

HINTON PULP
A DIVISION OF WEST FRASER MILLS LIMITED
Continuous Ambient Air Quality
Monitoring Program
Annual Summary for 2017

Operations and Data Collection,
QA/QC, Data Validation and Reporting by:



January 26, 2018

Hinton Pulp
A Division of West Fraser Mills Ltd.
Mr. Phil Whitney
760 Switzer Drive
Hinton, Alberta
T7V 1V7

Dear Mr. Whitney:

Re: Annual Ambient Air Quality Monitoring Report. January – December 2017.
For Hinton Pulp – A Division of West Fraser Mills Ltd.

The West Central Airshed Society (WCAS) presents the 2017 Annual Report containing ambient air quality and meteorological information from the following site:

Network Station is AMS 906 Hinton
Identified as:

The following is a list of the reported ambient air and meteorological parameters measured at the site location:

AMS 906 (Hinton)

TRS, H₂S, SO₂, O₃ NO_x, Particulate Matter (2.5 microns), Wind Speed and Direction, Relative Humidity, and External Temperature.

If additional information is required, please call (587) 499-4900.

Sincerely,



Patrick Andersen
Environmental Scientist

Summary Report

Continuous air quality/meteorological monitoring measurements

West Central Airshed Society

Hinton Pulp / Hinton Station 906												January to December 2017		24 Hour Average Maximum (ppm)
Parameter	Calibration Hours	Number of Data	Percent Uptime	Mean	Min	Max	Percentile					Exceedences		24 Hour Average Maximum (ppm)
							P10	Q1	Median	Q3	P90	1-hour	24-hour	
TRS (ppb)	440	8295	99.7	1.0	0.0	33.0	0.2	0.2	0.4	1.2	2.6	36	7	0.007
H ₂ S (ppb)	433	8302	99.7	0.4	0.0	18.7	0.0	0.0	0.0	0.2	0.7	0	0	0.007
SO ₂ (ppb)	425	8122	97.6	0.6	0.0	24.0	0.0	0.1	0.3	0.6	1.5	11	-	0.004
O ₃ (ppb)	423	8292	99.5	22.9	0.3	63.0	3.1	10.8	24.3	33.4	40.3	0	0	0.042
NO (ppb)	442	8293	99.7	2.1	0.0	153.0	0.0	0.2	0.6	1.8	4.8	-	-	-
NO ₂ (ppb)	442	8293	99.7	4.9	0.1	48.1	1.0	1.8	3.3	6.0	10.7	0	0	0.021
NO _x (ppb)	442	8293	99.7	7.1	0.0	184.0	1.2	2.2	4.3	8.1	14.9	-	-	-
Particulate Matter 2.5 microns (µ/m ³)	0	8701	99.3	10.7	0.0	185.9	1.6	3.4	6.6	12.6	22.9	91	19	88.05 µg/m ³
Wind Speed (kph)	0	8721	99.6	3.4	0.0	17.6	0.5	1.1	2.5	5.0	7.8	-	-	-
Temperature (°C)	0	8759	100.0	3.7	-34.0	31.8	-12.8	-2.9	4.3	11.9	18.6	-	-	-
Relative Humidity (%)	0	8759	100.0	63.2	7.3	98.7	28.7	44.1	68.0	81.6	91.5	-	-	-
Std Dev Wind Direction (deg)	0	8721	99.6	50.7	12.6	107.0	27.4	35.2	47.0	63.8	82.2	-	-	-
Std Dev Wind Speed (kph)	0	8721	99.6	2.6	0.0	11.1	1.0	1.4	2.1	3.2	4.9	-	-	-

Hinton Pulp
A Division of West Fraser Mills Limited
Frequency Distribution Charts
Wind Speed and Direction
Year 2017

West Central Airshed Society - Hinton (AMS 906)
 Annual Summary for 2017
 Percentage Frequency Distribution of Wind

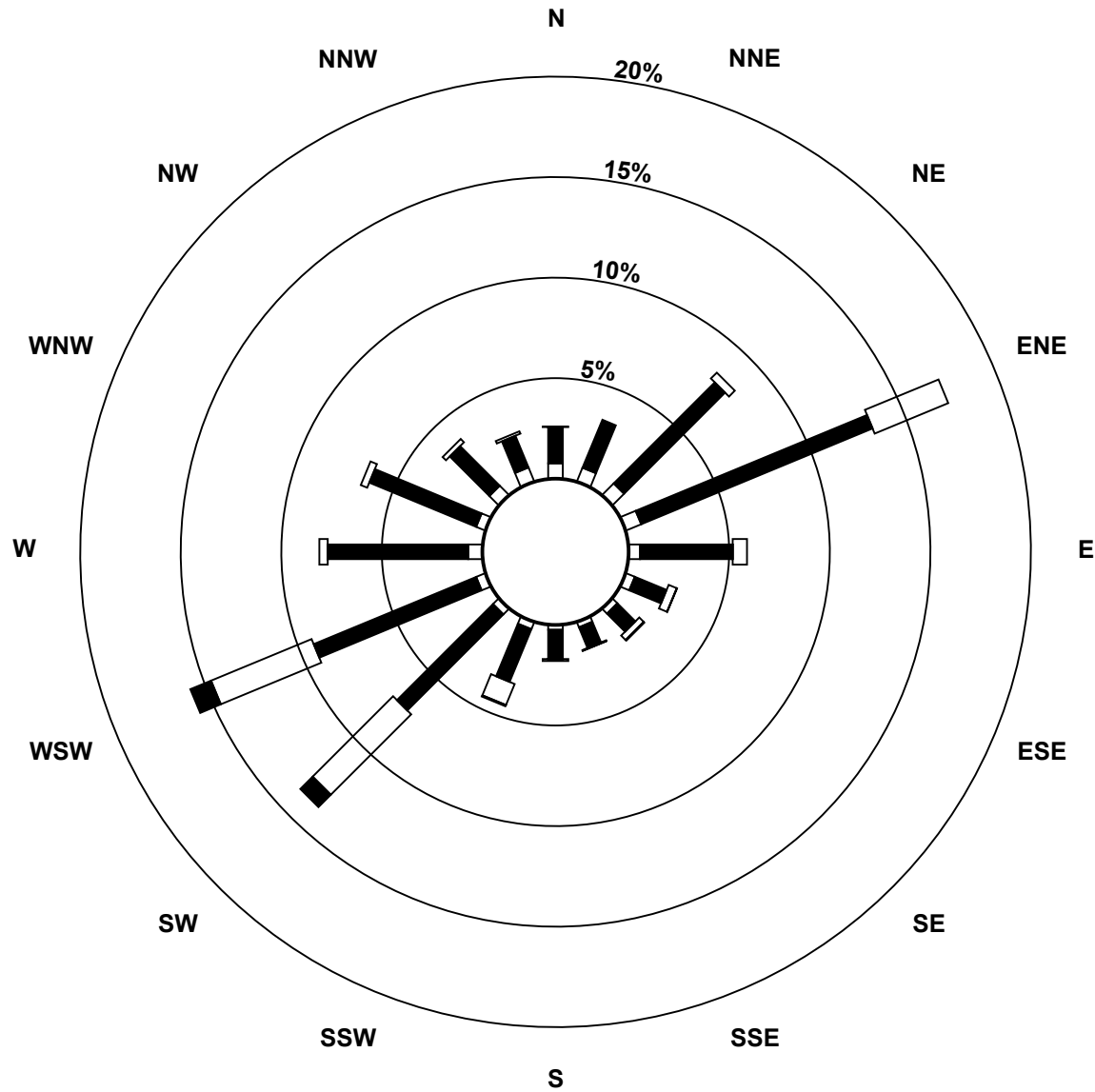
Speed (kph)							
Direction	>1 to 5	>5 to 11	>11 to 19	>19 to 28	>28 to 38	>38	Totals
N	112.00	2.00	0.00	0.00	0.00	0.00	114.00
NNE	162.00	0.00	0.00	0.00	0.00	0.00	162.00
NE	502.00	36.00	0.00	0.00	0.00	0.00	538.00
ENE	926.00	345.00	0.00	0.00	0.00	0.00	1271.00
E	312.00	62.00	0.00	0.00	0.00	0.00	374.00
ESE	87.00	38.00	1.00	0.00	0.00	0.00	126.00
SE	64.00	27.00	4.00	0.00	0.00	0.00	95.00
SSE	55.00	3.00	1.00	0.00	0.00	0.00	59.00
S	90.00	8.00	0.00	0.00	0.00	0.00	98.00
SSW	201.00	99.00	6.00	0.00	0.00	0.00	306.00
SW	514.00	493.00	76.00	0.00	0.00	0.00	1083.00
WSW	649.00	472.00	97.00	0.00	0.00	0.00	1218.00
W	484.00	36.00	0.00	0.00	0.00	0.00	520.00
WNW	398.00	30.00	0.00	0.00	0.00	0.00	428.00
NW	159.00	20.00	0.00	0.00	0.00	0.00	179.00
NNW	95.00	11.00	0.00	0.00	0.00	0.00	106.00
Totals	4810.00	1682.00	185.00	0.00	0.00	0.00	6677.00

Number of Data Values		6677
Hours in Time Period		8760

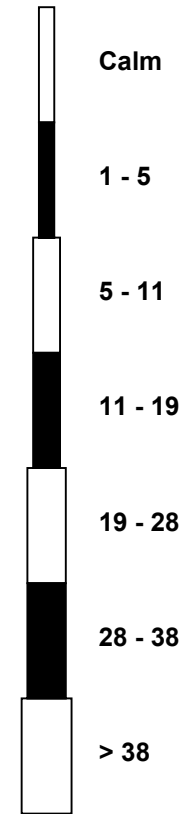
WCAS - Hinton
Wind Speed Rose



Wind Speed (WS) - kph
2017



Wind Frequency (kph)



Hinton Pulp
A Division of West Fraser Mills Limited
Frequency Distribution Charts
Monthly Averages
Year 2017

West Central Airshed Society - Hinton (AMS 906)
 Annual Summary for 2017
 TRS (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Exceedances**	Number 1-Hour Exceedances*	Percent of Data in each Concentration Range			
								<=3	>3-10	>10-50	>50
January	704	1.4	7.0	33.2	99.7	1	8	87.78	11.08	1.14	0.00
February	635	0.9	3.8	11.5	100.0	1	2	94.96	4.57	0.47	0.00
March	708	0.9	2.4	13.9	100.0	0	2	93.50	6.21	0.28	0.00
April	685	0.8	2.5	10.3	99.9	0	0	93.43	6.42	0.15	0.00
May	684	1.1	2.6	14.4	97.2	0	2	91.23	8.48	0.29	0.00
June	685	1.0	1.9	8.1	99.9	0	0	92.85	7.15	0.00	0.00
July	701	1.2	3.9	20.0	100.0	2	9	89.30	9.27	1.43	0.00
August	709	1.1	3.7	13.1	100.0	1	3	89.99	9.45	0.56	0.00
September	682	1.3	4.9	26.1	100.0	2	7	87.98	11.00	1.03	0.00
October	709	0.8	2.4	8.2	100.0	0	0	96.19	3.81	0.00	0.00
November	685	0.9	3.1	13.3	100.0	0	2	94.01	5.69	0.29	0.00
December	708	1.0	2.3	11.0	100.0	0	1	93.93	5.93	0.14	0.00
Annual	8295	1.0	7.0	33.2	99.7	7	36	92.09	7.42	0.48	0.00

* Hours of TRS above 10 ppb H₂S Hourly Average Guideline.

**Hours of TRS above 3 ppb H₂S Daily Average Guideline.

West Central Airshed Society - Hinton (AMS 906)
 Annual Summary for 2017
 H2S (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Exceedances**	Number 1-Hour Exceedances*	Percent of Data in each Concentration Range			
								<=3	>3-10	>10-50	>50
January	704	0.5	3.0	15.7	99.7	0	3	97.59	1.99	0.43	0.00
February	635	0.3	1.6	5.2	100.0	0	0	98.90	1.10	0.00	0.00
March	708	0.3	0.8	5.4	100.0	0	0	99.58	0.42	0.00	0.00
April	685	0.3	1.0	4.5	99.9	0	0	99.42	0.58	0.00	0.00
May	686	0.5	1.1	6.4	97.2	0	0	99.13	0.87	0.00	0.00
June	685	0.4	0.7	3.3	99.9	0	0	99.42	0.58	0.00	0.00
July	526	0.8	3.3	16.0	74.7	0	1	95.63	4.18	0.19	0.00
August	709	0.8	3.1	11.5	100.0	0	1	92.95	6.77	0.28	0.00
September	682	1.1	4.1	24.0	100.0	2	6	90.03	9.09	0.88	0.00
October	709	0.6	1.8	5.8	100.0	0	0	98.03	1.97	0.00	0.00
November	685	0.8	2.5	10.1	100.0	0	0	96.93	2.92	0.15	0.00
December	708	0.9	2.1	10.2	100.0	0	0	96.05	3.81	0.14	0.00
Annual	8122	0.6	4.1	24.0	97.6	2	11	96.97	2.86	0.17	0.00

* Hours of H2S above 10 ppb H₂S Hourly Average Guideline.

**Hours of H2S above 3 ppb H₂S Daily Average Guideline.

West Central Airshed Society - Hinton (AMS 906)
 Annual Summary for 2017
 SO2 (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Violations	Number 1-Hour Violations	Percent of Data in each Concentration Range (ppm)					
								<=0.02	>0.02-0.06	>0.06-0.11	>0.11-0.17	>0.17-0.34	>0.34
January	704	0.8	4.2	11.1	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	635	1.1	7.3	18.7	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	708	0.5	1.9	5.5	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	685	0.1	0.4	3.2	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	688	0.4	2.5	8.2	97.2	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	685	0.4	1.1	7.6	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	706	0.6	2.6	16.4	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	709	0.1	0.3	4.1	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	682	0.1	0.2	1.4	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	707	0.1	0.7	2.0	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	685	0.2	1.0	3.7	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	708	0.2	1.1	3.6	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8302	0.4	7.3	18.7	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00

West Central Airshed Society - Hinton (AMS 906)
 Annual Summary for 2017
 O3 (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 1-Hour Violations
January	707	26.1	41.6	45.2	99.7	0
February	640	26.4	42.3	47.2	100.0	0
March	708	26.7	37.4	51.8	100.0	0
April	685	25.5	37.7	53.9	99.9	0
May	688	27.7	36.4	56.4	97.2	0
June	685	25.3	33.2	59.4	99.9	0
July	704	23.5	40.3	63.0	99.9	0
August	709	17.7	27.3	49.5	100.0	0
September	683	15.6	26.9	59.5	100.0	0
October	708	19.8	32.1	45.0	100.0	0
November	685	16.0	32.0	38.1	100.0	0
December	690	24.2	34.3	44.3	97.5	0
Annual	8292	22.8	42.3	63.0	99.5	0

West Central Airshed Society - Hinton (AMS 906)
 Annual Summary for 2017
 NO2 (ppb)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Violations	Number 1-Hour Violations	Percent of Data in each Concentration Range (ppm)			
								<=0.05	>0.05-0.11	>0.11-0.21	>0.21
January	707	8.8	20.0	48.1	99.7	0	0	100.00	0	0	0
February	638	9.4	16.1	44.8	100.0	0	0	100.00	0	0	0
March	706	10.9	21.4	44.9	100.0	0	0	100.00	0	0	0
April	683	5.2	12.2	29.4	99.9	0	0	100.00	0	0	0
May	687	4.1	6.9	15.2	97.2	0	0	100.00	0	0	0
June	684	3.4	5.4	15.2	99.9	0	0	100.00	0	0	0
July	704	3.4	5.4	14.5	100.0	0	0	100.00	0	0	0
August	708	1.9	2.8	7.5	100.0	0	0	100.00	0	0	0
September	679	2.1	4.1	11.3	100.0	0	0	100.00	0	0	0
October	706	2.5	3.8	11.7	100.0	0	0	100.00	0	0	0
November	684	4.0	6.5	13.9	100.0	0	0	100.00	0	0	0
December	707	3.6	8.9	14.6	100.0	0	0	100.00	0	0	0
Annual	8293	4.9	21.4	48.1	99.7	0	0	100.00	0	0	0

West Central Airshed Society - Hinton (AMS 906)
 Annual Summary for 2017
 PM_{2.5} (µg/m³)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)	Number 24-Hour Violations	Number 1-Hour Violations
January	738	6.7	16.2	43.4	99.2	0	0
February	644	9.1	21.9	45.9	95.8	0	0
March	744	7.1	16.5	42.6	100.0	0	0
April	719	5.4	16.2	47.1	99.9	0	0
May	723	7.1	15.2	53.3	97.2	0	0
June	720	8.9	35.4	128.8	100.0	1	2
July	744	20.2	60.1	104.2	100.0	5	18
August	741	23.9	88.1	185.9	99.6	9	44
September	720	13.7	74.7	119.2	100.0	2	27
October	744	5.9	11.4	27.4	100.0	0	0
November	720	13.9	34.3	70.0	100.0	2	0
December	744	6.5	15.5	41.7	100.0	0	0
Annual	8701	10.7	88.1	185.9	99.3	19	91

Hinton Pulp
A Division of West Fraser Mills Limited
Frequency Distribution Charts
Meteorological Measurements
Year 2017

West Central Airshed Society - Hinton (AMS 906)
 Annual Summary for 2017
 External Temperature (°C)

Month	Number of Data	Mean	Maximum 24-Hour Value	Maximum 1-Hour Value	Operational Time (%)
January	744	-6.8	8.1	11.8	100.0
February	672	-6.6	9.2	13.5	100.0
March	744	-4.0	4.7	11.3	100.0
April	719	2.8	6.8	14.2	99.9
May	744	11.1	18.3	28.2	100.0
June	720	13.9	20.2	28.9	100.0
July	744	16.7	22.5	31.3	100.0
August	744	15.2	19.5	29.5	100.0
September	720	10.1	18.1	31.8	100.0
October	744	4.3	12.5	22.8	100.0
November	720	-5.6	2.9	8.2	100.0
December	744	-7.0	6.5	11.2	100.0
Annual	8759	3.7	22.5	31.8	100.0