

Rapid City Area Air Monitoring Report
June 8, 2020
SD Department of Environment 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 Environment and Natural Resources (DENR) 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 DENR Air Quality **Real Time Data** webpage (<http://denr.sd.gov/des/aq/aarealtime.aspx>). From this location you can view the hourly concentration data from a majority of DENR’s monitoring sites in the state. Two of these sites are located in the Rapid City area: Credit Union and Black Hawk.

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.

Three high wind dust alerts have been issued by the National Weather Service so far in 2020. The 24-hour PM-10 concentrations on the alert days were less than the 24-hour National Ambient Air Quality standard for PM-10 of 150 micrograms per cubic meter. 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 2020. Wind Direction data was obtained from the meteorological station at the Black Hawk monitor site.

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

No.	Date	Credit Union PM-10 (ug/m ³)	Black Hawk PM-10 (ug/m ³)	Wind Direction
1	1-17-2020	107.0	56.1	N
2	1-18-2020	24.8	4.4	NW
3	3-8-2020	82.5	6.6	SW

Note: “ug/m³” means micrograms per cubic meter.

Air Monitoring Report for PM-10 and PM-2.5

PM-10

Figure 1 shows the 24-hour average sample concentrations for PM-10 at the Credit Union Site for January through May 2020. 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.

The highest 24-hour PM-10 concentration so far in 2020 was recorded on January 17, 2020 with a level of 107.0 micrograms per cubic meter. This day did not exceed the PM-10 24-hour standard even though it did occur during a high wind dust alert event. Winds were generally out of the north with sustained winds over 40 miles per hour and peak wind gusts over 60 miles per hour.

Figure 1. January thru May 2020 24-Hour PM-10 Concentrations at Credit Union Site

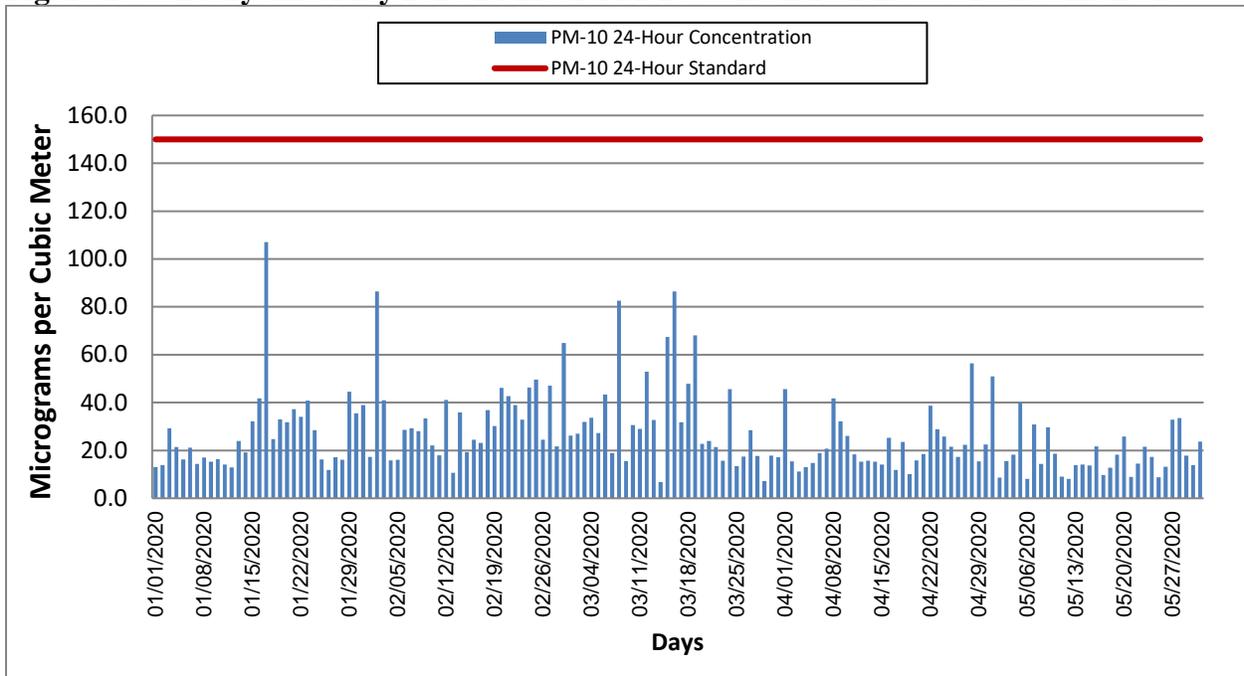
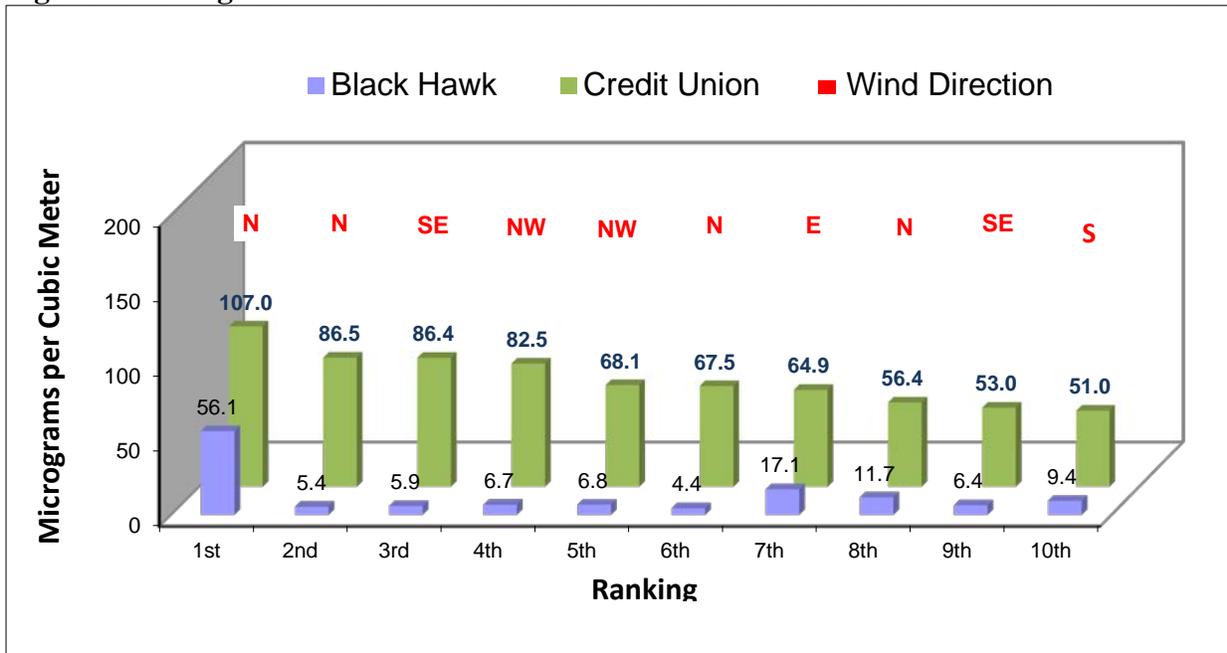


Figure 2 shows the ten highest 24-hour average concentration days for 2020. PM-10 concentrations at the Credit Union Site are shown in green and are compared to the corresponding Black Hawk Site concentrations in purple for those days.

DENR uses this comparison along with the wind direction to help determine what may be contributing to PM-10 concentrations at each site. For example, DENR 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 2. 10 Highest 24-Hr. PM-10 Concentrations for 2020: Credit Union vs Black Hawk



PM-2.5

Figure 3 provides a graph of the 24-hour PM-2.5 concentrations at the Credit Union Site for January through May 2020. 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 3. January through May 2020 24-Hour PM-2.5 Concentrations at Credit Union Site

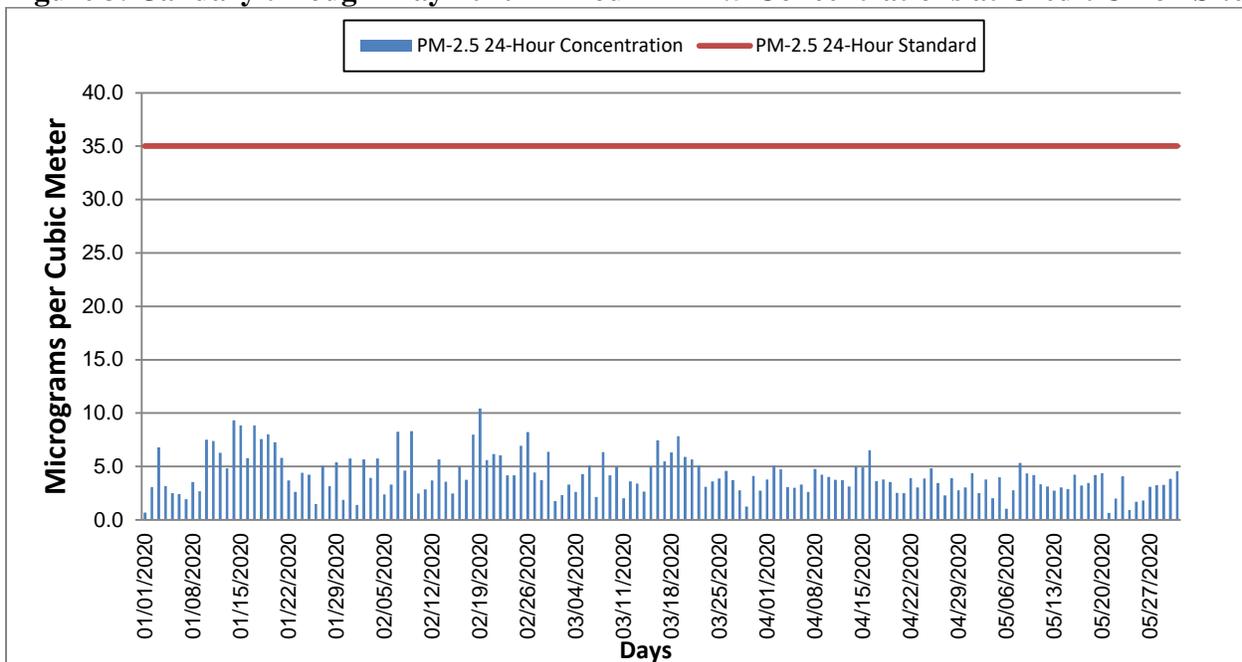
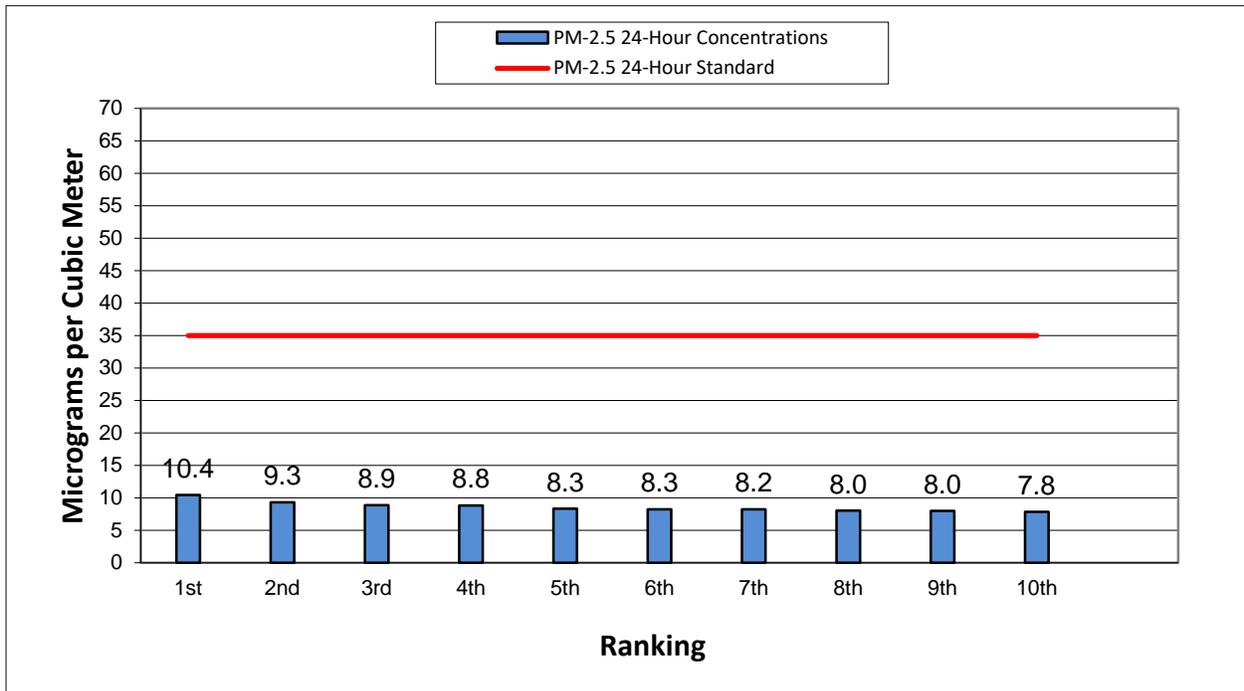


Figure 4 shows the ten highest 24-hour PM-2.5 concentrations for 2020. The highest 24-hour PM-2.5 concentration was recorded on February 19, 2020, with a level of 10.4 micrograms per cubic meter. This day did not occur during a high wind dust alert event and did not exceed the PM-2.5 24-hour standard of 35 micrograms per cubic meter.

Figure 4. 10 Highest 24-Hour PM-2.5 Sample Concentrations for January through May 2020



EPA and State Activities

- DENR continues to review the Natural Events Action Plan for the Rapid City area to determine if any changes are necessary. DENR will provide an overview of the findings and possible changes to the plan to the Rapid City Area Air Quality Board, local industry, and the public before any changes are finalized.
- The 2015-2019 5-Year Assessment and the 2020 South Dakota Ambient Air Monitoring Annual Plan are available for review and comment on the DENR website at this location: <https://denr.sd.gov/des/aq/airprogr.aspx>. They are open for public comment through June 26, 2020.