



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
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DALLAS, TEXAS 75270

Office of the Regional Administrator

December 20, 2019

James C. Kenney
Cabinet Secretary
New Mexico Environment Department
1190 Saint Francis Drive
Santa Fe, New Mexico 87502

Dear Secretary Kenney:

This letter responds to the New Mexico Environment Department (NMED) Exceptional Events Demonstrations, dated October 22, 2019, and received on November 14, 2019. The demonstrations request to exclude Particulate Matter less than or equal to 10 micrometers in diameter (PM₁₀) data associated with exceptional event claims on various dates during 2016. The NMED determined that high wind dust events caused exceedances of the PM₁₀ National Ambient Air Quality Standard level of 150 µg/m³ at the monitors and on the dates listed in the enclosure.

In 2016, the US Environmental Protection Agency revised the Exceptional Events Rule (EER) found in sections 40 CFR 50.14 and 40 CFR 51.930. See, "Treatment of Data Influenced by Exceptional Events," 81 FR 68216 (Oct. 3, 2016). After careful consideration of the information provided, the EPA concurs, based on the weight of evidence, that NMED has met the applicable exceptional event demonstration requirements in 40 CFR 50.14(a)(2) and (b)(5). In addition, the NMED has met the schedule and procedural requirements in section 50.14(c). The EPA has reviewed the documentations provided to demonstrate that the exceedances at the subject monitors during 2016 meet the criteria for an exceptional event under the EER. The basis for our concurrence is set forth in the enclosed technical support document. My staff will enter "concurrence flags" for these data into the EPA's Air Quality System (AQS) data repository.

The EPA concurrence is a preliminary step in the regulatory process for actions that may rely on the dataset containing the event-influenced data and does not constitute final agency action. If the EPA takes a regulatory action that is affected by exclusion of the subject data, the EPA will publish notice of its proposed action in the Federal Register. The EPA's concurrence letter and accompanying technical support document will be included in the record as part of the technical basis for that proposal. When the EPA issues that regulatory action, it will be a final agency action subject to judicial review.

If you have any questions or wish to discuss this matter further, please have your staff contact Ms. Frances Verhalen, Chief, Air Monitoring and Grants Section, (214) 665-2172.

Sincerely

A handwritten signature in blue ink, appearing to read "Ken McQueen". The signature is fluid and cursive, with a prominent initial "K" and a long, sweeping tail.

Ken McQueen
Regional Administrator

Enclosure

cc: Michael Baca, NMED

Technical Review of 2016 PM₁₀ Exceptional Event Demonstrations, dated October 22, 2019

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 Demonstrations hereafter referred to as “demonstrations,” were 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 to 10 micrometers in diameter (PM₁₀) 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. 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. Also, the air agency is 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 with “High Winds”, i.e., the “RJ” qualifier flags. The NMED submitted an initial notification to the EPA on July 16, 2018. The NMED solicited public input on the draft demonstrations from August 15, 2019, through September 17, 2019. 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 there was a clear causal relationship between the 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 the 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 exceedance.
- 5) Evidence the event was caused by human activity that is unlikely to recur or was a natural event
 - a) Pursuant 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)(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.

2016 PM₁₀ Exceptional Event Demonstrations, Dona Ana and Luna Counties, NM

Summary

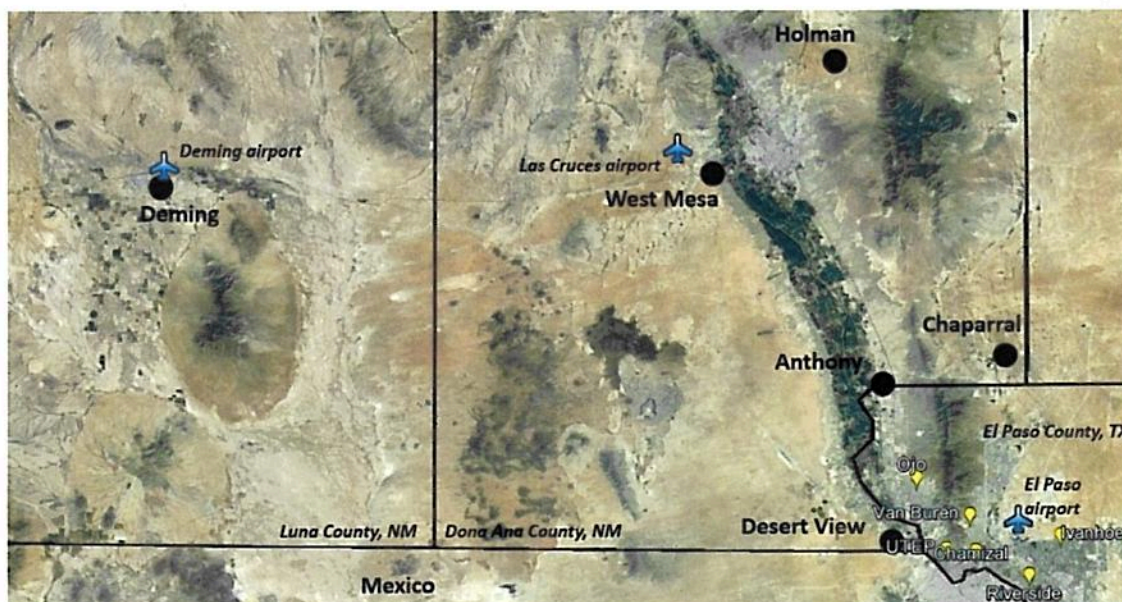
The NMED asserts that 11 wind events in calendar year 2016 caused 28 exceedances of the NAAQS level for PM₁₀ from 7 monitors on 6 sites in Luna and Dona Ana Counties, New Mexico. The measurements exceeded the NAAQS level of 150 micrograms per cubic meter (µg/m³) for PM₁₀ using 24 hours averaging time.

Exceedance Day	Anthony 35-013-0016 POC 2	Chaparral 35-013-0020	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
March 12		166 (POC 1)				
March 22	164		199			165
March 23		162 (POC 1)	189			
March 29	219		212			
April 15			237			
April 25	247	163 (POC 1) 225 (POC 2)	221			
May 6	252	230 (POC 1) 269 (POC 2)	184			
July 15	289	214 (POC 2)				278
July 24			195			
December 16		172 (POC 2)				
December 17	268	689 (POC 2)	363	209	246	266

Table of 2016 PM₁₀ Exceedances (µg/m³) 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 PM₁₀ NAAQS comparable data. The NMED operates a Manual (35-013-0016-81102-1, POC 1) and Continuous (35-013-0016-81102-2, POC 2) PM₁₀ monitor at the Anthony site. The 2016 exceedances were measured on the Continuous monitor. At Chaparral, NMED operated a Manual PM₁₀ monitor from 1996 through July 2016 (35-013-0020-81102-1). NMED started operating the existing Continuous PM₁₀ monitor at Chaparral during April 2016 (35-013-0020-81102-2).

The TCEQ operates 5 sites in adjacent El Paso County. Four report PM₁₀ 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, PM₁₀ 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. The EPA will consider a sustained wind speed based on shorter averaging times (e.g., 1 to 5 minutes) on a case-by-case basis. The 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 is prohibited from concurring on AQS flagged exceedances unless the Mitigation Plan requirement is 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 the NMED that Dona Ana and Luna Counties are subject to the Mitigation Plan requirement for PM₁₀ 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 General 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 demonstrations, 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 modeling using archived weather data is available at (ready.arl.noaa.gov/HYSPLIT_traj.php).

The 2018 Design Value for the West Mesa PM₁₀ monitor (AQS ID 35-013-0024-81102-2) is 0.7 “estimated exceedances.” An area with a Design Value of more than 1 “estimated exceedances” could be a candidate for a non-attainment designation under the PM₁₀ NAAQS. Therefore, the PM₁₀ exceedance NMED seeks to exclude measured at the West Mesa monitor on December 17, 2016, does not have regulatory significance under the Exceptional Events Rule. However, EPA chose to review the exceedance because the demonstration showed a widespread wind event occurred on the exceedance day which impacted multiple monitors in the area.

MARCH 12, 2016

The exceedance occurred on March 12, 2016, 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	35-013-0020-81102-1	166 µg/m ³

MARCH 12, 2016, 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 3-2 on page 9 shows hourly wind speed data at the Chaparral monitor site on the exceedance day. Wind speeds exceeded 25 mph for multiple hours. Gusts peaked at 46 mph.

Figure 3-8 on page 14 shows the frequency distribution of wind direction correlated with PM₁₀ data at Chaparral when PM₁₀ concentrations exceeded 150 µg/m³ on the exceedance day. Most of the winds were from the west.

Figure 3-5 on page 11 shows hourly wind speed data at the Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites, on the exceedance day. Wind speeds exceeded 25 mph for multiple hours at the sites, except for Anthony and Desert View.

On the exceedance day, AQS data shows the hourly wind speeds at the Santa Teresa monitor site (AQS ID 35-013-0022) exceeded 25 mph for an hour. Santa Teresa is close to the Mexico border 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 Chamizal, Ascarate, Skyline, and Van Buren monitor sites in El Paso County exceeded 25 mph for multiple hours. The hourly wind speeds at Socorro, Ojo, UTEP, and Ivanhoe peaked at 19, 20, 21, and 23 mph, respectively. Socorro, Ojo, Van Buren, Chamizal, and UTEP are about 10, 15, 16, 19, and 19 miles to the south southwest of Chaparral, respectively. Ascarate is 20 miles to the south of Chaparral. Ivanhoe and Socorro are about 18 and 26 miles south southeast of Chaparral, respectively.

The Las Cruces airport is about 34 miles northwest of Chaparral. On the exceedance day winds at the airport exceeded 25 mph for multiple hours. During this period, the winds were from the west. The weather type for the exceedance day was haze (Weather Type HZ).

The El Paso airport is about 18 miles south of Chaparral. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. During this period, the winds were from the west. The weather type for the exceedance day was “Dust, volcanic ash, blowing dust, blowing sand or...obstruction” (Weather Type DU).

The Deming airport is in Luna County about 80 miles northwest of Chaparral. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. During this period, the winds were from the west and gusts peaked at 57 mph. The weather type for the exceedance day was haze.

Figure 3-12 on page 17 shows the 24-hours PM₁₀ measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. The Chaparral 24-hours measurement exceeded the NAAQS level of 150 µg/m³. Other sites measurements approached the NAAQS level or were elevated: Desert View 141 µg/m³ (average 46 µg/m³), Anthony 129 µg/m³ (average 46 µg/m³), Holman 149 µg/m³ (average 28 µg/m³), Deming 154 µg/m³ (average 27 µg/m³) and West Mesa 98 µg/m³ (average 21 µg/m³).

The PM₁₀ manual monitors in El Paso County did not sample on the exceedance day. The continuous Chamizal monitor reported PM₁₀ levels at 137 µg/m³ on the exceedance day which approached the NAAQS level of 150 µg/m³. Chamizal is about 19 miles south of Chaparral.

Figure 3-6 on page 12 is a satellite image of dust plumes. One plume is approaching the El Paso area and the other plume is north of Chaparral. The image was captured at 11 AM MDT on the exceedance day. The plumes appear to be moving from the southwest to the northeast.

Figure 3-4 on page 10 and the narrative on page 13 show the National Weather Service (NWS) forecast a wind advisory on the exceedance day. The area of the watch covered the Chaparral site. The NWS predicted wind gusts in the range of 45-55 mph and visibility down to 1 mile.

Figure 3-10 on page 15 shows the hourly wind speed and PM₁₀ data at Chaparral on the exceedance day. The elevated PM₁₀ data correlate with the elevated wind speeds.

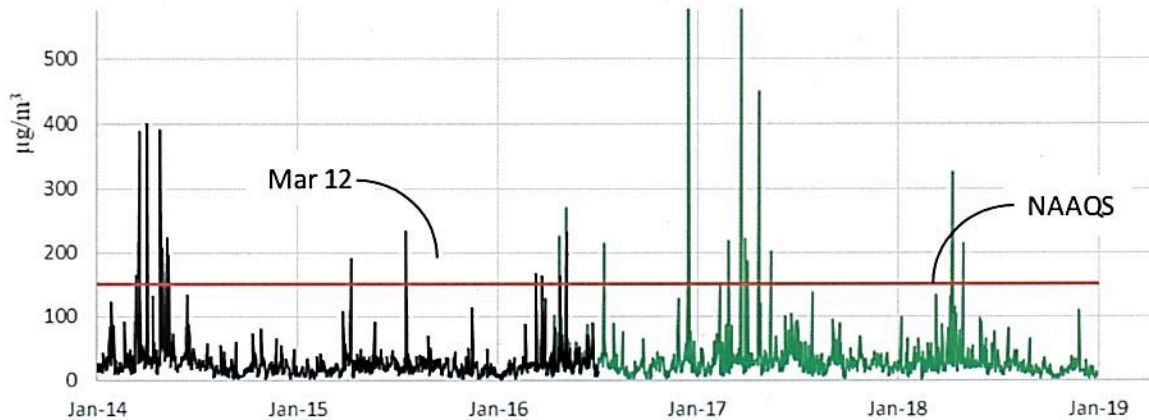
Figure 3-9 on page 15 shows the hourly PM₁₀ data at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming on the exceedance day. The elevated PM₁₀ data correlate with the elevated wind speeds shown in Figure 3-5.

There are independent weather reports, evidence of blowing dust, and hourly wind data that showed that on the exceedance day the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM₁₀ 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 using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM₁₀ exceedance at the monitor on the exceedance day.

MARCH 12, 2016, EXCEEDANCE DAY, Analyses comparing event concentrations to other concentrations at the monitor

The graph below shows monitor data from 2014 to 2019. The monitor data for the days surrounding the exceedance day did not approach the NAAQS level. The 24-Hours measurement on the exceedance day is above the 95th percentile of historical site data.

2016 PM₁₀ Exceptional Event Demonstrations, Dona Ana and Luna Counties, NM



24-Hours Measurements, Chaparral PM₁₀ Monitor, 35-013-0020-81102-1

Black is the Manual monitor at POC 1, and green is the Continuous monitor at POC 2

Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM₁₀ 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.

MARCH 12, 2016, 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.

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 Chaparral exceeded the threshold for multiple hours on the exceedance day. These elevated winds were from the west.

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 population 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 of the Chaparral site. 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.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. 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 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 PM₁₀ 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. 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. See 40 CFR 50.14(b)(8)(v). 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 Chaparral on the exceedance day. The Dona Ana County ordinance requires a plan for disturbed site dust controls. As an unincorporated area in the county, the ordinance applied in Chaparral. The controls required by the ordinance would have been used on any disturbed sites active on the exceedance day which were in upwind areas of the county or Chaparral community. The NMED indicates the implementation and enforcement of any controls occur at the local level. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Chaparral.

Figure 3-7 on page 13 shows the results of a NOAA HYSPLIT Model 6 hours backward trajectory. The NMED ran the model with the trajectories ending at the “start” of the exceedance day wind event, at the Chaparral location. The results show that the winds could have been in Texas and Mexico prior to reaching Chaparral. Upwind anthropogenic sources in Texas and Mexico 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.

MARCH 22, 2016

The exceedances occurred on March 22, 2016, hereafter referred to as the “exceedance day,” at monitor sites in Dona Ana and Luna Counties. The monitors and exceedances are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Anthony	35-013-0016-81102-2	164 µg/m ³
Desert View	35-013-0021-81102-2	199 µg/m ³
Deming	35-029-0003-81102-2	165 µg/m ³

MARCH 22, 2016, 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 21 provides hourly wind speed data from the Anthony, Desert View, and Deming monitor sites, on the exceedance day. Winds at Deming exceeded 25 mph for multiple hours. The winds at Desert View and Anthony reached a maximum one-hour wind speed of 21 mph and 24 mph, respectively. The hourly wind speeds at Desert View and Anthony did not reach the threshold.

Figures 4-11 through 4-13 on pages 28 and 29 show the frequency distribution of wind direction correlated with PM₁₀ data at Anthony, Desert View, and Deming when PM₁₀ concentrations exceeded 150 µg/m³ on the exceedance day. Most of the winds were from the west southwest.

Figure 4-5 on page 23 shows hourly wind speed data at the Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites, on the exceedance day. The winds exceeded 25 mph for multiple hours at the sites, except for Anthony and Desert View.

On the exceedance day, AQS data shows the hourly wind speeds at Santa Teresa peaked at 23 mph. The winds at Santa Teresa exceeded 25 mph for 5 minutes at 4:55 PM. Santa Teresa is about 6 miles west of Desert View and 16 miles southwest of Anthony.

On the exceedance day, AQS data shows the hourly wind speeds at the Chamizal, Ascarate, Skyline, and Van Buren monitor site in El Paso County exceeded 25 mph for multiple hours. The hourly wind speeds at Socorro, Ojo, UTEP, and Ivanhoe peaked at 19, 21, 20, and 23 mph. Skyline, Van Buren, Chamizal, and Ascarate are about 13, 15, 18, and 21 miles to the southeast of Anthony, respectively. Ojo is about 10 miles south of Anthony.

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 west southwest.

The El Paso airport is about 18 miles southeast of Anthony and 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. The weather type for the exceedance day was “Dust, volcanic ash, blowing dust, blowing sand or...obstruction” (Weather Type DU).

The Deming airport is in Luna County about 68 miles northwest of Anthony and 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. Gusts peaked at 43 mph. The weather type for the exceedance day was “smoke or haze” (Weather Type HZ).

Figure 4-21 on page 34 shows the 24-hours PM₁₀ measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. The Anthony, Desert View, and Deming 24-hours measurement exceeded the NAAQS level of 150 µg/m³. Other sites measurements approached the NAAQS level or were elevated: Chaparral 107 µg/m³ (average 36 µg/m³), Holman 89 µg/m³ (average 28 µg/m³), and West Mesa 41 µg/m³ (average 21 µg/m³).

The PM₁₀ manual monitors in El Paso County did not sample on the exceedance day. The Chamizal site, however, reports continuous PM₁₀ measurements which are non-NAAQS comparable. On the exceedance day, the Chamizal site reported PM₁₀ levels at 187 µg/m³ which is above the NAAQS level of 150 µg/m³.

Figure 4-6 on page 24 is a satellite image of a dust plume over the El Paso area, including the Anthony and Desert View monitor sites. The image was captured at 11 AM MDT on the exceedance day. The plume appears to be moving from the southwest to the northeast.

Figure 4-7 on page 25 are images of blowing dust on the exceedance day. The images were taken near “I-10 west of Lordsburg, NM...” Lordsburg is about 55 miles west of Deming. The images are accompanied with text from a March 28, 2016, blog posted by a state Climatologist. The text states the cameras along I-10 recorded “time of near-zero visibility” during the afternoon.

Figure 4-4 on page 22 and the narrative on page 26 show the NWS forecast a wind advisory on the exceedance day from noon on Tuesday March 22, i.e., the exceedance day, to 6 AM on Wednesday March 23. The NWS predicted wind in the range of 35-45 mph, gusts up to 60 mph, and poor visibility due to blowing dust.

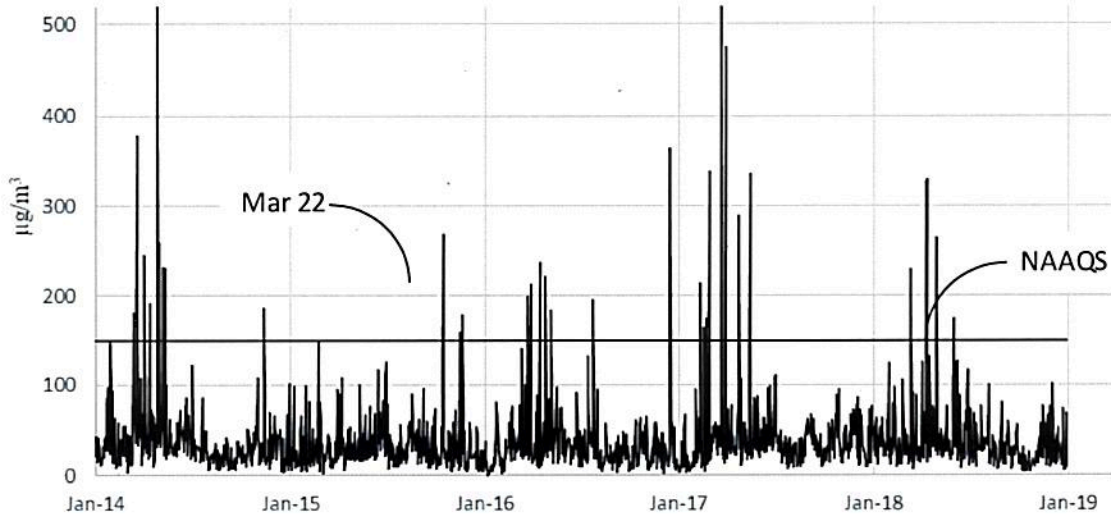
Figures 4-15, 4-16 and 4-17 on pages 30 and 31 show the hourly wind speed and PM₁₀ data at Anthony, Desert View, and Deming, on the exceedance day. The elevated PM₁₀ measurements correlate with the elevated wind speeds.

Figure 4-14 on page 30 shows the hourly PM₁₀ data at the Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites, on the exceedance day. The elevated PM₁₀ measurements correlate with elevated wind speeds shown in Figure 4-5.

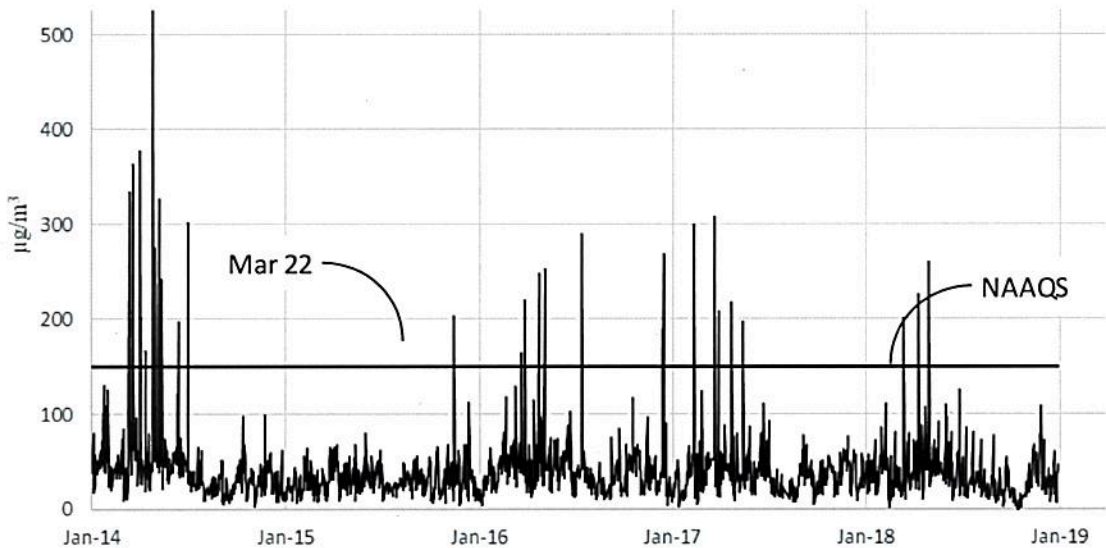
There are independent weather reports, evidence of blowing dust, and hourly wind data which showed that on the exceedance day the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM₁₀ measurements at the monitors correlated with 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 PM₁₀ exceedances at the monitors on the exceedance day.

MARCH 22, 2016, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitor

The graphs below reflect the 24-hours monitor data from 2014 to 2019. The measurements for the day before the exceedance day did not approach the NAAQS level. The measurements for the day after the exceedance day did approach or exceed the NAAQS level due to a wind incident on March 23, 2016, which is discussed below. The measurements on the exceedance day are above the 95th percentile of historical site data.

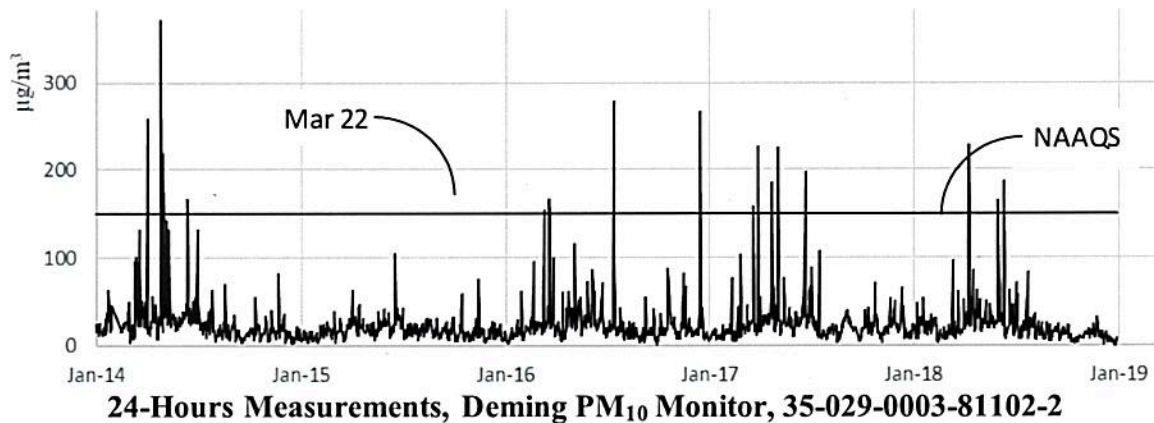


24-Hours Measurements, Desert View PM₁₀ Monitor, 35-013-0021-81102-2



24-Hours Measurements, Anthony PM₁₀ Monitor, 35-013-0016-81102-2

2016 PM₁₀ Exceptional Event Demonstrations, Dona Ana and Luna Counties, NM



Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM₁₀ 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 22, 2016, 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.

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 Deming exceeded the threshold on the exceedance day. While the hourly wind speeds at Desert View and Anthony did not reach the threshold, the upwind Santa Teresa site experienced winds that exceeded 25 mph for 5 minutes. These elevated winds were from the west southwest.

Anthony, New Mexico is a city in Dona Ana County with a population of about 9,300. A portion of the city of Anthony, New Mexico is currently in non-Attainment for PM₁₀. The Anthony monitor site is in the non-attainment area about 700 feet north of the Texas border. The Anthony city limits are about 0.5 miles west of the Anthony monitor site. Beyond the city to the west there are undisturbed arid lands all the way to the Arizona border.

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 ¾ of a mile to the south of Desert View, respectively.

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. To the west of the monitor are about 3 miles of developed and undeveloped lands within the city. Beyond the city limits to the west are undeveloped lands 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. 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 monitor site on the exceedance day. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM₁₀ 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 and Anthony monitor sites 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 day of the exceedance. The NMED indicates the implementation and enforcement of any controls occurs at the local level. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at Desert View, Anthony, and Deming.

Figures 4-8, 4-9 and 4-10 on pages 26 and 27 show 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 Anthony, Desert View, and Deming site location. The results show that the winds could have been in Texas and Mexico prior to reaching the sites. Upwind anthropogenic sources in Texas and Mexico 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.

MARCH 23, 2016

The exceedances occurred on March 23, 2016, 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
Chaparral	35-013-0020-81102-1	162 µg/m ³
Desert View	35-013-0021-81102-2	189 µg/m ³

MARCH 23, 2016, EXCEEDANCE DAY, Clear Causal Relationship

In the demonstration, the NMED states “[a]s the event unfolded, the wind blew from the west northwest throughout the border region.”

Table 5-2 on page 38 provides wind measurements from the Deming, Chaparral, and Desert View monitor sites. Chaparral had hourly wind speeds that exceeded 25 mph for multiple hours. The maximum hourly wind speed at Desert View was 22 mph. The hourly wind speeds at Desert View did not reach the threshold. The winds at Desert View, however, exceeded 25 mph for 5 minutes at about 5 PM.

Figures 5-8 and 5-9 on page 44 show the frequency distribution of wind direction correlated with PM₁₀ data at Chaparral and Desert View when PM₁₀ concentrations exceeded 150 µg/m³ on the exceedance day. Most of the winds were from the west northwest.

Figure 5-5 on page 40 shows hourly wind data at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. Winds met or exceeded 25 mph for multiple hours at the sites, except for Desert View.

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

On the exceedance day, AQS data shows the hourly wind speeds at the Chamizal, Ascarate, Skyline, and Van Buren monitor sites in El Paso County exceeded 25 mph for multiple hours. The hourly wind speed at Socorro, UTEP, and Ivanhoe peaked at 24 mph, while Ojo peaked at 23 mph. Ojo is about 5 miles northeast of Desert View. The other El Paso County monitor sites are within 20 miles of Desert View to the northeast or southeast.

The El Paso airport is about 11 miles east of the Desert View site. On the exceedance day, winds at the airport were above 25 mph for multiple hours. During this period, the winds were from the west northwest and gusts were in the 40-mph range. The overall weather type noted for the exceedance day was “Dust, volcanic ash, blowing dust, blowing sand or...obstruction” (Weather Type DU). The code used during some of the high wind hours was “widespread dust” (DU:5).

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. Wind gusts reached 54 mph during this period. The winds were from the west northwest.

The Deming airport is in Luna County 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 west northwest. Gusts peaked at 52 mph. The weather type for the exceedance day was haze (Weather Type HZ).

Figure 5-15 on page 49 shows the 24-hours PM₁₀ measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. The Chaparral and Desert view 24-hours measurement exceeded the NAAQS level of 150 µg/m³. Other sites measurements approached the NAAQS level or were elevated: Anthony 146 µg/m³ (average 46 µg/m³), Deming 142 µg/m³ (average 27 µg/m³), Holman 67 µg/m³ (average 28 µg/m³), and West Mesa 41 µg/m³ (average 21 µg/m³).

The PM₁₀ manual monitors in El Paso County did not sample on the exceedance day. The Chamizal site, however, reports continuous PM₁₀ measurements which are non-NAAQS comparable. On the exceedance day, the Chamizal site reported PM₁₀ levels at 158 µg/m³ which is above the NAAQS level of 150 µg/m³. Chamizal is about 8 miles east of Desert View.

Figure 5-4 on page 39 and narrative on page 42 show the NWS forecast a wind advisory on the exceedance day. The NWS predicted strong winds from the northwest with wind gusts up to from 45 to 55 mph.

Figure 5-10 on page 45 shows PM₁₀ hourly data at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming. The elevated PM₁₀ measurements correlate with information about elevated wind speeds shown in Figure 5-5.

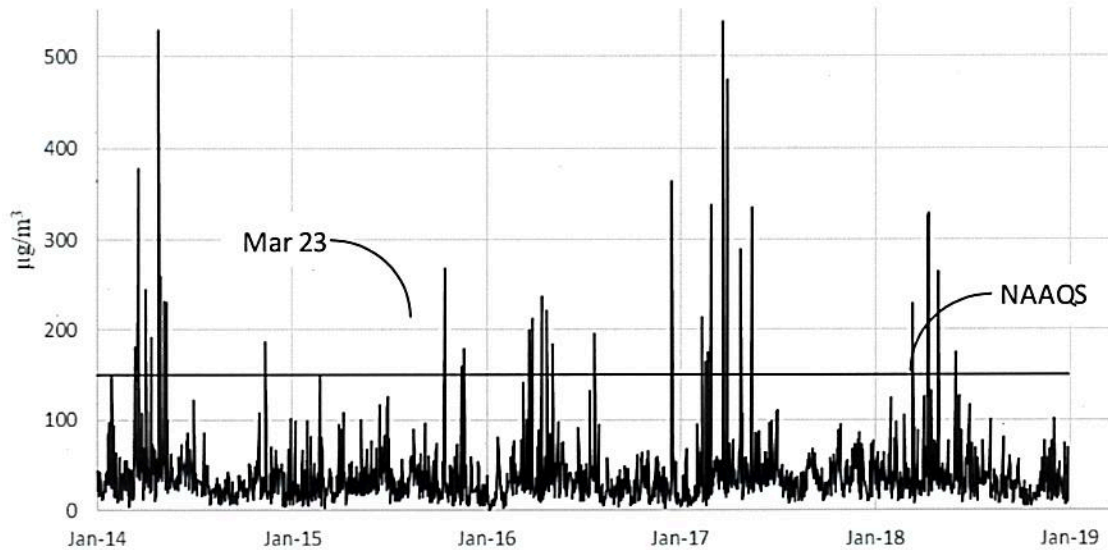
Figures 5-11 and 5-12 on page 46 show hourly wind and PM₁₀ data at Desert View and Chaparral, on the exceedance day. The elevated PM₁₀ measurements correlate with the elevated wind speeds.

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 PM₁₀ 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 PM₁₀ exceedances at the monitors on the exceedance day.

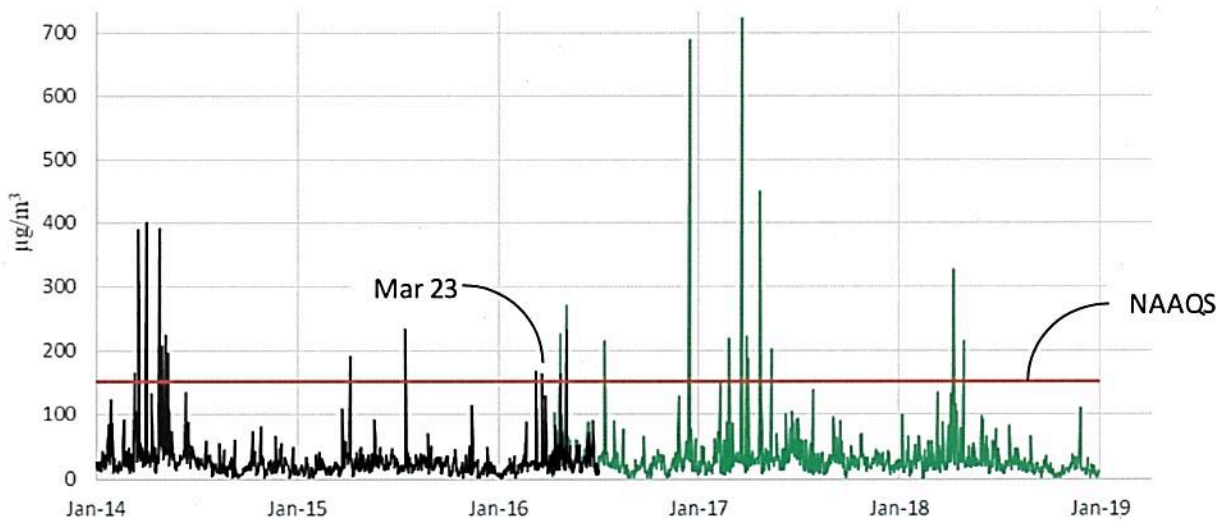
MARCH 23, 2016, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitor

The graphs below reflect the 24-hours monitor data from 2014 to 2019. The site measurements for the day after the exceedance day did not approach the NAAQS level. The measurements for the preceding day did approach and or exceed NAAQS due to a wind incident on March 22, 2016, which is discussed above. The measurements on the exceedance day are above the 95th percentile of historical site data.

2016 PM₁₀ Exceptional Event Demonstrations, Dona Ana and Luna Counties, NM



24-Hours Measurements, Desert View PM₁₀ Monitor, 35-013-0021-81102-2



24-Hours Measurements, Chaparral PM₁₀ Monitor, 35-013-0020-81102-1

Black is the Manual monitor at POC 1, and green is the Continuous monitor at POC 2

Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM₁₀ 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 23, 2016, 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.

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 hourly wind speeds at Desert View did not reach the

threshold, the winds exceeded 25 mph for 5 minutes. These elevated winds were from the west northwest.

See discussion under the March 12, 2016, exceedance for general information about the Chaparral community. Residential areas extend to about 2 miles northwest of the Chaparral monitor site. Directly north of the site is undeveloped land. To the west and northwest beyond the residential areas, with a few exceptions such as the Anthony and Las Cruces, undisturbed arid lands exist all the way to the Arizona border.

See discussion under the March 22, 2016, exceedances for information about the city of Sunland Park, New Mexico. The Desert View monitor site is about 1 mile south and $\frac{3}{4}$ of a mile north of the Texas and Mexico border, respectively. On the exceedance day, nearby anthropogenic sources in Texas and Mexico would not have been upwind. Beyond the city to the west, except for a nearby landfill, and to the northwest, except for the city of Deming, there are undeveloped lands all the way to the Arizona border. Deming is about 75 miles northwest of the Desert View site in Luna County.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. 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.

Part of the City of Anthony was upwind of Chaparral on the exceedance day. Due to recurring impacts from non-anthropogenic sources deemed to contribute significantly to PM₁₀ exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance date, 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 and Luna counties were upwind of Desert View and Chaparral on the exceedance day. The cities of Las Cruces and Deming were upwind of Chaparral and Desert View, respectively, on the exceedance day. The demonstration provides information on the Las Cruces, Deming, and Dona Ana and Luna counties dust ordinances. The ordinances require a plan for disturbed site dust controls. The controls required by the ordinances would have applied to any upwind disturbed sites in the cities or counties or the unincorporated Chaparral community on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at the Chaparral and Desert View monitor sites.

Figures 5-7 and 5-8 on page 43 show 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 and Desert View monitor site locations. The results show that the winds

could have been in Mexico prior to reaching the 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 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 29, 2016

The exceedances occurred on March 29, 2016, 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	35-013-0016-81102-2	219 µg/m ³
Desert View	35-013-0021-81102-2	212 µg/m ³

MARCH 29, 2016, 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 6-2 on page 53 shows hourly wind speed data from the Holman, Anthony, and Desert View monitor sites, on the exceedance day. Winds at Anthony exceeded 25 mph for an hour. The hourly winds at Desert View peaked at 19 mph. The hourly wind speeds at Desert View did not reach the threshold.

Table 6-5 on page 55 shows hourly wind speed data from the Holman, Anthony, West Mesa, Chaparral, Deming, and Desert View monitor sites, on the exceedance day. All the sites, except Desert View experienced at least one hour of winds exceeding 25 mph.

Figures 6-9 and 6-10, on page 59, show the frequency distribution of wind direction correlated with PM₁₀ data at the Anthony and Desert View sites when PM₁₀ concentrations exceeded 150 µg/m³ on the exceedance day. The winds at Anthony were from the west southwest and the southwest. The winds at Desert View were from the west southwest and the west.

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 6 miles west of Desert View.

On the exceedance day, AQS data shows the hourly wind speeds at the Ojo, Ivanhoe, Chamizal, Ascarate, and Skyline monitor sites in El Paso County peaked at 19, 20, 22, 23, and 24 mph. Ojo is about 5 miles northeast of Desert View. Ivanhoe, Chamizal, Ascarate, and Skyline are within 12 miles of Desert View to the northeast or southeast.

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. Wind gusts reached 47 mph during this period and winds were from the southwest. The weather type noted for the exceedance day was hazy.

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 and gusts getting up to 46 mph. The overall weather type noted for the exceedance day was “Dust, volcanic ash, blowing dust, blowing sand or...obstruction” (Weather Type DU). The code used during some of the high wind hours was widespread dust.

The Deming airport is in Luna County 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, and the weather type was smoke and haze (Weather Type FU HZ). Gusts peaked at 47 mph. The overall weather type for the exceedance day was haze.

Figure 6-16 on page 63 shows the 24-hours PM₁₀ measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. The Anthony and Desert View 24-hours measurement exceeded the NAAQS level of 150 µg/m³. Other sites measurements approached the NAAQS level or were elevated: Chaparral 128 µg/m³ (average 46 µg/m³), Holman 143 µg/m³ (average 28 µg/m³), Deming 98 µg/m³ (average 27 µg/m³) and West Mesa 77 µg/m³ (average 21 µg/m³).

Figure 6-4 on pages 54 and 56, shows the NWS forecast a wind advisory on the exceedance day. The NWS predicted 30-40 mph from noon on Tuesday March 29 to 6 AM Wednesday March 30 with gusts of 50-60 mph in the Chaparral area. The area around the Desert View monitor has similar warnings except the 25-35 mph high winds were projected to occur on Tuesday from noon to 8 PM. The advisory indicated blowing dust might be an issue in Dona Ana County.

Figure 6-6 on page 57 shows the New Mexico Department of Transportation issued a press release on the exceedance day informing the public of dangers while driving in low visibility conditions from blowing dusts caused by high winds.

The PM₁₀ manual monitors in El Paso County did not sample on the exceedance day. The Chamizal site, however, reports continuous PM₁₀ measurements which are non-NAAQS comparable. On the exceedance day, the Chamizal site reported PM₁₀ levels at 158 µg/m³ which is above the NAAQS level of 150 µg/m³. Chamizal is about 8 miles east of Desert View.

Figures 6-12 and 6-13 on page 61 show both hourly wind speed and PM₁₀ measurements from the Anthony and Desert View sites on the exceedance day. The figures show elevated hourly PM₁₀ measurements at the sites correlate with elevated wind speeds.

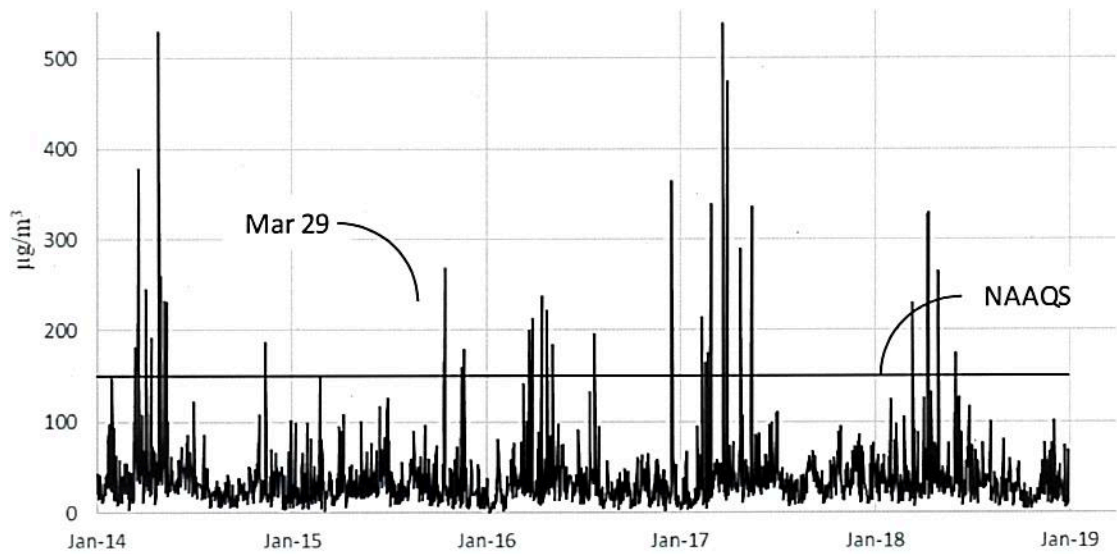
Figure 6-11 on page 60 shows PM₁₀ measurements from the Holman, Anthony, West Mesa, Chaparral, Deming, and Desert View monitor sites on the exceedance day. The elevated PM₁₀ measurements correlate with the elevated wind speeds in Figure 6-5.

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 PM₁₀ 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 PM₁₀ exceedances at the monitors on the exceedance day.

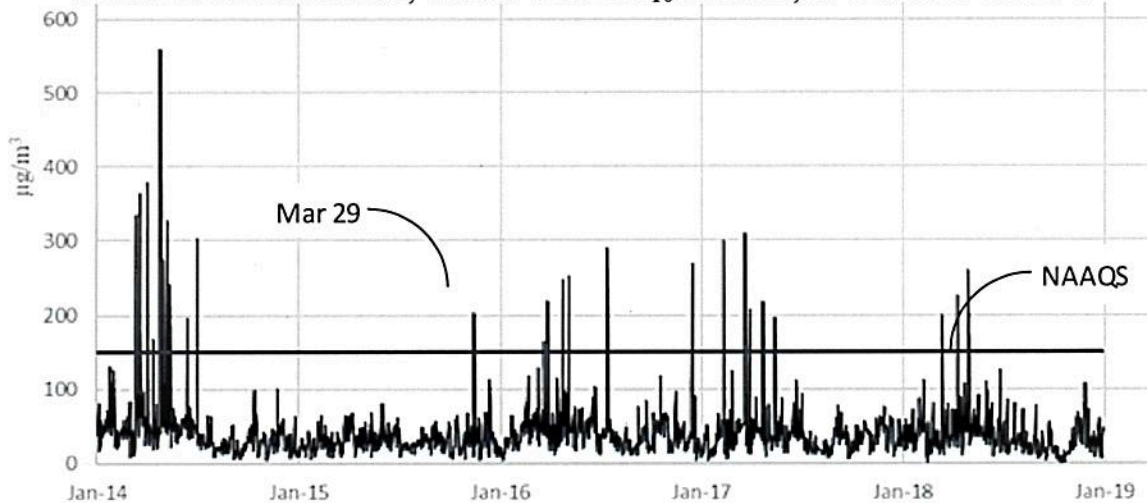
MARCH 29, 2016, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitor

The graphs below show the monitors data from 2014 to 2019. The monitors data for the days surrounding the exceedance day did not approach the NAAQS level. The 24-hours measurements on the exceedance day are above the 95th percentile of historical site data.

2016 PM₁₀ Exceptional Event Demonstrations, Dona Ana and Luna Counties, NM



24-Hours Measurements, Desert View PM₁₀ Monitor, 35-013-0021-81102-2



24-Hours Measurements, Anthony PM₁₀ Monitor, 35-013-0016-81102-2

Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM₁₀ 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 29, 2016, 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.

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 Anthony exceeded the threshold on the exceedance day. While the hourly wind speeds at Desert View did not reach the threshold, the winds at the upwind Santa Teresa site exceeded 25 mph for multiple hours. The winds at

Anthony were from the west southwest and the southwest. The winds at Desert view were from the west southwest and the west.

See discussion under the March 22, 2016, exceedance for information about the city of Anthony. The Anthony city limits are about one-half mile to the west and southwest of the Anthony monitor site. Beyond the city to the west there are undeveloped lands 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 under the March 22, 2016, exceedances for information about the city of Sunland Park. The Desert View monitor site is on the western city limits of Sunland Park. Desert View is about 1 mile south and 3/4 of a mile north of the Texas and Mexico border, respectively. On the exceedance day, nearby anthropogenic sources in Texas and the city would not have been upwind. Beyond the city to the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border. To the southwest is Mexico.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. 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 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 PM₁₀ exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance date, 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 also upwind of Desert View on the exceedance day. The demonstration provides information on Dona Ana County Dust ordinance. The ordinance requires a plan for disturbed site dust controls. The controls required by the ordinance would have applied to any upwind disturbed sites in the county on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at the Anthony and Desert View monitor sites.

Figures 6-7 and 6-8 on page 58 shows the results of NOAA HYSPLIT Model 6-hour backward trajectories for the Anthony and Desert View sites. The NMED ran the models with the trajectories ending at the "start" of the exceedance day wind event. The results show that the winds could have been in Texas and Mexico prior to reaching the Anthony site, and Mexico prior to reaching Desert View. Upwind anthropogenic sources in Texas and Mexico 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.

APRIL 15, 2016

The exceedance occurred on April 15, 2016, 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	237 µg/m ³

APRIL 15, 2016, 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 7-2 on page 67 shows hourly wind speed data from the Chaparral, Deming, and Desert View monitor sites. The maximum hourly wind speed at Desert View was 18 mph. The hourly wind speeds at Desert View did not reach the threshold.

Figure 7-8 on page 72 shows the frequency distribution of wind direction correlated with PM₁₀ data at Desert View when PM₁₀ concentrations exceeded 150 µg/m³ on the exceedance day. The winds were from the west southwest.

Table 7-5 on page 69 shows hourly wind speed data from the Holman, Anthony, West Mesa, Chaparral, Deming, and Desert View monitor sites, on the exceedance day. Winds at Deming and Holman exceeded 25 mph for an hour.

On the exceedance day, the AQS data shows the hourly wind speeds at Santa Teresa peaked of 22 mph. While hourly winds at Santa Teresa did not reach the threshold, the winds exceeded 25 mph for 10 minutes at about 4 PM. Santa Teresa is about 6 miles west of Desert View.

On the exceedance day, AQS data shows the hourly wind speeds at the Chamizal and Skyline monitor sites in El Paso County peaked at 22 mph. Winds at Ascarate and Van Buren peaked at 21 mph. Chamizal, Van Buren, Ascarate, and Skyline are within 12 miles of Desert View to the northeast or southeast.

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. Wind gusts reached 41 mph during this period. The winds were from the southwest.

The El Paso airport is about 11 miles east of Desert View. On the exceedance day winds at the airport were above 25 mph for multiple hours. During this period, the winds were from the west southwest, gusts peaked at 41 mph, and weather type was dust (Weather Type DU).

The Deming airport is in Luna County about 74 miles northwest of Desert View. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. During this period, winds were from the southwest, the weather type was smoke and haze (Weather Type FU HZ), and gusts peaked at 47 mph.

Figure 7-12 on page 75 shows the 24-hours PM₁₀ measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. The Desert View 24-hours measurement

exceeded the NAAQS level of 150 $\mu\text{g}/\text{m}^3$. A few site measurements were elevated: Chaparral 101 $\mu\text{g}/\text{m}^3$ (average 46 $\mu\text{g}/\text{m}^3$), Anthony 114 $\mu\text{g}/\text{m}^3$ (average 46 $\mu\text{g}/\text{m}^3$), and Deming 60 $\mu\text{g}/\text{m}^3$ (average 27 $\mu\text{g}/\text{m}^3$). Other measurements were close to the site averages: Holman 29 $\mu\text{g}/\text{m}^3$ (average 28 $\mu\text{g}/\text{m}^3$) and West Mesa 23 $\mu\text{g}/\text{m}^3$ (average 21 $\mu\text{g}/\text{m}^3$).

The PM₁₀ manual monitors in El Paso County did not sample on the exceedance day. The Chamizal site, however, reports continuous PM₁₀ measurements which are non-NAAQS comparable. On the exceedance day, the Chamizal site reported PM₁₀ levels at 140 $\mu\text{g}/\text{m}^3$ which approached the NAAQS level of 150 $\mu\text{g}/\text{m}^3$. Chamizal is about 8 miles east of Desert View.

Figure 7-4 and the narrative on page 71 show the NWS forecast a wind advisory on the exceedance day. The NWS predicted westerly winds of 25-35 mph during the afternoon of the exceedance day with gusts around 55 mph “west of the Rio Grande.” The Desert View site is west of the Rio Grande. The advisory indicated blowing dust might be an issue.

Figure 7-6 on page 70 shows a satellite image taken at 1 PM on the exceedance day. The image shows a dust plume originating in Mexico and extending into the Desert View area.

Figure 7-10 on page 73 shows both hourly wind speed and PM₁₀ data from Desert View on the exceedance day. The elevated PM₁₀ measurements correlate with the elevated wind speeds.

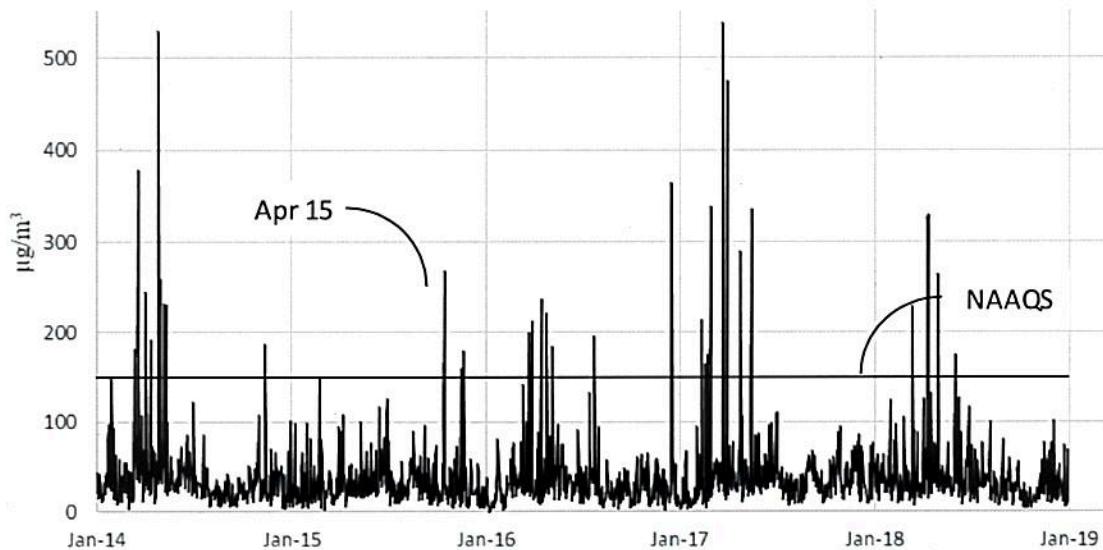
Figure 7-9 on page 73 shows the PM₁₀ measurements from Holman, Anthony, West Mesa, Chaparral, Deming, and Desert View monitor sites, on the exceedance day. The elevated PM₁₀ measurements correlate with the elevated wind speeds on Figure 7-5.

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 PM₁₀ 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 using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM₁₀ exceedance at the monitor on the exceedance day.

APRIL 15, 2016, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitor

The graph below shows monitor data from 2014 to 2019. The monitor data for the days surrounding the exceedance day did not approach the NAAQS level. The 24-Hours measurement on the exceedance day is above the 95th percentile of historical site data.

2016 PM₁₀ Exceptional Event Demonstrations, Dona Ana and Luna Counties, NM



24-Hours Measurements, Desert View PM₁₀ Monitor, 35-013-0021-81102-2

Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM₁₀ at this monitor 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 15, 2016, 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.

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 Desert View did not exceed the threshold on the exceedance day. Winds at the upwind Santa Teresa site, however, exceeded 25 mph for 10 minutes. The winds at Desert view were from the west southwest.

See discussion under the March 22, 2016, exceedances for information about the City of Sunland Park. The Desert View monitor site is on the western city limits of Sunland Park. Desert View is about 1 mile south and 3/4 of a mile north of the Texas and Mexico border, respectively. On the exceedance day, nearby anthropogenic sources in Texas and the city would not have been upwind. Beyond the city to the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border. To the southwest is Mexico.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads and storage piles. 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 also upwind of Desert View on the exceedance day. The demonstration provides information on Dona Ana County Dust ordinance. The ordinance requires a plan for disturbed site dust controls. The controls required by the ordinance would have applied to any upwind disturbed sites in the county on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at the Desert View monitor site.

Figures 7-7 on page 71 shows the results of NOAA HYSPLIT Model 6-hour backward trajectory for the Desert View site. The NMED ran the models with the trajectories ending at the 'start' of the exceedance day wind event. The results show that the winds could have been in Mexico prior to reaching the Desert View. Upwind anthropogenic sources in Mexico 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.

APRIL 25, 2016

The exceedances occurred on April 25, 2016, 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
Chaparral	35-013-0020-81102-1	163 µg/m ³
Chaparral	35-013-0020-81102-2	225 µg/m ³
Anthony	35-013-0016-81102-2	247 µg/m ³
Desert View	35-013-0021-81102-2	221 µg/m ³

APRIL 25, 2016, EXCEEDANCE DAY, Clear Causal Relationship

In the demonstration, NMED states “[a]s the event unfolded, the wind blew from the southwest throughout the border region.”

Table 8-2 on page 79 shows hourly wind speed data from the Chaparral, Anthony, Holman, and Desert View monitor sites, on the exceedance day. Winds at Anthony, Chaparral, and Desert View winds approached the threshold for multiple hours, reaching maximum hourly wind speeds of 24, 23, and 20 mph, respectively. Gusts at the sites reached 46, 50, and 39 mph, respectively. While hourly winds at Chaparral did not reach the threshold, winds exceeded 25 mph for a total of 40 minutes from about 3 PM to 5 PM. While hourly winds at Anthony did not reach the threshold, winds exceeded 25 mph for a total of 55 minutes from about 2 PM to 5 PM.

Figure 8-4 on page 80 shows hourly wind speed data from the Anthony, West Mesa, Chaparral, Holman, and Desert View sites, on the exceedance day. Winds at Holman exceeded 25 mph for multiple hours. Winds at West Mesa were 25 mph for an hour.

Figures 8-9, 8-10, and 8-11, on pages 85 and 86 shows the frequency distribution of wind direction correlated with PM₁₀ data at Anthony, Chaparral, and Desert View when PM₁₀ concentrations exceeded 150 µg/m³ on the exceedance day. The winds were from the southwest at Anthony and west southwest at Chaparral and Desert View.

On the exceedance day, AQS data shows the hourly wind speeds at Santa Teresa reached 25 mph for multiple hours. 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, Skyline, and Chamizal monitor sites in El Paso County peaked at 21 mph. Winds at Ascarate peaked at 20 mph. Chamizal, Van Buren, Ascarate, and Skyline are within 12 miles of Desert View to the northeast or southeast.

The Las Cruces airport is about 40 miles north of the Desert View site. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. Wind gusts reached 41 mph during this period. The winds were from the southwest.

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 west southwest and gusts getting up to 39 mph. The overall weather type noted for the exceedance day was “Dust,

volcanic ash, blowing dust, blowing sand or...obstruction” (Weather Type DU). The code used during some of the high wind hours was “widespread dust” (DU:5).

The Deming airport is in Luna County about 74 miles northwest of Desert View. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. During this period, winds were from the southwest, and gusts peaked at 44 mph.

On the exceedance day, the Chaparral, Anthony, and Desert View 24-hours measurement exceeded the NAAQS level of 150 µg/m³. Other site measurements from monitors in the NMED network were above the site averages: Holman 45 µg/m³ (average 28 µg/m³), Deming 61 µg/m³ (average 27 µg/m³) and West Mesa 30 µg/m³ (average 21 µg/m³).

The PM₁₀ manual monitors in El Paso County did not sample on the exceedance day. The Chamizal site, however, reports continuous PM₁₀ measurements which are non-NAAQS comparable. On the exceedance day, the Chamizal site reported PM₁₀ levels at 122 µg/m³ which approached the NAAQS level of 150 µg/m³. Chamizal is about 8 miles east of Desert View.

The narrative on page 82 shows the NWS wind advisory for the exceedance day. The NWS predicted visibility issues due to blowing dust in the Deming, Las Cruces, and El Paso area.

The NWS April 2016 monthly weather summary shows a satellite image of a dust plume originating in Mexico and extending over the El Paso area on the exceedance day (www.weather.gov/epz/monthlyweatherhighlights). The summary also shows images of low visibility on a roadway in “southern New Mexico” on the exceedance day.

Figures 8-13, 8-14, and 8-15, on pages 87 and 88, show both hourly wind speed and PM₁₀ data on the exceedance day from Anthony, Chaparral, and Desert View. The elevated PM₁₀ measurements correlate with elevated wind speeds.

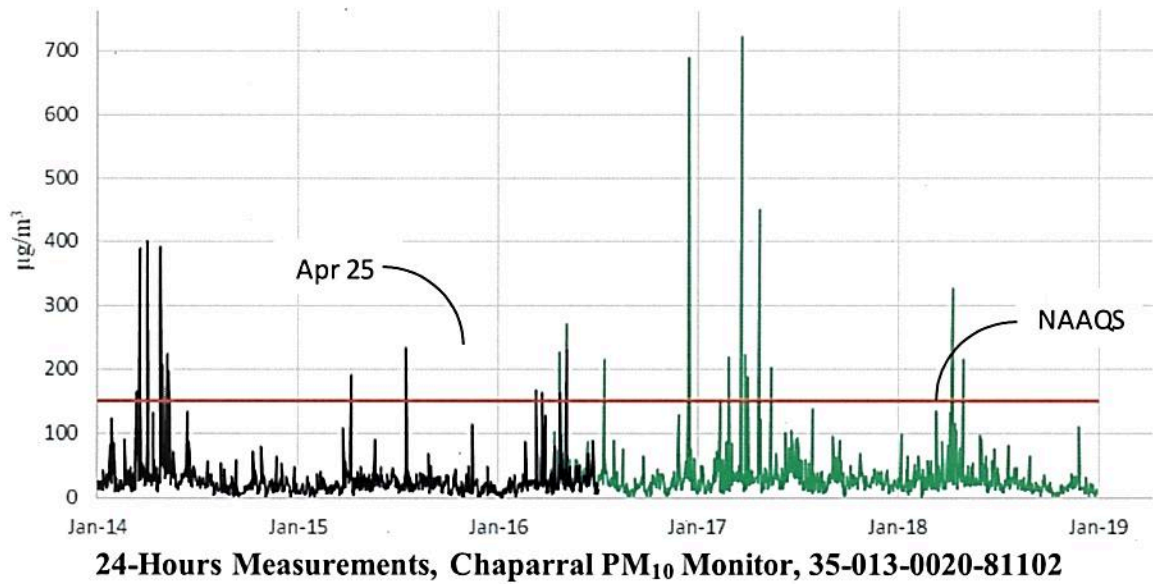
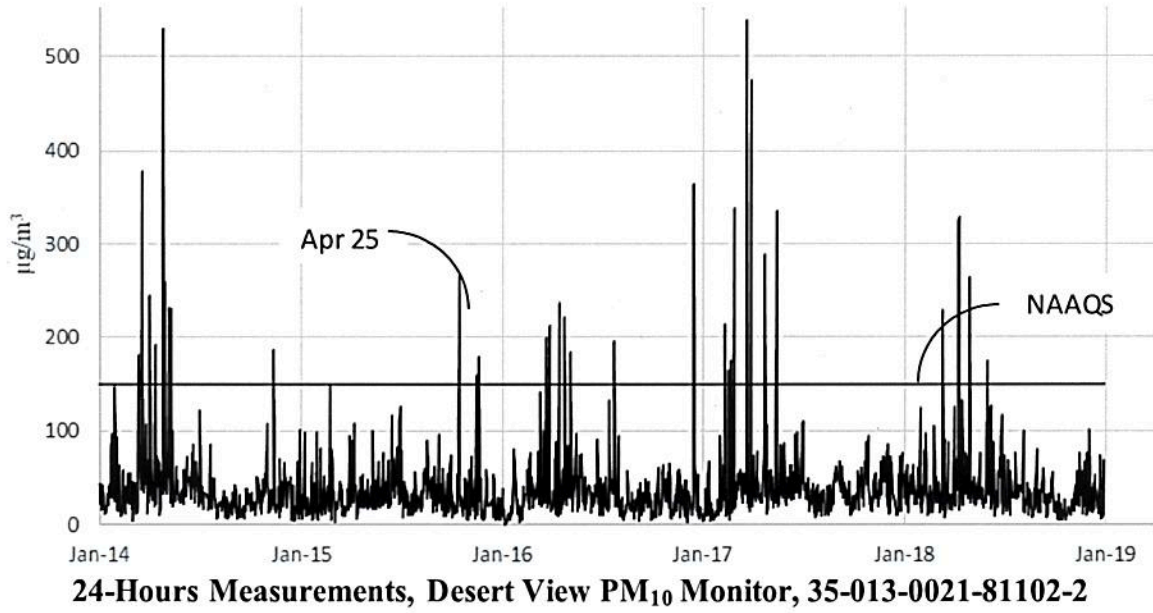
Figure 8-12 on page 87 of the PM₁₀ measurements from Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming on the exceedance day. All the sites had elevated measurements which correlated to the elevated winds shown on Figure 8-4.

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 PM₁₀ 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 PM₁₀ exceedances at the monitors on the exceedance day.

APRIL 25, 2016, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitor

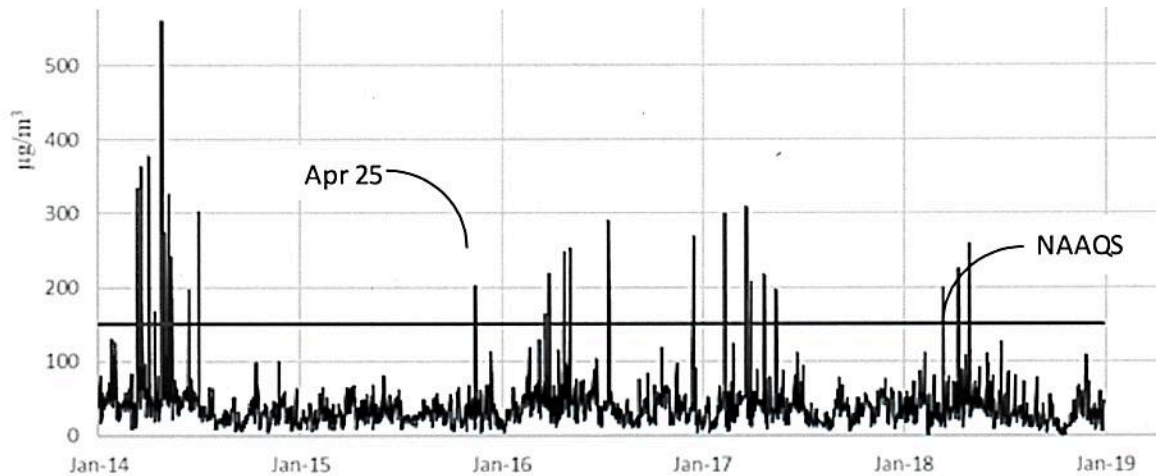
The graphs below show the monitors data from 2014 to 2019. The monitors data for the days surrounding the exceedance day did not approach the NAAQS level. The 24-Hours measurements on the exceedance day are above the 95th percentile of historical site data.

2016 PM₁₀ Exceptional Event Demonstrations, Dona Ana and Luna Counties, NM



Black is the Manual monitor at POC 1, and green is the Continuous monitor at POC 2

2016 PM₁₀ Exceptional Event Demonstrations, Dona Ana and Luna Counties, NM



24-Hours Measurements, Anthony PM₁₀ Monitor, 35-013-0016-81102-2

Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM₁₀ 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.

APRIL 25, 2016, 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.

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 Anthony, Chaparral, and Desert View did not exceed the threshold on the exceedance day. Winds at a site upwind of Desert View, i.e., the Santa Teresa site, however, exceeded 25 mph for multiple hours. While hourly winds at Chaparral and Anthony did not reach the threshold, the winds at the sites exceeded 25 mph for a total of 40 and 55 minutes, respectively. The winds were from the southwest at Anthony and west southwest at Chaparral and Desert View.

See discussion under the March 22, 2016, exceedance for information about the city of Anthony. The Anthony city limits are about one-half mile to the west and southwest of the Anthony monitor site. Beyond the city to the west there are undeveloped lands 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 under the March 22, 2016, exceedances for information about the city of Sunland Park. The Desert View monitor site is on the western city limits of Sunland Park. Desert View is about 1 mile south and 3/4 of a mile north of the Texas and Mexico border, respectively. On the exceedance day, nearby anthropogenic sources in Texas and the city would not have been upwind. Beyond the city to the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border. To the southwest is Mexico.

See discussion under the March 12, 2016, exceedance for general information about the Chaparral community. 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 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. 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 PM₁₀ exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance date, 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 Desert View, Chaparral, and Anthony on the exceedance day. The demonstration provides information on Dona Ana County Dust ordinance. The ordinance requires a plan for disturbed site dust controls. The controls required by the ordinance would have applied to any upwind disturbed sites in the county or in the unincorporated communities of La Union and Chaparral on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at the Anthony, Desert View, and Chaparral monitor sites.

Figures 8-6, 8-7, and 8-8, on pages 83 and 84 show the results of NOAA HYSPLIT Model 6-hours backward trajectories. The NMED ran the model with the trajectories ends at the "start" of the exceedance day wind event, at Anthony, Chaparral, and Desert View. The results show that the winds could have been in Texas and Mexico prior to reaching Anthony and Chaparral and the winds could have been in Mexico prior to reaching Desert View. Upwind anthropogenic sources in Texas or Mexico are outside the jurisdiction of the state of New Mexico. 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 6, 2016

The exceedances occurred on May 6, 2016, 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
Chaparral	35-013-0020-81102-1	230 $\mu\text{g}/\text{m}^3$
Chaparral	35-013-0020-81102-2	269 $\mu\text{g}/\text{m}^3$
Anthony	35-013-0016-81102-2	252 $\mu\text{g}/\text{m}^3$
Desert View	35-013-0021-81102-2	184 $\mu\text{g}/\text{m}^3$

MAY 6, 2016, EXCEEDANCE DAY, Clear Causal Relationship

In the demonstration, NMED states “[a]s the event unfolded, the wind blew from the southwest throughout the border region.”

Table 9-2 on page 95 shows hourly wind speed data at the Chaparral, Anthony, and Desert View monitor sites on the exceedance day. The wind speeds from the Anthony, Chaparral, and Desert View peaked at 22, 21, and 16 mph, respectively. Gusts at the Anthony, Chaparral, and Desert View sites reached 39, 43, and 33 mph, respectively. While the hourly wind speeds at Anthony did not exceed the threshold, winds exceeded 25 mph for at least 5 minutes during the 5 PM hour.

Figure 9-4 on page 96 shows hourly wind speeds at the Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites on the exceedance day. The winds at Deming exceeded 25 mph for multiple hours.

Figures 9-8, 9-9, and 9-10 on pages 99-100 shows the frequency distribution of wind direction correlated with PM₁₀ data at Anthony, Chaparral, and Desert View when PM₁₀ concentrations exceeded 150 $\mu\text{g}/\text{m}^3$ on the exceedance day. Most of the winds were from the west southwest at Chaparral with some from the south and west. The winds at Desert View were from the west southwest and southwest. The winds at Anthony were mostly from the west southwest and some from the southeast.

On the exceedance day, AQS data shows the hourly wind speeds at Santa Teresa peaked at 23 mph. While the hourly winds at Santa Teresa did not exceed the threshold, winds exceeded 25 mph for 10 minutes during the 5 PM hour. Santa Teresa is about 6 miles west of Desert View, 16 miles southwest of Anthony and 23 miles southwest of Chaparral.

On the exceedance day, AQS data shows the hourly wind speeds at the Skyline and Chamizal monitor sites in El Paso County peaked at 20 mph.

The El Paso airport is about 11 miles east of the Desert View site and 15 miles south of Chaparral. On the exceedance day winds at the airport exceeded 25 mph for an hour at about 4 PM. During this period, the winds were from the southwest. Wind gusts peaked at 40 mph. During the 5PM hour, the weather code used was “widespread dust” (DU:5). The overall weather type noted for the exceedance day was “Dust, volcanic ash, blowing dust, blowing sand, or...obstruction” (Weather Type DU).

The Las Cruces airport is about 40 miles north of the Desert View site. On the exceedance day, the winds at the airport peaked at 23 mph. The winds were from the southwest. Wind gusts peaked at 37 mph.

The Deming airport is in Luna County about 74 miles northwest of Desert View. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. During this period, winds were from the southwest, the weather type was smoke and haze (Weather Type FU HZ), and wind gusts peaked at 48 mph. The overall weather type for the exceedance day was haze.

Figure 9-18 on page 106 shows the 24-hours PM₁₀ measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. The Chaparral, Anthony, and Desert View 24-hours measurement exceeded the NAAQS level of 150 µg/m³. Other sites measurements were elevated: Deming 115 µg/m³ (average 27 µg/m³), Holman 84 µg/m³ (average 28 µg/m³) and West Mesa 64 µg/m³ (average 21 µg/m³).

There is no valid data from PM₁₀ manual monitors in El Paso County on the exceedance day. The Chamizal site, however, reports continuous PM₁₀ measurements which are non-NAAQS comparable. On the exceedance day, the Chamizal site reported PM₁₀ levels at 132 µg/m³ which approached the NAAQS level of 150 µg/m³. Chamizal is about 8 miles east of Desert View and about 19 miles south of Chaparral.

The narrative on page 97 shows the NWS forecast a wind advisory on the exceedance day for areas west and north of Las Cruces.

Figures 9-12, 9-13, and 9-14, on pages 102 and 103, show hourly wind speed and PM₁₀ data on the exceedance day from Anthony, Chaparral, and Desert View. The elevated PM₁₀ measurements correlate with elevated wind speeds.

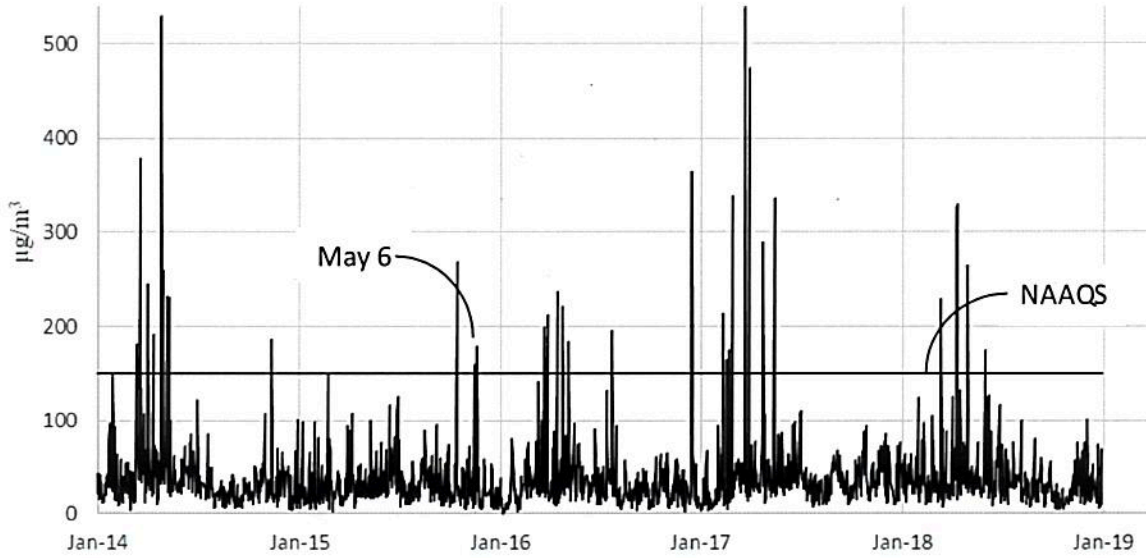
Figure 9-11 on page 101 shows hourly PM₁₀ measurements from Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming on the exceedance day. The elevated measurements correlate with the elevated winds shown on Figure 9-4.

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 PM₁₀ 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 PM₁₀ exceedances at the monitors on the exceedance day.

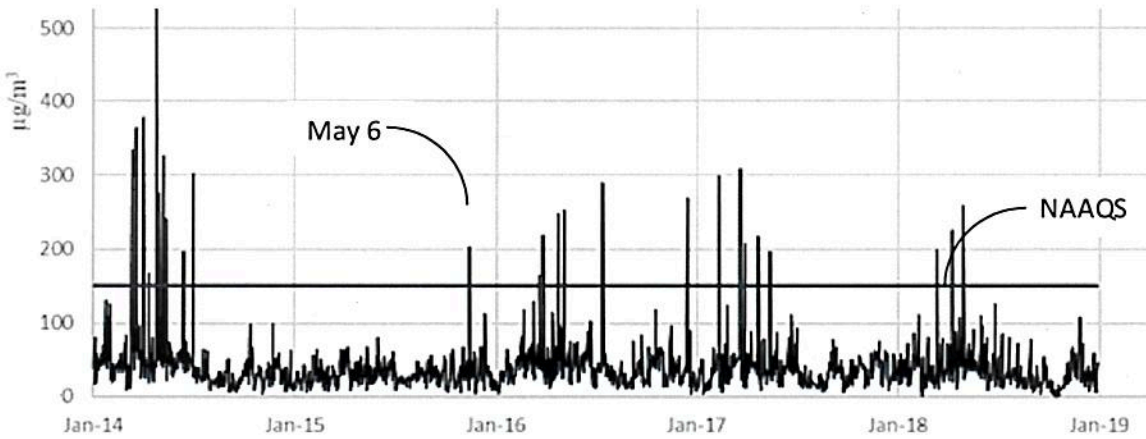
MAY 6, 2016, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitor

The graphs below show the monitors data from 2014 to 2019. The monitors data for the days surrounding the exceedance day did not approach the NAAQS level. The 24-Hours measurements on the exceedance day are above the 95th percentile of historical site data.

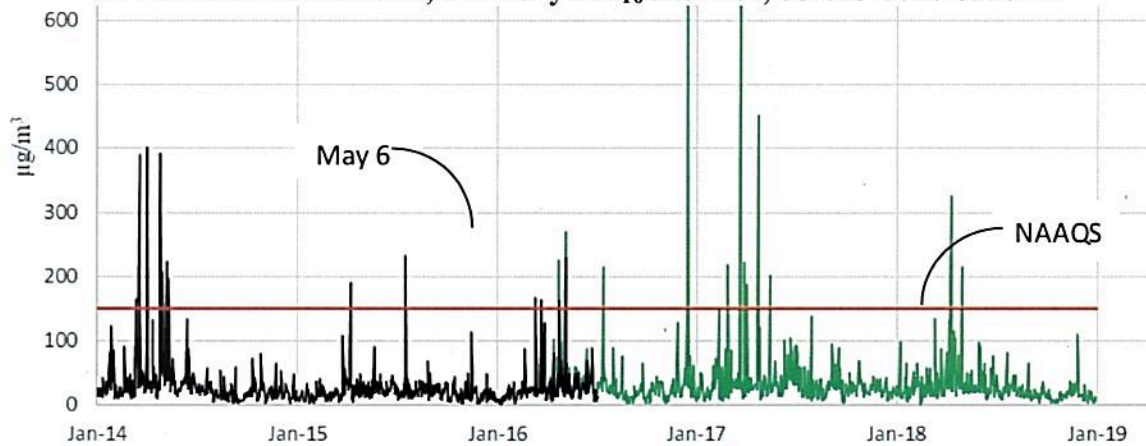
2016 PM₁₀ Exceptional Event Demonstrations, Dona Ana and Luna Counties, NM



24-Hours Measurements, Desert View PM₁₀ Monitor, 35-013-0021-81102-2



24-Hours Measurements, Anthony PM₁₀ Monitor, 35-013-0016-81102-2



24-Hours Measurements, Chaparral PM₁₀ Monitor, 35-013-0020-81102

Black is the Manual monitor at POC 1, and green is the Continuous monitor at POC 2

Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM₁₀ 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.

MAY 6, 2016, 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.

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 Anthony, Chaparral, and Desert View did not exceed the threshold on the exceedance day. The winds at a site upwind of Desert View, Anthony, and Chaparral, on the exceedance day, i.e., the Santa Teresa site, however, exceeded 25 mph for 10 minutes. Also, the winds at Anthony exceeded 25 mph for at least 5 minutes. Anthony was upwind of Chaparral, on the exceedance day.

See discussion under the March 22, 2016, exceedance for information about the city of Anthony. The Anthony city limits are about one-half mile to the west and southwest of the Anthony monitor site. On the exceedance day, the winds at Anthony were mostly from the west southwest and some from the southeast. Beyond the city to the west there are undeveloped lands 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. To the southeast is Texas.

See discussion under the March 22, 2016, exceedances for information about the city of Sunland Park. The Desert View monitor site is on the western city limits of Sunland Park. On the exceedance day, the winds at Desert View were from the west southwest and southwest. Desert View is about 1 mile south and $\frac{3}{4}$ of a mile north of the Texas and Mexico border, respectively. On the exceedance day, nearby anthropogenic sources in Texas and the city would not have been upwind. Beyond the city to the west, except for a nearby landfill, there are undeveloped lands all the way to the Arizona border. To the southwest is Mexico.

See discussion under the March 12, 2016, exceedance for general information about the Chaparral community. On the exceedance day, most of the winds were from the west southwest at Chaparral with some from the south and west. 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 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. 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 PM₁₀ exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance date, 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 Desert View, Chaparral, and Anthony on the exceedance day. The demonstration provides information on Dona Ana County Dust ordinance. The ordinance requires a plan for disturbed site dust controls. The controls required by the ordinance would have applied to any upwind disturbed sites in the county or in the unincorporated communities of La Union and Chaparral on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at the Anthony, Desert View, and Chaparral monitor sites.

Figures 9-5, 9-6, 9-7 on pages 98 and 99 show the results of NOAA HYSPLIT Model 6-hours backward trajectories. The NMED ran the model with the trajectories ends at the 'start' of the exceedance day wind event, at Anthony, Chaparral, and Desert View. The results show that the winds could have been in Texas and Mexico prior to reaching Anthony and Chaparral and the winds could have in been in Mexico prior to reaching Desert View. Upwind anthropogenic sources in Texas or Mexico are outside the jurisdiction of the state of New Mexico. 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 15, 2016

The exceedances occurred on July 15, 2016, 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
Chaparral	35-013-0020-81102-2	214 µg/m ³
Anthony	35-013-0016-81102-2	289 µg/m ³
Deming	35-029-0003-81102-2	278 µg/m ³

JULY 15, 2016, EXCEEDANCE DAY, Clear Causal Relationship

In the demonstration, the NMED states “[a]s the event unfolded, the wind blew from multiple directions throughout the border region.”

Table 10-2 on page 110 shows hourly wind data from the Chaparral, Anthony, Desert View, and Deming monitor sites on the exceedance day. The winds at Chaparral exceeded 25 mph for 1 hour. The winds at Anthony and Deming peaked at 14 and 23 mph, respectively. Gusts at Anthony and Deming reached 40 and 47 mph, respectively. While the hourly winds at Deming did not exceed the threshold, as shown in Table 10-2, winds exceeded 25 mph for at least 35 minutes at about 4 PM on the exceedance day based on 5-minute interval data measurements.

Figure 10-5 on page 111 shows the hourly wind speeds at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites on the exceedance day. Winds at Chaparral and Holman exceeded 25 mph for an hour.

Figures 10-7, 10-8, 10-9, and 10-10 on pages 115 and 116 show the frequency distribution of wind direction correlated with PM₁₀ data at Anthony, Chaparral, and Deming when PM₁₀ concentrations exceeded 150 µg/m³ on the exceedance day. The winds at Anthony were from the west, northeast, and east northeast. The winds at Chaparral varied from the northeast to the south. Deming winds were west northwest, northwest, and south.

On the exceedance day, AQS data shows the hourly wind speeds at Santa Teresa peaked at 21 mph. While the hourly winds at Santa Teresa did not exceed the threshold, winds exceeded 25 mph for 15 minutes during the 6 PM hour. Santa Teresa is about 16 miles southwest of Anthony and 23 miles southwest of Chaparral.

On the exceedance day, AQS data shows the hourly wind speeds at the Ascarate monitor site in El Paso County exceeded 25 mph for an hour. The hourly wind speed at Ivanhoe, Ojo, Chamizal, Socorro, Skyline, and UTEP peaked at 23, 22, 21, 20, 20 and 19 mph, respectively. The El Paso County monitor sites are south of Anthony and Chaparral, with the furthest being Socorro about 26 miles south southeast of Chaparral.

The Deming airport is in Luna County. The Deming monitor is on the airport site. On the exceedance day, winds at the airport exceeded 25 mph for an hour. During this period, winds were from the northwest, weather type was “FU” or smoke, and “HZ” or haze, gusts peaked at 45 mph. The overall weather type noted for the entire exceedance day was summarized as haze.

The Las Cruces airport is about 27 miles northwest of Anthony. For most of the exceedance day, winds at the airport were below 10 mph. At about 5 PM the winds started to increase and peaked at 24 mph for about 20 minutes. During this period of elevated winds, the airport experienced gusts up to 34 mph. The wind direction information indicated the wind varied from northeast to southeast. The preceding weather type reported was VCTS, i.e., thunderstorm in vicinity. The overall weather type for the exceedance day was thunderstorm and rain (Weather Type TS RA).

The El Paso airport is about 18 miles southeast of Anthony. Winds at the airport exceeded 25 mph for multiple hours. During this period, the winds were from the northeast with gusts peaked at 56 mph. The overall weather type noted for the entire exceedance day was summarized as thunderstorm, rain, haze, and dust (Weather Type TS RA HZ DU).

Figure 10-18 on page 122 shows the 24-hours PM₁₀ measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. The Chaparral, Anthony, and Deming 24-hours measurement exceeded the NAAQS level of 150 µg/m³. Other site measurements approached the NAAQS level or were elevated: Desert View 132 µg/m³ (average 46 µg/m³), Holman 113 µg/m³ (average 28 µg/m³) and West Mesa 55 µg/m³ (average 21 µg/m³).

There is no valid data for the PM₁₀ manual monitors in El Paso County on the exceedance day. The Chamizal site, however, reports continuous PM₁₀ measurements which are non-NAAQS comparable. On the exceedance day, the Chamizal site reported PM₁₀ levels at 120 µg/m³ which approached the NAAQS level of 150 µg/m³. Chamizal is about 8 miles east of Desert View.

Figure 10-6 on page 114 and the narrative on page 112 show the NWS forecasted and reported a wind event on the exceedance day. The advisory indicates isolated thunderstorms could cause outflow winds and blowing dust. The NWS summary for the exceedance day indicated the El Paso area had wind gusts from the northeast up to 56 mph and both haze and sandstorm were experienced.

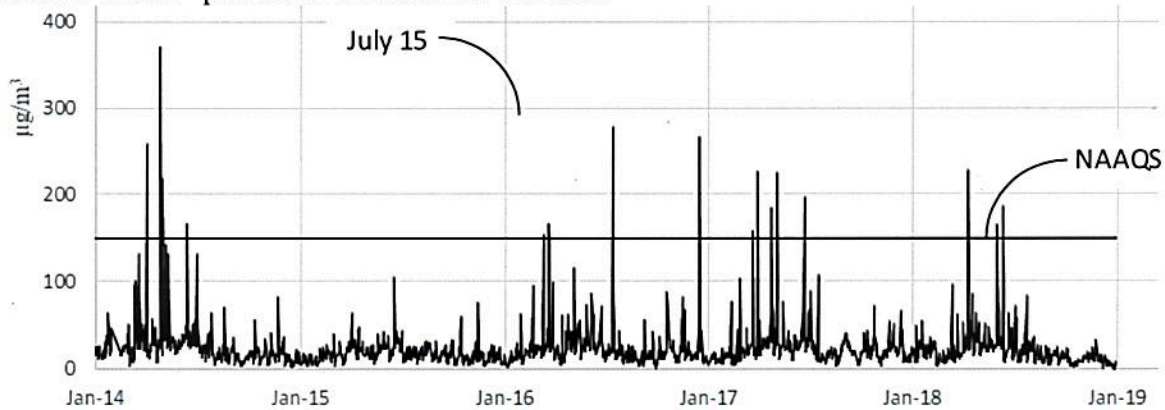
Figures 10-12, 10-13 and 10-14, on pages 118-119 show the hourly wind speed and PM₁₀ measurements from Anthony, Chaparral, and Deming on the exceedance day. The elevated PM₁₀ measurements correlate with elevated winds.

Figure 10-11 on page 118 shows hourly PM₁₀ measurements from Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming on the exceedance day. The elevated measurements correlate to the elevated winds shown on Figure 9-5.

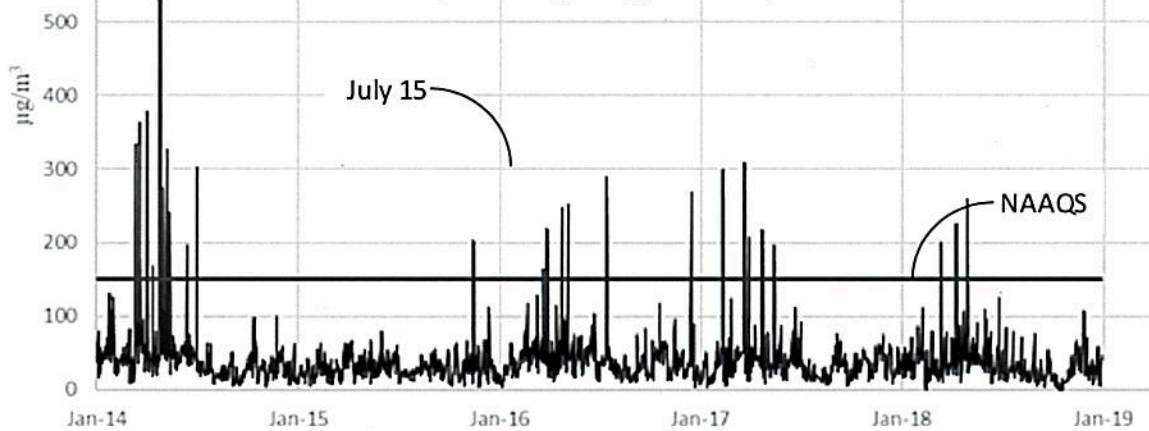
There are independent weather reports, evidence of blowing dust, and hourly wind data which showed that on the exceedance day the area experienced a widespread wind incident with entrained particulate matter. The demonstration showed that elevated hourly PM₁₀ measurements at the monitors correlated with 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 PM₁₀ exceedances at the monitors on the exceedance day.

JULY 15, 2016, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitor

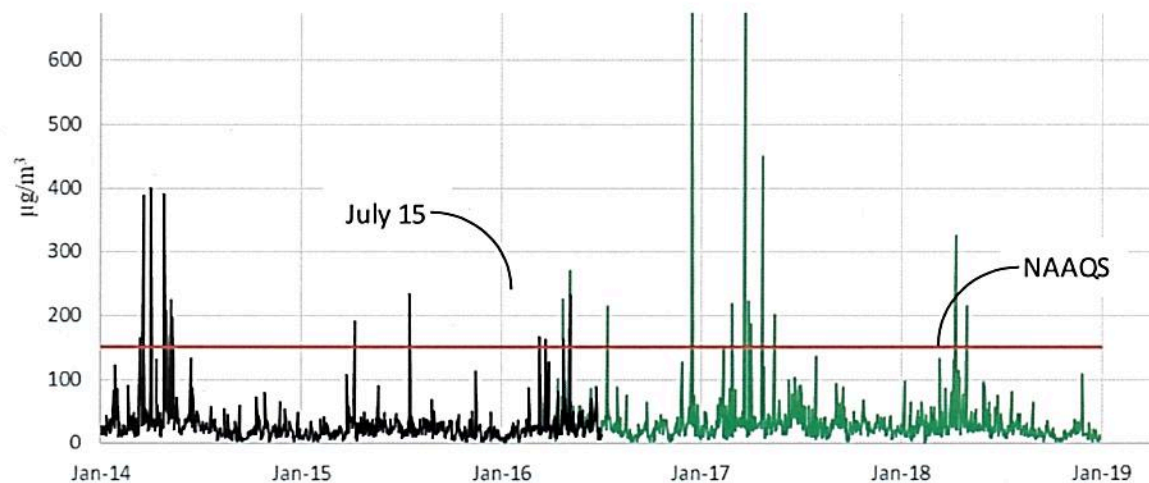
The graphs below show the monitor data from 2014 to 2019. The monitors data for the days surrounding the exceedance day did not approach the NAAQS level. The 24-Hours measurements on the exceedance day are above the 95th percentile of historical site data.



24-Hours Measurements, Deming PM₁₀ Monitor, 35-029-0003-81102-2



24-Hours Measurements, Anthony PM₁₀ Monitor, 35-013-0016-81102-2



24-Hours Measurements, Chaparral PM₁₀ Monitor, 35-013-0020-81102-2

Black is the Manual monitor at POC 1, and green is the Continuous monitor at POC 2

Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM₁₀ 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.

JULY 15, 2016, 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.

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 hourly winds at the Deming monitor site did not reach the threshold, however, winds at the monitor site exceeded 25 mph for 35 minutes. Also, winds at the Deming airport exceeded 25 mph for 1 hour. The hourly winds at Anthony also did not reach the threshold, however, Chaparral was upwind of Anthony on the exceedance day and experienced at least an hour of 25 mph winds.

See discussion under the March 22, 2016, exceedance for general information about the city of Anthony. On the exceedance day, the winds at Anthony were from the west, northeast, and east northeast. The developed land of the city of Anthony extends about one half mile to the west and about 1 mile to the northeast of the Anthony monitor site. The Anthony monitor site is about 800 feet north of the Texas border. To the southwest, the Mexico border is about 20 miles from the Anthony site. To the west beyond the city limits there are undisturbed arid lands to the Arizona border. To the northeast and east beyond the Anthony city limits there is the Chaparral community and then undisturbed arid lands to the Texas border.

See discussion under the March 22, 2016, exceedance for general information about the city of Deming. On the exceedance day, winds at Deming were west northwest, northwest and south. Northwest of the Deming monitor site for about 3 miles, there is mostly developed land within the city limits. Beyond the city, to the northwest, there are undeveloped arid 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 under the March 12, 2016, exceedance for general information about the Chaparral community. On the exceedance day, the winds at Chaparral varied from the northeast to the south. Residential areas or potential anthropogenic upwind sources extend to about 1 mile south of the Chaparral monitor site. Beyond the community southern limits are about 7 miles of undeveloped arid lands and then the northern suburbs of El Paso, Texas. The Chaparral monitor site is on the community's northern limits. Beyond the site to the north are undeveloped arid lands to the suburbs of Albuquerque hundreds of miles from the site. Also, the White Sands Missile Range is about 50 miles north of the site. Beyond the site to the northeast are undeveloped arid lands to the Texas border.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads, and storage piles. 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 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 PM₁₀ exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance date, 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 city of Deming and/or Dona Ana and Luna counties were upwind of the Chaparral, Deming and Anthony monitor sites on the exceedance day. The demonstration provides information on Deming, Luna County, and Dona Ana County dust ordinances. The ordinances require a plan for disturbed site dust controls. The controls required by the ordinance would have applied to any upwind disturbed sites in the city, counties, or the unincorporated Chaparral community on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at the Anthony, Deming, and Chaparral monitor sites.

Upwind anthropogenic sources in Texas or Mexico are outside the jurisdiction of the state of New Mexico. 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 24, 2016

The exceedance occurred on July 24, 2016, 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	195 µg/m ³

JULY 24, 2016, EXCEEDANCE DAY, Clear Causal Relationship

In the demonstration, the NMED states “[a]s the event unfolded, the wind blew from multiple directions throughout the border region.”

Table 11-2 on page 126 shows hourly wind speed data from the West Mesa, Desert View, and Deming monitor sites on the exceedance day. The winds at Desert View peaked at 15 mph. Gusts at the Desert View reached 40 mph.

Table 11-3 on page 126 shows 5-minute interval wind data from the Desert View and Santa Teresa monitor sites, on the exceedance day. At about 8 PM, winds at Desert View exceeded 25 mph for 5 minutes.

On the exceedance day, AQS data shows the hourly wind speeds at Santa Teresa peaked at 23 mph. While hourly winds did not exceed threshold, winds at Santa Teresa exceeded 25 mph for 40 minutes as shown on Table 11-3. Santa Teresa site is about 6 miles west of Desert View.

Figure 11-4 on page 128 shows hourly wind speeds at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites were erratic on the exceedance date.

Figure 11-6 on page 130 shows the frequency distribution of wind direction correlated with PM₁₀ data at Desert View when PM₁₀ concentrations exceeded 150 µg/m³ on the exceedance day. Winds were from the south southwest and the northwest.

On the exceedance day, AQS data shows the hourly wind speeds the monitor sites in El Paso County experienced elevated wind speeds but the winds did not approach threshold. The hourly wind speeds at UTEP, Chamizal, Ascarate, Skyline, and Ojo peaked between 13 and 19 mph.

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 about 8 minutes. Wind direction varied and gusts reached 33 mph. Weather was reported as thunderstorm and rain (Weather Type TS RA).

The Las Cruces airport is about 40 miles northwest of the Desert View site. On the exceedance day, winds at the airport peaked at 22 mph for about 15 minutes. Wind direction varied and gusts reached 41 mph. Weather was reported as thunderstorm and rain.

The Deming airport is in Luna County about 74 miles northwest of Desert View. On the exceedance day, winds at the airport peaked at 22 mph for about 30 minutes. Wind direction varied and gusts reached 31 mph. Weather was reported as rain and haze (Weather Type RA HZ).

Figure 11-10 on page 33 shows the 24-hours PM₁₀ measurements at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming, on the exceedance day. The Desert View 24-hours measurement exceeded the NAAQS level of 150 µg/m³. Other sites measurements were below average: Chaparral 19 µg/m³ (average 32 µg/m³), Anthony 35 µg/m³ (average 46 µg/m³), Holman 18 µg/m³ (average 28 µg/m³), Deming 21 µg/m³ (average 27 µg/m³) and West Mesa 16 µg/m³ (average 21 µg/m³).

The PM₁₀ manual monitors in El Paso County did not sample on the exceedance day. The Chamizal site, however, reports continuous PM₁₀ measurements which are non-NAAQS comparable. On the exceedance day, the Chamizal site reported PM₁₀ levels at 34 µg/m³ while the site average is 31 µg/m³. Chamizal is about 8 miles east of Desert View.

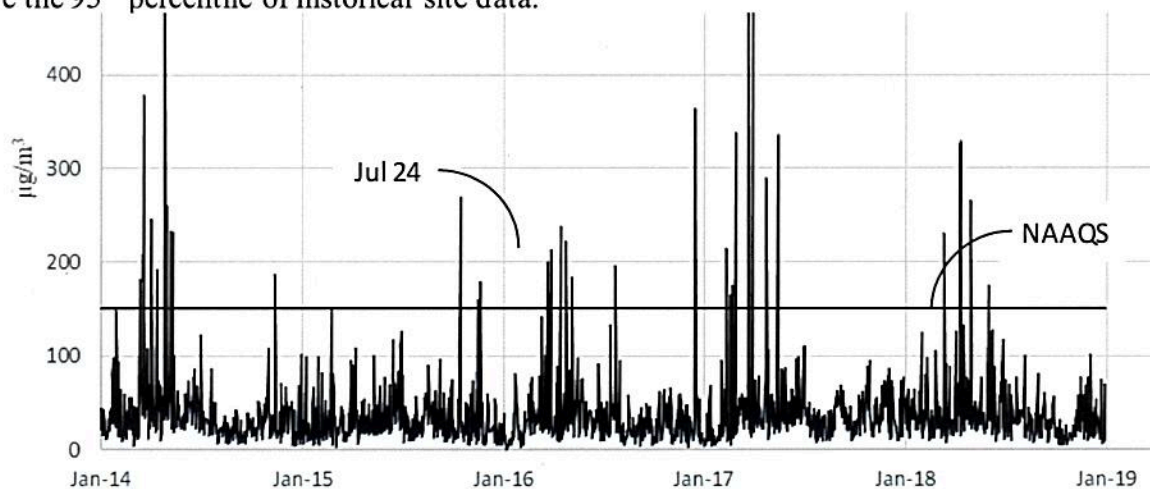
Figure 11-7 on page 131 shows hourly PM₁₀ measurements from Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites on the exceedance day. The elevated PM₁₀ measurements correlate with elevated wind speeds shown on Figure 11-4.

Figure 11-8 on page 132 shows both hourly wind speed and PM₁₀ data from Desert View on the exceedance day. The elevated PM₁₀ measurement correlates 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 PM₁₀ 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 using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM₁₀ exceedance at the monitor on the exceedance day.

JULY 24, 2016, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitor

The graph below shows monitor data from 2014 to 2019. The monitor data for the days surrounding the exceedance day did not approach the NAAQS level. The 24-Hours measurement on the exceedance day is above the 95th percentile of historical site data.



24-Hours Measurements, Desert View PM₁₀ Monitor, 35-013-0021-81102-2

Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM₁₀ at this monitor 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.

JULY 24, 2016, 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.

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, the hourly winds at Desert View did not reach the threshold. Winds at Desert View did, however, exceed 25 mph for 5 minutes on the exceedance day. Also, the winds at the upwind Santa Teresa site exceeded 25 mph for 40 minutes. Winds at Desert View were from the from the south southwest and the northwest.

See discussion under the March 22, 2016, exceedances for information about the city of Sunland Park. The Desert View monitor site is on the western city limits of Sunland Park. Desert View is about 1 mile south and 3/4 of a mile north of the Texas and Mexico border, respectively. On the exceedance day, nearby anthropogenic sources in Texas and the city would not have been upwind. To the west, except for a nearby landfill, and to the northwest, except for the city of Deming in Luna County, there are undeveloped lands all the way to the Arizona border. To the southwest is Mexico.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads, and storage piles. 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 Deming and/or Dona Ana and Luna Counties were upwind of the Desert View monitor site on the exceedance day. The demonstration provides information on Deming, Luna County, and Dona Ana County dust ordinances. The ordinances require a plan for disturbed site dust controls. The controls required by the ordinance would have applied to any upwind disturbed sites in the city or counties on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at the Desert View monitor site.

Upwind anthropogenic sources in Mexico are outside the jurisdiction of the state of New Mexico. 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.

DECEMBER 16, 2016

The exceedance occurred on December 16, 2016, 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
Chaparral	35-013-0020-81102-2	172 µg/m ³

DECEMBER 16, 2016, 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 12-2 on page 137 shows hourly wind speed data from the Chaparral, Anthony, and Deming monitor sites on the exceedance day. Winds at Chaparral exceeded 25 mph for multiple hours. Gusts at the Anthony, Chaparral, and Deming sites reached 43, 46, and 40 mph, respectively.

Figure 12-4 on page 138 shows hourly wind speeds at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites on the exceedance day. Winds at West Mesa and Chaparral exceeded 25 mph for multiple hours. Winds at Holman and Deming approached the threshold.

Figure 12-7 on page 141 shows the frequency distribution of wind direction correlated with PM₁₀ data at Chaparral when PM₁₀ concentrations exceeded 150 µg/m³ on the exceedance day. The winds were from the west southwest and southwest.

On the exceedance day, AQS data shows the hourly wind speeds at the Van Buren and Skyline monitor sites in El Paso County exceeded 25 mph for multiple hours. The hourly wind speed at Chamizal, Socorro, Ojo, and Ascarate peaked at 21, 20, 19 and 19 mph, respectively. Van Buren, and Skyline are about 16 and 10 miles to the south southwest of Chaparral, respectively. Chamizal, Socorro, Ojo, and Ascarate are within 26 miles of Chaparral, to the southeast and southwest.

The El Paso airport is about 18 miles south of Chaparral. On the exceedance day winds at the airport exceeded 25 mph for multiple hours. During this period, the winds were from the west southwest and gusts getting up to 45 mph.

The Las Cruces airport is about 34 miles northwest of Chaparral. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. Wind gusts peaked 49 mph and winds were from the west southwest. Overall, the weather type noted for the exceedance day was haze. In the afternoon, the weather type was shown as smoke and haze.

The Deming airport is in Luna County about 78 miles northwest of Chaparral. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. During this time, the weather type was smoke and haze, winds were from the west and southwest and gusts peaked at 39 mph.

Figure 12-11 on page 145 shows the 24-hours PM₁₀ measurements at Anthony, Chaparral, Desert View, and Deming on the exceedance day. Holman and West Mesa PM₁₀ exceedance day data are not available. The Chaparral 24-hours measurement exceeded the NAAQS level of 150 µg/m³. Other sites

measurements were elevated: Desert View 86 µg/m³ (average 46 µg/m³), Anthony 112 µg/m³ (average 46 µg/m³), and Deming 47 µg/m³ (average 27 µg/m³).

The PM₁₀ manual monitors in El Paso County did not sample on the exceedance day. The Chamizal site, however, reports continuous PM₁₀ measurements which are non-NAAQS comparable. On the exceedance day, the Chamizal site reported PM₁₀ levels at 79 µg/m³ which is above the average for the site at 30 µg/m³. Chamizal is about 19 miles south of Chaparral.

Figure 12-5 on page 140 is a satellite image of dust plumes which appear to be passing over areas in Mexico. The image was captured at 11 AM on the exceedance day. Generally, the plume appears to be moving from the southwest to the northeast.

The narrative on page 140 shows the NWS forecast wind and blowing dust on the exceedance day. The NWS predicted visibility issues due to blowing dust.

The NOAA Storm Events database shows that on the exceedance day, “High Wind” storm events were reported in various areas of Dona Ana County with “peak winds” ranging from 60 to 89 mph. The events started between 10 AM and 12:30 PM. The events ended the next day between 3 PM and 4 PM. A “High Wind” storm event with a “peak gust” of 71 mph was also reported in El Paso County that started at 3 PM on the exceedance day and ended at 2 PM on the next day.

Figure 12-9 on page 143 shows both hourly wind speed and PM₁₀ data on the exceedance day at Chaparral. The elevated PM₁₀ measurements correlate with elevated wind speeds.

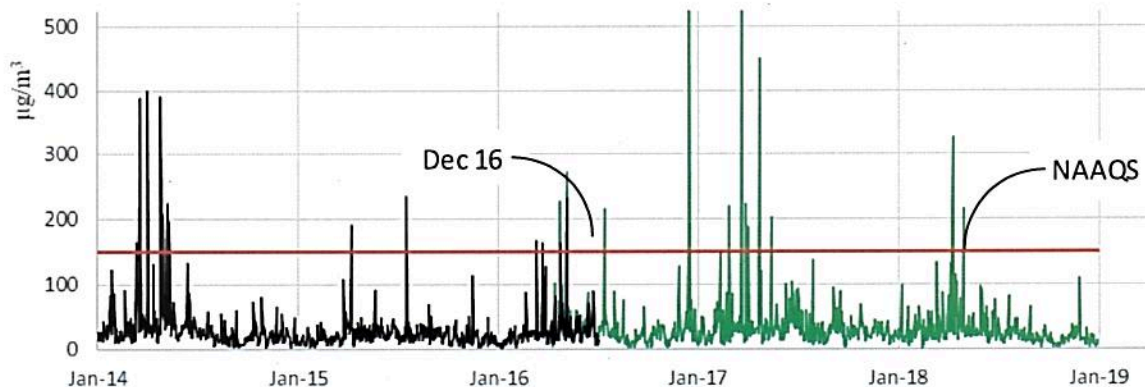
Figure 12-8 on page 142 shows PM₁₀ measurements from the Anthony, Chaparral, Desert View, and Deming monitor sites on the exceedance day. The elevated PM₁₀ measurements correlate with elevated wind speeds shown on Figure 12-4.

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 PM₁₀ 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 using a weight of evidence approach to the information provided, the NMED showed that a high wind dust event clearly caused the PM₁₀ exceedance at the monitor on the exceedance day.

DECEMBER 16, 2016, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitor

The graph below shows monitor data from 2014 to 2019. The measurement for the day before the exceedance day did not approach the NAAQS level. The measurement for the day after the exceedance day did exceed the NAAQS level due to a wind incident on December 17, 2016, which is discussed below. The 24-Hours measurement on the exceedance day is above the 95th percentile of historical site data.

2016 PM₁₀ Exceptional Event Demonstrations, Dona Ana and Luna Counties, NM



24-Hours Measurements, Chaparral PM₁₀ Monitor, 35-013-0020-81102

Black is the Manual monitor at POC 1, and green is the Continuous monitor at POC 2

Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM₁₀ 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.

DECEMBER 16, 2016, 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.

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. These elevated winds were from the west southwest and southwest.

See discussion under the March 12, 2016, exceedance for general information about the Chaparral community. 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 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. 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 Chaparral 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 PM₁₀ exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance date, 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 Chaparral on the exceedance day. The demonstration provides information on Dona Ana County Dust ordinance. The ordinance requires a plan for disturbed site dust controls. The controls required by the ordinance 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. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at the Chaparral monitor site.

Figure 12-6 on page 141 show the results of NOAA HYSPLIT Model 6-hours backward trajectories. The NMED ran the model with the trajectories ends at the “start” of the exceedance day wind event, at Chaparral. The results show that the winds could have been in Texas and Mexico prior to reaching Chaparral. Upwind anthropogenic sources in Texas and Mexico to the west and southwest 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.

DECEMBER 17, 2016

The exceedances occurred on December 17, 2016, hereafter referred to as the “exceedance day,” at monitor sites in Dona Ana and Luna Counties. The relevant monitor and exceedance are:

Site Name	Monitor AQS ID	Exceedance, Measurement
Chaparral	35-013-0020-81102-2	689 $\mu\text{g}/\text{m}^3$
Anthony	35-013-0016-81102-2	268 $\mu\text{g}/\text{m}^3$
Desert View	35-013-0021-81102-2	363 $\mu\text{g}/\text{m}^3$
Deming	35-029-0003-81102-2	266 $\mu\text{g}/\text{m}^3$
Holman	35-013-0019-81102-2	209 $\mu\text{g}/\text{m}^3$
West Mesa	35-013-0024-81102-2	246 $\mu\text{g}/\text{m}^3$

DECEMBER 17, 2016, 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.”

Figure 13-4 on page 151 indicates hourly wind speeds at Anthony, West Mesa, Chaparral, Holman, Desert View, and Deming monitor sites on the exceedance date. The figure shows winds at Anthony, West Mesa, Chaparral, Holman, and Deming sites exceeded 25 mph for multiple hours.

On the exceedance day, the AQS data shows the hourly wind speeds at Desert View reached a peak of 23 mph. While the hourly wind speeds at Desert View did not exceed the threshold, winds exceeded 25 mph for at least 45 minutes between 9 AM and 3 PM.

On the exceedance day, AQS data shows the hourly wind speeds at the Skyline, Van Buren, Ascarate, Chamizal, and Ivanhoe monitor sites in El Paso County exceeded 25 mph for at least one hour. The hourly wind speeds at Socorro and Ojo peaked at 24 mph and at UTEP winds peaked at 22 mph. The El Paso County sites are all within 20 miles of Desert View, to the northeast and southeast.

Figures 13-12 through 13-18 on pages 157 to 160 show the frequency distribution of wind direction correlated with PM₁₀ data at Anthony, Chaparral, Deming, Desert View, Holman, and West Mesa when PM₁₀ concentrations exceeded 150 $\mu\text{g}/\text{m}^3$ on the exceedance day. Winds at Chaparral and Holman were from the west, west southwest and southwest. Winds at Anthony were from the west northwest and west. Winds at Deming varied from west southwest and southwest to west northwest. The Desert View and West Mesa winds varied from the west northwest, west, and west southwest.

The Las Cruces airport is about 34 miles northwest of Chaparral. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. The wind direction varied from west southwest to west northwest. Wind gusts reached 62 mph during this period. The overall weather type noted for the entire exceedance day was summarized as rain, drizzle, and haze (Weather Type RA DZ HZ).

The El Paso airport is about 18 miles south of Chaparral. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. The winds were from the west southwest and west northwest and gusts reached 60 mph. From about 8 AM to 4 PM, the weather type was blowing dust (Weather Type BL DU). The overall weather type noted for the entire exceedance day was summarized as rain and dust (Weather Type RA DU).

The Deming airport is in Luna County about 78 miles northwest of Chaparral. On the exceedance day, winds at the airport exceeded 25 mph for multiple hours. During this time, the weather types were smoke, haze, and rain, winds varied from west northwest to west southwest, and gusts peaked at 59 mph. The overall weather type for the exceedance day was rain and haze (Weather Type RA HZ).

The PM₁₀ manual monitors in El Paso County did not sample on the exceedance day. Also, on the exceedance day, the continuous Chamizal PM₁₀ measurement was invalid and incomplete.

Figure 13-5 on page 153 shows a satellite image of dust plumes which appears to be passing over areas in New Mexico, Texas, and Mexico. The image was captured at 9:25 AM on the exceedance day. Generally, the plumes appear to be moving from the southwest to the northeast.

The narrative on page 153 shows the NWS issued a wind and blowing dust advisory on the exceedance day. The NWS predicted gusts up to 50 mph.

The NOAA Storm Events database shows that on the exceedance day “High Wind” storm events were reported in various Dona Ana County areas with “peak winds” ranging from 60 to 89 mph. The events started between 10 AM and 12:30 PM on the day before exceedance day. The events ended on the exceedance day between 3 PM and 4 PM. A “High Wind” storm event with a “peak gust” of 71 mph was reported in El Paso County also that started at 3 PM on the day before and ended at 2 PM on the exceedance day.

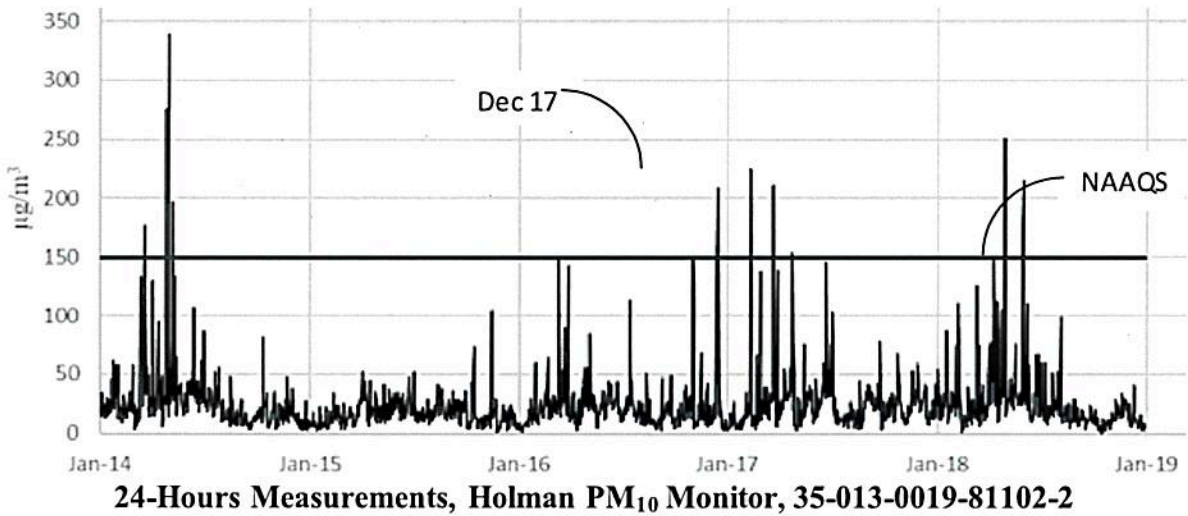
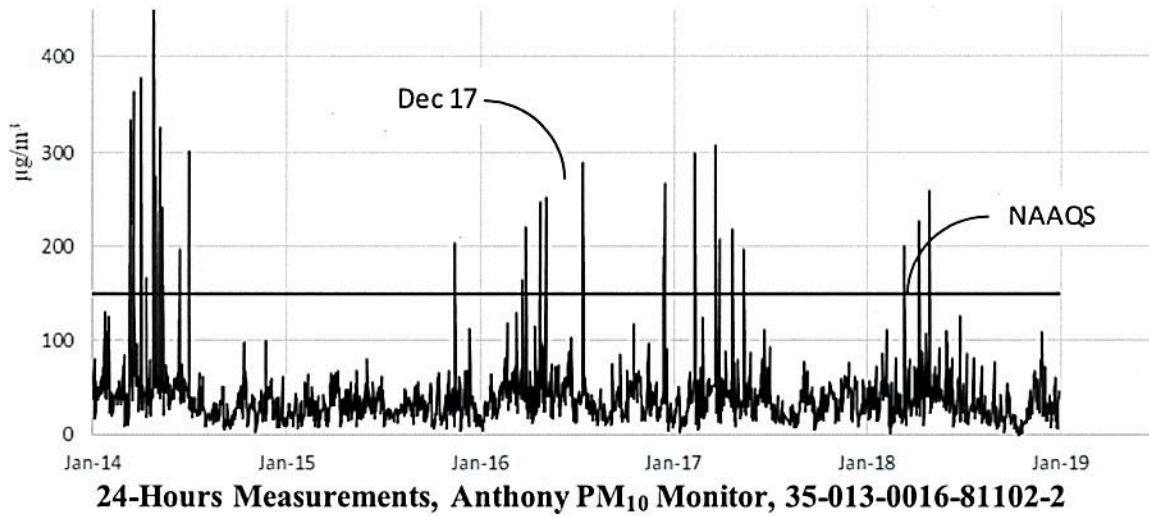
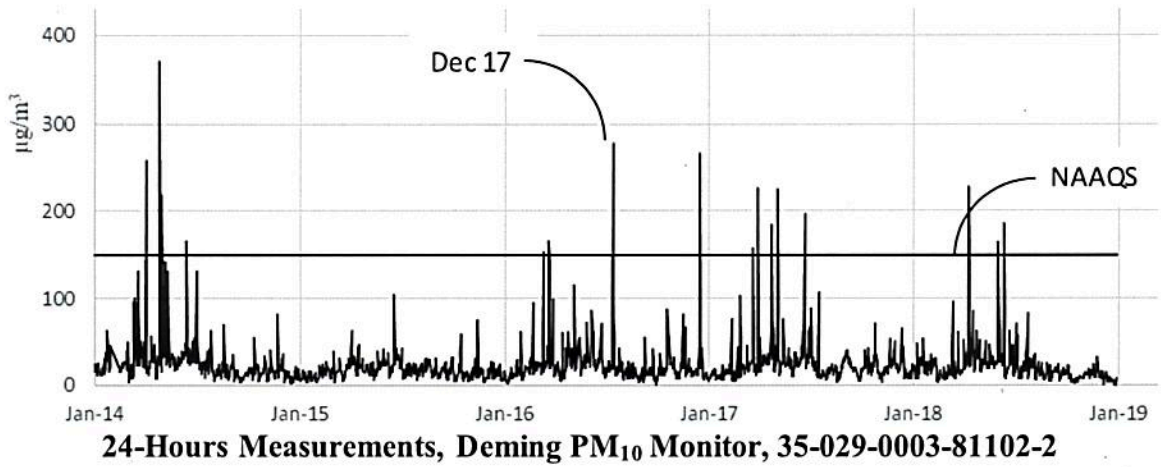
Figures 13-20 through 13-25 on pages 162 to 164 show both hourly wind speed and PM₁₀ data from Anthony, West Mesa, Holman, Chaparral, Deming, and Desert View on the exceedance day. The elevated PM₁₀ measurements correlate with elevated wind speeds.

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 PM₁₀ 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 PM₁₀ exceedances at the monitors on the exceedance day.

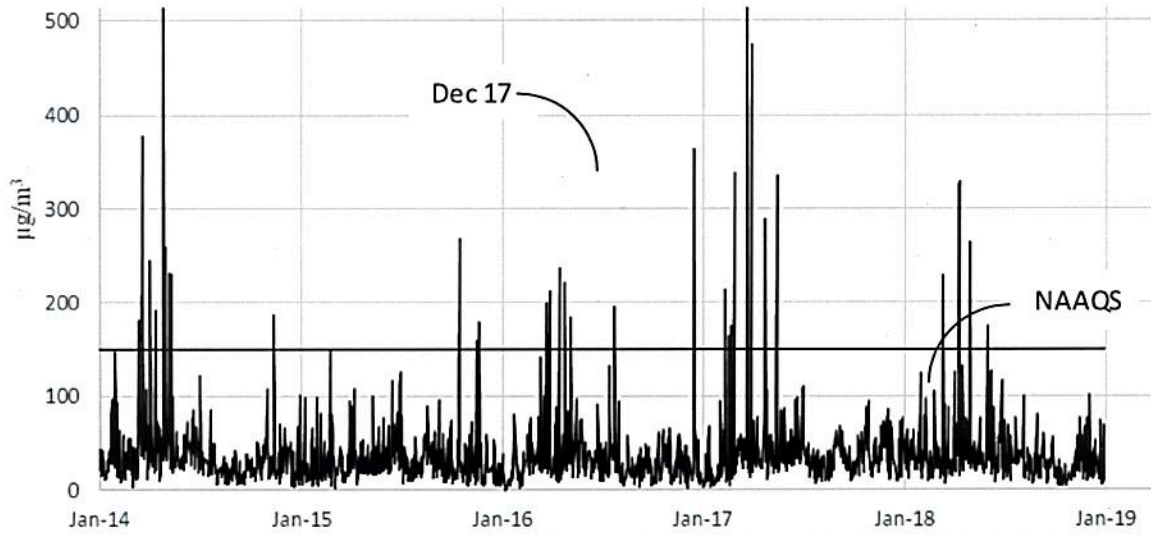
DECEMBER 17, 2016, EXCEEDANCE DAY, Analyses comparing event influenced concentrations to other concentrations at the monitor

The graphs below show the monitors data from 2014 to 2019. The site measurements for the day after the exceedance day did not approach the NAAQS level. The measurements for the preceding day were elevated, approached the NAAQS level, or exceeded the NAAQS level due to a wind incident on December 16, 2016, which is discussed above. The 24-Hours measurements on the exceedance day are above the 95th percentile of historical site data.

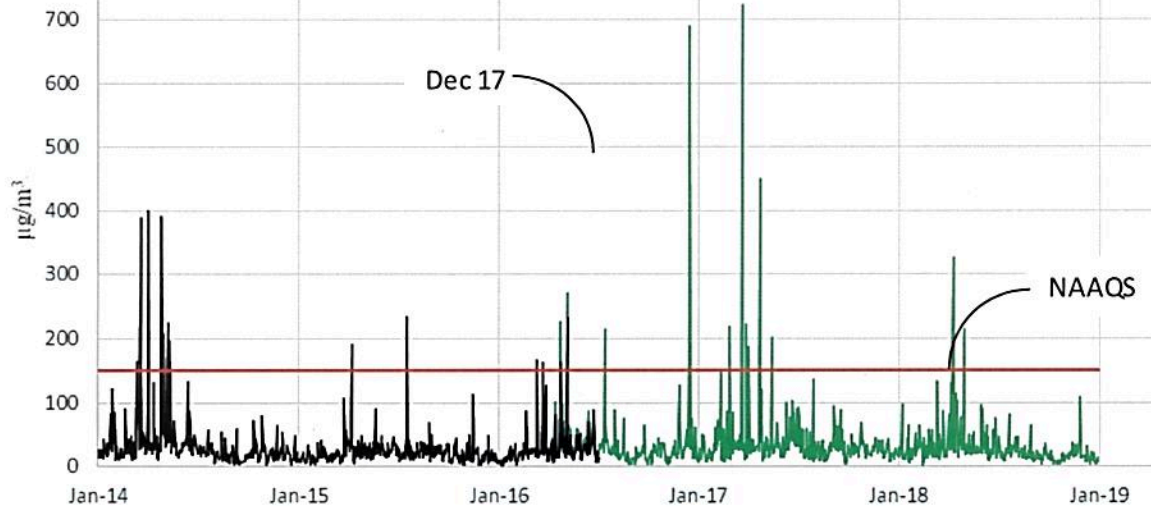
2016 PM₁₀ Exceptional Event Demonstrations, Dona Ana and Luna Counties, NM



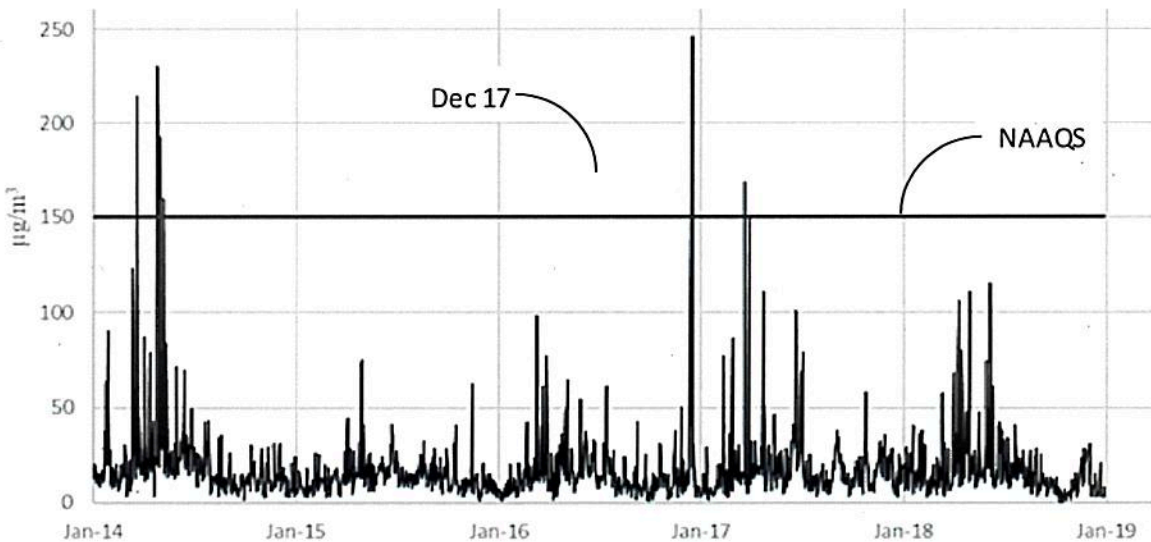
2016 PM₁₀ Exceptional Event Demonstrations, Dona Ana and Luna Counties, NM



24-Hours Measurements, Desert View PM₁₀ Monitor, 35-013-0021-81102-2



24-Hours Measurements, Chaparral PM₁₀ Monitor, 35-013-0020-81102



24-Hours Measurements, West Mesa PM₁₀ Monitor, 35-013-0024-81102-2

Based on the analyses and statistics, the comparison of the exceedances to the historical concentrations of PM₁₀ 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.

DECEMBER 17, 2016, EXCEEDANCE DAY, Not reasonably controllable or preventable

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

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 Anthony, West Mesa, Holman, Deming, and Chaparral exceeded the threshold on the exceedance day. While the hourly wind speeds at Desert View did not exceed the threshold on the exceedance day, the winds exceeded 25 mph for at least 45 minutes.

See discussion under the March 12, 2016, exceedance for general information about the Chaparral community. On the exceedance day, the winds at Chaparral varied from the west to southwest. Residential areas or potential anthropogenic upwind sources extend to about 2 miles west and 1 mile south of the Chaparral monitor site. Beyond the residential areas to the south there are about 7 miles of sparsely vegetated natural undisturbed arid lands and then the northern suburbs of El Paso, Texas. To the west, with a few exceptions such as the city of Anthony, New Mexico, undisturbed arid lands exist all to the Arizona border. To the southwest, the Mexico border is about 24 miles from the Chaparral monitor site.

See discussion under the March 22, 2016, exceedance for general information about the city of Anthony. On the exceedance day, winds at Anthony were from the west northwest and west. The Anthony monitor site is about 800 feet north of the Texas border. To the southwest, the Mexico border is about 20 miles from the Anthony monitor site. The developed land of the city of Anthony extends about one half mile to the west and northwest of the Anthony monitor site. To the west and northwest beyond the city of Anthony, there are undisturbed arid lands to the Arizona border.

See discussion under the March 22, 2016, exceedance for general information about the city of Deming. Winds at Deming varied from west southwest to west northwest, on the exceedance day. To the southwest and northwest of the Deming monitor site for about 2 miles, there is a mix of developed and undeveloped land within the city limits. To the southwest and northwest beyond the city of Deming, there are undisturbed arid lands to the Arizona border.

See discussion under the March 22, 2016, exceedance for general information about the city of Sunland Park. The Desert View monitor site is on the western limits of the city of Sunland Park. The Texas border is about 1 mile north and east of Desert View. The Mexico border is about 3/4 of a mile south of Desert View. On the exceedance day, wind at Desert View varied from the west northwest to west southwest. On the exceedance day, nearby anthropogenic sources in Texas and the city of Sunland Park would not have been upwind. To the west, except for a nearby landfill, and northwest, except for the city of Deming, there are undeveloped lands all the way to the Arizona border. To the southwest is the Mexico border.

On the exceedance day, the winds at Holman varied from the west to the southwest. The Holman monitor site is 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.

On the exceedance day, winds at West Mesa varied from the west northwest to the west 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.

The NMED indicates anthropogenic sources near the monitor sites includes disturbed surface areas, residential properties, vacant lots, dirt roads, and storage piles. 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 was upwind of the Chaparral and Anthony monitoring 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 PM₁₀ exceedances, the EPA waived the area attainment deadline for the Anthony SIP. The SIP was approved more than 5 years before the exceedance date, 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 cities of Deming and Las Cruces and/or Luna and Dona Ana Counties were upwind of Chaparral, Holman, West Mesa, Anthony, Deming, and Desert View on the exceedance day. The demonstration provides information on city and county dust ordinances. The ordinances require a plan for disturbed site dust controls. The controls required by the ordinances would have applied to any upwind disturbed sites in the cities and counties on the exceedance day. The NMED indicates the implementation and enforcement of any controls occurs at the local level. During the subject widespread high wind event, however, the emissions from the extensive upwind undeveloped lands likely dominated the impacts at the monitor sites.

Figures 13-6 through 13-11 on pages 154 to 156 show the results of NOAA HYSPLIT Model 6-hours backward trajectories. The NMED ran the model with the trajectories ends at the "start" of the exceedance day wind event at Anthony, West Mesa, Holman, Deming, Desert View, and Chaparral. The results show that the winds could have been in Texas or Mexico prior to reaching the monitor sites. Upwind anthropogenic sources in Texas and Mexico to the southwest 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, the controls on any upwind sources within the state jurisdiction, the widespread nature of the weather event, and the dominating emissions from sustained high winds on extensive upwind undeveloped arid lands, the demonstration showed that potentially contributing anthropogenic activities were reasonably controlled on the exceedance day.