:	F.S. id# 160459244 expires June 19, 2020		
Reference Hygrometer % RH- Reading:	51.90		
Station Hygrometer % RH- Reading:	47.10		
RH Tolerance +/- 15% of difference:	44.12 - 59.69	9.2%	
<b>ANEMOMETER - WIND SPEED &amp; WIND DIRECTION SENSOR CHECK</b>			
<b>WIND SPEED</b>		<b>WIND DIRECTION</b>	
Previous check date:	November 1, 2018	Previous check date:	November 1, 2018
Wind Speed Observed (kph):	20-Oct	Wind Direction Observed:	W
Wind speed on Data Logger (kph):	12	Wind Direction on Data Logger:	W
		Wind Direction Pass/Fail?:	Pass

## ***CALIBRATORS***

Company <u>Maxxam</u>		Operator: <u>Mike</u>	
<b>Calibrator:</b>		<b>Flow Measurement Device:</b>	
Make/Model	<u>Sabio</u>	Make/Model	<u>Bios Definer 220</u>
Serial Number	<u>3860808</u>	Serial Number	<u>H=128686; L=129069</u>
Last Verification Date	<u>26-Jan-17</u>	Temperature (°C)	<u>22.2 C</u>
NO Cylinder S/N	<u>LL104183</u>	Barometric Pressure	<u>706.1mmHg</u>
NO [PPM]	<u>50.8</u>	NOx [PPM]	<u>50.9</u>
Expiry Date	<u>October 24, 2020</u>		

Dilution Flow (sccm)			
Pt. #1 <u>5065</u>	Pt. #2 <u>5085</u>	Pt. #3 <u>5079</u>	
Gas Flow (sccm)			
Pt. #1 <u>78.3</u>	Pt. #2 <u>38.1</u>	Pt. #3 <u>19.2</u>	

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
5095	0.0	0.0000	0.0000	0.0000	0.0001	0.0001	Limit ± 10%	
5065	78.3	0.7853	0.7869	0.7957	0.0005	0.7962	1%	1%
5085	38.1	0.3806	0.3814	0.3850	0.0001	0.3851	1%	1%
5079	19.2	0.1920	0.1924	0.1936	-0.0001	0.1935	1%	1%
Absolute Average Percent Difference							1%	1%

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

<b>NO</b>		<b>LIMITS</b>		<b>NOx</b>
Correlation=	1.0000	≥ 0.990		Correlation= 1.0000
m (Slope)=	1.0136	0.90-1.10		m (Slope)= 1.0121
b (Intercept % of FS)=	-0.0509	± 3% F.S.		b (Intercept % of FS)= -0.0577

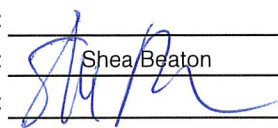
Flow	O <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
5065	0.0	0.0000	0.7937	-0.0005	0.7932	NO <sub>2</sub>	% Diff. Limit
5065	500.0	0.4556	0.3381	0.4549	0.7925	0%	± 10%
5065	275.0	0.2406	0.5531	0.2392	0.7923	0%	± 10%
5065	95.0	0.0799	0.7138	0.0771	0.7910	-3%	± 10%
Absolute Average Percent Difference						1%	± 10%

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

<b>NO<sub>2</sub></b>		<b>LIMITS</b>
Correlation=	1.0000	≥ 0.995
m (Slope)=	1.0014	0.90-1.10
b (Intercept % of FS)=	-0.1619	± 3% F.S.

<b>AENV Standards</b>	<b>NO<sub>x</sub> Analyzer</b>
<b>Audit Calibrator</b>	
Make/Model	<u>Thermo 146i</u>
Serial/AMU Number	<u>1809</u>
SRM Gas Cylinder No.	<u>APEX1170572</u>
Cylinder Conc. (ppm)	<u>49.99</u>
	Make/Model <u>Thermo 42i</u>
	Serial/AMU Number <u>1868</u>
	Last Calibration Date <u>August 16, 2018</u>
	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>November 15, 2020</u>

COMMENTS: \_\_\_\_\_

Auditor: Shea Beaton  
Operator Signature: 

Date: August 21, 2018  
Location: McIntyre Center Edmonton

<b>Company</b> <u>Maxxam</u>		<b>Operator:</b> <u>Mike</u>	
<b>Calibrator:</b>		<b>Flow Measurement Device:</b>	
Make/Model	<u>Sabio</u>	Make/Model	<u>Bios Definer 220</u>
Serial Number	<u>17100415</u>	Serial Number	<u>H=128686; L=129069</u>
Last Verification Date	<u>May 16, 2017</u>	Temperature (°C)	<u>22.2 C</u>
NO Cylinder S/N	<u>LL104183</u>	Barometric Pressure	<u>706.1mmHg</u>
NO [PPM]	<u>50.8</u>	NOx [PPM]	<u>50.9</u>
Expiry Date	<u>October 24, 2020</u>		

<b>Dilution Flow (sccm)</b>			
Pt. #1	<u>5120</u>	Pt. #2	<u>5121</u>
		Pt. #3	<u>5128</u>
<b>Gas Flow (sccm)</b>			
Pt. #1	<u>77.4</u>	Pt. #2	<u>37.8</u>
		Pt. #3	<u>19</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
5136	0.0	0.0000	0.0000	0.0001	-0.0002	0.0001	Limit ± 10%	
5120	77.4	0.7680	0.7695	0.7793	0.0003	0.7796	1%	1%
5121	37.8	0.3750	0.3757	0.3802	0.0000	0.3802	1%	1%
5128	19.0	0.1882	0.1885	0.1908	0.0005	0.1909	1%	1%
Absolute Average Percent Difference							1%	1%

<b>LINEAR REGRESSION ANALYSIS</b>				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<b>NO</b>		<b>LIMITS</b>		<b>NOx</b>			
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000		
m (Slope)=	1.0146	0.90-1.10		m (Slope)=	1.0130		
b (Intercept % of FS)=	-0.0074	± 3% F.S.		b (Intercept % of FS)=	-0.0059		

Flow	O <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
5120	0.0	0.0000	0.7794	0.0005	0.7799	NO <sub>2</sub>	% Diff. Limit
5120	500.0	0.4827	0.2967	0.4854	0.7806	0%	± 10%
5120	275.0	0.2672	0.5122	0.2676	0.7798	0%	± 10%
5120	90.0	0.0896	0.6898	0.0890	0.7787	-1%	± 10%
Absolute Average Percent Difference						0%	± 10%

<b>LINEAR REGRESSION ANALYSIS</b>				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<b>NO<sub>2</sub></b>		<b>LIMITS</b>					
Correlation=	1.0000	≥ 0.995					
m (Slope)=	1.0053	0.90-1.10					
b (Intercept % of FS)=	-0.0370	± 3% F.S.					

<b>AENV Standards</b>		<b>NO<sub>x</sub> Analyzer</b>	
<b>Audit Calibrator</b>			
Make/Model	<u>Thermo 146i</u>	Make/Model	<u>Thermo 42i</u>
Serial/AMU Number	<u>1809</u>	Serial/AMU Number	<u>1868</u>
SRM Gas Cylinder No.	<u>APEX1170572</u>	Last Calibration Date	<u>August 16, 2018</u>
Cylinder Conc. (ppm)	<u>49.99</u>	Full Scale (ppm)	<u>1.0</u>
		Cylinder Gas Expiry Date	<u>November 15, 2020</u>

COMMENTS: \_\_\_\_\_

Auditor: Shea Beaton Date: August 21, 2018  
 Operator Signature: [Signature] Location: McIntyre Center Edmonton



## ***CALIBRATION GASES***



# Calibration Gas Audit

## Single Component Cylinder Gas

File No. 2017-486CGA

**Company:** Maxxam **Operator's Name:** Mike  
**Cylinder #:** LL108015 **Concentration PPM:** 47.9 **Tolerance(%)** 2 **Certified By:** Praxair  
**Expiry Date:** October 2020

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>R&amp;R MFC 201</u>	Make/Model: <u>Mesa Definer 220</u>
Serial Number: <u>AMU 1690</u>	Serial Number: <u>H-133034 / L-132702</u>
Last Verification Date: <u>December 13, 2017</u>	Temp. °C: <u>23.4 C</u>
Gas Type: <u>SO2</u> Conc. <u>98.07</u>	B.P. <u>707 mmHg</u>
Cylinder Number: <u>CAL016625</u>	
Expiry Date: <u>January 2019</u>	

**Reference Analyzer:**  
 Make/Model: Teco 43C Serial/AMU Number: 1623  
 Instrument Settings: Zero: 10.0 Span: 1.006 Range: 1.0  
 Last Calibration: Date: Dec12/17 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000			
4989	79.5	0.760	0.01594	62.755	47.7
4995	39.6	0.374	0.00793	126.136	47.2
4992	19.6	0.183	0.00393	254.694	46.6
Average Cylinder Concentration:					<b>47.2</b>

Previous Stated Concentration PPM: 47.9  
 Percent variance from Stated: 2

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

Auditor: Al Clark Date: December 13, 2017  
 Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



# Calibration Gas Audit

## Single Component Cylinder Gas

File No. 2017-137CGA

**Company:** Maxxam **Operator's Name:** Raja Abid Ashraf  
**Cylinder #:** LL119432 **Concentration PPM:** 10.3 **Tolerance(%)** 2 **Certified By:** Praxair  
**Expiry Date:** May 16, 2020

**Reference Calibrator and Gas:**  
**Make/Model:** R&R MFC 201  
**Serial Number:** AMU 1690  
**Last Verification Date:** July 27, 2017  
**Gas Type:** H2S **Conc.** 20.43  
**Cylinder Number:** CAL015272  
**Expiry Date:** Janaury 2019

**Flow Measurement Device:**  
**Make/Model:** Mesa Definer 220  
**Serial Number:** H-133034 L-132702  
**Temp. °C:** 22.0 C  
**B.P.** 700 mmhg

**Reference Analyzer:**  
**Make/Model:** Teco 450i **Serial/AMU Number:** 1980  
**Instrument Settings:** **Zero:** 21.9 **Span:** 1.069 **Range:** 0.1  
**Last Calibration:** **Date:** July 27, 2017 **C.F.** 1.000 **Done By:** Al Clark

Calibrator Flows (scem)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	<del>0.0000</del>	<del>0.0000</del>	<del>0.0000</del>
5117	38.9	0.0595	0.00760	131.542	7.8
5103	18.4		0.00361	277.337	0.0
5097	9.4		0.00184	542.234	0.0
Average Cylinder Concentration:					<b>2.6</b>

Previous Stated Concentration PPM: 10.3  
 Percent variance from Stated: 75

Meets Manufacturer Tolerance. Use manufacturers stated concentration  **COMMENTS:** \_\_\_\_\_  
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration  Do not use. \_\_\_\_\_  
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder  \_\_\_\_\_

**Auditor:** Al Clark **Date:** July 27, 2017  
**Operator Signature:** *Al Clark* **Location:** McIntyre Center Edmonton



# Calibration Gas Audit

## CH4 / C3H8 Cylinder Gas

File No. 2017-484CGA

**Company:** Maxxam **Operators name:** Mike  
**Cylinder #:** LL107207 **Conc CH4 (PPM)** 600/207 **Tolerance (%)** 2 **Certified By:** Praxair  
**Expiry Date:** October 2025

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>R&amp;R MFC 201</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1690</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>December 13, 2017</u>			Temp. °C	<u>23.1 C</u>
Gas Type	<u>CH4</u>	Conc.	<u>990.4</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>5604875</u>	Expiry Date	<u>July 2021</u>		
Gas Type	<u>C3H8</u>	Conc.	<u>246.5</u>		
Cylinder Number	<u>XF003845B</u>	Expiry Date	<u>July 2022</u>		

**Reference Analyzer:**  
**Make/Model** Teco 55i **Serial/AMU Number:** 2108  
**Instrument Settings** **Zero:** N/A **Span:** N/A **Range:** 20.0  
**Last Calibration:** **Date:** Dec 12/17 **C.F.** 1.000 **Done By:** Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH4	C3H8			CH4	C3H8
3500	0.0	0.00	0.00				
3618	80.4	13.28	12.77	0.02	45.00	598	209
3547	39.8	6.71	6.47	0.01	89.12	598	210
3560	19.8	3.35	3.26	0.01	179.80	602	213
Average Cylinder Concentration:						<b>599</b>	<b>211</b>

	<b>CH4</b>	<b>C3H8</b>
Previous Stated Concentration PPM:	<u>600</u>	<u>207</u>
Percent variance from Stated:	<u>0</u>	<u>2</u>

**Cylinder gas tolerances based on CH4 only**  
 Meets Manufacturer Tolerance. Use manufacturers stated concentration  **COMMENTS:**  
 < =5% Outside Manufacturer Tolerance. Use manufacturers concentration   
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

**Auditor:** Al Clark **Date:** December 13, 2017  
**Operator Signature:**  **Location:** McIntyre Center Edmonton

***APPENDIX III***  
***MAXIMUM INSTANTANEOUS DATA***



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE  
Three Creeks 986b Station - December 2018

SULPHUR DIOXIDE Instantaneous Maximum (SO<sub>2</sub> ppb)

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

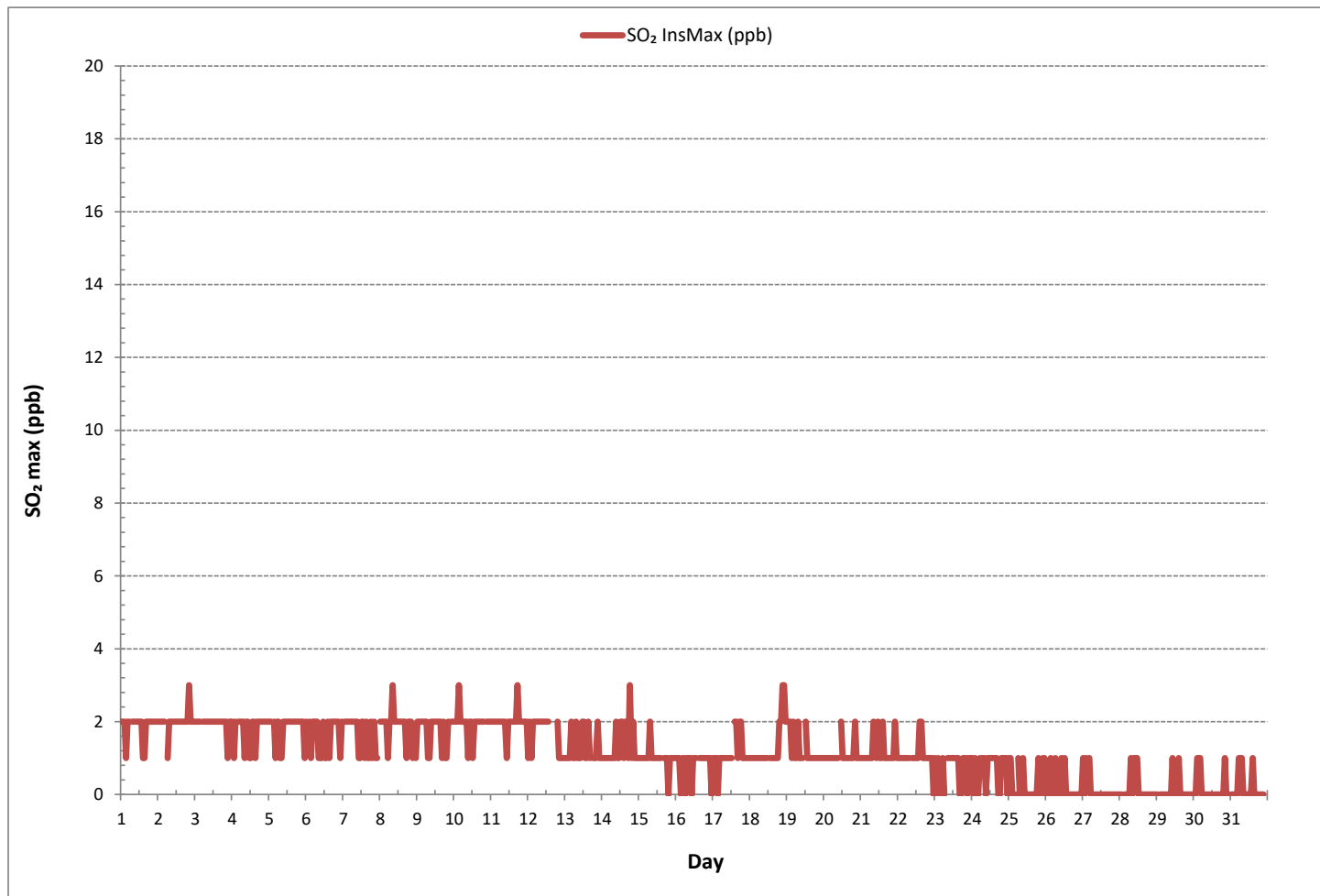
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	554
MAXIMUM INSTANTANEOUS VALUE:	3 ppb @ HOUR 20 ON DAY 2
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	1
OPERATIONAL TIME:	744 hrs

SULPHUR DIOXIDE Instantaneous Maximum (SO<sub>2</sub> ppb)







PEACE RIVER AREA MONITORING PROGRAM COMMITTEE  
Three Creeks 986b Station - December 2018

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	0.22	0.26	0.26	0.28	0.23	0.23	S	0.32	0.28	0.28	0.19	0.17	0.18	0.17	0.17	0.19	0.21	0.22	0.28	0.20	0.28	0.23	0.24	0.21	0.17	0.32	0.23	24	
2	0.22	0.24	0.23	0.20	0.21	S	0.33	0.23	0.21	0.20	0.21	0.21	0.21	0.21	0.20	0.21	0.24	0.23	0.23	0.24	0.25	0.27	0.22	0.21	0.20	0.33	0.23	24	
3	0.23	0.24	0.24	0.21	S	0.34	0.25	0.23	0.27	0.24	0.26	0.27	0.33	0.34	0.48	0.50	0.24	0.26	0.21	0.23	0.22	0.25	0.23	0.22	0.21	0.50	0.27	24	
4	0.21	0.24	0.23	S	0.30	0.26	0.21	0.21	0.21	0.22	0.22	0.26	0.18	0.21	0.36	0.20	0.22	0.21	0.27	0.23	0.23	0.25	0.26	0.25	0.18	0.36	0.24	24	
5	0.26	0.25	S	0.37	0.30	0.27	0.25	0.29	0.26	0.27	0.26	0.25	0.26	0.29	0.23	0.25	0.24	0.24	0.22	0.23	0.24	0.25	0.30	0.25	0.22	0.37	0.26	24	
6	0.26	S	0.38	0.30	0.30	0.25	0.28	0.30	0.24	0.31	0.27	0.25	0.28	0.27	0.28	0.24	0.26	0.25	0.24	0.22	0.28	0.25	0.24	0.23	0.23	0.38	0.27	24	
7	S	0.45	0.29	0.29	0.29	0.30	0.27	0.26	0.28	0.28	0.26	0.29	0.30	0.24	0.24	0.24	0.27	0.26	0.29	0.29	0.26	0.27	0.24	S	0.24	0.45	0.28	24	
8	0.40	0.35	0.32	0.31	0.30	0.29	0.30	0.32	0.28	0.26	0.30	0.28	0.25	0.30	0.31	0.28	0.29	0.31	0.25	0.25	0.24	0.25	S	0.36	0.24	0.40	0.30	24	
9	0.28	0.29	0.28	0.29	0.27	0.29	0.28	0.23	0.25	0.26	0.28	0.27	0.22	0.25	0.25	0.25	0.22	0.23	0.31	0.26	2.20	S	0.41	0.26	0.22	2.20	0.35	24	
10	0.26	0.23	0.21	0.28	0.27	0.27	0.25	0.25	0.25	0.22	0.22	0.23	0.19	0.21	0.23	0.22	0.20	0.21	0.24	0.22	S	0.35	0.23	0.25	0.19	0.35	0.24	24	
11	0.22	0.25	0.24	0.22	0.26	0.26	0.26	0.20	0.21	0.19	0.17	0.21	0.15	0.19	0.18	0.17	0.18	0.19	0.15	S	0.26	0.19	0.16	0.16	0.15	0.26	0.20	24	
12	0.20	0.16	0.17	0.19	0.18	0.16	0.17	0.21	0.16	C	C	C	C	C	C	C	0.35	0.32	0.25	S	0.43	0.25	0.22	0.21	0.23	0.16	0.43	0.23	24
13	0.22	0.18	0.23	0.18	0.23	0.20	0.25	0.19	0.24	0.23	0.20	0.19	0.22	0.23	0.24	0.19	0.17	S	0.31	0.21	0.19	0.21	0.20	0.21	0.17	0.31	0.21	24	
14	0.20	0.18	0.19	0.20	0.23	0.20	0.22	0.23	0.23	0.29	0.26	0.22	0.22	0.22	0.20	0.23	S	0.32	0.24	0.36	0.29	0.22	0.26	0.34	0.18	0.36	0.24	24	
15	0.29	0.28	0.30	0.30	0.23	0.36	0.35	0.28	0.28	0.38	0.19	0.21	0.26	0.23	0.24	S	0.39	0.34	0.30	0.25	0.54	0.57	0.46	0.39	0.19	0.57	0.33	24	
16	0.43	0.30	0.31	0.32	0.32	0.27	0.28	0.27	0.25	0.28	0.30	0.26	0.32	0.32	S	0.42	0.34	0.24	0.26	0.25	0.34	0.43	0.30	0.31	0.24	0.43	0.31	24	
17	0.28	0.29	0.26	0.28	0.27	0.33	0.29	0.26	0.27	0.27	0.30	0.28	0.31	S	0.36	0.34	0.31	0.39	0.29	0.24	0.30	0.34	0.32	0.33	0.24	0.39	0.30	24	
18	0.30	0.28	0.30	0.29	0.30	0.27	0.25	0.27	0.31	0.29	0.29	0.25	S	0.32	0.26	0.22	0.24	0.24	0.22	0.36	0.22	0.23	0.27	0.28	0.22	0.36	0.27	24	
19	0.26	0.26	0.27	0.27	0.28	0.30	0.30	0.27	0.23	0.27	0.21	S	0.31	0.26	0.23	0.23	0.26	0.20	0.22	0.23	0.23	0.23	0.25	0.26	0.20	0.31	0.25	24	
20	0.22	0.23	0.23	0.22	0.22	0.26	0.24	0.28	0.28	0.24	S	0.40	0.28	0.26	0.21	0.22	0.23	0.23	0.25	0.22	0.22	0.22	0.22	0.27	0.21	0.40	0.25	24	
21	0.21	0.22	0.22	0.25	0.29	0.23	0.27	0.27	0.22	S	0.33	0.28	0.23	0.23	0.25	0.23	0.24	0.20	0.21	0.26	0.21	0.20	0.23	0.21	0.20	0.33	0.24	24	
22	0.28	0.39	0.38	0.24	0.21	0.29	0.47	0.30	S	0.51	0.30	0.34	0.30	0.29	0.29	0.28	0.29	0.29	0.33	0.28	0.33	0.35	0.30	0.39	0.21	0.51	0.32	24	
23	0.45	0.55	0.63	0.44	0.45	0.41	0.31	S	0.66	0.37	0.33	0.37	0.35	0.33	0.32	0.35	0.31	0.32	0.30	0.36	0.35	0.42	0.42	0.43	0.30	0.66	0.40	24	
24	0.46	0.35	0.35	0.31	0.31	0.49	S	0.51	0.42	0.35	0.36	0.34	0.35	0.36	0.37	0.44	0.43	0.53	0.58	0.58	0.58	0.70	0.71	0.59	0.31	0.71	0.46	24	
25	0.44	0.43	0.30	0.39	0.37	S	0.52	0.39	0.39	0.41	0.39	0.42	0.38	0.36	0.38	0.37	0.35	0.37	0.35	0.33	0.36	0.43	0.43	0.72	0.30	0.72	0.40	24	
26	0.68	0.53	0.50	0.55	S	0.78	0.44	0.41	0.41	0.52	0.61	0.39	0.43	0.42	0.35	0.37	0.40	0.47	0.37	0.42	0.42	0.44	0.38	0.38	0.35	0.78	0.46	24	
27	0.38	0.42	0.49	S	0.73	0.60	0.56	0.43	0.41	0.39	0.39	0.39	0.40	0.37	0.38	0.37	0.40	0.38	0.39	0.36	0.38	0.39	0.39	0.38	0.36	0.73	0.43	24	
28	0.40	0.41	S	0.55	0.38	0.44	0.41	0.39	0.39	0.37	0.42	0.39	0.41	0.42	0.43	0.39	0.36	0.41	0.38	0.36	0.36	0.38	0.34	0.37	0.34	0.55	0.40	24	
29	0.38	S	0.59	0.40	0.63	0.74	0.54	0.55	0.41	0.45	0.45	0.47	0.45	0.47	0.43	0.44	0.42	0.41	0.39	0.39	0.45	0.47	0.45	0.38	0.38	0.74	0.47	24	
30	S	0.55	0.46	0.44	0.44	0.47	0.44	0.50	0.44	0.44	0.44	0.43	0.44	0.44	0.45	0.43	0.42	0.43	0.43	0.44	0.45	0.47	0.45	S	0.42	0.55	0.45	24	
31	0.58	0.47	0.46	0.47	0.48	0.47	0.45	0.44	0.43	0.40	0.42	0.39	0.37	0.35	0.40	0.39	0.39	0.39	0.39	0.35	0.38	0.36	S	0.45	0.35	0.58	0.42	24	
HOURLY MAX	0.68	0.55	0.63	0.55	0.73	0.78	0.56	0.55	0.66	0.52	0.61	0.47	0.45	0.47	0.48	0.50	0.43	0.53	0.58	0.58	2.20	0.70	0.71	0.72					
HOURLY AVG	0.32	0.32	0.32	0.31	0.32	0.35	0.33	0.31	0.31	0.32	0.30	0.30	0.30	0.30	0.30	0.30	0.29	0.30	0.30	0.30	0.30	0.38	0.33	0.31	0.32				

STATUS FLAG CODES

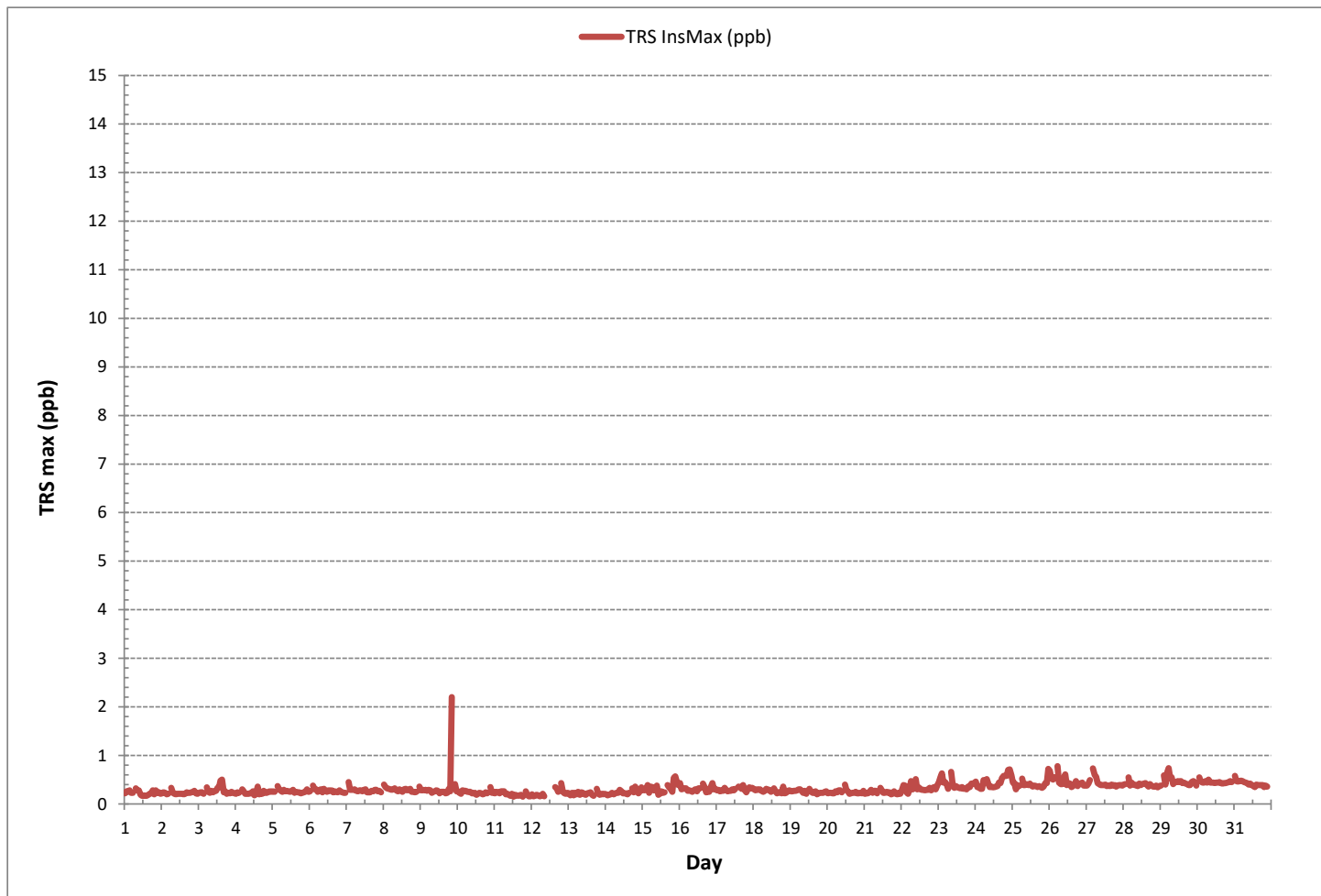
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	705
MAXIMUM INSTANTANEOUS VALUE:	2.20 ppb @ HOUR 20 ON DAY 9
IZS CALIBRATION TIME:	33 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	0.13
OPERATIONAL TIME:	744 hrs



TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE  
Three Creeks 986b Station - December 2018

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	2.31	2.35	2.02	2.26	2.22	2.13	S	2.04	2.07	2.06	2.08	2.04	2.06	2.02	2.02	2.08	2.03	2.49	2.44	2.05	2.06	2.07	2.25	2.21	2.02	2.49	2.15	24	
2	2.32	2.06	2.17	2.22	2.32	S	2.11	2.13	2.10	2.04	2.08	1.99	1.97	2.04	1.98	2.00	1.97	2.00	2.00	2.00	2.01	2.02	2.02	2.03	1.97	2.32	2.07	24	
3	2.06	2.10	2.03	2.07	S	2.05	2.02	2.02	2.02	2.05	2.02	2.72	2.80	2.50	2.29	2.03	2.00	1.99	1.99	1.98	1.98	1.97	1.96	1.96	1.96	2.80	2.11	24	
4	1.98	1.99	2.01	S	2.01	2.03	2.01	2.16	S1	S1	2.07	2.05	2.05	2.19	2.09	2.05	2.04	2.09	2.04	2.06	2.10	2.10	2.12	2.22	1.98	2.22	2.07	22	
5	2.23	3.18	S	2.00	2.03	2.00	2.13	2.03	2.30	2.16	1.99	1.99	2.07	2.07	1.99	2.01	2.00	2.00	1.98	1.99	2.00	2.65	1.98	1.99	1.98	3.18	2.12	24	
6	1.99	S	2.00	2.01	2.02	2.02	2.02	2.01	2.02	2.03	2.03	2.02	2.02	2.02	2.01	2.02	2.02	2.00	2.01	2.00	2.02	2.03	2.03	2.03	1.99	2.03	2.02	24	
7	S	2.05	2.06	2.06	2.09	2.09	2.07	2.06	2.04	2.03	2.04	2.04	2.02	2.02	2.03	2.03	2.03	2.04	2.03	2.03	2.02	2.00	2.01	S	2.00	2.09	2.04	24	
8	2.05	2.06	2.05	2.06	2.06	2.14	2.07	2.05	2.05	2.04	2.08	2.04	2.05	2.08	2.06	2.06	2.06	2.06	2.06	2.04	2.01	2.01	S	2.04	2.01	2.14	2.06	24	
9	2.07	2.01	2.05	2.05	2.05	2.05	2.06	2.06	2.04	2.05	2.06	2.02	2.03	2.03	2.02	2.02	2.05	3.37	2.03	2.04	S	5.29	S	2.02	2.06	2.01	5.29	2.24	24
10	2.07	2.08	2.05	2.06	2.05	2.05	2.02	2.00	1.99	1.98	1.98	1.97	1.97	1.97	1.97	1.98	1.98	1.97	1.98	1.95	S	1.96	1.96	1.97	1.95	2.08	2.00	24	
11	1.97	1.98	1.97	1.96	1.96	1.96	1.95	1.98	1.96	1.95	1.95	1.95	1.92	1.91	1.94	1.91	1.93	1.92	1.91	S	1.90	1.91	1.89	1.91	1.89	1.98	1.94	24	
12	1.90	1.90	1.91	1.91	1.91	1.90	1.92	1.91	1.91	C	C	C	Y	Y	Y	Y	C	C	C	C	2.01	2.00	2.02	1.99	2.01	1.90	2.02	1.94	20
13	2.01	1.99	2.01	1.98	2.00	1.99	2.01	1.99	2.00	1.98	2.00	2.01	2.04	2.08	2.10	2.06	2.02	S	2.00	2.02	2.01	2.01	2.02	2.00	1.98	2.10	2.01	24	
14	1.99	2.00	2.01	1.99	2.01	1.99	2.01	2.01	2.00	2.03	2.00	1.99	1.98	1.99	1.97	1.99	S	2.00	2.01	2.00	3.20	2.12	2.14	2.34	1.97	3.20	2.08	24	
15	2.27	2.46	2.31	2.16	2.21	2.15	2.19	2.16	2.12	2.09	2.13	2.23	2.39	2.39	2.49	S	2.07	2.03	2.05	2.06	2.11	2.14	2.18	2.25	2.03	2.49	2.20	24	
16	2.21	2.13	2.09	3.19	2.47	2.06	2.04	2.03	2.01	2.03	2.04	2.01	2.03	2.01	S	2.01	2.03	2.01	2.03	2.02	2.05	2.05	2.02	2.05	2.01	3.19	2.11	24	
17	2.04	2.06	2.07	2.08	2.07	2.11	2.26	2.06	2.08	2.05	2.08	2.06	2.10	S	2.11	2.09	2.12	2.12	2.09	2.08	2.13	2.19	2.10	2.10	2.04	2.26	2.10	24	
18	2.10	2.12	2.11	2.11	2.11	3.97	2.07	2.36	2.08	2.05	2.06	2.04	S	2.04	2.02	2.05	2.03	2.07	2.07	2.08	2.07	2.10	2.07	2.09	2.02	3.97	2.17	24	
19	2.10	2.08	2.09	2.07	2.07	2.10	2.13	2.07	2.07	2.04	2.04	S	2.02	2.03	2.00	2.03	2.00	2.02	2.03	2.02	2.02	2.01	2.03	2.03	2.00	2.13	2.05	24	
20	2.01	2.02	2.04	2.01	2.04	2.03	2.06	2.09	2.05	2.07	S	2.03	2.02	2.01	1.99	2.01	2.01	1.99	2.00	1.99	2.01	1.99	2.01	2.25	1.99	2.25	2.03	24	
21	2.37	2.25	2.24	2.24	2.17	2.10	2.20	2.08	2.11	S	2.32	2.73	2.30	2.31	2.36	2.39	2.43	2.98	3.04	2.86	2.64	2.16	2.05	3.61	2.05	3.61	2.43	24	
22	2.18	2.07	2.03	2.04	2.03	2.10	2.11	2.15	S	2.15	2.15	2.14	2.08	2.05	2.07	2.05	2.05	2.08	2.09	2.08	2.11	2.64	2.15	2.03	2.64	2.12	24		
23	2.17	2.18	2.27	2.66	3.02	2.67	2.09	S	2.10	2.10	2.23	2.18	2.28	2.15	2.15	2.18	2.07	2.10	2.06	2.06	2.03	2.06	2.03	2.08	2.03	3.02	2.21	24	
24	2.03	2.06	2.07	2.05	2.07	2.05	S	2.05	2.08	2.07	2.09	2.09	2.11	2.13	2.14	2.15	2.15	2.20	2.19	2.24	2.24	2.26	2.23	2.18	2.03	2.26	2.13	24	
25	2.17	2.24	2.17	2.25	2.06	S	2.07	2.18	2.41	2.49	2.62	2.43	2.27	2.42	2.53	2.65	2.76	2.09	2.07	2.08	2.07	2.11	2.16	2.20	2.06	2.76	2.28	24	
26	2.23	2.22	2.16	2.14	S	2.15	2.13	2.14	2.17	2.48	2.14	2.09	2.15	2.13	2.06	2.11	2.13	2.15	2.92	2.32	2.31	2.10	2.10	2.10	2.06	2.92	2.20	24	
27	3.18	3.18	2.10	S	2.30	2.19	2.37	2.39	2.13	2.38	2.14	2.23	2.11	2.11	2.10	2.09	2.10	2.09	2.09	2.16	2.08	2.07	2.08	2.08	2.07	3.18	2.25	24	
28	2.08	2.08	S	2.13	2.11	2.12	2.12	2.14	2.12	2.11	2.13	2.12	3.42	3.11	2.40	2.96	2.80	3.07	2.59	2.54	2.50	2.26	4.27	2.25	2.08	4.27	2.50	24	
29	2.09	S	2.35	2.15	2.14	2.14	2.14	2.13	2.12	2.10	2.10	2.11	2.12	2.11	2.13	2.14	2.12	2.13	2.12	2.12	2.12	2.15	2.20	2.17	2.08	2.08	2.35	2.14	24
30	S	2.10	2.17	2.22	2.14	2.30	2.25	2.25	2.42	2.65	2.50	2.77	2.95	2.43	2.22	2.13	2.13	2.13	2.13	2.13	2.16	2.17	2.14	2.14	S	2.10	2.95	2.30	24
31	2.14	2.14	2.14	2.14	2.15	2.14	2.14	2.14	2.15	2.14	2.13	2.13	2.13	2.12	2.11	2.09	2.10	2.10	2.07	2.07	2.06	2.05	S	2.07	2.05	2.15	2.12	24	
HOURLY MAX	3.18	3.18	2.35	3.19	3.02	3.97	2.37	2.39	2.42	2.65	2.62	2.77	3.42	3.11	2.53	2.96	2.80	3.37	3.04	2.86	5.29	2.65	4.27	3.61					
HOURLY AVG	2.15	2.18	2.09	2.15	2.13	2.16	2.10	2.10	2.09	2.12	2.11	2.15	2.19	2.15	2.12	2.12	2.11	2.18	2.14	2.10	2.24	2.10	2.16	2.15					

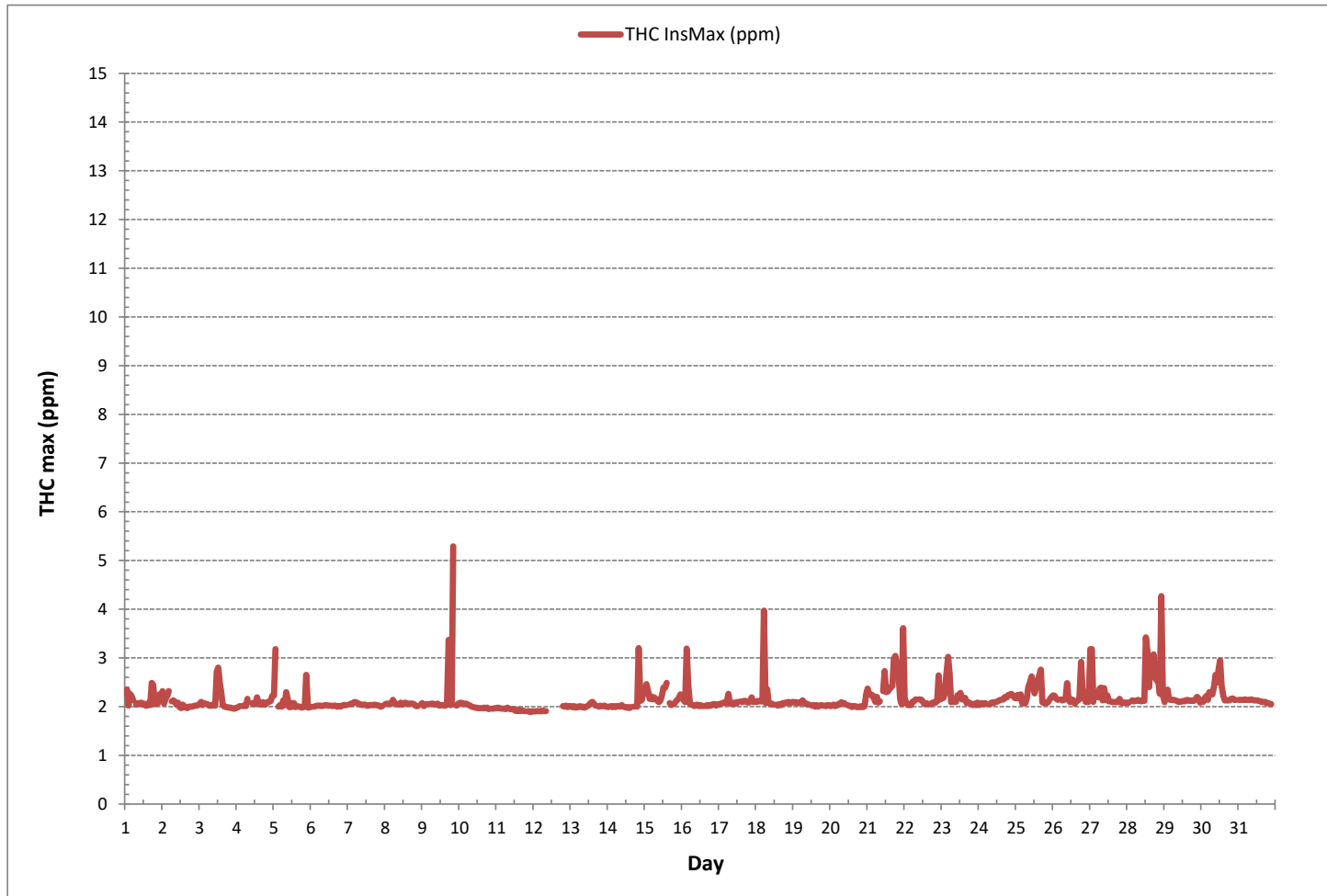
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	700
MAXIMUM INSTANTANEOUS VALUE:	5.29 ppm @ HOUR 20 ON DAY 9
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	0.27
OPERATIONAL TIME:	738 hrs

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE  
Three Creeks 986b Station - December 2018

METHANE MAX Instantaneous Maximum (CH<sub>4</sub> ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	2.31	2.35	2.02	2.26	2.22	2.13	S	2.04	2.07	2.06	2.08	2.04	2.06	2.02	2.02	2.08	2.03	2.49	2.44	2.05	2.06	2.07	2.25	2.21	2.02	2.49	2.15	24	
2	2.32	2.06	2.17	2.22	2.32	S	2.11	2.13	2.10	2.04	2.08	1.99	1.97	2.04	1.98	2.00	1.97	2.00	2.00	2.00	2.01	2.02	2.02	2.03	1.97	2.32	2.07	24	
3	2.06	2.10	2.03	2.07	S	2.05	2.02	2.02	2.02	2.05	2.02	2.72	2.80	2.50	2.29	2.03	2.00	1.99	1.99	1.98	1.98	1.97	1.96	1.96	1.96	2.80	2.11	24	
4	1.98	1.99	2.01	S	2.01	2.03	2.03	2.16	S1	S1	2.07	2.05	2.05	2.19	2.09	2.05	2.04	2.09	2.04	2.06	2.10	2.10	2.12	2.22	1.98	2.22	2.07	22	
5	2.23	3.18	S	2.00	2.03	2.00	2.13	2.03	2.30	2.16	1.99	1.99	2.07	2.07	1.99	2.01	2.00	2.00	1.98	1.99	2.00	2.65	1.98	1.99	1.98	3.18	2.12	24	
6	1.99	S	2.00	2.01	2.02	2.02	2.02	2.01	2.02	2.03	2.03	2.02	2.02	2.02	2.01	2.02	2.02	2.00	2.01	2.00	2.02	2.03	2.03	2.03	1.99	2.03	2.02	24	
7	S	2.05	2.06	2.06	2.09	2.09	2.07	2.06	2.04	2.03	2.04	2.04	2.02	2.02	2.03	2.03	2.03	2.04	2.03	2.03	2.02	2.00	2.01	S	2.00	2.09	2.04	24	
8	2.05	2.06	2.05	2.06	2.06	2.09	2.07	2.05	2.05	2.04	2.05	2.04	2.05	2.07	2.06	2.06	2.06	2.06	2.06	2.04	2.01	2.01	S	2.04	2.01	2.09	2.05	24	
9	2.07	2.01	2.03	2.05	2.05	2.06	2.06	2.04	2.05	2.04	2.02	2.02	2.03	2.03	2.02	2.02	2.05	3.37	2.03	2.04	3.92	S	2.02	2.06	2.01	3.92	2.18	24	
10	2.07	2.07	2.05	2.06	2.06	2.05	2.03	2.02	2.00	1.99	1.98	1.98	1.97	1.97	1.97	1.97	1.98	1.97	1.98	1.95	S	1.96	1.96	1.97	1.95	2.07	2.00	24	
11	1.97	1.98	1.97	1.96	1.96	1.96	1.95	1.98	1.96	1.95	1.95	1.92	1.91	1.94	1.91	1.93	1.92	1.92	S	1.90	1.91	1.89	1.91	1.89	1.89	1.98	1.94	24	
12	1.90	1.90	1.91	1.91	1.91	1.90	1.92	1.91	1.91	C	C	C	Y	Y	Y	Y	C	C	C	2.01	2.00	2.02	1.99	2.01	1.90	2.02	1.94	20	
13	2.01	1.99	2.01	1.98	2.00	1.99	2.01	1.99	2.00	1.98	2.00	2.01	2.04	2.08	2.10	2.06	2.02	S	2.00	2.02	2.01	2.01	2.02	2.00	1.98	2.10	2.01	24	
14	1.99	2.00	2.01	1.99	2.01	1.99	2.01	2.01	2.00	2.03	2.00	1.99	1.98	1.99	1.97	1.99	S	2.00	2.01	2.00	3.20	2.12	2.14	2.34	1.97	3.20	2.08	24	
15	2.27	2.46	2.31	2.16	2.21	2.15	2.19	2.16	2.12	2.09	2.13	2.23	2.39	2.39	2.49	S	2.07	2.03	2.05	2.06	2.11	2.14	2.18	2.25	2.03	2.49	2.20	24	
16	2.21	2.13	2.09	3.19	2.47	2.06	2.04	2.03	2.01	2.03	2.04	2.01	2.03	2.01	S	2.01	2.03	2.01	2.03	2.02	2.05	2.05	2.02	2.05	2.01	3.19	2.11	24	
17	2.04	2.06	2.07	2.08	2.07	2.11	2.26	2.06	2.08	2.05	2.08	2.06	2.10	S	2.11	2.09	2.12	2.12	2.09	2.08	2.10	2.14	2.10	2.10	2.04	2.26	2.09	24	
18	2.09	2.12	2.11	2.11	2.11	3.97	2.07	2.36	2.08	2.05	2.06	2.04	S	2.04	2.02	2.05	2.03	2.07	2.08	2.07	2.10	2.07	2.09	2.02	3.97	2.17	2.17	24	
19	2.10	2.08	2.09	2.07	2.07	2.10	2.13	2.07	2.07	2.04	2.04	S	2.02	2.03	2.00	2.03	2.00	2.02	2.03	2.02	2.02	2.00	2.03	2.03	2.00	2.13	2.05	24	
20	2.01	2.02	2.04	2.01	2.04	2.03	2.06	2.09	2.05	2.07	S	2.03	2.02	2.01	1.99	2.01	2.01	1.99	2.01	1.99	2.01	1.99	2.01	2.25	1.99	2.25	2.03	24	
21	2.37	2.25	2.24	2.24	2.17	2.10	2.20	2.08	2.11	S	2.32	2.73	2.30	2.31	2.36	2.39	2.43	2.98	3.04	2.86	2.64	2.16	2.05	3.61	2.05	3.61	2.43	24	
22	2.18	2.07	2.03	2.04	2.03	2.10	2.11	2.15	S	2.15	2.15	2.14	2.08	2.05	2.07	2.05	2.05	2.05	2.08	2.09	2.08	2.11	2.64	2.15	2.03	2.64	2.12	24	
23	2.17	2.18	2.27	2.66	3.02	2.67	2.09	S	2.10	2.10	2.23	2.18	2.28	2.15	2.15	2.18	2.07	2.10	2.06	2.06	2.03	2.06	2.03	2.08	2.03	3.02	2.21	24	
24	2.03	2.06	2.07	2.05	2.07	2.05	S	2.05	2.08	2.07	2.09	2.09	2.11	2.13	2.14	2.15	2.15	2.20	2.19	2.21	2.24	2.26	2.23	2.18	2.03	2.26	2.13	24	
25	2.17	2.24	2.17	2.25	2.06	S	2.07	2.18	2.41	2.49	2.62	2.43	2.27	2.42	2.53	2.65	2.76	2.09	2.07	2.08	2.07	2.11	2.16	2.20	2.06	2.76	2.28	24	
26	2.23	2.22	2.16	2.14	S	2.15	2.13	2.14	2.17	2.48	2.14	2.09	2.15	2.13	2.06	2.11	2.13	2.15	2.92	2.32	2.31	2.10	2.10	2.10	2.06	2.92	2.20	24	
27	3.18	3.18	2.10	S	2.30	2.19	2.37	2.39	2.13	2.38	2.14	2.23	2.11	2.11	2.10	2.09	2.10	2.09	2.09	2.16	2.08	2.07	2.08	2.08	2.07	3.18	2.25	24	
28	2.08	2.08	S	2.13	2.11	2.12	2.12	2.14	2.12	2.11	2.13	2.12	3.42	3.11	2.40	2.96	2.80	3.07	2.59	2.54	2.50	2.26	4.27	2.25	2.08	4.27	2.50	24	
29	2.09	S	2.35	2.15	2.14	2.14	2.14	2.13	2.12	2.10	2.10	2.11	2.12	2.11	2.13	2.14	2.12	2.13	2.12	2.12	2.15	2.20	2.17	2.08	2.08	2.35	2.14	24	
30	S	2.10	2.17	2.22	2.14	2.30	2.25	2.25	2.42	2.65	2.50	2.77	2.95	2.43	2.22	2.13	2.13	2.13	2.13	2.13	2.16	2.17	2.14	2.14	S	2.10	2.95	2.30	24
31	2.14	2.14	2.14	2.14	2.15	2.14	2.14	2.14	2.15	2.14	2.13	2.13	2.13	2.12	2.11	2.09	2.10	2.10	2.07	2.07	2.06	2.05	S	2.07	2.05	2.15	2.12	24	
HOURLY MAX	3.18	3.18	2.35	3.19	3.02	3.97	2.37	2.39	2.42	2.65	2.62	2.77	3.42	3.11	2.53	2.96	2.80	3.37	3.04	2.86	3.92	2.65	4.27	3.61					
HOURLY AVG	2.15	2.18	2.09	2.15	2.13	2.16	2.10	2.10	2.09	2.12	2.11	2.15	2.19	2.15	2.12	2.12	2.11	2.18	2.14	2.10	2.20	2.09	2.16	2.15					

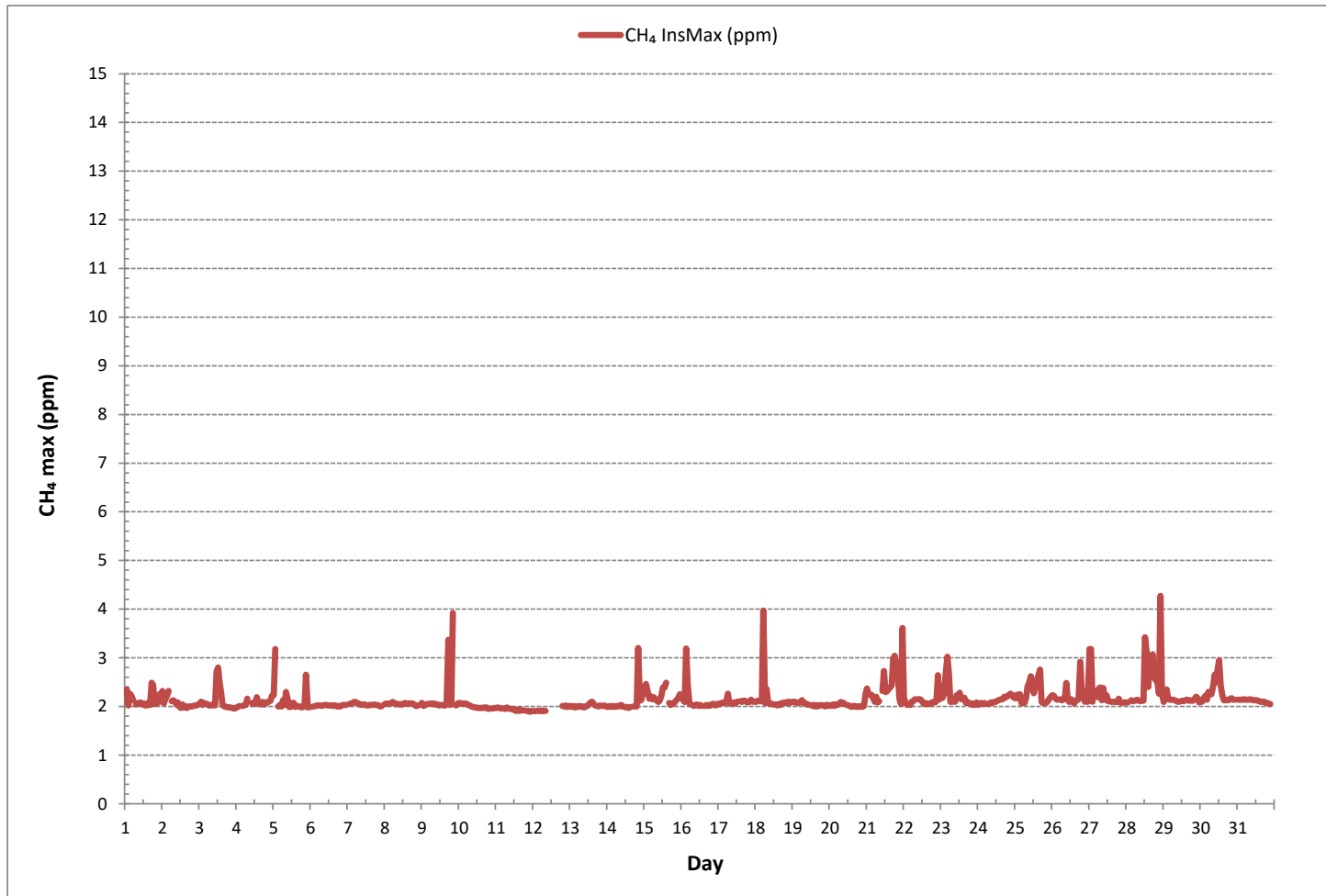
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	700
MAXIMUM INSTANTANEOUS VALUE:	4.27 ppm @ HOUR 22 ON DAY 28
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	0.25
OPERATIONAL TIME:	738 hrs

METHANE MAX Instantaneous Maximum (CH<sub>4</sub> ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE  
Three Creeks 986b Station - December 2018

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
2	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
3	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
4	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	S1	S1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22	
5	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
6	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
7	S	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.01	0.00	24	
8	0.00	0.00	0.00	0.01	0.00	0.07	0.00	0.00	0.00	0.00	0.04	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	0.07	0.01	24	
9	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.37	S	0.00	0.00	1.37	0.06	24	
10	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.03	0.00	24	
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	Y	Y	Y	Y	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20	
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.08	0.00	0.00	0.00	0.08	0.01	24
18	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	24
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
24	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05	0.00	24
25	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
26	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
27	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
28	0.00	0.00	S	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
29	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
30	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	24	
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	24	
HOURLY MAX	0.02	0.03	0.04	0.01	0.00	0.07	0.00	0.01	0.00	0.00	0.04	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.05	1.37	0.08	0.00	0.00	0.00	0.00	0.00	0.00	
HOURLY AVG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

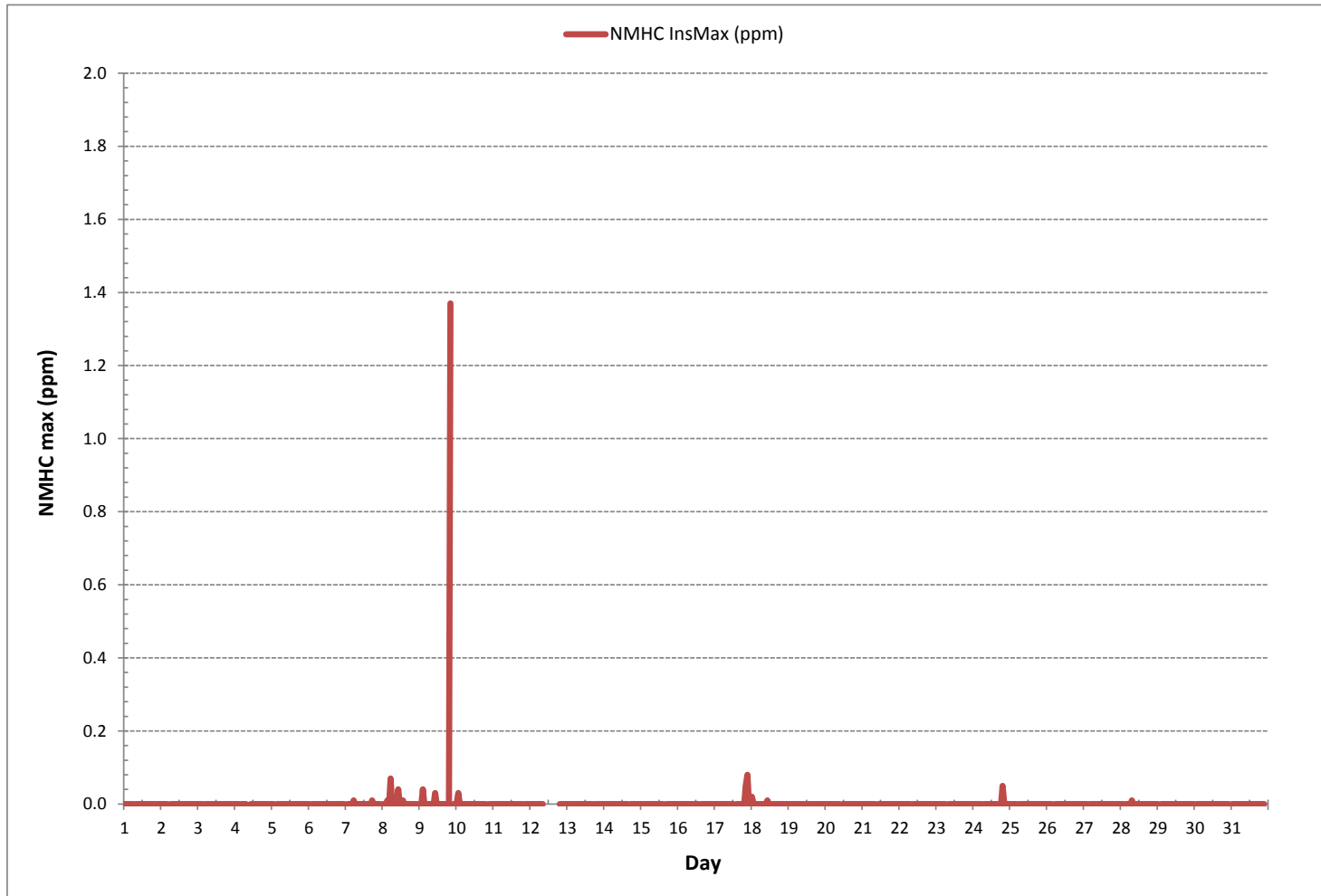
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	16
MAXIMUM INSTANTANEOUS VALUE:	1.37 ppm @ HOUR 20 ON DAY 9
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	0.05
OPERATIONAL TIME:	738 hrs

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE  
Three Creeks 986b Station - December 2018

WIND SPEED Instantaneous Maximum (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	3.1	5.0	5.8	9.6	4.7	5.7	6.6	5.2	8.2	6.5	6.3	7.4	6.8	8.5	8.0	9.0	8.7	4.6	7.3	6.9	8.6	6.2	4.0	4.1	3.1	9.6	6.5	24	
2	7.0	5.8	6.5	6.2	4.5	11.3	10.2	8.9	8.5	7.0	7.6	12.7	12.2	12.1	11.1	11.9	12.6	12.3	11.2	14.0	14.6	16.5	12.2	10.8	4.5	16.5	10.3	24	
3	12.8	13.8	10.4	11.4	9.9	10.2	7.9	3.8	4.1	2.1	2.3	5.9	8.8	5.3	4.2	0.1	0.1	0.1	0.1	9.4	11.6	13.5	12.7	13.5	0.1	13.8	7.3	24	
4	12.8	14.4	15.5	15.2	15.5	9.5	15.0	12.5	13.8	17.5	17.3	17.0	17.0	14.6	40.0	48.2	36.0	37.6	37.5	27.5	19.7	28.4	21.0	16.0	9.5	48.2	21.6	24	
5	14.1	4.7	3.2	3.9	5.5	6.8	6.1	6.8	9.1	5.7	8.5	11.3	11.9	14.5	14.8	11.0	9.6	13.3	12.1	10.9	8.0	6.2	7.7	12.6	3.2	14.8	9.1	24	
6	10.9	9.2	8.3	7.4	8.6	7.3	6.5	7.0	6.2	6.1	9.7	11.0	14.1	14.4	13.8	16.2	13.9	18.6	14.6	16.4	18.2	14.6	11.7	12.8	6.1	18.6	11.6	24	
7	23.6	24.9	24.2	22.3	16.1	16.7	15.5	9.5	8.7	10.8	11.5	13.0	16.1	15.9	14.2	14.5	10.3	7.5	9.4	9.7	9.8	9.5	10.2	15.6	7.5	24.9	14.2	24	
8	13.9	7.7	10.7	11.0	15.7	17.1	20.8	19.9	25.2	26.7	26.2	29.2	30.7	27.3	28.3	21.6	18.9	12.1	12.4	15.1	17.0	18.2	19.6	24.5	7.7	30.7	19.6	24	
9	19.4	20.9	17.3	14.2	10.8	14.6	13.1	13.8	15.1	10.3	11.4	8.5	15.6	11.2	12.4	9.5	9.3	4.1	7.3	6.2	10.3	13.6	13.0	13.8	4.1	20.9	12.3	24	
10	14.9	12.5	14.5	15.4	16.6	20.9	18.8	22.5	20.8	16.2	19.8	24.8	29.0	25.8	29.1	20.4	17.8	13.6	16.8	16.8	22.6	16.8	17.4	17.8	12.5	29.1	19.2	24	
11	14.0	13.2	11.8	20.1	23.6	21.1	23.2	19.7	20.3	24.1	24.0	28.8	26.3	25.7	32.8	26.6	27.5	22.9	25.4	26.4	31.9	42.6	36.9	36.2	11.8	42.6	25.2	24	
12	26.4	29.0	37.5	33.1	35.9	34.4	22.5	27.1	31.9	29.3	29.8	34.6	38.7	35.3	41.0	33.0	35.5	27.9	40.1	21.5	21.9	20.5	17.2	22.1	17.2	41.0	30.3	24	
13	26.1	26.1	26.1	30.7	38.2	30.3	21.6	22.7	26.7	28.8	31.0	35.1	32.7	30.8	33.1	41.0	39.7	37.6	28.1	21.5	16.8	17.9	20.8	22.2	16.8	41.0	28.6	24	
14	13.9	19.1	23.8	17.3	13.3	16.5	16.0	10.6	9.9	10.4	13.2	18.7	20.7	20.6	12.9	9.8	12.4	11.8	13.7	14.2	6.3	14.0	11.1	13.1	6.3	23.8	14.3	24	
15	14.4	16.9	18.6	37.6	15.5	24.2	25.1	21.3	25.2	37.6	40.1	27.6	34.9	30.5	23.1	9.8	6.0	5.7	8.0	8.6	5.7	4.8	3.8	9.9	3.8	40.1	19.0	24	
16	9.9	11.3	6.5	7.6	6.4	13.8	25.6	28.4	27.8	28.2	27.4	27.3	26.0	21.5	18.9	19.7	23.0	15.1	18.0	20.2	14.3	12.1	16.9	15.4	6.4	28.4	18.4	24	
17	15.5	13.8	13.5	13.9	19.8	13.0	10.9	14.9	17.8	16.4	23.8	25.2	27.2	23.7	20.2	16.4	14.6	10.5	15.9	17.1	15.4	10.8	6.3	8.1	6.3	27.2	16.0	24	
18	14.8	9.0	14.3	10.1	11.2	11.7	15.0	8.4	4.6	7.4	10.1	15.4	15.9	14.6	25.1	15.2	13.1	11.0	15.0	9.1	10.5	13.3	19.9	18.0	4.6	25.1	13.0	24	
19	20.6	13.8	19.9	17.6	21.5	16.3	11.1	19.2	23.5	24.6	25.5	30.4	30.4	27.2	30.3	23.9	26.6	25.8	24.8	20.6	19.6	16.3	18.1	18.2	11.1	30.4	21.9	24	
20	14.4	16.4	10.1	10.6	7.2	11.4	12.6	10.1	10.8	11.0	10.5	12.8	17.3	21.3	21.6	25.1	36.8	34.6	29.1	25.8	19.7	15.7	8.5	8.8	7.2	36.8	16.8	24	
21	13.3	15.1	16.1	22.4	30.1	25.9	25.4	37.1	35.6	25.9	26.4	30.3	36.2	26.5	33.4	19.8	11.0	8.6	6.5	8.5	6.1	4.1	3.5	4.7	3.5	37.1	19.7	24	
22	4.9	6.6	3.6	3.6	3.0	4.3	3.9	2.8	3.3	4.8	3.2	2.4	3.8	4.2	4.3	10.3	6.4	5.2	3.1	3.9	2.6	4.1	3.0	3.4	2.4	10.3	4.2	24	
23	3.2	3.4	3.6	3.8	3.1	5.0	6.9	8.1	6.2	7.5	5.7	5.8	7.4	8.2	6.4	7.4	5.3	7.2	6.1	5.1	7.6	5.0	5.0	5.8	3.1	8.2	5.8	24	
24	5.0	6.0	7.0	8.1	7.5	7.6	7.2	5.5	7.7	9.5	10.8	9.5	8.1	9.7	9.4	9.5	6.0	9.2	10.1	6.7	6.3	8.9	8.0	8.3	5.0	10.8	8.0	24	
25	12.8	11.6	13.4	15.2	17.1	17.4	12.5	10.7	6.9	8.8	8.2	7.3	10.8	16.4	14.2	14.2	6.8	4.4	4.5	3.8	3.6	4.4	4.7	4.9	5.7	3.6	17.4	9.4	24
26	5.7	3.6	5.1	7.6	9.8	8.1	9.2	8.2	6.4	7.3	9.8	10.5	8.4	9.1	10.2	10.5	10.9	9.8	6.9	9.4	10.5	14.5	13.3	9.3	3.6	14.5	8.9	24	
27	6.4	5.9	4.8	6.1	3.9	3.7	5.4	9.1	4.5	7.9	3.9	5.8	6.7	7.7	7.3	6.0	6.2	5.6	5.6	6.6	5.8	6.7	4.7	6.1	3.7	9.1	5.9	24	
28	6.5	8.2	6.5	3.5	4.4	9.7	13.5	13.1	12.9	9.3	9.2	8.1	2.4	5.8	6.3	5.3	6.4	5.0	7.8	5.9	7.3	4.6	5.2	5.5	2.4	13.5	7.2	24	
29	8.1	9.3	4.9	5.3	4.6	4.9	9.1	9.7	13.4	22.0	20.7	19.5	18.5	20.3	25.6	24.9	22.8	19.5	22.5	19.7	19.2	21.3	25.6	24.9	4.6	25.6	16.5	24	
30	24.5	20.2	25.5	21.1	23.7	18.2	17.6	14.6	12.5	9.8	7.7	8.0	10.4	9.7	6.4	8.0	10.3	10.9	14.3	18.9	17.1	13.6	13.1	12.1	6.4	25.5	14.5	24	
31	9.4	9.5	9.6	10.9	13.9	11.4	11.7	14.9	18.1	14.2	15.6	17.8	23.0	27.1	21.5	17.3	15.3	16.0	19.4	25.1	28.9	32.3	36.6	26.2	9.4	36.6	18.6	24	
HOURLY MAX	26.4	29.0	37.5	37.6	38.2	34.4	25.6	37.1	35.6	37.6	40.1	35.1	38.7	35.3	41.0	48.2	39.7	37.6	40.1	27.5	31.9	42.6	36.9	36.2					

STATUS FLAG CODES

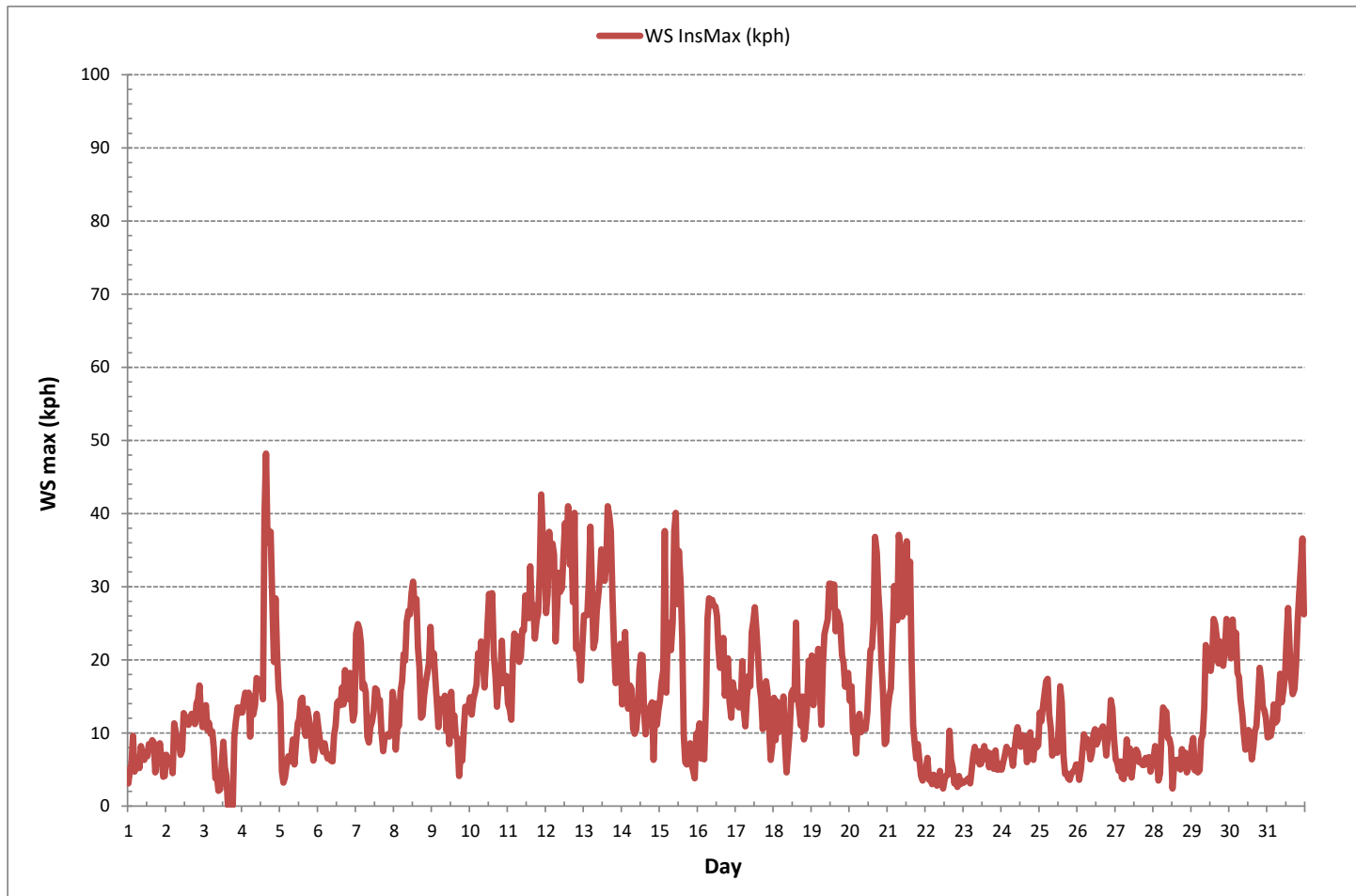
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	48.2	kph	@ HOUR	15	ON DAY	4	
OPERATIONAL TIME:						744	hrs



WIND SPEED Instantaneous Maximum (WS kph)

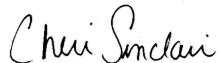


***APPENDIX IV  
REPORT CERTIFICATION FORM***

### Report Certification Form

<b>Alberta Airshed</b> (if applicable)	<b>EPA Approval or Code of Practice Registration #</b> (if applicable)
YES	N/A
<b>Company Name</b> (if applicable)	<b>Industrial Operation Name</b> (if applicable)
Peace River Area Monitoring Program Committee	Three Creeks 986b Station
<b>Name of the Representative of the Person Responsible</b>	<b>Position / Title of the Representative of the Person Responsible</b>
Mike Bisaga / Lily Lin	Technical Program Managers
<b>Is an External Party Certifying the Report?</b> If 'Yes', fill in the fields below for the external person.	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Name of External Person Certifying the Report</b>	<b>Position / Title of External Person Certifying the Report</b>
Cheri Sinclair	Supervisor, Customer Service, Air Services
<b>Company Name for the External Person Certifying the Report</b>	<b>Identification of Qualifications / Professional Designations of the External Person Certifying the Report</b>
Maxxam Analytics, A Bureau Veritas Group Company	B.Sc.

Maxxam Analytics is the designated contractor conducting monitoring and reporting activities. I certify that the submitted data has been (a) reviewed and validated as per the AMD Chapter 6: Ambient Data Quality. I certify that the submitted report (b) accurately reflects the monitoring results and reporting timeframe and (c) meets the specified analysis, summarization and reporting requirements as per the AMD Chapter 9: Reporting.



\_\_\_\_\_  
Signature of the External Person Certifying the Report

23 - Jan - 2019





\_\_\_\_\_  
Report Issued Date (dd-mon-yyyy)

***APPENDIX V***  
***DATA VALIDATION CERTIFICATION FORM***



### Validation Certificate Form

<b>Client:</b> <u>Peace River Area Monitoring Program Committee</u>	<b>Project #:</b> <u>8449-2018-12-02-C</u>
<b>Site:</b> <u>Three Creeks 986b Station</u>	<b>Contact:</b> <u>Lily Lin</u>

Level 0 Preliminary Verification	<u></u>	Date <u>18 - Jan - 2019</u>
Level 1 Primary Validation	<u></u>	Date <u>18 - Jan - 2019</u>
Level 2 Final Validation	<u></u>	Date <u>23 - Jan - 2019</u>
Level 3 Independent Data Review	<u></u>	Date <u>23 - Jan - 2019</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

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