

**NEW GOLD RAINY RIVER MINE
APPENDIX F
2018 AIR QUALITY RESULTS**



**NEW GOLD INC.
RAINY RIVER MINE**

**AMBIENT AIR QUALITY MONITORING PROGRAM
FIRST QUARTER 2018 REPORT**

Submitted by:

**Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited
160 Traders Blvd. E., Suite 110
Mississauga, Ontario
L4Z 3K7**

**May 2018
TC111504**





Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited
160 Traders Boulevard East
Suite 110
Mississauga, Ontario
Canada
T: 905.568.2929

May 10, 2018
TC111504

Sylvie St. Jean
Environmental Manager
New Gold Inc.
Rainy River Mine
5967 Hwy 11 / 71, P.O. Box 5
Emo, Ontario P0W 1E0

Dear Ms. St. Jean:

**Re: Rainy River Mine
Ambient Air Quality Monitoring Program
First Quarter 2018 Report**

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (hereinafter referred to as Wood), is a leading environment and infrastructure, engineering, consulting and project management organization. Our team of professionals provides a full range of services to clients in a wide range of sectors including government, industrial & commercial, water, transportation, minerals & metals, oil & gas clients and clean energy. Environment and Infrastructure's core competencies are in environmental assessments, health and environmental risk assessment, environmental geology (site investigation), remediation engineering, geotechnical engineering and testing, and water resource services.

Wood is pleased to submit to New Gold Inc. (New Gold) the attached summary report of the results for the ambient air quality monitoring program for the first quarter of 2018 at the Rainy River Mine. The monitoring program consists of two air quality monitoring stations that were established in May 2015: one to the south of the Site near the beginning of the Highway 600 reroute on Tait Road, and one to the east of the Site on Gallinger Road. The sampling stations are operated and maintained by New Gold staff; Wood staff performed quarterly calibrations, provided technical guidance to New Gold field staff, communicated with the laboratory staff as required, and prepared the data summary report.

Wood will supply the MOECC with raw and edited data per the Operations Manual for Air Quality Monitoring in Ontario (MOECC 2016b).

The key finding(s) of the Q1 2018 monitoring are as follows:

- There was a measured exceedance of the TSP and iron Ambient Air Quality Criteria (AAQC) at the Gallinger Station in Q1 2018; and
- There were no exceedances of the dustfall or metals/metalloids (excluding iron) AAQC, PM_{2.5} Canadian Ambient Air Quality Standard, or SO₂/NO₂ criteria measured in Q1 2018.

The measured TSP and PM_{2.5} concentrations for the Q1 2018 are depicted in Figures CL-1 and CL-2.

Should you have any questions or wish to discuss the air monitoring program, please do not hesitate to contact the undersigned.

Sincerely,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited



Caleb Vandenberg, P.Eng.
Air Quality Engineer



Dan Russell, P.Geo.
Associate Geoscientist



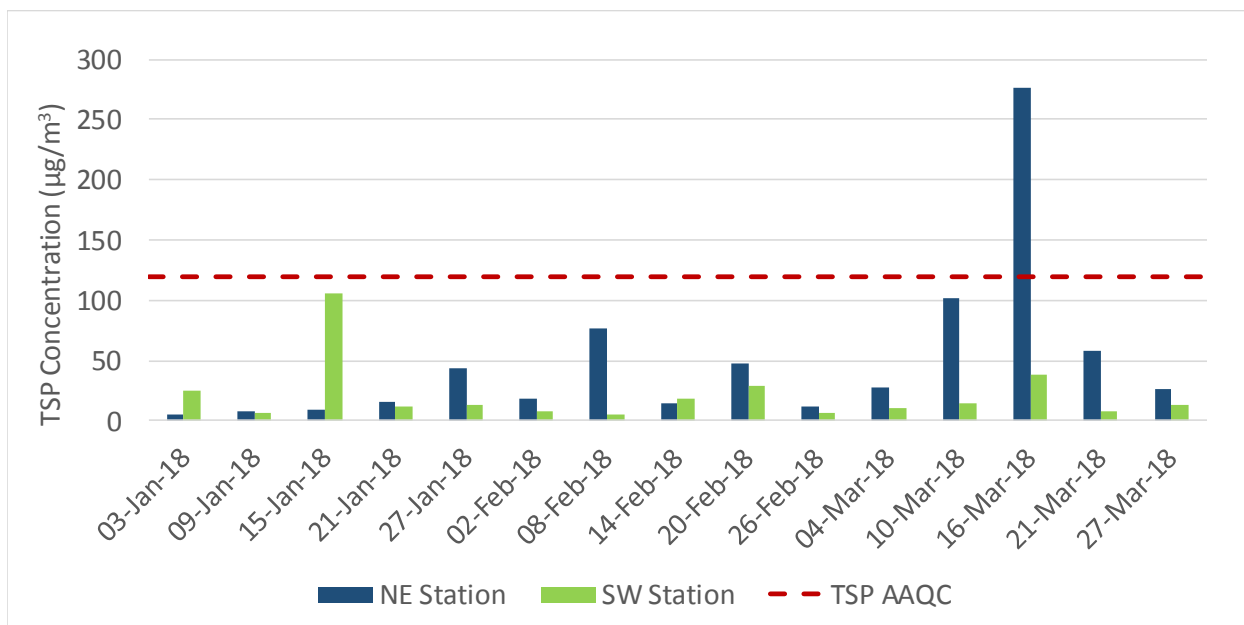


Figure CL-1: TSP Concentrations (Q1 2018)

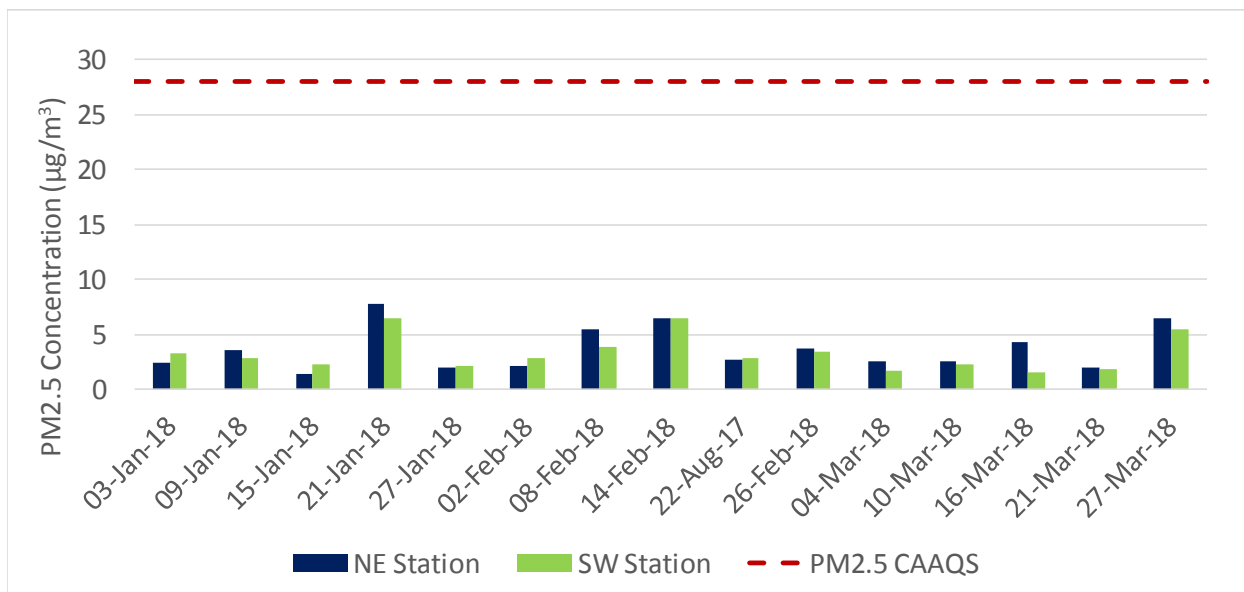


Figure CL-2: PM_{2.5} Concentrations (Q1 2018)



Revision	Date	Revised By	Description
0	May 10, 2018	Caleb Vandenberg	Draft Report
1	May 10, 2018	Caleb Vandenberg	Final Report



ACRONYMS AND ABBREVIATIONS

AAQC	Ambient Air Quality Criteria
AAQO	Alberta Ambient Air Quality Objectives
ACFM	Cubic Feet Per Minute at Actual Conditions
AEP	Alberta Environment and Parks
ASTM	American Society for Testing and Materials
BCMOE	British Columbia Ministry of the Environment
CAAQS	Canadian Ambient Air Quality Standards
Hi-Vol	High Volume Sampler
ICP/AES	Inductively Coupled Plasma / Atomic Emission Spectroscopy
LPM	Litres Per Minute
MOECC	Ministry of the Environment and Climate Change
NIST	National Institute of Standards and Technology
TSP	Total Suspended Particulate
PM _{2.5}	Particulate Matter less than 2.5 microns in diameter
US EPA	United States Environmental Protection Agency
µg/m ³	Microgram per Cubic Metre

TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION	1
2.0 MONITORING STATIONS.....	2
3.0 ANALYTICAL AND MONITORING METHODS	6
3.1 TSP and Metals.....	6
3.2 PM _{2.5}	6
3.3 Total Dustfall.....	6
3.4 Passive Sampling for SO ₂ and NO ₂	7
3.5 Field Operations	7
3.5.1 Hi-Vol Samplers	7
3.5.2 PQ200 Samplers.....	7
3.5.3 Dustfall Samplers.....	8
3.5.4 Passive Samplers.....	8
3.5.5 Performance and Site Audits	8
3.5.6 Equipment and Sampling Issues	8
4.0 RESULTS	9
4.1 TSP and Metals.....	9
4.2 PM _{2.5}	10
4.3 Total Dustfall.....	10
4.4 Passive SO ₂ and NO ₂	10
4.5 Evaluation of Effects of Abatement Measures on Monitored Concentrations	11
5.0 CONCLUSIONS.....	15
6.0 REFERENCES.....	16
7.0 CLOSING.....	17



LIST OF TABLES

	PAGE
Table 2-1: Ambient Air Monitoring Stations	2
Table 4-1: Summary Statistics for Q1 2018 TSP Concentration Data	12
Table 4-2: Summary Statistics for Q1 2018 Metals Concentration Data	12
Table 4-3: Summary Statistics for Q1 2018 PM _{2.5} Concentration Data	13
Table 4-4: Summary Statistics for Q1 2018 Total Dustfall Data	13
Table 4-5: Summary Statistics for Q1 2018 Passive SO ₂ and NO ₂ Concentration Data	13

LIST OF FIGURES

Figure 2-1: Ambient Air Monitoring Stations.....	3
Figure 2-2: Ambient Air Monitoring – Southwest Monitoring Station	4
Figure 2-3: Ambient Air Monitoring – Northeast Monitoring Station	5
Figure 4-1: TSP Concentrations (Q1 2018)	14
Figure 4-2: PM _{2.5} Concentrations (Q1 2018)	14

LIST OF APPENDICES

Appendix A	Sampling Results
Appendix A-1	TSP, Metals, and PM _{2.5} Sampling Results
Appendix A-2	Total Dustfall Sampling Results
Appendix A-3	SO ₂ and NO ₂ Passive Sampling Results



1.0 INTRODUCTION

Wood is pleased to provide a summary of the First Quarter (Q1) 2018 results for the ambient air quality monitoring program undertaken at the Rainy River Mine located in northwestern Ontario. Two sampling stations were established in May 2015: one to the south of the Site near the beginning of the Highway 600 realignment at Tait Road, and one to the east of the Site on Gallinger Road (Figures 2-1, 2-2 and 2-3).

New Gold Inc. (New Gold) staff operate and maintain the sampling stations. Wood staff performed quarterly calibrations, provided technical guidance to New Gold field staff, communicated with the laboratory staff as required, and prepared the data summary reports.

This Quarterly Ambient Air Quality Report addresses the required elements of a Quarterly Report defined in the *Operations Manual for Air Quality Monitoring in Ontario* (MOECC 2016b), hereafter referred to as the Operations Manual. Specifically, the following information is provided:

- Summary statistics;
- Sampling dates (start and end where applicable); and
- A summary of exceedances of an Ontario Standard, Ambient Air Quality Criterion (AAQC), or Canadian Ambient Air Quality Standard (CAAQS).

The purpose of the air monitoring program is to quantify potential air quality effects associated with activities related to the Mine. The monitoring program consists of:

- Two High Volume (Hi-Vol) samplers for discrete sampling of Total Suspended Particulate (TSP) and metals;
- Two PQ200 samplers for discrete sampling of respirable particulate matter (PM_{2.5});
- Two standard passive dustfall collection units;
- Two passive sampling enclosures each measuring NO₂ and SO₂; and
- One meteorological station to obtain real-time site wind speed, wind direction, temperature, relative humidity, and precipitation.

2.0 MONITORING STATIONS

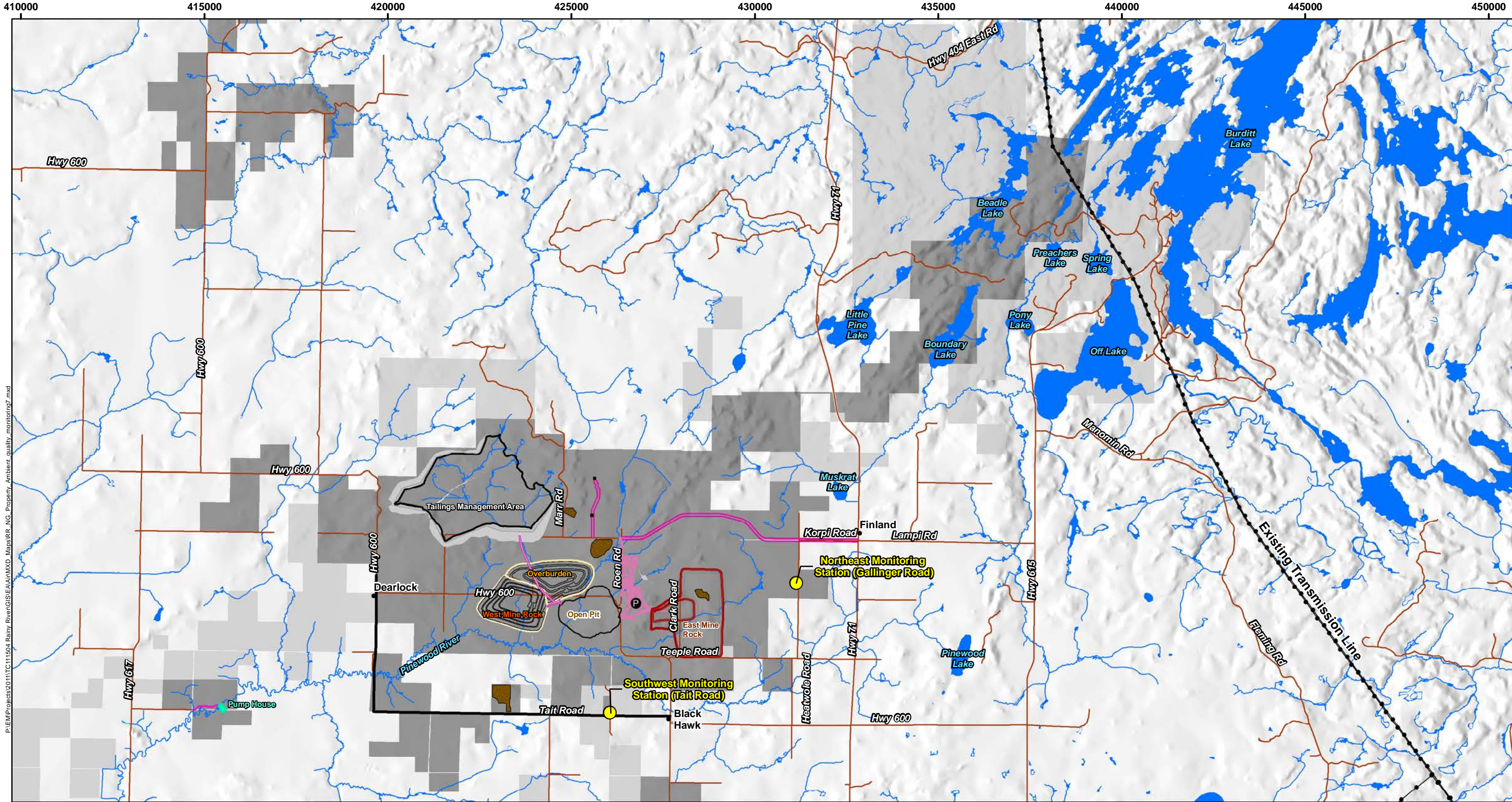
The ambient monitoring stations were sited in accordance with the criteria stipulated in the MOECC Operations Manual (MOECC 2018).

The general location for the two stations is shown in Figure 2-1. UTM co-ordinates for each station based upon NAD 83, are presented in Table 2-1. Photographs showing each station and the equipment installed are presented as Figures 2-2 and 2-3.

There were no changes to the stations or station locations in Q1 2018.



Table 2-1: Ambient Air Monitoring Stations

Station	UTM Co-ordinates			Parameters Monitored
	Easting (m)	Northing (m)	Zone	
Tait Road Station	426 072	5 406 996	15	TSP, metals, PM _{2.5} , NO ₂ , SO ₂ , total dustfall Meteorological data (wind speed and direction, ambient temperature, relative humidity, rainfall)
Gallinger Road Station	431 133	5 410 534	15	TSP, metals, PM _{2.5} , NO ₂ , SO ₂ , total dustfall
















P:\EMP\Projects\2011\TC111504 Rainy River\GIS\EA\RainMMD Maps\RR_NG_Property_Ambient_quality_monitoring7.mxd

LEGEND

-  Ambient Air Quality Monitoring Stations
-  New Gold - Rainy River Property Boundary
-  New Gold Lands with No Current Access Control


Proposed Site Features

-  Underground Portal
-  Open Pit
-  Plant Site / Ancillary Facilities
-  Explosives Facilities
-  Overburden / West Mine Rock Stockpile
-  Ore / East Mine Rock Stockpile
-  Proposed Pump House
-  Tailings Management Area
-  Aggregate Pit / Quarry
-  Site Roads
-  Roads
-  Existing Transmission Line
-  First Nation Land

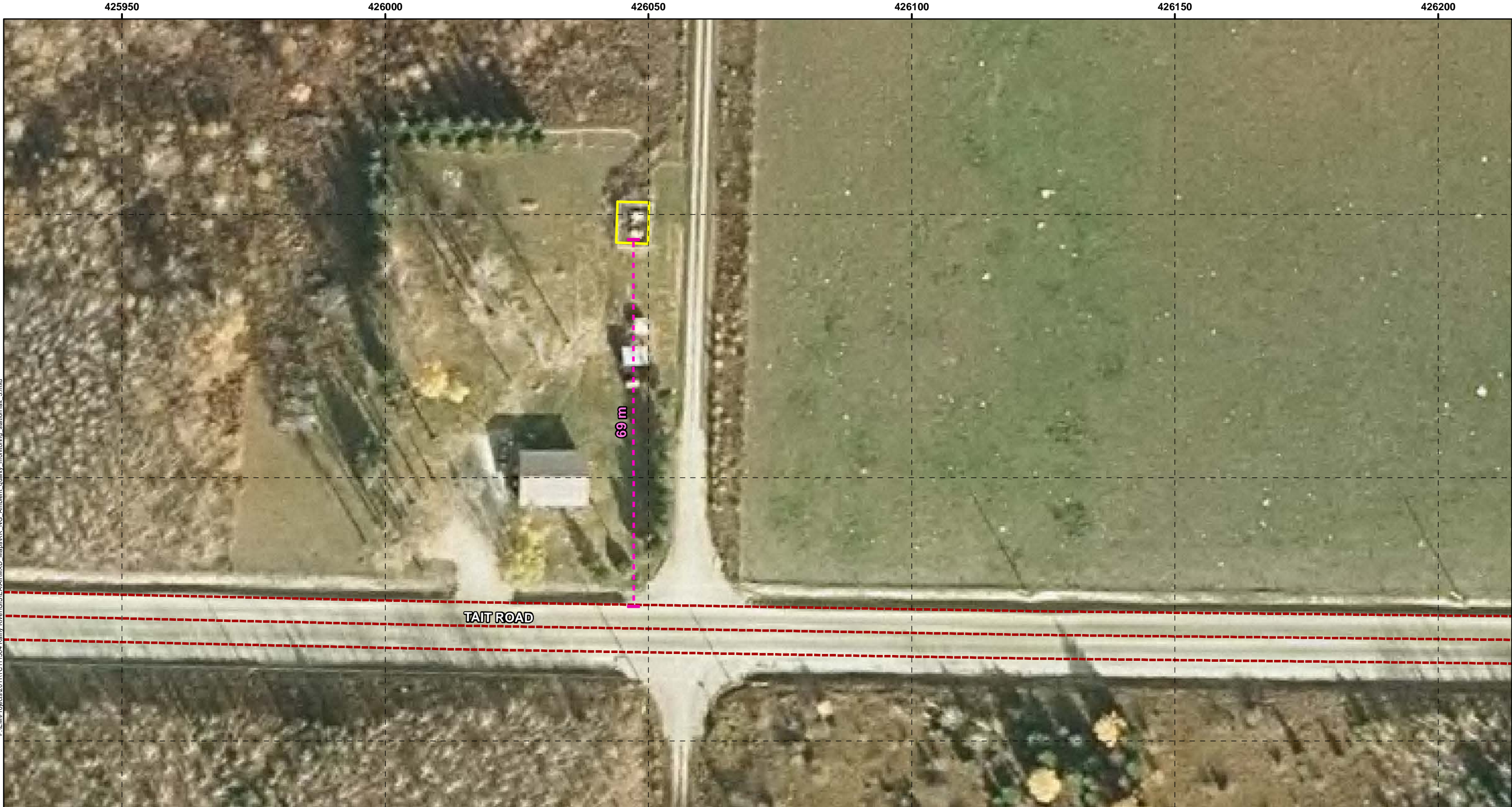
NOTES:
- Road and Utility data and topographic data extracted from Land Information Ontario, Ontario Road Network, MNR Queen's Printer for Ontario, 2011-2012
- Land tenure information and parcels provided by NewGold, March 13, 2018.

Datum: NAD83
Projection: UTM Zone 15N



	
RAINY RIVER MINE	
Ambient Air Monitoring Stations	
PROJECT N°: TC111504	FIGURE: 2-1
SCALE: 1:100,000	DATE: May 2018





P:\EIA\Projects\2011\TC111504 Rainy River\GIS\EA\AIA\MXD Maps\RR_NG Ambient quality monitoring station\Tait_3.mxd

LEGEND

-  Southwest Monitoring Station (Tait Road)
-  Highway Re-alignment

Notes:
- Aerial imagery provided by
NewGold Pileades imagery
(October 2017).

newgold Rainy River Project **wood.**

RAINY RIVER MINE

**Ambient Air Monitoring
Southwest Monitoring Station**

Datum & Projection:
NAD 1983 UTM Zone 15N



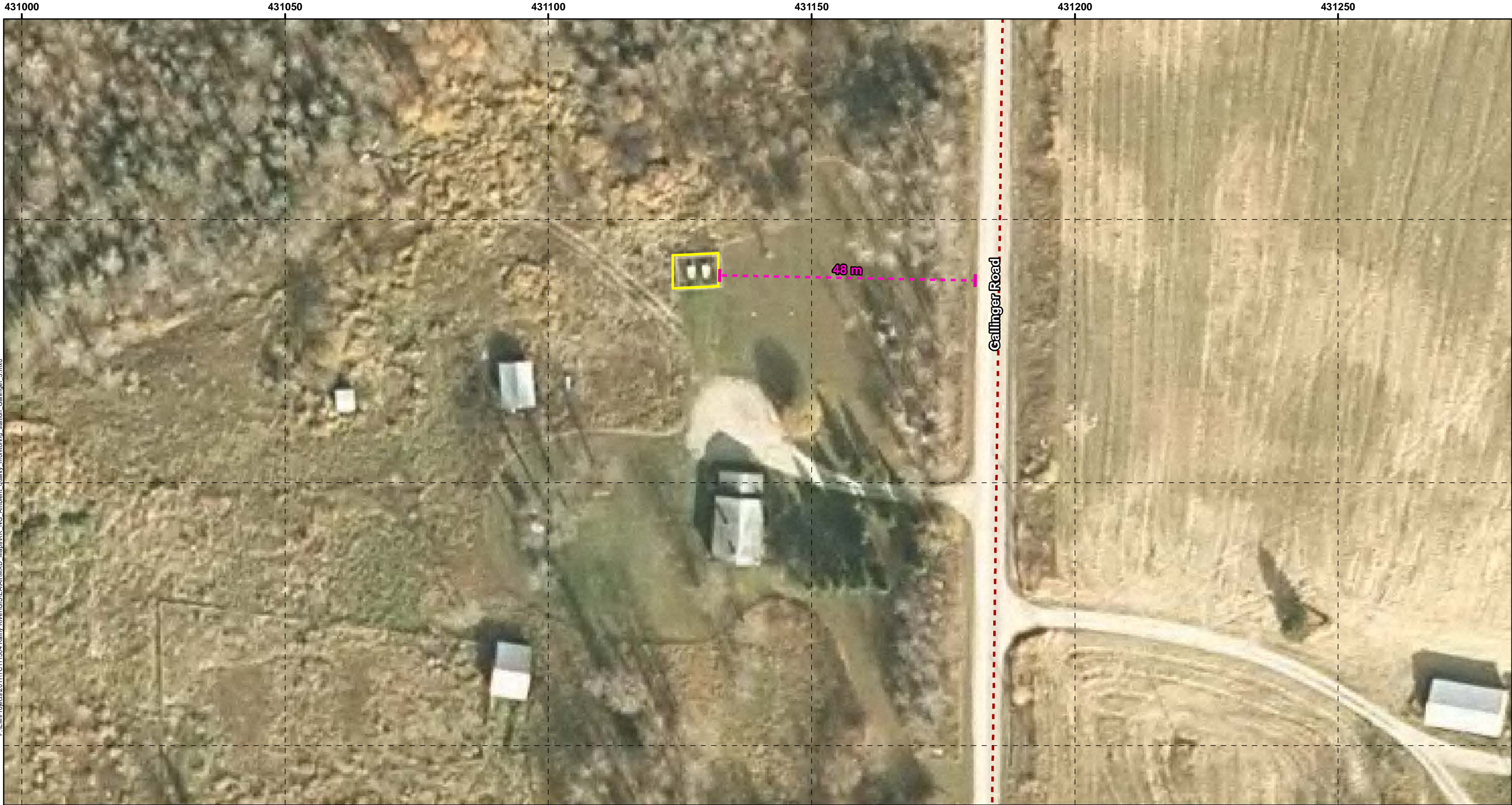
PROJECT N°: TC111504

FIGURE: 2-2

SCALE: 1:700



DATE: May 2018







P:\E\MP\Projects\2011\TC111504 Rainy River\GIS\EA\Air\MXD Maps\RR_NG Ambient quality monitoring station Gallinger 3.mxd

LEGEND

-  Northeast Monitoring Station (Gallinger Road)
-  Gallinger Road

<p>Notes:</p> <ul style="list-style-type: none">- Aerial imagery provided by NewGold Pileades imagery (October 2017).			
	<p>RAINY RIVER MINE</p>		
	<p>Ambient Air Monitoring Northeast Monitoring Station</p>		
<p>Datum & Projection: NAD 1983 UTM Zone 15N</p>		<p>PROJECT N°: TC111504</p>	<p>FIGURE: 2-3</p>
		<p>SCALE: 1:700</p>	<p>DATE: May 2018</p>



3.0 ANALYTICAL AND MONITORING METHODS

3.1 TSP and Metals

The TSP concentrations were determined using the standard gravimetric reference methods approved by the United States Environmental Protection Agency (US EPA) and the Ontario Ministry of the Environment and Climate Change (MOECC); as described in the Operations Manual (MOECC 2016b). Measurements of 24-hour average TSP and metal concentrations were collected as specified in the Operations Manual (MOECC 2016b); particulate samples were collected every sixth day as per the North American schedule (US EPA 2017). Sampling was performed with Hi-Vol samplers (brush motor and mass flow controlled). Metals and metalloids analyzed included the following: arsenic (As), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), iron (Fe), lead (Pb), manganese (Mn), nickel (Ni), selenium (Se), vanadium (V) and zinc (Zn). A metalloid is an element such as As that has both metallic and non-metallic properties.

The lowest detectable limit of total particulate on the filter is 2.3 milligrams (mg). A typical 24-hour sample volume of 1,630 m³ results in a method detection limit of 1.4 micrograms per cubic metre (µg/m³).

Metal concentrations were determined using standard Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP/AES) methodology. Method detection limits are as shown on the data sheets in Appendix A-1.

3.2 PM_{2.5}

Sampling was performed with PQ200 samplers. PM_{2.5} concentrations were determined using the standard gravimetric reference methods approved by the US EPA and the MOECC; as described in the Operations Manual (MOECC 2016b). PM_{2.5} measurements were collected over a 24-hour period to match the averaging time for the Canadian Ambient Air Quality Standard (CAAQS); particulate samples were collected every sixth day as per the North American schedule (US EPA 2017).

The lowest detectable limit of PM_{2.5} on the Teflon filters is 1 µg. A typical 24-hour sample volume of 24 m³ results in a method detection limit of 0.04 µg/m³.

3.3 Total Dustfall

Water soluble and insoluble portions of dustfall were determined using ASTM method D-1739-98 and the British Columbia Ministry of Environment method outlined in Section G of Air Constituents – Inorganic (MOECC 2016c). Standard dustfall samplers were used to measure total dustfall deposition. The method detection limit for total dustfall is 0.3 g/m²/30 days. Bird deterrents were added in Q3 2017 with the goal of reducing contamination.



3.4 Passive Sampling for SO₂ and NO₂

SO₂ and NO₂ concentrations were monitored with passive sampling devices. The exposed permeation filters were analyzed by the Maxxam Analytics Inc. laboratory (Edmonton, Alberta). Testing was performed using methodology developed, approved and validated by Alberta Environment with the support of the Alberta Research Council, the Clean Air Strategic Alliance of Alberta, and the National Research Council of Canada.

Sample uptake is dependent on temperature, relative humidity and wind speed. Analytical results are adjusted for these meteorological parameters measured during the exposure period (monthly averages). Required meteorological data were obtained from the Environment and Climate Change Canada website. Fort Frances meteorological station (Climate ID 6022474) is downloaded by Maxxam Analytics with each sample submission. For both SO₂ and NO₂, the analytical method detection limit is in the order of 0.1 parts per billion (ppb). Validation tests conducted in Alberta show that results from passive sampling are typically within 10% of those obtained from sampling with continuous analyzers for 30-day exposure periods.

Since there are no MOECC guidelines for monthly concentrations of SO₂ and NO₂ obtained from passive sampling, the data is only used for screening purposes. For NO₂, the monthly results were compared to the MOECC 24-hour AAQC converted to an equivalent 30-day average (78 µg/m³) using the methodology outlined in the *Procedure for Preparing an Emission Summary and Dispersion Modelling Report* (MOECC 2017). For SO₂, the results were compared against the 30-day Alberta Ambient Air Quality Objective of 30 µg/m³ (AEP 2016).

3.5 Field Operations

3.5.1 Hi-Vol Samplers

To meet the requirements of 1 in 6 day sampling schedule, stations were visited once every six days. The exposed filter was recovered and a pre-weighed filter installed for the subsequent sample run. Additional visits were made to resolve instrumentation issues and perform flow calibration checks and preventative maintenance.

Wood staff performed flow, temperature, and barometric pressure calibrations using an electronic BGI flow calibrator. The flows were calibrated to 16.7 litres per minute (LPM) for each station. Q1 Calibrations were performed on:

- November 2, 2017 – All hi-vols calibrated; and
- February 21, 2018 – All hi-vols calibrated.

3.5.2 PQ200 Samplers

To meet the requirements of 1 in 6 day sampling schedule, stations were visited once every six days. The exposed filter was recovered and a pre-weighed filter installed for the subsequent sample run. Additional visits were made to resolve instrumentation issues and perform flow calibration checks and preventative maintenance.



Wood staff performed flow, temperature, and barometric pressure calibrations using an electronic BGI flow calibrator. The flows were calibrated to 16.7 litres per minute (LPM) for each station. Q1 Calibrations were performed on:

- November 2, 2017 – All PQ200s calibrated; and
- February 21, 2018 – All PQ200s calibrated.

3.5.3 Dustfall Samplers

The dustfall samplers containing algaecide were changed every month, as required. Dustfall jars were provided by the laboratory with screw-on lids to prevent sample loss during transport.

3.5.4 Passive Samplers

The permeation filters in the passive samplers were changed every month, as required. Permeation filters were kept in filter cassettes inside Ziploc bags until deployed to prevent premature exposure. After the sample was collected, the filter was placed back in its cassette and into a Ziploc bag for shipment to the lab.

3.5.5 Performance and Site Audits

There were no MOECC audits conducted in Q1 2018.

3.5.6 Equipment and Sampling Issues

During Q1 2018, the ambient air monitoring program was successful in collecting sufficient valid data to fulfil the requirements of the MOECC Operations Manual. A number of invalid samples were collected and are discussed below:

- The sampling schedule for both stations was offset by one day for a period in Q1 due to a scheduling error however this is inconsequential to the validity of the results; and
- February 2: PM_{2.5} sample at the Tait Road station was invalid due to too much sample volume collected.

4.0 RESULTS

Sampling program results for Q1 2018 are presented in Appendix A-1 for the particulate and metals data, Appendix A-2 for the dustfall data and Appendix A-3 for the passive SO₂ and NO₂ data. For the purpose of performing statistical analyses following MOECC protocol, a value of half the detection limit was substituted for concentrations less than the detection limit.

For comparative purposes, the MOECC AAQC and CAAQS values are presented, where available, noting that the AAQCs are numerically equivalent to the Ontario Regulation 419/05 standards.

Summaries of the statistical analyses for Q1 2018 for the TSP, metals, and PM_{2.5} concentrations are presented in Tables 4-1, 4-2, and 4-3, respectively. During the quarter, the 1 in 6-day sampling schedule presented a possible 15 sampling days between January 1 and March 31, 2018.

A summary of the statistical analyses for Q1 2018 for the total dustfall data is presented in Table 4-4.

A summary of the statistical analysis for the Q1 2018 passive SO₂ and NO₂ results is presented in Table 4-5.

4.1 TSP and Metals

The Gallinger Road and Tait Road stations both collected 15 valid samples, respectively, resulting in 100% valid data for Q1 2018.

For the quarter, the geometric mean TSP concentrations were 14.3 µg/m³ for the Tait Road station and 27.1 µg/m³ for the Gallinger Road station. Values reported by the laboratory as below the detection limit were, by convention, substituted with one-half of the detection limit. The maximum 24-hour concentration for TSP was 106.3 µg/m³ at the Tait Road station (January 15, 2018), and 275.9 µg/m³ at the Gallinger Road station (March 16, 2018).

The only exceedances of an MOECC AAQC measured for any of TSP, metals, or metalloids in Q1 2018 was at the Gallinger Road Station on March 16, 2018 where a TSP concentration of 275.9 µg/m³ (230% of AAQC) and Fe concentration of 5.49 µg/m³ (137% of AAQC) were measured.

The rolling 30-day average lead concentrations at both stations were at maximum 4% of the 30-day lead AAQC (0.2 µg/m³) in Q1 2018.

Appendix A-1 and Figure 4-1 present individual sample data. The Q1 2018 TSP and metals summary statistics are summarized in Tables 4-1 and 4-2, respectively.

4.2 **PM_{2.5}**

The Gallinger Road and Tait Road stations both collected 15 and 14 valid samples, respectively, resulting in 93% and 100% valid data, respectively for Q1 2018. The February 2, 2018 sample at the Tait Road Station collected more than 110% of the required sample volume due to operator error and was invalidated.

Values reported by the laboratory as below the detection limit were, by convention, substituted with one-half of the detection limit. The maximum 24-hour concentration for PM_{2.5} was 6.49 µg/m³ at the Tait Road station (February 14, 2018), and 7.75 µg/m³ at the Gallinger Road station (January 21, 2018).

There were no PM_{2.5} exceedances of the AAQC of 30 µg/m³ or CAAQS (ECCC 2013) of 28 µg/m³ measured in Q1 2018. Appendix A-1 and Figure 4-2 present individual sample data.

The Q1 2018 PM_{2.5} summary statistics are summarized in Table 4-3.

4.3 **Total Dustfall**

In Q1 2018, three valid samples were collected at each station. Each dustfall jar was exposed for approximately 30-days to coincide with each calendar month in the quarter.

There were no dustfall exceedances of the 30-day AAQC of 7 g/m² measured in Q1 2018

A summary of the results is presented in Table 4-4 and the monthly results are presented in Appendix A-2.

4.4 **Passive SO₂ and NO₂**

In Q1 2018, 3 valid samples were collected at each station for each of SO₂ and NO₂.

There are no MOECC standards, guidelines or AAQCs for SO₂ or NO₂ for a 30-day averaging period. The 30-day measured average SO₂ or NO₂ concentrations allow for future analysis of trends in the ambient concentrations, to identify any notable increases, and for potential comparison with dispersion modelling results.

For NO₂, the monthly results were compared to the MOECC 24-hour AAQC converted to an equivalent 30-day average (78 µg/m³) using the methodology outlined in the *Procedure for Preparing an Emission Summary and Dispersion Modelling Report* (MOECC 2017). For SO₂, the results were compared against the Alberta Ambient Air Quality Objective of 30 µg/m³ (AEP 2017).

A summary of the passive results is presented in Table 4-5 and the monthly results are presented in Appendix A-3.

4.5 Evaluation of Effects of Abatement Measures on Monitored Concentrations

The Rainy River Mine has a comprehensive Best Management Practices Plan (BMPP) for Fugitive Dust approved by the MOECC as part of the ECA review process. This BMPP effectively controls the generation and dispersion of dust such that the particulate matter measured at the two ambient monitoring stations was below the AAQC for all Q1 2018 samples, with the exception of one TSP measurement and the Gallinger Road Station.

Table 4-1: Summary Statistics for Q1 2018 TSP Concentration Data

Statistics	Tait Road (SW)	Gallinger Road (NE)
Geometric Mean ($\mu\text{g}/\text{m}^3$)	14.3	27.1
Arithmetic Mean ($\mu\text{g}/\text{m}^3$)	20.9	49.2
January Maximum ($\mu\text{g}/\text{m}^3$)	106.3	43.2
February Maximum ($\mu\text{g}/\text{m}^3$)	28.6	76.4
March Maximum ($\mu\text{g}/\text{m}^3$)	38.0	275.9
Maximum 24-hr ($\mu\text{g}/\text{m}^3$)	106.3 (Jan.15)	275.9 (Mar.16)
90 th percentile	34.2	91.6
95 th percentile	58.5	153.9
24-hr AAQC	120	120
No. of valid samples	15	15
Valid data	100%	100%
No. samples > AAQC (particulate)	0	1
No. samples > AAQC (metals)	0	1
No. samples > AAQC (metalloids)	0	0

Table 4-2: Summary Statistics for Q1 2018 Metals Concentration Data

Metal	24-hr AAQC ($\mu\text{g}/\text{m}^3$)	Tait Road (SW)		Gallinger Road (NE)	
		Maximum 24-hr Concentration ($\mu\text{g}/\text{m}^3$)	% 24-hr AAQC	Maximum 24-hr Concentration ($\mu\text{g}/\text{m}^3$)	% 24-hr AAQC
As	0.3	9.89E-04	0.33%	2.75E-03	0.92%
Cd	0.025	2.81E-04	1.13%	6.51E-04	2.60%
Cr	0.5	6.14E-03	1.23%	2.20E-02	4.40%
Co	0.1	5.80E-04	0.58%	2.94E-03	2.94%
Cu	50	5.00E-02	0.10%	7.11E-01	1.42%
Fe	4	1.27E+00	31.7%	5.49E+00	137%
Pb	0.5	2.65E-02	5.29%	1.33E-02	2.67%
Mn	0.4	8.32E-02	20.8%	1.30E-01	32.5%
Ni	0.2	1.24E-03	0.62%	8.85E-03	4.43%
Se	10	4.29E-04	0.0043%	4.26E-04	0.0043%
V	2	1.65E-03	0.083%	1.24E-02	0.62%
Zn	120	7.00E-02	0.058%	1.50E-01	0.12%

Table 4-3: Summary Statistics for Q1 2018 PM_{2.5} Concentration Data

Statistics	Tait Road (SW)	Gallinger Road (NE)
Arithmetic Mean ($\mu\text{g}/\text{m}^3$)	3.31	3.70
January Maximum ($\mu\text{g}/\text{m}^3$)	6.45	7.75
February Maximum ($\mu\text{g}/\text{m}^3$)	6.49	6.49
March Maximum ($\mu\text{g}/\text{m}^3$)	5.49	6.41
Maximum 24-hr ($\mu\text{g}/\text{m}^3$)	6.49 (Feb.14)	7.75 (Jan.21)
90 th percentile	6.16	6.46
95 th percentile	6.46	6.87
24-hr CAAQS	28	28
No. of valid samples	14	15
Valid data	93%	100%
No. samples > CAAQS	0	0

Table 4-4: Summary Statistics for Q1 2018 Total Dustfall Data

Statistic	Tait Road (SW)	Gallinger Road (NE)
Arithmetic mean ($\text{g}/\text{m}^3/30\text{d}$)	1.3	2.4
Maximum ($\text{g}/\text{m}^3/30\text{d}$)	1.5	3.8
30-day AAQC	7	7
No. > AAQC	0	0
No. valid samples	3	3
Valid Data	100%	100%

Table 4-5: Summary Statistics for Q1 2018 Passive SO₂ and NO₂ Concentration Data

Statistic	Tait Road (SW)		Gallinger Road (NE)	
	SO ₂	NO ₂	SO ₂	NO ₂
Mean ($\mu\text{g}/\text{m}^3$)	0.5	2.0	0.4	2.5
Maximum ($\mu\text{g}/\text{m}^3$)	0.8	3.6	0.5	3.8
AAQC 24-hr converted to 30-day ($\mu\text{g}/\text{m}^3$)	N/A	78	N/A	78
Alberta AAQO ($\mu\text{g}/\text{m}^3$)	30	N/A	30	N/A
No. valid samples	3	3	3	3
Valid data	100%	100%	100%	100%

Note: N/A: No applicable criterion



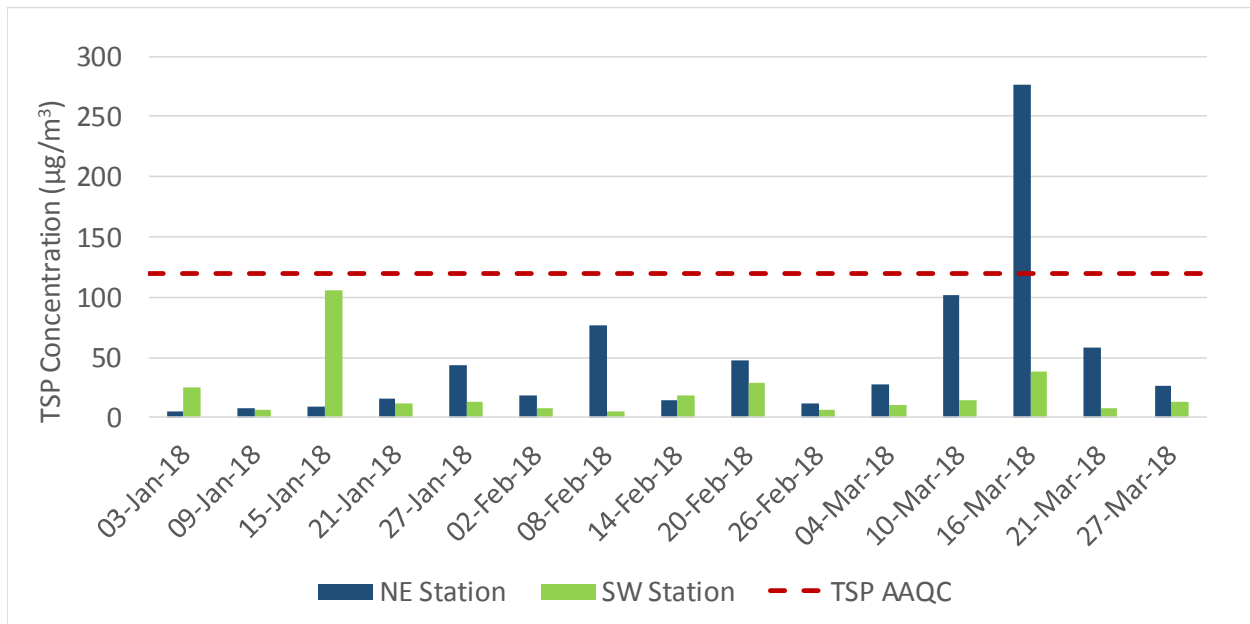


Figure 4-1: TSP Concentrations (Q1 2018)

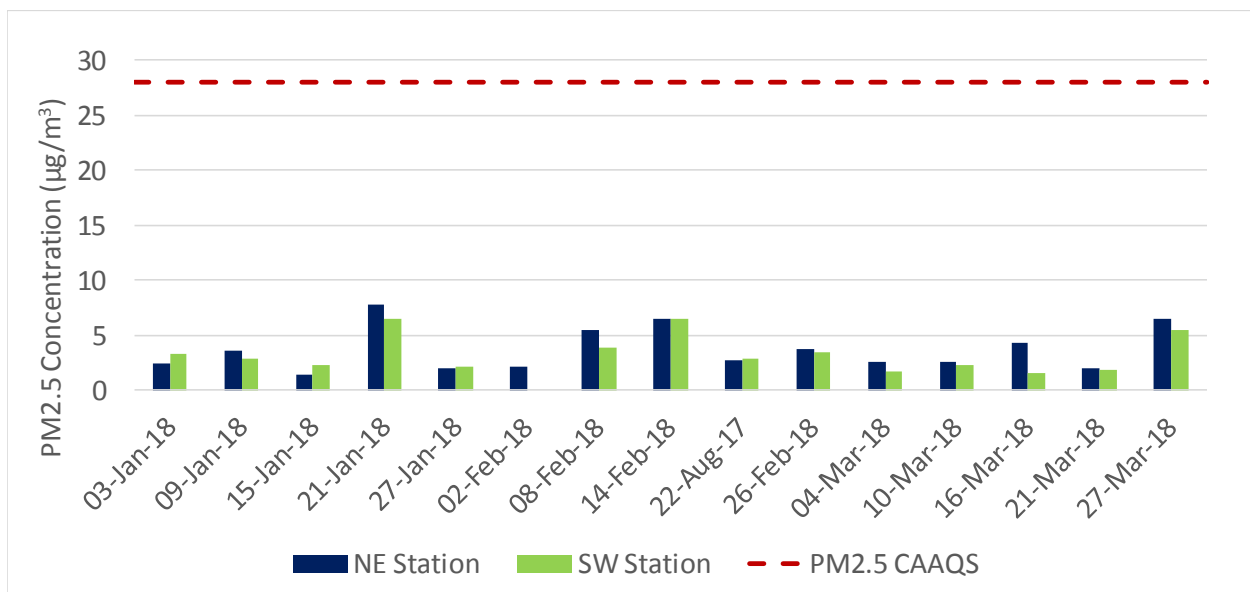


Figure 4-2: PM_{2.5} Concentrations (Q1 2018)

5.0 CONCLUSIONS

This report summarizes the data collected in Q1 2018 for the ambient air quality monitoring program at the Rainy River Mine.

The monitoring program collects TSP, metals, PM_{2.5}, total dustfall, NO₂, and SO₂ ambient air quality data from two monitoring stations, that were installed and commissioned in May 2015.

A summary of the Q1 2018 ambient air quality monitoring program results is provided below:

- There were 15 valid TSP samples collected at both stations resulting in 100% sample validity. Metal and metalloid concentrations were measured on each of the TSP filters.
- The only measured exceedances of an MOECC AAQC for TSP, metals, or metalloids in Q1 2018 was at the Gallinger Road Station. On March 16, 2018 a TSP concentration of 275.9 µg/m³ (230% of AAQC) and a Fe concentration of 5.49 µg/m³ (137% of AAQC) were measured.
- There were 14 and 15 valid PM_{2.5} samples collected at the Tait and Gallinger Road stations, respectively (93% and 100% valid data, respectively). There were no exceedances of the 24-hour PM_{2.5} CAAQS in Q1 2018.
- There were 3 valid dustfall samples collected at each station (100% sample validity). There were no exceedances of the 30-day dustfall AAQC in Q1 2018.
- There were 3 valid passive SO₂ and NO₂ samples collected at each of the two stations (100% sample validity). There were no exceedances of AEP Criterion for SO₂ or the 30-day equivalent AAQC for NO₂ in Q1 2018.

6.0 REFERENCES

- Alberta Environment and Parks (AEP). 2017. Alberta Ambient Air Quality Objectives and Guidelines Summary.
- American Society for Testing and Materials (ASTM). 2004. Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter).
- British Columbia Ministry of the Environment. 2007. Section G of Air Constituents – Inorganic.
- Environment Canada (ECCC). 2013. Canadian Environmental Protection Act, 1999 Sections 54 and 55.
- Ministry of the Environment and Climate Change (MOECC). 2017. Procedure for Preparing and Emission Summary and Dispersion Modelling Report.
- Ministry of the Environment and Climate Change (MOECC). 2016a. Ontario's Ambient Air Quality Criteria, PIBS # 6570e01.
- Ministry of the Environment and Climate Change (MOECC). 2016b. Operations Manual for Air Quality Monitoring in Ontario.
- Ministry of the Environment and Climate Change (MOECC). 2016c. Determination of Total Dustfall in Air Particulate Matter by Gravimetry, E3043.
- United States Environmental Protection Agency (USEPA). 2017. Sampling Schedule Calendar, <https://www3.epa.gov/ttnamti1/calendar.html> (Accessed February 10, 2017).

7.0 CLOSING

This *Rainy River Mine Ambient Air Quality Monitoring Program First Quarter 2018 Report* was prepared by Wood for the sole benefit of New Gold Inc. for specific application to the Rainy River Mine. The quality of information, conclusions and estimates contained herein are consistent with the level of effort involved in Wood's services and based on:

- i) information available at the time of preparation;
- ii) data supplied by outside sources; and
- iii) the assumptions, conditions and qualifications set forth in this document.

This report is intended to be used by New Gold only, and its nominated representatives, subject to the terms and conditions of its contract with Wood. Any other use of, or reliance on, this report by any third party is at that party's sole risk. This report has been prepared in accordance with generally accepted industry-standard practices. No other warranty, expressed or implied, is made.

If you require further information regarding the above or the Mine in general, please contact the undersigned at (905) 568-2929. Thank you for the opportunity to be of service to New Gold Inc.

Yours truly,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

Prepared by:



Caleb Vandenberg, P.Eng.
Air Quality Engineer

Reviewed by:



Linda Lattner, M.Eng., P.Eng.
Senior Air Quality Engineer

APPENDIX A

SAMPLING RESULTS

Appendix A-1 TSP, Metals and PM_{2.5} Sampling Results

Appendix A-2 Total Dustfall Sampling Results

Appendix A-3 SO₂ and NO₂ Passive Sampling Results

APPENDIX A-1

TSP, METALS AND PM_{2.5} SAMPLING RESULTS

NORTHEAST (GALLINGER ROAD) PARTICULATE/METALS CONCENTRATIONS														
Date	PM2.5	TSP	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Selenium (Se)	Vanadium (V)	Zinc (Zn)
3-Jan-18	2.46	4.6	<u>9.83E-04</u>	5.64E-05	4.20E-03	3.34E-05	4.84E-01	4.33E-02	1.25E-03	2.71E-03	3.67E-04	<u>4.26E-04</u>	<u>1.64E-03</u>	7.87E-03
9-Jan-18	3.62	8.3	<u>9.04E-04</u>	1.07E-04	4.22E-03	5.91E-05	3.00E-01	2.77E-01	1.65E-03	7.41E-03	4.52E-04	<u>3.92E-04</u>	<u>1.51E-03</u>	9.76E-03
15-Jan-18	1.37	9.4	<u>9.82E-04</u>	7.20E-05	4.12E-03	6.87E-05	2.72E-01	9.10E-02	3.54E-03	6.22E-03	5.04E-04	<u>4.26E-04</u>	<u>1.64E-03</u>	9.95E-03
21-Jan-18	7.75	15.2	<u>8.88E-04</u>	9.12E-05	4.44E-03	8.05E-05	5.25E-01	1.52E-01	3.94E-03	9.12E-03	5.03E-04	<u>3.85E-04</u>	<u>1.48E-03</u>	1.60E-02
27-Jan-18	2.04	43.20	<u>9.22E-04</u>	1.79E-04	4.30E-03	1.47E-04	1.53E-01	3.85E-01	8.85E-03	3.59E-02	6.70E-04	<u>3.99E-04</u>	<u>1.54E-03</u>	3.79E-02
2-Feb-18	2.08	18.86	<u>9.43E-04</u>	1.10E-04	5.03E-03	1.79E-04	5.37E-01	3.48E-01	2.89E-03	1.63E-02	7.04E-04	<u>4.09E-04</u>	<u>1.57E-03</u>	2.11E-02
8-Feb-18	5.41	76.36	<u>2.75E-03</u>	6.51E-04	5.38E-03	3.47E-04	4.16E-01	8.70E-01	1.33E-02	6.76E-02	1.14E-03	<u>4.07E-04</u>	<u>1.56E-03</u>	1.50E-01
14-Feb-18	6.49	14.6	<u>9.06E-04</u>	9.00E-05	4.89E-03	8.88E-05	1.46E-01	1.77E-01	1.82E-03	1.01E-02	5.74E-04	<u>3.92E-04</u>	<u>1.51E-03</u>	1.47E-02
20-Feb-18	2.71	47.8	<u>9.43E-04</u>	2.56E-04	5.47E-03	2.14E-04	2.51E-01	4.98E-01	1.06E-02	3.82E-02	1.28E-03	<u>4.09E-04</u>	<u>1.57E-03</u>	5.03E-02
26-Feb-18	3.8	11.5	<u>9.49E-04</u>	9.11E-05	5.25E-03	6.58E-05	6.07E-01	1.18E-01	1.48E-03	5.50E-03	5.19E-04	<u>4.11E-04</u>	<u>1.58E-03</u>	1.48E-02
4-Mar-18	2.50	27.1	<u>9.29E-04</u>	5.95E-05	6.13E-03	2.12E-04	7.31E-02	3.96E-01	2.11E-03	1.13E-02	9.60E-04	<u>4.03E-04</u>	<u>1.55E-03</u>	1.18E-02
10-Mar-18	2.50	101.7	<u>9.42E-04</u>	6.09E-05	1.02E-02	1.14E-03	6.20E-01	2.00E+00	2.35E-03	4.58E-02	3.56E-03	<u>4.08E-04</u>	<u>1.14E-03</u>	1.30E-02
16-Mar-18	4.33	275.9	<u>9.62E-04</u>	1.32E-04	2.20E-02	2.94E-03	5.94E-01	5.49E+00	6.09E-03	1.30E-01	8.85E-03	<u>4.17E-04</u>	1.24E-02	3.73E-02
21-Mar-18	2.04	57.7	<u>9.60E-04</u>	5.89E-05	7.36E-03	6.22E-04	7.11E-01	1.11E+00	1.24E-03	2.47E-02	1.94E-03	<u>4.16E-04</u>	<u>1.60E-03</u>	9.67E-03
27-Mar-18	6.41	26.6	<u>9.33E-04</u>	1.29E-04	4.98E-03	1.95E-04	3.29E-01	3.86E-01	3.14E-03	1.28E-02	8.28E-04	<u>4.04E-04</u>	<u>1.56E-03</u>	2.35E-02

Geometric mean	N/A	27.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arithmetic mean	3.70	49.2	1.06E-03	1.43E-04	6.53E-03	4.26E-04	4.01E-01	8.23E-01	4.29E-03	2.83E-02	1.52E-03	4.07E-04	2.46E-03	2.85E-02
Max. concentration	7.75	275.9	2.75E-03	6.51E-04	2.20E-02	2.94E-03	7.11E-01	5.49E+00	1.33E-02	1.30E-01	8.85E-03	4.26E-04	1.24E-02	1.50E-01
Min. concentration	1.37	4.6	8.88E-04	5.64E-05	4.12E-03	3.34E-05	7.31E-02	4.33E-02	1.24E-03	2.71E-03	3.67E-04	3.85E-04	1.48E-03	7.87E-03
90th percentile	6.46	91.6	9.83E-04	2.25E-04	9.09E-03	9.31E-04	6.15E-01	1.65E+00	9.91E-03	5.89E-02	2.91E-03	4.22E-04	3.14E-03	4.54E-02
95th percentile	6.87	153.9	1.51E-03	3.75E-04	1.38E-02	1.68E-03	6.47E-01	3.05E+00	1.14E-02	8.64E-02	5.15E-03	4.26E-04	6.61E-03	8.01E-02
CAAQS	28.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No. > CAAQS value*	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AAQC	N/A	120	0.3	0.025	0.5	0.1	50	4	0.5	0.4	0.2	10	2	120
No. > AAQC	0	1	0	0	0	0	0	1	0	0	0	0	0	0
No. of valid samples	15	15	15	15	15	15	15	15	15	15	15	15	15	15
No. samples < mdl	0	0	14	0	0	0	0	0	0	0	0	15	13	0
Detection limit (µg)	6	5	6	2	5	2	5	50	3	50	3	10	5	5
Half detection limit (µg)	3	2.5	3	1	2.5	1	2.5	25	1.5	25	1.5	5	2.5	2.5
% < detection limit	0	0	93	0	0	0	0	0	0	0	0	100	87	0
% valid data	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Notes:

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

N/A: Not applicable

—: Invalid Sample

*Canadian Ambient Air Quality Standard, 24-hour standard

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, First Quarter 2018 Report

Appendix A-1



SOUTHWEST (TAIT ROAD) PARTICULATE/METALS CONCENTRATIONS														
Date	PM2.5	TSP	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Selenium (Se)	Vanadium (V)	Zinc (Zn)
3-Jan-18	3.33	25.2	<u>9.89E-04</u>	6.73E-05	4.75E-03	1.49E-04	4.43E-02	3.30E-01	7.12E-03	1.86E-02	6.53E-04	<u>4.29E-04</u>	<u>1.65E-03</u>	1.66E-02
9-Jan-18	2.83	6.0	<u>9.06E-04</u>	8.88E-05	3.93E-03	4.11E-05	1.23E-02	1.82E-01	9.55E-04	4.79E-03	3.50E-04	<u>3.93E-04</u>	<u>1.51E-03</u>	9.06E-03
15-Jan-18	2.33	106.3	<u>9.38E-04</u>	2.81E-04	4.44E-03	5.80E-04	2.65E-02	1.27E+00	2.65E-02	8.32E-02	1.24E-03	<u>4.06E-04</u>	<u>1.56E-03</u>	7.00E-02
21-Jan-18	6.45	11.6	<u>8.62E-04</u>	4.60E-05	3.97E-03	6.78E-05	4.01E-02	1.17E-01	1.23E-03	5.48E-03	3.62E-04	<u>3.74E-04</u>	<u>1.44E-03</u>	9.71E-03
27-Jan-18	2.08	13.5	<u>9.14E-04</u>	1.60E-04	4.82E-03	9.14E-05	4.72E-02	1.91E-01	3.32E-03	1.19E-02	5.30E-04	<u>3.96E-04</u>	<u>1.52E-03</u>	2.62E-02
2-Feb-18	—	8.5	<u>9.62E-04</u>	7.82E-05	4.62E-03	9.68E-05	3.75E-02	1.22E-01	1.42E-03	5.31E-03	4.94E-04	<u>4.17E-04</u>	<u>1.60E-03</u>	1.31E-02
8-Feb-18	3.83	5.5	<u>9.40E-04</u>	5.33E-05	4.45E-03	5.52E-05	5.00E-02	7.08E-02	1.16E-03	2.46E-03	4.26E-04	<u>4.07E-04</u>	<u>1.57E-03</u>	1.08E-02
14-Feb-18	6.49	18.7	<u>9.06E-04</u>	9.73E-05	5.20E-03	1.05E-04	2.60E-02	2.29E-01	2.66E-03	1.52E-02	6.16E-04	<u>3.93E-04</u>	<u>1.51E-03</u>	1.45E-02
20-Feb-18	2.83	28.6	<u>8.90E-04</u>	1.93E-04	4.81E-03	1.20E-04	2.42E-02	2.81E-01	7.42E-03	2.30E-02	9.32E-04	<u>3.86E-04</u>	<u>1.48E-03</u>	4.09E-02
26-Feb-18	3.41	5.8	<u>9.53E-04</u>	4.26E-05	5.21E-03	4.38E-05	2.92E-02	6.42E-02	8.00E-04	2.14E-03	4.51E-04	<u>4.13E-04</u>	<u>1.59E-03</u>	9.66E-03
4-Mar-18	1.71	10.1	<u>9.69E-04</u>	1.18E-04	6.14E-03	8.53E-05	2.39E-02	1.71E-01	1.39E-03	5.03E-03	6.98E-04	<u>4.20E-04</u>	<u>1.62E-03</u>	1.24E-02
10-Mar-18	2.21	14.9	<u>9.13E-04</u>	4.02E-05	3.89E-03	2.06E-04	2.02E-02	4.11E-01	8.21E-04	9.86E-03	8.33E-04	<u>3.95E-04</u>	<u>1.52E-03</u>	6.69E-03
16-Mar-18	1.54	38.0	<u>8.71E-04</u>	6.21E-05	4.53E-03	3.13E-04	3.01E-02	6.15E-01	1.94E-03	2.11E-02	1.09E-03	<u>3.77E-04</u>	<u>1.45E-03</u>	1.63E-02
21-Mar-18	1.79	7.4	<u>8.79E-04</u>	2.46E-05	3.99E-03	7.56E-05	2.54E-02	2.19E-01	8.61E-04	5.20E-03	5.74E-04	<u>3.81E-04</u>	<u>1.47E-03</u>	7.15E-03
27-Mar-18	5.49	13.3	<u>8.57E-04</u>	6.97E-05	4.00E-03	1.22E-04	2.51E-02	1.91E-01	2.09E-03	6.06E-03	5.89E-04	<u>3.71E-04</u>	<u>1.43E-03</u>	9.26E-03

Geometric mean	N/A	14.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arithmetic mean	3.31	20.9	9.17E-04	9.49E-05	4.58E-03	1.43E-04	3.08E-02	2.98E-01	3.98E-03	1.46E-02	6.56E-04	3.97E-04	1.53E-03	1.82E-02
Max. concentration	6.49	106.3	9.89E-04	2.81E-04	6.14E-03	5.80E-04	5.00E-02	1.27E+00	2.65E-02	8.32E-02	1.24E-03	4.29E-04	1.65E-03	7.00E-02
Min. concentration	1.54	5.5	8.57E-04	2.46E-05	3.89E-03	4.11E-05	1.23E-02	6.42E-02	8.00E-04	2.14E-03	3.50E-04	3.71E-04	1.43E-03	6.69E-03
90th percentile	6.16	34.2	9.66E-04	1.80E-04	5.20E-03	2.71E-04	4.60E-02	5.33E-01	7.30E-03	2.22E-02	1.03E-03	4.19E-04	1.61E-03	3.50E-02
95th percentile	6.46	58.5	9.75E-04	2.19E-04	5.49E-03	3.93E-04	4.80E-02	8.11E-01	1.31E-02	4.10E-02	1.14E-03	4.23E-04	1.63E-03	4.96E-02
CAAQS	28.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No. > CAAQS value*	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AAQC	N/A	120	0.3	0.025	0.5	0.1	50	4	0.5	0.4	0.2	10	2	120
No. > AAQC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of valid samples	14	15	15	15	15	15	15	15	15	15	15	15	15	15
No. samples < mdl	0	0	15	0	0	0	0	0	0	0	0	15	15	0
Detection limit (µg)	6	5	6	2	5	2	5	50	3	50	3	10	5	5
Half detection limit (µg)	3	2.5	3	1	2.5	1	2.5	25	1.5	25	1.5	5	2.5	2.5
% < detection limit	0	0	100	0	0	0	0	0	0	0	0	100	100	0
% valid data	93	100	100	100	100	100	100	100	100	100	100	100	100	100

Notes:

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

N/A: Not applicable

—: Invalid Sample

*Canadian Ambient Air Quality Standard, 24-hour standard

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, First Quarter 2018 Report

Appendix A-1



APPENDIX A-2

TOTAL DUSTFALL SAMPLING RESULTS

SW (Tait Road) Monitoring Results for Dustfall (Q1 2018)
(results expressed in g/m²/30days)

Month	No. Exposure Days	Dustfall (insoluble)	Dustfall (soluble)	Dustfall (total)
January	30	1.3	<u>0.15</u>	1.5
February	28	0.36	0.72	1.1
March	31	1.3	<u>0.15</u>	1.4

Arithmetic mean	1.3
Max. concentration	1.5
Min. concentration	1.1
AAQC	7
No. > AAQC value**	0
No. of valid samples	3
% Valid data	100
No. samples < mdl	0
Detection limit*	0.30
Half detection limit	0.15

NE (Gallinger Road) Monitoring Results for Dustfall (Q1 2018)
(results expressed in g/m²/30days)

Month	No. Exposure Days	Dustfall (insoluble)	Dustfall (soluble)	Dustfall (total)
January	30	1.3	<u>0.15</u>	1.5
February	28	1.4	<u>0.17</u>	1.7
March	31	3.69	<u>0.15</u>	3.84

Arithmetic mean	2.4
Max. concentration	3.8
Min. concentration	1.5
AAQC	7
No. > AAQC value**	0
No. of valid samples	3
% Valid data	100
No. samples < mdl	0
Detection limit*	0.30
Half detection limit	0.15

Notes:

All statistics were calculated using 1/2DL for values reported as <DL

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

N/A: Not applicable

N/R: No Results Available

—: Invalid Sample

*If samples had differing detection limits, the highest is displayed here

**Ontario Ambient Air Quality Criteria, 30-day standard

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, First Quarter 2018 Report
Appendix A-2



APPENDIX A-3

SO₂ AND NO₂ PASSIVE SAMPLING RESULTS

Monitoring Results for Passive SO₂ and NO₂ (Q1 2018)
(results expressed in µg/m³)

	SW (Tait Road)		NE (Gallinger Road)	
Month	SO₂	NO₂	SO₂	NO₂
January	0.8	3.6	0.5	3.8
February	0.5	1.3	0.5	2.4
March	0.1	1.1	0.1	1.3

Arithmetic mean	0.5	2.0	0.4	2.5
Max. concentration	0.8	3.6	0.5	3.8
Min. concentration	0.1	1.1	0.1	1.3
AAQC* 24-hr converted to 30-day	N/A	78 µg/m ³	N/A	78 µg/m ³
Alberta Ambient Air Quality Objectives 2013	30 µg/m ³	N/A	30 µg/m ³	N/A
No. of valid samples	3	3	3	3
% Valid Data	100%	100%	100%	100%
No. samples < mdl	0	0	0	0
Detection limit	0.3	0.2	0.3	0.2
Half detection limit	0.15	0.1	0.15	0.1

Notes:

All statistics were calculated using 1/2DL for values reported as <DL

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

All results reported by the lab in parts per billion (ppb) and are converted to µg/m³ assuming 101.23kPa and 25C

N/A: Not applicable

N/R: No Results Available

—: Invalid Sample

*Ontario Ambient Air Quality Criteria

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, First Quarter 2018 Report
Appendix A-3





**NEW GOLD INC.
RAINY RIVER MINE**

**AMBIENT AIR QUALITY MONITORING PROGRAM
SECOND QUARTER 2018 REPORT**

Submitted by:

**Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited
160 Traders Blvd. E., Suite 110
Mississauga, Ontario
L4Z 3K7**

**August 2018
TC111504**





Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited
160 Traders Boulevard East
Suite 110
Mississauga, Ontario
Canada
T: 905.568.2929

August 14, 2018
TC111504

Sylvie St. Jean
Environmental Manager
New Gold Inc.
Rainy River Mine
5967 Hwy 11 / 71, P.O. Box 5
Emo, Ontario P0W 1E0

Dear Ms. St. Jean:

**Re: Rainy River Mine
Ambient Air Quality Monitoring Program
Second Quarter 2018 Report**

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (hereinafter referred to as Wood), is a leading environment and infrastructure, engineering, consulting and project management organization. Our team of professionals provides a full range of services to clients in a wide range of sectors including government, industrial & commercial, water, transportation, minerals & metals, oil & gas clients and clean energy. Environment and Infrastructure's core competencies are in environmental assessments, health and environmental risk assessment, environmental geology (site investigation), remediation engineering, geotechnical engineering and testing, and water resource services.

Wood is pleased to submit to New Gold Inc. (New Gold) the attached summary report of the results for the ambient air quality monitoring program for the second quarter of 2018 at the Rainy River Mine. The monitoring program consists of two air quality monitoring stations that were established in May 2015: one to the south of the Site near the beginning of the Highway 600 reroute on Tait Road, and one to the east of the Site on Gallinger Road. The sampling stations are operated and maintained by New Gold staff; Wood staff performed quarterly calibrations, provided technical guidance to New Gold field staff, communicated with the laboratory staff as required, and prepared the data summary report.

Wood will supply the MECP with raw and edited data per the Operations Manual for Air Quality Monitoring in Ontario (MECP 2016b).

The key finding(s) of the Q2 2018 monitoring are as follows:

- There was a measured exceedance of the TSP and iron Ambient Air Quality Criteria (AAQC) at the Gallinger Station in Q2 2018 on April 8. Winds on this day were light and variable; and
- There were no exceedances of the dustfall or metals/metalloids (excluding iron) AAQC, PM_{2.5} Canadian Ambient Air Quality Standard, or SO₂/NO₂ criteria measured in Q2 2018.

The measured TSP and PM_{2.5} concentrations for the Q2 2018 are depicted in Figures CL-1 and CL-2.

Note that quarterly reports do not include interpretation of the data (i.e. exceedances); interpretation of results is included in the annual reporting. Should you have any questions or wish to discuss the air monitoring program, please do not hesitate to contact the undersigned.

Sincerely,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited



Caleb Vandenberg, P.Eng.
Air Quality Engineer



Linda Lattner, P.Eng., M.Eng.
Senior Air Quality Engineer

CC Dan Russel, Associate Geoscientist, Wood
 Twila Griffith, Senior Environmental Coordinator, New Gold



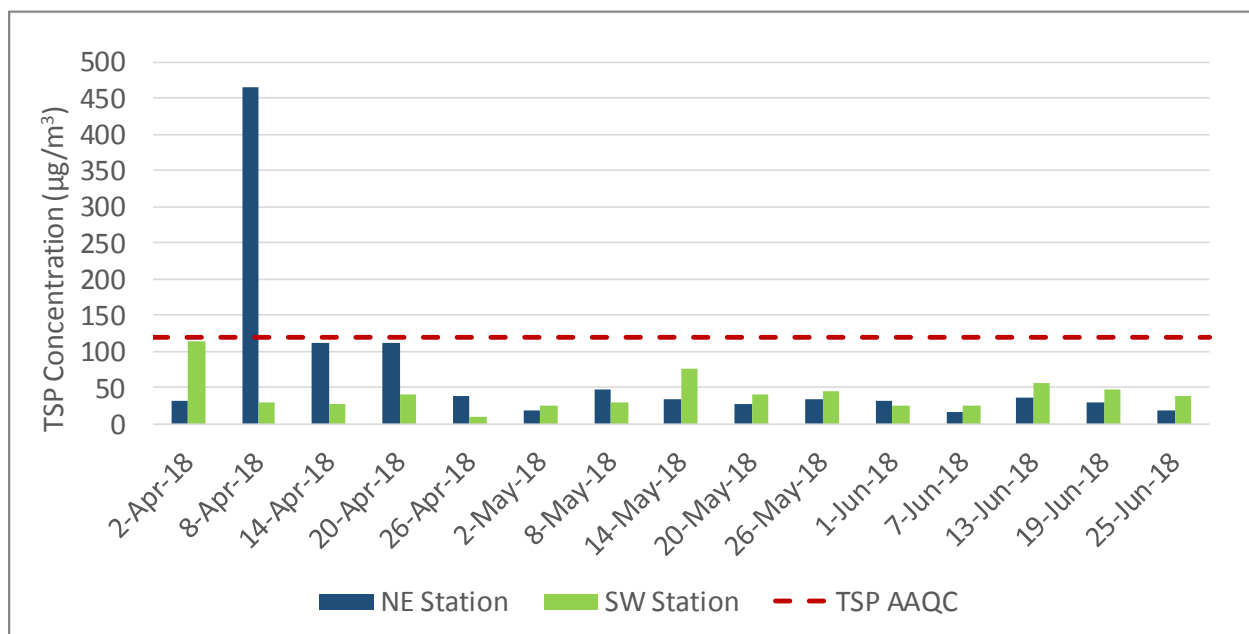


Figure CL-1: TSP Concentrations (Q2 2018)

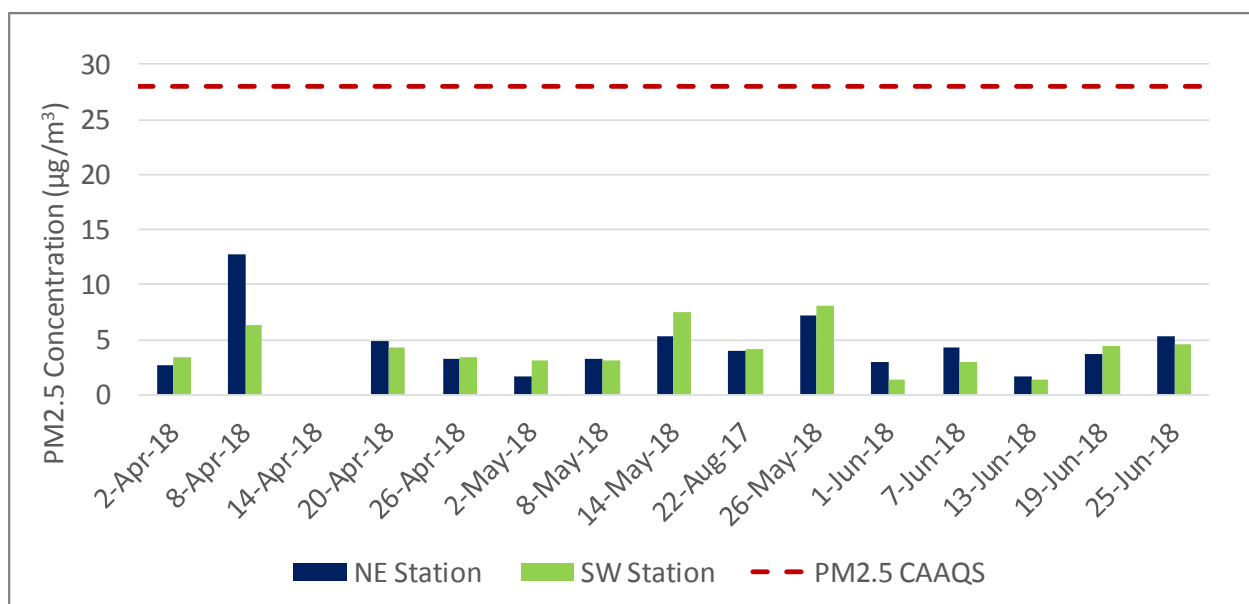


Figure CL-2: PM_{2.5} Concentrations (Q2 2018)



Revision	Date	Revised By	Description
0	August 9, 2018	Ryan Fletcher	Draft Report
1	August 13, 2018	Caleb Vandenberg	Final Report



ACRONYMS AND ABBREVIATIONS

AAQC	Ambient Air Quality Criteria
AAQO	Alberta Ambient Air Quality Objectives
ACFM	Cubic Feet Per Minute at Actual Conditions
AEP	Alberta Environment and Parks
ASTM	American Society for Testing and Materials
BCMOE	British Columbia Ministry of the Environment
CAAQS	Canadian Ambient Air Quality Standards
Hi-Vol	High Volume Sampler
ICP/AES	Inductively Coupled Plasma / Atomic Emission Spectroscopy
LPM	Litres Per Minute
MECP	Ministry of the Environment, Conservation and Parks
NIST	National Institute of Standards and Technology
TSP	Total Suspended Particulate
PM _{2.5}	Particulate Matter less than 2.5 microns in diameter
US EPA	United States Environmental Protection Agency
µg/m ³	Microgram per Cubic Metre

TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION.....	1
2.0 MONITORING STATIONS.....	2
3.0 ANALYTICAL AND MONITORING METHODS	6
3.1 TSP and Metals	6
3.2 PM _{2.5}	6
3.3 Total Dustfall	6
3.4 Passive Sampling for SO ₂ and NO ₂	7
3.5 Field Operations	7
3.5.1 Hi-Vol Samplers	7
3.5.2 PQ200 Samplers.....	7
3.5.3 Dustfall Samplers.....	8
3.5.4 Passive Samplers.....	8
3.5.5 Performance and Site Audits.....	8
3.5.6 Equipment and Sampling Issues.....	8
4.0 RESULTS.....	9
4.1 TSP and Metals	9
4.2 PM _{2.5}	10
4.3 Total Dustfall	10
4.4 Passive SO ₂ and NO ₂	10
4.5 Evaluation of Effects of Abatement Measures on Monitored Concentrations.....	11
5.0 CONCLUSIONS	15
6.0 REFERENCES	16
7.0 CLOSING	17



LIST OF TABLES

	PAGE
Table 2-1: Ambient Air Monitoring Stations.....	2
Table 4-1: Summary Statistics for Q2 2018 TSP Concentration Data.....	12
Table 4-2: Summary Statistics for Q2 2018 Metals Concentration Data.....	12
Table 4-3: Summary Statistics for Q2 2018 PM _{2.5} Concentration Data.....	13
Table 4-4: Summary Statistics for Q2 2018 Total Dustfall Data	13
Table 4-5: Summary Statistics for Q2 2018 Passive SO ₂ and NO ₂ Concentration Data	13

LIST OF FIGURES

Figure 2-1: Ambient Air Monitoring Stations	3
Figure 2-2: Ambient Air Monitoring – Southwest Monitoring Station.....	4
Figure 2-3: Ambient Air Monitoring – Northeast Monitoring Station.....	5
Figure 4-1: TSP Concentrations (Q2 2018).....	14
Figure 4-2: PM _{2.5} Concentrations (Q2 2018).....	14

LIST OF APPENDICES

Appendix A	Sampling Results
Appendix A-1	TSP, Metals, and PM _{2.5} Sampling Results
Appendix A-2	Total Dustfall Sampling Results
Appendix A-3	SO ₂ and NO ₂ Passive Sampling Results



1.0 INTRODUCTION

Wood is pleased to provide a summary of the Second Quarter (Q2) 2018 results for the ambient air quality monitoring program undertaken at the Rainy River Mine located in northwestern Ontario. Two sampling stations were established in May 2015: one to the south of the Site near the beginning of the Highway 600 realignment at Tait Road, and one to the east of the Site on Gallinger Road (Figures 2-1, 2-2 and 2-3).

New Gold Inc. (New Gold) staff operate and maintain the sampling stations. Wood staff performed quarterly calibrations, provided technical guidance to New Gold field staff, communicated with the laboratory staff as required, and prepared the data summary reports.

This Quarterly Ambient Air Quality Report addresses the required elements of a Quarterly Report defined in the *Operations Manual for Air Quality Monitoring in Ontario* (MECP 2016b), hereafter referred to as the Operations Manual. Specifically, the following information is provided:

- Summary statistics;
- Sampling dates (start and end where applicable); and
- A summary of exceedances of an Ontario Standard, Ambient Air Quality Criterion (AAQC), or Canadian Ambient Air Quality Standard (CAAQS).

The purpose of the air monitoring program is to quantify potential air quality effects associated with activities related to the Mine. The monitoring program consists of:

- Two High Volume (Hi-Vol) samplers for discrete sampling of Total Suspended Particulate (TSP) and metals;
- Two PQ200 samplers for discrete sampling of respirable particulate matter (PM_{2.5});
- Two standard passive dustfall collection units;
- Two passive sampling enclosures each measuring NO₂ and SO₂; and
- One meteorological station to obtain real-time site wind speed, wind direction, temperature, relative humidity, and precipitation.

2.0 MONITORING STATIONS

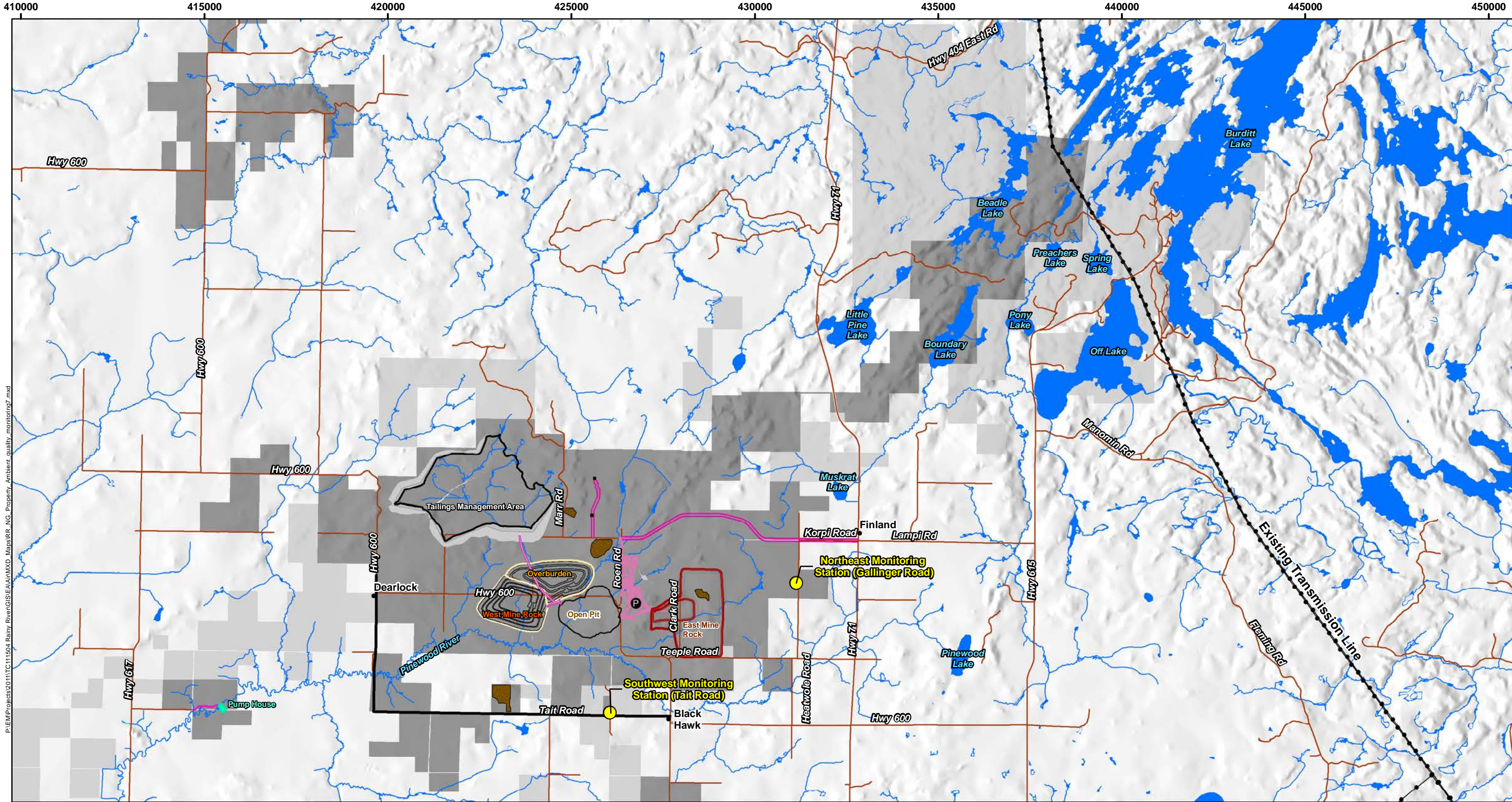
The ambient monitoring stations were sited in accordance with the criteria stipulated in the MECP Operations Manual (MECP 2018).

The general location for the two stations is shown in Figure 2-1. UTM co-ordinates for each station based upon NAD 83, are presented in Table 2-1. Photographs showing each station and the equipment installed are presented as Figures 2-2 and 2-3.

There were no changes to the stations or station locations in Q2 2018.



Table 2-1: Ambient Air Monitoring Stations

Station	UTM Co-ordinates			Parameters Monitored
	Easting (m)	Northing (m)	Zone	
Tait Road Station	426 072	5 406 996	15	TSP, metals, PM _{2.5} , NO ₂ , SO ₂ , total dustfall Meteorological data (wind speed and direction, ambient temperature, relative humidity, rainfall)
Gallinger Road Station	431 133	5 410 534	15	TSP, metals, PM _{2.5} , NO ₂ , SO ₂ , total dustfall
















P:\EMP\Projects\2011\TC111504 Rainy River\GIS\EA\Map\MXD Maps\RR_NG_Property_Ambient_quality_monitoring7.mxd

LEGEND

-  Ambient Air Quality Monitoring Stations
-  New Gold - Rainy River Property Boundary
-  New Gold Lands with No Current Access Control

Proposed Site Features

-  Underground Portal
-  Open Pit
-  Plant Site / Ancillary Facilities
-  Explosives Facilities
-  Overburden / West Mine Rock Stockpile
-  Ore / East Mine Rock Stockpile
-  Proposed Pump House
-  Tailings Management Area
-  Aggregate Pit / Quarry
-  Site Roads
-  Roads
-  Existing Transmission Line
-  First Nation Land

NOTES:
- Road and Utility data and topographic data extracted from Land Information Ontario, Ontario Road Network, MNR Queen's Printer for Ontario, 2011-2012
- Land tenure information and parcels provided by NewGold, March 13, 2018.

Datum: NAD83
Projection: UTM Zone 15N



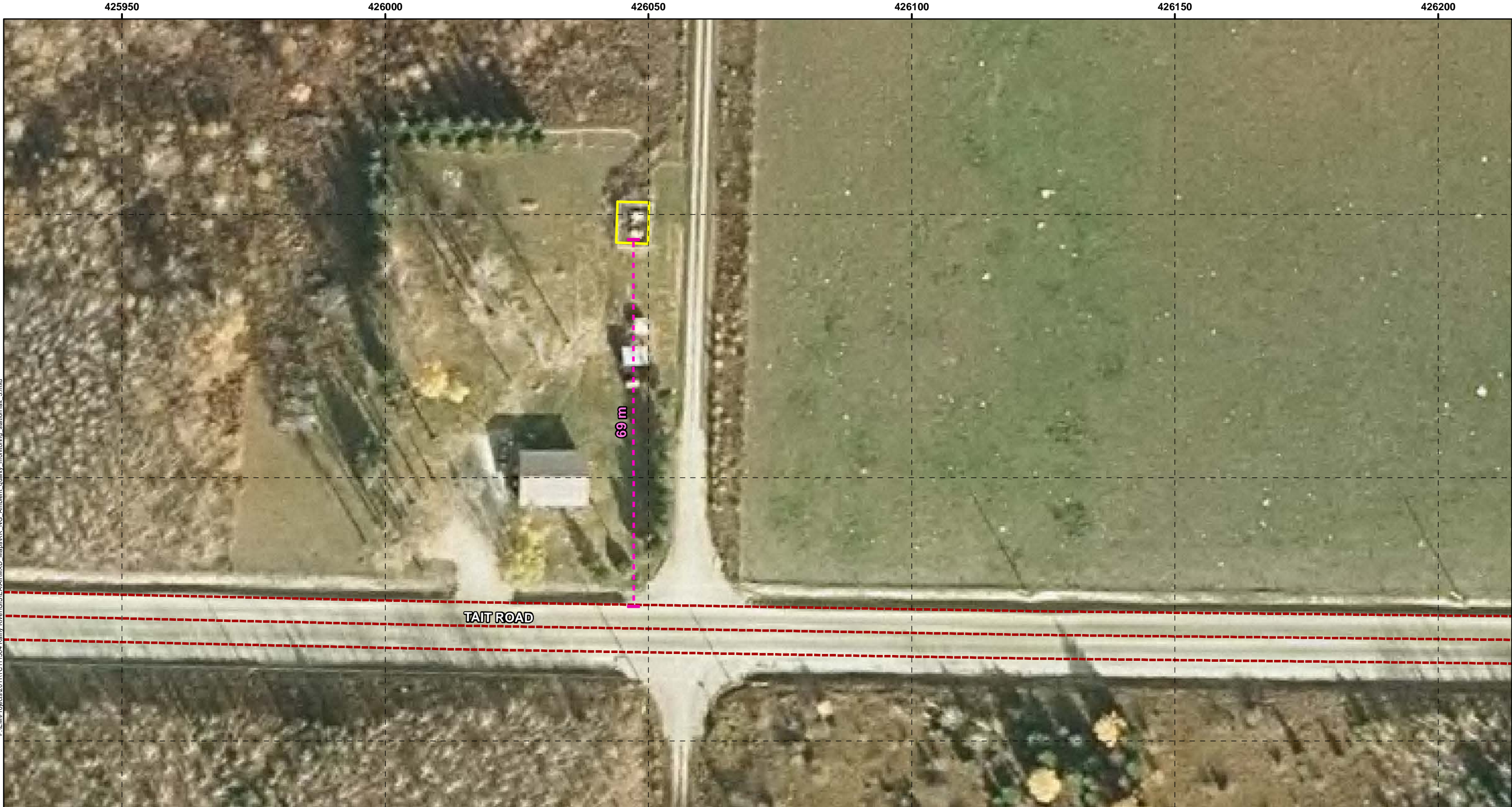
newgold Rainy River Project **wood.**

RAINY RIVER MINE

Ambient Air Monitoring Stations

PROJECT N°: TC111504	FIGURE: 2-1
SCALE: 1:100,000	DATE: May 2018





P:\EIA\Projects\2011\TC111504 Rainy River\GIS\EA\AIA\MXD Maps\RR_NG Ambient quality monitoring station\Tait_3.mxd


LEGEND

-  Southwest Monitoring Station (Tait Road)
-  Highway Re-alignment

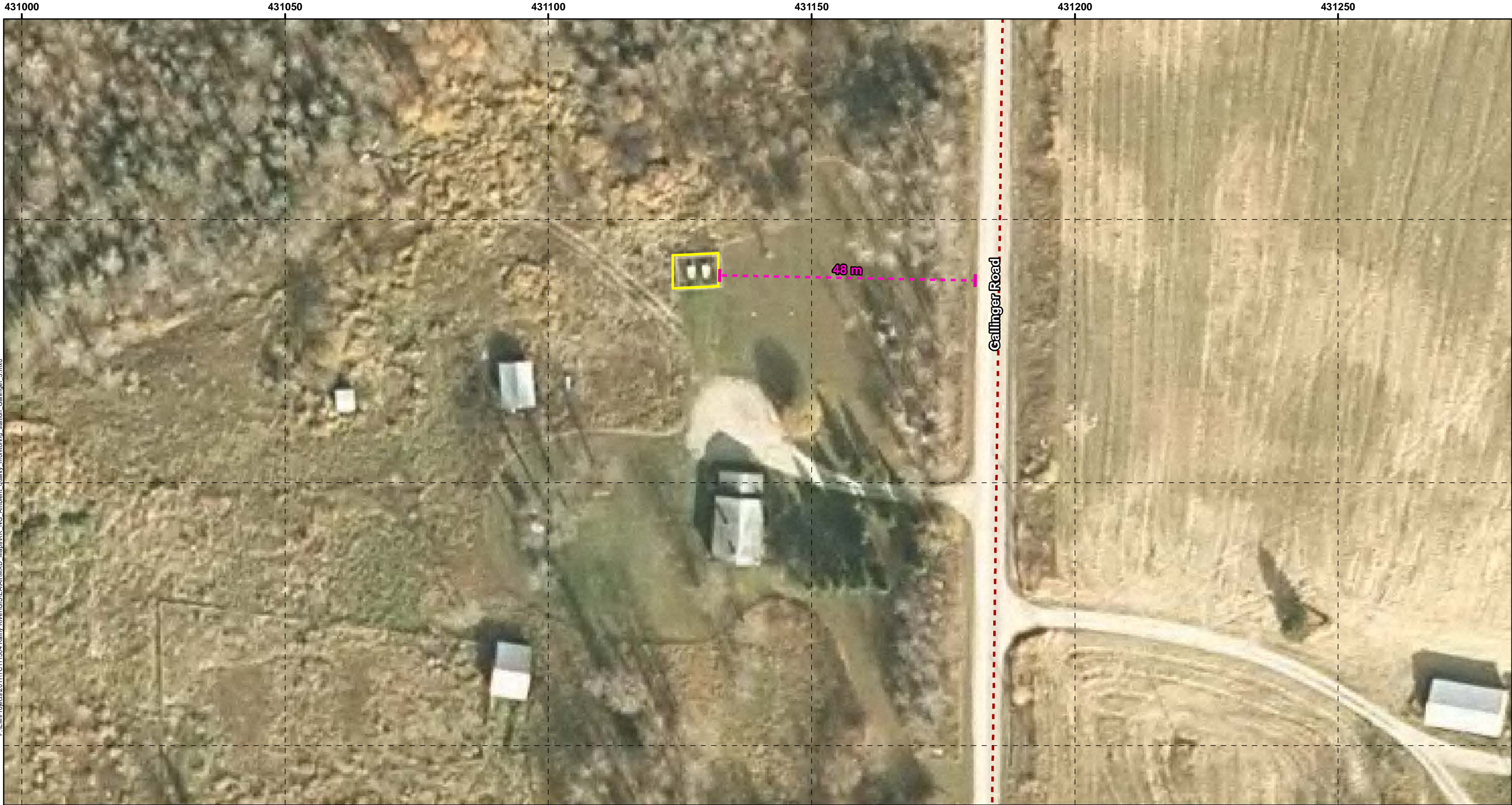
Notes:
- Aerial imagery provided by NewGold Pileades imagery (October 2017).

Datum & Projection:
NAD 1983 UTM Zone 15N





	
RAINY RIVER MINE	
Ambient Air Monitoring Southwest Monitoring Station	
PROJECT N°: TC111504	FIGURE: 2-2
SCALE: 1:700	DATE: May 2018






P:\E\MP\Projects\2011\TC111504 Rainy River\GIS\EA\Air\MXD Maps\RR_NG Ambient quality monitoring station Gallinger 3.mxd



LEGEND

-  Northeast Monitoring Station (Gallinger Road)
-  Gallinger Road

Notes:
- Aerial imagery provided by NewGold Pileades imagery (October 2017).

Datum & Projection:
NAD 1983 UTM Zone 15N



 
Rainy River Project

RAINY RIVER MINE

Ambient Air Monitoring
Northeast Monitoring Station

PROJECT N°: TC111504

SCALE: 1:700

FIGURE: 2-3

DATE: May 2018



3.0 ANALYTICAL AND MONITORING METHODS

3.1 TSP and Metals

The TSP concentrations were determined using the standard gravimetric reference methods approved by the United States Environmental Protection Agency (US EPA) and the Ontario Ministry of the Environment, Conservation and Parks (MECP), as described in the Operations Manual (MECP 2016b). Measurements of 24-hour average TSP and metal concentrations were collected as specified in the Operations Manual (MECP 2016b); particulate samples were collected every sixth day as per the North American schedule (US EPA 2017). Sampling was performed with Hi-Vol samplers (brush motor and mass flow controlled). Metals and metalloids analyzed included the following: arsenic (As), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), iron (Fe), lead (Pb), manganese (Mn), nickel (Ni), selenium (Se), vanadium (V) and zinc (Zn). A metalloid is an element such as As that has both metallic and non-metallic properties.

The lowest detectable limit of total particulate on the filter is 2.3 milligrams (mg). A typical 24-hour sample volume of 1,630 m³ results in a method detection limit of 1.4 micrograms per cubic metre (µg/m³).

Metal concentrations were determined using standard Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP/AES) methodology. Method detection limits are as shown on the data sheets in Appendix A-1.

3.2 PM_{2.5}

Sampling was performed with PQ200 samplers. PM_{2.5} concentrations were determined using the standard gravimetric reference methods approved by the US EPA and the MECP, as described in the Operations Manual (MECP 2016b). PM_{2.5} measurements were collected over a 24-hour period to match the averaging time for the Canadian Ambient Air Quality Standard (CAAQS); particulate samples were collected every sixth day as per the North American schedule (US EPA 2017).

The lowest detectable limit of PM_{2.5} on the Teflon filters is 1 µg. A typical 24-hour sample volume of 24 m³ results in a method detection limit of 0.04 µg/m³.

3.3 Total Dustfall

Water soluble and insoluble portions of dustfall were determined using ASTM method D-1739-98 and the British Columbia Ministry of Environment method outlined in Section G of Air Constituents – Inorganic (MECP 2016c). Standard dustfall samplers were used to measure total dustfall deposition. The method detection limit for total dustfall is 0.3 g/m²/30 days. Bird deterrents were added in Q3 2017 with the goal of reducing contamination.



3.4 Passive Sampling for SO₂ and NO₂

SO₂ and NO₂ concentrations were monitored with passive sampling devices. The exposed permeation filters were analyzed by the Maxxam Analytics Inc. laboratory (Edmonton, Alberta). Testing was performed using methodology developed, approved and validated by Alberta Environment with the support of the Alberta Research Council, the Clean Air Strategic Alliance of Alberta, and the National Research Council of Canada, and following the Standard Operating Procedures for Trace Gas Passive Sampling outlined in the Operations Manual (MECP 2016b).

Sample uptake is dependent on temperature, relative humidity and wind speed. Analytical results are adjusted for these meteorological parameters measured during the exposure period (monthly averages). Required meteorological data were obtained from the Environment and Climate Change Canada website. Fort Frances meteorological station (Climate ID 6022474) is downloaded by Maxxam Analytics with each sample submission. For both SO₂ and NO₂, the analytical method detection limit is in the order of 0.1 parts per billion (ppb). Validation tests conducted in Alberta show that results from passive sampling are typically within 10% of those obtained from sampling with continuous analyzers for 30-day exposure periods.

Since there are no MECP guidelines for monthly concentrations of SO₂ and NO₂ obtained from passive sampling, the data is only used for screening purposes. For NO₂, the monthly results were compared to the MECP 24-hour AAQC converted to an equivalent 30-day average (78 µg/m³) using the methodology outlined in the *Procedure for Preparing an Emission Summary and Dispersion Modelling Report* (MECP 2017). For SO₂, the results were compared against the 30-day Alberta Ambient Air Quality Objective of 30 µg/m³ (AEP 2016).

3.5 Field Operations

3.5.1 Hi-Vol Samplers

To meet the requirements of 1-in-6 day sampling schedule, stations were visited once every six days. The exposed filter was recovered and a pre-weighed filter installed for the subsequent sample run. Additional visits were made to resolve instrumentation issues and perform flow calibration checks and preventative maintenance.

Wood staff performed flow, temperature, and barometric pressure calibrations using an electronic BGI flow calibrator. The flows were calibrated to 16.7 litres per minute (LPM) for each station. Q2 Calibrations were performed on:

- February 21, 2018 – All hi-vols calibrated; and
- May 24, 2018 – All hi-vols calibrated.

3.5.2 PQ200 Samplers

To meet the requirements of 1-in-6 day sampling schedule, stations were visited once every six days. The exposed filter was recovered and a pre-weighed filter installed for the subsequent sample run.

RAINY RIVER MINE



Additional visits were made to resolve instrumentation issues and perform flow calibration checks and preventative maintenance.

Wood staff performed flow, temperature, and barometric pressure calibrations using an electronic BGI flow calibrator. The flows were calibrated to 16.7 litres per minute (LPM) for each station. Q2 Calibrations were performed on:

- February 21, 2018 – All PQ200s calibrated; and
- May 24, 2018 – All PQ200s calibrated.

3.5.3 Dustfall Samplers

The dustfall samplers containing algaecide were changed every month, as required. Dustfall jars were provided by the laboratory with screw-on lids to prevent sample loss during transport.

3.5.4 Passive Samplers

The permeation filters in the passive samplers were changed every month, as required. Permeation filters were kept in filter cassettes inside Ziploc bags until deployed to prevent premature exposure. After the sample was collected, the filter was placed back in its cassette and into a Ziploc bag for shipment to the lab.

3.5.5 Performance and Site Audits

There were no MECP audits conducted in Q2 2018.

3.5.6 Equipment and Sampling Issues

During Q2 2018, the ambient air monitoring program was successful in collecting sufficient valid data to fulfil the requirements of the MECP Operations Manual. A number of invalid samples were collected and are discussed below:

- April 14: PM_{2.5} samples at the Gallinger and Tait Road stations were invalidated due a timer error with both samplers.
- The May 2018 dustfall Gallinger Road sample was invalidated due the sample being contaminated with foreign organic matter (decayed insects, etc.).

4.0 RESULTS

Sampling program results for Q2 2018 are presented in Appendix A-1 for the particulate and metals data, Appendix A-2 for the dustfall data and Appendix A-3 for the passive SO₂ and NO₂ data. For the purpose of performing statistical analyses following MECP protocol, a value of half the detection limit was substituted for concentrations less than the detection limit.

For comparative purposes, the MECP AAQC and CAAQS values are presented, where available, noting that the AAQCs are numerically equivalent to the Ontario Regulation 419/05 Standards and Air Contaminant Benchmarks (ACBs) where the averaging times are equivalent.

Summaries of the statistical analyses for Q2 2018 for the TSP, metals, and PM_{2.5} concentrations are presented in Tables 4-1, 4-2, and 4-3, respectively. During the quarter, the 1 in 6-day sampling schedule presented a possible 15 sampling days between April 1 and June 30, 2018.

A summary of the statistical analyses for Q2 2018 for the total dustfall data is presented in Table 4-4.

A summary of the statistical analysis for the Q2 2018 passive SO₂ and NO₂ results is presented in Table 4-5.

4.1 TSP and Metals

The Gallinger Road and Tait Road stations both collected 15 valid samples, respectively, resulting in 100% valid data for Q2 2018.

For the quarter, the geometric mean TSP concentrations were 36.8 µg/m³ for the Tait Road station and 42.2 µg/m³ for the Gallinger Road station. Values reported by the laboratory as below the detection limit were, by convention, substituted with one-half of the detection limit. The maximum 24-hour concentration for TSP was 115 µg/m³ at the Tait Road station (April 2, 2018), and 464 µg/m³ at the Gallinger Road station (April 8, 2018).

The only exceedances of an MECP AAQC measured for any of TSP, metals, or metalloids in Q2 2018 was at the Gallinger Road Station on April 8, 2018 where a TSP concentration of 464 µg/m³ (387% of AAQC) and the iron (Fe) concentration of 8.35 µg/m³ (209% of AAQC) were measured and conservatively assuming all of the iron present was metallic.

The rolling 30-day average lead concentrations at both stations were at maximum 2.13% of the 30-day lead AAQC (0.2 µg/m³) in Q2 2018.

Appendix A-1 and Figure 4-1 present individual sample data. The Q2 2018 TSP and metals summary statistics are summarized in Tables 4-1 and 4-2, respectively.

4.2 **PM_{2.5}**

The Gallinger Road and Tait Road stations both collected 14 valid samples, respectively, resulting in 93% valid data for Q2 2018. A timer error occurred at both stations on April 14, 2018, resulting in no sample collection which is identified as an invalid sample in the summary tables.

Values reported by the laboratory as below the detection limit were, by convention, substituted with one-half of the detection limit. The maximum 24-hour concentration for PM_{2.5} was 8.12 µg/m³ at the Tait Road station (May 26, 2018), and 12.7 µg/m³ at the Gallinger Road station (April 8, 2018).

There were no PM_{2.5} exceedances of the AAQC of 30 µg/m³ or CAAQS (ECCC 2013) of 28 µg/m³ measured in Q2 2018. Appendix A-1 and Figure 4-2 present individual sample data.

The Q2 2018 PM_{2.5} summary statistics are summarized in Table 4-3.

4.3 **Total Dustfall**

In Q2 2018, three valid samples were collected at each station, with the exception of the March 2018 Gallinger Road sample which was invalidated due to contamination. Each dustfall jar was exposed for approximately 30-days to coincide with each calendar month in the quarter.

There were no dustfall exceedances of the 30-day AAQC of 7 g/m² measured in Q2 2018.

A summary of the results is presented in Table 4-4 and the monthly results are presented in Appendix A-2.

4.4 **Passive SO₂ and NO₂**

In Q2 2018, three valid samples were collected at each station for each of SO₂ and NO₂.

There are no MECP standards, guidelines or AAQCs for SO₂ or NO₂ for a 30-day averaging period. The 30-day measured average SO₂ or NO₂ concentrations allow for future analysis of trends in the ambient concentrations, to identify any notable increases, and for potential comparison with dispersion modelling results.

For NO₂, the monthly results were compared to the MECP 24-hour AAQC converted to an equivalent 30-day average (78 µg/m³) using the methodology outlined in the *Procedure for Preparing an Emission Summary and Dispersion Modelling Report* (MECP 2017). For SO₂, the results were compared against the Alberta Ambient Air Quality Objective of 30 µg/m³ (AEP 2017).

A summary of the passive results is presented in Table 4-5 and the monthly results are presented in Appendix A-3.

4.5 Evaluation of Effects of Abatement Measures on Monitored Concentrations

The Rainy River Mine has a comprehensive Best Management Practices Plan (BMPP) for Fugitive Dust approved by the MECP as part of the ECA review process. This BMPP effectively controls the generation and dispersion of dust such that the particulate matter measured at the two ambient monitoring stations was below the AAQC for all Q2 2018 samples, with the exception of one TSP and iron concentration measured on April 8, 2018 at the Gallinger Road Station.

Table 4-1: Summary Statistics for Q2 2018 TSP Concentration Data

Statistics	Tait Road (SW)	Gallinger Road (NE)
Geometric Mean ($\mu\text{g}/\text{m}^3$)	36.8	42.2
Arithmetic Mean ($\mu\text{g}/\text{m}^3$)	42.5	70.4
April Maximum ($\mu\text{g}/\text{m}^3$)	115.2	464.1
May Maximum ($\mu\text{g}/\text{m}^3$)	76.2	46.69
June Maximum ($\mu\text{g}/\text{m}^3$)	56.8	37.6
Maximum 24-hr ($\mu\text{g}/\text{m}^3$)	115.2 (April 2)	464.1 (April 8)
90 th percentile	68.4	112.2
95 th percentile	87.9	218.0
24-hr AAQC	120	120
No. of valid samples	15	15
Valid data	100%	100%
No. samples > AAQC (particulate)	0	1
No. samples > AAQC (metals)	0	1*
No. samples > AAQC (metalloids)	0	0

* This exceedance was based upon the conservative assumption that 100% of the iron present is in the metallic form, as the filters are analyzed for iron as Fe.

Table 4-2: Summary Statistics for Q2 2018 Metals Concentration Data

Metal	24-hr AAQC ($\mu\text{g}/\text{m}^3$)	Tait Road (SW)		Gallinger Road (NE)	
		Maximum 24-hr Concentration ($\mu\text{g}/\text{m}^3$)	% 24-hr AAQC	Maximum 24-hr Concentration ($\mu\text{g}/\text{m}^3$)	% 24-hr AAQC
As	0.3	9.76E-04	0.33%	9.77E-04	0.33%
Cd	0.025	4.16E-04	1.66%	1.74E-04	0.70%
Cr	0.5	8.85E-03	1.77%	3.64E-02	7.28%
Co	0.1	8.40E-04	0.84%	5.08E-03	5.08%
Cu	50	5.27E-02	0.11%	1.00E+00	2.00%
Fe	4	1.94E+00	48.5%	8.35E+00	208.6%*
Pb	0.5	1.08E-02	2.16%	8.79E-03	1.76%
Mn	0.4	8.52E-02	21.3%	2.32E-01	58.1%
Ni	0.2	2.29E-03	1.15%	1.53E-02	7.67%
Se	10	1.00E-03	0.010%	8.11E-04	0.0081%
V	2	1.63E-03	0.081%	1.57E-02	0.78%
Zn	120	8.33E-02	0.069%	5.03E-02	0.042%

* This exceedance was based upon the conservative assumption that 100% of the iron present is in the metallic form, as the filters are analyzed for iron as Fe.



Table 4-3: Summary Statistics for Q2 2018 PM_{2.5} Concentration Data

Statistics	Tait Road (SW)	Gallinger Road (NE)
Arithmetic Mean ($\mu\text{g}/\text{m}^3$)	4.15	4.48
April Maximum ($\mu\text{g}/\text{m}^3$)	6.33	12.7
May Maximum ($\mu\text{g}/\text{m}^3$)	8.12	7.16
June Maximum ($\mu\text{g}/\text{m}^3$)	4.58	5.33
Maximum 24-hr ($\mu\text{g}/\text{m}^3$)	8.12 (May 26)	12.7 (April 8)
90 th percentile	7.11	6.61
95 th percentile	7.68	9.1
24-hr CAAQS	28	28
No. of valid samples	14	14
Valid data	93%	93%
No. samples > CAAQS	0	0

Table 4-4: Summary Statistics for Q2 2018 Total Dustfall Data

Statistic	Tait Road (SW)	Gallinger Road (NE)
Arithmetic mean ($\text{g}/\text{m}^3/30\text{d}$)	3.4	3.8
Maximum ($\text{g}/\text{m}^3/30\text{d}$)	4.1	4.7
30-day AAQC	7	7
No. > AAQC	0	0
No. valid samples	3	2
Valid Data	100%	67%

Table 4-5: Summary Statistics for Q2 2018 Passive SO₂ and NO₂ Concentration Data

Statistic	Tait Road (SW)		Gallinger Road (NE)	
	SO ₂	NO ₂	SO ₂	NO ₂
Mean ($\mu\text{g}/\text{m}^3$)	0.2	1.1	0.1	0.6
Maximum ($\mu\text{g}/\text{m}^3$)	0.3	1.7	0.1	0.6
AAQC 24-hr converted to 30-day ($\mu\text{g}/\text{m}^3$)	N/A	78 $\mu\text{g}/\text{m}^3$	N/A	78 $\mu\text{g}/\text{m}^3$
Alberta AAQO ($\mu\text{g}/\text{m}^3$)	30 $\mu\text{g}/\text{m}^3$	N/A	30 $\mu\text{g}/\text{m}^3$	N/A
No. valid samples	3	3	3	3
Valid data	100%	100%	100%	100%

Note: N/A: No applicable criterion



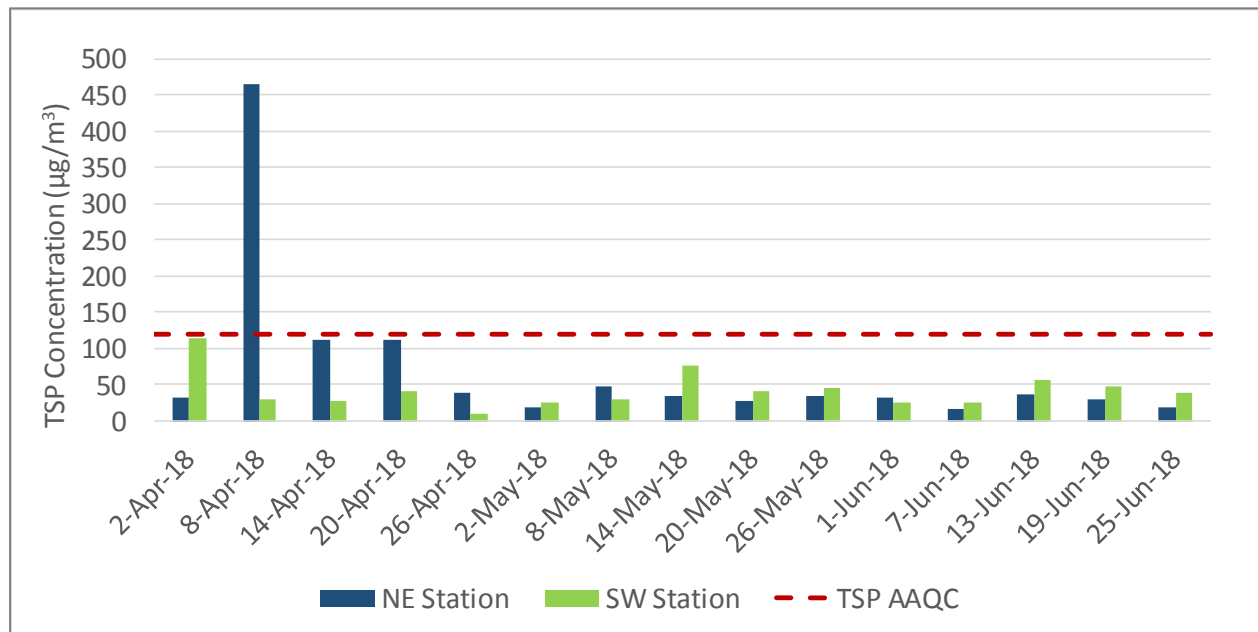


Figure 4-1: TSP Concentrations (Q2 2018)

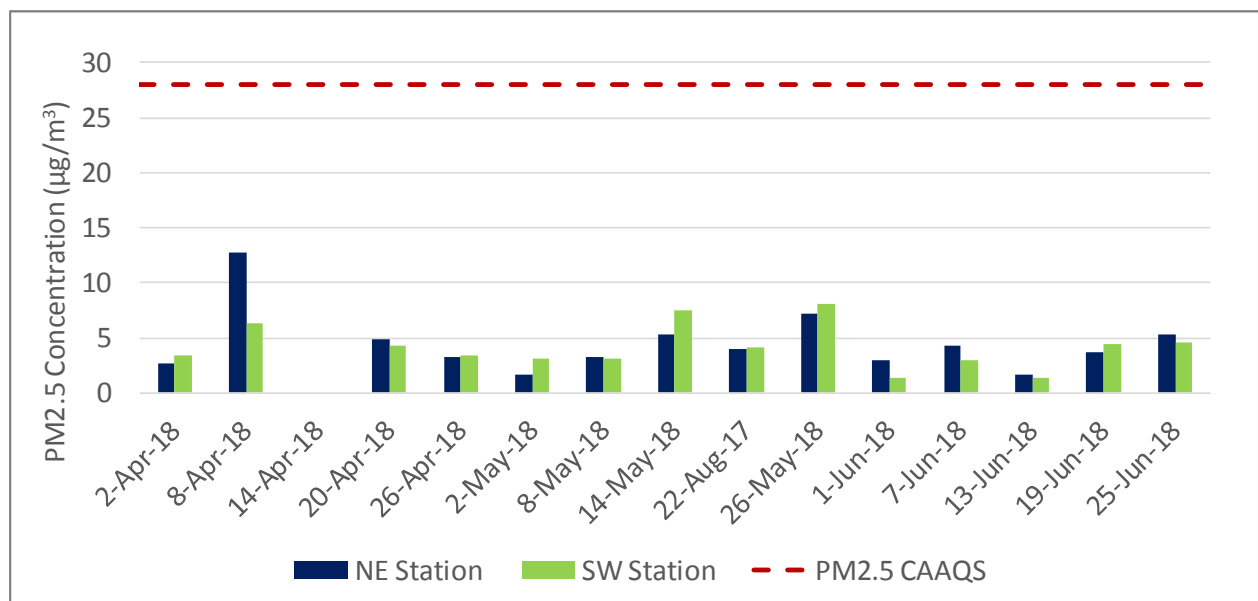


Figure 4-2: PM_{2.5} Concentrations (Q2 2018)

5.0 CONCLUSIONS

This report summarizes the data collected in Q2 2018 for the ambient air quality monitoring program at the Rainy River Mine.

The monitoring program collects TSP, metals, PM_{2.5}, total dustfall, NO₂, and SO₂ ambient air quality data from two monitoring stations that were installed and commissioned in May 2015.

A summary of the Q2 2018 ambient air quality monitoring program results is provided below:

- There were 15 valid TSP samples collected at both stations resulting in 100% sample validity. Metal and metalloid concentrations were measured on each of the TSP filters.
- The only measured exceedances of an MECP AAQC for TSP, metals, or metalloids in Q2 2018 was at the Gallinger Road Station. On April 8, 2018 a TSP concentration of 464 µg/m³ (387% of AAQC) and an iron (Fe) concentration of 8.35 µg/m³ (209% of AAQC) were measured.
- There were 14 valid PM_{2.5} samples collected at the Tait and Gallinger Road stations, (93% valid data). There were no exceedances of the 24-hour PM_{2.5} CAAQS in Q2 2018.
- There were 3 valid dustfall samples collected at the Tait Road station (100% sample validity), and 2 valid dustfall samples collected at the Gallinger Road Station (67% validity). There were no exceedances of the 30-day dustfall AAQC in Q2 2018.
- There were 3 valid passive SO₂ and NO₂ samples collected at each of the two stations (100% sample validity). There were no exceedances of AEP Criterion for SO₂ or the 30-day equivalent AAQC for NO₂ in Q2 2018.

6.0 REFERENCES

- Alberta Environment and Parks (AEP). 2017. Alberta Ambient Air Quality Objectives and Guidelines Summary.
- American Society for Testing and Materials (ASTM). 2004. Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter).
- British Columbia Ministry of the Environment. 2007. Section G of Air Constituents – Inorganic.
- Environment Canada (ECCC). 2013. Canadian Environmental Protection Act, 1999 Sections 54 and 55.
- Ministry of the Environment, Conservation and Parks (MECP). 2017. Procedure for Preparing and Emission Summary and Dispersion Modelling Report.
- Ministry of the Environment, Conservation and Parks (MECP). 2016a. Ontario's Ambient Air Quality Criteria, PIBS # 6570e01.
- Ministry of the Environment, Conservation and Parks (MECP). 2016b. Operations Manual for Air Quality Monitoring in Ontario.
- Ministry of the Environment, Conservation and Parks (MECP). 2016c. Determination of Total Dustfall in Air Particulate Matter by Gravimetry, E3043.
- United States Environmental Protection Agency (USEPA). 2018. Sampling Schedule Calendar, <https://www3.epa.gov/ttnamti1/calendar.html>.

7.0 CLOSING

This *Rainy River Mine Ambient Air Quality Monitoring Program Second Quarter 2018 Report* was prepared by Wood for the sole benefit of New Gold Inc. for specific application to the Rainy River Mine. The quality of information, conclusions and estimates contained herein are consistent with the level of effort involved in Wood's services and based on:

- i) information available at the time of preparation;
- ii) data supplied by outside sources; and
- iii) the assumptions, conditions and qualifications set forth in this document.

This report is intended to be used by New Gold only, and its nominated representatives, subject to the terms and conditions of its contract with Wood. Any other use of, or reliance on, this report by any third party is at that party's sole risk. This report has been prepared in accordance with generally accepted industry-standard practices. No other warranty, expressed or implied, is made.

If you require further information regarding the above or the Mine in general, please contact the undersigned at (905) 568-2929. Thank you for the opportunity to be of service to New Gold Inc.

Yours truly,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

Prepared by:



Caleb Vandenberg, P.Eng.
Air Quality Engineer

Reviewed by:



Linda Lattner, M.Eng., P.Eng.
Senior Air Quality Engineer

APPENDIX A

SAMPLING RESULTS

Appendix A-1 TSP, Metals and PM_{2.5} Sampling Results

Appendix A-2 Total Dustfall Sampling Results

Appendix A-3 SO₂ and NO₂ Passive Sampling Results

APPENDIX A-1

TSP, METALS AND PM_{2.5} SAMPLING RESULTS

NORTHEAST (GALLINGER ROAD) PARTICULATE/METALS CONCENTRATIONS														
Date	PM2.5	TSP	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Selenium (Se)	Vanadium (V)	Zinc (Zn)
2-Apr-18	2.67	31.5	<i>9.77E-04</i>	1.26E-04	8.53E-03	2.96E-04	8.73E-01	5.60E-01	1.98E-03	1.83E-02	1.34E-03	<i>4.23E-04</i>	<i>1.63E-03</i>	1.73E-02
8-Apr-18	12.70	464.1	<i>9.63E-04</i>	1.74E-04	3.64E-02	5.08E-03	1.00E+00	8.35E+00	8.79E-03	2.32E-01	1.53E-02	<i>4.17E-04</i>	1.57E-02	5.03E-02
14-Apr-18	—	111.6	<i>9.25E-04</i>	5.80E-05	1.33E-02	1.11E-03	1.79E-01	2.04E+00	2.70E-03	5.11E-02	3.83E-03	<i>4.01E-04</i>	<i>1.54E-03</i>	1.57E-02
20-Apr-18	4.87	112.5	<i>9.48E-04</i>	1.08E-04	1.22E-02	1.30E-03	6.58E-01	2.29E+00	4.72E-03	6.58E-02	3.45E-03	<i>4.11E-04</i>	<i>1.58E-03</i>	2.42E-02
26-Apr-18	3.20	39.36	<i>9.36E-04</i>	1.18E-04	8.30E-03	3.09E-04	5.31E-01	6.36E-01	2.68E-03	2.19E-02	1.33E-03	<i>4.05E-04</i>	<i>1.56E-03</i>	2.26E-02
2-May-18	1.71	18.94	<i>9.56E-04</i>	6.76E-05	7.21E-03	1.46E-04	5.93E-01	3.19E-01	1.11E-03	1.43E-02	8.03E-04	<i>4.14E-04</i>	<i>1.59E-03</i>	7.40E-03
8-May-18	3.25	46.69	<i>9.61E-04</i>	1.09E-04	6.41E-03	4.36E-04	3.17E-01	7.69E-01	2.56E-03	2.75E-02	1.90E-03	<i>4.16E-04</i>	<i>1.60E-03</i>	2.04E-02
14-May-18	5.29	33.7	<i>9.43E-04</i>	1.03E-04	6.04E-03	2.42E-04	6.79E-01	4.45E-01	1.65E-03	1.81E-02	1.05E-03	<i>4.09E-04</i>	<i>1.57E-03</i>	1.19E-02
20-May-18	3.95	27.7	<i>9.03E-04</i>	9.51E-05	5.18E-03	2.23E-04	7.34E-01	4.33E-01	1.46E-03	1.37E-02	8.73E-04	<i>3.91E-04</i>	<i>1.51E-03</i>	1.01E-02
26-May-18	7.16	34.7	<i>9.35E-04</i>	1.14E-04	5.11E-03	1.39E-04	4.86E-01	2.52E-01	6.49E-04	8.92E-03	1.05E-03	8.11E-04	<i>1.56E-03</i>	8.98E-03
1-Jun-18	2.91	31.4	<i>9.18E-04</i>	5.57E-05	6.30E-03	2.05E-04	3.83E-01	3.31E-01	5.81E-04	1.14E-02	1.10E-03	<i>3.98E-04</i>	<i>1.53E-03</i>	8.81E-03
7-Jun-18	4.33	17.0	<i>8.88E-04</i>	5.86E-05	3.08E-03	8.05E-05	7.34E-01	1.22E-01	4.50E-04	3.04E-03	7.05E-04	<i>3.85E-04</i>	<i>1.48E-03</i>	6.16E-03
13-Jun-18	1.71	37.6	<i>9.02E-04</i>	7.93E-05	3.97E-03	2.07E-04	4.52E-01	4.17E-01	1.60E-03	1.59E-02	9.62E-04	<i>3.91E-04</i>	<i>1.50E-03</i>	1.22E-02
19-Jun-18	3.66	29.0	<i>8.84E-04</i>	8.84E-05	3.95E-03	1.76E-04	8.01E-01	3.00E-01	4.54E-04	7.48E-03	8.25E-04	<i>3.83E-04</i>	<i>1.47E-03</i>	5.89E-03
25-Jun-18	5.33	19.9	<i>8.74E-04</i>	9.03E-05	3.44E-03	8.56E-05	6.76E-01	2.23E-01	9.20E-04	5.80E-03	4.83E-04	<i>3.79E-04</i>	<i>1.46E-03</i>	6.47E-03

Geometric mean	N/A	42.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arithmetic mean	4.48	70.4	9.28E-04	9.63E-05	8.62E-03	6.69E-04	6.07E-01	1.17E+00	2.15E-03	3.44E-02	2.34E-03	4.29E-04	2.49E-03	1.52E-02
Max. concentration	12.70	464.1	9.77E-04	1.74E-04	3.64E-02	5.08E-03	1.00E+00	8.35E+00	8.79E-03	2.32E-01	1.53E-02	8.11E-04	1.57E-02	5.03E-02
Min. concentration	1.71	17.0	8.74E-04	5.57E-05	3.08E-03	8.05E-05	1.79E-01	1.22E-01	4.50E-04	3.04E-03	4.83E-04	3.79E-04	1.46E-03	5.89E-03
90th percentile	6.61	112.2	9.62E-04	1.23E-04	1.28E-02	1.23E-03	8.44E-01	2.19E+00	3.91E-03	5.99E-02	3.68E-03	4.21E-04	1.62E-03	2.36E-02
95th percentile	9.10	218.0	9.67E-04	1.40E-04	2.02E-02	2.44E-03	9.11E-01	4.11E+00	5.94E-03	1.16E-01	7.28E-03	5.40E-04	5.86E-03	3.20E-02
CAAQS	28.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No. > CAAQS value*	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AAQC	N/A	120	0.3	0.025	0.5	0.1	50	4	0.5	0.4	0.2	10	2	120
No. > AAQC	0	1	0	0	0	0	0	1	0	0	0	0	0	0
No. of valid samples	14	15	15	15	15	15	15	15	15	15	15	15	15	15
No. samples < mdl	0	0	15	0	0	0	0	0	0	0	0	14	14	0
Detection limit (µg)	6	5	6	2	5	2	5	50	3	50	3	10	5	5
Half detection limit (µg)	3	2.5	3	1	2.5	1	2.5	25	1.5	25	1.5	5	2.5	2.5
% < detection limit	0	0	100	0	0	0	0	0	0	0	0	93	93	0
% valid data	93	100	100	100	100	100	100	100	100	100	100	100	100	100

Notes:

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

All results above their respective AAQC are bolded

N/A: Not applicable

—: Invalid Sample

*Canadian Ambient Air Quality Standard, 24-hour standard

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, Second Quarter 2018 Report

Appendix A-1



SOUTHWEST (TAIT ROAD) PARTICULATE/METALS CONCENTRATIONS														
Date	PM2.5	TSP	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Selenium (Se)	Vanadium (V)	Zinc (Zn)
2-Apr-18	3.37	115.2	<u>9.76E-04</u>	4.16E-04	8.85E-03	7.68E-04	3.28E-02	1.94E+00	1.08E-02	8.52E-02	2.29E-03	<u>4.23E-04</u>	<u>1.63E-03</u>	8.33E-02
8-Apr-18	6.33	30.7	<u>9.74E-04</u>	7.40E-05	6.17E-03	2.72E-04	4.09E-02	5.79E-01	1.96E-03	1.76E-02	9.74E-04	<u>4.22E-04</u>	<u>1.62E-03</u>	1.40E-02
14-Apr-18	—	27.2	<u>9.64E-04</u>	7.01E-05	7.26E-03	1.95E-04	1.84E-02	3.76E-01	1.93E-03	1.25E-02	8.68E-04	<u>4.18E-04</u>	<u>1.61E-03</u>	1.19E-02
20-Apr-18	4.29	41.1	<u>9.71E-04</u>	7.51E-05	7.18E-03	3.84E-04	3.47E-02	8.15E-01	2.27E-03	2.36E-02	1.28E-03	<u>4.21E-04</u>	<u>1.62E-03</u>	1.51E-02
26-Apr-18	3.46	10.3	<u>9.07E-04</u>	3.02E-05	6.53E-03	1.36E-04	7.92E-03	2.41E-01	6.65E-04	6.90E-03	5.87E-04	<u>3.93E-04</u>	<u>1.51E-03</u>	8.53E-03
2-May-18	3.12	26.5	<u>9.43E-04</u>	7.48E-05	6.79E-03	2.15E-04	4.87E-02	4.58E-01	1.86E-03	1.78E-02	8.30E-04	<u>4.09E-04</u>	<u>1.57E-03</u>	1.35E-02
8-May-18	3.16	29.8	<u>9.26E-04</u>	5.86E-05	5.62E-03	2.98E-04	3.67E-02	5.83E-01	1.15E-03	1.83E-02	1.15E-03	<u>4.01E-04</u>	<u>1.54E-03</u>	9.88E-03
14-May-18	7.45	76.2	<u>9.00E-04</u>	9.18E-05	6.96E-03	8.40E-04	5.27E-02	1.70E+00	2.18E-03	5.11E-02	2.22E-03	<u>3.90E-04</u>	<u>1.50E-03</u>	2.02E-02
20-May-18	4.12	40.8	<u>9.16E-04</u>	3.91E-05	5.31E-03	3.68E-04	5.17E-02	6.23E-01	1.01E-03	1.61E-02	1.17E-03	<u>3.97E-04</u>	<u>1.53E-03</u>	8.18E-03
26-May-18	8.12	44.8	<u>8.36E-04</u>	6.80E-05	5.19E-03	3.46E-04	4.22E-02	5.50E-01	1.29E-03	1.62E-02	1.14E-03	1.00E-03	<u>1.39E-03</u>	1.27E-02
1-Jun-18	1.29	25.9	<u>9.13E-04</u>	8.22E-05	5.23E-03	1.36E-04	2.96E-02	1.88E-01	4.02E-04	5.62E-03	7.91E-04	<u>3.96E-04</u>	<u>1.52E-03</u>	8.28E-03
7-Jun-18	3.00	25.0	<u>9.48E-04</u>	3.10E-05	3.79E-03	2.48E-04	4.24E-02	3.62E-01	5.06E-04	7.78E-03	7.78E-04	<u>4.11E-04</u>	<u>1.58E-03</u>	8.28E-03
13-Jun-18	1.33	56.8	<u>9.13E-04</u>	4.87E-05	4.63E-03	6.15E-04	3.98E-02	9.99E-01	5.85E-04	2.35E-02	1.49E-03	<u>3.96E-04</u>	<u>1.52E-03</u>	7.98E-03
19-Jun-18	4.45	47.1	<u>8.80E-04</u>	4.40E-05	4.81E-03	4.49E-04	4.41E-02	7.57E-01	1.27E-03	1.87E-02	1.39E-03	<u>3.81E-04</u>	<u>1.47E-03</u>	1.30E-02
25-Jun-18	4.58	39.6	<u>8.93E-04</u>	4.46E-05	4.05E-03	3.46E-04	1.90E-02	6.37E-01	8.63E-04	1.32E-02	9.52E-04	<u>3.87E-04</u>	<u>1.49E-03</u>	6.55E-03

Geometric mean	N/A	36.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arithmetic mean	4.15	42.5	9.24E-04	8.32E-05	5.89E-03	3.74E-04	3.61E-02	7.20E-01	1.92E-03	2.23E-02	1.19E-03	4.43E-04	1.54E-03	1.61E-02
Max. concentration	8.12	115.2	9.76E-04	4.16E-04	8.85E-03	8.40E-04	5.27E-02	1.94E+00	1.08E-02	8.52E-02	2.29E-03	1.00E-03	1.63E-03	8.33E-02
Min. concentration	1.29	10.3	8.36E-04	3.02E-05	3.79E-03	1.36E-04	7.92E-03	1.88E-01	4.02E-04	5.62E-03	5.87E-04	3.81E-04	1.39E-03	6.55E-03
90th percentile	7.11	68.4	9.73E-04	8.79E-05	7.23E-03	7.07E-04	5.05E-02	1.42E+00	2.23E-03	4.01E-02	1.93E-03	4.23E-04	1.62E-03	1.82E-02
95th percentile	7.68	87.9	9.75E-04	1.89E-04	7.74E-03	7.89E-04	5.20E-02	1.77E+00	4.83E-03	6.13E-02	2.24E-03	5.97E-04	1.62E-03	3.91E-02
CAAQS	28.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No. > CAAQS value*	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AAQC	N/A	120	0.3	0.025	0.5	0.1	50	4	0.5	0.4	0.2	10	2	120
No. > AAQC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of valid samples	14	15	15	15	15	15	15	15	15	15	15	15	15	15
No. samples < mdl	0	0	15	0	0	0	0	0	0	0	0	14	15	0
Detection limit (µg)	6	5	6	2	5	2	5	50	3	50	3	10	5	5
Half detection limit (µg)	3	2.5	3	1	2.5	1	2.5	25	1.5	25	1.5	5	2.5	2.5
% < detection limit	0	0	100	0	0	0	0	0	0	0	0	93	100	0
% valid data	93	100	100	100	100	100	100	100	100	100	100	100	100	100

Notes:

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

All results above their respective AAQC are bolded

N/A: Not applicable

—: Invalid Sample

*Canadian Ambient Air Quality Standard, 24-hour standard

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, Second Quarter 2018 Report

Appendix A-1



APPENDIX A-2

TOTAL DUSTFALL SAMPLING RESULTS

SW (Tait Road) Monitoring Results for Dustfall (Q2 2018)
(results expressed in g/m²/30days)

Month	No. Exposure Days	Dustfall (insoluble)	Dustfall (soluble)	Dustfall (total)
April	29	2.9	0.81	3.7
May	33	3.6	0.51	4.1
June	31	1.1	1.2	2.2

Arithmetic mean	3.4
Max. concentration	4.1
Min. concentration	2.2
AAQC	7
No. > AAQC value**	0
No. of valid samples	3
% Valid data	100
No. samples < mdl	0
Detection limit*	0.30
Half detection limit	0.15

NE (Gallinger Road) Monitoring Results for Dustfall (Q2 2018)
(results expressed in g/m²/30days)

Month	No. Exposure Days	Dustfall (insoluble)	Dustfall (soluble)	Dustfall (total)
April	29	2.1	0.75	2.9
May	33	INV	INV	INV
June	31	1.9	2.9	4.7

Arithmetic mean	3.8
Max. concentration	4.7
Min. concentration	2.9
AAQC	7
No. > AAQC value**	0
No. of valid samples	2
% Valid data	67
No. samples < mdl	0
Detection limit*	0.30
Half detection limit	0.15

Notes:

All statistics were calculated using 1/2DL for values reported as <DL

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

N/A: Not applicable

N/R: No Results Available

—: Invalid Sample

*If samples had differing detection limits, the highest is displayed here

**Ontario Ambient Air Quality Criteria, 30-day standard

RAINY RIVER MINE



APPENDIX A-3

SO₂ AND NO₂ PASSIVE SAMPLING RESULTS

Monitoring Results for Passive SO₂ and NO₂ (Q2 2018)
(results expressed in µg/m³)

	SW (Tait Road)		NE (Gallinger Road)	
Month	SO₂	NO₂	SO₂	NO₂
April	<u>0.1</u>	0.9	<u>0.1</u>	0.6
May	0.3	1.7	<u>0.1</u>	0.6
June	<u>0.1</u>	0.7	<u>0.1</u>	0.6

Arithmetic mean	0.2	1.1	0.1	0.6
Max. concentration	0.3	1.7	0.1	0.6
Min. concentration	0.1	0.7	0.1	0.6
AAQC* 24-hr converted to 30-day	N/A	78 µg/m ³	N/A	78 µg/m ³
Alberta Ambient Air Quality Objectives 2013	30 µg/m ³	N/A	30 µg/m ³	N/A
No. of valid samples	3	3	3	3
% Valid Data	100%	100%	100%	100%
No. samples < mdl	0	0	0	0
Detection limit	0.3	0.2	0.3	0.2
Half detection limit	0.15	0.1	0.15	0.1

Notes:

All statistics were calculated using 1/2DL for values reported as <DL

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

All results reported by the lab in parts per billion (ppb) and are converted to µg/m³ assuming 101.23kPa and 25C

N/A: Not applicable

N/R: No Results Available

—: Invalid Sample

*Ontario Ambient Air Quality Criteria

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, Second Quarter 2018 Report
Appendix A-3





**NEW GOLD INC.
RAINY RIVER MINE**

**AMBIENT AIR QUALITY MONITORING PROGRAM
THIRD QUARTER 2018 REPORT REVISION 1.1**

Submitted by:

**Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited
160 Traders Blvd. E., Suite 110
Mississauga, Ontario
L4Z 3K7**

**December 2018
TC111504**





Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited
160 Traders Boulevard East
Suite 110
Mississauga, Ontario
Canada
T: 905.568.2929

December 5, 2018
TC111504

Sylvie St. Jean
Environmental Manager
New Gold Inc.
Rainy River Mine
5967 Hwy 11 / 71, P.O. Box 5
Emo, Ontario P0W 1E0

Dear Ms. St. Jean:

**Re: Rainy River Mine
Ambient Air Quality Monitoring Program
Third Quarter 2018 Report**

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (hereinafter referred to as Wood), is a leading environment and infrastructure, engineering, consulting and project management organization. Our team of professionals provides a full range of services to clients in a wide range of sectors including government, industrial & commercial, water, transportation, minerals & metals, oil & gas clients and clean energy.

Wood is submitting to New Gold Inc. (New Gold) the attached summary report of the results for the ambient air quality monitoring program for the third quarter of 2018 at the Rainy River Mine. The monitoring program consists of two air quality monitoring stations that were established in May 2015: one to the south of the Site near the beginning of the Highway 600 reroute on Tait Road, and one to the east of the Site on Gallinger Road. The sampling stations are operated and maintained by New Gold staff; Wood staff performed quarterly calibrations, provided technical guidance to New Gold field staff, communicated with the laboratory staff as required, and prepared the data summary report.

This report revision includes all laboratory data from Q3 2018.

Wood will supply the MECP with raw and edited data per the Operations Manual for Air Quality Monitoring in Ontario (MECP 2016b).

The key finding(s) of the Q3 2018 monitoring are as follows:

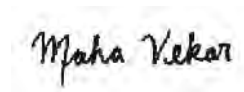
- J There were no exceedances of the TSP, dustfall or metals/metalloids Ambient Air Quality Criteria AAQC, PM_{2.5} Canadian Ambient Air Quality Standard CAAQS, or the SO₂, or NO₂ criteria measured in Q3 2018.

The measured TSP and PM_{2.5} concentrations for the Q3 2018 are depicted in Figures CL-1 and CL-2.

Note that quarterly reports do not include interpretation of the data (i.e. exceedances); interpretation of results is included in the annual reporting. Should you have any questions or wish to discuss the air monitoring program, please do not hesitate to contact the undersigned.

Sincerely,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited



Maha Vekar
Air Quality Technician



Linda Lattner, P.Eng., M.Eng.
Senior Air Quality Engineer



Ryan Fletcher, P.Eng
Air Quality Engineer

CC Dan Russell, Associate Geoscientist, Wood
Twila Griffith, Senior Environmental Coordinator, New Gold



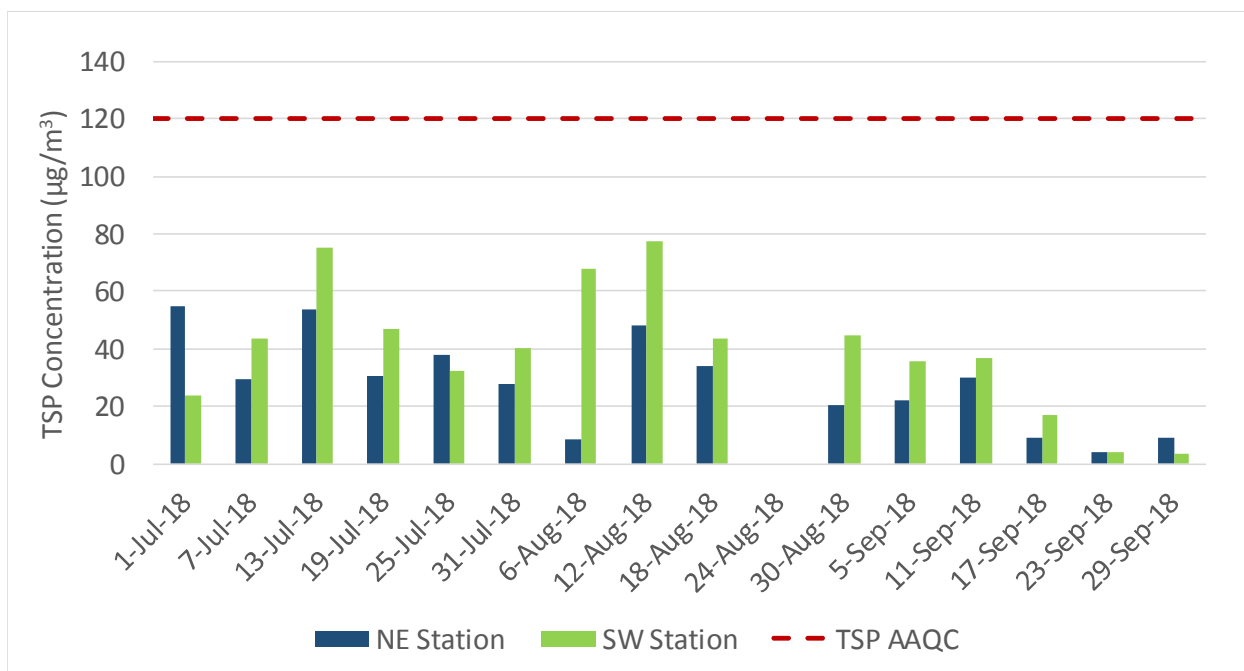


Figure CL-1: TSP Concentrations (Q3 2018)

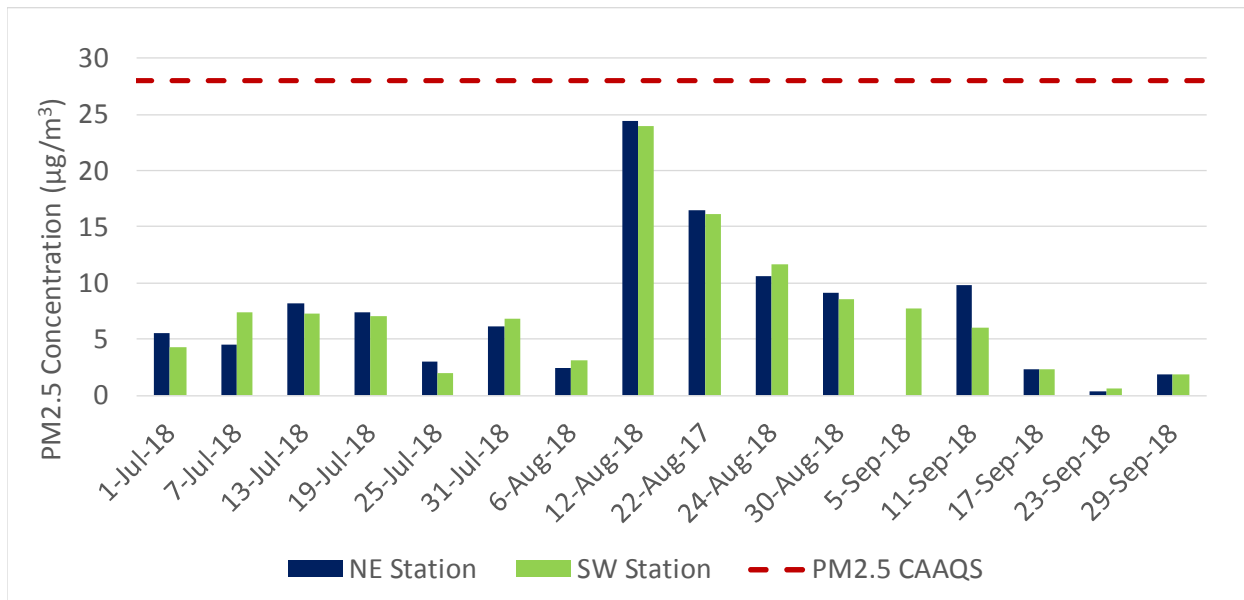


Figure CL-2: PM_{2.5} Concentrations (Q3 2018)

Revision	Date	Revised By	Description
0	November 12, 2018	Ryan Fletcher	Draft Report
1	November 15, 2018	Ryan Fletcher	Final Report (Pending laboratory results)
1.1	December 5, 2018	Ryan Fletcher	Final Report



ACRONYMS AND ABBREVIATIONS

AAQC	Ambient Air Quality Criteria
AAQO	Alberta Ambient Air Quality Objectives
ACFM	Cubic Feet Per Minute at Actual Conditions
AEP	Alberta Environment and Parks
ASTM	American Society for Testing and Materials
BCMOE	British Columbia Ministry of the Environment
CAAQS	Canadian Ambient Air Quality Standards
Hi-Vol	High Volume Sampler
ICP/AES	Inductively Coupled Plasma / Atomic Emission Spectroscopy
LPM	Litres Per Minute
MECP	Ministry of the Environment, Conservation and Parks
NIST	National Institute of Standards and Technology
TSP	Total Suspended Particulate
PM _{2.5}	Particulate Matter less than 2.5 microns in diameter
US EPA	United States Environmental Protection Agency
µg/m ³	Microgram per Cubic Metre

TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION	1
2.0 MONITORING STATIONS	2
3.0 ANALYTICAL AND MONITORING METHODS	6
3.1 TSP and Metals	6
3.2 PM _{2.5}	6
3.3 Total Dustfall	6
3.4 Passive Sampling for SO ₂ and NO ₂	7
3.5 Field Operations	7
3.5.1 Hi-Vol Samplers	7
3.5.2 PQ200 Samplers	8
3.5.3 Dustfall Samplers	8
3.5.4 Passive Samplers	8
3.5.5 Performance and Site Audits	8
3.5.6 Equipment and Sampling Issues	8
4.0 RESULTS	9
4.1 TSP and Metals	9
4.2 PM _{2.5}	10
4.3 Total Dustfall	10
4.4 Passive SO ₂ and NO ₂	10
4.5 Evaluation of Effects of Abatement Measures on Monitored Concentrations	11
5.0 CONCLUSIONS	15
6.0 REFERENCES	16
7.0 CLOSING	17



LIST OF TABLES

	PAGE
Table 2-1: Ambient Air Monitoring Stations	2
Table 4-1: Summary Statistics for Q3 2018 TSP Concentration Data	12
Table 4-2: Summary Statistics for Q3 2018 Metals Concentration Data	12
Table 4-3: Summary Statistics for Q3 2018 PM _{2.5} Concentration Data	13
Table 4-4: Summary Statistics for Q3 2018 Total Dustfall Data	13
Table 4-5: Summary Statistics for Q3 2018 Passive SO ₂ and NO ₂ Concentration Data	13

LIST OF FIGURES

Figure 2-1: Ambient Air Monitoring Stations	3
Figure 2-2: Ambient Air Monitoring – Southwest Monitoring Station.....	4
Figure 2-3: Ambient Air Monitoring – Northeast Monitoring Station.....	5
Figure 4-1: TSP Concentrations (Q2 2018).....	14
Figure 4-2: PM _{2.5} Concentrations (Q2 2018).....	14

LIST OF APPENDICES

Appendix A	Sampling Results
Appendix A-1	TSP, Metals, and PM _{2.5} Sampling Results
Appendix A-2	Total Dustfall Sampling Results
Appendix A-3	SO ₂ and NO ₂ Passive Sampling Results



1.0 INTRODUCTION

This report presents a summary of the Third Quarter (Q3) 2018 results for the ambient air quality monitoring program undertaken at the Rainy River Mine located in northwestern Ontario. Two sampling stations were established in May 2015: one to the south of the Site near the beginning of the Highway 600 realignment at Tait Road, and one to the east of the Site on Gallinger Road (Figures 2-1, 2-2 and 2-3).

New Gold Inc. (New Gold) staff operate and maintain the sampling stations. Wood staff performed quarterly calibrations, provided technical guidance to New Gold field staff, communicated with the laboratory staff as required, and prepared the data summary reports. An extended completion date was issued by the laboratory for the final three samples in September, as well as the September dustfall samples. After consultation with the laboratory they agreed to try to meet our reporting deadline, which occurred for all parameters except metals. This report revision includes the complete laboratory dataset.

This Quarterly Ambient Air Quality Report addresses the required elements of a Quarterly Report defined in the *Operations Manual for Air Quality Monitoring in Ontario* (MECP 2016b), hereafter referred to as the Operations Manual. Specifically, the following information is provided:

-) Summary statistics;
-) Sampling dates (start and end where applicable); and
-) A summary of exceedances of an Ontario Standard, Ambient Air Quality Criterion (AAQC), or Canadian Ambient Air Quality Standard (CAAQS).

The purpose of the air monitoring program is to quantify potential air quality effects associated with activities related to the Mine. The monitoring program consists of:

-) Two High Volume (Hi-Vol) samplers for discrete sampling of Total Suspended Particulate (TSP) and metals;
-) Two PQ200 samplers for discrete sampling of respirable particulate matter (PM_{2.5});
-) Two standard passive dustfall collection units;
-) Two passive sampling enclosures each measuring NO₂ and SO₂; and
-) One meteorological station to obtain real-time site wind speed, wind direction, temperature, relative humidity, and precipitation.

2.0 MONITORING STATIONS

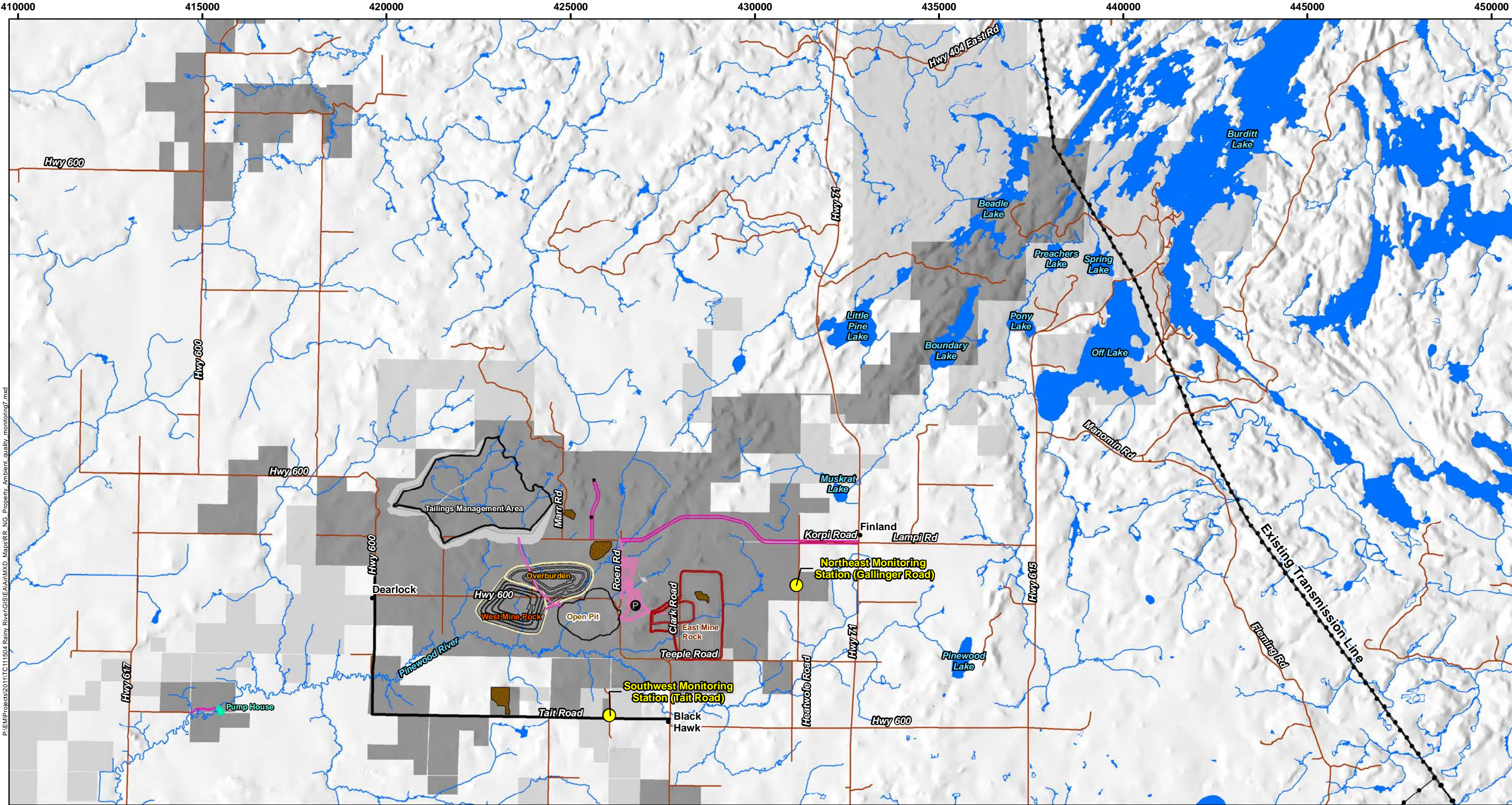
The ambient monitoring stations were sited in accordance with the criteria stipulated in the MECP Operations Manual (MECP 2018).

The general location for the two stations is shown in Figure 2-1. UTM co-ordinates for each station based upon NAD 83, are presented in Table 2-1. Photographs showing each station and the equipment installed are presented as Figures 2-2 and 2-3.

There were no changes to the stations or station locations in Q3 2018.



Table 2-1: Ambient Air Monitoring Stations

Station	UTM Co-ordinates			Parameters Monitored
	Easting (m)	Northing (m)	Zone	
Tait Road Station – Southwest	426 072	5 406 996	15	TSP, metals, PM _{2.5} , NO ₂ , SO ₂ , total dustfall Meteorological data (wind speed and direction, ambient temperature, relative humidity, rainfall)
Gallinger Road Station - Northeast	431 133	5 410 534	15	TSP, metals, PM _{2.5} , NO ₂ , SO ₂ , total dustfall
















P:\EMP\Projects\2011\TC111504 Rainy River\GIS\EA\RainMMD Maps\RR_NG_Property_Ambient_quality_monitoring7.mxd

LEGEND

-  Ambient Air Quality Monitoring Stations
-  New Gold - Rainy River Property Boundary
-  New Gold Lands with No Current Access Control

Proposed Site Features

-  Underground Portal
-  Open Pit
-  Plant Site / Ancillary Facilities
-  Explosives Facilities
-  Overburden / West Mine Rock Stockpile
-  Ore / East Mine Rock Stockpile
-  Proposed Pump House
-  Tailings Management Area
-  Aggregate Pit / Quarry
-  Site Roads
-  Roads
-  Existing Transmission Line
-  First Nation Land

NOTES:

- Road and Utility data and topographic data extracted from Land Information Ontario, Ontario Road Network, MNR Queen's Printer for Ontario, 2011-2012
- Land tenure information and parcels provided by NewGold, March 13, 2018.

Datum: NAD83
Projection: UTM Zone 15N



RAINY RIVER MINE

Ambient Air Monitoring Stations

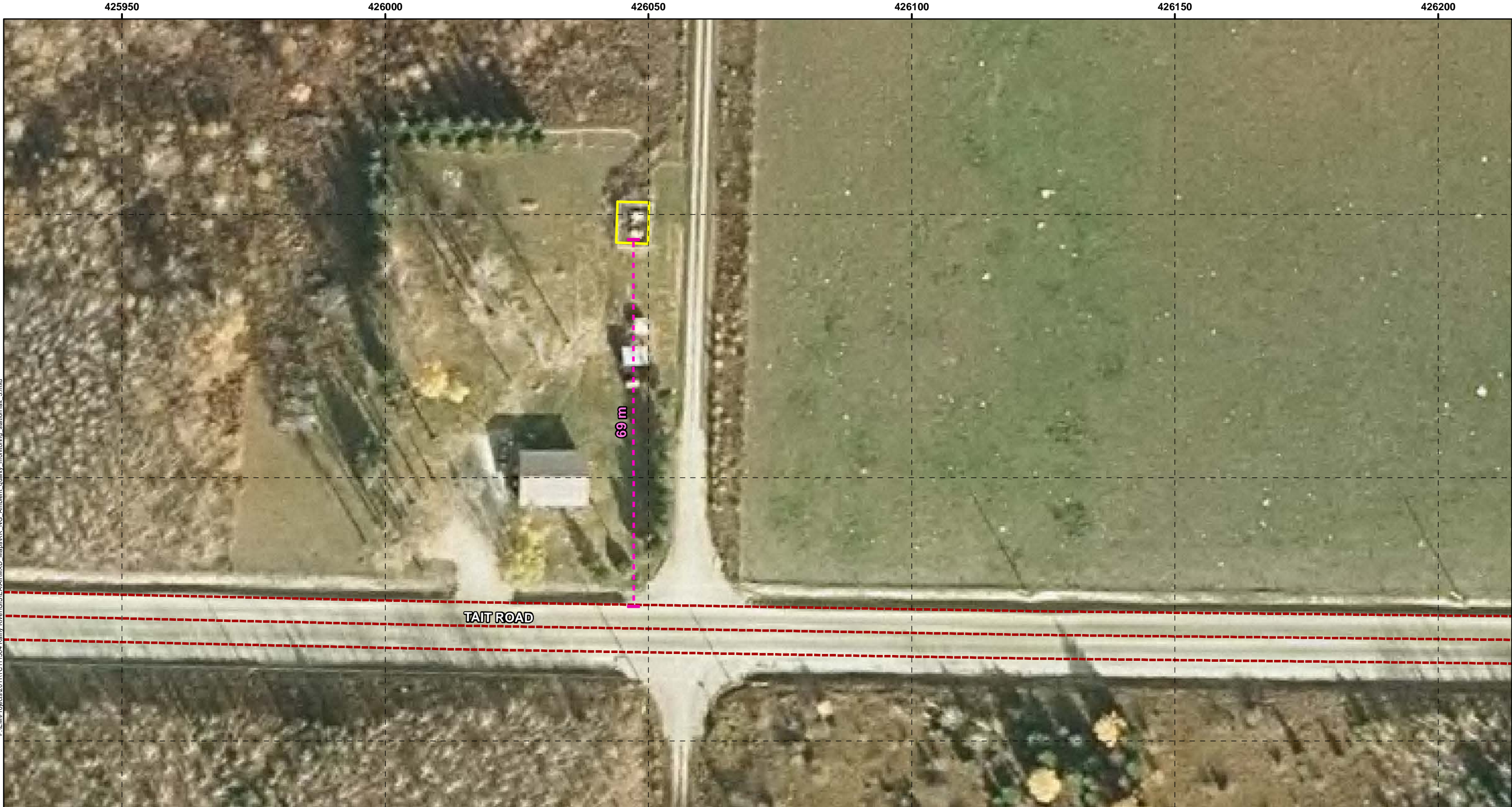
PROJECT N°: TC111504

FIGURE: 2-1

SCALE: 1:100,000

DATE: May 2018





P:\EIA\Projects\2011\TC111504 Rainy River\GIS\EA\AIA\MXD Maps\RR_NG Ambient quality monitoring station\Tait_3.mxd

LEGEND

-  Southwest Monitoring Station (Tait Road)
-  Highway Re-alignment

Notes:
- Aerial imagery provided by NewGold Pileades imagery (October 2017).

Datum & Projection:
NAD 1983 UTM Zone 15N



newgold Rainy River Project **wood.**

RAINY RIVER MINE

**Ambient Air Monitoring
Southwest Monitoring Station**

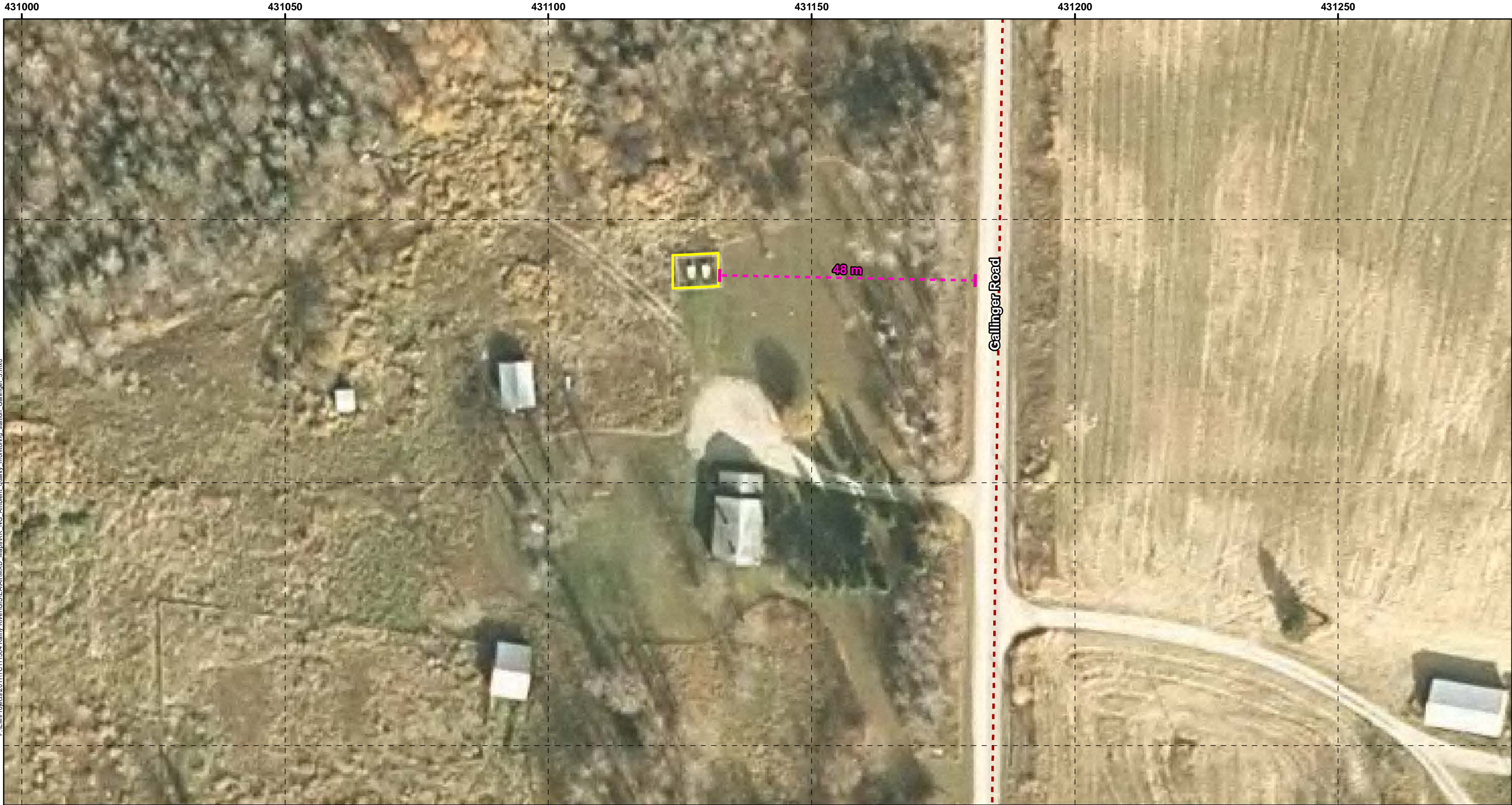
PROJECT N^o: TC111504

FIGURE: 2-2

SCALE: 1:700



DATE: May 2018






P:\E\MP\Projects\2011\TC111504 Rainy River\GIS\EA\Air\MMXD Maps\RR_NG Ambient quality monitoring station Gallinger 3.mxd



LEGEND

-  Northeast Monitoring Station (Gallinger Road)
-  Gallinger Road

Notes:
- Aerial imagery provided by NewGold Pileades imagery (October 2017).

Datum & Projection:
NAD 1983 UTM Zone 15N





Rainy River Project

RAINY RIVER MINE

Ambient Air Monitoring
Northeast Monitoring Station

PROJECT N°: TC111504

SCALE: 1:700

FIGURE: 2-3

DATE: May 2018



3.0 ANALYTICAL AND MONITORING METHODS

3.1 TSP and Metals

The TSP concentrations were determined using the standard gravimetric reference methods approved by the United States Environmental Protection Agency (US EPA) and the Ontario Ministry of the Environment, Conservation and Parks (MECP), as described in the Operations Manual (MECP 2016b). Measurements of 24-hour average TSP and metal concentrations were collected as specified in the Operations Manual (MECP 2016b); particulate samples were collected every sixth day as per the North American schedule (US EPA 2017). Sampling was performed with Hi-Vol samplers (brush motor and mass flow controlled). Metals and metalloids analyzed included the following: arsenic (As), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), iron (Fe), lead (Pb), manganese (Mn), nickel (Ni), selenium (Se), vanadium (V) and zinc (Zn). A metalloid is an element such that has both metallic and non-metallic properties.

The lowest detectable limit of total particulate on the filter is 2.3 milligrams (mg). A typical 24-hour sample volume of 1,630 m³ results in a method detection limit of 1.4 micrograms per cubic metre (µg/m³).

Metal concentrations were determined using standard Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP/AES) methodology. Method detection limits are as shown on the data sheets in Appendix A-1.

3.2 PM_{2.5}

Sampling was performed with PQ200 samplers. PM_{2.5} concentrations were determined using the standard gravimetric reference methods approved by the US EPA and the MECP, as described in the Operations Manual (MECP 2016b). PM_{2.5} measurements were collected over a 24-hour period to match the averaging time for the Canadian Ambient Air Quality Standard (CAAQS); particulate samples were collected every sixth day as per the North American schedule (US EPA 2017).

The lowest detectable limit of PM_{2.5} on the Teflon filters is 1 µg. A typical 24-hour sample volume of 24 m³ results in a method detection limit of 0.04 µg/m³.

3.3 Total Dustfall

Water soluble and insoluble portions of dustfall were determined using ASTM method D-1739-98 and the British Columbia Ministry of Environment method outlined in Section G of Air Constituents – Inorganic (MECP 2016c). Standard dustfall samplers were used to measure total dustfall deposition. The method detection limit for total dustfall is 0.3 g/m²/30 days. Bird deterrents were added in Q3 2017 with the goal of reducing contamination.

3.4 Passive Sampling for SO₂ and NO₂

SO₂ and NO₂ concentrations were monitored with passive sampling devices. The exposed permeation filters were analyzed by the Maxxam Analytics Inc. laboratory (Edmonton, Alberta). Testing was performed using methodology developed, approved and validated by Alberta Environment with the support of the Alberta Research Council, the Clean Air Strategic Alliance of Alberta, and the National Research Council of Canada, and following the Standard Operating Procedures for Trace Gas Passive Sampling outlined in the Operations Manual (MECP 2016b).

Sample uptake is dependent on temperature, relative humidity and wind speed. Analytical results are adjusted for these meteorological parameters measured during the exposure period (monthly averages). Required meteorological data were obtained from the Environment and Climate Change Canada website. Fort Frances meteorological station (Climate ID 6022474) is downloaded by Maxxam Analytics with each sample submission. For both SO₂ and NO₂, the analytical method detection limit is in the order of 0.1 parts per billion (ppb). Validation tests conducted in Alberta show that results from passive sampling are typically within 10% of those obtained from sampling with continuous analyzers for 30-day exposure periods.

Since there are no MECP guidelines for monthly concentrations of SO₂ and NO₂ obtained from passive sampling, the data is only used for screening purposes. For NO₂, the monthly results were compared to the MECP 24-hour AAQC converted to an equivalent 30-day average (78 µg/m³) using the methodology outlined in the *Procedure for Preparing an Emission Summary and Dispersion Modelling Report* (MECP 2017). For SO₂, the results were compared against the 30-day Alberta Ambient Air Quality Objective of 30 µg/m³ (AEP 2016).

3.5 Field Operations

3.5.1 Hi-Vol Samplers

To meet the requirements of 1-in-6 day sampling schedule, stations were visited once every six days. The exposed filter was recovered and a pre-weighed filter installed for the subsequent sample run. Additional visits were made to resolve instrumentation issues and perform flow calibration checks and preventative maintenance.

Wood staff performed flow, temperature, and barometric pressure calibrations using an electronic BGI flow calibrator. The flows were calibrated to 16.7 litres per minute (LPM) for each station. Q3 Calibrations were performed on:

-) May 24, 2018 – All hi-vols calibrated; and
-) August 20, 2018 – All hi-vols calibrated.

3.5.2 PQ200 Samplers

To meet the requirements of 1-in-6 day sampling schedule, stations were visited once every six days. The exposed filter was recovered and a pre-weighed filter installed for the subsequent sample run. Additional visits were made to resolve instrumentation issues and perform flow calibration checks and preventative maintenance.

Wood staff performed flow, temperature, and barometric pressure calibrations using an electronic BGI flow calibrator. The flows were calibrated to 16.7 litres per minute (LPM) for each station. Q3 Calibrations were performed on:

-) May 24, 2018 – All PQ200s calibrated; and
-) August 20, 2018– All PQ200s calibrated.

3.5.3 Dustfall Samplers

The dustfall samplers containing algaecide were changed every month, as required. Dustfall jars were provided by the laboratory with screw-on lids to prevent sample loss during transport.

3.5.4 Passive Samplers

The permeation filters in the passive samplers were changed every month, as required. Permeation filters were kept in filter cassettes inside Ziploc bags until deployed to prevent premature exposure. After the sample was collected, the filter was placed back in its cassette and into a Ziploc bag for shipment to the lab.

3.5.5 Performance and Site Audits

There were no MECP audits conducted in Q3 2018.

3.5.6 Equipment and Sampling Issues

During Q3 2018, the ambient air monitoring program was successful in collecting sufficient valid data to fulfil the requirements of the MECP Operations Manual. Three samples were invalidated, as discussed below:

-) August 24: TSP samples at the Gallinger and Tait Road stations were invalidated due to insufficient volume collection at both samplers.
-) September 5: The PM_{2.5} sample at the Gallinger Road station was invalidated due to a sampler error resulting in an approximately 60 hour run time.



4.0 RESULTS

Sampling program results for Q3 2018 are presented in Appendix A-1 for the particulate and metals data, Appendix A-2 for the dustfall data and Appendix A-3 for the passive SO₂ and NO₂ data. For the purpose of performing statistical analyses following MECP protocol, a value of half the detection limit was substituted for concentrations less than the detection limit.

For comparative purposes, the MECP AAQC and CAAQS values are presented, where available, noting that the AAQCs are numerically equivalent to the Ontario Regulation 419/05 Standards and Air Contaminant Benchmarks (ACBs) where the averaging times are equivalent.

Summaries of the statistical analyses for Q3 2018 for the TSP, metals, and PM_{2.5} concentrations are presented in Tables 4-1, 4-2, and 4-3, respectively. During the quarter, the 1 in 6-day sampling schedule presented a possible 15 sampling days between July 1 and September 30, 2018.

A summary of the statistical analyses for Q3 2018 for the total dustfall data is presented in Table 4-4.

A summary of the statistical analysis for the Q3 2018 passive SO₂ and NO₂ results is presented in Table 4-5.

4.1 TSP and Metals

The Gallinger Road and Tait Road stations both collected 15 valid samples, respectively, resulting in 94% valid data for Q3 2018. A sampler error occurred at both stations on August 24th resulting in insufficient volume collection, thus invalidating the sample.

For the quarter, the geometric mean TSP concentrations were 30.3 µg/m³ for the Tait Road station and 22.3 µg/m³ for the Gallinger Road station. Values reported by the laboratory as below the detection limit were, by convention, substituted with one-half of the detection limit. The maximum 24-hour concentration for TSP was 77.2 µg/m³ at the Tait Road station (August 12, 2018), and 55.0 µg/m³ at the Gallinger Road station (July 1, 2018).

The rolling 30-day average lead concentration at the Tait Road station and Gallinger Road stations was at maximum 0.80% and 1.05%, respectively, of the 30-day lead AAQC (0.2 µg/m³) in Q3 2018.

Appendix A-1 and Figure 4-1 present individual sample data. The Q3 2018 TSP and metals summary statistics are summarized in Tables 4-1 and 4-2, respectively.

4.2 PM_{2.5}

The Gallinger Road station collected 15 valid samples resulting in 94% valid data for Q3 2018. The Tait Road station collected 16 valid samples resulting in 100% valid data. A sampler error occurred at the Gallinger Road station on September 5th resulting in an excessive sample run time, thus invalidating the sample.

Values reported by the laboratory as below the detection limit were, by convention, substituted with one-half of the detection limit. The maximum 24-hour concentration for PM_{2.5} was 24.0 µg/m³ at the Tait Road station (August 12, 2018), and 24.4 µg/m³ at the Gallinger Road station (August 12, 2018).

There were no PM_{2.5} exceedances of the AAQC of 30 µg/m³ or CAAQS (ECCC 2013) of 28 µg/m³ measured in Q3 2018. Appendix A-1 and Figure 4-2 present individual sample data.

The Q3 2018 PM_{2.5} summary statistics are summarized in Table 4-3.

4.3 Total Dustfall

In Q3 2018, three valid samples were collected at each station. Each dustfall jar was exposed for approximately 30-days to coincide with each calendar month in the quarter.

There were no dustfall exceedances of the 30-day AAQC of 7 g/m² measured in Q3 2018.

A summary of the results is presented in Table 4-4 and the monthly results are presented in Appendix A-2.

4.4 Passive SO₂ and NO₂

In Q3 2018, three valid samples were collected at each station for each of SO₂ and NO₂.

There are no MECP standards, guidelines or AAQCs for SO₂ or NO₂ for a 30-day averaging period. The 30-day measured average SO₂ or NO₂ concentrations allow for future analysis of trends in the ambient concentrations, to identify any notable increases, and for potential comparison with dispersion modelling results.

For NO₂, the monthly results were compared to the MECP 24-hour AAQC converted to an equivalent 30-day average (78 µg/m³) using the methodology outlined in the *Procedure for Preparing an Emission Summary and Dispersion Modelling Report* (MECP 2017). For SO₂, the results were compared against the Alberta Ambient Air Quality Objective of 30 µg/m³ (AEP 2017).

A summary of the passive results is presented in Table 4-5 and the monthly results are presented in Appendix A-3.



4.5 Evaluation of Effects of Abatement Measures on Monitored Concentrations

The Rainy River Mine has a comprehensive Best Management Practices Plan (BMPP) for Fugitive Dust approved by the MECP as part of the ECA review process. This BMPP effectively controls the generation and dispersion of dust such that the particulate matter measured at the two ambient monitoring stations was below the AAQC for all Q3 2018 samples.

Table 4-1: Summary Statistics for Q3 2018 TSP Concentration Data

Statistics	Tait Road (SW)	Gallinger Road (NE)
Geometric Mean ($\mu\text{g}/\text{m}^3$)	30.3	22.3
Arithmetic Mean ($\mu\text{g}/\text{m}^3$)	39.5	28.0
July Maximum ($\mu\text{g}/\text{m}^3$)	75.4	55.0
August Maximum ($\mu\text{g}/\text{m}^3$)	77.2	48.3
September Maximum ($\mu\text{g}/\text{m}^3$)	37.0	30.1
Maximum 24-hr ($\mu\text{g}/\text{m}^3$)	77.2	55.0
90 th percentile	13.9	51.6
95 th percentile	18.1	54.1
24-hr AAQC	120	120
No. of valid samples	15	15
Valid data	94%	94%
No. samples > AAQC (particulate)	0	0
No. samples > AAQC (metals)	0	0
No. samples > AAQC (metalloids)	0	0

Table 4-2: Summary Statistics for Q3 2018 Metals Concentration Data

Metal	24-hr AAQC ($\mu\text{g}/\text{m}^3$)	Tait Road (SW)		Gallinger Road (NE)	
		Maximum 24-hr Concentration ($\mu\text{g}/\text{m}^3$)	Fraction of 24-hr AAQC	Maximum 24-hr Concentration ($\mu\text{g}/\text{m}^3$)	Fraction of 24-hr AAQC
As	0.3	9.79E-04	0.3 %	9.44E-04	0.3 %
Cd	0.025	6.53E-04	2.6 %	5.99E-04	2.4 %
Cr	0.5	7.85E-03	1.6 %	6.54E-03	1.3 %
Co	0.1	8.50E-04	0.8 %	5.99E-04	0.6 %
Cu	50	1.12E-01	0.2 %	5.85E-01	1.2 %
Fe	4	1.19E+00	29.8 %	6.72E-01	16.8 %
Pb	0.5	2.80E-03	0.6 %	4.29E-03	0.9 %
Mn	0.4	4.09E-02	10.2 %	2.41E-02	6.0 %
Ni	0.2	2.00E-03	1.0 %	1.04E-03	0.5 %
Se	10	3.26E-03	0.04 %	2.99E-03	0.03 %
V	2	1.63E-03	0.09 %	1.57E-03	0.08 %
Zn	120	2.31E-02	0.02 %	3.09E-02	0.03 %

Table 4-3: Summary Statistics for Q3 2018 PM_{2.5} Concentration Data

Statistics	Tait Road (SW)	Gallinger Road (NE)
Arithmetic Mean ($\mu\text{g}/\text{m}^3$)	7.30	7.48
July Maximum ($\mu\text{g}/\text{m}^3$)	7.41	8.25
August Maximum ($\mu\text{g}/\text{m}^3$)	24.0	24.4
September Maximum ($\mu\text{g}/\text{m}^3$)	7.79	9.78
Maximum 24-hr ($\mu\text{g}/\text{m}^3$)	24.0	24.4
90 th percentile	13.9	14.2
95 th percentile	18.1	18.9
24-hr CAAQS	28	28
No. of valid samples	16	15
Valid data	100%	93%
No. samples > CAAQS	0	0

Table 4-4: Summary Statistics for Q3 2018 Total Dustfall Data

Statistic	Tait Road (SW)	Gallinger Road (NE)
Arithmetic mean ($\text{g}/\text{m}^2/30\text{d}$)	3.4	2.7
Maximum ($\text{g}/\text{m}^2/30\text{d}$)	4.8	4.5
30-day AAQC	7	7
No. > AAQC	0	0
No. valid samples	3	3
Valid Data	100%	100%

Table 4-5: Summary Statistics for Q3 2018 Passive SO₂ and NO₂ Concentration Data

Statistic	Tait Road (SW)		Gallinger Road (NE)	
	SO ₂	NO ₂	SO ₂	NO ₂
Mean ($\mu\text{g}/\text{m}^3$)	0.2	1.1	0.1	1.0
Maximum ($\mu\text{g}/\text{m}^3$)	0.3	1.5	0.1	1.1
AAQC 24-hr converted to 30-day ($\mu\text{g}/\text{m}^3$)	N/A	78 $\mu\text{g}/\text{m}^3$	N/A	78 $\mu\text{g}/\text{m}^3$
Alberta AAQO ($\mu\text{g}/\text{m}^3$)	30 $\mu\text{g}/\text{m}^3$	N/A	30 $\mu\text{g}/\text{m}^3$	N/A
No. valid samples	3	3	3	3
Valid data	100%	100%	100%	100%

Note: N/A: No applicable criterion

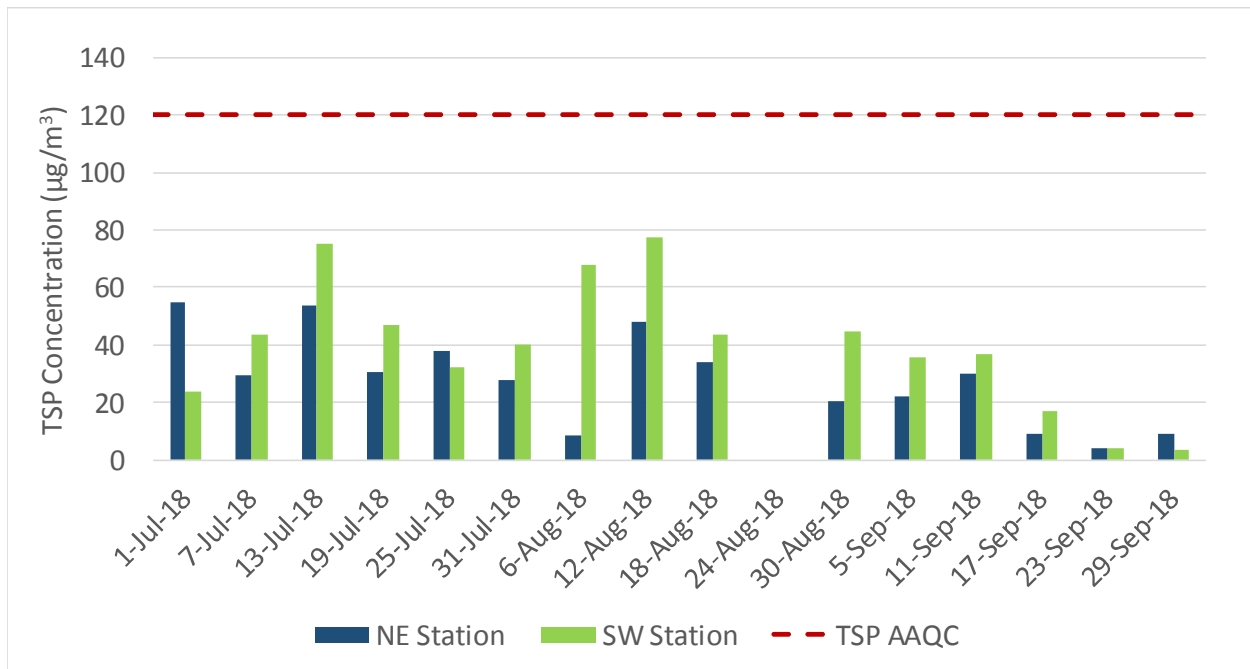


Figure 4-1: TSP Concentrations (Q3 2018)

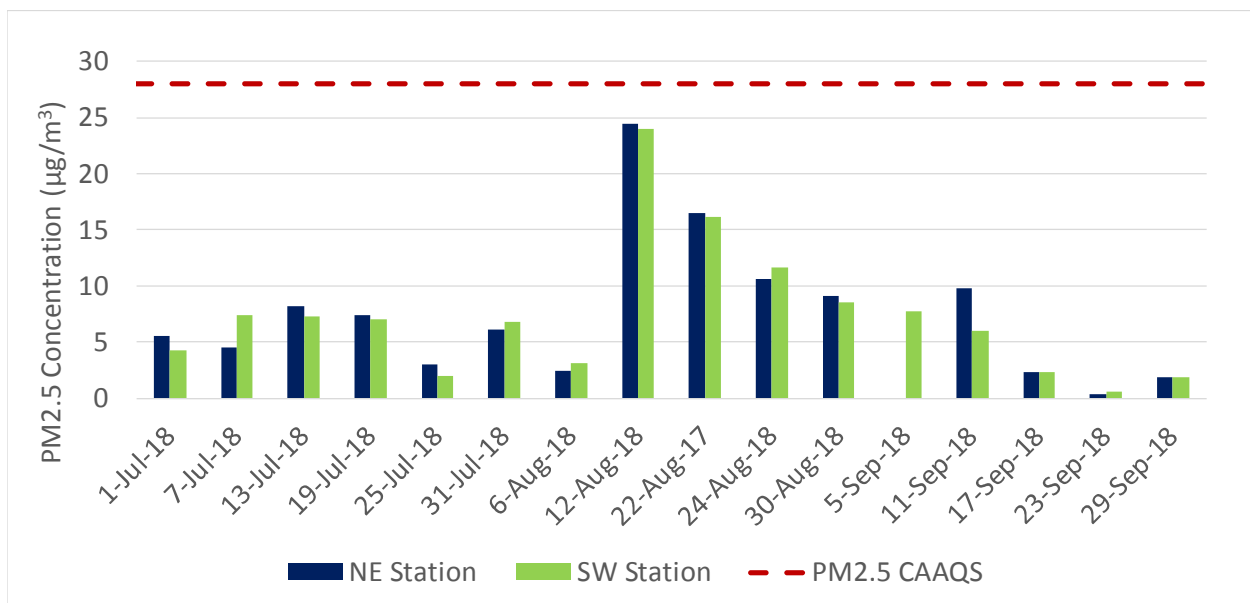


Figure 4-2: PM_{2.5} Concentrations (Q3 2018)

5.0 CONCLUSIONS

This report summarizes the data collected in Q3 2018 for the ambient air quality monitoring program at the Rainy River Mine.

The monitoring program collects TSP, metals, PM_{2.5}, total dustfall, NO₂, and SO₂ ambient air quality data from two monitoring stations that were installed and commissioned in May 2015.

A summary of the Q3 2018 ambient air quality monitoring program results is provided below:

-) There were 15 valid TSP samples collected at both stations, resulting in 94% sample validity. Metal and metalloid concentrations were measured on each of the TSP filters. There were no exceedances of the TSP or metals/metalloids AAQC;
-) There were 15 valid PM_{2.5} samples collected at the Gallinger Road station, (94% valid data) and 16 valid samples collected at the Tait Road Station, (100% valid data). There were no exceedances of the 24-hour PM_{2.5} CAAQS;
-) There were 3 valid dustfall samples collected at the Tait Road Station and Gallinger Road Station, resulting in 100% sample validity. There were no exceedances of the 30-day dustfall AAQC; and
-) There were 3 valid passive SO₂ and NO₂ samples collected at each of the two stations, resulting in 100% sample validity. There were no exceedances of AEP Criterion for SO₂ or the 30-day equivalent AAQC for NO₂.



6.0 REFERENCES

- Alberta Environment and Parks (AEP). 2017. Alberta Ambient Air Quality Objectives and Guidelines Summary.
- American Society for Testing and Materials (ASTM). 2004. Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter).
- British Columbia Ministry of the Environment. 2007. Section G of Air Constituents – Inorganic.
- Environment Canada (ECCC). 2013. Canadian Environmental Protection Act, 1999 Sections 54 and 55.
- Ministry of the Environment, Conservation and Parks (MECP). 2017. Procedure for Preparing and Emission Summary and Dispersion Modelling Report.
- Ministry of the Environment, Conservation and Parks (MECP). 2016a. Ontario's Ambient Air Quality Criteria, PIBS # 6570e01.
- Ministry of the Environment, Conservation and Parks (MECP). 2016b. Operations Manual for Air Quality Monitoring in Ontario.
- Ministry of the Environment, Conservation and Parks (MECP). 2016c. Determination of Total Dustfall in Air Particulate Matter by Gravimetry, E3043.
- United States Environmental Protection Agency (USEPA). 2018. Sampling Schedule Calendar, <https://www3.epa.gov/ttnamti1/calendar.html>.

7.0 CLOSING

This *Rainy River Mine Ambient Air Quality Monitoring Program Third Quarter 2018 Report* was prepared by Wood for the sole benefit of New Gold Inc. for specific application to the Rainy River Mine. The quality of information, conclusions and estimates contained herein are consistent with the level of effort involved in Wood's services and based on:

- i) information available at the time of preparation;
- ii) data supplied by outside sources; and
- iii) the assumptions, conditions and qualifications set forth in this document.

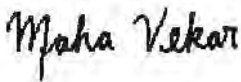
This report is intended to be used by New Gold only, and its nominated representatives, subject to the terms and conditions of its contract with Wood. Any other use of, or reliance on, this report by any third party is at that party's sole risk. This report has been prepared in accordance with generally accepted industry-standard practices. No other warranty, expressed or implied, is made.

If you require further information regarding the above or the Mine in general, please contact the undersigned at (905) 568-2929. Thank you for the opportunity to be of service to New Gold Inc.

Yours truly,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

Prepared by:



Maha Vekar
Air Quality Technician

Reviewed by:



Linda Lattner, P.Eng., M.Eng.
Senior Air Quality Engineer



Ryan Fletcher, P. Eng
Air Quality Engineer

APPENDIX A

SAMPLING RESULTS

Appendix A-1 TSP, Metals and PM_{2.5} Sampling Results

Appendix A-2 Total Dustfall Sampling Results

Appendix A-3 SO₂ and NO₂ Passive Sampling Results



APPENDIX A-1

TSP, METALS AND PM_{2.5} SAMPLING RESULTS



NORTHEAST (GALLINGER ROAD) PARTICULATE/METALS CONCENTRATIONS														
Date	PM2.5	TSP	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Selenium (Se)	Vanadium (V)	Zinc (Zn)
1-Jul-18	5.54	55.0	<u>8.69E-04</u>	1.47E-04	4.29E-03	2.87E-04	5.85E-01	6.72E-01	1.93E-03	2.18E-02	1.04E-03	<u>3.77E-04</u>	<u>1.45E-03</u>	2.12E-02
7-Jul-18	4.54	29.7	<u>8.60E-04</u>	9.63E-05	4.30E-03	1.16E-04	1.68E-01	2.66E-01	1.13E-03	1.07E-02	5.73E-04	<u>3.73E-04</u>	<u>1.43E-03</u>	1.05E-02
13-Jul-18	8.25	53.8	<u>8.63E-04</u>	1.02E-04	5.75E-03	2.00E-04	2.71E-01	3.73E-01	2.00E-03	2.17E-02	6.73E-04	<u>3.74E-04</u>	<u>1.44E-03</u>	1.94E-02
19-Jul-18	7.41	30.8	<u>8.76E-04</u>	8.76E-05	5.96E-03	1.76E-04	4.22E-01	3.84E-01	1.12E-03	1.99E-02	6.48E-04	<u>3.80E-04</u>	<u>1.46E-03</u>	9.87E-03
25-Jul-18	3.00	37.9	<u>8.88E-04</u>	1.27E-04	6.21E-03	1.70E-04	3.09E-01	3.76E-01	4.29E-03	2.34E-02	6.57E-04	<u>3.85E-04</u>	<u>1.48E-03</u>	3.09E-02
31-Jul-18	6.16	27.6	<u>9.44E-04</u>	6.23E-05	6.54E-03	1.52E-04	1.94E-01	2.83E-01	1.00E-03	1.75E-02	5.41E-04	<u>4.09E-04</u>	<u>1.57E-03</u>	9.00E-03
6-Aug-18	2.41	8.53	<u>9.08E-04</u>	4.12E-05	5.45E-03	2.18E-05	5.44E-01	3.51E-02	2.78E-04	2.20E-03	2.60E-04	<u>3.93E-04</u>	<u>1.51E-03</u>	4.12E-03
12-Aug-18	24.39	48.3	<u>8.63E-04</u>	<u>5.75E-04</u>	4.09E-03	<u>5.75E-04</u>	3.11E-01	3.40E-01	<u>8.63E-04</u>	2.41E-02	<u>8.63E-04</u>	<u>2.88E-03</u>	<u>1.44E-03</u>	1.87E-02
18-Aug-18	16.53	33.8	<u>8.87E-04</u>	<u>5.92E-04</u>	5.03E-03	<u>5.92E-04</u>	5.21E-01	3.30E-01	<u>8.87E-04</u>	2.08E-02	<u>8.87E-04</u>	<u>2.96E-03</u>	<u>1.48E-03</u>	1.32E-02
24-Aug-18	10.6	—	—	—	—	—	—	—	—	—	—	—	—	—
30-Aug-18	9.07	20.7	<u>8.66E-04</u>	<u>5.77E-04</u>	4.50E-03	<u>5.77E-04</u>	2.38E-01	1.14E-01	<u>8.66E-04</u>	6.24E-03	<u>8.66E-04</u>	<u>2.89E-03</u>	<u>1.44E-03</u>	1.34E-02
5-Sep-18	—	22.0	<u>8.61E-04</u>	<u>5.74E-04</u>	5.16E-03	<u>5.74E-04</u>	5.34E-01	3.31E-01	<u>8.61E-04</u>	1.18E-02	<u>8.61E-04</u>	<u>2.87E-03</u>	<u>1.43E-03</u>	9.30E-03
11-Sep-18	9.78	30.1	<u>8.74E-04</u>	<u>5.83E-04</u>	<u>1.46E-03</u>	<u>5.83E-04</u>	4.20E-01	2.88E-01	<u>8.74E-04</u>	1.58E-02	<u>8.74E-04</u>	<u>2.91E-03</u>	<u>1.46E-03</u>	1.31E-02
17-Sep-18	2.33	9.0	<u>8.69E-04</u>	<u>5.79E-04</u>	<u>1.45E-03</u>	<u>5.79E-04</u>	5.18E-01	5.73E-02	<u>8.69E-04</u>	2.09E-03	<u>8.69E-04</u>	<u>2.90E-03</u>	<u>1.45E-03</u>	5.21E-03
23-Sep-18	<u>0.31</u>	3.9	<u>8.92E-04</u>	<u>5.95E-04</u>	<u>1.49E-03</u>	<u>5.95E-04</u>	2.02E-01	2.32E-02	<u>8.92E-04</u>	1.19E-03	<u>8.92E-04</u>	<u>2.97E-03</u>	<u>1.49E-03</u>	4.10E-03
29-Sep-18	1.83	9.1	<u>8.98E-04</u>	<u>5.99E-04</u>	<u>1.50E-03</u>	<u>5.99E-04</u>	2.89E-01	1.02E-01	<u>8.98E-04</u>	5.27E-03	<u>8.98E-04</u>	<u>2.99E-03</u>	<u>1.50E-03</u>	9.10E-03

Geometric mean	N/A	22.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arithmetic mean	7.48	28.0	8.81E-04	3.56E-04	4.21E-03	3.86E-04	3.68E-01	2.65E-01	1.25E-03	1.36E-02	7.60E-04	1.74E-03	1.47E-03	1.27E-02
Max. concentration	24.4	55.0	9.44E-04	5.99E-04	6.54E-03	5.99E-04	5.85E-01	6.72E-01	4.29E-03	2.41E-02	1.04E-03	2.99E-03	1.57E-03	3.09E-02
Min. concentration	0.31	3.87	8.60E-04	4.12E-05	1.45E-03	2.18E-05	1.68E-01	2.32E-02	2.78E-04	1.19E-03	2.60E-04	3.73E-04	1.43E-03	4.10E-03
90th percentile	14.2	51.6	9.04E-04	5.93E-04	6.11E-03	5.93E-04	5.40E-01	3.80E-01	1.97E-03	2.28E-02	8.96E-04	2.97E-03	1.51E-03	2.05E-02
95th percentile	18.9	54.1	9.19E-04	5.96E-04	6.31E-03	5.96E-04	5.56E-01	4.70E-01	2.68E-03	2.36E-02	9.40E-04	2.98E-03	1.53E-03	2.41E-02
CAAQS	28.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No. > CAAQS value*	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AAQC	N/A	120	0.3	0.025	0.5	0.1	50	4	0.5	0.4	0.2	10	2	120
No. > AAQC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of valid samples	15	15	15	15	15	15	15	15	15	15	15	15	15	15
No. samples < mdl	1	0	15	8	4	8	0	0	8	0	8	15	15	0
Detection limit (µg)	6	5	6	2	5	2	5	50	3	50	3	10	5	5
Half detection limit (µg)	3	2.5	3	1	2.5	1	2.5	25	1.5	25	1.5	5	2.5	2.5
% < detection limit	7	0	100	53	27	53	0	0	53	0	53	100	100	0
% valid data	94	94	94	94	94	94	94	94	94	94	94	94	94	94

Notes:

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

N/A: Not applicable

—: Invalid Sample

*Canadian Ambient Air Quality Standard, 24-hour standard

Detection limits may change from sample to sample

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, Third Quarter 2018 Report

Appendix A-1



SOUTHWEST (TAIT ROAD) PARTICULATE/METALS CONCENTRATIONS

Date	PM2.5	TSP	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Selenium (Se)	Vanadium (V)	Zinc (Zn)
1-Jul-18	4.29	23.7	<i>8.78E-04</i>	3.16E-05	3.57E-03	1.72E-04	4.62E-02	2.72E-01	6.44E-04	6.68E-03	5.92E-04	<i>3.81E-04</i>	<i>1.46E-03</i>	6.62E-03
7-Jul-18	7.41	43.8	<i>8.89E-04</i>	5.51E-05	4.68E-03	3.92E-04	2.62E-02	6.40E-01	9.36E-04	1.87E-02	1.11E-03	<i>3.85E-04</i>	<i>1.48E-03</i>	8.47E-03
13-Jul-18	7.32	75.4	<i>8.98E-04</i>	5.27E-05	7.84E-03	8.50E-04	5.20E-02	1.19E+00	7.60E-04	3.39E-02	2.00E-03	<i>3.89E-04</i>	<i>1.50E-03</i>	1.06E-02
19-Jul-18	6.99	47.0	<i>9.07E-04</i>	3.75E-05	6.89E-03	4.57E-04	3.95E-02	7.20E-01	8.89E-04	2.61E-02	1.25E-03	<i>3.93E-04</i>	<i>1.51E-03</i>	9.86E-03
25-Jul-18	1.96	32.2	<i>9.30E-04</i>	3.66E-05	7.56E-03	3.35E-04	4.66E-02	5.41E-01	8.37E-04	1.49E-02	9.36E-04	<i>4.03E-04</i>	<i>1.55E-03</i>	1.01E-02
31-Jul-18	6.78	40.1	<i>8.79E-04</i>	5.27E-05	6.44E-03	3.11E-04	2.98E-02	5.86E-01	1.65E-03	2.52E-02	8.67E-04	<i>3.81E-04</i>	<i>1.46E-03</i>	1.27E-02
6-Aug-18	3.16	67.7	<i>9.06E-04</i>	9.18E-05	7.85E-03	4.62E-04	5.11E-02	8.09E-01	2.80E-03	2.97E-02	1.19E-03	<i>3.93E-04</i>	<i>1.51E-03</i>	2.31E-02
12-Aug-18	24.0	77.2	<i>9.34E-04</i>	<i>6.23E-04</i>	5.54E-03	<i>6.23E-04</i>	3.31E-02	1.02E+00	<i>9.34E-04</i>	4.09E-02	<i>9.34E-04</i>	<i>3.11E-03</i>	<i>1.56E-03</i>	1.99E-02
18-Aug-18	16.1	43.5	<i>9.79E-04</i>	<i>6.53E-04</i>	5.88E-03	<i>6.53E-04</i>	4.15E-02	5.91E-01	<i>9.79E-04</i>	2.78E-02	<i>9.79E-04</i>	<i>3.26E-03</i>	<i>1.63E-03</i>	1.62E-02
24-Aug-18	11.65	—	—	—	—	—	—	—	—	—	—	—	—	—
30-Aug-18	8.58	44.8	<i>9.05E-04</i>	<i>6.03E-04</i>	5.85E-03	<i>6.03E-04</i>	3.75E-02	6.09E-01	<i>9.05E-04</i>	3.10E-02	<i>9.05E-04</i>	<i>3.02E-03</i>	<i>1.51E-03</i>	1.38E-02
5-Sep-18	7.79	35.4	<i>8.55E-04</i>	<i>5.70E-04</i>	4.90E-03	<i>5.70E-04</i>	6.55E-02	5.87E-01	<i>8.55E-04</i>	1.53E-02	<i>8.55E-04</i>	<i>2.85E-03</i>	<i>1.42E-03</i>	8.66E-03
11-Sep-18	5.95	37.0	<i>8.59E-04</i>	<i>5.72E-04</i>	<i>1.43E-03</i>	<i>5.72E-04</i>	1.08E-01	5.08E-01	<i>8.59E-04</i>	1.91E-02	<i>8.59E-04</i>	<i>2.86E-03</i>	<i>1.43E-03</i>	1.04E-02
17-Sep-18	2.37	17.1	<i>8.76E-04</i>	<i>5.84E-04</i>	<i>1.46E-03</i>	<i>5.84E-04</i>	1.12E-01	2.58E-01	<i>8.76E-04</i>	7.83E-03	<i>8.76E-04</i>	<i>2.92E-03</i>	<i>1.46E-03</i>	8.00E-03
23-Sep-18	0.62	4.2	<i>9.15E-04</i>	<i>6.10E-04</i>	<i>1.53E-03</i>	<i>6.10E-04</i>	6.41E-02	3.42E-02	<i>9.15E-04</i>	1.28E-03	<i>9.15E-04</i>	<i>3.05E-03</i>	<i>1.53E-03</i>	5.19E-03
29-Sep-18	1.83	3.7	<i>9.00E-04</i>	<i>6.00E-04</i>	<i>1.50E-03</i>	<i>6.00E-04</i>	5.49E-02	9.54E-02	<i>9.00E-04</i>	4.44E-03	<i>9.00E-04</i>	<i>3.00E-03</i>	<i>1.50E-03</i>	4.68E-03

Geometric mean	N/A	30.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arithmetic mean	7.30	39.5	9.01E-04	3.45E-04	4.86E-03	5.20E-04	5.38E-02	5.64E-01	1.05E-03	2.02E-02	1.01E-03	1.79E-03	1.50E-03	1.12E-02
Max. concentration	24.0	77.2	9.79E-04	6.53E-04	7.85E-03	8.50E-04	1.12E-01	1.19E+00	2.80E-03	4.09E-02	2.00E-03	3.26E-03	1.63E-03	2.31E-02
Min. concentration	0.62	3.72	8.55E-04	3.16E-05	1.43E-03	1.72E-04	2.62E-02	3.42E-02	6.44E-04	1.28E-03	5.92E-04	3.81E-04	1.42E-03	4.68E-03
90th percentile	13.9	72.3	9.32E-04	6.18E-04	7.73E-03	6.41E-04	9.11E-02	9.36E-01	1.38E-03	3.27E-02	1.23E-03	3.09E-03	1.55E-03	1.84E-02
95th percentile	18.1	76.0	9.48E-04	6.32E-04	7.84E-03	7.12E-04	1.09E-01	1.07E+00	1.99E-03	3.60E-02	1.48E-03	3.16E-03	1.58E-03	2.08E-02
CAAQS	28.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No. > CAAQS value*	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AAQC	N/A	120	0.3	0.025	0.5	0.1	50	4	0.5	0.4	0.2	10	2	120
No. > AAQC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of valid samples	16	15	15	15	15	15	15	15	15	15	15	15	15	15
No. samples < mdl	0	0	15	8	4	8	0	0	8	0	8	15	15	0
Detection limit (µg)	6	5	6	2	5	2	5	50	3	50	3	10	5	5
Half detection limit (µg)	3	2.5	3	1	2.5	1	2.5	25	1.5	25	1.5	5	2.5	2.5
% < detection limit	0	0	100	53	27	53	0	0	53	0	53	100	100	0
% valid data	100	94	94	94	94	94	94	94	94	94	94	94	94	94

Notes:

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

N/A: Not applicable

—: Invalid Sample

*Canadian Ambient Air Quality Standard, 24-hour standard

Detection limits may change from sample to sample

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, Third Quarter 2018 Report

Appendix A-1



APPENDIX A-2

TOTAL DUSTFALL SAMPLING RESULTS



SW (Tait Road) Monitoring Results for Dustfall (Q3 2018)
(results expressed in g/m²/30days)

Month	No. Exposure Days	Dustfall (insoluble)	Dustfall (soluble)	Dustfall (total)
July	29	2.0	1.80	3.8
August	31	2.91	1.86	4.8
September	30	1.1	0.45	1.5

Arithmetic mean	3.4
Max. concentration	4.8
Min. concentration	1.5
AAQC	7
No. > AAQC value**	0
No. of valid samples	3
% Valid data	100
No. samples < mdl	0
Detection limit*	0.30
Half detection limit	0.15

NE (Gallinger Road) Monitoring Results for Dustfall (Q3 2018)
(results expressed in g/m²/30days)

Month	No. Exposure Days	Dustfall (insoluble)	Dustfall (soluble)	Dustfall (total)
July	29	0.8	1.47	2.3
August	31	3.1	1.38	4.5
September	30	0.54	0.66	1.2

Arithmetic mean	2.7
Max. concentration	4.5
Min. concentration	1.2
AAQC	7
No. > AAQC value**	0
No. of valid samples	3
% Valid data	100
No. samples < mdl	0
Detection limit*	0.30
Half detection limit	0.15

Notes:

All statistics were calculated using 1/2DL for values reported as <DL

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

N/A: Not applicable

N/R: No Results Available

—: Invalid Sample

*If samples had differing detection limits, the highest is displayed here

**Ontario Ambient Air Quality Criteria, 30-day standard

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, Third Quarter 2018 Report Revision 1
Appendix A-2



APPENDIX A-3

SO₂ AND NO₂ PASSIVE SAMPLING RESULTS



Monitoring Results for Passive SO₂ and NO₂ (Q3 2018)
(results expressed in µg/m³)

	SW (Tait Road)		NE (Gallinger Road)	
Month	SO₂	NO₂	SO₂	NO₂
July	0.1	0.7	0.1	1.1
August	0.3	1.5	0.1	0.9
September	0.1	0.9	0.1	0.9

Arithmetic mean	0.2	1.1	0.1	1.0
Max. concentration	0.3	1.5	0.1	1.1
Min. concentration	0.1	0.7	0.1	0.9
AAQC* 24-hr converted to 30-day	N/A	78 µg/m ³	N/A	78 µg/m ³
Alberta Ambient Air Quality Objectives 2013	30 µg/m ³	N/A	30 µg/m ³	N/A
No. of valid samples	3	3	3	3
% Valid Data	100%	100%	100%	100%
No. samples < mdl	0	0	0	0
Detection limit	0.3	0.2	0.3	0.2
Half detection limit	0.15	0.1	0.15	0.1

Notes:

All statistics were calculated using 1/2DL for values reported as <DL

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

All results reported by the lab in parts per billion (ppb) and are converted to µg/m³ assuming 101.23kPA and 25C

N/A: Not applicable

N/R: No Results Available

—: Invalid Sample

*Ontario Ambient Air Quality Criteria

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, Third Quarter 2018 Report Revision 1
Appendix A-3





**NEW GOLD INC.
RAINY RIVER MINE**

**AMBIENT AIR QUALITY MONITORING PROGRAM
FOURTH QUARTER 2018 REPORT**

Submitted by:

**Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited
160 Traders Blvd. E., Suite 110
Mississauga, Ontario
L4Z 3K7**

**February 2019
TC111504**





Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited
160 Traders Boulevard East
Suite 110
Mississauga, Ontario
Canada
T: 905.568.2929

February 13, 2019
TC111504

Sylvie St. Jean
Environmental Manager
New Gold Inc.
Rainy River Mine
5967 Hwy 11 / 71, P.O. Box 5
Emo, Ontario P0W 1E0

Dear Ms. St. Jean:

**Re: Rainy River Mine
Ambient Air Quality Monitoring Program
Fourth Quarter 2018 Report**

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (hereinafter referred to as Wood), is a leading environment and infrastructure, engineering, consulting and project management organization. Our team of professionals provides a full range of services to clients in a wide range of sectors including government, industrial & commercial, water, transportation, minerals & metals, oil & gas clients and clean energy.

Wood is submitting to New Gold Inc. (New Gold) the attached summary report of the results for the ambient air quality monitoring program for the fourth quarter of 2018 at the Rainy River Mine. The monitoring program consists of two air quality monitoring stations that were established in May 2015: one to the south of the Site near the beginning of the Highway 600 reroute on Tait Road, and one to the east of the Site on Gallinger Road. The sampling stations are operated and maintained by New Gold staff; Wood staff performed quarterly calibrations, provided technical guidance to New Gold field staff, communicated with the laboratory staff as required, and prepared the data summary report.

Wood will supply the MECP with raw and edited data per the Operations Manual for Air Quality Monitoring in Ontario (MECP 2018a).

The key finding(s) of the Q4 2018 monitoring are as follows:


- There were no exceedances of the TSP, dustfall or metals/metalloids Ambient Air Quality Criteria (AAQC), PM_{2.5} Canadian Ambient Air Quality Standard CAAQS, or the SO₂, or NO₂ criteria measured in Q4 2018.

The measured TSP and PM_{2.5} concentrations for the Q4 2018 are depicted in Figures CL-1 and CL-2.

Note that quarterly reports do not include interpretation of the data (i.e. exceedances); interpretation of results is included in the annual reporting. Should you have any questions or wish to discuss the air monitoring program, please do not hesitate to contact the undersigned.

Sincerely,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited



Ryan Fletcher, P.Eng.
Air Quality Engineer



Linda Lattner, P.Eng., M.Eng.
Senior Air Quality Engineer

CC Dan Russell, Associate Geoscientist, Wood
 Twila Griffith, Senior Environmental Coordinator, New Gold



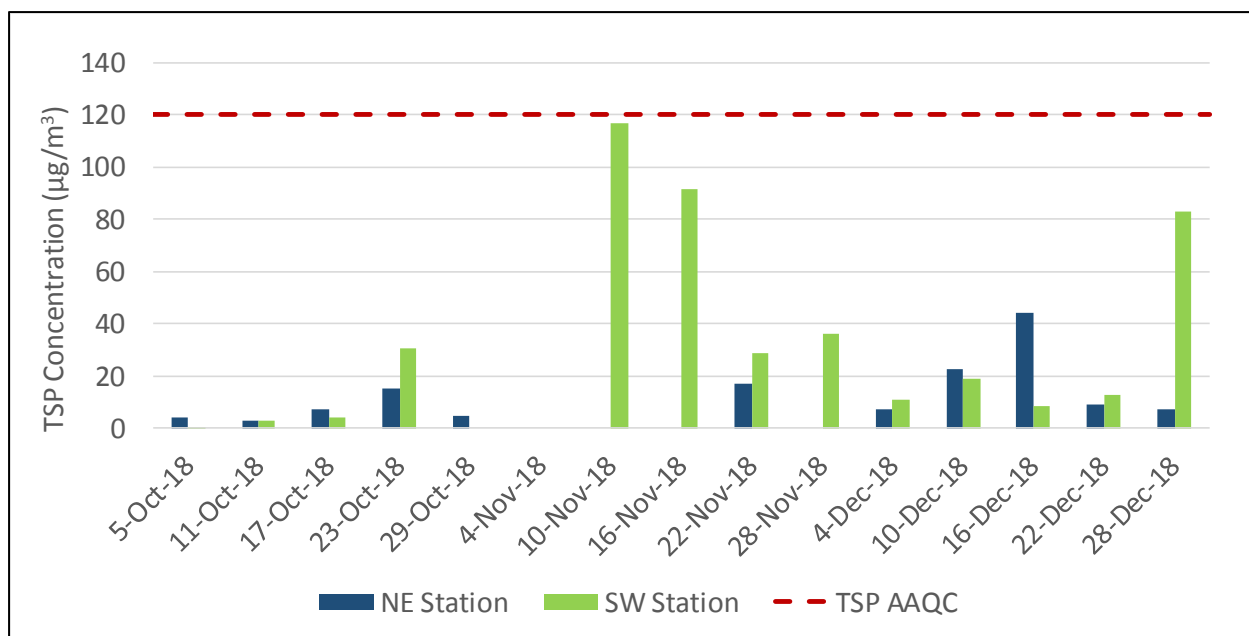


Figure CL-1: TSP Concentrations (Q4 2018)

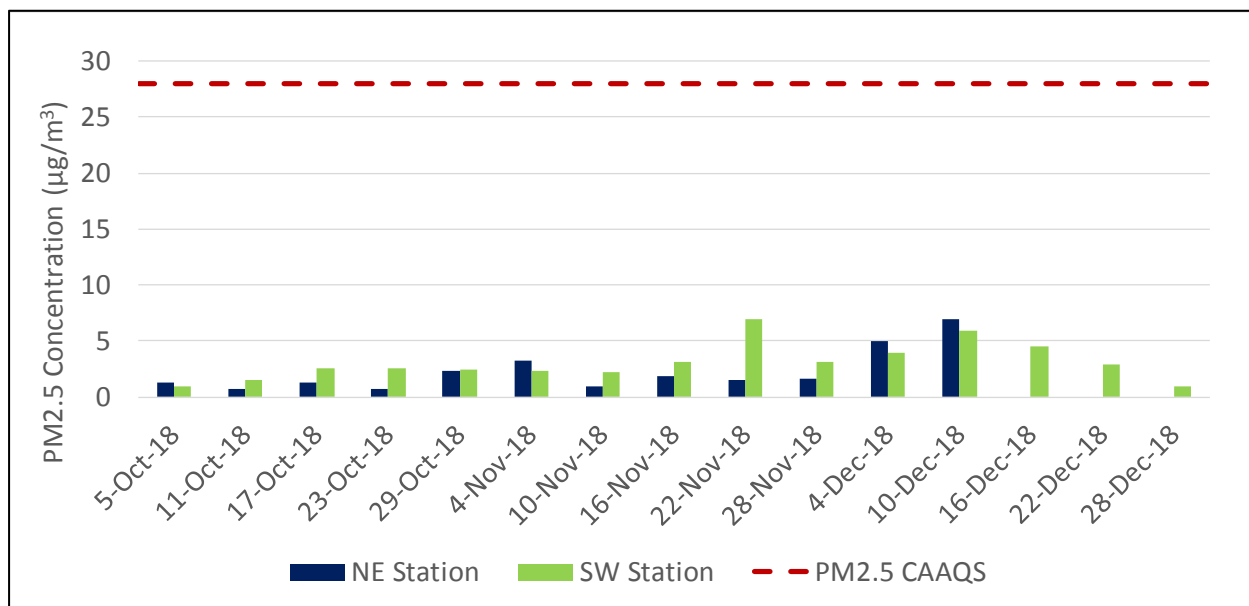


Figure CL-2: PM_{2.5} Concentrations (Q4 2018)



Revision	Date	Prepared By / Revised By	Description
0	February 12, 2019	Ryan Fletcher Linda Lattner	Draft Report
1	February 13, 2019	Caleb Vandenberg	Final Report



ACRONYMS AND ABBREVIATIONS

AAQC	Ambient Air Quality Criteria
AAQO	Alberta Ambient Air Quality Objectives
ACFM	Cubic Feet Per Minute at Actual Conditions
AEP	Alberta Environment and Parks
ASTM	American Society for Testing and Materials
BCMOE	British Columbia Ministry of the Environment
CAAQS	Canadian Ambient Air Quality Standards
Hi-Vol	High Volume Sampler
ICP/AES	Inductively Coupled Plasma / Atomic Emission Spectroscopy
LPM	Litres Per Minute
MECP	Ministry of the Environment, Conservation and Parks
MOECC	Ministry of the Environment and Climate Change
NIST	National Institute of Standards and Technology
TSP	Total Suspended Particulate
PM _{2.5}	Particulate Matter less than 2.5 microns in diameter
US EPA	United States Environmental Protection Agency
µg/m ³	Microgram per Cubic Metre



TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION.....	1
2.0 MONITORING STATIONS.....	2
3.0 ANALYTICAL AND MONITORING METHODS	6
3.1 TSP and Metals	6
3.2 PM _{2.5}	6
3.3 Total Dustfall	6
3.4 Passive Sampling for SO ₂ and NO ₂	7
3.5 Field Operations.....	8
3.5.1 Hi-Vol Samplers	8
3.5.2 PQ200 Samplers.....	8
3.5.3 Dustfall Samplers.....	8
3.5.4 Passive Samplers.....	8
3.5.5 Performance and Site Audits.....	8
3.5.6 Equipment and Sampling Issues.....	9
4.0 RESULTS.....	10
4.1 TSP and Metals	10
4.2 PM _{2.5}	11
4.3 Total Dustfall	11
4.4 Passive SO ₂ and NO ₂	11
4.5 Evaluation of Effects of Abatement Measures on Monitored Concentrations.....	11
5.0 CONCLUSIONS.....	15
6.0 REFERENCES	16
7.0 CLOSING	17



LIST OF TABLES

	PAGE
Table 2-1: Ambient Air Monitoring Stations.....	2
Table 4-1: Summary Statistics for Q4 2018 TSP Concentration Data.....	12
Table 4-2: Summary Statistics for Q4 2018 Metals Concentration Data.....	12
Table 4-3: Summary Statistics for Q4 2018 PM _{2.5} Concentration Data.....	13
Table 4-4: Summary Statistics for Q4 2018 Total Dustfall Data	13
Table 4-5: Summary Statistics for Q4 2018 Passive SO ₂ and NO ₂ Concentration Data	13

LIST OF FIGURES

Figure 2-1: Ambient Air Monitoring Stations	3
Figure 2-2: Ambient Air Monitoring – Tait Road Station (Southwest).....	4
Figure 2-3: Ambient Air Monitoring – Gallinger Road Station (Northeast).....	5
Figure 4-1: TSP Concentrations (Q4 2018).....	14
Figure 4-2: PM _{2.5} Concentrations (Q4 2018).....	14

LIST OF APPENDICES

Appendix A	Sampling Results
Appendix A-1	TSP, Metals, and PM _{2.5} Sampling Results
Appendix A-2	Total Dustfall Sampling Results
Appendix A-3	SO ₂ and NO ₂ Passive Sampling Results



1.0 INTRODUCTION

This report presents a summary of the Fourth Quarter (Q4) 2018 results for the ambient air quality monitoring program undertaken at the Rainy River Mine located in northwestern Ontario. Two sampling stations were established in May 2015: one to the south of the Site near the beginning of the Highway 600 realignment at Tait Road, and one to the east of the Site on Gallinger Road (Figures 2-1, 2-2 and 2-3).

New Gold Inc. (New Gold) staff operate and maintain the sampling stations. Wood staff performed quarterly calibrations, provided technical guidance to New Gold field staff, communicated with the laboratory staff as required, and prepared the data summary reports.

This Quarterly Ambient Air Quality Report addresses the required elements of a Quarterly Report defined in the *Operations Manual for Air Quality Monitoring in Ontario* (MECP 2018a), hereafter referred to as the Operations Manual. Specifically, the following information is provided:

- Summary statistics;
- Sampling dates (start and end where applicable); and
- A summary of exceedances of an Ontario Standard, Ambient Air Quality Criterion (AAQC), or Canadian Ambient Air Quality Standard (CAAQS).

The purpose of the air monitoring program is to quantify potential air quality effects associated with activities related to the Mine. The monitoring program consists of:

- Two High Volume (Hi-Vol) samplers for discrete sampling of Total Suspended Particulate (TSP) and metals;
- Two PQ200 samplers for discrete sampling of respirable particulate matter (PM_{2.5});
- Two standard passive dustfall collection units;
- Two passive sampling enclosures each measuring NO₂ and SO₂; and
- One meteorological station to obtain real-time site wind speed, wind direction, temperature, relative humidity, and precipitation.



2.0 MONITORING STATIONS

The ambient monitoring stations were sited in accordance with the criteria stipulated in the MECP Operations Manual (MECP 2018a).

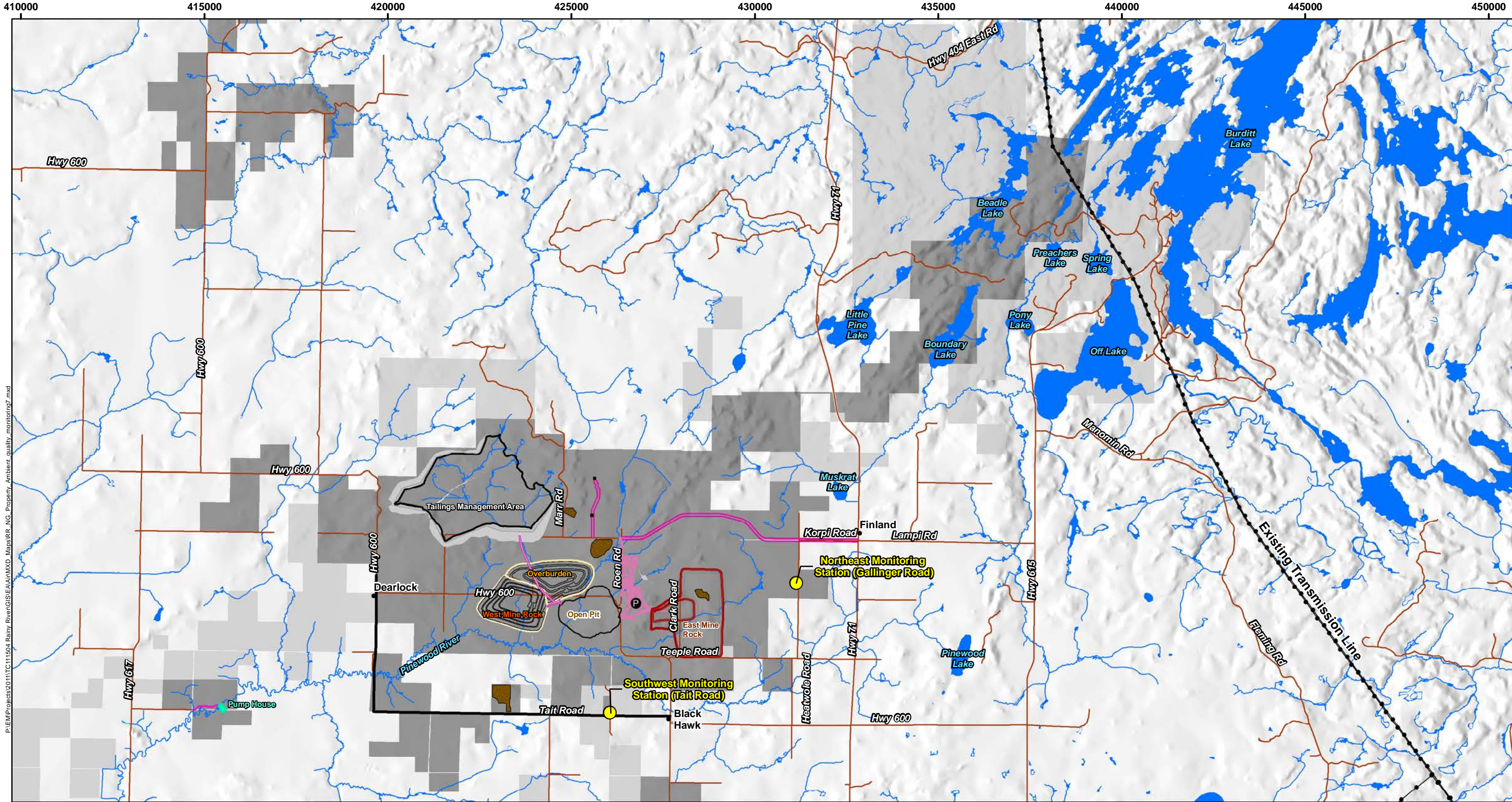
The general location for the two stations is shown in Figure 2-1. UTM co-ordinates for each station based upon NAD 83, are presented in Table 2-1. Photographs showing each station and the equipment installed are presented as Figures 2-2 and 2-3.

There were no changes to the stations or station locations in Q4 2018.

Table 2-1: Ambient Air Monitoring Stations

Station	UTM Co-ordinates			Parameters Monitored
	Easting (m)	Northing (m)	Zone	
Tait Road Station – Southwest	426 072	5 406 996	15	TSP, metals, PM _{2.5} , NO ₂ , SO ₂ , total dustfall Meteorological data (wind speed and direction, ambient temperature, relative humidity, rainfall)
Gallinger Road Station - Northeast	431 133	5 410 534	15	TSP, metals, PM _{2.5} , NO ₂ , SO ₂ , total dustfall





P:\EMP\Projects\2011\TC111504 Rainy River\GIS\EA\RainMMD Maps\RR_NG_Property_Ambient_quality_monitoring7.mxd

- LEGEND**
- Ambient Air Quality Monitoring Stations
 - New Gold - Rainy River Property Boundary
 - New Gold Lands with No Current Access Control

- Proposed Site Features**
- Underground Portal
 - Open Pit
 - Plant Site / Ancillary Facilities
 - Explosives Facilities
 - Overburden / West Mine Rock Stockpile
 - Ore / East Mine Rock Stockpile
 - Proposed Pump House
 - Tailings Management Area
 - Aggregate Pit / Quarry
 - Site Roads
 - Roads
 - Existing Transmission Line
 - First Nation Land

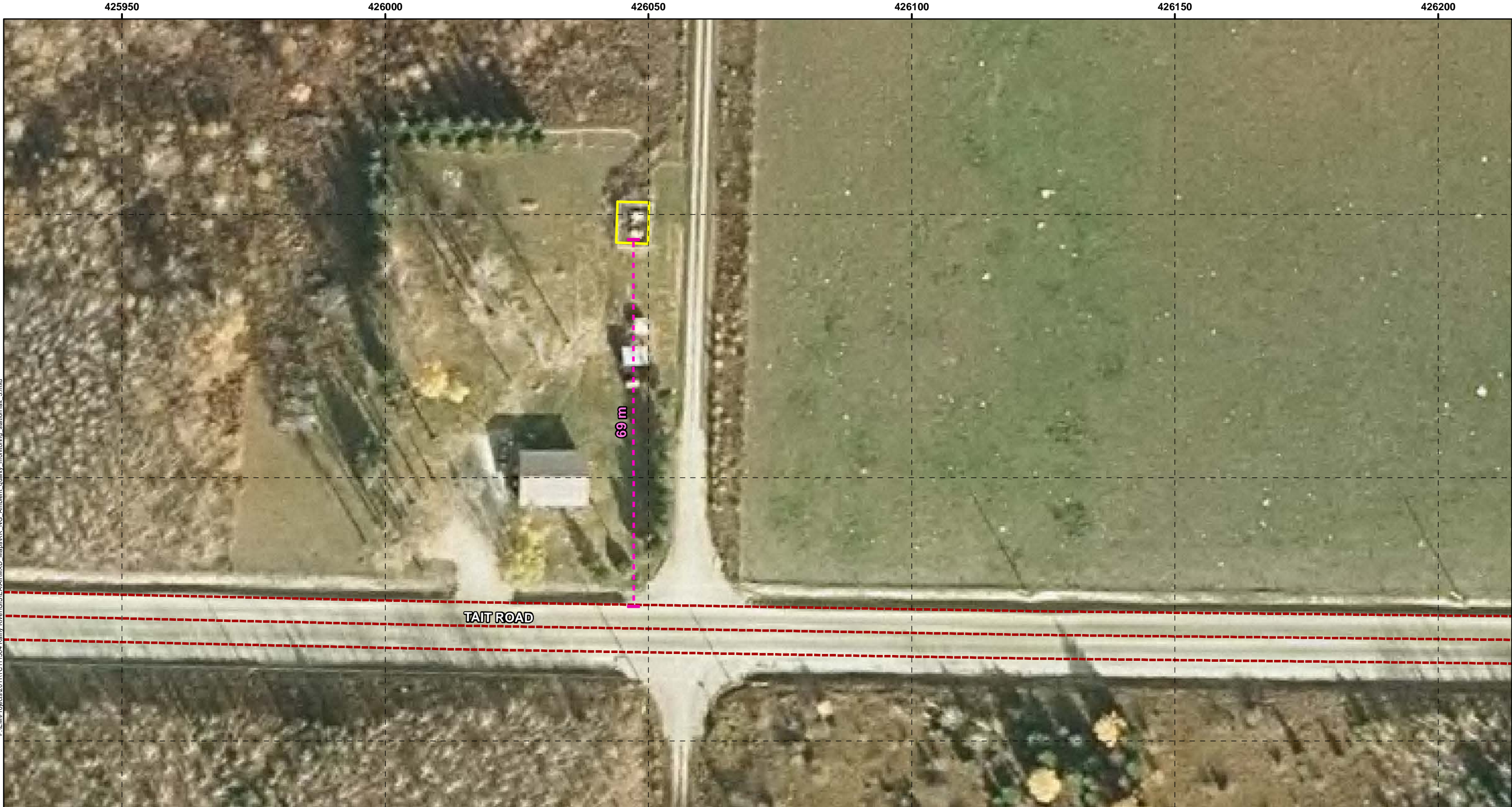
NOTES:
- Road and Utility data and topographic data extracted from Land Information Ontario, Ontario Road Network, MNR Queen's Printer for Ontario, 2011-2012
- Land tenure information and parcels provided by NewGold, March 13, 2018.

Datum: NAD83
Projection: UTM Zone 15N



Rainy River Project	
RAINY RIVER MINE	
Ambient Air Monitoring Stations	
PROJECT N°: TC111504	FIGURE: 2-1
SCALE: 1:100,000	DATE: May 2018





P:\EIA\Projects\2011\TC111504 Rainy River\GIS\EA\AIA\MXD Maps\RR_NG Ambient quality monitoring station\Tait_3.mxd

LEGEND

-  Southwest Monitoring Station (Tait Road)
-  Highway Re-alignment

Notes:
- Aerial imagery provided by
NewGold Pileades imagery
(October 2017).

newgold Rainy River Project **wood.**

RAINY RIVER MINE

**Ambient Air Monitoring
Southwest Monitoring Station**

Datum & Projection:
NAD 1983 UTM Zone 15N



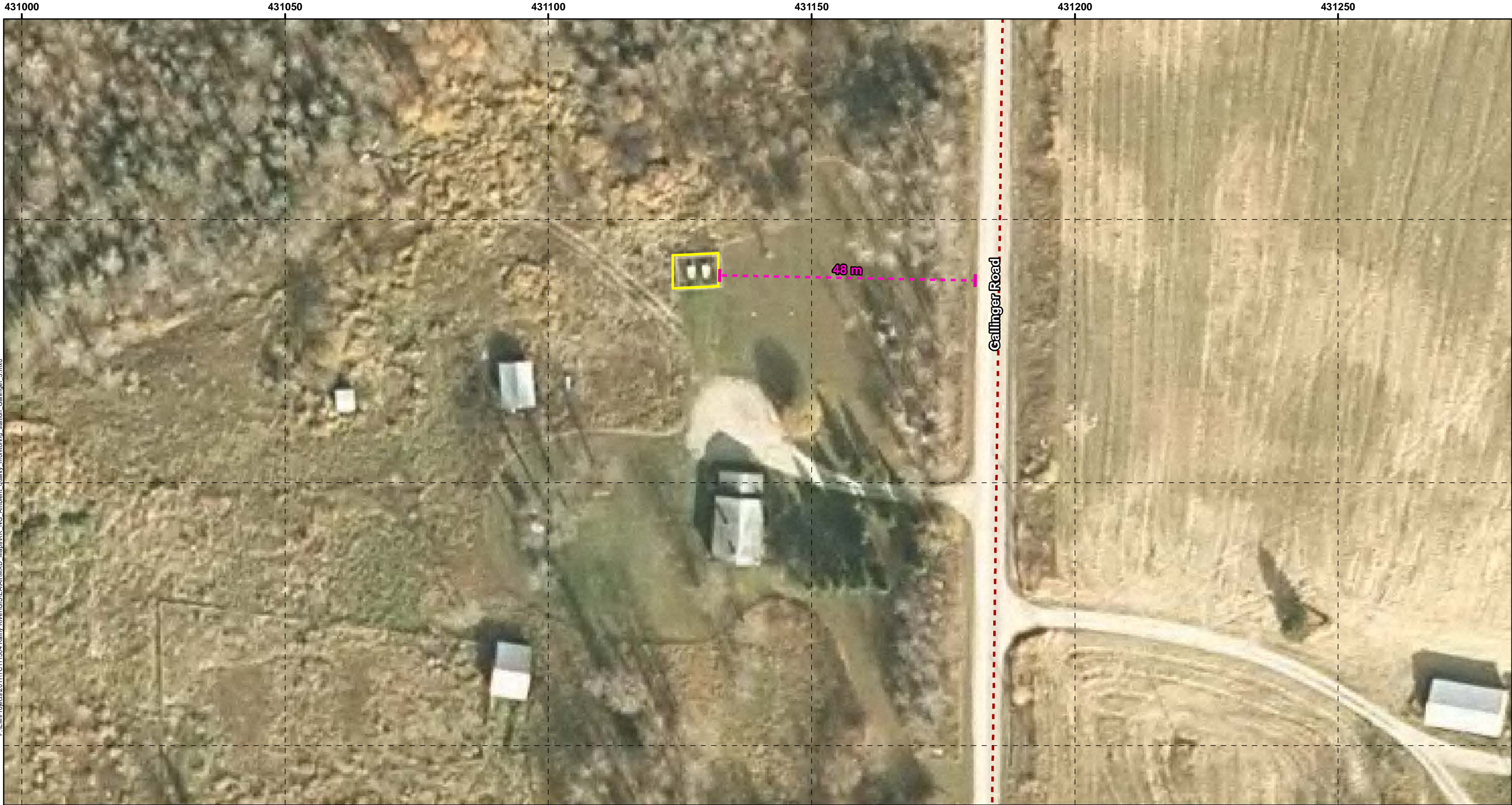
PROJECT N°: TC111504

FIGURE: 2-2

SCALE: 1:700

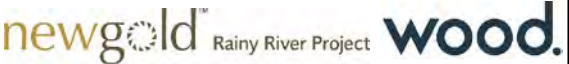

DATE: May 2018





P:\E\MP\Projects\2011\TC111504 Rainy River\GIS\EA\Air\MXD Maps\RR_NG Ambient quality monitoring station Gallinger 3.mxd

- LEGEND**
-  Northeast Monitoring Station (Gallinger Road)
 -  Gallinger Road

<p>Notes:</p> <ul style="list-style-type: none">- Aerial imagery provided by NewGold Pileades imagery (October 2017).			
	RAINY RIVER MINE		
	Ambient Air Monitoring Northeast Monitoring Station		
Datum & Projection: NAD 1983 UTM Zone 15N		PROJECT N°: TC111504	FIGURE: 2-3
		SCALE: 1:700	DATE: May 2018



3.0 ANALYTICAL AND MONITORING METHODS

3.1 TSP and Metals

The TSP concentrations were determined using the standard gravimetric reference methods approved by the United States Environmental Protection Agency (US EPA) and the Ontario Ministry of the Environment, Conservation and Parks (MECP), as described in the Operations Manual (MECP 2018a). Measurements of 24-hour average TSP and metal concentrations were collected as specified in the Operations Manual (MECP 2018a); particulate samples were collected every sixth day as per the North American schedule (US EPA 2018). Sampling was performed with mass flow controlled Hi-Vol samplers (brush motor). All filters were analyzed for the following metals and metalloids: arsenic (As), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), iron (Fe), lead (Pb), manganese (Mn), nickel (Ni), selenium (Se), vanadium (V) and zinc (Zn). A metalloid is an element such that has both metallic and non-metallic properties.

The lowest detectable limit of total particulate on the filter is 2.3 milligrams (mg). A typical 24-hour sample volume of 1,630 m³ results in a method detection limit of 1.4 micrograms per cubic metre (µg/m³).

Metal concentrations were determined using standard Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP/AES). Method detection limits are as shown in the sampling summary in Appendix A-1.

3.2 PM_{2.5}

Sampling was performed with PQ200 samplers. PM_{2.5} concentrations were determined using the standard gravimetric reference methods approved by the US EPA and the MECP, as described in the Operations Manual (MECP 2018a). PM_{2.5} measurements were collected over a 24-hour period to match the averaging time for the Canadian Ambient Air Quality Standard (CAAQS); particulate samples were collected every sixth day as per the North American schedule (US EPA 2018).

The lowest detectable limit of PM_{2.5} on the Teflon filters is 1 µg. A typical 24-hour sample volume of 24 m³ results in a method detection limit of 0.04 µg/m³.

3.3 Total Dustfall

Water soluble and insoluble portions of dustfall were determined using ASTM method D-1739-98 (MOECC 2016) and the British Columbia Ministry of Environment method outlined in Section G of Air Constituents – Inorganic (BCMOE 2007). Standard dustfall samplers were used to measure total dustfall deposition. The method detection limit for total dustfall is 0.3 g/m²/30 days. Bird deterrents were added in Q3 2017 with the goal of reducing contamination.



3.4 Passive Sampling for SO₂ and NO₂

SO₂ and NO₂ concentrations were monitored with passive sampling devices. The exposed permeation filters were analyzed by the Maxxam Analytics Inc. laboratory (Edmonton, Alberta). Testing was performed using methodology developed, approved and validated by Alberta Environment with the support of the Alberta Research Council, the Clean Air Strategic Alliance of Alberta, and the National Research Council of Canada, and following the Standard Operating Procedures for Trace Gas Passive Sampling outlined in the Operations Manual (MECP 2018a).

Sample uptake is dependent on temperature, relative humidity and wind speed. Analytical results are adjusted for these meteorological parameters measured during the exposure period (monthly averages). Required meteorological data were obtained from the Environment and Climate Change Canada website. Fort Frances meteorological station (Climate ID 6022474) is downloaded by Maxxam Analytics with each sample submission. For both SO₂ and NO₂, the analytical method detection limit is in the order of 0.1 parts per billion (ppb). Validation tests conducted in Alberta show that results from passive sampling are typically within 10% of those obtained from sampling with continuous analyzers for 30-day exposure periods.

Since there are no MECP guidelines for monthly concentrations of SO₂ and NO₂ obtained from passive sampling, the data is only used for screening purposes. For NO₂, the monthly results were compared to the MECP 24-hour AAQC converted to an equivalent 30-day average (78 µg/m³) using the methodology outlined in the *Procedure for Preparing an Emission Summary and Dispersion Modelling Report* (MECP 2018b). For SO₂, the results were compared against the 30-day Alberta Ambient Air Quality Objective of 30 µg/m³ (AEP 2016).



3.5 Field Operations

3.5.1 Hi-Vol Samplers

To meet the requirements of 1-in-6 day sampling schedule, stations were visited once every six days. The exposed filter was recovered and a pre-weighed filter installed for the subsequent sample run.

Wood staff performed flow, temperature, and barometric pressure calibrations using an electronic BGI flow calibrator. The flows were calibrated to 16.7 litres per minute (LPM) for each station. Q4 Calibrations were performed on:

- November 21, 2018 – All Hi-Vols calibrated.

3.5.2 PQ200 Samplers

To meet the requirements of 1-in-6 day sampling schedule, stations were visited once every six days. The exposed filter was recovered and a pre-weighed filter installed for the subsequent sample run.

Wood staff performed flow, temperature, and barometric pressure calibrations using an electronic BGI flow calibrator. The flows were calibrated to 16.7 litres per minute (LPM) for each station. Q4 Calibrations were performed on:

- November 21, 2018 – All PQ200s calibrated.

3.5.3 Dustfall Samplers

The dustfall samplers, containing isopropanol in the winter to prevent freezing, were changed every month, as required. Dustfall jars were provided by the laboratory with screw-on lids to prevent sample loss during transport.

3.5.4 Passive Samplers

The permeation filters in the passive samplers were changed every month, as required. Permeation filters were kept in filter cassettes inside Ziploc bags until deployed to prevent premature exposure. After the sample was collected, the filter was placed back in its cassette and into a Ziploc bag for shipment to the lab.

3.5.5 Performance and Site Audits

There were no MECP audits conducted in Q4 2018.



3.5.6 Equipment and Sampling Issues

During Q4 2018, nine samples were invalidated, as discussed below:

- October 29: TSP sample at the Tait Road station was invalidated due to excessive run time.
- November 4: TSP samples at the Tait Road and Gallinger Road stations were invalidated due to excessive run times.
- November 10: TSP sample at the Gallinger Road station was invalidated due to excessive run time.
- November 16: TSP sample at the Gallinger Road station was invalidated due to excessive run time.
- November 28: TSP sample at the Gallinger Road station was invalidated due to insufficient run time.
- December 16: PM_{2.5} sample at the Gallinger Road station was invalidated due to sampler failure.
- December 22: PM_{2.5} sample at the Gallinger Road station was invalidated due to sampler failure.
- December 28: PM_{2.5} sample at the Gallinger Road station was invalidated due to sampler failure.



4.0 RESULTS

Sampling program results for Q4 2018 are presented in Appendix A-1 for the particulate and metals data, Appendix A-2 for the dustfall data and Appendix A-3 for the passive SO₂ and NO₂ data. For the purpose of performing statistical analyses following MECP protocol, a value of half the detection limit was substituted for concentrations less than the detection limit.

For comparative purposes, the MECP AAQC and CAAQS values are presented, where available, noting that the AAQCs are numerically equivalent to the Ontario Regulation 419/05 Standards and Air Contaminant Benchmarks (ACBs) where the averaging times are equivalent.

Summaries of the statistical analyses for Q4 2018 for the TSP, metals, and PM_{2.5} concentrations are presented in Tables 4-1, 4-2, and 4-3, respectively. During the quarter, the 1 in 6-day sampling schedule presented a possible 15 sampling days between October 1 and December 31, 2018.

A summary of the statistical analyses for Q4 2018 for the total dustfall data is presented in Table 4-4.

A summary of the statistical analysis for the Q4 2018 passive SO₂ and NO₂ results is presented in Table 4-5.

4.1 TSP and Metals

The Gallinger Road station collected 11 valid samples, respectively, resulting in 73% valid data for Q4 2018. The Tait Road station collected 13 valid samples, respectively, resulting in 87% valid data for Q4 2018. A list of issues that occurred is provided in Section 3.5.6.

For the quarter, the geometric mean TSP concentrations were 16.0 µg/m³ for the Tait Road station and 9.4 µg/m³ for the Gallinger Road station. Values reported by the laboratory as below the detection limit were, by convention, substituted with one-half of the detection limit. The maximum 24-hour concentration for TSP was 116.9 µg/m³ at the Tait Road station (November 10, 2018), and 44.3 µg/m³ at the Gallinger Road station (December 16, 2018).

The rolling 30-day average lead concentration at the Tait Road station and Gallinger Road stations was at maximum 2% and 1%, respectively, of the 30-day lead AAQC (0.2 µg/m³) in Q4 2018.

Appendix A-1 and Figure 4-1 present individual sample data. The Q4 2018 TSP and metals summary statistics are summarized in Tables 4-1 and 4-2, respectively.



4.2 PM_{2.5}

The Gallinger Road station collected 12 valid samples resulting in 80% valid data for Q4 2018. The Tait Road station collected 15 valid samples resulting in 100% valid data. Issues with the sampling pump occurred at the end of December, resulting in three invalid samples at the Gallinger Road station.

Values reported by the laboratory as below the detection limit were, by convention, substituted with one-half of the detection limit. The maximum 24-hour concentration for PM_{2.5} was 6.91 µg/m³ at the Tait Road station (November 22, 2018), and 6.99 µg/m³ at the Gallinger Road station (December 10, 2018).

There were no PM_{2.5} exceedances of the AAQC (MECP 2018b) of 30 µg/m³ or CAAQS (ECCC 2013) of 28 µg/m³ measured in Q4 2018. Appendix A-1 and Figure 4-2 present individual sample data. The Q4 2018 PM_{2.5} summary statistics are summarized in Table 4-3.

4.3 Total Dustfall

In Q4 2018, three valid samples were collected at each station. Each dustfall jar was exposed for approximately 30-days to coincide with each calendar month in the quarter.

There were no dustfall exceedances of the 30-day AAQC of 7 g/m² measured in Q4 2018. A summary of the results is presented in Table 4-4 and the monthly results are presented in Appendix A-2.

4.4 Passive SO₂ and NO₂

In Q4 2018, three valid samples were collected at each station for each of SO₂ and NO₂.

There are no MECP standards, guidelines or AAQCs for SO₂ or NO₂ for a 30-day averaging period. The 30-day measured average SO₂ or NO₂ concentrations allow for future analysis of trends in the ambient concentrations, to identify any notable increases, and for potential comparison with dispersion modelling results.

For NO₂, the monthly results were compared to the MECP 24-hour AAQC converted to an equivalent 30-day average (78 µg/m³) using the methodology outlined in the *Procedure for Preparing an Emission Summary and Dispersion Modelling Report* (MECP 2018b). For SO₂, the results were compared against the Alberta Ambient Air Quality Objective of 30 µg/m³ (AEP 2017).

A summary of the passive results is presented in Table 4-5 and the monthly results are presented in Appendix A-3.

4.5 Evaluation of Effects of Abatement Measures on Monitored Concentrations

The Rainy River Mine has a comprehensive Best Management Practices Plan (BMPP) for Fugitive Dust approved by the MECP as part of the ECA review process. This BMPP effectively controls the generation and dispersion of dust such that the particulate matter measured at the two ambient monitoring stations was below the AAQC for all Q4 2018 samples.



Table 4-1: Summary Statistics for Q4 2018 TSP Concentration Data

Statistics	Tait Road (SW)	Gallinger Road (NE)
Geometric Mean ($\mu\text{g}/\text{m}^3$)	16.0	9.39
Arithmetic Mean ($\mu\text{g}/\text{m}^3$)	34.2	12.9
October Maximum ($\mu\text{g}/\text{m}^3$)	30.3	15.0
November Maximum ($\mu\text{g}/\text{m}^3$)	116.9	16.9
December Maximum ($\mu\text{g}/\text{m}^3$)	82.9	44.3
Maximum 24-hr ($\mu\text{g}/\text{m}^3$)	116.9	44.3
90 th percentile	89.8	22.6
95 th percentile	101.7	33.4
24-hr AAQC	120	120
No. of valid samples	13	11
Valid data	87%	73%
No. samples > AAQC (particulate)	0	0
No. samples > AAQC (metals)	0	0
No. samples > AAQC (metalloids)	0	0

Table 4-2: Summary Statistics for Q4 2018 Metals Concentration Data

Metal	24-hr AAQC ($\mu\text{g}/\text{m}^3$)	Tait Road (SW)		Gallinger Road (NE)	
		Maximum 24-hr Concentration ($\mu\text{g}/\text{m}^3$)	Fraction of 24-hr AAQC	Maximum 24-hr Concentration ($\mu\text{g}/\text{m}^3$)	Fraction of 24-hr AAQC
As	0.3	3.25E-03	1.1%	9.66E-04	0.3%
Cd	0.025	6.72E-04	2.7%	6.44E-04	2.6%
Cr	0.5	6.12E-03	1.2%	3.91E-03	0.8%
Co	0.1	1.73E-03	1.7%	6.44E-04	0.6%
Cu	50	7.58E-02	0.2%	6.64E-01	1.3%
Fe	4	2.62E+00	65.4%	5.41E-01	13.5%
Pb	0.5	1.74E-02	3.5%	4.16E-03	0.8%
Mn	0.4	6.95E-02	17.4%	3.46E-02	8.6%
Ni	0.2	3.52E-03	1.8%	9.66E-04	0.5%
Se	10	3.36E-03	0.03%	3.22E-03	0.03%
V	2	7.70E-03	0.4%	5.99E-03	0.3%
Zn	120	1.40E-01	0.1%	6.01E-02	0.1%



Table 4-3: Summary Statistics for Q4 2018 PM_{2.5} Concentration Data

Statistics	Tait Road (SW)	Gallinger Road (NE)
Arithmetic Mean ($\mu\text{g}/\text{m}^3$)	3.08	2.32
October Maximum ($\mu\text{g}/\text{m}^3$)	2.58	2.33
November Maximum ($\mu\text{g}/\text{m}^3$)	6.91	3.25
December Maximum ($\mu\text{g}/\text{m}^3$)	5.95	6.99
Maximum 24-hr ($\mu\text{g}/\text{m}^3$)	6.91	6.99
90 th percentile	5.40	4.82
95 th percentile	6.24	5.89
24-hr CAAQS	28	28
No. of valid samples	15	12
Valid data	100%	80%
No. samples > CAAQS	0	0

Table 4-4: Summary Statistics for Q4 2018 Total Dustfall Data

Statistic	Tait Road (SW)	Gallinger Road (NE)
Arithmetic mean ($\text{g}/\text{m}^2/30\text{d}$)	1.5	1.3
Maximum ($\text{g}/\text{m}^2/30\text{d}$)	2.2	2.4
30-day AAQC	7	7
No. > AAQC	0	0
No. valid samples	3	3
Valid Data	100%	100%

Table 4-5: Summary Statistics for Q4 2018 Passive SO₂ and NO₂ Concentration Data

Statistic	Tait Road (SW)		Gallinger Road (NE)	
	SO ₂	NO ₂	SO ₂	NO ₂
Mean ($\mu\text{g}/\text{m}^3$)	0.3	1.8	0.3	1.4
Maximum ($\mu\text{g}/\text{m}^3$)	0.5	2.4	0.5	1.5
AAQC 24-hr converted to 30-day ($\mu\text{g}/\text{m}^3$)	N/A	78 $\mu\text{g}/\text{m}^3$	N/A	78 $\mu\text{g}/\text{m}^3$
Alberta AAQO ($\mu\text{g}/\text{m}^3$)	30 $\mu\text{g}/\text{m}^3$	N/A	30 $\mu\text{g}/\text{m}^3$	N/A
No. valid samples	3	3	3	3
Valid data	100%	100%	100%	100%

Note: N/A: No applicable criterion



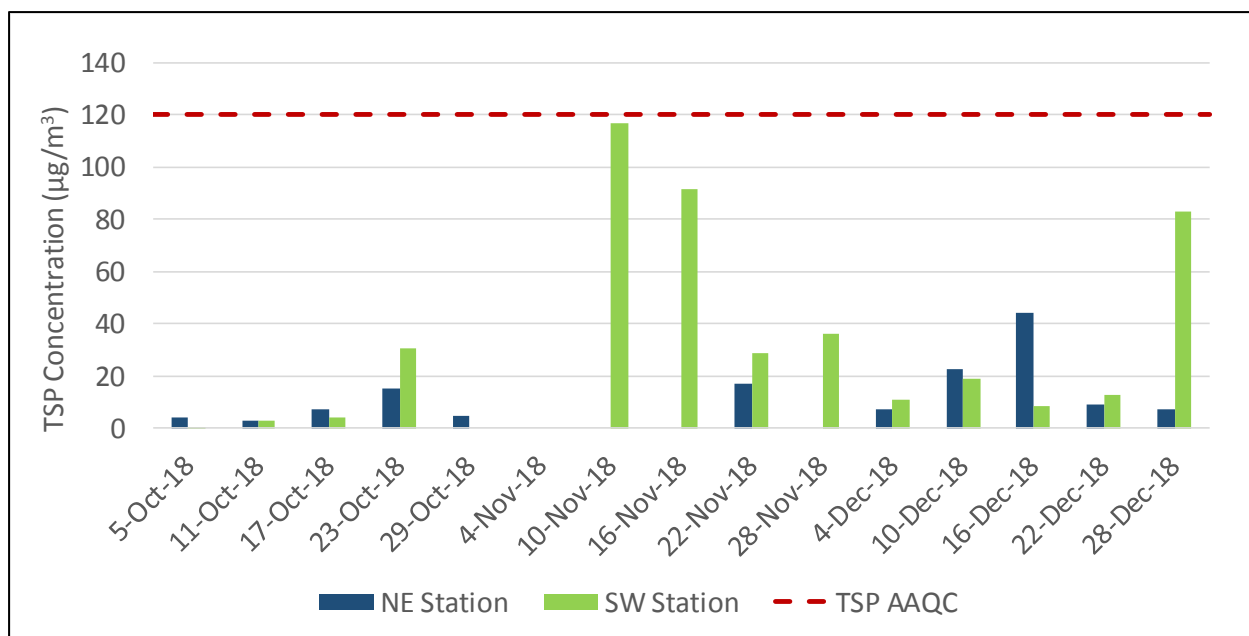


Figure 4-1: TSP Concentrations (Q4 2018)

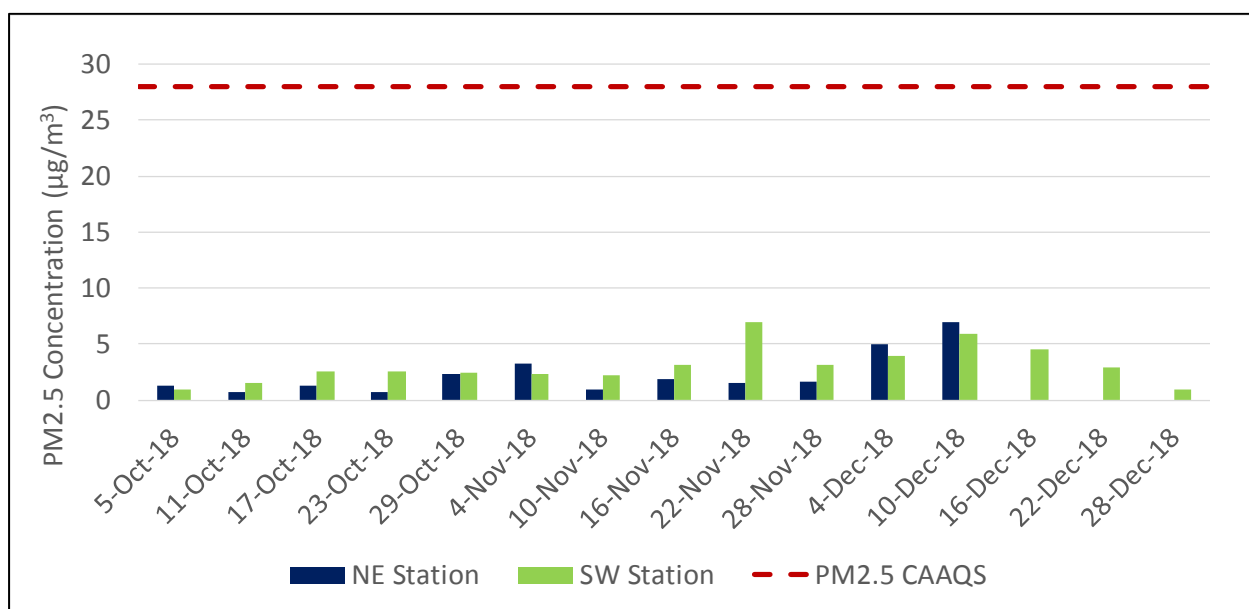


Figure 4-2: PM_{2.5} Concentrations (Q4 2018)



5.0 CONCLUSIONS

This report summarizes the data collected in Q4 2018 for the ambient air quality monitoring program at the Rainy River Mine.

The monitoring program collects TSP, metals, PM_{2.5}, total dustfall, NO₂, and SO₂ ambient air quality data from two monitoring stations that were installed and commissioned in May 2015.

A summary of the Q4 2018 ambient air quality monitoring program results is provided below:

- There were 11 valid TSP samples collected at the Gallinger Road station, resulting in 73% sample validity. Metal and metalloid concentrations were measured on each of the TSP filters, with no exceedances of the 24-hour TSP AAQC in Q4 2018.
- There were 13 valid TSP samples collected at the Tait Road station, resulting in 87% sample validity. Metal and metalloid concentrations were measured on each of the TSP filters, with no exceedances of the 24-hour TSP AAQC in Q4 2018.
- There were 12 valid PM_{2.5} samples collected at the Gallinger Road station, (80% valid data) and 15 valid samples collected at the Tait Road Station, (100% valid data), with no exceedances of the 24-hour AAQC or PM_{2.5} CAAQS in Q4 2018.
- There were 3 valid dustfall samples collected at each of the Tait Road Station and Gallinger Road Station, resulting in 100% sample validity, with no exceedances of the 30-day dustfall AAQC in Q4 2018.
- There were 3 valid passive SO₂ and NO₂ samples collected at each of the two stations, resulting in 100% sample validity, and no exceedances of AEP Criterion for SO₂ or the 30-day equivalent AAQC for NO₂ in Q4 2018.



6.0 REFERENCES

- Alberta Environment and Parks (AEP). 2017. Alberta Ambient Air Quality Objectives and Guidelines Summary.
- American Society for Testing and Materials (ASTM). 2004. Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter).
- British Columbia Ministry of the Environment (BCMOE). 2007. Section G of Air Constituents – Inorganic.
- Environment Canada (ECCC). 2013. Canadian Environmental Protection Act, 1999 Sections 54 and 55.
- Ministry of the Environment and Climate Change (MOECC). 2016. Determination of Total Dustfall in Air Particulate Matter by Gravimetry, E3043.
- Ministry of the Environment, Conservation and Parks (MECP). 2018a. Operations Manual for Air Quality Monitoring in Ontario.
- Ministry of the Environment, Conservation and Parks (MECP). 2018b. Ontario's Ambient Air Quality Criteria, PIBS # 6570e01.
- Ministry of the Environment, Conservation and Parks (MECP). 2018b. Procedure for Preparing and Emission Summary and Dispersion Modelling Report.
- United States Environmental Protection Agency (USEPA). 2018. Sampling Schedule Calendar, <https://www3.epa.gov/ttnamti1/calendar.html>.



7.0 CLOSING

This *Rainy River Mine Ambient Air Quality Monitoring Program Fourth Quarter 2018 Report* was prepared by Wood for the sole benefit of New Gold Inc. for specific application to the Rainy River Mine. The quality of information, conclusions and estimates contained herein are consistent with the level of effort involved in Wood's services and based on:

- i) information available at the time of preparation;
- ii) data supplied by outside sources; and
- iii) the assumptions, conditions and qualifications set forth in this document.

This report is intended to be used by New Gold only, and its nominated representatives, subject to the terms and conditions of its contract with Wood. Any other use of, or reliance on, this report by any third party is at that party's sole risk. This report has been prepared in accordance with generally accepted industry-standard practices. No other warranty, expressed or implied, is made.

If you require further information regarding the above or the Mine in general, please contact the undersigned at (905) 568-2929. Thank you for the opportunity to be of service to New Gold Inc.

Yours truly,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

Prepared by:



Ryan Fletcher, P. Eng.
Air Quality Engineer

Reviewed by:



Linda Lattner, P.Eng., M.Eng.
Senior Air Quality Engineer



APPENDIX A

SAMPLING RESULTS

Appendix A-1 TSP, Metals and PM_{2.5} Sampling Results

Appendix A-2 Total Dustfall Sampling Results

Appendix A-3 SO₂ and NO₂ Passive Sampling Results



APPENDIX A-1

TSP, METALS AND PM_{2.5} SAMPLING RESULTS



NORTHEAST (GALLINGER ROAD) PARTICULATE/METALS CONCENTRATIONS														
Date	PM2.5	TSP	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Selenium (Se)	Vanadium (V)	Zinc (Zn)
5-Oct-18	1.33	4.20	<u>9.40E-04</u>	<u>6.27E-04</u>	<u>1.57E-03</u>	<u>6.27E-04</u>	6.64E-01	3.32E-02	<u>9.40E-04</u>	1.94E-03	<u>9.40E-04</u>	<u>3.13E-03</u>	<u>1.57E-03</u>	5.33E-03
11-Oct-18	0.749	2.96	<u>8.53E-04</u>	<u>5.68E-04</u>	<u>1.42E-03</u>	<u>5.68E-04</u>	3.35E-01	2.90E-02	<u>8.53E-04</u>	1.48E-03	<u>8.53E-04</u>	<u>2.84E-03</u>	<u>1.42E-03</u>	8.87E-03
17-Oct-18	1.33	7.20	<u>9.31E-04</u>	<u>6.21E-04</u>	<u>1.55E-03</u>	<u>6.21E-04</u>	3.10E-01	1.02E-01	<u>9.31E-04</u>	3.35E-03	<u>9.31E-04</u>	<u>3.10E-03</u>	<u>1.55E-03</u>	6.70E-03
23-Oct-18	0.749	15.0	<u>8.96E-04</u>	<u>5.98E-04</u>	<u>1.49E-03</u>	<u>5.98E-04</u>	5.02E-01	2.80E-01	<u>8.96E-04</u>	7.95E-03	<u>8.96E-04</u>	<u>2.99E-03</u>	<u>1.49E-03</u>	7.89E-03
29-Oct-18	2.33	4.60	<u>8.95E-04</u>	<u>5.97E-04</u>	<u>1.49E-03</u>	<u>5.97E-04</u>	3.88E-01	3.46E-02	<u>8.95E-04</u>	1.67E-03	<u>8.95E-04</u>	<u>2.98E-03</u>	<u>1.49E-03</u>	5.97E-03
4-Nov-18	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—
10-Nov-18	0.957	—	—	—	—	—	—	—	—	—	—	—	—	—
16-Nov-18	1.92	—	—	—	—	—	—	—	—	—	—	—	—	—
22-Nov-18	1.58	16.9	<u>9.26E-04</u>	<u>6.18E-04</u>	<u>1.54E-03</u>	<u>6.18E-04</u>	3.20E-01	3.53E-01	<u>9.26E-04</u>	1.02E-02	<u>9.26E-04</u>	<u>3.09E-03</u>	5.99E-03	1.69E-02
28-Nov-18	1.62	—	—	—	—	—	—	—	—	—	—	—	—	—
4-Dec-18	4.99	7.05	<u>9.44E-04</u>	<u>6.30E-04</u>	<u>1.57E-03</u>	<u>6.30E-04</u>	2.27E-01	9.00E-02	<u>9.44E-04</u>	3.02E-03	<u>9.44E-04</u>	<u>3.15E-03</u>	<u>1.57E-03</u>	8.82E-03
10-Dec-18	6.99	22.6	<u>9.46E-04</u>	<u>6.31E-04</u>	<u>3.91E-03</u>	<u>6.31E-04</u>	6.43E-01	4.35E-01	2.40E-03	1.75E-02	<u>9.46E-04</u>	<u>3.15E-03</u>	<u>1.58E-03</u>	2.90E-02
16-Dec-18	—	44.3	<u>8.92E-04</u>	<u>5.95E-04</u>	3.21E-03	<u>5.95E-04</u>	1.35E-01	5.41E-01	4.16E-03	3.46E-02	<u>8.92E-04</u>	<u>2.97E-03</u>	<u>1.49E-03</u>	6.01E-02
22-Dec-18	—	9.28	<u>9.66E-04</u>	<u>6.44E-04</u>	<u>1.61E-03</u>	<u>6.44E-04</u>	2.25E-01	1.49E-01	<u>9.66E-04</u>	4.83E-03	<u>9.66E-04</u>	<u>3.22E-03</u>	<u>1.61E-03</u>	1.24E-02
28-Dec-18	—	7.39	<u>9.40E-04</u>	<u>6.26E-04</u>	<u>1.57E-03</u>	<u>6.26E-04</u>	3.95E-01	9.33E-02	<u>9.40E-04</u>	3.76E-03	<u>9.40E-04</u>	<u>3.13E-03</u>	<u>1.57E-03</u>	1.22E-02

Geometric mean	N/A	9.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arithmetic mean	2.32	12.9	0.00	0.00	0.00	0.00	0.38	0.19	0.00	0.01	0.00	0.00	0.00	0.02
Max. concentration	6.99	44.3	0.0	0.0	0.0	0.0	0.7	0.5	0.0	0.0	0.0	0.0	0.0	0.1
Min. concentration	0.75	2.96	0.00	0.00	0.00	0.00	0.14	0.03	0.00	0.00	0.00	0.00	0.00	0.01
90th percentile	4.82	22.6	0.0	0.0	0.0	0.0	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0
95th percentile	5.89	33.4	0.0	0.0	0.0	0.0	0.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0
CAAQS	28.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No. > CAAQS value*	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AAQC	N/A	120	0.3	0.025	0.5	0.1	50	4	0.5	0.4	0.2	10	2	120
No. > AAQC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of valid samples	12	11	11	11	11	11	11	11	11	11	11	11	11	11
No. samples < mdl	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Detection limit (µg)	6	5	6	2	5	2	5	50	3	50	3	10	5	5
Half detection limit (µg)	3	2.5	3	1	2.5	1	2.5	25	1.5	25	1.5	5	2.5	2.5
% < detection limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% valid data	80	73	73	73	73	73	73	73	73	73	73	73	73	73

Notes:

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

N/A: Not applicable

—: Invalid Sample

*Canadian Ambient Air Quality Standard, 24-hour standard

Detection limits may change from sample to sample

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, Fourth Quarter 2018 Report

Appendix A-1



SOUTHWEST (TAIT ROAD) PARTICULATE/METALS CONCENTRATIONS														
Date	PM2.5	TSP	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Selenium (Se)	Vanadium (V)	Zinc (Zn)
5-Oct-18	0.916	0.700	<u>9.13E-04</u>	<u>6.08E-04</u>	<u>1.52E-03</u>	<u>6.08E-04</u>	2.65E-02	5.54E-02	<u>9.13E-04</u>	1.52E-03	<u>9.13E-04</u>	<u>3.04E-03</u>	<u>1.52E-03</u>	9.67E-03
11-Oct-18	1.50	2.62	<u>9.34E-04</u>	<u>6.23E-04</u>	<u>1.56E-03</u>	<u>6.23E-04</u>	5.75E-02	3.99E-02	<u>9.34E-04</u>	1.74E-03	<u>9.34E-04</u>	<u>3.11E-03</u>	<u>1.56E-03</u>	3.06E-02
17-Oct-18	2.58	4.26	<u>8.99E-04</u>	<u>5.99E-04</u>	<u>1.50E-03</u>	<u>5.99E-04</u>	3.99E-02	1.30E-01	<u>8.99E-04</u>	3.54E-03	<u>8.99E-04</u>	<u>3.00E-03</u>	<u>1.50E-03</u>	7.37E-03
23-Oct-18	2.54	30.3	<u>8.98E-04</u>	<u>5.99E-04</u>	<u>1.50E-03</u>	<u>5.99E-04</u>	5.44E-02	5.90E-01	<u>8.98E-04</u>	1.51E-02	<u>8.98E-04</u>	<u>2.99E-03</u>	<u>1.50E-03</u>	1.12E-02
29-Oct-18	2.46	—	—	—	—	—	—	—	—	—	—	—	—	—
4-Nov-18	2.29	—	—	—	—	—	—	—	—	—	—	—	—	—
10-Nov-18	2.25	116.9	<u>9.27E-04</u>	<u>6.18E-04</u>	6.12E-03	1.73E-03	3.37E-02	2.62E+00	<u>9.27E-04</u>	4.93E-02	3.52E-03	<u>3.09E-03</u>	5.50E-03	1.87E-02
16-Nov-18	3.16	91.6	<u>9.41E-04</u>	<u>6.27E-04</u>	4.52E-03	<u>6.27E-04</u>	4.21E-02	1.26E+00	1.88E-03	3.36E-02	2.01E-03	<u>3.14E-03</u>	<u>1.57E-03</u>	2.18E-02
22-Nov-18	6.91	28.6	<u>9.39E-04</u>	<u>6.26E-04</u>	<u>1.56E-03</u>	<u>6.26E-04</u>	4.11E-02	5.89E-01	2.38E-03	2.00E-02	<u>9.39E-04</u>	<u>3.13E-03</u>	5.95E-03	3.04E-02
28-Nov-18	3.16	36.0	<u>9.78E-04</u>	<u>6.52E-04</u>	<u>1.63E-03</u>	<u>6.52E-04</u>	4.67E-02	1.19E+00	<u>9.78E-04</u>	2.58E-02	1.96E-03	<u>3.26E-03</u>	7.70E-03	2.37E-02
4-Dec-18	3.96	10.9	<u>1.01E-03</u>	<u>6.72E-04</u>	<u>1.68E-03</u>	<u>6.72E-04</u>	4.63E-02	1.11E-01	<u>1.01E-03</u>	3.49E-03	<u>1.01E-03</u>	<u>3.36E-03</u>	<u>1.68E-03</u>	1.05E-02
10-Dec-18	5.95	18.7	<u>9.97E-04</u>	<u>6.65E-04</u>	4.19E-03	<u>6.65E-04</u>	7.58E-02	5.56E-01	<u>9.97E-04</u>	2.33E-02	<u>9.97E-04</u>	<u>3.32E-03</u>	<u>1.66E-03</u>	1.80E-02
16-Dec-18	4.58	8.46	<u>9.84E-04</u>	<u>6.56E-04</u>	<u>1.64E-03</u>	<u>6.56E-04</u>	5.05E-02	1.46E-01	<u>9.84E-04</u>	4.00E-03	<u>9.84E-04</u>	<u>3.28E-03</u>	<u>1.64E-03</u>	1.63E-02
22-Dec-18	2.91	12.5	<u>9.09E-04</u>	<u>6.06E-04</u>	3.21E-03	<u>6.06E-04</u>	4.31E-02	2.25E-01	2.36E-03	7.51E-03	<u>9.09E-04</u>	<u>3.03E-03</u>	<u>1.52E-03</u>	2.60E-02
28-Dec-18	1.00	82.9	3.25E-03	<u>6.38E-04</u>	3.44E-03	<u>6.38E-04</u>	6.34E-02	8.61E-01	1.74E-02	6.95E-02	<u>9.56E-04</u>	<u>3.19E-03</u>	<u>1.59E-03</u>	1.40E-01

Geometric mean	N/A	16.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arithmetic mean	3.08	34.19	0.00	0.00	0.00	0.001	0.05	0.64	0.00	0.02	0.00	0.00	0.00	0.03
Max. concentration	6.91	116.9	0.0	0.0	0.0	0.0	0.1	2.6	0.0	0.1	0.0	0.0	0.0	0.1
Min. concentration	0.916	0.700	0.00	0.00	0.00	0.00	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.01
90th percentile	5.40	89.8	0.0	0.0	0.0	0.0	0.1	1.2	0.0	0.0	0.0	0.0	0.0	0.0
95th percentile	6.24	101.7	0.0	0.0	0.0	0.0	0.1	1.8	0.0	0.1	0.0	0.0	0.0	0.1
CAAQS	28.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
No. > CAAQS value*	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AAQC	N/A	120	0.3	0.025	0.5	0.1	50	4	0.5	0.4	0.2	10	2	120
No. > AAQC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of valid samples	15	13	13	13	13	13	13	13	13	13	13	13	13	13
No. samples < mdl	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Detection limit (µg)	6	5	6	2	5	2	5	50	3	50	3	10	5	5
Half detection limit (µg)	3	2.5	3	1	2.5	1	2.5	25	1.5	25	1.5	5	2.5	2.5
% < detection limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% valid data	100	87	87	87	87	87	87	87	87	87	87	87	87	87

Notes:

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

N/A: Not applicable

—: Invalid Sample

*Canadian Ambient Air Quality Standard, 24-hour standard

Detection limits may change from sample to sample

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, Fourth Quarter 2018 Report

Appendix A-1



APPENDIX A-2

TOTAL DUSTFALL SAMPLING RESULTS

SW (Tait Road) Monitoring Results for Dustfall (Q4 2018)
(results expressed in g/m²/30days)

Month	No. Exposure Days	Dustfall (insoluble)	Dustfall (soluble)	Dustfall (total)
October	32	<u>0.15</u>	0.51	0.81
November	29	1.0	0.63	1.7
December	33	2.0	<u>0.15</u>	2.2

Arithmetic mean	1.5
Max. concentration	2.2
Min. concentration	0.8
AAQC	7
No. > AAQC value**	0
No. of valid samples	3
% Valid data	100
No. samples < mdl	0
Detection limit*	0.30
Half detection limit	0.15

NE (Gallinger Road) Monitoring Results for Dustfall (Q4 2018)
(results expressed in g/m²/30days)

Month	No. Exposure Days	Dustfall (insoluble)	Dustfall (soluble)	Dustfall (total)
October	32	0.87	1.5	2.4
November	29	0.51	0.30	0.84
December	33	0.54	<u>0.15</u>	0.66

Arithmetic mean	1.3
Max. concentration	2.4
Min. concentration	0.7
AAQC	7
No. > AAQC value**	0
No. of valid samples	3
% Valid data	100
No. samples < mdl	0
Detection limit*	0.30
Half detection limit	0.15

Notes:

All statistics were calculated using 1/2DL for values reported as <DL

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

N/A: Not applicable

N/R: No Results Available

—: Invalid Sample

*If samples had differing detection limits, the highest is displayed here

**Ontario Ambient Air Quality Criteria, 30-day standard

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, Fourth Quarter 2018 Report
Appendix A-2



APPENDIX A-3

SO₂ AND NO₂ PASSIVE SAMPLING RESULTS



Monitoring Results for Passive SO₂ and NO₂ (Q4 2018)
(results expressed in µg/m³)

	SW (Tait Road)		NE (Gallinger Road)	
Month	SO ₂	NO ₂	SO ₂	NO ₂
October	<u>0.1</u>	1.1	<u>0.1</u>	1.5
November	<u>0.1</u>	2.4	<u>0.1</u>	1.1
December	0.5	1.7	0.5	1.5

Arithmetic mean	0.3	1.8	0.3	1.4
Max. concentration	0.5	2.4	0.5	1.5
Min. concentration	0.1	1.1	0.1	1.1
AAQC* 24-hr converted to 30-day	N/A	78 µg/m ³	N/A	78 µg/m ³
Alberta Ambient Air Quality Objectives 2013	30 µg/m ³	N/A	30 µg/m ³	N/A
No. of valid samples	3	3	3	3
% Valid Data	100%	100%	100%	100%
No. samples < mdl	0	0	0	0
Detection limit	0.3	0.2	0.3	0.2
Half detection limit	0.15	0.1	0.15	0.1

Notes:

All statistics were calculated using 1/2DL for values reported as <DL

All non detectable results were reported as 1/2 detection limit and are denoted by italics and underlining

All results reported by the lab in parts per billion (ppb) and are converted to µg/m³ assuming 101.23kPA and 25C

N/A: Not applicable

N/R: No Results Available

—: Invalid Sample

*Ontario Ambient Air Quality Criteria

RAINY RIVER MINE

Ambient Air Quality Monitoring Program, Fourth Quarter 2018 Report
Appendix A-3

