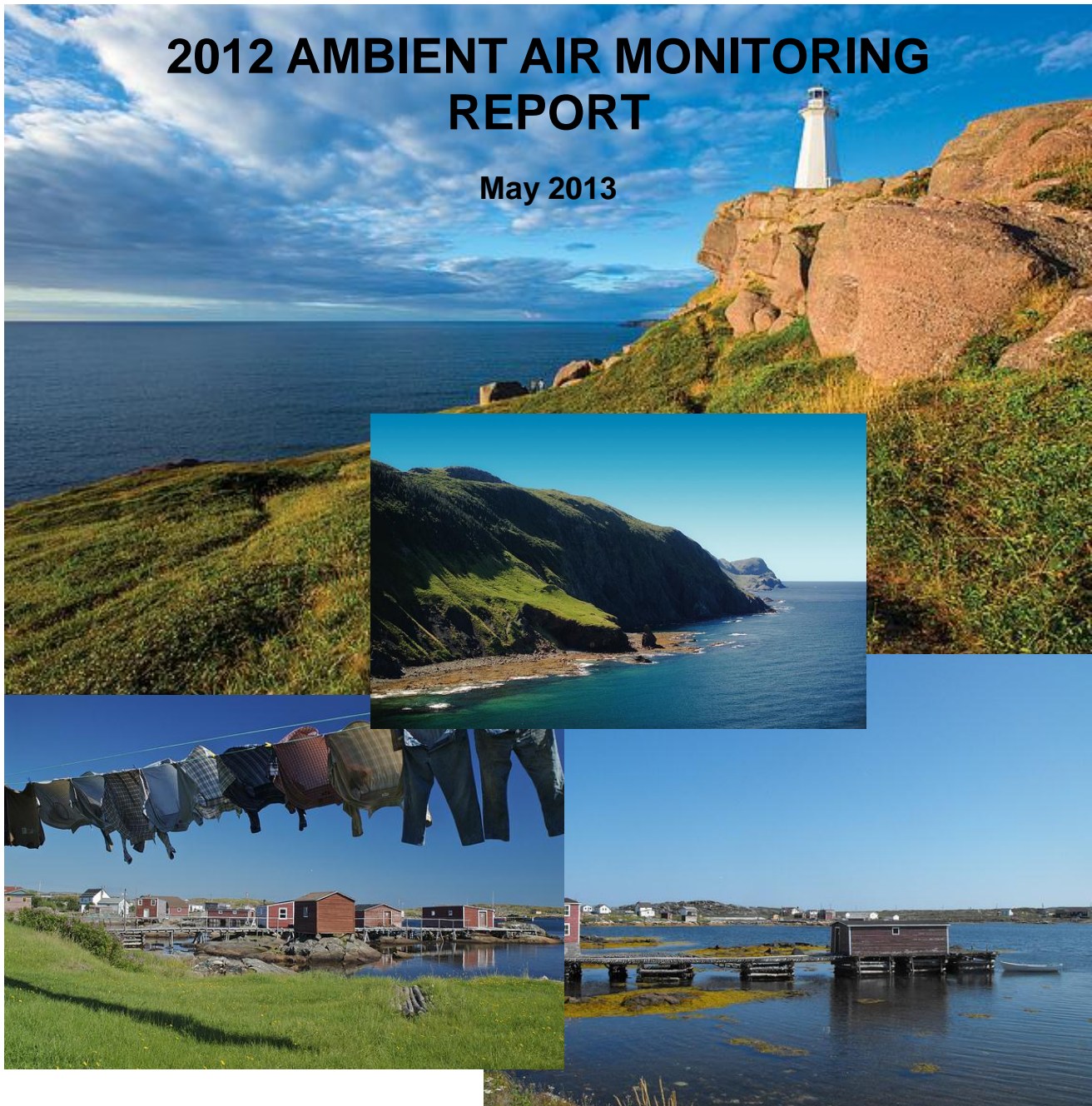




DEPARTMENT OF ENVIRONMENT AND CONSERVATION

# 2012 AMBIENT AIR MONITORING REPORT

May 2013



## **Executive Summary**

The air quality in communities across the province is generally considered to be good as the ambient air quality standards are rarely exceeded for the pollutants being measured. On occasion, communities in close proximity to an industrial operation may experience episodic decreases in the quality of the air; however, these episodes tend to be brief in nature and are rarely at levels that exceed the air quality standards. Elevated levels of air pollutants can occur due to long-range transport from mainland Canada and the United States, but are also episodic in nature and rarely produce levels that exceed the ambient air quality standards. On a local level, emissions from sources such as vehicular traffic and woodstoves also impact the air quality in the province.

This report presents all the monitoring results from both the federal / provincial operated National Air Pollution Surveillance (NAPS) network as well as the stations operated by industrial facilities in the province. Both datasets undergo rigorous quality assurance procedure to ensure that the highest level of data confidence is achieved.

In 2012, most monitors indicated no exceedances of the ambient air quality standards. Those stations which indicated exceedances tended to be at an industrial property boundary and away from the community, though there were instances when a community based monitor indicated an exceedance of the air quality standard.

The report does not provide commentary into any trend identified in the data except in situations where there has been a technological change in the data collection system or there has been a change in the operating condition as in the case of industrial monitoring.

# Table of Contents

	<u>Page #</u>
1.0 INTRODUCTION .....	10
1.1 Definitions .....	11
2.0 MONITORING NETWORK .....	12
2.1 Pollutants .....	12
2.1.1 Oxides of Nitrogen (NO <sub>x</sub> ) .....	12
2.1.2 Particulate Matter (PM).....	13
2.1.3 Carbon Monoxide (CO) .....	13
2.1.4 Sulphur Dioxide (SO <sub>2</sub> ).....	13
2.1.5 Ozone (O <sub>3</sub> ).....	14
2.2 Ambient Air Standards .....	14
2.3 Monitoring in Newfoundland and Labrador .....	15
2.4 Air Quality Health Index (AQHI) .....	18
2.5 Data Validity and Acceptability .....	19
3.0 NATIONAL AIR POLLUTION SURVEILLANCE (NAPS) NETWORK .....	20
3.1 St. John's.....	23
3.2 Mt. Pearl.....	35
3.3 Grand Falls Windsor .....	47
3.4 Corner Brook .....	59
3.5 Burin .....	71
3.6 Port aux Choix .....	79
4.0 INDUSTRIAL MONITORING NETWORK.....	82
4.1 NALCOR - Holyrood .....	84
4.1.1 Butterpot Road .....	84
4.1.2 Green Acres Road .....	90
4.1.3 Indian Pond Drive.....	98
4.1.4 Indian Pond Road.....	106
4.1.5 Lawrence Pond Road .....	114
4.1.6 NALCOR Property Boundary .....	122
4.2 North Atlantic Refining Limited.....	127
4.2.1 Arnold's Cove .....	128
4.2.2 Come by Chance .....	132
4.2.3 Sunnyside .....	136
4.2.4 NARL Property Boundary .....	142
4.3 Iron Ore Company of Canada.....	146
4.3.1 Indian Point.....	147
4.3.2 Town Depot / Tamarack Drive .....	152
4.3.3 Smokey Mountain.....	157
4.3.4 Bartlett Drive.....	162
4.3.5 Hudson Drive.....	164
4.4 Wabush Mines.....	166
4.4.1 Bond Street .....	166
4.4.2 Shea Street.....	170

4.4.3	Substation .....	172
4.5	Corner Brook Pulp and Paper .....	179
4.5.1	Main Street .....	179
4.5.2	West Street .....	185
4.6	VALE Newfoundland and Labrador Limited - Voisey's Bay .....	188
4.6.1	Accommodation Unit .....	189
4.6.2	Crusher Site .....	193
4.6.3	Port Site .....	195
4.7	VALE Newfoundland and Labrador - Long Harbour .....	198
4.7.1	Community Centre (AM1) .....	198
4.7.2	Main Road (AM2) .....	202
4.7.3	Access Road (AM3) .....	207
4.8	NALCOR - Little Bay Islands .....	210
4.8.1	Little Bay Islands .....	210



## List of Tables

	<u>Page #</u>
Table 2.2.1 - Ambient Air Standards in Newfoundland and Labrador .....	14
Table 2.3.1 - Pollutant Monitoring in Newfoundland and Labrador .....	15
Table 2.4.1 - AQHI Health Messages.....	18
Table 3.1.1 - St. John's NAPS SO <sub>2</sub> Summary 2011 & 2012 .....	24
Table 3.1.2 - St. John's NAPS PM <sub>2.5</sub> Summary 2011 & 2012.....	26
Table 3.1.3 - St. John's NAPS NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012 .....	28
Table 3.1.4 - St. John's NAPS CO Summary 2011 & 2012 .....	30
Table 3.1.5 - St. John's NAPS O <sub>3</sub> Summary 2011 & 2012.....	32
Table 3.1.6 - St. John's NAPS AQHI Summary 2011 & 2012 .....	34
Table 3.2.1 - Mt. Pearl NAPS SO <sub>2</sub> Summary 2011 & 2012 .....	36
Table 3.2.2 - Mt. Pearl NAPS PM <sub>2.5</sub> Summary 2011 & 2012 .....	38
Table 3.2.3 - Mt. Pearl NAPS NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012.....	40
Table 3.2.4 - Mt. Pearl NAPS CO Summary 2011 & 2012 .....	42
Table 3.2.5 - Mt. Pearl NAPS O <sub>3</sub> Summary 2011 & 2012 .....	44
Table 3.2.6 - Mt. Pearl NAPS AQHI Summary 2011 & 2012.....	46
Table 3.3.1 - Grand Falls Windsor NAPS SO <sub>2</sub> Summary 2011 & 2012 .....	48
Table 3.3.2 - Grand Falls Windsor NAPS PM <sub>2.5</sub> Summary 2011 & 2012 .....	50
Table 3.3.3 - Grand Falls Windsor NAPS NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012 .....	52
Table 3.3.4 - Grand Falls Windsor NAPS CO Summary 2011 & 2012 .....	54
Table 3.3.5 - Grand Falls Windsor NAPS O <sub>3</sub> Summary 2011 & 2012 .....	56
Table 3.3.6 - Grand Falls Windsor NAPS AQHI Summary 2011 & 2012.....	58
Table 3.4.1 - Corner Brook NAPS SO <sub>2</sub> Summary 2011 & 2012 .....	60
Table 3.4.2 - Corner Brook NAPS PM <sub>2.5</sub> Summary 2011 & 2012 .....	62
Table 3.4.3 - Corner Brook NAPS NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012 .....	64
Table 3.4.4 - Corner Brook NAPS CO Summary 2011 & 2012.....	66
Table 3.4.5 - Corner Brook NAPS O <sub>3</sub> Summary 2011 & 2012 .....	68
Table 3.4.6 - Corner Brook NAPS AQHI Summary 2011 & 2012.....	70
Table 3.5.1 - Burin NAPS SO <sub>2</sub> Summary 2011 & 2012 .....	72
Table 3.5.2 - Burin NAPS PM <sub>2.5</sub> Summary 2011 & 2012 .....	73
Table 3.5.3 - Burin NAPS NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012.....	74
Table 3.5.4 - Burin NAPS CO Summary 2011 & 2012.....	75
Table 3.5.5 - Burin NAPS O <sub>3</sub> Summary 2011 & 2012 .....	76
Table 3.5.6 - Burin NAPS PM <sub>10</sub> Summary 2011 & 2012 .....	77
Table 3.5.7 - Burin NAPS AQHI Summary 2011 & 2012.....	78
Table 3.6.1 - Port aux Choix NAPS O <sub>3</sub> Summary 2011 & 2012 .....	80
Table 4.1.1.1 - Butterpot Road SO <sub>2</sub> Summary 2011 & 2012.....	85
Table 4.1.1.2 - Butterpot Road PM <sub>2.5</sub> Summary 2011 & 2012.....	87
Table 4.1.1.3 - Butterpot Road NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012 .....	89
Table 4.1.2.1 - Green Acres Road SO <sub>2</sub> Summary 2011 & 2012.....	91
Table 4.1.2.2 - Green Acres Road PM <sub>2.5</sub> Summary 2011 & 2012.....	93
Table 4.1.2.3 - Green Acres Road NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012 .....	95
Table 4.1.2.4 - Green Acres Road TPM Summary 2011 & 2012 .....	97

Table 4.1.3.1 - Indian Pond Drive SO <sub>2</sub> Summary 2011 & 2012 .....	99
Table 4.1.3.2 - Indian Pond Drive PM <sub>2.5</sub> Summary 2011 & 2012 .....	101
Table 4.1.3.3 - Indian Pond Drive NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012 .....	103
Table 4.1.3.4 - Indian Pond Drive TPM Summary 2011 & 2012 .....	105
Table 4.1.4.1 - Indian Pond Road SO <sub>2</sub> Summary 2011 & 2012 .....	107
Table 4.1.4.2 - Indian Pond Road PM <sub>2.5</sub> Summary 2011 & 2012 .....	109
Table 4.1.4.3 - Indian Pond Road NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012.....	111
Table 4.1.4.4 - Indian Pond Road TPM Summary 2011 & 2012.....	113
Table 4.1.5.1 - Lawrence Pond Road SO <sub>2</sub> Summary 2011 & 2012.....	115
Table 4.1.5.2 - Lawrence Pond Road PM <sub>2.5</sub> Summary 2011 & 2012.....	117
Table 4.1.5.3 - Lawrence Pond Road NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012 .....	119
Table 4.1.5.4 - Lawrence Pond Road TPM Summary 2011 & 2012 .....	121
Table 4.1.6.1 - NALCOR Boundary PM <sub>2.5</sub> Summary 2011 & 2012.....	123
Table 4.1.6.2 - NALCOR Boundary TPM Summary 2011 & 2012 .....	125
Table 4.2.1.1 - Arnold's Cove SO <sub>2</sub> Summary 2011 & 2012 .....	129
Table 4.2.1.2 - Arnold's Cove PM <sub>2.5</sub> Summary 2011 & 2012 .....	131
Table 4.2.2.1 - Come by Chance SO <sub>2</sub> Summary 2011 & 2012.....	133
Table 4.2.2.2 - Come by Chance PM <sub>2.5</sub> Summary 2011 & 2012.....	135
Table 4.2.3.1 - Sunnyside SO <sub>2</sub> Summary 2011 & 2012 .....	137
Table 4.2.3.2 - Sunnyside PM <sub>2.5</sub> Summary 2011 & 2012 .....	139
Table 4.2.3.3 - Sunnyside PM <sub>10</sub> Summary 2011 & 2012.....	141
Table 4.2.4.1 - NARL Boundary SO <sub>2</sub> Summary 2011 & 2012 .....	143
Table 4.2.4.2 - NARL Boundary PM <sub>2.5</sub> Summary 2011 & 2012 .....	145
Table 4.3.1.1 - Indian Point SO <sub>2</sub> Summary 2011 & 2012 .....	148
Table 4.3.1.2 - Indian Point PM <sub>2.5</sub> Summary 2011 & 2012 .....	149
Table 4.3.1.3 - Indian Point NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012.....	150
Table 4.3.1.4 - Indian Point TPM Summary 2011 & 2012.....	151
Table 4.3.2.1 - Town Depot / Tamarack Dr. SO <sub>2</sub> Summary 2011 & 2012.....	153
Table 4.3.2.2 - Town Depot / Tamarack Dr. PM <sub>2.5</sub> Summary 2011 & 2012.....	154
Table 4.3.2.3 - Town Depot / Tamarack Dr. NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012 .....	155
Table 4.3.2.4 - Town Depot / Tamarack Dr. TPM Summary 2011 & 2012 .....	156
Table 4.3.3.1 - Smokey Mountain SO <sub>2</sub> Summary 2011 & 2012 .....	158
Table 4.3.3.2 - Smokey Mountain PM <sub>2.5</sub> Summary 2011 & 2012.....	159
Table 4.3.3.3 - Smokey Mountain NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012.....	160
Table 4.3.3.4 - Smokey Mountain TPM Summary 2011 & 2012 .....	161
Table 4.3.4.1 - Bartlett Drive TPM Summary 2011 & 2012 .....	163
Table 4.3.5.1 - Hudson Drive TPM Summary 2011 & 2012 .....	165
Table 4.4.1.1 - Bond Street SO <sub>2</sub> Summary 2011 & 2012 .....	167
Table 4.4.1.2 - Bond Street PM <sub>2.5</sub> Summary 2011 & 2012 .....	169
Table 4.4.2.1 - Shea Street TPM Summary 2011 & 2012.....	171
Table 4.4.3.1 - Substation TPM Summary 2011 & 2012.....	173
Table 4.4.3.2 - Substation PM <sub>10</sub> (Dichot) Summary 2011 & 2012 .....	175
Table 4.4.3.3 - Substation PM <sub>2.5</sub> (Dichot) Summary 2011 & 2012 .....	177
Table 4.5.1.1 - Main Street SO <sub>2</sub> Summary 2011& 2012.....	180

Table 4.5.1.2 - Main Street PM <sub>2.5</sub> Summary 2011 & 2012.....	182
Table 4.5.1.3 - Main Street TPM Summary 2011 & 2012 .....	184
Table 4.5.2.1 - West Street TPM Summary 2011 & 2012 .....	186
Table 4.6.1.1 - Accommodation Unit PM <sub>2.5</sub> Summary 2011 & 2012 .....	190
Table 4.6.1.2 - Accommodation Unit NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012.....	192
Table 4.6.2.1 - Crusher Site NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012.....	194
Table 4.6.3.1 - Port Site TPM Summary 2011 & 2012 .....	196
Table 4.7.1.1 - Community Centre (AM1) PM <sub>2.5</sub> Summary 2011 & 2012.....	199
Table 4.7.1.2 - Community Centre (AM1) NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012 .....	201
Table 4.7.2.1 - Main Road (AM2) PM <sub>2.5</sub> Summary 2011 & 2012 .....	203
Table 4.7.2.2 - Main Road (AM2) NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012.....	205
Table 4.7.3.1 - Access Road (AM3) PM <sub>2.5</sub> Summary 2011 & 2012.....	208
Table 4.7.3.2 - Access Road (AM3) NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012 .....	209
Table 4.8.1.1 - Little Bay Islands NO <sub>x</sub> / NO <sub>2</sub> Summary 2011 & 2012 .....	211

## List of Figures

	<u>Page #</u>
Figure 2.0.1 - Typical Ambient Air Monitoring Station .....	17
Figure 3.0.1 - NAPS Monitoring Stations in Greater St. John's .....	20
Figure 3.0.2 - NAPS Monitoring Station in Grand Falls Windsor .....	21
Figure 3.0.3 - NAPS Monitoring Station in Corner Brook .....	21
Figure 3.0.4 - NAPS Monitoring Station in Port aux Choix.....	22
Figure 3.0.5 - NAPS Monitoring Station in Burin .....	22
Figure 3.1.1 - St. John's NAPS Annual SO <sub>2</sub> Concentrations.....	25
Figure 3.1.2 - St. John's NAPS Annual PM <sub>2.5</sub> Concentrations.....	27
Figure 3.1.3 - St. John's NAPS Annual NO <sub>x</sub> / NO <sub>2</sub> Concentrations .....	29
Figure 3.1.4 - St. John's NAPS Annual CO Concentrations.....	31
Figure 3.1.5 - St. John's NAPS Annual O <sub>3</sub> Concentrations .....	33
Figure 3.1.6 - St. John's NAPS AQHI Frequency Distribution 2012 .....	35
Figure 3.2.1 - Mt. Pearl NAPS Annual SO <sub>2</sub> Concentrations.....	37
Figure 3.2.2 - Mt. Pearl NAPS Annual PM <sub>2.5</sub> Concentrations.....	39
Figure 3.2.3 - Mt. Pearl NAPS Annual NO <sub>x</sub> / NO <sub>2</sub> Concentrations .....	41
Figure 3.2.4 - Mt. Pearl NAPS Annual CO Concentrations .....	43
Figure 3.2.5 - Mt. Pearl NAPS Annual O <sub>3</sub> Concentrations.....	45
Figure 3.2.6 - Mt. Pearl NAPS AQHI Frequency Distribution 2012 .....	47
Figure 3.3.1 - Grand Falls Windsor NAPS Annual SO <sub>2</sub> Concentrations .....	49
Figure 3.3.2 - Grand Falls Windsor NAPS Annual PM <sub>2.5</sub> Concentrations .....	51
Figure 3.3.3 - Grand Falls Windsor NAPS Annual NO <sub>x</sub> / NO <sub>2</sub> Concentrations.....	53
Figure 3.3.4 - Grand Falls Windsor NAPS Annual CO Concentrations .....	55
Figure 3.3.5 - Grand Falls Windsor NAPS Annual O <sub>3</sub> Concentrations.....	57
Figure 3.3.6 - Grand Falls Windsor NAPS AQHI Frequency Distribution 2012 .....	59
Figure 3.4.1 - Corner Brook NAPS Annual SO <sub>2</sub> Concentrations .....	61
Figure 3.4.2 - Corner Brook NAPS Annual PM <sub>2.5</sub> Concentrations .....	63
Figure 3.4.3 - Corner Brook NAPS Annual NO <sub>x</sub> / NO <sub>2</sub> Concentrations.....	65
Figure 3.4.4 - Corner Brook NAPS Annual CO Concentrations .....	67
Figure 3.4.5 - Corner Brook NAPS Annual O <sub>3</sub> Concentrations .....	69
Figure 3.4.6 - Corner Brook NAPS AQHI Frequency Distribution 2012 .....	71
Figure 3.5.1 - Burin NAPS AQHI Frequency Distribution 2012 .....	79
Figure 3.6.1 - Port Aux Choix NAPS Annual O <sub>3</sub> Concentrations.....	81
Figure 4.0.1 - Industrial Monitoring Network in Newfoundland .....	82
Figure 4.0.2 - Industrial Monitoring Network in Labrador .....	83
Figure 4.1.1 - NALCOR Ambient Monitoring Stations.....	84
Figure 4.1.1.1 - Butterpot Road Annual SO <sub>2</sub> Concentrations .....	86
Figure 4.1.1.2 - Butterpot Road Annual PM <sub>2.5</sub> Concentrations .....	88
Figure 4.1.1.3 - Butterpot Road Annual NO <sub>x</sub> / NO <sub>2</sub> Concentrations .....	90
Figure 4.1.2.1 - Green Acres Road Annual SO <sub>2</sub> Concentrations .....	92
Figure 4.1.2.2 - Green Acres Road Annual PM <sub>2.5</sub> Concentrations .....	94
Figure 4.1.2.3 - Green Acres Road Annual NO <sub>x</sub> / NO <sub>2</sub> Concentrations.....	96
Figure 4.1.2.4 - Green Acres Road Annual TPM Concentrations.....	98

Figure 4.1.3.1 - Indian Pond Drive Annual SO <sub>2</sub> Concentrations.....	100
Figure 4.1.3.2 - Indian Pond Drive Annual PM <sub>2.5</sub> Concentrations.....	102
Figure 4.1.3.3 - Indian Pond Drive Annual NO <sub>x</sub> / NO <sub>2</sub> Concentrations .....	104
Figure 4.1.3.4 - Indian Pond Drive Annual TPM Concentrations .....	106
Figure 4.1.4.1 - Indian Pond Road Annual SO <sub>2</sub> Concentrations.....	108
Figure 4.1.4.2 - Indian Pond Road Annual PM <sub>2.5</sub> Concentrations.....	110
Figure 4.1.4.3 - Indian Pond Road Annual NO <sub>x</sub> / NO <sub>2</sub> Concentrations .....	112
Figure 4.1.4.4 - Indian Pond Road Annual TPM Concentrations .....	114
Figure 4.1.5.1 - Lawrence Pond Road Annual SO <sub>2</sub> Concentrations .....	116
Figure 4.1.5.2 - Lawrence Pond Road Annual PM <sub>2.5</sub> Concentrations .....	118
Figure 4.1.5.3 - Lawrence Pond Road Annual NO <sub>x</sub> / NO <sub>2</sub> Concentrations .....	120
Figure 4.1.5.4 - Lawrence Pond Road Annual TPM Concentrations.....	122
Figure 4.1.6.1 - NALCOR Boundary Annual PM <sub>2.5</sub> Concentrations .....	124
Figure 4.1.6.2 - NALCOR Boundary Annual TPM Concentrations.....	126
Figure 4.2.1 - NARL Ambient Monitoring Stations .....	127
Figure 4.2.1.1 - Arnold’s Cove Annual SO <sub>2</sub> Concentrations .....	130
Figure 4.2.1.2 - Arnold’s Cove Annual PM <sub>2.5</sub> Concentrations .....	132
Figure 4.2.2.1 - Come by Chance Annual SO <sub>2</sub> Concentrations .....	134
Figure 4.2.2.2 - Come by Chance Annual PM <sub>2.5</sub> Concentrations .....	136
Figure 4.2.3.1 - Sunnyside Annual SO <sub>2</sub> Concentrations.....	138
Figure 4.2.3.2 - Sunnyside Annual PM <sub>2.5</sub> Concentrations.....	140
Figure 4.2.3.3 - Sunnyside Annual PM <sub>10</sub> Concentrations.....	142
Figure 4.2.4.1 - NARL Boundary Annual SO <sub>2</sub> concentrations.....	144
Figure 4.3.1 - IOCC Ambient Monitoring Stations .....	146
Figure 4.3.4.1 - Bartlett Drive Annual TPM Concentrations .....	164
Figure 4.4.1 - Wabush Mines Ambient Monitoring Stations .....	166
Figure 4.4.1.1 - Bond Street Annual SO <sub>2</sub> Concentrations .....	168
Figure 4.4.1.2 - Bond Street Annual PM <sub>2.5</sub> Concentrations .....	170
Figure 4.4.2.1 - Shea Street Annual TPM Concentrations .....	172
Figure 4.4.3.1 - Substation Annual TPM Concentrations.....	174
Figure 4.4.3.2 - Substation Annual PM <sub>10</sub> (Dichot) Concentrations.....	176
Figure 4.4.3.3 - Substation Annual PM <sub>2.5</sub> (Dichot) Concentrations .....	178
Figure 4.5.1 - CBPP Ambient Monitoring Stations.....	179
Figure 4.5.1.1 - Main Street Annual SO <sub>2</sub> Concentrations .....	181
Figure 4.5.1.2 - Main Street Annual PM <sub>2.5</sub> Concentrations .....	183
Figure 4.5.1.3 - Main Street Annual TPM Concentrations.....	185
Figure 4.5.2.1 - West Street Annual TPM Concentrations.....	187
Figure 4.6.1 - VALE / Voisey’s Bay Ambient Monitoring Stations.....	188
Figure 4.6.1.1 - Accommodation Unit Annual PM <sub>2.5</sub> Concentrations.....	191
Figure 4.6.1.2 - Accommodation Unit Annual NO <sub>x</sub> / NO <sub>2</sub> Concentrations .....	193
Figure 4.6.2.1 - Crusher Site Annual NO <sub>x</sub> / NO <sub>2</sub> Concentrations .....	195
Figure 4.6.3.1 - Port Site Annual TPM Concentrations .....	197
Figure 4.7.1 - VALE / Long Harbour Ambient Monitoring Stations.....	198
Figure 4.7.1.1 – Community Centre (AM1) Annual PM <sub>2.5</sub> Concentrations.....	200

Figure 4.7.2.1 – Main Road (AM2) Annual PM <sub>2.5</sub> Concentrations .....	204
Figure 4.7.2.1 – Main Road (AM2) Annual NO <sub>x</sub> / NO <sub>2</sub> Concentrations.....	206
Figure 4.8.1 - NALCOR Little Bay Islands Ambient Monitoring Station .....	210
Figure 4.8.1.1 - Little Bay Islands Annual NO <sub>x</sub> / NO <sub>2</sub> Concentrations.....	212



## **1.0 Introduction**

The air quality in Newfoundland and Labrador is monitored through a joint effort between the Department of Environment and Conservation and Environment Canada via the National Air Pollution Surveillance (NAPS) network. In 2012, the Department operated stations at six locations as part of the (NAPS) network. Additionally the major industrial operations in the province are required to monitor the air quality near their operations for select pollutants. The Department audits the operation of these industrial monitoring networks on a regular basis.

In general the air quality in the province is good as indicated by the levels recorded at the various monitors; however in 2012 there were instances where an individual industry had emissions which approached or exceeded the associated ambient standard. There were also instances when elevated air pollutant levels, particularly ozone, were seen as a result of long range transport. Local emissions, such as those from vehicular traffic and woodstoves, also impact air quality on a routine basis.

This report provides summary information and trends from all air quality monitors in Newfoundland and Labrador in 2012. All data has gone through a data reduction and quality assurance process to account for any anomalous readings or system malfunctions.

In this report, Section 2 provides an overview of the monitoring network in the province, a description of the pollutants being measured and their associated standard. Section 3 provides results from the monitors in the NAPS network; Section 4 provides results from the monitoring of industrial emissions; while Section 5 provides the results for the mobile monitoring station operated by the Department of Environment and Conservation.

## 1.1 Definitions

The following definitions are used throughout this report:

AQHI	Air Quality Health Index
CO	Carbon Monoxide
IOCC	Iron Ore Company of Canada
NALCOR	NALCOR Energy
NARL	North Atlantic Refining Limited
NAPS	National Air Pollution Surveillance
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxides of Nitrogen
O <sub>3</sub>	Ozone
PM <sub>2.5</sub>	Particulate Matter less than or equal to 2.5 microns
PM <sub>10</sub>	Particulate Matter less than or equal to 10 microns
SO <sub>2</sub>	Sulphur Dioxide
TPM	Total Particulate Matter
µg/m <sup>3</sup>	Micrograms per cubic metre
VALE	VALE Newfoundland and Labrador

## 2.0 Monitoring Network

Five categories of pollutants are measured at the monitoring networks in the province, though not all networks monitor all pollutants. The monitored pollutants are sulphur dioxide (SO<sub>2</sub>), oxides of nitrogen (NO<sub>x</sub>) (which includes nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>)), carbon monoxide (CO), particulate matter (PM) (which includes particles less than 2.5 microns (PM<sub>2.5</sub>), particles less than 10 microns (PM<sub>10</sub>) and total particulate matter (TPM)), and ozone (O<sub>3</sub>). Volatile organic compounds, (VOCs) are also measured periodically at the NAPS stations, but are not included in this report.

### 2.1 Pollutants

#### 2.1.1 Oxides of Nitrogen (NO<sub>x</sub>)

In a combustion process, NO<sub>x</sub> is produced through 3 mechanisms, namely thermal NO<sub>x</sub>, fuel NO<sub>x</sub> and prompt NO<sub>x</sub>. Thermal NO<sub>x</sub> is the primary source of NO<sub>x</sub> and is formed as a high temperature dissociation and subsequent reaction of nitrogen (N<sub>2</sub>) and oxygen (O<sub>2</sub>). It is produced in the hottest part of the flame and its formation increases exponentially with the flame temperature. The control of thermal NO<sub>x</sub> is generally achieved through reducing the flame temperature, reducing the residence time, or by operating under fuel rich conditions. Fuel NO<sub>x</sub> is formed by the reaction of nitrogen compounds chemically bound in liquid or solid fuels with oxygen in the combustion air. In the combustion of such fuels, fuel NO<sub>x</sub> can account for up to 50% of the total NO<sub>x</sub> emissions. Prompt NO<sub>x</sub> is formed from the rapid reaction of atmospheric nitrogen with hydrocarbon radicals, and typically under partially fuel-rich conditions. It can be reduced through combustion staging or by operating under highly oxidizing combustion conditions.

NO<sub>2</sub> is the primary component of concern in NO<sub>x</sub> emissions. Generally between 5% and 10% of the NO<sub>x</sub> emitted from the combustion of fuel is emitted as NO<sub>2</sub>. The remainder is emitted as NO, which is subsequently converted to NO<sub>2</sub> in reactions with various oxidants and oxygen as the plume is transported downwind from the source. The rate of NO<sub>2</sub> formation varies with time of day, season, temperature, wind speed, solar radiation and the availability of oxidants to help drive the chemical reactions.

NO<sub>2</sub> is a reddish brown gas with a pungent odour, which upon reaction with other atmospheric compounds, becomes a major contributor to smog, acid rain, inhalable particulates and reduced visibility. At significant levels and exposure, inhalation may result in irritation and burning to the skin and eyes, nose and throat. Prolonged exposure may result in permanent lung damage.

### **2.1.2 Particulate Matter (PM)**

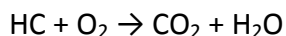
Particulate matter is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets, and can be large and dark enough to be seen with the naked eye or so small that they can only be detected with an electron microscope. Many manmade and natural sources emit particulate matter directly while others emit gaseous pollutants that react in the atmosphere to form particulate matter.

The size of the particulate has important health considerations. Particulate matter less than 10 microns in diameter (PM<sub>10</sub>) poses a health concern because it can be inhaled into and accumulate in the respiratory system. Particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>) is believed to pose the greatest health risks as it can lodge deeply into the lungs; a PM<sub>2.5</sub> particle is approximately 1/30<sup>th</sup> the average width of a human hair. Typically these smaller particles are suspended in the air for long periods of time. Total Particulate Matter (TPM) is the term applied to any particle suspended in the atmosphere, but depending on the monitoring method, is typically limited to particulate matter less than 44 microns. Particulate larger than 10 microns is typically associated with a nuisance issue rather than a health issue.

### **2.1.3 Carbon Monoxide (CO)**

Carbon monoxide is a colourless and odourless gas which reduces the delivery of oxygen to the body's organs. For those with heart disease, exposure to low doses can result in chest pain. For healthier people, exposure to higher levels affects the central nervous system.

Incomplete oxidation of fuel results in the formation of CO. In simplified terms, the generic stoichiometric combustion equation for complete combustion is:



However if sufficient oxygen (O<sub>2</sub>) is not present to complete the combustion of the hydrocarbon fuel (HC), then the oxidation to carbon dioxide (CO<sub>2</sub>) and water (H<sub>2</sub>O) is not completed and hence CO is emitted.

### **2.1.4 Sulphur Dioxide (SO<sub>2</sub>)**

Levels of sulphur dioxide (SO<sub>2</sub>) in ambient air are directly related to the concentration of sulphur in fuel and the quantity of fuel being combusted. Upon combustion, approximately 98% of the sulphur in the fuel will oxidize to form SO<sub>2</sub>, with the remaining 2% producing sulphur trioxide (SO<sub>3</sub>). The emitted SO<sub>2</sub> can also further oxidize to SO<sub>3</sub> and react with water to produce acid rain in the form of sulphuric acid (H<sub>2</sub>SO<sub>4</sub>).

Short-term exposures to SO<sub>2</sub> have shown adverse respiratory effects including bronchoconstriction and increased asthma symptoms.

### 2.1.5 Ozone (O<sub>3</sub>)

Ground-level ozone is not directly emitted into the air, but rather is formed by chemical reactions between NO<sub>x</sub> and volatile organic compounds (VOCs) in the presence of ultraviolet (UV) radiation. Ozone is a primary component of smog.

Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion. It can also worsen bronchitis, emphysema, and asthma as well as reduce lung function and inflame the linings of the lungs, permanently scarring lung tissue under repeated exposure.

## 2.2 Ambient Air Standards

The maximum concentrations of air pollutants considered to be protective of the environment are defined in the *Air Pollution Control Regulations, 2004*. For the pollutants discussed in the report, the ambient air standards are detailed in Table 2.2.1.

**TABLE 2.2.1 - AMBIENT AIR STANDARDS IN NEWFOUNDLAND AND LABRADOR**

<b>POLLUTANT</b>	<b>AVERAGING PERIOD</b>	<b>CONCENTRATION (µg/m<sup>3</sup>)</b>
CARBON MONOXIDE (CO)	1-HOUR	35000
	8-HOUR	15000
NITROGEN DIOXIDE (NO <sub>2</sub> )	1-HOUR	400
	24-HOUR	200
	1-YEAR	100
OZONE	1-HOUR	160
	8-HOUR	87
PARTICULATE MATTER < 2.5 MICRONS (PM <sub>2.5</sub> )	24-HOUR	25
PARTICULATE MATTER < 10 MICRONS (PM <sub>10</sub> )	24-HOUR	50
TOTAL PARTICULATE MATTER (TPM)	24-HOUR	120
	1-YEAR	60
SULPHUR DIOXIDE (SO <sub>2</sub> )	1-HOUR	900
	3-HOUR	600
	24-HOUR	300
	1-YEAR	60

## 2.3 Monitoring in Newfoundland and Labrador

Table 2.3.1 provides the listing of monitoring stations in the province that measured pollutants during 2012. Figure 2.0.1 provides a picture of a typical ambient air monitoring station.

**TABLE 2.3.1 - POLLUTANT MONITORING IN NEWFOUNDLAND AND LABRADOR**

OPERATOR	STATION LOCATION	POLLUTANT						
		SO <sub>2</sub>	NO <sub>x</sub> / NO <sub>2</sub>	O <sub>3</sub>	TPM	PM <sub>10</sub>	PM <sub>2.5</sub>	CO
ENVIRONMENT AND CONSERVATION + ENVIRONMENT CANADA (NAPS)	WATER STREET, ST. JOHN'S	✓	✓	✓			✓	✓
	OLD PLACENTIA ROAD, MOUNT PEARL	✓	✓	✓			✓	✓
	MACPHERSON AVENUE, CORNER BROOK	✓	✓	✓			✓	✓
	SCOTT AVENUE, GRAND FALLS WINDSOR	✓	✓	✓			✓	✓
	PORT AUX CHOIX			✓				
	BURIN	✓	✓	✓		✓	✓	✓
NALCOR ENERGY	BUTTERPOT ROAD	✓	✓				✓	
	GREEN ACRES ROAD	✓	✓		✓		✓	
	INDIAN POND DRIVE	✓	✓		✓		✓	
	INDIAN POND ROAD	✓	✓		✓		✓	
	LAWRENCE POND ROAD	✓	✓		✓		✓	
	PROPERTY BOUNDARY				✓		✓	
	LITTLE BAY ISLANDS		✓					



OPERATOR	STATION LOCATION	POLLUTANT						
		SO <sub>2</sub>	NO <sub>x</sub> / NO <sub>2</sub>	O <sub>3</sub>	TPM	PM <sub>10</sub>	PM <sub>2.5</sub>	CO
NORTH ATLANTIC REFINING LIMITED	COME BY CHANCE	✓					✓	
	FIRST STREET, ARNOLD'S COVE	✓					✓	
	SUNNYSIDE	✓				✓	✓	
	PROPERTY BOUNDARY	✓					✓	
CORNER BROOK PULP AND PAPER	MAIN STREET	✓			✓		✓	
	WEST STREET				✓			
IRON ORE COMPANY OF CANADA	HUDSON DRIVE				✓			
	BARTLETT DRIVE				✓			
	INDIAN POINT	✓	✓		✓		✓	
	SMOKEY MOUNTAIN	✓	✓		✓		✓	
	TAMARACK DRIVE	✓	✓		✓		✓	
VALE NEWFOUNDLAND AND LABRADOR LIMITED	VOISEY'S BAY CAMP		✓				✓	
	VOISEY'S BAY PROCESS AREA		✓					
	VOISEY'S BAY PORT				✓			
	LONG HARBOUR COMMUNITY CENTRE		✓				✓	
	LONG HARBOUR MAIN ROAD		✓				✓	
	LONG HARBOUR PROPERTY BOUNDARY		✓				✓	
WABUSH MINES	BOND AVENUE	✓					✓	
	SHEA STREET				✓			
	HYDRO SUBSTATION				✓	✓	✓	

**FIGURE 2.0.1 - TYPICAL AMBIENT AIR MONITORING STATION**



NAPS monitoring station in Mt. Pearl

## 2.4 Air Quality Health Index (AQHI)

The Air Quality Health Index (AQHI) is a scale designed to help an individual understand what the air quality means to your health. It is a numeral scale from 1 to 10+ where the higher the number the greater the health risk associated with air quality. Specifically the AQHI health messages are defined in Table 2.4.1.

The AQHI is calculated on an hourly basis and considers the combined relative health risks of O<sub>3</sub>, PM<sub>2.5</sub> and NO<sub>2</sub>. Data for the calculation of AQHI is currently being collected at the NAPS stations and the hourly AQHI is published to the Environment Canada weather office website.

[http://weather.gc.ca/airquality/pages/provincial\\_summary/nl\\_e.html](http://weather.gc.ca/airquality/pages/provincial_summary/nl_e.html)

**TABLE 2.4.1 - AQHI HEALTH MESSAGES**

AQHI READING	HEALTH RISK LEVEL	HEALTH MESSAGES	
		GENERAL POPULATION	AT RISK POPULATION
1-3	LOW	Ideal air quality for outdoor activities.	Enjoy your usual outdoor activities.
4-6	MODERATE	No need to modify your usual outdoor activities unless you experience symptoms such as coughing and throat irritation.	Consider reducing or rescheduling strenuous activities outdoors if you are experiencing symptoms.
7-10	HIGH	Consider reducing or rescheduling strenuous activities outdoors if you experience symptoms such as coughing and throat irritation.	Reduce or reschedule strenuous activities outdoors. Children and the elderly should also take it easy.
10+	VERY HIGH	Reduce or reschedule strenuous activities outdoors, especially if you experience symptoms such as coughing and throat irritation.	Avoid strenuous activities outdoors. Children and the elderly should also avoid outdoor physical exertion.

## 2.5 Data Validity and Acceptability

All data monitored in both the NAPS network and the industrial monitoring network undergoes a data reduction and quality assurance procedure before being published. This procedure ensures that any anomalous readings or questionable data is not incorporated into the published dataset. Elements of this procedure account for:

- Routine calibration and auditing of the analyzers
- Zero correction of the baseline drift and noise
- Analyzer “Status Flag” activation
- Shelter temperature analysis
- Statistical rendering of outliers

In 2010, the department developed its Guidance Document on Ambient Air Monitoring (GD-PPD-065) which further prescribes monitoring requirements. The document is available at [http://www.env.gov.nl.ca/env/env\\_protection/science/gd\\_ppd\\_065.pdf](http://www.env.gov.nl.ca/env/env_protection/science/gd_ppd_065.pdf)

### 3.0 National Air Pollution Surveillance (NAPS) Network

The NAPS network in the province is primarily established to monitor the air quality in urbanized settings and in neighbourhoods away from the influences of industrial operations. In 2012 there were four permanent sites and one temporary site operational with a complete suite monitoring (SO<sub>2</sub>, PM<sub>2.5</sub> NO<sub>x</sub> / NO<sub>2</sub>, CO and O<sub>3</sub>), and one which monitored O<sub>3</sub> only. The NAPS stations with a complete suite of monitoring provide the data necessary to calculate the AQHI.

The four permanent sites were located in St. John's on Water Street, in Mt. Pearl on Old Placentia Road, in Grand Falls Windsor on Scott Avenue, and in Corner Brook on Macpherson Avenue. The temporary station was located in Burin at the Highway Depot. The station which monitored O<sub>3</sub> only was located in Port aux Choix.

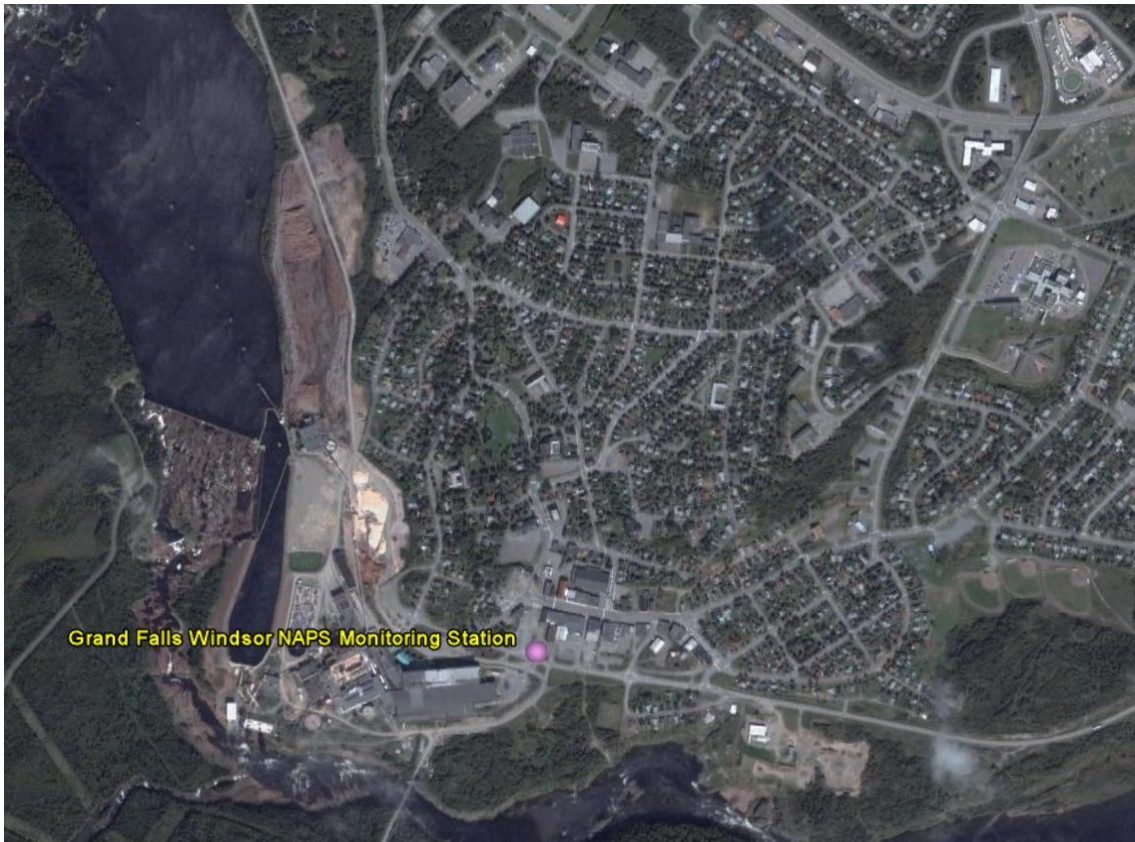
A map identifying the location of the NAPS stations in the greater St. John's area is presented in Figure 3.0.1, while the location of the Grand Falls Windsor station is presented in Figure 3.0.2. The location of the Corner Brook station is presented in Figure 3.0.3 while Figure 3.0.4 presents the location of the Port aux Choix Station. The location of the Burin station is presented in Figure 3.0.5.

**FIGURE 3.0.1 - NAPS MONITORING STATIONS IN GREATER ST. JOHN'S**

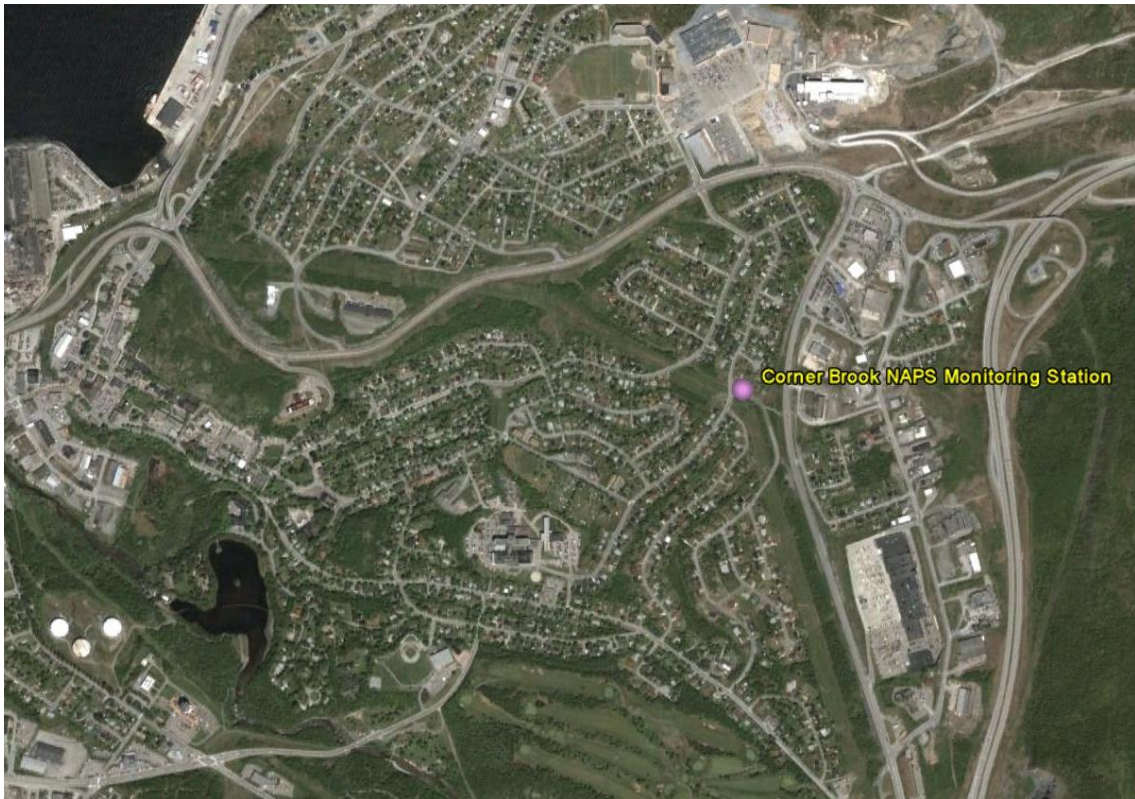




**FIGURE 3.0.2 - NAPS MONITORING STATION IN GRAND FALLS WINDSOR**

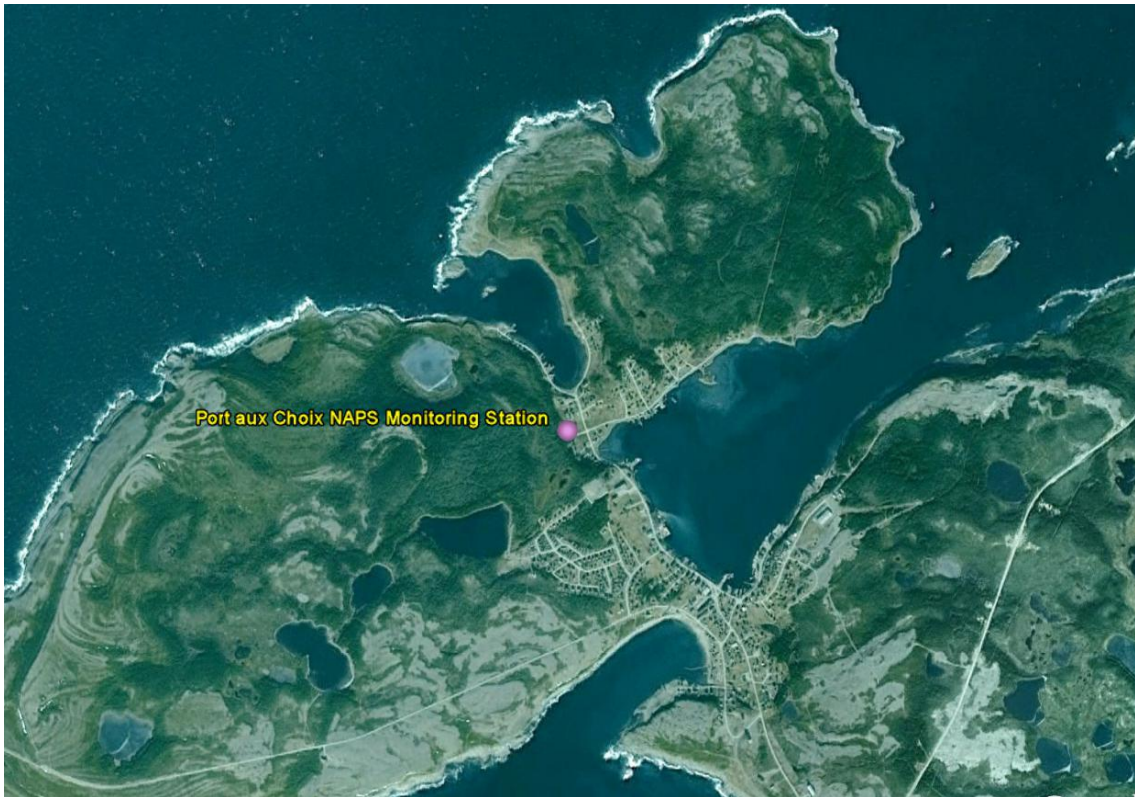


**FIGURE 3.0.3 - NAPS MONITORING STATION IN CORNER BROOK**

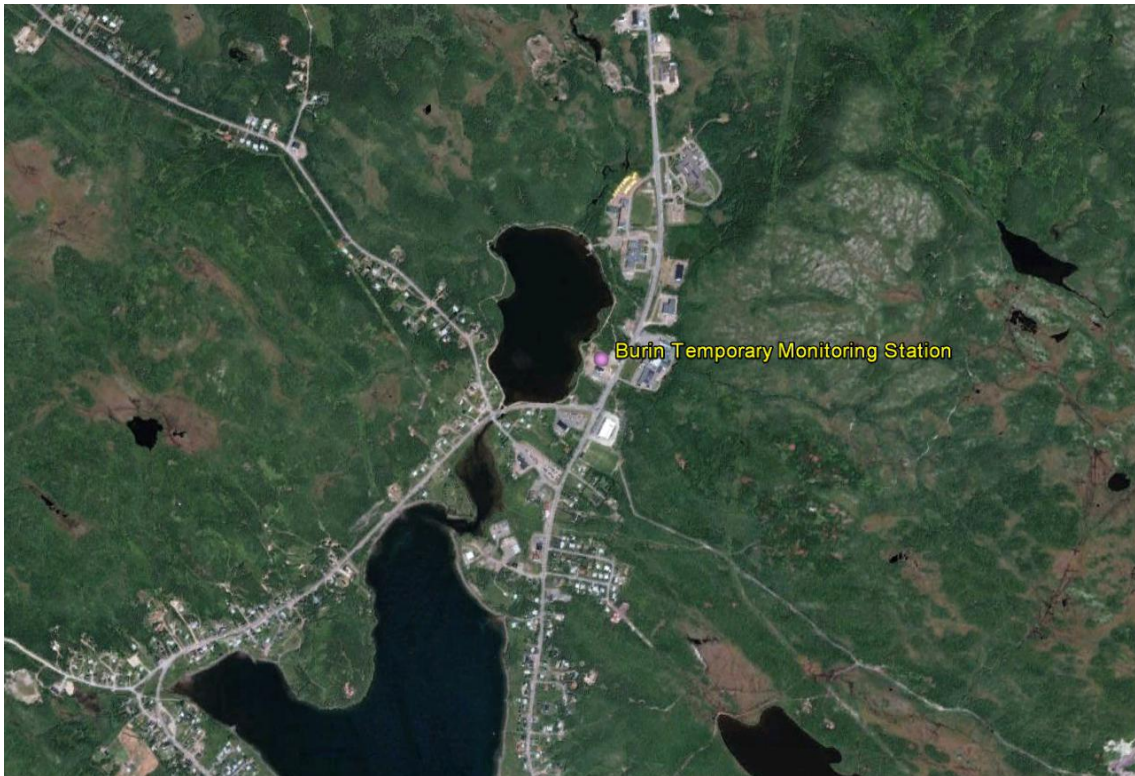




**FIGURE 3.0.4 - NAPS MONITORING STATION IN PORT AUX CHOIX**



**FIGURE 3.0.5 - NAPS MONITORING STATION IN BURIN**



### **3.1 St. John's**

The St. John's NAPS monitoring station is located on Water Street near the convention centre and monitors the ambient levels of SO<sub>2</sub>, NO<sub>x</sub> / NO<sub>2</sub>, CO, O<sub>3</sub> and PM<sub>2.5</sub> on a continuous basis. For all pollutants with the exception of O<sub>3</sub>, the ambient air criteria were not exceeded on any occasion in 2012. For O<sub>3</sub>, the 8-hour standard was exceeded eleven times between April and September.

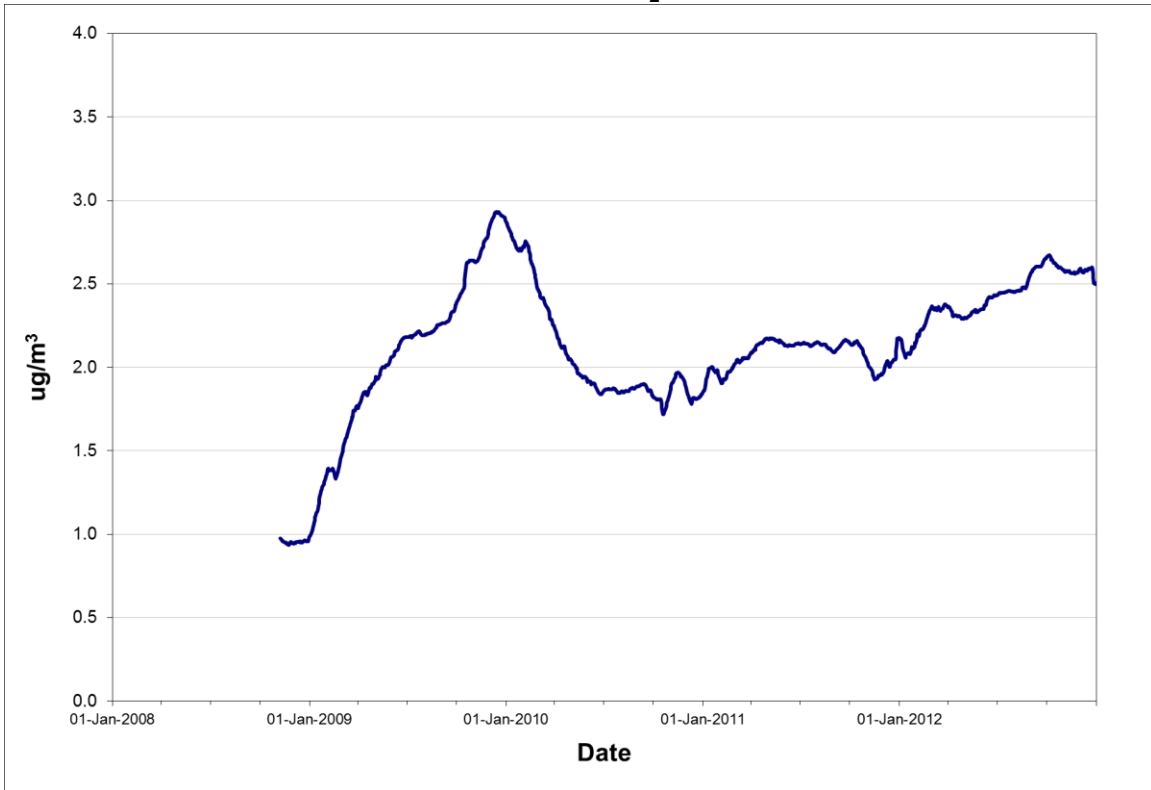
Tables 3.1.1 through 3.1.5 present the summary information on the level of air contaminants measured at the St. John's NAPS station, while Figures 3.1.1 through 3.1.5 provide a graphical representation of the annual trend of each pollutant. Table 3.1.6 provides a summary of the AQHI while Figure 3.1.6 provides a graphical representation of the percentage of time the AQHI values were below a given level in 2012.

**TABLE 3.1.1 - ST. JOHN'S NAPS SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	742	99.7%	4.5	30.7	27.8	15.1	0	0	0
	February	671	99.9%	3.4	26.3	20.9	7.7	0	0	0
	March	742	99.7%	2.6	21.7	20.8	7.0	0	0	0
	April	719	99.9%	2.3	14.5	12.2	5.8	0	0	0
	May	741	99.6%	0.8	45.9	22.0	6.7	0	0	0
	June	719	99.9%	1.2	32.9	14.5	2.7	0	0	0
	July	740	99.5%	1.0	6.8	5.1	2.4	0	0	0
	August	742	99.7%	0.6	27.5	12.9	3.4	0	0	0
	September	219	30.4%	0.4	5.0	2.3	0.7	0	0	0
	October	743	99.9%	1.9	35.2	12.2	4.4	0	0	0
	November	718	99.7%	2.4	16.9	13.1	5.8	0	0	0
	December	743	99.9%	3.8	84.3	55.7	16.1	0	0	0
Annual		8239	94.1%	2.2	84.3	55.7	16.1	0	0	0
2012	January	742	99.7%	4.1	30.5	22.3	10.6	0	0	0
	February	695	99.9%	5.9	50.7	32.9	15.0	0	0	0
	March	740	99.5%	2.7	17.8	9.4	5.8	0	0	0
	April	717	99.6%	1.4	15.8	9.6	3.2	0	0	0
	May	740	99.5%	1.4	8.0	5.2	3.1	0	0	0
	June	719	99.9%	2.2	52.8	31.6	8.4	0	0	0
	July	740	99.5%	1.2	14.0	8.9	3.5	0	0	0
	August	743	99.9%	1.8	21.7	18.7	6.6	0	0	0
	September	497	69.0%	3.2	13.5	11.8	5.1	0	0	0
	October	714	96.0%	1.1	8.3	3.6	1.7	0	0	0
	November	596	82.8%	2.4	9.9	8.4	4.2	0	0	0
	December	741	99.6%	2.8	15.0	12.1	4.6	0	0	0
Annual		8384	95.4%	2.5	52.8	32.9	15.0	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 3.1.1 - ST. JOHN'S NAPS ANNUAL SO<sub>2</sub> CONCENTRATIONS**



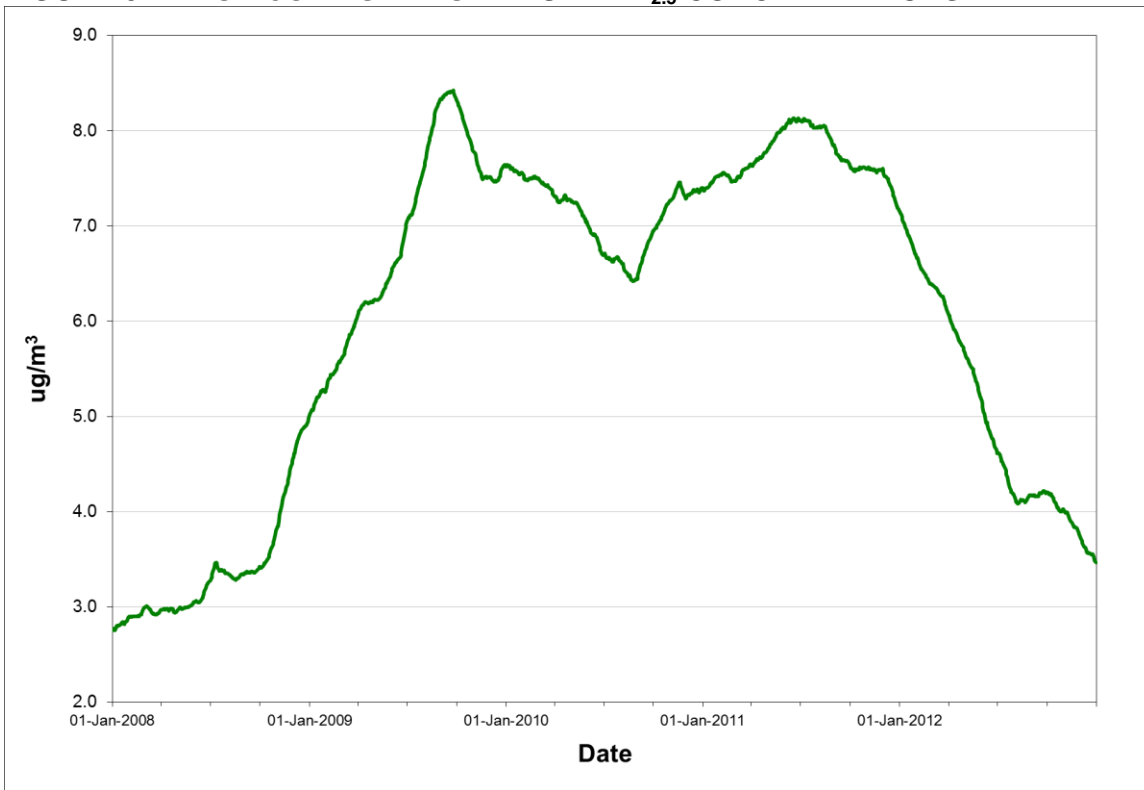
Rolling annual average of hourly concentrations

**TABLE 3.1.2 - ST. JOHN'S NAPS PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	31	100.0%	8.2	12.5	0
	February	28	100.0%	6.6	10.4	0
	March	31	100.0%	8.0	11.7	0
	April	30	100.0%	8.0	10.8	0
	May	31	100.0%	8.8	15.1	0
	June	30	100.0%	8.8	17.4	0
	July	31	100.0%	8.8	13.7	0
	August	23	74.2%	6.5	9.8	0
	September	5	16.7%	4.1	6.2	0
	October	31	100.0%	5.0	11.4	0
	November	30	100.0%	5.3	10.0	0
	December	29	93.5%	4.8	10.5	0
Annual		330	90.4%	7.2	17.4	0
2012	January	31	100.0%	3.2	6.4	0
	February	26	89.7%	2.9	7.3	0
	March	10	32.3%	1.8	4.3	0
	April	30	100.0%	4.0	7.3	0
	May	31	100.0%	3.8	9.6	0
	June	30	100.0%	3.3	7.5	0
	July	31	100.0%	4.3	11.9	0
	August	31	100.0%	5.8	10.2	0
	September	26	86.7%	4.5	11.6	0
	October	31	100.0%	3.1	8.1	0
	November	24	80.0%	1.9	6.0	0
	December	31	100.0%	1.7	5.6	0
Annual		332	90.7%	3.5	11.9	0

Observations in ug/m<sup>3</sup>

**FIGURE 3.1.2 - ST. JOHN'S NAPS ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



Rolling annual average of daily concentrations

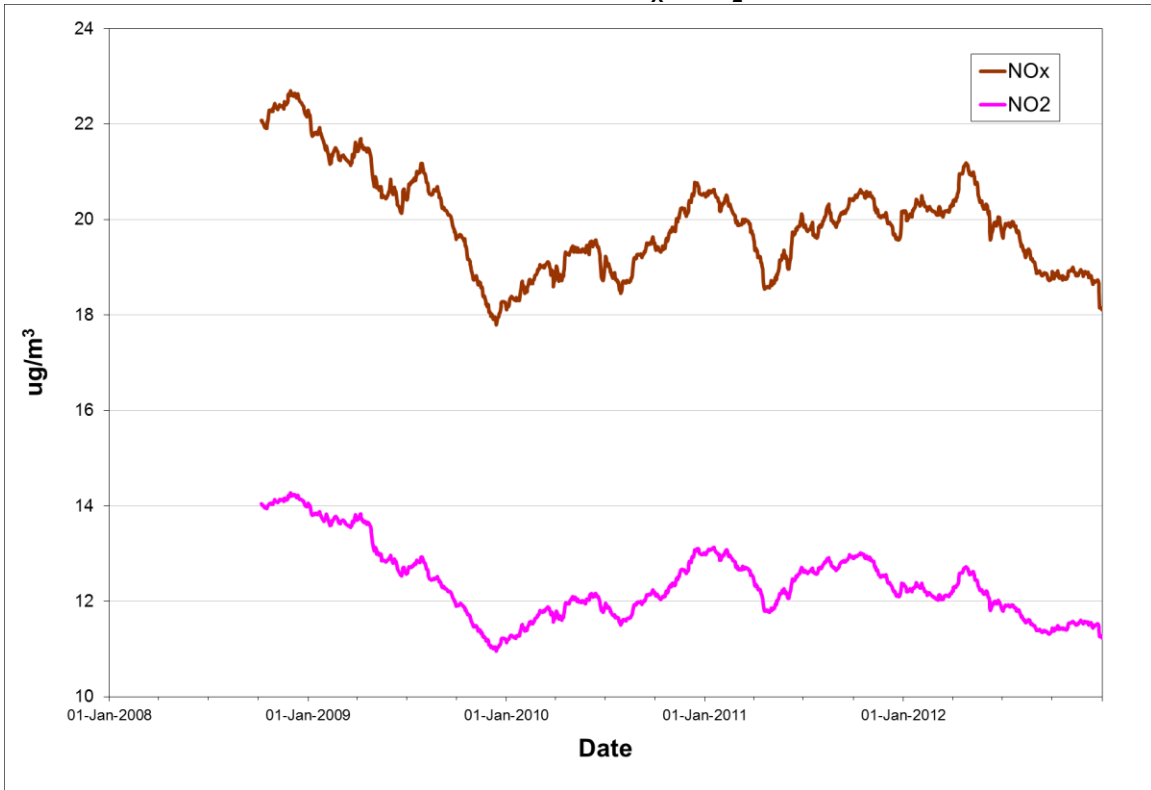


**TABLE 3.1.3 - ST. JOHN'S NAPS NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average NO <sub>x</sub> NO <sub>2</sub>		Maximums				Exceedances	
						1-Hour NO <sub>x</sub> NO <sub>2</sub>		24-Hour NO <sub>x</sub> NO <sub>2</sub>		1-Hour (>400)	24-Hour (>200)
2011	January	743	99.9%	19.7	14.0	288.7	107.1	55.5	30.7	0	0
	February	671	99.9%	20.6	14.5	191.4	84.2	43.1	26.9	0	0
	March	742	99.7%	15.8	10.9	147.6	71.7	47.2	29.4	0	0
	April	718	99.7%	14.0	8.7	143.5	58.3	43.1	22.1	0	0
	May	741	99.6%	24.6	15.1	213.9	65.7	69.2	31.5	0	0
	June	719	99.9%	30.9	17.4	321.2	73.1	90.3	44.8	0	0
	July	739	99.3%	15.2	8.6	156.6	67.5	32.9	18.1	0	0
	August	742	99.7%	23.2	12.5	245.9	83.0	52.7	27.4	0	0
	September	218	30.3%	18.7	8.7	107.3	60.4	28.4	13.7	0	0
	October	743	99.9%	18.6	10.6	213.9	56.9	49.7	25.5	0	0
	November	720	100.0%	16.6	10.5	192.9	60.0	35.8	19.9	0	0
	December	744	100.0%	22.9	14.2	646.9	133.4	129.2	51.5	0	0
Annual		8240	94.1%	20.1	12.3	646.9	133.4	129.2	51.5	0	0
2012	January	741	99.6%	21.3	13.3	186.1	71.2	53.3	31.2	0	0
	February	695	99.9%	18.5	11.7	300.8	77.2	81.4	39.5	0	0
	March	734	98.7%	17.6	12.5	170.0	69.7	49.1	29.8	0	0
	April	718	99.7%	22.3	13.6	398.1	100.5	77.8	37.3	0	0
	May	741	99.6%	15.9	10.0	219.4	73.4	36.7	26.2	0	0
	June	719	99.9%	25.2	13.8	231.7	66.3	62.2	27.7	0	0
	July	741	99.6%	15.3	8.3	193.6	75.4	61.9	27.0	0	0
	August	743	99.9%	14.7	8.2	275.7	99.0	63.2	24.5	0	0
	September	640	88.9%	16.5	9.9	138.8	57.7	31.0	19.5	0	0
	October	712	95.7%	19.6	12.3	178.1	67.7	48.1	24.7	0	0
	November	596	82.8%	16.0	10.9	180.6	61.3	48.9	26.7	0	0
	December	740	99.5%	14.1	10.5	145.2	66.9	37.4	27.7	0	0
Annual		8520	97.0%	18.1	11.2	398.1	100.5	81.4	39.5	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 3.1.3 - ST. JOHN'S NAPS ANNUAL NO<sub>x</sub> / NO<sub>2</sub> CONCENTRATIONS**



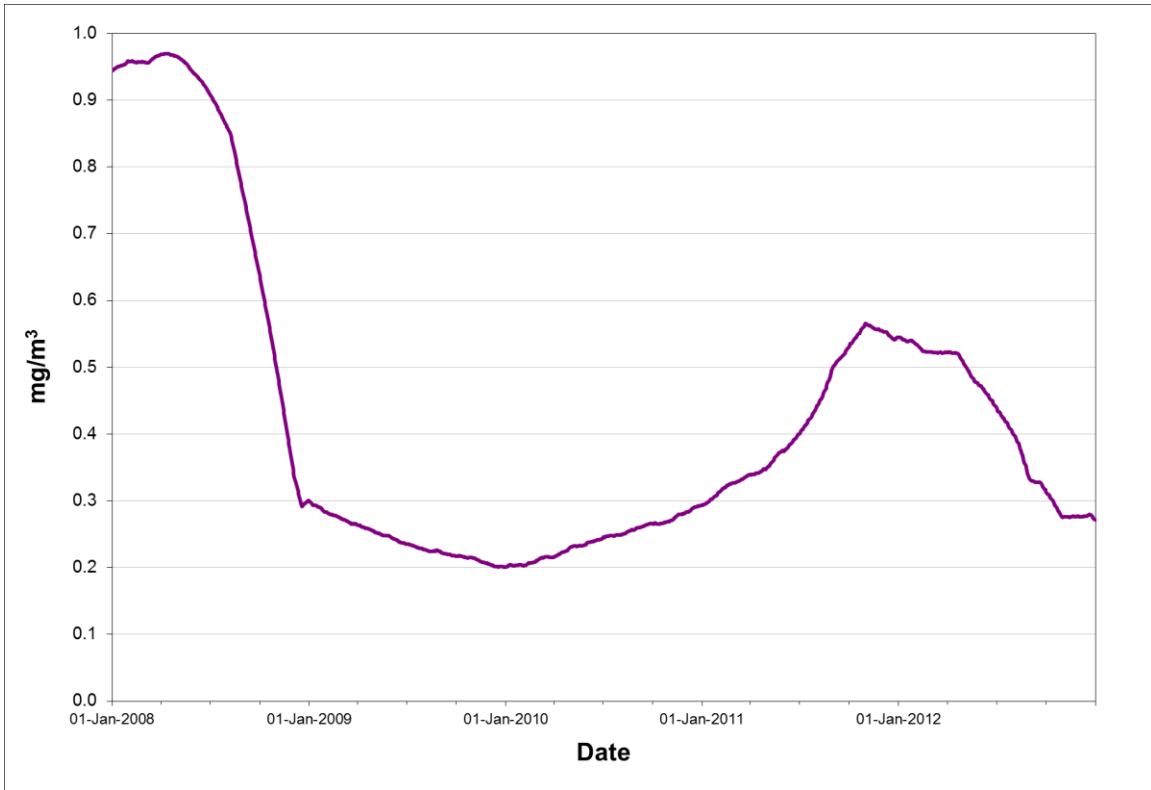
Rolling annual average of hourly concentrations

**TABLE 3.1.4 - ST. JOHN'S NAPS CO SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum		Regulatory Exceedances	
					1-Hour	8-Hour	1-Hour (>35)	8-Hour (>15)
2011	January	741	99.6%	0.5	1.4	0.8	0	0
	February	671	99.9%	0.5	2.0	0.9	0	0
	March	743	99.9%	0.5	0.9	0.7	0	0
	April	718	99.7%	0.5	1.1	1.0	0	0
	May	741	99.6%	0.6	1.1	1.0	0	0
	June	719	99.9%	0.6	1.7	1.1	0	0
	July	739	99.3%	0.7	1.6	1.4	0	0
	August	741	99.6%	1.0	2.3	2.0	0	0
	September	219	30.4%	0.7	1.6	1.4	0	0
	October	742	99.7%	0.7	1.5	1.3	0	0
	November	714	99.2%	0.2	1.2	0.7	0	0
	December	743	99.9%	0.2	1.7	1.0	0	0
Annual		8231	94.0%	0.5	2.3	2.0	0	0
2012	January	738	99.2%	0.4	1.0	0.7	0	0
	February	695	99.9%	0.4	1.6	0.7	0	0
	March	743	99.9%	0.5	1.1	0.8	0	0
	April	687	95.4%	0.3	0.9	0.8	0	0
	May	739	99.3%	0.2	0.5	0.4	0	0
	June	719	99.9%	0.2	1.0	0.5	0	0
	July	742	99.7%	0.2	0.6	0.5	0	0
	August	743	99.9%	0.2	0.6	0.5	0	0
	September	639	88.8%	0.2	0.7	0.5	0	0
	October	740	99.5%	0.2	1.0	0.6	0	0
	November	596	82.8%	0.2	1.2	0.6	0	0
	December	741	99.6%	0.2	0.9	0.5	0	0
Annual		8522	97.0%	0.3	1.6	0.8	0	0

Observations in mg/m<sup>3</sup>

**FIGURE 3.1.4 - ST. JOHN'S NAPS ANNUAL CO CONCENTRATIONS**



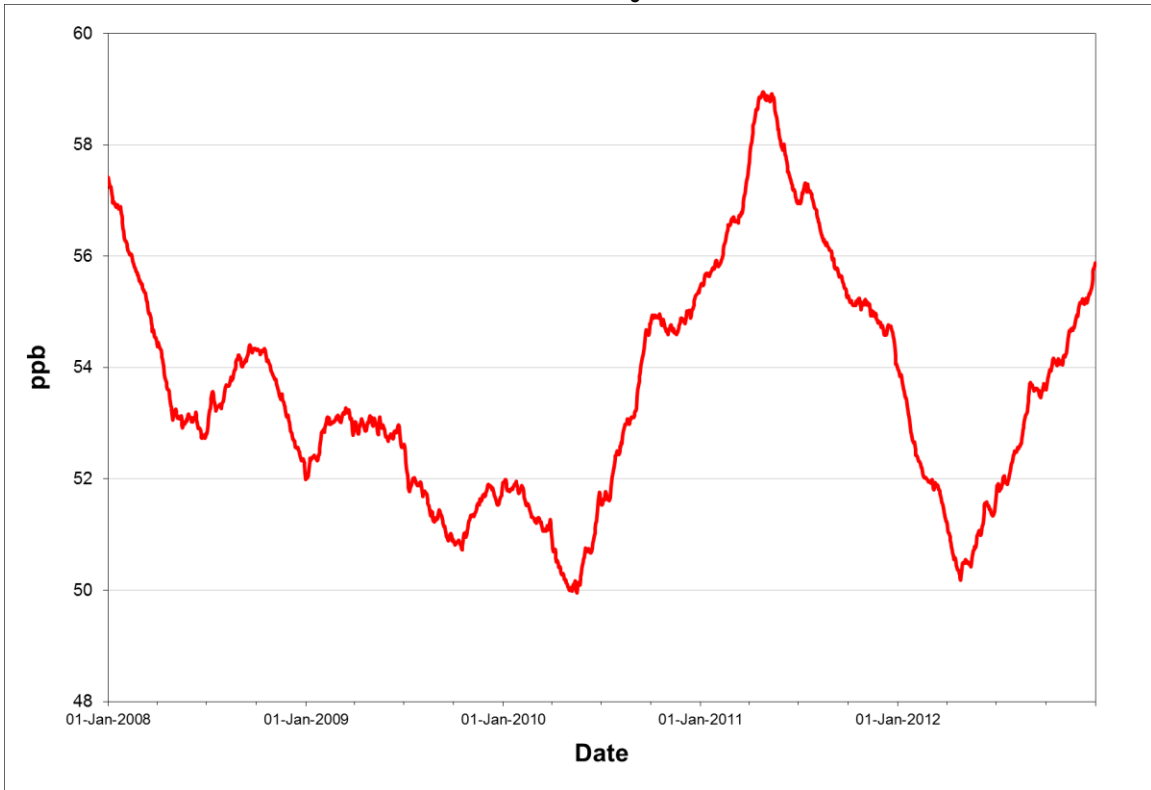
Rolling annual average of hourly concentrations

**TABLE 3.1.5 - ST. JOHN'S NAPS O<sub>3</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum		Regulatory Exceedances	
					1-Hour	8-Hour	1-Hour (>160)	8-Hour (>87)
2011	January	741	99.6%	61.6	87.9	84.3	0	0
	February	671	99.9%	67.6	90.2	84.8	0	0
	March	741	99.6%	71.5	93.0	88.0	0	5
	April	719	99.9%	69.9	112.8	103.3	0	12
	May	741	99.6%	53.9	95.1	81.8	0	0
	June	719	99.9%	43.1	76.9	73.6	0	0
	July	739	99.3%	48.6	114.6	92.1	0	1
	August	742	99.7%	37.0	78.0	55.9	0	0
	September	219	30.4%	34.9	56.9	47.8	0	0
	October	743	99.9%	45.6	79.9	75.7	0	0
	November	720	100.0%	49.7	81.0	77.2	0	0
	December	744	100.0%	52.5	78.7	74.8	0	0
Annual		8239	94.1%	54.0	114.6	103.3	0	18
2012	January	739	99.3%	46.7	71.8	68.5	0	0
	February	695	99.9%	59.2	82.9	76.4	0	0
	March	715	96.1%	64.2	90.1	85.4	0	0
	April	718	99.7%	61.2	107.6	101.5	0	4
	May	741	99.6%	59.8	98.5	89.7	0	1
	June	719	99.9%	49.0	106.5	81.8	0	0
	July	740	99.5%	56.4	117.7	97.7	0	4
	August	743	99.9%	50.4	105.1	90.3	0	1
	September	639	88.8%	48.4	104.8	99.1	0	1
	October	726	97.6%	51.0	89.4	77.1	0	0
	November	596	82.8%	62.9	89.2	85.1	0	0
	December	739	99.3%	61.9	82.9	79.1	0	0
Annual		8510	96.9%	55.9	117.7	101.5	0	11

Observations in ug/m<sup>3</sup>

**FIGURE 3.1.5 - ST. JOHN'S NAPS ANNUAL O<sub>3</sub> CONCENTRATIONS**

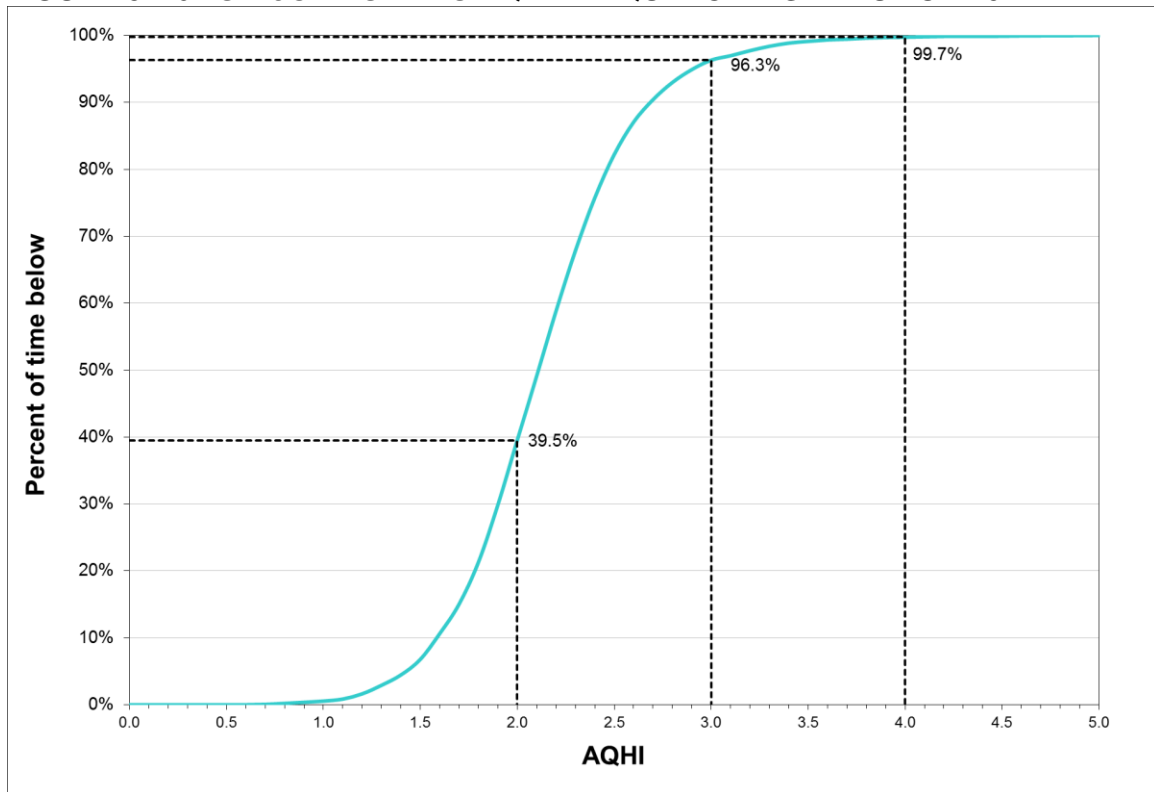


Rolling annual average of hourly concentrations

**TABLE 3.1.6 - ST. JOHN'S NAPS AQHI SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	<u>Maximum</u> 3-Hour
2011	January	742	99.7%	2.7	4.5
	February	670	99.7%	2.8	4.8
	March	740	99.5%	2.8	4.0
	April	718	99.7%	2.6	3.6
	May	742	99.7%	2.5	3.9
	June	720	100.0%	2.3	3.6
	July	737	99.1%	2.1	4.0
	August	577	77.6%	1.8	3.7
	September	149	20.7%	1.5	2.2
	October	742	99.7%	1.9	3.5
	November	720	100.0%	2.0	3.1
	December	712	95.7%	2.2	6.6
Annual		7969	91.0%	2.3	6.6
2012	January	740	99.5%	2.0	3.4
	February	654	94.0%	2.2	4.5
	March	220	29.6%	2.3	4.1
	April	720	100.0%	2.4	5.0
	May	744	100.0%	2.2	3.9
	June	720	100.0%	2.1	4.0
	July	739	99.3%	2.1	4.6
	August	742	99.7%	2.0	4.9
	September	636	88.3%	1.9	3.5
	October	711	95.6%	2.1	3.9
	November	596	82.8%	2.2	3.5
	December	739	99.3%	2.2	3.7
Annual		7961	90.6%	2.1	5.0

**FIGURE 3.1.6 - ST. JOHN'S NAPS AQHI FREQUENCY DISTRIBUTION 2012**



e.g. 96.3% of the time the AQHI recorded was below 3.0

### **3.2 Mt. Pearl**

The Mt. Pearl NAPS monitoring station is located on Old Placentia Road near Admiralty House and monitors the ambient levels of SO<sub>2</sub>, NO<sub>x</sub> / NO<sub>2</sub>, CO, O<sub>3</sub> and PM<sub>2.5</sub> on a continuous basis. For all pollutants, with the exception of O<sub>3</sub>, the ambient air criteria were not exceeded on any occasion in 2012. For O<sub>3</sub>, the 8-hour ambient standard was exceeded on twenty four eight occasions in 2012 between March and July.

Tables 3.2.1 through 3.2.5 present the summary information on the level of air contaminants measured at the Mt. Pearl NAPS station, while Figures 3.2.1 through 3.2.5 provide a graphical representation of the annual trend of each pollutant. Table 3.2.6 provides a summary of the AQHI while Figure 3.2.6 provides a graphical representation of the percentage of time the AQHI values were below a given level in 2012.

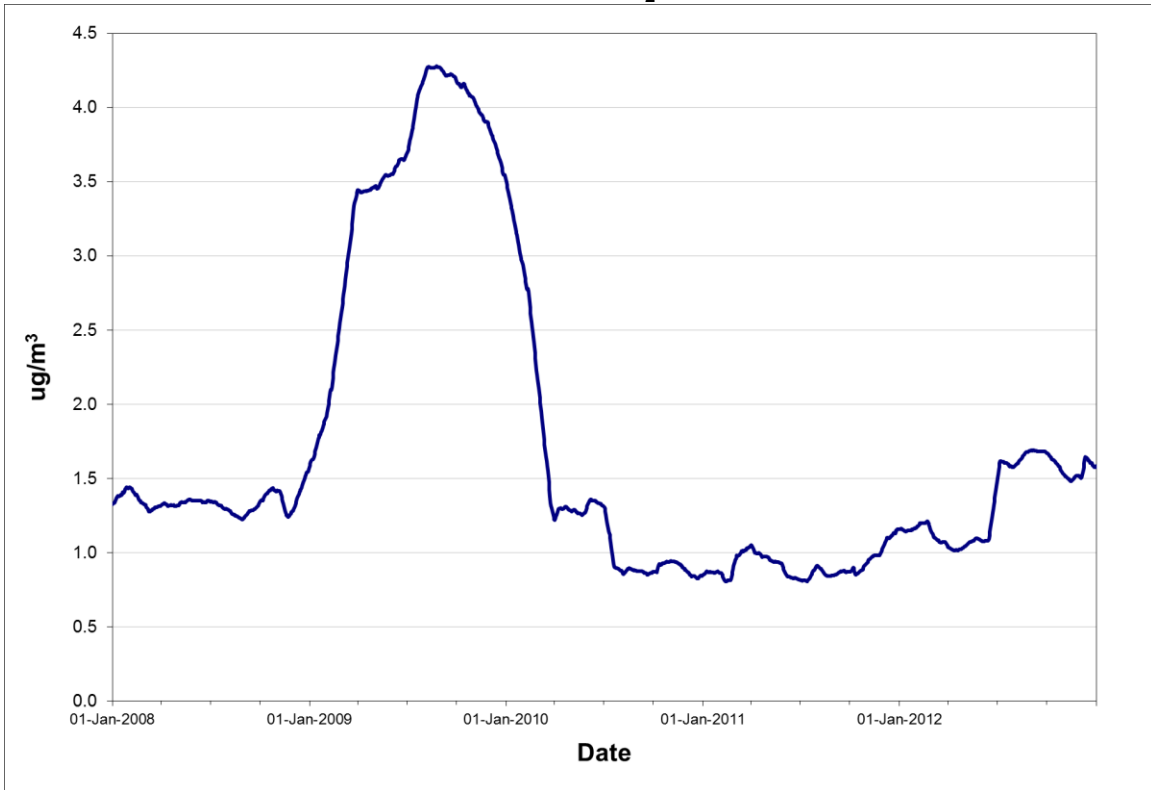


**TABLE 3.2.1 - MT. PEARL NAPS SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	159	21.4%	1.4	5.5	4.1	1.6	0	0	0
	February	245	36.5%	3.2	13.6	11.3	6.5	0	0	0
	March	743	99.9%	2.2	38.3	17.6	6.1	0	0	0
	April	718	99.7%	0.7	11.2	8.0	2.7	0	0	0
	May	741	99.6%	0.6	4.3	2.6	1.3	0	0	0
	June	717	99.6%	0.2	2.1	1.6	1.2	0	0	0
	July	736	98.9%	1.3	7.4	5.2	3.4	0	0	0
	August	741	99.6%	0.2	3.0	1.8	1.1	0	0	0
	September	691	96.0%	0.7	8.2	2.1	1.4	0	0	0
	October	744	100.0%	1.7	5.1	4.7	3.7	0	0	0
	November	541	75.1%	1.4	8.4	4.8	2.9	0	0	0
	December	732	98.4%	1.9	89.1	45.7	6.0	0	0	0
Annual		7508	85.7%	1.2	89.1	45.7	6.5	0	0	0
2012	January	740	99.5%	1.3	11.6	6.9	2.6	0	0	0
	February	694	99.7%	1.7	13.6	7.4	3.5	0	0	0
	March	740	99.5%	1.0	9.0	4.6	2.1	0	0	0
	April	718	99.7%	0.5	11.0	4.9	1.5	0	0	0
	May	744	100.0%	1.1	5.9	3.8	2.5	0	0	0
	June	718	99.7%	4.8	12.0	10.3	9.6	0	0	0
	July	740	99.5%	2.5	10.9	10.6	9.6	0	0	0
	August	730	98.1%	1.4	4.8	4.0	2.3	0	0	0
	September	713	99.0%	0.5	6.7	2.6	1.2	0	0	0
	October	737	99.1%	0.2	2.1	1.0	0.6	0	0	0
	November	691	96.0%	1.2	6.7	3.9	3.2	0	0	0
	December	655	88.0%	2.8	22.8	14.1	9.9	0	0	0
Annual		8620	98.1%	1.6	22.8	14.1	9.9	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 3.2.1 - MT. PEARL NAPS ANNUAL SO<sub>2</sub> CONCENTRATIONS**



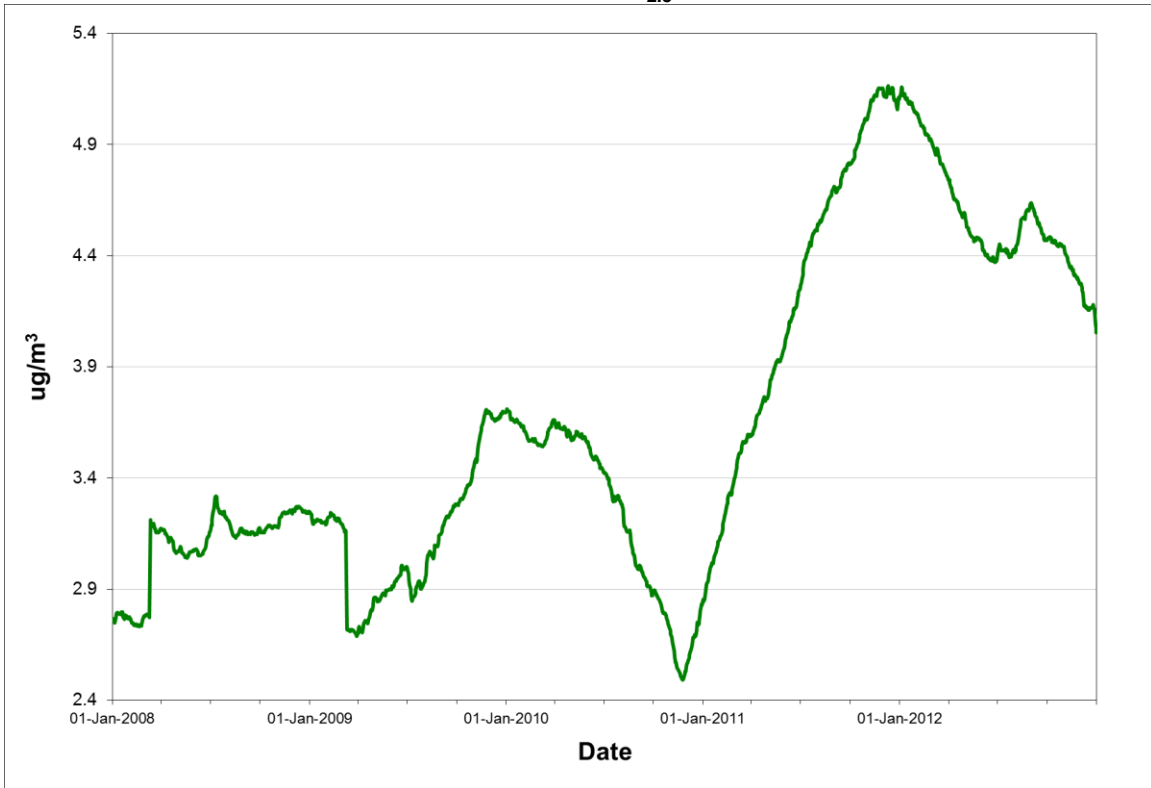
Rolling annual average of hourly concentrations

**TABLE 3.2.2 - MT. PEARL NAPS PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	31	100.0%	5.5	10.8	0
	February	28	100.0%	5.5	9.5	0
	March	29	93.5%	6.1	11.2	0
	April	30	100.0%	5.8	10.3	0
	May	31	100.0%	5.3	11.2	0
	June	30	100.0%	5.3	11.0	0
	July	31	100.0%	5.3	10.9	0
	August	31	100.0%	3.8	7.0	0
	September	28	93.3%	3.8	8.2	0
	October	23	74.2%	3.8	11.0	0
	November	30	100.0%	5.0	10.1	0
	December	31	100.0%	5.9	14.8	0
Annual		353	96.7%	5.1	14.8	0
2012	January	31	100.0%	4.8	13.5	0
	February	29	100.0%	3.9	8.2	0
	March	31	100.0%	4.0	13.4	0
	April	30	100.0%	4.0	7.5	0
	May	31	100.0%	3.8	8.5	0
	June	30	100.0%	4.5	10.0	0
	July	25	80.6%	5.8	12.7	0
	August	30	96.8%	6.2	10.7	0
	September	30	100.0%	2.0	6.2	0
	October	29	93.5%	3.5	6.4	0
	November	30	100.0%	3.0	7.1	0
	December	31	100.0%	3.6	6.5	0
Annual		357	97.5%	4.1	13.5	0

Observations in ug/m<sup>3</sup>

**FIGURE 3.2.2 - MT. PEARL NAPS ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



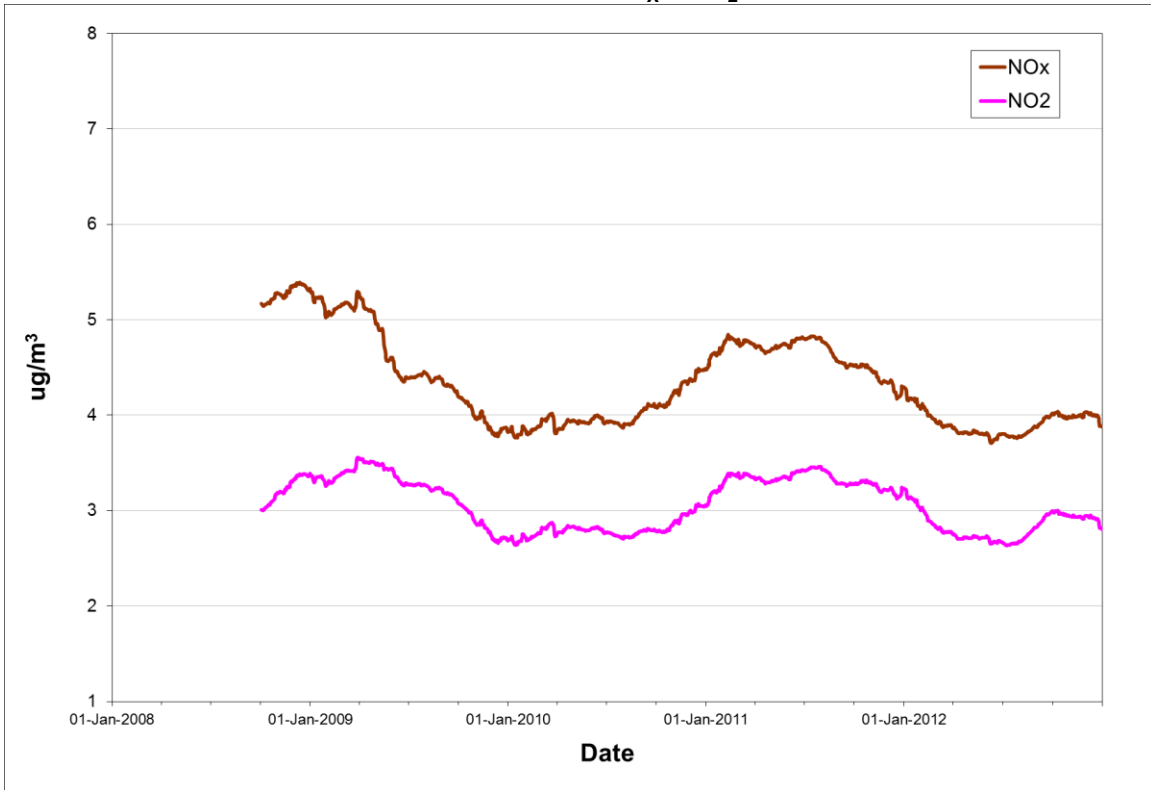
Rolling annual average of daily concentrations

**TABLE 3.2.3 - MT. PEARL NAPS NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour		24-Hour		1-Hour (>400)	24-Hour (>200)
				NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>		
2011	January	741	99.6%	7.0	5.9	121.3	67.1	26.8	19.9	0	0
	February	670	99.7%	6.2	5.4	87.2	65.8	16.1	15.1	0	0
	March	743	99.9%	3.9	3.0	75.2	46.0	11.6	10.3	0	0
	April	716	99.4%	3.1	2.4	35.2	33.0	5.2	4.4	0	0
	May	742	99.7%	3.7	2.5	19.5	15.3	6.5	4.8	0	0
	June	718	99.7%	4.9	3.3	45.6	37.1	16.0	12.3	0	0
	July	687	92.3%	2.7	1.8	22.1	19.0	5.0	3.6	0	0
	August	741	99.6%	1.9	1.0	42.0	10.8	7.2	3.5	0	0
	September	713	99.0%	3.2	2.0	53.8	18.1	7.4	5.3	0	0
	October	744	100.0%	4.7	3.4	77.3	37.5	14.5	9.2	0	0
	November	543	75.4%	4.7	3.7	37.3	24.1	8.4	6.4	0	0
	December	744	100.0%	5.7	4.4	49.3	35.8	23.6	18.2	0	0
Annual		8502	97.1%	4.3	3.2	121.3	67.1	26.8	19.9	0	0
2012	January	740	99.5%	4.3	3.3	35.0	27.1	14.9	11.7	0	0
	February	694	99.7%	4.4	3.1	119.4	56.5	25.6	15.1	0	0
	March	739	99.3%	3.2	2.2	58.6	34.1	7.8	6.0	0	0
	April	716	99.4%	2.4	1.9	34.9	28.3	9.2	8.0	0	0
	May	744	100.0%	3.7	2.7	33.9	27.0	8.9	6.9	0	0
	June	719	99.9%	4.8	2.6	35.8	29.6	11.4	8.3	0	0
	July	742	99.7%	2.4	1.9	38.3	16.8	4.2	2.9	0	0
	August	730	98.1%	3.1	2.7	16.3	13.1	6.0	4.8	0	0
	September	714	99.2%	4.8	4.0	51.1	27.5	9.0	7.3	0	0
	October	741	99.6%	4.3	3.0	47.8	32.8	11.0	7.8	0	0
	November	715	99.3%	5.1	3.4	92.1	39.3	19.1	11.8	0	0
	December	740	99.5%	3.9	2.8	28.1	25.6	7.2	6.4	0	0
Annual		8734	99.4%	3.9	2.8	119.4	56.5	25.6	15.1	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 3.2.3 - MT. PEARL NAPS ANNUAL NO<sub>x</sub> / NO<sub>2</sub> CONCENTRATIONS**



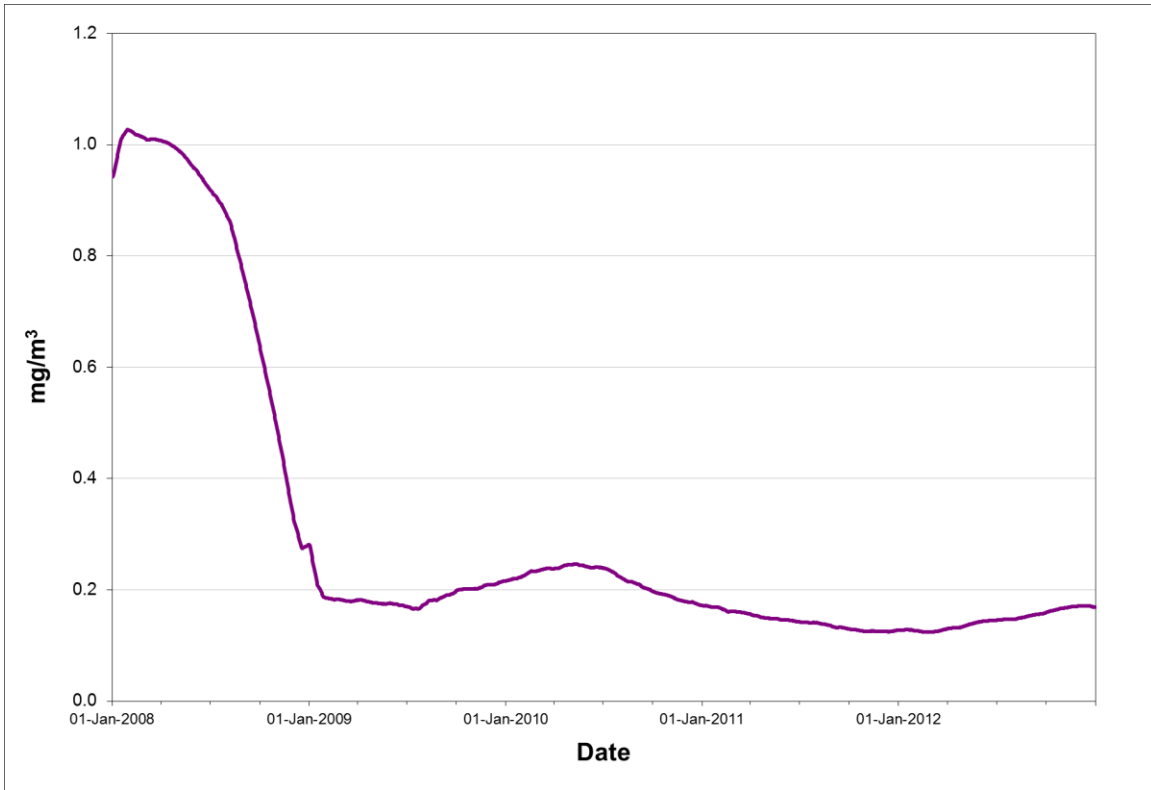
Rolling annual average of hourly concentrations

**TABLE 3.2.4 - MT. PEARL NAPS CO SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum		Regulatory Exceedances	
					1-Hour	8-Hour	1-Hour (>35)	8-Hour (>15)
2011	January	741	99.6%	0.2	2.2	0.5	0	0
	February	670	99.7%	0.2	2.4	0.5	0	0
	March	743	99.9%	0.2	0.5	0.3	0	0
	April	717	99.6%	0.1	0.5	0.3	0	0
	May	740	99.5%	0.1	1.4	0.4	0	0
	June	717	99.6%	0.1	0.3	0.2	0	0
	July	585	78.6%	0.1	0.4	0.2	0	0
	August	741	99.6%	0.1	0.3	0.2	0	0
	September	716	99.4%	0.1	0.3	0.2	0	0
	October	744	100.0%	0.1	0.5	0.2	0	0
	November	541	75.1%	0.1	0.4	0.3	0	0
	December	733	98.5%	0.2	0.8	0.4	0	0
Annual		8388	95.8%	0.1	2.4	0.5	0	0
2012	January	742	99.7%	0.2	0.5	0.3	0	0
	February	682	98.0%	0.2	2.5	0.4	0	0
	March	741	99.6%	0.2	1.0	0.4	0	0
	April	666	92.5%	0.2	0.6	0.3	0	0
	May	744	100.0%	0.2	0.4	0.3	0	0
	June	705	97.9%	0.1	0.3	0.2	0	0
	July	743	99.9%	0.1	0.5	0.2	0	0
	August	730	98.1%	0.2	0.4	0.2	0	0
	September	715	99.3%	0.1	0.5	0.3	0	0
	October	740	99.5%	0.2	0.5	0.3	0	0
	November	714	99.2%	0.2	1.0	0.4	0	0
	December	739	99.3%	0.2	0.5	0.3	0	0
Annual		8661	98.6%	0.2	2.5	0.4	0	0

Observations in mg/m<sup>3</sup>

**FIGURE 3.2.4 - MT. PEARL NAPS ANNUAL CO CONCENTRATIONS**



Rolling annual average of hourly concentrations

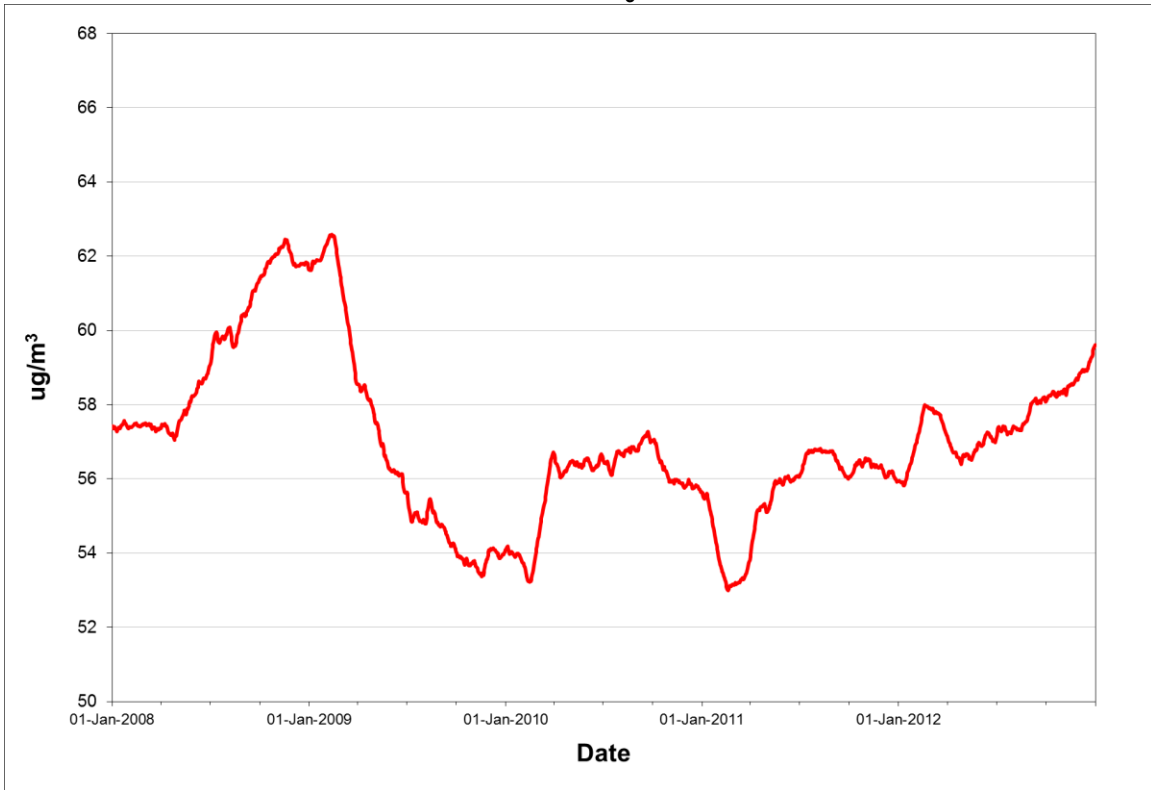


**TABLE 3.2.5 - MT. PEARL NAPS O<sub>3</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum		Regulatory Exceedances	
					1-Hour	8-Hour	1-Hour (>160)	8-Hour (>87)
2011	January	463	62.2%	40.0	52.9	51.5	0	0
	February	670	99.7%	56.4	88.8	85.6	0	0
	March	743	99.9%	79.4	96.2	93.5	0	17
	April	718	99.7%	80.0	120.5	112.6	0	32
	May	742	99.7%	65.7	99.8	92.3	0	7
	June	718	99.7%	54.2	83.4	79.3	0	0
	July	691	92.9%	51.7	114.5	89.6	0	1
	August	741	99.6%	41.8	72.9	67.6	0	0
	September	715	99.3%	40.8	90.9	87.5	0	1
	October	743	99.9%	46.8	76.5	72.2	0	0
	November	543	75.4%	50.8	74.8	70.2	0	0
	December	744	100.0%	56.0	74.3	71.3	0	0
Annual		8231	94.0%	55.9	120.5	112.6	0	58
2012	January	740	99.5%	57.0	73.0	71.0	0	0
	February	694	99.7%	69.5	89.8	82.9	0	0
	March	740	99.5%	71.1	93.4	89.2	0	1
	April	719	99.9%	73.8	121.0	112.9	0	14
	May	744	100.0%	68.6	107.1	92.1	0	6
	June	702	97.5%	55.7	103.3	81.7	0	0
	July	743	99.9%	54.5	112.4	103.0	0	3
	August	729	98.0%	46.9	91.3	80.0	0	0
	September	711	98.8%	44.2	93.3	86.8	0	0
	October	739	99.3%	49.7	76.8	67.1	0	0
	November	714	99.2%	58.2	80.1	77.6	0	0
	December	739	99.3%	66.0	85.0	82.1	0	0
Annual		8714	99.2%	59.6	121.0	112.9	0	24

Observations in ug/m<sup>3</sup>

**FIGURE 3.2.5 - MT. PEARL NAPS ANNUAL O<sub>3</sub> CONCENTRATIONS**

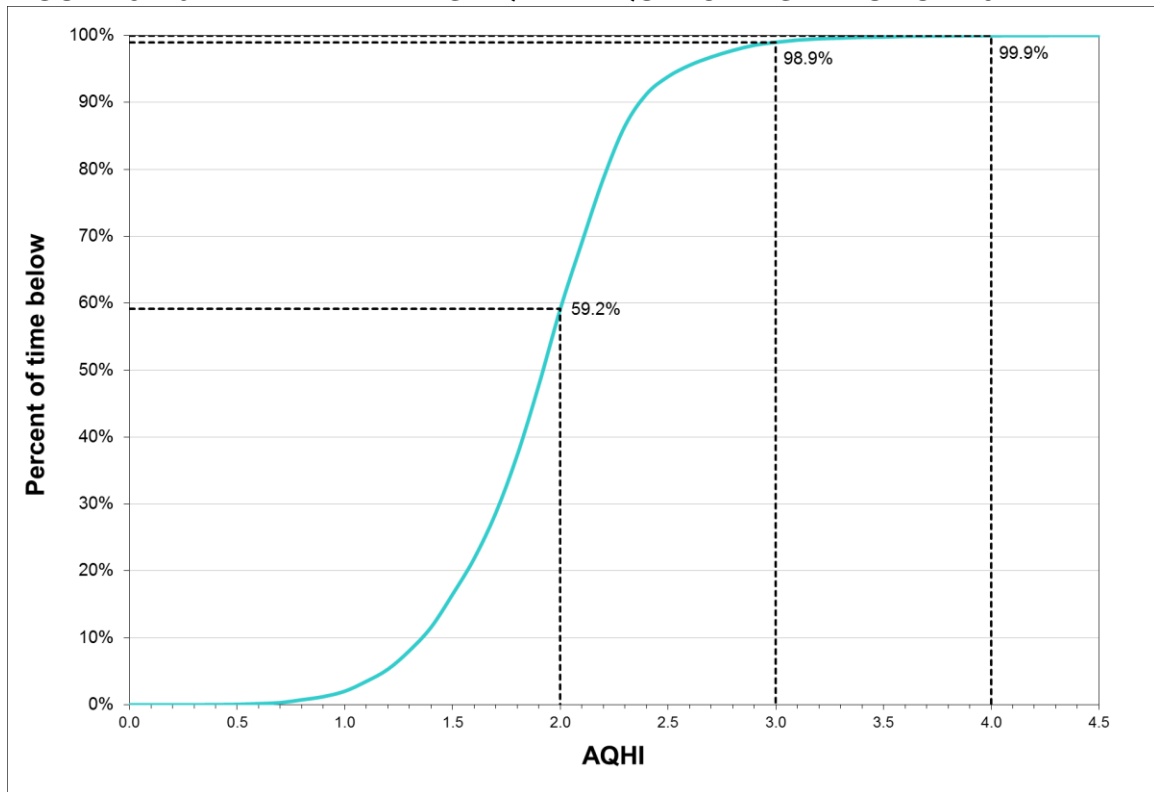


Rolling annual average of hourly concentrations

**TABLE 3.2.6 - MT. PEARL NAPS AQHI SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	<u>Maximum</u> 3-Hour
2011	January	462	62.1%	1.6	3.4
	February	668	99.4%	2.0	3.9
	March	704	94.6%	2.5	3.3
	April	717	99.6%	2.5	4.4
	May	740	99.5%	2.1	4.9
	June	720	100.0%	1.8	2.8
	July	685	92.1%	1.7	3.4
	August	739	99.3%	1.3	2.3
	September	669	92.9%	1.4	2.9
	October	594	79.8%	1.6	2.7
	November	541	75.1%	1.7	3.3
	December	742	99.7%	2.0	4.1
Annual		7981	91.1%	1.9	4.9
2012	January	739	99.3%	1.9	4.3
	February	694	99.7%	2.2	3.1
	March	740	99.5%	2.2	3.4
	April	718	99.7%	2.2	3.8
	May	744	100.0%	2.1	3.2
	June	700	97.2%	1.8	3.1
	July	605	81.3%	1.8	3.7
	August	732	98.4%	1.7	3.1
	September	711	98.8%	1.4	3.2
	October	723	97.2%	1.6	2.5
	November	715	99.3%	1.8	3.1
	December	739	99.3%	2.0	3.4
Annual		8560	97.4%	1.9	4.3

**FIGURE 3.2.6 - MT. PEARL NAPS AQHI FREQUENCY DISTRIBUTION 2012**



e.g. 98.9% of the time the AQHI recorded was below 3.0

### **3.3 Grand Falls Windsor**

The Grand Falls Windsor NAPS monitoring station is located on Scott Avenue and monitors the ambient levels of SO<sub>2</sub>, NO<sub>x</sub> / NO<sub>2</sub>, CO, O<sub>3</sub> and PM<sub>2.5</sub> on a continuous basis. For all pollutants, with the exception of O<sub>3</sub>, the ambient air criteria were not exceeded on any occasion in 2012. For O<sub>3</sub>, the 8-hour ambient standard was exceeded on twenty two occasions in 2012 between March and June.

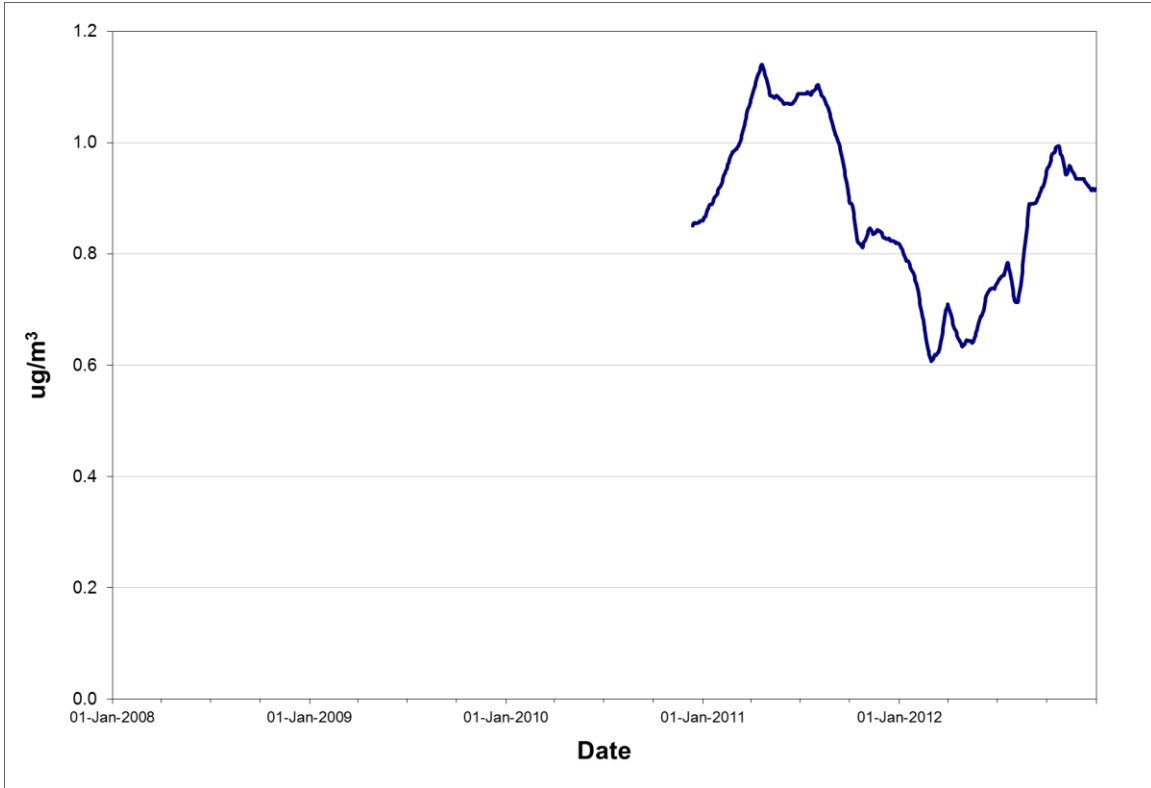
Tables 3.3.1 through 3.3.5 present the summary information on the level of air contaminants measured at the Grand Falls Windsor NAPS station, while Figures 3.3.1 through 3.3.5 provides a graphical representation of the annual trend of each pollutant. Table 3.3.6 provides a summary of the AQHI while Figure 3.3.6 provides a graphical representation of the percentage of time the AQHI values were below a given level in 2012.

**TABLE 3.3.1 - GRAND FALLS WINDSOR NAPS SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	669	89.9%	1.5	6.0	4.9	2.4	0	0	0
	February	670	99.7%	1.8	6.8	5.5	2.9	0	0	0
	March	741	99.6%	1.5	4.3	3.3	2.3	0	0	0
	April	704	97.8%	1.1	3.2	2.8	1.7	0	0	0
	May	663	89.1%	0.1	1.2	0.7	0.4	0	0	0
	June	718	99.7%	0.3	1.0	1.0	0.8	0	0	0
	July	717	96.4%	0.6	3.9	3.4	2.1	0	0	0
	August	724	97.3%	0.2	2.6	2.3	1.8	0	0	0
	September	654	90.8%	0.1	1.0	0.8	0.4	0	0	0
	October	647	87.0%	0.5	3.1	2.5	2.2	0	0	0
	November	695	96.5%	1.4	8.4	3.4	2.4	0	0	0
	December	141	19.0%	0.2	4.4	1.5	0.4	0	0	0
Annual		7743	88.4%	0.8	8.4	5.5	2.9	0	0	0
2012	January	13	1.7%	0.7	1.5	0.8	0.0	0	0	0
	February	691	99.3%	0.3	2.5	1.6	0.8	0	0	0
	March	744	100.0%	2.5	4.6	4.3	3.9	0	0	0
	April	720	100.0%	0.4	5.9	2.4	0.9	0	0	0
	May	735	98.8%	0.6	9.3	3.5	1.5	0	0	0
	June	289	40.1%	1.1	9.3	3.8	2.1	0	0	0
	July	740	99.5%	0.4	3.8	1.8	1.5	0	0	0
	August	740	99.5%	1.7	5.5	4.1	3.2	0	0	0
	September	720	100.0%	0.7	3.4	2.2	1.6	0	0	0
	October	460	61.8%	0.6	3.8	2.3	2.1	0	0	0
	November	545	75.7%	0.9	2.3	2.1	1.3	0	0	0
	December	736	98.9%	0.8	5.9	2.1	1.6	0	0	0
Annual		7133	81.2%	0.9	9.3	4.3	3.9	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 3.3.1 - GRAND FALLS WINDSOR NAPS ANNUAL SO<sub>2</sub> CONCENTRATIONS**



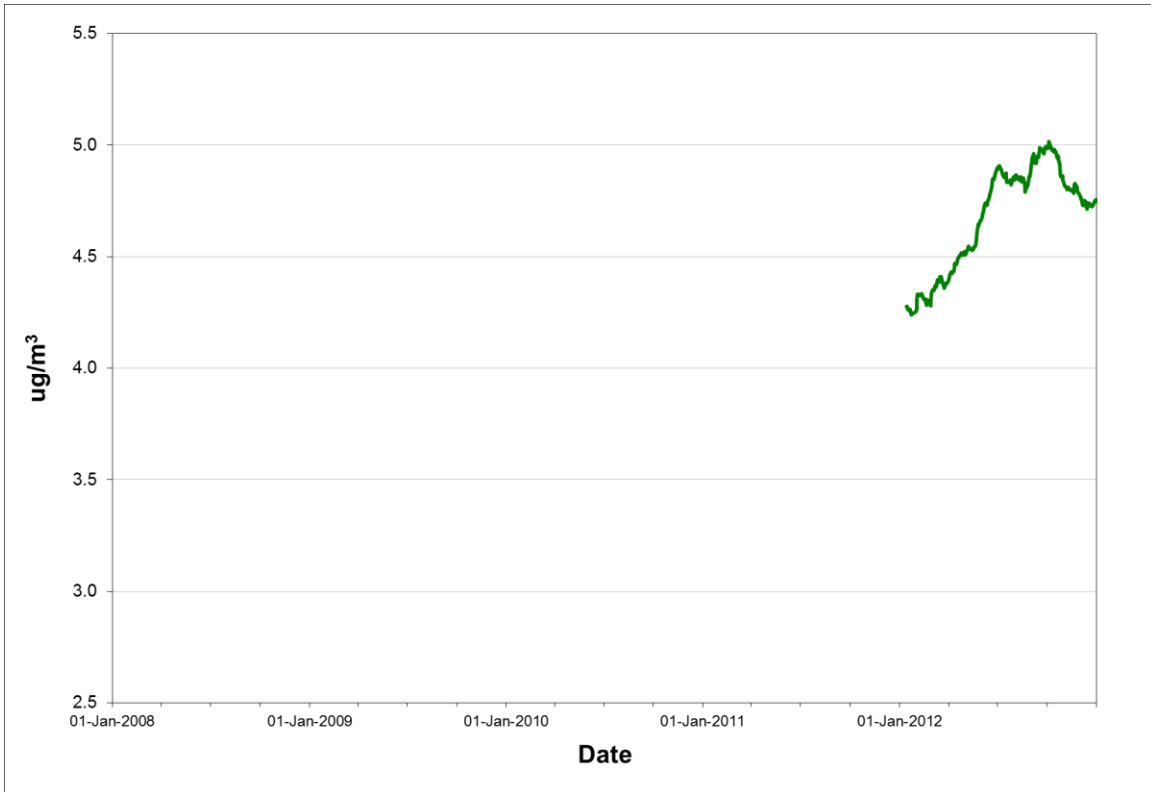
Rolling annual average of hourly concentrations

**TABLE 3.3.2 - GRAND FALLS WINDSOR NAPS PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	9	29.0%	5.5	8.1	0
	February	12	42.9%	4.4	6.3	0
	March	30	96.8%	4.9	10.4	0
	April	24	80.0%	3.6	6.4	0
	May	27	87.1%	3.0	8.7	0
	June	29	96.7%	1.9	6.0	0
	July	12	38.7%	3.8	11.8	0
	August	29	93.5%	4.2	13.8	0
	September	27	90.0%	5.0	16.9	0
	October	31	100.0%	5.5	19.7	0
	November	8	26.7%	5.0	5.6	0
	December	22	71.0%	4.8	10.2	0
Annual		260	71.2%	4.2	19.7	0
2012	January	22	71.0%	5.6	20.9	0
	February	29	100.0%	5.0	14.0	0
	March	31	100.0%	5.5	11.4	0
	April	23	76.7%	5.3	8.0	0
	May	31	100.0%	4.5	11.9	0
	June	13	43.3%	3.6	5.9	0
	July	23	74.2%	3.8	7.5	0
	August	29	93.5%	4.3	11.2	0
	September	30	100.0%	6.2	12.3	0
	October	31	100.0%	4.0	9.9	0
	November	30	100.0%	4.2	16.5	0
	December	31	100.0%	4.5	9.6	0
Annual		323	88.3%	4.7	20.9	0

Observations in ug/m<sup>3</sup>

**FIGURE 3.3.2 - GRAND FALLS WINDSOR NAPS ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



Rolling annual average of daily concentrations

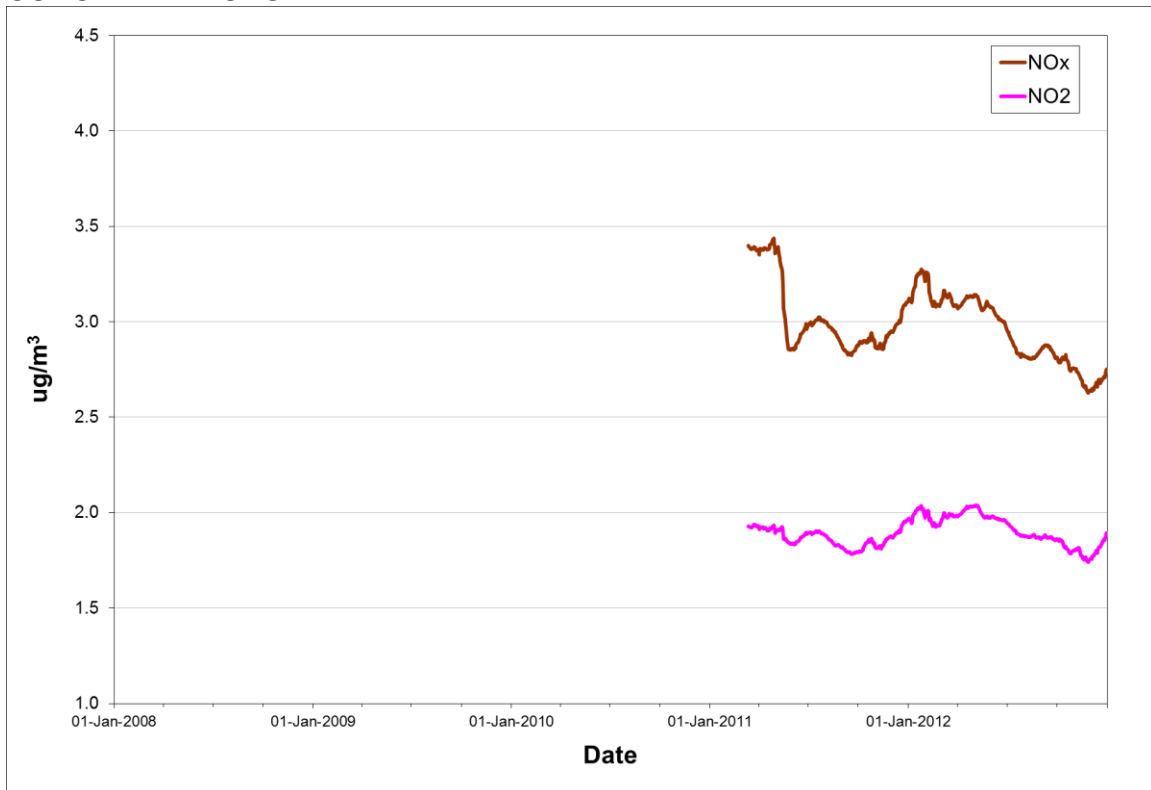


**TABLE 3.3.3 - GRAND FALLS WINDSOR NAPS NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
				NO <sub>x</sub>	NO <sub>2</sub>	1-Hour		24-Hour		1-Hour (>400)	24-Hour (>200)
				NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>		
2011	January	669	89.9%	3.2	2.5	69.6	45.0	9.9	7.3	0	0
	February	670	99.7%	4.9	3.5	103.7	59.8	25.7	18.0	0	0
	March	741	99.6%	2.9	1.9	19.0	16.9	5.2	3.8	0	0
	April	702	97.5%	2.6	1.5	128.2	45.7	8.6	3.9	0	0
	May	663	89.1%	3.1	1.8	17.0	10.9	4.8	3.3	0	0
	June	718	99.7%	3.5	1.9	20.7	10.3	6.4	3.7	0	0
	July	697	93.7%	2.9	1.5	40.3	25.0	7.2	3.8	0	0
	August	723	97.2%	1.6	1.2	13.6	15.9	3.6	2.7	0	0
	September	654	90.8%	2.5	1.2	22.5	12.8	6.1	2.9	0	0
	October	741	99.6%	3.0	2.0	40.5	23.0	8.3	3.9	0	0
	November	598	83.1%	3.6	2.5	46.2	30.7	9.8	6.2	0	0
	December	549	73.8%	3.6	2.3	125.9	48.4	14.5	7.1	0	0
Annual		8125	92.8%	3.1	2.0	128.2	59.8	25.7	18.0	0	0
2012	January	744	100.0%	4.4	2.6	133.1	53.4	18.1	11.8	0	0
	February	692	99.4%	3.4	3.2	44.4	44.8	10.1	8.1	0	0
	March	744	100.0%	2.8	2.3	50.2	28.6	10.7	7.2	0	0
	April	0	0.0%								
	May	737	99.1%	2.5	1.1	137.8	40.6	8.6	3.8	0	0
	June	351	48.8%	1.6	1.2	19.6	7.7	2.7	2.1	0	0
	July	739	99.3%	1.6	0.9	133.7	40.1	8.1	2.8	0	0
	August	744	100.0%	1.9	1.1	27.8	11.8	3.1	2.0	0	0
	September	720	100.0%	2.2	1.2	37.4	12.8	4.5	3.2	0	0
	October	733	98.5%	2.5	1.5	31.8	15.8	6.3	3.9	0	0
	November	716	99.4%	2.3	1.9	60.5	27.1	7.9	6.5	0	0
	December	743	99.9%	4.5	3.6	52.5	28.0	9.2	7.2	0	0
Annual		7663	87.2%	2.8	1.9	137.8	53.4	18.1	11.8	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 3.3.3 - GRAND FALLS WINDSOR NAPS ANNUAL NO<sub>x</sub> / NO<sub>2</sub> CONCENTRATIONS**



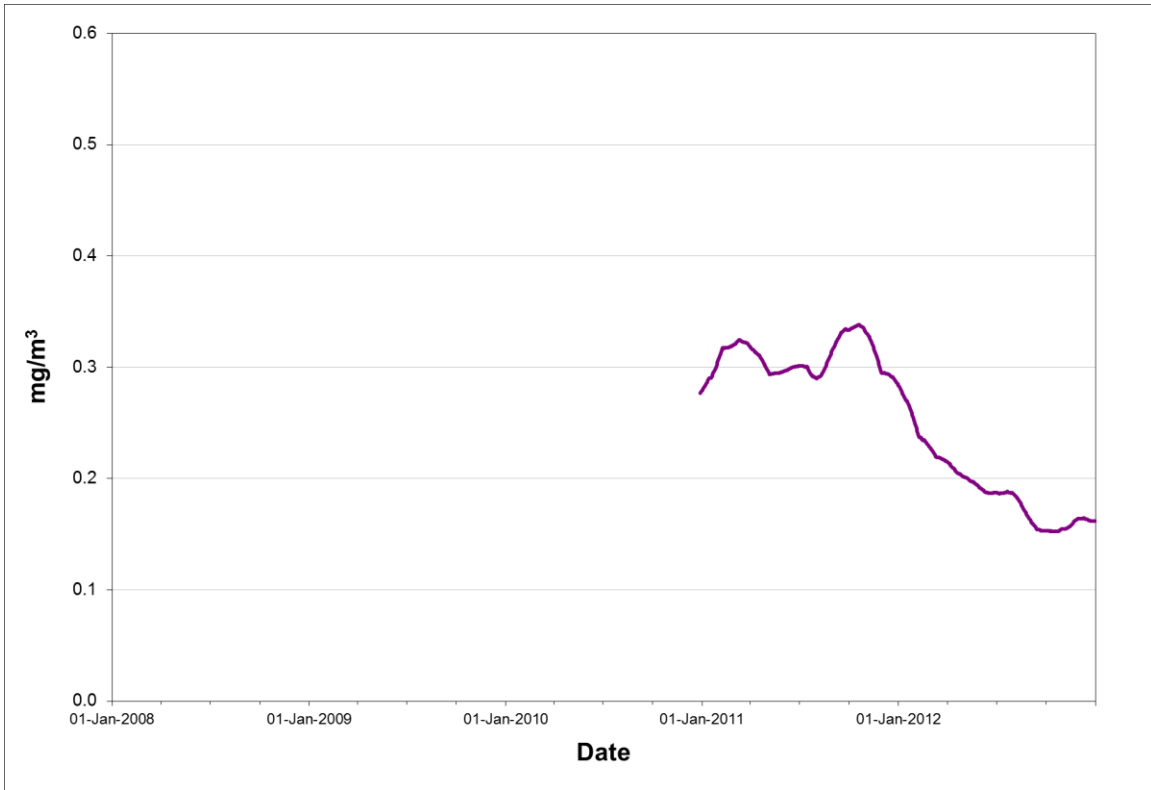
Rolling annual average of hourly concentrations

**TABLE 3.3.4 - GRAND FALLS WINDSOR NAPS CO SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum		Regulatory Exceedances	
					1-Hour	8-Hour	1-Hour (>35)	8-Hour (>15)
2011	January	669	89.9%	0.6	1.2	1.0	0	0
	February	670	99.7%	0.5	1.7	0.9	0	0
	March	741	99.6%	0.3	0.8	0.6	0	0
	April	704	97.8%	0.3	0.5	0.4	0	0
	May	663	89.1%	0.3	0.4	0.3	0	0
	June	718	99.7%	0.2	0.4	0.3	0	0
	July	715	96.1%	0.1	0.7	0.4	0	0
	August	724	97.3%	0.4	0.7	0.6	0	0
	September	618	85.8%	0.3	0.5	0.5	0	0
	October	300	40.3%	0.1	0.3	0.2	0	0
	November	694	96.4%	0.1	0.4	0.2	0	0
	December	505	67.9%	0.2	1.4	0.6	0	0
Annual		7721	88.1%	0.3	1.7	1.0	0	0
2012	January	743	99.9%	0.2	2.4	0.8	0	0
	February	682	98.0%	0.2	3.0	1.1	0	0
	March	744	100.0%	0.2	0.5	0.4	0	0
	April	720	100.0%	0.2	0.5	0.3	0	0
	May	743	99.9%	0.1	0.3	0.3	0	0
	June	352	48.9%	0.1	0.3	0.3	0	0
	July	730	98.1%	0.1	0.2	0.2	0	0
	August	741	99.6%	0.1	0.4	0.2	0	0
	September	720	100.0%	0.1	0.4	0.3	0	0
	October	742	99.7%	0.1	0.3	0.3	0	0
	November	716	99.4%	0.2	0.8	0.6	0	0
	December	744	100.0%	0.2	0.7	0.4	0	0
Annual		8377	95.4%	0.2	3.0	1.1	0	0

Observations in mg/m<sup>3</sup>

**FIGURE 3.3.4 - GRAND FALLS WINDSOR NAPS ANNUAL CO CONCENTRATIONS**



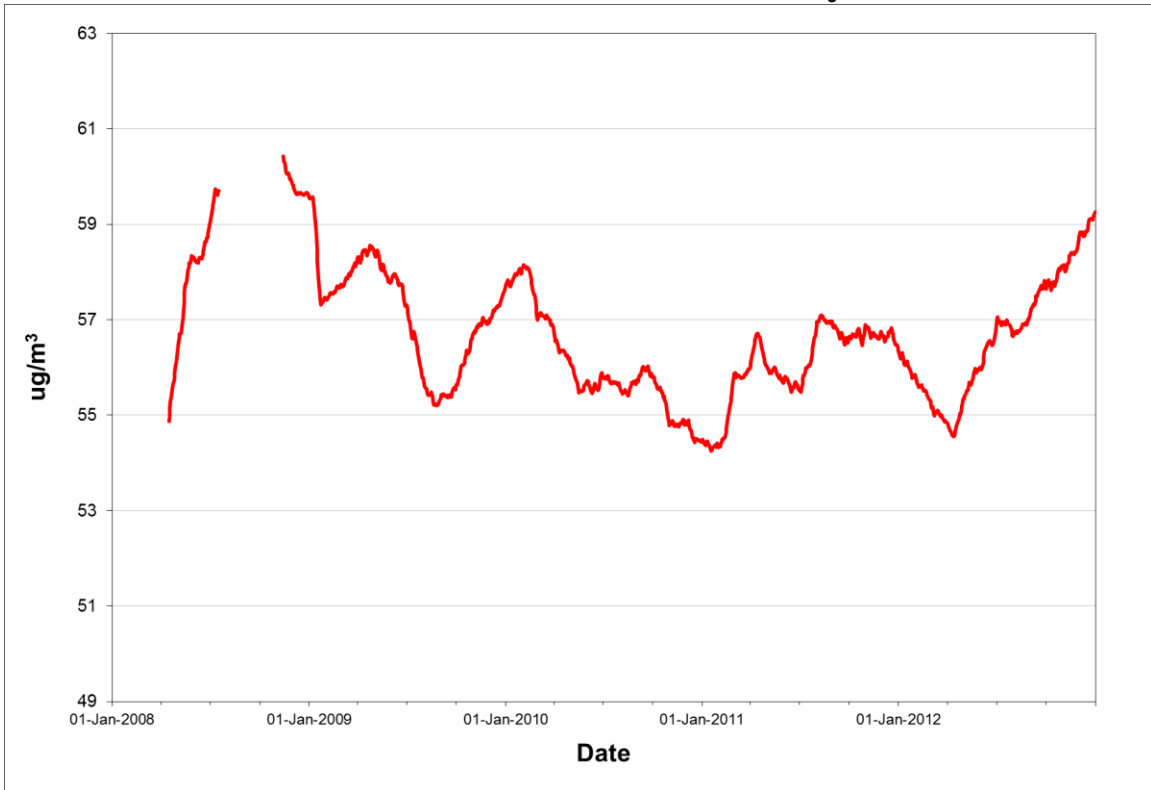
Rolling annual average of hourly concentrations

**TABLE 3.3.5 - GRAND FALLS WINDSOR NAPS O<sub>3</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum		Regulatory Exceedances	
					1-Hour	8-Hour	1-Hour (>160)	8-Hour (>87)
2011	January	669	89.9%	65.4	85.6	82.1	0	0
	February	670	99.7%	74.9	92.8	88.9	0	1
	March	741	99.6%	76.9	94.5	90.6	0	5
	April	444	61.7%	80.4	103.7	98.6	0	12
	May	375	50.4%	58.2	102.2	91.8	0	3
	June	718	99.7%	51.1	83.5	75.7	0	0
	July	491	66.0%	47.6	101.0	89.1	0	1
	August	710	95.4%	39.5	91.4	71.8	0	0
	September	655	91.0%	39.5	102.9	81.1	0	0
	October	741	99.6%	41.7	78.7	73.5	0	0
	November	714	99.2%	50.1	72.8	69.4	0	0
	December	608	81.7%	58.6	75.8	73.1	0	0
Annual		7536	86.0%	56.4	103.7	98.6	0	22
2012	January	744	100.0%	59.2	76.7	71.4	0	0
	February	696	100.0%	68.8	85.1	81.7	0	0
	March	744	100.0%	72.4	101.1	97.4	0	3
	April	720	100.0%	75.3	114.6	108.6	0	15
	May	688	92.5%	64.8	114.8	95.4	0	3
	June	351	48.8%	64.5	108.6	98.4	0	1
	July	743	99.9%	48.7	93.6	77.5	0	0
	August	744	100.0%	43.9	87.6	76.6	0	0
	September	560	77.8%	45.6	86.9	75.3	0	0
	October	624	83.9%	44.4	77.6	68.8	0	0
	November	717	99.6%	56.8	78.8	76.3	0	0
	December	742	99.7%	65.0	84.5	81.8	0	0
Annual		8073	91.9%	59.3	114.8	108.6	0	22

Observations in ug/m<sup>3</sup>

**FIGURE 3.3.5 - GRAND FALLS WINDSOR NAPS ANNUAL O<sub>3</sub> CONCENTRATIONS**



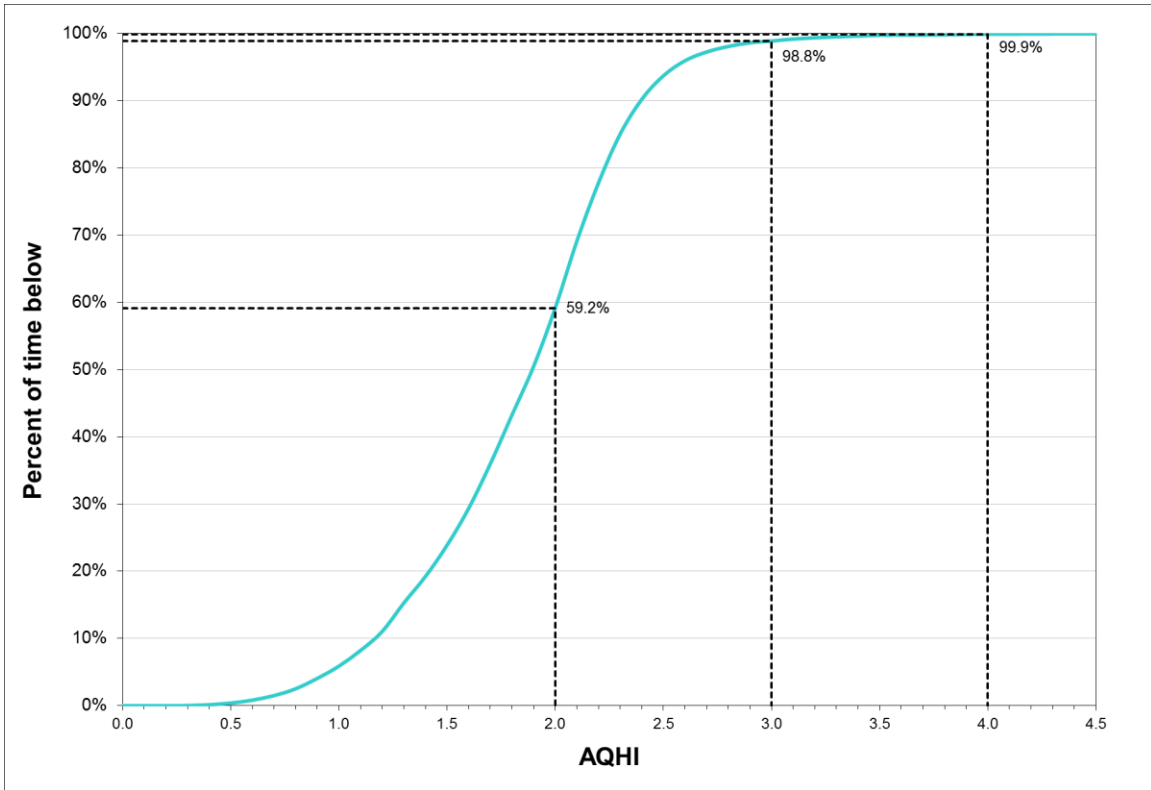
Rolling annual average of hourly concentrations

**TABLE 3.3.6 - GRAND FALLS WINDSOR NAPS AQHI SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	<u>Maximum</u> 3-Hour
2011	January	246	33.1%	2.3	3.8
	February	368	54.8%	2.4	3.1
	March	723	97.2%	2.4	4.1
	April	445	61.8%	2.4	3.0
	May	362	48.7%	1.7	2.9
	June	698	96.9%	1.5	3.3
	July	199	26.7%	1.4	2.7
	August	708	95.2%	1.3	2.9
	September	654	90.8%	1.3	4.5
	October	744	100.0%	1.5	3.9
	November	208	28.9%	1.7	2.3
	December	547	73.5%	1.9	4.6
Annual		5902	67.4%	1.8	4.6
2012	January	550	73.9%	1.9	7.3
	February	690	99.1%	2.2	4.8
	March	740	99.5%	2.3	3.3
	April	1	0.1%	2.3	2.3
	May	679	91.3%	2.0	3.5
	June	350	48.6%	1.9	3.5
	July	572	76.9%	1.5	2.7
	August	714	96.0%	1.4	3.0
	September	558	77.5%	1.5	4.0
	October	617	82.9%	1.4	2.4
	November	706	98.1%	1.8	3.9
	December	742	99.7%	2.1	3.6
Annual		6919	78.8%	1.8	7.3



**FIGURE 3.3.6 - GRAND FALLS WINDSOR NAPS AQHI FREQUENCY DISTRIBUTION 2012**



e.g. 98.8% of the time the AQHI recorded was below 3.0

### 3.4 Corner Brook

The Corner Brook NAPS monitoring station is located on Macpherson Avenue near Confederation Drive and monitors the ambient levels of SO<sub>2</sub>, NO<sub>x</sub> / NO<sub>2</sub>, CO, O<sub>3</sub> and PM<sub>2.5</sub> on a continuous basis. The station was moved to its current location in 2009 after being located on Brook Street since 2001. For all pollutants, with the exception of O<sub>3</sub>, the ambient air criteria were not exceeded on any occasion in 2012. The 8-hour O<sub>3</sub> standard was exceeded on thirty one occasions in 2012 between March and June.

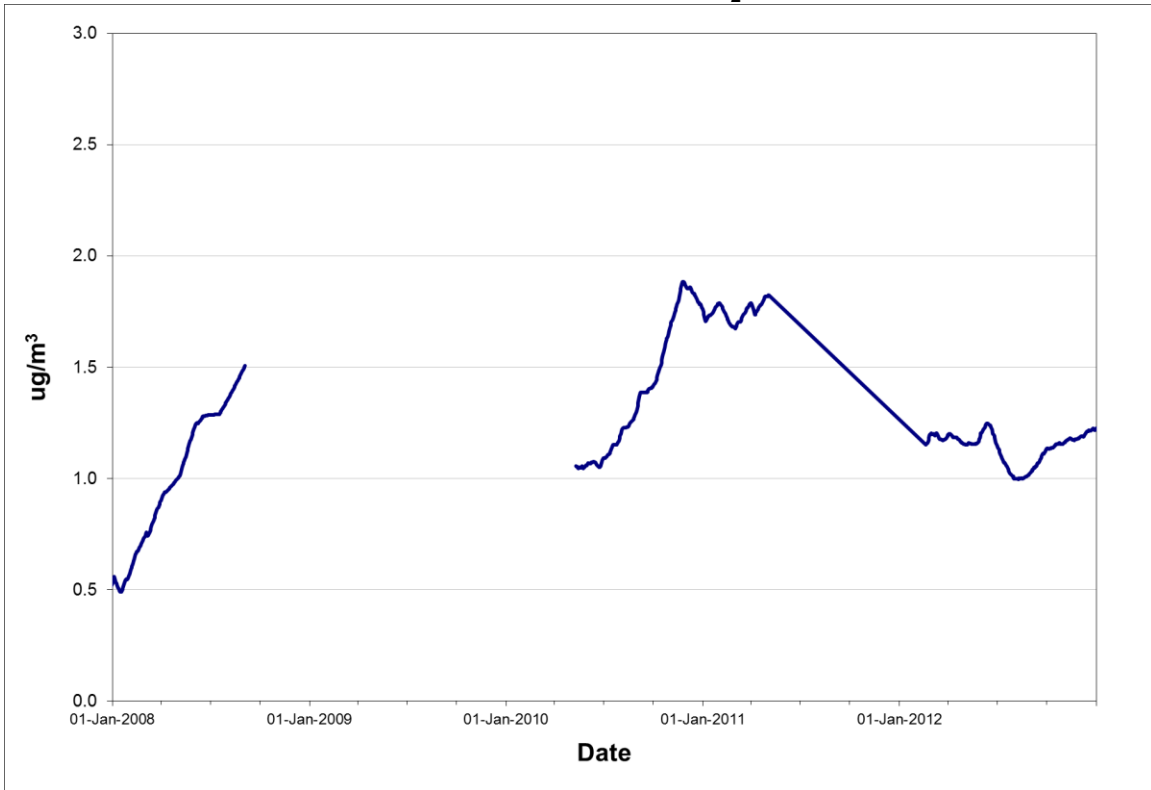
Tables 3.4.1 through 3.4.5 present the summary information on the level of air contaminants measured at the Corner Brook NAPS station, while Figures 3.4.1 through 3.3.5 provide a graphical representation of the annual trend of each pollutant. The disconnection in the Figures corresponds to the timeframe in which the station was relocated. Table 3.4.6 provides a summary of the AQHI while Figure 3.3 provides a graphical representation of the percentage of time the AQHI values were below a given level in 2012.

**TABLE 3.4.1 - CORNER BROOK NAPS SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	741	99.6%	1.6	4.7	4.5	3.4	0	0	0
	February	85	12.6%	2.0	4.3	4.1	2.5	0	0	0
	March	188	25.3%	1.1	3.0	2.9	2.5	0	0	0
	April	0	0.0%							
	May	107	14.4%	0.5	4.9	1.5	1.1	0	0	0
	June	714	99.2%	1.7	27.5	19.9	6.2	0	0	0
	July	741	99.6%	2.5	13.2	9.3	3.8	0	0	0
	August	737	99.1%	1.5	16.3	12.9	4.2	0	0	0
	September	719	99.9%	1.4	11.5	7.0	2.9	0	0	0
	October	717	96.4%	0.4	15.3	5.8	1.6	0	0	0
	November	715	99.3%	0.7	9.2	3.1	1.9	0	0	0
	December	739	99.3%	1.0	16.9	3.9	3.6	0	0	0
Annual		6203	70.8%	1.3	27.5	19.9	6.2	0	0	0
2012	January	744	100.0%	0.4	3.1	2.3	1.7	0	0	0
	February	693	99.6%	1.4	7.5	5.8	4.3	0	0	0
	March	735	98.8%	1.1	7.5	5.3	2.9	0	0	0
	April	546	75.8%	0.6	9.3	6.3	2.5	0	0	0
	May	671	90.2%	1.6	27.5	17.9	5.2	0	0	0
	June	652	90.6%	1.2	21.6	11.3	4.1	0	0	0
	July	621	83.5%	0.8	8.4	6.7	1.5	0	0	0
	August	600	80.6%	1.8	8.3	4.4	2.4	0	0	0
	September	719	99.9%	2.6	20.6	8.9	3.8	0	0	0
	October	738	99.2%	0.6	5.4	3.2	1.5	0	0	0
	November	713	99.0%	1.0	6.2	2.8	1.5	0	0	0
	December	740	99.5%	1.4	5.4	2.9	2.1	0	0	0
Annual		8172	93.0%	1.2	27.5	17.9	5.2	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 3.4.1 - CORNER BROOK NAPS ANNUAL SO<sub>2</sub> CONCENTRATIONS**



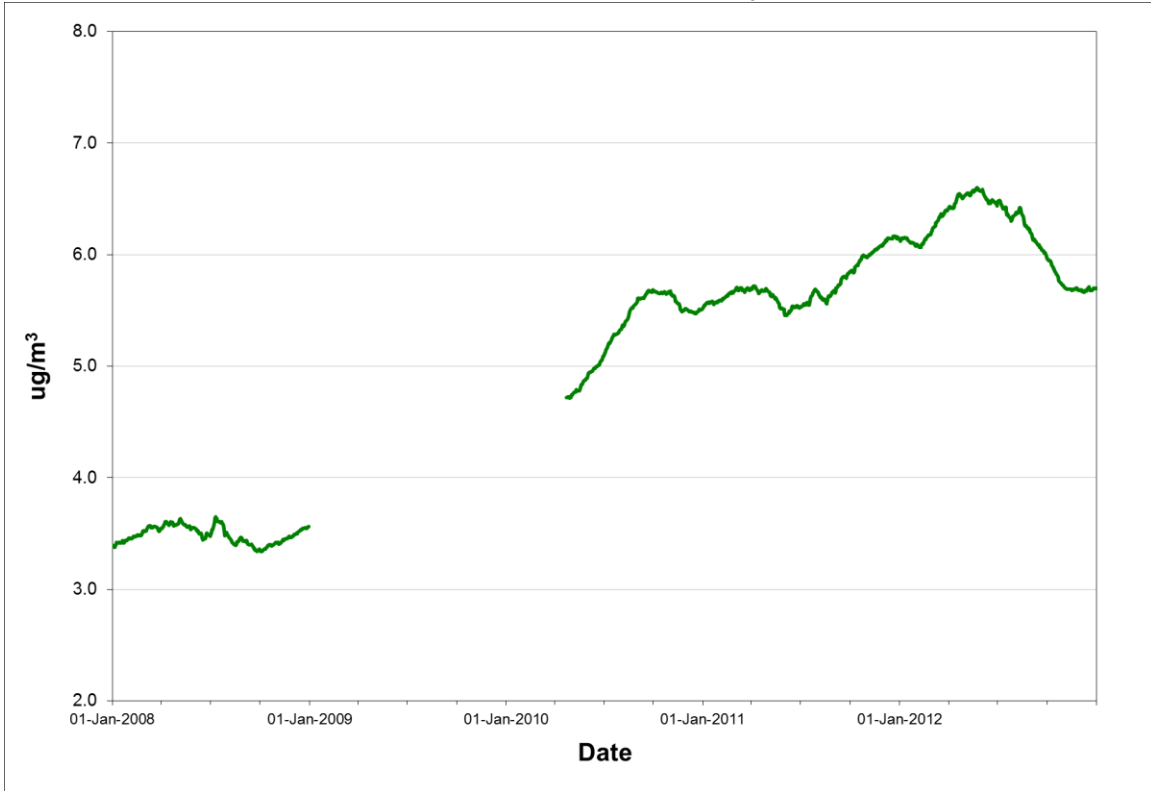
Rolling annual average of hourly concentrations

**TABLE 3.4.2 - CORNER BROOK NAPS PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	22	71.0%	4.3	7.0	0
	February	28	100.0%	4.8	7.3	0
	March	29	93.5%	5.7	10.8	0
	April	30	100.0%	5.2	11.3	0
	May	31	100.0%	4.5	9.7	0
	June	28	93.3%	7.5	15.3	0
	July	31	100.0%	9.1	17.1	0
	August	31	100.0%	8.1	15.8	0
	September	30	100.0%	7.6	15.1	0
	October	31	100.0%	6.7	11.6	0
	November	14	46.7%	4.4	6.5	0
	December	30	96.8%	4.1	11.9	0
Annual		335	91.8%	6.1	17.1	0
2012	January	31	100.0%	4.2	7.8	0
	February	29	100.0%	6.3	10.3	0
	March	31	100.0%	8.1	13.5	0
	April	30	100.0%	6.4	13.6	0
	May	31	100.0%	5.0	8.9	0
	June	28	93.3%	6.4	17.5	0
	July	31	100.0%	7.8	15.0	0
	August	30	96.8%	6.3	13.8	0
	September	30	100.0%	5.1	13.0	0
	October	31	100.0%	3.8	7.2	0
	November	22	73.3%	4.3	7.3	0
	December	30	96.8%	4.2	7.8	0
Annual		354	96.7%	5.7	17.5	0

Observations in ug/m<sup>3</sup>

**FIGURE 3.4.2 - CORNER BROOK NAPS ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



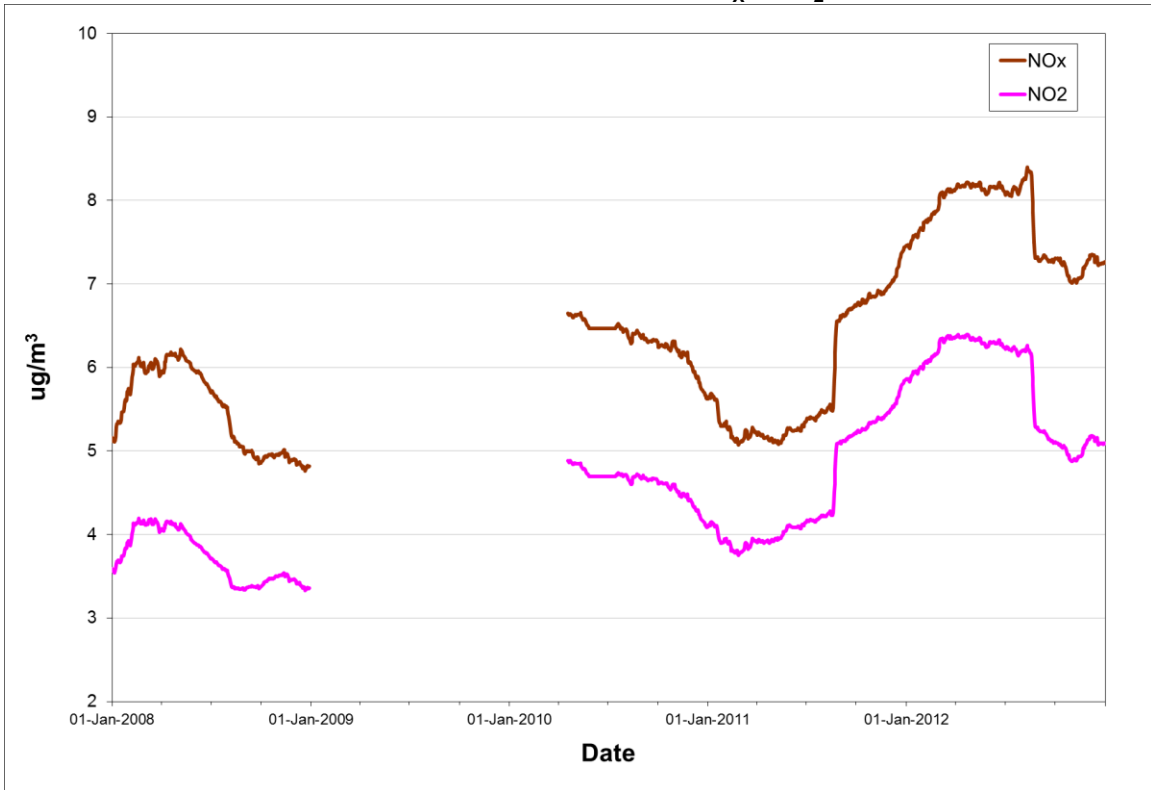
Rolling annual average of daily concentrations

**TABLE 3.4.3 - CORNER BROOK NAPS NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour		24-Hour		1-Hour (>400)	24-Hour (>200)
				NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>		
2011	January	741	99.6%	5.9	5.3	71.6	55.2	17.8	14.7	0	0
	February	662	98.5%	6.3	5.3	127.6	62.6	17.6	13.0	0	0
	March	691	92.9%	5.6	4.8	73.0	50.4	25.3	19.5	0	0
	April	716	99.4%	4.3	3.7	52.4	35.5	9.6	8.0	0	0
	May	744	100.0%	6.1	4.8	77.6	52.4	17.6	12.3	0	0
	June	619	86.0%	6.2	4.5	44.9	33.3	22.1	17.9	0	0
	July	741	99.6%	6.8	5.0	53.5	35.3	16.4	11.2	0	0
	August	737	99.1%	18.5	14.3	99.7	68.0	68.4	60.6	0	0
	September	719	99.9%	6.4	4.5	40.1	28.4	15.5	10.7	0	0
	October	740	99.5%	7.0	5.0	152.1	30.0	21.6	11.2	0	0
	November	714	99.2%	7.0	5.7	71.7	36.5	17.6	12.8	0	0
	December	739	99.3%	8.9	7.1	171.7	63.4	38.1	28.5	0	0
Annual		8563	97.8%	7.5	5.9	171.7	68.0	68.4	60.6	0	0
2012	January	744	100.0%	8.1	6.7	56.8	40.8	15.9	12.5	0	0
	February	696	100.0%	9.7	8.1	97.2	54.7	27.1	19.2	0	0
	March	735	98.8%	8.2	6.6	98.5	57.7	30.9	23.9	0	0
	April	713	99.0%	4.5	3.3	63.6	41.0	17.6	12.7	0	0
	May	735	98.8%	5.5	3.9	48.9	44.8	16.0	11.9	0	0
	June	556	77.2%	6.1	4.1	99.7	53.8	14.4	11.6	0	0
	July	719	96.6%	8.3	4.6	78.6	43.1	22.0	12.7	0	0
	August	731	98.3%	7.8	3.3	77.1	42.9	26.0	13.6	0	0
	September	719	99.9%	6.1	2.6	51.7	29.3	14.3	8.8	0	0
	October	734	98.7%	3.9	2.4	57.0	34.2	14.2	8.5	0	0
	November	714	99.2%	10.4	8.8	95.9	54.5	37.5	28.2	0	0
	December	743	99.9%	8.4	6.5	81.6	48.1	22.1	16.7	0	0
Annual		8539	97.2%	7.3	5.1	99.7	57.7	37.5	28.2	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 3.4.3 - CORNER BROOK NAPS ANNUAL NO<sub>x</sub> / NO<sub>2</sub> CONCENTRATIONS**



Rolling annual average of hourly concentrations

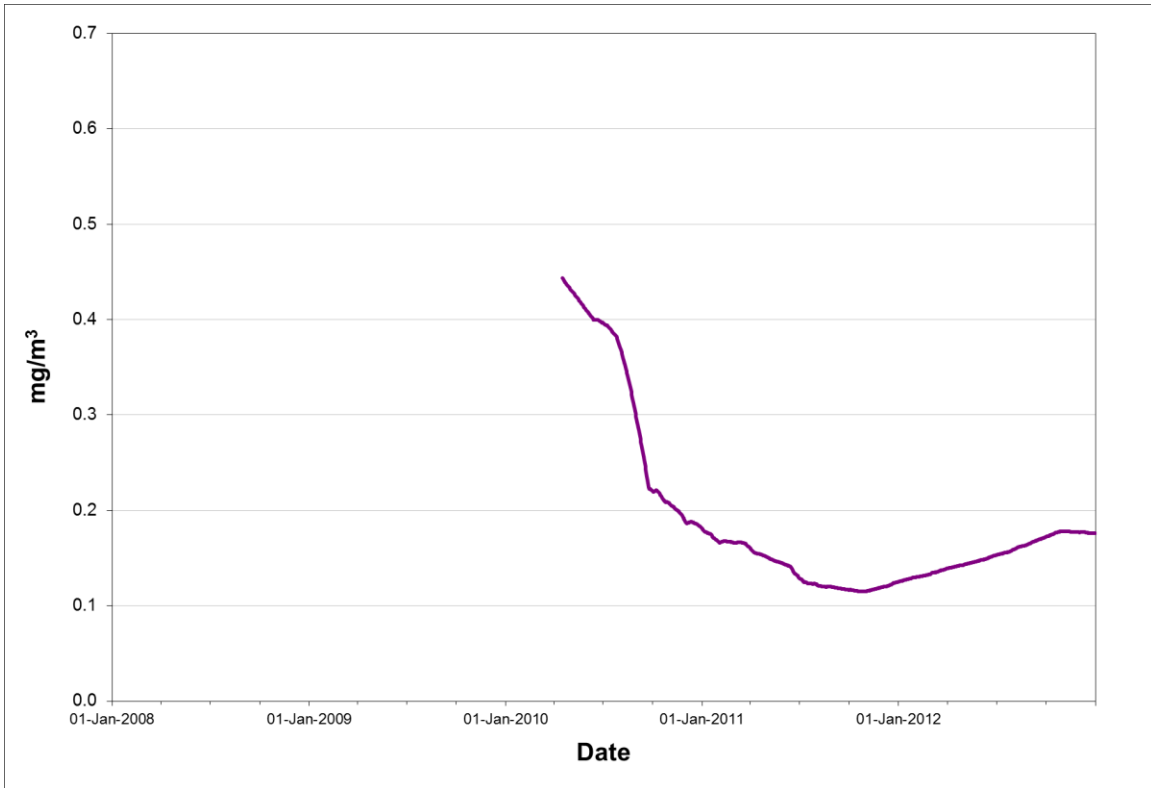
**TABLE 3.4.4 - CORNER BROOK NAPS CO SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum		Regulatory Exceedances	
					1-Hour	8-Hour	1-Hour (>35)	8-Hour (>15)
2011	January	741	99.6%	0.1	0.5	0.3	0	0
	February	669	99.6%	0.2	0.6	0.3	0	0
	March	741	99.6%	0.2	0.7	0.3	0	0
	April	713	99.0%	0.1	0.4	0.2	0	0
	May	744	100.0%	0.1	0.4	0.2	0	0
	June	719	99.9%	0.1	0.5	0.2	0	0
	July	742	99.7%	0.1	0.3	0.2	0	0
	August	738	99.2%	0.1	0.2	0.2	0	0
	September	719	99.9%	0.1	0.3	0.2	0	0
	October	738	99.2%	0.1	0.5	0.2	0	0
	November	710	98.6%	0.2	0.5	0.3	0	0
	December	738	99.2%	0.2	0.9	0.6	0	0
Annual		8712	99.5%	0.1	0.9	0.6	0	0
2012	January	742	99.7%	0.2	0.6	0.4	0	0
	February	696	100.0%	0.2	0.6	0.3	0	0
	March	736	98.9%	0.2	0.7	0.4	0	0
	April	713	99.0%	0.2	0.4	0.3	0	0
	May	740	99.5%	0.2	0.3	0.2	0	0
	June	713	99.0%	0.1	0.4	0.2	0	0
	July	741	99.6%	0.2	0.3	0.2	0	0
	August	729	98.0%	0.2	0.3	0.3	0	0
	September	717	99.6%	0.2	0.5	0.3	0	0
	October	736	98.9%	0.2	0.4	0.3	0	0
	November	715	99.3%	0.2	0.5	0.3	0	0
	December	738	99.2%	0.2	0.5	0.3	0	0
Annual		8716	99.2%	0.2	0.7	0.4	0	0

Observations in mg/m<sup>3</sup>



**FIGURE 3.4.4 - CORNER BROOK NAPS ANNUAL CO CONCENTRATIONS**



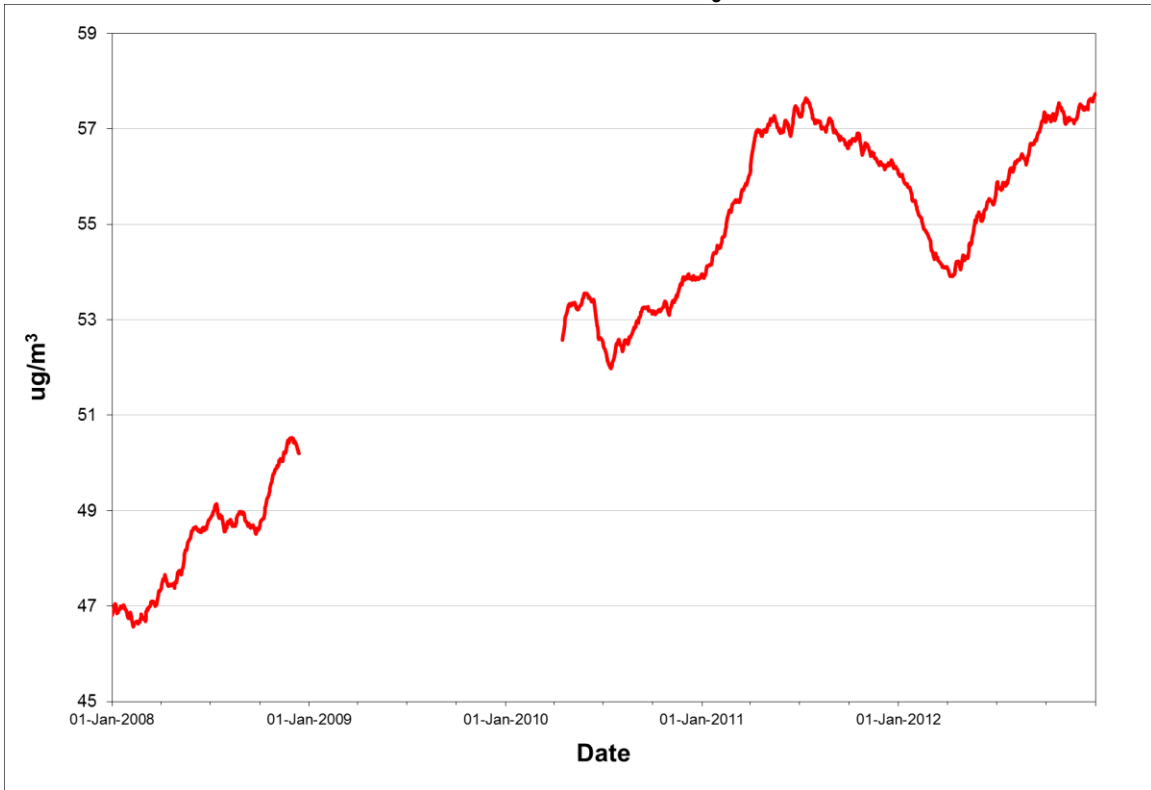
Rolling annual average of hourly concentrations

**TABLE 3.4.5 - CORNER BROOK NAPS O<sub>3</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum		Regulatory Exceedances	
					1-Hour	8-Hour	1-Hour (>160)	8-Hour (>87)
2011	January	741	99.6%	66.9	84.5	82.1	0	0
	February	669	99.6%	77.3	100.4	97.7	0	2
	March	738	99.2%	76.7	98.7	95.4	0	7
	April	718	99.7%	74.9	110.2	104.5	0	15
	May	744	100.0%	55.8	105.0	89.6	0	2
	June	719	99.9%	45.8	100.7	88.1	0	1
	July	742	99.7%	43.0	105.4	88.7	0	1
	August	574	77.2%	35.3	66.3	53.0	0	0
	September	719	99.9%	37.1	98.2	87.4	0	1
	October	739	99.3%	44.2	86.8	82.8	0	0
	November	716	99.4%	53.6	79.9	76.3	0	0
	December	739	99.3%	59.5	79.0	76.8	0	0
Annual		8558	97.7%	56.1	110.2	104.5	0	29
2012	January	744	100.0%	60.1	82.0	73.2	0	0
	February	696	100.0%	66.4	88.5	86.5	0	0
	March	739	99.3%	70.8	114.5	107.9	0	4
	April	718	99.7%	77.3	137.7	119.3	0	18
	May	743	99.9%	65.3	105.1	94.6	0	7
	June	716	99.4%	51.7	112.1	101.2	0	2
	July	743	99.9%	47.0	96.1	82.4	0	0
	August	731	98.3%	45.4	94.5	82.5	0	0
	September	719	99.9%	45.1	87.0	80.1	0	0
	October	724	97.3%	46.3	76.7	68.7	0	0
	November	718	99.7%	54.0	83.8	77.5	0	0
	December	743	99.9%	63.5	85.7	82.7	0	0
Annual		8734	99.4%	57.7	137.7	119.3	0	31

Observations in ug/m<sup>3</sup>

**FIGURE 3.4.5 - CORNER BROOK NAPS ANNUAL O<sub>3</sub> CONCENTRATIONS**

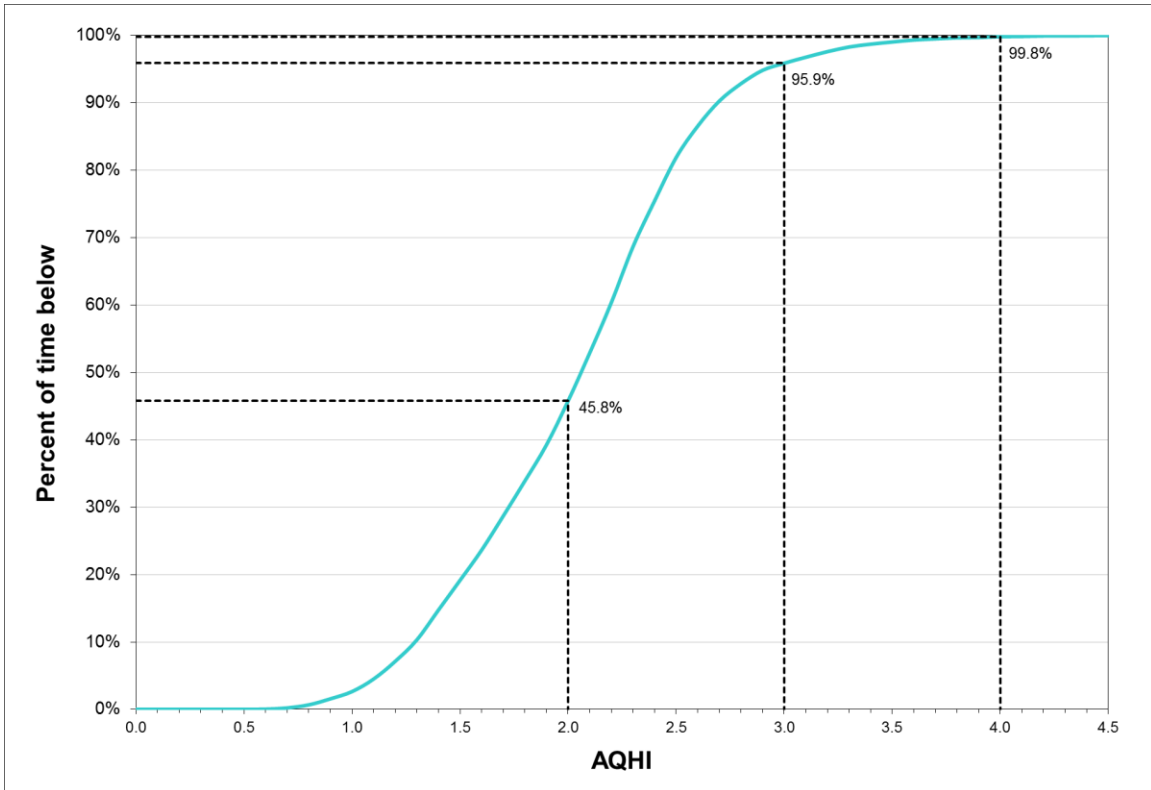


Rolling annual average of hourly concentrations

**TABLE 3.4.6 - CORNER BROOK NAPS AQHI SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	<u>Maximum</u> 1-Hour
2011	January	537	72.2%	2.2	2.9
	February	662	98.5%	2.5	3.6
	March	663	89.1%	2.5	3.5
	April	717	99.6%	2.4	4.0
	May	742	99.7%	1.9	4.0
	June	587	81.5%	1.8	3.1
	July	744	100.0%	1.8	3.6
	August	573	77.0%	1.5	3.1
	September	720	100.0%	1.5	3.5
	October	736	98.9%	1.7	2.9
	November	367	51.0%	1.9	2.9
	December	730	98.1%	2.1	3.8
Annual		7778	88.8%	2.0	4.0
2012	January	742	99.7%	2.1	2.7
	February	694	99.7%	2.4	3.6
	March	736	98.9%	2.6	4.4
	April	712	98.9%	2.5	4.2
	May	738	99.2%	2.1	3.5
	June	530	73.6%	1.9	4.4
	July	722	97.0%	1.8	4.0
	August	730	98.1%	1.7	4.5
	September	720	100.0%	1.5	3.3
	October	713	95.8%	1.5	2.5
	November	538	74.7%	2.0	3.3
	December	728	97.8%	2.2	2.9
Annual		8303	94.5%	2.0	4.5

**FIGURE 3.4.6 - CORNER BROOK NAPS AQHI FREQUENCY DISTRIBUTION 2012**



e.g. 95.9% of the time the AQHI recorded was below 3.0

### 3.5 Burin

The Burin station was commissioned in October 2011 and monitors the ambient levels of SO<sub>2</sub>, PM<sub>2.5</sub> NO<sub>x</sub> / NO<sub>2</sub>, CO, O<sub>3</sub> and PM<sub>10</sub> on a continuous basis. The ambient air criteria were not exceeded on any occasion in 2012. Tables 3.5.1 through 3.5.6 provide summary information on the level of each air contaminant measured at the Burin site. Due to the limited data, no graphical representation of the annual trend is provided.

Table 3.5.7 provides a summary of the AQHI, while Figure 3.5.1 provides a graphical representation of the AQHI frequency based on all data collected in Burin.

**TABLE 3.5.1 - BURIN NAPS SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January									
	February									
	March									
	April									
	May									
	June									
	July									
	August									
	September									
	October	165	76.4%	0.1	0.4	0.3	0.2	0	0	0
	November	425	59.0%	0.4	1.2	0.8	0.6	0	0	0
	December	322	43.3%	0.9	2.7	1.8	1.4	0	0	0
Annual		912	54.3%	0.5	2.7	1.8	1.4	0	0	0
2012	January	221	29.7%	0.0	3.2	1.6	0.2	0	0	0
	February	646	92.8%	1.6	4.2	3.5	3.2	0	0	0
	March	577	77.6%	2.0	24.9	9.8	3.4	0	0	0
	April	710	98.6%	1.5	27.2	10.6	3.3	0	0	0
	May	741	99.6%	0.8	5.5	3.2	2.5	0	0	0
	June	715	99.3%	0.1	18.6	7.0	1.2	0	0	0
	July	744	100.0%	0.4	1.3	1.1	0.8	0	0	0
	August	735	98.8%	0.2	2.8	1.6	0.5	0	0	0
	September	242	33.6%	0.0	1.1	0.6	0.1	0	0	0
	October	321	43.1%	0.0	1.6	0.8	0.1	0	0	0
	November	712	98.9%	0.2	1.0	0.9	0.8	0	0	0
	December	519	69.8%	0.1	2.2	1.0	0.4	0	0	0
Annual		6883	78.4%	0.7	27.2	10.6	3.4	0	0	0

Observations in ug/m<sup>3</sup>

**TABLE 3.5.2 - BURIN NAPS PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January					
	February					
	March					
	April					
	May					
	June					
	July					
	August					
	September					
	October	8	88.9%	2.9	4.6	0
	November	30	100.0%	4.7	10.0	0
	December	31	100.0%	4.1	15.7	0
Annual		69	98.6%	4.2	15.7	0
2012	January	31	100.0%	3.4	8.0	0
	February	29	100.0%	2.2	5.6	0
	March	31	100.0%	3.3	8.8	0
	April	30	100.0%	3.5	6.2	0
	May	31	100.0%	2.4	5.2	0
	June	30	100.0%	1.8	3.8	0
	July	31	100.0%	2.4	9.1	0
	August	29	93.5%	1.9	5.6	0
	September	22	73.3%	1.3	4.0	0
	October	31	100.0%	2.0	5.0	0
	November	30	100.0%	5.0	8.0	0
	December	31	100.0%	6.1	9.7	0
Annual		356	97.3%	3.0	9.7	0

Observations in ug/m<sup>3</sup>

**TABLE 3.5.3 - BURIN NAPS NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
				NO <sub>x</sub>	NO <sub>2</sub>	1-Hour		24-Hour		1-Hour (>400)	24-Hour (>200)
				NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>		
2011	January										
	February										
	March										
	April										
	May										
	June										
	July										
	August										
	September										
	October	196	90.7%	1.7	0.4	36.3	34.7	3.5	0.2	0	0
	November	713	99.0%	2.3	0.5	44.7	22.2	8.6	2.7	0	0
	December	742	99.7%	1.8	0.9	54.7	20.2	5.2	2.7	0	0
Annual		1651	98.3%	2.0	0.7	54.7	34.7	8.6	2.7	0	0
2012	January	742	99.7%	1.3	0.7	43.1	19.7	4.7	3.6	0	0
	February	689	99.0%	1.3	0.7	83.4	36.3	12.7	7.8	0	0
	March	738	99.2%	0.8	0.4	52.6	25.1	7.0	4.5	0	0
	April	713	99.0%	1.7	0.7	141.4	19.9	9.0	2.0	0	0
	May	740	99.5%	1.0	0.4	19.1	7.7	2.3	1.2	0	0
	June	717	99.6%	1.0	0.2	14.8	5.6	2.2	0.8	0	0
	July	744	100.0%	1.6	0.7	16.1	7.1	3.4	1.5	0	0
	August	735	98.8%	1.1	0.3	19.5	8.9	2.5	0.8	0	0
	September	713	99.0%	0.7	0.3	14.5	5.4	1.8	1.3	0	0
	October	736	98.9%	1.1	0.7	59.6	35.7	5.9	2.8	0	0
	November	716	99.4%	2.4	1.7	91.5	89.6	7.6	6.3	0	0
	December	740	99.5%	1.8	1.3	164.9	66.3	9.6	5.1	0	0
Annual		8723	99.3%	1.3	0.7	164.9	89.6	12.7	7.8	0	0

Observations in ug/m<sup>3</sup>



**TABLE 3.5.4 - BURIN NAPS CO SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum		Regulatory Exceedances	
					1-Hour	8-Hour	1-Hour (>35)	8-Hour (>15)
2011	January							
	February							
	March							
	April							
	May							
	June							
	July							
	August							
	September							
	October	0	0.0%					
	November	0	0.0%					
	December	0	0.0%					
Annual		0	0.0%					
2012	January	0	0.0%					
	February	0	0.0%					
	March	0	0.0%					
	April	462	64.2%	0.0	0.2	0.2	0	0
	May	258	34.7%	0.1	0.2	0.2	0	0
	June	0	0.0%					
	July	0	0.0%					
	August	401	53.9%	0.1	0.4	0.2	0	0
	September	713	99.0%	0.2	0.3	0.2	0	0
	October	739	99.3%	0.1	0.3	0.2	0	0
	November	715	99.3%	0.1	0.3	0.2	0	0
	December	740	99.5%	0.2	0.3	0.2	0	0
Annual		4028	45.9%	0.1	0.4	0.2	0	0

Observations in ug/m<sup>3</sup>

**TABLE 3.5.5 - BURIN NAPS O<sub>3</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum		Regulatory Exceedances	
					1-Hour	8-Hour	1-Hour (>160)	8-Hour (>87)
2011	January							
	February							
	March							
	April							
	May							
	June							
	July							
	August							
	September							
	October	200	92.6%	52.1	75.2	72.8	0	0
	November	718	99.7%	54.5	85.2	81.6	0	0
	December	742	99.7%	58.7	81.9	78.0	0	0
Annual		1660	98.8%	56.1	85.2	81.6	0	0
2012	January	743	99.9%	61.1	79.7	77.5	0	0
	February	689	99.0%	71.9	96.8	89.8	0	1
	March	737	99.1%	72.2	95.6	89.7	0	3
	April	716	99.4%	80.6	119.3	113.5	0	24
	May	645	86.7%	75.3	109.3	102.9	0	11
	June	717	99.6%	62.3	100.2	89.0	0	1
	July	744	100.0%	55.2	102.9	91.2	0	1
	August	736	98.9%	55.5	90.7	77.6	0	0
	September	714	99.2%	40.3	89.2	85.6	0	0
	October	735	98.8%	51.4	84.6	79.8	0	0
	November	715	99.3%	64.9	87.8	86.4	0	0
	December	739	99.3%	71.6	91.7	89.8	0	2
Annual		8630	98.2%	63.4	119.3	113.5	0	43

Observations in ug/m<sup>3</sup>

**TABLE 3.5.6 - BURIN NAPS PM<sub>10</sub> SUMMARY 2011 & 2012**

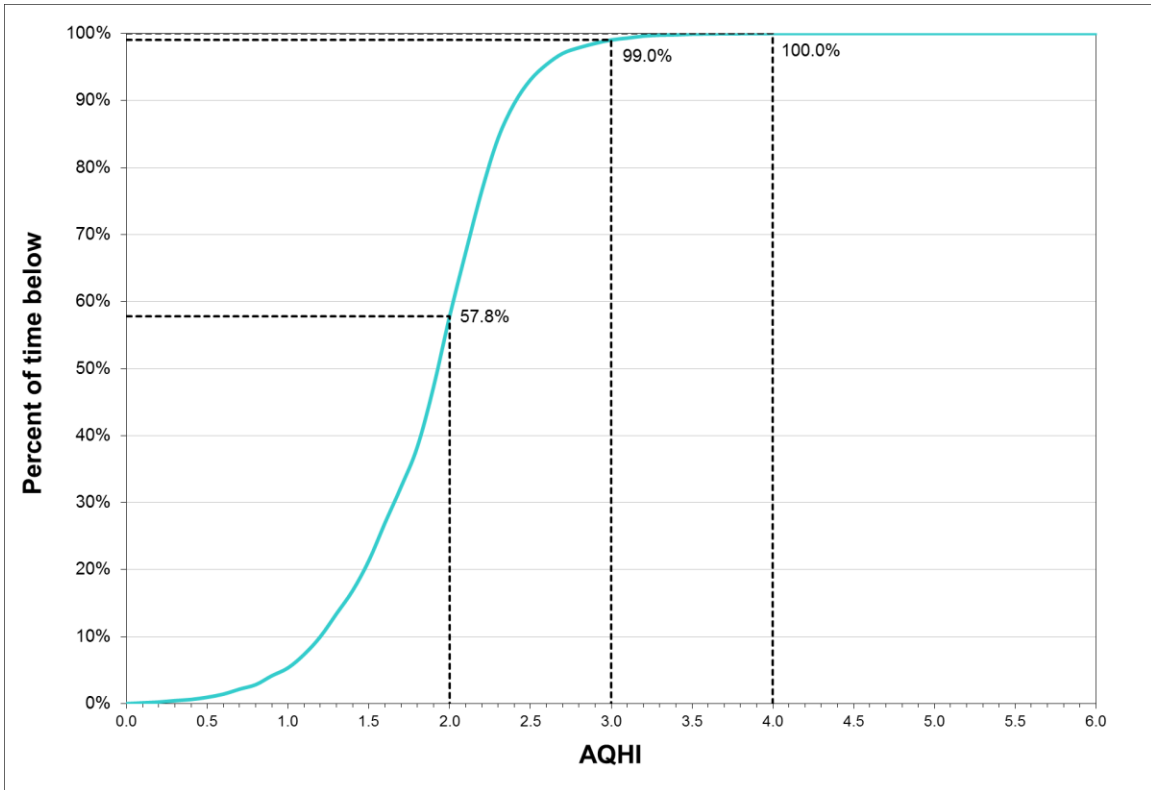
Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>50 µg/m <sup>3</sup> )
2011	January					
	February					
	March					
	April					
	May					
	June					
	July					
	August					
	September					
	October	8	88.9%	8.4	15.0	0
November	30	100.0%	11.8	24.0	0	
December	31	100.0%	10.6	22.6	0	
Annual		69	98.6%	10.8	24.0	0
2012	January	31	100.0%	9.5	21.5	0
	February	29	100.0%	6.8	15.4	0
	March	28	90.3%	10.7	22.3	0
	April	29	96.7%	11.2	24.8	0
	May	29	93.5%	9.9	19.7	0
	June	24	80.0%	9.5	19.0	0
	July	21	67.7%	12.4	18.5	0
	August	27	87.1%	13.6	23.9	0
	September	24	80.0%	13.2	23.1	0
	October	31	100.0%	10.1	20.0	0
	November	30	100.0%	11.7	18.5	0
	December	31	100.0%	10.9	15.8	0
Annual		334	91.3%	10.7	24.8	0

Observations in ug/m<sup>3</sup>

**TABLE 3.5.7 - BURIN NAPS AQHI SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	<u>Maximum</u> 3-Hour
2011	January				
	February				
	March				
	April				
	May				
	June				
	July				
	August				
	September				
	October	196	90.7%	1.5	2.2
November	714	99.2%	1.7	2.6	
December	742	99.7%	1.8	6.6	
Annual		1652	98.3%	1.7	6.6
2012	January	742	99.7%	1.8	2.3
	February	688	98.9%	2.0	2.6
	March	738	99.2%	2.1	3.0
	April	711	98.8%	2.3	3.5
	May	646	86.8%	2.1	3.2
	June	715	99.3%	1.8	2.8
	July	744	100.0%	1.6	3.1
	August	707	95.0%	1.6	2.7
	September	619	86.0%	1.2	2.4
	October	732	98.4%	1.5	2.4
	November	713	99.0%	2.0	3.9
	December	737	99.1%	2.2	3.2
Annual		8492	96.7%	1.9	3.9

**FIGURE 3.5.1 - BURIN NAPS AQHI FREQUENCY DISTRIBUTION 2012**



e.g. 99.0% of the time the AQHI recorded was below 3.0

### 3.6 Port aux Choix

The Port aux Choix NAPS monitoring station was relocated from the Ferolle Point location in 2010 due to logistical issues. The station monitors the ambient levels of O<sub>3</sub> on a continuous basis.

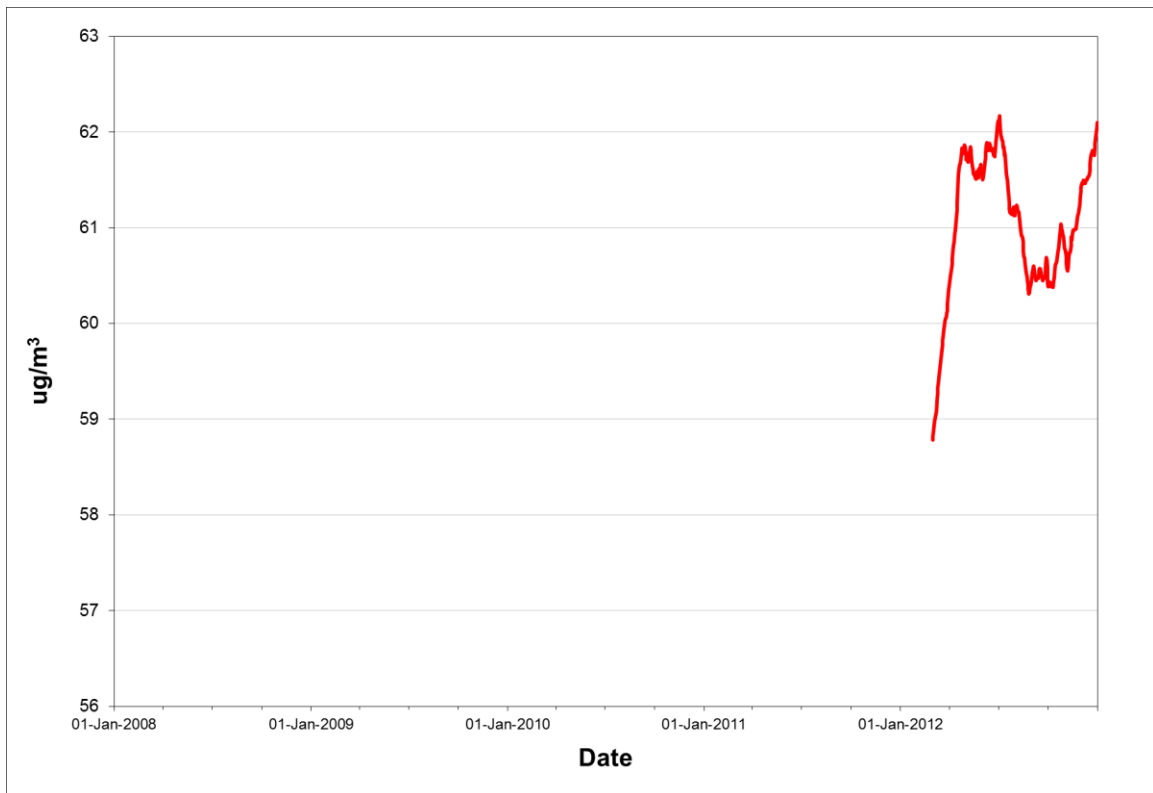
The 8-hour ambient air standard for O<sub>3</sub> was exceeded twenty five times in 2012. Table 3.6.1 presents the summary information on the level of O<sub>3</sub> measured at the Port aux Choix NAPS station while Figure 3.6.1 presents a graphical representation of the annual trend of O<sub>3</sub>.

**TABLE 3.6.1 - PORT AUX CHOIX NAPS O<sub>3</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum		Regulatory Exceedances	
					1-Hour	8-Hour	1-Hour (>160)	8-Hour (>87)
2011	January	597	80.2%	67.7	78.5	76.0	0	0
	February	365	54.3%	72.2	82.4	81.2	0	0
	March	0	0.0%					
	April	84	11.7%	69.4	92.2	86.8	0	0
	May	744	100.0%	68.7	104.0	97.4	0	7
	June	682	94.7%	55.5	92.2	78.5	0	0
	July	403	54.2%	55.9	96.1	86.3	0	0
	August	489	65.7%	47.5	85.0	80.8	0	0
	September	584	81.1%	44.3	92.6	83.3	0	0
	October	722	97.0%	47.2	89.0	87.5	0	1
	November	718	99.7%	56.6	77.0	74.0	0	0
	December	721	96.9%	65.3	82.0	78.8	0	0
Annual		6109	69.7%	58.1	104.0	97.4	0	8
2012	January	744	100.0%	64.5	77.3	75.4	0	0
	February	691	99.3%	73.4	85.4	82.6	0	0
	March	744	100.0%	74.7	105.2	101.0	0	3
	April	720	100.0%	77.5	129.0	123.6	0	13
	May	744	100.0%	65.6	94.9	91.0	0	4
	June	325	45.1%	61.4	74.3	72.3	0	0
	July	655	88.0%	45.6	111.2	96.9	0	1
	August	742	99.7%	44.7	79.0	75.2	0	0
	September	719	99.9%	48.7	95.3	88.2	0	1
	October	740	99.5%	50.8	92.6	72.1	0	0
	November	716	99.4%	63.4	86.7	84.1	0	0
	December	725	97.4%	73.5	90.4	89.9	0	3
Annual		8265	94.1%	62.1	129.0	123.6	0	25

Observations in ug/m<sup>3</sup>

**FIGURE 3.6.1 - PORT AUX CHOIX NAPS ANNUAL O<sub>3</sub> CONCENTRATIONS**



Rolling annual average of hourly concentrations

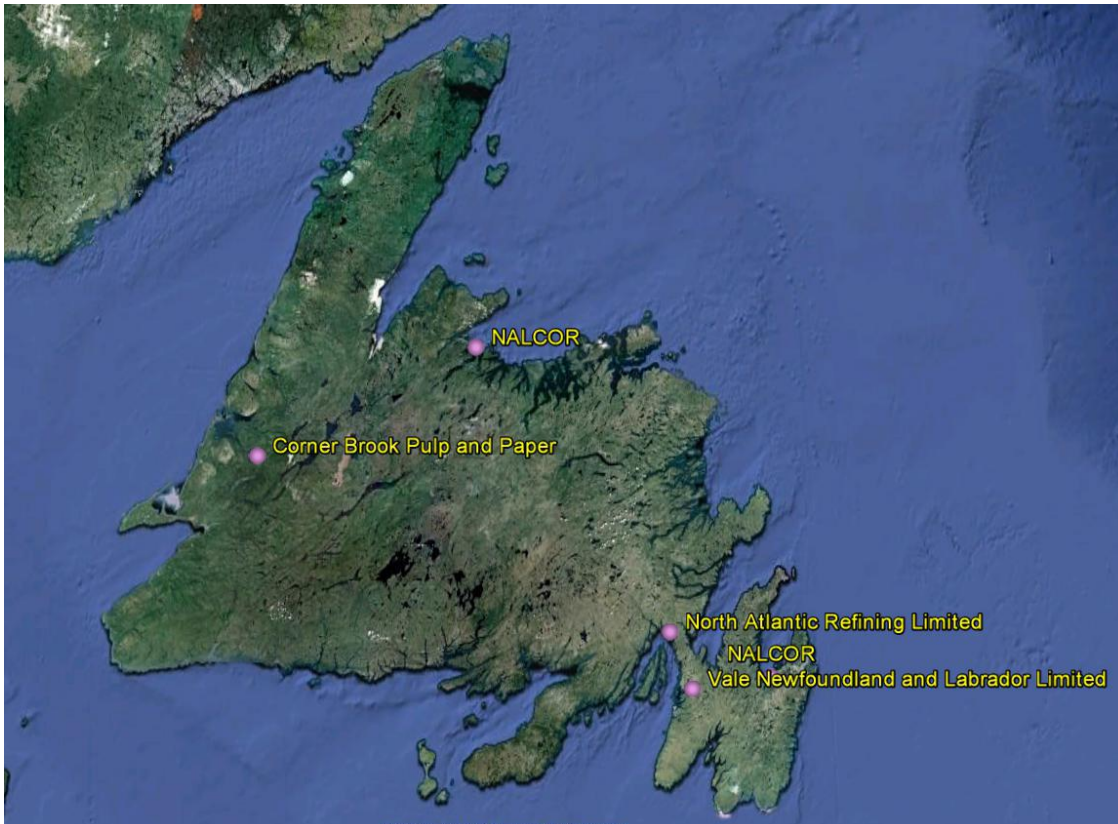
## 4.0 Industrial Monitoring Network

Industrial operations in the province are responsible for the monitoring of their emissions. The Department audits the operation of the industrial monitoring stations on a regular basis to ensure that the monitors are functioning according to instrument specifications and to the standard operating procedures. If the audits indicate a monitor is not operating with the specifications, corrective actions are required by the industry and data may be invalidated.

On the island of Newfoundland, there were five monitoring networks operated by industry in 2012 and another three in Labrador. Figures 4.0.1 and 4.0.2 present the locations of these monitoring networks.

The subsequent sections of this report detail the summary statistics and the longer term trend of pollutants measured at each station within a given network.

**FIGURE 4.0.1 - INDUSTRIAL MONITORING NETWORK IN NEWFOUNDLAND**





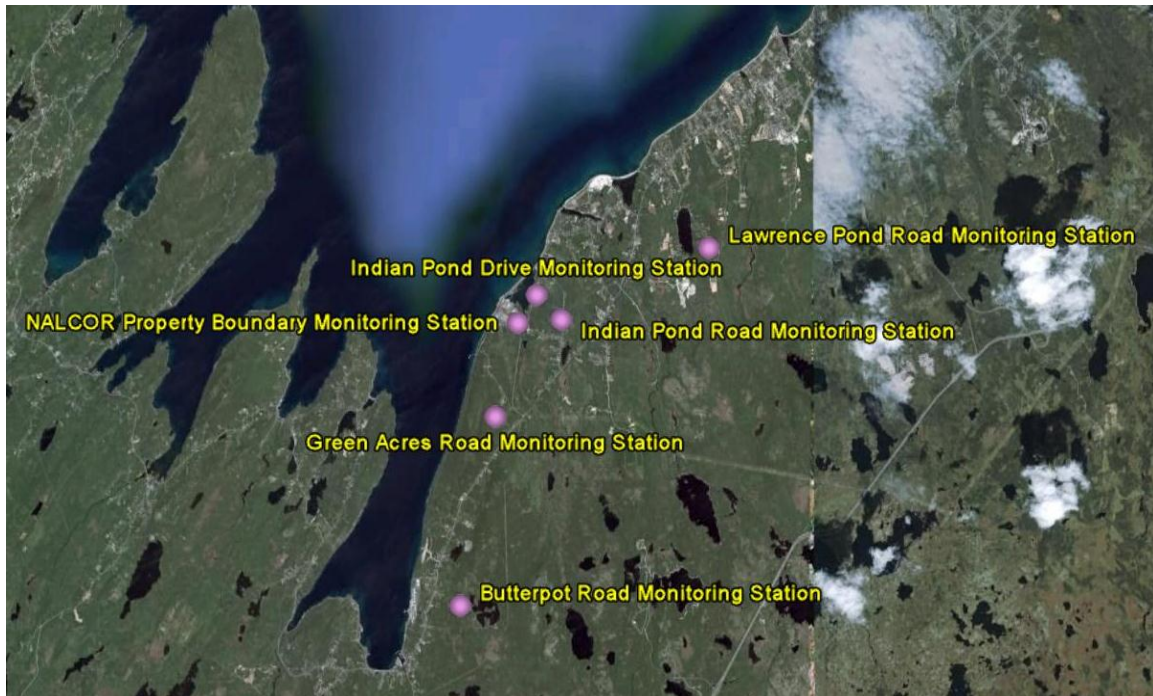
**FIGURE 4.0.2 - INDUSTRIAL MONITORING NETWORK IN LABRADOR**



## 4.1 NALCOR - Holyrood

In 2012, NALCOR operated monitoring stations at 6 locations in the Holyrood area. These stations are installed to monitor the emissions from the Holyrood Thermal Generating Station and are located at Butterpot Road, Green Acres Road, Indian Pond Drive, Indian Pond Road, Lawrence Pond, and the NALCOR property boundary. Figure 4.1.1 indicates the location of these stations.

**FIGURE 4.1.1 - NALCOR AMBIENT MONITORING STATIONS**



### 4.1.1 Butterpot Road

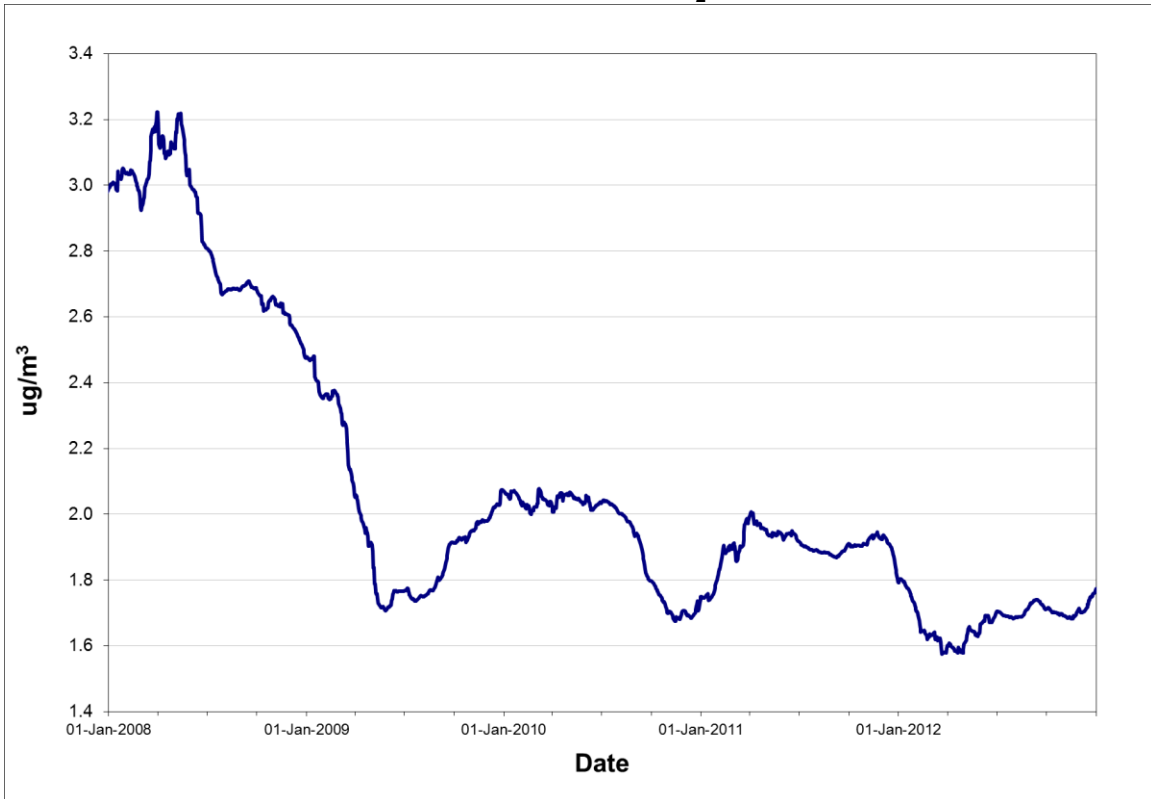
The Butterpot Road station monitors the ambient levels of  $\text{SO}_2$ ,  $\text{NO}_x / \text{NO}_2$  and  $\text{PM}_{2.5}$  on a continuous basis. For all pollutants, the ambient air criteria were not exceeded on any occasion in 2012. Tables 4.1.1.1 through 4.1.1.4 provide summary information on the level of air contaminants measured at Butterpot Road, while Figures 4.1.1.1 through 4.1.1.4 provide a graphical representation of the annual trend of each pollutant.

**TABLE 4.1.1.1 - BUTTERPOT ROAD SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	712	95.7%	2.4	19.7	9.9	4.1	0	0	0
	February	638	94.9%	3.0	29.5	20.1	6.0	0	0	0
	March	710	95.4%	3.1	33.8	18.7	9.5	0	0	0
	April	667	92.6%	2.2	16.5	10.5	4.6	0	0	0
	May	713	95.8%	1.4	34.3	17.0	4.8	0	0	0
	June	570	79.2%	1.5	35.9	20.2	5.6	0	0	0
	July	711	95.6%	1.1	2.9	1.8	1.5	0	0	0
	August	706	94.9%	0.9	2.5	1.7	1.3	0	0	0
	September	688	95.6%	1.5	5.9	4.6	2.4	0	0	0
	October	710	95.4%	1.3	14.1	7.9	2.5	0	0	0
	November	686	95.3%	1.8	13.1	7.1	3.0	0	0	0
	December	709	95.3%	1.4	22.2	9.1	3.4	0	0	0
Annual		8220	93.8%	1.8	35.9	20.2	9.5	0	0	0
2012	January	713	95.8%	1.5	21.5	14.1	4.0	0	0	0
	February	664	95.4%	1.9	38.0	17.0	3.8	0	0	0
	March	711	95.6%	2.8	71.6	29.5	8.6	0	0	0
	April	690	95.8%	2.1	38.3	27.8	7.6	0	0	0
	May	691	92.9%	2.3	47.9	25.4	10.4	0	0	0
	June	687	95.4%	2.0	47.6	22.6	7.8	0	0	0
	July	710	95.4%	0.8	3.6	2.2	1.3	0	0	0
	August	712	95.7%	1.4	11.9	10.6	3.4	0	0	0
	September	656	91.1%	1.3	3.2	2.7	2.4	0	0	0
	October	708	95.2%	1.1	12.1	7.8	3.2	0	0	0
	November	690	95.8%	2.0	22.5	15.8	6.2	0	0	0
	December	710	95.4%	2.2	33.9	20.2	6.3	0	0	0
Annual		8342	95.0%	1.8	71.6	29.5	10.4	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.1.1 - BUTTERPOT ROAD ANNUAL SO<sub>2</sub> CONCENTRATIONS**



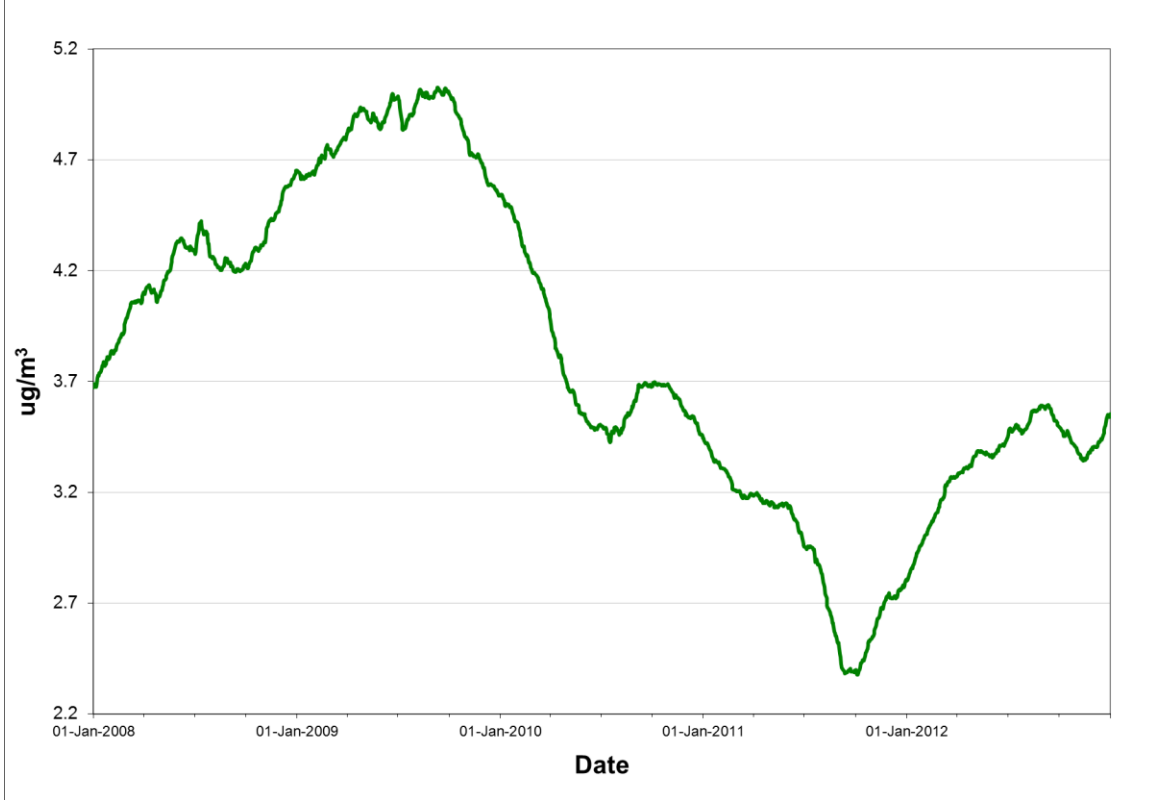
Rolling annual average of hourly concentrations

**TABLE 4.1.1.2 - BUTTERPOT ROAD PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	29	93.5%	1.6	4.3	0
	February	28	100.0%	1.6	3.4	0
	March	25	80.6%	2.8	6.4	0
	April	28	93.3%	2.6	4.7	0
	May	31	100.0%	3.4	5.5	0
	June	28	93.3%	2.0	5.4	0
	July	30	96.8%	3.3	8.5	0
	August	28	90.3%	2.0	5.1	0
	September	26	86.7%	2.7	5.1	0
	October	31	100.0%	4.0	9.8	0
	November	30	100.0%	3.8	8.1	0
	December	31	100.0%	3.4	6.7	0
Annual		345	94.5%	2.8	9.8	0
2012	January	31	100.0%	3.7	7.2	0
	February	29	100.0%	3.5	6.8	0
	March	31	100.0%	4.4	7.8	0
	April	30	100.0%	3.7	7.3	0
	May	31	100.0%	3.4	6.2	0
	June	25	83.3%	3.0	5.6	0
	July	31	100.0%	3.7	9.9	0
	August	29	93.5%	3.4	7.1	0
	September	20	66.7%	0.8	3.0	0
	October	26	83.9%	2.9	6.1	0
	November	30	100.0%	3.8	7.0	0
	December	31	100.0%	5.1	9.2	0
Annual		344	94.0%	3.5	9.9	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.1.2 - BUTTERPOT ROAD ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



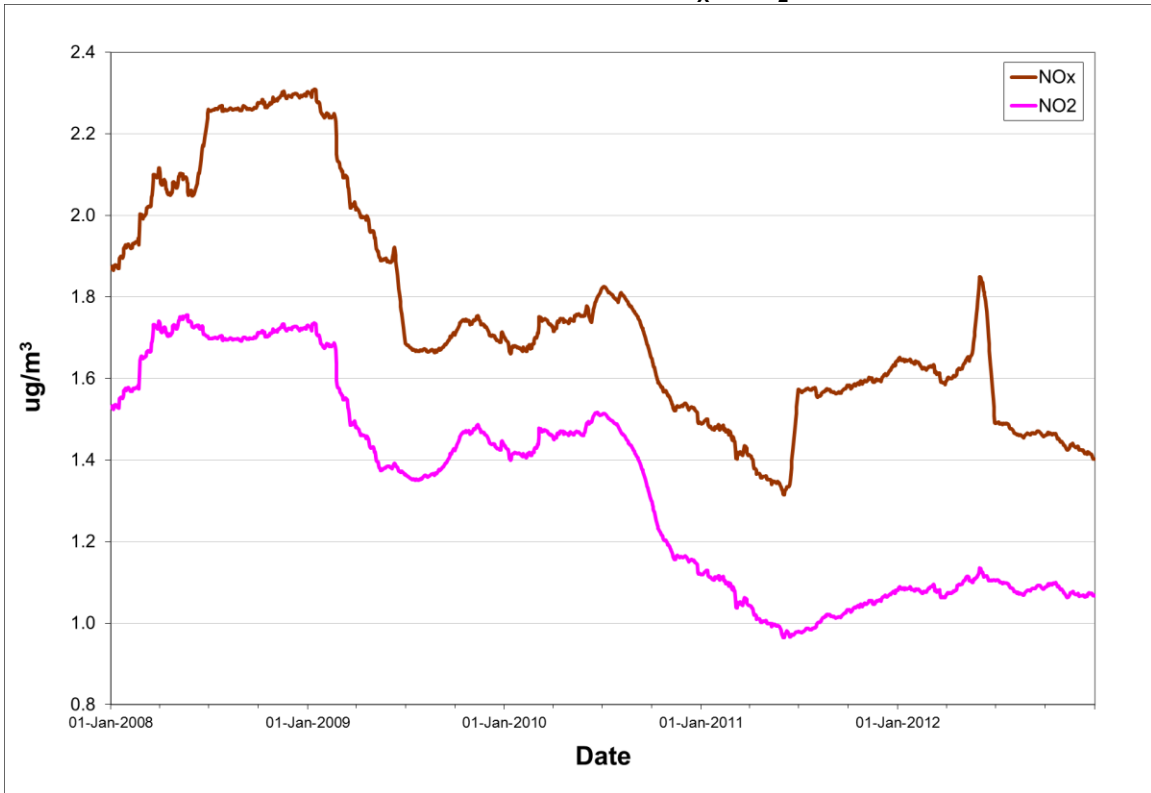
Rolling annual average of daily concentrations

**TABLE 4.1.1.3 - BUTTERPOT ROAD NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour		24-Hour		1-Hour (>400)	24-Hour (>200)
				NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>		
2011	January	682	91.7%	1.3	1.1	17.4	15.0	3.8	3.4	0	0
	February	610	90.8%	1.4	1.1	33.3	20.7	3.7	2.8	0	0
	March	679	91.3%	1.6	1.3	18.5	16.0	6.2	5.2	0	0
	April	634	88.1%	0.9	0.8	7.5	6.2	1.8	1.4	0	0
	May	681	91.5%	1.2	0.9	23.2	12.2	4.2	3.1	0	0
	June	686	95.3%	5.6	1.5	24.1	16.0	9.6	3.9	0	0
	July	713	95.8%	1.0	0.9	12.6	6.1	2.2	1.8	0	0
	August	709	95.3%	1.0	0.9	9.7	4.4	1.8	1.7	0	0
	September	687	95.4%	1.0	0.9	6.3	5.7	1.5	1.3	0	0
	October	710	95.4%	1.5	1.2	19.8	14.9	2.8	2.3	0	0
	November	660	91.7%	1.5	1.2	6.4	6.2	2.4	2.1	0	0
	December	680	91.4%	1.7	1.2	13.9	12.8	4.0	3.0	0	0
Annual		8131	92.8%	1.6	1.1	33.3	20.7	9.6	5.2	0	0
2012	January	682	91.7%	1.2	1.1	22.0	19.8	3.2	3.0	0	0
	February	635	91.2%	1.3	1.2	22.2	14.8	4.0	2.9	0	0
	March	680	91.4%	1.2	1.0	36.9	25.2	4.1	3.1	0	0
	April	660	91.7%	1.4	1.2	24.4	20.2	5.4	4.4	0	0
	May	677	91.0%	3.8	1.3	22.3	14.7	10.5	4.9	0	0
	June	686	95.3%	1.3	1.1	20.0	15.1	3.1	2.3	0	0
	July	712	95.7%	0.8	0.7	2.9	2.2	1.2	1.0	0	0
	August	713	95.8%	0.9	0.9	3.5	3.3	1.6	1.4	0	0
	September	659	91.5%	1.0	0.9	6.2	5.0	1.5	1.4	0	0
	October	701	94.2%	1.3	1.2	7.3	6.2	2.3	2.2	0	0
	November	660	91.7%	1.3	1.1	10.6	9.8	3.2	2.9	0	0
	December	680	91.4%	1.3	1.2	18.0	15.2	3.2	3.1	0	0
Annual		8145	92.7%	1.4	1.1	36.9	25.2	10.5	4.9	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.1.3 - BUTTERPOT ROAD ANNUAL NO<sub>x</sub> / NO<sub>2</sub> CONCENTRATIONS**



Rolling annual average of hourly concentrations

## 4.1.2 Green Acres Road

The Green Acres Road station monitors the ambient levels of SO<sub>2</sub>, NO<sub>x</sub> / NO<sub>2</sub>, PM<sub>2.5</sub> on a continuous basis and TPM on a 1 day in 6 day cycle consistent with the NAPS defined schedule. For all pollutants, the ambient air criteria were not exceeded on any occasion in 2012. Tables 4.1.2.1 through 4.1.2.4 provide summary information on the level of air contaminants measured at Green Acres Road, while Figures 4.1.2.1 through 4.1.2.4 provide a graphical representation of the annual trend of each pollutant.

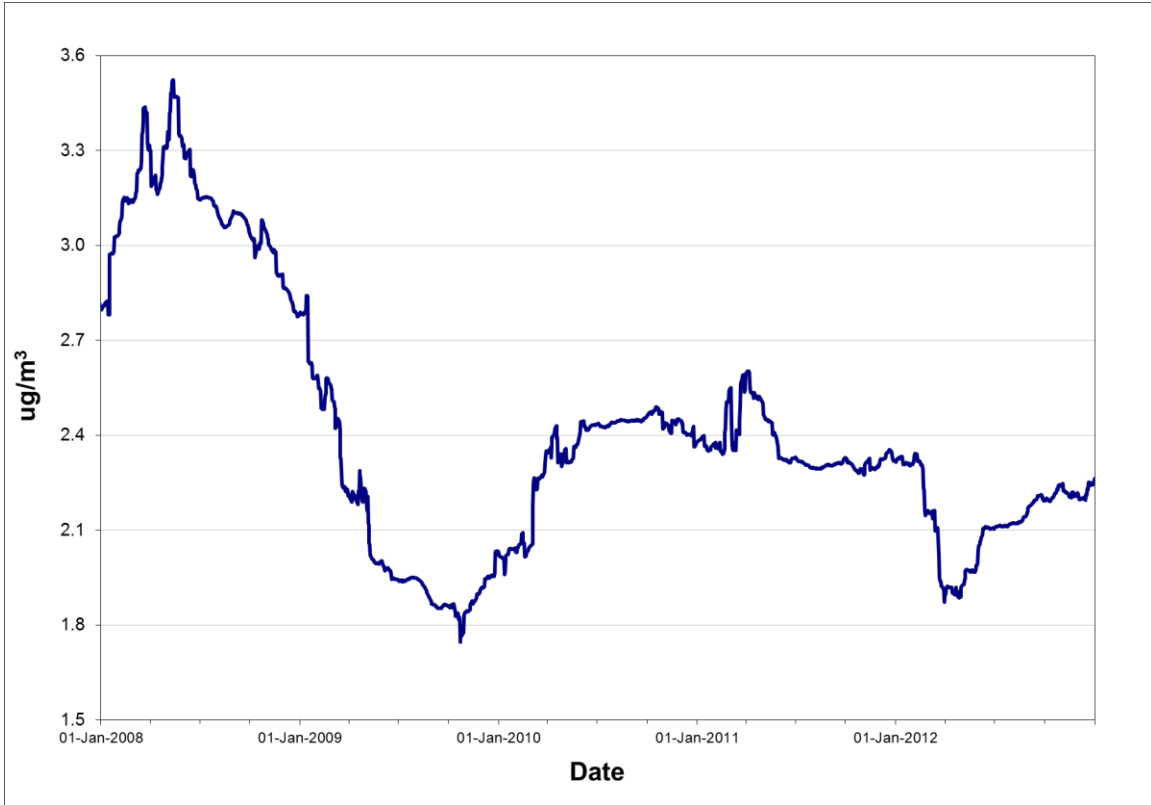


**TABLE 4.1.2.1 - GREEN ACRES ROAD SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	713	95.8%	2.3	95.5	34.3	6.9	0	0	0
	February	644	95.8%	5.0	150.4	103.3	24.7	0	0	0
	March	705	94.8%	6.1	180.1	96.7	27.3	0	0	0
	April	667	92.6%	2.0	51.6	26.4	8.8	0	0	0
	May	712	95.7%	1.3	25.0	17.5	4.5	0	0	0
	June	682	94.7%	1.3	36.6	23.9	4.6	0	0	0
	July	713	95.8%	1.1	6.1	4.6	2.0	0	0	0
	August	712	95.7%	1.2	4.1	2.2	1.7	0	0	0
	September	683	94.9%	1.5	7.2	4.8	3.4	0	0	0
	October	713	95.8%	1.6	14.7	9.7	4.0	0	0	0
	November	690	95.8%	2.6	33.0	23.2	10.9	0	0	0
	December	707	95.0%	2.1	34.7	18.8	5.4	0	0	0
Annual		8341	95.2%	2.3	180.1	103.3	27.3	0	0	0
2012	January	712	95.7%	2.2	30.0	17.0	4.5	0	0	0
	February	665	95.5%	3.1	135.5	75.2	13.9	0	0	0
	March	706	94.9%	2.9	80.9	40.3	10.2	0	0	0
	April	689	95.7%	2.2	109.0	52.7	11.1	0	0	0
	May	713	95.8%	2.8	156.0	64.7	20.5	0	0	0
	June	664	92.2%	2.0	103.0	48.4	9.0	0	0	0
	July	713	95.8%	1.3	5.1	3.9	2.4	0	0	0
	August	713	95.8%	1.7	15.0	11.6	4.5	0	0	0
	September	681	94.6%	1.8	5.0	4.6	3.3	0	0	0
	October	713	95.8%	2.2	34.7	22.8	7.7	0	0	0
	November	688	95.6%	2.3	27.7	24.8	8.5	0	0	0
	December	702	94.4%	2.6	58.0	40.2	9.9	0	0	0
Annual		8359	95.2%	2.3	156.0	75.2	20.5	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.2.1 - GREEN ACRES ROAD ANNUAL SO<sub>2</sub> CONCENTRATIONS**



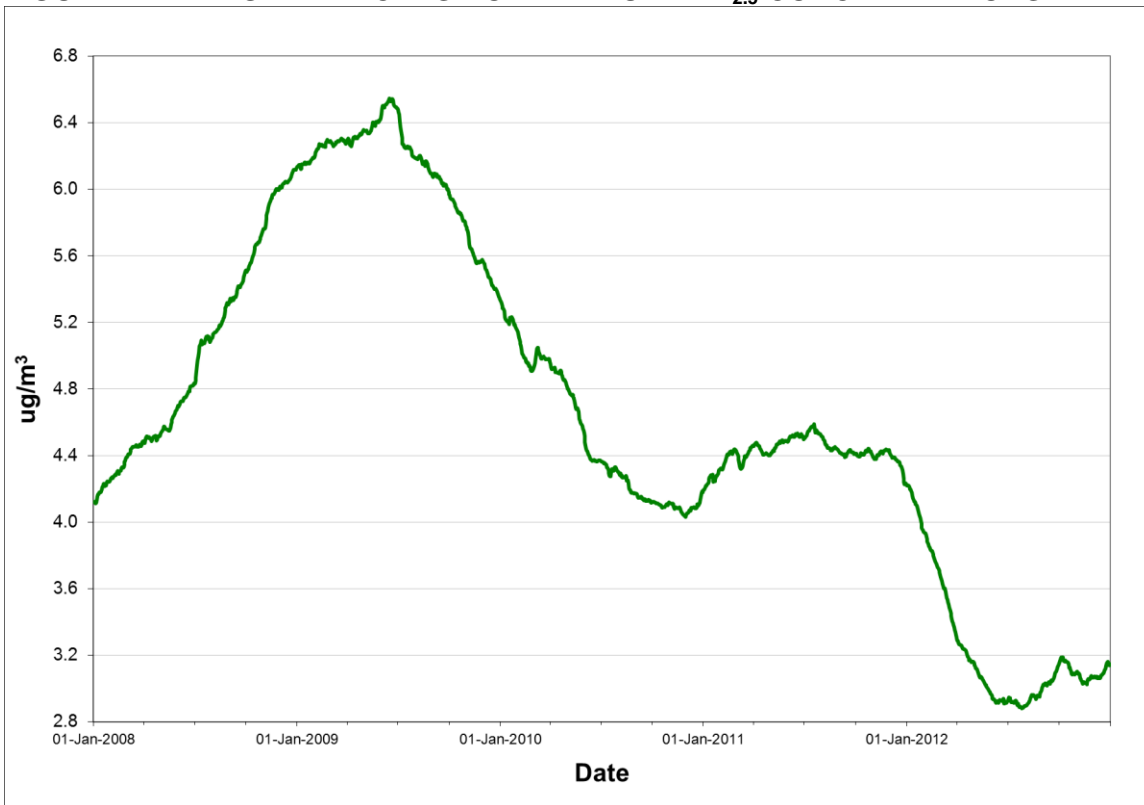
Rolling annual average of hourly concentrations

**TABLE 4.1.2.2 - GREEN ACRES ROAD PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	28	90.3%	5.7	10.0	0
	February	28	100.0%	5.0	7.4	0
	March	31	100.0%	6.7	10.7	0
	April	28	93.3%	4.3	7.8	0
	May	31	100.0%	4.4	7.2	0
	June	30	100.0%	4.0	11.0	0
	July	31	100.0%	4.2	9.7	0
	August	31	100.0%	3.0	6.4	0
	September	26	86.7%	3.7	9.0	0
	October	31	100.0%	3.3	9.9	0
	November	30	100.0%	3.6	7.9	0
	December	31	100.0%	2.9	6.7	0
Annual		356	97.5%	4.2	11.0	0
2012	January	31	100.0%	2.2	5.3	0
	February	27	93.1%	1.7	4.0	0
	March	31	100.0%	2.1	6.0	0
	April	30	100.0%	2.5	5.6	0
	May	31	100.0%	2.2	6.3	0
	June	26	86.7%	3.5	6.0	0
	July	31	100.0%	3.8	9.8	0
	August	31	100.0%	4.3	9.0	0
	September	30	100.0%	5.2	9.2	0
	October	22	71.0%	2.5	6.6	0
	November	25	83.3%	3.5	7.7	0
	December	31	100.0%	3.8	7.1	0
Annual		346	94.5%	3.1	9.8	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.2.2 - GREEN ACRES ROAD ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



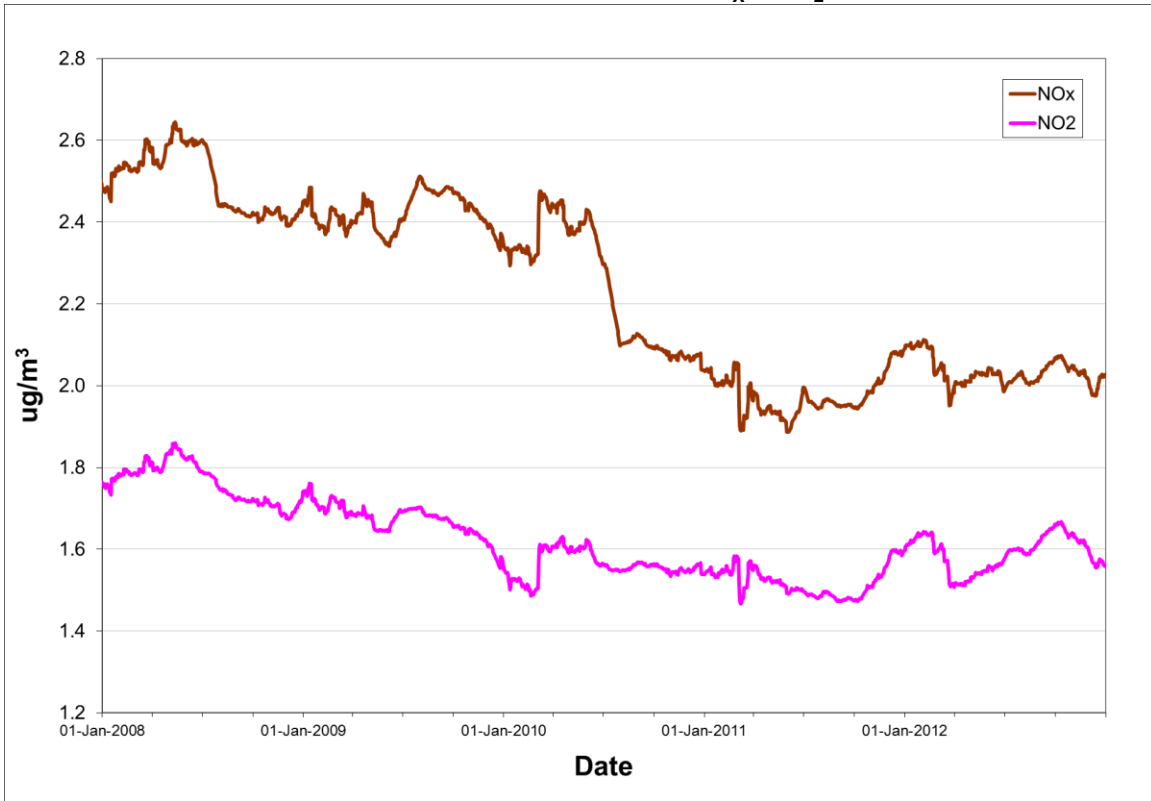
Rolling annual average of daily concentrations

**TABLE 4.1.2.3 - GREEN ACRES ROAD NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour NO <sub>x</sub>	1-Hour NO <sub>2</sub>	24-Hour NO <sub>x</sub>	24-Hour NO <sub>2</sub>	1-Hour (>400)	24-Hour (>200)
2011	January	682	91.7%	2.0	1.5	62.9	36.6	5.9	5.1	0	0
	February	616	91.7%	2.9	2.1	77.7	46.7	15.0	11.0	0	0
	March	659	88.6%	3.1	2.6	84.4	49.5	14.6	10.7	0	0
	April	635	88.2%	1.7	1.2	21.6	10.9	4.2	2.6	0	0
	May	687	92.3%	1.7	1.3	11.1	7.9	2.8	2.4	0	0
	June	668	92.8%	2.7	1.4	18.9	12.5	5.2	3.2	0	0
	July	713	95.8%	1.4	0.9	8.7	4.6	2.3	1.8	0	0
	August	713	95.8%	1.7	1.2	11.4	7.1	3.4	2.6	0	0
	September	673	93.5%	1.2	1.1	5.6	5.0	1.7	1.4	0	0
	October	682	91.7%	2.1	1.8	9.6	7.7	4.1	3.4	0	0
	November	660	91.7%	2.5	2.3	22.4	14.8	6.1	4.6	0	0
	December	659	88.6%	2.3	2.0	14.1	10.3	4.4	3.9	0	0
Annual		8047	91.9%	2.1	1.6	84.4	49.5	15.0	11.0	0	0
2012	January	682	91.7%	2.1	2.0	46.0	18.4	4.5	3.9	0	0
	February	636	91.4%	2.0	1.6	78.7	36.4	9.1	5.6	0	0
	March	672	90.3%	2.7	1.6	51.3	32.1	7.1	3.2	0	0
	April	660	91.7%	2.0	1.5	56.0	31.8	7.0	4.5	0	0
	May	681	91.5%	1.9	1.6	53.9	25.3	7.7	4.9	0	0
	June	558	77.5%	2.0	1.6	33.8	22.8	4.1	3.2	0	0
	July	511	68.7%	1.9	1.0	4.2	3.7	2.6	1.6	0	0
	August	713	95.8%	1.5	1.4	15.0	10.9	4.5	3.4	0	0
	September	674	93.6%	1.8	1.5	17.5	8.3	2.8	2.5	0	0
	October	682	91.7%	1.9	1.6	17.5	12.5	4.8	3.7	0	0
	November	660	91.7%	2.1	1.8	22.8	17.3	4.8	4.2	0	0
	December	658	88.4%	2.4	1.5	36.0	23.9	6.3	4.5	0	0
Annual		7787	88.6%	2.0	1.6	78.7	36.4	9.1	5.6	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.2.3 - GREEN ACRES ROAD ANNUAL NO<sub>x</sub> / NO<sub>2</sub> CONCENTRATIONS**



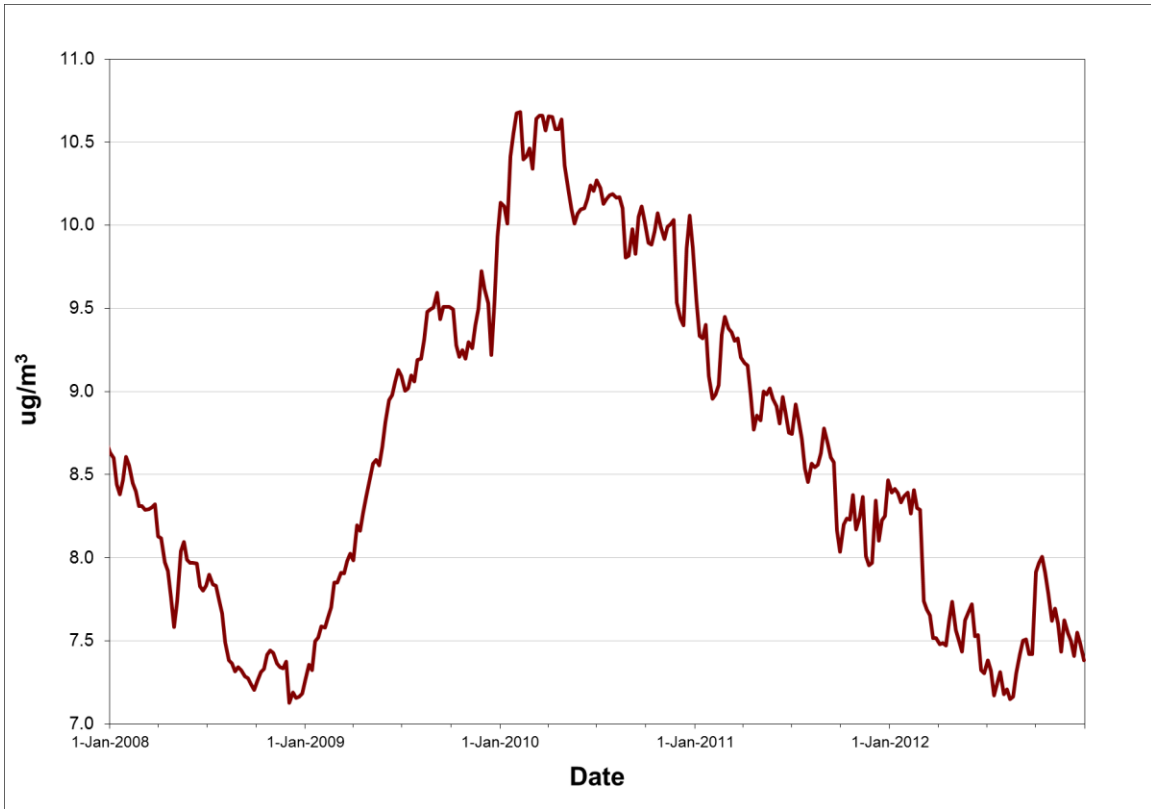
Rolling annual average of hourly concentrations

**TABLE 4.1.2.4 - GREEN ACRES ROAD TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m <sup>3</sup> )
2011	January	4	80.0%	8.3	12.4	0
	February	5	100.0%	12.7	22.5	0
	March	5	100.0%	9.8	15.9	0
	April	4	80.0%	6.3	15.5	0
	May	5	100.0%	8.0	13.5	0
	June	5	100.0%	14.0	32.4	0
	July	5	100.0%	7.9	35.1	0
	August	6	100.0%	8.1	13.3	0
	September	5	100.0%	4.6	15.2	0
	October	5	100.0%	9.0	17.2	0
	November	5	100.0%	6.5	13.6	0
	December	5	100.0%	9.3	18.0	0
Annual		59	96.7%	8.4	35.1	0
2012	January	4	80.0%	7.8	14.5	0
	February	5	100.0%	9.2	41.8	0
	March	5	100.0%	4.1	15.6	0
	April	5	100.0%	7.5	12.8	0
	May	5	100.0%	9.0	26.5	0
	June	4	80.0%	6.8	16.4	0
	July	5	100.0%	8.8	17.4	0
	August	6	100.0%	9.2	23.6	0
	September	5	100.0%	10.2	21.5	0
	October	5	100.0%	6.6	22.8	0
	November	5	100.0%	4.3	6.3	0
	December	5	100.0%	6.8	10.6	0
Annual		59	96.7%	7.3	41.8	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.2.4 - GREEN ACRES ROAD ANNUAL TPM CONCENTRATIONS**



Rolling annual average of daily concentrations

### 4.1.3 Indian Pond Drive

The Indian Pond Drive station monitors the ambient levels of  $\text{SO}_2$ ,  $\text{NO}_x / \text{NO}_2$ ,  $\text{PM}_{2.5}$  on a continuous basis and TPM on a 1 day in 6 day cycle consistent with the NAPS defined schedule. For all pollutants, the ambient air criteria were not exceeded on any occasion in 2012. Tables 4.1.3.1 through 4.1.3.4 provide summary information on the level of air contaminants measured at Indian Pond Drive, while Figures 4.1.3.1 through 4.1.3.4 provide a graphical representation of the annual trend of each pollutant.

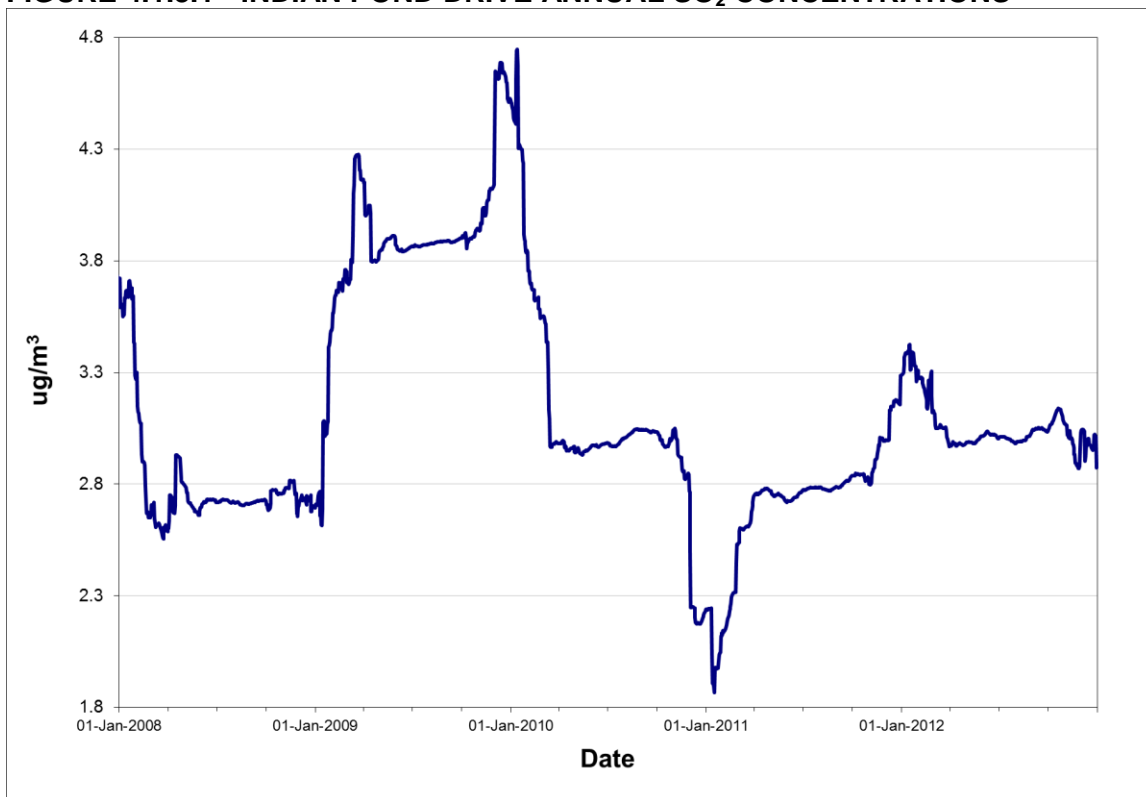


**TABLE 4.1.3.1 - INDIAN POND DRIVE SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	713	95.8%	4.9	129.8	87.1	42.9	0	0	0
	February	639	95.1%	7.5	168.1	146.3	49.6	0	0	0
	March	709	95.3%	4.2	110.5	57.5	19.7	0	0	0
	April	690	95.8%	2.1	38.1	31.3	6.1	0	0	0
	May	706	94.9%	1.2	3.0	2.6	2.1	0	0	0
	June	688	95.6%	2.3	41.2	15.1	3.4	0	0	0
	July	710	95.4%	1.6	9.5	6.1	2.6	0	0	0
	August	706	94.9%	1.6	6.7	5.7	2.9	0	0	0
	September	687	95.4%	1.7	6.0	4.2	3.4	0	0	0
	October	713	95.8%	2.3	24.9	14.3	7.5	0	0	0
	November	687	95.4%	4.3	148.0	84.5	17.6	0	0	0
	December	710	95.4%	6.0	199.6	176.6	57.8	0	0	0
Annual		8358	95.4%	3.3	199.6	176.6	57.8	0	0	0
2012	January	712	95.7%	5.2	114.3	88.7	29.5	0	0	0
	February	664	95.4%	5.1	167.0	138.7	43.2	0	0	0
	March	710	95.4%	2.3	42.9	25.6	7.4	0	0	0
	April	688	95.6%	2.3	21.1	15.0	4.6	0	0	0
	May	708	95.2%	1.6	23.3	9.2	3.1	0	0	0
	June	680	94.4%	2.1	11.7	8.3	4.4	0	0	0
	July	707	95.0%	1.3	4.7	3.1	2.4	0	0	0
	August	713	95.8%	2.2	42.3	30.9	7.5	0	0	0
	September	684	95.0%	1.7	5.0	4.5	3.3	0	0	0
	October	690	92.7%	2.7	12.9	10.1	4.6	0	0	0
	November	686	95.3%	3.8	154.4	141.2	30.3	0	0	0
	December	711	95.6%	4.2	145.4	105.0	25.4	0	0	0
Annual		8353	95.1%	2.9	167.0	141.2	43.2	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.3.1 - INDIAN POND DRIVE ANNUAL SO<sub>2</sub> CONCENTRATIONS**



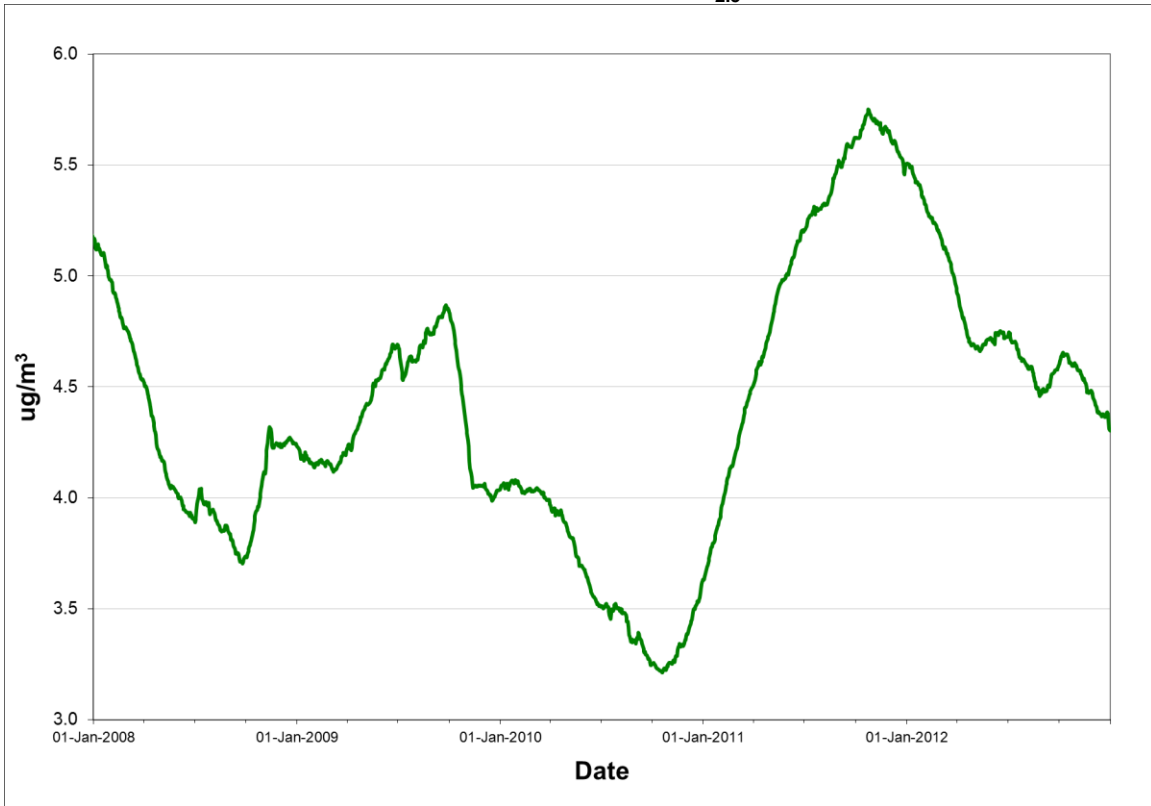
Rolling annual average of hourly concentrations

**TABLE 4.1.3.2 - INDIAN POND DRIVE PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	31	100.0%	6.0	10.3	0
	February	28	100.0%	5.9	10.8	0
	March	31	100.0%	6.4	8.7	0
	April	30	100.0%	6.6	9.3	0
	May	29	93.5%	5.3	8.5	0
	June	30	100.0%	4.8	9.9	0
	July	27	87.1%	5.8	12.5	0
	August	30	96.8%	6.2	11.1	0
	September	25	83.3%	5.8	9.6	0
	October	31	100.0%	4.1	11.0	0
	November	30	100.0%	4.6	7.9	0
	December	31	100.0%	4.5	13.9	0
Annual		353	96.7%	5.5	13.9	0
2012	January	31	100.0%	4.3	7.9	0
	February	28	96.6%	3.9	8.1	0
	March	31	100.0%	3.6	8.4	0
	April	30	100.0%	3.9	6.9	0
	May	31	100.0%	5.5	9.0	0
	June	26	86.7%	5.0	23.7	0
	July	31	100.0%	4.4	10.4	0
	August	31	100.0%	4.7	10.6	0
	September	30	100.0%	6.8	11.4	0
	October	25	80.6%	4.0	7.8	0
	November	29	96.7%	3.0	6.3	0
	December	29	93.5%	2.6	7.3	0
Annual		352	96.2%	4.3	23.7	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.3.2 - INDIAN POND DRIVE ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



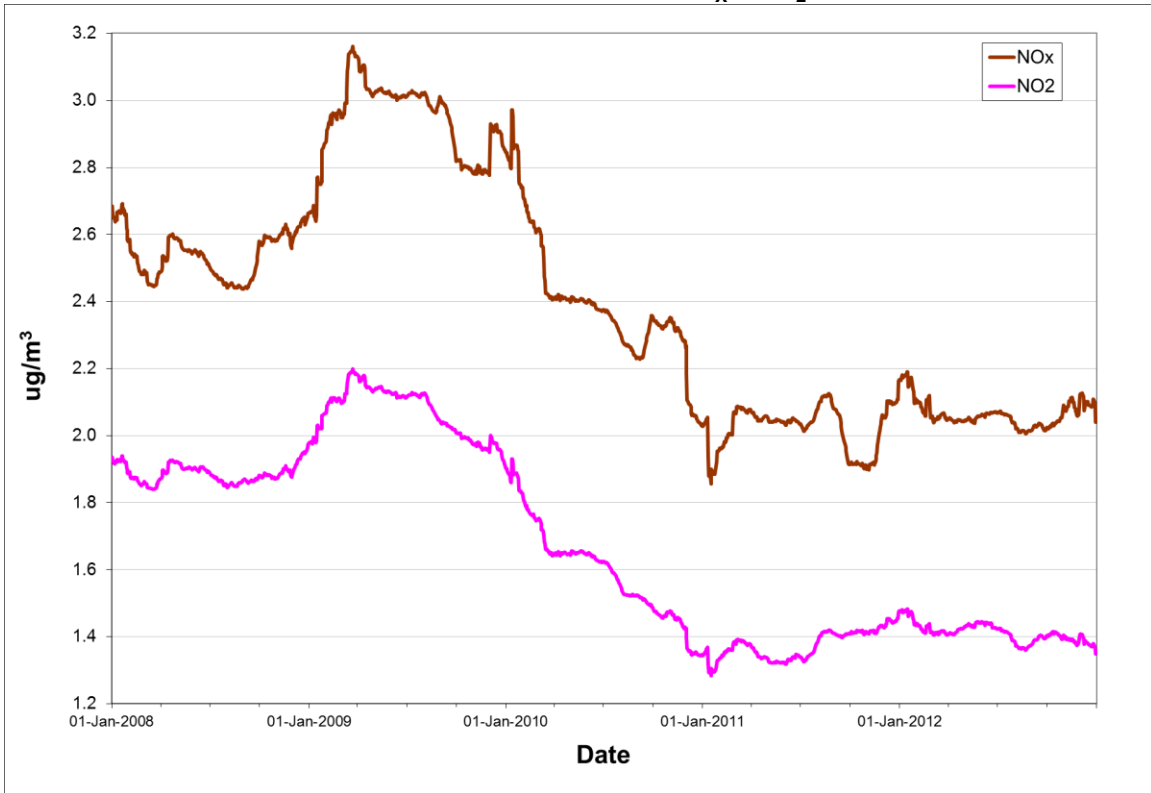
Rolling annual average of daily concentrations

**TABLE 4.1.3.3 - INDIAN POND DRIVE NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour		24-Hour		1-Hour (>400)	24-Hour (>200)
				NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>		
2011	January	682	91.7%	3.3	2.1	52.4	19.3	17.9	8.5	0	0
	February	588	87.5%	3.2	1.9	65.2	24.7	18.9	7.5	0	0
	March	658	88.4%	1.6	1.2	36.5	17.0	5.8	3.6	0	0
	April	660	91.7%	1.4	0.9	14.7	8.3	2.9	1.7	0	0
	May	675	90.7%	1.3	1.1	13.2	11.5	3.8	3.1	0	0
	June	657	91.3%	1.6	1.5	14.9	70.1	3.4	5.7	0	0
	July	713	95.8%	1.7	1.4	14.4	7.9	3.5	3.2	0	0
	August	705	94.8%	1.8	1.4	17.4	9.7	4.4	3.4	0	0
	September	688	95.6%	1.7	1.1	14.8	7.4	2.9	2.2	0	0
	October	711	95.6%	1.9	1.5	13.1	10.3	4.3	3.6	0	0
	November	654	90.8%	3.8	1.7	59.7	23.1	9.3	3.3	0	0
	December	680	91.4%	2.9	2.0	84.0	28.1	23.9	8.8	0	0
Annual		8071	92.1%	2.2	1.5	84.0	70.1	23.9	8.8	0	0
2012	January	682	91.7%	2.6	1.7	38.8	18.3	10.3	4.6	0	0
	February	635	91.2%	2.5	1.6	63.1	23.9	15.7	7.4	0	0
	March	679	91.3%	1.5	1.1	19.9	11.8	4.2	3.0	0	0
	April	660	91.7%	1.4	1.2	18.6	17.1	2.9	2.5	0	0
	May	678	91.1%	1.5	1.2	19.0	18.1	5.5	4.6	0	0
	June	660	91.7%	1.7	1.3	63.0	47.5	6.3	4.8	0	0
	July	708	95.2%	1.3	1.0	7.3	6.2	2.1	1.7	0	0
	August	713	95.8%	1.5	1.2	9.1	8.3	2.7	2.2	0	0
	September	686	95.3%	1.7	1.4	21.1	7.0	3.1	2.3	0	0
	October	686	92.2%	2.7	1.5	15.5	10.2	6.8	3.6	0	0
	November	690	95.8%	4.1	1.7	60.7	24.9	15.1	6.1	0	0
	December	711	95.6%	2.0	1.3	51.9	18.7	8.9	4.1	0	0
Annual		8188	93.2%	2.0	1.3	63.1	47.5	15.7	7.4	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.3.3 - INDIAN POND DRIVE ANNUAL NO<sub>x</sub> / NO<sub>2</sub> CONCENTRATIONS**



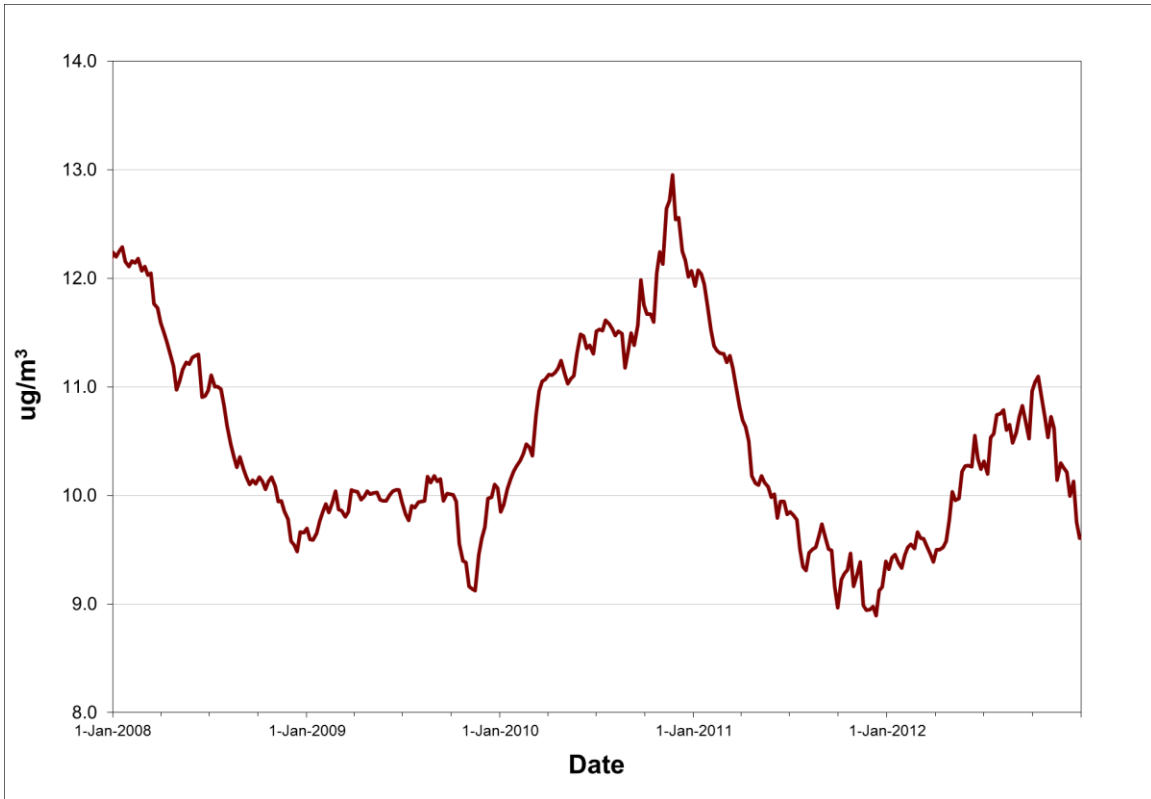
Rolling annual average of hourly concentrations

**TABLE 4.1.3.4 - INDIAN POND DRIVE TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m <sup>3</sup> )
2011	January	5	100.0%	9.1	15.5	0
	February	3	60.0%	11.2	16.8	0
	March	5	100.0%	13.0	21.0	0
	April	5	100.0%	7.3	11.9	0
	May	5	100.0%	9.0	12.9	0
	June	5	100.0%	14.6	26.7	0
	July	5	100.0%	6.2	10.2	0
	August	6	100.0%	9.5	18.8	0
	September	5	100.0%	5.7	17.1	0
	October	5	100.0%	9.8	18.0	0
	November	5	100.0%	8.4	18.4	0
	December	5	100.0%	12.7	20.6	0
Annual		59	96.7%	9.3	26.7	0
2012	January	4	80.0%	10.8	12.4	0
	February	5	100.0%	12.7	25.0	0
	March	5	100.0%	10.9	13.1	0
	April	4	80.0%	12.3	14.2	0
	May	5	100.0%	15.7	36.1	0
	June	5	100.0%	13.9	40.2	0
	July	5	100.0%	11.5	72.7	0
	August	5	83.3%	8.3	17.8	0
	September	5	100.0%	8.9	20.1	0
	October	5	100.0%	7.5	23.6	0
	November	5	100.0%	4.0	10.3	0
	December	5	100.0%	5.7	14.0	0
Annual		58	95.1%	9.5	72.7	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.3.4 - INDIAN POND DRIVE ANNUAL TPM CONCENTRATIONS**



Rolling annual average of daily concentrations

#### **4.1.4 Indian Pond Road**

The Indian Pond Road station monitors the ambient levels of  $\text{SO}_2$ ,  $\text{NO}_x / \text{NO}_2$ ,  $\text{PM}_{2.5}$  on a continuous basis and TPM on a 1 day in 6 day cycle consistent with the NAPS defined schedule. For all pollutants, with the exception of TPM, the ambient air criteria were not exceeded on any occasion in 2012. For TPM, the ambient air criterion was exceeded once in September. Tables 4.1.4.1 through 4.1.4.4 provide summary information on the level of air contaminants measured at Indian Pond Road, while Figures 4.1.4.1 through 4.1.4.4 provide a graphical representation of the annual trend of each pollutant.

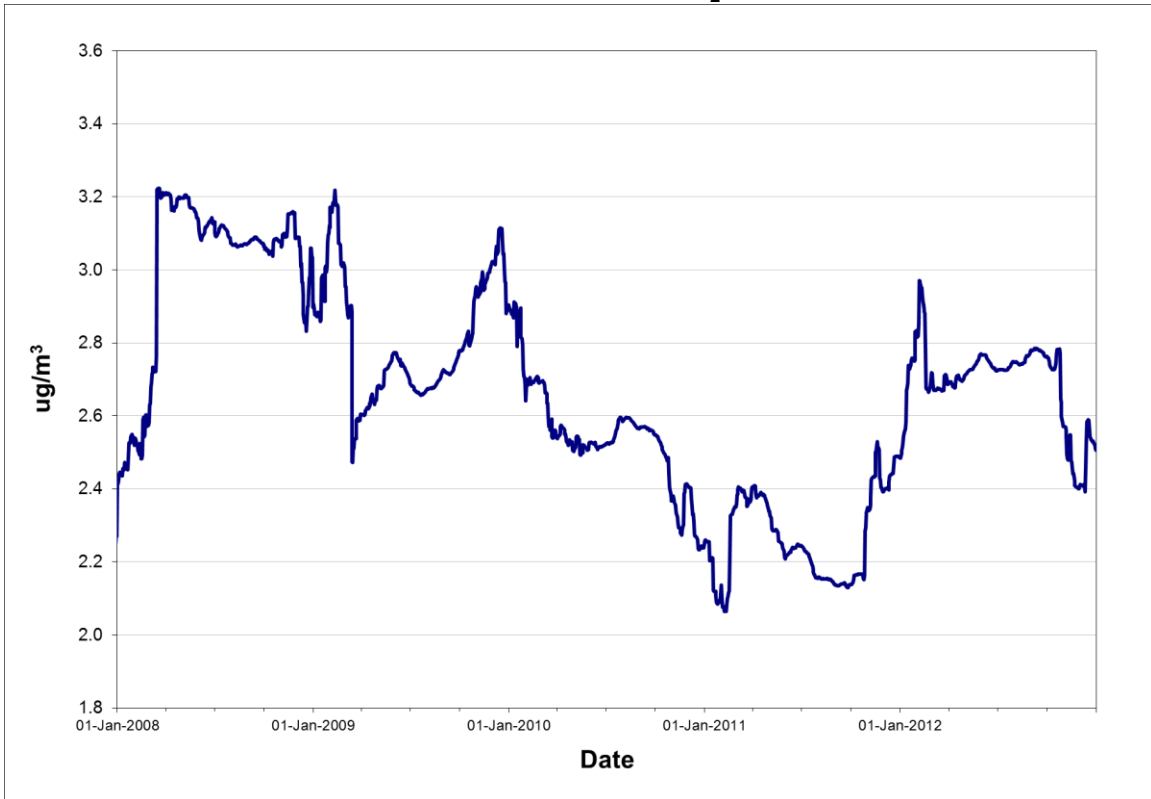


**TABLE 4.1.4.1 - INDIAN POND ROAD SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	708	95.2%	2.1	114.7	58.8	9.7	0	0	0
	February	644	95.8%	6.1	161.9	115.8	43.0	0	0	0
	March	711	95.6%	2.9	47.5	25.6	10.3	0	0	0
	April	686	95.3%	1.7	39.5	17.8	4.2	0	0	0
	May	710	95.4%	0.8	4.6	2.1	1.5	0	0	0
	June	688	95.6%	1.9	23.0	14.2	3.1	0	0	0
	July	700	94.1%	0.9	5.3	3.5	1.5	0	0	0
	August	711	95.6%	1.1	6.3	3.1	1.6	0	0	0
	September	687	95.4%	1.4	5.5	4.1	2.8	0	0	0
	October	710	95.4%	4.1	93.9	84.4	47.0	0	0	0
	November	689	95.7%	4.1	145.4	118.6	24.7	0	0	0
	December	710	95.4%	3.0	98.8	31.6	10.4	0	0	0
Annual		8354	95.4%	2.5	161.9	118.6	47.0	0	0	0
2012	January	707	95.0%	6.2	140.2	121.1	33.1	0	0	0
	February	667	95.8%	4.5	122.5	93.1	44.6	0	0	0
	March	711	95.6%	2.5	117.5	86.8	19.0	0	0	0
	April	683	94.9%	1.9	41.4	31.0	7.3	0	0	0
	May	712	95.7%	1.6	15.3	9.1	3.3	0	0	0
	June	687	95.4%	1.3	8.1	3.6	2.2	0	0	0
	July	713	95.8%	1.2	5.0	3.2	2.2	0	0	0
	August	708	95.2%	1.4	34.6	23.8	5.9	0	0	0
	September	677	94.0%	1.2	3.9	2.8	1.9	0	0	0
	October	689	92.6%	1.9	66.4	44.8	11.9	0	0	0
	November	685	95.1%	1.9	72.7	65.6	23.0	0	0	0
	December	711	95.6%	4.3	131.5	60.2	29.4	0	0	0
Annual		8350	95.1%	2.5	140.2	121.1	44.6	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.4.1 - INDIAN POND ROAD ANNUAL SO<sub>2</sub> CONCENTRATIONS**



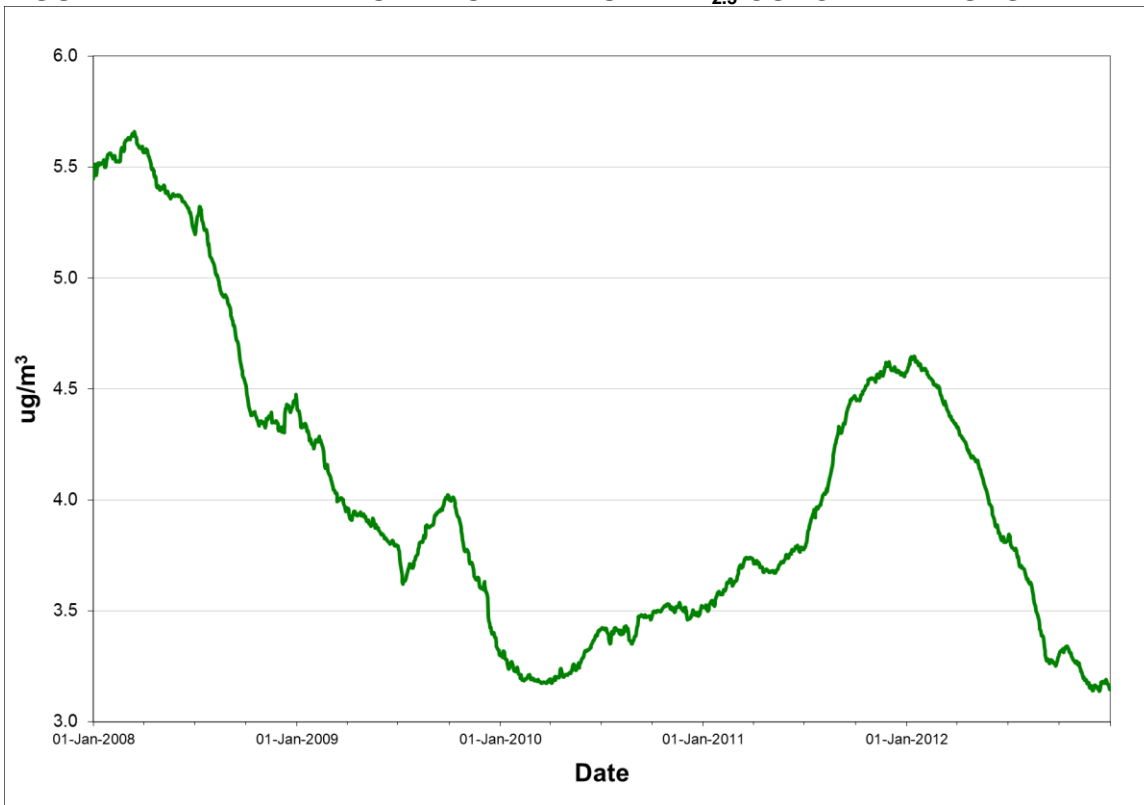
Rolling annual average of hourly concentrations

**TABLE 4.1.4.2 - INDIAN POND ROAD PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	27	87.1%	4.0	8.1	0
	February	28	100.0%	3.7	6.7	0
	March	31	100.0%	4.1	8.2	0
	April	30	100.0%	3.5	7.2	0
	May	31	100.0%	4.4	6.3	0
	June	30	100.0%	4.1	9.0	0
	July	31	100.0%	6.3	12.4	0
	August	31	100.0%	7.7	12.1	0
	September	26	86.7%	6.8	11.6	0
	October	29	93.5%	3.4	9.4	0
	November	30	100.0%	3.8	9.4	0
	December	31	100.0%	3.2	9.4	0
Annual		355	97.3%	4.6	12.4	0
2012	January	30	96.8%	4.2	10.7	0
	February	28	96.6%	2.5	6.5	0
	March	31	100.0%	2.1	7.9	0
	April	30	100.0%	1.9	4.3	0
	May	28	90.3%	1.6	5.0	0
	June	24	80.0%	2.0	5.2	0
	July	31	100.0%	4.8	11.0	0
	August	29	93.5%	4.6	8.9	0
	September	29	96.7%	5.2	11.0	0
	October	26	83.9%	3.0	6.4	0
	November	24	80.0%	2.2	5.2	0
	December	30	96.8%	3.3	9.1	0
Annual		340	92.9%	3.1	11.0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.4.2 - INDIAN POND ROAD ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



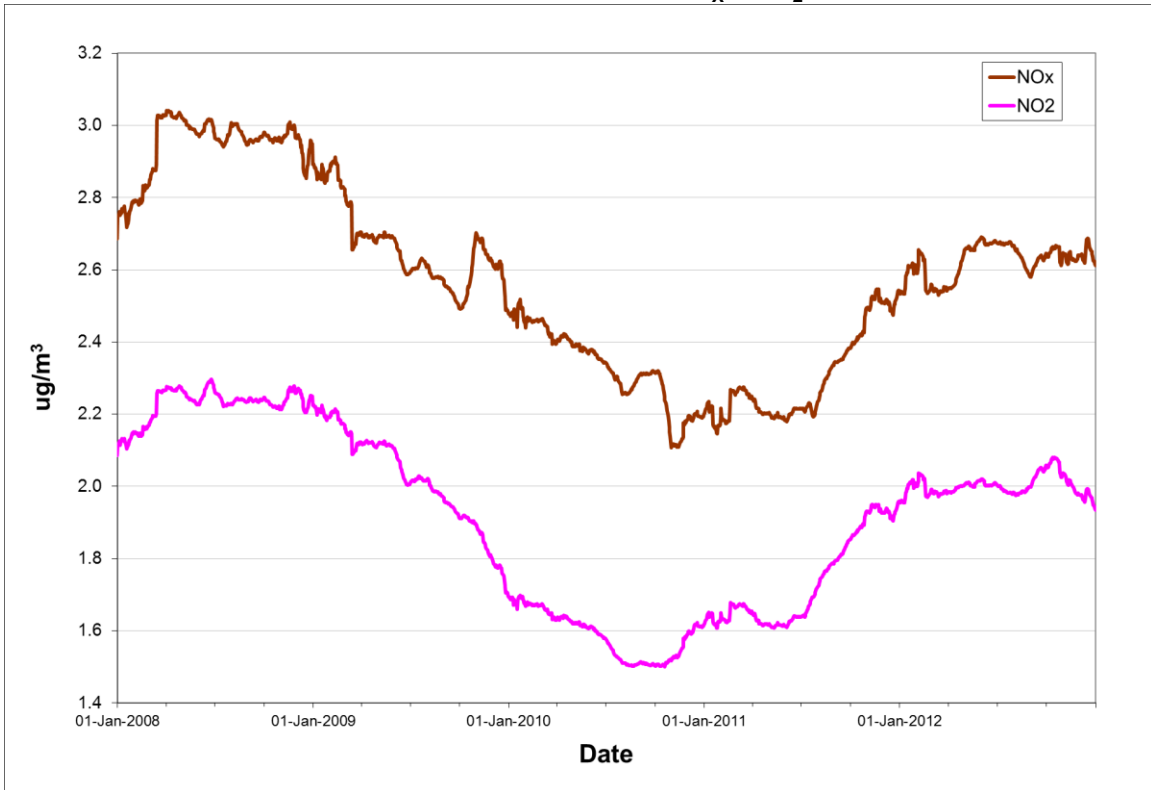
Rolling annual average of daily concentrations

**TABLE 4.1.4.3 - INDIAN POND ROAD NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour NO <sub>x</sub>	1-Hour NO <sub>2</sub>	24-Hour NO <sub>x</sub>	24-Hour NO <sub>2</sub>	1-Hour (>400)	24-Hour (>200)
2011	January	657	88.3%	3.2	2.5	86.8	36.8	11.0	8.2	0	0
	February	364	54.2%	4.1	2.6	98.2	48.5	19.5	11.8	0	0
	March	680	91.4%	1.8	1.4	23.1	16.7	5.1	4.3	0	0
	April	655	91.0%	1.4	1.1	15.9	9.0	2.6	2.1	0	0
	May	682	91.7%	1.7	1.5	11.0	7.7	3.5	2.9	0	0
	June	657	91.3%	2.2	1.9	17.0	16.6	4.2	3.9	0	0
	July	652	87.6%	2.1	1.9	8.5	6.5	4.3	3.5	0	0
	August	701	94.2%	3.2	1.9	10.8	8.2	4.6	3.4	0	0
	September	684	95.0%	2.0	1.8	11.8	8.5	3.1	2.8	0	0
	October	679	91.3%	3.3	2.5	38.9	21.4	18.6	10.6	0	0
	November	660	91.7%	3.1	2.4	58.0	24.5	11.3	7.1	0	0
	December	679	91.3%	3.0	2.4	44.0	19.1	7.7	5.0	0	0
Annual		7750	88.5%	2.5	2.0	98.2	48.5	19.5	11.8	0	0
2012	January	678	91.1%	3.9	2.9	61.9	32.4	15.7	8.4	0	0
	February	638	91.7%	2.9	2.2	54.4	29.9	17.6	10.4	0	0
	March	680	91.4%	1.7	1.3	42.3	25.9	6.7	4.2	0	0
	April	651	90.4%	2.7	1.4	20.4	13.3	5.4	2.7	0	0
	May	681	91.5%	2.1	1.6	15.6	11.7	5.3	4.3	0	0
	June	660	91.7%	2.1	1.7	10.2	7.6	3.0	2.4	0	0
	July	713	95.8%	2.1	1.6	6.8	5.4	2.8	2.2	0	0
	August	661	88.8%	2.2	2.1	10.0	6.3	3.6	3.3	0	0
	September	680	94.4%	2.7	2.5	20.1	12.2	4.2	3.6	0	0
	October	673	90.5%	3.3	2.3	22.4	13.6	7.3	4.5	0	0
	November	656	91.1%	3.1	1.7	29.0	17.0	10.4	5.7	0	0
	December	680	91.4%	2.6	1.9	45.9	23.6	12.3	8.0	0	0
Annual		8051	91.7%	2.6	1.9	61.9	32.4	17.6	10.4	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.4.3 - INDIAN POND ROAD ANNUAL NO<sub>x</sub> / NO<sub>2</sub> CONCENTRATIONS**



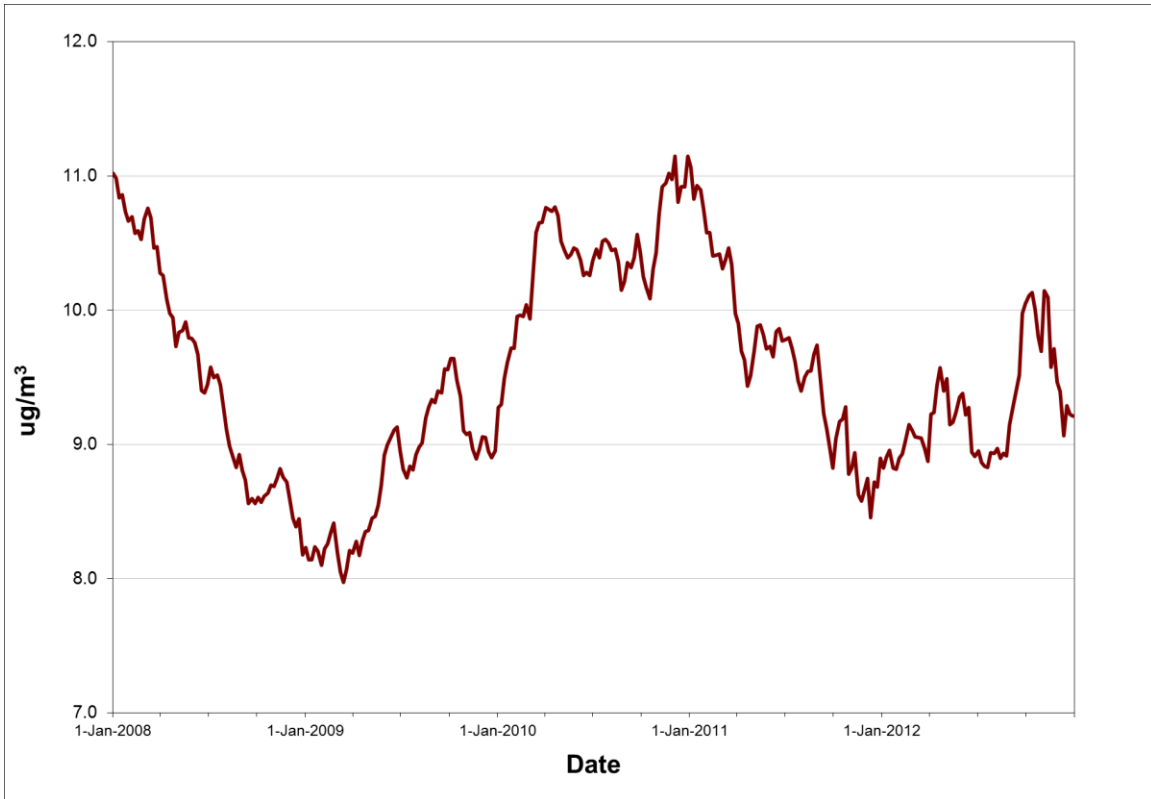
Rolling annual average of hourly concentrations

**TABLE 4.1.4.4 - INDIAN POND ROAD TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m <sup>3</sup> )
2011	January	4	80.0%	10.6	23.4	0
	February	3	60.0%	8.7	14.0	0
	March	5	100.0%	10.6	27.3	0
	April	5	100.0%	8.0	17.6	0
	May	5	100.0%	10.4	20.9	0
	June	5	100.0%	15.9	43.7	0
	July	5	100.0%	6.8	10.3	0
	August	6	100.0%	8.3	12.6	0
	September	5	100.0%	5.1	6.7	0
	October	5	100.0%	7.2	18.5	0
	November	5	100.0%	9.4	17.6	0
	December	5	100.0%	9.2	19.1	0
Annual		58	95.1%	8.8	43.7	0
2012	January	5	100.0%	10.1	11.5	0
	February	5	100.0%	11.9	17.6	0
	March	5	100.0%	11.1	14.4	0
	April	5	100.0%	10.8	25.1	0
	May	5	100.0%	11.5	31.9	0
	June	5	100.0%	8.1	16.8	0
	July	5	100.0%	7.4	14.6	0
	August	6	100.0%	11.1	45.3	0
	September	5	100.0%	16.7	125.8	1
	October	5	100.0%	7.6	21.6	0
	November	5	100.0%	3.5	8.4	0
	December	5	100.0%	6.6	12.3	0
Annual		61	100.0%	9.1	125.8	1

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.4.4 - INDIAN POND ROAD ANNUAL TPM CONCENTRATIONS**



Rolling annual average of daily concentrations

#### **4.1.5 Lawrence Pond Road**

The Lawrence Pond Road station monitors the ambient levels of  $\text{SO}_2$ ,  $\text{NO}_x / \text{NO}_2$ ,  $\text{PM}_{2.5}$  on a continuous basis and TPM on a 1 day in 6 day cycle consistent with the NAPS defined schedule. For all pollutants, the ambient air criteria were not exceeded on any occasion in 2012. Tables 4.1.5.1 through 4.1.5.4 provide summary information on the level of air contaminants measured at Lawrence Pond Road, while Figures 4.1.5.1 through 4.1.5.4 provide a graphical representation of the annual trend of each pollutant.

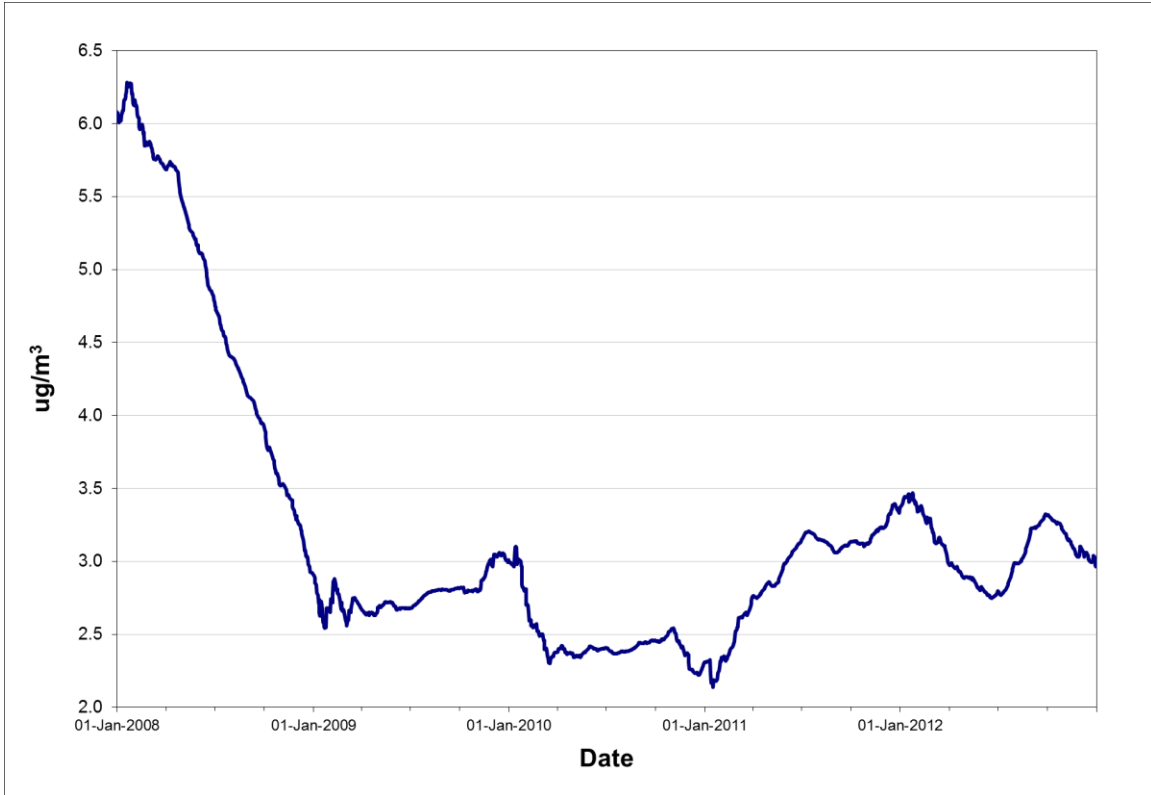


**TABLE 4.1.5.1 - LAWRENCE POND ROAD SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	713	95.8%	4.1	73.4	44.1	21.0	0	0	0
	February	644	95.8%	5.7	62.9	46.9	16.3	0	0	0
	March	706	94.9%	5.1	125.0	76.5	17.0	0	0	0
	April	686	95.3%	3.2	33.7	25.2	5.8	0	0	0
	May	666	89.5%	4.0	24.5	20.3	8.0	0	0	0
	June	0	0.0%							
	July	604	81.2%	1.4	14.2	5.4	2.9	0	0	0
	August	708	95.2%	1.2	5.5	3.1	1.7	0	0	0
	September	683	94.9%	2.1	4.8	4.0	3.4	0	0	0
	October	711	95.6%	2.4	25.7	12.2	5.1	0	0	0
	November	689	95.7%	3.5	39.4	25.8	8.5	0	0	0
	December	685	92.1%	4.3	79.1	69.1	24.1	0	0	0
Annual		7495	85.6%	3.4	125.0	76.5	24.1	0	0	0
2012	January	713	95.8%	4.2	61.9	38.7	15.5	0	0	0
	February	667	95.8%	3.8	62.7	53.7	15.9	0	0	0
	March	705	94.8%	2.5	53.5	39.0	14.4	0	0	0
	April	689	95.7%	2.2	42.0	16.9	5.6	0	0	0
	May	713	95.8%	3.4	32.9	23.3	9.7	0	0	0
	June	683	94.9%	2.4	30.2	11.8	6.4	0	0	0
	July	713	95.8%	3.9	7.8	7.4	7.1	0	0	0
	August	713	95.8%	3.9	30.4	23.6	8.9	0	0	0
	September	678	94.2%	3.2	9.3	7.7	6.0	0	0	0
	October	712	95.7%	1.1	49.3	25.9	4.5	0	0	0
	November	681	94.6%	2.0	51.7	29.3	18.3	0	0	0
	December	711	95.6%	2.9	48.8	38.1	12.0	0	0	0
Annual		8378	95.4%	3.0	62.7	53.7	18.3	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.5.1 - LAWRENCE POND ROAD ANNUAL SO<sub>2</sub> CONCENTRATIONS**



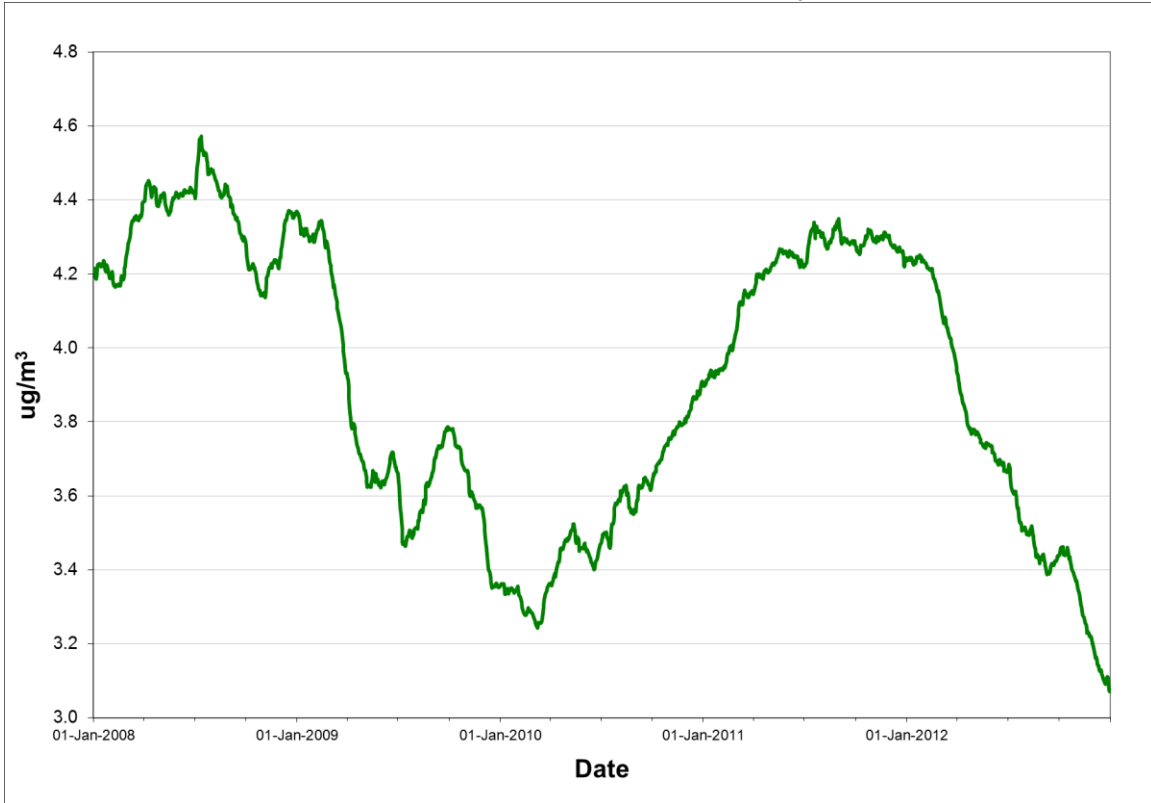
Rolling annual average of hourly concentrations

**TABLE 4.1.5.2 - LAWRENCE POND ROAD PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	31	100.0%	3.3	6.3	0
	February	28	100.0%	4.1	6.3	0
	March	31	100.0%	4.8	8.9	0
	April	30	100.0%	4.7	7.9	0
	May	31	100.0%	3.8	6.3	0
	June	30	100.0%	3.9	8.4	0
	July	31	100.0%	5.8	12.3	0
	August	30	96.8%	5.2	10.6	0
	September	26	86.7%	4.8	7.7	0
	October	31	100.0%	3.8	10.5	0
	November	30	100.0%	3.6	7.7	0
	December	31	100.0%	3.4	7.2	0
Annual		360	98.6%	4.2	12.3	0
2012	January	31	100.0%	3.2	7.0	0
	February	29	100.0%	2.8	6.8	0
	March	31	100.0%	2.5	6.6	0
	April	30	100.0%	2.8	6.0	0
	May	31	100.0%	3.2	6.9	0
	June	26	86.7%	3.0	6.9	0
	July	31	100.0%	4.1	10.2	0
	August	31	100.0%	4.2	10.7	0
	September	30	100.0%	4.6	8.7	0
	October	26	83.9%	2.8	9.1	0
	November	27	90.0%	1.5	3.9	0
	December	29	93.5%	1.9	4.6	0
Annual		352	96.2%	3.1	10.7	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.5.2 - LAWRENCE POND ROAD ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



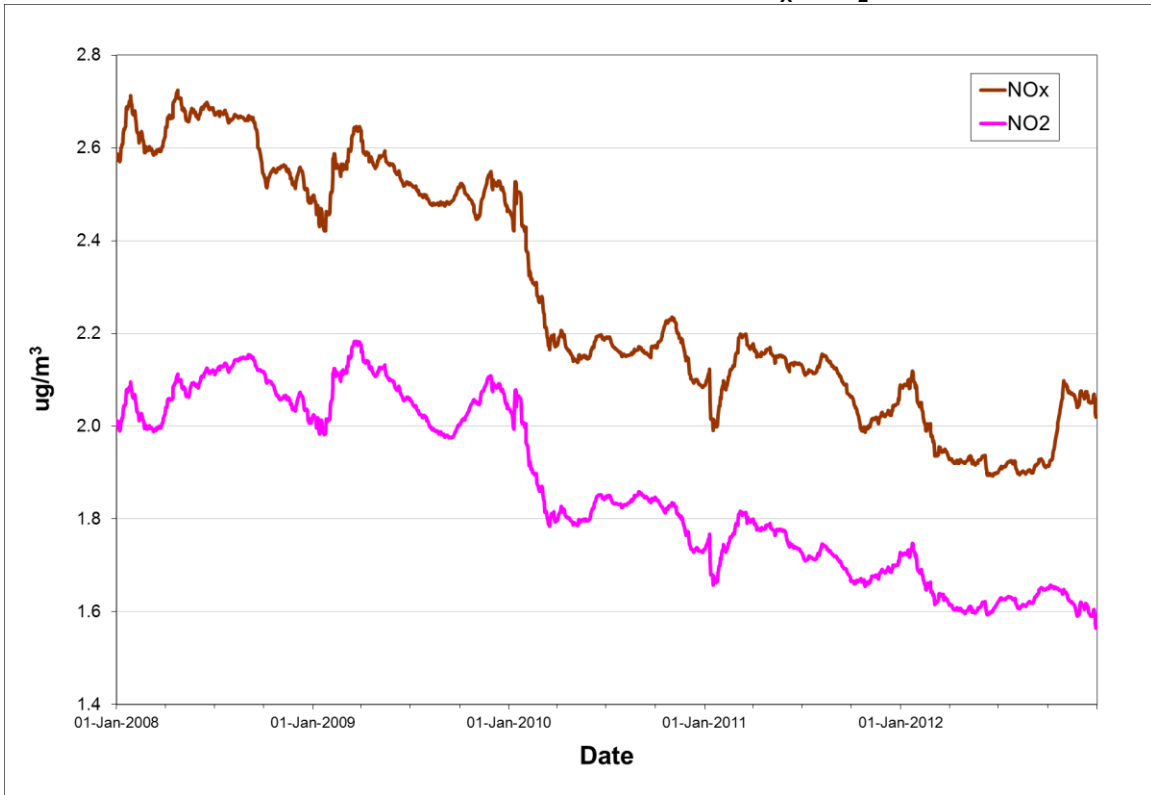
Rolling annual average of daily concentrations

**TABLE 4.1.5.3 - LAWRENCE POND ROAD NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour		24-Hour		1-Hour (>400)	24-Hour (>200)
				NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>		
2011	January	682	91.7%	2.8	2.5	41.2	36.4	10.5	8.8	0	0
	February	616	91.7%	3.4	2.7	42.1	30.1	10.6	8.3	0	0
	March	674	90.6%	2.2	1.8	67.1	83.5	9.5	6.5	0	0
	April	656	91.1%	1.6	1.4	18.1	14.7	3.3	2.8	0	0
	May	690	92.7%	1.6	1.3	14.7	11.4	4.6	3.8	0	0
	June	683	94.9%	2.1	1.6	24.8	16.8	7.3	5.8	0	0
	July	712	95.7%	1.3	1.2	13.4	7.3	3.1	2.5	0	0
	August	708	95.2%	1.8	1.6	8.5	7.3	3.8	3.2	0	0
	September	679	94.3%	1.6	1.2	8.3	7.4	2.9	2.1	0	0
	October	711	95.6%	2.0	1.5	16.1	15.4	3.3	2.9	0	0
	November	659	91.5%	2.3	2.0	19.7	17.7	4.1	3.7	0	0
	December	655	88.0%	2.5	2.1	49.7	35.6	14.6	10.3	0	0
Annual		8125	92.8%	2.1	1.7	67.1	83.5	14.6	10.3	0	0
2012	January	682	91.7%	2.7	2.3	32.0	29.2	8.2	6.5	0	0
	February	638	91.7%	2.0	1.8	35.1	31.1	7.2	6.4	0	0
	March	672	90.3%	1.6	1.5	33.0	25.5	8.5	7.4	0	0
	April	660	91.7%	1.5	1.2	17.2	13.0	2.9	2.2	0	0
	May	682	91.7%	1.8	1.6	18.6	15.0	5.1	4.1	0	0
	June	658	91.4%	1.7	1.6	21.7	15.8	3.1	2.8	0	0
	July	713	95.8%	1.6	1.3	13.4	11.1	2.4	1.9	0	0
	August	713	95.8%	1.6	1.5	5.1	4.5	2.6	2.4	0	0
	September	651	90.4%	1.8	1.5	15.6	14.5	3.0	2.8	0	0
	October	682	91.7%	4.1	1.5	21.7	12.2	6.8	3.1	0	0
	November	628	87.2%	1.9	1.6	21.7	20.2	7.8	7.0	0	0
	December	680	91.4%	1.9	1.4	23.7	20.4	6.3	5.0	0	0
Annual		8059	91.7%	2.0	1.6	35.1	31.1	8.5	7.4	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.5.3 - LAWRENCE POND ROAD ANNUAL NO<sub>x</sub> / NO<sub>2</sub> CONCENTRATIONS**



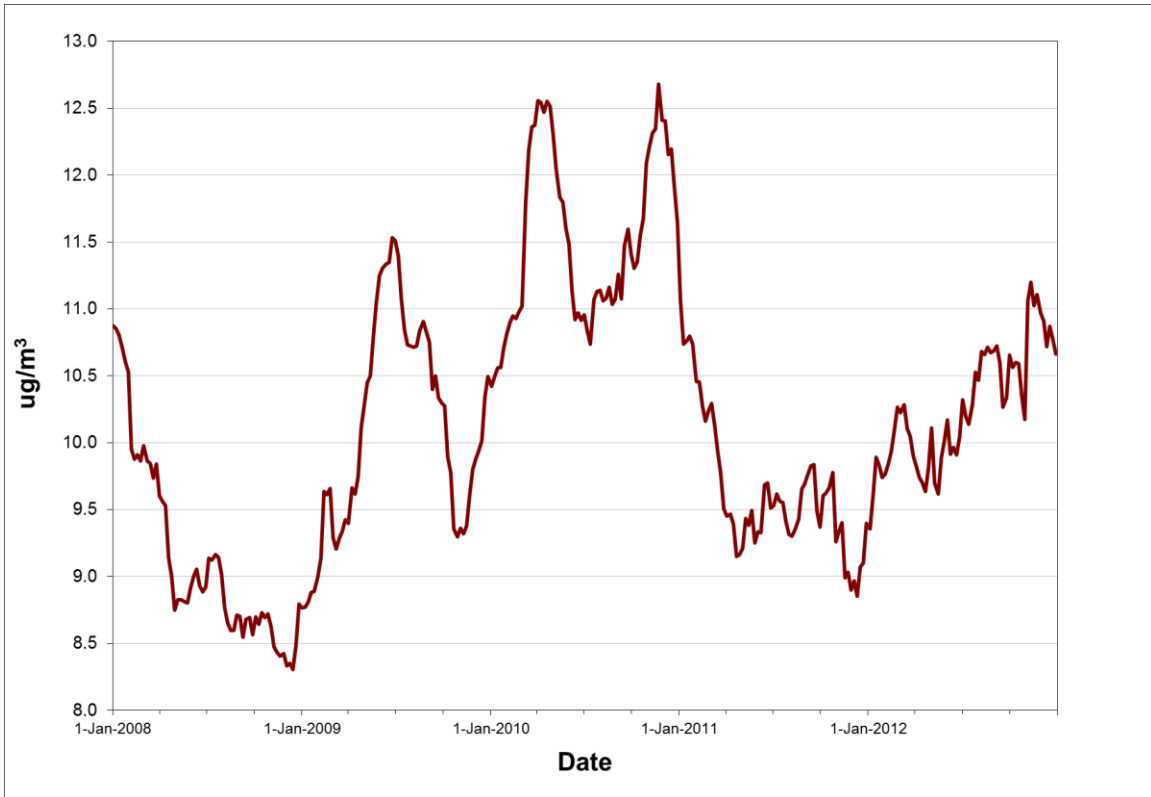
Rolling annual average of hourly concentrations

**TABLE 4.1.5.4 - LAWRENCE POND ROAD TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m <sup>3</sup> )
2011	January	5	100.0%	6.8	16.7	0
	February	5	100.0%	7.9	19.1	0
	March	5	100.0%	11.1	19.8	0
	April	5	100.0%	8.8	18.8	0
	May	5	100.0%	9.1	22.6	0
	June	5	100.0%	14.6	31.5	0
	July	5	100.0%	11.1	22.9	0
	August	5	83.3%	12.1	32.3	0
	September	5	100.0%	10.1	52.7	0
	October	5	100.0%	6.1	16.6	0
	November	5	100.0%	6.7	12.9	0
	December	5	100.0%	11.8	22.5	0
Annual		60	98.4%	9.4	52.7	0
2012	January	3	60.0%	12.4	23.2	0
	February	4	80.0%	13.0	20.2	0
	March	5	100.0%	9.1	18.7	0
	April	5	100.0%	7.2	14.5	0
	May	5	100.0%	14.2	55.6	0
	June	5	100.0%	12.9	34.9	0
	July	5	100.0%	17.2	37.4	0
	August	6	100.0%	14.2	34.6	0
	September	5	100.0%	10.0	13.3	0
	October	5	100.0%	6.6	20.4	0
	November	5	100.0%	8.2	56.2	0
	December	5	100.0%	7.8	13.2	0
Annual		58	95.1%	10.5	56.2	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.5.4 - LAWRENCE POND ROAD ANNUAL TPM CONCENTRATIONS**



Rolling annual average of daily concentrations

#### **4.1.6 NALCOR Property Boundary**

The NALCOR Property Boundary station monitors the ambient levels of  $\text{PM}_{2.5}$  on a continuous basis and TPM on a 1 day in 6 day cycle consistent with the NAPS defined schedule. For TPM and  $\text{PM}_{2.5}$ , the ambient air criteria were not exceeded on any occasion in 2012. Tables 4.1.6.1 through 4.1.6.2 provide summary information on the level of air contaminants measured at NALCOR Property Boundary, while Figures 4.1.6.1 through 4.1.6.2 provide a graphical representation of the annual trend of each pollutant.

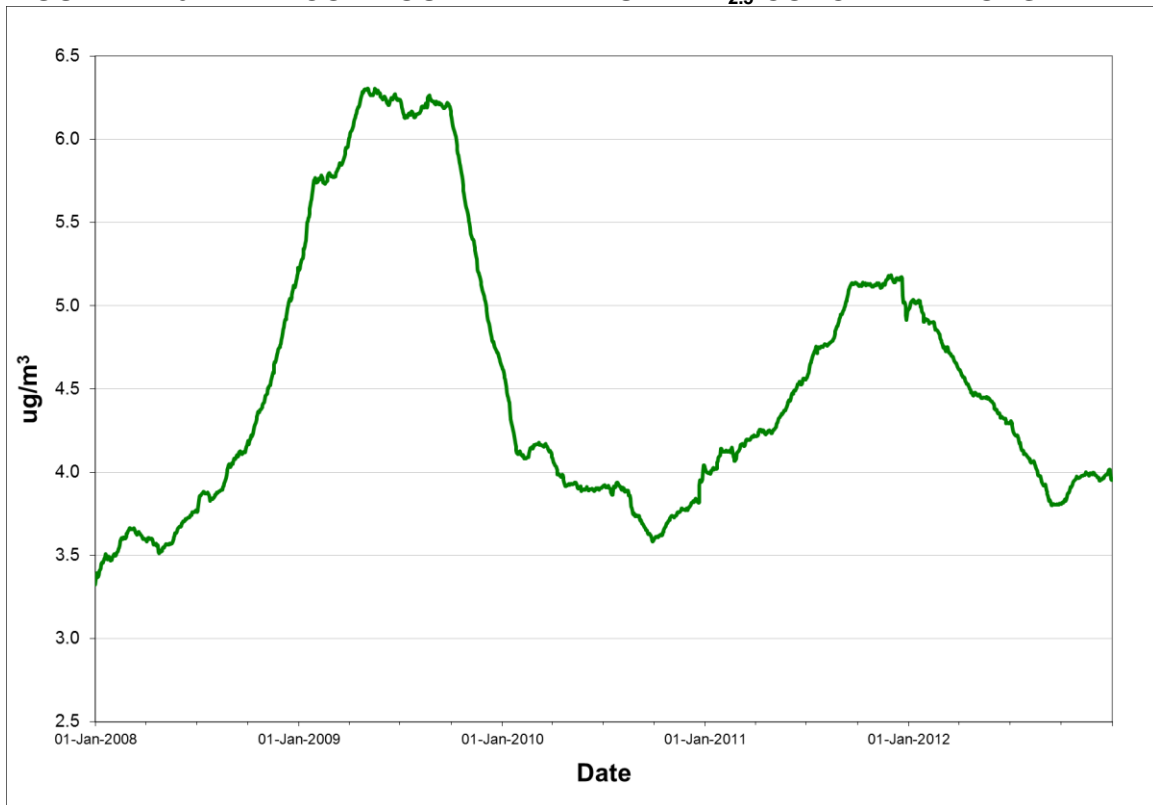


**TABLE 4.1.6.1 - NALCOR BOUNDARY PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	31	100.0%	4.8	15.8	0
	February	28	100.0%	4.7	17.4	0
	March	30	96.8%	5.5	9.4	0
	April	27	90.0%	5.4	9.3	0
	May	29	93.5%	5.2	8.5	0
	June	30	100.0%	5.1	9.6	0
	July	31	100.0%	6.7	13.0	0
	August	31	100.0%	6.2	10.4	0
	September	26	86.7%	5.4	10.1	0
	October	27	87.1%	2.6	8.2	0
	November	29	96.7%	3.6	7.6	0
	December	31	100.0%	4.5	13.9	0
Annual		350	95.9%	5.0	17.4	0
2012	January	31	100.0%	4.2	10.8	0
	February	29	100.0%	3.0	8.5	0
	March	31	100.0%	3.5	10.6	0
	April	28	93.3%	3.6	7.7	0
	May	31	100.0%	4.4	7.6	0
	June	24	80.0%	3.5	5.7	0
	July	31	100.0%	4.5	10.0	0
	August	29	93.5%	4.3	7.8	0
	September	30	100.0%	3.7	9.9	0
	October	26	83.9%	4.7	10.6	0
	November	27	90.0%	3.9	7.8	0
	December	31	100.0%	4.1	7.4	0
Annual		348	95.1%	4.0	10.8	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.6.1 - NALCOR BOUNDARY ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



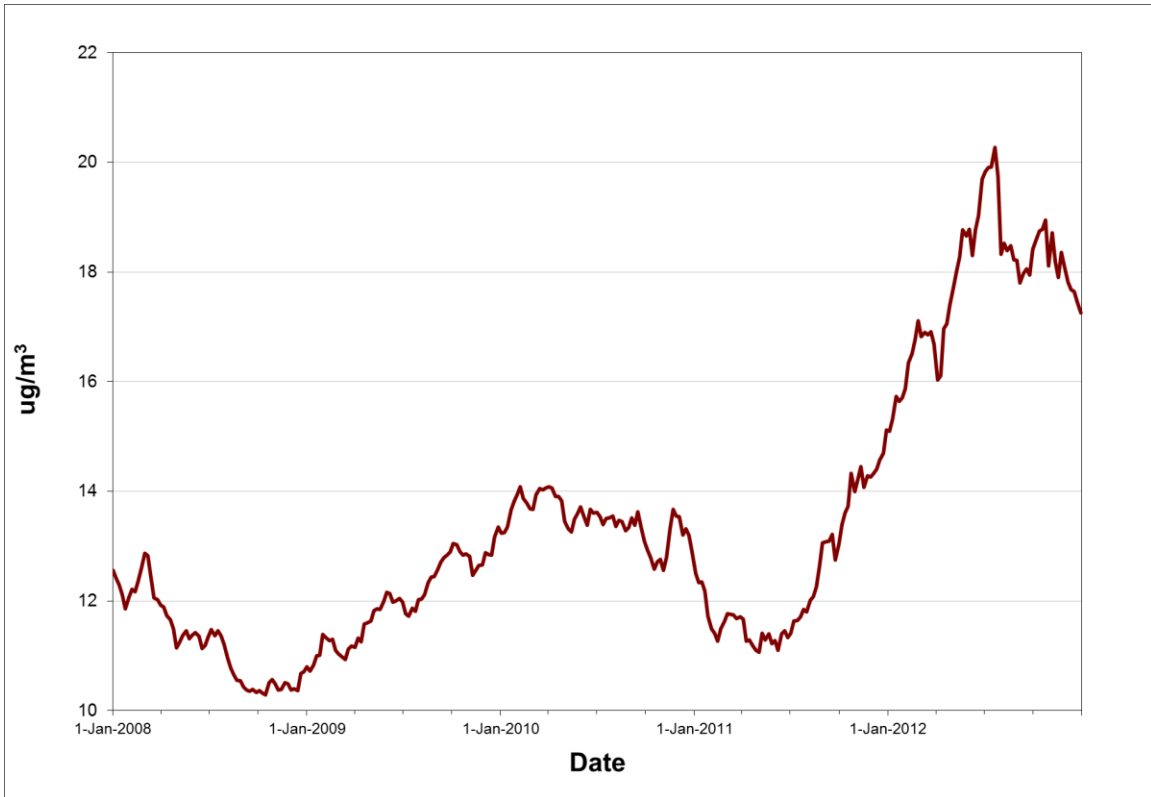
Rolling annual average of daily concentrations

**TABLE 4.1.6.2 - NALCOR BOUNDARY TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m <sup>3</sup> )
2011	January	5	100.0%	9.0	16.0	0
	February	5	100.0%	14.0	23.8	0
	March	5	100.0%	18.9	26.8	0
	April	5	100.0%	6.9	17.0	0
	May	5	100.0%	13.4	21.4	0
	June	5	100.0%	18.7	31.9	0
	July	5	100.0%	16.0	45.4	0
	August	6	100.0%	23.4	52.2	0
	September	5	100.0%	13.7	32.0	0
	October	5	100.0%	19.2	59.1	0
	November	5	100.0%	20.2	40.6	0
	December	2	40.0%	18.3	23.8	0
Annual		58	95.1%	15.2	59.1	0
2012	January	5	100.0%	16.4	46.8	0
	February	5	100.0%	29.5	55.5	0
	March	5	100.0%	15.4	27.7	0
	April	5	100.0%	13.4	29.5	0
	May	5	100.0%	25.9	48.0	0
	June	5	100.0%	34.9	107.7	0
	July	5	100.0%	13.4	26.9	0
	August	6	100.0%	10.3	38.6	0
	September	5	100.0%	21.2	41.4	0
	October	5	100.0%	20.3	41.5	0
	November	4	80.0%	12.1	22.3	0
	December	5	100.0%	10.5	15.9	0
Annual		60	98.4%	17.2	107.7	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.1.6.2 - NALCOR BOUNDARY ANNUAL TPM CONCENTRATIONS**



Rolling annual average of daily concentrations

## 4.2 North Atlantic Refining Limited

In 2012, North Atlantic Refining Limited (NARL) operated monitoring stations at four locations. These stations are installed to monitor the emissions from North Atlantic's refinery in Come-by-Chance and are located at Arnold's Cove, Come-by-Chance, Sunnyside and the NARL property boundary. The locations of these monitoring stations are identified in Figure 4.2.1.

Due to issues associated with changes in communication setups, the data from Arnold's Cove and Sunnyside for December 2012 was not available at the time of publication.

**FIGURE 4.2.1 - NARL AMBIENT MONITORING STATIONS**



#### **4.2.1 Arnold's Cove**

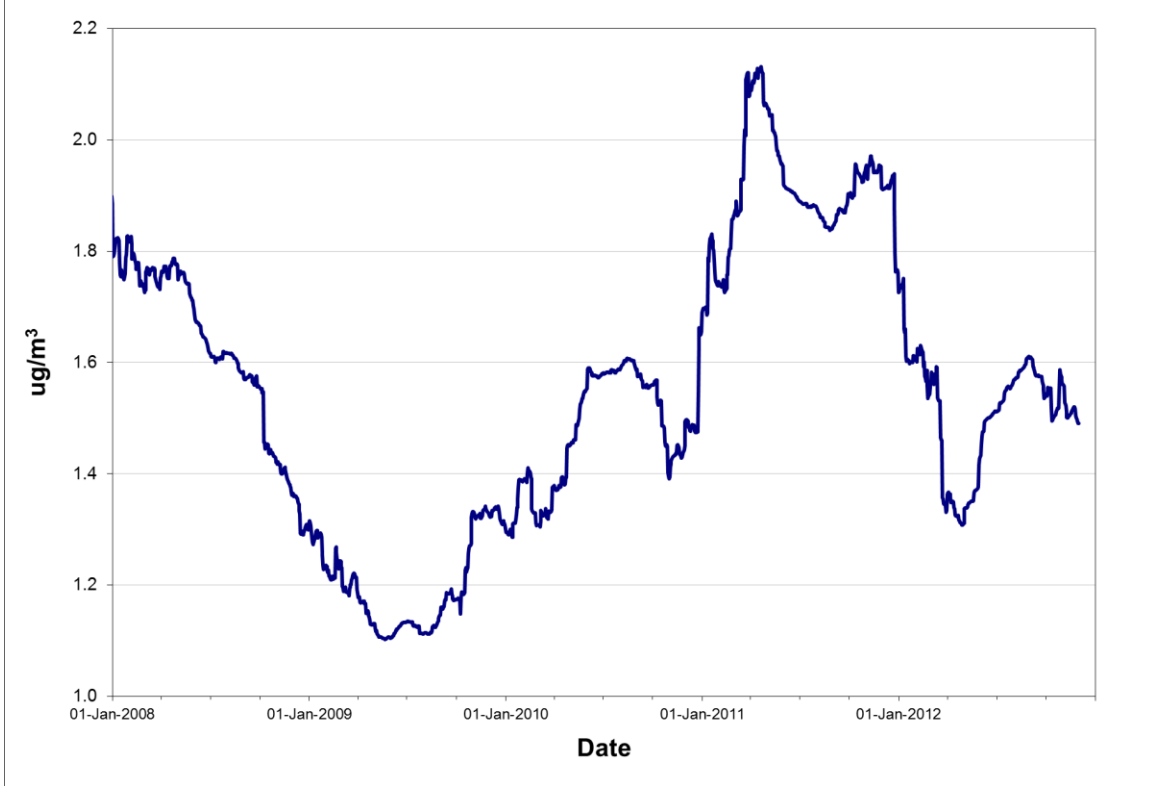
The Arnold's Cove station monitors the ambient levels of SO<sub>2</sub> and PM<sub>2.5</sub> on a continuous basis and is located near Tricentia Academy School. For both pollutants, the ambient air criteria were not exceeded on any occasion in 2012. Tables 4.2.1.1 through 4.2.1.2 provide summary information on the level of air contaminants measured at Arnold's Cove, while Figures 4.2.1.1 through 4.2.1.2 provide a graphical representation of the annual trend of each pollutant.

**TABLE 4.2.1.1 - ARNOLD'S COVE SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	694	93.3%	3.3	185.6	131.4	35.5	0	0	0
	February	640	95.2%	2.7	66.3	40.7	11.8	0	0	0
	March	708	95.2%	4.7	219.8	164.5	38.1	0	0	0
	April	685	95.1%	1.5	37.1	28.2	5.3	0	0	0
	May	710	95.4%	0.5	2.3	1.8	0.9	0	0	0
	June	683	94.9%	0.4	3.7	2.0	0.8	0	0	0
	July	706	94.9%	0.4	12.9	7.9	1.4	0	0	0
	August	709	95.3%	0.5	7.1	4.5	1.9	0	0	0
	September	687	95.4%	1.6	53.9	24.5	6.0	0	0	0
	October	704	94.6%	1.7	83.7	69.2	14.2	0	0	0
	November	687	95.4%	1.9	31.4	20.1	11.0	0	0	0
	December	703	94.5%	1.6	25.1	11.2	3.8	0	0	0
Annual		8316	94.9%	1.7	219.8	164.5	38.1	0	0	0
2012	January	691	92.9%	1.9	37.6	15.7	4.4	0	0	0
	February	663	95.3%	2.2	103.6	34.8	9.8	0	0	0
	March	708	95.2%	2.3	91.7	51.1	11.0	0	0	0
	April	685	95.1%	0.9	15.4	7.1	2.8	0	0	0
	May	735	98.8%	1.9	148.8	85.4	13.6	0	0	0
	June	714	99.2%	1.3	33.3	22.3	7.1	0	0	0
	July	681	91.5%	1.0	79.1	32.9	5.1	0	0	0
	August	680	91.4%	1.0	26.6	19.7	4.1	0	0	0
	September	655	91.0%	0.7	13.8	7.8	2.2	0	0	0
	October	679	91.3%	2.0	104.4	25.2	17.8	0	0	0
	November	668	92.8%	0.9	5.2	3.9	2.1	0	0	0
	December									
Annual		7559	86.1%	1.5	148.8	85.4	17.8	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.2.1.1 - ARNOLD'S COVE ANNUAL SO<sub>2</sub> CONCENTRATIONS**



Rolling annual average of hourly concentrations

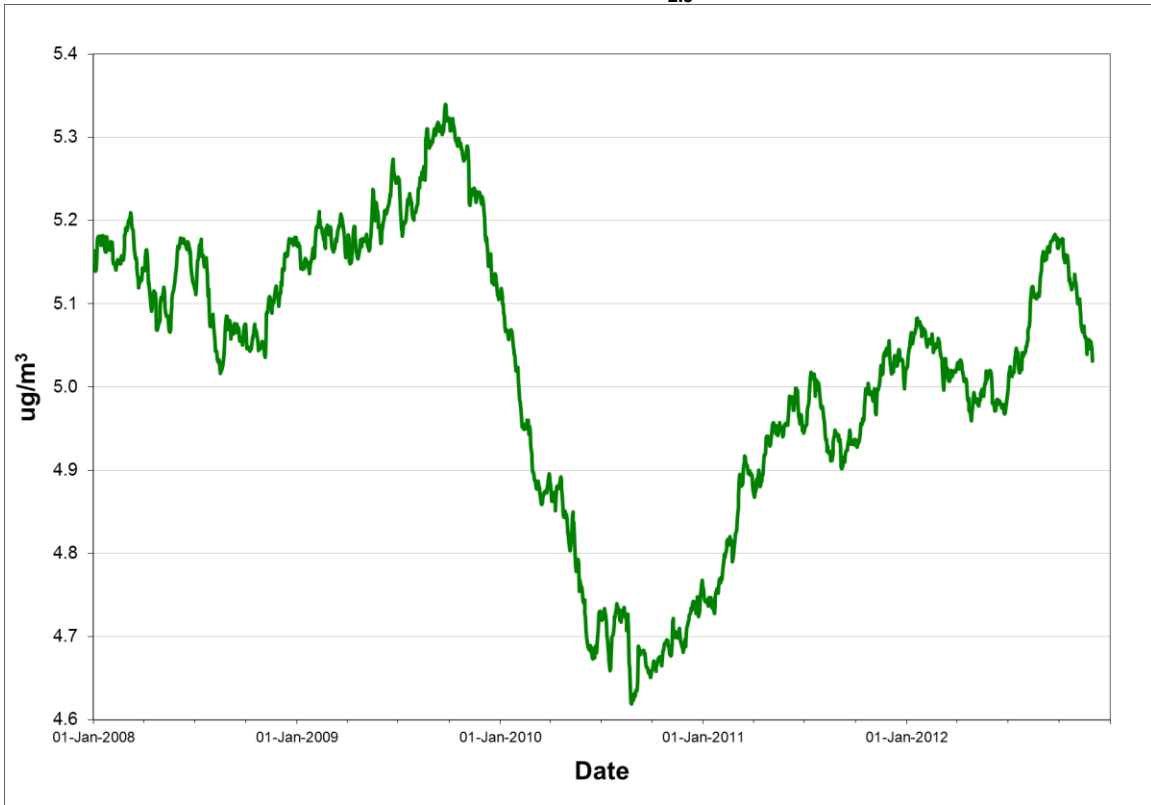


**TABLE 4.2.1.2 - ARNOLD'S COVE PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	31	100.0%	4.5	8.3	0
	February	28	100.0%	4.9	6.4	0
	March	30	96.8%	5.5	10.1	0
	April	30	100.0%	5.6	8.8	0
	May	31	100.0%	4.5	7.1	0
	June	29	96.7%	4.5	8.7	0
	July	31	100.0%	5.6	10.1	0
	August	29	93.5%	4.7	7.5	0
	September	28	93.3%	5.2	8.7	0
	October	31	100.0%	4.9	9.6	0
	November	30	100.0%	5.5	10.2	0
	December	31	100.0%	4.9	8.9	0
Annual		359	98.4%	5.0	10.2	0
2012	January	31	100.0%	5.0	7.9	0
	February	29	100.0%	4.6	8.8	0
	March	31	100.0%	5.1	11.1	0
	April	30	100.0%	5.3	8.5	0
	May	31	100.0%	4.8	9.9	0
	June	29	96.7%	4.2	8.2	0
	July	31	100.0%	6.1	11.0	0
	August	29	93.5%	6.2	11.8	0
	September	29	96.7%	5.3	8.2	0
	October	31	100.0%	4.4	8.4	0
	November	30	100.0%	4.4	9.1	0
	December					
Annual		331	90.4%	5.0	11.8	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.2.1.2 - ARNOLD'S COVE ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



Rolling annual average of daily concentrations

#### **4.2.2 Come by Chance**

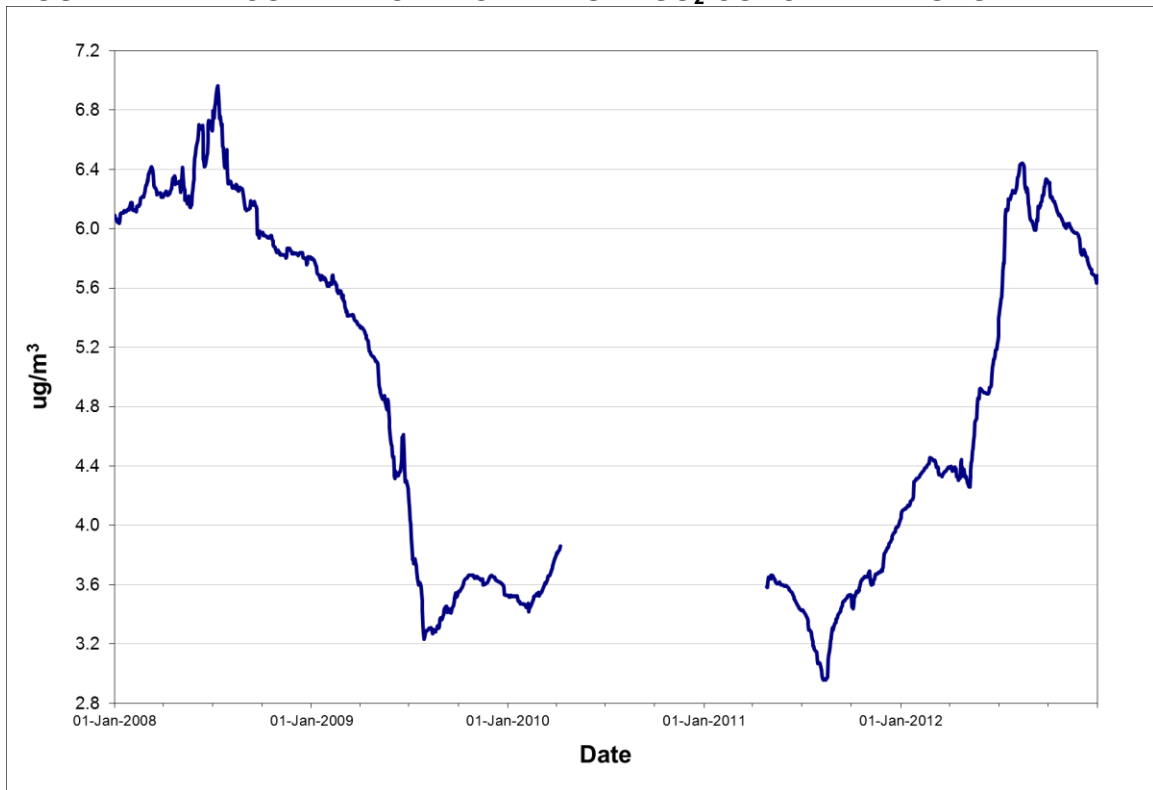
The Come by Chance station, located near the medical clinic, monitors the ambient levels of SO<sub>2</sub> and PM<sub>2.5</sub> on a continuous basis. For all pollutants, the ambient air criteria were not exceeded on any occasion in 2012. Tables 4.2.2.1 through 4.2.2.2 provide summary information on the level of air contaminants measured at Come by Chance, while Figures 4.2.2.1 through 4.2.2.2 provide a graphical representation of the annual trend of each pollutant.

**TABLE 4.2.2.1 - COME BY CHANCE SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	707	95.0%	1.4	18.9	9.2	4.1	0	0	0
	February	641	95.4%	1.4	40.5	18.6	4.3	0	0	0
	March	707	95.0%	3.8	64.1	41.6	11.9	0	0	0
	April	681	94.6%	7.3	124.5	72.6	26.8	0	0	0
	May	708	95.2%	3.0	58.1	31.1	10.5	0	0	0
	June	683	94.9%	1.7	11.3	8.9	5.1	0	0	0
	July	702	94.4%	2.3	13.1	8.4	4.3	0	0	0
	August	708	95.2%	7.9	186.8	175.6	43.6	0	0	0
	September	682	94.7%	5.2	91.1	55.3	15.5	0	0	0
	October	693	93.1%	5.9	109.5	72.7	23.8	0	0	0
	November	676	93.9%	3.8	68.7	44.5	19.2	0	0	0
	December	700	94.1%	4.6	83.8	53.9	17.5	0	0	0
Annual		8288	94.6%	4.0	186.8	175.6	43.6	0	0	0
2012	January	703	94.5%	4.6	214.6	115.5	37.9	0	0	0
	February	660	94.8%	3.1	76.4	54.8	11.1	0	0	0
	March	689	92.6%	3.2	24.5	19.3	8.1	0	0	0
	April	668	92.8%	6.5	168.1	98.7	38.6	0	0	0
	May	690	92.7%	10.0	198.9	167.5	34.9	0	0	0
	June	682	94.7%	6.1	131.9	73.1	27.7	0	0	0
	July	707	95.0%	13.5	347.9	178.5	68.7	0	0	0
	August	706	94.9%	5.8	323.1	189.6	27.8	0	0	0
	September	670	93.1%	8.7	250.2	170.1	42.0	0	0	0
	October	701	94.2%	2.2	57.0	26.7	8.3	0	0	0
	November	685	95.1%	2.2	67.5	36.7	13.7	0	0	0
	December	698	93.8%	2.3	120.2	88.3	23.9	0	0	0
Annual		8259	94.0%	5.7	347.9	189.6	68.7	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.2.2.1 - COME BY CHANCE ANNUAL SO<sub>2</sub> CONCENTRATIONS**



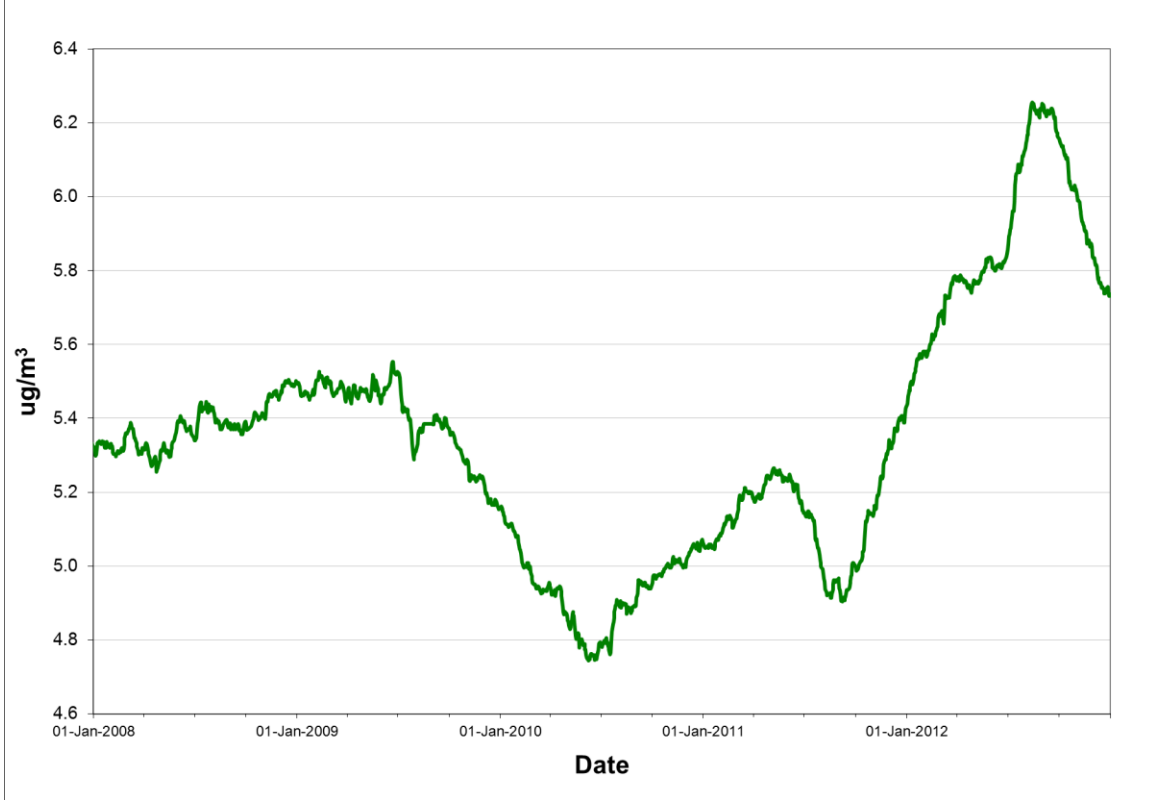
Rolling annual average of hourly concentrations

**TABLE 4.2.2.2 - COME BY CHANCE PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	31	100.0%	4.4	6.7	0
	February	28	100.0%	4.7	6.5	0
	March	31	100.0%	5.6	9.5	0
	April	30	100.0%	5.7	8.7	0
	May	31	100.0%	4.6	6.8	0
	June	29	96.7%	4.5	8.6	0
	July	31	100.0%	5.3	9.7	0
	August	31	100.0%	5.2	9.0	0
	September	22	73.3%	6.6	14.6	0
	October	20	64.5%	6.4	14.2	0
	November	30	100.0%	6.8	14.4	0
	December	31	100.0%	6.1	12.2	0
Annual		345	94.5%	5.4	14.6	0
2012	January	31	100.0%	6.0	11.2	0
	February	29	100.0%	5.9	12.4	0
	March	29	93.5%	6.6	17.5	0
	April	30	100.0%	5.8	8.8	0
	May	31	100.0%	5.2	11.9	0
	June	30	100.0%	4.8	8.2	0
	July	31	100.0%	8.3	18.4	0
	August	31	100.0%	6.6	11.6	0
	September	29	96.7%	5.5	9.8	0
	October	31	100.0%	4.6	7.4	0
	November	30	100.0%	4.7	8.2	0
	December	26	83.9%	4.7	6.8	0
Annual		358	97.8%	5.7	18.4	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.2.2.2 - COME BY CHANCE ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



Rolling annual average of daily concentrations

### 4.2.3 Sunnyside

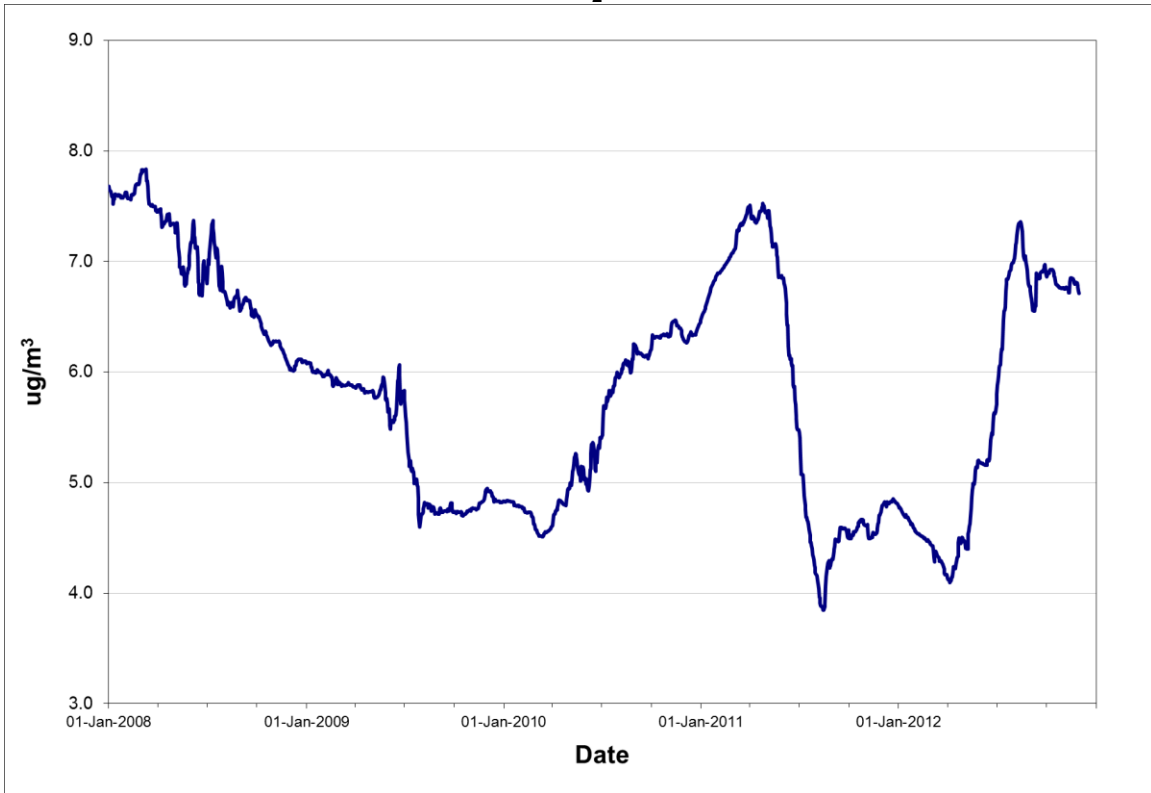
The Sunnyside station monitors the ambient levels of SO<sub>2</sub>, PM<sub>2.5</sub> and PM<sub>10</sub> on a continuous basis. For all pollutants, the ambient air criteria were not exceeded on any occasion in 2012. Tables 4.2.3.1 through 4.2.3.3 provide summary information on the level of air contaminants measured at Sunnyside, while Figures 4.2.3.1 through 4.2.3.3 provide a graphical representation of the annual trend of each pollutant.

**TABLE 4.2.3.1 - SUNNYSIDE SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	305	41.0%	4.8	58.8	47.4	9.8	0	0	0
	February	639	95.1%	3.0	33.1	24.2	6.0	0	0	0
	March	683	91.8%	6.4	134.7	100.1	27.4	0	0	0
	April	683	94.9%	6.3	81.5	65.2	19.3	0	0	0
	May	708	95.2%	2.7	71.6	59.2	19.4	0	0	0
	June	670	93.1%	2.6	8.4	7.9	6.9	0	0	0
	July	695	93.4%	0.8	6.5	4.5	2.2	0	0	0
	August	708	95.2%	9.6	182.1	144.2	52.2	0	0	0
	September	682	94.7%	6.9	96.8	76.3	28.3	0	0	0
	October	699	94.0%	5.2	86.2	79.8	17.8	0	0	0
	November	685	95.1%	5.3	109.1	64.6	23.5	0	0	0
	December	707	95.0%	3.6	57.2	38.0	18.9	0	0	0
Annual		7864	89.8%	4.8	182.1	144.2	52.2	0	0	0
2012	January	707	95.0%	2.0	58.0	36.9	12.7	0	0	0
	February	664	95.4%	1.6	42.8	31.1	5.4	0	0	0
	March	707	95.0%	3.0	71.7	53.7	22.4	0	0	0
	April	686	95.3%	10.0	156.2	106.3	48.0	0	0	0
	May	705	94.8%	11.1	208.6	119.4	51.6	0	0	0
	June	685	95.1%	9.0	146.2	100.2	42.2	0	0	0
	July	705	94.8%	16.0	223.7	160.1	54.9	0	0	0
	August	710	95.4%	7.0	297.8	138.6	28.9	0	0	0
	September	537	74.6%	9.4	589.8	338.2	109.3	0	0	0
	October	511	68.7%	2.0	76.7	35.4	9.5	0	0	0
	November	688	95.6%	5.0	180.5	133.4	46.2	0	0	0
	December									
Annual		7305	83.2%	7.0	589.8	338.2	109.3	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.2.3.1 - SUNNYSIDE ANNUAL SO<sub>2</sub> CONCENTRATIONS**



Rolling annual average of hourly concentrations

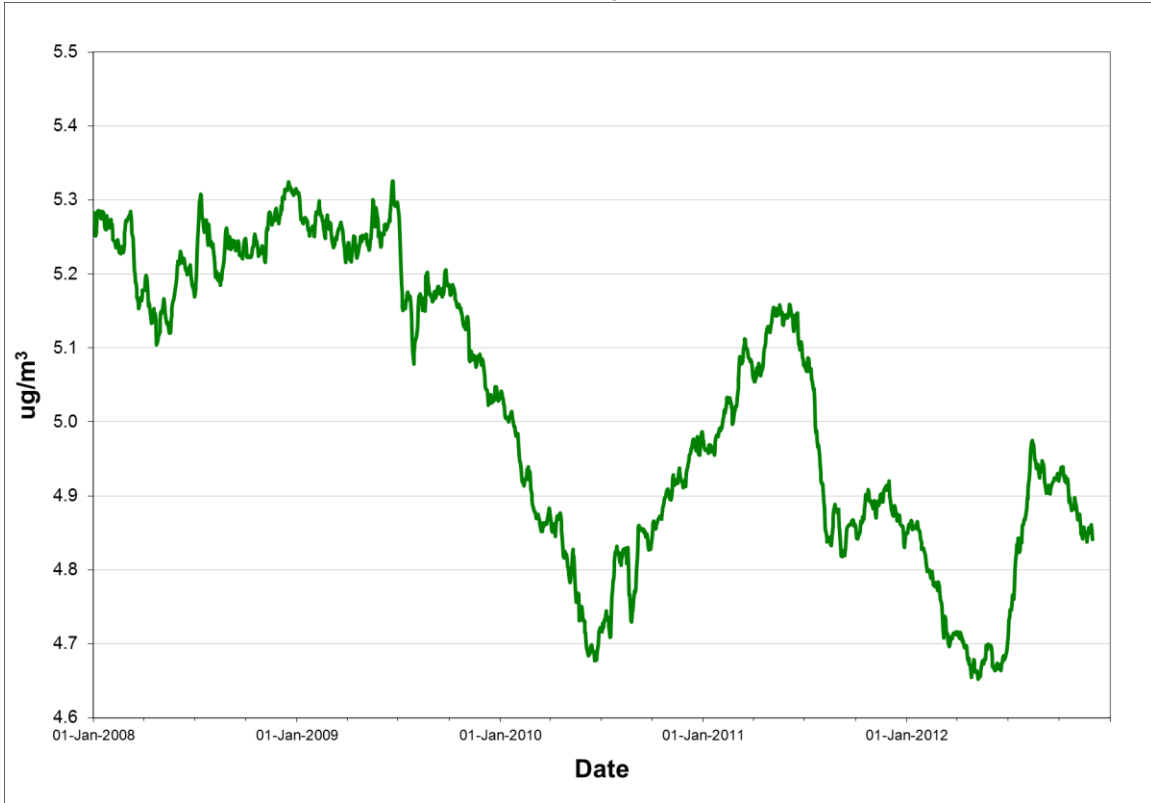


**TABLE 4.2.3.2 - SUNNYSIDE PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	31	100.0%	4.2	6.8	0
	February	28	100.0%	4.4	6.0	0
	March	31	100.0%	5.1	9.3	0
	April	30	100.0%	5.7	8.9	0
	May	31	100.0%	4.6	7.2	0
	June	30	100.0%	4.3	7.4	0
	July	31	100.0%	5.2	9.1	0
	August	31	100.0%	5.3	9.4	0
	September	21	70.0%	5.7	10.3	0
	October	31	100.0%	4.7	9.5	0
	November	30	100.0%	4.8	8.0	0
	December	31	100.0%	4.4	7.7	0
Annual		356	97.5%	4.8	10.3	0
2012	January	29	93.5%	3.9	6.0	0
	February	29	100.0%	3.7	7.8	0
	March	31	100.0%	4.4	9.2	0
	April	30	100.0%	5.3	7.8	0
	May	31	100.0%	4.8	10.7	0
	June	29	96.7%	4.4	7.9	0
	July	31	100.0%	7.1	12.7	0
	August	29	93.5%	6.2	11.6	0
	September	23	76.7%	5.4	9.3	0
	October	22	71.0%	4.1	6.4	0
	November	30	100.0%	4.3	9.9	0
	December					
Annual		314	85.8%	4.9	12.7	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.2.3.2 - SUNNYSIDE ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



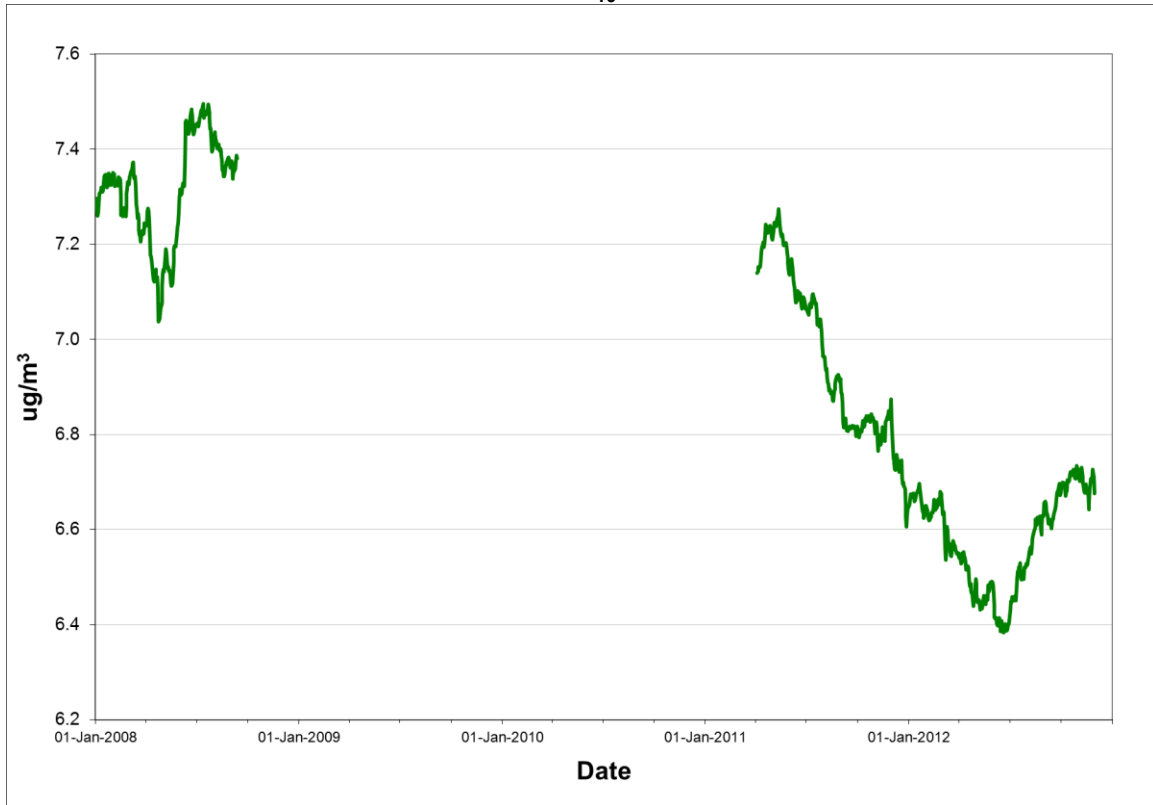
Rolling annual average of daily concentrations

**TABLE 4.2.3.3 - SUNNYSIDE PM<sub>10</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>50 µg/m <sup>3</sup> )
2011	January	31	100.0%	5.9	11.6	0
	February	28	100.0%	5.7	10.4	0
	March	31	100.0%	7.9	19.4	0
	April	30	100.0%	7.8	13.7	0
	May	31	100.0%	6.4	12.0	0
	June	30	100.0%	6.2	11.9	0
	July	31	100.0%	6.7	13.0	0
	August	31	100.0%	6.6	12.7	0
	September	29	96.7%	7.3	12.2	0
	October	17	54.8%	5.6	12.4	0
	November	30	100.0%	7.1	16.3	0
	December	31	100.0%	6.1	12.8	0
Annual		350	95.9%	6.6	19.4	0
2012	January	29	93.5%	5.8	12.4	0
	February	29	100.0%	5.9	14.3	0
	March	31	100.0%	6.5	19.8	0
	April	30	100.0%	7.3	13.8	0
	May	31	100.0%	6.3	18.0	0
	June	29	96.7%	5.4	10.4	0
	July	31	100.0%	7.9	14.1	0
	August	31	100.0%	8.0	13.9	0
	September	23	76.7%	7.8	14.0	0
	October	22	71.0%	6.6	14.5	0
	November	30	100.0%	6.6	14.5	0
	December					
Annual		316	86.3%	6.7	19.8	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.2.3.3 - SUNNYSIDE ANNUAL PM<sub>10</sub> CONCENTRATIONS**



Rolling annual average of daily concentrations

#### **4.2.4 NARL Property Boundary**

The NARL Property Boundary station monitors the ambient levels of SO<sub>2</sub> and PM<sub>2.5</sub>. Given its proximity to the process area of NARL, this station routinely records ambient levels of SO<sub>2</sub> and PM<sub>2.5</sub> in excess of the standards. In 2012, the 1-hour SO<sub>2</sub> standard was exceeded one hundred and forty four times, the 3-hour standard sixty eight times and the 24-hour standard forty one times. The majority of exceedances occurred in July, corresponding to a ten day shutdown of the sulphur recovery unit.

The PM<sub>2.5</sub> monitor was taken out of service in February 2011 due to technical issues and replaced in March 2012. From March onwards, in 2012 there were eighty seven recorded PM<sub>2.5</sub> exceedances of the ambient standard.

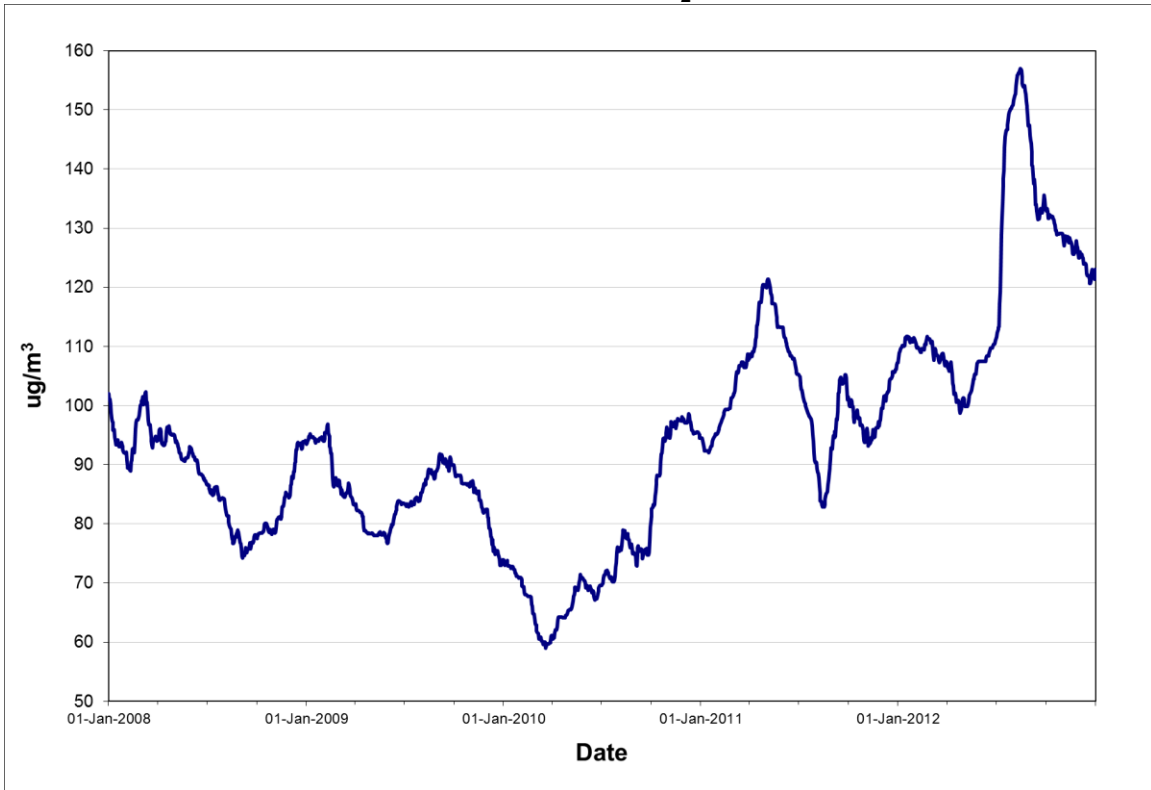
Tables 4.2.4.1 through 4.2.4.2 provide summary information on the level of air contaminants measured at NARL Property Boundary, while Figure 4.2.4.1 provides a graphical representation of the annual trend of SO<sub>2</sub>. No graphical presentation of PM<sub>2.5</sub> is provided owing to the extended period of downtime.

**TABLE 4.2.4.1 - NARL BOUNDARY SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	695	93.4%	42.1	563.7	519.1	273.5	0	0	0
	February	303	45.1%	52.7	684.5	619.5	304.9	0	1	1
	March	708	95.2%	116.7	674.5	576.5	424.4	0	0	4
	April	687	95.4%	204.2	1144.3	1011.6	658.7	10	25	9
	May	710	95.4%	20.2	817.5	566.4	285.8	0	0	0
	June	677	94.0%	1.1	44.5	18.2	4.7	0	0	0
	July	703	94.5%	0.7	14.3	8.3	2.8	0	0	0
	August	708	95.2%	145.5	1236.6	1022.9	704.4	23	19	8
	September	687	95.4%	295.0	1508.1	1340.6	1139.8	99	43	11
	October	693	93.1%	118.7	797.1	722.8	413.3	0	11	5
	November	688	95.6%	141.3	1097.7	880.9	457.0	3	13	6
	December	694	93.3%	121.8	1105.0	911.9	549.4	2	8	6
Annual		7953	90.8%	107.3	1508.1	1340.6	1139.8	137	120	50
2012	January	704	94.6%	88.3	940.1	894.1	477.5	2	4	2
	February	658	94.5%	79.6	727.6	561.9	321.7	0	0	2
	March	709	95.3%	72.0	710.9	516.8	356.3	0	0	2
	April	685	95.1%	130.0	634.7	538.2	443.0	0	0	5
	May	704	94.6%	92.5	677.0	547.3	334.1	0	0	3
	June	687	95.4%	48.5	548.1	479.3	238.4	0	0	0
	July	706	94.9%	464.2	4055.1	2944.6	2096.9	137	48	13
	August	708	95.2%	107.4	816.6	725.9	536.1	0	5	2
	September	684	95.0%	130.4	795.0	635.8	493.5	0	5	3
	October	707	95.0%	63.9	681.9	580.2	389.9	0	0	1
	November	687	95.4%	102.0	764.3	574.7	457.3	0	0	5
	December	709	95.3%	89.0	1040.7	1013.5	583.2	5	6	3
Annual		8348	95.0%	122.7	4055.1	2944.6	2096.9	144	68	41

Observations in ug/m<sup>3</sup>

**FIGURE 4.2.4.1 - NARL BOUNDARY ANNUAL SO<sub>2</sub> CONCENTRATIONS**



Rolling annual average of hourly concentrations

**TABLE 4.2.4.2 - NARL BOUNDARY PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )			
2011	January	28	90.3%	12.0	43.2	5			
	February	0	0.0%						
	March	0	0.0%						
	April	0	0.0%						
	May	0	0.0%						
	June	0	0.0%						
	July	0	0.0%						
	August	0	0.0%						
	September	0	0.0%						
	October	0	0.0%						
	November	0	0.0%						
	December	0	0.0%						
Annual		28	7.7%	12.0	43.2	5			
2012	January	0	0.0%	30.4	193.8	87			
	February	0	0.0%						
	March	18	58.1%				13.1	40.3	5
	April	26	86.7%				24.4	79.5	9
	May	21	67.7%				17.9	66.1	5
	June	30	100.0%				15.4	56.1	9
	July	31	100.0%				75.9	193.8	26
	August	31	100.0%				37.0	167.9	13
	September	27	90.0%				31.1	130.9	13
	October	31	100.0%				16.0	70.5	7
	November								
	December								
Annual		215	58.7%	30.4	193.8	87			

Observations in ug/m<sup>3</sup>

### 4.3 Iron Ore Company of Canada

In 2011, the Iron Ore Company of Canada (IOCC) completed a major revamp of their monitoring network to include the monitoring of more pollutants on a continuous basis. The revamp also included the introduction of several new station locations, the decommissioning of some stations as well as the moving of others. At the end of 2012, there were five stations in operation located near Smokey Mountain, the Town Depot / Tamarack Drive, Indian Point, Bartlett Drive, and Hudson Drive. The locations of these monitoring stations are identified in Figure 4.3.1.

Due to on-going start-up related issues, all stations in the new network recorded data loss at some time during 2012. However by the end of the year, most issues had been resolved.

**FIGURE 4.3.1 - IOCC AMBIENT MONITORING STATIONS**





### **4.3.1 Indian Point**

The Indian Point station monitors the ambient levels of SO<sub>2</sub>, NO<sub>x</sub> / NO<sub>2</sub>, PM<sub>2.5</sub> and TPM on a continuous basis. For SO<sub>2</sub>, NO<sub>x</sub> / NO<sub>2</sub>, the ambient air criteria were not exceeded on any occasion in 2012, however for PM<sub>2.5</sub> and TPM, the ambient air criteria was exceeded on one occasion and eleven occasions respectively. Tables 4.3.1.1 through 4.3.1.4 provide summary information on the level of air contaminants measured at Indian Point. Owing to insufficient data, graphical representations indicating the annual trend of each pollutant are not presented.

**TABLE 4.3.1.1 - INDIAN POINT SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	0	0.0%							
	February	0	0.0%							
	March	0	0.0%							
	April	0	0.0%							
	May	274	36.8%	2.9	15.8	11.3	5.1	0	0	0
	June	486	67.5%	3.8	33.1	20.8	9.2	0	0	0
	July	0	0.0%							
	August	433	58.2%	1.0	29.9	12.8	2.6	0	0	0
	September	676	93.9%	1.1	20.1	13.0	4.5	0	0	0
	October	695	93.4%	1.6	18.2	13.4	4.4	0	0	0
	November	690	95.8%	0.8	26.3	11.5	4.0	0	0	0
	December	709	95.3%	2.0	74.7	53.2	24.0	0	0	0
Annual		3963	45.2%	1.8	74.7	53.2	24.0	0	0	0
2012	January	713	95.8%	2.2	77.0	54.6	21.6	0	0	0
	February	667	95.8%	2.6	97.3	86.0	24.2	0	0	0
	March	713	95.8%	3.1	37.8	29.5	10.2	0	0	0
	April	689	95.7%	2.2	50.6	23.5	7.5	0	0	0
	May	702	94.4%	2.2	81.0	75.9	24.0	0	0	0
	June	0	0.0%							
	July	0	0.0%							
	August	0	0.0%							
	September	0	0.0%							
	October	0	0.0%							
	November	0	0.0%							
	December	647	87.0%	3.4	81.0	67.5	21.5	0	0	0
Annual		4131	47.0%	2.6	97.3	86.0	24.2	0	0	0

Observations in ug/m<sup>3</sup>

**TABLE 4.3.1.2 - INDIAN POINT PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	24	77.4%	3.3	8.3	0
	February	26	92.9%	3.9	7.3	0
	March	31	100.0%	3.6	7.3	0
	April	23	76.7%	3.6	6.4	0
	May	25	80.6%	4.9	8.8	0
	June	20	66.7%	4.9	11.1	0
	July	21	67.7%	7.6	18.6	0
	August	21	67.7%	4.9	9.3	0
	September	24	80.0%	3.0	6.7	0
	October	20	64.5%	2.6	8.6	0
	November	2	6.7%	5.6	6.2	0
	December	0	0.0%			
Annual		237	64.9%	4.2	18.6	0
2012	January	11	35.5%	6.2	9.3	0
	February	27	93.1%	4.5	10.5	0
	March	28	90.3%	4.7	8.1	0
	April	30	100.0%	4.3	13.2	0
	May	7	22.6%	6.5	9.4	0
	June	0	0.0%	0.0	0.0	0
	July	0	0.0%	0.0	0.0	0
	August	8	25.8%	4.0	12.0	0
	September	28	93.3%	3.6	12.3	0
	October	29	93.5%	3.1	9.9	0
	November	21	70.0%	6.7	42.4	1
	December	28	90.3%	3.6	8.9	0
Annual		217	59.3%	4.4	42.4	1

Observations in ug/m<sup>3</sup>

**TABLE 4.3.1.3 - INDIAN POINT NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average NO <sub>x</sub> NO <sub>2</sub>		Maximums				Exceedances	
						1-Hour NO <sub>x</sub> NO <sub>2</sub>		24-Hour NO <sub>x</sub> NO <sub>2</sub>		1-Hour (>400)	24-Hour (>200)
2011	January	740	99.5%	16.1	11.7	170.5	71.4	67.9	39.5	0	0
	February	669	99.6%	13.3	8.2	96.1	71.8	33.0	20.6	0	0
	March	744	100.0%	11.8	8.4	200.8	83.1	24.0	13.6	0	0
	April	674	93.6%	7.3	5.7	88.2	43.4	23.4	17.1	0	0
	May	741	99.6%	9.3	7.3	58.3	47.5	14.7	12.2	0	0
	June	717	99.6%	8.4	6.1	102.8	34.2	16.5	10.6	0	0
	July	740	99.5%	7.0	5.0	83.1	32.0	13.1	8.1	0	0
	August	742	99.7%	8.7	5.8	518.5	44.7	45.8	16.3	0	0
	September	705	97.9%	7.0	5.2	51.7	28.7	12.4	9.6	0	0
	October	723	97.2%	7.9	6.1	51.0	33.4	15.9	13.0	0	0
	November	720	100.0%	7.7	6.1	67.8	42.2	21.5	14.9	0	0
	December	742	99.7%	11.0	8.6	106.1	55.3	32.7	27.2	0	0
Annual		8657	98.8%	9.6	7.0	518.5	83.1	67.9	39.5	0	0
2012	January	741	99.6%	16.7	13.0	143.4	73.3	40.3	31.6	0	0
	February	696	100.0%	15.7	12.0	164.2	64.6	50.9	33.4	0	0
	March	744	100.0%	10.8	8.6	84.7	61.0	28.9	22.4	0	0
	April	719	99.9%	8.0	6.5	65.6	38.4	25.0	19.3	0	0
	May	736	98.9%	8.9	6.4	97.3	52.1	28.6	15.9	0	0
	June	718	99.7%		6.8		37.6		12.4	0	0
	July	744	100.0%		6.7		41.4		11.5	0	0
	August	741	99.6%		6.4		37.6		12.4	0	0
	September	693	96.3%	15.3	6.5	91.3	75.2	24.1	28.3	0	0
	October	709	95.3%	14.4	11.1	86.7	64.3	39.4	23.1	0	0
	November	352	48.9%	13.2	10.7	67.2	52.9	28.7	23.0	0	0
	December	735	98.8%	15.5	13.2	154.0	80.1	64.3	47.5	0	0
Annual		8328	94.8%	9.7	8.9	164.2	80.1	64.3	47.5	0	0

Observations in ug/m<sup>3</sup>

**TABLE 4.3.1.4 - INDIAN POINT TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 µg/m <sup>3</sup> )
2011	January					
	February					
	March					
	April					
	May					
	June	27	90.0%	35.4	95.4	0
	July	28	90.3%	35.8	75.9	0
	August	29	93.5%	20.8	79.4	0
	September	30	100.0%	17.0	61.4	0
	October	26	83.9%	14.2	72.0	0
	November	19	63.3%	9.1	37.8	0
	December	23	74.2%	6.3	87.8	0
Annual		182	49.9%	20.7	95.4	0
2012	January	27	87.1%	10.7	89.2	0
	February	25	86.2%	12.0	75.6	0
	March	29	93.5%	21.6	127.9	2
	April	24	80.0%	34.6	81.7	0
	May	16	51.6%	16.7	242.5	2
	June	30	100.0%	55.1	222.2	5
	July	31	100.0%	35.0	125.5	1
	August	30	96.8%	23.0	67.3	0
	September	29	96.7%	17.5	42.6	0
	October	31	100.0%	17.5	66.6	0
	November	26	86.7%	4.9	42.4	0
	December	29	93.5%	11.9	137.1	1
Annual		327	89.3%	22.2	242.5	11

Observations in ug/m<sup>3</sup>

### **4.3.2 Town Depot / Tamarack Drive**

The Town Depot / Tamarack Drive Point station monitors the ambient levels of SO<sub>2</sub>, NO<sub>x</sub> / NO<sub>2</sub>, PM<sub>2.5</sub> and TPM on a continuous basis. For all pollutants except TPM, the ambient air criteria were not exceeded on any occasion in 2012. For TPM the ambient air criteria was exceeded on ten occasions. Tables 4.3.2.1 through 4.3.2.4 provide summary information on the level of air contaminants measured at Town Depot / Tamarack Drive. Owing to insufficient data, graphical representations indicating the annual trend of each pollutant are not presented.

**TABLE 4.3.2.1 - TOWN DEPOT / TAMARACK Dr. SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	709	95.3%	4.4	97.7	69.0	33.3	0	0	0
	February	641	95.4%	1.7	65.2	39.1	10.5	0	0	0
	March	713	95.8%	4.0	133.2	109.8	26.9	0	0	0
	April	690	95.8%	2.2	74.0	43.9	15.7	0	0	0
	May	710	95.4%	2.3	62.0	54.0	10.9	0	0	0
	June	510	70.8%	2.0	370.5	129.5	17.4	0	0	0
	July	0	0.0%							
	August	312	41.9%	2.0	122.8	107.9	21.0	0	0	0
	September	683	94.9%	0.7	25.4	12.8	3.6	0	0	0
	October	704	94.6%	0.8	18.9	13.7	4.6	0	0	0
	November	695	96.5%	1.3	51.5	40.8	7.5	0	0	0
	December	711	95.6%	2.9	129.8	82.9	42.4	0	0	0
Annual		7078	80.8%	2.2	370.5	129.5	42.4	0	0	0
2012	January	566	76.1%	2.0	91.7	67.2	35.2	0	0	0
	February	0	0.0%							
	March	0	0.0%							
	April	0	0.0%							
	May	0	0.0%							
	June	0	0.0%							
	July	0	0.0%							
	August	0	0.0%							
	September	0	0.0%							
	October	0	0.0%							
	November	190	26.4%	0.8	13.7	11.8	2.0	0	0	0
	December	710	95.4%	3.9	122.4	107.1	34.3	0	0	0
Annual		1466	16.7%	2.8	122.4	107.1	35.2	0	0	0

Observations in ug/m<sup>3</sup>

**TABLE 4.3.2.2 - TOWN DEPOT / TAMARACK Dr. PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	22	71.0%	5.5	12.2	0
	February	25	89.3%	5.2	10.0	0
	March	30	96.8%	5.3	10.0	0
	April	12	40.0%	6.2	10.6	0
	May	12	38.7%	3.9	6.1	0
	June	20	66.7%	4.8	16.3	0
	July	21	67.7%	3.9	13.1	0
	August	30	96.8%	2.9	7.3	0
	September	29	96.7%	2.4	7.7	0
	October	30	96.8%	2.4	8.8	0
	November	30	100.0%	2.9	7.3	0
	December	30	96.8%	3.6	19.9	0
Annual		291	79.7%	3.9	19.9	0
2012	January	29	93.5%	3.9	8.3	0
	February	22	75.9%	3.9	11.3	0
	March	27	87.1%	4.1	8.3	0
	April	29	96.7%	3.7	9.5	0
	May	31	100.0%	4.4	14.9	0
	June	28	93.3%	6.2	14.6	0
	July	31	100.0%	4.3	10.8	0
	August	31	100.0%	4.6	12.6	0
	September	28	93.3%	6.2	14.6	0
	October	31	100.0%	2.9	8.0	0
	November	29	96.7%	3.0	9.5	0
	December	28	90.3%	5.3	20.0	0
Annual		344	94.0%	4.4	20.0	0

Observations in ug/m<sup>3</sup>



**TABLE 4.3.2.3 - TOWN DEPOT / TAMARACK Dr. NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average NO <sub>x</sub> NO <sub>2</sub>		Maximums				Exceedances	
						1-Hour NO <sub>x</sub> NO <sub>2</sub>		24-Hour NO <sub>x</sub> NO <sub>2</sub>		1-Hour (>400)	24-Hour (>200)
2011	January	733	98.5%	19.9	15.0	233.9	78.8	84.2	43.8	0	0
	February	669	99.6%	15.8	11.8	159.3	77.8	42.5	30.2	0	0
	March	744	100.0%	16.8	13.3	177.4	85.1	36.5	27.3	0	0
	April	720	100.0%	9.7	8.3	85.1	67.5	27.7	22.7	0	0
	May	740	99.5%	10.6	8.9	160.6	79.4	33.5	24.9	0	0
	June	716	99.4%	8.8	6.7	80.9	34.2	16.2	13.8	0	0
	July	738	99.2%	6.6	5.0	72.8	28.3	13.6	9.3	0	0
	August	740	99.5%	7.1	5.0	139.0	26.7	29.7	10.3	0	0
	September	713	99.0%	7.3	5.5	121.1	31.3	15.4	11.0	0	0
	October	733	98.5%	7.8	5.9	101.3	38.5	20.0	13.0	0	0
	November	720	100.0%	8.5	7.3	94.0	54.7	36.0	30.9	0	0
	December	742	99.7%	13.2	10.9	105.8	54.8	40.6	31.8	0	0
Annual		8708	99.4%	11.0	8.6	233.9	85.1	84.2	43.8	0	0
2012	January	743	99.9%	13.2	13.2	0.0	86.5	0.0	34.9	0	0
	February	696	100.0%	12.8	12.8	0.0	62.1	0.0	37.1	0	0
	March	744	100.0%	8.6	8.6	0.0	56.4	0.0	20.3	0	0
	April	720	100.0%	6.9	6.9	0.0	56.4	0.0	16.7	0	0
	May	738	99.2%	3.1	3.1	0.0	156.1	0.0	8.3	0	0
	June	716	99.4%	7.9	7.9	0.0	69.3	0.0	21.4	0	0
	July	744	100.0%	5.1	5.1	0.0	124.1	0.0	10.3	0	0
	August	742	99.7%	4.8	4.8	0.0	22.6	0.0	10.1	0	0
	September	705	97.9%	4.1	4.1	0.0	33.8	0.0	9.6	0	0
	October	722	97.0%	8.9	6.7	61.8	43.2	22.2	16.2	0	0
	November	685	95.1%	8.8	8.0	56.8	44.3	24.7	18.2	0	0
	December	712	95.7%	22.1	17.4	220.2	94.0	81.4	53.2	0	0
Annual		8667	98.7%	8.8	8.2	220.2	156.1	81.4	53.2	0	0

Observations in ug/m<sup>3</sup>

**TABLE 4.3.2.4 - TOWN DEPOT / TAMARACK Dr. TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 µg/m <sup>3</sup> )
2011	January					
	February					
	March					
	April					
	May					
	June	27	90.0%	22.0	74.8	0
	July	31	100.0%	25.4	59.3	0
	August	30	96.8%	15.4	44.5	0
	September	30	100.0%	17.0	91.9	0
	October	29	93.5%	12.7	100.5	0
	November	29	96.7%	9.6	105.8	0
	December	28	90.3%	8.4	145.6	1
Annual		204	55.9%	15.9	145.6	1
2012	January	22	71.0%	10.7	117.0	0
	February	23	79.3%	15.6	96.8	0
	March	27	87.1%	29.1	160.1	4
	April	30	100.0%	40.7	112.5	0
	May	30	96.8%	30.8	220.1	2
	June	30	100.0%	42.7	145.0	2
	July	31	100.0%	24.3	117.6	0
	August	31	100.0%	14.9	69.6	0
	September	27	90.0%	11.7	44.5	0
	October	31	100.0%	10.4	37.8	0
	November	30	100.0%	8.2	72.9	0
	December	31	100.0%	21.5	233.8	2
Annual		343	93.7%	22.1	233.8	10

Observations in ug/m<sup>3</sup>

### **4.3.3 Smokey Mountain**

The Smokey Mountain station monitors the ambient levels of SO<sub>2</sub>, NO<sub>x</sub> / NO<sub>2</sub>, PM<sub>2.5</sub> and TPM on a continuous basis. For all pollutants with the exception of TPM, the ambient air criteria were not exceeded on any occasion in 2012. For TPM, the ambient air criteria was exceeded on three occasions. Tables 4.3.3.1 through 4.3.3.4 provide summary information on the level of air contaminants measured at Smokey Mountain. Owing to insufficient data, graphical representations indicating the annual trend of each pollutant are not presented.

**TABLE 4.3.3.1 - SMOKEY MOUNTAIN SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	58	7.8%	1.6	3.5	3.1	2.3	0	0	0
	February	667	99.3%	2.7	44.9	36.3	10.6	0	0	0
	March	720	96.8%	1.4	25.6	9.5	2.3	0	0	0
	April	703	97.6%	2.1	28.0	17.2	4.7	0	0	0
	May	741	99.6%	1.5	44.7	31.3	9.0	0	0	0
	June	703	97.6%	1.0	7.5	3.9	2.1	0	0	0
	July	707	95.0%	0.8	8.3	4.1	1.6	0	0	0
	August	706	94.9%	1.0	2.0	2.0	1.5	0	0	0
	September	684	95.0%	1.2	5.8	3.1	1.8	0	0	0
	October	704	94.6%	0.9	12.4	4.7	2.5	0	0	0
	November	690	95.8%	1.0	16.4	10.3	3.3	0	0	0
	December	710	95.4%	0.6	5.7	3.4	1.2	0	0	0
Annual		7793	89.0%	1.3	44.9	36.3	10.6	0	0	0
2012	January	710	95.4%	0.9	16.8	13.2	3.0	0	0	0
	February	667	95.8%	1.2	29.3	13.9	5.4	0	0	0
	March	713	95.8%	0.9	42.2	23.0	5.9	0	0	0
	April	684	95.0%	0.9	32.4	21.2	5.2	0	0	0
	May	674	90.6%	1.0	50.7	48.5	8.3	0	0	0
	June	0	0.0%							
	July	0	0.0%							
	August	0	0.0%							
	September	0	0.0%							
	October	0	0.0%							
	November	0	0.0%							
	December	0	0.0%							
Annual		3448	39.3%	1.0	50.7	48.5	8.3	0	0	0

Observations in ug/m<sup>3</sup>

**TABLE 4.3.3.2 - SMOKEY MOUNTAIN PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	25	80.6%	3.7	8.6	0
	February	25	89.3%	5.2	7.6	0
	March	29	93.5%	3.8	6.0	0
	April	23	76.7%	3.7	7.0	0
	May	25	80.6%	1.9	4.6	0
	June	27	90.0%	2.3	6.2	0
	July	23	74.2%	2.8	10.0	0
	August	22	71.0%	2.2	5.9	0
	September	22	73.3%	1.7	3.4	0
	October	18	58.1%	1.6	3.7	0
	November	29	96.7%	1.8	4.7	0
	December	31	100.0%	2.4	5.0	0
Annual		299	81.9%	2.8	10.0	0
2012	January	28	90.3%	3.4	6.6	0
	February	29	100.0%	3.0	11.2	0
	March	30	96.8%	3.2	6.0	0
	April	30	100.0%	2.5	7.2	0
	May	8	25.8%	3.8	6.6	0
	June	7	23.3%	4.3	6.7	0
	July	22	71.0%	3.2	8.3	0
	August	22	71.0%	2.0	7.9	0
	September	18	60.0%	2.0	7.5	0
	October	1	3.2%	4.8	4.8	0
	November	27	90.0%	2.3	6.8	0
	December	28	90.3%	2.7	6.0	0
Annual		250	68.3%	2.8	11.2	0

Observations in ug/m<sup>3</sup>

**TABLE 4.3.3.3 - SMOKEY MOUNTAIN NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average NO <sub>x</sub> NO <sub>2</sub>		Maximums				Exceedances	
						1-Hour NO <sub>x</sub>	1-Hour NO <sub>2</sub>	24-Hour NO <sub>x</sub>	24-Hour NO <sub>2</sub>	1-Hour (>400)	24-Hour (>200)
2011	January	580	78.0%	34.1	30.9	169.2	89.0	105.7	69.7	0	0
	February	628	93.5%	17.8	16.1	97.8	67.7	35.2	30.2	0	0
	March	686	92.2%	15.0	14.2	122.4	68.9	28.2	27.3	0	0
	April	13	1.8%	30.0	23.4	97.7	65.6	0.0	0.0	0	0
	May	0	0.0%								
	June	178	24.7%	26.4	25.0	64.5	54.1	33.9	33.2	0	0
	July	663	89.1%	25.3	24.2	83.1	79.1	47.4	45.0	0	0
	August	378	50.8%	28.1	26.4	70.3	66.2	36.8	34.1	0	0
	September	0	0.0%								
	October	0	0.0%								
	November	31	4.3%	10.5	9.9	27.5	26.4	11.7	11.0	0	0
	December	710	95.4%	10.6	8.6	88.8	52.7	35.2	26.2	0	0
Annual		3867	44.1%	21.1	19.4	169.2	89.0	105.7	69.7	0	0
2012	January	709	95.3%	14.1	11.8	105.4	61.1	36.2	28.8	0	0
	February	591	84.9%	15.9	12.8	266.2	70.8	61.4	35.9	0	0
	March	690	92.7%	9.8	8.6	135.0	95.4	36.1	24.9	0	0
	April	685	95.1%	5.0	4.7	58.6	48.0	15.7	13.8	0	0
	May	703	94.5%	5.7	5.1	103.3	52.6	17.8	12.1	0	0
	June	681	94.6%	10.0	9.3	210.4	200.4	20.9	20.1	0	0
	July	739	99.3%	7.4	6.7	39.6	31.7	17.4	15.2	0	0
	August	738	99.2%	7.9	6.5	53.8	31.2	18.0	11.3	0	0
	September	692	96.1%	10.2	8.9	61.7	44.5	25.8	19.3	0	0
	October	713	95.8%	10.8	9.1	74.8	64.5	28.2	26.0	0	0
	November	709	98.5%	10.9	10.3	70.6	56.7	21.3	20.3	0	0
	December	692	93.0%	22.4	19.2	201.1	102.9	103.7	71.1	0	0
Annual		8342	95.0%	10.7	9.3	266.2	200.4	103.7	71.1	0	0

Observations in ug/m<sup>3</sup>

**TABLE 4.3.3.4 - SMOKEY MOUNTAIN TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 µg/m <sup>3</sup> )
2011	January					
	February					
	March					
	April					
	May					
	June	20	66.7%	12.4	42.6	0
	July	27	87.1%	11.6	64.4	0
	August	31	100.0%	13.1	44.0	0
	September	30	100.0%	11.5	93.5	0
	October	29	93.5%	9.1	30.8	0
	November	30	100.0%	6.4	59.2	0
	December	27	87.1%	3.4	31.5	0
Annual		194	53.2%	9.6	93.5	0
2012	January	29	93.5%	5.5	20.4	0
	February	26	89.7%	5.5	91.1	0
	March	31	100.0%	13.9	88.3	0
	April	30	100.0%	19.5	65.8	0
	May	31	100.0%	23.5	297.1	3
	June	30	100.0%	34.7	112.5	0
	July	31	100.0%	13.4	67.8	0
	August	31	100.0%	16.4	38.3	0
	September	26	86.7%	18.5	64.9	0
	October	29	93.5%	9.7	91.9	0
	November	29	96.7%	6.2	53.0	0
	December	28	90.3%	5.4	94.5	0
Annual		351	95.9%	14.5	297.1	3

Observations in ug/m<sup>3</sup>

#### **4.3.4 Bartlett Drive**

The Bartlett Drive monitoring station is located at A. P. Low School and measured TPM on a one day in six day cycle in 2012. The station had an equipment upgrade in 2011, resulting in period of monitoring downtime. One exceedance of the ambient air standard was recorded in 2012.

Table 4.3.4.1 provides summary information of air contaminants measured at Bartlett Drive, while Figure 4.3.4.1 provides a graphical representation of the annual trend of the measured pollutants.

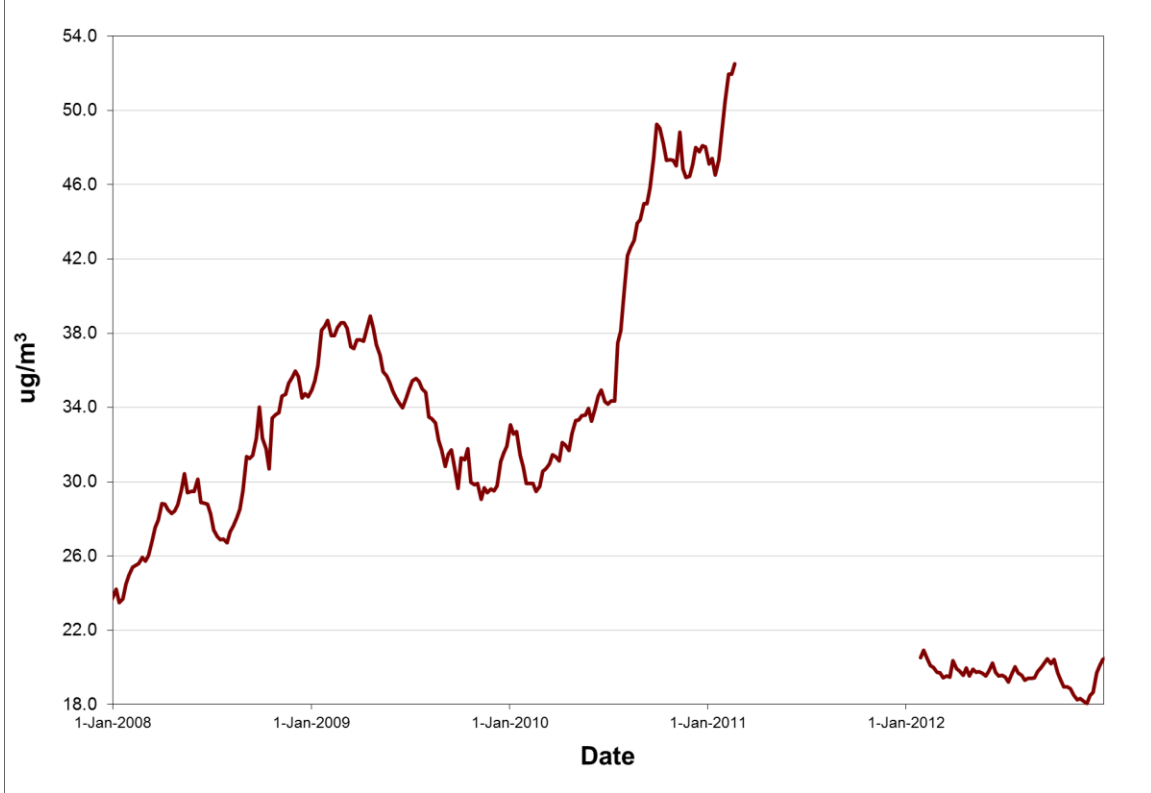


**TABLE 4.3.4.1 - BARTLETT DRIVE TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m <sup>3</sup> )
2011	January	4	80.0%	29.7	52.0	0
	February	0	0.0%			
	March	4	80.0%	13.2	22.3	0
	April	5	100.0%	36.5	54.6	0
	May	4	80.0%	56.6	95.6	0
	June	5	100.0%	40.8	98.3	0
	July	5	100.0%	22.3	32.7	0
	August	0	0.0%			
	September	2	40.0%	16.3	17.9	0
	October	5	100.0%	32.3	72.1	0
	November	5	100.0%	17.1	46.6	0
	December	5	100.0%	4.7	8.5	0
Annual		44	258.8%	14.0	98.3	0
2012	January	5	100.0%	12.3	44.8	0
	February	5	100.0%	13.9	49.5	0
	March	5	100.0%	19.5	110.6	0
	April	5	100.0%	23.9	67.6	0
	May	5	100.0%	46.1	86.0	0
	June	5	100.0%	41.1	98.3	0
	July	5	100.0%	23.8	79.9	0
	August	6	100.0%	20.5	51.0	0
	September	5	100.0%	27.4	43.6	0
	October	5	100.0%	12.1	37.5	0
	November	5	100.0%	10.0	16.6	0
	December	5	100.0%	21.5	159.7	1
Annual		61	100.0%	20.4	159.7	1

Observations in ug/m<sup>3</sup>

**FIGURE 4.3.4.1 - BARTLETT DRIVE ANNUAL TPM CONCENTRATIONS**



Rolling annual average of daily concentrations

### 4.3.5 Hudson Drive

The Hudson Drive monitoring station is located at the fire hall and measured TPM on a one day in six day cycle in 2012. The station is new in 2011.

Table 4.3.5.1 provides summary information of air contaminants measured at Hudson Drive. In 2012, the ambient air criteria was exceeded on three occasions. Owing to insufficient data, graphical representations indicating the annual trend of each pollutant are not presented.

**TABLE 4.3.5.1 - HUDSON DRIVE TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m <sup>3</sup> )
2011	January					
	February					
	March					
	April					
	May					
	June					
	July					
	August					
	September	2	100.0%	18.3	26.6	0
	October	5	100.0%	42.6	68.9	0
	November	5	100.0%	25.6	83.3	0
	December	5	100.0%	5.5	16.2	0
Annual		17	100.0%	18.2	83.3	0
2012	January	5	100.0%	16.2	37.2	0
	February	5	100.0%	12.2	44.9	0
	March	5	100.0%	17.4	98.3	0
	April	5	100.0%	43.7	178.1	1
	May	5	100.0%	67.9	172.0	1
	June	5	100.0%	51.1	104.4	0
	July	5	100.0%	22.6	86.0	0
	August	6	100.0%	26.9	35.0	0
	September	5	100.0%	32.9	47.3	0
	October	5	100.0%	18.5	55.3	0
	November	5	100.0%	14.0	31.9	0
	December	5	100.0%	21.0	196.6	1
Annual		60	100.0%	24.9	196.6	3

Observations in ug/m<sup>3</sup>

## 4.4 Wabush Mines

In 2012, Wabush Mines operated monitoring stations at three locations in and around Wabush. These stations are installed to monitor the emissions from Wabush Mines' iron ore mine and concentrator facility and are located on Bond Street, Shea Street and near the NALCOR substation to the north of the town. The locations of these monitoring stations are identified in Figure 4.4.1.

**FIGURE 4.4.1 - WABUSH MINES AMBIENT MONITORING STATIONS**



### 4.4.1 Bond Street

The Bond Street monitoring station is located near the Provincial Building and measures SO<sub>2</sub> and PM<sub>2.5</sub> on a continuous basis. The SO<sub>2</sub> criteria was not exceeded on any occasion in 2012, however the PM<sub>2.5</sub> criteria was exceeded on one occasion.

The SO<sub>2</sub> analyzer had been malfunctioning for a number of years resulting in large periods of data being invalidated. The last significant repairs occurred in September 2010 and the analyzer has been operating within acceptable parameters ever since.

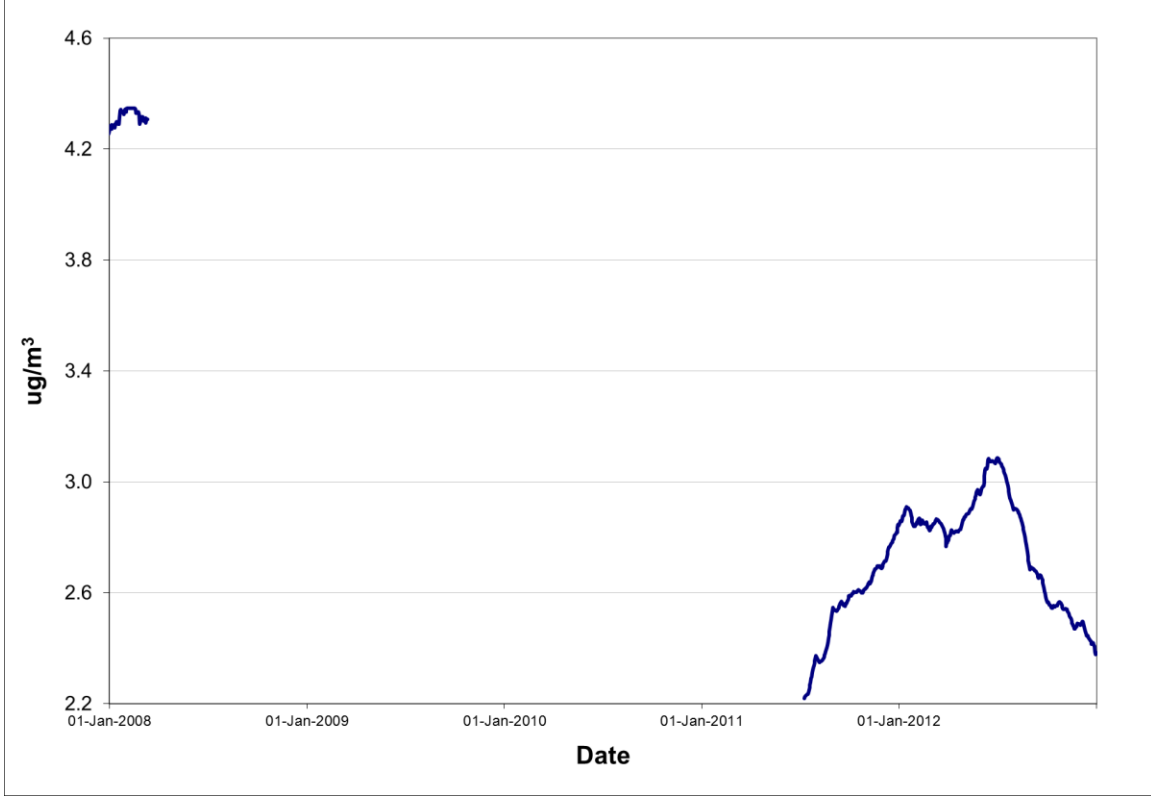
Tables 4.4.1.1 and 4.4.1.2 provide summary information of air contaminants measured at Bond Street, while Figures 4.4.1.1 and 4.4.1.2 provide a graphical representation of the annual trend of PM<sub>2.5</sub> and SO<sub>2</sub> respectively.

**TABLE 4.4.1.1 - BOND STREET SO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	702	94.4%	2.4	24.6	13.2	7.3	0	0	0
	February	614	91.4%	2.8	30.4	21.3	8.1	0	0	0
	March	698	93.8%	3.4	44.2	24.5	11.9	0	0	0
	April	688	95.6%	1.4	29.8	17.0	3.3	0	0	0
	May	714	96.0%	2.5	18.5	10.1	4.7	0	0	0
	June	674	93.6%	2.6	23.6	11.5	4.9	0	0	0
	July	714	96.0%	3.7	21.8	15.1	6.4	0	0	0
	August	712	95.7%	4.3	16.6	12.4	7.9	0	0	0
	September	672	93.3%	3.1	16.5	9.8	5.3	0	0	0
	October	549	73.8%	1.5	11.1	6.4	3.4	0	0	0
	November	496	68.9%	3.0	16.2	11.3	5.1	0	0	0
	December	705	94.8%	3.1	49.2	30.6	9.4	0	0	0
Annual		7938	90.6%	2.8	49.2	30.6	11.9	0	0	0
2012	January	704	94.6%	2.5	24.5	13.9	6.1	0	0	0
	February	667	95.8%	2.7	40.7	23.2	6.1	0	0	0
	March	710	95.4%	2.8	73.5	58.7	11.0	0	0	0
	April	691	96.0%	2.4	24.6	17.3	7.1	0	0	0
	May	691	92.9%	3.5	16.4	12.9	8.7	0	0	0
	June	472	65.6%	4.6	13.6	12.4	11.8	0	0	0
	July	709	95.3%	1.6	15.9	6.5	3.2	0	0	0
	August	698	93.8%	1.9	16.1	11.1	4.2	0	0	0
	September	661	91.8%	1.7	8.5	5.1	3.5	0	0	0
	October	711	95.6%	1.4	7.0	4.3	2.9	0	0	0
	November	690	95.8%	2.2	5.5	4.7	4.3	0	0	0
	December	711	95.6%	1.9	22.5	8.5	3.8	0	0	0
Annual		8115	92.4%	2.4	73.5	58.7	11.8	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.4.1.1 - BOND STREET ANNUAL SO<sub>2</sub> CONCENTRATIONS**



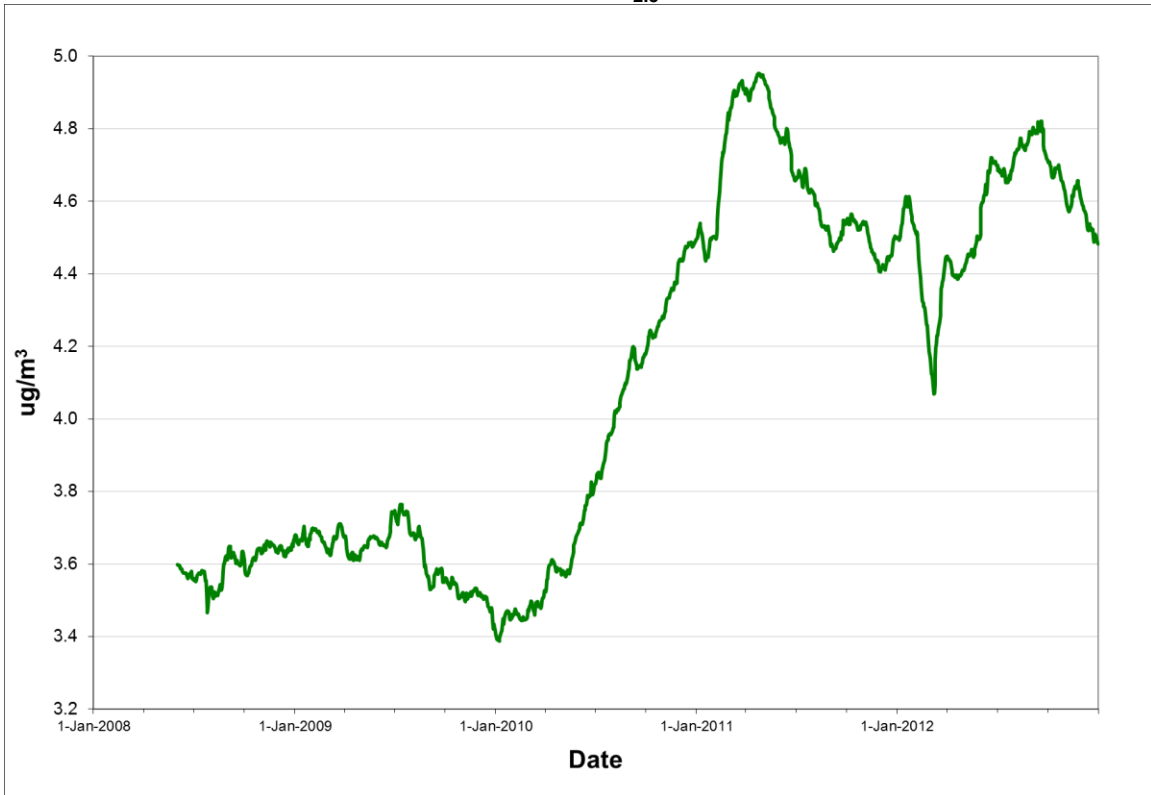
Rolling annual average of daily concentrations

**TABLE 4.4.1.2 - BOND STREET PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	31	100.0%	4.9	10.7	0
	February	28	100.0%	7.7	14.0	0
	March	31	100.0%	5.6	10.1	0
	April	30	100.0%	4.6	7.7	0
	May	31	100.0%	2.9	4.6	0
	June	26	86.7%	3.6	9.4	0
	July	31	100.0%	4.9	10.1	0
	August	31	100.0%	3.8	7.0	0
	September	29	96.7%	4.4	15.2	0
	October	19	61.3%	3.3	10.9	0
	November	19	63.3%	2.5	5.8	0
	December	27	87.1%	4.8	9.8	0
Annual		333	91.2%	4.5	15.2	0
2012	January	31	100.0%	5.3	10.5	0
	February	29	100.0%	3.5	7.1	0
	March	31	100.0%	8.4	23.3	0
	April	30	100.0%	4.2	6.0	0
	May	29	93.5%	3.8	8.9	0
	June	26	86.7%	6.2	26.4	1
	July	31	100.0%	5.2	10.0	0
	August	31	100.0%	4.4	8.6	0
	September	29	96.7%	3.7	11.8	0
	October	31	100.0%	2.8	7.3	0
	November	30	100.0%	3.1	7.7	0
	December	31	100.0%	3.3	7.6	0
Annual		359	98.1%	4.5	26.4	1

Observations in µg/m<sup>3</sup>

**FIGURE 4.4.1.2 - BOND STREET ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



Rolling annual average of daily concentrations

#### **4.4.2 Shea Street**

The Shea Street station monitored the ambient levels of TPM on a 1 day in 6 day cycle. Due to logistical issues, the Shea Street station was closed at the end of June 2012. There were no exceedances of the ambient air criteria in 2012. Table 4.4.2.1 provides summary information on the level of air contaminants measured at Shea Street, while Figure 4.4.2.1 provides a graphical representation of the annual trend in TPM.

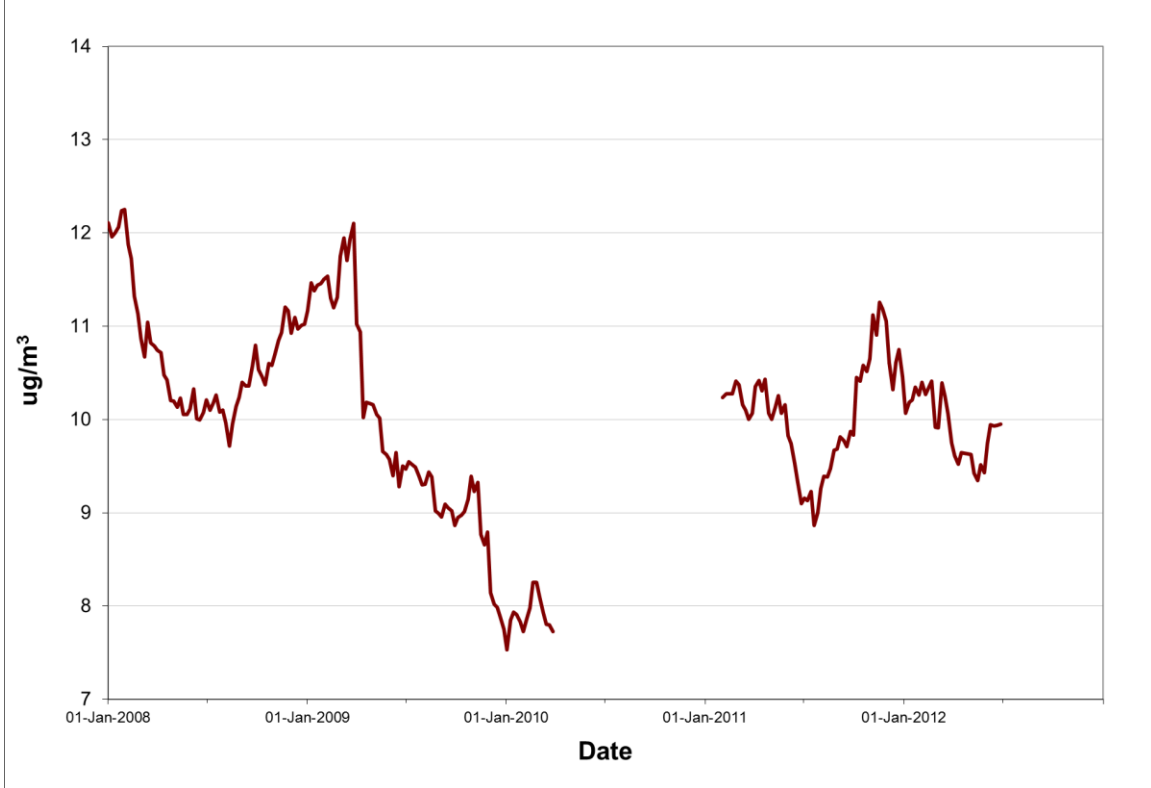


**TABLE 4.4.2.1 - SHEA STREET TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m <sup>3</sup> )
2011	January	5	100.0%	7.2	15.0	0
	February	3	60.0%	12.2	19.6	0
	March	5	100.0%	7.3	14.1	0
	April	5	100.0%	16.1	46.1	0
	May	5	100.0%	18.9	28.9	0
	June	5	100.0%	10.8	21.1	0
	July	5	100.0%	11.6	28.6	0
	August	6	100.0%	12.2	30.8	0
	September	5	100.0%	14.8	47.8	0
	October	5	100.0%	19.0	40.9	0
	November	5	100.0%	11.2	100.3	0
	December	4	80.0%	1.2	3.5	0
Annual		58	95.1%	10.5	100.3	0
2012	January	5	100.0%	5.8	14.5	0
	February	5	100.0%	7.5	15.8	0
	March	5	100.0%	5.9	62.0	0
	April	5	100.0%	13.9	19.7	0
	May	5	100.0%	14.7	22.7	0
	June	5	100.0%	20.7	45.2	0
	July					
	August					
	September					
	October					
	November					
	December					
Annual		30	100.0%	10.1	62.0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.4.2.1 - SHEA STREET ANNUAL TPM CONCENTRATIONS**



Rolling annual average of daily concentrations

### 4.4.3 Substation

The Substation monitoring station is located near the NALCOR substation to the north of the town of Wabush. The station monitors the ambient levels of TPM, PM<sub>10</sub> and PM<sub>2.5</sub> on a 1 day in 6 day cycle. There were seven exceedances of the ambient air criteria for TPM and two exceedances of the PM<sub>10</sub> standard; however were no exceedances of the PM<sub>2.5</sub> standard in 2012.

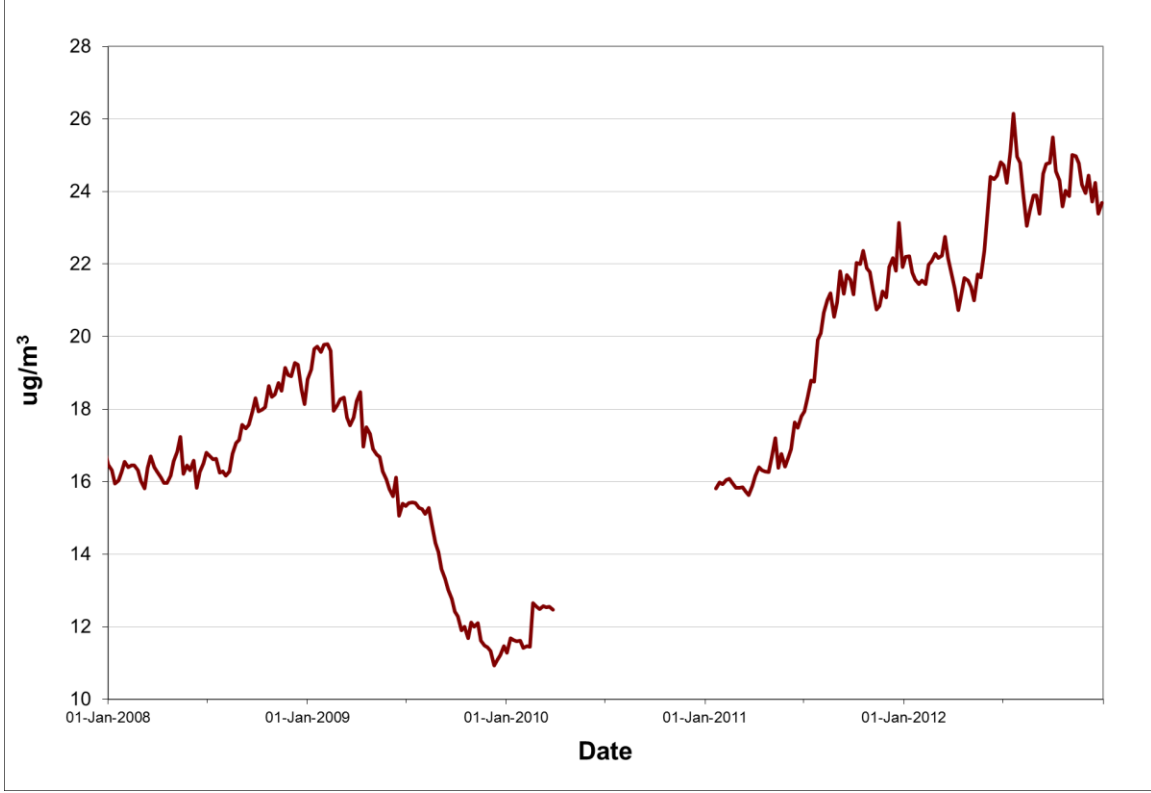
Tables 4.4.3.1 through 4.4.3.3 provide summary information on the level of air contaminants measured at the Substation, while Figures 4.4.3.1 through 4.4.3.3 provide a graphical representation of the annual trend of each air contaminant.

**TABLE 4.4.3.1 - SUBSTATION TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m <sup>3</sup> )
2011	January	5	100.0%	14.2	25.7	0
	February	5	100.0%	14.5	23.0	0
	March	5	100.0%	16.4	40.0	0
	April	5	100.0%	24.8	44.0	0
	May	4	80.0%	51.2	146.8	1
	June	5	100.0%	36.9	258.0	1
	July	5	100.0%	63.9	247.7	1
	August	6	100.0%	37.1	106.9	0
	September	5	100.0%	18.7	82.1	0
	October	5	100.0%	30.2	125.1	1
	November	5	100.0%	10.4	42.7	0
	December	5	100.0%	5.9	38.3	0
Annual		60	98.4%	21.9	258.0	4
2012	January	5	100.0%	11.0	21.0	0
	February	5	100.0%	22.9	78.6	0
	March	5	100.0%	12.0	42.3	0
	April	5	100.0%	22.5	51.7	0
	May	5	100.0%	68.5	168.1	1
	June	4	80.0%	196.2	413.8	3
	July	5	100.0%	68.8	547.4	2
	August	6	100.0%	24.1	110.4	0
	September	5	100.0%	40.8	124.6	1
	October	5	100.0%	13.7	29.8	0
	November	5	100.0%	10.8	33.7	0
	December	5	100.0%	5.1	7.4	0
Annual		60	98.4%	23.7	547.4	7

Observations in ug/m<sup>3</sup>

**FIGURE 4.4.3.1 - SUBSTATION ANNUAL TPM CONCENTRATIONS**



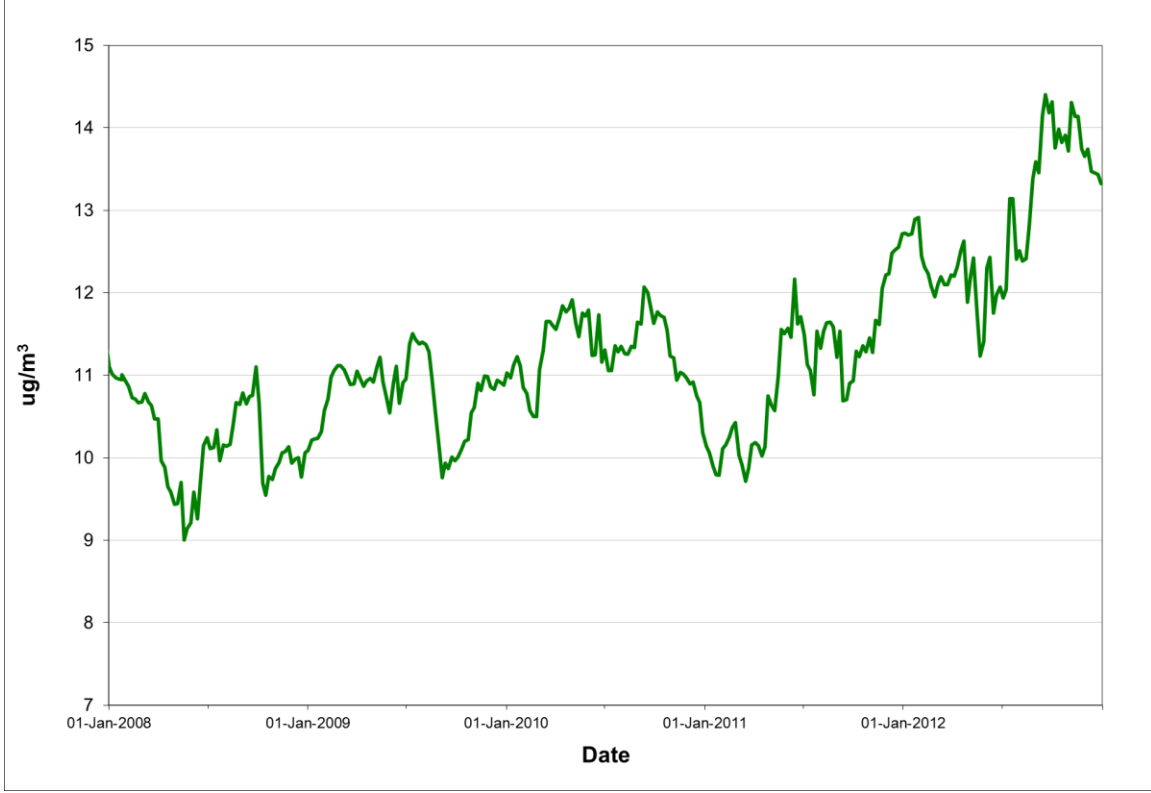
Rolling annual average of daily concentrations

**TABLE 4.4.3.2 - SUBSTATION PM<sub>10</sub> (DICHOT) SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>50 ug/m <sup>3</sup> )
2011	January	5	100.0%	1.4	2.9	0
	February	3	60.0%	13.2	24.0	0
	March	2	40.0%	14.9	18.5	0
	April	5	100.0%	15.3	47.3	0
	May	4	80.0%	25.9	53.9	1
	June	4	80.0%	20.0	57.7	1
	July	4	80.0%	18.2	47.6	0
	August	4	66.7%	6.9	12.3	0
	September	3	60.0%	7.1	17.0	0
	October	4	80.0%	11.4	29.7	0
	November	5	100.0%	14.7	31.2	0
	December	5	100.0%	6.5	17.1	0
Annual		48	78.7%	12.7	57.7	2
2012	January	5	100.0%	3.3	9.4	0
	February	5	100.0%	3.5	8.4	0
	March	4	80.0%	16.9	24.4	0
	April	0	0.0%	0.0	0.0	0
	May	5	100.0%	18.5	30.1	0
	June	4	80.0%	27.9	54.8	1
	July	3	60.0%	25.5	64.2	1
	August	6	100.0%	18.4	33.4	0
	September	4	80.0%	17.9	36.5	0
	October	4	80.0%	4.0	6.8	0
	November	5	100.0%	14.1	31.8	0
	December	5	100.0%	3.2	6.1	0
Annual		50	82.0%	13.3	64.2	2

Observations in ug/m<sup>3</sup>

**FIGURE 4.4.3.2 - SUBSTATION ANNUAL PM<sub>10</sub> (DICHOT) CONCENTRATIONS**



Rolling annual average of daily concentrations

**TABLE 4.4.3.3 - SUBSTATION PM<sub>2.5</sub> (DICHOT) SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 ug/m <sup>3</sup> )
2011	January	5	100.0%	1.1	2.9	0
	February	3	60.0%	6.5	12.2	0
	March	2	40.0%	8.2	10.8	0
	April	5	100.0%	3.3	5.6	0
	May	4	80.0%	5.0	8.4	0
	June	4	80.0%	5.8	11.2	0
	July	4	80.0%	4.5	8.0	0
	August	4	66.7%	3.0	4.6	0
	September	3	60.0%	2.5	5.7	0
	October	4	80.0%	3.1	7.5	0
	November	5	100.0%	5.3	16.9	0
	December	5	100.0%	3.2	8.6	0
Annual		48	78.7%	4.0	16.9	0
2012	January	5	100.0%	1.6	3.9	0
	February	5	100.0%	1.5	3.0	0
	March	4	80.0%	6.9	10.2	0
	April	0	0.0%	0.0	0.0	0
	May	5	100.0%	6.5	12.1	0
	June	4	80.0%	9.2	12.2	0
	July	3	60.0%	7.3	16.4	0
	August	6	100.0%	6.0	8.7	0
	September	4	80.0%	5.1	8.2	0
	October	4	80.0%	1.1	1.8	0
	November	5	100.0%	6.8	21.2	0
	December	5	100.0%	1.9	3.0	0
Annual		50	82.0%	4.8	21.2	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.4.3.3 - SUBSTATION ANNUAL PM<sub>2.5</sub> (DICHOT) CONCENTRATIONS**



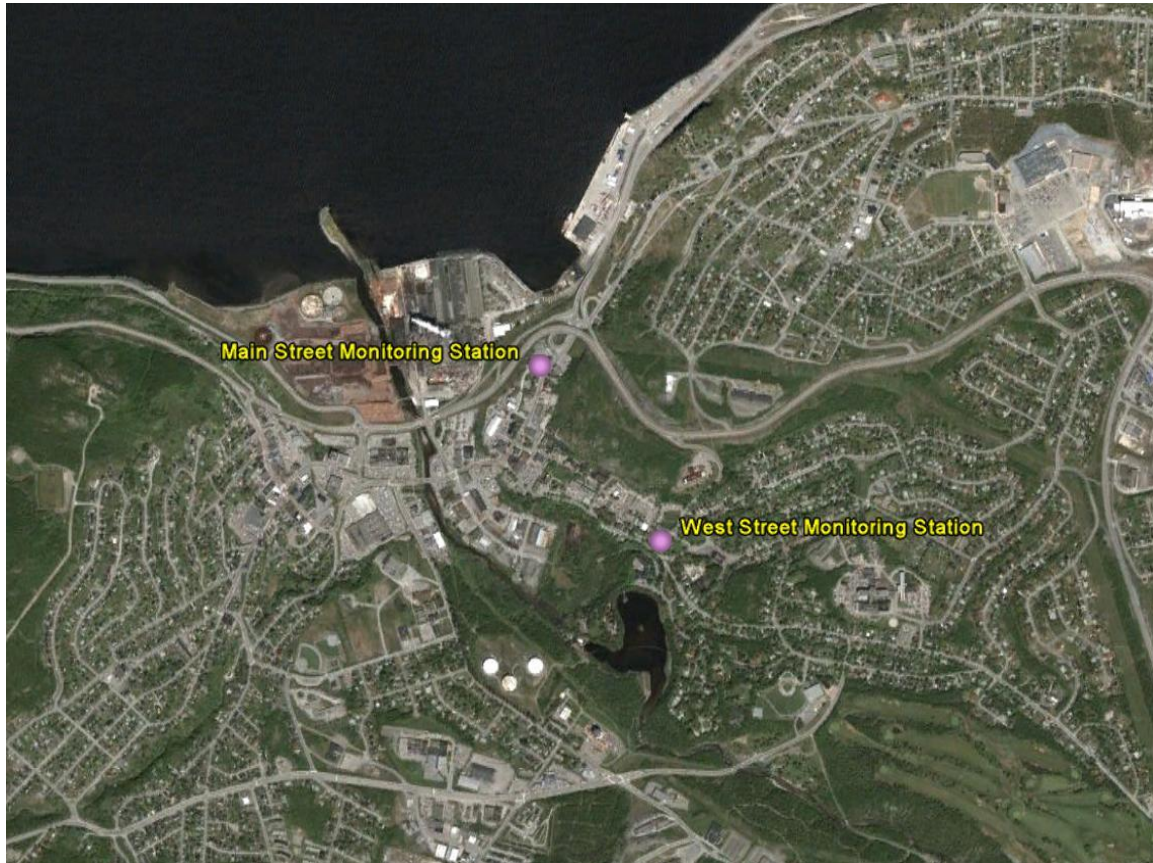
Rolling annual average of daily concentrations



## 4.5 Corner Brook Pulp and Paper

In 2012, Corner Brook Pulp and Paper (CBPP) operated monitoring stations at two locations in Corner Brook. These stations are installed to monitor the emissions from CBPP's paper mill operation and are located on Main Street and West Street. The locations of these monitoring stations are identified in Figure 4.5.1.

**FIGURE 4.5.1 - CBPP AMBIENT MONITORING STATIONS**



### 4.5.1 Main Street

The Main Street monitoring station is located at Hotel Corner Brook. The station monitors ambient levels of  $\text{SO}_2$  and  $\text{PM}_{2.5}$  on a continuous basis and TPM on a 1 day in 6 day cycle. For all pollutants except TPM, the ambient air criteria were not exceeded on any occasion in 2012. For TPM the ambient air criteria was exceeded on one occasion.

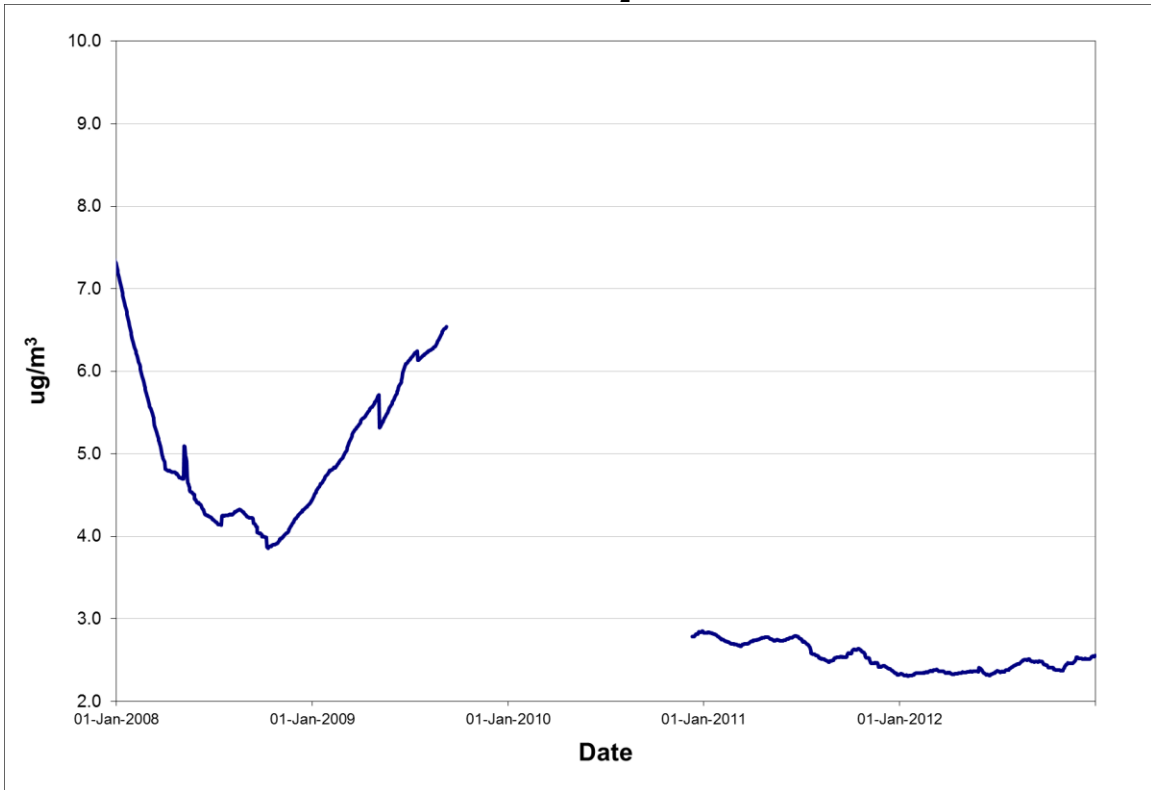
Tables 4.5.1.1 through 4.5.1.3 provide summary information on the level of air contaminants measured at the Main Street Station, while Figures 4.5.1.1 through 4.5.1.3 provide a graphical representation of the annual trend of each pollutant.

**TABLE 4.5.1.1 - MAIN STREET SO<sub>2</sub> SUMMARY 2011& 2012**

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum			Regulatory Exceedances		
					1-Hour	3-Hour	24-Hour	1-Hour (>900)	3-Hour (>600)	24-Hour (>300)
2011	January	708	95.2%	2.0	5.7	5.4	4.3	0	0	0
	February	642	95.5%	1.5	3.7	3.5	2.7	0	0	0
	March	714	96.0%	2.5	8.2	4.9	4.4	0	0	0
	April	697	96.8%	2.4	4.5	4.5	3.9	0	0	0
	May	713	95.8%	1.8	7.1	4.7	3.5	0	0	0
	June	689	95.7%	3.0	10.2	9.1	5.2	0	0	0
	July	729	98.0%	1.9	25.8	14.2	5.4	0	0	0
	August	741	99.6%	1.9	13.4	10.5	3.6	0	0	0
	September	720	100.0%	2.9	65.3	40.6	10.3	0	0	0
	October	740	99.5%	3.4	25.1	23.4	7.7	0	0	0
	November	718	99.7%	2.4	6.4	5.9	4.7	0	0	0
	December	733	98.5%	2.1	5.0	4.1	3.5	0	0	0
Annual		8544	97.5%	2.3	65.3	40.6	10.3	0	0	0
2012	January	744	100.0%	2.2	4.2	3.9	3.2	0	0	0
	February	696	100.0%	1.9	4.7	4.5	3.2	0	0	0
	March	741	99.6%	2.3	15.1	10.7	4.3	0	0	0
	April	714	99.2%	2.4	27.4	21.4	5.6	0	0	0
	May	742	99.7%	2.4	168.3	81.2	22.0	0	0	0
	June	715	99.3%	2.6	44.0	25.0	7.3	0	0	0
	July	706	94.9%	2.6	27.8	18.3	5.3	0	0	0
	August	707	95.0%	2.9	22.4	18.5	5.1	0	0	0
	September	717	99.6%	2.0	16.9	4.7	3.6	0	0	0
	October	744	100.0%	2.7	7.2	5.4	4.6	0	0	0
	November	711	98.8%	4.2	24.9	11.6	7.7	0	0	0
	December	671	90.2%	2.5	6.6	6.4	4.5	0	0	0
Annual		8608	98.0%	2.6	168.3	81.2	22.0	0	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.5.1.1 - MAIN STREET ANNUAL SO<sub>2</sub> CONCENTRATIONS**



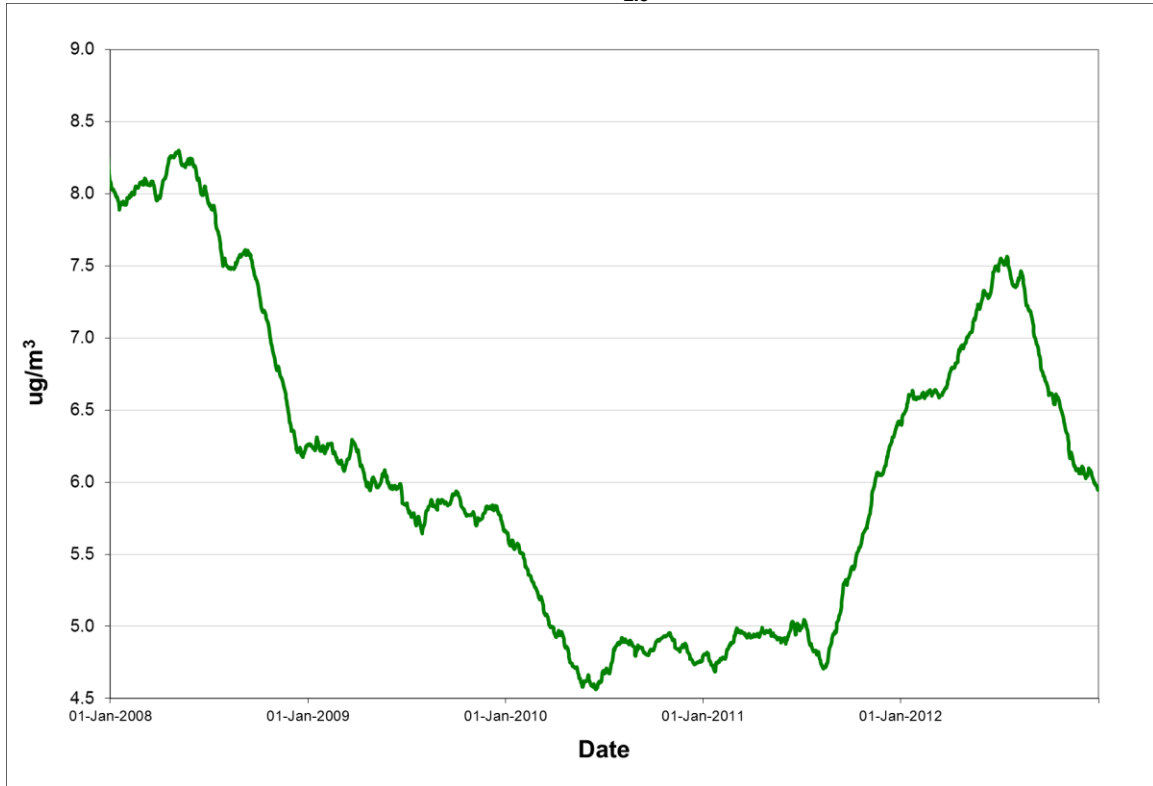
Rolling annual average of hourly concentrations

**TABLE 4.5.1.2 - MAIN STREET PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	31	100.0%	4.3	21.5	0
	February	27	96.4%	5.0	16.8	0
	March	26	83.9%	4.0	9.4	0
	April	30	100.0%	4.5	9.8	0
	May	29	93.5%	4.1	11.1	0
	June	30	100.0%	6.5	23.3	0
	July	25	80.6%	8.2	19.3	0
	August	31	100.0%	8.6	16.4	0
	September	30	100.0%	10.3	23.8	0
	October	31	100.0%	7.1	15.4	0
	November	30	100.0%	7.9	18.4	0
	December	31	100.0%	6.3	13.1	0
Annual		351	96.2%	6.4	23.8	0
2012	January	30	96.8%	6.4	13.3	0
	February	29	100.0%	5.4	10.3	0
	March	13	41.9%	4.5	11.0	0
	April	30	100.0%	7.0	15.6	0
	May	31	100.0%	7.6	14.2	0
	June	30	100.0%	9.1	19.1	0
	July	24	77.4%	6.3	17.2	0
	August	31	100.0%	6.2	14.3	0
	September	30	100.0%	4.5	11.9	0
	October	27	87.1%	4.1	19.7	0
	November	30	100.0%	4.5	16.1	0
	December	30	96.8%	4.7	17.0	0
Annual		335	91.5%	5.9	19.7	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.5.1.2 - MAIN STREET ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



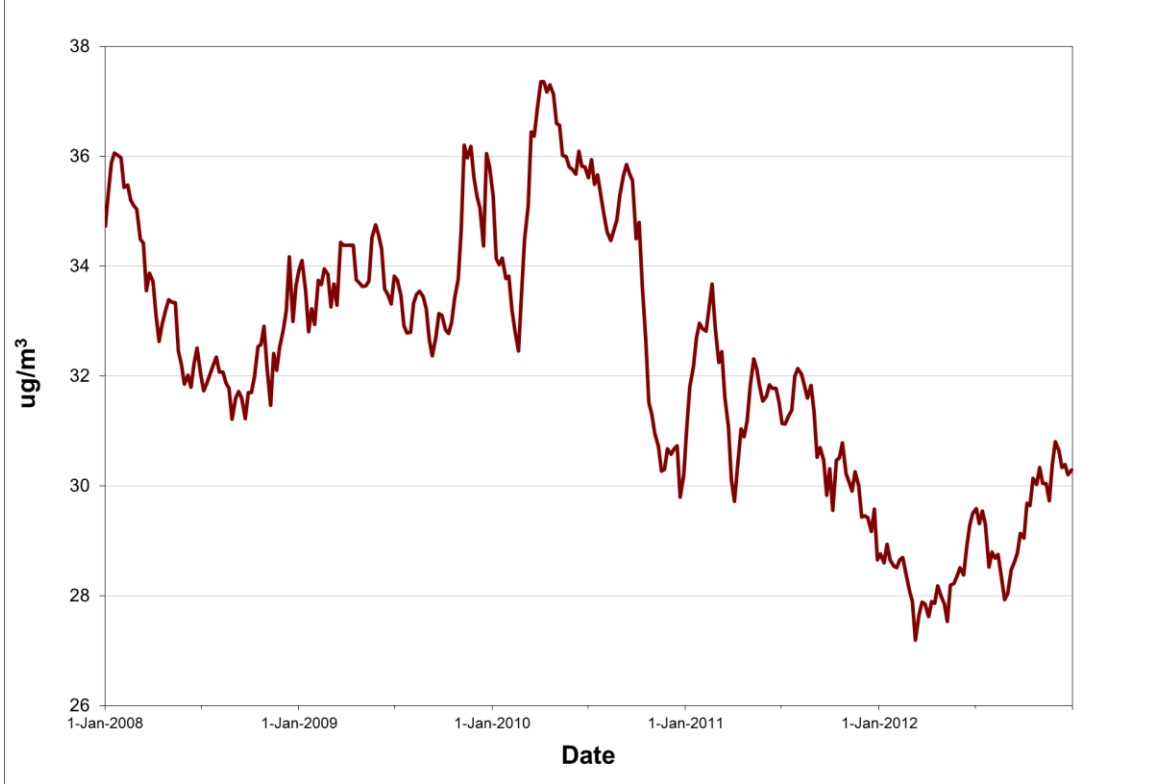
Rolling annual average of daily concentrations

**TABLE 4.5.1.3 - MAIN STREET TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m <sup>3</sup> )
2011	January	3	60.0%	18.0	20.3	0
	February	4	80.0%	18.0	20.9	0
	March	3	60.0%	34.0	102.0	0
	April	5	100.0%	75.6	117.9	0
	May	5	100.0%	42.4	90.6	0
	June	2	40.0%	40.4	54.2	0
	July	5	100.0%	39.1	67.4	0
	August	6	100.0%	32.4	56.7	0
	September	5	100.0%	19.0	40.8	0
	October	5	100.0%	15.4	33.7	0
	November	5	100.0%	28.2	55.7	0
	December	5	100.0%	19.9	27.7	0
Annual		53	86.9%	28.6	117.9	0
2012	January	5	100.0%	20.8	35.4	0
	February	5	100.0%	16.6	22.8	0
	March	5	100.0%	28.4	71.2	0
	April	4	80.0%	104.0	146.3	1
	May	4	80.0%	56.4	89.2	0
	June	5	100.0%	52.1	77.5	0
	July	3	60.0%	24.8	39.8	0
	August	5	83.3%	27.4	69.4	0
	September	4	80.0%	28.1	53.3	0
	October	4	80.0%	23.5	30.8	0
	November	5	100.0%	33.4	61.3	0
	December	5	100.0%	16.6	20.7	0
Annual		54	88.5%	30.3	146.3	1

Observations in ug/m<sup>3</sup>

**FIGURE 4.5.1.3 - MAIN STREET ANNUAL TPM CONCENTRATIONS**



Rolling annual average of daily concentrations

#### **4.5.2 West Street**

The West Street monitoring station is located at the Western Star building. The station monitors ambient levels TPM on a 1 day in 6 day cycle. The ambient air criterion was exceeded on two occasions in 2012.

Tables 4.5.2.1 provides summary information on the level of air contaminants measured at the West Street Station, while Figure 4.5.2.1 provides a graphical representation of the annual trend.

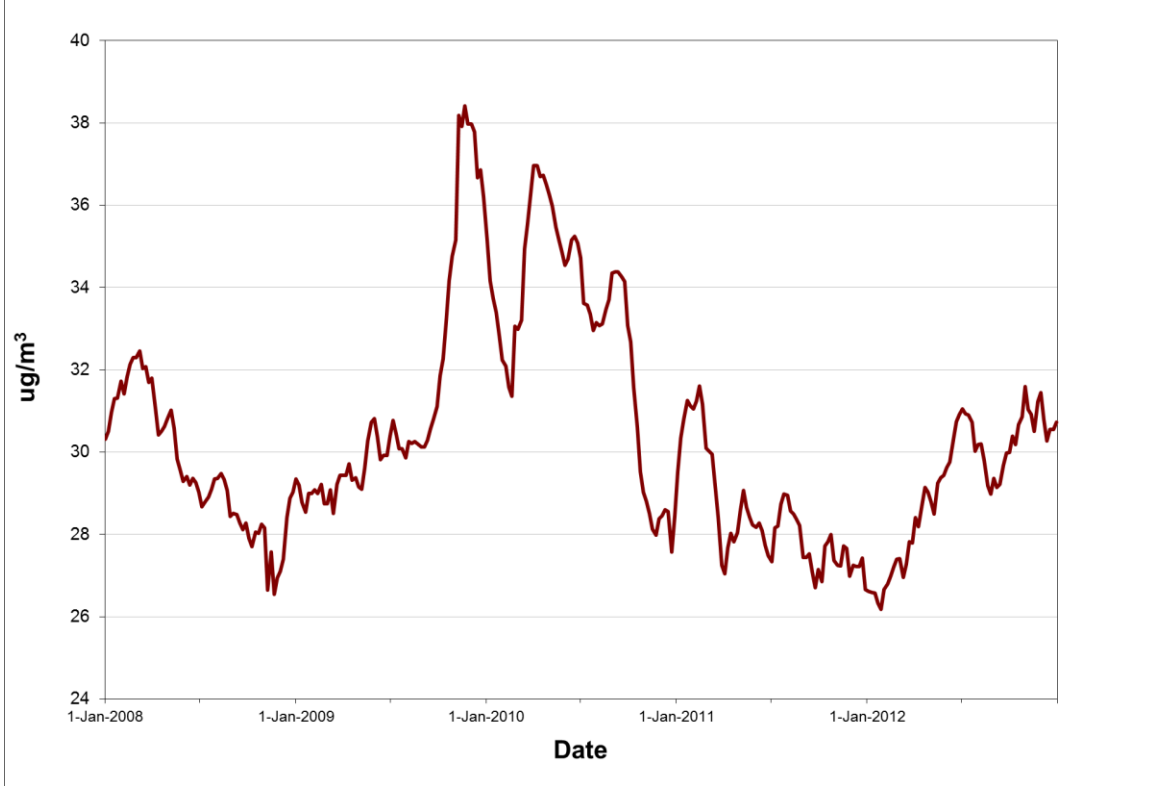
**TABLE 4.5.2.1 - WEST STREET TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m <sup>3</sup> )
2011	January	4	80.0%	14.7	21.6	0
	February	5	100.0%	12.2	18.1	0
	March	3	60.0%	29.5	75.1	0
	April	5	100.0%	74.7	119.1	0
	May	5	100.0%	44.6	128.3	1
	June	1	20.0%	46.5	46.5	0
	July	5	100.0%	34.8	45.5	0
	August	6	100.0%	31.3	41.8	0
	September	4	80.0%	19.5	31.6	0
	October	5	100.0%	16.1	31.7	0
	November	5	100.0%	29.5	70.1	0
	December	4	80.0%	19.0	53.5	0
Annual		52	85.2%	26.7	128.3	1
2012	January	5	100.0%	13.7	25.0	0
	February	4	80.0%	18.3	26.3	0
	March	4	80.0%	35.0	76.4	0
	April	5	100.0%	118.1	245.1	2
	May	4	80.0%	59.5	84.8	0
	June	5	100.0%	55.9	79.7	0
	July	3	60.0%	22.3	33.4	0
	August	6	100.0%	25.6	55.1	0
	September	4	80.0%	26.0	36.0	0
	October	4	80.0%	27.5	36.0	0
	November	5	100.0%	28.0	74.8	0
	December	4	80.0%	13.9	17.6	0
Annual		53	86.9%	30.7	245.1	2

Observations in ug/m<sup>3</sup>



**FIGURE 4.5.2.1 - WEST STREET ANNUAL TPM CONCENTRATIONS**



Rolling annual average of daily concentrations

#### 4.6 VALE Newfoundland and Labrador Limited - Voisey's Bay

In 2012, VALE Newfoundland and Labrador Limited (VALE) operated monitoring stations at three locations at its Voisey's Bay mine site. These stations are installed to monitor the emissions from VALE's mining operation and port activities and are located at the Accommodation unit, the Crusher and the concentrate storage facility near the Port. The locations of these monitoring stations are identified in Figure 4.6.1.

**FIGURE 4.6.1 - VALE / VOISEY'S BAY AMBIENT MONITORING STATIONS**



#### **4.6.1 Accommodation Unit**

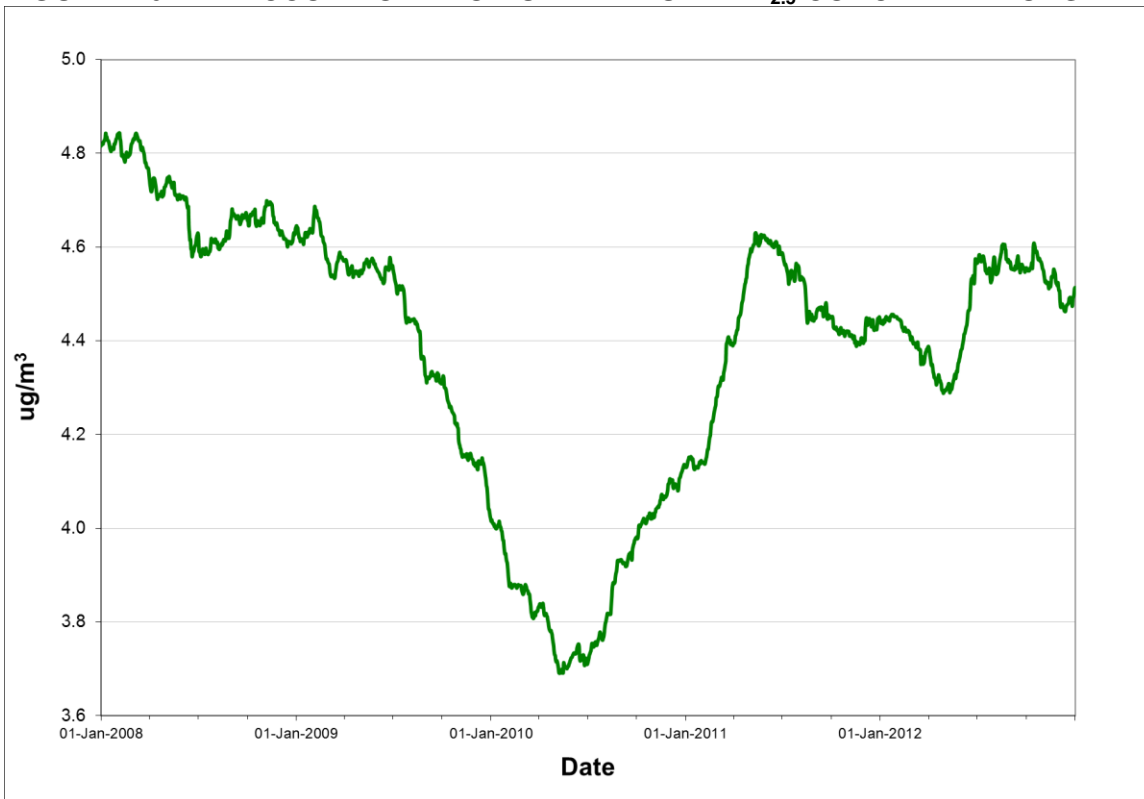
The Accommodation Unit station monitors the ambient levels of PM<sub>2.5</sub> and NO<sub>x</sub> / NO<sub>2</sub> on a continuous basis. For all pollutants, the ambient air criteria were not exceeded on any occasion in 2012. Tables 4.6.1.1 through 4.6.1.2 provide summary information on the level of air contaminants measured at the Accommodation Unit, while Figures 4.6.1.1 through 4.6.1.2 provide a graphical representation of the annual trend of each pollutant.

**TABLE 4.6.1.1 - ACCOMMODATION UNIT PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 ug/m <sup>3</sup> )
2011	January	2	6.5%	5.3	5.4	0
	February	28	100.0%	5.2	7.2	0
	March	31	100.0%	5.6	15.5	0
	April	30	100.0%	5.6	8.1	0
	May	31	100.0%	4.4	11.0	0
	June	29	96.7%	3.4	7.2	0
	July	31	100.0%	4.0	9.4	0
	August	31	100.0%	4.0	10.6	0
	September	30	100.0%	4.3	7.0	0
	October	31	100.0%	3.5	5.3	0
	November	30	100.0%	4.1	6.2	0
	December	31	100.0%	4.8	13.4	0
Annual		335	91.8%	4.4	15.5	0
2012	January	22	71.0%	4.6	7.3	0
	February	13	44.8%	4.9	6.3	0
	March	29	93.5%	5.5	11.4	0
	April	30	100.0%	4.5	10.0	0
	May	31	100.0%	5.2	7.1	0
	June	29	96.7%	5.6	13.8	0
	July	31	100.0%	4.1	9.1	0
	August	31	100.0%	4.0	6.2	0
	September	29	96.7%	4.1	11.0	0
	October	27	87.1%	3.3	11.8	0
	November	30	100.0%	3.7	8.2	0
	December	31	100.0%	4.7	8.3	0
Annual		333	91.0%	4.5	13.8	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.6.1.1 - ACCOMMODATION UNIT ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



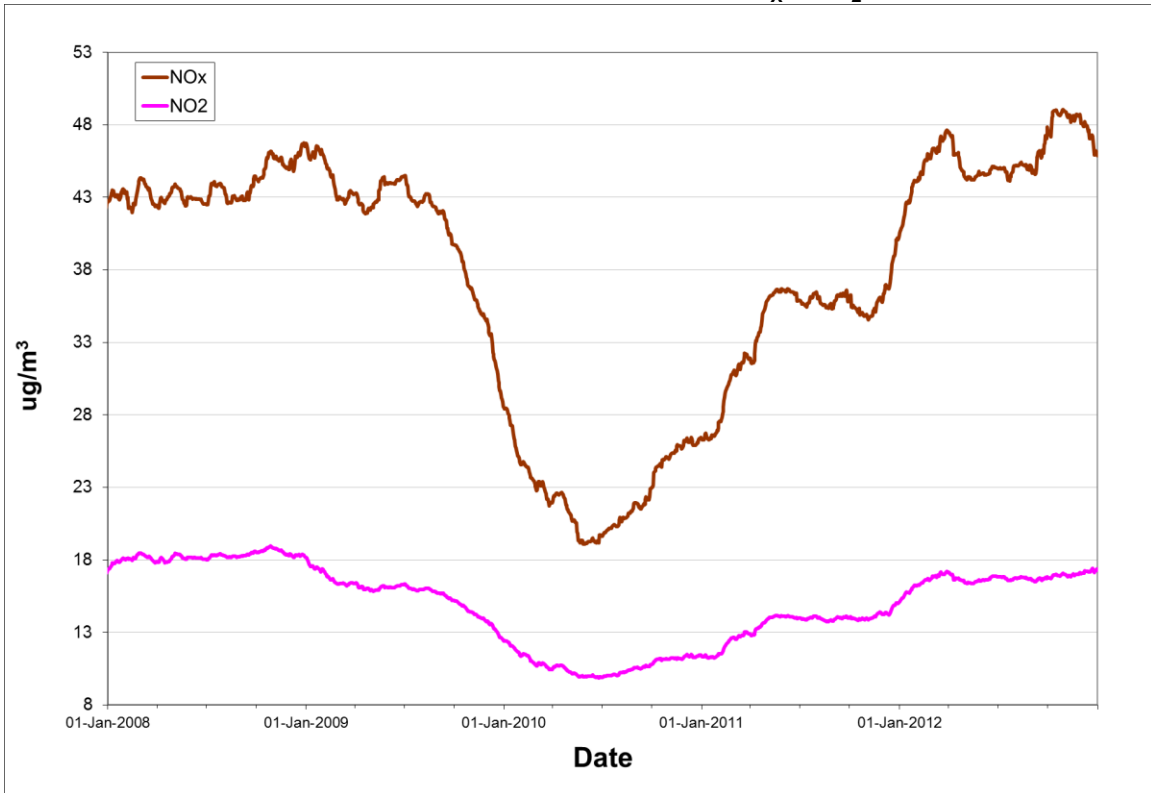
Rolling annual average of daily concentrations

**TABLE 4.6.1.2 - ACCOMMODATION UNIT NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour NO <sub>x</sub>	1-Hour NO <sub>2</sub>	24-Hour NO <sub>x</sub>	24-Hour NO <sub>2</sub>	1-Hour (>400)	24-Hour (>200)
2011	January	682	91.7%	39.5	17.3	424.8	70.6	140.2	41.3	0	0
	February	604	89.9%	67.2	25.5	571.0	76.0	155.9	41.7	0	0
	March	676	90.9%	46.5	19.0	457.8	93.4	147.0	50.9	0	0
	April	662	91.9%	63.3	20.9	779.2	117.4	227.0	67.5	0	0
	May	683	91.8%	21.0	9.6	301.5	92.0	82.6	24.6	0	0
	June	643	89.3%	8.4	4.3	173.8	52.1	50.5	15.4	0	0
	July	684	91.9%	23.6	9.2	401.1	74.8	120.6	30.1	0	0
	August	682	91.7%	19.9	8.1	335.7	62.3	58.1	20.1	0	0
	September	629	87.4%	41.9	14.5	445.3	124.4	131.8	36.8	0	0
	October	689	92.6%	25.9	10.9	414.5	271.7	149.2	32.8	0	0
	November	664	92.2%	46.2	17.5	698.4	74.7	180.1	43.8	0	0
	December	710	95.4%	81.4	24.5	555.1	75.0	190.9	46.8	0	0
Annual		8008	91.4%	40.3	15.1	779.2	271.7	227.0	67.5	0	0
2012	January	707	95.0%	82.3	30.3	556.3	101.0	184.4	56.9	0	0
	February	668	96.0%	89.0	30.8	787.8	106.2	237.2	48.3	0	0
	March	711	95.6%	62.5	23.7	532.2	90.1	192.2	57.1	0	0
	April	690	95.8%	26.5	12.8	351.2	82.1	112.0	35.3	0	0
	May	708	95.2%	22.9	10.4	374.2	66.8	66.8	25.5	0	0
	June	647	89.9%	13.5	7.9	183.6	59.8	60.1	23.9	0	0
	July	684	91.9%	26.0	7.9	512.3	65.1	162.6	32.9	0	0
	August	684	91.9%	19.7	7.7	466.5	43.6	131.5	25.7	0	0
	September	654	90.8%	75.7	16.3	669.5	94.3	268.3	37.4	0	0
	October	667	89.7%	39.0	13.0	735.2	68.0	270.4	34.1	0	0
	November	691	96.0%	42.9	18.6	740.0	77.8	130.4	36.9	0	0
	December	696	93.5%	51.5	27.4	318.5	78.4	104.9	55.9	0	0
Annual		8207	93.4%	46.0	17.3	787.8	106.2	270.4	57.1	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.6.1.2 - ACCOMMODATION UNIT ANNUAL NO<sub>x</sub> / NO<sub>2</sub> CONCENTRATIONS**



Rolling annual average of hourly concentrations

## 4.6.2 Crusher Site

The Crusher Site station monitors the ambient levels of NO<sub>x</sub> / NO<sub>2</sub> on a continuous basis. The ambient air criteria were not exceeded on any occasion in 2012. Table 4.6.2.1 provides summary information on the level of air contaminants measured at the Crusher Site, while Figure 4.6.2.1 provides a graphical representation of the annual trend.

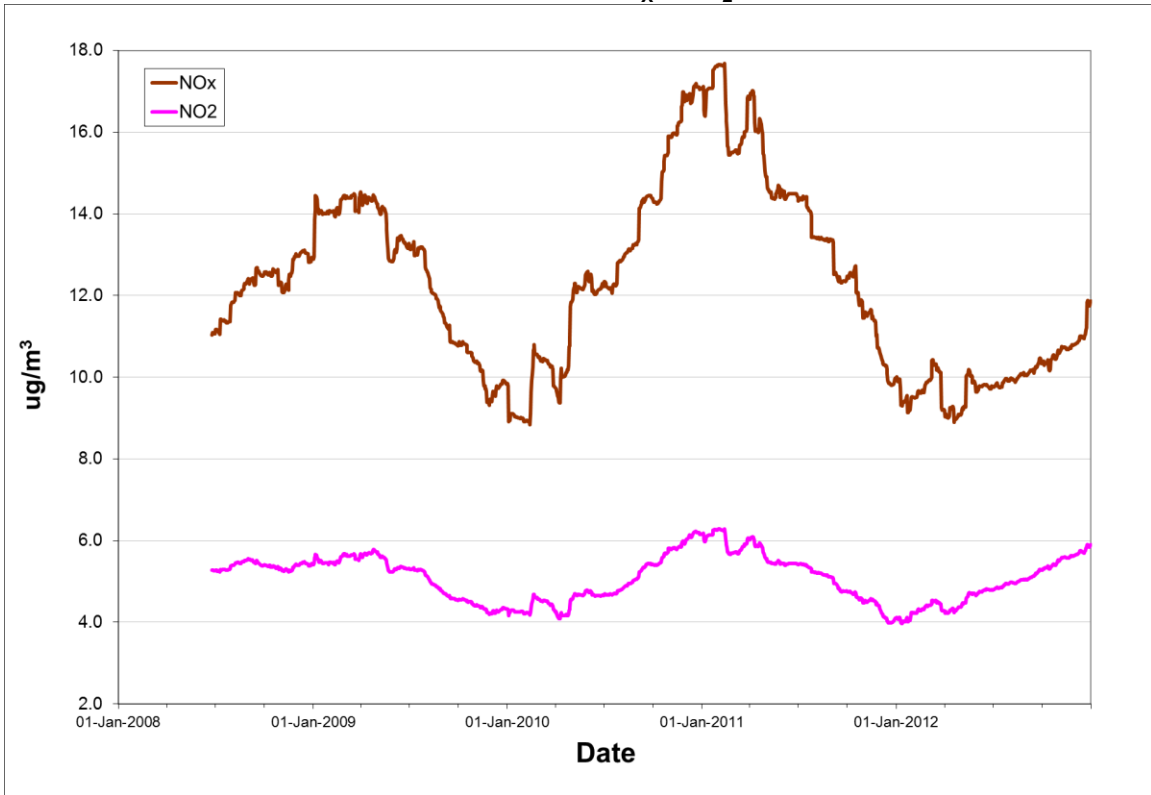
**TABLE 4.6.2.1 - CRUSHER SITE NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour NO <sub>x</sub>	1-Hour NO <sub>2</sub>	24-Hour NO <sub>x</sub>	24-Hour NO <sub>2</sub>	1-Hour (>400)	24-Hour (>200)
2011	January	623	83.7%	17.1	5.8	494.6	85.3	137.9	34.6	0	0
	February	610	90.8%	4.1	2.8	181.6	56.1	25.5	14.7	0	0
	March	684	91.9%	17.3	6.1	675.2	98.6	251.4	42.2	0	0
	April	662	91.9%	17.2	6.1	542.7	76.0	182.4	37.3	0	0
	May	590	79.3%	11.8	4.5	254.0	40.9	70.2	15.2	0	0
	June	192	26.7%	9.8	4.6	200.7	33.7	23.7	7.4	0	0
	July	558	75.0%	6.8	3.3	159.5	34.5	35.1	8.5	0	0
	August	586	78.8%	7.1	3.4	119.4	23.0	26.5	7.4	0	0
	September	589	81.8%	6.0	1.9	408.8	63.6	45.0	8.1	0	0
	October	714	96.0%	9.4	3.3	269.3	46.5	47.9	12.8	0	0
	November	691	96.0%	7.1	3.9	131.3	68.9	31.2	19.7	0	0
	December	697	93.7%	5.0	3.6	190.7	59.1	24.9	11.8	0	0
Annual		7196	82.1%	10.0	4.1	675.2	98.6	251.4	42.2	0	0
2012	January	692	93.0%	11.5	7.0	206.9	66.9	54.7	31.2	0	0
	February	641	92.1%	8.4	4.6	324.1	58.6	38.8	17.6	0	0
	March	644	86.6%	10.0	4.9	460.0	60.0	133.4	28.1	0	0
	April	657	91.3%	16.0	7.1	584.7	82.3	177.8	36.7	0	0
	May	694	93.3%	17.9	7.8	627.2	66.0	239.8	39.3	0	0
	June	568	78.9%	10.7	6.2	302.6	56.7	35.3	13.5	0	0
	July	682	91.7%	9.2	5.4	109.0	29.6	40.9	11.0	0	0
	August	686	92.2%	9.2	4.7	137.2	47.9	25.8	10.0	0	0
	September	617	85.7%	9.4	4.8	208.9	28.3	32.9	12.1	0	0
	October	651	87.5%	13.3	6.1	472.7	59.6	86.5	15.3	0	0
	November	690	95.8%	8.7	5.2	179.9	55.4	28.0	13.9	0	0
	December	696	93.5%	17.0	6.5	650.5	75.5	216.8	25.9	0	0
Annual		7918	90.1%	11.8	5.9	650.5	82.3	239.8	39.3	0	0

Observations in ug/m<sup>3</sup>



**FIGURE 4.6.2.1 - CRUSHER SITE ANNUAL NO<sub>x</sub> / NO<sub>2</sub> CONCENTRATIONS**



Rolling annual average of hourly concentrations

### 4.6.3 Port Site

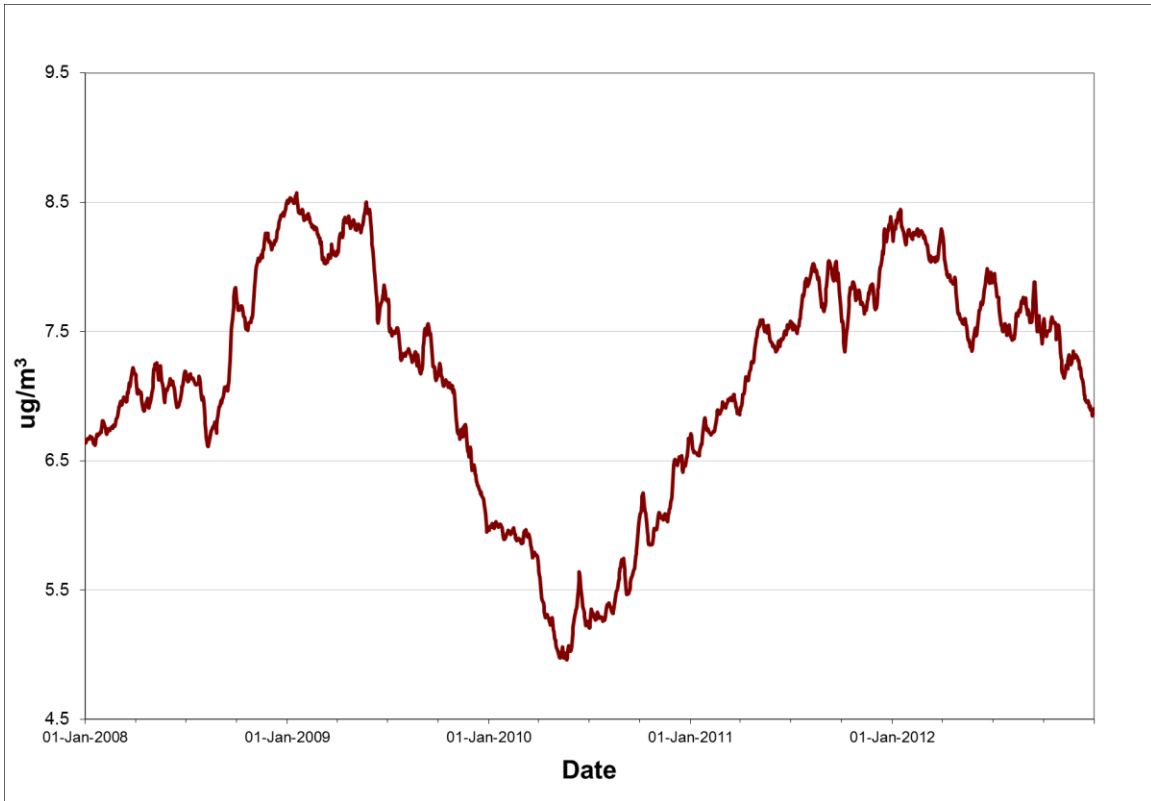
The Port Site station monitors the ambient levels of TPM on a continuous basis. The ambient air criterion was exceeded on three occasions in 2012. Table 4.6.3.1 provides summary information on the level of air contaminants measured at the Port Site, while Figure 4.6.3.1 provides a graphical representation of the annual trend.

**TABLE 4.6.3.1 - PORT SITE TPM SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120ug/m <sup>3</sup> )
2011	January	31	100.0%	4.7	74.5	0
	February	27	96.4%	5.8	22.5	0
	March	31	100.0%	7.8	32.3	0
	April	30	100.0%	10.9	69.7	0
	May	28	90.3%	5.0	39.2	0
	June	29	96.7%	5.6	32.9	0
	July	24	77.4%	10.7	132.8	1
	August	31	100.0%	9.4	82.8	0
	September	25	83.3%	19.2	479.2	5
	October	27	87.1%	6.3	29.3	0
	November	24	80.0%	12.9	71.2	0
	December	31	100.0%	12.8	95.4	0
Annual		338	92.6%	9.1	479.2	6
2012	January	31	100.0%	4.5	28.1	0
	February	29	100.0%	5.4	59.7	0
	March	30	96.8%	8.5	33.7	0
	April	30	100.0%	4.2	29.5	0
	May	31	100.0%	4.4	83.2	0
	June	30	100.0%	9.8	84.6	0
	July	29	93.5%	6.4	66.7	0
	August	30	96.8%	11.9	49.2	0
	September	30	100.0%	12.6	273.7	3
	October	28	90.3%	4.7	38.8	0
	November	26	86.7%	11.9	111.5	0
	December	23	74.2%	5.7	27.6	0
Annual		347	94.8%	7.5	273.7	3

Observations in ug/m<sup>3</sup>

**FIGURE 4.6.3.1 - PORT SITE ANNUAL TPM CONCENTRATIONS**



Rolling annual average of daily concentrations

## 4.7 VALE Newfoundland and Labrador - Long Harbour

In 2010, VALE began the installation of a monitoring network in the Long Harbour / Mt. Arlington Heights area to monitor the emissions from the Hydromet Nickel Processing facility currently being constructed by VALE. The network monitors levels of  $\text{NO}_x$  /  $\text{NO}_2$  as well as  $\text{PM}_{2.5}$ . By the end of 2012, all three stations were operational. The location of these stations is shown in Figure 4.7.1.

**FIGURE 4.7.1 - VALE / LONG HARBOUR AMBIENT MONITORING STATIONS**



### 4.7.1 Community Centre (AM1)

The Community Centre (AM1) station was the first station installed in the area and monitors the ambient levels of  $\text{PM}_{2.5}$  and  $\text{NO}_x$  /  $\text{NO}_2$  on a continuous basis. The ambient air criteria for  $\text{PM}_{2.5}$  was exceeded on one occasion in 2012, while the ambient air criteria for  $\text{NO}_x$  /  $\text{NO}_2$  was not exceeded in 2012. Tables 4.7.1.1 and 4.7.1.2 provide summary information on the level of air contaminants measured at the Community Centre (AM1) site, while Figure 4.7.1.1 provides a graphical representation on the annual trend in  $\text{PM}_{2.5}$ . The  $\text{NO}_x$  /  $\text{NO}_2$  monitor experienced prolonged episodes of baseline shifting in 2010 and 2011, resulting in most of the data being invalidated for

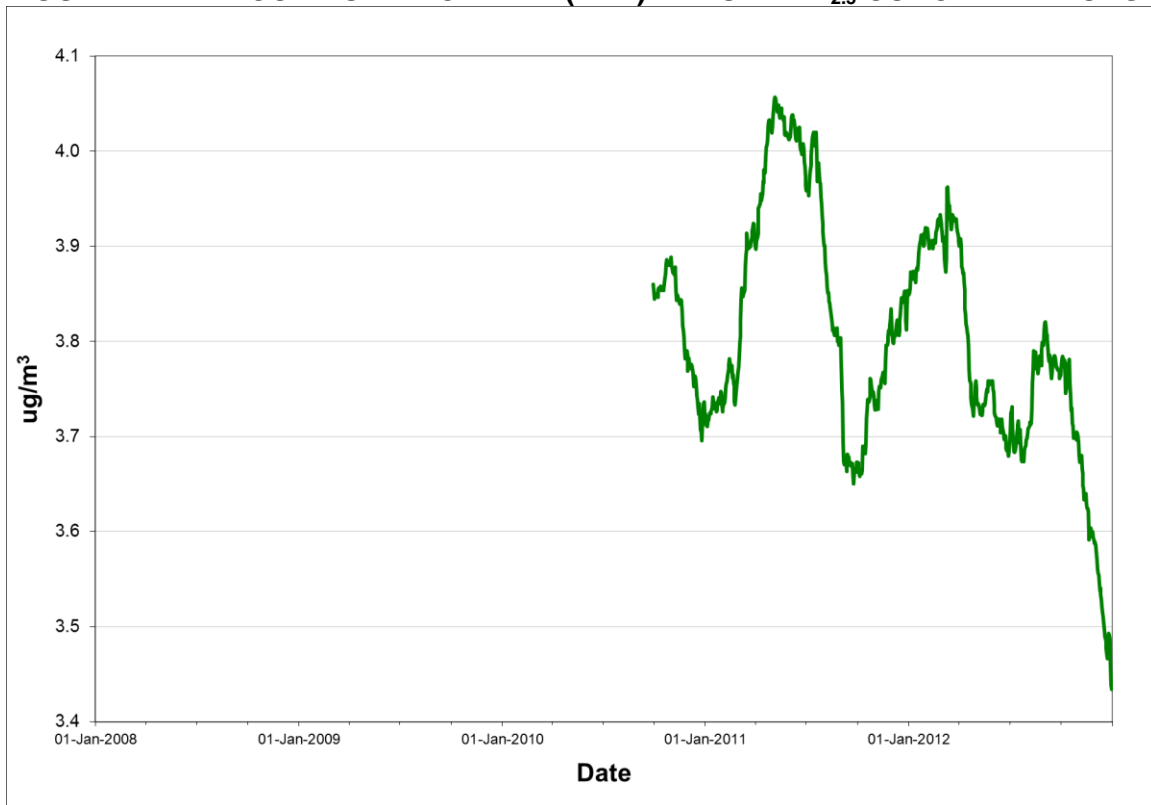
both years. The issue has since been resolved, however no graphical representation of the annual trend is provided due to insufficient data for trending purposes.

**TABLE 4.7.1.1 - COMMUNITY CENTRE (AM1) PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	25	80.6%	4.0	7.6	0
	February	28	100.0%	3.9	6.7	0
	March	31	100.0%	5.3	10.7	0
	April	30	100.0%	5.3	12.7	0
	May	31	100.0%	3.4	6.4	0
	June	30	100.0%	3.0	6.6	0
	July	31	100.0%	4.4	10.8	0
	August	31	100.0%	2.9	6.1	0
	September	30	100.0%	3.4	9.6	0
	October	31	100.0%	3.1	10.8	0
	November	30	100.0%	4.0	10.7	0
	December	17	54.8%	3.4	11.8	0
Annual		345	94.5%	3.9	12.7	0
2012	January	31	100.0%	4.8	11.0	0
	February	29	100.0%	3.9	10.1	0
	March	31	100.0%	5.1	28.8	1
	April	30	100.0%	3.6	6.8	0
	May	29	93.5%	3.3	7.6	0
	June	30	100.0%	2.3	5.6	0
	July	31	100.0%	4.4	11.0	0
	August	31	100.0%	4.2	10.8	0
	September	28	93.3%	2.8	6.3	0
	October	30	96.8%	2.4	6.9	0
	November	25	83.3%	2.6	5.4	0
	December	31	100.0%	1.8	8.0	0
Annual		356	97.3%	3.4	28.8	1

Observations in ug/m<sup>3</sup>

**FIGURE 4.7.1.1 – COMMUNITY CENTRE (AM1) ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



Rolling annual average of daily concentrations

**TABLE 4.7.1.2 - COMMUNITY CENTRE (AM1) NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average NO <sub>x</sub> NO <sub>2</sub>		Maximums				Exceedances	
						1-Hour NO <sub>x</sub> NO <sub>2</sub>		24-Hour NO <sub>x</sub> NO <sub>2</sub>		1-Hour (>400)	24-Hour (>200)
2011	January	0	0.0%								
	February	0	0.0%								
	March	0	0.0%								
	April	0	0.0%								
	May	0	0.0%								
	June	0	0.0%								
	July	0	0.0%								
	August	0	0.0%								
	September	167	23.2%	5.1	4.2	47.9	18.5	8.8	7.8	0	0
	October	714	96.0%	6.6	6.0	35.7	26.9	11.8	11.0	0	0
	November	687	95.4%	6.4	6.2	28.9	22.9	9.9	8.8	0	0
	December	705	94.8%	5.5	5.2	46.8	34.3	11.3	9.9	0	0
Annual		2273	25.9%	6.1	5.7	47.9	34.3	11.8	11.0	0	0
2012	January	703	94.5%	4.3	3.7	18.2	13.5	7.5	6.6	0	0
	February	663	95.3%	1.6	1.2	14.3	11.7	5.8	5.1	0	0
	March	712	95.7%	1.4	1.1	13.9	12.2	3.1	2.6	0	0
	April	686	95.3%	1.7	1.3	13.4	11.9	3.2	2.4	0	0
	May	709	95.3%	1.3	0.9	10.5	9.0	2.7	2.1	0	0
	June	689	95.7%	1.4	1.1	15.4	10.9	3.3	2.6	0	0
	July	715	96.1%	1.7	1.3	14.2	10.2	3.6	2.5	0	0
	August	707	95.0%	1.6	1.4	27.8	15.2	6.7	4.6	0	0
	September	680	94.4%	2.1	1.5	15.9	10.5	5.3	4.2	0	0
	October	687	92.3%	2.6	1.8	25.6	15.0	5.7	4.2	0	0
	November	684	95.0%	1.7	1.3	16.8	14.0	3.8	3.2	0	0
	December	713	95.8%	2.2	1.6	30.0	33.3	8.7	7.1	0	0
Annual		8348	95.0%	2.0	1.5	30.0	33.3	8.7	7.1	0	0

Observations in ug/m<sup>3</sup>

#### **4.7.2 Main Road (AM2)**

The Main Road (AM2) station was installed in April 2010 and monitors the ambient levels of PM<sub>2.5</sub> and NO<sub>x</sub> / NO<sub>2</sub> on a continuous basis. The ambient air criteria were not exceeded on any occasion in 2012. Tables 4.7.2.1 and 4.7.2.2 provide summary information on the level of air contaminants measured at the Main Road (AM2) site, while Figures 4.7.2.1 and 4.7.2.2 provide a graphical representation of the annual trend for pollutants.

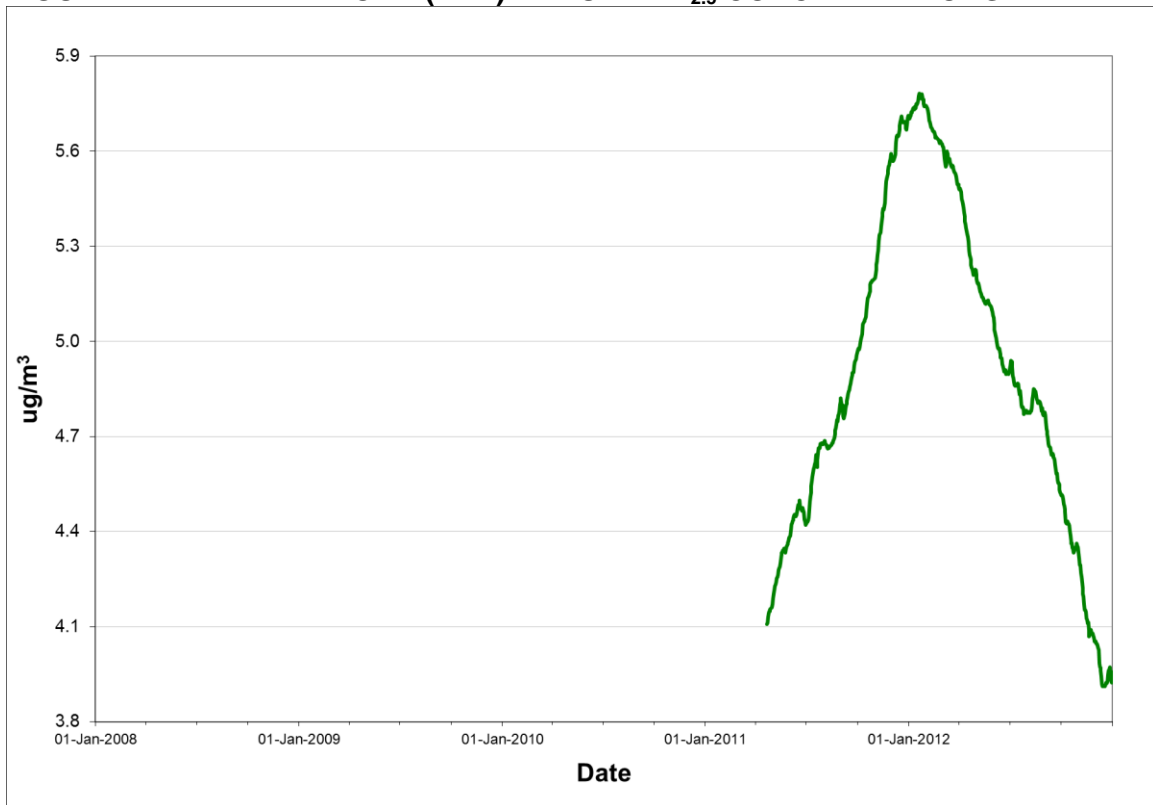


**TABLE 4.7.2.1 - MAIN ROAD (AM2) PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January	31	100.0%	5.0	7.7	0
	February	22	78.6%	5.3	8.5	0
	March	31	100.0%	6.4	11.5	0
	April	30	100.0%	6.2	12.8	0
	May	31	100.0%	4.9	8.0	0
	June	30	100.0%	4.7	9.2	0
	July	31	100.0%	6.6	12.7	0
	August	31	100.0%	5.0	10.6	0
	September	30	100.0%	6.0	9.9	0
	October	31	100.0%	5.0	12.7	0
	November	30	100.0%	7.2	14.4	0
	December	20	64.5%	6.5	18.1	0
Annual		348	95.3%	5.7	18.1	0
2012	January	31	100.0%	5.3	10.1	0
	February	29	100.0%	4.0	9.4	0
	March	31	100.0%	4.8	20.3	0
	April	30	100.0%	3.2	6.7	0
	May	31	100.0%	3.3	8.0	0
	June	30	100.0%	2.6	6.4	0
	July	31	100.0%	5.0	11.5	0
	August	31	100.0%	5.0	11.6	0
	September	30	100.0%	2.9	7.0	0
	October	26	83.9%	2.8	6.1	0
	November	26	86.7%	3.8	11.7	0
	December	31	100.0%	4.4	12.7	0
Annual		357	97.5%	3.9	20.3	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.7.2.1 – MAIN ROAD (AM2) ANNUAL PM<sub>2.5</sub> CONCENTRATIONS**



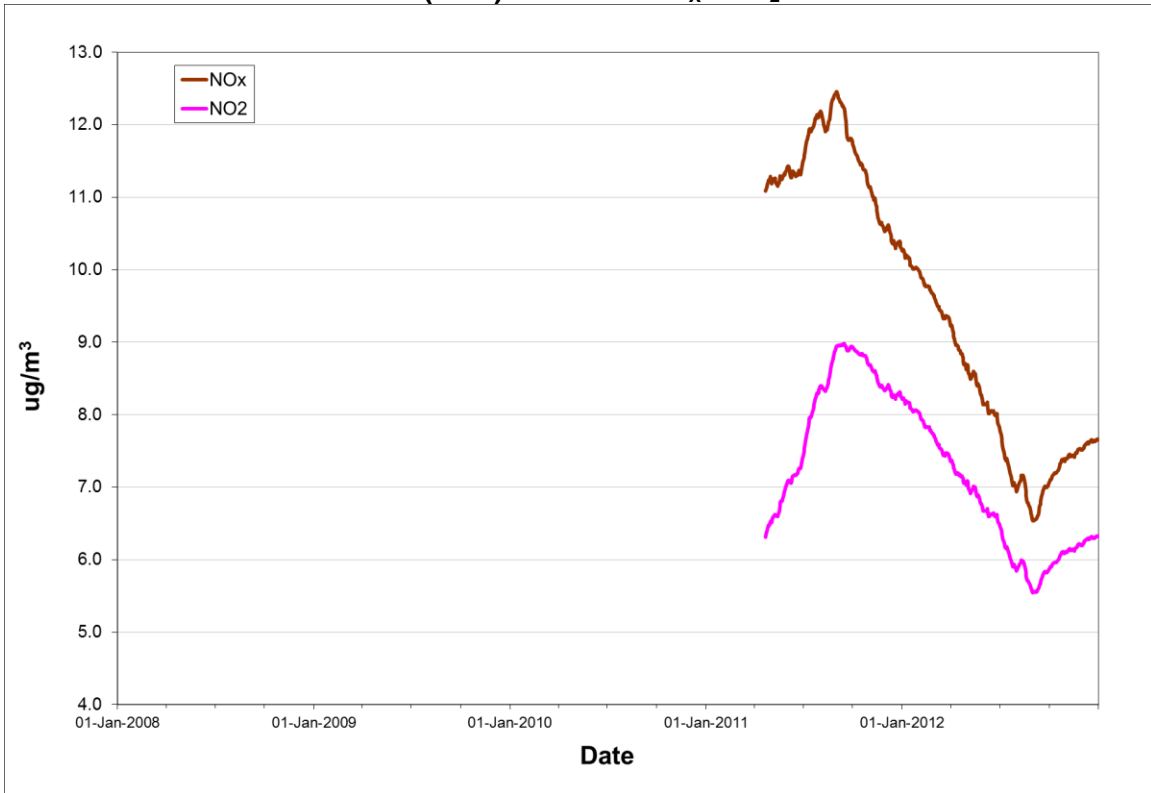
Rolling annual average of daily concentrations

**TABLE 4.7.2.2 - MAIN ROAD (AM2) NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour NO <sub>x</sub>	1-Hour NO <sub>2</sub>	24-Hour NO <sub>x</sub>	24-Hour NO <sub>2</sub>	1-Hour (>400)	24-Hour (>200)
2011	January	714	96.0%	10.3	8.5	46.1	33.7	29.9	22.4	0	0
	February	645	96.0%	9.8	8.8	40.6	32.5	24.8	20.5	0	0
	March	709	95.3%	10.4	9.4	36.0	30.1	21.8	19.0	0	0
	April	690	95.8%	15.7	11.5	53.6	41.5	25.9	19.5	0	0
	May	714	96.0%	11.6	9.6	52.1	42.4	33.2	26.8	0	0
	June	671	93.2%	10.7	8.0	58.0	37.2	36.5	25.4	0	0
	July	707	95.0%	18.8	14.1	76.5	56.3	32.9	25.3	0	0
	August	650	87.4%	14.6	10.2	52.3	33.8	29.3	20.7	0	0
	September	680	94.4%	6.3	5.0	41.2	23.9	18.0	12.3	0	0
	October	682	91.7%	3.9	3.4	16.6	15.3	9.4	7.4	0	0
	November	692	96.1%	5.5	4.9	24.0	18.8	9.4	7.6	0	0
	December	706	94.9%	5.9	5.3	40.2	32.6	12.2	10.7	0	0
Annual		8260	94.3%	10.3	8.2	76.5	56.3	36.5	26.8	0	0
2012	January	714	96.0%	6.8	6.0	38.5	33.5	14.1	11.9	0	0
	February	664	95.4%	5.3	4.8	26.3	22.5	9.3	8.3	0	0
	March	712	95.7%	6.1	5.5	31.7	29.3	15.6	14.2	0	0
	April	673	93.5%	8.3	7.5	29.0	24.9	13.8	12.6	0	0
	May	707	95.0%	6.1	5.6	34.7	29.9	14.4	12.8	0	0
	June	689	95.7%	6.8	5.7	35.1	26.2	13.5	11.0	0	0
	July	710	95.4%	8.7	6.8	22.5	18.0	14.3	11.4	0	0
	August	710	95.4%	8.8	6.1	25.2	14.4	16.4	10.1	0	0
	September	676	93.9%	12.4	8.8	84.0	37.2	36.8	19.2	0	0
	October	714	96.0%	7.9	6.4	39.4	23.6	18.1	13.6	0	0
	November	687	95.4%	6.9	5.9	28.1	25.4	15.7	13.5	0	0
	December	713	95.8%	7.6	6.8	31.5	28.7	15.3	13.8	0	0
Annual		8369	95.3%	7.6	6.3	84.0	37.2	36.8	19.2	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.7.2.1 – MAIN ROAD (AM2) ANNUAL NO<sub>x</sub> / NO<sub>2</sub> CONCENTRATIONS**



Rolling annual average of hourly concentrations

### **4.7.3 Access Road (AM3)**

The Access Road (AM3) station was installed in June 2011 near the VALE Inco security gate and monitors the ambient levels of PM<sub>2.5</sub> and NO<sub>x</sub> / NO<sub>2</sub> on a continuous basis. The ambient air criteria were not exceeded on any occasion in 2012. Tables 4.7.3.1 and 4.7.3.2 provide summary information on the level of air contaminants measured at the Access Road (AM3) site. Due to the limited data, no graphical representation of the annual trend is provided.

**TABLE 4.7.3.1 - ACCESS ROAD (AM3) PM<sub>2.5</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m <sup>3</sup> )
2011	January					
	February					
	March					
	April					
	May					
	June	15	93.8%	3.1	7.0	0
	July	31	100.0%	4.9	11.3	0
	August	31	100.0%	4.8	7.6	0
	September	30	100.0%	5.0	8.4	0
	October	31	100.0%	4.9	12.1	0
	November	30	100.0%	5.0	9.8	0
	December	31	100.0%	4.9	10.0	0
Annual		199	99.5%	4.8	12.1	0
2012	January	31	100.0%	5.6	11.5	0
	February	29	100.0%	4.7	10.2	0
	March	31	100.0%	5.0	11.8	0
	April	30	100.0%	4.8	12.5	0
	May	25	80.6%	3.8	7.9	0
	June	30	100.0%	2.5	5.1	0
	July	31	100.0%	2.9	11.2	0
	August	29	93.5%	2.2	7.0	0
	September	25	83.3%	1.4	3.5	0
	October	25	80.6%	1.6	4.5	0
	November	29	96.7%	1.8	4.5	0
	December	25	80.6%	2.3	6.6	0
Annual		340	92.9%	3.3	12.5	0

Observations in ug/m<sup>3</sup>

**TABLE 4.7.3.2 - ACCESS ROAD (AM3) NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

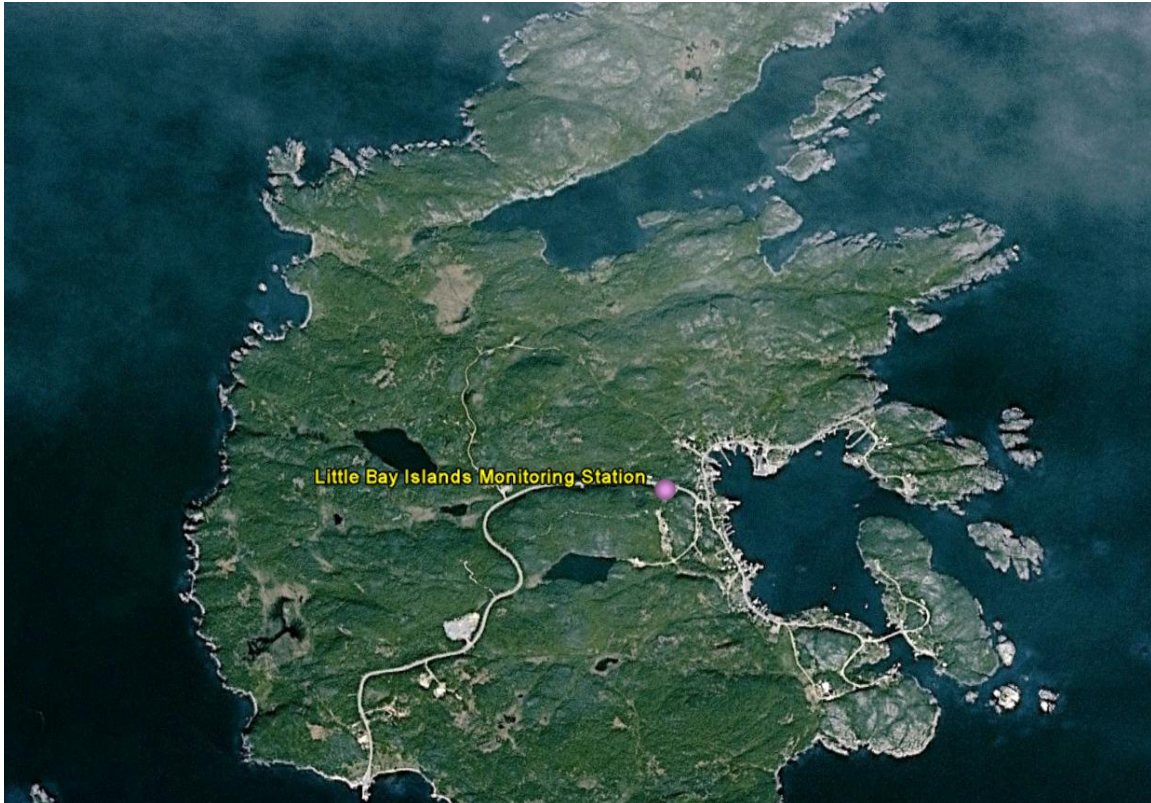
Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
				NO <sub>x</sub>	NO <sub>2</sub>	1-Hour		24-Hour		1-Hour (>400)	24-Hour (>200)
				NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>	NO <sub>x</sub>	NO <sub>2</sub>		
2011	January										
	February										
	March										
	April										
	May										
	June	353	91.9%	3.0	2.1	22.5	15.8	7.2	4.8	0	0
	July	712	95.7%	2.3	1.8	38.4	26.1	6.4	4.4	0	0
	August	683	91.8%	2.5	1.7	17.4	13.3	5.7	3.6	0	0
	September	685	95.1%	1.6	1.2	19.2	9.5	4.0	2.2	0	0
	October	714	96.0%	1.7	1.4	16.8	15.0	4.7	3.8	0	0
	November	691	96.0%	2.4	1.8	31.8	18.7	8.2	5.1	0	0
	December	706	94.9%	2.0	1.5	62.4	25.7	9.4	6.2	0	0
Annual		4544	94.7%	2.2	1.6	62.4	26.1	9.4	6.2	0	0
2012	January	713	95.8%	2.1	1.6	32.8	25.1	5.5	4.2	0	0
	February	663	95.3%	2.5	1.9	55.9	33.0	7.5	5.2	0	0
	March	711	95.6%	2.0	1.4	34.3	24.2	4.6	3.4	0	0
	April	684	95.0%	1.8	1.4	26.2	19.2	5.0	3.8	0	0
	May	708	95.2%	1.5	1.2	41.5	14.9	5.0	2.7	0	0
	June	689	95.7%	2.0	1.6	40.4	22.8	7.7	4.4	0	0
	July	686	92.2%	1.5	0.9	28.4	6.7	3.4	2.5	0	0
	August	701	94.2%	1.5	1.1	12.3	8.9	3.0	2.1	0	0
	September	688	95.6%	2.1	1.3	40.7	8.5	5.9	3.1	0	0
	October	511	68.7%	2.5	1.2	29.3	9.6	5.4	2.2	0	0
	November	688	95.6%	1.6	1.2	55.8	24.6	4.7	3.3	0	0
	December	712	95.7%	1.3	1.0	33.7	18.1	4.1	3.2	0	0
Annual		8154	92.8%	1.9	1.3	55.9	33.0	7.7	5.2	0	0

Observations in ug/m<sup>3</sup>

## 4.8 NALCOR - Little Bay Islands

In 2010, NALCOR began monitoring the levels of  $\text{NO}_x$  /  $\text{NO}_2$  in the community of Little Bay Islands. The monitor is situated in an area to measure emissions from the NALCOR diesel generating plant in the community. The location of the station is shown in Figure 4.8.1.

**FIGURE 4.8.1 - NALCOR LITTLE BAY ISLANDS AMBIENT MONITORING STATION**



### 4.8.1 Little Bay Islands

The Little Bay Islands station monitors the ambient levels of  $\text{NO}_x$  /  $\text{NO}_2$  on a continuous basis. The ambient air criteria were not exceeded on any occasion in 2012. Table 4.8.1.1 provides summary information on the level of air contaminants measured at the Little Bay Islands site while Figure 4.8.1.1 provides a graphical representation of the annual trend. Due to logistical issues, the station will be decommissioned in 2013.



**TABLE 4.8.1.1 - LITTLE BAY ISLANDS NO<sub>x</sub> / NO<sub>2</sub> SUMMARY 2011 & 2012**

Year	Month	# Valid Hours	% Valid Hours	Average NO <sub>x</sub> NO <sub>2</sub>		Maximums				Exceedances	
						1-Hour NO <sub>x</sub> NO <sub>2</sub>		24-Hour NO <sub>x</sub> NO <sub>2</sub>		1-Hour (>400)	24-Hour (>200)
2011	January	703	94.5%	19.3	9.1	147.1	49.6	67.9	25.9	0	0
	February	633	94.2%	12.6	7.2	104.6	45.5	37.9	19.4	0	0
	March	706	94.9%	20.5	10.2	241.0	71.8	67.7	28.6	0	0
	April	690	95.8%	26.5	13.1	434.3	67.1	98.5	28.6	0	0
	May	707	95.0%	52.9	17.5	377.3	69.1	107.9	29.4	0	0
	June	680	94.4%	51.4	14.6	515.0	69.0	131.5	30.0	0	0
	July	704	94.6%	38.4	12.7	358.3	62.0	92.9	26.3	0	0
	August	713	95.8%	39.7	12.7	348.4	57.9	98.5	26.4	0	0
	September	688	95.6%	19.1	9.0	147.3	47.9	56.2	19.0	0	0
	October	713	95.8%	17.9	7.6	178.8	49.3	56.7	16.9	0	0
	November	668	92.8%	28.6	13.1	354.7	71.4	114.2	36.7	0	0
	December	713	95.8%	17.1	9.4	218.4	57.1	49.6	18.2	0	0
Annual		8318	95.0%	28.8	11.4	515.0	71.8	131.5	36.7	0	0
2012	January	706	94.9%	24.7	12.1	176.6	58.4	85.7	26.4	0	0
	February	667	95.8%	19.8	9.3	437.5	88.1	66.4	25.9	0	0
	March	713	95.8%	30.1	12.6	381.6	84.1	108.1	31.4	0	0
	April	690	95.8%	38.5	16.9	342.4	86.2	98.0	35.7	0	0
	May	713	95.8%	60.3	19.9	649.2	131.1	161.7	42.6	0	0
	June	690	95.8%	43.7	14.2	437.7	82.1	115.6	30.0	0	0
	July	713	95.8%	52.8	17.5	476.3	94.6	145.0	47.9	0	0
	August	658	88.4%	42.0	16.3	376.8	74.0	103.0	28.4	0	0
	September	432	60.0%	31.6	14.0	254.0	70.9	60.1	22.9	0	0
	October	0	0.0%								
	November	0	0.0%								
	December	0	0.0%								
Annual		5982	68.1%	38.6	14.8	649.2	131.1	161.7	47.9	0	0

Observations in ug/m<sup>3</sup>

**FIGURE 4.8.1.1 - LITTLE BAY ISLANDS ANNUAL NO<sub>x</sub> / NO<sub>2</sub> CONCENTRATIONS**

