



Janet Napolitano
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Stephen A. Owens
Director

Assessment of Qualification for Treatment under the Arizona Natural and Exceptional Events Policy for the High Particulate (PM₁₀) Concentration Events in the Phoenix Area on August 16, 2007

Background

The Arizona Department of Environmental Quality (ADEQ) issues Dust Control Action Forecasts as part of the Natural Events Action Plan for the Phoenix area. On Wednesday August 15, 2007, due to the availability of atmospheric moisture and the possibility of monsoonal thunderstorms, ADEQ air quality forecasters issued the Maricopa County Dust Control Action Forecast calling for a moderate risk of wind-blown dust Thursday, August 16th for Maricopa County. The ADEQ Dust Control forecast also mentioned the fact that “during active summer monsoon episodes, outflows from even distant thunderstorms have the potential to cause periods of gusty winds and dense blowing dust.” The forecasts/advisories satisfy the requirement in 40 CFR 51.920(a)(1).

The forecast for August 16th called for a slight chance of thunderstorms capable of producing strong winds and blowing dust. This potential wind-blown dust event equated to a moderate risk of exceeding the PM₁₀ National Ambient Air Quality Standards (NAAQS) in Maricopa County. During the late afternoon / early evening hours of August 16th, a large thunderstorm developed east of the Phoenix area. The storm created an outflow boundary that generated blowing dust that moved into the Phoenix Metro area from the east. All appropriate State Implementation Plan (SIP) control measures were in place during the event

demonstrating, per 40 CFR 50.1(j), that the event “is not reasonably controllable or preventable.”

Strong winds were observed throughout eastern portions of Maricopa County and the Phoenix Metro area on August 16, 2007. The initialization of the wind-blown dust event is evident in the Phoenix visible camera images as well as the Arizona Meteorological Network (AzMET) and National Weather Service (NWS) monitors (see Fig. 1). Strong, gusty winds greater than 35 mph at Phoenix Sky Harbor Airport and up to 45 mph at Chandler Airport were reported during the early evening hours, while gusts greater than 30 mph were reported at several other central Arizona monitoring locations. In addition, both Phoenix Sky Harbor Airport and Chandler Airport NWS stations reported reduced visibility and blowing dust associated with the late afternoon/early evening thunderstorm. This event brought elevated ambient concentrations of PM₁₀ to the Phoenix area that exceeded the NAAQS at the West 43rd Ave. and Higley monitors operated by Maricopa County. The fact that ambient concentrations exceed the NAAQS satisfies the criteria in 40 CFR 50.1(j) that the event “affects air quality.”

The following are the key PM₁₀ monitor readings for the monitors examined in this report:

Monitor (Operator/Type)	AQS ID*	24-hr Avg PM ₁₀	1-hr Max PM ₁₀	Max Time	Flag**
PHOENIX METRO AREA					
West 43 rd Ave (MC/TEOM)	04-013-4009	215	1729	1800	A or RJ
Durango Complex (MC/TEOM)	04-013-9812	86	442	1700	None
Greenwood (MC/TEOM)	04-013-3010	65	398	1700	None
Higley (MC/TEOM)	04-013-4006	195	2573	1700	A or RJ
West Phoenix (MC/TEOM)	04-013-0019	47	288	1700	None
Central Phoenix (MC/TEOM)	04-013-3002	48	197	1700	None
JLG Supersite (ADEQ/TEOM)	04-013-9997	37	281	1700	None
Coyote Lakes (MC/TEOM)	04-013-4014	37	100	1800	None
South Phoenix (MC/TEOM)	04-013-4003	87	494	1700	None

* EPA Air Quality System Identification Number

** 24-hr PM₁₀ concentration influenced by natural or exceptional event to be flagged.

Type Abbreviations: TEOM – Tapered Element Oscillating Microbalance Monitor (Continuous monitor)

The preliminary findings from this analysis were presented at a stakeholders meeting on June 11, 2008. ADEQ has finalized this demonstration, which was made available for

public comment from August 11, 2008, through September 10, 2008. Any comments that were received were forwarded to EPA with this demonstration pursuant to 40 CFR 51.14(c)(3)(i).

SOUTHEAST PHOENIX

Hr	T(F)	RH	Rn	Spd	Max	Dir
1	85	52	-	1	4	SE
2	81	67	-	4	6	SE
3	80	66	-	5	6	SE
4	79	68	-	5	7	SE
5	77	72	-	6	7	SE
6	78	68	-	5	7	SE
7	79	69	-	2	4	SE
8	84	62	-	4	8	SE
9	88	50	-	6	9	S
10	92	42	-	4	10	S
11	96	35	-	2	7	S
12	99	29	-	2	6	W
1	100	29	-	4	9	NW
2	102	27	-	4	9	NW
3	103	25	-	5	9	NW
4	104	24	-	6	11	NW
5	98	28	-	16	39	NE
6	87	42	-	15	26	NE
7	86	46	-	16	25	NE
8	82	59	-	10	18	E
9	82	61	-	9	14	SE
10	85	50	-	9	17	E
11	82	57	-	2	6	NW
12	81	66	-	4	7	S

NWS-Chandler ARPT

Hr	T(F)	VR	Dust	Spd	Gust	Dir
1	M	M	M	M	M	M
2	M	M	M	M	M	M
3	M	M	M	M	M	M
4	M	M	M	M	M	M
5	M	M	M	M	M	M
6	M	M	M	M	M	M
7	82	40		5	5	VR
8	86	40		0	0	N
9	91	40		3	3	S
10	93	40		3	3	S
11	99	40		3	3	SW
12	99	40		5	5	W
1	102	40		6	6	NW
2	M	M	M	M	M	M
3	106	40		7	7	S
4	106	25		9	9	SW
5	108	1	BLDU	32	45	NE
6	82	4	RA	31	41	NE
7	M	M	M	M	M	M
8	M	M	M	M	M	M
9	88	15		11	11	NE
10	M	M	M	M	M	M
11	M	M	M	M	M	M
12	M	M	M	M	M	M

NWS-Phx Sky Harbor

Hr	T(F)	VR	Dust	Spd	Gust	Dir
1	96	10		7	7	NW
2	95	10		8	8	NW
3	93	10		5	5	N
4	92	10		3	3	S
5	91	10		3	3	SE
6	89	10		5	5	E
7	89	10		7	7	E
8	91	10		5	5	E
9	94	10		0	0	N
10	97	10		0	0	N
11	100	10		3	3	VR
12	102	10		5	5	W
1	106	10		0	0	N
2	108	10		9	9	SW
3	108	10		8	8	W
4	109	10		0	0	N
5	104	5	HZ BL	24	34	E
6	101	10		26	38	E
7	98	10		23	32	E
8	96	10		14	14	E
9	95	10		8	8	SE
10	94	10		8	8	NE
11	94	10		7	7	E
12	93	10		6	6	SE

Event Contrib. Analysis

Hourly PM₁₀ Conc. (µg/m³)

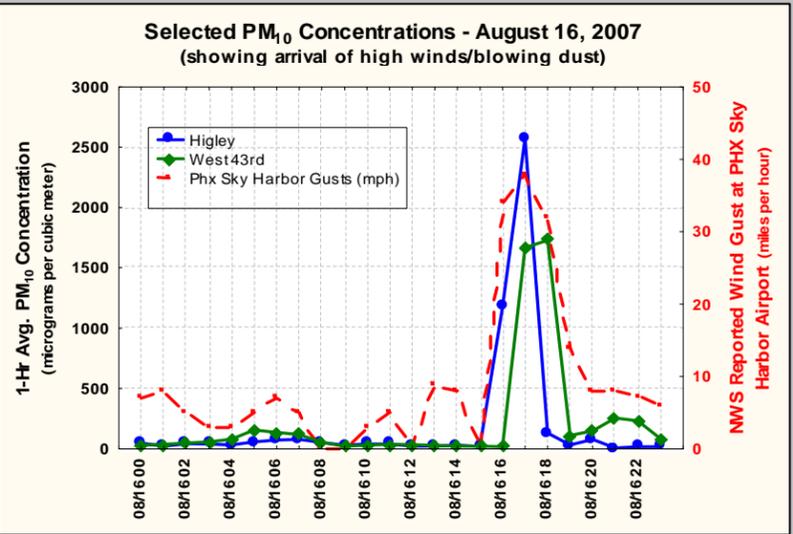
MONITORS:	Hr	1	2
1-HIGLEY	1	48	31
2-WEST 43RD	2	23	37
	3	44	47
	4	42	57
	5	34	80
	6	58	157
	7	75	136
	8	78	116
	9	54	53
	10	31	23
	11	39	30
	12	42	37
24-Hr. Avg PM ₁₀			
with Event		23	34
w/o Event		22	31
1-HIGLEY	195	39	
2-WEST 43RD	215	80	
> NAAQS	< NAAQS		
Pink=Event Contrib.			
Conclusion: As shown above, the PM ₁₀ concentrations would have been below the NAAQS "BUT FOR" the event contribution (hours highlighted in pink).			
	1174	17	
	2573	1668	
	132	1729	
	8	34	112
	9	78	150
	10	9	255
	11	19	233
	12	18	84



Figure 1. Key Data for Event of August 16, 2007

PHX WINDS	KEY	PM10
CEN. AZ WINDS	SAT IMAGES	PHX VIS.
SO AZ WINDS	PHX VIS.	CAMERAS

SUMMARY OF EVENT
By 5:00 pm, a strong outflow boundary had arrived over the East Valley and Phoenix experienced winds from the east with gust up to 35 mph. Mesa Williams Gateway Airport had a visibility of 1/8 statute mile in blowing dust with winds out of the east at 31 mph with gusts up to 41 mph.



COOLIDGE

Hr	T(F)	RH	Rn	Spd	Max	Dir
1	78	74	-	3	5	SE
2	77	76	-	4	6	SE
3	78	72	-	3	6	S
4	77	76	-	3	4	SW
5	76	79	-	2	4	SW
6	74	84	-	2	4	SE
7	76	82	-	1	4	SE
8	82	69	-	1	3	SW
9	87	59	-	2	6	S
10	91	47	-	3	6	S
11	94	47	-	3	6	S
12	98	40	-	2	5	SE
1	100	37	-	2	6	E
2	104	27	-	1	6	NW
3	104	30	-	2	5	SE
4	103	32	-	2	9	S
5	99	36	-	7	26	NE
6	85	54	-	12	20	NE
7	84	55	-	10	18	NE
8	83	58	-	5	12	SE
9	83	55	-	5	10	NE
10	83	60	-	4	7	S
11	80	69	-	2	5	N
12	80	72	-	2	4	NE

MARICOPA

Hr	T(F)	RH	Rn	Spd	Max	Dir
1	89	36	-	2	4	W
2	84	52	-	2	3	S
3	82	58	-	5	10	S
4	83	58	-	5	7	S
5	80	67	-	2	4	S
6	80	66	-	4	7	S
7	81	65	-	3	5	S
8	86	56	-	5	8	S
9	91	44	-	4	7	S
10	96	38	-	2	5	NE
11	97	33	-	4	5	NE
12	100	27	-	4	8	NE
1	102	25	-	4	8	N
2	104	24	-	4	8	NE
3	106	22	-	3	9	NE
4	107	18	-	3	11	SW
5	106	23	-	3	7	E
6	96	32	-	18	33	E
7	92	33	-	17	27	E
8	91	34	-	8	19	SE
9	89	40	-	4	7	S
10	88	45	-	2	5	N
11	87	45	-	6	10	NE
12	86	49	-	5	7	E

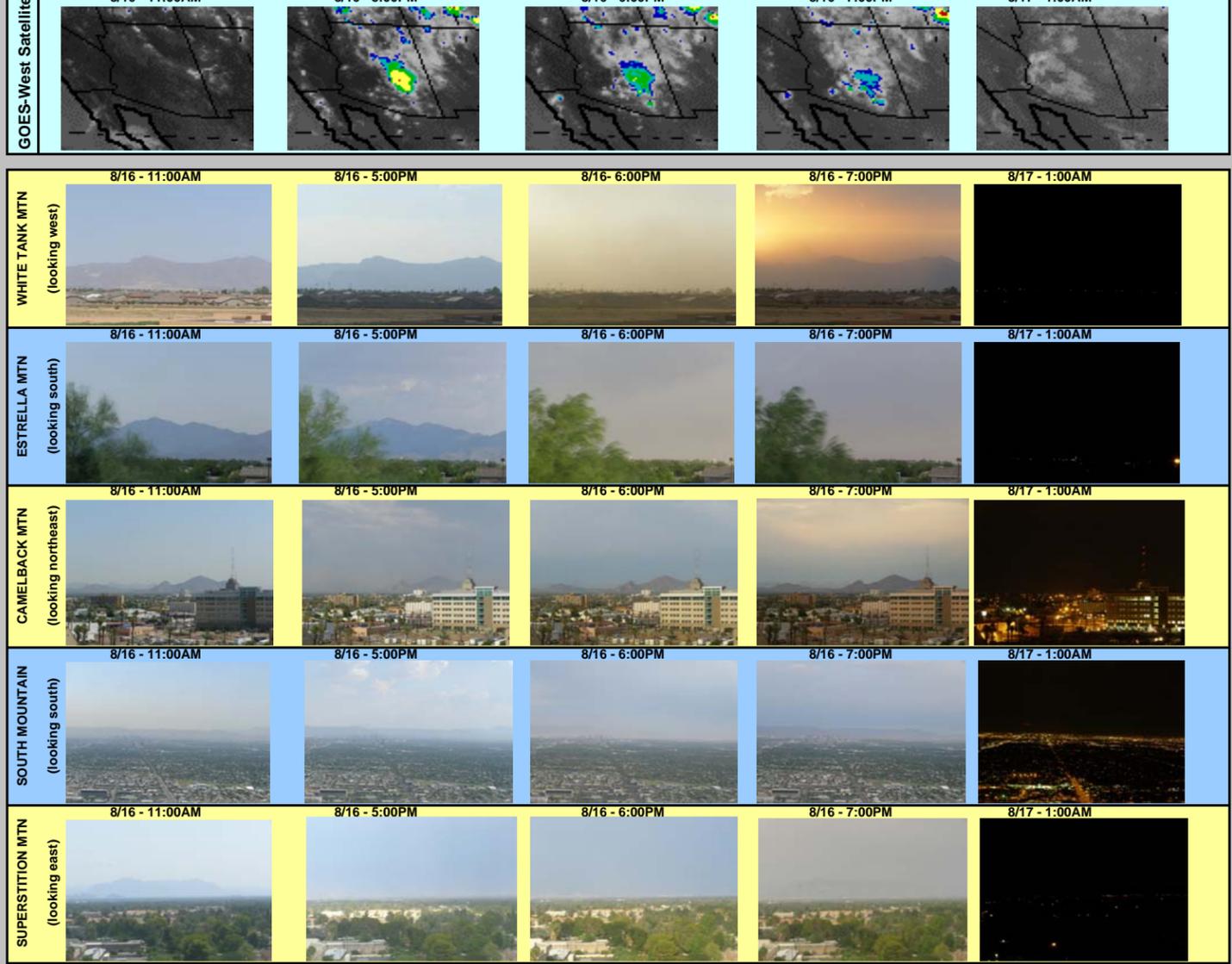
BUCKEYE

Hr	T(F)	RH	Rn	Spd	Max	Dir
1	88	38	-	2	3	N
2	86	41	-	1	3	N
3	84	49	-	1	2	NW
4	80	65	-	1	2	SW
5	81	55	-	1	2	N
6	82	48	-	1	3	NE
7	84	45	-	2	5	NE
8	89	43	-	1	5	NW
9	91	46	-	1	4	W
10	94	40	-	3	6	SW
11	96	38	-	2	6	W
12	99	31	-	2	6	SW
1	102	29	-	3	6	SW
2	104	26	-	4	7	SW
3	105	25	-	4	9	SW
4	106	24	-	4	8	S
5	106	21	-	4	8	SW
6	105	25	-	4	6	SW
7	99	27	-	13	28	E
8	95	28	-	17	24	E
9	92	32	-	11	18	SE
10	89	38	-	9	13	SE
11	85	43	-	6	11	SE
12	86	41	-	4	10	SE

Historical Distribution

5-Yr. Dist. of Values (µg/m³)

MONITORS:	Column Index			
1-HIGLEY	Yr - All Data (5-Yrs)			
2-WEST 43RD	Sea - Data for Summer season only (5-Yrs)			
Cum. Freq.	Mon 1	Mon 2		
	Yr	Sea	Yr	Sea
Min	3	13	5	16
0.5%	7	15	9	18
1.0%	8	17	11	18
2.5%	11	17	15	20
5%	16	19	19	24
10%	21	24	29	31
25%	33	36	44	40
50%	49	54	65	61
75%	71	71	91	82
90%	95	101	121	102
95%	114	138	139	127
97.5%	145	225	157	157
99.0%	175	493	192	251
99.5%	225	493	227	251
Max	493	493	313	251
Flagged Value	195	215		
Conclusion: Flagged Value is exceptional in nature (eg. greater than 95% of all data)				



YUMA

Hr	T(F)	RH	Rn	Spd	Max	Dir
1	89	45	-	0	3	NE
2	87	48	-	1	3	NE
3	86	50	-	0	1	NE
4	85	50	-	0	0	E
5	85	49	-	1	4	NE
6	85	48	-	0	1	E
7	85	50	-	0	2	E
8	90	47	-	4	9	S
9	94	40	-	6	10	S
10	98	33	-	7	11	S
11	101	25	-	7	14	S
12	103	26	-	6	15	S
1	105	23	-	6	12	S
2	107	20	-	6	15	SW
3	109	20	-	6	14	SW
4	109	19	-	7	15	SW
5	109	20	-	8	13	SW
6	108	20	-	7	12	W
7	106	20	-	3	7	W
8	101	25	-	3	5	W
9	97	29	-	2	5	SW
10	94	33	-	3	7	SW
11	92	39	-	5	7	SW
12	91	39	-	3	10	E

PALOMA

Hr	T(F)	RH	Rn	Spd	Max	Dir
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Assessment under the Technical Criteria Document (TCD)

1. Properly qualify and validate the air quality measurement to be flagged. This high wind event did occur on a filter sampling date (1-in-6 run day); therefore, data from the continuous analyzers as well as the filter-based monitors were examined. The air quality monitoring data were reviewed by the agency responsible for operation of the monitor. All hourly PM₁₀ readings from the West 43rd and Higley monitoring sites were valid for August 16th. Audits of the analyzers revealed operations were within acceptable tolerance. No local sources were reported as significantly contributing to the air quality episode. Exceedances of the NAAQS were recorded at the West 43rd and Higley monitors operated by Maricopa County.

2. Review suspected contributing sources. The NWS and AzMET surface data for Arizona, along with the visible camera images in Phoenix, provide a good explanation as to what meteorological conditions were in place on August 16th. Strong, easterly winds were occurring in the Phoenix area due to an outflow boundary from thunderstorms that developed east of the Phoenix Metro area during the late afternoon hours of August 16th. The plot of hourly PM₁₀ concentration data in the upper right corner of Figure 1 confirms the identical timing of elevated PM₁₀ concentrations at the West 43rd Ave. and Higley monitors with strong wind gusts at Sky Harbor Airport. Finally, reduced visibility and blowing dust reported at Sky Harbor and Chandler airports were coincident with elevated PM₁₀ concentrations measured at West 43rd Ave. and Higley.

3. Examine all air quality monitoring information. Data from all monitors in the network were reviewed. Monitors from the affected areas are summarized in the table in the Background section of this assessment. Pursuant to 40 CFR 50.14(c)(3)(iii)(C), the “Historical Distribution” Table in Figure 1 has been included to demonstrate that the event is associated with measured concentrations in excess of normal historical fluctuations, including background (i.e., concentrations greater than the 95th percentile). The monitors with readings greater than that of the NAAQS on August 16th, 2007, which should be flagged, include West 43rd Ave. and Higley.

4. Examine the meteorological conditions before and during the event. The AzMET meteorological data are summarized in Figure 1. The wind data are highlighted yellow if the max wind speed in the hour exceeds 15 mph and orange if it exceeds 25 mph. As can be seen in figure

1, wind speeds did not pick up in the Phoenix area until 4:00 or 5:00 p.m., when several stations reported gusty winds that approached 40 mph at times. This timing corresponds to the onset of elevated PM₁₀ concentrations recorded at the flagged monitoring sites, each of which only recorded two hours of exceptionally high PM₁₀ concentrations as the outflow boundary and its wind-blown dust passed.

5. Perform a qualitative attribution to emission source(s). All evidence indicates the elevated PM₁₀ concentrations in the Phoenix area can be attributed to soil emissions that were transported over portions of the Phoenix Metro area in Maricopa County. No source specific emission allocation is possible based on the data available for analysis. The hourly concentration data do not show any significant source other than the wind-blown dust event occurring on August 16th, 2007. Observational reports of blowing dust from trained officials, along with reduced visibility through portions of the Phoenix area, are further proof that the elevated PM₁₀ concentrations were attributed to soil emissions transported due to wind gusts associated with a thunderstorm (see attachments). These reports, in addition to the visual evidence of reduced visibility seen in the lower right portion of Figure 1, provide proof that the elevated PM₁₀ concentrations in the Phoenix area can be attributed to soil emissions.

6. Estimation of Contribution from Source or Event. The primary source appears to be wind-blown dust over portions of Maricopa County for which there is not an effective or efficient method to estimate the relative contributions from specific sources. The demonstration analysis contained in this report establishes the linkage between the measurements to be flagged and the event, thus satisfying the requirement in 40 CFR 50.14(c)(3)(iii)(B). Pursuant to 40 CFR 50.14(c)(3)(iii)(D), the “Event Contrib. Analysis” Table in Figure 1 has been included to demonstrate that there would have been no exceedances or violations but for the event (i.e., the contribution during the event overwhelmed the 24-hour averages).

7. Determination that a Natural or Exceptional Event Contributed To an Exceedance. Based on this analysis, the event satisfies the requirement in 40 CFR 50.1(j) that the elevated concentrations measured at the Higley and West 43rd Ave. monitors were attributed to a natural event.

Conclusion

Long-range transport of dust from soils. The region wide elevated PM₁₀ event on August 16th, 2007 in Maricopa County was the result of the transport of dust and soils from high winds that suspended natural soils and soils from areas where Best Available Control Measures are in place and should be flagged for air quality planning

purposes. The “high wind” flag (A or RJ) should be applied to the monitor readings indicated in the table at the beginning of this report, as the monitor would have been below the NAAQS but for the contribution of the event.

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

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
CHANDLER MUNICIPAL AIRPORT (53128)
CHANDLER , AZ
(08/2007)**

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

Elevation: 1243 ft. above sea level
Latitude: 33.269
Longitude: -111.801
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
16	0650	0	FEW200	40.00		82	28.0	71	21.8	66	19.0	58	5	VR		28.50			M	AA		29.82
16	0747	0	CLR	40.00		86	30.0	72	22.4	66	19.0	51	0	000		28.51			M	AA		29.83
16	0847	0	CLR	40.00		91	33.0	72	22.3	63	17.0	39	3	180		28.52			M	AA		29.84
16	0947	0	CLR	40.00		93	34.0	73	22.6	63	17.0	37	3	170		28.52			M	AA		29.84
16	1047	0	CLR	40.00		99	37.0	72	22.4	59	15.0	27	3	220		28.52			M	AA		29.84
16	1147	0	FEW200	40.00		99	37.0	72	22.4	59	15.0	27	5	290		28.50			M	AA		29.82
16	1247	0	FEW200	40.00		102	39.0	72	22.3	57	14.0	23	6	300		28.47			M	AA		29.79
16	1447	0	SCT200	40.00		106	41.0	72	22.4	55	13.0	19	7	200		28.42			M	AA		29.73
16	1549	0	SCT150	25.00		106	41.0	72	22.2	54	12.0	18	9	210	45	28.38			M	AA		29.69
16	1655	0	SCT150CB BKN200	1.00	BLDU -RA	108	42.0	74	23.2	57	14.0	19	32	040	41	28.43			M	AA		29.74
16	1755	0	SCT017 BKN050	4.00		82	28.0s	70	21.1	64	18.0	55	31	060		28.44			M	AA		29.76
16	2047	0	SCT150 BKN180	15.00		88	31.0	70	21.2	61	16.0	40	11	040		28.48			M	AA		29.80

Dynamically generated Wed Mar 26 13:22:36 EDT 2008 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
WILLIAMS GATEWAY AIRPORT (23104)
PHOENIX , AZ
(08/2007)**

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

Elevation: 1382 ft. above sea level

Latitude: 33.308

Longitude: -111.650

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
16	0056	0	CLR	10.00		90	32.0	70	21.0	59	15.0	35	6	260		28.34			M	AA		29.80
16	0156	0	CLR	10.00		88	31.0	70	21.2	61	16.0	40	3	230		28.33			M	AA		29.79
16	0257	0	CLR	10.00		86	30.0	70	20.9	61	16.0	43	0	000		28.34			M	AA		29.80
16	0355	0	CLR	10.00		82	28.0	70	21.1	64	18.0	55	5	150		28.35			M	AA		29.81
16	0456	0	CLR	10.00		82	28.0	70	20.8	63	17.0	53	8	080		28.35			M	AA		29.81
16	0647	0	FEW250	30.00		84	29.0	71	21.5	64	18.0	51	7	120		28.38			M	AA		29.84
16	0747	0	FEW250	30.00		86	30.0	71	21.8	64	18.0	48	10	130		28.39			M	AA		29.85
16	0847	0	FEW250	30.00		91	33.0	73	22.6	64	18.0	41	6	130		28.40			M	AA		29.86
16	0947	0	FEW250	30.00		95	35.0	71	21.8	59	15.0	30	5	130		28.40			M	AA		29.86
16	1047	0	FEW150 FEW250	30.00		97	36.0	73	22.6	61	16.0	30	3	VR		28.40			M	AA		29.86
16	1147	0	FEW150 FEW250	30.00		100	38.0	72	22.0	57	14.0	24	7	330		28.39			M	AA		29.85
16	1347	0	FEW100	30.00		104	40.0	73	22.6	57	14.0	21	6	310		28.32			M	AA		29.78
16	1447	0	FEW100 SCT150	30.00	BLDU	104	40.0	72	22.1	55	13.0	20	9	320		28.29			M	AA		29.75
16	1640	0	FEW000 SCT100 BKN250	3.00	DSs	106	41.0	71	21.7	52	11.0	17	25	030	34	28.32			M	AA		29.78
16	1650	0	FEW000 BKN100 BKN250	0.12s	nulls	100	38.0	71	21.5	55	13.0	22	31	070	41	28.34			M	AA		29.80
16	1715	0	FEW000 BKN120 BKN250	M	BLDU	84	29.0s	73	22.8	68	20.0	59	M	M	40	28.35			M	AA		29.81
16	1747	0	SCT080 BKN120 BKN250	10.00	-RA	86	30.0	70	20.9	61	16.0	43	29s	090	29	28.34			M	AA		29.80
16	1847	0	BKN120 BKN200 BKN250	15.00	-RA	88	31.0	69	20.6	59	15.0	38	20	090		28.34			M	AA		29.80
16	1955	0	SCT080 SCT120	10.00		86	30.0	71	21.5	63	17.0	46	17	140		28.33			M	AA		29.79
16	2055	0	CLR	10.00		84	29.0	70	21.2	63	17.0	49	15	120		28.35			M	AA		29.81
16	2158	0	SCT085 SCT110	10.00		88	31.0	70	21.2	61	16.0	40	9	030		28.37			M	AA		29.83
16	2259	0	CLR	10.00		88	31.0	70	21.2	61	16.0	40	3	180		28.37			M	AA		29.83
16	2357	0	CLR	10.00		86	30.0	70	20.9	61	16.0	43	0	000		28.37			M	AA		29.83

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

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
PHOENIX SKY HARBOR INTL AIRPORT (23183)
PHOENIX , AZ
(08/2007)**

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

Elevation: 1105 ft. above sea level
Latitude: 33.443
Longitude: -111.990
Data Version: VER3

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
16	0051	11	SCT250	10.00		96	35.6	71	21.4	57	13.9	27	7	300		28.59			AA		29.76	
16	0151	11	SCT250	10.00		95	35.0	70	21.3	57	13.9	28	8	320		28.58			AA		29.75	
16	0251	11	SCT250	10.00		93	33.9	71	21.5	59	15.0	32	5	010		28.59	8	001	AA		29.76	
16	0351	11	FEW250	10.00		92	33.3	70	21.3	59	15.0	33	3	190		28.59			AA		29.76	
16	0451	11	FEW250	10.00		91	32.8	70	21.2	59	15.0	34	3	150		28.60			AA		29.77	
16	0551	11	FEW250	10.00		89	31.7	71	21.4	61	16.1	39	5	080		28.61	3	005	AA		29.78	
16	0651	11	FEW250	10.00		89	31.7	71	21.7	62	16.7	41	7	110		28.63			AA		29.80	
16	0751	11	FEW250	10.00		91	32.8	72	22.0	62	16.7	38	5	110		28.65			AA		29.82	
16	0851	11	FEW250	10.00		94	34.4	73	22.8	63	17.2	36	0	000		28.65	3	015	AA		29.82	
16	0951	11	FEW250	10.00		97	36.1	73	22.7	61	16.1	30	0	000		28.65			AA		29.82	
16	1051	11	FEW090	10.00		100	37.8	73	22.6	59	15.0	26	3	VR		28.65	0	001	AA		29.82	
16	1151	11	FEW100	10.00		102	38.9	73	22.6	58	14.4	23	5	260		28.63			AA		29.80	
16	1251	11	FEW110 SCT250	10.00		106	41.1	74	23.2	58	14.4	21	0	000		28.60			AA		29.77	
16	1351	11	FEW110 SCT250	10.00		108	42.2	73	22.9	56	13.3	18	9	230		28.57	8	026	AA		29.74	
16	1451	11	FEW120 SCT250	10.00		108	42.2	73	22.7	55	12.8	17	8	260		28.54			AA		29.71	
16	1551	11	FEW120 SCT150 SCT250	10.00		109	42.8	72	22.4	53	11.7	16	0	000		28.51			AA		29.68	
16	1651	11	FEW120 SCT150 SCT250	10.00	BLDU	110	43.3	72	22.1	51	10.6	14	6	330	34	28.54	5	011	AA		29.71	
16	1706	11	SCT001 SCT120 BKN150	9.00	HZ BLDU SQ	104	40.0	72	22.1	55	13.0	20	29	070	34	28.55			M	SP		29.72
16	1709	11	SCT001 SCT120 BKN150	5.00	HZ BLDU	104	40.0	73	22.6	57	14.0	21	24	070	37	28.55			M	SP		29.72
16	1719	11	SCT120 BKN150 BKN250	6.00		102	39.0	72	22.3	57	14.0	23	29	070	38	28.56			M	SP		29.73
16	1751	11	SCT120 BKN150 BKN250	10.00		101	38.3	72	22.4	58	14.4	24	26	090	32	28.57			AA		29.74	
16	1851	11	SCT120 BKN150 BKN250	10.00		98	36.7	70	21.0	54	12.2	23	23	090		28.58	0	014	AA		29.75	
16	1951	11	SCT120 BKN150 BKN250	10.00		96	35.6	69	20.4	53	11.7	23	14	100		28.58			AA		29.75	
16	2051	11	SCT120 BKN150 BKN250	10.00		95	35.0	70	21.0	56	13.3	27	8	130		28.64			AA		29.81	
16	2151	11	SCT120 BKN150 BKN250	10.00		94	34.4	70	21.1	57	13.9	29	8	050		28.63	0	011	AA		29.80	
16	2251	11	SCT120 BKN150 BKN250	10.00		94	34.4	70	20.8	56	13.3	28	7	110		28.61			AA		29.78	
16	2351	11	BKN150 OVC250	10.00		93	33.9	70	20.9	57	13.9	30	6	140		28.62			AA		29.79	

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