



MAXXAM ANALYTICS
#1 2080 39 Ave. NE, Calgary, AB
T2E 6P7

maxxam.ca
Toll Free 800-386-7247
Fax 403-219-3673

AMBIENT AIR MONITORING MONTHLY DATA REPORT
PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
THREE CREEKS 842B STATION

JOB #: 8449-2018-12-80-C

December 2018

Prepared for:

PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Attention: LILY LIN

DATE: January 22, 2019

Prepared by:

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

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

Reviewed by:

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

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 842b 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).

THC/CH₄/NMHC: An additional zero-span verification was performed as a quality check following a span gas replacement on December 13, incurring one hour of downtime.

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						MAXIMUM VALUES							OPERATIONAL TIME (%)
Three Creeks 842b Station						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
	1-hr	24-hr	1-hr	24-hr									
SO ₂ (ppb)	172	48	0	0	0	3	18	21	14.3	SSW	1	8	100.0
TRS (ppb)	-	-	-	-	0.26	0.51	15	13	10.9	WNW	0.32	23	100.0
THC (ppm)	-	-	-	-	2.06	2.39	26	1	4.5	NE	2.14	29	99.9
CH ₄ (ppm)	-	-	-	-	2.06	2.39	26	1	4.5	NE	2.14	29	99.9
NMHC (ppm)	-	-	-	-	0.00	0.01	24	21	6.7	ENE	0.00	1	99.9
RELATIVE HUMIDITY (%)	-	-	-	-	79	95	1	17	5.4	SW	92	1	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	939	956	30	18	10.6	S	952	5	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	-9.2	3.0	18	12	6.4	S	0.3	13	100.0
STATION TEMPERATURE (°C)	-	-	-	-	21.8	23.4	3	9	1.6	WSW	23.0	3	100.0
VECTOR WS (kph)	-	-	-	-	4.0	28.4	13	13	-	WSW	19.0	12	100.0
VECTOR WD (sec)	-	-	-	-	191 (S)	-	-	-	-	-	-	-	100.0

SOUR GAS PROCESSING INDUSTRY
MONTHLY REPORT SUMMARY

Three Creeks 842b Station

Peace River Area Monitoring Program Committee

Plant Name / Location

Company

Licence Number	Report Date	
	YEAR	MONTH
N/A	2018	December

CONTINUOUS AMBIENT MONITORING							
PARAMETER	% TIME OPERATIONAL	ONE - HOUR AVERAGE			24 - HOUR AVERAGE		
		MAXIMUM VALUES		NO. READINGS > REGULATION	MAXIMUM VALUES		NO. READINGS > REGULATION
SO ₂	100.0	0.003	ppm	0	0.001	ppm	0
TRS	100.0	0.001	ppm	-	0.000	ppm	-
THC	99.9	2.39	ppm	-	2.14	ppm	-
CH ₄	99.9	2.39	ppm	-	2.14	ppm	-
NMHC	99.9	0.01	ppm	-	0.00	ppm	-
RH	100.0	95	%	-	92	%	-
BP	100.0	956	mb	-	952	mb	-
Ambient TPX	100.0	3.0	°C	-	0.3	°C	-
Station TPX	100.0	23.4	°C	-	23.0	°C	-
Wind Speed	100.0	28.4	kph	-	19.0	kph	-
Wind Direction	100.0	-		-	-		-

SIGNATURE OF COMPANY REPRESENTATIVE

FOR ALBERTA ENVIRONMENT USE ONLY

Exceedance Summary Report

SO₂ 1-Hour Exceedances

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

SO₂ 24-Hour Exceedances

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

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.

TABLE OF CONTENTS

<u>Title</u>	<u>Page</u>
SUMMARY	2
MONTHLY CONTINUOUS DATA SUMMARY REPORT	3
SOUR GAS SUMMARY REPORT	4
EXCEEDANCE SUMMARY REPORT	5
TABLE OF CONTENTS	6
 1.0 Discussion	 8
 2.0 Project Personnel	 11
 3.0 Plant Monthly Required AMD Summary	 11
 4.0 Calculations and Results	 11
 5.0 Methods and Procedures	 12
 Appendix I	 Continuous Monitoring Data Results 15
	Sulphur Dioxide 16
	Total Reduced Sulphur 21
	Total Hydrocarbon 26
	Methane 31
	Non-Methane Hydrocarbon 36
	Wind Speed 41
	Wind Direction 45
	Relative Humidity 49
	Barometric Pressure 52
	Ambient Temperature 55
	Station Temperature 58
 Appendix II	 Equipment Calibration Results 61
	Sulphur Dioxide 62
	Total Reduced Sulphur 68
	Total Hydrocarbon 68
	Wind System 72
	Meteorological System Check 74
	Calibrators 76
	Calibration Gases 79

Appendix III	Maximum Instantaneous Data	83
Appendix IV	Report Certification Form	96
Appendix V	Data Validation Certification Form	98

1.0 Discussion

This monthly report consists of continuous monitoring results for the following parameters: Sulphur Dioxide (SO₂), Total Reduced Sulphur (TRS), Total Hydrocarbon (THC), Methane (CH₄), 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 (SO₂)

- Operational time for the monitoring period was 100%.
- The routine monthly calibration was performed on December 5.
- On December 14, the analyzer screen was found blank while valid data was being recorded on the datalogger. The analyzer was reset and the issue was resolved. Four minutes of data were lost at 09:37-09:40 as a result; and the hourly average was re-calculated.

TOTAL REDUCED SULPHUR (TRS)

- Operational time for the monitoring period was 100%.
- The routine monthly calibration was performed on December 5.

TOTAL HYDROCARBONS (THC), METHANE (CH₄) and NON-METHANE HYDROCARBONS (NMHC)

- Operational time for the monitoring period was 99.9%, equivalent to one hour of downtime.
- The routine monthly calibration was performed on December 5. The fuel gas (H₂) cylinder was replaced during this site visit.
- The span gas cylinder was replaced on December 13. 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.
- During minute data review, data that were deemed anomalous, due to suspected poor injections, were discarded and the corresponding hourly average was re-calculated. The following minute data were impacted: December 31 at 13:32 -13:33.
- The daily zero result of December 17 was excluded from baseline correction during the data validation process, due to a drift for which a cause could not be determined. Daily zero results of December 16 and December 18 were applied incrementally to data collected between hour 15:00 on December 16 and hour 11:00 on December 18.
- One instance of maximum instantaneous data was discarded at hour 06:00 on December 29 due to an anomalous spike. The corresponding anomalously high minute concentration at 06:52 was also discarded and the hourly average was re-calculated.
- 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. No canister event was recorded this month.

WIND SPEED (WS) and WIND DIRECTION (WD)

- Operational time for the monitoring period was 100%.
- An anemometer sensor check was conducted on December 5. 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 5. The result was satisfactory.

BAROMETRIC PRESSURE (BP)

- Operational time for the monitoring period was 100%.
- A pressure sensor check was conducted on December 5. The result was satisfactory.

AMBIENT TEMPERATURE (AmbTPX)

- Operational time for the monitoring period was 100%.
- A temperature sensor check was conducted on December 5. The result was satisfactory.

STATION TEMPERATURE (StnTPX)

- Operational time for the monitoring period was 100%.

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 43i 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 - Campbell Scientific Unit

Barometric Pressure - Met One Unit

Ambient Temperature - Campbell Scientific 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

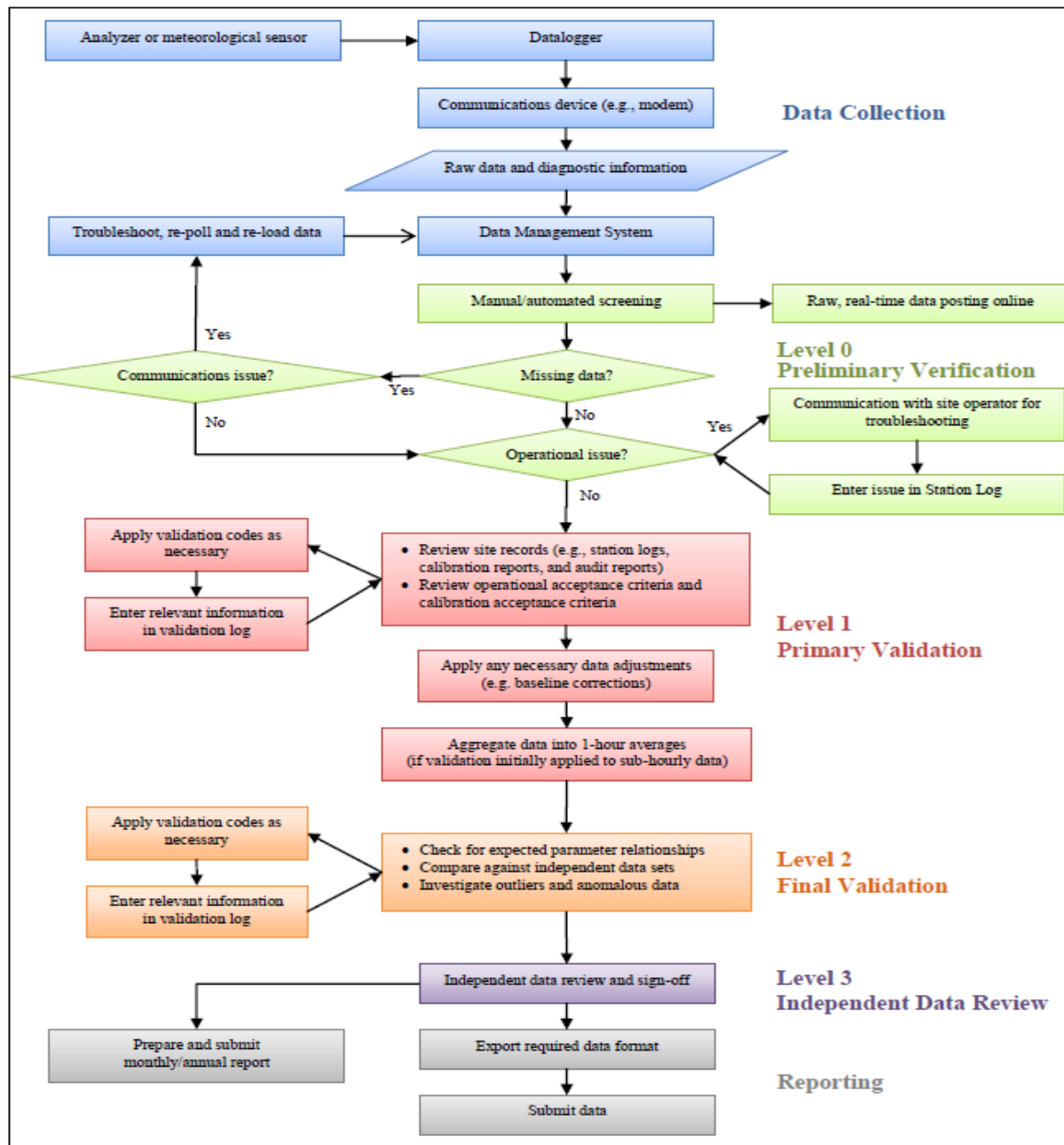
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

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 (SO₂ ppb)

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

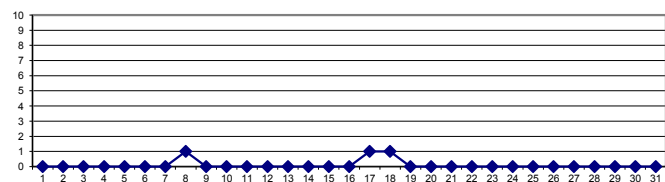
STATUS FLAG CODES

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

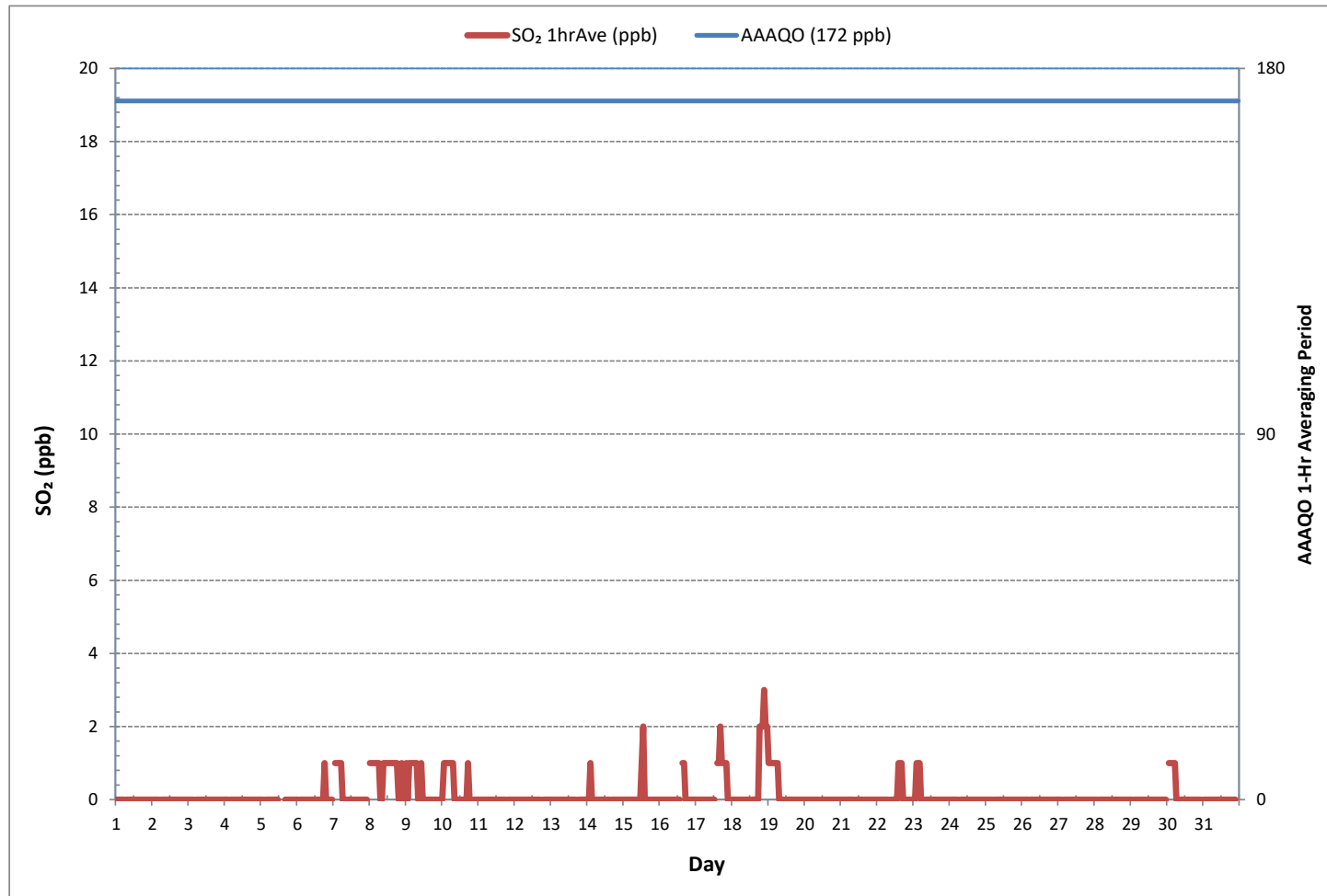
24 HR AVERAGES December 2018



MONTHLY SUMMARY

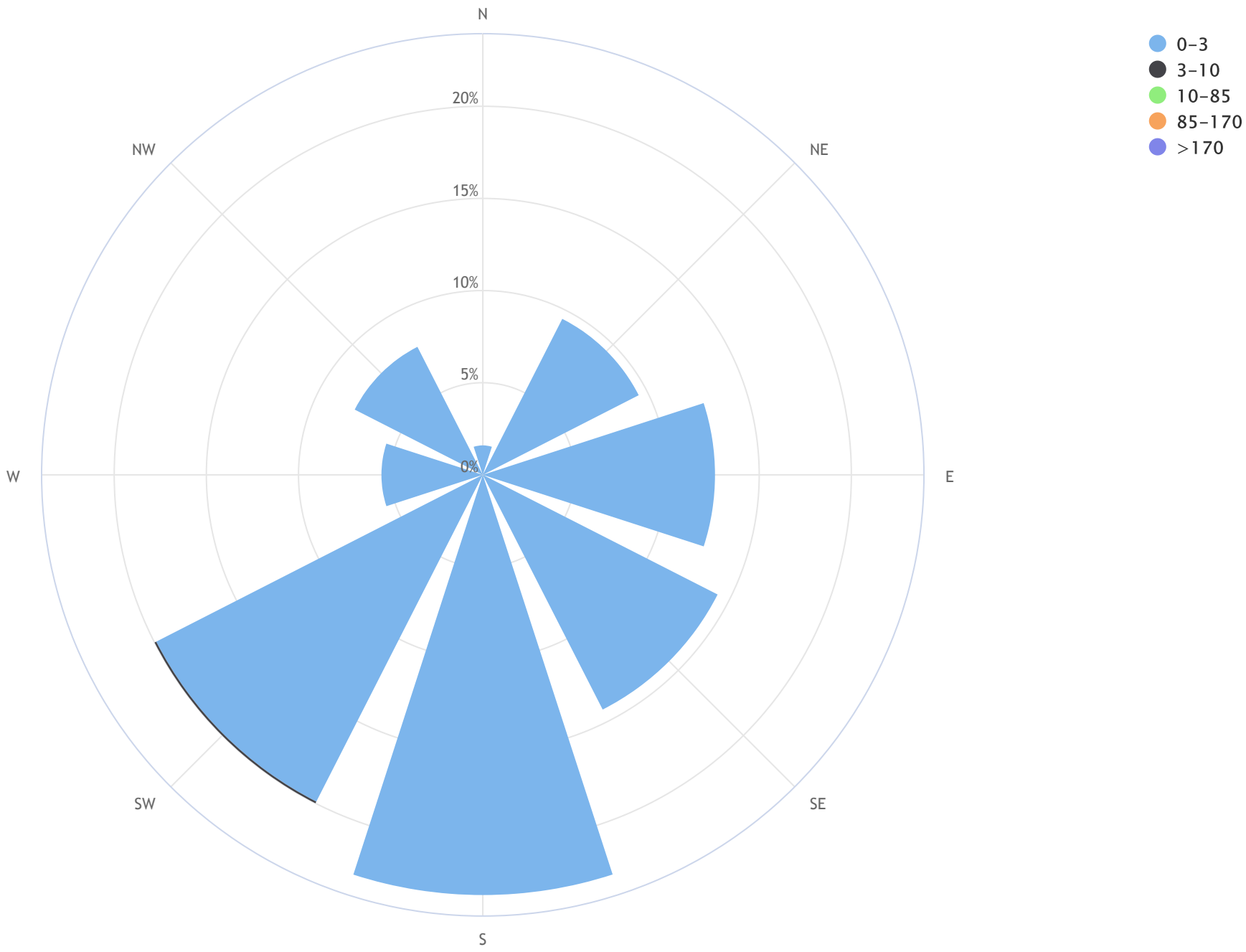
NUMBER OF 1-HR EXCEEDANCES:	0
NUMBER OF 24-HR EXCEEDANCES:	0
NUMBER OF NON-ZERO READINGS:	76
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	3 ppb @ HOUR 21 ON DAY 18
MAXIMUM 24-HR AVERAGE:	1 ppb ON DAY 8
IZS CALIBRATION TIME:	33 hrs
MONTHLY CALIBRATION TIME:	4 hrs
OPERATIONAL TIME:	744 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0
MONTHLY AVERAGE:	0 ppb

SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)



Peace River Area Monitoring Program Committee_Three Creeks 842b Station_SO₂ (ppb)_18/12

Pollutant Rose_Wind Frequency (Blowing From)_CALM Avg = 0.0_CALM % = 5.9%



Direction	0-3	3-10	10-85	85-170	>170	TOTAL
N	1.6	0.0	0.0	0.0	0.0	1.6
NE	9.5	0.0	0.0	0.0	0.0	9.5
E	12.6	0.0	0.0	0.0	0.0	12.6
SE	14.3	0.0	0.0	0.0	0.0	14.3
S	22.8	0.0	0.0	0.0	0.0	22.8
SW	19.9	0.1	0.0	0.0	0.0	20.1
W	5.5	0.0	0.0	0.0	0.0	5.5
NW	7.8	0.0	0.0	0.0	0.0	7.8
Summary	93.9	0.1	0.0	0.0	0.0	94.1
CALM	5.9	0.0	0.0	0.0	0.0	5.9

SO₂[ppb] Calibration: PRAMP_842 Monthly: 18/12 Type: Span



Span Meas Span Ref Span Low Span High

TOTAL REDUCED SULPHUR

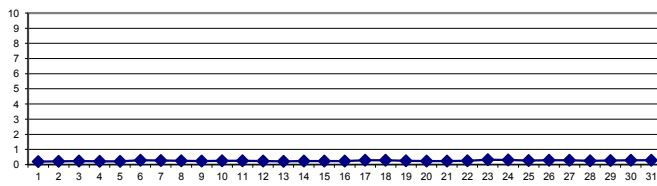
TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)

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	0.21	0.20	0.22	0.20	0.19	0.19	S	0.23	0.19	0.19	0.16	0.16	0.17	0.17	0.19	0.19	0.18	0.19	0.22	0.21	0.21	0.22	0.20	0.20	0.16	0.23	0.20	24	
2	0.20	0.20	0.21	0.20	0.19	S	0.22	0.19	0.21	0.19	0.19	0.20	0.20	0.20	0.22	0.23	0.21	0.23	0.22	0.25	0.22	0.21	0.23	0.24	0.19	0.25	0.21	24	
3	0.24	0.24	0.25	0.23	S	0.27	0.24	0.23	0.25	0.24	0.23	0.24	0.24	0.25	0.23	0.24	0.24	0.24	0.24	0.23	0.23	0.24	0.23	0.24	0.23	0.27	0.24	24	
4	0.26	0.23	0.23	S	0.24	0.22	0.22	0.22	0.22	0.20	0.20	0.21	0.20	0.20	0.20	0.20	0.21	0.22	0.23	0.24	0.22	0.23	0.23	0.28	0.20	0.28	0.22	24	
5	0.27	0.27	S	0.31	0.23	0.23	0.23	0.21	0.21	C	C	C	C	C	0.27	0.19	0.17	0.17	0.17	0.18	0.19	0.20	0.22	0.23	0.17	0.31	0.22	24	
6	0.25	S	0.32	0.28	0.29	0.29	0.31	0.29	0.31	0.29	0.28	0.28	0.29	0.28	0.27	0.28	0.27	0.26	0.27	0.26	0.26	0.26	0.27	0.26	0.25	0.32	0.28	24	
7	S	0.35	0.31	0.31	0.30	0.30	0.28	0.30	0.29	0.29	0.27	0.28	0.26	0.25	0.23	0.24	0.25	0.26	0.25	0.24	0.24	0.23	0.23	S	0.23	0.35	0.27	24	
8	0.30	0.24	0.25	0.24	0.24	0.26	0.24	0.25	0.26	0.26	0.26	0.26	0.25	0.26	0.23	0.25	0.27	0.26	0.25	0.23	0.22	0.22	S	0.27	0.22	0.30	0.25	24	
9	0.25	0.26	0.28	0.24	0.26	0.24	0.25	0.25	0.25	0.24	0.22	0.23	0.23	0.22	0.20	0.20	0.19	0.19	0.20	0.20	0.22	S	0.27	0.25	0.19	0.28	0.23	24	
10	0.24	0.24	0.28	0.28	0.26	0.28	0.27	0.24	0.25	0.23	0.23	0.23	0.23	0.24	0.22	0.26	0.31	0.27	0.28	0.27	S	0.32	0.27	0.25	0.22	0.32	0.26	24	
11	0.27	0.26	0.27	0.26	0.26	0.26	0.26	0.25	0.24	0.23	0.24	0.26	0.26	0.27	0.27	0.30	0.27	0.27	0.28	S	0.30	0.25	0.26	0.25	0.23	0.30	0.26	24	
12	0.26	0.25	0.26	0.24	0.26	0.25	0.24	0.25	0.24	0.26	0.24	0.26	0.23	0.21	0.22	0.21	0.21	0.22	S	0.23	0.22	0.22	0.22	0.21	0.21	0.26	0.23	24	
13	0.22	0.23	0.22	0.23	0.22	0.22	0.22	0.22	0.21	0.24	0.23	0.23	0.22	0.22	0.21	0.23	0.22	S	0.24	0.22	0.22	0.22	0.23	0.22	0.21	0.24	0.22	24	
14	0.23	0.23	0.22	0.23	0.25	0.23	0.23	0.24	0.25	0.26	0.25	0.25	0.23	0.21	0.21	0.21	S	0.23	0.22	0.21	0.20	0.22	0.21	0.27	0.20	0.27	0.23	24	
15	0.27	0.28	0.28	0.25	0.22	0.21	0.19	0.21	0.26	0.17	0.17	0.17	0.32	0.51	0.17	S	0.25	0.21	0.21	0.24	0.23	0.20	0.19	0.17	0.22	0.17	0.51	0.23	24
16	0.23	0.24	0.26	0.24	0.25	0.25	0.23	0.23	0.22	0.24	0.23	0.25	0.23	0.24	S	0.28	0.26	0.24	0.24	0.25	0.25	0.24	0.25	0.25	0.22	0.28	0.24	24	
17	0.25	0.25	0.26	0.27	0.26	0.26	0.26	0.25	0.25	0.26	0.28	0.25	0.27	S	0.32	0.29	0.29	0.29	0.28	0.32	0.32	0.31	0.33	0.32	0.25	0.33	0.28	24	
18	0.29	0.28	0.28	0.28	0.26	0.27	0.29	0.31	0.28	0.29	0.28	0.30	S	0.29	0.26	0.26	0.26	0.25	0.24	0.27	0.27	0.27	0.27	0.29	0.24	0.31	0.28	24	
19	0.27	0.28	0.28	0.29	0.29	0.29	0.27	0.25	0.24	0.24	0.24	S	0.26	0.24	0.23	0.23	0.24	0.24	0.24	0.22	0.21	0.23	0.23	0.22	0.25	0.21	0.29	0.25	24
20	0.24	0.25	0.24	0.25	0.24	0.26	0.26	0.23	0.22	0.23	S	0.27	0.25	0.23	0.21	0.22	0.21	0.23	0.22	0.21	0.21	0.22	0.21	0.21	0.21	0.27	0.23	24	
21	0.23	0.22	0.24	0.23	0.24	0.23	0.24	0.25	0.24	S	0.27	0.25	0.25	0.23	0.24	0.24	0.23	0.22	0.23	0.22	0.23	0.22	0.23	0.24	0.22	0.27	0.23	24	
22	0.24	0.23	0.24	0.20	0.20	0.23	0.25	0.24	S	0.30	0.28	0.27	0.28	0.28	0.27	0.27	0.28	0.27	0.29	0.28	0.28	0.25	0.26	0.32	0.20	0.32	0.26	24	
23	0.40	0.41	0.42	0.40	0.38	0.37	0.31	S	0.33	0.27	0.29	0.29	0.27	0.27	0.27	0.28	0.30	0.30	0.32	0.32	0.28	0.28	0.25	0.26	0.25	0.42	0.32	24	
24	0.25	0.25	0.25	0.24	0.24	0.25	S	0.28	0.26	0.26	0.24	0.26	0.25	0.26	0.25	0.27	0.26	0.24	0.28	0.37	0.46	0.50	0.50	0.48	0.24	0.50	0.30	24	
25	0.45	0.36	0.31	0.25	0.26	S	0.32	0.27	0.26	0.27	0.27	0.25	0.25	0.26	0.25	0.25	0.23	0.22	0.20	0.20	0.22	0.25	0.28	0.32	0.20	0.45	0.27	24	
26	0.39	0.47	0.43	0.38	S	0.38	0.29	0.25	0.23	0.24	0.22	0.23	0.23	0.24	0.23	0.23	0.23	0.22	0.23	0.23	0.25	0.26	0.26	0.27	0.22	0.47	0.28	24	
27	0.27	0.27	0.31	S	0.35	0.31	0.29	0.32	0.33	0.29	0.29	0.28	0.29	0.28	0.26	0.26	0.25	0.26	0.27	0.28	0.29	0.31	0.34	0.28	0.25	0.35	0.29	24	
28	0.25	0.27	S	0.29	0.25	0.27	0.25	0.26	0.26	0.25	0.25	0.25	0.25	0.24	0.27	0.28	0.29	0.31	0.29	0.26	0.25	0.24	0.24	0.23	0.23	0.31	0.26	24	
29	0.22	S	0.34	0.30	0.28	0.28	0.26	0.24	0.24	0.25	0.25	0.25	0.25	0.29	0.30	0.30	0.27	0.26	0.28	0.28	0.28	0.32	0.29	0.25	0.22	0.34	0.27	24	
30	S	0.30	0.28	0.28	0.27	0.27	0.27	0.28	0.28	0.28	0.28	0.30	0.29	0.30	0.28	0.27	0.27	0.29	0.29	0.29	0.29	0.31	0.30	S	0.27	0.31	0.28	24	
31	0.34	0.34	0.33	0.32	0.36	0.34	0.32	0.31	0.29	0.27	0.28	0.27	0.27	0.27	0.28	0.27	0.27	0.25	0.25	0.26	0.26	0.25	S	0.28	0.25	0.36	0.29	24	
HOURLY MAX	0.45	0.47	0.43	0.40	0.38	0.38	0.32	0.32	0.33	0.30	0.29	0.30	0.32	0.51	0.32	0.30	0.31	0.31	0.32	0.37	0.46	0.50	0.50	0.48					
HOURLY AVG	0.27	0.27	0.28	0.27	0.26	0.27	0.26	0.25	0.25	0.25	0.25	0.25	0.25	0.26	0.24	0.25	0.25	0.24	0.25	0.25	0.25	0.26	0.26	0.26					

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

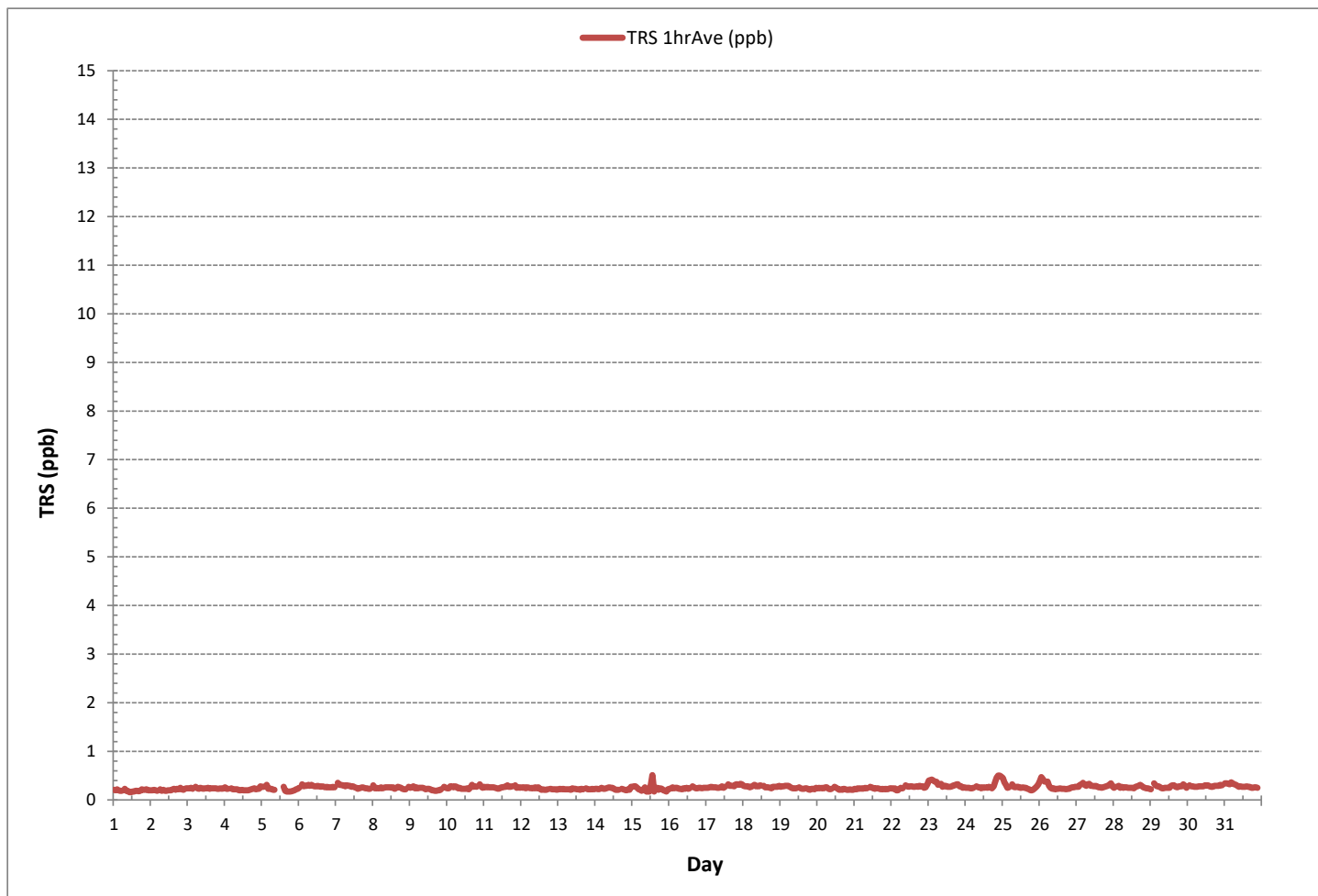
24 HR AVERAGES December 2018



MONTHLY SUMMARY

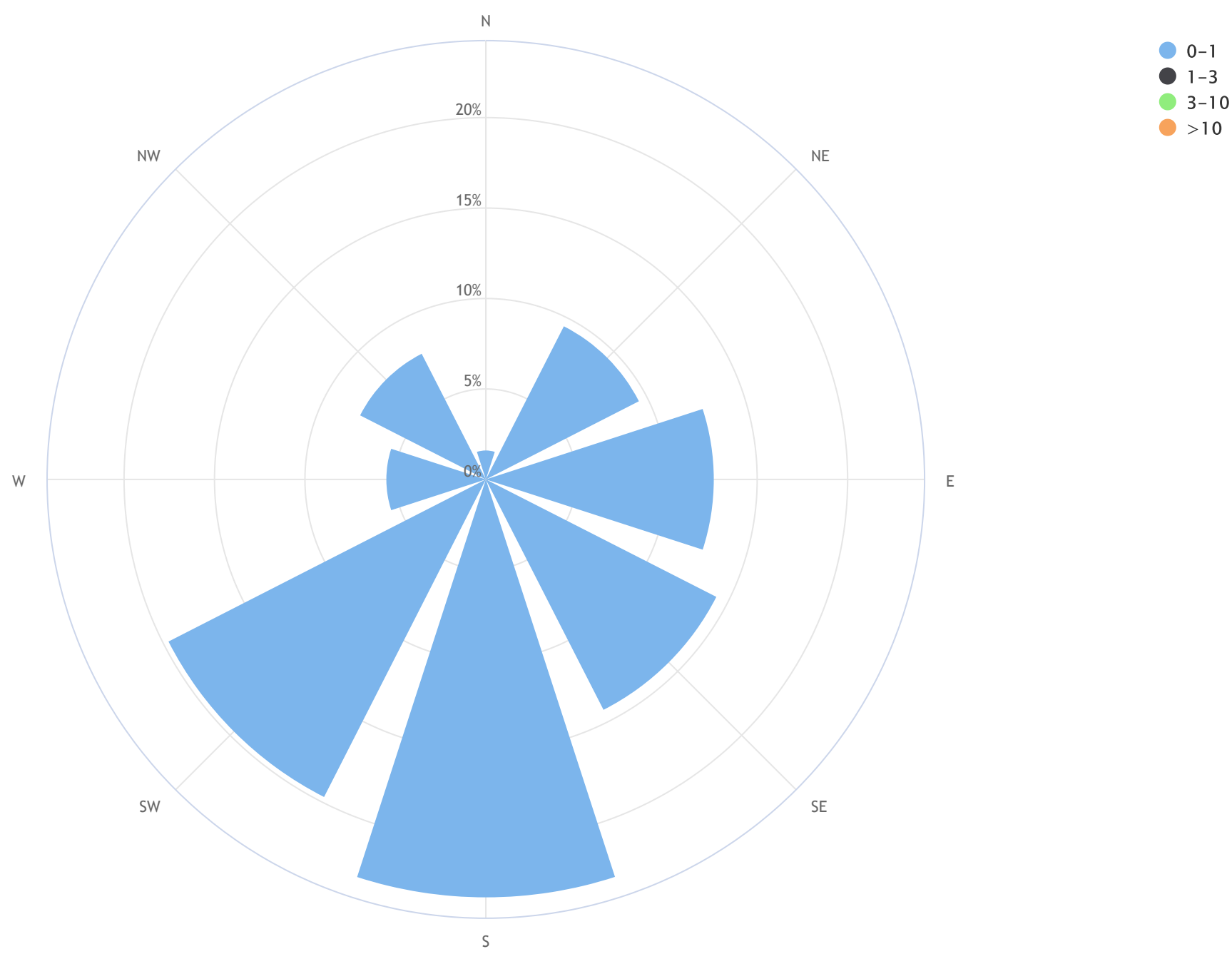
NUMBER OF NON-ZERO READINGS:	706				
MINIMUM 1-HR AVERAGE:	0.16	ppb	@ HOUR	10	ON DAY
MAXIMUM 1-HR AVERAGE:	0.51	ppb	@ HOUR	13	ON DAY
MAXIMUM 24-HR AVERAGE:	0.32	ppb			ON DAY
IZS CALIBRATION TIME:	33	hrs	OPERATIONAL TIME:	744	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.04		MONTHLY AVERAGE:	0.26	ppb

TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)



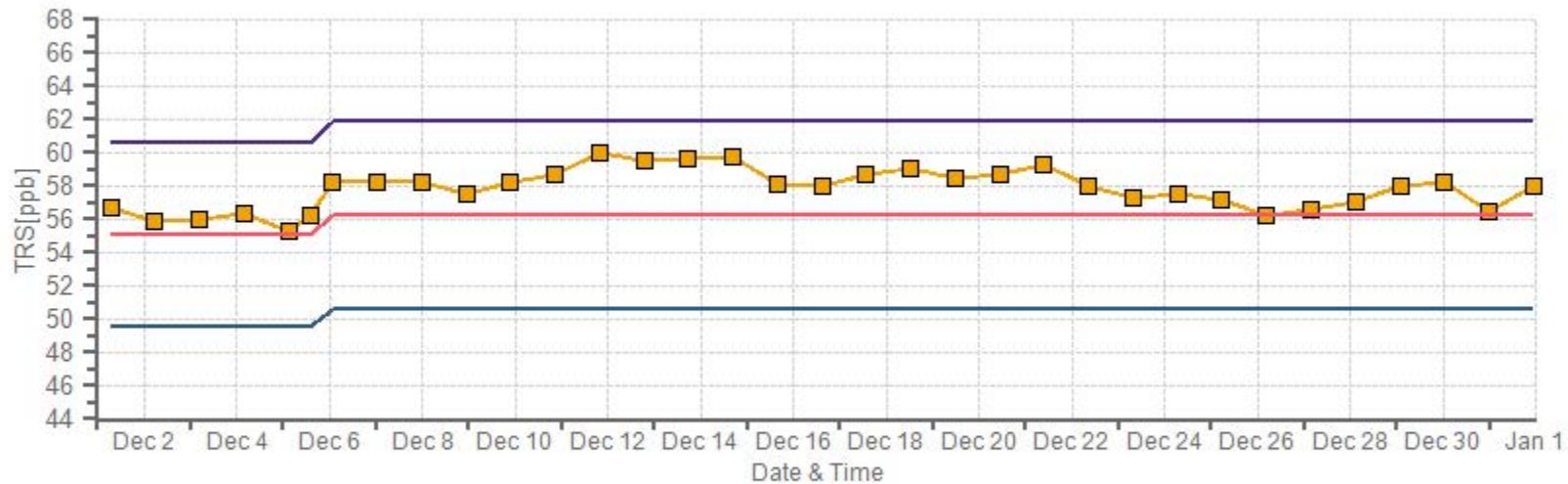
Peace River Area Monitoring Program Committee_Three Creeks 842b Station_TRS (ppb)_18/12

Pollutant Rose_Wind Frequency (Blowing From)_CALM Avg = 0.3_CALM % = 5.9%



Direction	0-1	1-3	3-10	>10	TOTAL
N	1.6	0.0	0.0	0.0	1.6
NE	9.5	0.0	0.0	0.0	9.5
E	12.6	0.0	0.0	0.0	12.6
SE	14.3	0.0	0.0	0.0	14.3
S	23.1	0.0	0.0	0.0	23.1
SW	19.7	0.0	0.0	0.0	19.7
W	5.5	0.0	0.0	0.0	5.5
NW	7.8	0.0	0.0	0.0	7.8
Summary	94.1	0.0	0.0	0.0	94.1
CALM	6.0	0.0	0.0	0.0	6.0

TRS[ppb] Calibration: PRAMP_842 Monthly: 18/12 Type: Span



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

TOTAL HYDROCARBON



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 842b Station - December 2018

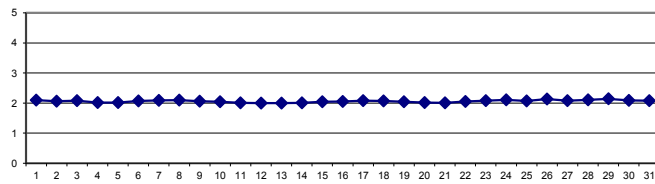
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

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	2.06	2.09	2.12	2.12	2.12		S	2.15	2.17	2.17	2.13	2.08	2.07	2.07	2.08	2.08	2.08	2.09	2.09	2.09	2.10	2.13	2.11	2.08	2.06	2.17	2.10	2.10	24
2	2.08	2.08	2.07	2.06	2.06	S	2.07	2.07	2.05	2.05	2.04	2.04	2.05	2.05	2.05	2.05	2.08	2.06	2.07	2.08	2.08	2.08	2.09	2.10	2.04	2.10	2.06	24	
3	2.10	2.10	2.10	2.10	S	2.09	2.08	2.08	2.09	2.09	2.09	2.09	2.10	2.08	2.07	2.06	2.06	2.06	2.06	2.06	2.06	2.05	2.04	2.05	2.04	2.10	2.08	24	
4	2.04	2.04	2.03	S	2.04	2.04	2.03	2.02	2.03	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.02	2.03	2.03	2.02	2.03	2.01	2.04	2.02	24	
5	2.04	2.04	S	2.04	2.03	2.02	2.02	2.03	2.04	C	C	C	C	2.00	2.01	2.00	2.00	2.01	2.01	2.01	2.01	2.02	2.02	2.03	2.00	2.04	2.02	24	
6	2.04	S	2.06	2.07	2.07	2.08	2.09	2.09	2.09	2.09	2.07	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.05	2.07	2.04	2.09	2.07	24	
7	S	2.11	2.09	2.10	2.12	2.11	2.10	2.11	2.12	2.11	2.09	2.10	2.07	2.07	2.07	2.07	2.08	2.09	2.10	2.09	2.08	2.09	2.10	S	2.07	2.12	2.09	24	
8	2.14	2.12	2.11	2.09	2.10	2.12	2.12	2.14	2.14	2.14	2.13	2.12	2.09	2.10	2.08	2.10	2.11	2.11	2.09	2.08	2.06	2.03	S	2.07	2.03	2.14	2.10	24	
9	2.08	2.07	2.09	2.08	2.08	2.07	2.08	2.08	2.07	2.06	2.05	2.05	2.06	2.04	2.03	2.03	2.04	2.02	2.02	2.03	2.04	S	2.06	2.07	2.02	2.09	2.06	24	
10	2.07	2.07	2.08	2.10	2.10	2.09	2.08	2.06	2.04	2.02	2.02	2.01	2.00	2.01	2.00	2.01	2.03	2.02	2.02	2.02	2.02	S	2.02	2.01	2.01	2.00	2.04	24	
11	2.00	2.01	2.01	2.02	2.02	2.01	2.01	2.00	2.00	2.00	2.00	2.01	2.01	2.02	2.02	2.02	2.02	2.01	2.02	2.01	2.02	S	2.00	1.99	1.99	1.99	2.02	2.01	24
12	2.00	1.99	2.01	2.01	1.99	2.00	2.01	1.99	1.99	2.00	2.01	2.00	2.00	1.99	1.99	1.99	2.00	2.00	S	2.00	2.00	2.00	2.00	2.00	1.99	2.01	2.00	24	
13	2.01	2.01	2.01	2.01	2.01	2.00	2.00	2.00	2.00	2.01	2.00	2.01	2.00	1.99	1.99	2.00	2.00	S	S1	2.01	2.00	2.00	2.00	2.00	1.99	2.01	2.00	23	
14	2.00	2.01	2.01	2.00	2.01	2.00	1.99	1.99	2.00	2.05	2.03	2.00	2.00	1.99	1.99	2.00	S	2.02	2.05	2.06	2.04	2.03	2.02	2.02	1.99	2.06	2.01	24	
15	2.02	2.02	2.03	2.02	2.01	2.01	2.01	2.02	2.02	2.03	2.03	2.03	2.02	2.02	2.02	S	2.02	2.02	2.08	2.10	2.05	2.06	2.06	2.10	2.01	2.10	2.04	24	
16	2.10	2.12	2.14	2.14	2.13	2.10	2.03	2.01	2.02	2.02	2.01	2.01	2.01	2.01	S	2.01	2.01	2.02	2.02	2.03	2.02	2.02	2.03	2.03	2.01	2.14	2.05	24	
17	2.04	2.05	2.05	2.06	2.07	2.07	2.06	2.06	2.07	2.06	2.07	2.06	2.08	S	2.10	2.10	2.11	2.10	2.09	2.11	2.13	2.11	2.11	2.11	2.04	2.13	2.08	24	
18	2.12	2.10	2.07	2.06	2.08	2.06	2.06	2.09	2.05	2.05	2.05	2.04	S	2.02	2.02	2.04	2.03	2.05	2.05	2.07	2.08	2.08	2.08	2.09	2.11	2.02	2.12	2.07	24
19	2.10	2.09	2.09	2.08	2.09	2.11	2.07	2.05	2.05	2.04	2.04	S	2.02	2.01	2.01	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.11	2.04	24	
20	2.00	2.00	2.01	2.01	2.01	2.02	2.02	2.02	2.02	2.03	S	2.05	2.07	2.02	2.00	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.01	2.01	2.01	2.07	2.02	24	
21	2.01	2.00	2.01	2.00	2.00	2.00	2.00	2.00	2.00	S	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.01	2.02	2.02	2.00	2.02	2.01	24
22	2.06	2.03	2.02	2.01	2.01	2.01	2.04	2.03	S	2.04	2.05	2.04	2.04	2.04	2.04	2.04	2.04	2.05	2.06	2.06	2.05	2.06	2.08	2.20	2.01	2.20	2.05	24	
23	2.30	2.30	2.17	2.11	2.08	2.08	2.06	S	2.04	2.04	2.05	2.05	2.04	2.04	2.03	2.03	2.03	2.03	2.04	2.04	2.04	2.05	2.04	2.04	2.03	2.30	2.08	24	
24	2.03	2.04	2.07	2.05	2.06	2.06	S	2.07	2.07	2.08	2.09	2.12	2.11	2.10	2.11	2.08	2.07	2.08	2.13	2.17	2.20	2.24	2.24	2.24	2.03	2.24	2.11	24	
25	2.16	2.13	2.08	2.05	2.04	S	2.03	2.03	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.06	2.14	2.22	2.28	2.03	2.28	2.07	24
26	2.35	2.39	2.34	2.28	S	2.20	2.14	2.12	2.11	2.11	2.06	2.04	2.05	2.06	2.06	2.04	2.04	2.06	2.06	2.08	2.07	2.07	2.07	2.08	2.04	2.39	2.13	24	
27	2.08	2.10	2.12	S	2.14	2.12	2.11	2.09	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.06	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.06	2.14	2.08	24	
28	2.08	2.10	S	2.09	2.11	2.12	2.11	2.11	2.11	2.11	2.11	2.11	2.14	2.13	2.11	2.11	2.12	2.12	2.12	2.11	2.10	2.10	2.10	2.09	2.08	2.14	2.11	24	
29	2.10	S	2.23	2.23	2.22	2.21	2.19	2.15	2.14	2.11	2.12	2.11	2.11	2.12	2.13	2.15	2.13	2.12	2.13	2.14	2.10	2.06	2.06	2.06	2.06	2.23	2.14	24	
30	S	2.07	2.08	2.09	2.08	2.08	2.07	2.08	2.08	2.08	2.08	2.08	2.08	2.09	2.09	2.09	2.09	2.10	2.10	2.10	2.10	2.10	2.10	S	2.07	2.10	2.09	24	
31	2.11	2.11	2.11	2.11	2.11	2.10	2.11	2.10	2.10	2.10	2.10	2.10	2.09	2.08	2.07	2.07	2.07	2.06	2.04	2.04	2.04	2.02	S	2.02	2.02	2.11	2.08	24	
HOURLY MAX	2.35	2.39	2.34	2.28	2.22	2.21	2.19	2.15	2.17	2.17	2.13	2.12	2.14	2.13	2.13	2.15	2.13	2.12	2.13	2.17	2.20	2.24	2.24	2.28					
HOURLY AVG	2.08	2.08	2.08	2.08	2.07	2.07	2.06	2.06	2.06	2.06	2.06	2.05	2.05	2.04	2.05	2.05	2.05	2.05	2.06	2.06	2.06	2.06	2.06	2.06	2.07				

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



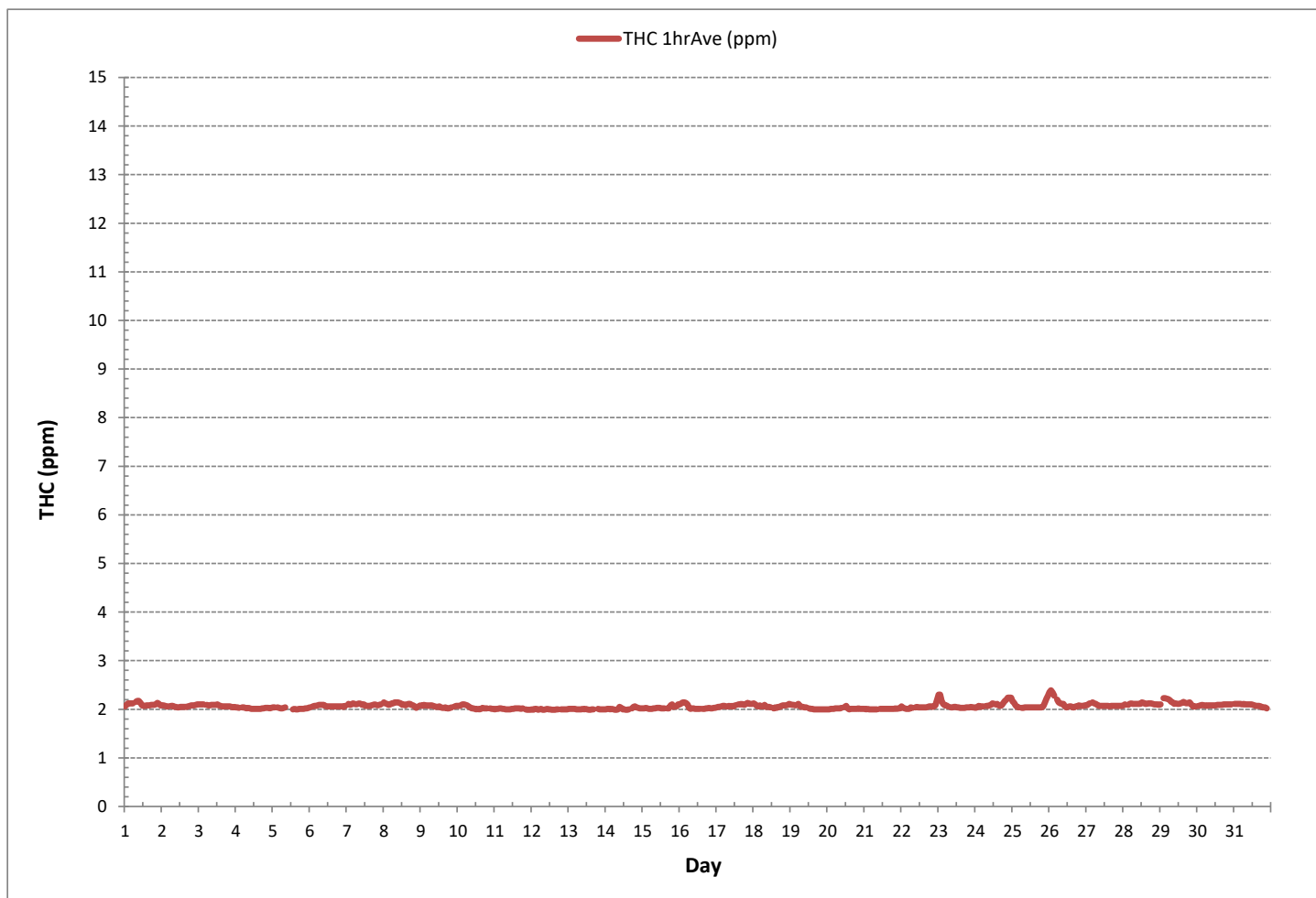
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	706				
MINIMUM 1-HR AVERAGE:	1.99	ppm	@ HOUR	21	ON DAY 11
MAXIMUM 1-HR AVERAGE:	2.39	ppm	@ HOUR	1	ON DAY 26
MAXIMUM 24-HR AVERAGE:	2.14	ppm			ON DAY 29
IZS CALIBRATION TIME:	33	hrs	OPERATIONAL TIME:	743	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:	99.9	%
STANDARD DEVIATION:	0.05		MONTHLY AVERAGE:	2.06	ppm



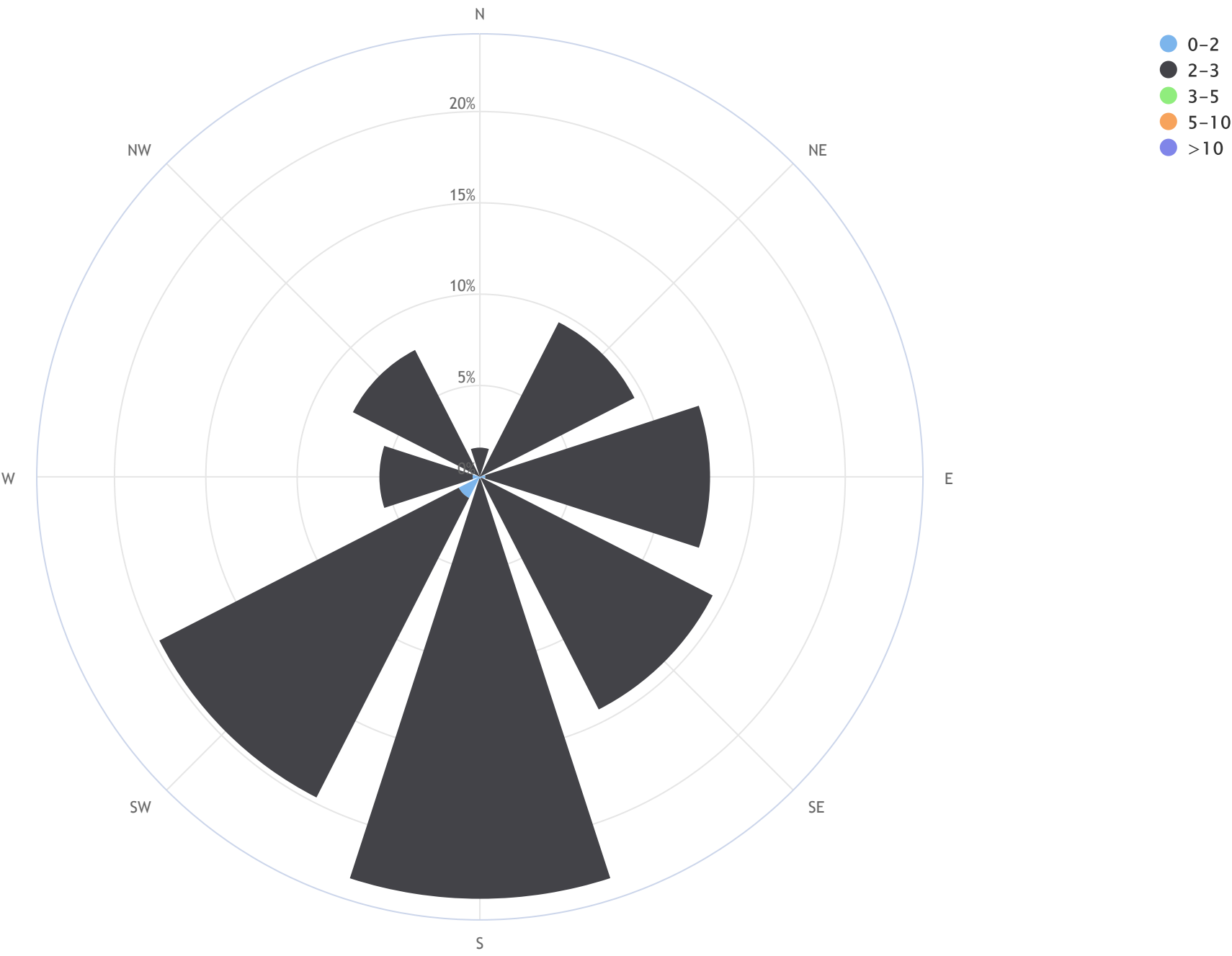
PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 842b Station - December 2018

TOTAL HYDROCARBONS Hourly Averages (THC ppm)



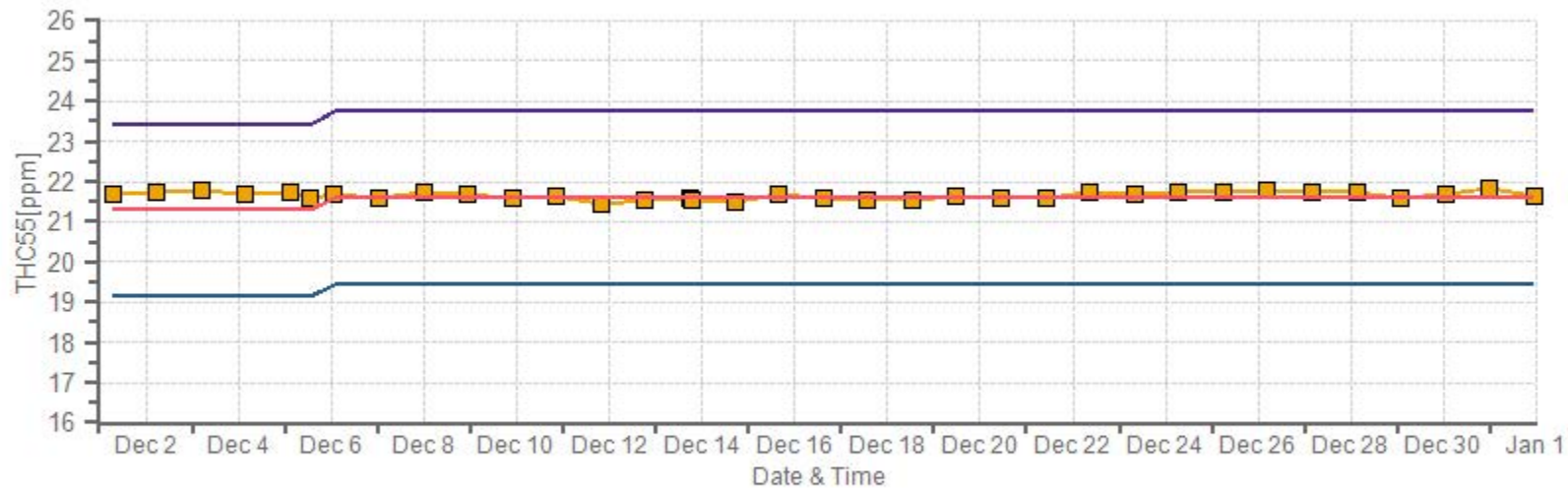
Peace River Area Monitoring Program Committee_Three Creeks 842b Station_THC (ppm)_18/12

Pollutant Rose_Wind Frequency (Blowing From)_CALM Avg = 2.1_CALM % = 5.9%



Direction	0-2	2-3	3-5	5-10	>10	TOTAL
N	0.0	1.6	0.0	0.0	0.0	1.6
NE	0.0	9.5	0.0	0.0	0.0	9.5
E	0.3	12.3	0.0	0.0	0.0	12.6
SE	0.1	14.2	0.0	0.0	0.0	14.3
S	0.1	23.0	0.0	0.0	0.0	23.1
SW	1.3	18.4	0.0	0.0	0.0	19.7
W	0.4	5.1	0.0	0.0	0.0	5.5
NW	0.0	7.8	0.0	0.0	0.0	7.8
Summary	2.3	91.8	0.0	0.0	0.0	94.0
CALM	0.0	6.0	0.0	0.0	0.0	6.0

THC55[ppm] Calibration: PRAMP_842 Monthly: 18/12 Type: Span



Span Meas Span Ref Span Low Span High

METHANE



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 842b Station - December 2018

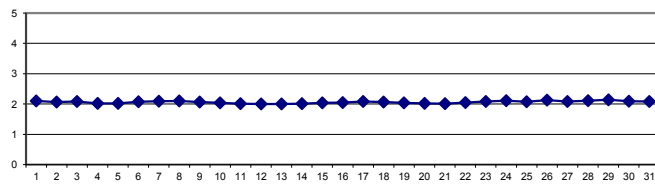
METHANE Hourly Averages (CH₄ ppm)

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	2.06	2.09	2.12	2.12	2.12	2.12	S	2.15	2.17	2.17	2.13	2.08	2.07	2.07	2.08	2.08	2.08	2.09	2.09	2.09	2.10	2.13	2.11	2.08	2.06	2.06	2.17	2.10	24
2	2.08	2.08	2.07	2.06	2.06	S	2.07	2.07	2.05	2.05	2.04	2.04	2.05	2.05	2.05	2.05	2.05	2.06	2.07	2.08	2.08	2.08	2.09	2.10	2.04	2.10	2.06	24	
3	2.10	2.10	2.10	2.10	S	2.09	2.08	2.08	2.09	2.09	2.09	2.09	2.10	2.08	2.07	2.06	2.06	2.06	2.06	2.06	2.06	2.05	2.04	2.05	2.04	2.10	2.08	24	
4	2.04	2.04	2.03	S	2.04	2.04	2.03	2.02	2.03	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.02	2.03	2.03	2.02	2.03	2.01	2.04	2.02	24	
5	2.04	2.04	S	2.04	2.03	2.02	2.02	2.03	2.04	C	C	C	C	2.00	2.01	2.00	2.00	2.01	2.01	2.01	2.01	2.01	2.02	2.02	2.03	2.00	2.04	2.02	24
6	2.04	S	2.06	2.07	2.07	2.08	2.09	2.09	2.09	2.09	2.07	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.05	2.07	2.04	2.09	2.07	24	
7	S	2.11	2.09	2.10	2.12	2.11	2.10	2.11	2.12	2.11	2.09	2.10	2.07	2.07	2.07	2.07	2.08	2.09	2.10	2.09	2.08	2.09	2.10	S	2.07	2.12	2.09	24	
8	2.14	2.12	2.11	2.09	2.10	2.12	2.12	2.14	2.14	2.14	2.13	2.12	2.09	2.10	2.08	2.10	2.11	2.11	2.09	2.08	2.06	2.03	S	2.07	2.03	2.14	2.10	24	
9	2.08	2.07	2.09	2.08	2.08	2.07	2.08	2.08	2.07	2.06	2.05	2.05	2.06	2.04	2.03	2.03	2.04	2.02	2.02	2.03	2.04	S	2.06	2.07	2.02	2.09	2.06	24	
10	2.07	2.07	2.08	2.10	2.10	2.09	2.08	2.06	2.04	2.02	2.02	2.01	2.00	2.01	2.00	2.01	2.03	2.02	2.02	2.02	S	2.02	2.01	2.01	2.00	2.10	2.04	24	
11	2.00	2.01	2.01	2.02	2.02	2.01	2.01	2.00	2.00	2.00	2.00	2.01	2.01	2.02	2.02	2.02	2.02	2.01	2.02	S	2.00	1.99	1.99	1.99	1.99	2.02	2.01	24	
12	2.00	1.99	2.01	2.01	1.99	2.00	2.01	1.99	1.99	2.00	2.01	2.00	2.00	1.99	1.99	1.99	2.00	2.00	S	2.00	2.00	2.00	2.00	2.00	1.99	2.01	2.00	24	
13	2.01	2.01	2.01	2.01	2.01	2.00	2.00	2.00	2.00	2.01	2.00	2.01	2.00	1.99	1.99	2.00	S	2.01	2.01	2.00	2.00	2.00	2.00	2.00	1.99	2.01	2.00	23	
14	2.00	2.01	2.01	2.00	2.01	2.00	1.99	1.99	2.00	2.05	2.03	2.00	2.00	1.99	1.99	2.00	S	2.02	2.05	2.06	2.04	2.03	2.02	2.02	1.99	2.06	2.01	24	
15	2.02	2.02	2.03	2.02	2.01	2.01	2.01	2.02	2.02	2.03	2.03	2.03	2.02	2.02	2.02	S	2.02	2.02	2.08	2.10	2.05	2.06	2.06	2.10	2.01	2.10	2.04	24	
16	2.10	2.12	2.14	2.14	2.13	2.10	2.03	2.01	2.02	2.02	2.01	2.01	2.01	2.01	S	2.01	2.01	2.02	2.02	2.03	2.02	2.02	2.03	2.03	2.01	2.14	2.05	24	
17	2.04	2.05	2.05	2.06	2.07	2.07	2.06	2.06	2.07	2.06	2.07	2.06	2.08	S	2.10	2.10	2.11	2.10	2.09	2.11	2.13	2.11	2.11	2.11	2.04	2.13	2.08	24	
18	2.12	2.10	2.07	2.06	2.08	2.06	2.06	2.09	2.05	2.05	2.05	2.04	S	2.02	2.04	2.03	2.05	2.05	2.07	2.08	2.08	2.08	2.09	2.11	2.02	2.12	2.06	24	
19	2.10	2.09	2.09	2.08	2.09	2.11	2.07	2.05	2.05	2.04	2.04	S	2.02	2.01	2.01	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.11	2.04	24	
20	2.00	2.00	2.01	2.01	2.01	2.02	2.02	2.02	2.02	2.03	S	2.05	2.07	2.02	2.00	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.01	2.01	2.00	2.07	2.02	24	
21	2.01	2.00	2.01	2.00	2.00	2.00	1.99	2.00	2.00	S	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.01	2.02	2.02	1.99	2.02	2.01	24
22	2.06	2.03	2.02	2.01	2.01	2.01	2.04	2.03	S	2.04	2.05	2.04	2.04	2.04	2.04	2.04	2.04	2.05	2.06	2.06	2.05	2.06	2.08	2.20	2.01	2.20	2.05	24	
23	2.30	2.30	2.17	2.11	2.08	2.08	2.06	S	2.04	2.04	2.05	2.05	2.04	2.04	2.03	2.03	2.03	2.03	2.04	2.04	2.04	2.05	2.04	2.04	2.03	2.30	2.08	24	
24	2.03	2.04	2.07	2.05	2.06	2.06	S	2.07	2.07	2.08	2.09	2.12	2.11	2.10	2.11	2.08	2.07	2.08	2.13	2.17	2.20	2.24	2.24	2.24	2.03	2.24	2.11	24	
25	2.16	2.13	2.08	2.05	2.04	S	2.03	2.03	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.06	2.14	2.22	2.28	2.03	2.28	2.07	24
26	2.35	2.39	2.34	2.28	S	2.20	2.14	2.12	2.11	2.11	2.06	2.04	2.05	2.06	2.06	2.04	2.04	2.06	2.06	2.08	2.07	2.07	2.07	2.07	2.08	2.04	2.39	2.13	24
27	2.08	2.10	2.12	S	2.14	2.12	2.11	2.09	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.06	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.06	2.14	2.08	24	
28	2.08	2.10	S	2.09	2.11	2.12	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.14	2.13	2.11	2.11	2.12	2.12	2.12	2.11	2.10	2.09	2.10	2.09	2.08	2.14	2.11	24
29	2.10	S	2.23	2.23	2.22	2.21	2.19	2.15	2.14	2.11	2.12	2.11	2.11	2.12	2.13	2.15	2.13	2.12	2.13	2.14	2.10	2.06	2.06	2.06	2.06	2.23	2.14	24	
30	S	2.07	2.08	2.09	2.08	2.08	2.07	2.08	2.08	2.08	2.08	2.08	2.08	2.09	2.09	2.09	2.09	2.10	2.10	2.10	2.10	2.10	2.10	S	2.07	2.10	2.09	24	
31	2.11	2.11	2.11	2.11	2.11	2.10	2.11	2.10	2.10	2.10	2.10	2.10	2.09	2.08	2.07	2.07	2.07	2.06	2.04	2.04	2.04	2.02	S	2.02	2.02	2.11	2.08	24	
HOURLY MAX	2.35	2.39	2.34	2.28	2.22	2.21	2.19	2.15	2.17	2.17	2.13	2.12	2.14	2.13	2.13	2.15	2.13	2.12	2.13	2.17	2.20	2.24	2.24	2.28					
HOURLY AVG	2.08	2.08	2.08	2.08	2.07	2.07	2.06	2.06	2.06	2.06	2.06	2.05	2.05	2.04	2.05	2.05	2.05	2.05	2.06	2.06	2.06	2.06	2.06	2.06	2.07				

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

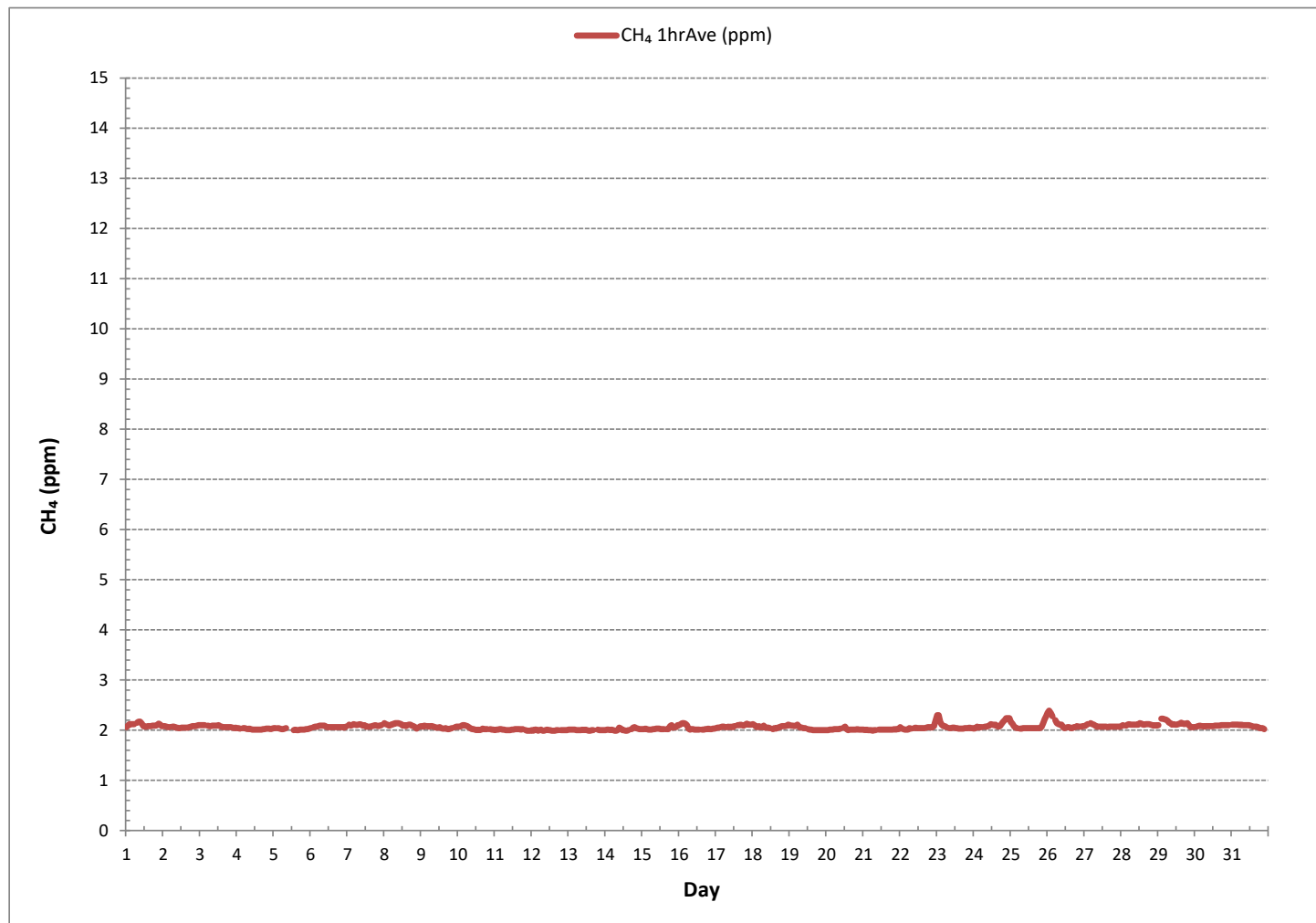
24 HR AVERAGES December 2018



MONTHLY SUMMARY

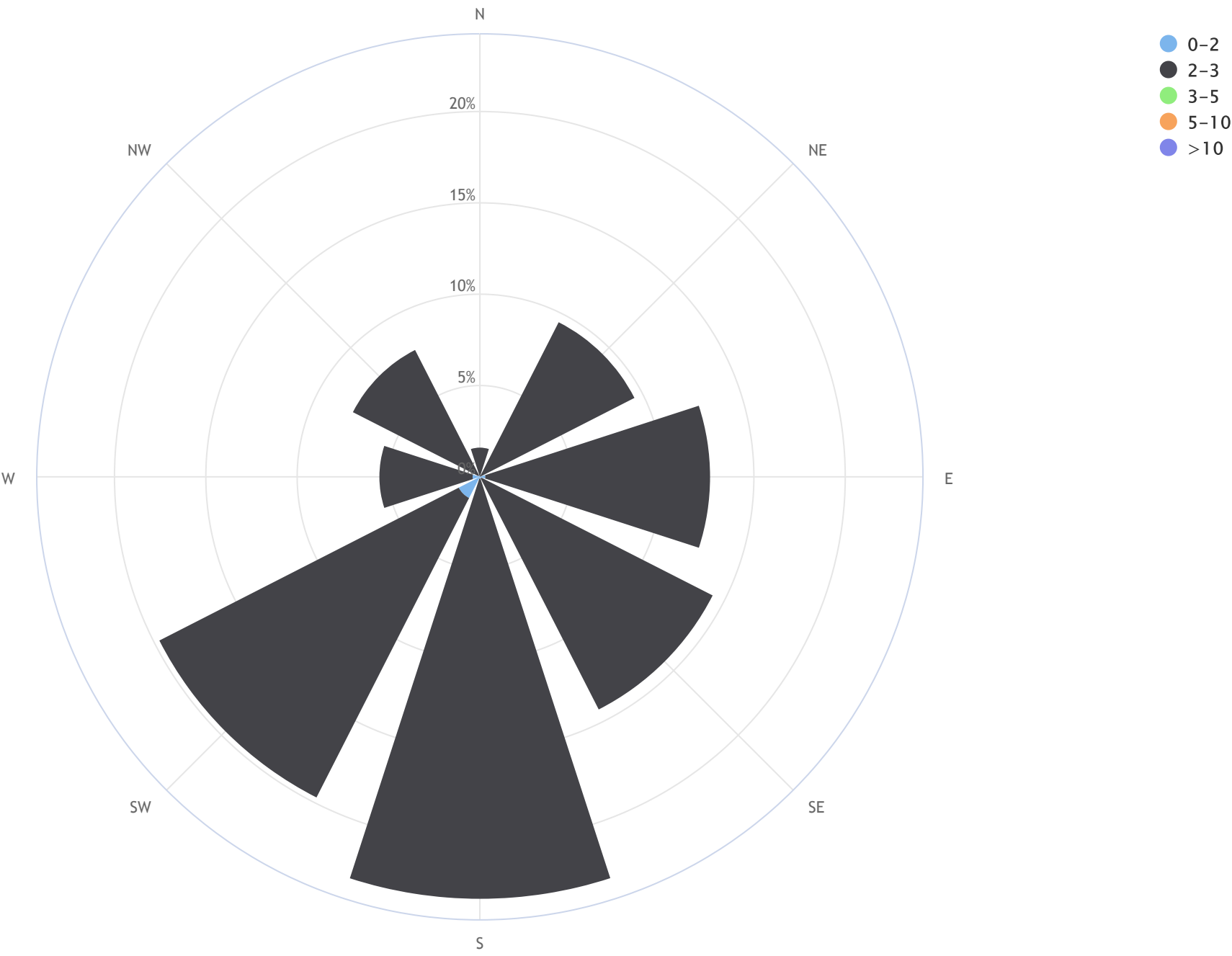
NUMBER OF NON-ZERO READINGS:	706				
MINIMUM 1-HR AVERAGE:	1.99	ppm	@ HOUR	21	ON DAY 11
MAXIMUM 1-HR AVERAGE:	2.39	ppm	@ HOUR	1	ON DAY 26
MAXIMUM 24-HR AVERAGE:	2.14	ppm			ON DAY 29
IZS CALIBRATION TIME:	33	hrs	OPERATIONAL TIME:	743	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:	99.9	%
STANDARD DEVIATION:	0.05		MONTHLY AVERAGE:	2.06	ppm

METHANE Hourly Averages (CH₄ ppm)



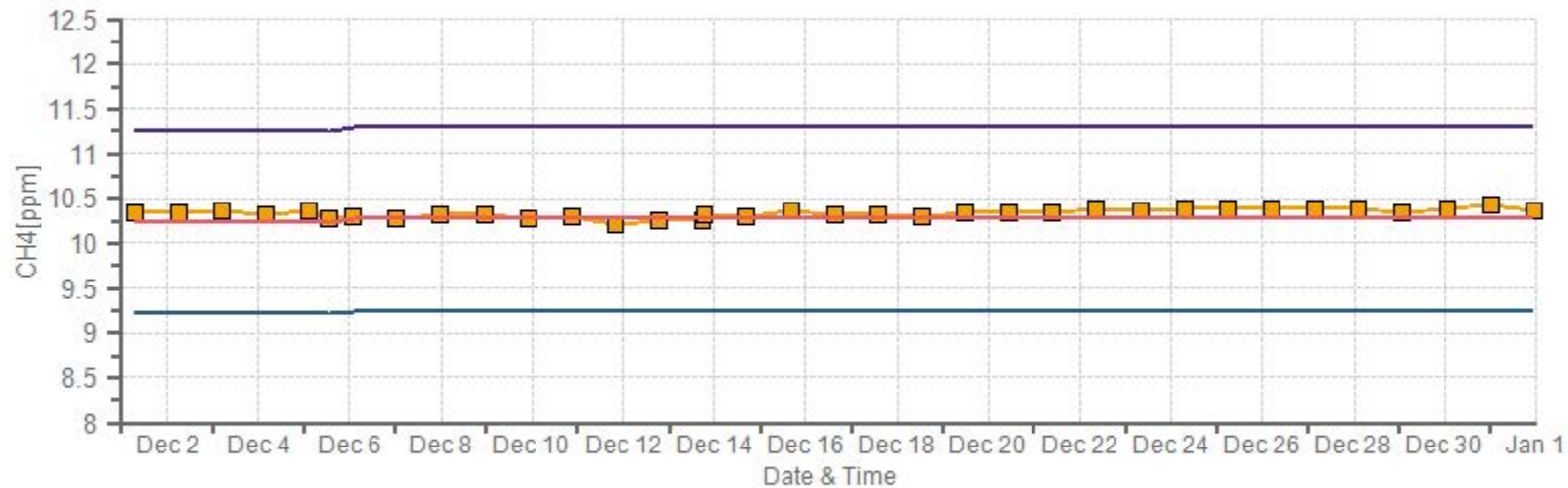
Peace River Area Monitoring Program Committee_Three Creeks 842b Station_CH4 (ppm)_18/12

Pollutant Rose_Wind Frequency (Blowing From)_CALM Avg = 2.1_CALM % = 5.9%



Direction	0-2	2-3	3-5	5-10	>10	TOTAL
N	0.0	1.6	0.0	0.0	0.0	1.6
NE	0.0	9.5	0.0	0.0	0.0	9.5
E	0.3	12.3	0.0	0.0	0.0	12.6
SE	0.1	14.2	0.0	0.0	0.0	14.3
S	0.1	23.0	0.0	0.0	0.0	23.1
SW	1.3	18.4	0.0	0.0	0.0	19.7
W	0.4	5.1	0.0	0.0	0.0	5.5
NW	0.1	7.7	0.0	0.0	0.0	7.8
Summary	2.4	91.6	0.0	0.0	0.0	94.0
CALM	0.0	6.0	0.0	0.0	0.0	6.0

CH4[ppm] Calibration: PRAMP_842 Monthly: 18/12 Type: Span



Span Meas Span Ref Span Low Span High

NON-METHANE HYDROCARBON



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 842b Station - December 2018

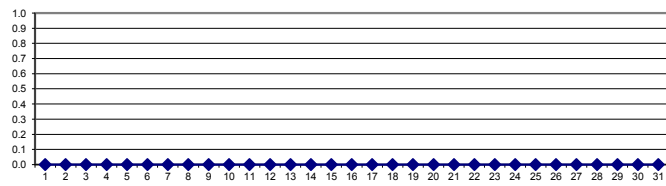
NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
5	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	S	0.00	0.00	0.00	24
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	24
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	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	S	0.00	0.00	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	S	0.00	0.00	0.00	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	S	0.00	0.00	0.00	0.00	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	S	0.00	0.00	0.00	0.00	0.00	0.00	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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	0.01	0.00	0.00	0.00	0.01	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	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	S	0.00	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	S	0.00	0.00	0.00	0.00	0.00	24
HOURLY MAX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00				
HOURLY AVG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

STATUS FLAG CODES

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

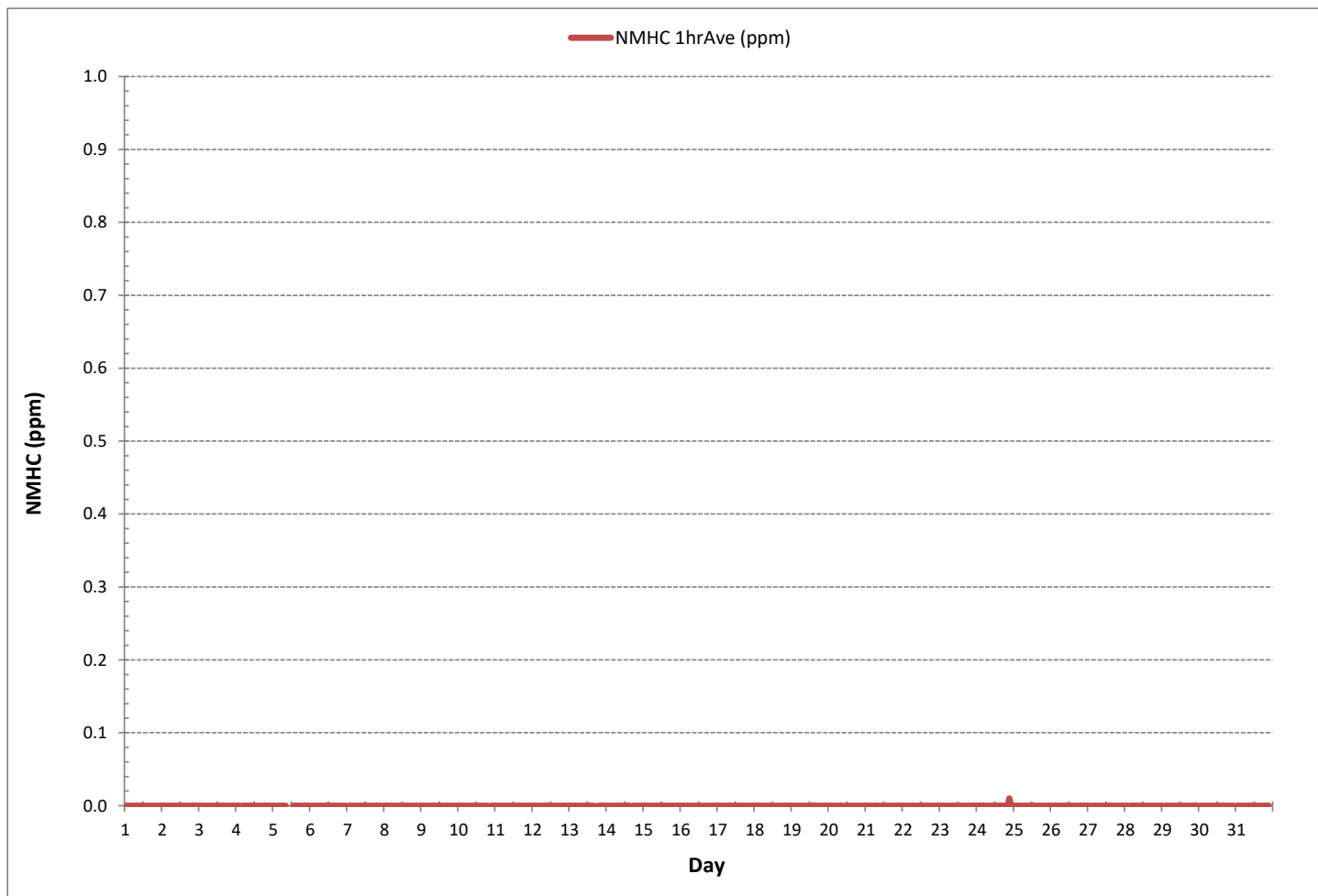
24 HR AVERAGES December 2018



MONTHLY SUMMARY

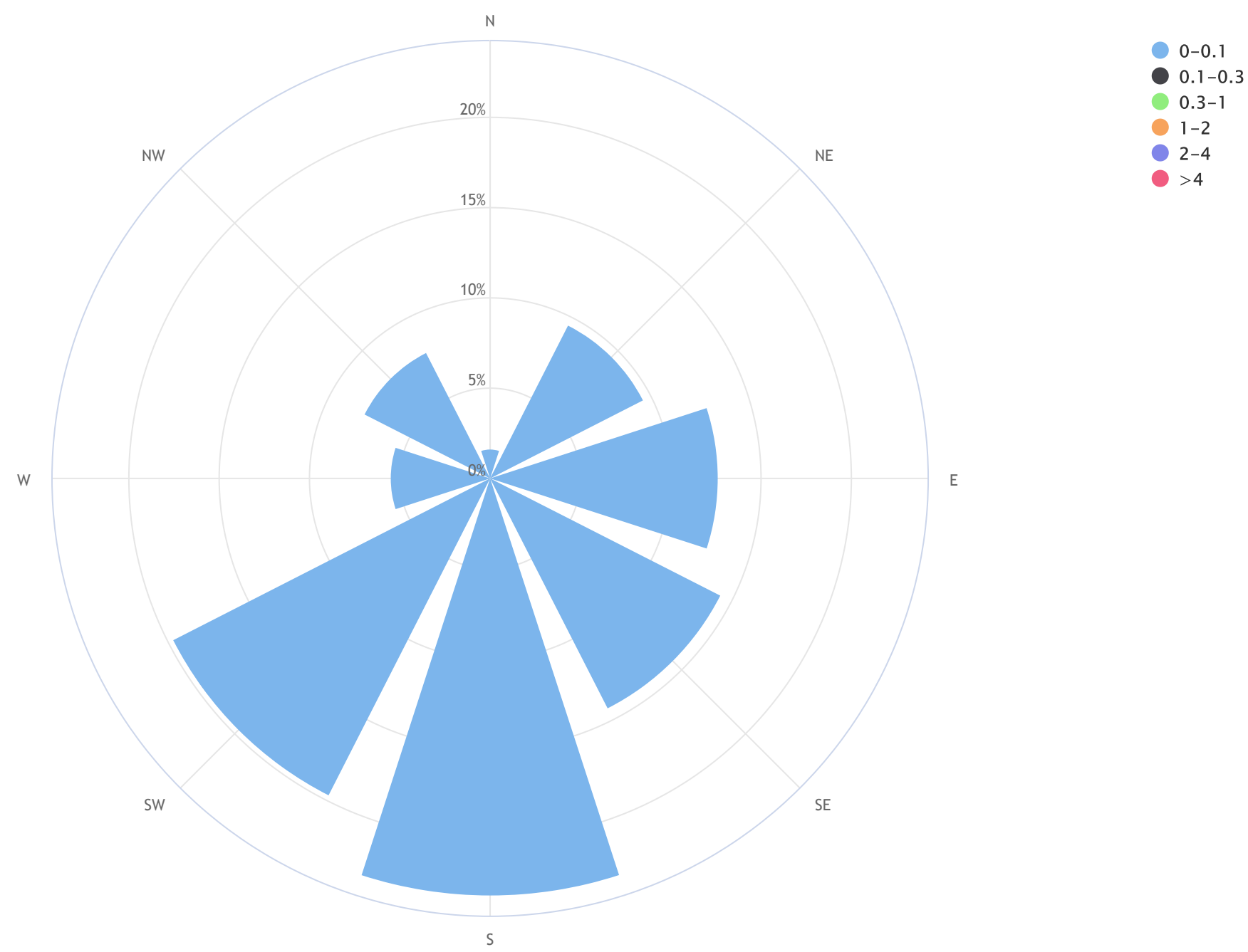
NUMBER OF NON-ZERO READINGS:	1				
MINIMUM 1-HR AVERAGE:	0.00	ppm	@ HOUR	0	ON DAY 1
MAXIMUM 1-HR AVERAGE:	0.01	ppm	@ HOUR	21	ON DAY 24
MAXIMUM 24-HR AVERAGE:	0.00	ppm			ON DAY 1
IZS CALIBRATION TIME:	33	hrs	OPERATIONAL TIME:	743	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:	99.9	%
STANDARD DEVIATION:	0.00		MONTHLY AVERAGE:	0.00	ppm

NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

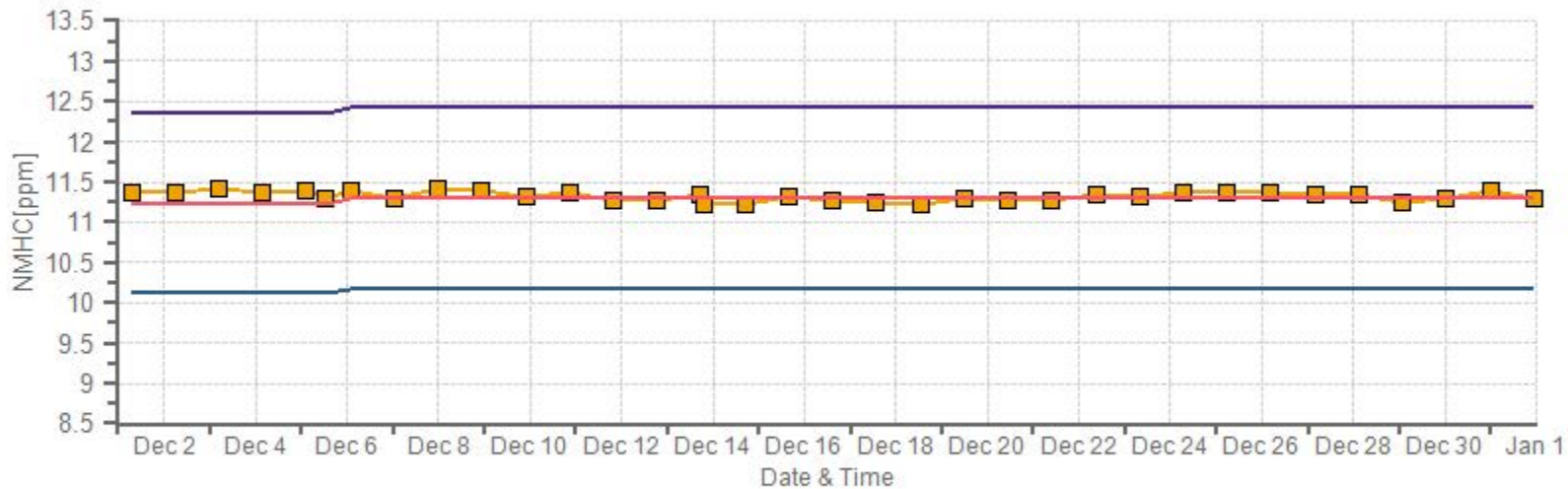


Peace River Area Monitoring Program Committee_Three Creeks 842b Station_NMHC (ppm)_18/12

Pollutant Rose_Wind Frequency (Blowing From)_CALM Avg = 0.0_CALM % = 5.9%



NMHC[ppm] Calibration: PRAMP_842 Monthly: 18/12 Type: Span



Span Meas Span Ref Span Low Span High

WIND SPEED



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 842b 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	2.9	2.8	2.4	2.8	2.2	2.6	2.6	4.0	3.3	3.2	3.9	4.7	5.0	5.2	4.5	5.2	5.8	5.4	4.8	3.6	3.5	2.2	1.6	2.1	1.6	5.8	1.4	24
2	2.5	3.0	3.0	2.7	2.2	6.2	5.6	5.9	3.9	4.7	5.9	7.1	7.4	7.6	5.9	7.4	6.9	7.6	7.5	8.0	9.2	8.2	7.4	6.9	2.2	9.2	5.7	24
3	7.1	7.0	6.4	6.3	6.1	6.2	5.4	3.5	2.4	1.6	0.9	2.1	2.1	2.1	2.1	0.2	0.2	0.2	0.2	0.2	6.2	7.1	4.7	9.0	0.2	9.0	3.2	24
4	12.8	13.7	13.9	13.5	10.9	8.5	9.0	11.2	11.3	13.7	11.1	11.5	12.3	10.7	15.0	17.7	16.7	15.0	15.3	12.5	10.6	9.2	9.2	8.1	8.1	17.7	8.0	24
5	5.8	2.3	1.7	1.8	3.6	5.5	3.7	1.6	3.2	4.2	6.3	7.1	6.8	7.4	9.8	7.4	8.0	9.8	8.6	8.4	9.2	6.2	3.1	6.2	1.6	9.8	4.2	24
6	4.5	4.6	5.2	6.7	6.0	5.0	5.6	5.8	5.3	5.1	6.6	8.3	9.3	12.4	11.9	11.7	12.6	12.7	9.2	12.8	8.1	7.7	3.7	7.0	3.7	12.8	7.6	24
7	12.6	15.3	16.3	12.1	7.1	12.6	10.7	7.0	5.8	8.3	7.6	5.9	12.2	12.1	11.2	9.4	7.3	6.4	6.6	7.6	7.0	7.3	8.1	8.9	5.8	16.3	8.8	24
8	7.2	6.3	6.4	9.5	11.0	13.1	12.5	13.3	9.8	11.2	14.9	16.9	17.4	17.0	15.7	11.4	5.5	9.1	10.1	9.5	6.7	16.5	8.7	12.6	5.5	17.4	10.8	24
9	9.6	8.5	8.4	6.9	9.3	7.6	5.8	8.5	6.7	5.0	9.9	11.6	12.9	9.1	7.3	6.6	5.9	4.2	6.4	5.3	8.8	7.8	5.6	7.8	4.2	12.9	6.9	24
10	4.4	5.9	8.7	6.9	10.3	9.7	9.9	13.4	14.1	14.4	13.6	14.2	16.4	14.0	10.7	10.6	11.1	7.1	5.7	5.6	10.3	8.0	12.5	13.3	4.4	16.4	9.6	24
11	13.7	10.1	12.0	18.3	18.0	10.7	11.6	11.5	12.9	13.3	19.7	17.5	14.5	17.2	18.1	19.1	18.8	19.1	15.6	13.3	26.5	26.9	23.8	18.1	10.1	26.9	15.2	24
12	20.1	25.3	25.8	24.4	20.4	21.6	15.8	15.8	18.0	20.7	22.6	26.4	25.9	25.1	27.9	22.5	19.3	16.1	17.4	15.7	15.2	14.3	13.7	13.9	13.7	27.9	19.0	24
13	17.4	16.3	18.5	21.5	24.7	13.0	13.7	11.3	9.5	17.1	17.0	24.2	27.7	28.4	28.1	28.0	26.3	23.6	17.1	18.5	16.9	16.9	13.4	13.8	9.5	28.4	17.1	24
14	9.0	10.5	13.4	9.5	7.5	9.1	6.6	4.1	3.0	4.6	7.0	8.6	9.2	9.4	7.5	6.5	5.8	7.0	4.2	4.0	4.4	6.0	5.7	7.1	3.0	13.4	3.4	24
15	5.6	6.1	7.5	11.8	8.3	5.5	11.0	8.4	12.9	18.0	15.8	13.5	12.1	10.9	5.0	1.6	2.4	3.2	4.0	4.3	3.5	3.1	4.3	7.0	1.6	18.0	4.6	24
16	5.6	5.1	4.0	3.4	2.9	4.1	8.2	9.6	10.8	12.4	14.8	12.5	10.8	10.2	7.7	8.3	11.0	9.9	9.7	7.2	6.5	7.0	6.2	7.2	2.9	14.8	7.9	24
17	7.3	6.0	3.3	3.9	6.8	7.4	8.7	11.4	11.7	10.0	13.5	14.0	14.1	12.3	12.0	11.2	10.5	3.6	5.7	7.4	7.7	4.9	7.4	6.2	3.3	14.1	7.1	24
18	5.4	4.1	7.5	1.7	4.3	9.9	5.6	7.0	4.7	4.0	6.4	7.9	6.4	7.1	8.2	7.4	6.4	8.3	10.4	4.9	6.0	14.3	12.3	9.3	1.7	14.3	5.9	24
19	10.7	13.0	12.3	10.4	13.1	16.5	17.9	17.1	11.9	13.8	16.8	18.1	19.2	17.8	15.8	14.6	14.3	11.0	10.7	11.3	8.3	10.7	9.2	10.7	8.3	19.2	13.4	24
20	7.5	7.0	8.8	7.3	7.8	4.5	4.7	4.5	7.0	5.9	5.6	4.3	8.4	10.0	11.6	12.9	14.0	12.4	11.8	10.1	7.6	5.7	6.6	5.6	4.3	14.0	4.9	24
21	6.9	8.1	8.3	11.9	16.0	14.5	13.8	13.9	15.7	15.2	13.6	14.6	15.3	16.3	14.3	8.8	6.6	5.0	3.1	3.0	2.6	0.9	3.2	3.8	0.9	16.3	9.5	24
22	2.9	2.4	0.5	1.3	1.7	3.4	3.1	2.5	3.7	3.2	2.4	3.5	3.8	4.7	4.0	6.0	4.5	3.0	3.3	2.5	1.8	1.5	1.1	1.6	0.5	6.0	2.4	24
23	2.2	3.1	2.7	2.1	1.8	1.4	2.6	2.5	3.0	3.0	2.4	2.2	2.8	3.4	4.0	3.3	2.6	2.8	2.5	1.9	1.3	1.9	1.6	1.8	1.3	4.0	2.0	24
24	1.4	1.7	2.6	2.9	2.2	2.3	1.9	2.0	2.3	2.0	2.5	2.7	2.0	2.6	1.9	1.0	1.7	0.8	3.7	5.1	7.6	6.7	2.7	3.5	0.8	7.6	2.1	24
25	6.6	5.4	5.8	6.3	5.7	6.6	5.8	5.2	4.2	3.9	5.2	4.9	5.2	6.4	6.3	4.0	1.2	1.2	1.9	1.3	2.3	2.5	2.5	2.7	1.2	6.6	2.2	24
26	3.9	4.5	4.3	3.3	3.7	4.6	4.3	3.4	2.9	1.7	3.9	4.2	2.5	3.4	3.3	5.0	3.9	2.9	6.0	2.5	5.6	5.1	5.0	2.8	1.7	6.0	3.0	24
27	1.9	2.6	2.0	1.7	1.8	1.4	2.6	3.8	1.5	2.7	1.1	1.0	1.8	2.3	3.2	4.5	3.8	3.4	3.8	3.1	3.5	2.7	2.6	2.2	1.0	4.5	0.7	24
28	2.3	2.6	1.3	1.4	1.5	3.5	4.6	4.7	3.4	1.6	2.9	2.1	3.2	4.2	3.9	2.8	2.0	1.1	2.2	1.3	1.2	1.7	0.8	1.8	0.8	4.7	0.5	24
29	3.3	2.3	2.4	1.4	2.8	2.9	5.0	4.7	2.9	6.4	7.6	8.9	10.8	11.8	15.7	14.7	12.9	12.0	12.5	12.0	9.8	11.7	12.9	10.9	1.4	15.7	6.3	24
30	12.2	11.1	12.1	11.2	10.8	9.8	9.2	8.4	6.2	3.5	3.0	2.1	2.1	4.2	5.9	5.6	6.1	8.8	10.6	10.7	8.6	9.9	10.6	10.1	2.1	12.2	2.1	24
31	8.6	7.5	7.7	8.2	9.0	11.0	10.3	11.2	14.6	12.5	12.3	13.2	13.2	14.1	12.5	7.9	5.2	9.0	12.6	16.7	14.9	19.9	26.9	23.3	5.2	26.9	12.2	24
HOURLY MAX	20.1	25.3	25.8	24.4	24.7	21.6	17.9	17.1	18.0	20.7	22.6	26.4	27.7	28.4	28.1	28.0	26.3	23.6	17.4	18.5	26.5	26.9	26.9	23.3				

STATUS FLAG CODES

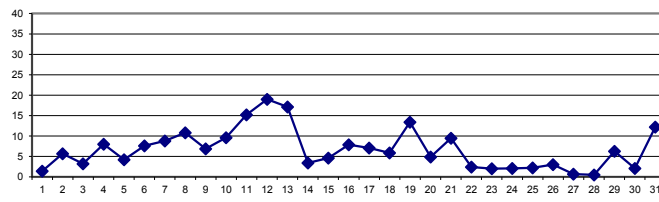
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION: August 22, 2018
DECLINATION: MAGNETIC DECLINATION 15 DEGREE EAST

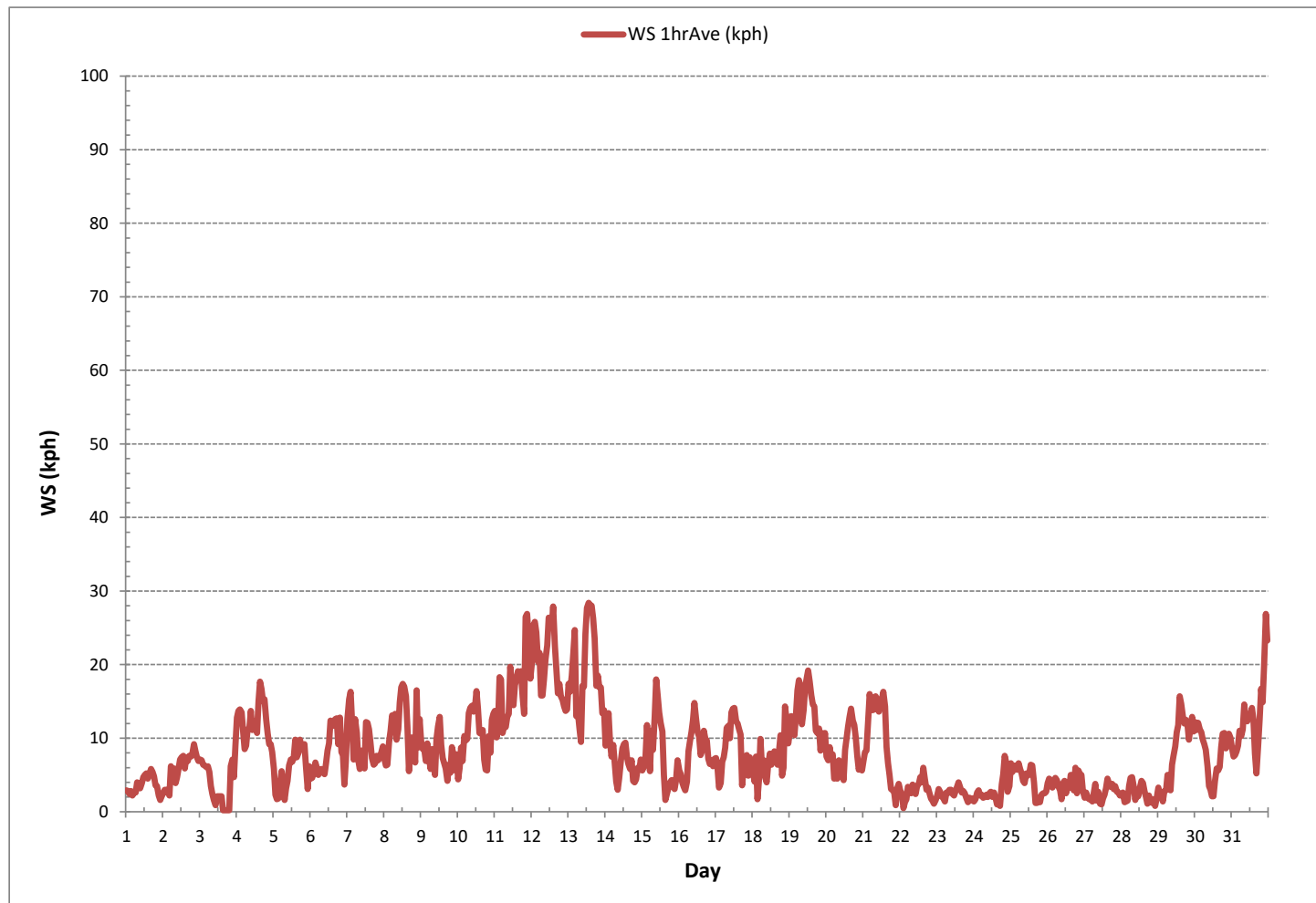
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:		744				
MINIMUM 1-HR AVERAGE	0.2	kph	@ HOUR	15	ON DAY	3
MAXIMUM 1-HR AVERAGE:	28.4	kph	@ HOUR	13	ON DAY	13
MAXIMUM 24-HR AVERAGE:	19.0	kph			ON DAY	12
MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:		744	
			AMD OPERATION UPTIME:		100.0	
STANDARD DEVIATION:	5.6		MONTHLY AVERAGE:		4.0	

24 HR AVERAGES December 2018

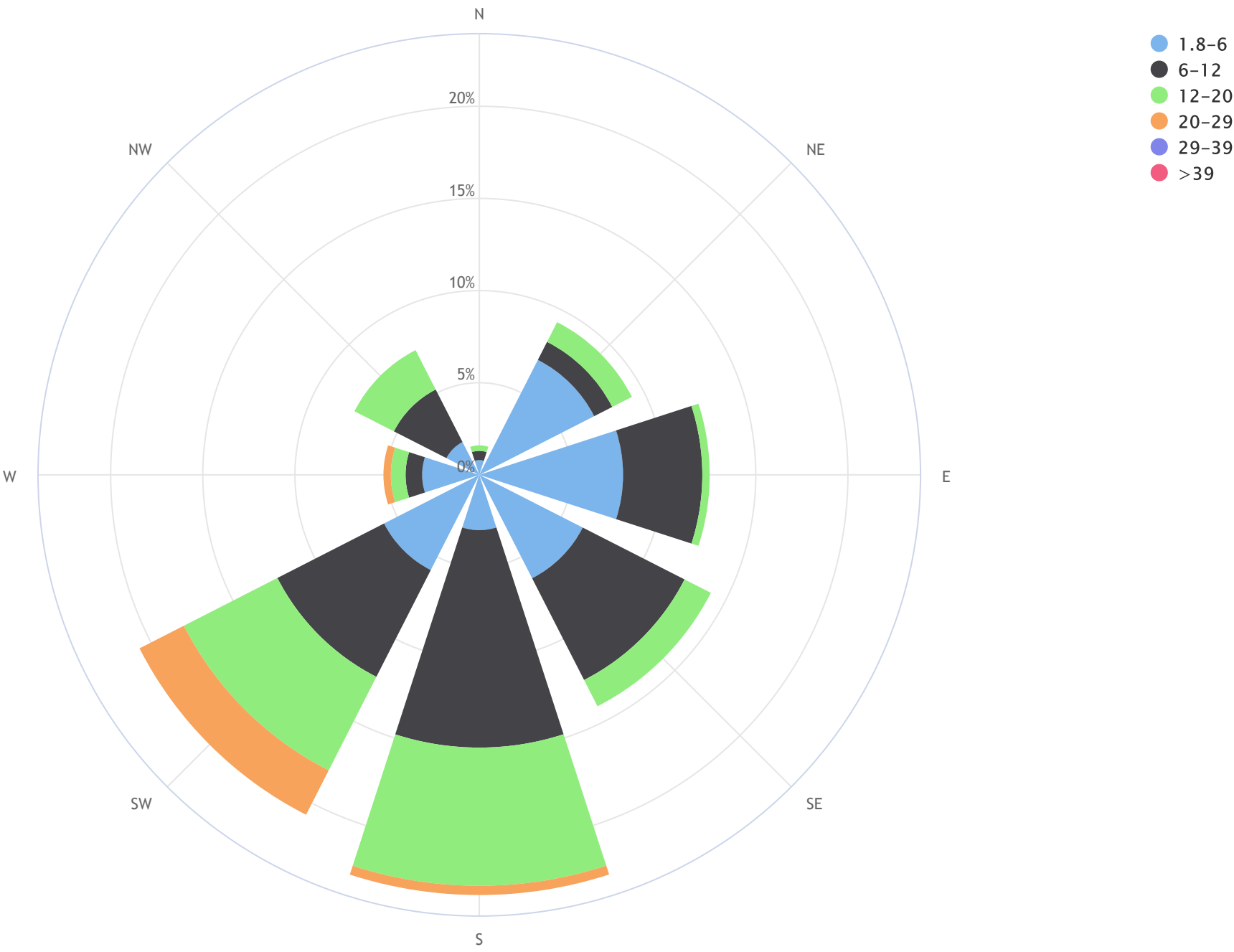


WIND SPEED Hourly Averages (WS kph)



Peace River Area Monitoring Program Committee_Three Creeks 842b Station_18/12

Wind Rose_Wind Frequency (Blowing From)_CALM Avg = 1.2_CALM % = 6.2%



Direction	1.8-6	6-12	12-20	20-29	29-39	>39	TOTAL
N	0.8	0.5	0.3	0.0	0.0	0.0	1.6
NE	7.0	1.1	1.2	0.0	0.0	0.0	9.3
E	7.8	4.3	0.4	0.0	0.0	0.0	12.5
SE	6.3	6.2	1.6	0.0	0.0	0.0	14.1
S	3.0	11.8	7.5	0.5	0.0	0.0	22.9
SW	5.8	6.5	5.7	2.7	0.0	0.0	20.6
W	3.1	0.9	0.8	0.4	0.0	0.0	5.2
NW	2.0	3.2	2.4	0.0	0.0	0.0	7.7
Summary	35.8	34.6	19.9	3.6	0.0	0.0	93.9
CALM	6.2	0.0	0.0	0.0	0.0	0.0	6.2

WIND DIRECTION



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 842b 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	ENE	E	ENE	ENE	E	NE	NE	ENE	ENE	E	SE	SSE	SSW	SW	SW	SW	SW	SW	SW	SW	SW	SSW	SSW	SW	S	24	
2	WSW	W	WSW	SW	SW	SW	WSW	SW	SW	SW	SW	SSW	SSW	SW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SW	24	
3	SSW	SW	SW	SW	SW	SW	SW	SW	SW	WSW	SW	WSW	SW	SW	SW	SSW	SSE	SE	SE	ESE	SSE	SSE	SE	S	SSW	24	
4	S	SSW	SSW	SW	SW	SW	SSW	SW	WSW	WSW	WSW	WSW	WSW	WSW	W	NW	NW	NNW	NNW	NNW	NNW	NW	NW	WNW	W	24	
5	WNW	W	S	SSW	WSW	SW	SW	SW	SW	SW	SW	WSW	WSW	SSW	S	S	SSE	SSE	SE	SE	SSE	SSE	SE	S	S	24	
6	SSW	SSW	SSE	S	SSE	SSE	SSE	SSE	SSE	SE	SSE	S	S	S	S	SSE	S	SSE	S	SSE	SSE	SSE	ESE	SSE	SSE	24	
7	S	S	SSW	S	S	SSW	SSW	SSE	SE	SSE	SSE	SSE	S	S	S	S	SSE	SE	SSE	SSE	SSE	SE	SSE	SSE	S	24	
8	SE	SE	SSE	S	S	SSW	S	S	SSE	S	S	S	S	SSW	SSW	S	SE	SSE	SSE	S	SSW	SSW	SSW	SSW	S	24	
9	S	S	SSE	SSE	S	SSE	SSE	SSE	SSE	SE	SSE	SSE	SE	SE	ESE	ESE	SE	SE	S	S	SW	SW	SSW	S	SSE	24	
10	SSW	S	SSE	SE	S	SSE	SSE	SSE	S	S	S	SSW	SW	SW	SSW	SSW	S	SE	SSE	SSE	S	SSE	SSW	SSW	S	24	
11	SSW	SSE	SE	SSE	SSE	SE	SE	SE	SE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	S	SSW	SSW	SSW	SSW	SSE	24	
12	SW	SW	SW	SW	SW	SW	SW	SW	SSW	SW	SW	SW	WSW	WSW	WSW	WSW	WSW	WSW	SW	SW	SSW	S	S	S	SSE	SW	24
13	SSE	SSE	SSE	SSE	SSW	SSW	SSW	S	SSW	SW	SSW	SW	WSW	WSW	WSW	WSW	WSW	WSW	SW	SW	SW	SW	SSW	SSW	SSW	SSW	24
14	S	SSE	S	SSE	SSE	S	S	ESE	ENE	ENE	NE	ENE	ENE	E	ENE	E	E	NE	ENE	S	WNW	SW	WNW	SE	24		
15	WNW	W	NW	NW	WNW	WSW	NW	W	W	WSW	W	W	WNW	WNW	WNW	SSE	ESE	E	ENE	ESE	ESE	ESE	ESE	SE	W	24	
16	E	ENE	ENE	ENE	NE	ENE	E	E	E	E	E	E	E	E	E	E	ESE	ESE	ESE	ESE	E	ESE	E	E	E	24	
17	E	E	SSE	ENE	ESE	S	SW	SSW	SSW	S	S	S	SSW	S	S	S	S	SE	SSE	SE	SSE	SE	SE	SE	S	24	
18	SE	E	SE	E	ESE	SSE	SSE	SSW	SSE	ESE	SE	SSE	S	SSW	SW	SSW	S	S	SSW	SSE	S	SSW	SSW	S	S	24	
19	S	SSW	SSW	SSW	SSW	SW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SW	SW	SW	SW	SW	SW	SW	SSW	SSW	SSW	SSW	SSW	SSW	24
20	SW	SW	SSW	SSE	SSE	SE	SE	ESE	SE	ESE	ESE	E	NE	ENE	E	ENE	ENE	ENE	ENE	ENE	ENE	NNE	E	NW	E	24	
21	NW	NW	NW	WNW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	WNW	W	WNW	WNW	SSW	WSW	WSW	NW	24	
22	SSW	SW	SSE	ESE	E	ESE	ESE	ESE	SE	SE	SSE	SSE	S	S	S	SSE	SE	SE	ESE	ESE	ESE	E	ENE	SSE	24		
23	ENE	ENE	NE	NE	NNE	NE	NNE	NNE	NNE	ESE	SSW	NNE	NE	NNE	NNE	NE	ENE	ENE	NNE	NNE	NNE	NE	ENE	ENE	NE	24	
24	ENE	ENE	ENE	ENE	ENE	ENE	E	ENE	ENE	NE	ENE	E	ENE	ENE	SE	W	WNW	SW	NE	ENE	ENE	ENE	E	WSW	ENE	24	
25	S	SSE	WNW	NNW	NNW	NW	NW	NNW	NW	NW	NW	NW	NNW	NW	WNW	WNW	SSW	ESE	ESE	ESE	ESE	E	ENE	ENE	NW	24	
26	ENE	NE	ENE	ENE	ENE	ENE	ENE	ENE	E	NE	ENE	ENE	NE	NE	SW	NW	S	NE	ENE	NE	ENE	E	E	ENE	ENE	24	
27	ESE	SSE	ENE	SE	W	S	WNW	NW	SE	WNW	SSW	E	WNW	W	S	S	NE	ENE	NE	ENE	NE	NNE	NE	NE	ENE	24	
28	NE	E	E	NE	ENE	E	E	E	E	ENE	ENE	ESE	WSW	WSW	W	WNW	W	WSW	W	W	SSW	S	S	E	E	24	
29	ENE	SE	ESE	E	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	NE	NE	NE	NNE	NNE	SE	NNW	NNW	NNW	NNW	NE	24	
30	NNW	NW	NNW	NW	NNW	NNW	NNW	NNW	NW	WNW	W	W	SW	SW	SSW	SSW	S	S	S	S	SSE	SSE	S	S	W	24	
31	SSE	S	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	S	S	S	S	S	SSE	S	SSE	S	S	S	S	SSW	S	24	

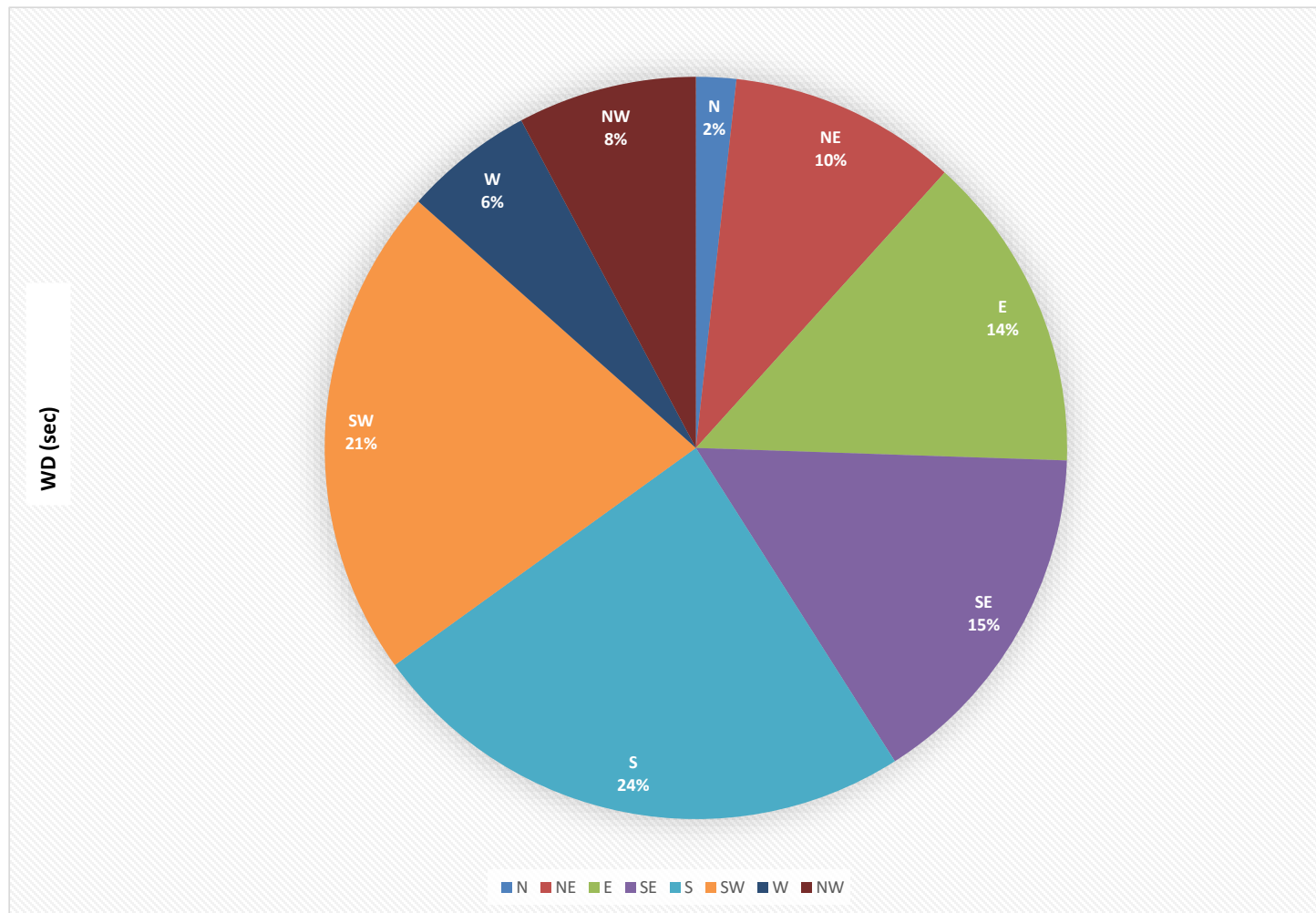
STATUS FLAG CODES

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

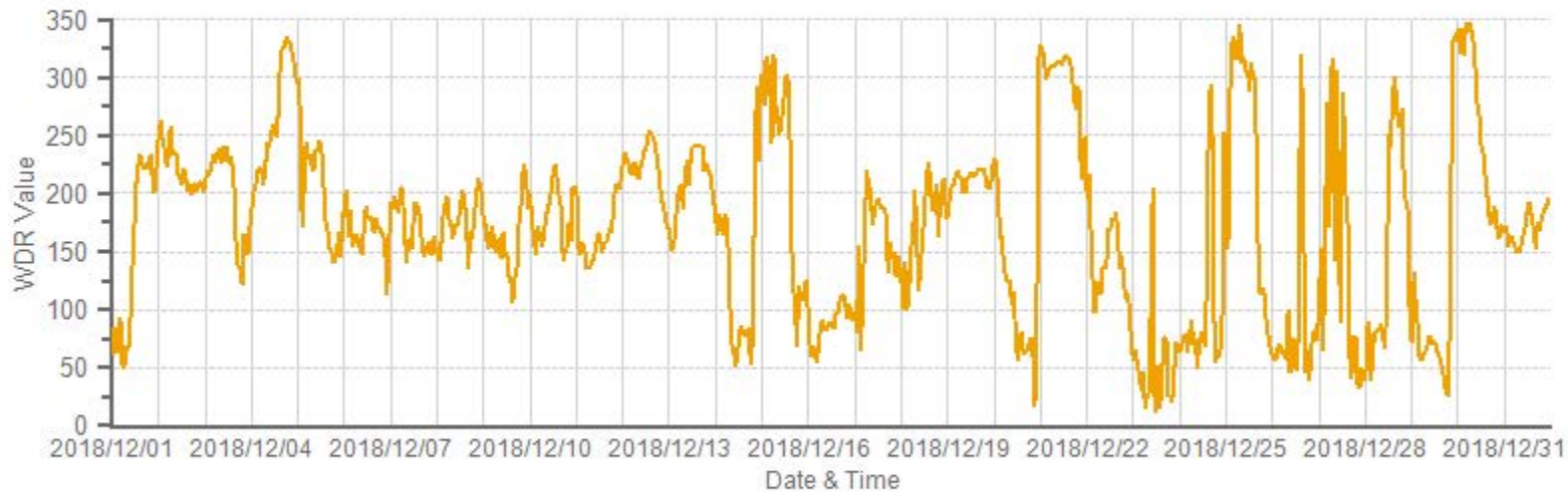
LAST CALIBRATION:	August 22, 2018
DECLINATION :	MAGNETIC DECLINATION 15 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	744	hrs
STANDARD DEVIATION:	77		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	191 (S)	

WIND DIRECTION Hourly Averages (WD)



WDR[degwdr] Station: PRAMP_842 Monthly: 18/12 Type: AVG 1 Hr. [1 Hr.]



— WDR[degwdr]

RELATIVE HUMIDITY

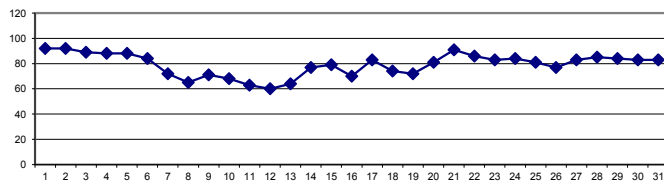
RELATIVE HUMIDITY Hourly Averages (RH %)

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	91	92	91	91	91	91	91	91	91	91	90	90	91	91	91	93	94	95	94	94	93	93	93	93	90	95	92	24	
2	93	93	93	93	92	92	92	93	93	92	92	93	93	93	93	93	92	92	92	91	91	91	91	90	90	90	93	92	24
3	90	90	90	90	90	89	89	88	87	87	91	93	92	93	91	90	88	88	87	87	88	88	88	90	87	93	89	24	
4	91	91	91	91	91	91	92	92	92	91	88	86	84	84	84	85	89	88	86	87	87	87	87	86	84	92	88	24	
5	85	86	89	90	90	88	88	88	88	87	87	85	83	83	83	87	90	93	92	90	90	90	90	90	83	93	88	24	
6	89	89	88	88	87	86	86	85	85	85	86	87	86	83	80	78	79	79	82	82	82	80	83	80	78	89	84	24	
7	72	71	66	68	75	72	70	75	80	79	75	73	63	62	61	65	72	76	78	78	79	78	75	72	61	80	72	24	
8	74	75	72	66	63	61	67	68	71	69	63	58	54	54	53	56	67	69	68	70	70	66	68	70	53	75	65	24	
9	72	75	76	76	74	75	77	80	80	80	72	68	65	60	59	62	67	68	64	65	65	71	74	72	59	80	71	24	
10	71	71	73	74	71	73	76	74	70	66	65	63	60	58	58	60	67	71	70	72	71	72	65	64	58	76	68	24	
11	64	71	73	70	70	71	68	64	59	57	53	53	56	58	59	62	64	61	63	64	64	63	64	64	53	73	63	24	
12	63	62	62	62	65	65	63	63	64	65	63	58	56	54	50	50	50	54	56	58	60	62	63	62	50	65	60	24	
13	63	87	86	64	60	65	67	72	76	73	74	68	62	57	56	55	54	53	57	56	56	56	55	57	53	87	64	24	
14	59	59	59	60	63	62	70	87	92	91	89	88	82	75	73	73	75	77	80	82	83	85	87	89	59	92	77	24	
15	89	88	87	88	87	86	82	83	79	74	70	66	64	63	58	63	80	85	85	86	86	83	83	87	58	89	79	24	
16	85	84	84	85	85	86	81	69	66	67	67	66	62	59	57	56	58	61	64	66	67	69	70	71	56	86	70	24	
17	71	71	72	76	79	82	85	88	89	90	90	93	90	82	79	80	84	88	91	87	84	82	82	82	71	93	83	24	
18	85	80	78	81	81	68	69	77	77	83	82	79	65	64	65	64	72	73	70	75	76	71	73	75	64	85	74	24	
19	78	77	78	79	79	80	77	75	76	76	72	70	71	68	67	68	68	68	67	66	67	68	70	70	66	80	72	24	
20	73	74	74	78	84	87	89	86	85	84	80	75	75	69	65	67	74	82	91	91	90	90	91	92	65	92	81	24	
21	93	93	94	95	94	93	92	92	91	91	90	89	86	87	88	89	89	90	90	89	90	90	90	90	86	95	91	24	
22	91	90	86	86	85	86	86	86	88	88	87	86	85	84	82	84	88	88	88	84	83	82	81	80	80	91	86	24	
23	80	83	84	83	83	82	83	83	82	82	81	81	82	83	83	84	84	84	84	84	84	84	84	84	80	84	83	24	
24	83	83	83	83	83	84	84	84	84	84	85	83	84	85	81	76	86	87	86	85	84	84	85	85	76	87	84	24	
25	85	86	87	86	84	83	82	82	82	83	80	78	78	76	76	75	81	82	81	79	78	77	76	77	75	87	81	24	
26	76	75	77	77	77	76	78	77	77	78	78	76	74	73	74	78	80	81	80	79	79	80	80	80	73	81	77	24	
27	80	80	80	85	85	84	84	84	83	83	83	83	84	84	83	83	83	84	84	85	85	84	84	84	80	85	83	24	
28	84	85	84	83	83	84	85	86	86	87	87	87	87	86	86	85	85	85	84	85	85	85	84	83	82	87	85	24	
29	81	81	82	82	83	84	85	85	87	87	86	86	86	85	84	84	84	84	84	84	84	82	81	81	81	87	84	24	
30	80	80	80	80	80	81	84	85	85	85	85	85	84	84	83	83	83	83	81	81	81	82	82	83	80	85	83	24	
31	84	85	84	85	85	85	85	85	85	85	84	82	77	74	75	78	81	79	79	78	90	92	88	86	74	92	83	24	
HOURLY MAX	93	93	94	95	94	93	92	93	93	92	92	93	93	93	93	93	94	95	94	94	93	93	93	93					
HOURLY AVG	80	81	81	80	81	80	81	82	82	81	80	78	76	75	73	74	78	79	79	79	80	80	80	80					

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

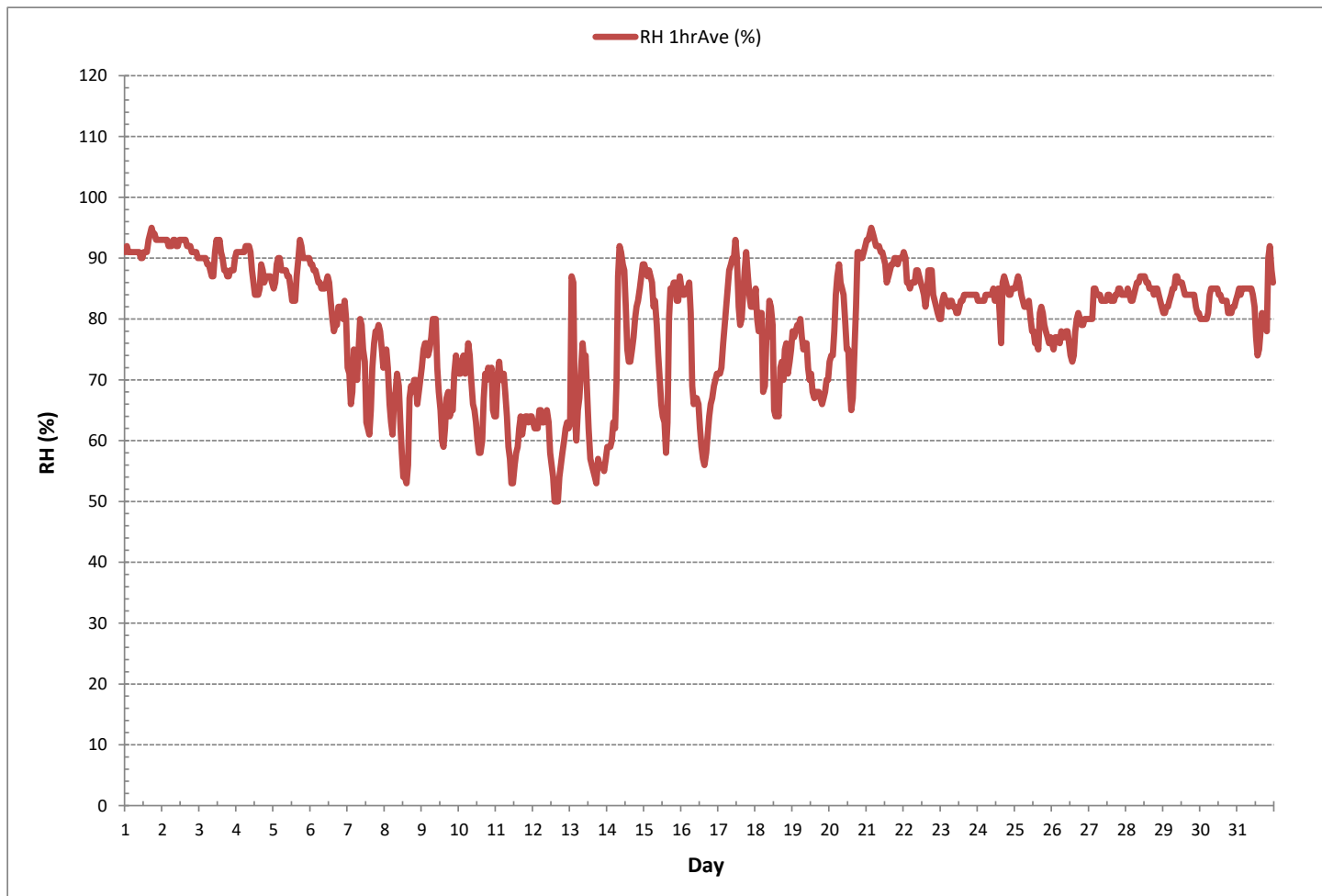
24 HR AVERAGES December 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	50	%	@ HOUR	14	ON DAY	12
MAXIMUM 1-HR AVERAGE:	95	%	@ HOUR	17	ON DAY	1
MAXIMUM 24-HR AVERAGE:	92	%			ON DAY	1
OPERATIONAL TIME:						744 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	10		MONTHLY AVERAGE:	79	%	

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 842b Station - December 2018

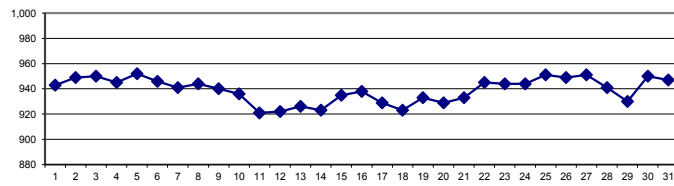
BAROMETRIC PRESSURE Hourly Averages (BP mbar)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	940	940	941	941	941	941	942	942	942	942	943	943	943	943	944	944	945	945	945	946	946	946	947	947	940	947	943	24
2	947	947	947	947	947	947	948	948	948	948	949	949	949	949	949	949	949	949	949	949	949	949	949	950	947	950	949	24
3	950	950	950	950	950	951	951	951	951	952	951	951	951	951	951	951	952	952	951	950	949	948	947	946	946	952	950	24
4	945	944	943	943	942	942	942	941	942	942	942	942	942	942	944	946	947	949	950	951	952	953	953	941	953	945	24	
5	954	954	954	955	954	954	954	954	953	953	953	953	952	951	951	951	950	950	949	948	948	948	948	948	948	955	952	24
6	947	947	947	947	947	947	947	947	947	947	947	946	946	945	945	945	945	945	944	943	943	942	942	942	942	947	946	24
7	941	941	940	940	940	940	940	940	941	941	941	941	940	940	940	940	941	942	942	942	942	943	943	940	943	941	24	
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9	945	945	945	944	944	944	943	943	942	942	941	941	940	939	938	937	936	936	936	936	936	936	937	936	936	945	940	24
10	937	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	935	934	934	934	937	936	24
11	934	933	932	931	930	928	926	925	924	922	922	920	919	918	917	916	916	915	915	915	915	915	915	915	915	934	921	24
12	915	915	916	917	917	918	919	920	920	921	922	923	923	924	925	926	927	928	928	928	928	927	926	926	915	928	922	24
13	925	923	922	921	921	922	922	922	923	923	924	925	925	926	927	928	929	929	929	929	929	929	930	930	921	930	926	24
14	930	929	929	929	929	928	928	927	926	925	924	923	921	920	919	919	918	917	917	916	916	916	916	916	916	930	923	24
15	917	918	919	922	924	925	927	930	931	933	935	936	938	939	940	942	944	945	945	946	946	947	947	947	917	947	935	24
16	947	946	946	946	945	944	943	942	941	940	939	938	937	936	935	935	934	934	933	933	932	932	931	931	931	947	938	24
17	931	930	931	930	930	930	929	930	930	929	929	929	929	929	929	929	928	928	928	928	927	926	926	925	925	931	929	24
18	925	924	924	923	923	922	922	922	922	922	922	922	922	922	922	922	923	923	923	924	924	925	926	926	922	926	923	24
19	927	928	928	929	929	930	930	931	931	932	933	933	933	934	935	935	936	936	937	937	937	938	939	939	927	939	933	24
20	939	939	939	939	938	938	937	936	935	934	933	932	929	927	925	923	921	921	920	919	918	918	919	919	918	939	929	24
21	919	920	921	923	924	925	926	927	929	931	933	934	935	936	938	939	940	941	941	942	942	943	943	944	919	944	933	24
22	944	945	945	945	946	946	946	946	946	946	946	945	945	945	944	945	946	946	945	945	945	945	945	944	944	946	945	24
23	944	944	944	943	943	943	943	943	943	943	944	943	943	943	943	943	944	944	944	944	944	944	944	944	943	944	944	24
24	944	945	945	945	945	945	944	944	944	944	944	944	943	943	943	943	944	945	945	945	945	946	946	946	943	946	944	24
25	947	947	948	948	949	949	950	951	952	952	953	953	952	953	953	953	953	953	953	953	953	953	953	952	947	953	951	24
26	952	952	952	951	951	950	950	950	950	949	949	948	947	947	947	947	948	948	948	949	949	949	949	950	947	952	949	24
27	950	950	951	951	951	950	951	951	951	952	952	952	951	951	951	952	952	951	951	951	951	950	950	949	949	952	951	24
28	949	948	947	946	945	944	943	942	941	941	940	939	938	937	937	938	938	938	937	937	937	937	937	937	937	949	941	24
29	937	936	936	936	934	933	932	931	929	928	928	927	925	925	924	925	925	926	927	929	930	932	933	935	924	937	930	24
30	937	939	941	942	943	945	946	947	949	950	951	951	952	953	954	955	955	955	956	956	956	956	956	956	937	956	950	24
31	956	956	955	955	954	953	952	952	951	951	950	949	948	947	946	945	944	943	941	940	938	936	934	933	933	956	947	24
HOURLY MAX	956	956	955	955	954	954	954	954	953	953	953	953	952	953	954	955	955	955	956	956	956	956	956	956				
HOURLY AVG	939	939	939	939	939	939	939	939	939	939	939	939	939	939	939	939	939	939	939	939	939	939	939	939				

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

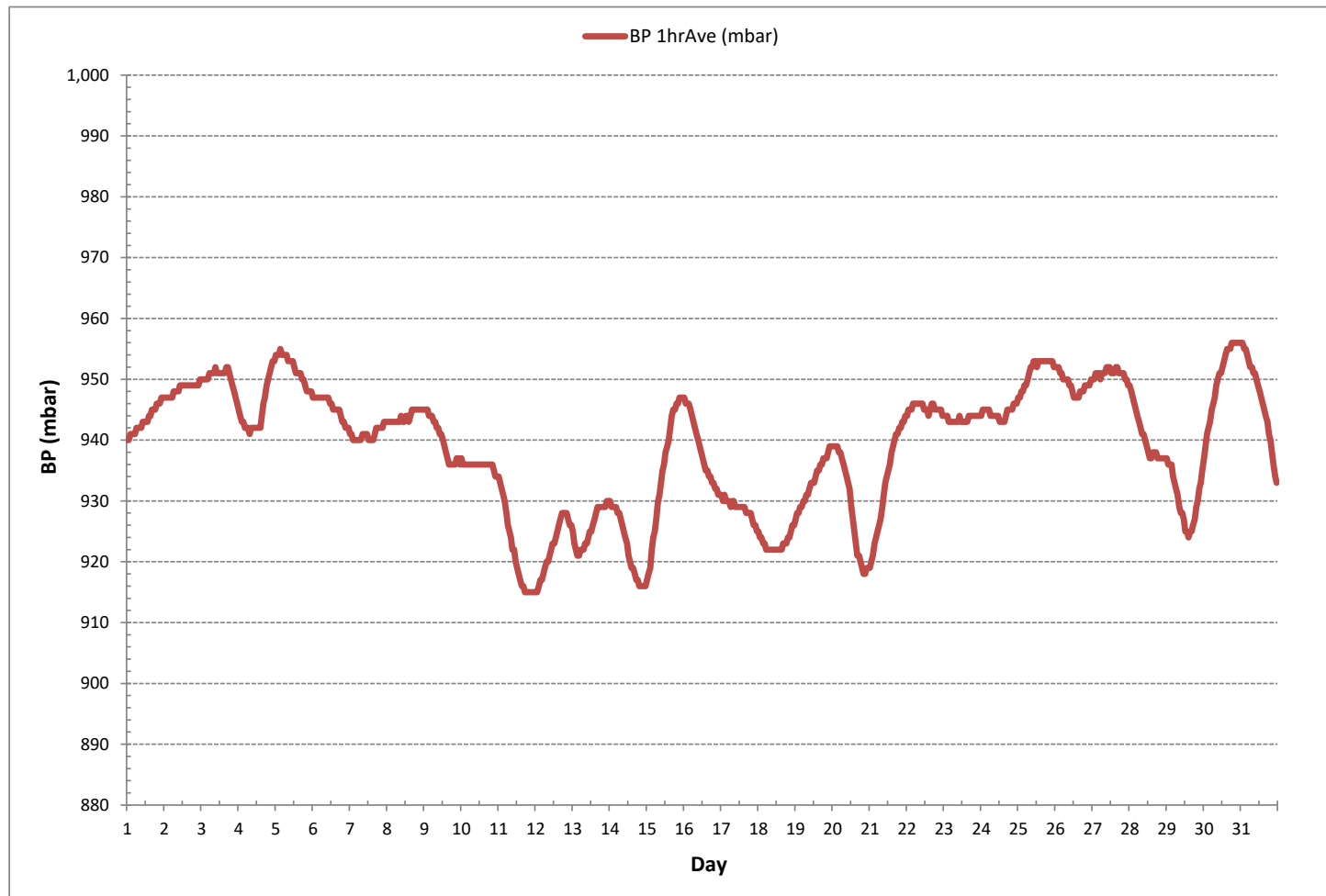
24 HR AVERAGES December 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	915	mbar	@ HOUR	17	ON DAY	11
MAXIMUM 1-HR AVERAGE:	956	mbar	@ HOUR	18	ON DAY	30
MAXIMUM 24-HR AVERAGE:	952	mbar			ON DAY	5
OPERATIONAL TIME:						744 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	10		MONTHLY AVERAGE:			939 mbar

BAROMETRIC PRESSURE Hourly Averages (BP mbar)



AMBIENT TEMPERATURE



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 842b Station - December 2018

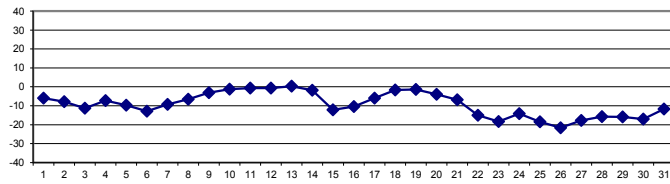
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	-7.0	-7.2	-7.2	-7.3	-7.2	-7.0	-6.9	-6.8	-6.6	-6.3	-5.6	-4.8	-4.3	-4.1	-4.4	-4.9	-5.0	-5.5	-5.9	-5.9	-6.0	-6.3	-6.2	-6.1	-7.3	-4.1	-6.0	24
2	-5.9	-5.9	-6.1	-6.2	-6.1	-6.5	-7.0	-7.6	-7.6	-7.4	-7.5	-7.8	-7.8	-7.7	-7.5	-7.5	-7.9	-8.4	-8.9	-9.1	-9.7	-9.9	-10.1	-10.2	-10.2	-5.9	-7.8	24
3	-10.5	-10.8	-11.0	-10.4	-10.4	-11.4	-11.5	-13.1	-14.0	-14.6	-9.8	-7.0	-6.5	-7.2	-7.3	-7.9	-12.7	-13.6	-14.3	-14.8	-14.3	-13.7	-13.0	-11.3	-14.8	-6.5	-11.3	24
4	-9.2	-8.6	-8.5	-8.7	-8.8	-8.3	-7.8	-6.9	-6.1	-6.1	-6.0	-5.8	-5.8	-5.5	-4.7	-5.2	-6.7	-7.3	-7.8	-8.2	-8.3	-8.5	-8.6	-8.5	-9.2	-4.7	-7.3	24
5	-8.7	-9.1	-10.6	-12.5	-10.7	-9.9	-9.7	-9.5	-9.2	-8.8	-8.4	-8.0	-7.9	-8.1	-8.2	-8.9	-10.1	-10.3	-10.4	-10.8	-11.0	-10.9	-10.7	-11.2	-12.5	-7.9	-9.7	24
6	-11.5	-12.3	-13.2	-13.5	-14.9	-16.0	-16.3	-16.5	-16.7	-16.7	-14.6	-12.3	-11.1	-10.1	-9.7	-10.1	-11.0	-11.3	-11.8	-11.5	-11.7	-12.3	-12.7	-11.4	-16.7	-9.7	-12.9	24
7	-8.8	-8.3	-7.0	-7.9	-10.3	-9.7	-9.5	-11.0	-12.4	-12.0	-10.5	-9.5	-6.7	-6.1	-5.9	-6.4	-8.2	-9.7	-10.5	-10.5	-11.1	-10.9	-10.5	-10.1	-12.4	-5.9	-9.3	24
8	-10.6	-11.5	-10.6	-8.8	-7.9	-7.0	-8.5	-9.0	-9.8	-9.5	-7.7	-5.6	-4.1	-4.4	-3.7	-4.0	-5.9	-6.5	-5.8	-5.6	-4.2	-1.7	-3.2	-4.0	-11.5	-1.7	-6.6	24
9	-4.5	-5.0	-5.7	-5.3	-4.6	-4.4	-4.7	-5.5	-5.8	-6.0	-3.8	-2.5	-1.8	0.1	0.6	0.1	-1.3	-1.9	-1.1	-1.7	-1.4	-2.9	-3.4	-2.6	-6.0	0.6	-3.1	24
10	-2.6	-2.6	-2.8	-2.7	-1.2	-1.1	-1.4	-0.9	-0.2	0.4	0.5	1.0	1.8	2.0	1.8	1.0	-0.5	-1.8	-2.7	-3.9	-3.8	-4.0	-2.3	-1.8	-4.0	2.0	-1.2	24
11	-1.7	-3.9	-4.4	-4.0	-3.8	-4.3	-4.2	-2.9	-2.1	-1.4	-0.6	-0.1	0.1	0.7	1.7	2.3	1.9	1.7	1.4	1.8	2.4	2.6	1.8	0.9	-4.4	2.6	-0.6	24
12	0.3	0.4	0.3	0.0	-0.8	-0.8	-0.7	-1.0	-1.3	-1.1	-0.5	0.5	0.7	0.8	1.3	0.7	-0.1	-1.0	-1.5	-2.2	-2.6	-2.8	-2.9	-2.4	-2.9	1.3	-0.7	24
13	-2.0	-2.7	-1.8	-0.1	1.0	0.8	0.4	0.0	-0.2	0.9	0.0	1.1	1.6	2.0	1.9	1.7	1.4	1.3	0.3	0.2	0.2	0.2	0.2	-0.1	-2.7	2.0	0.3	24
14	-0.4	-0.7	-0.5	-0.4	-0.8	-0.5	-0.8	-1.8	-2.0	-1.9	-1.8	-1.6	-0.8	-0.4	-0.4	-0.9	-1.5	-1.9	-2.6	-3.0	-3.4	-3.7	-4.5	-6.4	-6.4	-0.4	-1.8	24
15	-6.8	-7.3	-8.1	-9.2	-9.2	-9.1	-10.0	-10.1	-9.9	-11.6	-11.4	-10.5	-9.7	-9.2	-8.2	-9.6	-14.5	-16.3	-17.5	-17.9	-17.3	-19.2	-20.3	-17.1	-20.3	-6.8	-12.1	24
16	-16.5	-17.7	-17.4	-16.6	-15.0	-14.2	-11.9	-9.6	-9.8	-10.1	-10.0	-9.4	-8.4	-7.4	-6.6	-6.2	-6.4	-7.0	-7.5	-8.0	-8.4	-8.9	-9.0	-8.7	-17.7	-6.2	-10.4	24
17	-8.4	-8.2	-7.9	-7.9	-8.0	-7.8	-7.7	-7.5	-7.1	-6.8	-6.5	-6.1	-5.3	-4.5	-4.1	-4.2	-4.8	-6.0	-6.0	-4.4	-4.1	-3.5	-3.6	-4.3	-8.4	-3.5	-6.0	24
18	-4.8	-3.9	-3.6	-4.2	-3.8	-1.3	-1.1	-2.8	-1.7	-2.0	-1.1	0.0	3.0	2.7	1.3	0.6	-1.6	-1.6	-1.2	-2.8	-3.5	-1.6	-2.2	-2.7	-4.8	3.0	-1.7	24
19	-3.6	-2.7	-2.4	-2.8	-2.8	-3.3	-1.6	-1.3	-1.5	-1.2	-0.5	-0.3	-0.4	0.6	0.9	0.4	0.2	-0.6	-0.9	-0.9	-1.4	-1.6	-2.6	-2.7	-3.6	0.9	-1.4	24
20	-3.8	-4.2	-3.7	-5.2	-6.6	-7.8	-7.5	-6.2	-5.9	-5.3	-4.2	-2.7	-2.4	-1.6	-1.1	-1.2	-2.2	-2.7	-3.2	-3.0	-3.0	-3.2	-3.3	-3.3	-7.8	-1.1	-3.9	24
21	-3.5	-3.7	-3.8	-3.8	-4.7	-5.3	-5.6	-5.8	-6.3	-7.0	-7.4	-7.4	-7.2	-7.5	-7.8	-8.1	-8.0	-8.4	-8.9	-8.9	-9.1	-9.5	-9.5	-9.0	-9.5	-3.5	-6.9	24
22	-10.7	-12.0	-14.9	-16.1	-17.1	-17.0	-16.6	-17.0	-16.4	-14.8	-12.9	-10.9	-10.1	-9.9	-9.5	-10.7	-12.6	-14.2	-15.0	-18.2	-19.4	-20.4	-20.9	-21.7	-21.7	-9.5	-15.0	24
23	-22.1	-20.5	-19.5	-19.0	-18.6	-19.1	-19.3	-18.8	-19.4	-19.9	-20.0	-19.3	-18.9	-17.6	-17.4	-17.1	-17.2	-17.0	-16.7	-16.3	-16.0	-16.6	-16.4	-16.5	-22.1	-16.0	-18.3	24
24	-16.7	-16.6	-16.4	-16.0	-15.8	-15.5	-14.7	-14.1	-13.5	-12.9	-12.4	-11.2	-10.2	-9.7	-8.0	-9.1	-13.4	-15.9	-16.4	-16.7	-17.1	-16.8	-15.4	-14.5	-17.1	-8.0	-14.1	24
25	-14.7	-14.3	-14.2	-14.6	-15.5	-16.1	-16.9	-17.4	-17.6	-17.6	-17.3	-17.0	-16.6	-16.7	-16.6	-16.2	-18.7	-21.1	-22.5	-23.5	-24.0	-24.8	-25.2	-25.2	-25.2	-14.2	-18.5	24
26	-25.3	-26.6	-26.1	-25.8	-25.5	-25.9	-24.8	-25.1	-25.2	-24.1	-21.2	-19.0	-16.8	-15.3	-17.8	-19.4	-20.3	-19.3	-19.0	-19.2	-19.2	-19.2	-19.0	-19.3	-26.6	-15.3	-21.6	24
27	-20.1	-19.6	-19.3	-18.9	-18.2	-18.0	-17.7	-18.3	-18.5	-18.4	-18.3	-17.7	-17.2	-17.0	-16.8	-17.2	-17.3	-17.3	-17.2	-17.0	-17.1	-17.0	-17.0	-17.0	-20.1	-16.8	-17.8	24
28	-16.8	-16.6	-17.4	-18.2	-18.6	-17.2	-16.0	-15.0	-14.2	-13.3	-12.8	-11.9	-12.0	-13.4	-13.1	-13.6	-15.7	-16.4	-16.9	-16.3	-16.4	-16.9	-18.6	-19.4	-19.4	-11.9	-15.7	24
29	-20.2	-20.5	-19.9	-19.8	-18.5	-17.0	-15.8	-15.1	-14.1	-13.1	-13.4	-13.1	-12.5	-13.0	-13.7	-14.3	-14.2	-14.0	-14.1	-13.9	-14.2	-17.7	-19.2	-19.7	-20.5	-12.5	-15.9	24
30	-19.7	-19.4	-19.1	-18.7	-18.4	-18.2	-17.9	-17.6	-17.4	-17.2	-16.9	-16.4	-15.9	-16.0	-15.8	-15.6	-15.6	-15.8	-16.0	-15.9	-15.8	-15.7	-15.7	-16.3	-19.7	-15.6	-17.0	24
31	-17.0	-17.6	-17.8	-17.8	-17.6	-17.2	-16.5	-15.0	-14.3	-13.7	-12.7	-11.6	-10.3	-9.7	-9.5	-10.2	-10.8	-9.4	-8.1	-7.0	-6.5	-4.6	-3.2	-2.9	-17.8	-2.9	-11.7	24
HOURLY MAX	0.3	0.4	0.3	0.0	1.0	0.8	0.4	0.0	-0.2	0.9	0.5	1.1	3.0	2.7	1.9	2.3	1.9	1.7	1.4	1.8	2.4	2.6	1.8	0.9				
HOURLY AVG	-10.1	-10.3	-10.3	-10.4	-10.3	-10.2	-10.0	-10.0	-9.9	-9.7	-8.9	-8.0	-7.2	-6.9	-6.7	-7.2	-8.4	-9.0	-9.3	-9.5	-9.6	-9.7	-9.9	-9.9				

STATUS FLAG CODES

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

24 HR AVERAGES December 2018



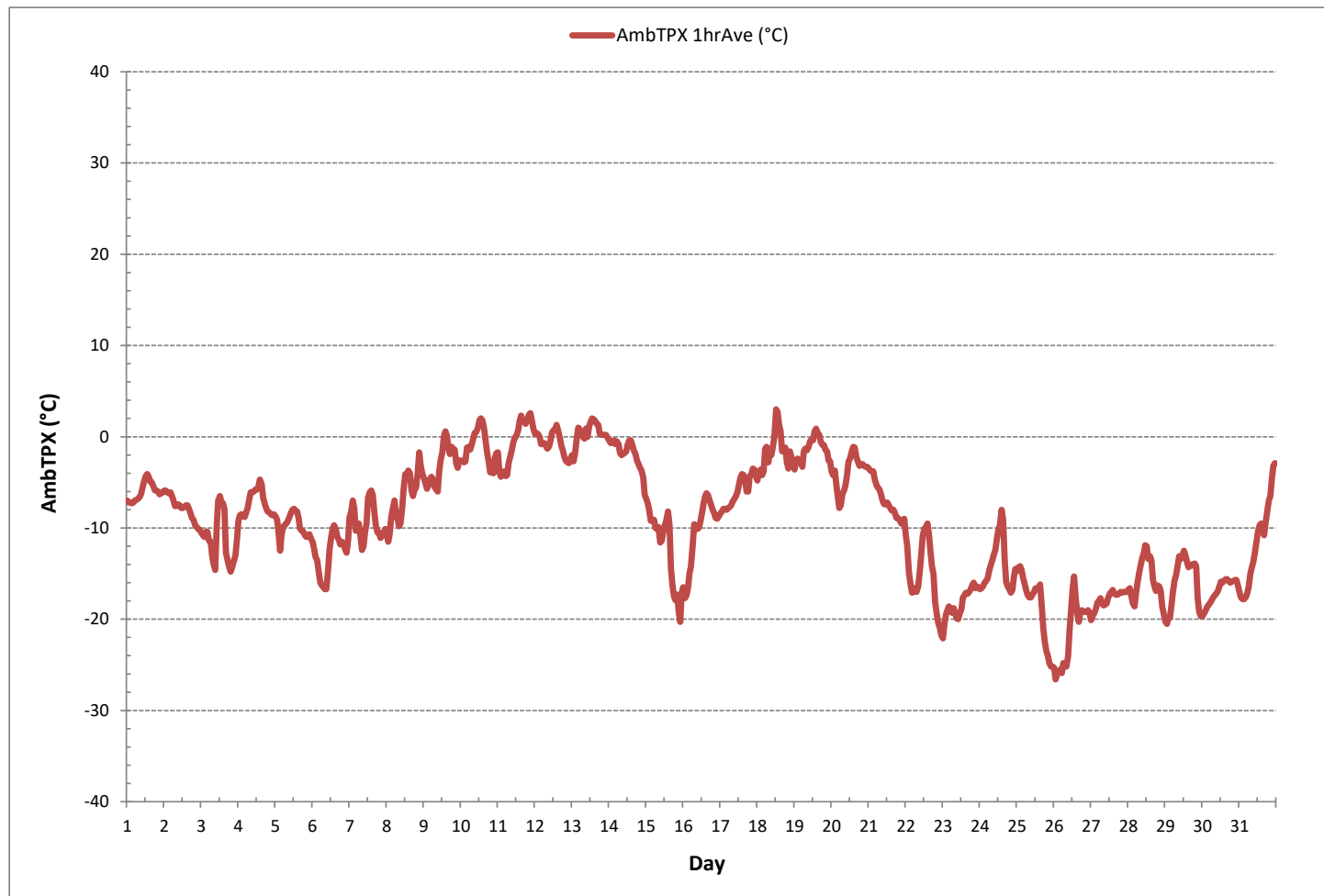
MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-26.6	°C	@ HOUR	1	ON DAY	26
MAXIMUM 1-HR AVERAGE:	3.0	°C	@ HOUR	12	ON DAY	18
MAXIMUM 24-HR AVERAGE:	0.3	°C			ON DAY	13

OPERATIONAL TIME:	744	hrs
AMD OPERATION UPTIME:	100.0	%

STANDARD DEVIATION:	6.7		MONTHLY AVERAGE:	-9.2	°C
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AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



STATION TEMPERATURE



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 842b Station - December 2018

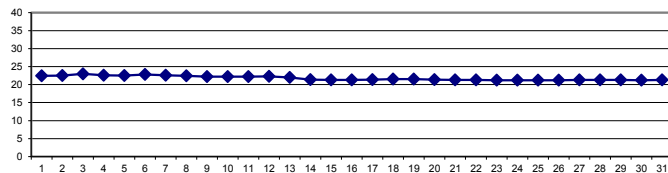
STATION TEMPERATURE Hourly Averages (StnTPX °C)

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	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	22.5	22.4	22.5	22.4	22.5	22.5	22.4	22.4	22.5	22.4	22.4	22.3	22.3	22.3	22.2	22.3	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.2	22.5	22.4	24		
2	22.4	22.4	22.4	22.4	22.4	22.5	22.4	22.5	22.5	22.5	22.5	22.4	22.5	22.4	22.4	22.5	22.6	22.5	22.7	22.8	22.7	22.8	22.8	22.8	22.4	22.8	22.5	24	
3	22.9	22.9	23.0	22.9	22.9	23.0	23.0	23.1	23.3	23.4	22.8	22.4	22.6	22.8	22.7	22.8	23.1	23.2	23.3	23.4	23.3	23.3	23.3	23.1	22.4	23.4	23.0	24	
4	23.0	22.9	22.9	22.9	22.8	22.8	22.7	22.5	22.6	22.6	22.5	22.5	22.4	22.4	22.5	22.3	22.4	22.5	22.3	22.7	22.5	22.4	22.5	22.4	22.3	23.0	22.6	24	
5	22.5	22.5	22.6	22.7	22.7	22.5	22.4	22.4	22.4	22.3	22.4	22.3	22.4	22.3	22.4	22.5	22.4	22.6	22.7	22.8	22.7	22.8	22.6	22.7	22.3	22.8	22.5	24	
6	22.8	22.9	22.9	22.9	23.0	23.0	23.0	23.0	23.0	22.6	22.7	22.4	22.5	22.5	22.5	22.5	22.5	22.7	22.7	22.8	22.8	22.7	22.8	22.9	22.4	23.0	22.8	24	
7	22.8	22.6	22.6	22.6	22.7	22.7	22.6	22.7	22.6	22.7	22.7	22.5	22.3	22.2	22.3	22.4	22.4	22.6	22.7	22.6	22.7	22.7	22.8	22.7	22.2	22.8	22.6	24	
8	22.6	22.8	22.7	22.7	22.6	22.6	22.6	22.6	22.6	22.7	22.4	22.2	22.1	22.3	22.3	22.3	22.3	22.3	22.4	22.4	22.4	22.4	22.3	22.3	22.1	22.8	22.4	24	
9	22.4	22.3	22.3	22.3	22.3	22.3	22.4	22.4	22.4	22.4	22.4	22.2	22.0	22.1	22.0	22.0	22.1	22.2	22.3	22.2	22.3	22.2	22.2	22.2	22.0	22.4	22.2	24	
10	22.2	22.2	22.2	22.2	22.1	22.1	22.2	22.1	22.2	22.2	22.0	21.7	21.9	22.0	21.9	22.0	22.2	22.3	22.4	22.5	22.5	22.4	22.5	22.4	21.7	22.5	22.2	24	
11	22.4	22.4	22.4	22.4	22.4	22.3	22.5	22.4	22.3	22.2	22.2	22.1	22.1	22.1	22.0	22.0	22.0	22.1	22.1	22.1	22.2	22.2	22.1	22.3	22.0	22.5	22.2	24	
12	22.3	22.4	22.4	22.5	22.4	22.5	22.4	22.4	22.4	22.4	22.2	22.0	22.0	22.2	22.2	22.1	22.3	22.4	22.5	22.4	22.5	22.3	22.4	22.3	22.0	22.5	22.3	24	
13	22.2	22.2	22.2	22.2	22.2	22.2	22.3	22.2	22.2	22.2	22.1	21.9	22.1	22.2	22.2	22.2	22.3	22.0	21.4	21.3	21.3	21.3	21.3	21.3	21.3	21.3	22.3	22.0	24
14	21.3	21.3	21.2	21.3	21.3	21.3	21.2	21.3	21.2	21.1	21.4	21.4	21.5	21.5	21.5	21.5	21.5	21.4	21.5	21.4	21.5	21.4	21.4	21.4	21.4	21.1	21.5	21.4	24
15	21.3	21.4	21.3	21.3	21.2	21.3	21.2	21.2	21.2	21.3	21.3	21.2	21.2	21.2	21.2	21.3	21.2	21.2	21.2	21.3	21.3	21.2	21.3	21.3	21.2	21.4	21.3	24	
16	21.4	21.3	21.3	21.3	21.3	21.3	21.2	21.3	21.3	21.2	21.2	21.2	21.2	21.3	21.4	21.4	21.3	21.3	21.3	21.2	21.3	21.3	21.3	21.3	21.2	21.4	21.3	24	
17	21.3	21.3	21.3	21.3	21.3	21.4	21.4	21.4	21.3	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.3	21.4	21.4	24	
18	21.4	21.4	21.4	21.5	21.4	21.4	21.4	21.5	21.5	21.5	21.5	21.6	21.7	21.5	21.5	21.4	21.5	21.4	21.5	21.5	21.4	21.5	21.5	21.5	21.4	21.7	21.5	24	
19	21.4	21.4	21.4	21.4	21.4	21.4	21.5	21.5	21.5	21.4	21.5	21.5	21.4	21.6	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.4	21.4	21.4	21.4	21.6	21.5	24	
20	21.4	21.4	21.4	21.4	21.3	21.4	21.3	21.4	21.3	21.4	21.4	21.4	21.5	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.3	21.5	21.4	24	
21	21.5	21.4	21.4	21.5	21.4	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.2	21.3	21.2	21.3	21.2	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.2	21.5	21.3	24	
22	21.3	21.3	21.3	21.3	21.2	21.3	21.3	21.3	21.4	21.3	21.4	21.2	21.3	21.3	21.3	21.3	21.3	21.3	21.2	21.2	21.2	21.3	21.3	21.2	21.3	21.2	21.4	21.3	24
23	21.3	21.3	21.2	21.3	21.3	21.3	21.3	21.3	21.3	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.3	21.2	21.3	21.2	24	
24	21.2	21.2	21.2	21.2	21.2	21.2	21.3	21.2	21.2	21.2	21.2	21.2	21.3	21.3	21.3	21.3	21.3	21.2	21.2	21.2	21.2	21.2	21.3	21.2	21.2	21.3	21.2	24	
25	21.1	21.1	21.2	21.2	21.2	21.2	21.2	21.1	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.1	21.2	21.2	21.2	21.1	21.2	21.2	21.1	21.2	21.2	24	
26	21.2	21.2	21.2	21.2	21.3	21.2	21.2	21.2	21.2	21.2	21.2	21.1	21.2	21.2	21.1	21.1	21.1	21.2	21.2	21.2	21.2	21.2	21.1	21.2	21.1	21.3	21.2	24	
27	21.2	21.2	21.3	21.3	21.2	21.3	21.4	21.4	21.4	21.4	21.4	21.3	21.4	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.4	21.2	21.4	21.3	24	
28	21.3	21.3	21.4	21.4	21.4	21.4	21.4	21.4	21.3	21.4	21.3	21.4	21.3	21.4	21.3	21.3	21.3	21.4	21.3	21.3	21.4	21.3	21.3	21.3	21.3	21.4	21.3	24	
29	21.4	21.4	21.4	21.3	21.4	21.4	21.3	21.3	21.3	21.4	21.3	21.3	21.3	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.1	21.2	21.1	21.4	21.3	24	
30	21.2	21.1	21.2	21.1	21.2	21.2	21.2	21.2	21.2	21.2	21.3	21.3	21.2	21.2	21.1	21.2	21.2	21.3	21.2	21.2	21.2	21.2	21.3	21.2	21.1	21.3	21.2	24	
31	21.3	21.2	21.2	21.3	21.2	21.3	21.2	21.3	21.3	21.2	21.2	21.3	21.3	21.3	21.3	21.2	21.3	21.3	21.3	21.3	21.3	21.4	21.4	21.5	21.5	21.2	21.5	21.3	24
HOURLY MAX	23.0	22.9	23.0	22.9	23.0	23.0	23.0	23.1	23.3	23.4	22.8	22.5	22.6	22.8	22.7	22.8	23.1	23.2	23.3	23.4	23.3	23.3	23.3	23.1					
HOURLY AVG	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.7	21.7	21.7	21.7	21.7	21.8	21.8	21.8	21.8	21.8	21.8	21.8	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



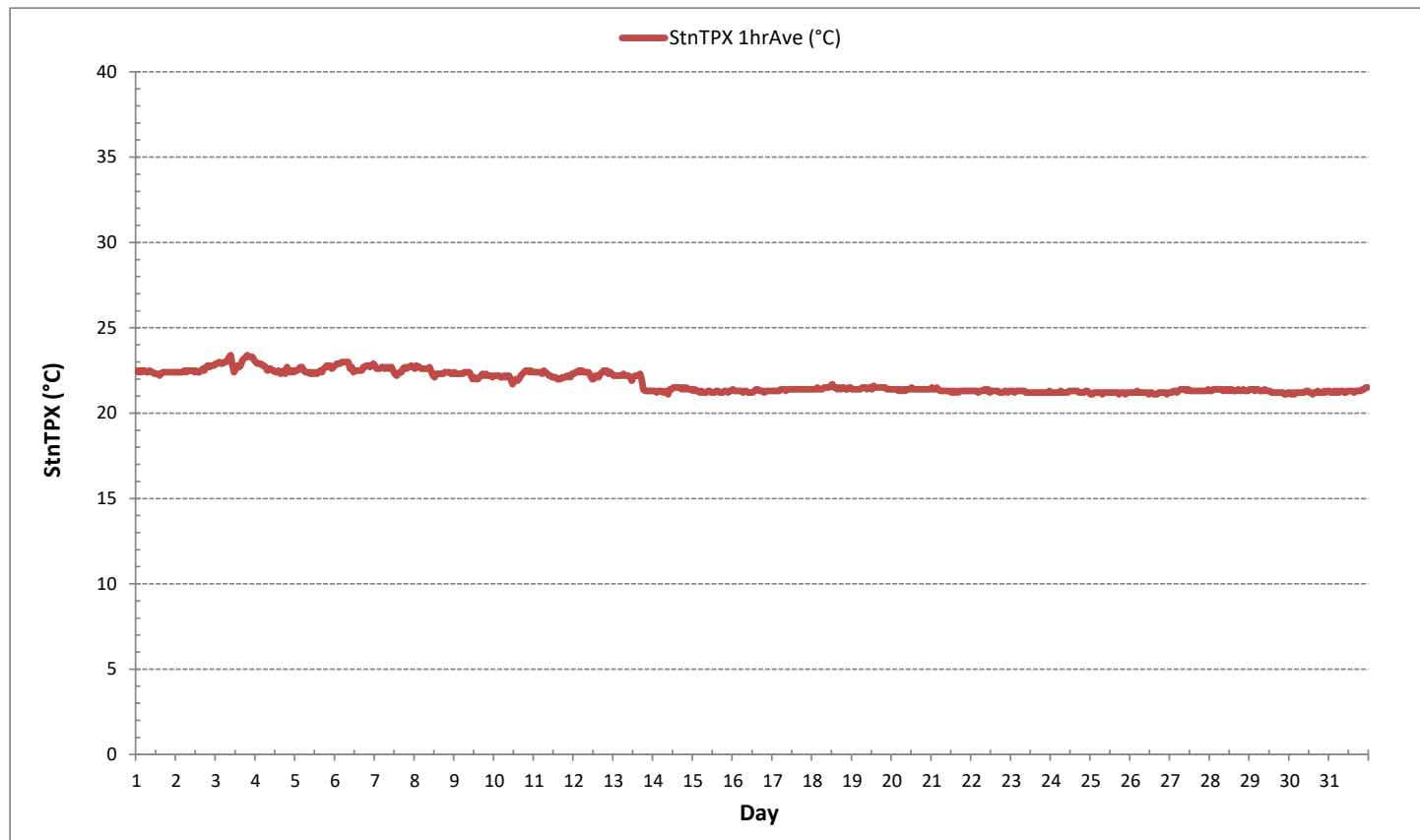
MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	21.1	°C	@ HOUR	9	ON DAY	14
MAXIMUM 1-HR AVERAGE:	23.4	°C	@ HOUR	9	ON DAY	3
MAXIMUM 24-HR AVERAGE:	23.0	°C			ON DAY	3

OPERATIONAL TIME:	744	hrs
AMD OPERATION UPTIME:	100.0	%

STANDARD DEVIATION:	0.6		MONTHLY AVERAGE:	21.8	°C
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STATION TEMPERATURE Hourly Averages (StnTPX °C)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



Thermo 43i Sulphur Dioxide Analyzer Calibration

Date:	December 5, 2018	Barometer/B.P./units:	Brunton 05490 expires December 11, 2018	28.11	inHg
Company/Airshed:	PRAMP	Thermometer/Station Temp:	Brunton 05490 expires December 11, 2018	22	°C
Location/Station Name:	842b	Weather Conditions:	Cloudy/Overcast		
Parameter:	Sulphur Dioxide	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	12:08	Performed By/Reviewer:	Chris Wesson	Rob Fisher	
End Time 24 hr. (mst):	16:02	Cal Gas Expiry Date:	October 24, 2020		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	n/a		
Analyzer:					
Serial Number/Owner:	835033373 Maxxam	Range ppb:	500		
Last Calibration Date:	November 7, 2018	As Found C.F.:	1.009		
Previous C.F.:	0.999	New C.F.:	0.999		

Calibration Standards:	Standard Calibration Points for Ranges
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. #:	LL108015
Cal Gas Conc. (ppm):	47.9

Point	ppb
High	380
Mid	180
Low	90

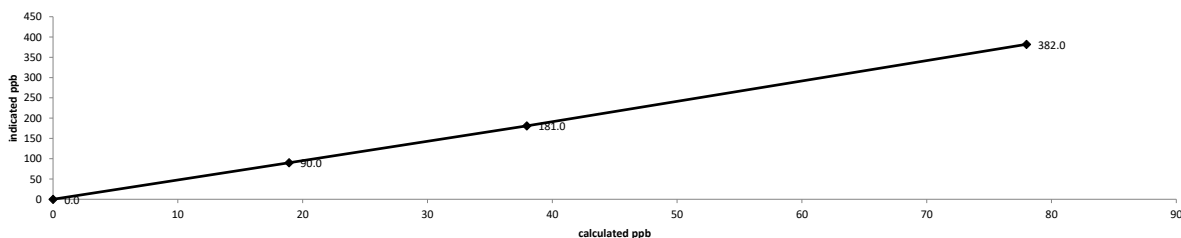
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	6000	0.00	6000	0.0	0.1	n/a
as found high	5954	47.80	6002	381.5	378	1.009
adjusted zero	6000	0.00	6000	0.0	0	n/a
adjusted high	5953	47.80	6001	381.5	382	0.999
mid	5980	22.70	6003	181.1	181	1.001
low	5989	11.30	6000	90.2	90	1.002
calibrator zero	6000	0.00	6000	0.0	0	n/a
Average C.F. =						1.001

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS
Slope =	0.999	> or = 0.995
b (Intercept as % of full scale) =	0.04%	0.95-1.05
% change in C.F. from last cal =	-1.05%	± 3% F.S.
		± 10%

Thermo 43i Sulphur Dioxide Analyzer Calibration

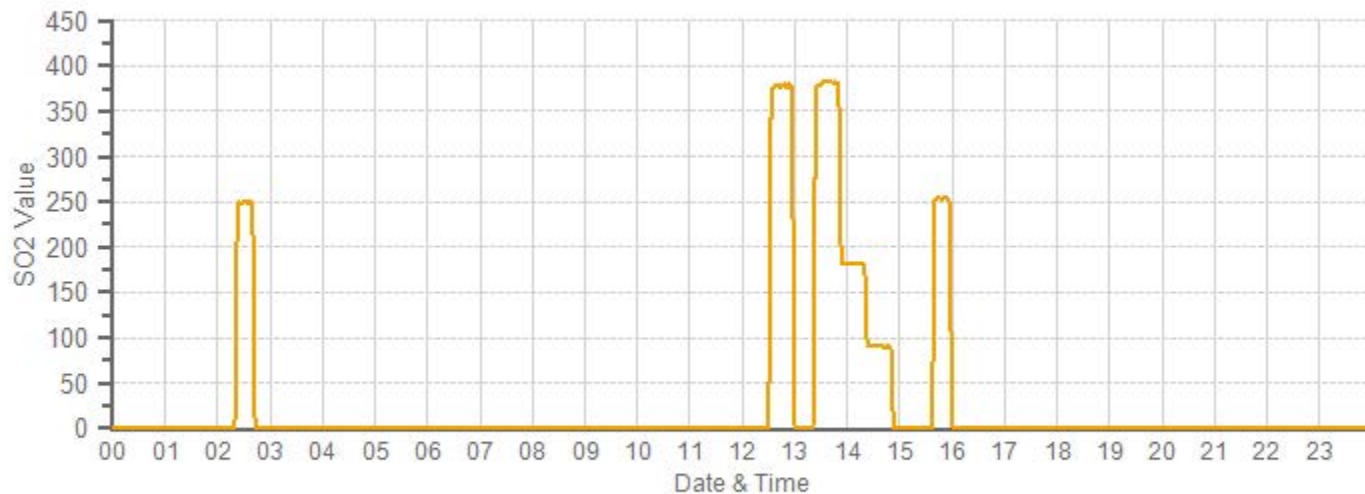


As found:		As left:	
Bkg:	14.2	Bkg:	14.6
Coef:	1.003	Coef:	1.010
Pmt:	-621.6	Pmt:	-621.6
Flash:	895	Flash:	895
Internal:	27.5	Internal:	27.2
Chamber:	45.3	Chamber:	45.0
Perm Oven Gas:	45.00	Perm Oven Gas:	45.00
Perm Oven Heater:	44.08	Perm Oven Heater:	44.09
Pressure:	685.0	Pressure:	684.1
Sample Flow:	0.415	Sample Flow:	0.414
Lamp Intensity:	81	Lamp Intensity:	81
Averaging Time:	120	Averaging Time:	120
Expected Value:	250.9	Expected Value:	253.0

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_842 Daily: 18/12/05 Type: AVG 1 Min. [1 Min.]



— SO2[ppb]

TOTAL REDUCED SULPHUR



Thermo 431-TLE Total Reduced Sulphur Analyzer Calibration

Date:	December 5, 2018	Barometer/B.P./units:	Brunton 05490 expires December 11, 2018	28.11	inHg
Company/Airshed:	PRAMP	Thermometer/Station Temp:	Brunton 05490 expires December 11, 2018	22	°C
Location/Station Name:	842b	Weather Conditions:	Cloudy/Overcast		
Parameter:	Total Reduced Sulphur	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	9:05	Performed By/Reviewer:	Chris Wesson	Rob Fisher	
End Time 24 hr. (mst):	13:40	Cal Gas Expiry Date:	November 7, 2020		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	CD Nova CDN-101 #553		
Analyzer:					
Serial Number/Owner:	1164600023 Maxxam	Range ppb:	100		
Last Calibration Date:	November 7, 2018	As Found C.F.:	1.025		
Previous C.F.:	1.000	New C.F.:	1.000		

Calibration Standards:	Standard Calibration Points for Ranges	SO2 Scrubber Check (10 minutes):
Low Flow Meter ID/Expiry Date:		Start/End Time 24 hr.:
High Flow Meter ID/Expiry Date:		SO2 Analyzer Range:
Calibrator ID/Expiry Date:		Target Concentration (ppb):
Cal Gas Cylinder I.D. #:		As Found Zero:
Cal Gas Conc. (ppm):		Analyzer Response: (ppb):
		Zero Corrected Result (ppb):

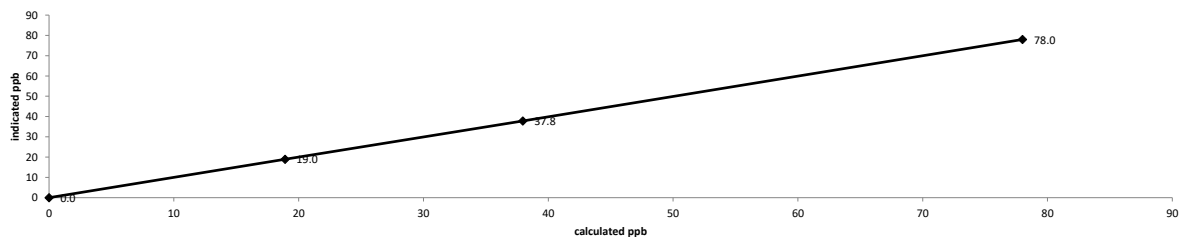
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	7501	0.00	7501	0.0	-0.1	n/a
as found high	7450	56.90	7507	77.9	75.93	1.025
adjusted zero	7501	0.00	7501	0.0	0	n/a
adjusted high	7442	56.90	7499	78.0	78	1.000
mid	7472	27.70	7500	38.0	37.81	1.004
low	7487	13.80	7501	18.9	18.95	0.998
calibrator zero	7500	0.00	7500	0.0	0.3	n/a
Average C.F. =						1.001

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) =	0.02%		± 3% F.S.
% change in C.F. from last cal =	-2.48%		± 10%

Thermo 431-TLE Total Reduced Sulphur Analyzer Calibration

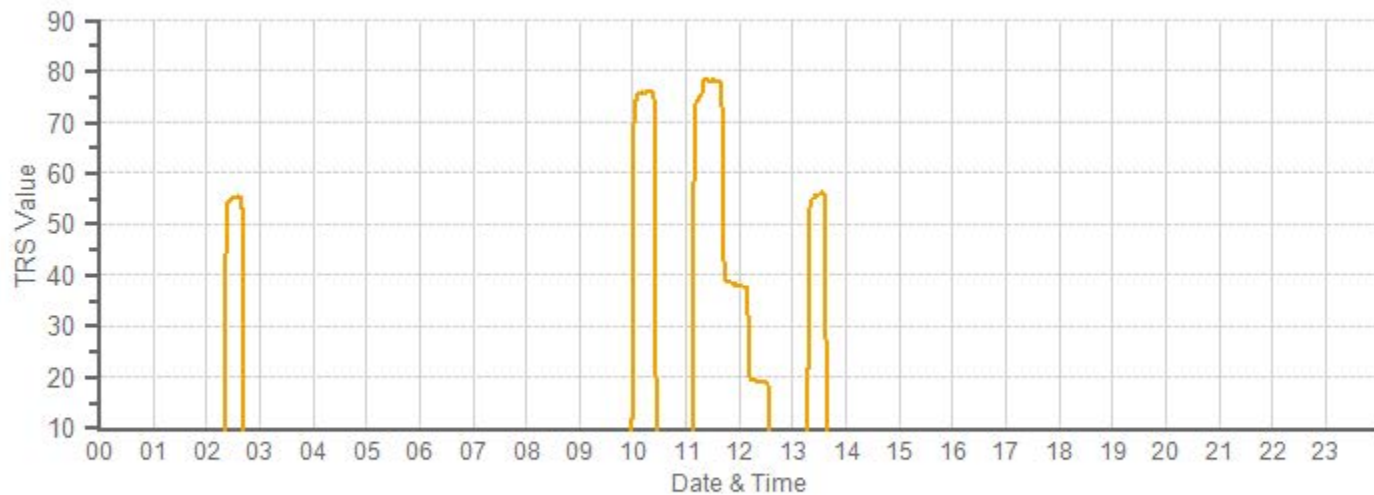


As found:		As left:	
Bkg:	2.89	Bkg:	2.94
Coef:	0.876	Coef:	0.905
Pmt:	-720.4	Pmt:	-720.4
Flash:	984	Flash:	984
Internal:	31.5	Internal:	31.6
Chamber:	45.1	Chamber:	45.0
Perm Oven Gas:	45.00	Perm Oven Gas:	45.00
Perm Oven Heater:	44.11	Perm Oven Heater:	44.11
Pressure:	673.2	Pressure:	672.6
Sample Flow:	0.408	Sample Flow:	0.408
Lamp Intensity:	89	Lamp Intensity:	88
Converter:	850	Converter:	850
Converter Set:	850	Converter Set:	850
Averaging Time:	120	Averaging Time:	120
Expected Value:	55.1	Expected Value:	56.2

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_842 Daily: 18/12/05 Type: AVG 1 Min. [1 Min.]



— TRS[ppb]

TOTAL HYDROCARBON



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	December 5, 2018	Barometer/B.P./units:	Brunton 05490 expires December 11, 2018	28.11	inHg
Company/Airshed:	PRAMP	Thermometer/Station Temp:	Brunton 05490 expires December 11, 2018	22	°C
Location/Station Name:	842b	Weather Conditions:	Cloudy/Overcast		
Parameter:	CH4 / NMHC / THC	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	09:05 / 12:52	Performed By/Reviewer:	Chris Wesson	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	October 18, 2025		

Analyzer:		Correction Factors:			
Serial Number/Owner:	1505664392 Maxxam	Previous C.F.:	As Found C.F.:	New C.F.:	
Measured Flow:	1.2 L/min	CH ₄ =	1.000	0.992	0.999
Last Calibration Date:	November 21, 2018	NMHC =	1.002	0.993	1.000
Range ppm:	20 CH ₄ /20 NMHC/40 THC	THC =	1.001	0.993	1.000

Calibration Standards:									
Low Flow Meter ID/Expiry Date:		N/A							
High Flow Meter ID/Expiry Date:		N/A							
Calibrator ID/Expiry Date:		Sabio id# 17100415 expires August 21, 2019							
Cal Gas Cylinder I.D. # :		LL107207							
CH4 Cylinder Conc.=		600.0	207.0	=C2H6 Cylinder Conc.					
CH4 expressed as C2H6=		569.3	1169.3	=total CH4 equivalent					
Standard Calibration Points for Analyzer Range of 20/20/40 ppm									
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											
Calibrator Flow Rates (cc/min)				Calculated CH ₄ (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH ₄ (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:	
Point	Diluent	Cal Gas	Total Flow							CH ₄	NMHC
as found zero	2999	0.00	2999	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a
as found high	2925	73.40	2998	14.69	13.94	28.63	14.81	14.03	28.84	0.992	0.993
adjusted zero	2999	0.00	2999	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a
adjusted high	2924	73.40	2997	14.69	13.94	28.64	14.71	13.94	28.65	0.999	1.000
mid	2963	36.80	3000	7.36	6.98	14.34	7.39	7.04	14.43	0.996	0.992
low	2981	18.50	2999	3.70	3.51	7.21	3.72	3.62	7.35	0.995	0.970
calibrator zero	2999	0.00	2999	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a
Average C.F. =										0.997	0.987

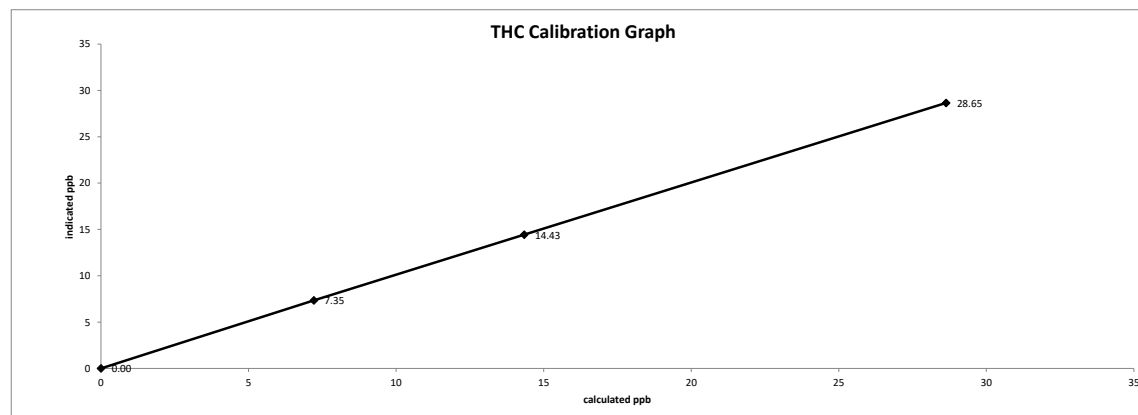
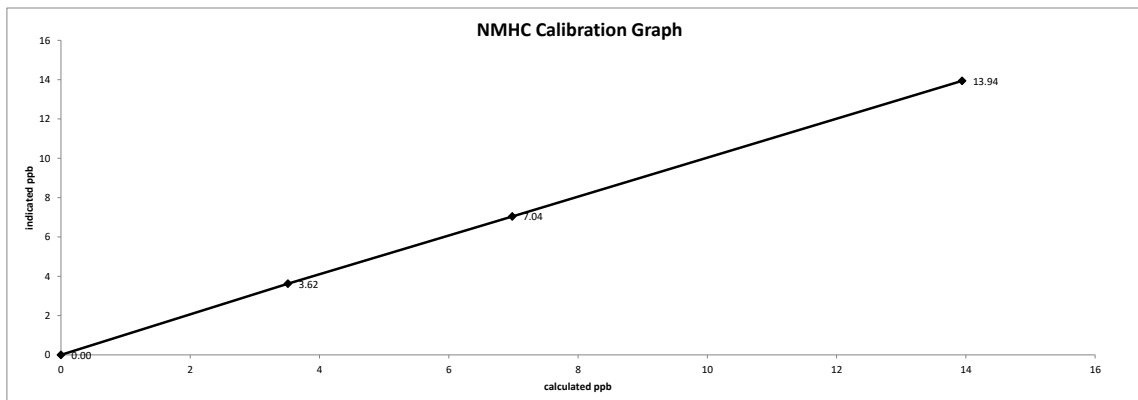
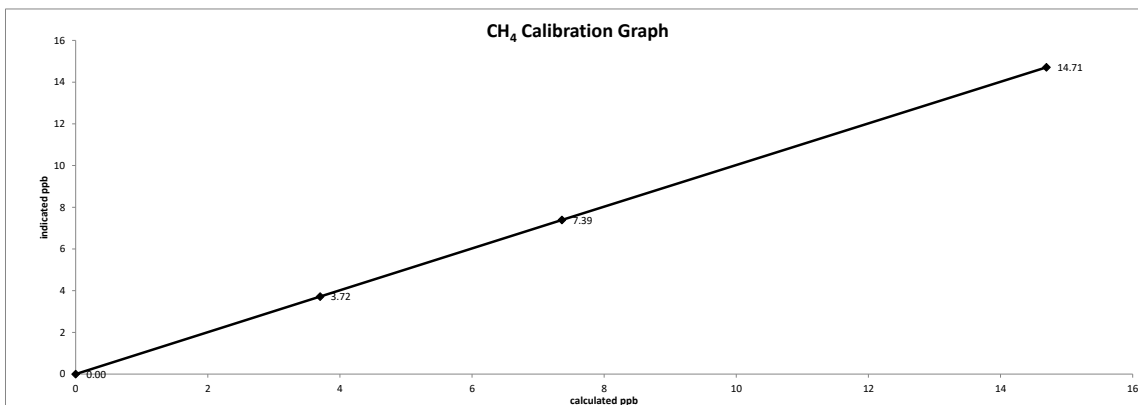
Linear Regression/Calibration Results:					
Correlation Coefficient =			CH ₄	NMHC	THC
Slope =			1.000	1.000	1.000
b (Intercept as % of full scale) =			1.001	0.998	0.999
% change in C.F. from last cal =			0.05%	0.28%	0.17%
			0.81%	0.86%	0.84%
LIMITS					
> or = 0.995					
0.95-1.05					
± 3% F.S.					
± 10%					

As Left Instrument Diagnostics:											
Interface Board Voltages:	Bias Supply:	-294.1	Calibration History cnt'd:	NM Peak Area:	79571						
Temperatures:	Detector Oven:	175.1	Crucial Settings:	Methane Start:	n/a						
	Filter:	175.0		Methane End:	n/a						
	Column Oven:	75.1		Backflush:	n/a						
	Internal:	32.5		NMHV Start:	n/a						
Cylinder Pressures/reg.:	Carrier:	800	50	NMHC End:	n/a						
	Fuel:	2100	50	Date:	05Dec2018						
	Span Gas:	500	16	Time:	11:51						
	Zero Air Generator:	50		CH ₄ PK HT:	0						
Internal Pressures:	Carrier:	31.1		CH ₄ RT:	11.4						
	Fuel:	47.3		CH ₄ Baseline:	3208						
	Air:	23.7		CH ₄ LOD:	42						
FID Status:	Status:	LIT		CH ₄ SD:	14						
	Counts:	35919		CH ₄ CONC:	0.00						
	Flame:	380.5		NM PK HT:	0						
	Det Base:	175.0		NM Peak Area:	0						
Flame and Power Stats:	Last Power On:	20Nov2018@18:11		NM CONC:	0.00						
	Flameouts:	2		NM Base Start:	3199						
	Det Oven at Start:	121.5		NM Base End:	3243						
	Col Oven at Start:	74.1		NM LOD:	11						
Calibration History:	Time:	05Dec2018@10:20		NM Start IDX:	12						
	Type:	SPAN		NM End IDX:	60						
	Status:	GOOD		NM Max Slope:	1.3e+00						
	Check/Adjust:	ADJUST		NM Min Slope:	-2.0e01						
	CH ₄ Span Conc:	14.69		NM PT Count:	0						
	CH ₄ SP Ratio:	0.000721		Previous CH ₄ :	10.23						
	CH ₄ RT:	12.2		Previous NMHC:	11.23						
	CH ₄ PK IDX:	21		Previous THC:	21.28						
	CH ₄ PK HT:	20371		New CH ₄ :	10.27						
	NM Span Conc:	13.94		New NMHC:	11.30						
	NM SP Ratio:	0.000175		New THC:	21.57						

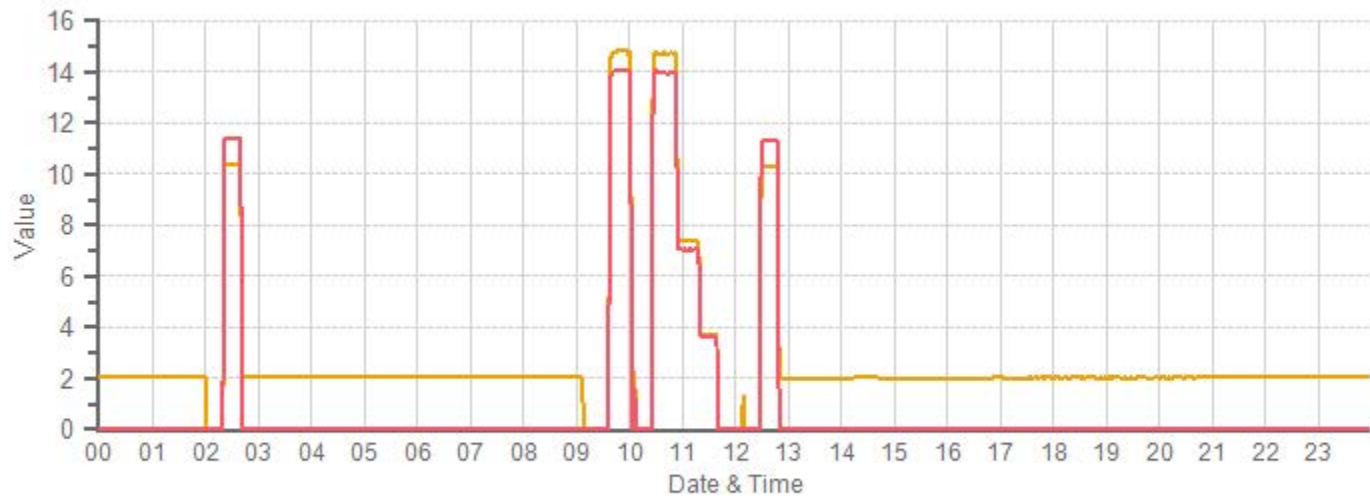
Comments:
The analyzer sample inlet filter was changed.
A new hydrogen cylinder was installed.
The analyzer cooling fan filter(s) were cleaned.
The manifold blower was found to be working normally.

Date: December 5, 2018
Company/Airshed: PRAMP
Location/Station Name: 842b

Start/End Time 24 hr. (mst): 09:05 / 12:52
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution



Station: PRAMP_842 Daily: 18/12/05 Type: AVG 1 Min. [1 Min.]



— CH4[ppm] — NMHC[ppm]

WIND SYSTEM



Meteorological Sensor Audit/Calibration

Location Information

Company:	PRAMP	Performed By:	Chris Wesson
Audit Location:	842b	Reviewed By:	Rob Fisher
Audit Date:	August 22, 2018	Start/End Time (mst):	17:50 / 18:21
Calibration Purpose:	routine annual	Weather Conditions:	Smoke

Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	0 - 1 V
Sensor Model:	05305VK	Velocity Unit Output Range:	0-200 KPH
Serial #:	124638	Direction Voltage Output Range:	0 - 1 V
Previous Cal/Audit Date:	August 30, 2017	Direction Unit Output Range:	0-360 °

Wind Calibrator Information

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

Wind Speed Audit Data

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.4	0.4	-
1000	18.4	18.4	18.4	1.002
2000	36.9	36.8	36.8	1.002
3000	55.3	55.2	55.2	1.002
4000	73.7	73.6	73.6	1.002
5000	92.2	91.8	91.9	1.003
6000	110.6	110.2	110.2	1.003
7000	129.0	128.8	128.8	1.002
8000	147.4	147.2	147.2	1.002
9000	165.9	165.6	165.6	1.002
10000	184.3	184.5	184.2	1.000
The audit meets AMD requirements.			Average Correction Factor=	1.002

Wind Direction Audit Data

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	1	355	1.0	0.0	0.5
30	330	30	330	0.0	0.0	0.0
60	300	60	300	0.0	0.0	0.0
90	270	91	270	-1.0	0.0	0.5
120	240	120	240	0.0	0.0	0.0
150	210	151	211	-1.0	-1.0	1.0
180	180	180	181	0.0	-1.0	0.5
210	150	210	151	0.0	-1.0	0.5
240	120	240	121	0.0	-1.0	0.5
270	90	270	90	0.0	0.0	0.0
300	60	300	60	0.0	0.0	0.0
330	30	330	30	0.0	0.0	0.0
355	0	355	1	0.0	1.0	0.5
The audit meets AMD requirements.			Average Absolute Degrees Difference=		0.3	

Comments:

METEOROLOGICAL SYSTEMS CHECK



Meteorological System Checklist

Date:	December 5, 2018		
Technician:	Chris Wesson		
Reviewer:	Rob Fisher		
Station:	842b		
Unit:	Make:	Model:	Serial #:
Temperature Sensor:	Campbell Scientific	HMP45C	C2608
Barometric Pressure Sensor:	MetOne	92	K12864
Relative Humidity Sensor:	Campbell Scientific	HMP45C	C2608
Anemometer:	RM Young	05305VK	124638
AMBIENT TEMPERATURE SENSOR CHECK			
Previous check date:	November 7, 2018		
Parameter:	Temperature @ 2 metres (1 C tolerance)		
Reference Thermometer ID:	F.S. 160459244 expires June 19, 2020		
Reference Temperature (°C):	-6.8		
Station - Ambient Temperature (°C):	-7.8		
Temperature Difference (°C):	1.0		
BAROMETRIC PRESSURE SENSOR CHECK			
Previous check date:	November 7, 2018		
Reference Barometer ID:	Brunton 05490 expires December 11, 2018		
Reference Pressure - Units/Reading:	mmHg	950.8	
Station Pressure - Units/Reading:	mmHg	952.2	
Pressure Tolerance +/- 15% of error:	808 - 1093	-0.15%	
RELATIVE HUMIDITY (HYGROMETER) SENSOR CHECK			
Previous check date:	November 7, 2018		
Reference Hygrometer ID:	F.S. id# 160459244 expires June 19, 2020		
Reference Hygrometer % RH- Reading:	80.70		
Station Hygrometer % RH- Reading:	84.20		
RH Tolerance +/- 15% of difference:	68.60 - 92.81	-4.3%	
ANEMOMETER - WIND SPEED & WIND DIRECTION SENSOR CHECK			
WIND SPEED		WIND DIRECTION	
Previous check date:	November 7, 2018	Previous check date:	November 7, 2018
Wind Speed Observed (kph):	0-10	Wind Direction Observed:	SW
Wind speed on Data Logger (kph):	6	Wind Direction on Data Logger:	SW
		Wind Direction Pass/Fail?:	Pass

CALIBRATORS

Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2018-131A

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

Dilution Flow (sccm)			
Pt. #1 <u>5120</u>	Pt. #2 <u>5121</u>	Pt. #3 <u>5128</u>	
Gas Flow (sccm)			
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 ₂	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%

LINEAR REGRESSION ANALYSIS

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

NO		LIMITS	NOx	
Correlation=	1.0000	≥ 0.990	Correlation=	1.0000
m (Slope)=	1.0146	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 ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5120	0.0	0.0000	0.7794	0.0005	0.7799	NO ₂	% 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%

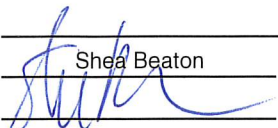
LINEAR REGRESSION ANALYSIS

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

NO ₂		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	1.0053	0.90-1.10
b (Intercept % of FS)=	-0.0370	± 3% F.S.

AENV Standards Audit Calibrator 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>		NO_x Analyzer 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>	
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COMMENTS:

Auditor: Shea Beaton
 Operator Signature: 

Date: August 21, 2018
 Location: McIntyre Center Edmonton

Company <u>Maxxam</u>		Operator: <u>Mike</u>	
Calibrator: Make/Model <u>Sabio</u> Serial Number <u>3860808</u> Last Verification Date <u>26-Jan-17</u> NO Cylinder S/N <u>LL104183</u> NO [PPM] <u>50.8</u> NOx [PPM] <u>50.9</u> Expiry Date <u>October 24, 2020</u>		Flow Measurement Device: Make/Model <u>Bios Definer 220</u> Serial Number <u>H=128686; L=129069</u> Temperature (°C) <u>22.2 C</u> Barometric Pressure <u>706.1mmHg</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 ₂	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				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
NO		LIMITS		NOx			
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 ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5065	0.0	0.0000	0.7937	-0.0005	0.7932	NO ₂	% 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				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
NO₂		LIMITS					
Correlation=	1.0000	≥ 0.995					
m (Slope)=	1.0014	0.90-1.10					
b (Intercept % of FS)=	-0.1619	± 3% F.S.					

AENV Standards		NO_x Analyzer	
Audit Calibrator			
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
Operator Signature: [Signature]

Date: August 21, 2018
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:

Make/Model: R&R MFC 201
Serial Number: AMU 1690
Last Verification Date: December 13, 2017
Gas Type: SO2 Conc. 98.07
Cylinder Number: CAL016625
Expiry Date: January 2019

Flow Measurement Device:

Make/Model: Mesa Definer 220
Serial Number: H-133034 / L-132702
Temp. °C: 23.4 C
B.P. 707 mmHg

Reference Analyzer:

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

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

Previous Stated Concentration PPM: 47.9

Percent variance from Stated: 2

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

Auditor: Al Clark
Operator Signature: *Al Clark*

Date: December 13, 2017
Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-137CGA

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: January 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 (scm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000			
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: **2.6**

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:

Make/Model R&R MFC 201
Serial Number AMU 1690
Last Verification Date December 13, 2017
Gas Type CH₄ Conc. 990.4
Cylinder Number 5604875 Expiry Date July 2021
Gas Type C₃H₈ Conc. 246.5
Cylinder Number XF003845B Expiry Date July 2022

Flow Measurement Device:

Make/Model Mesa Definer 220
Serial Number H-133034 / L-132702
Temp. °C 23.1 C
B.P. 707 mmHg

Reference Analyzer:

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

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH ₄	C ₃ H ₈			CH ₄	C ₃ H ₈
3500	0.0	0.00	0.00				
3618	80.4	13.28	12.77	0.02	45.00	598	209
3547	39.8	6.71	6.47	0.01	89.12	598	210
3560	19.8	3.35	3.26	0.01	179.80	602	213
Average Cylinder Concentration:						599	211

	<u>CH₄</u>	<u>C₃H₈</u>
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 842b Station - December 2018

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

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

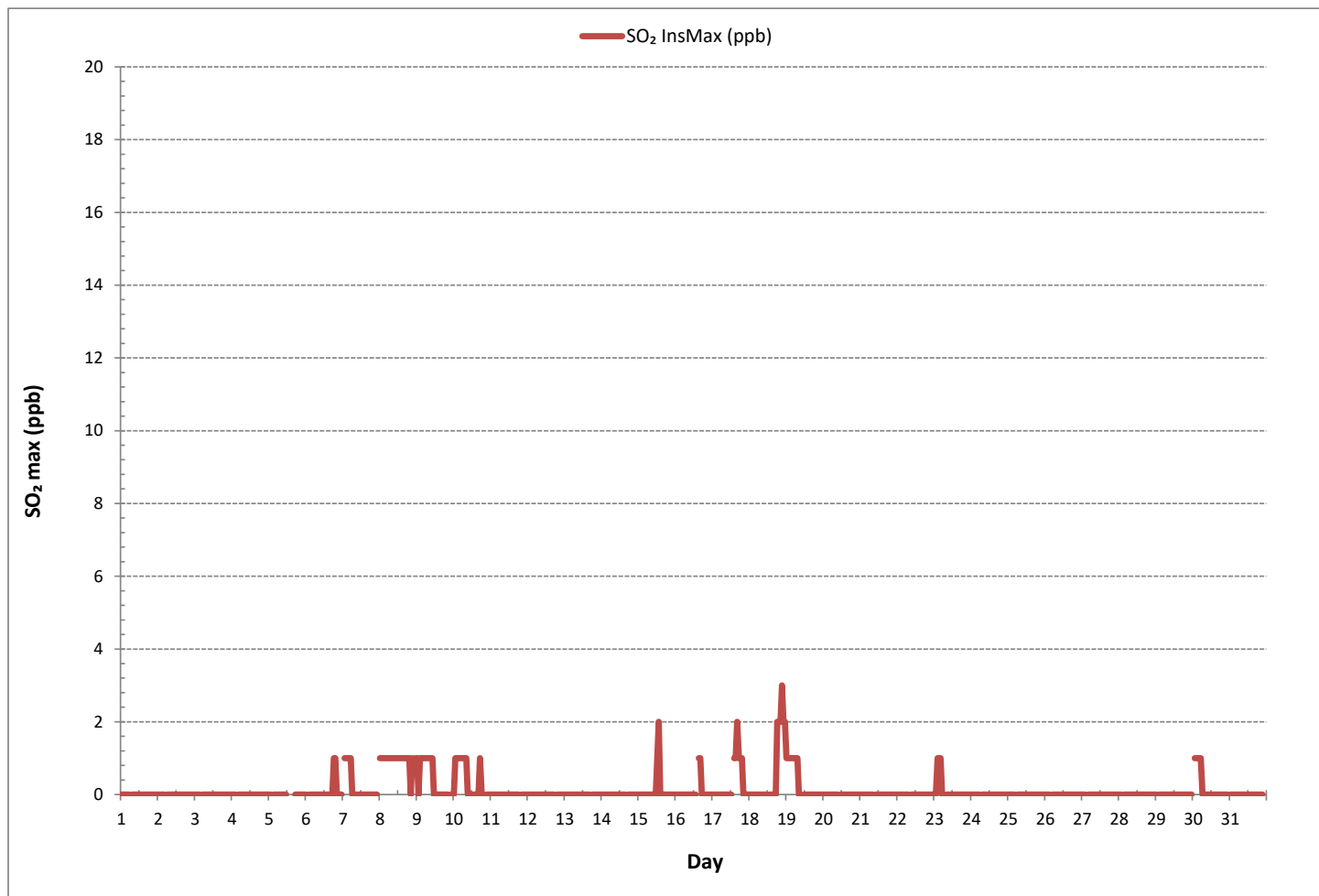
STATUS FLAG CODES

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:	80
MAXIMUM INSTANTANEOUS VALUE:	3 ppb @ HOUR 21 ON DAY 18
IZS CALIBRATION TIME:	33 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0
OPERATIONAL TIME:	744 hrs

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)



TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	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	0.14	0.12	0.14	0.13	0.13	0.13	S	0.19	0.13	0.13	0.10	0.10	0.11	0.11	0.13	0.14	0.12	0.13	0.16	0.15	0.16	0.16	0.15	0.15	0.10	0.19	0.14	24
2	0.14	0.15	0.15	0.15	0.13	S	0.17	0.13	0.17	0.14	0.13	0.13	0.15	0.14	0.16	0.18	0.15	0.19	0.17	0.18	0.16	0.16	0.17	0.17	0.13	0.19	0.16	24
3	0.17	0.18	0.18	0.17	S	0.20	0.18	0.18	0.18	0.20	0.17	0.19	0.18	0.19	0.17	0.18	0.18	0.18	0.17	0.17	0.18	0.19	0.18	0.18	0.17	0.20	0.18	24
4	0.20	0.18	0.18	S	0.19	0.18	0.16	0.18	0.17	0.16	0.15	0.17	0.17	0.15	0.16	0.17	0.17	0.18	0.19	0.20	0.19	0.20	0.20	0.24	0.15	0.24	0.18	24
5	0.23	0.24	S	0.27	0.20	0.20	0.20	0.19	0.19	C	C	C	C	C	0.34	0.25	0.23	0.21	0.21	0.21	0.21	0.21	0.22	0.23	0.19	0.34	0.23	24
6	0.24	S	0.30	0.26	0.27	0.27	0.28	0.26	0.27	0.26	0.26	0.26	0.26	0.24	0.24	0.25	0.23	0.23	0.24	0.22	0.23	0.22	0.23	0.21	0.21	0.30	0.25	24
7	S	0.31	0.28	0.29	0.27	0.26	0.26	0.28	0.28	0.28	0.26	0.27	0.25	0.25	0.23	0.25	0.26	0.28	0.27	0.25	0.26	0.26	0.26	S	0.23	0.31	0.27	24
8	0.33	0.28	0.27	0.27	0.28	0.29	0.27	0.28	0.30	0.28	0.29	0.29	0.28	0.29	0.26	0.27	0.29	0.28	0.28	0.25	0.25	0.25	S	0.29	0.25	0.33	0.28	24
9	0.28	0.28	0.29	0.26	0.27	0.26	0.27	0.26	0.25	0.25	0.23	0.24	0.24	0.23	0.20	0.20	0.19	0.19	0.20	0.20	0.22	S	0.27	0.25	0.19	0.29	0.24	24
10	0.24	0.24	0.27	0.27	0.26	0.26	0.25	0.22	0.23	0.21	0.21	0.20	0.20	0.21	0.19	0.24	0.28	0.23	0.25	0.23	S	0.29	0.23	0.22	0.19	0.29	0.24	24
11	0.22	0.21	0.22	0.20	0.21	0.20	0.19	0.20	0.17	0.17	0.18	0.19	0.17	0.19	0.19	0.23	0.18	0.18	0.19	S	0.22	0.17	0.18	0.18	0.17	0.23	0.19	24
12	0.19	0.17	0.20	0.18	0.19	0.20	0.19	0.21	0.21	0.20	0.20	0.21	0.18	0.17	0.19	0.18	0.19	0.18	S	0.20	0.19	0.19	0.18	0.18	0.17	0.21	0.19	24
13	0.20	0.19	0.18	0.19	0.18	0.18	0.18	0.17	0.17	0.19	0.18	0.20	0.17	0.17	0.16	0.18	0.17	S	0.19	0.16	0.17	0.17	0.18	0.17	0.16	0.20	0.18	24
14	0.18	0.18	0.16	0.17	0.19	0.18	0.18	0.17	0.18	0.19	0.18	0.19	0.17	0.14	0.14	0.14	S	0.16	0.17	0.16	0.15	0.17	0.17	0.22	0.14	0.22	0.17	24
15	0.23	0.26	0.25	0.23	0.19	0.19	0.17	0.20	0.24	0.17	0.16	0.17	0.33	0.53	0.18	S	0.27	0.22	0.24	0.23	0.19	0.19	0.17	0.21	0.16	0.53	0.23	24
16	0.23	0.24	0.25	0.24	0.24	0.23	0.23	0.22	0.20	0.22	0.20	0.22	0.20	0.22	S	0.25	0.22	0.20	0.23	0.23	0.22	0.21	0.21	0.21	0.20	0.25	0.22	24
17	0.23	0.23	0.23	0.24	0.25	0.24	0.25	0.23	0.25	0.24	0.26	0.24	0.25	S	0.30	0.28	0.26	0.26	0.27	0.30	0.29	0.27	0.29	0.28	0.23	0.30	0.26	24
18	0.25	0.24	0.24	0.23	0.22	0.22	0.24	0.27	0.24	0.23	0.24	0.25	S	0.22	0.22	0.21	0.19	0.19	0.19	0.21	0.23	0.23	0.22	0.25	0.19	0.27	0.23	24
19	0.22	0.23	0.24	0.24	0.24	0.25	0.23	0.21	0.20	0.20	0.20	S	0.22	0.20	0.18	0.19	0.19	0.19	0.18	0.18	0.18	0.20	0.18	0.21	0.18	0.25	0.21	24
20	0.20	0.20	0.20	0.22	0.20	0.22	0.22	0.19	0.18	0.19	S	0.24	0.21	0.18	0.18	0.17	0.17	0.19	0.17	0.17	0.17	0.18	0.17	0.16	0.16	0.24	0.19	24
21	0.18	0.17	0.19	0.18	0.18	0.17	0.19	0.18	0.19	S	0.21	0.19	0.20	0.17	0.19	0.19	0.18	0.18	0.19	0.18	0.18	0.17	0.20	0.20	0.17	0.21	0.19	24
22	0.21	0.20	0.20	0.16	0.17	0.20	0.23	0.22	S	0.28	0.26	0.24	0.25	0.27	0.24	0.26	0.26	0.26	0.29	0.27	0.26	0.23	0.24	0.31	0.16	0.31	0.24	24
23	0.39	0.40	0.42	0.40	0.38	0.36	0.31	S	0.32	0.27	0.30	0.29	0.29	0.27	0.27	0.28	0.30	0.31	0.33	0.33	0.28	0.29	0.26	0.27	0.26	0.42	0.32	24
24	0.27	0.27	0.26	0.27	0.25	0.29	S	0.31	0.29	0.29	0.26	0.29	0.28	0.29	0.28	0.31	0.31	0.29	0.32	0.41	0.51	0.56	0.54	0.53	0.25	0.56	0.33	24
25	0.50	0.42	0.37	0.31	0.32	S	0.39	0.34	0.32	0.33	0.33	0.31	0.32	0.34	0.32	0.33	0.32	0.29	0.28	0.28	0.30	0.35	0.38	0.41	0.28	0.50	0.34	24
26	0.49	0.57	0.52	0.46	S	0.47	0.37	0.33	0.32	0.33	0.31	0.31	0.30	0.32	0.31	0.32	0.31	0.31	0.30	0.32	0.33	0.33	0.32	0.35	0.30	0.57	0.36	24
27	0.34	0.34	0.37	S	0.42	0.38	0.36	0.40	0.40	0.37	0.37	0.37	0.36	0.36	0.35	0.34	0.34	0.33	0.35	0.37	0.37	0.41	0.42	0.37	0.33	0.42	0.37	24
28	0.34	0.37	S	0.38	0.34	0.36	0.36	0.35	0.35	0.33	0.34	0.35	0.34	0.33	0.36	0.37	0.38	0.42	0.39	0.35	0.33	0.33	0.33	0.31	0.31	0.42	0.35	24
29	0.31	S	0.43	0.40	0.37	0.38	0.35	0.34	0.33	0.34	0.34	0.35	0.34	0.39	0.40	0.40	0.36	0.38	0.38	0.38	0.37	0.42	0.40	0.36	0.31	0.43	0.37	24
30	S	0.40	0.39	0.38	0.39	0.38	0.37	0.39	0.38	0.39	0.39	0.40	0.39	0.40	0.38	0.37	0.38	0.39	0.40	0.39	0.40	0.41	0.40	S	0.37	0.41	0.39	24
31	0.44	0.43	0.43	0.42	0.46	0.43	0.41	0.40	0.38	0.36	0.36	0.36	0.34	0.35	0.36	0.34	0.34	0.32	0.32	0.32	0.32	0.31	S	0.33	0.31	0.46	0.37	24
HOURLY MAX	0.50	0.57	0.52	0.46	0.46	0.47	0.41	0.40	0.40	0.39	0.39	0.40	0.39	0.53	0.40	0.40	0.38	0.42	0.40	0.41	0.51	0.56	0.54	0.53				
HOURLY AVG	0.26	0.27	0.27	0.26	0.25	0.26	0.26	0.25	0.25	0.25	0.24	0.25	0.25	0.25	0.24	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.26	0.25	0.26			

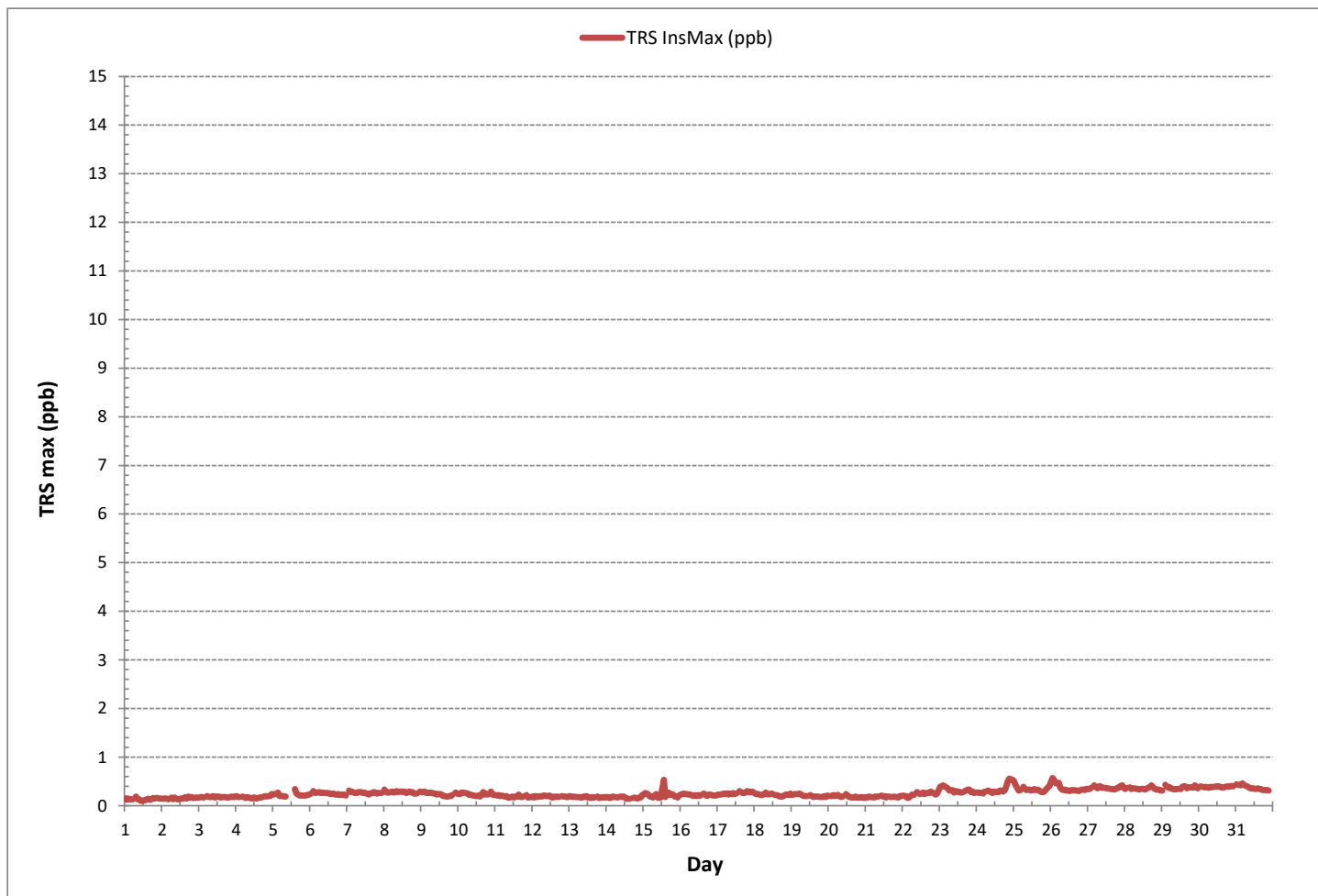
STATUS FLAG CODES

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:	706
MAXIMUM INSTANTANEOUS VALUE:	0.57 ppb @ HOUR 1 ON DAY 26
IZS CALIBRATION TIME:	33 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0.08
OPERATIONAL TIME:	744 hrs

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 842b 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	2.07	2.09	2.13	2.13	2.12	2.12	S	2.15	2.18	2.17	2.13	2.09	2.07	2.07	2.09	2.08	2.08	2.10	2.10	2.09	2.11	2.14	2.12	2.09	2.07	2.18	2.11	2.11	24
2	2.09	2.08	2.07	2.07	2.06	S	2.07	2.07	2.06	2.06	2.05	2.05	2.06	2.05	2.06	2.06	2.06	2.07	2.08	2.08	2.09	2.10	2.12	2.11	2.05	2.11	2.07	24	
3	2.11	2.11	2.10	2.10	S	2.09	2.09	2.09	2.09	2.10	2.10	2.10	2.11	2.08	2.08	2.07	2.06	2.06	2.06	2.07	2.06	2.05	2.05	2.05	2.05	2.11	2.08	24	
4	2.04	2.04	2.04	S	2.04	2.05	2.04	2.03	2.04	2.03	2.02	2.02	2.02	2.02	2.02	2.01	2.02	2.02	2.03	2.03	2.03	2.03	2.04	2.01	2.05	2.03	24		
5	2.04	2.05	S	2.04	2.03	2.03	2.03	2.04	2.05	C	C	C	C	2.01	2.02	2.00	2.01	2.01	2.01	2.01	2.02	2.03	2.03	2.04	2.00	2.05	2.03	24	
6	2.05	S	2.07	2.07	2.08	2.08	2.09	2.09	2.09	2.09	2.08	2.06	2.07	2.07	2.06	2.06	2.06	2.07	2.07	2.06	2.07	2.06	2.06	2.08	2.05	2.09	2.07	24	
7	S	2.11	2.10	2.10	2.12	2.12	2.10	2.11	2.12	2.12	2.10	2.10	2.08	2.07	2.07	2.08	2.09	2.10	2.11	2.09	2.09	2.09	2.10	S	2.07	2.12	2.10	24	
8	2.14	2.12	2.11	2.10	2.10	2.13	2.12	2.14	2.14	2.14	2.14	2.12	2.10	2.11	2.09	2.10	2.12	2.12	2.10	2.08	2.06	2.04	S	2.08	2.04	2.14	2.11	24	
9	2.08	2.08	2.09	2.09	2.08	2.08	2.08	2.09	2.08	2.07	2.05	2.06	2.06	2.05	2.03	2.04	2.04	2.03	2.03	2.04	2.05	S	2.06	2.08	2.03	2.09	2.06	24	
10	2.08	2.08	2.09	2.11	2.11	2.10	2.09	2.06	2.04	2.03	2.02	2.01	2.01	2.01	2.01	2.02	2.04	2.03	2.02	2.02	S	2.03	2.01	2.01	2.01	2.11	2.04	24	
11	2.01	2.02	2.02	2.03	2.02	2.02	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.03	2.03	2.03	2.02	2.02	S	2.01	1.99	1.99	1.99	1.99	2.03	2.01	24	
12	2.01	2.00	2.01	2.01	2.00	2.01	2.02	2.00	2.00	2.00	2.02	2.01	2.00	2.00	2.00	2.00	2.00	2.00	S	2.01	2.01	2.01	2.01	2.01	2.00	2.02	2.01	24	
13	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.00	2.01	2.02	2.00	2.01	2.00	2.00	2.00	2.00	2.00	S	S1	2.02	2.01	2.01	2.01	2.01	2.00	2.02	2.01	23	
14	2.01	2.01	2.01	2.01	2.01	2.01	2.00	2.00	2.00	2.06	2.04	2.00	2.01	2.00	2.00	2.01	S	2.03	2.06	2.07	2.04	2.04	2.02	2.03	2.00	2.07	2.02	24	
15	2.03	2.03	2.03	2.03	2.02	2.02	2.02	2.02	2.03	2.03	2.03	2.03	2.03	2.03	2.03	S	2.03	2.03	2.09	2.12	2.06	2.06	2.07	2.11	2.02	2.12	2.04	24	
16	2.11	2.13	2.16	2.16	2.14	2.11	2.04	2.01	2.02	2.02	2.02	2.02	2.02	2.01	S	2.02	2.02	2.03	2.03	2.03	2.03	2.03	2.04	2.01	2.16	2.05	24		
17	2.04	2.05	2.06	2.07	2.08	2.08	2.07	2.07	2.07	2.07	2.07	2.08	S	2.10	2.11	2.11	2.11	2.10	2.11	2.13	2.12	2.13	2.12	2.04	2.13	2.09	24		
18	2.13	2.10	2.08	2.07	2.08	2.06	2.06	2.10	2.06	2.05	2.06	2.05	S	2.02	2.05	2.04	2.05	2.06	2.07	2.08	2.10	2.08	2.09	2.11	2.02	2.13	2.07	24	
19	2.11	2.10	2.09	2.09	2.10	2.12	2.07	2.06	2.05	2.05	2.05	S	2.03	2.02	2.02	2.01	2.01	2.01	2.00	2.01	2.00	2.00	2.01	2.00	2.00	2.12	2.04	24	
20	2.01	2.01	2.01	2.02	2.02	2.02	2.03	2.02	2.03	2.04	S	2.06	2.08	2.03	2.00	2.02	2.01	2.02	2.02	2.02	2.03	2.02	2.01	2.01	2.00	2.08	2.02	24	
21	2.01	2.01	2.01	2.00	2.00	2.00	2.00	2.00	2.01	S	2.01	2.01	2.01	2.01	2.01	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.00	2.02	2.01	24	
22	2.07	2.03	2.03	2.02	2.02	2.02	2.05	2.04	S	2.05	2.05	2.05	2.04	2.04	2.05	2.04	2.05	2.06	2.06	2.06	2.06	2.06	2.10	2.23	2.02	2.23	2.06	24	
23	2.33	2.32	2.18	2.12	2.09	2.09	2.07	S	2.05	2.05	2.06	2.05	2.05	2.04	2.04	2.04	2.03	2.04	2.04	2.04	2.05	2.05	2.04	2.04	2.03	2.33	2.08	24	
24	2.04	2.05	2.07	2.05	2.06	2.07	S	2.07	2.08	2.09	2.10	2.13	2.12	2.11	2.11	2.09	2.08	2.09	2.14	2.18	2.21	2.27	2.25	2.24	2.04	2.27	2.12	24	
25	2.16	2.13	2.09	2.05	2.04	S	2.04	2.04	2.04	2.04	2.05	2.05	2.04	2.05	2.05	2.05	2.05	2.04	2.05	2.04	2.08	2.17	2.25	2.29	2.04	2.29	2.08	24	
26	2.36	2.40	2.36	2.31	S	2.22	2.16	2.14	2.12	2.12	2.07	2.05	2.06	2.07	2.07	2.05	2.04	2.06	2.06	2.09	2.08	2.08	2.08	2.09	2.04	2.40	2.14	24	
27	2.08	2.11	2.12	S	2.15	2.13	2.12	2.09	2.08	2.07	2.07	2.07	2.08	2.08	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.08	2.08	2.07	2.15	2.09	24	
28	2.08	2.11	S	2.10	2.12	2.12	2.11	2.11	2.12	2.11	2.12	2.12	2.15	2.14	2.12	2.12	2.12	2.13	2.13	2.11	2.10	2.10	2.10	2.10	2.08	2.15	2.12	24	
29	2.11	S	2.25	2.24	2.23	2.23	X	2.15	2.14	2.12	2.13	2.12	2.12	2.13	2.13	2.15	2.13	2.13	2.13	2.14	2.11	2.06	2.06	2.06	2.06	2.25	2.14	23	
30	S	2.08	2.09	2.09	2.09	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.09	2.10	2.09	2.10	2.10	2.10	2.10	2.11	2.11	2.11	2.11	S	2.08	2.11	2.09	24	
31	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.10	2.09	2.09	2.08	2.08	2.08	2.06	2.05	2.05	2.05	2.03	S	2.03	2.03	2.11	2.09	24	
HOURLY MAX	2.36	2.40	2.36	2.31	2.23	2.23	2.16	2.15	2.18	2.17	2.14	2.13	2.15	2.14	2.13	2.15	2.13	2.13	2.14	2.18	2.21	2.27	2.25	2.29					
HOURLY AVG	2.09	2.09	2.09	2.08	2.07	2.08	2.06	2.07	2.07	2.07	2.06	2.06	2.06	2.05	2.05	2.05	2.05	2.06	2.06	2.07	2.06	2.06	2.07	2.08					

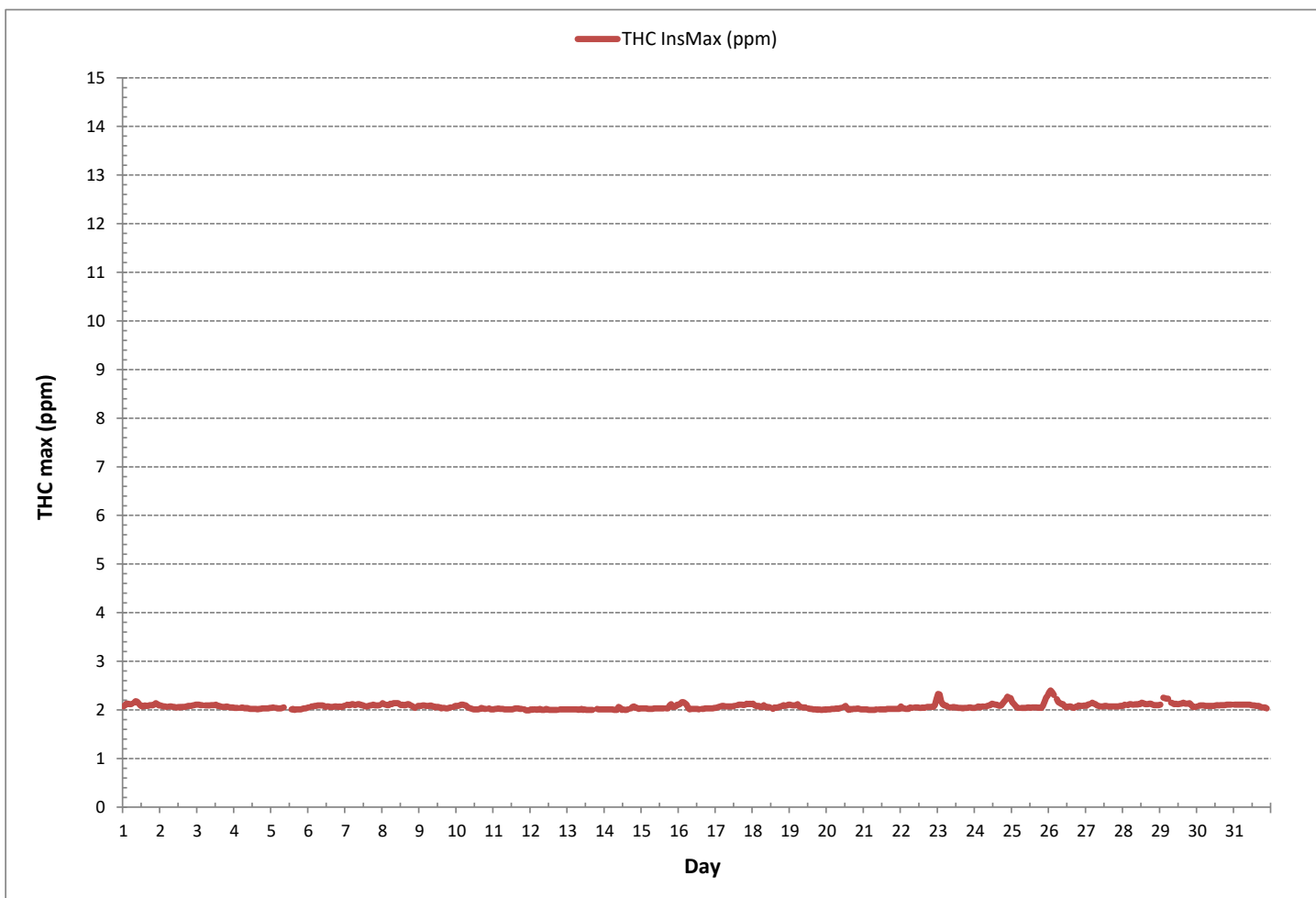
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:		705						
MAXIMUM INSTANTANEOUS VALUE:		2.40	ppm	@ HOUR	1	ON DAY	26	
IZS CALIBRATION TIME:		33	hrs	OPERATIONAL TIME:			742	hrs
MONTHLY CALIBRATION TIME:		4	hrs					
STANDARD DEVIATION:		0.05						

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 842b Station - December 2018

METHANE MAX Instantaneous Maximum (CH₄ ppm)

START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.			
DAY																														
1	2.07	2.09	2.13	2.13	2.12	2.12	S	2.15	2.18	2.17	2.13	2.09	2.07	2.07	2.09	2.08	2.08	2.10	2.10	2.09	2.11	2.14	2.12	2.09	2.07	2.18	2.11	2.11	24	
2	2.09	2.08	2.07	2.07	2.06	S	2.07	2.07	2.06	2.06	2.05	2.05	2.06	2.05	2.06	2.06	2.06	2.07	2.08	2.08	2.08	2.09	2.10	2.11	2.05	2.11	2.07	2.11	24	
3	2.11	2.11	2.10	2.10	S	2.09	2.09	2.09	2.09	2.10	2.10	2.10	2.11	2.08	2.08	2.07	2.06	2.06	2.06	2.07	2.06	2.05	2.05	2.05	2.05	2.11	2.08	2.11	24	
4	2.04	2.04	2.04	S	2.04	2.05	2.04	2.03	2.04	2.03	2.02	2.02	2.02	2.02	2.02	2.01	2.02	2.02	2.03	2.03	2.03	2.03	2.03	2.04	2.01	2.05	2.03	2.11	24	
5	2.04	2.05	S	2.04	2.03	2.03	2.03	2.04	2.05	C	C	C	C	2.01	2.02	2.00	2.01	2.01	2.01	2.01	2.02	2.03	2.03	2.04	2.00	2.05	2.03	2.11	24	
6	2.05	S	2.07	2.07	2.08	2.08	2.09	2.09	2.09	2.09	2.08	2.06	2.07	2.07	2.06	2.06	2.06	2.07	2.07	2.06	2.07	2.06	2.06	2.08	2.05	2.09	2.07	2.11	24	
7	S	2.11	2.10	2.10	2.12	2.12	2.10	2.11	2.12	2.12	2.10	2.10	2.08	2.07	2.07	2.08	2.09	2.10	2.11	2.09	2.09	2.09	2.10	S	2.07	2.12	2.10	2.11	24	
8	2.14	2.12	2.11	2.10	2.10	2.13	2.12	2.14	2.14	2.14	2.12	2.10	2.11	2.09	2.10	2.12	2.12	2.10	2.08	2.06	2.04	S	2.08	2.04	2.14	2.11	2.11	2.11	24	
9	2.08	2.08	2.09	2.09	2.08	2.08	2.08	2.09	2.08	2.07	2.05	2.06	2.06	2.05	2.03	2.04	2.04	2.03	2.03	2.04	2.05	S	2.06	2.08	2.03	2.09	2.06	2.11	24	
10	2.08	2.08	2.09	2.11	2.11	2.10	2.09	2.06	2.04	2.03	2.02	2.01	2.01	2.01	2.02	2.04	2.03	2.02	2.02	S	2.03	2.01	2.01	2.01	2.01	2.11	2.04	2.11	24	
11	2.01	2.02	2.02	2.03	2.02	2.02	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.03	2.03	2.03	2.02	2.02	S	2.01	1.99	1.99	1.99	1.99	2.03	2.01	2.11	24	
12	2.01	2.00	2.01	2.01	2.00	2.01	2.02	2.00	2.00	2.00	2.02	2.01	2.00	2.00	2.00	2.00	2.00	2.00	2.00	S	2.01	2.01	2.01	2.01	2.01	2.00	2.02	2.01	2.11	24
13	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.00	2.01	2.02	2.00	2.01	2.00	2.00	2.00	2.00	2.00	2.00	S	S1	2.02	2.01	2.01	2.01	2.01	2.00	2.02	2.01	2.11	23
14	2.01	2.01	2.01	2.01	2.01	2.01	2.00	2.00	2.00	2.06	2.04	2.00	2.01	2.00	2.00	2.01	S	2.03	2.06	2.07	2.04	2.04	2.02	2.03	2.00	2.07	2.02	2.11	24	
15	2.03	2.03	2.03	2.03	2.02	2.02	2.02	2.02	2.03	2.03	2.03	2.03	2.03	2.03	2.03	S	S	2.03	2.03	2.09	2.12	2.06	2.06	2.07	2.11	2.02	2.12	2.04	2.11	24
16	2.11	2.13	2.16	2.16	2.14	2.11	2.04	2.01	2.02	2.02	2.02	2.02	2.02	2.01	S	2.02	2.02	2.03	2.03	2.03	2.03	2.03	2.03	2.04	2.01	2.16	2.05	2.11	24	
17	2.04	2.05	2.06	2.07	2.08	2.08	2.07	2.07	2.07	2.07	2.07	2.07	2.08	S	2.10	2.11	2.11	2.11	2.10	2.11	2.13	2.12	2.12	2.12	2.04	2.13	2.09	2.11	24	
18	2.13	2.10	2.08	2.07	2.08	2.06	2.06	2.10	2.06	2.05	2.06	2.05	S	2.02	2.05	2.04	2.05	2.06	2.07	2.08	2.08	2.08	2.09	2.11	2.02	2.13	2.07	2.11	24	
19	2.11	2.10	2.09	2.09	2.10	2.12	2.07	2.06	2.05	2.05	2.05	S	2.03	2.02	2.02	2.01	2.01	2.01	2.00	2.01	2.00	2.00	2.01	2.00	2.00	2.12	2.04	2.11	24	
20	2.01	2.01	2.01	2.02	2.02	2.02	2.03	2.02	2.03	2.04	S	2.06	2.08	2.03	2.00	2.02	2.01	2.02	2.02	2.02	2.02	2.02	2.02	2.01	2.00	2.08	2.02	2.11	24	
21	2.01	2.01	2.01	2.00	2.00	2.00	2.00	2.00	2.01	S	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.00	2.02	2.01	2.11	24	
22	2.07	2.03	2.03	2.02	2.02	2.02	2.05	2.04	S	2.05	2.05	2.05	2.04	2.04	2.05	2.04	2.05	2.06	2.06	2.06	2.06	2.06	2.10	2.23	2.02	2.23	2.06	2.11	24	
23	2.33	2.32	2.18	2.12	2.09	2.09	2.07	S	2.05	2.05	2.06	2.05	2.05	2.04	2.04	2.04	2.03	2.04	2.04	2.04	2.05	2.05	2.04	2.04	2.03	2.33	2.08	2.11	24	
24	2.04	2.05	2.07	2.05	2.06	2.07	S	2.07	2.08	2.09	2.10	2.13	2.12	2.11	2.11	2.09	2.08	2.09	2.14	2.18	2.21	2.24	2.25	2.24	2.04	2.25	2.12	2.11	24	
25	2.16	2.13	2.09	2.05	2.04	S	2.04	2.04	2.04	2.04	2.05	2.05	2.04	2.05	2.05	2.05	2.05	2.04	2.05	2.04	2.08	2.17	2.25	2.29	2.04	2.29	2.08	2.11	24	
26	2.36	2.40	2.36	2.31	S	2.22	2.16	2.14	2.12	2.12	2.07	2.05	2.06	2.07	2.07	2.05	2.05	2.06	2.06	2.09	2.08	2.08	2.08	2.09	2.05	2.40	2.14	2.11	24	
27	2.08	2.11	2.12	S	2.15	2.13	2.12	2.09	2.08	2.07	2.07	2.07	2.08	2.08	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.08	2.08	2.07	2.15	2.09	2.11	24	
28	2.08	2.11	S	2.10	2.12	2.12	2.11	2.11	2.12	2.11	2.12	2.12	2.15	2.14	2.12	2.12	2.12	2.13	2.13	2.11	2.10	2.10	2.10	2.10	2.08	2.15	2.12	2.11	24	
29	2.11	S	2.25	2.24	2.23	2.23	X	2.15	2.14	2.12	2.13	2.12	2.12	2.13	2.13	2.15	2.13	2.13	2.13	2.14	2.11	2.06	2.06	2.06	2.06	2.25	2.14	2.11	24	
30	S	2.08	2.09	2.09	2.09	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.09	2.10	2.09	2.10	2.10	2.10	2.10	2.11	2.11	2.11	2.11	S	2.08	2.11	2.09	2.11	24	
31	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.10	2.09	2.09	2.08	2.08	2.08	2.06	2.05	2.05	2.05	2.03	S	2.03	2.03	2.11	2.09	2.11	24	
HOURLY MAX	2.36	2.40	2.36	2.31	2.23	2.23	2.16	2.15	2.18	2.17	2.14	2.13	2.15	2.14	2.13	2.15	2.13	2.13	2.14	2.18	2.21	2.24	2.25	2.29						
HOURLY AVG	2.09	2.09	2.09	2.08	2.07	2.08	2.06	2.07	2.07	2.07	2.06	2.06	2.06	2.05	2.05	2.05	2.05	2.06	2.06	2.07	2.06	2.06	2.07	2.08						

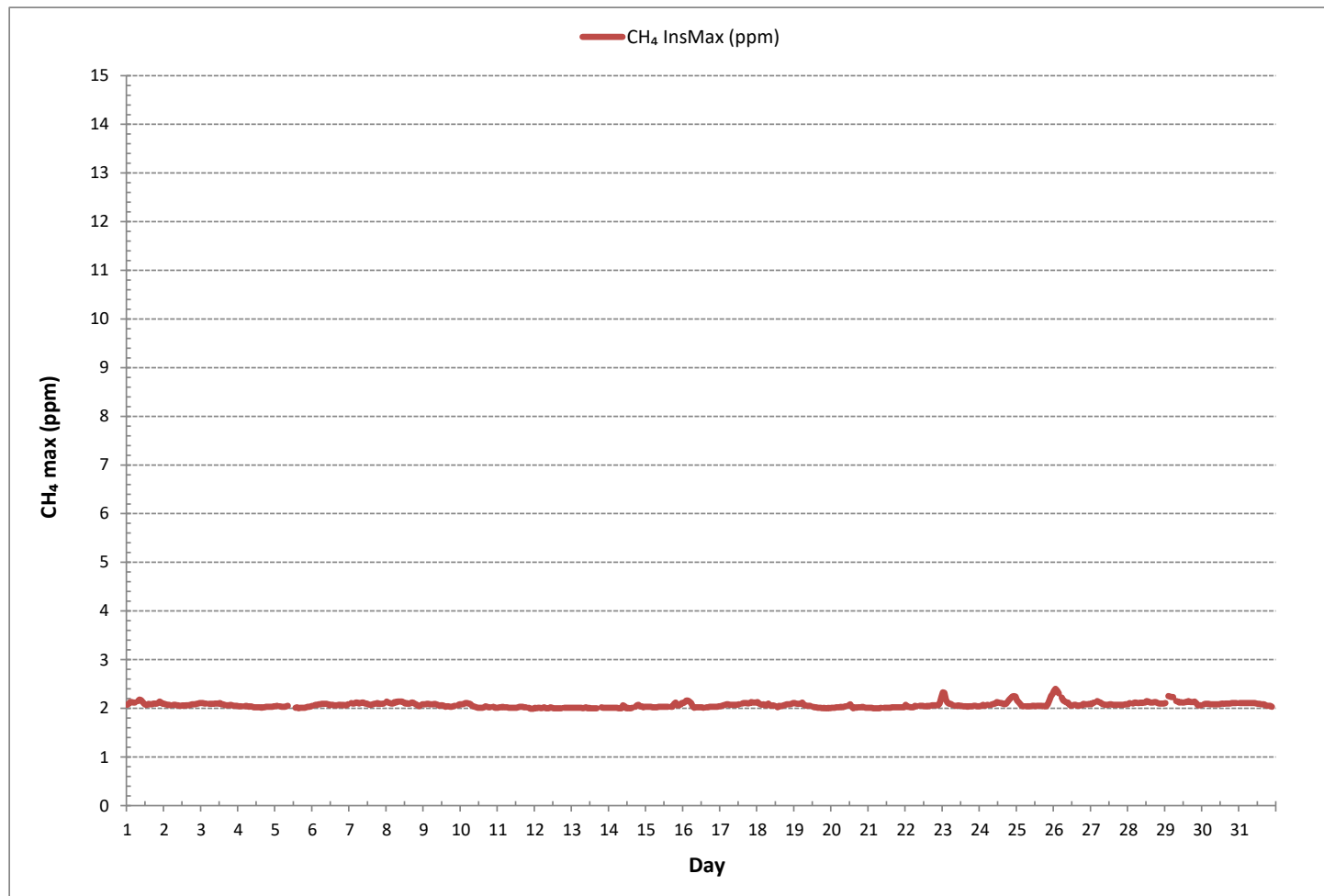
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	705
MAXIMUM INSTANTANEOUS VALUE:	2.40 ppm @ HOUR 1 ON DAY 26
IZS CALIBRATION TIME:	33 hrs
MONTHLY CALIBRATION TIME:	4 hrs
STANDARD DEVIATION:	0.05
OPERATIONAL TIME:	742 hrs

METHANE MAX Instantaneous Maximum (CH₄ ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 842b 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	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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
5	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	S	0.00	0.00	0.00	24
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	24
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	24
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	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	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	0.02	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	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	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.01	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	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	0.03	0.00	0.00	0.00	0.03	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	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	X	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23
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	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.01	0.00				
HOURLY AVG	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

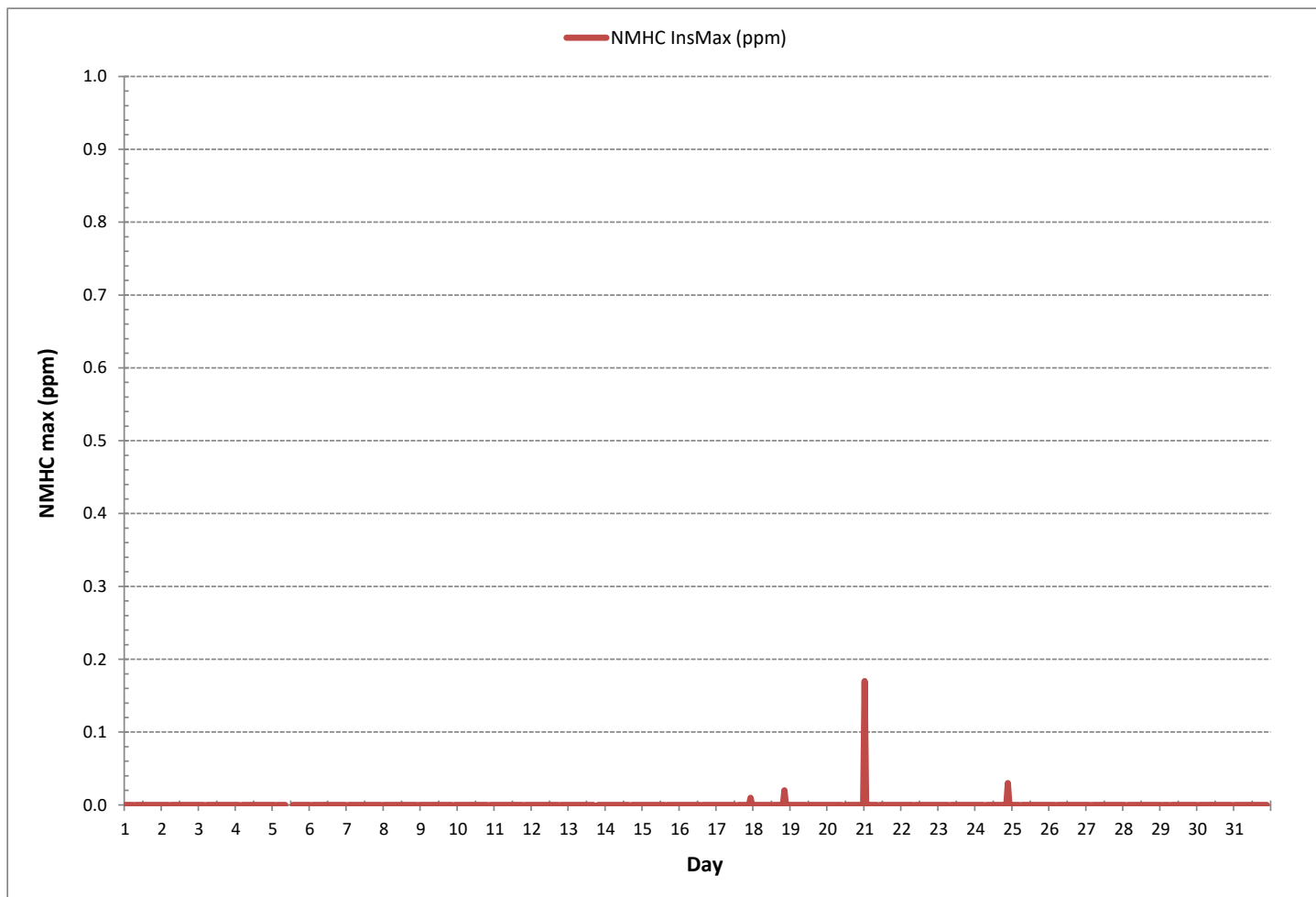
STATUS FLAG CODES

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:	4
MAXIMUM INSTANTANEOUS VALUE:	0.17 ppm @ HOUR 0 ON DAY 21
IZS CALIBRATION TIME:	33 hrs
MONTHLY CALIBRATION TIME:	4 hrs
STANDARD DEVIATION:	0.01
OPERATIONAL TIME:	742 hrs

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 842b 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	4.5	4.6	3.7	4.7	3.7	3.8	4.1	5.3	4.7	4.3	6.0	7.1	7.2	7.3	6.6	7.0	8.1	7.7	7.0	5.2	4.8	3.5	2.6	3.6	2.6	8.1	5.3	24
2	4.2	4.7	4.6	4.1	4.2	8.6	7.6	7.8	5.6	7.2	8.5	10.2	10.5	10.9	8.6	10.6	10.4	11.1	10.5	11.3	12.7	11.5	10.5	9.6	4.1	12.7	8.6	24
3	10.1	9.9	9.1	9.1	8.5	9.0	7.8	5.0	3.6	2.3	2.1	3.0	3.0	2.9	3.2	0.2	0.2	0.2	0.2	8.9	9.5	7.5	13.2	0.2	13.2	5.4	24	
4	20.1	21.1	23.0	21.0	16.0	12.8	12.9	17.5	17.1	20.3	18.1	19.6	19.3	17.3	25.5	32.8	31.5	30.2	30.9	25.0	20.3	16.5	15.1	13.7	12.8	32.8	20.7	24
5	9.1	3.5	2.4	3.0	5.4	7.9	5.5	3.0	4.7	6.2	9.1	11.4	12.5	11.2	13.5	10.4	11.0	14.0	12.6	12.3	12.5	9.3	4.6	8.7	2.4	14.0	8.5	24
6	7.4	7.2	7.3	9.4	8.0	6.5	7.2	7.1	6.8	6.7	9.0	11.3	13.3	17.6	17.2	17.2	18.3	18.7	14.0	17.9	12.8	12.3	6.9	10.3	6.5	18.7	11.3	24
7	19.6	23.0	25.6	18.5	10.7	18.5	16.5	9.2	7.8	10.9	11.0	9.7	17.8	17.1	16.1	13.7	10.8	9.6	10.2	10.0	9.7	10.3	11.5	11.8	7.8	25.6	13.7	24
8	10.1	8.9	9.8	14.7	15.7	19.8	18.0	18.9	14.7	16.1	22.5	25.4	27.2	26.4	25.1	17.1	7.9	12.0	13.3	12.1	10.9	24.1	14.1	17.8	7.9	27.2	16.8	24
9	13.7	11.8	12.9	10.0	13.3	11.0	8.6	12.6	10.4	8.2	14.1	17.5	18.8	14.9	12.2	10.8	10.0	8.6	10.4	9.1	12.9	10.7	7.8	10.9	7.8	18.8	11.7	24
10	7.3	7.9	11.9	11.1	14.6	14.0	14.4	19.6	20.3	21.8	20.5	21.8	24.2	20.7	16.2	15.3	17.0	11.1	8.9	7.9	13.1	11.4	19.6	20.7	7.3	24.2	15.5	24
11	20.5	15.9	17.5	24.5	24.8	17.6	19.0	18.9	19.1	19.8	28.7	26.6	21.9	24.9	26.2	27.9	25.6	28.9	24.1	22.3	40.5	39.0	35.7	29.4	15.9	40.5	25.0	24
12	31.3	40.2	40.4	37.2	31.2	33.0	25.7	23.4	27.3	32.2	34.7	40.8	40.2	40.4	46.2	37.1	31.5	25.0	26.8	23.6	21.9	19.9	19.8	21.1	19.8	46.2	31.3	24
13	25.8	23.2	26.6	33.3	39.7	20.4	20.7	17.1	14.5	26.4	25.5	37.9	44.6	45.0	45.3	45.6	41.2	38.7	26.3	28.5	25.8	25.5	21.3	20.8	14.5	45.6	30.0	24
14	13.2	14.6	19.9	13.3	10.5	13.0	10.0	6.3	5.3	8.6	13.2	16.7	18.8	18.9	15.2	13.5	12.8	14.6	8.6	9.2	7.1	9.9	9.5	12.2	5.3	19.9	12.3	24
15	10.4	11.7	12.8	20.3	12.8	10.6	18.2	12.7	21.0	27.1	25.3	21.9	20.4	16.2	7.7	2.8	3.8	4.5	5.5	6.1	4.9	4.2	6.1	10.8	2.8	27.1	12.4	24
16	8.3	6.2	5.2	5.2	4.1	7.0	15.2	18.4	19.1	23.5	29.0	24.1	21.8	20.3	16.5	17.1	21.4	19.7	18.8	15.1	12.5	13.5	12.1	13.3	4.1	29.0	15.3	24
17	13.3	10.7	5.5	6.3	11.3	11.0	12.8	16.7	16.8	14.0	20.4	20.7	21.0	17.8	17.3	15.9	15.0	6.0	8.3	10.4	12.5	9.1	11.0	10.7	5.5	21.0	13.1	24
18	10.0	7.9	11.8	4.3	7.4	14.5	10.2	10.0	6.5	6.6	9.5	12.2	10.0	11.4	11.0	10.6	8.4	12.0	15.4	7.3	11.1	21.7	18.4	12.9	4.3	21.7	10.9	24
19	13.9	18.2	19.6	16.5	19.6	24.2	27.2	25.3	18.1	19.9	26.8	27.7	27.9	26.9	23.3	23.0	22.6	16.3	16.2	16.3	12.3	14.6	14.0	16.0	12.3	27.9	20.3	24
20	12.4	11.0	15.0	10.5	10.5	6.0	7.7	8.0	12.0	9.8	10.1	8.8	14.3	19.8	22.8	23.5	29.2	25.4	24.8	20.1	15.4	10.1	11.4	9.4	6.0	29.2	14.5	24
21	11.0	14.1	13.2	18.9	25.7	23.6	21.7	22.6	26.8	25.1	23.4	23.8	27.4	29.2	24.6	14.6	10.5	7.8	4.7	4.3	4.1	2.1	4.4	5.5	2.1	29.2	16.2	24
22	4.3	3.8	1.3	2.4	2.6	4.5	4.1	3.4	5.1	4.9	3.8	5.1	5.3	6.6	5.7	8.6	6.7	4.4	4.6	3.4	2.7	2.7	1.9	2.4	1.3	8.6	4.2	24
23	3.1	4.8	4.6	4.0	3.4	2.3	4.5	4.7	5.7	5.3	4.2	4.1	5.6	6.1	7.0	5.9	4.8	5.4	4.5	3.7	2.8	3.5	4.4	4.0	2.3	7.0	4.5	24
24	3.4	3.6	5.3	5.8	4.3	4.9	3.9	4.2	5.1	4.4	5.0	5.3	4.2	4.6	3.6	2.0	2.7	1.2	5.4	7.1	10.9	9.2	4.9	6.0	1.2	10.9	4.9	24
25	11.7	10.8	11.1	11.0	10.7	12.6	11.5	9.5	7.6	6.6	8.7	9.3	10.2	10.1	9.4	6.8	2.6	2.4	2.9	2.3	3.4	3.7	3.8	3.8	2.3	12.6	7.6	24
26	5.3	5.5	6.8	5.3	5.5	6.2	6.8	5.7	5.2	5.6	9.9	9.8	5.8	6.8	6.3	6.8	7.1	5.8	12.0	5.3	10.2	8.8	9.0	5.1	5.1	12.0	6.9	24
27	3.4	4.6	4.0	3.2	3.1	2.8	3.7	5.6	3.0	3.8	2.3	2.3	3.2	4.0	5.6	7.4	6.4	6.1	6.8	5.9	6.4	5.7	4.9	4.4	2.3	7.4	4.5	24
28	4.7	4.6	2.5	2.6	3.4	6.9	8.0	8.7	6.8	3.5	5.2	3.8	4.5	5.3	5.8	4.2	3.2	2.0	3.8	2.8	2.7	3.4	2.9	3.6	2.0	8.7	4.4	24
29	5.2	3.9	3.9	2.4	4.3	4.2	7.6	10.2	9.9	17.1	20.5	19.7	22.5	26.1	29.3	29.0	25.6	23.2	24.9	25.0	17.4	20.8	23.2	20.9	2.4	29.3	16.5	24
30	24.8	22.1	24.2	24.0	22.0	20.7	19.1	16.0	10.9	5.2	4.5	3.4	3.7	6.0	8.3	7.9	8.5	12.9	15.3	15.6	12.7	14.0	15.0	14.2	3.4	24.8	13.8	24
31	11.7	10.5	10.7	11.6	11.9	15.0	14.7	16.9	20.8	17.4	17.8	20.1	20.5	21.7	19.4	13.0	9.7	15.5	19.4	25.8	23.3	31.2	41.0	35.5	9.7	41.0	19.0	24
HOURLY MAX	31.3	40.2	40.4	37.2	39.7	33.0	27.2	25.3	27.3	32.2	34.7	40.8	44.6	45.0	46.2	45.6	41.2	38.7	30.9	28.5	40.5	39.0	41.0	35.5				

STATUS FLAG CODES

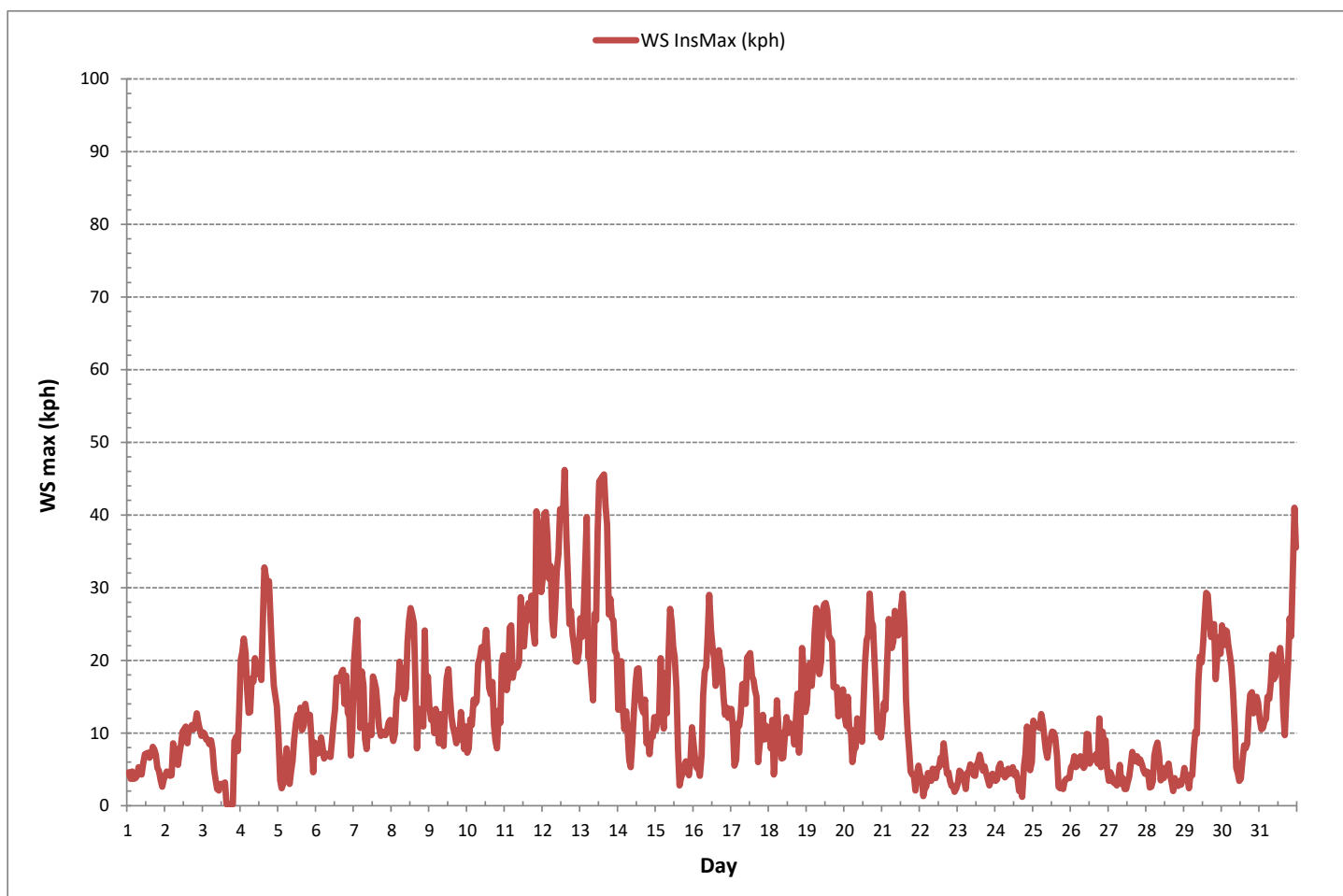
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE: 46.2 kph @ HOUR 14 ON DAY 12

OPERATIONAL TIME: 744 hrs

WIND SPEED Instantaneous Maximum (WS kph)

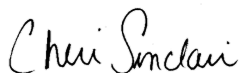


APPENDIX IV
REPORT CERTIFICATION FORM

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
YES	N/A
Company Name (if applicable)	Industrial Operation Name (if applicable)
Peace River Area Monitoring Program Committee	Three Creeks 842b Station
Name of the Representative of the Person Responsible	Position / Title of the Representative of the Person Responsible
Mike Bisaga / Lily Lin	Technical Program Managers
Is an External Party Certifying the Report? If 'Yes', fill in the fields below for the external person.	
☒ Yes ☐ No	
Name of External Person Certifying the Report	Position / Title of External Person Certifying the Report
Cheri Sinclair	Supervisor, Customer Service, Air Services
Company Name for the External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
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

22- Jan - 2019

Report Issued Date (dd-mon-yyyy)

APPENDIX V
DATA VALIDATION CERTIFICATION FORM

Validation Certificate Form

Client: <u>Peace River Area Monitoring Program Committee</u>	Project #: <u>8449-2018-12-03-C</u>
Site: <u>Three Creeks 842b Station</u>	Contact: <u>Lily Lin</u>

Level 0 Preliminary Verification

CSA/MLB/A

Date 09- Jan - 2019

Level 1 Primary Validation

CSA/MLB/A

Date 09- Jan - 2019

Level 2 Final Validation

CSA/MLB/A

Date 22- Jan - 2019

Level 3 Independent Data Review

Cheri Sinclair

Date 22- Jan - 2019

Post-Final Validation

NA

Date NA

Notes

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