

State of Arizona
PM_{2.5} Exceptional Event Documentation Supplement for
the Previously Submitted June 27, 2012
PM₁₀ Windblown Dust Exceptional Event

Produced by:

Arizona Department of Environmental Quality
Maricopa County Air Quality Department
Maricopa Association of Governments

Final Report
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1. INTRODUCTION

On June 27, 2012, the Glendale monitor (04-013-2001-88101-3), JLG Supersite monitor (04-013-9997-88101-3), and the West Phoenix monitor (04-013-0019-88101-3) exceeded both¹ the 24-hour and annual PM_{2.5} standards as a result of a high wind exceptional event. The PM₁₀ Exceptional Event documentation for June 27, 2012 was submitted to EPA on February 13, 2013 and the exceedances included therein received concurrence from EPA on July 1, 2013. This supplemental document related to PM_{2.5} exceedances that occurred during the same time period builds upon the initial documentation for the high wind exceptional events that caused thirteen Phoenix area monitors to exceed the PM₁₀ standard on June 27, 2011.

The information provided in the following sections of this supplemental document show that the PM_{2.5} exceedances at the Glendale, JLG Supersite, and West Phoenix monitors on June 27, 2012 were due to a high wind exceptional event by showing that:

- a. The event satisfies the criteria set forth in 40 CFR 501(j) that:
 - (1) the event affected air quality,
 - (2) the event was not reasonably controllable or preventable, and
 - (3) the event was caused by human activity unlikely to recur in a particular location or was a natural event;
- b. There is a clear causal relationship between the measurement under consideration and the event;
- c. The event is associated with a measured concentration in excess of normal historical fluctuations; and
- d. There would have been no exceedance or violation but for the event.

¹ As stated in EPA's *Interim Exceptional Events Rule Frequently Asked Questions*, May 2013, on pages 34-35, "The preamble [to the Exceptional Events Rule] states that in the particular case of PM_{2.5}, the direct comparison of a single 24-hour average concentration (determined from a single filter-based measurement or by averaging 24 1-hour measurements from a continuous equivalent instrument) to the level of the annual NAAQS can be the basis for meeting the 'but for' criterion for exceedances or violations of the annual NAAQS.²⁴ In context, it is clear that based on this comparison, a 24-hour concentration can be excluded from the calculation of the annual PM_{2.5} design value, if other rule criteria are also met. It is therefore not necessary to show that the annual average PM_{2.5} concentration was above 12 or 15 µg/m³ with the event and would have been below 12 or 15 µg/m³ 'but for' the single event at issue."

2. CONCEPTUAL MODEL

As explained in detail in Section II of the previously approved PM₁₀ main document, the active monsoon occurring on June 27, 2012 led to numerous thunderstorms and a large thunderstorm outflow that produced blowing dust throughout southeastern and central Arizona, including the Phoenix metropolitan area. The June 27th event was a widespread dust event with mostly southeasterly winds transporting dust from the desert areas of Pima and Pinal Counties into all areas of the Phoenix region during the evening. The windblown dust resulted in 24-hour average PM₁₀ concentrations in exceedance of the NAAQS for thirteen air quality monitors in the Phoenix area. In addition to generating and transporting high hourly and five-minute concentrations of PM₁₀, windblown dust carried by the outflows produced excessive hourly PM_{2.5} concentrations as high as 485 µg/m³ at the Glendale monitor, 537 µg/m³ at the JLG Supersite monitor, and 523 µg/m³ at the West Phoenix monitor. The transported PM_{2.5} from the dust storm ultimately caused these three monitors to exceed the PM_{2.5} standard on this date (i.e., 24-hour averages of 48.5 µg/m³, 38.8 µg/m³, and 37.1 µg/m³, respectively). A map of current PM_{2.5} monitors in Maricopa County is provided in Figure 1. As a summary of the event, Table 1 contains PM_{2.5} concentration data from all recorded monitors throughout Maricopa County, as well as PM₁₀ concentrations co-located at PM_{2.5} monitoring sites. Figure 2 and 3 display hourly graphs of PM_{2.5} and PM₁₀ concentrations, respectively, throughout Maricopa County before, during, and after the June 27, 2012 windblown dust event.

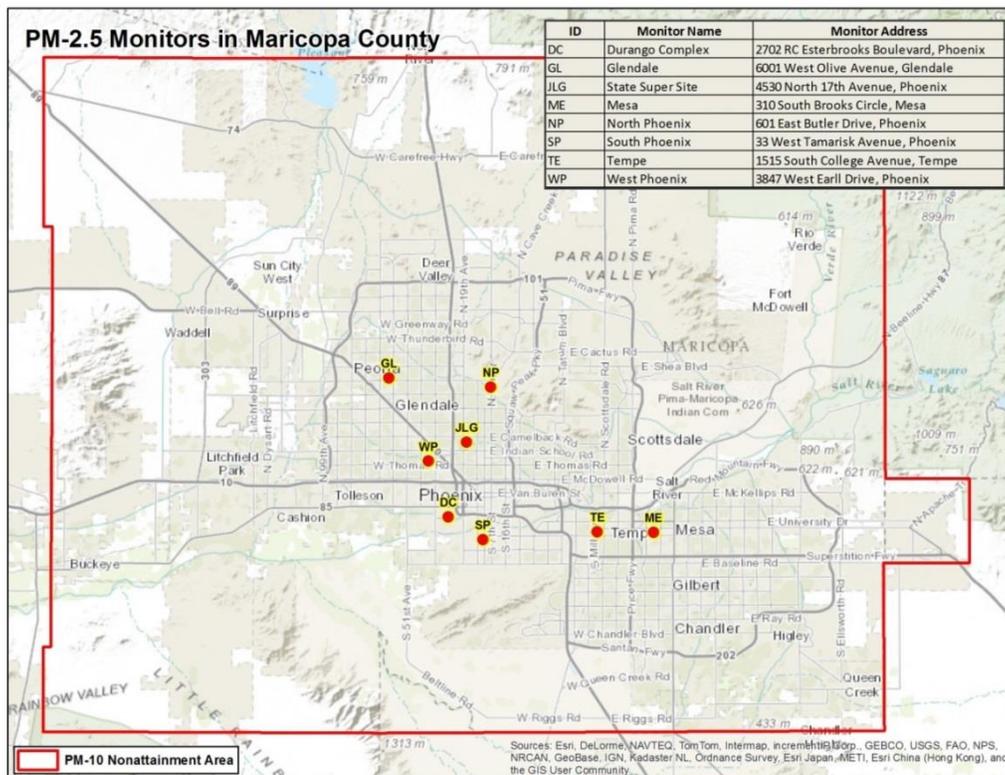


Figure 1. PM_{2.5} monitors in Maricopa County (2013).

Table 1. Summary of PM_{2.5} and PM₁₀ measurements in Maricopa County on June 27, 2012.

MARICOPA COUNTY ¹						
Monitor	AQS Monitor ID	24-Hour Average PM _{2.5} Concentration (µg/m ³)	1-Hour Maximum PM _{2.5} Concentration (µg/m ³)	Maximum PM _{2.5} Concentration Time	24-Hour Average PM ₁₀ Concentration (µg/m ³)	AQS Qualifier Flag
Durango Complex	04-013-9812-88101-3	31.8	404	2000	221.8	
Glendale*	04-013-2001-88101-3	42.8	485	2000	331	RJ
JLG Supersite-BAM	04-013-9997-88101-3	38.8	537	2000	344.9	RJ
North Phoenix	04-013-1004-81102-3	21.7	130.8	2000	179.2	
South Phoenix*	04-013-9997-88101-3	24.3	294.9	2000	344.4	
West Phoenix	04-013-0019-88101-3	37.1	523	2000	67.1**	RJ

SOURCE: ¹ Data as reported in EPA's Air Quality System (AQS) database. *Missing 2300 hourly observation for Glendale monitor and 0700 hourly observation for South Phoenix monitor. **Missing 2000 and 2100 hourly PM₁₀ observations for West Phoenix monitor.

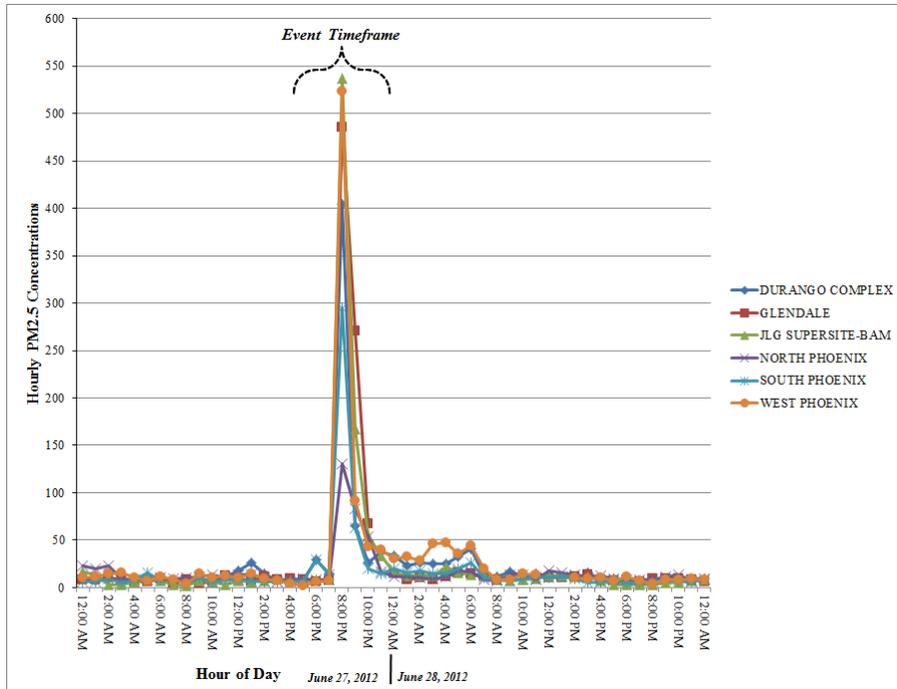


Figure 2. Timeline of hourly average PM_{2.5} concentrations at Maricopa County monitors before, during, and after the June 27, 2012 windblown dust event.

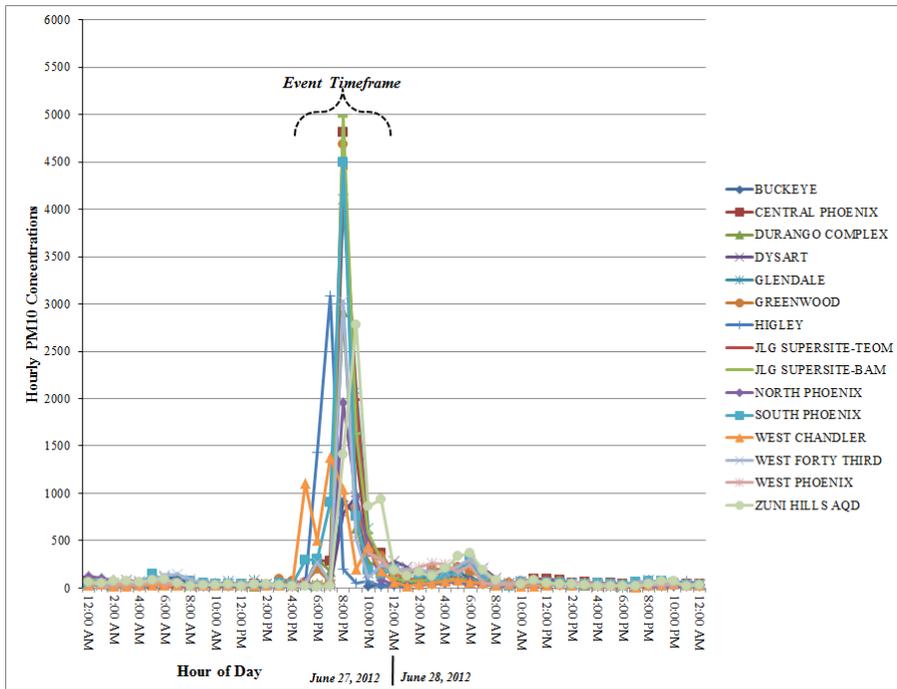


Figure 3. Timeline of hourly average PM₁₀ concentrations at Maricopa County monitors before, during, and after the June 27, 2012 windblown dust event.

3. HISTORICAL FLUCTUATIONS

PM_{2.5} concentrations measured at the Glendale, JLG Supersite, and West Phoenix monitors on June 27, 2012 were unusual and in excess of normal historical fluctuations. Figure 4 displays a time series plot of the 24-hour PM_{2.5} concentrations for the period of June 1, 2011 (when monitor began reporting to AQS) through September 30, 2013 for the Glendale monitor. Figure 5 displays a time series plot of the 24-hour PM_{2.5} concentrations for the period of January 1, 2011 (when monitor began reporting to AQS) through June 30, 2013 for the JLG Supersite monitor. Figure 6 displays a time series plot of the 24-hour PM_{2.5} concentrations for the period of May 1, 2010 (when monitor began reporting to AQS) through September 30, 2013 for the West Phoenix monitor. All three figures indicate that exceedances of the 24-hour PM_{2.5} standard have only occurred during the winter holiday season (result of residential and recreational wood burning) and during the monsoon season when high winds from thunderstorm outflows produce dust storms. As such, the PM_{2.5} exceedances on June 27, 2012 were in excess of normal historical fluctuations.

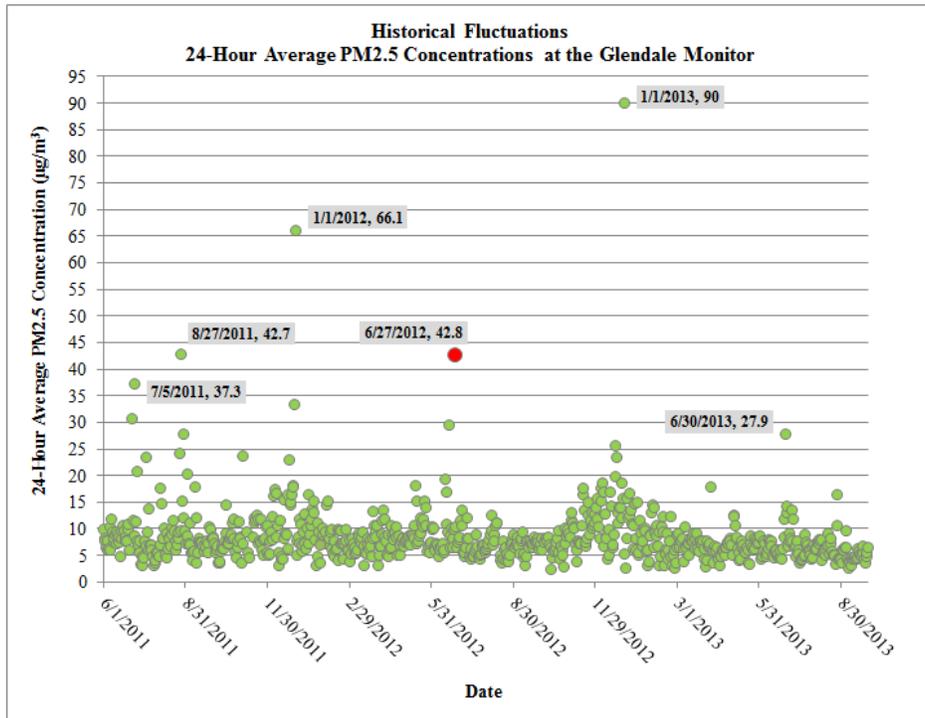


Figure 4. Plot of 24-Hour average PM_{2.5} concentrations (June 2011 - September 2013) at the Glendale monitor.

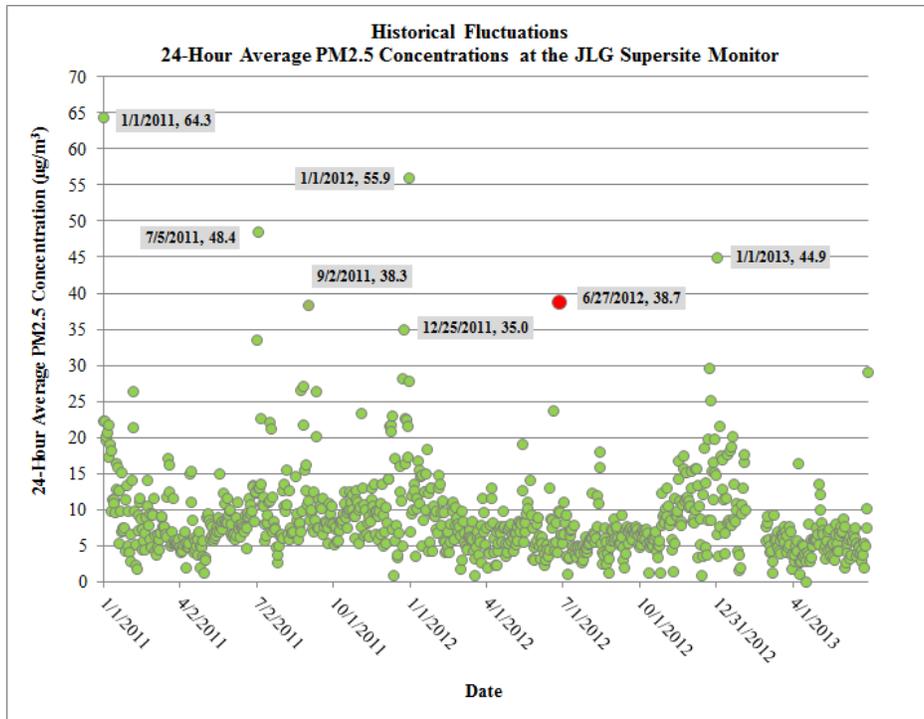


Figure 5. Plot of 24-Hour average PM_{2.5} concentrations (January 2011 - June 2013) at the JLG Supersite monitor.

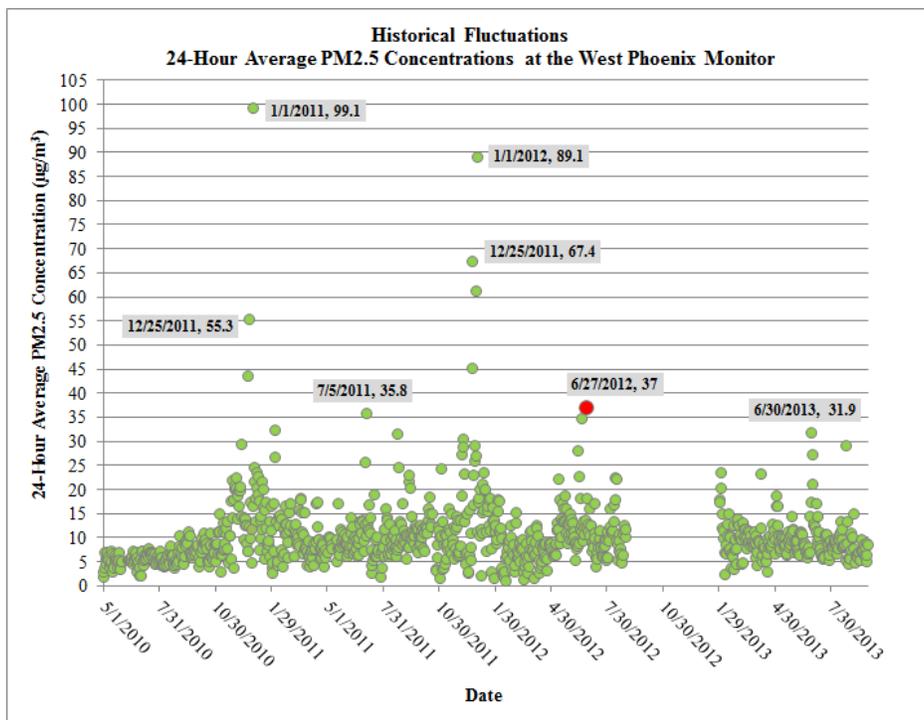


Figure 6. Plot of 24-Hour average PM_{2.5} concentrations (May 2010 - September 2013) at the West Phoenix monitor. No data available from 10-1-2012 through 1-30-2013. No PM_{2.5} data available from October 2012 - January 30, 2013.

4. NOT REASONABLY CONTROLLABLE OR PREVENTABLE

Maricopa County currently attains both the 24-hour and annual PM_{2.5} National Ambient Air Quality Standards. During a high wind event, PM_{2.5} is generated from windblown fugitive dust sources. The extensive fugitive dust PM₁₀ controls described in Section III of the PM₁₀ main document also control the amount of PM_{2.5} generated during a high wind event. When these controls are overwhelmed during a high wind event, exceedances of both the PM₁₀ and PM_{2.5} standards can occur due to fugitive dust emissions that are no longer reasonably controllable or preventable. The PM_{2.5} exceedances on June 27, 2012 were directly related to strong and gusty winds generated by thunderstorm outflows. The gusty outflow winds overwhelmed all reasonably available controls and were also responsible for the transport of PM emissions into Maricopa County.

For June 27, 2012, a Maricopa County Dust Control Forecast was issued indicating a moderate risk level for unhealthy PM₁₀. The Dust Control Forecast also indicated mostly light winds were expected, with strong gusts possible later in the day due to potential thunderstorm activity.

During the time period of June 24, 2012 through June 30, 2012, MCAQD inspectors conducted a total of 151 inspections of permitted facilities, of which 113 were at fugitive dust sources. Additionally, MCAQD conducted one inspection on a vacant lot and unpaved parking lot during this period. An evaluation of inspection reports and compliance records indicate no evidence of unusual anthropogenic-based particulate emissions or significant violations of particulate matter rules being observed in Maricopa County before, during, or after the high wind blowing dust event that would have impacted PM_{2.5} readings. Detailed information on regulatory measures, control programs, and enforcement activities are described in section III of the main PM₁₀ document.

The *WRAP Fugitive Dust Handbook* (September, 2006), estimates the PM_{2.5}/PM₁₀ ratio of windblown fugitive dust to be 0.15. Figures 7, 8, and 9 show historical 24-hour average ratios of PM_{2.5}/PM₁₀ as observed at the Glendale, JLG Supersite, and West Phoenix monitors. On June 27, 2012, the ratios were observed to be 0.13, 0.11, and 0.36, respectively. The resultant PM_{2.5}/PM₁₀ ratios provide evidence that the 24-hour average PM_{2.5} exceedances recorded on June 27, 2012 during the high wind event were the result of windblown dust emissions, as opposed to other common sources of PM_{2.5} such as combustion and industrial activities.

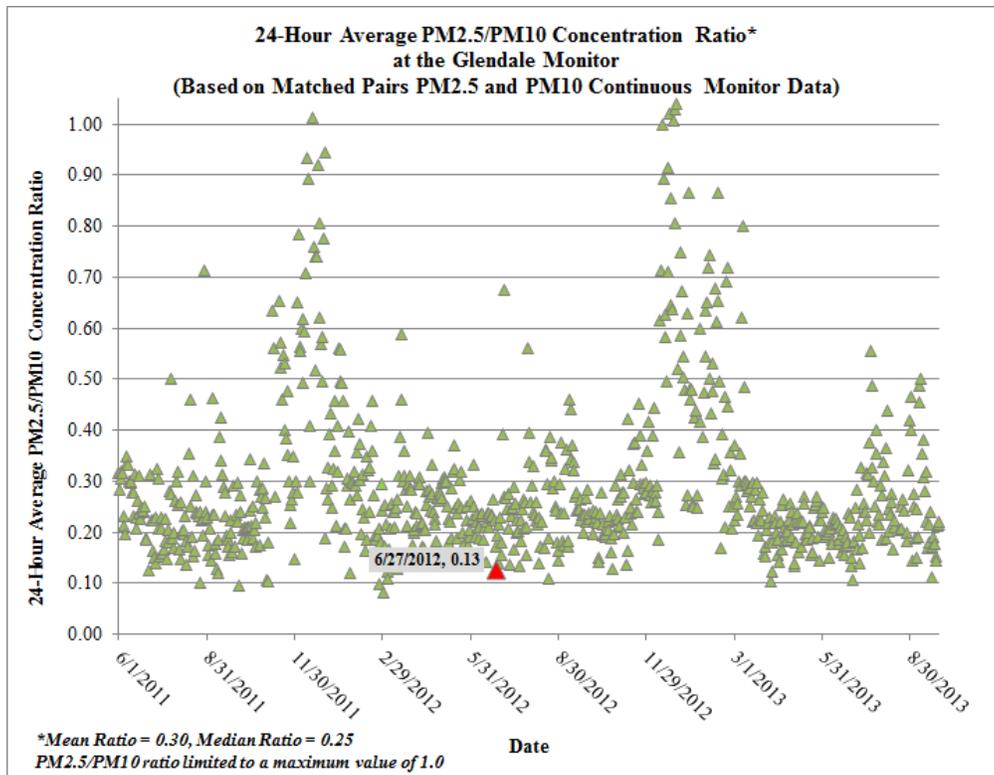


Figure 7. 24-Hour average PM_{2.5}/PM₁₀ concentration ratios at the Glendale monitor.

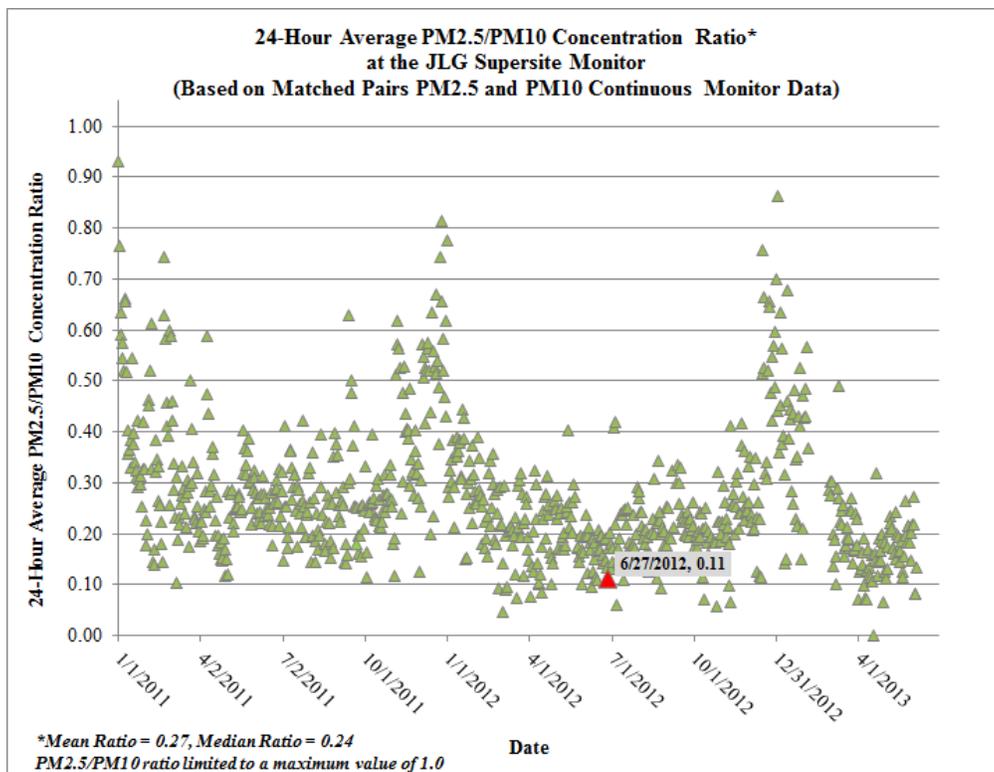


Figure 8. 24-Hour average PM_{2.5}/PM₁₀ concentration ratios at the JLG Supersite monitor.

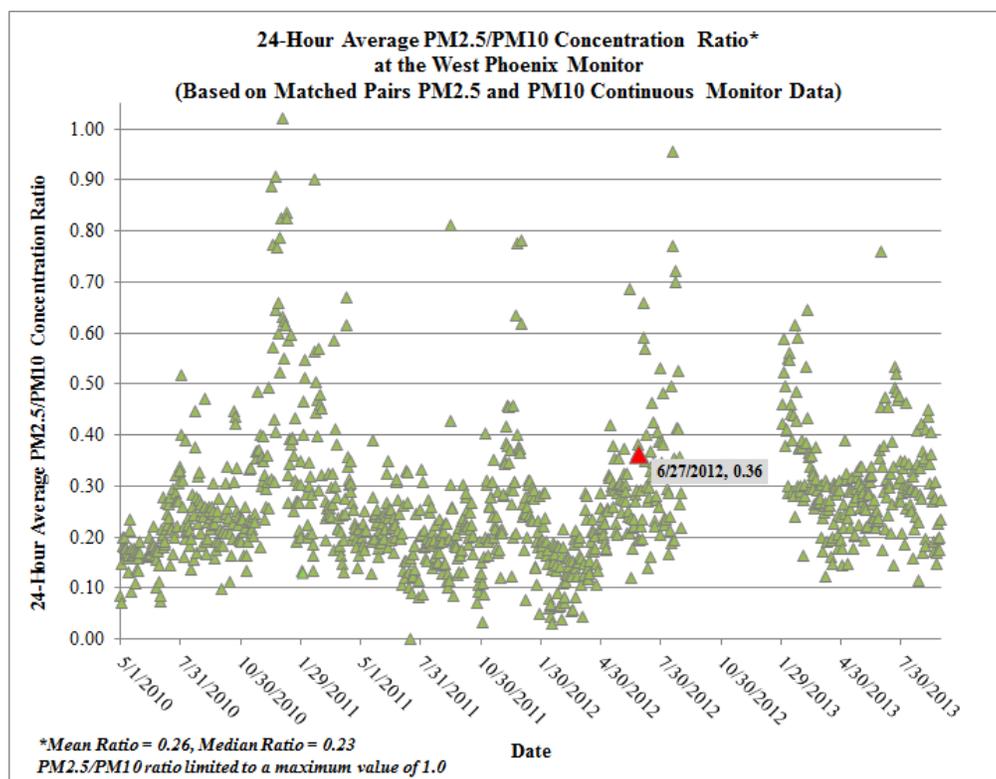


Figure 9. 24-Hour average PM_{2.5}/PM₁₀ concentration ratios at the West Phoenix monitor. No PM_{2.5} data available from 10-1-2012 through 1-30-2013.

In summary, the same thunderstorm outflow winds that overwhelmed PM₁₀ controls and led to exceedances of the PM₁₀ standard at thirteen Maricopa County monitors also caused the PM_{2.5} exceedances at the Glendale, JLG Supersite, and West Phoenix monitors. Despite the deployment of comprehensive control measures and sophisticated response programs, high wind conditions associated with thunderstorms and thunderstorm outflow winds brought high concentrations of both PM₁₀ and PM_{2.5} emissions into, and also overwhelmed controls within, Maricopa County. Sustained wind speeds over 30 mph with gusts up to 51 mph were reported at monitors across the Phoenix area as the dust-laden outflow boundary moved through. The dust storm was more than enough to overwhelm all available efforts to limit PM_{2.5} concentrations from fugitive dust sources during the event. The fact that this was a natural event involving strong thunderstorm outflow winds that transported and generated particulate matter emissions into Maricopa County from source regions outside of the county provides strong evidence that the event and PM_{2.5} exceedances of June 27, 2012 for the Glendale, JLG Supersite, and West Phoenix monitors were not reasonably controllable or preventable.

5. CLEAR CAUSAL RELATIONSHIP

A detailed description of the meteorology that caused the natural windblown dust exceedance event at the Glendale, JLG Supersite, and West Phoenix monitors is presented in Section V of the PM₁₀ main document via time series graphs, infrared satellite imagery, radar imagery, links to visibility camera data. In summary, between 6 pm and 8 pm MST on June 27th, severe thunderstorms developed over a large area southeast of the Phoenix region and by 7-8 pm, outflows from the thunderstorms entrained dust from the open desert areas of Pinal County and generated a haboob that progressed northwestward into Maricopa County, transporting extremely large amounts of PM₁₀ and PM_{2.5} into the Phoenix PM₁₀ nonattainment area. With the arrival of the dust storm, a) sustained wind speeds across the Phoenix area increased to over 30 mph, with gusts as high as 51 mph at the Chandler Municipal Airport, b) visibility dropped from 10 miles to less than 2 miles for many areas including Phoenix Sky Harbor International Airport, c) weather conditions were reported as “blowing dust” and “dust storm”, d) and hourly PM₁₀ concentrations increased to over 4000 µg/m³ at five monitoring sites. Additionally, high PM_{2.5} concentrations were observed with average hourly concentrations reaching 537 µg/m³ at the JLG Supersite monitor. Sudden increases in PM₁₀ and PM_{2.5} area wide coincide with the arrival of higher winds and diminished visibilities. Once winds subsided, visibility remained below 10 miles and particulate matter concentrations remained elevated for several hours. In total, thirteen monitors in the region exceeded the PM₁₀ NAAQS with Glendale, JLG Supersite, and West Phoenix monitors exceeding the PM_{2.5} 24-hour standard. Without the existence of particulate matter emissions generated by thunderstorm outflows, there would not have been any exceedances of the 24-hour PM₁₀ or PM_{2.5} standard in the Phoenix PM₁₀ nonattainment area.

Figures 10, 11, and 12 below show the highest hourly PM_{2.5} concentrations at the Glendale, JLG Supersite, and West Phoenix monitors, respectively, coinciding with the arrival of the thunderstorm outflows winds. In addition to the exceedance recorded at these three monitors, all other Phoenix area monitors recorded 24-hour PM_{2.5} concentrations that were elevated as a result of the thunderstorm outflow generated dust storm (see Figure 2).

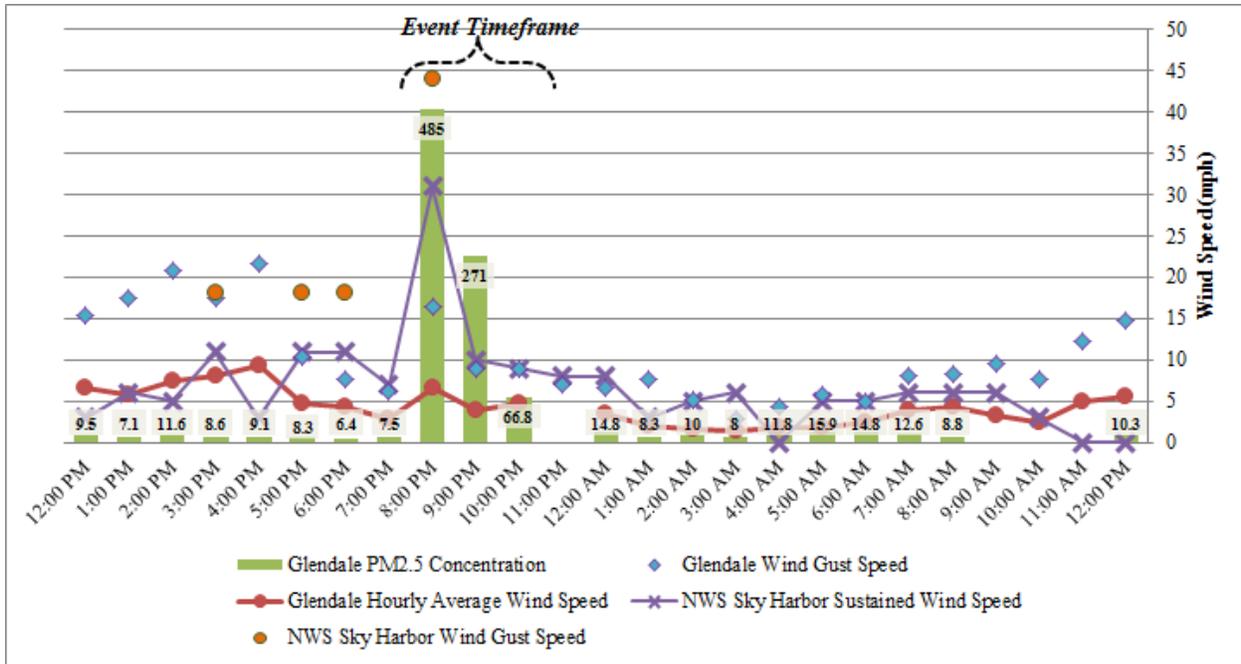


Figure 10. Hourly PM_{2.5} concentrations, wind speeds, and gusts as recorded at the Glendale monitor on June 27, 2012. Additionally, sustained wind speeds and gusts at Sky Harbor International Airport are shown. Note: missing 2300 hour observation for Glendale monitor.

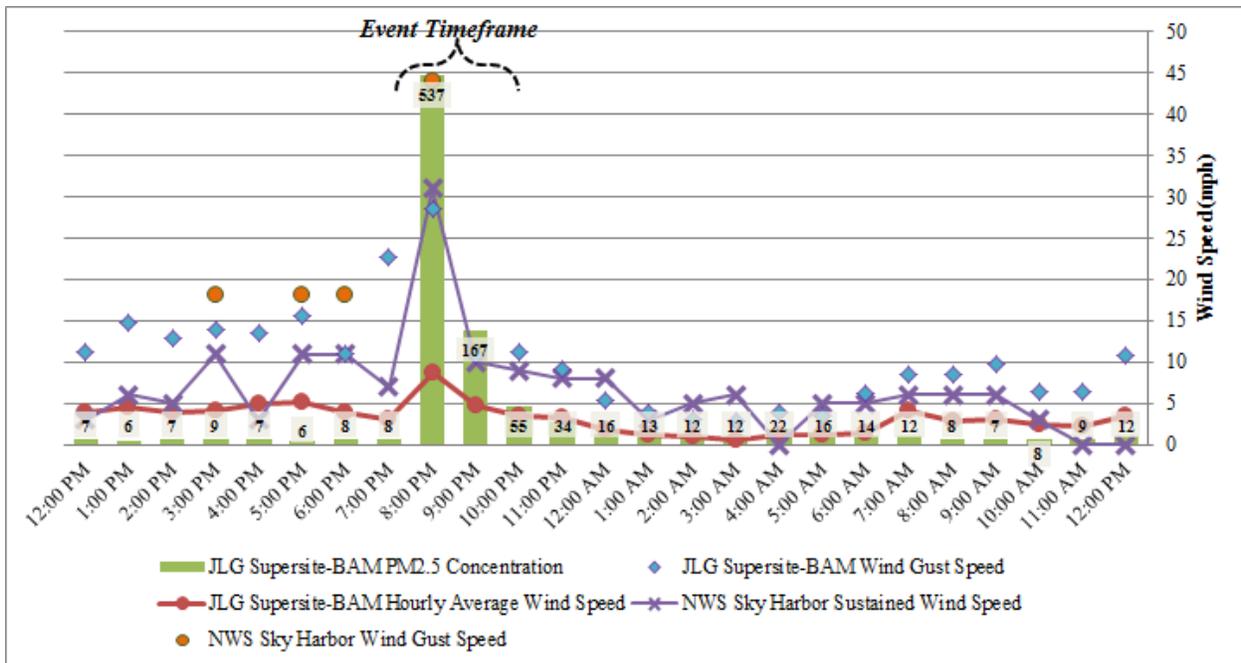


Figure 11. Hourly PM_{2.5} concentrations, wind speeds, and gusts as recorded at the JLG Supersite-BAM monitor on June 27, 2012. Additionally, sustained wind speeds and gusts at Sky Harbor International Airport are shown.

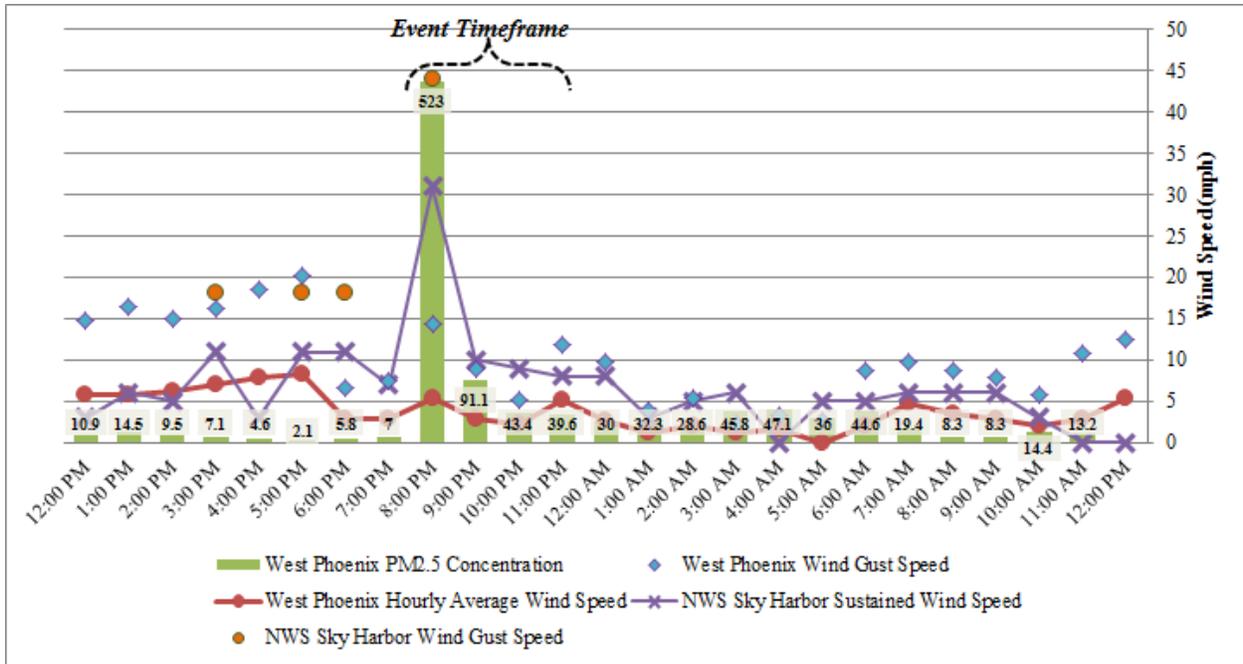


Figure 12. Hourly PM_{2.5} concentrations, wind speeds, and gusts as recorded at the West Phoenix monitor on June 27, 2012. Additionally, sustained wind speeds and gusts at Sky Harbor International Airport are shown.

6. BUT FOR ANALYSIS

Section 50.14(c)(3)(iv)(D) in 40 CFR part 50 requires that an exceptional event demonstration must satisfy that “[t]here would have been no exceedance or violation but for the event.” The prior sections of this PM_{2.5} supplemental document have provided detailed information that the exceedances on June 27, 2012 were not reasonably controllable or preventable and that there is a clear causal relationship between the windblown dust generated and transported by thunderstorm outflow winds and the exceedances at the Glendale, JLG Supersite, and West Phoenix monitors. The weight of evidence in these sections demonstrates that but for the existence of windblown dust emissions generated and transported by thunderstorm outflow winds, there would have been no exceedances of the 24-hour PM_{2.5} standard. It is also clear from Figures 10, 11, and 12 that but for the hourly concentrations affected by the high wind event (8:00 pm through 11:00 pm), the 24-hour average PM_{2.5} concentration for the three exceeding monitors would have been substantially under 35.5 µg/m³.

EPA’s *Interim Exceptional Events Rule Frequently Asked Questions* (May, 2013) provides procedures for excluding a 24-hour PM_{2.5} exceedance for comparison against the annual PM_{2.5} NAAQS. On pages 34-35, EPA states,

“The preamble [to the Exceptional Events Rule] states that in the particular case of PM_{2.5}, the direct comparison of a single 24-hour average concentration (determined from a single filter-based measurement or by averaging 24 1-hour measurements from a continuous equivalent instrument) to the level of the annual NAAQS can be the basis for meeting the ‘but for’ criterion for exceedances or violations of the annual NAAQS.²⁴ In context, it is clear that based on this comparison, a 24-hour concentration can be excluded from the calculation of the annual PM_{2.5} design value, if other rule criteria are also met. It is therefore not necessary to show that the annual average PM_{2.5} concentration was above 12 or 15 µg/m³ with the event and would have been below 12 or 15 µg/m³ ‘but for’ the single event at issue.”

Additionally, on page 39, EPA states,

“Also, if the 24-hour average concentration based on 1-hour measurements was above 12.0 µg/m³ (after rounding to one decimal digit, per 40 CFR 50 Appendix N section 4.3(a)) but would have been equal or less than 12.0 µg/m³ in the absence of the event, those 1-hour concentration values that were affected by the single event meet the “but for” test for purposes of comparison to 12 µg/m³ annual PM_{2.5} NAAQS.”

Tables 2, 3, and 4 display the hourly PM_{2.5} concentrations at the Glendale, JLG Supersite, and West Phoenix monitors, respectively, on June 27, 2012, as reported in EPA’s Air Quality System (AQS) database. The tables show that when the four hours affected by the high wind event are excluded (8:00 pm through 11:00 pm) the 24-hour average concentrations at the three exceeding sites would have been below 12.0 µg/m³ in absence of the high wind event. The exclusion of PM_{2.5} data beginning 8:00 pm is valid given this time coincides with rapid increases in both wind speeds and PM_{2.5} concentrations that is indicative of the dust storm approach and passage. After 8:00 pm and for the remainder of the day, winds slowly diminish; however, particulate matter remains suspended throughout the period based on PM_{2.5} hourly concentrations at the exceeding

sites failing to return at pre-vent concentrations. It should be noted that the Glendale monitor is missing PM_{2.5} data for the 11:00 pm observation, but would have likely continued to record an elevated PM_{2.5} concentration given high PM_{2.5} concentrations still being observed by surrounding monitors at that time (see Figure 2). As such, exclusion of the 24-hour average PM_{2.5} exceedances on June 27, 2012 at the Glendale, JLG Supersite, and West Phoenix monitors for comparison against the annual PM_{2.5} NAAQS is allowed under EPA interim guidance.

Table 2. Hourly average PM_{2.5} concentrations at the Glendale monitor on June 27, 2012 and resulting 24-hour average PM_{2.5} concentrations with and without hours affected by the high wind exceptional event.

Glendale	
Hour	PM_{2.5} Concentration (µg/m³)
12:00 AM	7.9
1:00 AM	8
2:00 AM	10.8
3:00 AM	8.6
4:00 AM	5.8
5:00 AM	6.1
6:00 AM	9.7
7:00 AM	3.7
8:00 AM	8.7
9:00 AM	4.5
10:00 AM	7.5
11:00 AM	12.1
12:00 PM	9.5
1:00 PM	7.1
2:00 PM	11.6
3:00 PM	8.6
4:00 PM	9.1
5:00 PM	8.3
6:00 PM	6.4
7:00 PM	7.5
8:00 PM	485
9:00 PM	271
10:00 PM	66.8
11:00 PM	NA
24-Hour Average	42.8*
24-Hour Average Excluding Hours Affected by High Wind Event (8:00 PM through 11:00 PM)	8.1

*Missing 2300 hourly observation for Glendale monitor.

Table 3. Hourly average PM_{2.5} concentrations at the JLG Supersite monitor on June 27, 2012 and resulting 24-hour average PM_{2.5} concentrations with and without hours affected by the high wind exceptional event.

JLG Supersite	
Hour	PM_{2.5} Concentration (µg/m³)
12:00 AM	17
1:00 AM	14
2:00 AM	3
3:00 AM	3
4:00 AM	6
5:00 AM	8
6:00 AM	7
7:00 AM	3
8:00 AM	2
9:00 AM	7
10:00 AM	6
11:00 AM	3
12:00 PM	7
1:00 PM	6
2:00 PM	7
3:00 PM	9
4:00 PM	7
5:00 PM	6
6:00 PM	8
7:00 PM	8
8:00 PM	537
9:00 PM	167
10:00 PM	55
11:00 PM	34
24-Hour Average	38.8
24-Hour Average Excluding Hours Affected by High Wind Event (8:00 PM through 10:00 PM)	8.1

Table 4. Hourly average PM_{2.5} concentrations at the West Phoenix monitor on June 27, 2012 and resulting 24-hour average PM_{2.5} concentrations with and without hours affected by the high wind exceptional event.

West Phoenix	
Hour	PM_{2.5} Concentration (µg/m³)
12:00 AM	10.6
1:00 AM	11.8
2:00 AM	14.3
3:00 AM	15.6
4:00 AM	10.6
5:00 AM	6.9
6:00 AM	11.9
7:00 AM	8.2
8:00 AM	4.5
9:00 AM	14.5
10:00 AM	10.7
11:00 AM	12
12:00 PM	10.9
1:00 PM	14.5
2:00 PM	9.5
3:00 PM	7.1
4:00 PM	4.6
5:00 PM	2.1
6:00 PM	5.8
7:00 PM	7
8:00 PM	523
9:00 PM	91.1
10:00 PM	43.4
11:00 PM	39.6
24-Hour Average	37.1
24-Hour Average Excluding Hours Affected by High Wind Event (8:00 PM through 11:00 PM)	9.7

7. CONCLUSION

The PM_{2.5} exceedances that occurred on June 27, 2012 at the Glendale, JLG Supersite, and West Phoenix monitors satisfies the criteria of 40 CFR 50.1(j) and meets the definition of an exceptional event. These criteria are:

- The event affects air quality.
- The event is not reasonably controllable or preventable.
- The event is unlikely to reoccur at a particular location or [is] a natural event.

A. Affects Air Quality

As stated in the preamble to the Exceptional Events Rule, the event in question is considered to have affected air quality if it can be shown that there is a clear causal relationship between the monitored exceedances and the event, and that the event is associated with measured concentrations in excess of normal historical fluctuations. Given the information presented in this PM_{2.5} supplemental document and the PM₁₀ main document, it is reasonable to conclude that the event in question affected air quality.

B. Not Reasonably Controllable or Preventable

Section 50.1(j) of Title 40 CFR Part 50 requires that an event must be “not reasonably controllable or preventable” in order to be defined as an exceptional event. This requirement is met by demonstrating that despite reasonable control measures in place within Maricopa County, high wind conditions overwhelmed all reasonably available controls. Despite the deployment of comprehensive control measures and sophisticated response programs, high wind conditions associated with thunderstorms and thunderstorm outflows generated and brought high concentrations of PM_{2.5} into Maricopa County. Examination of the PM_{2.5}/PM₁₀ ratio on June 27, 2012 is consistent with windblown dust as the source of the PM_{2.5} emissions. The fact that this was a natural event involving strong thunderstorm outflow winds that transported and generated PM_{2.5} emissions into Maricopa County, provides strong evidence that the event and exceedances of June 27, 2012 recorded at the Glendale, JLG Supersite, and West Phoenix monitors were not reasonably controllable or preventable.

C. Natural Event

As discussed above, the event shown to cause these exceedances were emissions of PM_{2.5} generated by high winds caused by thunderstorm activity and related outflow boundaries on June 27, 2012. The event therefore qualifies as a natural event.

In summary, the exceedances of the PM_{2.5} standards on June 27, 2012 would not have occurred but for the monsoonal thunderstorm driven high winds and windblown dust generated and transported from areas inside and outside of Maricopa County, based on the following weight of evidence:

- Historical fluctuation data in Section 3 shows the active record of 24-hour average PM_{2.5} data for Glendale, JLG Supersite, and West Phoenix monitors and demonstrates that the values on June 27, 2012 was atypical and in excess of normal historical fluctuations.
- The exceedances of the PM_{2.5} standards recorded on June 27, 2012 are tied to thunderstorm activity and thunderstorm generated outflow winds, as can be seen in data and analyses in Section V in the PM₁₀ main document.
- Figures and tables in Section V of the PM₁₀ main document show that the timing of thunderstorm generated outflow boundary passage and increases in wind speeds at monitoring locations and National Weather Service stations during each of the events during this period is consistent with the timing of elevated PM₁₀ and PM_{2.5} concentrations recorded at the monitoring locations in the Phoenix PM₁₀ nonattainment area.
- Visibility camera imagery discussed in Section V of the PM₁₀ main document indicates that large quantities of PM₁₀ was transported into the Phoenix Metro area during the June 27th event. The timing of the dust storms depicted in the visibility camera imagery is consistent with the PM₁₀ and PM_{2.5} concentration measurements, elevated winds, and reduced visibility reported during the high wind event.
- Wind directions, thunderstorm generated outflow boundary propagation, and concentration patterns showing elevated levels of PM₁₀ in Pinal County prior to levels increasing in Maricopa County, all depicted in Section V of the PM₁₀ main document, help to show that dust originating in Pinal County was transported to Maricopa County.
- Section III discusses that the rules in place to control PM₁₀ from fugitive dust sources in Maricopa County are the same rules that control PM_{2.5} emissions during high wind events. Inspections conducted in the area before, during, and after the event verify that no unusual anthropogenic activities affected the PM_{2.5} concentrations observed at the exceeding, Glendale, JLG Supersite and West Phoenix monitors.