



PAMZ | Parkland Airshed
Management Zone

Air Quality Monitoring Program 2009 Annual Summary

Prepared by





February 24, 2010

Enforcement and Monitoring Division
Alberta Environment
11th floor, Oxbridge Place
9820-106 Street
Edmonton, Alberta
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Attn: Shahin Manji

Re: Parkland Airshed Management Zone - Annual Summary Report - 2009

Enclosed is the Parkland Airshed Management Zone's (PAMZ) Annual Summary Report for 2009. This report summarizes the data collected by the PAMZ Continuous and Passive Air Quality Monitoring (AQM) Networks during 2008 in the formats required in the Air Monitoring Directive (AMD), specifically Section III C 2a, 2b, 2c, 2d, and 2e.

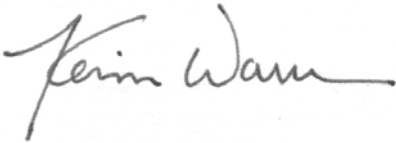
This summary report is submitted by PAMZ on behalf of the following Member Companies' Facilities to help satisfy their annual reporting requirements as outlined in the AMD:

Company	Facility	Approval Number
BP Canada Energy Company	North Caroline	10158-01-00
BP Canada Energy Company	South Caroline	1071-01-00
Bonavista Petroleum Limited	Carstairs-Crossfield	351-02-00
Penn West Energy	West Gilby	11437-01-00
Conoco Phillips Canada Ltd.	Medicine River	381-01-00
Harmattan Gas Processing L.P.	Harmattan	10154-02-01
Husky Oil Operations Limited	Ram River	57-01-00
Imperial Oil Resources Ltd.	Wilson Creek	10264-01-00
Keyera Energy Limited	Gilby	1333-02-00
Keyera Energy Limited	Homeglen-Rimbey	865-01-00
Keyera Energy Limited	Nevis	261-01-00
Keyera Energy Limited	Strachan	1351-01-00
ExxonMobil Oil Canada Ltd.	Lone Pine	11341-02-00
NAL Resources	Sylvan Lake	249-01-00
Penn West Petroleum Limited	Wimborne	359-01-00
PetroCanada	East Gilby	1717-02-00
Shell Canada Limited	Burnt Timber	295-01-00
Shell Canada Limited	Shantz	11379-01-00
Shell Canada Limited	Caroline	11323-01-00

This summary report pertains specifically to the PAMZ AQM Program. Member companies will also be submitting, under separate cover, Annual Summary Information to AENV as per AMD Section III C 2f, 2g, 3(all), 4(all) and 5(all) where applicable.

Should you have any questions concerning this report please contact the undersigned at your convenience (403) 238-6640.

Sincerely,

A handwritten signature in black ink that reads "Kevin Warren". The signature is written in a cursive style with a long horizontal stroke at the end.

Kevin Warren
Executive Director, PAMZ

**Parkland AirShed Management Zone
Air Quality Monitoring Program
2009 Annual Summary**

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1.

SO₂ Frequency & Exceedence Summary Tables

1.1 Parkland Airshed Management Zone – Beiseker SO₂ Sulphur Dioxide (ppb)

Beiseker SO ₂ (ppb) 2009															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340
January															
February															
March															
April															
May															
June															
July															
August															
September															
October	563	0.5	1.1	Oct 23	2.2	Oct 10 01:00	100.0	0	0	100	0	0	0	0	0
November	686	0.5	1.0	Nov 13	3.4	Nov 29 16:00	100.0	0	0	100	0	0	0	0	0
December	706	0.7	1.7	Dec 30	7.4	Dec 30 01:00	99.9	0	0	100	0	0	0	0	0
Annual	1955	0.6	1.7	Dec 30	7.4	Dec 30 01:00	100.0	0	0	100.00	0.00	0	0	0	0

1.2 Parkland Airshed Management Zone – Bentley SO₂ Sulphur Dioxide (ppb)

Bentley															SO ₂ (ppb)	2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range						
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340	
January																
February																
March																
April	494	0.3	0.9	Apr 10	4.7	Apr 10 10:00	100.0	0	0	100	0	0	0	0	0	
May	662	0.4	1.3	May 30	6.6	May 11 07:00	93.6	0	0	100	0	0	0	0	0	
June	677	0.3	1.1	Jun 03	5.4	Jun 03 11:00	99.2	0	0	100	0	0	0	0	0	
July	121	0.3	0.7	Jul 02	3.2	Jul 05 22:00	100.0	0	0	100	0	0	0	0	0	
August																
September																
October																
November																
December																
Annual	1954	0.3	1.3	May 30	6.6	May 11 07:00	98.2	0	0	100.00	0.00	0	0	0	0	

1.3 Parkland Airshed Management Zone – Bighorn Reserve SO₂ Sulphur Dioxide (ppb)

Bighorn Reserve															SO ₂ (ppb)	2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAQO		Percentage of Readings in Concentration Range						
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340	
January																
February																
March																
April																
May	560	0.1	0.4	May 21	1.2	May 25 16:00	99.7	0	0	100	0	0	0	0	0	
June	682	0.2	0.6	Jun 04	1.5	Jun 04 20:00	99.9	0	0	100	0	0	0	0	0	
July	7	0.0	-	-	0.1	Jul 01 08:00	100.0	0	0	100	0	0	0	0	0	
August																
September																
October																
November																
December																
Annual	1249	0.2	0.6	Jun 04	1.5	Jun 04 20:00	99.8	0	0	100.00	0.00	0	0	0	0	

1.4 Parkland Airshed Management Zone – Caroline SO₂ Sulphur Dioxide (ppb)

Caroline															2009
SO ₂ (ppb)															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340
January	704	1.0	2.6	Jan 28	29.1	Jan 05 19:00	99.5	0	0	99.72	0.28	0	0	0	0
February	639	0.9	1.7	Feb 17	9.9	Feb 03 20:00	100.0	0	0	100	0	0	0	0	0
March	709	0.5	1.7	Mar 11	6.0	Mar 14 02:00	100.0	0	0	100	0	0	0	0	0
April	441	0.7	1.7	Apr 06	12.1	Apr 06 19:00	100.0	0	0	100	0	0	0	0	0
May	445	0.4	0.9	May 17	5.2	May 26 23:00	100.0	0	0	100	0	0	0	0	0
June	613	0.3	0.6	Jun 25	2.8	Jun 14 21:00	90.8	0	0	100	0	0	0	0	0
July	709	0.5	3.7	Jul 09	25.3	Jul 09 04:00	100.0	0	0	99.72	0.28	0	0	0	0
August	688	0.4	1.3	Aug 26	5.4	Aug 27 11:00	96.9	0	0	100	0	0	0	0	0
September	686	0.5	1.7	Sep 01	6.3	Sep 01 13:00	100.0	0	0	100	0	0	0	0	0
October	709	0.5	1.4	Oct 06	17.9	Oct 06 07:00	100.0	0	0	100	0	0	0	0	0
November	686	0.2	0.7	Nov 24	3.4	Nov 26 04:00	100.0	0	0	100	0	0	0	0	0
December	709	0.6	1.8	Dec 30	7.2	Dec 30 14:00	99.9	0	0	100	0	0	0	0	0
Annual	7738	0.5	3.7	Jul 09	29.1	Jan 05 19:00	98.9	0	0	99.95	0.05	0	0	0	0

1.5 Parkland Airshed Management Zone – Cheddarville SO₂ Sulphur Dioxide (ppb)

Cheddarville											SO ₂ (ppb)					2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range						
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340	
January																
February																
March																
April	678	0.5	2.4	Apr 10	8.4	Apr 10 12:00	99.9	0	0	100	0	0	0	0	0	
May	101	0.7	1.2	May 02	3.3	May 02 12:00	100.0	0	0	100	0	0	0	0	0	
June																
July																
August																
September																
October																
November	585	0.9	1.4	Nov 23	3.5	Nov 09 22:00	100.0	0	0	100	0	0	0	0	0	
December	9	1.0	-	-	1.1	Dec 01 07:00	100.0	0	0	100	0	0	0	0	0	
Annual	1373	0.7	2.4	Apr 10	8.4	Apr 10 12:00	100.0	0	0	100.00	0.00	0	0	0	0	

1.6 Parkland Airshed Management Zone – Crossfield - Carstairs SO₂ Sulphur Dioxide (ppb)

Crossfield - Carstairs															SO ₂ (ppb)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range								
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340			
January																		
February																		
March																		
April																		
May																		
June																		
July	541	0.6	1.5	Jul 12	9.3	Jul 21 09:00	100.0	0	0	100	0	0	0	0	0			
August	678	0.7	1.5	Aug 21	8.7	Aug 21 15:00	95.7	0	0	100	0	0	0	0	0			
September	690	1.0	3.8	Sep 29	26.9	Sep 29 03:00	100.0	0	0	99.86	0.14	0	0	0	0			
October	101	1.0	2.0	Oct 02	14.6	Oct 02 10:00	98.0	0	0	100	0	0	0	0	0			
November																		
December																		
Annual	2010	0.8	3.8	Sep 29	26.9	Sep 29 03:00	98.4	0	0	99.95	0.05	0	0	0	0			

1.7 Parkland Airshed Management Zone – Gilby SO₂ Sulphur Dioxide (ppb)

Gilby SO ₂ (ppb) 2009															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340
January	536	1.6	3.2	Jan 27	16.9	Jan 17 09:00	99.3	0	0	100	0	0	0	0	0
February	219	1.3	1.8	Feb 09	5.4	Feb 01 02:00	100.0	0	0	100	0	0	0	0	0
March															
April															
May															
June															
July	679	0.5	1.4	Jul 27	9.1	Jul 27 10:00	100.0	0	0	100	0	0	0	0	0
August	79	0.5	0.6	Aug 01	2.9	Aug 01 10:00	100.0	0	0	100	0	0	0	0	0
September															
October															
November															
December															
Annual	1513	1.0	3.2	Jan 27	16.9	Jan 17 09:00	99.8	0	0	100.00	0.00	0	0	0	0

1.8 Parkland Airshed Management Zone – Harmattan SO₂ Sulphur Dioxide (ppb)

Harmattan															SO ₂ (ppb)		2009		
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range									
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340				
January																			
February																			
March																			
April																			
May																			
June																			
July																			
August	423	0.5	1.7	Aug 24	6.5	Aug 24 06:00	100.0	0	0	100	0	0	0	0	0	0	0	0	0
September	676	0.8	1.7	Sep 24	8.2	Sep 01 12:00	99.9	0	0	100	0	0	0	0	0	0	0	0	0
October																			
November																			
December	654	2.1	4.6	Dec 14	11.1	Dec 14 18:00	100.0	0	0	100	0	0	0	0	0	0	0	0	0
Annual	1753	1.2	4.6	Dec 14	11.1	Dec 14 18:00	100.0	0	0	100.00	0.00	0	0	0	0	0	0	0	0

1.9 Parkland Airshed Management Zone – Medicine Lodge SO₂ Sulphur Dioxide (ppb)

Medicine Lodge															SO ₂ (ppb)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range								
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340			
January	373	0.9	2.3	Jan 24	4.6	Jan 23 23:00	99.0	0	0	100	0	0	0	0	0			
February	639	0.9	1.7	Feb 23	7.8	Feb 11 12:00	100.0	0	0	100	0	0	0	0	0			
March	688	1.2	3.4	Mar 11	9.0	Mar 11 05:00	96.5	0	0	100	0	0	0	0	0			
April	168	0.4	0.8	Apr 06	2.0	Apr 07 11:00	100.0	0	0	100	0	0	0	0	0			
May																		
June																		
July																		
August																		
September																		
October																		
November																		
December																		
Annual	1868	1.0	3.4	Mar 11	9.0	Mar 11 05:00	98.9	0	0	100	0	0	0	0	0			

1.10 Parkland Airshed Management Zone – Red Deer – Oriole Park SO₂ Sulphur Dioxide (ppb)

Red Deer - Oriole Park															SO ₂ (ppb)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range								
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340			
January																		
February	306	0.8	1.5	Feb 23	3.8	Feb 18 10:00	86.4	0	0	100	0	0	0	0	0			
March	373	1.0	1.5	Mar 02	5.3	Mar 15 02:00	100.0	0	0	100	0	0	0	0	0			
April																		
May																		
June																		
July																		
August																		
September																		
October	656	0.6	1.4	Oct 17	3.9	Oct 20 15:00	100.0	0	0	100	0	0	0	0	0			
November	32	0.5	0.4	Nov 01	1.7	Nov 02 10:00	100.0	0	0	100	0	0	0	0	0			
December																		
Annual	1367	0.8	1.5	Feb 23	5.3	Mar 15 02:00	96.6	0	0	100.00	0.00	0	0	0	0			

1.11 Parkland Airshed Management Zone – Red Deer Riverside SO₂ Sulphur Dioxide (ppb)

Red Deer Riverside															SO ₂ (ppb)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range								
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340			
January	707	1.0	3.2	Jan 16	4.9	Jan 08 15:00	100.0	0	0	100	0	0	0	0	0			
February	566	0.6	1.5	Feb 09	8.4	Feb 09 15:00	100.0	0	0	100	0	0	0	0	0			
March	706	0.8	1.8	Mar 18	9.6	Mar 18 11:00	100.0	0	0	100	0	0	0	0	0			
April	686	0.4	0.9	Apr 07	4.8	Apr 27 11:00	100.0	0	0	100	0	0	0	0	0			
May	709	0.3	0.8	May 31	5.2	May 31 09:00	100.0	0	0	100	0	0	0	0	0			
June	681	0.2	0.7	Jun 03	3.4	Jun 29 08:00	100.0	0	0	100	0	0	0	0	0			
July	709	0.2	0.6	Jul 13	2.3	Jul 13 11:00	100.0	0	0	100	0	0	0	0	0			
August	709	0.2	0.5	Aug 31	1.6	Aug 10 20:00	99.9	0	0	100	0	0	0	0	0			
September	684	0.3	0.8	Sep 29	4.4	Sep 24 19:00	100.0	0	0	100	0	0	0	0	0			
October	704	0.3	0.7	Oct 17	4.3	Oct 29 17:00	100.0	0	0	100	0	0	0	0	0			
November	687	0.2	0.5	Nov 26	1.7	Nov 17 12:00	100.0	0	0	100	0	0	0	0	0			
December	710	0.4	1.8	Dec 29	7.2	Dec 29 20:00	100.0	0	0	100	0	0	0	0	0			
Annual	8258	0.4	3.2	Jan 16	9.6	Mar 18 11:00	100.0	0	0	100.00	0.00	0	0	0	0			

2.

TRS & H₂S Frequency & Exceedence Summary Tables

2.1 Parkland Airshed Management Zone – Beiseker TRS Total Reduced Sulphide (ppb)

Beiseker														TRS (ppb)		2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAQO		Percentage of Readings in Concentration Range						
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10	
January																
February																
March																
April																
May																
June																
July																
August																
September																
October	561	0.6	1.8	Oct 23	6.0	Oct 16 06:00	100.0	0	0	77.54	17.11	4.81	0.53	0	0	
November	686	0.2	0.5	Nov 06	1.8	Nov 27 07:00	100.0	0	0	97.96	2.04	0	0	0	0	
December	710	0.1	0.5	Dec 14	1.4	Dec 14 15:00	99.6	0	0	99.15	0.85	0	0	0	0	
Annual	1957	0.3	1.8	Oct 23	6.0	Oct 16 06:00	99.9	0	0	92.54	5.93	1	0	0	0	

2.2 Parkland Airshed Management Zone – Bentley TRS Total Reduced Sulphide (ppb)

Bentley TRS (ppb) 2009															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAQO		Percentage of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10
January															
February															
March															
April	489	0.3	0.9	Apr 30	5.2	Apr 30 04:00	99.4	0	0	98.36	1.43	0	0.2	0	0
May	661	0.2	0.9	May 11	5.8	May 11 07:00	93.6	0	0	96.22	2.87	0.61	0.3	0	0
June	667	0.1	0.5	Jun 20	2.4	Jun 20 06:00	99.2	0	0	98.5	1.5	0	0	0	0
July	122	0.1	0.2	Jul 03	1.3	Jul 03 18:00	100.0	0	0	99.18	0.82	0	0	0	0
August															
September															
October															
November															
December															
Annual	1939	0.2	0.9	May 11	5.8	May 11 07:00	98.0	0	0	97.73	1.91	0.21	0.15	0	0

2.3 Parkland Airshed Management Zone – Bighorn Reserve TRS Total Reduced Sulphide (ppb)

Bighorn Reserve													TRS (ppb)				2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range								
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10			
January																		
February																		
March																		
April																		
May	558	0.1	0.3	May 19	0.6	May 22 05:00	99.3	0	0	100	0	0	0	0	0	0		
June	680	0.1	0.3	Jun 21	2.7	Jun 21 01:00	99.9	0	0	99.85	0	0.15	0	0	0	0		
July	8	0.0	-	-	0.0	Jul 01 01:00	100.0	0	0	100	0	0	0	0	0	0		
August																		
September																		
October																		
November																		
December																		
Annual	1246	0.1	0.3	Jun 21	2.7	Jun 21 01:00	99.7	0	0	99.92	0.00	0.08	0	0	0	0		

2.4 Parkland Airshed Management Zone – Caroline TRS Total Reduced Sulphide (ppb)

Caroline															TRS (ppb)															2009														
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range																																		
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10																													
January	704	0.5	0.8	Jan 31	3.0	Jan 13 07:00	99.5	0	0	95.17	4.69	0.14	0	0	0																													
February	639	0.5	0.7	Feb 12	1.2	Feb 07 04:00	100.0	0	0	99.37	0.63	0	0	0	0																													
March	708	0.5	0.7	Mar 01	1.0	Mar 07 18:00	100.0	0	0	99.86	0.14	0	0	0	0																													
April	441	0.5	0.6	Apr 10	1.0	Apr 09 12:00	100.0	0	0	99.55	0.45	0	0	0	0																													
May	445	0.4	0.6	May 15	1.2	May 12 16:00	100.0	0	0	98.65	1.35	0	0	0	0																													
June	614	0.5	0.7	Jun 17	1.9	Jun 18 00:00	90.8	0	0	98.86	1.14	0	0	0	0																													
July	709	0.5	0.7	Jul 08	2.2	Jul 08 22:00	100.0	0	0	98.03	1.97	0	0	0	0																													
August	686	0.4	0.6	Aug 21	1.9	Aug 02 02:00	96.6	0	0	98.83	1.17	0	0	0	0																													
September	686	0.3	0.5	Sep 01	1.3	Sep 01 01:00	100.0	0	0	99.85	0.15	0	0	0	0																													
October	709	0.4	0.7	Oct 19	2.4	Oct 19 08:00	100.0	0	0	98.87	1.13	0	0	0	0																													
November	686	0.3	0.5	Nov 20	0.9	Nov 04 23:00	100.0	0	0	100	0	0	0	0	0																													
December	709	0.4	0.6	Dec 09	1.0	Dec 30 04:00	100.0	0	0	100	0	0	0	0	0																													
Annual	7736	0.4	0.8	Jan 31	3.0	Jan 13 07:00	98.9	0	0	98.9	1.1	0.0	0.0	0.0	0.0																													

2.5 Parkland Airshed Management Zone – Cheddarville TRS Total Reduced Sulphide (ppb)

Cheddarville															2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAQO		Percentage of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10
January															
February															
March															
April	637	0.1	0.2	Apr 03	1.1	Apr 03 02:00	95.4	0	0	99.69	0.31	0	0	0	0
May	101	0.1	0.2	May 03	0.5	May 03 17:00	100.0	0	0	100	0	0	0	0	0
June															
July															
August															
September															
October															
November	559	0.1	0.4	Nov 13	1.6	Nov 09 22:00	100.0	0	0	99.82	0.18	0	0	0	0
December	33	0.1	0.2	Dec 01	0.4	Dec 01 18:00	100.0	0	0	100	0	0	0	0	0
Annual	1330	0.1	0.4	Nov 13	1.6	Nov 09 22:00	98.8	0	0	99.77	0.23	0.00	0	0	0

2.6 Parkland Airshed Management Zone – Crossfield - Carstairs TRS Total Reduced Sulphide (ppb)

Crossfield - Carstairs															2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10
January															
February															
March															
April															
May															
June															
July	537	0.2	0.4	Jul 25	4.0	Jul 25 04:00	100.0	0	0	96.83	2.98	0.19	0	0	0
August	678	0.2	0.5	Aug 29	2.0	Aug 29 05:00	96.1	0	0	98.53	1.47	0	0	0	0
September	690	0.2	0.4	Sep 03	1.5	Sep 29 03:00	100.0	0	0	99.71	0.29	0	0	0	0
October	95	0.2	0.3	Oct 04	1.2	Oct 01 09:00	90.5	0	0	97.89	2.11	0	0	0	0
November															
December															
Annual	2000	0.2	0.5	Aug 29	4.0	Jul 25 04:00	96.7	0	0	98.45	1.50	0.05	0.00	0.00	0

2.7 Parkland Airshed Management Zone – Gilby TRS Total Reduced Sulphide (ppb)

Gilby TRS (ppb) 2009															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAQO		Percentage of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10
January	535	0.5	1.0	Jan 21	1.9	Jan 21 13:00	99.3	0	0	97.57	2.43	0	0	0	0
February	219	0.5	0.7	Feb 09	1.0	Feb 09 12:00	100.0	0	0	100	0	0	0	0	0
March															
April															
May															
June															
July	679	0.1	0.5	Jul 06	0.8	Jul 06 10:00	100.0	0	0	100	0	0	0	0	0
August	101	0.3	0.4	Aug 01	0.8	Aug 01 09:00	100.0	0	0	100	0	0	0	0	0
September															
October															
November															
December															
Annual	1534	0.3	1.0	Jan 21	1.9	Jan 21 13:00	99.8	0	0	99.67	0.33	0	0	0	0

2.8 Parkland Airshed Management Zone – Harmattan TRS Total Reduced Sulphide (ppb)

Harmattan TRS (ppb) 2009															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10
January															
February															
March															
April															
May															
June															
July															
August	402	0.3	0.6	Aug 25	2.8	Aug 25 07:00	94.4	0	0	96.02	3.73	0.25	0	0	0
September	687	0.4	0.8	Sep 22	3.7	Sep 24 07:00	100.0	0	0	92.14	6.84	1.02	0	0	0
October	8	0.5	-	-	1.7	Oct 01 01:00	100.0	0	0	87.5	12.5	0	0	0	0
November															
December	653	0.4	1.2	Dec 24	3.7	Dec 24 08:00	100.0	0	0	88.82	8.42	2.76	0	0	0
Annual	1750	0.3	1.2	Dec 24	3.7	Sep 24 07:00	98.6	0	0	91.77	6.74	1	0	0	0

2.9 Parkland Airshed Management Zone – Medicine Lodge TRS Total Reduced Sulphide (ppb)

Medicine Lodge											TRS (ppb)						2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAQO		Percentage of Readings in Concentration Range							
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10		
January	326	0.2	0.6	Jan 30	1.4	Jan 30 23:00	87.7	0	0	97.24	2.76	0	0	0	0		
February	639	0.1	0.3	Feb 28	0.9	Feb 23 17:00	100.0	0	0	100	0	0	0	0	0		
March	681	0.2	0.7	Mar 07	1.7	Mar 07 15:00	95.6	0	0	97.94	2.06	0	0	0	0		
April	170	0.2	0.3	Apr 04	1.1	Apr 05 07:00	100.0	0	0	99.41	0.59	0	0	0	0		
May																	
June																	
July																	
August																	
September																	
October																	
November																	
December																	
Annual	1816	0.2	0.7	Mar 07	1.7	Mar 07 15:00	95.8	0	0	98.68	1.32	0	0	0	0		

2.10 Parkland Airshed Management Zone – Red Deer - Oriole Park TRS Total Reduced Sulphide (ppb)

Red Deer - Oriole Park														TRS (ppb)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAQO		Number of Readings in Concentration Range							
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10		
January																	
February	291	0.8	1.2	Feb 18	3.9	Feb 18 10:00	81.7	0	0	75.26	23.37	1.37	0	0	0		
March	351	0.8	1.4	Mar 02	3.1	Mar 04 21:00	100.0	0	0	73.79	23.65	2.56	0	0	0		
April																	
May																	
June																	
July																	
August																	
September																	
October	641	0.4	0.8	Oct 16	1.6	Oct 22 00:00	99.6	0	0	97.19	2.81	0	0	0	0		
November	35	0.2	0.1	Nov 01	1.1	Nov 02 10:00	100.0	0	0	97.14	2.86	0	0	0	0		
December																	
Annual	1318	0.6	1.4	Mar 02	3.9	Feb 18 10:00	95.3	0	0	87.25	11.74	1.01	0	0	0		

2.11 Parkland Airshed Management Zone – Red Deer Riverside H₂S Hydrogen Sulphide (ppb)

Red Deer Riverside															H ₂ S (ppb)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range								
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10			
January	706	0.9	1.3	Jan 19	2.9	Jan 05 10:00	100.0	0	0	70.25	29.46	0	0	0	0			
February	565	0.5	1.0	Feb 28	3.6	Feb 28 09:00	100.0	0	0	94.34	5.31	0	0	0	0			
March	704	0.3	0.6	Mar 02	2.0	Mar 02 10:00	99.6	0	0	98.15	1.85	0	0	0	0			
April	683	0.3	0.8	Apr 20	3.0	Apr 20 05:00	100.0	0	0	96.93	2.78	0	0	0	0			
May	709	0.3	0.8	May 29	4.4	May 29 07:00	100.0	0	0	96.47	3.10	0	0	0	0			
June	680	0.4	0.9	Jun 04	5.1	Jun 04 06:00	100.0	0	0	91.47	7.94	0	0	0	0			
July	695	0.4	0.7	Jul 27	3.6	Jul 02 03:00	99.3	0	0	93.24	6.62	0	0	0	0			
August	705	0.5	1.5	Aug 27	9.0	Aug 27 19:00	99.7	0	0	94.33	3.97	1.42	0	0	0			
September	670	0.4	0.7	Sep 24	3.0	Sep 14 08:00	98.2	0	0	94.63	5.07	0.30	0	0	0			
October	689	0.4	1.3	Oct 19	7.4	Oct 19 07:00	97.3	0	0	95.07	3.92	0.87	0	0	0			
November	681	0.4	1.2	Nov 26	6.0	Nov 26 10:00	100.0	0	0	93.98	5.14	0.73	0	0	0			
December	703	0.6	1.3	Dec 18	3.4	Dec 19 07:00	100.0	0	0	84.78	14.94	0	0	0	0			
Annual	8190	0.4	1.5	Aug 27	9.0	Aug 27 19:00	99.5	0	0	91.92	7.55	0	0	0	0			

3.

NO₂ Frequency & Exceedence Summary Tables

3.1 Parkland Airshed Management Zone – Beiseker NO₂ Nitrogen Dioxide (ppb)

Beiseker														NO ₂ (ppb)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range							
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210			
January																	
February																	
March																	
April																	
May																	
June																	
July																	
August																	
September																	
October	561	4.4	8.1	Oct 16	19.8	Oct 08 08:00	100.0	0	0	100	0	0	0	0			
November	684	6.8	12.7	Nov 28	24.1	Nov 13 01:00	100.0	0	0	100	0	0	0	0			
December	705	9.7	23.8	Dec 18	41.3	Dec 18 14:00	99.9	0	0	96.45	3.55	0	0	0			
Annual	1950	7.2	23.8	Dec 18	41.3	Dec 18 14:00	100.0	0	0	98.72	1.28	0	0	0			

3.2 Parkland Airshed Management Zone – Bentley NO₂ Nitrogen Dioxide (ppb)

Bentley														NO ₂ (ppb)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range							
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210			
January																	
February																	
March																	
April	492	4.0	6.6	Apr 30	22.4	Apr 20 07:00	100.0	0	0	100	0	0	0	0			
May	660	3.9	5.6	May 11	20.9	May 11 07:00	93.6	0	0	100	0	0	0	0			
June	675	4.3	6.9	Jun 03	20.1	Jun 02 06:00	99.0	0	0	100	0	0	0	0			
July	122	3.9	4.2	Jul 05	13.3	Jul 03 18:00	100.0	0	0	100	0	0	0	0			
August																	
September																	
October																	
November																	
December																	
Annual	1949	4.1	6.9	Jun 03	22.4	Apr 20 07:00	98.1	0	0	100.00	0.00	0	0	0			

3.3 Parkland Airshed Management Zone – Bighorn Reserve NO₂ Nitrogen Dioxide (ppb)

Bighorn Reserve											NO ₂ (ppb)					2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range						
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210		
January																
February																
March																
April																
May	558	0.4	0.9	May 18	4.9	May 18 05:00	99.7	0	0	100.00	0	0	0	0		
June	677	0.4	1.0	Jun 05	5.3	Jun 05 05:00	99.9	0	0	100.00	0	0	0	0		
July	7	0.6	-	-	2.1	Jul 01 05:00	100.0	0	0	100.00	0	0	0	0		
August																
September																
October																
November																
December																
Annual	1242	0.4	1.0	Jun 05	5.3	Jun 05 05:00	99.8	0	0	100.00	0	0	0	0		

3.4 Parkland Airshed Management Zone – Caroline NO₂ Nitrogen Dioxide (ppb)

Caroline														NO ₂ (ppb)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range							
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210			
January	650	3.7	10.6	Jan 01	23.0	Jan 01 18:00	93.6	0	0	100.00	0	0	0	0			
February	613	4.6	10.1	Feb 13	20.7	Feb 05 18:00	96.4	0	0	100.00	0	0	0	0			
March	698	4.2	11.5	Mar 01	26.0	Mar 10 21:00	100.0	0	0	99.71	0.29	0	0	0			
April	429	3.1	5.5	Apr 05	10.9	Apr 09 17:00	97.6	0	0	100.00	0	0	0	0			
May	420	2.0	3.7	May 14	14.0	May 25 04:00	100.0	0	0	100.00	0	0	0	0			
June	618	1.7	2.7	Jun 12	9.2	Jun 12 04:00	91.0	0	0	100.00	0	0	0	0			
July	707	1.7	3.1	Jul 04	8.3	Jul 31 22:00	100.0	0	0	100.00	0	0	0	0			
August	686	2.0	3.4	Aug 26	6.4	Aug 26 05:00	96.9	0	0	100.00	0	0	0	0			
September	653	2.2	4.4	Sep 28	11.1	Sep 28 04:00	96.3	0	0	100.00	0	0	0	0			
October	708	2.7	5.5	Oct 21	11.3	Oct 15 04:00	100.0	0	0	100.00	0	0	0	0			
November	684	2.0	10.4	Nov 04	30.3	Nov 04 18:00	100.0	0	0	99.56	0.44	0	0	0			
December	707	3.3	9.2	Dec 13	17.1	Dec 13 07:00	100.0	0	0	100.00	0	0	0	0			
Annual	7573	2.8	11.5	Mar 01	30.3	Nov 04 18:00	97.6	0	0	99.93	0.07	0	0	0			

3.5 Parkland Airshed Management Zone – Cheddarville NO₂ Nitrogen Dioxide (ppb)

Cheddarville											NO ₂ (ppb)					2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range						
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210		
January																
February																
March																
April	676	1.8	4.8	Apr 07	15.0	Apr 07 07:00	100.0	0	0	100.00	0	0	0	0		
May	101	1.1	1.4	May 03	6.8	May 03 05:00	100.0	0	0	100.00	0	0	0	0		
June																
July																
August																
September																
October																
November	583	2.7	7.1	Nov 25	14.4	Nov 22 19:00	100.0	0	0	100.00	0	0	0	0		
December	9	1.7	-	-	3.2	Dec 01 05:00	100.0	0	0	100.00	0	0	0	0		
Annual	1369	2.2	7.1	Nov 25	15.0	Apr 07 07:00	100.0	0	0	100.00	0	0	0	0		

3.6 Parkland Airshed Management Zone – Crossfield - Carstairs NO₂ Nitrogen Dioxide (ppb)

Crossfield - Carstairs														NO ₂ (ppb)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range							
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210			
January																	
February																	
March																	
April																	
May																	
June																	
July	538	2.9	4.6	Jul 23	12.9	Jul 27 22:00	100.0	0	0	100.00	0	0	0	0			
August	653	3.2	7.2	Aug 31	25.3	Aug 31 21:00	93.2	0	0	99.85	0.15	0	0	0			
September	690	4.1	7.3	Sep 25	20.1	Sep 18 21:00	100.0	0	0	100.00	0	0	0	0			
October	101	3.7	6.2	Oct 01	11.7	Oct 02 00:00	98.1	0	0	100.00	0	0	0	0			
November																	
December																	
Annual	1982	3.5	7.3	Sep 25	25.3	Aug 31 21:00	97.8	0	0	99.95	0.05	0	0	0			

3.7 Parkland Airshed Management Zone – Gilby NO₂ Nitrogen Dioxide (ppb)

Gilby NO ₂ (ppb) 2009														
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range				
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210
January	533	10.1	20.5	Jan 21	36.2	Jan 20 01:00	99.3	0	0	96.44	3.56	0	0	0
February	219	9.6	14.3	Feb 09	25.0	Feb 09 03:00	100.0	0	0	100.00	0	0	0	0
March														
April														
May														
June														
July	677	2.0	4.8	Jul 27	24.7	Jul 27 01:00	100.0	0	0	100.00	0	0	0	0
August	79	1.7	2.3	Aug 01	7.6	Aug 01 05:00	100.0	0	0	100.00	0	0	0	0
September														
October														
November														
December														
Annual	1508	5.9	20.5	Jan 21	36.2	Jan 20 01:00	99.8	0	0	99.66	0.34	0	0	0

3.8 Parkland Airshed Management Zone – Harmattan NO₂ Nitrogen Dioxide (ppb)

Harmattan															NO ₂ (ppb)					2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range										
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210						
January																				
February																				
March																				
April																				
May																				
June																				
July																				
August	424	2.9	6.2	Aug 24	31.0	Aug 24 05:00	100.0	0	0	98.82	1.18	0	0	0						
September	676	5.7	12.4	Sep 23	39.4	Sep 24 05:00	100.0	0	0	95.56	4.44	0	0	0						
October																				
November																				
December	650	9.1	25.8	Dec 26	50.4	Dec 25 09:00	100.0	0	0	88.31	11.54	0.15	0	0						
Annual	1750	6.3	25.8	Dec 26	50.4	Dec 25 09:00	100.0	0	0	93.66	6.29	0.06	0	0						

3.9 Parkland Airshed Management Zone – Medicine Lodge NO₂ Nitrogen Dioxide (ppb)

Medicine Lodge															NO ₂ (ppb)					2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range										
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210						
January	369	5.3	10.9	Jan 20	27.0	Jan 21 03:00	98.7	0	0	99.73	0.27	0	0	0						
February	637	6.8	10.8	Feb 13	25.3	Feb 11 08:00	100.0	0	0	99.84	0.16	0	0	0						
March	688	5.5	20.6	Mar 02	28.1	Mar 02 22:00	96.5	0	0	99.13	0.87	0	0	0						
April	168	3.6	5.4	Apr 02	14.2	Apr 07 08:00	100.0	0	0	100	0	0	0	0						
May																				
June																				
July																				
August																				
September																				
October																				
November																				
December																				
Annual	1862	5.7	20.6	Mar 02	28.1	Mar 02 22:00	98.8	0	0	99.57	0.43	0	0	0						

3.10 Parkland Airshed Management Zone – Red Deer - Oriole Park NO₂ Nitrogen Dioxide (ppb)

Red Deer - Oriole Park											NO ₂ (ppb)					2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range						
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210		
January																
February	351	16.6	26.9	Feb 17	44.1	Feb 18 10:00	100.0	0	0	74.07	25.93	0	0	0		
March	373	16.1	29.6	Mar 02	42.6	Mar 12 20:00	100.0	0	0	79.62	20.38	0	0	0		
April																
May																
June																
July																
August																
September																
October	655	8.4	14.1	Oct 23	36.0	Oct 26 18:00	100.0	0	0	99.24	0.76	0	0	0		
November	32	11.6	10.0	Nov 01	19.7	Nov 01 22:00	100.0	0	0	100.00	0.00	0	0	0		
December																
Annual	1411	12.5	29.6	Mar 02	44.1	Feb 18 10:00	100.0	0	0	89.26	10.74	0	0	0		

3.11 Parkland Airshed Management Zone – Red Deer Riverside NO₂ Nitrogen Dioxide (ppb)

Red Deer Riverside											NO ₂ (ppb)					2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range						
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210		
January	704	23.2	36.2	Jan 19	50.7	Jan 05 10:00	100.0	0	0	54.26	45.31	0.43	0	0		
February	562	18.7	33.1	Feb 17	46.2	Feb 28 00:00	100.0	0	0	69.22	30.78	0	0	0		
March	705	15.2	32.4	Mar 12	51.6	Mar 12 08:00	100.0	0	0	80.85	18.87	0.28	0	0		
April	685	7.4	14.7	Apr 06	38.1	Apr 07 00:00	100.0	0	0	97.52	2.48	0	0	0		
May	643	6.3	10.8	May 05	29.9	May 05 00:00	94.7	0	0	99.53	0.47	0	0	0		
June	679	6.7	11.7	Jun 01	27.9	Jun 01 09:00	100.0	0	0	99.56	0.44	0	0	0		
July	707	5.6	8.9	Jul 13	23.3	Jul 27 08:00	100.0	0	0	100.00	0.00	0	0	0		
August	708	5.9	10.4	Aug 31	20.0	Aug 20 08:00	99.9	0	0	100.00	0.00	0	0	0		
September	681	7.8	12.8	Sep 23	27.0	Sep 23 20:00	100.0	0	0	99.71	0.29	0	0	0		
October	698	8.5	20.3	Oct 23	30.7	Oct 26 18:00	100.0	0	0	98.85	1.15	0	0	0		
November	685	15.7	25.6	Nov 13	33.9	Nov 10 20:00	100.0	0	0	84.96	15.04	0	0	0		
December	708	22.5	42.0	Dec 18	50.4	Dec 16 23:00	100.0	0	0	51.41	48.45	0.14	0	0		
Annual	8165	11.9	42.0	Dec 18	51.6	Mar 12 08:00	99.6	0	0	86.51	13.42	0.07	0	0		

4.

PM_{2.5} Frequency & Exceedence Summary Tables

4.1 Parkland Airshed Management Zone – Beiseker PM_{2.5} Particulate Matter 2.5 (µg/m³)

Beiseker PM _{2.5} (µg/m ³)															2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	Percentage of Readings in Concentration Range							
								AAAQO 24-Hr	AAAQG 1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30
January															
February															
March															
April															
May															
June															
July															
August															
September															
October	611	4.2	11.0	Oct 15	21.0	Oct 15 19:00	100.0	0	0	31.59	41.73	21.77	4.42	0.49	0
November	699	4.5	7.3	Nov 24	26.3	Nov 24 22:00	97.1	0	0	23.61	51.07	22.03	2.43	0.86	0
December	743	5.9	15.5	Dec 28	32.4	Dec 14 17:00	99.9	0	0	25.03	35.67	23.82	10.77	4.44	0.27
Annual	2053	4.9	15.5	Dec 28	32.4	Dec 14 17:00	99.0	0	0	26.5	42.72	22.6	6.04	2.05	0.1

4.2 Parkland Airshed Management Zone – Bentley PM_{2.5} Particulate Matter 2.5 (µg/m³)

Bentley															PM _{2.5} (µg/m ³)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range								
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30			
January																		
February																		
March																		
April	517	5.4	15.2	Apr 10	29.1	Apr 10 08:00	96.2	0	0	21.08	46.03	23.79	5.8	3.29	0			
May	696	4.2	8.4	May 25	21.1	May 25 07:00	93.6	0	0	29.17	44.68	23.42	2.3	0.43	0			
June	712	7.4	16.6	Jun 12	100.3	Jun 03 01:00	99.2	0	1	13.2	33.29	33.71	14.75	4.63	0.42			
July	134	5.4	8.8	Jul 05	16.6	Jul 06 00:00	93.0	0	0	17.91	42.54	30.6	8.96	0	0			
August																		
September																		
October																		
November																		
December																		
Annual	2059	5.7	16.6	Jun 12	100.3	Jun 03 01:00	96.2	0	1	20.81	40.98	27.56	7.92	2.58	0.15			

4.3 Parkland Airshed Management Zone – Bighorn Reserve PM_{2.5} Particulate Matter 2.5 (µg/m³)

Bighorn Reserve											PM _{2.5} (µg/m ³)						2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAs		Percentage of Readings in Concentration Range							
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30		
January																	
February																	
March																	
April																	
May	594	0.9	4.2	May 25	10.8	May 25 10:00	99.7	0	0	81.48	16.33	2.19	0	0	0		
June	719	2.3	11.0	Jun 04	30.7	Jun 04 10:00	99.9	0	0	66.34	21	9.18	1.53	1.81	0.14		
July	9	0.8	-	-	3.4	Jul 01 09:00	100.0	0	0	77.78	22.22	0	0	0	0		
August																	
September																	
October																	
November																	
December																	
Annual	1322	1.7	11.0	Jun 04	30.7	Jun 04 10:00	99.8	0	0	73.22	18.91	5.98	0.83	0.98	0.08		

4.4 Parkland Airshed Management Zone – Caroline PM_{2.5} Particulate Matter 2.5 (µg/m³)

Caroline															PM _{2.5} (µg/m ³)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		AAAQG		Percentage of Readings in Concentration Range						
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30			
January	738	2.7	19.0	Jan 24	144.6	Jan 24 22:00	99.5	0	1	67.62	15.99	12.47	2.17	1.22	0.54			
February	631	5.8	18.9	Feb 22	30.2	Feb 22 21:00	94.4	0	0	33.91	31.38	16.32	10.46	7.77	0.16			
March	744	5.6	18.3	Mar 15	38.5	Mar 20 04:00	100.0	0	0	38.58	27.42	15.32	10.22	8.2	0.27			
April	464	6.1	14.8	Apr 03	29.1	Apr 02 20:00	99.8	0	0	30.17	29.74	21.12	12.28	6.68	0			
May	442	3.9	8.1	May 25	15.7	May 25 18:00	100.0	0	0	25.57	53.85	19.91	0.68	0	0			
June	709	5.5	11.2	Jun 12	28.7	Jun 12 20:00	98.5	0	0	18.19	40.06	35.68	5.5	0.56	0			
July	711	8.0	15.2	Jul 29	71.0	Jul 10 20:00	95.6	0	0	18	25.6	31.5	15.33	8.72	0.84			
August	721	9.9	21.5	Aug 31	36.8	Sep 01 00:00	96.9	0	0	3.05	22.05	38.28	27.46	8.04	1.11			
September	658	5.5	27.9	Sep 01	37.3	Sep 01 01:00	97.1	0	0	33.89	30.24	24.77	5.93	3.34	1.82			
October	713	1.2	5.2	Oct 21	9.9	Oct 19 13:00	95.8	0	0	76.58	18.23	5.19	0	0	0			
November	720	0.8	4.6	Nov 25	20.7	Nov 25 11:00	100.0	0	0	84.58	13.61	1.67	0	0.14	0			
December	744	1.4	4.7	Dec 03	78.0	Dec 03 18:00	100.0	0	0	76.34	17.2	5.65	0.67	0	0.13			
Annual	7995	4.7	27.9	Sep 01	144.6	Jan 24 22:00	98.0	0	1	43.60	25.94	18.69	7.61	3.73	0.43			

4.5 Parkland Airshed Management Zone – Cheddarville PM_{2.5} Particulate Matter 2.5 (µg/m³)

Cheddarville PM _{2.5} (µg/m ³)															2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	Percentage of Readings in Concentration Range							
								AAAQO 24-Hr	AAAQG 1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30
January															
February															
March															
April	720	3.4	11.8	Apr 03	52.2	Apr 13 11:00	100.0	0	0	58.47	18.75	13.89	6.53	2.22	0.14
May	120	1.7	3.1	May 02	12.0	May 02 11:00	100.0	0	0	69.17	24.17	5.83	0.83	0	0
June															
July															
August															
September															
October															
November	614	1.0	8.1	Nov 25	39.2	Nov 29 10:00	100.0	0	0	86.64	8.14	3.42	1.14	0.33	0.33
December	36	0.8	0.8	Dec 01	3.7	Dec 02 03:00	100.0	0	0	80.56	19.44	0	0	0	0
Annual	1490	2.2	11.8	Apr 03	52.2	Apr 13 11:00	100.0	0	0	71.87	14.85	8.11	3.75	1.23	0.20

4.6 Parkland Airshed Management Zone – Crossfield - Carstairs PM_{2.5} Particulate Matter 2.5 (µg/m³)

Crossfield - Carstairs															PM _{2.5} (µg/m ³)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	Percentage of Readings in Concentration Range										
								AAAQO 24-Hr	AAAQG 1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30			
January																		
February																		
March																		
April																		
May																		
June																		
July	562	10.2	21.4	Jul 23	98.2	Jul 23 23:00	100.0	0	1	7.83	21.71	33.45	24.91	9.96	2.14			
August	744	10.3	22.0	Aug 31	100.1	Aug 31 20:00	100.0	0	1	6.99	25.27	27.82	26.75	11.02	2.15			
September	694	7.6	25.0	Sep 01	59.5	Sep 10 21:00	96.4	0	0	24.64	26.66	26.51	12.25	8.07	1.87			
October	127	4.8	7.3	Oct 01	29.4	Oct 01 20:00	98.4	0	0	22.83	48.82	22.05	3.94	2.36	0			
November																		
December																		
Annual	2127	9.0	25.0	Sep 01	100.1	Aug 31 20:00	98.7	0	2	13.9	26.2	28.5	20.2	9.3	1.9			

4.7 Parkland Airshed Management Zone – Gilby PM_{2.5} Particulate Matter 2.5 (µg/m³)

Gilby PM _{2.5} (µg/m ³)															2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		AAAQG		Percentage of Readings in Concentration Range				
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30	
January	558	2.0	11.0	Jan 20	29.4	Jan 15 17:00	99.3	0	0	71.33	15.23	9.14	3.23	1.08	0	
February	226	2.9	8.4	Feb 09	31.6	Feb 01 15:00	100.0	0	0	61.06	22.12	10.62	4.87	0.88	0.44	
March																
April																
May																
June																
July	707	6.1	17.2	Jul 30	36.8	Jul 30 01:00	100.0	0	0	32.39	26.31	23.48	11.03	6.22	0.57	
August	120	7.5	13.2	Aug 02	25.8	Aug 02 14:00	100.0	0	0	10.83	35.83	31.67	14.17	7.5	0	
September																
October																
November																
December																
Annual	1611	4.4	17.2	Jul 30	36.8	Jul 30 01:00	99.8	0	0	49.02	22.39	17.14	7.40	3.73	0.32	

4.8 Parkland Airshed Management Zone – Harmattan PM_{2.5} Particulate Matter 2.5 (µg/m³)

Harmattan PM _{2.5} (µg/m ³)															2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAs		Percentage of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30
January															
February															
March															
April															
May															
June															
July															
August	456	5.2	13.6	Aug 31	29.5	Aug 31 20:00	100.0	0	0	36.4	23.9	26.75	9.65	3.29	0
September	680	4.8	19.4	Sep 01	34.1	Sep 15 20:00	94.4	0	0	46.18	25.44	14.85	6.47	6.62	0.44
October	11	2.8	-	-	15.5	Oct 01 09:00	100.0	0	0	63.64	18.18	9.09	9.09	0	0
November															
December	666	0.9	3.5	Dec 30	27.2	Dec 03 20:00	97.7	0	0	84.68	12.31	2.4	0.45	0.15	0
Annual	1813	3.4	19.4	Sep 01	34.1	Sep 15 20:00	98.0	0	0	57.97	20.19	13.24	5.07	3.36	0.17

4.9 Parkland Airshed Management Zone – Medicine Lodge PM_{2.5} Particulate Matter 2.5 (µg/m³)

Medicine Lodge															PM _{2.5} (µg/m ³)		2009	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range								
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30			
January	405	3.7	8.4	Jan 24	19.0	Jan 15 12:00	98.8	0	0	39.51	37.78	18.27	3.95	0.49	0			
February	659	6.3	15.3	Feb 14	31.4	Feb 23 01:00	98.1	0	0	23.07	34.9	25.34	10.32	6.22	0.15			
March	737	8.3	35.2	Mar 02	45.6	Mar 20 01:00	99.1	1	0	26.19	28.77	21.44	9.91	8.41	5.29			
April	181	8.8	16.0	Apr 03	32.7	Apr 03 07:00	100.0	0	0	13.81	30.39	20.99	20.99	12.71	1.1			
May																		
June																		
July																		
August																		
September																		
October																		
November																		
December																		
Annual	1982	6.7	35.2	Mar 02	45.6	Mar 20 01:00	99.0	1	0	26.74	32.8	22.05	9.84	6.46	2.12			

4.10 Parkland Airshed Management Zone – Red Deer - Oriole Park PM_{2.5} Particulate Matter 2.5 (µg/m³)

Red Deer - Oriole Park															PM _{2.5} (µg/m ³)		2009		
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		AAQO		Percentage of Readings in Concentration Range							
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30				
January																			
February	384	8.0	17.8	Feb 16	60.8	Feb 15 14:00	100.0	0	0	30.73	14.58	23.44	16.15	14.58	0.52				
March	351	9.9	29.3	Mar 02	44.2	Mar 02 11:00	88.6	0	0	26.5	19.94	21.94	10.83	12.54	8.26				
April																			
May																			
June																			
July																			
August																			
September																			
October	671	2.5	7.6	Oct 15	21.4	Oct 16 00:00	96.4	0	0	63.19	23.25	9.24	3.13	1.19	0				
November	64	1.6	1.6	Nov 02	12.3	Nov 03 16:00	100.0	0	0	70.31	25	3.13	1.56	0	0				
December																			
Annual	1470	5.7	29.3	Mar 02	60.8	Feb 15 14:00	96.3	0	0	48.64	20.90	15.23	7.06	5.96	2.21				

4.11 Parkland Airshed Management Zone – Red Deer Riverside PM_{2.5} Particulate Matter 2.5 (µg/m³)

Red Deer Riverside											PM _{2.5} (µg/m ³)						2009
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Percentage of Readings in Concentration Range							
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30		
January	740	4.5	9.8	Jan 03	22.7	Jan 16 11:00	99.7	0	0	31.76	39.86	21.49	6.62	0.27	0.00		
February	566	4.5	7.8	Feb 17	21.0	Feb 10 12:00	98.8	0	0	30.21	37.28	28.27	3.89	0.35	0		
March	743	4.1	7.9	Mar 17	19.2	Mar 10 09:00	99.9	0	0	32.3	42.53	21.4	3.36	0.4	0		
April	711	4.0	8.8	Apr 03	17.6	Apr 26 15:00	98.8	0	0	30.94	45.57	19.13	4.22	0.14	0		
May	733	7.1	13.8	May 25	30.4	May 31 18:00	99.1	0	0	15.01	28.79	37.38	16.37	2.32	0.14		
June	717	11.0	26.3	Jun 13	44.2	Jun 13 09:00	99.9	0	0	1.95	15.48	41.84	28.03	11.16	1.53		
July	744	10.1	22.5	Jul 30	36.8	Jul 26 00:00	100.0	0	0	0.54	20.3	45.16	24.6	7.8	1.61		
August	741	11.1	16.8	Aug 28	28.7	Sep 01 00:00	100.0	0	0	0.13	10.26	45.48	32.52	11.61	0		
September	718	9.1	20.8	Sep 01	27.9	Sep 02 22:00	100.0	0	0	2.09	29.25	41.09	16.71	10.86	0		
October	730	9.1	17.0	Oct 15	46.9	Oct 25 07:00	98.7	0	0	1.1	20.55	53.56	19.73	4.79	0.27		
November	711	8.7	13.7	Nov 28	30.5	Nov 07 07:00	99.3	0	0	1.97	26.3	45.85	22.08	3.66	0.14		
December	738	17.8	42.5	Dec 28	62.7	Dec 28 05:00	99.5	1	0	0	3.12	21.82	26.96	40.11	7.99		
Annual	8592	8.5	42.5	Dec 28	62.7	Dec 28 05:00	99.5	1	0	11.97	26.36	35.35	17.36	7.96	1.00		

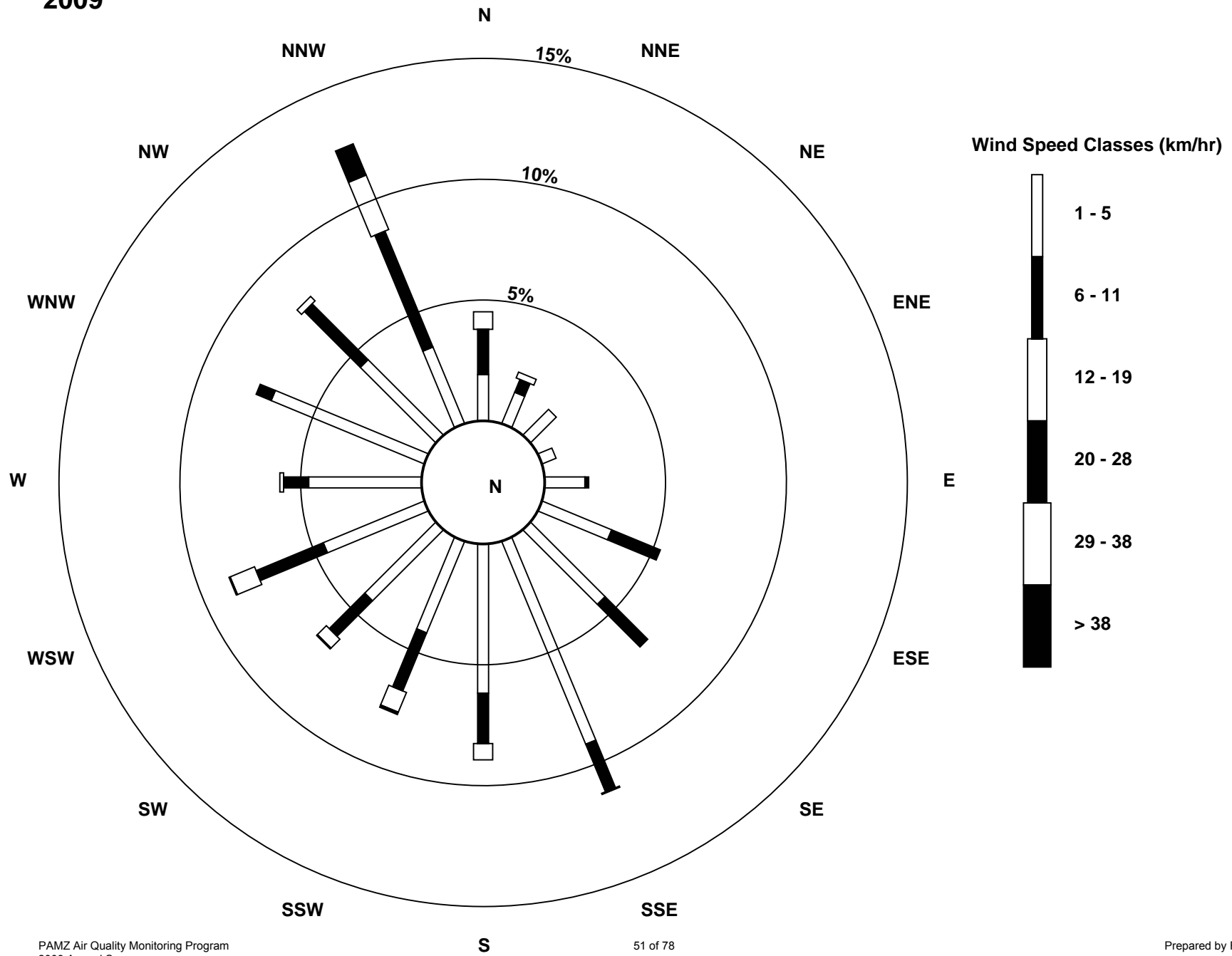
5.

Wind Data Summary Tables & Wind Roses

5.1 Parkland Airshed Management Zone – Beiseker Wind speed and Wind Direction Frequency Table

Beiseker								2009
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	86	1.92	1.61	0.93	0	0	0	4.47
NNE	43	1.40	0.36	0.47	0	0	0	2.23
NE	28	1.45	0	0	0	0	0	1.45
ENE	12	0.62	0	0	0	0	0	0.62
E	33	1.56	0.16	0	0	0	0	1.71
ESE	101	3.06	2.18	0	0	0	0	5.24
SE	128	4.15	2.44	0.05	0	0	0	6.65
SSE	214	8.93	1.87	0.31	0	0	0	11.11
S	169	6.07	1.92	0.78	0	0	0	8.77
SSW	146	4.00	2.44	1.04	0.10	0	0	7.58
SW	127	3.95	2.02	0.57	0.05	0	0	6.59
WSW	165	4.52	2.54	1.45	0.05	0	0	8.57
W	109	4.52	0.93	0.21	0	0	0	5.66
WNW	144	6.80	0.67	0	0	0	0	7.48
NW	148	4.15	2.96	0.57	0	0	0	7.68
NNW	232	3.32	4.15	3.17	1.40	0	0	12.05
Totals	1885	60.44	26.27	9.55	1.61	0	0	97.87

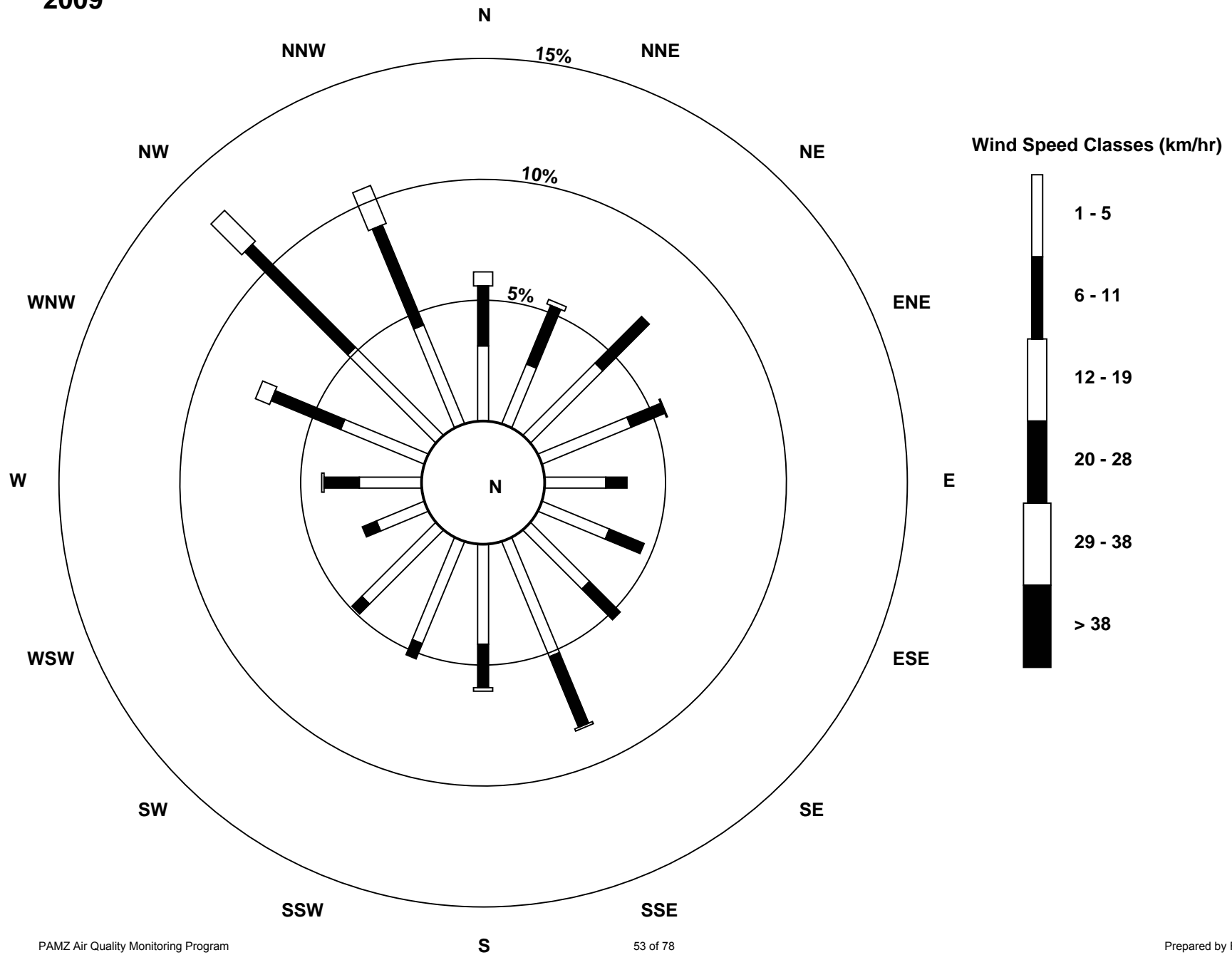
Wind Rose for WS at Beiseker 2009



5.2 Parkland Airshed Management Zone – Bentley Wind speed and Wind Direction Frequency Table

Bentley								2009
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	125	3.01	2.28	0.78	0	0	0	6.08
NNE	111	2.58	2.58	0.24	0	0	0	5.4
NE	140	4.08	2.72	0	0	0	0	6.81
ENE	110	3.79	1.51	0.05	0	0	0	5.35
E	67	2.38	0.88	0	0	0	0	3.26
ESE	92	2.92	1.56	0	0	0	0	4.47
SE	108	3.45	1.8	0	0	0	0	5.25
SSE	172	5.1	3.06	0.19	0	0	0	8.36
S	123	4.04	1.75	0.19	0	0	0	5.98
SSW	106	4.47	0.68	0	0	0	0	5.15
SW	101	4.33	0.58	0	0	0	0	4.91
WSW	56	2.09	0.63	0	0	0	0	2.72
W	82	2.43	1.17	0.39	0	0	0	3.99
WNW	152	3.65	2.77	0.97	0	0	0	7.39
NW	261	4.91	5.49	2.28	0	0	0	12.69
NNW	214	4.33	3.89	2.19	0	0	0	10.4
Totals	2020	57.56	33.35	7.29	0	0	0	98.2

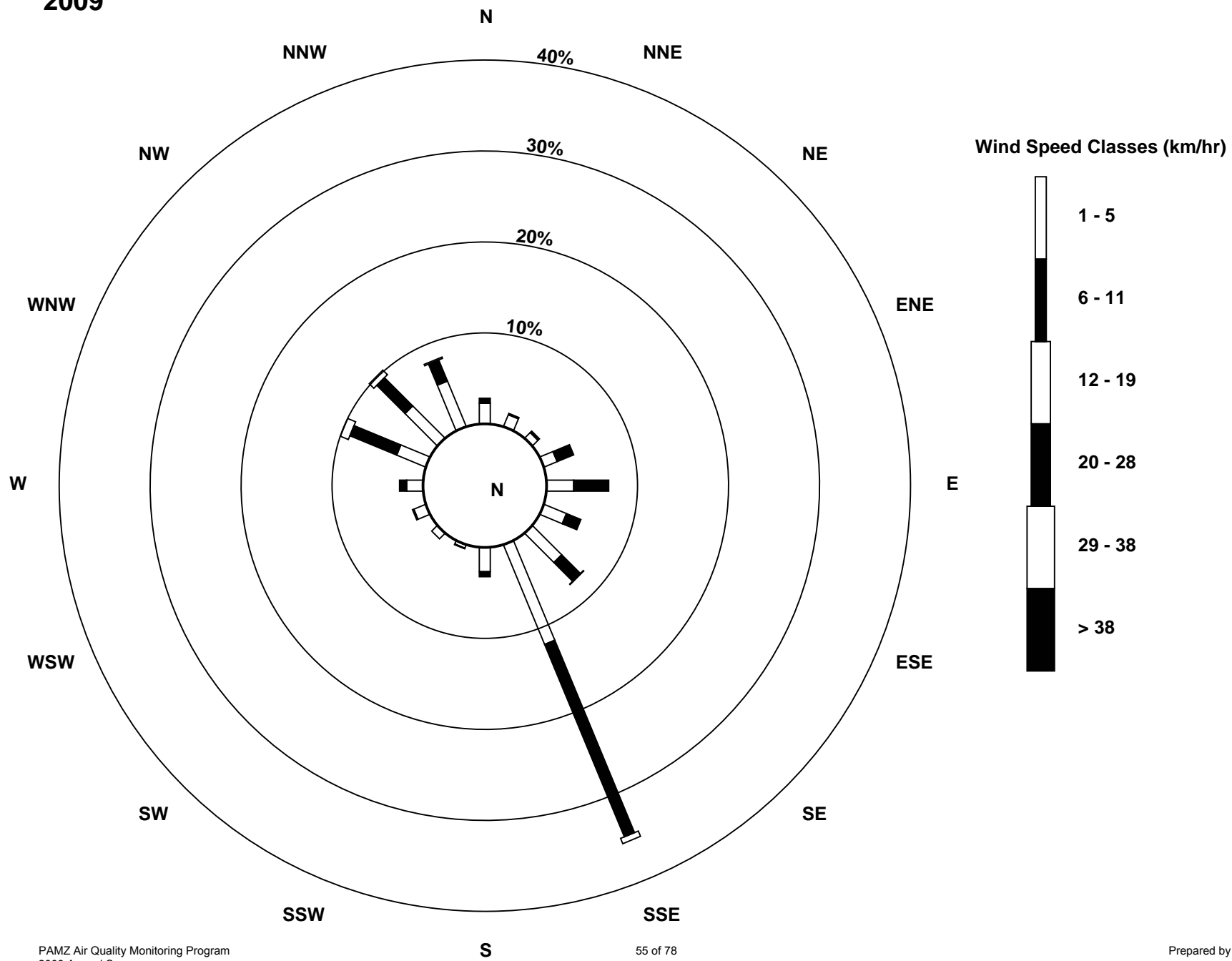
Wind Rose for WS at Bentley 2009



5.3 Parkland Airshed Management Zone – Bighorn Reserve Wind speed and Wind Direction Frequency Table

Bighorn Reserve								2009
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	35	2.20	0.55	0	0	0	0	2.75
NNE	19	1.33	0.16	0	0	0	0	1.49
NE	14	0.86	0.24	0	0	0	0	1.10
ENE	44	1.49	1.96	0	0	0	0	3.45
E	81	2.51	3.76	0.08	0	0	0	6.35
ESE	55	2.59	1.73	0	0	0	0	4.31
SE	96	4.55	2.67	0.31	0	0	0	7.53
SSE	443	11.22	22.75	0.78	0	0	0	34.75
S	41	2.67	0.55	0	0	0	0	3.22
SSW	6	0.39	0.08	0	0	0	0	0.47
SW	11	0.86	0	0	0	0	0	0.86
WSW	19	1.33	0.16	0	0	0	0	1.49
W	33	1.80	0.78	0	0	0	0	2.59
WNW	123	3.29	4.86	1.49	0	0	0	9.65
NW	129	5.02	3.92	1.18	0	0	0	10.12
NNW	101	5.25	2.43	0.24	0	0	0	7.92
Totals	1250	47.37	46.59	4.08	0	0	0	98.04

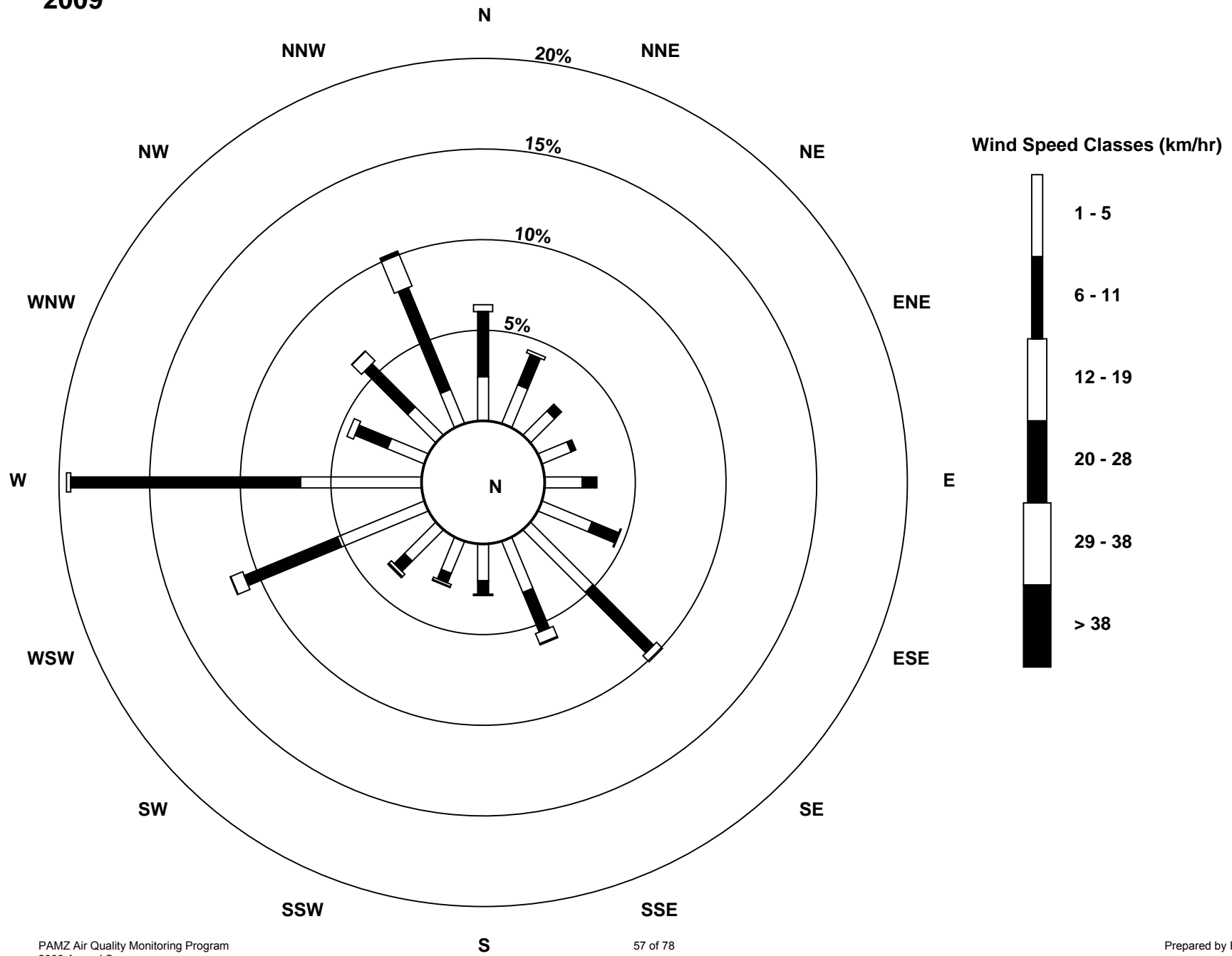
Wind Rose for WS at Bighorn Reserve 2009



5.4 Parkland Airshed Management Zone – Caroline Wind speed and Wind Direction Frequency Table

Caroline								2009
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	505	2.34	3.36	0.59	0	0	0	6.29
NNE	333	2.18	1.66	0.31	0	0	0	4.15
NE	190	1.83	0.52	0.01	0	0	0	2.37
ENE	158	1.68	0.27	0.01	0	0	0	1.97
E	227	2.03	0.78	0.01	0	0	0	2.83
ESE	368	2.94	1.52	0.12	0	0	0	4.58
SE	793	4.73	4.15	1.00	0	0	0	9.88
SSE	479	2.96	2.05	0.87	0.07	0	0	5.97
S	228	2.03	0.71	0.07	0.02	0	0	2.84
SSW	212	1.89	0.50	0.20	0.05	0	0	2.64
SW	278	2.39	0.78	0.20	0.09	0	0	3.46
WSW	914	5.08	5.35	0.91	0.04	0	0	11.38
W	1537	6.29	12.25	0.60	0	0	0	19.14
WNW	358	2.15	1.79	0.51	0	0	0	4.46
NW	502	2.14	3.01	1.07	0.02	0	0	6.25
NNW	810	1.96	5.48	2.45	0.20	0	0	10.09
Totals	7892	44.63	44.21	8.94	0.50	0	0	98.28

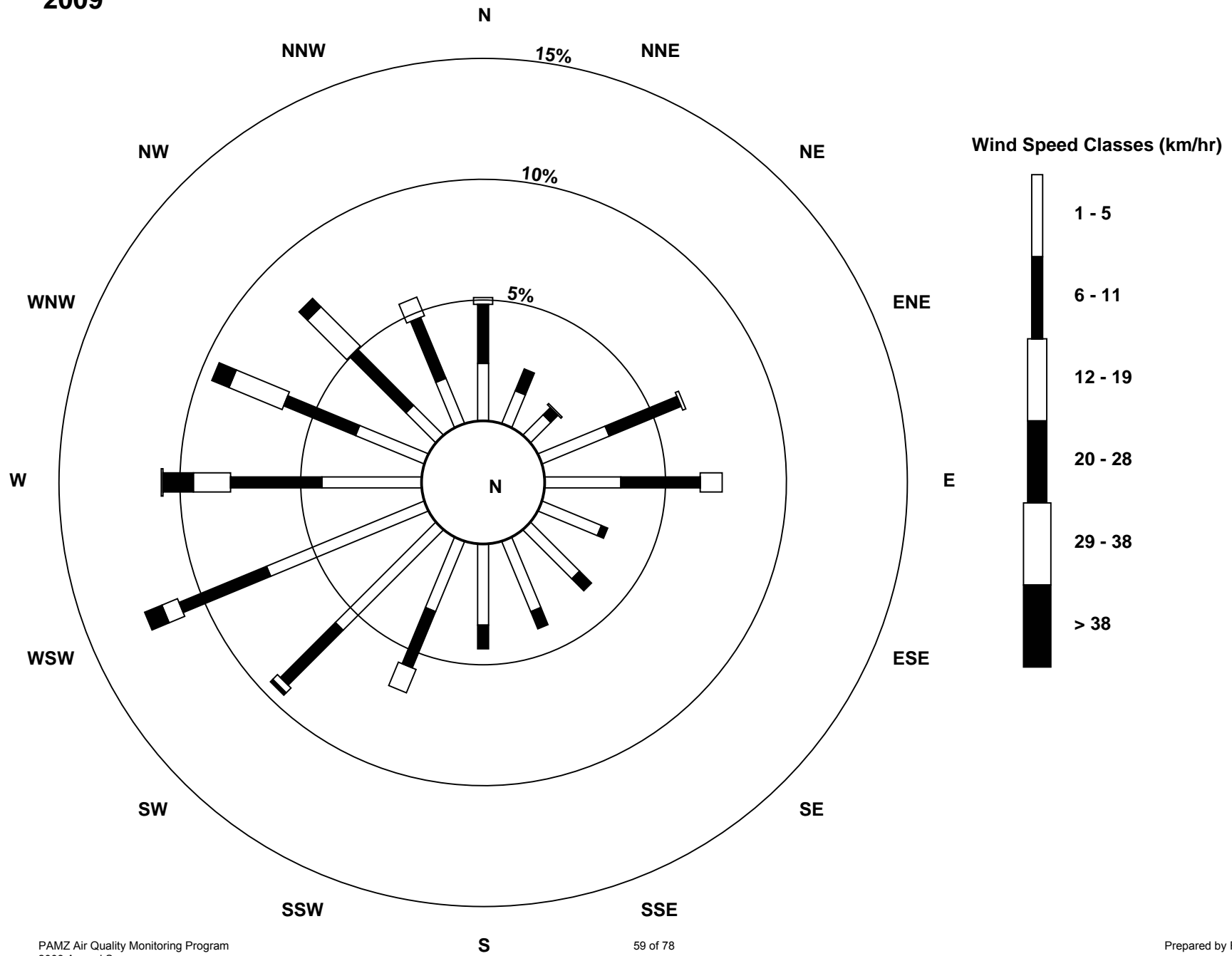
Wind Rose for WS at Caroline 2009



5.5 Parkland Airshed Management Zone – Cheddarville Wind speed and Wind Direction Frequency Table

Cheddarville								2009
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	73	2.38	2.03	0.70	0	0	0	5.10
NNE	35	1.47	0.98	0	0	0	0	2.45
NE	24	1.19	0.42	0.07	0	0	0	1.68
ENE	90	2.94	2.73	0.63	0	0	0	6.29
E	102	2.94	2.94	1.26	0	0	0	7.13
ESE	41	2.59	0.28	0	0	0	0	2.87
SE	50	2.80	0.70	0	0	0	0	3.50
SSE	54	3.01	0.77	0	0	0	0	3.78
S	62	3.36	0.98	0	0	0	0	4.34
SSW	95	3.08	2.45	1.12	0	0	0	6.64
SW	134	5.80	3.01	0.42	0.14	0	0	9.37
WSW	176	6.92	3.71	0.91	0.77	0	0	12.31
W	154	4.13	3.36	1.96	1.33	0	0	10.77
WNW	134	3.01	2.94	2.66	0.77	0	0	9.37
NW	110	1.61	2.87	2.73	0.49	0	0	7.69
NNW	80	2.03	2.38	1.19	0	0	0	5.59
Totals	1414	49.23	32.52	13.64	3.50	0	0	98.88

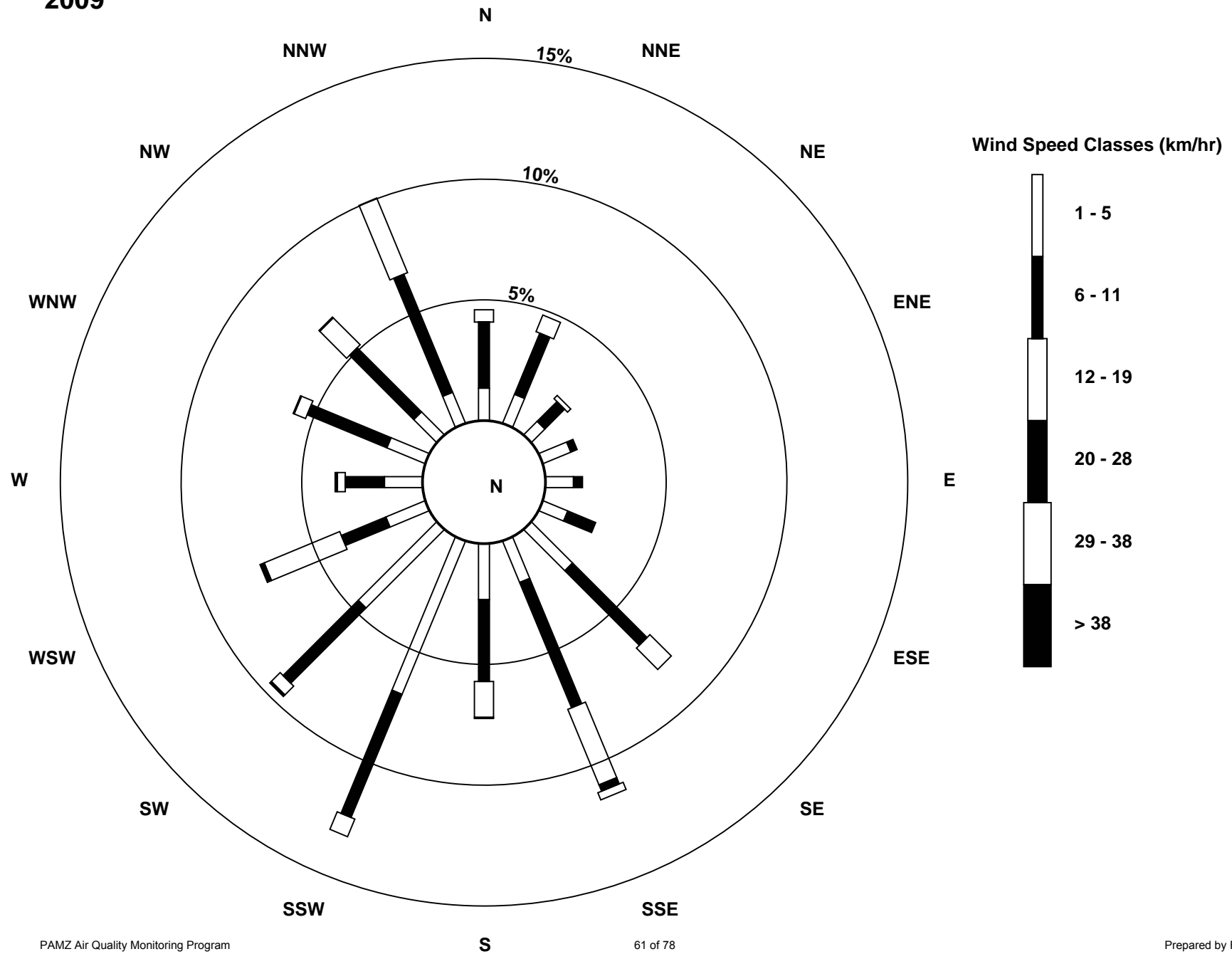
Wind Rose for WS at Cheddarville 2009



5.6 Parkland Airshed Management Zone – Crossfield - Carstairs Wind speed and Wind Direction Frequency Table

Crossfield - Carstairs								2009
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	98	1.35	2.32	0.88	0	0	0	4.55
NNE	101	1.21	2.46	1.02	0	0	0	4.69
NE	44	0.70	1.11	0.23	0	0	0	2.04
ENE	33	1.25	0.28	0.00	0	0	0	1.53
E	33	1.16	0.37	0	0	0	0	1.53
ESE	51	1.11	1.25	0	0	0	0	2.37
SE	167	2.23	3.71	1.81	0	0	0	7.75
SSE	241	1.76	4.59	4.22	0.32	0.28	0	11.18
S	154	2.23	3.02	1.86	0.05	0	0	7.15
SSW	277	6.54	5.29	1.02	0	0	0	12.85
SW	205	4.55	3.81	1.07	0.09	0	0	9.51
WSW	156	1.72	1.16	4.18	0.19	0	0	7.24
W	75	1.48	1.35	0.56	0.09	0	0	3.48
WNW	123	1.62	3.20	0.84	0.05	0	0	5.71
NW	143	1.25	2.83	2.51	0.05	0	0	6.64
NNW	214	1.35	4.13	4.45	0	0	0	9.93
Totals	2115	31.51	40.88	24.64	0.84	0.28	0	98.14

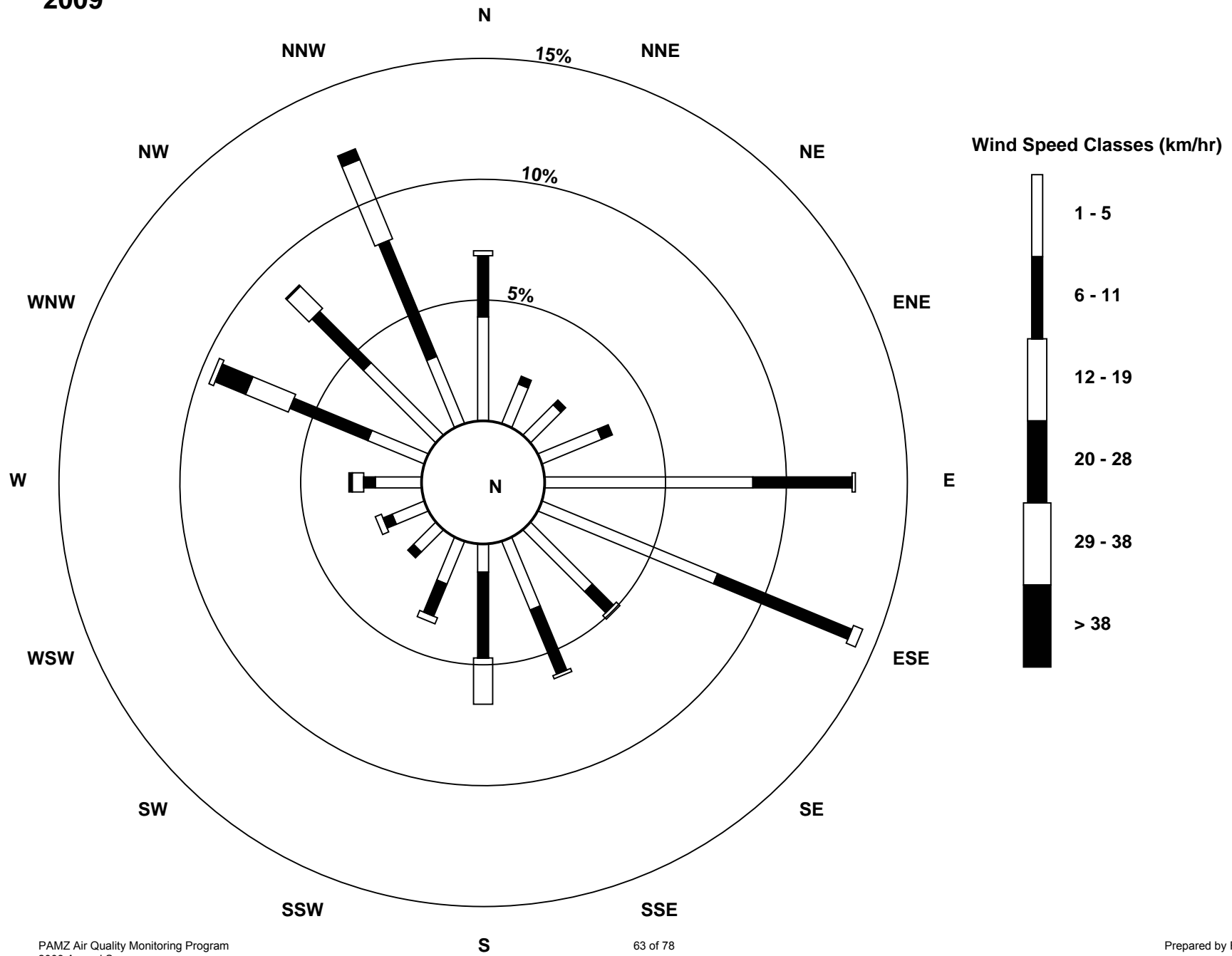
Wind Rose for WS at Crossfield - Carstairs 2009



5.7 Parkland Airshed Management Zone – Gilby Wind speed and Wind Direction Frequency Table

Gilby								2009
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	102	4.24	2.32	0.41	0	0	0	6.97
NNE	31	1.78	0.34	0	0	0	0	2.12
NE	30	1.78	0.27	0	0	0	0	2.05
ENE	46	2.67	0.48	0	0	0	0	3.14
E	187	8.54	4.03	0.21	0	0	0	12.78
ESE	205	7.66	5.33	1.03	0	0	0	14.01
SE	73	3.62	1.16	0.21	0	0	0	4.99
SSE	85	2.80	2.73	0.27	0	0	0	5.81
S	97	1.16	3.28	2.19	0	0	0	6.63
SSW	52	1.85	1.37	0.34	0	0	0	3.55
SW	24	1.30	0.34	0	0	0	0	1.64
WSW	30	1.37	0.34	0	0	0	0	2.05
W	44	1.91	0.41	0.55	0.14	0	0	3.01
WNW	137	2.46	3.08	2.26	1.37	0.21	0	9.36
NW	124	4.24	2.60	1.57	0.07	0	0	8.48
NNW	177	3.01	4.17	4.44	0.48	0	0	12.10
Totals	1444	50.38	32.26	13.81	2.05	0.21	0	98.70

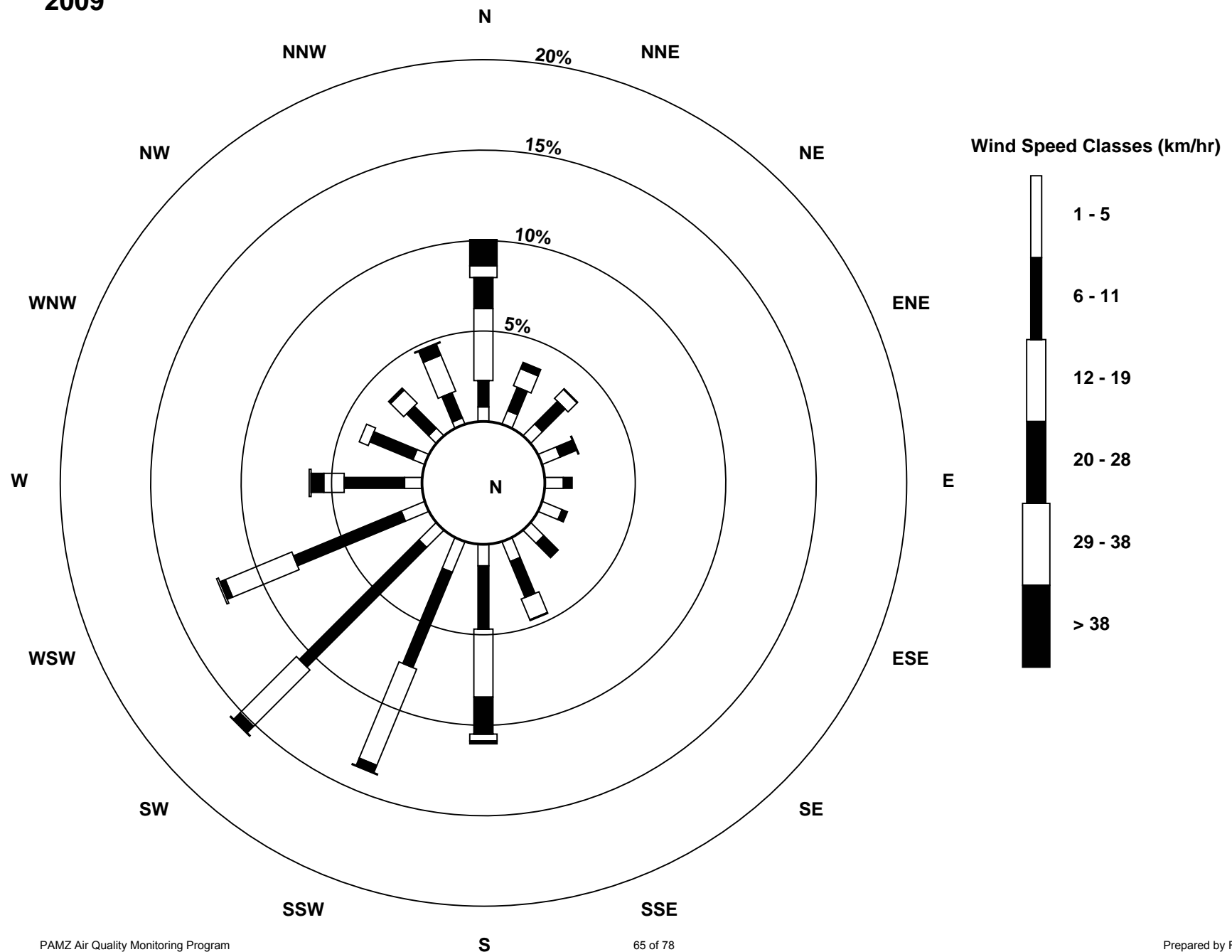
Wind Rose for WS at Gilby 2009



5.8 Parkland Airshed Management Zone – Harmattan Wind speed and Wind Direction Frequency Table

Harmattan								2009
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	186	0.81	0.97	4.41	1.99	0.43	1.40	10.01
NNE	66	0.81	1.13	1.24	0.38	0	0	3.55
NE	63	0.86	1.67	0.81	0.05	0	0	3.39
ENE	38	1.02	0.97	0.05	0	0	0	2.04
E	28	1.02	0.48	0	0	0	0	1.51
ESE	27	1.13	0.32	0	0	0	0	1.45
SE	40	1.02	0.97	0.16	0	0	0	2.15
SSE	86	1.18	1.88	1.51	0.05	0	0	4.63
S	199	1.13	2.90	4.09	2.04	0.38	0.16	10.70
SSW	250	1.67	4.36	6.94	0.43	0.05	0	13.45
SW	285	1.34	8.23	5.22	0.48	0.05	0	15.33
WSW	225	1.34	5.27	5.06	0.38	0.05	0	12.10
W	115	0.91	2.90	1.56	0.75	0.05	0	6.19
WNW	68	0.65	2.04	0.97	0	0	0	3.66
NW	64	0.54	1.13	1.61	0.16	0	0	3.44
NNW	87	0.38	1.34	2.31	0.65	0	0	4.68
Totals	1827	15.81	36.58	35.93	7.37	1.02	1.56	98.28

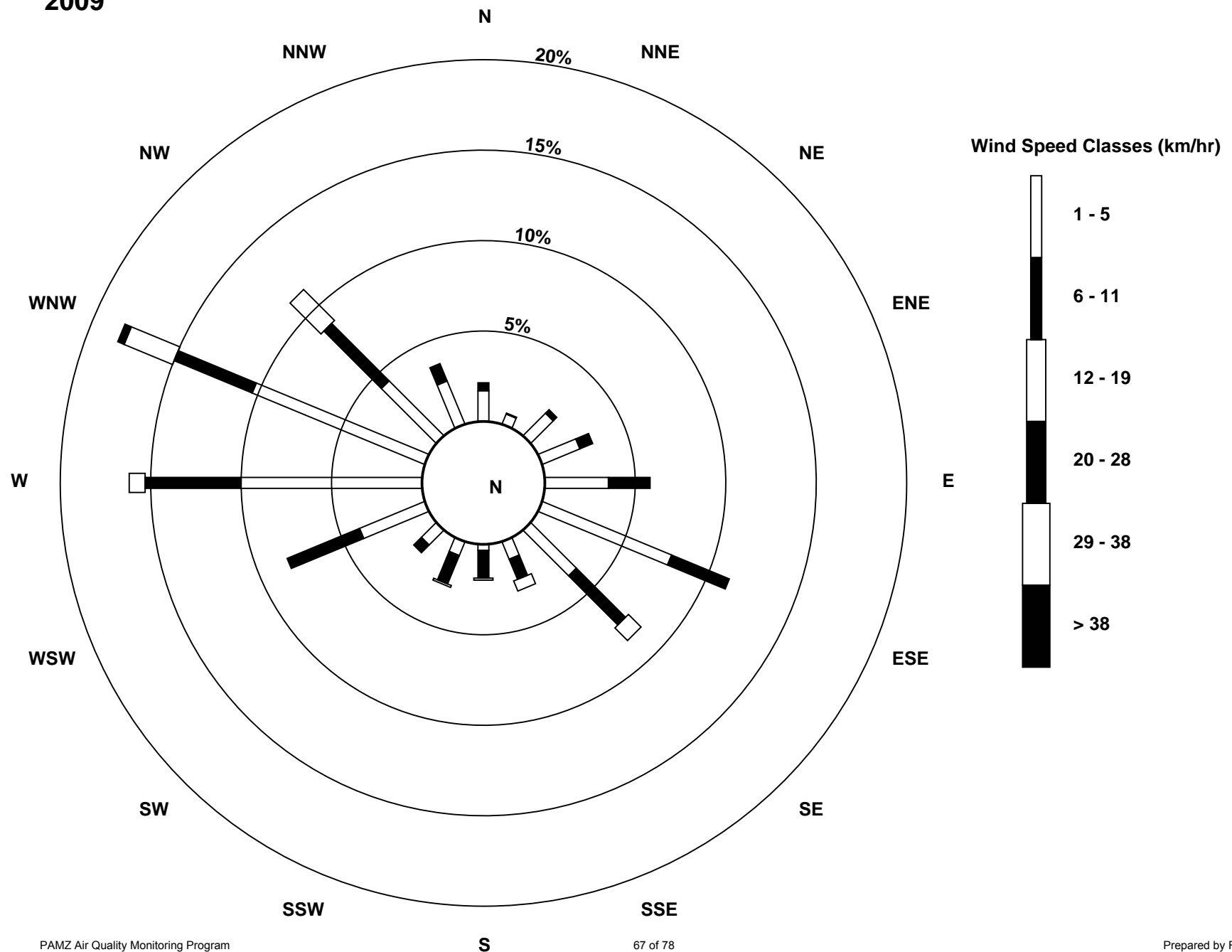
Wind Rose for WS at Harmattan 2009



5.9 Parkland Airshed Management Zone – Medicine Lodge Wind speed and Wind Direction Frequency Table

Medicine Lodge								2009
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	86	1.92	1.61	0.93	0	0	0	4.47
NNE	43	1.4	0.36	0.47	0	0	0	2.23
NE	28	1.45	0	0	0	0	0	1.45
ENE	12	0.62	0	0	0	0	0	0.62
E	33	1.56	0.16	0	0	0	0	1.71
ESE	101	3.06	2.18	0	0	0	0	5.24
SE	128	4.15	2.44	0.05	0	0	0	6.65
SSE	214	8.93	1.87	0.31	0	0	0	11.11
S	169	6.07	1.92	0.78	0	0	0	8.77
SSW	146	4	2.44	1.04	0.1	0	0	7.58
SW	127	3.95	2.02	0.57	0.05	0	0	6.59
WSW	165	4.52	2.54	1.45	0.05	0	0	8.57
W	109	4.52	0.93	0.21	0	0	0	5.66
WNW	144	6.8	0.67	0	0	0	0	7.48
NW	148	4.15	2.96	0.57	0	0	0	7.68
NNW	232	3.32	4.15	3.17	1.4	0	0	12.05
Totals	1885	60.44	26.27	9.55	1.61	0	0	97.87

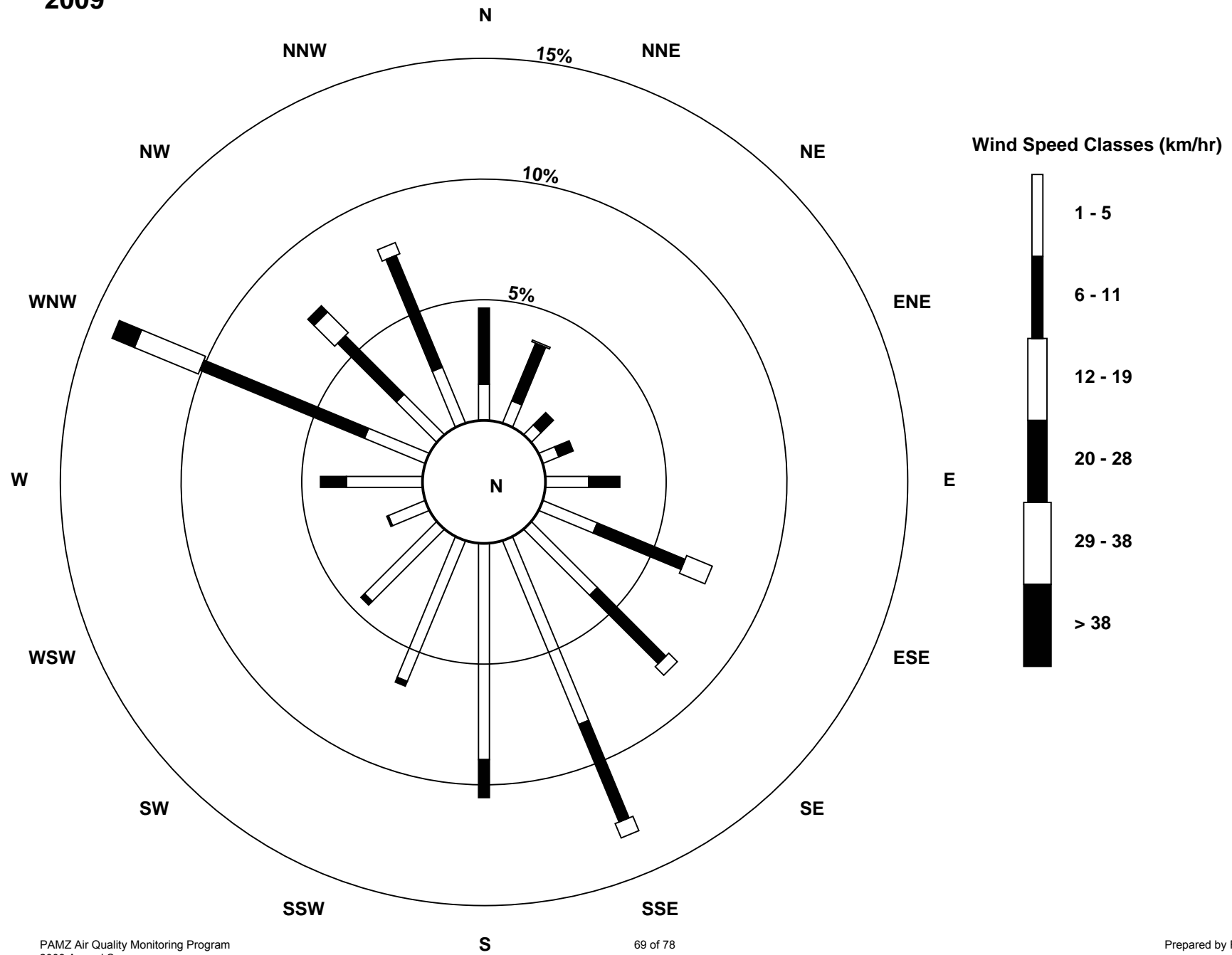
Wind Rose for WS at Medicine Lodge 2009



5.10 Parkland Airshed Management Zone – Red Deer - Oriole Park Wind speed and Wind Direction Frequency Table

Red Deer Oriole Park								2009
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	62	1.50	2.87	0.07	0	0	0	4.44
NNE	51	1.00	2.44	0.21	0	0	0	3.65
NE	18	0.57	0.72	0.00	0	0	0	1.29
ENE	19	0.72	0.64	0.00	0	0	0	1.36
E	42	1.72	1.29	0.00	0	0	0	3.01
ESE	104	2.44	3.08	1.93	0	0	0	7.45
SE	116	3.87	3.72	0.72	0	0	0	8.31
SSE	179	7.81	4.23	0.79	0	0	0	12.82
S	143	8.67	1.58	0.00	0	0	0	10.24
SSW	90	6.23	0.21	0.00	0	0	0	6.45
SW	61	4.15	0.21	0.00	0	0	0	4.37
WSW	24	1.65	0.07	0.00	0	0	0	1.72
W	59	3.15	0.93	0.14	0	0	0	4.23
WNW	191	2.51	6.52	3.65	1.00	0	0	13.68
NW	103	2.36	2.94	1.72	0.36	0	0	7.38
NNW	110	2.44	4.58	0.86	0	0	0	7.88
Totals	1372	50.79	36.03	10.10	1.36	0	0	98.28

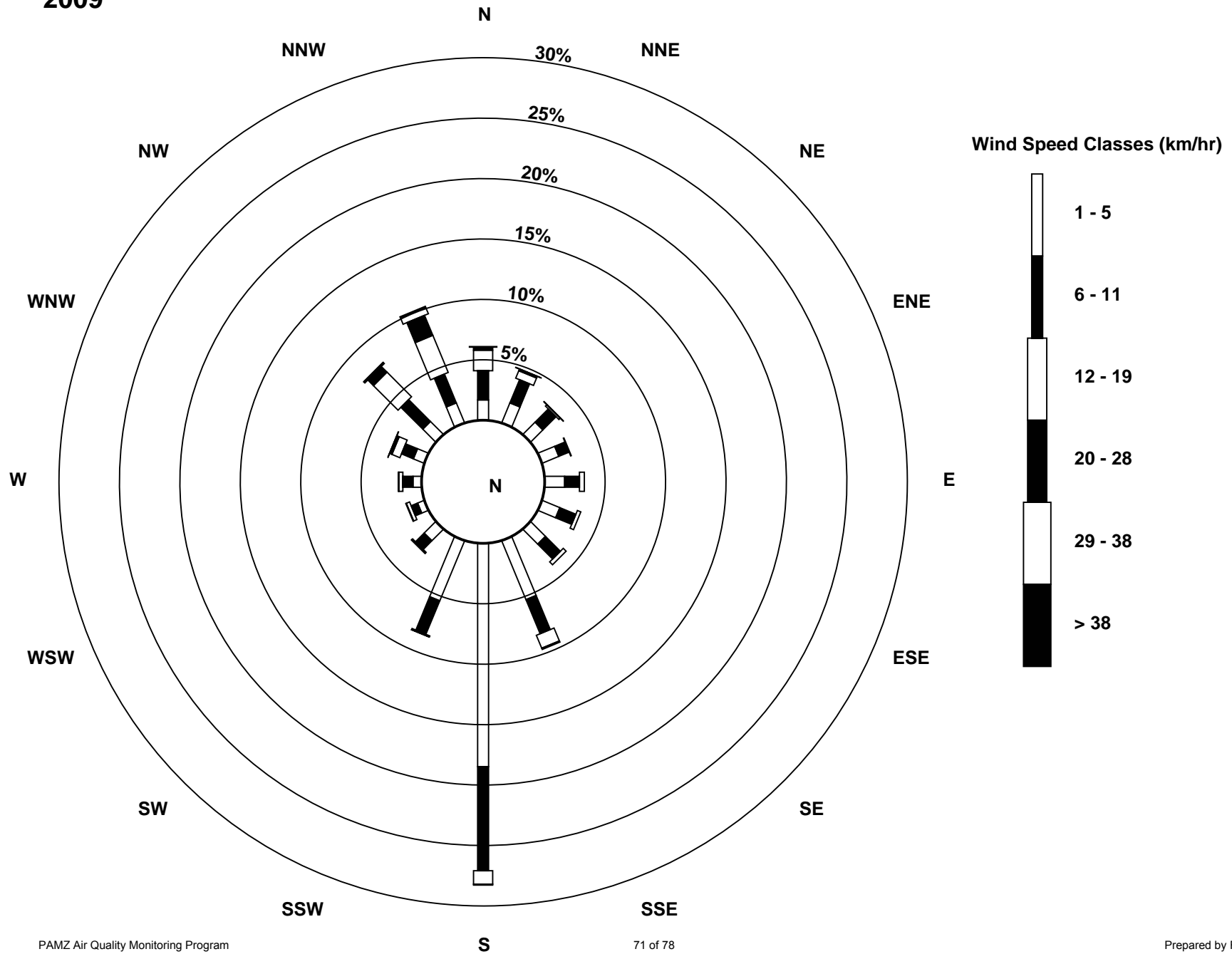
Wind Rose for WS at Oriole Park 2009



5.11 Parkland Airshed Management Zone – Red Deer Riverside Wind speed and Wind Direction Frequency Table

Red Deer Riverside								2009
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	486	1.61	2.06	1.99	0.26	0.05	0	5.97
NNE	373	1.74	1.74	0.93	0.15	0.01	0	4.58
NE	250	1.36	1.40	0.29	0	0.01	0	3.07
ENE	200	1.49	0.91	0.06	0	0	0	2.46
E	264	1.61	1.14	0.49	0	0	0	3.24
ESE	267	1.55	1.26	0.47	0	0	0	3.28
SE	304	1.66	1.65	0.43	0	0	0	3.73
SSE	774	5.21	2.71	1.47	0.11	0	0	9.50
S	2264	18.07	8.26	1.39	0.07	0	0	27.80
SSW	675	5.18	2.81	0.28	0.01	0	0	8.29
SW	199	1.29	0.96	0.16	0.04	0	0	2.44
WSW	120	0.56	0.52	0.34	0.05	0	0	1.47
W	151	0.69	0.72	0.41	0.04	0	0	1.85
WNW	237	0.92	0.93	0.83	0.22	0	0	2.91
NW	621	1.51	2.11	3.20	0.70	0.09	0.01	7.63
NNW	813	1.72	1.98	3.84	1.85	0.52	0.07	9.98
Totals	7998	46.17	31.18	16.60	3.50	0.68	0.09	98.21

Wind Rose for WS at Red Deer Riverside 2009



6.

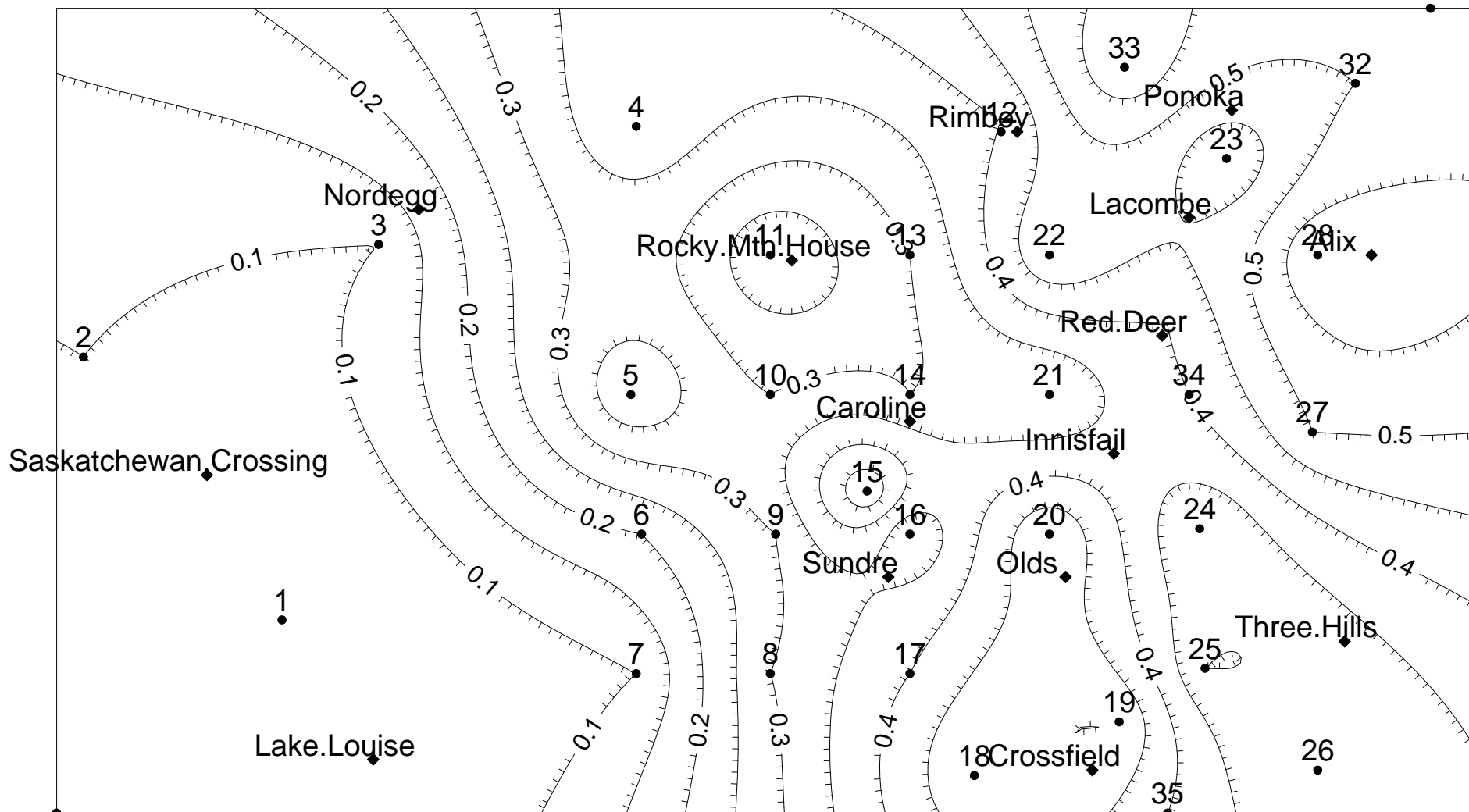
Passive Monitoring Program

PAMZ Annual Air Quality Monitoring Summary – 2009

SO₂ Passive Monitoring Network

Station	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	Station Average
1 Bow Summit	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
2 Parker Ridge	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1
3 Bighorn	0.2	0.2	0.2	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1
4 Sunchild	0.5	0.7	0.7	0.4	0.4	0.2	0.3	0.3	0.2	0.2	0.2	0.4	0.4
5 Baseline Mountain	0.1	0.7	0.8	0.5	0.4	0.0	0.5	0.7	0.3	0.2	0.2	0.4	0.4
6 Limestone Mountain	0.2	0.6	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2
7 Panther River	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
8 Fallen Timber	0.4	0.5	0.5	0.3	0.3	0.2	0.2	0.4	0.1	0.1	0.1	0.6	0.3
9 Bearberry	0.4	0.5	0.4	0.3	0.3	0.2	0.2	0.3	0.2	0.1	0.1	0.4	0.3
10 Ricinus	0.4	0.5	0.6	0.3	0.3	0.1	0.2	0.3	0.2	0.1	0.1	0.2	0.3
11 Twin Lakes	0.3	0.6	0.4	0.3	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2
12 Rimbey	0.8	0.6	0.9	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.6	0.4
13 Leslieville	0.6	0.5	0.7	0.3	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.4	0.3
14 Raven River	0.6	0.6	0.6	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
15 Caroline	1.1	0.9	0.8	NA	0.3	0.2	0.5	0.5	0.3	0.2	0.2	0.5	0.5
16 Sundre	0.4	0.4	0.5	0.3	0.3	0.1	0.1	0.3	0.2	0.1	0.1	0.3	0.3
17 South Elkton	0.7	0.7	0.7	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.4
18 Bottrel	0.8	0.8	0.6	0.4	0.3	0.2	0.4	0.4	0.3	0.3	0.3	0.6	0.5
19 Crossfield-Carstairs	0.8	0.5	0.8	0.3	0.4	0.3	0.3	0.6	0.5	0.4	0.4	0.7	0.5
20 Netook-Olds	0.9	0.8	0.8	0.3	0.4	0.2	0.3	0.4	0.4	0.3	0.3	0.5	0.5
21 Markerville	0.6	0.4	0.6	0.2	0.3	NA	0.2	0.4	0.2	0.2	0.2	NA	0.3
22 Sylvan Lake	0.9	0.7	0.9	0.4	0.3	0.2	0.3	0.4	0.4	0.3	0.3	0.7	0.5
23 Morningside	0.8	0.5	0.9	0.3	0.3	0.2	0.3	0.4	0.3	0.3	0.3	0.5	0.4
24 Mayton	0.5	0.4	0.5	0.2	0.3	0.2	0.2	0.3	0.3	0.1	0.1	0.3	0.3
25 Sunnyslope	0.6	0.4	0.6	0.2	0.3	0.2	0.3	0.4	0.3	0.2	0.2	0.4	0.3
26 Grainger	0.7	0.5	0.5	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.4	0.3
27 Elnora	0.9	0.9	0.8	0.3	0.3	0.2	0.3	0.4	0.3	0.3	0.3	0.7	0.5
28 Alix	1.0	1.0	1.1	0.5	0.4	0.3	0.4	0.5	0.5	0.3	0.3	1.0	0.6
32 Samson	1.0	0.5	0.8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.8	0.5
33 Ferrybank	1.0	1.0	1.2	0.4	0.4	0.3	0.4	0.5	0.4	0.4	0.4	0.8	0.6
34 Pakkwaw	0.8	0.6	1.0	0.4	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.5	0.4
35 Kersey	0.8	0.4	0.7	0.3	0.4	0.3	0.3	0.6	0.4	0.3	0.3	0.5	0.4
65 Red Deer	0.6	0.6	0.6	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.4	0.4
Monthly Average	0.6	0.6	0.6	0.3	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.4	0.4
Monthly Maximum	1.1	1.0	1.2	0.5	0.4	0.4	0.5	0.7	0.5	0.4	0.4	1.0	
Monthly Minimum	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	

*All values expressed in ppb



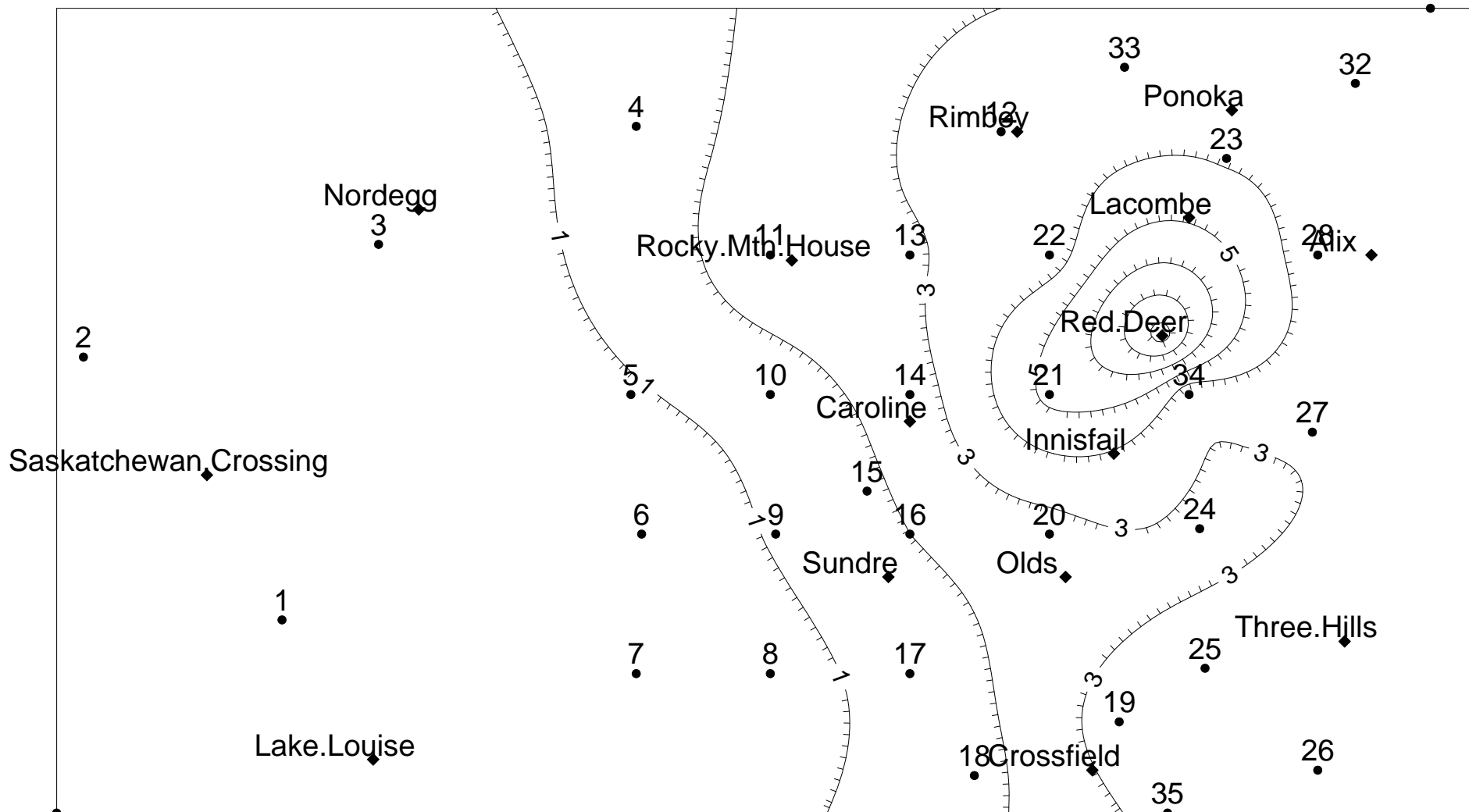
PAMZ Passive SO2 Monitoring Network - 2009 Station Averages (ppb)

PAMZ Annual Air Quality Monitoring Summary – 2009

NO₂ Passive Monitoring Network

Station	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	Station Average
1 Bow Summit	0.3	0.4	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.4	0.1	0.3	0.3
2 Parker Ridge	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.2	0.0	0.2	0.1	0.1	0.1
3 Bighorn	0.7	0.7	0.5	0.3	0.3	0.2	0.1	0.3	0.1	0.4	0.1	0.6	0.4
4 Sunchild	1.8	1.7	1.8	1.2	0.9	0.8	0.6	0.6	0.8	1.6	2.4	1.3	1.3
5 Baseline Mountain	0.2	1.1	0.9	1.1	0.9	0.8	0.7	0.8	0.9	1.0	0.5	1.4	0.9
6 Limestone Mountain	0.4	0.6	0.3	0.3	0.2	0.3	0.2	0.2	0.1	0.4	0.1	0.4	0.3
7 Panther River	0.7	1.0	0.7	0.5	0.5	0.5	0.3	0.4	0.5	0.5	0.2	0.7	0.5
8 Fallen Timber	1.8	1.6	0.5	0.5	0.6	0.5	0.3	0.4	0.3	0.6	0.3	0.7	0.7
9 Bearberry	2.2	2.0	1.6	0.8	0.6	0.9	0.6	0.9	1.0	1.4	0.6	1.1	1.1
10 Ricinus	2.9	2.6	2.3	1.0	0.8	0.6	0.5	0.6	0.9	1.4	1.0	1.8	1.4
11 Twin Lakes	7.6	4.9	3.3	1.9	1.3	1.3	1.1	1.5	2.1	2.2	2.7	4.0	2.8
12 Rimbey	6.9	5.5	3.3	2.5	2.0	3.0	1.9	1.9	2.3	3.0	5.0	6.3	3.6
13 Leslieville	4.2	4.8	3.7	2.7	2.0	2.4	1.6	2.1	2.5	2.9	2.4	3.3	2.9
14 Raven River	4.6	3.9	3.3	1.9	1.3	2.3	1.2	1.5	1.9	2.0	2.4	3.4	2.5
15 Caroline	2.8	2.7	2.3	NA	2.0	1.2	1.0	1.5	1.6	2.0	1.3	1.9	1.8
16 Sundre	4.1	3.5	3.0	1.5	1.4	1.4	1.0	1.3	1.3	1.9	1.3	2.5	2.0
17 South Elkton	2.2	2.2	1.5	1.0	0.9	0.9	0.9	1.1	1.1	1.5	0.6	1.2	1.3
18 Bottrel	2.2	2.0	3.6	1.0	0.9	0.9	0.9	1.2	1.3	1.7	1.0	2.0	1.6
19 Crossfield-Carstairs	6.0	4.7	1.7	NA	2.6	2.7	2.0	2.6	4.0	3.1	3.3	5.3	3.5
20 Netook-Olds	4.1	3.9	2.6	1.9	2.0	2.2	1.2	1.8	2.6	2.6	2.0	3.7	2.6
21 Markerville	11.1	7.0	5.6	4.4	4.1	NA	3.0	3.6	4.6	4.4	4.9	NA	5.3
22 Sylvan Lake	5.7	4.8	3.9	2.8	2.4	3.4	1.7	2.4	2.3	3.1	2.7	4.7	3.3
23 Morningside	7.3	5.9	3.7	2.5	2.3	3.0	1.7	2.7	2.6	3.2	4.4	7.0	3.9
24 Mayton	4.7	4.8	3.1	1.5	2.2	2.7	1.4	1.7	2.1	2.4	5.1	3.7	2.9
25 Sunnyslope	5.6	4.7	2.9	2.4	2.3	3.7	1.7	1.8	2.6	2.7	3.2	4.5	3.2
26 Grainger	5.4	5.6	3.4	2.7	4.0	4.6	2.6	2.8	3.7	3.8	3.8	4.4	3.9
27 Elnora	5.0	4.5	3.3	2.0	2.0	3.4	1.7	2.3	2.6	2.7	2.4	5.7	3.1
28 Alix	5.1	5.0	2.8	2.3	3.0	3.2	1.8	2.6	3.1	3.0	3.4	5.8	3.4
32 Samson	5.4	4.4	2.8	2.7	3.0	4.2	2.6	2.4	3.1	2.7	3.6	6.2	3.6
33 Ferrybank	5.8	4.4	3.0	3.5	2.1	2.5	1.5	NA	2.4	2.5	2.9	3.2	3.1
34 Pakkwaw	5.5	5.5	2.6	1.5	2.3	3.0	1.7	2.4	2.8	2.9	3.5	5.1	3.2
35 Kersey	5.1	4.6	3.4	1.7	2.6	3.4	2.0	2.2	2.6	3.1	2.1	5.2	3.2
65 Red Deer	16.9	13.9	9.1	6.0	4.6	5.0	3.2	4.4	5.7	6.3	11.7	15.6	8.5
Monthly Average	4.4	3.8	2.6	1.8	1.8	2.0	1.3	1.6	2.0	2.2	2.5	3.5	2.5
Monthly Maximum	16.9	13.9	9.1	6.0	4.6	5.0	3.2	4.4	5.7	6.3	11.7	15.6	
Monthly Minimum	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.2	0.0	0.2	0.1	0.1	

*All values expressed in ppb



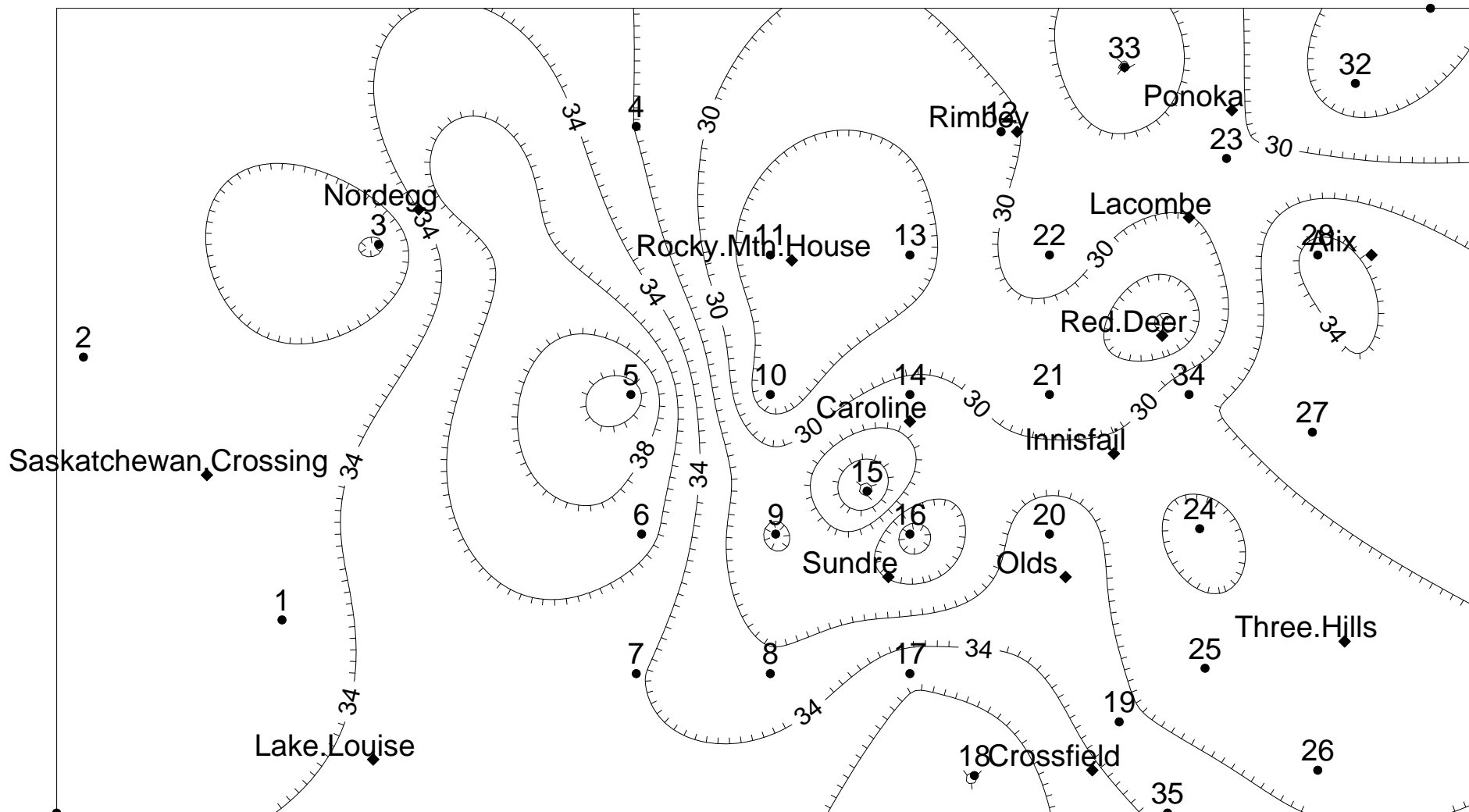
PAMZ Passive NO2 Monitoring Network - 2009 Station Averages (ppb)

PAMZ Annual Air Quality Monitoring Summary – 2009

O₃ Passive Monitoring Network

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Station Average
1 Bow Summit	41.3	42.2	51.6	39.9	32.8	27.5	20.6	23.6	24.7	31.6	32.3	28.5	33.1
2 Parker Ridge	41.9	40.5	45.6	39.6	29.4	26.4	20.8	28.5	27.3	32.2	42.1	29.9	33.7
3 Bighorn	33.4	40.7	43.1	39.9	29.4	24.6	17.8	20.9	22.2	21.0	33.4	29.2	29.6
4 Sunchild	34.5	41.6	43.8	39.6	37.5	33.0	24.4	25.2	27.4	20.9	26.8	28.4	31.9
5 Baseline Mountain	46.0	44.4	53.1	45.1	42.4	NA	34.0	35.7	35.3	36.8	40.4	40.1	41.2
6 Limestone Mountain	42.2	45.3	45.3	38.6	33.9	39.6	23.9	30.5	33.1	38.7	37.3	34.4	36.9
7 Panther River	55.5	38.8	47.8	40.5	30.4	30.3	21.2	23.5	25.7	32.4	33.0	30.5	34.1
8 Fallen Timber	37.6	38.2	50.8	34.7	34.9	30.1	21.3	22.2	24.3	29.5	30.9	33.0	32.3
9 Bearberry	32.3	35.7	46.2	40.3	27.3	29.0	21.1	20.6	22.8	23.8	26.8	26.8	29.4
10 Ricinus	26.9	34.3	37.9	37.4	29.6	25.0	19.3	18.2	22.2	19.1	23.8	23.0	26.4
11 Twin Lakes	25.7	33.8	40.2	37.0	29.9	29.3	20.8	19.6	19.8	17.7	18.0	19.7	26.0
12 Rimbey	31.9	38.1	43.7	41.0	34.7	28.1	25.2	21.9	21.8	17.3	22.5	25.1	29.3
13 Leslieville	30.0	38.6	40.2	34.2	29.7	28.6	20.5	19.1	22.3	17.9	20.1	23.7	27.1
14 Raven River	30.3	38.8	46.3	40.0	32.2	33.5	22.5	26.4	28.3	20.4	25.1	26.0	30.8
15 Caroline	38.5	43.2	47.8	NA	38.6	35.0	32.0	38.4	35.1	25.6	36.6	33.6	36.8
16 Sundre	26.9	31.2	43.7	35.6	28.5	28.5	18.6	18.8	20.5	15.9	22.5	27.3	26.5
17 South Elkton	39.8	41.2	53.5	40.2	36.6	36.7	23.7	28.8	33.3	25.2	33.2	35.8	35.7
18 Bottrel	39.7	44.9	61.4	44.6	39.5	33.8	30.2	31.5	32.0	28.7	36.9	34.2	38.1
19 Crossfield-Carstairs	37.2	38.7	50.9	38.5	33.6	30.2	23.7	28.8	29.3	19.5	27.9	30.7	32.4
20 Netook-Olds	36.9	47.7	51.6	44.3	36.7	33.8	24.6	25.3	27.9	15.8	29.7	31.4	33.8
21 Markerville	28.4	35.8	49.8	39.5	29.3	NA	20.9	21.8	22.5	18.6	18.0	NA	28.5
22 Sylvan Lake	31.3	35.7	51.9	42.6	35.7	31.8	23.6	26.8	27.7	19.1	27.7	28.2	31.8
23 Morningside	32.1	37.8	46.2	39.3	34.5	31.1	22.3	26.9	27.6	16.9	23.2	23.7	30.1
24 Mayton	31.7	37.3	47.0	40.8	34.2	28.8	22.1	21.8	23.3	17.9	18.0	22.2	28.8
25 Sunnyslope	35.2	41.4	61.7	33.6	31.1	34.6	20.1	21.6	23.7	16.2	23.6	25.6	30.7
26 Grainger	36.7	39.4	56.5	36.7	30.3	31.6	22.1	24.9	26.7	19.6	24.3	28.3	31.4
27 Elnora	35.8	41.5	53.2	40.2	36.7	36.1	29.1	30.1	31.3	19.9	25.9	26.3	33.8
28 Alix	36.2	41.2	52.2	46.8	40.3	38.4	29.8	34.3	31.1	15.1	25.5	29.4	35.0
32 Samson	23.0	35.6	43.8	38.0	23.6	25.4	21.3	21.8	22.1	22.2	17.8	22.8	26.4
33 Ferrybank	35.0	42.6	52.1	39.2	36.5	37.2	26.1	29.3	33.1	18.6	27.5	33.3	34.2
34 Pakkwaw	34.1	33.0	49.5	42.3	33.7	34.3	26.9	24.0	29.5	21.9	25.8	28.3	31.9
35 Kersey	38.5	40.1	51.8	37.7	34.1	34.8	26.5	28.0	28.8	21.7	29.4	32.0	33.6
44 Harlech	39.0	43.6	52.3	45.2	35.8	37.0	28.4	34.3	33.7	30.3	37.9	38.4	38.0
65 Red Deer	20.3	21.7	40.1	37.6	31.6	30.5	24.8	25.2	24.1	15.2	15.1	17.5	25.3
Monthly Average	34.7	38.9	48.5	39.7	33.4	31.8	23.9	25.9	27.1	22.2	27.5	28.7	31.9
Monthly Maximum	55.5	47.7	61.7	46.8	42.4	39.6	34.0	38.4	35.3	38.7	42.1	40.1	
Monthly Minimum	20.3	21.7	37.9	33.6	23.6	24.6	17.8	18.2	19.8	15.1	15.1	17.5	

*All values expressed in ppb



PAMZ Passive O3 Monitoring Network - 2009 Station Averages (ppb)