Annual | 2016

GOLDCORP

Ambient Air Monitoring Report

Goldcorp Canada Ltd.
Porcupine Gold Mines
Hollinger Open Pit

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Executive Summary

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Executive Summary

Porcupine Gold Mines is a subsidiary of Goldcorp Canada Ltd., situated in Timmins, Ontario.

In order to monitor potential air quality effects and ensure mitigation efforts are effective, Goldcorp has established an ambient air monitoring network. The data generated are used to assess the air quality where people live, measure compliance with provincial standards, compare changes to air quality over time, provide information about regional background levels of monitored pollutants, inform the public and raise awareness of local air quality.

The ambient air monitoring network has been approved by the Ministry of the Environment and Climate Change (MOECC) and will continue to operate throughout the life of the mining operations. In accordance with MOECC`s reporting requirements, this is the Annual Ambient Air Monitoring Report for 2016.

Conclusions:

During 2016 there were:

a) No exceedances of the continuous NO_2 24 hour and 1 hour running average AAQCs or of the ½ hour running average O.Reg 419/05 standard.

b) 29 exceedances of the continuous PM_{10} 24 hour running average AAQC, 2 at STN72135 (Extendicare), 5 at STN72138 (Hollinger Park), 10 at STN72139 (Hollinger Office), 4 at STN72140 (Goldmine Tour) and 8 at STN72141 (Claimpost Trail).

c) 3 exceedances of the non-continuous 24 hour clock TSP AAQC at STN72136 (MRCA).

d) 3 exceedances of the non-continuous 24 hour clock PM_{10} AAQC at STN72136 (MRCA).

e) No exceedances of the non-continuous 24 hour clock TSP or PM_{10} Suspended Metals AAQCs, standards or guidelines.

f) 11 exceedances of the non-continuous 30 day standard for Total Dustfall, 1 at STN72135 (Extendicare), 1 at STN72136 (MRCA), 1 at STN72141 (Claimpost Trail) and 8 at STN72143 (Snowmobile Crossing).

g) A summary of exceedances potentially associated to the Hollinger Open Pit (HOP) operations can be found in Table 26.

h) Network annual PM_{10} averages were 9 $\mu g/m^3$ at STN72135 (Hollinger Ext.), 12 $\mu g/m^3$ at STN72138 (Hollinger Park), 16 $\mu g/m^3$ at STN72139 (Hollinger Office), 10 $\mu g/m^3$ at STN72140 (Goldmine Tour) and 10 $\mu g/m^3$ at STN72141 (Claimpost Trail).

i) 44 calibrations were conducted on continuous samplers, all of which met criteria.

j) Overall, the percentage of continuous valid pollutant data recovery was 98.2% for 2016, exceeding the Ministry's minimum target of 90% and desirable target of 95%. The percent valid data recovery for non-continuous TSP, PM_{10} and Total Dustfall was 98.6%.

1.0 Introduction

Porcupine Gold Mines is a subsidiary of Goldcorp Canada Ltd., situated in Timmins, Ontario.

In order to monitor potential air quality effects and ensure mitigation efforts are effective, Goldcorp has established an ambient air monitoring network. The network reports continuous and non-continuous measurements of air quality data at various sites located around Goldcorp's Porcupine mining operations. The data generated are used to assess the air quality where people live, measure compliance with provincial standards, compare changes to air quality over time, provide information about regional background levels of monitored pollutants, inform the public and raise awareness of local air quality.

The ambient air monitoring network has been approved by the Ministry of the Environment and Climate Change (MOECC) and will continue to operate throughout the life of the mining operations. In accordance with MOECC`s reporting requirements, this is the Annual Ambient Air Monitoring Report for 2016.

2.0 Goldcorp - Ambient Air Monitoring Network

The ambient air monitoring network consists of a meteorological station and 5 continuous stations that report data for Total Suspended Particulate (TSP), Inhalable Particulate (PM_{10}) and Nitrogen Oxides (NO_X). In addition, there are 6 stations that collect non-continuous data for TSP, PM_{10}, metals, Total Dustfall, passive Sulphur Dioxide (SO_2) and passive Nitrogen Dioxide (NO_2).

2.1 Parameters Monitored

2.1.1 Particulate Matter (PM)

Particulate Matter (PM) consists of airborne particles in solid or liquid form, except pure water, that are microscopic in size. Particulate matter is classified according to its size. The MOECC identifies the following sizes of PM:

1) **Settleable Particulate Matter (Total Dustfall) -** Dustfall consists of very coarse particulate matter fractions that settle quickly under the influence of gravity.

2) **Suspended Particulate Matter (SP or TSP)** - airborne particulate matter with an upper size limit of approximately 44 micro metres (µm) in aerodynamic equivalent diameter.

3) **Particulate Matter < 10 microns (PM_{10})** - airborne particulate matter with a mass median diameter less than 10 µm.

4) **Particulate Matter < 2.5 microns ($PM_{2.5}$)** - airborne particulate matter with a mass median diameter less than 2.5 µm.

2.1.2 Metals

A number of trace metals which can cause human health impacts are present in airborne particulate matter. Concentrations of trace metals can be determined in a laboratory by analyzing the particulate matter collected on filters.

2.1.3 Nitrogen Oxides (NO, NO_2, NO_X)

Nitrogen Oxides (NO_X) are usually defined as the sum of Nitric Oxide (NO) and Nitrogen Dioxide (NO_2). NO_2 is a reddish-brown gas with a pungent and irritating odour. It transforms in the air to form gaseous nitric acid and organic nitrates. NO_2 also plays a major role in atmospheric reactions that produce ground-level ozone, a major component of smog.

In the case of air quality assessments, e.g. air quality reports such as the current report, NO_2, not NO_x, is the reference contaminant. NO_X Ambient Air Quality Criteria (AAQC) with 1 hour and 24 hour averaging times should only be compared to monitored NO_2 data.

2.1.4 Sulphur Dioxide (SO_2)

Sulphur Dioxide (SO_2) is a colourless gas that smells like burnt matches. SO_2 belongs to the family of sulphur oxide (SO_X) gases, these gases dissolve easily in water. Sulphur is prevalent in many raw materials. SO_X gases are formed when fuels containing sulphur are burned, when gasoline is extracted from oil or when metals are processed from sulphide ores.

2.2 Sampling Program Methodology

The Goldcorp ambient air monitoring network utilizes various types of sampling equipment. AirPointer® samplers measure continuous TSP, PM_{10} and Nitrogen Oxides. Hivol, Dustfall and passive samplers are used to measure non-continuous TSP, PM_{10}, metals, Total Dustfall, SO_2 and NO_2 data. Station locations are illustrated in Figure 1. The parameters monitored are listed in Table 1 and station Universal Transverse Mercator (UTM) data are tabulated in Table 2.

- **AirPointer® - Continuous TSP**

  TSP data is continuously monitored throughout the year by an Airpointer® system utilizing a Thermo Scientific model ADR1500 Dust Monitor. The ADR1500 utilizes light scattering photometer (nephelometer) technology to measure airborne particulate. The intensity of the light scattered by airborne particles passing through the sensing chamber is linearly proportional to their concentration. AirPointer® TSP measurements cannot be used to report exceedances because the measurement method is not officially designated. The collected TSP data is considered as “indicative” and should be used only for information purposes.

- **AirPointer® - Continuous PM_{10}**

  PM_{10} data is continuously monitored throughout the year by an AirPointer® system utilizing a Thermo Scientific model 5030 SHARP. The 5030 SHARP automatically measures and records airborne particulate concentration levels in micrograms per cubic metre ($\mu g/m^3$) using a combination of beta attenuation and light scattering technology.

- **AirPointer® - Continuous Nitrogen Oxides**

  NO, NO_2 and NO_X are continuously monitored throughout the year by an AirPointer® system utilizing a Thermo Scientific model 42i. The model 42i uses chemiluminescence technology to measure the amount of Nitrogen Oxides in the air.

- **Hivol - Non-continuous TSP and PM_{10}**

  Non-continuous TSP and PM_{10} samples are collected every 6 days according to the National Air Pollutant Surveillance (NAPS) schedule. Samples are collected on filter media for a 24 hour period from midnight to midnight. TSP samples are collected with a Tisch model 5170 Hivol sampler. PM_{10} samples are collected with a Tisch model 6070 Hivol sampler.

  Hivol samplers draw ambient air at a constant flow rate in order to collect suspended particulate matter onto a filter. Each filter is weighed before and after exposure to determine the total loading due to collected particulate.

  Non-continuous TSP and PM_{10} Hivol samplers meet US EPA and International Particulate Monitoring Regulations.

- **Hivol - Non-continuous Metals**

  TSP Hivol filters are analyzed every 18 days (NAPS schedule) by an accredited laboratory for a specified list of metals. PM_{10} Hivol filters are analyzed every 30 days. Metal concentrations are determined using Inductively Coupled Plasma Mass Spectrometry (ICP-MS). Results are reported in $\mu g/m^3$, analyses include; Arsenic (As), Cadmium (Cd), Chromium (Cr), Cobalt (Co), Copper (Cu), Iron (Fe, as Fe_2O_3), Lead (Pb), Magnesium (Mg, as MgO), Manganese (Mn), Nickel (Ni), Selenium (Se), Sulphur (S), Vanadium (V), Zinc (Zn) and Sulphate (SO_4).

- **Non-continuous Total Dustfall**

  Containers (Dustfall jars) of a standard size and shape are set up at selected sampling sites so that particulate matter can settle into them for periods of about 30 days. The collected samples are then sent to an accredited laboratory for analyses of both soluble and insoluble portions which are combined to calculate the Total Dustfall. Results are reported as grams per square metre per 30 days ($g/m^2/30d$).

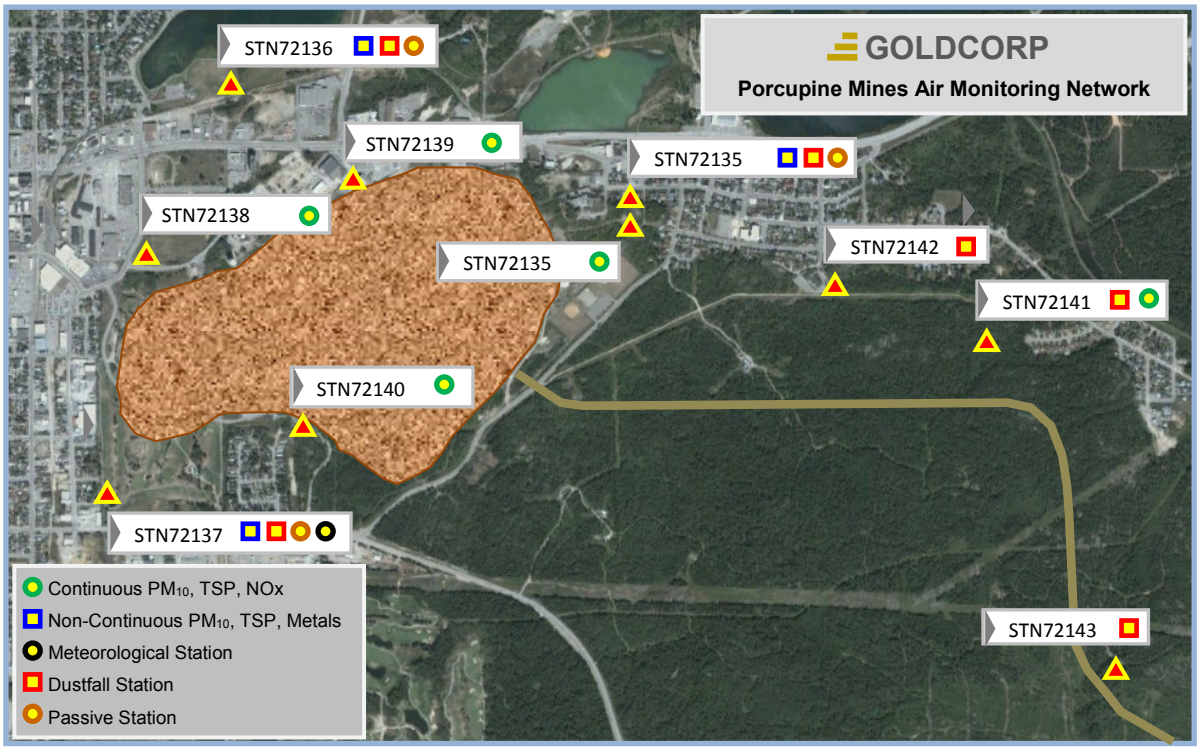
- **Non-continuous Passive SO_2 / NO_2**

  Passive sampling utilizes laboratory prepared filter cartridges which are installed at selected sampling sites for exposure to ambient air for periods of about 30 days. After exposure the cartridges are removed and submitted to an accredited laboratory for analysis. The analysis provides an estimate of monthly average spatial concentrations for SO_2 and NO_2. SO_2 analysis is determined by ion chromatography and NO_2 analysis is determined by spectrophotometry.

- **Meteorological Data**

  Meteorological data is monitored continuously throughout the year by a 5 metre meteorological station. Parameters monitored include; Wind Speed (WS), Wind Direction (WD), Ambient Temperature (AT), Relative Humidity (RH), Barometric Pressure (BP) and Precipitation (PRECP).

Goldcorp Air Monitoring Network Overview - Figure 1



Porcupine Gold Mines Ambient Air Monitoring Network		By : DC	**Figure 1**	ROTEK
	True North	Approx. Scale :	1:14000	
Goldcorp - Porcupine Gold Mines - Timmins, Ontario		Date Revised :	01 March, 2016	

Parameters Monitored at Each Station - Table 1

Station Identifier	TSP	HiVol TSP	PM_{10}	HiVol PM_{10}	NO_x	Metals	Passive SO_2	Passive NO_2	Total Dustfall	MET
STN72135 - Hollinger Ext.	✓		✓		✓					
STN72138 - Hollinger Park	✓		✓		✓					
STN72139 - Hollinger Office	✓		✓		✓					
STN72140 - Goldmine Tour	✓		✓		✓					
STN72141 - Claimpost Trail	✓		✓		✓				✓	
STN72135 - Extendicare		✓		✓		✓	✓	✓	✓	
STN72136 - MRCA		✓		✓		✓	✓	✓	✓	
STN72137 - Shania Twain		✓		✓		✓	✓	✓	✓	✓
STN72142 - Aura Lake									✓	
STN72143 - Snowmobile Crossing									✓	

UTM Station Coordinates - Table 2

UTM Coordinate Datum

Station Identifier	UTM Zone	Easting	Northing	Elevation
STN72135 - Hollinger Ext.	17 U	477690.00	5369095.00	329 metres
STN72138 - Hollinger Park	17 U	476172.60	5368991.69	318 metres
STN72139 - Hollinger Office	17 U	476860.57	5369232.07	326 metres
STN72140 - Goldmine Tour	17 U	476626.00	5368461.41	324 metres
STN72141 - Claimpost Trail	17 U	478831.56	5368717.43	319 metres
STN72135 - Extendicare	17 U	477683.00	5369104.00	327 metres
STN72136 - MRCA	17 U	476416.81	5369518.75	312 metres
STN72137 - Shania Twain	17 U	476064.20	5368291.07	314 metres
STN72142 - Aura Lake	17 U	478337.11	5368893.25	333 metres
STN72143 - Snowmobile Crossing	17 U	479158.24	5367586.26	323 metres

2.3 Summary of Network Operations

Air quality data and instrument performance are evaluated daily. Site visits to the non-continuous samplers are conducted weekly and continuous monitoring sites are visited as needed. Monthly data matrices, columnar data, station service logs and data edit records are retained in a historical database.

During 2016 there were 44 calibrations on the continuous samplers, all of which met criteria. Details are found in Appendix C.

2.3.1 Continuous Data

Data loggers are programmed to continuously scan the outputs from each of the continuous analyzers and process both five minute and hourly data averages. The data loggers have the capability to store several years' worth of data.

An Envitech Envista Air Resource Manager (ARM) application is used to poll the station data loggers and retrieve the collected data on an hourly basis. The data are then verified, quality assured and archived in a central database. The central database is backed up daily for contingency.

2.3.2 Non-continuous Data

TSP and PM_{10} samples are collected on filter media on a 6 day NAPS schedule. Gravimetric results (total loading) are calculated and reported for each filter. Metal analyses are conducted on every third TSP filter and every fifth PM_{10} filter. Filters are removed as soon as possible after exposure and submitted to an accredited laboratory for analysis. Laboratory reports are quality assured and submitted to the MOECC.

Dustfall data is collected using Dustfall jars on a monthly schedule. At the end of each month the exposed jars are retrieved and submitted for analyses.

Passive SO_2 and NO_2 data are collected on passive filter cartridges on a monthly schedule. At the end of each month, exposed cartridges are retrieved and submitted for analyses.

2.3.3 Quality Assurance

Quality assurance measures are implemented to ensure data integrity. The operation, service and maintenance of the stations and sampling equipment are in accordance with the manufacturers' operations manuals and protocols as outlined in the MOECC's 'Operations Manual for Air Quality Monitoring in Ontario', March 2008.

3.0 MOECC - AAQCs, Standards and Guidelines

The MOECC's AAQCs, standards and guidelines are based on the best scientific information available and are set at a level that safeguards human health and the natural environment. The effects considered may be based on health, odour, vegetation, soiling, visibility, corrosion or other effects. The relevant continuous PM_{10} and Nitrogen Oxides (as NO_2), AAQC and O. Reg 419/05 standards are summarized in Table 3. Non-continuous TSP, PM_{10}, Metals and Total Dustfall AAQCs, standards and guidelines are summarized in Tables 4, 5 and 6. There are no listed AAQCs, standards or guidelines for passive SO_2 / NO_2 monitoring.

Continuous Ambient Air Quality Criteria and Standards - Table 3

Contaminant Name	Criterion Type	Average Period	Average Type	Value	Units
Particulate Matter < 10µm – PM_{10}	Interim AAQC	24 Hr	Running	50	µg/m^3
Nitrogen Dioxide – NO_2	AAQC	24 Hr	Running	100	ppb
Nitrogen Dioxide – NO_2	AAQC	1 Hr	Running	200	ppb
Nitrogen Dioxide – NO_2	Standard	½ Hr	Running	250	ppb

Non-continuous TSP Ambient Air Quality Criteria and Standards - Table 4

Contaminant Name	Criterion Type	Average Period	Average Type	Value	Units
TSP	AAQC	24 Hr	Clock	120	µg/m^3
Arsenic (As)	AAQC	24 Hr	Clock	0.3	µg/m^3
Cadmium (Cd)	AAQC	24 Hr	Clock	0.025	µg/m^3
Chromium (Cr)	AAQC	24 Hr	Clock	0.5	µg/m^3
Cobalt (Co)	AAQC	24 Hr	Clock	0.1	µg/m^3
Copper (Cu)	AAQC	24 Hr	Clock	50	µg/m^3
Iron (Fe)	AAQC	24 Hr	Clock	25	µg/m^3
Lead (Pb)	AAQC	24 Hr	Clock	0.5	µg/m^3
Magnesium (Mg)	AAQC	24 Hr	Clock	120	µg/m^3
Manganese (Mn)	AAQC	24 Hr	Clock	0.4	µg/m^3
Nickel (Ni)	AAQC	24 Hr	Clock	0.2	µg/m^3
Selenium (Se)	AAQC	24 Hr	Clock	10	µg/m^3
Vanadium (V)	AAQC	24 Hr	Clock	2	µg/m^3
Zinc (Zn)	AAQC	24 Hr	Clock	120	µg/m^3

Non-continuous TSP Ambient Air Quality Criteria and Standards - Table 4 (cont.)

Contaminant Name	Criterion Type	Average Period	Average Type	Value	Units
Copper (Cu)	Standard	24 Hr	Clock	50	µg/m^3
Iron (Fe)	Standard	24 Hr	Clock	25	µg/m^3
Lead (Pb)	Standard	24 Hr	Clock	0.5	µg/m^3
Magnesium (Mg)	Standard	24 Hr	Clock	120	µg/m^3
Manganese (Mn)	Standard	24 Hr	Clock	0.4	µg/m^3
Nickel (Ni)	Standard	24 Hr	Clock	2	µg/m^3
Vanadium (V)	Standard	24 Hr	Clock	2	µg/m^3
Zinc (Zn)	Standard	24 Hr	Clock	120	µg/m^3
Arsenic (As)	Guideline	24 Hr	Clock	0.3	µg/m^3
Chromium (Cr)	Guideline	24 Hr	Clock	1.5	µg/m^3
Cobalt (Co)	Guideline	24 Hr	Clock	0.1	µg/m^3
Manganese (Mn)	Guideline	24 Hr	Clock	2.5	µg/m^3
Selenium (Se)	Guideline	24 Hr	Clock	10	µg/m^3

Non-continuous PM_{10} Ambient Air Quality Criteria - Table 5

Contaminant Name	Criterion Type	Average Period	Average Type	Value	Units
PM_{10}	Interim AAQC	24 Hr	Clock	50	µg/m^3
Manganese (Mn)	AAQC	24 Hr	Clock	0.2	µg/m^3
Nickel (Ni)	AAQC	24 Hr	Clock	0.1	µg/m^3

Non-continuous Total Dustfall Standard - Table 6

Contaminant Name	Criterion Type	Average Period	Average Type	Value	Units
Total Dustfall	Standard	30 days	Clock	7.0	g/m^2/30d

4.0 Continuous Data Statistics

The continuous data statistics are summarized in the accompanying tables and include:

- Maximum 24 hour running average
- Number of exceedances > 24 hour running average
- Number of valid clock hours
- Monthly and annual arithmetic means
- Overall percent valid data
- Maximum ½ hour running averages (NO_2 only)
- Maximum 1 hour running averages (NO_2 only)
- Number of exceedances > ½ hour running average (NO_2 only)
- Number of exceedances > 1 hour running average (NO_2 only)

STN72135 PM_{10} Data Statistics Summary - Table 7

STN72135	Max 24 Hr Running Avg	Events > 24 Hr AAQC	Valid Clock Hours	Monthly Mean	Percent Valid Data
Month	**PM_{10}**	**PM_{10}**	**PM_{10}**	**PM_{10}**	**PM_{10}**
	µg/m^3	No.	Hrs	µg/m^3	%
January	15	0	734	6	98.7
February	14	0	696	6	100.0
March	44	0	732	11	98.4
April	51	1	715	10	99.3
May	36	0	712	10	95.7
June	74	1	717	12	99.6
July	27	0	744	11	100.0
August	27	0	741	11	99.6
September	20	0	679	9	94.3
October	14	0	743	7	99.9
November	23	0	668	8	92.8
December	17	0	744	6	100.0
Totals		2	8625		
Annual Mean				9	98.2

STN72138 PM_{10} Data Statistics Summary - Table 8

STN72138	Max 24 Hr Running Avg	Events > 24 Hr AAQC	Valid Clock Hours	Monthly Mean	Percent Valid Data
Month	PM_{10}	PM_{10}	PM_{10}	PM_{10}	PM_{10}
	µg/m^3	No.	Hrs	µg/m^3	%
January	18	0	721	6	96.9
February	36	0	696	8	100.0
March	80	2	729	18	98.0
April	72	1	715	18	99.3
May	55	1	731	17	98.3
June	56	1	716	17	99.4
July	24	0	744	11	100.0
August	26	0	671	13	90.2
September	40	0	709	13	98.5
October	40	0	736	11	98.9
November	29	0	716	11	99.4
December	19	0	743	5	99.9
Totals		5	8627		
Annual Mean				12	98.2

STN72139 PM_{10} Data Statistics Summary - Table 9

STN72139	Max 24 Hr Running Avg	Events > 24 Hr AAQC	Valid Clock Hours	Monthly Mean	Percent Valid Data
Month	PM_{10}	PM_{10}	PM_{10}	PM_{10}	PM_{10}
	µg/m^3	No.	Hrs	µg/m^3	%
January	21	0	721	9	96.9
February	92	1	696	13	100.0
March	63	2	722	18	97.0
April	51	2	715	19	99.3
May	67	2	735	20	98.8
June	92	1	718	20	99.7
July	41	0	744	18	100.0
August	70	1	739	20	99.3
September	45	0	648	15	90.0
October	34	0	739	14	99.3
November	54	1	652	15	90.6
December	25	0	735	9	98.8
Totals		10	8564		
Annual Mean				16	97.5

STN72140 PM_{10} Data Statistics Summary - Table 10

STN72140	Max 24 Hr Running Avg	Events > 24 Hr AAQC	Valid Clock Hours	Monthly Mean	Percent Valid Data
Month	**PM_{10}**	**PM_{10}**	**PM_{10}**	**PM_{10}**	**PM_{10}**
	µg/m^3	No.	Hrs	µg/m^3	%
January	22	0	721	8	96.9
February	19	0	696	8	100.0
March	57	1	739	13	99.3
April	66	2	715	18	99.3
May	25	0	734	11	98.7
June	55	1	717	13	99.6
July	27	0	744	10	100.0
August	24	0	738	10	99.2
September	21	0	709	10	98.5
October	22	0	744	9	100.0
November	14	0	655	7	91.0
December	26	0	733	8	98.5
Totals		4	8645		
Annual Mean				10	98.4

STN72141 PM_{10} Data Statistics Summary - Table 11

STN72141	Max 24 Hr Running Avg	Events > 24 Hr AAQC	Valid Clock Hours	Monthly Mean	Percent Valid Data
Month	**PM_{10}**	**PM_{10}**	**PM_{10}**	**PM_{10}**	**PM_{10}**
	µg/m^3	No.	Hrs	µg/m^3	%
January	17	0	738	5	99.2
February	9	0	696	5	100.0
March	99	4	740	15	99.5
April	588	4	715	32	99.3
May	22	0	524	ins*	70.4
June	46	0	718	11	99.7
July	48	0	744	11	100.0
August	33	0	741	10	99.6
September	19	0	708	8	98.3
October	34	0	743	7	99.9
November	14	0	697	6	96.8
December	11	0	734	4	98.7
Totals		8	8498		
Annual Mean				10	96.8

ins* - insufficient data to calculate mean.

STN72135 NO_2 Data Statistics Summary - Table 12

STN72135	Max 24 Hr Running Avg	Max 1 Hr Running Avg	Max ½ Hr Running Avg	Events > 24 Hr AAQC	Events > 1 Hr AAQC	Events > ½ Hr Standard	Valid Clock Hours	Monthly Mean	Percent Valid Data
Month	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2
	ppb	ppb	ppb	No.	No.	No.	Hrs	ppb	%
January	12	33	35	0	0	0	744	5	100.0
February	17	45	46	0	0	0	696	5	100.0
March	13	45	45	0	0	0	744	5	100.0
April	11	37	41	0	0	0	720	4	100.0
May	15	41	43	0	0	0	718	5	96.5
June	7	21	24	0	0	0	256	ins*	35.6
July	5	16	16	0	0	0	744	1	100.0
August	5	14	14	0	0	0	740	2	99.5
September	6	20	21	0	0	0	700	2	97.2
October	6	17	20	0	0	0	741	2	99.6
November	8	20	21	0	0	0	716	3	99.4
December	9	30	30	0	0	0	744	3	100.0
Totals				0	0	0	8263		
Annual Mean								3	94.0

ins* - insufficient data to calculate mean.

STN72138 NO_2 Data Statistics Summary - Table 13

STN72138	Max 24 Hr Running Avg	Max 1 Hr Running Avg	Max ½ Hr Running Avg	Events > 24 Hr AAQC	Events > 1 Hr AAQC	Events > ½ Hr Standard	Valid Clock Hours	Monthly Mean	Percent Valid Data
Month	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2
	ppb	ppb	ppb	No.	No.	No.	Hrs	ppb	%
January	10	22	26	0	0	0	744	4	100.0
February	12	32	34	0	0	0	696	4	100.0
March	9	30	32	0	0	0	736	3	98.9
April	9	28	32	0	0	0	720	2	100.0
May	10	22	24	0	0	0	729	2	98.0
June	8	37	41	0	0	0	715	2	99.3
July	4	21	22	0	0	0	744	2	100.0
August	4	23	25	0	0	0	741	2	99.6
September	11	27	32	0	0	0	720	3	100.0
October	11	30	35	0	0	0	742	3	99.7
November	13	27	29	0	0	0	717	4	99.6
December	13	30	31	0	0	0	743	4	99.9
Totals				0	0	0	8747		
Annual Mean								3	99.6

STN72139 NO_2 Data Statistics Summary - Table 14

STN72139	Max 24 Hr Running Avg	Max 1 Hr Running Avg	Max ½ Hr Running Avg	Events > 24 Hr AAQC	Events > 1 Hr AAQC	Events > ½ Hr Standard	Valid Clock Hours	Monthly Mean	Percent Valid Data
Month	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2
	ppb	ppb	ppb	No.	No.	No.	Hrs	ppb	%
January	12	30	35	0	0	0	744	5	100.0
February	18	37	40	0	0	0	696	6	100.0
March	14	36	41	0	0	0	736	6	98.9
April	14	37	40	0	0	0	719	5	99.9
May	17	36	38	0	0	0	741	5	99.6
June	13	44	49	0	0	0	714	4	99.2
July	11	29	32	0	0	0	744	3	100.0
August	8	31	35	0	0	0	739	3	99.3
September	11	26	27	0	0	0	720	5	100.0
October	12	23	25	0	0	0	741	4	99.6
November	14	25	28	0	0	0	718	5	99.7
December	10	27	30	0	0	0	678	5	91.1
Totals				0	0	0	8690		
Annual Mean								5	98.9

STN72140 NO_2 Data Statistics Summary - Table 15

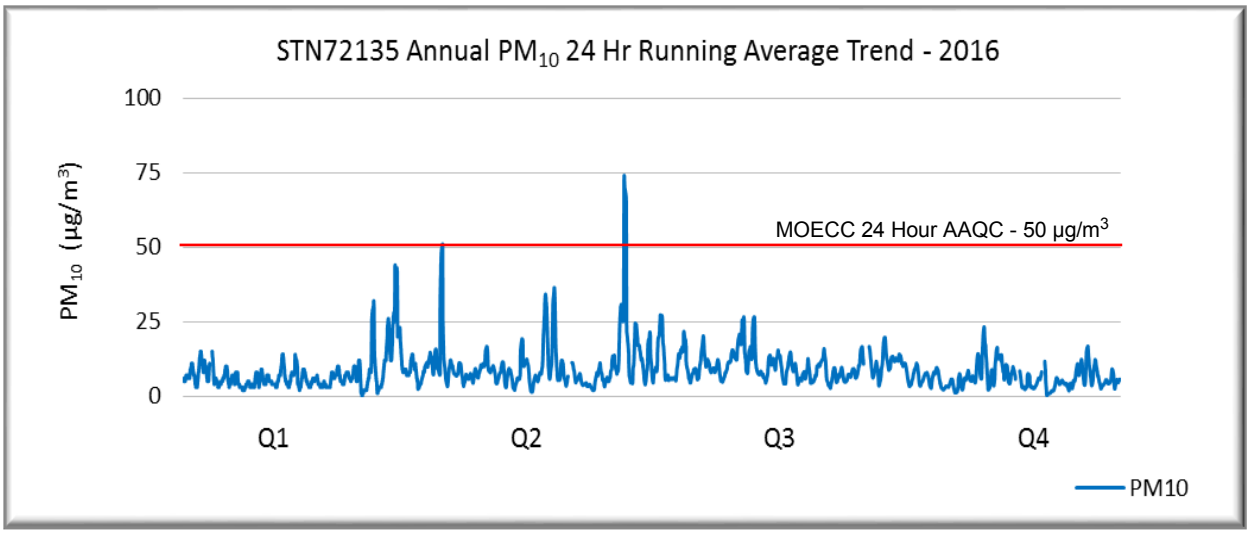
STN72140	Max 24 Hr Running Avg	Max 1 Hr Running Avg	Max ½ Hr Running Avg	Events > 24 Hr AAQC	Events > 1 Hr AAQC	Events > ½ Hr Standard	Valid Clock Hours	Monthly Mean	Percent Valid Data
Month	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2
	ppb	ppb	ppb	No.	No.	No.	Hrs	ppb	%
January	12	24	25	0	0	0	744	4	100.0
February	14	34	36	0	0	0	696	4	100.0
March	16	37	39	0	0	0	744	6	100.0
April	12	35	39	0	0	0	720	5	100.0
May	14	34	36	0	0	0	740	4	99.5
June	10	33	36	0	0	0	716	3	99.4
July	12	22	25	0	0	0	744	2	100.0
August	7	22	24	0	0	0	738	2	99.2
September	8	26	28	0	0	0	720	3	100.0
October	13	25	26	0	0	0	740	3	99.5
November	14	23	26	0	0	0	717	4	99.6
December	11	27	28	0	0	0	743	4	99.9
Totals				0	0	0	8762		
Annual Mean								4	99.8

STN72141 NO_2 Data Statistics Summary - Table 16

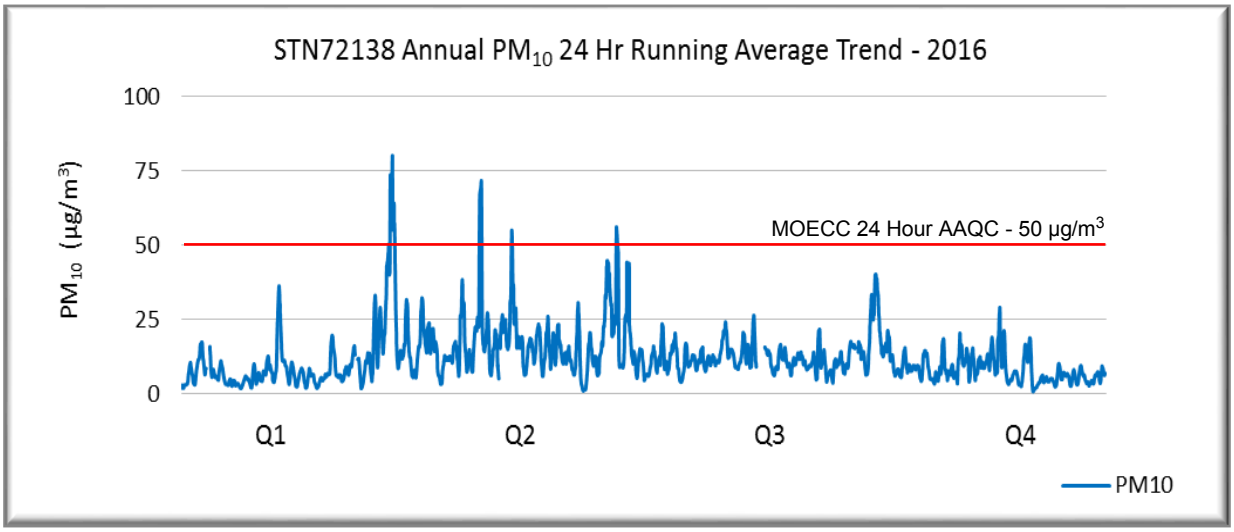
STN72141	Max 24 Hr Running Avg	Max 1 Hr Running Avg	Max ½ Hr Running Avg	Events > 24 Hr AAQC	Events > 1 Hr AAQC	Events > ½ Hr Standard	Valid Clock Hours	Monthly Mean	Percent Valid Data
Month	**NO_2**	**NO_2**	**NO_2**	**NO_2**	**NO_2**	**NO_2**	**NO_2**	**NO_2**	**NO_2**
	ppb	ppb	ppb	No.	No.	No.	Hrs	ppb	%
January	12	35	39	0	0	0	744	4	100.0
February	22	47	49	0	0	0	696	5	100.0
March	21	54	56	0	0	0	744	5	100.0
April	14	48	50	0	0	0	719	4	99.9
May	20	51	52	0	0	0	739	6	99.3
June	11	34	35	0	0	0	715	3	99.3
July	8	27	27	0	0	0	744	2	100.0
August	6	21	23	0	0	0	740	2	99.5
September	6	19	20	0	0	0	719	2	99.9
October	8	21	22	0	0	0	738	2	99.2
November	8	20	22	0	0	0	717	2	99.6
December	9	30	30	0	0	0	744	2	100.0
Totals				0	0	0	8759		
Annual Mean								3	99.7

4.1 Continuous PM_{10} 24 Hr Running Average Trends

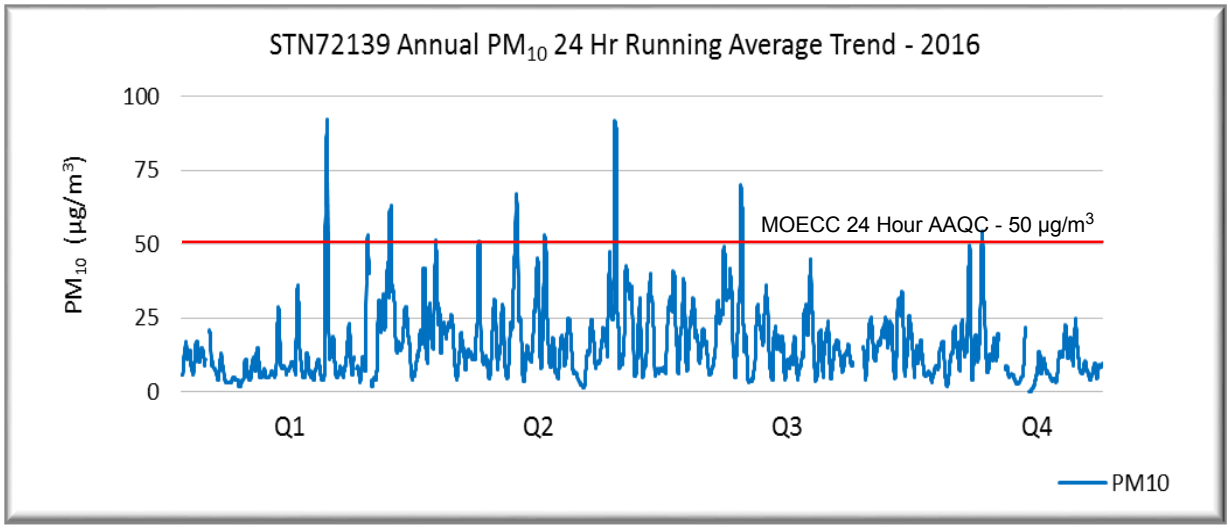
STN72135 PM_{10} 24 Hr Running Average Trend - Figure 2



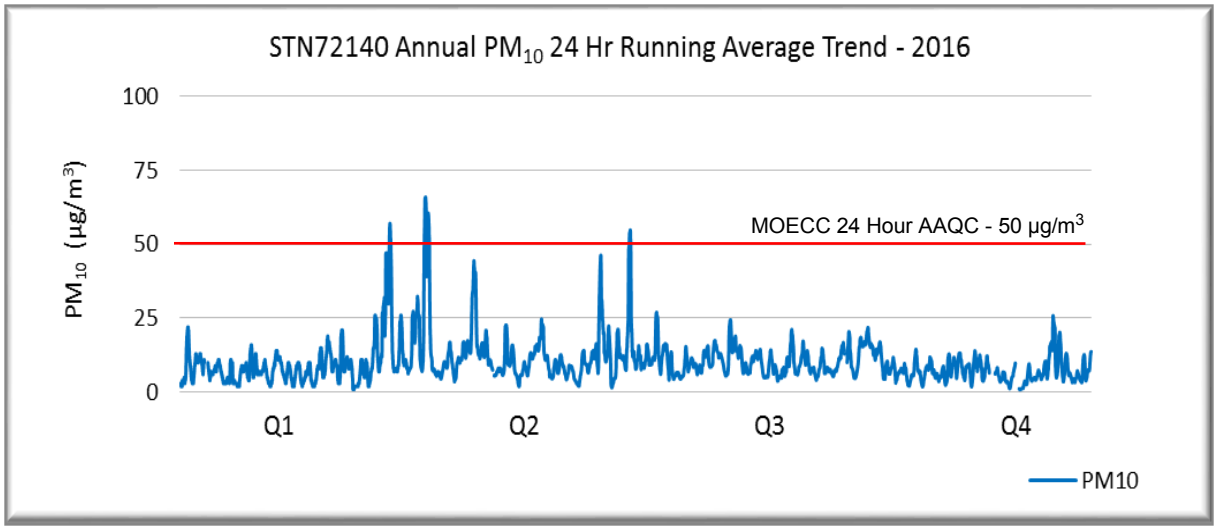
STN72138 PM_{10} 24 Hr Running Average Trend - Figure 3



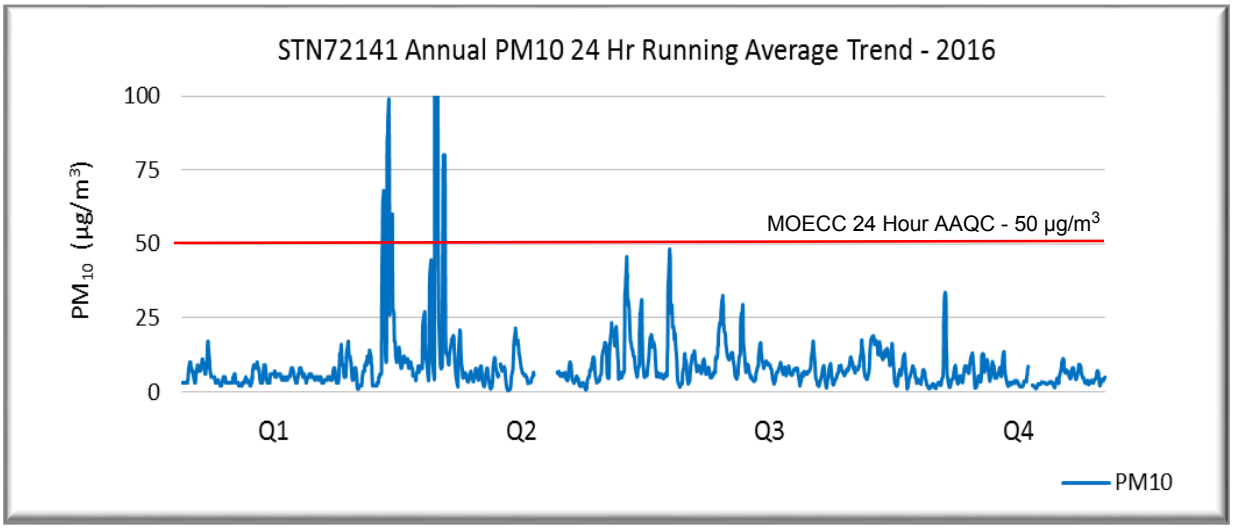
STN72139 PM_{10} 24 Hr Running Average Trend - Figure 4



STN72140 PM_{10} 24 Hr Running Average Trend - Figure 5



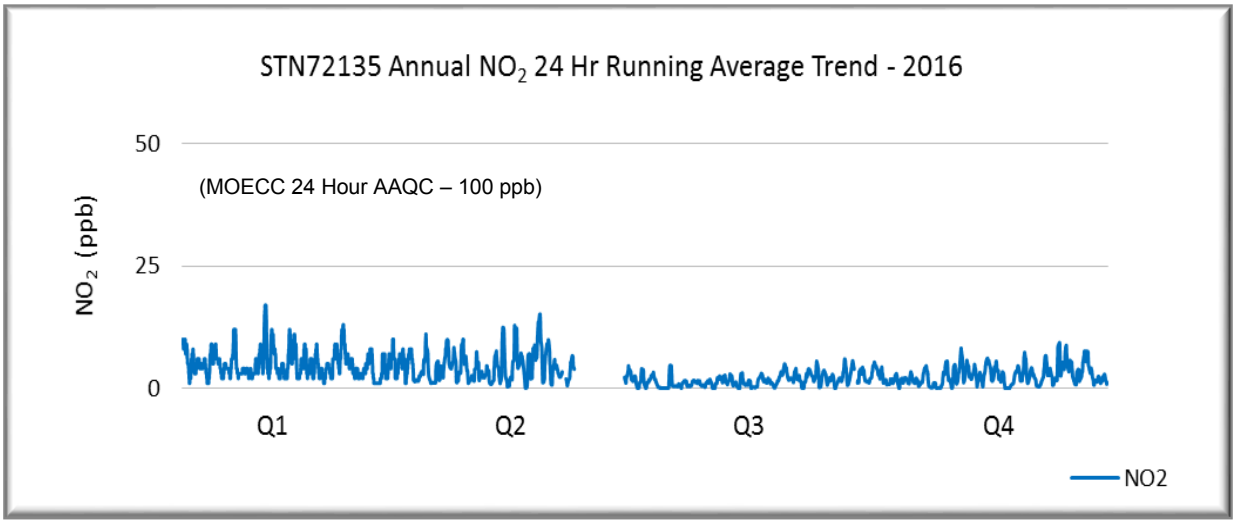
STN72141 PM_{10} 24 Hr Running Average Trend - Figure 6



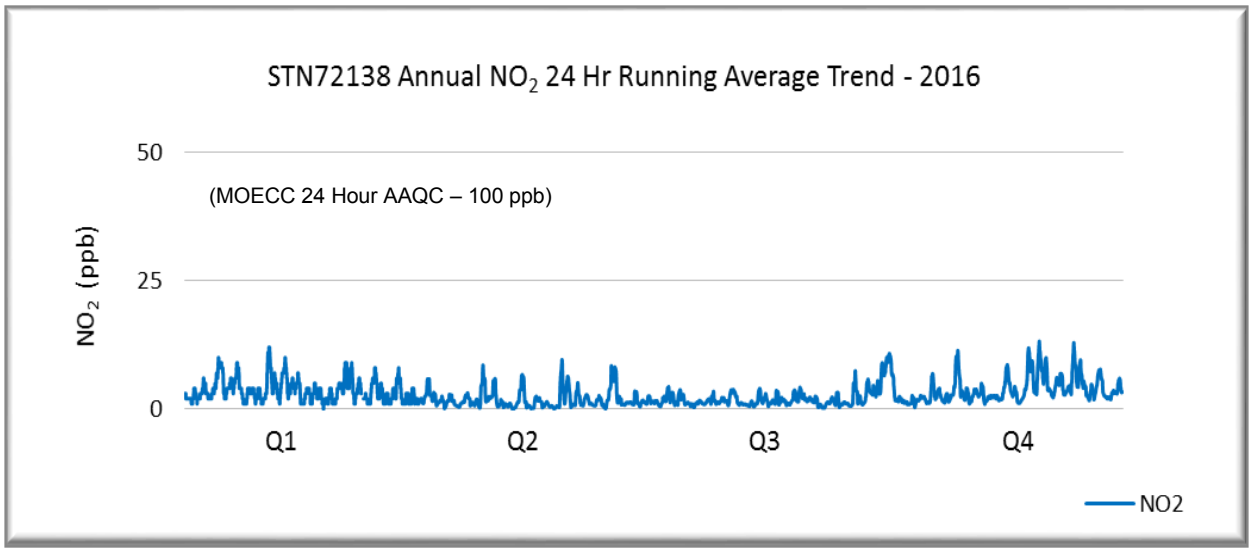
Note: During Q1, 24 Hr averages peaked to 99 µg/m^3 on March 22. During Q2, 24 Hr averages peaked to 588 µg/m^3 on April 10. Scaling for this graphic has remained at 100 µg/m^3 for station to station comparisons.

4.2 Continuous NO_2 24 Hr Running Average Trends

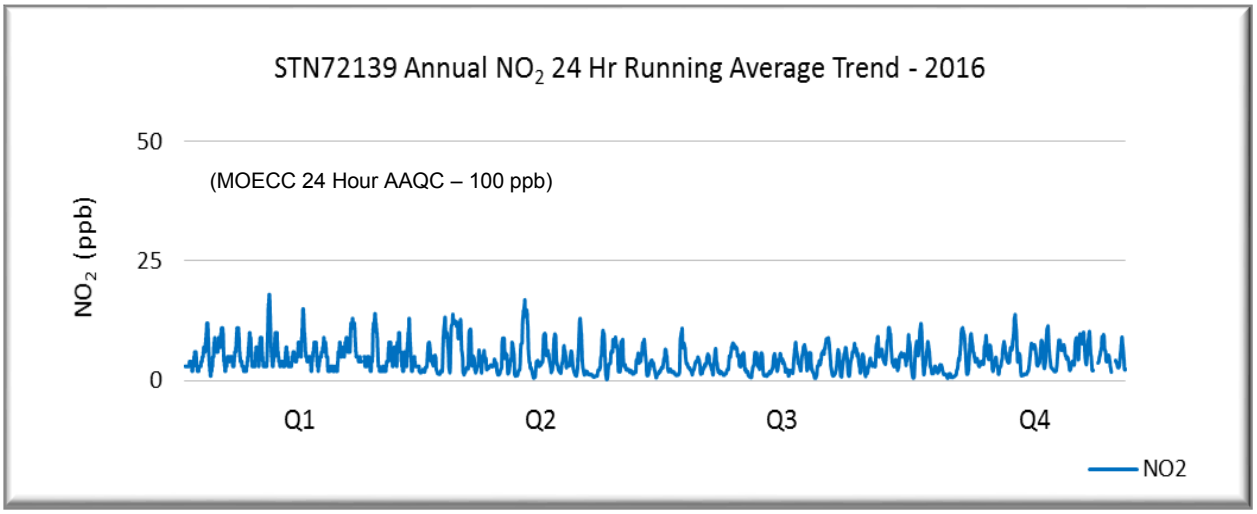
STN72135 NO_2 24 Hr Running Average Trend - Figure 7



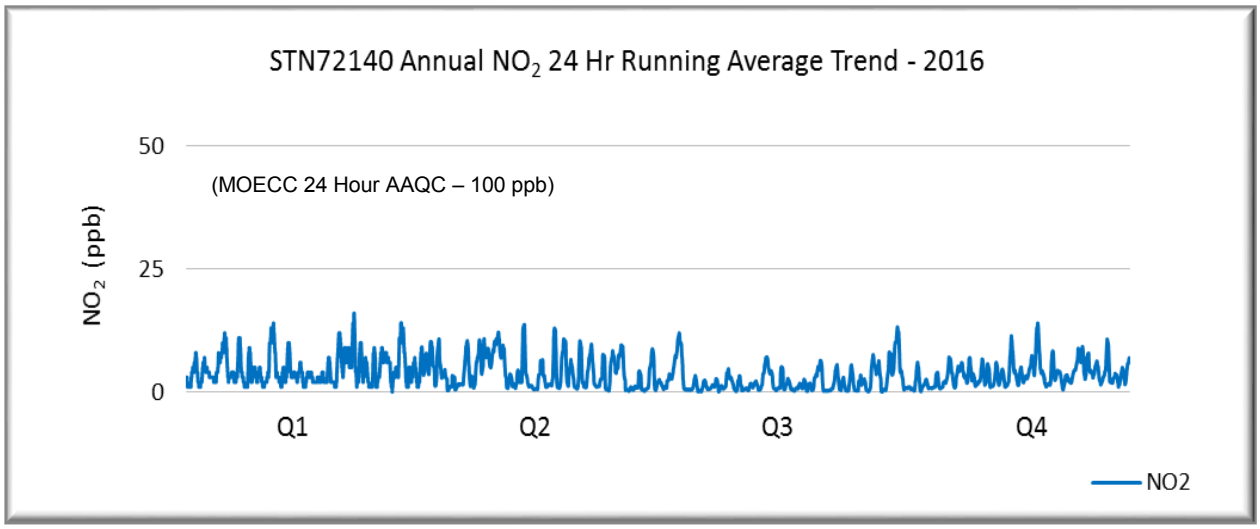
STN72138 NO_2 24 Hr Running Average Trend - Figure 8



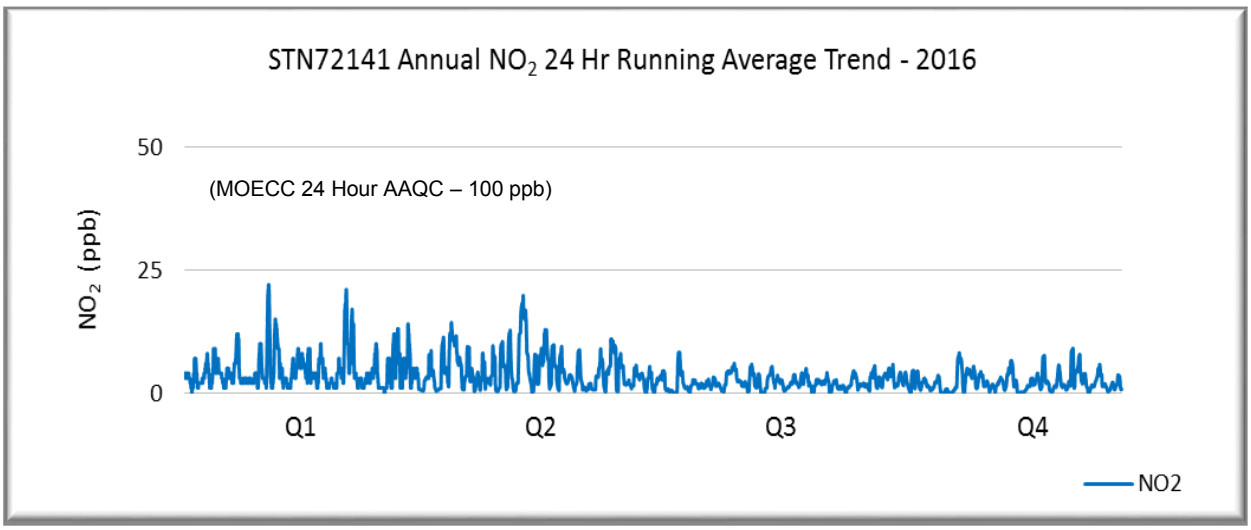
STN72139 NO_2 24 Hr Running Average Trend - Figure 9



STN72140 NO_2 24 Hr Running Average Trend - Figure 10



STN72141 NO_2 24 Hr Running Average Trend - Figure 11



5.0 Non-continuous Data Statistics

Non-continuous TSP, PM_{10} and suspended metal data statistics have been summarized in Tables 17 and 18 and include:

- Reportable Detection Limit (RDL)
- Annual Maximum 24 hour clock value
- Annual Average 24 hour clock arithmetic mean

Geometric means and additional information on non-continuous data can be found in Appendix B.

For statistic trending and as per MOECC guidelines, non-detect parameters are reported as half of the Reportable Detection Limit for all non-continuous parameters.

Non-continuous TSP Data Summary - Table 17

Station		STN72135 Extendicare		STN72136 MRCA		STN72137 Shania Twain	
Parameter	RDL µg/m^3	Annual Max µg/m^3	Annual Avg µg/m^3	Annual Max µg/m^3	Annual Avg µg/m^3	Annual Max µg/m^3	Annual Avg µg/m^3
TSP	3	73	26	166	31	94	29
Arsenic	0.0037	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019
Cadmium	0.0012	0.0025	0.0007	0.0006	0.0006	0.0006	0.0006
Chromium	0.0031	0.0086	0.0028	0.0080	0.0027	0.0066	0.0029
Cobalt	0.0012	0.0006	0.0006	0.0017	0.0007	0.0016	0.0006
Copper	0.0031	0.4600	0.1015	0.1120	0.0406	0.1010	0.0584
Iron	0.0310	2.3300	0.9070	3.1700	0.8560	3.2200	0.9651
Lead	0.0018	0.0031	0.0012	0.0043	0.0015	0.0118	0.0027
Magnesium	0.0310	0.8960	0.3460	1.1600	0.3648	1.0300	0.3778
Manganese	0.00061	0.0432	0.0199	0.0734	0.0188	0.0651	0.0202
Nickel	0.0018	0.0041	0.0018	0.0062	0.0019	0.0046	0.0021
Selenium	0.0061	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031
Sulphur	0.0150	0.5270	0.2414	0.5220	0.2389	0.5440	0.2435
Vanadium	0.0031	0.0041	0.0019	0.0050	0.0021	0.0043	0.0017
Zinc	0.0031	0.0390	0.0166	0.0545	0.0211	0.0562	0.0223
Sulphate	0.0500	1.5800	0.7243	1.5700	0.7235	1.6300	0.7305

Non-continuous PM_{10} Data Summary - Table 18

Station		STN72135 Extendicare		STN72136 MRCA		STN72137 Shania Twain	
Parameter	RDL µg/m³	Annual Max µg/m³	Annual Avg µg/m³	Annual Max µg/m³	Annual Avg µg/m³	Annual Max µg/m³	Annual Avg µg/m³
PM_{10}	3	27	12	78	15	43	15
Arsenic	0.0037	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019
Cadmium	0.0012	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006
Chromium	0.0031	0.0050	0.0018	0.0053	0.0020	0.0150	0.0030
Cobalt	0.0012	0.0006	0.0006	0.0006	0.0006	0.0019	0.0007
Copper	0.0031	0.0415	0.0264	0.0330	0.0151	0.0319	0.0166
Iron	0.0310	0.9520	0.3405	1.4500	0.5102	2.3600	0.5848
Lead	0.0018	0.0023	0.0010	0.0031	0.0014	0.0054	0.0017
Magnesium	0.0310	0.4560	0.1331	0.7420	0.2234	0.9920	0.2553
Manganese	0.0006	0.0173	0.0080	0.0345	0.0117	0.0395	0.0118
Nickel	0.0018	0.0027	0.0010	0.0038	0.0014	0.0071	0.0018
Selenium	0.0061	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031
Sulphur	0.0150	0.6060	0.2122	0.5310	0.2143	0.5030	0.2155
Vanadium	0.0031	0.0016	0.0016	0.0016	0.0016	0.0036	0.0017
Zinc	0.0031	0.0210	0.0117	0.0241	0.0150	0.0269	0.0146
Sulphate	0.0500	1.8200	0.6354	1.5900	0.6417	1.5100	0.6477

Non-continuous Total Dustfall and Passive SO_2 / NO_2 data statistics have been summarized in Tables 19 and 20.

Non-continuous Total Dustfall Data Summary - Table 19

Month	STN72135 Extendicare	STN72136 MRCA	STN72137 Shania Twain	STN72141 Claimpost	STN72142 Aura Lake	STN72143 Snowmobile Crossing
	$g/m^2/30d$	$g/m^2/30d$	$g/m^2/30d$	$g/m^2/30d$	$g/m^2/30d$	$g/m^2/30d$
January	0.66	0.72	0.68	1.20	0.58	1.20
February	1.10	0.61	0.55	0.80	0.51	1.30
March	2.10	1.40	1.30	6.10	2.20	42.00
April	1.60	1.40	1.80	9.30	4.00	44.00
May	3.20	1.70	1.60	3.70	1.40	24.00
June	3.00	2.50	1.50	5.90	5.50	23.00
July	9.70	10.00	4.90	5.60	3.70	26.00
August	5.00	3.60	2.60	3.20	4.60	24.00
September	3.40	1.70	2.50	4.20	2.00	21.00
October	2.00	1.20	0.93	2.10	2.00	5.10
November	1.60	1.00	0.98	2.90	1.20	12.00
December	0.79	0.69	0.52	0.71	0.61	3.80

Non-continuous Passive SO_2 / NO_2 Data Summary - Table 20

Month	STN72135 Extendicare	STN72136 MRCA	STN72137 Shania Twain	STN72135 Extendicare	STN72136 MRCA	STN72137 Shania Twain
	SO_2	SO_2	SO_2	NO_2	NO_2	NO_2
	ppb	ppb	ppb	ppb	ppb	ppb
January	0.14	0.11	0.05	1.57	1.89	1.58
February	0.05	0.14	0.05	2.13	2.08	1.40
March	0.05	0.05	0.05	3.46	1.58	2.31
April	0.05	0.15	0.05	3.13	1.79	2.72
May	0.05	0.05	0.10	5.14	2.83	4.00
June	0.05	0.05	0.05	4.11	1.97	2.06
July	0.05	0.05	0.05	2.09	1.60	0.91
August	0.05	0.05	0.05	1.61	1.07	0.84
September	0.05	0.05	0.05	2.83	2.02	1.53
October	0.05	0.05	0.11	1.36	1.68	1.81
November	0.11	0.12	0.11	1.58	1.43	1.34
December	0.05	0.13	0.05	2.08	1.39	1.73

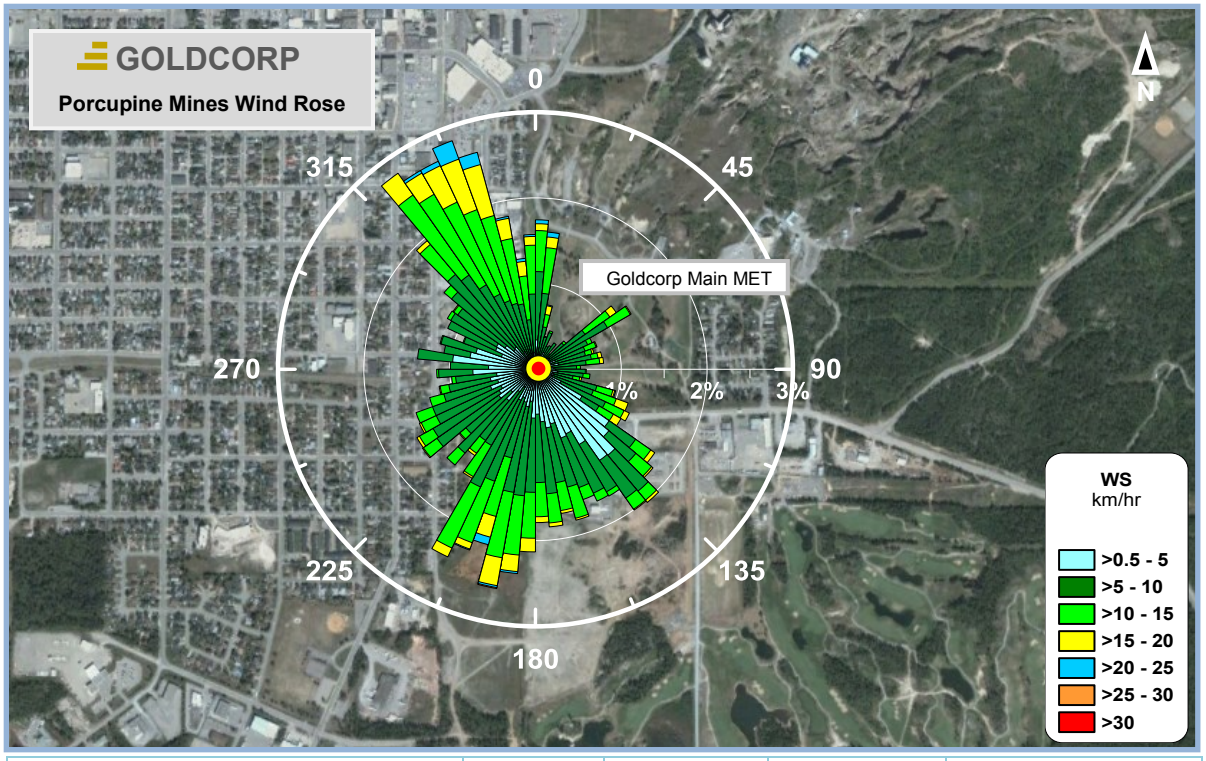
6.0 Wind Frequency Distribution

To illustrate wind frequency distribution information, distributions of wind speeds, and the frequency of the varying wind directions, we have included a wind rose graphic superimposed on an aerial view of the Goldcorp mine property.

Wind roses summarize the occurrence of winds at a location, showing their strength, direction and frequency. Each branch of the rose represents wind coming from that direction, with north to the top of the graphic. The branches are divided into segments of different colours, which represent wind speed ranges from that direction. The length of each segment within a branch is proportional to the frequency of winds blowing within the corresponding range of speeds from that direction.

The majority and magnitude of branches in the 2016 wind rose below indicate predominant wind directions out of the south and northwest (these branches represent the plot data when the wind was blowing from this vector). Table 21 summarizes the wind frequency distribution in tabular format.

Wind Frequency Distribution - Wind Rose - Figure 12



Wind Rose – Annual, 2016 Meteorological Station		By : BB	**Figure 12**
	True North	Approx. Scale :	1:14000
Goldcorp - Porcupine Gold Mines - Timmins, Ontario		Date Revised :	07 Apr, 2017

ROTEK

Wind Frequency Distribution Table - Table 21

Wind Speed Class	0.5 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	> 30	All
	km/hr	km/hr	km/hr	km/hr	km/hr	km/hr	km/hr	
Wind Direction	%	%	%	%	%	%	%	%
N	1.38	5.05	4.76	1.85	0.48	0.01	0.00	13.53
NE	1.46	3.09	0.87	0.10	0.00	0.00	0.00	5.52
E	1.93	3.27	0.98	0.25	0.01	0.00	0.00	6.44
SE	8.08	4.62	1.57	0.39	0.00	0.00	0.00	14.66
S	4.75	7.62	4.67	1.15	0.15	0.01	0.00	18.35
SW	3.57	7.52	2.87	0.31	0.00	0.00	0.00	14.27
W	5.68	4.26	0.47	0.01	0.00	0.00	0.00	10.42
NW	2.78	7.61	4.76	1.48	0.17	0.00	0.00	16.80
All	29.63	43.04	20.95	5.54	0.81	0.02	0.00	100.00

7.0 Valid Data Percentages

Overall, the percentage of continuous valid pollutant data recovery was 98.2% for 2016, exceeding the Ministry's minimum target of 90% and desirable target of 95%. The percent valid data recovery for non-continuous TSP, PM_{10} and Total Dustfall was 98.6%.

7.1 Invalid Data Summary

Data is reported in Time Beginning Eastern Standard Time (EST). In this format, a value reported at 10:00 Hrs represents the data collected from 10:00 to 11:00 Hrs (EST).

Notwithstanding the minimum 90% valid data performance measure, emitters are to notify (as soon as practical) the MOECC of any system or equipment failures resulting in missing data of 24 hours or more in length and of the plans and schedule for repairing the failed system or equipment. Tables 22 and 23 detail problems that resulted in significant data losses along with remedial actions.

Invalid Continuous Data Summary - Table 22

Station	Parameter	Start Date	Start Time EST	End Date	End Time EST	Description	Corrective Action
STN72135	NO, NO_2, NO_X	Jun 03	08:00	Jun 22	14:00	Peltier Cooler Failed	Repaired Peltier Cooler
STN72135	PM_{10}	Sep 21	17:00	Sep 23	09:00	Power Failure	Restored Power
STN72135	TSP	Sep 21	17:00	Sep 26	14:00	Inlet Heater Failed	Repaired Inlet Heater
STN72135	PM_{10}	Nov 19	22:00	Nov 21	01:00	Excessive Fog	Data Invalidated
STN72138	PM_{10}	Aug 14	16:00	Aug 17	13:00	Tape Ran Out	Replaced Tape
STN72139	PM_{10}	Sep 24	01:00	Sep 26	13:00	Tape Error	Reset Tape
STN72139	PM_{10}	Nov 19	19:00	Nov 21	16:00	Excessive Fog	Data Invalidated
STN72139	PM_{10}	Nov 30	06:00	Dec 01	07:00	Excessive Fog	Data Invalidated
STN72139	TSP	Dec 16	22:00	Dec 27	11:00	Optic Cell Failure	Replaced Optic Cell
STN72139	NO, NO_2, NO_X	Dec 18	04:00	Dec 19	09:00	Flow Issue	Stabilized Flow
STN72139	NO, NO_2, NO_X	Dec 25	04:00	Dec 26	06:00	Flow Issue	Serviced Pump
STN72140	TSP	Aug 11	09:00	Aug 24	10:00	System Leak	Repaired Leak
STN72140	PM_{10}	Nov 19	22:00	Nov 21	17:00	Excessive Fog	Data Invalidated
STN72140	PM_{10}	Nov 30	08:00	Dec 01	08:00	Excessive Fog	Data Invalidated
STN72141	PM_{10}	May 18	21:00	May 27	13:00	Reaction Cell Failed	Repaired Reaction Cell
STN72141	TSP	Oct 28	11:00	Oct 29	10:00	Unstable Response	Stabilized Response
STN72141	TSP	Oct 30	09:00	Oct 31	11:00	Optic Cell Failure	Replaced Optic Cell
STN72141	PM_{10}	Nov 30	09:00	Dec 01	09:00	Excessive Fog	Data Invalidated

Invalid Non-continuous Data Summary - Table 23

Station	Parameter	Start Date	Start Time EST	End Date	End Time EST	Description	Corrective Action
STN72135	TSP	Jul 29	00:00	Jul 29	23:00	Sample Overran	Sample Date Invalidated
STN72135	PM_{10}	Aug 04	00:00	Aug 04	23:00	No Sample Taken	Sample Date Invalidated
STN72136	TSP	Jul 29	00:00	Jul 29	23:00	Sample Overran	Sample Date Invalidated
STN72136	PM_{10}	Aug 04	00:00	Aug 04	23:00	No Sample Taken	Sample Date Invalidated
STN72136	TSP	Nov 14	00:00	Nov 14	23:00	Power Failure	Restored Power
STN72136	PM_{10}	Nov 14	00:00	Nov 14	23:00	Power Failure	Restored Power
STN72137	TSP	Jul 29	00:00	Jul 29	23:00	Sample Overran	Sample Date Invalidated
STN72137	PM_{10}	Aug 04	00:00	Aug 04	23:00	No Sample Taken	Sample Date Invalidated

8.0 Data Editing

A data validation process to filter out erroneous data is critical to maximize data integrity. Validation can be done using automated or manual procedures. Regardless of the process followed, judgment to accept or reject suspicious or unusual data is required. Many factors need to be considered during this process by qualified staff with an understanding of local pollutant and climatic conditions as well as knowledge of air monitoring principles and analyzer behaviour.

9.0 Exceedance Summary

This report summarizes the continuous and non-continuous monitoring results according to MOECC reporting requirements. The continuous and non-continuous data sets are provided in separate appendices to this report.

When reporting the number of continuous exceedances, there may be multiple consecutive running averages that exceed the AAQC or standard. If the consecutive averages occur within a single clock based averaging period, they are to be reported as a single exceedance. If they are spread across 2 clock based averaging periods and more than 24 consecutive hours, they are to be reported as 2 exceedances. The exceedance value reported is the highest recorded value during the exceedance episode.

A 24 hour clock average is defined as the midnight to midnight average. A 24 hour running average is the average of the current hour and the preceding 23 hours.

During 2016 there were:

a) No exceedances of the continuous NO_2 24 hour and 1 hour running average AAQCs or of the ½ hour running average O.Reg 419/05 standard.

b) 29 exceedances of the continuous PM_{10} 24 hour running average AAQC, 2 at STN72135, 5 at STN72138, 10 at STN72139, 4 at STN72140 and 8 at STN72141.

c) 3 exceedances of the non-continuous 24 hour clock TSP AAQC at STN72136.

d) 3 exceedances of the non-continuous 24 hour clock PM_{10} AAQC at STN72136.

e) No exceedances of the non-continuous 24 hour clock TSP or PM_{10} Suspended Metals AAQCs, standards or guidelines.

f) 11 exceedances of the non-continuous 30 day standard for Total Dustfall, 1 at STN72135, 1 at STN72136, 1 at STN72141 and 8 at STN72143.

Continuous exceedances are summarized in Table 24. Non-continuous exceedances are summarized in Table 25. Not all exceedances can be attributed to the Hollinger Open Pit (HOP) operations. Exceedances potentially associated to HOP operations are listed in Table 26.

Continuous Parameter Exceedance Summary - Table 24

Station	Parameter	Criterion Exceeded	Exceedance Count	Start Date	Start Time	End Date	End Time	Exceedance Value	Figure Reference
STN72139	PM_{10}	24 Hr Interim AAQC	1	Feb 26	23:00	Feb 27	22:00	92 µg/m^3	13
STN72139	PM_{10}	24 Hr Interim AAQC	1	Mar 14	13:00	Mar 15	00:00	53 µg/m^3	14
STN72141	PM_{10}	24 Hr Interim AAQC	1	Mar 20	05:00	Mar 20	21:00	68 µg/m^3	15
STN72141	PM_{10}	24 Hr Interim AAQC	1	Mar 22	01:00	Mar 23	00:00	99 µg/m^3	16
STN72138	PM_{10}	24 Hr Interim AAQC	2	Mar 23	06:00	Mar 25	02:00	80 µg/m^3	17
STN72141	PM_{10}	24 Hr Interim AAQC	1	Mar 23	07:00	Mar 23	16:00	55 µg/m^3	16
STN72139	PM_{10}	24 Hr Interim AAQC	1	Mar 23	07:00	Mar 24	06:00	63 µg/m^3	18
STN72141	PM_{10}	24 Hr Interim AAQC	1	Mar 23	19:00	Mar 24	04:00	60 µg/m^3	16
STN72140	PM_{10}	24 Hr Interim AAQC	1	Mar 23	19:00	Mar 24	07:00	57 µg/m^3	19
STN72140	PM_{10}	24 Hr Interim AAQC	1	Apr 07	19:00	Apr 08	13:00	66 µg/m^3	20
STN72140	PM_{10}	24 Hr Interim AAQC	1	Apr 08	22:00	Apr 09	18:00	61 µg/m^3	20
STN72141	PM_{10}	24 Hr Interim AAQC	3	Apr 09	20:00	Apr 11	05:00	588 µg/m^3	21
STN72135	PM_{10}	24 Hr Interim AAQC	1	Apr 10	18:00	Apr10	20:00	51 µg/m^3	22
STN72139	PM_{10}	24 Hr Interim AAQC	1	Apr 10	20:00	Apr 10	21:00	51 µg/m^3	23
STN72141	PM_{10}	24 Hr Interim AAQC	1	Apr 13	02:00	Apr 14	00:00	80 µg/m^3	24
STN72138	PM_{10}	24 Hr Interim AAQC	1	Apr 27	12:00	Apr 28	10:00	72 µg/m^3	25
STN72139	PM_{10}	24 Hr Interim AAQC	1	Apr 28	01:00	Apr 28	03:00	51 µg/m^3	26
STN72138	PM_{10}	24 Hr Interim AAQC	1	May 10	05:00	May 10	11:00	55 µg/m^3	27
STN72139	PM_{10}	24 Hr Interim AAQC	1	May 12	09:00	May 13	06:00	67 µg/m^3	28
STN72139	PM_{10}	24 Hr Interim AAQC	1	May 23	20:00	May 24	08:00	53 µg/m^3	29
STN72139	PM_{10}	24 Hr Interim AAQC	1	Jun 20	12:00	Jun 21	11:00	92 µg/m^3	30
STN72135	PM_{10}	24 Hr Interim AAQC	1	Jun 20	13:00	Jun 21	11:00	74 µg/m^3	31
STN72138	PM_{10}	24 Hr Interim AAQC	1	Jun 20	14:00	Jun 21	01:00	56 µg/m^3	32
STN72140	PM_{10}	24 Hr Interim AAQC	1	Jun 28	22:00	Jun 29	10:00	55 µg/m^3	33
STN72139	PM_{10}	24 Hr Interim AAQC	1	Aug 09	12:00	Aug 10	10:00	70 µg/m^3	34
STN72139	PM_{10}	24 Hr Interim AAQC	1	Nov 13	05:00	Nov 13	14:00	54 µg/m^3	35

Table 24 is a summary of the continuous exceedances which are graphically illustrated in Figures 13 to 35. Exceedances are calculated based on 24 hour running averages while pollution roses are generated using hourly values. For this reason, dates identified on the referenced pollution roses may not correspond to the exceedance start and end dates listed above.

Non-continuous Parameter Exceedance Summary - Table 25

Station	Parameter	Criterion Exceeded	Exceedance Count	Start Date	Start Time	End Date	End Time	Exceedance Value
STN72143	Total Dustfall	30 day standard	1	Mar 01	00:00	Mar 31	23:00	42.0 g/m^2/30d
STN72136	TSP	24 Hr Clock AAQC	1	Mar 13	00:00	Mar 13	23:00	127 µg/m^3
STN72136	PM_{10}	24 Hr Interim AAQC	1	Mar 13	00:00	Mar 13	23:00	60 µg/m^3
STN72141	Total Dustfall	30 day standard	1	Apr 01	00:00	Apr 30	23:00	9.30 g/m^2/30d
STN72143	Total Dustfall	30 day standard	1	Apr 01	00:00	Apr 30	23:00	44.0 g/m^2/30d
STN72143	Total Dustfall	30 day standard	1	May 01	00:00	May 31	23:00	24.0 g/m^2/30d
STN72136	TSP	24 Hr Clock AAQC	1	May 06	00:00	May 06	23:00	127 µg/m^3
STN72136	PM_{10}	24 Hr Interim AAQC	1	May 06	00:00	May 06	23:00	71 µg/m^3
STN72136	TSP	24 Hr Clock AAQC	1	May 12	00:00	May 12	23:00	166 µg/m^3
STN72136	PM_{10}	24 Hr Interim AAQC	1	May 12	00:00	May 12	23:00	78 µg/m^3
STN72143	Total Dustfall	30 day standard	1	Jun 01	00:00	Jun 30	23:00	23.0 g/m^2/30d
STN72135	Total Dustfall	30 day standard	1	Jul 01	00:00	Jul 31	23:00	9.7 g/m^2/30d
STN72136	Total Dustfall	30 day standard	1	Jul 01	00:00	Jul 31	23:00	10.0 g/m^2/30d
STN72143	Total Dustfall	30 day standard	1	Jul 01	00:00	Jul 31	23:00	26.0 g/m^2/30d
STN72143	Total Dustfall	30 day standard	1	Aug 01	00:00	Aug 31	23:00	24.0 g/m^2/30d
STN72143	Total Dustfall	30 day standard	1	Sep 01	00:00	Sep 30	23:00	21.0 g/m^2/30d
STN72143	Total Dustfall	30 day standard	1	Nov 01	00:00	Nov 30	23:00	12.0 g/m^2/30d

Table 25 is a summary of non-continuous exceedances. Non-continuous exceedances cannot be graphically illustrated by a pollution rose since the exceedance values consist of only a single data point.

Source Contribution Assessment of Exceedances - Table 26

Station	Parameter	Criterion Exceeded	Date	Exceedance Value	Potential Cause / Comments
STN72139	PM_{10}	24 Hr Interim AAQC	Feb 26	92 µg/m^3	Hollinger office parking lots and HOP Operations
STN72143	Total Dustfall	30 day standard	Mar 01	42.0 g/m^2/30d	Refer to Note 1
STN72136	TSP	24 Hr Clock AAQC	Mar 13	127 µg/m^3	Offsite activities and HOP Operations
STN72136	PM_{10}	24 Hr Interim AAQC	Mar 13	60 µg/m^3	Offsite activities and HOP Operations
STN72139	PM_{10}	24 Hr Interim AAQC	Mar 14	53 µg/m^3	HOP Operations
STN72141	PM_{10}	24 Hr Interim AAQC	Mar 20	68 µg/m^3	Hollinger Haul Road
STN72141	PM_{10}	24 Hr Interim AAQC	Mar 22	99 µg/m^3	Hollinger Haul Road
STN72138	PM_{10}	24 Hr Interim AAQC	Mar 23	80 µg/m^3	Offsite roads, parking lots and HOP Operations
STN72141	PM_{10}	24 Hr Interim AAQC	Mar 23	55 µg/m^3	Hollinger Haul Road and moderate winds
STN72139	PM_{10}	24 Hr Interim AAQC	Mar 23	63 µg/m^3	Offsite roads, parking lots and HOP Operations
STN72140	PM_{10}	24 Hr Interim AAQC	Mar 23	57 µg/m^3	HOP Operations
STN72141	PM_{10}	24 Hr Interim AAQC	Mar 23	60 µg/m^3	Hollinger Haul Road and moderate winds
STN72141	Total Dustfall	30 day standard	Apr 01	9.30 g/m^2/30d	Offsite activities and Hollinger Haul Road
STN72143	Total Dustfall	30 day standard	Apr 01	44.0 g/m^2/30d	Refer to Note 1
STN72140	PM_{10}	24 Hr Interim AAQC	Apr 07	66 µg/m^3	HOP Operations and moderate winds
STN72140	PM_{10}	24 Hr Interim AAQC	Apr 08	61 µg/m^3	HOP Operations and moderate winds
STN72141	PM_{10}	24 Hr Interim AAQC	Apr 09	588 µg/m^3	Hollinger Haul Road
STN72135	PM_{10}	24 Hr Interim AAQC	Apr 10	51 µg/m^3	Hollinger Haul Road
STN72139	PM_{10}	24 Hr Interim AAQC	Apr 10	51 µg/m^3	HOP Operations
STN72141	PM_{10}	24 Hr Interim AAQC	Apr 13	80 µg/m^3	Hollinger Haul Road
STN72138	PM_{10}	24 Hr Interim AAQC	Apr 27	72 µg/m^3	Offsite parking lots and Brunette Road
STN72139	PM_{10}	24 Hr Interim AAQC	Apr 28	51 µg/m^3	Offsite parking lots
STN72143	Total Dustfall	30 day standard	May 01	24.0 g/m^2/30d	Refer to Note 1
STN72136	TSP	24 Hr Clock AAQC	May 06	127 µg/m^3	Offsite activities and HOP Operations
STN72136	PM_{10}	24 Hr Interim AAQC	May 06	71 µg/m^3	Offsite activities and HOP Operations
STN72138	PM_{10}	24 Hr Interim AAQC	May 10	55 µg/m^3	Offsite parking lots, Brunette Road and HOP Operations
STN72139	PM_{10}	24 Hr Interim AAQC	May 12	67 µg/m^3	HOP Operations and moderate winds
STN72136	TSP	24 Hr Clock AAQC	May 12	166 µg/m^3	Offsite activities and HOP Operations

Source Contribution Assessment of Exceedances - Table 26 (Continued)

Station	Parameter	Criterion Exceeded	Date	Exceedance Value	Potential Cause / Comments
STN72136	PM_{10}	24 Hr Interim AAQC	May 12	78 µg/m^3	Offsite activities and HOP Operations
STN72139	PM_{10}	24 Hr Interim AAQC	May 23	53 µg/m^3	Hollinger office parking lots and HOP Operations
STN72143	Total Dustfall	30 day standard	Jun 01	23.0 g/m^2/30d	Refer to Note 1
STN72139	PM_{10}	24 Hr Interim AAQC	Jun 20	92 µg/m^3	Offsite and Hollinger office parking lots, HOP Operations
STN72135	PM_{10}	24 Hr Interim AAQC	Jun 20	74 µg/m^3	Offsite activities and HOP Operations
STN72138	PM_{10}	24 Hr Interim AAQC	Jun 20	56 µg/m^3	Offsite parking lots and Brunette Road
STN72140	PM_{10}	24 Hr Interim AAQC	Jun 28	55 µg/m^3	HOP Operations
STN72135	Total Dustfall	30 day standard	Jul 01	9.7 g/m^2/30d	Offsite activities and HOP Operations
STN72136	Total Dustfall	30 day standard	Jul 01	10.0 g/m^2/30d	Offsite activities and HOP Operations
STN72143	Total Dustfall	30 day standard	Jul 01	26.0 g/m^2/30d	Refer to Note 1
STN72143	Total Dustfall	30 day standard	Aug 01	24.0 g/m^2/30d	Hollinger Haul Road
STN72139	PM_{10}	24 Hr Interim AAQC	Aug 09	70 µg/m^3	Hollinger office parking lots and HOP Operations
STN72143	Total Dustfall	30 day standard	Sep 01	21.0 g/m^2/30d	Refer to Note 1
STN72143	Total Dustfall	30 day standard	Nov 01	12.0 g/m^2/30d	Refer to Note 1
STN72139	PM_{10}	24 Hr Interim AAQC	Nov 13	54 µg/m^3	Hollinger office parking lots and HOP Operations

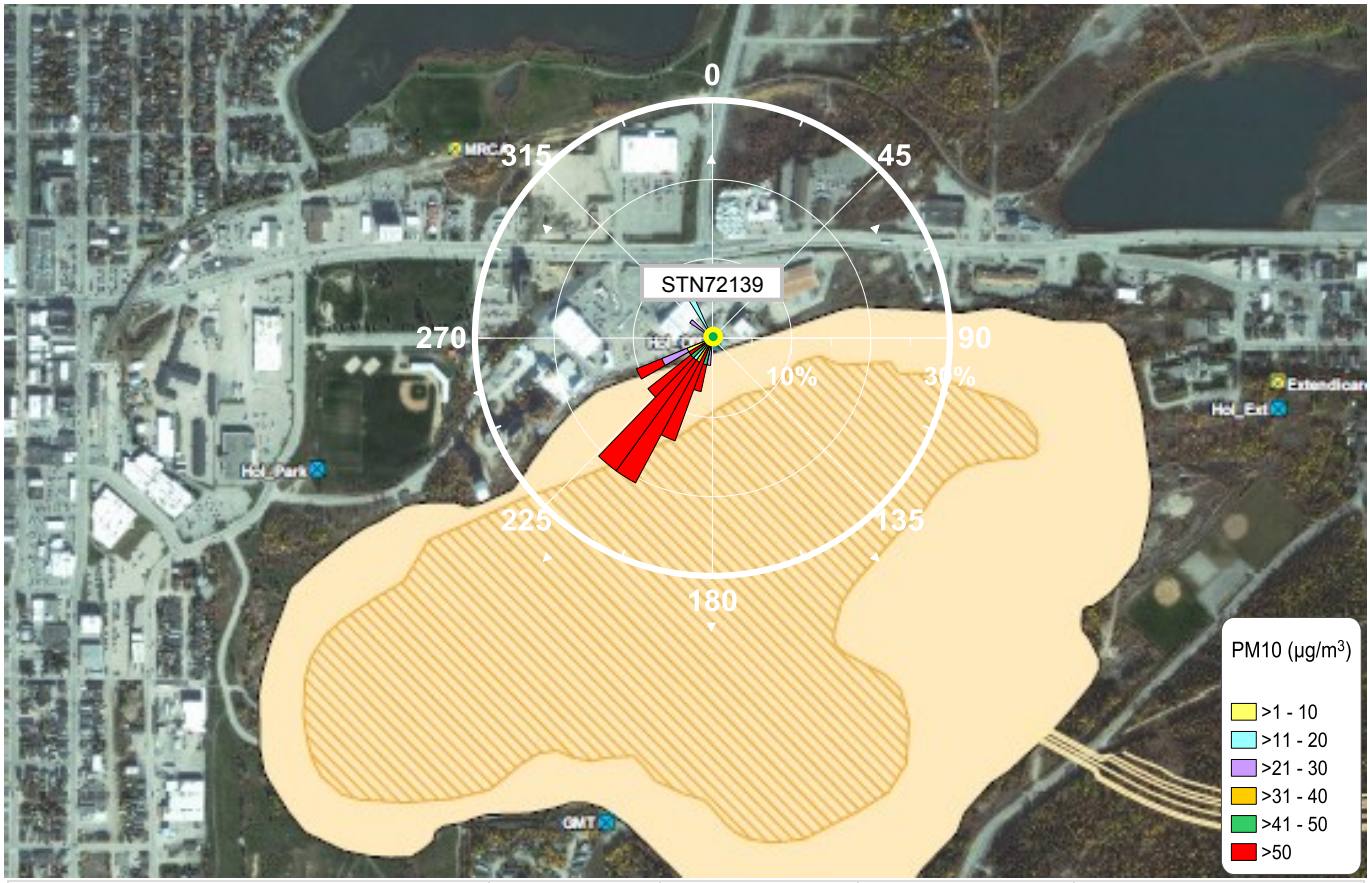
Note 1: Station 72143 (Snowmobile Crossing) is located on Goldcorp property. The data are used as a control indicator for process operations. Values from this location are included in this report and intended for information purposes only.

10.0 Continuous PM_{10} Exceedance Episode Pollution Roses

The following PM_{10} pollution roses graphically illustrate the PM_{10} exceedance episodes.

The rose branches show the percentage of time pollutants come from a particular direction. Branches should therefore point to the source of PM_{10}. The branches are divided into segments of different colours, with the colours representing PM_{10} concentration ranges. The length of each segment within a branch is proportional to the frequency of PM_{10} concentration ranges from that direction.

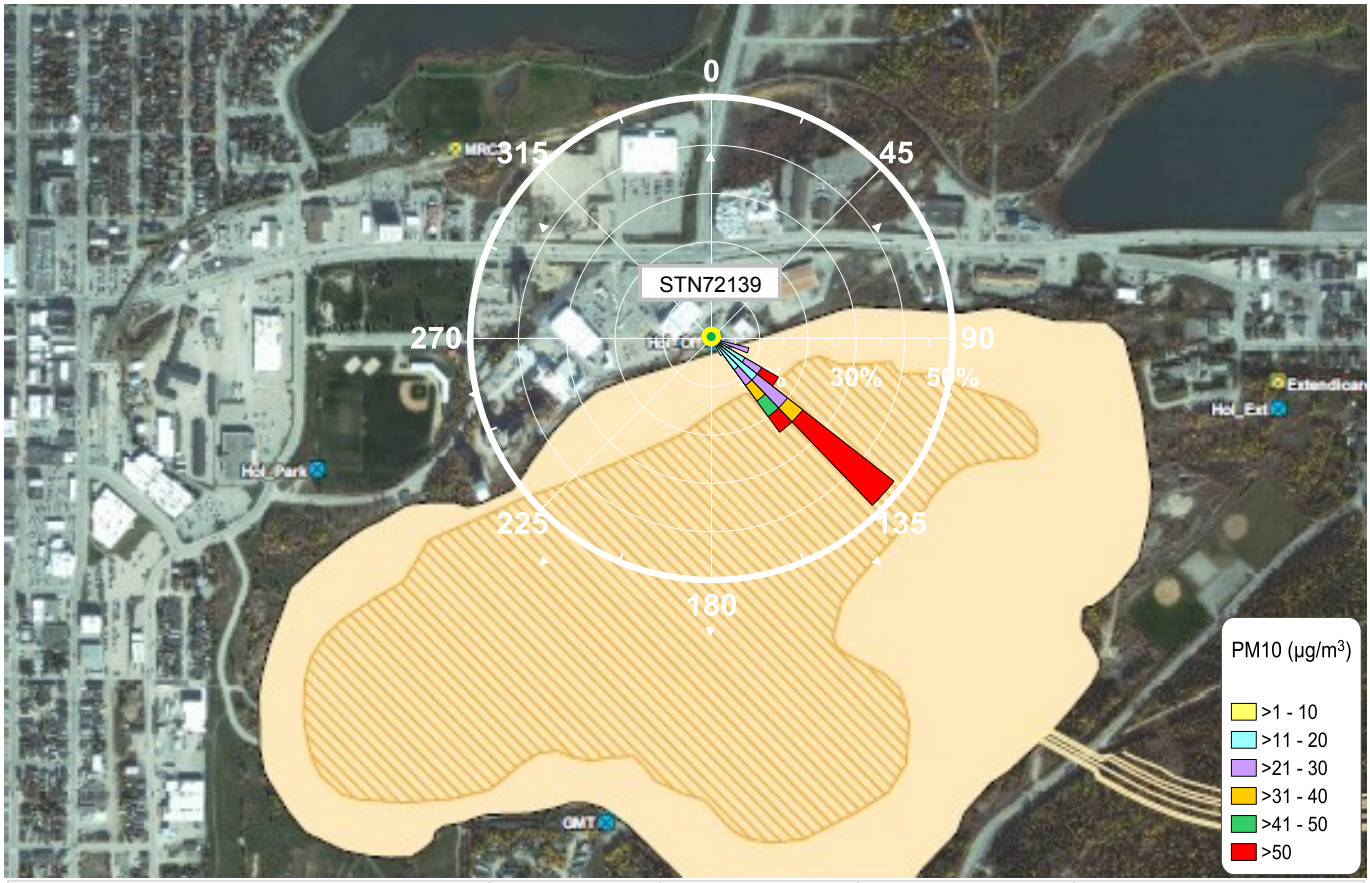
PM_{10} Pollution Rose – STN72139 February 26th to 27th - Figure 13



STN72139 PM_{10} Pollution Rose February 26 - 27, 2016		By : JP	**Figure 13**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 May, 2016	

Exceedance is due to inhalable particulate (PM_{10}) levels possibly caused by Hollinger Office parking lot and from Hollinger Open Pit operations. Wind speeds ranged from 7.1 to 19.0 km/h.

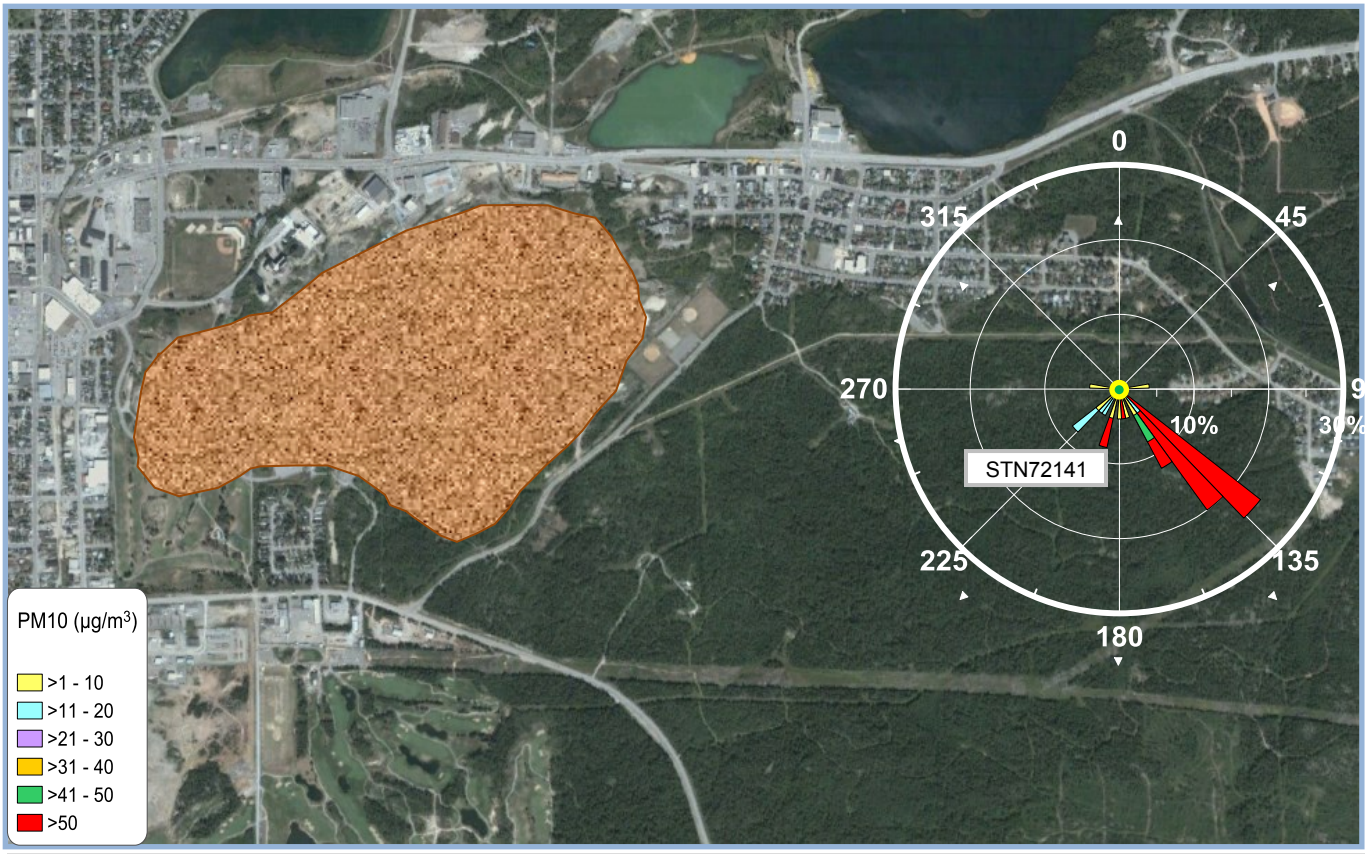
PM_{10} Pollution Rose – STN72139 March 13th to 14th - Figure 14



STN72139 PM_{10} Pollution Rose March 13 - 14, 2016		By : JP	**Figure 14**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 May, 2016	

Exceedance is due to inhalable particulate (PM_{10}) levels possibly from Hollinger Open Pit operations. Wind speeds ranged from 2.3 to 12.9 km/h.

PM_{10} Pollution Rose – STN72141 March 19th to 20th - Figure 15

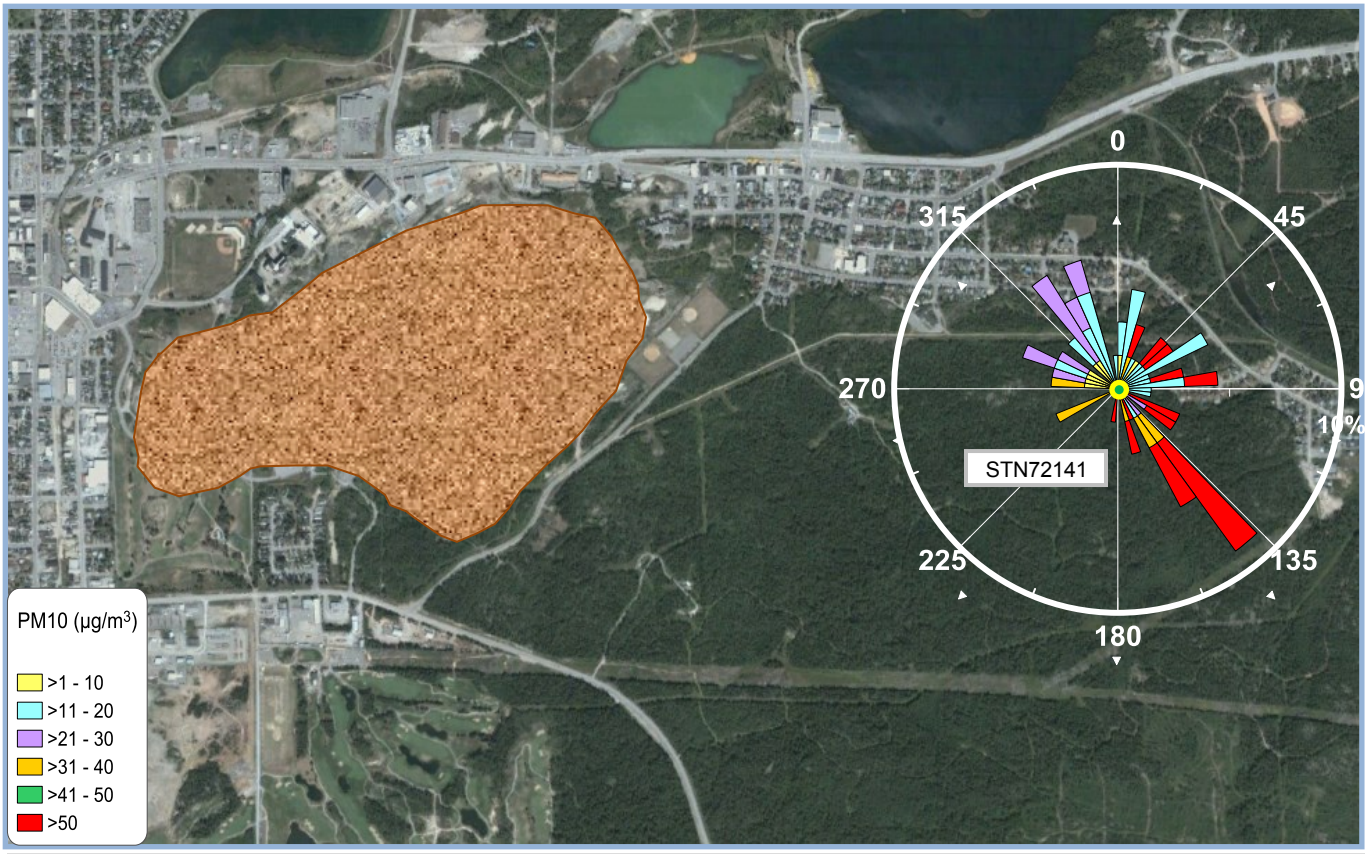


STN72141 PM_{10} Pollution Rose March 19 - 20, 2016		By : JP	**Figure 15**
	True North	Approx. Scale :	1:8525
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 May, 2016

ROTEK

Exceedance is due to inhalable particulate (PM_{10}) levels from the southeast of the air monitoring station possible from the Hollinger Haul Road. Wind speeds ranged from 2.0 to 8.3 km/h.

PM_{10} Pollution Rose – STN72141 March 21st to 23rd - Figure 16

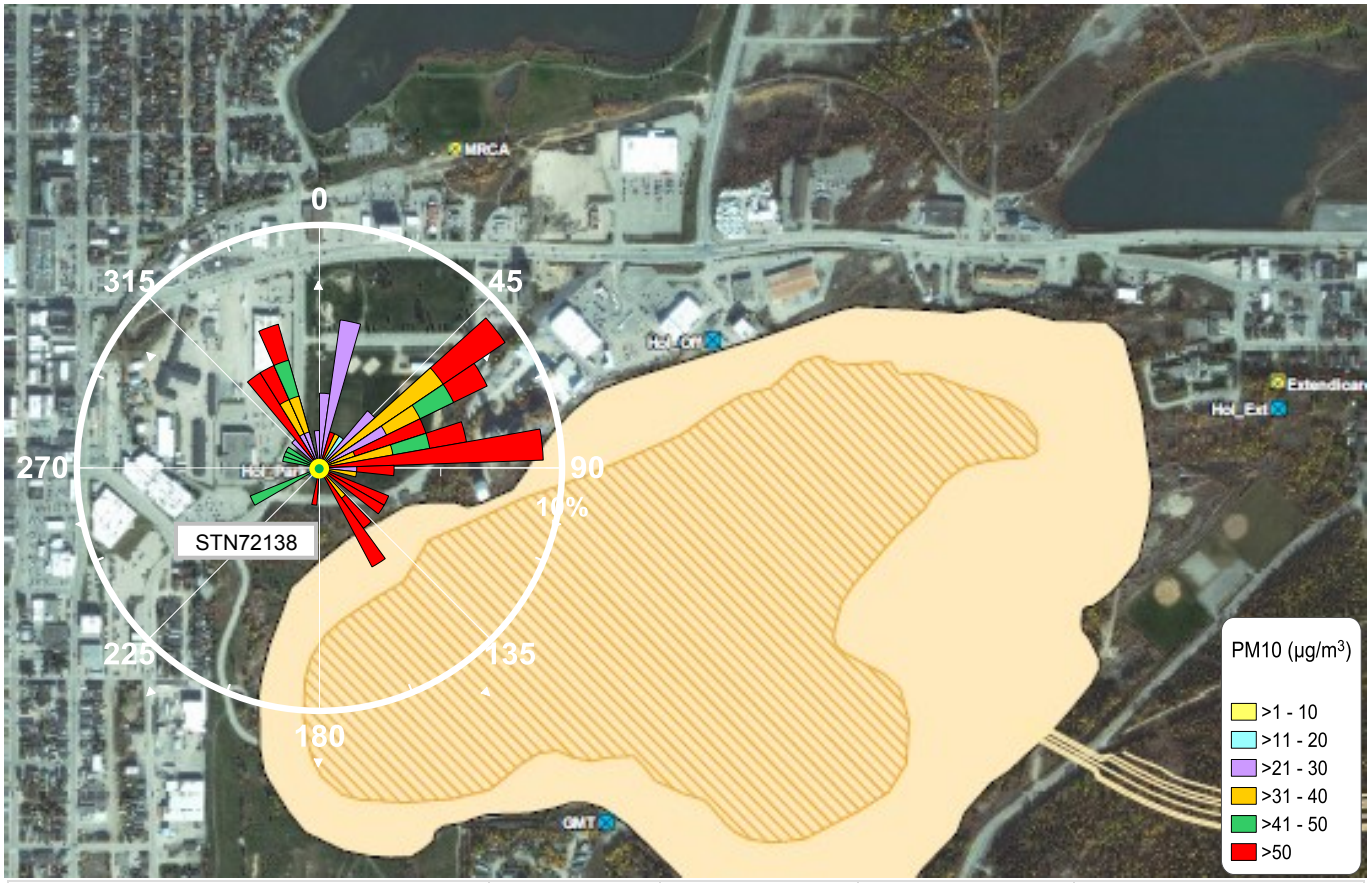


STN72141 PM_{10} Pollution Rose March 21 - 23, 2016		By : JP	**Figure 16**
	True North	Approx. Scale :	1:8525
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 May, 2016

ROTEK

Exceedance is due to inhalable particulate (PM_{10}) levels mainly from the southeast of the air monitoring station possibly caused by the Hollinger Haul Road. Wind speeds ranged from 1.5 to 15.6 km/h.

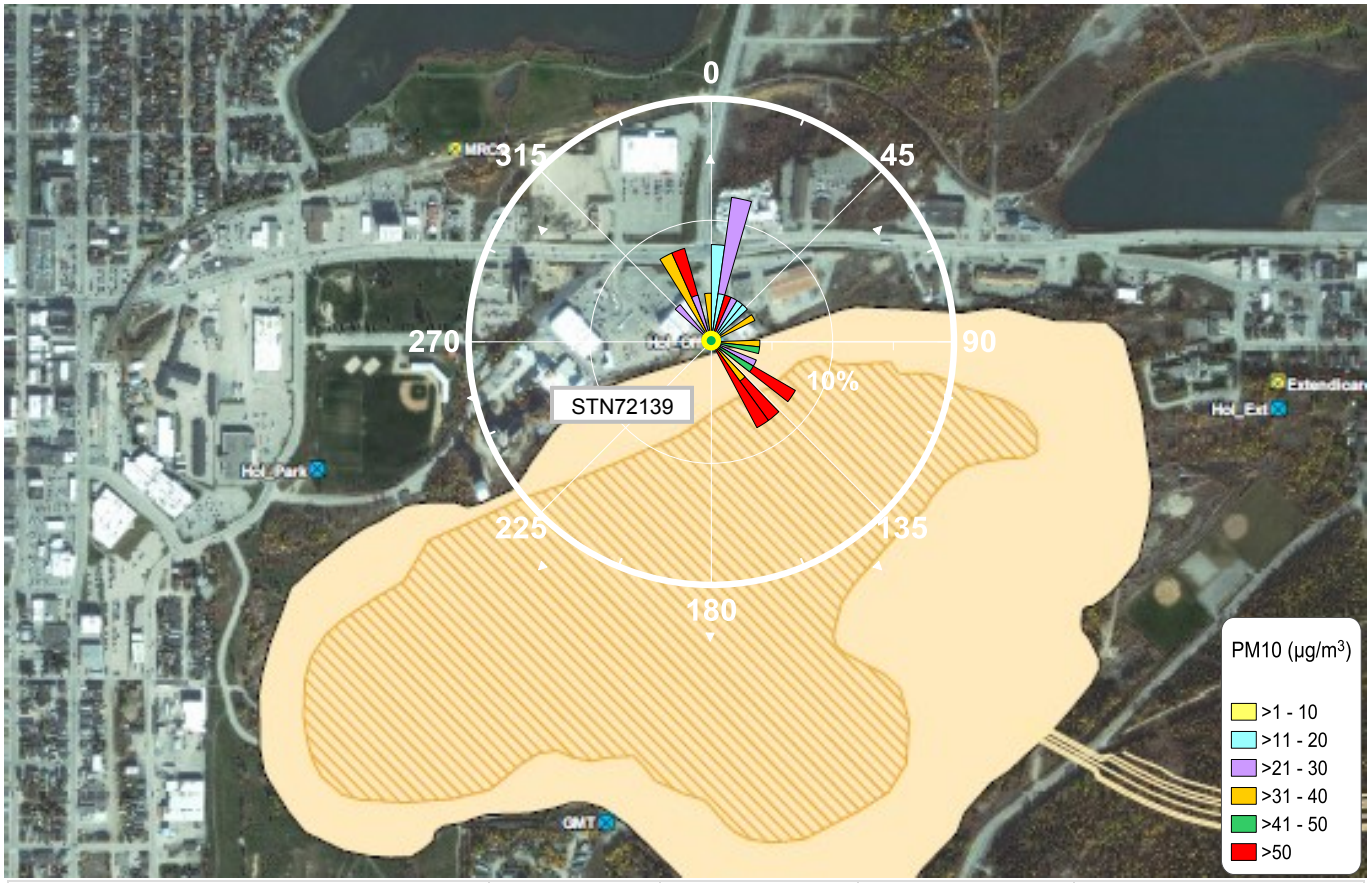
PM_{10} Pollution Rose – STN72138 March 22nd to 24th - Figure 17



STN72138 PM_{10} Pollution Rose March 22 - 24, 2016		By : JP	**Figure 17**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 May, 2016	

Exceedances were due to inhalable particulate (PM_{10}) levels from offsite roads, parking lots and possibly some Hollinger Open Pit operations. The highest elevated PM_{10} hourly concentrations were recorded from the southeast. Wind speeds ranged from 1.5 to 15.6 km/h.

PM_{10} Pollution Rose – STN72139 March 22nd to 23rd - Figure 18



STN72139 PM_{10} Pollution Rose March 22 - 23, 2016		By : JP	**Figure 18**
	True North	Approx. Scale :	1:8525
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 May, 2016

ROTEK

Exceedance is due to inhalable particulate (PM_{10}) levels from offsite roads, parking lots and possibly Hollinger Open Pit operations. Wind speeds ranged from 1.7 to 14.0 km/h.

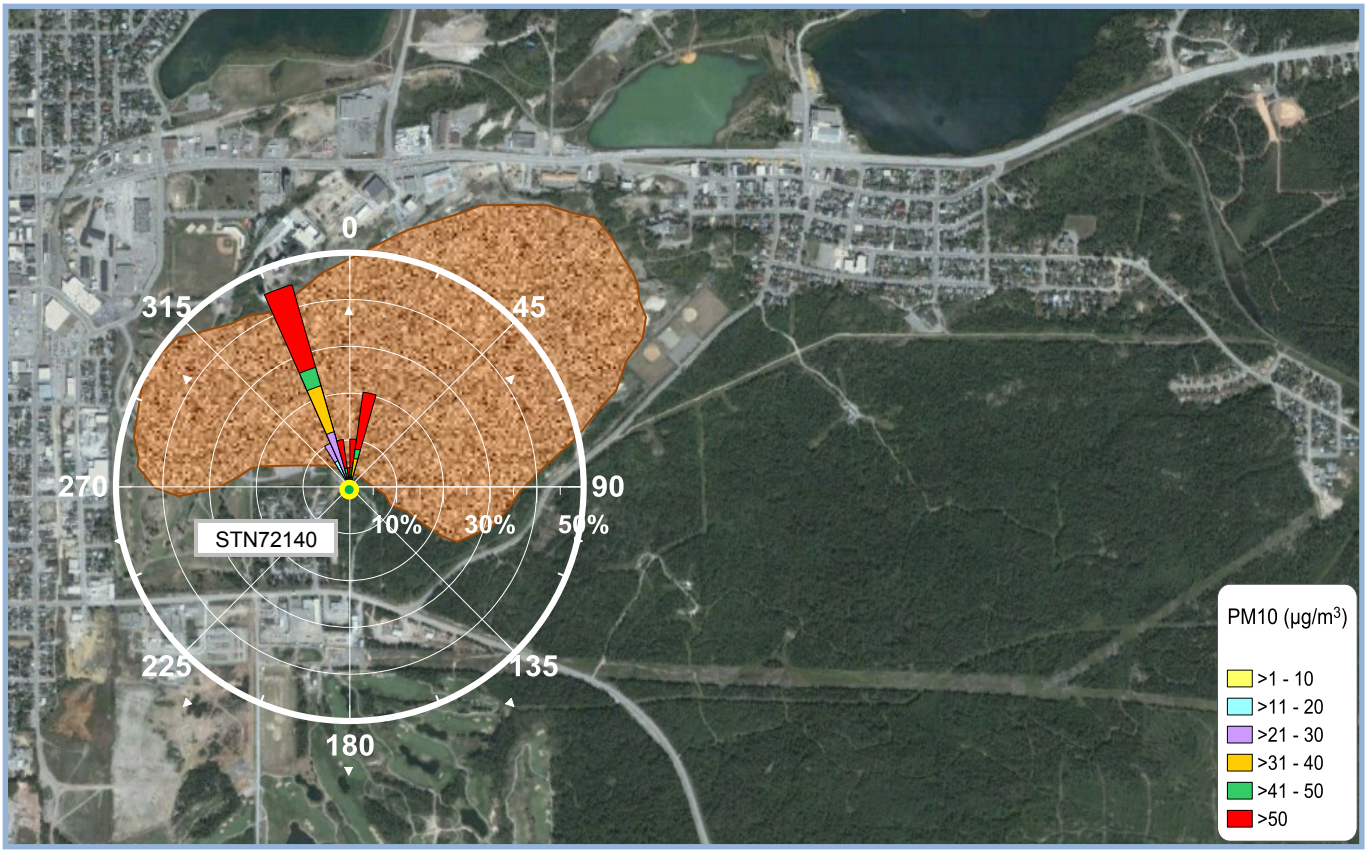
PM_{10} Pollution Rose – STN72140 March 22nd to 23rd - Figure 19

STN72140 PM_{10} Pollution Rose March 22 - 23, 2016		By : JP	**Figure 19**
	True North	Approx. Scale :	1:8525
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 May, 2016

ROTEK

Exceedance is due to inhalable particulate (PM_{10}) levels possibly from the Hollinger Open Pit operations. Wind speeds ranged from 1.7 to 14.0 km/h.

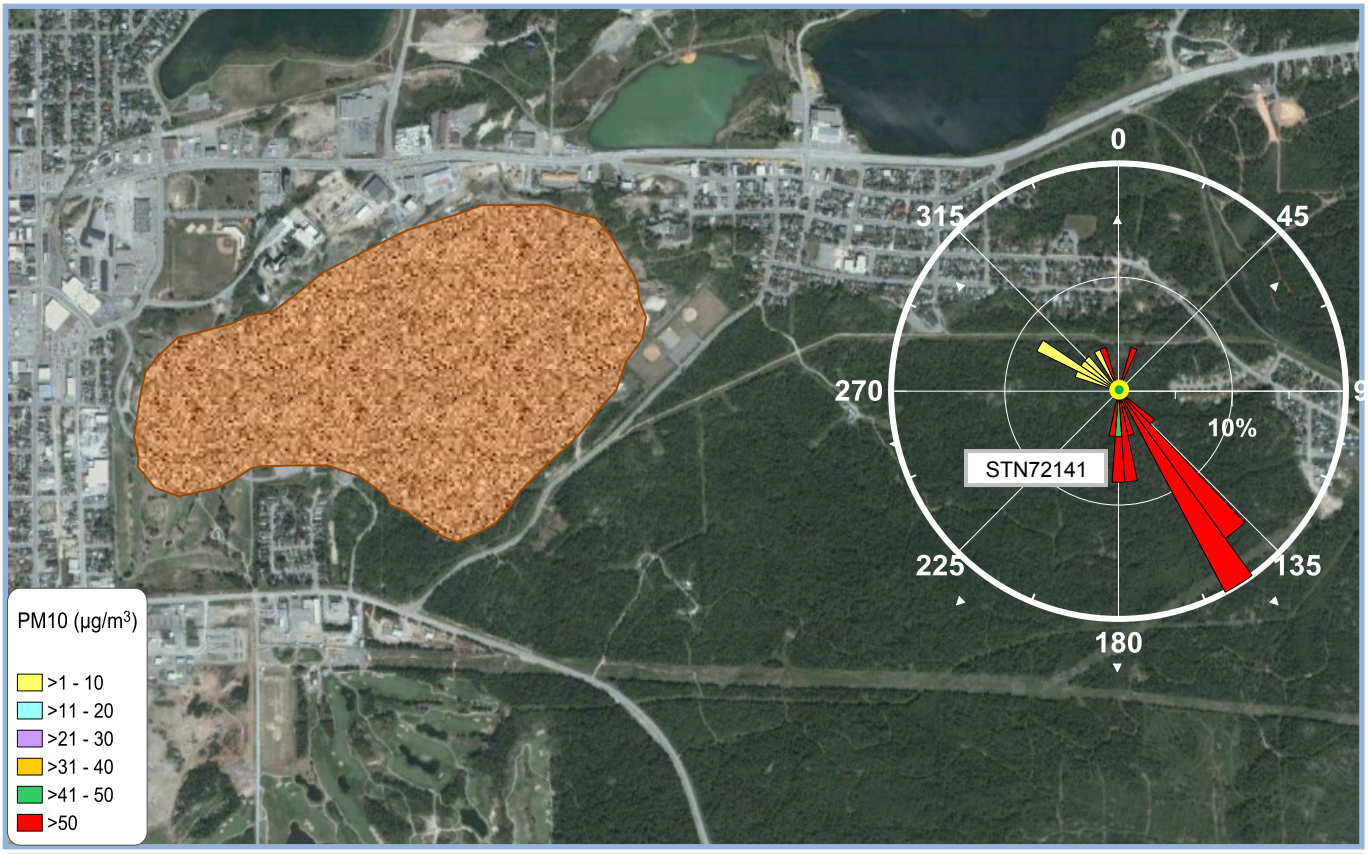
PM_{10} Pollution Rose – STN72140 April 07th to 09th - Figure 20



STN72140 PM_{10} Pollution Rose April 07 - 09, 2016		By : JP	**Figure 20**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016	

Exceedances are due to inhalable particulate (PM_{10}) levels, possibly caused by Hollinger Open Pit operations. Wind speeds ranged from 10.5 to 21.6 km/h.

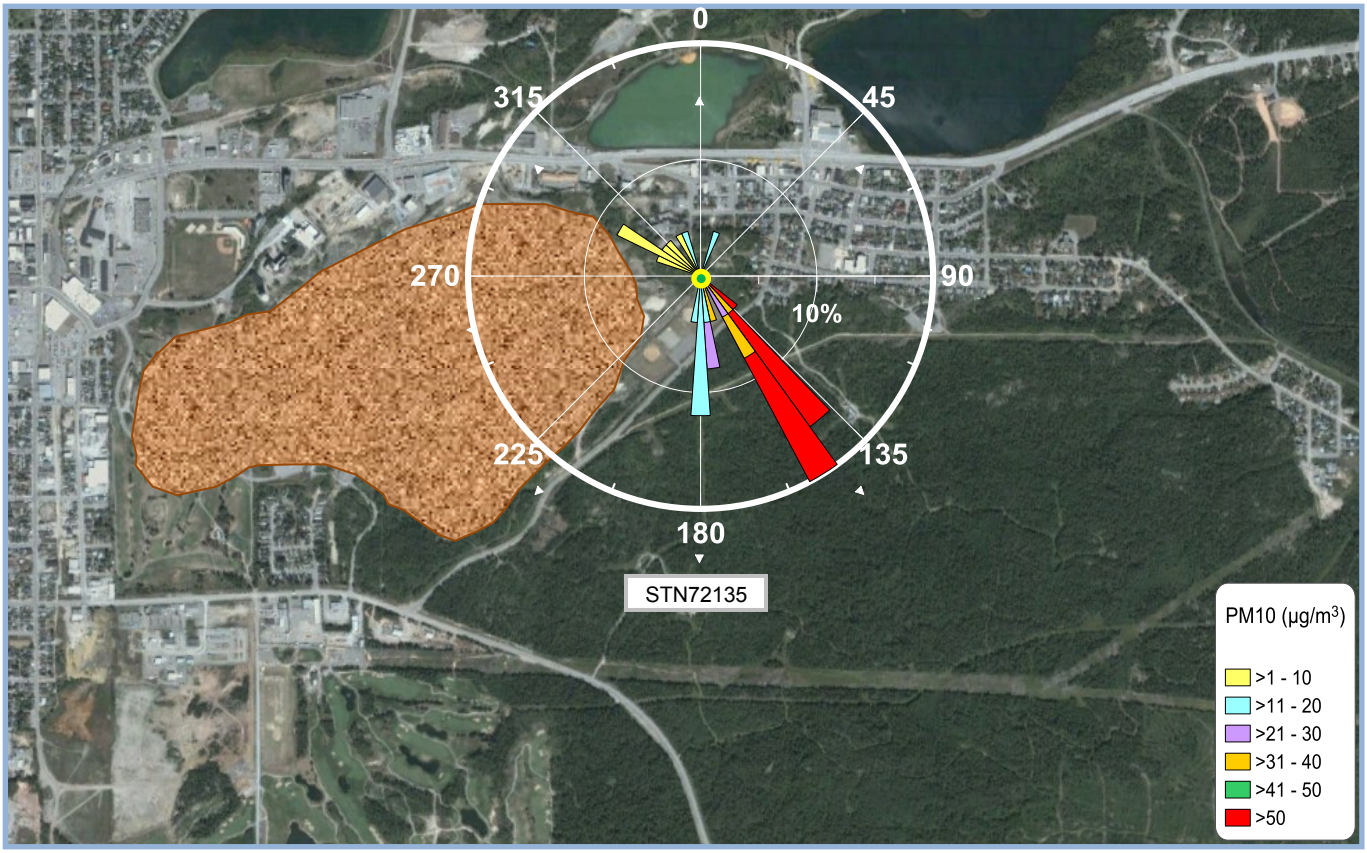
PM_{10} Pollution Rose – STN72141 April 09th to 10th - Figure 21



STN72141 PM_{10} Pollution Rose April 09 - 10, 2016		By : JP	**Figure 21**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016	

Exceedances are due to inhalable particulate (PM_{10}) levels possibly from the Hollinger Haul Road. Wind speeds ranged from 1.7 to 11.8 km/h.

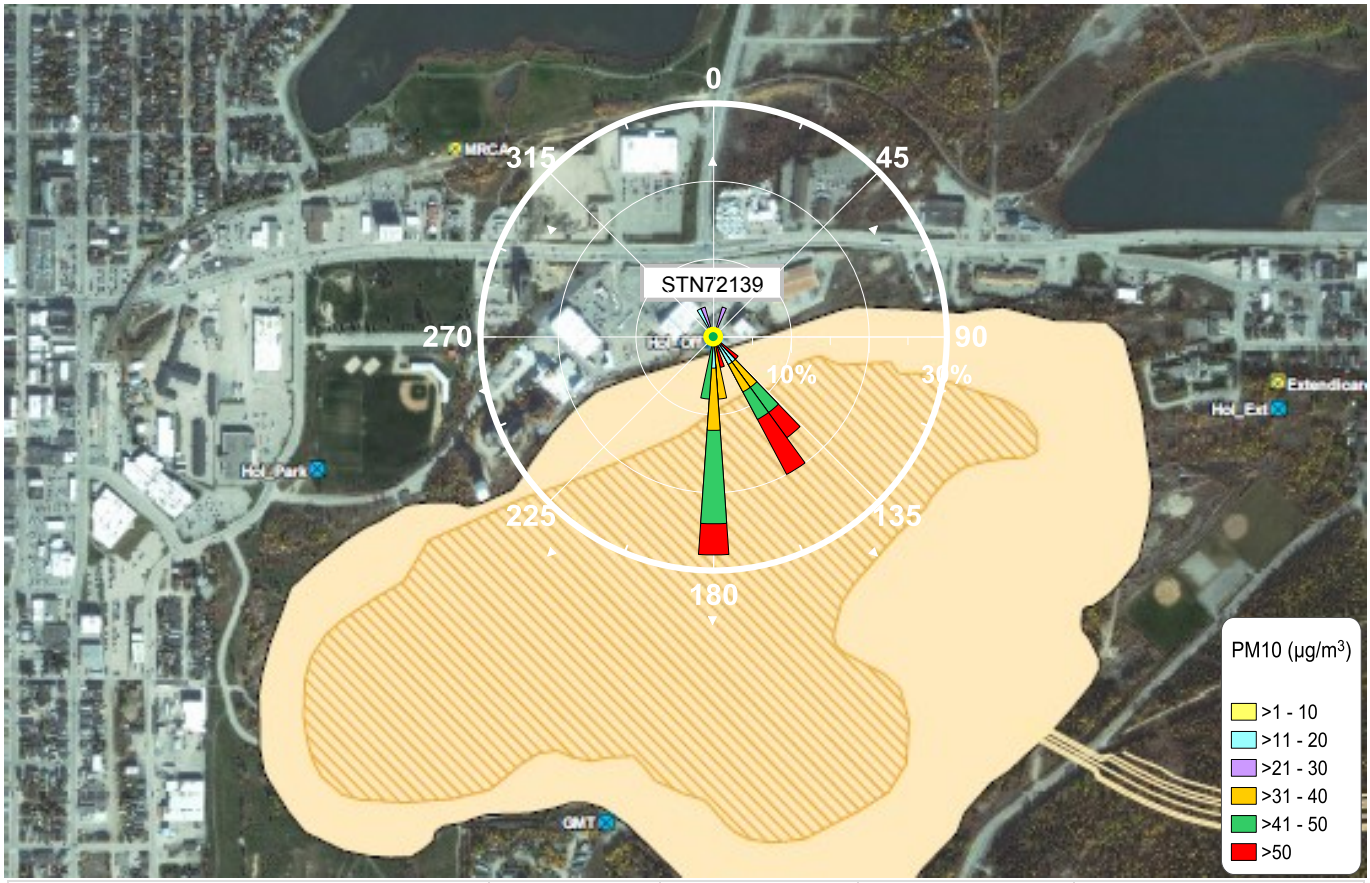
PM_{10} Pollution Rose – STN72135 April 09th - Figure 22



STN72135 PM_{10} Pollution Rose April 09, 2016	↑ True North	By : JP	**Figure 22**	ROTEK
		Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016	

Exceedance is due to inhalable particulate (PM_{10}) levels, possibly caused by the Hollinger Haul Road. Wind speeds ranged from 1.7 to 2.3 km/h.

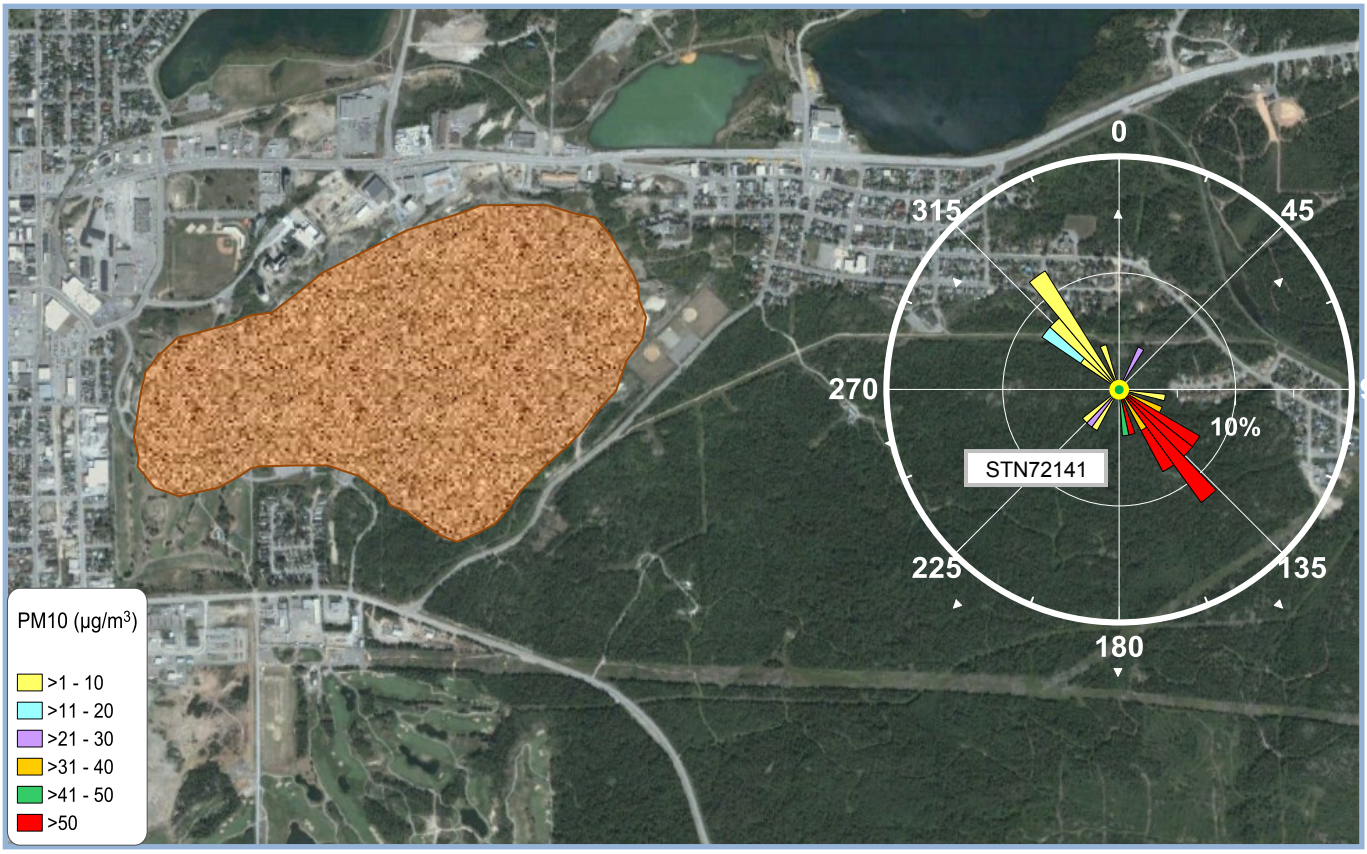
PM_{10} Pollution Rose – STN72139 April 09th to 10th - Figure 23



STN72139 PM_{10} Pollution Rose April 09 - 10, 2016		By : JP	**Figure 23**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016	

Exceedance is due to inhalable particulate (PM_{10}) levels, possibly caused by Hollinger Open Pit operations. Wind speeds ranged from 2.2 to 15.7 km/h.

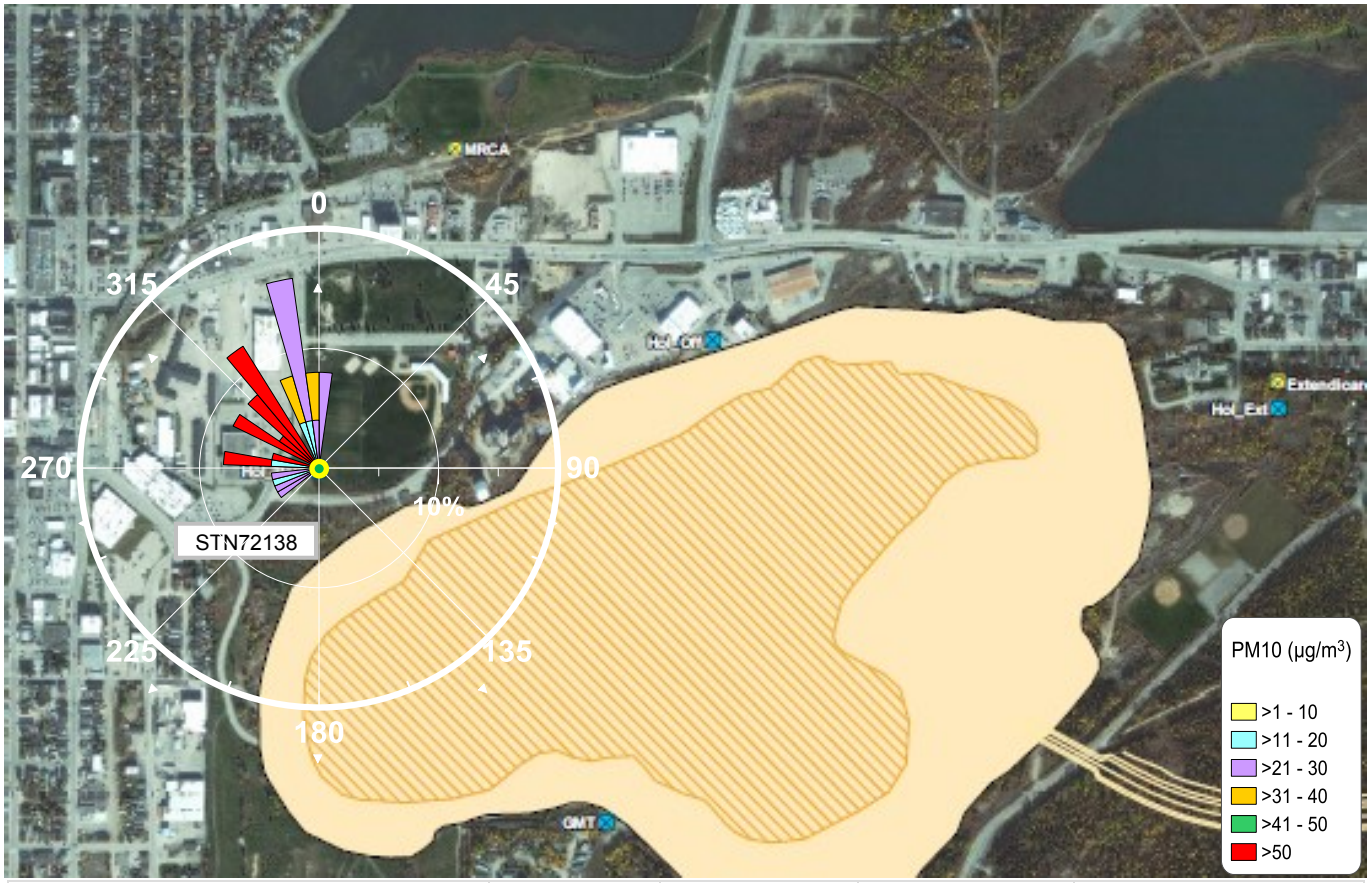
PM_{10} Pollution Rose – STN72141 April 12th to 13th - Figure 24



STN72141 PM_{10} Pollution Rose April 12 -13, 2016		By : JP	**Figure 24**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016	

Exceedance is due to inhalable particulate (PM_{10}) levels from the southeast of the air monitoring station, possibly caused by HOP haul road. Wind speeds ranged from 2.7 to 3.2 km/h.

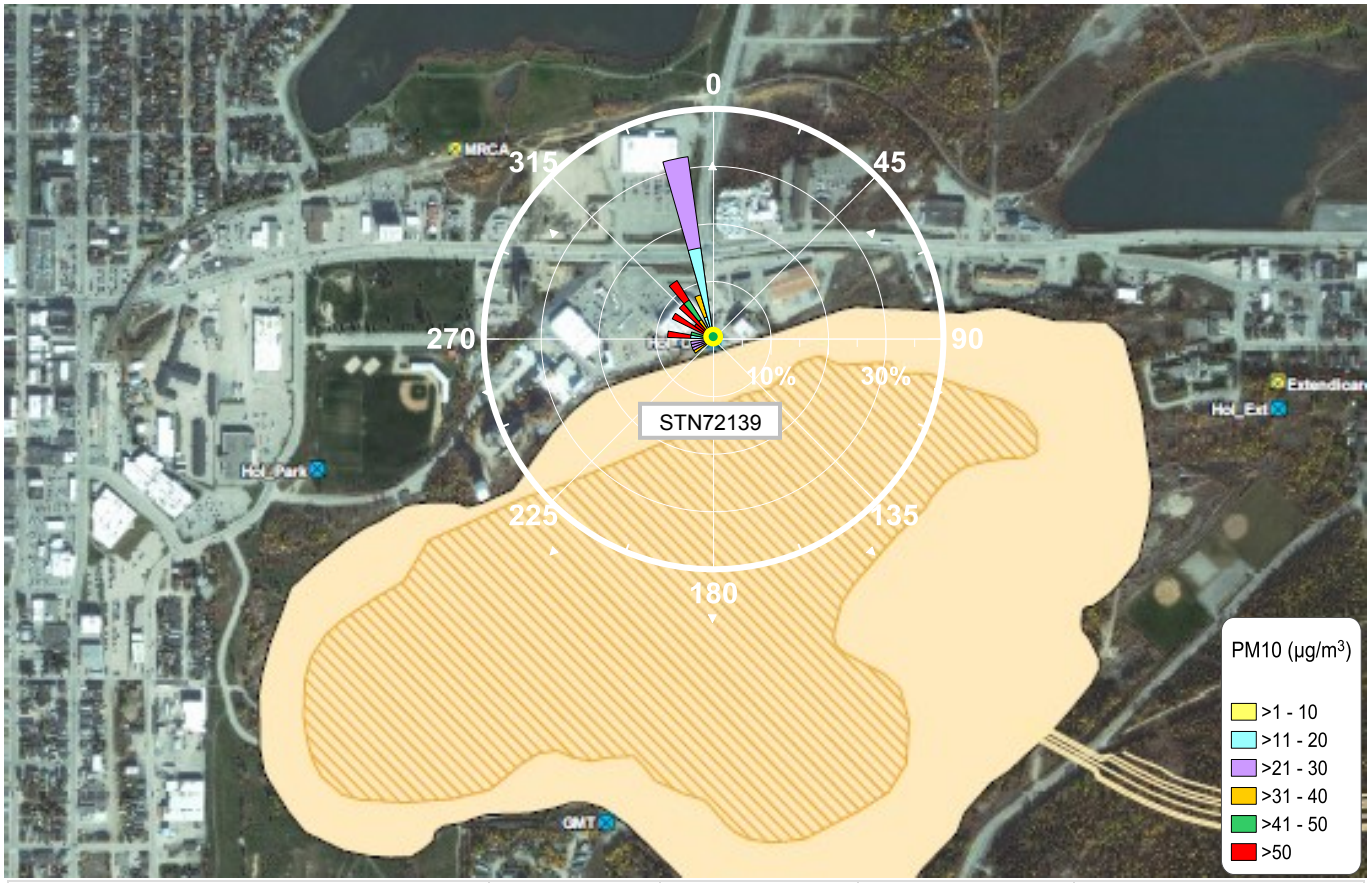
PM_{10} Pollution Rose – STN72138 April 27th - Figure 25



STN72138 PM_{10} Pollution Rose April 27, 2016		By : JP	**Figure 25**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016	

Exceedance is due to inhalable particulate (PM_{10}) levels from offsite parking lots and Brunette road. Wind speeds ranged from 6.1 to 19.5 km/h.

PM_{10} Pollution Rose – STN72139 April 27th - Figure 26

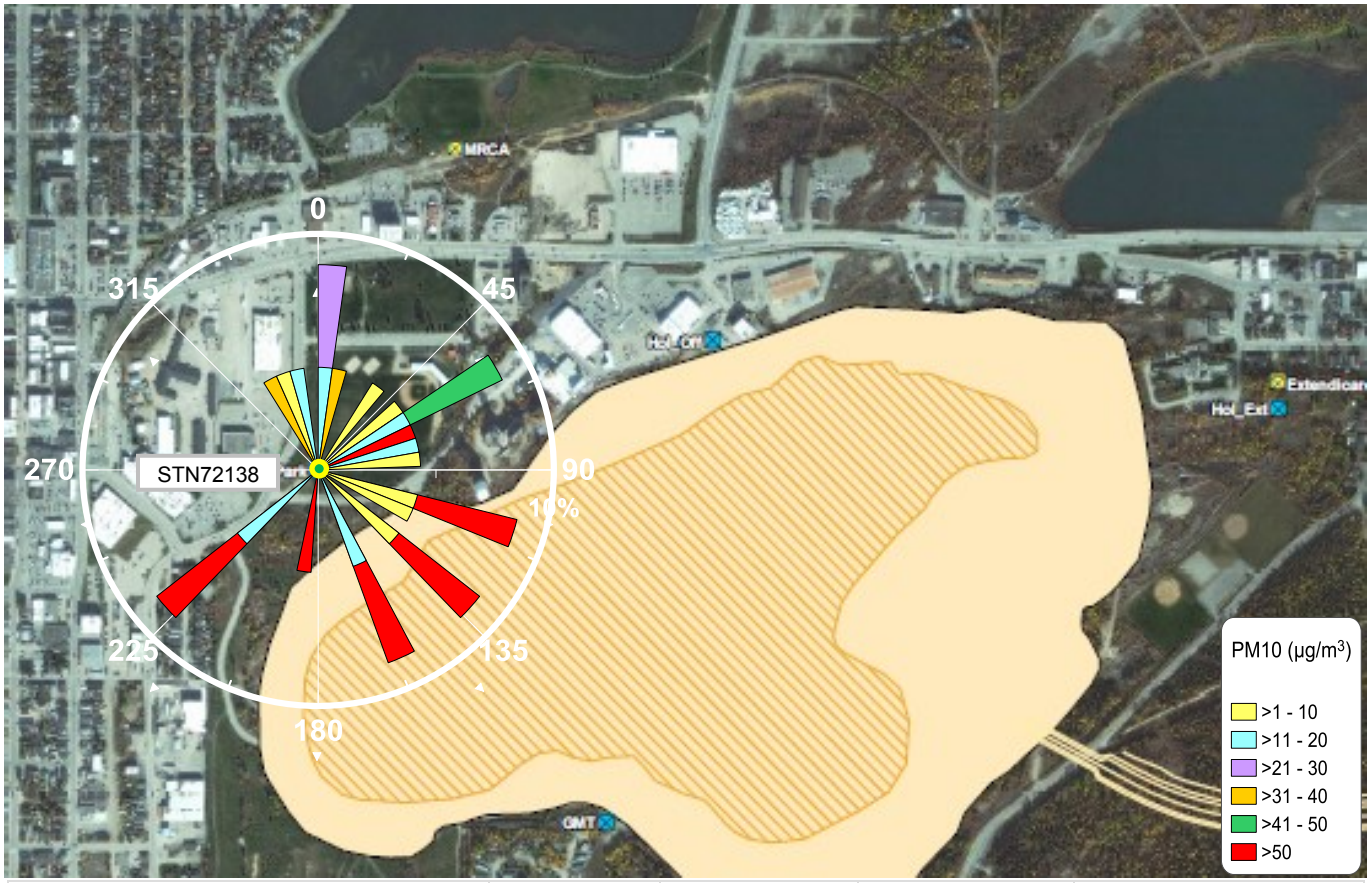


STN72139 PM_{10} Pollution Rose April 27, 2016		By : JP	**Figure 26**
	True North	Approx. Scale :	1:8525
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016

ROTEK

Exceedance is due to inhalable particulate (PM_{10}) levels from offsite parking lots. Wind speeds ranged from 6.1 to 19.5 km/h.

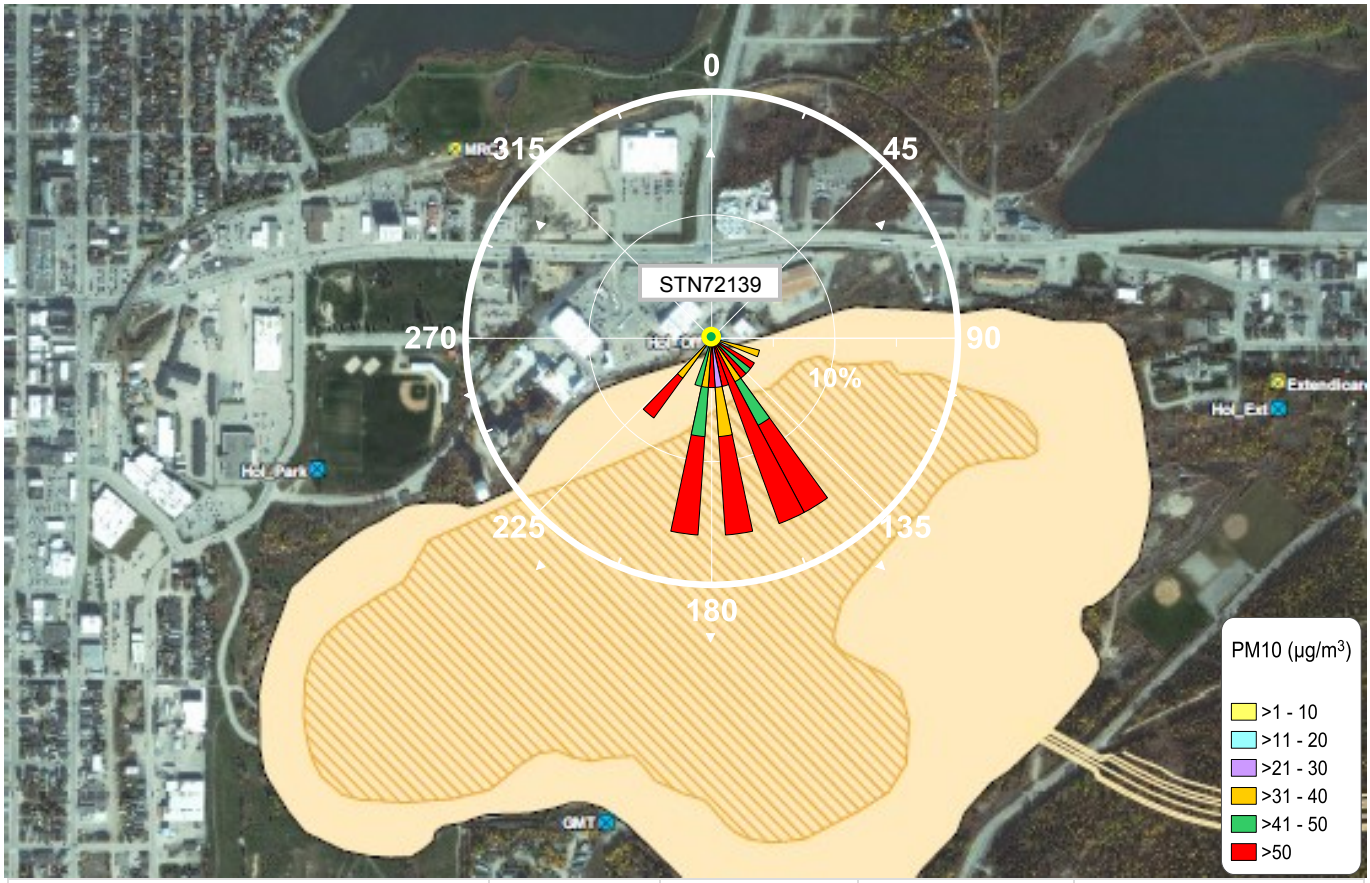
PM_{10} Pollution Rose – STN72138 May 10th - Figure 27



STN72138 PM_{10} Pollution Rose May 10, 2016		By : JP	**Figure 27**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016	

Exceedance is due to inhalable particulate (PM_{10}) levels from offsite parking lots, Brunette road and possibly Hollinger Open Pit operations. Wind speeds ranged from 1.3 to 2.5 km/h.

PM_{10} Pollution Rose – STN72139 May 12th - Figure 28

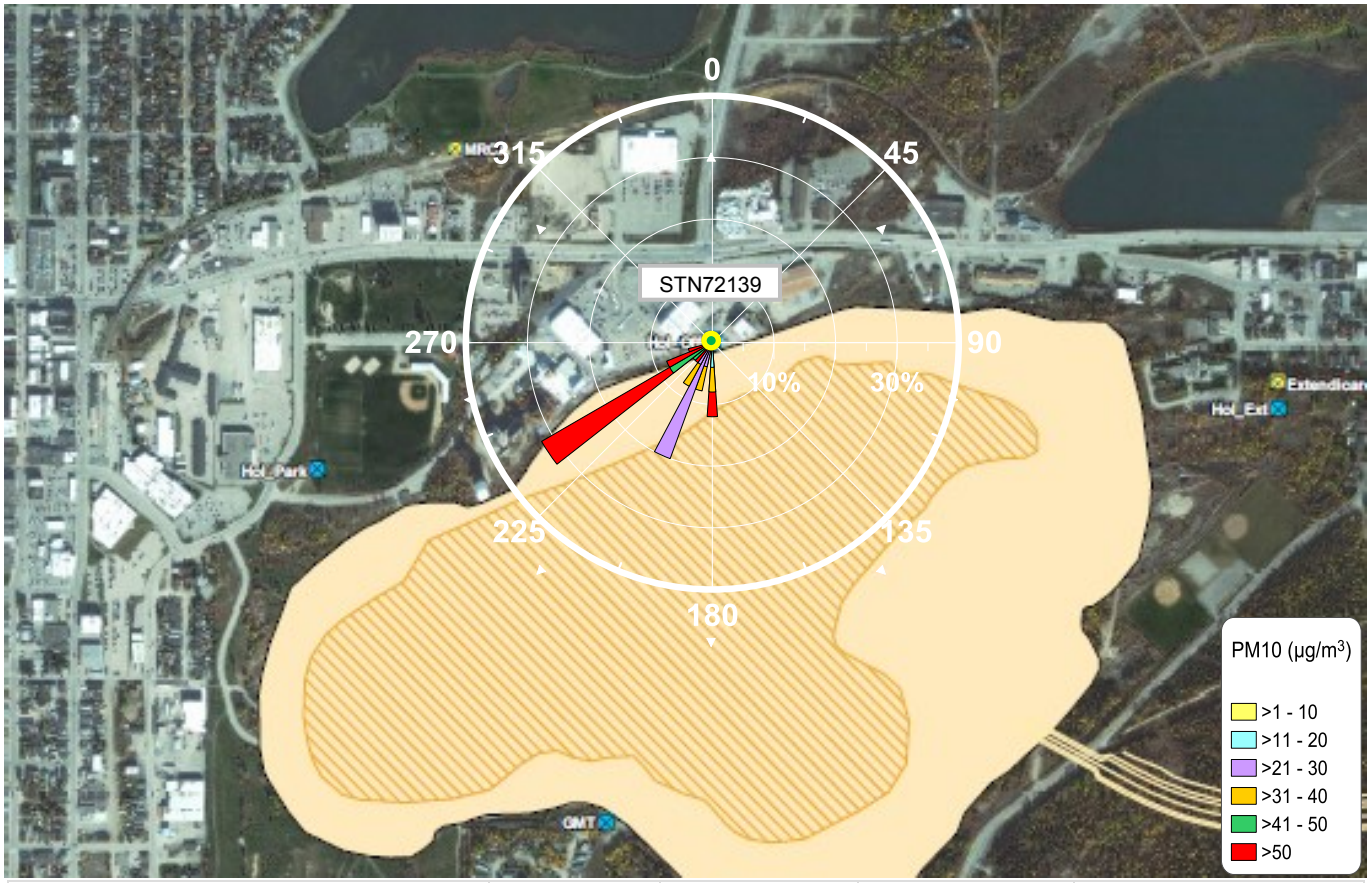


STN72139 PM_{10} Pollution Rose May 12, 2016		By : JP	**Figure 28**
	True North	Approx. Scale :	1:8525
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016

ROTEK

Exceedance is due to inhalable particulate (PM_{10}) levels, possibly from Hollinger Open Pit operations, water trucks dispatched. Wind speeds ranged from 3.2 to 17.9 km/h.

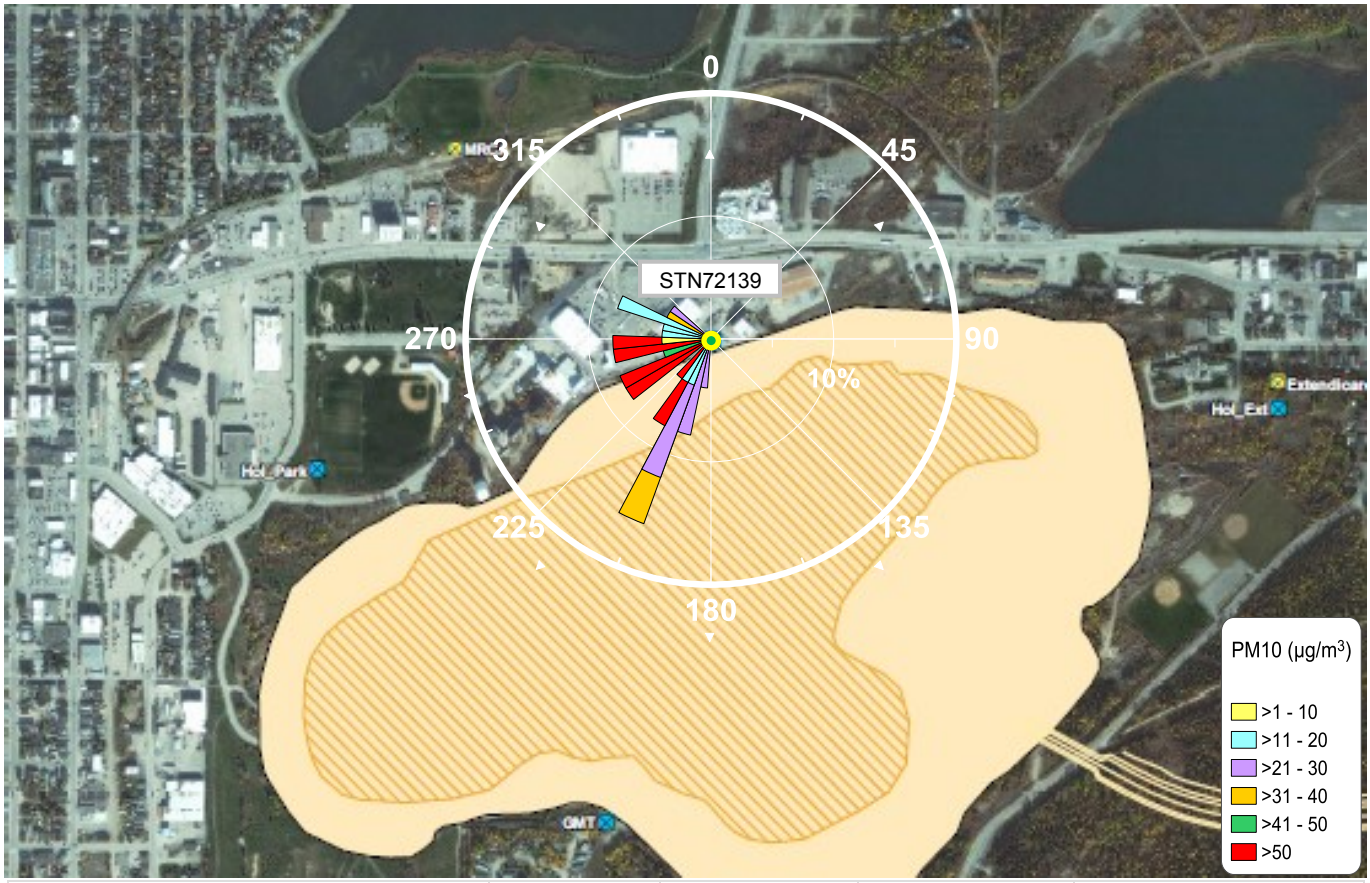
PM_{10} Pollution Rose – STN72139 May 23rd - Figure 29



STN72139 PM_{10} Pollution Rose May 23, 2016		By : JP	**Figure 29**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016	

Exceedance is due to inhalable particulate (PM_{10}) levels from the Hollinger office parking lot and Hollinger Open Pit operations. Wind speeds ranged from 9.5 to 11.8 km/h.

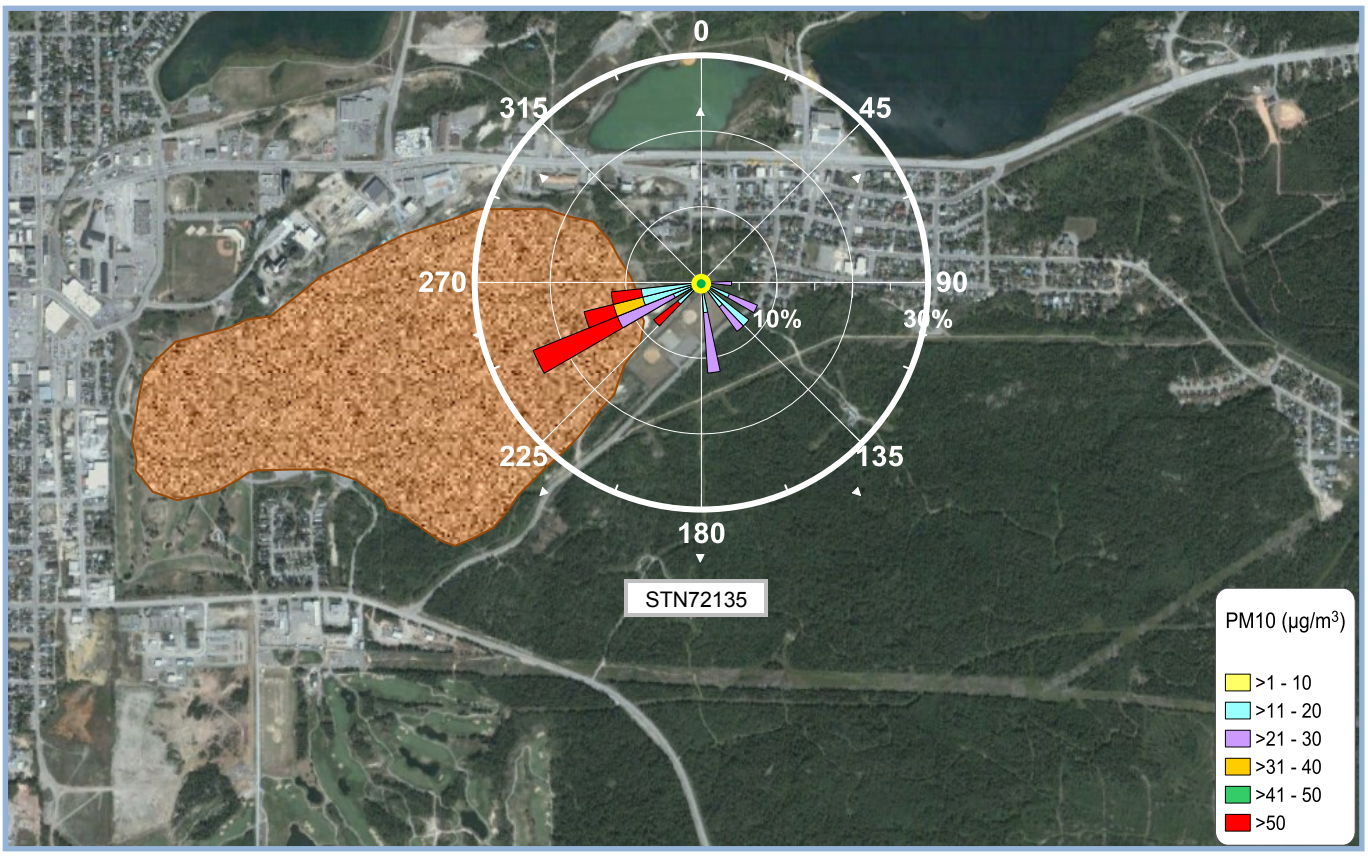
PM_{10} Pollution Rose – STN72139 June 20th - Figure 30



STN72139 PM_{10} Pollution Rose June 20, 2016		By : JP	**Figure 30**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016	

Exceedance is due to inhalable particulate (PM_{10}) levels from offsite parking lots and the Hollinger office parking lot and Hollinger Open Pit operations. Wind speeds ranged from 10.4 to 17.3 km/h.

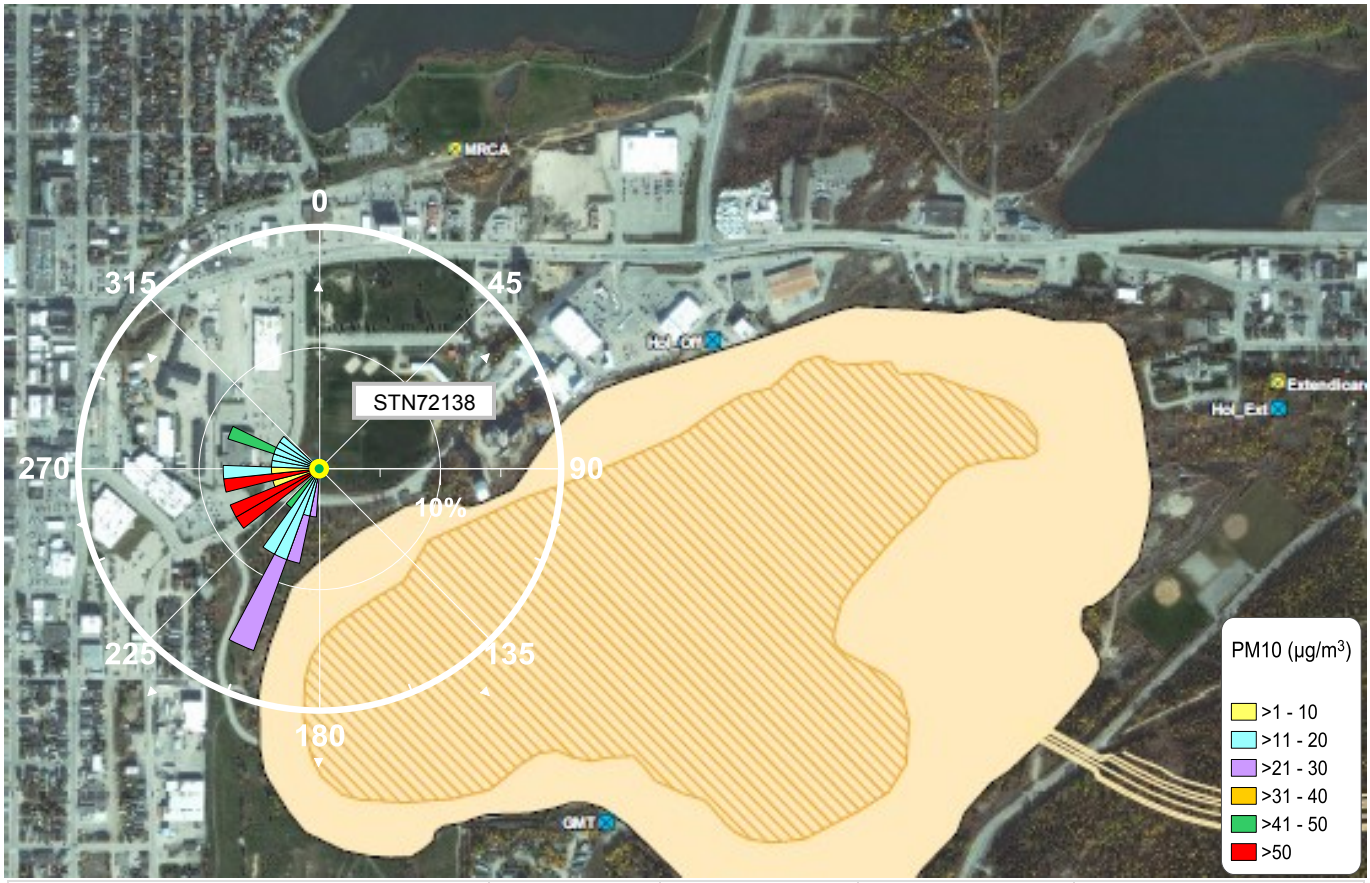
PM_{10} Pollution Rose – STN72135 June 20th - Figure 31



STN72135 PM_{10} Pollution Rose June 20, 2016	By : JP	**Figure 31**	ROTEK
	True North	Approx. Scale :	1:8525
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016

Exceedance is due to inhalable particulate (PM_{10}) levels from offsite activities and possibly from the Hollinger Open Pit operations. Wind speeds ranged from 3.1 to 10.9 km/h.

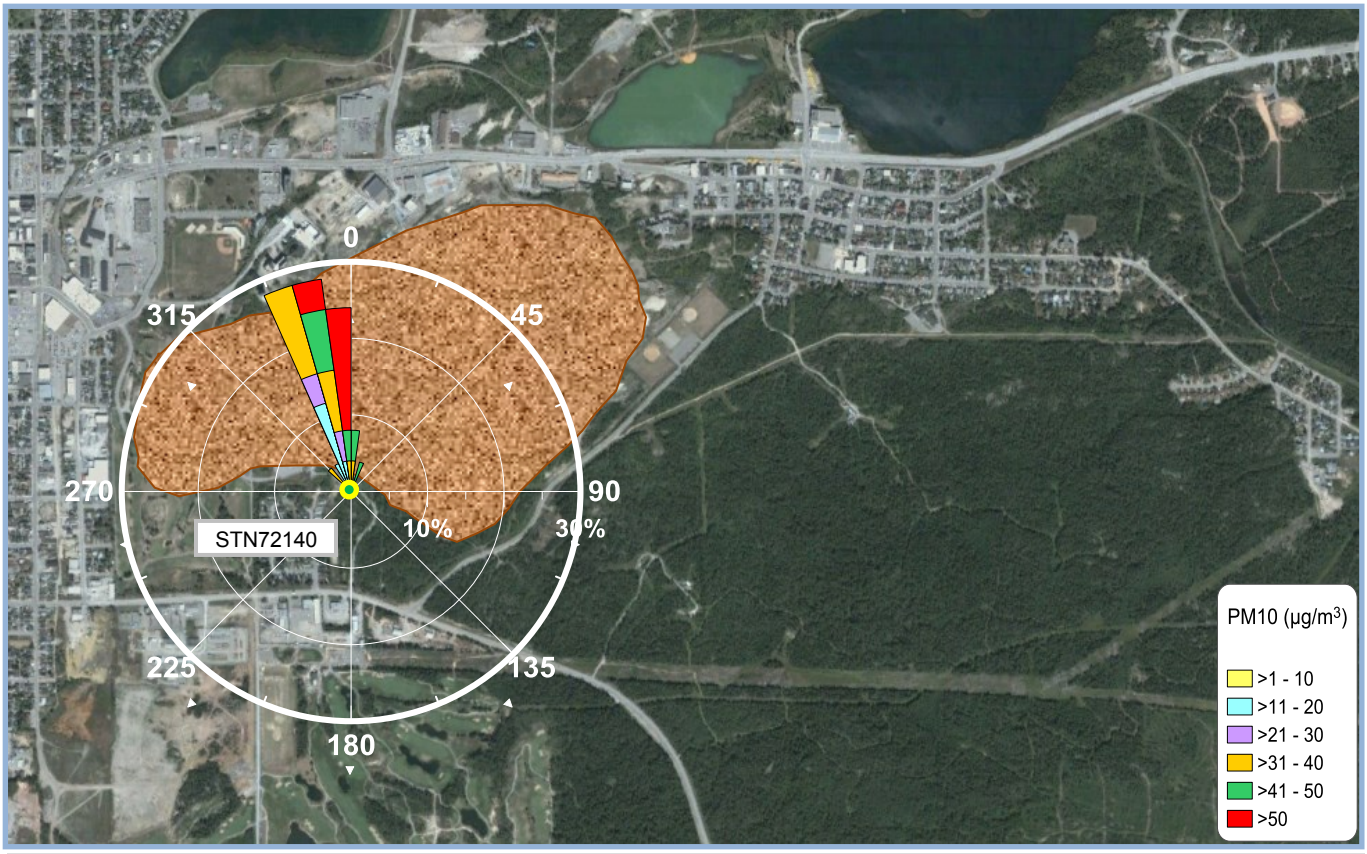
PM_{10} Pollution Rose – STN72138 June 20th - Figure 32



STN72138 PM_{10} Pollution Rose June 20, 2016		By : JP	**Figure 32**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016	

Exceedance is due to inhalable particulate (PM_{10}) levels from offsite parking lots and Brunette road. Wind speeds ranged from 10.8 to 15.7 km/h.

PM_{10} Pollution Rose – STN72140 June 28th - Figure 33

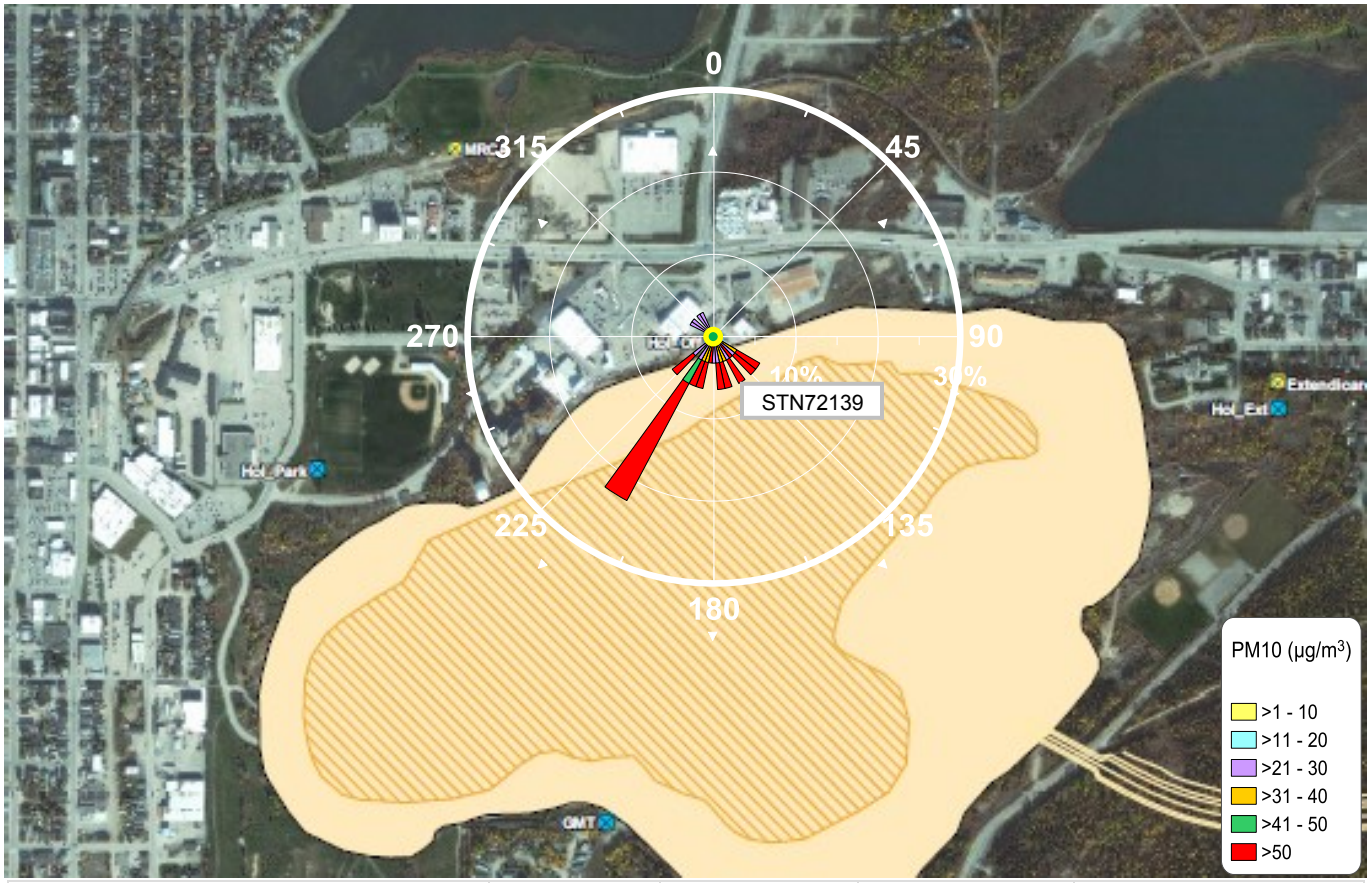


STN72140 PM_{10} Pollution Rose June 28, 2016		By : JP	**Figure 33**
	True North	Approx. Scale :	1:8525
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	10 Aug, 2016

ROTEK

Exceedance is due to inhalable particulate (PM_{10}) levels possibly from Hollinger Pit operations, water trucks dispatched. Wind speeds ranged from 10.9 to 13.0 km/h.

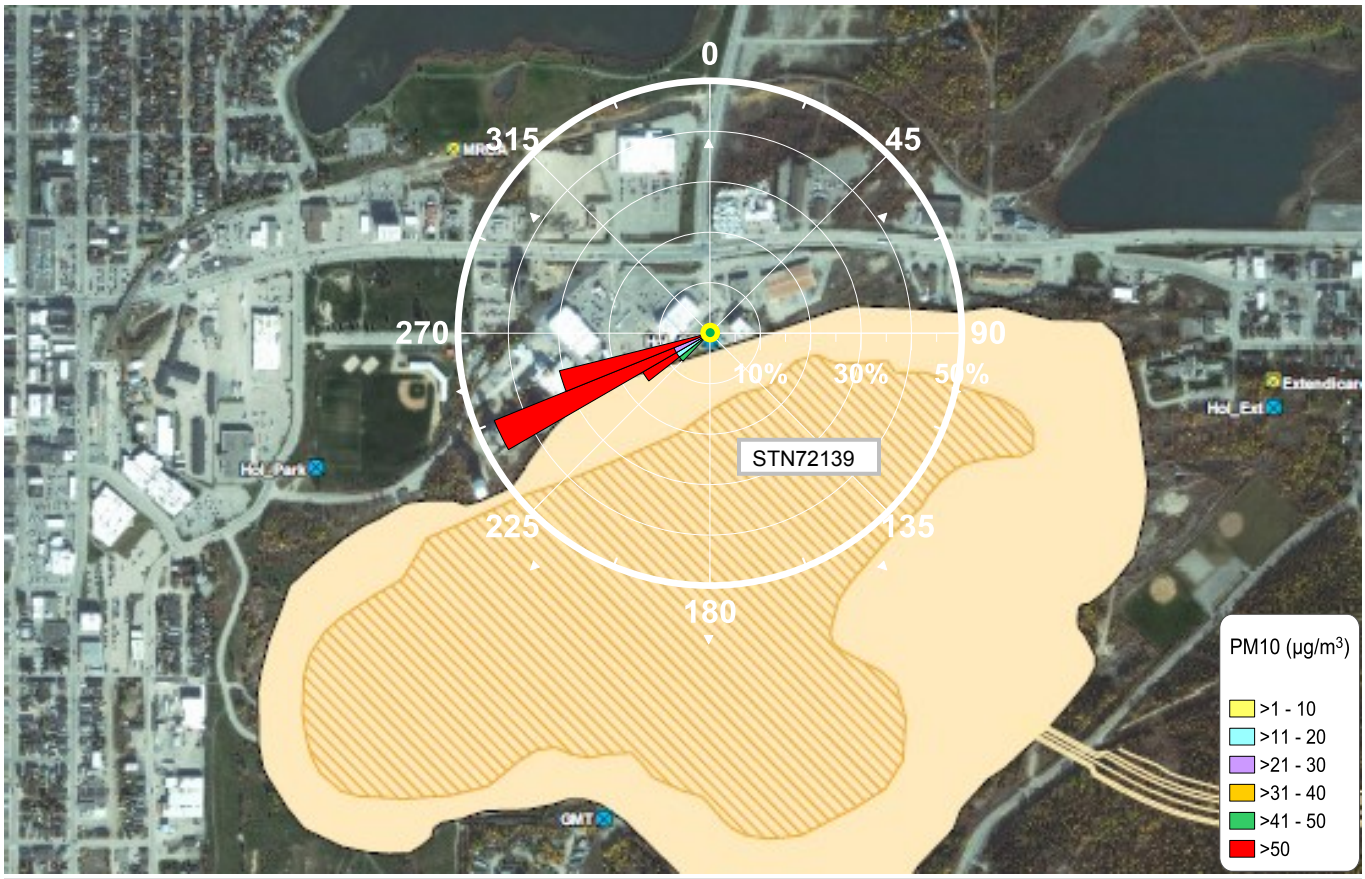
PM_{10} Pollution Rose – STN72139 August 08th to 09th - Figure 34



STN72139 PM_{10} Pollution Rose August 08 - 09, 2016		By : JP	**Figure 34**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	07 Nov, 2016	

Exceedance is due to inhalable particulate (PM_{10}) levels, possibly caused by Hollinger Office parking lots and Hollinger Open Pit operations. Wind speeds ranged from 2.2 to15.5 km/h with hot, dry conditions.

PM_{10} Pollution Rose – STN72139 November 12th - Figure 35



STN72139 PM_{10} Pollution Rose November 12, 2016		By : JP	**Figure 35**	ROTEK
	True North	Approx. Scale :	1:8525	
Goldcorp Porcupine Mines Timmins Ontario		Date Revised :	31 Jan, 2017	

Exceedance is due to inhalable particulate (PM_{10}) levels, possibly caused by Hollinger Office parking lots and Hollinger Open Pit operations. Wind speeds ranged from 5.9 to 16.7 km/h with freeze / dry conditions.

11.0 Conclusions

During 2016 there were:

a) No exceedances of the continuous NO_2 24 hour and 1 hour running average AAQCs or of the ½ hour running average O.Reg 419/05 standard.

b) 29 exceedances of the continuous PM_{10} 24 hour running average AAQC, 2 at STN72135 (Extendicare), 5 at STN72138 (Hollinger Park), 10 at STN72139 (Hollinger Office), 4 at STN72140 (Goldmine Tour) and 8 at STN72141 (Claimpost Trail).

c) 3 exceedances of the non-continuous 24 hour clock TSP AAQC at STN72136 (MRCA).

d) 3 exceedances of the non-continuous 24 hour clock PM_{10} AAQC at STN72136 (MRCA).

e) No exceedances of the non-continuous 24 hour clock TSP or PM_{10} Suspended Metals AAQCs, standards or guidelines.

f) 11 exceedances of the non-continuous 30 day standard for Total Dustfall, 1 at STN72135 (Extendicare), 1 at STN72136 (MRCA), 1 at STN72141 (Claimpost Trail) and 8 at STN72143 (Snowmobile Crossing).

a) A summary of exceedances potentially associated to the Hollinger Open Pit (HOP) operations can be found in Table 26.

g) Network annual PM_{10} averages were 9 $\mu g/m^3$ at STN72135 (Hollinger Ext.), 12 $\mu g/m^3$ at STN72138 (Hollinger Park), 16 $\mu g/m^3$ at STN72139 (Hollinger Office), 10 $\mu g/m^3$ at STN72140 (Goldmine Tour) and 10 $\mu g/m^3$ at STN72141 (Claimpost Trail).

h) 44 calibrations were conducted on continuous samplers, all of which met criteria.

i) Overall, the percentage of continuous valid pollutant data recovery was 98.2% for 2016, exceeding the Ministry's minimum target of 90% and desirable target of 95%. The percent valid data recovery for non-continuous TSP, PM_{10} and Total Dustfall was 98.6%.

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Ambient Air Monitoring Report

Appendix A
Continuous Data Statistics

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2016 Data Statistics		Maximum 24 Hr Running Average			Maximum 1 Hr Running Average	Maximum ½ Hr Running Average	Maximum 24 Hr Clock Average		Maximum 1 Hr Clock Average		Monthly Mean					Percent Valid Data				
Station	**Month**	**NO2**	**PM10**	**TSP**	**NO2**	**NO2**	**PM10**	**TSP**	**PM10**	**TSP**	**NO**	**NO2**	**NOX**	**PM10**	**TSP**	**NO**	**NO2**	**NOX**	**PM10**	**TSP**
		ppb	µg/m^3	µg/m^3	ppb	ppb	µg/m^3	µg/m^3	µg/m^3	µg/m^3	ppb	ppb	ppb	µg/m^3	µg/m^3	%	%	%	%	%
STN72135	January	12	15	39	33	35	12	39	30	68	2	5	7	6	10	100.0	100.0	100.0	98.7	100.0
	February	17	14	15	45	46	12	15	96	61	2	5	7	6	8	100.0	100.0	100.0	100.0	100.0
	March	13	44	56	45	45	42	52	247	332	2	5	7	11	16	100.0	100.0	100.0	98.4	100.0
	April	11	51	69	37	41	33	50	519	774	1	4	5	10	15	100.0	100.0	100.0	99.3	100.0
	May	15	36	70	41	43	34	66	113	160	2	5	7	10	17	96.5	96.5	96.5	95.7	96.5
	June	7	74	84	21	24	70	74	320	301	ins*	ins*	ins*	12	19	35.6	35.6	35.6	99.6	99.2
	July	5	27	42	16	16	25	38	127	143	1	1	2	11	21	100.0	100.0	100.0	100.0	99.7
	August	5	27	49	14	14	26	46	76	119	1	2	3	11	22	99.5	99.5	99.5	99.6	99.3
	September	6	20	27	20	21	19	27	30	44	2	2	5	9	12	97.2	97.2	97.2	94.3	83.6
	October	6	14	31	17	20	14	31	30	65	1	2	3	7	11	99.6	99.6	99.6	99.9	99.6
	November	8	23	29	20	21	23	27	65	86	2	3	5	8	13	99.4	99.4	99.4	92.8	99.4
	December	9	17	19	30	30	16	14	35	28	2	3	5	6	7	100.0	100.0	100.0	100.0	99.9
	Q1 Arithmetic Mean										2	5	7	8	11	100.0	100.0	100.0	99.0	100.0
	Q2 Arithmetic Mean										2	4	6	11	17	77.4	77.4	77.4	98.2	98.6
	Q3 Arithmetic Mean										2	2	3	10	18	98.9	98.9	98.9	98.0	94.2
	Q4 Arithmetic Mean										1	3	4	7	10	99.7	99.7	99.7	97.5	99.6
	Annual Arithmetic Mean										2	3	5	9	14	94.0	94.0	94.0	98.2	98.1

Exceedance Summary STN72135																		
Parameter		**Type**	**Averaging Type**	**Limit**	**Q1**			**Q2**			**Q3**			**Q4**			**Total**
					J	F	M	A	M	J	J	A	S	O	N	D	
Particulate Matter < 10 µm	**PM10**	AAQC	24 Hr Running	50 µg/m^3	0	0	0	1	0	1	0	0	0	0	0	0	2
Nitrogen Dioxide	**NO2**	AAQC	24 Hr Running	100 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Dioxide	**NO2**	AAQC	1 Hr Running	200 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Dioxide	**NO2**	Standard	½ Hr Running	250 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0

ins* insufficient data to caluculate mean.

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2016 Data Statistics		Maximum 24 Hr Running Average			Maximum 1 Hr Running Average	Maximum ½ Hr Running Average	Maximum 24 Hr Clock Average		Maximum 1 Hr Clock Average		Monthly Mean					Percent Valid Data				
Station	**Month**	**NO2**	**PM10**	**TSP**	**NO2**	**NO2**	**PM10**	**TSP**	**PM10**	**TSP**	**NO**	**NO2**	**NOX**	**PM10**	**TSP**	**NO**	**NO2**	**NOX**	**PM10**	**TSP**
		ppb	µg/m^3	µg/m^3	ppb	ppb	µg/m^3	µg/m^3	µg/m^3	µg/m^3	ppb	ppb	ppb	µg/m^3	µg/m^3	%	%	%	%	%
STN72138	January	10	18	38	22	26	17	37	31	67	2	4	5	6	8	100.0	100.0	100.0	96.9	100.0
	February	12	36	19	32	34	29	18	59	64	2	4	6	8	7	100.0	100.0	100.0	100.0	100.0
	March	9	80	88	30	32	73	81	315	420	2	3	5	18	21	98.9	98.9	98.9	98.0	98.8
	April	9	72	68	28	32	69	67	243	211	1	2	3	18	22	100.0	100.0	100.0	99.3	100.0
	May	10	55	56	22	24	37	49	130	120	1	2	2	17	23	98.0	98.0	98.0	98.3	99.2
	June	8	56	50	37	41	52	43	440	383	1	2	3	17	21	99.3	99.3	99.3	99.4	99.3
	July	4	24	34	21	22	23	32	62	95	1	2	2	11	18	100.0	100.0	100.0	100.0	99.9
	August	4	26	47	23	25	26	43	50	103	1	2	2	13	20	99.6	99.6	99.6	90.2	99.6
	September	11	40	48	27	32	40	47	79	104	2	3	5	13	17	100.0	100.0	100.0	98.5	99.9
	October	11	40	46	30	35	33	36	60	86	1	3	4	11	14	99.7	99.7	99.7	98.9	99.6
	November	13	29	42	27	29	27	38	90	101	2	4	7	11	16	99.6	99.6	99.6	99.4	99.9
	December	13	19	21	30	31	9	16	19	48	2	4	6	5	9	99.9	99.9	99.9	99.9	99.9
	Q1 Arithmetic Mean										2	4	5	11	12	99.6	99.6	99.6	98.3	99.6
	Q2 Arithmetic Mean										1	2	3	17	22	99.1	99.1	99.1	99.0	99.5
	Q3 Arithmetic Mean										1	2	3	12	18	99.9	99.9	99.9	96.2	99.8
	Q4 Arithmetic Mean										2	4	6	9	13	99.7	99.7	99.7	99.4	99.8
	Annual Arithmetic Mean										1	3	4	12	16	99.6	99.6	99.6	98.2	99.7

Exceedance Summary STN72138																		
Parameter		**Type**	**Averaging Type**	**Limit**	**Q1**			**Q2**			**Q3**			**Q4**			**Total**
					J	F	M	A	M	J	J	A	S	O	N	D	
Particulate Matter < 10 µm	**PM10**	AAQC	24 Hr Running	50 µg/m^3	0	0	2	1	1	1	0	0	0	0	0	0	5
Nitrogen Dioxide	**NO2**	AAQC	24 Hr Running	100 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Dioxide	**NO2**	AAQC	1 Hr Running	200 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Dioxide	**NO2**	Standard	½ Hr Running	250 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0

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2016 Data Statistics		Maximum 24 Hr Running Average			Maximum 1 Hr Running Average	Maximum ½ Hr Running Average	Maximum 24 Hr Clock Average		Maximum 1 Hr Clock Average		Monthly Mean					Percent Valid Data				
Station	**Month**	**NO2**	**PM10**	**TSP**	**NO2**	**NO2**	**PM10**	**TSP**	**PM10**	**TSP**	**NO**	**NO2**	**NOX**	**PM10**	**TSP**	**NO**	**NO2**	**NOX**	**PM10**	**TSP**
		ppb	µg/m^3	µg/m^3	ppb	ppb	µg/m^3	µg/m^3	µg/m^3	µg/m^3	ppb	ppb	ppb	µg/m^3	µg/m^3	%	%	%	%	%
STN72139	January	12	21	37	30	35	16	37	46	55	3	5	8	9	11	100.0	100.0	100.0	96.9	100.0
	February	18	92	60	37	40	56	38	475	249	3	6	9	13	12	100.0	100.0	100.0	100.0	99.9
	March	14	63	59	36	41	62	59	303	289	3	6	9	18	18	98.9	98.9	98.9	97.0	98.9
	April	14	51	47	37	40	50	41	222	188	3	5	9	19	19	99.9	99.9	99.9	99.3	99.9
	May	17	67	65	36	38	62	64	201	176	3	5	8	20	20	99.6	99.6	99.6	98.8	99.7
	June	13	92	64	44	49	91	59	423	240	3	4	7	20	20	99.2	99.2	99.2	99.7	99.6
	July	11	41	62	29	32	40	56	121	152	3	3	6	18	23	100.0	100.0	100.0	100.0	99.9
	August	8	70	69	31	35	64	57	221	159	3	3	6	20	23	99.3	99.3	99.3	99.3	99.2
	September	11	45	43	26	27	39	37	104	90	5	5	9	15	17	100.0	100.0	100.0	90.0	99.9
	October	12	34	41	23	25	31	35	83	80	4	4	8	14	16	99.6	99.6	99.6	99.3	99.6
	November	14	54	47	25	28	47	44	139	144	5	5	10	15	17	99.7	99.7	99.7	90.6	99.9
	December	10	25	26	27	30	20	23	56	70	3	5	9	9	ins*	91.1	91.1	91.1	98.8	62.9
	Q1 Arithmetic Mean										3	5	9	13	14	99.6	99.6	99.6	98.0	99.6
	Q2 Arithmetic Mean										3	5	8	19	19	99.5	99.5	99.5	99.3	99.7
	Q3 Arithmetic Mean										3	4	7	18	21	99.8	99.8	99.8	96.4	99.6
	Q4 Arithmetic Mean										4	5	9	13	16	96.8	96.8	96.8	96.2	87.5
	Annual Arithmetic Mean										3	5	8	16	18	98.9	98.9	98.9	97.5	96.6

Exceedance Summary STN72139																		
Parameter		**Type**	**Averaging Type**	**Limit**	**Q1**			**Q2**			**Q3**			**Q4**			**Total**
					J	F	M	A	M	J	J	A	S	O	N	D	
Particulate Matter < 10 µm	**PM10**	AAQC	24 Hr Running	50 µg/m^3	0	1	2	2	2	1	0	1	0	0	1	0	10
Nitrogen Dioxide	**NO2**	AAQC	24 Hr Running	100 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Dioxide	**NO2**	AAQC	1 Hr Running	200 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Dioxide	**NO2**	Standard	½ Hr Running	250 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0

ins* insufficient data to caluculate mean.

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2016 Data Statistics		Maximum 24 Hr Running Average			Maximum 1 Hr Running Average	Maximum ½ Hr Running Average	Maximum 24 Hr Clock Average		Maximum 1 Hr Clock Average		Monthly Mean					Percent Valid Data				
Station	**Month**	**NO2**	**PM10**	**TSP**	**NO2**	**NO2**	**PM10**	**TSP**	**PM10**	**TSP**	**NO**	**NO2**	**NOX**	**PM10**	**TSP**	**NO**	**NO2**	**NOX**	**PM10**	**TSP**
		ppb	µg/m^3	µg/m^3	ppb	ppb	µg/m^3	µg/m^3	µg/m^3	µg/m^3	ppb	ppb	ppb	µg/m^3	µg/m^3	%	%	%	%	%
STN72140	January	12	22	27	24	25	22	27	85	123	2	4	6	8	8	100.0	100.0	100.0	96.9	100.0
	February	14	19	19	34	36	18	19	58	54	2	4	7	8	7	100.0	100.0	100.0	100.0	99.9
	March	16	57	56	37	39	57	56	221	189	3	6	9	13	15	100.0	100.0	100.0	99.3	100.0
	April	12	66	51	35	39	61	49	180	146	4	5	9	18	18	100.0	100.0	100.0	99.3	99.9
	May	14	25	43	34	36	22	37	92	179	3	4	7	11	14	99.5	99.5	99.5	98.7	99.5
	June	10	55	47	33	36	52	42	164	107	3	3	6	13	20	99.4	99.4	99.4	99.6	99.4
	July	12	27	39	22	25	26	36	64	79	3	2	5	10	18	100.0	100.0	100.0	100.0	99.7
	August	7	24	35	22	24	22	35	64	95	2	2	4	10	ins*	99.2	99.2	99.2	99.2	57.5
	September	8	21	21	26	28	21	19	91	45	4	3	6	10	11	100.0	100.0	100.0	98.5	100.0
	October	13	22	26	25	26	19	25	40	51	3	3	6	9	10	99.5	99.5	99.5	100.0	99.5
	November	14	14	17	23	26	13	16	34	31	3	4	7	7	9	99.6	99.6	99.6	91.0	99.6
	December	11	26	19	27	28	24	16	102	82	2	4	6	8	8	99.9	99.9	99.9	98.5	99.9
	Q1 Arithmetic Mean										2	5	7	9	10	100.0	100.0	100.0	98.7	100.0
	Q2 Arithmetic Mean										3	4	7	14	17	99.6	99.6	99.6	99.2	99.6
	Q3 Arithmetic Mean										3	2	5	10	14	99.7	99.7	99.7	99.2	85.8
	Q4 Arithmetic Mean										2	4	6	8	9	99.6	99.6	99.6	96.5	99.6
	Annual Arithmetic Mean										3	4	6	10	13	99.8	99.8	99.8	98.4	96.2

Exceedance Summary STN72140																		
Parameter		**Type**	**Averaging Type**	**Limit**	**Q1**			**Q2**			**Q3**			**Q4**			**Total**
					J	F	M	A	M	J	J	A	S	O	N	D	
Particulate Matter < 10 µm	**PM10**	AAQC	24 Hr Running	50 µg/m^3	0	0	1	2	0	1	0	0	0	0	0	0	4
Nitrogen Dioxide	**NO2**	AAQC	24 Hr Running	100 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Dioxide	**NO2**	AAQC	1 Hr Running	200 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Dioxide	**NO2**	Standard	½ Hr Running	250 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0

ins* insufficient data to caluculate mean.

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2016 Data Statistics		Maximum 24 Hr Running Average			Maximum 1 Hr Running Average	Maximum ½ Hr Running Average	Maximum 24 Hr Clock Average		Maximum 1 Hr Clock Average		Monthly Mean					Percent Valid Data				
Station	**Month**	**NO2**	**PM10**	**TSP**	**NO2**	**NO2**	**PM10**	**TSP**	**PM10**	**TSP**	**NO**	**NO2**	**NOX**	**PM10**	**TSP**	**NO**	**NO2**	**NOX**	**PM10**	**TSP**
		ppb	µg/m^3	µg/m^3	ppb	ppb	µg/m^3	µg/m^3	µg/m^3	µg/m^3	ppb	ppb	ppb	µg/m^3	µg/m^3	%	%	%	%	%
STN72141	January	12	17	25	35	39	13	25	28	38	1	4	5	5	7	100.0	100.0	100.0	99.2	100.0
	February	22	9	12	47	49	8	11	25	35	3	5	8	5	5	100.0	100.0	100.0	100.0	100.0
	March	21	99	87	54	56	75	63	500	461	4	5	9	15	14	100.0	100.0	100.0	99.5	100.0
	April	14	588	255	48	50	380	181	4646	960	4	4	8	32	19	99.9	99.9	99.9	99.3	99.6
	May	20	22	29	51	52	20	25	40	108	6	6	11	ins*	9	99.3	99.3	99.3	70.4	99.3
	June	11	46	33	34	35	40	31	179	117	4	3	8	11	14	99.3	99.3	99.3	99.7	99.4
	July	8	48	46	27	27	46	44	144	122	3	2	5	11	17	100.0	100.0	100.0	100.0	99.7
	August	6	33	35	21	23	30	33	121	111	4	2	6	10	16	99.5	99.5	99.5	99.6	99.3
	September	6	19	28	19	20	18	28	42	45	4	2	6	8	11	99.9	99.9	99.9	98.3	99.9
	October	8	34	40	21	22	31	20	148	134	2	2	4	7	8	99.2	99.2	99.2	99.9	92.3
	November	8	14	18	20	22	13	18	48	41	2	2	4	6	10	99.6	99.6	99.6	96.8	99.6
	December	9	11	9	30	30	10	9	48	46	2	2	4	4	5	100.0	100.0	100.0	98.7	100.0
	Q1 Arithmetic Mean										3	5	7	8	8	100.0	100.0	100.0	99.6	100.0
	Q2 Arithmetic Mean										5	5	9	21	14	99.5	99.5	99.5	89.8	99.5
	Q3 Arithmetic Mean										3	2	6	10	14	99.8	99.8	99.8	99.3	99.6
	Q4 Arithmetic Mean										2	2	4	6	8	99.6	99.6	99.6	98.4	97.3
	Annual Arithmetic Mean										3	3	7	10	11	99.7	99.7	99.7	96.8	99.1

Exceedance Summary STN72141																		
Parameter		**Type**	**Averaging Type**	**Limit**	**Q1**			**Q2**			**Q3**			**Q4**			**Total**
					J	F	M	A	M	J	J	A	S	O	N	D	
Particulate Matter < 10 µm	**PM10**	AAQC	24 Hr Running	50 µg/m^3	0	0	4	4	0	0	0	0	0	0	0	0	8
Nitrogen Dioxide	**NO2**	AAQC	24 Hr Running	100 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Dioxide	**NO2**	AAQC	1 Hr Running	200 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Dioxide	**NO2**	Standard	½ Hr Running	250 ppb	0	0	0	0	0	0	0	0	0	0	0	0	0

ins* insufficient data to caluculate mean.

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Ambient Air Monitoring Report

Appendix B
Non-continuous Data Statistics

GOLDCORP

Goldcorp - TSP / Metals Report

Station : STN72135 TSP
Location : Extendicare
Reporting Period : 01 January to 30 June, 2016
Sample Matrix : Teflon Coated Filter
Method : IO-3.1
Valid Samples - Number / % : 59 / 96.7%

Parameter	TSP	As	Cd	Cr	Co	Cu	Fe	Pb	Mg	Mn	Ni	Se	S	V	Zn	SO_4
Name		Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Selenium	Sulphur	Vanadium	Zinc	Sulphate
Units	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
AAQC	120	0.3	0.025	0.5	0.1	50	25	0.5	120	0.4	0.2	10	n/a	2	120	n/a
Standard	n/a	n/a	n/a	n/a	n/a	50	25	0.5	120	0.4	2	n/a	n/a	2	120	n/a
Guideline	n/a	0.3	n/a	1.5	0.1	n/a	n/a	n/a	n/a	2.5	n/a	10	n/a	n/a	n/a	n/a
RDL	3	0.0037	0.0012	0.0031	0.0012	0.0031	0.0310	0.0018	0.0310	0.00061	0.0018	0.0061	0.0150	0.0031	0.0031	0.0500
Date																
01-Jan-16	27															
07-Jan-16	16															
13-Jan-16	15	0.00185	0.0006	0.00155	0.0006	0.4600	0.3790	0.0009	0.1430	0.00926	0.0009	0.00305	0.1310	0.00155	0.0390	0.3900
19-Jan-16	8															
25-Jan-16	10															
31-Jan-16	14	0.00185	0.0006	0.00155	0.0006	0.1690	0.3660	0.0009	0.0850	0.00830	0.0009	0.00305	0.2520	0.00155	0.0112	0.7600
06-Feb-16	6															
12-Feb-16	11															
18-Feb-16	6	0.00185	0.0006	0.00155	0.0006	0.0842	0.3570	0.0009	0.1140	0.00804	0.0009	0.00305	0.2160	0.00155	0.0102	0.6500
24-Feb-16	7															
01-Mar-16	12															
07-Mar-16	10	0.00185	0.0006	0.00155	0.0006	0.0857	0.3080	0.0009	0.1010	0.00683	0.0009	0.00305	0.5270	0.00155	0.0204	1.5800
13-Mar-16	55															
19-Mar-16	73															
25-Mar-16	38	0.00185	0.0006	0.00410	0.0006	0.1100	1.1800	0.0009	0.5050	0.02560	0.0025	0.00305	0.3570	0.00155	0.0134	1.0700
31-Mar-16	12															
06-Apr-16	41															
12-Apr-16	33	0.00185	0.0006	0.00480	0.0006	0.1210	0.9590	0.0009	0.4540	0.01910	0.0027	0.00305	0.4910	0.00155	0.0187	1.4700
18-Apr-16	21															
24-Apr-16	35															
30-Apr-16	37	0.00185	0.0006	0.00440	0.0006	0.0308	1.0900	0.0025	0.5570	0.02090	0.0030	0.00305	0.2290	0.00155	0.0263	0.6900
06-May-16	32															
12-May-16	35															
18-May-16	34	0.00185	0.0006	0.00420	0.0006	0.0536	1.9000	0.0009	0.6420	0.04320	0.0028	0.00305	0.1760	0.00410	0.0148	0.5300
24-May-16	72															
*30-May-16	17															
05-Jun-16	13	0.00185	0.0006	0.00155	0.0006	0.0577	0.1700	0.0021	0.0760	0.00977	0.0009	0.00305	0.1850	0.00155	0.0128	0.5500
11-Jun-16	35															
17-Jun-16	42															
23-Jun-16	31	0.00185	0.0006	0.00155	0.0006	0.0838	1.2200	0.0009	0.4400	0.02600	0.0026	0.00305	0.1360	0.00155	0.0165	0.4100
29-Jun-16	61															

Station : STN72135 TSP

Reporting Period : 01 July to 31 December, 2016

05-Jul-16	62															
11-Jul-16	55	0.00185	0.0006	0.00860	0.0006	0.0897	1.9500	0.0009	0.7560	0.04110	0.0041	0.00305	0.4290	0.00340	0.0183	1.2900
17-Jul-16	37															
23-Jul-16	24															
29-Jul-16	InVld															
04-Aug-16	InVld															
10-Aug-16	20	0.00185	0.0006	0.00155	0.0006	0.0685	0.8300	0.0009	0.3240	0.02080	0.0009	0.00305	0.1740	0.00155	0.0119	0.5200
16-Aug-16	37	0.00185	0.0006	0.00155	0.0006	0.0700	1.3200	0.0009	0.4710	0.03040	0.0025	0.00305	0.3770	0.00155	0.0193	1.1300
22-Aug-16	33															
28-Aug-16	21															
03-Sep-16	42	0.00185	0.0006	0.00430	0.0006	0.1140	1.8300	0.0009	0.6350	0.03950	0.0031	0.00305	0.2340	0.00155	0.0168	0.7000
09-Sep-16	23															
15-Sep-16	22															
21-Sep-16	16	0.00185	0.0006	0.00155	0.0006	0.0755	0.5410	0.0020	0.2050	0.01330	0.0009	0.00305	0.1430	0.00155	0.0154	0.4300
27-Sep-16	9															
03-Oct-16	19															
09-Oct-16	9	0.00185	0.0006	0.00155	0.0006	0.1200	0.3010	0.0009	0.1420	0.00633	0.0009	0.00305	0.0870	0.00155	0.0094	0.2600
15-Oct-16	14															
21-Oct-16	7															
27-Oct-16	52	0.00185	0.0006	0.00700	0.0006	0.0515	2.3300	0.0020	0.8960	0.04310	0.0037	0.00305	0.2710	0.00400	0.0140	0.8100
02-Nov-16	20															
08-Nov-16	29															
14-Nov-16	27	0.00185	0.0006	0.00155	0.0006	0.0938	0.8990	0.0009	0.3210	0.02180	0.0009	0.00305	0.1820	0.00155	0.0141	0.5500
20-Nov-16	12	0.00185	0.0006	0.00155	0.0006	0.0656	0.2660	0.0009	0.1160	0.00601	0.0009	0.00305	0.0560	0.00155	0.0142	0.1700
26-Nov-16	4															
02-Dec-16	5															
08-Dec-16	10	0.00185	0.0006	0.00155	0.0006	0.0845	0.4030	0.0009	0.1330	0.00870	0.0009	0.00305	0.1430	0.00155	0.0094	0.4300
14-Dec-16	8															
20-Dec-16	14															
26-Dec-16	15	0.00185	0.0025	0.00155	0.0006	0.0435	0.4470	0.0031	0.1500	0.00981	0.0009	0.00305	0.2740	0.00155	0.0233	0.8200

Arithmetic Mean	26	0.00185	0.0007	0.00281	0.0006	0.1015	0.9070	0.0012	0.3460	0.01990	0.0018	0.00305	0.2414	0.00188	0.0166	0.7243
Geometric Mean	20	0.00185	0.0006	0.00231	0.0006	0.0847	0.6945	0.0011	0.2606	0.01601	0.0015	0.00305	0.2101	0.00176	0.0156	0.6307
Max	73	0.00185	0.0025	0.00860	0.0006	0.4600	2.3300	0.0031	0.8960	0.04320	0.0041	0.00305	0.5270	0.00410	0.0390	1.5800
Min	4	0.00185	0.0006	0.00155	0.0006	0.0308	0.1700	0.0009	0.0760	0.00601	0.0009	0.00305	0.0560	0.00155	0.0094	0.1700
No. of Samples	59	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
No. > AAQC	0	0	0	0	0	0	0	0	0	0	0	0	n/a	0	0	n/a
No. > Standard	n/a	n/a	n/a	n/a	n/a	0	0	0	0	0	0	n/a	n/a	0	0	n/a
No. > Guideline	n/a	0	n/a	0	0	n/a	n/a	n/a	n/a	0	n/a	0	n/a	n/a	n/a	n/a

Note: All non detectable results reported as ½ the Reportable Detection Limit (RDL).

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Goldcorp - TSP / Metals Report

Station : STN72136 TSP
Location : MRCA
Reporting Period : 01 January to 30 June, 2016
Sample Matrix : Teflon Coated Filter
Method : IO-3.1
Valid Samples - Number / % : 58 / 95.1%

Parameter	TSP	As	Cd	Cr	Co	Cu	Fe	Pb	Mg	Mn	Ni	Se	S	V	Zn	SO_4
Name		Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Selenium	Sulphur	Vanadium	Zinc	Sulphate
Units	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
AAQC	120	0.3	0.025	0.5	0.1	50	25	0.5	120	0.4	0.2	10	n/a	2	120	n/a
Standard	n/a	n/a	n/a	n/a	n/a	50	25	0.5	120	0.4	2	n/a	n/a	2	120	n/a
Guideline	n/a	0.3	n/a	1.5	0.1	n/a	n/a	n/a	n/a	2.5	n/a	10	n/a	n/a	n/a	n/a
RDL	3	0.0037	0.0012	0.0031	0.0012	0.0031	0.0310	0.0018	0.0310	0.00061	0.0018	0.0061	0.0150	0.0031	0.0031	0.0500
Date																
01-Jan-16	10															
07-Jan-16	11															
13-Jan-16	12	0.00185	0.0006	0.00155	0.0006	0.0414	0.1530	0.0009	0.1480	0.00431	0.0009	0.00305	0.3660	0.00155	0.0545	1.1000
19-Jan-16	5															
25-Jan-16	20															
31-Jan-16	10	0.00185	0.0006	0.00155	0.0006	0.0224	0.0760	0.0009	0.0155	0.00158	0.0009	0.00305	0.2640	0.00155	0.0098	0.7900
06-Feb-16	5															
12-Feb-16	2															
18-Feb-16	6	0.00185	0.0006	0.00155	0.0006	0.0231	0.1000	0.0009	0.0520	0.00254	0.0009	0.00305	0.2100	0.00155	0.0125	0.6300
24-Feb-16	6															
01-Mar-16	7															
07-Mar-16	5	0.00185	0.0006	0.00155	0.0006	0.0274	0.1290	0.0009	0.0520	0.00323	0.0009	0.00305	0.5220	0.00155	0.0181	1.5700
13-Mar-16	127															
19-Mar-16	86															
25-Mar-16	34	0.00185	0.0006	0.00155	0.0006	0.0444	0.6050	0.0009	0.3580	0.01210	0.0009	0.00305	0.3620	0.00155	0.0145	1.0800
31-Mar-16	9															
06-Apr-16	32															
12-Apr-16	29	0.00185	0.0006	0.00155	0.0006	0.0423	0.7490	0.0009	0.4090	0.01550	0.0022	0.00305	0.4400	0.00155	0.0151	1.3200
18-Apr-16	29															
24-Apr-16	26															
30-Apr-16	29	0.00185	0.0006	0.00310	0.0006	0.0269	0.8500	0.0028	0.4090	0.01620	0.0021	0.00305	0.2210	0.00155	0.0282	0.6600
06-May-16	127															
12-May-16	166															
18-May-16	43	0.00185	0.0006	0.00500	0.0006	0.0553	1.8000	0.0039	0.7840	0.03870	0.0038	0.00305	0.1930	0.00350	0.0289	0.5800
24-May-16	42															
*30-May-16	42															
05-Jun-16	12	0.00185	0.0006	0.00155	0.0006	0.0297	0.1890	0.0009	0.0860	0.00964	0.0009	0.00305	0.0920	0.00155	0.01	0.2800
11-Jun-16	36															
17-Jun-16	42															
23-Jun-16	27	0.00185	0.0006	0.00155	0.0006	0.0401	0.7630	0.0009	0.3210	0.01560	0.0009	0.00305	0.0950	0.00155	0.0186	0.4100
29-Jun-16	46															

Station : STN72136 TSP

Reporting Period : 01 July to 31 December, 2016

05-Jul-16	38															
11-Jul-16	68	0.00185	0.0006	0.00520	0.0013	0.1120	2.3100	0.0030	0.9340	0.05230	0.0047	0.00305	0.3040	0.00340	0.0434	0.9100
17-Jul-16	55															
23-Jul-16	21															
29-Jul-16	InVld															
04-Aug-16	InVld															
10-Aug-16	20	0.00185	0.0006	0.00155	0.0006	0.0432	0.5020	0.0009	0.2190	0.01340	0.0009	0.00305	0.1520	0.00155	0.016	0.4600
16-Aug-16	79	0.00185	0.0006	0.00640	0.0017	0.0782	3.1700	0.0043	1.1600	0.07340	0.0062	0.00305	0.4360	0.00500	0.0529	1.3100
22-Aug-16	31															
28-Aug-16	24															
03-Sep-16	45	0.00185	0.0006	0.00490	0.0006	0.0709	1.3400	0.0009	0.5950	0.02650	0.0038	0.00305	0.1760	0.00155	0.0196	0.5300
09-Sep-16	32															
15-Sep-16	37															
21-Sep-16	25	0.00185	0.0006	0.00155	0.0006	0.0327	0.6400	0.0009	0.2970	0.01650	0.0009	0.00305	0.1790	0.00155	0.0195	0.5400
27-Sep-16	33															
03-Oct-16	19															
09-Oct-16	11	0.00185	0.0006	0.00155	0.0006	0.0252	0.3350	0.0009	0.1640	0.00724	0.0009	0.00305	0.0890	0.00155	0.0090	0.2700
15-Oct-16	26															
21-Oct-16	3															
27-Oct-16	57	0.00185	0.0006	0.00800	0.0013	0.0399	2.7700	0.0026	1.0400	0.05180	0.0043	0.00305	0.2880	0.00420	0.0228	0.8600
02-Nov-16	24															
08-Nov-16	12															
14-Nov-16	InVld															
20-Nov-16	4	0.00185	0.0006	0.00155	0.0006	0.0098	0.0810	0.0009	0.0510	0.00205	0.0009	0.00305	0.0390	0.00155	0.0089	0.1200
26-Nov-16	4															
02-Dec-16	4															
08-Dec-16	7	0.00185	0.0006	0.00155	0.0006	0.0194	0.1770	0.0009	0.0840	0.00413	0.0009	0.00305	0.1140	0.00155	0.0093	0.3400
14-Dec-16	5															
20-Dec-16	12															
26-Dec-16	14	0.00185	0.0006	0.00155	0.0006	0.027	0.3810	0.0009	0.1170	0.00881	0.0009	0.00305	0.2360	0.00155	0.0105	0.7100

Arithmetic Mean	31	0.00185	0.0006	0.00272	0.0007	0.0406	0.8560	0.0015	0.3648	0.01878	0.0019	0.00305	0.2389	0.00205	0.0211	0.7235
Geometric Mean	19	0.00185	0.0006	0.00223	0.0007	0.0353	0.4666	0.0012	0.2104	0.01096	0.0015	0.00305	0.2002	0.00187	0.0178	0.6134
Max	166	0.00185	0.0006	0.00800	0.0017	0.1120	3.1700	0.0043	1.1600	0.07340	0.0062	0.00305	0.5220	0.00500	0.0545	1.5700
Min	2	0.00185	0.0006	0.00155	0.0006	0.0098	0.0760	0.0009	0.0155	0.00158	0.0009	0.00305	0.0390	0.00155	0.0089	0.1200
No. of Samples	58	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
No. > AAQC	0	0	0	0	0	0	0	0	0	0	0	0	n/a	0	0	n/a
No. > Standard	n/a	n/a	n/a	n/a	n/a	0	0	0	0	0	0	n/a	n/a	0	0	n/a
No. > Guideline	n/a	0	n/a	0	0	n/a	n/a	n/a	n/a	0	n/a	0	n/a	n/a	n/a	n/a

Note: All non detectable results reported as ½ the Reportable Detection Limit (RDL).

GOLDCORP

Goldcorp - TSP / Metals Report

Station : STN72137 TSP
Location : Shania Twain Centre
Reporting Period : 01 January to 30 June, 2016
Sample Matrix : Teflon Coated Filter
Method : IO-3.1
Valid Samples - Number / % : 59 / 96.7%

Parameter	TSP	As	Cd	Cr	Co	Cu	Fe	Pb	Mg	Mn	Ni	Se	S	V	Zn	SO_4
Name		Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Selenium	Sulphur	Vanadium	Zinc	Sulphate
Units	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
AAQC	120	0.3	0.025	0.5	0.1	50	25	0.5	120	0.4	0.2	10	n/a	2	120	n/a
Standard	n/a	n/a	n/a	n/a	n/a	50	25	0.5	120	0.4	2	n/a	n/a	2	120	n/a
Guideline	n/a	0.3	n/a	1.5	0.1	n/a	n/a	n/a	n/a	2.5	n/a	10	n/a	n/a	n/a	n/a
RDL	3	0.0037	0.0012	0.0031	0.0012	0.0031	0.0310	0.0018	0.0310	0.00061	0.0018	0.0061	0.0150	0.0031	0.0031	0.0500
Date																
01-Jan-16	10															
07-Jan-16	9															
13-Jan-16	10	0.00185	0.0006	0.00155	0.0006	0.0450	0.1580	0.0009	0.0540	0.00404	0.0009	0.00305	0.0890	0.00155	0.0562	0.2700
19-Jan-16	8															
25-Jan-16	12															
31-Jan-16	10	0.00185	0.0006	0.00155	0.0006	0.0417	0.1130	0.0009	0.0370	0.00306	0.0009	0.00305	0.2360	0.00155	0.0134	0.7100
06-Feb-16	7															
12-Feb-16	4															
18-Feb-16	2	0.00185	0.0006	0.00155	0.0006	0.0138	0.0700	0.0009	0.0155	0.00174	0.0009	0.00305	0.1790	0.00155	0.0102	0.5400
24-Feb-16	10															
01-Mar-16	16															
07-Mar-16	10	0.00185	0.0006	0.00155	0.0006	0.0505	0.3820	0.0009	0.1090	0.00979	0.0009	0.00305	0.5120	0.00155	0.0178	1.5400
13-Mar-16	44															
19-Mar-16	79															
25-Mar-16	33	0.00185	0.0006	0.00155	0.0006	0.0642	0.8150	0.0019	0.3770	0.01720	0.0021	0.00305	0.3510	0.00155	0.0217	1.0500
31-Mar-16	18															
06-Apr-16	24															
12-Apr-16	37	0.00185	0.0006	0.00155	0.0006	0.0722	0.8700	0.0024	0.4470	0.01680	0.0024	0.00305	0.4500	0.00155	0.0266	1.3500
18-Apr-16	29															
24-Apr-16	44															
30-Apr-16	66	0.00185	0.0006	0.00660	0.0016	0.0533	3.2200	0.0025	1.0300	0.06510	0.0042	0.00305	0.2570	0.00430	0.0230	0.7700
06-May-16	52															
12-May-16	57															
18-May-16	40	0.00185	0.0006	0.00520	0.0006	0.0728	1.4900	0.0063	0.7090	0.02800	0.0035	0.00305	0.2460	0.00155	0.0258	0.7400
24-May-16	69															
*30-May-16	36															
05-Jun-16	18	0.00185	0.0006	0.00155	0.0006	0.0429	0.6680	0.0026	0.2230	0.0176	0.0009	0.00305	0.1900	0.00155	0.0141	0.5700
11-Jun-16	53															
17-Jun-16	94															
23-Jun-16	50	0.00185	0.0006	0.00600	0.0006	0.0618	1.6200	0.0028	0.6250	0.02900	0.0039	0.00305	0.1540	0.00155	0.0212	0.4600
29-Jun-16	63															

Station : STN72137 TSP

Reporting Period : 01 July to 31 December, 2016

05-Jul-16	44															
11-Jul-16	51	0.00185	0.0006	0.00460	0.0006	0.0689	1.4200	0.0029	0.6890	0.03040	0.0034	0.00305	0.2750	0.00155	0.0248	0.8200
17-Jul-16	37															
23-Jul-16	26															
29-Jul-16	InVld															
04-Aug-16	InVld															
10-Aug-16	27	0.00185	0.0006	0.00155	0.0006	0.0662	0.8350	0.0009	0.3390	0.02070	0.0021	0.00305	0.1820	0.00155	0.0145	0.5500
16-Aug-16	50	0.00185	0.0006	0.00610	0.0006	0.0638	1.9600	0.0034	0.8290	0.04000	0.0046	0.00305	0.4690	0.00155	0.0393	1.4000
22-Aug-16	29															
28-Aug-16	17															
03-Sep-16	41	0.00185	0.0006	0.00320	0.0006	0.0504	1.2600	0.0009	0.5030	0.02680	0.0027	0.00305	0.1520	0.00155	0.0251	0.4600
09-Sep-16	35															
15-Sep-16	37															
21-Sep-16	34	0.00185	0.0006	0.00360	0.0006	0.0509	1.1300	0.0009	0.4560	0.02530	0.0025	0.00305	0.2050	0.00155	0.0198	0.6100
27-Sep-16	12															
03-Oct-16	24															
09-Oct-16	12	0.00185	0.0006	0.00155	0.0006	0.0618	0.4050	0.0009	0.1880	0.00786	0.0009	0.00305	0.0950	0.00155	0.0091	0.2900
15-Oct-16	16															
21-Oct-16	13															
27-Oct-16	33	0.00185	0.0006	0.00480	0.0006	0.0510	1.6900	0.0118	0.5410	0.03050	0.0028	0.00305	0.1590	0.00155	0.0383	0.4800
02-Nov-16	33															
08-Nov-16	13															
14-Nov-16	32	0.00185	0.0006	0.00155	0.0006	0.1010	1.3100	0.0025	0.4680	0.03180	0.0025	0.00305	0.1910	0.00155	0.0213	0.5700
20-Nov-16	10	0.00185	0.0006	0.00155	0.0006	0.0411	0.1780	0.0009	0.0860	0.00379	0.0009	0.00305	0.0490	0.00155	0.0133	0.1500
26-Nov-16	4															
02-Dec-16	4															
08-Dec-16	8	0.00185	0.0006	0.00155	0.0006	0.0583	0.2310	0.0009	0.0910	0.00505	0.0009	0.00305	0.1280	0.00155	0.0105	0.3800
14-Dec-16	9															
20-Dec-16	10															
26-Dec-16	19	0.00185	0.0006	0.00155	0.0006	0.0944	0.4430	0.0079	0.1170	0.01050	0.0009	0.00305	0.5440	0.00155	0.0220	1.6300

Arithmetic Mean	29	0.00185	0.0006	0.00287	0.0006	0.0584	0.9651	0.0027	0.3778	0.02024	0.0021	0.00305	0.2435	0.00168	0.0223	0.7305
Geometric Mean	21	0.00185	0.0006	0.00240	0.0006	0.0549	0.6434	0.0019	0.2417	0.01416	0.0018	0.00305	0.2064	0.00163	0.0201	0.6203
Max	94	0.00185	0.0006	0.00660	0.0016	0.1010	3.2200	0.0118	1.0300	0.06510	0.0046	0.00305	0.5440	0.00430	0.0562	1.6300
Min	2	0.00185	0.0006	0.00155	0.0006	0.0138	0.0700	0.0009	0.0155	0.00174	0.0009	0.00305	0.0490	0.00155	0.0091	0.1500
No. of Samples	59	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
No. > AAQC	0	0	0	0	0	0	0	0	0	0	0	0	n/a	0	0	n/a
No. > Standard	n/a	n/a	n/a	n/a	n/a	0	0	0	0	0	0	n/a	n/a	0	0	n/a
No. > Guideline	n/a	0	n/a	0	0	n/a	n/a	n/a	n/a	0	n/a	0	n/a	n/a	n/a	n/a

Note: All non detectable results reported as ½ the Reportable Detection Limit (RDL).

GOLDCORP

Goldcorp - PM10 / Metals Report

Station : STN72135 PM10
Location : Extendicare
Reporting Period : 01 January to 30 June, 2016
Sample Matrix : Teflon Coated Filter
Method : IO-3.1
Valid Samples - Number / % : 59 / 96.7%

Parameter	PM10	As	Cd	Cr	Co	Cu	Fe	Pb	Mg	Mn	Ni	Se	S	V	Zn	SO_4
Name		Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Selenium	Sulphur	Vanadium	Zinc	Sulphate
Units	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
AAQC	50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.2	0.1	n/a	n/a	n/a	n/a	n/a
RDL	3	0.0037	0.0012	0.0031	0.0012	0.0031	0.0310	0.0018	0.0310	0.00061	0.0018	0.0061	0.0150	0.0031	0.0031	0.0500
Date																
01-Jan-16	10															
07-Jan-16	12															
13-Jan-16	9															
19-Jan-16	13	0.00185	0.0006	0.00155	0.0006	0.0358	0.2860	0.0009	0.1140	0.00679	0.0009	0.00305	0.0790	0.00155	0.0090	0.2400
25-Jan-16	9															
31-Jan-16	10															
06-Feb-16	7															
12-Feb-16	8															
18-Feb-16	2	0.00185	0.0006	0.00155	0.0006	0.0138	0.1860	0.0009	0.0630	0.00451	0.0009	0.00305	0.1850	0.00155	0.0073	0.5500
24-Feb-16	4															
01-Mar-16	9															
07-Mar-16	6															
13-Mar-16	20															
19-Mar-16	27	0.00185	0.0006	0.00500	0.0006	0.0371	0.9520	0.0009	0.4560	0.01730	0.0027	0.00305	0.1370	0.00155	0.0157	0.4100
25-Mar-16	26															
31-Mar-16	8															
06-Apr-16	18															
12-Apr-16	12															
18-Apr-16	10	0.00185	0.0006	0.00155	0.0006	0.0415	0.1500	0.0009	0.0680	0.00324	0.0009	0.00305	0.2280	0.00155	0.0210	0.6800
24-Apr-16	15															
30-Apr-16	16															
06-May-16	15															
12-May-16	16															
18-May-16	16	0.00185	0.0006	0.00155	0.0006	0.0175	0.7210	0.0009	0.2500	0.01610	0.0009	0.00305	0.1400	0.00155	0.0115	0.4200
24-May-16	26															
*30-May-16	8															
05-Jun-16	2															
11-Jun-16	13															
17-Jun-16	12	0.00185	0.0006	0.00155	0.0006	0.0286	0.3620	0.0009	0.1420	0.00956	0.0009	0.00305	0.1050	0.00155	0.0155	0.3100
23-Jun-16	10															
29-Jun-16	27															

Station : STN72135 PM10

Reporting Period : 01 July to 31 December, 2016

05-Jul-16	22															
11-Jul-16	26															
17-Jul-16	19	0.00185	0.0006	0.00155	0.0006	0.0254	0.3220	0.0009	0.1080	0.00762	0.0009	0.00305	0.1830	0.00155	0.0092	0.5500
23-Jul-16	13															
29-Jul-16	InVld															
04-Aug-16	InVld															
10-Aug-16	10															
16-Aug-16	17	0.00185	0.0006	0.00155	0.0006	0.0280	0.3950	0.0009	0.1340	0.01120	0.0009	0.00305	0.3080	0.00155	0.0111	0.9200
22-Aug-16	14															
28-Aug-16	12															
03-Sep-16	16															
09-Sep-16	11															
15-Sep-16	10	0.00185	0.0006	0.00155	0.0006	0.0248	0.3110	0.0009	0.1020	0.00911	0.0009	0.00305	0.0940	0.00155	0.0105	0.2800
21-Sep-16	12															
27-Sep-16	6															
03-Oct-16	10															
09-Oct-16	3															
15-Oct-16	8	0.00185	0.0006	0.00155	0.0006	0.0201	0.1110	0.0023	0.0440	0.00286	0.0009	0.00305	0.4560	0.00155	0.0131	1.3700
21-Oct-16	2															
27-Oct-16	16															
02-Nov-16	7															
08-Nov-16	9															
14-Nov-16	8	0.00185	0.0006	0.00155	0.0006	0.0292	0.1680	0.0009	0.0770	0.00469	0.0009	0.00305	0.1540	0.00155	0.0091	0.4600
20-Nov-16	6	0.00185	0.0006	0.00155	0.0006	0.0204	0.1880	0.0009	0.0890	0.00440	0.0009	0.00305	0.0840	0.00155	0.0070	0.2500
26-Nov-16	1.5															
02-Dec-16	1.5															
08-Dec-16	3															
14-Dec-16	7															
20-Dec-16	13	0.00185	0.0006	0.00155	0.0006	0.0209	0.2750	0.0009	0.0830	0.00646	0.0009	0.00305	0.6060	0.00155	0.0121	1.8200
26-Dec-16	21															

Arithmetic Mean	12	0.00185	0.0006	0.00182	0.0006	0.0264	0.3405	0.0010	0.1331	0.00799	0.0010	0.00305	0.2122	0.00155	0.0117	0.6354
Geometric Mean	10	0.00185	0.0006	0.00170	0.0006	0.0252	0.2833	0.0010	0.1086	0.00689	0.0010	0.00305	0.1733	0.00155	0.0112	0.5183
Max	27	0.00185	0.0006	0.00500	0.0006	0.0415	0.9520	0.0023	0.4560	0.01730	0.0027	0.00305	0.6060	0.00155	0.0210	1.8200
Min	2	0.00185	0.0006	0.00155	0.0006	0.0138	0.1110	0.0009	0.0440	0.00286	0.0009	0.00305	0.0790	0.00155	0.0070	0.2400
No. of Samples	59	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
No. > AAQC	0	0	0	0	0	0	0	0	0	0	0	0	n/a	0	0	n/a

Note: All non detectable results reported as ½ the Reportable Detection Limit (RDL).

GOLDCORP

Goldcorp - PM10 / Metals Report

Station : STN72136 PM10
Location : MRCA
Reporting Period : 01 January to 30 June, 2016
Sample Matrix : Teflon Coated Filter
Method : IO-3.1
Valid Samples - Number / % : 58 / 95.1%

Parameter	PM10	As	Cd	Cr	Co	Cu	Fe	Pb	Mg	Mn	Ni	Se	S	V	Zn	SO_4
Name		Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Selenium	Sulphur	Vanadium	Zinc	Sulphate
Units	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
AAQC	50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.2	0.1	n/a	n/a	n/a	n/a	n/a
RDL	3	0.0037	0.0012	0.0031	0.0012	0.0031	0.0310	0.0018	0.0310	0.00061	0.0018	0.0061	0.0150	0.0031	0.0031	0.0500
Date																
01-Jan-16	6															
07-Jan-16	4															
13-Jan-16	7															
19-Jan-16	2	0.00185	0.0006	0.00155	0.0006	0.0074	0.0840	0.0009	0.0480	0.00210	0.0009	0.00305	0.0620	0.00155	0.0085	0.1900
25-Jan-16	15															
31-Jan-16	10															
06-Feb-16	9															
12-Feb-16	7															
18-Feb-16	4	0.00185	0.0006	0.00155	0.0006	0.0066	0.1350	0.0009	0.0540	0.00316	0.0009	0.00305	0.1680	0.00155	0.0073	0.5000
24-Feb-16	4															
01-Mar-16	5															
07-Mar-16	4															
13-Mar-16	60															
19-Mar-16	43	0.00185	0.0006	0.00530	0.0006	0.0316	1.3500	0.0022	0.7420	0.02490	0.0038	0.00305	0.1750	0.00155	0.0241	0.5200
25-Mar-16	17															
31-Mar-16	8															
06-Apr-16	19															
12-Apr-16	20															
18-Apr-16	4	0.00185	0.0006	0.00155	0.0006	0.0147	0.0960	0.0009	0.0470	0.00484	0.0009	0.00305	0.2190	0.00155	0.0146	0.6500
24-Apr-16	9															
30-Apr-16	11															
06-May-16	71															
12-May-16	78															
18-May-16	21	0.00185	0.0006	0.00155	0.0006	0.0187	0.7820	0.0031	0.3410	0.01690	0.0020	0.00305	0.1560	0.00155	0.0184	0.4700
24-May-16	8															
*30-May-16	16															
05-Jun-16	5															
11-Jun-16	21															
17-Jun-16	17	0.00185	0.0006	0.00155	0.0006	0.0302	0.6180	0.0009	0.2290	0.01420	0.0009	0.00305	0.1230	0.00155	0.0190	0.3700
23-Jun-16	8															
29-Jun-16	20															

Station : STN72136 PM10

Reporting Period : 01 July to 31 December, 2016

05-Jul-16	25															
11-Jul-16	37															
17-Jul-16	28	0.00185	0.0006	0.00155	0.0006	0.0120	0.5060	0.0009	0.2390	0.01190	0.0009	0.00305	0.1990	0.00155	0.0104	0.6000
23-Jul-16	11															
29-Jul-16	InVld															
04-Aug-16	InVld															
10-Aug-16	9															
16-Aug-16	37	0.00185	0.0006	0.00350	0.0006	0.0330	1.4500	0.0022	0.5180	0.03450	0.0031	0.00305	0.3750	0.00155	0.023	1.1200
22-Aug-16	8															
28-Aug-16	16															
03-Sep-16	20															
09-Sep-16	15															
15-Sep-16	14	0.00185	0.0006	0.00155	0.0006	0.0112	0.5510	0.0009	0.2160	0.01310	0.0009	0.00305	0.1050	0.00155	0.0180	0.3200
21-Sep-16	13															
27-Sep-16	16															
03-Oct-16	12															
09-Oct-16	4															
15-Oct-16	10	0.00185	0.0006	0.00155	0.0006	0.0056	0.2180	0.0022	0.0900	0.00456	0.0009	0.00305	0.3950	0.00155	0.0149	1.1800
21-Oct-16	2															
27-Oct-16	17															
02-Nov-16	8															
08-Nov-16	5															
14-Nov-16	InVld															
20-Nov-16	8	0.00185	0.0006	0.00155	0.0006	0.0040	0.1870	0.0009	0.1060	0.00455	0.0009	0.00305	0.0640	0.00155	0.0090	0.1900
26-Nov-16	1.5															
02-Dec-16	1.5															
08-Dec-16	6															
14-Dec-16	11															
20-Dec-16	9	0.00185	0.0006	0.00155	0.0006	0.0065	0.1450	0.0009	0.0510	0.00510	0.0009	0.00305	0.5310	0.00155	0.0126	1.5900
26-Dec-16	4															

Arithmetic Mean	15	0.00185	0.0006	0.00203	0.0006	0.0151	0.5102	0.0014	0.2234	0.01165	0.0014	0.00305	0.2143	0.00155	0.0150	0.6417
Geometric Mean	10	0.00185	0.0006	0.00184	0.0006	0.0119	0.3305	0.0012	0.1457	0.00831	0.0012	0.00305	0.1747	0.00155	0.0140	0.5240
Max	78	0.00185	0.0006	0.00530	0.0006	0.0330	1.4500	0.0031	0.7420	0.03450	0.0038	0.00305	0.5310	0.00155	0.0241	1.5900
Min	2	0.00185	0.0006	0.00155	0.0006	0.0040	0.0840	0.0009	0.0470	0.00210	0.0009	0.00305	0.0620	0.00155	0.0073	0.1900
No. of Samples	58	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
No. > AAQC	0	0	0	0	0	0	0	0	0	0	0	0	n/a	0	0	n/a

Note: All non detectable results reported as ½ the Reportable Detection Limit (RDL).

GOLDCORP

Goldcorp - PM10 / Metals Report

Station : STN72137 PM10
Location : Shania Twain Centre
Reporting Period : 01 January to 30 June, 2016
Sample Matrix : Teflon Coated Filter
Method : IO-3.1
Valid Samples - Number / % : 59 / 96.7%

Parameter	PM10	As	Cd	Cr	Co	Cu	Fe	Pb	Mg	Mn	Ni	Se	S	V	Zn	SO_4
Name		Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Nickel	Selenium	Sulphur	Vanadium	Zinc	Sulphate
Units	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
AAQC	50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.2	0.1	n/a	n/a	n/a	n/a	n/a
RDL	3	0.0037	0.0012	0.0031	0.0012	0.0031	0.0310	0.0018	0.0310	0.00061	0.0018	0.0061	0.0150	0.0031	0.0031	0.0500
Date																
01-Jan-16	10															
07-Jan-16	13															
13-Jan-16	9															
19-Jan-16	12	0.00185	0.0006	0.00155	0.0006	0.0120	0.2130	0.0009	0.0980	0.00474	0.0009	0.00305	0.0860	0.00155	0.0113	0.2600
25-Jan-16	8															
31-Jan-16	8															
06-Feb-16	14															
12-Feb-16	13															
18-Feb-16	6	0.00185	0.0006	0.00155	0.0006	0.0094	0.2090	0.0009	0.0890	0.00464	0.0009	0.00305	0.1670	0.00155	0.0103	0.5000
24-Feb-16	8															
01-Mar-16	11															
07-Mar-16	6															
13-Mar-16	18															
19-Mar-16	35	0.00185	0.0006	0.00490	0.0006	0.0175	1.1100	0.0009	0.5640	0.02110	0.0033	0.00305	0.1500	0.00155	0.0175	0.4500
25-Mar-16	20															
31-Mar-16	14															
06-Apr-16	10															
12-Apr-16	22															
18-Apr-16	13	0.00185	0.0006	0.00155	0.0006	0.0131	0.2540	0.0009	0.0890	0.00521	0.0009	0.00305	0.2050	0.00155	0.0151	0.6200
24-Apr-16	14															
30-Apr-16	18															
06-May-16	23															
12-May-16	30															
18-May-16	18	0.00185	0.0006	0.00310	0.0006	0.0319	0.7780	0.0054	0.3510	0.01440	0.0021	0.00305	0.1790	0.00155	0.0163	0.5400
24-May-16	28															
*30-May-16	12															
05-Jun-16	7															
11-Jun-16	19															
17-Jun-16	43	0.00185	0.0006	0.01500	0.0019	0.0232	2.3600	0.0035	0.9920	0.03950	0.0071	0.00305	0.2360	0.00360	0.0269	0.7100
23-Jun-16	20															
29-Jun-16	31															

Station : STN72137 PM10

Reporting Period : 01 July to 31 December, 2016

05-Jul-16	21															
11-Jul-16	30															
17-Jul-16	20	0.00185	0.0006	0.00155	0.0006	0.0167	0.2350	0.0009	0.1130	0.00545	0.0009	0.00305	0.1850	0.00155	0.0090	0.5600
23-Jul-16	13															
29-Jul-16	InVld															
04-Aug-16	InVld															
10-Aug-16	12															
16-Aug-16	28	0.00185	0.0006	0.00155	0.0006	0.0303	0.9140	0.0025	0.3880	0.02010	0.0024	0.00305	0.3740	0.00155	0.0216	1.1200
22-Aug-16	12															
28-Aug-16	12															
03-Sep-16	18															
09-Sep-16	19															
15-Sep-16	18	0.00185	0.0006	0.00155	0.0006	0.0194	0.5380	0.0009	0.2290	0.01300	0.0009	0.00305	0.1020	0.00155	0.0152	0.3100
21-Sep-16	16															
27-Sep-16	6															
03-Oct-16	13															
09-Oct-16	4															
15-Oct-16	9	0.00185	0.0006	0.00155	0.0006	0.0048	0.1380	0.0009	0.0580	0.00318	0.0009	0.00305	0.3910	0.00155	0.0117	1.1700
21-Oct-16	6															
27-Oct-16	11															
02-Nov-16	10															
08-Nov-16	9															
14-Nov-16	10	0.00185	0.0006	0.00155	0.0006	0.0189	0.4050	0.0020	0.1470	0.01070	0.0009	0.00305	0.1490	0.00155	0.0126	0.4500
20-Nov-16	10	0.00185	0.0006	0.00155	0.0006	0.0093	0.2620	0.0009	0.1280	0.00596	0.0009	0.00305	0.0740	0.00155	0.0095	0.2200
26-Nov-16	1.5															
02-Dec-16	1.5															
08-Dec-16	8															
14-Dec-16	14															
20-Dec-16	10	0.00185	0.0006	0.00155	0.0006	0.0097	0.1870	0.0009	0.0730	0.00495	0.0009	0.00305	0.5030	0.00155	0.0134	1.5100
26-Dec-16	14															

Arithmetic Mean	15	0.00185	0.0006	0.00296	0.0007	0.0166	0.5848	0.0017	0.2553	0.01176	0.0018	0.00305	0.2155	0.00171	0.0146	0.6477
Geometric Mean	12	0.00185	0.0006	0.00213	0.0007	0.0147	0.4026	0.0013	0.1727	0.00882	0.0013	0.00305	0.1844	0.00165	0.0139	0.5549
Max	43	0.00185	0.0006	0.01500	0.0019	0.0319	2.3600	0.0054	0.9920	0.03950	0.0071	0.00305	0.5030	0.00360	0.0269	1.5100
Min	2	0.00185	0.0006	0.00155	0.0006	0.0048	0.1380	0.0009	0.0580	0.00318	0.0009	0.00305	0.0740	0.00155	0.0090	0.2200
No. of Samples	59	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
No. > AAQC	0	0	0	0	0	0	0	0	0	0	0	0	n/a	0	0	n/a

Note: All non detectable results reported as ½ the Reportable Detection Limit (RDL).

GOLDCORP

Goldcorp - Dustfall Summary Report

Reporting Period : 01 January to 31 December, 2016

Sampling Method : BRL SOP-00121

Standard : 7.0 g/m^2/30d

	STN72135 Extendicare			STN72136 MRCA			STN72137 Shania Twain Centre		
Units	g/m²/30d			g/m²/30d			g/m²/30d		
RDL	0.01			0.01			0.01		
Month	Insoluble	Soluble	**Total Dustfall**	Insoluble	Soluble	**Total Dustfall**	Insoluble	Soluble	**Total Dustfall**
January	0.22	0.45	0.66	0.11	0.62	0.72	0.10	0.58	0.68
February	0.25	0.81	1.10	0.12	0.49	0.61	0.13	0.41	0.55
March	1.50	0.68	2.10	0.88	0.50	1.40	0.86	0.45	1.30
April	1.00	0.54	1.60	0.88	0.53	1.40	1.20	0.61	1.80
May	1.90	1.30	3.20	0.61	1.10	1.70	0.61	0.94	1.60
June	1.90	1.10	3.00	1.80	0.68	2.50	0.81	0.74	1.50
July	4.00	5.70	9.70	4.20	6.10	10.00	0.94	4.00	4.90
August	1.30	3.60	5.00	1.60	2.00	3.60	0.43	2.10	2.60
September	1.30	2.10	3.40	0.86	0.82	1.70	1.10	1.40	2.50
October	0.90	1.10	2.00	0.71	0.46	1.20	0.46	0.48	0.93
November	1.00	0.53	1.60	0.64	0.38	1.00	0.62	0.36	0.98
December	0.38	0.41	0.79	0.26	0.44	0.69	0.20	0.32	0.52
Annual Average	1.30	1.53	2.85	1.06	1.18	2.21	0.62	1.03	1.66
Annual Max	4.00	5.70	9.70	4.20	6.10	10.00	1.20	4.00	4.90
No. of Valid Samples	12	12	12	12	12	12	12	12	12
% Valid Data	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Samples > Standard	n/a	n/a	1	n/a	n/a	1	n/a	n/a	0

Note: All non detectable results reported as ½ the Reportable Detection Limit (RDL).

GOLDCORP

Goldcorp - Dustfall Summary Report

Reporting Period : 01 January to 31 December, 2016

Sampling Method : BRL SOP-00121

Standard : 7.0 g/m^2/30d

	STN72141 Claimpost Trail			STN72142 Aura Lake			STN72143 Snowmobile Crossing		
Units	g/m²/30d			g/m²/30d			g/m²/30d		
RDL	0.01			0.01			0.01		
Month	Insoluble	Soluble	**Total Dustfall**	Insoluble	Soluble	**Total Dustfall**	Insoluble	Soluble	**Total Dustfall**
January	0.32	0.92	1.20	0.17	0.41	0.58	0.59	0.59	1.20
February	0.26	0.53	0.80	0.15	0.36	0.51	0.73	0.61	1.30
March	5.20	0.94	6.10	1.60	0.59	2.20	40.00	1.60	42.00
April	8.30	1.10	9.30	2.80	1.10	4.00	42.00	1.50	44.00
May	2.30	1.40	3.70	0.68	0.75	1.40	22.00	1.60	24.00
June	2.20	3.60	5.90	2.90	2.60	5.50	20.00	2.10	23.00
July	3.40	2.10	5.60	1.70	2.00	3.70	23.00	3.70	26.00
August	1.60	1.60	3.20	1.90	2.60	4.60	21.00	3.50	24.00
September	3.00	1.20	4.20	1.20	0.78	2.00	19.00	2.50	21.00
October	1.50	0.64	2.10	1.20	0.81	2.00	4.50	0.55	5.10
November	2.40	0.50	2.90	0.71	0.43	1.20	10.00	1.20	12.00
December	0.40	0.31	0.71	0.30	0.31	0.61	3.40	0.41	3.80
Annual Average	2.57	1.24	3.81	1.28	1.06	2.36	17.19	1.66	18.95
Annual Max	8.30	3.60	9.30	2.90	2.60	5.50	42.00	3.70	44.00
No. of Valid Samples	12	12	12	12	12	12	12	12	12
% Valid Data	91.7	91.7	91.7	100.0	100.0	100.0	100.0	100.0	100.0
No. of Samples > Standard	n/a	n/a	1	n/a	n/a	0	n/a	n/a	8

Note: All non detectable results reported as ½ the Reportable Detection Limit (RDL).

GOLDCORP

Goldcorp - Passive Sampling Report

Reporting Period : 01 January to 31 December 2016
Sampling Methods : Radiello F1 / APHA 4110

	STN72135 EXTENDICARE		STN72136 MRCA		STN72137 SHANIA TWAIN	
Parameter	**SO_2**	**NO_2**	**SO_2**	**NO_2**	**SO_2**	**NO_2**
Units	ppb	ppb	ppb	ppb	ppb	ppb
RDL	0.10	0.10	0.10	0.10	0.10	0.10
Month						
January	0.14	1.57	0.11	1.89	0.05	1.58
February	0.05	2.13	0.14	2.08	0.05	1.40
March	0.05	3.46	0.05	1.58	0.05	2.31
April	0.05	3.13	0.15	1.79	0.05	2.72
May	0.05	5.14	0.05	2.83	0.10	4.00
June	0.05	4.11	0.05	1.97	0.05	2.06
July	0.05	2.09	0.05	1.60	0.05	0.91
August	0.05	1.61	0.05	1.07	0.05	0.84
September	0.05	2.83	0.05	2.02	0.05	1.53
October	0.05	1.36	0.05	1.68	0.11	1.81
November	0.11	1.58	0.12	1.43	0.11	1.34
December	0.05	2.08	0.13	1.39	0.05	1.73
Annual Average	0.06	2.59	0.08	1.78	0.06	1.85
Annual Maximum	0.14	5.14	0.15	2.83	0.11	4.00
No. of Valid Samples	12	12	12	12	12	12
% Valid Data	100.0	100.0	100.0	100.0	100.0	100.0

Note: All non detectable results reported as ½ the Reportable Detection Limit (RDL).

Annual 2016

GOLDCORP

Ambient Air Monitoring Report

Appendix C
Calibration Summary

GOLDCORP CALIBRATION SUMMARY JUNE 2016

Station Identifier	STN72135	STN72138	STN72139	STN72140	STN72141
GC Serial Number	380	379	381	382	453
Station Name	Extendicare	Hollinger Park	Hollinger Office	Goldmine Tour	Claimpost Trail
Date	Jun-14	Jun-14	Jun-15	Jun-15	Jun-16
Time (EST)	12:00	15:30	14:30	12:00	11:30
SHARP Neph Zero response	10.1	4.4	6.7	6.1	2.6
SHARP Conc. Zero response	2.7	3.7	7.8	6.5	2.6
SHARP Zero reset	Yes	Yes	Yes	Yes	Yes
Flow rate response	Pass	Pass	Pass	Pass	Pass
Monitor calibration criteria	Pass	Pass	Pass	Pass	Pass
Date	Jun-14	Jun-14	Jun-15	Jun-15	Jun-16
Time (EST)	8:45	16:00	14:00	11:00	15:00
TSP Zero response	-1.0	0.5	0.2	5.4	1.0
TSP Zero reset	Yes	No	No	Yes	Yes
Flow rate response	Pass	Pass	Pass	Pass	Pass
Monitor calibration criteria	Pass	Pass	Pass	Pass	Pass
Date	01/06/2014*	Jun-14	Jun-15	Jun-15	Jun-16
Time (EST)	10:00	15:00	13:30	10:00	10:00
NO / NOX Zero response	na / na	0.0 / 0.0	0.3 / 0.5	0.0 / 0.0	0.5 / 1.2
NO / NOX Zero reset	na / na	No	No	No	Yes
NO / NOX Span input	na / na	700 / 701	700 / 701	700 / 701	700 / 701
NO / NOX Span response	na / na	636 / 637	669 / 670	650 / 651	767 / 768
NO / NOX Span tolerance	na / na	-9.1 / - 9.1	-4.4 / -4.4	- 7.1 / -7.1	9.6 / 9.6
NO / NOX Span reset	na / na	Yes	Yes	Yes	Yes
Monitor calibration criteria	na / na	Pass	Pass	Pass	Pass

*** STN72135, June 14 - NOX Instrument removed for peltier repairs, unable to calibrate.**

GOLDCORP CALIBRATION SUMMARY AUGUST 2016

Station Identifier	STN72135	STN72138	STN72139	STN72140	STN72141
GC Serial Number	380	379	381	382	453
Station Name	Extendicare	Hollinger Park	Hollinger Office	Goldmine Tour	Claimpost Trail
Date	Aug-24	Aug-23	Aug-23	Aug-24	Aug-25
Time (EST)	12:30	9:45	15:00	10:00	12:00
SHARP Neph Zero response	0.5	-0.2	2.8	0.9	2.9
SHARP Conc. Zero response	0.7	-0.6	3.9	1.2	2.1
SHARP Zero reset	No	No	Yes	Yes	Yes
Flow rate response	Pass	Pass	Pass	Pass	Pass
Monitor calibration criteria	Pass	Pass	Pass	Pass	Pass
Date	Aug-24	Aug-23	Aug-23	Aug-24	Aug-25
Time (EST)	11:30	10:00	14:30	9:30	11:00
TSP Zero response	1.6	-2.2	2.0	-1.0	0.9
TSP Zero reset	Yes	Yes	Yes	Yes	No
Flow rate response	Pass	Pass	Pass	Pass	Pass
Monitor calibration criteria	Pass	Pass	Pass	Pass	Pass
Date	Aug-24	Aug-23	Aug-23	Aug-24	Aug-25
Time (EST)	11:00	9:00	14:00	9:00	11:00
NO / NOX Zero response	0.0 / 0.0	0.0 / 0.0	0.0 / 0.1	0.0 / 0.0	0.1 / 0.4
NO / NOX Zero reset	No	No	No	No	Yes
NO / NOX Span input	700 / 701	700 / 701	700 / 701	700 / 701	700 / 701
NO / NOX Span response	690 / 690	715 / 716	669 / 670	660 / 661	665 / 666
NO / NOX Span tolerance	-1.4 / -1.6	2.1 / 2.1	-4.4 / -4.4	-5.7 / -5.7	-5.0 / -5.0
NO / NOX Span reset	No	No	No	Yes	Yes
Monitor calibration criteria	Pass	Pass	Pass	Pass	Pass

GOLDCORP CALIBRATION SUMMARY OCTOBER 2016

Station Identifier	STN72135	STN72138	STN72139	STN72140	STN72141
GC Serial Number	380	379	381	382	453
Station Name	Extendicare	Hollinger Park	Hollinger Office	Goldmine Tour	Claimpost Trail
Date	Oct-26	Oct-26	Oct-27	Oct-27	Oct-27
Time (EST)	14:00	10:45	10:30	13:30	16:30
SHARP Neph Zero response	17.8	11.1	-0.2	1.9	-0.2
SHARP Conc. Zero response	3.6	6.8	-0.3	2.8	-0.6
SHARP Zero reset	Yes	Yes	No	Yes	No
Flow rate response	Pass	Pass	Pass	Pass	Pass
Monitor calibration criteria	Pass	Pass	Pass	Pass	Pass
Date	Oct-26	Oct-26	Oct-27	Oct-27	Oct-27
Time (EST)	13:30	10:15	10:00	14:30	15:00
TSP Zero response	-0.5	0.7	-1.7	0.3	-2.5
TSP Zero reset	No	No	Yes	No	Yes
Flow rate response	Pass	Pass	Pass	Pass	Pass
Monitor calibration criteria	Pass	Pass	Pass	Pass	Pass
Date	Oct-26	Oct-26	Oct-27	Oct-27	Oct-27
Time (EST)	13:00	9:45	9:00	12:00	15:00
NO / NOX Zero response	0.3 / 0.3	0.0 / 0.0	- 0.4 / -0.4	0.0 / 0.4	0.0 / 0.0
NO / NOX Zero reset	No	No	No	No	No
NO / NOX Span input	700 / 701	700 / 701	700 / 701	700 / 701	700 / 701
NO / NOX Span response	681 / 681	765 / 767	638 / 639	717 / 718	633 / 634
NO / NOX Span tolerance	-2.7 / -2.9	9.3 / 9.4	- 8.9 / -8.8	2.4 / 2.4	- 9.6 / -9.6
NO / NOX Span reset	Yes	Yes	Yes	No	Yes
Monitor calibration criteria	Pass	Pass	Pass	Pass	Pass