Appendix V4-2E

Doris North Gold Mine Project: Air Quality Compliance Report Q3 and Q4, 2011

Hope Bay Mining Limited

DORIS NORTH GOLD MINE PROJECT
Air Quality Compliance Report
Q3 and Q4, 2011

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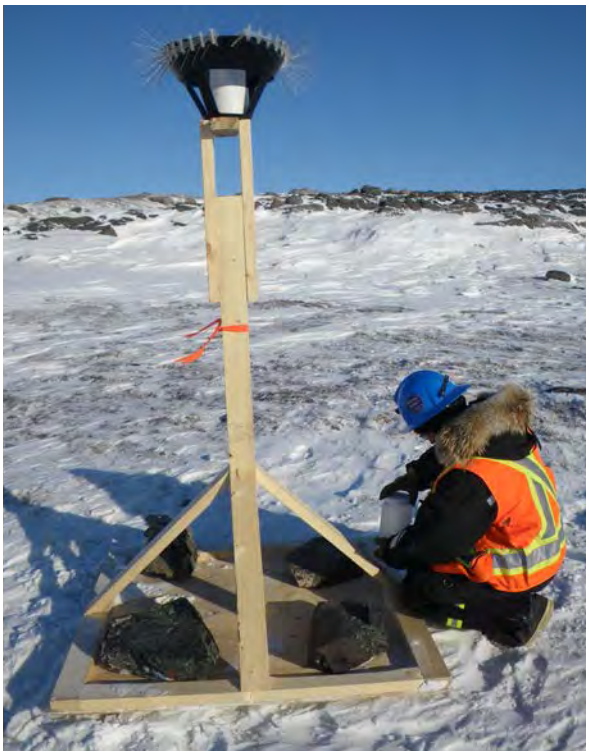

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Engineers & Scientists

April 2012

DORIS NORTH GOLD MINE PROJECT
AIR QUALITY COMPLIANCE REPORT
Q3 AND Q4, 2011

April 2012
Project #1009-008-02

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Prepared for:

Hope Bay Mining Limited

Prepared by:

Rescan™ Environmental Services Ltd.
Vancouver, British Columbia

Executive Summary

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Executive Summary

The following atmospheric monitoring requirements are outlined in the Doris North Gold Mine Project Certificate (NIRB No. 003, issued September 15, 2006; NIRB 2006) and Type A Water Licence (NWB Licence No. 2AM-DOH0713 Type A, issued September 19, 2007; NWB 2007):

1. *Section 4.0 of Project Certificate. Item 8. HBML will fund and install a weather station at the mine site to collect atmospheric data, including air temperature and precipitation. The design and location of this station shall be developed in consultation with Environment Canada officials.*
2. *Section 4.0 of Project Certificate. Item 30. HBML will install and fund an atmospheric monitoring station. This station and its location shall be developed in consultation with Environment Canada and Health Canada air quality officials and focus on particulates of concern generated at the mine site. The results of air quality monitoring are to be reported every six months to NIRB through the Monitoring Officer, and from there to all of the parties.*
3. *Commentary: NIRB expects that Canada Wide Standards for Dioxins and Furans and the Canada Wide Standards for Mercury will apply and should be followed including stack testing of incinerators.*
4. *Schedule D of the Type A Water Licence. Item 1i. Monitoring of dust generation and use of water by the contractor to manage dust emissions from crushing and construction activity.*

This report is intended to meet the requirements outlined in numbers two and four from the list above for the last six months of 2011. In addition annual air quality monitoring results for 2011 (Q1, Q2, Q3 and Q4) are reported, as requested by the Nunavut Impact Review Board (NIRB). Requirements outlined in numbers one and three are addressed in separate reports (Rescan 2011a, 2011c).

In order to comply with Item 30 in Section 4.0 of the Project Certificate, Hope Bay Mining Limited (HBML) along with Rescan Environmental Services (Rescan) conducted the following activities in Q3 and Q4 2011:

- Collected measurements of particulates of concern, including suspended particulate matter (by the use of Partisol samplers which measured PM_{10}, $PM_{2.5}$ and TSP) and dustfall (four dustfall monitoring stations); and
- Collected measurements of ambient air quality, including sulphur dioxide, nitrogen dioxide, and ozone (SO_2, NO_2 and O_3); by the use of one Passive Air Monitoring Systems (PASS).

In addition, three new dustfall monitoring stations were installed in early 2011 to fulfil the requirements of Schedule D, Item 1i of the Type A Water Licence.

In October 2011, the Partisol samplers were relocated from the butte near the Doris Camp to the northwest shore of Doris Lake, close to the Doris meteorological station. This was done to help decrease the amount of malfunctions and increase the amount of maintenance visits. As required in the Project Certificate, this relocation was approved by Mr. Dave Fox (Air Protection Management Analyst North, Environment Canada, Yellowknife; D. Fox, pers. comm.).

All samples collected for particulate matter (PM_{10}, $PM_{2.5}$ and TSP), dustfall and SO_2, NO_2 and O_3 were analyzed at an accredited laboratory. All parameters were compared with the Nunavut Environmental Guideline for Air Quality, Canada Wide Standards and Canadian National Ambient Air Quality Objectives

(NAAQOs) established under the Canadian Environmental Protection Act (CEPA). In addition, comparison was made to predictions presented in the Environmental Impact Statement (EIS) for the Doris North Gold Mine Project (MHBL 2005).

The PM_{10} and $PM_{2.5}$ concentrations were below the relevant guidelines for the July to December 2011 period as well as the full 2011 period and are considered typical of background concentrations for remote undisturbed areas in Canada. Compared to the predicted maximum concentrations reported in the EIS for the Doris North Gold Mine Project, PM_{10} concentrations were slightly above the predictions and $PM_{2.5}$ concentrations were below predictions.

TSP concentrations were well below the relevant standards for the July to December 2011 period and the full 2011 period. Compared to the concentrations predicted in the EIS for the Doris North Gold Mine Project, monitored concentrations of TSP were below the predictions.

All dustfall samples collected using the Alberta Environment (AE) method in Q3/Q4 and on an annual basis were below the relevant dustfall standard. For all dustfall stations that used the American Society for Testing and Materials (ASTM) collection method, dustfall results from Q3/Q4 were below the Alberta (commercial and industrial) standards. Most of the ASTM method dustfall sample values in Q3/Q4 (16 out of 18) and on an annual basis were above the rate predicted in the EIS for the Doris North Gold Mine Project. For the one station that used the AE method, total dustfall was below or equal to the predicted rate during all months except for February, July and August. The 2011 annual average total dustfall rate for this station was also below the EIS predictions.

The July to December 2011 period and the full 2011 annual average concentrations of SO_2 and NO_2 were well below the relevant annual standards and were also well below the maximum concentrations predicted in the EIS for the Doris North Gold Mine Project. The 2011 annual average O_3 concentration was above the relevant annual standard. Predictions of O_3 concentrations were not included in the EIS for the Doris North Gold Mine Project; however, concentrations were within the range of concentrations estimated by Health Canada for areas relatively unimpacted by anthropogenic pollution.

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DORIS NORTH GOLD MINE PROJECT
AIR QUALITY COMPLIANCE REPORT Q3 AND Q4, 2011

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Glossary and Abbreviations

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Glossary and Abbreviations

Terminology used in this document is defined where it is first used. The following list will assist readers who may choose to review only portions of the document.

AE	Alberta Environment
Air Quality Standards	Objectives for maximum concentrations of criteria air contaminants in the atmosphere developed to ensure long-tern protection of public health and the environment.
Ambient Air Quality	The outdoor air quality at a particular site.
ASTM	American Society for Testing and Materials.
BC MoE	British Columbia Ministry of Environment.
CALA	Canadian Association for Laboratory Accreditation
CEPA	Canadian Environmental Protection Act
Criteria Air Contaminants (CAC)	Contaminants for which environmental regulatory agencies have established ambient air concentration limits.
CCME	Canadian Council of Ministers of the Environment
Dustfall	The settleable fraction of total particulate matter in ambient air.
EC	Environment Canada
EIS	Environmental Impact Statement
Fixed Dustfall	The residue remaining after ignition of a total dustfall sample.
Fugitive Dust	Particulate matter, often sand or mineral dust, released to the atmosphere by mechanical disruption of soil or by wind scouring.
Geometric Mean	The geometric mean is a type of mean or average, which indicates the central tendency or typical value of a set of numbers. The numbers in a data set are multiplied together and then the n^{th} root (where n is the count of numbers in the set) of the resulting product is taken. The geometric mean of a data set is less than or equal to the data set's arithmetic mean/average.
GN	Government of Nunavut
HBML	Hope Bay Mining Limited
MHBL	Miramar Hope Bay Limited
NAAQO	National Ambient Air Quality Objective
NAPS	National Air Pollution Surveillance
NIRB	Nunavut Impact Review Board
NWT	Northwest Territories

Oxides of Nitrogen (NO_x)	NO_x gas primarily consists of nitrogen oxide (NO) and nitrogen dioxide (NO_2). The gases are emitted with exhaust from combustion engines and products from blasting operations. NO_x can be converted to nitric acid in the atmosphere and thus contribute to acid deposition.
Ozone (O_3)	A colourless, odourless reactive gas naturally found in the earth's stratosphere, where it absorbs the ultraviolet component of incoming solar radiation that could be harmful to life on earth. It is also found near earth's surface where pollutants emitted from human activities react in the presence of sunlight to form ozone. How sunny weather and stagnant conditions favour ozone formulation. The principal pollutants involved in these reactions are NO_x, volatile organic carbon (VOC) and carbon monoxide (CO).
PASS	Passive Air monitoring Sampling System
$PM_{2.5}$	Respirable particulate matter. $PM_{2.5}$ particles are a subset of PM_{10} and are defined as particles with a diameter less than 2.5 µm. These particles are small enough to enter deep into the respiratory system. The majority of PM emitted in diesel engine exhaust is $PM_{2.5}$.
PM_{10}	Inhalable particulate matter. PM_{10} particles are airborne particles that have a diameter of 10 µm or less and are thus a subset of total suspended particulate. The majority of PM_{10} particles are from fugitive dust sources. PM_{10} can enter the respiratory system and have been linked to health problems.
Sulphur Dioxide (SO_2)	Fossil fuel contains a small amount of organic compounds. During fuel combustion, the sulphur is oxidized and emitted as SO_2 gas with the engine exhaust. In the atmosphere, SO_2 can further oxidize to sulphate particles, which contribute to acid deposition.
Total Dustfall	The amount of particulate matter material remaining after evaporation and drying of a dustfall sample.
TSP	Total suspended particulates (TSP) are solid matter or liquid droplets from smoke, dust, fuel ash, or condensing vapours that can be suspended in the air.
US EPA	United States Environmental Protection Agency. The USEPA has promulgated a variety of guidelines, objectives, emission factors, air dispersion modelling procedures and statutes for the protection of ambient air quality.
NAAQO	National Ambient Air Quality Objective

1. Introduction

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- Collected measurements of ambient air quality, including sulphur dioxide, nitrogen dioxide, and ozone (SO_2, NO_2 and O_3); by the use of one Passive Air Monitoring Systems (PASS).

In addition, three new dustfall monitoring stations were installed in early 2011 to fulfil the requirements of Schedule D, Item 1i of the Type A Water Licence.

Chapter 2 of this report provides the results from the particulate matter (both suspended particulate matter and dustfall) measurements, and Chapter 3 of this report provides the results from the passive ambient air quality samplers for SO_2, NO_2 and O_3. Chapter 4 provides a brief discussion of the results.

2. Particulate Matter

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2. Particulate Matter

Particulate matter is a criteria air quality contaminant (CAC) associated with mining and mineral processing operations. It is generated by mobile equipment, crushing, blasting, bulk handling and storage and other associated mineral processing and construction activities. As part of the ambient air quality compliance monitoring program, particulate matter was previously monitored at a station on a butte which is approximately 660 m north of Doris camp. Due to on-going power and access issues at this location, the station was relocated close to Doris meteorological station, in October 2011.

Dustfall was monitored near Roberts Bay (DF1), at the Doris meteorological station (DF2 and DFA1) and approximately 500 m west of the southern portion of Ogama Lake (DF3). Three additional dustfall stations were installed in 2011 to monitor dustfall close to construction activates (CDF1, CDF2 and CDF3). Where possible, measured concentrations were compared to ambient air quality standards given in the 2011 update of the Air Quality Management Plan for the Doris North Gold Mine Project (Rescan 2011b) and predictions in the EIS for the Doris North Gold Mine Project (MHBL 2005).

2.1 SUSPENDED PARTICULATE MATTER

Suspended particulate matter in ambient air is generally a complex, multi-phase system of all airborne solid and low vapour pressure liquid particles having aerodynamic particle sizes from 0.01 to 100 µm in diameter. Airborne suspended particulate matter concentrations were monitored using two Partisol samplers. The samplers were initially installed on the butte near the Doris Camp. Due to on-going power and access issues that resulted in substantial data gaps at this station in previous monitoring periods, the station was relocated. The current site selection, methods and results are presented below.

2.1.1 Site Selection

As with any type of ambient air monitoring study, the validity of conclusions depends on representativeness of the sample data. Therefore, the sampling location and the siting of the ambient air samplers are important.

Nunavut does not have established siting requirements for ambient air samplers. Therefore, the siting criteria from the British Columbia Ministry of Environment (BC MoE 2009a) and the US EPA (US EPA 2009 and US EPA 1999) were used.

Additional factors, not specified in standard site selection criteria, were also considered. The Partisol air sampler location was free from obstructions and nearby pollutant sources that may cause interference in suspended particulate monitoring (Figure 2-1.1; Plates 2-1.1 and 2.1-2). Due to the very cold climate, the Partisol samplers were installed inside a temperature controlled shelter in an attempt to reduce interruptions to the sample schedule caused by cold weather, wet conditions and excess humidity, air leaks and pump malfunctioning. Despite this effort, the Partisol samplers were not operational for the majority of the monitoring period due to sporadic power failures. In addition, the original location of the samplers did not allow for easy access or frequent maintenance visits. The Partisol samplers were relocated in October 2011 in order to rectify this problem and allow for frequent maintenance checks and a more reliable source of continuous power (Rescan 2011d).

As required in the Project Certificate, both the previous and current location of the partisol samplers, along with the monitoring objectives, were reviewed with Mr. Dave Fox (Air Protection Management Analyst North, Environment Canada, Yellowknife; D. Fox, pers. comm.).

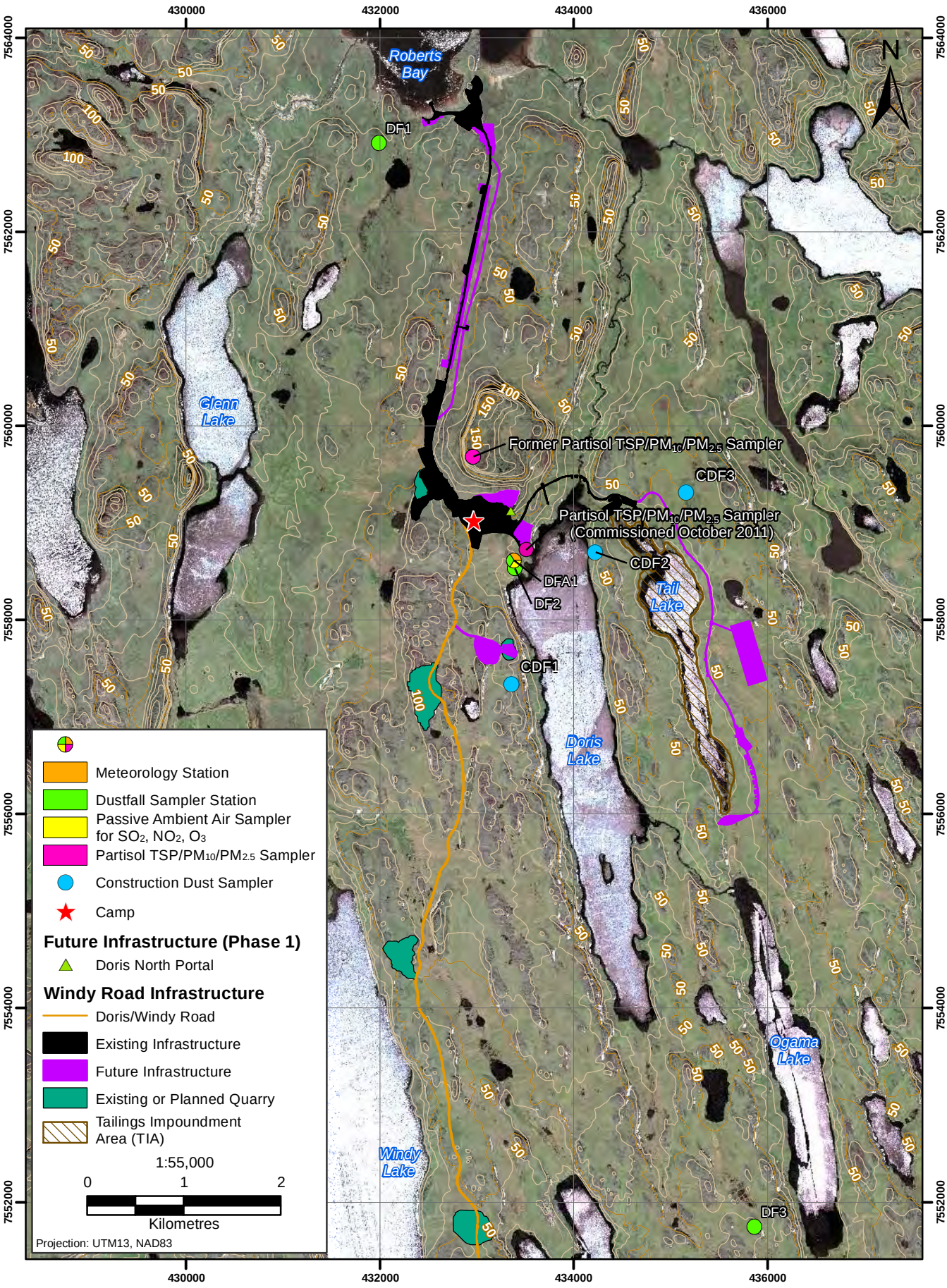

Figure 2.1-1

Doris North Gold Mine Project
2011 Ambient Air Quality Monitoring Program Stations

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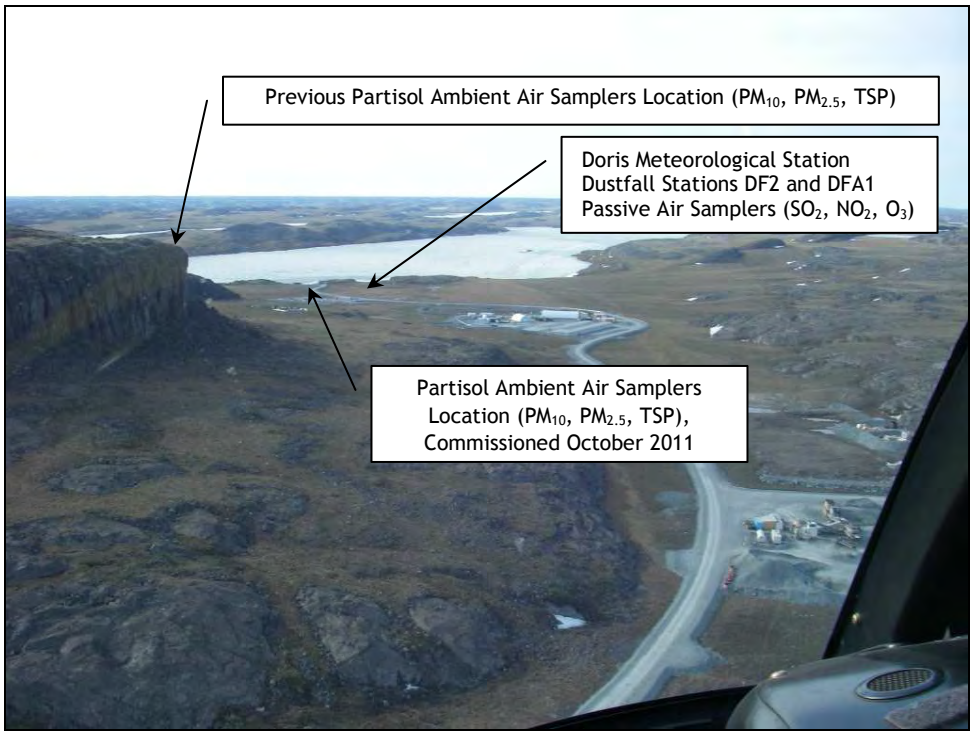


Plate 2.1-1. Location of previous and current partisol ambient air samplers, dustfall stations DF2 and DFA1, and PASS station. Doris Lake is shown in the background of this photograph. Date of photo: June 2009.

Plate 2.1-2. Temperature controlled shelter housing the Partisol ambient air samplers, October 2011.

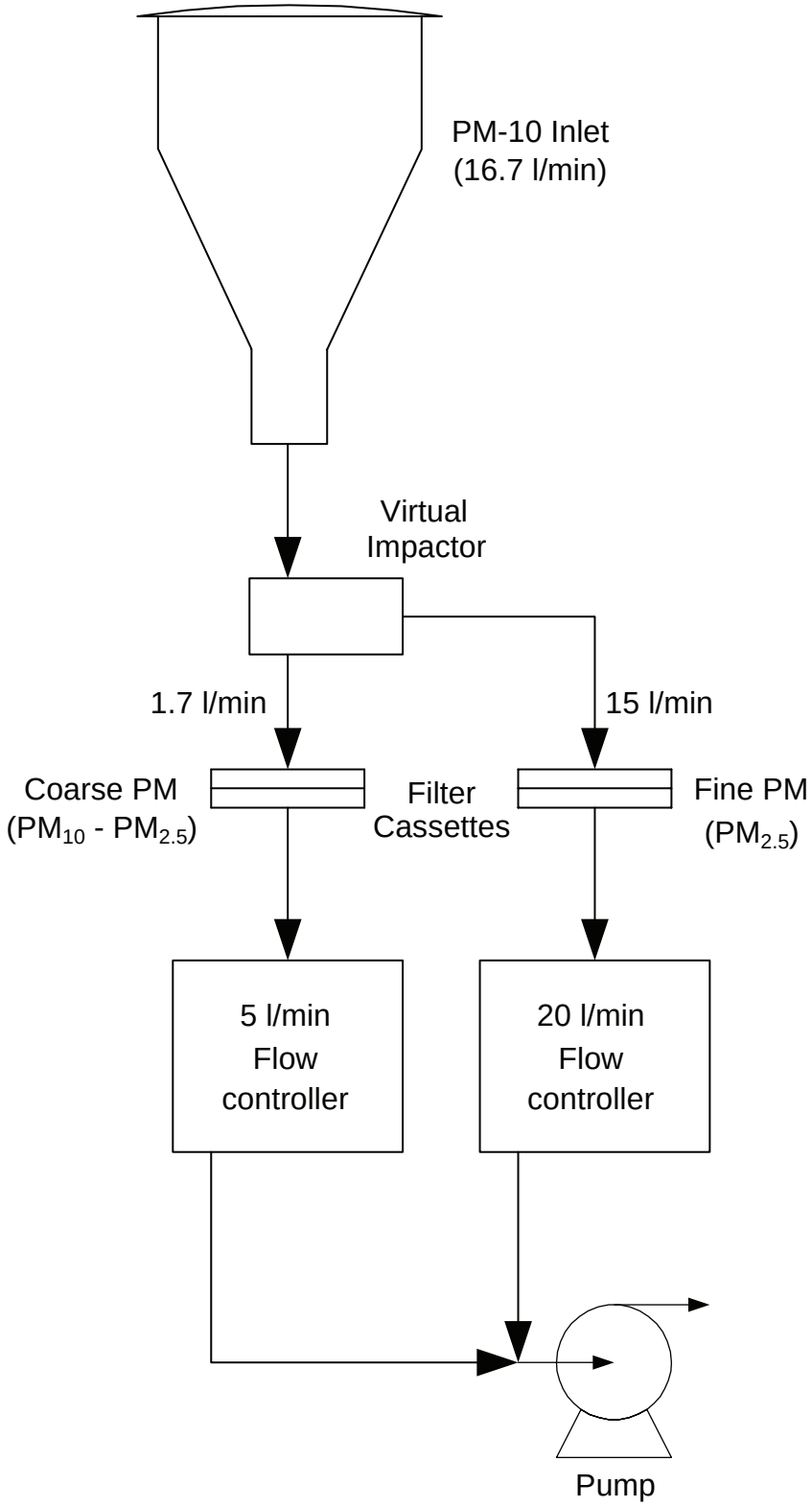
2.1.2 Monitoring Method

Suspended particulate matter is being monitored by the Partisol ambient air samplers in three forms; TSP, PM_{10} and $PM_{2.5}$. A Partisol Plus Model 2025 ambient air sampler monitors TSP and Partisol Sequential Dichotomous Model 2025-D ambient air sampler monitors PM_{10} and $PM_{2.5}$ simultaneously (Plate 2.1-3). The Partisol instruments are widely used in Canada for compliance monitoring programs and are recognized as reference equivalent methods by the US EPA (US EPA 2009).

Plate 2.1-3. Inside the temperature controlled shelter. The Partisol sampler for TSP is shown on the right and the PM_{10}/$PM_{2.5}$ sampler is on the left.

The Partisol ambient air samplers draw a particulate-laden ambient air stream through a size-selective inlet, and then through a 47 mm diameter filter. A built-in pump provides the vacuum required to pull the air flow through the sample filter and a volume flow controller monitors and automatically adjusts the flow rate (Figure 2.1-2). The filters, approved for use with the Partisol ambient air samplers, were the Pallflex TX40H120-WW Teflon coated fibre glass type. The Partisol air sampler filters are pre and post weighted at a laboratory that is accredited by the Canadian Association for Laboratory Accreditation (CALA 2011). Maxxam Analytical Laboratory undertook analysis of filters for the first sample (i.e. February 14, 2011), while ALS Laboratory Group was used for the remainder of the 2011 samples. Any results below analytic detection limits were reported as half of the detection limit.

The filter exchange is performed using pneumatic pressure from the sample pump, and does not involve any special electromechanical components, belts or motors. New filter cassettes from the supply magazine (left, Plate 2.1-4) are pushed up and rightward to the sampling position, while the previous cassette is moved to the storage magazine (right, Plate 2.1-4). The supply and storage magazines are covered to seal off the filter cassettes thereby protecting them from environmental interferences during sampling operations.



Source: Thermo Fisher Scientific, 2007

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Simplified Diagram for the Partisol Sequential Dichotomous Model 2025D Ambient Air Sampler

Figure 2.1-2

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Plate 2.1-4. The Partisol air sampler filters are contained in a magazine on the left side of the unit. The filters laden with suspended particulate matter are contained in a magazine on the right side of the unit (PM_{10} at front and $PM_{2.5}$ at rear).

The Partisol Sequential Dichotomous Model 2025-D $PM_{10}/PM_{2.5}$ sampler (the instrument on the left in Plate 2.1-3) splits the incoming ambient air and all sampling air goes through separate filters for PM_{10} and $PM_{2.5}$. The Partisol Plus 2025 TSP sampler (the instrument on right in Plate 2.1-3) monitors only TSP therefore, the instrument does not split the incoming ambient air and all sampling air goes through one filter.

The Partisol ambient air samplers at the Doris North Gold Mine Project are programmed to follow Environment Canada's National Air Pollution Surveillance (NAPS) schedule (EC 2011). The NAPS program requires 24-hour sampling every six days for particulate matter monitoring.

Measured concentrations of TSP concentrations at the Doris North Gold Mine Project site have been lower than PM_{10} and $PM_{2.5}$ concentrations for some sample periods since the equipment was installed in summer 2009. PM_{10} and $PM_{2.5}$ are subsets of TSP; therefore, the TSP concentration should always be equal or higher than PM_{10} and $PM_{2.5}$ concentration. This suggested that there may be a malfunction with the sampling equipment. A leak test and a flow audit were performed during the site visit in fall 2010, but this indicated that the equipment passed the various tests and was performing to manufacturers guidelines. Further investigation into the matter was undertaken during 2011 and the problem has been identified as a mechanical failure. The unit was sent to the manufacturer and was repaired and calibrated before redeployment in October 2011. The first valid TSP results from 2011 were available in Q4 and are presented in this report.

2.1.3 Results and Comparison

Table 2.1-1 summarizes ambient PM_{10} and $PM_{2.5}$ concentrations measured with the Partisol 2025-D Dichotomous sampler. Valid PM_{10} and $PM_{2.5}$ samples were only collected during February, November and December 2011 due to power supply outages. Full results for the 2011 period are presented in Appendix 1.

Table 2.1-1. PM_{10} and $PM_{2.5}$ Results Summary, Doris North Gold Mine Project, 2011

	PM_{10} (µg/m^3)	$PM_{2.5}$ (µg/m^3)
Ambient Air Quality Standard	50 [a]	30 [b]
EIS Predictions (MHBL 2005)	61.9 (Maximum 24-hour concentration. 50 µg/m^3 exceeded 2 days per year)	18.4 (24-hour 98th percentile concentration)
	8.0 (annual average concentration)	4.5 (annual average concentration)
Q1 Q2 Average	**9.1**	**4.2**
Range	**9.1**	**0.6 to 7.9**
Q3 Q4 Average	***10*** [c]	**3.1**
Range	***10*** [c]	***1.1*** [d] **to 12.3**
2011 Average	**9.9**	**3.4**

Results below detection limit are reported as half of the detection limit and are shown in italics.
PM_{10} and $PM_{2.5}$ were only sampled in February, November and December 2011.
[a] *British Columbia Ministry of Environment Level B 24-hour Standard for PM_{10} used (BC MoE 2011) as there are no ambient air quality standards for PM_{10} set by Federal or Nunavut Territorial Governments.*
[b] *Canada Wide Standard for 24-hour $PM_{2.5}$ (CCME 2000). There are no ambient air quality standards for $PM_{2.5}$ set by the Nunavut Territorial Government.*
[c] *PM_{10} detection limit was 20 µg/m^3 for Q3 Q4 sample results.*
[d] *$PM_{2.5}$ detection limit was 2.2 µg/m^3 for Q3 Q4 sample results.*

There are no ambient air quality standards in Nunavut for PM_{10} and $PM_{2.5}$ therefore results were compared to the British Columbia Ministry of Environment Level B Standard for PM_{10} (BC MoE 2011) and the Canada-Wide Standards for $PM_{2.5}$ (CCME 2000). In addition, concentrations are compared to the predicted concentrations contained in the Environmental Impact Statement (EIS) for the Doris North Gold Mine Project (MHBL 2005).

Available data from the 2011 reporting period were well below the relevant ambient air quality standards. PM_{10} concentrations were below analytic detection limits during Q3 and Q4 sampling. The EIS for the Doris North Gold Mine Project predicted maximum PM_{10} concentrations of 61.5 micrograms per cubic metre (µg/m^3), with the PM_{10} 24-hour BC MoE standard exceeded 2 days per year (MHBL 2005). This was predicted at 200 m from the proposed ore processing facility. PM_{10} concentrations monitored during the first half of 2011 were below this maximum predicted concentration. $PM_{2.5}$ concentrations for the Project were predicted to be 18.4 µg/m^3 based on 98th percentile of the 24-hour ambient measurement, averaged over 3 years (MHBL 2005). Concentrations of $PM_{2.5}$ monitored during 2011 were below these predicted concentrations.

All Q3 and Q4 PM_{10} samples were below the analytic detection limit of 20 µg/m^3. The 2011 annual average PM_{10} value of 9.9 µg/m^3 was above the EIS annual average concentration prediction of 8.0 µg/m^3. The annual average $PM_{2.5}$ value of 3.4 µg/m^3 was below the EIS predictions of 4.5 µg/m^3.

Table 2.1-2 summarizes ambient TSP concentrations measured with the Partisol Plus 2025 sampler. Full results for the 2011 period are presented in Appendix 1. As discussed above, there are no valid TSP results available for January to October 2011. The relevant standards for TSP are the National Ambient Air Quality Objective 24-hour TSP standard (EC 2011) and the Nunavut Territorial Government (GN 2002) 24-hour TSP standard. In addition, the average 2011 concentration was compared to the predicted concentrations contained in the EIS for the Doris North Gold Mine Project (MHBL 2005).

Table 2.1-2. Total Suspended Particulate Results Summary, Doris North Gold Mine Project, 2011

	TSP (µg/m^3)
Ambient Air Quality Standard	120 [a]
EIS Predictions (MHBL 2005)	
maximum 24-hour concentration	76.3
annual average concentration	14.5
Q1 Q2 Average	**n/a**[b]
Range	**n/a**[b]
Q3 Q4 Average	**6.6**
Range	***1.0***[c] **to 12.6**
2011 Geometric Mean	**5.4**
2011 Average	**6.6**

Results below detection limit are reported as half of the detection limit and are shown in italics.
TSP was only sampled in February, November and December 2011.
[a] *National Ambient Air Quality Objective (EC 2011) and Nunavut Territorial Government (GN 2002) 24-hour TSP Standard calculated as geometric mean.*
[b] *Sampling station was sent for repairs during this time.*
[c] *Detection limit was 2.0 µg/m^3.*

From the available data, the geometric mean 24 hour TSP concentrations and the individual results for each 24-hour period were well below relevant ambient air quality standards. The EIS for the Doris North Gold Mine Project predicted maximum 24-hour TSP concentrations of 76.3 µg/m^3 and an annual mean concentration of 14.5 µg/m^3. TSP concentrations measured during 2011 were well below these predicted concentrations.

Environment Canada undertakes monitoring at various locations across Canada as part of the National Air Pollution Surveillance (NAPS) Network. The nearest NAPS suspended particulate matter monitoring station to the Project is the Yellowknife, NWT station. The annual average PM_{10} and $PM_{2.5}$ were 6 and 3 µg/m^3 in 2006 (EC 2008), respectively, which was the latest year of published data. The only suspended particulate matter monitoring station operated by NAPS in Nunavut is located in Iqaluit and this station monitors PM_{10} only. The annual average PM_{10} at the Iqualit station was 14 µg/m^3 in 2006 (EC 2008). During 2011, average PM_{10} and $PM_{2.5}$ concentrations at the Doris North Gold Mine Project site were similar to NAPS Yellowknife station and PM_{10} was lower than at NAPS Iqualit station. Monitoring of TSP concentrations by NAPS ceased in 2003. The latest regional data is from 2002 and an annual geometric mean of 27 µg/m^3 was reported at Yellowknife, NWT station (EC 2003).

2.2 DUSTFALL

The purpose of the dustfall monitoring program is to quantify the amount of dust deposition near the Doris North Gold Mine Project site and compare the results to the available standards and the predicted concentrations reported in the EIS for the Doris North Gold Mine Project (MHBL 2005).

Dustfall monitoring was undertaken at seven locations during Q1, Q2, Q3 and Q4 of 2011. One dustfall station, co-located with Doris North meteorological station, uses an AE sampling method (Alberta AMD 1989), and the other six stations use the ASTM D1739-98 sampling method (ASTM 2010). Three of these six stations were first established during the 2011 monitoring period in order to monitor dustfall from construction areas.

2.2.1 Site Selection

Nunavut does not have established siting requirements for ambient air samplers. Therefore, the siting criteria from the British Columbia Ministry of Environment (BC MoE 2009a) and the US EPA (US EPA 2009 and US EPA 1999) were used. The dustfall monitoring station which uses the AE method is co-located at the Doris North meteorological station (DFA1). Six other dustfall stations followed the ASTM 2010 site selection recommendations (DF1, DF2, DF3, CDF1, CDF2 and CDF3). Dominant wind directions as well as present and potential future project activities were considered during the site selection process. There are no obstructions or local sources of air pollutants in the immediate area around the stations. In addition, the relatively flat topography allows for the collection of representative data (Figure 2.1-1). The dustfall monitoring stations are in open areas that are free of structures higher than 1 m within a 20 m radius of each collection container.

2.2.2 Monitoring Method

The dustfall monitoring stations collect particles small enough to pass through a 1 mm screen and large enough to settle by virtue of their weight. This requires containers of a standard size and shape, which are partially filled with deionised water. The containers are installed on a 2 m pole, surrounded by a windscreen and bird spikes, and are exposed to the atmosphere for approximately 30 days. The windscreen around the sample container improves the dustfall collection efficiency and bird spikes are used to minimize contaminants from bird faeces (Plate 2.2-1). Monthly samples were sent to a laboratory for analysis. Dustfall results are prorated by the laboratory to a 30-day average, so that they could be compared with standards.

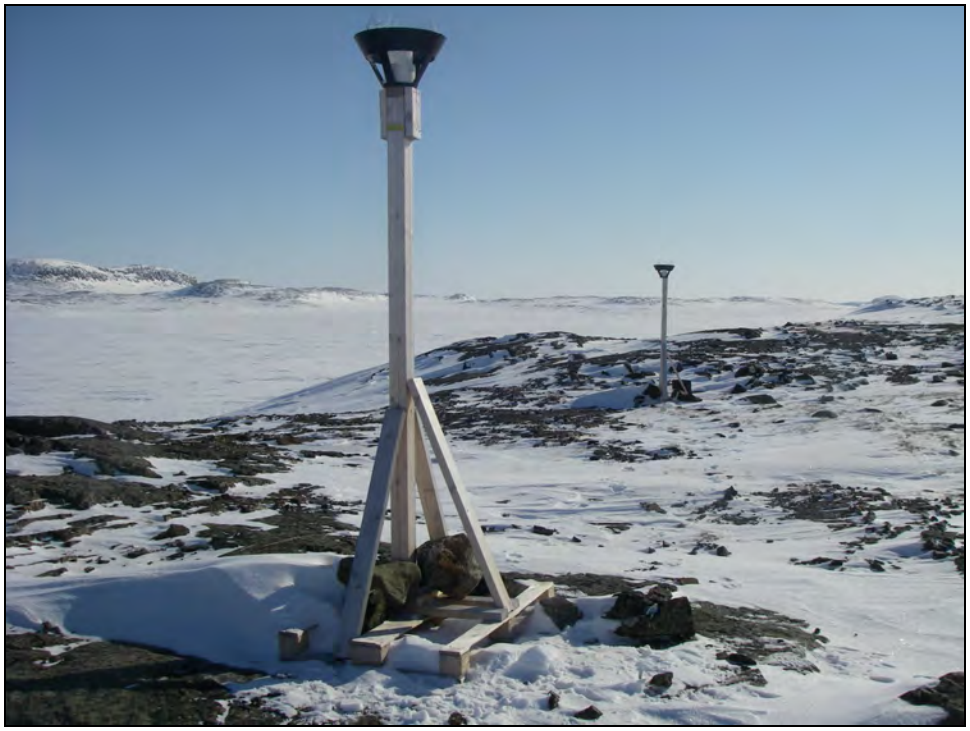


Plate 2.2-1. Example of a dustfall monitoring station near the Doris North Project site which uses the ASTM monitoring method.

Dustfall was monitored at six stations (DF1, DF2, DF3, CDF1, CDF2 and CDF3) using the ASTM D1739-98 sampling method (ASTM 2010). These stations have two dustfall collectors. One of the containers is analyzed for particulates (total, soluble and insoluble) and anions (sulphate, nitrate, chloride, and

ammonia) and the other for total metals and various cations. Algae are an interference for dustfall measurements; therefore, the deionized water in the dustfall containers also contains algaecide. Analysis was undertaken by Maxxam Analytical Laboratory.

A seventh dustfall station, which is co-located with the Doris North meteorological station (DFA1, Figure 2.1-1), is operated in accordance with the AE sampling method (Alberta AMD 1989). The station has one dustfall collector. Samples are analysed for total dustfall and total fixed dustfall. Total dustfall is defined as the amount of material left after evaporation of a sample of dustfall and its subsequent drying. Total fixed dustfall is the residue that is left after ignition of the total dustfall sample (Alberta AMD 1989). Analysis was undertaken by ALS laboratory Group.

All non-construction dustfall results, except for those collected during June and July, were based on two samples collected at each station. The values presented are the average of the two samples. It was possible to analyze both containers for all parameters because of the amount of sample collected. Typically some of the liquid in a sample container evaporates, thus, not allowing enough sample for all parameters to be analysed. In these cases, evaporation was likely low or precipitation was high which allowed for both containers to be analysed.

2.2.3 Results and Comparison

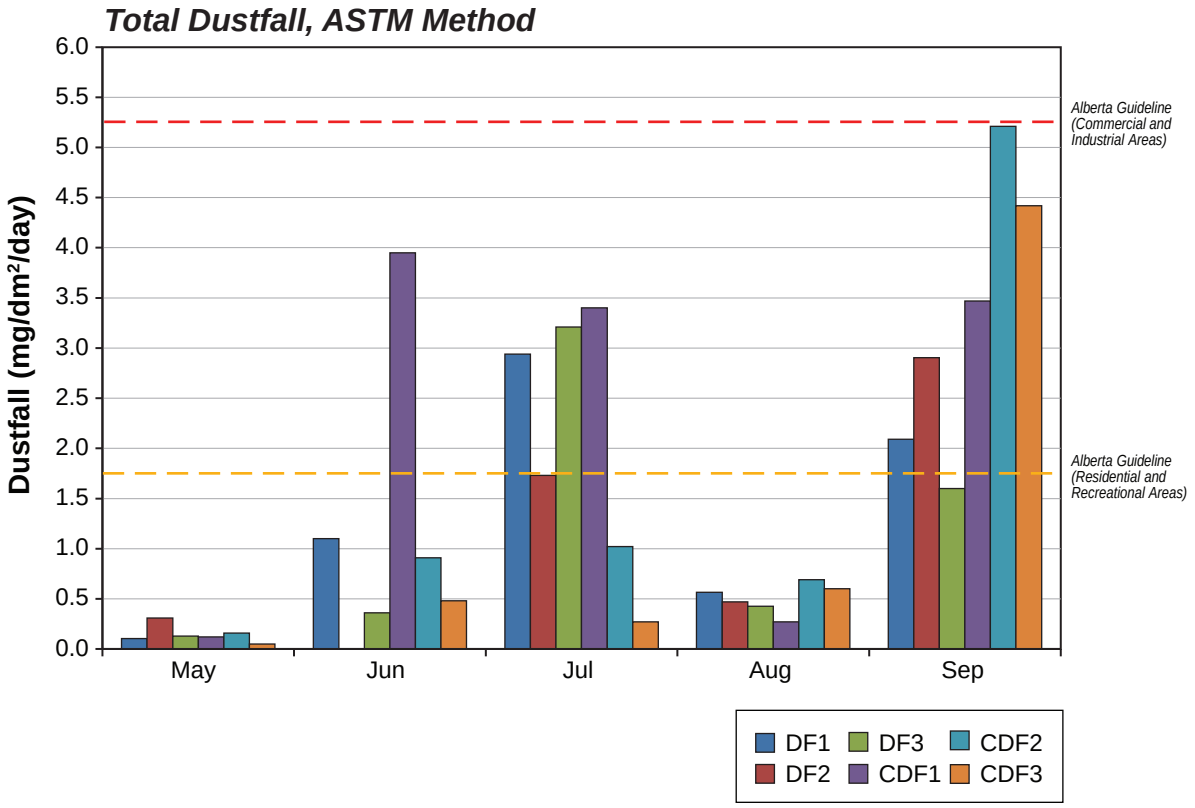
For the Q3/Q4 period, samples were collected on a monthly basis for the months of July to September 2011 at the stations that followed the ASTM method (DF1, DF2, DF3, CDF1, CDF2 and CDF3), and between July and December 2011 at the DFA1 station using the AE method. Table 2.2-1 summarizes the relevant dustfall guidelines used for comparison to the Doris North dustfall levels specified in the 2011 update of the Air Quality Management Plan for the Doris North Gold Mine Project (Rescan 2011b). Tables 2.2-2 and 2.2-3 and Figure 2.2-1 include all data collected in 2011, including data previously reported in the Q1/Q2 report. The laboratory results of ASTM method dustfall samples are included in Appendix 2, and AE method dustfall results are in Appendix 3.

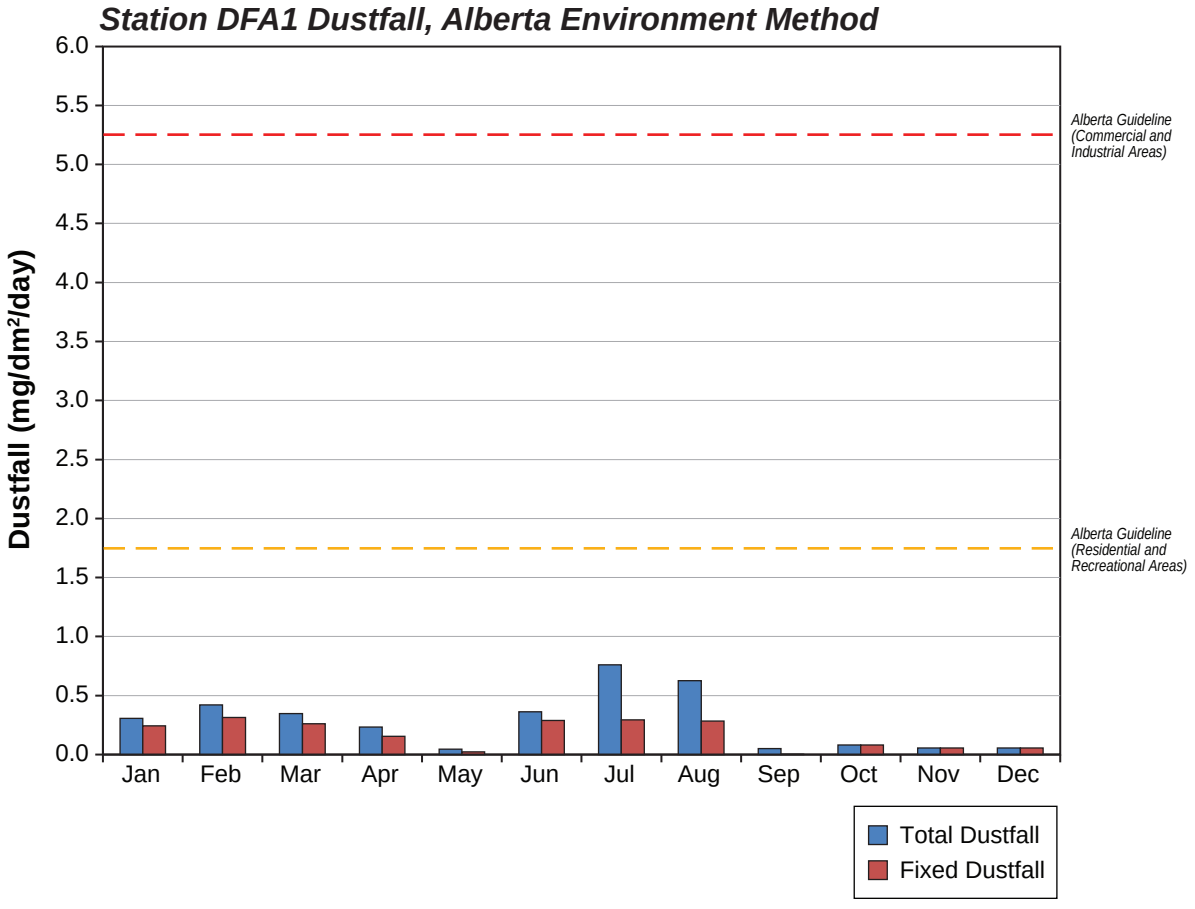
Table 2.2-1. Dustfall Guidelines

Jurisdiction	Dustfall (mg/dm^2/day)	Comments
Alberta Guideline (Alberta Environment 2010)	1.75	Residential and recreational areas.
	5.25	Commercial and industrial areas.

For all ASTM method stations, all dustfall results were below the Alberta (commercial and industrial) guideline of 5.25 mg/dm^2/day. Nine out of the 29 ASTM method dustfall samples were above the Alberta (residential and recreational) limit of 1.75 mg/dm^2/day. Most exceedances occurred in September, and no exceedances occurred in May or August. All AE method dustfall samples were below both Alberta guidelines. Dustfall rates below detection limits (0.1 mg/dm^2/day) generally indicate baseline levels for a typical undeveloped area.

A maximum annual deposition rate of 0.36 mg/dm^2/day was predicted in the EIS for the Doris North Gold Mine Project at 20 m from the proposed mine portal (reported as 10.8 mg/100 cm^2/30 days in the EIS). The monitoring stations are all located at a greater distance from the proposed mine portal. Most of the ASTM method dustfall samples were above this predicted rate; the exceptions include: all stations in May, DF3 in June, CDF3 in July and CDF1 in August. For the station using the AE method, total dustfall was only above the predicted rate in February, July and August 2011, and below or equal to the predicted rate during all other months. The 2011 annual average total dustfall rate for the station using the AE method, DFA1, is below the maximum annual deposition rate predicted in EIS for the Doris North Gold Mine Project.





Dustfall Results using the ASTM and Alberta Environment Method, Doris North Gold Mine Project, 2011

Figure 2.2-1

Table 2.2-2. Dustfall Results using the ASTM Method, Doris North Gold Mine Project, 2011 (mg/dm^2/day)

Period/Parameter	DF1[a]	DF2[a]	DF3[a]	CDF1	CDF2	CDF3
May-11						
Total Dustfall	0.11	0.31	0.13	0.12	0.16	*0.05*
Insoluble Dustfall	0.09	0.16	*0.05*	*0.05*	*0.05*	*0.05*
Soluble Dustfall	*0.05*	0.18	0.10	*0.05*	*0.05*	*0.05*
Jun-11						
Total Dustfall	1.10	n/a[b]	0.36	3.95	0.91	0.48
Insoluble Dustfall	*0.05*	n/a[b]	*0.05*	*0.05*	*0.05*	*0.05*
Soluble Dustfall	1.04	n/a[b]	0.34	3.91	0.86	0.46
Jul-11						
Total Dustfall	2.94	1.73	3.21	3.40	1.02	0.27
Insoluble Dustfall	*0.05*	0.85	*0.05*	*0.05*	*0.05*	*0.05*
Soluble Dustfall	2.86	0.88	3.18	3.33	0.99	0.26
Aug-11						
Total Dustfall	0.57	0.47	0.43	0.27	0.69	0.60
Insoluble Dustfall	*0.05*	*0.05*	*0.05*	*0.05*	*0.05*	*0.05*
Soluble Dustfall	0.53	0.45	0.42	0.27	0.69	0.60
Sep-11						
Total Dustfall	2.09	2.91	1.60	3.47	5.21	4.42
Insoluble Dustfall	*0.05*	*0.05*	*0.05*	*0.05*	*0.05*	*0.05*
Soluble Dustfall	2.08	2.88	1.60	3.45	5.20	4.41

Limit of Detection is 0.10 mg/dm^2/day. Results below detection limit are reported as half of the detection limit (i.e. 0.05 mg/dm^2/day) and are shown in italics.
[a] All results except for those collected during June and July were based on two samples collected at each station. The values presented are the average of the two samples.
[b] Laboratory notes state that this sample was not received, but was included on the chain of custody form.

Table 2.2-3. Dustfall Results using the Alberta Environment Method, Doris North Gold Mine Project, 2011

Period	Total Dustfall at Station DFA1 (mg/dm^2/day)	Fixed Dustfall at Station DFA1 (mg/dm^2/day)
Jan-11	0.31	0.24
Feb-11	0.42	0.31
Mar-11	0.35	0.26
Apr-11	0.23	0.15
May-11	0.05	0.02
Jun-11	0.36	0.29
Jul-11	0.76	0.29
Aug-11	0.63	0.28
Sep-11	0.05	*0.00*
Oct-11	0.08	0.08

(continued)

Table 2.2-3. Dustfall Results using the Alberta Environment Method, Doris North Gold Mine Project, 2011 (completed)

Period	Total Dustfall at Station DFA1 (mg/dm^2/day)	Fixed Dustfall at Station DFA1 (mg/dm^2/day)
Nov-11 and Dec-11	0.06[a]	0.06[a]
Q1 Q2 Average	**0.29**	**0.21**
Q3 Q4 Average	**0.31**	**0.14**
2011 Average	**0.30**	**0.18**

Detection Limit was 0.0033 mg/dm^2/day. Results below detection limit are reported as half of the detection limit (i.e. 0.0017 mg/dm^2/day) and are shown in italics.
n/a = not available
[a] *This sample was collected over a period of 51 days, starting on October 30, 2011.*

The concentration of total metals in the ASTM method dustfall samples was also analyzed and the laboratory results are summarized in Appendix 2. Most of the metal concentrations were below the detection limits and for all intents and purposes should be considered negligible. There are no specific criteria for metal concentrations in dustfall. However, there are workplace or occupational air quality standards (e.g., industrial hygiene) for metals that are of concern with respect to human health. The metals that are a concern for human health are cadmium, lead and arsenic and the concentrations of these metals in the collected dustfall samples were close to or below detection limits. There were no predictions of concentration of total metals in the dustfall within the EIS for the Doris North Gold Mine Project.

3. Ambient Air Quality Monitoring by Passive Samplers

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3. Ambient Air Quality Monitoring by Passive Samplers

As part of the ambient air quality compliance monitoring program, monthly average concentrations of criteria air contaminants were monitored at the Project site in Q3 and Q4, 2011. A Passive Air Sampling System (PASS) at the Doris North meteorological station was used to monitor SO_2, NO_2 and O_3 (Figure 2.2-1). Measured concentrations were compared to ambient air quality standards given in the 2011 update of the Air Quality Management Plan for the Doris North Gold Mine Project (Rescan 2011b) and predictions in the EIS for the Doris North Gold Mine Project (MHBL 2005).

3.1 SITE SELECTION

Nunavut does not have established siting requirements for ambient air samplers. Therefore, the siting criteria from the British Columbia Ministry of Environment (BC MoE 2009a) and the US EPA (US EPA 2009) were used. The samplers were placed in environmentally safe locations where they would not be affected by weather or damaged by wildlife. They were placed far from obstructions and there were no nearby roadways that could influence measurements.

3.2 MONITORING METHOD

Passive air sampling is a diffusive method which monitors gas or vapour pollutants from the atmosphere at a rate controlled by a physical process, such as diffusion through a static air layer or permeation through a membrane. The passive method does not involve the active movement of the air through the sampler; therefore no electric air moving pump is required. The number of days of contact between the ambient air and the permeation membrane is important. The local meteorological conditions are also used in the calculations. The meteorological parameters that are used in the PASS calculations are air temperature, wind speed and relative humidity.

The PASS provides low detection limits, is very easy to install and does not require power. The passive sampler is kept under a rain shelter (Plate 3.2-1), on a tripod beside the Doris meteorological station. Sampling was undertaken on a monthly basis and PASS samples were sent to Maxxam Analytical Laboratory for analysis following each sampling period. Laboratory results were provided in ppb. Conversion ratios were used in order to convert from ppb to $\mu g/m^3$: 2.61 for SO_2, 1.88 for NO_2 and 1.96 for O_3, assuming conditions of 25°C and 101 kPa.

3.3 RESULTS AND COMPARISON

The Q3/Q4 average values for SO_2, NO_2 and O_3 were 0.7, 1.8 and 46.8 $\mu g/m^3$, respectively. The 2011 annual average for the same parameters were 0.4, 2.3 and 51.7 $\mu g/m^3$, respectively. The only missing data for the whole 2011 monitoring period were the November and December ozone samples, as the laboratory reported that they were damaged and could not be analyzed.

The relevant ambient air quality standards are summarized in Table 3.3-1. Maximum predicted concentrations contained in the EIS for the Doris North Gold Mine Project (MHBL 2005) are presented in Table 3.3-2. PASS results are summarized in Table 3.3-3 and the original laboratory reports are presented in Appendix 3. The time series of concentrations are presented in Figure 3.3-1. Monitoring results were compared to the relevant ambient air quality standards and the predictions in the EIS for the Doris North Gold Mine Project.

The PASS results are expressed as monthly average concentrations; however Health Canada's National Ambient Air Quality Objectives (NAAQO) and the Nunavut Environmental Guideline for Air Quality have

averaging periods of 1-hour, 24-hour and 1-year. Thus, only the 2011 annual average concentrations can be directly compared to standards.

Plate 3.2-1. Passive air samplers under a rain shelter at Doris meteorological station.

The 2011 annual average concentrations of SO_2 and NO_2 were well below the relevant annual standards. The 2011 annual average concentrations were also well below the maximum concentrations predicted in the EIS for the Doris North Gold Mine Project.

Table 3.3-1. Ambient Air Quality Standards for SO_2, NO_2 and O_3

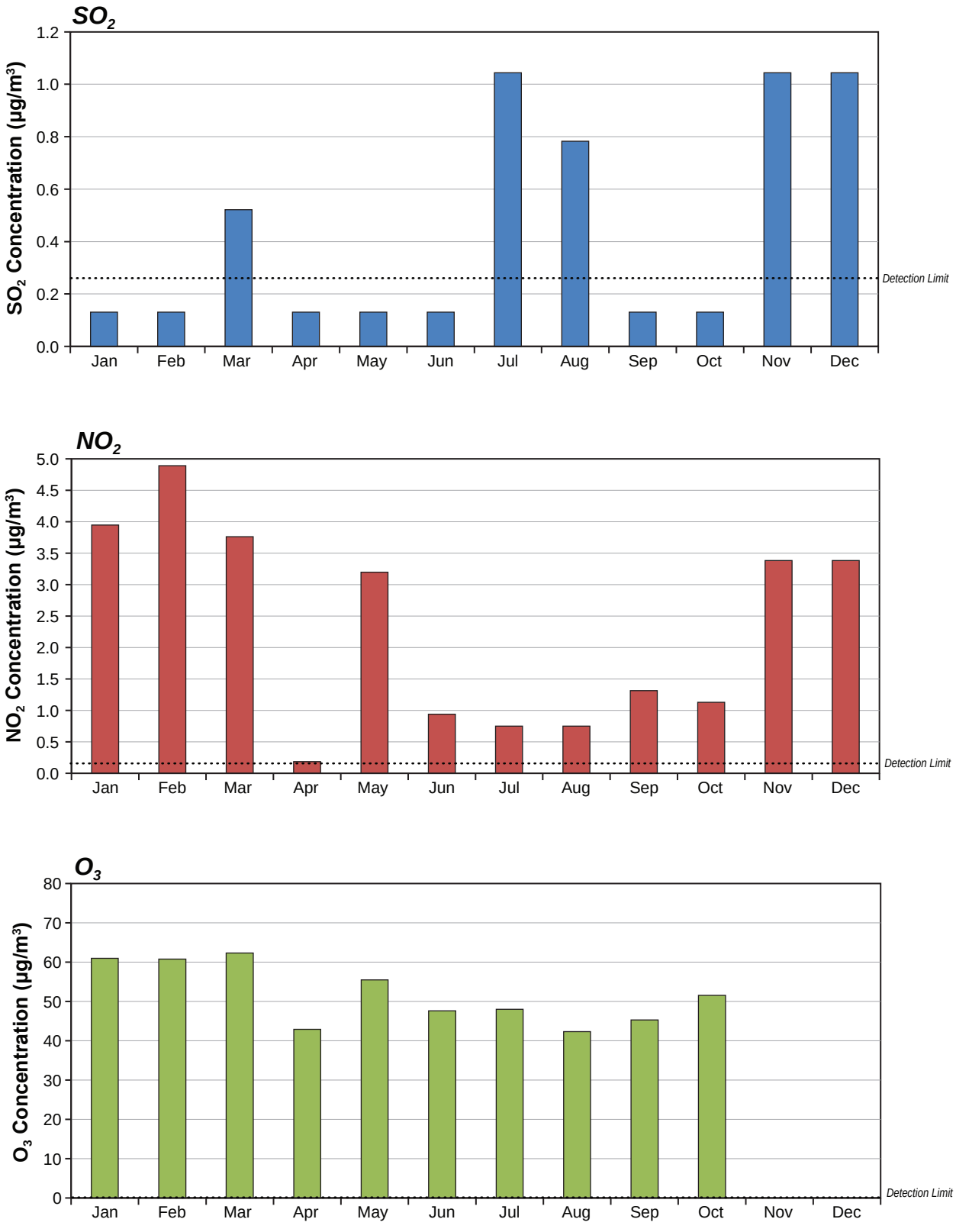
Parameter	Unit	Annual	Daily	1-Hour
SO_2 [a]	µg/m^3	30	150	450
NO_2 [b]	µg/m^3	100	200	400
O_3 [c]	µg/m^3	30	50	160

[a] *National Ambient Air Quality Objective (BC MoE 2009b) and Nunavut Territorial Government (GN 2002) maximum desirable concentrations for SO_2.*
[b] *National Ambient Air Quality Objective (BC MoE 2009b) maximum acceptable concentrations for NO_2.*
[c] *National Ambient Air Quality Objective (BC MoE 2009b) maximum acceptable concentration for O_3. Canada Wide Standard (CCME 2000) for O_3 has an 8-hour averaging period which cannot be compared with monthly results.*

Table 3.3-2. Maximum Predicted Concentrations of SO_2, NO_2 and O_3 from the EIS for the Doris North Gold Mine Project (MHBL 2005)

Parameter	Unit	Annual	Daily	1-Hour
SO_2	µg/m^3	5.8	49.6	265.9
NO_2	µg/m^3	47.7	126.4	306.7
O_3	µg/m^3	n/a	n/a	n/a

Predictions of Ozone concentrations were not included in the EIS for the Doris North Gold Mine Project.
n/a = not available



Note: November and December ozone sampling equipment was damaged and the lab was not able to analyze the samples.

NEWMONT NORTH AMERICA

SO_2, NO_2 and O_3 Concentrations from the Passive Air Sampling System, Doris North Gold Mine Project, 2011

Figure 3.3-1

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Table 3.3-3. Passive Ambient Air Quality Monitoring Results, Doris North Gold Mine Project, 2011

Period	SO_2 (µg/m^3)	NO_2 (µg/m^3)	O_3 (µg/m^3)
Jan-11	*0.1*	3.9	61.0
Feb-11	*0.1*	4.9	60.8
Mar-11	0.5	3.8	62.3
Apr-11	*0.1*	0.2	42.9
May-11	*0.1*	3.2	55.5
Jun-11	*0.1*	0.9	47.6
Jul-11	1.0	0.8	48.0
Aug-11	0.8	0.8	42.3
Sep-11	*0.1*	1.3	45.3
Oct-11	*0.1*	1.1	51.5
Nov-11 and Dec-11	1.0[a]	3.4[a]	n/a[b]
Q1 Q2 Average	**0.2**	**2.8**	**55.0**
Q3 Q4 Average	**0.7**	**1.8**	**46.8**
2011 Average	**0.4**	**2.3**	**51.7**

Limit of Detection is 0.26 µg/m^3 (0.1 ppb) for SO_2, 0.19 µg/m^3 (0.1 ppb) for NO_2 and 0.20 µg/m^3 (0.1 ppb) for O_3. Results below detection limit are reported as half of the detection limit and are shown in italics.
n/a = not available
[a] *This sample was collected over a period of 51 days, starting on October 30, 2011.*
[b] *The laboratory notes that this sample was returned with damage, and could not be analyzed.*

The 2011 annual average O_3 concentration is above the relevant annual standard. Predictions of O_3 concentrations were not included in the EIS for the Doris North Gold Mine Project. Health Canada recognises that the annual standard may not be achievable in remote locations and provides estimates of O_3 concentrations expected in areas that are not influenced by anthropogenic pollution (HC 1999). These estimates are given for the May to September period, but it is stated that when all months of the year are included, values would be slightly lower. The estimates are:

- Daily 1 hr. Maximum (May - Sept.) 69 to 94 µg/m^3 (reported as 35 to 48 ppb); and
- Monthly 1 hr. Average (May - Sept.) 49 to 78 µg/m^3 (reported as 25 - 40 ppb).

Remote locations may experience higher concentrations of ground level O_3 than urban locations due to the transport of O_3 from urban areas and the lower NO_2 concentrations, which scavenges O_3 from the air through chemical reactions. Monthly O_3 concentrations were within the range of concentrations typical of remote locations estimated by Health Canada and are considered representative of concentrations in an area relatively un-impacted by anthropogenic pollution.

Environment Canada undertakes monitoring at various locations across Canada as part of the National Air Pollution Surveillance (NAPS) Network. The nearest NAPS monitoring station to the Project which measures SO_2, NO_2 and O_3 concentrations is the Yellowknife, NWT station. Annual average concentrations of SO_2, NO_2 and O_3 were less than or equal to 0 µg /m^3 (reported as 0 ppb), 8 µg/m^3 (reported as 4 ppb) and 51 µg/m^3 (reported as 26 ppb), respectively, for 2006 (EC 2008) which is the latest year of published data. During 2011, annual average NO_2 and concentrations at the Doris North Gold Mine Project site were lower than the 2006 data for the NAPS Yellowknife station. SO_2 and O_3 concentrations at the Doris North Gold Mine Project in 2011 were slightly higher than the NAPS Yellowknife station 2006 data.

4. Results and Discussion

4. Results and Discussion

The ambient air quality monitoring program at the Doris North Gold Mine Project site continued during the last six months of 2011. This included Partisol monitoring of particulate matter, dustfall monitoring and passive ambient air monitoring of concentrations of SO_2, NO_2 and O_3 throughout the reporting period.

From the available data, PM_{10} and $PM_{2.5}$ concentrations were below the relevant guidelines for the July to December 2011 period and the full 2011 period. Compared to the predicted maximum concentrations reported in the EIS for the Doris North Gold Mine Project, PM_{10} concentrations were slightly above the predictions and $PM_{2.5}$ concentrations were below predictions. Total suspended particulate matter concentrations were well below the relevant standards and predicted concentrations in the EIS for the Doris North Gold Mine Project. It should be noted that due to power outages, sensor recalibration and station relocation, TSP and PM were only sampled in February, November and December of 2011. The station has now been fully serviced and relocated (October 2011).

For all ASTM method stations, all dustfall results were below the Saskatchewan and Alberta (commercial and industrial) limits; only samples collected in May were below all dustfall limits, for each station. All other ASTM method dustfall values were above BC, Ontario or Alberta (residential and recreational) limits. All AE dustfall samples were below every relevant dustfall limit. Most of the ASTM method dustfall samples were above the rate predicted in the EIS for the Doris North Gold Mine Project; the exceptions include: all samples in May, DF3 in June, CDF3 in July and CDF1 in August. For the station using the AE method, total dustfall was only above the predicted rate in February, July and August 2011, and below or equal to the predicted rate during all other months. The 2011 annual average total dustfall rate for the station using the AE method, DFA1, is comparable to the maximum annual deposition rate predicted in EIS for the Doris North Gold Mine Project.

The passive ambient air quality monitoring program included monthly sampling for SO_2, NO_2 and O_3. 2011 annual average concentrations of SO_2 and NO_2 were well below the relevant annual standards and were also well below the maximum concentrations predicted in the EIS for the Doris North Gold Mine Project.

The 2011 annual average O_3 concentration was above the relevant annual standard. Predictions of O_3 concentrations were not included in the EIS for the Doris North Gold Mine Project; however, concentrations were within the range of concentrations estimated by Health Canada for areas relatively unimpacted by anthropogenic pollution.

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Personal Communications

Fox, D. 2011. Email from Dave Fox (Environment Canada) to Anqela Holzapfel (Newmont) stating that he agrees with the new location of the Partisol samplers. Personal Communication: September 6, 2011.

Appendix 1

Suspended Particulate Matter Results (TSP, PM_{10} and $PM_{2.5}$)

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Your Project #: 1009-008-02
Site Location: HOPE BAY, NUNAVUT - BASELINE

Attention: TOLGA OLCAY
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2011/10/20
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B191562
Received: 2011/09/27, 12:13

Sample Matrix: Filter
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Mass Determination(ug/filter)	3	N/A	2011/09/28	EINDSOP-00151	EPA 2.12 Monitoring
Mass Determination (ug/m³) (1)	2	N/A	2011/10/20	EINDSOP-00151	EPA 2.12 Monitoring
Volume	2	N/A	2011/10/20	N/A	see departement

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) As per method, results are blank subtracted.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Levi Manchak, Customer Service
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B191562
Report Date: 2011/10/20

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-008-02
Site Location: HOPE BAY, NUNAVUT - BASELINE

RESULTS OF CHEMICAL ANALYSES OF FILTER

Maxxam ID		BQ3476	BQ3477	BQ3478		
Sampling Date						
	Units	**RP084092**	**RP058031**	**BLANK**	**RDL**	**QC Batch**
.						
Volume	m3	22.80	25.30		0.01	5286266
PM2.5/10						
Particulate Matter	ug/m3	0.6	1.1		0.1	5286265
Particulate Matter	ug/filter	14	27	11	3	5216463

RDL = Reportable Detection Limit

General Comments

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: TOLGA OLCAY
Client Project #: 1009-008-02
P.O. #:
Site Location: HOPE BAY, NUNAVUT - BASELINE

Quality Assurance Report

Maxxam Job Number: PB191562

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5216463	SS6	Calibration Check	Particulate Matter	2011/09/28		100	%	N/A

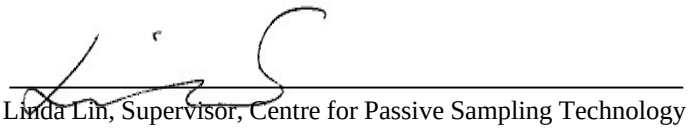
Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.

Maxxam Analytics International Corporation o/a Maxxam Analytics Edmonton: 6744 - 50th Street T6B 3M9 Telephone(780) 378-8500 FAX(780) 378-8699

Validation Signature Page

Maxxam Job #: B191562

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Linda Lin, Supervisor, Centre for Passive Sampling Technology

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RESCAN ENVIRONMENTAL SERVICES
ATTN: Tolga Olcay
Sixth Floor
1111 West Hastings Street
Vancouver BC V6E 2J3

Date Received: 02-SEP-11
Report Date: 26-SEP-11 14:29 (MT)
Version: FINAL

Client Phone: 604-689-9460

Certificate of Analysis

Lab Work Order #: L1053843

Project P.O. #: NOT SUBMITTED
Job Reference: HOPE BAY 1009-008-002
C of C Numbers:
Legal Site Desc:

Amber Springer
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1053843-2	L1053843-3	L1053843-4	L1053843-6	L1053843-7
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	20-FEB-11	26-FEB-11	20-FEB-11	20-FEB-11	26-FEB-11
	Sampled Time					
	Client ID	24943	27443	27433	27715	27727
Grouping	**Analyte**					
FILTER						
Particulates	Particulate - PM2.5 (ug)				180	97
	Particulate - PM2.5 (ug/m3)				7.9	4.2
	Particulate - PM10 (ug/m3)			9.1		
	Total Suspended Particulate (ug)	127	150			
	Total Suspended Particulate (ug/m3)	5.0	5.9			

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1053843-2	L1053843-3	L1053843-6	L1053843-7	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	20-FEB-11	26-FEB-11	20-FEB-11	26-FEB-11	
	Sampled Time					
	Client ID	24943	27443	27715	27727	
Grouping	**Analyte**					
MISC.						
Field Tests	Air Volume, Client Supplied (L)	25400	25300	22800	22800	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
AIR VOLUME-VA	Misc.	Air volume (L)	HYGIENE METHOD
PART-PM10-VA	Filter	Total Particulate (PM10) by Gravimetric	BCMOE METHOD

Total Particulate Matter (PM10) Method analysis is carried out in accordance with the BCMOE Lab Manual, Section G Air Constituents - Inorganics, "Total Particulate - PM10/PM02 - 47mm - HiVol" method. ALS provides pre-weighed filters (Pallflex TX40 HI20-WW 47mm) and clients typically sample using a "Partisol Model 2000 Air Sampler" as per U.S. EPA Reference Method RFPS-0694-098, fitted with a PM10 inlet. The particulate matter is determined gravimetrically.

PART-PM2.5-VA	Filter	Total Particulate (PM2.5) by Gravimetric	BCMOE METHOD

Total Particulate Matter (PM2.5) Method analysis is carried out in accordance with the BCMOE Lab Manual, Section G Air Constituents - Inorganics, "Total Particulate - PM10/PM02 - 47mm - HiVol" method. ALS provides pre-weighed filters (Pallflex TX40 HI20-WW 47mm) and clients typically sample using a "Partisol Model 2000 Air Sampler" as per U.S. EPA Reference Method RFPS-0694-098, fitted with a PM2.5 inlet. The particulate matter is determined gravimetrically.

PART-TSP-VA	Filter	Total Particulate (TSP) by Gravimetric	BCMOE METHOD

Total Suspended Particulate Matter (TSP) Method of analysis is modified from the BCMOE Lab Manual, Section G Air Constituents - Inorganics, "Total Particulate - PM10/PM02 - 47mm - HiVol" method. ALS provides pre-weighed filters (Pallflex TX40 HI20-WW 47mm) and clients typically sample using a "Partisol Model 2000 Air Sampler" as per U.S. EPA Reference Method RFPS-0694-098, fitted with a TSP inlet. The particulate matter is determined gravimetrically.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES
Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878
www.alsenviro.com

L1053843-COFC

REPORT TO:		REPORT FORMAT / DISTRIBUTION		SERVICE REQUESTED	
COMPANY:	Rescan Environmental Services Ltd.	HARDCOPY:	STANDARD	REGULAR SERVICE (DEFAULT)	X
CONTACT:	Tolga Olcay	ELECTRONIC	PDF and EXCEL	PRIORITY SERVICE (2-3 DAYS)	
ADDRESS:	6th Flr, 1111 West Hastings Street	EMAIL 1:	tolcay@rescan.com	EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
CITY/ PROV	Vancouver, BC V6E 2J3	EMAIL 2:		OTHER (<1 DAY / WEEKEND) - CONTACT ALS	
PHONE: 604-689-9460	604-689-4277			ANALYSIS REQUEST	
INVOICE TO: SAME AS REPORT ? YES / NO				Please indicate below Filtered, Preserved or both (F, P, F/P)	
COMPANY:	SAME AS ABOVE	CLIENT / PROJECT INFORMATION:			
CONTACT:		JOB #:	Hope Bay 1009-008-002		
ADDRESS:		PO /AFE:			
CITY/ PROV		Legal Site Description:			
PHONE:	FAX	QUOTE #:			
Lab Work Order # (lab use only)	L1053843	ALS CONTACT			

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	TSP	PM10	PM2.5										NUMBER OF CONTAINERS
	rp 058031	Feb 14, 2011		Water	x					Vol=25.3 m3							
	24943	Feb 20, 2011		Water	x					Voll=25.4m3							
	27443	feb 26, 2011		Water	x					Vol=25.3m3							
	27433	Feb 20, 2011		Water		x				Vol=2.4m3							
	rp 084092	Feb 14, 2011		Water			x			Vol=22.8m3							
	27715	Feb 20, 2011		Water			x			Vol=22.8m4							
	27727	feb 26, 2011		Water			x			Vol=22.8m5							
	rp 090549	Feb14, 2011		Water	DAMAGED PM10 FILTER												
				Water													
				Water													

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS
	Use Partisol 2025 D calculation instructions for PM2.5 and PM10 filters

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified below.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
TOLGA		Mani Sept 2nd 11 13:30		TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:		
					If NO, Explain

GENF 18.01 Front

2°C

RESCAN ENVIRONMENTAL SERVICES
ATTN: Derek Shaw
Sixth Floor
1111 West Hastings Street
Vancouver BC V6E 2J3

Date Received: 09-FEB-12
Report Date: 16-FEB-12 17:08 (MT)
Version: FINAL

Client Phone: 604-689-9460

Certificate of Analysis

Lab Work Order #: L1112786

Project P.O. #: NOT SUBMITTED
Job Reference: HOPE BAY 1009-008-002
C of C Numbers: 1, 2, 3, 4, 5, 6
Legal Site Desc:

Amber Springer
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-1	L1112786-2	L1112786-3	L1112786-4	L1112786-5
	Description	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER
	Sampled Date					
	Sampled Time					
	Client ID	24939	17843	25074	27324	24944
Grouping	**Analyte**					
FILTER						
Particulates	Particulate - PM2.5 (ug)					
	Particulate - PM2.5 (ug/m3)					
	Particulate - PM10 (ug/m3)					
	Total Suspended Particulate (ug)	257	117	260	143	203
	Total Suspended Particulate (ug/m3)	10.1	4.6	10.2	5.6	8.0

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-6	L1112786-7	L1112786-8	L1112786-9	L1112786-10
	Description	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER
	Sampled Date					
	Sampled Time					
	Client ID	24923	22666	29745	24924	24941
Grouping	**Analyte**					
FILTER						
Particulates	Particulate - PM2.5 (ug)					
	Particulate - PM2.5 (ug/m3)					
	Particulate - PM10 (ug/m3)					
	Total Suspended Particulate (ug)	320	193	90	80	<50
	Total Suspended Particulate (ug/m3)	12.6	7.6	3.5	3.1	<2.0

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-11	L1112786-12	L1112786-13	L1112786-14	L1112786-15
	Description	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER
	Sampled Date					
	Sampled Time					
	Client ID	24940	24938	13063	22670	27809
Grouping	**Analyte**					
FILTER						
Particulates	Particulate - PM2.5 (ug)					
	Particulate - PM2.5 (ug/m3)					
	Particulate - PM10 (ug/m3)				<20	<20
	Total Suspended Particulate (ug)	80	80	60		
	Total Suspended Particulate (ug/m3)	3.1	3.3	2.4		

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-16	L1112786-17	L1112786-18	L1112786-19	L1112786-20
	Description	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER
	Sampled Date					
	Sampled Time					
	Client ID	25080	25419	27450	27812	27797
Grouping	**Analyte**					
FILTER						
Particulates	Particulate - PM2.5 (ug)					
	Particulate - PM2.5 (ug/m3)					
	Particulate - PM10 (ug/m3)	<20	<20	<20	<20	<20
	Total Suspended Particulate (ug)					
	Total Suspended Particulate (ug/m3)					

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-21	L1112786-22	L1112786-23	L1112786-24	L1112786-25
	Description	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER
	Sampled Date					
	Sampled Time					
	Client ID	27445	27438	27818	27811	27448
Grouping	**Analyte**					
FILTER						
Particulates	Particulate - PM2.5 (ug)					
	Particulate - PM2.5 (ug/m3)					
	Particulate - PM10 (ug/m3)	<20	<20	<20	<20	<21
	Total Suspended Particulate (ug)					
	Total Suspended Particulate (ug/m3)					

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-26	L1112786-27	L1112786-28	L1112786-29	L1112786-30
	Description	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER
	Sampled Date					
	Sampled Time					
	Client ID	27800	27817	27814	27430	24922
Grouping	**Analyte**					
FILTER						
Particulates	Particulate - PM2.5 (ug)			280	77	<50
	Particulate - PM2.5 (ug/m3)			12.3	3.4	<2.2
	Particulate - PM10 (ug/m3)	<20	<20			
	Total Suspended Particulate (ug)					
	Total Suspended Particulate (ug/m3)					

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-31	L1112786-32	L1112786-33	L1112786-34	L1112786-35
	Description	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER
	Sampled Date					
	Sampled Time					
	Client ID	25072	27779	13097	25446	27795
Grouping	**Analyte**					
FILTER						
Particulates	Particulate - PM2.5 (ug)	67	<50	73	50	83
	Particulate - PM2.5 (ug/m3)	2.9	<2.2	3.2	<2.2	3.7
	Particulate - PM10 (ug/m3)					
	Total Suspended Particulate (ug)					
	Total Suspended Particulate (ug/m3)					

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-36	L1112786-37	L1112786-38	L1112786-39	L1112786-40
	Description	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER
	Sampled Date					
	Sampled Time					
	Client ID	27798	25060	25407	28678	25061
Grouping	**Analyte**					
FILTER						
Particulates	Particulate - PM2.5 (ug)	<50	<50	<50	<50	<50
	Particulate - PM2.5 (ug/m3)	<2.2	<2.2	<20	<21	<20
	Particulate - PM10 (ug/m3)					
	Total Suspended Particulate (ug)					
	Total Suspended Particulate (ug/m3)					

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-41				
	Description	TEFLON FILTER				
	Sampled Date					
	Sampled Time					
	Client ID	25412				
Grouping	**Analyte**					
FILTER						
Particulates	Particulate - PM2.5 (ug)	50				
	Particulate - PM2.5 (ug/m3)	20				
	Particulate - PM10 (ug/m3)					
	Total Suspended Particulate (ug)					
	Total Suspended Particulate (ug/m3)					

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-1	L1112786-2	L1112786-3	L1112786-4	L1112786-5
	Description	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER
	Sampled Date					
	Sampled Time					
	Client ID	24939	17843	25074	27324	24944
Grouping	**Analyte**					
MISC.						
Field Tests	Air Volume, Client Supplied (L)	25400	25400	25400	25400	25400

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-6	L1112786-7	L1112786-8	L1112786-9	L1112786-10
	Description	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER
	Sampled Date					
	Sampled Time					
	Client ID	24923	22666	29745	24924	24941
Grouping	**Analyte**					
MISC.						
Field Tests	Air Volume, Client Supplied (L)	25400	25400	25400	25400	25400

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-11	L1112786-12	L1112786-13	L1112786-28	L1112786-29
	Description	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER
	Sampled Date					
	Sampled Time					
	Client ID	24940	24938	13063	27814	27430
Grouping	**Analyte**					
MISC.						
Field Tests	Air Volume, Client Supplied (L)	25400	23900	25400	22800	22800

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-30	L1112786-31	L1112786-32	L1112786-33	L1112786-34
	Description	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER	TEFLON FILTER
	Sampled Date					
	Sampled Time					
	Client ID	24922	25072	27779	13097	25446
Grouping	**Analyte**					
MISC.						
Field Tests	Air Volume, Client Supplied (L)	22800	22800	22800	22800	22800

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1112786-35 TEFLON FILTER 27795	L1112786-36 TEFLON FILTER 27798	L1112786-37 TEFLON FILTER 25060	L1112786-38 TEFLON FILTER 25407	L1112786-39 TEFLON FILTER 28678
Sample ID / Description / Sampled Date / Sampled Time / Client ID						
MISC.						
Field Tests	Air Volume, Client Supplied (L)	22800	22800	22800	2500	2400

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1112786-40	L1112786-41			
	Description	TEFLON FILTER	TEFLON FILTER			
	Sampled Date					
	Sampled Time					
	Client ID	25061	25412			
Grouping	**Analyte**					
MISC.						
Field Tests	Air Volume, Client Supplied (L)	2500	2500			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
AIR VOLUME-VA	Misc.	Air volume (L)	HYGIENE METHOD
PART-PM10-VA	Filter	Total Particulate (PM10) by Gravimetric	BCMOE METHOD

Total Particulate Matter (PM10) Method analysis is carried out in accordance with the BCMOE Lab Manual, Section G Air Constituents - Inorganics, "Total Particulate - PM10/PM02 - 47mm - HiVol" method. ALS provides pre-weighed filters (Pallflex TX40 HI20-WW 47mm) and clients typically sample using a "Partisol Model 2000 Air Sampler" as per U.S. EPA Reference Method RFPS-0694-098, fitted with a PM10 inlet. The particulate matter is determined gravimetrically.

PART-PM2.5-VA	Filter	Total Particulate (PM2.5) by Gravimetric	BCMOE METHOD

Total Particulate Matter (PM2.5) Method analysis is carried out in accordance with the BCMOE Lab Manual, Section G Air Constituents - Inorganics, "Total Particulate - PM10/PM02 - 47mm - HiVol" method. ALS provides pre-weighed filters (Pallflex TX40 HI20-WW 47mm) and clients typically sample using a "Partisol Model 2000 Air Sampler" as per U.S. EPA Reference Method RFPS-0694-098, fitted with a PM2.5 inlet. The particulate matter is determined gravimetrically.

PART-TSP-VA	Filter	Total Particulate (TSP) by Gravimetric	BCMOE METHOD

Total Suspended Particulate Matter (TSP) Method of analysis is modified from the BCMOE Lab Manual, Section G Air Constituents - Inorganics, "Total Particulate - PM10/PM02 - 47mm - HiVol" method. ALS provides pre-weighed filters (Pallflex TX40 HI20-WW 47mm) and clients typically sample using a "Partisol Model 2000 Air Sampler" as per U.S. EPA Reference Method RFPS-0694-098, fitted with a TSP inlet. The particulate matter is determined gravimetrically.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

1 2 3 4 5
6

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

COC #

REPORT TO:		REPORT FORMAT / DISTRIBUTION	
COMPANY:	Rescan Environmental Services Ltd.	HARDCOPY:	STANDARD
CONTACT:	Derek Shaw	ELECTRONIC	PDF and EXCEL
ADDRESS:	6th Flr, 1111 West Hastings Street	EMAIL 1:	dshaw@rescan.com
CITY/ PROV	Vancouver, BC V6E 2J3	EMAIL 2:	
PHONE: 604-689-9460	604-689-4277		
INVOICE TO: SAME AS REPORT ? YES / NO			
COMPANY:	SAME AS ABOVE	CLIENT / PROJECT INFORMATION:	
CONTACT:		JOB #:	Hope Bay 1009-008-002
ADDRESS:		PO /AFE:	
CITY/ PROV		Legal Site Description:	
PHONE:	FAX	QUOTE #:	
Lab Work Order # (lab use only)		ALS CONTACT	

SERVICE REQUESTED	
REGULAR SERVICE (DEFAULT)	✓
PRIORITY SERVICE (2-3 DAYS)	
EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
OTHER (<1 DAY / WEEKEND) - CONTACT ALS	

ANALYSIS REQUEST

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	TSP (HART - TSP VA)	PM10	PM2.5											NUMBER OF CONTAINERS
	24939	5-Nov-2011		teflon filter	x					Vol=25.4 m3								
	17843	11-Nov-2011		teflon filter	x					Vol=25.4 m3								
	25074	17-Nov-2011		teflon filter	x					Vol=25.4 m3								
	27324	23-Nov-2011		teflon filter	x					Vol=25.4 m3								
	24944	29-Nov-2011		teflon filter	x					Vol=25.4 m3								
	24923	5-Dec-2011		teflon filter	x					Vol=25.4 m3								
	22666	11-Dec-2011		teflon filter	x					Vol=25.4 m3								
	29745	17-Dec-2011		teflon filter	x					Vol=25.4 m3								
	24924	23-Dec-2011		teflon filter	x					Vol=25.4 m3								
	24941	29-Dec-2011		teflon filter	x					Vol=25.4 m3								

GUIDELINES / REGULATIONS

SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Use Partisol 2025 D calculation instructions for PM2.5 and PM10 filters

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified below.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:
Dave Vokey	Feb 9	Feb 9, 12	
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:
Tolga O'Leary	Feb 9	14:53	

SAMPLE CONDITION (lab use only)

TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
2	
	If NO, Explain

GENF 18.01 Front

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

COC #

REPORT TO:		REPORT FORMAT / DISTRIBUTION		SERVICE REQUESTED	
COMPANY:	Rescan Environmental Services Ltd.	HARDCOPY:	STANDARD	REGULAR SERVICE (DEFAULT)	✓
CONTACT:	Derek Shaw	ELECTRONIC	PDF and EXCEL	PRIORITY SERVICE (2-3 DAYS)	
ADDRESS:	6th Flr, 1111 West Hastings Street	EMAIL 1:	dshaw@rescan.com	EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
CITY/ PROV	Vancouver, BC V6E 2J3	EMAIL 2:		OTHER (<1 DAY / WEEKEND) - CONTACT ALS	
PHONE: 604-689-9460	604-689-4277			ANALYSIS REQUEST	
INVOICE TO: SAME AS REPORT ? YES / NO				Please indicate below Filtered, Preserved or both (F, P, F/P)	
COMPANY:	SAME AS ABOVE	CLIENT / PROJECT INFORMATION:			
CONTACT:		JOB #:	Hope Bay 1009-008-002		
ADDRESS:		PO /AFE:			
CITY/ PROV		Legal Site Description:			
PHONE:	FAX	QUOTE #:			
Lab Work Order # (lab use only):		ALS CONTACT			

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	TSP	PM10	PM2.5											NUMBER OF CONTAINERS
	24940	4-Jan-2012		teflon filter	x					Vol=25.4 m3								
	24938	10-Jan-2012		teflon filter	x					Vol=23.9 m3								
	13063	16-Jan-2012		teflon filter	x					Vol=25.4 m4								

GUIDELINES / REGULATIONS

SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Use Partisol 2025 D calculation instructions for PM2.5 and PM10 filters

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified below.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
Dave Vickery	January			TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
RELINQUISHED BY: Tolga	DATE & TIME: Jan 9	RECEIVED BY: Feb 09/12	DATE & TIME: 1453	>0°C	If NO, Explain

GENF 18.01 Front

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

COC #

REPORT TO:		REPORT FORMAT / DISTRIBUTION		SERVICE REQUESTED	
COMPANY:	Rescan Environmental Services Ltd.	HARDCOPY:	STANDARD	REGULAR SERVICE (DEFAULT)	✓
CONTACT:	Derek Shaw	ELECTRONIC	PDF and EXCEL	PRIORITY SERVICE (2-3 DAYS)	
ADDRESS:	6th Flr, 1111 West Hastings Street	EMAIL 1:	dshaw@rescan.com	EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
CITY/ PROV	Vancouver, BC V6E 2J3	EMAIL 2:		OTHER (<1 DAY / WEEKEND) - CONTACT ALS	
PHONE: 604-689-9460	604-689-4277			ANALYSIS REQUEST	
INVOICE TO: SAME AS REPORT ? YES / NO				Please indicate below Filtered, Preserved or both (F, P, F/P)	
COMPANY:	SAME AS ABOVE	CLIENT / PROJECT INFORMATION:			
CONTACT:		JOB #:	Hope Bay 1009-008-002		
ADDRESS:		PO /AFE:			
CITY/ PROV		Legal Site Description:			
PHONE:	FAX	QUOTE #:			
Lab Work Order # (lab use only)		ALS CONTACT			

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	TSP	PM10	PM2.5										NUMBER OF CONTAINERS
	22670	5-Nov-2011		teflon filter		x				Vol=2.5 m3							
	27809	11-Nov-2011		teflon filter		x				Vol=2.5 m3							
	25080	17-Nov-2011		teflon filter		x				Vol=2.5 m3							
	25419	23-Nov-2011		teflon filter		x				Vol=2.5 m3							
	27450	29-Nov-2011		teflon filter		x				Vol=2.5 m3							
	27812	5-Dec-2011		teflon filter		x				Vol=2.5 m3							
	27797	11-Dec-2011		teflon filter		x				Vol=2.5 m3							
	27445	17-Dec-2011		teflon filter		x				Vol=2.5 m3							
	27438	23-Dec-2011		teflon filter		x				Vol=2.5 m3							
	27818	29-Dec-2011		teflon filter		x				Vol=2.5 m3							

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS
	Use Partisol 2025 D calculation instructions for PM2.5 and PM10 filters

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified below.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
Dave Vokes	Jan 2012			TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	20°C	
Tolga	Feb 9, 2012				If NO, Explain

GENF 18.01 Front

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

COC #

REPORT TO:		REPORT FORMAT / DISTRIBUTION		SERVICE REQUESTED	
COMPANY:	Rescan Environmental Services Ltd.	HARDCOPY:	STANDARD	REGULAR SERVICE (DEFAULT)	
CONTACT:	Derek Shaw	ELECTRONIC	PDF and EXCEL	PRIORITY SERVICE (2-3 DAYS)	✓
ADDRESS:	6th Fl, 1111 West Hastings Street	EMAIL 1:	dshaw@rescan.com	EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
CITY/ PROV	Vancouver, BC V6E 2J3	EMAIL 2:		OTHER (<1 DAY / WEEKEND) - CONTACT ALS	
PHONE:	604-689-9460 604-689-4277			ANALYSIS REQUEST	
INVOICE TO:	SAME AS REPORT ? YES / NO			Please indicate below Filtered, Preserved or both (F, P, F/P)	
COMPANY:	SAME AS ABOVE	CLIENT / PROJECT INFORMATION:			
CONTACT:		JOB #:	Hope Bay 1009-008-002		
ADDRESS:		PO /AFE:			
CITY/ PROV		Legal Site Description:			
PHONE:	FAX	QUOTE #:			
Lab Work Order #: (lab use only)		ALS CONTACT			

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	TSP	PM10	PM2.5										NUMBER OF CONTAINERS
	27811	4-Jan-2012		teflon filter		x				Vol=2.5 m3							
	27448	10-Jan-2012		teflon filter		x				Vol=2.4 m3							
	27800	16-Jan-2012		teflon filter		x				Vol=2.5 m3							
	27817	22-Jan-2012		teflon filter		x				Vol=2.5 m4							

GUIDELINES / REGULATIONS

SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Use Partisol 2025 D calculation instructions for PM2.5 and PM10 filters

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified below.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
Dave Vokey	Jan 2012			TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	20 °C	
TOLGA	Feb 9, 2012	Feb 09/12			If NO, Explain

GENF 18.01 Front

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878

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COC #

L1112786-COFC

REPORT TO:		REPORT FORMAT / DISTRIBUTION		SERVICE REQUESTED	
COMPANY:	Rescan Environmental Services Ltd.	HARDCOPY:	STANDARD	REGULAR SERVICE (DEFAULT)	✓
CONTACT:	Derek Shaw	ELECTRONIC	PDF and EXCEL	PRIORITY SERVICE (2-3 DAYS)	
ADDRESS:	6th Flr, 1111 West Hastings Street	EMAIL 1:	dshaw@rescan.com	EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
CITY/ PROV	Vancouver, BC V6E 2J3	EMAIL 2:		OTHER (<1 DAY / WEEKEND) - CONTACT ALS	
PHONE: 604-689-9460	604-689-4277			ANALYSIS REQUEST	
INVOICE TO: SAME AS REPORT ? YES / NO				Please indicate below Filtered, Preserved or both (F, P, F/P)	
COMPANY:	SAME AS ABOVE	CLIENT / PROJECT INFORMATION:			
CONTACT:		JOB #:	Hope Bay 1009-008-002		
ADDRESS:		PO /AFE:			
CITY/ PROV		Legal Site Description:			
PHONE:	FAX	QUOTE #:			
Lab Work Order # (lab use only)		ALS CONTACT			

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	TSP	PM10	PM2.5										NUMBER OF CONTAINERS
	27814	5-Nov-2011		teflon filter			x			Vol=22.8 m3							
	27430	11-Nov-2011		teflon filter			x			Vol=22.8 m3							
	24922	17-Nov-2011		teflon filter			x			Vol=22.8 m3							
	25072	23-Nov-2011		teflon filter			x			Vol=22.8 m3							
	27779	29-Nov-2011		teflon filter			x			Vol=22.8 m3							
	13097	5-Dec-2011		teflon filter			x			Vol=22.8 m3							
	25446	11-Dec-2011		teflon filter			x			Vol=22.8 m3							
	27795	17-Dec-2011		teflon filter			x			Vol=22.8 m3							
	27798	23-Dec-2011		teflon filter			x			Vol=22.8 m3							
	25060	29-Dec-2011		teflon filter			x			Vol=22.8 m3							

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS
	Use Partisol 2025 D calculation instructions for PM2.5 and PM10 filters

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified below.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
Dave Vokey	Jan			TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	20°C	
Tolga	Feb 9, 2012			If NO, Explain	

1C453

GENF 18.01 Front

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM COC #

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

REPORT TO:		REPORT FORMAT / DISTRIBUTION		SERVICE REQUESTED	
COMPANY:	Rescan Environmental Services Ltd. [redacted]	HARDCOPY:	STANDARD [redacted]	REGULAR SERVICE (DEFAULT)	✓
CONTACT:	Derek Shaw [redacted]	ELECTRONIC	PDF and EXCEL [redacted]	PRIORITY SERVICE (2-3 DAYS)	
ADDRESS:	6th Flr, 1111 West Hastings Street [redacted]	EMAIL 1:	dshaw@rescan.com [redacted]	EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
CITY/ PROV	Vancouver, BC [redacted] V6E 2J3 [redacted]	EMAIL 2:	[redacted]	OTHER (<1 DAY / WEEKEND) - CONTACT ALS	
PHONE: 604-689-9460 [redacted]	604-689-4277 [redacted]	[redacted]			

INVOICE TO: SAME AS REPORT ? YES / NO		CLIENT / PROJECT INFORMATION:	
COMPANY:	SAME AS ABOVE [redacted]		
CONTACT:	[redacted]	JOB #:	Hope Bay 1009-008-002 [redacted]
ADDRESS:	[redacted]	PO /AFE:	[redacted]
CITY/ PROV	[redacted]	Legal Site Description:	[redacted]
PHONE: [redacted]	FAX [redacted]	QUOTE #:	[redacted]
Lab Work Order # (lab use only)	[redacted]	ALS CONTACT	

ANALYSIS REQUEST

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	TSP	PM10	PM2.5											NUMBER OF CONTAINERS
[redacted]	25407	4-Jan-2012		teflon filter			x			Vol=2.5 m3								
[redacted]	28678	10-Jan-2012		teflon filter			x			Vol=2.4 m3								
[redacted]	25061	16-Jan-2012		teflon filter			x			Vol=2.5 m3								
[redacted]	25412	22-Jan-2012		teflon filter			x			Vol=2.5 m3								
[redacted]																		
[redacted]																		
[redacted]																		
[redacted]																		
[redacted]																		
[redacted]																		

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS
	Use Partisol 2025 D calculation instructions for PM2.5 and PM10 filters

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RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only) [redacted]	
Dave Vokey	Jan			TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
RELINQUISHED BY: Tolga Olcay	DATE & TIME: Feb 9, 2012	RECEIVED BY: [signature] Feb 14	DATE & TIME:	20°C	[redacted]
				[redacted]	If NO, Explain [redacted]

(4-5)

GENF 18.01 Front

CALIBRATION CONSTANTS - OCTOBER 12, 2011

TSP UNIT, S/N 2025B221230801

SENSOR	OFFSET	SPAN
Temp ambient	5.62	
Press ambient	-0.50	
RH ambient	13.30	
Temp filter comp	-1.87	
Temp filter 1	0.03	
Flow	0.557	1.094

Leak Check Passed - 18 mm Hg with standard cassette.

DICHOT UNIT, S/N 202DA202970801

SENSOR	OFFSET	SPAN
Temp ambient	2.69	
Press ambient	-0.60	
RH ambient	7.72	
Temp filter comp	-0.46	
Temp filter 1	1.97	
Temp filter 2	1.67	
Flow High	-0.057	1.050
Flow Low	0.129	1.038

Leak Check Passed - 6 mm Hg with standard cassette.

Appendix 2

Dustfall Results (ASTM Method)

Rescan™
Engineers and Scientists

RESCAN ENVIRONMENTAL SERVICES
ATTN: Tolga Olcay
Sixth Floor
1111 West Hastings Street
Vancouver BC V6E 2J3

Date Received: 17-JUN-11
Report Date: 28-JUN-11 14:46 (MT)
Version: FINAL

Client Phone: 604-689-9460

Certificate of Analysis

Lab Work Order #: L1019622
Project P.O. #: NOT SUBMITTED
Job Reference: 1009-008-02 HOPE BAY BASELINE & CONSTRUCTION DUSTFALL
Legal Site Desc:
C of C Numbers:

Amber Springer
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1019622-1 DUSTFALL 04-JUN-11 12:00 DF1A	L1019622-2 DUSTFALL 04-JUN-11 12:00 DF1B	L1019622-3 DUSTFALL 06-JUN-11 13:30 DF2A	L1019622-4 DUSTFALL 06-JUN-11 13:30 DF2B	L1019622-5 DUSTFALL 04-JUN-11 12:16 DF3A
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	0.16	<0.10	<0.10	0.57	<0.10
	Total Insoluble Dustfall (mg/dm2.day)	0.12	<0.10	<0.10	0.26	<0.10
	Total Soluble Dustfall (mg/dm2.day)	<0.10	<0.10	<0.10	0.31	0.10
Anions and Nutrients	Ammonia (as N) (mg/dm2.day)	0.000042	0.000207	0.000419	0.000073	0.000058
	Chloride (Cl) (mg/dm2.day)	0.0023	<0.0054	<0.0047	0.0031	0.0013
	Nitrate (as N) (mg/dm2.day)	0.000500	0.000978	0.000734	0.000505	0.000357
	Sulfate (SO4) (mg/dm2.day)	0.0015	0.0063	0.0056	<0.0022	0.0016
Metals	Aluminum (Al)-Total (mg/dm2.day)	0.00115	0.000343	0.00117	0.00169	0.000116
	Antimony (Sb)-Total (mg/dm2.day)	<0.00000026	<0.0000011	0.00000239	<0.00000045	<0.00000024
	Arsenic (As)-Total (mg/dm2.day)	0.0000113	<0.0000011	<0.00000094	0.0000157	0.0000104
	Barium (Ba)-Total (mg/dm2.day)	0.00000753	0.0000172	0.0000112	0.00000968	0.00000230
	Beryllium (Be)-Total (mg/dm2.day)	<0.0000013	<0.0000054	<0.0000047	<0.0000022	<0.0000012
	Bismuth (Bi)-Total (mg/dm2.day)	<0.0000013	<0.0000054	<0.0000047	<0.0000022	<0.0000012
	Boron (B)-Total (mg/dm2.day)	<0.000026	<0.00011	<0.000094	<0.000045	0.000024
	Cadmium (Cd)-Total (mg/dm2.day)	0.00000043	0.00000192	<0.00000047	0.00000046	0.00000044
	Calcium (Ca)-Total (mg/dm2.day)	0.00746	0.0233	0.00627	0.0205	0.00071
	Chromium (Cr)-Total (mg/dm2.day)	0.0000086	<0.0000054	0.0000080	0.0000094	0.0000033
	Cobalt (Co)-Total (mg/dm2.day)	0.00000115	0.0000012	0.00000128	0.00000188	<0.00000024
	Copper (Cu)-Total (mg/dm2.day)	0.0000166	0.0000768	0.0000571	0.0000219	0.0000204
	Iron (Fe)-Total (mg/dm2.day)	0.00164	0.00050	0.00179	0.00308	0.000151
	Lead (Pb)-Total (mg/dm2.day)	0.00000020	0.00000459	0.00000149	0.00000169	0.00000052
	Lithium (Li)-Total (mg/dm2.day)	<0.000013	<0.000054	<0.000047	<0.000022	<0.000012
	Magnesium (Mg)-Total (mg/dm2.day)	0.00099	0.0011	0.00126	0.00191	0.00025
	Manganese (Mn)-Total (mg/dm2.day)	0.0000653	0.000154	0.0000685	0.0000807	0.00000663
	Mercury (Hg)-Total (mg/dm2.day)	<0.00000013	<0.0000011	<0.00000047	<0.00000022	<0.00000024
	Molybdenum (Mo)-Total (mg/dm2.day)	<0.00000013	<0.00000054	<0.00000047	0.00000023	<0.00000012
	Nickel (Ni)-Total (mg/dm2.day)	0.0000040	0.0000069	<0.0000047	0.0000049	0.0000025
	Phosphorus (P)-Total (mg/dm2.day)	<0.00079	<0.0032	<0.0028	<0.0013	<0.00071
	Potassium (K)-Total (mg/dm2.day)	<0.0052	<0.021	<0.019	<0.0089	<0.0047
	Selenium (Se)-Total (mg/dm2.day)	<0.0000026	<0.000011	<0.0000094	<0.0000045	<0.0000024
	Silicon (Si)-Total (mg/dm2.day)	0.00133	0.00073	0.00174	0.00285	0.00026
	Silver (Ag)-Total (mg/dm2.day)	<0.000000026	<0.00000011	<0.000000094	<0.000000045	<0.000000024
	Sodium (Na)-Total (mg/dm2.day)	<0.0052	<0.021	<0.019	<0.0089	<0.0047
	Strontium (Sr)-Total (mg/dm2.day)	0.00000406	0.0000121	0.00000599	0.0000110	0.00000216
	Thallium (Tl)-Total (mg/dm2.day)	<0.00000026	<0.0000011	<0.00000094	<0.00000045	<0.00000024
	Tin (Sn)-Total (mg/dm2.day)	<0.00000026	0.0000047	<0.00000094	<0.00000045	<0.00000024
	Titanium (Ti)-Total (mg/dm2.day)	0.000054	<0.00011	<0.000094	0.000111	<0.000024

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1019622-6	L1019622-7	L1019622-8	L1019622-9	
Description	DUSTFALL	DUSTFALL	DUSTFALL	DUSTFALL	
Sampled Date	04-JUN-11	04-JUN-11	04-JUN-11	04-JUN-11	
Sampled Time	12:16	12:05	12:07	12:09	
Client ID	DF3B	CDF1	CDF2	CDF3	
Grouping / **Analyte**					
DUSTFALL					
Particulates					
Total Dustfall (mg/dm2.day)	0.15	<0.10	0.16	<0.10	
Total Insoluble Dustfall (mg/dm2.day)	<0.10	<0.10	<0.10	<0.10	
Total Soluble Dustfall (mg/dm2.day)	0.16	0.12	<0.10	<0.10	
Anions and Nutrients					
Ammonia (as N) (mg/dm2.day)	0.000072	0.000042	0.000319	0.000150	
Chloride (Cl) (mg/dm2.day)	<0.0026	<0.0026	<0.0062	<0.0046	
Nitrate (as N) (mg/dm2.day)	0.000417	0.000363	0.000758	0.000386	
Sulfate (SO4) (mg/dm2.day)	<0.0026	<0.0026	0.0062	<0.0046	
Metals					
Aluminum (Al)-Total (mg/dm2.day)	0.0000996	0.000169	0.000642	0.00134	
Antimony (Sb)-Total (mg/dm2.day)	<0.00000052	<0.00000052	<0.0000012	<0.00000092	
Arsenic (As)-Total (mg/dm2.day)	0.0000183	0.0000189	<0.0000012	<0.00000092	
Barium (Ba)-Total (mg/dm2.day)	0.00000463	0.00000567	0.0000180	0.00000659	
Beryllium (Be)-Total (mg/dm2.day)	<0.0000026	<0.0000026	<0.0000062	<0.0000046	
Bismuth (Bi)-Total (mg/dm2.day)	<0.0000026	<0.0000026	<0.0000062	<0.0000046	
Boron (B)-Total (mg/dm2.day)	<0.000052	<0.000052	<0.00012	<0.000092	
Cadmium (Cd)-Total (mg/dm2.day)	0.00000091	0.00000086	<0.00000062	<0.00000046	
Calcium (Ca)-Total (mg/dm2.day)	0.00111	0.00157	0.0213	0.00441	
Chromium (Cr)-Total (mg/dm2.day)	<0.0000026	<0.0000026	<0.0000062	0.0000063	
Cobalt (Co)-Total (mg/dm2.day)	<0.00000052	<0.00000052	<0.0000012	0.00000109	
Copper (Cu)-Total (mg/dm2.day)	0.0000358	0.0000187	0.0000216	0.0000671	
Iron (Fe)-Total (mg/dm2.day)	<0.00016	0.00020	0.00090	0.00157	
Lead (Pb)-Total (mg/dm2.day)	0.00000098	0.00000046	<0.00000062	0.00000213	
Lithium (Li)-Total (mg/dm2.day)	<0.000026	<0.000026	<0.000062	<0.000046	
Magnesium (Mg)-Total (mg/dm2.day)	<0.00052	<0.00052	<0.0012	0.00104	
Manganese (Mn)-Total (mg/dm2.day)	0.00000851	0.0000129	0.000145	0.0000569	
Mercury (Hg)-Total (mg/dm2.day)	<0.00000026	<0.00000026	<0.0000012	<0.00000046	
Molybdenum (Mo)-Total (mg/dm2.day)	<0.00000026	<0.00000026	<0.00000062	<0.00000046	
Nickel (Ni)-Total (mg/dm2.day)	0.0000058	<0.0000026	<0.0000062	0.0000047	
Phosphorus (P)-Total (mg/dm2.day)	<0.0016	<0.0016	<0.0037	<0.0028	
Potassium (K)-Total (mg/dm2.day)	<0.010	<0.010	<0.025	<0.018	
Selenium (Se)-Total (mg/dm2.day)	<0.0000052	<0.0000052	<0.000012	<0.0000092	
Silicon (Si)-Total (mg/dm2.day)	<0.00026	0.00042	0.00101	0.00145	
Silver (Ag)-Total (mg/dm2.day)	<0.000000052	<0.000000052	<0.00000012	<0.000000092	
Sodium (Na)-Total (mg/dm2.day)	<0.010	<0.010	<0.025	<0.018	
Strontium (Sr)-Total (mg/dm2.day)	0.00000360	0.00000240	0.0000102	0.00000482	
Thallium (Tl)-Total (mg/dm2.day)	<0.00000052	<0.00000052	<0.0000012	<0.00000092	
Tin (Sn)-Total (mg/dm2.day)	<0.00000052	<0.00000052	<0.0000012	<0.00000092	
Titanium (Ti)-Total (mg/dm2.day)	<0.000052	<0.000052	<0.00012	<0.000092	

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1019622-1	L1019622-2	L1019622-3	L1019622-4	L1019622-5
	Description	DUSTFALL	DUSTFALL	DUSTFALL	DUSTFALL	DUSTFALL
	Sampled Date	04-JUN-11	04-JUN-11	06-JUN-11	06-JUN-11	04-JUN-11
	Sampled Time	12:00	12:00	13:30	13:30	12:16
	Client ID	DF1A	DF1B	DF2A	DF2B	DF3A
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	<0.000000026	<0.00000011	<0.000000094	<0.000000045	<0.000000024
	Vanadium (V)-Total (mg/dm2.day)	0.0000063	<0.000011	<0.0000094	0.0000086	<0.0000024
	Zinc (Zn)-Total (mg/dm2.day)	0.0000181	0.000121	0.000213	0.0000589	0.0000124

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1019622-6	L1019622-7	L1019622-8	L1019622-9	
	Description	DUSTFALL	DUSTFALL	DUSTFALL	DUSTFALL	
	Sampled Date	04-JUN-11	04-JUN-11	04-JUN-11	04-JUN-11	
	Sampled Time	12:16	12:05	12:07	12:09	
	Client ID	DF3B	CDF1	CDF2	CDF3	
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	<0.000000052	<0.000000052	<0.00000012	<0.000000092	
	Vanadium (V)-Total (mg/dm2.day)	<0.0000052	<0.0000052	<0.000012	<0.0000092	
	Zinc (Zn)-Total (mg/dm2.day)	0.0000175	0.0000147	0.000089	0.000144	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-VA	Dustfall	Dustfall Chloride by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The chloride analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

DUSTFALLS-COM-DM2-VA	Dustfall	Combined Dustfalls-Total, soluble, insol	BCMOE DUSTFALLS

Dustfall analysis is carried out in accordance with procedures published by the B.C. Ministry of Environment Laboratory.

HG-DUST(DM2-CVAFS-VA	Dustfall	Total Mercury in Dustfalls by CVAFS	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DUST(DM2)-ICP-VA	Dustfall	Total Metals in Dustfalls by ICPOES	EPA 6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-DUST(DM2)-MS-VA	Dustfall	Total Metals in Dustfalls by ICPMS	EPA 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

NH3-F-VA	Dustfall	Dustfall Ammonia by Fluorescence	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The ammonia analysis is specifcially carried out using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO3-IC-VA	Dustfall	Dustfall Nitrate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The nitrate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

SO4-IC-VA	Dustfall	Dustfall Sulphate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The sulphate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

L1019622-COFC

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM COC #

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

REPORT TO:		REPORT FORMAT / DISTRIBUTION			SERVICE REQUESTED	
COMPANY:	Rescan Environmental Services Ltd.	HARDCOPY:	STANDARD		REGULAR SERVICE (DEFAULT)	X
CONTACT:	[redacted]	ELECTRONIC	PDF and EXCEL		PRIORITY SERVICE (2-3 DAYS)	
ADDRESS:	6th Flr,1111 West Hastings Street	EMAIL 1:	tolcay@rescan.com		EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
CITY/ PROV	Vancouver, BC V6E 2J3	EMAIL 2:	dgriffin@rescan.com		OTHER (<1 DAY / WEEKEND) - CONTACT ALS	
PHONE: 604-689-9460	Fax 604-689-4277	[redacted]			ANALYSIS REQUEST	

INVOICE TO: SAME AS REPORT ? YES / NO			
COMPANY:	SAME AS ABOVE	CLIENT / PROJECT INFORMATION:	
CONTACT:	[redacted]	JOB #:	1009-002-02
ADDRESS:	[redacted]	PO /AFE:	
CITY/ PROV	[redacted]	Legal Site Description:	
PHONE: [redacted]	FAX [redacted]	QUOTE #:	
Lab Work Order # (lab use only)	L1019622	ALS CONTACT	

Please indicate below Filtered. Preserved or both (F, P, F/P)

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	Total, Soluble, Insoluble Partic	Cl, SO4, NO3, NH3	Total Mg, Ca, K	NUMBER OF CONTAINERS
[redacted]	DF1a	June 4 11	12:00	Water	X	X	X	1
[redacted]	DF1b	June 4 11	12:00	Water	X	X	X	1
[redacted]	DF2a	June 6 11	13:30	Water	X	X	X	1
[redacted]	DF2b	June 6 11	13:30	Water	X	X	X	1
[redacted]	DF3a	June 4 11	12:16	Water	X	X	X	1
[redacted]	DF3b	June 4 11	12:16	Water	X	X	X	1
[redacted]	CDF1	June 4 11	12:05	Water	X	X	X	1
[redacted]	CDF2	June 4 11	12:07	Water	X	X	X	1
[redacted]	CDF3	June 4 11	12:09	Water	X	X	X	1
[redacted]	(month installed dustfall)							

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS
	Please split the sample to analyze for different parameters

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified below.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
		[signature]	Jun 7/11	TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	17.0	
			10:Bam		If NO, Explain

GENF 18.01 Front

RESCAN ENVIRONMENTAL SERVICES
ATTN: Tolga Olcay
Sixth Floor
1111 West Hastings Street
Vancouver BC V6E 2J3

Date Received: 15-AUG-11
Report Date: 24-AUG-11 16:45 (MT)
Version: FINAL

Client Phone: 604-689-9460

Certificate of Analysis

Lab Work Order #: L1044753

Project P.O. #: NOT SUBMITTED
Job Reference: 1009-002-02
C of C Numbers:
Legal Site Desc:

Amber Springer
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1044753-1	L1044753-2	L1044753-3	L1044753-4	L1044753-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	04-AUG-11	04-AUG-11	04-AUG-11	04-AUG-11	04-AUG-11
	Sampled Time	17:00	17:00	17:00	17:00	17:00
	Client ID	DF1 (JUL5/11-4-AUG/11)	DF2 (JUL5/11-4-AUG/11)	DF3 (JUL5/11-4-AUG/11)	CDF1 (JUL5/11-4-AUG/11)	CDF2 (JUL5/11-4-AUG/11)
Grouping	**Analyte**					
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	2.94	1.73	3.21	3.40	1.02
	Total Insoluble Dustfall (mg/dm2.day)	<0.10	0.85	<0.10	<0.10	<0.10
	Total Soluble Dustfall (mg/dm2.day)	2.86	0.88	3.18	3.33	0.99
Anions and Nutrients	Ammonia (as N) (mg/dm2.day)	<0.00013	<0.00012	0.00050	0.00065	0.00263
	Chloride (Cl) (mg/dm2.day)	0.349	0.112	0.306	0.337	0.111
	Nitrate (as N) (mg/dm2.day)	0.00110	0.00021	0.00050	0.00068	0.00065
	Sulfate (SO4) (mg/dm2.day)	<0.013	<0.012	<0.010	<0.012	<0.010
Metals	Aluminum (Al)-Total (mg/dm2.day)	0.00224	0.00310	<0.00030 DLB	<0.00055 DLB	0.00171
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000017	<0.0000017	<0.0000018	<0.0000024	<0.0000021
	Arsenic (As)-Total (mg/dm2.day)	<0.0000017	<0.0000017	<0.0000018	<0.0000024	<0.0000021
	Barium (Ba)-Total (mg/dm2.day)	0.00000784	0.0000150	0.00000696	0.0000172	0.0000106
	Beryllium (Be)-Total (mg/dm2.day)	<0.0000086	<0.0000086	<0.0000089	<0.000012	<0.000010
	Bismuth (Bi)-Total (mg/dm2.day)	<0.0000086	<0.0000086	<0.0000089	<0.000012	<0.000010
	Boron (B)-Total (mg/dm2.day)	<0.00017	<0.00017	<0.00018	<0.00024	<0.00021
	Cadmium (Cd)-Total (mg/dm2.day)	0.00000145	0.00000286	<0.00000089	<0.0000012	0.0000012
	Calcium (Ca)-Total (mg/dm2.day)	0.00479	0.00924	0.00290	0.0039	0.0142
	Chromium (Cr)-Total (mg/dm2.day)	0.0000138	0.0000214	<0.0000089	<0.000012	0.000016
	Cobalt (Co)-Total (mg/dm2.day)	0.0000018	0.0000029	<0.0000018	<0.0000024	<0.0000021
	Copper (Cu)-Total (mg/dm2.day)	0.000110	0.000111	0.0000893	0.0000754	0.0000592
	Iron (Fe)-Total (mg/dm2.day)	0.00345	0.00507	<0.00053	0.00083	0.00280
	Lead (Pb)-Total (mg/dm2.day)	0.00000249	0.00000231	0.00000197	0.0000013	<0.0000010
	Lithium (Li)-Total (mg/dm2.day)	<0.000086	<0.000086	<0.000089	<0.00012	<0.00010
	Magnesium (Mg)-Total (mg/dm2.day)	0.0020	0.0034	<0.0018	<0.0024	0.0036
	Manganese (Mn)-Total (mg/dm2.day)	0.0000848	0.000128	0.0000233	0.0000542	0.000139
	Mercury (Hg)-Total (mg/dm2.day)	<0.00000086	<0.00000086	<0.00000089	<0.0000012	<0.0000010
	Molybdenum (Mo)-Total (mg/dm2.day)	<0.00000086	<0.00000086	<0.00000089	<0.0000012	<0.0000010
	Nickel (Ni)-Total (mg/dm2.day)	0.0000280	0.0000088	<0.0000089	<0.000012	<0.000010
	Phosphorus (P)-Total (mg/dm2.day)	<0.0052	0.0071	<0.0053	<0.0072	0.0109
	Potassium (K)-Total (mg/dm2.day)	<0.035	<0.035	<0.036	<0.048	<0.042
	Selenium (Se)-Total (mg/dm2.day)	<0.000017	<0.000017	<0.000018	<0.000024	<0.000021
	Silicon (Si)-Total (mg/dm2.day)	0.00234	0.00382	<0.00089	<0.0012	0.0021
	Silver (Ag)-Total (mg/dm2.day)	<0.00000017	<0.00000017	<0.00000018	<0.00000024	<0.00000021
	Sodium (Na)-Total (mg/dm2.day)	<0.035	<0.035	<0.036	<0.048	<0.042
	Strontium (Sr)-Total (mg/dm2.day)	0.0000086	0.0000200	0.0000152	0.0000432	0.0000211
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000017	<0.0000017	<0.0000018	<0.0000024	<0.0000021
	Tin (Sn)-Total (mg/dm2.day)	<0.0000017	<0.0000017	<0.0000018	<0.0000024	<0.0000021
	Titanium (Ti)-Total (mg/dm2.day)	<0.00017	<0.00017	<0.00018	<0.00024	<0.00021

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1044753-6				
	Description	WATER				
	Sampled Date	04-AUG-11				
	Sampled Time	17:00				
	Client ID	CDF3 (JUL5/11-4-AUG/11)				
Grouping	**Analyte**					
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	0.27				
	Total Insoluble Dustfall (mg/dm2.day)	<0.10				
	Total Soluble Dustfall (mg/dm2.day)	0.26				
Anions and Nutrients	Ammonia (as N) (mg/dm2.day)	0.00020				
	Chloride (Cl) (mg/dm2.day)	0.046				
	Nitrate (as N) (mg/dm2.day)	0.00056				
	Sulfate (SO4) (mg/dm2.day)	<0.011				
Metals	Aluminum (Al)-Total (mg/dm2.day)	0.000741				
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000021				
	Arsenic (As)-Total (mg/dm2.day)	<0.0000021				
	Barium (Ba)-Total (mg/dm2.day)	0.0000029				
	Beryllium (Be)-Total (mg/dm2.day)	<0.000011				
	Bismuth (Bi)-Total (mg/dm2.day)	<0.000011				
	Boron (B)-Total (mg/dm2.day)	<0.00021				
	Cadmium (Cd)-Total (mg/dm2.day)	<0.0000011				
	Calcium (Ca)-Total (mg/dm2.day)	0.0022				
	Chromium (Cr)-Total (mg/dm2.day)	<0.000011				
	Cobalt (Co)-Total (mg/dm2.day)	<0.0000021				
	Copper (Cu)-Total (mg/dm2.day)	0.0000280				
	Iron (Fe)-Total (mg/dm2.day)	0.00114				
	Lead (Pb)-Total (mg/dm2.day)	<0.0000011				
	Lithium (Li)-Total (mg/dm2.day)	<0.00011				
	Magnesium (Mg)-Total (mg/dm2.day)	<0.0021				
	Manganese (Mn)-Total (mg/dm2.day)	0.0000378				
	Mercury (Hg)-Total (mg/dm2.day)	<0.0000011				
	Molybdenum (Mo)-Total (mg/dm2.day)	<0.0000011				
	Nickel (Ni)-Total (mg/dm2.day)	<0.000011				
	Phosphorus (P)-Total (mg/dm2.day)	<0.0064				
	Potassium (K)-Total (mg/dm2.day)	<0.043				
	Selenium (Se)-Total (mg/dm2.day)	<0.000021				
	Silicon (Si)-Total (mg/dm2.day)	<0.0011				
	Silver (Ag)-Total (mg/dm2.day)	<0.00000021				
	Sodium (Na)-Total (mg/dm2.day)	<0.043				
	Strontium (Sr)-Total (mg/dm2.day)	0.0000047				
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000021				
	Tin (Sn)-Total (mg/dm2.day)	<0.0000021				
	Titanium (Ti)-Total (mg/dm2.day)	<0.00021				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1044753-1 WATER 04-AUG-11 17:00 DF1 (JUL5/11-4-AUG/11)	L1044753-2 WATER 04-AUG-11 17:00 DF2 (JUL5/11-4-AUG/11)	L1044753-3 WATER 04-AUG-11 17:00 DF3 (JUL5/11-4-AUG/11)	L1044753-4 WATER 04-AUG-11 17:00 CDF1 (JUL5/11-4-AUG/11)	L1044753-5 WATER 04-AUG-11 17:00 CDF2 (JUL5/11-4-AUG/11)
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	<0.00000017	<0.00000017	<0.00000018	<0.00000024	<0.00000021
	Vanadium (V)-Total (mg/dm2.day)	<0.000017	<0.000017	<0.000018	<0.000024	<0.000021
	Zinc (Zn)-Total (mg/dm2.day)	0.000044	0.000116	0.000143	0.000118	0.000114

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1044753-6				
	Description	WATER				
	Sampled Date	04-AUG-11				
	Sampled Time	17:00				
	Client ID	CDF3 (JUL5/11-4-AUG/11)				
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	<0.00000021				
	Vanadium (V)-Total (mg/dm2.day)	<0.000021				
	Zinc (Zn)-Total (mg/dm2.day)	0.000071				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection limit was raised due to detection of analyte at comparable level in Method Blank.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-VA	Dustfall	Dustfall Chloride by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The chloride analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

DUSTFALLS-COM-DM2-VA	Dustfall	Combined Dustfalls-Total, soluble, insol	BCMOE DUSTFALLS

Dustfall analysis is carried out in accordance with procedures published by the B.C. Ministry of Environment Laboratory.

HG-DUST(DM2-CVAFS-VA	Dustfall	Total Mercury in Dustfalls by CVAFS	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DUST(DM2)-ICP-VA	Dustfall	Total Metals in Dustfalls by ICPOES	EPA 6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-DUST(DM2)-MS-VA	Dustfall	Total Metals in Dustfalls by ICPMS	EPA 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

NH3-F-VA	Dustfall	Dustfall Ammonia by Fluorescence	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The ammonia analysis is specifcially carried out using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO3-IC-VA	Dustfall	Dustfall Nitrate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The nitrate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

SO4-IC-VA	Dustfall	Dustfall Sulphate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The sulphate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

L1044753-COFC

UP

Environmental Division

ALS

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM COC #

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

REPORT TO:		REPORT FORMAT / DISTRIBUTION			SERVICE REQUESTED	
COMPANY:	Rescan Environmental Services Ltd.	HARDCOPY:	STANDARD		REGULAR SERVICE (DEFAULT)	X
CONTACT:	[redacted]	ELECTRONIC	PDF and EXCEL		PRIORITY SERVICE (2-3 DAYS)	
ADDRESS:	6th Flr,1111 West Hastings Street	EMAIL 1:	tolcay@rescan.com		EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
CITY/ PROV	Vancouver BC	V6E 2J3	EMAIL 2:	dgriffin@rescan.com	OTHER (<1 DAY / WEEKEND) - CONTACT ALS	
PHONE:	604-689-9460	Fax	604-689-4277		ANALYSIS REQUEST	

INVOICE TO: SAME AS REPORT ? YES / NO		CLIENT / PROJECT INFORMATION:	
COMPANY:	SAME AS ABOVE	JOB #:	1009-002-02
CONTACT:	[redacted]	PO /AFE:	[redacted]
ADDRESS:	[redacted]	Legal Site Description:	[redacted]
CITY/ PROV	[redacted]	QUOTE #:	[redacted]
PHONE:	[redacted] FAX [redacted]	ALS CONTACT	
Lab Work Order # (lab use only):	L1044753		

Please indicate below Filtered. Preserved or both (F, P, F/P)

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	Total, Soluble, Insoluble Partic	Cl, SO4, NO3, NH3	Total Mg, Ca, K	NUMBER OF CONTAINERS
[redacted]	DF1a	4-Aug-2011	17:00	Water	X	X	X	1
[redacted]	DF1b	4-Aug-2011	17:00	Water	X	X	X	1
[redacted]	DF2a	4-Aug-2011	17:00	Water	X	X	X	1
[redacted]	DF2b	4-Aug-2011	17:00	Water	X	X	X	1
[redacted]	DF3a	4-Aug-2011	17:00	Water	X	X	X	1
[redacted]	DF3b	4-Aug-2011	17:00	Water	X	X	X	1
[redacted]	CDF1	4-Aug-2011	17:00	Water	X	X	X	1
[redacted]	CDF2	4-Aug-2011	17:00	Water	X	X	X	1
[redacted]	CDF3	4-Aug-2011	17:00	Water	X	X	X	1
[redacted]	(installed July 5/11)							

GUIDELINES / REGULATIONS

SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS

Please split the sample to analyze for different parameters

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified below.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:
		[redacted]	Aug 5
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:

SAMPLE CONDITION (lab use only)

TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
21°C	
	If NO, Explain

9:30

Sample Receipt Confirmation

Report Distribution:

Company Name: RESCAN ENVIRONMENTAL SERVICES
Contact: Tolga Olcay
Address: Sixth Floor, 1111 West Hastings Street Vancouver, BC, V6E 2J3
Phone: 604-689-9460
Fax: 604-687-4277
Email: tolcay@rescan.com dgriffin@rescan.com
Report Name: CROSSTAB_ALS
Digital Type: --
Digital Email: --
Distribution: Hard Copy: Y Email: Y Fax: N

Invoice Distribution:

Acct Name: RESCAN ENVIRONMENTAL SERVICES
Contact: Accounts Payable
Address: Sixth Floor, 1111 West Hastings Street Vancouver, BC, V6E 2J3
Phone: 604-689-9460
Fax: --
Invoice Email: --
Project #: N/A
Account #: RES100

Client Information:

Job Reference #: 1009-002-02
Project PO #:
Legal Site Description: N/A
Quote #: N/A
Date Sampled: 05-JUL-11
Date Received: 15-AUG-11
Sampled By:
Chain Of Custody: --

Workorder Summary:

Lab Work Order #: **L1044754**
Estimated completion date: 24-AUG-11
5 Samples received at ALS in **VANCOUVER**
Client Job #: 1009-002-02
Account Manager: Amber Springer
Estimated sample disposal date: 23-SEP-11

Lab Sample ID	Client Sample ID	Date Sampled	Date Received	Sample Due Date	Priority Flag	Sample Type
L1044754-1	DF1 (JUN4/11-JUL5/11)	05-JUL-11 16:45	15-AUG-11 09:30	24-AUG-11		WATER
L1044754-2	DF3 (JUN4/11-JUL5/11)	04-AUG-11 17:00	15-AUG-11 09:30	24-AUG-11		WATER
L1044754-3	CDF1 (JUN4/11-JUL5/11)	05-JUL-11 17:15	15-AUG-11 09:30	24-AUG-11		WATER
L1044754-4	CDF2 (JUN4/11-JUL5/11)	05-JUL-11 17:30	15-AUG-11 09:30	24-AUG-11		WATER
L1044754-5	CDF3 (JUN4/11-JUL5/11)	05-JUL-11 17:30	15-AUG-11 09:30	24-AUG-11		WATER

Analysis Requested:

	Sample Handling and Disposal Fee	Dustfall Chloride by Ion Chromatography	Combined Dustfalls-Total, soluble, insol	Dustfall Ammonia by Fluorescence	Dustfall Nitrate by Ion Chromatography	Total Mercury in Dustfalls by CVAFS	Total Metals in Dustfalls by ICPOES	Total Metals in Dustfalls by ICPMS	Dustfall Sample Preparation	Dustfall Sulphate by Ion Chromatography
DF1 (JUN4/11-JUL5/11)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DF3 (JUN4/11-JUL5/11)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CDF1 (JUN4/11-JUL5/11)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CDF2 (JUN4/11-JUL5/11)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CDF3 (JUN4/11-JUL5/11)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Sample Integrity Observations:

Observation	Details
Samples listed on COC but not received	Both TM and WQ dustfall bottles for sample "DF2" are not received

ALS Group strives to deliver on-time results to our clients at all times. However, there are times when due to capacity issues or other unforeseen circumstances we are unable to meet our expected turnaround times. The information above is related to a recent workorder you have submitted to our laboratory. In the event that you have an inquiry, please refer to the Lab Work Order # when calling your Account Manager.

L1044754-COFC

Environmental Division

(ALS)

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM COC #

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

REPORT TO:		REPORT FORMAT / DISTRIBUTION		SERVICE REQUESTED	
COMPANY:	Rescan Environmental Services Ltd.	HARDCOPY:	STANDARD	REGULAR SERVICE (DEFAULT)	X
CONTACT:	[redacted]	ELECTRONIC	PDF and EXCEL	PRIORITY SERVICE (2-3 DAYS)	
ADDRESS:	6th Flr 1111 West Hastings Street	EMAIL 1:	tolcay@rescan.com	EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
CITY/ PROV	Vancouver, BC V6E 2J3	EMAIL 2:	dgriffin@rescan.com	OTHER (<1 DAY / WEEKEND) - CONTACT ALS	
PHONE:	604-689-9460 Fax 604-689-4277	[redacted]		ANALYSIS REQUEST	
INVOICE TO:	SAME AS REPORT ? YES / NO			Please indicate below Filtered. Preserved or both (F, P, F/P)	
COMPANY:	SAME AS ABOVE	CLIENT / PROJECT INFORMATION:			
CONTACT:	[redacted]	JOB #:	1009-002-02		
ADDRESS:	[redacted]	PO /AFE:	[redacted]		
CITY/ PROV	[redacted]	Legal Site Description:	[redacted]		
PHONE:	[redacted] FAX [redacted]	QUOTE #:	[redacted]		
Lab Work Order #. (lab use only):	[redacted] L1044754	ALS CONTACT			

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	Total, Soluble, Insoluble Partic	Cl, SO4, NO3, NH3	Total Mg, Ca, K	NUMBER OF CONTAINERS
[redacted]	DF1a	5-Jul-2011	4:45	Water	X	X	X	1
[redacted]	DF1b	5-Jul-2011	4:45	Water	X	X	X	1
[redacted]	DF2a	4-Aug-2011	5:00	Water	X	X	X	1
[redacted]	DF2b	4-Aug-2011	5:00	Water	X	X	X	1
[redacted]	DF3a	5-Jul-2011	5:15	Water	X	X	X	1
[redacted]	DF3b	5-Jul-2011	5:15	Water	X	X	X	1
[redacted]	CDF1	5-Jul-2011	5:30	Water	X	X	X	1
[redacted]	CDF2	5-Jul-2011	5:30	Water	X	X	X	1
[redacted]	CDF3	5-Jul-2011	5:30	Water	X	X	X	1
[redacted]	(installed June 4/11)							

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS
	Please split the sample to analyze for different parameters

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified below.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
		KyAk	Aug 15	TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	21°C	
					If NO, Explain

9:30

GENF 18.01 Front

RESCAN ENVIRONMENTAL SERVICES
ATTN: Tolga Olcay
Sixth Floor
1111 West Hastings Street
Vancouver BC V6E 2J3

Date Received: 14-OCT-11
Report Date: 25-OCT-11 13:03 (MT)
Version: FINAL

Client Phone: 604-689-9460

Certificate of Analysis

Lab Work Order #: L1071955

Project P.O. #: NOT SUBMITTED
Job Reference: 1009-002-02
C of C Numbers:
Legal Site Desc:

Amber Springer
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1071955-1	L1071955-2	L1071955-3	L1071955-4	L1071955-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	03-SEP-11	03-SEP-11	03-SEP-11	03-SEP-11	03-SEP-11
	Sampled Time	13:30	13:30	17:45	17:45	14:15
	Client ID	DF1A (AUG 4 - SEP 3)	DF1B (AUG 4 - SEP 3)	DF2A (AUG 4 - SEP 3)	DF2B (AUG 4 - SEP 3)	DF3A (AUG 4 - SEP 3)
Grouping	**Analyte**					
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	0.79	0.34	0.30	0.64	0.60
	Total Insoluble Dustfall (mg/dm2.day)	<0.10	<0.10	<0.10	<0.10	<0.10
	Total Soluble Dustfall (mg/dm2.day)	0.75	0.30	0.28	0.61	0.60
Anions and Nutrients	Ammonia (as N) (mg/dm2.day)	0.00038	0.00117	0.00208	0.00092	0.00043
	Chloride (Cl) (mg/dm2.day)	0.114	0.111	0.0499	0.108	0.115
	Nitrate (as N) (mg/dm2.day)	0.00079	0.00068	0.000343	0.00060	0.00055
	Sulfate (SO4) (mg/dm2.day)	<0.015	<0.015	<0.0079	<0.014	<0.015
Metals	Aluminum (Al)-Total (mg/dm2.day)	0.000922	0.00150	0.00177	0.000240	0.000128
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000030	<0.0000029	<0.0000016	<0.0000029	<0.0000030
	Arsenic (As)-Total (mg/dm2.day)	<0.0000030	<0.0000029	<0.0000016	<0.0000029	<0.0000030
	Barium (Ba)-Total (mg/dm2.day)	0.0000052	0.0000048	0.00000414	0.0000043	0.0000029
	Beryllium (Be)-Total (mg/dm2.day)	<0.000015	<0.000015	<0.0000079	<0.000014	<0.000015
	Bismuth (Bi)-Total (mg/dm2.day)	<0.000015	<0.000015	<0.0000079	<0.000014	<0.000015
	Boron (B)-Total (mg/dm2.day)	<0.00030	<0.00029	<0.00016	<0.00029	<0.00030
	Cadmium (Cd)-Total (mg/dm2.day)	<0.0000015	<0.0000015	<0.00000079	<0.0000014	<0.0000015
	Calcium (Ca)-Total (mg/dm2.day)	0.0064	0.0059	0.00377	0.0019	<0.0015
	Chromium (Cr)-Total (mg/dm2.day)	<0.000015	<0.000015	0.0000175	<0.000014	<0.000015
	Cobalt (Co)-Total (mg/dm2.day)	<0.0000030	<0.0000029	0.0000020	<0.0000029	<0.0000030
	Copper (Cu)-Total (mg/dm2.day)	0.0000479	0.0000401	0.0000232	0.0000323	0.0000292
	Iron (Fe)-Total (mg/dm2.day)	0.00157	0.00256	0.00293	<0.00086	<0.00091
	Lead (Pb)-Total (mg/dm2.day)	<0.0000015	<0.0000015	0.00000092	<0.0000014	<0.0000015
	Lithium (Li)-Total (mg/dm2.day)	<0.00015	<0.00015	<0.000079	<0.00014	<0.00015
	Magnesium (Mg)-Total (mg/dm2.day)	<0.0030	<0.0029	0.0024	<0.0029	<0.0030
	Manganese (Mn)-Total (mg/dm2.day)	0.0000608	0.0000787	0.0000624	0.0000148	0.0000091
	Mercury (Hg)-Total (mg/dm2.day)	<0.0000030	<0.0000029 DLM	<0.0000016	<0.0000029 DLM	<0.0000030 DLM
	Molybdenum (Mo)-Total (mg/dm2.day)	<0.0000015	<0.0000015	<0.00000079	<0.0000014	<0.0000015
	Nickel (Ni)-Total (mg/dm2.day)	<0.000015	<0.000015	0.0000089	<0.000014	<0.000015
	Phosphorus (P)-Total (mg/dm2.day)	<0.0091	<0.0088	<0.0047	<0.0086	<0.0091
	Potassium (K)-Total (mg/dm2.day)	<0.061	<0.059	<0.031	<0.057	<0.061
	Selenium (Se)-Total (mg/dm2.day)	<0.000030	<0.000029	<0.000016	<0.000029	<0.000030
	Silicon (Si)-Total (mg/dm2.day)	<0.0015	0.0020	0.00242	<0.0014	<0.0015
	Silver (Ag)-Total (mg/dm2.day)	<0.00000030	<0.00000059 DLB	<0.00000031 DLB	<0.00000057 DLB	<0.00000061 DLB
	Sodium (Na)-Total (mg/dm2.day)	<0.061	<0.059	<0.031	<0.057	<0.061
	Strontium (Sr)-Total (mg/dm2.day)	0.0000095	0.0000079	0.0000053	0.0000052	0.0000053
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000030	<0.0000029	<0.0000016	<0.0000029	<0.0000030
	Tin (Sn)-Total (mg/dm2.day)	<0.0000030	<0.0000029	<0.0000016	<0.0000029	<0.0000030
	Titanium (Ti)-Total (mg/dm2.day)	<0.00030	<0.00029	<0.00016	<0.00029	<0.00030

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1071955-6	L1071955-7	L1071955-8	L1071955-9	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	03-SEP-11	03-SEP-11	03-SEP-11	03-SEP-11	
	Sampled Time	14:15	14:00	13:55	13:50	
	Client ID	DF3B (AUG 4 - SEP 3)	CDF1 (AUG 4 - SEP 3)	CDF2 (AUG 4 - SEP 3)	CDF3 (AUG 4 - SEP 3)	
Grouping	**Analyte**					
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	0.25	0.27	0.69	0.60	
	Total Insoluble Dustfall (mg/dm2.day)	<0.10	<0.10	<0.10	<0.10	
	Total Soluble Dustfall (mg/dm2.day)	0.24	0.27	0.69	0.60	
Anions and Nutrients	Ammonia (as N) (mg/dm2.day)	0.00045	0.00084	0.00263	0.00125	
	Chloride (Cl) (mg/dm2.day)	0.102	0.054	0.103	0.111	
	Nitrate (as N) (mg/dm2.day)	0.00062	0.00060	0.00056	0.00054	
	Sulfate (SO4) (mg/dm2.day)	<0.014	0.085	<0.018	<0.014	
Metals	Aluminum (Al)-Total (mg/dm2.day)	0.000119	0.000149	0.000245	0.000196	
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000027	<0.0000033	<0.0000036	<0.0000028	
	Arsenic (As)-Total (mg/dm2.day)	<0.0000027	<0.0000033	<0.0000036	<0.0000028	
	Barium (Ba)-Total (mg/dm2.day)	0.0000044	0.0000035	0.0000050	0.0000028	
	Beryllium (Be)-Total (mg/dm2.day)	<0.000014	<0.000016	<0.000018	<0.000014	
	Bismuth (Bi)-Total (mg/dm2.day)	<0.000014	<0.000016	<0.000018	<0.000014	
	Boron (B)-Total (mg/dm2.day)	<0.00027	<0.00033	<0.00036	<0.00028	
	Cadmium (Cd)-Total (mg/dm2.day)	<0.0000014	<0.0000016	<0.0000018	<0.0000014	
	Calcium (Ca)-Total (mg/dm2.day)	0.0016	0.0018	0.0038	0.0017	
	Chromium (Cr)-Total (mg/dm2.day)	<0.000014	<0.000016	<0.000018	<0.000014	
	Cobalt (Co)-Total (mg/dm2.day)	<0.0000027	<0.0000033	<0.0000036	<0.0000028	
	Copper (Cu)-Total (mg/dm2.day)	0.0000422	0.0659	0.000232	0.000110	
	Iron (Fe)-Total (mg/dm2.day)	<0.00081	<0.00098	<0.0011	<0.00085	
	Lead (Pb)-Total (mg/dm2.day)	<0.0000014	0.0000031	<0.0000018	<0.0000014	
	Lithium (Li)-Total (mg/dm2.day)	<0.00014	<0.00016	<0.00018	<0.00014	
	Magnesium (Mg)-Total (mg/dm2.day)	<0.0027	<0.0033	<0.0036	<0.0028	
	Manganese (Mn)-Total (mg/dm2.day)	0.0000111	0.0000173	0.0000330	0.0000155	
	Mercury (Hg)-Total (mg/dm2.day)	<0.0000027 DLM	<0.0000033 DLM	<0.0000036 DLM	<0.0000028	
	Molybdenum (Mo)-Total (mg/dm2.day)	<0.0000014	<0.0000016	<0.0000018	<0.0000014	
	Nickel (Ni)-Total (mg/dm2.day)	<0.000014	<0.000016	<0.000018	<0.000014	
	Phosphorus (P)-Total (mg/dm2.day)	<0.0081	<0.0098	<0.011	<0.0085	
	Potassium (K)-Total (mg/dm2.day)	<0.054	<0.065	<0.073	<0.056	
	Selenium (Se)-Total (mg/dm2.day)	<0.000027	<0.000033	<0.000036	<0.000028	
	Silicon (Si)-Total (mg/dm2.day)	<0.0014	<0.0016	<0.0018	<0.0014	
	Silver (Ag)-Total (mg/dm2.day)	<0.00000027	<0.00000065 DLB	<0.00000036	<0.00000028	
	Sodium (Na)-Total (mg/dm2.day)	<0.054	<0.065	<0.073	<0.056	
	Strontium (Sr)-Total (mg/dm2.day)	0.0000066	0.0000050	0.0000079	0.0000055	
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000027	<0.0000033	<0.0000036	<0.0000028	
	Tin (Sn)-Total (mg/dm2.day)	<0.0000027	<0.0000033	<0.0000036	<0.0000028	
	Titanium (Ti)-Total (mg/dm2.day)	<0.00027	<0.00033	<0.00036	<0.00028	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1071955-1	L1071955-2	L1071955-3	L1071955-4	L1071955-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	03-SEP-11	03-SEP-11	03-SEP-11	03-SEP-11	03-SEP-11
	Sampled Time	13:30	13:30	17:45	17:45	14:15
	Client ID	DF1A (AUG 4 - SEP 3)	DF1B (AUG 4 - SEP 3)	DF2A (AUG 4 - SEP 3)	DF2B (AUG 4 - SEP 3)	DF3A (AUG 4 - SEP 3)
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	<0.00000030	<0.00000029	<0.00000016	<0.00000029	<0.00000030
	Vanadium (V)-Total (mg/dm2.day)	<0.000030	<0.000029	<0.000016	<0.000029	<0.000030
	Zinc (Zn)-Total (mg/dm2.day)	0.000033	0.000039	0.000021	0.000033	0.000064

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1071955-6	L1071955-7	L1071955-8	L1071955-9	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	03-SEP-11	03-SEP-11	03-SEP-11	03-SEP-11	
	Sampled Time	14:15	14:00	13:55	13:50	
	Client ID	DF3B (AUG 4 - SEP 3)	CDF1 (AUG 4 - SEP 3)	CDF2 (AUG 4 - SEP 3)	CDF3 (AUG 4 - SEP 3)	
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	<0.00000027	<0.00000033	<0.00000036	<0.00000028	
	Vanadium (V)-Total (mg/dm2.day)	<0.000027	<0.000033	<0.000036	<0.000028	
	Zinc (Zn)-Total (mg/dm2.day)	0.000046	<0.000033	0.000041	<0.000028	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection limit was raised due to detection of analyte at comparable level in Method Blank.
DLM	Detection Limit Adjusted For Sample Matrix Effects

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-VA	Dustfall	Dustfall Chloride by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The chloride analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

DUSTFALLS-COM-DM2-VA	Dustfall	Combined Dustfalls-Total, soluble, insol	BCMOE DUSTFALLS

Dustfall analysis is carried out in accordance with procedures published by the B.C. Ministry of Environment Laboratory.

HG-DUST(DM2-CVAFS-VA	Dustfall	Total Mercury in Dustfalls by CVAFS	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DUST(DM2)-ICP-VA	Dustfall	Total Metals in Dustfalls by ICPOES	EPA 6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-DUST(DM2)-MS-VA	Dustfall	Total Metals in Dustfalls by ICPMS	EPA 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

NH3-F-VA	Dustfall	Dustfall Ammonia by Fluorescence	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The ammonia analysis is specifcially carried out using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO3-IC-VA	Dustfall	Dustfall Nitrate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The nitrate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

SO4-IC-VA	Dustfall	Dustfall Sulphate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The sulphate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

*L1071955

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES
Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878
www.alsenviro.com

COC #

REPORT TO:		REPORT FORMAT / DISTRIBUTION		SERVICE REQUESTED	
COMPANY:	Rescan Environmental Services Ltd.	HARDCOPY:	STANDARD	REGULAR SERVICE (DEFAULT)	X
CONTACT:	[redacted]	ELECTRONIC	PDF and EXCEL	PRIORITY SERVICE (2-3 DAYS)	
ADDRESS:	6th Flr, 1111 West Hastings Street	EMAIL 1:	tolcay@rescan.com	EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
CITY/ PROV	Vancouver, BC [redacted] V6E 2J3	EMAIL 2:	dgriffin@rescan.com	OTHER (<1 DAY / WEEKEND) - CONTACT ALS	
PHONE: 604-689-9460 [redacted]	Fax 604-689-4277			ANALYSIS REQUEST	
INVOICE TO: SAME AS REPORT ? YES / NO				Please indicate below Filtered. Preserved or both (F, P, F/P)	
COMPANY:	SAME AS ABOVE	CLIENT / PROJECT INFORMATION:			
CONTACT:	[redacted]	JOB #:	1009-002-02		
ADDRESS:	[redacted]	PO /AFE:			
CITY/ PROV	[redacted]	Legal Site Description:			
PHONE: [redacted]	FAX	QUOTE #:			
Lab Work Order # (lab use only)	L1071955	ALS CONTACT			

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	Total, Soluble, Insoluble Par	Cl, SO4, NO3, NH3	Total Mg, Ca, K	NUMBER OF CONTAINERS
[redacted]	DF1a	3-Sep-2011	13:30	Water	X	X	X	1
[redacted]	DF1b	3-Sep-2011	13:30	Water	X	X	X	1
[redacted]	DF2a	3-Sep-2011	17:45	Water	X	X	X	1
[redacted]	DF2b	3-Sep-2011	17:45	Water	X	X	X	1
[redacted]	DF3a	3-Sep-2011	14:15	Water	X	X	X	1
[redacted]	DF3b	3-Sep-2011	14:15	Water	X	X	X	1
[redacted]	CDF1	3-Sep-2011	14:00	Water	X	X	X	1
[redacted]	CDF2	3-Sep-2011	13:55	Water	X	X	X	1
[redacted]	CDF3	3-Sep-2011	13:50	Water	X	X	X	1
[redacted]	(installed Aug 4/11)							

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS
	Please split the sample to analyze for different parameters

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified below.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
				TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
J. Tolcay	Oct 11/11 9:00a				
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	11.6°C	If NO, Explain
			Oct 11/11 10:04am		

GENF 18.01 Front

RESCAN ENVIRONMENTAL SERVICES
ATTN: Tolga Olcay
Sixth Floor
1111 West Hastings Street
Vancouver BC V6E 2J3

Date Received: 14-OCT-11
Report Date: 25-OCT-11 13:02 (MT)
Version: FINAL

Client Phone: 604-689-9460

Certificate of Analysis

Lab Work Order #: L1071959

Project P.O. #: NOT SUBMITTED
Job Reference: 1009-002-02
C of C Numbers:
Legal Site Desc:

Amber Springer
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1071959-1	L1071959-2	L1071959-3	L1071959-4	L1071959-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	02-OCT-11	02-OCT-11	02-OCT-11	02-OCT-11	02-OCT-11
	Sampled Time	14:42	14:42	20:00	20:00	14:55
	Client ID	DF1A	DF1B	DF2A	DF2B	DF3A
Grouping	**Analyte**					
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	1.50	2.68	3.35	2.46	3.15
	Total Insoluble Dustfall (mg/dm2.day)	<0.10	<0.10	<0.10	<0.10	<0.10
	Total Soluble Dustfall (mg/dm2.day)	1.48	2.68	3.29	2.46	3.14
Anions and Nutrients	Ammonia (as N) (mg/dm2.day)	0.00018	0.00017	0.00073	0.00046	0.00024
	Chloride (Cl) (mg/dm2.day)	0.404	0.403	0.408	0.385	0.380
	Nitrate (as N) (mg/dm2.day)	0.00058	0.00061	0.00061	0.00072	0.00063
	Sulfate (SO4) (mg/dm2.day)	<0.013	<0.013	<0.014	<0.014	<0.017
Metals	Aluminum (Al)-Total (mg/dm2.day)	<0.00038 DLB	<0.00028 DLB	0.00181	<0.00011 DLB	<0.00017 DLB
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000025	<0.0000025	<0.0000028	<0.0000029	<0.0000033
	Arsenic (As)-Total (mg/dm2.day)	<0.0000025	<0.0000025	<0.0000028	<0.0000029	<0.0000033
	Barium (Ba)-Total (mg/dm2.day)	0.0000076	0.0000060	0.0000066	0.0000059	0.0000064
	Beryllium (Be)-Total (mg/dm2.day)	<0.000013	<0.000013	<0.000014	<0.000014	<0.000017
	Bismuth (Bi)-Total (mg/dm2.day)	<0.000013	<0.000013	<0.000014	<0.000014	<0.000017
	Boron (B)-Total (mg/dm2.day)	<0.00025	<0.00025	<0.00028	<0.00029	<0.00033
	Cadmium (Cd)-Total (mg/dm2.day)	<0.0000013	<0.0000013	<0.0000014	<0.0000014	<0.0000017
	Calcium (Ca)-Total (mg/dm2.day)	0.0046	0.0042	0.0126	0.0032	0.0034
	Chromium (Cr)-Total (mg/dm2.day)	<0.000013	<0.000013	<0.000014	<0.000014	<0.000017
	Cobalt (Co)-Total (mg/dm2.day)	<0.0000025	<0.0000025	<0.0000028	<0.0000029	<0.0000033
	Copper (Cu)-Total (mg/dm2.day)	0.000344	0.000200	0.000408	0.000434	0.000240
	Iron (Fe)-Total (mg/dm2.day)	<0.00076	<0.00076	0.00314	<0.00086	<0.00099
	Lead (Pb)-Total (mg/dm2.day)	0.0000158	0.0000071	0.0000050	0.0000061	0.0000038
	Lithium (Li)-Total (mg/dm2.day)	<0.00013	<0.00013	<0.00014	<0.00014	<0.00017
	Magnesium (Mg)-Total (mg/dm2.day)	0.0026	<0.0025	0.0048	<0.0029	<0.0033
	Manganese (Mn)-Total (mg/dm2.day)	0.0000297	0.0000243	0.000128	0.0000175	0.0000134
	Mercury (Hg)-Total (mg/dm2.day)	<0.0000025 DLM	<0.0000025	<0.0000028 DLM	<0.0000029	<0.0000033
	Molybdenum (Mo)-Total (mg/dm2.day)	<0.0000013	<0.0000013	<0.0000014	<0.0000014	<0.0000017
	Nickel (Ni)-Total (mg/dm2.day)	<0.000013	<0.000013	<0.000014	<0.000014	<0.000017
	Phosphorus (P)-Total (mg/dm2.day)	<0.0076	<0.0076	<0.0083	<0.0086	<0.0099
	Potassium (K)-Total (mg/dm2.day)	<0.051	<0.051	<0.055	<0.057	<0.066
	Selenium (Se)-Total (mg/dm2.day)	<0.000025	<0.000025	<0.000028	<0.000029	<0.000033
	Silicon (Si)-Total (mg/dm2.day)	<0.0013	<0.0013	0.0021	<0.0014	<0.0017
	Silver (Ag)-Total (mg/dm2.day)	<0.00000051 DLB	<0.00000025	<0.00000028	<0.00000057 DLB	<0.00000033
	Sodium (Na)-Total (mg/dm2.day)	<0.051	<0.051	<0.055	<0.057	<0.066
	Strontium (Sr)-Total (mg/dm2.day)	0.0000205	0.0000186	0.0000260	0.0000123	0.0000167
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000025	<0.0000025	<0.0000028	<0.0000029	<0.0000033
	Tin (Sn)-Total (mg/dm2.day)	<0.0000025	<0.0000025	<0.0000028	<0.0000029	<0.0000033
	Titanium (Ti)-Total (mg/dm2.day)	<0.00025	<0.00025	<0.00028	<0.00029	<0.00033

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1071959-6	L1071959-7	L1071959-8	L1071959-9	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	02-OCT-11	02-OCT-11	02-OCT-11	02-OCT-11	
	Sampled Time	14:55	14:30	14:35	14:40	
	Client ID	DF3B	CDF1	CDF2	CDF3	
Grouping	**Analyte**					
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	<0.10	3.47	5.21	4.42	
	Total Insoluble Dustfall (mg/dm2.day)	<0.10	<0.10	<0.10	<0.10	
	Total Soluble Dustfall (mg/dm2.day)	<0.10	3.45	5.20	4.41	
Anions and Nutrients	Ammonia (as N) (mg/dm2.day)	0.00020	<0.00028	0.00055	<0.00028	
	Chloride (Cl) (mg/dm2.day)	0.077	0.443	0.552	0.463	
	Nitrate (as N) (mg/dm2.day)	0.00089	0.00066	0.00071	0.00066	
	Sulfate (SO4) (mg/dm2.day)	<0.019	<0.028	<0.030	<0.028	
Metals	Aluminum (Al)-Total (mg/dm2.day)	<0.00015 DLB	0.0000306	0.000702	<0.00028 DLB	
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000038	<0.00000027	<0.0000060	<0.0000055	
	Arsenic (As)-Total (mg/dm2.day)	<0.0000038	<0.00000027	<0.0000060	<0.0000055	
	Barium (Ba)-Total (mg/dm2.day)	0.0000037	0.00000027	0.0000130	0.0000051	
	Beryllium (Be)-Total (mg/dm2.day)	<0.000019	<0.0000014	<0.000030	<0.000028	
	Bismuth (Bi)-Total (mg/dm2.day)	<0.000019	<0.0000014	<0.000030	<0.000028	
	Boron (B)-Total (mg/dm2.day)	<0.00038	<0.000027	<0.00060	<0.00055	
	Cadmium (Cd)-Total (mg/dm2.day)	<0.0000019	<0.00000014	<0.0000030	<0.0000028	
	Calcium (Ca)-Total (mg/dm2.day)	0.0025	0.00025	0.0083	0.0036	
	Chromium (Cr)-Total (mg/dm2.day)	<0.000019	<0.0000014	<0.000030	<0.000028	
	Cobalt (Co)-Total (mg/dm2.day)	<0.0000038	<0.00000027	<0.0000060	<0.0000055	
	Copper (Cu)-Total (mg/dm2.day)	0.0000824	0.0000115	0.000363	0.000292	
	Iron (Fe)-Total (mg/dm2.day)	<0.0011	<0.000081	<0.0018	<0.0017	
	Lead (Pb)-Total (mg/dm2.day)	<0.0000019	<0.00000014	0.0000048	0.0000042	
	Lithium (Li)-Total (mg/dm2.day)	<0.00019	<0.000014	<0.00030	<0.00028	
	Magnesium (Mg)-Total (mg/dm2.day)	<0.0038	<0.00027	<0.0060	<0.0055	
	Manganese (Mn)-Total (mg/dm2.day)	0.0000115	0.00000215	0.0000544	0.0000222	
	Mercury (Hg)-Total (mg/dm2.day)	<0.0000038	<0.00000027	<0.0000060 DLM	<0.0000055 DLM	
	Molybdenum (Mo)-Total (mg/dm2.day)	<0.0000019	<0.00000014	<0.0000030	<0.0000028	
	Nickel (Ni)-Total (mg/dm2.day)	<0.000019	<0.0000014	<0.000030	<0.000028	
	Phosphorus (P)-Total (mg/dm2.day)	<0.011	<0.00081	<0.018	<0.017	
	Potassium (K)-Total (mg/dm2.day)	<0.076	<0.0054	<0.12	<0.11	
	Selenium (Se)-Total (mg/dm2.day)	<0.000038	<0.0000027	<0.000060	<0.000055	
	Silicon (Si)-Total (mg/dm2.day)	<0.0019	<0.00014	<0.0030	<0.0028	
	Silver (Ag)-Total (mg/dm2.day)	<0.00000076 DLB	<0.000000027	<0.00000060	<0.00000055	
	Sodium (Na)-Total (mg/dm2.day)	<0.076	<0.0054	<0.12	<0.11	
	Strontium (Sr)-Total (mg/dm2.day)	0.0000130	0.00000088	0.0000238	0.0000179	
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000038	<0.00000027	<0.0000060	<0.0000055	
	Tin (Sn)-Total (mg/dm2.day)	<0.0000038	<0.00000027	<0.0000060	<0.0000055	
	Titanium (Ti)-Total (mg/dm2.day)	<0.00038	<0.000027	<0.00060	<0.00055	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1071959-1	L1071959-2	L1071959-3	L1071959-4	L1071959-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	02-OCT-11	02-OCT-11	02-OCT-11	02-OCT-11	02-OCT-11
	Sampled Time	14:42	14:42	20:00	20:00	14:55
	Client ID	DF1A	DF1B	DF2A	DF2B	DF3A
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	<0.00000025	<0.00000025	<0.00000028	<0.00000029	<0.00000033
	Vanadium (V)-Total (mg/dm2.day)	<0.000025	<0.000025	<0.000028	<0.000029	<0.000033
	Zinc (Zn)-Total (mg/dm2.day)	0.000088	0.000117	0.000073	0.000077	0.000054

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1071959-6	L1071959-7	L1071959-8	L1071959-9	
	Description	WATER	WATER	WATER	WATER	
	Sampled Date	02-OCT-11	02-OCT-11	02-OCT-11	02-OCT-11	
	Sampled Time	14:55	14:30	14:35	14:40	
	Client ID	DF3B	CDF1	CDF2	CDF3	
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	<0.00000038	<0.000000027	<0.00000060	<0.00000055	
	Vanadium (V)-Total (mg/dm2.day)	<0.000038	<0.0000027	<0.000060	<0.000055	
	Zinc (Zn)-Total (mg/dm2.day)	<0.000038	0.0000029	0.000090	0.000056	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection limit was raised due to detection of analyte at comparable level in Method Blank.
DLM	Detection Limit Adjusted For Sample Matrix Effects

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-VA	Dustfall	Dustfall Chloride by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The chloride analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

DUSTFALLS-COM-DM2-VA	Dustfall	Combined Dustfalls-Total, soluble, insol	BCMOE DUSTFALLS

Dustfall analysis is carried out in accordance with procedures published by the B.C. Ministry of Environment Laboratory.

HG-DUST(DM2-CVAFS-VA	Dustfall	Total Mercury in Dustfalls by CVAFS	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DUST(DM2)-ICP-VA	Dustfall	Total Metals in Dustfalls by ICPOES	EPA 6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-DUST(DM2)-MS-VA	Dustfall	Total Metals in Dustfalls by ICPMS	EPA 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

NH3-F-VA	Dustfall	Dustfall Ammonia by Fluorescence	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The ammonia analysis is specifcially carried out using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO3-IC-VA	Dustfall	Dustfall Nitrate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The nitrate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

SO4-IC-VA	Dustfall	Dustfall Sulphate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The sulphate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

L10719559-COFC

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES
Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878
www.alsenviro.com

COC #

REPORT TO:		REPORT FORMAT / DISTRIBUTION		SERVICE REQUESTED	
COMPANY:	Rescan Environmental Services Ltd.	HARDCOPY:	STANDARD	REGULAR SERVICE (DEFAULT)	X
CONTACT:	[redacted]	ELECTRONIC	PDF and EXCEL	PRIORITY SERVICE (2-3 DAYS)	
ADDRESS:	6th Flr,1111 West Hastings Street	EMAIL 1:	tolcay@rescan.com	EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
CITY/ PROV	Vancouver, BC V6E 2J3	EMAIL 2:	dgriffin@rescan.com	OTHER (<1 DAY / WEEKEND) - CONTACT ALS	
PHONE:	604-689-9460 Fax 604-689-4277			ANALYSIS REQUEST	

INVOICE TO: SAME AS REPORT ? YES / NO			
COMPANY:	SAME AS ABOVE	CLIENT / PROJECT INFORMATION:	
CONTACT:	[redacted]	JOB #:	1009-002-02
ADDRESS:	[redacted]	PO /AFE:	[redacted]
CITY/ PROV	[redacted]	Legal Site Description:	
PHONE:	[redacted] FAX [redacted]	QUOTE #:	[redacted]
Lab Work Order # (lab use only)	L1071959	ALS CONTACT	

Please indicate below Filtered. Preserved or both (F, P, F/P)

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	Total, Soluble, Insoluble Par	Cl, SO4, NO3, NH3	Total Mg, Ca, K	NUMBER OF CONTAINERS
[redacted]	DF1a	2-Oct-2011	14:42	Water	X	X	X	1
[redacted]	DF1b	2-Oct-2011	14:42	Water	X	X	X	1
[redacted]	DF2a	2-Oct-2011	20:00	Water	X	X	X	1
[redacted]	DF2b	2-Oct-2011	20:00	Water	X	X	X	1
[redacted]	DF3a	2-Oct-2011	14:55	Water	X	X	X	1
[redacted]	DF3b	2-Oct-2011	14:55	Water	X	X	X	1
[redacted]	CDF1	2-Oct-2011	14:30	Water	X	X	X	1
[redacted]	CDF2	2-Oct-2011	14:35	Water	X	X	X	1
[redacted]	CDF3	2-Oct-2011	14:40	Water	X	X	X	1
[redacted]	(installed Sept 3/11)							

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS
	Please split the sample to analyze for different parameters

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified below.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:
J Tunc	Oct 11/11 9:00a		
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:
			11/10/11

SAMPLE CONDITION (lab use only)	
TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
10.9°C	
	If NO, Explain

GENF 18.01 Front

1009.

RESCAN ENVIRONMENTAL SERVICES
ATTN: Tolga Olcay
Sixth Floor
1111 West Hastings Street
Vancouver BC V6E 2J3

Date Received: 01-FEB-12
Report Date: 09-FEB-12 16:25 (MT)
Version: FINAL

Client Phone: 604-689-9460

Certificate of Analysis

Lab Work Order #: L1109673

Project P.O. #: NOT SUBMITTED
Job Reference: 1009-002-02
C of C Numbers: 1, 2
Legal Site Desc:

Amber Springer
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1109673-1	L1109673-2	L1109673-3		
	Description	WATER	WATER	WATER		
	Sampled Date	20-DEC-11	15-DEC-11	16-DEC-11		
	Sampled Time	11:30	11:30	11:30		
	Client ID	CDF1	CDF2	CDF3		
Grouping	**Analyte**					
DUSTFALL						
Particulates	Total Dustfall (mg/dm2.day)	1.63	2.03	1.57		
	Total Insoluble Dustfall (mg/dm2.day)	<0.10	<0.10	<0.10		
	Total Soluble Dustfall (mg/dm2.day)	1.60	1.93	1.56		
Anions and Nutrients	Ammonia, Total (as N) (mg/dm2.day)	0.000106	0.000181	0.000113		
	Chloride (Cl) (mg/dm2.day)	0.280	0.298	0.217		
	Nitrate (as N) (mg/dm2.day)	0.000293	0.000331	0.000244		
	Sulfate (SO4) (mg/dm2.day)	<0.0097	<0.0072	<0.0093		
Metals	Aluminum (Al)-Total (mg/dm2.day)	0.000186	0.000531	0.000109		
	Antimony (Sb)-Total (mg/dm2.day)	<0.0000019	<0.0000014	<0.0000019		
	Arsenic (As)-Total (mg/dm2.day)	<0.0000019	<0.0000014	<0.0000019		
	Barium (Ba)-Total (mg/dm2.day)	0.0000123	0.00000885	0.0000130		
	Beryllium (Be)-Total (mg/dm2.day)	<0.0000097	<0.0000072	<0.0000093		
	Bismuth (Bi)-Total (mg/dm2.day)	<0.0000097	<0.0000072	<0.0000093		
	Boron (B)-Total (mg/dm2.day)	<0.00019	<0.00014	<0.00019		
	Cadmium (Cd)-Total (mg/dm2.day)	0.00000117	<0.00000072	<0.00000093		
	Calcium (Ca)-Total (mg/dm2.day)	0.00724	0.0103	0.00334		
	Chromium (Cr)-Total (mg/dm2.day)	0.0000367	0.0000165	<0.0000093		
	Cobalt (Co)-Total (mg/dm2.day)	<0.0000019	<0.0000014	<0.0000019		
	Copper (Cu)-Total (mg/dm2.day)	0.000186	0.0000841	0.000106		
	Iron (Fe)-Total (mg/dm2.day)	<0.00058	0.00074	<0.00056		
	Lead (Pb)-Total (mg/dm2.day)	0.0000139	0.00000847	0.00000511		
	Lithium (Li)-Total (mg/dm2.day)	<0.000097	<0.000072	<0.000093		
	Magnesium (Mg)-Total (mg/dm2.day)	0.0115	0.0116	0.0076		
	Manganese (Mn)-Total (mg/dm2.day)	0.0000283	0.0000529	0.0000104		
	Mercury (Hg)-Total (mg/dm2.day)	<0.0000019 DLM	<0.0000014 DLM	<0.0000019 DLM		
	Molybdenum (Mo)-Total (mg/dm2.day)	0.00000223	<0.00000072	<0.00000093		
	Nickel (Ni)-Total (mg/dm2.day)	0.0000202	<0.0000072	<0.0000093		
	Phosphorus (P)-Total (mg/dm2.day)	<0.0058	<0.0043	<0.0056		
	Potassium (K)-Total (mg/dm2.day)	<0.039	<0.029	<0.037		
	Selenium (Se)-Total (mg/dm2.day)	<0.000019	<0.000014	<0.000019		
	Silicon (Si)-Total (mg/dm2.day)	<0.00097	<0.00072	<0.00093		
	Silver (Ag)-Total (mg/dm2.day)	<0.00000019	<0.00000014	<0.00000019		
	Sodium (Na)-Total (mg/dm2.day)	0.079	0.086	0.056		
	Strontium (Sr)-Total (mg/dm2.day)	0.0000668	0.0000664	0.0000455		
	Thallium (Tl)-Total (mg/dm2.day)	<0.0000019	<0.0000014	<0.0000019		
	Tin (Sn)-Total (mg/dm2.day)	<0.0000019	<0.0000014	<0.0000019		
	Titanium (Ti)-Total (mg/dm2.day)	<0.00019	<0.00014	<0.00019		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1109673-1	L1109673-2	L1109673-3		
	Description	WATER	WATER	WATER		
	Sampled Date	20-DEC-11	15-DEC-11	16-DEC-11		
	Sampled Time	11:30	11:30	11:30		
	Client ID	CDF1	CDF2	CDF3		
Grouping	**Analyte**					
DUSTFALL						
Metals	Uranium (U)-Total (mg/dm2.day)	<0.00000019	<0.00000014	<0.00000019		
	Vanadium (V)-Total (mg/dm2.day)	<0.000019	<0.000014	<0.000019		
	Zinc (Zn)-Total (mg/dm2.day)	0.000143	0.000094	0.000074		

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-IC-VA	Dustfall	Dustfall Chloride by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The chloride analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

DUSTFALLS-COM-DM2-VA	Dustfall	Combined Dustfalls-Total, soluble, insol	BCMOE DUSTFALLS

Dustfall analysis is carried out in accordance with procedures published by the B.C. Ministry of Environment Laboratory.

HG-DUST(DM2-CVAFS-VA	Dustfall	Total Mercury in Dustfalls by CVAFS	EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-DUST(DM2)-ICP-VA	Dustfall	Total Metals in Dustfalls by ICPOES	EPA 6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-DUST(DM2)-MS-VA	Dustfall	Total Metals in Dustfalls by ICPMS	EPA 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

NH3-F-VA	Dustfall	Dustfall Ammonia by Fluorescence	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The ammonia analysis is specifcially carried out using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO3-IC-VA	Dustfall	Dustfall Nitrate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The nitrate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

SO4-IC-VA	Dustfall	Dustfall Sulphate by Ion Chromatography	BC LAB MAN. - PART. - SOLUBLE - ANIONS

The Dustfall analysis is carried out in accordance with the B.C. Laboratory Manual method 'Particulate - Total' and 'Particulate - Soluble - Anions and Cations by Ion Chromatography'. The sulphate analysis is specifcially carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

1 2

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

HBML

L1109673

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

COC #

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

REPORT TO:		REPORT FORMAT / DISTRIBUTION		SERVICE REQUESTED	
COMPANY:	Rescan Environmental Services Ltd.	HARDCOPY:	STANDARD	REGULAR SERVICE (DEFAULT)	X
CONTACT:		ELECTRONIC	PDF and EXCEL	PRIORITY SERVICE (2-3 DAYS)	
ADDRESS:	6th Flr, 1111 West Hastings Street	EMAIL 1:	tolcay@rescan.com	EMERGENCY SERVICE (1-2 DAY / WEEKEND)	
CITY/ PROV	Vancouver, BC V6E 2J3	EMAIL 2:	dgriffin@rescan.com	OTHER (<1 DAY / WEEKEND) - CONTACT ALS	
PHONE: 604-689-9460	Fax 604-689-4277			ANALYSIS REQUEST	

INVOICE TO: SAME AS REPORT ? YES / NO				Please indicate below Filtered, Preserved or both (F, P, F/P)
COMPANY:	SAME AS ABOVE	CLIENT / PROJECT INFORMATION:		
CONTACT:		JOB #:	1009-002-02	
ADDRESS:		PO /AFE:		
CITY/ PROV		Legal Site Description:		
PHONE	FAX	QUOTE #:		
Lab Work Order # (lab use only)		ALS CONTACT		

Sample #	SAMPLE IDENTIFICATION (This description will appear on the report)	DATE (dd-mmm-yy)	TIME (hh:mm)	SAMPLE TYPE	Total, Soluble, Insoluble Partic	Cl, SO4, NO3, NH3	Total Mg, Ca, K	NUMBER OF CONTAINERS
	CDF1	20-Dec-2011	11:30	Water	X	X	X	1
	CDF2	15-Dec-2011	11:00	Water	X	X	X	1
	CDF3	16-Dec-2011	11:30	Water	X	X	X	1
	(Deployed 2-Oct-11)							

L1109673-COFC

GUIDELINES / REGULATIONS	SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS
	Please split the sample to analyze for different parameters

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified below.

RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	SAMPLE CONDITION (lab use only)	
D. Vokey	18 Jan 2012 @ 1830 hrs	BP	Feb. 1 9:25	TEMPERATURE	SAMPLES RECEIVED IN GOOD CONDITION ?
RELINQUISHED BY:	DATE & TIME:	RECEIVED BY:	DATE & TIME:	12	
					If NO, Explain

GENF 18.01 Front

L1109673

TERMS AND CONDITIONS:

1. Quote number must be provided to ensure correct pricing.
2. Turnaround times will vary dependent on complexity of analysis & lab workload at time of submission. Please contact the lab to confirm faster turnaround times are available.
3. All hazardous samples submitted must be labeled to comply with WHMIS and TDG regulations. Appropriate Material Safety Data Sheets (MSDS) must be supplied for all hazardous materials. This must include the nature of the hazard, as well as a contact name and phone number to call for further information.

ALS Laboratory Group Limitation of Liability Statement:

ALS Laboratory Group (ALS) has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel.

Results are obtained from chemical measurements and cannot be guaranteed.

The responsibility of ALS is the reasonable care and diligence required by the laws of the province where the sample is tested.

The quality, condition, contents and source of samples stored and tested are not known to ALS except as declared and described on the Chain of Custody form completed and submitted by the customer and accompanying the sample.

ALS assumes no liability for the use or interpretation of the results or for any action, inaction, negligence, including gross negligence, strict liability, in tort or otherwise arising from the use or interpretation of the results.

ALS reserves the right to re-test any sample that remains in its possession.

IN NO EVENT SHALL ALS, ITS OFFICERS, DIRECTORS, AGENTS, EMPLOYEES OR AFFILIATES BE LIABLE FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY OR PUNITIVE DAMAGES, WHETHER FORESEEABLE OR UNFORESEEABLE, (INCLUDING CLAIMS FOR LOSS OF PROFITS OR REVENUE OR LOSSES CAUSED BY STOPPAGE OF OTHER WORK OR IMPAIRMENT OF OTHER ASSETS) INCURRED BY CUSTOMER OR ANY THIRD PARTY, ARISING OUT OF BREACH OR FAILURE OF EXPRESS OR IMPLIED WARRANTY, BREACH OF CONTRACT, BREACH OF WARRANTY, MISREPRESENTATION, NEGLIGENCE, STRICT LIABILITY IN TORT OR OTHERWISE, EVEN IF THE OTHER PARTY OR ANY OTHER PERSON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN ANY EVENT, THE LIABILITY OF ALS ARISING FROM LEGAL RESPONSIBILITY SHALL BE LIMITED TO THE COST OF TESTING THE SAMPLE AS REQUESTED IN THE CHAIN OF CUSTODY FORM UNDER WHICH THE SAMPLE WAS ORIGINALLY DEPOSITED. NOTWITHSTANDING THE FOREGOING, NO LIABILITY SHALL ATTACH TOALS UNLESS NOTICE IN WRITING OF LOSS OR DAMAGE, TOGETHER WITH FULL AND DETAILED PARTICULARS THEREOF, IS GIVEN TO ALS BY THE CUSTOMER WITHIN THIRTY DAYS AFTER ANALYSIS OF THE SAMPLE GIVING RISE TO SUCH LIABILITY. THE PROVISIONS OF THIS PARAGRAPH ALLOCATE THE RISKS UNDER THIS AGREEMENT BETWEEN THE CUSTOMER AND ALS. THE FEES PROVIDED FOR IN THIS AGREEMENT REFLECT THIS ALLOCATION OF RISKS AND THE LIMITATION OF LIABILITY SPECIFIED HEREIN.

GENF15.00

Appendix 3

Dustfall (Alberta Method) and PASS Results

Rescan™
Engineers and Scientists

Your Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)

Attention: TOLGA OLCAY
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2011/10/28

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B1A1652
Received: 2011/10/21, 14:44

Sample Matrix: Air
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total & Fixed Dustfall	2	2011/10/27	2011/10/27	EINDSOP-00180	AMD 32020
Determination of Dustfall-mg/cm2/30 days	2	2011/10/27	2011/10/27		see departement
Exposure (Number of days)	2	2011/10/27	2011/10/27		see department
NO2 Passive Analysis (1)	3	2011/10/27	2011/10/28	EINDSOP-00148	Tang Passive NO2 in
O3 Passive Analysis (1)	3	2011/10/27	2011/10/28	EINDSOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	3	2011/10/27	2011/10/28	EINDSOP-00149	Tang Passive SO2 in

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Levi Manchak, Customer Service
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B1A1652
Report Date: 2011/10/28

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		BW8968		BW8969	BX3967		
Sampling Date		2011/08/04 14:30		2011/08/02 09:20	2011/08/02 09:20		
	Units	**11DORIS-008**	**RDL**	**11BOSTON-008**	**11BOSTON-008 DUP**	**RDL**	**QC Batch**
Industrial							
Exposure	days	28	1	33		1	5307138
Dustfall Determination							
Total Dustfall	mg	14	2	6		1	5307135
Total Dustfall (30 day)	mg/cm2/30day	0.188	0.002	0.067		0.001	5307136
Total Fixed Dustfall	mg	7	2	4		1	5307135
Total Fixed Dustfall (30 day)	mg/cm2/30day	0.085	0.002	0.040		0.001	5307136
Passive Monitoring							
Calculated NO2	ppb	0.4	0.1	0.7	0.8	0.1	5307139
Calculated O3	ppb	21.6	0.1	19.9	21.5	0.1	5307140
Calculated SO2	ppb	0.3	0.1	<0.1	0.2	0.1	5307143

RDL = Reportable Detection Limit

Maxxam Job #: B1A1652
Report Date: 2011/10/28

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

General Comments

Sample Exposure Times:
Doris: 2011/08/04 - 2011/09/01
Boston: 2011/08/02 - 2011/09/04

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: TOLGA OLCAY
Client Project #: 1009-002-02
P.O. #:
Site Location: HOPE BAY (BOSTON/DORIS)

Quality Assurance Report

Maxxam Job Number: PB1A1652

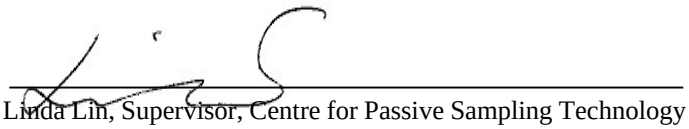
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5307135	OZ	Calibration Check	Total Dustfall	2011/10/27		101	%	N/A
		Method Blank	Total Dustfall	2011/10/27	<1		mg	
			Total Fixed Dustfall	2011/10/27	<1		mg	
		RPD [BW8968-01]	Total Dustfall	2011/10/27	0		%	N/A
			Total Fixed Dustfall	2011/10/27	NC		%	N/A
5307139	OZ	Calibration Check	Calculated NO2	2011/10/28		99	%	76 - 118
		Spiked Blank	Calculated NO2	2011/10/28		100	%	N/A
		Method Blank	Calculated NO2	2011/10/28	<0.1		ppb	
5307140	OZ	Calibration Check	Calculated O3	2011/10/28		98	%	91 - 107
		Spiked Blank	Calculated O3	2011/10/28		101	%	N/A
		Method Blank	Calculated O3	2011/10/28	<0.1		ppb	
5307143	OZ	Calibration Check	Calculated SO2	2011/10/28		98	%	95 - 105
		Spiked Blank	Calculated SO2	2011/10/28		97	%	N/A
		Method Blank	Calculated SO2	2011/10/28	<0.1		ppb	

N/A = Not Applicable
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B1A1652

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Linda Lin, Supervisor, Centre for Passive Sampling Technology

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Your Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)

Attention: TOLGA OLCAY
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2011/10/28

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B1A1654
Received: 2011/10/21, 14:49

Sample Matrix: Air
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total & Fixed Dustfall	2	2011/10/28	2011/10/28	EINDSOP-00180	AMD 32020
Determination of Dustfall-mg/cm2/30 days	2	2011/10/28	2011/10/28		see departement
Exposure (Number of days)	2	2011/10/27	2011/10/28		see department
NO2 Passive Analysis (1)	3	2011/10/28	2011/10/28	EINDSOP-00148	Tang Passive NO2 in
O3 Passive Analysis (1)	3	2011/10/28	2011/10/28	EINDSOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	3	2011/10/28	2011/10/28	EINDSOP-00149	Tang Passive SO2 in

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Levi Manchak, Customer Service
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B1A1654
Report Date: 2011/10/28

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		BW8986		BW8987	BX4013		
Sampling Date		2011/09/01 17:45		2011/09/04 14:45	2011/09/01 14:45		
	Units	**11DORIS-009**	**RDL**	**11BOSTON-009**	**11BOSTON-009 DUP**	**RDL**	**QC Batch**
Industrial							
Exposure	days	31	1	35		1	5307208
Dustfall Determination							
Total Dustfall	mg	<2	2	1		1	5312352
Total Dustfall (30 day)	mg/cm2/30day	0.015	0.002	0.013		0.001	5312353
Total Fixed Dustfall	mg	<2	2	<1		1	5312352
Total Fixed Dustfall (30 day)	mg/cm2/30day	<0.002	0.002	0.006		0.001	5312353
Passive Monitoring							
Calculated NO2	ppb	0.7	0.1	1.3	0.8	0.1	5311703
Calculated O3	ppb	23.1	0.1	24.6	30.4	0.1	5307140
Calculated SO2	ppb	<0.1	0.1	0.1	0.1	0.1	5311710

RDL = Reportable Detection Limit

Maxxam Job #: B1A1654
Report Date: 2011/10/28

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

General Comments

Sample Exposure Times:
Doris: 2011/09/01 - 2011/10/03
Boston: 2011/09/04 - 2011/10/10

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: TOLGA OLCAY
Client Project #: 1009-002-02
P.O. #:
Site Location: HOPE BAY (BOSTON/DORIS)

Quality Assurance Report

Maxxam Job Number: PB1A1654

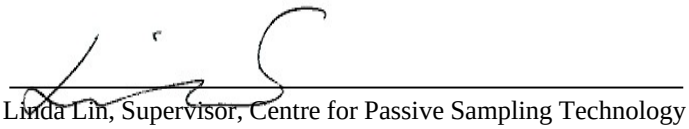
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5307140	OZ	Calibration Check	Calculated O3	2011/10/28		98	%	91 - 107
		Spiked Blank	Calculated O3	2011/10/28		101	%	N/A
		Method Blank	Calculated O3	2011/10/28	<0.1		ppb	
5311703	DF4	Calibration Check	Calculated NO2	2011/10/28		99	%	76 - 118
		Spiked Blank	Calculated NO2	2011/10/28		100	%	N/A
		Method Blank	Calculated NO2	2011/10/28	<0.1		ppb	
5311710	DF4	Calibration Check	Calculated SO2	2011/10/28		98	%	95 - 105
		Spiked Blank	Calculated SO2	2011/10/28		97	%	N/A
		Method Blank	Calculated SO2	2011/10/28	<0.1		ppb	
5312352	OZ	Calibration Check	Total Dustfall	2011/10/28		101	%	N/A
		Method Blank	Total Dustfall	2011/10/28	<1		mg	
			Total Fixed Dustfall	2011/10/28	<1		mg	

Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Validation Signature Page

Maxxam Job #: B1A1654

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Linda Lin, Supervisor, Centre for Passive Sampling Technology

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam

Your Project #: 1009-002-02
Site: HOPE BAY (BOSTON/DORIS)

Attention: TOLGA OLCAY
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2011/03/04

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B111200
Received: 2011/02/11, 14:08

Sample Matrix: Air
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total & Fixed Dustfall	2	2011/02/18	2011/02/18	EINDSOP-00180	AMD 32020
Determination of Dustfall-mg/cm2/30 days	2	2011/02/18	2011/02/18		see departement
Exposure (Number of days)	2	2011/02/15	2011/02/15		see department
NO2 Passive Analysis (1)	3	2011/02/16	2011/03/04	EINDSOP-00148	Tang Passive NO2 in
O3 Passive Analysis (1)	3	2011/02/18	2011/03/04	EINDSOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	3	2011/02/18	2011/03/04	EINDSOP-00149	Tang Passive SO2 in

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

LEVI MANCHAK,
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

==========

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Total cover pages: 1

Maxxam Job #: B111200
Report Date: 2011/03/04

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JT

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		Z85622	Z85624	Z85626		
Sampling Date		2011/01/10 14:45	2011/01/11 10:35	2011/01/11 10:35		
	Units	**11DORIS-001**	**11BOSTON-001**	**11BOSTOND-001**	**RDL**	**QC Batch**
Industrial						
Exposure	days	20	21		1	4635415
Dustfall Determination						
Total Dustfall	mg	5	5		1	4647172
Total Dustfall (30 day)	mg/cm2/30day	0.092	0.087		0.001	4647173
Total Fixed Dustfall	mg	4	3		1	4647172
Total Fixed Dustfall (30 day)	mg/cm2/30day	0.073	0.052		0.001	4647173
Passive Monitoring						
Calculated NO2	ppb	2.1	2.9	2.8	0.1	4638238
Calculated O3	ppb	31.1	34.4	33.3	0.1	4647026
Calculated SO2	ppb	<0.1	<0.1	<0.1	0.1	4646677

RDL = Reportable Detection Limit

Maxxam Job #: B111200
Report Date: 2011/03/04

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JT

General Comments

Exposure Dates:
11Doris-001: 2011/01/10 - 2011/01/30
11Boston-001: 2011/01/11 - 2011/02/01
11BostonDUP-001: 2011/01/11 - 2011/02/01

No Blanks returned. Lab blanks utilized for all parameters. - DF

All DUSTFALL samples with the Summer solution.-OZ

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: TOLGA OLCAY
Client Project #: 1009-002-02
P.O. #:
Site Reference: HOPE BAY (BOSTON/DORIS)

Quality Assurance Report

Maxxam Job Number: PB111200

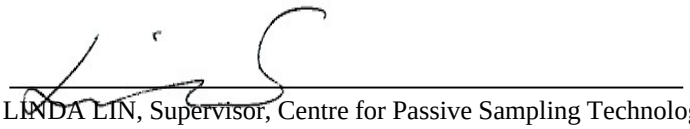
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
4638238	DF4	Calibration Check	Calculated NO2	2011/02/16		99	%	76 - 118
		Spiked Blank	Calculated NO2	2011/02/16		99	%	N/A
		Method Blank	Calculated NO2	2011/02/16	<0.1		ppb	
4646677	DF4	Calibration Check	Calculated SO2	2011/02/18		101	%	95 - 105
		Spiked Blank	Calculated SO2	2011/02/18		99	%	N/A
		Method Blank	Calculated SO2	2011/02/18	<0.1		ppb	
4647026	OZ	Calibration Check	Calculated O3	2011/02/18		100	%	91 - 107
		Spiked Blank	Calculated O3	2011/02/18		100	%	N/A
		Method Blank	Calculated O3	2011/02/18	<0.1		ppb	
4647172	OZ	Calibration Check	Total Dustfall	2011/02/18		101	%	N/A
		Method Blank	Total Dustfall	2011/02/18	<1		mg	
			Total Fixed Dustfall	2011/02/18	<1		mg	

Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Validation Signature Page

Maxxam Job #: B111200

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



LINDA LIN, Supervisor, Centre for Passive Sampling Technology

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Your Project #: 1009-002-02
Site: HOPE BAY (BOSTON/DORIS)

Attention: TOLGA OLCAY
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2011/03/24

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B120749
Received: 2011/03/16, 14:30

Sample Matrix: Air
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total & Fixed Dustfall	2	2011/03/23	2011/03/23	EINDSOP-00180	AMD 32020
Determination of Dustfall-mg/cm2/30 days	2	2011/03/23	2011/03/23		see departement
Exposure (Number of days)	2	2011/03/23	2011/03/23		see department
NO2 Passive Analysis (1)	3	2011/03/21	2011/03/24	EINDSOP-00148	Tang Passive NO2 in
O3 Passive Analysis (1)	3	2011/03/23	2011/03/24	EINDSOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	3	2011/03/23	2011/03/24	EINDSOP-00149	Tang Passive SO2 in

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

LEVI MANCHAK,
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

==========

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Total cover pages: 1

Maxxam Job #: B120749
Report Date: 2011/03/24

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JT

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		AD6444	AD6445	AD6447		
Sampling Date		2011/01/30 15:30	2011/02/01 14:00	2011/02/01 14:00		
	Units	**11DORIS-002**	**11BOSTON-002**	**11BOSTOND-002**	**RDL**	**QC Batch**
Industrial						
Exposure	days	35	32		1	4726852
Dustfall Determination						
Total Dustfall	mg	12	3		2	4726849
Total Dustfall (30 day)	mg/cm2/30day	0.126	0.038		0.002	4726850
Total Fixed Dustfall	mg	9	<2		2	4726849
Total Fixed Dustfall (30 day)	mg/cm2/30day	0.094	0.013		0.002	4726850
Passive Monitoring						
Calculated NO2	ppb	2.6	3.7	3.7	0.1	4719596
Calculated O3	ppb	31.0	33.4	31.6	0.1	4726832
Calculated SO2	ppb	<0.1	<0.1	<0.1	0.1	4726754

RDL = Reportable Detection Limit

Maxxam Job #: B120749
Report Date: 2011/03/24

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JT

General Comments

All samples with the Propanol solution.
Sample Exposure Times:
Feb. 1, 2011 - Mar. 6, 2011

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: TOLGA OLCAY
Client Project #: 1009-002-02
P.O. #:
Site Reference: HOPE BAY (BOSTON/DORIS)

Quality Assurance Report

Maxxam Job Number: PB120749

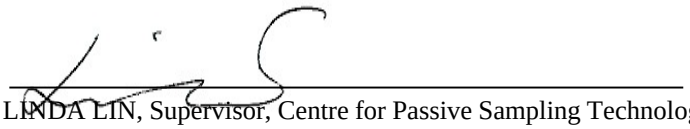
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
4719596	DF4	Calibration Check	Calculated NO2	2011/03/21		100	%	76 - 118
		Spiked Blank	Calculated NO2	2011/03/21		100	%	N/A
		Method Blank	Calculated NO2	2011/03/21	<0.1		ppb	
4726754	DF4	Calibration Check	Calculated SO2	2011/03/23		100	%	95 - 105
		Spiked Blank	Calculated SO2	2011/03/23		100	%	N/A
		Method Blank	Calculated SO2	2011/03/23	<0.1		ppb	
4726832	OZ	Calibration Check	Calculated O3	2011/03/23		102	%	91 - 107
		Spiked Blank	Calculated O3	2011/03/23		100	%	N/A
		Method Blank	Calculated O3	2011/03/23	<0.1		ppb	
4726849	OZ	Calibration Check	Total Dustfall	2011/03/23		101	%	N/A
		Method Blank	Total Dustfall	2011/03/23	<1		mg	
			Total Fixed Dustfall	2011/03/23	<1		mg	

Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Validation Signature Page

Maxxam Job #: B120749

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



LINDA LIN, Supervisor, Centre for Passive Sampling Technology

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Maxxam

Your Project #: 1009-002-02
Site: HOPE BAY (BOSTON/DORIS)

Attention: TOLGA OLCAY
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2011/04/27

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B130168
Received: 2011/04/15, 14:47

Sample Matrix: Air
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total & Fixed Dustfall	2	2011/04/27	2011/04/27	EINDSOP-00180	AMD 32020
Determination of Dustfall-mg/cm2/30 days	2	2011/04/27	2011/04/27		see departement
Exposure (Number of days)	2	2011/04/27	2011/04/27		see department
NO2 Passive Analysis (1)	3	2011/04/27	2011/04/27	EINDSOP-00148	Tang Passive NO2 in
O3 Passive Analysis (1)	3	2011/04/21	2011/04/27	EINDSOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	3	2011/04/27	2011/04/27	EINDSOP-00149	Tang Passive SO2 in

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

LEVI MANCHAK,
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

==========

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Total cover pages: 1

Maxxam Job #: B130168
Report Date: 2011/04/27

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		AI6024	AI6025	AI6027		
Sampling Date		2011/03/06 17:00	2011/03/06 12:30	2011/03/06 12:30		
	Units	**11DORIS-003**	**11BOSTON-003**	**11BOSTOND-003**	**RDL**	**QC Batch**
Industrial						
Exposure	days	35	33		1	4813042
Dustfall Determination						
Total Dustfall	mg	10	<2		2	4813039
Total Dustfall (30 day)	mg/cm2/30day	0.104	0.013		0.001	4813040
Total Fixed Dustfall	mg	7	<2		2	4813039
Total Fixed Dustfall (30 day)	mg/cm2/30day	0.078	<0.001		0.001	4813040
Passive Monitoring						
Calculated NO2	ppb	2.0	1.6	1.6	0.1	4812734
Calculated O3	ppb	31.8	35.9	33.2	0.1	4802572
Calculated SO2	ppb	0.2	0.3	0.3	0.1	4812721

RDL = Reportable Detection Limit

Maxxam Job #: B130168
Report Date: 2011/04/27

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

General Comments

Used 2-Propanol for dustfall. SS

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: TOLGA OLCAY
Client Project #: 1009-002-02
P.O. #:
Site Reference: HOPE BAY (BOSTON/DORIS)

Quality Assurance Report

Maxxam Job Number: PB130168

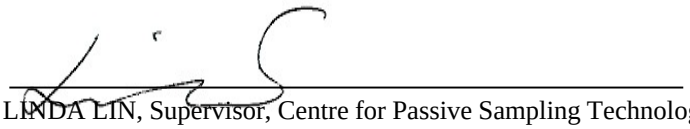
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
4802572	SS6	Calibration Check	Calculated O3	2011/04/21		100	%	91 - 107
		Spiked Blank	Calculated O3	2011/04/21		100	%	N/A
		Method Blank	Calculated O3	2011/04/21	<0.1		ppb	
4812721	DF4	Calibration Check	Calculated SO2	2011/04/27		99	%	95 - 105
		Spiked Blank	Calculated SO2	2011/04/27		101	%	N/A
		Method Blank	Calculated SO2	2011/04/27	<0.1		ppb	
4812734	DF4	Calibration Check	Calculated NO2	2011/04/27		99	%	76 - 118
		Spiked Blank	Calculated NO2	2011/04/27		102	%	N/A
		Method Blank	Calculated NO2	2011/04/27	<0.1		ppb	
4813039	SS6	Calibration Check	Total Dustfall	2011/04/27		104	%	N/A
		Method Blank	Total Dustfall	2011/04/27	<1		mg	
			Total Fixed Dustfall	2011/04/27	<1		mg	
		RPD [AI6024-01]	Total Dustfall	2011/04/27	NC		%	N/A
			Total Fixed Dustfall	2011/04/27	NC		%	N/A

N/A = Not Applicable
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B130168

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



LINDA LIN, Supervisor, Centre for Passive Sampling Technology

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Your Project #: 1009-002-02
Site: HOPE BAY (BOSTON/DORIS)

Attention: TOLGA OLCAY
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2011/05/27

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B141231
Received: 2011/05/19, 13:28

Sample Matrix: Air
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total & Fixed Dustfall	2	2011/05/27	2011/05/27	EINDSOP-00180	AMD 32020
Determination of Dustfall-mg/cm2/30 days	2	2011/05/27	2011/05/27		see departement
Exposure (Number of days)	2	2011/05/27	2011/05/27		see department
NO2 Passive Analysis (1)	3	2011/05/26	2011/05/27	EINDSOP-00148	Tang Passive NO2 in
O3 Passive Analysis (1)	3	2011/05/24	2011/05/27	EINDSOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	3	2011/05/27	2011/05/27	EINDSOP-00149	Tang Passive SO2 in

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Levi Manchak, Customer Service
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

==========

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Total cover pages: 1

Maxxam Job #: B141231
Report Date: 2011/05/27

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		AO3039	AO3040	AO3042		
Sampling Date		2011/04/10 17:25	2011/04/09 08:45	2011/04/09 08:45		
	Units	**11DORIS-004**	**11BOSTON-004**	**11BOSTOND-004**	**RDL**	**QC Batch**
Industrial						
Exposure	days	19	24		1	4885012
Dustfall Determination						
Total Dustfall	mg	4	2		2	4885009
Total Dustfall (30 day)	mg/cm2/30day	0.070	0.037		0.002	4885010
Total Fixed Dustfall	mg	2	<2		2	4885009
Total Fixed Dustfall (30 day)	mg/cm2/30day	0.046	0.018		0.002	4885010
Passive Monitoring						
Calculated NO2	ppb	0.1	0.5	0.2	0.1	4881817
Calculated O3	ppb	21.9	22.4	22.7	0.1	4875172
Calculated SO2	ppb	<0.1	<0.1	0.2	0.1	4884958

RDL = Reportable Detection Limit

Maxxam Job #: B141231
Report Date: 2011/05/27

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Reference: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

General Comments

All DUSTFALL samples with the Propanol solution. - OZ

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: TOLGA OLCAY
Client Project #: 1009-002-02
P.O. #:
Site Reference: HOPE BAY (BOSTON/DORIS)

Quality Assurance Report

Maxxam Job Number: PB141231

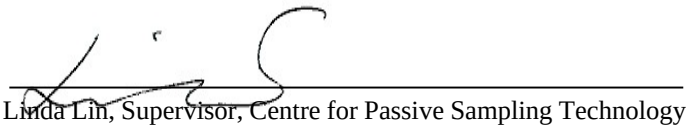
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
4875172	OZ	Calibration Check	Calculated O3	2011/05/24		98	%	91 - 107
		Spiked Blank	Calculated O3	2011/05/24		99	%	N/A
		Method Blank	Calculated O3	2011/05/24	<0.1		ppb	
4881817	DF4	Calibration Check	Calculated NO2	2011/05/26		101	%	76 - 118
		Spiked Blank	Calculated NO2	2011/05/26		96	%	N/A
		Method Blank	Calculated NO2	2011/05/26	<0.1		ppb	
4884958	DF4	Calibration Check	Calculated SO2	2011/05/27		102	%	95 - 105
		Spiked Blank	Calculated SO2	2011/05/27		99	%	N/A
		Method Blank	Calculated SO2	2011/05/27	<0.1		ppb	
4885009	OZ	Calibration Check	Total Dustfall	2011/05/27		103	%	N/A
		Method Blank	Total Dustfall	2011/05/27	<1		mg	
			Total Fixed Dustfall	2011/05/27	<1		mg	
		RPD [AO3039-01]	Total Dustfall	2011/05/27	NC		%	N/A
			Total Fixed Dustfall	2011/05/27	NC		%	N/A

N/A = Not Applicable
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B141231

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Linda Lin, Supervisor, Centre for Passive Sampling Technology

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Your Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)

Attention: TOLGA OLCAY
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2011/08/02

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B166943
Received: 2011/07/25, 13:54

Sample Matrix: Air
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total & Fixed Dustfall	2	2011/07/28	2011/08/02	EINDSOP-00180	AMD 32020
Determination of Dustfall-mg/cm2/30 days	2	2011/07/28	2011/08/02		see departement
Exposure (Number of days)	2	2011/07/28	2011/07/28		see department
NO2 Passive Analysis (1)	3	2011/07/28	2011/08/02	EINDSOP-00148	Tang Passive NO2 in
O3 Passive Analysis (1)	3	2011/07/26	2011/08/02	EINDSOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	3	2011/07/28	2011/08/02	EINDSOP-00149	Tang Passive SO2 in

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Levi Manchak, Customer Service
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

==========

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Total cover pages: 1

Maxxam Job #: B166943
Report Date: 2011/08/02

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		BB9274	BB9275	BB9277		
Sampling Date		2011/04/30 17:00	2011/05/03 10:30	2011/05/03 10:30		
	Units	**11DORIS-005**	**11BOSTON-005**	**11BOSTOND-005**	**RDL**	**QC Batch**
Industrial						
Exposure	days	32	32		1	5048604
Dustfall Determination						
Total Dustfall	mg	1	1		1	5048601
Total Dustfall (30 day)	mg/cm2/30day	0.014	0.014		0.001	5048602
Total Fixed Dustfall	mg	<1	<1		1	5048601
Total Fixed Dustfall (30 day)	mg/cm2/30day	0.007	0.007		0.001	5048602
Passive Monitoring						
Calculated NO2	ppb	1.7	0.4	1.6	0.1	5046009
Calculated O3	ppb	28.3	25.9	28.8	0.1	5037884
Calculated SO2	ppb	<0.1	0.2	<0.1	0.1	5046013

RDL = Reportable Detection Limit

Maxxam Job #: B166943
Report Date: 2011/08/02

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

General Comments

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: TOLGA OLCAY
Client Project #: 1009-002-02
P.O. #:
Site Location: HOPE BAY (BOSTON/DORIS)

Quality Assurance Report

Maxxam Job Number: PB166943

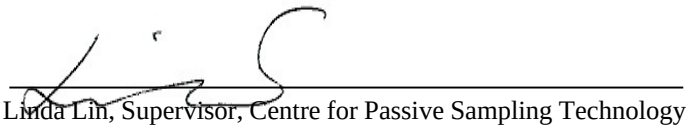
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5037884	OZ	Calibration Check	Calculated O3	2011/07/26		99	%	91 - 107
		Spiked Blank	Calculated O3	2011/07/26		99	%	N/A
		Method Blank	Calculated O3	2011/07/26	<0.1		ppb	
5046009	DF4	Calibration Check	Calculated NO2	2011/07/28		101	%	76 - 118
		Spiked Blank	Calculated NO2	2011/07/28		101	%	N/A
		Method Blank	Calculated NO2	2011/07/28	<0.1		ppb	
5046013	DF4	Calibration Check	Calculated SO2	2011/07/28		102	%	95 - 105
		Spiked Blank	Calculated SO2	2011/07/28		101	%	N/A
		Method Blank	Calculated SO2	2011/07/28	<0.1		ppb	
5048601	OZ	Calibration Check	Total Dustfall	2011/08/02		103	%	N/A
		Method Blank	Total Dustfall	2011/08/02	<1		mg	
			Total Fixed Dustfall	2011/08/02	<1		mg	
		RPD [BB9274-01]	Total Dustfall	2011/08/02	NC		%	N/A
			Total Fixed Dustfall	2011/08/02	NC		%	N/A

N/A = Not Applicable
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B166943

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Linda Lin, Supervisor, Centre for Passive Sampling Technology

==========

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Your Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)

Attention: TOLGA OLCAY
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2011/08/29

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B174664
Received: 2011/08/15, 08:08

Sample Matrix: Air
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total & Fixed Dustfall	2	2011/08/26	2011/08/26	EINDSOP-00180	AMD 32020
Determination of Dustfall-mg/cm2/30 days	2	2011/08/26	2011/08/26		see departement
Exposure (Number of days)	2	2011/08/17	2011/08/17		see department
NO2 Passive Analysis (1)	2	2011/08/26	2011/08/26	EINDSOP-00148	Tang Passive NO2 in
NO2 Passive Analysis (1)	1	2011/08/26	2011/08/29	EINDSOP-00148	Tang Passive NO2 in
O3 Passive Analysis (1)	2	2011/08/24	2011/08/26	EINDSOP-00197	EPA 300 R2.1
O3 Passive Analysis (1)	1	2011/08/24	2011/08/29	EINDSOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	2	2011/08/24	2011/08/26	EINDSOP-00149	Tang Passive SO2 in
SO2 Passive Analysis (1)	1	2011/08/24	2011/08/29	EINDSOP-00149	Tang Passive SO2 in

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Levi Manchak, Customer Service
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

==========

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Total cover pages: 1

Maxxam Job #: B174664
Report Date: 2011/08/29

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		BG2695		BG2696	BG2713		
Sampling Date		2011/06/02 11:20		2011/06/05 10:00	2011/06/05 10:00		
	Units	**11DORIS-006**	**RDL**	**11BOSTON-006**	**11BOSTOND-006**	**RDL**	**QC Batch**
Industrial							
Exposure	days	32	1	27		1	5081527
Dustfall Determination							
Total Dustfall	mg	10	3	8		2	5126138
Total Dustfall (30 day)	mg/cm2/30day	0.109	0.003	0.102		0.002	5126139
Total Fixed Dustfall	mg	8	3	5		2	5126138
Total Fixed Dustfall (30 day)	mg/cm2/30day	0.087	0.003	0.061		0.002	5126139
Passive Monitoring							
Calculated NO2	ppb	0.5	0.1	1.4	1.7	0.1	5125580
Calculated O3	ppb	24.3	0.1	22.9	25.2	0.1	5117139
Calculated SO2	ppb	<0.1	0.1	<0.1	<0.1	0.1	5119081

RDL = Reportable Detection Limit

Maxxam Job #: B174664
Report Date: 2011/08/29

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

General Comments

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: TOLGA OLCAY
Client Project #: 1009-002-02
P.O. #:
Site Location: HOPE BAY (BOSTON/DORIS)

Quality Assurance Report

Maxxam Job Number: PB174664

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5117139	OZ	Calibration Check	Calculated O3	2011/08/24		101	%	91 - 107
		Spiked Blank	Calculated O3	2011/08/24		100	%	N/A
		Method Blank	Calculated O3	2011/08/24	<0.1		ppb	
5119081	DF4	Calibration Check	Calculated SO2	2011/08/24		100	%	95 - 105
		Spiked Blank	Calculated SO2	2011/08/24		101	%	N/A
		Method Blank	Calculated SO2	2011/08/24	<0.1		ppb	
5125580	DF4	Calibration Check	Calculated NO2	2011/08/26		100	%	76 - 118
		Spiked Blank	Calculated NO2	2011/08/26		102	%	N/A
		Method Blank	Calculated NO2	2011/08/26	<0.1		ppb	
5126138	OZ	Calibration Check	Total Dustfall	2011/08/26		101	%	N/A
		Method Blank	Total Dustfall	2011/08/26	<1		mg	
			Total Fixed Dustfall	2011/08/26	<1		mg	
		RPD [BG2695-01]	Total Dustfall	2011/08/26	NC		%	N/A
			Total Fixed Dustfall	2011/08/26	NC		%	N/A

N/A = Not Applicable
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B174664

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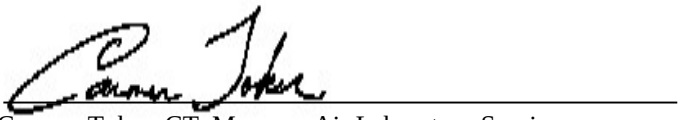

Carmen Toker, CT, Manager Air Laboratory Services

==========

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Your Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)

Attention: TOLGA OLCAY
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2011/08/26

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B174668
Received: 2011/08/15, 08:23

Sample Matrix: Air
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total & Fixed Dustfall	2	2011/08/26	2011/08/26	EINDSOP-00180	AMD 32020
Determination of Dustfall-mg/cm2/30 days	2	2011/08/26	2011/08/26		see departement
Exposure (Number of days)	2	2011/08/17	2011/08/17		see department
NO2 Passive Analysis (1)	3	2011/08/26	2011/08/26	EINDSOP-00148	Tang Passive NO2 in
O3 Passive Analysis (1)	3	2011/08/24	2011/08/26	EINDSOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	3	2011/08/24	2011/08/26	EINDSOP-00149	Tang Passive SO2 in

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Levi Manchak, Customer Service
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

==========

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Total cover pages: 1

Maxxam Job #: B174668
Report Date: 2011/08/26

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		BG2717	BG2718	BG2720		
Sampling Date		2011/07/05 10:00	2011/07/02 17:40	2011/07/02 17:40		
	Units	**11DORIS-007**	**11BOSTON-007**	**11BOSTOND-007**	**RDL**	**QC Batch**
Industrial						
Exposure	days	30	30		1	5081527
Dustfall Determination						
Total Dustfall	mg	19	13		1	5126145
Total Dustfall (30 day)	mg/cm2/30day	0.228	0.154		0.001	5126146
Total Fixed Dustfall	mg	7	9		1	5126145
Total Fixed Dustfall (30 day)	mg/cm2/30day	0.088	0.110		0.001	5126146
Passive Monitoring						
Calculated NO2	ppb	0.4	0.9	0.9	0.1	5125580
Calculated O3	ppb	24.5	24.2	23.4	0.1	5117139
Calculated SO2	ppb	0.4	<0.1	DAMAGED	0.1	5119081

RDL = Reportable Detection Limit

Maxxam Job #: B174668
Report Date: 2011/08/26

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

General Comments

Sample: BG2720 was returned to the lab damaged. - DF

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: TOLGA OLCAY
Client Project #: 1009-002-02
P.O. #:
Site Location: HOPE BAY (BOSTON/DORIS)

Quality Assurance Report

Maxxam Job Number: PB174668

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5117139	OZ	Calibration Check	Calculated O3	2011/08/24		101	%	91 - 107
		Spiked Blank	Calculated O3	2011/08/24		100	%	N/A
		Method Blank	Calculated O3	2011/08/24	<0.1		ppb	
5119081	DF4	Calibration Check	Calculated SO2	2011/08/24		100	%	95 - 105
		Spiked Blank	Calculated SO2	2011/08/24		101	%	N/A
		Method Blank	Calculated SO2	2011/08/24	<0.1		ppb	
5125580	DF4	Calibration Check	Calculated NO2	2011/08/26		100	%	76 - 118
		Spiked Blank	Calculated NO2	2011/08/26		102	%	N/A
		Method Blank	Calculated NO2	2011/08/26	<0.1		ppb	
5126145	OZ	Calibration Check	Total Dustfall	2011/08/26		101	%	N/A
		Method Blank	Total Dustfall	2011/08/26	<1		mg	
			Total Fixed Dustfall	2011/08/26	<1		mg	

Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Validation Signature Page

Maxxam Job #: B174668

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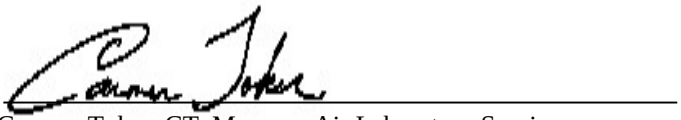

Carmen Toker, CT, Manager Air Laboratory Services

==========

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Your Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)

Attention: TOLGA OLCAY
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2012/02/09

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B207504
Received: 2012/01/30, 14:01

Sample Matrix: Air
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total & Fixed Dustfall	2	2012/02/06	2012/02/06	EINDSOP-00180	AMD 32020
Determination of Dustfall-mg/cm2/30 days	2	2012/02/06	2012/02/06		see departement
Exposure (Number of days)	2	2012/02/01	2012/02/01		see department
NO2 Passive Analysis (1)	3	2012/02/08	2012/02/09	EINDSOP-00148	Tang Passive NO2 in
O3 Passive Analysis (1)	3	2012/02/02	2012/02/09	EINDSOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	3	2012/02/07	2012/02/09	EINDSOP-00149	Tang Passive SO2 in

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Levi Manchak, Customer Service
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

==========

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Total cover pages: 1

Maxxam Job #: B207504
Report Date: 2012/02/09

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		CP4174	CP4175	CP4176		
Sampling Date		2011/10/03 01:55	2011/10/10 10:30	2011/10/10 10:30		
	Units	**11DORIS-010**	**11BOSTON-010**	**11BOSTON-010 DUP**	**RDL**	**QC Batch**
Industrial						
Exposure	days	27	20		1	5560736
Dustfall Determination						
Total Dustfall	mg	2	3		1	5569178
Total Dustfall (30 day)	mg/cm2/30day	0.024	0.050		0.001	5569179
Total Fixed Dustfall	mg	2	3		1	5569178
Total Fixed Dustfall (30 day)	mg/cm2/30day	0.024	0.050		0.001	5569179
Passive Monitoring						
Calculated NO2	ppb	0.6	0.7	0.6	0.1	5578080
Calculated O3	ppb	26.3	28.6	31.1	0.1	5564421
Calculated SO2	ppb	<0.1	<0.1	<0.1	0.1	5574274

RDL = Reportable Detection Limit

Maxxam Job #: B207504
Report Date: 2012/02/09

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

General Comments

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: TOLGA OLCAY
Client Project #: 1009-002-02
P.O. #:
Site Location: HOPE BAY (BOSTON/DORIS)

Quality Assurance Report

Maxxam Job Number: PB207504

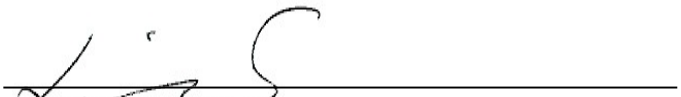
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5564421	OZ	Calibration Check	Calculated O3	2012/02/03		98	%	91 - 107
		Spiked Blank	Calculated O3	2012/02/03		100	%	N/A
		Method Blank	Calculated O3	2012/02/03	<0.1		ppb	
5569178	OZ	Calibration Check	Total Dustfall	2012/02/06		102	%	N/A
		Method Blank	Total Dustfall	2012/02/06	<1		mg	
			Total Fixed Dustfall	2012/02/06	<1		mg	
		RPD [CP4174-01]	Total Dustfall	2012/02/06	NC		%	N/A
			Total Fixed Dustfall	2012/02/06	NC		%	N/A
5574274	DF4	Calibration Check	Calculated SO2	2012/02/07		102	%	95 - 105
		Spiked Blank	Calculated SO2	2012/02/07		100	%	N/A
		Method Blank	Calculated SO2	2012/02/07	<0.1		ppb	
5578080	DF4	Calibration Check	Calculated NO2	2012/02/08		102	%	76 - 118
		Spiked Blank	Calculated NO2	2012/02/08		102	%	N/A
		Method Blank	Calculated NO2	2012/02/08	<0.1		ppb	

N/A = Not Applicable
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B207504

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Linda Lin, Supervisor, Centre for Passive Sampling Technology

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Your Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)

Attention: TOLGA OLCAY
RESCAN ENVIRONMENTAL SERVICES LTD.
SIXTH FLOOR
1111 WEST HASTINGS STREET
VANCOUVER, BC
CANADA V6E 2J3

Report Date: 2012/02/09

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B207514
Received: 2012/01/30, 14:09

Sample Matrix: Air
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total & Fixed Dustfall	2	2012/02/06	2012/02/06	EINDSOP-00180	AMD 32020
Determination of Dustfall-mg/cm2/30 days	2	2012/02/06	2012/02/06		see departement
Exposure (Number of days)	2	2012/02/03	2012/02/03		see department
NO2 Passive Analysis (1)	2	2012/02/08	2012/02/09	EINDSOP-00148	Tang Passive NO2 in
O3 Passive Analysis (1)	2	2012/02/02	2012/02/09	EINDSOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	2	2012/02/07	2012/02/09	EINDSOP-00149	Tang Passive SO2 in

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Levi Manchak, Customer Service
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

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Total cover pages: 1

Maxxam Job #: B207514
Report Date: 2012/02/09

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		CP4223	CP4224		
Sampling Date		2011/10/30 11:00	2011/12/20 11:30		
	Units	**11DORIS-011**	**11DORIS-012**	**RDL**	**QC Batch**
Industrial					
Exposure	days	51	34	1	5560736
Dustfall Determination					
Total Dustfall	mg	2	<1	1	5569178
Total Dustfall (30 day)	mg/cm2/30day	0.017	0.006	0.001	5569179
Total Fixed Dustfall	mg	2	<1	1	5569178
Total Fixed Dustfall (30 day)	mg/cm2/30day	0.017	<0.001	0.001	5569179
Passive Monitoring					
Calculated NO2	ppb	1.8	2.1	0.1	5578068
Calculated O3	ppb	DAMAGED	DAMAGED	0.1	5564421
Calculated SO2	ppb	0.4	<0.1	0.1	5574280

RDL = Reportable Detection Limit

Maxxam Job #: B207514
Report Date: 2012/02/09

RESCAN ENVIRONMENTAL SERVICES LTD.
Client Project #: 1009-002-02
Site Location: HOPE BAY (BOSTON/DORIS)
Sampler Initials: JK

General Comments

Samples: CP4223 (11DORIS-011) and CP4224 (11DORIS-012) for O3 parameter were returned with damage. - OZ

Results relate only to the items tested.

RESCAN ENVIRONMENTAL SERVICES LTD.
Attention: TOLGA OLCAY
Client Project #: 1009-002-02
P.O. #:
Site Location: HOPE BAY (BOSTON/DORIS)

Quality Assurance Report

Maxxam Job Number: PB207514

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5564421	OZ	Calibration Check	Calculated O3	2012/02/03		98	%	91 - 107
		Spiked Blank	Calculated O3	2012/02/03		100	%	N/A
		Method Blank	Calculated O3	2012/02/03	<0.1		ppb	
5569178	OZ	Calibration Check	Total Dustfall	2012/02/06		102	%	N/A
		Method Blank	Total Dustfall	2012/02/06	<1		mg	
			Total Fixed Dustfall	2012/02/06	<1		mg	
		RPD	Total Dustfall	2012/02/06	NC		%	N/A
			Total Fixed Dustfall	2012/02/06	NC		%	N/A
5574280	DF4	Calibration Check	Calculated SO2	2012/02/07		102	%	95 - 105
		Spiked Blank	Calculated SO2	2012/02/07		102	%	N/A
		Method Blank	Calculated SO2	2012/02/07	<0.1		ppb	
5578068	DF4	Calibration Check	Calculated NO2	2012/02/08		99	%	76 - 118
		Spiked Blank	Calculated NO2	2012/02/08		101	%	N/A
		Method Blank	Calculated NO2	2012/02/08	<0.1		ppb	

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Validation Signature Page

Maxxam Job #: B207514

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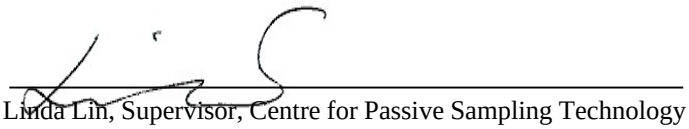

Linda Lin, Supervisor, Centre for Passive Sampling Technology

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