Technical Review of 2019 PM_{10} Exceptional Event Demonstrations, dated November 16, 2021

Introduction

The U.S. Environmental Protection Agency (EPA) promulgated the original Exceptional Events Rule (EER) in 2007, hereafter referred to as "2007 EER," pursuant to the 2005 amendment of the Clean Air Act Section (CAA) 319. The 2007 EER was in effect until September 30, 2016, when a revised EER was promulgated by the EPA (See, 81 FR 68216, October 3, 2016) hereafter referred to as "2016 EER." The subject Exceptional Event Demonstration hereafter referred to as "demonstrations," was submitted in accordance with the 2016 EER. The Exceptional Event federal regulations are found at 40 CFR 50.14.

In the demonstrations, the New Mexico Environment Department (NMED) requests the EPA concur that the subject measurements of particulate matter of less than or equal to10 micrometers in diameter (PM_{10}) which exceeds the National Ambient Air Quality Standard (NAAQS) be excluded from the data set used for certain regulatory decisions, as outlined in the 2016 EER. After considering the information provided and using a weight of evidence analysis as provided in the demonstrations, the EPA shall concur or non-concur with the Air Quality System (AQS) database flagging of each exceedance of the NAAQS and the state's demonstrations. For the purposes of this document, there is a "demonstration" for each exceedance day or wind event.

Procedural Requirements

The 2016 EER includes certain scheduling and procedural requirements as specified in 40 CFR 50.14(c) that an air agency must follow: 1. Public Notification; 2. Initial Notification of the Potential EE; and 3. Submission of the demonstration. For example, data claimed to be caused by an exceptional event must be flagged in the AQS database by the air agency. The air agency is also to provide the EPA with an initial notification for the potential exceptional event and conduct a 30-day public comment period for the demonstration. Failure to meet the procedural requirements results in the EPA non-concurrence with the AQS flagging of the exceedances.

In accordance with 40 CFR 50.14(c), the NMED flagged the subject exceedances in AQS as "High Winds" events, i.e., the "RJ" qualifier flags used in AQS. The NMED submitted an initial notification to the EPA on November 2, 2020. The NMED solicited public input on the draft demonstrations from September 22, 2021, through October 25, 2021, and received no comments. The NMED met the scheduling and procedural regulatory provisions of the 2016 EER for the demonstrations.

Required Demonstration Content

In accordance with 40 CFR §50.14(c)(3), a demonstration to justify data exclusion must address the criteria discussed below.

1) A narrative conceptual model.
   a) Pursuant to 40 CFR §50.14(c)(3)(iv)(A), the demonstration shall provide a narrative conceptual model that describes the event(s) and how emissions from the event(s) led to the exceedance or violation at the affected monitor. The demonstration includes a narrative conceptual model for each exceedance.

2) Evidence demonstrating there was a clear causal relationship between exceedance and event.
   a) Pursuant to 40 CFR §50.14(c)(3)(iv)(B), the demonstration shall provide evidence that there was a clear causal relationship between the measurement under consideration and the event claimed to have affected the air quality in the area. The clear causal criterion is addressed below for each exceedance.

3) Analyses comparing event influenced concentrations to other concentrations at the monitors.
   a) Pursuant to 40 CFR §50.14(c)(3)(iv)(C), the demonstration shall provide an analysis of the exceedance compared to measurements at the same monitor at other times. The historical data comparison criterion is addressed below for each exceedance.

4) Evidence demonstrating event was not reasonably controllable or preventable.
   a) Pursuant to 40 CFR §50.14(c)(3)(iv)(D), the demonstration shall provide evidence the event was both not reasonably controllable and not reasonably preventable.
      i) Not Reasonably Preventable - In accordance with 40 CFR §50.14(b)(5)(iv), the air agency will not be required to provide a case-specific justification that the event was not reasonably preventable for a high wind dust event. As discussed in more detail below for the clear causal criterion that includes the not reasonably preventable criterion, the NMED showed that a high wind dust event caused each exceedance. Therefore, the NMED was not required to provide a case-specific justification for the not reasonably preventable criterion.
      ii) Not Reasonably Controllable, Undisturbed Land Sources - A high wind threshold is defined by 40 CFR §50.1(q) as the minimum wind speed capable of causing particulate matter emissions from natural undisturbed lands in the area affected by a high wind dust event. The NMED showed wind speeds were sustained above the high wind threshold for each exceedance. Therefore, emissions from upwind undeveloped lands met the not reasonably controllable criterion and could not have been reasonably controlled.
      iii) Not Reasonably Controllable, Anthropogenic Sources – This criterion is addressed below for each day of exceedance.

5) Evidence the event was caused by human activity unlikely to recur or was a natural event
   a) According to 40 CFR §50.14(c)(3)(iv)(E), the demonstration must provide evidence that the event was a human activity unlikely to recur or was a natural event. In accordance with 40 CFR §50.14(b)(5)(ii) and (b)(8), a high wind dust event is considered a natural event if the demonstration shows all anthropogenic sources are reasonably controlled.
   b) As discussed below for the clear causal criterion, the NMED showed that a high wind dust event caused each exceedance. Also as discussed below for the reasonable control of anthropogenic sources criterion, the NMED showed that the anthropogenic sources were reasonably controlled for each exceedance. Therefore, the high wind dust event that caused each exceedance is a natural event.

6) Records of a 30-day public comment period with copies of and responses to comments
   a) Pursuant to 40 CFR §50.14(c)(3)(v)(A), the demonstration shall provide evidence the air agency conducted a 30-day comment period. The demonstration must include records of the 30-day public comment period conducted for the demonstration. The NMED did not receive comments during the public comment period. The NMED provided records of the 30-day public comment period conducted for the demonstration.

Summary

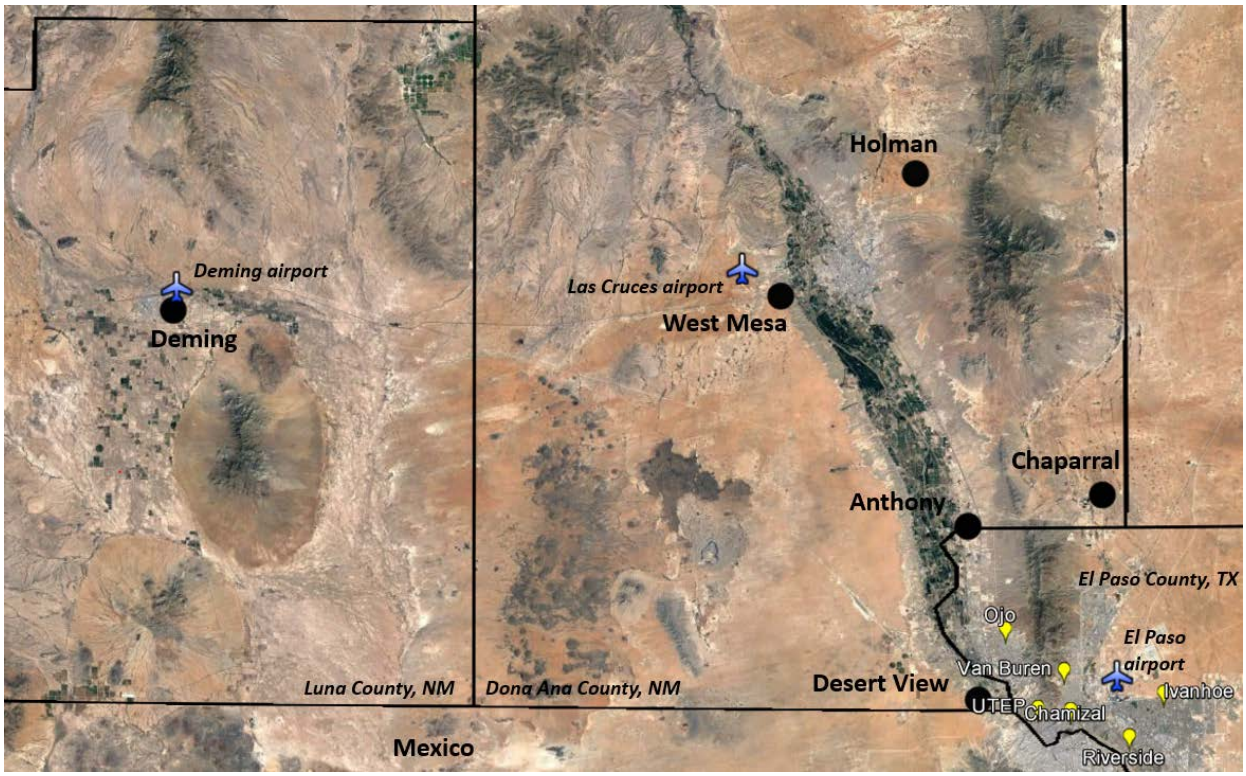
The NMED asserts that 8 wind events in calendar year 2019 caused 25 exceedances of the NAAQS level for PM_{10} from 6 monitors on 6 sites in Luna and Dona Ana Counties, New Mexico. The measurements exceeded the NAAQS level of 150 micrograms per cubic meter ($\mu g/m^3$) for PM_{10} using a 24-hour averaging time.

Exceedance Day	Anthony 35-013-0016 POC 2	Chaparral 35-013-0020 POC 2	Desert View 35-013-0021 POC 2	Holman 35-013-0019 POC 2	West Mesa 35-013-0024 POC 2	Deming 35-029-0003 POC 2
January 18	**104**	**164**	**52**	**27**	**26**	**29**
February 22	**91**	**69**	**240**	**49**	**52**	**69**
March 8	**506**	**423**	**734**	**224**	**178**	**187**
March 13	**194**	**167**	**227**	**409**	**83**	**72**
April 10	**377**	**442**	**488**	**691**	**351**	**721**
May 20	**246**	**218**	**362**	**58**	**51**	**124**
May 26	**202**	**156**	**293**	**117**	**93**	**148**
July 29	**52**	**50**	**261**	**26**	**30**	**15**

Table of 2019 PM_{10} Exceedances ($\mu g/m^3$) in Demonstrations

The NMED operates 5 monitor sites in Dona Ana County (Chaparral, West Mesa, Anthony, Desert View, Holman) and 1 site in Luna County (Deming) which report PM_{10} NAAQS comparable data. NMED operates a Manual (35-013-0016-81102-1, POC 1) and Continuous (35-013-0016-81102-2, POC 2) PM_{10} monitor at the Anthony site.

The TCEQ operates 5 sites in adjacent El Paso County. Four report PM_{10} NAAQS comparable data (Ojo 48-141-1021, Ivanhoe 48-141-0029, Riverside 48-141-0038, Van Buren 48-141-0693). One site reports non-NAAQS comparable data (Chamizal 48-141-0044).



Map of area, PM_{10} monitor sites, and local airports

General Background on EPA Review

The NMED claims the exceedances were caused by high wind dust events. A high wind dust event is defined by 40 CFR §50.1(p) as an event that includes the high-speed wind and the dust the wind entrains and transports to a monitor site. On April 4, 2019, the EPA released guidance for the preparation of demonstrations for high wind dust events (*Guidance on the Preparation of Demonstrations in Support of Requests to Exclude Ambient Air Quality Data Influenced by high wind dust events Under the 2016 Exceptional Event Rule*, EPA-457/B-19-001, April 2019) (hereinafter "Guidance").

A high wind threshold is defined by 40 CFR §50.1(q) as the minimum wind speed capable of causing particulate matter emissions from natural undisturbed lands in the area affected by a high wind dust event. As specified 40 CFR §50.14(b)(5)(iii), the EPA will accept a high wind threshold for New Mexico of a sustained wind of 25 miles per hour (mph). As stated in the preamble to the 2016 EER (81 FR 68257-68258), the high wind threshold clarified the "level of evidence needed to demonstrate not reasonably controllable" and "should be representative of conditions that are capable of overwhelming reasonable controls…on anthropogenic sources and/or causing emissions from natural undisturbed areas."

Per the April 2019 Guidance, "[w]hen evaluating measured sustained wind speeds, EPA will generally accept that the sustained wind was at or above the area-specific high wind threshold in cases where there was at least one full hour in which the hourly average wind speed was at or above the area specific high wind threshold. EPA will consider a sustained wind speed based on shorter averaging times (e.g., 1 to 5 minutes) on a case-by-case basis. EPA may also consider multiple occurrences of high wind measured at

shorter averaging times as part of the weight-of-evidence demonstration, even if the hourly average was not above the threshold." [pg. 13]

"Meteorological events involving high temperatures or lack of precipitation (*i.e.*, … drought) also do not directly cause pollutant emissions and are not considered exceptional events. However, [these] conditions …may promote occurrences of…high wind dust events, which do directly cause emissions." [pg. 4]

"Cases where dust was entrained by sustained winds at or above the high wind threshold upwind of the monitor and …transported at lower wind speeds to the monitor could still qualify for the basic controls analysis category, but in such cases, the state should show that sustained winds were at or above the… threshold in the expected source area. Cases of long-range transport (*e.g.*, >50 miles) could still qualify for a basic controls analysis but air agencies may need to include supplementary analyses such as a trajectory analysis…or satellite plume imagery…" [pg 16, footnote 28]

Per the April 2019 Guidance, the EPA intends to use a tiered approach for evaluating whether a demonstration shows that a high wind dust event and its emissions were not reasonably controllable. Large-scale and high-energy high wind dust events are Tier 1. Tier 2 events have sustained wind speeds at or above the high wind threshold. Tier 3 are all other events. None of the subject events qualify as a Tier 1 event. [See pgs. 14-16]

Per the concurrence prohibition of 40 CFR 50.14(b)(9), the EPA cannot concur on AQS flagged exceedances unless the Mitigation Plan requirement has been met. Air agencies are required to submit Mitigation Plans for areas with known, recurring events (See 40 CFR 51.930). The 2016 EER promulgation notified air agencies with areas initially subject to the Mitigation Plan requirements.

With the 2016 EER promulgation, the EPA notified NMED that Dona Ana and Luna Counties are subject to the Mitigation Plan requirement for PM_{10} data influenced by high wind dust events. The required NMED Mitigation Plan was submitted on September 25, 2018, and on October 29, 2018, the EPA deemed the plan complete. The NMED met its Mitigation Plan obligations. Therefore, the concurrence prohibition of 40 CFR 50.14(b)(9) does not preclude the EPA from concurring with the subject exceedances.

Other Information

In this document, use of "page x' or 'figure x" are a reference to a page or figure in the demonstrations. The NMED uses meteorological data from the La Union (35-013-0008) site as a proxy for the Anthony site (page 5). The La Union site is about 5 miles south southwest of the Anthony site. In the demonstration, the terms "Wind Gust" and "Wind Max" reflect instantaneous wind data.

The high wind threshold is expressed in miles per hour (mph). The NMED uses meter per second (m/s) for wind speed in the demonstration. Meteorological data in AQS expresses wind speed in knots. In this document, wind speed data has been converted to mph.

NOAA provides airport meteorological data (www.ncdc.noaa.gov/cdo-web/datatools/lcd) and reported storm events information (www.ncdc.noaa.gov/stormevents/). NOAA HYSPLIT (Hybrid Single-Particle Lagrangian Integrated Trajectory) modeling using archived weather data is available at

(ready.arl.noaa.gov/HYSPLIT_traj.php). For this application the HYSPLIT model is used to establish back trajectories for wind-blown dust and to establish source-receptor relationships. HYSPLIT has evolved over more than 30 years and continues to be one of the most extensively used atmospheric transport and dispersion models in the atmospheric sciences community.

JANUARY 18, 2019

The exceedance occurred on January 18, 2019, hereafter referred to as the "exceedance day", at a monitor site in Dona Ana County. The monitor and exceedance are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Chaparral	35-013-0020-81102	164 µg/m^3

JANUARY 18, 2019, EXCEEDANCE DAY, clear causal relationship.
In the demonstration, NMED states "As the event unfolded, the wind blew from the west southwest throughout the border region."

Table 3-2 on page 9 shows hourly wind data from the Chaparral, Anthony and West Mesa monitor sites for certain hours on the exceedance day. Hourly wind speeds at the Chaparral and West Mesa monitoring sites exceed 25 mph for multiple hours on the exceedance day.

Figures 3-7 and 3-8 on pages 14 and 16 shows the frequency distribution of wind direction correlated with PM_{10} data at Chaparral for the hours when PM_{10} measurements exceeded 150 µg/m^3 on the exceedance day. The figures show most of the winds were from the southwest with some from the west.

Figure 3-4 on page 11 shows hourly wind speed data at the Anthony, West Mesa, Chaparral, Holman, Desert View, La Union, Santa Teresa, and Deming monitor sites on the exceedance day. The winds exceeded 25 mph for multiple hours at Chaparral, Deming, and West Mesa. AQS data shows the winds at Chaparral peaked at 27 mph for an hour.

On the exceedance day, AQS data shows the hourly wind speeds at the Chaparral monitor site (AQS ID 35-013-0020) reached 25 mph and over from 10:00 am till almost 3:00 pm. Chaparral is near the Texas border about 16 miles north of the El Paso airport and about 11 miles east of Anthony.

The Las Cruces airport is about 34 miles northwest of Chaparral. On the exceedance day, winds at the airport were reported at over 25 mph for multiple hours. During this period, the winds were from the west southwest and shifted to the northwest at around 3:30 pm. Gusts reached 51 mph. The overall weather type for the exceedance day was sunny. During the hours of 11:55 am to 2:55 pm, the weather type was listed as haze, dust, and smoke (Weather Type HZ:7|FU|HZ).

The El Paso airport is about 16 miles southeast of Chaparral. On the exceedance day winds at the airport peaked at 30 mph. From about 11:51 am to 5:30 pm, the weather type was shown as clear with wind speeds over 25 mph for multiple hours and gusts at 47 mph.

The narrative on page 7 and Figure 3-3 on page 10 discusses the National Weather Service (NWS) wind advisory forecast for the southwestern New Mexico area on the exceedance day.

Figure 3-11 on page 17 shows the 24-hours PM_{10} measurements from the Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites on the exceedance day. While Chaparral measured exceedances, the other site measurements were above the monitor averages: Desert View 27

µg/m^3 (average 16 µg/m^3), West Mesa 26 µg/m^3 (average 16 µg/m^3), Anthony 104 µg/m^3 (average 38 µg/m^3), Holman 27 µg/m^3 (average 26 µg/m^3), and Deming 29 µg/m^3 (average 23 µg/m^3).

The PM_{10} manual monitors in El Paso County did not sample on the exceedance day.

The Chamizal site in El Paso County reports PM_{10} non-NAAQS comparable measurements. On the exceedance day, Chamizal 24-hours measurement of 144 µg/m^3 is above the site average of 25 µg/m^3. Chamizal is about 8 miles east of Desert View.

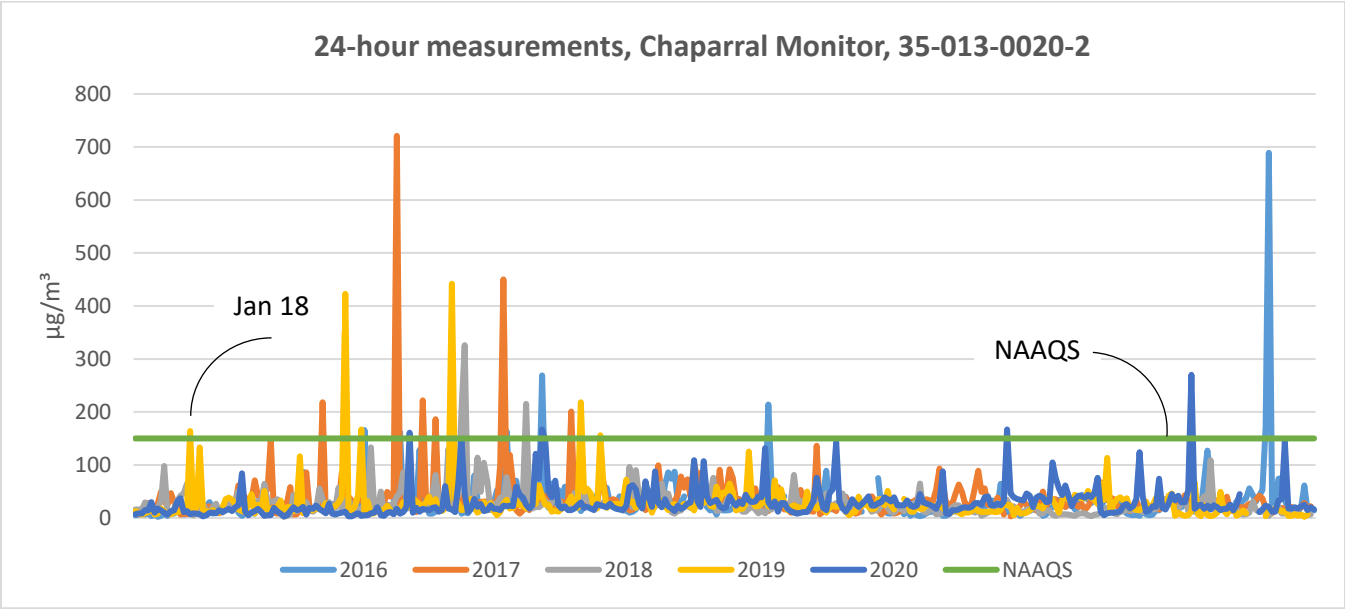
Figure 3-9 on page 16 show the hourly wind speeds, wind max, and PM_{10} data at Chaparral on the exceedance day. The elevated hourly PM_{10} measurements correlate with elevated wind speeds.

Figure 3-8 on page 15 shows the hourly PM_{10} data at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming on the exceedance day. The elevated PM_{10} data correlate with elevated hourly wind speeds shown in Figure 3-4 on page 11.

There are independent weather reports, evidence of blowing dust, and wind data which showed that on the exceedance day the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM_{10} measurements at the monitor correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedance are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion and using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM_{10} exceedance at the monitor on the exceedance day.

JANUARY 18, 2019, EXCEEDANCE DAY, analyses comparing event concentrations to other concentrations at the monitor.

The graphs below reflect the 24-hours monitor data from 2016 to 2020 for the Chaparral site. The site measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurements on the exceedance day are above the 95th percentile of historical site data.



Based on the analyses and statistics, the comparison of the exceedance to the historical concentrations of PM_{10} at the monitor indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the exceedance and the wind incident on the exceedance day.

JANUARY 18, 2019, EXCEEDANCE DAY, not reasonably controllable or preventable.
See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

Not Reasonably Controllable, Anthropogenic Sources - The 25 mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at Chaparral exceeded the threshold on the exceedance day. The elevated winds were mostly from the west-southwest and later shifted to the northwest at around 3:30 pm.

Chaparral New Mexico is a remote unincorporated community in Dona Ana County with about 15,000 residents on about 59.2 square miles. The population density is about 250 residents per square mile. In comparison, Albuquerque and El Paso have populations densities of 3,000 and 2,500 residents per square mile, respectively. Vegetation is sparse in the Chaparral community residential areas. Most of the roads in the community are unpaved. The Texas and Mexico borders are about 2.5 miles to the south, and 24 miles to the southwest of the Chaparral monitor site, respectively. Residential areas or potential anthropogenic upwind sources extend to about 2 miles west and south of the Chaparral site. Beyond the residential areas to the south there are about 7 miles of undeveloped lands and then the northern suburbs of El Paso. Beyond the residential areas to the west, with a few exceptions such as the city of Anthony, there are undeveloped lands to the Arizona border. Residential areas extend to about 1 mile southwest of the Chaparral site. Further to the southwest, there are lands in the state of Texas, the unincorporated La Union community in New Mexico, and undeveloped lands to the Mexico border.

The NMED indicates anthropogenic sources near the monitor site include disturbed surface areas, residential properties, vacant lots, dirt roads, and materials handling and transportation. In an email dated April 4, 2022, the NMED states that if a source has a permit, the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMED's Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state's jurisdiction.

The NMED indicates that natural areas of the Chihuahua Desert in Dona Ana, Luna, and Hidalgo Counties are the most likely sources, under NMED's jurisdiction, contributing to the high wind blowing dust event. Other natural sources located in Texas and Chihuahua, MX likely also contributed to the exceedances on this day.

Portions of the city of Anthony were upwind of the Chaparral site on the exceedance day. The demonstration provides information on the Anthony SIP. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM_{10} exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 6 years before the exceedance day, however, because of the waiver the NMED is not obligated to revise the SIP. See 40 CFR 50.14(b)(8)(v). Therefore, during the demonstration review, the EPA considered the Anthony SIP limited controls, e.g., treat and pave area roads as funding allows, as part of the review of whether anthropogenic sources were reasonably controlled on the exceedance day. Appendix C of the demonstration provides a letter from the city of Anthony dated September 18, 2019, that reports on the status of local dust control efforts including road paving.

Portions of Dona Ana County were upwind of the Chaparral monitor site on the exceedance day. The demonstration provides information on the Dona Ana County Dust ordinance in appendix D. The ordinance requires a plan for dust controls on disturbed site. The controls required by the ordinance would have applied to any upwind disturbed sites in the county. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memorandums of understandings exist between NMED and local municipals for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at the Chaparral site.

Figure 3-6 on page 14 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the models with the trajectories ending at the "start" of the exceedance day wind event, at the Chaparral monitor site location. The results show that the winds could have been in Arizona and west New Mexico prior to reaching the Chaparral site. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from high winds on extensive upwind undeveloped arid lands contributed significantly to the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.

FEBRUARY 22, 2019

The exceedance occurred on February 22, 2019, hereafter referred to as the "exceedance day", at a monitor site located in Dona Ana County. The monitor and exceedance are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Desert View	35-013-0021-81102-2	240 µg/m^3

FEBRUARY 22, 2019, EXCEEDANCE DAY, clear causal relationship.
In the demonstration, the NMED states "[a]s the event unfolded, the wind blew from the southwest throughout the border region."

Table 4-2 on page 14 shows hourly wind data from the Desert View, Chaparral, and West Mesa monitor sites for certain hours on the exceedance day. The maximum hourly wind speed at Desert View was 23 mph, with gust as high as 44.5 mph during the 3-4 pm timeframe. The maximum hourly wind speed for West Mesa and Chaparral was 31 mph.

Figure 4-7 on page 25, shows the frequency distribution of wind speed correlated with PM_{10} data at Desert View for the hours when PM_{10} measurements exceeded 150 µg/m^3 on the exceedance day. The figure shows the winds were from the west, south, and southwest.

Figure 4-3 on page 22 shows hourly wind data at Anthony, West Mesa, Chaparral, Holman, Desert View, Santa Teresa, La Union, and Deming monitor sites on the exceedance day. The winds at most of the sites started to elevate about 7:00 am with notable spikes from 10:00 am to 6:00 pm on the exceedance day. While the winds at Desert View approached the threshold, only the winds at West Mesa, Chaparral, and Deming exceeded 25 mph.

On the exceedance day, AQS data shows the hourly wind speeds at the Santa Teresa monitor site reached a peak of 23 mph at 3:00 pm. Santa Teresa is about 6 miles west of Desert View.

On the exceedance day, AQS data shows the hourly wind speeds at the Skyline (AQS ID 48-141-0058) and Van Buren monitor site in El Paso County exceeded 25 mph for multiple hours. Skyline and Van Buren are about 11 miles northeast, and 7 miles east of Desert View, respectively. The hourly winds at the Ascarate monitor site (AQS ID 48-141-0055) reached 25 mph around 4:00 pm. Ascarate is about 11 miles east of Desert View. Ivanhoe and Chamizal also had elevated hourly wind speeds that peaked at between 19 and 27 mph at about 3:00 pm. Ivanhoe and Chamizal are about 8 and 15 miles east of Desert View, respectively. The monitor sites in El Paso County were not upwind of Desert View on the exceedance day.

The Las Cruces airport is about 40 miles north of Desert View. On the exceedance day the winds at the airport exceeded 25 mph from 1:00 pm through 6:00 pm. The winds were from the southwest, and gusts reached 48 mph. The overall weather type for the high wind timeframe was unknown precipitation and trace snow, ice pellets. (Weather Type UP:09|SN:03).

The El Paso airport is about 11 miles east of the Desert View site. On the exceedance day the winds at the airport exceeded 25 mph from 3:30 pm through 7:00 pm. The winds were from the west southwest, and gusts reached 49 mph. The overall weather type for the day was 'Dust, blowing dust, blowing sand or…obstruction' (Weather Type BL|DU).

The Deming airport is about 74 miles northwest of Desert View. On the exceedance day winds at the airport exceeded 25 mph from 12:00 pm through 5:30pm and wind gusts reached 40 mph. The winds were from the west southwest. From 1:50 pm through 3:30 pm the weather had intermittent periods of weather types 'Haze, blowing dust…obstruction, mist, ice pellets, light snow and smoke' (Weather Type HZ|FU|HZ and SN|BR).

Figure 4-9 on page 27 shows the 24-hour PM_{10} measurements from the Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites on the exceedance day. The 24-hour PM_{10} measurement at the Desert View, site was above the NAAQS level of 150 $\mu g/m^3$ at 240 $\mu g/m^3$. West Mesa was above the average at 52 $\mu g/m^3$ (average 16 $\mu g/m^3$).

Samples were not collected on the exceedance day from the El Paso County PM_{10} NAAQS comparable monitors.

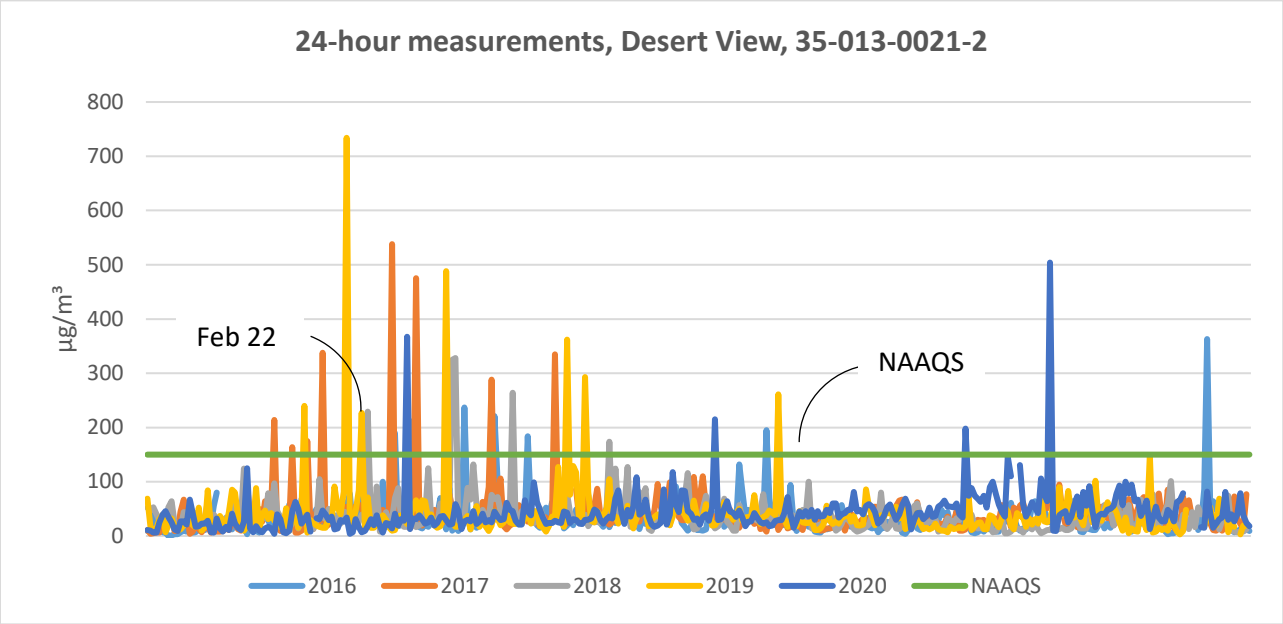
The Chamizal site in El Paso County reports PM_{10} non-NAAQS comparable measurements. On the exceedance day, Chamizal did not report any 24-hour data. Chamizal is about 8 miles east of Desert View.

Figure 4-6 on page 25 shows hourly PM_{10} measurements Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. There were several spikes between 2:00 pm to 5:30 pm. The elevated PM_{10} measurements correlate with elevated wind speeds shown on Figure 4-3 on page 22.

Figures 4-7 on page 25 shows the hourly wind speed and PM_{10} data at Desert View on the exceedance day. The elevated PM_{10} measurement correlates with the elevated wind speed.

There are independent weather reports, evidence of visibility impairment from blowing dust, and wind data which showed that on the exceedance day the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM_{10} measurements at the monitors correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedances are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM_{10} exceedances at the monitors on the exceedance day.

FEBRUARY 22, 2019, EXCEEDANCE DAY, analyses comparing event influenced concentrations to other concentrations at the monitor.
The graph below reflects the 24-hours monitor data from 2016 to 2020 for the Desert View site. The site measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurement on the exceedance day is above the 99th percentile of historical site data.



Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM_{10} at this monitor indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the exceedance and the wind incident on the exceedance day.

FEBRUARY 22, 2019, EXCEEDANCE DAY, not reasonably controllable or preventable.
See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

Not Reasonably Controllable, Anthropogenic Sources – The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at Chaparral, Deming, and West Mesa exceeded the 25-mph high wind threshold. Desert View were elevated but did not exceed the threshold on the exceedance day. The winds at Desert View reached a maximum hourly wind speed of 23 mph, and there were gusts of wind speeds that reached 43 mph during the event. While the hourly wind speeds at Desert View did not reach the threshold, the winds exceeded 25 mph for 5 minutes at different times during the elevated dust event. Also winds at the upwind Santa Teresa site reached 23 mph during the elevated PM_{10} timeframe.

The Desert View monitor site is in the city of Sunland Park, New Mexico. The city has a population of about 15,000. The Desert View site is located on the western city limits. Beyond the city to the west,

except for a nearby landfill, there are undeveloped lands all the way to the Arizona border. The Texas and Mexico borders are about 1 mile to the northeast, and 3/4 of a mile to the south of Desert View, respectively. To the southeast of Desert View, there are undeveloped lands to the Mexico border. On the exceedance day, there could have been upwind anthropogenic sources in about 1 mile of lands in the city of Sunland Park before reaching the Texas border. The demonstration does not discuss any specific sources in the city of Sunland Park nor controls for the sources. The city of El Paso, Texas, extends to about 18 miles east of Desert View. Beyond the city of El Paso to the east is mostly undeveloped Texas lands for hundreds of miles.

The NMED indicates anthropogenic sources near the monitor site includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMED's Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state's jurisdiction.

Portions of Dona Ana County were downwind of the Desert View monitor site on the exceedance day. The demonstration provides information on dust ordinances for Las Cruces, Dona Ana, and Luna counties. Each ordinance requires a plan for dust controls for anthropogenic sources. The controls would have applied to any upwind disturbed sites in the cities, counties, and the Desert View community on the day of the exceedance. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memorandums of understandings exist between NMED and local municipals for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event. While dust control ordinances exist for anthropogenic sources, during the subject widespread high wind event, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Desert View (see Figure 4-4 on page 24).

Mexico was upwind of Desert View on the exceedance day. Figure 4-4 on page 24 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the models with the trajectories ending at the "start" of the exceedance day wind event, at the Desert View monitor site location. The model predicts that the winds originated in Chihuahua, MX prior to reaching the monitoring sites. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the weight of evidence (the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from high winds on extensive upwind undeveloped arid lands contributed significantly to the impacts), the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.

MARCH 8, 2019

The exceedance occurred on March 8, 2019, hereafter referred to as the "exceedance day," at monitor sites located in Dona Ana and Luna Counties. The relevant monitors and exceedances are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Anthony	35-013-0016-81102-2	506 µg/m^3
Chaparral	35-013-0020-81102-2	224 µg/m^3
Desert View	35-013-0021-81102-2	423 µg/m^3
Holman	35-013-0019-81102-2	734 µg/m^3
West Mesa	35-013-0024-81102-2	178 µg/m^3
Deming	35-029-0003-81102-2	187 µg/m^3

MARCH 8, 2019, EXCEEDANCE DAY, Clear Causal Relationship
In the demonstration, NMED states "[a]s the event unfolded, the wind blew from the west-southwest throughout the border region."

Table 5-2 on page 31 provides hourly wind speed measurements from the Anthony, Chaparral, and Deming monitor sites for certain hours on the exceedance day. At 11:00 am, wind gusts at Deming exceeded 25 mph for multiple hours with wind speeds exceeding 25 mph beginning around 3:00 pm. Winds at Chaparral hit 24 mph at 4pm with gusts exceeding 25 mph beginning at 12:00 pm and continuing throughout the day. Winds at the Anthony site peaked at 24.6 mph with gusts above 25 mph throughout the day. Winds at the La Union site measured 24.8 mph for multiple hours starting at 12:00 pm.

Figures 5-7 through 5-12 on pages 36-39 show the frequency distribution of wind direction correlated with PM_{10} data of the even at Anthony, Holman, Chaparral, Desert View, West Mesa and Desert view for the hours (2pm -7 pm) when PM_{10} measurements exceeded 150 µg/m^3 on the exceedance day. The figures show the winds were from the south-southwest.

Figure 5-4 on page 31 shows hourly winds at Anthony, West Mesa, Chaparral, Holman, Desert View, La Union, Santa Teresa, and Deming, on the exceedance day. Deming, West Mesa, and Holman all exceeded 25 mph for multiple hours. Anthony, Chaparral, Desert View, La Union, and Santa Teresa all approached the 25 mph threshold.

On the exceedance day, AQS data shows the hourly wind speeds at the Chamizal, Ascarate, and Skyline monitor sites in El Paso County exceeded 25 mph for multiple hours.

The Las Cruces airport is about 40 miles north of Desert View. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. During this time, the winds were from the west southwest, and gusts reached 48 mph. Winds were elevated until about 9:30 pm. From the hours of 2:00 pm-5:35 pm the weather was listed as "haze and smoke" (Weather Type HZ:7|FU|HZ).

The El Paso airport is about 11 miles east of Desert View. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. During this period, the winds were from the west southwest, gusts

reached 55 mph, and weather was rain, “blowing” and “widespread dust” (Weather Type-RA| BL:5| DU:5). The overall weather for the day was ‘Light rain, dust, blowing dust, blowing sand or obstruction’ (Weather Type DU).

The Deming airport is about 74 miles northwest of Desert View. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours beginning at 2:50 pm. During this period, the winds were from the west southwest, gusts reached 56 mph, and weather type was haze and smoke (Weather Type HZ| FU| HZ). The overall weather type for the exceedance day was clear with 6 hours of haze (Weather Type CLR| HZ).

Figure 5-5 on page 35 is a photo from Ranger Peak in El Paso facing south southwest toward Ciudad Juarez, Mexico that shows widespread dust and low visibility. The time stamp for the image is 2:00 pm MST which correlates with the higher PM_{10} readings. Based on known wind directions at this time, the plumes appear to be travelling from the southwest to the north.

The narrative on page 34 as well as figure 5-3 on page 32 discusses the NWS Wind Advisory and a Blowing Dust Advisory forecast on the exceedance day. Strong winds and reduced visibility were predicted for southwestern New Mexico and west Texas with wind gusts up to 45 mph. High winds were expected from 2:00 pm on the exceedance day until 4:00 pm.

The NOAA Storm Events Database shows that on the exceedance day, high windstorm events were reported in various Dona Ana and El Paso Counties areas with wind gusts close to 65 mph in various locations throughout the counties. Some areas of blowing dust reduced visibility to under a mile at times in Luna and Dona Ana counties.

Figure 5-16 on page 39 shows the 24-hours PM_{10} measurements from Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. Measurements were above monitor averages: West Mesa 178 $\mu g/m^3$, (average 16 $\mu g/m^3$), Deming 187 $\mu g/m^3$, (average 23 $\mu g/m^3$), Anthony 506 $\mu g/m^3$, (average 38 $\mu g/m^3$), Desert View 734 $\mu g/m^3$, (average 16 $\mu g/m^3$), Chaparral 423$\mu g/m^3$, (average 27 $\mu g/m^3$), and Holman 224 $\mu g/m^3$, (average 26 $\mu g/m^3$).

The PM_{10} manual monitors in El Paso County did not sample on the exceedance day. The PM_{10} continuous monitor at the Chamizal site in El Paso County reports non-NAAQS comparable data. On the exceedance day, the Chamizal monitoring data shows elevated hourly PM_{10} measurements during the timeframe of excessive wind speeds. Chamizal is about 8 miles east of Desert View.

Figure 5-13 on page 39 shows hourly PM_{10} measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. The elevated PM_{10} measurements correlate with the elevated wind speeds shown on Figure 5-3.

Figures 5-14 and 5-15 on page 40 shows wind speed and PM_{10} measurements at Anthony and Holman on the exceedance day. The elevated PM_{10} measurements correlate with elevated wind speeds.

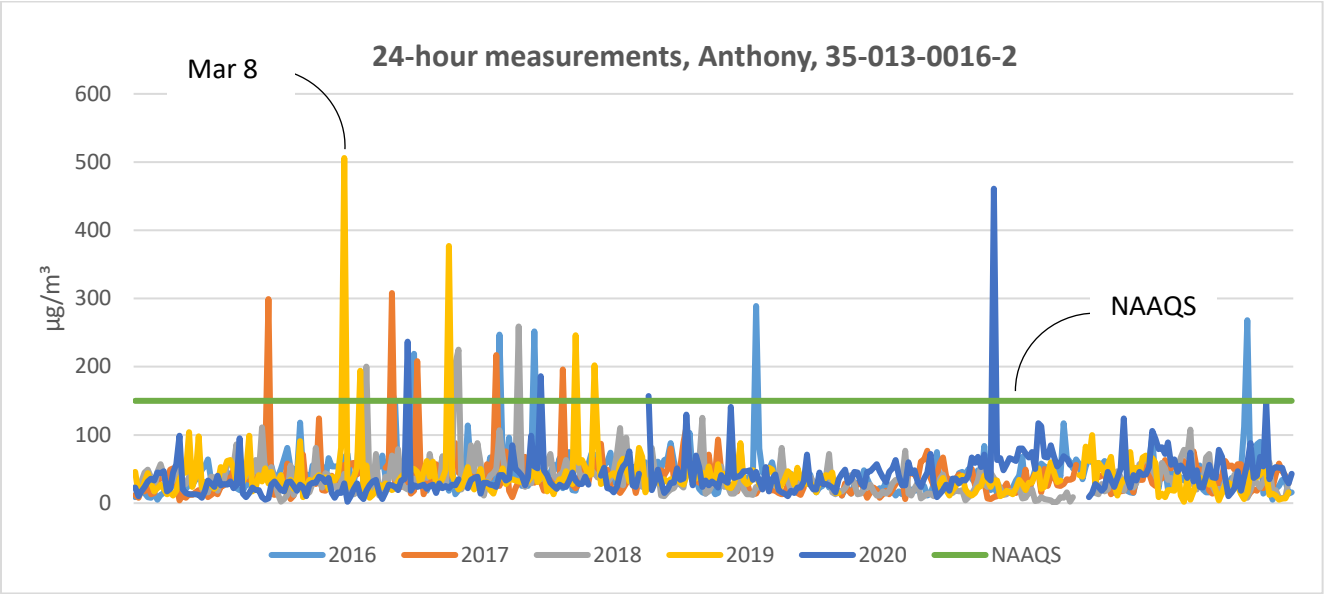
Figures 5-16 and 5-17 on page 41 shows wind speed and PM_{10} measurements at Chaparral and Desert View, on the exceedance day. The elevated PM_{10} measurements correlate with elevated wind speeds.

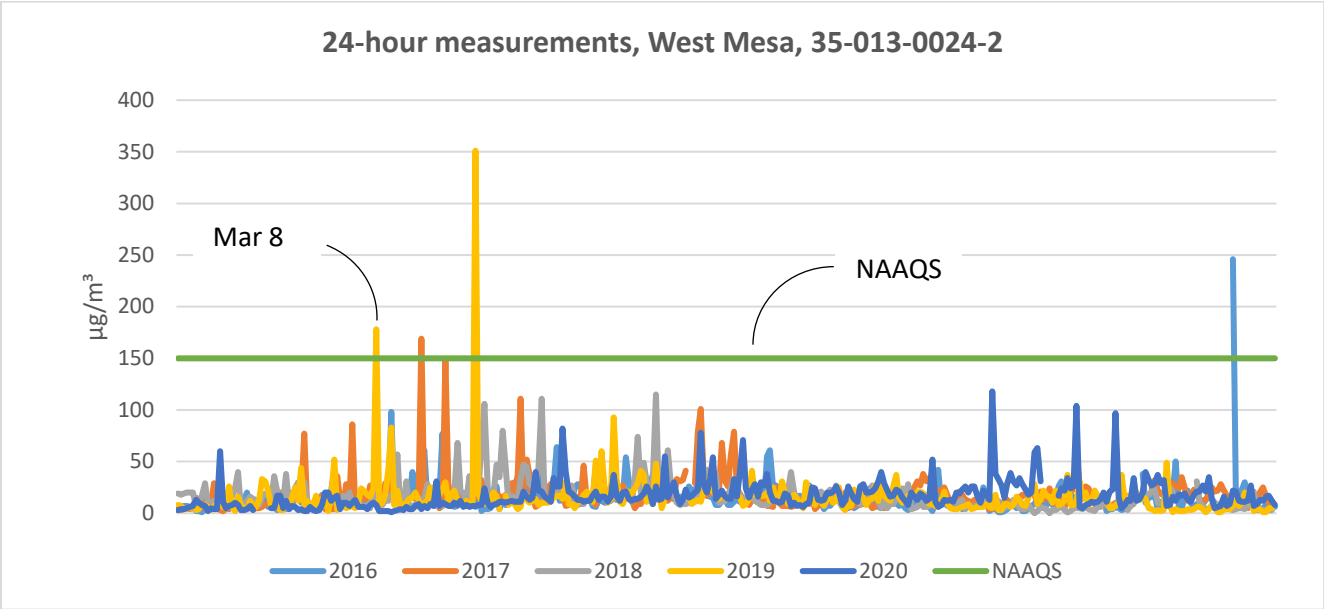
Figures 5-18 and 5-19 on page 42 shows wind speed and PM_{10} measurements at West Mesa and Deming on the exceedance day. The elevated PM_{10} measurements correlate with elevated wind speeds.

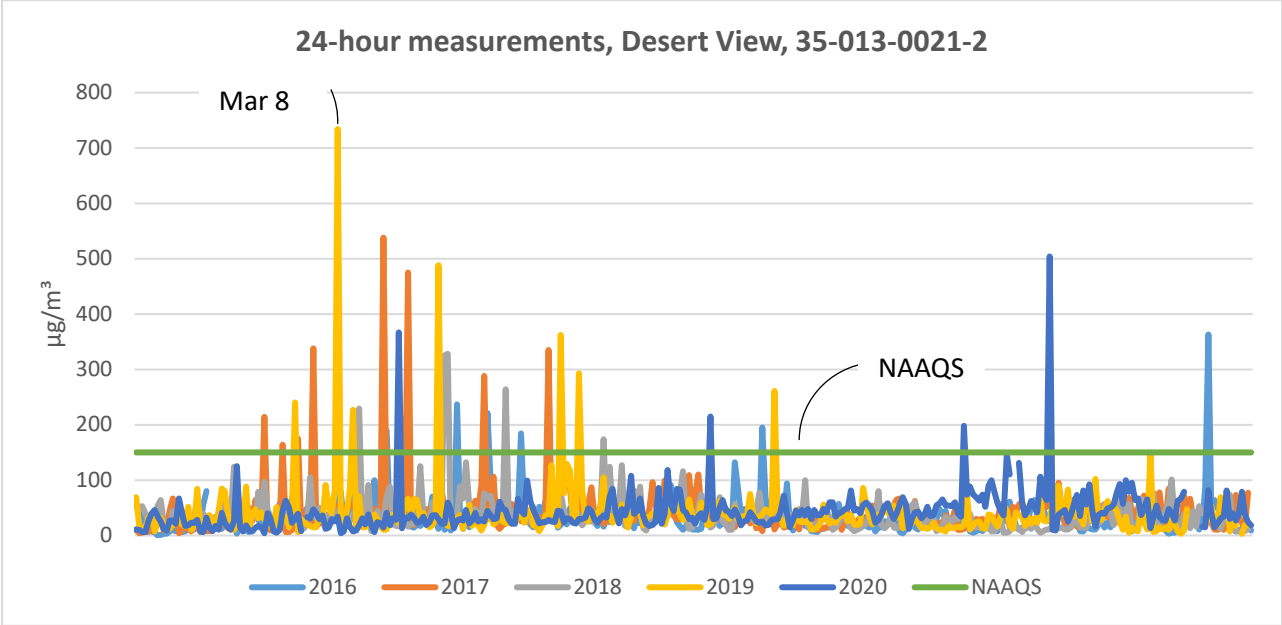
There are independent weather reports, evidence of blowing dust, and wind data which showed that on the exceedance day the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM_{10} measurements at the monitors correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedances are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM_{10} exceedances at the monitors on the exceedance day.

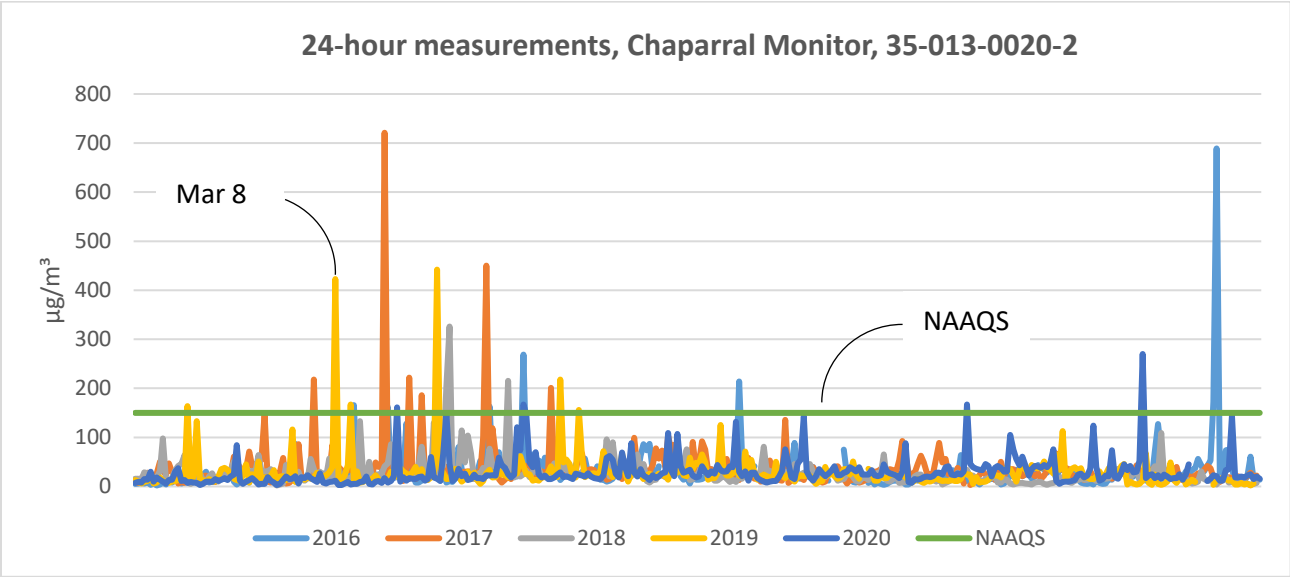
MARCH 8, 2019, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitors.

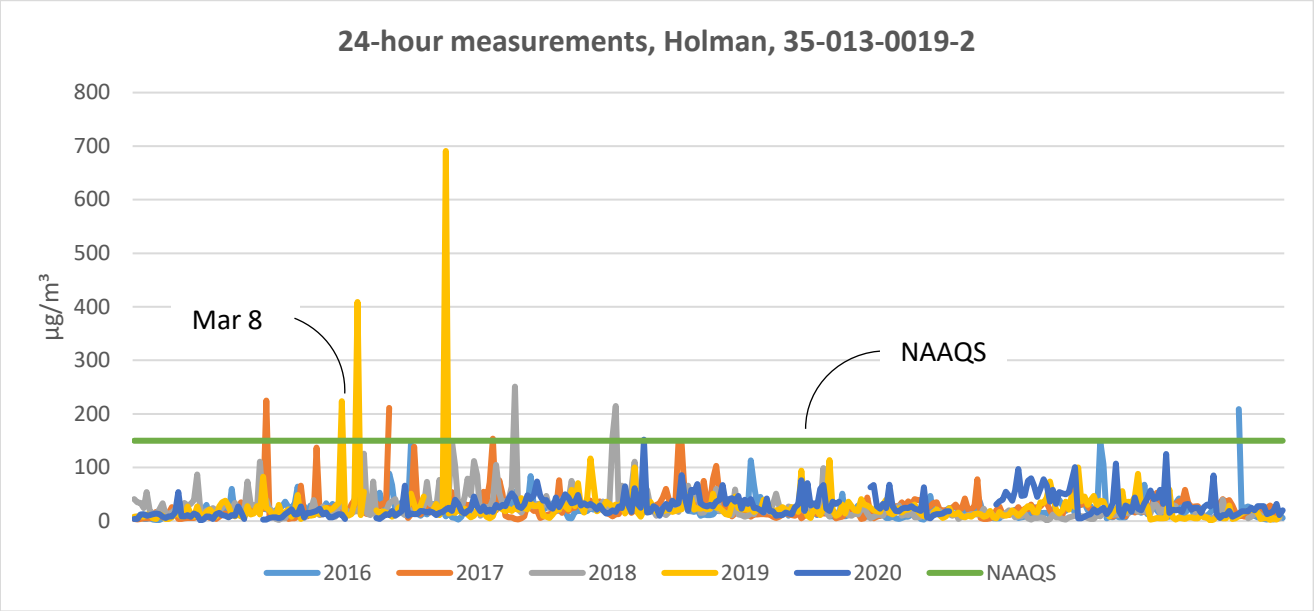
The graphs below reflect the 24-hours monitor data from 2016 to 2020 for the Anthony, West Mesa, Desert View, Chaparral, Holman, and Deming sites. The site measurements for the days surrounding the exceedance day did not approach the NAAQS level, except for March 13, which was another event day. The measurements on the exceedance day are above the 95th percentile of historical site data.

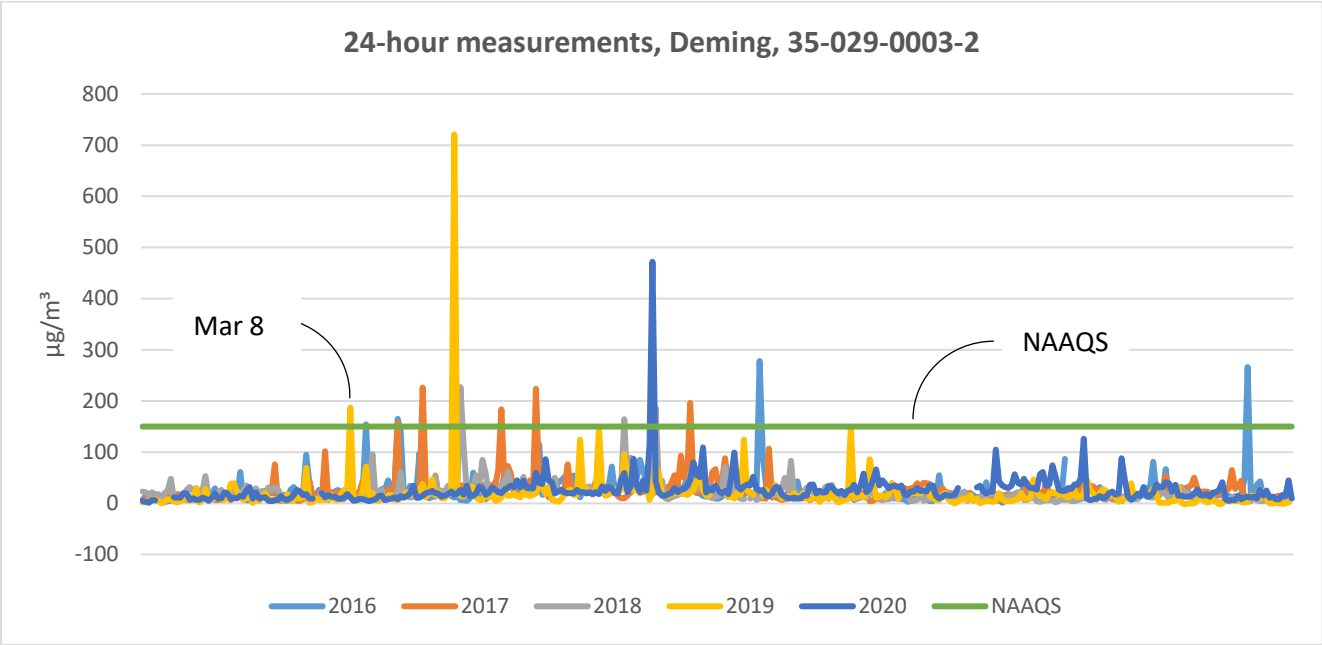



24-hour measurements, West Mesa, 35-013-0024-2
400
350
300
250
200
150
100
50
0
µg/m³
Mar 8
NAAQS
2016
2017
2018
2019
2020
NAAQS


24-hour measurements, Desert View, 35-013-0021-2
800
700
600
500
400
300
200
100
0
µg/m³
Mar 8
NAAQS
2016
2017
2018
2019
2020
NAAQS


24-hour measurements, Chaparral Monitor, 35-013-0020-2
800
700
600
500
400
300
200
100
0
µg/m³
Mar 8
NAAQS
2016
2017
2018
2019
2020
NAAQS


24-hour measurements, Holman, 35-013-0019-2
800
700
600
500
400
300
200
100
0
µg/m³
Mar 8
NAAQS
2016
2017
2018
2019
2020
NAAQS



Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM_{10} at these monitors indicates a deviation from normal concentrations occurred and supports the clear causal relationship between the monitored exceedances and the wind incident on the exceedance day.

MARCH 8, 2019, EXCEEDANCE DAY, not reasonably controllable or preventable.
See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

Not Reasonably Controllable, Anthropogenic Sources – The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at West Mesa, Deming and Holman exceeded the threshold on the exceedance day. Wind speed measured at Anthony, Chaparral, and Desert View did not exceed the threshold, however winds at the nearby La Union site did. Also 5-min wind data from Anthony, Chaparral and Desert View show brief periods ranging from 5-mins to 20-mins over the 25 mph threshold. These elevated winds were from the south and southwest.

Anthony, New Mexico is a small city in Dona Ana County with a population of about 9,300. A portion of the city of Anthony is currently in non-Attainment for PM_{10}. The Anthony monitor site is in the non-attainment area about 700 feet north of the Texas border. To the west of the city is mostly undeveloped lands all the way to the Arizona border. To the southeast of the monitor are lands in Texas. The developed land of the city extends about one mile to the east of the Anthony monitor site. Further to the east there is the Chaparral community in Dona Ana County, and the active Permian basin oil field close to the Texas border. Generally, most of the land to the east is arid and undeveloped.

The Holman monitor site is in Dona Ana County northeast of the city of Las Cruces. The land within a one-half radius of the site is undeveloped. To the southwest, except for the city of Las Cruces, there are undisturbed arid lands all the way to the Mexico border. To the west, undisturbed arid lands exist to the Arizona border.

The city of Deming with a population of about 15,000, is the only city in Luna County, New Mexico. The city is located 33 miles north of the Mexico border. Except for the city of Deming, a village close to the Mexico border and some agricultural fields, the land in the county is undeveloped. The Deming monitor site is at the airport within the city limits. During the hours of highest impact on the monitor, the winds were from the south southwest. To the west and northwest of the monitor are about 3 miles of developed and undeveloped lands within the city. Beyond the city limits to the west and northwest are undeveloped lands to the Arizona border. To the south of the site for about 2 miles, there is a mix of developed and undeveloped land within the city limits. Beyond the city, to the south, there are undeveloped arid lands to the Mexico border

On the exceedance day, winds at West Mesa varied south southwest. The West Mesa monitor site is on the city of Las Cruces western city limits. Except for the Las Cruces airport which is northwest of West Mesa, to the southwest, west, and northwest there are undisturbed arid lands all the way to the Arizona and Mexico borders. On the exceedance day, nearby anthropogenic sources in the city of Las Cruces would not have been upwind.

See discussion about the February 22, 2019, exceedance for information about the location of the Desert View site in the city of Sunland Park. During the wind incident, the winds were from the south southwest. Desert View is on the western city limits. To the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border. The Texas and Mexico borders are about 1 mile to the northeast, and ¾ of a mile to the south of Desert View, respectively.

See discussion about the January 18, 2019, exceedance for information about the location of the Chaparral site. The Texas and Mexico borders are about 2.5 miles to the south, and 24 miles to the southwest of the Chaparral monitor site, respectively. Residential areas or potential anthropogenic upwind sources extend to about 2 miles west and south of the Chaparral site. Beyond the residential areas to the south there are about 7 miles of undeveloped lands and then the northern suburbs of El Paso. Beyond the residential areas to the west, with a few exceptions such as the city of Anthony, there are undeveloped lands to the Arizona border. Residential areas extend to about 1 mile southwest of the Chaparral site. Further to the southwest, there are lands in the state of Texas, the unincorporated La Union community in New Mexico, and undeveloped lands to the Mexico border.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMED's Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does,

however, provide general information about controls for potential anthropogenic sources within the state's jurisdiction.

Portions of the Dona Ana County were upwind of Desert View, West Mesa, Chaparral, Anthony, and Holman on the exceedance day. Portions of Luna County and the city of Deming were upwind of the Deming monitor site on the exceedance day. The demonstration provides information on the city of Deming, and Dona Ana and Luna Counties Dust ordinances. The ordinances require a plan for dust controls on disturbed sites. The controls would have applied to any upwind disturbed sites in the city, counties, and the Chaparral community on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memorandums of understandings exist between NMED and local municipals for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Anthony, Holman, West Mesa, Chaparral, Desert View, and Deming.

Portions of the city of Anthony were upwind of the Anthony monitor site on the exceedance day. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM_{10} exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance day; however, because of the waiver the NMED is not obligated to revise the SIP. See 40 CFR 50.14(b)(8)(v). Therefore, during the demonstration review, the EPA considered the Anthony SIP limited controls, e.g., treat and pave area roads as funding allows, as part of the review of whether anthropogenic sources were reasonably controlled on the exceedance day. Appendix C of the demonstration provides a letter from the city of Anthony dated September 18, 2019, that reports on the status of local dust control efforts including road paving.

Figure 5-6 on page 36 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the models with the trajectories ending at the "start" of the exceedance day wind event, at the Desert View monitor site location. The model predicts that the winds originated in Chihuahua, Mexico prior to reaching New Mexico and El Paso monitoring locations. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from high winds on extensive upwind undeveloped arid lands contributed significantly to the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.

March 13, 2019

The exceedance occurred on March 13, 2019, hereafter referred to as the "exceedance day," at the monitor sites located in Dona Ana County. The relevant monitors and exceedances are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Anthony	35-013-0016-81102-1	194 $\mu g/m^3$

Chaparral	35-013-0020-81102-2	167 µg/m^3
Desert View	35-013-0021-81102-2	227 µg/m^3
Holman	35-013-0019-81102-2	409 µg/m^3

MARCH 13, 2019, EXCEEDANCE DAY, clear causal relationship.
In the demonstration, the NMED indicates "[a]s the event unfolded, the wind blew from the southwest throughout the border region."

Table 6-2 on page 50 shows hourly wind data from the Desert View, Holman, and Anthony monitor sites, for certain hours on the exceedance day. Winds at the sites exceeded 25 mph for multiple hours.

Figures 6-6, 6-7, 6-8, and 6-9 on pages 54-56 shows the frequency distribution of wind direction correlated with PM_{10} data at Anthony, Chaparral, Desert View, and Holman for the hours when PM_{10} measurements exceeded 150 µg/m^3 on the exceedance day. The winds were from the west and southwest, except from the Holman site, where winds blew from the southeast 70% of the time and the remainder of the time from the west southwest.

Figure 6-3 on page 51 shows hourly wind data at Anthony, West Mesa, Chaparral, Holman, Desert View, Santa Teresa, La Union, and Deming, on the exceedance day. Every monitoring site experienced hourly wind speeds that exceeded 25 mph for multiple hours.

On the exceedance day, AQS data shows the hourly wind speeds at the Santa Teresa site exceeded 25 mph for multiple hours. Santa Teresa is about 23 miles southwest of Chaparral site and about 6 miles west of Desert View.

On the exceedance day, AQS data shows the hourly wind speeds at the La Union site exceeded 25 mph for multiple hours. La Union is about 5 miles south southwest of the Anthony site.

On the exceedance day, AQS data shows the hourly wind speeds at the Chamizal, Ascarate, Socorro and Ivanhoe monitor sites in El Paso County exceeded 25 mph for multiple hours.

The Las Cruces airport is about 40 miles north of Desert View. On the exceedance day winds at the airport exceeded 25 mph for multiple hours. During this period, the winds blew from west southwest, with gusts reaching 60 mph. The weather type was smoke and haze from 3:55 pm through 4:35 pm (Weather Type HZ:7|FU| HZ). The overall weather type for the exceedance day was Clear (Weather Type CLR).

The El Paso airport is about 11 miles east of the Desert View site. On the exceedance day winds at the airport exceeded 25 mph for multiple hours. During this period, the winds varied from west southwest to west northwest, gusts reached 72 mph, and weather type was "blowing" and "widespread dust" (Weather Type BL:5|DU:5) from 10:50 am-5:50 pm. The overall weather type for the exceedance day was "Scattered clouds" (Weather Type SCT).

The Deming airport is about 74 miles northwest of Desert View. On the exceedance day winds at the airport exceeded 25 mph for multiple hours during the day. During this period, the winds blew predominately from the west southwest, with gusts reaching 58 mph, and weather type was "Haze and

smoke" (Weather Type HZ:7|FU|HZ). This period lasted from around 11:00 am-5:00 pm. Overall weather type for the exceedance day was broken clouds (Weather Type BKN).

Figure 6-19 on page 61 shows the 24-hours PM_{10} measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. Anthony, Chaparral, Desert View, and Holman 24-hours measurements exceeded the NAAQS level of 150 µg/m^3. Other sites measurements were elevated: West Mesa had a measurement of 83 µg/m^3 which is above the monitor average of 16 µg/m^3, Deming had a measurement of 72 µg/m^3 which is above the monitoring average of 23 µg/m^3.

The PM_{10} manual monitors in El Paso County did not sample on the exceedance day. The 24-hour measurement from the PM_{10} continuous Chamizal monitor in El Paso County on the exceedance day was 134 µg/m^3.

Figure 6-4 on page 53 and the narrative on page 52 provide information and satellite imagery captured from the Suomi NPP satellite VIIRS RGB. The imagery shows dust plumes originating upwind of NMED's monitoring sites near Ascension and Janos, Chih. The dust plumes appear limited to Mexico, orientated in a southwest to northeast fashion and traveling toward El Paso and NMED's monitoring sites. Image time stamp is 15:17 MDT. The NWS issued a Wind Advisory and a Blowing dust Advisory for parts of Dona Ana and El Paso Counties on the exceedance day. The areas in Dona Ana County include the Desert View, Anthony, West Mesa, Holman, and Chaparral sites. A wind advisory remained in effect from 9:00 am to 9:00 pm in the evening on the exceedance day.

Figure 6-10 on page 57 shows hourly PM_{10} measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming on the exceedance day. The elevated PM_{10} measurements correlate with elevated wind speeds shown on Figure 6-3.

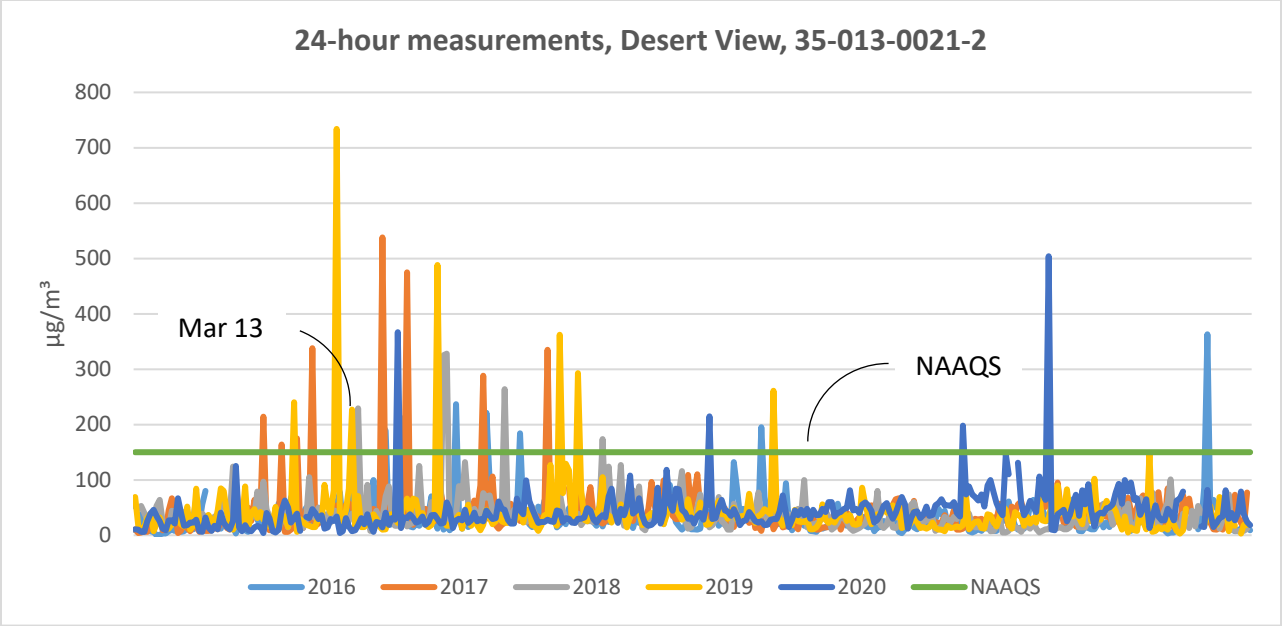
Figures 6-11, 6-12, 6-13, and 6-14 on pages 57-59 show both hourly wind speeds and PM_{10} measurements at the Anthony, Chaparral, Desert View and Holman sites on the exceedance day. The elevated PM_{10} measurements at the sites correlate with elevated wind speeds.

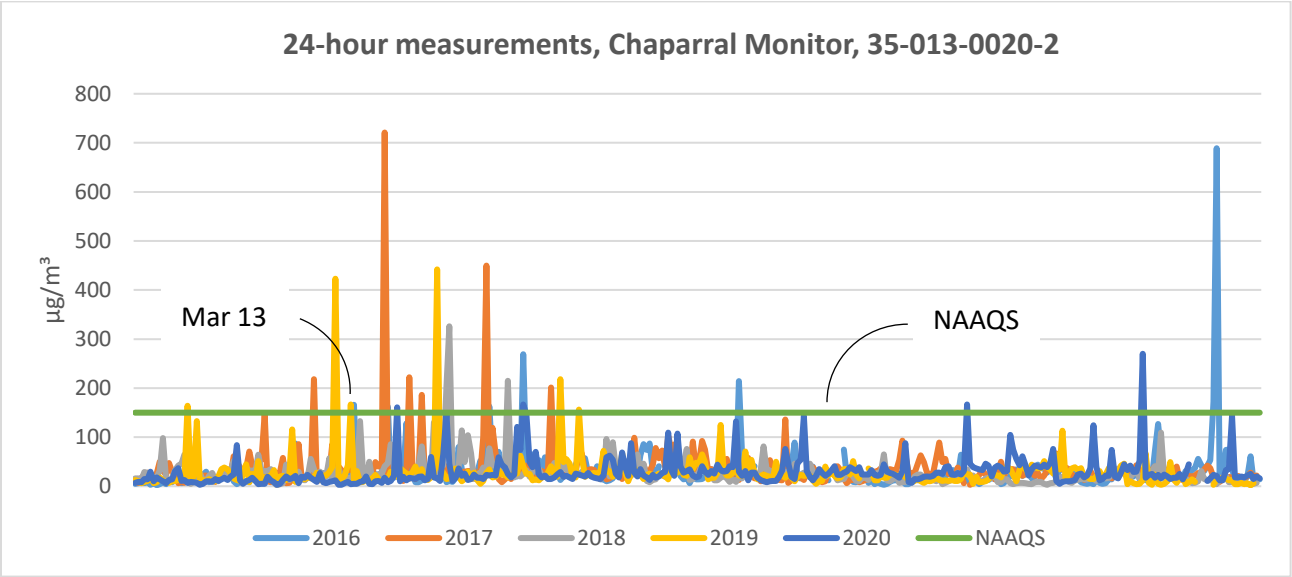
There are independent weather reports, evidence of blowing dust, and hourly wind data which showed that on the exceedance day the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM_{10} measurements at the monitors correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedance are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM_{10} exceedance at the monitors on the exceedance day.

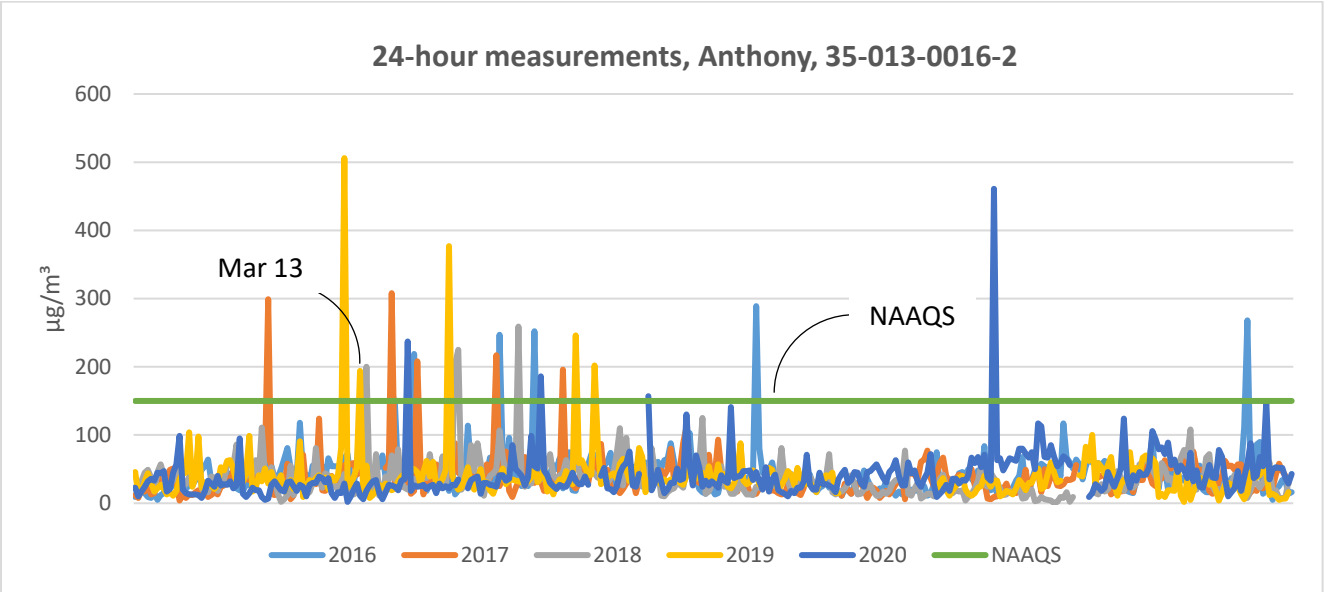
MARCH 13, 2019, EXCEEDANCE DAY, analyses comparing event influenced concentrations to other concentrations at the monitor.

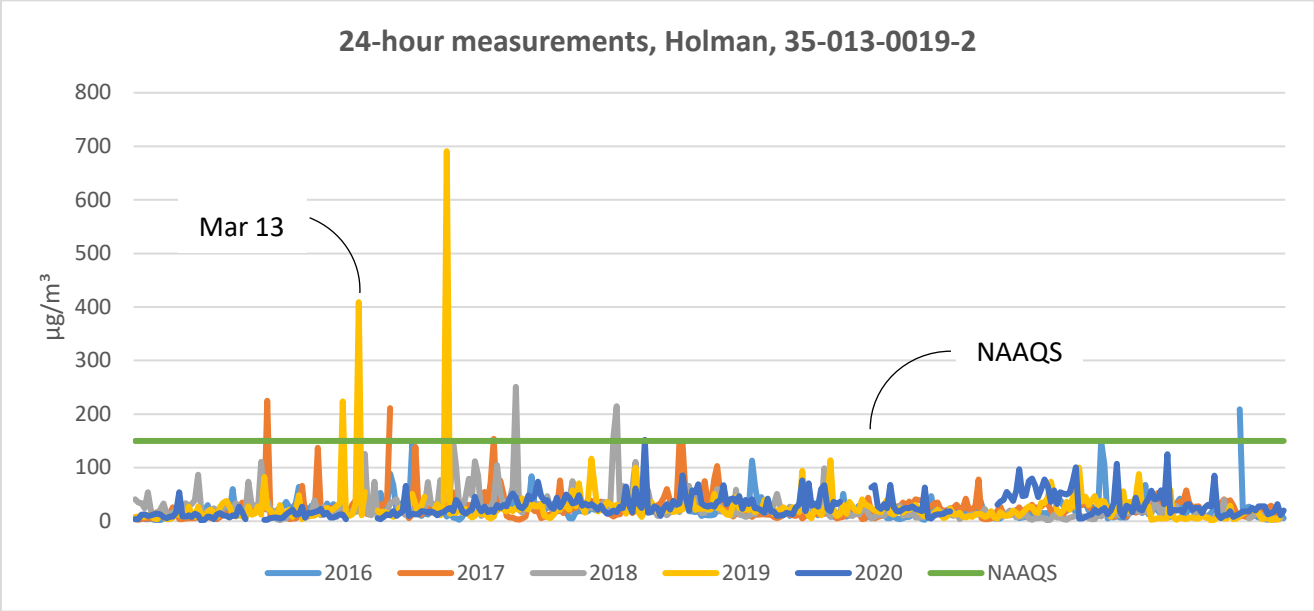
The site measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurements on the exceedance day are above the 99th percentile of historical site data. The graphs

below reflect the 24-hours monitor data from 2016 to 2020 for the Desert View, Chaparral, Anthony, and Holman sites.









Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM_{10} at these monitors indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the exceedances and the wind incident on the exceedance day.

MARCH 13, 2019, EXCEEDANCE DAY, not reasonably controllable or preventable.
See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

Not Reasonably Controllable, Anthropogenic Sources – The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at the Anthony, Desert View, Holman, Chaparral sites exceeded the threshold on the exceedance day. The winds were from the west and southwest.

See discussion about the February 22, 2019, exceedance for information about the location of the Desert View site in the city of Sunland Park. The Desert View site is located on the western city limits. The Texas and Mexico borders are about 1 mile to the northeast, 3/4 of a mile to the south of Desert View, respectively. To the southwest of Desert View, there are undeveloped lands to the Mexico border. To the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border.

See discussion about the January 18, 2019, exceedance for information about the location of the Chaparral site. The Texas and Mexico borders are about 2.5 miles to the south, and 24 miles to the southwest of the Chaparral monitor site, respectively. Residential areas or potential anthropogenic upwind sources extend to about 2 miles west and south of the Chaparral site. Beyond the residential areas to the south there are about 7 miles of undeveloped lands and then the northern suburbs of El Paso. Beyond the residential areas to the west, with a few exceptions such as the city of Anthony, there are undeveloped lands to the Arizona border. Residential areas extend to about 1 mile southwest of the Chaparral site. Further to the southwest, there are lands in the state of Texas, the unincorporated La Union community in New Mexico, and undeveloped lands to the Mexico border.

See discussion about the March 8, 2019, exceedance for information about the location of the Anthony site. During the hours of highest impact on the monitor, the winds were from the west. The Anthony city limits are about 0.5 miles west of the Anthony monitor site. Beyond the city to the west undeveloped lands exist to the Arizona border. The Texas and Mexico borders are about 700 feet to the south and 20 miles to the southwest of the Anthony site, respectively.

The Holman monitor site is in Dona Ana County northeast of the city of Las Cruces. The land within a one-half radius of the site is undeveloped. Beyond that there are some lightly populated large lot residential areas. To the southwest, except for the city of Las Cruces, there are undisturbed arid lands all the way to the Mexico border. To the west, undisturbed arid lands exist to the Arizona border.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMED's Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state's jurisdiction.

Portions of the city of Anthony were upwind of the Anthony and Chaparral sites on the exceedance day. The demonstration provides information on the Anthony SIP. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM_{10} exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance day, however, because of the waiver the NMED is not obligated to revise the SIP. See 40 CFR 50.14(b)(8)(v). Therefore, during the demonstration review, the EPA considered the Anthony SIP limited controls, e.g., treat and pave area roads as funding allows, as part of the review of whether anthropogenic sources were reasonably controlled on the exceedance day. Appendix C of the demonstration provides a letter from the city of Anthony dated September 18, 2019, that reports on the status of local dust control efforts including road paving.

Portions of the Dona Ana County were upwind of Anthony, Desert View, Holman, and Chaparral on the exceedance day. The demonstration provides information on the Dona Ana County Dust ordinance. The county ordinance applies in unincorporated communities in the county. The ordinance requires a plan for dust control on disturbed sites. The controls would have applied to any upwind disturbed sites in the county or the unincorporated communities of Chaparral and La Union on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memorandums of understandings exist between NMED and local municipals for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Desert View and Chaparral.

Desert View is located about 3/4 of a mile north of the Mexico border. The Mexico border is about 24 miles southwest of Chaparral. Mexico was upwind of Anthony, Holman, Desert View, and Chaparral on the exceedance day. Figure 6-5 on page 54 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the models with the trajectories ending at the “start” of the exceedance day wind event, at the Desert View monitor site location. The results show that the winds could have been in Chihuahua, Mexico prior to reaching Anthony and El Paso, TX. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from high winds on extensive upwind undeveloped arid lands contributed significantly to the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.

APRIL 10, 2019

The exceedance occurred on April 10, 2019, hereafter referred to as the “exceedance day,” at monitor sites in Dona Ana and Luna counties. The relevant monitors and exceedances are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Holman	35-013-0019-81102-2	691 $\mu g/m^3$
Anthony	35-013-0019-81102-2	377 $\mu g/m^3$

Chaparral	35-013-0020-81102-2	442 µg/m^3
Desert View	35-013-0021-81102-2	488 µg/m^3
West Mesa	35-013-0024-81102-2	351 µg/m^3
Deming	35-029-0003-81102-2	721 µg/m^3

APRIL 10, 2019, EXCEEDANCE DAY, clear causal relationship.
In the demonstration, the NMED indicates "[a]s the event unfolded, the wind blew from the southwest throughout the border region."

Table 7-2 on page 65 shows hourly wind speeds at the Anthony, Deming, and West Mesa monitor sites for certain hours on the exceedance day. The winds exceeded 25 mph at Deming and West Mesa for multiple hours beginning at 7:00 am. Wind speeds at Anthony approached the 25 mph mark with wind gusts exceeding 25 mph throughout the day.

Figures 7-8 thru 7-13 on pages 70-73 show the frequency distribution of wind direction correlated with PM_{10} data at Anthony, Deming, West Mesa, Holman, Chaparral, and Desert View monitor sites, for the hours when PM_{10} measurements exceeded 150 µg/m^3 on the exceedance day. The winds at all included monitoring sites were from the southwest respectively.

Figure 7-4 on page 67 shows hourly wind speeds at Chaparral, Anthony, Desert View, Deming, Santa Teresa, La Union, and West Mesa on the exceedance day. The winds at Chaparral, West Mesa, Santa Teresa, La Union, and Deming exceeded 25 mph for multiple hours. The winds at Anthony and Desert View approached 25 mph.

The Las Cruces airport is about 27 miles northwest of Anthony. On the exceedance day winds at the airport exceeded 25 mph from 7:30 am till after 8:00 pm. During this period, the winds were from the southwest, gusts reached 61 mph. From 8:55 am till 6:15 pm the weather type was hazy with smoke (HZ:7|FU|HZ), with the evening weather type as clear. The overall weather type was clear (Weather Type CLR/HZ).

The El Paso airport is about 18 miles southeast of the Anthony site. On the exceedance day, winds at the airport were above 25 mph for multiple hours. During this period, the wind direction was from the southwest, gusts reached 60 mph, and weather type was "blowing widespread dust, sand…squalls (BL:5|DU:5|SQ2. The overall weather type for the exceedance day was broken clouds, clouds (Weather Type BKN/X).

The Alamogordo White Sands airport is about 48 miles northeast of the Holman Site. On the exceedance day, winds at the airport exceeded 25 mph beginning after 7:30 am. During this period, the wind direction was predominately from the southwest, gusts reached 56 mph, and the weather type included haze smoke, (HZ:7|FU|HZ). The overall weather type for the exceedance day was clear (Weather Type CLR).

The Deming airport is about 74 miles northwest of Desert View and the Deming monitor is on the airport site. On the exceedance day winds at the airport exceeded 25 mph for multiple hours. During this period, the winds were from the southwest, gusts reached 64 mph, and weather type included light rain

and smoke and haze (Weather Type -RA:02, HZ:7|FU|HZ). The overall weather type for the exceedance day was overcast (Weather Type OVC).

Figure 7-27 on page 81 shows the 24-hour PM_{10} measurements from Chaparral, Anthony, Desert View, Deming, Holman, and West Mesa on the exceedance day. All monitoring sites exceeded the NAAQS level.

The PM_{10} manual monitors in El Paso County did not sample on the exceedance day. The PM_{10} continuous monitor at the Chamizal site in El Paso County reports non-NAAQS comparable data. On the exceedance day, the Chamizal 24-hours measurement of 267 $\mu g/m^3$ is above the NAAQS level of 150 $\mu g/m^3$. Chamizal is about 8 miles east of Desert View.

The narrative on page 68 and 69 discusses the NWS wind and blowing dust advisory issued for portions of southwestern New Mexico and west Texas on the exceedance day. The advisory also warned about reduced visibility between ¼ to 1 mile. Both the blowing dust advisory and wind advisory were in effect from 9:00 am to 9:00 pm.

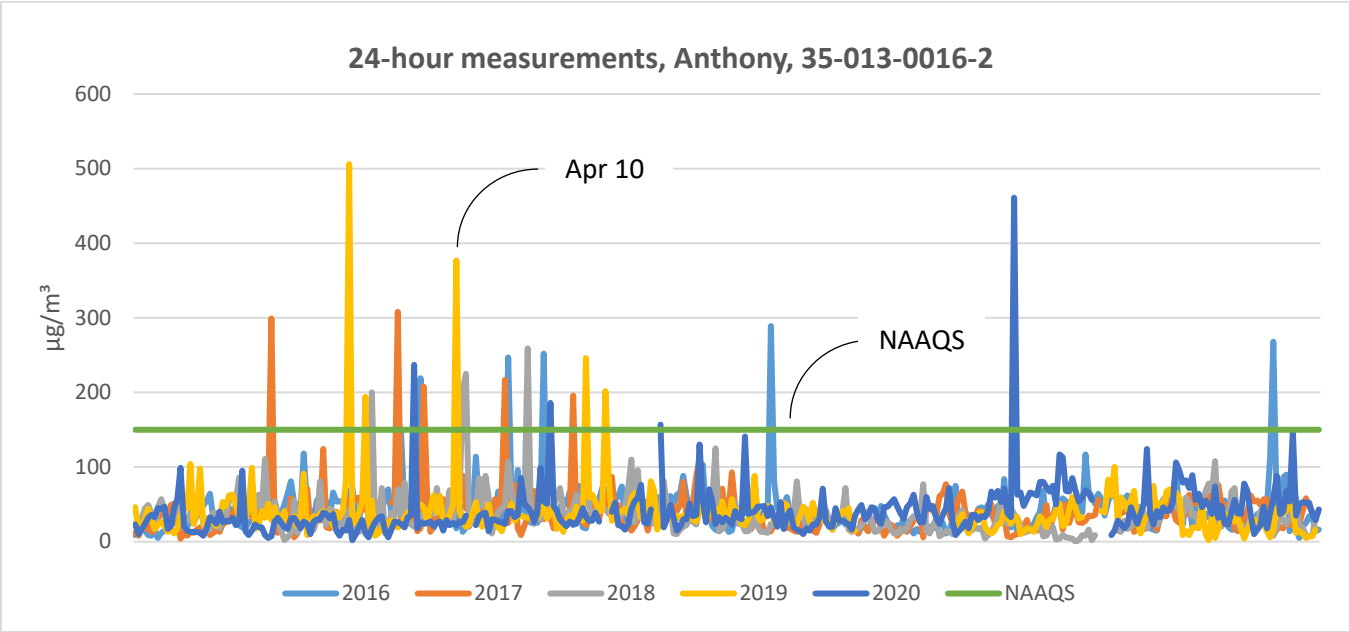
The NOAA storm events data center lists an event in southern Dona Ana County on April 10, 2019. The narrative states, “The National Weather Service Office in Santa Teresa recorded a peak gust of 63 mph…other gusts around Las Cruces included 61 and 59 mph gusts.

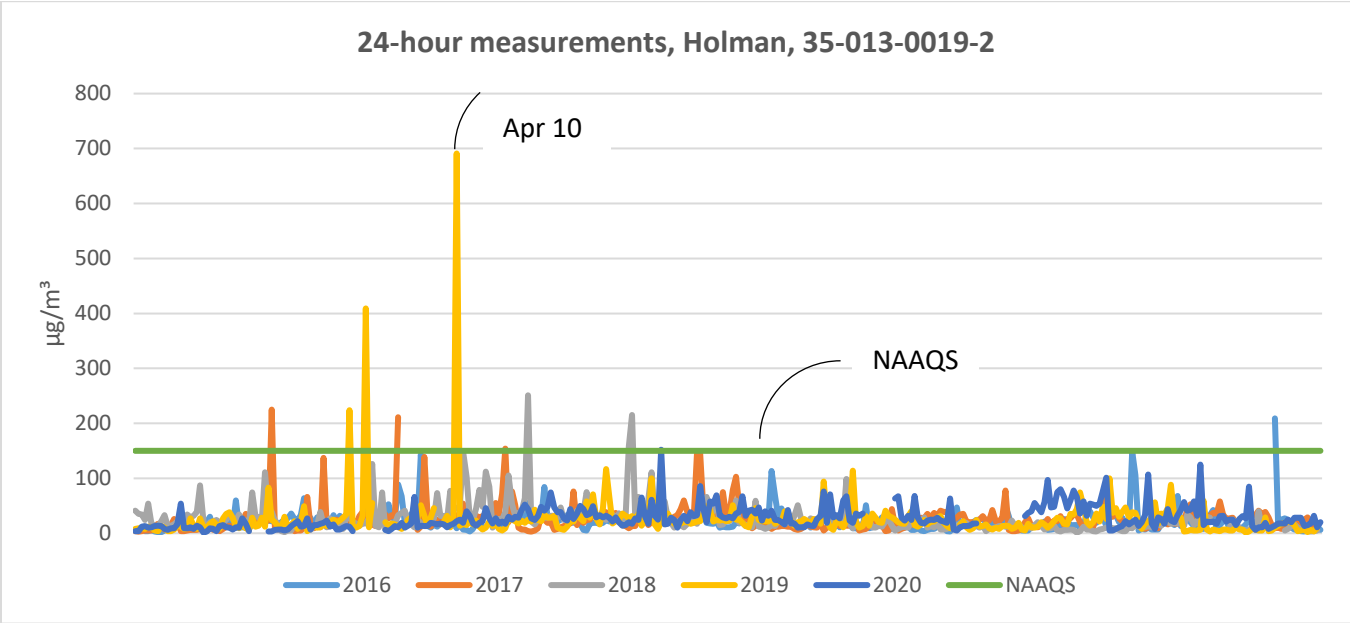
Figures 7-14 thru 7-20 on pages 74-77 show the hourly wind speeds and PM_{10} measurements at Anthony, Holman, Chaparral, Desert View, West Mesa, and Deming on the exceedance day. The elevated PM_{10} measurements correlate with the elevated wind speeds.

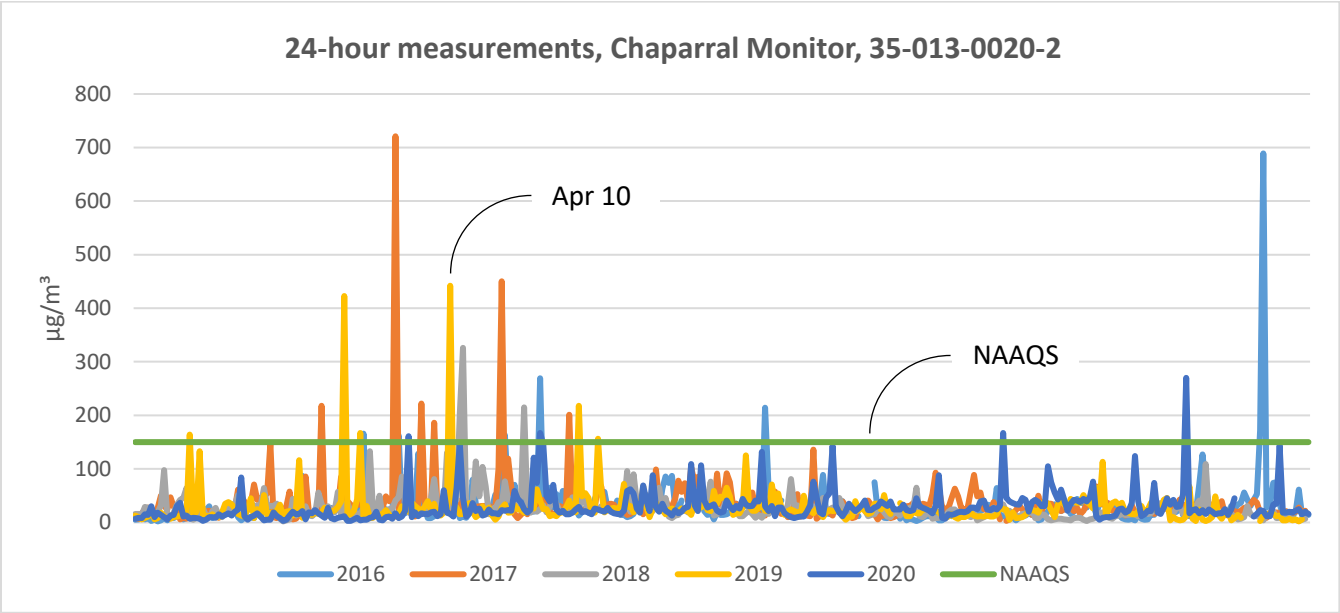
There are independent weather reports, evidence of blowing dust, and hourly wind data which showed that on the exceedance day the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM_{10} measurements at the monitors correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedance are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM_{10} exceedances at the monitors on the exceedance day.

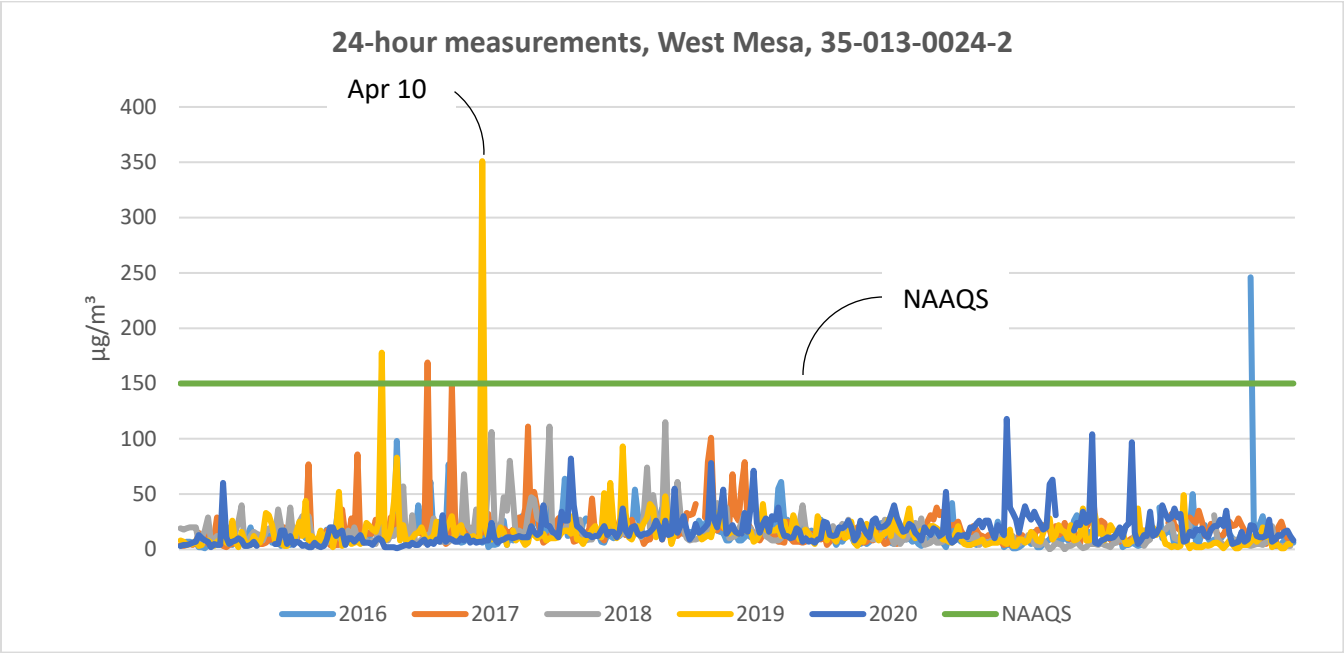
APRIL 10, 2019, EXCEEDANCE DAY, analyses comparing event influenced concentrations to other concentrations at the monitor.

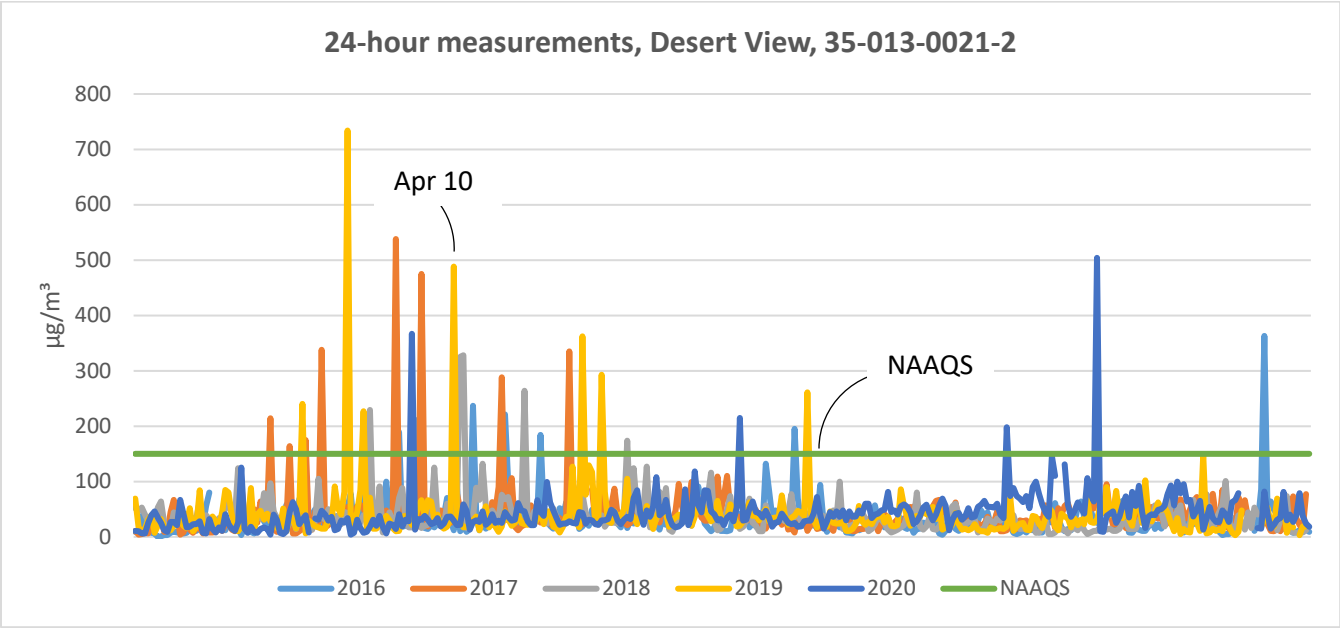
The graphs below reflect the 24-hour monitor data from 2016 to 2020 for the Anthony, Holman, Chaparral, Desert View, West Mesa, and Deming sites. The sites measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurements on the exceedance day are above the 99th percentile of historical site data, except for Chaparral, Holman, West Mesa, and Deming; the values at these monitors for this date set new maximums.

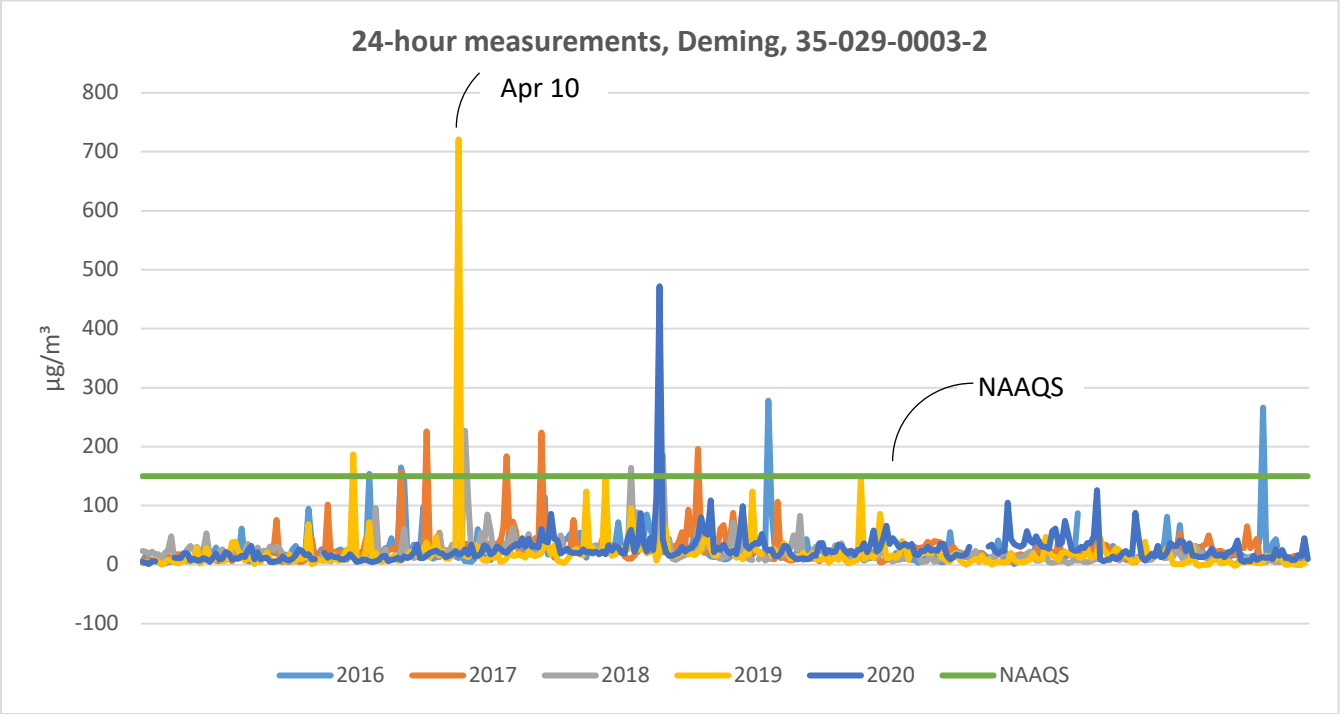

24-hour measurements, Anthony, 35-013-0016-2
600
500
400
300
200
100
0
µg/m³
Apr 10
NAAQS
2016
2017
2018
2019
2020
NAAQS


24-hour measurements, Holman, 35-013-0019-2
800
700
600
500
400
300
200
100
0
µg/m³
Apr 10
NAAQS
2016
2017
2018
2019
2020
NAAQS


24-hour measurements, Chaparral Monitor, 35-013-0020-2
800
700
600
500
400
300
200
100
0
µg/m³
Apr 10
NAAQS
2016
2017
2018
2019
2020
NAAQS


24-hour measurements, West Mesa, 35-013-0024-2
Apr 10
400
350
300
250
200
150
100
50
0
µg/m³
NAAQS
2016
2017
2018
2019
2020
NAAQS





Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM_{10} at these monitors indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the monitored exceedances and the wind incident on the exceedance day.

APRIL 10, 2019, EXCEEDANCE DAY, not reasonably controllable or preventable.

See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

Not Reasonably Controllable, Anthropogenic Sources – The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at Chaparral, Deming, West Mesa, La Union, and Santa Teresa exceeded 25 mph on the exceedance day. The Anthony and Desert View monitoring sites approached the 25 mph threshold and had intermittent periods of between 5-10 minutes where wind speeds exceeded 25 mph. Wind information at the Holman site was not available due to bad weather.

See discussion about the March 8, 2019, exceedance for information about the location of the Anthony site. During the hours of highest impact on the monitor, the winds were from the southwest. The Anthony city limits are about 0.5 miles west of the Anthony monitor site. Beyond the city to the west undeveloped lands exist to the Arizona border. The Texas and Mexico borders are about 700 feet to the south and 20 miles to the southwest of the Anthony site, respectively.

See discussion about the February 22, 2019, exceedance for information about the location of the Desert View site in the city of Sunland Park. The Desert View site is located on the western city limits. The Texas and Mexico borders are about 1 mile to the northeast, 3/4 of a mile to the south of Desert View, respectively. To the southwest of Desert View, there are undeveloped lands to the Mexico border. To the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border.

See discussion about the January 18, 2019, exceedance for information about the location of the Chaparral site. The Texas and Mexico borders are about 2.5 miles to the south, and 24 miles to the southwest of the Chaparral monitor site, respectively. Residential areas or potential anthropogenic upwind sources extend to about 2 miles west and south of the Chaparral site. Beyond the residential areas to the south there are about 7 miles of undeveloped lands and then the northern suburbs of El Paso. Beyond the residential areas to the west, with a few exceptions such as the city of Anthony, there are undeveloped lands to the Arizona border. Residential areas extend to about 1 mile southwest of the Chaparral site. Further to the southwest, there are lands in the state of Texas, the unincorporated La Union community in New Mexico, and undeveloped lands to the Mexico border.

See discussion about the March 8, 2019, exceedance for information about the location of the Holman site. During the hours of highest impact on the monitor, the winds were from the southwest. Generally, most of the land to the west is arid and undeveloped.

See discussion about the March 8, 2019, exceedance for information about the location of the Deming site. During the hours of highest impact on the monitor, the winds were from the southwest. To the west of the Deming monitor for about 3 miles, is a mix of developed and undeveloped land within the city of Deming city limits. Beyond the city limits to the west, there are undeveloped lands to the Arizona border. To the south of the site for about 2 miles, there is a mix of developed and undeveloped land within the city limits. Beyond the city, to the south, there are undeveloped arid lands to the Mexico border.

See discussion about March 8, 2019, exceedance for information about the location of the West Mesa site. On the exceedance day, winds at West Mesa varied south southwest. Except for the Las Cruces airport which is northwest of West Mesa, to the southwest, west, and northwest there are undisturbed arid lands all the way to the Arizona and Mexico borders. On the exceedance day, nearby anthropogenic sources in the city of Las Cruces would not have been upwind.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. In an email dated April 4, 2022, The NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMED's Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state's jurisdiction.

Portions of the city of Anthony were upwind of the Anthony, Holman, and Chaparral sites on the exceedance day. The demonstration provides information on the Anthony SIP. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM_{10} exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance day, however, because of the waiver the NMED is not obligated to revise the SIP. See 40 CFR 50.14(b)(8)(v). Therefore, during the demonstration review, the EPA considered the Anthony SIP limited controls, e.g., treat and pave area roads as funding allows, as part of the review of whether anthropogenic sources were reasonably controlled on the exceedance day. Appendix C of the demonstration provides a letter from the city of Anthony dated September 18, 2019, that reports on the status of local dust control efforts including road paving.

Portions of Dona Ana County were upwind of the Desert View, Anthony, and Chaparral monitor sites on the exceedance day. Portions of Luna County and the city of Deming were upwind of the Deming monitor site. The demonstration provides information on the cities of Deming, Las Cruces, Dona Ana, and Luna counties dust ordinances. The ordinances require a plan for dust controls on disturbed sites. The controls would have applied to any upwind disturbed sites in the cities, counties, and the Chaparral community on the day of the exceedance. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memorandums of understandings exist between NMED and local municipals for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Desert View, Anthony, Holman, West Mesa, Chaparral, and Deming.

Figure 7-7 on page 70 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the model with the trajectories ending at the "start" of the wind event, at the Desert View site. The results show the winds may have been in southwestern Chihuahua, MX and travelled into

the southern New Mexico and El Paso, TX area. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Figure 7-5 on page 68 shows an image captured by satellite with dust plumes characterized as pink bands in the RGB Suomi VIIRS. The image shows dust originating upwind of NMED monitoring locations near Ascension and Janos, Chihuahua.

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from high winds on extensive upwind undeveloped arid lands contributed significantly to the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.

MAY 20, 2019

The exceedance occurred on May 20, 2019; hereafter referred to as the "exceedance day" at monitor sites in Dona Ana County. The relevant monitors and exceedances are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Anthony	35-013-0016-81102-1	246 µg/m^3
Desert View	35-013-0021-81102-2	362 µg/m^3
Chaparral	35-013-0021-81102-2	218 µg/m^3

MAY 20, 2019, EXCEEDANCE DAY, Clear Causal Relationship.
In the demonstration, the NMED indicates "[a]s the event unfolded, the wind blew from the southwest throughout the border region."

Table 8-2 on page 84 shows hourly wind speed data from the Deming, Desert View, and Chaparral monitor sites for certain hours on the exceedance day. Wind speeds at the Deming and Chaparral site exceeded 25 mph for multiple hours. Wind speeds Desert View approached the 25 mph threshold, with wind gusts exceeding 25 mph throughout the day.

Figure 8-3 on page 86 shows hourly wind speeds at Chaparral, Anthony, Desert View, Deming, La Union, Santa Teresa, and West Mesa on the exceedance day. Wind speeds at West Mesa, Chaparral, Deming, La Union, and Santa Teresa sites exceeded the threshold for multiple hours. Anthony and Desert View sites approached the threshold throughout the day.

Figures 8-6 through 8-7 on pages 89 and 90 shows the frequency distribution of wind direction correlated with PM_{10} data at the Chaparral, Desert View, and Anthony monitor sites when the PM_{10} measurements exceeded 150 µg/m^3 on the exceedance day. The winds were from the west southwest predominately.

On the exceedance day, AQS data shows the hourly wind speeds at the Chaparral site exceeded 25 mph for multiple hours with a measurement of 31 mph recorded.

On the exceedance day, AQS data shows the hourly wind speeds at the Santa Teresa site approached and exceeded 25 mph for multiple hours with a measurement of 27 mph recorded. Santa Teresa is about 6 miles west of Desert View.

On the exceedance day, AQS data shows the hourly wind speeds at the La Union site approached and exceeded 25 mph for multiple hours with a measurement of 28 mph recorded. La Union is about 5 miles south of the Anthony monitor.

On the exceedance day, AQS data shows the hourly wind speeds at the Ivanhoe and Socorro monitor sites in El Paso County was between 15-23 mph. Chamizal and Ascarate monitor sites in El Paso County had winds that exceeded 25 mph for multiple hours. Chamizal is approximately 18.5 miles from the Anthony monitoring site.

The Deming airport is about 74 miles northwest of Desert View. On the exceedance day winds at the airport exceeded 25 mph for multiple hours. During this period, the winds were from the southwest, shifting to the northwest after 3:00 pm, gusts reached 47 mph, and weather type included smoke and haze (Weather Type HZ:7|FU|HZ). The overall weather type for the exceedance day was clear.

The Las Cruces airport is about 27 miles northwest of Anthony and 40 miles north of Desert View. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. During this period, the winds were from the southwest and gusts reached 53 mph. The overall weather type for the exceedance day was clear (Weather Type CLR).

The El Paso airport is about 11 miles east of the Desert View site. On the exceedance day winds at the airport exceeded 25 mph for multiple hours. During this period, the winds were from the southwest and gusts reached 55 mph, and weather type included “blowing” and “widespread dust” (Weather Type BL:5, DU:5). The overall weather type for the exceedance day was scattered clouds (Weather Type SCT).

Figure 8-16 on page 94 shows the 24-hours PM_{10} measurements from the Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites on the exceedance day. The measurements at Desert View, Anthony, and Chaparral exceeded the NAAQS level of 150 $\mu g/m^3$. West Mesa, Deming, and Holman measurements where above average levels: West Mesa 51 $\mu g/m^3$ (average 16 $\mu g/m^3$), Holman 58 $\mu g/m^3$ (average 27 $\mu g/m^3$), and Deming 124 $\mu g/m^3$ (average 23 $\mu g/m^3$).

The PM_{10} manual monitors in El Paso County did not sample on the exceedance day. The PM_{10} continuous monitor at the Chamizal site in El Paso County reports non-NAAQS comparable data. On the exceedance day, the Chamizal 24-hours measurement of 83 $\mu g/m^3$ is above the site average of 25 $\mu g/m^3$. Chamizal is about 8 miles east of Desert View.

Figure 8-4 on page 87 shows a satellite image captured with the VIIRS sensor on the Suomi NPP NOAA-20 weather satellite. The image shows dust plumes originating in northern Chihuahua, MX.

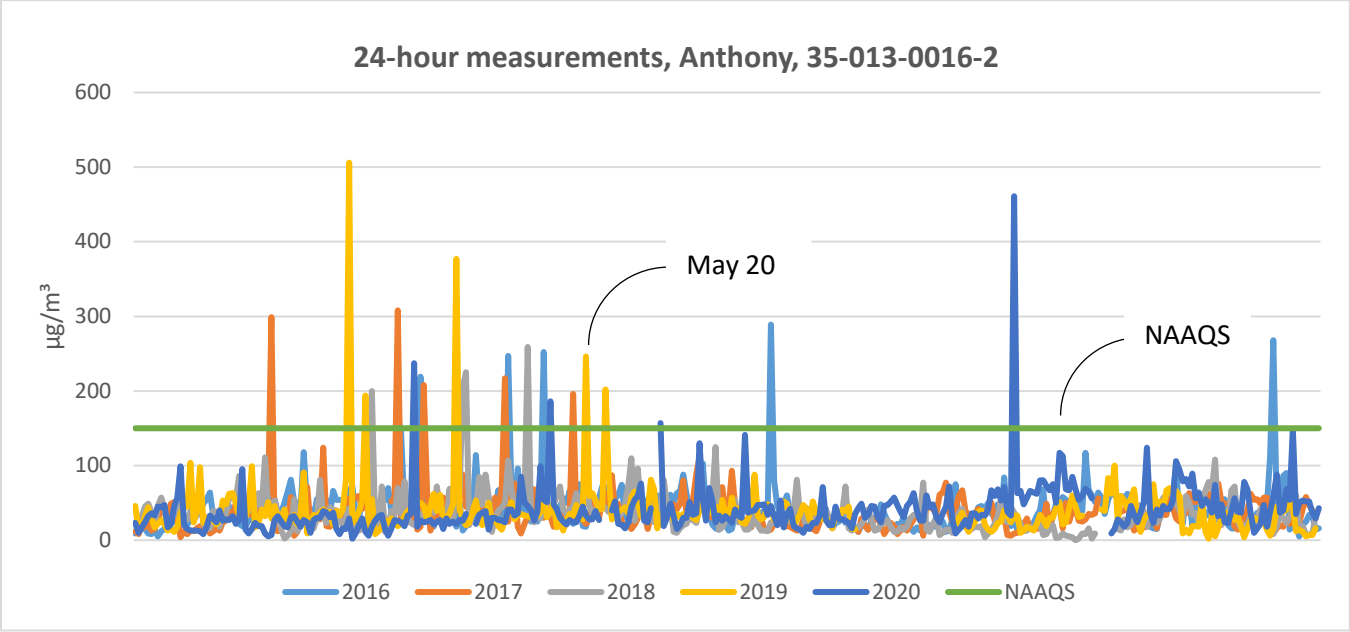
The narrative on page 88 discusses that the NWS issued a Wind Advisory and a Blowing Dust Advisory for parts of southwestern New Mexico and West Texas on the exceedance day from noon till 9:00 pm.

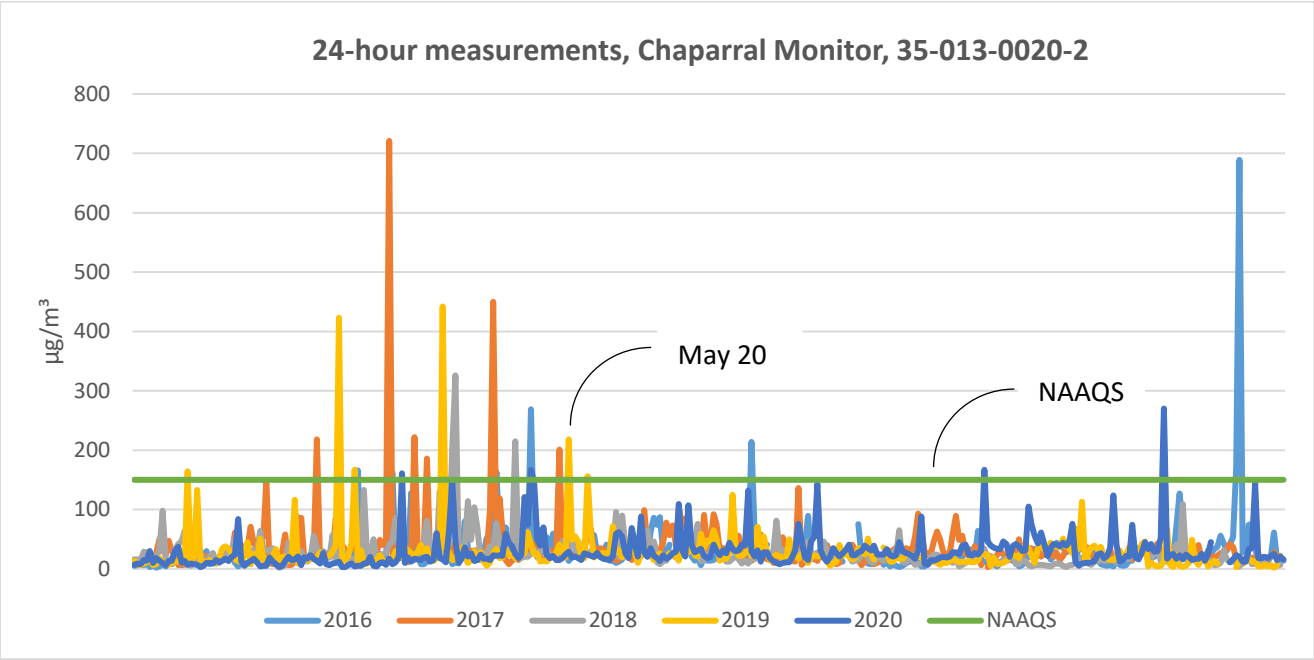
Figure 8-9 on page 90 shows the hourly PM_{10} measurements from Chaparral, Anthony, Desert View, Deming, Holman, and West Mesa on the exceedance day. The elevated PM_{10} measurements at the sites correlate with elevated wind speeds shown in Figure 8-3.

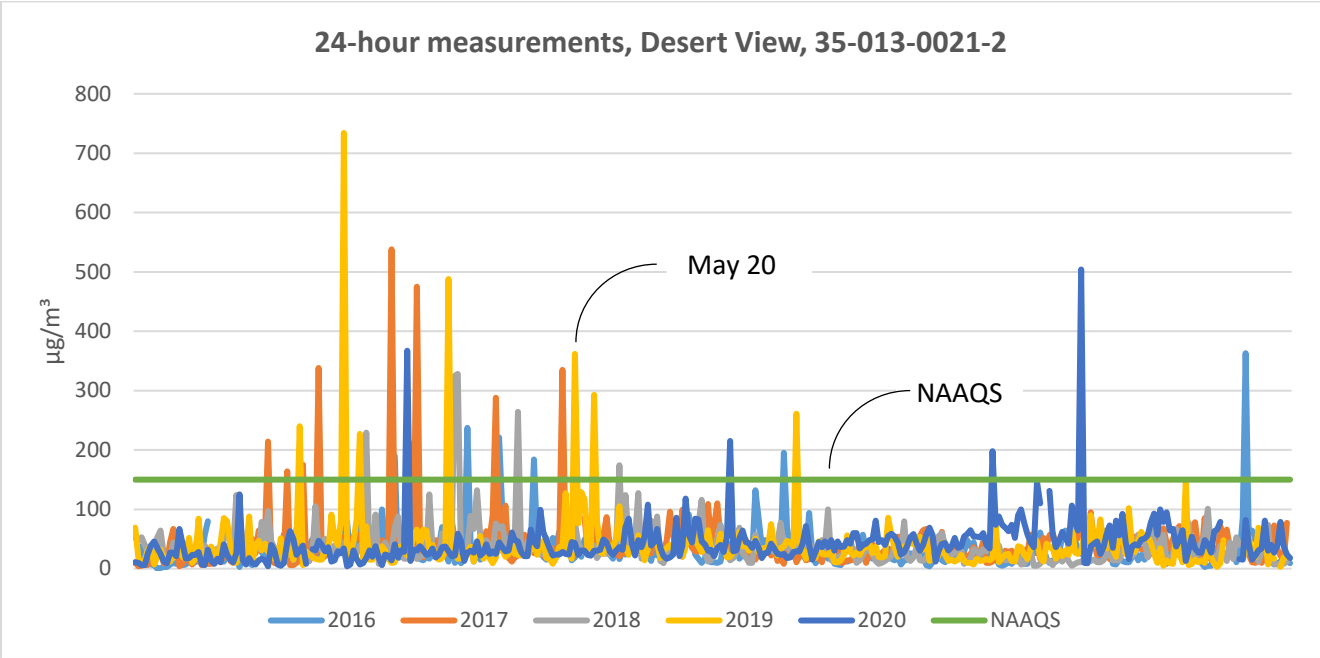
Figures 8-10 through 8-12 on pages 91 and 92 show hourly wind speed and PM_{10} measurements at the Anthony, Chaparral, and Desert View monitor sites on the exceedance day. The elevated PM_{10} measurements at the sites correlate with the elevated wind speeds.

There are independent weather reports, evidence of blowing dust, and hourly wind data which showed that on the exceedance day the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM_{10} measurements at the monitors correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedance are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM_{10} exceedance at the monitors on the exceedance day.

MAY 20, 2019, EXCEEDANCE DAY, analyses comparing event influenced concentrations to other concentrations at the monitor.
The graphs below reflect the 24-hours monitor data from 2016 to 2020 for the Anthony, Chaparral, and Desert View sites. The sites measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurements on the exceedance day are above the 99th percentile of historical site data.







Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM_{10} at these monitors indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the monitored exceedances and the wind incident on the exceedance day.

MAY 20, 2019, EXCEEDANCE DAY, not reasonably controllable or preventable.
See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

Not Reasonably Controllable, Anthropogenic Sources - The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at the Chaparral site exceeded the threshold on the exceedance day. Desert View and Anthony monitor sites approached the threshold. The Anthony proxy monitor of La Union exceeded 25 mph winds for multiple hours.

See discussion about the February 22, 2019, exceedance for information about the location of the Desert View site in the city of Sunland Park. During the hours of highest impact on the monitor, the winds were from the southwest. The Desert View site is located on the western city limits. The Texas and Mexico borders are about 1 mile to the northeast, and 3/4 of a mile to the south of Desert View, respectively. To the southeast of Desert View, there are undeveloped lands to the Mexico border. To the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border.

See discussion about the January 18, 2019, exceedance for information about the location of the Chaparral site. During the hours of highest impact on the monitor, the winds were from the southwest. The Texas and Mexico borders are about 2.5 miles to the south, and 24 miles to the southwest of the Chaparral monitor site, respectively. Residential areas or potential anthropogenic upwind sources extend to about 2 miles west and south of the Chaparral site. Beyond the residential areas to the south there are about 7 miles of undeveloped lands and then the northern suburbs of El Paso. Beyond the residential areas to the west, with a few exceptions such as the city of Anthony, there are undeveloped lands to the Arizona border. Residential areas extend to about 1 mile southwest of the Chaparral site. Further to the southwest, there are lands in the state of Texas, the unincorporated La Union community in New Mexico, and undeveloped lands to the Mexico border.

See discussion about the March 8, 2019, exceedance for information about the location of the Anthony site. During the hours of highest impact on the monitor, the winds were from the southwest. The Anthony city limits are about 0.5 miles west of the Anthony monitor site. Beyond the city to the west undeveloped lands exist to the Arizona border. The Texas and Mexico borders are about 700 feet to the south and 20 miles to the southwest of the Anthony site, respectively.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads, and storage piles. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMEDS Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state's jurisdiction.

Portions of the city of Anthony were upwind of the Anthony and Chaparral sites on the exceedance day. The demonstration provides information on the Anthony SIP. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM_{10} exceedances, the EPA waived the area

attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance day, however, because of the waiver the NMED is not obligated to revise the SIP. See 40 CFR 50.14(b)(8)(v). Therefore, during the demonstration review, the EPA considered the Anthony SIP limited controls, e.g., treat and pave area roads as funding allows, as part of the review of whether anthropogenic sources were reasonably controlled on the exceedance day. Appendix C of the demonstration provides a letter from the city of Anthony dated September 18, 2019, that reports on the status of local dust control efforts including road paving.

Portions of the Dona Ana County were upwind of Anthony, Desert View, and Chaparral on the exceedance day. The demonstration provides information on the Dona Ana County Dust ordinance. The county ordinance applies in unincorporated communities in the county. The ordinance requires a plan for dust control on disturbed sites. The controls would have applied to any upwind disturbed sites in the county or the unincorporated communities of Chaparral and La Union on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memorandums of understandings exist between NMED and local municipals for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Anthony, Desert View, and Chaparral.

Desert View is located about 3/4 of a mile north of the Mexico border. The Mexico border is about 24 miles southwest of Chaparral. Mexico was upwind of Anthony, Desert View, and Chaparral on the exceedance day. Figure 8-5 on page 88 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the models with the trajectories ending at the “start” of the exceedance day wind event, at the Desert View monitor site location. The results show that the winds could have been in Chihuahua, Mexico prior to reaching downwind monitoring sites in southern New Mexico and El Paso, TX. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from high winds on extensive upwind undeveloped arid lands contributed significantly to the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.

MAY 26, 2019

The exceedances occurred on May 26, 2019; hereafter referred to as the “exceedance day” at monitor sites in Dona Ana County. The relevant monitor and exceedance are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Anthony	35-013-0016-81102-1	202 $\mu g/m^3$
Chaparral	35-013-0020-81102-2	156 $\mu g/m^3$
Desert View	35-013-0021-81102-2	293 $\mu g/m^3$

MAY 26, 2019, EXCEEDANCE DAY, Clear Causal Relationship.
In the demonstration, the NMED states "[a]s the event unfolded, the wind blew from the southwest throughout the border region."

Table 9-2 on page 98 shows hourly wind speed measurements from the Anthony, Desert View, and Chaparral monitor sites for certain hours on the exceedance day. The table shows hourly wind speeds exceeded 25 mph for one hour at Chaparral. The maximum hourly wind speed measured at Anthony was 20 mph. The maximum hourly wind speed measured at Desert View was 21 mph. Maximum wind gusts of 37, 41 and 38 mph were measured at the Chaparral, Anthony, and Desert View sites, respectively.

Figure 9-5 through 9-7 on pages 101 and 102 shows the frequency distribution of wind direction correlated with PM_{10} data at the Anthony, Chaparral and Desert View sites when PM_{10} concentrations exceeded 150 $\mu g/m^3$ on the exceedance day. The winds were from the southwest.

Figure 9-3 on page 99 shows hourly wind speeds at Deming, Anthony, Desert View, Chaparral, La Union, Santa Teresa, and West Mesa on the exceedance day. The winds at Deming, West Mesa, Santa Teresa, Chaparral, and La Union exceeded 25 mph for at least one hour. The winds at Anthony and Desert View approached but did not reach 25 mph.

On the exceedance day, AQS data shows the hourly wind speeds at the Santa Teresa and La Union sites exceeded 25 mph for multiple hours. Santa Teresa is approximately 6 miles west from the Desert View monitoring site, while La Union is approximately 5 miles south of the Anthony monitoring site.

On the exceedance day, AQS data shows the hourly wind speeds at the Chamizal and Ascarate monitor sites in El Paso County exceeded 25 mph for multiple hours.

The Las Cruces airport is about 40 miles north of Desert View. On the exceedance day winds at the airport exceeded 25 mph for multiple hours. During this period, the winds were from the south southwest and gusts reached 54 mph. From about 2:30 pm to 3:15 pm the weather type for the exceedance day was "Haze and smoke" (Weather Type HZ:7|FU). The overall weather type for the day was clear (Weather Type CLR).

The El Paso airport is about 11 miles east of the Desert View site. On the exceedance day winds at the airport exceeded 25 mph for multiple hours. During this period, the winds were from west southwest to west northwest, gusts reached 46 mph, and weather type was "blowing" and "widespread dust" (Weather Type BL:5|DU:5). The overall weather type for the exceedance day was "Dust, blowing dust, blowing sand or…obstruction" (Weather Type DU).

The Deming airport is about 74 miles northwest of Desert View. On the exceedance day winds at the airport exceeded 25 mph for multiple hours in the afternoon During this period, the winds were from south southwest to west, gusts reached 53 mph, and weather type was "Haze and smoke" (Weather Type HZ:7|FU|HZ). The overall weather type for the day was clear (Weather Type CLR).

Figure 9-9 on page 87 shows the 24-hour PM_{10} measurements from Chaparral, Anthony, Desert View, Deming, Holman, and West Mesa on the exceedance day. Desert View, Anthony, and Chaparral

exceeded the NAAQS level of 150 µg/m^3 and the other measurements were above average: West Mesa 93 µg/m^3 (average 16 µg/m^3), Deming 148 µg/m^3 (average 23 µg/m^3) and Holman 117 µg/m^3 (average 27 µg/m^3)

The PM_{10} manual monitors in El Paso County did not sample on the exceedance day. The PM_{10} continuous monitor at the Chamizal site in El Paso County reports non-NAAQS comparable data. On the exceedance day, the Chamizal 24-hours measurement of 131 µg/m^3 is above the site average of 25 µg/m^3.

The narrative on page 100 explains that satellite imagery was not available during the event due to the development of dense cloud cover.

The NWS issued a Wind Advisory and a Blowing Dust Advisory for the event date. These were in place for southwestern New Mexico and west Texas. Details state "Winds gusting around 40 to 50 mph…blowing dust will reduce visibility to less than a half mile…".

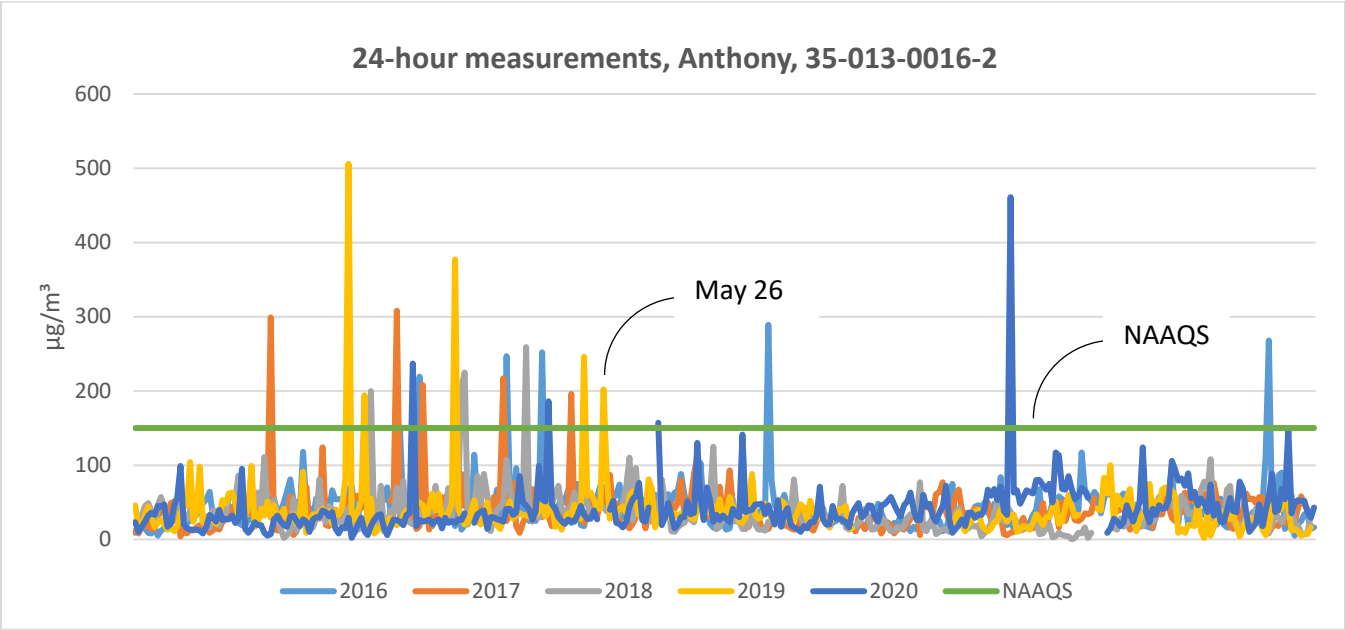
Figure 9-8 on page 103 shows the hourly PM_{10} measurements from Chaparral, Anthony, Desert View, Deming, Holman, and West Mesa on the exceedance day. elevated PM_{10} measurements correlate with elevated wind speeds shown in Figure 9-3.

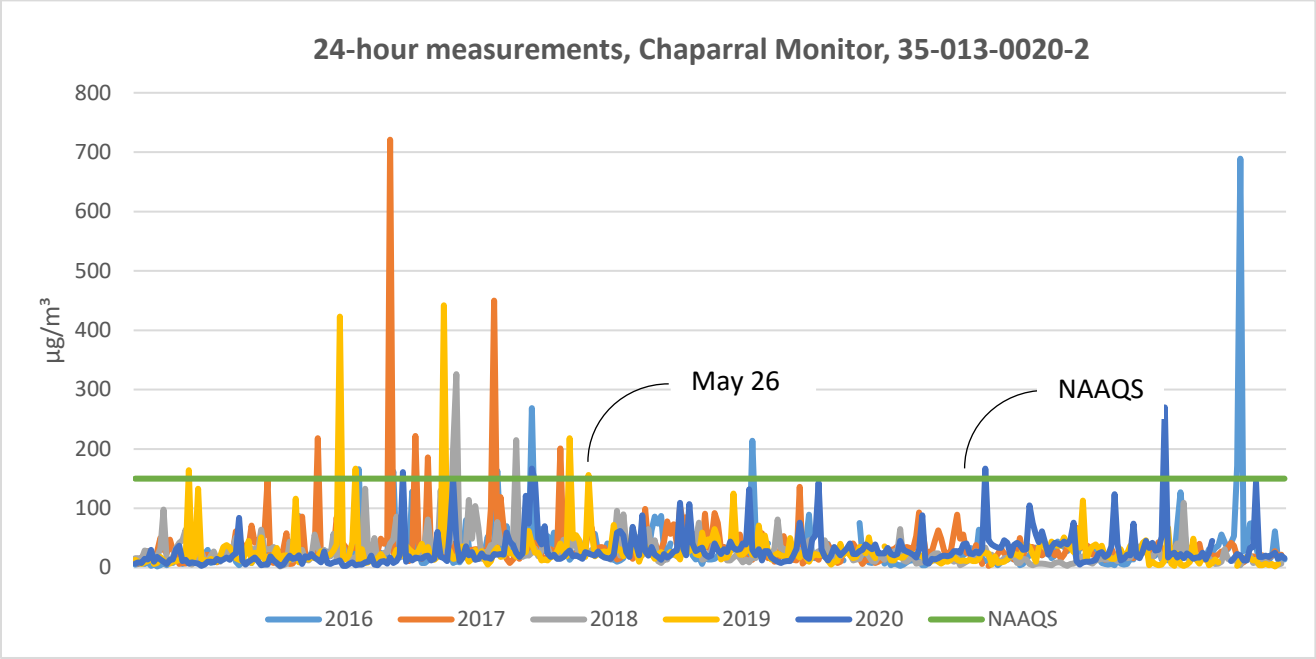
Figures 9-9 through 9-11on pages 103 and 104 shows hourly wind speeds and PM_{10} measurements at Anthony, Chaparral, and Desert View on the exceedance day. The elevated PM_{10} measurements correlate with elevated wind speeds.

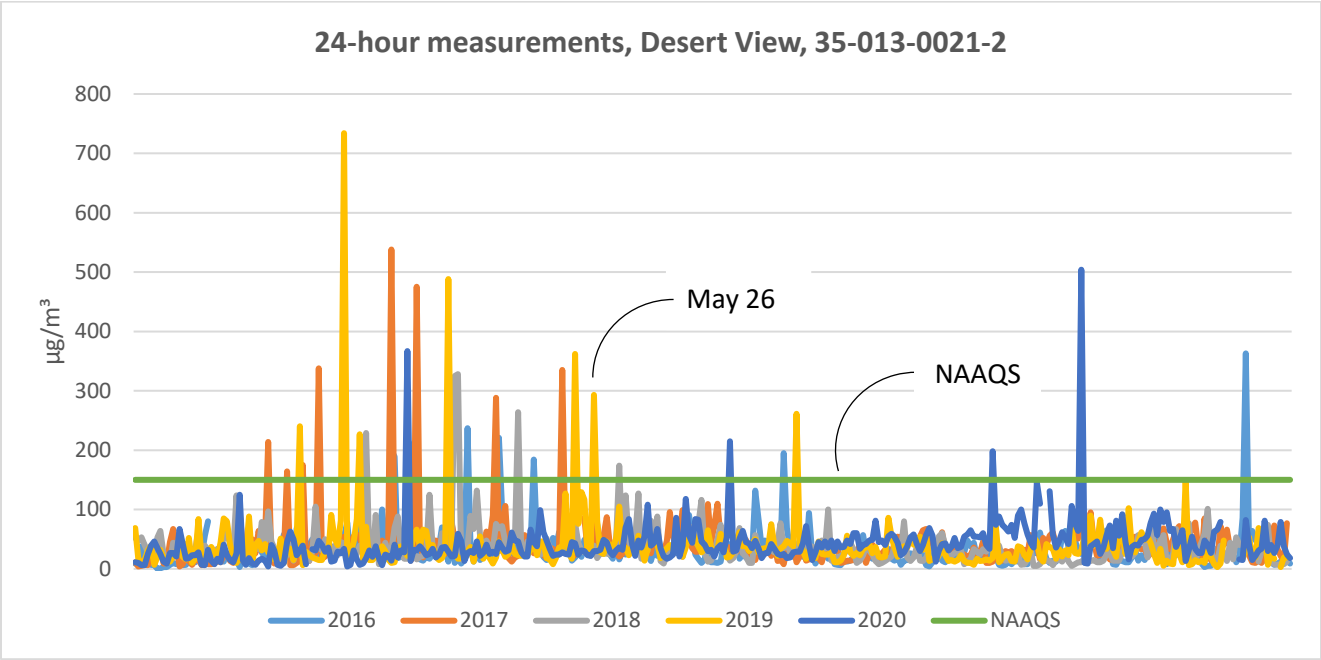
There are independent weather reports, evidence of blowing dust, and hourly wind data which showed that on the exceedance day the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM_{10} measurements at the monitors correlated with elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedances are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM_{10} exceedances at the monitors on the exceedance day.

MAY 26, 2019, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitor.

The site measurements for the days surrounding the exceedance day did not approach the NAAQS level, except for May 20th, which was another exceedance day at the Anthony site. The measurements on the exceedance day are above the 95th percentile of historical site data. The graph below reflects the 24-hours monitor data from 2016 to 2020 for the Anthony, Chaparral, and Desert View sites.


24-hour measurements, Anthony, 35-013-0016-2
600
500
400
300
200
100
0
µg/m³
May 26
NAAQS
2016
2017
2018
2019
2020
NAAQS


24-hour measurements, Chaparral Monitor, 35-013-0020-2
800
700
600
500
400
300
200
100
0
µg/m³
May 26
NAAQS
2016
2017
2018
2019
2020
NAAQS



Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM_{10} at the monitors indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the monitored exceedance and the wind incident on the exceedance day.

MAY 26, 2019, EXCEEDANCE DAY, not reasonably controllable or preventable.
See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

Not Reasonably Controllable, Anthropogenic Sources - The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds measured at Chaparral exceeded the threshold on the exceedance day. While the winds at the Anthony and Desert View sites did not exceed the 25 mph threshold, they did approach it and had hourly gust over 25 mph. The Anthony MET proxy site La Union did exceed 25 mph for multiple hours and the Santa Teresa site near Desert View did exceed the threshold for multiple hours. The winds were from the southwest.

See discussion about the February 22, 2019, exceedance for information about the location of the Desert View site in the city of Sunland Park. During the hours of highest impact on the monitor, the winds were from the southwest. The Desert View site is located on the western city limits. The Texas and Mexico borders are about 1 mile to the northeast, and 3/4 of a mile to the south of Desert View, respectively. To the southeast of Desert View, there are undeveloped lands to the Mexico border. To the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border.

See discussion about the January 18, 2019, exceedance for information about the location of the Chaparral site. During the hours of highest impact on the monitor, the winds were from the southwest.

The Texas and Mexico borders are about 2.5 miles to the south, and 24 miles to the southwest of the Chaparral monitor site, respectively. Residential areas or potential anthropogenic upwind sources extend to about 2 miles west and south of the Chaparral site. Beyond the residential areas to the south there are about 7 miles of undeveloped lands and then the northern suburbs of El Paso. Beyond the residential areas to the west, with a few exceptions such as the city of Anthony, there are undeveloped lands to the Arizona border. Residential areas extend to about 1 mile southwest of the Chaparral site. Further to the southwest, there are lands in the state of Texas, the unincorporated La Union community in New Mexico, and undeveloped lands to the Mexico border.

See discussion about the March 8, 2019, exceedance for information about the location of the Anthony site. During the hours of highest impact on the monitor, the winds were from the southwest. The Anthony city limits are about 0.5 miles west of the Anthony monitor site. Beyond the city to the west undeveloped lands exist to the Arizona border. The Texas and Mexico borders are about 700 feet to the south and 20 miles to the southwest of the Anthony site, respectively.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMEDS Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state's jurisdiction.

Portions of the city of Anthony were upwind of the Anthony and Chaparral sites on the exceedance day. The demonstration provides information on the Anthony SIP. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM_{10} exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance day, however, because of the waiver the NMED is not obligated to revise the SIP. See 40 CFR 50.14(b)(8)(v). Therefore, during the demonstration review, the EPA considered the Anthony SIP limited controls, e.g., treat and pave area roads as funding allows, as part of the review of whether anthropogenic sources were reasonably controlled on the exceedance day. Appendix C of the demonstration provides a letter from the city of Anthony dated September 18, 2019, that reports on the status of local dust control efforts including road paving.

Portions of the Dona Ana County were upwind of Anthony, Desert View, and Chaparral on the exceedance day. The demonstration provides information on the Dona Ana County Dust ordinance. The county ordinance applies in unincorporated communities in the county. The ordinance requires a plan for dust control on disturbed sites. The controls would have applied to any upwind disturbed sites in the county or the unincorporated communities of Chaparral and La Union on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memorandums of understandings exist between NMED and local municipals for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event. During the subject widespread high wind event,

however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Anthony, Desert View, and Chaparral.

Figure 9-4 on page 101 and the narrative on page 100 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the model with the trajectories ending at the "start" of the wind event, at Desert View. The results show the winds may have originated in northern Mexico and travelled into southern New Mexico and El Paso, TX. Any upwind anthropogenic sources are outside the state of New Mexico's jurisdiction. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the widespread nature of the weather event, and the likelihood that emissions from high winds on extensive upwind undeveloped arid lands contributed significantly to the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.

JULY 29, 2019

The exceedances occurred on July 29, 2019; hereafter referred to as the "exceedance day" at a monitor site in Dona Ana County. The relevant monitor and exceedance are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Desert View	35-013-0021-81102-2	261 $\mu g/m^3$

MAY 26, 2019, EXCEEDANCE DAY, Clear Causal Relationship.
In the demonstration, the NMED states "[a]s the event unfolded, the wind blew from the southwest throughout the border region."

Table 10-2 on page 109 shows hourly wind speed measurements from the Anthony, Desert View, and Chaparral monitor sites for certain hours on the exceedance day. The table shows hourly wind speeds did not exceeded 25 mph at Desert View. Maximum wind gusts of 30 mph were measured at the Desert View site, respectively.

Figure 10-7 on page 114 shows the frequency distribution of wind direction correlated with PM_{10} data at the Desert View site when PM_{10} concentrations exceeded 150 $\mu g/m^3$ on the exceedance day. The winds were from the south southwest.

Figure 10-3 on page 114 shows hourly wind data at Anthony, West Mesa, Chaparral, Holman, Desert View, Santa Teresa, La Union, and Deming monitor sites on the exceedance day. The winds at most of the sites started and were elevated near midnight on the exceedance day. While the winds at Desert View were elevated, other sites showed slight wind elevations as well.

On the exceedance day, AQS data shows the hourly wind speeds at the Santa Teresa monitor site reached a peak of 12 mph at midnight. Santa Teresa is about 6 miles west of Desert View.

On the exceedance day, AQS data shows the hourly wind speeds at the Van Buren (AQS ID 48-141-0693) and Chamizal (AQS 48-141-0044) monitoring sites from 01:00-2:00 am were between 12-19 mph. Both Van Buren and Chamizal are less than 8 miles to the northeast and east of Desert View, respectively. The monitor sites in El Paso County were not upwind of Desert View on the exceedance day.

The Las Cruces airport is about 40 miles north of Desert View. On the exceedance day the winds at the airport at the time of the exceedance were less than 10 mph. The winds were from the south sifting to the east later in the day and no gusts where reported. The overall weather type for the day was clear (Weather Type CLR).

The El Paso airport is about 11 miles east of the Desert View site. On the exceedance day the winds at the airport were less than 10 mph. The winds were from the west southwest, and no gusts were recorded. The overall weather type for the day was clear (Weather Type CLR). The only notable event was recorded around 11:15 pm on the 28th of July with a spike in wind speed to 24 mph with gusts at 31 and blowing dust and haze recorded for 45 minutes. (BL:5|DU:5|).

The Deming airport is about 74 miles northwest of Desert View. On the exceedance day winds at the airport were less than 10 mph and wind gusts were not recorded. The winds were shifting from east to west to south during the exceedance timeframe of midnight-2:00 am. The overall weather type for the day was clear (Weather Type CLR).

Figure 10-11on page 117 shows the 24-hours PM_{10} measurements from the Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites on the exceedance day. The 24hours PM_{10} measurement at the Desert View site was above the NAAQS level of 150 µg/m^3 at 261 µg/m^3. Other monitoring sites recorded measurements above their averages: Anthony 52 µg/m^3 (average 38 µg/m^3), Chaparral 50 µg/m^3 (average 27 µg/m^3), and West Mesa 30 µg/m^3 (average 16 µg/m^3).

Samples were not collected on the exceedance day from the El Paso County PM_{10} NAAQS comparable monitors.

The Chamizal site in El Paso County reports PM_{10} non-NAAQS comparable measurements. On the exceedance day, Chamizal recorded an average of 108 µg/m^3, above the average (25 µg/m^3). Chamizal is about 8 miles east of Desert View.

Figure 10-8 on page 115 shows hourly PM_{10} measurements Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. The largest spike in PM_{10} was between 01:00 am and 05:00 am. The elevated PM_{10} measurements correlate with elevated wind speeds shown on Figure 10-3 on page 111.

Figures 10-9 on page 116 shows the hourly wind speed and PM_{10} data at Desert View on the exceedance day. The elevated PM_{10} measurement correlates with the elevated wind speed.

The National Weather Service issued a Hazardous Weather Outlook for the event day. An excerpt from the Outlook stated: “outflow winds in excess of 40 mph and blowing dust”. These outflow winds generally accompany an outflow boundary that separates thunderstorm cooled air and the surrounding

air. The boundary can cause localized wind gusts along it and may persist for 24 hours or more after the thunderstorms have moved out of the area.

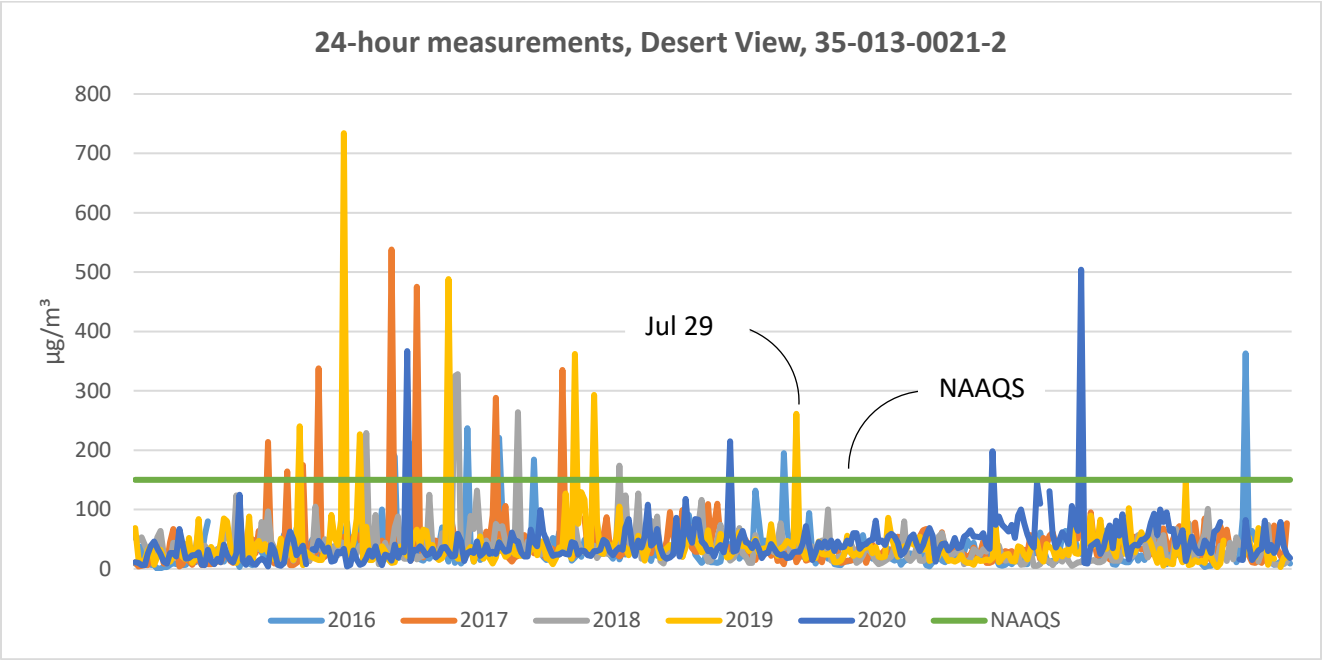
Figure 10-4 on page 111 shows meteorological data from July 28, 2019, with wind speeds elevated sharply to 24 mph and gusts at 31 mph at 11:00 pm. The data also shows conditions as having "Blowing Dust/Windy." These conditions lasted for 40 total sustained minutes.

On the event day an image captured by the MODIS Aerosol Optical Depth Aqua satellite shows dust plumes originating upwind of NMED's monitoring site near Ascension and Janos, Chihuahua. The dust plumes appear to be limited to Mexico, orientated in a northwest position, and traveling toward El Paso and NMED's monitoring site at the time that the image was captured.

There are independent weather reports, evidence of satellite images of dust plumes and wind data which showed that on the exceedance day the area experienced a localized wind incident with entrained particulate matter. The presence of an outflow boundary that moved through the area could have produced localized wind gusts that may have been difficult to capture by the monitoring station. The demonstration showed that elevated hourly PM_{10} measurements at the monitors correlated with slightly elevated wind speeds measured on the exceedance day. The likelihood that anthropogenic sources caused the exceedances are discussed below in the Not Reasonably Controllable criterion. Based on the EPA review of the clear causal relationship criterion using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM_{10} exceedances at the monitors on the exceedance day.

JULY 29, 2019, EXCEEDANCE DAY, analyses comparing event influenced concentrations to other concentrations at the monitor.

The graph below reflects the 24-hours monitor data from 2016 to 2020 for the Desert View site. The site measurements for the days surrounding the exceedance day did not approach the NAAQS level. The measurement on the exceedance day is above the 99th percentile of historical site data.



Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM_{10} at this monitor indicates a deviation from normal or typical concentrations occurred. This supports the clear causal relationship between the exceedance and the wind incident on the exceedance day.

JULY 29, 2019, EXCEEDANCE DAY, not reasonably controllable or preventable.
See discussion above for additional information on the requirements for the EPA review and analysis of this overall criteria.

Not Reasonably Controllable, Anthropogenic Sources – The 25-mph high wind threshold is the minimum wind speed capable of overwhelming reasonable controls on anthropogenic sources. As discussed previously for the clear causal criterion, hourly wind speeds at Desert View were elevated but did not exceed the threshold on the exceedance day. The winds at Desert View reached a maximum hourly wind speed of 16 mph, and there were gusts of wind speeds that reached 32 mph during the event. The presence of an outflow boundary that passed through the area during the elevated PM_{10} event had the potential to produce localized downward gusts that may not have been captured by the monitor. While the hourly wind speeds at Desert View did not reach the threshold, meteorological data from the El Paso International Airport showed a spike in wind speeds to 24 mph with gusts at 31 mph and Blowing dust/windy conditions around the time of the recorded elevated PM_{10} measurements at Desert View. Also, wind gusts during the elevated PM_{10} timeframe at Anthony and Chaparral were over 23 mph multiple times.

See discussion about the February 22, 2019, exceedance for information about the location of the Desert View site in the city of Sunland Park. During the hours of highest impact on the monitor, the winds were from the southwest. The Desert View site is located on the western city limits. The Texas and Mexico borders are about 1 mile to the northeast, and 3/4 of a mile to the south of Desert View, respectively. To the southeast of Desert View, there are undeveloped lands to the Mexico border. To the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. In an email dated April 4, 2022, the NMED states that if a source has a permit the terms are enforced which sets allowable emission rates. Any source not required to have a permit must maintain records to provide upon request. In addition, NMEDS Fugitive Dust Control Rule applies to Dona Ana and Luna Counties for land development greater than 1 acre and commercial or industrial bulk material handling or storage. The NMED also indicates no unusual sources were operational and point source emissions were constant before, during, and after the wind incident. The demonstration does not provide information about any specific potential anthropogenic sources, nor controls on the sources, on the exceedance day. The demonstration does, however, provide general information about controls for potential anthropogenic sources within the state's jurisdiction.

Portions of the Dona Ana County were upwind of Desert View on the exceedance day. The demonstration provides information on the Dona Ana County Dust ordinance. The county ordinance applies in unincorporated communities in the county. The ordinance requires a plan for dust control on disturbed sites. The controls would have applied to any upwind disturbed sites in the county or the unincorporated communities of Chaparral and La Union on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. NMED indicates that memorandums of understandings exist between NMED and local municipals for the implementation and enforcement of dust controls. Based on this, EPA can conclude that reasonable and acceptable controls were implemented during the event. During the subject localized high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Desert View.

Figure 10-6 on page 114 and the narrative on page 113 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectories. The NMED ran the model with the trajectories ending at the "start" of the wind event, at Desert View. The results show the winds may have originated in southern northern Mexico, New Mexico, and west Texas. The analysis shows support for the hypothesis that dust plumes originated in northern Mexico, west Texas, and southern New Mexico. Any upwind anthropogenic sources are outside the state of New Mexico's jurisdiction. The state is not required to address the reasonably controllable criteria for sources outside its jurisdiction, 40 CFR 50.14(b)(8)(vii).

Based on the limited scope of potential anthropogenic upwind sources within the state jurisdiction, the possible controls on the sources, the localized nature of the weather event, and the likelihood that emissions from elevated winds on extensive upwind undeveloped arid lands contributed significantly to the impacts, the demonstration showed that contributing anthropogenic activities were reasonably controlled on the exceedance day.