Lakeland Industry & Community Association

Cold Lake Monitoring Site
Ambient Annual Data Report

For
2008

Prepared By:

Maxxam Analytics Inc

Driven by Service and Science

February 25, 2009

Lakeland Industry & Community Association
Ambient Air Monitoring

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Introduction

The following Ambient Air Monitoring report was prepared for:

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Monitoring Location: Cold Lake
Data Period: January 2008 to December 2008

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Craig Snider

The monthly analytical report for passive monitoring:
Authorized by Levi Manchak

Calibration Procedure

The following calibration procedure applies to all calibrations conducted at the Lakeland Industry & Community Association Air Monitoring Station.

Calibration gas concentrations are generated using a dynamic mass flow controlled calibrator. EPA Protocol one gases are diluted with zero air generated on site. The Mass Flow Controllers in the calibrator are referenced using an NIST traceable flow meter once per month. All listed flows are reported as corrected to Standard Temperature and Pressure (STP).

Generated zero gas is introduced to the analyzer first. Three concentrations of calibration gas are then generated in order to introduce points at approximately 50-80%, 25-40% & 10-20% of the analyzer's full-scale range. An auto zero and span are then performed to validate the daily zero and span values recorded to the next multi-point calibration.

All indicated concentrations are taken from the ESC data logger used to collect the data for monthly reporting.

Conformance of each calibration to Alberta Environment regulations is outlined in the individual calibration reports. The slope and correlation coefficient are derived from the calculated and indicated analyzer responses. The percent change is calculated using the previous calibration correction factor and the current correction factor before adjustment. The calibration conforms to the procedure outlined in the *Air Monitoring Directive, Appendix A-10, Section 1.6.*

General Monthly Summary - Cold Lake

Equipment Operation

The following summary outlines the analyzer performance. Any non-conformances, problems or maintenance performed are detailed at the end of each section.

AQM STATION – LICA – COLD LAKE

Sulphur Dioxide (PPB)

- Analyzer make / model - TECO 43A replaced to Thermo 43i
  - On May 1st, the SO2 values were less stable during the initial span point, observed the UV lamp voltage was fluctuating more than expected. Installed a difference UV lamp and allowed the analyzer time to stabilized.
  - The vacuum pump was rebuilt on May 21st.
  - The temporary Maxxam-owned UV lamp was removed and an AENV-owned lamp was installed on June 4th.
  - The permeation tube was replaced on July 21st because daily span started dropping on July 18th.
  - There was one hour of data invalid due to a power failure on September 15th.
  - A removal calibration on the TECO 43A SO2 analyzer and an installation calibration on a new Thermo 43i SO2 analyzer were performed on December 31st. A new SO2 permeation tube was also installed on the same day.
  - A power failure occurred on December 21st for three hours.

General Monthly Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Total Reduced Sulphur (PPB)

- Analyzer make / model -TEI 43A replaced to TEI 450i
- Converter - CD NOVA CDN 101
  - The pump was rebuilt after the “As Found” points were completed in March.
  - On September 11th, a replacement lamp was installed and the PMT gain was changed due to the low daily span reading occurring on September 10th.
  - The Hydrogen cylinder was replaced on September 16th.
  - There was one hour of data invalid due to a power failure on September 15th. When the power was restored to the TRS converter, a fault appeared on the temperature controller. Thus, the thermo-couple was replaced with the LICA-owned spare, and then the TRS converter was restarted.
  - A permeation tube was replaced due to the TRS span was 17% lower than expected value on October 28th.
  - A removal calibration on the TEI 43A TRS analyzer was performed on December 18th. The AENV supplied TEI 450i analyzer was installed and calibrated on the same day, but the calibration was non-linear. On December 19th, the factory-supplied capillary was removed and the capillary from the TEI 43A was installed. The analyzer showed linear response. A total of 28 hours of data was invalidated due to this issue.
  - The daily span of TRS was stabilizing between on 19th and the 25th of December as a new analyzer and new permeation tube device.
  - A power failure occurred on December 21st for three hours.

General Monthly Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Total HydroCarbon (PPM)

- Analyzer make / model -TECO 51C-LT
  - ❖ It was agreed to with the LICA Program Manager to invalidate all data, after zero correction, which falls below the historical background average of 1.5 ppm in January..
  - ❖ The pump diaphragm was changed after the 'As Found' points were completed in February.
  - ❖ The zero air pump was rebuilt following the as found points on August 1st. A new 4-way valve in the zero air supply was replaced on August 25th.
  - ❖ The analyzer was relighted on September 16th due to a power failure occurred on September 15th. Because of the power failure, there were 15 hours of data invalid.
  - ❖ The total of 7 hours of data were also invalided as the concentrations fell below the historical background average of 1.5 ppm in September.
  - ❖ The CH4 span gas cylinder was replaced on October 1st.
  - ❖ The Hydrogen gas cylinder was replaced on November 4th following the as-found points.
  - ❖ The result of the monthly calibration in November showed poor linearity. The technician performed crosschecks with other calibrator, but still got same poor results. Thus, flows were measured and adjusted, and allow the analyzer time to stabilize overnight. On November 5th, the as-found points calibration was performed, but the linearity was still poor. Thus, sample and H2 pressures were changed back to values prior to optimization on November 4th. The calibration linearity is better but still passible.
  - ❖ A power failure occurred on December 21st for three hours.

General Monthly Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Nitrogen Dioxide (PPB)

- Analyzer make / model - TECO 42C
- ❖ The scrubbing materials were replaced in the exhaust scrubber in February.
- ❖ A slight leak developed in the exhaust tubing/scrubber of the analyzer, this was repaired and the analyzer re-calibrated during the month calibration in April. No data was invalidated due to this leak.
- ❖ The Maxxam-owned Thomas wobble pump was removed and an AENV-owned 2 cylinder Thomas diaphragm pump was installed on July 2nd.
- ❖ On August 20th, the analyzer was put on the maintenance mode for checking high span values issue for 12 hours.
- ❖ The analyzer was relighted on September 16th due to a power failure occurred on September 15th.
- ❖ The pump was rebuilt and the charcoal in the exhaust scrubber was replaced on November 13th because the pump was much nosier than usual.
- ❖ It was noticed on December 12th during the daily data review that the channels on the Nox analyzer did not add up. It was due to a loose wire NO output. The problem was fixed on December 13th. As a result, a total of 24 hours of data was invalided.
- ❖ A power failure occurred on December 21st for three hours.

Ozone (PPB)

- Analyzer make / model - TECO 49I
- ❖ The analyzer was relighted on September 16th due to a power failure occurred on September 15th.
- ❖ The pump was rebuilt following an as found point on October 1st, and the charcoal in the exhaust scrubber was replaced during the pump rebuild.
- ❖ A power failure occurred on December 21st for three hours.

General Monthly Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Particulate Matter 2.5 (ug/m^3)

- Analyzer make / model - TEOM 1400A

❖ During the February monthly calibration the filter was replaced, the inlet was cleaned and o-rings lubricated. As a new filter was installed, the sampler was unstable until full conditioning of the filter was completed; as a result 21 hours of data was invalidated.

❖ During the March monthly calibration the bypass and sensor in-line filters were replaced. As a new filter was installed, the sampler was unstable until full conditioning of the filter was completed; as a result 32 hours of data was invalidated.

❖ Following the calibration and filter change, the analyzer was allowed to stabilize full conditioning of the filter was completed, as a result 15 hours of data was invalidated in April.

❖ One hour of data was invalidated as it was below –3.0 ug/m^3 in April.

❖ During the Teom audit in May, the aux flow displayed on the Teom was fluctuating. The total flow was low and fluctuating (still within tolerance), and the main flow was low (outside tolerance). A leak was found in the brass elbow fitting screwed into the bottom of the mass transducer unit. The brass elbow fitting was wrapped with Teflon tap as a temporary fix. After the repair until a new part arrived, all audited parameters were within allowable tolerances. Following the calibration and filter change, the analyzer was allowed to stabilize full conditioning of the filter was completed, as a result 17 hours of data was invalidated.

❖ Four hours of data were invalidated as it was below –3.0 ug/m^3 in May.

❖ The Teom audit was performed on June 5th, 2008 showing all parameters were within tolerances. On June 6th, 2008, the Teom analyzer was reading excessively negative. Thus, the technician repeated the audit, changed a leaking fitting in the bottom of the transducer housing, and installed a new filter. After the repair, all audit values were within allowable tolerance. There were 45 hours of data invalid during this period.

❖ There were high readings from mid-day of June 7th until 10:00am of June 8th due to smoke in the air, which may be a result of a fire burning near by, or smoke carried in from a fire to the North.

❖ Twenty hours of data were invalidated as it was below –3.0 ug/m^3 in June.

(To Be Continued…)

General Monthly Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Particulate Matter 2.5 (ug/m^3)

- (Continued)The Teom audit and KO confirmation were performed on July 4th showing all parameters were within tolerances. The Teom was put in maintenance mode following the audit to allow it to stabilize until July 5th, 9:00. A new teom filter was installed following the audit. On July 21st, the teom screen was noticed frozen and was not able to navigate within the main screen likely due to power outage on the 19th. The maintenance mode was again entered until the screen returned to normal and the analyzer stabilized. As a result, 30 hours of data was invalided due to these two maintenances.
- There were 39 hours data invalid, which is likely due to a problem with the mass transducer on the 5th and 6th.
- Fifty-five hours of data were invalidated as it was below –3.0 ug/m^3 in this month in July.
- The Teom audit was performed on August 25th showing all parameters were within tolerances. The technician performed an audit on the AENV-Owned Teom, and then replaced it with a Maxxam-Owned Teom on August 25th. The Teom was put up on the maintenance mode overnight to allow it stable. There were 24 hours of data invalid during this period.
- Seventy-nine hours of data were invalidated as it was below –3.0 ug/m^3 in August.
- The flow adjust factors were changed in order to bring the actual flows closer to the expected values on September 04th.
- There was one hour of data invalid due to a power failure on September 15th.
- Two hours of data were invalidated as it was below –3.0 ug/m^3 in September.
- Four hours of data were invalidated as it was below –3.0 ug/m^3 in October.
- A Teom audit including leak check and Ko verification were peformed on November 5th. Following the audit, the flow adjust factors were changed to bring actual flows cloaser to the expected values. The large inline bypass filter was replaced on the same say.
- A TEOM audit and a full calibration were performed on December 1st. Hardware calibrations, including analog in/out calibration, flows calibration, and a temperature sensor calibration, were conducted on the same day. After this, a post-calibration audit was performed, and all parameters were within tolerance.
- The filter was replaced due to noise issue in December.
- A power failure occurred on December 21st for three hours.
- One hour of data was invalidated as it was below –3.0 ug/m^3.

General Monthly Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Vector Wind Speed (KPH) & Vector Wind Direction (DEG)

- System make / model – Met One 50.5
  - On January 4th there was one hour of data missing for the parameter of standard deviation of vector wind direction.
  - There was one hour of data invalid due to a power failure on September 15th.
  - The Met One 50.5 wind system was checked using the zero/span method in the manual. A Maxxam-Owned RM Young 5103VK (S/N# 2068) wind system was installed as a temporary replacement for the AENV-Owned Met One 50.5 wind system, which was shipped to the manufacturer for factory calibration on October 10th.
  - The temporary replacement Maxxam-Owned RM Young 5103VK (S/N# 2068) wind system was removed and the AENV-Owned Met One 50.5 wind system was installed on November 5th. The Met One 50.5 wind system had been shipped to the manufacturer for a routine calibration, and the results were within tolerance according to the manufacturer. The heater control board was found by Met One to be faulty and had to be replaced. The zero/span test outlined in the manual was performed on November 5th.
  - A spike of 95 km/hr showed on one reading of one-minute data for wind speed system on December 13th, at 21:37. It is likely due to electrical problem.
  - A power failure occurred on December 21st for three hours.

Relative Humidity (PERCENT)

- System make / model - Rotronic Hygroclip-S3
  - There was one hour of data invalid due to a power failure on September 15th.
  - A power failure occurred on December 21st for three hours.

Ambient Temperature (DEGC)

- System make / model - Rotronic Hygroclip-S3
  - There was one hour of data invalid due to a power failure on September 15th.
  - A power failure occurred on December 21st for three hours.

General Monthly Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Trailer Temperature (DEGC)

- System make / model - R&R 61
  - ❖ There was one hour of data invalid due to a power failure on September 15th.
  - ❖ A power failure occurred on December 21st for three hours.

Datalogger

- System make / model - ESC 8832
- Software make / version - ESC v 5.51a

The ESC 8832 is connected to a modem with DSL for continuous connection with the base computer.

Trailer

- ❖ The manifold and inlet lines were cleaned on October 2nd. A/C heat exchanger and filters on the Bard HVAC unit were cleaned and throw-away filter was replaced on October 2nd.

General Monthly Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Air Quality Index (AQI)

- There were no fair AQI values recorded in January 2008. The highest offending pollutant was Ozone with an hourly concentration of 40.0 ppb and an AQI value of 20 on January 20th.
- There were no fair AQI values recorded in February 2008. The highest offending pollutant was Ozone with an hourly concentration of 49.0 ppb and an AQI value of 25 on February 22nd and two on February 27th.
- There were 43 hours of fair AQI values recorded in March 2008, all of these due to Ozone. The highest hourly concentration of Ozone was 59.0 ppb and an AQI value of 33 on March 9th hour 15 and hour 16.
- There were 154 hours of fair AQI values recorded in April 2008, all of these due to Ozone. The highest hourly concentration of Ozone was 63.0 ppb and an AQI value of 36 on April 25th, hour 14, April 27th, hour 21, and April 28th, hour 16.
- There were 145 hours of fair AQI values recorded in May 2008, all of these due to Ozone. The highest hourly concentration of Ozone was 63.0 ppb and an AQI value of 36 on May 16th, hour 17 and hour 18.
- There were 6 hours of poor AQI values and 47 hours of fair AQI values recorded in June. All the poor AQI values were due to PM2.5, which may be a result of a smoke in the air at that time period. 35hours of fair AQI values were due to Ozone and 12 hours were due to PM2.5. The highest hourly concentration of PM2.5 was 93.0 UG/M3 and an AQI value of 57 on June 8th, hour 3.The highest hourly concentration of Ozone was 62.0 ppb and an AQI value of 35 on June 13th, hour 15.
- There were 3 hours of fair AQI values recorded in July 2008. All the fair AQI values were due to ozone. The highest hourly concentration of Ozone was 56 ppb and an AQI value of 30 on July 25th, hour 14.
- 10 hours of fair AQI values recorded in August 2008. 9 hours of fair AQI values were due to Ozone and 1 hour was due to PM2.5. The highest hourly concentration of PM2.5 was 37.1 UG/M3 and an AQI value of 29 on August 15th, hour 18.The highest hourly concentration of Ozone was 57.0 ppb and an AQI value of 31 on June 15th, hour 16 and hour 17.
- All AQI values recorded in September were within the good range in September.
- All AQI values recorded in October were within the good range in October.
- All AQI values recorded in November were within the good range in November.
- 2 hours of fair AQI values recorded in December, both were due to PM2.5. The highest hourly concentration of PM2.5 was 44.9 UG/M3 and an AQI value of 33 on December 11th.

General Monthly Summary - Cold Lake

AQM STATION – LICA – COLD LAKE

Passive Network

- Site #21: the ozone sampler was missing at the station upon change out in February.
- The results of the H2S duplicate sampling showed large variation in the concentration results. The field and laboratory data was reviewed, but failed to provide information on the reason for the discrepancies. Due to the large variations, the H2S duplicates were not utilized in the data reporting in June.
- The result of the sample #5 H2S duplicate sampling showed large variation in the concentration result. The field and laboratory data was reviewed, but failed to provide information on the reason for the discrepancies. Due to the large variation, the H2S duplicate was not utilized in the data reporting in October.
- NO2 sample duplicate at station#10 and NO2 sample at station #23 were missing in November.
- SO2 sample at station#8 and NO2 sample at station #23 were missing in December.

Continuous Monitoring

Annual Summaries Graphs & Wind Roses

Sulphur Dioxide

Current Date : 02/25/09
Current Time : 11:29

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2008

Logger Name : LICA Logger Id : 01 Parameter : SO2_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	707	0	4	0
February	696	661	0	8	0
March	744	706	0	4	0
April	720	685	0	2	0
May	744	691	0	0	0
June	720	678	0	7	0
July	744	705	0	1	0
August	744	704	0	1	0
September	720	684	0	3	0
October	744	706	0	4	0
November	720	682	0	2	0
December	744	697	0	5	0
Yearly Total	8784	8306	0	8	0

SO_2 Monthly Averages and Frequency Distributions of One Hour Readings - 2008

Plant Operator: Lakeland Industry & Community Plant Location: Cold Lake

Month	Number of Readings	% Readings in Concentration Range (ppb SO_2)						SO_2 ppb Monthly Average
		0 to 19 ppb	20 to 59 ppb	60 to 109 ppb	110 to 169 ppb	170 to 340 ppb	>341 ppb	
January	707	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.34
February	661	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.82
March	706	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.12
April	685	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.03
May	690	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.00
June	678	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.03
July	705	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.00
August	704	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.01
September	684	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.02
October	706	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.14
November	682	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.07
December	697	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.56
							Annual Average	**0.18**

SO_2 Exceedances of One Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Plant Location: Cold Lake

Month	Number of Exceedances	SO2 ppb Peak Reading
January	0	4
February	0	8
March	0	5
April	0	2
May	0	0
June	0	7
July	0	1
August	0	1
September	0	3
October	0	4
November	0	2
December	0	5
TOTAL EXCEED	**0**	
ANNUAL PEAK		**8**

SO_2 24 - Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Plant Location: Cold Lake

Month	SO2 ppb 24-Hour Peak Reading
January	1.0
February	2.3
March	0.7
April	0.4
May	0.0
June	0.7
July	0.0
August	0.0
September	0.2
October	0.7
November	0.6
December	1.9
ANNUAL PEAK	**2.3**

LICA
SO2_ / WDR Joint Frequency Distribution (Percent)

01/01/08 thru 12/31/08

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : SO2_
Units : PPB

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	20	2.49	4.31	5.09	3.48	8.58	9.66	10.60	2.83	2.95	3.35	11.32	12.66	9.05	6.20	5.12	2.25	100.00
<	60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<	110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<	170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<	340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>=	340	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	2.49	4.31	5.09	3.48	8.58	9.66	10.60	2.83	2.95	3.35	11.32	12.66	9.05	6.20	5.12	2.25	

Calm : .00 %

Total # Operational Hours : 8298

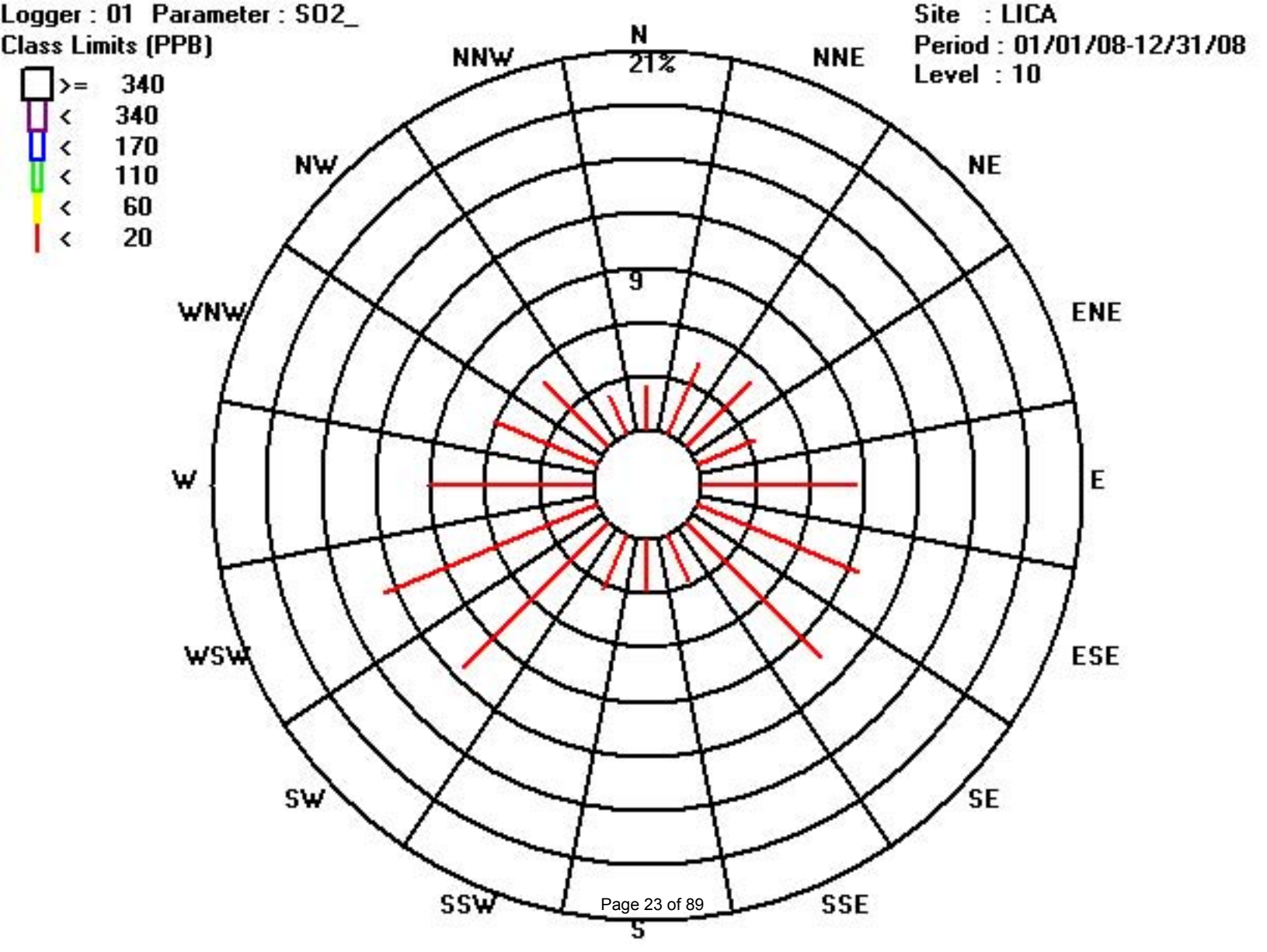
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	20	207	358	423	289	712	802	880	235	245	278	940	1051	751	515	425	187	8298
<	60																	
<	110																	
<	170																	
<	340																	
>=	340																	
	Totals	207	358	423	289	712	802	880	235	245	278	940	1051	751	515	425	187	

Calm : .00 %

Total # Operational Hours : 8298


Logger : 01 Parameter : SO2_
Class Limits (PPB)
>= 340
< 340
< 170
< 110
< 60
< 20
Site : LICA
Period : 01/01/08-12/31/08
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Total Reduced Sulphur

Current Date : 02/25/09
Current Time : 11:29

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2008

Logger Name : LICA Logger Id : 01 Parameter : TRS_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	704	0	1	0
February	696	661	0	1	0
March	744	703	0	6	0
April	720	685	0	0	0
May	744	706	0	0	0
June	720	685	0	1	0
July	744	700	0	3	0
August	744	705	0	4	0
September	720	643	0	1	0
October	744	695	0	0	0
November	720	684	0	0	0
December	744	675	0	0	0
Yearly Total	8784	8246	0	6	0

TRS Monthly Averages and Frequency Distributions of One Hour Readings - 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	Number of Readings	% Readings in Concentration Range (ppb TRS)				TRS ppb Monthly Average
		0 to 3 ppb	4 to 10 ppb	11 to 50 ppb	>50 ppb	
January	704	100.0%	0.0%	0.0%	0.0%	0.03
February	661	100.0%	0.0%	0.0%	0.0%	0.00
March	703	100.0%	0.0%	0.0%	0.0%	0.02
April	685	100.0%	0.0%	0.0%	0.0%	0.00
May	706	100.0%	0.0%	0.0%	0.0%	0.00
June	685	100.0%	0.0%	0.0%	0.3%	0.00
July	699	100.0%	0.0%	0.0%	0.0%	0.02
August	705	100.0%	0.0%	0.0%	0.0%	0.01
September	643	100.0%	0.0%	0.0%	0.0%	0.02
October	695	100.0%	0.0%	0.0%	0.0%	0.00
November	684	100.0%	0.0%	0.0%	0.0%	0.00
December	675	100.0%	0.0%	0.0%	0.0%	0.00
					Annual Average	**0.01**

TRS One - Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	TRS ppb One-Hour Peak Reading
January	1.0
February	1.0
March	6.0
April	0.0
May	0.0
June	1.0
July	3.0
August	4.0
September	1.0
October	0.0
November	0.0
December	0.0
ANNUAL PEAK	**6.0**

TRS 24 - Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	TRS ppb 24-Hour Peak Reading
January	0.2
February	0.0
March	0.5
April	0.0
May	0.0
June	0.0
July	0.2
August	0.3
September	0.3
October	0.0
November	0.0
December	0.0
ANNUAL PEAK	**0.5**

LICA
TRS_ / WD Joint Frequency Distribution (Percent)

01/01/08 thru 12/31/08

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : TRS_
Units : PPB

Wind Parameter : WD
Instrument Height : 10 Meters

		Direction																
	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	3	2.47	4.27	5.08	3.50	8.66	9.82	10.71	2.81	2.91	3.27	11.27	12.53	9.03	6.19	5.08	2.26	99.95
<	10	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.04
<	50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>=	50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	2.47	4.27	5.08	3.52	8.67	9.82	10.71	2.81	2.91	3.27	11.30	12.53	9.03	6.19	5.08	2.26	

Calm : .00 %

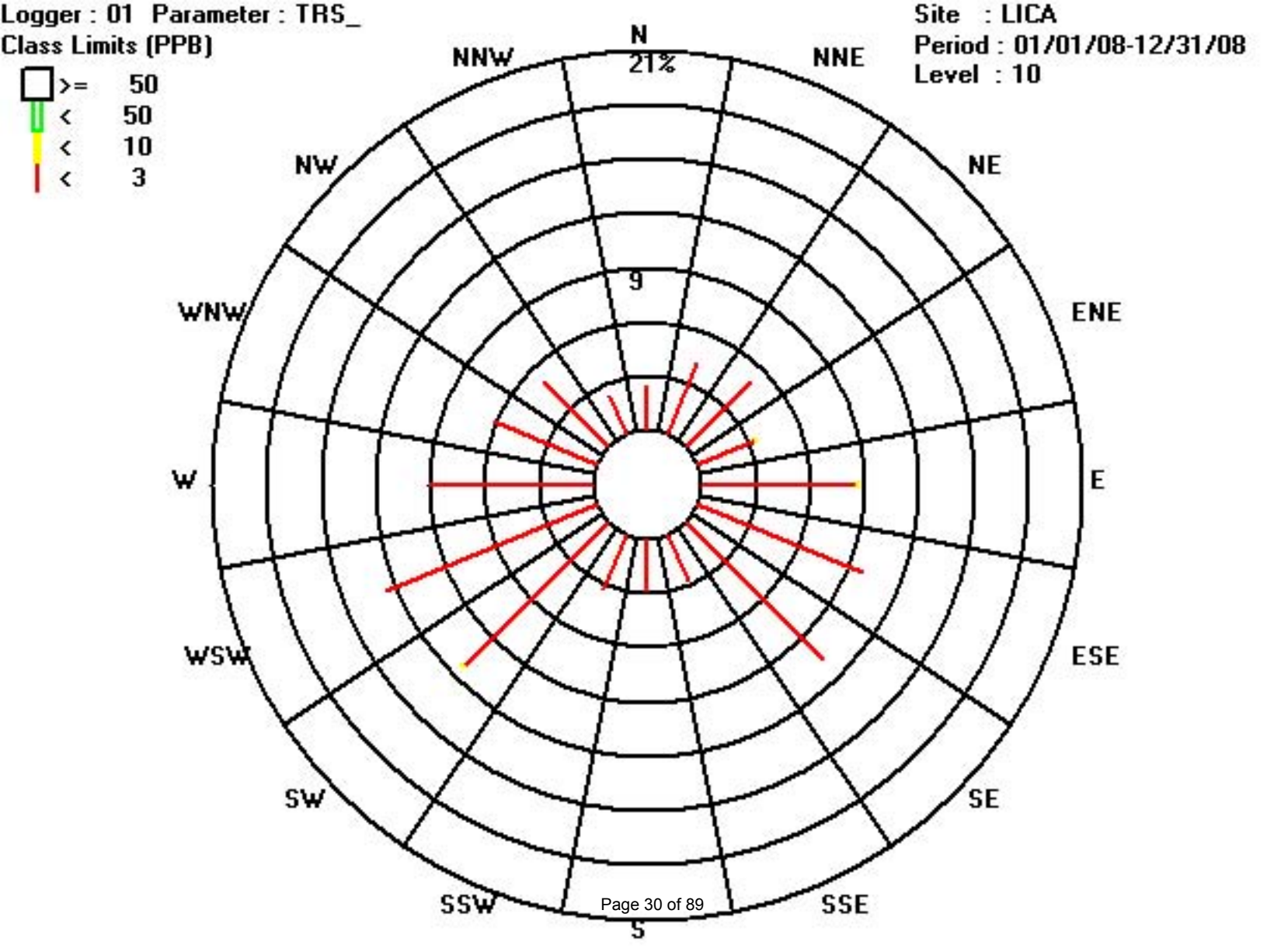
Total # Operational Hours : 8238

Distribution By Samples

		Direction																
	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	3	204	352	419	289	714	809	883	232	240	270	929	1033	744	510	419	187	8234
<	10				1	1						2						4
<	50																	
>=	50																	
	Totals	204	352	419	290	715	809	883	232	240	270	931	1033	744	510	419	187	

Calm : .00 %

Total # Operational Hours : 8238


Logger : 01 Parameter : TRS_
Class Limits (PPB)
>= 50
< 50
< 10
< 3
Site : LICA
Period : 01/01/08-12/31/08
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Total Hydrocarbons

Current Date : 02/25/09
Current Time : 11:29

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2008

Logger Name : LICA Logger Id : 01 Parameter : THC Units : PPM

	Readings	Valid Readings	Min	Max	Mean
January	744	708	1.7	4.5	2.2
February	696	660	1.6	4.4	2.1
March	744	707	1.6	2.9	1.8
April	720	683	1.7	2.8	1.8
May	744	706	1.5	6.6	1.7
June	720	682	1.5	2.6	1.8
July	744	706	1.6	2.8	1.8
August	744	693	1.7	3.1	1.8
September	720	665	1.5	3.6	1.8
October	744	707	1.5	3.6	1.7
November	720	675	1.5	2.8	1.8
December	744	699	1.7	6	2.2
Yearly Total	8784	8291	1.5	6.6	1.9

THC Monthly Averages and Frequency Distributions of One Hour Readings - 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	Number of Readings	% Readings in Concentration Range (ppm THC)				THC ppm Monthly Average
		0 to 3 ppm	4 to 10 ppm	11 to 50 ppm	>50 ppm	
January	708	92.7%	7.3%	0.0%	0.0%	2.22
February	661	95.8%	4.2%	0.0%	0.0%	2.11
March	707	100.0%	0.0%	0.0%	0.0%	1.86
April	683	100.0%	0.0%	0.0%	0.0%	1.83
May	706	99.7%	0.3%	0.0%	0.0%	1.70
June	682	100.0%	0.0%	0.0%	0.0%	1.86
July	706	100.0%	0.0%	0.0%	0.0%	1.82
August	693	99.6%	0.4%	0.0%	0.0%	1.90
September	664	98.9%	1.1%	0.0%	0.0%	1.80
October	707	99.4%	0.6%	0.0%	0.0%	1.78
November	675	100.0%	0.0%	0.0%	0.0%	1.82
December	699	92.4%	7.6%	0.0%	0.0%	2.22
					Annual Average	**1.91**

LICA
THC / WD Joint Frequency Distribution (Percent)

01/01/08 thru 12/31/08

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : THC
Units : PPM

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	3.0	2.47	4.24	4.96	3.42	8.59	9.66	10.53	2.73	2.84	3.24	10.86	12.40	8.82	6.07	5.08	2.23	98.21
<	10.0	.01	.02	.09	.13	.07	.07	.09	.08	.08	.09	.42	.27	.19	.07	.02	.02	1.78
<	50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>=	50.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	2.48	4.27	5.05	3.56	8.66	9.73	10.63	2.82	2.93	3.34	11.28	12.68	9.01	6.14	5.10	2.25	

Calm : .00 %

Total # Operational Hours : 8286

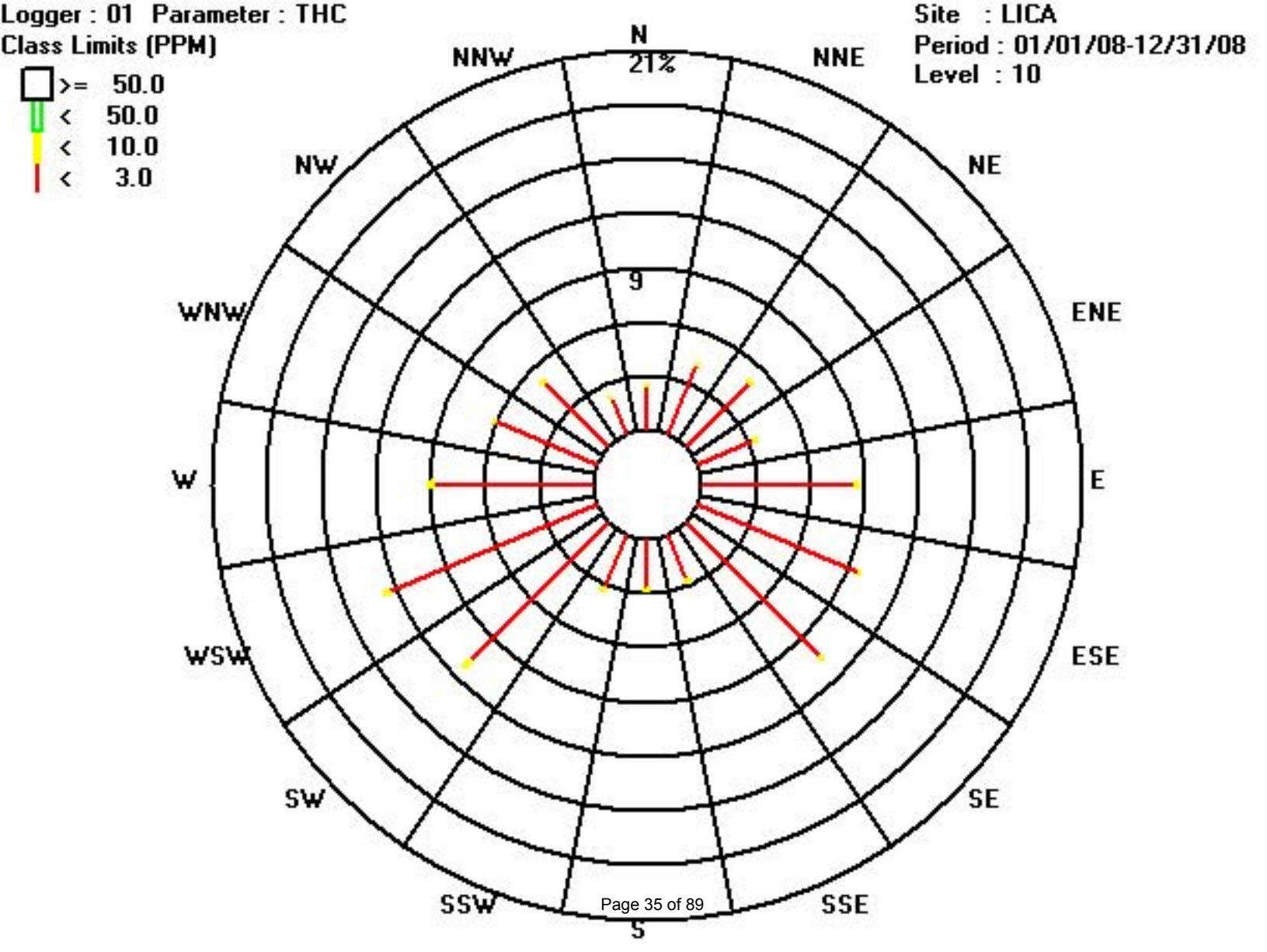
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	3.0	205	352	411	284	712	801	873	227	236	269	900	1028	731	503	421	185	8138
<	10.0	1	2	8	11	6	6	8	7	7	8	35	23	16	6	2	2	148
<	50.0																	
>=	50.0																	
	Totals	206	354	419	295	718	807	881	234	243	277	935	1051	747	509	423	187	

Calm : .00 %

Total # Operational Hours : 8286


Logger : 01 Parameter : THC
Class Limits (PPM)
>= 50.0
< 50.0
< 10.0
< 3.0
Site : LICA
Period : 01/01/08-12/31/08
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Particulate Matter 2.5

Current Date : 02/25/09
Current Time : 11:29

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2008

Logger Name : LICA Logger Id : 01 Parameter : PM2 Units : UG/M3

	Readings	Valid Readings	Min	Max	Mean
January	744	738	0	17.2	3.6
February	696	675	0	26.7	4.2
March	744	708	0	19.4	2.9
April	720	701	0	12.8	3.2
May	744	710	0	25.4	4.6
June	696	653	0	93	6.1
July	696	618	0	24.1	4.2
August	744	635	0	37.1	3.6
September	720	713	0	12.6	2.1
October	744	736	0	19.9	3
November	720	716	0	11.4	2.8
December	744	726	0	44.9	3.5
Yearly Total	8712	8329	0	93	3.6

PM 2.5 Monthly Averages and Frequency Distributions of Daily Average Rea

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	Valid Readings* Hours	% Readings in Concentration Range (ug/m^3)						Total D Readi > 30 u
		≤ 30 ug/m^3	30 < C ≤ 60 ug/m^3	60 < C ≤ 80 ug/m^3	80 < C ≤ 120 ug/m^3	120 < C ≤ 240 ug/m^3	> 240 ug/m^3	
January	738	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
February	673	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0
March	707	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
April	701	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
May	710	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0
June	652	93.7%	5.2%	1.1%	0.0%	0.0%	0.0%	1
July	618	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0
August	636	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%	1
September	713	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
October	736	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
November	716	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
December	726	99.7%	0.3%	0.0%	0.3%	0.0%	0.0%	0
								Annual A

C - Concentration

* Valid readings - does not include calibration hours and downtime hours

PM2.5 One - Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Plant Cold Lake

Month	PM2.5 ppb One-Hour Peak Reading
January	17.2
February	21.0
March	19.4
April	12.8
May	25.4
June	93.0
July	24.1
August	37.1
September	12.6
October	19.9
November	11.4
December	44.9
ANNUAL PEAK	**93.0**

PM2.5 Exceedances of 24 - Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Plant Cold Lake

Month	Number of Exceedances	PM2.5 ppb Peak Reading
January	0	8.8
February	0	13.5
March	0	6.3
April	0	6.8
May	0	11.4
June	1	33.2
July	0	9.3
August	1	8.6
September	0	4.7
October	0	11.1
November	0	6.4
December	0	8.6
TOTAL EXCEED	**2**	
ANNUAL PEAK		**33.2**

LICA
PM2 / WD Joint Frequency Distribution (Percent)

01/01/08 thru 12/31/08

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : PM2
Units : UG/M3

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	30.0	2.37	4.31	5.16	3.59	8.86	9.56	10.61	2.83	2.92	3.38	11.40	12.65	8.79	6.09	4.93	2.16	99.69
<	60.0	.01	.01	.01	.02	.01	.01	.00	.01	.00	.00	.02	.02	.00	.01	.02	.03	.21
<	80.0	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
<	120.0	.02	.01	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.07
<	240.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>=	240.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	2.41	4.33	5.20	3.62	8.88	9.57	10.61	2.84	2.92	3.38	11.42	12.67	8.79	6.10	4.96	2.21	

Calm : .00 %

Total # Operational Hours : 8321

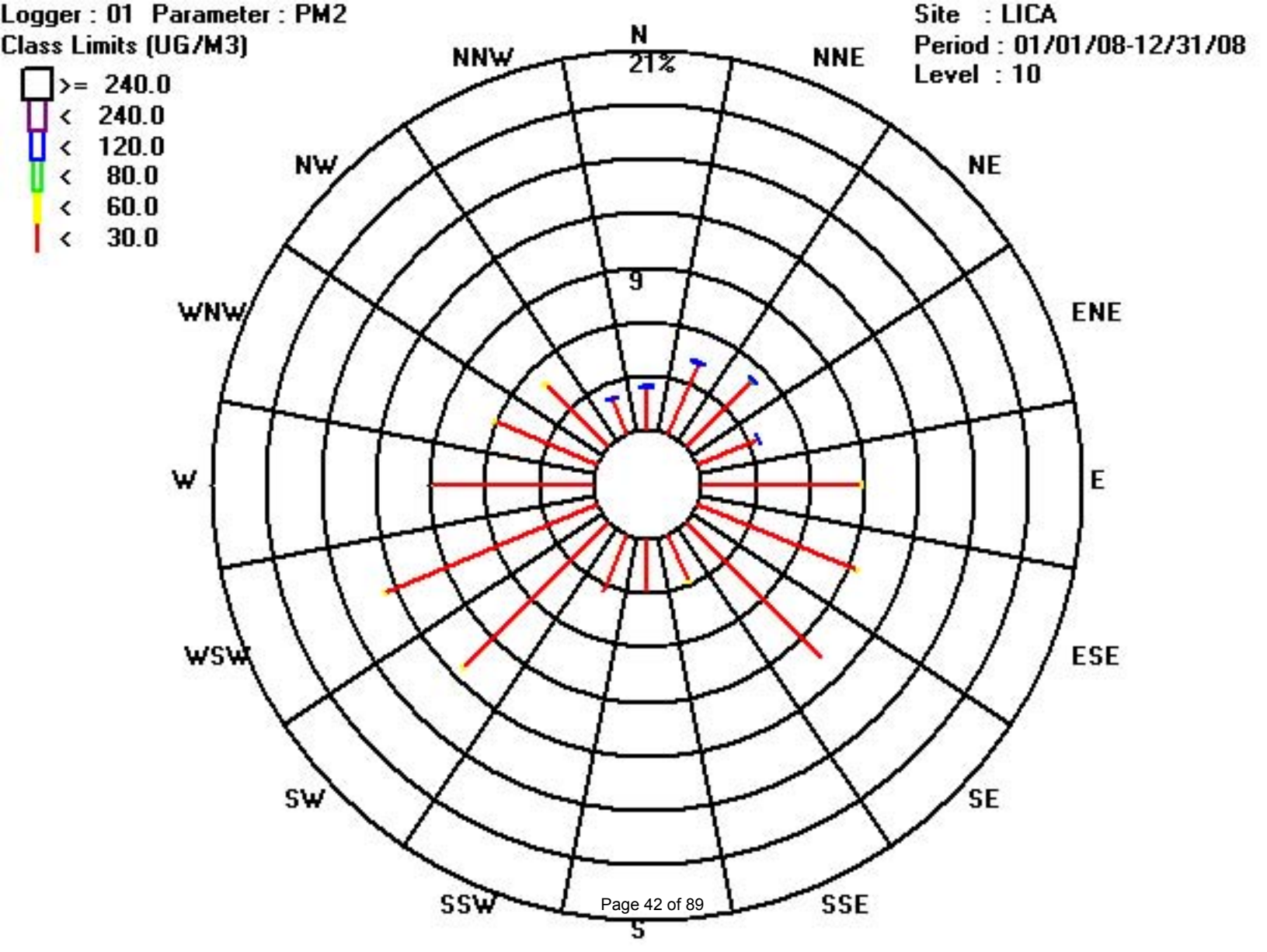
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	30.0	198	359	430	299	738	796	883	236	243	282	949	1053	732	507	411	180	8296
<	60.0	1	1	1	2	1	1		1			2	2		1	2	3	18
<	80.0			1														1
<	120.0	2	1	1	1												1	6
<	240.0																	
>=	240.0																	
	Totals	201	361	433	302	739	797	883	237	243	282	951	1055	732	508	413	184	

Calm : .00 %

Total # Operational Hours : 8321


Logger : 01 Parameter : PM2
Class Limits (UG/M3)
>= 240.0
< 240.0
< 120.0
< 80.0
< 60.0
< 30.0
Site : LICA
Period : 01/01/08-12/31/08
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Nitrogen Dioxide

Current Date : 02/25/09
Current Time : 11:29

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2008

Logger Name : LICA Logger Id : 01 Parameter : NO2_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	704	0	37	10
February	696	657	1	47	10
March	744	704	0	41	6
April	720	664	0	22	3
May	744	703	0	19	2
June	720	681	0	9	1
July	744	702	0	10	1
August	744	681	0	7	1
September	720	682	0	15	1
October	744	704	0	23	3
November	720	671	0	34	4
December	744	700	0	31	9
Yearly Total	8784	8253	0	47	4

NO_2 Monthly Averages and Frequency Distributions of One Hour Readings - 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	Number of Readings	% Readings in Concentration Range (ppm NO_2)				NO_2 ppb Monthly Average
		0 to 0.05 ppm	0.06 to 0.11 ppm	0.12 to 0.21 ppm	> 0.21 ppm	
January	704	100%	0%	0%	0%	10.55
February	659	100%	0%	0%	0%	10.80
March	704	100%	0%	0%	0%	6.19
April	664	100%	0%	0%	0%	3.11
May	703	100%	0%	0%	0%	2.06
June	681	100%	0%	0%	0%	1.94
July	702	100%	0%	0%	0%	1.44
August	681	100%	0%	0%	0%	1.42
September	682	100%	0%	0%	0%	1.99
October	704	100%	0%	0%	0%	3.96
November	671	100%	0%	0%	0%	4.40
December	700	100%	0%	0%	0%	9.02
					Annual Average	**4.74**

NO_2 Exceedances of One Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	Number of Exceedances	NO2 ppb Peak Reading
January	0	37
February	0	47
March	0	41
April	0	22
May	0	19
June	0	9
July	0	10
August	0	7
September	0	15
October	0	37
November	0	34
December	0	31
TOTAL EXCEED	**0**	
ANNUAL PEAK		**47**

NO_2 Exceedances of 24-Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	Number of Exceedances	NO2 ppb Peak Reading
January	0	20.1
February	0	28.4
March	0	15.8
April	0	5.8
May	0	4.9
June	0	3.4
July	0	2.7
August	0	2.4
September	0	4.1
October	0	13.9
November	0	15.3
December	0	21.2
TOTAL EXCEED	**0**	
ANNUAL PEAK		**28.4**

LICA
NO2_ / WD Joint Frequency Distribution (Percent)

01/01/08 thru 12/31/08

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : NO2_
Units : PPB

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	50	2.44	4.24	5.11	3.60	8.63	9.81	10.69	2.82	2.95	3.34	11.31	12.67	8.90	6.11	5.09	2.20	100.00
<	110	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<	210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>=	210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	2.44	4.24	5.11	3.60	8.63	9.81	10.69	2.82	2.95	3.34	11.31	12.67	8.90	6.11	5.09	2.20	

Calm : .00 %

Total # Operational Hours : 8245

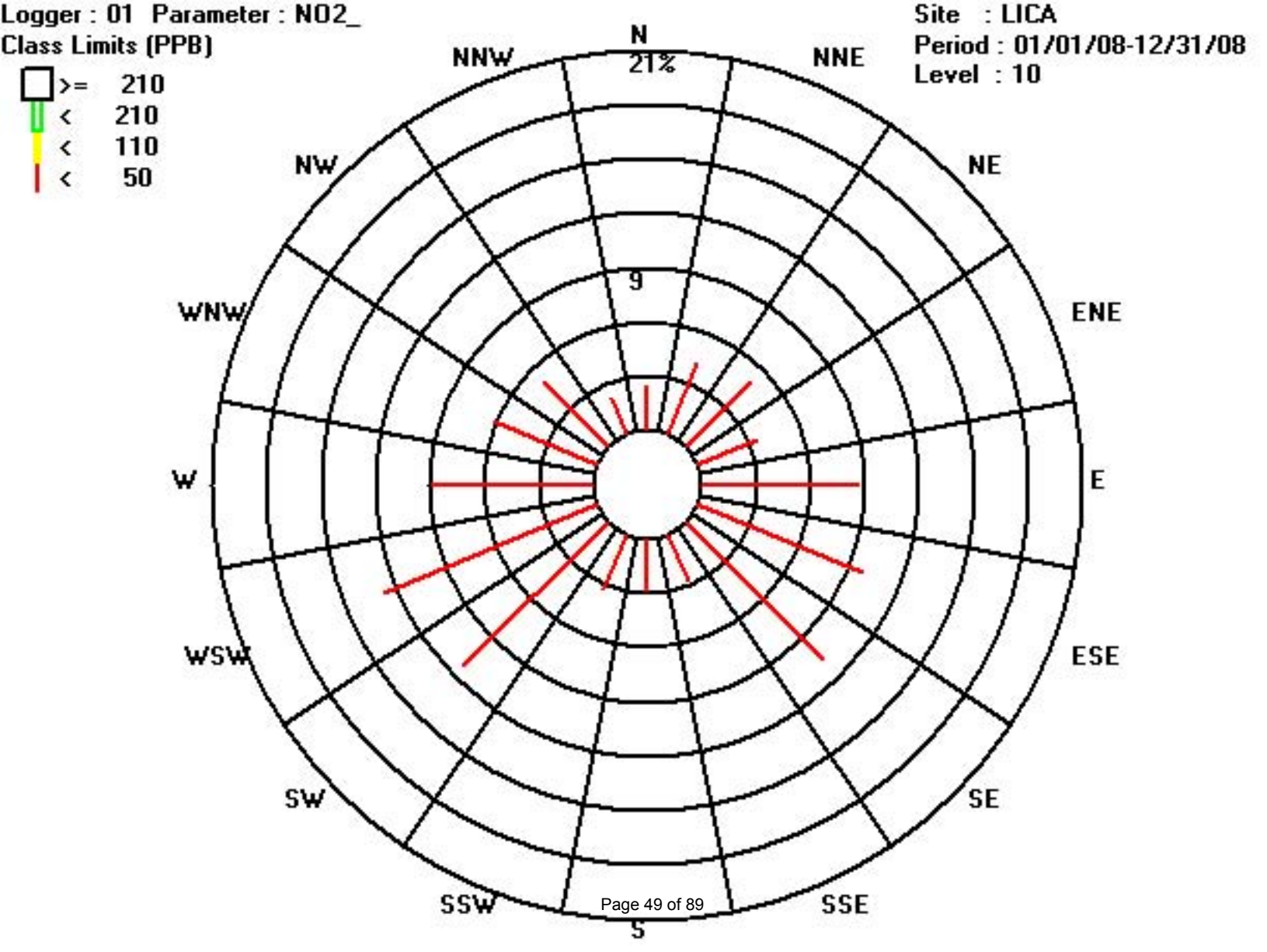
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	50	202	350	422	297	712	809	882	233	244	276	933	1045	734	504	420	182	8245
<	110																	
<	210																	
>=	210																	
	Totals	202	350	422	297	712	809	882	233	244	276	933	1045	734	504	420	182	

Calm : .00 %

Total # Operational Hours : 8245


Logger : 01 Parameter : NO2_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA
Period : 01/01/08-12/31/08
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Nitric Oxide

Current Date : 02/25/09
Current Time : 11:29

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2008

Logger Name : LICA Logger Id : 01 Parameter : NO_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	704	0	87	3
February	696	657	0	103	3
March	744	704	0	53	1
April	720	664	0	10	0
May	744	703	0	10	0
June	720	681	0	5	0
July	744	702	0	22	0
August	744	681	0	11	0
September	720	682	0	19	0
October	744	704	0	64	1
November	720	671	0	49	1
December	744	701	0	48	3
Yearly Total	8784	8254	0	103	1

NO Monthly Averages and Frequency Distributions of One Hour Readings - 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	Number of Readings	% Readings in Concentration Range (ppm NO)				NO ppb Monthly Average
		0 to 0.05 ppm	0.06 to 0.11 ppm	0.12 to 0.21 ppm	> 0.21 ppm	
January	704	99.4%	0.6%	0.0%	0.0%	3.78
February	659	98.9%	1.1%	0.0%	0.0%	3.99
March	704	99.9%	0.1%	0.0%	0.0%	1.17
April	664	100.0%	0.0%	0.0%	0.0%	0.23
May	703	100.0%	0.0%	0.0%	0.0%	0.12
June	681	100.0%	0.0%	0.0%	0.0%	0.14
July	702	100.0%	0.0%	0.0%	0.0%	0.30
August	681	100.0%	0.0%	0.0%	0.0%	0.31
September	682	100.0%	0.0%	0.0%	0.0%	0.69
October	704	99.7%	0.3%	0.0%	0.0%	1.62
November	671	100.0%	0.0%	0.0%	0.0%	1.44
December	700	100.0%	0.0%	0.0%	0.0%	3.90
					Annual Average	**1.47**

NO One - Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	NO ppb One - Hour Peak Reading
January	87
February	103
March	53
April	10
May	10
June	5
July	22
August	11
September	19
October	64
November	49
December	48
ANNUAL PEAK	**103**

NO 24 - Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	NO ppb 24 - Hour Peak Reading
January	15.8
February	26.3
March	7.2
April	1.0
May	0.7
June	0.8
July	2.4
August	2.4
September	3.8
October	15.0
November	15.9
December	18.3
ANNUAL PEAK	**26.3**

LICA
NO_ / WD Joint Frequency Distribution (Percent)

01/01/08 thru 12/31/08

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : NO_
Units : PPB

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	50	2.44	4.24	5.11	3.51	8.59	9.79	10.69	2.81	2.95	3.34	11.30	12.67	8.91	6.11	5.09	2.19	99.83
<	110	.00	.00	.00	.08	.03	.01	.00	.01	.00	.00	.01	.00	.00	.00	.00	.01	.16
<	210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>=	210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	2.44	4.24	5.11	3.60	8.63	9.81	10.69	2.82	2.95	3.34	11.31	12.67	8.91	6.11	5.09	2.20	

Calm : .00 %

Total # Operational Hours : 8246

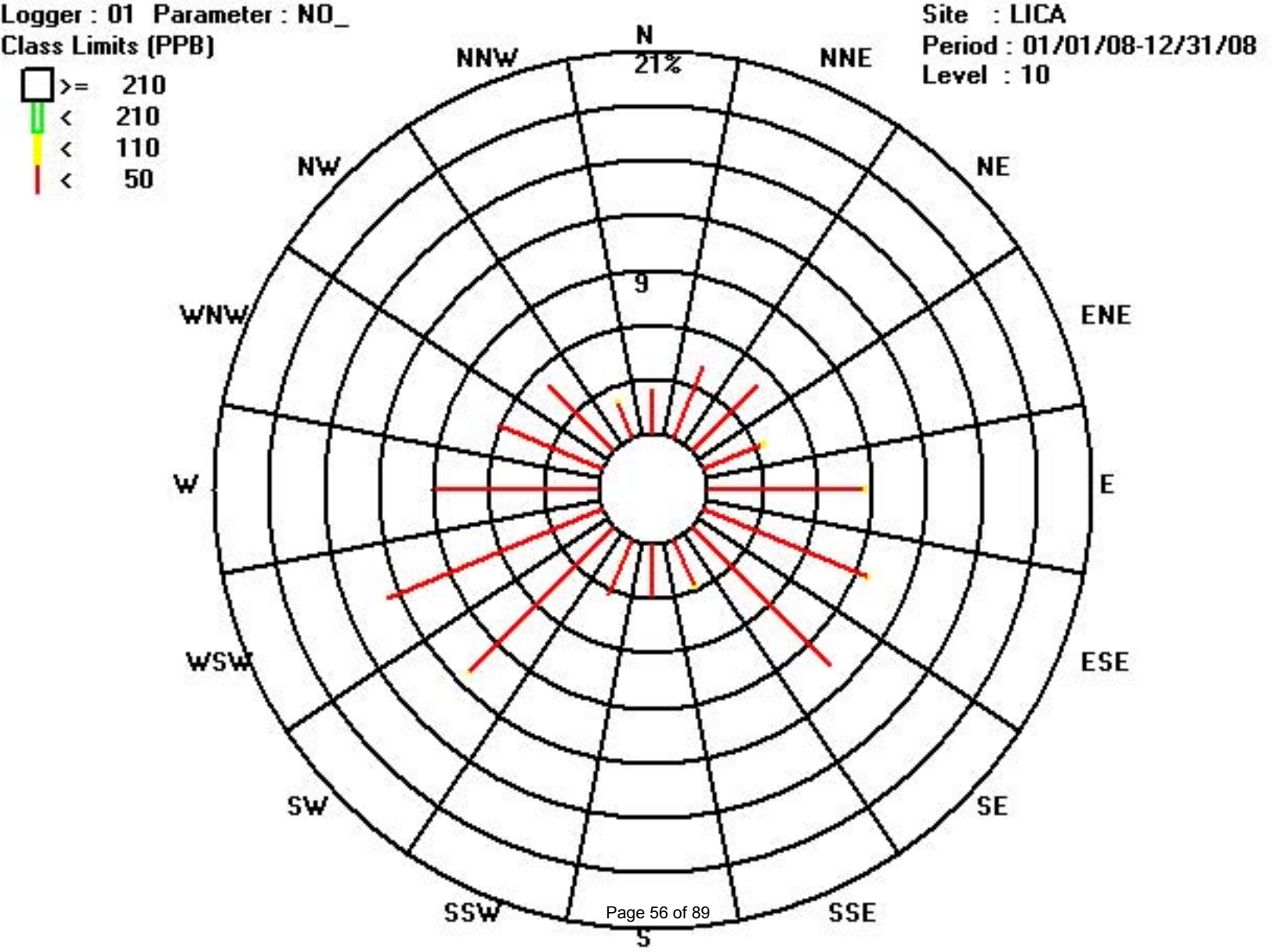
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	50	202	350	422	290	709	808	882	232	244	276	932	1045	735	504	420	181	8232
<	110				7	3	1		1			1					1	14
<	210																	
>=	210																	
	Totals	202	350	422	297	712	809	882	233	244	276	933	1045	735	504	420	182	

Calm : .00 %

Total # Operational Hours : 8246


Logger : 01 Parameter : NO_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA
Period : 01/01/08-12/31/08
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Oxides of Nitrogen

Current Date : 02/25/09
Current Time : 11:29

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2008

Logger Name : LICA Logger Id : 01 Parameter : NOX_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	704	0	120	14
February	696	657	1	149	15
March	744	704	0	86	7
April	720	664	0	32	3
May	744	703	0	27	2
June	720	681	0	11	2
July	744	702	0	26	1
August	744	681	0	16	1
September	720	682	0	25	2
October	744	704	0	82	5
November	720	671	0	74	6
December	744	678	0	70	13
Yearly Total	8784	8231	0	149	6

NO_x Monthly Averages and Frequency Distributions of One Hour Readings - 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	Number of Readings	% Readings in Concentration Range (ppm NOx)				NOx ppb Monthly Average
		0 to 0.05 ppm	0.06 to 0.11 ppm	0.12 to 0.21 ppm	> 0.21 ppm	
January	704	95.3%	4.5%	0.1%	0.0%	14.66
February	659	95.8%	3.8%	0.5%	0.0%	15.21
March	704	98.4%	1.6%	0.0%	0.0%	7.74
April	664	100.0%	0.0%	0.0%	0.0%	3.39
May	703	100.0%	0.0%	0.0%	0.0%	2.35
June	681	100.0%	0.0%	0.0%	0.0%	2.28
July	702	100.0%	0.0%	0.0%	0.0%	1.93
August	681	100.0%	0.0%	0.0%	0.0%	1.90
September	682	100.0%	0.0%	0.0%	0.0%	2.96
October	704	99.1%	0.9%	0.0%	0.0%	5.83
November	671	99.1%	0.9%	0.0%	0.0%	6.10
December	677	96.6%	3.4%	0.0%	0.0%	13.53
					Annual Average	**6.49**

NO_x One Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	NOx ppb One-Hour Peak Reading
January	120
February	149
March	86
April	32
May	27
June	11
July	26
August	16
September	25
October	82
November	74
December	70
ANNUAL PEAK	**149**

NO_x 24 - Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	NOx ppb 24-Hour Peak Reading
January	33.1
February	55.0
March	22.6
April	6.9
May	5.6
June	3.8
July	5.3
August	4.1
September	8.3
October	28.1
November	31.7
December	38.5
ANNUAL PEAK	**55.0**

LICA
NOX_ / WD Joint Frequency Distribution (Percent)

01/01/08 thru 12/31/08

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : NOX_
Units : PPB

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	50	2.44	4.24	5.01	3.34	8.47	9.74	10.62	2.78	2.93	3.30	11.20	12.58	8.88	6.08	4.88	2.14	98.69
<	110	.01	.01	.12	.21	.18	.09	.09	.04	.03	.04	.14	.12	.03	.03	.02	.01	1.25
<	210	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04
>=	210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	2.45	4.25	5.13	3.61	8.65	9.83	10.72	2.83	2.96	3.35	11.34	12.70	8.92	6.11	4.91	2.15	

Calm : .00 %

Total # Operational Hours : 8223

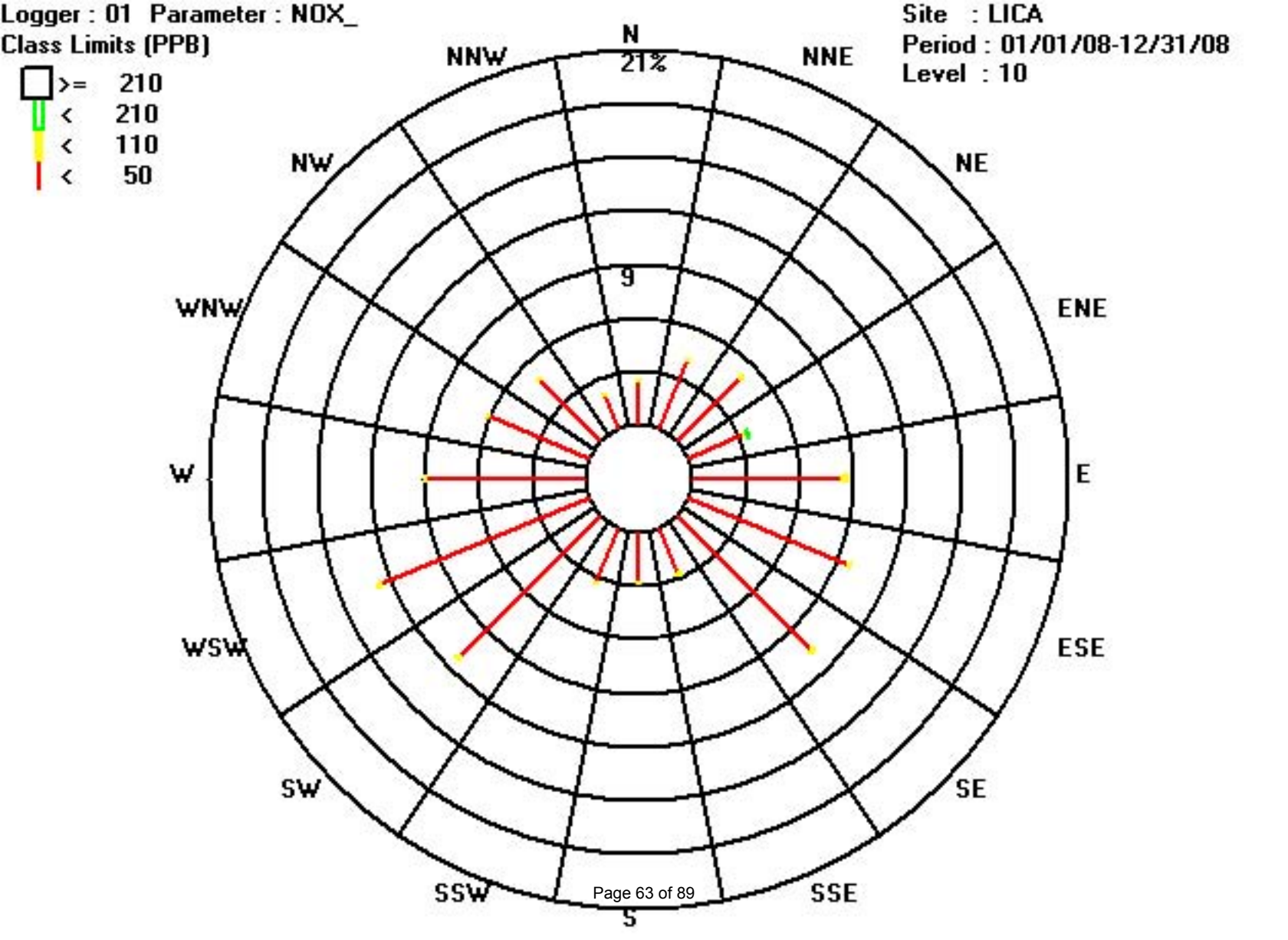
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	50	201	349	412	275	697	801	874	229	241	272	921	1035	731	500	402	176	8116
<	110	1	1	10	18	15	8	8	4	3	4	12	10	3	3	2	1	103
<	210				4													4
>=	210																	
	Totals	202	350	422	297	712	809	882	233	244	276	933	1045	734	503	404	177	

Calm : .00 %

Total # Operational Hours : 8223


Logger : 01 Parameter : NOX_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA
Period : 01/01/08-12/31/08
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Ozone

Current Date : 02/25/09
Current Time : 11:29

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2008

Logger Name : LICA Logger Id : 01 Parameter : O3_ Units : PPB

	Readings	Valid Readings	Min	Max	Mean
January	744	707	0	40	19
February	696	662	0	49	25
March	744	707	0	59	35
April	720	685	3	63	41
May	744	706	3	63	38
June	720	685	0	62	29
July	744	708	0	59	24
August	744	707	0	57	21
September	720	685	0	36	16
October	744	703	0	44	21
November	720	684	0	34	17
December	744	705	0	39	18
Yearly Total	8784	8344	0	63	25

O_3 Monthly Averages and Frequency Distributions of One Hour Readings - 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	Number of Readings	% Readings in Concentration Range (ppmO3)				O3 ppb Monthly Average
		0 to 0.05 ppm	0.06 to 0.11 ppm	0.12 to 0.21 ppm	> 0.21 ppm	
January	706	100.0%	0.0%	0.0%	0.0%	19.90
February	663	100.0%	0.0%	0.0%	0.0%	25.93
March	707	92.2%	7.8%	0.0%	0.0%	35.76
April	684	72.1%	27.9%	0.0%	0.0%	41.07
May	706	76.3%	23.7%	0.0%	0.0%	38.58
June	685	91.2%	8.8%	0.0%	0.0%	29.77
July	708	98.7%	1.3%	0.0%	0.0%	24.43
August	707	98.3%	1.7%	0.0%	0.0%	21.92
September	685	100.0%	0.0%	0.0%	0.0%	16.33
October	703	100.0%	0.0%	0.0%	0.0%	21.62
November	684	100.0%	0.0%	0.0%	0.0%	17.66
December	705	100.0%	0.0%	0.0%	0.0%	18.23
					Annual Average	**25.93**

O_3 One - Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	O3 ppb One - Hour Peak Reading
January	40
February	49
March	59
April	63
May	63
June	62
July	59
August	57
September	36
October	44
November	34
December	39
ANNUAL PEAK	**63**

O_3 24 - Hour Averages for 2008

Plant Operator: Lakeland Industry & Community Association Plant Location: Cold Lake

Month	O3 ppb 24 - Hour Peak Reading
January	32.0
February	39.0
March	45.0
April	56.4
May	47.0
June	43.5
July	33.3
August	38.1
September	25.5
October	32.0
November	27.9
December	31.2
ANNUAL PEAK	**56.4**

LICA
O3_ / WD Joint Frequency Distribution (Percent)

01/01/08 thru 12/31/08

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : O3_
Units : PPB

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	50	2.37	3.93	4.53	3.41	8.07	9.15	9.96	2.63	2.77	3.23	10.26	12.29	8.65	5.88	4.76	2.09	94.06
<	110	.14	.31	.55	.16	.62	.53	.57	.19	.17	.13	1.04	.35	.38	.28	.29	.14	5.93
<	210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
>=	210	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	2.51	4.24	5.08	3.58	8.69	9.69	10.54	2.83	2.95	3.37	11.30	12.65	9.04	6.17	5.06	2.24	

Calm : .00 %

Total # Operational Hours : 8338

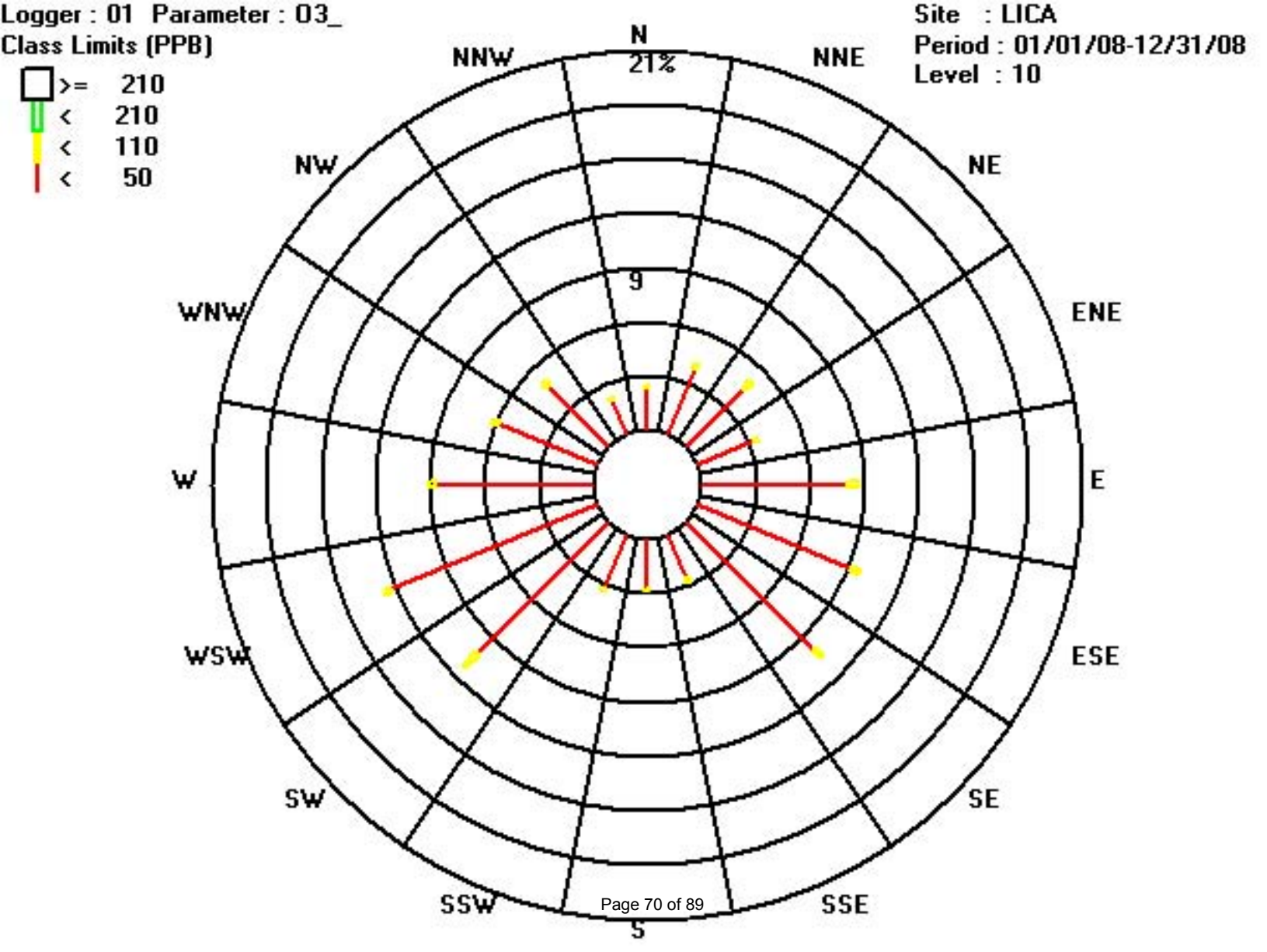
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	50	198	328	378	285	673	763	831	220	231	270	856	1025	722	491	397	175	7843
<	110	12	26	46	14	52	45	48	16	15	11	87	30	32	24	25	12	495
<	210																	
>=	210																	
	Totals	210	354	424	299	725	808	879	236	246	281	943	1055	754	515	422	187	

Calm : .00 %

Total # Operational Hours : 8338


Logger : 01 Parameter : 03_
Class Limits (PPB)
>= 210
< 210
< 110
< 50
Site : LICA
Period : 01/01/08-12/31/08
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9

Ambient Temperature

Current Date : 02/25/09
Current Time : 11:30

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2008

Logger Name : LICA Logger Id : 01 Parameter : TPX Units : DGC

	Readings	Valid Readings	Min	Max	Mean
January	744	744	-40	0	-15.4
February	696	696	-36.6	4.5	-14.5
March	744	743	-29.7	8.3	-5.6
April	720	720	-14.5	17.1	0.2
May	744	744	-3.2	25.2	11
June	720	720	0.5	29.3	15.4
July	744	744	6.4	29.2	16.8
August	744	744	-0.1	30.1	16.2
September	720	719	-1.6	23.1	9.7
October	744	744	-8	25.2	5.1
November	720	720	-16.2	8.4	-2
December	744	741	-39.2	6.7	-20.1
Yearly Total	8784	8779	-40	30.1	1.4

Temperature - Monthly Averages for 2008

Plant Operator: Lakeland Industry & Community Plant Location: Cold Lake

Month	Monthly Averages (Deg.C)	Maximum Hourly Average	Minimum Hourly Average	Maximum Daily Average
January	-15.43	-0.8	-40.0	-4.3
February	-14.60	4.5	-36.6	-0.4
March	-5.67	8.3	-29.7	2.1
April	0.23	17.1	-14.5	10.1
May	11.01	25.2	-3.2	17.7
June	15.45	29.3	0.5	22.9
July	16.82	29.2	6.4	22.7
August	16.24	30.1	-0.1	23.2
September	9.77	23.1	-1.6	14.7
October	5.15	25.2	-8.0	17.3
November	-2.03	8.4	-16.2	5.2
December	-20.17	6.7	-39.2	1.5
ANNUAL AVERAGE	**1.40**	-	-	-

Relative Humidity

Current Date : 02/25/09
Current Time : 11:30

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2008

Logger Name : LICA Logger Id : 01 Parameter : RH Units : %FS

	Readings	Valid Readings	Min	Max	Mean
January	744	744	51.3	93	77
February	696	696	43.3	92.4	71.4
March	744	743	32.3	95	68
April	720	720	24.8	94.7	62.4
May	744	744	14.9	95.3	51
June	720	720	17.9	97.8	63.9
July	744	744	28.3	98.8	71.4
August	744	744	32.5	98.9	73
September	720	719	30.6	99.1	72.1
October	744	744	18.8	95.6	61.4
November	720	720	48.4	98	79.8
December	744	741	45.2	93.3	73.2
Yearly Total	8784	8779	14.9	99.1	68.7

RELATIVE HUMIDITY - Monthly Averages for 2008

Plant Operator: Lakeland Industry & Community Plant Location: Cold Lake

Month	Monthly Averages (%)	Maximum Hourly Average	Maximum Daily Average
January	77.09	93.00	88.01
February	71.49	92.40	79.48
March	68.09	95.00	78.48
April	62.45	94.70	86.53
May	51.05	95.30	75.90
June	63.97	97.80	90.48
July	71.43	98.80	91.00
August	73.06	98.90	93.91
September	72.19	99.10	88.24
October	61.49	95.60	89.65
November	79.80	98.00	93.52
December	73.28	93.30	83.42
ANNUAL AVERAGE	**68.78**	-	-

Vector Wind Speed

Current Date : 02/25/09
Current Time : 11:30

Annual Parameter Summary Report - Hourly
Maxxam Analytics

Year : 2008

Logger Name : LICA Logger Id : 01 Parameter : WSP Units : KPH

	Readings	Valid Readings	Min	Max	Mean
January	744	744	0	25.5	4.9
February	696	696	0	23.8	5.3
March	744	743	0	21.8	5.9
April	720	720	0	20.7	7.4
May	744	744	0	25.4	6.9
June	720	720	0	19.5	5.2
July	744	744	0	19.1	5.7
August	744	744	0	17.7	6.1
September	720	719	0	19.9	5.4
October	744	739	0	31.1	7
November	720	717	0	18.4	6
December	744	741	0	30.1	5.6
Yearly Total	8784	8771	0	31.1	5.9

LICA
WSP / WD Joint Frequency Distribution (Percent)

01/01/08 thru 12/31/08

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : WSP
Units : KPH

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	6.0	1.03	1.82	3.24	2.72	4.02	4.69	5.41	2.39	2.26	2.63	7.06	6.46	3.32	1.89	1.24	.83	51.10
<	12.0	1.02	1.66	1.50	.62	3.96	4.05	4.07	.21	.20	.23	3.37	4.77	3.59	2.28	1.99	.99	34.59
<	20.0	.38	.82	.17	.01	.37	.58	.78	.00	.00	.00	.37	.95	1.77	1.71	1.44	.31	9.72
<	29.0	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.12	.21	.26	.01	.62
<	39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.02
>=	39.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	Totals	2.45	4.30	4.93	3.36	8.36	9.33	10.27	2.61	2.47	2.87	10.81	12.19	8.82	6.12	4.94	2.15	

Calm : 3.93 %

Total # Operational Hours : 8771

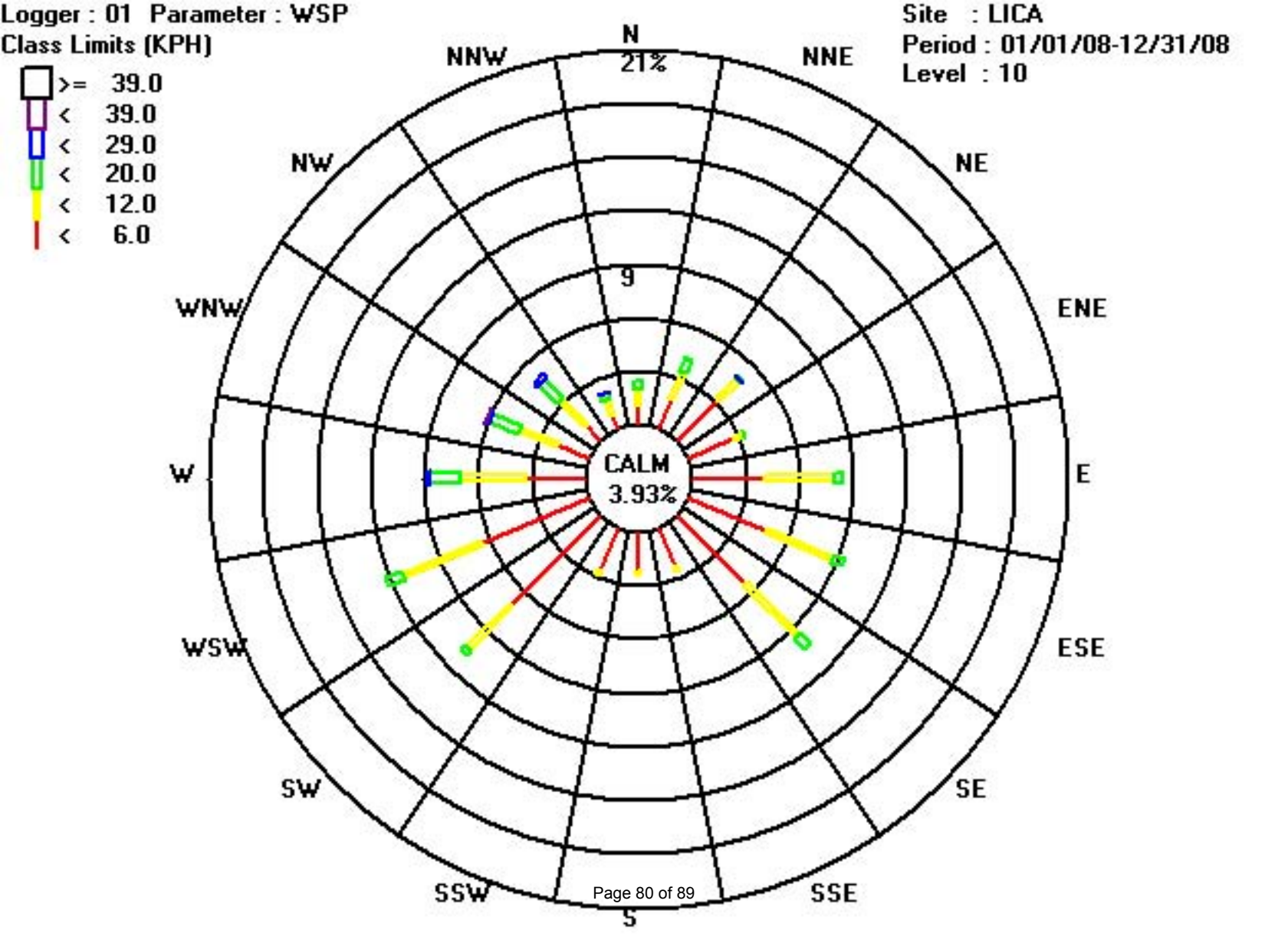
Distribution By Samples

Direction

	Limit	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Freq
<	6.0	91	160	285	239	353	412	475	210	199	231	620	567	292	166	109	73	4482
<	12.0	90	146	132	55	348	356	357	19	18	21	296	419	315	200	175	87	3034
<	20.0	34	72	15	1	33	51	69				33	84	156	150	127	28	853
<	29.0			1										11	19	23	1	55
<	39.0														2			2
>=	39.0																	
	Totals	215	378	433	295	734	819	901	229	217	252	949	1070	774	537	434	189	

Calm : 3.93 %

Total # Operational Hours : 8771


Logger : 01 Parameter : WSP
Class Limits (KPH)
>= 39.0
< 39.0
< 29.0
< 20.0
< 12.0
< 6.0
Site : LICA
Period : 01/01/08-12/31/08
Level : 10
N
21%
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
9
CALM
3.93%

Passive Monitoring Annual Summary

Sulphur Dioxide

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION		***BONNYVILLE***
Company		Project Number
BONNYVILLE	01/01/2008	12/01/2008
Location	***Date Samples Start***	***Date Sampled End***

SO2 (ppb)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Average	Maximum
1	0.3	0.6	0.3	0.1	0.3	<0.1	0.3	0.2	<0.1	0.2	0.1	0.2	**<0.2**	**0.6**
2	0.8	1.1	0.4	0.2	0.3	0.1	0.4	0.3	<0.1	0.3	0.2	0.6	**<0.4**	**1.1**
2A	NA	NA	NA	0.4	NA	NA	NA	NA	NA	0.3	NA	NA	**0.4**	**0.4**
3	1.7	1.7	0.7	0.3	0.2	0.2	0.5	0.3	0.2	0.4	0.3	0.8	**0.6**	**1.7**
4	1.0	1.3	0.5	0.3	0.2	0.3	0.4	0.4	0.3	0.3	0.3	0.7	**0.5**	**1.3**
4A	NA	0.5	NA	NA	NA	NA	NA	NA	NA	0.3	NA	NA	**0.3**	**0.3**
5	1.0	1.1	0.4	0.3	0.2	0.4	0.6	0.5	0.3	0.2	0.2	0.6	**0.5**	**1.1**
7	0.9	1.4	0.5	0.4	0.4	0.8	0.4	0.3	0.5	0.3	0.4	NA	**0.6**	**1.4**
8	0.9	1.3	0.6	0.2	0.2	0.2	0.4	0.3	0.1	0.3	0.2	0.5	**0.4**	**1.3**
9	0.6	1.1	0.5	0.2	0.3	0.3	0.4	0.2	0.1	0.1	0.3	0.4	**0.4**	**1.1**
9A	NA	NA	NA	0.2	NA	NA	NA	NA	NA	NA	0.3	NA	**0.3**	**0.3**
10	0.4	1.0	0.6	0.2	0.3	<0.1	0.4	0.1	<0.1	0.2	0.3	0.3	**<0.3**	**1.0**
10A	NA	NA	NA	NA	0.3	NA	NA	NA	NA	NA	0.3	NA	**0.3**	**0.3**
11	0.6	1.0	0.4	0.2	0.2	<0.1	0.4	0.2	<0.1	0.3	0.3	0.5	**<0.4**	**1.0**
11A	NA	NA	NA	NA	0.3	NA	NA	NA	NA	NA	NA	0.5	**0.4**	**0.5**
12	0.7	1.3	0.6	0.4	0.2	0.2	0.6	0.3	0.1	0.4	0.4	0.8	**0.5**	**1.3**
12A	NA	NA	NA	NA	NA	0.2	NA	NA	NA	NA	NA	0.8	**0.5**	**0.8**
13	1.0	2.1	1.7	0.8	1.2	0.9	1.2	0.8	0.7	1.5	1.6	1.3	**1.2**	**2.1**
13A	NA	NA	NA	NA	NA	1.2	NA	NA	NA	NA	NA	NA	**1.2**	**1.2**
14	0.6	1.0	0.5	0.2	0.2	0.2	0.5	0.2	0.1	0.1	0.2	0.5	**0.4**	**1.0**
15	0.7	1.2	0.4	0.2	0.2	0.2	0.4	0.3	0.1	0.3	0.3	0.6	**0.4**	**1.2**
15A	NA	1.3	NA	NA	NA	NA	NA	0.3	NA	NA	NA	NA	**0.8**	**1.3**
16	0.8	1.1	0.4	0.2	0.3	0.5	0.5	0.4	0.2	0.3	0.2	0.7	**0.5**	**1.1**
16A	NA	1.2	NA	NA	NA	NA	NA	NA	0.3	NA	NA	NA	**0.8**	**1.2**
17	0.6	1.2	0.3	0.2	0.2	0.1	0.3	0.2	<0.1	0.2	0.2	0.5	**<0.3**	**1.2**
17A	0.7	NA	NA	NA	NA	NA	NA	0.2	NA	NA	NA	NA	**0.4**	**0.7**
18	0.7	1.2	0.5	0.2	0.2	0.2	0.3	0.2	<0.1	0.2	0.2	0.6	**<0.4**	**1.2**
19	0.6	0.8	0.5	0.2	0.3	0.2	0.4	0.3	0.2	0.1	0.3	0.4	**0.4**	**0.8**
19A	0.5	NA	NA	NA	NA	NA	0.5	NA	NA	NA	NA	NA	**0.5**	**0.5**
20	0.4	0.8	0.3	0.2	0.2	0.1	0.2	0.2	<0.1	<0.1	0.2	0.3	**<0.3**	**0.8**
21	0.7	1.1	0.4	0.2	0.2	0.3	0.5	0.3	0.1	0.2	0.2	0.7	**0.4**	**1.1**
21A	NA	NA	0.5	NA	NA	NA	NA	NA	0.1	NA	NA	NA	**0.3**	**0.5**
22	0.7	1.3	0.6	0.2	0.2	0.1	0.2	0.2	<0.1	0.2	0.3	0.8	**<0.4**	**1.3**
23	0.6	1.3	1.1	0.5	0.6	0.4	0.4	0.4	0.4	0.4	0.6	0.7	**0.6**	**1.3**
24	1.5	1.9	1.4	1.1	0.6	0.9	0.7	0.6	0.7	0.8	0.7	1.5	**1.0**	**1.9**
25	0.6	1.1	0.6	0.3	0.5	0.4	0.8	0.4	0.4	0.4	0.3	0.4	**0.5**	**1.1**
26	NA	NA	NA	NA	NA	NA	0.5	0.2	<0.1	0.1	0.3	0.4	**<0.3**	**0.5**
26A	NA	NA	NA	NA	NA	NA	0.3	NA	NA	NA	NA	NA	**0.3**	**0.3**
Average	**0.8**	**1.2**	**0.6**	**0.3**	**0.3**	**<0.3**	**0.5**	**0.3**	**<0.2**	**<0.3**	**0.3**	**0.6**		
Maximum	**1.7**	**2.1**	**1.7**	**1.1**	**1.2**	**1.2**	**1.2**	**0.8**	**0.7**	**1.5**	**1.6**	**1.5**		

Hydrogen Sulphide

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION		***BONNYVILLE***
Company		Project Number
BONNYVILLE	01/01/2008	12/01/2008
Location	***Date Samples Start***	***Date Sampled End***

H2S (ppb)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Average	Maximum
2	0.23	0.22	0.09	0.04	0.12	0.15	0.19	0.26	0.12	0.08	0.06	0.17	**0.14**	**0.26**
2A	NA	NA	NA	0.05	NA	NA	NA	NA	NA	0.05	NA	NA	**0.05**	**0.05**
4	0.20	0.22	0.14	0.17	0.17	0.35	0.48	1.02	0.40	0.08	0.08	0.18	**0.29**	**1.02**
4A	NA	NA	0.13	NA	NA	NA	NA	NA	NA	0.28	NA	NA	**0.28**	**0.28**
9	0.20	0.24	0.14	0.06	0.14	0.20	0.46	0.33	0.10	0.13	0.06	0.13	**0.18**	**0.46**
9A	NA	NA	NA	0.06	NA	NA	NA	NA	NA	NA	0.10	NA	**0.08**	**0.10**
10	0.16	0.19	0.07	0.04	0.04	0.04	0.08	0.14	0.05	0.10	0.06	0.14	**0.09**	**0.19**
10A	NA	NA	NA	NA	0.05	NA	NA	NA	NA	NA	0.07	NA	**0.06**	**0.07**
11	0.07	0.15	0.06	0.04	0.07	0.04	0.09	0.14	0.06	0.10	0.09	0.13	**0.09**	**0.15**
11A	NA	NA	NA	NA	0.07	NA	NA	NA	NA	NA	NA	0.25	**0.16**	**0.25**
12	0.16	0.18	0.09	0.03	0.05	0.04	0.10	0.15	0.06	0.10	0.08	0.14	**0.10**	**0.18**
12A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.13	**0.13**	**0.13**
13	0.16	0.26	0.13	0.06	0.10	0.11	0.19	0.26	0.18	0.20	0.17	0.26	**0.17**	**0.26**
13A	NA	NA	NA	NA	NA	0.04	NA	NA	NA	NA	NA	NA	**0.04**	**0.04**
15	0.20	0.23	0.14	0.08	0.13	0.16	0.27	0.39	0.14	0.15	0.13	0.16	**0.18**	**0.39**
15A	NA	0.23	NA	NA	NA	NA	NA	0.41	NA	NA	NA	NA	**0.32**	**0.41**
16	0.22	0.26	0.13	0.09	0.16	0.54	0.46	0.51	0.21	0.21	0.14	0.15	**0.26**	**0.54**
16A	NA	0.25	NA	NA	NA	NA	NA	NA	0.24	NA	NA	NA	**0.25**	**0.25**
17	0.18	0.19	0.08	0.06	0.10	0.14	0.16	0.19	0.08	0.10	0.09	0.15	**0.13**	**0.19**
17A	0.20	NA	NA	NA	NA	0.03	NA	0.20	NA	NA	NA	NA	**0.14**	**0.20**
19	0.21	0.20	0.10	0.05	0.08	0.21	0.27	0.28	0.12	0.14	0.11	0.14	**0.16**	**0.28**
19A	0.22	NA	NA	NA	NA	NA	0.28	NA	NA	NA	NA	NA	**0.25**	**0.28**
21	0.24	0.23	0.13	0.06	0.11	0.24	0.30	0.40	0.14	0.17	0.11	0.16	**0.19**	**0.40**
21A	NA	NA	0.11	NA	NA	NA	NA	NA	0.14	NA	NA	NA	**0.13**	**0.14**
22	0.14	0.15	0.06	<0.02	0.05	0.04	0.09	0.11	0.04	0.10	0.11	0.13	**<0.09**	**0.15**
23	0.16	0.21	0.11	0.05	0.12	0.11	0.17	0.30	0.16	0.17	0.13	0.28	**0.16**	**0.30**
24	0.17	0.21	0.11	0.07	0.09	0.23	0.26	0.33	0.26	0.32	0.11	0.18	**0.19**	**0.33**
26	NA	NA	NA	NA	NA	NA	0.28	0.32	0.12	0.13	0.12	0.16	**0.19**	**0.32**
26A	NA	NA	NA	NA	NA	NA	0.25	NA	NA	NA	NA	NA	**0.25**	**0.25**
Average	**0.18**	**0.21**	**0.11**	**<0.06**	**0.10**	**0.16**	**0.24**	**0.32**	**0.15**	**0.14**	**0.10**	**0.17**		
Maximum	**0.24**	**0.26**	**0.14**	**0.17**	**0.17**	**0.54**	**0.48**	**1.02**	**0.40**	**0.32**	**0.17**	**0.28**		

Nitrogen Dioxide

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION		***BONNYVILLE***
Company		Project Number
BONNYVILLE	01/01/2008	12/01/2008
Location	***Date Samples Start***	***Date Sampled End***

NO2 (ppb)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Average	Maximum
1	2.4	2.9	1.3	0.5	1.0	0.8	0.9	0.9	0.9	1.5	1.8	1.9	**1.4**	**2.9**
2	3.7	4.3	1.6	0.9	1.6	1.9	1.2	1.0	1.5	2.4	2.0	3.8	**2.2**	**4.3**
2A	NA	NA	NA	0.8	NA	NA	NA	NA	NA	2.4	NA	NA	**1.6**	**2.4**
3	4.8	4.0	1.3	0.6	1.4	1.7	1.0	0.9	0.4	2.3	2.4	3.3	**2.0**	**4.8**
4	4.3	3.4	1.4	0.8	1.0	1.2	0.7	0.6	0.8	1.8	1.8	2.7	**1.7**	**4.3**
4A	NA	NA	1.4	NA	NA	NA	NA	NA	NA	1.9	NA	NA	**1.9**	**1.9**
5	4.4	4.8	2.4	1.4	2.1	2.4	1.3	1.2	1.9	3.0	2.3	4.1	**2.6**	**4.8**
7	2.9	2.7	1.3	0.7	1.1	0.8	0.8	0.7	0.6	1.7	1.6	2.5	**1.5**	**2.9**
8	3.6	4.4	1.7	1.0	1.2	1.4	1.2	1.6	1.2	3.0	2.0	3.5	**2.2**	**4.4**
9	4.5	5.5	2.2	1.3	1.4	1.8	1.5	1.1	1.4	3.0	2.6	3.8	**2.5**	**5.5**
9A	NA	NA	NA	1.3	NA	NA	NA	NA	NA	NA	NA	NA	**1.3**	**1.3**
10	1.7	2.3	0.8	0.4	0.8	0.6	0.6	0.3	0.4	1.1	2.3	1.5	**1.1**	**2.3**
10A	NA	NA	NA	NA	0.8	NA	NA	NA	NA	NA	1.0	NA	**0.9**	**1.0**
11	3.6	6.0	2.2	1.1	1.6	1.4	1.0	1.7	0.9	2.1	0.9	4.7	**2.3**	**6.0**
11A	NA	NA	NA	NA	2.2	NA	NA	NA	NA	NA	NA	5.1	**3.7**	**5.1**
12	3.3	3.4	1.3	0.6	1.1	0.8	0.8	0.5	0.8	1.7	2.2	2.3	**1.6**	**3.4**
12A	NA	NA	NA	NA	NA	0.7	NA	NA	NA	NA	NA	2.4	**1.6**	**2.4**
13	3.0	3.8	2.3	1.1	1.7	1.3	1.7	1.4	1.9	3.3	3.4	3.6	**2.4**	**3.8**
13A	NA	NA	NA	NA	NA	1.3	NA	NA	NA	NA	NA	NA	**1.3**	**1.3**
14	3.6	4.4	1.5	1.0	0.8	1.0	1.1	0.8	1.2	1.8	1.6	3.2	**1.8**	**4.4**
15	4.4	4.5	1.8	1.1	1.2	1.5	1.2	1.2	1.2	2.9	2.4	3.5	**2.2**	**4.5**
15A	NA	4.1	NA	NA	NA	NA	NA	1.7	NA	NA	NA	NA	**2.9**	**4.1**
16	4.1	5.0	2.1	0.9	1.5	2.8	1.5	1.4	3.1	2.9	2.5	3.6	**2.6**	**5.0**
16A	NA	5.1	NA	NA	NA	NA	NA	NA	1.6	NA	NA	NA	**3.3**	**5.1**
17	3.0	3.2	1.5	0.8	0.8	0.9	1.0	0.8	0.9	2.1	1.7	2.4	**1.6**	**3.2**
17A	2.7	NA	NA	NA	NA	NA	NA	0.8	NA	NA	NA	NA	**1.8**	**2.7**
18	3.2	2.8	0.8	0.4	0.7	0.9	0.7	1.0	0.8	1.4	1.5	2.7	**1.4**	**3.2**
19	5.9	6.8	3.6	1.8	1.5	1.6	1.5	0.9	1.6	2.9	2.5	5.1	**3.0**	**6.8**
19A	5.8	NA	NA	NA	NA	NA	1.2	NA	NA	NA	NA	NA	**3.5**	**5.8**
20	1.2	1.4	0.4	0.2	0.3	0.4	0.3	0.2	0.2	2.8	NA	NA	**0.7**	**2.8**
21	5.1	6.6	3.5	2.3	2.1	2.5	1.7	1.7	2.3	3.7	3.3	4.3	**3.3**	**6.6**
21A	NA	NA	3.6	NA	NA	NA	NA	NA	2.6	NA	NA	NA	**3.1**	**3.6**
25	11.6	13.2	9.0	4.5	4.5	4.5	3.4	3.1	3.7	7.8	5.7	8.9	**6.7**	**13.2**
26	NA	NA	NA	NA	NA	NA	1.4	1.2	1.4	3.5	3.2	5.3	**2.7**	**5.3**
26A	NA	NA	NA	NA	NA	NA	1.3	NA	NA	NA	NA	NA	**1.3**	**1.3**
Average	**4.0**	**4.5**	**2.1**	**1.1**	**1.4**	**1.5**	**1.2**	**1.1**	**1.4**	**2.6**	**2.3**	**3.7**		
Maximum	**11.6**	**13.2**	**9.0**	**4.5**	**4.5**	**4.5**	**3.4**	**3.1**	**3.7**	**7.8**	**5.7**	**8.9**		

Ozone

PASSIVE AMBIENT AIR MONITORING ANNUAL

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION		***BONNYVILLE***
Company		Project Number
BONNYVILLE	01/01/2008	12/01/2008
Location	***Date Samples Start***	***Date Sampled End***

O3 (ppb)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Average	Maximum
1	20.9	26.4	37.0	39.1	35.4	21.0	16.6	12.8	12.8	18.7	15.1	18.6	**22.9**	**39.1**
2	25.0	32.0	43.6	43.6	47.6	29.6	23.1	17.8	18.9	22.2	18.0	21.9	**28.6**	**47.6**
2A	NA	NA	NA	43.4	NA	NA	NA	NA	NA	21.3	NA	NA	**32.4**	**43.4**
3	27.5	35.4	54.5	52.6	48.2	31.4	25.2	22.7	20.8	26.2	21.7	31.4	**33.1**	**54.5**
4	23.8	37.1	46.9	44.5	45.4	30.7	23.3	17.8	18.2	25.3	18.4	22.5	**29.5**	**46.9**
4A	NA	NA	48.1	NA	NA	NA	NA	NA	NA	17.1	NA	NA	**17.1**	**17.1**
5	25.3	35.6	47.6	46.9	44.8	30.2	24.7	19.6	18.2	22.4	20.2	24.2	**30.0**	**47.6**
7	27.8	35.3	45.5	41.7	47.2	33.8	26.2	23.5	23.3	27.6	18.5	26.3	**31.4**	**47.2**
8	27.4	34.8	43.1	45.4	42.2	28.8	29.0	19.4	19.8	25.0	19.3	24.5	**29.9**	**45.4**
9	22.6	29.2	44.3	42.5	40.5	37.3	26.5	21.6	17.7	22.5	16.3	18.8	**28.3**	**44.3**
9A	NA	NA	NA	41.3	NA	NA	NA	NA	NA	NA	16.1	NA	**28.7**	**41.3**
10	23.2	33.8	40.1	37.6	35.9	24.2	17.1	15.3	12.6	21.6	17.0	20.4	**24.9**	**40.1**
10A	NA	NA	NA	NA	33.7	NA	NA	NA	NA	NA	15.7	NA	**24.7**	**33.7**
11	23.1	25.9	35.1	41.9	41.8	29.5	19.5	15.8	14.1	17.9	16.3	17.9	**24.9**	**41.9**
11A	NA	NA	NA	NA	41.7	NA	NA	NA	NA	NA	NA	18.7	**30.2**	**41.7**
12	25.6	35.4	43.3	36.3	48.2	36.5	21.8	21.8	17.2	23.2	20.2	24.4	**29.5**	**48.2**
12A	NA	NA	NA	NA	NA	38.9	NA	NA	NA	NA	NA	23.0	**31.0**	**38.9**
13	23.2	32.6	40.4	43.9	43.7	33.1	29.1	29.0	21.3	22.6	17.8	21.0	**29.8**	**43.9**
13A	NA	NA	NA	NA	NA	33.5	NA	NA	NA	NA	NA	NA	**33.5**	**33.5**
14	23.7	34.4	45.2	40.6	50.3	31.0	23.8	16.9	17.4	22.2	18.5	22.4	**28.9**	**50.3**
15	26.1	33.8	47.7	41.4	40.7	30.8	24.8	18.8	19.5	22.4	19.5	21.8	**28.9**	**47.7**
15A	NA	30.9	NA	NA	NA	NA	NA	25.3	NA	NA	NA	NA	**28.1**	**30.9**
16	26.0	37.7	52.9	52.9	48.2	34.2	25.5	20.6	21.8	23.2	16.6	26.2	**32.2**	**52.9**
16A	NA	32.9	NA	NA	NA	NA	NA	NA	18.8	NA	NA	NA	**25.8**	**32.9**
17	23.5	33.0	45.4	39.8	38.4	25.6	18.3	13.7	15.4	19.3	17.9	23.3	**26.1**	**45.4**
17A	25.9	NA	NA	NA	NA	NA	NA	13.9	NA	NA	NA	NA	**19.9**	**25.9**
18	28.8	38.4	46.8	45.0	42.7	31.1	26.2	28.0	20.9	25.9	21.5	24.6	**31.7**	**46.8**
19	20.3	32.8	35.7	40.4	39.8	29.6	19.6	22.5	15.7	20.7	18.0	18.7	**26.1**	**40.4**
19A	22.2	NA	NA	NA	NA	NA	22.2	NA	NA	NA	NA	NA	**22.2**	**22.2**
20	22.3	30.7	34.8	36.9	35.7	26.1	18.3	13.4	14.3	18.0	16.4	18.5	**23.8**	**36.9**
21	23.6	NA	41.2	41.6	51.1	31.6	24.7	27.4	21.3	22.2	17.7	21.9	**29.5**	**51.1**
21A	NA	NA	37.0	NA	NA	NA	NA	NA	19.5	NA	NA	NA	**28.3**	**37.0**
25	18.4	27.1	35.2	37.8	45.9	28.1	36.0	21.3	17.5	21.0	15.5	17.7	**26.8**	**45.9**
26	NA	NA	NA	NA	NA	NA	26.8	19.9	17.7	22.2	20.0	19.3	**21.0**	**26.8**
26A	NA	NA	NA	NA	NA	NA	26.7	NA	NA	NA	NA	NA	**26.7**	**26.7**
Average	**24.2**	**33.0**	**43.1**	**42.5**	**43.0**	**30.7**	**24.0**	**20.0**	**18.1**	**22.1**	**18.0**	**22.0**		
Maximum	**28.8**	**38.4**	**54.5**	**52.9**	**51.1**	**38.9**	**36.0**	**29.0**	**23.3**	**27.6**	**21.7**	**31.4**		