



Palliser Airshed Society

Ambient Air Monitoring Network Summary

February 2004



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Alberta Environment
Enforcement and Monitoring Division
11th Floor, Oxbridge Place
9820 - 106th Street
Edmonton, Alberta, T5K 2J6

Attention: Director of Monitoring and Evaluation

RE: Palliser Airshed Society (PAS) Ambient Air Monitoring Report – February 2004

Enclosed is the PAS Ambient Monitoring Report for the month of **February 2004**.

Continuous Monitoring – Medicine Hat

Included in this report are the, monthly sampling table, detailed hourly average reports and multipoint calibration reports of all instruments. The measured ambient air quality was within the Provincial and Federal guidelines with no exceedences recorded. Operational time of all instruments was below 90% and Alberta Environment was informed (reference# 147009). A letter was submitted within seven days of notification and is attached as a reference. There were no significant events leading to emergency response for the month of February.

The following is a summary of the monthly averages found during this month of sampling:

- Monthly average concentrations of NO₂ was 16.1 ppb
- Monthly average concentrations for O₃ was 25.1 ppb
- Monthly average concentrations for THC was 2.5 ppm
- Monthly average concentrations for PM_{2.5} was 4.1 µg/m³

A calibration audit was performed at the Medicine Hat station by Alberta Environment personnel on February 12, 2004. The formal audit report and response has been attached.

Passive Monitoring – Six Stations throughout the PAS zone:

There were no damaged or missing samples for the month and no exceedances of the Provincial Air Quality guidelines

- Monthly average concentrations for SO₂ passives ranged from 0.4 ppb to 0.7 ppb
- Monthly average concentrations for NO₂ passives ranged from 5.9 ppb to 10.6 ppb
- Monthly average concentrations for O₃ passives ranged from 27.7 ppb to 38.1 ppb

If you have any questions, please contact the Focus office at 466-6555.

Gary Cross

Gary Cross C.E.T.
AQM Technical Manager

Kevin McCullum

Kevin McCullum, M.Sc., P.Eng.
AQM Environmental Engineer



March 31, 2004

February 2004 Monthly Overall Summary Report

Ambient Air Quality Data

Feb-2004		PAS - AMBIENT AIR QUALITY DATA					Maximum Recorded Values						Operational Time (%)
Pollutant (units)	Limits		Station	Monthly Average	Exceedence		1HOUR			DAILY			
	1-hr	24-hr			1-hr	24-hr	Conc	Day	WSPD (km/hr)	WDIR (Sector)	Conc	Day	
O ₃ (ppb)	82	-	Medicine Hat	25.1	0	0	47.6	Feb-17	33.5	S	39.5	Feb-09	67.1%
NO (ppb)	-	-	Medicine Hat	135.6	0	0	135.6	Feb-05	3.3	SSE	59.7	Feb-03	67.0%
NO ₂ (ppb)	210	110	Medicine Hat	16.1	0	0	54.1	Feb-16	4.1	SSE	31.0	Feb-05	67.0%
NO _x (ppb)	-	-	Medicine Hat	28.7	0	0	165.3	Feb-05	3.3	SSE	91.9	Feb-03	67.0%
THC (ppm)	-	-	Medicine Hat	2.5	0	0	4.4	Feb-15	11.6	SW	3.4	Feb-03	68.2%
PM _{2.5} (µg/m ³)	-	30	Medicine Hat	4.1	0	0	38.7	Feb-02	3.7	SW	22.7	Feb-02	61.4%
RH (%)	-	-	Medicine Hat	70.2									69.8%
SR (W/m ²)	-	-	Medicine Hat	96.6									69.8%
Temp (°C)	-	-	Medicine Hat	-7.1									65.8%
WSPD v (km/hr)	-	-	Medicine Hat	7.5									64.1%
WSPD s (km/hr)	-	-	Medicine Hat	11.8									64.1%
WDIR (Deg)	-	-	Medicine Hat	WSW									64.1%

Note: exceedances of PM_{2.5} are based on the 24-hr Canada-wide Standards for PM_{2.5}.



March 31, 2004

Continuous Monitoring

Ambient Air Compliance Network

PAS - Medicine Hat Station

General Station Issues

Missing data resulting from problems with communications to the central data archive amounted to less than 90% uptime. As data can now be viewed by the technicians on a daily basis, data retrieval problems can be identified and addressed immediately.

Alarms will be established to alert the on call personnel if this happens in the future.

Parameter	Make	Model	Notes
NOx/NO/NO ₂	Teledyne-API	200E	- No operation problems observed
O ₃	Teledyne-API	400E	- No operation problems observed
THC	Bendix	400	- No operation problems observed
PM _{2.5}	R&P	1400AB	- No operation problems observed
RH	Met One	083D	- No operation problems observed
AT	Met One	083D	- No operation problems observed
SR	Met One	096-1	- No operation problems observed
WS	Met One	010C	- No operation problems observed
WD	Met One	020C	- No operation problems observed

Station: Medicine Hat

Station Owner: Palliser Airshed Society

Parameter : Ozone (O3)

Table with 2 columns: Guideline Limit, Alberta Environment; 2 rows: 1-hr 0.082 ppm / 24-hr na ppm, 1-hr 82 ppb / 24-hr na ppb

Sampling Dates: February 1, 2004 to March 1, 2004

Summary

Summary statistics table: Number of 1-hr Exceedances: 0, Number of 24-hr Exceedances: 0, Maximum 1-hr Average: 47.6 ppb, Maximum 24-hr Average: 39.5 ppb

Status Characters

Legend for Status Characters: C Calibration, S Instrument out of Service, * < 75% Data, N Excessive Instrument Drift, F DACS Off-Line, A AIC - Zero / Span Check, R Alarm, X Filter Exchange, M Equipment Maintenance, E Exceedance

AIC Time: 34 hrs, Operational Time: 433 hrs, Calibration Time: 5 hrs, AMD Operational Uptime: 67.1%, Percentile table with columns 99, 95, 75, 50, 25, 5, 1, Average, Geomean

Day Mountain Standard Time

Main data table with 25 columns for hourly measurements (0:00-23:59), 2 columns for 24-hour Average and Daily Maximum, rows for each day from 1-Feb-04 to 29-Feb-04

Hourly Avg and Hourly Max summary row: Hourly Avg (47.6-45.2), Hourly Max (47.6-45.2)

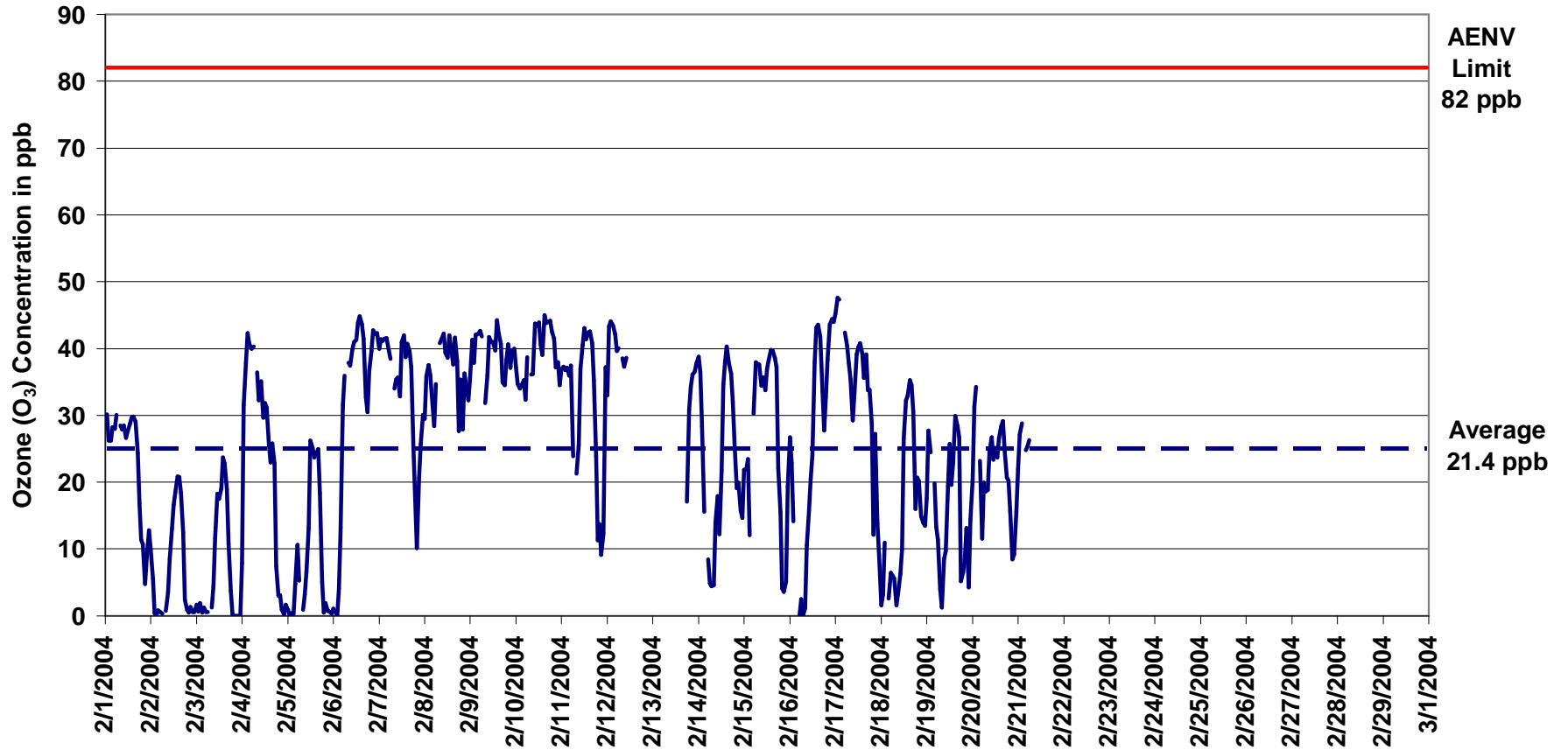


Figure 1. PAS – Medicine Hat O₃ Monthly Trend

Station: Medicine Hat

Station Owner: Pallisar Airshed Society

Parameter : Nitrogen Oxide (NO)

Guideline Limit:	Alberta Environment:	1-hr na ppm	24-hr na ppm
		1-hr na ppb	24-hr na ppb

Sampling Dates: February 1, 2004 to March 1, 2004

Summary

Number of 1-hr Exceedances:	0		
Number of 24-hr Exceedances:	0		
Maximum 1-hr Average:	135.6 ppb	5-Feb	9:00 9:59
Maximum 24-hr Average:	59.7 ppb	3-Feb	

Status Characters

C	Calibration	A	AIC - Zero / Span Check
S	Instrument out of Service	R	Alarm
*	< 75% Data	X	Filter Exchange
N	Excessive Instrument Drift	M	Equipment Maintenance
F	DACS Off-Line	E	Exceedance

AIC Time:	39 hrs	Operational Time:	427 hrs						
Calibration Time:	6 hrs	AMD Operational Uptime:	67.0%						
Percentile	99	95	75	50	25	5	1	Average	Geomean
	120.2	69.2	9.1	0.7	0.0	0.0	0.0	11.7 ppb	- ppb

Day Mountain Standard Time

Day	Hour Start	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-hr Average	Daily Maximum	
	Hour End	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			
1-Feb-04		0.2	0.2	0.1	0.0	0.4	0.0	A	0.0	0.5	1.0	4.6	3.3	3.6	3.9	2.6	2.5	2.2	1.0	1.8	1.0	7.8	12.1	0.1	0.7	2.2	12.1	
2-Feb-04		23.9	51.1	14.8	12.9	6.9	9.6	A	25.8	127.9	88.8	99.8	68.0	56.0	43.5	34.7	29.6	22.7	47.3	65.6	53.7	101.1	60.7	44.2	75.1	50.6	127.9	
3-Feb-04		69.5	122.1	54.2	83.6	71.1	83.1	A	115.6	125.3	68.6	41.8	73.0	64.0	38.8	35.6	31.3	29.7	50.7	49.1	38.0	31.8	35.0	27.6	33.5	59.7	125.3	
4-Feb-04		0.0	0.0	0.0	0.0	0.0	0.0	A	0.0	0.3	1.7	9.9	5.7	5.7	12.7	13.7	7.5	5.1	15.9	13.6	12.5	8.1	11.8	25.5	101.0	10.9	101.0	
5-Feb-04		47.6	39.2	84.6	6.6	0.0	10.8	A	53.1	121.8	135.6	69.6	18.9	20.9	22.7	16.9	8.7	7.5	9.1	62.6	18.3	18.5	44.1	82.1	56.9	41.6	135.6	
6-Feb-04		23.7	40.7	16.5	11.8	0.0	0.0	A	0.5	0.0	0.0	0.0	0.0	0.0	1.5	1.0	2.0	0.7	4.6	0.0	0.0	0.0	0.0	2.3	4.6	4.6	40.7	
7-Feb-04		0.0	0.0	0.0	0.0	0.0	0.0	A	0.4	0.0	0.7	8.9	0.2	0.0	5.8	1.6	1.0	0.7	19.0	0.4	5.0	2.8	0.0	0.0	0.0	2.0	19.0	
8-Feb-04		0.0	0.0	0.0	0.0	0.0	0.0	A	0.0	0.0	0.0	0.0	0.0	0.0	0.9	3.1	0.3	0.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.2	3.1	
9-Feb-04		0.0	0.0	0.0	0.0	0.0	0.0	A	0.9	1.5	0.4	1.8	3.1	6.8	2.1	4.3	3.3	3.0	0.2	0.0	0.0	1.6	0.0	0.0	0.0	1.3	6.8	
10-Feb-04		0.0	0.0	0.0	0.0	0.0	0.0	A	0.1	1.1	0.0	0.0	0.2	2.4	6.4	2.3	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	6.4	
11-Feb-04		0.0	0.0	0.0	0.0	0.0	0.0	A	3.4	3.4	0.5	0.0	0.0	2.9	2.5	1.2	2.1	2.0	7.2	9.6	7.5	9.0	9.8	0.0	4.4	2.8	9.8	
12-Feb-04		0.0	0.0	0.0	0.0	2.2	0.9	A	0.0	1.4	3.8	M	M	M	M	M	M	M	M	M	M	M	M	M	M	*	3.8	
13-Feb-04		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	M	C	C	C	C	C	C	C	0.0	*	0.0
14-Feb-04		0.0	0.0	1.9	A	7.7	1.7	3.3	35.0	5.0	12.4	34.2	17.2	4.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	35.0	
15-Feb-04		0.0	0.0	0.0	A	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	21.8	20.6	40.3	0.0	3.8	40.3	
16-Feb-04		0.0	0.0	A	A	79.1	4.4	15.1	33.2	12.7	16.0	18.3	25.0	4.4	0.4	0.0	0.0	2.2	0.0	0.0	4.7	0.0	0.0	0.0	1.7	9.9	79.1	
17-Feb-04		0.0	0.0	A	A	0.0	0.0	0.0	0.0	2.7	3.5	0.0	0.0	0.0	0.9	8.6	0.0	0.9	0.0	0.0	7.7	0.0	5.3	1.0	54.9	3.9	54.9	
18-Feb-04		9.7	0.0	A	0.0	0.0	1.5	9.2	35.8	78.2	63.3	71.0	15.7	1.0	0.3	0.0	0.0	0.0	2.6	0.0	0.0	0.6	0.0	0.0	4.1	12.7	78.2	
19-Feb-04		0.0	0.0	A	0.0	3.6	0.0	2.8	10.6	7.0	16.9	4.0	1.2	10.9	6.3	2.2	0.0	0.0	13.2	4.1	0.3	0.0	17.5	0.0	0.0	4.4	17.5	
20-Feb-04		0.0	0.0	A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	6.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.4	0.6	6.0	
21-Feb-04		0.1	0.0	A	0.0	0.9	0.0	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.9	
22-Feb-04		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
23-Feb-04		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
24-Feb-04		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
25-Feb-04		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
26-Feb-04		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
27-Feb-04		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
28-Feb-04		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
29-Feb-04		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
																										*	0.0	
																										*	0.0	
Hourly Avg		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hourly Max		69.5	122.1	84.6	83.6	79.1	83.1	15.1	115.6	127.9	135.6	99.8	73.0	64.0	43.5	35.6	31.3	29.7	50.7	65.6	53.7	101.1	60.7	82.1	101.0			

Station: Medicine Hat

Station Owner: Pallisar Airshed Society

Parameter : Oxides of Nitrogen (NO_x)

Guideline Limit:	Alberta Environment:	1-hr	na	ppm	24-hr	na	ppm
		1-hr	na	ppb	24-hr	na	ppb

Sampling Dates: February 1, 2004 to March 1, 2004

Summary

Number of 1-hr Exceedances:	0						
Number of 24-hr Exceedances:	0						
Maximum 1-hr Average:	165.3	ppb	5-Feb	9:00	9:59		
Maximum 24-hr Average:	91.9	ppb	3-Feb				

Status Characters

C	Calibration	A	AIC - Zero / Span Check
S	Instrument out of Service	R	Alarm
*	< 75% Data	X	Filter Exchange
N	Excessive Instrument Drift	M	Equipment Maintenance
F	DACS Off-Line	E	Exceedance

AIC Time:	39 hrs	Operational Time:	427 hrs						
Calibration Time:	6 hrs	AMD Operational Uptime:	67.0%						
Percentile	99	95	75	50	25	5	1	Average	Geomean
	152.4	102.1	37.8	14.4	7.4	3.2	2.1	28.7 ppb	- ppb

Day Mountain Standard Time

Day	Hour Start	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-hr Average	Daily Maximum	
Hour End	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				
1-Feb-04	5.1	9.1	9.9	9.7	9.7	5.7	A	7.5	8.6	7.5	11.6	9.2	8.7	8.4	7.3	8.7	12.2	17.1	22.6	22.9	34.4	35.9	20.5	23.6	13.7	35.9		
2-Feb-04	48.5	84.5	48.0	45.1	38.9	41.3	A	58.0	152.5	113.0	126.4	88.6	75.5	63.0	55.2	52.3	52.4	85.7	102.8	90.1	135.4	93.8	78.9	113.1	80.1	152.5		
3-Feb-04	105.4	162.3	89.8	122.9	107.9	119.0	A	152.1	158.3	93.5	61.5	96.1	86.0	60.4	58.5	55.5	61.4	88.5	86.9	73.9	68.7	71.4	64.4	68.6	91.9	162.3		
4-Feb-04	17.4	9.6	4.2	5.9	5.0	4.5	A	10.4	14.9	12.1	23.7	15.0	15.8	27.9	32.4	24.2	25.1	48.3	50.4	49.5	46.9	51.9	64.9	142.6	30.5	142.6		
5-Feb-04	90.1	82.2	126.4	43.6	27.4	45.0	A	93.4	155.2	165.3	96.5	36.3	39.3	41.9	36.1	27.8	32.9	46.6	101.4	57.7	58.5	86.0	119.9	102.4	74.4	165.3		
6-Feb-04	65.6	83.9	61.5	49.8	16.0	11.7	A	12.8	8.9	5.8	6.0	6.2	3.8	4.2	8.7	11.8	19.4	20.6	16.5	8.1	5.5	4.1	3.6	10.2	19.3	83.9		
7-Feb-04	4.7	3.3	2.7	2.4	4.8	4.4	A	11.4	7.4	8.0	19.7	4.3	3.7	12.6	8.0	8.6	11.0	43.5	27.4	37.5	23.6	15.9	11.8	14.4	12.7	43.5		
8-Feb-04	9.1	7.3	7.9	11.9	15.8	9.8	A	5.0	4.4	3.1	6.6	7.4	4.2	8.7	14.2	8.5	11.1	20.1	10.7	17.2	9.5	10.6	11.7	8.7	9.7	20.1		
9-Feb-04	2.9	7.0	3.3	2.8	3.2	4.8	A	16.5	12.6	5.5	7.5	8.8	15.1	6.9	10.9	12.0	16.6	14.5	10.0	6.6	10.0	4.5	4.0	5.4	8.3	16.6		
10-Feb-04	9.8	8.0	8.3	8.8	12.7	7.6	A	13.3	13.8	3.8	4.2	3.9	8.3	16.8	8.4	10.5	7.3	6.8	6.2	4.3	5.9	2.9	5.5	2.2	7.8	16.8		
11-Feb-04	1.2	1.4	2.3	3.8	2.5	15.9	A	23.7	18.4	7.2	2.8	2.4	6.5	6.0	4.8	7.7	13.4	29.3	43.8	40.1	45.4	44.0	10.7	19.5	15.3	45.4		
12-Feb-04	3.4	2.4	2.0	3.2	8.5	7.4	A	8.3	9.8	11.0	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	*	11.0	
13-Feb-04	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	M	C	C	C	C	C	C	C	4.8	*	4.8	
14-Feb-04	4.5	13.4	26.8	A	39.4	32.3	34.8	73.4	33.8	36.8	69.7	44.3	17.8	11.3	8.5	8.8	10.5	13.0	17.6	21.8	20.2	24.2	26.1	16.7	26.3	73.4		
15-Feb-04	16.6	14.7	26.2	A	12.4	6.0	5.6	4.7	7.7	8.6	14.0	4.6	3.0	3.0	6.4	11.7	9.6	24.7	32.1	69.1	66.8	87.8	26.3	17.1	20.8	87.8		
16-Feb-04	13.0	24.9	A	A	134.1	41.2	53.5	71.1	38.5	35.7	37.8	47.1	15.4	7.3	5.1	6.6	17.1	19.9	14.4	14.4	3.6	3.4	5.0	6.4	28.0	134.1		
17-Feb-04	1.4	2.0	A	A	3.7	3.0	4.1	7.3	18.5	15.6	5.0	5.0	5.3	8.4	21.0	7.0	12.9	8.1	10.9	38.5	13.9	33.7	34.0	99.2	16.3	99.2		
18-Feb-04	46.6	22.8	A	35.7	31.5	32.8	43.8	70.6	116.2	98.6	109.1	37.9	11.9	9.7	7.3	6.9	9.4	25.5	13.3	13.3	21.1	20.2	22.7	24.8	36.2	116.2		
19-Feb-04	7.4	10.3	A	14.0	23.9	19.2	30.1	41.4	29.7	40.6	20.3	13.4	30.3	23.3	15.3	14.9	18.5	51.6	37.7	30.2	23.4	56.2	22.2	15.3	25.6	56.2		
20-Feb-04	6.0	3.2	A	12.2	26.6	15.0	16.5	14.2	8.2	5.9	12.0	6.2	14.9	7.3	11.6	8.8	11.2	13.1	12.4	17.6	24.4	29.6	16.3	14.3	13.4	29.6		
21-Feb-04	10.5	4.2	A	6.6	10.1	4.5	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	10.5	
22-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
23-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
24-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
25-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
26-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
27-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
28-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
29-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
																										*	0.0	
																										*	0.0	
Hourly Avg	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hourly Max	105.4	162.3	126.4	122.9	134.1	119.0	53.5	152.1	158.3	165.3	126.4	96.1	86.0	63.0	58.5	55.5	61.4	88.5	102.8	90.1	135.4	93.8	119.9	142.6				

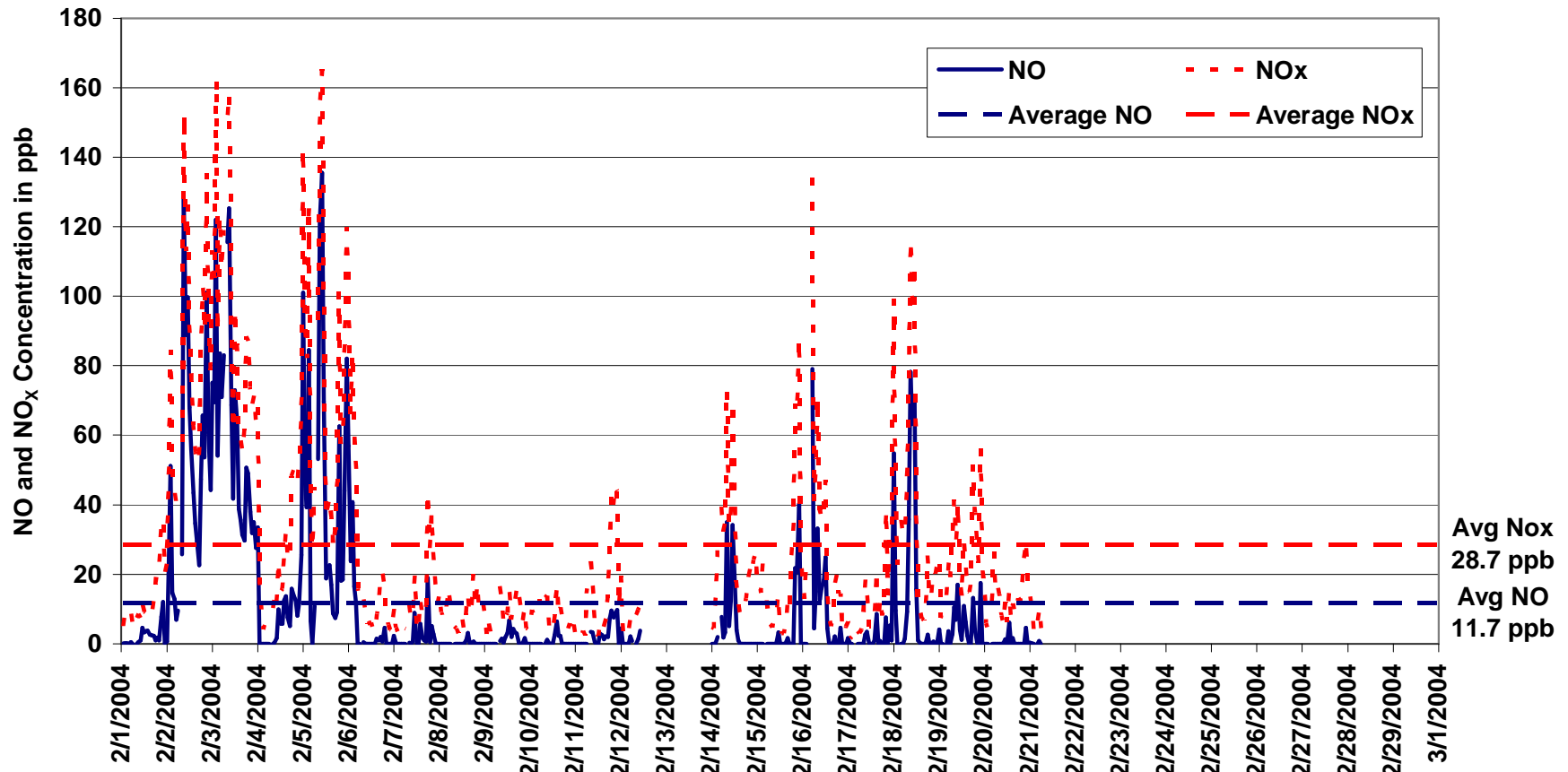


Figure 2. PAS – Medicine Hat NO and NO_x Monthly Trends

Station: Medicine Hat

Station Owner: Pallisar Airshed Society

Parameter : Nitrogen Dioxide (NO₂)

Guideline Limit:	Alberta Environment:	1-hr 0.212 ppm	24-hr 0.106 ppm
		1-hr 212 ppb	24-hr 106 ppb

Sampling Dates: February 1, 2004 to March 1, 2004

Summary

Number of 1-hr Exceedances:	0		
Number of 24-hr Exceedances:	0		
Maximum 1-hr Average:	54.1 ppb	16-Feb	4:00 4:59
Maximum 24-hr Average:	31.0 ppb	5-Feb	

Status Characters

C Calibration	A AIC - Zero / Span Check
S Instrument out of Service	R Alarm
* < 75% Data	X Filter Exchange
N Excessive Instrument Drift	M Equipment Maintenance
F DACS Off-Line	E Exceedance

AIC Time:	39 hrs	Operational Time:	427 hrs						
Calibration Time:	6 hrs	AMD Operational Uptime:	67.0%						
Percentile	99	95	75	50	25	5	1	Average	Geomean
	43.3	37.4	24.5	12.3	6.3	3.1	2.1	16.1 ppb	- ppb

Day Mountain Standard Time

Day	Hour Start	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-hr Average	Daily Maximum	
	Hour End	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			
1-Feb-04	4.5	8.3	9.0	8.7	7.9	4.7	A	6.4	6.3	4.6	5.1	3.9	3.2	2.6	2.8	4.2	7.9	14.1	18.8	19.9	24.7	21.8	18.3	20.9	9.9	24.7		
2-Feb-04	22.6	31.3	31.2	30.1	30.0	29.7	A	30.1	22.2	21.7	24.1	18.0	16.9	16.7	17.6	19.7	26.8	35.3	34.0	33.2	30.9	29.8	31.3	34.4	26.8	35.3		
3-Feb-04	32.3	36.4	31.8	35.3	32.8	31.8	A	32.4	29.1	21.2	16.0	19.5	18.5	18.1	19.6	20.9	28.8	34.8	34.9	33.2	34.3	33.9	34.4	32.8	28.8	36.4		
4-Feb-04	17.0	10.1	4.9	5.9	5.8	5.2	A	10.1	12.8	8.7	12.0	7.5	8.2	13.4	16.8	14.7	18.0	30.6	34.8	35.1	36.9	38.2	37.3	39.4	18.4	39.4		
5-Feb-04	40.3	40.8	40.7	34.9	28.3	32.1	A	38.0	31.2	27.6	24.7	15.3	16.2	17.2	17.1	17.1	23.5	35.5	36.7	37.4	38.1	39.8	36.4	43.5	31.0	43.5		
6-Feb-04	39.8	41.0	43.0	36.1	17.2	12.3	A	10.4	8.4	5.3	4.6	4.6	3.0	3.3	5.5	9.1	15.8	18.2	10.2	8.6	5.0	4.7	4.1	6.5	13.8	43.0		
7-Feb-04	4.0	4.0	3.3	2.9	3.6	4.7	A	9.8	6.8	6.1	9.5	2.8	2.5	5.5	5.0	6.3	9.1	23.2	25.8	31.3	19.6	15.8	11.7	14.6	9.9	31.3		
8-Feb-04	10.2	8.5	9.3	12.5	16.0	11.0	A	6.3	5.4	3.8	6.0	6.3	4.0	6.5	9.8	7.0	9.5	18.2	11.0	16.9	9.4	10.6	11.5	8.9	9.5	18.2		
9-Feb-04	3.3	7.0	3.4	3.0	3.1	4.2	A	14.2	9.7	3.7	4.3	4.2	6.8	3.5	5.2	7.3	12.2	12.9	9.4	6.1	7.1	4.2	3.8	5.4	6.3	14.2		
10-Feb-04	9.0	8.0	8.2	8.9	12.3	7.3	A	12.0	11.6	3.3	3.2	2.6	4.7	9.2	5.0	7.0	6.3	6.3	5.9	4.2	5.6	3.1	5.0	2.3	6.6	12.3		
11-Feb-04	1.6	1.9	2.9	4.2	3.1	15.8	A	19.3	13.9	5.7	2.2	1.4	2.6	2.6	2.6	4.5	10.4	21.1	33.2	31.6	35.4	33.3	10.5	14.1	11.9	35.4		
12-Feb-04	3.5	2.4	2.1	2.8	5.3	5.5	A	7.3	7.4	6.3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	*	7.4	
13-Feb-04	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	M	C	C	C	C	C	C	C	5.9	*	5.9	
14-Feb-04	5.9	14.0	24.2	A	31.1	30.2	31.0	37.9	28.4	24.0	35.2	26.8	13.4	9.9	8.3	8.5	10.3	13.8	18.1	22.9	21.0	25.2	26.6	17.9	21.1	37.9		
15-Feb-04	17.9	16.6	27.6	A	14.5	8.5	8.1	7.3	9.4	8.7	10.3	5.5	4.8	4.9	6.6	9.6	11.2	24.4	32.1	46.8	45.5	46.8	27.2	16.5	17.9	46.8		
16-Feb-04	17.6	27.4	A	A	54.1	36.0	37.8	37.2	25.1	18.8	18.8	21.4	10.4	6.2	5.5	7.2	14.3	19.6	14.3	9.1	4.9	4.3	4.8	4.2	18.1	54.1		
17-Feb-04	2.1	2.1	A	A	3.7	3.6	4.4	6.6	14.2	10.2	3.5	3.3	3.7	5.1	9.8	5.2	9.1	7.5	11.1	27.3	12.3	24.6	29.0	40.1	10.8	40.1		
18-Feb-04	32.7	22.3	A	33.3	28.1	27.1	30.6	30.9	34.8	31.8	34.6	18.9	7.7	6.6	5.3	5.6	8.3	20.6	12.7	12.7	18.6	20.0	21.6	19.3	21.1	34.8		
19-Feb-04	8.5	11.2	A	14.8	19.5	19.3	26.5	30.1	21.9	22.9	15.3	11.2	18.5	16.0	12.1	13.9	18.5	37.4	32.7	29.0	24.9	37.8	24.3	18.5	21.1	37.8		
20-Feb-04	10.2	7.5	A	16.1	25.9	16.9	16.8	16.5	10.5	7.6	9.6	6.2	7.9	6.9	9.0	8.4	10.7	13.9	13.9	18.0	24.1	24.1	17.8	12.9	13.5	25.9		
21-Feb-04	9.4	6.2	A	8.6	8.2	6.7	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	9.4	
22-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
23-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
24-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
25-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
26-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
27-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
28-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
29-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
																										*	0.0	
																										*	0.0	
Hourly Avg	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Hourly Max	40.3	41.0	43.0	36.1	54.1	36.0	37.8	38.0	34.8	31.8	35.2	26.8	18.5	18.1	19.6	20.9	28.8	37.4	36.7	46.8	45.5	46.8	37.3	43.5				

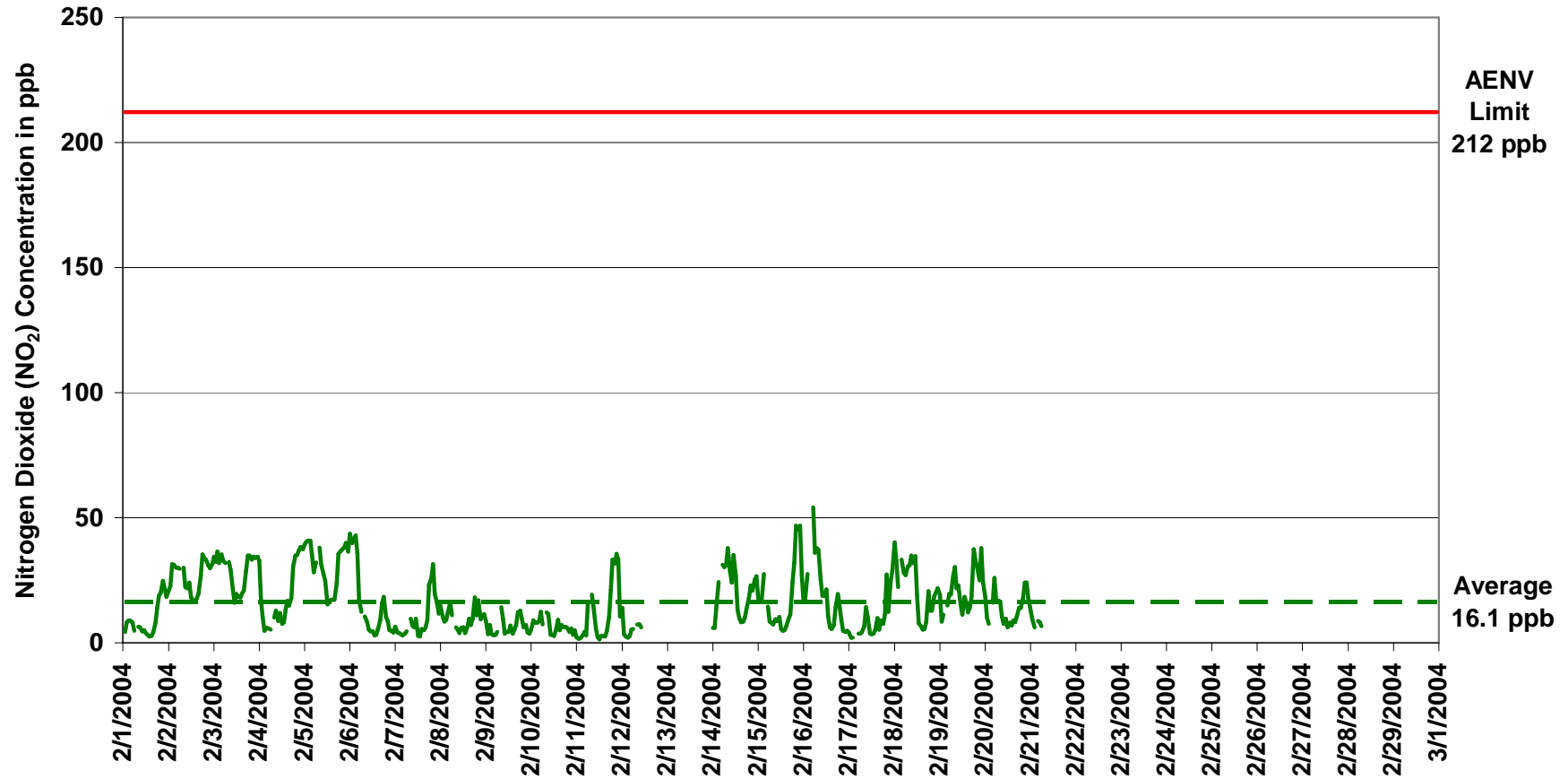


Figure 3. PAS – Medicine Hat NO₂ Monthly Trends

Station: Medicine Hat

Station Owner: Pallisar Airshed Society

Parameter : Total Hydrocarbons (THC)

Guideline Limit:	Alberta Environment:	1-hr	na	ppm	24-hr	na	ppm
		1-hr	na	ppb	24-hr	na	ppb

Sampling Dates: February 1, 2004 to March 1, 2004

Summary

Number of 1-hr Exceedances:	0
Number of 24-hr Exceedances:	0
Maximum 1-hr Average:	4.4 ppm 15-Feb 22:00 22:59
Maximum 24-hr Average:	3.4 ppm 3-Feb

Status Characters

C	Calibration	A	AIC - Zero / Span Check
S	Instrument out of Service	R	Alarm
*	< 75% Data	X	Filter Exchange
N	Excessive Instrument Drift	M	Equipment Maintenance
F	DACS Off-Line	E	Exceedance

AIC Time:	40 hrs	Operational Time:	435 hrs						
Calibration Time:	0 hrs	AMD Operational Uptime:	68.2%						
Percentile	99	95	75	50	25	5	1	Average	Geomean
	4.1	3.4	2.8	2.3	2.1	2.0	1.8	2.5 ppm	- ppm

Day Mountain Standard Time

Day	Hour Start	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-hr Average	Daily Maximum	
	Hour End	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			
1-Feb-04	2.2	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	1.9	A	1.9	1.9	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.1	2.4	
2-Feb-04	2.5	2.8	2.7	2.8	2.7	2.9	3.0	2.6	2.9	3.1	A	3.1	3.1	3.2	3.3	3.4	3.2	3.4	3.4	3.3	3.3	3.6	3.3	3.2	3.3	3.1	3.6	
3-Feb-04	3.4	3.3	3.2	2.7	3.1	3.5	3.2	3.3	3.4	3.6	3.7	3.7	3.4	3.1	A	4.1	3.3	3.5	3.6	3.6	3.4	3.2	3.1	2.9	3.4	4.1		
4-Feb-04	2.2	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.0	A	2.2	2.4	2.4	2.5	2.5	2.4	2.6	2.8	2.7	2.8	2.8	2.7	3.1	2.3	3.1		
5-Feb-04	3.0	3.0	2.9	2.7	2.7	2.6	2.7	2.8	3.0	3.2	3.0	A	2.7	2.9	2.6	2.5	2.5	2.5	2.7	2.4	2.4	2.5	2.7	2.6	2.7	3.2		
6-Feb-04	2.5	2.6	2.7	2.4	2.1	2.1	2.0	2.0	2.0	2.0	A	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.7	
7-Feb-04	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	A	2.0	2.0	1.9	2.0	2.1	2.2	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.1	2.4		
8-Feb-04	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	A	2.1	2.2	2.1	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
9-Feb-04	2.1	2.0	2.0	2.1	2.1	2.0	2.2	2.1	2.2	2.1	A	2.2	2.1	2.0	2.1	2.1	2.3	2.3	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.3	
10-Feb-04	2.0	2.1	2.2	2.2	2.1	2.0	2.1	2.1	2.0	2.0	A	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	
11-Feb-04	2.1	2.1	2.1	2.1	2.1	2.3	2.3	2.2	2.2	2.1	A	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.2	2.4	2.5	2.4	2.2	2.2	2.2	2.2	2.5	
12-Feb-04	2.4	2.2	2.2	2.3	2.3	2.2	2.2	2.1	2.2	2.4	2.5	A	M	M	M	M	M	M	M	M	M	M	M	M	M	*	2.5	
13-Feb-04	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	2.6	2.7	2.7	2.5	2.3	2.4	2.5	*	2.7		
14-Feb-04	2.5	2.4	2.5	A	3.4	3.8	3.5	3.4	3.7	4.2	3.5	3.1	3.0	3.0	2.8	2.8	2.8	2.8	2.9	3.0	3.0	3.0	3.1	3.5	3.1	4.2		
15-Feb-04	3.3	3.4	3.3	A	2.3	1.9	2.0	2.0	2.1	2.4	3.0	3.1	3.1	3.0	3.0	3.0	3.0	3.1	3.7	4.3	4.2	4.1	4.4	3.7	3.1	4.4		
16-Feb-04	3.2	3.3	A	A	2.8	2.9	3.2	3.2	2.8	2.9	3.0	3.0	2.4	2.0	2.0	2.2	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.5	3.3		
17-Feb-04	1.9	1.9	A	A	2.0	2.0	2.2	2.1	2.0	2.0	2.0	2.2	2.1	2.1	2.0	2.1	2.5	2.4	2.5	2.4	2.4	3.2	3.1	2.8	2.3	3.2		
18-Feb-04	2.5	2.5	A	2.3	2.5	2.8	2.7	2.9	2.8	3.2	3.1	2.4	2.4	2.2	2.4	2.2	2.2	2.1	2.1	3.3	2.7	2.4	2.1	2.0	2.5	3.3		
19-Feb-04	2.0	2.0	A	2.1	2.2	2.4	2.7	2.7	2.9	3.1	2.5	2.4	2.3	2.3	2.3	2.5	2.3	2.4	2.7	2.8	2.5	2.9	3.4	3.4	2.6	3.4		
20-Feb-04	2.5	2.3	A	3.0	2.5	2.7	2.7	2.2	2.4	2.4	2.1	2.1	2.2	2.2	2.1	2.1	2.2	2.3	2.1	2.1	2.2	2.2	2.3	2.1	2.3	3.0		
21-Feb-04	2.0	2.0	A	2.1	2.0	2.0	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	2.1	
22-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
23-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
24-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
25-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
26-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
27-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
28-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
29-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
																										*	0.0	
																										*	0.0	
Hourly Avg	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Hourly Max	3.4	3.4	3.3	3.0	3.4	3.8	3.5	3.4	3.7	4.2	3.7	3.7	3.4	3.2	3.3	4.1	3.3	3.5	3.7	4.3	4.2	4.1	4.4	3.7				

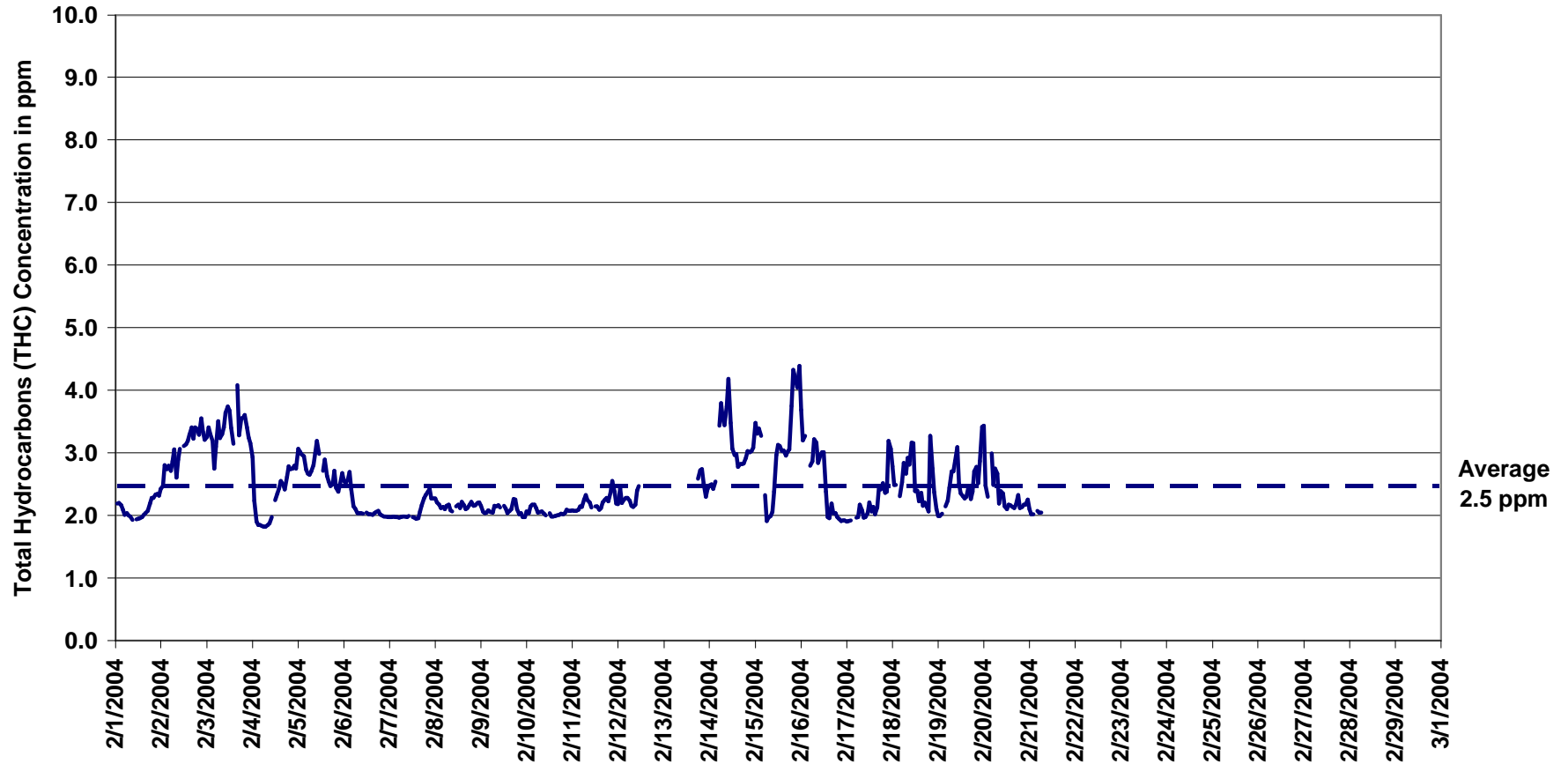


Figure 4. PAS – Medicine Hat THC Monthly Trends

Station: Medicine Hat

Station Owner: Pallisar Airshed Society

Parameter : **Particulate Matter (PM_{2.5})**

Guideline Limit: Canada Wide Standard

1-hr	na	µg/m ³	24-hr	30	µg/m ³
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Sampling Dates: February 1, 2004 to March 1, 2004

Summary

Number of 1-hr Exceedances:	0				
Number of 24-hr Exceedances:	0				
Maximum 1-hr Average:	38.7	µg/m ³	2-Feb	11:00	11:59
Maximum 24-hr Average:	22.7	µg/m ³	2-Feb		

Status Characters

C	Calibration	A	AIC - Zero / Span Check
S	Instrument out of Service	R	Alarm
*	< 75% Data	X	Filter Exchange
N	Excessive Instrument Drift	M	Equipment Maintenance
F	DACS Off-Line	E	Exceedance

AIC Time:	23 hrs	Operational Time:	404 hrs						
Calibration Time:	0 hrs	AMD Operational Uptime:	61.4%						
Percentile	99	95	75	50	25	5	1	Average	Geomean
	33.4	19.3	4.2	0.9	0.0	0.0	0.0	4.1 µg/m ³	- µg/m ³

Day	Mountain Standard Time																							24-hr 24-hour Average	Daily Daily Maximum		
	Hour Start Hour End	0:00 0:59	1:00 1:59	2:00 2:59	3:00 3:59	4:00 4:59	5:00 5:59	6:00 6:59	7:00 7:59	8:00 8:59	9:00 9:59	10:00 10:59	11:00 11:59	12:00 12:59	13:00 13:59	14:00 14:59	15:00 15:59	16:00 16:59	17:00 17:59	18:00 18:59	19:00 19:59	20:00 20:59	21:00 21:59			22:00 22:59	23:00 23:59
1-Feb-04	2.7	3.1	3.4	3.0	1.6	2.7	A	3.6	3.5	3.8	3.8	2.6	3.1	4.0	3.5	3.7	4.9	7.8	10.7	7.9	8.7	9.9	7.5	9.5	5.0	10.7	
2-Feb-04	10.6	14.5	7.4	8.0	7.1	8.0	A	10.0	25.8	25.0	36.1	38.7	28.2	23.5	24.9	24.5	22.5	24.8	31.2	34.5	38.5	33.5	15.7	27.9	22.7	38.7	
3-Feb-04	23.1	28.7	14.1	17.2	9.9	15.8	A	16.8	22.6	15.3	12.2	18.0	19.4	12.0	11.6	11.9	10.1	13.3	17.6	16.5	15.0	13.3	12.6	11.1	15.6	28.7	
4-Feb-04	N	N	N	0.0	0.0	0.0	A	0.0	1.7	1.9	5.5	6.5	6.1	9.3	11.2	7.4	6.2	8.6	10.5	10.8	10.6	11.7	11.7	16.3	6.8	16.3	
5-Feb-04	11.6	12.6	14.0	9.2	8.1	8.8	A	18.8	24.0	30.1	17.1	8.6	8.0	12.6	8.8	5.8	3.1	3.1	6.4	3.4	1.9	7.2	5.3	7.8	10.3	30.1	
6-Feb-04	3.2	3.9	4.7	4.6	0.5	0.0	A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.7	4.7		
7-Feb-04	0.0	0.0	0.0	0.0	0.1	0.6	A	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	1.7	1.8	2.6	1.3	0.2	0.9	0.5	0.5	2.6	
8-Feb-04	0.5	2.4	3.4	0.4	0.6	0.0	A	0.0	0.0	0.1	1.9	1.8	0.1	0.0	0.1	0.2	1.9	2.9	1.6	2.5	0.0	2.8	0.9	1.7	1.1	3.4	
9-Feb-04	0.7	0.0	0.0	0.0	0.0	0.0	A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.1	0.8	0.0	0.0	0.0	0.0	0.4	0.2	1.6		
10-Feb-04	4.2	1.4	0.3	0.8	1.7	0.0	A	2.7	3.8	2.7	1.2	1.7	2.1	2.4	2.1	0.8	0.1	0.0	0.0	0.0	0.0	0.7	0.0	1.3	4.2		
11-Feb-04	0.3	1.2	0.0	0.3	0.0	3.9	A	1.5	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.5	1.6	2.5	2.0	0.5	0.0	0.8	3.9		
12-Feb-04	0.0	0.0	0.4	0.0	0.0	0.0	A	0.8	1.2	2.0	M	M	M	M	M	M	M	M	M	M	M	M	M	M	*	2.0	
13-Feb-04	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	*	0.1	
14-Feb-04	0.0	0.0	0.0	A	4.7	3.6	4.3	6.5	1.2	3.2	5.1	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.2	0.9	0.4	0.0	1.4	6.5	
15-Feb-04	0.0	0.0	1.4	A	2.7	3.8	3.9	2.1	3.1	6.5	4.6	3.8	1.6	2.5	1.8	2.7	1.4	1.3	2.6	4.8	3.9	7.3	0.0	0.0	2.7	7.3	
16-Feb-04	0.0	0.0	A	A	7.9	1.2	0.2	2.0	6.5	2.8	2.6	4.3	3.8	N	0.2	0.0	N	N	N	N	N	N	N	N	*	7.9	
17-Feb-04	N	N	A	A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N	0.0	0.0	0.0	0.0	N	N	0.0	0.0	0.0	0.0	1.9	*	1.9	
18-Feb-04	0.0	0.0	A	N	0.0	0.0	0.0	1.9	2.2	4.0	7.8	2.3	N	0.0	N	0.0	N	N	N	N	0.0	0.0	0.0	0.0	*	7.8	
19-Feb-04	0.0	0.0	A	0.0	0.0	1.3	2.2	4.0	3.9	4.0	0.5	0.6	1.2	1.9	0.0	0.5	0.0	2.4	3.1	1.9	0.1	0.4	0.0	0.0	1.2	4.0	
20-Feb-04	0.0	N	A	0.0	0.0	N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21-Feb-04	N	N	A	N	0.0	0.0	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
22-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
23-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
24-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
25-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
26-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
27-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
28-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
29-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
																									*	0.0	
																									*	0.0	
Hourly Avg	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Hourly Max	23.1	28.7	14.1	17.2	9.9	15.8	4.3	18.8	25.8	30.1	36.1	38.7	28.2	23.5	24.9	24.5	22.5	24.8	31.2	34.5	38.5	33.5	15.7	27.9			

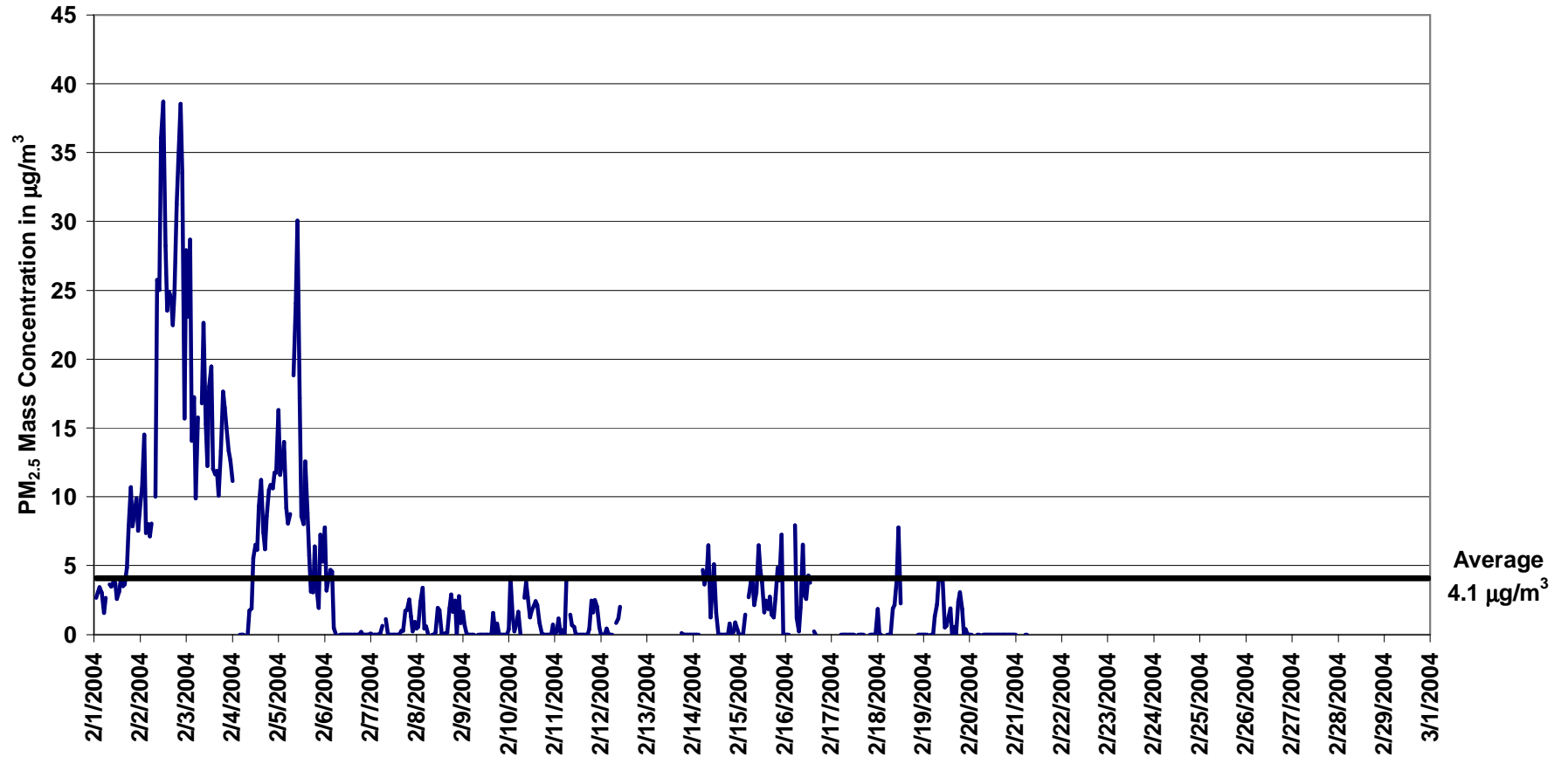


Figure 5. PAS – Medicine Hat PM_{2.5} Monthly Trends

Station: Medicine Hat

Station Owner: Pallisar Airshed Society

Parameter : **Relative Humidity (%)**

Guideline Limit:

Sampling Dates: February 1, 2004 to March 1, 2004

Summary

Number of 1-hr Exceedances:	0
Number of 24-hr Exceedances:	0
Maximum 1-hr Average:	88.5 % 9-Feb 0:00 0:59
Maximum 24-hr Average:	82.6 % 14-Feb

Status Characters

C	Calibration	A	AIC - Zero / Span Check
S	Instrument out of Service	R	Alarm
*	< 75% Data	X	Filter Exchange
N	Excessive Instrument Drift	M	Equipment Maintenance
F	DACS Off-Line	E	Exceedance

AIC Time:	40 hrs	Operational Time:	446 hrs						
Calibration Time:	0 hrs	AMD Operational Uptime:	69.8%						
Percentile	99	95	75	50	25	5	1	Average	Geomean
	87.1	85.3	77.4	70.1	63.7	55.0	50.1	70.2 %	- %

Day Mountain Standard Time

Hour Start Hour End	0:00 0:59	1:00 1:59	2:00 2:59	3:00 3:59	4:00 4:59	5:00 5:59	6:00 6:59	7:00 7:59	8:00 8:59	9:00 9:59	10:00 10:59	11:00 11:59	12:00 12:59	13:00 13:59	14:00 14:59	15:00 15:59	16:00 16:59	17:00 17:59	18:00 18:59	19:00 19:59	20:00 20:59	21:00 21:59	22:00 22:59	23:00 23:59	24-hr Average	Daily Maximum	
1-Feb-04	69.3	68.9	67.4	65.7	66.2	67.1	A	66.6	65.8	64.5	62.1	62.5	62.0	59.5	59.9	58.8	62.4	69.9	70.9	72.9	74.1	73.8	72.6	72.5	66.8	74.1	
2-Feb-04	72.1	69.9	70.0	69.3	69.8	68.4	A	67.9	68.7	69.3	70.6	66.9	59.2	53.1	53.0	56.0	59.9	70.1	74.7	73.7	72.6	71.2	69.3	68.9	67.2	74.7	
3-Feb-04	67.9	67.4	66.9	67.3	66.5	66.4	A	65.7	66.3	67.8	68.6	67.8	61.3	56.5	54.1	53.6	55.7	67.3	70.3	69.2	69.5	69.1	69.6	75.4	65.7	75.4	
4-Feb-04	68.4	66.8	66.9	67.0	68.6	68.1	A	67.8	67.7	65.3	62.9	59.2	59.2	60.3	61.1	62.3	67.1	71.4	73.9	73.7	74.7	76.9	80.0	81.0	68.3	81.0	
5-Feb-04	80.8	79.9	79.2	78.3	78.0	78.5	A	78.8	74.6	68.1	61.3	63.9	56.4	56.0	56.1	58.1	67.4	75.1	79.1	78.2	78.0	79.4	80.0	77.4	72.3	80.8	
6-Feb-04	76.3	77.7	79.8	74.1	69.2	68.2	A	67.1	64.1	57.5	55.0	53.5	51.6	50.4	49.9	49.5	56.5	61.5	60.7	60.5	60.5	62.1	63.6	67.1	62.5	79.8	
7-Feb-04	68.3	70.0	70.1	70.3	73.1	74.7	A	75.8	70.1	65.3	57.0	54.2	53.4	53.5	52.8	56.4	63.4	70.8	73.4	74.2	73.4	70.7	71.4	65.3	66.4	75.8	
8-Feb-04	60.5	66.7	76.3	79.2	80.1	78.9	A	78.8	75.0	74.1	72.2	80.0	84.0	79.1	74.0	74.9	79.4	82.1	77.9	75.3	74.4	80.4	84.2	84.4	77.0	84.4	
9-Feb-04	88.5	85.7	82.2	84.2	79.2	76.0	A	73.7	71.0	69.0	63.1	58.8	54.7	53.1	57.5	64.5	72.0	79.4	75.2	71.0	68.4	68.9	70.9	72.4	71.3	88.5	
10-Feb-04	62.8	66.6	65.5	61.1	58.9	61.5	A	60.8	62.6	66.8	68.2	69.3	71.9	73.0	70.2	67.7	71.8	73.8	76.0	72.5	74.0	72.3	75.3	72.5	68.5	76.0	
11-Feb-04	71.1	71.0	71.8	71.9	72.5	73.3	A	73.9	72.9	71.4	70.3	67.5	65.1	64.1	62.2	59.5	60.9	63.2	68.5	64.6	65.0	67.4	58.7	60.6	67.3	73.9	
12-Feb-04	59.6	56.5	56.7	58.6	57.5	56.9	A	56.7	57.3	55.0	55.8	N	52.4	56.5	57.5	58.8	61.4	65.3	65.3	66.4	67.9	67.8	67.2	62.8	60.0	67.9	
13-Feb-04	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	79.0	80.6	80.1	83.1	85.8	86.7	86.4	*	86.7	
14-Feb-04	85.5	85.4	86.1	A	85.6	83.0	84.1	84.5	83.5	80.9	75.5	73.3	74.4	77.4	79.6	80.2	80.9	83.0	84.5	85.1	86.0	86.5	87.3	88.4	82.6	88.4	
15-Feb-04	87.8	85.6	85.5	A	85.2	88.0	86.9	86.0	85.5	82.9	82.0	77.5	73.8	72.1	69.7	69.4	71.9	76.3	81.1	84.1	86.5	86.8	80.4	77.8	81.0	88.0	
16-Feb-04	79.9	81.9	A	A	84.8	85.7	85.1	83.7	75.8	67.0	61.4	57.2	57.7	55.1	56.8	59.3	61.9	62.6	60.9	57.1	52.5	54.7	55.4	48.9	65.7	85.7	
17-Feb-04	45.9	45.2	A	A	60.9	65.6	69.4	68.2	56.6	55.4	60.5	62.3	59.6	59.2	55.6	60.4	67.3	72.3	69.2	70.4	71.5	74.6	77.2	78.3	63.9	78.3	
18-Feb-04	78.0	78.0	A	78.6	76.9	78.2	77.7	81.0	77.1	72.0	61.0	63.9	65.5	61.8	66.1	66.3	68.8	76.1	79.7	80.2	77.9	75.6	72.9	69.4	73.2	81.0	
19-Feb-04	70.5	72.8	A	79.1	79.6	80.2	80.1	80.1	75.9	72.4	71.0	68.4	65.5	61.9	60.3	65.6	65.1	69.7	75.6	76.0	74.6	78.4	77.0	77.1	72.9	80.2	
20-Feb-04	75.7	76.1	A	81.2	82.4	79.9	79.7	78.1	75.2	73.2	70.0	69.6	69.4	68.7	65.8	65.4	67.5	72.5	76.8	79.3	81.9	81.7	80.7	77.8	75.2	82.4	
21-Feb-04	75.8	76.5	A	77.7	75.7	73.9	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	77.7	
22-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
23-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
24-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
25-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
26-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
27-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
28-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
29-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0	
																									*	0.0	
																									*	0.0	
Hourly Avg	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hourly Max	88.5	85.7	86.1	84.2	85.6	88.0	86.9	86.0	85.5	82.9	82.0	80.0	84.0	79.1	79.6	80.2	80.9	83.0	84.5	85.1	86.5	86.8	87.3	88.4			

Station: Medicine Hat

Station Owner: Pallisar Airshed Society

Parameter : **Temperature (°C)**

Guideline Limit:

Sampling Dates: February 1, 2004 to March 1, 2004

Summary

Number of 1-hr Exceedances:	0			
Number of 24-hr Exceedances:	0			
Maximum 1-hr Average:	8.2	°C	18-Feb	13:00 13:59
Maximum 24-hr Average:	3.6	°C	17-Feb	

Status Characters

C	Calibration	A	AIC - Zero / Span Check
S	Instrument out of Service	R	Alarm
*	< 75% Data	X	Filter Exchange
N	Excessive Instrument Drift	M	Equipment Maintenance
F	DACS Off-Line	E	Exceedance

AIC Time:	63 hrs	Operational Time:	395 hrs						
Calibration Time:	0 hrs	AMD Operational Uptime:	65.8%						
Percentile	99	95	75	50	25	5	1	Average	Geomean
	6.8	4.6	-0.9	-4.9	-13.1	-23.4	-28.0	-7.1 °C	- °C

Day	Mountain Standard Time																							24-hr 24-hour Average	Daily Daily Maximum			
Hour Start Hour End	0:00 0:59	1:00 1:59	2:00 2:59	3:00 3:59	4:00 4:59	5:00 5:59	6:00 6:59	7:00 7:59	8:00 8:59	9:00 9:59	10:00 10:59	11:00 11:59	12:00 12:59	13:00 13:59	14:00 14:59	15:00 15:59	16:00 16:59	17:00 17:59	18:00 18:59	19:00 19:59	20:00 20:59	21:00 21:59	22:00 22:59	23:00 23:59				
1-Feb-04	-21.4	-21.4	-21.3	-21.1	-21.1	-21.0	A	-20.6	-20.2	-19.3	-18.2	-17.9	-17.5	-16.2	-16.6	-16.3	-17.5	-20.0	-20.2	-20.7	-21.6	-22.6	-22.3	-22.9	-19.9	-16.2		
2-Feb-04	-23.3	-25.1	-25.8	-26.3	-26.5	-26.5	A	-26.4	-25.4	-22.6	-19.3	-18.5	-16.5	-17.0	-16.7	-18.2	-19.2	-21.4	-22.8	-23.3	-24.3	-25.5	-26.6	-27.0	-22.8	-16.5		
3-Feb-04	-27.5	-27.9	-28.6	-28.0	-28.5	-28.6	A	-28.9	-27.3	-23.5	-20.8	-18.3	-16.3	-15.2	-15.3	-15.3	-16.2	-18.8	-20.7	-22.1	-22.2	-22.4	-22.3	-15.5	-22.2	-15.2		
4-Feb-04	-7.6	-6.5	-5.7	-6.1	-6.5	-6.0	A	-7.3	-8.2	-8.7	-9.0	-8.8	-9.1	-8.6	-8.2	-8.2	-8.7	-10.9	-12.7	-13.0	-13.5	-13.9	-14.2	-15.0	-9.4	-5.7		
5-Feb-04	-15.7	-16.1	-16.4	-16.2	-16.7	-17.7	A	-18.8	-18.0	-15.5	-12.7	-11.6	-8.6	-8.8	-8.4	-8.6	-10.8	-13.2	-14.8	-15.6	-16.4	-17.4	-17.9	-17.3	-14.5	-8.4		
6-Feb-04	-18.0	-17.3	-13.5	-9.5	-7.6	-6.5	A	-4.5	-3.4	-1.6	-0.7	N	N	1.3	N	2.5	0.5	N	-0.3	N	0.5	N	0.4	N	*	2.5		
7-Feb-04	N	N	-1.4	-1.4	-1.6	-1.8	A	-0.9	N	1.8	3.6	4.9	5.5	5.7	5.5	3.7	0.6	-1.8	-2.3	-2.2	-2.4	-2.0	-2.2	-1.3	0.5	5.7		
8-Feb-04	-0.8	-1.5	-2.2	-2.3	-2.8	-3.0	A	-3.5	-2.7	-2.2	-1.2	-1.8	-2.3	-1.3	-0.5	N	-1.4	-1.2	-0.4	N	N	N	-0.4	-0.4	-1.7	-0.4		
9-Feb-04	-0.4	-0.9	-1.3	-1.5	-1.8	-2.3	A	-4.2	-4.5	-4.9	-3.7	-2.6	-1.7	N	-1.3	N	N	-3.0	-1.4	N	N	N	N	N	*	-0.4		
10-Feb-04	1.2	N	-1.6	N	N	N	A	N	N	1.4	1.8	2.3	2.1	1.2	1.0	1.1	A	-2.6	-4.1	-5.5	-7.6	-9.5	-11.4	-12.2	*	2.3		
11-Feb-04	-12.3	-12.6	-13.1	-13.5	-14.5	-14.7	A	-15.7	-15.0	-13.5	-12.9	-11.6	-10.6	-10.2	-9.7	-8.5	-8.9	-9.6	-11.1	-10.5	-10.4	-10.2	-7.0	-7.8	-11.5	-7.0		
12-Feb-04	-6.5	-4.5	-4.4	-4.5	-4.2	-4.8	A	-4.6	-4.8	-3.0	-1.8	N	A	2.5	3.4	4.0	3.7	2.0	1.2	A	A	A	A	A	*	4.0		
13-Feb-04	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	-5.7	-5.5	-6.1	-7.1	-7.4	-6.4	-6.2	*	-5.5		
14-Feb-04	-7.0	-7.2	-8.3	A	-11.2	-11.0	-10.0	-8.9	-8.5	-7.2	-5.3	-3.8	-3.7	-4.4	-4.9	-5.3	-5.5	-5.8	-6.2	-6.5	-6.8	-6.9	-7.3	-8.4	-7.0	-3.7		
15-Feb-04	-9.6	-10.7	-10.2	A	-9.2	-8.2	-8.1	-7.9	-7.3	-6.2	-5.5	-3.9	-2.9	-1.9	-0.8	A	A	-1.7	-2.8	-3.6	-4.9	-5.8	-5.4	-5.1	-5.8	-0.8		
16-Feb-04	-6.2	-6.9	A	A	-10.2	-11.1	-11.6	-12.3	-10.9	-7.4	-4.2	A	A	3.6	3.8	3.6	2.6	1.6	1.1	2.0	2.9	2.9	3.1	4.4	-2.5	4.4		
17-Feb-04	4.7	4.7	A	A	3.5	2.8	1.5	A	4.8	5.2	4.4	4.6	5.5	5.9	6.9	5.6	3.6	2.3	2.3	1.5	A	A	-0.8	-1.1	3.6	6.9		
18-Feb-04	-1.1	-1.7	A	A	A	-1.4	-0.7	-1.3	A	A	5.0	6.1	6.8	8.2	7.3	7.4	6.7	4.6	3.1	2.0	1.9	1.9	2.1	2.6	3.1	8.2		
19-Feb-04	2.1	1.0	A	-1.4	-2.1	-3.1	-3.9	-3.7	-2.6	-1.0	A	A	3.0	4.6	5.4	4.0	3.6	2.7	1.5	0.9	0.7	A	-1.6	-2.2	0.4	5.4		
20-Feb-04	-2.1	-2.4	A	-4.5	-4.9	-4.7	-4.9	-3.9	-2.8	-1.6	-0.1	A	1.1	1.8	2.3	2.8	3.0	1.9	0.5	A	-1.9	-2.5	-2.9	-2.6	-1.4	3.0		
21-Feb-04	-2.2	-2.5	A	-3.5	-3.5	-3.0	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	-2.2		
22-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0		
23-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0		
24-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0		
25-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0		
26-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0		
27-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0		
28-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0		
29-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0		
																									*	0.0		
																									*	0.0		
Hourly Avg	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Hourly Max	4.7	4.7	-1.3	-1.4	3.5	2.8	1.5	-0.9	4.8	5.2	5.0	6.1	6.8	8.2	7.3	7.4	6.7	4.6	3.1	2.0	2.9	2.9	3.1	4.4				

Station: Medicine Hat

Station Owner: Pallisar Airshed Society

Parameter : **Solar Radiation (W/m²)**

Guideline Limit:

Sampling Dates: February 1, 2004 to March 1, 2004

Summary

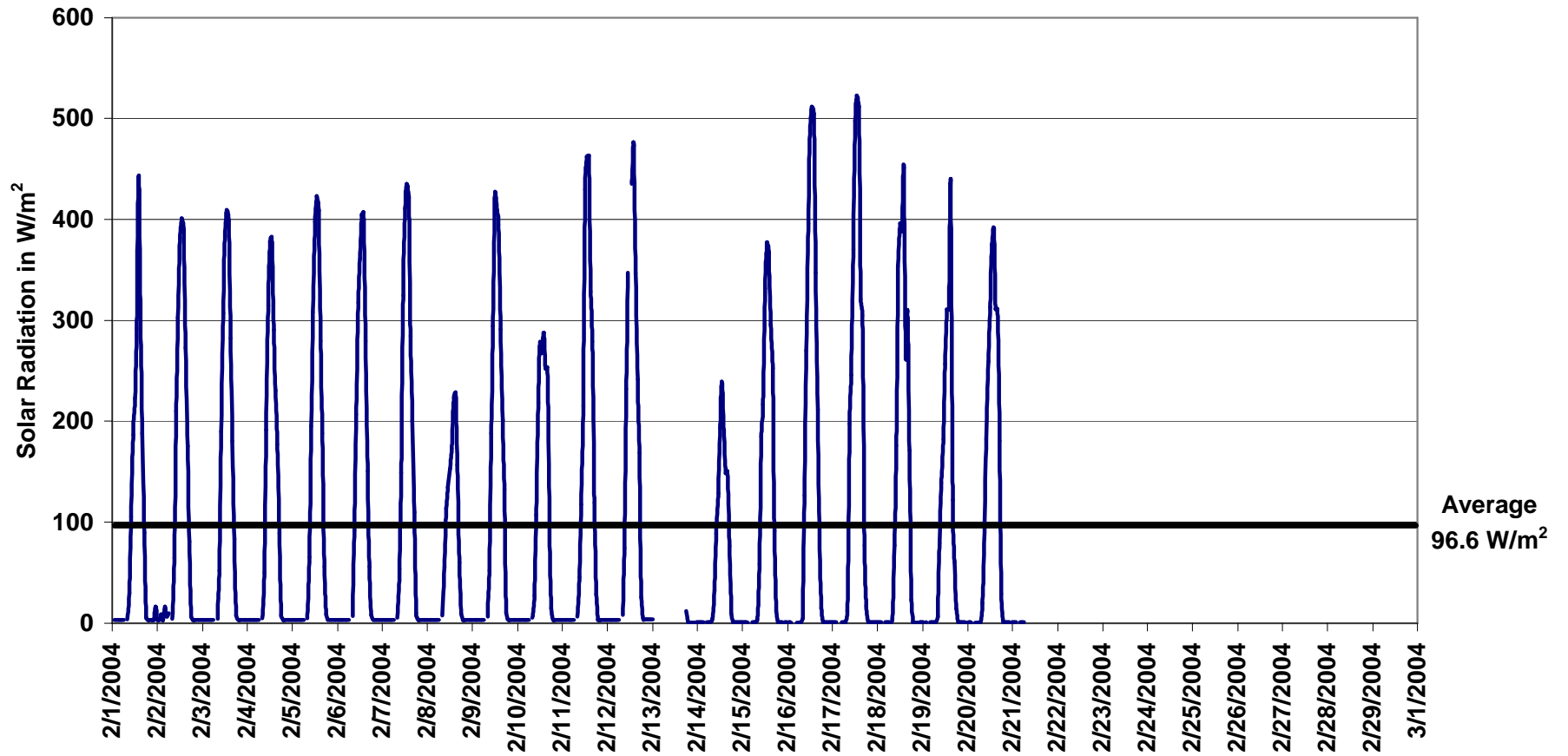
Number of 1-hr Exceedances:	0			
Number of 24-hr Exceedances:	0			
Maximum 1-hr Average:	522.8	W/m ²	17-Feb	12:00 12:59
Maximum 24-hr Average:	140.4	W/m ²	17-Feb	

Status Characters

C	Calibration	A	AIC - Zero / Span Check
S	Instrument out of Service	R	Alarm
*	< 75% Data	X	Filter Exchange
N	Excessive Instrument Drift	M	Equipment Maintenance
F	DACS Off-Line	E	Exceedance

AIC Time:	40 hrs				Operational Time:	446 hrs			
Calibration Time:	0 hrs				AMD Operational Uptime:	69.8%			
Percentile	99	95	75	50	25	5	1	Average	Geomean
	493.6	406.3	182.6	3.3	3.2	0.8	0.8	96.6 W/m ²	- W/m ²

Day	Mountain Standard Time																							24-hr Average	Daily Maximum		
Hour Start	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			
Hour End	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			
1-Feb-04	3.2	3.2	3.2	3.2	3.2	3.2	A	3.8	29.5	105.9	186.8	222.9	292.0	443.7	290.2	188.1	89.8	6.2	3.1	3.1	3.1	3.2	16.2	3.1	83.0	443.7	
2-Feb-04	3.2	9.1	3.1	16.3	6.6	10.0	A	4.3	64.8	210.0	302.5	381.3	401.2	390.2	272.7	175.3	81.0	6.4	3.1	3.2	3.2	3.2	3.2	3.2	102.5	401.2	
3-Feb-04	3.2	3.2	3.2	3.2	3.2	3.2	A	4.5	52.2	189.9	307.0	383.3	409.6	399.0	282.4	180.5	83.9	7.6	3.2	3.2	3.2	3.2	3.2	3.2	101.7	409.6	
4-Feb-04	3.2	3.2	3.2	3.2	3.2	3.2	A	4.9	50.3	191.5	314.9	378.1	382.4	290.4	230.7	177.0	89.1	8.2	3.2	3.2	3.2	3.2	3.2	3.2	93.7	382.4	
5-Feb-04	3.2	3.1	3.2	3.2	3.2	3.2	A	5.0	65.4	195.4	308.4	397.2	422.9	408.6	279.5	188.1	56.1	8.8	3.3	3.3	3.3	3.4	3.4	3.4	103.2	422.9	
6-Feb-04	3.3	3.2	3.2	3.2	3.3	3.3	A	7.4	92.2	206.9	317.8	360.7	404.5	406.9	279.5	150.7	56.1	8.0	3.3	3.3	3.2	3.2	3.3	3.2	101.3	406.9	
7-Feb-04	3.2	3.2	3.2	3.2	3.2	3.2	A	5.3	53.9	149.2	324.9	411.5	435.1	422.3	284.5	200.2	109.8	9.8	3.2	3.1	3.1	3.2	3.2	3.2	106.3	435.1	
8-Feb-04	3.2	3.2	3.2	3.2	3.2	3.2	A	7.4	55.5	113.7	135.0	153.2	173.4	222.6	228.2	156.8	59.9	9.5	3.3	3.2	3.2	3.2	3.2	3.2	58.9	228.2	
9-Feb-04	3.2	3.3	3.3	3.3	3.3	3.3	A	6.4	52.4	188.3	294.6	426.0	410.3	395.3	291.1	201.5	132.5	10.1	3.2	3.2	3.3	3.2	3.3	3.2	106.4	426.0	
10-Feb-04	3.3	3.2	3.3	3.2	3.2	3.2	A	5.4	27.8	107.5	218.5	278.2	267.4	287.6	252.1	253.5	97.8	14.7	3.2	3.3	3.3	3.2	3.2	3.3	80.4	287.6	
11-Feb-04	3.2	3.2	3.2	3.2	3.3	3.3	A	6.4	45.8	118.0	215.0	429.6	462.3	463.2	328.5	278.8	119.6	28.7	3.2	3.2	3.2	3.2	3.2	3.2	110.2	463.2	
12-Feb-04	3.3	3.3	3.3	3.3	3.3	3.3	A	8.0	74.5	232.2	347.1	N	435.4	473.3	347.0	241.5	168.8	25.8	3.8	3.7	3.6	3.6	3.7	3.6	108.9	473.3	
13-Feb-04	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	12.2	0.8	0.8	0.8	0.8	0.8	0.9	*	12.2	
14-Feb-04	0.9	0.9	0.9	A	0.9	0.9	0.9	4.4	32.2	88.4	128.9	193.2	239.3	191.7	148.6	150.7	76.6	9.9	0.9	0.9	0.9	0.9	0.9	0.9	55.4	239.3	
15-Feb-04	0.9	0.9	0.8	A	0.9	0.9	0.9	4.3	58.0	185.0	216.7	331.5	377.1	367.9	295.3	252.3	91.4	12.3	0.9	0.9	0.9	0.9	0.8	0.9	95.8	377.1	
16-Feb-04	0.9	0.8	A	A	0.8	0.8	0.8	5.1	126.6	270.2	396.0	488.1	512.1	505.1	347.3	212.1	97.8	15.2	0.9	0.9	0.9	0.9	0.9	0.9	135.7	512.1	
17-Feb-04	0.9	0.9	A	A	0.9	0.9	0.9	11.9	197.4	245.9	370.5	498.0	522.8	511.9	321.0	304.8	76.8	17.0	1.0	0.9	0.9	0.9	0.9	0.9	140.4	522.8	
18-Feb-04	0.9	0.9	A	0.9	0.9	0.9	0.8	4.1	77.0	176.2	353.8	396.0	388.7	451.2	264.4	308.6	171.5	23.4	1.0	0.8	0.8	0.8	0.9	0.9	114.1	451.2	
19-Feb-04	0.8	0.9	A	0.9	0.9	0.9	0.9	6.9	79.2	139.4	182.0	256.9	310.7	310.9	435.3	122.3	60.5	14.4	1.0	0.9	0.9	0.9	0.8	0.8	83.9	435.3	
20-Feb-04	0.9	0.8	A	0.8	0.8	0.8	0.9	19.6	100.2	182.8	259.5	313.4	375.7	390.6	311.3	311.5	180.6	29.1	1.1	0.9	0.9	0.9	0.8	0.9	108.0	390.6	
21-Feb-04	0.9	0.9	A	0.9	0.9	0.9	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.9	
22-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0
23-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0
24-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0
25-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0
26-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0
27-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0
28-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0
29-Feb-04	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	0.0
																										*	0.0
																										*	0.0
Hourly Avg	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hourly Max	3.3	9.1	3.3	16.3	6.6	10.0	0.9	19.6	197.4	270.2	396.0	498.0	522.8	511.9	435.3	311.5	180.6	29.1	3.8	3.7	3.6	3.6	16.2	3.6			



Station: Medicine Hat

Station Owner: Pallisar Airshed Society

Parameter : Wind Speed (km/hr)

Guideline Limit:

Sampling Dates: February 1, 2004 to March 1, 2004

Summary

Table with 4 columns: Metric, Value, Unit, Date/Time. Includes Number of 1-hr Exceedances (0), Number of 24-hr Exceedances (0), Maximum 1-hr Average (36.3 km/hr 6-Feb 12:00 12:59), and Maximum 24-hr Average (21.8 km/hr 10-Feb).

Status Characters

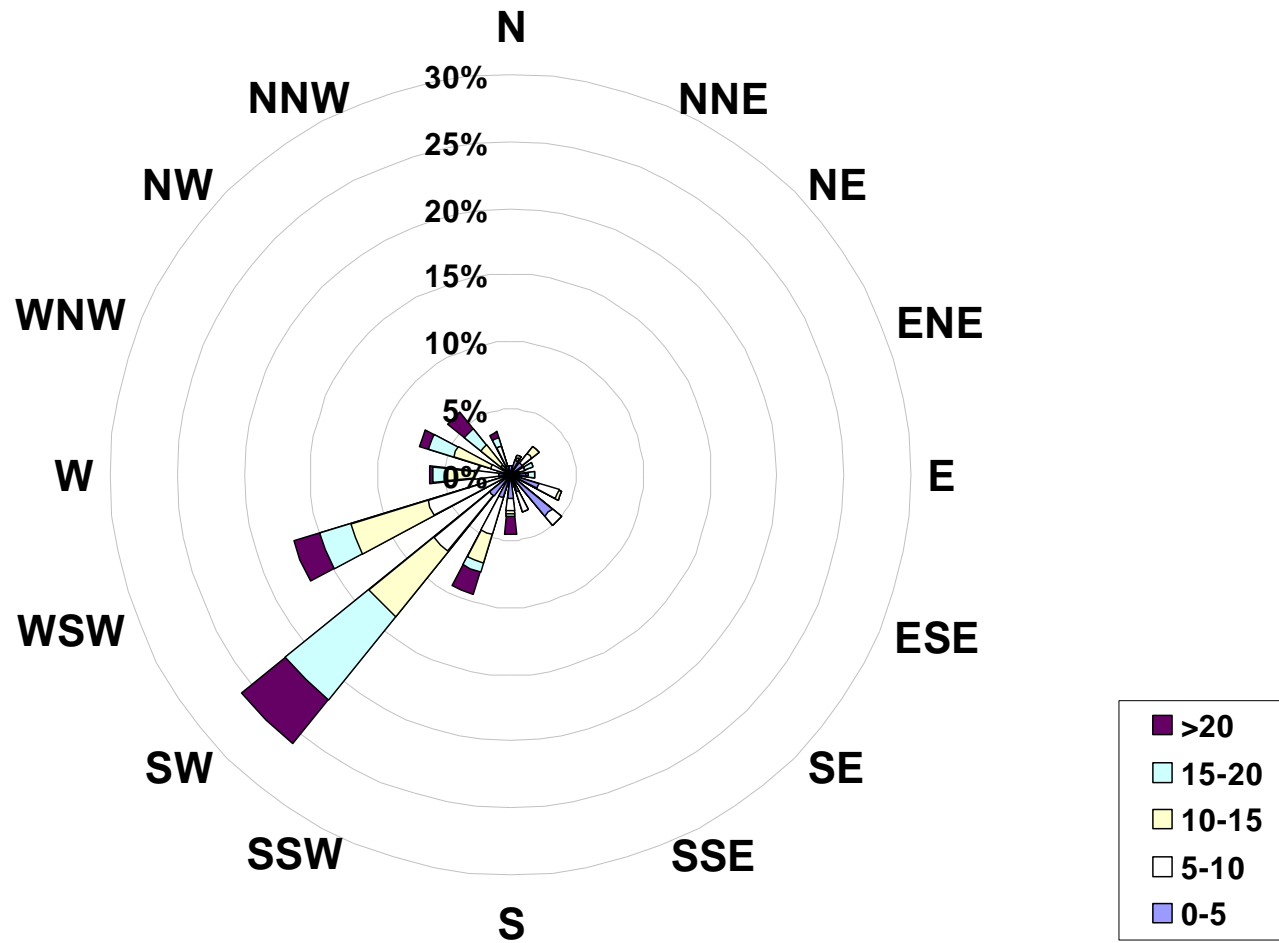
Table with 2 columns: Character, Description. Includes C Calibration, S Instrument out of Service, * < 75% Data, N Excessive Instrument Drift, F DACS Off-Line, A AIC - Zero / Span Check, R Alarm, X Filter Exchange, M Equipment Maintenance, E Exceedance.

Table with 2 rows: Calm Time (0 hrs), Operational Time (446 hrs), Calibration Time (0 hrs), AMD Operational Uptime (64.1%), and Percentile (99, 95, 75, 50, 25, 5, 1, AverageS, AverageV).

Day Mountain Standard Time

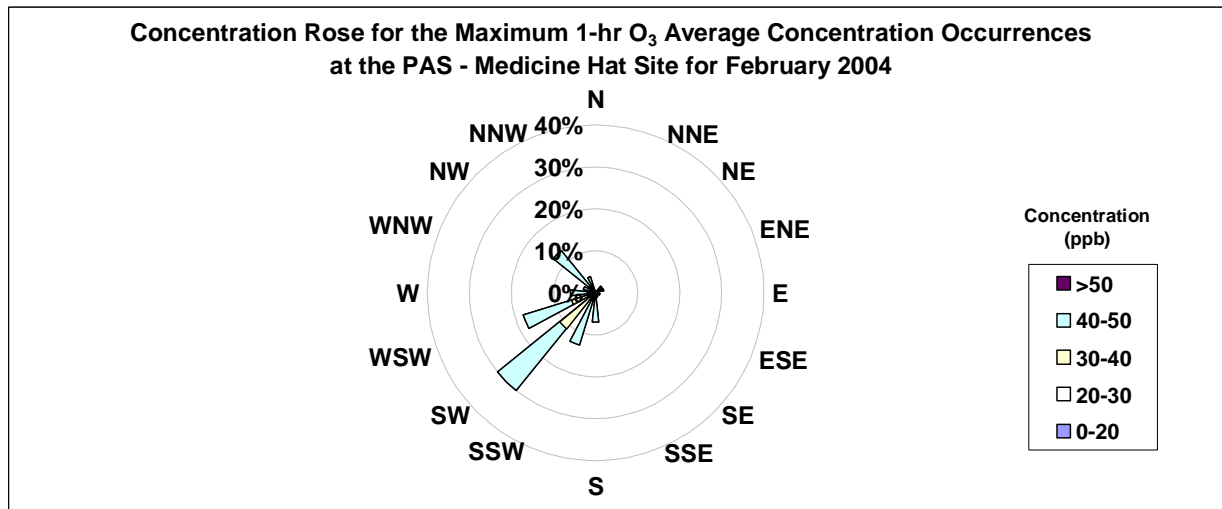
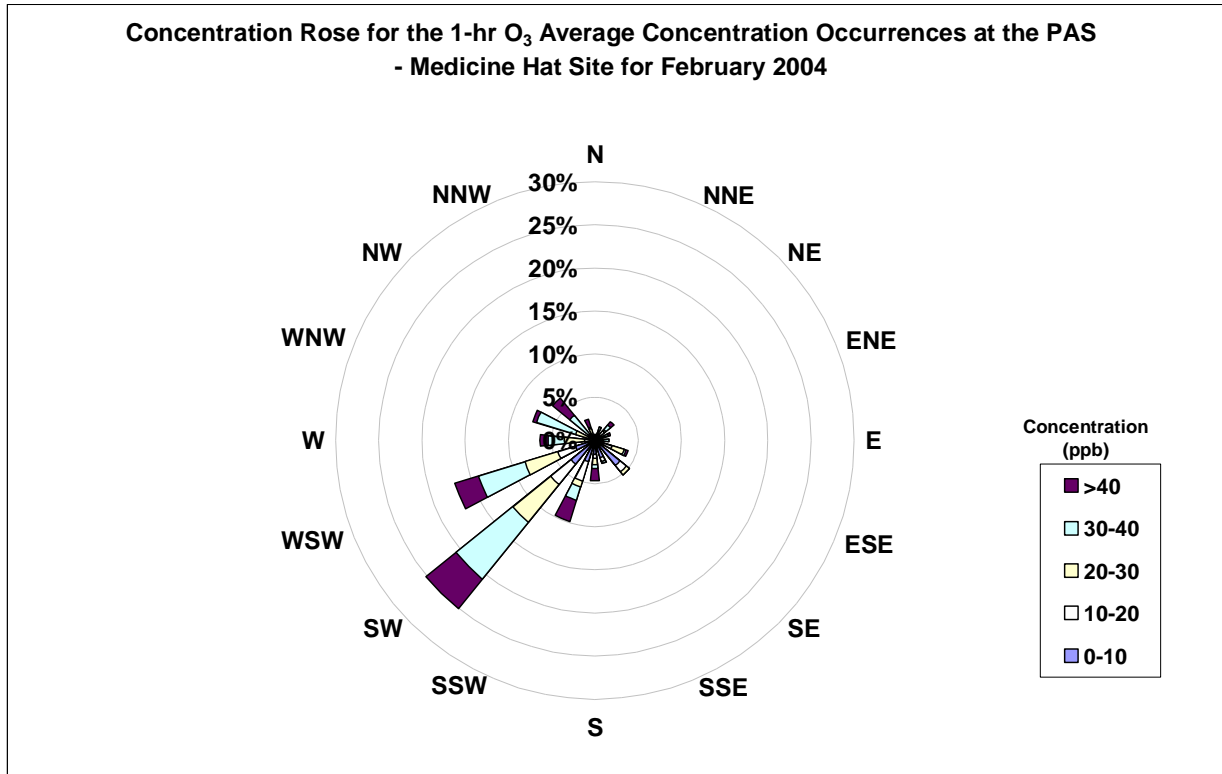
Main data table with 24 columns for hourly intervals (0:00-23:59) and 3 summary columns (24-hr Scalar Average, 24-hr Vector Average, Daily Max). Rows include dates from 1-Feb-04 to 29-Feb-04, and summary rows for 1-hr Scalar, 1-hr Vector, and Hourly Max.

Wind Rose for the 1-hr Average Meterological Data at the Medicine Hat Site for February 2004

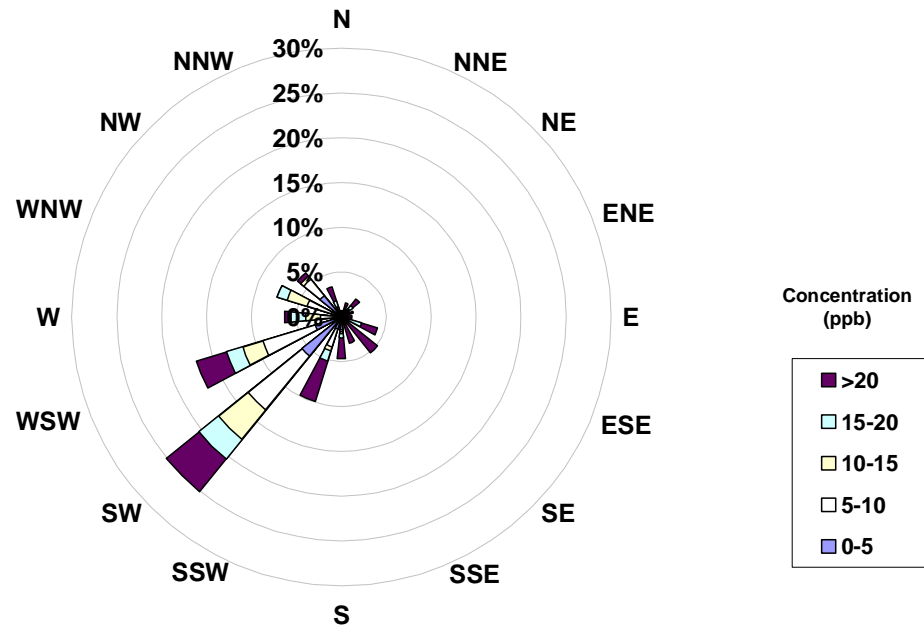


Monthly Summary Concentration Roses February 2004

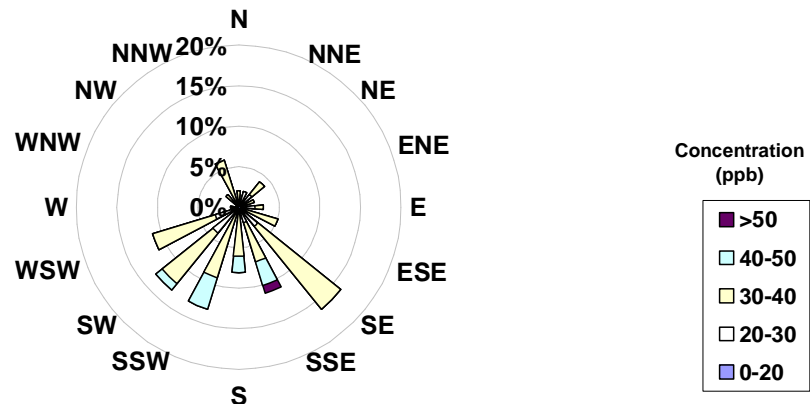
O₃ Concentration Rose
NO₂ Concentration Rose
PM_{2.5} Concentration Rose

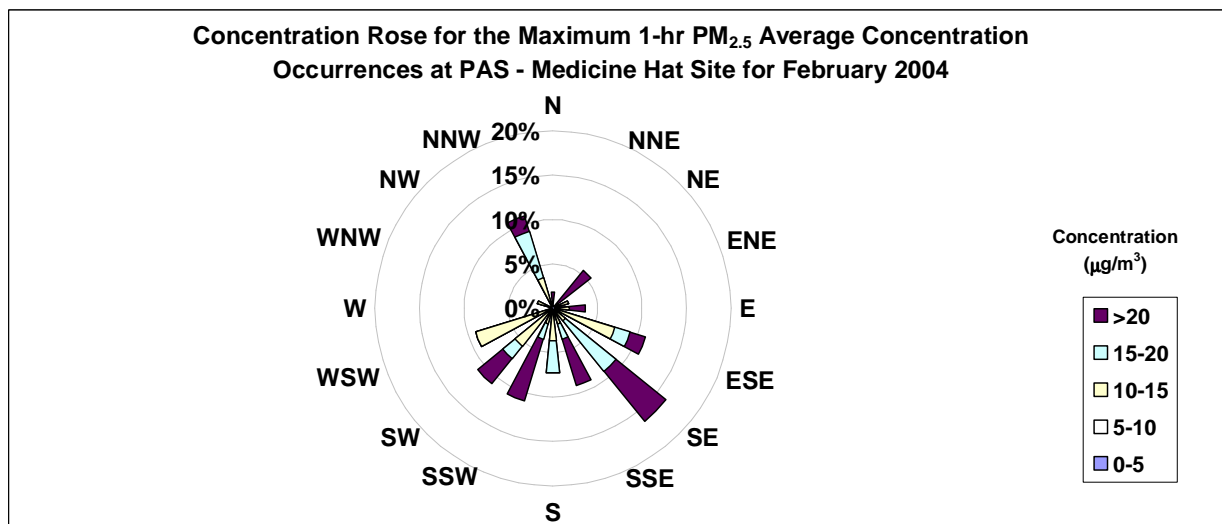
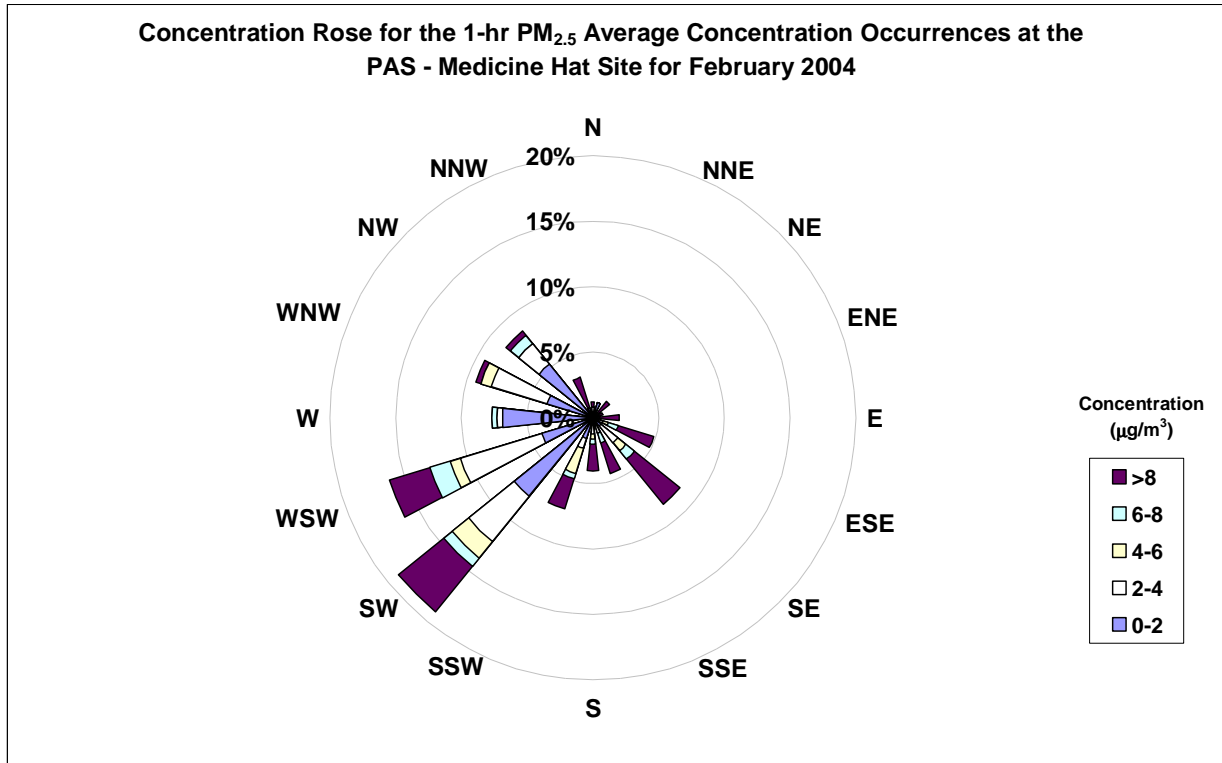


Concentration Rose for the 1-hr NO₂ Average Concentration Occurrences at the PAS - Medicine Hat Site for February 2004



Concentration Rose for the Maximum 1-hr NO₂ Average Concentration Occurrences at the PAS - Medicine Hat Site for February 2004





Passive Monitoring

Ambient Air Compliance Network

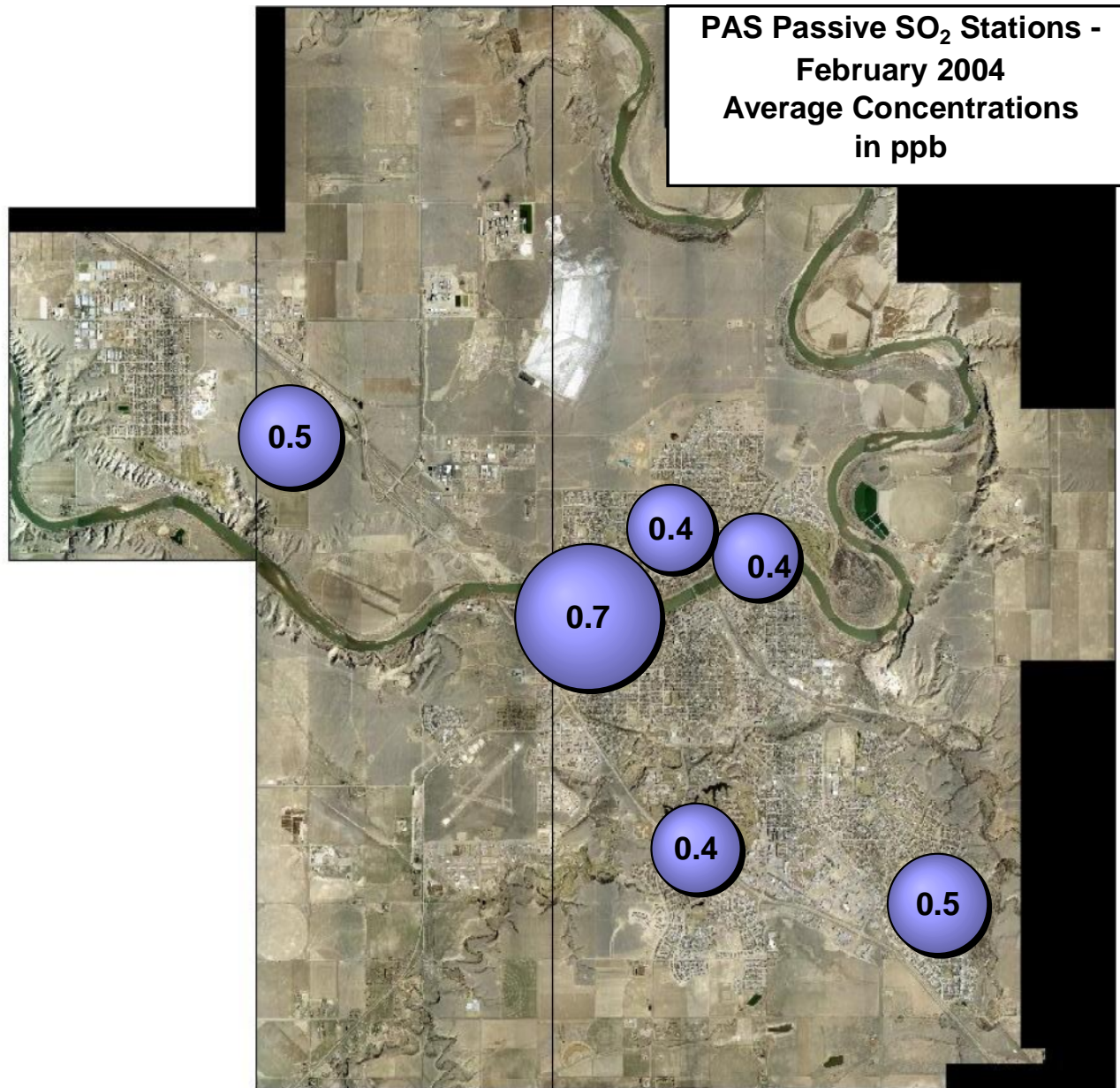
Palliser Airshed Society – PAS Passive Stations for February 2004

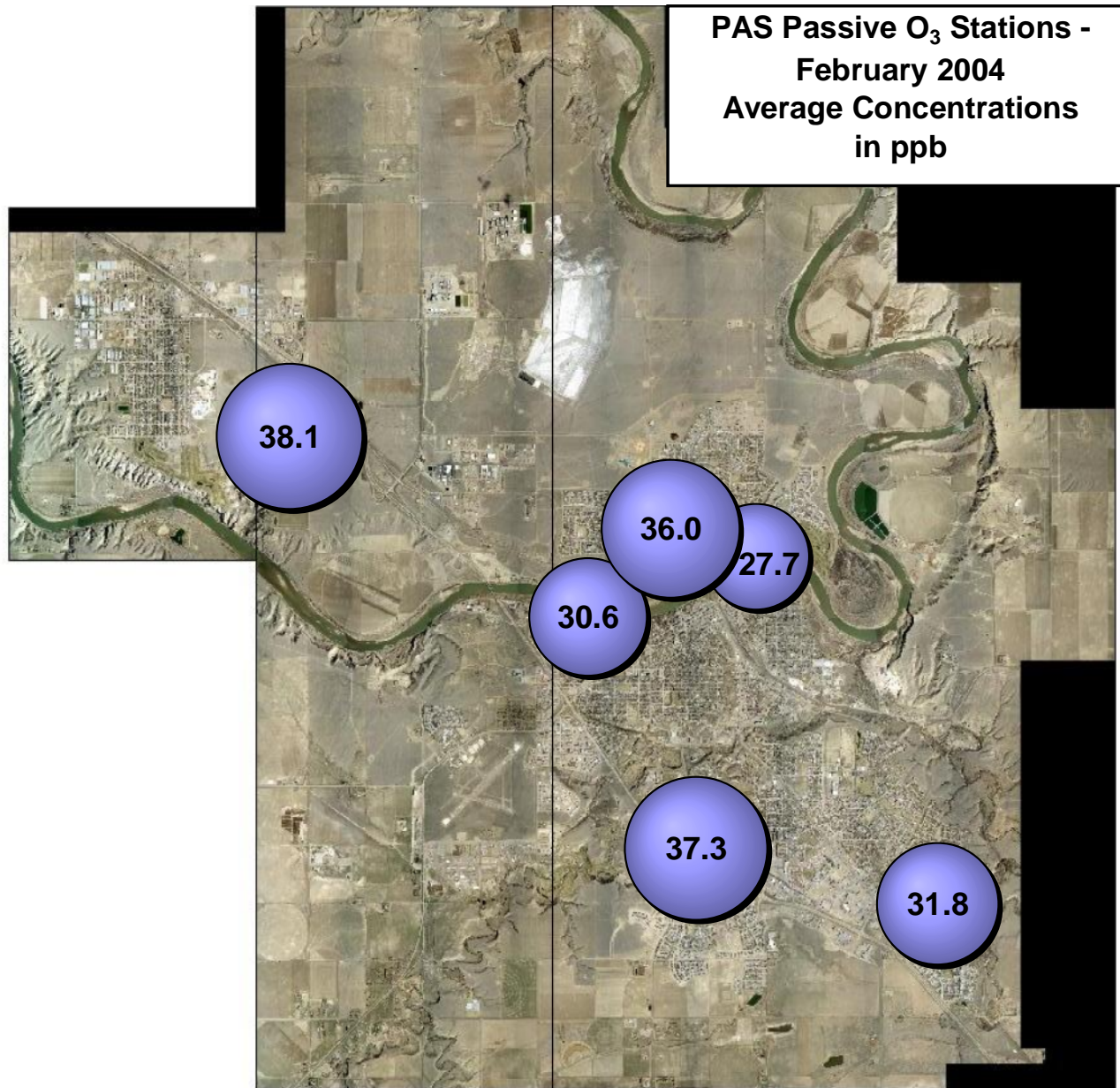
Station Number	Station	SO ₂ ppb	O ₃ ppb	NO ₂ ppb	Location		
	Name				Easting	Northing	Elevation
Duplicates							
6a	Redcliff	0.5	32.6	8.2			
6b	Redcliff	0.5	31.0	8.1			
1	Hospital	0.7	30.6	10.4	521648	5542721	698
2	Ball Park	0.4	27.7	10.6	524019	5543686	660
3	Monitoring Station	0.4	36.0	9.4	522812	5544133	714
4	Redcliff	0.5	38.1	5.9	517448	5545608	725
5	Southridge	0.4	37.3	6.4	523172	5539016	721
6	Christian School Park	0.5	31.8	8.2	526577	5538133	709

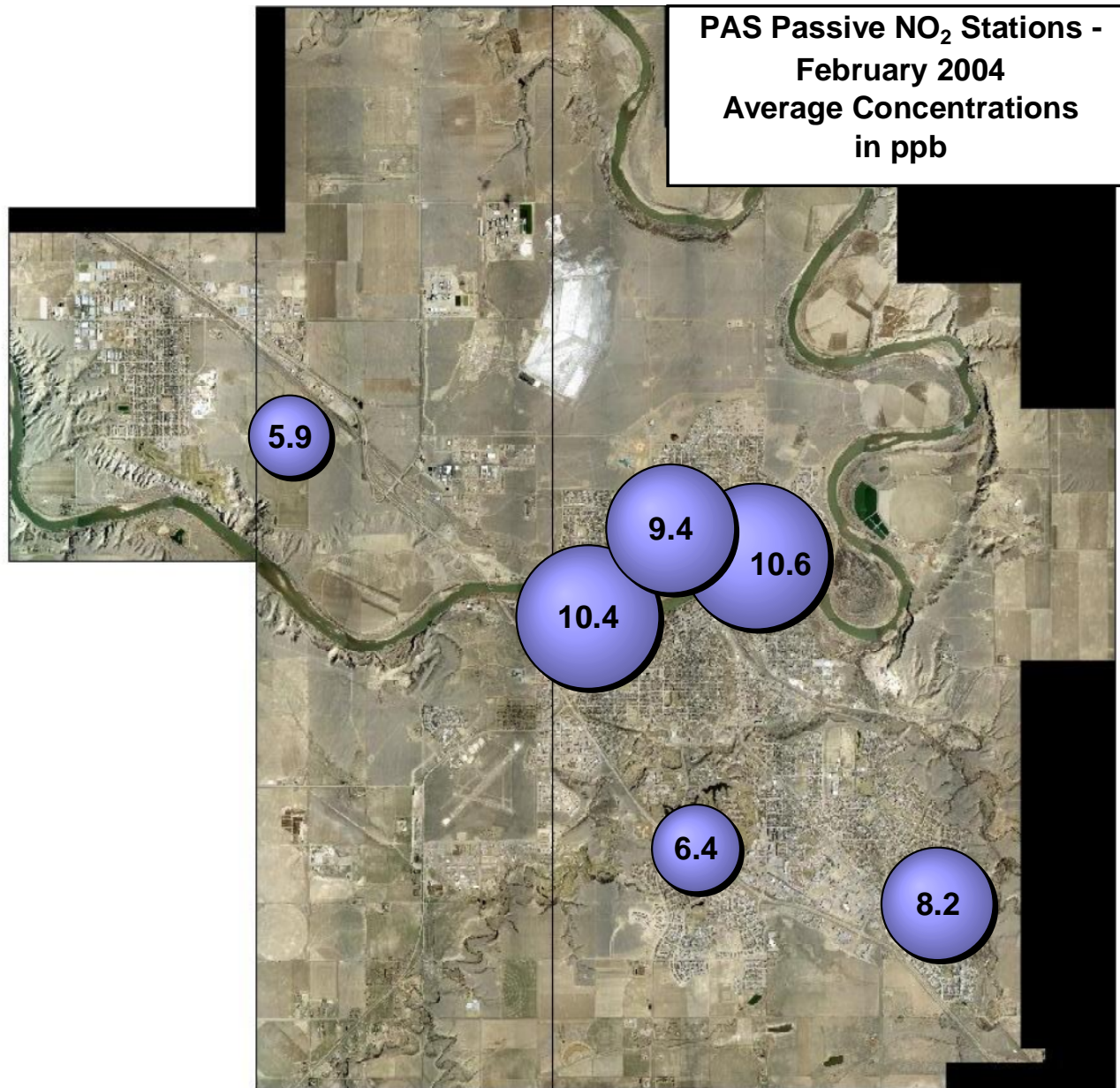
Stats:							
	Mean	0.5	33.6	8.5			
	Standard Deviation	0.1	4.2	2.0			
	Minimum	0.4			2		Ball Park
	Maximum	0.7			1		Hospital
	Minimum		27.7		2		Ball Park
	Maximum		38.1		4		Redcliff
	Minimum			5.9	4		Redcliff
	Maximum			10.6	2		Ball Park

Comparison between Continuous and Passive monitoring (passive #3)

	SO ₂	O ₃	NO ₂
PAS Station	-	25.1	16.1
PAS Passive	0.4	36.0	9.4







March 31, 2004

February 2004 - Calibration Report

PAS - Medicine Hat Station

O₃, NO_x, NO, NO₂, THC

Calibration Report



Parameter 03
 Air Monitoring Network Palliser Airshed

Station Information

Calibration Date	<u>February 13, 2004</u>	Previous Calibration	<u>January 9, 2004</u>
Station Number	<u>1</u>	Station Location	<u>Crescent Heights</u>
Reason:	<input checked="" type="checkbox"/> Routine	<input type="checkbox"/> Install	<input type="checkbox"/> Removal
			<input type="checkbox"/> Other:
Start Time (MST)	<u>12:15</u>	End Time (MST)	<u>15:45</u>
Barometric Pressure	<u>0.922</u> mb	Station Temperature	<u>20.5</u> Deg C
Calibrator	<u>EnviroNics 6100</u>	Serial Number	<u>3016</u>
Cal Gas Concentrator	<u>NA</u>	Cal Gas Expiry Date	<u>NA</u>
DACS make	<u>Focus AP1000</u>	DACS serial No.	<u>NA</u>
DACS voltage range	<u>0 - 1 volt</u>	DACS channel #	<u>5</u>
	<u>Before</u>		<u>After</u>
DACS slope	<u>0.050</u>	DACS slope	<u>0.050</u>
DACS intercept	<u>0.000</u>	DACS intercept	<u>0.000</u>
Calculated slope	<u>0.997306</u>	Calculated slope	<u>1.010495</u>
Calculated intercept	<u>-0.095056</u>	Calculated intercept	<u>0.434302</u>
Analyzer make	<u>API Model 400E</u>	Analyzer serial #	<u>331</u>

	before		after	
Concentration range	0 - 500	ppb	0 - 500	ppb
Background	-0.7	ppb	NA	ppb
coefficient	1.107		NA	
Lamp measure	4230.7	mV	4032.7	mV
Lamp Reference	4230.8	mV	4032.3	mV
Pressure	26.2	inches Hg	26.9	inches Hg
Sample Flow	696	ccm	665	ccm
Lamp temp	52	Deg C	52	Deg C

Calibration Data

Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
4995	0.00	0.0	0.3	N/A
4995	0.00	400.0	396.7	1.0084
4995	0.00	200.0	194.3	1.0292
4995	0.00	100.0	99.7	1.0034
4995	0.00	0.0	0.3	0.0000
4995	0.00	400.0	393.1	1.0174
Average Correction Factor				1.0137

Calculated value of As Found Response: 391.7 ppm Percent Change of As Found: -2.1%

	before calibration		after calibration	
Auto zero	-4.5	ppb	-4.2	ppb
Auto span	430.5	ppb	409.5	ppb

Notes: Analyzer as found performed before DACS maintenance.
Analyzer was span adjusted.
All test functions normal.

Calibration Performed By: Kelly Baragar

Calibration Summary



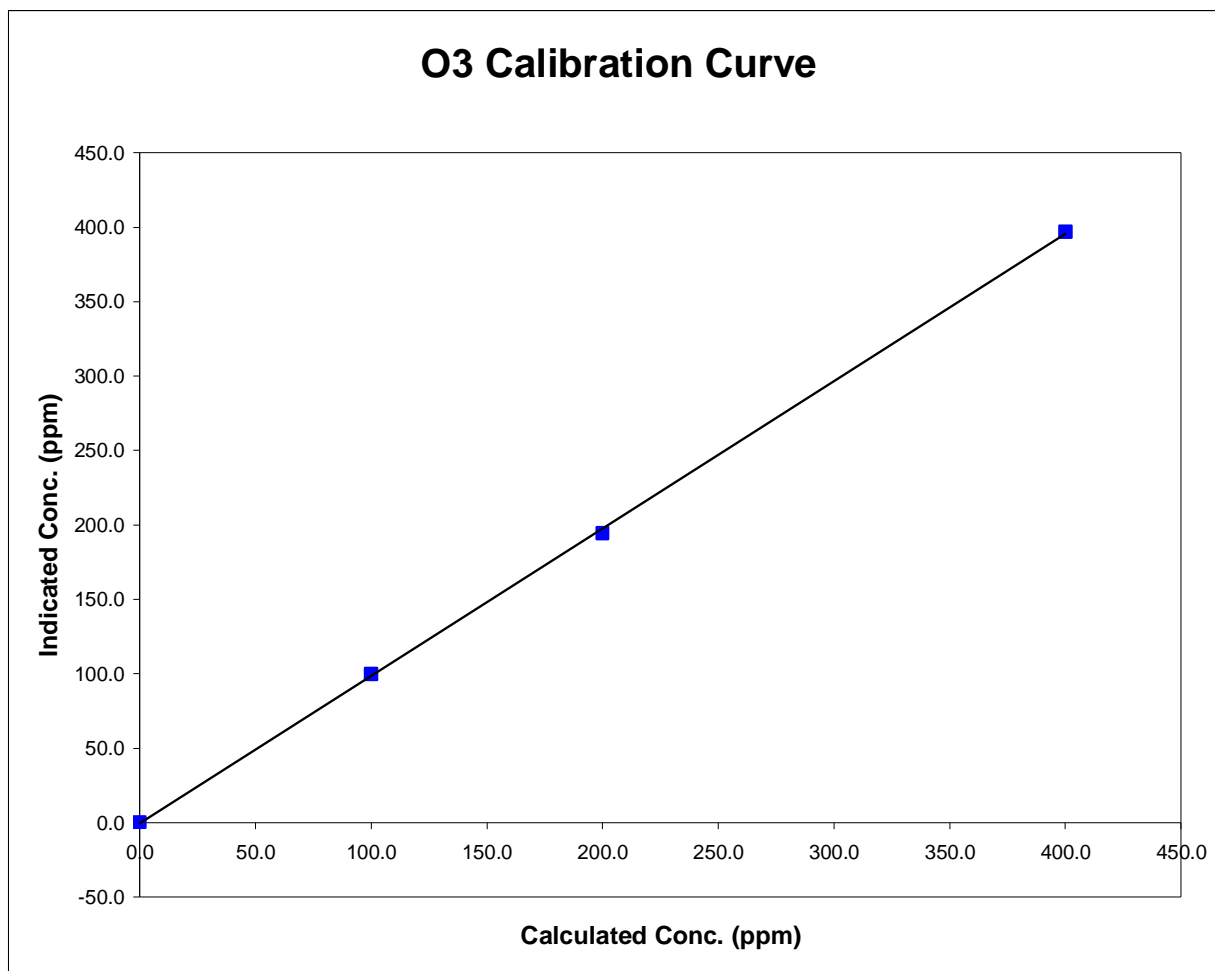
Parameter O3
 Air Monitoring Network Palliser Airshed

Station Information

Calibration Date	February 13, 2004	Previous Calibration	January 9, 2004
Station Number	1	Station Location	Crescent Heights
Start Time (MST)	12:15	End Time (MST)	15:45
Analyzer make/model	API Model 400E	Analyzer serial #	331

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
400.0	396.7	1.0084	Correlation Coefficient	0.999843
200.0	194.3	1.0292		
100.0	99.7	1.0034		
0.0	0.3	N/A		
			Slope	1.010495
			Intercept	0.434302



Calibration Report



Parameter **NOx-NO-NO₂**
 Air Monitoring Network **Palliser Airshed**

Station Information

Calibration Date	<u>February 12, 2004</u>	Previous Calibration	<u>January 9, 2004</u>
Station Number	<u>1</u>	Station Location	<u>Crescent Heights</u>
Reason:	<input checked="" type="checkbox"/> Routine <input type="checkbox"/> Installation <input type="checkbox"/> Removal Other: _____		
Start Time (MST)	<u>17:45</u>	End Time (MST)	<u>22:40</u>
Barometric Pressure	<u>0.924</u> mmHg	Station Temperature	<u>20.5</u> Deg C
Calibrator	<u>Envionics 6100</u>	Serial Number	<u>3016</u>
NO Cal Gas Conc	<u>50.3</u> ppm	Cal Gas Expiry Date	<u>19-Jan-06</u>
NOx Cal Gas Conc	<u>50.5</u> ppm	Cal Gas Serial #	<u>ALM025793</u>

DACS Information

DACS make	<u>FOCUS AP1000</u>	DACS serial No.	<u>N/A</u>
-----------	---------------------	-----------------	------------

Parameter		NO2	NOx	NO
Before	DACS slope	0.050000	0.050000	0.050000
	DACS offset	0.000000	0.000000	0.000000
After	DACS slope	0.050000	0.050000	0.050000
	DACS offset	0.000000	0.000000	0.000000
Before	Data Slope	1.000457	1.008608	1.000203
	Data Offset	-2.095910	-1.608125	1.700509
After	Data Slope	1.006157	1.003387	0.999669
	Data Offset	-0.699155	-1.322858	-0.942398
Channel #		8	6	7
Voltage Range		0 - 1 VDC	0 - 1 VDC	0 - 1 VDC

Analyzer Information

Analyzer make/model	<u>API Model 200E</u>	Analyzer serial #	<u>219</u>
---------------------	-----------------------	-------------------	------------

Test Point	before		after	
Concentration range	0 - 500	ppb	0 - 500	ppb
NO background	-1.9	mV	-1.9	mV
NOx background	0.5	mV	0.5	mV
NO coefficient	1.338		1.200	
NOx coefficient	1.177		1.189	
Chamber Temp	50.0	Deg C	50.0	Deg C
Cooler Temp	7.1	Deg C	6.8	Deg C
Converter Temp	314.9	Deg C	315.2	Deg C
Perm Temp	40.1	Deg C	40.3	Deg C
Pressure	3.8	mm Hg	3.7	inches Hg
Sample Flow	453.0	ccm	455.0	ccm

Notes: Initial response was similar to AE audit results; NO imbalance was noted between NOx and NO channels. This was suspected to be the result of the cylinder or regulator used last month.
Span adjustment performed; no other maintenance necessary.

Calibration Report



Parameter **NOx-NO-NO₂**
 Air Monitoring Network **Palliser Airshed**

Station Information

Calibration Date: February 12, 2004 Station Location: Crescent Heights

Calibration Data

	Dilution flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	
zero	4993	0.00	0.0	0.0	0.0	1.0	0.3	1.1	N/A	N/A	
1	4993	39.97	401.1	399.5	1.6	400.5	400.0	1.2	1.0013	0.9986	
2	4993	19.97	201.2	200.4	0.8	202.9	202.3	0.9	0.9917	0.9906	
3	4993	9.96	100.5	100.1	0.4	101.3	101.3	0.1	0.9926	0.9882	
AFZ	4993	0.00	0.0	0.0	0.0	1.0	0.3	1.1	0.0000	0.0000	
AFS	4993	39.97	401.1	399.5	1.6	394.4	442.6	-24.5	1.0169	0.9026	
									Average Correction Factor	0.9952	0.9925

As Found Concentrations NO_x= 391.8 NO= 443.9 As Found Percent Change NO_x= -2.3% NO= 11.1%

GPT Calibration Data

Dilution Flow 4993 ccm Source Gas Flow 39.97 ccm

O3 Setpoint (ppb)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency	
0	403.9	401.3	2.6	403.8	402.3	1.1	N/A	N/A	N/A	N/A	
100	401.9	128.0	273.9	401.9	129.0	273.1	1.0001	0.9924	1.0028	99.7%	
200	402.3	218.2	184.0	402.2	219.2	183.6	1.0001	0.9954	1.0026	99.7%	
300	401.0	309.6	91.4	401.0	310.7	91.0	1.0001	0.9966	1.0044	99.6%	
							Average Correction Factor	1.0001	0.9948	1.0033	99.7%

AIC Data

Parameter	Previous calibration			Current calibration				
	NOx	NO2	NO	NOx	NO2	NO		
Auto zero	2.7	0.7	2.0	ppb	1.8	0.5	1.7	ppb
Auto span	385.4	378.2	7.5	ppb	383.9	377.7	6.6	ppb

Calibration Performed By: Kelly Baragar

Calibration Summary



Parameter NO₂
 Air Monitoring Network Palliser Airshed

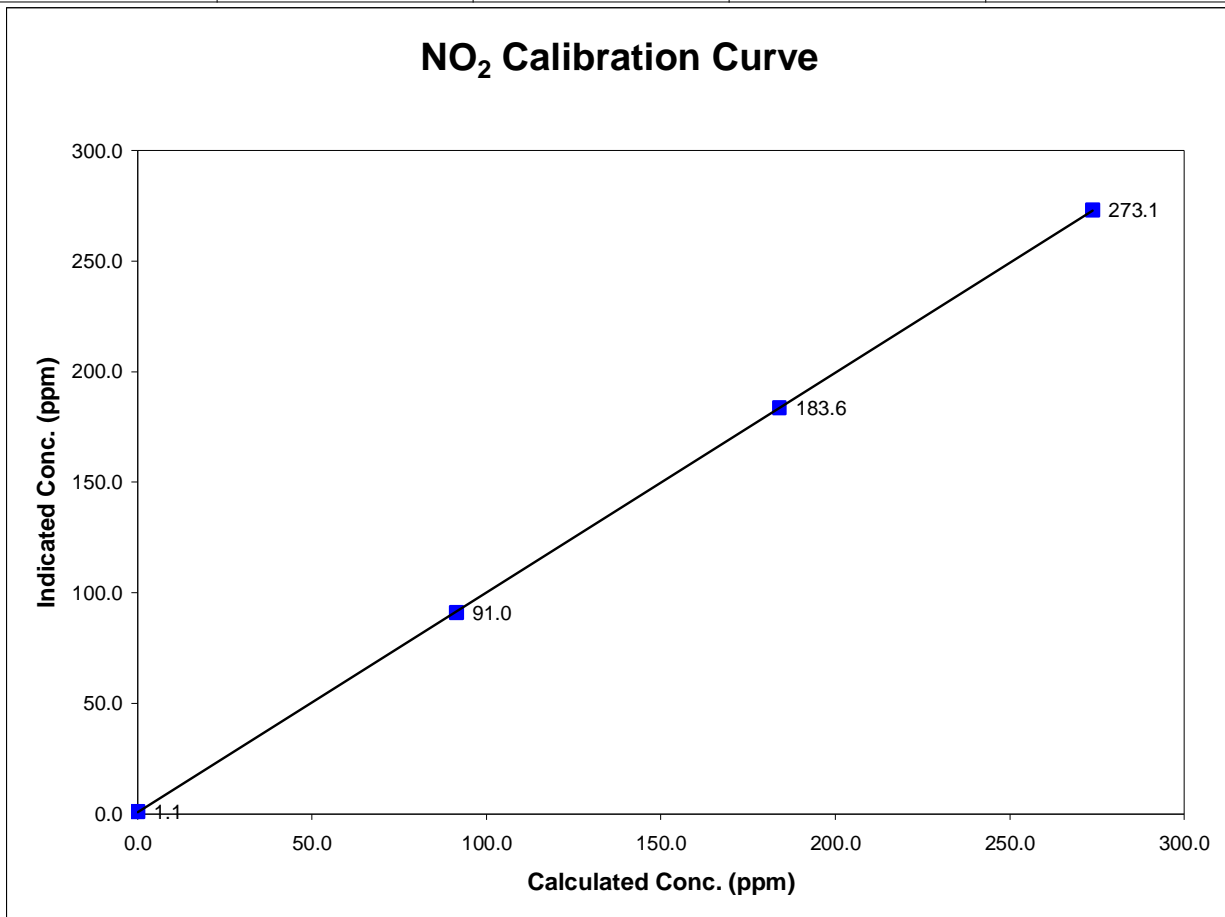
Station Information

Calibration Date	February 12, 2004	Previous Calibration	January 9, 2004
Station Number	1	Station Location	Crescent Heights
Start Time (MST)	17:45	End Time (MST)	22:40
Analyzer make	API Model 200E	Analyzer serial #	219

Calibration Data

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	1.1	0.0000	Correlation Coefficient	0.999988
91.4	91.0	1.0044		
184.0	183.6	1.0026		
273.9	273.1	1.0028		
			Slope	1.006157
			Intercept	-0.699155

NO₂ Calibration Curve



Calibration Summary



Parameter NO_x
 Air Monitoring Network Palliser Airshed

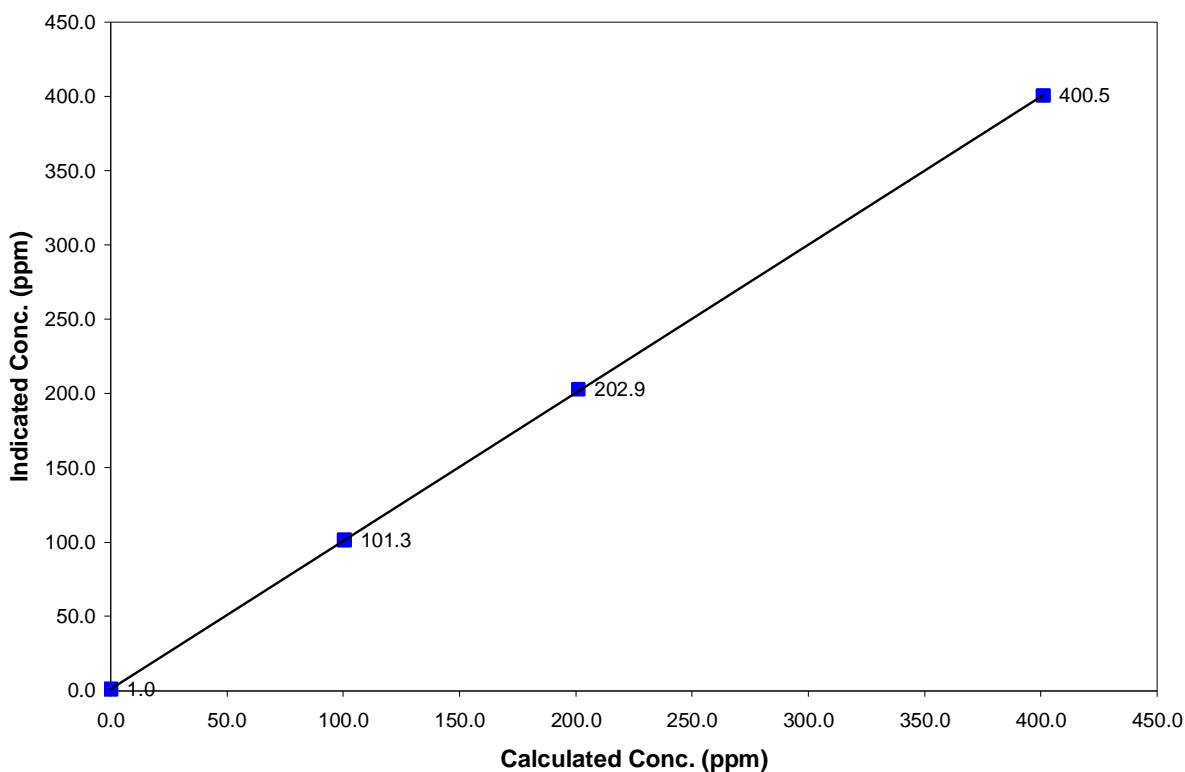
Station Information

Calibration Date	February 12, 2004	Previous Calibration	January 9, 2004
Station Number	1	Station Location	Crescent Heights
Start Time (MST)	17:45	End Time (MST)	22:40
Analyzer make	API Model 200E	Analyzer serial #	219

Calibration Data

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	1.0	0.0000	Correlation Coefficient	0.999983
401.1	400.5	1.0013		
201.2	202.9	0.9917	Slope	1.003387
100.5	101.3	0.9926		
			Intercept	-1.322858

NO_x Calibration Curve



Calibration Summary



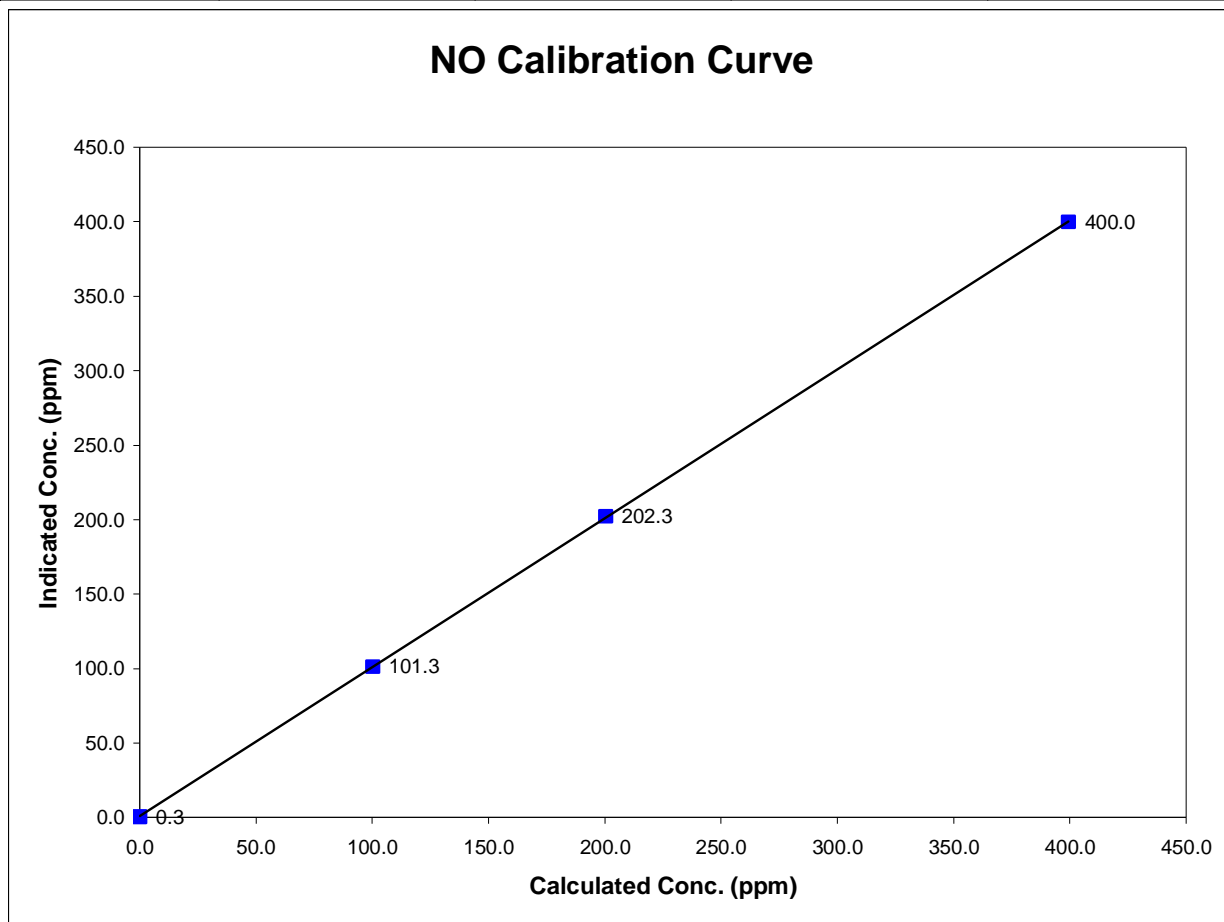
Parameter NO
 Air Monitoring Network Palliser Airshed

Station Information

Calibration Date	February 12, 2004	Previous Calibration	January 9, 2004
Station Number	1	Station Location	Crescent Heights
Start Time (MST)	17:45	End Time (MST)	22:40
Analyzer make	API Model 200E	Analyzer serial #	219

Calibration Data

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.3	N/A		
399.5	400.0	0.9986	Correlation Coefficient	0.999984
200.4	202.3	0.9906		
100.1	101.3	0.9882	Slope	0.999669
			Intercept	-0.942398



Calibration Report



Parameter THC
 Air Monitoring Network Palliser Airshed

Station Information

Calibration Date	February 13, 2004	Previous Calibration	January 9, 2004
Station Number	1	Station Location	Crescent Heights
Reason:	<input checked="" type="checkbox"/> Routine	<input type="checkbox"/> Install	<input type="checkbox"/> Removal
			<input type="checkbox"/> Other:
Start Time (MST)	9:15	End Time (MST)	13:00
Barometric Pressure	0.922 mb	Station Temperature	21.5 Deg C
Calibrator	EnviroNics 6100	Serial Number	3016
Cal Gas Concentration	700 ppm CH ₄ / 301 ppm C ₃ H ₈	Cal Gas Expiry Date	8/28/2005
Cal Gas CH ₄ equiv	1527.75 ppm	Cal Gas Cylinder #	ALM030358
DACS make	Focus AP1000	DACS serial No.	1
DACS voltage range	0 - 1 volt	DACS channel #	9
	<u>Before</u>		<u>After</u>
DACS slope	0.005000	DACS slope	0.005000
DACS intercept	0.000000	DACS intercept	0.000000
Calculated slope	1.002524	Calculated slope	0.999675
Calculated intercept	-0.143435	Calculated intercept	-0.051417
Analyzer make	Bendix Model 8201	Analyzer serial #	300437-2

	before		after	
Concentration range	0 - 50	ppm	0 - 50	ppm
THC zero pot	119		172	
THC span pot	650		557	

Calibration Data

Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
2997	0.00	0.000	-0.044	N/A
2997	39.96	20.102	20.112	0.9995
2997	19.96	10.107	10.206	0.9903
2997	9.97	5.065	5.218	0.9707
2997	0.00	0.000	-0.126	As Found Zero
2997	39.96	20.102	20.140	As Found Span
Average Correction Factor				0.9869

Calculated value of As Found Response: 20.174 ppm Percent Change of As Found: -0.4

	before calibration		after calibration	
Auto zero	0.093	ppm	0.071	ppm
Auto span	23.305	ppm	23.256	ppm

Notes: Response appears relatively close to expected values on As Found.
Zero and span adjustments performed.
No other maintenance necessary.

Calibration Performed By: Kelly Baragar

Calibration Summary



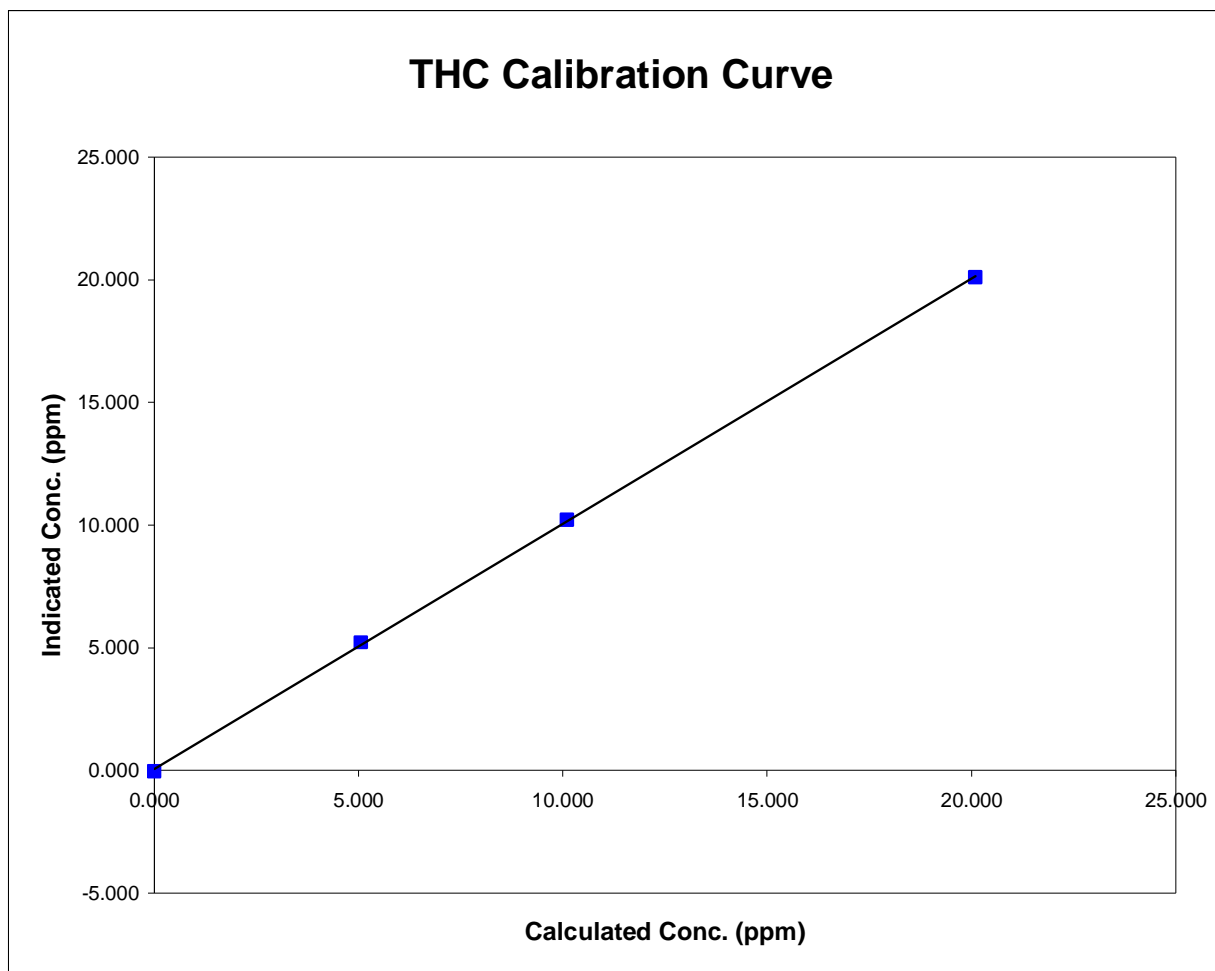
Parameter THC
 Air Monitoring Network Palliser Airshed

Station Information

Calibration Date	February 13, 2004	Previous Calibration	January 9, 2004
Station Number	1	Station Location	Crescent Heights
Start Time (MST)	9:15	End Time (MST)	13:00
Analyzer make/model	Bendix Model 8201	Analyzer serial #	300437-2

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.000	-0.044	N/A		
5.065	5.218	0.9707	Correlation Coefficient	0.999894
10.107	10.206	0.9903		
20.102	20.112	0.9995	Slope	0.999675
			Intercept	-0.051417



Appendix A
Contravention Letter
And
Audit Report & Response



AIR QUALITY MONITORING

March 31, 2004

Standards & Approvals Division
Alberta Environment
4th Floor, Oxbridge Place
9820 – 106 Street
Edmonton, Alberta T5K 2J6

ATTENTION: Director

RE: Air Monitoring Directive Contravention Report Ref # 147009

A contravention of the Alberta Air Monitoring Directive was recently reported by Focus to Alberta Environment (AENV) on behalf of the Palliser Airshed Society (PAS). The contravention was less than ninety (90%) percent data collection for the month of February for all monitored parameters at the Crescent Heights Air Monitoring Station located in Medicine Hat, Alberta. The station is owned by PAS and operated on their behalf by Focus. The contravention has been assigned AENV reference number 147009.

The cause of the contravention was missing data from the Data Acquisition System (DAS) as caused by initial start-up problems relating mainly to internet connectivity issues and computer viruses. Daily data remote inspection was not available until March 9th hindering the ability to review station data collection. As a result of these issues and proactive improvement of data collection procedures the following actions have and will be taken:

1. A firewall and virus protection has been installed on the site PC to protect from internet intrusions.
2. An uninterruptible power supply (UPS) system will be installed to insure the DAS and station computer (PC) are less affected by power modulations or loss.
3. A back-up digital chart recorder will be installed to act as a secondary data collection source and all collected data will be archived regularly onsite.
4. Data remote queries are now available to ensure routine central archived data collection is occurring without irregularities.

The listed action items are to ensure that data will not be lost in the future for reasons related to computer or power problems.

Sincerely,

THE FOCUS CORPORATION

A handwritten signature in black ink, appearing to read 'G. Cross'.

Gary Cross C.E.T.
AQM Technical Manager

March 31, 2004



Regional Services
Northern Region
Air Monitoring and Auditing

McInyre Centre
4946 - 89 Street
Edmonton, Alberta T6E 5K1
Canada

Telephone: (780) 427-7888
Fax: (780) 422-2011

File No. 2004-320-323A

RECEIVED MAR 11 2004

March 2, 2004

Bob Scotten
Manager, Palliser Air Shed
Focus Corporation
Suite 1000
9925 109 St. Edm.
AB, T5K 2J8

Dear Mr. Scotten


Re: Medicine Hat (Crescent Heights) Ambient Air Monitoring Station Audit

Attached are the results from the air monitoring station audit conducted February 12, 2004, as well as the Network Audit Summary specifying deficiencies, issues and concerns.


Audits consist of station inspections as well performance audits of all continuous parameters. All continuous analyzers were audited according to the guidelines set forth in the Air Monitoring Directive (AMD), as well as operational limits specified by the manufacturer to ensure quality data.

Please ensure the NOx analyzer is recalibrated and operating correctly as soon as possible and that calibrations are done on a monthly basis and kept at the station for AENV review. We request that you respond in writing by March 24, 2004 as to corrective actions taken.

Yours truly,


Bruce Laing
Monitoring Systems Auditor
Northern Region

AND


Al Clark
Monitoring Systems Auditor
Northern Region

Attachment:

cc: Matilda Ricci, AENV Air Shed Representative
Ron Wendling, President Palliser Air Shed
Jay Litke, Regional Compliance Manager

R:\AUDITS\AUDITS 2004\Airsheds\Focus\Focus Palliser Air Shed Letter feb. 12, 2004.doc

ALBERTA ENVIRONMENT

STATION AUDIT

DATE: Feb. 12, 2004

PLANT OPERATOR: Palliser Air Shed	PLANT LOCATION: Medicine Hat
CLEAN AIR LICENSE #	STATION DESIGNATION: Crescent Heights
CONTRACTOR: Focus Corporation	STATION OPERATOR: Kelly Barager

STATUS OF SITE DOCUMENTATION: Incomplete

LOCATION: LATITUDE N 50° 02' 56.0"
 LONGITUDE W 110° 40' 52 .6"

COMMENTS:

Manifold Material : Glass Condition: Clean Manifold Flow: Good

Calibration records: None Last Calibrations Performed: Dec. 2003

Wind Head Orientation: OK

Wind direction vane: OK Visual: SW Logger Indication: 228°

Wind Speed Visual: OK Based on visual estimates Logger: 20.0 KPH

Relative Humidity: Indicated 59.5% Measured 65.0%

Audit Performed by: Bruce Laing/Al Clark

Follow-up Summary

Audit Status: Incomplete follow-up required

Please address the following items and respond in writing as to how they have been corrected:

Medicine Hat Station:

- Imbalance of NO/NO_x on the NO monitor. Calibration required.
- No calibration records at site, calibration not done in month of January.

Alberta Environment
TEOM® PM10/2.5 Audit

File # 2004-322A

	Station		Audit Transfer Standard
Date:	<u>Feb. 12, 2004</u>	Make/Model:	<u>Bios</u>
Station Name:	<u>Crescent Heights, Palliser Air Shed</u>	Serial Number:	<u>B714</u>
Location:	<u>Medicine Hat</u>	Cell s/n:	<u>H1591</u>
Operator:	<u>Kelly Baragar</u>		

	Sampler		Set-up and current Sampler readings
Make/Model	<u>Team Series 1400a PM 2.5</u>	F-Main Set Pt (l/min)	<u>3.00</u>
Unit #	<u>140AB237960110</u>	F-Aux Set Pt (l/min)	<u>13.67</u>
Control unit s/n	<u>140AB237960110</u>	Filter Load (%)	<u>46%</u>
Transducer s/n	<u>1200C165030110</u>	K _o Factor	<u>12758</u>
		Temp (°C)	<u>1.9</u>
		Press (ATM)	<u>0.926</u>

Conversion from mm Hg or " Hg to ATM (Atmospheres)
 ATM = (mm Hg) X (1.316 X 10⁻³) or ATM = ("Hg) X (3.34207 X 10⁻²)

Note: Tolerances are noted as BOLD in Brackets

Audit

Zero flow			
	Pump Off		Pump On (Time to reach set points)
F-Main (l/min)	<u>0.11</u>		(45-60 Sec) <u>28s</u>
F-Aux (l/min)	<u>0.13</u>		(45-60 Sec) <u>47s</u>
Temperature/Pressure			
Measured Temp (± 1 °C)	<u>2.3</u>	Δ°C	<u>-0.4</u>
Measured Press (± 1.5% ATM)	<u>0.923</u>	Δ% ATM	<u>0.33</u>
Flow Audit			
Indicated Main/Aux Flow (l/min)	<u>3.00 / 13.66</u>	Δ% from Set-pt	
		(± 2%)	<u>0 / 0.07</u>
Total Flow = Main + Aux (l/min)	<u>16.66</u>	(± 2%)	<u>0.06</u>
Measured Total Flow (l/min)	<u>16.35</u>	(± 1.0 l/min. (5.65%))	<u>0.32, 1.96</u>
Measured Main Flow (l/min)	<u>3.01</u>	(± 0.2 l/min. (6.25%))	<u>0.099, 3.3</u>
Leak Check			
Main (< 0.15 l/min)	<u>0.06</u>	Actual leakage = Pump On – Pump Off	<u>0</u>
Aux (< 0.15 l/min)	<u>0.13</u>		<u>0</u>
K_o Factor			
Measured	<u>12719</u>		
K _o % Difference (± 2.5%)	<u>0.31</u>		

Comments: All parameters are within the specifications of the audit.

Auditor/s: Bruce Laing/AI Clark



Field THC Audit

File No. 2004-323A

Date: February 12, 2004 Performed by: Al Clark/Bruce Laing

Station Name: C.Heights Location: Medicine Hat Operator: K. Baragar
 Temp. 21.5 BP: 701 mm hg

Monitor Make/Model: Bendix 8201 AMU # 792
 Inlet flow (sccm): Not measured Range: 0-50.0ppm
 Last cal. Date: Unknown Old C.F. Unknown

Audit Method: Gas Dilution
 Calibrator: Make/Model: Dasibi 5008 AMU # 896
 CH4 cylinder # SV - 13928 CH4 concentration: 951.4 ppm

Audit: As Found Cc/Ci 0.954

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Conc. (ppm)		Cc/Ci Ratio Initial	Cc/Ci Ratio Final
Air	Gas	Total		Initial	Final		
2998	0	2998	0	-0.2	-0.2	0.9540	0.9540
2998	49.97	3047.97	16.6	17.2	17.2	0.9540	0.9540
2998	24.85	3022.85	7.8	8.6	8.6	0.8864	0.8864
2998	12.27	3010.27	3.9	4.1	4.1	0.9070	0.9070
Average Correction Factor (CF) =						0.9158	0.9158

True Conc. (ppm) = ((Indicated Conc. (ppm))*Average CF)

Linear Regression Analysis:

Correlation Coeff.= 0.9992
 m (Slope)= 0.9539
 b (Intercept)= -0.0074

LIMITS
> 0.995
0.85-1.15
± 3% F.S

Remarks: _____



Field O3 Audit

File No. 2004-321A

Date: February 12, 2004 Performed by: Al Clark/Bruce Laing

Station Name: C.Heights Location: Medicine Hat Operator: K. Baragar
 Temp. 21.5 BP: 701 mm hg

Monitor Make/Model: API 400E AMU # 331
 Inlet flow (sccm): N/A Range: 0 - 500 ppb
 Last cal. Date: Late Dec/03 Old C.F. Unknown

Audit Method: Dilution/GPT
 Calibrator Make/Model: Dasibi 5008 AMU # 896
 NO cylinder # SV - 13043 NO concentration: 49.8

Audit: As Found Cc/Ci 1.0627

Calibrator Air Flow	Calculated O3 Conc. (ppm)	Indicated Conc. (ppm)		Cc/Ci Ratio Initial	Cc/Ci Ratio Final
		Initial	Final		
5047	0	0.001	0.001	1.0627	1.0627
5047	0.390	0.368	0.368	1.0627	1.0627
5047	0.210	0.202	0.202	1.0448	1.0448
5047	0.063	0.062	0.062	1.0328	1.0328
				Average Correction Factor=	1.0467


True Conc. (ppm) = ((Indicated Conc. (ppm))*Average CF)

Linear Regression Analysis:

Correlation Coeff.= 1.0000
 m (Slope)= 1.0629
 b (Intercept)= -0.0025

LIMITS
 > 0.995
 0.85-1.15
 ± 3% F.S

Remarks:

		Field NO-NOx-NO2 Audit				File No. <u>2004-320A</u>																																																									
		Date: <u>February 12, 2004</u>		Performed by: <u>Al Clark/Bruce Laing</u>																																																											
Station:		Name: <u>C.Heights</u> Location: <u>Medicine Hat</u>		Operator: <u>K. Baragar</u>		BP: <u>701 mm hg</u>																																																									
Monitor:		Make/Model: <u>API 200E</u> AMU # <u>219</u>		Inlet flow (sccm): <u>N/A</u> Range: <u>0 - 0.50 ppm</u>		Last cal. Date: <u>End of Dec/03</u> Old C.F.'s: NO <u>N/A</u> NOx <u>N/A</u>																																																									
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		As Found Cc/Ci		NO <u>0.8957</u>		NOx <u>0.9831</u>																																																									
Calibrator Flows			Calc. Conc.		Indicated Conc.				Final																																																						
					NO		NOx		NO		NOx																																																				
					Initial		Final		Initial		Final																																																				
Air	Gas	Total	NO (ppm)	NOx (ppm)	Initial	Final	Initial	Final	Cc/Ci	Cc/Ci	Cc/Ci	Cc/Ci																																																			
5047	0	5047	0	0	0.0002	0.0002	-0.0001	-0.0001	0.8957	0.9831	0.8957	0.9831																																																			
5047	40.93	5087.93	0.401	0.401	0.4479	0.4479	0.4074	0.4074	0.8957	0.9831	0.9447	1.0394																																																			
5047	22.04	5067.04	0.217	0.217	0.2299	0.2299	0.2083	0.2083	0.9447	1.0394	0.9447	1.0394																																																			
5047	11.14	5058.14	0.110	0.110	0.1198	0.1198	0.1082	0.1082	0.9197	1.0127	0.9197	1.0127																																																			
Average Correction Factors (CF) =										0.9200	1.0118																																																				
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		NO		NOx		NO2		LIMITS																																																							
Correlation Coeff.=		<u>0.9995</u>		<u>0.9995</u>		<u>1.0000</u>		> 0.995																																																							
m (Slope)=		<u>0.8967</u>		<u>0.9841</u>		<u>1.0093</u>		0.85-1.15																																																							
b (Intercept)=		<u>0.0031</u>		<u>0.0037</u>		<u>-0.0007</u>		± 3% F.S																																																							
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">O3 Setting</th> <th rowspan="2">Flow Rate</th> <th colspan="3">Indicated Conc. (ppm)</th> <th rowspan="2">NO Decrease</th> <th rowspan="2">NO2 Increase</th> <th rowspan="2">CF</th> </tr> <tr> <th>NO</th> <th>NOx</th> <th>NO2</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">5047</td> <td style="text-align: center;">0.447</td> <td style="text-align: center;">0.403</td> <td style="text-align: center;">-0.044</td> <td style="text-align: center;">0.390</td> <td style="text-align: center;">0.387</td> <td style="text-align: center;">1.0078</td> </tr> <tr> <td style="text-align: center;">40</td> <td style="text-align: center;">5047</td> <td style="text-align: center;">0.057</td> <td style="text-align: center;">0.400</td> <td style="text-align: center;">0.343</td> <td style="text-align: center;">0.390</td> <td style="text-align: center;">0.387</td> <td style="text-align: center;">1.0078</td> </tr> <tr> <td style="text-align: center;">25</td> <td style="text-align: center;">5047</td> <td style="text-align: center;">0.237</td> <td style="text-align: center;">0.402</td> <td style="text-align: center;">0.165</td> <td style="text-align: center;">0.210</td> <td style="text-align: center;">0.209</td> <td style="text-align: center;">1.0048</td> </tr> <tr> <td style="text-align: center;">10</td> <td style="text-align: center;">5047</td> <td style="text-align: center;">0.384</td> <td style="text-align: center;">0.403</td> <td style="text-align: center;">0.019</td> <td style="text-align: center;">0.063</td> <td style="text-align: center;">0.063</td> <td style="text-align: center;">1.0000</td> </tr> <tr> <td colspan="7" style="text-align: right;">Average Correction Factor (CF) =</td> <td style="text-align: center;">1.0042</td> </tr> </tbody> </table>													O3 Setting	Flow Rate	Indicated Conc. (ppm)			NO Decrease	NO2 Increase	CF	NO	NOx	NO2	0	5047	0.447	0.403	-0.044	0.390	0.387	1.0078	40	5047	0.057	0.400	0.343	0.390	0.387	1.0078	25	5047	0.237	0.402	0.165	0.210	0.209	1.0048	10	5047	0.384	0.403	0.019	0.063	0.063	1.0000	Average Correction Factor (CF) =							1.0042
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		Average Converter Efficiency <u>99.58%</u>																																																													
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<u>NO/NOx are not balanced. Unit needs to be recalibrated.</u>																																																															



AIR QUALITY MONITORING

March 31, 2004

Regional Services, Air Monitoring & Auditing
Alberta Environment
McIntyre Centre
4948 - 89 Street
Edmonton, Alberta T6E 5K1

ATTENTION: Bruce Laing & Al Clark

RE: Medicine Hat (Crescent Heights) Ambient Air Monitoring Station Audit

A station audit was recently completed by Alberta Environment (AENV) at the Palliser Airshed Society's (PAS) Crescent Heights Air Monitoring Station located in Medicine Hat, Alberta. The station is owned by PAS and operated on their behalf by Focus. The formal audit report was received March 11, 2004. The Follow-up Summary of the audit report identified two items that were to be addressed by Focus staff. Explanation and actions taken are described below:

1. It was stated in the report that there was no calibration completed in the month of January however, the routine multipoint calibration of all parameters was completed on January 9th, 2004. All calibration sheets were included in our monthly report sent to Alberta Environment.
2. The day the audit was conducted was the scheduled day for the February multipoint calibration. As Alberta Environment staff were at the site on that day, the monthly calibrations were postponed until February 13th, 2004. The calibrations for February were completed on that day, and adjustments were made to correct the imbalance of the NO₂ analyzer.
3. No calibration records were at the site as there was no printer available at the site to print the calibration sheets. A printer was installed during the March 9th station visit. All calibration sheets will be available at the site in the future.

After reviewing all audit calibration sheets, it is clear that all audited parameters passed AENV criteria for this audit, including the NO₂ analyzer. As this is not stated in the report, we would request the department follow-up with a written response to the Chairman of PAS and to Focus indicating the status of the audit.. The PAS station began operations on December 28, as such, the station was still being updated with equipment (eg: Printer) when the station audit occurred. Positive feedback regarding the station's operations and design would be helpful and welcomed at this stage in its development.

If you have any questions, or require anything further please contact me at the numbers listed below.

Sincerely,

THE FOCUS CORPORATION

A handwritten signature in black ink, appearing to be "G. Cross".

Gary Cross C.E.T.
AQM Technical Manager

cc: Matilda Ricci, AENV PAS Representative
Ron Wendling, Chair PAS
Jay Litke, Regional Compliance Manager
Bob Scotten, Manager - PAS