



7 June 2011

**AMEC Project No.: TC81525A**

Goldcorp Canada Limited  
Porcupine Gold Mines  
4315 Gold Mine Road  
Timmins, ON  
P0N 1H0

Attention: Mr. Peter W. Andrews, P. Eng.  
Senior Project Engineer

Dear Mr. Andrews

**Re: Baseline Air Quality Monitoring Program  
Annual Summary Report – 2010  
Timmins**

AMEC Earth & Environmental, a division of AMEC Americas Limited (AMEC), is pleased to submit to Goldcorp Canada Limited (Goldcorp) the first annual summary report for the data collected in 2010 from the baseline air quality monitoring program undertaken in the City of Timmins at the following sampling locations: near the Extencicare Facility in Schumacher, the Mattagami River Conservation Area office and the Shania Twain Tourist Centre in Timmins.

These sampling stations were operated and maintained by Goldcorp in 2010.

Please contact Ray Potvin at your convenience if you have any questions about the report.

Sincerely,

**AMEC Earth & Environmental,  
AMEC Americas Limited**

Ray Potvin, MSc. P. Eng  
Air Quality Specialist

Steve Lamming, Ph.D., CCEP  
Senior Air Quality Management Specialist



**BASELINE AIR QUALITY MONITORING PROGRAM  
ANNUAL 2010 REPORT  
CITY OF TIMMINS**

Submitted to:

**Goldcorp Canada Limited**  
Porcupine Gold Mines  
4315 Gold Mine Road  
Timmins, ON  
P0N 1H0

Submitted by:

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7 June 2011  
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## **1.0 INTRODUCTION**

AMEC Earth & Environmental, a division of AMEC Americas Limited (AMEC) is pleased to provide a summary of the 2010 results for the baseline air quality monitoring program undertaken in the City of Timmins for Goldcorp Canada Limited (Goldcorp) in relation to the Hollinger mine project. In 2010, Goldcorp operated and maintained the sampling stations and AMEC provided technical guidance as required and prepared data summary reports.

This report summarizes the results obtained in 2010 at sampling stations in the vicinity of the Extendicare Facility, Mattagami River Conservation Area Office and Shania Twain Tourist Centre.

## **2.0 BACKGROUND**

As part of the Hollinger Open Pit Mine Project in South Porcupine, AMEC provided to Goldcorp and to the Ministry of the Environment (Ministry) a monitoring plan to collect baseline air quality data near the mine site (hereafter called the Site). The plan was approved in late summer of 2009 and the air quality sampling stations were commissioned in November 2009.

The purpose of the baseline monitoring program is to obtain an air quality data base near residential areas adjacent to the Site prior to the commencement of activities sometime in 2012.

## **3.0 METHODOLOGY**

### **3.1 Sampling Locations**

The locations of the three (3) sampling stations are shown on the aerial photo in Appendix A. The monitoring locations were chosen so as to 'triangulate' the sectors near the Site and thus provide optimum coverage of the most populated areas, and also taking into consideration the prevailing wind patterns.

The chosen locations for the three sampling stations are as follows:

1. West Station: on the Shania Twain Road and just west, northwest of the Shania Twain Tourist Centre.
2. Northeast Station: just south of the Extendicare Facility located in the community of Schumacher.
3. Northwest Station: south of Gilles Lake near the Mattagami River Conservation Authority (MRCA) office.

Photos of the sampling stations are provided in Appendix B.

## 3.2 Field Sampling Methods and Instrumentation

### 3.2.1 Total Suspended and Inhalable Particulates

Particulate samples for Total Suspended Particulates (TSP), defined as the size fraction of particles with equivalent aerodynamic diameters from 44 microns and smaller, were obtained with a standard hi-vol sampler equipped with a mass flow controller, a mechanical timer and an elapsed time indicator. Inhalable Particulate (PM<sub>10</sub>), defined as the size fraction of particles with equivalent aerodynamic diameters from 10 microns and smaller, were collected with a standard hi-vol equipped with a Tisch Environmental PM<sub>10</sub> size selective inlet head (model #TE-6001), a mass flow controller, a mechanical timer and elapsed time indicator. Both samplers were set to operate at a flow rate of 1.13 m<sup>3</sup>/min and with 200 mm x 250 mm quartz filters as the particulate collection medium. At this flow rate, the sample volume is about 1630 m<sup>3</sup> over a 24 hour period.

All samplers were operated to collect particulate samples every sixth day, following the North American standard particulate sampling schedule. On sampling days, particulate matter was collected over a 24-hour period, from midnight to midnight. The TSP and PM<sub>10</sub> filters were analyzed at the Mississauga Ontario Maxxam Analytics Inc. Laboratory for total particulate loading. For the purposes of the baseline study, a subset of the filters was analyzed for the following elements: arsenic (As), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), iron (Fe), lead (Pb), nickel (Ni), selenium (Se) and sulphur (S). The results were all reported in units of microgram per cubic metre of air sampled (µg/m<sup>3</sup>).

### 3.2.2 Total Dustfall

Total dustfall samples, comprising water soluble and insoluble particulate matter, were collected with standard plastic dustfall jars lined with 4 mil thick polyethylene liners and exposed without the addition of water or ethylene glycol. The jars are exposed to the atmosphere for 30 days. The results are expressed in grams per square meter per 30 days (g/m<sup>2</sup>/30 days). At the end of each exposure period, the polyethylene liners are removed from the jars, heat sealed and sent to the Maxxam Analytics Inc. laboratory for analysis.

### 3.2.3 Sulphur dioxide and Nitrogen Dioxide

Monthly average concentrations of sulphur dioxide (SO<sub>2</sub>) and nitrogen dioxide (NO<sub>2</sub>) were determined using passive samplers. Permeation filters treated with chemicals to adsorb these compounds are exposed to the atmosphere for 30 days.

Since there are no standards and guidelines for results obtained from passive sampling of SO<sub>2</sub> and NO<sub>2</sub> and since the method is not recognized by the MOE as a Standard Operating Procedure (SOP), the data is only being used for screening purposes and for comparison with concentrations measured during the baseline, construction and operational phases of the mining project.

Each station was equipped with a hi-vol TSP and PM<sub>10</sub> sampler, as well as a dustfall and passive SO<sub>2</sub> and NO<sub>2</sub> samplers.

### **3.3 Analytical Methods**

#### **3.3.1 Total Suspended and Inhalable Particulates**

In order to determine the particulate loadings, the filters were pre-weighed and post-weighed with a '3-point balance' with an accuracy of 1 mg. For TSP and PM<sub>10</sub> samples, this amounted to a reportable detection limit of 5 mg or about 3 µg/m<sup>3</sup> for the expected air sample volume of about 1630 m<sup>3</sup> (flow rate of 1.13 m<sup>3</sup>/min for 24 hours).

The metals scan was done by ICP/AES. The iron was reported by the laboratory as total iron. However it is highly unlikely that it remains in the pure metallic form due to its progressive oxidation in the air. Hence the results are reported as ferric oxide (Fe<sub>2</sub>O<sub>3</sub>). This is a conservative assumption since presumably the iron may not all be in this oxide form. The detection limits for the metals ranged from 0.0003 to 0.0031 µg/m<sup>3</sup> and are shown for each element in the results spreadsheets in Appendix C.

#### **3.3.2 Total Dustfall**

The soluble and insoluble portions of the dustfall samples were determined using ASTM method D-1739-98 and MOE method DF-E3043A (September 8, 1995) by Maxxam Analytics.

#### **3.3.3 Sulphur dioxide and Nitrogen Dioxide**

The exposed filters are removed from the stations at the end of the exposure period, placed in a sealed container and sent to the AMEC laboratory located in Edmonton for analysis. They are analyzed with the methodology that was developed, approved and validated by Alberta Environment with the support of the Alberta Research Council, the Clean Air Strategic Alliance of Alberta, and the National Research Council of Canada.

Since the sample uptake is dependent on temperature, relative humidity and wind speed, the analytical results need to be adjusted for these meteorological parameters measured during the exposure period (monthly averages). The method detection limit is in the order of 0.1 parts per billion (ppb) for both SO<sub>2</sub> and NO<sub>2</sub>. Validation tests conducted in Alberta show that results from passive sampling are typically within 10% of those obtained from sampling with continuous analyzers for 30-day exposure periods.

### **3.4 Field Operations**

For routine operations, the sites were visited for each filter change to meet the requirements of the 1 in 6 day sampling schedule. Additional visits were made to change hi-vol motors for re-brushing, resolve instrumentation issues, perform flow calibration checks and preventative maintenance, and witness audits performed by the Ministry.

#### **3.4.1 Extendicare Facility Station**

The hi-vol TSP and PM<sub>10</sub> motors were changed twice in 2010 (April 13 and July 22) with re-brushed units.

Flow calibration checks were performed on the TSP and PM<sub>10</sub> samplers on April 13, June 22 and July 22 with a certified flow calibrator. In every instance, the flow calibration was well within 10% of the required flow rate of 40 cfm (1.13 m<sup>3</sup>/min). The Ministry audited the flow calibrations in June and October. The flow calibrations were within 10% of the required value of 40 cfm. However, the PM<sub>10</sub> sampler had a flow reading 20.1% high for the June audit. The required data corrections were performed.

### **3.4.2 MRCA Office Station**

The hi-vol TSP and PM<sub>10</sub> motors were changed twice in 2010 (April 13 and July 22) with re-brushed units.

Flow calibration checks were performed on the TSP and PM<sub>10</sub> samplers on April 13, June 22 and July 22 with a certified flow calibrator. In every instance, the flow calibration was well within 10% of the required flow rate of 40 cfm (1.13 m<sup>3</sup>/min). The Ministry audited the flow calibrations in June and October. The flow calibrations were within 10% of the required value of 40 cfm and no data corrections were required.

### **3.4.3 Shania Twain Road Station**

The hi-vol TSP and PM<sub>10</sub> motors were changed twice in 2010 (April 13 and July 22) with re-brushed units.

Flow calibration checks were performed on the TSP and PM<sub>10</sub> samplers on April 13, June 22 and July 22 with a certified flow calibrator. In every instance, the flow calibration was well within 10% of the required flow rate of 40 cfm (1.13 m<sup>3</sup>/min). The Ministry audited the flow calibrations in June and October. The flow calibrations were within 10% of the required value of 40 cfm and no data corrections were required.

## **4.0 RESULTS**

The results for the 2010 sampling program are presented in Appendix C-1 for the hi-vol data, Appendix C-2 for the dustfall data and Appendix C-3 for the passive SO<sub>2</sub> and NO<sub>2</sub> data. By convention, all results below the analytical detection limit were reported at half the detection limit. Iron (Fe) in the TSP and PM<sub>10</sub> particulate samples is reported conservatively as ferric oxide (Fe<sub>2</sub>O<sub>3</sub>) and some of the iron may not be in the form of ferric oxide.

For comparison purposes, the O. Reg.419/05 Schedule 3 Standard values are presented. Schedule 3 values came into effect on February 1, 2010 for the mining and smelting sectors. As of that date, the standard for lead (Pb) in TSP was lowered from 2 to 0.5 µg/m<sup>3</sup>. Section 20 guidelines under O.Reg. 419/05 for 24-hour averages, are also presented. The Ministry has an interim Ambient Air Quality Criterion (AAQC) for PM<sub>10</sub>, but does not yet have standards or guidelines for metals in PM<sub>10</sub>.

A summary of the statistical analysis for the year for the TSP and PM<sub>10</sub> particulate concentrations and of the exceedences is presented in Table 1 below. In 2010, the 1 in 6 day hi-vol sampling schedule comprised a possible total of 61 samples.

A summary of the statistical analysis for the year for the total dustfall and passive SO<sub>2</sub> and NO<sub>2</sub> is presented respectively in Tables 2 and 3 below.

#### **4.1 Total Suspended and Inhalable Particulates**

The highest geometric mean TSP concentration in 2010 was measured at the MRCA office station (28 µg/m<sup>3</sup>) and the lowest at the Extendicare facility station (20 µg/m<sup>3</sup>). Hence there were no exceedences of the Ministry annual standard of 60 µg/m<sup>3</sup> (geometric mean). The higher TSP concentrations at the MRCA office station likely reflect particulate matter contributions from nearby sources in the commercial area south of the sampling location. These include traffic and significant open spaces and parking lots from which dust re-suspension could occur under dry and windy conditions. The Shania Twain Road station recorded one marginal exceedence (121 µg/m<sup>3</sup> on March 15) of the 24-hour Schedule 3 standard of 120 µg/m<sup>3</sup>.

The MRCA office site also recorded the highest PM<sub>10</sub> average concentrations, which were essentially the same as at the Shania Twain Road site. Both sites had one (1) exceedence of the PM<sub>10</sub> interim AAQC (50 µg/m<sup>3</sup>) with maximum 24-hour concentrations of 53 µg/m<sup>3</sup> and 57 µg/m<sup>3</sup> respectively.

Since there was no construction activity at the site in 2010, these TSP and PM<sub>10</sub> results are believed to represent background concentrations near the sampling stations.

The valid data record for TSP and PM<sub>10</sub> ranged from 97% to 100% which is above the Ministry minimum target of 90% and desirable target of 95%.

Approximately one third of the TSP samples and one fifth of the PM<sub>10</sub> samples were analyzed for the elements listed in section 3.2.1. All elemental results are presented in Appendix C-1. At the three (3) sampling locations, the following elements were usually reported below their method detection limit: As, Cd, Co, Ni and Se. Cr was detected for 24% to 44% of the samples, whereas Pb was detected for about half the samples. Cu, Fe and S were usually above their detection limit. However the 'detectable' elements such as Cr, Pb, Cu and Fe (expressed as ferric oxide) had 24-hour maximum concentrations much lower than the Ministry standards and guidelines. Annual average concentrations were not reported for the elements with 50% or more of the results below the method detection limit.

As expected, the concentrations of elements in PM<sub>10</sub> were always lower than in the TSP samples. At this time, the Ministry has not formally established 24-hour standards or guidelines for elements in PM<sub>10</sub>. However in the not too distant future, the Ministry is expected to apply the draft standards posted on the Environmental Bill of Rights (EBR).

**Table 1: Summary Statistics for the 2010 TSP and PM<sub>10</sub> Particulate Data**

Statistic ( $\mu\text{g}/\text{m}^3$ )	Extencicare Facility		MRCA Site		Shania Twain Road Site	
	TSP	PM <sub>10</sub>	TSP	PM <sub>10</sub>	TSP	PM <sub>10</sub>
Annual geometric mean	20	11	28	14	25	14
Annual arithmetic mean	25	13	34	18	31	17
Maximum 24 hour	110	49	88	53	121	57
90 <sup>th</sup> Percentile	44.8	25.9	63.6	39.2	52.7	29.8
95 <sup>th</sup> Percentile	53.8	28.5	74.0	41.8	57.8	38.3
No. of valid samples	59	60	59	61	61	59
% Valid data	97	98	97	100	100	97
No. samples > Sch. 3 value (particulate)	nil	-	nil	-	1	-
No. samples > Sch. 3 value (elements)	nil	-	nil	-	nil	-
No. samples > Section 20 guideline (elements)	nil	-	nil	-	nil	-
No. samples > Interim AAQC (PM <sub>10</sub> )	-	nil	-	1	-	1

## 4.2 Total Dustfall

As shown in Table 2, the annual average total dustfall values were similar to each other but a bit higher at the MRCA Office and Shania Twain Road stations (2.9 and 2.8 g/m<sup>2</sup>/30 days respectively) than at the Extencicare Facility station (2.1 g/m<sup>2</sup>/30 days). On average, the insoluble portion (such as road dust and other inorganic particulate matter not readily soluble in water) comprised slightly more than half (55%) of the dustfall material collected at the MRCA Office and Shania Twain Road stations. The insoluble portion at the Extencicare Facility station was lower at 38%. Much of the soluble portion of dustfall could be particulate sulphate and nitrate compounds which are well known components of acid rain and acid deposition and are transported large distances from outside the area. There likely are other particulate materials contributing to the soluble fraction such as biological matter. The total dustfall levels were generally higher at the three stations during the period March to September (see Appendix C-2).

Each location recorded one (1) exceedence of the Ministry monthly standard (7.0 g/m<sup>2</sup>/30 days). The exceedence at the Extendicare Facility station occurred in December with over 80% of the dustfall as the soluble fraction. Road salt is suspect as the main contributor. The exceedence at the MRCA Office station was recorded in July with equal contributions from the insoluble and soluble fractions. At the Shania Twain Road station, the exceedence occurred in June with about 60% of the dustfall in the insoluble fraction.

The October samples were spoiled in transit to the laboratory, and the January sample from the MRCA Office station was also spoiled. Hence the % valid data recovery was 83% for the latter station and 92% for the other stations.

**Table 2: Summary Statistics for the 2010 Total Dustfall Data**

Statistic (g/m <sup>2</sup> /30days)	Extendicare Facility			MRCA Site			Shania Twain Road Site		
	Insoluble	Soluble	Total	Insoluble	Soluble	Total	Insoluble	Soluble	Total
Annual mean	0.8	1.3	2.1	1.6	1.3	2.9	1.5	1.3	2.8
Maximum	2.9	5.6	7.3	4.6	3.9	7.8	7.8	5.3	13.1
No.> Sch 3 Std	-	-	1 (Dec)	-	-	1 (July)	-	-	1 (June)
No of samples	11	11	11	10	10	10	11	11	11
% Valid data	92	92	92	83	83	83	92	92	92

### 4.3 Passive SO<sub>2</sub> and NO<sub>2</sub>

The annual mean SO<sub>2</sub> concentration, as noted in Table 3, was identical at all stations with a value of 0.2 ppb. The method detection limit is 0.1 ppb such the mean concentrations determined in 2010 represent very low background values. As seen in Appendix C-3, the SO<sub>2</sub> concentrations were typically somewhat higher during the colder months presumably due to the combustion of sulphur-bearing heating fuels.

The average NO<sub>2</sub> concentrations were higher at the MRCA Office station (3.5 ppb), probably due to vehicular traffic emissions, followed by the results from the Shania Twain Road (2.6 ppb) and Extendicare Facility station (1.7 ppb). The higher values were typically recorded in the colder months, suggesting a seasonal pattern with the heating season. However at the MRCA Office station, the levels were fairly constant for most of the year. This could be attributed to more sustained contributions from nearby sources such as traffic emissions. One (1) sample was invalidated (Shania Twain Road station).

As indicated earlier, there are no Ministry standards, guidelines or AAQCs for SO<sub>2</sub> and NO<sub>2</sub> data obtained from passive samplers. The data will be used for trend analysis and as a screening tool to assess whether continuous sampling of these substances could be warranted in the future.

**Table 3: Summary Statistics for the 2010 Passive SO<sub>2</sub> and NO<sub>2</sub> Data**

Statistic (ppb)	Extendicare Facility		MRCA Site		Shania Twain Road Site	
	SO <sub>2</sub>	NO <sub>2</sub>	SO <sub>2</sub>	NO <sub>2</sub>	SO <sub>2</sub>	NO <sub>2</sub>
Annual mean	0.2	1.7	0.2	3.5	0.2	2.6
Maximum	0.4	2.6	0.3	4.2	0.4	4.3
No. of samples	12	12	12	12	11	11
% Valid data	100	100	100	100	92	92

## 5.0 CONCLUSIONS

The data collected in 2010 will serve as a baseline for determining background air quality in the communities of Schumacher and South Porcupine near the proposed Hollinger mine project site. This data can later be used to assess changes in air quality as the project moves from the construction to the operational phases.

The results show that the concentrations of particulate matter, as determined from measurements of TSP, PM<sub>10</sub> and dustfall can be impacted by existing background sources to the point where, at times, exceedences of Ministry standards and guidelines are marginally exceeded.

The concentration of elements, such as heavy metals, were observed to be quite low in both the TSP and PM<sub>10</sub> samples and well below Ministry standards and guidelines. A number of the elements analyzed had concentrations consistently below their method detection limit.

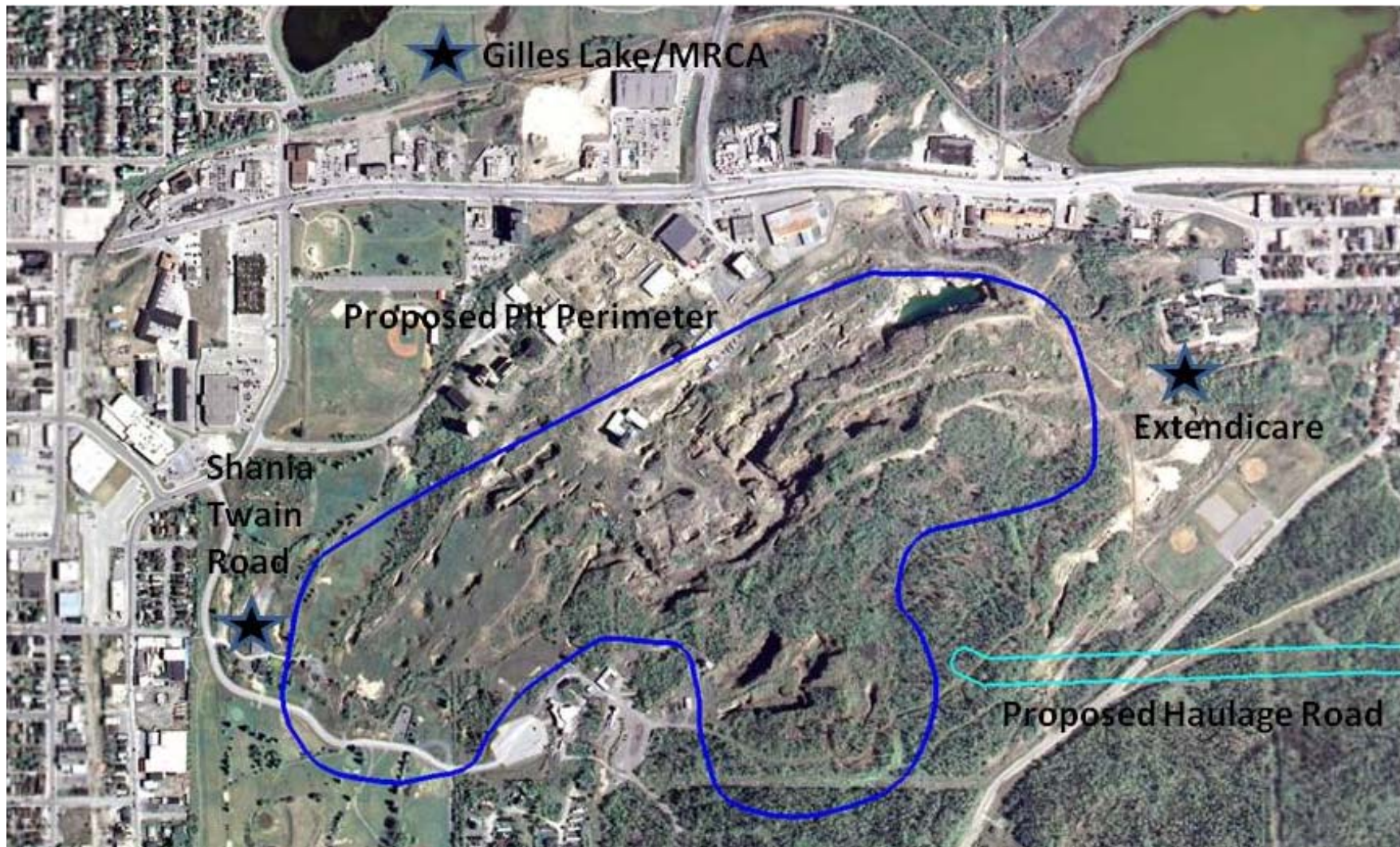
The concentrations of SO<sub>2</sub> and NO<sub>2</sub>, determined from passive sampling, reflected the low background values in the area. The levels of NO<sub>2</sub> were consistently higher than those of SO<sub>2</sub> and in most instances displayed a seasonal pattern with higher values during the heating seasons. Traffic emissions and emissions from other sources in the commercial area near the MRCA Office station are believed to be the main contributors to the NO<sub>2</sub> concentrations measured at the sampling site.

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Baseline Air Quality Monitoring Program  
Annual 2010 Report  
Timmins, Ontario  
June 2011



## **APPENDIX A**

### **Aerial Photo of the Sampling Program Area**



★ Location of Air Quality Sampling Stations

**Goldcorp Canada Limited**  
Baseline Air Quality Monitoring Program  
Annual 2010 Report  
Timmins, Ontario  
June 2011



## **APPENDIX B**

### **Photos of the Sampling Stations**



**Figure 1: Photo of Air Sampling Station at the MRCA Office Site**



**Figure 2: Photo of Air Sampling Station at the Shania Twain Road Site**



**Figure 3: Photo of Air Sampling Station at the Extendicare Facility Site**

## **APPENDIX C**

**Appendix C-1: TSP and PM<sub>10</sub> Sampling Results**

**Appendix C-2: Total Dustfall Sampling Results**

**Appendix C-3: SO<sub>2</sub> and NO<sub>2</sub> Passive Sampling Results**

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## **Appendix C-1**

### **TSP and PM<sub>10</sub> Sampling Results**



**Extencicare Home Monitoring Results for TSP and Metals (2010)**  
 (results expressed in  $\mu\text{g}/\text{m}^3$ )

Date	TSP	As	Cd	Co	Cr	Cu	Fe(Fe <sub>2</sub> O <sub>3</sub> )	Ni	Pb	S	Se
January 2, 2010	10.3	0.0003	0.0002	0.0003	0.0006	0.002	0.066	0.0016	0.0006	0.075	0.0003
January 8, 2010	30.3										
January 14, 2010	19.8										
January 20, 2010	11.9	0.0003	0.0004	0.0003	0.0024	0.083	0.235	0.0016	0.0085	0.351	0.0003
January 26, 2010	13.9										
February 1, 2010	15.4										
February 7, 2010	30.8	0.0003	0.0002	0.0003	0.0018	0.107	0.645	0.0016	0.0018	0.404	0.0003
February 13, 2010	28.8										
February 19, 2010	23.3										
February 25, 2010	26.0	0.0003	0.0002	0.0003	0.0006	0.033	0.205	0.0016	0.0006	0.213	0.0003
March 3, 2010	45.3										
March 9, 2010	32.2	0.0006	0.0002	0.0003	0.0003	0.084	0.463	0.0016	0.0231	0.095	0.0003
March 15, 2010	86.0										
March 21, 2010	21.9										
March 27, 2010	24.2	0.0003	0.0002	0.0003	0.0003	0.022	0.148	0.0016	0.0012	0.172	0.0003
April 2, 2010	53.5										
April 8, 2010	38.8										
April 14, 2010	17.4	0.0006	0.0002	0.0003	0.0012	0.010	0.309	0.0016	0.0018	0.453	0.0003
April 20, 2010	42.8										
April 26, 2010	109.8										
May 2, 2010	27.3	0.0003	0.0002	0.0003	0.0019	0.019	0.588	0.0016	0.0012	0.377	0.0003
May 8, 2010	39.7										
May 14, 2010	20.5										
May 20, 2010	51.3	0.0003	0.0002	0.0003	0.0024	0.026	0.456	0.0016	0.0006	0.144	0.0003
May 26, 2010	56.1										
June 1, 2010	21.4										
June 7, 2010	16.7	0.0003	0.0002	0.0003	0.0012	0.022	0.426	0.0016	0.0006	0.059	0.0003
June 13, 2010	33.7										
June 19, 2010	15.6										
June 25, 2010	19.5	0.0003	0.0002	0.0003	0.0012	0.019	0.472	0.0016	0.0024	0.134	0.0003
July 1, 2010	15.5										
July 7, 2010	19.5										
July 13, 2010	20.2	0.0003	0.0002	0.0003	0.0012	0.029	0.557	0.0016	0.0006	0.056	0.0003
July 19, 2010	12.1										
July 25, 2010	16.5										
July 31, 2010	15.6	0.0003	0.0002	0.0003	0.0003	0.009	0.059	0.0016	0.0006	0.035	0.0003
August 6, 2010	25.0										
August 12, 2010	27.7										
August 18, 2010	10.7	0.0003	0.0002	0.0003	0.0003	0.017	0.164	0.0016	0.0006	0.069	0.0003
August 24, 2010	17.7										
August 30, 2010	44.7										



Extendicare Home Monitoring Results for TSP and Metals (2010)  
 (results expressed in  $\mu\text{g}/\text{m}^3$ )

Date	TSP	As	Cd	Co	Cr	Cu	Fe( $\text{Fe}_2\text{O}_3$ )	Ni	Pb	S	Se
September 5, 2010	15.0	0.0003	0.0002	0.0003	0.0003	0.024	0.214	0.0016	0.0006	0.044	0.0003
September 11, 2010	23.1										
September 17, 2010	20.7										
September 23, 2010	11.3	0.0003	0.0002	0.0003	0.0003	0.018	0.103	0.0016	0.0018	0.144	0.0003
September 29, 2010	27.8										
October 4, 2010	34.1	0.0003	0.0002	0.0003	0.0003	0.012	0.246	0.0016	0.0018	0.119	0.0003
October 8, 2010	26.9										
October 14, 2010	24.5										
October 22, 2010	7.4	0.0003	0.0002	0.0003	0.0003	0.012	0.126	0.0016	0.0006	0.113	0.0003
October 29, 2010	8.2										
November 4, 2010	14.1										
November 10, 2010	15.7										
November 16, 2010	inv										
November 22, 2010	inv										
November 28, 2010	3.4										
December 4, 2010	9.5										
December 10, 2010	7.3										
December 16, 2010	24.0										
December 22, 2010	4.9										
December 28, 2010	2.3										
Geometric mean	20.2	n/r	n/r	n/r	0.001	0.021	0.243	n/r	0.001	0.128	n/r
Arithmetic mean	25.2	n/r	n/r	n/r	0.001	0.031	0.305	n/r	0.003	0.170	n/r
Max. concentration	109.8	0.0006	0.0004	n/r	0.0024	0.107	0.645	n/r	0.0231	0.4530	n/r
Min. concentration	2.3	0.0003	0.0002	n/r	0.0003	0.002	0.059	n/r	0.0006	0.0352	n/r
90th percentile	44.8										
95th percentile	53.8										
Standard*	120	n/a	0.25*	n/a	n/a	50	25	2	0.5	n/a	n/a
No. > Sch. 3 value*	0	n/a	0	n/a	n/a	0	0	0	0	n/a	n/a
Guideline	n/a	0.3	n/a	0.1	1.5	n/a	n/a	n/a	n/a	n/a	10.0
No. > guideline	n/a	0	n/a	0	0	n/a	n/a	n/a	n/a	n/a	0
No. of valid samples	59	18	18	18	18	18	18	18	18	18	18
No. samples < mdl	0	16	17	18	8	0	0	18	9	0	18
Detection limit	0.3	0.0006	0.0003	0.0006	0.0006	0.0006	0.0012	0.0031	0.0012	0.0031	0.0006
Half detection limit	0.2	0.0003	0.0002	0.0003	0.0003	0.0003	0.0006	0.0016	0.0006	0.0016	0.0003
% < detection limit	0	89	94	100	44	0	0	100	50	0	100
% valid data	96.7										

Notes:

- All non detectable results were reported as 1/2 the detection limit
- \* O. Reg.419/05 schedule 3, 24-hour standard; note that for cadmium and its compounds, 0.25 is the MRL URT under schedule 6
- n/r: Statistics not reported due to high % of values < detection limit
- Total Fe expressed as  $\text{Fe}_2\text{O}_3$



Extencicare Home Monitoring Results for PM<sub>10</sub> and Metals (2010)  
 (results expressed in µg/m<sup>3</sup>)

Date	PM <sub>10</sub>	As	Cd	Co	Cr	Cu	Fe(Fe <sub>2</sub> O <sub>3</sub> )	Ni	Pb	S	Se
January 2, 2010	7.1										
January 8, 2010	23.7										
January 14, 2010	10.3										
January 20, 2010	10.1	0.0003	0.0002	0.0003	0.0012	0.023	0.079	0.0016	0.005	0.184	0.0003
January 26, 2010	10.9										
February 1, 2010	14.1										
February 7, 2010	27.3										
February 13, 2010	24.9										
February 19, 2010	12.5	0.0003	0.0002	0.0003	0.0003	0.002	0.044	0.0016	0.0006	0.050	0.0003
February 25, 2010	13.9										
March 3, 2010	25.8										
March 9, 2010	16.4										
March 15, 2010	49.4										
March 21, 2010	17.6	0.0003	0.0002	0.0003	0.0003	0.002	0.074	0.0016	0.0006	0.092	0.0003
March 27, 2010	13.9										
April 2, 2010	28.4										
April 8, 2010	10.8										
April 14, 2010	12.5										
April 20, 2010	17.5	0.0003	0.0002	0.0003	0.0012	0.006	0.537	0.0016	0.0019	0.122	0.0003
April 26, 2010	31.7										
May 2, 2010	9.1										
May 8, 2010	8.7										
May 14, 2010	8.2										
May 20, 2010	15.7	0.0003	0.0002	0.0003	0.0019	0.007	0.618	0.0016	0.0006	0.113	0.0003
May 26, 2010	30.0										
June 1, 2010	11.5										
June 7, 2010	5.1										
June 13, 2010	20.0										
June 19, 2010	6.9	0.0003	0.0002	0.0003	0.0005	0.003	0.047	0.0016	0.0006	0.038	0.0003
June 25, 2010	12.3										
July 1, 2010	7.7										
July 7, 2010	12.3										
July 13, 2010	11.4										
July 19, 2010	6.4	0.0003	0.0002	0.0003	0.0003	0.002	0.161	0.0016	0.0006	0.029	0.0003
July 25, 2010	9.5										
July 31, 2010	12.7										
August 6, 2010	16.6										
August 12, 2010	17.5										
August 18, 2010	7.6	0.0003	0.0002	0.0003	0.0003	0.003	0.095	0.0016	0.0006	0.059	0.0003
August 24, 2010	14.2										
August 30, 2010	27.9										
September 5, 2010	11.8										
September 11, 2010	13.5										
September 17, 2010	13.9	0.0003	0.0002	0.0003	0.0006	0.002	0.177	0.0016	0.0006	0.234	0.0003
September 23, 2010	11.0										
September 29, 2010	2.4										



**Extencicare Home Monitoring Results for PM<sub>10</sub> and Metals (2010)**  
 (results expressed in µg/m<sup>3</sup>)

Date	PM <sub>10</sub>	As	Cd	Co	Cr	Cu	Fe(Fe <sub>2</sub> O <sub>3</sub> )	Ni	Pb	S	Se
October 4, 2010	13.7										
October 8, 2010	19.6										
October 14, 2010	13.0	0.0003	0.0002	0.0003	0.0003	0.001	0.197	0.0016	0.0006	0.086	0.0003
October 22, 2010	2.9										
October 29, 2010	3.0										
November 4, 2010	6.7	0.0003	0.0002	0.0003	0.0003	0.0003	0.002	0.0016	0.0006	0.062	0.0003
November 10, 2010	5.7										
November 16, 2010	6.0	0.001	0.0002	0.0003	0.0003	0.002	0.074	0.0016	0.002	0.498	0.0003
November 22, 2010	4.0										
November 28, 2010	1.2	0.0003	0.0002	0.0003	0.0003	0.002	0.025	0.0016	0.0006	0.066	0.0003
December 4, 2010	inv										
December 10, 2010	inv										
December 16, 2010	13.1										
December 22, 2010	4.1										
December 28, 2010	1.4										
Geometric mean	10.8	n/r	n/r	n/r	n/r	0.003	0.081	n/r	n/r	0.091	n/r
Arithmetic mean	13.4	n/r	n/r	n/r	n/r	0.004	0.164	n/r	n/r	0.126	n/r
Max. concentration	49.4	0.0012	n/r	n/r	0.0019	0.0234	0.6184	n/r	0.0049	0.4975	n/r
Min. concentration	1.2	0.0003	n/r	n/r	0.0003	0.0003	0.0017	n/r	0.0006	0.0293	n/r
90th percentile	25.9										
95th percentile	28.5										
AAQC	50 <sup>*</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Number > AAQC	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
No. of valid samples	59	13	13	13	13	13	13	13	13	13	13
No. samples < mdl	0	12	13	13	9	1	0	13	10	0	13
Detection limit	0.3	0.0006	0.0003	0.0006	0.0006	0.0006	0.0012	0.0031	0.0012	0.0031	0.0006
Half detection limit	0.2	0.0003	0.0002	0.0003	0.0003	0.0003	0.0006	0.0016	0.0006	0.0016	0.0003
% < detection limit	0	92	100	100	69	8	0	100	77	0	100
% valid data	96.7										

Notes:

- All non detectable results were reported as 1/2 the detection limit
- \* O. Reg.419/05 schedule 3, 24-hour standard
- n/r: Statistics not reported due to high % of values < detection limit
- Total Fe expressed as Fe<sub>2</sub>O<sub>3</sub>



**MRCA Office Monitoring Results for TSP and Metals (2010)**  
 (results expressed in  $\mu\text{g}/\text{m}^3$ )

Date	TSP	As	Cd	Co	Cr	Cu	Fe( $\text{Fe}_2\text{O}_3$ )	Ni	Pb	S	Se
January 2, 2010	30.9	0.0003	0.0002	0.0003	0.0006	0.005	0.078	0.0016	0.0006	0.113	0.0003
January 8, 2010	28.2										
January 14, 2010	31.5										
January 20, 2010	33.8	0.0003	0.0002	0.0003	0.0019	0.048	0.376	0.0016	0.0068	0.278	0.0003
January 26, 2010	11.0										
February 1, 2010	16.9										
February 7, 2010	15.3	0.0003	0.0002	0.0003	0.0019	0.030	0.178	0.0016	0.0006	0.256	0.0003
February 13, 2010	13.3										
February 19, 2010	24.9										
February 25, 2010	20.0	0.0003	0.0002	0.0003	0.0003	0.006	0.064	0.0016	0.0006	0.156	0.0003
March 3, 2010	47.2										
March 9, 2010	59.0	0.00159	0.00044	0.0003	0.0012	0.032	1.160	0.0016	0.0280	0.135	0.0006
March 15, 2010	86.0										
March 21, 2010	56.2										
March 27, 2010	33.9	0.0003	0.0002	0.0003	0.0012	0.017	0.412	0.0016	0.0006	0.270	0.0003
April 2, 2010	63.6										
April 8, 2010	27.0										
April 14, 2010	88.5	0.0012	0.0002	0.0006	0.0037	0.048	0.966	0.0016	0.0037	0.305	0.0003
April 20, 2010	24.0										
April 26, 2010	38.3										
May 2, 2010	71.0	0.0012	0.0002	0.0006	0.0037	0.055	1.284	0.0016	0.0037	0.379	0.0003
May 8, 2010	21.8										
May 14, 2010	30.4										
May 20, 2010	46.7	0.0006	0.0002	0.0003	0.0025	0.018	0.523	0.0016	0.0012	0.199	0.0003
May 26, 2010	62.9										
June 1, 2010	51.8										
June 7, 2010	10.9	0.0003	0.0002	0.0006	0.0006	0.022	0.117	0.0016	0.0006	0.075	0.0003
June 13, 2010	16.5										
June 19, 2010	36.9										
June 25, 2010	86.0	0.0012	0.0002	0.0012	0.0031	0.031	1.227	0.0016	0.0037	0.194	0.0003
July 1, 2010	37.7										
July 7, 2010	30.4										
July 13, 2010	28.0	0.0003	0.0002	0.0003	0.001	0.048	0.888	0.0016	0.001	0.072	0.0003
July 19, 2010	17.1										
July 25, 2010	20.7										
July 31, 2010	33.7	0.0003	0.0002	0.0003	0.0003	0.013	1.021	0.0016	0.0012	0.113	0.0003
August 6, 2010	19.3										
August 12, 2010	63.7										
August 18, 2010	19.6	0.0003	0.0002	0.0003	0.0003	0.015	0.572	0.0016	0.0006	0.076	0.0003
August 24, 2010	31.4										
August 30, 2010	72.6										



**MRCA Office Monitoring Results for TSP and Metals (2010)**  
 (results expressed in  $\mu\text{g}/\text{m}^3$ )

Date	TSP	As	Cd	Co	Cr	Cu	Fe( $\text{Fe}_2\text{O}_3$ )	Ni	Pb	S	Se
September 5, 2010	20.3	0.0003	0.0002	0.0003	0.0003	0.007	0.251	0.0016	0.0006	0.042	0.0003
September 11, 2010	58.7										
September 17, 2010	44.0										
September 23, 2010	31.3	0.0003	0.0002	0.0003	0.0003	0.0003	0.020	0.0016	0.0006	0.001	0.0003
September 29, 2010	15.0										
October 4, 2010	43.8	0.0006	0.0002	0.0003	0.0018	0.017	1.267	0.0016	0.0037	0.171	0.0003
October 8, 2010	51.8										
October 14, 2010	34.7										
October 22, 2010	17.5	0.0003	0.0002	0.0003	0.0003	0.005	0.389	0.0016	0.0006	0.115	0.0003
October 29, 2010	24.2										
November 4, 2010	9.0	0.0003	0.0002	0.0003	0.0006	0.015	0.265	0.0016	0.0006	0.080	0.0003
November 10, 2010	33.8										
November 16, 2010	inv										
November 22, 2010	inv										
November 28, 2010	11.4	0.0003	0.0002	0.0003	0.0003	0.010	0.117	0.0016	0.0006	0.114	0.0003
December 4, 2010	5.4										
December 10, 2010	26.2										
December 16, 2010	9.7										
December 22, 2010	3.1										
December 28, 2010	9.0										
Geometric mean	27.6	n/r	n/r	n/r	0.001	0.015	0.346	n/r	0.001	0.110	n/r
Arithmetic mean	34.0	n/r	n/r	n/r	0.001	0.022	0.559	n/r	0.003	0.157	n/r
Max. concentration	88.5	0.0016	0.0004	0.0012	0.0037	0.055	1.284	n/r	0.0280	0.3791	0.0006
Min. concentration	3.1	0.0003	0.0002	0.0003	0.0003	0.000	0.020	n/r	0.0006	0.0010	0.0003
90th percentile	63.6										
95th percentile	74.0										
Standard*	120	n/a	0.25*	n/a	n/a	50	25	2	0.5	n/a	n/a
No. > Sch. 3 value*	0	n/a	0	n/a	n/a	0	0	0	0	n/a	n/a
Guideline	n/a	0.3	n/a	0.1	1.5	n/a	n/a	n/a	n/a	n/a	10.0
No. > guideline	n/a	0	n/a	0	0	n/a	n/a	n/a	n/a	n/a	0
No. of valid samples	59	20	20	20	20	20	20	20	20	20	20
No. samples < mdl	0	14	19	16	7	1	0	20	11	1	19
Detection limit	0.3	0.0006	0.0003	0.0006	0.0006	0.0006	0.0012	0.0031	0.0012	0.0031	0.0006
Half detection limit	0.2	0.0003	0.0002	0.0003	0.0003	0.0003	0.0006	0.0016	0.0006	0.0016	0.0003
% < detection limit	0	70	95	80	35	5	0	100	55	5	95
% valid data	96.7										

Notes:

- █ All non detectable results were reported as 1/2 the detection limit
- \* O. Reg.419/05 schedule 3, 24-hour standard; note that for cadmium and its compounds, 0.25  $\mu\text{g}/\text{m}^3$  URT under schedule 6
- n/r: Statistics not reported due to high % of values < detection limit
- Total Fe expressed as  $\text{Fe}_2\text{O}_3$



**MRCA Office Monitoring Results for PM<sub>10</sub> and Metals (2010)**  
 (results expressed in µg/m<sup>3</sup>)

Date	PM <sub>10</sub>	As	Cd	Co	Cr	Cu	Fe(Fe <sub>2</sub> O <sub>3</sub> )	Ni	Pb	S	Se
January 2, 2010	7.2										
January 8, 2010	23.8										
January 14, 2010	29.7										
January 20, 2010	29.2	0.0003	0.0002	0.0003	0.0013	0.015	0.140	0.0016	0.0038	0.139	0.0003
January 26, 2010	9.7										
February 1, 2010	14.1										
February 7, 2010	14.7										
February 13, 2010	12.2										
February 19, 2010	14.6	0.0003	0.0002	0.0003	0.0003	0.003	0.040	0.0016	0.0006	0.057	0.0003
February 25, 2010	12.0										
March 3, 2010	41.8										
March 9, 2010	40.6										
March 15, 2010	52.9										
March 21, 2010	27.8	0.0003	0.0002	0.0003	0.0006	0.007	0.635	0.0016	0.0019	0.155	0.0003
March 27, 2010	21.4										
April 2, 2010	43.1										
April 8, 2010	7.4										
April 14, 2010	40.4										
April 20, 2010	8.7	0.0003	0.0002	0.0003	0.0013	0.003	0.273	0.0016	0.0013	0.157	0.0003
April 26, 2010	9.7										
May 2, 2010	20.4										
May 8, 2010	3.8										
May 14, 2010	12.1										
May 20, 2010	12.4	0.0003	0.0002	0.0003	0.0013	0.003	0.326	0.0016	0.0006	0.113	0.0003
May 26, 2010	39.2										
June 1, 2010	18.4										
June 7, 2010	4.9										
June 13, 2010	10.8										
June 19, 2010	19.6	0.0003	0.0002	0.0003	0.0013	0.003	0.233	0.0016	0.0006	0.719	0.0003
June 25, 2010	33.2										
July 1, 2010	13.2										
July 7, 2010	18.3										
July 13, 2010	13.5										
July 19, 2010	7.2	0.0003	0.0002	0.0003	0.0003	0.001	0.038	0.0016	0.0006	0.051	0.0003
July 25, 2010	9.8										
July 31, 2010	16.5										
August 6, 2010	9.5										
August 12, 2010	29.0										
August 18, 2010	10.4	0.0003	0.0002	0.0003	0.0003	0.002	0.108	0.0016	0.0006	0.040	0.0003
August 24, 2010	17.5										
August 30, 2010	34.6										



MRCA Office Monitoring Results for PM<sub>10</sub> and Metals (2010)  
 (results expressed in µg/m<sup>3</sup>)

Date	PM <sub>10</sub>	As	Cd	Co	Cr	Cu	Fe(Fe <sub>2</sub> O <sub>3</sub> )	Ni	Pb	S	Se
September 5, 2010	11.3										
September 11, 2010	49.1										
September 17, 2010	12.3	0.0003	0.0002	0.0003	0.0003	0.002	0.073	0.0016	0.0006	0.126	0.0003
September 23, 2010	7.0										
September 29, 2010	7.6										
October 4, 2010	30.0										
October 8, 2010	21.3										
October 14, 2010	25.4	0.0003	0.0002	0.0003	0.001	0.002	0.347	0.0016	0.0006	0.100	0.0003
October 22, 2010	14.9										
October 29, 2010	16.7										
November 4, 2010	5.3										
November 10, 2010	17.5	0.001	0.0002	0.0003	0.001	0.009	0.545	0.0016	0.004	0.207	0.001
November 16, 2010	18.7										
November 22, 2010	9.7	0.0003	0.0002	0.0003	0.001	0.006	0.132	0.0016	0.002	0.309	0.0003
November 28, 2010	6.0										
December 4, 2010	3.6	0.0003	0.0002	0.0020	0.0003	0.004	0.134	0.0016	0.0006	0.0016	0.239
December 10, 2010	23.2	0.0003	0.0002	0.0003	0.004	0.006	0.378	0.004	0.0006	0.774	0.0003
December 16, 2010	4.2										
December 22, 2010	1.5	0.0003	0.0002	0.0003	0.002	0.003	0.076	0.0016	0.0006	0.119	0.0003
December 28, 2010	7.1										
Geometric mean	14.4	n/r	n/r	n/r	0.001	0.004	0.167	n/r	n/r	0.109	n/r
Arithmetic mean	18.2	n/r	n/r	n/r	0.001	0.005	0.232	n/r	n/r	0.205	n/r
Max. concentration	52.9	0.0012	n/r	0.0020	0.0038	0.0153	0.6345	0.0037	0.0038	0.7740	0.2390
Min. concentration	1.5	0.0003	n/r	0.0003	0.0003	0.0006	0.0382	0.0016	0.0006	0.0016	0.0003
90th percentile	39.2										
95th percentile	41.8										
AAQC	50*	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Number > AAQC	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
No. of valid samples	61	15	15	15	15	15	15	15	15	15	15
No. samples < mdl	0	14	15	14	5	0	0	14	10	1	13
Detection limit	0.3	0.0006	0.0003	0.0006	0.0006	0.0006	0.0012	0.0031	0.0012	0.0031	0.0006
Half detection limit	0.2	0.0003	0.0002	0.0003	0.0003	0.0003	0.0006	0.0016	0.0006	0.0016	0.0003
% < detection limit	0	93	100	93	33	0	0	93	67	7	87
% valid data	100.0										

Notes:

All non detectable results were reported as 1/2 the detection limit

\* O. Reg.419/05 schedule 3, 24-hour standard

n/r: Statistics not reported due to high % of values < detection limit

Total Fe expressed as Fe<sub>2</sub>O<sub>3</sub>



**Shania Twain Rd Monitoring Results for TSP and Metals (2010)**  
 (results expressed in  $\mu\text{g}/\text{m}^3$ )

Date	TSP	As	Cd	Co	Cr	Cu	Fe( $\text{Fe}_2\text{O}_3$ )	Ni	Pb	S	Se
January 2, 2010	31.2	0.0003	0.0002	0.0003	0.0006	0.005	0.105	0.0016	0.0006	0.107	0.0003
January 8, 2010	28.1										
January 14, 2010	34.6										
January 20, 2010	16.7	0.0003	0.0002	0.0003	0.0018	0.027	0.162	0.0016	0.0049	0.261	0.0003
January 26, 2010	11.7										
February 1, 2010	19.3										
February 7, 2010	27.2	0.0003	0.0002	0.0003	0.0012	0.046	0.159	0.0016	0.0012	0.237	0.0003
February 13, 2010	25.5										
February 19, 2010	12.8										
February 25, 2010	31.5	0.0003	0.0002	0.0003	0.0003	0.015	0.137	0.0061	0.0006	0.149	0.0003
March 3, 2010	46.7										
March 9, 2010	25.4	0.0012	0.0004	0.0003	0.0012	0.045	0.857	0.0016	0.0238	0.120	0.0003
March 15, 2010	121.4										
March 21, 2010	30.7										
March 27, 2010	28.3	0.0003	0.0002	0.0003	0.0006	0.015	0.179	0.0016	0.0006	0.203	0.0003
April 2, 2010	54.2										
April 8, 2010	35.5										
April 14, 2010	43.5	0.0006	0.0002	0.0003	0.0024	0.033	1.500	0.0016	0.0049	0.201	0.0003
April 20, 2010	38.3										
April 26, 2010	62.2										
May 2, 2010	28.1	0.0006	0.0002	0.0003	0.0024	0.050	0.949	0.0016	0.0018	0.362	0.0003
May 8, 2010	53.6										
May 14, 2010	23.7										
May 20, 2010	49.6	0.0006	0.0002	0.0003	0.0024	0.034	1.410	0.0016	0.0018	0.160	0.0003
May 26, 2010	57.8										
June 1, 2010	39.7										
June 7, 2010	33.7	0.0003	0.0002	0.0003	0.0018	0.041	0.507	0.0016	0.0018	0.083	0.0003
June 13, 2010	48.7										
June 19, 2010	38.3										
June 25, 2010	33.9	0.0006	0.0002	0.0003	0.0024	0.046	1.010	0.0016	0.0018	0.180	0.0003
July 1, 2010	22.4										
July 7, 2010	29.3										
July 13, 2010	24.9	0.0003	0.0002	0.0003	0.0018	0.049	0.981	0.0016	0.0012	0.077	0.0003
July 19, 2010	17.2										
July 25, 2010	24.0										
July 31, 2010	21.4	0.0003	0.0002	0.0003	0.0003	0.005	0.311	0.0016	0.0006	0.055	0.0003
August 6, 2010	26.0										
August 12, 2010	30.4										
August 18, 2010	14.0	0.0003	0.0002	0.0003	0.0003	0.013	0.360	0.0016	0.0018	0.067	0.0003
August 24, 2010	23.7										
August 30, 2010	80.2	0.0003									



Shania Twain Rd Monitoring Results for TSP and Metals (2010)  
 (results expressed in  $\mu\text{g}/\text{m}^3$ )

Date	TSP	As	Cd	Co	Cr	Cu	Fe(Fe <sub>2</sub> O <sub>3</sub> )	Ni	Pb	S	Se
September 5, 2010	10.3	0.0003	0.0002	0.0003	0.0006	0.012	0.215	0.0016	0.0006	0.045	0.0003
September 11, 2010	34.0										
September 17, 2010	46.4										
September 23, 2010	52.7	0.0003	0.0002	0.0003	0.0003	0.003	0.076	0.0016	0.0006	0.084	0.0003
September 29, 2010	19.8										
October 4, 2010	41.4	0.001	0.0002	0.0003	0.001	0.010	0.778	0.0016	0.003	0.142	0.0003
October 8, 2010	41.3			0.0003							0.0003
October 14, 2010	34.2										
October 22, 2010	6.5										
October 29, 2010	44.8	0.0003	0.0002	0.0003	0.0003	0.010	0.352	0.0016	0.011	0.057	0.0003
November 4, 2010	6.3										
November 10, 2010	17.7										
November 16, 2010	27.2										
November 22, 2010	9.7										
November 28, 2010	1.0										
December 4, 2010	12.4	0.0003	0.0002	0.0003	0.001	0.008	0.134	0.0016	0.0006	0.189	0.0003
December 10, 2010	9.8										
December 16, 2010	10.3	0.0003	0.0002	0.0003	0.002	0.021	0.147	0.0016	0.0006	0.142	0.0003
December 22, 2010	5.0										
December 28, 2010	10.0	0.0003	0.0002	0.0003	0.002	0.013	0.101	0.0016	0.0006	0.445	0.0003
Geometric mean	24.8	n/r	n/r	n/r	0.001	0.018	0.325	n/r	0.002	0.134	n/r
Arithmetic mean	30.9	n/r	n/r	n/r	0.001	0.024	0.497	n/r	0.003	0.160	n/r
Max. concentration	121.4	0.0012	0.0004	n/r	0.0024	0.050	1.500	0.0061	0.0238	0.4450	n/r
Min. concentration	1.0	0.0003	0.0002	n/r	0.0003	0.003	0.076	0.0016	0.0006	0.0451	n/r
90th percentile	52.7										
95th percentile	57.8										
Standard*	120	n/a	0.25*	n/a	n/a	50	25	2	0.5	n/a	n/a
No. > Sch. 3 value*	1	n/a	0	n/a	n/a	0	0	0	0	n/a	n/a
Guideline	n/a	0.3	n/a	0.1	1.5	n/a	n/a	n/a	n/a	n/a	10.0
No. > guideline	n/a	0	n/a	0	0	n/a	n/a	n/a	n/a	n/a	0
No. of valid samples	61	22	21	22	21	21	21	21	21	21	22
No. samples < mdl	0	16	20	22	5	0	0	20	9	0	22
Detection limit	0.3	0.0006	0.0003	0.0006	0.0006	0.0006	0.0012	0.0031	0.0012	0.0031	0.0006
Half detection limit	0.2	0.0003	0.0002	0.0003	0.0003	0.0003	0.0006	0.0016	0.0006	0.0016	0.0003
% < detection limit	0	73	95	100	24	0	0	95	43	0	100
% valid data	100.0										

Notes:

All non detectable results were reported as 1/2 the detection limit

\* O. Reg.419/05 schedule 3, 24-hour standard; note that for cadmium and its compounds, 0.25  $\mu\text{g}/\text{m}^3$  is the URT under schedule 6

n/r: Statistics not reported due to high % of values < detection limit

Total Fe expressed as Fe<sub>2</sub>O<sub>3</sub>



Shania Twain Rd Monitoring Results for PM<sub>10</sub> and Metals (2010)  
 (results expressed in µg/m<sup>3</sup>)

Date	PM <sub>10</sub>	As	Cd	Co	Cr	Cu	Fe(Fe <sub>2</sub> O <sub>3</sub> )	Ni	Pb	S	Se
January 2, 2010	21.6										
January 8, 2010	22.3										
January 14, 2010	29.8										
January 20, 2010	15.5	0.0003	0.0002	0.0003	0.0012	0.009	0.075	0.0016	0.0043	0.167	0.0003
January 26, 2010	11.1										
February 1, 2010	17.1										
February 7, 2010	19.8										
February 13, 2010	23.2										
February 19, 2010	11.4	0.0003	0.0002	0.0003	0.0003	0.002	0.082	0.0016	0.0006	0.054	0.0003
February 25, 2010	19.4										
March 3, 2010	38.0										
March 9, 2010	13.7										
March 15, 2010	57.0										
March 21, 2010	20.7	0.0003	0.0002	0.0003	0.0012	0.002	0.316	0.0016	0.0006	0.145	0.0003
March 27, 2010	16.7										
April 2, 2010	29.9										
April 8, 2010	10.0										
April 14, 2010	28.1										
April 20, 2010	12.7	0.0003	0.0002	0.0003	0.0012	0.006	0.456	0.0016	0.0025	0.192	0.0003
April 26, 2010	18.6										
May 2, 2010	12.3										
May 8, 2010	11.2										
May 14, 2010	12.7										
May 20, 2010	19.8	0.0003	0.0002	0.0003	0.0018	0.009	0.439	0.0016	0.0006	0.147	0.0003
May 26, 2010	43.0										
June 1, 2010	16.8										
June 7, 2010	8.5										
June 13, 2010	31.8										
June 19, 2010	21.6	0.0003	0.0002	0.0003	0.0012	0.004	0.276	0.0016	0.0006	0.623	0.0003
June 25, 2010	21.2										
July 1, 2010	9.7										
July 7, 2010	17.6										
July 13, 2010	13.8										
July 19, 2010	8.8	0.0003	0.0002	0.0003	0.0003	0.003	0.082	0.0016	0.0006	0.015	0.0003
July 25, 2010	10.1										
July 31, 2010	14.4										
August 6, 2010	11.1										
August 12, 2010	12.1										
August 18, 2010	9.8	0.0003	0.0002	0.0003	0.0003	0.005	0.159	0.0016	0.0025	0.066	0.0003
August 24, 2010	15.1										
August 30, 2010	40.4										



Shania Twain Rd Monitoring Results for PM<sub>10</sub> and Metals (2010)  
 (results expressed in µg/m<sup>3</sup>)

Date	PM <sub>10</sub>	As	Cd	Co	Cr	Cu	Fe(Fe <sub>2</sub> O <sub>3</sub> )	Ni	Pb	S	Se
September 5, 2010	7.7										
September 11, 2010	19.0										
September 17, 2010	16.7	0.0003	0.0002	0.0003	0.0012	0.006	0.466	0.0016	0.0012	0.217	0.0003
September 23, 2010	28.2										
September 29, 2010	14.9										
October 4, 2010	19.4										
October 8, 2010	inv										
October 14, 2010	15.4										
October 22, 2010	inv										
October 29, 2010	10.7	0.0003	0.0002	0.0003	0.0003	0.003	0.114	0.0016	0.010	0.039	0.0003
November 4, 2010	1.3										
November 10, 2010	5.0										
November 16, 2010	11.5										
November 22, 2010	3.9										
November 28, 2010	inv										
December 4, 2010	11.1										
December 10, 2010	7.2	0.0003	0.0002	0.0003	0.002	0.006	1.044	0.0016	0.002	0.767	0.0003
December 16, 2010	6.6										
December 22, 2010	2.0	0.0003	0.0002	0.0003	0.002	0.006	0.105	0.0016	0.0006	0.130	0.0003
December 28, 2010	6.4										
Geometric mean	13.8	n/r	n/r	n/r	0.001	0.005	0.212	n/r	n/r	0.128	n/r
Arithmetic mean	16.8	n/r	n/r	n/r	0.001	0.005	0.301	n/r	n/r	0.213	n/r
Max. concentration	57.0	n/r	n/r	n/r	0.0021	0.0086	1.0439	n/r	0.0095	0.7670	n/r
Min. concentration	1.3	n/r	n/r	n/r	0.0003	0.0024	0.0754	n/r	0.0006	0.0147	n/r
90th percentile	29.8										
95th percentile	38.3										
AAQC	50*	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Number > AAQC	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
No. of valid samples	58	12	12	12	12	12	12	12	12	12	12
No. samples < mdl	0	12	12	12	4	0	0	12	6	0	12
Detection limit	0.3	0.0006	0.0003	0.0006	0.0006	0.0006	0.0012	0.0031	0.0012	0.0031	0.0006
Half detection limit	0.2	0.0003	0.0002	0.0003	0.0003	0.0003	0.0006	0.0016	0.0006	0.0016	0.0003
% < detection limit	0	100	100	100	33	0	0	100	50	0	100
% valid data	95.1										

Notes:

All non detectable results were reported as 1/2 the detection limit

\* O. Reg.419/05 schedule 3, 24-hour standard

n/r: Statistics not reported due to high % of values < detection limit

Total Fe expressed as Fe<sub>2</sub>O<sub>3</sub>

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## **Appendix C-2**

### **Total Dustfall Sampling Results**

**Extencicare Facility Monitoring Results for Dustfall (2010)**  
 (results expressed in g/m<sup>2</sup>/30days)

Month	No. Exposure	Dustfall	Dustfall	Dustfall
	Days	(insoluble)	(soluble)	(total)
January	29	0.02	0.45	0.47
February	31	0.05	0.28	0.33
March	31	0.05	0.28	0.33
April	30	0.005	0.26	0.27
May	31	2.93	1.87	4.80
June	30	1.52	0.62	2.14
July	30	0.69	1.24	1.93
August	32	0.64	0.89	1.53
September	31	0.66	2.44	3.10
October	no sample			
November	32	0.07	0.56	0.63
December	35	1.45	5.87	7.32
Arithmetic mean		0.73	1.34	2.1
Max. value		2.93	5.87	7.3
Min. value		0.01	0.26	0.3
Standard		n/a	n/a	7.0
No. > Sch. 3 value		n/a	n/a	1
No. of valid samples		11	11	11
Detection limit		0.01	0.01	0.02
Half detection limit		0.005	0.005	0.01
% Valid Data		92	92	92



**MRCA Office Monitoring Results for Dustfall (2010)**  
 (results expressed in g/m<sup>2</sup>/30days)

Month	No. Exposure Days	Dustfall (insoluble)	Dustfall (soluble)	Dustfall (total)
January	29	no sample	no sample	no sample
February	31	0.05	0.08	0.13
March	31	1.67	0.88	2.54
April	30	0.02	0.29	0.31
May	31	3.56	2.98	6.54
June	30	4.58	0.91	5.49
July	30	3.90	3.85	7.75
August	32	0.97	0.96	1.93
September	31	1.17	2.07	3.24
October	no sample			
November	32	0.22	0.59	0.81
December	35	0.03	0.39	0.42
Arithmetic mean		1.62	1.30	2.9
Max. value		4.58	3.85	7.8
Min. value		0.02	0.08	0.1
Standard		n/a	n/a	7.0
No. > Sch. 3 value		n/a	n/a	1
No. of valid samples		10	10	10
Detection limit		0.01	0.01	0.02
Half detection limit		0.005	0.005	0.01
% Valid Data		83	83	83



**Shania Twain Rd Monitoring Results for Dustfall (2010)**  
 (results expressed in g/m<sup>2</sup>/30days)

Month	No. Exposure	Dustfall	Dustfall	Dustfall
	Days	(insoluble)	(soluble)	(total)
January	29	0.03	0.18	0.21
February	31	0.04	0.17	0.21
March	31	1.64	0.82	2.46
April	30	0.02	0.38	0.40
May	31	3.27	2.35	5.62
June	30	7.76	5.30	13.06
July	30	0.25	1.33	1.58
August	32	1.06	1.34	2.40
September	31	1.97	1.67	3.64
October	no sample			
November	32	0.24	0.53	0.77
December	35	0.01	0.31	0.32
Arithmetic mean		1.48	1.31	2.8
Max. value		7.76	5.30	13.1
Min. value		0.01	0.17	0.2
Standard		n/a	n/a	7.0
No. > Sch. 3 value		n/a	n/a	1
No. of valid samples		11	11	11
Detection limit		0.01	0.01	0.02
Half detection limit		0.005	0.005	0.01
% Valid Data		92	92	92

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### **Appendix C-3**

### **SO<sub>2</sub> and NO<sub>2</sub> Passive Sampling Results**



**Monitoring Results for Passive SO<sub>2</sub> and NO<sub>2</sub> (2010)**  
 (results expressed in ppb)

Month	Extendicare Home		MRCA Office		Shania Twain Rd	
	SO <sub>2</sub>	NO <sub>2</sub>	SO <sub>2</sub>	NO <sub>2</sub>	SO <sub>2</sub>	NO <sub>2</sub>
January	0.2	2.6	0.2	3.6	0.2	4.3
February	0.2	2.6	0.1	3.6	no sample	no sample
March	0.4	2.2	0.3	3.6	0.4	3.3
April	0.3	1.8	0.3	3.6	0.3	2.8
May	0.1	1.6	0.1	3.6	0.1	2.1
June	0.1	1.2	0.1	3.6	0.1	2.5
July	0.1	0.9	0.1	3.6	0.1	1.4
August	0.1	0.9	0.1	3.6	0.1	1.4
September	0.1	1.5	0.1	2.5	0.1	1.9
October	0.1	1.8	0.1	2.9	0.1	2.4
November	0.2	1.5	0.1	3.3	0.2	3.1
December	0.2	1.9	0.2	4.2	0.2	3.9
Arithmetic mean	0.2	1.7	0.2	3.5	0.2	2.6
Max. concentration	0.4	2.6	0.3	4.2	0.4	4.3
Min. concentration	0.1	0.9	0.1	2.5	0.1	1.4
No. of valid samples	12	12	12	12	11	11
Detection limit	0.1	0.1	0.1	0.1	0.1	0.1
Half detection limit	0.05	0.05	0.05	0.05	0.05	0.05
% Valid data	100	100	100	100	92	92