

# Rapid City Area Air Monitoring Report

## December 9, 2024

### SD Department of Agriculture and Natural Resources

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#### Introduction

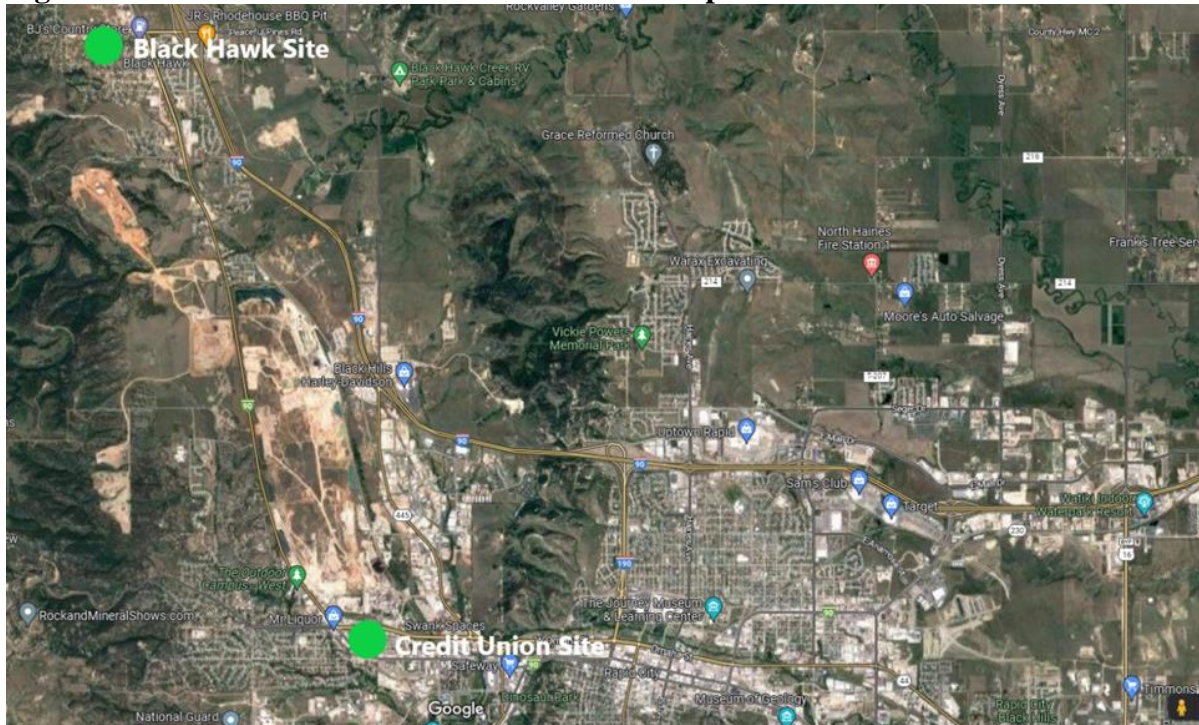
The focus of this report is on particulate matter 10 microns in diameter or less (PM-10) and particulate matter 2.5 microns in diameter or less (PM-2.5) pollution levels collected by the South Dakota Department of Agriculture and Natural Resources (DANR) in the Rapid City area. *The data in this report is draft and subject to change.*

Current levels of air pollutants in Rapid City can be viewed by going to the DANR Air Quality *Real Time Data* webpage:

<https://danr.sd.gov/Environment/AirQuality/AirMonitoring/RealTimeData.aspx>

From this location you can view the hourly concentration data from a majority of DANR's monitoring sites in the state. Two of these sites are located in the Rapid City area: Credit Union and Black Hawk. Figure 1 below shows the locations of the two sites.

**Figure 1. Credit Union and Black Hawk Sites - Map**



## High Wind Dust Alerts

A high wind dust alert is issued by the National Weather Service during the following three meteorological conditions established in the Natural Events Action Plan for Rapid City: 1) Five consecutive days of 0.02 inches or less of precipitation each day, excluding dry snow; 2) forecasted peak wind gusts greater than 40 miles per hour; and 3) forecasted average hourly wind speed greater than 20 miles per hour.

There have been four high wind dust alert days issued by the National Weather Service so far in 2024. Table 1 provides the 24-hour PM-10 concentration from the Credit Union site compared to the Black Hawk site for the alert days in 2024.

**Table 1. Credit Union and Black Hawk PM10 Comparison During High Wind Dust Alerts**

No.	Date	Credit Union PM-10 (ug/m <sup>3</sup> )	Black Hawk PM-10 (ug/m <sup>3</sup> )	Wind Direction
1	9-30-24	141.6	45.3	NNW
2	10-05-24	114.1	70.9	NNW
3	11-19-24	42.6	12.3	NW
4	11-20-24	42.8	7.6	NW

*Note:* “ug/m<sup>3</sup>” means micrograms per cubic meter.

## Air Monitoring Report for PM-10 and PM-2.5

### *PM-10*

Figure 2 shows the 24-hour average sample concentrations for PM-10 at the Credit Union Site for January-November 2024. The federal 24-hour National Ambient Air Quality Standard for PM-10 is 150 micrograms per cubic meter and is represented as the bold red line.

Four 24-hour samples for PM-10 had a concentration greater than the 24-hour standard of 150 micrograms per cubic meter in 2024. On March 29<sup>th</sup>, 2024, the Credit Union site saw a 24-hour sample equating to 176.9 micrograms per cubic meter. This day encountered wind gusts of over 40 mph from the North.

The other exceedances will be discussed more at length at the end of the report.

**Figure 2. January-November 2024 24-Hour PM-10 Concentrations at Credit Union Site**

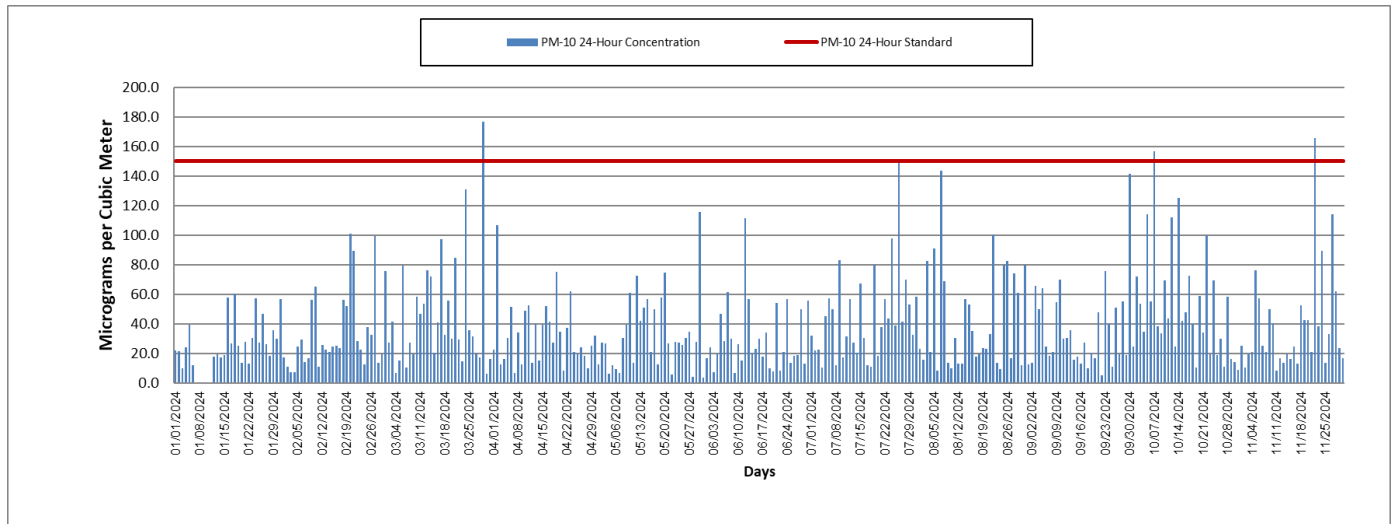
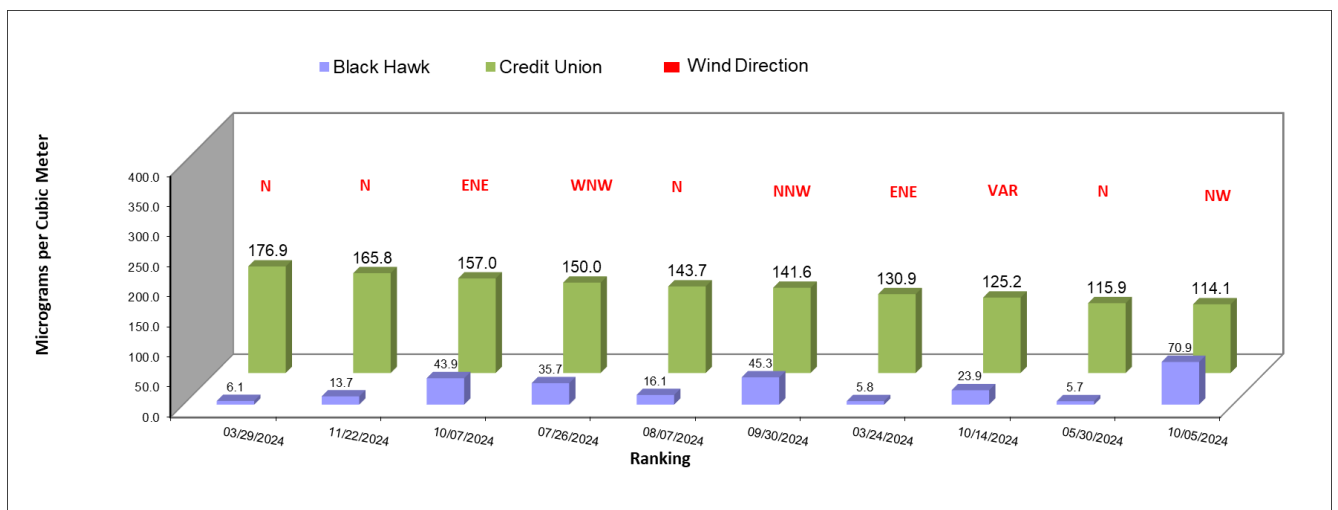


Figure 3 shows the ten highest 24-hour average concentration days for 2024. PM-10 concentrations at the Credit Union Site are shown in green and are compared to the corresponding Black Hawk Site concentrations in purple for those days.

DANR uses this comparison along with the wind direction to help determine what may be contributing to PM-10 concentrations at each site. For example, DANR can estimate how well fugitive dust emissions from the quarry area are controlled when the wind direction is out of the north (N) to north-northwest (NNW) or south (S) to south-southeast (SSE).

**Figure 3. 10 Highest 24-Hr. PM-10 Concentrations for 2024: Credit Union vs Black Hawk**



**PM-2.5**

Figure 4 provides a graph of the 24-hour PM-2.5 concentrations at the Credit Union Site for January through November 2024. The 24-hour PM-2.5 concentrations are represented in light blue while the bold red line represents the 24-hour PM-2.5 federal National Ambient Air Quality Standard of 35 micrograms per cubic meter.

**Figure 4. January-November 2024 24-Hour PM-2.5 Concentrations at Credit Union Site**

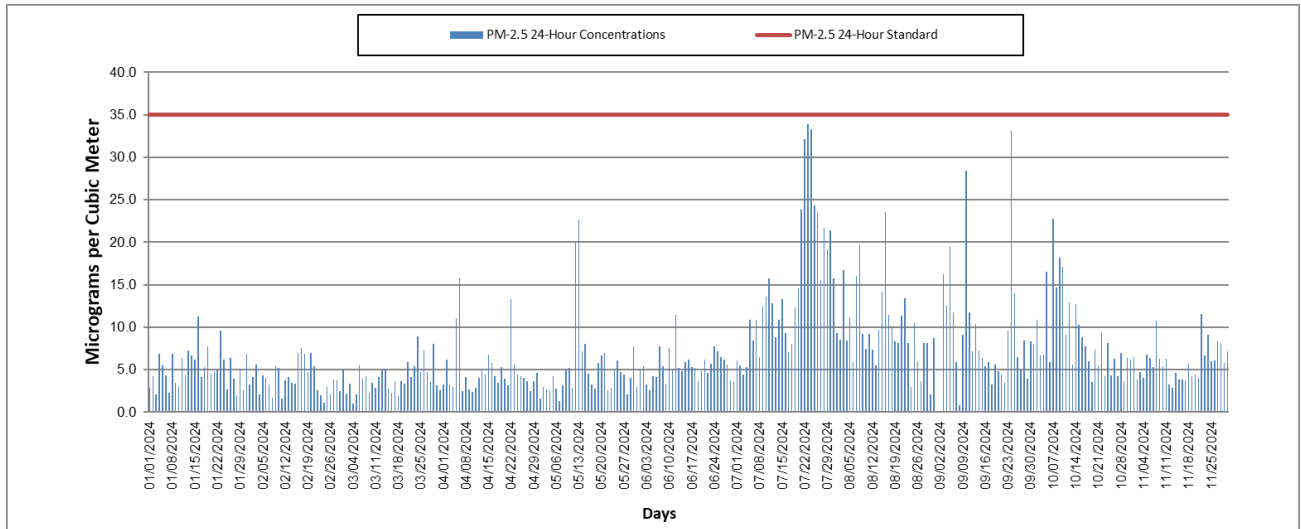


Figure 5 shows the ten highest 24-hour PM-2.5 concentrations for 2024. The highest 24-hour PM-2.5 concentration was recorded on July 23, 2024, with a concentration of 33.9 micrograms per cubic meter. On July 23, 2024, smoke from the fires in Canada and the western states attributed to the Rapid City site’s high PM 2.5 readings.

**Figure 5. 10 Highest 24-Hour PM-2.5 Sample Concentrations for January through November 2024**

