



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202 - 2733

Office of the Regional Administrator

July 7, 2015

Mr. Richard A. Hyde, P.E.
Executive Director
Texas Commission on Environmental Quality
Post Office Box 13087
Austin, Texas 78711-3087

Dear Mr. Hyde:

This letter responds to the Texas Commission on Environmental Quality's 2010 - 2012 Exceptional Events Demonstration regarding exceedances of the PM₁₀ and PM_{2.5} National Ambient Air Quality Standards at the air monitoring sites in the El Paso Area, listed in Enclosure 1. The U.S. Environmental Protection Agency has completed its analysis of this submittal to ensure it meets the requirements governed by 40 Code of Federal Regulations §50.14.

The EPA acknowledges your request to exclude the flagged PM₁₀ and PM_{2.5} data from consideration in determining El Paso County's attainment status under the daily PM₁₀ NAAQS, in addition to the daily and annual PM_{2.5} NAAQS, as applicable. The submittal meets the schedule and procedural requirements set forth in 40 CFR § 50.14(c), for the proposed exceptional events flags listed in Enclosure 1.

For the PM₁₀ and PM_{2.5} exceedances listed in Enclosure 1, except for those on February 8, 2011, the EPA concurs, based on the weight of the evidence provided, that TCEQ has successfully made the demonstrations referred to in 40 CFR § 50.14. The EPA will rely on calculated values that exclude this data in proposed regulatory actions, such as a proposed designation, classification, attainment demonstration, or finding as to whether El Paso County has met the daily PM₁₀ NAAQS as well as the daily and annual PM_{2.5} NAAQS, as applicable. If EPA pursues such action for the El Paso County area, we will initiate a new comment period during which we may receive comments. In this event, we must consider and respond to those comments before taking final regulatory action.

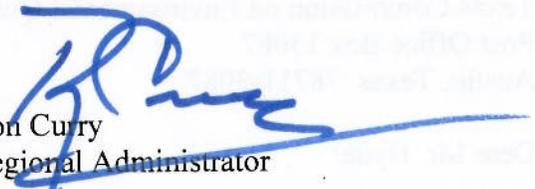
After careful consideration of the information provided, based on the weight of the evidence, the EPA is unable to concur that the TCEQ has successfully made the demonstration, referred to in 40 CFR § 50.14, that the PM_{2.5} exceedances on February 8, 2011, at the University of Texas El Paso and Chamizal monitoring sites would not have occurred but for the event.

The EPA will rely on calculated values that include these February 8, 2011, data in proposed regulatory actions, such as a proposed designation, classification, attainment demonstration, or finding as to whether El Paso County has met the daily and annual PM_{2.5} NAAQS. If the EPA pursues such action for the El Paso area, we will initiate a new comment period during which we may receive comments on the exceptional event submission TCEQ has made and the determinations conveyed in this letter. In this event, we must consider and respond to those comments before taking final regulatory action.

The determinations conveyed in this letter do not constitute final EPA action regarding any matter on which the EPA is required to provide an opportunity for public comment. In particular, this applies to determinations regarding the attainment status or classification of the area. Final actions will take place only after the EPA completes notice and comment on those determinations.

We appreciate the work and effort of the TCEQ to develop their exceptional events package. Details regarding our review are provided in Enclosure 2. If you have any questions, please contact me at (214) 665-2100 or your staff may contact Mr. Robert Lushek, Air Quality Analysis Acting Section Chief, at (214) 665-7148.

Sincerely,



Ron Curry
Regional Administrator

Enclosures

cc: Richard C. Chism
Texas Commission on Environmental Quality

Enclosure 1

2010-2012 El Paso area PM₁₀ and PM_{2.5} Exceptional Event Flagged Data Proposed for Exclusion

PM₁₀

The demonstration seeks exclusion for 3 exceedances of the 24-hour PM₁₀ NAAQS at the Socorro site.

Date	Site ID	Site Name	POC*	PM ₁₀ (µg/m ³)	Event Description
11/28/10	481410057	Socorro	1	249	High winds – regional blowing dust
4/3/11	481410057	Socorro	1	159	High winds – regional blowing dust
4/9/11	481410057	Socorro	1	169	High winds – regional blowing dust

*POC = parameter occurrence code. In this case, the specific monitor for this pollutant at the monitoring site.

PM_{2.5}

The demonstration seeks exclusion for the following exceedances of the daily & annual PM_{2.5} NAAQS:

Date	Site ID	Site Name	POC*	PM _{2.5} (µg/m ³)	Event Description
2/8/11	481410037	UTEP	1	36.8	High winds – regional blowing dust
2/8/11	481410044	Chamizal	1	42.9	High winds – regional blowing dust
3/7/11	481410044	Chamizal	6	37.2	High winds – regional blowing dust
4/9/11	481410037	UTEP	1	48.7	High winds – regional blowing dust
4/9/11	481410044	Chamizal	1	38.5	High winds – regional blowing dust
4/26/11	481410044	Chamizal	6	36.2	High winds – regional blowing dust
5/10/11	481410044	Chamizal	6	36.3	High winds – regional blowing dust
3/7/12	481410044	Chamizal	6	85.0	High winds – regional blowing dust
3/18/12	481410044	Chamizal	6	130.4	High winds – regional blowing dust
11/10/12	481410044	Chamizal	6	45.7	High winds – regional blowing dust

*POC = parameter occurrence code. In this case, the specific monitor for this pollutant at the monitoring site.

February 8, 2011

UTEP

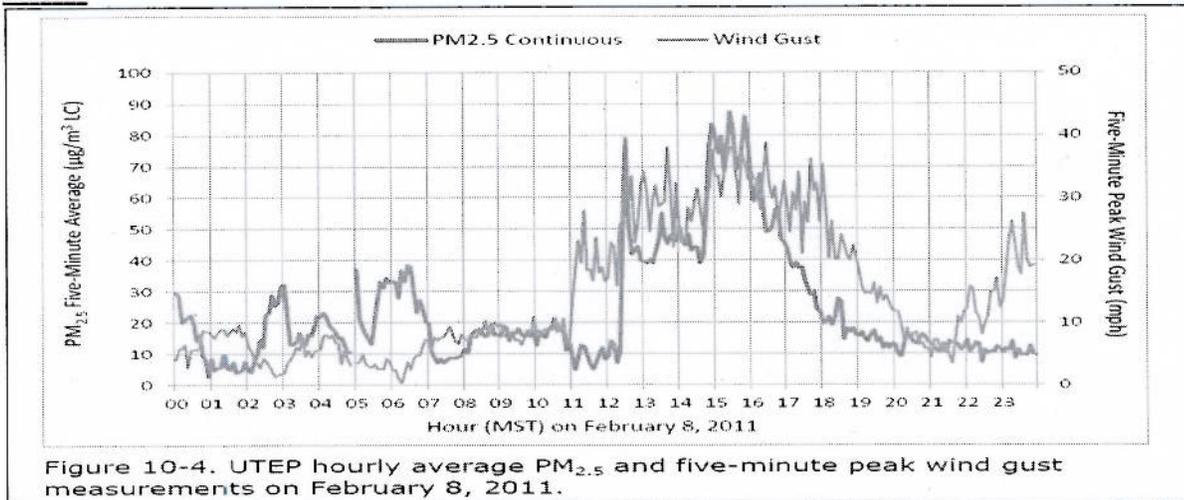


Figure 10-4. UTEP hourly average PM_{2.5} and five-minute peak wind gust measurements on February 8, 2011.

Looking at the figure above, note the morning elevated PM_{2.5} levels, particularly from 00 to 07 hours. During an extended period in the morning hours of February 8, 2011, the peak wind gusts are low but the PM_{2.5} concentrations at the UTEP site reach levels above the annual and daily PM_{2.5} NAAQS of 12 $\mu\text{g}/\text{m}^3$ and 35 $\mu\text{g}/\text{m}^3$, respectively. These elevated PM_{2.5} levels in the absence of high wind gusts are indicative of PM_{2.5} contributions from local sources.

The evidence in the document on contributions from local sources was fairly general and not sufficient to rule out significant local contributions to measured PM_{2.5} levels on February 8, 2011.

The document did not demonstrate that but for the high wind dust event, PM_{2.5} levels at the UTEP site on February 8, 2011, would not have exceeded 12 $\mu\text{g}/\text{m}^3$ or 35 $\mu\text{g}/\text{m}^3$.

Chamizal

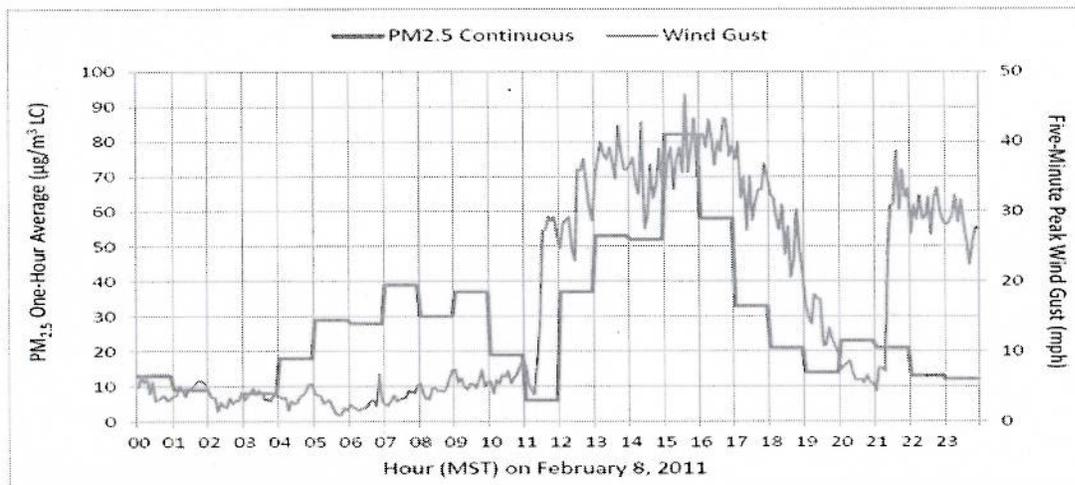


Figure 10-3. Chamizal hourly average PM_{2.5} and five-minute peak wind gust measurements on February 8, 2011.

Looking at the figure above, note the morning elevated PM_{2.5} levels, particularly from 04 to 11 hours. During an extended period in the morning hours of February 8, 2011, the peak wind gusts are low but the PM_{2.5} concentrations at the Chamizal site reach levels above the annual and daily PM_{2.5} NAAQS of 12 $\mu\text{g}/\text{m}^3$ and 35 $\mu\text{g}/\text{m}^3$, respectively. These elevated PM_{2.5} levels in the absence of high wind gusts are indicative of PM_{2.5} contributions from local sources.

The evidence in the document on contributions from local sources was fairly general and not sufficient to rule out significant local contributions to measured PM_{2.5} levels on February 8, 2011.

The document did not demonstrate that but for the high wind dust event, PM_{2.5} levels at the Chamizal site on February 8, 2011, would not have exceeded 12 $\mu\text{g}/\text{m}^3$ or 35 $\mu\text{g}/\text{m}^3$.

Texas 2011-2012 El Paso –PM_{2.5} Exceptional Events Demonstration Technical Review Summary

Introduction

The Environmental Protection Agency (EPA) promulgated the Exceptional Events Rule (EER) in 2007, pursuant to the 2005 amendment of the Clean Air Act (CAA) Section 319. The EER added 40 CFR §50.1(j), (k), and (l); §50.14; and §51.930 to the Code of Federal Regulations (CFR). These sections contain definitions, criteria for EPA approval, procedural requirements, and requirements for air agency demonstrations, all of which must be met before EPA can concur under the EER on the exclusion of air quality data from regulatory decisions. Failure to meet the required criteria results in non-concurrence with the exclusion of the measured National Ambient Air Quality Standard (NAAQS) exceedance(s).

After considering the weight of evidence provided in the demonstration, the EPA will decide to concur or not to concur with each flag. Under 40 CFR §50.14(c)(3)(iv), the air agency demonstration to justify exclusion of data must provide evidence that:

- the event was caused by human activity unlikely to reoccur at a particular location or was a natural event,
- the event affects air quality,
- the event was not reasonably controllable or preventable,
- the event was in excess of normal historical fluctuations,
- there was a clear causal relationship, and
- there would have been no exceedance or violation but for the event,

Exceptional Events Demonstration

The Texas Commission on Environmental Quality (TCEQ) submitted the 2010-2012 El Paso PM Exceptional Events Demonstration dated November 1, 2013 to EPA Region 6. An addendum to the demonstration dated August 19, 2014 was submitted in response to EPA comments.

The daily PM_{2.5} NAAQS is a 24-hour standard of 35 µg/m³ based on a 98th percentile, averaged over three years. The annual PM_{2.5} NAAQS is an annual mean of 12 µg/m³ averaged over three years.

Note: For PM_{2.5}, if the day meets the requirements for exclusion for the daily standard it is automatically excluded from calculation of the annual standard, so no separate comparison vs. the annual standard is needed.

Proposed 2011-2012 El Paso PM_{2.5} Exceptional Events

Date	Site ID	Site Name	PM _{2.5} (µg/m ³)	POC*	Description
02/08/2011	481410037	UTEP	36.8	1	High winds – regional blowing dust
02/08/2011	481410044	Chamizal	42.9	1	High winds – regional blowing dust
03/07/2011	481410044	Chamizal	37.2	6	High winds – regional blowing dust
04/09/2011	481410037	UTEP	48.7	1	High winds – regional blowing dust
04/09/2011	481410044	Chamizal	38.5	1	High winds – regional blowing dust
04/26/2011	481410044	Chamizal	36.2	6	High winds – regional blowing dust
05/10/2011	481410044	Chamizal	36.3	6	High winds – regional blowing dust
03/07/2012	481410044	Chamizal	85.0	6	High winds – regional blowing dust
03/18/2012	481410044	Chamizal	130.4	6	High winds – regional blowing dust
11/10/2012	481410044	Chamizal	45.7	6	

*POC = parameter occurrence code. In this case the specific monitor for this pollutant at the monitoring site.

Based on a weight of evidence in the TCEQ 2010-2012 El Paso PM Exceptional Events Demonstration dated May 22, 2013 and an addendum dated August 19, 2014, all the PM_{2.5} measurements are approved by the Regional Administrator as exceptional events, except for the PM_{2.5} measurements on February 8, 2011 at both the UTEP and Chamizal monitoring sites (above in **bold**).

Note: Area-Wide Wind Gust Approach

The document attempted to argue that the peak wind gust data for the entire El Paso area should be used to help set a pollutant specific (PM₁₀ or PM_{2.5}) wind gust threshold. Then, in an attempt to justify a high wind PM data exclusions, the highest peak wind gust in the entire El Paso area on a specific day was compared to that pollutant-specific threshold to argue that local PM controls were overwhelmed at a specific monitoring site that day, even if that site was different from where the peak wind gust occurred.

EPA did not find this wind gust argument and approach persuasive or sufficiently supported in the document. Consequently, EPA did not agree with the conclusions presented in the document that relied on the area-wide peak wind gust approach.

That being said, EPA conclusions on exceptional event demonstrations are based on the weight of evidence in all the documentation submitted by the requesting agency. Based on the weight of evidence, EPA was still able to make conclusions on the requested PM exclusions for the El Paso area.

March 7, 2011

The event was caused by human activity unlikely to reoccur or was a natural event

High winds causing windblown dust are natural events. This natural phenomenon was mentioned in the preamble to the EPA Exceptional Events Rule as being eligible for evaluation as a possible exceptional event. [See 72 FR 13566, 13566 and 13576 (March 22, 2007)].

The proposed exceptional event flag for March 7, 2011 is for a high wind blowing dust event, which is a natural event. Webcam imagery provide visual evidence of dust from northern Mexico moving into the El Paso area on March 7, 2011, as does back trajectory analysis of air masses traveling from Mexico over primarily natural desert terrain to the monitors in El Paso County. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for March 18, 2012 also support the occurrence of high wind dust event in the area that day. This evidence is located in Appendix D of the demonstration.

PM_{2.5} speciation data from the El Paso Chamizal site for five of the ten 2010-2012 proposed exceptional event days, including March 7, 2011, also provides evidence that the elevated particulate concentrations were from natural sources. A summary of the Chamizal PM_{2.5} speciation data on some of the proposed exceptional event days is provided in the table below, including averages from 2010 through 2012. The speciation data shows an elevated IMPROVE soil component on proposed exceptional event days, including March 7, 2011, as would be expected with dust from high winds.

On the 2010-2012 proposed exceptional event days when speciation monitoring data were available, the Chamizal IMPROVE soil component ranged from 14.9 to 47.4 µg/m³ on five proposed 2010-2012 PM exceptional event days compared to the 95th percentile of 5.4 µg/m³ for all sample days during the period from 2001 through 2012, including high wind dust events. The speciation monitoring IMPROVE soil component data shows that IMPROVE soil concentrations were significantly elevated with high winds.

Chamizal PM speciation soil component summary for 2010-2012 proposed exceptional event days (µg/m³)

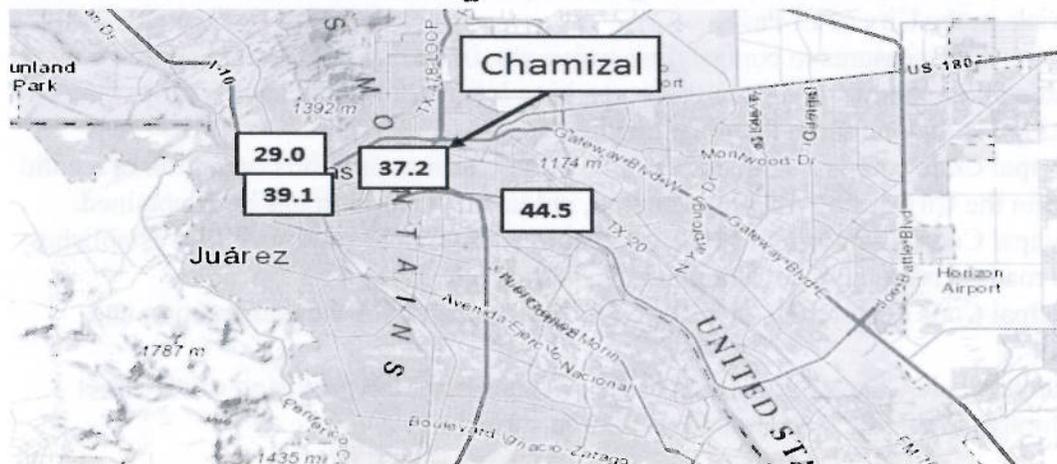
	2010-2012 average*	2010-2012 (95 th percentile)	11/28/10	3/7/11	4/3/11	4/9/11	03/7/12
ISoil	2.1	5.4	17.4	24.3	14.9	17.0	47.4

The event affects air quality

The measurement of $37.2 \mu\text{g}/\text{m}^3$ on March 7, 2011, exceeded the $\text{PM}_{2.5}$ 24-hour NAAQS of $35 \mu\text{g}/\text{m}^3$. The $\text{PM}_{2.5}$ measurement at Chamizal was well above the 95th percentile of $20.2 \mu\text{g}/\text{m}^3$ from 2008 through 2012. The preamble to the Exceptional Event Rule (72 *Federal Register* 13569) states: "For extremely high concentrations relative to historical values (e.g., concentrations greater than the 95th percentile), a lesser amount of documentation or evidence may be required to demonstrate that the event affected air quality."

Maps provided also display daily average $\text{PM}_{2.5}$ measurements from the March 7, 2011, event for El Paso area monitors, including the Chamizal $\text{PM}_{2.5}$ measurement proposed as an exceptional event. Graphs of continuous $\text{PM}_{2.5}$, PM_{10} , and wind data for the March 7, 2011, event are also provided. Elevated PM measurements are evident throughout the El Paso area and continuous PM_{10} and $\text{PM}_{2.5}$ measurements plotted against peak winds support the occurrence of a dust cloud in the area affecting air quality on March 7, 2011, as also documented by webcam and satellite images.

Map of El Paso area daily average $\text{PM}_{2.5}$ measurements ($\mu\text{g}/\text{m}^3$) on March 7, 2011



The event was not reasonably controllable or preventable

The evidence is located in Appendix D of the demonstration, including meteorological data, webcam and satellite images, back trajectories and graphs of continuous $\text{PM}_{2.5}$, and wind data for March 7, 2011. Back trajectories indicate that the air arriving at the Chamizal site at the time of the highest $\text{PM}_{2.5}$ levels on March 7, 2011, originated from northern Mexico, as depicted in the satellite imagery.

Furthermore, there are PM control measures in the El Paso area. The El Paso area has been classified as nonattainment for the 24-hour PM_{10} NAAQS since November 15, 1990. The State of Texas adopted State Implementation Plan (SIP) provisions in November 1991 that include regulations on PM_{10} sources in the El Paso area, approved by EPA effective February 17, 1994. Some of these control measures could reduce $\text{PM}_{2.5}$ emissions as well.

On January 25, 2012, TCEQ adopted a SIP revision to incorporate a revised Memorandum of Agreement between the TCEQ and the City to reflect updates to the PM_{10} control measures. The regulations included in these SIP revisions are summarized below:

- 30 TAC §111.111(c) prohibits the use of solid fuel heating devices during periods of atmospheric stagnation in the City of El Paso, including the Fort Bliss Military Reservation.

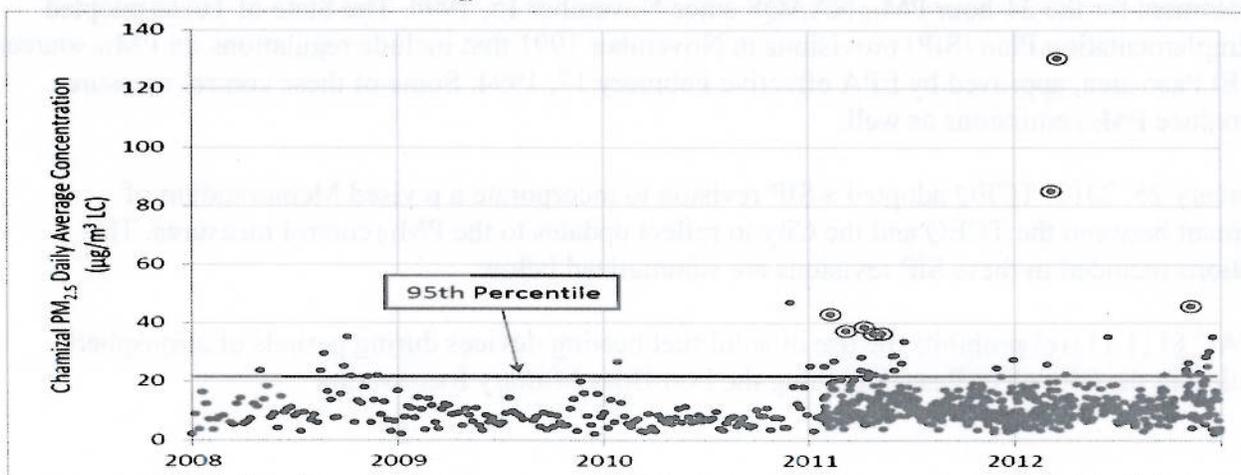
- 30 TAC §111.141 establishes that §111.143 (Materials Handling), §111.145 (Construction & Demolition), §111.147 (Roads, Streets, and Alleys), and §111.149 (Parking Lots), and associated dates of compliance, shall apply to the City of El Paso and portions of the Fort Bliss Military Reservation.
 - 30 TAC §111.145 establishes measures to control dust emissions related to land clearing, construction, repair, alteration and demolition of structures, roads, streets, alleys, or parking areas of any size.
 - 30 TAC §111.147 establishes measures to control dust emissions on public, industrial, commercial, or private roads, streets, or alleys including application of asphalt, water, or suitable oil or chemicals and mechanical street sweeping. Specific requirements are established for alleys and levee roads, including paving new alleys and disallowing use of unpaved alleys for garbage and recycling collection.
- Other regulations applicable to particulate matter control in the El Paso area are summarized below:

- 30 TAC §111.143 establishes measures to control dust emissions related to the handling, transport, or storage of materials which can create airborne particulate matter including the application of water, chemicals, or coverings on materials stockpiles; use of hoods, fans, and filters to enclose, collect, and clean the emissions of dusty materials; and the covering of all open-bodied trucks, trailers, and railroad cars transporting materials in the City of El Paso.
- 30 TAC §111.149 establishes measures to control dust emissions, including appropriate application of asphalt, water, or suitable oil or chemicals for temporary parking lots, parking lots having more than five spaces, and paved parking lots having more than one hundred spaces.
- City of El Paso Municipal Code Chapter 9.38, concerning wood burning, prohibits operation of a solid fuel heating device within the City during a no-burn period, unless an exemption has been obtained.
- City of El Paso Municipal Code Chapter 19.15.020, concerning sub-divider responsibility, establishes standards for proposed roads serving new developments, including alleys.
- City of El Paso Municipal Code Chapter 19.15.160 establishes standards for the construction and improvement of alleys.
- City of El Paso Municipal Code Chapter 20.14 establishes standards for the provision of off-street parking, loading and storage, including standards for dust-free surfacing.

The event was in excess of normal historical fluctuations

The figure below shows the valid daily measurements of PM_{2.5} at Chamizal for the period from 2005 through 2012 along with the level of the 95th percentile. The proposed 2011 and 2012 PM_{2.5} exceptional event days are circled. It is evident that the flagged PM_{2.5} concentration during the March 7, 2011, exceptional event day was above the 95th percentile. The figure demonstrates that flagged measurement on the event day was well outside of normal historical fluctuations of PM_{2.5} for the El Paso area.

Chamizal FRM and FEM 2008-2012 PM_{2.5} daily measurements, with proposed exceptional event days circled



There was a clear causal relationship

TCEQ has submitted, and we have reviewed, evidence using multiple tools and data sources to demonstrate a causal relationship from high wind dust impacts and dust originating in Mexico on the proposed PM_{2.5} exceptional event day of March 7, 2011. These tools and data sources include satellite imagery, webcam images, backward air trajectories, and PM speciation data.

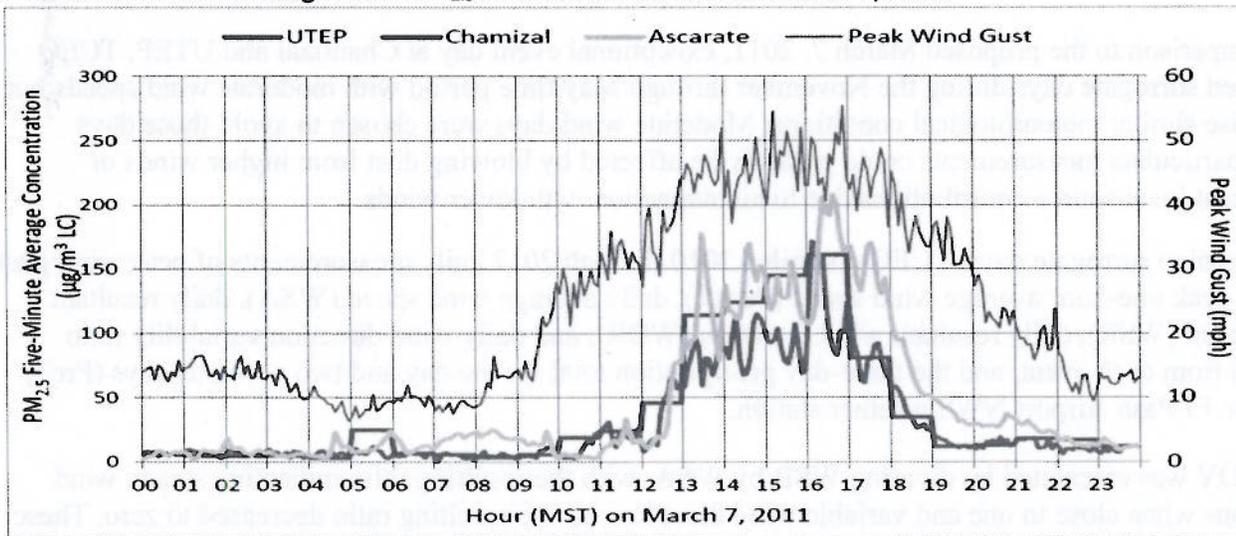
El Paso PM_{2.5} speciation data shows an elevated IMPROVE soil component on proposed exceptional event days, including March 7, 2011, as would be expected with dust from high winds. On the 2010-2012 proposed exceptional event days when speciation monitoring data were available, the Chamizal IMPROVE soil component ranged from 14.9 to 47.4 µg/m³ on five proposed 2010-2012 PM exceptional event days compared to the 95th percentile of 5.4 µg/m³ and an average of 2.1 µg/m³ for all sample days during the period from 2001 through 2012, including high wind dust events.

Chamizal PM_{2.5} speciation soil component summary for 2010-2012 proposed exceptional event days (µg/m³)

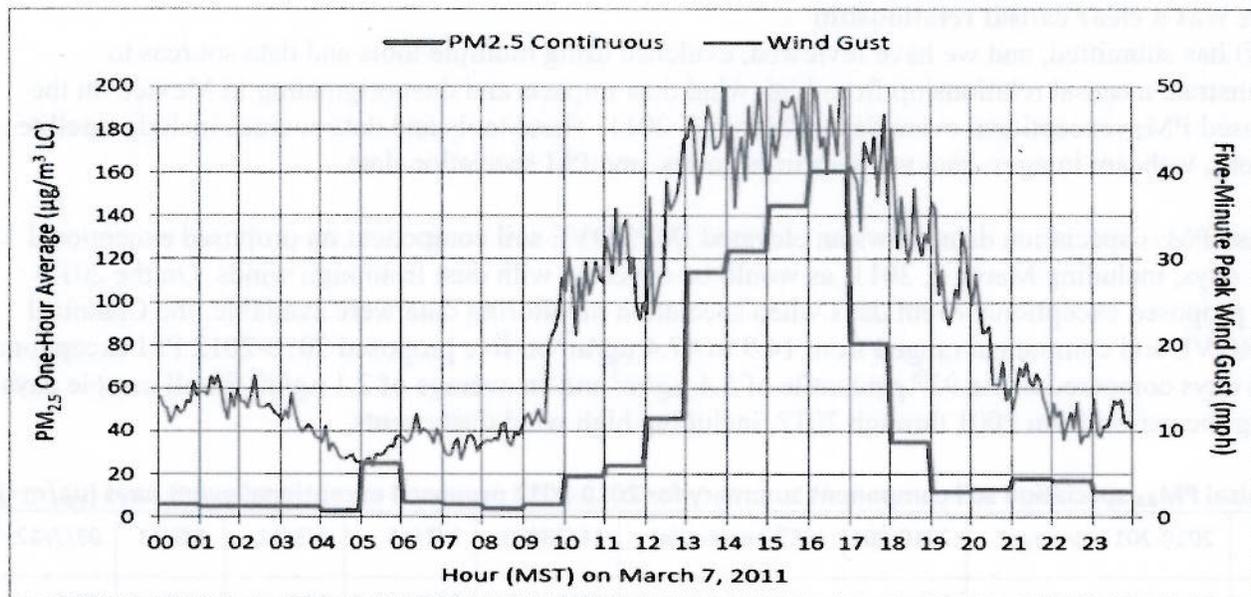
	2010-2012 average*	2010-2012 (95 th percentile)	11/28/10	3/7/11	4/3/11	4/9/11	03/7/12
ISoil	2.1	5.4	17.4	24.3	14.9	17.0	47.4

The figure below plots available continuous five-minute PM_{2.5} data from three PM_{2.5} sites in the El Paso area on March 7, 2011. The figure illustrates a rise in PM_{2.5} at all three sites around 1300 MST with particulate matter levels remaining very high for the next five hours indicating the passing of a dust cloud, as also documented by webcam and satellite images.

El Paso five-minute average from PM_{2.5} continuous monitors on March 7, 2011



The figure below plots five-minute PM_{2.5} and wind gust data from the Chamizal site on March 7, 2011. There is a good correlation between the period of highest wind gusts and elevated PM_{2.5}. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the afternoon high wind event. *Note: The Ascarate site is a continuous PM_{2.5} monitor, but no exceptional events were claimed for this site. The Ascarate monitor is not PM_{2.5} NAAQS comparable. The graphical information of PM_{2.5} readings from this site is for informational purposes.*



There would have been no exceedance or violation but for the event

Title 40 CFR Part 50.14(c)(3)(iv)(D) states the demonstration to justify the exceptional event designation shall provide evidence that “there would have been no exceedance or violation but for the event.” TCEQ identified matching surrogate days to estimate the appropriate daily “but for the event” PM_{2.5} concentrations at the Chamizal site without high wind dust events and that these PM_{2.5} levels would be below the 24-hour PM_{2.5} NAAQS of 35 µg/m³.

For comparison to the proposed March 7, 2011, exceptional event day at Chamizal and UTEP, TCEQ identified surrogate days during the November through May time period with moderate wind speeds but otherwise similar meteorological conditions. Moderate wind days were chosen to avoid those days where particulate measurements could possibly be affected by blowing dust from higher winds or significant local source contributions due to air stagnation with lower winds.

To determine surrogate days, TCEQ compiled 2010 through 2012 daily measurements of peak wind gust (Gust), peak one-hour average wind speed (Peak1), daily average wind speed (WSA), daily resultant wind speed (WSR), daily resultant wind direction (WDR), and daily wind direction variability ratio (WDV) from each event, and the three-day precipitation total for the day and two previous days (Prc3) from the El Paso Airport NWS weather station.

The WDV was calculated by dividing WSR by WSA, with the resulting ratio indicating steady wind directions when close to one and variable wind directions as the resulting ratio decreased to zero. These parameters were chosen to best eliminate factors associated with blowing dust and air stagnation and to ensure similar meteorological conditions between event days and surrogate days

At Chamizal, days were sorted to remove those with peak wind above 24 mph to eliminate days potentially influenced by blowing dust. To eliminate days potentially influenced by air stagnation situations that could result in local source contributions at higher levels than would be expected on high wind days, days with daily average wind speeds below 8.0 mph were also removed. To match the west to southwest wind flow on the event days, the daily resultant wind direction was constrained to be between 240 and 285 degrees clockwise from true north and only days with a WDV of 0.5 or higher were included to ensure limited wind variability.

Finally, days that had measured precipitation within the last three days were removed because recent precipitation could reduce possible local dust contributions that need to be included in the “but for the event” case since no recent rain was observed on the proposed exceptional event days. There were a total of 16 days that met the above criteria at the Chamizal site. Of those, 10 days had valid PM_{2.5} measurements that could be used to evaluate the “but for the event” concentration.

The tables below list the key local meteorological parameters for the Chamizal proposed 2011-2012 PM_{2.5} exceptional event days and surrogate days, respectively. As illustrated by this analysis, on all ten surrogate days with winds consistently from the west to southwest at moderate wind speeds, the Chamizal 24-hour PM_{2.5} measurements were well below 12.0 µg/m³, thus providing strong evidence that the 24-hour and annual PM_{2.5} NAAQS would not have been exceeded but for the high wind dust event.

Chamizal PM_{2.5}, wind, and El Paso Airport precipitation on the proposed PM_{2.5} exceptional event days

Day	PM _{2.5}	Gust	Peak1	WSA	WSR	WDR	WDV	Prc3
02/08/2011	42.9	46.7	26.1	11.1	5.7	280	0.52	0.00
03/07/2011	37.2	55.4	31.6	15.5	14.7	256	0.95	0.00
04/09/2011	38.5	46.3	26.7	16.1	13.7	254	0.85	0.00
04/26/2011	36.2	55.4	27.9	19.7	18.9	283	0.96	0.00
05/10/2011	36.3	47.4	25.1	15.2	12.9	265	0.85	0.00
03/07/2012	85.0	42.7	25.7	15.7	11.8	245	0.75	0.00
03/18/2012	130.4	63.7	31.9	17.7	14.3	244	0.81	0.00
11/10/2012	45.7	54.0	30.0	14.6	12.2	273	0.84	0.00
Average	56.5	51.5	28.1	15.7	13.0	263	0.82	0.00

PM_{2.5} is in µg/m³. Gust is the peak wind gust in mph. Peak1 is the peak 1-hour wind speed average in mph. WSA is the daily wind speed average in mph. WSR is the daily wind speed resultant (vector magnitude) in mph. WDR is daily wind direction resultant in degrees from north. WDV is wind direction variability ratio (WSR divided by WSA). Prc3 is the precipitation total over the most recent three days.

Chamizal PM_{2.5}, wind, and El Paso Airport precipitation measurements on ten surrogate days.

Day	PM _{2.5}	Gust	Peak1	WSA	WSR	WDR	WDV	Prc3
03/12/2011	7.0	22.9	13.5	9.8	9.3	267	0.94	0.00
03/13/2011	6.7	21.6	14.2	8.1	7.0	276	0.86	0.00
10/21/2011	9.7	23.7	11.7	8.0	7.2	268	0.90	0.00
01/18/2012	6.2	23.5	14.3	9.4	8.4	258	0.90	0.00
02/03/2012	6.8	21.0	12.6	8.6	5.2	277	0.60	0.00
02/29/2012	11.1	23.2	12.1	8.9	8.1	261	0.91	0.00
03/14/2012	6.8	23.4	11.8	8.6	8.1	263	0.94	0.00
06/07/2012	10.0	20.3	13.0	8.1	7.2	267	0.89	0.00
07/31/2012	5.9	23.7	12.2	8.0	6.5	261	0.81	0.00
11/09/2012	8.1	22.0	11.2	8.1	6.8	264	0.83	0.00
Average	7.8	22.5	12.7	8.6	7.4	266	0.86	0.00

Title 40 CFR Part 50.14(c)(3)(iv)(D) states the demonstration to justify the exceptional event designation shall provide evidence that “there would have been no exceedance or violation but for the event.” TCEQ identified matching surrogate days to estimate the appropriate daily “but for the event”

PM_{2.5} concentrations at the Chamizal site without high wind dust events and that these PM₁₀ concentrations would be below the 24-hour PM_{2.5} NAAQS of 35 µg/m³.

Winds at the site on this day exceeded the EPA guideline threshold for high wind events of 25 mph.

The preceding figure plots PM_{2.5} and wind gust data from the Chamizal site on March 7, 2011. All of the PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the high wind event.

For comparison to the proposed March 7, 2011, exceptional event day at Chamizal, TCEQ identified surrogate days during the November through May time period with moderate wind speeds but otherwise similar meteorological conditions.

El Paso-Chamizal PM_{2.5} "but for the event" results from Surrogate Day PM_{2.5} values vs Daily PM_{2.5} NAAQS

El Paso Chamizal PM _{2.5} "but for the event" Estimates	Surrogate Day PM _{2.5} Range (µg/m ³)	Surrogate Day PM _{2.5} Average (µg/m ³)	Daily PM _{2.5} NAAQS (µg/m ³)
Resulting 3/7/11 Chamizal PM _{2.5} "but for the event" Estimates	5.9-11.1	7.8	35

The non-event surrogate day PM_{2.5} range and average are well below the 24-hour PM_{2.5} NAAQS of 35 µg/m³, further illustrating along with the other evidence in the demonstration that the daily PM_{2.5} NAAQS would not have been exceeded on March 7, 2011, but for the high wind dust event.

April 9, 2011, Event Day

The event was caused by human activity unlikely to reoccur or was a natural event

High winds causing windblown dust are natural events. This natural phenomenon was mentioned in the preamble to the EPA Exceptional Events Rule as being eligible for evaluation as a possible exceptional event. [See 72 FR 13566, 13566 and 13576 (March 22, 2007)].

The proposed exceptional event flag for April 9, 2011, is for a high wind blowing dust event, which is a natural event. Webcam imagery provide visual evidence of dust from northern Mexico moving into the El Paso area on April 9, 2011, as does back trajectory analysis of air masses traveling from Mexico over primarily natural desert terrain to the monitors in El Paso County. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for April 9, 2011, also support the occurrence of high wind dust event in the area that day. This evidence is located in Appendix J of the demonstration.

The PM_{2.5} speciation summary discussion for March 7, 2011, is also relevant to April 9, 2011.

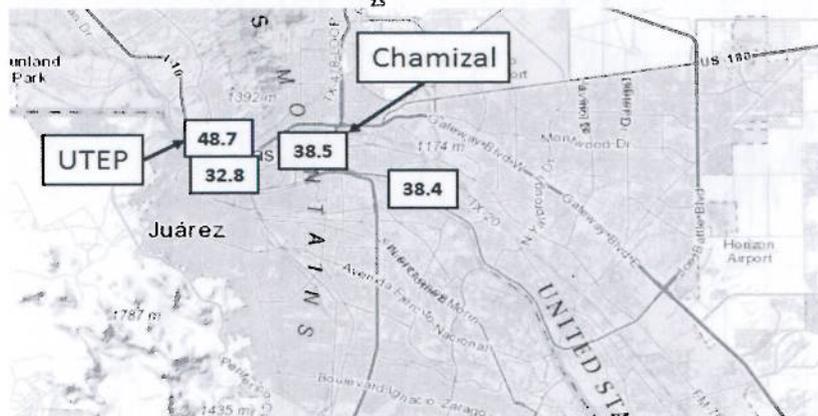
The event affects air quality

The measurement of 38.5 µg/m³ on April 9, 2011, at Chamizal and the measurement of 48.7 µg/m³ on April 9, 2011, at UTEP exceeded the PM_{2.5} 24-hour NAAQS of 35 µg/m³. These PM_{2.5} measurements were well above the 95th percentile of 20.2 µg/m³ from 2008-2012. The preamble to the Exceptional Event Rule (72 *Federal Register* 13569) states: "For extremely high concentrations relative to historical values (e.g., concentrations greater than the 95th percentile), a lesser amount of documentation or evidence may be required to demonstrate that the event affected air quality."

Maps provided also display daily average PM₁₀ and PM_{2.5} measurements from the April 9, 2011, event for El Paso area monitors, including the UTEP PM_{2.5} measurement proposed as an exceptional event. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for the April 9, 2011, event are also provided.

Elevated PM measurements are evident throughout the El Paso area and continuous PM₁₀ and PM_{2.5} measurements plotted against peak winds support the occurrence of a dust cloud in the area affecting air quality on April 9, 2011, as also documented by satellite and webcam images.

El Paso area daily average PM measurements ($\mu\text{g}/\text{m}^3$) on April 9, 2011



The event was not reasonably controllable or preventable

The summary for the March 7, 2011, event day is also applicable to April 9, 2011. The evidence is located in Appendix F of the demonstration, including meteorological data, webcam images, back trajectories and graphs of continuous PM_{2.5}, PM₁₀, and wind data for April 9, 2011.

Furthermore, there are PM control measures in the El Paso area. These control measures are discussed in with the March 7, 2011, event day and are also relevant to this April 9, 2011, review summary.

The event was in excess of normal historical fluctuations

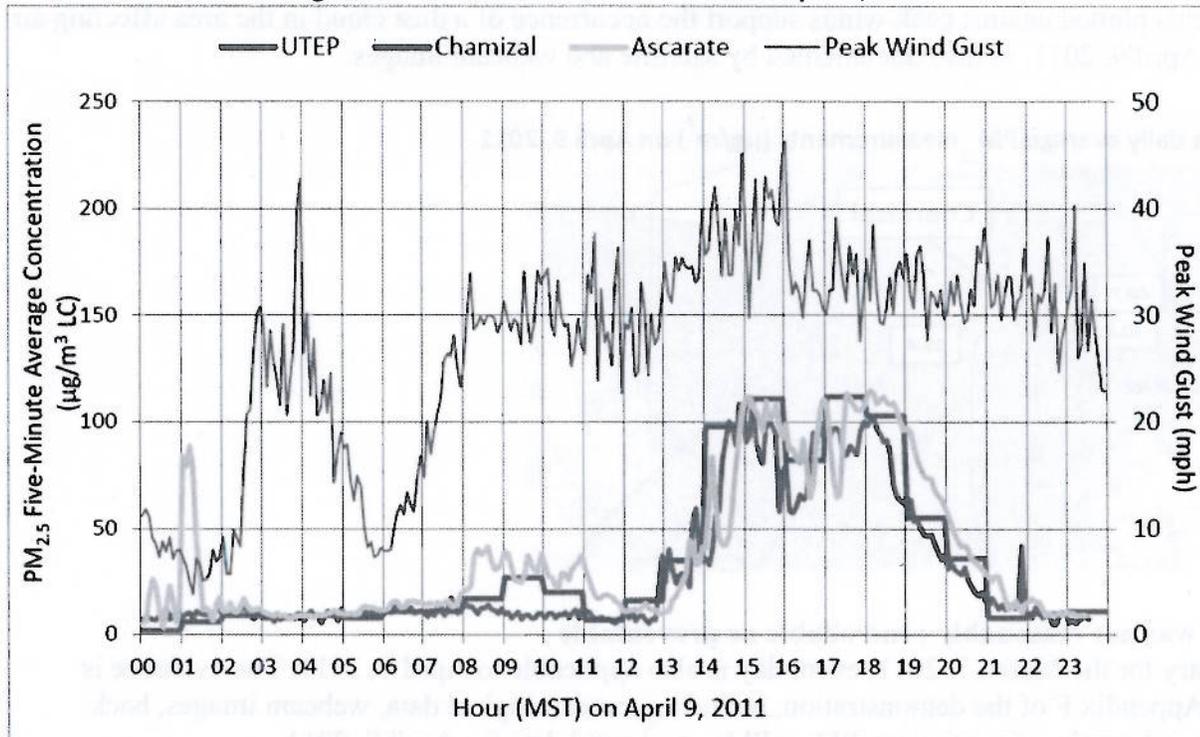
The figure presented in the summary for the March 7, 2011, event day is also relevant to April 9, 2011. The figure shows the valid daily measurements of PM_{2.5} at Chamizal for the period from 2005 through 2012 along with the level of the 95th percentile. The proposed 2011 and 2012 PM_{2.5} exceptional event days are circled. It is evident that the flagged PM_{2.5} concentration during the April 9, 2011 event day was above the 95th during this five-year period. The figure demonstrates that the flagged measurement on the event day was well outside of normal historical fluctuations of PM_{2.5} concentrations for the El Paso area.

There was a clear causal relationship

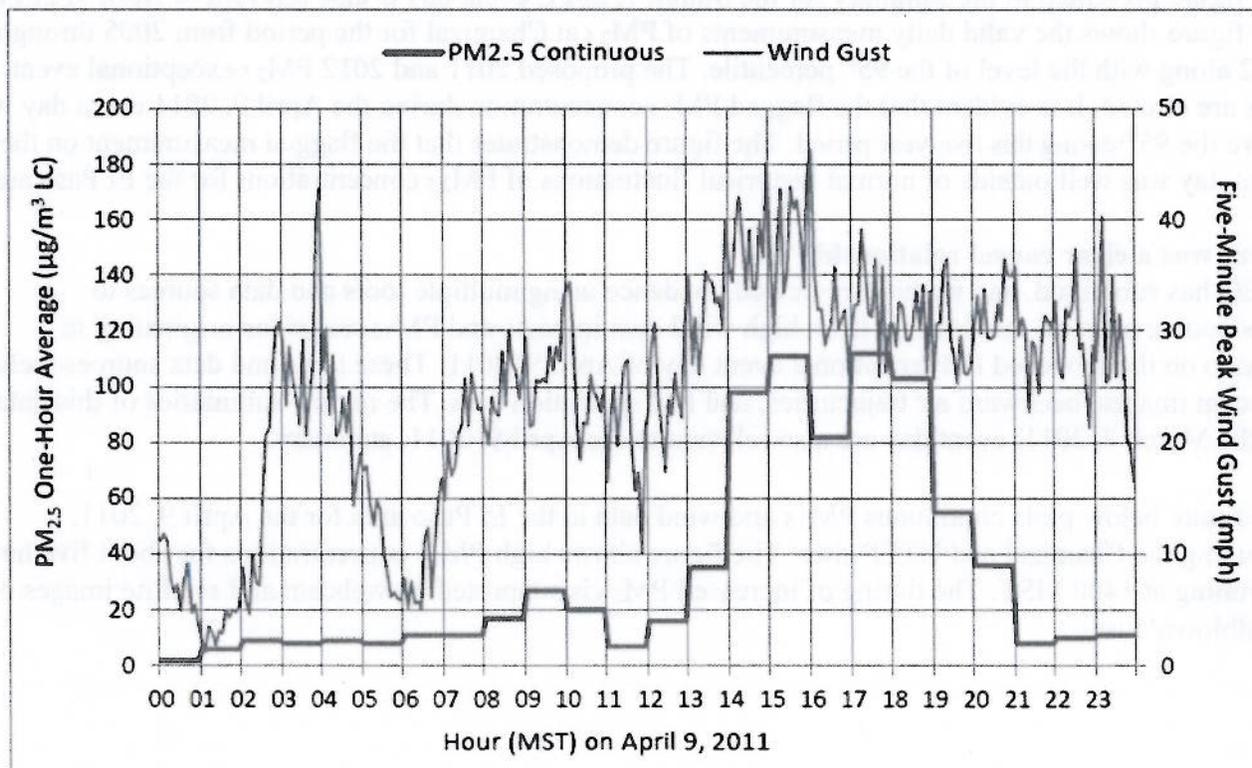
TCEQ has submitted, and we have reviewed, evidence using multiple tools and data sources to demonstrate a causal relationship from high wind dust impacts and PM₁₀ emissions originating in Mexico on the proposed PM exceptional event day of April 9, 2011. These tools and data sources include webcam images, backward air trajectories, and PM speciation data. The review summaries of this data for the March 7, 2011, event day are also relevant to the April 9, 2011, summary.

The figure below plots continuous PM_{2.5} and wind data in the El Paso area for the April 9, 2011, including the Chamizal and UTEP sites. The figure shows high PM_{2.5} concentrations for about five hours beginning at 1400 MST. The timing of increased PM_{2.5} is supported by webcam and satellite images of windblown dust.

El Paso five-minute average from PM_{2.5} continuous monitors on April 9, 2011

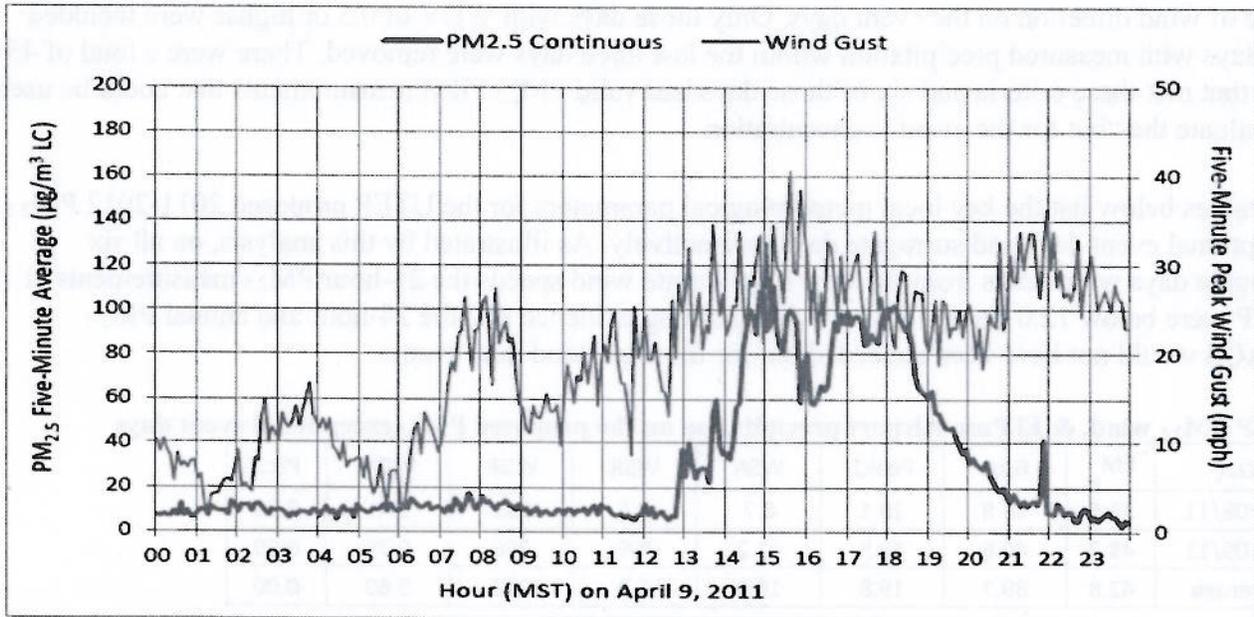


The figure below plots five-minute PM_{2.5} and wind gust data from the Chamizal site on April 9, 2011. There is a relationship between the extended period of consistently high wind gusts and elevated PM_{2.5}. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 $\mu\text{g}/\text{m}^3$ occurred during the afternoon high wind event.



The figure below plots five-minute PM_{2.5} and wind gust data from the UTEP site on April 9, 2011.

There is a relationship between the extended period of consistently high wind gusts and elevated PM_{2.5}. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the afternoon high wind event.



There would have been no exceedance or violation but for the event

Title 40 CFR Part 50.14(c)(3)(iv)(D) states the demonstration to justify the exceptional event designation shall provide evidence that “there would have been no exceedance or violation but for the event.” TCEQ identified matching surrogate days to estimate the appropriate daily “but for the event” PM_{2.5} concentrations at the Chamizal site without high wind dust events and that these PM_{2.5} levels would be below the 24-hour PM_{2.5} NAAQS of 35 µg/m³.

The preceding figure plots PM_{2.5} and wind gust data from the Chamizal on April 9, 2011. There is a relationship between the extended period of consistently high wind gusts and elevated PM_{2.5}. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the afternoon high wind event

For comparison to the proposed April 9, 2011, exceptional event day at Chamizal, TCEQ identified surrogate days during the November through May time period with moderate wind speeds but otherwise similar meteorological conditions. The process for setting the surrogate days and the resulting data are discussed with the March 7, 2011, event day and are also relevant to this April 9, 2011, summary.

Chamizal PM_{2.5} “but for the event” results from Surrogate Day PM_{2.5} values vs Daily PM_{2.5} NAAQS

El Paso Chamizal PM _{2.5} “but For the event” Estimates	Surrogate Day PM _{2.5} Range (µg/m ³)	Surrogate Day PM _{2.5} Average (µg/m ³)	Daily PM _{2.5} NAAQS (µg/m ³)
Resulting 4/9/11 Chamizal PM _{2.5} “but for the event” estimate	5.9-11.1	7.8	35

The non-event surrogate day PM_{2.5} range and average are well below the 24-hour PM_{2.5} NAAQS of 35 µg/m³, further illustrating along with the other evidence in the demonstration that the daily PM_{2.5} NAAQS at Chamizal would not have been exceeded on April 9, 2011, but for the high wind dust event. For comparison to the proposed April 9, 2011, exceptional event day at UTEP, TCEQ identified surrogate days during the November through May time period with moderate wind speeds but otherwise similar meteorological conditions.

To determine surrogate days at UTEP, meteorological data were sorted to remove days that had peak wind gust above 24 mph and daily average wind speed below 5.0 mph. The daily resultant wind direction was constrained to be between 240 and 295 degrees clockwise from true north to match the range of wind direction on the event days. Only those days with WDV of 0.5 or higher were included and days with measured precipitation within the last three days were removed. There were a total of 45 days that met these criteria and six of those days had valid PM_{2.5} FRM measurements that could be used to evaluate the “but for the event” concentration.

The tables below list the key local meteorological parameters for the UTEP proposed 2011-2012 PM_{2.5} exceptional event days and surrogate days, respectively. As illustrated by this analysis, on all six surrogate days with winds from the west at moderate wind speeds the 24-hour PM_{2.5} measurements at UTEP were below 12.0 µg/m³, thus providing strong evidence that the 24-hour and annual PM_{2.5} NAAQS would not have been exceeded but for the high wind dust event.

UTEP PM_{2.5}, wind, & El Paso Airport precipitation on the proposed PM_{2.5} exceptional event days

Day	PM _{2.5}	Gust	Peak1	WSA	WSR	WDR	WDV	Prc3
02/08/11	36.8	38.8	20.1	8.7	3.6	291	0.41	0.00
04/09/11	48.7	40.6	19.5	11.2	8.9	266	0.79	0.00
Average	42.8	39.7	19.8	10.0	6.2	279	0.60	0.00

UTEP PM_{2.5}, wind, and El Paso Airport precipitation measurements on six surrogate days.

Day	PM _{2.5}	Gust	Peak1	WSA	WSR	WDR	WDV	Prc3
05/20/10	8.1	20.0	8.9	5.3	3.6	284	0.68	0.00
11/16/10	4.3	23.9	12.1	7.4	6.5	287	0.88	0.00
01/31/12	11.2	22.6	11.2	5.4	3.4	294	0.63	0.00
03/16/12	8.7	20.5	9.3	5.3	4.0	295	0.75	0.00
04/03/12	6.0	23.1	9.4	6.0	4.9	291	0.81	0.00
05/03/12	6.9	22.4	10.1	7.4	6.0	278	0.82	0.00
Average	7.5	22.1	10.2	6.1	4.7	288	0.76	0.00

PM_{2.5} is in µg/m³ LC. Gust is the peak wind gust in mph. Peak1 is the peak 1-hour wind speed average in mph.

WSA is the daily wind speed average in mph. WSR is the daily wind speed resultant (vector magnitude) in mph.

WDR is the daily wind direction resultant in degrees from north. WDV is the wind direction variability ratio (WSR/WSA).

Prc3 is the precipitation total over the most recent three days.

The preceding figure plots PM_{2.5} and wind gust data from the UTEP on April 9, 2011. There is a relationship between the extended period of consistently high wind gusts and elevated PM_{2.5}. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the afternoon high wind event.

El Paso- UTEP PM_{2.5} “but for the event” results from Surrogate Day PM_{2.5} values vs Daily PM_{2.5} NAAQS

El Paso UTEP PM _{2.5} “but for the event” Estimates	Surrogate Day PM _{2.5} Range (µg/m ³)	Surrogate Day PM _{2.5} Average (µg/m ³)	Daily PM _{2.5} NAAQS (µg/m ³)
Resulting 4/9/11 UTEP PM _{2.5} “but for the event” Estimates	4.3-11.2	7.5	35

The non-event surrogate day PM_{2.5} range and average are well below the 24-hour PM_{2.5} NAAQS of 35 µg/m³, further illustrating along with the other evidence in the demonstration that the daily PM_{2.5} NAAQS at UTEP would not have been exceeded on April 9, 2011, but for the high wind dust event.

April 26, 2011

The event was caused by human activity unlikely to reoccur or was a natural event

High winds causing windblown dust are natural events. This natural phenomenon was mentioned in the preamble to the EPA Exceptional Events Rule as being eligible for evaluation as a possible exceptional event. [See 72 FR 13566, 13566 and 13576 (March 22, 2007)].

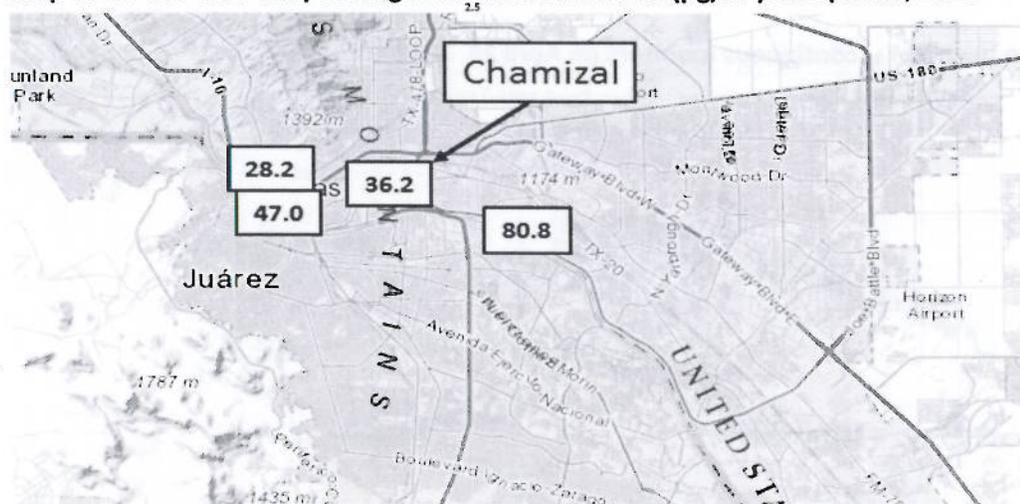
The proposed exceptional event flag for April 26, 2011, is for a high wind blowing dust event, which is a natural event. Webcam imagery provide visual evidence of dust from northern Mexico moving into the El Paso area on April 26, 2011, as does back trajectory analysis of air masses traveling from Mexico over primarily natural desert terrain to the monitors in El Paso County. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for April 26, 2011, also support the occurrence of high wind dust event in the area that day. This evidence is located in Appendix G of the demonstration. The PM_{2.5} speciation summary discussion for March 7, 2011, is also relevant to April 26, 2011.

The event affects air quality

The measurement of 36.2 µg/m³ on April 26, 2011, exceeded the PM_{2.5} 24-hour NAAQS of 35 µg/m³. The PM_{2.5} measurement at Chamizal was well above the 95th percentile of 20.2 µg/m³ from 2008 through 2012. The preamble to the Exceptional Event Rule (72 *Federal Register* 13569) states: "For extremely high concentrations relative to historical values (e.g., concentrations greater than the 95th percentile), a lesser amount of documentation or evidence may be required to demonstrate that the event affected air quality."

Maps provided also display daily average PM_{2.5} measurements from the April 26, 2011, event for El Paso area monitors, including the Chamizal PM_{2.5} measurement proposed as an exceptional event. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for the April 26, 2011, event are also provided. Elevated PM measurements are evident throughout the El Paso area and continuous PM₁₀ and PM_{2.5} measurements plotted against peak winds support the occurrence of a dust cloud in the area affecting air quality on April 26, 2011, as also documented by webcam photographic images.

Map of El Paso area daily average PM_{2.5} measurements (µg/m³) on April 26, 2011



The event was not reasonably controllable or preventable

The review summary discussion for the February 8, 2011, event day is also applicable to April 26, 2011. The evidence is located in Appendix G of the demonstration, including meteorological data, webcam images, back trajectories and graphs of continuous PM_{2.5}, PM₁₀, and wind data for April 26, 2011.

Furthermore, there are PM control measures in the El Paso area. These control measures are discussed in with the March 7, 2011, event day and are also relevant to this April 26, 2011, review summary.

In this case the oncoming air mass originated primarily in Southern New Mexico, some of the dust arriving at the Chamizal site may have come from Northern Mexico as well. Nevertheless, graphs of continuous PM_{2.5}, PM₁₀, and wind data for April 26, 2011, also support the occurrence of high wind dust event in the area that day. This evidence is located in Appendix G of the demonstration.

The event was in excess of normal historical fluctuations

The figure presented in this section for the March 7, 2011, event day is also relevant to April 26, 2011. The figure shows the valid daily measurements of PM_{2.5} at Chamizal for the period from 2005 through 2012 along with the level of the 95th percentile. The proposed 2011 and 2012 PM_{2.5} exceptional event days are circled. From the figure it is evident that the flagged PM_{2.5} concentration during the proposed April 26, 2011, exceptional event day was above the 95th percentile during this five-year period. The figure demonstrates that flagged measurement on the proposed event day was well outside of normal historical fluctuations of measured PM_{2.5} concentrations for the El Paso area.

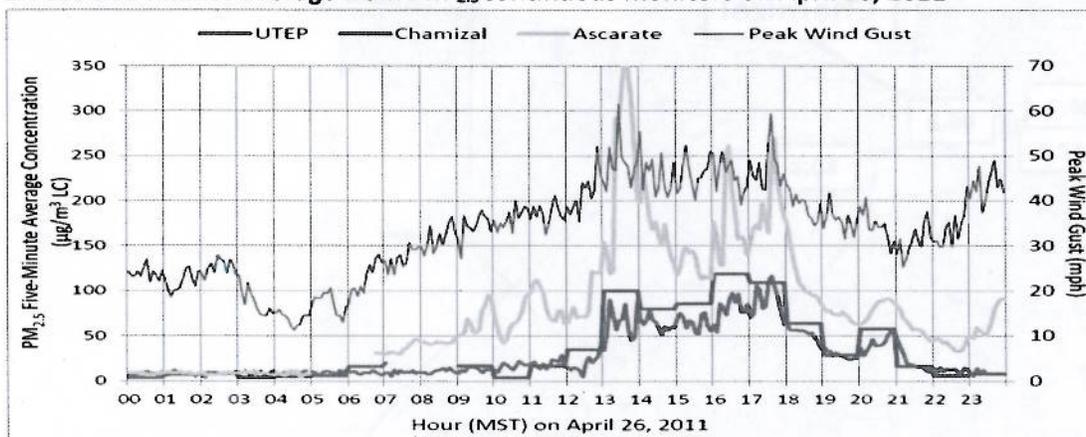
There was a clear causal relationship

TCEQ has submitted, and we have reviewed, evidence using multiple tools and data sources to demonstrate a causal relationship from high wind dust impacts and dust originating in Mexico on the proposed PM_{2.5} exceptional event day of April 26, 2011. These tools and data sources include webcam images, backward air trajectories, and PM speciation data. The review summaries of this data for the March 7, 2011, event day are also relevant to the April 26, 2011, summary.

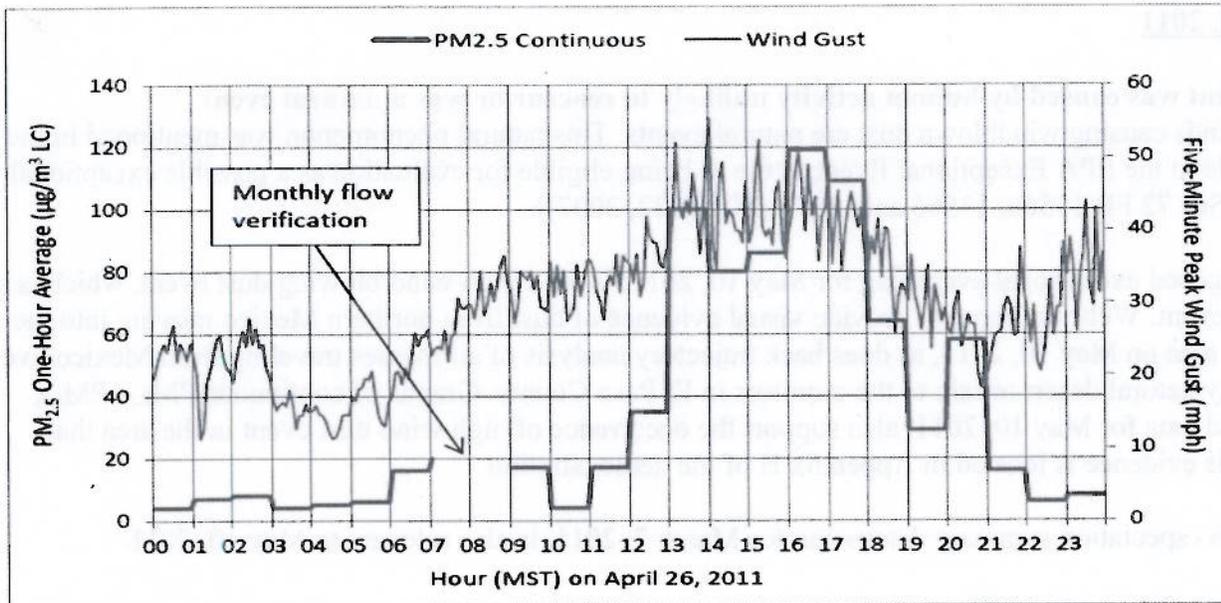
Winds at the site on this day exceeded the EPA guideline threshold for high wind events of 25 mph.

The figure below plots available continuous five-minute PM_{2.5} data from three PM_{2.5} sites in the El Paso area on April 26, 2011. The continuous five-minute PM_{2.5} data in the figure indicates intense dust arriving at all three PM_{2.5} sites around 1300 MST. As peak winds exceeded 40 mph, several sharp increases in measured PM_{2.5} occurred between 1300 and 1800 MST, indicating the passing of windblown dust, as supported by webcam photographs.

El Paso five-minute average from PM_{2.5} continuous monitors on April 26, 2011



The figure below plots five-minute PM_{2.5} and wind gust data from the Chamizal site on April 26, 2011. There is a relationship between the highest wind gusts and most elevated PM_{2.5} levels. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the afternoon high wind event.



There would have been no exceedance or violation but for the event

Title 40 CFR Part 50.14(c)(3)(iv)(D) states the demonstration to justify the exceptional event designation shall provide evidence that “there would have been no exceedance or violation but for the event.” TCEQ identified matching surrogate days to estimate the appropriate daily “but for the event” PM_{2.5} concentrations at the Chamizal site without high wind dust events and that these PM_{2.5} levels would be below the 24-hour PM_{2.5} NAAQS of 35 µg/m³.

Winds at the site on this day exceeded the EPA guideline threshold for high wind events of 25 mph.

The preceding figure plots PM_{2.5} and wind gust data from the Chamizal site on April 26, 2011. There is a relationship between the highest wind gusts and most elevated PM_{2.5} levels. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the afternoon high wind event.

For comparison to the proposed April 26, 2011, exceptional event day at Chamizal, TCEQ identified surrogate days during the November through May time period with moderate wind speeds but otherwise similar meteorological conditions. The process for setting the surrogate days and the resulting data are discussed with the March 7, 2011, event day and are also relevant to this April 26, 2011, summary.

El Paso-Chamizal PM_{2.5} “but for the event” results from Surrogate Day PM_{2.5} values vs Daily PM_{2.5} NAAQS

El Paso Chamizal PM _{2.5} “but for the event” Estimates	Surrogate Day PM _{2.5} Range (µg/m ³)	Surrogate Day PM _{2.5} Average (µg/m ³)	Daily PM _{2.5} NAAQS (µg/m ³)
Resulting 4/26/11 Chamizal PM _{2.5} “but for the event” Estimates	5.9-11.1	7.8	35

The non-event surrogate day PM_{2.5} range and average are well below the 24-hour PM_{2.5} NAAQS of 35 µg/m³, further illustrating along with the other evidence in the demonstration that the daily PM_{2.5} NAAQS would not have been exceeded on April 26, 2011, but for the high wind dust event.

May 10, 2011

The event was caused by human activity unlikely to reoccur or was a natural event

High winds causing windblown dust are natural events. This natural phenomenon was mentioned in the preamble to the EPA Exceptional Events Rule as being eligible for evaluation as a possible exceptional event. [See 72 FR 13566, 13566 and 13576 (March 22, 2007)].

The proposed exceptional event flag for May 10, 2011, is for a high wind blowing dust event, which is a natural event. Webcam imagery provide visual evidence of dust from northern Mexico moving into the El Paso area on May 10, 2011, as does back trajectory analysis of air masses traveling from Mexico over primarily natural desert terrain to the monitors in El Paso County. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for May 10, 2011, also support the occurrence of high wind dust event in the area that day. This evidence is located in Appendix H of the demonstration.

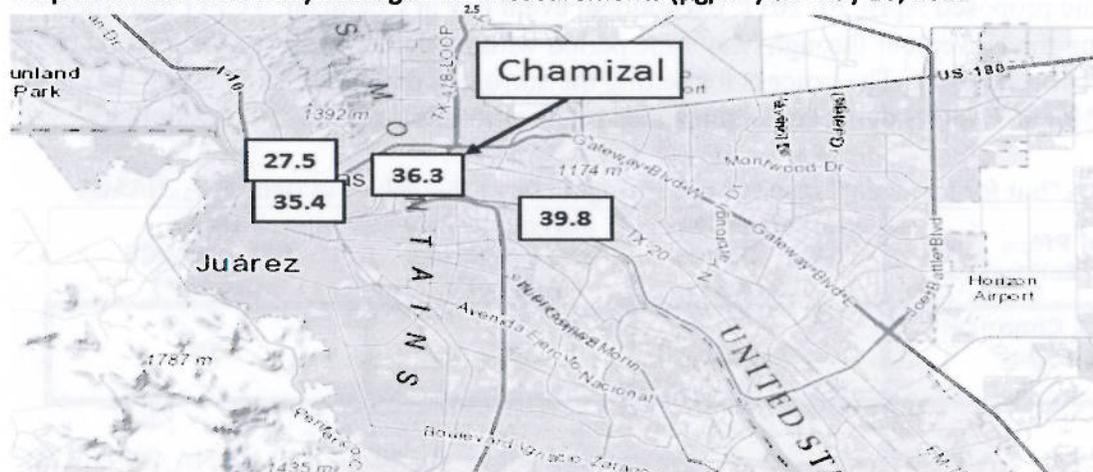
The PM_{2.5} speciation summary discussion for March 7, 2011, is also relevant to May 10, 2011.

The event affects air quality

The measurement of 36.3 $\mu\text{g}/\text{m}^3$ on May 10, 2011, exceeded the PM_{2.5} 24-hour NAAQS of 35 $\mu\text{g}/\text{m}^3$. The PM_{2.5} measurement at Chamizal was well above the 95th percentile of 20.2 $\mu\text{g}/\text{m}^3$ from 2008 through 2012. The preamble to the Exceptional Event Rule (72 *Federal Register* 13569) states: "For extremely high concentrations relative to historical values (e.g., concentrations greater than the 95th percentile), a lesser amount of documentation or evidence may be required to demonstrate that the event affected air quality."

Maps provided also display daily average PM_{2.5} measurements from the May 10, 2011, event for El Paso area monitors, including the Chamizal PM_{2.5} measurement proposed as an exceptional event. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for the May 10, 2011, event are also provided. Elevated PM measurements are evident throughout the El Paso area and continuous PM₁₀ and PM_{2.5} measurements plotted against peak winds support the occurrence of a dust cloud in the area affecting air quality on May 10, 2011, as shown by webcam photographic images.

Map of El Paso area daily average PM_{2.5} measurements ($\mu\text{g}/\text{m}^3$) on May 10, 2011



The event was not reasonably controllable or preventable

The review summary discussion for the March 7, 2011, event day is also applicable to May 10, 2011. The evidence is located in Appendix H of the demonstration, including meteorological data, webcam images, back trajectories and graphs of continuous PM_{2.5}, PM₁₀, and wind data for May 10, 2011.

Furthermore, there are PM control measures in the El Paso area. These control measures are discussed in with the March 7, 2011, event day and are also relevant to this May 10, 2011, review summary.

The event was in excess of normal historical fluctuations

The figure presented in this section for the March 7, 2011, event day is also relevant to May 10, 2011. The figure shows the valid daily measurements of PM_{2.5} at Chamizal for the period from 2005 through 2012 along with the level of the 95th percentile. The proposed 2011 and 2012 PM_{2.5} exceptional event days are circled. It is evident that the flagged PM_{2.5} concentration during the proposed May 10, 2011, event day was above the 95th percentile. The figure demonstrates that the flagged measurement on the proposed event day was well outside of normal historical fluctuations of PM_{2.5} for the El Paso area.

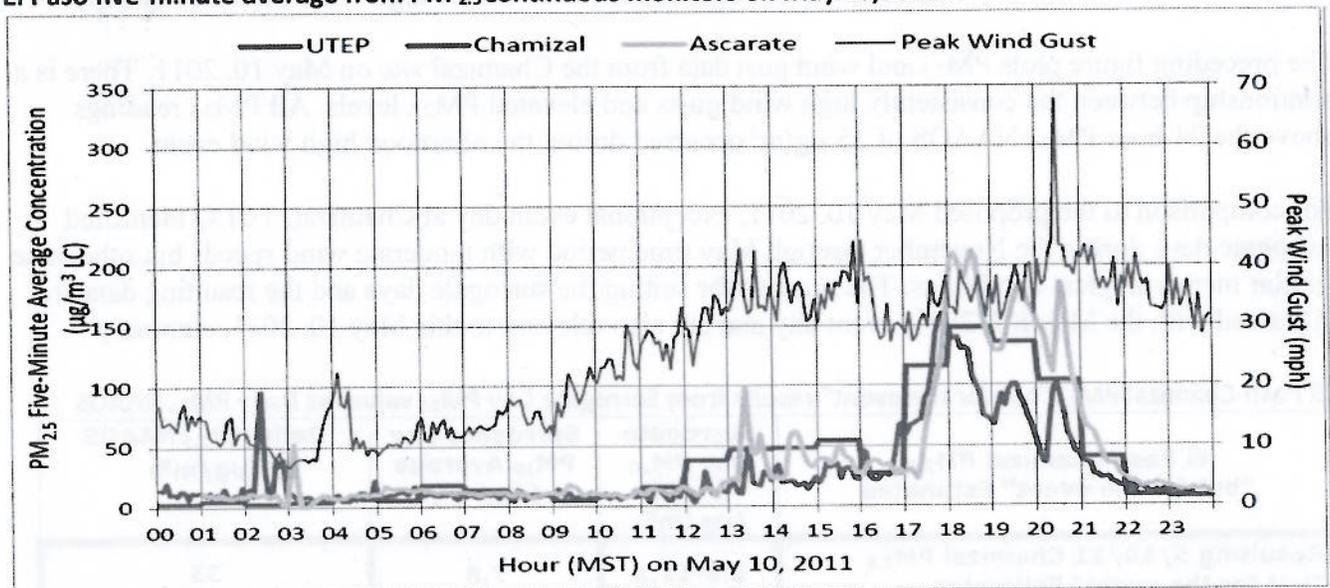
There was a clear causal relationship

TCEQ has submitted, and we have reviewed, evidence using multiple tools and data sources to demonstrate a causal relationship from high wind dust impacts and dust originating in Mexico on the proposed PM_{2.5} exceptional event day of May 10, 2011. These tools and data sources include webcam images, backward air trajectories, and PM speciation data. The review summaries of this data for the March 7, 2011, event day are also relevant to the May 10, 2011, summary.

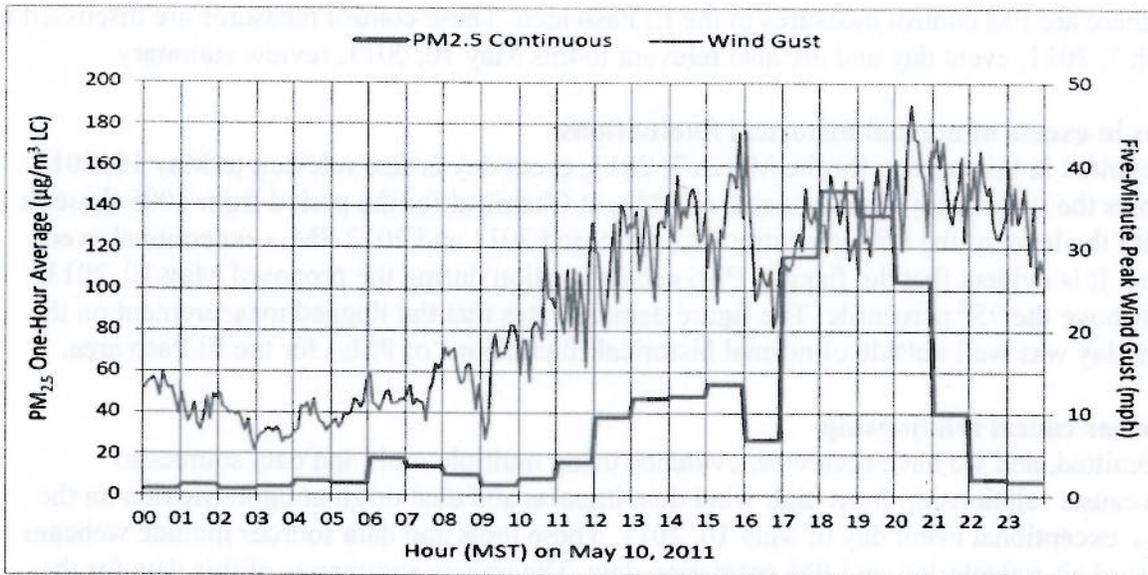
Winds at the site on this day exceeded the EPA guideline threshold for high wind events of 25 mph.

The figure below plots continuous five-minute PM_{2.5} data from three PM_{2.5} sites in the El Paso area on May 10, 2011. The figure shows rising PM_{2.5} concentrations in the early afternoon with a sharp rise at all sites around 1700 MST indicating the passing of windblown dust, as supported by webcam photographs.

El Paso five-minute average from PM_{2.5} continuous monitors on May 10, 2011



The following figure below plots PM_{2.5} and wind gust data from the Chamizal site on May 10, 2011. There is a relationship between the consistently high wind gusts and elevated PM_{2.5} levels. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 $\mu\text{g}/\text{m}^3$ occurred during the afternoon high wind event.



There would have been no exceedance or violation but for the event

Title 40 CFR Part 50.14(c)(3)(iv)(D) states the demonstration to justify the exceptional event designation shall provide evidence that “there would have been no exceedance or violation but for the event.” TCEQ identified matching surrogate days to estimate the appropriate daily “but for the event” PM_{2.5} concentrations at the Chamizal site without high wind dust events and that these PM_{2.5} levels would be below the 24-hour PM_{2.5} NAAQS of 35 µg/m³.

Winds at the site on this day exceeded the EPA guideline threshold for high wind events of 25 mph.

The preceding figure plots PM_{2.5} and wind gust data from the Chamizal site on May 10, 2011. There is a relationship between the consistently high wind gusts and elevated PM_{2.5} levels. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the afternoon high wind event.

For comparison to the proposed May 10, 2011, exceptional event day at Chamizal, TCEQ identified surrogate days during the November through May time period with moderate wind speeds but otherwise similar meteorological conditions. The process for setting the surrogate days and the resulting data are discussed with the March 7, 2011, event day and are also relevant to this May 10, 2011, summary.

El Paso-Chamizal PM_{2.5} “but for the event” results from Surrogate Day PM_{2.5} values vs Daily PM_{2.5} NAAQS

El Paso Chamizal PM _{2.5} “but for the event” Estimates	Surrogate Day PM ₁₀ Range (µg/m ³)	Surrogate Day PM ₁₀ Average (µg/m ³)	Daily PM _{2.5} NAAQS (µg/m ³)
Resulting 5/10/11 Chamizal PM_{2.5} “but for the event” Estimates	5.9-11.1	7.8	35

The non-event surrogate day PM_{2.5} range and average are well below the 24-hour PM_{2.5} NAAQS of 35 µg/m³, further illustrating along with the other evidence in the demonstration that the daily PM_{2.5} NAAQS would not have been exceeded on May 10, 2011, but for the high wind dust event.

March 7, 2012

The event was caused by human activity unlikely to reoccur or was a natural event

High winds causing windblown dust are natural events. This natural phenomenon was mentioned in the preamble to the EPA Exceptional Events Rule as being eligible for evaluation as a possible exceptional event. [See 72 FR 13566, 13566 and 13576 (March 22, 2007)].

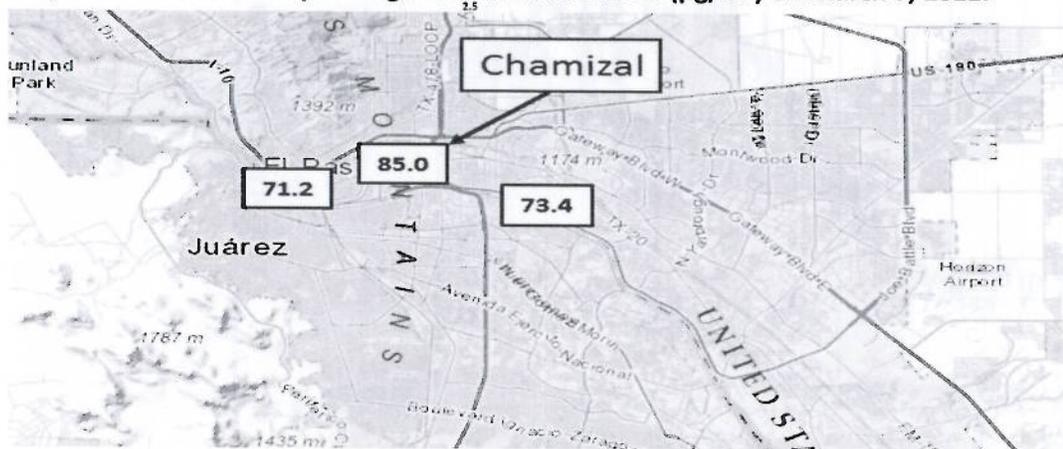
The proposed exceptional event flag for March 7, 2012, is for a high wind blowing dust event, which is a natural event. Satellite and webcam imagery provide visual evidence of dust from northern Mexico moving into the El Paso area on March 7, 2012, as does back trajectory analysis of air masses traveling from Mexico over primarily natural desert terrain to the monitors in El Paso County. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for March 7, 2012, also support the occurrence of high wind dust event in the area that day. The majority of this evidence is located in Appendix I of the demonstration.

The event affects air quality

The measurement of 85.0 $\mu\text{g}/\text{m}^3$ on March 7, 2012, exceeded the PM_{2.5} 24-hour NAAQS of 35 $\mu\text{g}/\text{m}^3$. The PM_{2.5} measurement at Chamizal was well above the 95th percentile of 20.2 $\mu\text{g}/\text{m}^3$ from 2008 through 2012, was the second highest 24-hour PM_{2.5} measurement during this five-year period. The preamble to the Exceptional Event Rule (72 *Federal Register* 13569) states: "For extremely high concentrations relative to historical values (e.g., concentrations greater than the 95th percentile), a lesser amount of documentation or evidence may be required to demonstrate that the event affected air quality."

Maps provided also display daily average PM_{2.5} measurements from the March 7, 2012, event for El Paso area monitors, including the Chamizal PM_{2.5} measurement proposed as an exceptional event. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for the March 7, 2012, event are also provided. Elevated PM measurements are evident throughout the El Paso area and continuous PM₁₀ and PM_{2.5} measurements plotted against peak winds support the occurrence of an intense dust cloud in the area on March 7, 2012, as also shown by satellite imagery and webcam photographic images.

Map of El Paso area daily average PM_{2.5} measurements ($\mu\text{g}/\text{m}^3$) on March 7, 2012.



The event was not reasonably controllable or preventable

The review summary discussion for the March 7, 2011, event day is also applicable to March 7, 2012. The evidence is located in Appendix I of the demonstration, including meteorological data, webcam images, back trajectories and graphs of continuous PM_{2.5}, PM₁₀, and wind data for May 10, 2011. Furthermore, there are PM control measures in the El Paso area. These control measures are discussed in with the March 7, 2011, event day and are also relevant to this March 7, 2012, review summary.

The event was in excess of normal historical fluctuations

The figure presented in this section for the March 7, 2011, event day is also relevant to March 7, 2012.

The figure shows the valid daily measurements of PM_{2.5} at Chamizal for the period from 2005 through 2012 along with the level of the 95th percentile. The proposed 2011 and 2012 PM_{2.5} exceptional event days are circled. It is evident that the flagged PM_{2.5} concentration during the proposed March 7, 2012, event day was above the 95th percentile. The figure demonstrates that the flagged measurement on the proposed event day was well outside of normal historical fluctuations of PM_{2.5} for the El Paso area.

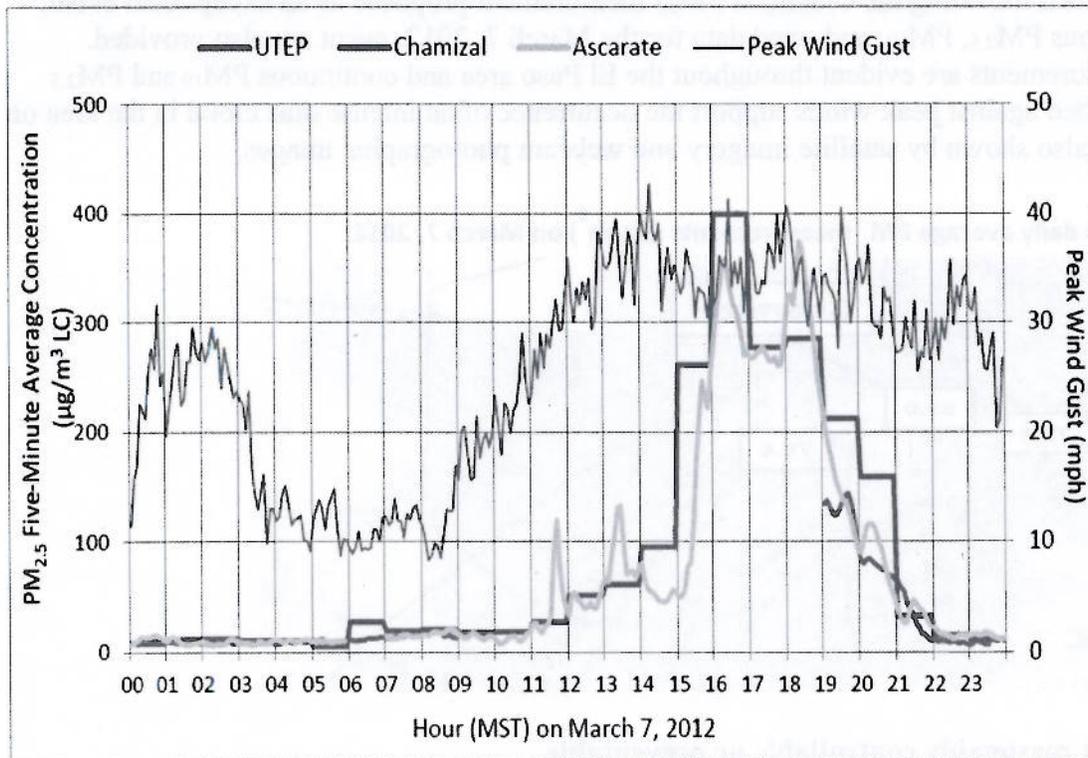
There was a clear causal relationship

TCEQ has submitted, and we have reviewed, evidence using multiple tools and data sources to demonstrate a causal relationship from high wind dust impacts and dust originating in Mexico on the proposed PM_{2.5} exceptional event day of March 7, 2012. These tools and data sources include satellite imagery, webcam images, backward air trajectories, and PM speciation data. The review summaries of this data for the March 7, 2011, event day are also relevant to the May 10, 2011, summary.

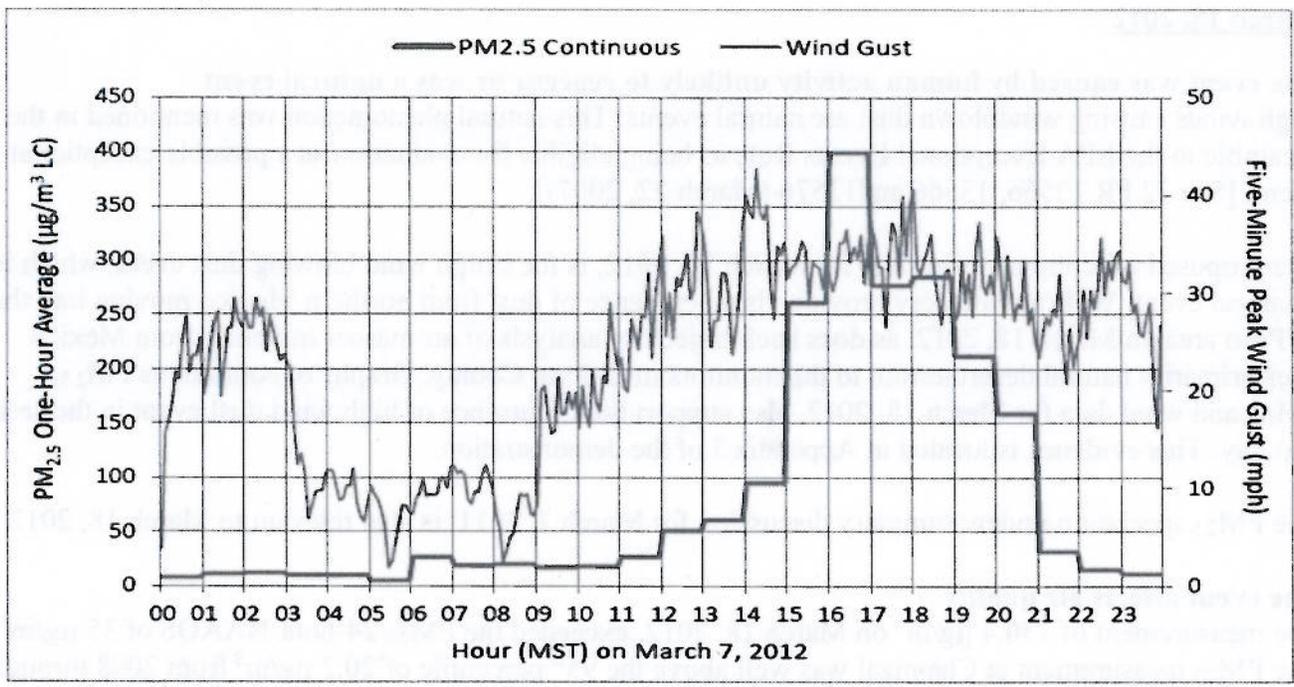
Winds at the site on this day exceeded the EPA guideline threshold for high wind events of 25 mph.

The figure below plots available continuous five-minute PM_{2.5} data from three PM_{2.5} sites in the El Paso area on March 7, 2012. The figure indicates a gradual rise in concentration in the early afternoon with a sharp increase and very high PM_{2.5} concentrations continuing for about six hours.

El Paso five-minute average from PM_{2.5} continuous monitors on March 7, 2012



The following figure below plots PM_{2.5} and wind gust data from the Chamizal site on March 7, 2012. There is a relationship between the consistently high wind gusts and elevated PM_{2.5} levels. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the afternoon high wind event.



There would have been no exceedance or violation but for the event

Title 40 CFR Part 50.14(c)(3)(iv)(D) states the demonstration to justify the exceptional event designation shall provide evidence that “there would have been no exceedance or violation but for the event.” TCEQ identified matching surrogate days to estimate the appropriate daily “but for the event” PM_{2.5} concentrations at the Chamizal site without high wind dust events and that these PM_{2.5} levels would be below the 24-hour PM_{2.5} NAAQS of 35 µg/m³.

Winds at the site on this day exceeded the EPA guideline threshold for high wind events of 25 mph.

The preceding figure below plots PM_{2.5} and wind gust data from the Chamizal site on March 7, 2012. There is a relationship between the consistently high wind gusts and elevated PM_{2.5} levels. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the afternoon high wind event.

For comparison to the proposed March 7, 2012, exceptional event day at Chamizal, TCEQ identified surrogate days during the November through May time period with moderate wind speeds but otherwise similar meteorological conditions. Moderate wind days were chosen to avoid those days where particulate measurements could possibly be affected by blowing dust from higher winds or significant local source contributions due to air stagnation with lower winds.

El Paso-Chamizal PM_{2.5} “but for the event” results from Surrogate Day PM_{2.5} values vs Daily PM_{2.5} NAAQS

El Paso Chamizal PM _{2.5} “but for the event” Estimates	Surrogate Day PM _{2.5} Range (µg/m ³)	Surrogate Day PM _{2.5} Average (µg/m ³)	Daily PM _{2.5} NAAQS (µg/m ³)
Resulting 3/7/12 Chamizal PM_{2.5} “but for the event” Estimates	5.9-11.1	7.8	35

The non-event surrogate day PM_{2.5} range and average are well below the 24-hour PM_{2.5} NAAQS of 35 µg/m³, further illustrating along with the other evidence in the demonstration that the daily PM_{2.5} NAAQS would not have been exceeded on March 7, 2012, but for the high wind dust event.

March 18, 2012

The event was caused by human activity unlikely to reoccur or was a natural event

High winds causing windblown dust are natural events. This natural phenomenon was mentioned in the preamble to the EPA Exceptional Events Rule as being eligible for evaluation as a possible exceptional event. [See 72 FR 13566, 13566 and 13576 (March 22, 2007)].

The proposed exceptional event flag for March 18, 2012, is for a high wind blowing dust event, which is a natural event. Webcam imagery provide visual evidence of dust from northern Mexico moving into the El Paso area on March 18, 2012, as does back trajectory analysis of air masses traveling from Mexico over primarily natural desert terrain to the monitors in El Paso County. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for March 18, 2012, also support the occurrence of high wind dust event in the area that day. This evidence is located in Appendix J of the demonstration.

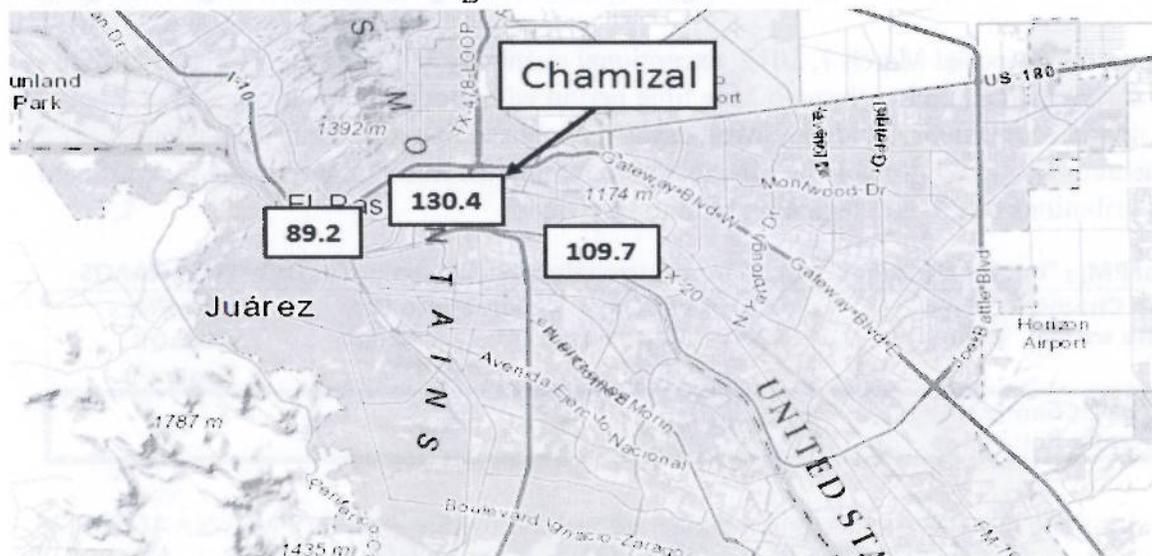
The PM_{2.5} speciation review summary discussion for March 7, 2011, is also relevant to March 18, 2012.

The event affects air quality

The measurement of 130.4 $\mu\text{g}/\text{m}^3$ on March 18, 2012, exceeded the PM_{2.5} 24-hour NAAQS of 35 $\mu\text{g}/\text{m}^3$. The PM_{2.5} measurement at Chamizal was well above the 95th percentile of 20.2 $\mu\text{g}/\text{m}^3$ from 2008 through 2012, was by far the highest 24-hour PM_{2.5} measurement during this five-year period. The preamble to the Exceptional Event Rule (72 *Federal Register* 13569) states: "For extremely high concentrations relative to historical values (e.g., concentrations greater than the 95th percentile), a lesser amount of documentation or evidence may be required to demonstrate that the event affected air quality."

Maps provided also display daily average PM_{2.5} measurements from the March 18, 2012, event for El Paso area monitors, including the Chamizal PM_{2.5} measurement proposed as an exceptional event. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for the March 18, 2012, event are also provided. Elevated PM measurements are evident throughout the El Paso area and continuous PM₁₀ and PM_{2.5} measurements plotted against peak winds support the occurrence of a dust cloud in the area affecting air quality on March 18, 2012, as also shown by webcam photographic images.

Map of El Paso area daily average PM_{2.5} measurements ($\mu\text{g}/\text{m}^3$) on March 18, 2012



The event was not reasonably controllable or preventable

The review summary discussion for the March 7, 2012, event day is also applicable to March 18, 2012. The evidence is located in Appendix J of the demonstration, including meteorological data, webcam images, back trajectories and graphs of continuous PM_{2.5}, PM₁₀, and wind data for March 18, 2012.

Furthermore, there are PM control measures in the El Paso area. These control measures are discussed in with the March 7, 2011, event day and are also relevant to this March 18, 2012, review summary.

The event was in excess of normal historical fluctuations

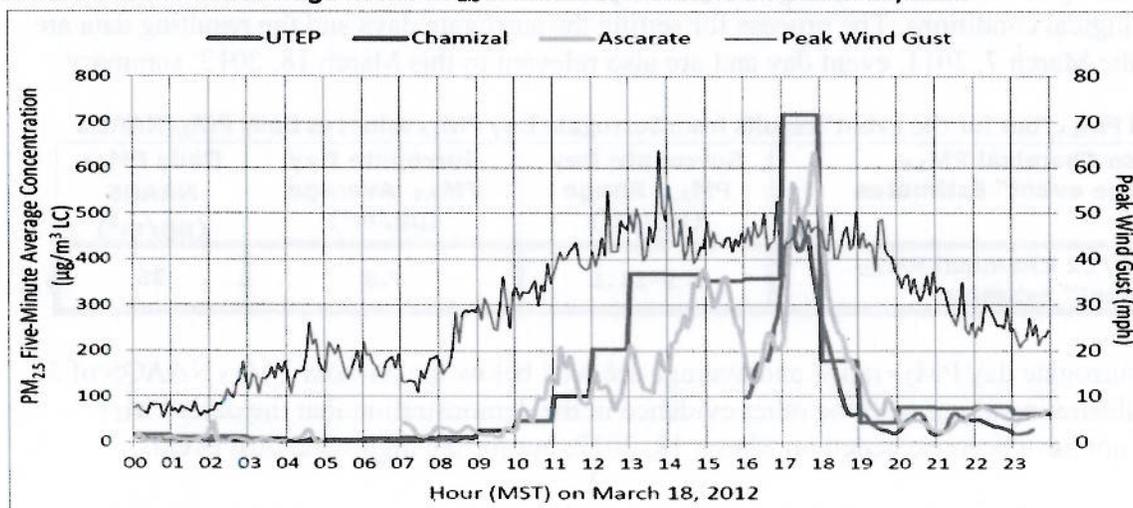
The figure presented in this section for the March 7, 2012, event day is also relevant to March 18, 2012. The figure shows the valid daily measurements of PM_{2.5} at Chamizal for the period from 2005 through 2012 along with the level of the 95th percentile. The proposed 2011 and 2012 PM_{2.5} exceptional event days are circled. From the figure it is evident that the flagged PM_{2.5} concentration during the proposed March 18, 2012, exceptional event day was not only above the 95th percentile but also by far the highest 24-hour PM_{2.5} measurement during this five-year period. The figure demonstrates that flagged measurement on the proposed 2012 event day was well outside of normal historical fluctuations of measured PM_{2.5} concentrations for the El Paso area.

There was a clear causal relationship

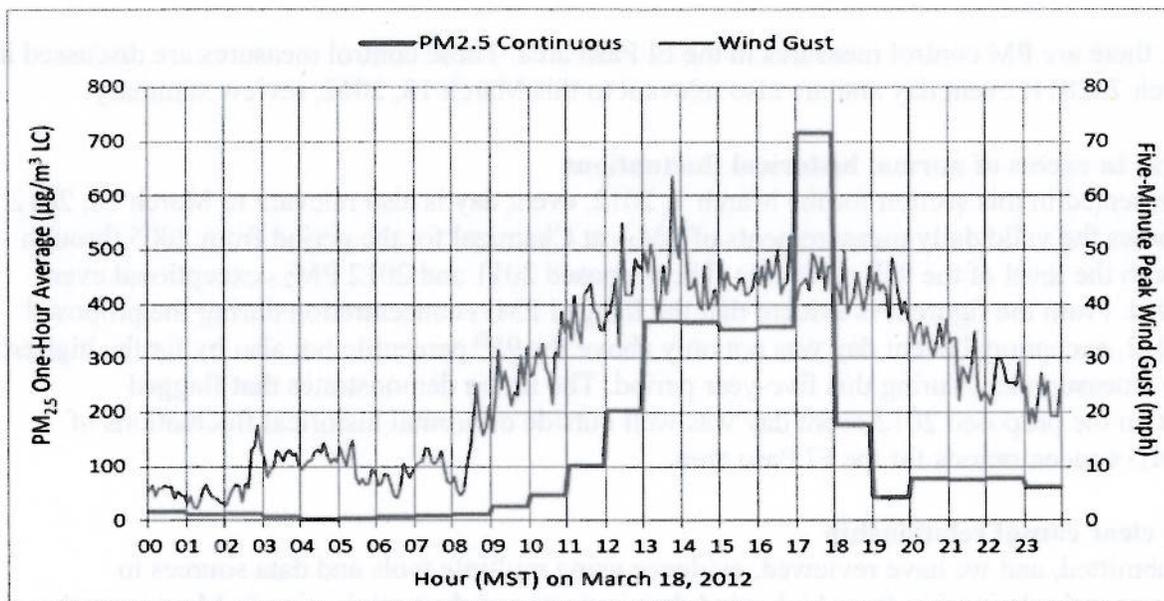
TCEQ has submitted, and we have reviewed, evidence using multiple tools and data sources to demonstrate a causal relationship from high wind dust impacts and dust originating in Mexico on the proposed PM_{2.5} exceptional event day of March 18, 2012. These tools and data sources include webcam images, backward air trajectories, and PM speciation data. The review summaries of this data for the March 7, 2011, event day are also relevant to the March 18, 2012, summary.

The figure below plots available continuous five-minute PM_{2.5} data from three PM_{2.5} sites in the El Paso area on March 18, 2012. The continuous five-minute PM_{2.5} data in the figure indicates intense dust arriving first at Chamizal around 1300 MST and then later at the Ascarate site farther to the east with the dust event going from west to east consistent with the southwest wind direction and similar to previous events. The figure indicates PM_{2.5} levels increasing at the Chamizal site as winds consistently exceeded 25 mph around 0830 MST, with PM_{2.5} levels increasing dramatically during the period of peak winds in the afternoon with PM_{2.5} levels decreasing as the winds subsided overnight, indicating the passing of an intense dust plume, as supported by webcam photographs.

El Paso five-minute average from PM_{2.5} continuous monitors on March 18, 2012



The following figure below plots PM_{2.5} and wind gust data from the Chamizal site on March 18, 2012. There is a relationship between the consistently high wind gusts and elevated PM_{2.5} levels. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the high wind event.



There would have been no exceedance or violation but for the event

Title 40 CFR Part 50.14(c)(3)(iv)(D) states the demonstration to justify the exceptional event designation shall provide evidence that “there would have been no exceedance or violation but for the event.” TCEQ identified matching surrogate days to estimate the appropriate daily “but for the event” PM_{2.5} concentrations at the Chamizal site without high wind dust events and that these PM_{2.5} levels would be below the 24-hour PM_{2.5} NAAQS of 35 µg/m³.

The following figure below plots PM_{2.5} and wind gust data from the Chamizal site on March 18, 2012. There is a relationship between the consistently high wind gusts and elevated PM_{2.5} levels. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the high wind event.

For comparison to the proposed March 18, 2012, exceptional event day at Chamizal, TCEQ identified surrogate days during the November through May time period with moderate wind speeds but otherwise similar meteorological conditions. The process for setting the surrogate days and the resulting data are discussed with the March 7, 2011, event day and are also relevant to this March 18, 2012, summary.

El Paso-Chamizal PM_{2.5} “but for the event” results from Surrogate Day PM_{2.5} values vs Daily PM_{2.5} NAAQS

El Paso Chamizal PM _{2.5} “but for the event” Estimates	Surrogate Day PM _{2.5} Range (µg/m ³)	Surrogate Day PM _{2.5} Average (µg/m ³)	Daily PM _{2.5} NAAQS (µg/m ³)
Resulting 3/18/12 Chamizal PM _{2.5} “but for the event” estimate	5.9-11.1	7.8	35

The non-event surrogate day PM_{2.5} range and average are well below the 24-hour PM_{2.5} NAAQS of 35 µg/m³, further illustrating along with the other evidence in the demonstration that the daily PM_{2.5} NAAQS would not have been exceeded on March 18, 2012, but for the high wind dust event.

November 10, 2012

The event was caused by human activity unlikely to reoccur or was a natural event

High winds causing windblown dust are natural events. This natural phenomenon was mentioned in the preamble to the EPA Exceptional Events Rule as being eligible for evaluation as a possible exceptional event. [See 72 FR 13566, 13566 and 13576 (March 22, 2007)].

The proposed exceptional event flag for November 10, 2012, is for a high wind blowing dust event, which is a natural event. Satellite and webcam imagery provide visual evidence of dust from northern Mexico moving into the El Paso area on November 10, 2012, as does back trajectory analysis of air masses traveling from Mexico over primarily natural desert terrain to the monitors in El Paso County. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for November 10, 2012, also support the occurrence of high wind dust event in the area that day. This evidence is located in Appendix K of the demonstration.

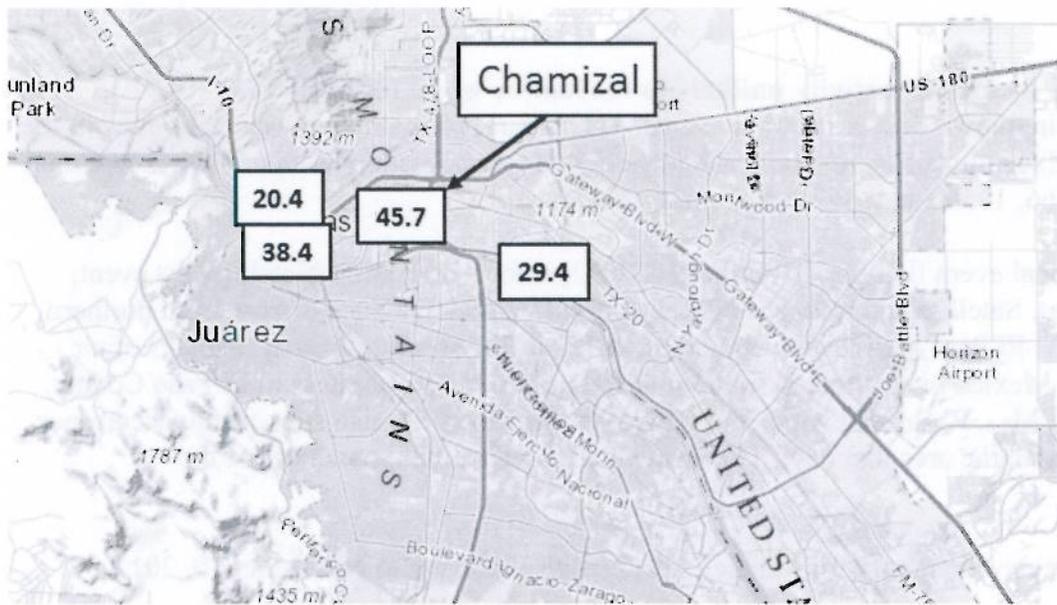
The PM_{2.5} speciation review summary for March 7, 2012, is also relevant to November 10, 2012.

The event affects air quality

The measurement of 45.7 $\mu\text{g}/\text{m}^3$ on November 10, 2012, exceeded the PM_{2.5} 24-hour NAAQS of 35 $\mu\text{g}/\text{m}^3$. The PM_{2.5} measurement at Chamizal was well above the 95th percentile of 20.2 $\mu\text{g}/\text{m}^3$ from 2008 through 2012, was by far the highest 24-hour PM_{2.5} measurement during this five-year period. The preamble to the Exceptional Event Rule (72 *Federal Register* 13569) states: "For extremely high concentrations relative to historical values (e.g., concentrations greater than the 95th percentile), a lesser amount of documentation or evidence may be required to demonstrate that the event affected air quality."

Maps provided also display daily average PM_{2.5} measurements from the November 10, 2012, event for El Paso area monitors, including the Chamizal PM_{2.5} measurement proposed as an exceptional event. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for the November 10, 2012, event are also provided. Elevated PM measurements are evident throughout the El Paso area and continuous PM₁₀ and PM_{2.5} measurements plotted against peak winds support the occurrence of a dust cloud in the area affecting air quality on November 10, 2012, as also shown by satellite and webcam photographic images.

Map of El Paso area daily average PM_{2.5} measurements ($\mu\text{g}/\text{m}^3$) on November 10, 2012



The event was not reasonably controllable or preventable

The review summary for the March 7, 2012, event day is also applicable to November 10, 2012. The evidence is located in Appendix K of the demonstration, including meteorological data, satellite images, webcam photos, back trajectories and graphs of PM_{2.5}, PM₁₀, and wind data for November 10, 2012.

Furthermore, there are PM control measures in the El Paso area. These control measures are discussed in with the March 7, 2011, event day and are also relevant to this November 10, 2012, review summary.

The event was in excess of normal historical fluctuations

The figure presented in this section for the March 7, 2012, event is also relevant to November 10, 2012. The figure shows the valid daily measurements of PM_{2.5} at Chamizal for the period from 2005 through 2012 along with the level of the 95th percentile. The proposed 2011 and 2012 PM_{2.5} exceptional event days are circled. From the figure it is evident that the flagged PM_{2.5} concentration during the proposed November 10, 2012 exceptional event day was not only above the 95th percentile but also by far the highest 24-hour PM_{2.5} measurement during this five-year period. The figure demonstrates that flagged measurement on the proposed 2012 event day was well outside of normal historical fluctuations of measured PM_{2.5} concentrations for the El Paso area.

There was a clear causal relationship

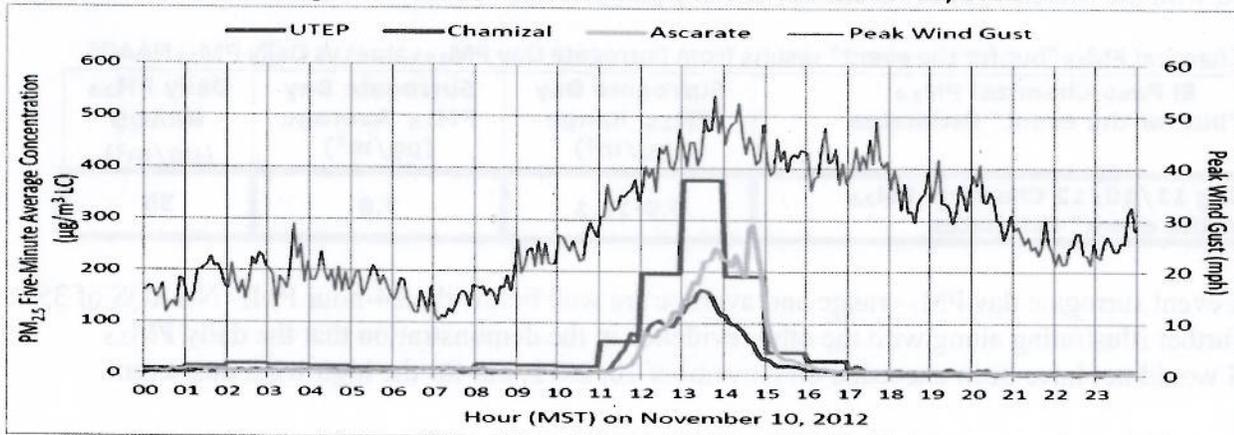
TCEQ has submitted, and we have reviewed, evidence using multiple tools and data sources to demonstrate a causal relationship from high wind dust impacts and dust originating in Mexico on the proposed PM_{2.5} exceptional event day of November 10, 2012. These tools and data sources include satellite images, webcam photos, backward air trajectories, and PM speciation data. The review summaries of this data for the March 7, 2011, event day are also relevant to the November 10, 2012, summary.

Winds at the site on this day exceeded the EPA guideline threshold for high wind events of 25 mph.

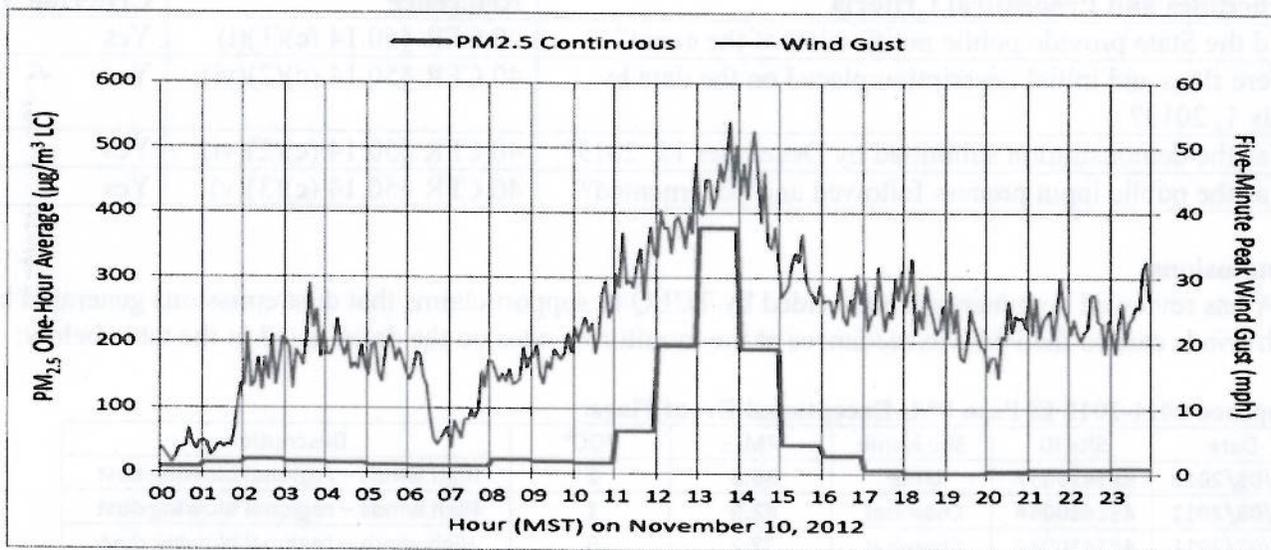
The figure below plots available continuous five-minute PM_{2.5} data from three PM_{2.5} sites in the El Paso area on November 10, 2012. The figure indicates intense dust arriving first at Chamizal and then later at the Ascarate site farther to the east consistent with dust event impacting from west to east and the west-southwest wind direction, and similar to previous events. Likewise, the data in the figure indicates a sharp rise in measured concentrations starting around 1100 MST, peaking between 1300 and 1500 MST

before rapidly falling off. This pattern is consistent with the passage of a large transported dust cloud as supported by satellite imagery and webcam images.

El Paso five-minute average from PM_{2.5} continuous monitors on November 10, 2012



The following figure plots PM_{2.5} and wind gust data from the Chamizal site on November 10, 2012. There is a relationship between the period of highest wind gusts and the elevated PM_{2.5} levels. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the peak of the high wind event.



There would have been no exceedance or violation but for the event

Title 40 CFR Part 50.14(c)(3)(iv)(D) states the demonstration to justify the exceptional event designation shall provide evidence that “there would have been no exceedance or violation but for the event.” TCEQ identified matching surrogate days to estimate the appropriate daily “but for the event” PM_{2.5} concentrations at the Chamizal site without high wind dust events and that these PM_{2.5} levels would be below the 24-hour PM_{2.5} NAAQS of 35 µg/m³.

Winds at the site on this day exceeded the EPA guideline threshold for high wind events of 25 mph.

The following figure plots PM_{2.5} and wind gust data from the Chamizal site on November 10, 2012. There is a relationship between the period of highest wind gusts and the elevated PM_{2.5} levels. All PM_{2.5} readings above the 24-hour PM_{2.5} NAAQS of 35 µg/m³ occurred during the peak of the high wind event.

For comparison to the proposed November 10, 2012, exceptional event day at Chamizal, TCEQ identified surrogate days during November through May with moderate wind speeds but otherwise similar meteorological conditions. The process for setting the surrogate days and the resulting data are discussed with the March 7, 2011, event day and are also relevant to this November 10, 2012, summary.

El Paso-Chamizal PM_{2.5} "but for the event" results from Surrogate Day PM_{2.5} values vs Daily PM_{2.5} NAAQS

El Paso Chamizal PM _{2.5} "but for the event" Estimates	Surrogate Day PM _{2.5} Range (µg/m ³)	Surrogate Day PM _{2.5} Average (µg/m ³)	Daily PM _{2.5} NAAQS (µg/m ³)
Resulting 11/10/12 Chamizal PM_{2.5} "but for the event" Estimates	5.9-11.1	7.8	35

The non-event surrogate day PM_{2.5} range and average are well below the 24-hour PM_{2.5} NAAQS of 35 µg/m³, further illustrating along with the other evidence in the demonstration that the daily PM_{2.5} NAAQS would not have been exceeded on November 10, 2012, but for the high wind dust event.

Schedule and Procedural Requirements

A specific schedule and procedural requirements an air agency must follow to request data exclusion is identified in 40 CFR §50.14(c). The table below outlines the EPA's evaluation of these requirements.

Schedules and Procedural Criteria	Reference	Criterion Met?
Did the State provide public notification of the event?	40 CFR §50.14 (c)(1)(i)	Yes
Were flags and initial description placed on the data by July 1, 2013?	40 CFR §50.14 (c)(2)(vi)	Yes
Was the demonstration submitted by December 12, 2013?	40 CFR §50.14 (c)(2)(vi)	Yes
Was the public input process followed and documented?	40 CFR §50.14 (c)(3)(v)	Yes

Conclusions

EPA has reviewed documentation provided by TCEQ to support claims that dust emissions generated by high winds caused the PM_{2.5} exceedances at the monitoring sites on the dates listed in the table below:

Proposed 2011-2012 El Paso PM_{2.5} Exceptional Event Flags:

Date	Site ID	Site Name	PM _{2.5}	POC*	Description
02/08/2011	481410037	UTEP	36.8	1	High winds – regional blowing dust
02/08/2011	481410044	Chamizal	42.9	1	High winds – regional blowing dust
03/07/2011	481410044	Chamizal	37.2	6	High winds – regional blowing dust
04/09/2011	481410037	UTEP	48.7	1	High winds – regional blowing dust
04/09/2011	481410044	Chamizal	38.5	1	High winds – regional blowing dust
04/26/2011	481410044	Chamizal	36.2	6	High winds – regional blowing dust
05/10/2011	481410044	Chamizal	36.3	6	High winds – regional blowing dust
03/07/2012	481410044	Chamizal	85.0	6	High winds – regional blowing dust
03/18/2012	481410044	Chamizal	130.4	6	High winds – regional blowing dust
11/10/2012	481410044	Chamizal	45.7	6	High winds – regional blowing dust

*POC = pollutant of concern. In this case, the specific monitor for the pollutant at the monitoring site.

Based on a weight of evidence in the TCEQ 2011 El Paso PM Exceptional Events Demonstration dated November 1, 2013, and an addendum to the demonstration dated August 19, 2014, EPA finds that all of the requested exceptional event days tables above, except for the PM_{2.5} exceedances at the Chamizal and UTEP monitors on February 8, 2011 (in bold), meet the definition of exceptional events and that the weight of evidence is sufficient for concurrence with these flagged data on these days.

As a consequence, these exceedances, with the exception of the PM_{2.5} exceedances at the Chamizal and UTEP monitors on February 8, 2011, will not be included in consideration when EPA is making attainment or nonattainment determinations for the annual PM_{2.5} NAAQS. This concurrence does not constitute final EPA action to exclude these data from consideration for purposes of determining the attainment status of the area. Final actions will come only after EPA completes notice and comment on those determinations.

TCEQ El Paso 2010-2011 PM₁₀ Exceptional Events Demonstration Technical Review Summary

Introduction

EPA promulgated the Exceptional Events Rule (EER) in 2007, pursuant to the 2005 amendment of the Clean Air Act (CAA) Section 319. The EER added 40 CFR §50.1(j), (k), and (l); §50.14; and §51.930 to the Code of Federal Regulations (CFR). These sections contain definitions, criteria for Environmental Protection Agency (EPA) approval, procedural requirements, and requirements for air agency demonstrations, all of which must be met before EPA can concur under the EER on the exclusion of air quality data from regulatory decisions.

As a requirement under the EER, data claimed to be due to an exceptional event must be flagged in the EPA's Air Quality System database and an initial description of the event should be provided to the EPA, as well as, notice and opportunity for public input. Failure to meet the above criteria will result in non-concurrence with the flagging of the measured proposed National Ambient Air Quality Standard (NAAQS) exceedance(s).

After considering the weight of evidence provided in the demonstration, the EPA will decide to concur or not to concur with each flag. Under 40 CFR §50.14(c)(3)(iv), the air agency demonstration to justify exclusion of data must provide evidence that:

- the event was caused by human activity unlikely to reoccur at a particular location or was a natural event,
- the event affects air quality,
- the event was not reasonably controllable or preventable,
- the event was in excess of normal historical fluctuations,
- there was a clear causal relationship, and
- there would have been no exceedance or violation but for the event,

Exceptional Events Demonstration

The Texas Commission on Environmental Quality (TCEQ) submitted the 2010-212 El Paso PM Exceptional Events Demonstration dated November 1, 2013 to EPA Region 6. An addendum to the demonstration dated August 19, 2014 was submitted in response to EPA comments. This demonstration claims measured PM₁₀ exceedances on November 28, 2010, April 3, 2011 and April 9, 2011 at the El Paso - Socorro air quality monitoring site were exceptional events due to high winds in the area.

The daily PM₁₀ NAAQS is a 24-hour standard of 150 µg/m³ not to be exceeded more than once per year on average over three years.

The demonstration seeks exclusion for 3 exceedances of the 24-hour PM₁₀ NAAQS at the Socorro site.

Date	Site ID	Site Name	PM ₁₀ (µg/m ³)	POC*	Event Description
11/28/10	481410057	Socorro	249	1	High winds – regional blowing dust
4/3/11	481410057	Socorro	159	1	High winds – regional blowing dust
4/9/11	481410057	Socorro	169	1	High winds – regional blowing dust

*POC = parameter occurrence code. In this case, the specific monitor for the pollutant at the monitoring site.

Conclusions: PM₁₀ exceedances

Based on a weight of evidence in the TCEQ 2010-2012 El Paso PM Exceptional Events Demonstration dated May 22, 2013 and an addendum dated August 19, 2014, all three of the above PM₁₀ measurements readings are approved by the Regional Administrator as exceptional events.

Note: Area-Wide Wind Gust Approach

The document attempted to argue that the peak wind gust data for the entire El Paso area should be used to help set a pollutant specific (PM₁₀ or PM_{2.5}) wind gust threshold. Then, in an attempt to justify a high wind PM data exclusions, the highest peak wind gust in the entire El Paso area on a specific day was compared to that pollutant-specific threshold to argue that local PM controls were overwhelmed at a specific monitoring site that day, even if that site was different from where the peak wind gust occurred.

EPA did not find this wind gust argument and approach persuasive or sufficiently supported in the document. Consequently, EPA did not agree with the conclusions presented in the document that relied on the area-wide peak wind gust approach.

That being said, EPA conclusions on exceptional event demonstrations are based on the weight of evidence in all the documentation submitted by the requesting agency. Based on the weight of evidence, EPA was still able to make conclusions on the requested PM exclusions for the El Paso area.

November 28, 2010

The event was caused by human activity unlikely to reoccur or was a natural event

High winds causing windblown dust are natural events. This natural phenomenon was mentioned in the preamble to the EPA Exceptional Events Rule as being eligible for evaluation as a possible exceptional event. [See 72 FR 13566, 13566 and 13576 (March 22, 2007)].

The proposed exceptional event flag for 2010 is for a high wind blowing dust event, which is a natural event. Satellite and webcam imagery provide visual evidence of dust from northern Mexico moving into the El Paso area on November 28, 2010, as does back trajectory analysis of air masses traveling from Mexico over primarily natural desert terrain to the monitors in El Paso County. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for November 28, 2010 also support the occurrence of high wind dust event in the area that day.

PM_{2.5} speciation data from the El Paso Chamizal site for five of the ten 2010-2012 proposed exceptional event days, including November 28, 2010, also provides evidence that the elevated particulate concentrations were from natural sources. Speciation data from the PM_{2.5} fraction is supportive of the relationship between high winds, dust impacts and elevated PM at sites. A summary of the Chamizal speciation data on proposed exceptional event days is provided in the table below, including averages from 2010 through 2012. The speciation data shows an elevated IMPROVE soil component on proposed exceptional event days, including November 28, 2010, as would be expected with dust from high winds.

The PM speciation monitoring IMPROVE soil component data available from the Chamizal site shows that IMPROVE soil concentrations were significantly elevated with high winds. On the three proposed PM₁₀ exceptional event days, the IMPROVE soil component ranged from 14.9 to 17.4 µg/m³ compared to the 95th percentile of 5.4 µg/m³ for all sample days during the period from 2001 through 2012, including high wind dust events.

Chamizal PM speciation soil component summary for proposed PM₁₀ exceptional event days (µg/m³)

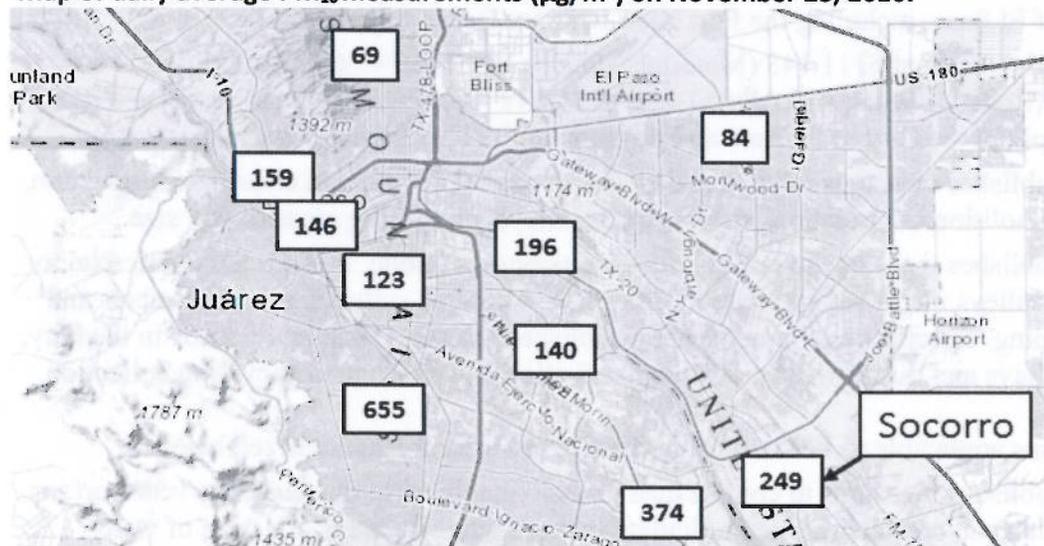
	2010-2012 average*	2010-2012 (95 th percentile)	11/28/10	4/3/11	4/9/11
ISoil	2.1	5.4	17.4	14.9	17.0

The event affects air quality

The measurement of $249 \mu\text{g}/\text{m}^3$ on November 28, 2010, exceeded the PM_{10} 24-hour NAAQS of $150 \mu\text{g}/\text{m}^3$. The PM_{10} measurement at Socorro was well above the 95th percentile of $68 \mu\text{g}/\text{m}^3$ from 2008 through 2012, was the highest PM_{10} measurement during this five-year period. The preamble to the Exceptional Event Rule (72 *Federal Register* 13569) states: "For extremely high concentrations relative to historical values (e.g., concentrations greater than the 95th percentile), a lesser amount of documentation or evidence may be required to demonstrate that the event affected air quality."

Maps provided also display daily average PM_{10} measurements from the November 28, 2010, event at El Paso area monitors, including the Socorro PM_{10} measurement proposed as an exceptional event. Graphs of continuous $\text{PM}_{2.5}$, PM_{10} , and wind data for the November 28, 2010, event are also provided. Elevated PM measurements are evident throughout the El Paso area and continuous PM measurements plotted against wind speeds support the occurrence of a dust cloud in the area on November 28, 2010, as also documented by satellite imagery and webcam photographic images.

Map of daily average PM_{10} measurements ($\mu\text{g}/\text{m}^3$) on November 28, 2010.



The event was not reasonably controllable or preventable

Ambient air impacts of windblown dust on November 28, 2010, were not controllable or preventable. Meteorological data and satellite imagery in the document show the transport of large amounts of uncontrollable particulates, originating in Mexico. In addition, two El Paso webcams, located at Chelsea Street and Ranger Peak, provide visual images of the dust impacting the El Paso area on November 28, 2010. This evidence is located in Appendix B of the demonstration.

Graphs of continuous $\text{PM}_{2.5}$, PM_{10} , and wind data for the November 28, 2010, event are also provided. Elevated PM measurements are evident throughout the El Paso area and continuous PM_{10} and $\text{PM}_{2.5}$ measurements plotted against wind speeds support the occurrence of an intense dust cloud in the area on November 28, 2010, as also shown by satellite imagery and webcam photographic images.

The proposed November 28, 2010, exceptional event day is for a high wind blowing dust event. The document provides satellite imagery and a back trajectory analysis of how air masses traveled from Mexico over primarily desert terrain to El Paso County monitors, including the Socorro monitor. Graphs of continuous $\text{PM}_{2.5}$, PM_{10} , and wind data for November 28, 2010, also support the occurrence of a high wind dust event in the area that day.

The Socorro monitoring site is located immediately west of the Rio Grande River, the international border between the U.S. and Mexico. The west-southwest wind direction on the proposed event day is from across the border. With this wind direction, there is not much distance nor any large PM₁₀ sources between the Socorro monitor and the Mexican border. It is not reasonable to control or prevent either natural PM₁₀ emissions from a high wind dust event or PM₁₀ emissions originating in Mexico.

Furthermore, there are PM control measures in the El Paso area. The El Paso area has been classified as nonattainment for the 24-hour PM₁₀ NAAQS since November 15, 1990. The State of Texas adopted State Implementation Plan (SIP) provisions in November 1991 that include regulations on PM₁₀ sources in the El Paso area, approved by EPA effective February 17, 1994.

On January 25, 2012, TCEQ adopted a SIP revision to incorporate a revised Memorandum of Agreement between the TCEQ and the City to reflect updates to the PM₁₀ control measures. The regulations included in these SIP revisions are summarized below:

- 30 TAC §111.111(c) prohibits the use of solid fuel heating devices during periods of atmospheric stagnation in the City of El Paso, including the Fort Bliss Military Reservation.
- 30 TAC §111.141 establishes that §111.143 (Materials Handling), §111.145 (Construction & Demolition), §111.147 (Roads, Streets, and Alleys), and §111.149 (Parking Lots), and associated dates of compliance, shall apply to the City of El Paso and portions of the Fort Bliss Military Reservation.
- 30 TAC §111.145 establishes measures to control dust emissions related to land clearing/construction, repair, alteration and demolition of structures, roads, streets, alleys, or parking areas of any size.
- 30 TAC §111.147 establishes measures to control dust emissions on public, industrial, commercial, or private roads, streets, or alleys including application of asphalt, water, or suitable oil or chemicals and mechanical street sweeping. Specific requirements are established for alleys and levee roads in the City, including paving new alleys and disallowing use of unpaved alleys for garbage or recycling collection.

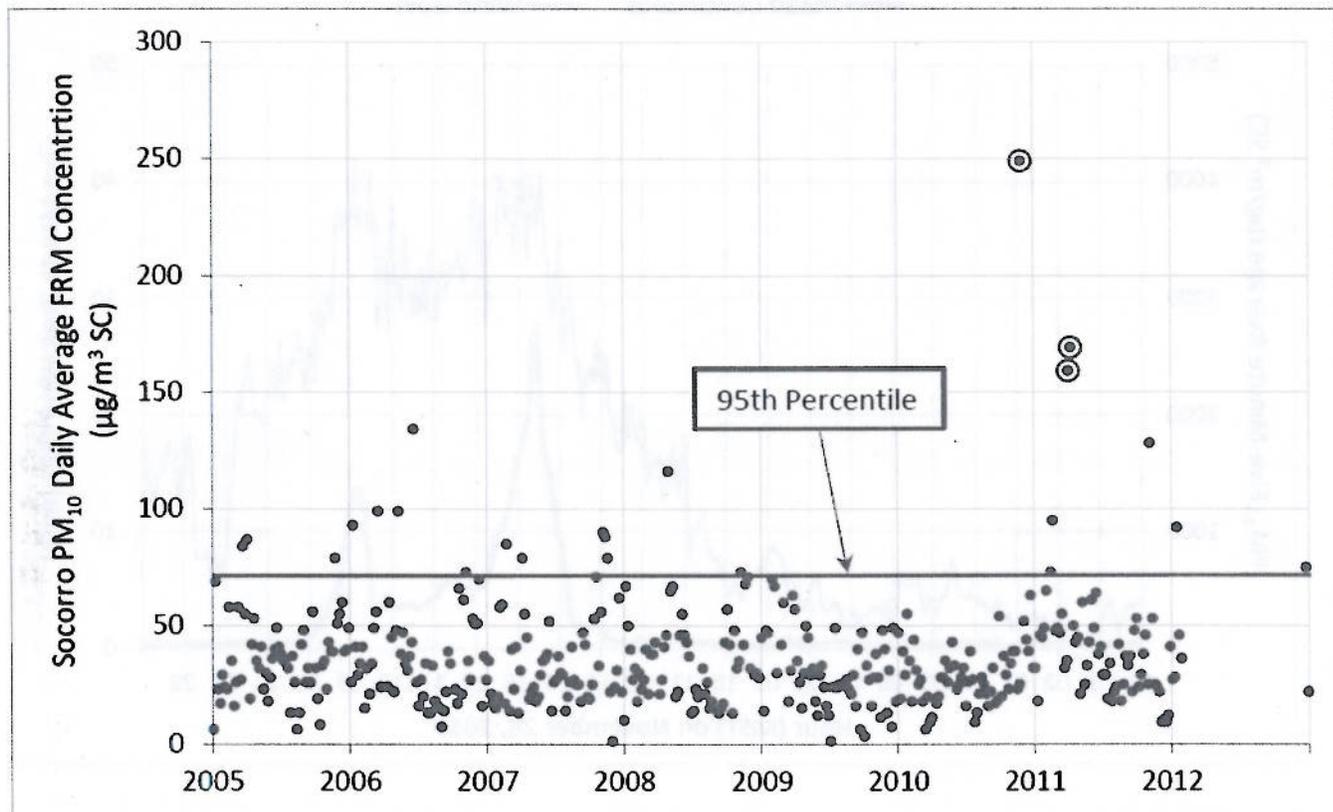
Other existing regulations applicable to PM control in the El Paso area are summarized below:

- 30 TAC §111.143 establishes measures to control dust emissions related to the handling, transport, or storage of materials which can create airborne particulate matter including the application of water, chemicals, or coverings on materials stockpiles; use of hoods, fans, and filters to enclose, collect, and clean the emissions of dusty materials; and the covering of all open-bodied trucks, trailers, and railroad cars transporting materials in the City of El Paso.
- 30 TAC §111.149 establishes measures to control dust emissions, including appropriate application of asphalt, water, or suitable oil or chemicals for temporary parking lots, parking lots having more than five spaces, and paved parking lots having more than one hundred spaces.
- City of El Paso Municipal Code Chapter 9.38, concerning wood burning, prohibits operation of a solid fuel heating device within the City during a no-burn period, unless an exemption has been obtained.
- City of El Paso Municipal Code Chapter 19.15.020, concerning sub-divider responsibility, establishes standards for proposed roads serving new developments, including alleys.
- City of El Paso Municipal Code Chapter 19.15.160 establishes standards for the construction and improvement of alleys.
- City of El Paso Municipal Code Chapter 20.14 establishes standards for the provision of off-street parking, loading and storage, including standards for dust-free surfacing.

The event was in excess of normal historical fluctuations

The figure below shows the valid daily measurements of PM₁₀ at Socorro for the period from 2005 through 2012 along with the level of the 95th percentile. The proposed 2010 and 2011 PM₁₀ exceptional event days are circled. From the figure it is evident that the flagged PM₁₀ concentration during the proposed November 28, 2010, exceptional event day was not only above the 95th percentile but also the highest historical valid PM₁₀ measurement at the site since 2005. The figure demonstrates that flagged measurement on the proposed 2010 event day was well outside of normal historical fluctuations in measured particulate concentrations for the El Paso area

Socorro FRM PM₁₀ daily measurements from 2005-2012, with proposed exceptional event days circled in red.



There was a clear causal relationship

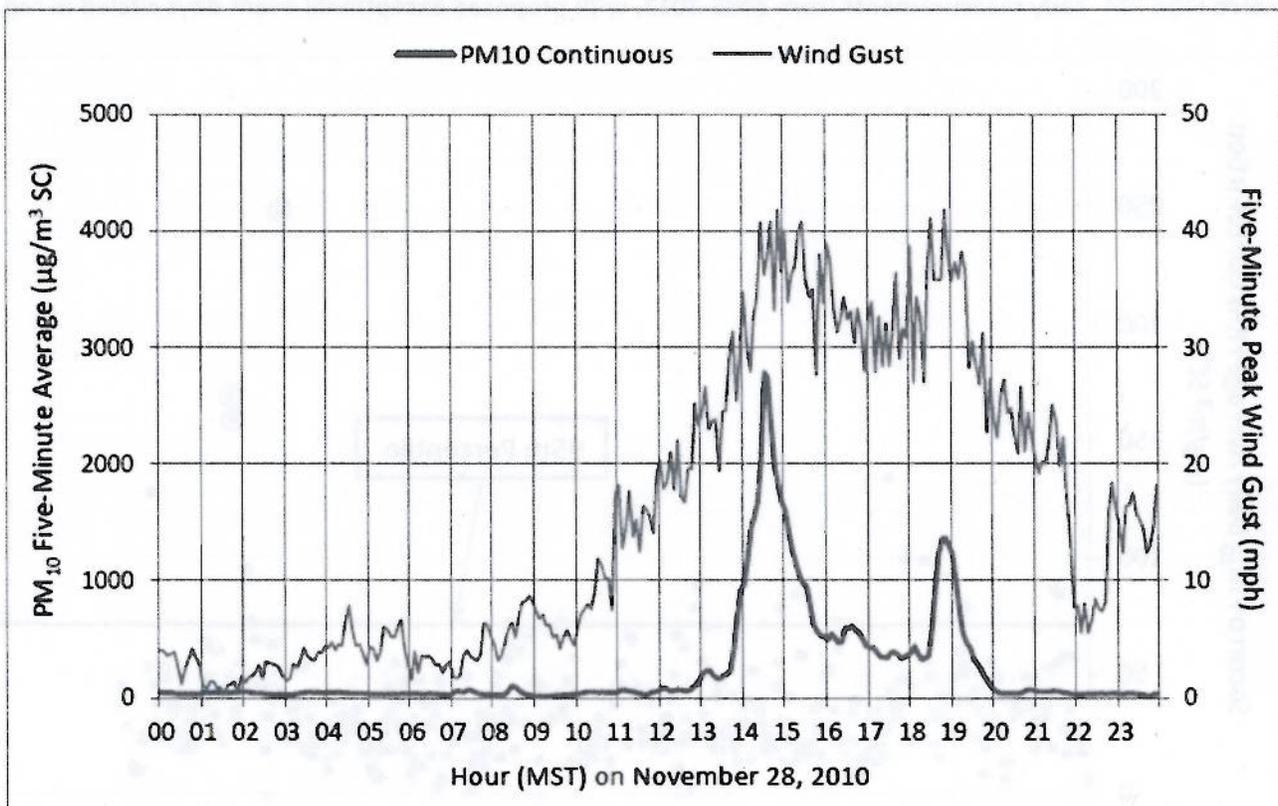
TCEQ has submitted, and we have reviewed, evidence using multiple tools and data sources to demonstrate a causal relationship from high wind dust impacts and dust originating in Mexico on the proposed PM₁₀ exceptional event day of November 28, 2010. These tools and data sources include satellite imagery, webcam images, backward air trajectories, and PM speciation data.

The sequence of satellite images for the proposed event day shows dust plumes originating in northern Mexico moving into and sweeping across the El Paso area. Backward-in-time air trajectories corroborate visual evidence from satellite images and show that the air arriving on the proposed November 28, 2010, event day came from Mexico providing further evidence of the causal relationship for the event day. Webcam images on the event day provide further visual evidence a high wind dust event caused the PM₁₀ exceedance.

As discussed previously, El Paso PM_{2.5} speciation data shows an elevated IMPROVE soil component on proposed exceptional event days, including November 28, 2010, as would be expected with dust from high winds.

The following figure plots the continuous five -minute PM₁₀ measurements from the Socorro site on November 28, 2010. There is a good relationship between high wind gusts and PM₁₀ concentration peaks on the event day.

Wind and PM₁₀ measurements from Socorro continuous monitor on November 28, 2010.



There would have been no exceedance or violation but for the event

TCEQ identified matching surrogate days to estimate the daily “but for the event” PM₁₀ concentrations at the Socorro site and that these PM₁₀ levels would be below the 24-hour PM₁₀ NAAQS of 150 µg/m³.

For comparison to the proposed November 28, 2010, exceptional event day at Socorro, TCEQ identified surrogate days during the November through May time period with moderate wind speeds but otherwise similar meteorological conditions. Moderate wind days were chosen to avoid those days where particulate measurements could possibly be affected by blowing dust from higher winds or significant local source contributions due to air stagnation with lower winds.

To determine surrogate days, TCEQ compiled 2010 through 2012 daily measurements of peak wind gust (Gust), peak one-hour average wind speed (Peak1), daily average wind speed (WSA), daily resultant wind speed (WSR), daily resultant wind direction (WDR), and daily wind direction variability ratio (WDV) from each event, and the three-day precipitation total for the day and two previous days (Prc3) from the El Paso Airport NWS weather station.

The WDV was calculated by dividing WSR by WSA, with the resulting ratio indicating steady wind directions when close to one and variable wind directions as the resulting ratio decreased to zero. These parameters were chosen to best eliminate factors associated with blowing dust and air stagnation and to ensure similar meteorological conditions between event days and surrogate days

Surrogate moderate wind days for Socorro were determined by sorting meteorological data to remove days that had peak wind gust above 32 mph and daily average wind speed below 5.0 mph. The daily resultant wind direction was constrained to be between 240 and 285 degrees clockwise from true north to match the range of wind direction on the event days. Only days with a steady wind direction variability ratio of 0.5 or higher were included and days that had measured precipitation within the last three days were removed. There were a total of 52 days that met these criteria, with 12 of those days having valid PM₁₀ measurements that could be used to evaluate the "but for the event" concentration.

The key local meteorological parameters for the Socorro proposed exceptional event days and surrogate days, respectively, are listed in the tables below. On all 12 of the surrogate days, the Socorro 24-hour PM₁₀ measurements were well below 150 µg/m³, providing additional evidence that without the high wind dust event, the 24-hour PM₁₀ NAAQS would not have been exceeded

Socorro PM₁₀, wind, & El Paso Airport precipitation on proposed 2010-2011 PM₁₀ exceptional event days

Day	PM10	Gust	Peak1	WSA	WSR	WDR	WDV	Prc3
11/28/10	249	41.8	21.0	9.4	7.2	261	0.76	0.00
04/03/11	159	41.5	21.0	13.8	12.9	260	0.94	0.00
04/09/11	169	38.5	18.3	11.3	8.2	242	0.73	0.00
Average	192	40.6	20.1	11.5	9.4	254	0.81	0.00

12 surrogate days: Socorro FRM PM₁₀, wind, and El Paso Airport precipitation measurements

Day	PM ₁₀	Gust	Peak1	WSA	WSR	WDR	WDV	Prc3
03/16/11	55	24.8	11.1	5.2	3.3	240	0.64	0.00
12/10/10	44	30.8	12.3	6.7	3.4	271	0.51	0.00
04/21/11	43	26.5	13.1	6.7	5.0	268	0.74	0.00
05/27/11	43	29.8	13.2	7.4	6.0	279	0.81	0.00
03/28/11	35	28.9	12.0	6.2	4.7	273	0.75	0.00
05/21/11	33	21.6	9.4	5.3	3.7	252	0.70	0.00
03/22/11	32	27.0	13.2	9.1	8.2	285	0.90	0.00
02/19/10	31	21.9	11.4	5.3	3.9	241	0.73	0.00
11/22/10	25	29.9	13.4	6.4	4.2	273	0.65	0.00
11/16/10	23	22.0	11.7	5.0	3.1	256	0.63	0.00
01/09/11	18	30.3	15.8	7.1	5.6	282	0.80	0.00
02/07/10	18	27.0	14.4	7.3	4.4	263	0.60	0.00
Average	33	26.7	12.6	6.5	4.6	265	0.70	0.00

PM₁₀ is in µg/m³ SC. Gust is the peak wind gust in mph. Peak1 is the peak 1-hour wind speed average in mph. WSA is the daily wind speed average in mph. WSR is the daily wind speed resultant (vector magnitude) in mph. WDR is daily wind direction resultant in degrees from north. WDV is wind direction variability ratio (WSR divided by WSA). Prc3 is the precipitation total over the most recent three days.

El Paso-Socorro PM₁₀ "but for the event" Surrogate Day PM₁₀ measurements vs. Daily PM₁₀ NAAQS

	Surrogate Day PM ₁₀ Range (µg/m ³)	Surrogate Day PM ₁₀ Average (µg/m ³)	Daily PM ₁₀ NAAQS (µg/m ³)
Resulting 11/28/10 Socorro PM ₁₀ "but for the event" Estimates	18-55	33	150

The non-event surrogate day PM₁₀ range and average are well below the 24-hour PM₁₀ NAAQS of 150 µg/m³, further illustrating along with the other evidence in the demonstration that the daily PM₁₀ NAAQS would not have been exceeded on November 28, 2010, but for the high wind dust event.

April 3, 2011, Event Day

The event was caused by human activity unlikely to reoccur or was a natural event

High winds causing windblown dust are natural events. This natural phenomenon was mentioned in the preamble to the EPA Exceptional Events Rule as being eligible for evaluation as a possible exceptional event. [See 72 FR 13566, 13566 and 13576 (March 22, 2007)].

The proposed exceptional event flag for April 3, 2011, is for a high wind blowing dust event, which is a natural event. Satellite and webcam imagery provide visual evidence of dust from northern Mexico moving into the El Paso area on April 3, 2011, as does back trajectory analysis of air masses traveling from Mexico over primarily natural desert terrain to the monitors in El Paso County. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for April 3, 2011, also support the occurrence of high wind dust event in the area that day. This evidence is located in Appendix E of the demonstration.

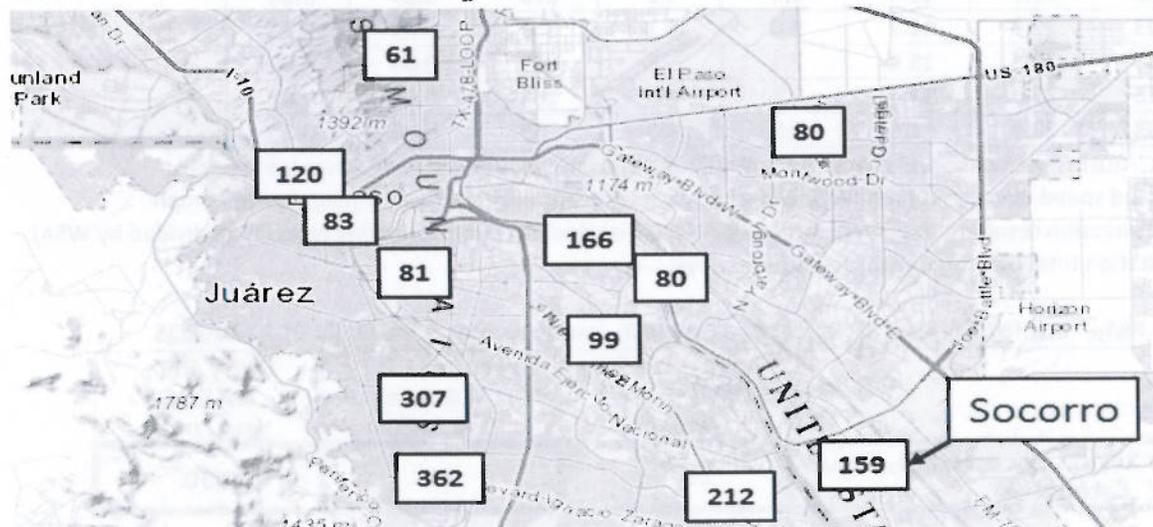
The PM speciation review summary for November 28, 2010, is also relevant to April 3, 2011

The event affects air quality

The measurement of 159 µg/m³ on the proposed exceptional event day exceeded the PM₁₀ 24-hour NAAQS of 150 µg/m³. The PM₁₀ measurement at Socorro was well above the 95th percentile of 68 µg/m³ from 2008 through 2012. The preamble to the Exceptional Event Rule (72 Federal Register 13569) states: "For extremely high concentrations relative to historical values (e.g., concentrations greater than the 95th percentile), a lesser amount of documentation or evidence may be required to demonstrate that the event affected air quality."

Maps provided also display daily average PM₁₀ and PM_{2.5} measurements on April 3, 2011, at the El Paso area PM monitors, including the Socorro PM₁₀ measurement proposed as an exceptional event. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for the April 3, 2011, event are also provided. Elevated PM measurements are evident throughout the El Paso area and continuous PM measurements plotted against winds support the occurrence of high wind dust event in the area affecting air quality on April 3, 2011, as also documented by satellite imagery and webcam photographic images.

Map of El Paso area daily average PM₁₀ measurements (µg/m³) on April 3, 2011



The event was not reasonably controllable or preventable

The proposed April 3, 2011, exceptional event day is for a high wind blowing dust event. The document provides satellite imagery and a back trajectory analysis of how air masses traveled from Mexico over primarily desert terrain to El Paso County monitors, including the Socorro monitor. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for April 3, 2011, also support the occurrence of a high wind dust event in the area that day. The evidence is located in Appendix E of the demonstration, including meteorological data, satellite images, webcam photos, back trajectories and graphs of PM_{2.5}, PM₁₀, and wind data for April 3, 2011.

As discussed for the November 28, 2010, event day, due to the west-southwest wind direction on the proposed event day and the location of the Socorro monitor, it is not reasonable to control natural PM₁₀ emissions and deposition from a high wind dust event or PM₁₀ emissions originating in Mexico.

Furthermore, there are PM control measures in the El Paso area. These control measures are discussed in with the November 28, 2010, event day and are also relevant to this April 3, 2011, review summary.

The event was in excess of normal historical fluctuations

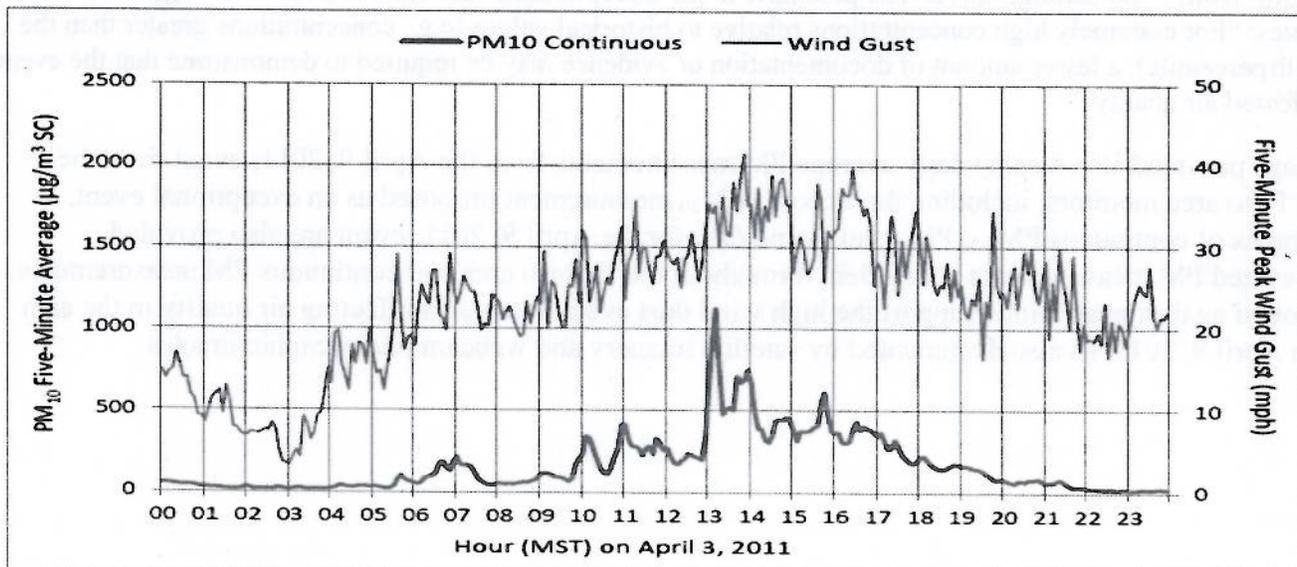
The figure shown with in the above discussion of the November 28, 2010, showing the Socorro PM₁₀ daily measurements from 2005-2012, with proposed exceptional event days circled in red demonstrates that flagged measurement on the proposed event day was well outside of normal historical fluctuations in measured particulate concentrations for the El Paso area.

There was a clear causal relationship

TCEQ has submitted, and we have reviewed, evidence using multiple tools and data sources to demonstrate a causal relationship from high wind dust impacts and dust originating in Mexico on the proposed PM₁₀ exceptional event day of April 3, 2011. These tools and data sources include satellite imagery, webcam images, backward air trajectories, and PM speciation data.

The figure below plots the continuous five-minute PM₁₀ from the Socorro site on April 3, 2011. PM₁₀ levels over the 24-hour NAAQS of 150 $\mu\text{g}/\text{m}^3$ occurred during periods of consistently high winds and there is a good correlation between highest wind gusts and PM₁₀ concentration peaks on the event day.

Wind and PM₁₀ measurements from Socorro continuous monitor on April 3, 2011



There would have been no exceedance or violation but for the event

TCEQ identified matching surrogate days to estimate the daily “but for the event” PM₁₀ concentrations at the Socorro site and that these PM₁₀ levels would be below the 24-hour PM₁₀ NAAQS of 150 µg/m³.

El Paso-Socorro PM₁₀ “but for the event” estimates from Surrogate Day PM₁₀ values vs. Daily PM₁₀ NAAQS

El Paso Socorro PM₁₀ “but for the event” Estimate	Surrogate Day PM₁₀ Range (µg/m³)	Surrogate Day PM₁₀ Average (µg/m³)	Daily PM₁₀ NAAQS (µg/m³)
Resulting 4/3/11 Socorro PM₁₀ “but for the event” Estimate	18-55	33	150

The non-event surrogate day PM₁₀ range and average are well below the 24-hour PM₁₀ NAAQS of 150 µg/m³, further illustrating along with the other evidence in the demonstration that the daily PM₁₀ NAAQS would not have been exceeded on April 3, 2011, but for the high wind dust event.

April 9, 2011, Event Day

The event was caused by human activity unlikely to reoccur or was a natural event

High winds causing windblown dust are natural events. This natural phenomenon was mentioned in the preamble to the EPA Exceptional Events Rule as being eligible for evaluation as a possible exceptional event. [See 72 FR 13566, 13566 and 13576 (March 22, 2007)].

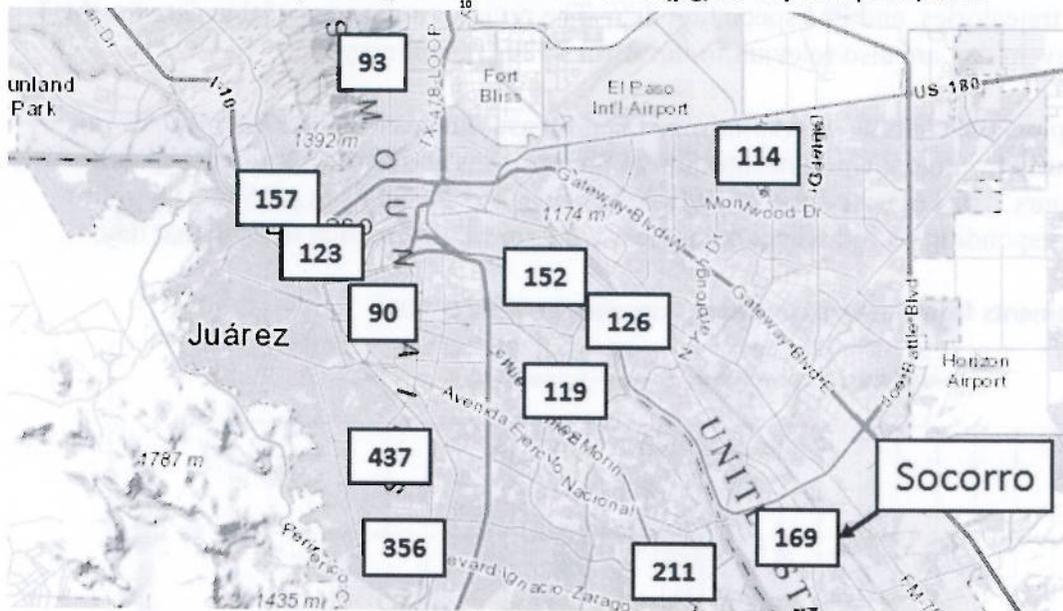
The proposed exceptional event flag for April 9, 2011, is for a high wind blowing dust event, which is a natural event. Webcam imagery provide visual evidence of dust from northern Mexico moving into the El Paso area on April 9, 2011, as does back trajectory analysis of air masses traveling from Mexico over primarily natural desert terrain to the monitors in El Paso County. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for April 9, 2011, also support the occurrence of high wind dust event in the area that day. This evidence is located in Appendix J of the demonstration.

The event affects air quality

The measurement of 169 µg/m³ on the proposed exceptional event day exceeded the PM₁₀ 24-hour NAAQS of 150 µg/m³. The PM₁₀ measurement at Socorro was well above the 95th percentile of 68 µg/m³ from 2008 through 2012. The preamble to the Exceptional Event Rule (72 *Federal Register* 13569) states: “For extremely high concentrations relative to historical values (e.g., concentrations greater than the 95th percentile), a lesser amount of documentation or evidence may be required to demonstrate that the event affected air quality.”

Maps provided also display daily average PM measurements from the April 9, 2011, event from the El Paso area monitors, including the Socorro PM₁₀ measurement proposed as an exceptional event. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for the April 9, 2011, event are also provided. Elevated PM measurements are evident throughout the El Paso area and continuous PM measurements plotted against peak winds support the high wind dust event in the area affecting air quality in the area on April 9, 2011, as also documented by satellite imagery and webcam photographic images.

Map of El Paso area daily average PM measurements ($\mu\text{g}/\text{m}^3$ SC) on April 9, 2011



The event was not reasonably controllable or preventable

The proposed April 9, 2011, exceptional event day is for a high wind blowing dust event. The document provides satellite imagery and a back trajectory analysis of how air masses traveled from Mexico over primarily desert terrain to El Paso County monitors, including the Socorro monitor. Graphs of continuous PM_{2.5}, PM₁₀, and wind data for April 9, 2011, also support the occurrence of a high wind dust event in the area that day.

The summary discussion for the November 28, 2010, event day is also applicable to April 9, 2011. The evidence is located in Appendix J of the demonstration, including meteorological data, webcam images, back trajectories and graphs of continuous PM_{2.5}, PM₁₀, and wind data for April 9, 2011.

As discussed for the November 28, 2010, event day, due to the west-southwest wind direction on the proposed event day and the location of the Socorro monitor, it is not reasonable to control natural PM₁₀ emissions and deposition from a high wind dust event or PM₁₀ emissions originating in Mexico.

Furthermore, there are PM control measures in the El Paso area. These control measures are discussed in with the November 28, 2010, event day and are also relevant to this April 9, 2011, review summary.

The event was in excess of normal historical fluctuations

The figure presented in the summary for the November 28, 2010, event day is also relevant to April 9, 2011. The figure shows the valid daily measurements of PM₁₀ at Socorro for the period from 2005 through 2012 along with the level of the 95th percentile. The proposed 2010 and 2011 PM₁₀ exceptional event days are circled. From the figure it is evident that the flagged PM₁₀ concentration during the proposed April 9, 2011, exceptional event day was above the 95th percentile. The figure demonstrates that flagged measurement on the proposed event day was well outside of normal historical fluctuations in measured particulate concentrations for the El Paso area.

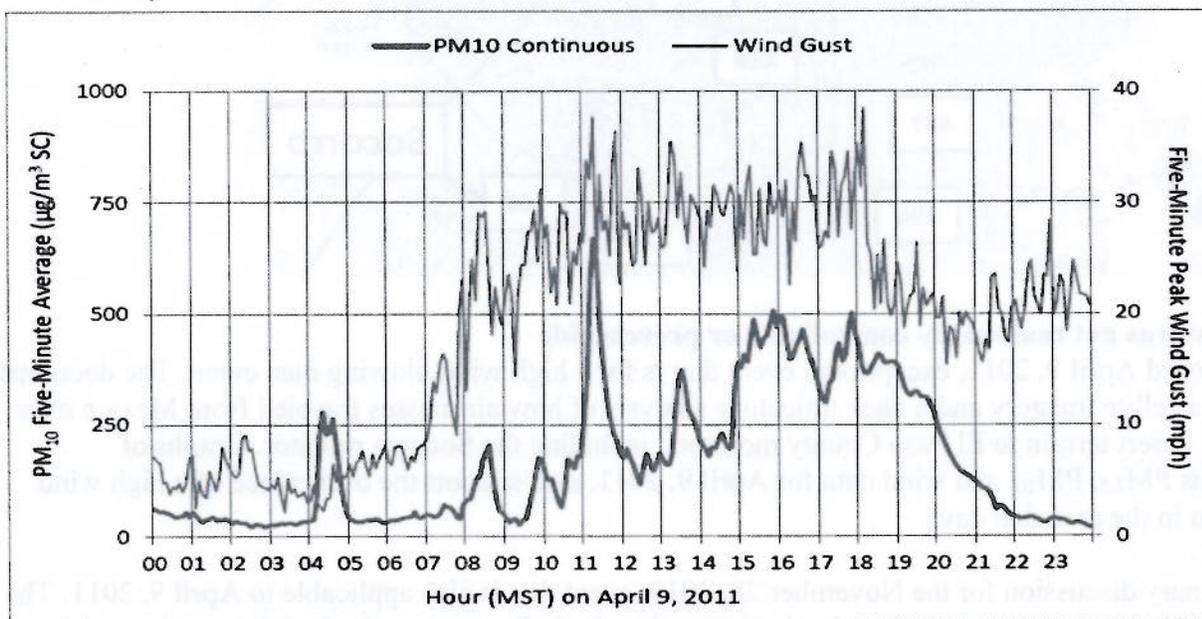
There was a clear causal relationship

TCEQ has submitted, and we have reviewed, evidence using multiple tools and data sources to demonstrate a causal relationship from high wind dust impacts and dust originating in Mexico on the

proposed PM_{2.5} exceptional event day of April 9, 2011. These tools and data sources include webcam images, backward air trajectories, and PM speciation data. The review summaries of this data for the November 28, 2010, event day are also relevant to the April 9, 2011, summary.

The following figure plots the continuous five-minute PM₁₀ measurements from the Socorro site on April 9, 2011. The hourly average PM₁₀ concentration at Socorro was above the 24-hour NAAQS of 150 µg/m³ for about ten hours. The largest period of PM₁₀ levels over the 24-hour NAAQS of 150 µg/m³ occurred during a corresponding period when the highest winds were recorded at the site that day.

Wind and PM₁₀ measurements from Socorro continuous monitor on April 9, 2011



There would have been no exceedance or violation but for the event

On all 12 of the surrogate days, the Socorro 24-hour PM₁₀ measurements were well below 150 µg/m³, providing strong evidence that without the high wind blowing dust events the 24-hour PM₁₀ NAAQS would not have been exceeded.

El Paso-Socorro PM₁₀ "but for the event" estimates from Surrogate Day PM₁₀ values vs. Daily PM₁₀ NAAQS

El Paso Socorro PM ₁₀ "but for the event" Estimate	Surrogate Day PM ₁₀ Range (µg/m ³)	Surrogate Day PM ₁₀ Average (µg/m ³)	Daily PM ₁₀ NAAQS (µg/m ³)
Resulting 4/9/11 Socorro PM ₁₀ "but for the event" Estimate	18-55	33	150

The non-event surrogate day PM₁₀ range and average are well below the 24-hour PM₁₀ NAAQS of 150 µg/m³, further illustrating along with the other evidence in the demonstration that the daily PM₁₀ NAAQS would not have been exceeded on April 9, 2011, but for the high wind dust event.

Schedule and Procedural Requirements

A specific schedule and procedural requirements an air agency must follow to request data exclusion is identified in 40 CFR §50.14(c). The table below outlines the EPA's evaluation of these requirements.

Schedules and Procedural Criteria	Reference	Criterion Met?
Did the State provide public notification of the event?	40 CFR §50.14 (c)(1)(i)	Yes
Were flags and initial description placed on the data by July 1 st of the following year?	40 CFR §50.14 (c)(2)(vi)	Yes
Was the demonstration submitted within 3 years of the end of the quarter in which the event occurred and 12 months prior to the date of any regulatory decision that must be made by EPA?	40 CFR §50.14 (c)(2)(vi)	Yes
Was the public input process followed and documented?	40 CFR §50.14 (c)(3)(v)	Yes

Conclusion

EPA has reviewed documentation provided by the TCEQ to support claims that dust emissions generated by high winds caused an exceedance of the 24-hour PM₁₀ NAAQS at the El Paso Socorro air monitoring site (AQS ID 481410057) on November 28, 2010, April 3, 2011, and April 9, 2011. Based on a weight of evidence in the Demonstration dated November 1, 2013, and the addendum to the demonstration dated August 19, 2014, EPA has determined that the flagged exceedance at this location and on this day meet the definition of an exceptional event. Furthermore, EPA finds that the weight of evidence is sufficient for concurrence with the flagged data on this day for this monitor. This concurrence does not constitute final EPA action to exclude these data from consideration for purposes of determining the attainment status of the area. Final actions will come only after EPA completes notice and comment on those determinations.

