

Ambient Air and Sound

Monthly Report

**STONEY TRAIL AGGREGATE RESOURCE**

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**BURNCO**

**LAFARGE**



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Contracting Ltd.

June 2020

This report summarizes the ambient air quality, metrological data and sound data collected at the Stoney Trail Aggregate Resource (STAR) pit monitoring locations for the month.

### Metrological Data Results

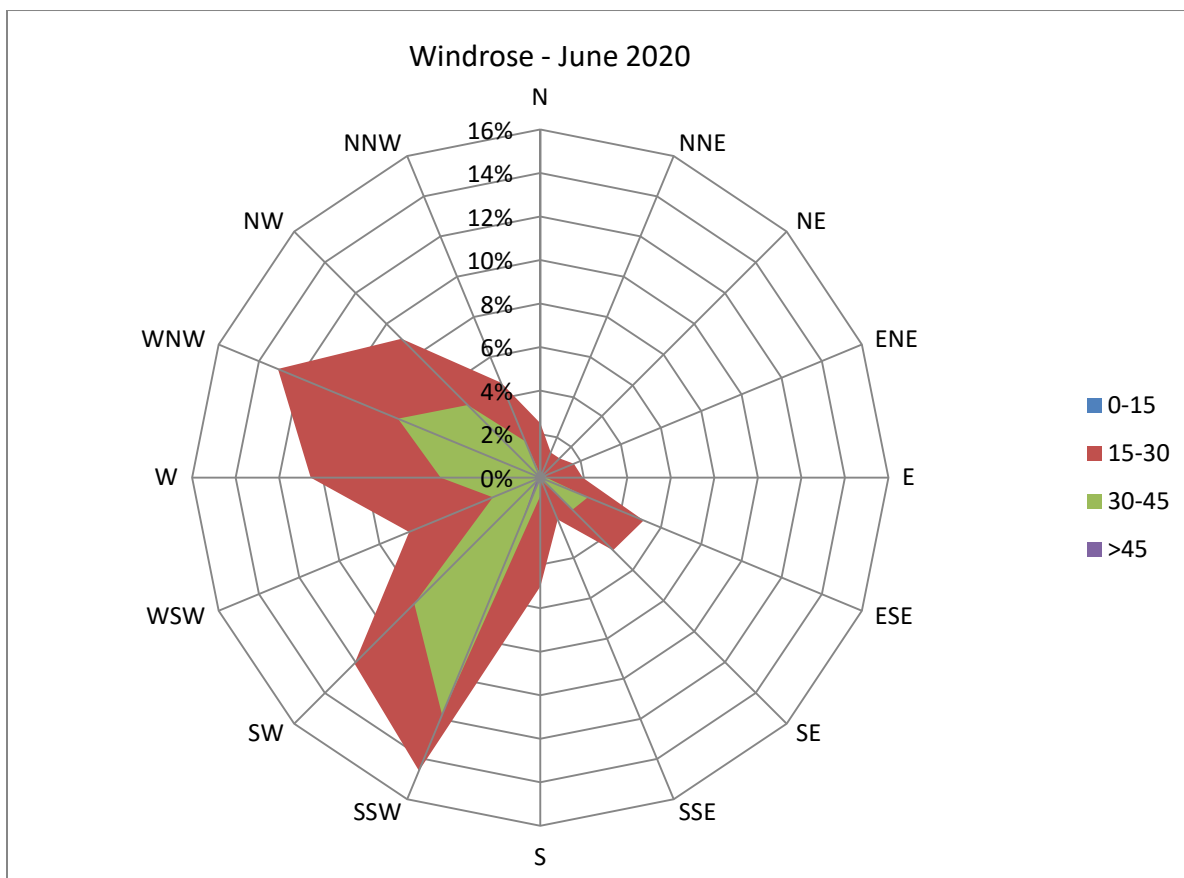
Table 1 provides a summary of the metrological data recorded at STAR during the month. Monitor details can be found in the STAR Monitoring Appendix.

**Table 1: STAR metrological data**

Parameter	Monthly Average	1-Hour	
		Maximum	Minimum
Wind Speed	15.13	36.45	1.38
Wind Direction	SW	SSW	-
Temperature	19.51	31.47	8.9
Precipitation(mm)	104.8*		

\*Monthly total accumulation of precipitation (mm)

The wind rose (Figure 1) illustrates the frequency of wind speed and direction for the month



**Figure 1: Monthly wind rose from the scale house station**

## Particulate Data Results

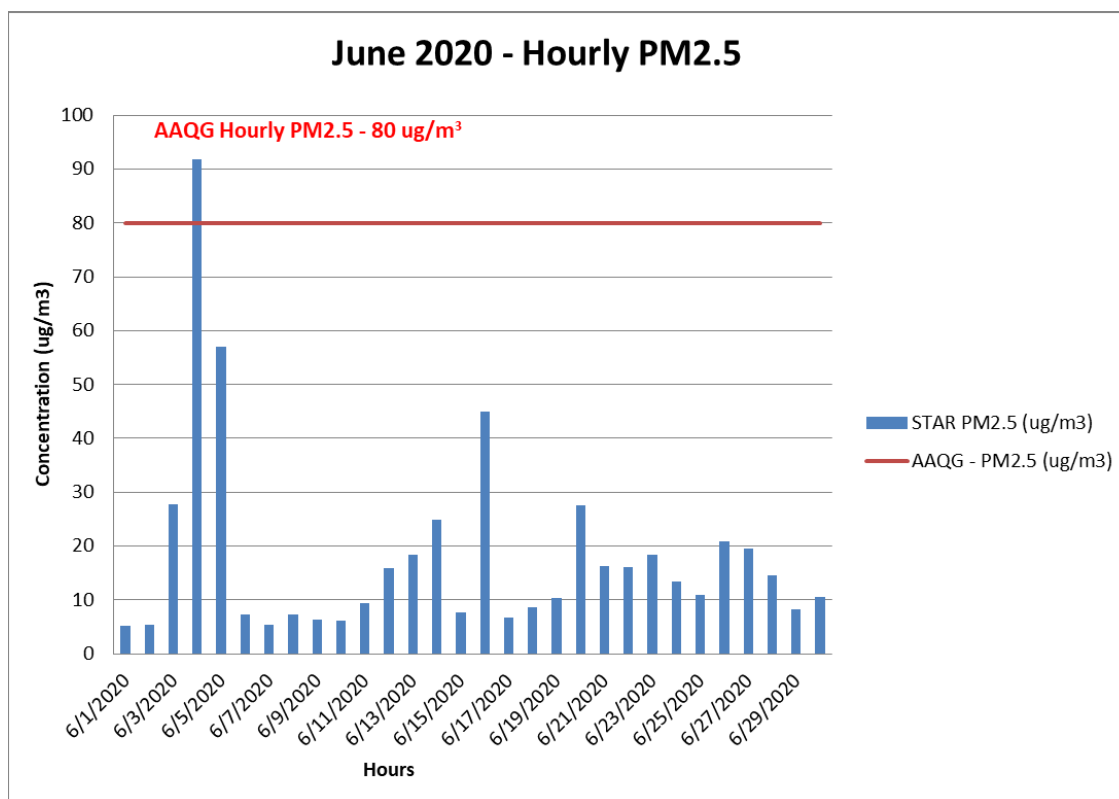
Table 2 provides a summary of the particulate data recorded at STAR during the month. STAR compares its data to Alberta's ambient air quality objectives (AAAQO) and guidelines (AAAQG) guidelines as well as to the Calgary Region Airshed Zone's (CRAZ) northwest particulate monitor data, details of which, both can be found in STAR Monitoring Appendix.

**Table 2: STAR data summary for particulate data**

Parameter	Monthly Average	CRAZ	1-Hour Average		24-Hour Average	
		PM2.5 Average	Maximum Concentration	Events vs AAAQO or AAAQG	Maximum Concentration	Events vs AAAQO
PM <sub>2.5</sub> (ug/m <sup>3</sup> )	7.73	4.23	91.8	2	48.6	1
TSP (ug/m <sup>3</sup> )	3.14		12.27	-	5.4	0

\*PM<sub>2.5</sub> Events where June 4<sup>th</sup> 8am & 9am – Undetermined source

Figure 2 graphically illustrates the time series for hourly concentrations of PM<sub>2.5</sub>, while Figure 3 and 4 shows daily average concentrations recorded during the month for particulate matter.



**Figure 2: 1-hour concentrations of PM<sub>2.5</sub> STAR**

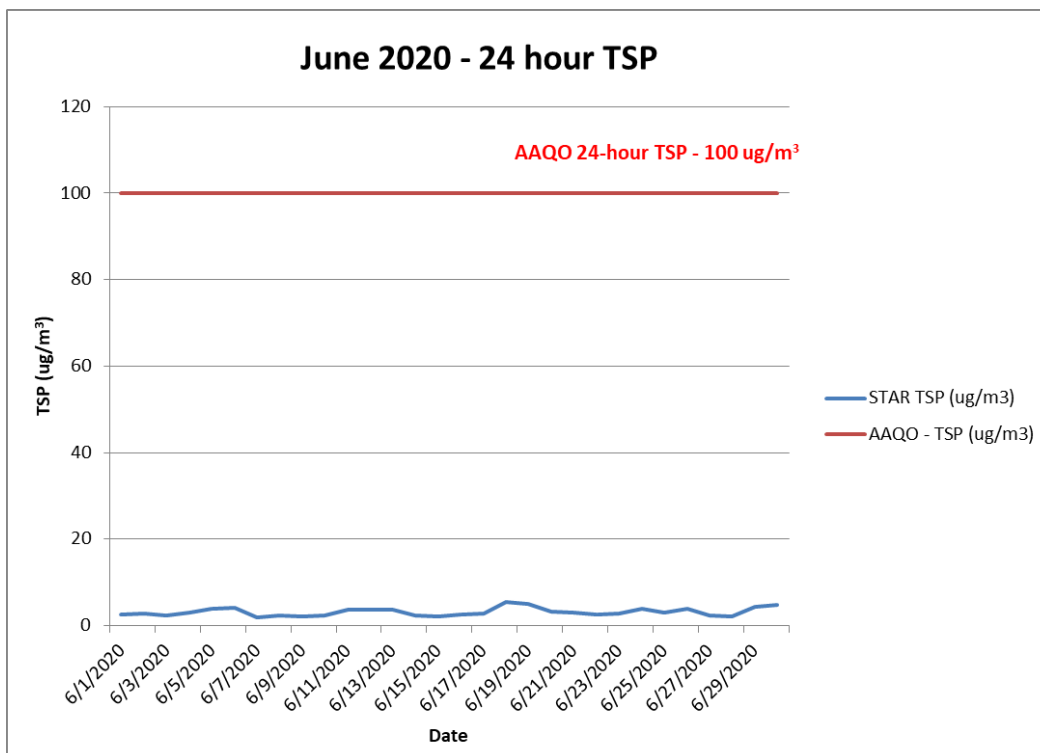


Figure 3: 24-hour concentrations of TSP at STAR

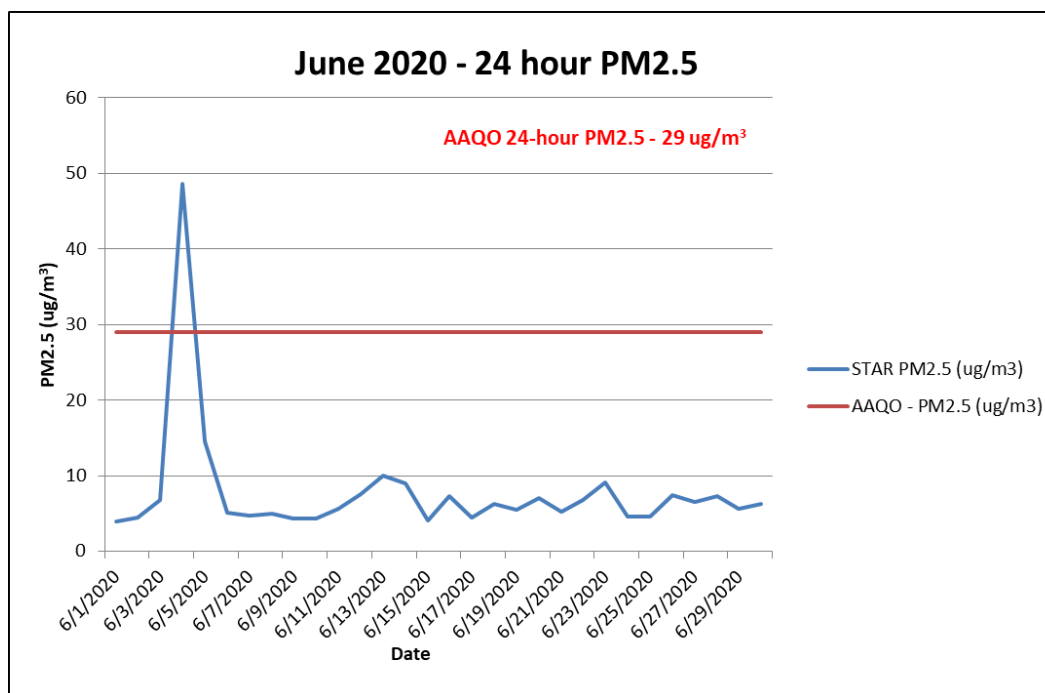


Figure 4: 24-hour concentrations of PM<sub>2.5</sub> at STAR

The results from the STAR Pit and the CRAZ station for PM<sub>2.5</sub> are shown graphically below (Figure 5).

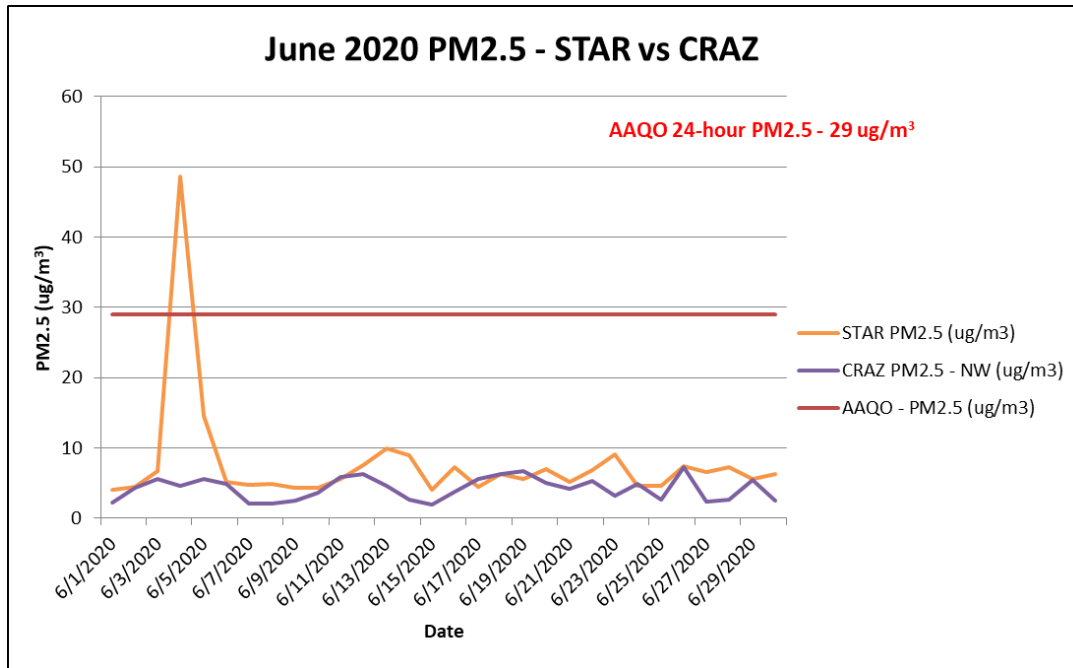


Figure 5: CRAZ and STAR Comparison for PM2.5

## Sound Data

A summary of the sound data during the month can be found in Table 3. STAR compares its data to the City of Calgary guidelines for residential areas that can be found in the STAR Monitoring Appendix.

Table 3: STAR data summary for sound data

Parameter	Monthly Average (dba)	Maximum 1-Hour Sound Level (dba)	Events vs Guidelines
Sound Level Day Time	45.75	51.21	0
Sound Level Nighttime	42.42	50.98	1

The Sound event was on June 16<sup>th</sup> at 11pm – all other readings adjacent to the event were normal indicating a localized background sound not associated with STAR Operations.

Figure 6 shows the graphical representation of hourly sound levels at the STAR pit. Figure 7 shows the month of hours for the sound levels at the STAR pit, this graphical representation shows the average of each hour every day to determine trends in a day over a month of readings.

As sound can be impacted by a variety of conditions, data is considered invalid if the wind speed is above 11.5 km/hour and rainfall is greater than 3mm/hour.

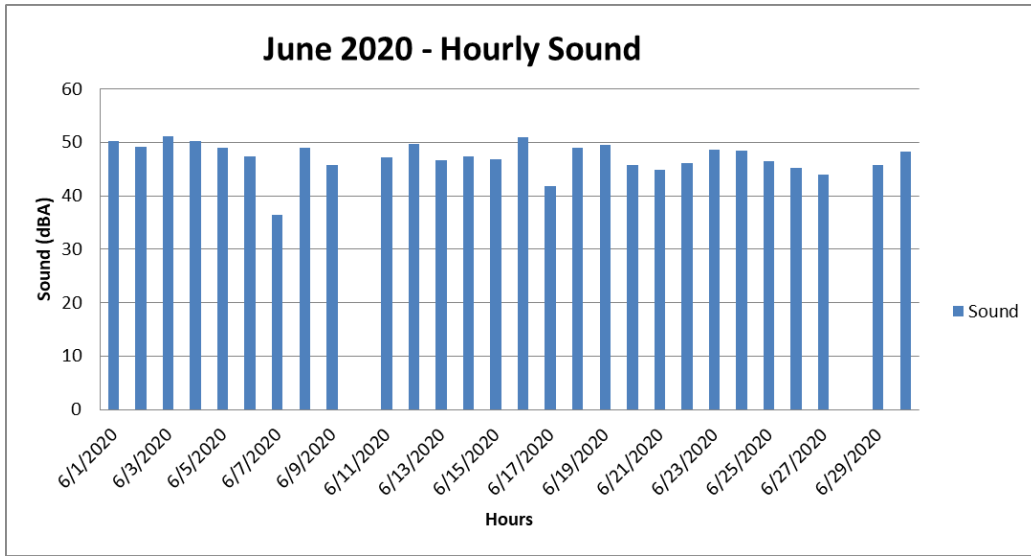


Figure 6: Hourly sound level at the STAR Pit

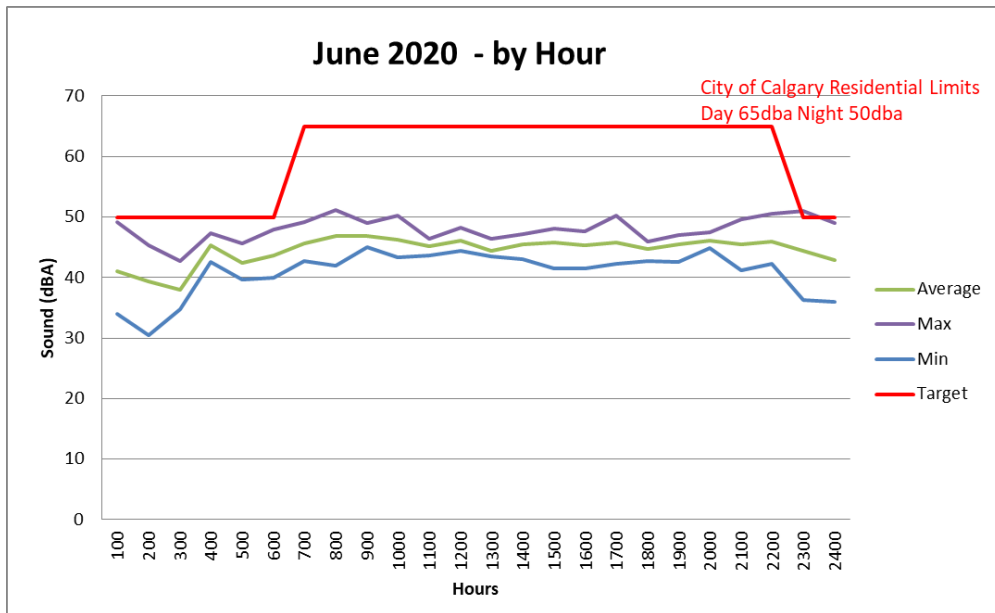


Figure 7: Month of Hours sound levels at the STAR

It is important to note that the monitoring stations are located inside the perimeter berms, adjacent to operations and not at site boundaries. Measurements are intended to help monitor the internal operations performance and are not representative of the lower offsite levels.