

**SANDFIRE RESOURCES, INC.
BLACK BUTTE COPPER
PROJECT AMBIENT AIR
MONITORING PROGRAM
Quarterly Data Report
Second Quarter 2020**

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CERTIFICATION OF DATA INTEGRITY

Bison Engineering, Inc., certifies the data in this report is an accurate summary of the air quality conditions measured at the Black Butte Copper Project air monitoring site. Every effort was made to obtain accurate and representative data and to comply with the procedures set forth in the project-specific *Quality Assurance Project Plan*, the *State of Montana Ambient Air Monitoring Program Quality Assurance Project Plan (April 2013)*, and the Environmental Protection Agency's *Quality Assurance Handbook for Air Pollution Measurement Systems: Volume I, A Field Guide to Environmental Quality Assurance (April 1994)*, *Volume II, Ambient Air Quality Program (May 2013)*, and *Volume IV, Meteorological Measurements (March 2008)*.

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APPENDICES

Appendix A: Meteorological Data

Appendix B: Performance Audit Reports

Appendix C: Newlan Creek RAWs Station Precipitation Summaries

1.0 INTRODUCTION

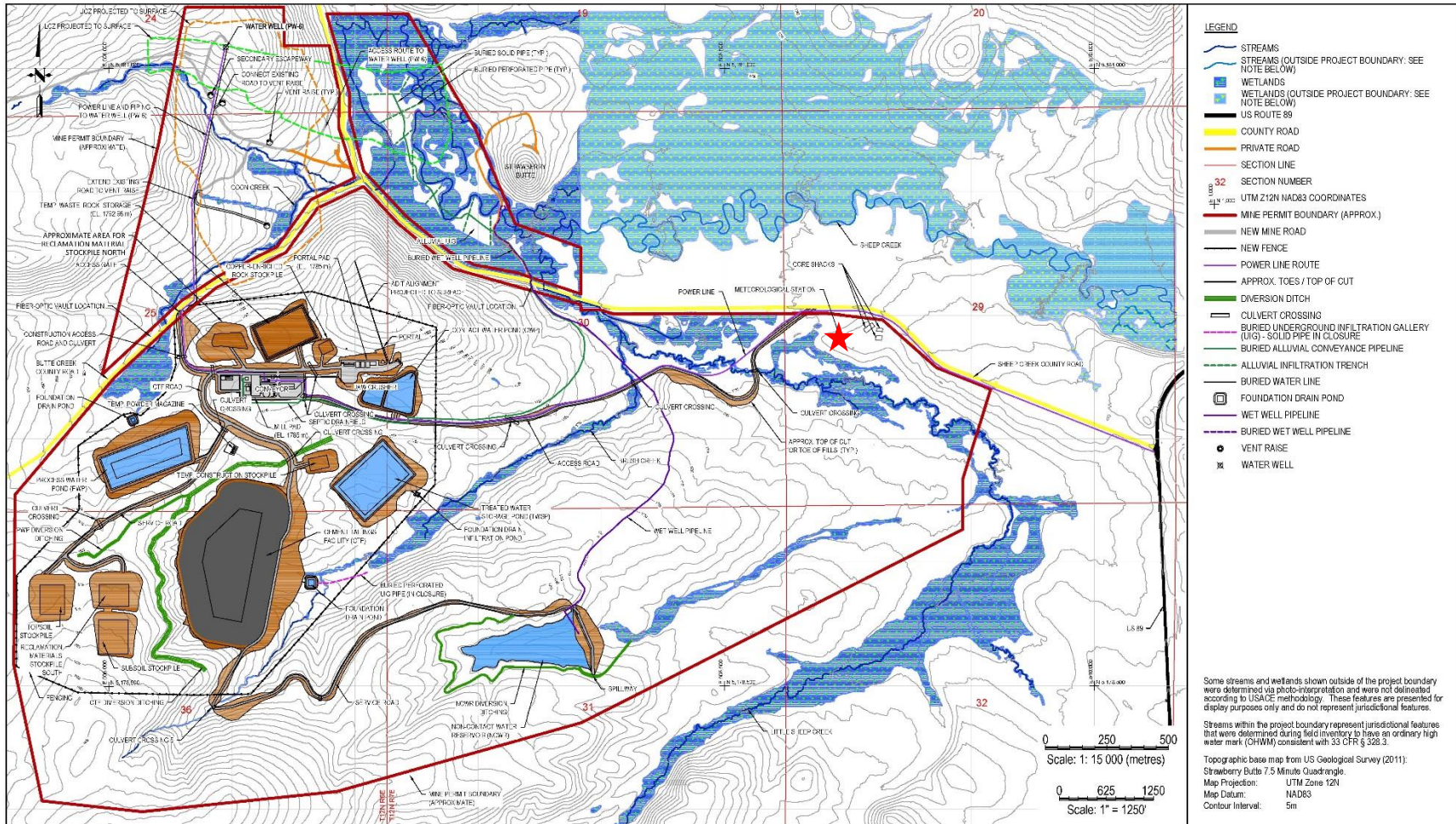
Sandfire Resources, Inc. established an ambient air monitoring site to measure wind speed, wind direction, standard deviation of wind direction, temperature at 9 meters and 2 meters, delta temperature, solar radiation, barometric pressure, and precipitation. The station was established to accurately characterize the local meteorology and collect baseline data in support of an operating permit application and various environmental studies.

The meteorological monitoring system was installed in April 2012. The site is operated by Bison Engineering, Inc., of Helena and Billings. Figure 1 shows the current location of the monitoring site, depicted by a red star. It is located to the west-southwest of the core shed buildings. On February 6, 2018, the tower was shut down and moved to a new location approximately 300 feet southwest of the original location, where monitoring resumed on March 7, 2018. Relocation activities were documented in the monitoring report for the first quarter of 2018.

This report presents the data collected during the second quarter (April through June) of 2020. In addition, a description of the monitoring system operations is presented, together with summaries of quality assurance activities, including calibrations and performance audits. Tabular summaries of the data completeness achieved, and the periods of missing data also are presented. Appendix A presents hourly meteorological data collected.

On June 23, 2015, an evaporation pan and manual precipitation gauge were installed adjacent to the existing meteorological system. The evaporation data will be used for hydrological / water balance studies. The manual rain gauge was installed to provide a backup data source for the existing automatic rain gauge, which has experienced occasional mechanical problems. Also, the automatic rain gauge is sometimes unreliable for measuring frozen precipitation. Neither the evaporation pan nor the rain gauge was operated during the second quarter of 2020.

Figure 1. Monitoring Site Location



Prepared by Tetra Tech Inc. (Revised October 2018 to include alluvial UG as included in the December 2018 Integrated Discharge Permit Application Narrative Report by Hydrometrics that was revised in February 2018, Completeness Determination by MT DEQ on May 25, 2018.)



FIGURE 1.3
Facilities Site Plan
Black Butte Copper Project
Mine Operating Permit Application
Meagher County, Montana

2.0 MONITORING SYSTEM OPERATIONS

Monitoring activities continued in the normal manner during the second quarter of 2020. Data were downloaded and reviewed by Bison at least once a week and examined for suspect behavior. All instruments except the automatic rain gauge were operational throughout the quarter. Other than the rain gauge problem (described below), data losses were limited to approximately one week of data in mid-June when the AC power breaker for the meteorological tower tripped, resulting in draining and ultimately failure of the backup 12-volt battery. Additionally, three hours of wind speed data were lost in May when the anemometer cups were frozen in place by snow and ice.

Review of hourly data records indicated that the rain gauge signal cable began to fail intermittently on May 29; subsequent investigation determined that the cable had been chewed by rodents. This resulted in the loss of precipitation data from May 29 through the end of the quarter. In lieu of those data, daily precipitation data from the Newlan Creek RAWS site are provided as Appendix C to this report. Hourly data can also be provided if desired.¹ The signal cable was repaired by onsite personnel in August 2020. It will be replaced with a new cable during the upcoming third quarter audit in September 2020.

Don Milmine of Bison conducted performance audits of the meteorological system on June 2, 2020. No calibration adjustments were made to any of the instrumentation.

¹ The Newlan Creek RAWS site is located approximately 2.9 miles southeast of the Black Butte meteorological tower, at a similar elevation (within 100 feet). The precipitation data from that site should be representative of the Black Butte site during most conditions.

3.0 PERFORMANCE AUDIT DATA

Don Milmine of Bison conducted performance audits of the meteorological system on June 2, 2020. All audit results were satisfactory and no calibration adjustments were necessary.

The Bison report of the audits are presented in Appendix B.

4.0 CALIBRATION DATA

Don Milmine of Bison conducted performance audits of the meteorological system on June 2, 2020, as discussed in Section 3.0. All of the as-found audit results were satisfactory, and no calibration adjustments were needed.

5.0 DATA COMPLETENESS

The meteorological percentages of data recovery achieved during the second quarter of 2020 are given in Tables 1 and 2. In these tables, the number of possible data values during each month of the quarter is given, together with the number of valid readings and the number of hours spent on quality assurance activities (such as calibrations, performance audits, and maintenance on the sensors). The quality assurance hours are added to the number of hours of valid data to compute the net percentage data recovery.

During the second quarter the net percentage data recovery for precipitation was 65.8 percent due to the signal cable problem described in Section 2.0. Data recovery for other parameters ranged from 91.5 percent to 91.8 percent. Approximately one week of data was lost during June due to the power failure described in Section 2.0. Overall net data recovery for the quarter was 89.2 percent.

Table 1. Monthly Data Completeness

April 2020					
Parameter	Readings Possible	Valid Readings	Percentage Recovery	Quality Assurance Hours	Net Percentage Recovery
Black Butte Copper Project Met Tower					
Wind Speed	720	720	100.0	0	100.0
Wind Direction	720	720	100.0	0	100.0
Standard Deviation	720	720	100.0	0	100.0
9-Meter Temperature	720	720	100.0	0	100.0
2-Meter Temperature	720	720	100.0	0	100.0
9-2 M Delta Temperature	720	720	100.0	0	100.0
Solar Radiation	720	720	100.0	0	100.0
Barometric Pressure	720	720	100.0	0	100.0
Relative Humidity	720	720	100.0	0	100.0
Precipitation	720	720	100.0	0	100.0
Total	7,200	7,200	100.0	0	100.0

Table 1. Monthly Data Completeness (Continued)

May 2020					
Parameter	Readings Possible	Valid Readings	Percentage Recovery	Quality Assurance Hours	Net Percentage Recovery
Black Butte Copper Project Met Tower					
Wind Speed	744	741	99.6	0	99.6
Wind Direction	744	744	100.0	0	100.0
Standard Deviation	744	744	100.0	0	100.0
9-Meter Temperature	744	744	100.0	0	100.0
2-Meter Temperature	744	744	100.0	0	100.0
9-2 M Delta Temperature	744	744	100.0	0	100.0
Solar Radiation	744	744	100.0	0	100.0
Barometric Pressure	744	744	100.0	0	100.0
Relative Humidity	744	744	100.0	0	100.0
Precipitation	744	716	96.2	0	96.2
Total	7,440	7,409	99.6	0	99.6

Table 1. Monthly Data Completeness (Continued)

June 2020					
Parameter	Readings Possible	Valid Readings	Percentage Recovery	Quality Assurance Hours	Net Percentage Recovery
Black Butte Copper Project Met Tower					
Wind Speed	720	538	74.7	3	75.1
Wind Direction	720	538	74.7	3	75.1
Standard Deviation	720	538	74.7	3	75.1
9-Meter Temperature	720	538	74.7	3	75.1
2-Meter Temperature	720	538	74.7	3	75.1
9-2 M Delta Temperature	720	538	74.7	3	75.1
Solar Radiation	720	538	74.7	3	75.1
Barometric Pressure	720	541	75.1	0	75.1
Relative Humidity	720	541	75.1	0	75.1
Precipitation	720	0	0.0	0	0.0
Total	7,200	4,848	67.3	21	67.6

Table 2. Quarterly Data Completeness

Second Quarter 2020					
Parameter	Readings Possible	Valid Readings	Percentage Recovery	Quality Assurance Hours	Net Percentage Recovery
Black Butte Copper Project Met Tower					
Wind Speed	2,184	1,999	91.5	3	91.7
Wind Direction	2,184	2,002	91.7	3	91.8
Standard Deviation	2,184	2,002	91.7	3	91.8
9-Meter Temperature	2,184	2,002	91.7	3	91.8
2-Meter Temperature	2,184	2,002	91.7	3	91.8
9-2 M Delta Temperature	2,184	2,002	91.7	3	91.8
Solar Radiation	2,184	2,002	91.7	3	91.8
Barometric Pressure	2,184	2,005	91.8	0	91.8
Relative Humidity	2,184	2,005	91.8	0	91.8
Precipitation	2,184	1,436	65.8	0	65.8
Total	21,840	19,457	89.1	21	89.2

6.0 MONITORING DATA

The hourly data values collected at the monitoring site are given in the data tables in Appendix A. Each of these tables presents one month's data for one parameter in the monitoring system. In addition, the average, maximum, and minimum values for each parameter for each day are listed (for wind direction, the prevailing wind direction for the day is given). For those hours with missing data, a code is given that explains the reason the data were missing. These codes are given in Table 3.

Monthly and quarterly wind rose distributions from the monitoring site are presented in Tables 4 through 7. These tables give the percentage frequency of occurrence of winds from 16 cardinal directions and from 22 wind speed ranges. These same data are presented graphically in Figures 2 through 5. In the wind rose figures, the length of each "petal" of the rose is proportional to the percentage of time the wind blew from that direction. On the bottom of each figure is a histogram showing the average wind speed from each of the cardinal wind directions.

Table 3. Missing Data Codes

Mnemonic Code	Description	Equivalent EPA Null Value Reason Code
Sc	Scheduled but not collected	9972
Ti	Sample time out of limits	9973
Fi	Filter damage	9976
Op	Voided by operator	9978
Mi	Miscellaneous void	9979
ND	Machine malfunction	9980
Wx	Bad weather	9981
Co	Collection error	9983
Lb	Lab error	9984
QA	Poor quality assurance results	9985
ZS	Manual zero/span check	9986
Wa	Monitoring waived	9987
Pw	Power failure	9988
Wi	Wildlife damage	9989
AZ	Automatic zero/span check	9991
Au	Performance audit	9992
Ma	Routine maintenance/repairs	9993
Ca	Multipoint calibration	9995
PZ	Precision/zero/span	9998

Table 4. Monthly Wind Rose Summary, Black Butte Copper Project Met Tower

April 2020																		
Direction>>>		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Wind Speed (meters per second)	0.1 - 1.0	1.0	1.3	0.3	0.1	1.1	2.5	3.2	1.5	0.1	0.1	0.3	0.3	0.3	0.1	0.1	0.1	12.5
	1.1 - 2.0	0.7	1.0	0.6	2.2	2.9	3.6	2.8	1.5	0.8	0.1	0.8	0.3	1.0	1.0	0.8	1.0	21.1
	2.1 - 3.0	0.3	0.3	0.8	1.0	2.6	1.5	0.3	0.8	0.6	0.4	0.7	0.7	2.5	1.8	1.3	0.4	16.0
	3.1 - 4.0	0.3	0.0	0.1	0.1	0.4	0.0	0.4	0.4	0.0	0.1	0.7	1.5	2.5	2.6	0.6	0.1	10.0
	4.1 - 5.0	0.6	0.0	0.3	0.0	0.1	0.0	0.3	0.6	0.0	0.4	0.3	1.4	2.9	3.2	0.8	0.6	11.4
	5.1 - 6.0	0.0	0.3	0.0	0.0	0.0	0.0	0.1	0.4	0.1	0.3	0.3	1.3	3.1	3.1	0.8	1.3	11.0
	6.1 - 7.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.1	1.0	2.9	2.8	0.4	0.4	8.3
	7.1 - 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.3	1.1	1.9	1.3	0.7	0.1	5.8
	8.1 - 9.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.1	0.4	0.3	0.1	2.6
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.0	0.7
	10.1 - 11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.1	0.0	0.6
	11.1 - 12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	12.1 - 13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	13.1 - 14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	14.1 - 15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	15.1 - 16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	16.1 - 17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17.1 - 18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	18.1 - 19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	19.1 - 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	> 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calm																		0.0
Total		3.5	2.8	2.1	3.5	7.2	7.6	7.4	5.7	1.7	1.7	3.6	7.8	18.9	16.4	6.1	4.2	100.0
Average Speed		3.2	1.6	2.3	1.8	1.9	1.4	1.7	2.6	2.0	3.9	3.5	4.9	5.2	4.9	4.6	4.2	3.6

Table 5. Monthly Wind Rose Summary, Black Butte Copper Project Met Tower

May 2020																		
Direction>>>		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Wind Speed (meters per second)	0.1 - 1.0	0.4	0.5	0.5	0.4	0.1	0.8	1.5	1.1	0.9	0.0	0.4	0.5	0.0	0.4	0.3	0.5	8.5
	1.1 - 2.0	1.2	1.3	1.9	1.3	1.9	4.6	4.6	2.4	0.7	0.7	0.8	0.4	0.4	1.3	0.7	0.3	24.6
	2.1 - 3.0	0.5	0.4	0.3	0.8	1.6	2.3	2.0	0.3	0.3	0.8	0.4	0.5	1.6	1.5	1.6	1.1	16.1
	3.1 - 4.0	0.4	0.4	0.8	0.8	0.7	0.4	0.9	1.3	0.3	0.0	0.1	0.7	1.9	3.4	0.4	0.0	12.6
	4.1 - 5.0	0.0	0.4	0.4	0.0	0.5	0.4	1.5	0.9	1.1	0.4	0.4	0.9	1.9	2.6	1.1	0.4	13.0
	5.1 - 6.0	0.0	0.1	0.0	0.1	0.0	0.3	0.7	1.6	0.3	0.1	0.1	1.2	2.2	1.5	0.3	0.1	8.6
	6.1 - 7.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.5	0.4	0.1	0.1	0.4	1.2	1.1	0.7	0.1	5.4
	7.1 - 8.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.2	0.0	0.1	0.0	0.9	1.1	0.3	0.3	0.1	5.1
	8.1 - 9.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.7	0.0	0.0	0.0	0.4	0.9	0.1	0.0	0.0	3.2
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.0	0.0	0.1	0.5	0.3	0.0	0.0	0.1	2.0
	10.1 - 11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.8
	11.1 - 12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	12.1 - 13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	13.1 - 14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	14.1 - 15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	15.1 - 16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	16.1 - 17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17.1 - 18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	18.1 - 19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	19.1 - 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	> 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calm																		0.0
Total		2.6	3.2	3.9	3.6	4.9	8.8	14.7	10.4	4.0	2.6	2.6	6.6	11.9	12.1	5.3	2.8	100.0
Average Speed		1.9	2.2	2.1	2.5	2.5	2.1	3.8	4.3	3.4	4.0	3.0	5.3	5.3	4.0	3.7	3.3	3.7

Table 6. Monthly Wind Rose Summary, Black Butte Copper Project Met Tower

June 2020																		
Direction>>>		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Wind Speed (meters per second)	0.1 - 1.0	0.7	0.7	0.6	0.6	0.4	1.1	1.9	1.3	0.6	0.0	0.2	0.0	0.2	0.4	0.2	0.7	9.5
	1.1 - 2.0	0.6	0.4	1.1	2.6	5.8	4.3	2.6	1.9	0.9	0.9	0.9	0.7	0.9	0.9	1.9	1.1	27.5
	2.1 - 3.0	0.4	0.2	0.4	0.6	1.1	1.3	0.4	0.4	0.6	0.4	0.0	1.1	2.4	3.5	4.1	0.4	17.1
	3.1 - 4.0	0.0	0.2	0.2	0.2	0.4	0.0	0.0	0.2	0.4	0.2	0.0	1.5	5.0	2.8	2.2	0.4	13.6
	4.1 - 5.0	0.0	0.0	0.2	0.0	0.2	0.4	0.6	0.4	0.2	0.0	0.4	2.0	4.1	3.0	0.9	0.9	13.2
	5.1 - 6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.0	0.4	0.9	3.3	1.5	1.3	0.4	8.4
	6.1 - 7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2	0.0	0.0	0.2	1.7	1.7	0.6	0.6	0.0	5.4
	7.1 - 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.7	0.0	0.6	0.2	1.9
	8.1 - 9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.4	0.4	0.7	0.2	0.0	0.0	2.2
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.6
	10.1 - 11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
	11.1 - 12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
	12.1 - 13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	13.1 - 14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	14.1 - 15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	15.1 - 16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	16.1 - 17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17.1 - 18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	18.1 - 19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	19.1 - 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	> 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calm																		0.0
Total		1.7	1.5	2.4	3.9	7.8	7.1	7.8	4.6	2.6	1.5	2.6	8.4	19.5	12.8	11.7	4.1	100.0
Average Speed		1.5	1.6	2.0	1.7	1.8	1.7	3.8	2.2	2.0	2.0	4.1	4.4	4.6	3.7	3.5	3.0	3.3

Table 7. Quarterly Wind Rose Summary, Black Butte Copper Project Met Tower

Second Quarter 2020																		
Direction>>>		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Wind Speed (meters per second)	0.1 - 1.0	0.7	0.9	0.5	0.4	0.6	1.5	2.2	1.3	0.6	0.1	0.3	0.3	0.2	0.3	0.2	0.5	10.2
	1.1 - 2.0	0.9	1.0	1.2	2.0	3.3	4.2	3.4	2.0	0.8	0.6	0.9	0.5	0.8	1.1	1.1	0.8	24.1
	2.1 - 3.0	0.4	0.3	0.5	0.8	1.9	1.8	1.0	0.5	0.5	0.6	0.4	0.8	2.2	2.2	2.2	0.7	16.3
	3.1 - 4.0	0.3	0.2	0.4	0.4	0.5	0.2	0.5	0.7	0.2	0.1	0.3	1.2	3.0	3.0	1.0	0.2	11.9
	4.1 - 5.0	0.2	0.2	0.3	0.0	0.3	0.3	0.8	0.7	0.5	0.3	0.4	1.4	2.9	2.9	1.0	0.6	12.5
	5.1 - 6.0	0.0	0.2	0.0	0.1	0.0	0.1	0.4	0.9	0.2	0.2	0.3	1.2	2.8	2.1	0.8	0.6	9.4
	6.1 - 7.0	0.2	0.0	0.0	0.1	0.0	0.0	0.4	0.4	0.2	0.1	0.2	1.0	2.0	1.6	0.6	0.2	6.5
	7.1 - 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.1	0.2	0.8	1.3	0.6	0.5	0.2	4.5
	8.1 - 9.0	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.0	0.0	0.2	0.4	1.0	0.3	0.1	0.1	2.8
	9.1 - 10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.0	0.0	0.1	0.2	0.4	0.0	0.1	0.1	1.2
	10.1 - 11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.1	0.0	0.0	0.3	0.1	0.1	0.0	0.6
	11.1 - 12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
	12.1 - 13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	13.1 - 14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	14.1 - 15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	15.1 - 16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	16.1 - 17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17.1 - 18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	18.1 - 19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	19.1 - 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	> 20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calm																		0.0
Total		2.7	2.6	2.9	3.7	6.5	7.9	10.2	7.2	2.8	2.0	3.0	7.5	16.5	13.9	7.3	3.7	100.0
Average Speed		2.5	1.9	2.1	2.0	2.0	1.7	3.2	3.4	2.8	3.6	3.5	4.9	5.0	4.3	3.9	3.6	3.6

Figure 2. Monthly Wind Rose, Black Butte Copper Project Met Tower

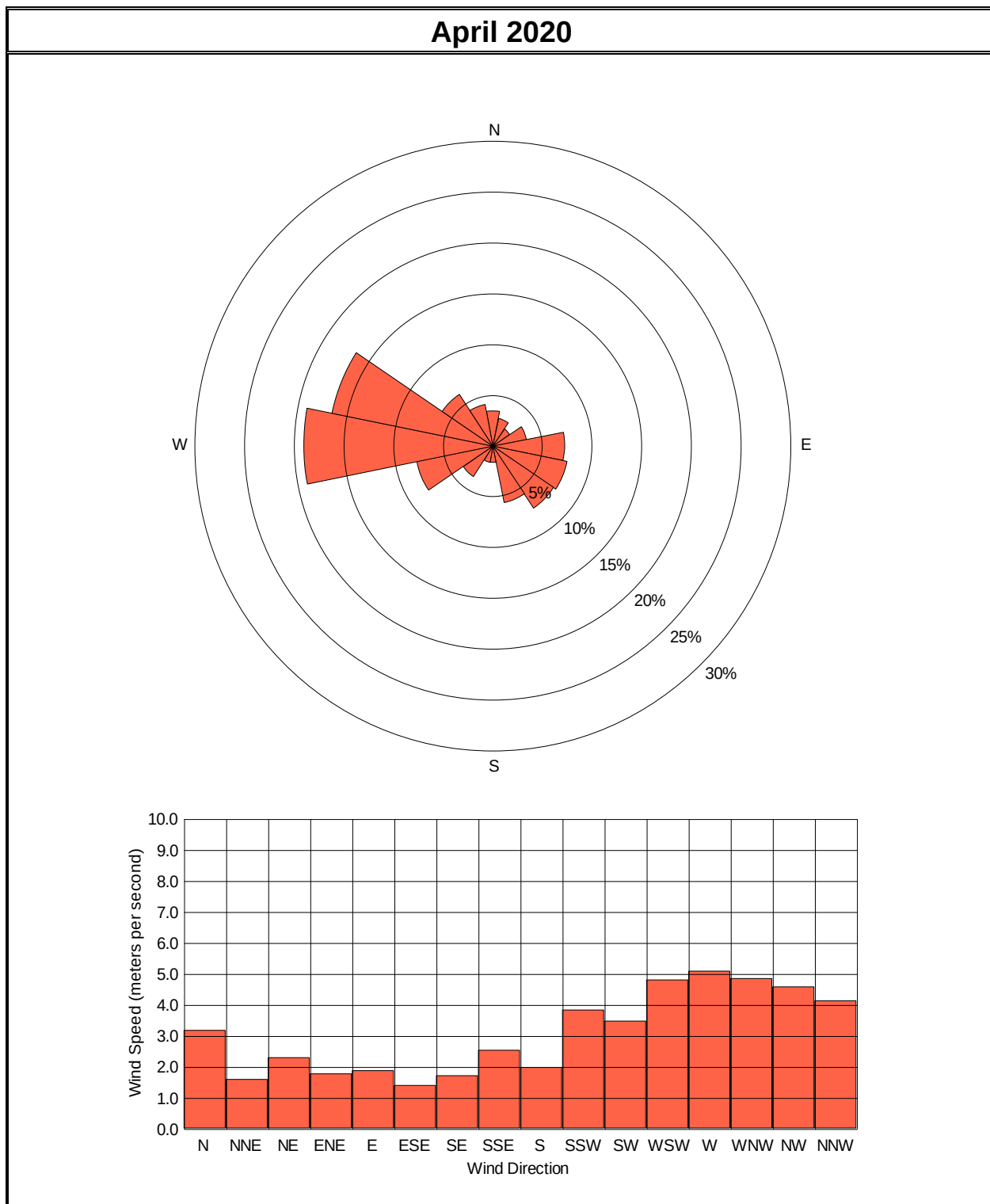


Figure 3. Monthly Wind Rose, Black Butte Copper Project Met Tower

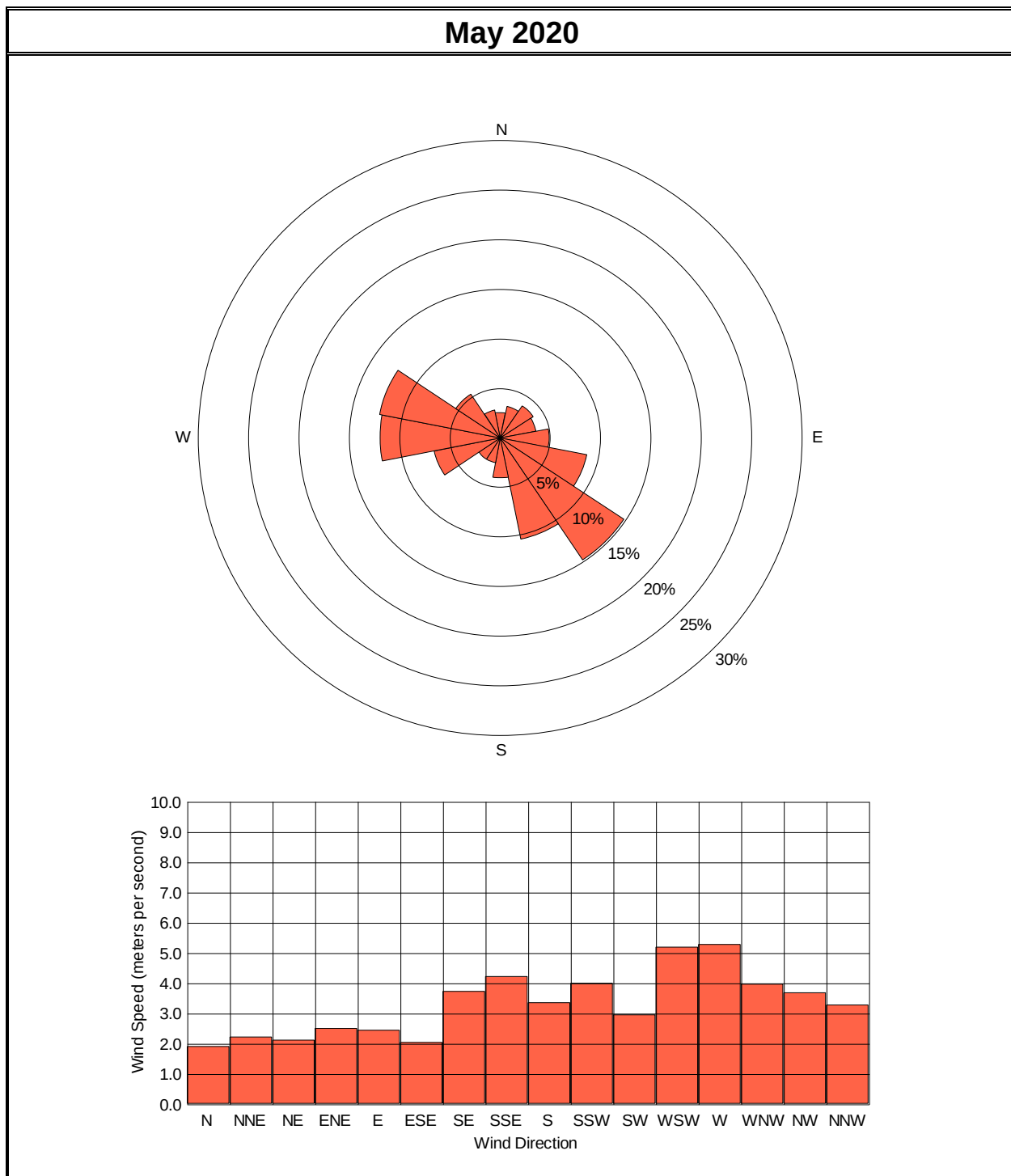


Figure 4. Monthly Wind Rose, Black Butte Copper Project Met Tower

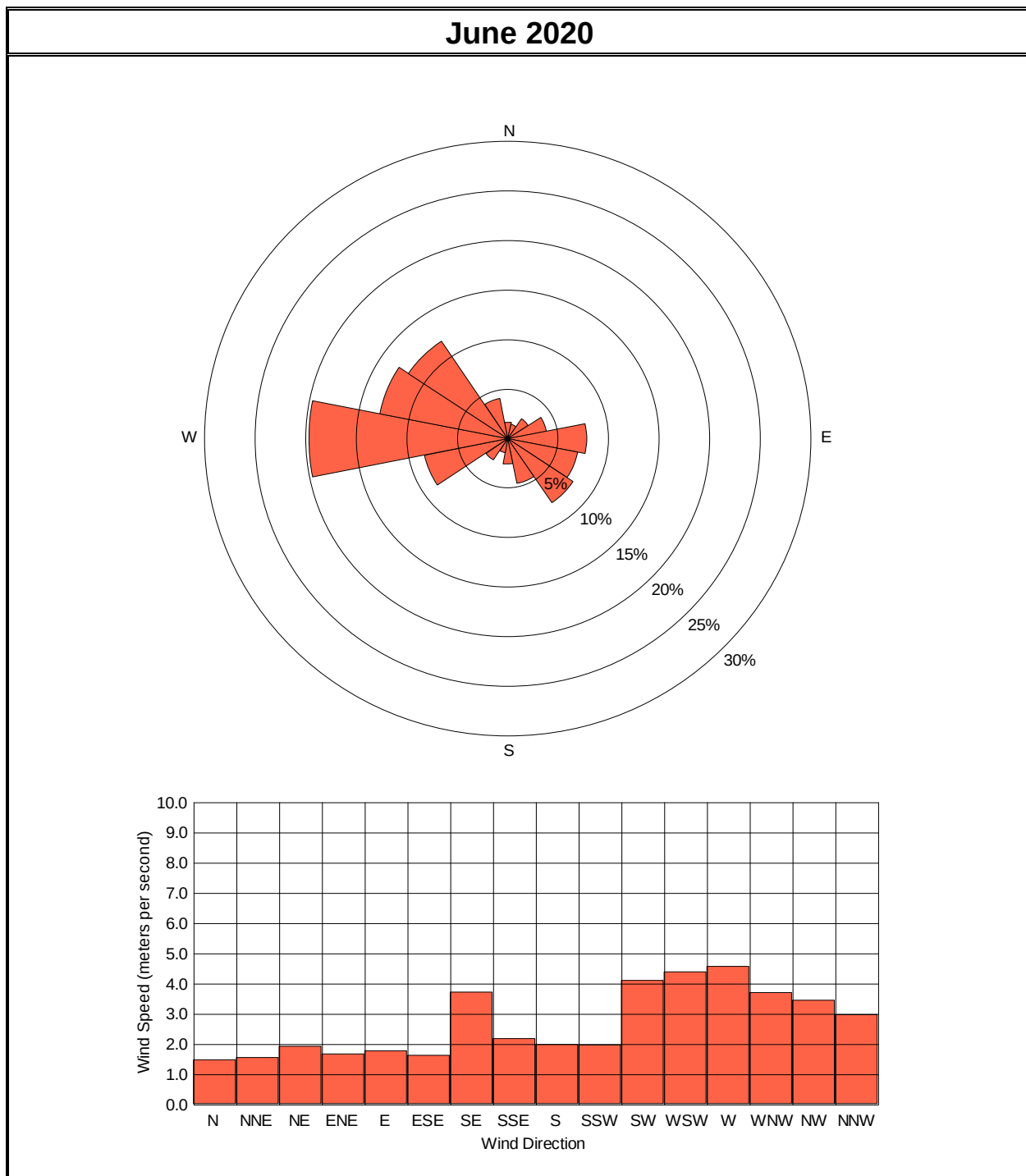
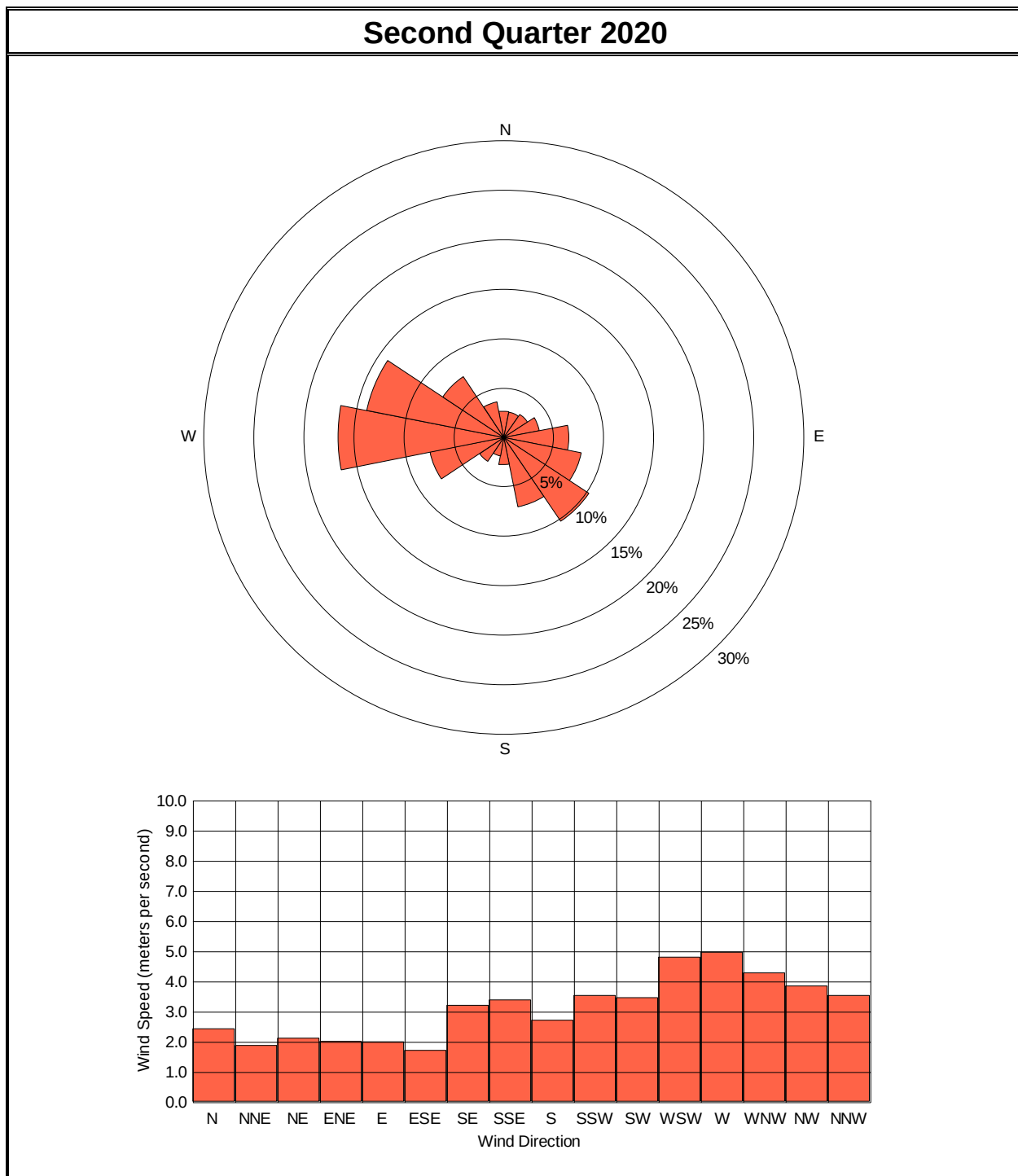


Figure 5. Quarterly Wind Rose, Black Butte Copper Project Met Tower



**APPENDIX A: HOURLY AIR QUALITY AND
METEOROLOGICAL DATA, SECOND QUARTER 2020**

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Wind Speed (meters per second)
April 2020

A-1

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	8.5	7.6	7.9	5.7	7.2	5.9	4.6	4.9	4.6	5.0	5.7	5.6	5.5	3.8	4.9	5.7	5.5	4.3	3.5	3.0	2.7	3.1	3.0	2.1	5.0	8.5	2.1
2	1.4	2.3	2.1	2.1	1.6	1.4	0.5	0.7	1.8	2.7	2.8	2.4	2.9	2.3	3.0	3.1	1.4	1.5	2.5	7.0	5.3	3.5	2.5	1.7	2.4	7.0	0.5
3	1.6	1.2	1.4	1.5	0.9	1.1	1.1	1.6	1.1	3.4	6.8	7.1	8.4	7.4	7.7	7.0	2.4	2.4	2.2	3.2	2.8	3.9	1.6	3.1	3.4	8.4	0.9
4	0.9	3.2	2.8	2.4	2.6	3.1	1.2	2.1	4.6	5.2	4.7	6.3	4.8	3.3	3.4	2.7	1.9	1.4	1.1	5.4	9.2	6.3	7.1	7.3	3.9	9.2	0.9
5	5.3	4.4	4.5	4.9	5.1	4.6	4.0	1.5	1.8	4.0	4.0	5.5	5.5	4.1	3.7	2.4	2.7	1.4	2.5	5.9	1.6	1.7	1.8	1.6	3.5	5.9	1.4
6	2.3	1.6	1.7	1.3	1.3	1.2	1.6	0.8	0.7	3.5	7.6	8.5	7.5	7.2	8.4	6.9	6.7	8.0	7.5	6.7	6.0	4.0	2.4	3.1	4.4	8.5	0.7
7	2.1	4.7	6.8	6.0	3.1	3.4	2.6	3.3	6.0	6.3	4.6	5.5	6.9	7.1	7.1	9.0	5.9	5.7	6.3	8.2	8.6	7.7	4.7	5.2	5.7	9.0	2.1
8	4.7	4.9	1.7	1.5	1.5	2.1	1.1	1.1	1.1	0.7	1.2	3.5	4.9	4.0	6.6	5.9	4.8	2.3	2.5	1.2	1.1	1.5	1.1	0.9	2.6	6.6	0.7
9	0.5	1.0	1.3	0.9	0.7	0.6	0.8	0.6	0.8	1.2	1.3	1.6	3.2	1.9	2.6	3.7	3.7	3.0	1.6	2.2	2.9	2.5	2.2	1.3	1.8	3.7	0.5
10	1.3	1.4	1.3	1.0	1.1	1.0	0.9	0.5	0.5	0.7	4.4	4.5	5.3	4.1	5.3	6.3	6.8	5.6	2.9	2.5	1.5	1.5	1.2	0.9	2.6	6.8	0.5
11	1.1	2.3	3.0	4.3	4.8	5.7	4.0	2.6	2.4	2.7	2.8	1.9	3.2	3.4	2.4	3.3	4.3	4.4	2.5	2.0	3.7	4.2	3.6	2.9	3.2	5.7	1.1
12	4.2	6.2	5.3	2.9	2.7	1.9	1.3	1.3	2.0	5.6	7.5	7.8	7.7	6.8	7.0	6.1	5.6	5.7	3.8	1.7	1.5	0.9	0.6	0.4	4.0	7.8	0.4
13	0.7	0.6	0.7	0.6	0.5	0.5	0.9	0.8	3.0	5.9	6.8	7.4	8.3	9.7	10.7	10.5	8.5	7.9	5.5	3.1	0.9	1.5	1.2	0.7	4.0	10.7	0.5
14	0.8	0.7	0.4	0.6	0.5	0.5	0.5	0.7	0.9	4.7	5.3	6.6	7.3	5.4	4.2	4.3	5.0	3.7	3.1	2.7	2.2	1.5	0.9	1.2	2.7	7.3	0.4
15	1.2	1.4	1.1	1.2	1.0	5.2	5.4	5.2	8.3	9.0	5.9	6.1	4.5	4.3	5.1	5.5	6.1	5.0	3.3	4.3	4.7	2.2	1.5	1.5	4.1	9.0	1.0
16	1.2	1.6	1.6	1.2	1.6	1.3	1.0	0.6	1.2	2.0	2.5	3.4	4.3	6.1	4.9	4.5	4.6	5.3	3.6	1.4	1.5	2.7	2.7	2.0	2.6	6.1	0.6
17	2.1	1.5	1.1	1.4	0.9	1.0	0.6	0.7	1.0	7.0	5.3	7.0	8.2	9.3	8.9	7.7	7.0	7.6	5.0	3.5	2.3	2.9	2.2	2.0	4.0	9.3	0.6
18	1.3	1.0	0.9	1.6	1.5	1.6	0.9	1.1	1.4	3.3	5.1	4.1	4.6	4.0	3.5	4.1	2.9	5.1	4.0	2.7	2.3	3.8	4.8	4.4	2.9	5.1	0.9
19	2.9	2.3	2.6	1.1	0.3	0.5	0.4	1.1	3.3	4.7	5.5	5.9	7.1	7.1	6.5	5.9	5.3	4.8	4.8	3.7	4.3	2.0	1.1	1.3	3.5	7.1	0.3
20	1.0	0.9	0.8	1.4	1.9	1.1	0.8	0.6	1.1	3.4	3.9	3.7	4.1	3.9	3.7	4.3	4.1	4.2	3.5	2.7	2.1	2.1	2.0	1.8	2.5	4.3	0.6
21	1.6	0.8	0.7	1.0	1.0	1.0	1.1	2.2	6.8	6.4	5.7	6.5	6.5	6.7	7.0	7.7	7.0	7.3	7.0	3.8	5.0	3.7	2.3	2.1	4.2	7.7	0.7
22	1.7	2.7	2.5	1.6	1.7	1.7	1.2	2.8	6.0	5.8	6.3	7.0	7.5	7.9	7.3	6.9	6.3	5.0	2.4	5.3	4.0	2.8	1.5	1.2	4.1	7.9	1.2
23	6.3	6.5	5.0	3.5	2.6	1.6	4.5	4.1	4.5	4.3	4.9	4.9	6.0	6.5	4.5	3.7	5.9	4.2	4.2	2.5	1.2	1.1	1.0	0.8	3.9	6.5	0.8
24	0.8	1.7	1.6	0.9	0.6	2.6	2.5	2.4	3.9	4.4	6.3	5.8	6.4	6.5	5.9	5.1	5.2	6.1	4.6	2.9	3.2	2.7	1.7	1.0	3.5	6.5	0.6
25	1.4	0.9	1.3	1.0	1.1	1.1	1.0	0.8	1.8	5.2	5.5	6.1	5.4	5.9	6.5	4.8	2.9	3.6	1.3	1.1	1.7	2.3	1.6	5.7	2.9	6.5	0.8
26	6.2	5.6	6.2	5.1	5.4	5.7	4.6	6.5	10.3	7.5	8.0	8.0	8.0	8.6	9.6	8.8	7.5	6.7	5.7	3.4	2.5	2.3	2.3	1.5	6.1	10.3	1.5
27	1.8	1.0	0.9	0.8	1.1	1.2	0.8	1.0	1.3	4.4	5.4	7.5	8.1	9.4	8.7	7.6	8.4	7.5	10.1	8.1	5.5	4.8	5.2	7.2	4.9	10.1	0.8
28	7.2	7.4	2.8	0.8	1.6	1.3	1.5	3.0	5.4	6.4	6.5	5.6	5.8	6.8	6.2	6.0	6.4	5.8	4.0	2.5	2.0	2.5	2.5	0.9	4.2	7.4	0.8
29	1.0	1.5	1.3	1.6	1.5	1.4	1.0	0.7	1.4	1.8	2.3	3.8	3.6	4.1	6.0	4.9	5.2	3.5	2.4	2.2	3.1	3.8	2.9	2.6	2.6	6.0	0.7
30	2.9	2.3	2.2	4.2	2.8	2.5	2.7	2.9	1.8	4.3	4.9	4.4	4.0	4.0	2.9	6.5	4.4	2.6	2.6	2.2	1.8	1.4	2.9	6.7	3.3	6.7	1.4
Avg	2.5	2.7	2.5	2.1	2.0	2.1	1.8	1.9	3.0	4.4	5.0	5.5	5.8	5.7	5.8	5.7	5.1	4.7	3.9	3.6	3.2	2.9	2.4	2.5	3.6	7.4	0.9
Max	8.5	7.6	7.9	6.0	7.2	5.9	5.4	6.5	10.3	9.0	8.0	8.5	8.4	9.7	10.7	10.5	8.5	8.0	10.1	8.2	9.2	7.7	7.1	7.3	6.1	10.7	2.1
Min	0.5	0.6	0.4	0.6	0.3	0.5	0.4	0.5	0.5	0.7	1.2	1.6	2.9	1.9	2.4	2.4	1.4	1.4	1.1	1.1	0.9	0.9	0.6	0.4	1.8	3.7	0.3

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Wind Speed (meters per second)
May 2020

A-2

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	3.8	4.3	5.8	2.3	2.7	2.5	3.5	3.3	4.8	5.1	5.6	5.9	5.0	5.8	6.0	5.9	5.7	6.0	5.3	3.3	1.9	2.1	2.2	1.2	4.2	6.0	1.2
2	1.6	1.5	1.2	1.4	1.4	1.1	1.0	0.8	1.5	4.1	3.8	3.6	3.4	3.1	3.7	3.4	2.3	3.2	2.3	2.1	5.0	3.5	1.7	2.0	2.4	5.0	0.8
3	3.9	3.7	3.2	2.9	2.7	2.4	2.3	2.5	3.8	5.0	10.5	6.9	7.5	7.0	7.9	6.9	8.0	7.5	6.7	5.4	4.8	3.2	2.2	2.0	5.0	10.5	2.0
4	1.6	2.0	1.5	1.8	2.8	1.7	2.2	6.4	6.6	9.5	7.8	8.8	9.4	9.5	9.1	7.7	8.4	8.8	8.0	5.6	2.8	1.2	1.6	1.7	5.3	9.5	1.2
5	2.2	1.5	1.3	1.2	0.8	0.6	1.0	1.0	6.2	6.4	6.4	6.5	7.1	6.9	4.9	4.6	3.8	2.0	1.1	3.4	3.5	1.7	2.1	1.7	3.2	7.1	0.6
6	1.8	1.7	1.8	2.0	1.7	1.8	1.9	3.4	7.2	7.3	7.7	7.6	7.6	9.7	8.5	7.7	2.2	8.2	3.5	4.0	5.2	5.0	2.6	1.8	4.7	9.7	1.7
7	4.2	5.0	4.6	3.7	4.6	3.4	3.9	3.1	3.9	3.4	4.8	4.9	4.0	1.1	1.3	0.9	1.2	1.7	1.8	1.2	1.4	0.9	1.9	2.2	2.9	5.0	0.9
8	1.9	1.9	1.7	0.9	1.2	0.6	0.7	3.0	3.5	3.1	3.1	3.3	4.8	4.8	4.6	4.6	6.0	5.0	4.2	4.7	3.2	5.0	6.3	5.5	3.5	6.3	0.6
9	4.7	2.1	1.5	1.1	1.2	0.6	0.9	1.1	1.4	1.6	1.8	2.9	3.3	4.2	3.6	4.0	5.2	5.0	4.1	4.1	3.5	1.8	2.0	1.6	2.6	5.2	0.6
10	1.0	1.2	0.8	1.1	0.8	0.8	0.8	5.3	7.8	7.9	7.7	8.8	10.1	9.6	8.9	9.3	9.9	7.4	5.5	4.4	4.5	3.3	2.6	2.0	5.1	10.1	0.8
11	2.7	2.5	2.7	2.9	3.8	3.6	5.6	4.5	4.6	4.1	3.6	4.6	6.1	7.3	6.0	3.7	4.2	7.1	6.7	5.9	6.1	5.0	3.0	3.4	4.6	7.3	2.5
12	2.4	3.1	2.3	5.6	5.4	4.5	4.4	4.9	5.6	2.5	3.8	2.4	1.5	2.7	3.1	3.5	3.0	1.5	0.8	1.1	0.8	1.5	2.5	1.3	2.9	5.6	0.8
13	2.5	2.4	0.4	0.6	0.7	0.3	0.4	1.4	4.3	6.3	7.5	7.5	7.7	8.4	10.0	5.0	6.8	5.7	5.1	3.6	2.5	2.8	2.2	1.7	4.0	10.0	0.3
14	2.3	1.7	1.3	1.1	1.0	0.7	0.8	1.5	5.5	6.0	5.8	6.0	5.0	5.3	4.2	4.0	3.2	2.1	3.7	4.0	4.0	3.1	2.7	1.6	3.2	6.0	0.7
15	1.4	1.5	1.5	1.4	0.9	0.6	1.3	1.1	2.2	3.8	4.7	3.8	1.4	2.0	4.2	2.3	2.2	3.7	1.5	1.4	1.7	0.8	1.1	0.9	2.0	4.7	0.6
16	1.1	1.1	0.9	0.4	Wx	Wx	Wx	0.8	1.3	4.2	5.0	4.6	4.7	4.9	5.9	6.7	6.6	5.2	5.8	7.6	8.3	7.4	5.1	4.5	4.4	8.3	0.4
17	2.6	2.8	1.7	2.0	1.8	1.1	1.3	0.8	2.0	2.5	3.6	4.1	7.0	6.1	6.8	4.8	2.1	3.9	3.8	5.8	2.4	2.5	2.0	3.5	3.2	7.0	0.8
18	2.9	3.0	1.9	2.7	1.1	1.4	1.2	0.9	0.9	0.7	2.0	3.3	4.2	4.2	4.7	4.2	2.1	1.3	4.1	3.7	5.2	9.1	2.9	2.6	2.9	9.1	0.7
19	2.6	3.9	2.7	2.7	3.0	1.6	1.3	1.5	1.0	1.0	2.7	1.9	4.4	5.1	6.2	7.1	3.7	3.2	2.4	3.6	4.3	4.8	3.6	6.6	3.4	7.1	1.0
20	4.6	1.8	2.3	1.3	1.7	1.6	1.6	1.5	2.6	2.9	2.5	3.0	3.4	4.8	5.6	4.7	4.3	1.8	2.5	1.9	2.1	2.3	1.5	4.5	2.8	5.6	1.3
21	2.0	3.2	3.0	2.5	4.4	4.2	5.4	5.9	6.2	7.2	8.0	7.6	8.8	9.8	10.4	10.5	9.3	6.0	5.4	5.5	2.0	1.5	1.2	1.2	5.5	10.5	1.2
22	4.7	3.1	1.6	1.2	1.7	1.7	2.5	1.7	1.9	4.0	5.6	6.8	6.7	5.7	5.5	6.1	4.8	4.2	3.9	2.4	2.7	2.0	1.6	1.6	3.5	6.8	1.2
23	1.1	0.9	0.7	0.7	0.6	0.6	0.7	1.6	1.0	1.3	2.7	5.1	4.8	4.0	3.2	2.2	2.2	2.3	2.5	3.0	2.8	1.8	1.5	1.7	2.0	5.1	0.6
24	1.9	0.7	1.3	1.8	1.5	0.9	0.8	1.4	1.8	2.9	2.9	2.4	3.0	1.4	2.8	1.9	6.0	5.8	2.4	0.9	3.7	3.2	3.2	2.3	2.4	6.0	0.7
25	2.2	1.3	1.4	1.0	0.9	1.0	0.7	0.8	3.1	4.8	6.0	5.0	5.0	5.0	4.9	4.8	4.4	3.5	2.8	3.1	1.8	1.9	1.2	1.6	2.8	6.0	0.7
26	3.5	3.3	4.0	3.3	2.9	2.4	2.7	5.8	4.7	6.0	7.6	7.2	8.5	8.9	7.5	8.3	8.2	7.9	6.3	5.3	2.1	2.3	2.0	2.3	5.1	8.9	2.0
27	2.8	2.8	2.4	0.8	1.2	1.1	0.7	0.9	4.3	4.9	4.7	5.9	4.5	4.1	5.3	7.5	6.6	6.3	4.9	3.7	0.9	1.3	1.2	1.8	3.4	7.5	0.7
28	1.4	1.6	1.5	1.2	1.7	1.7	3.1	5.3	8.1	8.4	8.3	6.8	5.2	4.5	4.8	6.2	7.2	7.9	7.1	5.8	1.6	1.7	1.6	1.7	4.3	8.4	1.2
29	2.1	2.4	1.8	2.2	2.0	1.3	1.1	1.1	1.9	1.8	4.2	2.2	2.6	2.9	2.1	3.3	2.8	1.4	0.6	4.3	3.1	2.4	1.6	1.6	2.2	4.3	0.6
30	1.2	1.7	1.3	1.2	1.5	1.8	1.4	5.6	8.9	8.3	8.7	9.2	9.1	9.2	7.5	8.5	8.7	4.3	5.5	4.3	4.7	4.2	4.4	6.5	5.3	9.2	1.2
31	8.8	6.6	4.0	2.9	2.9	3.0	5.7	3.6	10.1	11.1	10.5	8.4	6.2	6.7	6.3	6.3	6.2	5.9	5.5	2.1	0.9	1.2	2.0	2.1	5.4	11.1	0.9
Avg	2.7	2.5	2.1	1.9	2.0	1.7	2.0	2.7	4.2	4.8	5.5	5.4	5.5	5.6	5.7	5.4	5.1	4.7	4.1	3.8	3.2	2.9	2.4	2.5	3.7	7.4	1.0
Max	8.8	6.6	5.8	5.6	5.4	4.5	5.7	6.4	10.1	11.1	10.5	9.2	10.1	9.8	10.4	10.5	9.9	8.8	8.0	7.6	8.3	9.1	6.3	6.6	5.5	11.1	2.5
Min	1.0	0.7	0.4	0.4	0.6	0.3	0.4	0.8	0.9	0.7	1.8	1.9	1.4	1.1	1.3	0.9	1.2	1.3	0.6	0.9	0.8	0.8	1.1	0.9	2.0	4.3	0.3

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Wind Speed (meters per second)
June 2020

A-3

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	1.8	1.6	2.0	1.3	1.5	1.6	1.1	1.0	1.8	2.3	1.8	3.9	3.0	3.9	3.0	2.7	5.1	4.2	3.2	1.5	1.3	4.5	5.9	3.5	2.6	5.9	1.0
2	2.4	1.7	1.8	2.2	2.0	1.4	1.0	3.1	5.4	5.4	4.7	Au	Au	Au	4.4	4.2	4.3	3.1	2.7	1.9	1.8	2.8	2.0	1.6	2.9	5.4	1.0
3	1.0	1.2	2.4	1.1	2.8	3.1	4.5	4.5	3.4	4.4	4.7	6.5	6.2	5.8	6.4	6.6	6.0	5.7	5.4	3.7	3.6	1.4	2.2	1.7	3.9	6.6	1.0
4	1.2	1.5	1.4	2.2	1.7	0.8	2.3	5.3	6.5	6.9	5.6	5.8	4.8	5.4	4.1	7.7	6.5	6.7	4.4	3.3	2.4	2.7	1.6	1.3	3.8	7.7	0.8
5	1.7	1.2	1.0	0.8	0.6	0.6	1.0	5.9	6.2	7.2	4.1	3.1	5.4	6.7	8.6	8.6	11.2	10.5	11.2	8.8	10.1	9.2	5.0	6.4	5.6	11.2	0.6
6	2.5	4.5	1.5	1.1	1.9	1.4	1.1	0.8	2.0	3.5	2.5	1.9	2.7	4.0	5.0	3.8	5.1	4.0	3.0	9.4	3.9	2.1	5.5	4.8	3.2	9.4	0.8
7	4.9	3.4	2.9	4.9	5.8	2.6	2.1	4.8	4.4	4.3	4.2	4.3	4.0	1.9	3.0	2.4	3.0	2.9	4.1	5.5	5.1	2.8	2.3	1.6	3.6	5.8	1.6
8	1.0	1.8	1.8	2.9	2.7	4.5	6.3	5.4	4.3	3.9	4.0	5.3	7.0	5.5	5.0	2.8	2.0	2.3	2.6	2.0	2.1	1.7	2.7	3.8	3.5	7.0	1.0
9	3.4	1.5	1.4	1.3	0.8	1.5	2.3	6.8	7.4	7.2	8.6	7.3	7.5	8.5	8.9	8.7	9.8	8.2	6.6	5.7	4.3	5.8	Pw	Pw	5.6	9.8	0.8
10	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw		
11	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw		
12	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw		
13	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw		
14	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw		
15	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw		
16	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw		
17	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	3.6	4.7	4.4	4.3	2.3	4.3	3.3	3.4	3.3	3.2	2.6	2.6	3.0	3.9	6.5	3.7	6.5	2.3
18	3.9	3.2	3.8	3.2	2.2	1.4	2.5	3.5	5.4	7.6	7.1	6.2	7.0	7.1	5.3	4.0	3.9	3.7	2.6	1.1	1.0	1.6	1.8	1.6	3.8	7.6	1.0
19	1.4	1.1	0.8	1.0	0.9	0.6	0.5	0.8	1.7	4.3	5.5	5.0	5.0	2.4	6.0	8.2	5.8	2.2	3.2	2.2	1.5	2.5	2.4	1.9	2.8	8.2	0.5
20	2.0	1.0	1.5	1.1	0.8	1.0	0.7	0.9	3.3	4.3	5.0	5.4	6.9	6.6	6.1	5.9	6.2	6.1	1.8	2.6	3.3	3.9	1.5	1.2	3.3	6.9	0.7
21	0.8	1.2	1.5	1.0	1.3	1.0	1.0	2.1	3.8	4.4	4.7	4.8	5.2	4.9	4.3	5.9	5.5	5.8	5.0	2.9	1.7	2.5	2.0	1.7	3.1	5.9	0.8
22	2.1	1.6	0.9	1.2	1.3	1.3	1.1	0.9	2.2	3.1	3.5	3.4	3.4	3.5	4.1	3.9	3.7	2.9	2.1	1.3	1.2	2.5	2.5	1.6	2.3	4.1	0.9
23	1.3	1.5	1.3	1.0	1.3	1.1	0.8	0.6	3.1	4.5	5.0	4.1	4.4	3.9	4.3	3.7	3.4	2.8	2.0	1.3	1.2	2.5	2.2	1.5	2.4	5.0	0.6
24	1.6	1.5	1.5	1.2	1.4	1.5	1.1	0.9	0.8	2.8	3.8	4.5	5.0	6.2	4.9	2.5	2.4	3.4	8.8	4.4	4.4	3.1	1.9	2.0	3.0	8.8	0.8
25	1.4	1.5	1.8	1.7	1.0	0.9	0.7	0.6	1.5	3.5	4.3	4.5	4.6	4.8	5.7	5.4	5.3	4.3	3.5	2.2	1.7	0.9	1.2	1.9	2.7	5.7	0.6
26	2.4	2.5	2.1	1.9	1.3	1.4	0.9	1.0	1.4	4.1	4.0	6.1	5.9	6.0	5.7	4.9	3.9	3.4	2.8	1.8	1.5	2.2	2.4	1.9	3.0	6.1	0.9
27	1.4	1.2	1.3	0.9	0.9	1.3	1.0	0.9	1.9	5.4	6.9	5.0	4.3	4.5	3.0	2.4	1.4	2.9	3.1	3.6	2.0	3.3	1.6	1.3	2.6	6.9	0.9
28	1.6	1.7	1.9	1.3	1.3	1.1	0.8	1.3	2.5	2.6	4.1	5.1	3.7	3.5	2.6	2.5	2.3	1.8	1.6	2.5	2.9	2.6	2.4	2.9	2.4	5.1	0.8
29	2.8	3.1	1.6	0.9	1.3	1.0	1.3	3.0	3.2	2.8	2.9	3.5	4.5	4.6	1.8	3.6	3.1	3.3	4.0	2.5	2.1	1.4	1.2	1.3	2.5	4.6	0.9
30	1.4	1.1	0.9	1.0	1.1	1.3	1.6	4.8	4.1	5.1	7.4	6.7	8.4	8.1	7.0	6.8	5.6	3.0	2.0	1.8	1.1	1.5	1.8	1.3	3.5	8.4	0.9
Avg	2.0	1.8	1.7	1.6	1.6	1.5	1.6	2.7	3.5	4.5	4.7	4.9	5.1	5.0	4.9	4.8	4.7	4.2	3.9	3.2	2.7	2.9	2.5	2.4	3.3	6.9	0.9
Max	4.9	4.5	3.8	4.9	5.8	4.5	6.3	6.8	7.4	7.6	8.6	7.3	8.4	8.5	8.9	8.7	11.2	10.5	11.2	9.4	10.1	9.2	5.9	6.5	5.6	11.2	2.3
Min	0.8	1.0	0.8	0.8	0.6	0.6	0.5	0.6	0.8	2.3	1.8	1.9	2.7	1.9	1.8	2.4	1.4	1.8	1.6	1.1	1.0	0.9	1.2	1.2	2.3	4.1	0.5

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Wind Direction (degrees)
April 2020

A-4

Day	<< Hour >>																								Prev
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	328	325	328	328	311	331	326	287	260	250	258	259	263	284	265	255	263	253	250	262	269	271	282	290	282
2	269	277	252	295	291	285	252	271	152	154	135	110	272	319	264	259	189	104	161	154	156	152	146	124	212
3	130	144	155	155	153	151	142	115	333	303	245	232	218	211	229	225	42	195	156	217	110	280	1	95	178
4	104	276	295	274	277	276	97	233	252	261	282	258	281	290	271	313	317	8	92	145	145	147	149	142	257
5	149	140	142	148	153	159	147	132	68	130	233	215	254	255	252	268	254	233	179	201	124	118	118	63	170
6	117	110	115	137	125	112	131	217	38	256	268	264	269	278	281	292	293	290	285	299	302	296	252	236	258
7	289	281	287	289	258	263	256	274	286	275	275	289	261	253	269	283	285	293	292	288	283	287	290	267	278
8	310	310	351	268	271	280	178	247	24	23	341	283	289	285	296	308	302	305	286	80	158	129	113	142	298
9	136	111	148	164	120	123	6	103	22	347	14	313	291	330	303	282	292	279	245	118	92	84	87	115	65
10	93	125	76	123	124	119	139	150	127	122	248	266	269	298	281	290	9	14	11	304	359	316	214	132	106
11	311	270	266	283	302	318	313	291	82	101	86	327	138	130	109	34	53	40	36	349	5	344	345	345	358
12	358	334	335	311	339	283	270	157	231	258	258	260	266	306	319	332	319	329	308	210	166	137	147	116	286
13	212	121	81	237	126	135	102	151	280	281	285	292	306	306	310	303	311	304	286	303	120	122	96	135	261
14	111	111	92	107	136	339	9	146	358	299	282	262	253	251	252	257	247	240	262	280	268	188	47	69	258
15	101	99	112	101	359	325	337	333	360	4	13	9	349	343	347	332	3	359	351	352	346	6	109	113	11
16	74	308	185	121	92	63	85	13	262	284	297	280	257	254	267	267	291	291	287	187	131	97	94	105	268
17	104	135	154	147	155	160	160	142	141	260	266	269	271	261	265	265	269	280	274	288	79	92	65	62	199
18	62	127	89	68	47	97	355	217	325	293	309	292	288	294	317	341	337	268	232	182	184	159	153	160	294
19	170	161	157	171	134	298	170	36	284	287	296	291	294	307	299	296	288	295	296	291	277	268	99	84	274
20	27	358	10	99	106	118	15	16	17	263	278	264	275	291	279	275	278	275	260	261	103	104	87	136	325
21	105	137	124	124	76	99	109	12	264	259	273	263	274	282	284	264	282	278	278	282	288	294	116	46	273
22	329	73	98	87	123	121	57	324	265	260	253	266	253	256	282	281	294	288	286	273	258	50	117	24	292
23	279	268	266	270	281	303	276	271	295	273	308	312	301	291	292	313	296	301	264	258	125	111	162	131	280
24	131	295	298	15	106	234	297	308	274	263	289	287	309	335	332	317	288	288	297	282	84	99	66	28	310
25	91	98	132	128	104	98	25	144	335	250	241	241	235	239	237	213	213	237	274	137	110	99	66	288	175
26	274	272	275	275	286	276	296	268	263	277	258	260	261	268	272	279	284	292	282	254	92	71	55	27	280
27	43	101	121	83	23	71	129	270	93	286	266	254	253	266	261	256	253	266	277	280	276	275	248	309	272
28	296	285	300	219	234	146	89	317	297	297	295	285	278	298	265	271	253	260	267	270	228	103	97	164	267
29	121	64	59	90	61	129	155	322	90	40	207	249	224	211	205	197	185	198	149	116	81	74	54	62	124
30	81	62	68	86	101	73	86	89	156	232	246	226	240	252	218	267	307	311	27	231	112	26	226	267	178
Prev	86	105	110	140	110	126	86	262	313	276	275	271	269	279	276	282	289	286	277	254	133	97	105	98	273

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Wind Direction (degrees)
May 2020

A-5

Day	<< Hour >>																								Prev
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	286	257	285	276	298	320	299	288	299	279	250	254	282	270	259	264	276	263	286	291	39	104	105	120	280
2	133	125	125	128	132	113	131	155	353	254	258	244	245	265	287	278	202	214	200	138	89	106	133	123	168
3	142	96	96	116	111	123	133	141	147	276	268	287	283	259	271	282	267	273	289	297	297	310	263	33	256
4	352	285	148	170	287	143	316	266	262	258	254	247	258	251	260	274	281	291	287	291	281	224	84	99	264
5	111	69	42	55	49	54	132	70	301	312	287	307	307	294	327	310	323	356	12	152	160	111	118	129	27
6	131	143	92	108	143	123	180	163	153	159	156	157	155	144	132	196	302	262	278	273	281	289	304	301	176
7	280	284	285	286	290	300	300	299	298	281	297	254	264	28	45	43	33	88	154	133	143	162	130	139	291
8	141	137	146	146	148	177	215	274	279	298	297	298	297	315	306	313	311	293	297	306	301	329	344	336	288
9	330	298	36	154	150	127	127	17	331	247	283	247	282	305	3	13	15	19	16	26	55	106	107	85	18
10	336	65	62	350	333	245	114	152	150	144	147	147	144	136	139	143	143	136	123	116	125	124	124	136	128
11	138	134	119	113	146	156	144	108	85	93	126	140	141	147	154	109	144	152	150	150	142	135	147	136	134
12	121	146	134	157	159	158	155	160	154	136	172	199	161	341	301	299	230	121	118	141	146	233	266	176	165
13	337	93	173	140	170	227	323	300	249	258	262	260	251	276	279	300	315	301	308	294	258	271	91	130	269
14	103	76	119	122	151	171	166	12	265	255	253	251	255	246	276	298	282	196	67	73	73	49	87	112	157
15	76	32	103	40	57	125	131	143	275	243	147	49	124	296	54	214	289	302	356	306	288	107	31	32	50
16	54	126	56	144	273	94	329	182	37	195	194	183	169	169	168	189	183	172	143	127	133	140	160	144	153
17	136	140	134	132	126	154	159	176	155	173	183	162	205	174	165	191	194	153	156	154	128	96	104	144	154
18	55	5	67	96	71	112	6	245	291	314	318	264	260	231	181	233	307	88	205	84	74	331	41	345	355
19	338	70	93	83	99	86	296	280	158	295	312	347	140	109	300	330	70	53	349	20	36	80	33	64	37
20	54	280	151	188	164	154	150	202	323	309	298	323	326	290	269	175	257	70	97	101	104	103	161	230	191
21	316	275	269	257	188	190	191	212	234	238	245	245	250	249	260	263	235	244	264	236	212	123	79	121	234
22	279	354	107	139	105	85	78	60	41	264	283	259	264	266	268	264	286	279	281	286	91	48	63	68	326
23	51	336	341	151	359	102	241	139	91	351	273	267	283	350	37	31	292	334	11	339	16	268	185	230	338
24	205	159	198	299	308	23	23	325	293	282	308	14	216	246	359	9	247	299	296	170	78	82	81	85	314
25	92	103	102	117	130	126	150	253	267	270	261	270	267	263	264	252	266	286	275	284	219	250	155	118	230
26	270	268	295	283	264	273	283	292	298	255	250	252	261	264	276	262	258	263	271	297	170	205	236	130	263
27	74	64	73	111	84	126	291	8	294	295	278	288	260	290	284	305	312	308	318	38	28	14	194	147	334
28	228	117	164	133	124	98	122	153	148	145	144	143	143	141	145	138	146	146	144	135	109	103	121	109	136
29	119	124	131	108	109	108	37	353	159	167	304	343	338	320	304	244	255	294	5	165	158	138	130	117	119
30	103	103	85	43	32	119	47	152	148	145	151	147	150	143	138	137	136	127	134	146	111	140	164	157	127
31	153	154	156	103	78	123	151	152	190	200	212	272	283	250	278	256	277	278	275	313	235	120	81	73	199
Prev	89	102	111	125	120	130	149	197	250	249	250	253	242	259	273	264	267	268	289	176	117	117	115	115	189

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Wind Direction (degrees)
June 2020

A-6

Day	<< Hour >>																								Prev
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	51	52	73	60	51	63	23	331	314	308	358	284	286	302	299	293	282	291	304	296	257	272	276	268	320
2	201	199	149	75	53	117	3	309	259	255	239	22	60	232	248	249	241	253	246	269	132	99	93	97	213
3	159	119	303	218	266	267	297	293	293	284	272	263	253	261	265	291	316	318	328	317	324	68	119	98	284
4	118	97	122	152	199	104	243	291	294	276	277	265	284	323	328	308	303	308	312	292	129	94	107	74	286
5	76	52	31	3	88	141	353	146	146	139	145	154	150	141	145	137	136	129	127	128	126	143	136	129	123
6	120	134	91	84	115	67	350	313	336	264	279	312	299	289	34	69	316	53	159	279	281	297	281	292	331
7	284	270	279	251	241	247	174	281	265	274	267	233	209	317	313	326	307	303	296	267	264	298	271	168	270
8	165	152	102	170	169	121	160	159	150	187	266	255	254	268	272	258	319	310	297	328	331	93	290	292	232
9	254	124	108	63	164	80	313	263	264	268	259	267	265	258	260	269	265	265	273	256	253	283	Pw	Pw	260
10	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	
11	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	
12	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	
13	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	
14	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	
15	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	
16	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	
17	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	318	329	346	329	290	299	302	259	282	251	262	295	284	308	278	295
18	278	279	280	285	326	321	311	298	298	314	323	315	319	337	316	328	314	323	316	217	187	124	84	129	306
19	91	123	222	144	136	41	178	337	344	255	261	267	268	359	276	257	274	211	339	275	98	33	75	63	286
20	95	134	88	155	102	125	132	110	279	257	281	270	258	267	264	229	229	253	294	253	266	280	192	158	223
21	111	88	88	131	134	147	2	310	272	269	271	297	257	335	301	291	305	313	315	307	94	56	253	79	316
22	141	76	106	91	91	113	177	71	264	254	256	254	245	258	262	274	273	245	268	292	187	98	100	128	204
23	92	84	87	69	111	142	346	173	295	265	264	254	260	280	262	264	263	288	268	278	119	84	108	104	238
24	57	105	111	93	95	131	125	294	332	297	289	261	281	258	295	320	307	294	292	92	108	99	291	84	341
25	308	236	186	186	99	47	25	146	321	279	291	306	312	288	284	300	288	287	295	273	131	117	158	124	276
26	119	110	106	99	91	114	156	28	340	252	265	251	262	273	280	274	291	272	281	236	122	115	86	91	196
27	99	105	140	150	63	88	28	269	332	263	265	277	286	278	72	41	339	311	318	305	11	85	25	78	6
28	115	74	88	120	57	46	53	304	269	303	320	336	24	170	304	310	8	287	312	304	308	298	311	328	339
29	326	325	254	285	209	136	255	272	309	308	311	281	250	235	224	275	272	266	266	282	300	272	197	154	267
30	154	174	159	132	142	163	142	168	188	215	227	237	219	228	250	252	264	259	265	306	117	113	116	159	192
Prev	117	114	116	122	114	107	12	287	291	270	277	277	272	276	283	287	289	285	289	280	179	82	131	113	274

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Standard Deviation of Wind Direction (degrees)
April 2020

A-7

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	7	7	6	11	13	14	7	23	13	7	5	7	11	20	12	5	7	9	8	16	14	14	18	19	11	23	5
2	33	15	10	20	12	33	87	86	18	9	10	98	23	35	17	17	77	38	16	8	5	10	18	33	30	98	5
3	36	27	31	27	53	40	27	75	55	75	14	20	18	20	13	22	79	72	82	14	78	49	67	18	42	82	13
4	83	41	27	22	28	25	41	91	11	11	17	11	17	32	13	41	22	25	45	12	10	15	10	9	27	91	9
5	10	13	11	9	8	7	17	47	52	13	63	23	21	18	16	33	43	53	34	13	39	20	26	69	27	69	7
6	58	46	38	55	34	77	29	55	78	64	12	13	12	14	11	11	12	9	9	8	5	11	28	28	30	78	5
7	45	16	15	11	16	11	19	17	17	14	15	11	13	10	13	9	10	7	7	9	10	9	7	14	14	45	7
8	19	18	65	81	47	18	51	28	57	57	58	20	10	17	11	13	13	22	21	80	44	26	32	53	36	81	10
9	68	32	22	41	55	41	60	64	43	13	37	79	30	46	34	22	16	20	80	24	16	20	33	28	39	80	13
10	54	32	53	37	38	73	39	91	82	50	23	18	17	21	20	22	18	8	24	17	82	77	92	52	43	92	8
11	63	35	20	15	8	8	24	23	20	12	17	86	18	27	28	81	16	11	33	25	19	24	32	34	28	86	8
12	21	9	12	18	38	18	63	45	31	9	6	11	13	17	11	11	16	14	10	79	31	43	27	93	27	93	6
13	96	82	66	93	77	98	36	55	53	10	11	15	11	10	9	10	12	10	10	34	56	27	42	52	41	98	9
14	61	42	84	54	54	92	70	67	38	22	17	11	9	11	12	15	21	14	10	15	30	40	60	39	37	92	9
15	40	33	27	67	65	10	11	16	15	15	18	18	19	22	26	13	16	24	23	19	12	85	38	35	28	85	10
16	85	48	51	48	27	55	52	86	65	44	29	22	18	12	19	21	13	9	9	52	24	32	18	19	36	86	9
17	20	14	42	20	29	25	39	67	88	12	17	15	12	10	13	13	13	9	10	13	85	13	33	17	26	88	9
18	32	42	63	31	61	61	84	78	81	17	19	14	12	24	32	12	25	19	41	16	29	8	7	21	35	84	7
19	10	9	8	66	45	61	59	43	19	14	15	11	12	14	20	15	11	12	8	7	12	30	50	26	24	66	7
20	43	61	74	42	21	33	48	80	36	36	23	35	30	31	21	27	19	16	10	39	22	37	54	12	35	80	10
21	27	54	67	44	60	47	46	90	12	13	19	20	22	22	17	19	15	11	8	17	9	59	29	55	33	90	8
22	77	29	38	67	76	66	67	73	13	22	16	18	16	17	17	15	10	17	30	19	33	69	47	70	38	77	10
23	12	10	9	12	18	36	12	12	12	22	36	19	19	19	21	17	13	12	11	84	59	96	79	37	28	96	9
24	23	79	81	54	70	64	23	26	15	18	15	17	26	14	15	23	19	13	10	35	16	24	28	34	31	81	10
25	29	36	30	62	53	60	75	57	58	18	20	19	19	17	17	21	24	17	53	44	17	23	56	12	35	75	12
26	12	10	14	14	16	16	16	15	14	16	18	18	18	18	17	16	14	12	13	18	45	47	37	42	20	47	10
27	34	79	89	87	54	36	73	103	46	33	15	16	15	16	14	15	15	13	13	10	23	18	28	12	36	103	10
28	11	11	44	89	83	24	58	32	17	15	16	29	22	15	22	25	18	18	12	53	58	26	27	48	32	89	11
29	68	51	45	42	45	37	56	87	67	67	69	48	53	39	20	24	16	18	14	31	18	44	51	45	44	87	14
30	29	84	53	15	37	37	17	16	77	24	19	23	21	19	27	49	29	24	81	84	47	84	56	12	40	84	12
Avg	40	36	40	42	41	41	44	55	40	25	22	26	19	20	18	21	21	19	25	30	32	36	38	35	32	81	9
Max	96	84	89	93	83	98	87	103	88	75	69	98	53	46	34	81	79	72	82	84	85	96	92	93	44	103	14
Min	7	7	6	9	8	7	7	12	11	7	5	7	9	10	9	5	7	7	7	7	5	8	7	9	11	23	5

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Standard Deviation of Wind Direction (degrees)
May 2020

A-8

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	16	16	10	53	19	20	20	14	13	24	17	23	25	21	21	24	19	15	24	21	32	23	21	43	22	53	10
2	24	33	35	48	18	41	47	50	64	31	26	47	66	49	35	46	81	44	19	52	12	24	52	49	41	81	12
3	30	22	12	15	31	26	13	28	13	59	14	11	14	16	24	19	21	13	13	7	14	31	63	91	25	91	7
4	90	69	57	76	86	47	61	15	16	12	16	14	13	16	17	19	17	13	12	9	26	87	53	23	36	90	9
5	18	47	40	49	71	62	18	84	15	15	25	20	15	19	28	30	28	53	81	27	38	47	33	23	37	84	15
6	27	30	45	28	17	26	38	21	10	10	9	10	16	10	12	40	83	13	17	12	8	13	9	19	22	83	8
7	9	8	7	9	9	9	8	8	8	19	31	18	24	24	38	65	28	15	26	27	25	29	21	13	20	65	7
8	16	17	17	34	37	76	78	53	23	13	30	33	17	34	47	24	13	15	12	14	17	15	15	14	28	78	12
9	14	35	93	66	32	44	53	78	64	78	62	36	44	26	51	23	12	13	14	10	43	56	46	68	44	93	10
10	58	60	59	64	80	90	74	18	6	10	9	8	9	10	11	9	8	12	13	14	13	19	26	37	30	90	6
11	20	22	24	17	13	10	10	25	12	18	27	14	10	10	6	25	19	5	7	8	10	11	18	31	16	31	5
12	17	11	32	6	9	12	7	8	6	62	23	28	79	52	31	15	69	40	28	28	41	88	45	65	33	88	6
13	95	33	79	30	53	82	85	89	21	17	14	14	17	14	28	21	14	14	11	14	28	40	44	74	39	95	11
14	37	53	31	70	96	92	76	84	19	17	19	18	28	18	37	32	27	68	40	12	12	51	24	49	42	96	12
15	60	50	25	34	72	58	10	51	90	16	72	38	86	32	38	77	33	15	30	43	27	65	82	80	49	90	10
16	55	24	40	57	78	60	91	74	79	28	18	20	18	23	24	19	13	15	17	7	8	8	16	9	33	91	7
17	12	11	35	24	22	31	28	75	25	32	25	24	17	19	13	15	31	6	7	11	15	25	61	70	26	75	6
18	45	73	55	47	75	32	81	77	61	47	44	49	27	34	20	45	44	78	36	22	10	82	60	48	50	82	10
19	63	11	29	26	21	72	43	80	65	58	21	57	36	15	55	59	19	58	70	32	25	30	42	12	42	80	11
20	20	42	16	55	35	75	16	92	13	13	23	22	23	19	15	87	69	92	21	38	34	45	52	46	40	92	13
21	24	15	19	41	13	9	9	11	10	14	11	13	11	15	13	13	14	23	19	14	83	38	80	55	24	83	9
22	33	47	34	56	46	48	12	37	54	38	23	21	18	19	20	20	20	20	12	13	29	20	36	31	29	56	12
23	33	66	69	45	73	80	82	19	53	77	51	17	36	26	36	81	87	78	21	18	11	54	56	61	51	87	11
24	44	28	62	21	19	34	39	33	48	24	23	50	45	98	46	72	14	40	78	49	9	19	18	20	39	98	9
25	23	26	25	61	69	27	45	95	43	21	19	23	25	22	20	30	19	22	18	14	42	43	28	56	34	95	14
26	26	22	18	13	23	24	29	11	14	15	12	15	17	16	19	16	14	12	11	11	73	69	51	50	24	73	11
27	49	39	49	42	42	47	73	77	17	21	27	24	25	18	25	12	18	18	14	37	72	84	85	16	39	85	12
28	97	28	28	60	23	42	25	10	8	8	10	10	17	27	15	9	8	7	6	14	28	32	36	30	24	97	6
29	28	19	24	25	18	30	45	47	62	60	26	48	40	16	48	38	20	69	52	10	15	14	20	31	34	69	10
30	34	53	43	82	78	54	34	14	9	10	8	7	9	9	10	10	11	33	19	18	17	25	21	9	26	82	7
31	7	11	20	41	48	16	4	12	12	17	16	24	17	21	18	22	14	12	17	64	54	83	32	40	26	83	4
Avg	36	33	37	42	43	44	40	45	31	29	24	24	27	24	26	33	29	30	25	22	28	41	40	41	33	82	9
Max	97	73	93	82	96	92	91	95	90	78	72	57	86	98	55	87	87	92	81	64	83	88	85	91	51	98	15
Min	7	8	7	6	9	9	4	8	6	8	8	7	9	9	6	9	8	5	6	7	8	8	9	9	16	31	4

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Standard Deviation of Wind Direction (degrees)
June 2020

A-9

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	38	34	44	37	49	54	59	35	48	60	41	38	43	39	30	41	12	9	21	30	39	18	14	22	36	60	9
2	66	92	68	34	38	36	81	77	15	19	42	Au	Au	Au	30	26	29	34	12	21	65	23	25	40	42	92	12
3	77	54	39	87	35	17	23	12	11	19	27	18	19	15	16	13	15	15	8	7	6	86	45	58	30	87	6
4	65	47	85	94	69	83	56	11	14	18	20	17	25	16	19	17	13	11	14	26	21	47	55	48	37	94	11
5	28	57	45	62	90	68	84	12	11	11	19	35	16	12	9	12	10	10	9	11	11	21	41	44	30	90	9
6	87	44	71	83	30	41	93	85	47	19	23	48	26	13	27	45	35	69	82	13	12	14	12	15	43	93	12
7	8	12	22	13	8	30	68	18	25	28	32	29	34	59	50	34	28	12	33	16	9	28	19	22	27	68	8
8	52	27	35	34	20	33	8	8	9	53	22	13	11	15	15	47	78	48	53	27	86	95	24	18	35	95	8
9	48	49	34	65	68	38	78	14	14	16	14	15	19	14	11	14	12	10	11	17	14	10	Pw	Pw	27	78	10
10	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw
11	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw
12	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw
13	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw
14	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw
15	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw
16	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw
17	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	6	12	25	18	24	23	10	17	21	13	27	21	20	21	11	18	27	6
18	14	11	9	22	10	23	17	14	14	12	16	13	10	14	16	19	15	11	16	37	102	19	22	40	21	102	9
19	56	36	88	32	30	94	69	86	65	16	17	17	21	41	38	12	16	70	29	66	39	22	21	33	42	94	12
20	38	47	41	57	42	41	77	86	50	24	20	20	14	13	11	20	18	16	35	33	12	18	44	20	33	86	11
21	61	40	59	45	59	67	90	45	16	14	21	14	13	27	22	13	19	24	15	16	58	65	98	69	40	98	13
22	33	54	57	39	45	51	36	74	49	32	24	29	33	34	22	33	21	29	41	26	95	18	22	13	38	95	13
23	35	33	51	59	30	27	85	94	51	22	20	29	27	35	29	28	21	20	17	26	38	20	20	43	36	94	17
24	26	32	31	23	36	20	83	40	63	68	17	20	30	17	26	49	25	55	20	40	31	19	50	52	36	83	17
25	64	60	60	57	69	67	44	60	69	22	23	22	21	23	15	14	10	10	10	25	57	73	51	20	39	73	10
26	18	17	20	18	48	29	42	87	83	20	20	17	19	18	19	21	12	13	25	22	84	22	32	38	31	87	12
27	36	65	40	67	85	56	78	68	58	15	16	21	21	49	47	39	76	56	24	20	51	78	79	74	51	85	15
28	33	30	27	41	96	72	68	54	34	21	10	18	31	76	12	16	48	29	37	24	16	14	12	21	35	96	10
29	23	22	53	81	59	57	61	24	18	23	17	25	10	12	33	21	11	12	13	22	25	60	52	34	32	81	10
30	66	50	73	66	27	58	34	13	21	19	18	19	17	14	14	13	13	15	29	76	85	73	38	31	37	85	13
Avg	44	42	48	51	47	48	61	46	36	24	21	23	22	26	23	24	24	26	25	27	42	38	36	35	35	84	11
Max	87	92	88	94	96	94	93	94	83	68	42	48	43	76	50	49	78	70	82	76	102	95	98	74	51	102	17
Min	8	11	9	13	8	17	8	8	9	6	10	13	10	12	9	10	10	9	8	7	6	10	12	11	18	27	6

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
9-Meter Temperature (Degrees Celsius)
April 2020

A-10

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	-8.8	-9.5	-10.5	-11.0	-12.1	-12.5	-13.3	-13.6	-13.8	-13.2	-12.6	-12.5	-11.6	-11.0	-11.0	-11.0	-11.7	-12.8	-13.7	-14.0	-14.4	-14.8	-15.2	-15.5	-12.5	-8.8	-15.5
2	-15.3	-15.4	-15.5	-15.4	-15.5	-15.5	-15.1	-14.6	-14.0	-12.7	-11.0	-9.2	-8.1	-7.0	-5.9	-5.3	-4.8	-4.5	-4.7	-7.4	-8.2	-8.5	-9.1	-9.3	-10.5	-4.5	-15.5
3	-10.5	-11.8	-11.8	-12.0	-12.3	-13.7	-14.7	-13.2	-9.7	-4.8	-2.8	-2.0	-1.6	-1.2	-0.8	-1.1	-2.5	-1.7	-1.9	-2.2	-3.2	-3.2	-4.3	-4.8	-6.2	-0.8	-14.7
4	-5.0	-5.1	-5.1	-5.1	-5.7	-6.4	-8.7	-8.3	-5.2	-4.5	-3.3	-2.3	-1.8	-1.1	0.0	0.7	1.3	1.4	0.7	0.0	-1.2	-2.3	-2.9	-3.2	-3.0	1.4	-8.7
5	-3.6	-3.6	-3.5	-3.5	-4.1	-4.5	-4.9	-4.4	-2.7	1.5	4.2	5.5	6.0	6.3	6.8	7.4	7.6	7.5	6.4	5.9	4.4	3.2	1.5	1.6	1.7	7.6	-4.9
6	-0.8	-1.7	-2.9	-3.4	-3.6	-4.1	-4.9	-3.0	-0.5	4.0	6.2	6.6	7.3	8.0	8.6	8.3	7.9	7.3	6.8	5.7	5.0	3.8	2.1	1.9	2.7	8.6	-4.9
7	2.4	3.0	3.1	2.8	2.4	2.1	1.9	2.2	3.3	3.4	3.5	4.0	5.0	6.2	7.0	7.6	7.3	7.1	7.1	6.9	6.2	5.3	3.7	1.5	4.4	7.6	1.5
8	-1.8	-3.0	-4.9	-6.3	-7.3	-6.8	-6.9	-7.0	-6.2	-4.5	-1.1	1.2	2.8	4.1	5.7	6.5	7.0	6.4	5.9	4.2	1.6	-0.6	-2.1	-3.3	-0.7	7.0	-7.3
9	-4.1	-4.8	-6.2	-6.6	-7.3	-8.2	-7.8	-6.5	-3.5	1.0	4.0	5.7	6.9	8.1	9.2	10.3	10.8	11.1	9.7	5.1	2.8	0.9	-0.1	-1.7	1.2	11.1	-8.2
10	-2.8	-3.0	-3.8	-3.9	-4.5	-4.9	-4.8	-3.5	-0.7	3.9	8.4	9.4	10.3	10.3	10.3	10.6	8.5	7.2	5.8	5.0	3.4	2.6	1.2	0.3	2.7	10.6	-4.9
11	0.3	0.0	-1.2	-1.9	-2.4	-4.0	-4.8	-5.0	-4.9	-5.1	-4.9	-4.8	-5.3	-4.7	-4.9	-5.0	-5.3	-5.9	-6.4	-7.2	-7.8	-9.2	-10.0	-10.5	-5.0	0.3	-10.5
12	-10.8	-11.1	-11.6	-12.6	-13.3	-15.8	-17.6	-16.7	-14.0	-12.1	-11.3	-10.3	-9.6	-9.0	-8.7	-9.4	-9.1	-9.6	-10.2	-13.3	-15.8	-16.6	-15.8	-15.3	-12.5	-8.7	-17.6
13	-15.6	-15.9	-15.7	-15.3	-14.7	-16.2	-17.6	-16.8	-12.5	-10.8	-10.0	-9.3	-8.6	-8.0	-6.8	-6.4	-5.9	-5.8	-6.4	-7.5	-10.2	-13.2	-14.8	-15.2	-11.6	-5.8	-17.6
14	-15.6	-15.8	-15.3	-14.6	-14.4	-14.3	-13.3	-11.5	-7.7	-3.9	-2.8	-1.7	-1.5	-1.5	-1.3	-0.3	0.4	0.8	0.9	0.6	0.0	-0.9	-1.2	-2.3	-5.7	0.9	-15.8
15	-4.7	-5.5	-5.7	-4.7	-3.7	-2.6	-2.7	-2.9	-3.0	-4.1	-4.5	-4.7	-4.7	-4.4	-4.1	-4.0	-3.7	-4.1	-4.4	-4.8	-5.5	-7.0	-9.3	-9.5	-4.8	-2.6	-9.5
16	-10.6	-10.8	-11.7	-13.1	-14.6	-15.7	-16.2	-14.2	-9.8	-7.1	-6.0	-5.1	-4.6	-3.9	-3.4	-2.6	-2.0	-1.6	-1.6	-3.4	-6.0	-7.6	-9.6	-11.1	-8.0	-1.6	-16.2
17	-11.9	-12.9	-13.0	-13.5	-13.8	-13.8	-13.5	-11.5	-6.8	0.8	1.9	3.4	4.7	5.9	6.5	7.4	8.4	8.4	7.8	5.9	2.2	0.0	-0.4	-0.6	-2.0	8.4	-13.8
18	-0.8	-1.0	-1.0	-1.8	-2.7	-1.9	-1.7	0.5	2.7	3.3	3.4	3.7	4.1	4.5	4.7	4.6	4.8	4.1	2.7	1.8	1.4	0.9	0.5	0.5	1.6	4.8	-2.7
19	0.4	0.3	0.1	-0.1	-0.4	-0.6	-0.5	0.3	1.5	2.5	3.8	4.7	5.4	6.2	6.8	7.4	7.5	7.3	6.9	6.2	5.8	4.1	3.7	3.4	3.4	7.5	-0.6
20	3.2	3.3	1.3	-1.1	-2.3	-2.9	-3.3	-0.2	3.6	5.8	6.9	7.5	8.3	8.9	10.0	10.5	10.7	11.0	10.3	8.0	4.8	0.9	-0.3	0.3	4.4	11.0	-3.3
21	-0.8	-2.1	-3.4	-3.7	-4.3	-4.5	-3.4	2.8	6.9	7.8	9.0	10.0	11.2	12.1	12.9	13.2	13.2	13.0	12.2	10.3	9.2	7.4	4.3	3.6	5.7	13.2	-4.5
22	3.2	1.6	-1.4	-2.2	-3.0	-3.5	-2.3	3.1	5.6	6.5	7.2	8.3	9.3	9.6	10.0	10.1	9.9	9.5	8.8	8.2	6.1	3.9	3.3	3.1	4.8	10.1	-3.5
23	5.1	4.6	4.0	4.0	3.5	2.7	2.9	3.2	3.5	3.9	2.3	3.4	4.6	4.4	2.1	4.1	5.0	5.0	4.3	2.9	1.6	1.8	1.7	1.8	3.4	5.1	1.6
24	1.9	1.5	0.8	0.7	0.4	0.0	0.6	0.9	2.3	3.2	4.9	5.8	6.4	5.2	6.3	7.5	8.1	8.1	7.1	5.8	3.0	0.9	-0.7	-1.8	3.3	8.1	-1.8
25	-3.4	-4.1	-4.8	-5.3	-5.7	-5.7	-3.7	-0.1	4.6	6.3	7.2	8.4	9.4	10.0	10.9	11.0	11.2	11.2	10.6	8.2	5.9	5.4	3.3	6.3	4.0	11.2	-5.7
26	6.4	5.6	5.4	4.9	4.8	4.7	4.8	5.3	6.2	7.2	7.9	9.2	10.4	11.4	12.0	12.6	12.8	12.6	11.5	9.6	5.8	2.4	1.6	0.6	7.3	12.8	0.6
27	1.2	1.1	0.5	0.0	0.0	0.7	1.1	3.0	6.1	8.3	8.3	8.1	8.9	9.8	10.6	10.6	11.4	11.3	10.6	9.4	8.2	7.6	6.8	2.9	6.1	11.4	0.0
28	3.0	3.4	2.2	0.8	0.4	-1.7	-0.9	3.2	4.9	6.1	7.2	8.3	9.5	10.4	11.4	12.0	12.6	12.8	12.5	10.5	6.8	3.8	1.9	1.2	5.9	12.8	-1.7
29	0.2	-0.3	-0.7	-1.5	-1.5	-1.9	0.2	5.8	11.8	14.1	16.1	17.5	18.5	19.6	19.9	19.9	20.4	20.2	19.3	15.8	12.3	8.9	8.1	6.6	10.4	20.4	-1.9
30	5.8	5.3	7.7	5.6	6.0	5.0	5.7	8.7	11.2	13.3	13.6	14.0	14.4	14.9	14.5	10.9	7.1	6.9	6.5	6.0	5.3	5.2	5.4	4.2	8.5	14.9	4.2
Avg	-3.1	-3.6	-4.2	-4.7	-5.1	-5.6	-5.5	-3.8	-1.4	0.7	1.9	2.8	3.5	4.1	4.6	4.9	5.0	4.8	4.2	2.7	1.0	-0.5	-1.6	-2.1	-0.0	5.8	-6.8
Max	6.4	5.6	7.7	5.6	6.0	5.0	5.7	8.7	11.8	14.1	16.1	17.5	18.5	19.6	19.9	19.9	20.4	20.2	19.3	15.8	12.3	8.9	8.1	6.6	10.4	20.4	4.2
Min	-15.6	-15.9	-15.7	-15.4	-15.5	-16.2	-17.6	-16.8	-14.0	-13.2	-12.6	-12.5	-11.6	-11.0	-11.0	-11.0	-11.7	-12.8	-13.7	-14.0	-15.8	-16.6	-15.8	-15.5	-12.5	-8.8	-17.6

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
9-Meter Temperature (Degrees Celsius)
May 2020

A-11

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	3.5	3.3	2.7	2.3	1.7	0.9	1.7	2.9	3.9	4.7	5.7	6.7	7.1	8.3	9.0	9.9	10.2	10.5	10.2	8.4	5.0	0.9	-1.2	-2.1	4.8	10.5	-2.1
2	-3.2	-3.9	-4.3	-4.8	-5.5	-5.1	-3.1	1.7	6.7	9.1	9.9	10.9	11.9	12.9	13.7	13.9	14.4	14.6	14.3	9.9	6.3	3.7	3.1	3.8	5.5	14.6	-5.5
3	7.0	6.1	5.6	3.4	2.3	1.7	2.8	5.4	8.0	9.5	6.9	4.2	5.8	6.2	7.5	7.8	8.3	7.8	7.2	5.6	4.2	2.9	0.9	-0.3	5.3	9.5	-0.3
4	-0.9	-0.7	-1.9	-2.7	-2.3	-2.9	-1.5	0.8	1.8	2.8	3.7	4.8	5.6	6.7	7.2	7.5	7.7	7.8	7.3	6.1	4.7	1.5	0.3	-2.6	2.5	7.8	-2.9
5	-2.8	-4.2	-4.9	-5.2	-6.5	-7.0	-4.3	1.3	5.7	6.7	7.8	9.0	9.9	10.8	11.5	12.2	12.6	12.8	12.7	9.9	7.9	7.4	6.4	5.5	4.8	12.8	-7.0
6	4.8	4.4	3.2	3.5	3.9	5.2	6.5	8.0	9.3	9.6	9.9	10.8	12.3	13.0	13.0	10.5	7.0	2.6	0.5	0.3	0.0	0.0	-0.1	-0.6	5.7	13.0	-0.6
7	-0.5	-0.6	-0.8	-0.9	-1.0	-1.1	-0.9	-0.6	0.0	0.5	0.9	1.3	2.1	3.0	4.0	5.0	5.6	6.5	5.5	2.9	1.3	0.2	-0.6	-1.0	1.3	6.5	-1.1
8	-2.1	-3.2	-3.1	-3.7	-2.8	-1.6	-0.8	1.0	2.1	1.8	1.7	2.8	4.5	5.3	6.3	6.8	4.8	4.3	3.5	3.0	3.1	2.7	1.9	1.2	1.6	6.8	-3.7
9	0.6	-0.2	-1.9	-3.1	-4.2	-5.1	-2.9	0.0	2.2	3.3	4.3	5.7	6.7	6.9	6.8	7.1	6.8	7.0	6.5	4.9	3.6	2.3	1.7	0.5	2.5	7.1	-5.1
10	-0.2	-1.4	-2.8	-3.4	-3.7	-4.2	-2.1	1.5	1.9	2.7	3.6	4.0	4.2	4.2	5.3	5.3	4.3	3.2	2.7	2.3	1.9	1.5	0.9	0.3	1.3	5.3	-4.2
11	-0.2	-0.5	-0.8	-0.9	-1.1	-1.2	-1.2	-0.9	-0.4	0.2	0.5	1.1	1.6	1.5	-0.5	-0.7	0.1	0.2	-0.2	-0.7	-1.2	-1.2	-1.0	-1.4	-0.4	1.6	-1.4
12	-1.5	-1.5	-1.5	-1.5	-1.9	-1.9	-1.6	-1.1	-0.3	1.6	2.5	3.3	4.6	7.0	8.0	8.2	6.1	6.6	6.6	6.1	4.8	4.1	3.2	3.4	2.6	8.2	-1.9
13	1.0	0.7	0.5	0.6	0.6	0.6	1.0	3.2	5.1	6.2	6.9	7.7	8.3	8.4	8.2	6.6	7.1	7.7	8.3	7.3	5.0	4.2	2.2	-0.2	4.5	8.4	-0.2
14	-1.0	-1.8	-2.8	-2.9	-3.7	-3.9	-1.7	2.2	5.9	7.0	7.9	8.8	9.4	10.2	10.5	11.4	11.5	11.1	10.5	8.3	6.7	5.0	3.3	2.6	4.8	11.5	-3.9
15	2.2	0.9	-0.8	-1.0	-1.3	-0.5	1.3	4.8	7.5	7.2	5.6	2.3	3.0	5.1	6.3	4.9	3.9	4.6	4.8	4.3	3.4	2.2	1.6	1.1	3.1	7.5	-1.3
16	0.6	0.4	-0.2	-0.3	-0.5	-1.0	-0.6	2.0	5.5	7.7	8.8	9.7	11.2	11.9	13.1	13.6	13.5	13.8	13.1	11.7	10.7	9.9	9.0	8.5	7.2	13.8	-1.0
17	7.5	7.2	4.5	3.2	2.0	1.5	3.8	8.4	12.2	13.9	15.3	16.6	16.2	16.1	16.7	16.0	16.3	16.1	15.0	14.0	12.0	11.3	9.9	10.4	11.1	16.7	1.5
18	9.5	8.4	7.5	6.3	5.5	5.3	5.6	7.8	10.1	12.4	15.0	16.9	17.9	19.0	19.1	18.8	18.0	18.1	17.1	15.0	12.4	10.5	8.3	7.4	12.2	19.1	5.3
19	6.6	5.6	5.2	4.9	4.1	3.7	5.4	7.2	9.7	12.1	13.7	15.1	16.4	16.4	13.1	10.2	12.3	12.3	12.4	12.3	11.6	11.1	10.9	12.0	10.2	16.4	3.7
20	11.8	10.2	8.0	7.4	6.1	6.1	7.3	8.0	7.9	8.6	9.7	10.6	11.7	13.3	13.3	10.5	7.9	7.3	7.3	7.0	6.4	5.8	6.0	5.6	8.5	13.3	5.6
21	4.3	4.2	3.6	3.8	4.0	3.8	4.1	5.0	5.3	5.6	5.5	6.2	8.1	9.2	10.1	10.6	10.2	9.8	7.9	6.7	4.0	2.9	3.4	3.5	5.9	10.6	2.9
22	3.3	1.4	1.4	0.0	-0.7	-0.8	0.9	2.7	4.0	5.4	6.3	7.4	7.7	8.2	8.8	9.2	8.9	8.9	8.4	7.1	5.2	4.5	3.6	2.8	4.8	9.2	-0.8
23	2.0	0.9	0.3	-0.5	-0.8	-1.0	-0.6	1.2	2.9	4.6	6.2	6.5	7.0	7.3	7.0	6.0	5.0	5.8	6.3	6.1	5.0	4.4	3.3	3.1	3.7	7.3	-1.0
24	2.7	2.7	2.7	2.6	2.3	2.3	2.9	4.0	5.2	6.3	6.6	7.4	5.6	8.3	9.3	10.2	10.5	9.5	8.6	8.3	5.7	3.7	2.1	0.7	5.4	10.5	0.7
25	-0.3	-1.2	-2.1	-2.3	-2.9	-2.7	0.5	5.1	8.5	9.6	10.8	11.6	12.7	13.6	14.3	15.2	15.2	15.3	14.6	13.7	12.0	10.9	8.8	8.3	7.9	15.3	-2.9
26	9.2	9.1	9.0	9.0	8.3	8.0	8.6	10.0	10.9	11.4	12.2	13.2	14.1	14.8	15.6	16.2	16.5	16.4	15.5	14.0	11.6	10.0	9.6	7.3	11.7	16.5	7.3
27	4.9	3.0	2.1	0.9	0.0	0.2	2.5	7.7	11.0	12.1	12.8	13.8	14.3	14.4	16.0	16.8	16.6	16.6	15.9	13.7	11.3	8.2	6.9	4.2	9.4	16.8	0.0
28	3.8	3.8	2.2	2.3	2.7	6.3	8.1	9.2	10.3	11.3	12.3	13.1	14.2	15.2	15.9	16.2	16.6	15.8	15.0	13.7	12.7	11.8	11.3	11.0	10.6	16.6	2.2
29	11.1	11.0	10.1	8.7	5.4	4.8	8.9	11.8	14.3	16.2	15.8	16.4	18.3	18.4	18.8	19.9	20.1	20.2	20.5	17.1	14.9	14.3	13.2	12.5	14.3	20.5	4.8
30	11.3	10.2	8.5	6.9	6.0	7.2	10.8	15.3	16.5	17.8	18.9	19.7	20.6	20.9	21.0	20.8	20.1	19.4	19.5	18.5	17.9	17.7	17.7	17.5	15.9	21.0	6.0
31	16.7	16.5	16.3	15.7	14.3	13.8	15.3	18.8	20.5	21.6	21.9	20.4	19.2	20.3	21.1	21.7	21.7	21.3	20.4	18.5	14.1	12.0	8.4	6.6	17.4	21.9	6.6
Avg	3.6	2.9	2.1	1.6	1.0	1.0	2.5	5.0	6.9	8.0	8.7	9.3	10.1	10.9	11.3	11.2	11.0	10.8	10.3	8.9	7.2	6.0	5.0	4.2	6.6	12.1	-0.0
Max	16.7	16.5	16.3	15.7	14.3	13.8	15.3	18.8	20.5	21.6	21.9	20.4	20.6	20.9	21.1	21.7	21.7	21.3	20.5	18.5	17.9	17.7	17.7	17.5	17.4	21.9	7.3
Min	-3.2	-4.2	-4.9	-5.2	-6.5	-7.0	-4.3	-1.1	-0.4	0.2	0.5	1.1	1.6	1.5	-0.5	-0.7	0.1	0.2	-0.2	-0.7	-1.2	-1.2	-1.2	-2.6	-0.4	1.6	-7.0

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
9-Meter Temperature (Degrees Celsius)
June 2020

A-12

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	6.2	4.7	4.1	3.3	2.6	3.4	6.2	9.5	12.0	13.4	14.8	16.7	17.1	18.3	18.6	19.0	17.5	14.5	11.7	11.1	10.7	10.5	9.9	9.2	11.0	19.0	2.6
2	8.1	6.7	5.0	3.2	1.9	1.3	4.0	8.5	10.2	11.2	12.5	Au	Au	Au	17.6	18.3	19.0	19.1	17.9	15.2	12.0	9.5	8.5	7.7	10.4	19.1	1.3
3	6.6	7.6	11.9	11.1	11.1	11.2	11.9	12.0	11.9	12.5	13.6	15.9	16.5	16.9	17.9	18.4	18.1	17.5	16.3	15.1	13.3	11.8	9.6	8.4	13.2	18.4	6.6
4	7.3	6.4	6.3	7.4	8.3	8.7	11.4	12.1	12.5	13.3	13.7	14.3	14.9	14.8	15.2	16.5	16.3	16.0	15.1	13.9	10.7	9.2	6.8	5.5	11.5	16.5	5.5
5	4.6	3.4	2.6	2.4	1.9	2.1	6.7	12.9	14.5	15.5	16.6	18.3	18.8	19.7	20.7	21.1	20.6	20.5	19.6	19.3	19.1	17.9	17.8	17.7	13.9	21.1	1.9
6	16.5	14.7	13.8	12.6	9.9	9.2	9.9	11.8	14.5	15.2	15.8	17.0	17.8	17.1	16.5	13.3	12.2	11.3	11.3	8.4	7.9	7.7	7.3	6.4	12.4	17.8	6.4
7	6.2	6.3	6.3	5.9	5.7	5.5	5.7	6.4	7.4	8.1	9.2	10.1	9.1	9.9	11.3	11.8	12.3	12.1	11.0	9.0	7.0	6.5	6.4	5.6	8.1	12.3	5.5
8	5.0	3.3	3.3	3.4	3.4	2.7	2.6	1.8	1.9	3.0	3.8	4.3	5.2	5.0	3.4	2.9	2.6	3.4	4.1	4.4	3.9	3.4	3.3	2.6	3.4	5.2	1.8
9	2.4	0.7	-0.5	-1.0	-1.2	-0.4	2.6	4.4	5.4	6.1	7.1	8.1	8.9	9.6	9.7	9.6	9.7	8.9	8.4	7.8	7.2	7.6	ND	ND	5.5	9.7	-1.2
10	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
11	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
12	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
13	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
14	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
15	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
16	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
17	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	7.9	8.1	8.0	7.1	7.5	7.9	7.0	6.6	6.1	5.5	5.3	5.4	5.4	5.3	5.2	6.6	8.1	5.2
18	4.6	4.7	4.9	5.0	4.8	5.0	5.5	6.0	6.6	7.6	7.7	8.2	8.3	8.6	9.1	9.0	9.2	9.2	9.2	9.0	7.4	5.3	4.2	3.9	6.8	9.2	3.9
19	4.1	4.7	4.0	2.2	2.0	2.7	4.5	6.5	9.2	11.0	11.8	12.6	13.0	12.7	15.2	15.8	15.3	13.0	13.6	12.8	10.8	8.8	7.2	6.1	9.2	15.8	2.0
20	5.1	3.7	2.8	1.6	0.7	1.0	4.2	9.3	13.3	14.8	16.0	17.0	17.7	17.4	16.6	15.1	15.6	14.9	12.7	12.9	12.5	12.1	10.1	9.2	10.7	17.7	0.7
21	9.1	8.8	9.3	9.2	9.5	9.7	9.8	11.2	12.0	12.8	13.9	14.5	15.0	14.0	16.2	17.1	17.1	17.5	17.3	16.4	12.7	9.9	10.4	10.1	12.6	17.5	8.8
22	7.8	6.3	5.1	4.1	3.4	3.8	6.2	10.4	13.2	14.5	15.2	16.2	17.0	17.8	18.6	18.8	19.2	19.3	19.3	18.3	14.2	10.9	8.7	7.2	12.3	19.3	3.4
23	6.5	6.0	4.7	4.3	3.5	4.2	7.5	11.9	16.2	17.6	18.3	19.4	20.6	21.5	22.2	22.8	23.3	23.4	23.2	21.8	17.0	14.2	11.1	9.6	14.6	23.4	3.5
24	9.2	7.9	6.9	6.6	6.1	6.6	9.6	13.8	19.1	21.0	21.7	22.5	23.5	24.3	24.5	24.7	24.4	22.9	14.7	12.5	13.0	12.5	10.9	10.1	15.4	24.7	6.1
25	9.7	11.3	10.4	8.9	8.1	7.5	8.7	11.3	13.9	15.6	16.5	17.0	17.9	18.7	19.3	19.8	20.1	20.1	20.0	18.6	14.5	13.9	13.2	11.1	14.4	20.1	7.5
26	9.4	8.4	7.0	6.1	5.0	5.5	8.6	13.4	17.5	19.3	20.4	21.2	21.9	22.9	23.7	23.9	23.3	23.8	23.7	22.0	17.3	13.9	11.4	9.9	15.8	23.9	5.0
27	8.4	6.9	6.1	5.5	5.3	5.9	9.3	13.7	17.1	19.3	20.0	20.6	20.5	17.1	14.8	14.7	14.8	14.6	13.0	12.1	11.2	10.4	9.2	8.2	12.4	20.6	5.3
28	7.9	7.7	7.4	6.2	5.6	5.7	6.3	8.7	9.9	10.2	10.7	11.7	11.4	7.7	7.0	6.9	6.7	5.7	5.3	5.3	5.4	5.5	5.4	6.4	7.4	11.7	5.3
29	6.3	6.3	6.4	6.3	6.6	6.2	6.9	7.2	7.8	8.5	9.2	9.1	9.1	9.1	8.7	8.9	8.8	8.4	8.4	8.0	7.5	6.8	6.5	5.3	7.6	9.2	5.3
30	3.7	2.1	1.3	0.9	0.7	1.2	3.4	6.9	8.4	9.5	10.6	10.4	11.0	10.9	9.0	8.5	8.3	8.7	9.6	9.2	8.8	7.5	6.4	6.7	6.8	11.0	0.7
Avg	7.0	6.3	5.9	5.2	4.8	4.9	6.9	9.5	11.6	12.5	13.4	14.2	14.6	14.6	14.9	15.0	14.8	14.4	13.5	12.5	10.8	9.6	8.6	7.8	10.6	16.1	4.0
Max	16.5	14.7	13.8	12.6	11.1	11.2	11.9	13.8	19.1	21.0	21.7	22.5	23.5	24.3	24.5	24.7	24.4	23.8	23.7	22.0	19.1	17.9	17.8	17.7	15.8	24.7	8.8
Min	2.4	0.7	-0.5	-1.0	-1.2	-0.4	2.6	1.8	1.9	3.0	3.8	4.3	5.2	5.0	3.4	2.9	2.6	3.4	4.1	4.4	3.9	3.4	3.3	2.6	3.4	5.2	-1.2

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
2-Meter Temperature (Degrees Celsius)
April 2020

A-13

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	-8.7	-9.4	-10.6	-11.0	-12.2	-12.5	-13.5	-13.7	-13.7	-13.0	-12.3	-12.2	-11.3	-10.3	-10.5	-10.8	-11.5	-12.6	-13.4	-13.8	-14.3	-14.6	-14.9	-15.3	-12.3	-8.7	-15.3
2	-15.2	-15.2	-15.3	-15.2	-15.3	-15.3	-15.0	-14.4	-13.8	-12.4	-10.6	-8.7	-7.7	-6.3	-5.6	-5.0	-4.6	-4.3	-4.9	-7.5	-8.3	-8.7	-9.3	-9.5	-10.3	-4.3	-15.3
3	-11.3	-12.6	-12.3	-12.6	-13.1	-14.8	-15.8	-13.9	-9.6	-4.8	-2.8	-2.0	-1.5	-1.2	-0.8	-1.1	-2.3	-1.6	-1.9	-2.9	-3.7	-3.4	-4.3	-4.9	-6.5	-0.8	-15.8
4	-5.2	-5.2	-5.1	-5.3	-6.3	-7.2	-9.5	-9.2	-5.4	-4.7	-3.2	-2.4	-1.7	-0.8	0.2	1.2	1.5	1.3	0.2	-0.4	-1.5	-2.4	-3.1	-3.4	-3.2	1.5	-9.5
5	-3.9	-3.9	-3.6	-3.8	-4.5	-4.9	-5.1	-4.7	-2.5	1.6	4.2	5.3	5.7	6.0	6.5	7.2	7.2	7.1	5.1	5.2	3.8	2.4	0.6	0.1	1.3	7.2	-5.1
6	-1.6	-2.3	-4.0	-4.4	-4.9	-5.1	-6.0	-3.4	-0.9	3.7	5.8	6.1	6.7	7.5	8.0	7.7	7.2	6.5	6.1	4.9	4.1	2.2	0.7	0.8	1.9	8.0	-6.0
7	1.8	2.4	2.6	2.3	1.8	1.5	1.0	1.7	3.0	3.2	3.3	3.9	4.7	5.7	6.5	7.0	6.6	6.1	6.1	6.1	5.4	4.5	2.4	0.7	3.8	7.0	0.7
8	-2.3	-3.3	-5.2	-6.9	-7.6	-6.7	-6.7	-6.8	-6.0	-3.8	-0.2	1.7	3.2	4.5	5.7	6.4	6.7	5.8	5.2	3.6	0.7	-1.3	-2.7	-3.8	-0.8	6.7	-7.6
9	-5.0	-6.0	-7.1	-7.7	-8.2	-8.8	-8.3	-6.2	-2.7	1.8	4.6	6.1	7.2	8.5	9.7	10.4	10.7	10.7	8.7	4.1	2.2	0.2	-0.8	-2.7	0.9	10.7	-8.8
10	-3.7	-4.2	-4.7	-5.1	-5.5	-5.7	-5.4	-3.2	-0.5	3.9	8.2	9.5	10.4	10.1	10.0	10.2	7.9	6.5	5.0	3.8	2.9	2.2	1.0	0.3	2.2	10.4	-5.7
11	0.2	0.0	-1.1	-1.8	-2.3	-4.0	-4.7	-4.9	-4.8	-5.0	-4.7	-4.6	-5.2	-4.6	-4.7	-4.9	-5.2	-5.9	-6.5	-7.3	-7.9	-9.3	-10.1	-10.5	-5.0	0.2	-10.5
12	-10.8	-11.2	-11.8	-13.4	-13.9	-17.3	-18.3	-17.3	-13.9	-11.9	-11.2	-10.2	-9.5	-8.7	-8.3	-9.3	-8.9	-9.7	-10.8	-14.4	-17.0	-16.9	-15.7	-15.3	-12.7	-8.3	-18.3
13	-16.0	-16.4	-15.8	-15.3	-14.8	-16.9	-18.7	-16.7	-12.2	-10.7	-9.7	-9.1	-8.5	-7.9	-6.9	-6.5	-5.7	-5.8	-6.7	-8.6	-11.6	-14.0	-15.6	-16.0	-11.9	-5.7	-18.7
14	-16.9	-16.8	-15.8	-15.1	-14.7	-14.9	-13.6	-11.3	-7.0	-3.4	-2.5	-1.6	-1.4	-1.4	-1.1	-0.1	0.4	0.8	0.8	0.5	-0.4	-1.4	-1.7	-3.3	-5.9	0.8	-16.9
15	-5.2	-5.8	-5.9	-5.0	-3.7	-2.8	-2.8	-2.8	-3.0	-4.0	-4.2	-4.5	-4.5	-4.1	-3.8	-3.8	-3.7	-4.0	-4.4	-4.9	-5.8	-7.7	-9.8	-9.8	-4.8	-2.8	-9.8
16	-11.6	-11.8	-12.6	-13.9	-15.3	-16.5	-16.6	-13.8	-9.5	-6.4	-5.3	-4.3	-3.9	-3.3	-2.7	-1.9	-1.4	-1.3	-1.7	-4.6	-6.8	-7.8	-10.2	-12.1	-8.1	-1.3	-16.6
17	-12.9	-13.9	-14.0	-14.4	-14.8	-15.0	-14.0	-11.2	-6.4	0.9	2.3	3.8	5.0	6.0	6.7	7.6	8.4	8.1	7.2	4.2	1.1	-0.4	-0.7	-0.8	-2.4	8.4	-15.0
18	-1.0	-1.3	-1.6	-2.3	-3.2	-2.2	-1.8	0.6	3.0	3.7	3.7	4.2	4.7	5.3	5.2	4.9	5.2	4.4	2.6	1.6	1.3	0.8	0.5	0.5	1.6	5.3	-3.2
19	0.4	0.2	0.0	-0.1	-0.4	-0.6	-0.4	0.5	1.8	2.9	4.2	5.3	5.9	6.6	7.3	8.1	7.8	7.2	6.5	5.4	5.3	3.6	3.0	2.5	3.5	8.1	-0.6
20	2.5	2.6	0.7	-1.8	-3.2	-3.9	-3.0	0.5	4.4	6.6	7.8	8.3	9.3	9.7	10.9	11.3	11.2	11.5	10.0	6.9	3.5	0.3	-1.2	-1.3	4.3	11.5	-3.9
21	-2.1	-3.4	-4.5	-4.9	-5.3	-5.5	-3.7	3.1	7.3	8.5	9.9	10.9	12.2	13.1	13.8	14.0	13.8	13.3	12.0	9.4	7.9	6.3	2.4	1.7	5.4	14.0	-5.5
22	1.9	-0.5	-2.1	-3.0	-3.8	-4.3	-2.5	3.6	6.2	7.2	8.1	9.3	10.3	10.4	10.5	10.7	10.2	9.5	8.3	7.9	5.7	3.6	3.0	2.6	4.7	10.7	-4.3
23	4.8	4.4	3.7	3.8	3.2	2.5	3.0	3.3	3.8	4.3	2.4	4.0	5.4	4.9	2.4	4.8	5.6	5.6	4.3	2.5	1.3	1.5	1.3	1.1	3.5	5.6	1.1
24	1.3	1.2	0.7	0.5	-0.2	-0.3	0.5	0.9	2.5	3.6	5.7	6.7	7.2	5.8	7.1	8.2	8.8	8.3	6.8	4.8	2.5	0.4	-1.4	-2.5	3.3	8.8	-2.5
25	-4.9	-5.2	-6.1	-6.3	-6.6	-6.6	-3.6	0.2	5.3	6.9	7.9	9.5	10.2	10.6	11.5	11.2	11.3	11.1	10.2	7.2	4.3	3.9	2.6	5.9	3.8	11.5	-6.6
26	6.2	5.3	5.1	4.6	4.5	4.5	4.7	5.5	6.7	8.1	9.0	10.3	11.6	12.5	13.1	13.6	13.6	13.0	11.3	7.5	4.6	1.8	1.1	-0.3	7.4	13.6	-0.3
27	0.8	0.5	-0.2	-0.5	-0.5	0.1	1.1	3.1	6.2	8.7	8.6	8.6	9.8	11.0	11.8	11.2	11.9	11.4	10.5	9.2	7.9	7.4	6.4	2.6	6.2	11.9	-0.5
28	2.6	2.9	1.6	-0.3	-0.6	-2.9	-1.1	3.7	5.5	7.0	8.3	9.4	10.7	11.8	12.6	13.1	13.4	13.4	12.6	9.3	5.1	2.8	1.5	0.3	5.9	13.4	-2.9
29	-0.8	-1.2	-1.9	-2.9	-2.7	-3.1	0.2	6.5	12.4	14.9	16.8	18.5	19.2	20.5	20.6	20.4	20.8	20.2	18.8	14.6	11.0	8.2	7.5	5.9	10.2	20.8	-3.1
30	5.0	4.6	6.7	5.3	5.6	4.9	5.8	9.0	11.6	13.9	14.2	14.7	15.0	15.4	14.7	10.8	7.1	6.8	6.5	5.6	5.1	5.2	5.4	4.2	8.5	15.4	4.2
Avg	-3.7	-4.2	-4.7	-5.2	-5.6	-6.1	-5.8	-3.7	-1.1	1.0	2.3	3.2	4.0	4.6	5.0	5.2	5.1	4.8	3.8	2.0	0.3	-1.0	-2.1	-2.7	-0.2	6.0	-7.4
Max	6.2	5.3	6.7	5.3	5.6	4.9	5.8	9.0	12.4	14.9	16.8	18.5	19.2	20.5	20.6	20.4	20.8	20.2	18.8	14.6	11.0	8.2	7.5	5.9	10.2	20.8	4.2
Min	-16.9	-16.8	-15.8	-15.3	-15.3	-17.3	-18.7	-17.3	-13.9	-13.0	-12.3	-12.2	-11.3	-10.3	-10.5	-10.8	-11.5	-12.6	-13.4	-14.4	-17.0	-16.9	-15.7	-16.0	-12.7	-8.7	-18.7

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
2-Meter Temperature (Degrees Celsius)
May 2020

A-14

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	3.4	3.1	2.5	2.1	1.3	0.4	1.8	3.4	4.6	5.4	6.5	7.7	8.0	9.3	9.8	10.8	10.9	10.9	10.3	7.6	3.9	-0.1	-2.4	-2.9	4.9	10.9	-2.9
2	-4.4	-5.1	-5.5	-6.0	-6.7	-6.2	-3.0	1.9	7.4	9.8	10.7	11.7	12.8	13.8	14.7	14.6	15.0	15.0	14.2	9.1	6.0	2.7	2.1	3.2	5.3	15.0	-6.7
3	6.1	5.6	4.9	2.3	1.5	0.7	2.6	5.3	8.2	9.7	7.3	4.8	6.4	7.0	8.6	8.6	9.1	8.2	7.4	5.1	3.5	2.1	-0.9	-1.5	5.1	9.7	-1.5
4	-2.1	-1.9	-3.2	-4.5	-3.6	-4.1	-1.3	1.2	2.5	3.7	4.8	6.0	6.8	7.9	8.2	8.1	8.3	8.2	7.5	5.5	3.4	0.1	-1.2	-4.2	2.3	8.3	-4.5
5	-4.4	-5.4	-6.1	-6.7	-7.8	-7.7	-4.2	1.9	6.5	7.7	9.0	10.2	11.2	12.2	12.8	13.4	13.6	13.5	13.0	9.2	7.4	7.0	5.8	4.7	4.9	13.6	-7.8
6	4.3	3.8	1.9	2.3	3.0	4.7	6.3	8.1	9.6	10.1	10.3	11.5	13.3	14.2	13.7	10.4	6.9	2.6	0.5	0.3	0.0	0.0	-0.2	-0.6	5.7	14.2	-0.6
7	-0.5	-0.6	-0.8	-0.9	-1.0	-1.1	-0.9	-0.5	0.0	0.5	0.9	1.3	2.2	3.7	4.5	5.6	6.0	6.5	4.9	2.5	0.8	-0.5	-1.5	-2.1	1.2	6.5	-2.1
8	-3.2	-4.0	-4.3	-4.7	-3.6	-2.2	-1.0	0.8	2.1	2.0	2.0	3.3	5.3	5.9	6.9	7.3	5.0	4.5	3.5	2.9	2.9	2.5	1.7	1.0	1.5	7.3	-4.7
9	0.2	-1.1	-3.1	-4.4	-5.1	-5.9	-2.7	0.7	3.0	3.8	4.9	6.5	7.7	7.9	7.4	7.8	7.2	7.8	6.8	4.4	2.9	1.5	1.1	0.0	2.5	7.9	-5.9
10	-0.9	-2.1	-3.7	-4.5	-4.9	-5.2	-1.9	1.8	2.6	3.7	4.7	5.3	5.5	5.5	6.7	6.2	4.9	3.6	2.9	2.4	1.9	1.5	0.9	0.4	1.6	6.7	-5.2
11	-0.2	-0.5	-0.8	-0.9	-1.0	-1.1	-1.0	-0.7	-0.2	0.4	0.9	1.7	2.2	2.0	-0.3	-0.5	0.3	0.4	-0.1	-0.7	-1.1	-1.1	-1.0	-1.4	-0.2	2.2	-1.4
12	-1.4	-1.5	-1.6	-1.5	-1.9	-1.8	-1.5	-0.9	0.0	2.1	3.1	3.8	5.2	7.8	8.7	8.7	6.2	6.7	6.6	5.8	4.5	4.0	3.2	3.4	2.8	8.7	-1.9
13	0.9	0.6	0.5	0.5	0.5	0.6	1.2	3.4	5.4	6.7	7.4	8.4	9.1	9.1	8.6	7.3	7.5	8.3	8.6	6.9	4.2	3.4	1.4	-0.8	4.6	9.1	-0.8
14	-1.5	-2.5	-3.7	-4.1	-5.0	-4.4	-1.6	2.7	6.5	7.8	8.8	9.7	10.3	11.1	11.3	12.5	12.2	11.4	10.7	8.2	6.5	4.6	2.8	2.4	4.9	12.5	-5.0
15	1.8	0.4	-1.5	-2.0	-1.9	-0.8	1.5	5.3	8.2	7.7	5.7	2.4	3.2	5.8	6.7	5.0	4.1	4.6	4.9	4.1	2.9	1.8	1.6	1.1	3.0	8.2	-2.0
16	0.7	0.5	-0.1	-0.2	-0.4	-0.9	-0.4	2.5	6.1	8.1	9.4	10.2	12.0	12.7	13.9	14.2	14.0	14.2	13.1	11.5	10.5	9.7	8.9	8.1	7.4	14.2	-0.9
17	6.6	5.7	3.6	2.2	1.0	0.5	3.9	8.6	12.5	14.3	15.6	17.1	16.5	16.4	17.0	16.0	16.4	15.9	14.7	13.5	11.3	10.7	9.1	9.7	10.8	17.1	0.5
18	9.2	7.9	7.0	5.9	5.0	4.9	5.8	8.0	10.5	12.9	15.7	17.6	18.8	19.8	19.6	19.0	18.4	18.2	16.8	14.9	12.4	10.5	7.9	6.9	12.2	19.8	4.9
19	6.2	5.6	5.2	4.8	3.9	3.4	5.5	7.4	10.0	12.5	14.5	15.8	17.0	16.5	13.1	10.2	12.4	12.3	12.5	12.0	11.4	10.9	10.7	11.8	10.2	17.0	3.4
20	11.5	9.7	7.9	7.3	5.5	6.0	7.5	8.1	8.2	9.1	10.4	11.4	12.6	14.2	13.5	10.2	7.8	7.4	7.3	7.0	6.2	5.8	5.8	5.4	8.6	14.2	5.4
21	4.2	4.1	3.6	3.7	4.0	3.8	4.2	5.0	5.4	5.7	5.7	6.6	8.6	9.7	10.9	11.4	10.6	10.1	7.8	6.6	3.8	2.8	3.3	3.4	6.0	11.4	2.8
22	3.1	1.3	1.0	-0.3	-1.2	-0.9	1.1	3.2	4.7	6.1	7.2	8.4	8.8	9.3	9.7	10.2	9.5	9.3	8.3	6.8	5.1	4.3	3.3	2.7	5.0	10.2	-1.2
23	1.7	0.6	0.1	-1.1	-1.2	-1.2	-0.5	1.4	3.1	5.1	6.9	7.1	7.5	7.8	7.2	6.2	5.3	6.2	6.6	6.2	4.9	4.2	3.3	3.1	3.8	7.8	-1.2
24	2.7	2.7	2.8	2.6	2.3	2.4	3.2	4.4	5.7	6.8	7.0	8.0	5.9	8.7	9.8	10.8	11.0	9.7	8.7	8.2	5.5	3.4	1.9	0.3	5.6	11.0	0.3
25	-1.3	-2.0	-2.8	-3.1	-3.7	-3.1	0.7	5.6	9.2	10.4	11.7	12.5	13.5	14.6	15.1	15.9	15.6	15.5	14.3	13.3	11.5	10.5	8.6	8.2	7.9	15.9	-3.7
26	8.9	8.8	8.6	8.6	7.7	7.6	8.7	10.5	11.4	11.8	12.8	13.9	15.0	15.8	16.6	17.0	17.2	16.8	15.6	13.6	10.4	8.7	8.3	5.3	11.7	17.2	5.3
27	3.9	2.5	1.5	0.0	-1.0	-0.4	3.1	8.4	11.7	13.0	13.6	14.8	15.0	15.0	17.0	17.8	17.5	17.2	16.2	13.5	10.3	7.0	5.9	3.0	9.4	17.8	-1.0
28	2.5	1.8	1.2	0.8	1.5	5.6	8.0	9.5	10.9	12.1	13.3	14.1	15.2	16.0	16.6	17.2	17.5	16.4	15.2	13.6	12.5	11.4	10.8	10.5	10.6	17.5	0.8
29	10.8	10.6	9.5	8.3	4.3	3.9	9.4	12.4	14.7	16.7	16.3	17.2	18.9	18.9	19.4	20.5	20.5	20.6	20.7	16.7	14.3	13.7	12.2	11.5	14.3	20.7	3.9
30	9.9	8.5	7.1	5.8	5.0	6.7	11.2	15.6	17.0	18.6	19.7	20.7	21.6	21.8	21.7	21.4	20.6	19.6	19.5	18.1	17.3	17.0	17.3	17.0	15.8	21.8	5.0
31	16.4	16.2	15.8	15.0	13.6	12.9	14.7	18.7	20.5	21.8	22.3	21.1	19.9	21.0	22.0	22.4	22.3	21.7	20.4	18.0	12.9	10.1	7.9	5.7	17.2	22.4	5.7
Avg	3.1	2.4	1.5	0.9	0.3	0.6	2.6	5.3	7.4	8.6	9.3	10.0	10.8	11.7	12.0	11.8	11.4	11.1	10.3	8.6	6.8	5.5	4.5	3.7	6.7	12.8	-0.7
Max	16.4	16.2	15.8	15.0	13.6	12.9	14.7	18.7	20.5	21.8	22.3	21.1	21.6	21.8	22.0	22.4	22.3	21.7	20.7	18.1	17.3	17.0	17.3	17.0	17.2	22.4	5.7
Min	-4.4	-5.4	-6.1	-6.7	-7.8	-7.7	-4.2	-0.9	-0.2	0.4	0.9	1.3	2.2	2.0	-0.3	-0.5	0.3	0.4	-0.1	-0.7	-1.1	-1.1	-2.4	-4.2	-0.2	2.2	-7.8

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
2-Meter Temperature (Degrees Celsius)
June 2020

A-15

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	5.6	4.0	3.3	2.7	1.7	3.0	6.6	10.2	12.7	14.0	15.7	17.6	17.9	19.3	19.5	19.8	17.5	14.1	11.5	11.0	10.5	10.1	9.6	8.7	11.1	19.8	1.7
2	7.3	5.6	3.9	2.6	1.6	1.1	4.4	9.0	10.8	12.0	13.2	Au	Au	Au	18.5	19.1	19.6	19.4	17.5	14.6	11.3	9.0	8.1	7.1	10.3	19.6	1.1
3	5.8	6.4	10.7	9.8	9.9	10.3	11.9	12.0	12.1	12.9	14.2	16.7	17.1	17.5	18.5	19.2	18.7	17.8	15.9	14.0	11.4	10.8	9.1	7.9	12.9	19.2	5.8
4	6.6	5.7	5.7	6.8	7.7	8.5	11.5	12.2	12.8	13.9	14.5	15.3	15.7	15.5	15.9	17.5	17.2	16.4	14.9	13.2	9.6	8.6	6.1	4.8	11.5	17.5	4.8
5	3.6	2.5	1.4	1.4	0.7	1.2	7.0	13.3	15.1	16.1	17.3	18.9	19.6	20.6	21.6	21.9	21.2	20.9	19.5	19.1	18.9	17.4	17.4	17.5	13.9	21.9	0.7
6	16.2	14.3	13.4	11.7	8.9	8.6	9.9	12.0	15.0	15.6	16.3	17.6	18.4	17.4	16.5	13.2	12.1	11.1	11.2	8.4	7.9	7.7	7.3	6.4	12.4	18.4	6.4
7	6.2	6.3	6.3	5.9	5.5	5.3	5.7	6.8	8.1	8.7	9.9	10.6	9.3	10.5	12.0	12.5	13.1	12.5	11.0	9.0	7.0	6.6	6.3	5.5	8.4	13.1	5.3
8	4.6	3.1	2.9	2.5	2.5	2.4	2.8	2.1	2.4	3.5	4.3	5.1	6.1	5.5	3.6	3.1	2.8	3.6	4.2	4.4	3.7	3.2	2.6	1.9	3.5	6.1	1.9
9	1.6	0.2	-1.2	-1.5	-1.4	-0.5	2.8	4.7	5.8	6.5	7.9	9.0	9.8	10.4	10.3	10.2	10.2	9.1	8.4	7.7	7.0	7.5	Pw	Pw	5.7	10.4	-1.5
10	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
11	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
12	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
13	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
14	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
15	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
16	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
17	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	8.2	8.3	8.0	7.2	7.8	8.1	7.1	6.8	6.1	5.6	5.4	5.4	5.4	5.2	5.2	6.7	8.3	5.2
18	4.6	4.7	4.9	5.0	4.9	5.1	5.6	6.1	7.0	8.3	8.3	9.0	9.1	9.4	10.0	9.4	9.7	9.6	9.5	9.1	6.9	4.8	3.8	3.7	7.0	10.0	3.7
19	4.1	4.5	3.5	1.6	1.7	2.8	4.6	6.8	9.7	11.6	12.4	13.2	13.2	13.2	15.8	16.4	15.7	13.2	13.8	12.4	10.4	8.0	6.7	5.8	9.2	16.4	1.6
20	4.6	2.7	2.0	0.9	0.2	0.6	4.5	9.8	13.9	15.5	16.8	17.8	18.4	17.7	16.7	15.4	15.7	14.9	12.7	12.6	12.0	11.7	9.8	9.0	10.7	18.4	0.2
21	9.1	8.8	9.2	9.1	9.2	9.5	10.0	11.5	12.3	13.2	14.4	14.9	15.4	14.3	16.8	17.8	17.7	18.1	17.6	15.9	11.6	9.3	9.2	9.2	12.7	18.1	8.8
22	7.0	5.3	4.4	2.8	2.5	3.7	6.4	10.8	13.8	15.0	15.9	17.0	17.7	18.6	19.5	19.7	20.0	19.8	19.6	18.3	13.0	9.9	7.6	5.8	12.3	20.0	2.5
23	5.4	4.4	3.6	3.1	2.2	3.4	7.9	12.4	16.9	18.3	19.0	20.1	21.4	22.3	23.0	23.4	23.8	23.9	23.3	21.1	16.1	13.6	9.8	8.1	14.4	23.9	2.2
24	8.0	6.6	5.3	5.2	4.8	5.9	9.9	14.4	19.8	21.6	22.4	23.1	24.2	24.9	25.2	25.3	24.6	22.1	14.2	12.4	12.7	12.0	10.5	9.7	15.2	25.3	4.8
25	9.2	10.6	9.8	8.4	7.6	7.4	9.0	11.6	14.6	16.3	17.3	17.7	18.8	19.6	20.2	20.7	20.8	20.6	20.2	17.8	13.6	12.0	11.4	9.7	14.4	20.8	7.4
26	7.9	7.2	5.7	4.3	3.9	4.8	8.9	14.1	18.1	19.9	21.0	21.8	22.6	23.6	24.4	24.2	23.3	23.8	23.6	20.8	15.6	12.6	10.5	8.7	15.5	24.4	3.9
27	7.3	5.3	4.7	4.0	4.0	5.3	9.8	14.2	17.5	19.7	20.5	21.4	20.8	16.9	14.9	14.5	15.0	14.5	12.9	11.9	11.0	10.2	8.8	8.0	12.2	21.4	4.0
28	7.7	7.6	7.3	5.7	5.3	5.6	6.6	9.2	10.3	10.8	11.4	12.2	11.6	7.7	7.1	7.0	6.8	5.7	5.4	5.3	5.4	5.5	5.4	6.2	7.5	12.2	5.3
29	6.2	6.2	6.3	6.2	6.5	6.3	7.0	7.2	8.2	8.7	9.3	9.3	9.5	9.2	8.9	9.2	9.1	8.6	8.6	8.1	7.3	6.5	6.3	4.5	7.6	9.5	4.5
30	3.1	1.5	1.0	0.7	0.7	1.3	3.6	7.3	8.9	9.8	11.3	10.9	11.6	11.4	9.5	9.2	8.8	9.0	9.8	9.1	8.5	7.0	5.9	6.6	6.9	11.6	0.7
Avg	6.4	5.6	5.2	4.5	4.1	4.6	7.1	9.9	12.1	13.0	14.0	14.9	15.2	15.1	15.5	15.5	15.2	14.6	13.5	12.2	10.3	9.1	8.1	7.3	10.6	16.8	3.5
Max	16.2	14.3	13.4	11.7	9.9	10.3	11.9	14.4	19.8	21.6	22.4	23.1	24.2	24.9	25.2	25.3	24.6	23.9	23.6	21.1	18.9	17.4	17.4	17.5	15.5	25.3	8.8
Min	1.6	0.2	-1.2	-1.5	-1.4	-0.5	2.8	2.1	2.4	3.5	4.3	5.1	6.1	5.5	3.6	3.1	2.8	3.6	4.2	4.4	3.7	3.2	2.6	1.9	3.5	6.1	-1.5

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
9-2 M Delta Temperature (Degrees Celsius)
April 2020

A-16

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	-0.04	-0.05	0.18	0.02	-0.02	-0.01	0.20	0.07	-0.10	-0.15	-0.29	-0.26	-0.34	-0.62	-0.40	-0.23	-0.23	-0.23	-0.21	-0.20	-0.17	-0.17	-0.18	-0.17	-0.15	0.20	-0.62
2	-0.15	-0.18	-0.16	-0.16	-0.15	-0.14	-0.14	-0.26	-0.20	-0.25	-0.32	-0.47	-0.47	-0.73	-0.34	-0.28	-0.25	-0.15	0.17	0.12	0.08	0.18	0.25	0.24	-0.16	0.25	-0.73
3	0.78	0.79	0.58	0.67	0.80	1.12	1.10	0.70	-0.14	-0.01	0.05	0.00	-0.02	-0.05	-0.01	0.02	-0.17	-0.16	0.08	0.66	0.44	0.13	-0.02	0.13	0.31	1.12	-0.17
4	0.21	0.08	0.02	0.17	0.59	0.86	0.88	0.85	0.23	0.18	-0.12	0.03	-0.16	-0.27	-0.17	-0.46	-0.19	0.13	0.50	0.50	0.26	0.15	0.22	0.23	0.20	0.88	-0.46
5	0.33	0.30	0.17	0.28	0.39	0.39	0.26	0.24	-0.20	-0.09	0.00	0.16	0.29	0.33	0.38	0.15	0.45	0.47	1.26	0.74	0.63	0.80	0.86	1.52	0.42	1.52	-0.20
6	0.79	0.66	1.09	1.01	1.34	1.06	1.13	0.38	0.45	0.34	0.45	0.54	0.57	0.46	0.62	0.62	0.69	0.76	0.72	0.87	0.86	1.54	1.35	1.08	0.81	1.54	0.34
7	0.62	0.62	0.43	0.53	0.61	0.60	0.90	0.47	0.24	0.16	0.17	0.19	0.32	0.50	0.52	0.64	0.73	1.01	0.93	0.81	0.79	0.81	1.33	0.86	0.62	1.33	0.16
8	0.51	0.34	0.30	0.52	0.30	-0.10	-0.12	-0.19	-0.27	-0.75	-0.88	-0.49	-0.40	-0.38	0.03	0.19	0.28	0.58	0.76	0.57	0.85	0.78	0.65	0.53	0.15	0.85	-0.88
9	0.92	1.15	0.92	1.14	0.91	0.63	0.47	-0.32	-0.86	-0.79	-0.59	-0.43	-0.26	-0.38	-0.43	-0.11	0.11	0.41	1.03	0.95	0.60	0.63	0.74	0.93	0.31	1.15	-0.86
10	0.90	1.20	0.82	1.11	0.97	0.79	0.60	-0.38	-0.20	-0.02	0.19	-0.02	-0.07	0.24	0.30	0.38	0.62	0.74	0.81	1.17	0.57	0.45	0.19	0.05	0.48	1.20	-0.38
11	0.04	-0.02	-0.07	-0.07	-0.04	-0.01	-0.04	-0.07	-0.07	-0.11	-0.18	-0.21	-0.13	-0.11	-0.19	-0.15	-0.05	0.03	0.05	0.08	0.07	0.01	0.04	0.00	-0.05	0.08	-0.21
12	0.02	0.09	0.18	0.79	0.68	1.46	0.74	0.70	-0.03	-0.14	-0.16	-0.11	-0.13	-0.26	-0.40	-0.11	-0.27	0.08	0.56	1.09	1.23	0.33	-0.07	0.04	0.26	1.46	-0.40
13	0.47	0.53	0.01	-0.01	0.08	0.80	0.97	-0.06	-0.27	-0.19	-0.19	-0.18	-0.16	-0.05	0.03	0.07	-0.11	0.04	0.37	1.09	1.40	0.73	0.89	0.78	0.29	1.40	-0.27
14	1.23	1.01	0.48	0.44	0.37	0.68	0.36	-0.19	-0.72	-0.46	-0.27	-0.07	-0.09	-0.18	-0.20	-0.20	-0.01	0.06	0.14	0.11	0.41	0.48	0.54	0.98	0.20	1.23	-0.72
15	0.46	0.29	0.19	0.32	0.01	0.19	0.06	-0.07	-0.02	-0.08	-0.27	-0.18	-0.21	-0.26	-0.26	-0.25	-0.09	-0.06	-0.02	0.15	0.25	0.68	0.56	0.29	0.07	0.68	-0.27
16	0.91	0.94	0.87	0.77	0.66	0.76	0.30	-0.39	-0.42	-0.65	-0.71	-0.87	-0.74	-0.65	-0.72	-0.73	-0.62	-0.31	0.06	1.24	0.82	0.20	0.53	1.00	0.09	1.24	-0.87
17	0.98	1.01	0.94	0.97	1.02	1.14	0.42	-0.28	-0.39	-0.18	-0.43	-0.39	-0.30	-0.17	-0.15	-0.21	-0.01	0.27	0.64	1.70	1.05	0.44	0.27	0.13	0.35	1.70	-0.43
18	0.27	0.30	0.55	0.50	0.59	0.34	0.17	-0.07	-0.35	-0.44	-0.25	-0.50	-0.64	-0.81	-0.56	-0.25	-0.43	-0.25	0.03	0.12	0.07	0.03	0.02	0.02	-0.06	0.59	-0.81
19	0.02	0.03	0.10	0.01	-0.01	-0.03	-0.07	-0.21	-0.25	-0.37	-0.43	-0.57	-0.47	-0.42	-0.49	-0.64	-0.37	0.12	0.41	0.82	0.56	0.51	0.65	0.91	-0.01	0.91	-0.64
20	0.62	0.67	0.60	0.70	0.84	0.92	-0.29	-0.72	-0.83	-0.80	-0.91	-0.78	-1.02	-0.78	-0.91	-0.77	-0.50	-0.50	0.32	1.13	1.30	0.62	0.89	1.65	0.06	1.65	-1.02
21	1.32	1.28	1.10	1.21	1.02	1.00	0.29	-0.30	-0.36	-0.68	-0.86	-0.90	-1.00	-0.98	-0.91	-0.83	-0.56	-0.30	0.16	0.94	1.24	1.10	1.88	1.96	0.28	1.96	-1.00
22	1.34	2.14	0.69	0.79	0.75	0.82	0.16	-0.43	-0.57	-0.69	-0.88	-0.97	-0.96	-0.80	-0.56	-0.58	-0.32	0.01	0.52	0.29	0.35	0.32	0.33	0.53	0.10	2.14	-0.97
23	0.32	0.19	0.23	0.26	0.24	0.19	-0.03	-0.16	-0.30	-0.40	-0.11	-0.55	-0.78	-0.54	-0.26	-0.68	-0.60	-0.56	0.00	0.36	0.38	0.29	0.45	0.66	-0.06	0.66	-0.78
24	0.66	0.30	0.08	0.22	0.63	0.35	0.10	0.02	-0.21	-0.34	-0.83	-0.87	-0.74	-0.55	-0.81	-0.73	-0.62	-0.29	0.29	1.02	0.53	0.54	0.77	0.72	0.01	1.02	-0.87
25	1.42	1.11	1.35	1.09	0.93	1.00	-0.12	-0.39	-0.67	-0.65	-0.73	-1.05	-0.87	-0.65	-0.56	-0.26	-0.11	0.07	0.43	0.93	1.63	1.49	0.74	0.40	0.27	1.63	-1.05
26	0.19	0.33	0.28	0.28	0.24	0.24	0.13	-0.20	-0.52	-0.94	-1.05	-1.12	-1.20	-1.14	-1.02	-0.98	-0.78	-0.48	0.27	2.09	1.19	0.52	0.54	0.92	-0.09	2.09	-1.20
27	0.36	0.61	0.81	0.62	0.53	0.54	0.00	-0.18	-0.13	-0.40	-0.27	-0.53	-0.89	-1.17	-1.19	-0.63	-0.41	-0.07	0.07	0.16	0.29	0.23	0.37	0.26	-0.04	0.81	-1.19
28	0.35	0.44	0.66	1.14	0.99	1.15	0.20	-0.53	-0.68	-0.93	-1.11	-1.15	-1.18	-1.36	-1.18	-1.10	-0.85	-0.55	-0.07	1.20	1.68	0.98	0.44	0.97	-0.02	1.68	-1.36
29	0.99	0.92	1.21	1.34	1.26	1.15	0.06	-0.67	-0.61	-0.75	-0.68	-0.97	-0.79	-0.87	-0.71	-0.48	-0.39	-0.03	0.52	1.14	1.27	0.69	0.61	0.73	0.21	1.34	-0.97
30	0.74	0.76	0.94	0.32	0.43	0.19	-0.07	-0.36	-0.38	-0.59	-0.58	-0.69	-0.60	-0.51	-0.24	0.12	0.09	0.09	0.04	0.37	0.14	0.07	0.06	0.00	0.01	0.94	-0.69
Avg	0.59	0.59	0.52	0.57	0.57	0.60	0.29	-0.10	-0.29	-0.37	-0.41	-0.45	-0.45	-0.44	-0.36	-0.28	-0.17	0.03	0.36	0.74	0.69	0.52	0.53	0.61	0.16	1.18	-0.65
Max	1.42	2.14	1.35	1.34	1.34	1.46	1.13	0.85	0.45	0.34	0.45	0.54	0.57	0.50	0.62	0.64	0.73	1.01	1.26	2.09	1.68	1.54	1.88	1.96	0.81	2.14	0.34
Min	-0.15	-0.18	-0.16	-0.16	-0.15	-0.14	-0.29	-0.72	-0.86	-0.94	-1.11	-1.15	-1.20	-1.36	-1.19	-1.10	-0.85	-0.56	-0.21	-0.20	-0.17	-0.17	-0.18	-0.17	-0.16	0.08	-1.36

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
9-2 M Delta Temperature (Degrees Celsius)
May 2020

A-17

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	0.06	0.13	0.27	0.21	0.44	0.52	-0.08	-0.48	-0.72	-0.65	-0.87	-0.95	-0.90	-0.99	-0.71	-0.89	-0.75	-0.41	-0.10	0.83	1.10	1.07	1.22	0.83	-0.08	1.22	-0.99
2	1.16	1.15	1.17	1.20	1.23	1.13	-0.16	-0.28	-0.68	-0.77	-0.82	-0.84	-0.87	-0.83	-1.00	-0.66	-0.52	-0.38	0.03	0.73	0.33	0.97	0.94	0.64	0.12	1.23	-1.00
3	0.81	0.57	0.65	1.16	0.80	0.97	0.20	0.09	-0.15	-0.20	-0.42	-0.64	-0.55	-0.79	-1.10	-0.80	-0.83	-0.43	-0.21	0.45	0.64	0.77	1.85	1.12	0.16	1.85	-1.10
4	1.17	1.21	1.34	1.75	1.34	1.20	-0.21	-0.42	-0.74	-0.97	-1.09	-1.21	-1.23	-1.16	-1.00	-0.66	-0.54	-0.45	-0.13	0.56	1.27	1.42	1.63	1.66	0.20	1.75	-1.23
5	1.68	1.12	1.25	1.46	1.26	0.78	-0.07	-0.60	-0.83	-1.01	-1.19	-1.26	-1.28	-1.39	-1.26	-1.19	-1.01	-0.68	-0.29	0.64	0.51	0.47	0.54	0.74	-0.07	1.68	-1.39
6	0.54	0.57	1.31	1.23	0.92	0.52	0.24	-0.12	-0.31	-0.48	-0.45	-0.72	-1.01	-1.16	-0.71	0.09	0.13	-0.06	0.05	-0.01	-0.02	0.01	0.07	-0.02	0.03	1.31	-1.16
7	-0.01	-0.01	-0.02	-0.01	-0.01	0.00	0.00	-0.03	-0.04	-0.02	-0.03	0.03	-0.05	-0.68	-0.49	-0.57	-0.44	-0.03	0.55	0.39	0.52	0.74	0.84	1.11	0.07	1.11	-0.68
8	1.16	0.80	1.19	1.01	0.84	0.56	0.13	0.20	-0.04	-0.25	-0.31	-0.46	-0.80	-0.59	-0.56	-0.46	-0.15	-0.16	-0.06	0.09	0.23	0.22	0.18	0.25	0.13	1.19	-0.80
9	0.41	0.94	1.16	1.23	0.94	0.78	-0.27	-0.66	-0.78	-0.46	-0.55	-0.82	-1.04	-0.95	-0.63	-0.71	-0.43	-0.75	-0.28	0.49	0.65	0.81	0.65	0.51	0.01	1.23	-1.04
10	0.65	0.71	0.83	1.10	1.14	1.01	-0.27	-0.34	-0.67	-1.02	-1.15	-1.25	-1.28	-1.30	-1.35	-0.96	-0.63	-0.36	-0.20	-0.07	-0.01	0.02	0.01	-0.02	-0.23	1.14	-1.35
11	-0.02	0.00	0.00	-0.03	-0.04	-0.08	-0.16	-0.20	-0.20	-0.27	-0.38	-0.60	-0.66	-0.50	-0.19	-0.18	-0.23	-0.23	-0.13	-0.04	-0.05	-0.04	-0.03	-0.02	-0.18	0.00	-0.66
12	-0.01	-0.01	0.04	0.00	-0.03	-0.07	-0.12	-0.17	-0.27	-0.49	-0.63	-0.47	-0.63	-0.82	-0.74	-0.46	-0.14	-0.16	-0.04	0.29	0.23	0.10	0.03	0.03	-0.19	0.29	-0.82
13	0.06	0.08	0.01	0.10	0.10	0.00	-0.15	-0.22	-0.36	-0.52	-0.46	-0.71	-0.81	-0.77	-0.42	-0.67	-0.36	-0.51	-0.31	0.43	0.77	0.84	0.87	0.61	-0.10	0.87	-0.81
14	0.51	0.69	0.90	1.15	1.28	0.54	-0.14	-0.46	-0.59	-0.79	-0.86	-0.88	-0.88	-0.98	-0.75	-1.11	-0.66	-0.27	-0.23	0.13	0.22	0.39	0.47	0.19	-0.09	1.28	-1.11
15	0.45	0.48	0.70	1.03	0.59	0.27	-0.23	-0.42	-0.67	-0.41	-0.07	-0.08	-0.19	-0.65	-0.36	-0.12	-0.13	-0.07	-0.03	0.18	0.51	0.35	0.00	0.06	0.05	1.03	-0.67
16	-0.08	-0.11	-0.04	-0.03	-0.03	-0.07	-0.21	-0.43	-0.59	-0.45	-0.59	-0.50	-0.78	-0.71	-0.82	-0.60	-0.46	-0.32	-0.01	0.22	0.20	0.17	0.19	0.32	-0.24	0.32	-0.82
17	0.86	1.46	0.91	1.04	1.01	1.02	-0.02	-0.20	-0.32	-0.34	-0.37	-0.53	-0.32	-0.30	-0.27	0.04	-0.06	0.12	0.35	0.45	0.76	0.62	0.83	0.68	0.31	1.46	-0.53
18	0.35	0.50	0.50	0.38	0.51	0.36	-0.11	-0.23	-0.37	-0.53	-0.69	-0.73	-0.84	-0.73	-0.43	-0.26	-0.37	-0.05	0.34	0.10	0.08	0.09	0.40	0.49	-0.05	0.51	-0.84
19	0.37	0.03	0.03	0.11	0.17	0.29	-0.11	-0.26	-0.27	-0.42	-0.78	-0.64	-0.52	-0.15	-0.03	-0.06	-0.13	-0.06	-0.10	0.28	0.18	0.22	0.23	0.18	-0.06	0.37	-0.78
20	0.26	0.54	0.11	0.18	0.62	0.07	-0.13	-0.11	-0.25	-0.47	-0.74	-0.76	-0.86	-0.92	-0.22	0.31	0.08	-0.07	-0.02	0.04	0.15	0.09	0.16	0.17	-0.07	0.62	-0.92
21	0.07	0.05	0.01	0.04	0.03	-0.01	-0.06	-0.02	-0.07	-0.08	-0.17	-0.35	-0.48	-0.49	-0.75	-0.81	-0.37	-0.24	0.07	0.07	0.17	0.18	0.13	0.14	-0.12	0.18	-0.81
22	0.20	0.08	0.35	0.34	0.49	0.13	-0.20	-0.54	-0.68	-0.65	-0.93	-1.02	-1.10	-1.07	-0.93	-0.92	-0.60	-0.41	0.06	0.35	0.11	0.24	0.29	0.18	-0.26	0.49	-1.10
23	0.29	0.34	0.16	0.53	0.35	0.21	-0.15	-0.18	-0.26	-0.56	-0.74	-0.62	-0.49	-0.49	-0.22	-0.19	-0.32	-0.36	-0.31	-0.06	0.09	0.20	0.00	-0.02	-0.12	0.53	-0.74
24	0.03	-0.05	-0.05	0.02	0.00	-0.10	-0.24	-0.44	-0.48	-0.56	-0.33	-0.54	-0.24	-0.40	-0.51	-0.60	-0.56	-0.14	0.00	0.15	0.17	0.24	0.19	0.38	-0.17	0.38	-0.60
25	1.01	0.85	0.79	0.77	0.82	0.42	-0.27	-0.49	-0.64	-0.75	-0.90	-0.89	-0.89	-0.93	-0.81	-0.73	-0.38	-0.20	0.23	0.47	0.49	0.38	0.22	0.18	-0.05	1.01	-0.93
26	0.27	0.24	0.34	0.46	0.59	0.41	-0.07	-0.42	-0.45	-0.39	-0.63	-0.72	-0.86	-0.97	-0.93	-0.86	-0.68	-0.46	-0.11	0.40	1.17	1.30	1.24	2.00	0.04	2.00	-0.97
27	1.07	0.45	0.56	0.84	1.06	0.63	-0.55	-0.65	-0.72	-0.96	-0.79	-0.97	-0.78	-0.58	-0.93	-1.04	-0.89	-0.64	-0.29	0.29	1.02	1.13	1.01	1.19	-0.02	1.19	-1.04
28	1.23	1.99	0.99	1.46	1.28	0.70	0.11	-0.25	-0.60	-0.85	-1.00	-1.04	-0.95	-0.86	-0.78	-0.97	-0.86	-0.54	-0.19	0.09	0.26	0.42	0.50	0.43	0.02	1.99	-1.04
29	0.29	0.38	0.55	0.47	1.18	0.95	-0.51	-0.55	-0.40	-0.42	-0.49	-0.73	-0.66	-0.57	-0.63	-0.62	-0.35	-0.36	-0.25	0.43	0.63	0.59	1.03	0.97	0.04	1.18	-0.73
30	1.41	1.68	1.35	1.07	0.98	0.54	-0.44	-0.26	-0.55	-0.77	-0.86	-0.95	-0.95	-0.94	-0.61	-0.61	-0.52	-0.22	-0.04	0.35	0.66	0.72	0.41	0.45	0.08	1.68	-0.95
31	0.29	0.31	0.48	0.68	0.72	0.92	0.53	0.17	0.02	-0.21	-0.38	-0.73	-0.67	-0.75	-0.95	-0.76	-0.64	-0.39	-0.01	0.50	1.18	1.92	0.56	0.84	0.15	1.92	-0.95
Avg	0.53	0.55	0.58	0.68	0.66	0.47	-0.12	-0.29	-0.44	-0.54	-0.63	-0.73	-0.76	-0.79	-0.68	-0.58	-0.45	-0.30	-0.05	0.30	0.46	0.54	0.54	0.52	-0.02	1.06	-0.92
Max	1.68	1.99	1.35	1.75	1.34	1.20	0.53	0.20	0.02	-0.02	-0.03	0.03	-0.05	-0.15	-0.03	0.31	0.13	0.12	0.55	0.83	1.27	1.92	1.85	2.00	0.31	2.00	-0.53
Min	-0.08	-0.11	-0.05	-0.03	-0.04	-0.10	-0.55	-0.66	-0.83	-1.02	-1.19	-1.26	-1.28	-1.39	-1.35	-1.19	-1.01	-0.75	-0.31	-0.07	-0.05	-0.04	-0.03	-0.02	-0.26	0.00	-1.39

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
9-2 M Delta Temperature (Degrees Celsius)
June 2020

A-18

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	0.58	0.78	0.79	0.63	0.92	0.37	-0.41	-0.66	-0.66	-0.67	-0.85	-0.94	-0.85	-1.03	-0.84	-0.77	0.05	0.46	0.29	0.12	0.20	0.37	0.27	0.47	-0.06	0.92	-1.03
2	0.74	1.06	1.01	0.60	0.34	0.16	-0.42	-0.48	-0.61	-0.80	-0.73	Au	Au	Au	-0.83	-0.72	-0.55	-0.30	0.45	0.58	0.62	0.53	0.46	0.59	0.08	1.06	-0.83
3	0.79	1.18	1.18	1.32	1.19	0.87	0.06	-0.09	-0.22	-0.43	-0.60	-0.82	-0.61	-0.52	-0.61	-0.80	-0.66	-0.30	0.34	1.08	1.82	1.03	0.53	0.48	0.26	1.82	-0.82
4	0.68	0.69	0.53	0.54	0.68	0.24	-0.15	-0.16	-0.32	-0.65	-0.82	-0.95	-0.86	-0.72	-0.77	-1.02	-0.91	-0.40	0.17	0.68	1.12	0.59	0.76	0.70	-0.01	1.12	-1.02
5	1.00	0.91	1.15	1.03	1.24	0.90	-0.26	-0.35	-0.60	-0.65	-0.68	-0.63	-0.72	-0.91	-0.95	-0.79	-0.54	-0.34	0.14	0.23	0.27	0.44	0.38	0.22	0.02	1.24	-0.95
6	0.33	0.40	0.38	0.94	0.98	0.59	0.04	-0.27	-0.48	-0.33	-0.46	-0.53	-0.65	-0.31	-0.03	0.11	0.14	0.15	0.06	0.02	0.02	0.04	0.00	0.00	0.05	0.98	-0.65
7	-0.02	0.01	0.01	0.03	0.13	0.19	-0.03	-0.42	-0.69	-0.62	-0.66	-0.42	-0.13	-0.62	-0.75	-0.67	-0.75	-0.36	-0.02	0.04	0.03	-0.02	0.05	0.14	-0.23	0.19	-0.75
8	0.45	0.22	0.41	0.95	0.88	0.23	-0.17	-0.29	-0.44	-0.47	-0.52	-0.79	-0.90	-0.52	-0.19	-0.19	-0.17	-0.19	-0.10	-0.03	0.16	0.22	0.69	0.69	-0.00	0.95	-0.90
9	0.81	0.54	0.63	0.47	0.23	0.05	-0.21	-0.24	-0.41	-0.42	-0.76	-0.90	-0.91	-0.83	-0.62	-0.63	-0.49	-0.11	-0.06	0.04	0.11	0.04	Pw	Pw	-0.17	0.81	-0.91
10	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
11	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
12	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
13	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
14	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
15	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
16	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
17	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	-0.22	-0.25	-0.07	-0.08	-0.30	-0.16	-0.13	-0.16	-0.07	-0.10	-0.07	0.01	0.00	0.01	0.02	-0.10	0.02	-0.30
18	-0.01	-0.03	-0.03	-0.01	-0.02	-0.04	-0.07	-0.18	-0.33	-0.62	-0.60	-0.82	-0.78	-0.86	-0.90	-0.41	-0.51	-0.45	-0.35	-0.01	0.50	0.57	0.44	0.16	-0.22	0.57	-0.90
19	0.00	0.12	0.52	0.65	0.26	-0.11	-0.14	-0.26	-0.56	-0.56	-0.59	-0.60	-0.23	-0.51	-0.64	-0.59	-0.34	-0.15	-0.26	0.34	0.40	0.78	0.53	0.29	-0.07	0.78	-0.64
20	0.50	0.95	0.72	0.75	0.57	0.41	-0.24	-0.49	-0.56	-0.66	-0.83	-0.74	-0.73	-0.24	-0.09	-0.22	-0.17	-0.05	-0.01	0.28	0.45	0.40	0.34	0.15	0.02	0.95	-0.83
21	0.06	0.01	0.15	0.12	0.27	0.15	-0.12	-0.30	-0.20	-0.30	-0.49	-0.40	-0.42	-0.30	-0.55	-0.69	-0.59	-0.52	-0.24	0.49	1.13	0.56	1.20	0.85	-0.01	1.20	-0.69
22	0.74	0.92	0.75	1.24	0.91	0.14	-0.15	-0.48	-0.58	-0.58	-0.70	-0.76	-0.65	-0.80	-0.90	-0.89	-0.79	-0.45	-0.33	0.00	1.15	1.05	1.07	1.37	0.05	1.37	-0.90
23	1.17	1.52	1.07	1.14	1.25	0.82	-0.48	-0.52	-0.63	-0.66	-0.72	-0.68	-0.76	-0.84	-0.73	-0.65	-0.50	-0.47	0.00	0.65	0.91	0.67	1.30	1.50	0.18	1.52	-0.84
24	1.20	1.33	1.62	1.42	1.30	0.68	-0.30	-0.61	-0.69	-0.62	-0.70	-0.58	-0.70	-0.59	-0.70	-0.69	-0.20	0.79	0.53	0.09	0.30	0.52	0.49	0.41	0.18	1.62	-0.70
25	0.52	0.72	0.57	0.52	0.49	0.13	-0.33	-0.36	-0.77	-0.70	-0.72	-0.77	-0.91	-0.87	-0.84	-0.83	-0.66	-0.50	-0.20	0.79	0.94	1.93	1.77	1.43	0.06	1.93	-0.91
26	1.56	1.23	1.24	1.73	1.08	0.72	-0.31	-0.64	-0.60	-0.57	-0.63	-0.68	-0.70	-0.68	-0.71	-0.32	0.01	0.01	0.07	1.16	1.71	1.23	0.92	1.27	0.34	1.73	-0.71
27	1.11	1.59	1.34	1.46	1.26	0.68	-0.49	-0.50	-0.38	-0.37	-0.51	-0.76	-0.30	0.20	-0.04	0.12	-0.19	0.09	0.14	0.21	0.18	0.21	0.32	0.18	0.23	1.59	-0.76
28	0.21	0.07	0.17	0.47	0.33	0.11	-0.29	-0.51	-0.43	-0.57	-0.66	-0.48	-0.12	-0.01	-0.11	-0.10	-0.04	-0.04	-0.11	-0.03	0.01	-0.02	-0.02	0.16	-0.08	0.47	-0.66
29	0.10	0.11	0.10	0.04	0.07	-0.08	-0.05	-0.05	-0.46	-0.22	-0.11	-0.18	-0.30	-0.12	-0.15	-0.32	-0.20	-0.18	-0.18	-0.06	0.19	0.32	0.26	0.71	-0.03	0.71	-0.46
30	0.58	0.58	0.33	0.23	-0.03	-0.11	-0.25	-0.33	-0.52	-0.35	-0.67	-0.55	-0.60	-0.42	-0.57	-0.72	-0.48	-0.22	-0.15	0.13	0.27	0.48	0.46	0.07	-0.12	0.58	-0.72
Avg	0.60	0.68	0.67	0.74	0.65	0.32	-0.22	-0.37	-0.51	-0.52	-0.62	-0.64	-0.59	-0.54	-0.55	-0.52	-0.38	-0.16	0.00	0.29	0.54	0.52	0.56	0.54	0.02	1.05	-0.78
Max	1.56	1.59	1.62	1.73	1.30	0.90	0.06	-0.05	-0.20	-0.22	-0.11	-0.07	-0.08	0.20	-0.03	0.12	0.14	0.79	0.53	1.16	1.82	1.93	1.77	1.50	0.34	1.93	-0.30
Min	-0.02	-0.03	-0.03	-0.01	-0.03	-0.11	-0.49	-0.66	-0.77	-0.80	-0.85	-0.95	-0.91	-1.03	-0.95	-1.02	-0.91	-0.52	-0.35	-0.07	0.01	-0.02	-0.02	0.00	-0.23	0.02	-1.03

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Solar Radiation (Watts per Square Meter)
April 2020

A-19

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	0	0	0	0	0	0	41	219	420	490	699	580	740	694	703	625	406	124	13	0	0	0	0	0	240	740	0
2	0	0	0	0	0	0	20	100	255	484	742	856	848	614	690	688	471	235	65	0	0	0	0	0	253	856	0
3	0	0	0	0	0	0	43	245	368	426	719	740	937	842	685	410	316	241	51	0	0	0	0	0	251	937	0
4	0	0	0	0	0	1	57	199	226	445	736	857	588	480	691	598	364	208	54	0	0	0	0	0	229	857	0
5	0	0	0	0	0	0	32	105	418	525	629	892	709	531	412	444	226	98	15	0	0	0	0	0	210	892	0
6	0	0	0	0	0	1	53	231	276	472	715	802	778	871	712	471	218	167	48	0	0	0	0	0	242	871	0
7	0	0	0	0	0	2	39	159	215	220	207	254	328	327	281	276	156	78	20	1	0	0	0	0	107	328	0
8	0	0	0	0	0	1	26	118	298	587	757	848	883	858	774	635	368	102	25	0	0	0	0	0	262	883	0
9	0	0	0	0	0	3	49	214	419	611	737	853	877	805	762	631	446	256	67	1	0	0	0	0	280	877	0
10	0	0	0	0	0	2	54	176	232	391	472	652	761	384	407	424	276	83	33	1	0	0	0	0	181	761	0
11	0	0	0	0	0	0	19	57	96	165	303	154	323	371	512	243	206	117	32	0	0	0	0	0	108	512	0
12	0	0	0	0	0	4	99	281	481	635	576	572	722	689	883	321	459	265	103	2	0	0	0	0	254	883	0
13	0	0	0	0	0	3	41	164	320	450	593	603	598	640	784	579	576	317	94	2	0	0	0	0	240	784	0
14	0	0	0	0	0	4	58	205	404	587	612	567	746	659	562	549	191	121	25	0	0	0	0	0	220	746	0
15	0	0	0	0	0	5	70	172	255	494	531	315	295	349	413	386	346	145	52	2	0	0	0	0	160	531	0
16	0	0	0	0	0	5	116	294	462	505	836	1081	994	932	818	676	499	303	108	3	0	0	0	0	318	1081	0
17	0	0	0	0	0	6	51	236	464	584	762	909	915	886	771	702	510	321	130	3	0	0	0	0	302	915	0
18	0	0	0	0	0	7	64	143	287	328	365	382	526	623	478	355	371	223	40	1	0	0	0	0	175	623	0
19	0	0	0	0	0	3	19	105	237	338	462	646	586	694	653	615	374	145	66	3	0	0	0	0	206	694	0
20	0	0	0	0	0	10	120	301	494	669	876	705	941	727	708	556	366	326	109	6	0	0	0	0	288	941	0
21	0	0	0	0	0	10	124	304	499	641	771	846	937	891	815	705	478	318	124	6	0	0	0	0	311	937	0
22	0	0	0	0	0	10	122	310	506	533	737	801	780	601	399	436	267	94	12	1	0	0	0	0	234	801	0
23	0	0	0	0	0	8	80	116	196	299	169	522	701	356	175	463	362	248	44	6	0	0	0	0	156	701	0
24	0	0	0	0	0	2	34	130	392	361	718	637	521	360	552	446	355	217	60	4	0	0	0	0	200	718	0
25	0	0	0	0	0	14	151	302	503	546	693	907	698	461	441	180	104	70	35	4	0	0	0	0	213	907	0
26	0	0	0	0	0	4	35	224	496	695	798	900	921	909	815	691	515	305	94	5	0	0	0	0	309	921	0
27	0	0	0	0	0	11	89	105	168	236	180	378	620	843	835	396	288	107	65	6	0	0	0	0	180	843	0
28	0	0	0	0	0	19	155	341	536	707	839	923	954	916	834	697	532	333	149	5	0	0	0	0	331	954	0
29	0	0	0	0	0	19	153	322	523	686	800	890	937	892	591	373	354	154	88	10	0	0	0	0	283	937	0
30	0	0	0	0	0	26	111	304	340	503	358	497	408	320	157	40	15	6	10	6	0	0	0	0	129	503	0
Avg	0	0	0	0	0	6	71	206	360	487	613	686	719	651	610	487	347	191	61	3	0	0	0	0	229	798	0
Max	0	0	0	0	0	26	155	341	536	707	876	1081	994	932	883	705	576	333	149	10	0	0	0	0	331	1081	0
Min	0	0	0	0	0	0	19	57	96	165	169	154	295	320	157	40	15	6	10	0	0	0	0	0	107	328	0

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Solar Radiation (Watts per Square Meter)
May 2020

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	0	0	0	0	0	23	166	347	462	422	725	854	618	793	480	669	492	294	128	17	0	0	0	0	270	854	0
2	0	0	0	0	0	32	190	352	542	707	840	924	952	924	871	485	524	319	157	16	0	0	0	0	326	952	0
3	0	0	0	0	0	27	55	87	240	226	303	579	361	651	815	455	536	280	171	18	0	0	0	0	200	815	0
4	0	0	0	0	0	30	185	348	543	727	850	997	924	872	678	398	358	302	155	18	0	0	0	0	308	997	0
5	0	0	0	0	0	32	182	364	555	719	847	933	961	916	855	717	549	350	163	20	0	0	0	0	340	961	0
6	0	0	0	0	1	25	91	173	271	362	324	519	793	890	454	20	19	18	5	1	0	0	0	0	165	890	0
7	0	0	0	0	0	9	55	123	317	292	517	523	761	708	656	616	470	353	55	11	0	0	0	0	228	761	0
8	0	0	0	0	0	20	77	172	141	193	257	394	844	546	452	292	148	130	46	2	0	0	0	0	155	844	0
9	0	0	0	0	1	47	207	382	581	440	596	1063	1042	632	319	430	210	385	165	27	0	0	0	0	272	1063	0
10	0	0	0	0	1	29	232	276	456	728	849	878	851	786	822	548	353	136	62	8	0	0	0	0	292	878	0
11	0	0	0	0	0	14	38	55	84	124	159	258	290	224	116	125	187	158	61	9	0	0	0	0	79	290	0
12	0	0	0	0	0	20	82	154	286	566	560	359	585	599	468	166	208	119	59	11	0	0	0	0	177	599	0
13	0	0	0	0	0	21	79	160	364	488	401	585	801	691	461	459	297	339	191	37	0	0	0	0	224	801	0
14	0	0	0	0	2	63	164	333	506	685	768	751	835	872	517	697	395	187	213	33	0	0	0	0	293	872	0
15	0	0	0	0	2	56	154	369	536	209	57	17	168	573	301	49	55	80	74	22	0	0	0	0	113	573	0
16	0	0	0	0	1	31	145	369	550	496	591	505	950	762	824	542	405	309	130	19	0	0	0	0	276	950	0
17	0	0	0	0	1	52	180	227	419	418	431	553	304	309	291	89	138	82	45	48	0	0	0	0	149	553	0
18	0	0	0	0	1	30	95	181	288	385	785	920	932	819	431	210	243	110	23	32	0	0	0	0	229	932	0
19	0	0	0	0	1	30	111	235	297	294	604	604	512	185	62	253	334	99	138	20	0	0	0	0	157	604	0
20	0	0	0	0	2	18	42	39	106	218	361	423	608	656	177	23	42	60	15	7	0	0	0	0	117	656	0
21	0	0	0	0	2	21	56	73	125	133	202	335	475	520	746	741	354	217	53	20	0	0	0	0	170	746	0
22	0	0	0	0	3	72	227	411	520	556	741	949	950	928	667	642	307	233	74	30	0	0	0	0	305	950	0
23	0	0	0	0	2	18	58	105	212	513	623	349	271	252	141	114	210	201	120	34	0	0	0	0	134	623	0
24	0	0	0	0	4	44	110	245	335	368	156	362	345	530	384	575	407	103	57	16	1	0	0	0	168	575	0
25	0	0	0	0	4	81	240	408	597	654	839	788	871	916	718	568	299	177	49	10	0	0	0	0	301	916	0
26	0	0	0	0	4	43	178	380	309	367	643	724	840	896	783	772	614	414	208	47	2	0	0	0	301	896	0
27	0	0	0	0	7	73	225	410	515	711	673	779	715	387	728	759	597	419	220	52	1	0	0	0	303	779	0
28	0	0	0	0	3	42	111	331	560	733	848	896	952	930	660	746	663	421	203	77	2	0	0	0	341	952	0
29	0	0	0	0	4	70	250	298	525	568	295	670	510	339	518	598	346	354	160	41	1	0	0	0	231	670	0
30	0	0	0	0	5	81	235	389	581	732	838	937	942	895	567	593	472	285	165	45	1	0	0	0	323	942	0
31	0	0	0	0	2	30	105	211	304	530	697	722	586	849	887	747	588	409	229	71	2	0	0	0	290	887	0
Avg	0	0	0	0	2	38	140	258	391	470	561	650	695	673	544	455	349	237	116	26	0	0	0	0	233	799	0
Max	0	0	0	0	7	81	250	411	597	733	850	1063	1042	930	887	772	663	421	229	77	2	0	0	0	341	1063	0
Min	0	0	0	0	0	9	38	39	84	124	57	17	168	185	62	20	19	18	5	1	0	0	0	0	79	290	0

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Solar Radiation (Watts per Square Meter)
June 2020

A-21

	<< Hour >>																											
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Avg	Max	Min	
1	0	0	0	0	5	71	205	352	425	659	788	830	891	910	624	580	86	32	36	19	2	0	0	0	271	910	0	
2	0	0	0	0	6	83	241	411	606	776	823	Au	Au	Au	879	729	579	345	124	36	1	0	0	0	269	879	0	
3	0	0	0	0	5	50	166	192	207	365	585	804	589	509	636	654	505	318	135	58	3	0	0	0	241	804	0	
4	0	0	0	0	6	95	242	221	341	544	715	804	719	551	583	792	601	324	111	41	2	0	0	0	279	804	0	
5	0	0	0	0	5	79	234	411	587	564	694	794	702	805	853	751	554	402	93	71	3	0	0	0	317	853	0	
6	0	0	0	0	4	47	99	193	349	284	362	453	474	233	114	45	24	16	37	1	0	0	0	0	114	474	0	
7	0	0	0	0	4	24	112	338	629	409	595	373	227	880	705	425	436	201	88	21	1	0	0	0	228	880	0	
8	0	0	0	0	4	34	98	188	247	305	358	589	761	367	69	122	79	109	38	20	2	0	0	0	141	761	0	
9	0	0	0	0	10	106	243	416	461	409	775	855	847	710	527	534	413	106	74	29	2	0	Pw	Pw	296	855	0	
10	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
11	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
12	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
13	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
14	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
15	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
16	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
17	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	174	251	99	119	185	129	125	94	49	31	28	1	0	0	0	86	251	0	
18	0	0	0	0	0	11	58	128	287	613	509	632	615	648	552	206	241	205	149	48	3	0	0	0	204	648	0	
19	0	0	0	0	3	31	133	160	422	518	558	513	277	475	736	664	391	185	190	44	5	0	0	0	221	736	0	
20	0	0	0	0	6	83	211	406	583	740	874	830	895	382	269	339	259	185	114	37	2	0	0	0	259	895	0	
21	0	0	0	0	2	24	142	216	213	328	484	372	440	697	627	690	516	456	259	91	3	0	0	0	232	697	0	
22	0	0	0	0	5	66	163	406	599	661	861	953	959	987	935	781	685	455	270	98	4	0	0	0	370	987	0	
23	0	0	0	0	4	84	235	405	580	735	857	932	965	941	871	736	589	406	256	90	3	0	0	0	362	965	0	
24	0	0	0	0	6	78	218	396	582	738	840	934	972	959	881	718	390	73	6	8	1	0	0	0	325	972	0	
25	0	0	0	0	5	54	163	331	614	735	790	779	925	930	897	772	622	449	265	95	4	0	0	0	351	930	0	
26	0	0	0	0	7	81	223	398	574	730	854	936	970	953	882	571	330	366	253	90	3	0	0	0	343	970	0	
27	0	0	0	0	4	77	264	282	334	636	756	890	416	225	110	40	178	48	17	4	0	0	0	0	178	890	0	
28	0	0	0	0	5	62	149	332	324	339	411	373	136	20	63	60	56	31	44	14	0	0	0	0	101	411	0	
29	0	0	0	0	0	20	38	49	304	134	121	164	248	132	142	217	125	105	109	29	3	0	0	0	81	304	0	
30	0	0	0	0	7	73	227	398	515	483	792	553	713	432	450	537	284	98	61	20	1	0	0	0	235	792	0	
Avg	0	0	0	0	5	61	176	301	445	516	637	657	630	588	545	482	349	216	120	43	2	0	0	0	241	768	0	
Max	0	0	0	0	10	106	264	416	629	776	874	953	972	987	935	792	685	456	270	98	5	0	0	0	370	987	0	
Min	0	0	0	0	0	11	38	49	207	134	121	99	119	20	63	40	24	16	6	1	0	0	0	0	81	251	0	

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Barometric Pressure (inches of mercury)
April 2020

A-22

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	24.21	24.22	24.23	24.24	24.25	24.26	24.28	24.28	24.29	24.29	24.29	24.29	24.27	24.26	24.26	24.26	24.28	24.30	24.31	24.32	24.33	24.34	24.34	24.35	24.28	24.35	24.21
2	24.36	24.37	24.38	24.38	24.38	24.39	24.40	24.41	24.41	24.40	24.39	24.37	24.37	24.37	24.37	24.37	24.38	24.37	24.36	24.37	24.40	24.40	24.39	24.39	24.38	24.41	24.36
3	24.39	24.38	24.37	24.36	24.36	24.35	24.35	24.34	24.32	24.31	24.29	24.28	24.25	24.24	24.22	24.21	24.20	24.20	24.18	24.17	24.16	24.16	24.16	24.13	24.27	24.39	24.13
4	24.13	24.14	24.14	24.14	24.15	24.17	24.18	24.18	24.18	24.19	24.19	24.19	24.18	24.17	24.16	24.15	24.15	24.13	24.13	24.12	24.12	24.13	24.13	24.12	24.15	24.19	24.12
5	24.10	24.08	24.07	24.06	24.05	24.05	24.05	24.06	24.07	24.08	24.08	24.07	24.07	24.07	24.07	24.06	24.06	24.06	24.06	24.07	24.08	24.08	24.08	24.08	24.07	24.10	24.05
6	24.07	24.07	24.06	24.05	24.07	24.07	24.08	24.10	24.11	24.12	24.13	24.13	24.14	24.14	24.14	24.14	24.15	24.16	24.16	24.19	24.20	24.20	24.21	24.13	24.21	24.05	
7	24.22	24.22	24.22	24.22	24.22	24.23	24.25	24.26	24.27	24.27	24.29	24.29	24.28	24.28	24.27	24.27	24.28	24.28	24.29	24.30	24.32	24.34	24.36	24.39	24.28	24.39	24.22
8	24.42	24.45	24.47	24.49	24.50	24.52	24.53	24.54	24.54	24.55	24.55	24.55	24.54	24.53	24.52	24.51	24.50	24.49	24.49	24.49	24.50	24.50	24.51	24.51	24.51	24.55	24.42
9	24.52	24.52	24.52	24.52	24.53	24.54	24.53	24.52	24.50	24.49	24.48	24.46	24.44	24.43	24.41	24.39	24.37	24.36	24.35	24.34	24.35	24.35	24.34	24.33	24.44	24.54	24.33
10	24.32	24.31	24.30	24.30	24.30	24.30	24.30	24.30	24.31	24.30	24.29	24.28	24.26	24.25	24.24	24.23	24.22	24.22	24.22	24.22	24.23	24.24	24.24	24.23	24.27	24.32	24.22
11	24.22	24.21	24.20	24.18	24.18	24.18	24.20	24.20	24.21	24.23	24.24	24.25	24.25	24.26	24.28	24.28	24.29	24.31	24.33	24.36	24.38	24.41	24.42	24.44	24.27	24.44	24.18
12	24.45	24.45	24.46	24.47	24.48	24.48	24.49	24.49	24.48	24.48	24.48	24.47	24.46	24.47	24.47	24.48	24.48	24.49	24.49	24.51	24.52	24.52	24.52	24.51	24.48	24.52	24.45
13	24.51	24.50	24.49	24.49	24.48	24.47	24.48	24.49	24.48	24.49	24.49	24.49	24.48	24.48	24.48	24.48	24.49	24.49	24.48	24.49	24.50	24.50	24.49	24.47	24.49	24.51	24.47
14	24.46	24.44	24.43	24.42	24.42	24.42	24.43	24.42	24.42	24.42	24.42	24.40	24.39	24.39	24.38	24.37	24.35	24.35	24.34	24.34	24.34	24.33	24.33	24.31	24.39	24.46	24.31
15	24.31	24.30	24.30	24.30	24.31	24.33	24.36	24.39	24.40	24.42	24.45	24.47	24.48	24.49	24.49	24.49	24.50	24.50	24.50	24.51	24.53	24.55	24.55	24.55	24.44	24.55	24.30
16	24.55	24.54	24.54	24.55	24.56	24.56	24.57	24.57	24.56	24.55	24.55	24.53	24.53	24.52	24.51	24.50	24.49	24.47	24.46	24.44	24.45	24.45	24.44	24.43	24.51	24.57	24.43
17	24.43	24.41	24.39	24.39	24.38	24.36	24.36	24.34	24.32	24.31	24.31	24.30	24.29	24.27	24.27	24.25	24.24	24.24	24.23	24.23	24.23	24.24	24.23	24.22	24.30	24.43	24.22
18	24.22	24.22	24.22	24.23	24.24	24.24	24.25	24.27	24.28	24.29	24.29	24.29	24.29	24.29	24.28	24.28	24.28	24.28	24.28	24.29	24.30	24.31	24.30	24.30	24.27	24.31	24.22
19	24.29	24.29	24.27	24.27	24.27	24.27	24.29	24.30	24.31	24.32	24.33	24.33	24.33	24.32	24.32	24.31	24.31	24.31	24.30	24.31	24.33	24.34	24.34	24.35	24.31	24.35	24.27
20	24.35	24.36	24.36	24.36	24.37	24.38	24.39	24.41	24.41	24.41	24.42	24.42	24.41	24.40	24.39	24.38	24.37	24.36	24.36	24.36	24.37	24.37	24.36	24.36	24.38	24.42	24.35
21	24.36	24.35	24.34	24.35	24.36	24.36	24.37	24.39	24.39	24.39	24.38	24.38	24.37	24.36	24.35	24.35	24.34	24.34	24.35	24.36	24.37	24.38	24.38	24.38	24.36	24.39	24.34
22	24.39	24.39	24.39	24.41	24.41	24.41	24.42	24.44	24.42	24.40	24.39	24.38	24.36	24.36	24.35	24.34	24.33	24.32	24.31	24.32	24.33	24.31	24.30	24.29	24.37	24.44	24.29
23	24.28	24.27	24.27	24.27	24.27	24.27	24.28	24.28	24.28	24.28	24.29	24.30	24.30	24.31	24.32	24.33	24.34	24.34	24.36	24.37	24.40	24.41	24.42	24.43	24.32	24.43	24.27
24	24.44	24.45	24.45	24.46	24.46	24.47	24.48	24.49	24.50	24.50	24.50	24.49	24.48	24.48	24.48	24.48	24.48	24.48	24.49	24.50	24.50	24.51	24.50	24.50	24.48	24.51	24.44
25	24.51	24.51	24.52	24.52	24.52	24.52	24.52	24.52	24.51	24.51	24.49	24.48	24.46	24.44	24.42	24.40	24.38	24.37	24.36	24.35	24.34	24.34	24.34	24.36	24.45	24.52	24.34
26	24.36	24.35	24.35	24.36	24.36	24.36	24.38	24.38	24.38	24.39	24.40	24.39	24.38	24.37	24.37	24.37	24.37	24.38	24.38	24.38	24.39	24.40	24.39	24.39	24.38	24.40	24.35
27	24.38	24.38	24.37	24.36	24.35	24.34	24.33	24.34	24.33	24.34	24.35	24.35	24.33	24.33	24.32	24.32	24.30	24.30	24.31	24.34	24.34	24.36	24.36	24.38	24.34	24.38	24.30
28	24.40	24.41	24.43	24.43	24.45	24.47	24.52	24.55	24.56	24.57	24.58	24.58	24.58	24.59	24.58	24.58	24.58	24.58	24.58	24.58	24.59	24.60	24.60	24.60	24.54	24.60	24.40
29	24.60	24.59	24.59	24.58	24.58	24.58	24.60	24.60	24.59	24.57	24.55	24.53	24.50	24.47	24.45	24.43	24.41	24.40	24.38	24.37	24.37	24.38	24.38	24.37	24.49	24.60	24.37
30	24.35	24.35	24.39	24.38	24.35	24.34	24.35	24.35	24.34	24.32	24.31	24.30	24.29	24.28	24.25	24.27	24.31	24.32	24.31	24.28	24.29	24.31	24.31	24.33	24.32	24.39	24.25
Avg	24.35	24.35	24.35	24.35	24.35	24.36	24.37	24.37	24.37	24.37	24.37	24.37	24.36	24.35	24.35	24.34	24.34	24.34	24.34	24.34	24.35	24.36	24.36	24.36	24.36	24.42	24.29
Max	24.60	24.59	24.59	24.58	24.58	24.58	24.60	24.60	24.59	24.57	24.58	24.58	24.58	24.59	24.58	24.58	24.58	24.58	24.58	24.58	24.59	24.60	24.60	24.60	24.54	24.60	24.47
Min	24.07	24.07	24.06	24.05	24.05	24.05	24.05	24.06	24.07	24.08	24.08	24.07	24.07	24.07	24.07	24.06	24.06	24.06	24.06	24.07	24.08	24.08	24.08	24.08	24.07	24.10	24.05

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Barometric Pressure (inches of mercury)
May 2020

Day	<< Hour >>																								Avg	Max	Min	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
1	24.35	24.36	24.38	24.40	24.41	24.42	24.43	24.43	24.44	24.44	24.44	24.45	24.44	24.43	24.43	24.43	24.43	24.43	24.43	24.44	24.45	24.46	24.46	24.47	24.43	24.47	24.35	
2	24.47	24.47	24.47	24.48	24.48	24.48	24.48	24.49	24.48	24.48	24.47	24.45	24.44	24.42	24.41	24.40	24.39	24.38	24.37	24.36	24.36	24.36	24.35	24.36	24.43	24.49	24.35	
3	24.36	24.35	24.33	24.31	24.30	24.30	24.31	24.32	24.32	24.31	24.34	24.36	24.38	24.39	24.39	24.40	24.40	24.41	24.42	24.43	24.43	24.44	24.45	24.45	24.37	24.45	24.30	
4	24.44	24.45	24.46	24.48	24.49	24.50	24.52	24.52	24.52	24.51	24.52	24.51	24.50	24.50	24.50	24.50	24.51	24.52	24.53	24.53	24.55	24.55	24.54	24.55	24.51	24.55	24.44	
5	24.55	24.56	24.56	24.57	24.57	24.58	24.59	24.61	24.61	24.62	24.62	24.63	24.63	24.63	24.62	24.61	24.61	24.59	24.59	24.60	24.61	24.62	24.62	24.62	24.60	24.63	24.55	
6	24.60	24.57	24.55	24.54	24.53	24.51	24.50	24.49	24.46	24.44	24.41	24.38	24.35	24.33	24.32	24.34	24.39	24.41	24.44	24.47	24.47	24.47	24.47	24.46	24.45	24.60	24.32	
7	24.45	24.44	24.44	24.44	24.45	24.47	24.50	24.53	24.56	24.58	24.61	24.63	24.67	24.68	24.69	24.69	24.69	24.68	24.67	24.67	24.67	24.66	24.65	24.63	24.59	24.69	24.44	
8	24.63	24.61	24.59	24.58	24.58	24.57	24.56	24.57	24.59	24.59	24.60	24.61	24.61	24.62	24.62	24.63	24.64	24.65	24.65	24.66	24.67	24.69	24.70	24.71	24.62	24.71	24.56	
9	24.71	24.70	24.70	24.69	24.70	24.70	24.71	24.71	24.70	24.69	24.69	24.68	24.67	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.67	24.67	24.68	24.68	24.68	24.71	24.66	
10	24.67	24.66	24.66	24.65	24.66	24.65	24.66	24.66	24.65	24.65	24.64	24.63	24.62	24.61	24.60	24.59	24.58	24.58	24.58	24.57	24.57	24.57	24.57	24.56	24.62	24.67	24.56	
11	24.55	24.53	24.51	24.49	24.49	24.49	24.50	24.49	24.48	24.47	24.46	24.45	24.44	24.43	24.42	24.41	24.39	24.37	24.36	24.36	24.35	24.34	24.30	24.29	24.43	24.55	24.29	
12	24.28	24.25	24.23	24.21	24.20	24.20	24.18	24.18	24.17	24.14	24.13	24.15	24.14	24.13	24.12	24.12	24.13	24.12	24.11	24.11	24.13	24.14	24.15	24.14	24.16	24.28	24.11	
13	24.15	24.14	24.14	24.14	24.14	24.14	24.15	24.16	24.16	24.16	24.16	24.16	24.15	24.15	24.15	24.17	24.18	24.19	24.19	24.21	24.22	24.24	24.26	24.26	24.17	24.26	24.14	
14	24.27	24.27	24.28	24.28	24.29	24.30	24.31	24.32	24.33	24.33	24.33	24.33	24.33	24.32	24.32	24.31	24.31	24.31	24.32	24.33	24.34	24.35	24.35	24.35	24.32	24.35	24.27	
15	24.34	24.34	24.33	24.33	24.34	24.35	24.36	24.37	24.36	24.36	24.37	24.39	24.39	24.39	24.39	24.40	24.41	24.41	24.42	24.44	24.45	24.47	24.48	24.48	24.39	24.48	24.33	
16	24.48	24.48	24.49	24.50	24.50	24.50	24.51	24.51	24.51	24.50	24.49	24.48	24.46	24.43	24.42	24.40	24.40	24.39	24.38	24.37	24.37	24.37	24.36	24.35	24.44	24.51	24.35	
17	24.34	24.33	24.32	24.31	24.31	24.31	24.31	24.31	24.31	24.30	24.28	24.28	24.29	24.27	24.26	24.27	24.27	24.26	24.27	24.27	24.27	24.27	24.27	24.29	24.29	24.34	24.26	
18	24.28	24.24	24.23	24.21	24.22	24.22	24.24	24.24	24.24	24.23	24.23	24.22	24.22	24.21	24.20	24.19	24.19	24.18	24.20	24.21	24.20	24.23	24.26	24.28	24.22	24.28	24.18	
19	24.30	24.29	24.30	24.30	24.29	24.28	24.29	24.29	24.30	24.30	24.29	24.28	24.26	24.25	24.24	24.26	24.26	24.26	24.26	24.26	24.26	24.28	24.25	24.25	24.23	24.27	24.30	24.23
20	24.22	24.21	24.22	24.20	24.19	24.19	24.20	24.22	24.22	24.22	24.23	24.21	24.21	24.19	24.17	24.20	24.21	24.19	24.20	24.19	24.18	24.16	24.15	24.15	24.20	24.20	24.23	24.15
21	24.15	24.14	24.13	24.12	24.12	24.12	24.11	24.12	24.13	24.13	24.14	24.14	24.14	24.15	24.16	24.16	24.16	24.17	24.18	24.19	24.21	24.21	24.20	24.19	24.15	24.21	24.11	
22	24.20	24.21	24.22	24.21	24.21	24.22	24.23	24.24	24.24	24.24	24.24	24.24	24.24	24.25	24.25	24.25	24.26	24.27	24.28	24.29	24.30	24.32	24.32	24.32	24.25	24.32	24.20	
23	24.32	24.32	24.33	24.32	24.32	24.33	24.34	24.36	24.37	24.37	24.36	24.35	24.36	24.37	24.38	24.40	24.41	24.42	24.42	24.42	24.44	24.45	24.45	24.46	24.38	24.46	24.32	
24	24.46	24.45	24.46	24.47	24.48	24.48	24.48	24.49	24.49	24.49	24.49	24.49	24.49	24.48	24.47	24.47	24.47	24.48	24.48	24.48	24.48	24.49	24.48	24.49	24.48	24.49	24.45	
25	24.49	24.49	24.49	24.48	24.49	24.49	24.51	24.51	24.50	24.49	24.48	24.47	24.46	24.44	24.43	24.42	24.41	24.40	24.40	24.41	24.41	24.42	24.41	24.40	24.45	24.51	24.40	
26	24.40	24.40	24.39	24.39	24.39	24.40	24.41	24.42	24.42	24.41	24.41	24.41	24.40	24.40	24.40	24.39	24.38	24.39	24.40	24.41	24.43	24.44	24.45	24.46	24.41	24.46	24.38	
27	24.46	24.46	24.47	24.47	24.48	24.49	24.51	24.51	24.51	24.51	24.51	24.50	24.50	24.51	24.50	24.51	24.51	24.52	24.54	24.56	24.58	24.61	24.62	24.63	24.52	24.63	24.46	
28	24.63	24.64	24.65	24.66	24.67	24.67	24.67	24.67	24.66	24.65	24.64	24.64	24.63	24.61	24.61	24.60	24.59	24.58	24.58	24.59	24.59	24.60	24.60	24.59	24.63	24.67	24.58	
29	24.58	24.58	24.57	24.56	24.55	24.56	24.56	24.56	24.56	24.55	24.56	24.55	24.55	24.55	24.53	24.52	24.52	24.51	24.51	24.52	24.53	24.55	24.55	24.55	24.55	24.58	24.51	
30	24.55	24.55	24.54	24.52	24.52	24.53	24.53	24.51	24.50	24.49	24.47	24.45	24.44	24.42	24.41	24.39	24.38	24.37	24.35	24.35	24.35	24.35	24.33	24.31	24.44	24.55	24.31	
31	24.32	24.33	24.31	24.29	24.27	24.26	24.25	24.25	24.23	24.24	24.25	24.27	24.30	24.30	24.30	24.30	24.30	24.30	24.30	24.31	24.34	24.37	24.39	24.40	24.30	24.40	24.23	
Avg	24.42	24.41	24.41	24.41	24.41	24.41	24.42	24.42	24.42	24.42	24.41	24.41	24.41	24.40	24.40	24.40	24.40	24.40	24.40	24.41	24.42	24.42	24.42	24.42	24.41	24.48	24.35	
Max	24.71	24.70	24.70	24.69	24.70	24.70	24.71	24.71	24.70	24.69	24.69	24.68	24.67	24.68	24.69	24.69	24.69	24.68	24.67	24.67	24.67	24.69	24.70	24.71	24.68	24.71	24.66	
Min	24.15	24.14	24.13	24.12	24.12	24.12	24.11	24.12	24.13	24.13	24.13	24.14	24.14	24.13	24.12	24.12	24.13	24.12	24.11	24.11	24.13	24.14	24.15	24.14	24.15	24.21	24.11	

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Barometric Pressure (inches of mercury)
June 2020

A-24

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	24.41	24.42	24.42	24.43	24.43	24.44	24.45	24.45	24.44	24.44	24.44	24.42	24.41	24.40	24.39	24.38	24.40	24.44	24.47	24.47	24.50	24.52	24.53	24.54	24.44	24.54	24.38
2	24.54	24.55	24.56	24.56	24.58	24.59	24.60	24.60	24.60	24.60	24.60	24.58	24.56	24.54	24.52	24.51	24.49	24.48	24.48	24.47	24.48	24.48	24.48	24.47	24.54	24.60	24.47
3	24.46	24.45	24.45	24.45	24.45	24.47	24.48	24.49	24.48	24.47	24.46	24.43	24.42	24.41	24.40	24.38	24.37	24.37	24.37	24.38	24.38	24.38	24.38	24.38	24.42	24.49	24.37
4	24.37	24.36	24.34	24.34	24.34	24.35	24.35	24.35	24.35	24.35	24.36	24.36	24.35	24.35	24.35	24.35	24.36	24.36	24.37	24.38	24.39	24.41	24.41	24.41	24.36	24.41	24.34
5	24.40	24.40	24.38	24.38	24.38	24.38	24.38	24.38	24.36	24.35	24.34	24.33	24.31	24.29	24.26	24.23	24.21	24.20	24.17	24.17	24.16	24.17	24.15	24.15	24.29	24.40	24.15
6	24.16	24.18	24.13	24.11	24.12	24.12	24.12	24.13	24.11	24.11	24.10	24.09	24.06	24.04	24.01	24.01	23.99	24.00	23.98	24.02	24.04	24.04	24.03	24.03	24.07	24.18	23.98
7	24.03	24.04	24.03	24.04	24.05	24.06	24.07	24.08	24.08	24.08	24.07	24.08	24.09	24.08	24.09	24.08	24.09	24.09	24.09	24.12	24.14	24.17	24.17	24.18	24.09	24.18	24.03
8	24.18	24.18	24.18	24.19	24.20	24.20	24.21	24.22	24.24	24.25	24.27	24.28	24.29	24.31	24.33	24.35	24.38	24.40	24.42	24.43	24.45	24.46	24.46	24.45	24.31	24.46	24.18
9	24.47	24.49	24.48	24.48	24.49	24.49	24.50	24.50	24.50	24.50	24.50	24.50	24.49	24.49	24.49	24.50	24.50	24.51	24.51	24.50	24.50	24.52	Pw	Pw	24.50	24.52	24.47
10	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
11	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
12	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
13	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
14	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
15	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
16	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
17	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	24.38	24.39	24.40	24.42	24.43	24.45	24.47	24.48	24.50	24.51	24.52	24.53	24.55	24.55	24.55	24.48	24.55	24.38
18	24.56	24.55	24.54	24.54	24.54	24.56	24.57	24.58	24.58	24.58	24.60	24.60	24.60	24.60	24.60	24.60	24.60	24.59	24.59	24.58	24.58	24.58	24.57	24.56	24.58	24.60	24.54
19	24.55	24.53	24.52	24.51	24.51	24.51	24.51	24.51	24.49	24.49	24.48	24.48	24.47	24.47	24.45	24.44	24.44	24.45	24.45	24.46	24.46	24.46	24.46	24.46	24.48	24.55	24.44
20	24.45	24.45	24.45	24.44	24.44	24.45	24.46	24.46	24.45	24.44	24.44	24.44	24.44	24.44	24.44	24.44	24.45	24.44	24.45	24.44	24.44	24.45	24.45	24.43	24.45	24.46	24.43
21	24.43	24.42	24.42	24.42	24.42	24.43	24.43	24.44	24.44	24.44	24.45	24.45	24.45	24.46	24.45	24.45	24.45	24.44	24.45	24.47	24.48	24.50	24.52	24.53	24.45	24.53	24.42
22	24.53	24.54	24.54	24.54	24.55	24.57	24.59	24.60	24.60	24.61	24.61	24.61	24.60	24.60	24.60	24.60	24.60	24.60	24.60	24.60	24.61	24.62	24.61	24.61	24.59	24.62	24.53
23	24.61	24.60	24.60	24.60	24.60	24.60	24.61	24.60	24.59	24.58	24.57	24.57	24.56	24.54	24.53	24.52	24.51	24.50	24.49	24.49	24.50	24.51	24.51	24.50	24.55	24.61	24.49
24	24.49	24.48	24.48	24.47	24.47	24.47	24.47	24.46	24.45	24.44	24.44	24.43	24.43	24.41	24.40	24.38	24.36	24.36	24.45	24.44	24.44	24.42	24.43	24.43	24.44	24.49	24.36
25	24.43	24.43	24.44	24.43	24.45	24.47	24.50	24.50	24.51	24.52	24.52	24.52	24.51	24.51	24.51	24.51	24.51	24.50	24.50	24.50	24.51	24.54	24.55	24.55	24.50	24.55	24.43
26	24.55	24.54	24.53	24.52	24.52	24.53	24.53	24.52	24.51	24.49	24.48	24.47	24.46	24.45	24.44	24.42	24.41	24.40	24.39	24.38	24.39	24.39	24.39	24.38	24.46	24.55	24.38
27	24.37	24.36	24.35	24.34	24.33	24.33	24.33	24.32	24.31	24.30	24.29	24.27	24.25	24.25	24.25	24.23	24.21	24.21	24.20	24.21	24.21	24.19	24.17	24.18	24.27	24.37	24.17
28	24.19	24.18	24.18	24.17	24.18	24.18	24.18	24.18	24.18	24.17	24.15	24.13	24.13	24.16	24.17	24.17	24.17	24.18	24.17	24.16	24.16	24.17	24.16	24.17	24.17	24.19	24.13
29	24.18	24.18	24.18	24.17	24.19	24.19	24.20	24.23	24.24	24.24	24.24	24.26	24.26	24.27	24.29	24.30	24.31	24.31	24.32	24.32	24.31	24.32	24.32	24.31	24.26	24.32	24.17
30	24.31	24.30	24.30	24.29	24.29	24.29	24.30	24.29	24.29	24.28	24.27	24.26	24.26	24.26	24.29	24.29	24.30	24.31	24.30	24.30	24.30	24.30	24.31	24.31	24.29	24.31	24.26
Avg	24.39	24.39	24.39	24.38	24.39	24.39	24.40	24.40	24.40	24.40	24.39	24.39	24.38	24.38	24.38	24.37	24.37	24.38	24.38	24.38	24.39	24.40	24.39	24.39	24.39	24.46	24.33
Max	24.61	24.60	24.60	24.60	24.60	24.60	24.61	24.60	24.60	24.61	24.61	24.61	24.60	24.60	24.60	24.60	24.60	24.60	24.60	24.60	24.61	24.62	24.61	24.61	24.59	24.62	24.54
Min	24.03	24.04	24.03	24.04	24.05	24.06	24.07	24.08	24.08	24.08	24.07	24.08	24.06	24.04	24.01	24.01	23.99	24.00	23.98	24.02	24.04	24.04	24.03	24.03	24.07	24.18	23.98

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Relative Humidity (Percent)
April 2020

A-25

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	72.3	71.0	66.9	65.9	70.6	69.1	68.5	69.1	72.2	72.5	72.7	73.2	71.7	67.7	70.7	71.3	72.0	75.2	76.8	77.2	77.4	77.6	77.4	77.5	72.4	77.6	65.9
2	76.7	77.2	77.0	77.4	77.1	76.8	76.5	70.8	67.7	63.7	58.9	55.5	58.5	56.4	54.2	52.2	42.8	46.4	55.4	70.9	73.5	74.2	74.8	76.8	66.3	77.4	42.8
3	79.1	82.1	81.7	82.2	81.9	81.2	80.5	76.7	64.4	61.7	50.3	44.2	42.9	43.4	40.7	45.0	61.0	51.7	52.2	53.9	59.8	67.1	81.0	83.1	64.5	83.1	40.7
4	83.7	85.8	82.8	78.7	80.6	71.8	75.2	66.7	61.7	54.9	50.2	49.4	47.1	44.8	42.9	40.8	40.1	42.5	47.3	55.6	63.5	66.3	66.7	64.9	61.0	85.8	40.1
5	63.6	63.0	64.0	65.6	67.7	70.5	72.8	69.3	59.5	52.2	43.0	39.0	38.9	38.0	37.3	35.6	36.6	35.9	48.1	51.1	59.9	63.6	70.1	68.6	54.7	72.8	35.6
6	76.3	76.0	81.7	83.6	84.4	85.1	84.1	70.8	67.1	55.5	46.7	43.3	39.9	36.6	33.9	36.5	41.0	45.5	45.5	51.8	53.0	58.8	64.1	63.2	59.3	85.1	33.9
7	58.4	57.4	58.1	58.2	59.0	59.7	61.3	59.5	55.5	55.1	53.2	51.0	49.9	44.7	39.9	34.1	35.3	37.3	38.4	37.0	33.3	33.7	41.2	54.7	48.6	61.3	33.3
8	72.7	76.4	80.8	85.1	87.6	88.5	87.3	87.3	85.5	69.2	56.6	56.8	50.8	44.6	33.4	33.0	35.7	41.5	44.9	53.4	67.2	73.6	77.0	80.3	65.4	88.5	33.0
9	83.4	84.1	84.9	85.8	85.9	85.6	85.0	73.4	63.8	55.9	43.2	37.4	39.2	36.4	35.0	32.5	31.7	32.0	38.5	55.9	63.2	70.0	73.2	80.3	60.7	85.9	31.7
10	83.1	83.4	85.5	84.8	85.1	84.8	84.7	75.5	73.1	58.9	39.0	35.6	33.1	34.8	34.4	34.9	46.3	52.9	61.0	67.5	71.5	77.2	86.5	90.2	65.2	90.2	33.1
11	91.3	91.3	90.2	88.7	88.6	87.7	87.3	85.6	80.8	79.0	72.8	73.3	76.4	68.8	66.5	66.5	63.8	60.9	64.2	75.8	71.4	68.7	65.0	66.6	76.3	91.3	60.9
12	64.2	63.7	64.8	69.8	65.7	73.6	74.9	65.9	49.3	67.7	70.8	66.9	62.2	53.8	52.1	54.1	48.1	49.0	52.2	67.1	75.6	77.6	78.1	78.4	64.4	78.4	48.1
13	79.9	79.3	78.9	79.0	79.2	78.9	77.4	74.2	64.3	67.4	66.2	67.5	63.0	59.6	50.4	46.8	45.8	43.4	47.6	53.1	62.7	71.4	75.3	78.3	66.2	79.9	43.4
14	78.3	79.4	78.9	78.3	78.4	78.9	77.5	71.4	66.8	67.8	71.0	67.1	70.3	73.6	75.2	69.5	68.3	67.5	65.7	65.5	69.4	71.4	68.7	73.2	72.2	79.4	65.5
15	78.9	80.1	82.2	82.0	85.2	84.1	74.8	75.9	70.9	69.5	65.7	67.3	66.2	67.1	65.7	67.4	55.6	62.4	68.7	67.7	70.3	81.4	81.5	82.7	73.1	85.2	55.6
16	83.6	82.5	82.4	80.6	79.4	80.0	76.6	67.6	62.0	58.9	57.3	57.4	54.4	55.5	51.2	51.8	48.7	46.8	47.1	60.8	70.1	68.0	74.6	78.6	65.7	83.6	46.8
17	79.2	81.4	81.3	81.3	81.2	81.0	78.6	71.4	63.2	43.7	41.2	40.4	38.5	35.8	34.9	33.9	31.2	27.9	30.3	41.0	53.3	60.0	65.0	66.8	55.9	81.4	27.9
18	70.5	75.0	74.1	71.7	76.3	71.2	73.5	65.3	59.8	61.8	61.3	62.7	62.1	59.5	61.0	60.1	57.8	63.7	73.6	80.3	81.4	83.1	83.7	81.8	69.6	83.7	57.8
19	81.3	82.3	83.6	84.8	87.0	88.8	89.5	86.5	79.7	71.6	60.5	54.3	50.0	45.3	43.1	42.4	41.3	44.1	45.5	50.4	52.5	61.1	64.5	66.8	64.9	89.5	41.3
20	67.4	65.8	74.0	80.9	84.4	84.9	79.1	68.0	56.1	49.6	45.6	45.2	43.6	41.0	38.6	38.1	37.1	36.2	40.1	48.4	59.8	71.7	78.1	77.8	58.8	84.9	36.2
21	79.2	83.0	85.7	86.4	86.2	86.3	80.1	67.0	54.9	50.9	47.0	43.5	39.0	34.5	31.9	31.1	29.1	28.0	30.2	34.4	34.6	39.1	54.5	60.2	54.0	86.4	28.0
22	59.6	68.1	74.8	78.3	79.3	80.0	74.3	56.2	49.4	44.9	41.5	37.2	34.9	34.4	32.9	33.0	34.0	36.3	39.1	45.2	66.0	81.2	84.8	85.4	56.3	85.4	32.9
23	71.9	73.7	77.6	74.7	78.9	84.2	84.5	84.8	80.9	81.5	86.0	85.2	76.8	75.8	87.4	79.0	71.0	72.9	78.1	84.1	86.7	88.2	86.9	87.4	80.8	88.2	71.0
24	85.4	85.2	88.8	89.5	88.8	90.3	91.6	88.9	80.3	74.4	60.0	52.7	48.8	57.9	52.6	43.8	37.0	35.6	41.6	49.0	62.9	72.4	78.4	81.4	68.2	91.6	35.6
25	85.0	87.2	87.1	87.3	87.3	86.7	81.1	72.0	55.0	50.0	46.1	41.4	39.0	37.4	33.2	32.6	33.1	30.7	35.5	47.0	56.7	56.5	64.2	61.0	58.0	87.3	30.7
26	54.0	57.0	52.3	54.3	54.0	53.8	51.6	49.3	45.3	38.7	35.2	28.8	25.0	23.1	21.6	20.7	19.6	18.9	20.5	29.4	40.8	54.5	59.1	67.6	40.6	67.6	18.9
27	66.5	69.3	72.8	74.9	77.0	73.1	71.8	63.8	52.3	39.2	42.3	50.3	49.0	46.0	43.1	39.4	35.3	34.8	36.0	40.3	45.3	49.9	54.9	84.1	54.6	84.1	34.8
28	78.2	68.7	71.3	77.8	74.1	80.8	76.0	52.7	41.6	33.8	29.6	27.8	24.8	22.8	23.4	22.4	22.1	22.2	23.4	28.8	39.7	52.1	59.3	64.0	46.6	80.8	22.1
29	69.0	72.1	74.5	77.8	77.4	78.0	68.7	49.0	28.2	26.3	26.2	25.9	24.1	20.9	20.9	22.5	22.4	22.1	26.3	36.2	45.5	55.2	59.4	64.9	45.6	78.0	20.9
30	66.6	72.2	70.6	80.0	83.5	85.4	82.7	72.1	65.8	53.6	53.8	52.0	50.1	49.1	51.4	68.7	86.2	89.5	90.1	87.1	89.4	89.5	89.9	88.6	73.7	90.1	49.1
Avg	74.6	75.8	77.0	78.2	79.1	79.4	77.6	70.2	62.6	57.7	53.1	51.1	49.0	47.0	45.3	44.7	44.3	45.1	48.8	55.5	61.9	67.2	71.3	74.5	62.1	82.8	40.6
Max	91.3	91.3	90.2	89.5	88.8	90.3	91.6	88.9	85.5	81.5	86.0	85.2	76.8	75.8	87.4	79.0	86.2	89.5	90.1	87.1	89.4	89.5	89.9	90.2	80.8	91.6	71.0
Min	54.0	57.0	52.3	54.3	54.0	53.8	51.6	49.0	28.2	26.3	26.2	25.9	24.1	20.9	20.9	20.7	19.6	18.9	20.5	28.8	33.3	33.7	41.2	54.7	40.6	61.3	18.9

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Relative Humidity (Percent)
May 2020

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	88.1	86.0	80.2	82.2	82.9	83.9	78.8	70.8	64.8	60.8	54.3	45.1	43.7	37.4	35.2	33.6	32.2	32.4	33.5	39.8	56.7	72.1	79.7	82.7	60.7	88.1	32.2
2	84.4	86.3	86.1	86.6	86.6	86.0	78.8	63.7	41.7	33.9	29.0	28.1	26.2	25.5	24.4	22.6	18.9	16.5	17.0	33.1	44.0	54.8	62.0	64.2	50.0	86.6	16.5
3	65.7	68.3	69.4	77.1	79.6	82.8	81.9	78.0	68.5	58.4	61.4	78.3	57.8	49.4	39.2	36.3	33.4	33.5	32.0	36.5	39.9	43.4	55.6	57.4	57.7	82.8	32.0
4	59.7	57.1	60.9	67.6	64.7	64.8	59.8	51.2	44.5	40.4	36.9	33.3	31.2	28.1	25.3	24.4	23.2	22.2	25.0	30.0	35.6	46.8	54.8	67.2	43.9	67.6	22.2
5	68.3	72.1	76.0	77.2	80.9	78.5	71.3	51.9	32.9	29.4	27.9	26.1	25.2	25.5	25.6	24.5	22.3	22.9	24.3	35.8	44.6	43.5	47.6	52.3	45.3	80.9	22.3
6	55.2	56.9	63.1	63.1	59.4	52.1	48.0	40.6	36.4	37.3	38.6	38.7	35.5	35.6	36.0	50.3	78.1	85.9	90.6	91.7	92.0	91.6	90.3	90.9	60.7	92.0	35.5
7	90.7	89.7	89.8	90.2	90.4	90.9	90.3	89.0	85.9	82.8	83.6	84.2	81.6	71.0	66.0	60.6	61.1	60.7	73.0	86.8	89.7	90.7	91.1	91.5	82.6	91.5	60.6
8	90.9	90.1	89.9	89.2	90.0	91.2	91.9	91.2	84.9	84.1	86.4	84.5	79.8	74.0	67.9	64.2	76.5	80.7	83.8	86.5	84.9	80.6	75.1	72.3	82.9	91.9	64.2
9	71.5	74.8	81.9	84.7	86.9	85.4	78.3	68.5	54.9	51.6	49.5	47.7	40.9	40.4	44.4	43.4	45.5	40.7	42.3	51.6	62.5	67.9	71.0	75.6	60.9	86.9	40.4
10	81.1	83.0	85.9	87.2	88.2	86.5	80.4	74.4	70.5	64.5	59.7	57.3	58.4	58.4	50.6	51.8	56.5	60.8	62.0	62.9	64.0	65.4	65.9	65.2	68.4	88.2	50.6
11	64.8	64.9	65.4	66.5	66.3	66.4	66.7	67.8	67.5	65.9	64.3	61.5	59.0	61.1	84.3	86.8	81.9	79.3	78.8	79.1	81.4	80.6	79.4	84.3	71.8	86.8	59.0
12	85.3	84.3	85.3	83.6	85.8	86.2	84.3	81.5	79.4	74.3	74.0	69.7	67.1	62.7	62.1	60.7	80.4	79.3	79.9	84.6	89.1	88.1	88.1	88.6	79.3	89.1	60.7
13	89.9	91.3	90.9	91.1	91.4	91.5	91.3	87.2	76.1	67.9	62.7	58.1	56.7	51.2	51.6	69.2	66.7	62.8	54.0	56.4	68.3	69.6	79.1	84.1	73.3	91.5	51.2
14	86.7	87.9	88.4	89.0	88.7	87.3	83.8	76.9	58.9	50.3	48.3	45.3	40.4	37.0	34.8	31.2	31.2	32.6	35.9	50.6	60.5	68.0	75.0	77.4	61.1	89.0	31.2
15	77.4	81.3	85.6	85.9	87.5	84.9	82.0	64.8	55.8	64.4	74.4	89.0	87.7	81.0	75.8	84.0	87.7	84.7	83.9	87.2	90.2	91.0	91.9	92.1	82.1	92.1	55.8
16	92.5	92.6	92.7	92.7	92.7	92.8	92.9	92.6	81.5	66.4	57.8	50.4	44.2	42.0	38.3	35.9	36.7	36.7	43.2	52.5	57.9	62.8	68.2	71.8	66.2	92.9	35.9
17	76.6	79.2	84.0	86.7	89.0	89.4	83.4	63.9	40.4	32.8	27.5	27.7	30.2	31.6	32.4	34.2	35.3	39.5	46.9	51.7	61.0	63.2	68.7	74.8	56.3	89.4	27.5
18	83.0	84.7	86.7	84.6	88.7	88.9	89.2	83.9	74.6	61.0	57.3	50.9	42.4	38.0	36.5	40.5	46.4	44.5	48.4	68.1	78.9	80.5	86.5	87.0	68.0	89.2	36.5
19	89.8	88.6	89.1	89.3	90.0	90.8	87.4	82.5	75.8	65.9	60.6	52.4	49.2	51.5	67.4	84.7	77.2	78.0	77.2	74.5	73.8	76.4	78.0	73.4	76.0	90.8	49.2
20	74.1	81.0	88.8	92.0	92.4	93.0	92.8	91.2	91.9	87.7	76.6	73.1	65.5	54.1	50.9	58.0	77.9	84.3	85.5	86.8	86.8	86.7	81.6	79.3	80.5	93.0	50.9
21	87.0	85.6	87.0	87.4	84.9	84.8	84.6	80.2	77.0	72.5	71.2	66.2	53.7	47.8	43.0	39.0	40.6	44.1	58.8	68.1	86.4	88.7	89.2	89.9	71.6	89.9	39.0
22	87.0	89.0	86.6	88.3	89.1	84.1	78.4	62.5	60.1	55.0	51.8	48.6	47.5	45.7	42.8	39.6	40.1	39.1	41.2	49.9	62.7	66.3	71.7	76.4	62.6	89.1	39.1
23	78.9	83.2	84.1	85.9	86.5	86.3	85.4	76.6	65.4	51.4	46.3	51.3	49.5	45.1	45.9	54.8	65.9	60.6	58.1	62.0	73.7	79.4	86.3	87.8	68.8	87.8	45.1
24	87.5	87.8	89.1	88.1	89.1	88.5	84.8	81.8	76.5	70.8	71.6	64.9	78.7	64.3	58.7	51.5	49.4	53.6	60.1	65.8	78.3	84.2	85.2	88.3	74.9	89.1	49.4
25	89.5	90.2	90.5	90.1	89.9	87.8	79.0	67.5	55.3	52.3	46.4	42.5	40.7	37.0	36.3	35.1	36.4	37.3	44.6	44.3	56.2	63.8	81.7	86.1	61.7	90.5	35.1
26	79.4	79.7	79.1	76.7	79.7	80.1	74.8	65.2	59.9	59.4	54.5	49.8	43.7	41.0	38.5	35.4	34.8	34.2	38.0	43.3	52.7	59.1	58.7	72.2	57.9	80.1	34.2
27	77.1	82.2	83.9	86.8	88.9	87.5	76.8	62.3	51.5	43.4	39.7	35.1	36.7	38.1	32.4	28.3	30.3	30.1	32.5	49.5	61.3	74.2	78.3	86.1	58.0	88.9	28.3
28	88.1	87.8	89.6	89.7	89.1	79.5	65.7	52.7	43.8	41.7	42.8	42.9	40.0	39.2	39.5	40.8	42.2	44.6	46.6	50.6	53.4	57.0	56.9	57.0	57.6	89.7	39.2
29	56.4	56.5	58.3	62.3	75.7	77.6	62.6	55.5	47.6	42.5	51.5	49.7	44.6	46.5	45.2	41.1	40.1	38.7	37.7	60.9	70.6	70.6	75.5	76.0	56.0	77.6	37.7
30	81.4	84.7	86.6	90.3	91.3	87.6	76.7	62.0	58.6	54.8	51.7	49.8	48.3	47.7	48.4	50.7	54.7	57.7	58.5	63.5	65.6	67.8	66.1	67.2	65.5	91.3	47.7
31	71.1	60.2	57.7	61.5	67.4	71.6	64.7	46.8	36.8	32.4	29.1	39.5	42.3	35.5	30.7	26.1	24.4	25.3	28.7	36.5	54.4	65.4	73.0	80.4	48.4	80.4	24.4
Avg	79.3	80.2	81.7	83.0	84.3	83.5	78.9	70.5	61.9	56.6	54.4	53.0	49.9	46.6	45.5	46.4	49.3	49.8	52.3	59.4	67.0	71.0	74.6	77.4	64.9	87.6	40.4
Max	92.5	92.6	92.7	92.7	92.7	93.0	92.9	92.6	91.9	87.7	86.4	89.0	87.7	81.0	84.3	86.8	87.7	85.9	90.6	91.7	92.0	91.6	91.9	92.1	82.9	93.0	64.2
Min	55.2	56.5	57.7	61.5	59.4	52.1	48.0	40.6	32.9	29.4	27.5	26.1	25.2	25.5	24.4	22.6	18.9	16.5	17.0	30.0	35.6	43.4	47.6	52.3	43.9	67.6	16.5

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Relative Humidity (Percent)
June 2020

Day	<< Hour >>																								Avg	Max	Min
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	80.5	85.4	85.5	88.0	90.0	87.6	79.4	63.7	45.2	44.9	43.8	35.8	35.7	33.2	32.3	31.5	40.8	62.5	78.5	84.7	82.5	73.0	64.9	67.6	63.2	90.0	31.5
2	77.7	80.4	84.3	86.9	88.2	86.5	79.6	65.1	56.9	50.8	44.3	34.9	32.1	32.7	33.0	30.7	26.8	27.8	38.4	54.8	62.9	69.7	73.7	78.3	58.2	88.2	26.8
3	81.9	78.1	55.8	57.9	59.5	54.6	44.3	45.7	48.5	44.2	41.0	36.9	36.4	36.5	33.2	26.8	29.2	29.1	31.1	35.0	42.6	44.9	54.7	62.4	46.3	81.9	26.8
4	69.2	73.9	75.7	70.3	64.7	63.0	45.9	37.1	35.6	35.5	31.0	30.3	30.9	32.9	33.8	30.9	30.1	31.1	34.2	38.7	53.4	59.4	68.7	73.7	47.9	75.7	30.1
5	78.5	82.3	85.6	86.4	86.5	82.1	71.6	48.6	46.0	44.8	40.5	34.8	35.8	35.8	36.6	37.8	40.1	40.5	44.7	45.7	46.2	51.7	55.8	61.1	55.0	86.5	34.8
6	69.2	81.0	83.3	83.4	89.4	90.2	86.9	79.9	73.2	70.1	66.3	59.5	57.1	60.7	56.9	79.4	83.9	86.7	86.0	86.6	89.4	90.5	89.1	88.2	78.6	90.5	56.9
7	88.5	87.0	87.8	85.4	83.9	84.0	81.6	71.6	66.3	63.3	59.3	56.4	66.4	66.1	52.2	47.3	47.6	49.9	57.4	65.4	74.2	77.1	75.4	80.8	69.8	88.5	47.3
8	82.7	87.5	86.7	79.2	73.2	77.4	82.8	87.5	87.7	84.0	80.7	81.5	79.6	82.7	85.7	86.4	87.6	86.1	85.9	86.7	87.9	87.2	83.4	82.5	83.9	87.9	73.2
9	78.4	82.6	87.8	89.2	89.1	85.4	71.8	60.9	51.8	49.6	45.2	42.9	41.2	41.8	43.8	46.4	47.4	53.0	58.1	63.6	69.1	69.2	Pw	Pw	62.2	89.2	41.2
10	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
11	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
12	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
13	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
14	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
15	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
16	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw			
17	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	Pw	80.6	77.3	76.2	80.2	77.0	77.9	79.7	83.6	87.9	87.9	88.4	88.8	88.8	89.8	88.0	83.5	89.8	76.2
18	89.0	90.2	91.0	90.5	91.5	91.6	89.2	86.9	85.9	78.5	68.9	68.1	69.0	67.5	65.2	66.7	64.4	66.1	67.2	69.3	81.0	88.3	89.0	89.6	79.4	91.6	64.4
19	90.0	90.1	89.8	91.7	92.6	92.8	92.9	89.1	72.9	67.8	65.3	61.2	60.8	64.1	48.4	43.8	46.7	64.7	59.6	66.4	77.8	81.3	85.8	87.3	74.3	92.9	43.8
20	88.4	91.4	91.6	92.3	92.4	92.5	85.1	68.5	55.1	52.5	48.0	43.3	39.8	41.4	46.5	58.3	55.7	57.6	75.0	69.9	66.6	68.4	82.7	89.0	68.8	92.5	39.8
21	88.5	90.0	89.0	88.8	88.9	86.1	83.7	76.0	72.1	67.7	62.8	56.6	57.5	66.4	53.5	45.5	44.5	39.4	40.1	47.0	64.5	76.2	82.2	81.4	68.7	90.0	39.4
22	86.2	88.8	91.7	91.5	92.4	92.6	87.8	71.3	60.4	57.2	51.6	46.6	43.3	39.7	40.0	40.7	37.2	35.9	37.2	44.8	67.0	77.3	82.6	88.5	64.7	92.6	35.9
23	88.6	89.6	91.4	91.3	92.2	89.8	79.8	65.7	50.7	48.5	46.5	43.8	39.9	36.6	36.5	35.6	34.8	35.0	37.8	47.0	64.8	71.5	83.0	87.3	62.0	92.2	34.8
24	87.6	89.0	90.8	91.7	91.6	89.7	81.3	65.6	44.8	38.5	36.8	34.2	29.8	24.8	26.3	25.9	28.8	41.3	70.0	84.5	80.6	80.8	87.2	88.8	62.9	91.7	24.8
25	90.1	83.2	83.9	88.4	90.2	89.9	86.3	72.3	64.9	59.3	52.8	52.6	46.1	40.9	35.1	33.7	32.5	33.0	34.2	44.0	62.0	68.5	76.1	80.6	62.5	90.2	32.5
26	86.2	88.1	89.9	91.4	92.5	91.3	80.4	69.1	53.2	45.3	43.4	39.7	36.7	31.1	31.6	33.9	35.4	32.0	33.3	44.3	63.4	71.2	75.8	81.8	60.0	92.5	31.1
27	84.6	88.1	89.8	89.9	90.4	86.0	76.0	66.9	55.9	42.1	41.0	39.9	42.1	65.4	80.4	81.5	82.1	80.5	85.0	85.4	84.7	83.7	85.9	90.0	74.9	90.4	39.9
28	90.8	90.6	90.7	91.3	92.4	92.7	90.9	80.5	76.8	76.0	74.3	66.4	65.0	85.7	88.4	88.1	86.3	86.3	87.4	87.7	88.8	90.3	91.3	88.4	85.3	92.7	65.0
29	88.0	88.7	87.7	89.3	87.3	90.6	88.3	88.2	86.4	85.1	84.5	86.7	86.8	84.8	84.3	82.1	83.4	86.6	84.2	85.1	89.1	89.8	90.2	90.8	87.0	90.8	82.1
30	92.2	92.4	92.5	92.8	92.9	93.2	92.5	77.6	66.6	60.5	55.1	59.3	55.2	56.6	72.3	75.2	74.6	75.2	72.8	78.8	83.9	84.3	88.9	88.1	78.1	93.2	55.1
Avg	84.4	86.3	86.5	86.7	86.9	85.9	79.9	69.9	61.7	58.6	54.8	51.6	50.8	52.4	51.9	52.5	53.2	56.0	60.3	65.4	72.7	75.8	79.8	82.5	68.3	89.6	44.9
Max	92.2	92.4	92.5	92.8	92.9	93.2	92.9	89.1	87.7	85.1	84.5	86.7	86.8	85.7	88.4	88.1	87.6	87.9	87.9	88.4	89.4	90.5	91.3	90.8	87.0	93.2	82.1
Min	69.2	73.9	55.8	57.9	59.5	54.6	44.3	37.1	35.6	35.5	31.0	30.3	29.8	24.8	26.3	25.9	26.8	27.8	31.1	35.0	42.6	44.9	54.7	61.1	46.3	75.7	24.8

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Precipitation (Inches)
April 2020

A-28

Day	<< Hour >>																								Tot Max	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.04	0.10	0.04
11	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.05
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01
23	0.01	0.01	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.01	0.08	0.03	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.23	0.08
24	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.04
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.11	0.18	0.13	0.00	0.00	0.04	0.02	0.09	0.82	0.25
Tot	0.02	0.06	0.00	0.00	0.03	0.02	0.03	0.06	0.00	0.02	0.12	0.05	0.02	0.01	0.10	0.27	0.11	0.18	0.13	0.00	0.01	0.07	0.06	0.15	1.52	0.00
Max	0.01	0.04	0.00	0.00	0.03	0.01	0.02	0.04	0.00	0.01	0.08	0.03	0.01	0.01	0.05	0.25	0.11	0.18	0.13	0.00	0.01	0.04	0.04	0.09	0.82	0.25

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Precipitation (Inches)
May 2020

	<< Hour >>																									
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Tot	Max
1	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.07	0.10	0.01	0.03	0.02	0.02	0.00	0.01	0.28	0.10
7	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.06	0.12	0.13	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.13
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.06	0.02
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.16	0.06
13	0.10	0.02	0.02	0.01	0.00	0.01	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.10
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.23	0.00	0.00	0.02	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.23
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03
18	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.29	0.21
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.09	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.12	0.09
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.11	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.11
21	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.01	0.00	0.00	0.09	0.04
22	0.04	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.04
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.06	0.10	0.06
24	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.04
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.06	0.06
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.12
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.01	0.00	Wi	Wi	Wi	Wi	0.05	0.04
31	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi
Tot	0.24	0.06	0.06	0.01	0.00	0.02	0.05	0.00	0.13	0.07	0.40	0.40	0.06	0.00	0.04	0.16	0.38	0.13	0.09	0.09	0.05	0.26	0.03	0.16	2.89	0.00
Max	0.10	0.02	0.04	0.01	0.00	0.01	0.04	0.00	0.07	0.06	0.15	0.23	0.04	0.00	0.02	0.09	0.11	0.10	0.06	0.04	0.02	0.21	0.03	0.06	0.48	0.23

Sandfire Resources America Inc.
Black Butte Copper Project Met Tower Air Monitoring Summary
Precipitation (Inches)
June 2020

Day	<< Hour >>																								Tot	Max
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
2	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
3	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
4	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
5	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
6	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
7	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
8	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
9	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
10	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
11	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
12	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
13	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
14	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
15	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
16	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
17	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
18	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
19	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
20	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
21	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
22	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
23	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
24	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
25	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
26	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
27	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
28	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
29	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
30	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi	Wi		
Tot																										
Max																										

APPENDIX B: PERFORMANCE AUDIT REPORTS
SECOND QUARTER 2020



BISON ENGINEERING, INC.

Bison Engineering

Preliminary Meteorological Parameters Audit Form

Audit Dates: 06/02/2020 Tower Lowered : 11:30 MST Tower Back Up : 15:30 MST
 Client: Tintina Resources
 Site: Black Butte
 AUDITOR: Don Milmine PRECEDING CALIBRATION BY: Jeff Bell

Temperature

Audit Device: Control Company - digital thermometer Model 4000
 Meter S/N: 140251289 Temperature Sensor: Climatronics 100093
 Last certified: 6/4/2019 S/N X17929 (Upper), S/N X17927 (Lower) - Matched Set

Temperature bath results

	9m	9m	2m	2m	9m - 2m	Logger
Audit	DAS	DAS	DAS	DAS	DAS	9m-2m ▲ T
Value	Value	Diff.	Value	Diff.	Diff.	Reading
°C	°C	°C	°C	°C	°C	°C
0.01	0.02	0.01	0.01	0.00	0.01	0.02
19.30	19.26	-0.04	19.26	-0.04	0.00	0.00
29.62	29.67	0.05	29.64	0.02	0.03	0.03

Wind Direction

		Linearity Check from DAS			
Sensor height:	9 Meter	Setpoint	Clockwise	Counter-CW	Diff CCW
Sensor (Make/model number):	Climatronics/ 102083	0	1.3	1.4	1.3
Serial Number :	P1336C	30	31.0	31.0	1.0
Crossarm orientation from nextar Q4-01 GPS:	359.6/ 179.6	60	61.2	61.5	1.2
GPS location north of sensor:		90	91.4	91.4	1.4
N 46 deg 46 min 22.95 sec, W 110 deg 52 min 56.90 sec		120	121.0	121.5	1.0
GPS location south of sensor:		150	150.9	151.2	0.9
N 46 deg 46 min 21.90 sec, W 110 deg 52 min 56.89 sec		180	180.9	181.2	0.9
Sensor response aligned with crossarm (as found):	178.4	210	210.8	210.6	0.8
Sensor response aligned with crossarm (as left):	179.0	240	240.5	240.7	0.5
		270	270.8	270.6	0.8
Linearity Audit Device: Climatronics 101966, SN 70		300	300.8	300.7	0.8
(torque disk)		330	330.8	330.9	0.8
Threshold Torque: 2.8 gm-cm (torque disk)				Max Diff	1.4
					1.5

Wind Speed

Sensor height:: 9 Meter
 Sensor (Make/model number): Climatronics/ 102083
 Serial Number : P1336C
 Calibration device: R.M. Young Model 18801 wind speed shaft simulator
 S/N CA02929

Chronous motor checks

Known	Known	DAS	DAS
Value	Value	Value	Diff.
RPM	m/s	m/s	m/s
0	0.22	0.22	0.00
50	1.30	1.30	0.00
300	6.66	6.66	0.00
500	10.94	10.95	0.01
600	13.09	13.10	0.01
700	15.23	15.24	0.01
800	17.38	17.40	0.02
990	21.45	21.45	0.00

Threshold Torque: 0.2 g-cm
 (torque disk)

Solar Radiation

Audit Device: Met One Part # 096-1 Serial # Y82228

Time (MST)	CTS Value (W/m2)	Site Value (W/m2)	Diff. (%)	Diff. (% FS)
1514	936	935	-0.1	-0.1
1518	930	932	0.2	0.2

Relative Humidity

Site Sensor: Met One 083E-0-35
Sensor Height: 2 meters
Reference Std: Taylor Hygrometer Tool # T66978

Ref Dry-Bulb:	20.3	deg C	BP = 24.35 in. Hg
Ref Wet-Bulb	11.1	deg C	
Ref RH:	34.9	%RH	
Station RH:	31.2	%RH	
Diff:	-3.7	%RH	

Barometric Pressure

Audit Device: Vaisala Model PTB330(50-1100) serial # C4310002
Checked against Bison Mercury barometer (Billings) May 2020

Audit Value:	24.31	in Hg
Station Value:	24.35	in Hg
Diff:	0.04	in Hg

Precipitation

Rain Gauge = Met One Model 375D, Serial No. N3939
This gauge installed as temporary replacement for site gauge which had failed. Gauge had no heater.
Level checked OK
Wind Screen in place
8" opening
Precip audit performed June 2, 2020
250 ml water added
Calibration is 8.24 ml per tip
Known audit value is $250 / 8.24 = 30.3$ tips (so 30 full tips expected)
Unit registered 30 tips
% difference from expected = 0.0%

Signature Site Operator : _____

Signature Auditor :  _____

**APPENDIX C: NEWLAN CREEK RAWS STATION
PRECIPITATION SUMMARIES, SECOND QUARTER 2020**

Newlan Creek Montana

Monthly Summary for

May, 2020

Day	Day	Total	Wind			Air Temperature			Fuel Temperature			Humidity			Dew	Wet	Total
of	of	Solar Rad.	Ave.	V. Dir.	Max.	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Point	Bulb	Precip
Month	Year	ly.	mph	Deg	mph	Deg.	Fahrenheit	Deg.	Fahrenheit			Percent		Deg.	Fahrenheit	inches	
1	122	537	5.0	299	23.0	41	55	26	42	65	22	65	100	29	28	35	0.00
2	123	651	2.8	303	19.0	43	63	21	44	72	17	53	98	14	22	34	0.00
3	124	420	6.6	306	34.0	40	54	24	40	60	18	61	95	29	26	34	0.01
4	125	629	7.0	295	36.0	35	50	17	36	58	13	49	86	20	15	27	0.00
5	126	669	5.6	297	24.0	42	59	18	44	67	14	45	87	20	19	32	0.00
6	127				29.0		57	31		64	31		100	36			
7	128	390	4.6	317	18.0	36	51	27	36	52	24	87	100	58	32	34	0.40
8	129	328	5.1	314	20.0	36	47	24	35	53	21	88	100	61	32	34	0.03
9	130	506	3.2	314	17.0	37	49	21	37	58	17	64	97	35	25	32	0.00
10	131	485	7.3	134	28.0	35	43	23	36	50	20	71	97	50	26	31	0.00
11	132	196	5.9	142	22.0	31	37	29	32	40	29	74	89	60	24	28	0.03
12	133	370	4.7	159	23.0	38	51	28	39	58	28	84	100	56	33	36	0.28
13	134	443	5.5	295	33.0	41	51	27	41	53	24	76	100	42	33	37	0.18
14	135	480	4.0	341	22.0	42	56	24	42	61	20	64	100	30	28	35	0.00
15	136	281	3.3	320	18.0	38	49	26	38	54	23	89	100	61	35	36	0.35
16	137	601	5.8	155	22.0	47	60	30	48	67	29	68	100	36	35	41	0.00
17	138	309	4.6	186	28.0	52	65	31	52	73	28	59	100	25	36	44	0.00
18	139	491	4.0	342	44.0	56	73	41	57	82	38	71	100	33	44	49	0.24

19	140	342	3.8	2	29.0	51	64	37	51	67	36	81	100	49	45	48	0.07
20	141	197	4.1	119	26.0	47	59	41	47	64	39	87	100	51	43	45	0.11
21	142	390	6.3	242	30.0	43	56	35	44	63	33	75	100	34	35	39	0.04
22	143	655	4.8	295	27.0	42	53	28	43	63	25	65	100	35	29	36	0.05
23	144	296	3.0	344	18.0	39	47	29	40	57	28	73	99	43	31	35	0.14
24	145	341	2.1	318	21.0	42	53	29	42	59	26	81	100	50	36	39	0.09
25	146	599	4.2	312	28.0	48	62	24	48	70	21	66	100	33	34	41	0.09
26	147	589	6.4	296	27.0	53	65	37	53	73	33	63	92	31	38	45	0.02
27	148	590	5.2	325	24.0	50	66	29	50	74	27	61	99	26	34	41	0.00
28	149	688	6.5	138	25.0	52	66	32	54	73	29	57	100	38	36	44	0.00
29	150	492	3.9	186	19.0	60	74	39	61	80	36	55	81	35	43	50	0.00
30	151	646	7.8	142	36.0	61	72	42	62	76	39	68	100	48	50	54	0.00
31	152	568	7.2	264	38.0	63	77	40	64	83	36	51	92	24	42	51	0.00

MONTHLY STATISTICS

	Total	Wind			Air Temperature			Fuel Temperature			Humidity			Dew	Wet	Total
	Solar Rad.	Ave.	V. Dir.	Max.	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Point	Bulb	Precip.
	ly.	mph	Deg	mph	Deg.	Fahrenheit		Deg.	Fahrenheit		Percent		Deg.	Fahrenheit	inches	
Total	14180															2.13
Ave.	473	5.0	293	26.1	44.7	57.5	29.4	45.2	64.2	26.6	68	97	38	33	39	
Max.	688	7.8		44.0	63	77	42	64	83	39	89	100	61	50	54	0.40
Min.	196	2.1		17.0	31	37	17	32	40	13	45	81	14	15	27	0.00

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° 1 ly = 1 cal/cm² = 4.1855 J/cm² = 3.6855 BTU/ft² = .01163 KW-hr/m²

Newlan Creek Montana

Monthly Summary for

June, 2020

Day	Day	Total	Wind			Air Temperature			Fuel Temperature			Humidity			Dew	Wet	Total	
of	of	Solar Rad.	Ave.	V.	Dir.	Max.	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Point	Bulb	Precip
Month	Year	ly.	mph	Deg	mph	Deg.	Fahrenheit	Deg.	Fahrenheit				Percent			Deg.	Fahrenheit	inches
1	153	574	3.9	333	19.0	53	70	34	53	78	31	67	100	31	40	46	0.06	
2	154	710	4.2	297	22.0	52	70	32	53	77	29	61	100	26	36	44	0.00	
3	155	470	5.1	304	29.0	54	69	40	54	76	37	53	89	24	35	44	0.00	
4	156	564	5.9	321	23.0	53	65	39	54	73	36	51	82	29	33	43	0.00	
5	157	654	8.1	144	32.0	59	73	34	59	79	32	57	95	35	41	49	0.00	
6	158	252	5.0	312	27.0	54	69	43	54	74	42	85	100	57	49	51	0.99	
7	159	489	4.4	280	28.0	48	59	41	49	63	40	72	95	43	39	43	0.10	
8	160	239	4.5	200	25.0	38	45	33	37	49	30	90	100	76	35	36	0.38	
9	161	585	6.6	275	29.0	43	54	28	43	60	25	66	100	38	31	37	0.01	
10	162	575	6.9	286	26.0	51	63	36	52	69	32	63	98	36	38	44	0.00	
11	163	659	3.8	262	23.0	55	76	30	56	84	28	63	100	27	39	46	0.03	
12	164	593	5.4	140	23.0	66	80	46	65	85	44	47	80	30	44	53	0.00	
13	165	594	7.5	174	33.0	65	80	41	64	85	37	35	79	16	34	49	0.00	
14	166	486	5.9	338	31.0	42	54	32	43	63	30	75	99	44	34	38	0.16	
15	167	518	5.1	172	26.0	47	61	30	47	69	27	63	100	30	33	40	0.01	
16	168	264	3.8	321	17.0	44	50	34	44	51	30	92	100	74	42	43	0.20	
17	169	136	3.6	309	17.0	42	49	36	42	48	34	94	100	78	40	41	0.45	
18	170	328	5.4	322	24.0	45	52	36	45	56	34	85	100	66	40	42	0.13	

19	171	451	3.9	316	22.0	49	65	34	49	71	32	80	100	42	42	45	0.07
20	172	526	3.6	276	21.0	52	68	32	52	75	30	74	100	37	43	47	0.05
21	173	449	4.3	301	20.0	55	66	43	54	68	39	74	100	39	46	50	0.04
22	174	586	2.7	311	16.0	55	70	36	55	79	34	70	100	38	43	48	0.00
23	175	728	3.8	318	20.0	59	78	35	60	83	33	66	100	35	45	51	0.00
24	176	657	4.8	336	33.0	61	81	40	61	87	37	67	100	23	46	51	0.06
25	177	703	4.8	303	22.0	60	72	45	60	79	43	66	100	32	46	51	0.00
26	178	693	4.0	300	23.0	61	80	38	61	86	35	64	100	29	45	52	0.00
27	179	338	3.4	338	32.0	55	75	40	54	85	37	80	100	38	48	51	0.30
28	180	206	2.6	320	16.0	46	56	41	45	57	39	93	100	62	43	44	1.02
29	181	166	3.1	262	13.0	46	51	38	45	53	36	94	100	84	44	45	0.67
30	182	496	4.5	262	23.0	45	56	32	46	64	31	82	100	54	39	42	0.00

MONTHLY STATISTICS

	Total		Wind		Air Temperature		Fuel Temperature		Humidity		Dew		Wet		Total
	Solar Rad.	Ave. V.	Dir. Max.	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Point	Bulb	Precip.
	ly.	mph	Deg	mph	Deg.	Fahrenheit	Deg.	Fahrenheit		Percent	Deg.	Fahrenheit			inches
Total	14689														4.73
Ave.	490	4.7	302	23.8	51.9	65.2	36.6	51.8	70.9	34.1	71	97	42	40	46
Max.	728	8.1		33.0	66	81	46	65	87	44	94	100	84	49	53
Min.	136	2.6		13.0	38	45	28	37	48	25	35	79	16	31	36

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