

Ambient Air and Sound

Monthly Report

**STONEY TRAIL AGGREGATE RESOURCE**

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Materials

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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

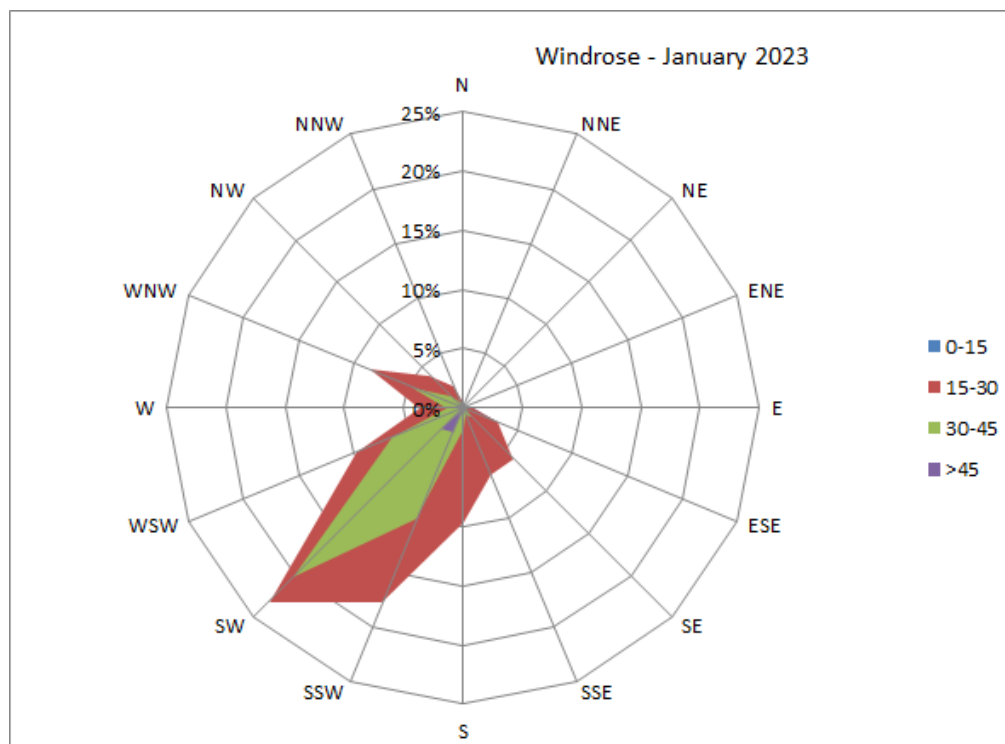
Table 1 provides a summary of the metrological data recorded at STAR during the month. Monitor details can be found in the STAR Monitoring Appendix.

**Table 1: STAR metrological data**

| Parameter         | Monthly Average | 1-Hour  |         |
|-------------------|-----------------|---------|---------|
|                   |                 | Maximum | Minimum |
| Wind Speed        | 15.94           | 43.5    | 1.39    |
| Wind Direction    | SW              | SSW     | SW      |
| Temperature       | 1.14            | 6.96    | -13.95  |
| Precipitation(mm) | 0.30mm*         |         |         |

\*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

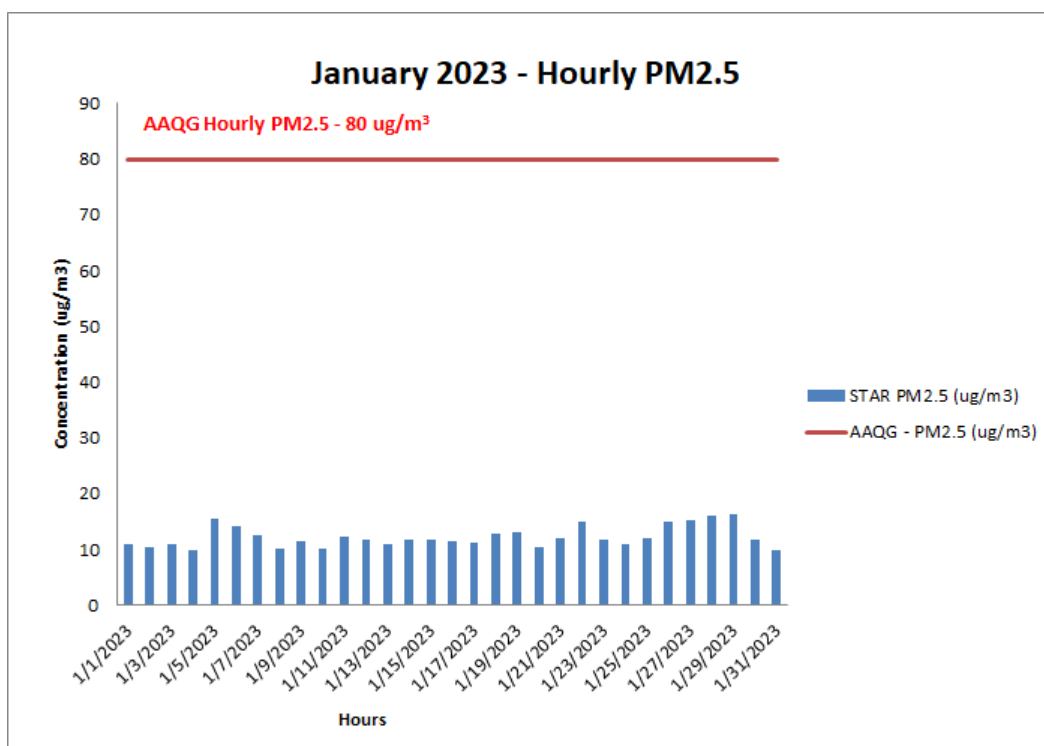
Table 2 provides a summary of the particulate data recorded at STAR during the month. STAR compares its data to Alberta's ambient air quality objectives (AAAQO) and guidelines (AAAQG) guidelines as well as to the Calgary Region Airshed Zone's (CRAZ) northwest particulate monitor data, details of which, 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> ) | 9.87            | 4.64          | 16.2                  | 0                        | 12.61                 | 0               |
| TSP (ug/m <sup>3</sup> )               |                 |               |                       |                          |                       |                 |

Notes: TSP Monitor failed. Under Repair

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**

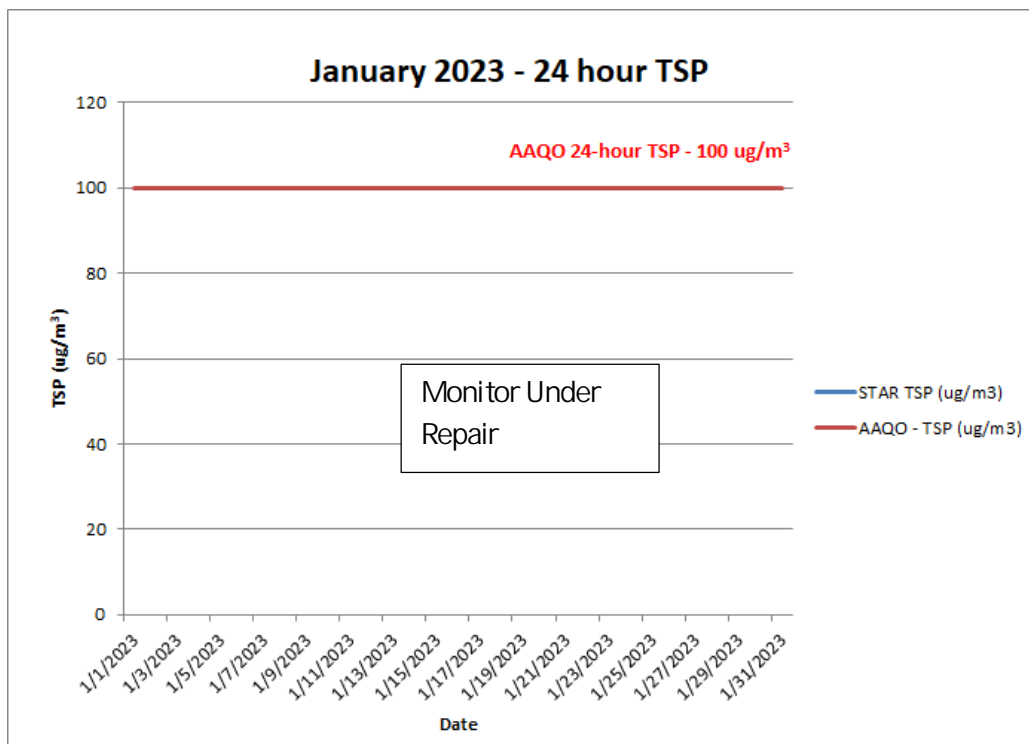


Figure 3: 24-hour concentrations of TSP at STAR

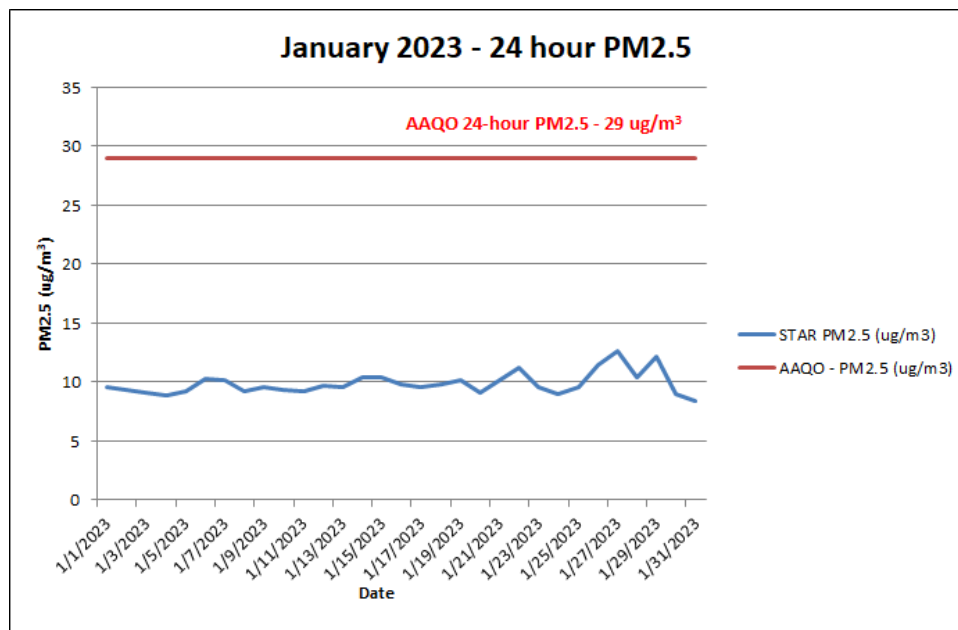


Figure 4: 24-hour concentrations of PM<sub>2.5</sub> at STAR

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

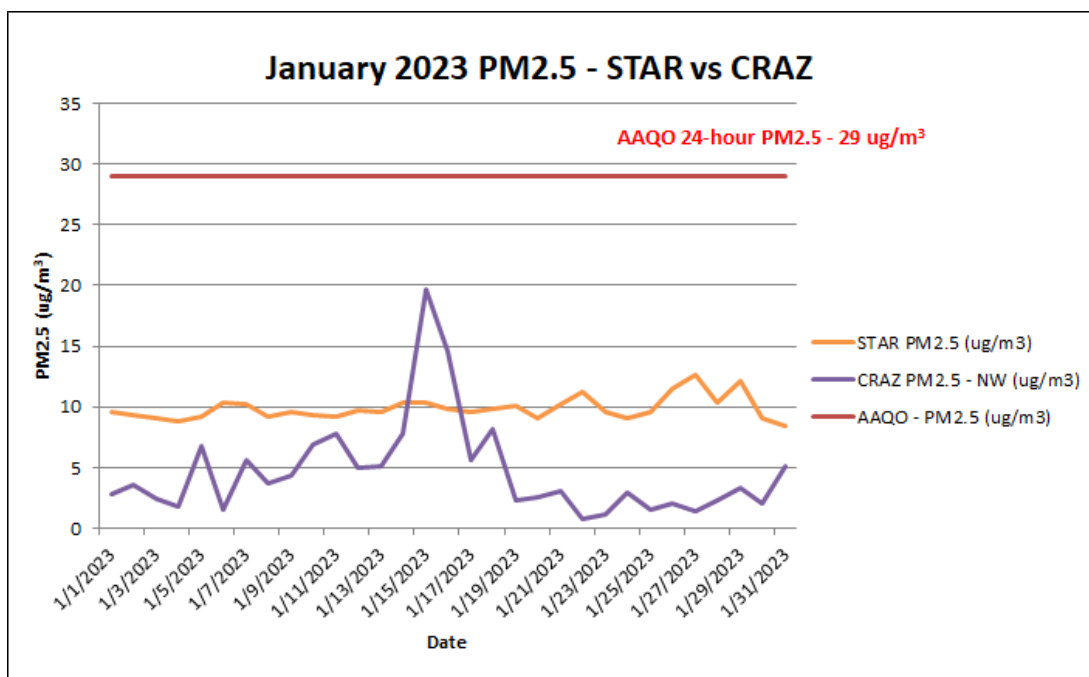


Figure 5: CRAZ and STAR Comparison for PM<sub>2.5</sub>

Notes: none

## 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 Target |
|-----------------------|-----------------------|----------------------------------|------------------|
| Sound Level Day Time  | 47.47                 | 53.98                            | 0                |
| Sound Level Nighttime | 38.64                 | 46.87                            | 0                |

Notes: None

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.

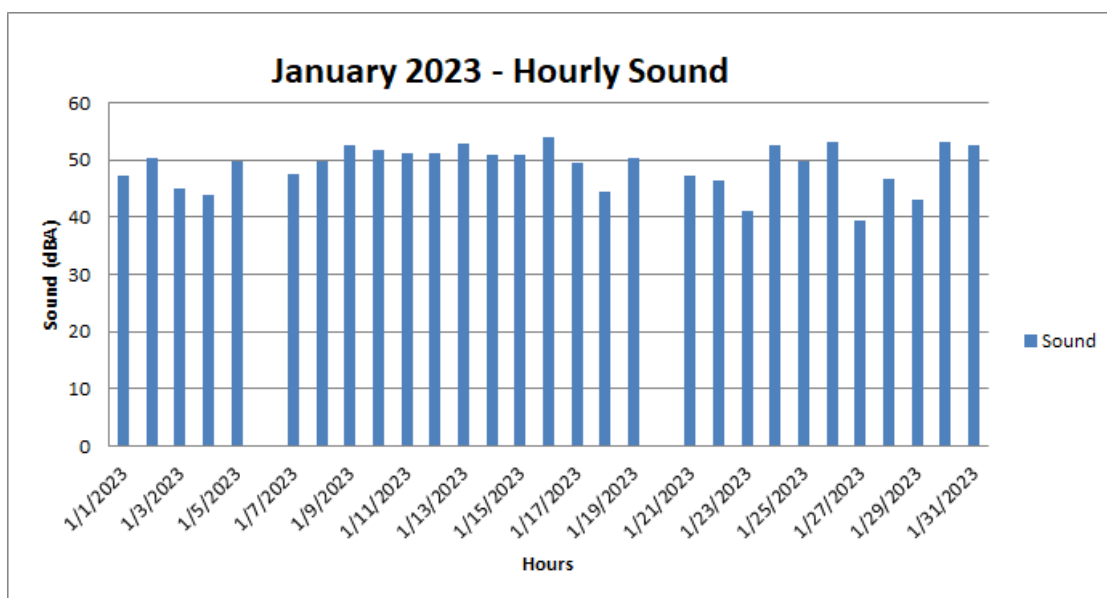


Figure 6: Hourly sound level at the STAR Pit

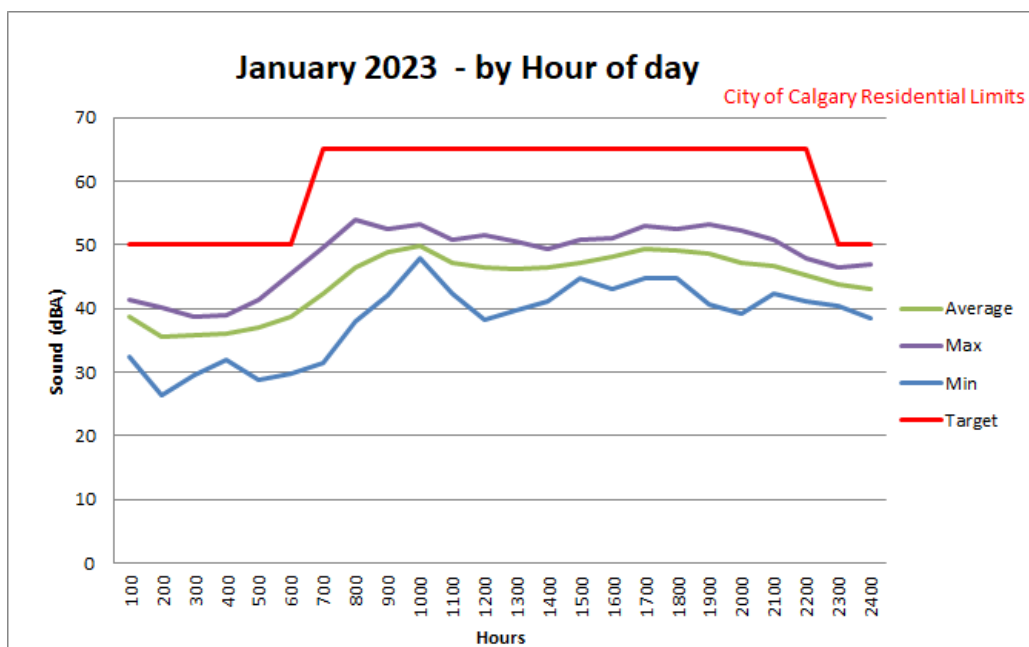


Figure 7: Month of Hours sound levels at the STAR

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