

State of Arizona Exceptional Event Documentation for July 25, 2014, for the Maricopa County PM₁₀ Nonattainment Area

Produced by:

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

FINAL Report
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I. EXCEPTIONAL EVENT RULE (EER) REQUIREMENTS

In addition to the technical requirements that are contained within the EER, procedural requirements must also be met in order for EPA to concur with the flagged air quality monitoring data. This section of the report lays out the requirements of the EER and associated guidance, and discusses how the Arizona Department of Environmental Quality (ADEQ) addressed those requirements.

Procedural Requirements

This section presents a review of the procedural requirements of the EER as required by 40 CFR 50.14 (Treatment of Air Quality Monitoring Data Influenced by Exceptional Events) and explains how ADEQ fulfills them. The Federal EER requirements include public notification that an event was occurring, the placement of informational flags on data in EPA's Air Quality System (AQS), the notification of EPA of the intent to flag through submission of initial event description, the documentation that the public comment process was followed, and the submittal of a demonstration supporting the exceptional events flag. ADEQ has addressed all of these procedural and documentation requirements.

Public notification that event was occurring (40 CFR 50.14(c)(1)(i))

ADEQ issued Dust Control Action Forecasts and Ensemble Forecasts for the Greater Phoenix area advising citizens of the potential for high wind / dust events on July 25, 2014. More information on ADEQ's forecasting program can be found in Section IV. The forecast products that were issued for July 25, 2014 are included in Appendix A.

Place informational flag on data in AQS (40 CFR 50.14(c)(2)(ii))

ADEQ and other operating agencies in Arizona submit data into EPA's AQS. Data from both filter-based and continuous monitors operated in Arizona are submitted to AQS.

When ADEQ and/or another agency operating monitors in Arizona suspects that data may be influenced by an exceptional event, ADEQ and/or the other operating agency expedites analysis of the filters collected from the potentially-affected filter-based air monitoring instruments, quality assures the results and submits the data into AQS. ADEQ and/or other operating agencies also submit data from continuous monitors into AQS after quality assurance is complete.

If ADEQ and/or the operating agency have determined a potential exists that the monitor reading has been influenced by an exceptional event, a preliminary flag is submitted for the measurement in the AQS. The data are not official until they undergo more thorough quality assurance and quality control, leading to certification by May 1st of the year following the calendar year in which the data were collected (40 CFR 58.15(a)(2)). The presence of the flag can be confirmed in AQS.

Notify EPA of intent to flag through submission of initial event description by July 1 of calendar year following event (40 CFR 50.14(c)(2)(iii))

ADEQ will submit a letter to EPA Region 9 Air Division Director, Deborah Jordan, on September 8, 2014, notifying EPA of ADEQ's intent to flag data in AQS and submit documentation to EPA by October 2014 for the July 25, 2014, exceptional event. This assessment report serves as the demonstration

supporting the flagging of these data. Six Maricopa County nonattainment area monitors have been flagged as exceeding the 24-hour PM₁₀ standard as a result of the high wind exceptional event:

Durango Complex (04-013-9812-81102-1), **Mesa** (04-013-1003-81102-1), **South Phoenix** (04-013-4003-81102-1), **South Scottsdale** (04-013-3003-81102-1), **Tempe** (04-013-4005-81102-1), and **West Chandler** (04-013-4004-81102-1)

Document that the public comment process was followed for event documentation (40 CFR 50.14(c)(3)(iv))

ADEQ posted this assessment report on the ADEQ webpage and placed a hardcopy of the report in the ADEQ Records Management Center for public review. ADEQ opened a 30-day public comment period on September 8, 2014. A copy of the public notice certification, along with any comments received, will be submitted to EPA, consistent with the requirements of 40 CFR 50.14(c)(3)(iv). See Appendix E for a copy of the affidavit of public notice.

Submit demonstration supporting exceptional event flag (40 CFR 50.14(a)(1-2))

At the close of the comment period, and after ADEQ has had the opportunity to consider any comments submitted on this document, ADEQ will submit this document, the comments received, and ADEQ's responses to those comments to EPA Region IX headquarters in San Francisco, California. The deadline for the submittal of this demonstration package is September 30, 2017.

Documentation Requirements

Section 50.14(c)(3)(iii) of the EER states that in order to justify excluding air quality monitoring data, evidence must be provided for the following elements:

- 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.

Section II of this assessment introduces the conceptual model of a thunderstorm outflow wind event that transpired on July 25, 2014, providing a background narrative of the exceptional event and an overall explanation that ‘the event affected air quality’. Further evidence that ‘the event affected air quality’ is provided in Section V.

Section IV of this assessment details the existing area control measures and demonstrates that despite the presence and enforcement of these controls, the event on July 25, 2014, was not reasonably controllable or preventable.

Section V of this assessment establishes a clear causal connection between the natural event on July 25, 2014, and the exceedances of the 24-hour PM₁₀ standard. The evidence in this section (and the previous section on historical fluctuations) also confirms that the event in question both affected air quality and was the result of a natural event.

Section III of this assessment provides data summaries and time series graphs which help illustrate that the event on July 25, 2014, produced PM₁₀ concentrations in excess of normal historical fluctuations.

Section VI of this assessment builds upon the demonstration showing a clear causal connection between the natural event and the exceedances and concludes there would have been no exceedances on July 25, 2014, but for the presence of the natural event.

II. CONCEPTUAL MODEL

Geographic Setting and Climate

Geographic Setting

The Maricopa County PM₁₀ nonattainment area is located in the Salt River Valley in south-central Arizona. It lies at a mean elevation of 1,090 feet above mean sea level (msl) in the northeastern part of the Sonoran Desert. Other than the mountains in and around the area, the topography of the area is generally flat. The area is surrounded by the McDowell Mountains (~4,200 ft msl) to the northeast, the foothills of the Bradshaw (~7,900 ft msl) and Mazatzal (~7,900 ft msl) ranges to the north, the White Tank Mountains (~4,500 ft msl) to the west, the Sierra Estrella (~4,450 ft msl) to the southwest, and the Superstition Mountains (~5,000 ft msl) far to the east. Within the area are the Phoenix Mountains (~2,600 ft msl) and South Mountain (~2,600 ft msl). Current development is pushing north, west, and south into Pinal County. The PM₁₀ nonattainment area contains a fairly dense network of PM₁₀ monitors throughout the area, with a much less dense network of monitors located throughout the rest of the state. Figure 2–1 shows the general geographic setting of the nonattainment area, as well as the locations of PM₁₀ monitors in the nonattainment area and throughout the state. It should be noted that some of the monitors shown in Figure 2-1 are filter-based monitors; therefore, monitoring data from all locations may only be available for select days (i.e. 1-in-6 run days).

Figure 2–2 depicts the drainage systems or watersheds for the State of Arizona. Many of the rivers that form Arizona's drainage system are dry for most of the year and, consequently, are sources of silt and fine soils that become suspended and add to regional PM₁₀ loadings during high wind events. Much of this alluvial matter and fine soil is deposited in the low lying areas of central and southern Arizona, with larger depositional areas focused in and around the confluences of dry river channels.

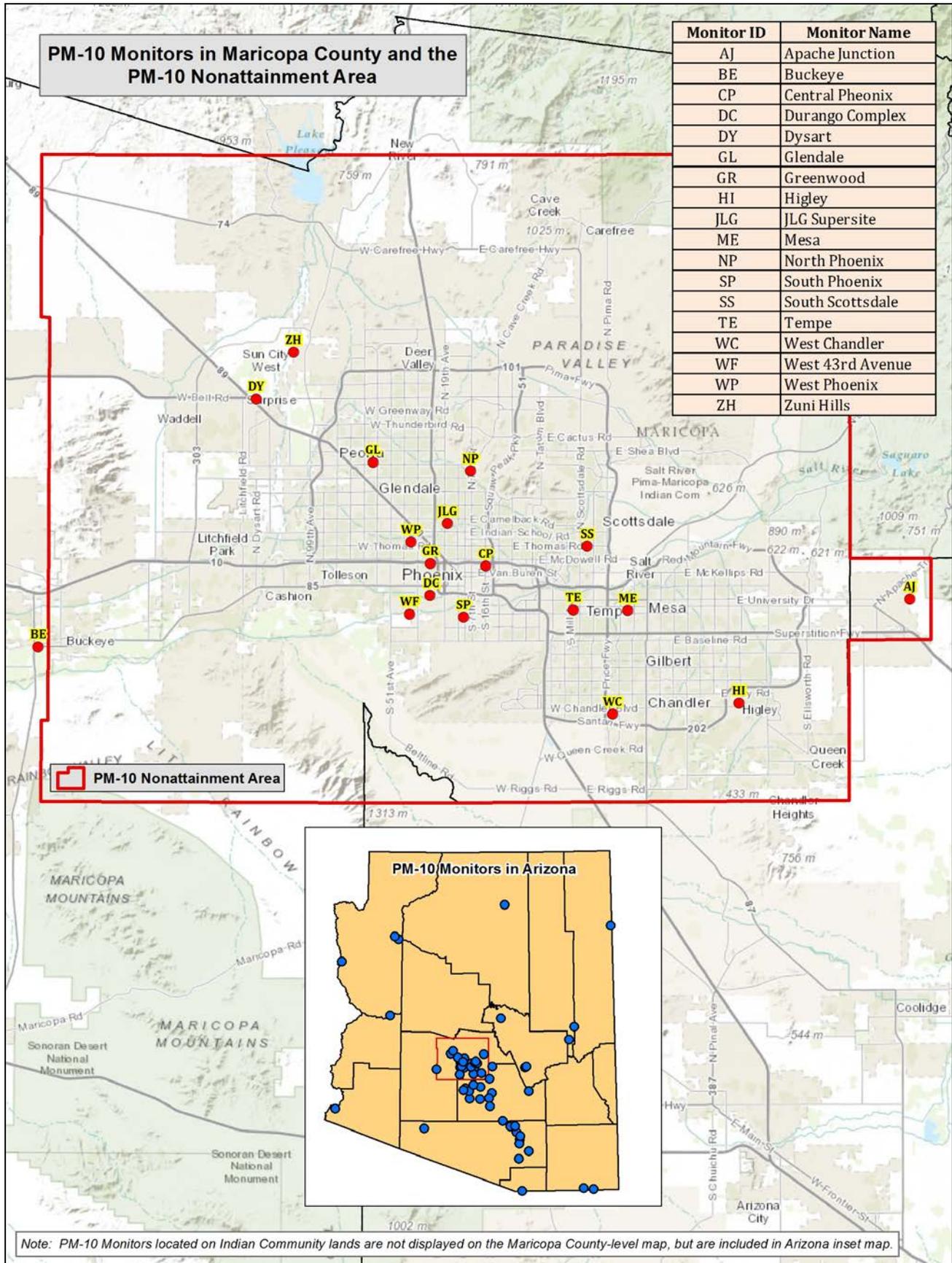
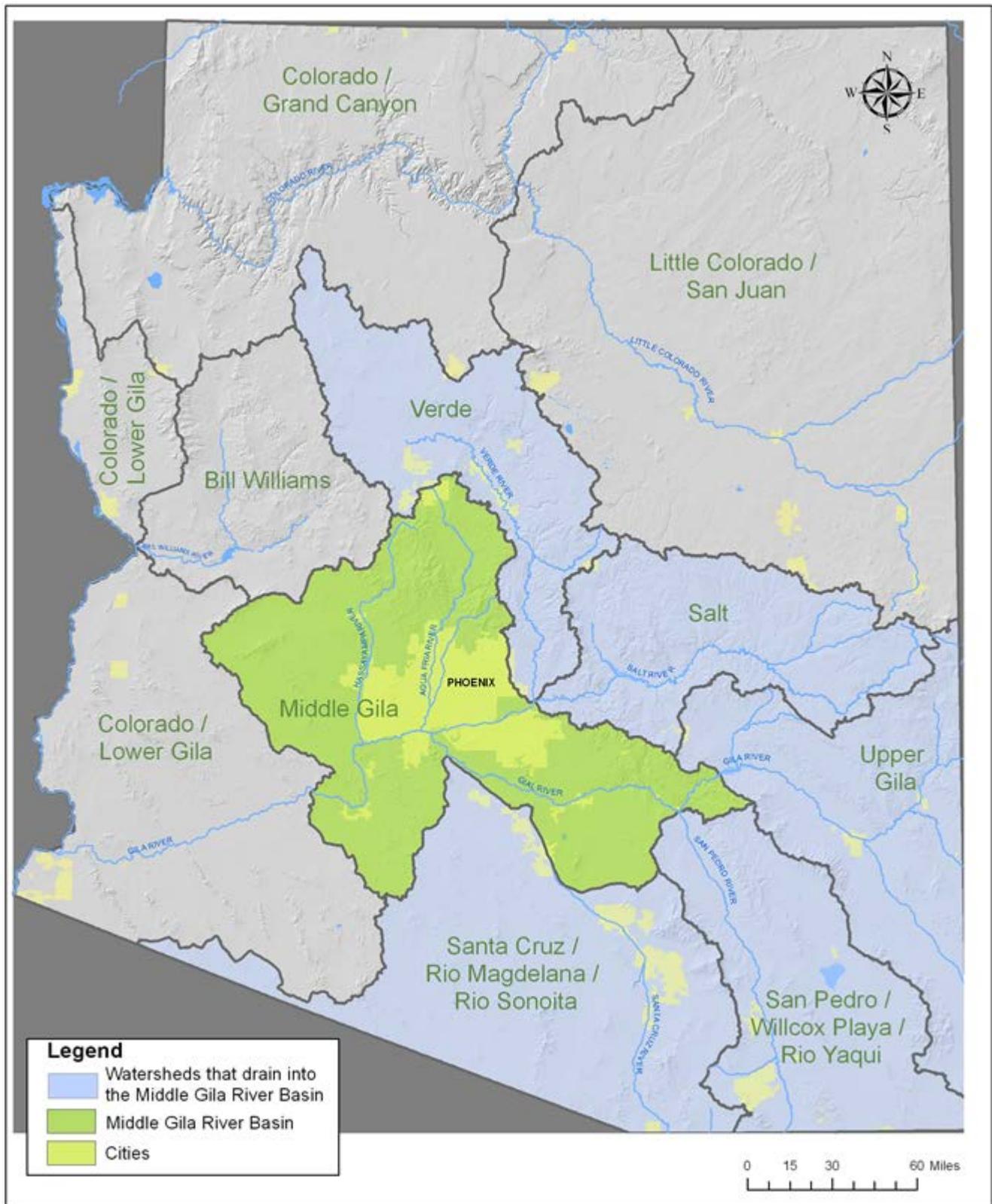


Figure 2-1. Maricopa County PM₁₀ nonattainment area geographic setting and PM₁₀ monitor locations.



Map 2
Drainage System Phoenix, Arizona



Author: N. Caroli, March 15, 2010

Figure 2-2. Drainage basins of the state of Arizona.

Climate

The Maricopa County PM₁₀ nonattainment area has an arid climate, with very hot summers and temperate winters. The average summer high temperature is among the hottest of any populated area in the United States. The temperature reaches or exceeds 100°F an average of 110 days during the year and highs top 110°F an average of 18 days during the year. The area receives an average of 7.66 inches of rain per year.

Precipitation is sparse during the first part of the summer, but the influx of monsoonal moisture, which generally begins in early July and lasts until mid-September, raises humidity levels and can cause heavy localized precipitation and flooding. Although thunderstorms are possible at any time of the year, they are most common during the monsoon season from July to mid-September as humid air is advected from the Gulf of California, Gulf of Mexico, and large thunderstorm complexes from the Sierra Madre Occidental Mountains in Mexico. This influx in moisture, combined with intense solar heating, often creates a very unstable environment that is ripe for thunderstorm development. These thunderstorms can bring strong winds and blowing dust, large hail, and heavy rain. Dust storms associated with these thunderstorms typically occur in the early part of the monsoon season (July) before soaking rains help keep soil particles bound to one another. However, depending on the amount of precipitation received during the monsoon season, extremely hot temperatures act to dry out the surface quickly, and dust storms can occur at any time. During the December through March period, winter storms moving inland from the Pacific Ocean can bring strong winds, blowing dust and significant rains throughout Arizona. This December – March time period, and July – August time period are typically the wettest parts of the year. Meanwhile, a distinct dry season occurs during the period April through June for the nonattainment area and the rest of Arizona. While these weather patterns describe the general climatology for the nonattainment area over a long period of time, the area and the entire state of Arizona is also prone to a high degree of variability in these weather patterns from year to year.

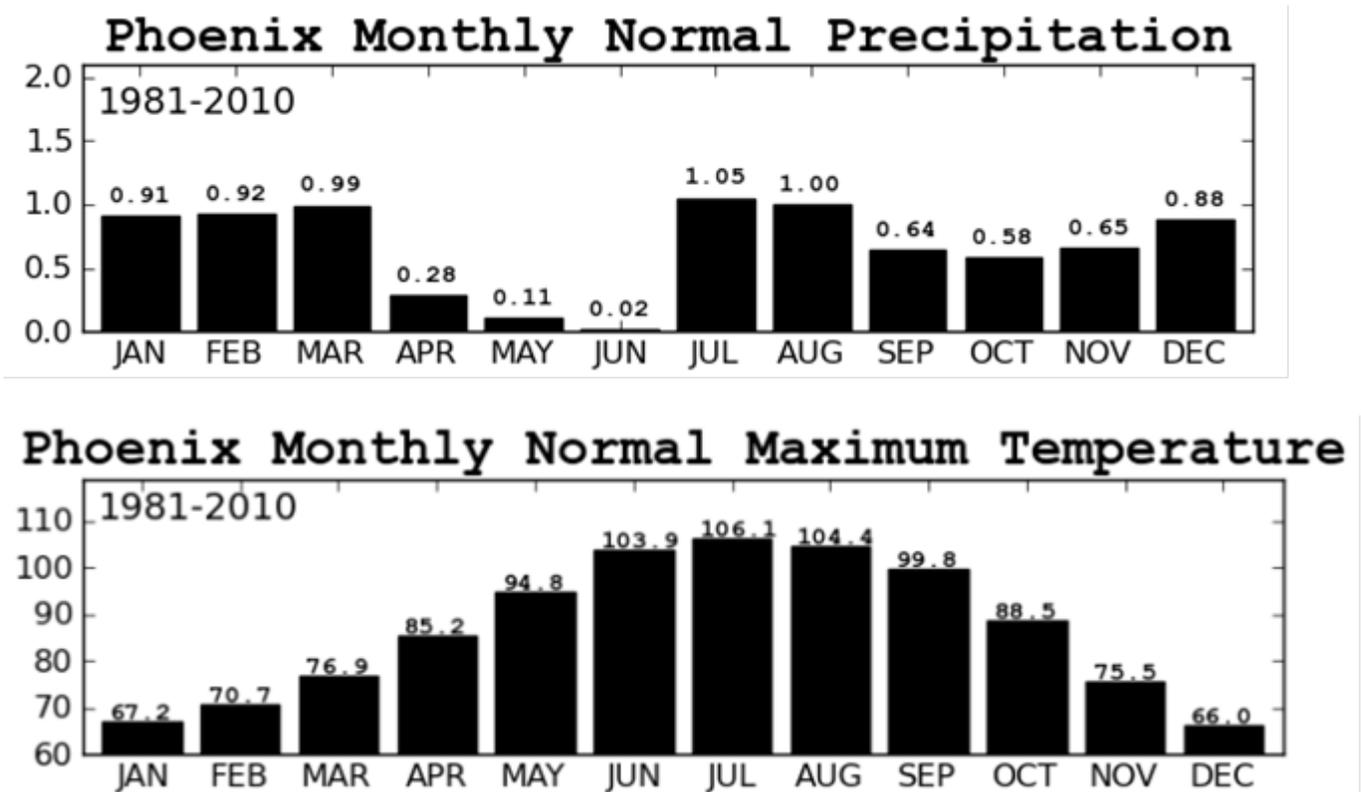


Figure 2-3 Phoenix monthly precipitation (top) and maximum temperature (bottom) climatology (source: National Weather Service).

Monsoon Season Thunderstorm Outflow Dust Storm Event Summary

The North American Monsoon is a shift in wind patterns in the summer which occurs as Mexico and the southwest U.S. warm under intense solar heating. As this happens, low level moisture is transported primarily from the Gulf of California and eastern Pacific Ocean into the southwestern U.S. Mid and upper level moisture is also transported into the region, mainly from the Gulf of Mexico by easterly winds aloft. This combination causes a distinct rainy season over large portions of western North America, which develops rather quickly and sometimes dramatically. There are usually distinct “burst” periods of heavy rain during the monsoon, and “break” periods with little or no rain. Even during active monsoon periods, some areas can go without receiving any significant precipitation while other nearby areas experience heavy rains and flooding.

In addition to bringing precipitation, active thunderstorms can produce downbursts, or sometimes more concentrated and severe microbursts, which are rapidly descending bursts of air spreading away from the thunderstorm clouds. These downward bursts of air hit the ground and then disperse away from the storms as areas of outflow. These outflow boundaries from the thunderstorms can generate large walls of dust, sometimes called haboobs, and transport that dust for long distances from the initiating thunderstorms (see Figure 2–4).

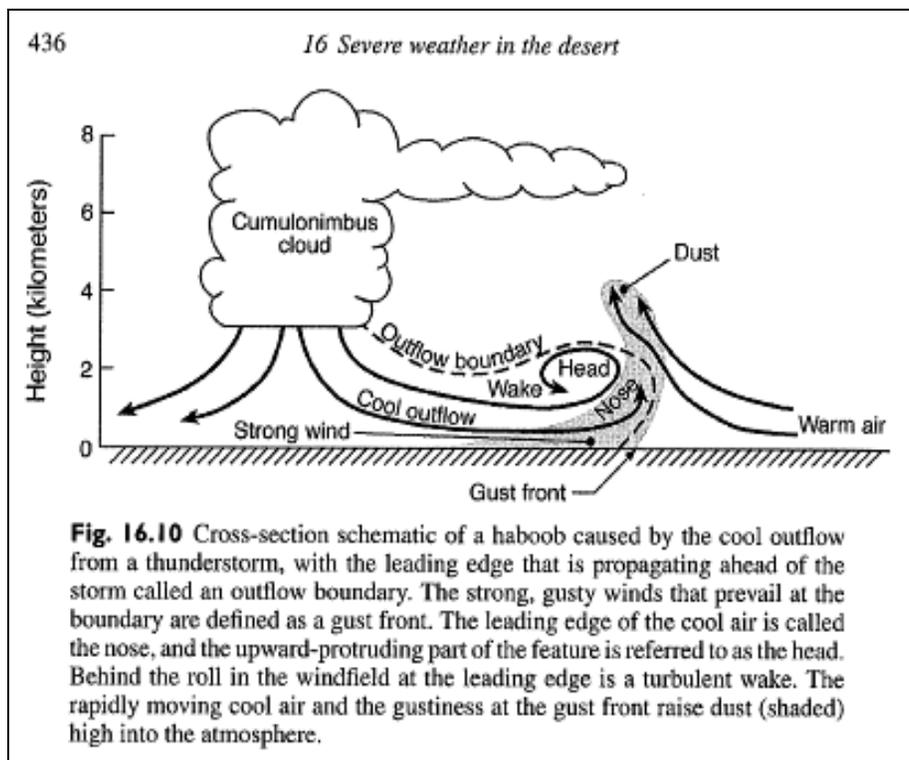


Figure 2-4. Cross-section of a thunderstorm creating an outflow boundary and haboob (Source: Desert Meteorology. Thomas T. Warner. 2004.)

In the early evening of July 25, 2014, the National Weather Service (NWS), (See Appendix B) issued a dust storm warning and blowing dust advisory for the greater Phoenix metropolitan area in response to thunderstorm outflow winds of 30 to 40 mph originating in Pinal County. The outflow winds generated dense blowing dust and reduced visibilities to as low as 0.3 miles in the Maricopa County PM₁₀ nonattainment area, as reported at Falcon Field Airport in Mesa. Sustained winds as high as 40 mph and gusts as high as 48 mph were recorded in the nonattainment area as a result of the passing thunderstorm outflow and dust storm.

A thunderstorm outflow originating in the open and natural desert areas of Pinal County produced the intense outflow winds that generated and transported significant quantities of blowing dust north-northwest towards the Maricopa County nonattainment area. The outflow-generated dust storm continued on prevailing winds towards the nonattainment area, first impacting the southeastern monitors between 5:00 pm – 7:30 pm, and then impacting the central and northern monitors of the nonattainment area between 5:30 pm – 8:00 pm. The western-most Buckeye monitor was the only monitor in Maricopa County that was not significantly affected by the passing dust storm.

Only trace amounts of precipitation were recorded at NWS stations in the nonattainment area in response to the thunderstorm outflow, which did not meaningfully reduce the impact of the dust storm on nonattainment area monitors. The dust storm generated and transported extremely high concentrations of PM₁₀ throughout the nonattainment area, with six monitors in the nonattainment area recording five-minute average PM₁₀ concentrations over 2,600 µg/m³. The PM₁₀ from the dust storm ultimately caused six monitors in the nonattainment area to exceed the 24-hour PM₁₀ standard on July 25, 2014. Two other monitors in the nonattainment area nearly exceeded the standard with 24-hour average PM₁₀ concentrations above 135 µg/m³.

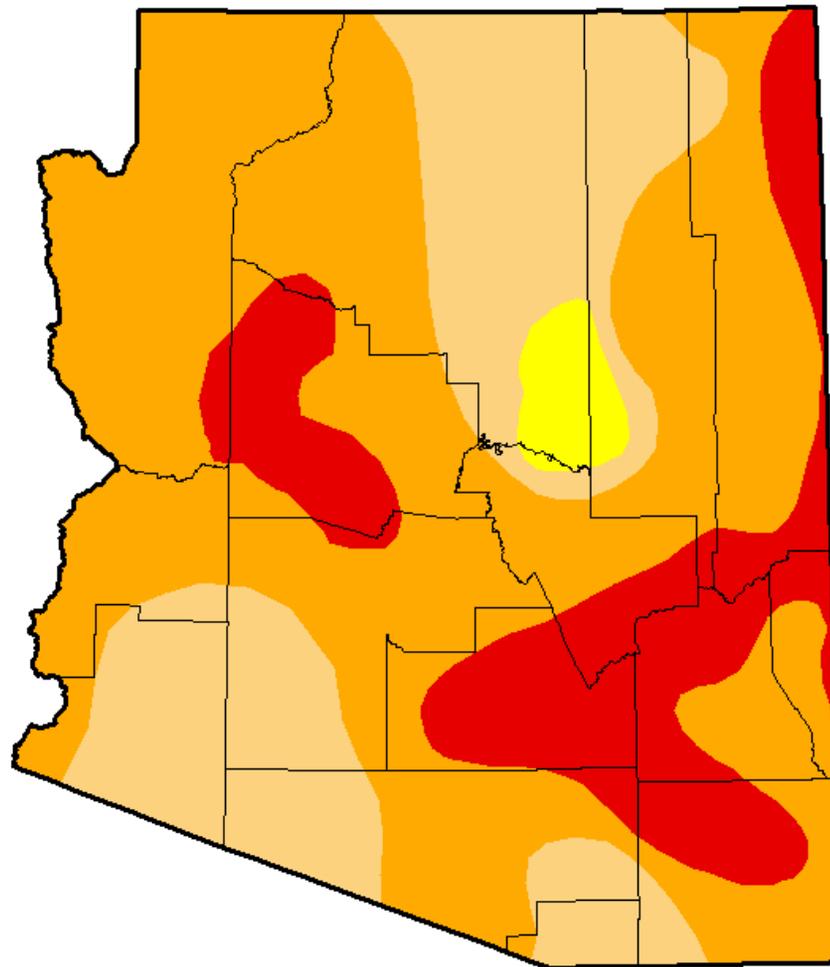
Early morning and afternoon haze was also present in the nonattainment area prior to the arrival of the thunderstorm outflow-generated dust storm, due to the transport of fine dust from thunderstorm outflows originating in and near northern Mexico on July 24, 2014. While this haze did raise ambient PM₁₀ and PM_{2.5} concentrations across the nonattainment area, projected 24-hour average PM₁₀ concentrations were far below 150 µg/m³. Without the presence of the evening thunderstorm outflow-generated dust storm, there would have been no nonattainment area exceedances of the PM₁₀ standard on July 25, 2014.

A contributing factor that led to this dust storm was the on-going drought across the region. As shown in Figure 2–5, the U.S. Drought Monitor as of July 22, 2014, categorized the drought level of the source area of the thunderstorm winds as either D2 (Severe) or D3 (Extreme). This level of drought helps to show how the natural desert areas within Pinal and Maricopa counties are vulnerable to dust storms generated by thunderstorm outflow winds.

A more detailed explanation and time series visualization of the thunderstorm outflow dust storm event is available in Section V, describing the clear causal connection between the approaching outflow and the exceeding PM₁₀ concentrations recorded in the nonattainment area. As a summary of the event, Figure 2–6 displays an hourly graph of the PM₁₀ concentrations throughout Maricopa County and the nonattainment area. Table 2–1 contains PM₁₀ concentration data from all recorded monitors throughout the state of Arizona.

U.S. Drought Monitor Arizona

July 22, 2014
(Released Thursday, Jul. 24, 2014)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	97.88	72.30	17.59	0.00
Last Week <i>7/15/2014</i>	0.00	100.00	97.88	72.30	15.64	0.00
3 Months Ago <i>4/22/2014</i>	0.00	100.00	98.17	61.20	7.31	0.00
Start of Calendar Year <i>12/31/2013</i>	20.72	79.28	53.58	14.73	0.00	0.00
Start of Water Year <i>10/1/2013</i>	14.83	85.17	61.91	25.28	0.00	0.00
One Year Ago <i>7/23/2013</i>	0.00	100.00	91.13	63.58	22.81	3.04

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

David Miskus
NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

Figure 2-5. U.S. Drought Monitor analysis of Arizona issued for July 22, 2014.

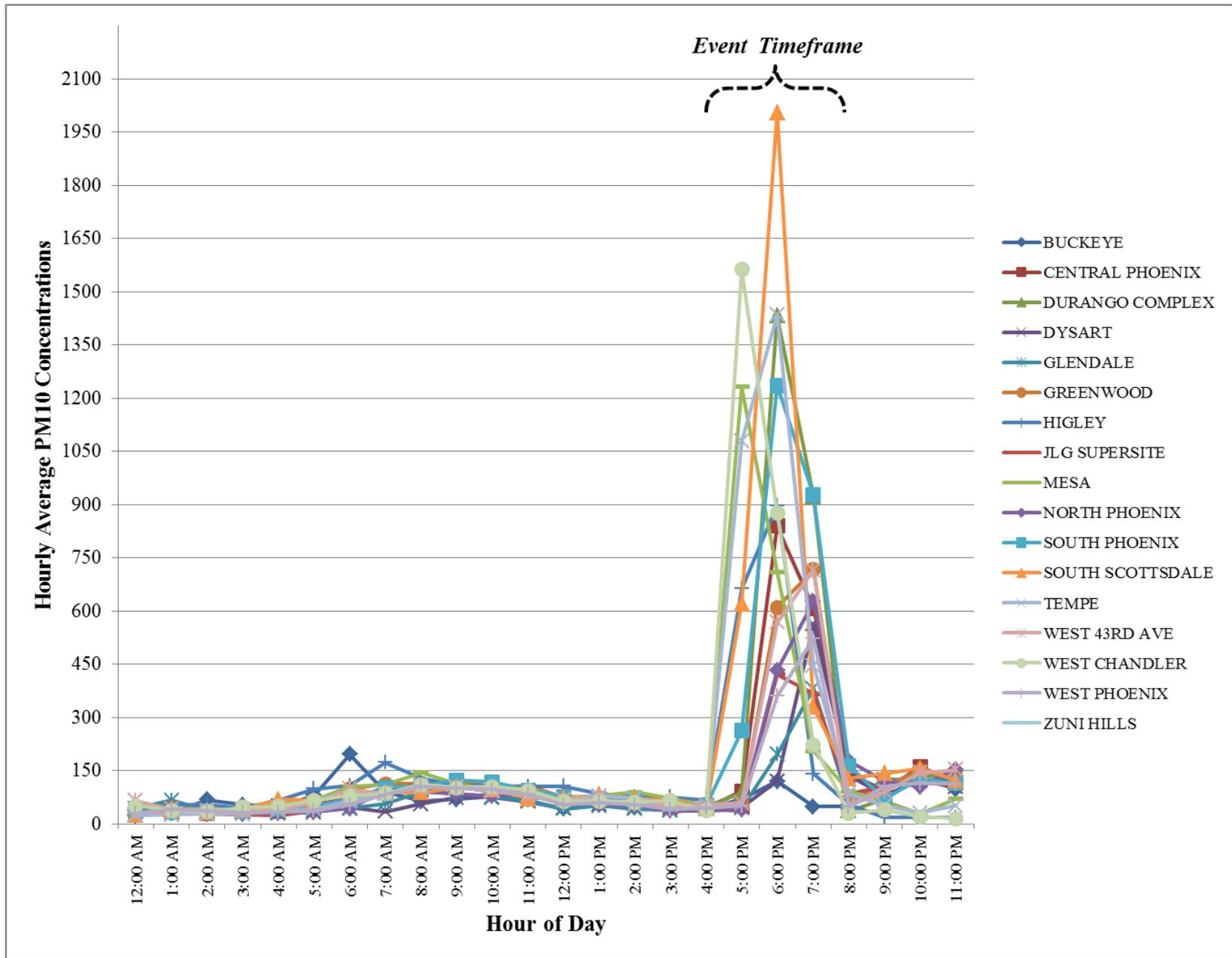


Figure 2-6. Timeline of PM₁₀ concentrations at monitors in Maricopa County and the PM₁₀ nonattainment area on July 25, 2014.

Table 2-1. Arizona PM₁₀ Measurements on July 25, 2014.

Monitor	Monitor Type	Operator	AQS Monitor ID	24-hr Avg PM ₁₀ (µg/m ³)	1-hr Max PM ₁₀ (µg/m ³)	Max Time	AQS Qualifier Flag
Cochise County							
Douglas Red Cross	TEOM	ADEQ	04-003-1005-81102-3	161	368	0100	
Paul Spur Chemical Lime	TEOM	ADEQ	04-003-0011-81102-3	229	538	0100	
Gila County							
Hayden Old Jail	TEOM	ADEQ	04-007-1001-81102-3	66	248	1400	
Miami Golf Course	TEOM	ADEQ	04-007-8000-81102-3	59	198	1800	
Payson Well Site	TEOM	ADEQ	04-007-0008-81102-1	64	332	2100	
La Paz County							
Alamo Lake	TEOM	ADEQ	04-012-8000-81102-1	N/A	N/A	N/A	
Maricopa County							
Buckeye	TEOM	MCAQD	04-013-4011-81102-1	72	195	0600	
Central Phoenix	TEOM	MCAQD	04-013-3002-81102-4	135	840	1800	
Durango Complex	TEOM	MCAQD	04-013-9812-81102-1	163	1,432	1800	RJ
Dysart	TEOM	MCAQD	04-013-4010-81102-1	80	562	1900	
Glendale	TEOM	MCAQD	04-013-2001-81102-1	81	382	1900	
Greenwood	TEOM	MCAQD	04-013-3010-81102-1	126	716	1900	
Higley	TEOM	MCAQD	04-013-4006-81102-1	137	897	1800	
JLG Supersite	BAM	ADEQ	04-013-9997-81102-3	93	422	1800	
Mesa	TEOM	MCAQD	04-013-1003-81102-1	155	1,231	1700	RJ
North Phoenix	BAM	MCAQD	04-013-1004-81102-1	107	626	1900	
South Phoenix	TEOM	MCAQD	04-013-4003-81102-1	170	1,235	1800	RJ
South Scottsdale	TEOM	MCAQD	04-013-3003-81102-1	193	2,004	1800	RJ
Tempe	TEOM	MCAQD	04-013-4005-81102-1	175	1,435	1800	RJ
West Chandler	TEOM	MCAQD	04-013-4004-81102-1	163	1,563	1700	RJ
West Forty Third	TEOM	MCAQD	04-013-4009-81102-1	122	715	1900	
West Phoenix	TEOM	MCAQD	04-013-0019-81102-1	96	523	1900	
Zuni Hills	TEOM	MCAQD	04-013-4016-81102-1	N/A	N/A	N/A	
Mohave County							
Bullhead City	TEOM	ADEQ	04-015-1003-81102-3	38	123	0700	
Pima County							
Ajo	TEOM	ADEQ	04-019-0001-81102-3	62	386	1700	
Geronimo	BAM	PCDEQ	04-019-1113-81102-1	178	511	0600	
Green Valley	TEOM	PCDEQ	04-019-1030-81102-1	172	539	0200	
Rillito	TEOM	ADEQ	04-019-0020-81102-3	169	660	1500	
Pinal County							
Casa Grande Downtown	TEOM	PCAQCD	04-021-0001-81102-3	157	955	1700	
Combs School	TEOM	PCAQCD	04-021-3009-81102-3	192	1,707	1700	
Cowtown	TEOM	PCAQCD	04-021-3013-81102-3	234	1,396	1700	
Maricopa	TEOM	PCAQCD	04-021-3010-81102-3	170	1,207	1700	
Pinal Air Park	TEOM	PCAQCD	04-021-3007-81102-3	175	521	1500	
Pinal County Housing	TEOM	PCAQCD	04-021-3011-81102-3	371	4,191	1600	
Stanfield	TEOM	PCAQCD	04-021-3008-81102-3	147	1,497	1600	
Santa Cruz County							
Nogales Post Office	BAM	ADEQ	04-023-0004-81102-3	180	702	0000	
Yuma County							
Yuma Supersite	TEOM	ADEQ	04-027-8011-81102-3	55	122	1000	

SOURCE: ADEQ's, MCAQD's and PCAQCD's AirVision Databases and PCDEQ website.

TEOM: Tapered Element Oscillating Microbalance monitor
 BAM: Beta Attenuation Monitor
 MCAQD: Maricopa County Air Quality Department
 ADEQ: Arizona Department of Environmental Quality
 PCDEQ: Pima County Department of Environmental Quality
 PCAQCD: Pinal County Air Quality Control District
 RJ: qualifier flag for high winds

III. HISTORICAL FLUCTUATIONS

PM₁₀ concentrations measured at nonattainment area monitors on July 25, 2014, were unusual and in excess of normal historical fluctuations. Figure 3–1 displays a time series plot of the 24-hour average PM₁₀ concentrations for the period of January 1, 2009, through July 31, 2014, for the exceeding South Scottsdale monitor; the monitor that recorded the highest 24-hour average PM₁₀ concentration during the July 25, 2014, exceptional event. The figure indicates that the 24-hour average PM₁₀ concentration seen at the South Scottsdale monitor on July 25, 2014, was in excess of normal historical fluctuations. Figures showing the historical fluctuations for the other monitors in the PM₁₀ nonattainment area that exceeded on July 25, 2014, are included in Appendix C.

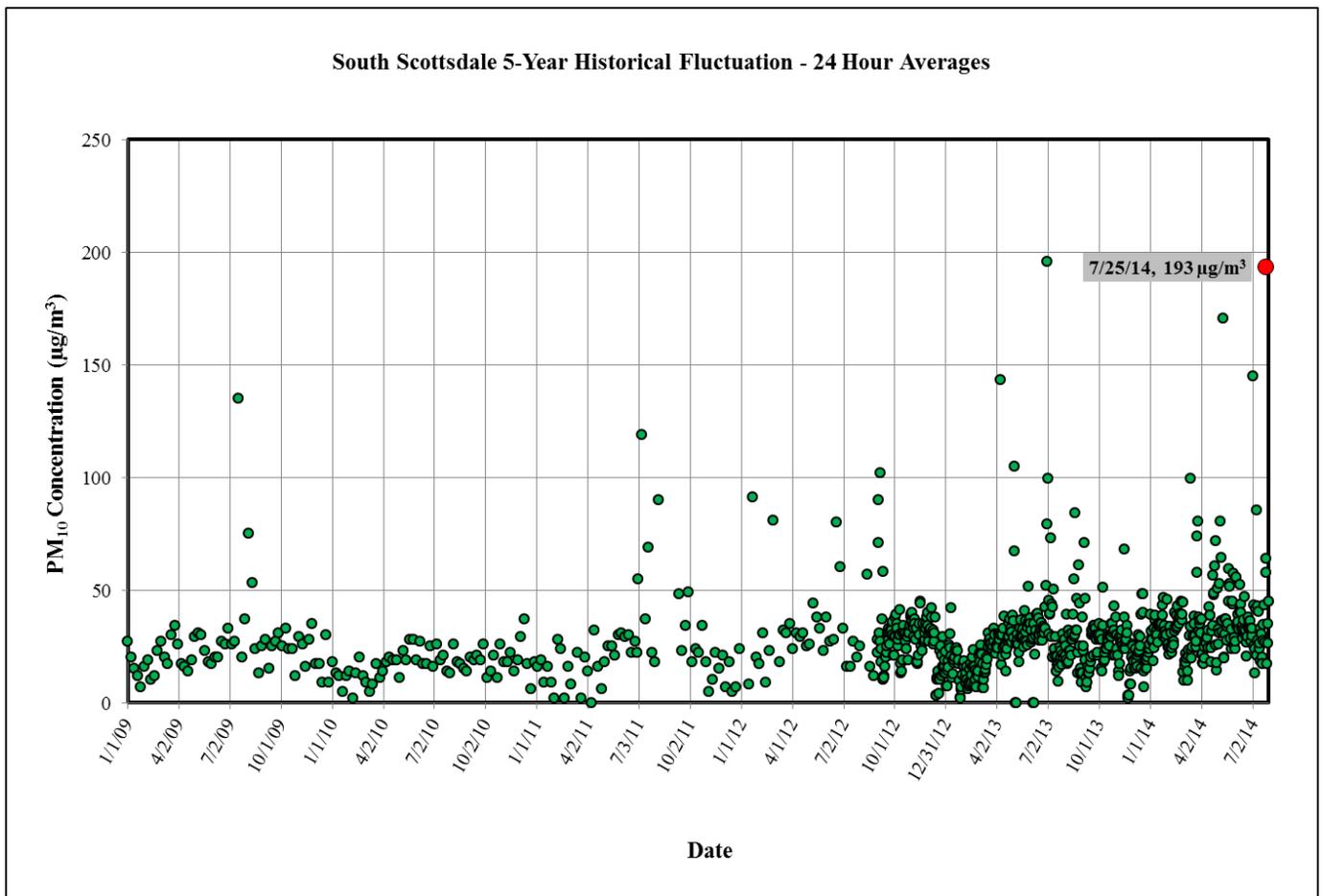


Figure 3-1. Plot of 24-hour average PM₁₀ concentrations (January 1, 2009 – July 31, 2014) at the South Scottsdale monitor.

IV. 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 and the PM₁₀ nonattainment area, high wind conditions overwhelmed all reasonably available controls. The event occurring on July 25, 2014, was directly related to turbulent winds generated by thunderstorm outflows, producing wind gusts up to 48 mph, sustained winds as high as 40 mph, and reduced visibilities as low as 0.3 miles. The gusty outflow winds overwhelmed all reasonably available controls, and were also responsible for the transport of PM into the Maricopa County PM₁₀ nonattainment area from areas outside of the nonattainment area.

As shown in Section V, the source region for the thunderstorm outflows and associated transported dust on July 25, 2014, came from the desert areas of Pinal County. While it is likely that PM₁₀ was generated within the nonattainment area as gusts from the thunderstorm outflows passed through the area, the transport of dust from the source regions outside the nonattainment area contributed heavily to the elevated and exceeding concentrations of PM₁₀ within the nonattainment area. Strict controls on local sources of fugitive dust were in place and enforced during the event on July 25, 2014, but were not capable of controlling the dust and PM₁₀ generated and transported by the gusty and turbulent thunderstorm outflow winds on this date.

The following sections describe the BACM- and MSM-level PM₁₀ control measures in place on July 25, 2014, and the robustness of the programs designed to enforce these measures. Inspections of local sources performed before, during, and after July 25, 2014, confirmed that no unusual anthropogenic PM₁₀-producing activities contributed to the exceedances on July 25, 2014.

Regulatory Measures and Control Programs

The Arizona Department of Environmental Quality (ADEQ) and the Maricopa County Air Quality Department (MCAQD) are responsible for implementing regulatory measures to control emissions from mobile sources, agricultural sources, stationary sources, fugitive dust sources, and open burning within Maricopa County. Three major programs provide or contribute to air pollution control measures for the Greater Phoenix area. These programs include:

- 1.) ADEQ’s Agricultural Best Management Program (AgBMP)
- 2.) Maricopa County’s Inspection and Compliance Program
- 3.) ADEQ’s Air Quality Forecasting Program

Specifically, ADEQ is responsible for compliance assistance and enforcement of Agricultural Best Management Practices developed by the Governor’s Agricultural Best Management Practices Committee, while MCAQD is responsible for compliance assurance for all other significant sources of PM₁₀ emissions. In addition to routine inspections and inspections driven by complaints, inspections are often increased when 1.) ADEQ forecasters issue a High Risk for the Maricopa County Dust Control Forecast, 2.) ADEQ forecasters issue a High Pollution Advisory, or 3.) near real-time monitoring data indicate unique activity via high PM concentrations. The forecasting program and inspection / compliance programs work together so that resources can be best utilized during days that are of greatest risk for elevated PM emissions.

On July 25, 2002, EPA took initial action to finalize approval of the Best Available Control Measure (BACM) and the Most Stringent Measure (MSM) demonstrations in the Serious Area PM₁₀ plan for the Maricopa County portion of the PM₁₀ nonattainment area (67 FR 48718). These BACM and MSM demonstrations were again approved by EPA on July 14, 2006 (71 FR 43979). The Agricultural Best Management Practices General Permit rule and related definitions have been approved into the Arizona Administrative Code as R18-2-610 and R18-2-611 pursuant to Arizona Revised Statutes § 49-457¹. Maricopa County regulations of PM₁₀ emissions are listed in Table 4-1.

Table 4-1. Rules and Ordinances Regulating Particulate Matter Emissions in Maricopa County.

Rule/Ordinance Number & Title	Description
Rule 300: Visible Emissions	Establishes standards for visible emissions and opacity.
Rule 310: Fugitive Dust from Dust-Generating Operations	Establishes limits for the emissions of particulate matter into the ambient air from any property, operations, or activity that may serve as a fugitive dust source.
Rule 310.01: Fugitive Dust from Non-Traditional Sources of Fugitive Dust	Establishes limits for the emissions of particulate matter into the ambient air from open areas, vacant lots, unpaved parking lots, and unpaved roadways which are not regulated by Rule 310 and which are not required to have either a permit or a dust control plan.
Rule 311: Particulate Matter from Process Industries	Establishes emission rates based on process weight applicable to any affected operations not subject to Rule 316.
Rule 312: Abrasive Blasting	Establishes limits for particulate emissions from abrasive blasting operations.
Rule 314: Open Outdoor Fires and Indoor Fireplaces at Commercial and Institutional Establishments	Establishes limits for the emissions of air contaminants produced from open burning.
Rule 316: Nonmetallic Mineral Processing	Establishes limits for the emissions of particulate matter into the ambient air from any nonmetallic mining operation or rock product processing plant.
Rule 317: Hospital/Medical/ Infectious Waste Incinerators	Establishes limits for the emissions of air pollutants from medical waste incinerators.
Rule 322: Power Plant Operations	Establishes limits for the emissions of nitrogen oxides, sulfur oxides, carbon monoxide and particulate matter from existing power plants and cogeneration plants.
Rule 323: Fuel Burning Equipment from Industrial/Commercial/ Institutional (ICI) Sources	Establishes limits for the emissions of nitrogen oxides, sulfur oxides, carbon monoxide and particulate matter from ICI sources.
Rule 324: Stationary Internal Combustion (IC) Engines	Establishes limits for the emissions of carbon monoxide, nitrogen oxides, sulfur oxides, volatile organic compounds, and particulate matter from stationary internal combustion engines, including stationary IC engines used in cogeneration.

¹ Updates to the AgBMP program in December, 2011, clarified BMPs for crop and added BMPs for animal operations. Effective 12/29/2011, R18-2-611 was renumbered to R18-2-610.01 **Agricultural PM₁₀ General Permit for Crop Operations** and R18-2-611.01, **Animal Operations PM₁₀ General Permit** was added. Definitions for Crop Operations were revised at R18-2-610 and new definitions for Animal Operations were added at R18-2-611.

Rule/Ordinance Number & Title	Description
Rule 325: Brick and Structural Clay Products (BSCP) Manufacturing	Establishes limits for particulate matter emissions from the use of tunnel kilns for curing in the brick and structural clay product (BSCP) manufacturing processes.
Ordinance P-25: Leaf Blower Restriction	Establishes restrictions for leaf blowers in incorporated and unincorporated sections of Area A in Maricopa County.
Ordinance P-26: Residential Woodburning Restriction	Establishes restrictions for residential woodburning.
Ordinance P-27: Vehicle Parking and Use on Unstabilized Vacant Lots	Establishes restrictions for vehicle parking and use on unstabilized vacant lots in unincorporated sections of Area A in Maricopa County.
Ordinance P-28: Off-Road Vehicle Use in Unincorporated Areas of Maricopa County	Establishes restrictions for operating vehicles on unpaved property in unincorporated areas of Maricopa County.
Arizona Administrative Code R18-2-611 & 610: Agricultural PM ₁₀ General permit	Establishes a requirement for commercial farmers to implement best management practices and maintain a record demonstrating compliance

In addition to the rules and regulations listed in the above table, other PM₁₀ reducing control measures (e.g., paving of unpaved roads, PM₁₀ certified street sweepers, controlling unpaved parking lots, etc.) have been committed to, and implemented by, local jurisdictions throughout the PM₁₀ nonattainment area, and incorporated into the Arizona SIP through PM₁₀ plans such as the Revised MAG 1999 Serious Area Particulate Plan for PM₁₀ for the Maricopa County Nonattainment Area. The Pinal County Air Quality Control District (PCAQCD) also implements regulatory control measures on emissions from existing and new non-point sources within Pinal County (see Table 4-2). Additionally, the PCAQCD implements specific nonattainment rules for that part of the PM₁₀ nonattainment area that resides in Pinal County (see Table 4-3).

Table 4-2. Pinal County Rules Regulating Existing and New Non-point Sources in Pinal County.

Article Number & Title	Description
Article 2: Fugitive Dust	Provides a mechanism to reasonably regulate operations which periodically may cause fugitive dust emissions into the atmosphere
Article 3: Construction Sites – Fugitive Dust	Improves the control of excessive fugitive dust emissions that have been traditionally associated with construction, earthwork, and land development, and thereby minimize nuisance impacts

Table 4-3. Pinal County Rules Regulating Fugitive Dust in Pinal County Portion of MC PM₁₀ NAA.

Article Number & Title	Description
Article 4: Nonattainment Area Rules; Dustproofing for Commercial Parking, Drives and Yards	Establishes rules to avoid violations of the prevailing PM ₁₀ standard and additionally minimize nuisance impacts by improving control of excessive fugitive dust emissions from unpaved parking lots
Article 5: Nonattainment Area Rules; Stabilization for Residential Parking and Drives	Establishes rules for stabilizing residential properties
Article 6: Restrictions on Vehicle Parking and Use on Vacant Lots	Establishes rules for unpaved or unstabilized vacant lots

Article Number & Title	Description
Article 7: Construction Sites in Nonattainment Areas – Fugitive Dust	Establishes rules to avoid violations of the prevailing PM ₁₀ standard and additionally minimize nuisance impacts by improving control of excessive fugitive dust emissions from activities associated with construction, earthwork, or land development.
Article 8: Nonattainment Area Rules, Requirement for Stabilization of Disturbed Areas at Vacant Lots	Establishes rules for stabilizing disturbed areas at vacant lots

PM₁₀ Rule Effectiveness

MCAQD analyzed the effectiveness of its fugitive dust rules (Rules 310, 310.01 and 316) in terms of source compliance rates. The rule effectiveness study was designed to assess how many sources regulated by MCAQD during the subject time period received no PM₁₀ emissions-related violations. As a basis for comparison, the percentage of sources that did not receive a PM₁₀ emissions-related violation during calendar year 2007 was 76% for sources subject to Rule 310, 85% for sources subject to Rule 310.01, and 40% for sources subject to Rule 316. In early 2008, Rules 310, 310.01, and 316 were strengthened and new ordinances (covering additional source categories such as leaf blowers, vacant lots, and off-road vehicles) were adopted. These enhancements resulted from MCAQD’s obligations under such agreements as the 2005 Revised PM₁₀ State Implementation Plan for the Salt River Area and the Maricopa Association of Governments (MAG) 2007 Five Percent Plan for PM₁₀ for the Maricopa County Nonattainment Area. Three major areas that contributed to increased compliance were an increase in departmental staffing (especially inspectors), a robust training program, and regulatory changes that broadened and strengthened control measures under Rules 310, 310.01, and 316.

Rule effectiveness rates were re-assessed for FY 2009 (July 2008–June 2009), a period that allowed time for the new and revised regulations to take effect. The results showed significant increases in compliance compared with the earlier period: to 90% (from 76%) for Rule 310 sources, to 95% (from 85%) for Rule 310.01 sources, and to 65% (from 40%) for Rule 316 sources. These improvements continued into calendar year 2010 with rule effectiveness rates of 94% for Rule 310 sources, 96% for Rule 310.01, and 73% for Rule 316 sources.

Additional rule effectiveness increases were observed for Rule 310.01 and Rule 316 in calendar year 2012. The increase in rule effectiveness for Rule 310.01 was attributed to ADEQ’s Dust Action General Permit, which was a new dust measure contained in the 2012 Five Percent Plan for PM₁₀ for the Maricopa County Nonattainment Area. The rule effectiveness for Rule 310.01 was 98%, an increase of 2% in 2012. The rule effectiveness for Rule 316 had a considerable increase to 83%, which is an increase of 10% compared to 2010.

The timeline below illustrates the improvements in rule effectiveness over the last several years, and also points out significant revisions to previous rules, as well as newly adopted rules, ordinances and measures. Since the first study of 2007, the rule effectiveness has increased for Rule 310, Rule 310.01, and Rule 316 by 17%, 13%, and 43%, respectively.

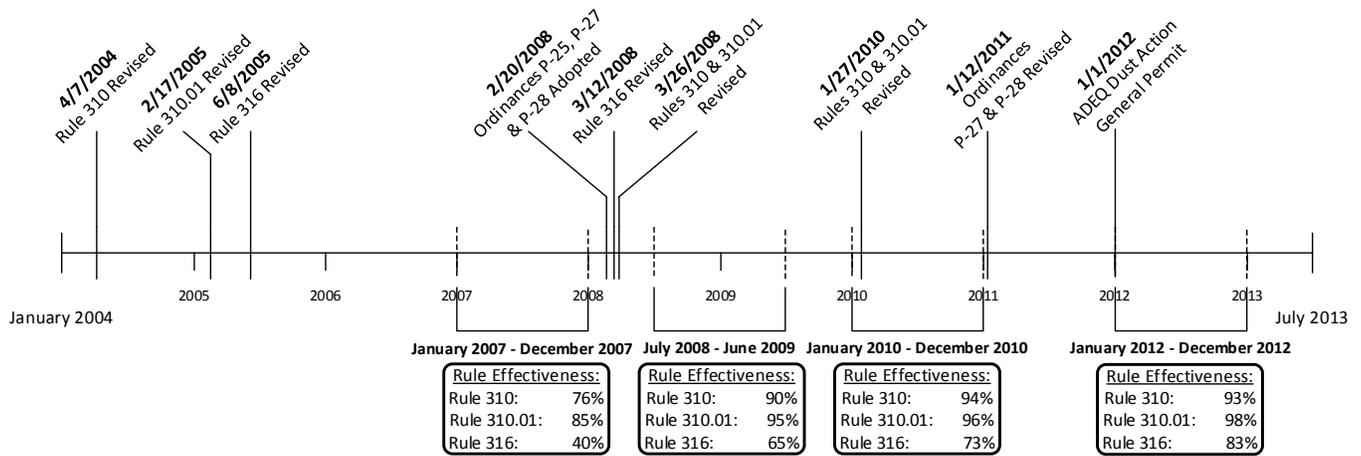


Figure 4-1. Timeline of Maricopa County fugitive dust rules and ordinances.

Compliance and Enforcement Activities

MCAQD is prepared to proactively respond to high wind events and protect human health and well-being. MCAQD’s approach consists of two primary components: routine proactive inspections, as well as surveillance inspections, conducted both during and after significant events. MCAQD routinely inspects dust control-permitted sites and increases the frequency of inspections for permits covering areas of ten acres or more. Non-metallic surface mining sources under Rule 316 are also regularly inspected multiple times every year. Maricopa County also responds to the majority of air quality complaints within 24 hours.

Maricopa County monitors the ADEQ Five-Day Dust Control Forecast to identify the potential for elevated PM₁₀ pollution levels due to high winds or stagnant conditions. When a High Pollution Advisory (HPA) is issued for Maricopa County, MCAQD conducts additional increased surveillance before, during, and after the forecast event(s). MCAQD also conducts event surveillance and post-event activities after an exceptional event that had not been forecast (i.e., those instances in which an HPA had not been issued).

Pre-event surveillance consists of surveying high-risk areas for any dust-generating activities, educating sources of the impending HPA event, and issuing violations for failure to comply with local, state, or federal regulations. During the event, MCAQD inspectors survey high-risk areas to confirm that control measures are in place, document any violations, and contact other regulatory agencies if necessary. Post-event activities include continued surveys of high-risk areas, re-inspecting sources within two business days of receiving a violation, and an internal MCAQD debriefing of event activities.

Currently, a total of 16 MCAQD air monitoring sites were upgraded with new equipment to allow the monitoring sites to automatically report monitored readings at 5-minute intervals. Previously, hourly readings were only available. The real-time data reporting system includes a mechanism to alert MCAQD inspectors when PM₁₀ concentrations are elevated. The system allows MCAQD inspectors to review concentrations at the monitor and to consult the National Weather Service website to check for weather event activity. This capability allows the MCAQD responder to identify regional events and monitor specific issues. If necessary, the MCAQD responders can inform nearby stakeholders and local governments of the elevated PM₁₀ concentrations.

On July 24, 2014, the ADEQ issued a Dust Control Forecast indicating a low risk for unhealthy PM₁₀ levels for July 25, 2014, though the forecast did note that storms were building in Pima County and the area could be affected by outflows from those storms.

An evaluation of all inspection reports, air quality complaints, compliance reports, and other documentation indicate no evidence of unusual anthropogenic-based PM₁₀ emissions. During the time period of July 22 through July 28, 2014, MCAQD inspectors conducted a total of 321 inspections of permitted facilities, of which 227 were at fugitive dust sources. Additionally, MCAQD conducted 89 inspections on vacant lots and unpaved parking lots during this period.

During this 7-day period, a total of 35 violations were issued county-wide for PM₁₀ and non-PM₁₀-related violations, but only one of these was issued to a PM₁₀ fugitive dust source within a 4-mile radius of an exceeding monitor:

- MCAQD issued a violation to a fugitive dust source on July 28, 2014 for failure to renew their dust permit within 14 days of expiration. A renewal permit was issued on July 29, 2014. The source was located 1.3 and 3.7 miles from the exceeding Tempe and South Scottsdale monitors, respectively. This violation would not have contributed to the exceedances on July 25, 2014, as this violation was an administrative violation.

Also during this 7-day period, a total of two 60-day letters were issued for non-compliant vacant lots and/or unpaved parking lots; none of these vacant lots were located within a 4-mile radius of an exceeding monitor.

MCAQD was prepared for any complaints received due to the high wind event. During the 7-day period from July 22 through July 28, 2014, MCAQD received 35 complaints, of which 21 were windblown dust or PM₁₀ related. One of these complaints was located within 4 miles of an exceeding monitor:

- MCAQD responded to a complaint on July 23, 2014, regarding track out from a construction site. No violations were issued. The complaint was located approximately 2.1, 2.6, and 3.6 miles from the exceeding Mesa, Tempe, and South Scottsdale monitors, respectively.

No evidence was found to suggest that agricultural activities produced unusual or significant PM₁₀ emissions near the exceeding monitors on or around July 25, 2014. The ADEQ Aq BMP inspector received no dust complaints regarding agricultural activity in Maricopa County and the nonattainment area during the period between July 22 and July 28, 2014.

Conclusions

The thunderstorm outflow event on July 25, 2014, produced strong gusts and turbulent wakes that transported and generated dust and PM₁₀ into the Maricopa County PM₁₀ nonattainment area. The source region of the outflow winds that caused the exceedances was largely located in areas outside the nonattainment area, primarily the deserts of Pinal County. The Maricopa County area is designated as a serious nonattainment area for PM₁₀ and is required to have BACM for all significant sources of PM₁₀. BACM-approved control measures on significant anthropogenic sources were in place and enforced during the events, and pro-active tracking and response to the events by regulatory agencies and local governments confirmed the uncontrollable nature of the dust emissions; therefore, these pre-existing/prior approved required controls are adequate for meeting the requirements of an exceptional event and should be considered “reasonable” for these purposes.

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 PM₁₀ emissions into, and also overwhelmed controls within, the nonattainment area. Strong thunderstorm outflows with gusts as high as 48 mph, and sustained winds as high as 40 mph, were more than enough to overwhelm all available efforts to limit PM₁₀ concentrations from the event. The fact that this was a natural event involving strong thunderstorm outflow winds that transported and generated PM₁₀ emissions into Maricopa County from source regions outside of the nonattainment area provides strong evidence that the event and exceedances of July 25, 2014, recorded at six nonattainment area monitors, were not reasonably controllable or preventable.

V. CLEAR CAUSAL RELATIONSHIP

Introduction

A demonstration of the clear causal connection between windblown dust generated and transported by thunderstorm outflow winds and the exceedances at the six nonattainment area monitors on July 25, 2014, is provided in this section. Around 4:30 pm on July 25, 2014, a very strong thunderstorm outflow developed in the deserts of Pinal County and began transporting dust northward towards the nonattainment area. Strong winds heading north-northwest from the thunderstorm outflow continued across the nonattainment area, with gusts as high as 48 mph and sustained winds as high as 40 mph, depositing and generating five-minute average PM₁₀ concentrations over 2,600 µg/m³ at six nonattainment area monitors along the way. In all, six nonattainment area monitors exceeded the 24-hour PM₁₀ standard as a result of the PM₁₀ transported and generated by the thunderstorm outflow winds. Drought conditions in Pinal County and southern Maricopa County likely exacerbated the amount of the dust the thunderstorm outflow was able to entrain.

A detailed description of the meteorology that caused the natural windblown dust exceedance event at the nonattainment area monitors is described below in a series of time-stamped maps. Time series videos of visibility photos on the day of the high wind dust event provide additional evidence of the dust storm impacts on the exceeding monitors. The weight of evidence presented in this section provides the clear causal connection between the windblown dust generated and transported by thunderstorm outflow winds and the exceedances at the nonattainment area monitors on July 25, 2014.

Time Series Maps and Visibility Photos.

Figures 5–1 through 5–9 provide a time series GIS-based visualization of the meteorology and PM₁₀ concentrations associated with the thunderstorm outflows. The data displayed in the following maps were gathered from five data sources. All available meteorological and air quality data was used in order to present the most complete story of the event. Table 5–1 displays the types of data used from each agency in creating the maps.

Table 5-1. Data Sets Used in the Creation of Time Series GIS Maps.

Agency	Data Sets
Arizona Department of Environmental Quality (ADEQ)	Hourly PM ₁₀ Concentrations, Wind Speed, Wind Direction and Wind Gusts
Arizona Meteorological Network (AZMET)	Hourly Wind Speed, Wind Direction and Wind Gusts
Maricopa County Air Quality Department (MCAQD)	5-Minute PM ₁₀ Concentrations, Wind Speed, Wind Direction, and Wind Gusts (hourly data used when 5-minute was unavailable)
Pinal County Air Quality Control District (PCAQCD)	5-Minute PM ₁₀ Concentrations, Wind Speed, Wind Direction, and Wind Gusts (hourly data used when 5-minute was unavailable)
National Weather Service (NWS)	Point in Time Wind Speed, Wind Direction, Wind Gusts, Visibility and Base Velocity Radar

Map Description

A description of each time series map is provided to highlight important data in each map and explain the progression of the meteorology and PM₁₀ concentrations through time. Taken as a whole, the maps and associated explanatory text describe the clear causal connection between the windblown dust generated and transported by the thunderstorm outflow winds and the PM₁₀ exceedances at the nonattainment area monitors.

July 25, 4:30 PM – 5:00 PM

The thunderstorm outflow and associated dust storm is clearly evident in Pinal County. The outflow is producing gusts as high as 49 mph and sustained winds as high as 41 mph. Visibility is reduced to 2.0 miles at the Casa Grande Municipal Airport and five Pinal County monitors record PM₁₀ concentrations ranging between 1,000 to over 5,000 $\mu\text{g}/\text{m}^3$. The nonattainment area is predominantly experiencing moderate winds from the west and low PM₁₀ concentrations.

July 25, 5:00 PM – 5:30 PM

The thunderstorm outflow and dust storm crosses into the nonattainment area and immediately raises PM₁₀ concentrations at the West Chandler and Higley monitors. Visibility is reduced to 1.0 miles at both the Chandler Municipal and Phoenix-Mesa Gateway Airports. Gusts of 46 mph and sustained winds speeds of 40 mph are recorded at the Chandler Municipal Airport. The dust storm carries significant amounts of dust for miles behind the outflow front, as evidenced by the very high PM₁₀ concentrations still being recorded at the Pinal County monitors, 20 to 30 miles south of the West Chandler and Higley monitors.

July 25, 5:30 PM – 6:00 PM

As the dust storm moves north across the nonattainment area, it is somewhat confined to the eastern portion of the nonattainment area due to the moderate westerly winds present in the nonattainment area before arrival of the outflow. In the next hour and a half, the strong winds from the thunderstorm outflow will overwhelm the westerly winds and all but the most western portions of the nonattainment area will be impacted by the outflow-generated dust storm. During this period, visibility is reduced to 0.3 miles at Mesa Falcon Field Airport and 1.5 miles at Phoenix Sky Harbor International Airport. Eight nonattainment area monitors record five-minute average PM₁₀ concentrations of at least 1,000 $\mu\text{g}/\text{m}^3$.

July 25, 6:00 PM – 6:30 PM

Gusty, turbulent winds continue behind the thunderstorm outflow front as it pushes north and west across the nonattainment areas. Dust is heavy throughout the eastern portion of the nonattainment area with visibilities at five airports ranging between 1.0 to 4.0 miles. Gusts as high as 48 mph and sustained winds as high as 26 mph persist behind the front of the thunderstorm outflow. Light precipitation in Pinal County has helped to reduce PM₁₀ concentrations in the source area of the outflow.

July 25, 6:30 PM – 7:00 PM

The outflow continues north and west across the nonattainment area. Monitors located in the central portion of the nonattainment area record the highest PM₁₀ concentrations during this and the following period, under wind gusts of 46 mph and sustained winds of 28 mph. Visibility levels as low as 0.8 miles

(Phoenix Goodyear Airport) are recorded. Eleven nonattainment monitors record PM_{10} concentrations of at least $1,000 \mu\text{g}/\text{m}^3$.

July 25, 7:00 PM – 7:30 PM

PM_{10} concentrations begin to decrease in the southeastern portion of the nonattainment areas as the winds from the outflow subside and the densest parts of the dust storm pass. Concentrations are still very high in the central and northern portions of the nonattainment area, with eight monitors recording PM_{10} concentrations of at least $1,000 \mu\text{g}/\text{m}^3$.

July 25, 7:30 PM – 8:00 PM

The outflow front exits the nonattainment area and winds decrease throughout the area. Visibility levels return to normal at many stations, except in the northern portions of the nonattainment area where two airports report visibilities of 6.0 miles. PM_{10} concentrations fall below $1,000 \mu\text{g}/\text{m}^3$ at all nonattainment area monitors.

July 25, 8:00 PM – 8:30 PM

Reduced visibilities are still noted in the northern portions of the nonattainment area, however all nonattainment area monitors record PM_{10} concentrations under $500 \mu\text{g}/\text{m}^3$ as PM_{10} from the dust storm settles out of the atmosphere.

July 25, 8:30 PM – 9:00 PM

Shifting winds from the east help to blow out any remaining suspended dust from the outflow-generated dust storm. Visibility levels are normal across the nonattainment area and PM_{10} concentrations have returned to pre-storm levels.

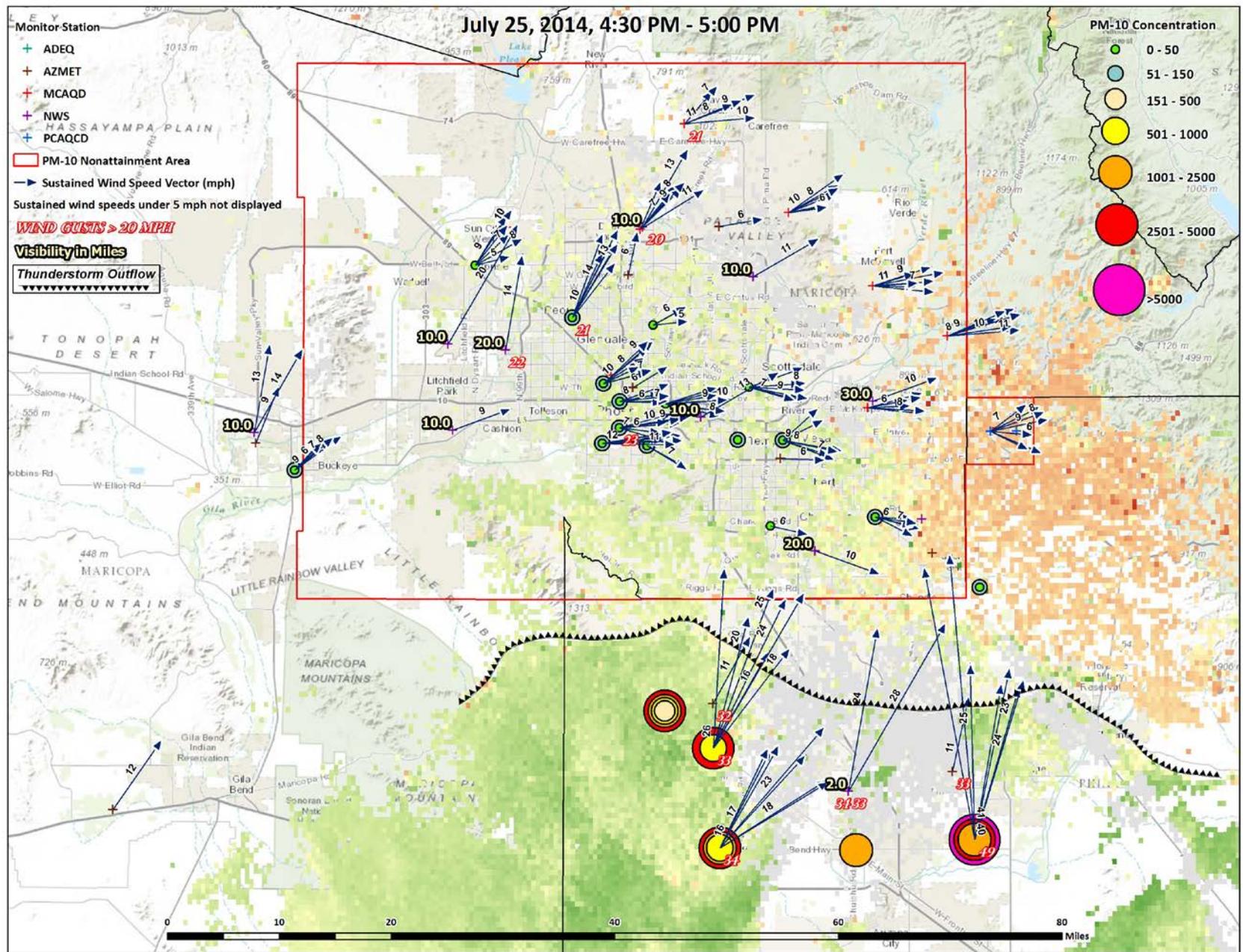


Figure 5-1. July 25, 2014, 4:30 PM – 5:00 PM.

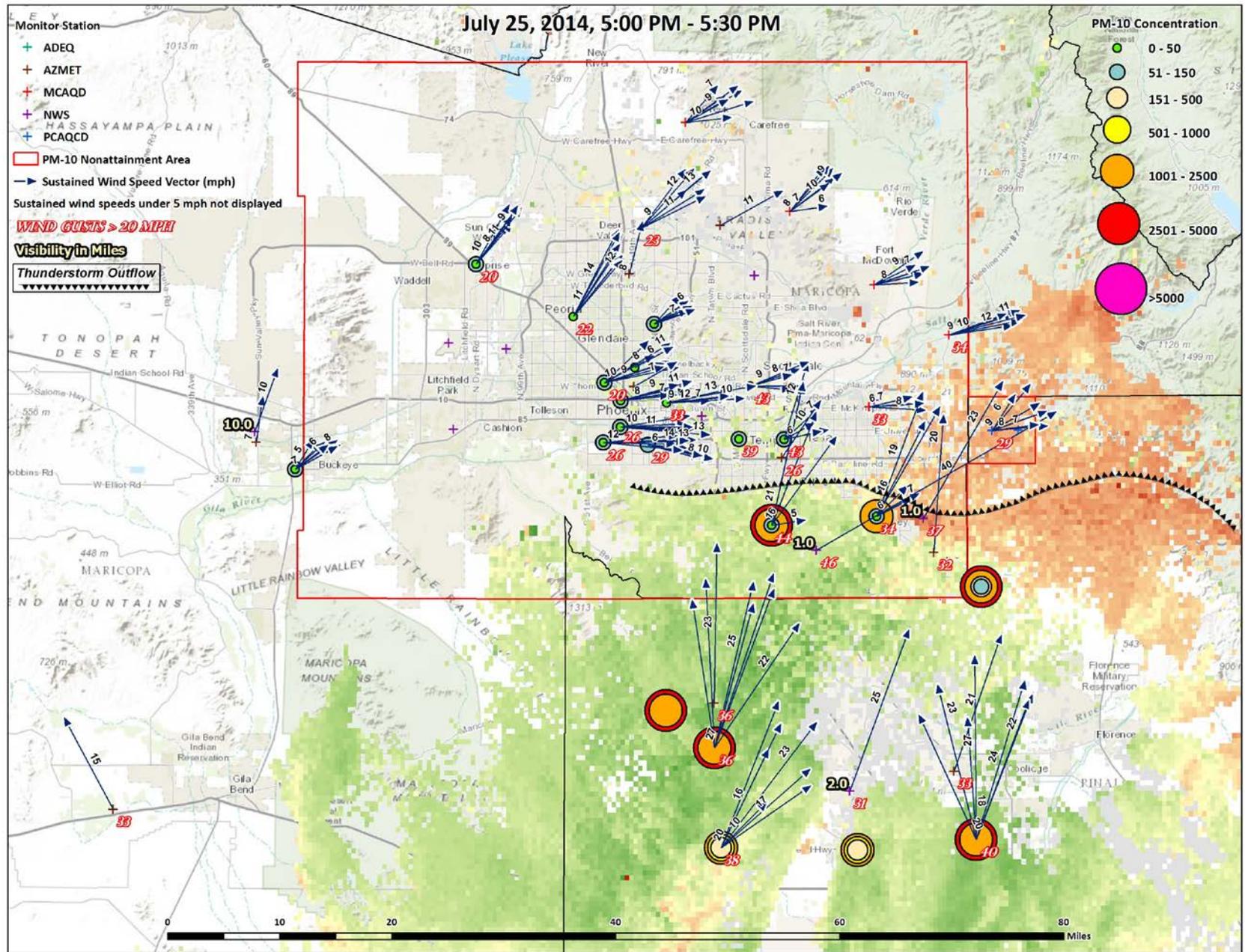


Figure 5-2. July 25, 2014, 5:00 PM – 5:30 PM.

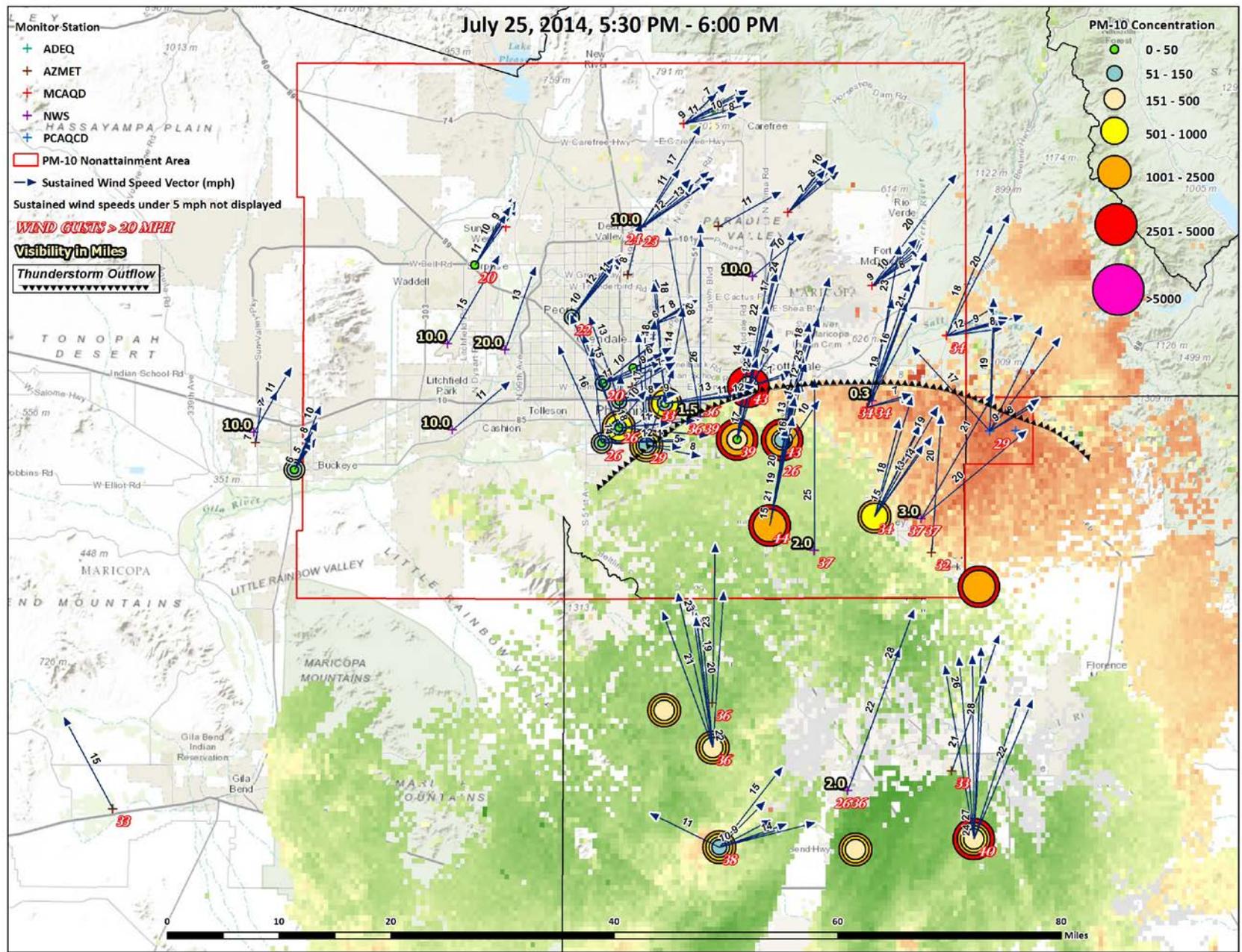


Figure 5-3. July 25, 2014, 5:30 PM – 6:00 PM.

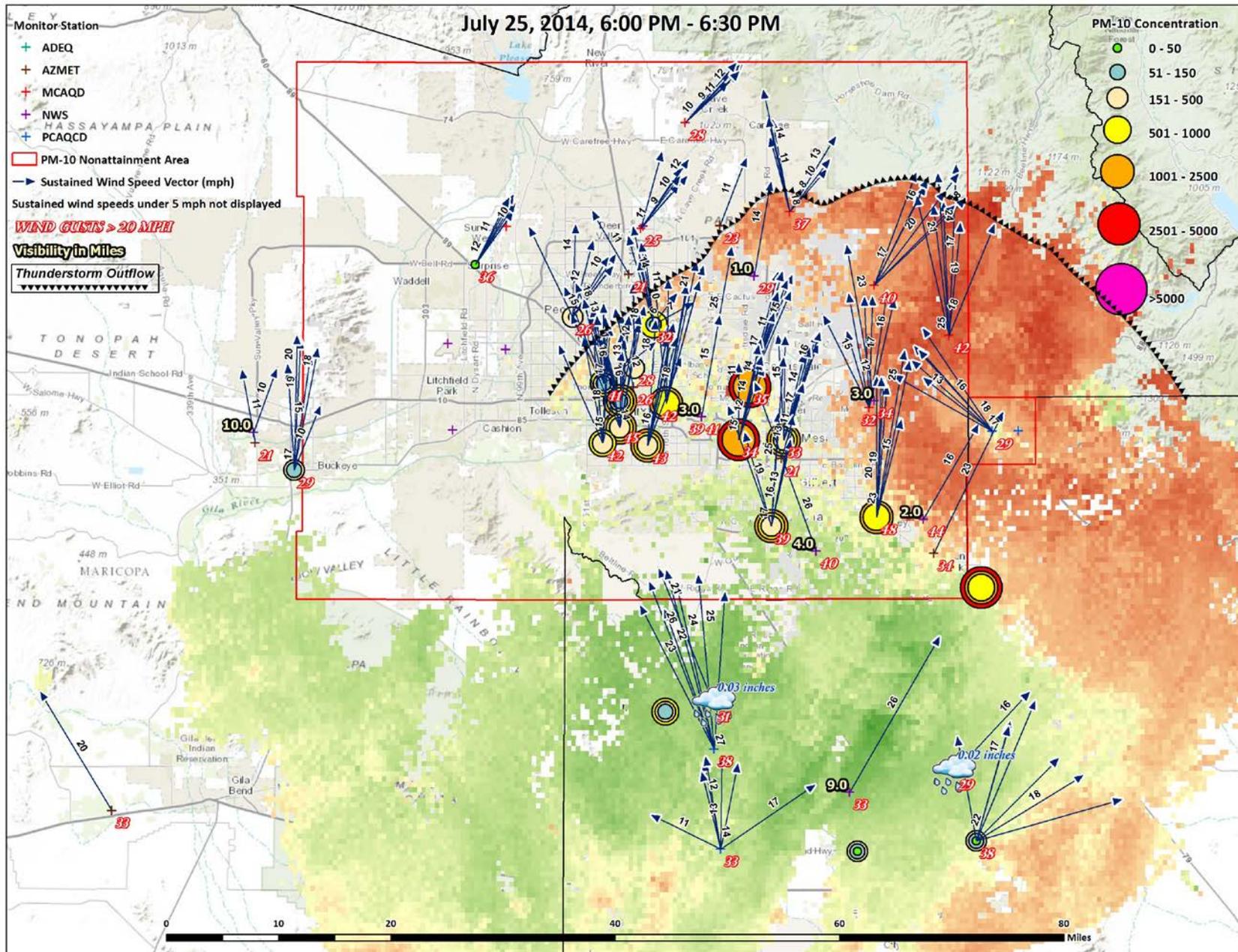


Figure 5-4. July 25, 2014, 6:00 PM – 6:30 PM.

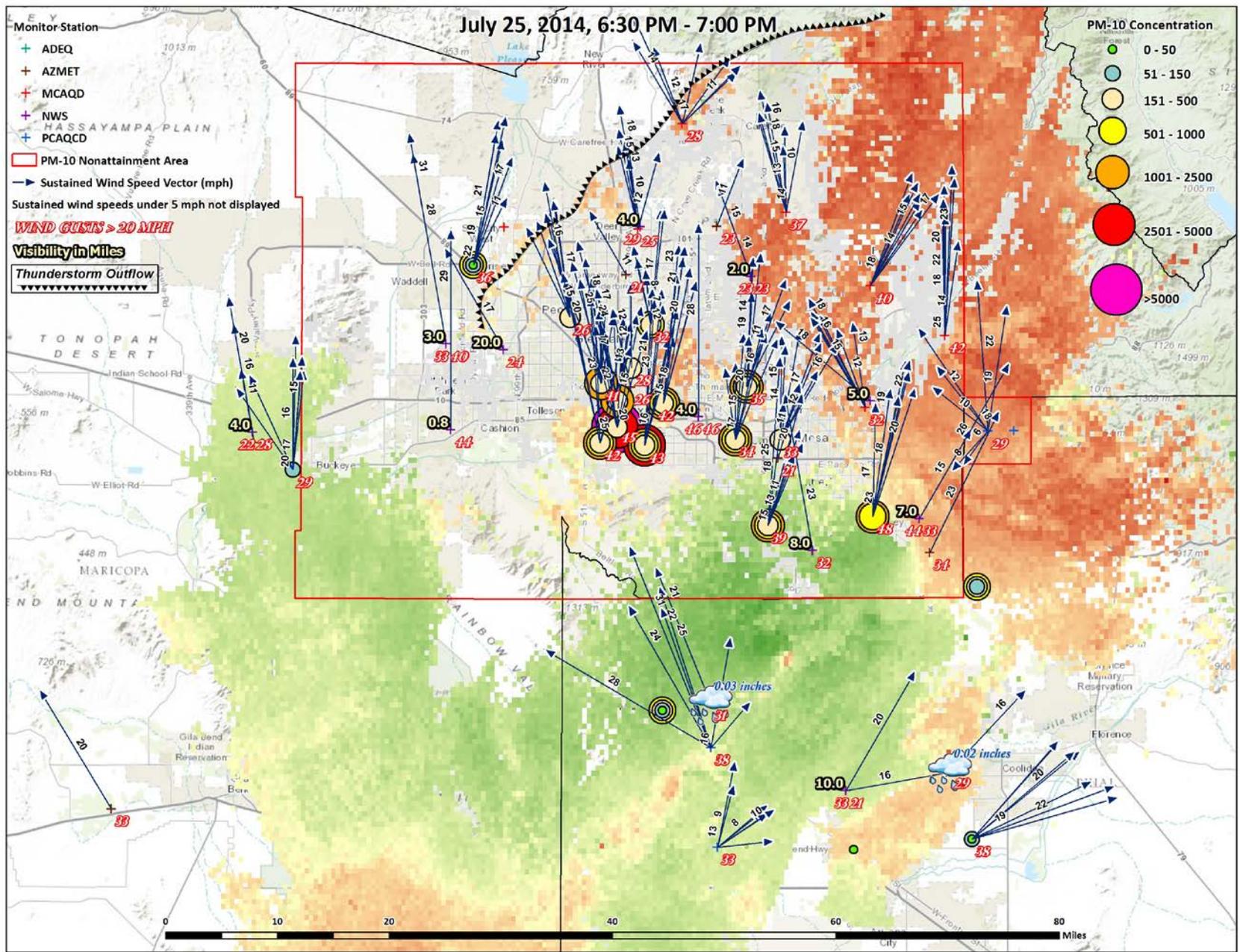


Figure 5-5. July 25, 2014, 6:30 PM – 7:00 PM.

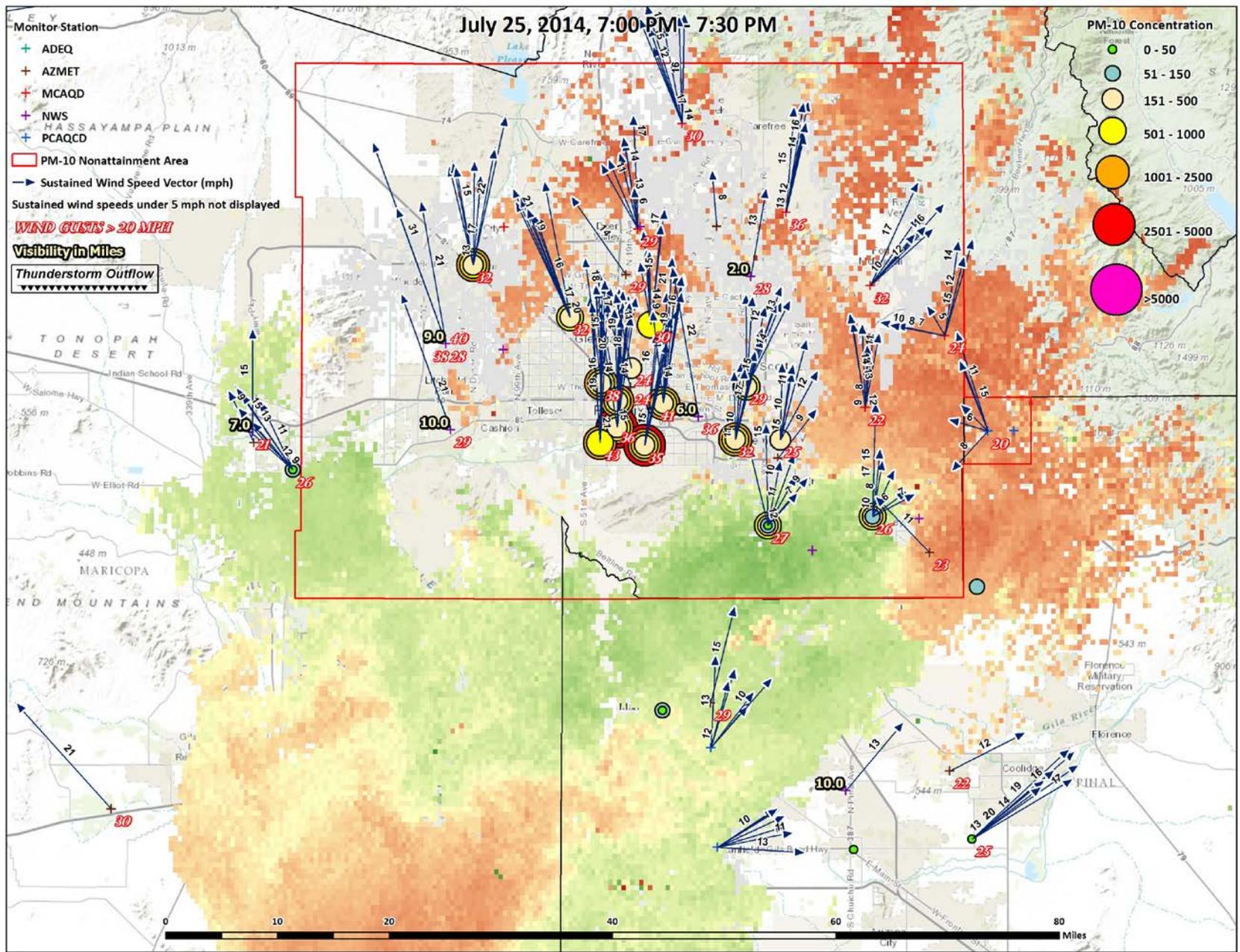


Figure 5-6. July 25, 2014, 7:00 PM – 7:30 PM.

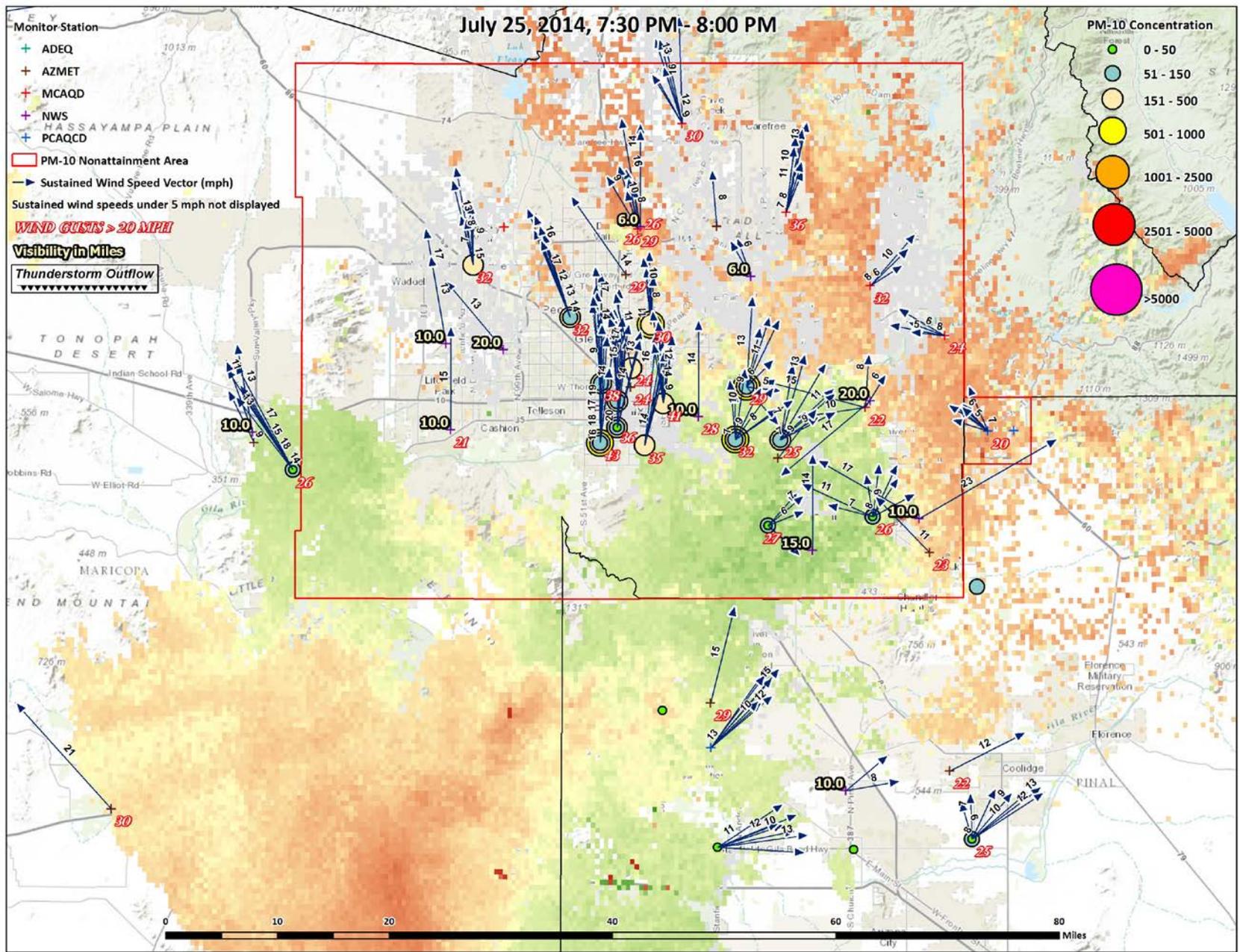


Figure 5-7. July 25, 2014, 7:30 PM – 8:00 PM.

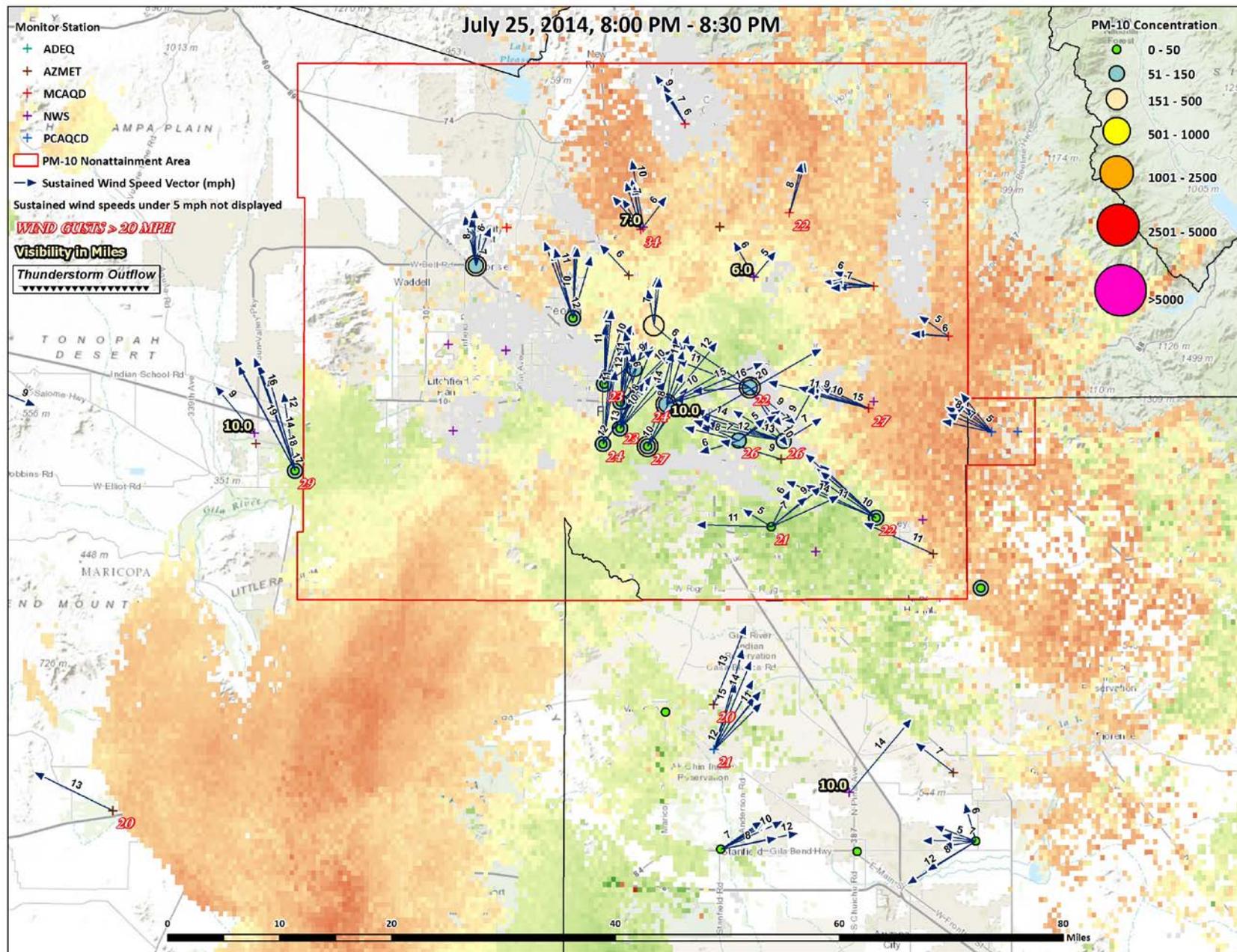


Figure 5-8. July 25, 2014, 8:00 PM – 8:30 PM.

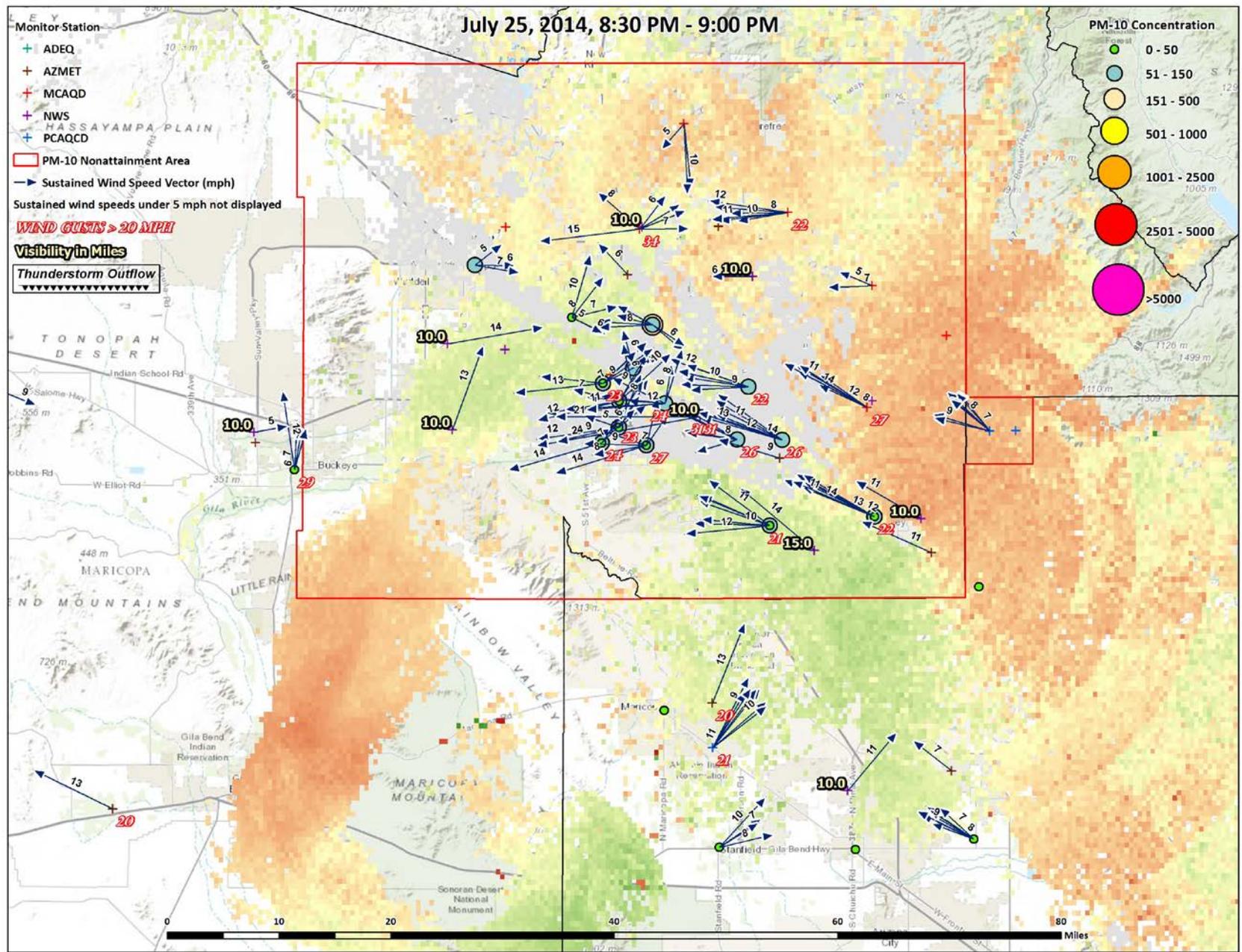


Figure 5-9. July 25, 2014, 8:30 PM – 9:00 PM.

Visibility Photos

Time series videos of visibility photos taken on the day of the event are provided below in the following link. The visibility photos taken in the area of the exceeding monitors clearly show the approach of the thunderstorm outflow and decreased visibility due to the overwhelming dust storm associated with the thunderstorm outflow.

http://www.phoenixvis.net/tlapse_camera.aspx?site=ALL

Conclusion

The information presented within this section has adequately demonstrated a clear causal relationship between the emissions generated by uncontrollable natural events and the exceedances measured at the nonattainment area monitors. The maps provided in this section contain an illustration of the event as it unfolded. The series of maps for the event show a spatial and temporal representation of the thunderstorm outflow winds and associated windblown dust as they move throughout Maricopa and Pinal counties. These maps show a clear causal connection between the windblown dust generated and transported by the thunderstorm outflow winds and the exceedance at the monitors. Visibility photos help show the approach of the thunderstorm outflow and the reduced visibilities associated with the dust storm generated by the outflow. It is clear from these data that thunderstorm outflow winds generated and transported uncontrollable windblown PM₁₀ emissions to the nonattainment area monitors, demonstrating a clear causal connection between the event and the exceedances.

VI. “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 submittal have provided detailed information that the exceedances on July 25, 2014, 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 nonattainment area 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 exceedance of the 24-hour PM₁₀ standard.

As detailed in Section IV, all reasonable control measures were in place and actively enforced before, during, and after the exceedances on July 25, 2014. Inspection and compliance data of local fugitive dust sources during this time period revealed that PM₁₀ from anthropogenic activities was well controlled and constant. Real-time surveillance of PM₁₀ monitoring stations during the event established a clear link between rapidly rising PM₁₀ concentrations and the arrival of the thunderstorm outflow winds. As an example, Figure 6–1 shows that PM₁₀ concentrations in the hours before the event at the exceeding Tempe monitor were at constant levels below the 24-hour standard (even with the presence of early morning haze transported from Mexico and southern Arizona), indicating no significant anthropogenic activities. PM₁₀ concentrations in the hours after the event show a quick return to pre-storm levels once transported dust from the thunderstorm outflows passed the monitoring station. Appendix D contains similar graphs for the other exceeding nonattainment area monitors.

As shown in Section V, detailed, time series maps establish a clear causal relationship between the arrival of windblown dust generated by thunderstorm outflow winds and elevated PM₁₀ concentrations at the monitors. The body of evidence presented in this submittal confirms that the exceedances on July 25, 2014, were a natural event and that there would have been no exceedance but for the presence of the uncontrollable windblown dust from the thunderstorm outflow winds.

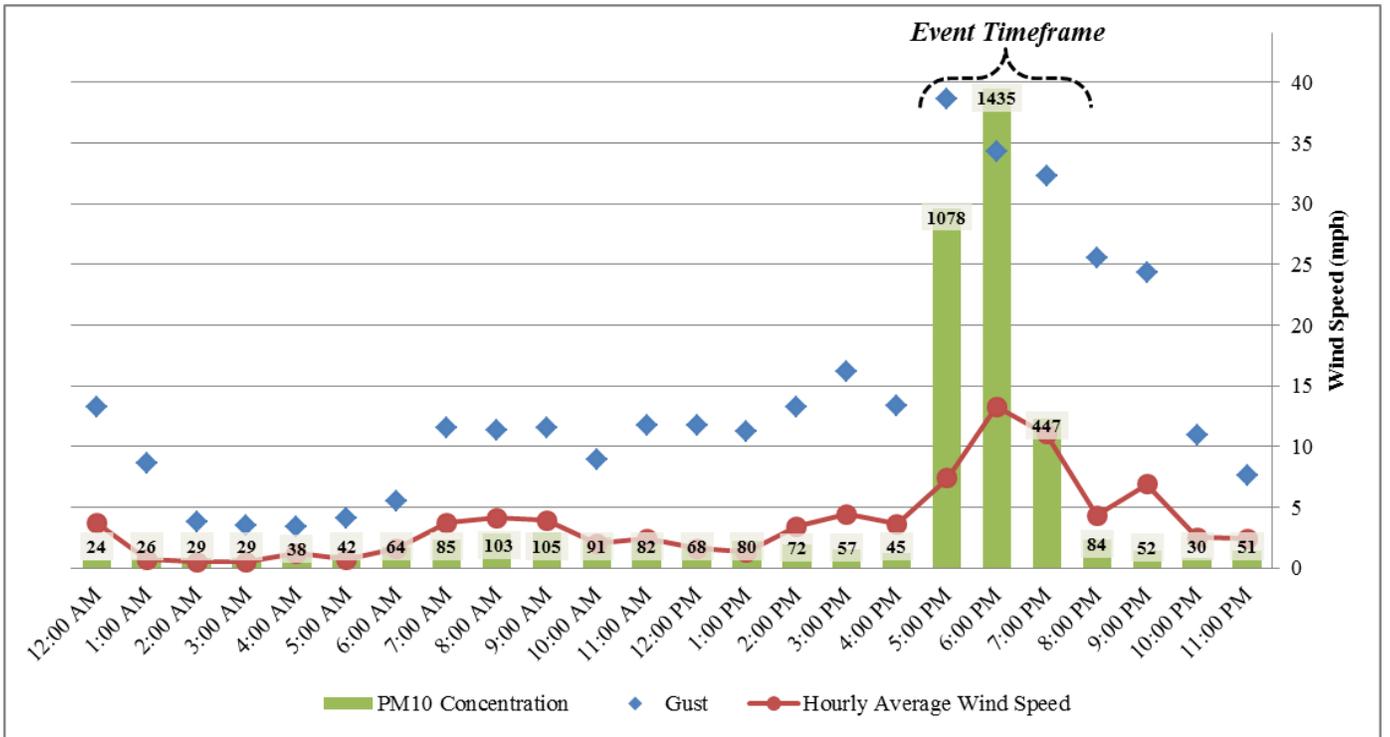


Figure 6-1. Hourly PM₁₀ concentration, wind gust, and average wind speed as recorded at the exceeding Tempe monitor.

VII. CONCLUSIONS

The exceedances that occurred on July 25, 2014, satisfy the criteria of 40 CFR 50.1(j) and meet 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 Sections II, III, IV and V, 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 and the PM₁₀ nonattainment area, 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 PM₁₀ emissions into the PM₁₀ nonattainment area. The event discussed in this document that caused the exceedances in this request (see Sections II and V) was caused by thunderstorm driven outflow winds that generated and transported dust into Maricopa County from areas inside and outside of the PM₁₀ nonattainment area. The fact that this was a natural event involving strong thunderstorm outflow winds that transported and generated PM₁₀ emissions into the nonattainment area, provides strong evidence that the event and exceedances of July 25, 2014, recorded at the nonattainment area monitors were not reasonably controllable or preventable.

C. Natural Event

As discussed above, the event shown to cause these exceedances were emissions of PM₁₀ generated by high winds caused by thunderstorm activity and related outflow boundaries on July 25, 2014. The event therefore qualifies as a natural event.

In summary, the exceedances of the federal 24-hour PM₁₀ standard on July 25, 2014, would not have occurred but for the monsoonal thunderstorm driven high winds and windblown dust generated and transported from areas inside and outside the nonattainment area, based on the following weight of evidence:

- Historical Fluctuation data in Section III (and Appendix C) showing five years of 24-hour average data for the nonattainment area monitors demonstrates that the values on July 25, 2014, were atypical and in excess of normal historical fluctuations.
- The exceedances of the PM₁₀ standard recorded on July 25, 2014, are tied to thunderstorm activity and thunderstorm generated outflow winds, as can be seen in radar imagery analyses in Section V.
- Figures in Section V show that the timing of thunderstorm generated outflow boundary passage and increases in wind speeds at monitoring locations and National Weather Service stations during the event are consistent with the timing of elevated PM₁₀ concentrations recorded at the monitoring locations in the nonattainment area.
- 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, help to show that dust originating in Pinal County was transported to the nonattainment area.
- Section IV discusses rules that are in place in the nonattainment area, as well as inspections that were conducted in the area to verify compliance with those rules, in order to show that the event was not reasonably controllable or preventable.

APPENDIX A

ADEQ FORECAST PRODUCTS FOR PHOENIX AND MARICOPA COUNTY



MARICOPA COUNTY DUST CONTROL FORECAST

ISSUED Thursday, July 24, 2014

Five-day weather outlook:

High pressure will remain overhead for the next few days with some activity over the weekend. Scattered thunderstorms will initiate near southern Arizona and make its way northwest towards phoenix and western Arizona. Convective storms on Friday will initiate in Pima County and produce some low risk outflows as they traverse northwest. However, on Saturday, a local model seems to show heavy activity through the Phoenix Valley area. Heavy outflows from thunderstorms will make their way towards Phoenix through Pinal County, possibly kicking some dust up into the atmosphere. Since, the models do not agree for now, check back tomorrow for an update. But for now, the risk of exceeding the 24-hour PM10 health standard in Phoenix is forecast to be Low for Friday through Tuesday.

R I S K F A C T O R S

	<u>WINDS</u>	<u>STAGNATION</u>	<u>UNHEALTHY PM-10 RISK LEVEL</u>
Day 1: Fri. 7/25/2014	Winds from the southwest around 5mph.	+ Stagnation conditions expected.	= LOW
Day 2: Sat. 7/26/2014	Winds generally from the west around 5-10mph.	+ No stagnation due to possible rain.	= LOW
Day 3: Sun. 7/27/2014	Winds from the south early, shifting to west mid-afternoon around 5-10mph.	+ Stagnation conditions expected.	= LOW

EXTENDED OUTLOOK

Day 4: Mon. 7/28/2014	Winds from the southwest early, shifting to northwest late afternoon around 5-10mph.	+ Stagnation conditions expected.	= LOW
Day 5: Tue. 7/29/2014	Winds light and generally from the west.	+ Stagnation conditions expected.	= LOW

The Maricopa County Dust Control Action Forecast is issued to assist in the planning of work activities to help reduce dust pollution. A recorded message of this forecast can be accessed at [602-771-2368](tel:602-771-2368). To review the complete air quality forecast for the Phoenix metropolitan area, as well as the health impacts and reduction methods for different air pollutants, call [602-771-2367](tel:602-771-2367) for recorded forecast information or click on ADEQ's Air Quality Forecast at <http://www.azdeq.gov/environ/air/ozone/ensemble.pdf>.



MARICOPA COUNTY DUST CONTROL FORECAST

ISSUED Friday, July 25, 2014

Five-day weather outlook:

A surface high will remain over the Southwest. Models originally expected today to be a down day. However, latest model runs have forecasted today to include potential for dust from collapsing thunderstorms in central Pima, western Pinal, and southern Maricopa Counties.

Outflows from these storms can lift up dust into the lower atmosphere which may increase some PM10 concentrations at various monitors in Maricopa County. However, if precipitation falls today, outflows generated from storms over the rest of the weekend will pose a low risk for any dust activity. Thus, the risk of exceeding the 24-hour PM10 health standard in Phoenix is forecast to be Low Saturday through Wednesday.

R I S K F A C T O R S

	<u>WINDS</u>	<u>STAGNATION</u>	<u>UNHEALTHY PM-10 RISK LEVEL</u>
Day 1: Sat. 7/26/2014	Winds generally from the west around 5-10mph.	+ Stagnation conditions expected.	= LOW
Day 2: Sun. 7/27/2014	Winds generally from the west around 5-10mph.	+ No stagnation due to possible rain.	= LOW
Day 3: Mon. 7/28/2014	Winds generally from the southwest around 5-10mph.	+ Stagnation conditions expected.	= LOW

EXTENDED OUTLOOK

Day 4: Tue. 7/29/2014	winds generally light and from the south.	+ Stagnation conditions expected.	= LOW
Day 5: Wed. 7/30/2014	Winds from the southwest around 5-10mph.	+ Stagnation conditions expected.	= LOW

The Maricopa County Dust Control Action Forecast is issued to assist in the planning of work activities to help reduce dust pollution. A recorded message of this forecast can be accessed at [602-771-2368](tel:602-771-2368). To review the complete air quality forecast for the Phoenix metropolitan area, as well as the health impacts and reduction methods for different air pollutants, call [602-771-2367](tel:602-771-2367) for recorded forecast information or click on ADEQ's Air Quality Forecast at <http://www.azdeq.gov/environ/air/ozone/ensemble.pdf>.



VERY UNHEALTHY (201-300)
UNHEALTHY (151-200)
UNHEALTHY FOR SENSITIVE GROUPS (101-150)
MODERATE (51-100)
GOOD (0-50)

For more information visit:
<http://www.airnow.gov/index.cfm?action=aqibasics.aqi>

AIR QUALITY FORECAST FOR Friday, July 25, 2014

This report is updated by 1:00 p.m. Sunday thru Friday and is valid for areas within and bordering Maricopa County in Arizona

FORECAST DATE	YESTERDAY Wed 07/23/2014	TODAY Thu 07/24/2014	TOMORROW Fri 07/25/2014	EXTENDED Sat 07/26/2014
NOTICES (*SEE BELOW FOR DETAILS)	Ozone HPA Dust 			Dust possible
AIR POLLUTANT	Highest AQI Reading/Site (*Preliminary data only*)			
O3*	87 North Phoenix	87 Moderate	77 Moderate	77 Moderate
CO*	5 Multiple Sites	4 Good	5 Good	5 Good
PM-10*	54 Buckeye	47 Good	45 Good	57 Moderate
PM-2.5*	35 Mesa	30 Good	33 Good	35 Good

* O3 = Ozone CO = Carbon Monoxide PM-10 = Particles 10 microns & smaller PM-2.5 = Particles smaller than 2.5 microns
 **"Ozone Health Watch" means that the highest concentration of OZONE may approach the federal health standard.
 ***"PM-10 or PM-2.5 Health Watch" means that the highest concentration of PM-10 or PM-2.5 may approach the federal health standard.
 ****"High Pollution Advisory" means that the highest concentration of OZONE, PM-10, or PM-2.5 may exceed the federal health standard.
 *****"DUST" means that short periods of high PM-10 concentrations caused by outflow from thunderstorms are possible.

Health Statements	
Thursday, 07/24/2014	Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.
Friday, 07/25/2014	Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.

SYNOPSIS AND DISCUSSION

A typical, active monsoon pattern will remain in place through next week as high pressure has finally settled over the Four Corners. Thursday is supposed to be fairly quiet across much of the state according to forecast models. Friday could see a little more activity in southwestern Maricopa County. Saturday is where the forecast models diverge. One model, the WRF-NAM, shows little to no storm activity, while the WRF-GFS shows a large outbreak sweeping through the Valley Saturday night. If this is the scenario that unfolds, we could see some dust ahead of the storms followed by significant rain. We prefer to wait another day to decide which to go with (though the GFS has done better in recent days).

The highest ozone concentration occurred at North Phoenix on Wednesday. Though we had an Ozone HPA in place, we did not exceed the health standard. Concentrations are forecast to remain in the middle Moderate range through Saturday.

Temperatures will "cool" a bit to 110°F Friday through the middle of next week with some humidity and daily thunderstorm teasers. It's summer. This is exactly what we would expect for the end of July in Phoenix.

Check back on Friday for a closer look at the weekend's weather and air quality. Until then, have a good day! -J.Paul

MONITORING SITE MAPS	
INTERACTIVE MAPS	http://alert.fcd.maricopa.gov/alert/Google/v3/air.html http://www.airnow.gov/

POLLUTION MONITOR READINGS FOR Wednesday, July 23, 2014

O3 (OZONE)

SITE NAME	MAX 8-HR VALUE (PPB)	MAX AQI	AQI COLOR CODE
Alamo Lake	NOT AVBL	NOT AVBL	NOT AVBL
Apache Junction	46	39	
Blue Point	60	51	
Buckeye	50	42	
Casa Grande	58	49	
Cave Creek	66	71	
Central Phoenix	63	61	
Dysart	69	80	
Falcon Field	59	50	
Fountain Hills	57	48	
Glendale	68	77	
Humboldt Mountain	58	49	
Phoenix Supersite	69	80	
Mesa	62	58	
North Phoenix	71	87	
Pinal Air Park	61	54	
Pinnacle Peak	69	80	
Queen Valley	59	50	
Rio Verde	45	38	
South Phoenix	61	54	

South Scottsdale	64	64	
Tempe	59	50	
Tonto Nat'l Mon.	58	49	
West Chandler	61	54	
West Phoenix	67	74	
Yuma	61	54	

CO (CARBON MONOXIDE)

SITE NAME	MAX 8-HR VALUE (PPM)	MAX AQI	AQI COLOR CODE
Central Phoenix	0.4	5	
Greenwood	0.4	5	
Phoenix Supersite	0.3	3	
West Phoenix	0.4	5	

PM-10 (PARTICLES)

SITE NAME	MAX 24-HR VALUE ($\mu\text{g}/\text{m}^3$)	MAX AQI	AQI COLOR CODE
Buckeye	60.8	54	
Central Phoenix	30.0	28	
Combs School (Pinal County)	39.7	37	
Durango	41.9	39	
Dysart	31.1	29	
Glendale	33.8	31	
Greenwood	41.1	38	
Higley	37.8	35	
Maricopa (Pinal County)	88.2	67	
Phoenix Supersite	27.5	25	
Mesa	38.1	35	
North Phoenix	28.0	26	
South Phoenix	40.7	38	
South Scottsdale	43.1	40	
Tempe	28.6	26	
West Chandler	33.3	31	
West Forty Third	41.9	39	
West Phoenix	33.8	31	
Zuni Hills	NOT AVBL	NOT AVBL	NOT AVBL

PM-2.5 (PARTICLES)

SITE NAME	MAX 24-HR VALUE ($\mu\text{g}/\text{m}^3$)	MAX AQI	AQI COLOR CODE
Durango	6.5	27	
Glendale	7.7	32	
Phoenix Supersite	4.0	17	
Mesa	8.4	35	
North Phoenix	5.4	23	
South Phoenix	6.2	26	
Tempe	7.9	33	
West Phoenix	7.0	29	

DESCRIPTION OF LOCAL AIR POLLUTANTS IN DETAIL



O3 (OZONE):

Description –

This is a secondary pollutant that is formed by the reaction of other primary pollutants (precursors) such as VOCs (volatile organic compounds) and NOx (Nitrogen Oxides) in the presence of heat and sunlight.

Sources – VOCs are emitted from motor vehicles, chemical plants, refineries, factories, and other industrial sources. NOx is emitted from motor vehicles, power plants, and other sources of combustion.

Potential health impacts – Exposure to ozone can make people more susceptible to respiratory infection, result in lung inflammation, and aggravate pre-existing respiratory diseases such as asthma. Other effects include decrease in lung function, chest pain, and cough.

Unit of measurement – Parts per billion (ppb).

Averaging interval – Highest eight-hour period within a 24-hour period (midnight to midnight)

Reduction tips – Curtail daytime driving, refuel cars and use gasoline-powered equipment as late in the day as possible.

CO (CARBON MONOXIDE):

Description – A colorless, odorless, poisonous gas formed when carbon in fuels is not burned completely.

Sources – In cities, as much as 95 percent of all CO emissions emanate from automobile exhaust. Other sources include industrial processes, non-transportation fuel combustion, and natural sources such as wildfires. Peak concentrations occur in colder winter months.

Potential health impacts – Reduces oxygen delivery to the body's organs and tissues. The health threat is most serious for those who suffer from cardiovascular disease.

Unit of measurement – Parts per million (ppm).

Averaging interval – Highest eight-hour period within a 24-hour period (midnight to midnight)

Reduction tips – Keep motor vehicle tuned properly and minimize nighttime driving.

PM-10 & PM-2.5 (PARTICLES):

Description – The term “particulate matter” (PM) includes both solid particles and liquid droplets found in air. Many manmade and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. Particles less than 10 micrometers in diameter tend to pose the greatest health concern because they can be inhaled into and accumulate in the respiratory system. Particles less than 2.5 micrometers in diameter are referred to as “fine” particles and are responsible for many visibility degradations such as the “Valley Brown Cloud” (see <http://www.phoenixvis.net/>). Particles with diameters between 2.5 and 10 micrometers are referred to as “coarse”.

Sources – Fine = All types of combustion (motor vehicles, power plants, wood burning, etc.) and some industrial processes. Coarse = crushing or grinding operations and dust from paved or unpaved roads.

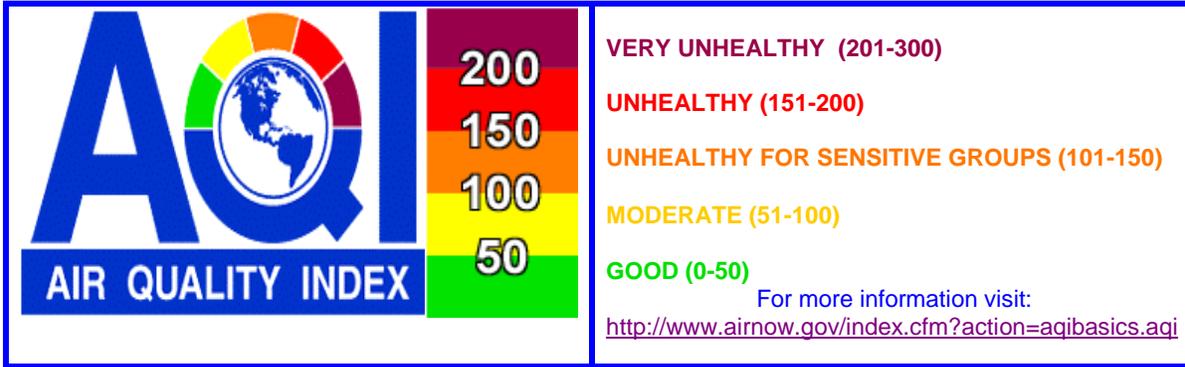
Potential health impacts – PM can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases, such as asthma and chronic bronchitis.

Units of measurement – Micrograms per cubic meter (ug/m3)

Averaging interval – 24 hours (midnight to midnight).

Reduction tips – Stabilize loose soils, slow down on dirt roads, carpool, and use public transit.

{Updated 12/19/2011}



AIR QUALITY FORECAST FOR Saturday, July 26, 2014

This report is updated by 1:00 p.m. Sunday thru Friday and is valid for areas within and bordering Maricopa County in Arizona

FORECAST DATE	YESTERDAY Thu 07/24/2014	TODAY Fri 07/25/2014	TOMORROW Sat 07/26/2014	EXTENDED Sun 07/27/2014
NOTICES (*SEE BELOW FOR DETAILS)		Dust possible		
AIR POLLUTANT	Highest AQI Reading/Site (*Preliminary data only*)			
O3*	74 Dysart	77 <i>Moderate</i>	54 <i>Moderate</i>	54 <i>Moderate</i>
CO*	5 Multiple Sites	5 <i>Good</i>	5 <i>Good</i>	6 <i>Good</i>
PM-10*	37 Higley	45 <i>Good</i>	40 <i>Good</i>	40 <i>Good</i>
PM-2.5*	43 North Phoenix	33 <i>Good</i>	35 <i>Good</i>	34 <i>Good</i>

* O3 = Ozone CO = Carbon Monoxide PM-10 = Particles 10 microns & smaller PM-2.5 = Particles smaller than 2.5 microns
 **Ozone Health Watch means that the highest concentration of OZONE may approach the federal health standard.
PM-10 or PM-2.5 Health Watch means that the highest concentration of PM-10 or PM-2.5 may approach the federal health standard.
High Pollution Advisory means that the highest concentration of OZONE, PM-10, or PM-2.5 may exceed the federal health standard.
DUST means that short periods of high PM-10 concentrations caused by outflow from thunderstorms are possible.

Health Statements	
Friday, 07/25/2014	Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.
Saturday, 07/26/2014	Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.

SYNOPSIS AND DISCUSSION

First things first: the HAZE. Arizona residents in the southern half of the state are waking up to hazy conditions and wondering why. Our best analysis points to several potential influences. Initially, there was a very significant storm complex near the tip of Baja Thursday morning. As it collapsed, it sent outflow north. As it progressed, thunderstorms popped just south of the Arizona border near Nogales around 3pm. Nogales began seeing PM10 levels increase around 5pm. The interesting thing is that surface winds were not very light during this episode, only around 5-15 mph. This was not your classic thunderstorm outflow. We believe some dust was local, some transported from far away. Elevated particulate levels are still noted across much of southern Arizona Friday morning. Many monitors in Santa Cruz, Cochise, Pima and Pinal Counties will exceed the PM10 and PM2.5 standard as a result. Locally, Maricopa County is seeing some haze and elevated readings, but not nearly as high as the mentioned counties to the south. With the heating of the day and expected storm development, this haze should clear by early afternoon.

Models suggest that today could see some isolated strong to severe storms pop rather quickly in western Pima and Pinal Counties. Out flow from these slow-moving cells would be capable of generating some additional dust. How much dust remains to be seen in light of rain in recent weeks. There is one forecast model that suggests that nothing will happen due to capping of energy later in the day. We'll see.

Looking ahead, spotty, isolated showers are expected this weekend. Rain will be hit-and-miss, but potentially heavy in spots. Dust will be limited as outflow from the east should override outflow from the south. Thus, PM10 concentrations are expected to be in the Good range, especially with any additional rain. Ozone levels are also forecast to be much better, though we will keep concentrations in the lower Moderate range.

Check back on Sunday for a look ahead at next week's weather and air quality. Until then, have a great weekend! -J.Paul

MONITORING SITE MAPS	
INTERACTIVE MAPS	http://alert.fcd.maricopa.gov/alert/Google/v3/air.html http://www.airnow.gov/

POLLUTION MONITOR READINGS FOR Thursday, July 24, 2014

O3 (OZONE)

SITE NAME	MAX 8-HR VALUE (PPB)	MAX AQI	AQI COLOR CODE
Alamo Lake	NOT AVBL	NOT AVBL	NOT AVBL
Apache Junction	45	38	
Blue Point	60	51	
Buckeye	55	47	
Casa Grande	57	48	
Cave Creek	65	67	
Central Phoenix	62	58	
Dysart	67	74	
Falcon Field	58	49	
Fountain Hills	55	47	
Glendale	65	67	
Humboldt Mountain	61	54	

Phoenix Supersite	66	71	
Mesa	63	61	
North Phoenix	66	71	
Pinal Air Park	52	44	
Pinnacle Peak	64	64	
Queen Valley	55	47	
Rio Verde	46	39	
South Phoenix	40	34	
South Scottsdale	60	51	
Tempe	59	50	
Tonto Nat'l Mon.	54	46	
West Chandler	61	54	
West Phoenix	66	71	
Yuma	52	44	

CO (CARBON MONOXIDE)

SITE NAME	MAX 8-HR VALUE (PPM)	MAX AQI	AQI COLOR CODE
Central Phoenix	0.3	3	
Greenwood	0.4	5	
Phoenix Supersite	0.4	5	
West Phoenix	0.4	5	

PM-10 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (µg/m3)	MAX AQI	AQI COLOR CODE
Buckeye	38.8	36	
Central Phoenix	24.9	23	
Combs School (Pinal County)	39.9	37	
Durango	31.2	29	
Dysart	25.9	24	
Glendale	24.0	22	
Greenwood	36.4	34	
Higley	40.1	37	
Maricopa (Pinal County)	41.7	39	
Phoenix Supersite	22.2	21	
Mesa	27.2	25	
North Phoenix	20.3	19	
South Phoenix	28.6	26	
South Scottsdale	26.9	25	
Tempe	23.5	22	
West Chandler	25.4	24	
West Forty Third	34.1	32	
West Phoenix	28.6	26	
Zuni Hills	NOT AVBL	NOT AVBL	NOT AVBL

PM-2.5 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (µg/m3)	MAX AQI	AQI COLOR CODE
Durango	7.8	33	
Glendale	7.9	33	
Phoenix Supersite	4.9	20	
Mesa	8.4	35	
North Phoenix	10.2	43	
South Phoenix	7.3	30	
Tempe	9.6	40	
West Phoenix	8.0	33	

DESCRIPTION OF LOCAL AIR POLLUTANTS IN DETAIL



O3 (OZONE):

Description –

This is a secondary pollutant that is formed by the reaction of other primary pollutants (precursors) such as VOCs (volatile organic compounds) and NO_x (Nitrogen Oxides) in the presence of heat and sunlight.

Sources – VOCs are emitted from motor vehicles, chemical plants, refineries, factories, and other industrial sources. NO_x is emitted from motor vehicles, power plants, and other sources of combustion.

Potential health impacts – Exposure to ozone can make people more susceptible to respiratory infection, result in lung inflammation, and aggravate pre-existing respiratory diseases such as asthma. Other effects include decrease in lung function, chest pain, and cough.

Unit of measurement – Parts per billion (ppb).

Averaging interval – Highest eight-hour period within a 24-hour period (midnight to midnight)

Reduction tips – Curtail daytime driving, refuel cars and use gasoline-powered equipment as late in the day as possible.

CO (CARBON MONOXIDE):

Description – A colorless, odorless, poisonous gas formed when carbon in fuels is not burned completely.

Sources – In cities, as much as 95 percent of all CO emissions emanate from automobile exhaust. Other sources include industrial processes, non-transportation fuel combustion, and natural sources such as wildfires. Peak concentrations occur in colder winter months.

Potential health impacts – Reduces oxygen delivery to the body's organs and tissues. The health threat is most serious for those who suffer from cardiovascular disease.

Unit of measurement – Parts per million (ppm).

Averaging interval – Highest eight-hour period within a 24-hour period (midnight to midnight)

Reduction tips – Keep motor vehicle tuned properly and minimize nighttime driving.

PM-10 & PM-2.5 (PARTICLES):

Description – The term “particulate matter” (PM) includes both solid particles and liquid droplets found in air. Many manmade and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. Particles less than 10 micrometers in diameter tend to pose the greatest health concern because they can be inhaled into and accumulate in the respiratory system. Particles less than 2.5 micrometers in diameter are referred to as “fine” particles and are responsible for many visibility degradations such as the “Valley Brown Cloud” (see <http://www.phoenixvis.net/>). Particles with diameters between 2.5 and 10 micrometers are referred to as “coarse”.

Sources – Fine = All types of combustion (motor vehicles, power plants, wood burning, etc.) and some industrial processes. Coarse = crushing or grinding operations and dust from paved or unpaved roads.

Potential health impacts – PM can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases, such as asthma and chronic bronchitis.

Units of measurement – Micrograms per cubic meter (ug/m³)

Averaging interval – 24 hours (midnight to midnight).

Reduction tips – Stabilize loose soils, slow down on dirt roads, carpool, and use public transit.

{Updated 12/19/2011}

APPENDIX B

NATIONAL WEATHER SERVICE METEOROLOGICAL OBSERVATIONS AND STORM REPORTS

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
WILLIAMS GATEWAY AIRPORT (23104)
PHOENIX, AZ
(07/2014)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1382 ft. above sea level

Latitude: 33.3

Longitude: -111.666

Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0015	0	CLR	10.00		95	35.0	70	21.2	57	14.0	28	11	190		28.42			M	AA		29.88
25	0035	0	CLR	10.00		93	34.0	70	20.9	57	14.0	30	11	190		28.43			M	AA		29.89
25	0055	0	CLR	10.00		93	34.0	71	21.5	59	15.0	32	11	200		28.43			M	AA		29.89
25	0115	0	CLR	10.00		93	34.0	71	21.5	59	15.0	32	11	200		28.43			M	AA		29.89
25	0135	0	CLR	10.00		93	34.0	71	21.5	59	15.0	32	10	200		28.43			M	AA		29.89
25	0155	0	CLR	10.00		93	34.0	71	21.5	59	15.0	32	6	210		28.44			M	AA		29.90
25	0215	0	CLR	10.00		91	33.0	69	20.6	57	14.0	32	5	190		28.43			M	AA		29.89
25	0235	0	CLR	10.00		90	32.0	69	20.4	57	14.0	33	5	150		28.44			M	AA		29.90
25	0255	0	CLR	10.00		90	32.0	69	20.4	57	14.0	33	3	180		28.44			M	AA		29.90
25	0315	0	CLR	10.00		86	30.0	68	19.7	57	14.0	37	6	100		28.44			M	AA		29.90
25	0335	0	CLR	10.00		88	31.0	67	19.6	55	13.0	33	7	100		28.44			M	AA		29.90
25	0355	0	CLR	10.00		86	30.0	68	19.7	57	14.0	37	6	080		28.44			M	AA		29.90
25	0415	0	CLR	10.00		86	30.0	69	20.3	59	15.0	40	6	090		28.44			M	AA		29.90
25	0435	0	CLR	10.00		86	30.0	69	20.3	59	15.0	40	6	100		28.45			M	AA		29.91
25	0447	0	CLR250	20.00		88	31.0	M	M	59	15.0	M	6	100		M			M	AA		29.90
25	0455	0	CLR	10.00		86	30.0	68	19.7	57	14.0	37	6	110		28.44			M	AA		29.90
25	0515	0	CLR	10.00		86	30.0	69	20.3	59	15.0	40	8	120		28.45			M	AA		29.91
25	0535	0	CLR	10.00		86	30.0	69	20.3	59	15.0	40	7	120		28.46			M	AA		29.92
25	0547	0	FEW250	20.00		86	30.0	70	20.9	61	16.0	43	7	110		28.46			M	AA		29.92
25	0650	0	FEW250	20.00		88	31.0	70	21.2	61	16.0	40	6	130		28.48			M	AA		29.94
25	0753	0	FEW250	20.00		91	33.0	72	22.3	63	17.0	39	6	130		28.49			M	AA		29.96
25	0847	0	FEW250	20.00		93	34.0	72	22.0	61	16.0	34	7	120		28.49			M	AA		29.96
25	0949	0	CLRs	20.00		97	36.0	73	22.6	61	16.0	30	6	130		28.48			M	AA		29.95
25	1047	0	CLRs	20.00		99	37.0	73	22.9	61	16.0	29	6	180		28.48			M	AA		29.94
25	1147	0	FEW100	20.00		100	38.0	72	22.0	57	14.0	24	8	200		28.46			M	AA		29.92
25	1247	0	FEW150	20.00		100	38.0	72	22.0	57	14.0	24	8	240		28.44			M	AA		29.90
25	1350	0	SCT100	20.00		104	40.0	73	22.6	57	14.0	21	11	290	16	28.41			M	AA		29.87
25	1450	0	SCT120	20.00		104	40.0	73	22.6	57	14.0	21	5	290		28.38			M	AA		29.84
25	1548	0	SCT100s	20.00		106	41.0	72	22.4	55	13.0	19	9	300		28.36			M	AA		29.82
25	1728	0	SCT080 BKN150	1.00	BLDU	104	40.0	73	22.6	57	14.0	21	23	210	37	28.40			M	AA		29.86
25	1739	0	BKN080 OVC150	3.00	BLDU	93	34.0	72	22.0	61	16.0	34	20	230	37	28.40			M	AA		29.86
25	1747	0	BKN080 OVC150	3.00	BLDU	93	34.0	72	22.0	61	16.0	34	21	210	37	28.41			M	AA		29.87
25	1823	0	BKN080 OVC100	2.00	-RA BLDU	88	31.0	70	21.2	61	16.0	40	16	210	44	28.44			M	AA		29.90
25	1835	0	BKN080CB OVC100	2.00	-TSRA BLDU	88	31.0	70	21.2	61	16.0	40	15	210	44	28.45			M	AA		29.91
25	1855	0	BKN080CB BKN100 OVC150	7.00	TSRA	90	32.0	69	20.4	57	14.0	33	26	210	33	28.46			M	AA		29.92
25	1935	0	BKN080 BKN100 OVC120	10.00		88	31.0	69	20.6	59	15.0	38	23	240		28.43			M	AA		29.89
25	1947	0	CLR080 CLR150	10.00		88	31.0	M	M	63	17.0	M	17	120		M			M	AA		29.91
25	1955	0	M	M		M	M	M	M	M	M	M		M		M			M	AA		M
25	2015	0	M	M		M	M	M	M	M	M	M		M		M			M	AA		M
25	2035	0	M	M		M	M	M	M	M	M	M		M		M			M	AA		M
25	2047	0	CLR120	10.00		84	29.0	M	M	66	19.0	M	11	120		M			M	AA		29.94
25	2055	0	M	M		M	M	M	M	M	M	M		M		M			M	AA		M
25	2115	0	M	M		M	M	M	M	M	M	M		M		M			M	AA		M
25	2135	0	M	M		M	M	M	M	M	M	M		M		M			M	AA		M
25	2150	0	BKN100 OVC120	20.00		84	29.0	72	22.1	66	19.0	55	14	110		28.48			M	AA		29.94
25	2155	0	M	M		M	M	M	M	M	M	M		M		M			M	AA		M
25	2215	0	M	M		M	M	M	M	M	M	M		M		M			M	AA		M
25	2235	0	M	M		M	M	M	M	M	M	M		M		M			M	AA		M
25	2249	0	BKN100 OVC120	20.00		86	30.0	71	21.5	63	17.0	46	11	090		28.46			M	AA		29.93
25	2255	0	M	M		M	M	M	M	M	M	M		M		M			M	AA		M
25	2315	0	M	M		M	M	M	M	M	M	M		M		M			M	AA		M
25	2335	0	M	M		M	M	M	M	M	M	M		M		M			M	AA		M
25	2347	0	BKN100 OVC120	20.00		86	30.0	71	21.5	63	17.0	46	11	160		28.49			M	AA		29.96
25	2355	0	M	M		M	M	M	M	M	M	M		M		M			M	AA		M

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA**
(may be updated)
HOURLY OBSERVATIONS TABLE
PHOENIX SKY HARBOR INTL AIRPORT (23183)
PHOENIX, AZ
(07/2014)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1107 ft. above sea level
Latitude: 33.427
Longitude: -112.003
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0051	11	BKN250	10.00		97	36.1	73	22.7	61	16.1	30	10	250		28.66		29.75	AA		29.83	
25	0151	11	FEW180 BKN250	10.00		96	35.6	73	22.5	61	16.1	31	9	280		28.66		29.76	AA		29.83	
25	0251	11	BKN250	10.00		94	34.4	72	21.9	60	15.6	32	0	000		28.66		29.77	AA		29.84	
25	0351	11	SCT250	10.00		93	33.9	72	22.0	61	16.1	34	8	050		28.66		29.77	AA		29.84	
25	0451	11	SCT250	10.00		92	33.3	72	22.2	62	16.7	37	6	080		28.69		29.78	AA		29.86	
25	0551	11	FEW180 BKN250	10.00		92	33.3	73	22.5	63	17.2	38	6	080		28.69		29.80	AA		29.87	
25	0651	11	FEW250	10.00		92	33.3	74	23.1	65	18.3	41	7	140		28.70		29.81	AA		29.88	
25	0751	11	FEW250	10.00		93	33.9	74	23.2	65	18.3	40	9	120		28.73		29.84	AA		29.91	
25	0851	11	CLR	10.00		95	35.0	74	23.5	65	18.3	37	9	130		28.72		29.83	AA		29.90	
25	0951	11	CLR	10.00		99	37.2	75	23.8	64	17.8	32	7	VR		28.73		29.84	AA		29.91	
25	1051	11	FEW085	10.00		102	38.9	75	23.9	63	17.2	28	8	200		28.71		29.82	AA		29.89	
25	1151	11	FEW090	10.00		102	38.9	74	23.4	61	16.1	26	5	VR		28.69		29.80	AA		29.87	
25	1251	11	FEW100	10.00		105	40.6	75	23.8	61	16.1	24	8	290		28.68		29.78	AA		29.85	
25	1351	11	FEW100 FEW250	10.00		106	41.1	75	23.7	60	15.6	22	3	VR		28.65		29.75	AA		29.82	
25	1451	11	FEW100 FEW160 SCT250	10.00		109	42.8	76	24.3	61	16.1	21	13	230	16	28.62		29.72	AA		29.79	
25	1551	11	FEW120 FEW160 BKN250	10.00		107	41.7	74	23.5	59	15.0	21	11	300		28.59		29.69	AA		29.76	
25	1651	11	FEW120 SCT160 SCT200	10.00		107	41.7	74	23.3	58	14.4	20	13	240		28.59		29.69	AA		29.76	
25	1748	11	BKN016 BKN160 BKN200	3.00		97	36.0	74	23.2	63	17.0	33	28	170	36	28.62		M	SP		29.79	
25	1749	11	BKN016 BKN160 BKN200	2.50		95	35.0	73	22.9	63	17.0	35	28	180	36	28.62		M	SP		29.79	
25	1751	11	BKN016 BKN160 BKN200	1.75		94	34.4	73	22.8	63	17.2	36	26	180	36	28.63		29.73	AA		29.80	
25	1758	11	BKN016 OVC200	1.50	BLDU	92	33.3	71	21.9	61	16.1	36	28	180	39	28.63		M	SP		29.80	
25	1814	11	BKN016 BKN160 OVC200	2.50	BLDU	93	33.9	72	22.0	61	16.1	34	25	190	39	28.64		M	SP		29.81	
25	1823	11	BKN016 BKN160 OVC200	3.00	BLDU	93	33.9	72	22.0	61	16.1	34	15	190	41	28.64		M	SP		29.81	
25	1849	11	FEW013 SCT120 BKN200	3.00		91	33.0	73	22.6	64	18.0	41	28	180	46	28.68		M	SP		29.85	
25	1851	11	FEW013 SCT120 BKN200	4.00		91	32.8	73	22.9	65	18.3	42	28	180	46	28.69		29.79	AA		29.86	
25	1927	11	FEW005 SCT130 BKN200	6.00		89	31.7	71	21.7	62	16.7	41	22	170	36	28.69		M	SP		29.86	
25	1951	11	FEW085 SCT100 SCT130	10.00		91	32.8	71	21.4	60	15.6	35	14	180	28	28.68		29.79	AA		29.85	
25	2019	11	FEW090 SCT120 BKN200	10.00		94	34.4	72	22.2	61	16.1	33	20	240		28.64		M	SP		29.81	
25	2049	11	FEW090 SCT120 BKN200	10.00		91	33.0	73	22.6	64	18.0	41	24	080	31	28.68		M	SP		29.85	
25	2051	11	FEW090 SCT120 BKN200	10.00		90	32.2	73	22.5	64	17.8	42	21	090	31	28.68		29.79	AA	T	29.85	
25	2058	11	FEW090 SCT120 BKN200	10.00		91	32.8	72	22.3	63	17.2	39	21	080		28.69		M	SP		29.86	
25	2151	11	FEW090 SCT120 BKN200	10.00		88	31.1	72	22.1	64	17.8	45	16	070		28.71		29.83	AA		29.89	
25	2251	11	FEW090 SCT120 BKN200	10.00		89	31.7	73	22.6	65	18.3	45	7	120		28.72		29.83	AA		29.90	
25	2351	11	FEW090 SCT120 BKN200	10.00		88	31.1	72	22.2	64	17.8	45	11	160		28.72		29.84	AA		29.90	

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA**
(final)
HOURLY OBSERVATIONS TABLE
SCOTTSDALE AIRPORT (03192)
SCOTTSDALE, AZ
(07/2014)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1473 ft. above sea level
Latitude: 33.622
Longitude: -111.910
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0053	12	CLR	10.00		94	34.4	71	21.6	59	15.0	31	5	200		28.27		29.77	AA		29.87	
25	0153	12	CLR	10.00		92	33.3	72	22.1	62	16.7	37	9	250		28.29		29.79	AA		29.89	
25	0253	12	CLR	10.00		91	32.8	72	22.0	62	16.7	38	0	000		28.29		29.79	AA		29.89	
25	0353	12	CLR	10.00		90	32.2	72	22.1	63	17.2	41	0	000		28.30		29.80	AA		29.90	
25	0453	12	CLR	10.00		89	31.7	72	22.3	64	17.8	44	3	080		28.30		29.80	AA		29.90	
25	0553	12	CLR	10.00		88	31.1	71	21.8	63	17.2	43	0	000		28.32		29.83	AA		29.92	
25	0653	12	CLR	10.00		90	32.2	72	22.4	64	17.8	42	0	000		28.34		29.84	AA		29.94	
25	0753	12	CLR	10.00		92	33.3	73	22.7	64	17.8	40	7	140		28.35		29.86	AA		29.95	
25	0853	12	CLR	10.00		94	34.4	74	23.0	64	17.8	37	5	VR		28.36		29.86	AA		29.96	
25	0953	12	CLR	10.00		96	35.6	74	23.0	63	17.2	34	5	VR		28.35		29.86	AA		29.95	
25	1053	12	CLR	10.00		98	36.7	75	23.6	64	17.8	33	5	VR		28.34		29.84	AA		29.94	
25	1153	12	CLR	10.00		99	37.2	74	23.2	62	16.7	30	6	VR		28.32		29.83	AA		29.92	
25	1253	12	CLR	10.00		102	38.9	74	23.3	61	16.1	26	8	210		28.30		29.80	AA		29.90	
25	1353	12	CLR	10.00		104	40.0	75	23.6	61	16.1	24	5	VR		28.27		29.78	AA		29.87	
25	1453	12	CLR	10.00		106	41.1	75	23.6	60	15.6	22	7	VR		28.25		29.74	AA		29.84	
25	1553	12	CLR	10.00		105	40.6	74	23.5	60	15.6	23	8	280	20	28.22		29.71	AA		29.81	
25	1653	12	CLR	10.00		105	40.6	74	23.2	59	15.0	22	11	240		28.22		29.71	AA		29.81	
25	1753	12	CLR	10.00		103	39.4	74	23.2	60	15.6	24	10	230		28.23		29.72	AA		29.82	
25	1816	12	BKN020	1.00	BLDU	91	33.0	72	22.3	63	17.0	39	14	190	29	28.26	M		SP		29.85	
25	1851	12	VV015	2.00	BLDU	91	33.0	72	22.3	63	17.0	39	15	160	23	28.31	M		SP		29.91	
25	1853	12	VV015	2.00	BLDU	92	33.3	72	22.1	62	16.7	37	14	160	23	28.30		29.81	AA		29.90	
25	1912	12	FEW019 BKN100	2.00	BLDU	90	32.0	72	22.4	64	18.0	42	13	190	28	28.31	M		SP		29.91	
25	1948	12	BKN014	2.00	BLDU	88	31.0	71	21.8	63	17.0	43	6s	160		28.31	M		SP		29.91	
25	1953	12	BKN014	2.00	BLDU	88	31.1	71	21.5	62	16.7	42	6s	160		28.31		29.83	AA		29.91	
25	2000	12	BKN014	6.00	BLDU	88	31.0	71	21.8	63	17.0	43	6s	150		28.30	M		SP		29.90	
25	2008	12	FEW014	6.00	-RAs	88	31.0	71	21.8	63	17.0	43	5s	220		28.29	M		SP		29.89	
25	2053	12	CLR	10.00	BLDU	88	31.1	72	22.1	64	17.8	45	6s	090		28.32		29.83	AA	T	29.92	
25	2153	12	CLR	10.00	BLDU	89	31.7	72	22.3	64	17.8	44	0s	000		28.36		29.87	AA		29.96	
25	2253	12	FEW032	10.00	BLDU	89	31.7	72	22.3	64	17.8	44	3s	010		28.34		29.85	AA		29.94	
25	2353	12	CLR	10.00	BLDU	90	32.2	72	22.1	63	17.2	41	3s	030		28.33		29.84	AA		29.93	

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
LUKE AFB AIRPORT (23111)
GLENDALE, AZ
(07/2014)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1085 ft. above sea level
Latitude: 33.55
Longitude: -112.366
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0058	0	CLR	10.00		94	34.5	72	22.2	61	16.3	33	21	230		28.68			M	AA		29.83
25	0158	0	CLR	10.00		92	33.5	73	22.5	63	17.2	38	14	230		28.67			29.77	AA		29.82
25	0258	0	CLR	10.00		91	32.9	73	22.6	64	17.5	41	10	220		28.68			29.78	AA		29.83
25	0358	0	CLR	10.00		91	32.6	73	22.6	64	17.6	41	2	220		28.69			29.79	AA		29.84
25	0458	0	CLR	10.00		88	31.0	72	22.1	64	17.7	45	0	000		28.70			29.80	AA		29.85
25	0558	0	CLR	10.00		88	31.1	73	22.5	65	18.3	47	2	070		28.71			29.82	AA		29.87
25	0658	0	CLR	10.00		90	32.1	73	22.8	65	18.3	44	3	010		28.74			29.84	AA		29.89
25	0758	0	CLR	10.00		93	34.1	73	22.6	63	17.1	37	5	050		28.75			29.86	AA		29.91
25	0858	0	CLR	10.00		96	35.3	74	23.4	64	18.0	35	3	080		28.75			29.86	AA		29.91
25	0958	0	CLR	10.00		98	36.8	75	23.7	64	17.9	33	2	080		28.75			29.86	AA		29.91
25	1058	0	CLR	10.00		100	37.6	75	23.9	64	17.5	31	7	210		28.74			29.84	AA		29.89
25	1158	0	CLR	10.00		103	39.3	75	23.8	62	16.9	26	11	220		28.72			29.83	AA		29.88
25	1258	0	FEW170	10.00		103	39.6	75	24.1	63	17.1	27	10	230		28.71			29.81	AA		29.86
25	1358	0	FEW200	10.00		105	40.6	75	23.8	61	16.1	24	8	210	16	28.67			29.77	AA		29.82
25	1454	0	FEW200	10.00		106	41.0	75	23.9	61	16.0	23	14	190	21	28.64			M	AA		29.79
25	1458	0	CLR	10.00		106	41.0	75	23.9	61	16.0	23	15	230		28.64			M	AA		29.79
25	1459	0	FEW200	10.00		106	41.3	75	23.9	61	16.0	23	15	230		28.64			29.74	AA		29.79
25	1558	0	BKN250	10.00		108	42.1	76	24.4	62	16.5	22	9	210	17	28.60			29.70	AA		29.75
25	1658	0	SCT120 SCT160 BKN250	10.00		106	41.0	76	24.2	62	16.4	24	20	210		28.61			29.71	AA		29.76
25	1758	0	CLR	10.00		104	40.1	75	23.7	61	16.0	24	15	210		28.62			29.72	AA		29.77
25	1852	0	FEW002	5.00	HZ	95	35.0	72	22.4	61	16.0	32	28	170	33	28.66			M	AA		29.81
25	1858	0	SCT004	3.00	HZ	95	35.0	72	22.1	60	15.5	31	31	170	40	28.67			29.77	AA		29.82
25	1908	0	BKN005	1.75	HZ	93	34.0	71	21.5	59	15.0	32	31	160	40	28.68			M	AA		29.83
25	1917	0	BKN004	3.00	HZ	93	34.0	70	20.9	57	14.0	30	21	160	38	28.69			M	AA		29.84
25	1927	0	SCT005	9.00		95	35.0	71	21.8	59	15.0	30	21	170	28	28.69			M	AA		29.84
25	1935	0	FEW004	10.00		95	35.0	71	21.8	59	15.0	30	17	170		28.70			M	AA		29.85
25	1958	0	CLR	10.00		95	34.8	71	21.5	58	14.7	29	13	170		28.70			29.80	AA		29.85
25	2058	0	CLR	10.00		95	35.1	70	21.3	57	14.0	28	14	260		28.69			29.79	AA		29.84
25	2144	0	SCT090 BKN160	10.00		91	33.0	71	21.7	61	16.0	37	18	350	25	28.75			M	AA	T	29.91
25	2154	0	BKN090 OVC160	10.00		93	34.0	72	22.1	61	16.0	34	15	350	25	28.75			M	AA	T	29.91
25	2158	0	BKN090 BKN160	10.00		92	33.6	71	21.6	60	15.5	34	17	350	23	28.75			29.86	AA	T	29.91
25	2208	0	SCT090	10.00		91	33.0	72	22.3	63	17.0	39	14	350		28.75			M	AA		29.91
25	2258	0	FEW130	10.00		92	33.4	73	22.5	63	17.1	38	10	340		28.74			29.85	AA		29.90
25	2358	0	SCT190	10.00		90	32.2	73	22.5	64	17.7	42	3	330		28.74			29.85	AA		29.90

Dynamically generated Tue Jul 29 17:56:31 EDT 2014 via <http://cdo.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
PHOENIX GOODYEAR AIRPORT (03186)
GOODYEAR, AZ
(07/2014)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 968 ft. above sea level
Latitude: 33.416
Longitude: -112.383
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0547	0	FEW180 FEW250	10.00		90	32.0	73	22.5	64	18.0	42	7	050		28.85			M	AA		29.88
25	0647	0	CLRs	10.00		90	32.0	73	22.5	64	18.0	42	5	120		28.87			M	AA		29.90
25	0747	0	FEW200	10.00		91	33.0	73	22.6	64	18.0	41	7	090		28.89			M	AA		29.92
25	0847	0	CLRs	10.00		95	35.0	75	23.8	66	19.0	39	8	020		28.89			M	AA		29.92
25	0950	0	CLRs	10.00		99	37.0	76	24.4	66	19.0	34	6	130		28.89			M	AA		29.92
25	1047	0	CLRs	10.00		99	37.0	75	23.8	64	18.0	32	0	000		28.88			M	AA		29.91
25	1147	0	FEW250	10.00		100	38.0	75	24.0	64	18.0	31	7	VR		28.86			M	AA		29.89
25	1247	0	FEW250	10.00		102	39.0	75	24.0	63	17.0	28	9	270		28.84			M	AA		29.87
25	1352	0	SCT250	10.00		104	40.0	76	24.2	63	17.0	26	7	250		28.81			M	AA		29.84
25	1447	0	SCT250	10.00		106	41.0	76	24.5	63	17.0	25	11	270		28.78			M	AA		29.81
25	1647	0	FEW100 SCT150 BKN250	10.00		104	40.0	76	24.2	63	17.0	26	9	250		28.76			M	AA		29.79
25	1747	0	FEW100 SCT150 BKN250	10.00		102	39.0	75	23.9	63	17.0	28	11	230		28.76			M	AA		29.79
25	1847	0	BKN025 OVC200	0.75	BLDU	91	33.0	71	21.7	61	16.0	37	29	180	44	28.78			M	AA		29.81
25	1916	0	BKN060 OVC200	10.00		93	34.0	70	21.0	57	14.0	30	21	160	29	28.81			M	AA		29.84
25	1947	0	SCT100 BKN160 OVC250	10.00		95	35.0	70	21.3	57	14.0	28	15	180	21	28.83			M	AA		29.86
25	2047	0	SCT120 BKN160 OVC250	10.00		95	35.0	69	20.8	55	13.0	26	13	200		28.79			M	AA		29.82

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
GLENDALE MUNICIPAL AIRPORT (53126)
GLENDALE, AZ
(07/2014)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1066 ft. above sea level
Latitude: 33.527
Longitude: -112.295
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0547	0	FEW200	20.00		90	32.0	73	22.5	64	18.0	42	5	030		28.76			M	AA		29.89
25	0647	0	CLR	20.00		91	33.0	73	22.6	64	18.0	41	3	060		28.77			M	AA		29.90
25	0747	0	CLR	20.00		95	35.0	73	22.9	63	17.0	35	5	040		28.78			M	AA		29.92
25	0847	0	CLR	20.00		97	36.0	M	M	64	18.0	M	5	VR		M			M	AA		29.92
25	0850	0	CLRs	20.00		97	36.0	74	23.5	64	18.0	34	5	VR		28.78			M	AA		29.92
25	0947	0	CLRs	20.00		99	37.0	75	23.8	64	18.0	32	6	070		28.79			M	AA		29.93
25	1047	0	CLRs	20.00		100	38.0	75	23.7	63	17.0	30	5	160		28.77			M	AA		29.91
25	1147	0	FEW200	20.00		102	39.0	75	23.9	63	17.0	28	6	170		28.76			M	AA		29.89
25	1247	0	FEW200	20.00		106	41.0	76	24.5	63	17.0	25	6	210		28.74			M	AA		29.87
25	1347	0	FEW200	20.00		106	41.0	75	23.9	61	16.0	23	9	150		28.71			M	AA		29.84
25	1447	0	FEW120 FEW200	20.00		108	42.0	76	24.2	61	16.0	22	13	190	21	28.68			M	AA		29.81
25	1547	0	FEW120 SCT160 BKN250	20.00		108	42.0	76	24.2	61	16.0	22	13	200	20	28.65			M	AA		29.78
25	1652	0	SCT120 SCT160 BKN250	20.00		108	42.0	76	24.2	61	16.0	22	14	190	22	28.65			M	AA		29.78
25	1747	0	SCT120 BKN160 OVC250	20.00		106	41.0	75	23.9	61	16.0	23	13	200		28.65			M	AA		29.78
25	1847	0	SCT120 BKN160 OVC250	20.00		99	37.0	73	22.9	61	16.0	29	17	150	24	28.65			M	AA		29.78
25	1953	0	SCT120 BKN160 OVC200	20.00		95	35.0	70	21.3	57	14.0	28	13	140	17	28.74			M	AA		29.87

Dynamically generated Tue Jul 29 17:55:39 EDT 2014 via <http://cdo.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
FALCON FIELD AIRPORT (03185)
MESA, AZ
(07/2014)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1380 ft. above sea level
Latitude: 33.466
Longitude: -111.733
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0518	0	CLRs	20.00		88	31.0	70	21.2	61	16.0	40	6	100		28.41			M	AA		29.89
25	0555	0	CLRs	20.00		90	32.0	71	21.5	61	16.0	38	7	110		28.42			M	AA		29.90
25	0650	0	CLRs	20.00		90	32.0	72	22.1	63	17.0	41	9	120		28.43			M	AA		29.91
25	0855	0	CLRs	20.00		93	34.0	73	22.6	63	17.0	37	9	130		28.46			M	AA		29.94
25	0947	0	CLRs	20.00		97	36.0	74	23.2	63	17.0	33	6	200		28.45			M	AA		29.93
25	1047	0	CLRs	20.00		99	37.0	74	23.5	63	17.0	31	9	170		28.44			M	AA		29.92
25	1159	0	FEW110	20.00		99	37.0	75	23.8	64	18.0	32	8	260		28.41			M	AA		29.89
25	1254	0	FEW110	20.00		104	40.0	76	24.2	63	17.0	26	5	VR		28.39			M	AA		29.87
25	1347	0	FEW110	30.00		104	40.0	75	23.6	61	16.0	24	6	250		28.38			M	AA		29.85
25	1448	0	FEW110	30.00		106	41.0	75	23.9	61	16.0	23	5	200		28.34			M	AA		29.81
25	1557	0	FEW110 BKN250	30.00		106	41.0	75	23.9	61	16.0	23	9	270		28.32			M	AA		29.79
25	1647	0	FEW110 BKN250	30.00		104	40.0	75	23.6	61	16.0	24	10	250		28.32			M	AA		29.79
25	1747	0	VV005	0.25s	DSs	99	37.0	73	22.9	61	16.0	29	23	200	34	28.35			M	AA		29.82
25	1755	0	VV005	2.00	BLDU	91	33.0	71	21.7	61	16.0	37	23	190	34	28.35			M	AA		29.83
25	1818	0	OVC120	3.00	BLDU	91	33.0	72	22.3	63	17.0	39	23	170	34	28.38			M	AA		29.86
25	1847	0	OVC120	5.00	HZ VCTS	88	31.0	72	22.1	64	18.0	45	18	130		28.43			M	AA		29.91
25	1955	0	OVC120	20.00s	VCTS	86	30.0	71	21.8	64	18.0	48	17	050		28.40			M	AA		29.88

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA**
(final)
HOURLY OBSERVATIONS TABLE
PHOENIX DEER VALLEY ARPT (03184)
PHOENIX, AZ
(07/2014)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1455 ft. above sea level
Latitude: 33.688
Longitude: -112.081
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0053	12	CLR	10.00		94	34.4	69	20.5	55	12.8	27	16	250		28.28			29.74	AA		29.84
25	0153	12	CLR	10.00		91	32.8	71	21.4	60	15.6	35	13	260		28.30			29.77	AA		29.86
25	0253	12	CLR	10.00		90	32.2	71	21.5	61	16.1	38	6	280		28.31			29.78	AA		29.87
25	0353	12	CLR	10.00		89	31.7	71	21.4	61	16.1	39	3	330		28.31			29.78	AA		29.87
25	0453	12	CLR	10.00		88	31.1	70	20.9	60	15.6	39	3	060		28.32			29.79	AA		29.88
25	0553	12	CLR	10.00		87	30.6	69	20.5	59	15.0	39	3	090		28.34			29.81	AA		29.90
25	0653	12	CLR	10.00		88	31.1	70	21.2	61	16.1	40	5	100		28.36			29.82	AA		29.92
25	0753	12	CLR	10.00		91	32.8	73	22.6	64	17.8	41	9	130		28.37			29.84	AA		29.93
25	0853	12	CLR	10.00		93	33.9	73	22.9	64	17.8	38	10	150		28.37			29.84	AA		29.93
25	0953	12	CLR	10.00		96	35.6	74	23.0	63	17.2	34	6	140		28.37			29.84	AA		29.93
25	1053	12	CLR	10.00		97	36.1	73	22.6	61	16.1	30	9	200		28.36			29.83	AA		29.92
25	1153	12	CLR	10.00		100	37.8	74	23.0	61	16.1	28	8	240		28.34			29.81	AA		29.90
25	1253	12	CLR	9.00		101	38.3	73	22.9	60	15.6	26	7	220		28.31			29.78	AA		29.87
25	1353	12	CLR	10.00		103	39.4	73	22.7	58	14.4	23	7	VR	18	28.29			29.76	AA		29.85
25	1453	12	CLR	10.00		104	40.0	74	23.1	59	15.0	23	9	220		28.26			29.73	AA		29.82
25	1553	12	CLR	10.00		105	40.6	74	23.2	59	15.0	22	11	240		28.23			29.70	AA		29.79
25	1653	12	CLR	10.00		105	40.6	73	22.7	57	13.9	21	13	210	20	28.22			29.69	AA		29.78
25	1753	12	CLR	10.00		102	38.9	73	22.8	59	15.0	24	17	210	24	28.23			29.70	AA		29.79
25	1853	12	FEW021	4.00	BLDU	92	33.3	71	21.8	61	16.1	36	18	170	29	28.29			29.76	AA		29.85
25	1943	12	BKN031 BKN110	5.00	-RA	88	31.0	71	21.8	63	17.0	43	16	170	26	28.33			M	SP		29.89
25	1951	12	BKN029	6.00	-RA	88	31.0	70	21.2	61	16.0	40	15	180	26	28.33			M	SP		29.89
25	1953	12	BKN029	6.00	-RA	88	31.1	70	21.2	61	16.1	40	14	180	26	28.33			29.80	AA	T	29.89
25	2006	12	SCT031	7.00		90	32.0	71	21.5	61	16.0	38	10	170		28.33			M	SP		29.89
25	2053	12	FEW090	10.00		91	32.8	70	20.8	58	14.4	33	3	VR		28.31			29.79	AA	T	29.87
25	2153	12	CLR	8.00		91	32.8	70	21.1	59	15.0	34	3	360		28.38			29.86	AA		29.95
25	2253	12	CLR	10.00		89	31.7	72	22.0	63	17.2	42	3	060		28.36			29.84	AA		29.92
25	2353	12	CLR	10.00		90	32.2	71	21.5	61	16.1	38	0	000		28.35			29.82	AA		29.91

Dynamically generated Tue Jul 29 18:28:41 EDT 2014 via <http://cdo.ncdc.noaa.gov/qcld/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
CHANDLER MUNICIPAL AIRPORT (53128)
CHANDLER, AZ
(07/2014)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1243 ft. above sea level

Latitude: 33.268

Longitude: -111.812

Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0547	0	FEW250	30.00		86	30.0	71	21.8	64	18.0	48	7	070		28.58			M	AA		29.90
25	0647	0	FEW250	20.00		86	30.0	74	23.1	68	20.0	55	7	090		28.59			M	AA		29.91
25	0747	0	CLRs	20.00		91	33.0	75	23.9	68	20.0	47	5	080		28.61			M	AA		29.93
25	0847	0	CLRs	20.00		95	35.0	75	23.8	66	19.0	39	6	080		28.61			M	AA		29.93
25	0950	0	CLRs	20.00		97	36.0	74	23.2	63	17.0	33	7	190		28.61			M	AA		29.93
25	1047	0	CLRs	20.00		99	37.0	74	23.5	63	17.0	31	14	170		28.60			M	AA		29.92
25	1147	0	FEW120	20.00		100	38.0	75	23.6	63	17.0	30	9	230		28.58			M	AA		29.90
25	1247	0	FEW100	25.00		102	39.0	74	23.4	61	16.0	26	8	240		28.55			M	AA		29.87
25	1347	0	FEW150	20.00		104	40.0	75	23.6	61	16.0	24	11	240		28.52			M	AA		29.84
25	1447	0	FEW150 SCT200	20.00		106	41.0	74	23.4	59	15.0	21	9	310		28.48			M	AA		29.80
25	1547	0	FEW100 BKN200	20.00		106	41.0	75	23.9	61	16.0	23	11	290	17	28.46			M	AA		29.78
25	1647	0	SCT100 BKN200	20.00		104	40.0	75	23.6	61	16.0	24	10	290		28.47			M	AA		29.79
25	1714	0	SCT100	1.00		100	38.0	74	23.1	61	16.0	28	40s	240	46	28.49			M	AA		29.81
25	1747	0	BKN100	2.00	BLDU	91	33.0	73	22.6	64	18.0	41	25	180	37	28.53			M	AA		29.85
25	1815	0	BKN100	4.00	BLDU	88	31.0	73	22.8	66	19.0	48	26	160	40	28.54			M	AA		29.86
25	1847	0	BKN080 OVC150	8.00	VCTS	86	30.0	71	21.8	64	18.0	48	23	170	32	28.55			M	AA		29.87
25	1950	0	SCT050 BKN080 OVC150	15.00		90	32.0	72	22.1	63	17.0	41	14	180		28.55			M	AA		29.87
25	2047	0	SCT080 BKN150	15.00		88	31.0	70	21.2	61	16.0	40	14	130		28.58			M	AA		29.90

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U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

**(final)
HOURLY OBSERVATIONS TABLE
CASA GRANDE MUNICIPAL ARPT (03914)
CASA GRANDE, AZ
(07/2014)**

Elevation: 1462 ft. above sea level

Latitude: 32.95

Longitude: -111.766

Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0015	0	CLR	10.00		91	33.0	71	21.7	61	16.0	37	9	200		28.35		M	AA		29.90	
25	0035	0	CLR	10.00		91	33.0	71	21.7	61	16.0	37	5	190		28.35		M	AA		29.90	
25	0055	0	CLR	10.00		90	32.0	71	21.5	61	16.0	38	0	000		28.36		M	AA		29.91	
25	0115	0	CLR	10.00		90	32.0	71	21.5	61	16.0	38	0	000		28.35		M	AA		29.90	
25	0135	0	CLR	10.00		90	32.0	70	21.0	59	15.0	35	0	000		28.35		M	AA		29.90	
25	0155	0	CLR	10.00		90	32.0	70	21.0	59	15.0	35	0	000		28.35		M	AA		29.90	
25	0215	0	CLR	10.00		90	32.0	72	22.1	63	17.0	41	8	170		28.35		M	AA		29.90	
25	0235	0	CLR	10.00		90	32.0	72	22.1	63	17.0	41	10	190		28.34		M	AA		29.89	
25	0255	0	CLR	10.00		90	32.0	72	22.1	63	17.0	41	9	190		28.34		M	AA		29.89	
25	0315	0	CLR	10.00		90	32.0	72	22.1	63	17.0	41	7	170		28.34		M	AA		29.89	
25	0335	0	CLR	10.00		90	32.0	72	22.1	63	17.0	41	7	180		28.34		M	AA		29.89	
25	0355	0	CLR	10.00		90	32.0	72	22.1	63	17.0	41	5	170		28.35		M	AA		29.90	
25	0415	0	CLR	10.00		88	31.0	71	21.8	63	17.0	43	0	000		28.35		M	AA		29.90	
25	0435	0	CLR	10.00		88	31.0	71	21.8	63	17.0	43	0	000		28.35		M	AA		29.90	
25	0455	0	CLR	10.00		88	31.0	71	21.8	63	17.0	43	0	000		28.35		M	AA		29.90	
25	0515	0	CLR	10.00		88	31.0	71	21.8	63	17.0	43	0	000		28.36		M	AA		29.91	
25	0535	0	CLR	10.00		86	30.0	70	20.9	61	16.0	43	0	000		28.37		M	AA		29.92	
25	0555	0	CLR	10.00		86	30.0	70	20.9	61	16.0	43	0	000		28.37		M	AA		29.92	
25	0615	0	CLR	10.00		86	30.0	71	21.5	63	17.0	46	0	000		28.37		M	AA		29.92	
25	0635	0	CLR	10.00		86	30.0	71	21.5	63	17.0	46	0	000		28.38		M	AA		29.93	
25	0655	0	CLR	10.00		88	31.0	71	21.8	63	17.0	43	0	000		28.39		M	AA		29.94	
25	0715	0	CLR	9.00		88	31.0	71	21.8	63	17.0	43	0	000		28.39		M	AA		29.94	
25	0735	0	CLR	8.00		90	32.0	72	22.1	63	17.0	41	0	000		28.40		M	AA		29.95	
25	0755	0	CLR	8.00		90	32.0	72	22.1	63	17.0	41	6	100		28.40		M	AA		29.95	
25	0815	0	CLR	8.00		91	33.0	72	22.3	63	17.0	39	3	120		28.41		M	AA		29.96	
25	0835	0	CLR	9.00		93	34.0	73	22.6	63	17.0	37	0	000		28.41		M	AA		29.96	
25	0855	0	CLR	10.00		93	34.0	73	22.6	63	17.0	37	9	170		28.41		M	AA		29.96	
25	0915	0	CLR	10.00		95	35.0	73	22.9	63	17.0	35	8	170		28.41		M	AA		29.96	
25	0935	0	CLR	10.00		95	35.0	73	22.9	63	17.0	35	3	160		28.41		M	AA		29.96	
25	0955	0	CLR	10.00		97	36.0	74	23.2	63	17.0	33	0	000		28.41		M	AA		29.96	
25	1015	0	CLR	10.00		97	36.0	74	23.2	63	17.0	33	8	130		28.40		M	AA		29.95	
25	1035	0	CLR	10.00		99	37.0	73	22.9	61	16.0	29	10	200		28.40		M	AA		29.95	
25	1055	0	CLR	10.00		99	37.0	74	23.5	63	17.0	31	5	230		28.39		M	AA		29.94	
25	1115	0	CLR	10.00		100	38.0	75	23.6	63	17.0	30	0	000		28.39		M	AA		29.94	
25	1135	0	CLR	10.00		100	38.0	75	23.6	63	17.0	30	10	250		28.37		M	AA		29.92	
25	1155	0	CLR	10.00		102	39.0	74	23.3	61	16.0	26	0	000		28.37		M	AA		29.92	
25	1215	0	CLR	10.00		100	38.0	74	23.1	61	16.0	28	6	180		28.36		M	AA		29.91	
25	1235	0	CLR	10.00		102	39.0	74	23.3	61	16.0	26	0	000		28.36		M	AA		29.91	
25	1255	0	CLR	10.00		102	39.0	74	23.3	61	16.0	26	7	230		28.35		M	AA		29.90	
25	1315	0	CLR	10.00		102	39.0	74	23.3	61	16.0	26	5	210	16	28.34		M	AA		29.89	
25	1335	0	CLR	10.00		102	39.0	74	23.3	61	16.0	26	7	280		28.33		M	AA		29.88	
25	1355	0	CLR	10.00		104	40.0	75	23.6	61	16.0	24	11	270	16	28.32		M	AA		29.87	
25	1415	0	CLR	10.00		106	41.0	75	23.9	61	16.0	23	8	270		28.31		M	AA		29.86	
25	1435	0	CLR	10.00		106	41.0	75	23.9	61	16.0	23	0	000		28.30		M	AA		29.85	
25	1455	0	CLR	10.00		106	41.0	75	23.9	61	16.0	23	10	320	16	28.28		M	AA		29.83	
25	1515	0	CLR	10.00		104	40.0	75	23.6	61	16.0	24	3	290		28.28		M	AA		29.83	
25	1535	0	CLR	10.00		104	40.0	75	23.6	61	16.0	24	8	300		28.27		M	AA		29.82	
25	1555	0	CLR	10.00		102	39.0	73	22.8	59	15.0	24	0	000		28.27		M	AA		29.82	
25	1615	0	CLR	10.00		102	39.0	73	22.8	59	15.0	24	0	000		28.29		M	AA		29.84	
25	1635	0	CLR	3.00		102	39.0	73	22.8	59	15.0	24	28s	210	34	28.30		M	AA		29.85	
25	1655	0	SCT006 SCT010 BKN100	2.00		91	33.0	72	22.3	63	17.0	39	24	190	33	28.33		M	AA		29.88	
25	1715	0	BKN008 BKN040 OVC100	2.00		88	31.0	71	21.8	63	17.0	43	25	200	31	28.33		M	AA		29.88	
25	1735	0	FEW030 FEW040	10.00	TS	82	28.0	71	21.8	66	19.0	58	22	200	26	28.34		M	AA		29.89	
25	1755	0	BKN100	2.00	VCTS	81	27.0	70	21.0	64	18.0	56	28	200	36	28.39		M	AA		29.94	
25	1815	0	FEW041 SCT070 OVC100	9.00	VCTS	79	26.0	70	21.3	66	19.0	65	26	210	33	28.39		M	AA		29.94	
25	1835	0	FEW044 BKN055 OVC095	10.00	VCTS	79	26.0	69	20.6	64	18.0	60	20	210	33	28.37		M	AA		29.92	
25	1855	0	SCT050 BKN070	10.00	VCTS	81	27.0	70	21.0	64	18.0	56	16	260	21	28.37		M	AA		29.92	
25	1915	0	FEW050	10.00		81	27.0	70	21.0	64	18.0	56	13	220		28.37		M	AA		29.92	
25	1935	0	CLR	10.00		82	28.0	70	20.8	63	17.0	53	8	260		28.37		M	AA		29.92	
25	1955	0	CLR	10.00		82	28.0	70	20.8	63	17.0	53	8	230		28.37		M	AA		29.92	
25	2015	0	CLR	10.00		82	28.0	70	20.8	63	17.0	53	14	220	17	28.37		M	AA		29.92	
25	2035	0	CLR	10.00		82	28.0	68	20.2	61	16.0	49	11	220		28.36		M	AA		29.91	
25	2055	0	CLR	10.00		82	28.0	68	20.2	61	16.0	49	11	220		28.36		M	AA		29.91	
25	2115	0	CLR	10.00		82	28.0	70	20.8	63	17.0	53	0	000		28.36		M	AA		29.91	
25	2135	0	CLR	10.00		82	28.0	68	20.2	61	16.0	49	13	070		28.36		M	AA		29.91	
25	2155	0	CLR	10.00		82	28.0	70	20.8	63	17.0	53	11	080		28.36		M	AA		29.91	

7/29/2014

QUALITY CONTROLLED Local Climatological Data: CASA GRANDE MUNICIPAL ARPT

25	2215	0	CLR	10.00		81	27.0	70	21.0	64	18.0	56	10	100			M	AA	29.91
25	2235	0	CLR	10.00		81	27.0	69	20.6	63	17.0	54	9	110			M	AA	29.91
25	2255	0	CLR	10.00		81	27.0	70	21.0	64	18.0	56	7	180			M	AA	29.94
25	2315	0	CLR	10.00		81	27.0	70	21.0	64	18.0	56	8	300			M	AA	29.97
25	2335	0	CLR	10.00		81	27.0	70	21.0	64	18.0	56	0	000			M	AA	29.99
25	2355	0	CLR	10.00		81	27.0	70	21.0	64	18.0	56	0	000			M	AA	29.97

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AWS ID 720644	WBAN ID 99999	Name BUCKEYE MUNI	Country UNITED STATES	State ARIZONA	Latitude +33.420	Longitude -112.686	Elevation +0311.2 (meters)																						
USAF	WBAN	YR--MODAHRMN	DIR	SPD	GUS	CLG	SKC	L	M	H	VSB	MW	MW	MW	MW	AW	AW	AW	AW	W	TEMP	DEWP	SLP	ALT	STP	MAX	MIN	PCP01	P
		GMT		MPH	MPH						Miles										F	F	mb	inches	mb	F	F	inches	i
720644	99999	201407250715	230	15	22	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	93	59	*****	29.85	*****	***	***	*****	*
720644	99999	201407250735	230	14	21	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	91	59	*****	29.85	*****	***	***	*****	*
720644	99999	201407250755	210	6	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	91	59	*****	29.85	*****	***	***	*****	*
720644	99999	201407250815	220	6	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	90	61	*****	29.85	*****	***	***	*****	*
720644	99999	201407250835	***	0	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	90	61	*****	29.85	*****	***	***	*****	*
720644	99999	201407250855	***	0	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	90	61	*****	29.84	*****	***	***	*****	*
720644	99999	201407250915	***	0	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	88	59	*****	29.85	*****	***	***	*****	*
720644	99999	201407250935	***	0	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	88	59	*****	29.84	*****	***	***	*****	*
720644	99999	201407250955	020	5	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	88	59	*****	29.85	*****	***	***	*****	*
720644	99999	201407251015	030	6	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	88	59	*****	29.85	*****	***	***	*****	*
720644	99999	201407251035	010	7	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	88	59	*****	29.84	*****	***	***	*****	*
720644	99999	201407251055	360	5	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	88	61	*****	29.84	*****	***	***	*****	*
720644	99999	201407251115	030	5	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	86	59	*****	29.84	*****	***	***	*****	*
720644	99999	201407251135	040	5	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	86	59	*****	29.85	*****	***	***	*****	*
720644	99999	201407251155	040	5	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	86	61	*****	29.85	*****	***	***	*****	*
720644	99999	201407251215	040	6	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	86	61	*****	29.86	*****	***	***	*****	*
720644	99999	201407251235	030	6	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	86	61	*****	29.87	*****	***	***	*****	*
720644	99999	201407251255	010	6	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	86	61	*****	29.87	*****	***	***	*****	*
720644	99999	201407251315	070	5	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	86	63	*****	29.88	*****	***	***	*****	*
720644	99999	201407251335	120	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	90	63	*****	29.88	*****	***	***	*****	*
720644	99999	201407251355	110	6	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	86	64	*****	29.89	*****	***	***	*****	*
720644	99999	201407251415	120	8	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	88	64	*****	29.90	*****	***	***	*****	*
720644	99999	201407251435	090	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	91	63	*****	29.90	*****	***	***	*****	*
720644	99999	201407251455	120	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	91	64	*****	29.91	*****	***	***	*****	*
720644	99999	201407251515	120	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	91	64	*****	29.92	*****	***	***	*****	*
720644	99999	201407251535	110	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	93	64	*****	29.92	*****	***	***	*****	*
720644	99999	201407251555	110	10	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	95	63	*****	29.92	*****	***	***	*****	*
720644	99999	201407251615	120	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	95	63	*****	29.92	*****	***	***	*****	*
720644	99999	201407251635	140	7	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	95	63	*****	29.92	*****	***	***	*****	*
720644	99999	201407251655	140	6	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	97	63	*****	29.93	*****	***	***	*****	*
720644	99999	201407251715	***	0	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	95	63	*****	29.92	*****	***	***	*****	*
720644	99999	201407251735	160	5	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	99	63	*****	29.92	*****	***	***	*****	*
720644	99999	201407251755	150	6	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	99	63	*****	29.91	*****	***	***	*****	*
720644	99999	201407251815	240	6	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	99	63	*****	29.91	*****	***	***	*****	*
720644	99999	201407251835	200	5	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	99	61	*****	29.90	*****	***	***	*****	*
720644	99999	201407251855	990	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	100	59	*****	29.89	*****	***	***	*****	*
720644	99999	201407251915	220	10	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	102	57	*****	29.89	*****	***	***	*****	*
720644	99999	201407251935	190	10	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	102	57	*****	29.88	*****	***	***	*****	*
720644	99999	201407251955	210	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	102	57	*****	29.87	*****	***	***	*****	*
720644	99999	201407252015	190	10	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	102	57	*****	29.86	*****	***	***	*****	*
720644	99999	201407252035	990	9	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	104	59	*****	29.85	*****	***	***	*****	*
720644	99999	201407252055	990	14	17	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	104	59	*****	29.84	*****	***	***	*****	*
720644	99999	201407252115	240	14	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	104	59	*****	29.83	*****	***	***	*****	*
720644	99999	201407252135	230	9	16	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	106	59	*****	29.82	*****	***	***	*****	*
720644	99999	201407252155	240	14	18	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	108	59	*****	29.81	*****	***	***	*****	*
720644	99999	201407252215	250	10	22	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	106	59	*****	29.80	*****	***	***	*****	*
720644	99999	201407252235	230	13	16	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	106	59	*****	29.79	*****	***	***	*****	*
720644	99999	201407252255	240	15	18	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	106	59	*****	29.78	*****	***	***	*****	*
720644	99999	201407252315	210	9	18	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	106	59	*****	29.78	*****	***	***	*****	*
720644	99999	201407252335	210	14	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	104	59	*****	29.78	*****	***	***	*****	*
720644	99999	201407252355	190	13	18	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	102	61	*****	29.78	*****	***	***	*****	*
720644	99999	201407260015	200	10	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	102	63	*****	29.78	*****	***	***	*****	*
720644	99999	201407260035	210	7	***	722	CLR	*	*	*	10.0	**	**	**	**	**	**	**	**	**	100	63	*****	29.78	*****	***	***	*****	*

720644	99999	201407260055	210	11	***	722	CLR	*	*	*	10.0	*	*	*	*	*	*	*	*	*	102	59	*****	29.78	*****	*	*	*	*	*	*
720644	99999	201407260115	200	10	***	722	CLR	*	*	*	10.0	*	*	*	*	*	*	*	*	*	100	61	*****	29.80	*****	*	*	*	*	*	*
720644	99999	201407260135	170	16	22	722	SCT	*	*	*	8.0	*	*	*	*	*	*	*	*	*	97	63	*****	29.82	*****	*	*	*	*	*	*
720644	99999	201407260155	170	20	28	722	SCT	*	*	*	4.0	*	*	*	*	*	*	*	*	*	93	61	*****	29.84	*****	*	*	*	*	*	*
720644	99999	201407260215	180	15	21	722	SCT	*	*	*	7.0	*	*	*	*	*	*	*	*	*	91	61	*****	29.85	*****	*	*	*	*	*	*
720644	99999	201407260235	170	13	18	722	SCT	*	*	*	10.0	*	*	*	*	*	*	*	*	*	91	57	*****	29.86	*****	*	*	*	*	*	*
720644	99999	201407260255	160	11	***	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	90	59	*****	29.86	*****	*	*	*	*	*	*
720644	99999	201407260315	140	9	***	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	90	59	*****	29.88	*****	*	*	*	*	*	*
720644	99999	201407260335	110	3	***	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	90	57	*****	29.88	*****	*	*	*	*	*	*
720644	99999	201407260355	260	5	***	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	91	57	*****	29.87	*****	*	*	*	*	*	*
720644	99999	201407260415	310	22	26	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	91	57	*****	29.87	*****	*	*	*	*	*	*
720644	99999	201407260435	320	13	17	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	91	57	*****	29.88	*****	*	*	*	*	*	*
720644	99999	201407260455	340	24	32	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	91	57	*****	29.89	*****	*	*	*	*	*	*
720644	99999	201407260515	020	17	28	120	***	*	*	*	9.1	*	*	*	*	*	*	*	*	*	90	63	*****	29.91	*****	*	*	*	*	*	*
720644	99999	201407260535	010	17	25	85	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	90	63	*****	29.91	*****	*	*	*	*	*	*
720644	99999	201407260555	010	16	24	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	90	63	*****	29.89	*****	*	*	*	*	*	*
720644	99999	201407260615	010	22	30	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	90	61	*****	29.87	*****	*	*	*	*	*	*
720644	99999	201407260635	360	18	30	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	90	59	*****	29.89	*****	*	*	*	*	*	*
720644	99999	201407260655	360	15	20	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	90	59	*****	29.89	*****	*	*	*	*	*	*
720644	99999	201407260715	350	13	***	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	90	59	*****	29.89	*****	*	*	*	*	*	*
720644	99999	201407260735	100	8	***	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	90	59	*****	29.91	*****	*	*	*	*	*	*
720644	99999	201407260755	160	7	***	120	***	*	*	*	10.0	*	*	*	*	*	*	*	*	*	90	61	*****	29.90	*****	*	*	*	*	*	*

NWS storm reports

NWS SRRS PRODUCTS FOR:
2014072520 to 2014072607

WWUS75 KPSR 252103

NPWPSR

URGENT - WEATHER MESSAGE

NATIONAL WEATHER SERVICE PHOENIX AZ

203 PM MST FRI JUL 25 2014

... POTENTIAL FOR AREAS OF BLOWING DUST THIS AFTERNOON AND EVENING
CREATING HAZARDOUS TRAVEL CONDITIONS THROUGHOUT THE SOUTH-CENTRAL
ARIZONA DESERTS...

AZZ022-023-027-028-260400-

/O. CON. KPSR. DU. Y. 0023. 000000T0000Z-140726T0400Z/

NORTHWEST MARI COPA COUNTY-GREATER PHOENIX AREA-

SOUTHWEST MARI COPA COUNTY-

NORTHWEST AND NORTH CENTRAL PINAL COUNTY-

INCLUDING THE CITIES OF... BUCKEYE... NEW RIVER... WICKENBURG...

MESA... PHOENIX... GILA BEND... APACHE JUNCTION... CASA GRANDE...

FLORENCE

203 PM MST FRI JUL 25 2014

... BLOWING DUST ADVISORY IN EFFECT UNTIL 9 PM MST THIS EVENING...

* AFFECTED AREA... THE GREATER PHOENIX METROPOLITAN AREA...

NORTHWEST AND NORTH CENTRAL PINAL COUNTY. THIS INCLUDES THE
DUST-PRONE TRAVEL CORRIDORS SUCH AS INTERSTATE 10... INTERSTATE
8... STATE ROUTE 347... 87 AND 79 ALONG WITH OTHER TRAVEL
CORRIDORS THROUGH THE OPEN DESERT AREAS.

* TIMING... UNTIL 9 PM MST THIS EVENING.

* WINDS... THUNDERSTORM OUTFLOW WINDS OF 35 TO 45 MPH... GENERALLY
BLOWING TOWARD THE NORTHWEST.

* VISIBILITY... RAPIDLY DROPPING TO AROUND 1 MILE... POSSIBLY
LOWER NEAR OPEN FIELDS AND DUST-PRONE AREAS.

* IMPACTS... AN INCREASE IN THUNDERSTORM ACTIVITY AND COVERAGE TODAY
IS EXPECTED... RESULTING IN THE POTENTIAL FOR LARGE STORM OUTFLOWS
TO MOVE THROUGH THE CENTRAL AZ DESERTS. AS A RESULT... LARGE AREAS
OF INTENSE BLOWING DUST ARE POSSIBLE. VISIBILITIES MAY BE DROP
SUDDENLY... RESULTING IN HAZARDOUS DRIVING CONDITIONS. USE CAUTION
IF YOU ENCOUNTER AREAS OF BLOWING DUST.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER

BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT

APPROACHING... PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR

VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR

FOOT OFF THE BRAKE PEDAL.

REMEMBER... PULL ASIDE... STAY ALIVE.

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VISIT US ON FACEBOOK... TWITTER... AND AT WEATHER.GOV/PHOENIX

NWUS55 KPSR 252344

LSRPSR

PRELIMINARY LOCAL STORM REPORT

NATIONAL WEATHER SERVICE PHOENIX AZ

444 PM MST FRI JUL 25 2014

.. TIME... .. EVENT... .. CITY LOCATION... .. LAT. LON...

.. DATE... .. MAG... .. COUNTY LOCATION.. ST.. .. SOURCE...

.. REMARKS..

0442 PM DUST STORM 1 WSW COOLIDGE 32.97N 111.55W
07/25/2014 PINAL AZ TRAINED SPOTTER

VISIBILITY AROUND ONE EIGHTH OF A MILE IN COOLIDGE

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EVENT NUMBER PSR1400112

NWS storm reports

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LEINS

WWUS75 KPSR 252346

NPWPSR

URGENT - WEATHER MESSAGE

NATIONAL WEATHER SERVICE PHOENIX AZ

446 PM MST FRI JUL 25 2014

... POTENTIAL FOR AREAS OF BLOWING DUST THIS AFTERNOON AND EVENING
CREATING HAZARDOUS TRAVEL CONDITIONS THROUGHOUT THE SOUTH-CENTRAL
ARIZONA DESERTS...

AZZ023-028-260400-

/O. NEW. KPSR. DS. W. 0008. 140725T2346Z-140726T0200Z/

/O. CON. KPSR. DU. Y. 0023. 000000T0000Z-140726T0400Z/

GREATER PHOENIX AREA-NORTHWEST AND NORTH CENTRAL PINAL COUNTY-
INCLUDING THE CITIES OF... BUCKEYE... MESA... PHOENIX...

APACHE JUNCTION... CASA GRANDE... FLORENCE

446 PM MST FRI JUL 25 2014

... DUST STORM WARNING IN EFFECT UNTIL 7 PM MST THIS EVENING...

... BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS
EVENING...

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS ISSUED A DUST STORM
WARNING... WHICH IS IN EFFECT UNTIL 7 PM MST THIS EVENING.

* AFFECTED AREA... THE GREATER PHOENIX METROPOLITAN AREA... ESPECIALLY
THE SOUTHEAST PHOENIX VALLEY... AND AREAS IN PINAL COUNTY NEAR
COOLIDGE... CASA GRANDE... SACATON... AND PORTIONS OF INTERSTATE 10
BETWEEN PHOENIX AND CASA GRANDE.

* TIMING... DUST STORM WARNING UNTIL 7 PM.

* WINDS... THUNDERSTORM OUTFLOW WINDS OF 30 TO 40 MPH... GENERALLY
PRODUCING DENSE BLOWING DUST.

* VISIBILITY... RAPIDLY DROPPING TO AROUND 1/4 MILE OR LESS.

* IMPACTS... AN INCREASE IN THUNDERSTORM ACTIVITY AND COVERAGE
TODAY IS EXPECTED... RESULTING IN THE POTENTIAL FOR LARGE STORM
OUTFLOWS TO MOVE THROUGH THE CENTRAL AZ DESERTS. AS A RESULT...
LARGE AREAS OF INTENSE BLOWING DUST ARE POSSIBLE.

VISIBILITIES MAY BE DROP SUDDENLY... RESULTING IN HAZARDOUS
DRIVING CONDITIONS. USE CAUTION IF YOU ENCOUNTER AREAS OF
BLOWING DUST.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER

BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT
APPROACHING... PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR
VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR
FOOT OFF THE BRAKE PEDAL.

REMEMBER... PULL ASIDE... STAY ALIVE.

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AZZ022-027-260400-

/O. CON. KPSR. DU. Y. 0023. 000000T0000Z-140726T0400Z/

NORTHWEST MARI COPA COUNTY-SOUTHWEST MARI COPA COUNTY-

INCLUDING THE CITIES OF... BUCKEYE... NEW RIVER... WICKENBURG...

GILA BEND

446 PM MST FRI JUL 25 2014

... BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS
EVENING...

A BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS
EVENING.

* AFFECTED AREA... THE GREATER PHOENIX METROPOLITAN AREA...

NORTHWEST AND NORTH CENTRAL PINAL COUNTY. THIS INCLUDES THE
DUST-PRONE TRAVEL CORRIDORS SUCH AS INTERSTATE 10... INTERSTATE

NWS storm reports

8...STATE ROUTE 347...87 AND 79 ALONG WITH OTHER TRAVEL
CORRIDORS THROUGH THE OPEN DESERT AREAS.

- * TIMING...UNTIL 9 PM MST THIS EVENING.
- * WINDS...THUNDERSTORM OUTFLOW WINDS OF 35 TO 45 MPH...GENERALLY BLOWING TOWARD THE NORTHWEST.
- * VISIBILITY...RAPIDLY DROPPING TO AROUND 1 MILE...POSSIBLY LOWER NEAR OPEN FIELDS AND DUST-PRONE AREAS.
- * IMPACTS...AN INCREASE IN THUNDERSTORM ACTIVITY AND COVERAGE TODAY IS EXPECTED...RESULTING IN THE POTENTIAL FOR LARGE STORM OUTFLOWS TO MOVE THROUGH THE CENTRAL AZ DESERTS. AS A RESULT... LARGE AREAS OF INTENSE BLOWING DUST ARE POSSIBLE. VISIBILITIES MAY BE DROP SUDDENLY...RESULTING IN HAZARDOUS DRIVING CONDITIONS. USE CAUTION IF YOU ENCOUNTER AREAS OF BLOWING DUST.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT APPROACHING...PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR FOOT OFF THE BRAKE PEDAL.

REMEMBER...PULL ASIDE...STAY ALIVE.

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VISIT US ON FACEBOOK...TWITTER...AND AT WEATHER.GOV/PHOENIX

NWUS55 KPSR 252352

LSRPSR

PRELIMINARY LOCAL STORM REPORT

NATIONAL WEATHER SERVICE PHOENIX AZ

452 PM MST FRI JUL 25 2014

.. TIME...	... EVENT...	... CITY LOCATION...	... LAT. LON...
.. DATE...	... MAG....	.. COUNTY LOCATION.. ST..	... SOURCE....
	.. REMARKS..		

0450 PM	DUST STORM	6 SW STANFIELD	32.83N 112.04W
07/25/2014		PINAL	AZ TRAINED SPOTTER
	NEAR ZERO VISIBILITY ALONG INTERSTATE 8 EAST OF STANFIELD		

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EVENT NUMBER PSR1400113

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LEINS

NWUS55 KPSR 260003

LSRPSR

PRELIMINARY LOCAL STORM REPORT

NATIONAL WEATHER SERVICE PHOENIX AZ

503 PM MST FRI JUL 25 2014

.. TIME...	... EVENT...	... CITY LOCATION...	... LAT. LON...
.. DATE...	... MAG....	.. COUNTY LOCATION.. ST..	... SOURCE....
	.. REMARKS..		

0501 PM	DUST STORM	SAN TAN VALLEY	33.17N 111.57W
07/25/2014		PINAL	AZ TRAINED SPOTTER
	NEAR ZERO VISIBILITY IN SAN TAN VALLEY		

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EVENT NUMBER PSR1400114

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LEINS

NWUS55 KPSR 260019

LSRPSR

NWS storm reports

PRELIMINARY LOCAL STORM REPORT
NATIONAL WEATHER SERVICE PHOENIX AZ
519 PM MST FRI JUL 25 2014

.. TIME... .. EVENT... .. CITY LOCATION... .. LAT. LON...
.. DATE... .. MAG... .. COUNTY LOCATION.. ST... .. SOURCE...
.. REMARKS..
0518 PM DUST STORM 4 SSW FIREBIRD LAKE 33.22N 111.99W
07/25/2014 MARI COPA AZ TRAINED SPOTTER
VISIBILITY IS AROUND 150 FEET NEAR SR 347 AND RIGGS RD

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EVENT NUMBER PSR1400115
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LEINS

WWUS85 KPSR 260026
AWWPHX

AZZ023-260230-
AIRPORT WEATHER WARNING FOR SKY HARBOR AIRPORT
NATIONAL WEATHER SERVICE PHOENIX AZ
526 PM MST FRI JUL 25 2014

.. AIRPORT WEATHER WARNING FOR SKY HARBOR AIRPORT IN EFFECT UNTIL
730 PM MST...
THE NATIONAL WEATHER SERVICE IN PHOENIX HAS ISSUED AN AIRPORT WEATHER
WARNING FOR SKY HARBOR AIRPORT FOR BLOWING DUST.
A DUST STORM WARNING HAS BEEN ISSUED FOR THE GREATER PHOENIX
AREA... INCLUDING SKY HARBOR INTERNATIONAL AIRPORT. STRONG GUSTY WINDS
UP TO 40 MPH HAVE CREATED AREAS OF DENSE BLOWING DUST THAT HAVE THE
POTENTIAL TO RAPIDLY LOWER VISIBILITY TO LESS THAN A QUARTER OF A MILE.
THE DUST WILL AFFECT THE AIRPORT THROUGH AT LEAST 700 PM.
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NWUS55 KPSR 260036
LSRPSR

PRELIMINARY LOCAL STORM REPORT
NATIONAL WEATHER SERVICE PHOENIX AZ
536 PM MST FRI JUL 25 2014

.. TIME... .. EVENT... .. CITY LOCATION... .. LAT. LON...
.. DATE... .. MAG... .. COUNTY LOCATION.. ST... .. SOURCE...
.. REMARKS..
0535 PM DUST STORM 3 ESE SUPERSTITION SPRI 33.38N 111.64W
07/25/2014 MARI COPA AZ NWS EMPLOYEE
VISIBILITY DOWN TO A HALF MILE AT BASELINE AND
ELLSWORTH RD

&&
EVENT NUMBER PSR1400116
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LEINS

NWUS55 KPSR 260049
LSRPSR

PRELIMINARY LOCAL STORM REPORT
NATIONAL WEATHER SERVICE PHOENIX AZ
549 PM MST FRI JUL 25 2014

.. TIME... .. EVENT... .. CITY LOCATION... .. LAT. LON...
.. DATE... .. MAG... .. COUNTY LOCATION.. ST... .. SOURCE...
.. REMARKS..
0547 PM DUST STORM 2 WSW GILA BEND 32.94N 112.71W
07/25/2014 MARI COPA AZ TRAINED SPOTTER
DUST STORM APPROACHING NOW AND VISIBILITY DOWN TO .25
MILE

NWS storm reports

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EVENT NUMBER PSR1400117
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WWUS75 KPSR 260049
NPWPSR

URGENT - WEATHER MESSAGE
NATIONAL WEATHER SERVICE PHOENIX AZ
549 PM MST FRI JUL 25 2014

... POTENTIAL FOR AREAS OF BLOWING DUST THIS AFTERNOON AND EVENING
CREATING HAZARDOUS TRAVEL CONDITIONS THROUGHOUT THE SOUTH-CENTRAL
ARIZONA DESERTS. ...

AZZ027-260400-

/O. EXA. KPSR. DS. W. 0008. 000000T0000Z-140726T0200Z/
/O. CON. KPSR. DU. Y. 0023. 000000T0000Z-140726T0400Z/

SOUTHWEST MARICOPA COUNTY-
INCLUDING THE CITY OF... GILA BEND
549 PM MST FRI JUL 25 2014

... DUST STORM WARNING GILA BEND UNTIL 7 PM MST THIS EVENING...
THE NATIONAL WEATHER SERVICE IN PHOENIX HAS ISSUED A DUST STORM
WARNING... WHICH IS IN EFFECT UNTIL 7 PM MST THIS EVENING. A
BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS
EVENING.

* AFFECTED AREA... GILA BEND AND VICININTY... INCLUDING NEARBY PORTIONS
OF INTERSTATE 8.

* TIMING... UNTIL 7 PM MST THIS EVENING.

* WINDS... THUNDERSTORM OUTFLOW WINDS OF 25 TO 40 MPH.

* VISIBILITY... RAPIDLY DROPPING TO AROUND 1/4 MILE... POSSIBLY
LOWER NEAR OPEN FIELDS AND DUST-PRONE AREAS.

* IMPACTS... VISIBILITIES MAY BE DROP SUDDENLY... RESULTING IN
HAZARDOUS DRIVING CONDITIONS. USE CAUTION IF YOU ENCOUNTER AREAS OF
BLOWING DUST.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER
BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT
APPROACHING... PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR
VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR
FOOT OFF THE BRAKE PEDAL.

REMEMBER... PULL ASIDE... STAY ALIVE.

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AZZ023-028-260400-

/O. CON. KPSR. DS. W. 0008. 000000T0000Z-140726T0200Z/
/O. CON. KPSR. DU. Y. 0023. 000000T0000Z-140726T0400Z/

GREATER PHOENIX AREA-NORTHWEST AND NORTH CENTRAL PINAL COUNTY-
INCLUDING THE CITIES OF... BUCKEYE... MESA... PHOENIX...
APACHE JUNCTION... CASA GRANDE... FLORENCE

549 PM MST FRI JUL 25 2014

... DUST STORM WARNING REMAINS IN EFFECT UNTIL 7 PM MST THIS
EVENING...

... BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS
EVENING...

A DUST STORM WARNING REMAINS IN EFFECT UNTIL 7 PM MST THIS
EVENING. A BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST
THIS EVENING.

* AFFECTED AREA... THE GREATER PHOENIX METROPOLITAN AREA...
ESPECIALLY THE SOUTHEAST PHOENIX VALLEY... AND AREAS IN PINAL
COUNTY NEAR COOLIDGE... CASA GRANDE... SACATON... AND PORTIONS OF
INTERSTATE 10 BETWEEN PHOENIX AND CASA GRANDE.

NWS storm reports

- * TIMING...DUST STORM WARNING UNTIL 7 PM.
- * WINDS...THUNDERSTORM OUTFLOW WINDS OF 30 TO 40 MPH...GENERALLY PRODUCING DENSE BLOWING DUST.
- * VISIBILITY...RAPIDLY DROPPING TO AROUND 1/4 MILE OR LESS.
- * IMPACTS...AN INCREASE IN THUNDERSTORM ACTIVITY AND COVERAGE TODAY IS EXPECTED...RESULTING IN THE POTENTIAL FOR LARGE STORM OUTFLOWS TO MOVE THROUGH THE CENTRAL AZ DESERTS. AS A RESULT... LARGE AREAS OF INTENSE BLOWING DUST ARE POSSIBLE. VISIBILITIES MAY BE DROP SUDDENLY...RESULTING IN HAZARDOUS DRIVING CONDITIONS. USE CAUTION IF YOU ENCOUNTER AREAS OF BLOWING DUST.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT APPROACHING...PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR FOOT OFF THE BRAKE PEDAL.

REMEMBER...PULL ASIDE...STAY ALIVE.

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AZZ022-260400-

/O. CON. KPSR. DU. Y. 0023. 000000T0000Z-140726T0400Z/

NORTHWEST MARICOPA COUNTY-

INCLUDING THE CITIES OF...BUCKEYE...NEW RIVER...WICKENBURG

549 PM MST FRI JUL 25 2014

...BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING...

A BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING.

- * AFFECTED AREA...THE GREATER PHOENIX METROPOLITAN AREA... NORTHWEST AND NORTH CENTRAL PINAL COUNTY. THIS INCLUDES THE DUST-PRONE TRAVEL CORRIDORS SUCH AS INTERSTATE 10...INTERSTATE 8...STATE ROUTE 347...87 AND 79 ALONG WITH OTHER TRAVEL CORRIDORS THROUGH THE OPEN DESERT AREAS.
- * TIMING...UNTIL 9 PM MST THIS EVENING.
- * WINDS...THUNDERSTORM OUTFLOW WINDS OF 35 TO 45 MPH...GENERALLY BLOWING TOWARD THE NORTHWEST.
- * VISIBILITY...RAPIDLY DROPPING TO AROUND 1 MILE...POSSIBLY LOWER NEAR OPEN FIELDS AND DUST-PRONE AREAS.
- * IMPACTS...AN INCREASE IN THUNDERSTORM ACTIVITY AND COVERAGE TODAY IS EXPECTED...RESULTING IN THE POTENTIAL FOR LARGE STORM OUTFLOWS TO MOVE THROUGH THE CENTRAL AZ DESERTS. AS A RESULT... LARGE AREAS OF INTENSE BLOWING DUST ARE POSSIBLE. VISIBILITIES MAY BE DROP SUDDENLY...RESULTING IN HAZARDOUS DRIVING CONDITIONS. USE CAUTION IF YOU ENCOUNTER AREAS OF BLOWING DUST.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT APPROACHING...PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR FOOT OFF THE BRAKE PEDAL.

REMEMBER...PULL ASIDE...STAY ALIVE.

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VISIT US ON FACEBOOK...TWITTER...AND AT WEATHER.GOV/PHOENIX

NWUS55 KPSR 260103

LSRPSR

PRELIMINARY LOCAL STORM REPORT

NWS storm reports

NATIONAL WEATHER SERVICE PHOENIX AZ

603 PM MST FRI JUL 25 2014

.. TIME...	... EVENT...	... CITY LOCATION...	... LAT. LON...
.. DATE...	... MAG...	.. COUNTY LOCATION.. ST..	... SOURCE...
	.. REMARKS..		
0547 PM	DUST STORM	3 NNE MESA	33.46N 111.73W
07/25/2014		MARI COPA	AZ AWOS
	QUARTER MILE VISIBILITY AT FALCON FIELD AIRPORT		

&&

EVENT NUMBER PSR1400118

\$\$

LEINS

WWUS85 KPSR 260140

SPSPSR

SPECIAL WEATHER STATEMENT

NATIONAL WEATHER SERVICE PHOENIX AZ

640 PM MST FRI JUL 25 2014

AZZ023-024-028-260230-

PINAL AZ-MARI COPA AZ-

640 PM MST FRI JUL 25 2014

... SIGNIFICANT WEATHER ADVISORY...

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS ISSUED A SIGNIFICANT WEATHER ADVISORY FOR...

EAST CENTRAL MARI COPA COUNTY IN SOUTH CENTRAL ARIZONA

NORTHWESTERN PINAL COUNTY IN SOUTH CENTRAL ARIZONA

IN THE PHOENIX EAST VALLEY TO THE TOWN OF MARI COPA.

UNTIL 730 PM MST

AT 637 PM MST... NATIONAL WEATHER SERVICE METEOROLOGISTS DETECTED ISOLATED VERY STRONG THUNDERSTORMS... NEAR APACHE JUNCTION... AND JUST EAST OF THE TOWN OF MARI COPA... MOVING NORTH AT 5 MPH.

ISOLATED THUNDERSTORMS ARE CAPABLE OF PRODUCING WIND GUSTS TO 50 MPH WITH INTENSE RAINFALL.

LOCALLY DENSE BLOWING DUST IS POSSIBLE. IF YOU ENCOUNTER BLOWING DUST WHILE DRIVING... PULL OVER AS FAR OFF THE ROADWAY AS POSSIBLE AND PARK. TURN OFF YOUR HEADLIGHTS AND KEEP YOUR FOOT OFF THE BRAKE. VERY HEAVY RAINFALL MAY CAUSE TEMPORARY PONDING ON SOME ROADS AND MINOR FLOODING OF POOR DRAINAGE AREAS. IN HEAVY RAINFALL... SLOW DOWN TO REDUCE THE RISK OF HYDROPLANING... AND LEAVE A SAFE DISTANCE BETWEEN YOURSELF AND OTHER VEHICLES.

LAT... LON 3369 11163 3363 11129 3286 11153 3309 11214

TIME... MOT... LOC 0138Z 187DEG 5KT 3343 11150

\$\$

HV

WWUS75 KPSR 260204

NPWPSR

URGENT - WEATHER MESSAGE

NATIONAL WEATHER SERVICE PHOENIX AZ

704 PM MST FRI JUL 25 2014

AZZ023-027-028-260400-

/O. EXP. KPSR. DS. W. 0008. 000000T0000Z-140726T0200Z/

/O. CON. KPSR. DU. Y. 0023. 000000T0000Z-140726T0400Z/

GREATER PHOENIX AREA-SOUTHWEST MARI COPA COUNTY-

NORTHWEST AND NORTH CENTRAL PINAL COUNTY-

INCLUDING THE CITIES OF... BUCKEYE... MESA... PHOENIX... GILA BEND...

APACHE JUNCTION... CASA GRANDE... FLORENCE

704 PM MST FRI JUL 25 2014

... BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING...

... DUST STORM WARNING HAS EXPIRED...

NWS storm reports

THE DUST STORM WARNING IS NO LONGER IN EFFECT. A BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING. A BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING.

- * AFFECTED AREA... GILA BEND AND VICINITY... INCLUDING NEARBY PORTIONS OF INTERSTATE 8.
- * TIMING... UNTIL 9 PM MST THIS EVENING.
- * WINDS... THUNDERSTORM OUTFLOW WINDS OF 25 TO 40 MPH.
- * VISIBILITY... RAPIDLY DROPPING TO AROUND 1 MILE... POSSIBLY LOWER NEAR OPEN FIELDS AND DUST-PRONE AREAS.
- * IMPACTS... VISIBILITIES MAY BE DROP SUDDENLY... RESULTING IN HAZARDOUS DRIVING CONDITIONS. USE CAUTION IF YOU ENCOUNTER AREAS OF BLOWING DUST.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT APPROACHING... PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR FOOT OFF THE BRAKE PEDAL.

REMEMBER... PULL ASIDE... STAY ALIVE.

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AZZ022-260400-

/O. CON. KPSR. DU. Y. 0023. 000000T0000Z-140726T0400Z/

NORTHWEST MARI COPA COUNTY-

INCLUDING THE CITIES OF... BUCKEYE... NEW RIVER... WICKENBURG

704 PM MST FRI JUL 25 2014

... BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING...

A BLOWING DUST ADVISORY REMAINS IN EFFECT UNTIL 9 PM MST THIS EVENING.

- * AFFECTED AREA... THE GREATER PHOENIX METROPOLITAN AREA... NORTHWEST AND NORTH CENTRAL PINAL COUNTY. THIS INCLUDES THE DUST-PRONE TRAVEL CORRIDORS SUCH AS INTERSTATE 10... INTERSTATE 8... STATE ROUTE 347... 87 AND 79 ALONG WITH OTHER TRAVEL CORRIDORS THROUGH THE OPEN DESERT AREAS.
- * TIMING... UNTIL 9 PM MST THIS EVENING.
- * WINDS... THUNDERSTORM OUTFLOW WINDS OF 35 TO 45 MPH... GENERALLY BLOWING TOWARD THE NORTHWEST.
- * VISIBILITY... RAPIDLY DROPPING TO AROUND 1 MILE... POSSIBLY LOWER NEAR OPEN FIELDS AND DUST-PRONE AREAS.
- * IMPACTS... AN INCREASE IN THUNDERSTORM ACTIVITY AND COVERAGE TODAY IS EXPECTED... RESULTING IN THE POTENTIAL FOR LARGE STORM OUTFLOWS TO MOVE THROUGH THE CENTRAL AZ DESERTS. AS A RESULT... LARGE AREAS OF INTENSE BLOWING DUST ARE POSSIBLE. VISIBILITIES MAY BE DROP SUDDENLY... RESULTING IN HAZARDOUS DRIVING CONDITIONS. USE CAUTION IF YOU ENCOUNTER AREAS OF BLOWING DUST.

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REMEMBER... PULL ASIDE... STAY ALIVE.

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VISIT US ON FACEBOOK... TWITTER... AND AT WEATHER.GOV/PHOENIX

NWUS55 KPSR 260205

NWS storm reports

LSRPSR

PRELIMINARY LOCAL STORM REPORT
NATIONAL WEATHER SERVICE PHOENIX AZ
705 PM MST FRI JUL 25 2014

.. TIME... .. EVENT... .. CITY LOCATION... .. LAT. LON...
.. DATE... .. MAG... .. COUNTY LOCATION.. ST... .. SOURCE...
.. REMARKS..
0535 PM DUST STORM 1 NNE AHWATUKEE 33.34N 111.99W
07/25/2014 MARI COPA AZ TRAINED SPOTTER
DELAYED REPORT... VISIBILITY AROUND A QUARTER OF A MILE

&&

EVENT NUMBER PSR1400119

\$\$

LEINS

WWUS75 KPSR 260317

NPWPSR

URGENT - WEATHER MESSAGE
NATIONAL WEATHER SERVICE PHOENIX AZ
817 PM MST FRI JUL 25 2014

AZZ022-023-027-028-260430-

/O. CAN. KPSR. DU. Y. 0023. 000000T0000Z-140726T0400Z/

NORTHWEST MARI COPA COUNTY-GREATER PHOENIX AREA-

SOUTHWEST MARI COPA COUNTY-

NORTHWEST AND NORTH CENTRAL PINAL COUNTY-

INCLUDING THE CITIES OF... BUCKEYE... NEW RIVER... WICKENBURG...

MESA... PHOENIX... GILA BEND... APACHE JUNCTION... CASA GRANDE...

FLORENCE

817 PM MST FRI JUL 25 2014

... BLOWING DUST ADVISORY IS CANCELED...

THE BLOWING DUST ADVISORY ISSUED EARLIER FOR THE SOUTH CENTRAL
ARIZONA DESERTS INCLUDING THE GREATER PHOENIX AREA... GILA BEND...
CASA GRANDE... APACHE JUNCTION... WICKENBURG... AND OTHER NEARBY DESERT
COMMUNITIES WAS CANCELED.

ALTHOUGH GUSTY WINDS CONTINUED ACROSS THE DESERTS AT 8 PM...

VISIBILITIES HAVE IMPROVED MARKEDLY FROM THE LOWER VALUES REPORTED
EARLIER. IMPROVING VISIBILITIES ARE EXPECTED THE REMAINDER OF THE
EVENING.

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS CANCELED THE BLOWING
DUST ADVISORY.

\$\$

VISIT

FXUS65 KPSR 260350

AFDPSR

AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE PHOENIX AZ
850 PM MST FRI JUL 25 2014

. SYNOPSIS...

MONSOON MOISTURE WILL REMAIN ACROSS THE REGION THROUGH AT LEAST THE
MIDDLE OF NEXT WEEK... ALLOWING FOR AN INCREASED CHANCE OF AFTERNOON
SHOWERS AND THUNDERSTORMS. DAYTIME TEMPERATURES WILL STILL HOLD
ABOVE SEASONAL NORMALS... BUT ARE EXPECTED TO FALL BACK FROM THEIR
NEAR-RECORD READINGS.

&&

. DISCUSSION...

CONVECTION IS ONGOING ACROSS FAR NW MARI COPA COUNTY/LA PAZ
COUNTY/YAVAPAI COUNTY... AND POINTS NORTH BUT THE LOWER DESERTS HAVE
QUIETED DOWN SINCE THIS AFTERNOON. OBVIOUSLY THE BIGGEST IMPACT THIS
AFTERNOON WAS IN THE FORM OF BLOWING DUST AND REDUCED VSBYS... BUT
SOME LOCATIONS SAW A DECENT AMOUNT OF RAINFALL IN A SHORT TIME.

NWS storm reports

PARTS OF APACHE JUNCTION AND AREAS NEAR BOUSE/WENDEN DID QUITE WELL FOR RAINFALL TONIGHT. UNLESS SOMETHING CHANGES BEFORE MIDNIGHT... SKY HARBOR WILL ONLY RECORD A TRACE FOR THE DAY.

CONVECTION WILL CONTINUE TO DISSIPATE THROUGH THE REST OF THE EVENING AND OVERNIGHT HOURS BUT I WILL HANG ONTO AT LEAST A SLIGHT CHANCE MENTION FROM WICKENBURG WESTWARD TO THE CA STATE LINE. HRRR HAS A GOOD HANDLE ON THE WEATHER AT PRESENT AND I EXPECT STORMS TO TAPER OFF QUICKLY AFTER MIDNIGHT.

LOW TEMPS ARE VERY TRICKY... AS THE LOCATIONS THAT SAW RAIN WILL LIKELY REMAIN STEADY FOR THE REST OF THE NIGHT. ELSEWHERE... UPPER 80S TO LOWER 90S LOOKS LIKE A SOLID BET FOR TEMPS.

&&

. PREVIOUS DISCUSSION. . .

SATURDAY LOOKS LIKE IT MAY BE SIMILAR TO TODAY... WITH SIMILAR MOISTURE AND MUCAPE VALUES BEING FORECASTED ACROSS THE REGION. HOWEVER... IF TODAY TURNS OUT TO BE QUITE ACTIVE... THE WORKED-OVER ATMOSPHERE MAY HOLD TS ACTIVITY DOWN SOMEWHAT ON SATURDAY. THE INCREASING MOISTURE AND CLOUDINESS... ALONG WITH LOWER 500MB HEIGHTS... IS EXPECTED TO END OUR EXCESSIVE HEAT... WITH HIGHS AROUND 110F TODAY AND THE 105-109F RANGE ON SATURDAY. SATURDAY COULD TURN OUT TO BE EVEN COOLER IF THERE IS WIDESPREAD RAINFALL TODAY/THIS EVENING.

SUNDAY THROUGH THURSDAY. . .

IT APPEARS THAT A LOW-MID GRADE MONSOON WILL LIKELY PREVAIL THROUGH THE EXTENDED PERIOD AS WEAK SOUTHERLY FLOW ALOFT CONTINUES TO PULL MOISTURE INTO THE REGION... WITH THE GFS SHOWING A MORE ACTIVE PATTERN AS IT KEEPS THE UPPER HIGH CENTER OFF TO OUR EAST... AND THE EURO SHOWING A DRIER ONE AS IT ATTEMPTS TO REPOSITION THE UPPER HIGH CENTER WESTWARD BACK OVER THE REGION.

&&

. AVIATION. . .

SOUTH-CENTRAL ARIZONA INCLUDING KPHX... KIWA... AND KSDL... STORMS ARE DISSIPATING ACROSS THE METRO AS OF 0345Z AND CONDITIONS SHOULD CONTINUE TO IMPROVE AT ALL SITES. WINDS HAVE BEEN ALL OVER THE PLACE BUT ARE FINALLY BEGINNING TO TAKE ON A SOUTHEASTERLY DRIFT ACROSS THE VALLEY. WILL NEED TO TAKE A WAIT AND SEE APPROACH FOR SATURDAY AFTERNOON STORM POTENTIAL... ATMOSPHERE MAY BE TOO CONTAMINATED FROM TODAY'S STORMS TO SUPPORT CONVECTION ON SATURDAY. SOUTHEAST CALIFORNIA AND SOUTHWEST ARIZONA INCLUDING KIPL AND KBLH... STILL THINKING THAT BOTH SE CA TAF SITES WILL REMAIN DRY OVERNIGHT ALTHOUGH A STRAY SHOWER COULD SNEAK INTO BLH. OTHERWISE THE ONLY IMPACTS OVERNIGHT SHOULD BE DEBRIS CLOUDS FROM THE PHOENIX STORMS. ANOTHER ROUND OF STORMS POSSIBLE ON SATURDAY.

AVIATION DISCUSSION NOT UPDATED FOR AMENDED TAFS.

&&

. FIRE WEATHER. . .

MONDAY THROUGH FRIDAY. . .

SLIGHTLY COOLER AFTERNOON TEMPERATURES ARE EXPECTED ALONG WITH HIGHER HUMIDITY. MINIMUM RELATIVE HUMIDITY LEVELS WILL RANGE FROM 15 TO 25 PERCENT. A TYPICAL MONSOON DAILY THREAT OF AFTERNOON AND EVENING THUNDERSTORMS ARE EXPECTED WITH THE HIGHEST PROBABILITIES IN THE MOUNTAINS EAST OF PHOENIX. TYPICAL AFTERNOON AND EVENING SOUTHWEST WINDS ARE EXPECTED WITH GOOD RECOVERY AT NIGHT.

&&

. PSR WATCHES/WARNINGS/ADVISORIES. . .

AZ. . . NONE.

CA. . . NONE.

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VISIT US ON FACEBOOK. . . TWITTER. . . AND AT WEATHER.GOV/PHOENIX

DISCUSSION. . . LEINS/PERCHA

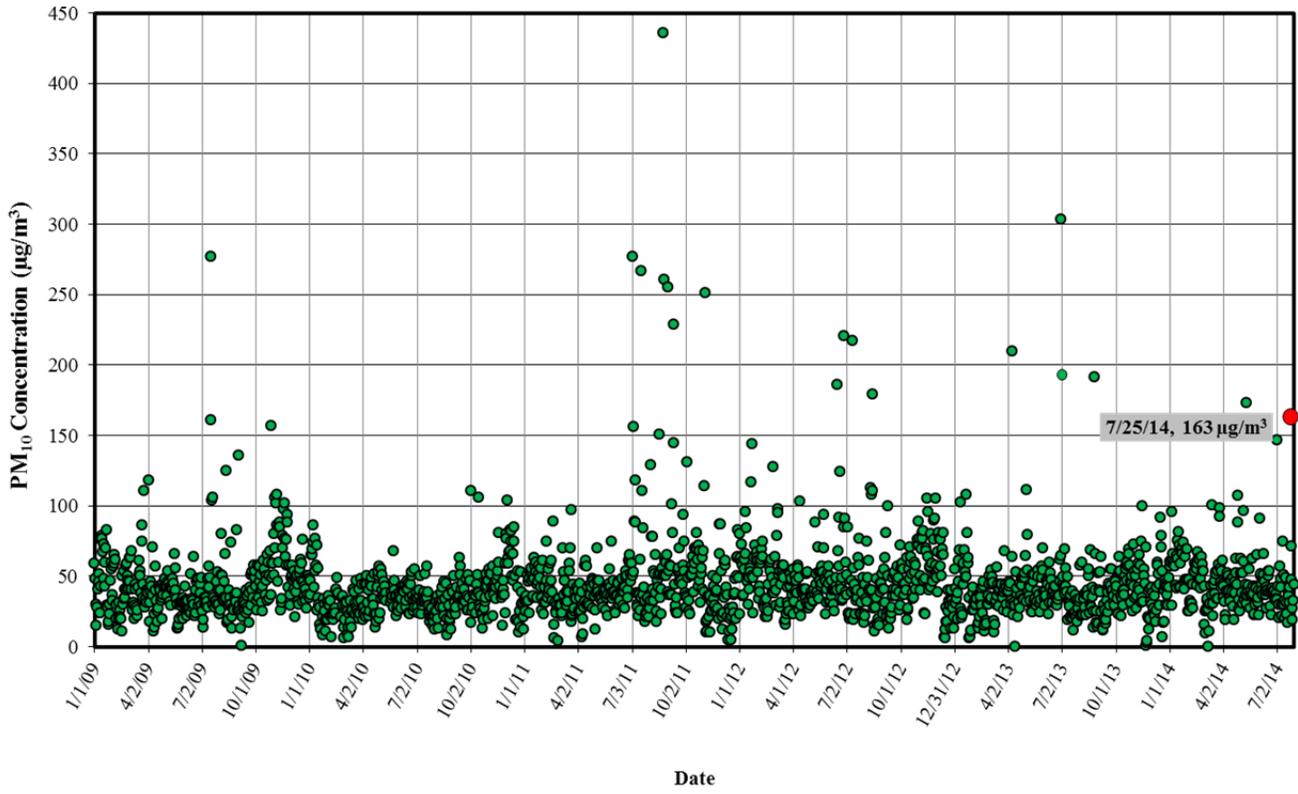
AVIATION. . . LEINS

FIRE WEATHER. . . VASQUEZ

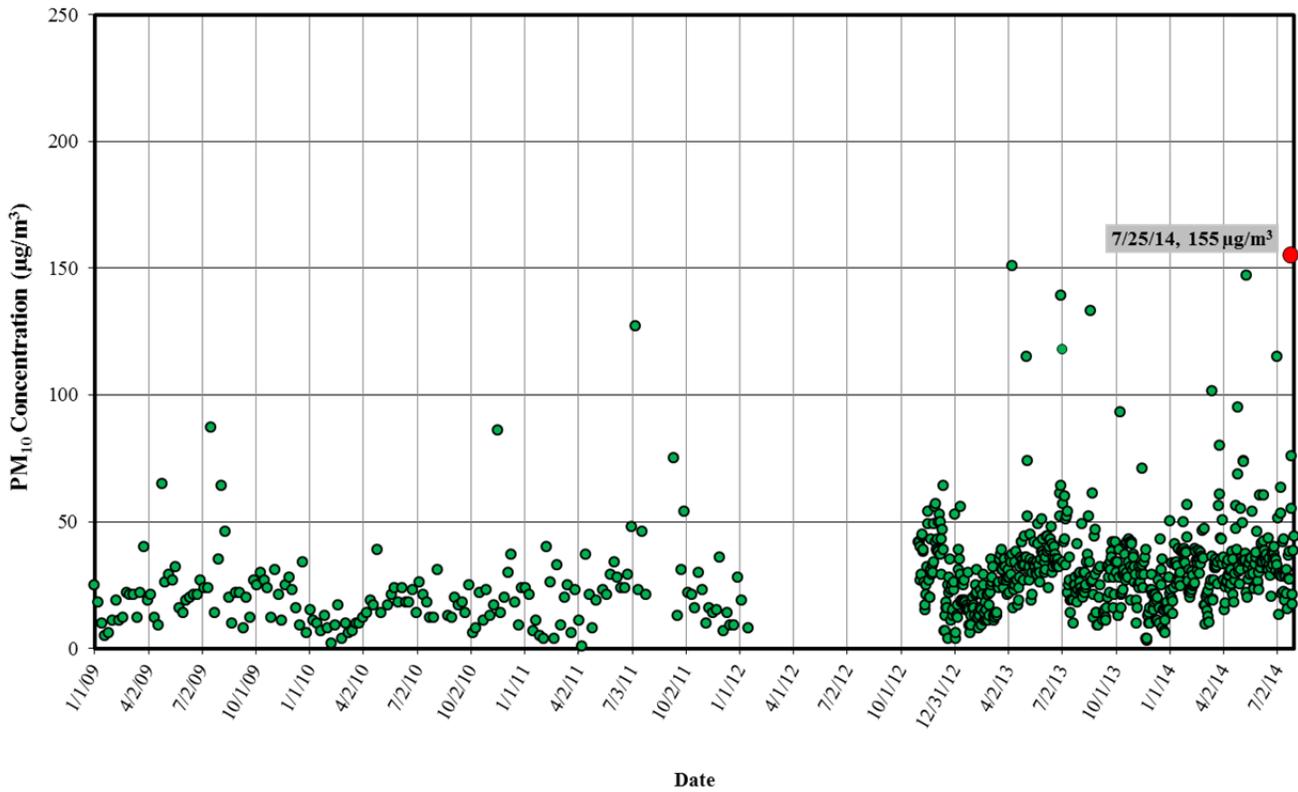
APPENDIX C

HISTORICAL FLUCTUATION GRAPHS

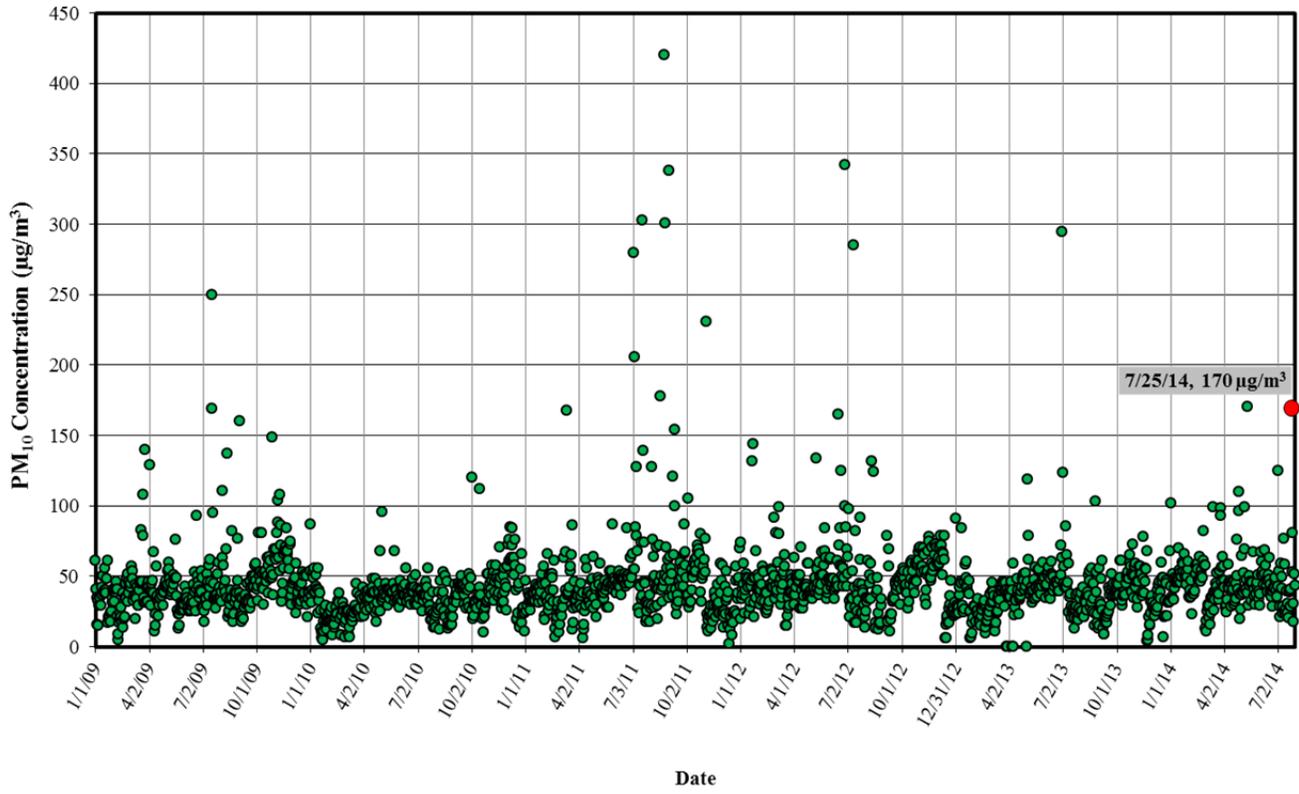
Durango 5-Year Historical Fluctuation - 24 Hour Averages



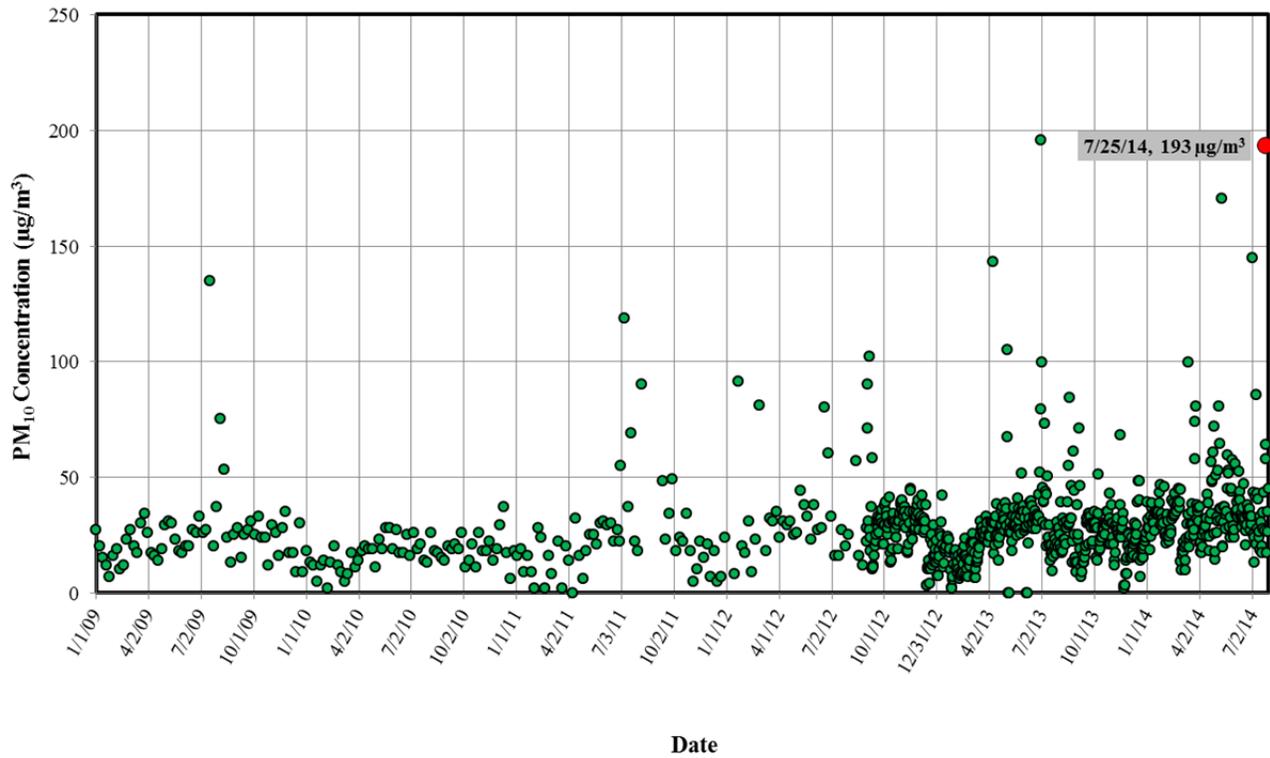
Mesa 5-Year Historical Fluctuation - 24 Hour Averages



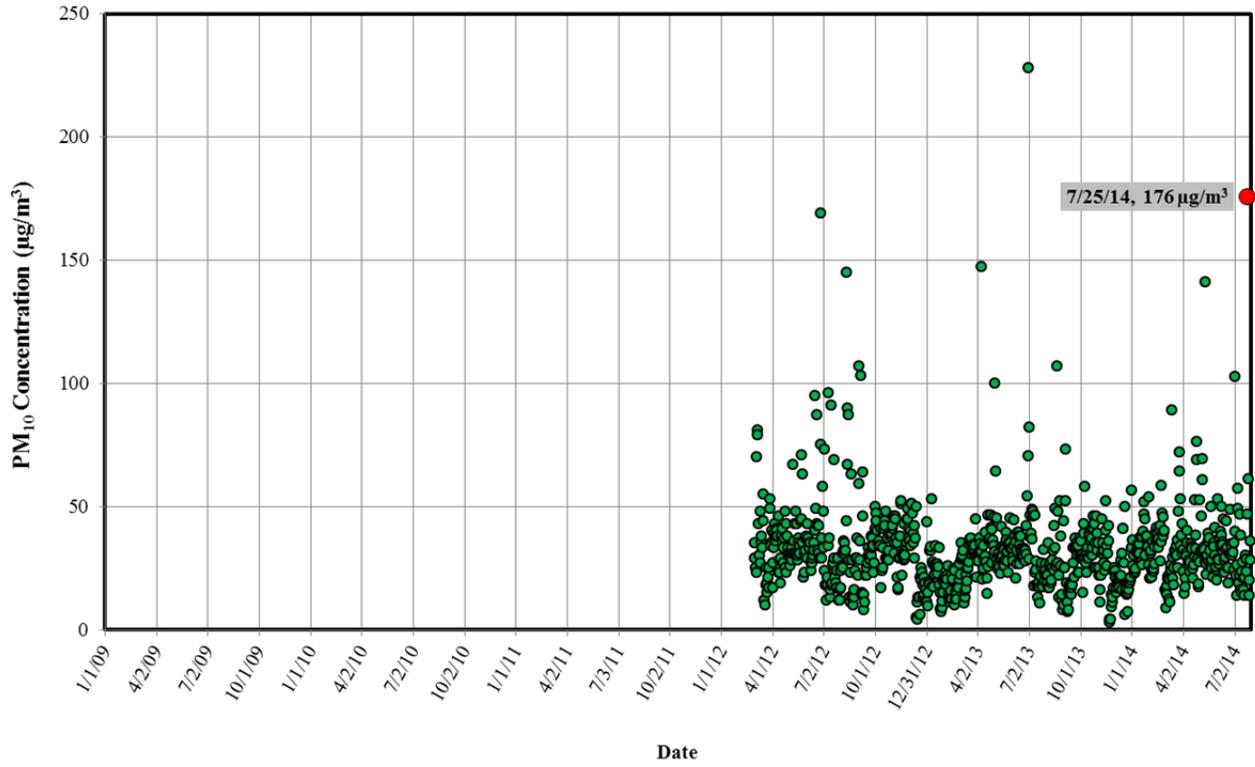
South Phoenix 5-Year Historical Fluctuation - 24 Hour Averages



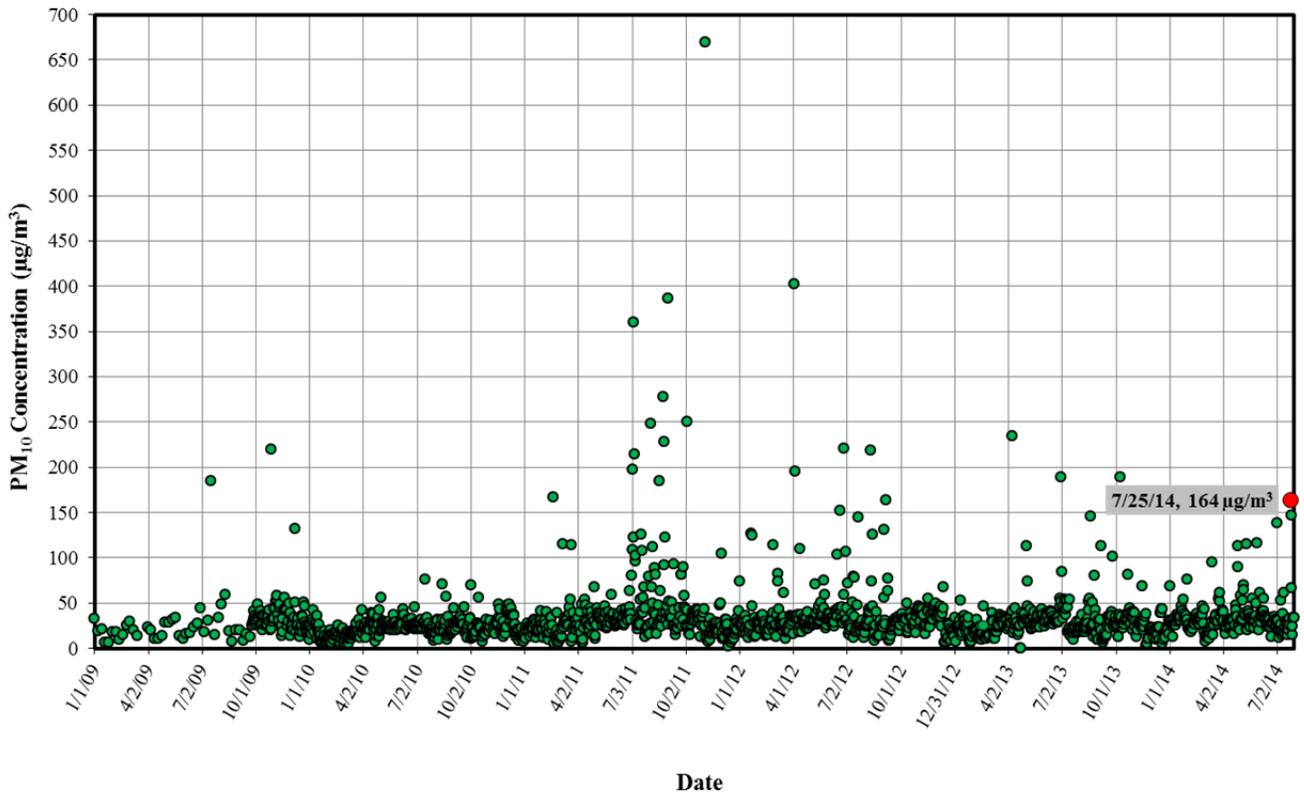
South Scottsdale 5-Year Historical Fluctuation - 24 Hour Averages



Tempe 5-Year Historical Fluctuation - 24 Hour Averages



West Chandler 5-Year Historical Fluctuation - 24 Hour Averages



APPENDIX D

GRAPHS OF HOURLY PM₁₀ CONCENTRATIONS, WIND GUSTS, AND SUSTAINED WIND SPEEDS

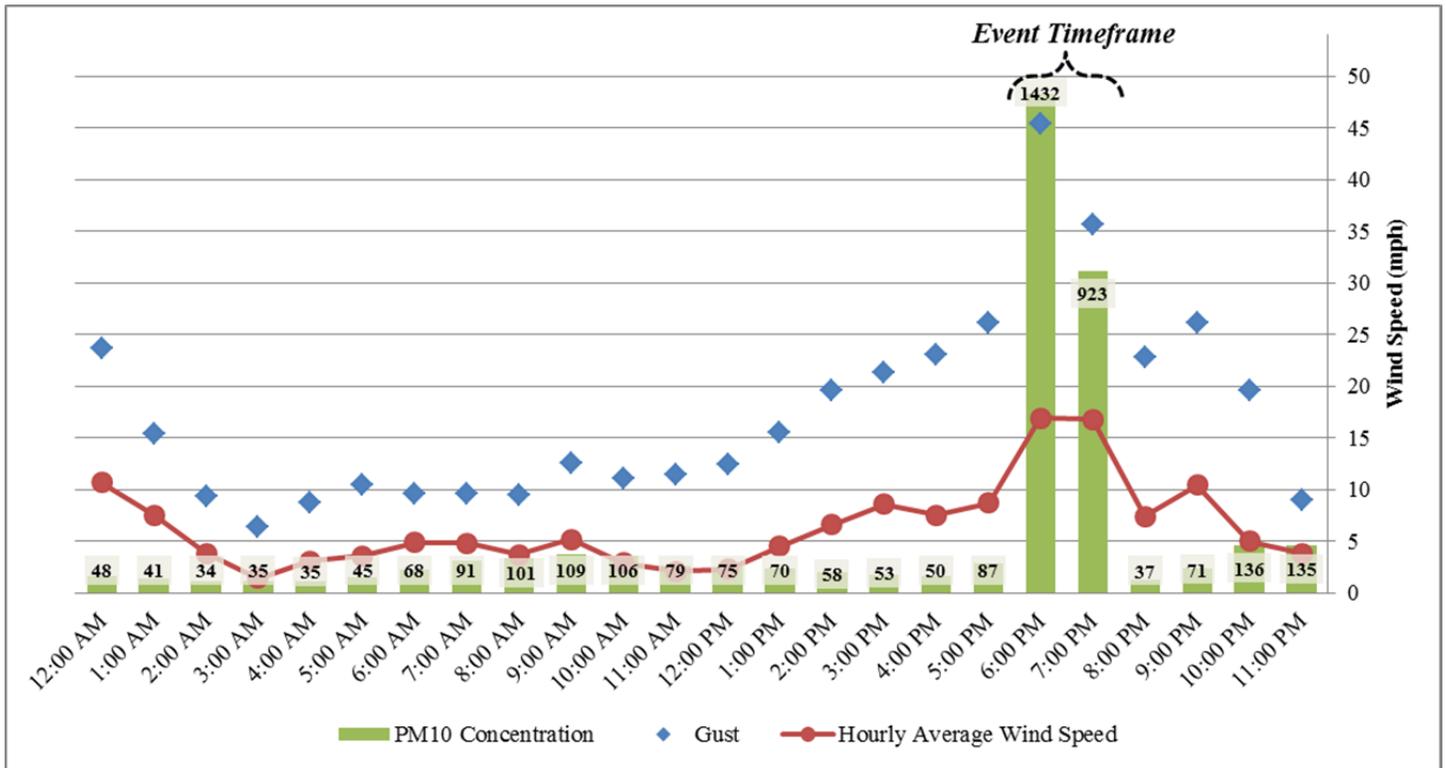


Figure D-1. Durango Complex monitor PM10 concentration, wind gust, and hourly wind speed on July 25, 2014.

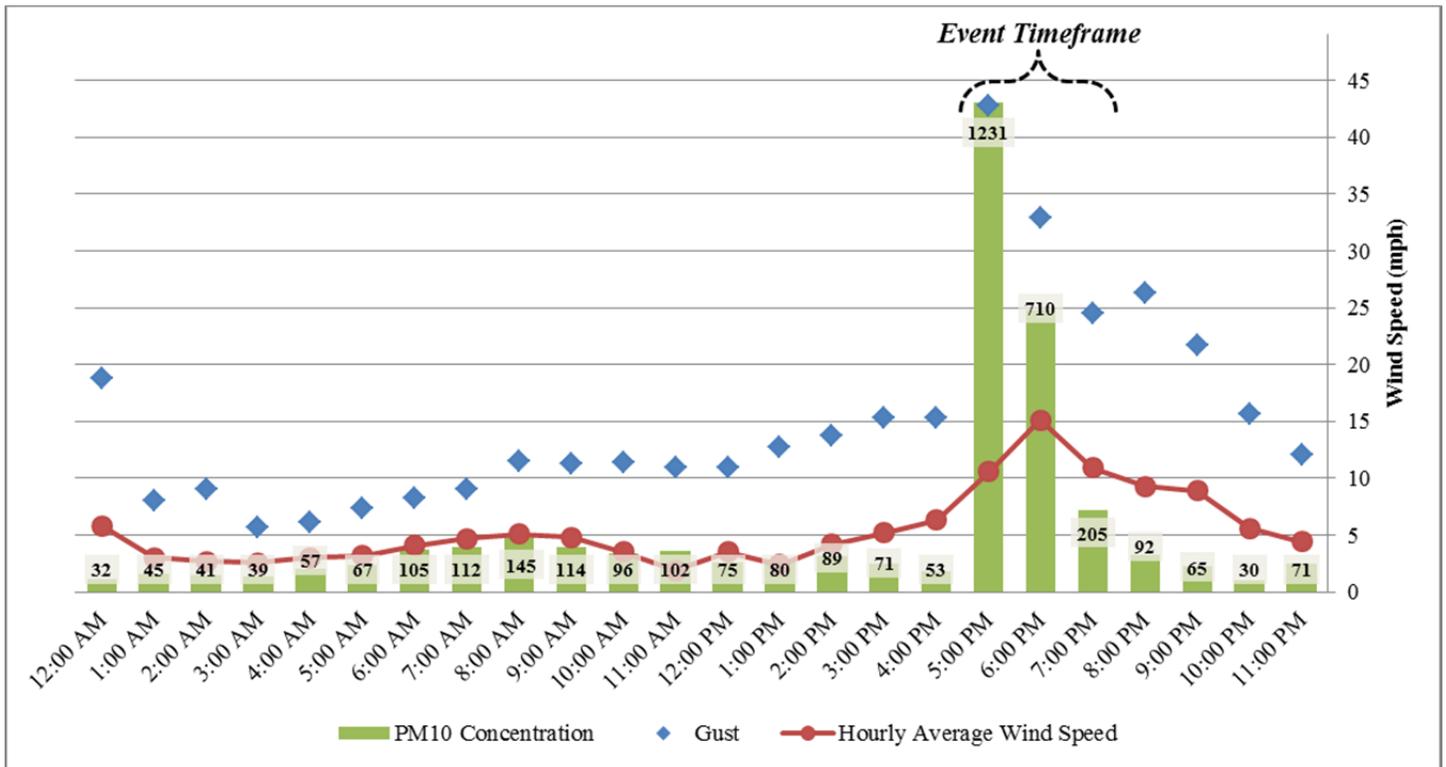


Figure D-2. Mesa monitor PM10 concentration, wind gust, and hourly wind speed on July 25, 2014.

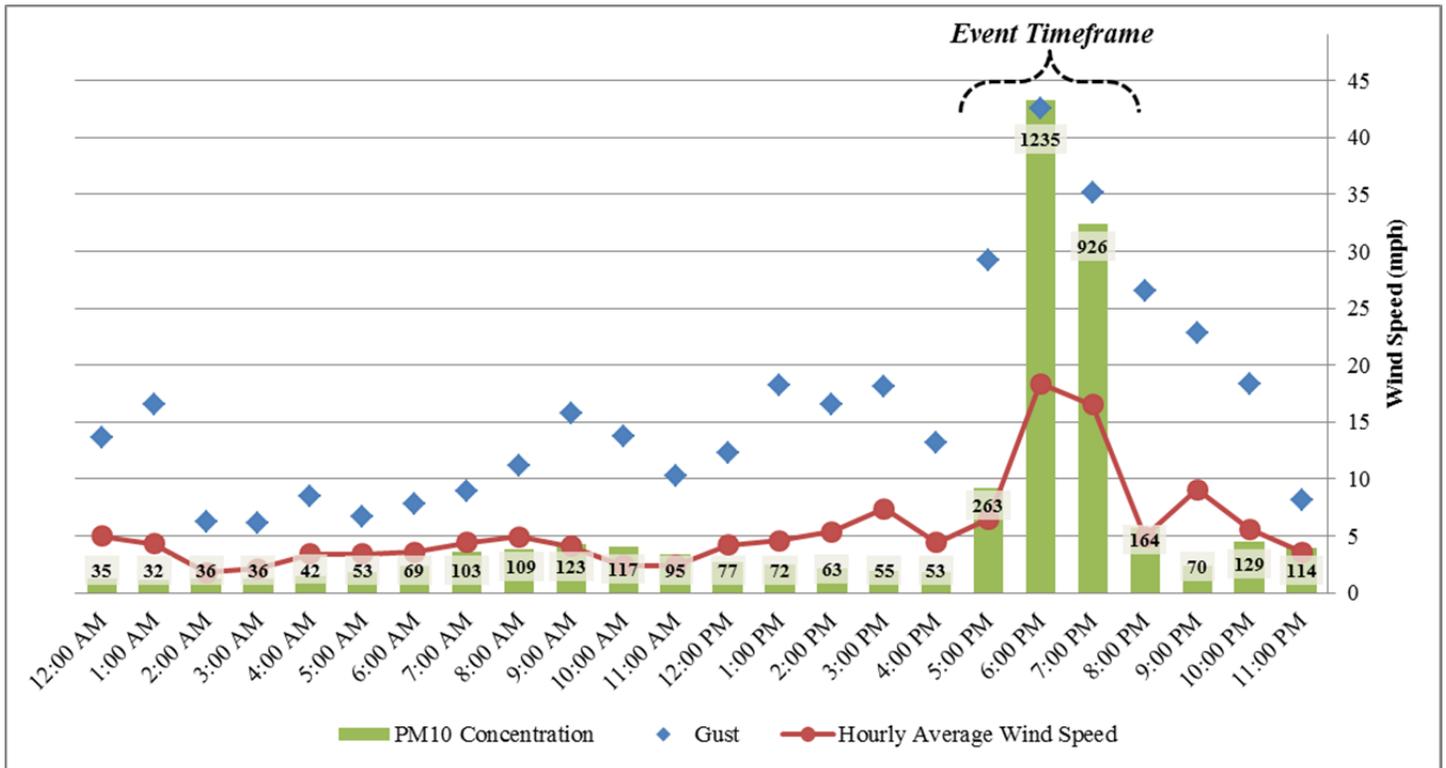


Figure D-3. South Phoenix monitor PM10 concentration, wind gust, and hourly wind speed on July 25, 2014.

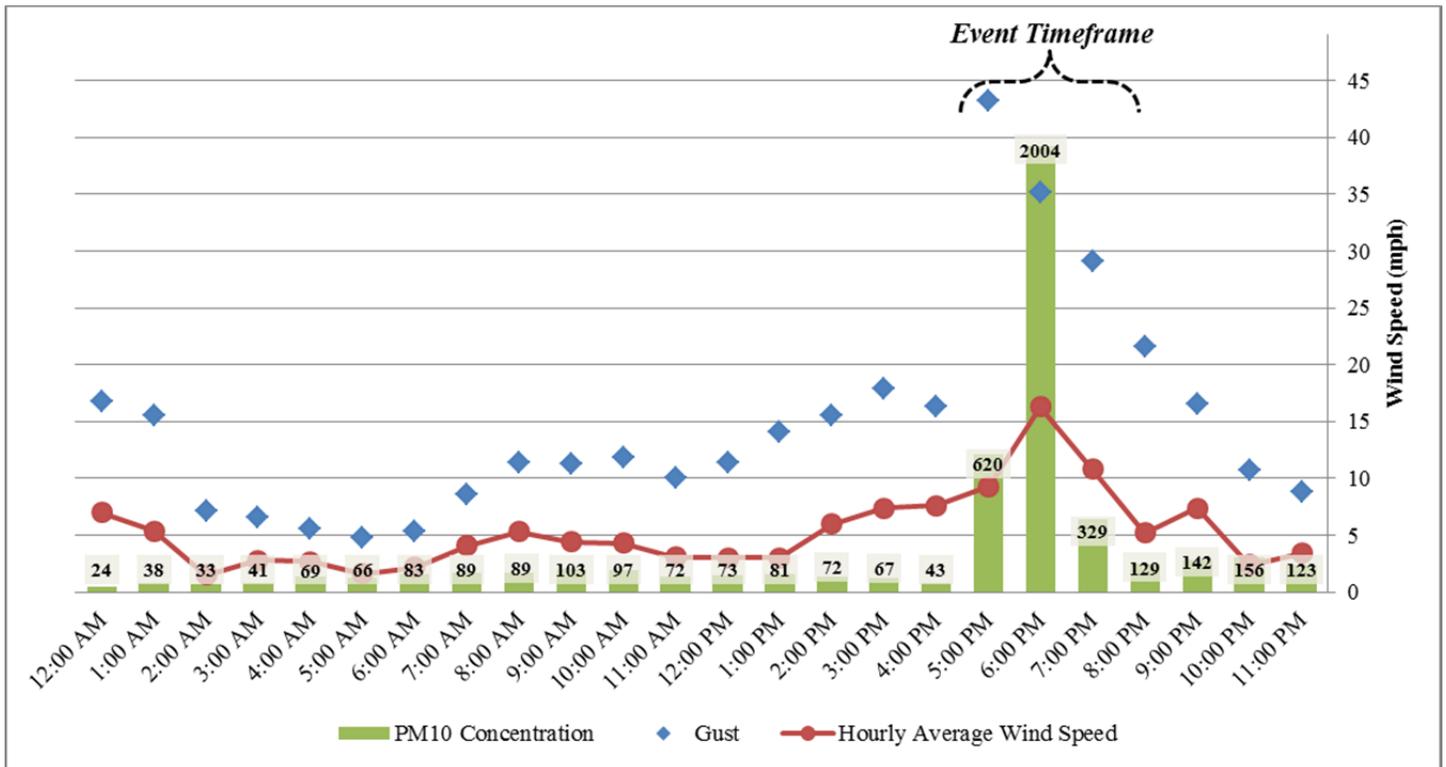


Figure D-4. South Scottsdale monitor PM10 concentration, wind gust, and hourly wind speed on July 25, 2014.

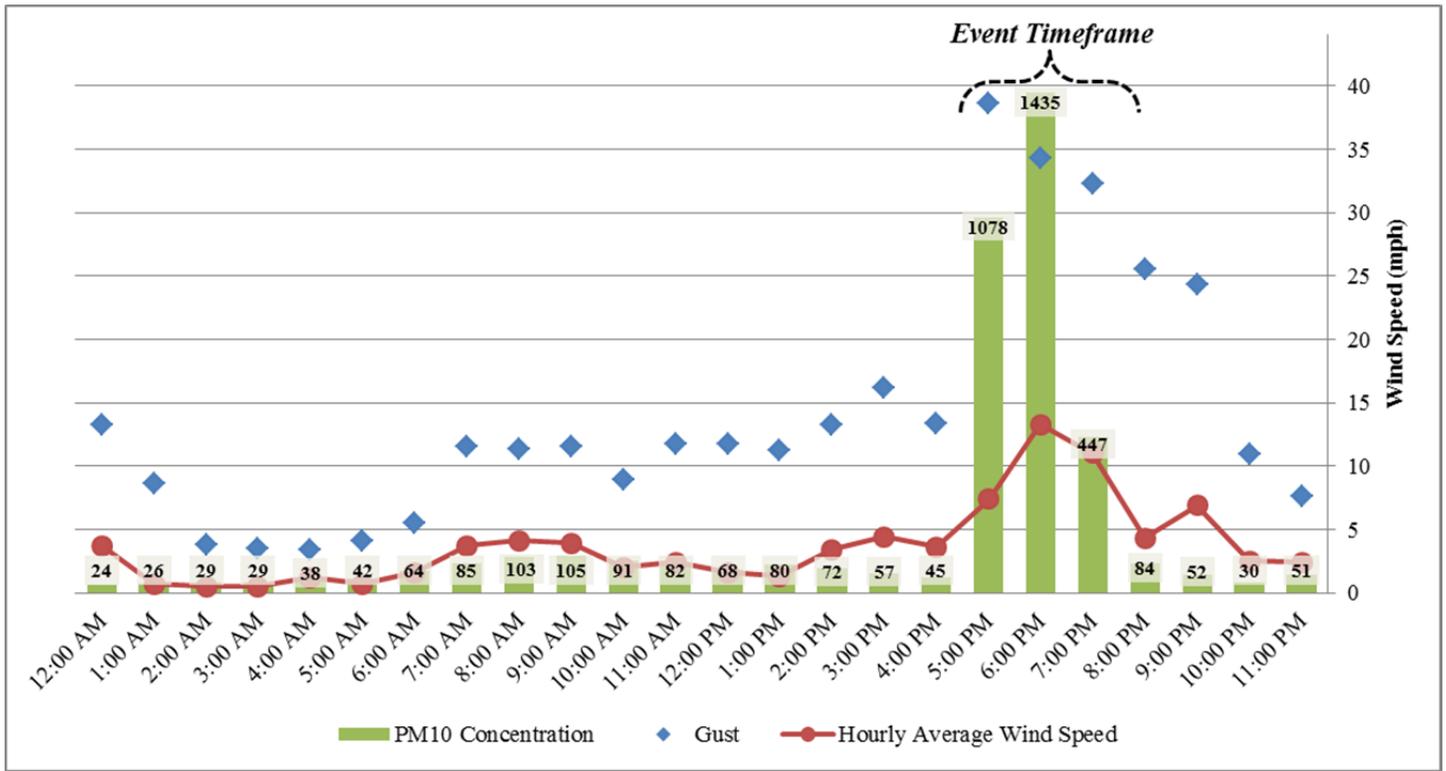


Figure D-5. Tempe monitor PM10 concentration, wind gust, and hourly wind speed on July 25, 2014.

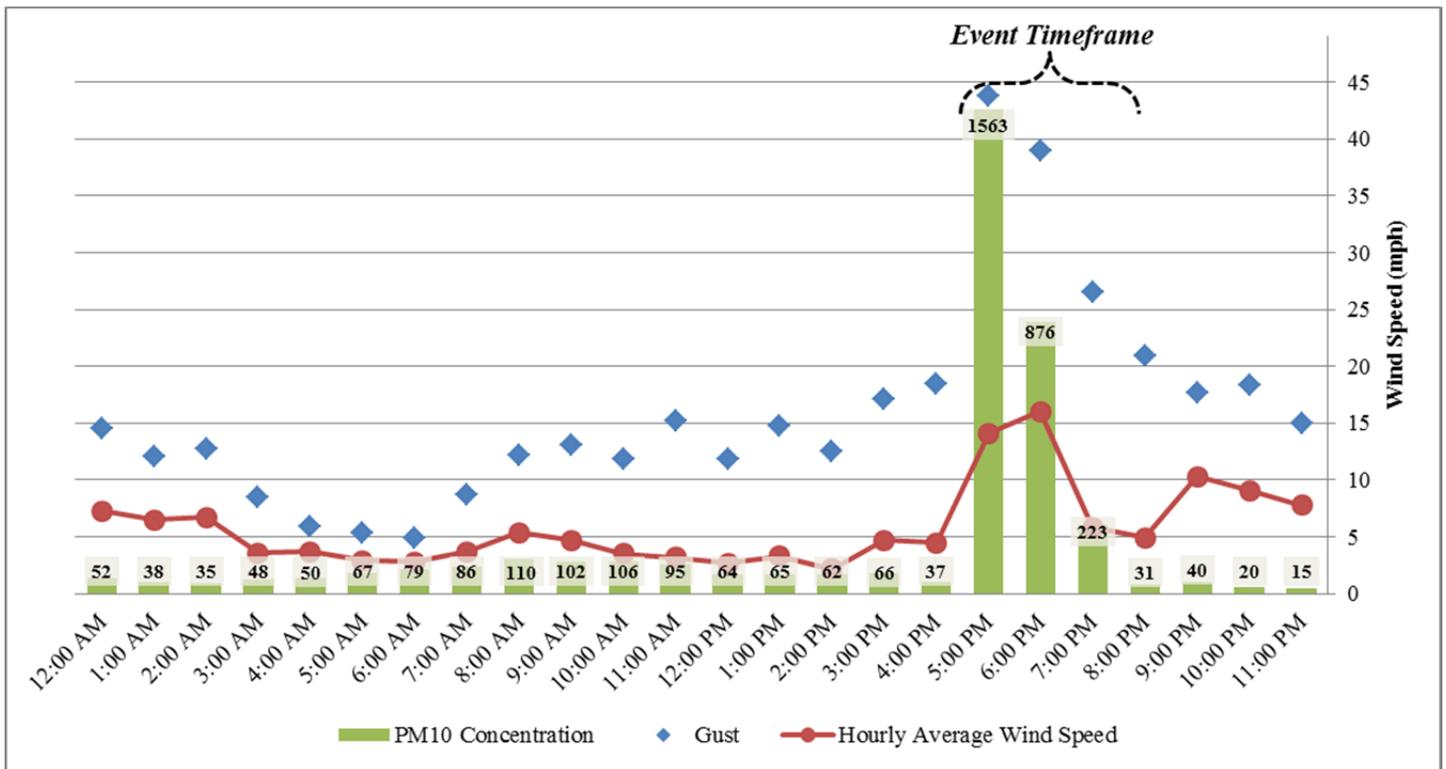


Figure D-6. West Chandler monitor PM10 concentration, wind gust, and hourly wind speed on July 25, 2014.

APPENDIX E

NOTICE OF PUBLIC COMMENT PERIOD

6840

State Agency
Public Notices

Request for Public Comments on Exceptional Events in the Maricopa County (Greater Phoenix) PM10 Nonattainment Area.

In 2005, Congress identified a need to account for events that result in exceedances of the National Ambient Air Quality Standards (NAAQS) that are exceptional in nature (e.g., not expected to reoccur or caused by acts of nature beyond man-made controls.) In response, EPA promulgated the Exceptional Events Rule (EER) to address exceptional events in 40 CFR Parts 50 and 51 on March 22, 2007 (72 FR 13560). On May 10, 2013, EPA released interim guidance documents to State, tribal and local air agencies for review. These guidance documents clarify key provisions of the 2007 EER in response to questions and issues that have arisen since the rule was promulgated. The EER allows for states and tribes to "flag" air quality monitoring data as an exceptional event. If flagged, these data can be excluded from consideration in air quality planning if EPA concurs with the demonstration submitted by the flagging agency documenting that all procedural and technical requirements have been met. Pursuant to 40 CFR 50.14(c)(3)(i), the Arizona Department of Environmental Quality (ADEQ) is soliciting comments on the final demonstrations of events that caused elevated concentrations of PM10 in the Maricopa County PM10 Nonattainment Area on May

11, July 3, July 8, and July 25, 2014. ADEQ has decided to flag these episodes based on these analyses. A copy of each demonstration is available for review beginning Monday, September 8, 2014 on the ADEQ website at www.azdeq.gov/air/planning/nee.html. Interested parties can submit written comments throughout the comment period which will end at 5:00 p.m. on Tuesday, October 7, 2014. Any comments received will be responded to and the comments and ADEQ's responses to the comments will be forwarded to EPA with the final demonstrations.

Written comments should be addressed, faxed, or e-mailed to: Andra Junel, Air Assessment Section, Arizona Department of Environmental Quality, 1110 W. Washington Street, Phoenix, AZ 85007. PHONE: (602) 771-4417; FAX: (602) 771-2366, E-mail: junel.andra@azdeq.gov.

In addition to being available on-line, a copy of each analysis is available for review, Monday through Friday, 8:30 a.m. to 4:30 p.m., at the ADEQ Records Management Center, 1110 W. Washington St., Phoenix, AZ, 85007, Attn: Records Center, (602) 771-4380, E-mail: recordscenter@azdeq.gov. Persons with a disability may request reasonable accommodations, such as a sign language interpreter, by contacting Alicia Pollard at (602) 771-4791 or at pollard.alicia@azdeq.gov. The TDD line for hearing impaired individuals is (602) 771-4829. Requests should be made as early as possible to allow time to arrange for the accommodation. Pub: September 8, 2014.

THE ARIZONA REPUBLIC

STATE OF ARIZONA }
COUNTY OF MARICOPA } SS.

Tabitha Weaver, being first duly sworn, upon oath deposes and says: That she is a Sr. legal advertising representative of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

The Arizona Republic

September 8, 2014



Sworn to before me this
9th day of
September A.D. 2014



BRIAN BILLINGS
Notary Public - State of Arizona
MARICOPA COUNTY
My Commission Expires
July 25, 2018


Notary Public