MONTHLY AIR QUALITY REPORT FOR MARCH 2009

AQI COLOR SCALE

GOOD	MODERATE	UNHEALTHY FOR SENSITIVE GROUPS	UNHEALTHY
0-50	51-100	101-150	151-200

Calendar of maximum AQI values & their corresponding color for March 2009*

*Preliminary data

SAMPLE POLLUTANT REPORTING BOX

1 (day of month)	O3	CO
	PM10	PM2.5

SUN			MON			TUES			WED			THU			FRI			SAT	
1	45	20	2	45	19	3	42	22	4	41	14	5	36	13	6	47	07	7	46	10
	47	44		59	53		59	48		58	52		48	27		43	22		31	28
8	46	15	9	37	13	10	47	09	11	43	13	12	42	11	13	44	07	14	49	08
	33	53		28	24		40	31		44	39		42	33		40	29		27	33
15	54	09	16	50	11	17	51	13	18	50	18	19	50	19	20	49	16	21	39	15
	27	35		40	37		54	49		56	48		78	48		65	42		42	35
22	47	04	23	47	05	24	42	07	25	43	09	26	50	07	27	45	09	28	49	15
	122	45		64	41		40	27		52	31		128	40		31	19		35	41
29	49	13	30	58	05	31	50	07												
	39	35		41	25		31	30												

Calendar of High Pollution Advisories and Health Watches issued during March 2009

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22 A	23	24	25	26 A	27	28
29	30	31				

LEGEND

HIGH POLLUTION ADVISORIES
A = PM-10 High Pollution Advisory
B = PM-2.5 High Pollution Advisory
C = Ozone High Pollution Advisory

HEALTH WATCHES
D = PM-10 Health Watch
E = PM-2.5 Health Watch
F = Ozone Health Watch

Calendar of Meteorological Conditions observed in Metro Phoenix during March 2009

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3 E	4	5	6	7
8	9 B	10 E	11	12	13	14 E
15	16	17 E	18	19 E	20 E	21 E
22 D	23 E	24 E	25 E	26 D	27	28 F
29 F	30	31				

LEGEND

ELECTROMETEORS
A = Thunderstorm

HYDROMETEORS
B = Rain/Drizzle/Hail/Snow
C = Fog

LITHOMETEORS
D = Blowing Dust
E = Haze (vsby <10SM)
F = Smoke

Exceedance days during MAR 2009-

Total=	2	Date	Max AQI	Pollutant	Site/s
		3/22	122	PM-10	West Forty Third
		3/26	128	PM-10	West Forty Third

Health Watches issued during MAR 2009-

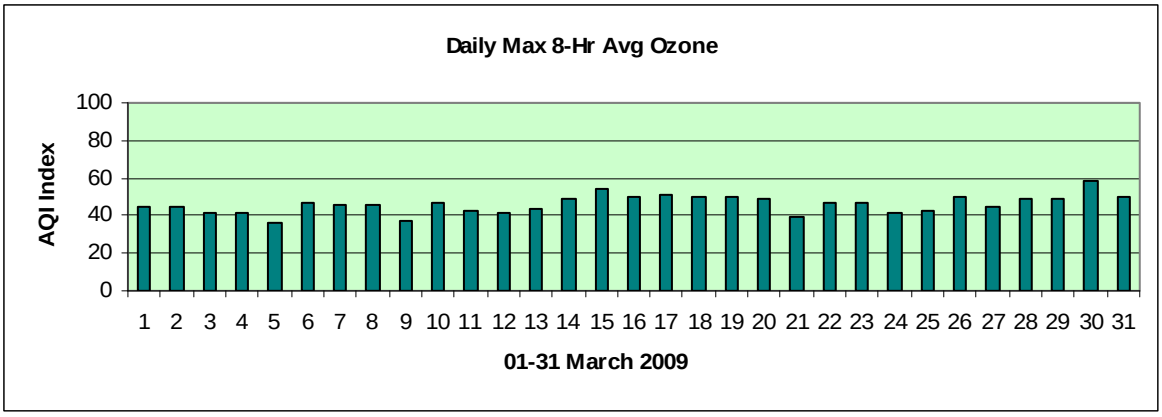
Total=	0	Date	Max AQI	Pollutant	Site/s

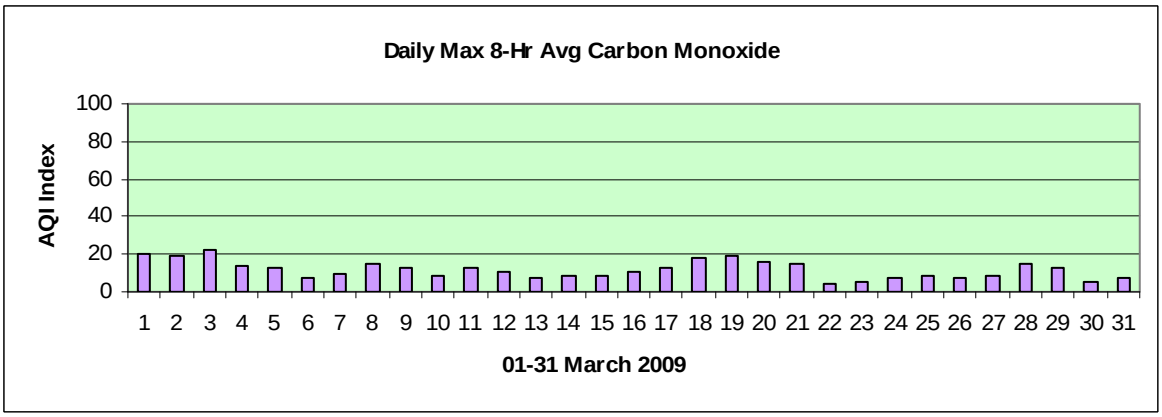
High Pollution Advisories issued during MAR 2009-

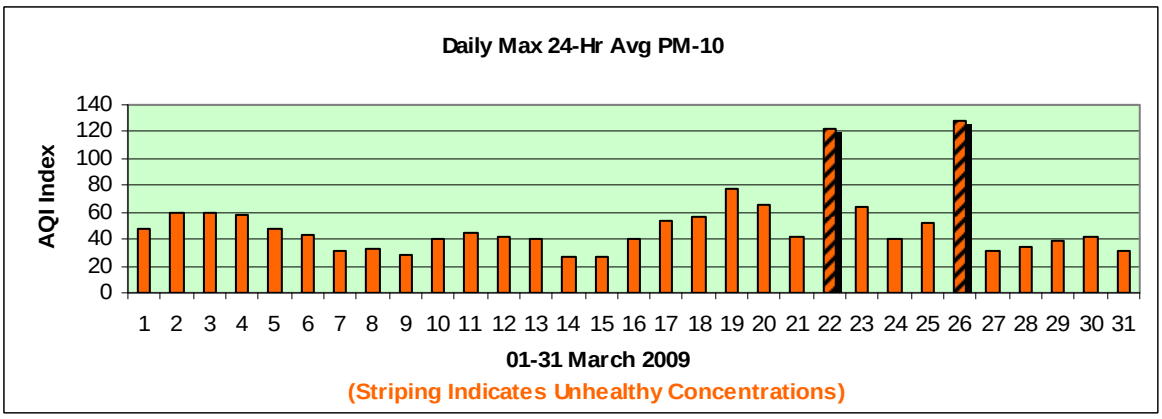
Total=	2	Date	Max AQI	Pollutant	Site/s
		3/22	122	PM-10	West Forty Third
		3/26	128	PM-10	West Forty Third

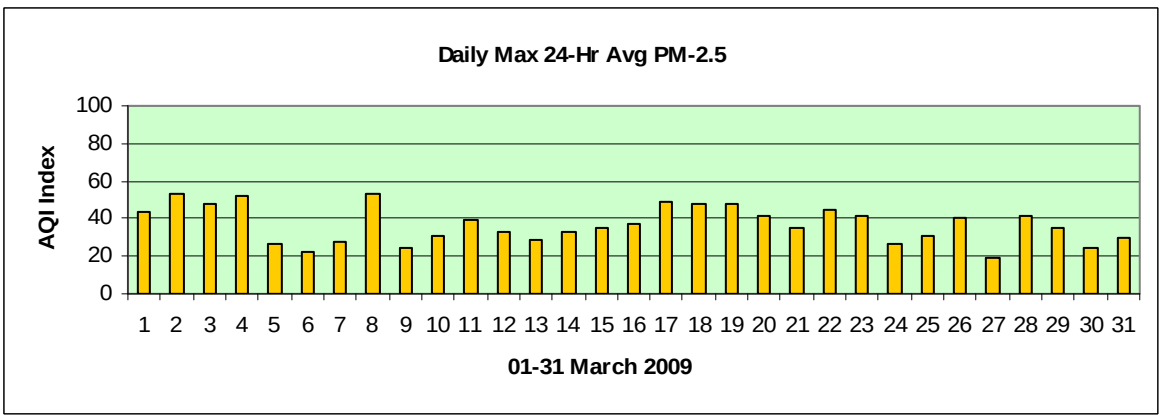
Concentration Recap:

Days in the Good category:	17
Days in the Moderate category:	12
Days in the Unhealthy for Sensitive Groups category:	2
Days in the Unhealthy category:	0
Total Forecast Days:	31


Daily Max 8-Hr Avg Ozone
AQI Index
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
01-31 March 2009


Daily Max 8-Hr Avg Carbon Monoxide
AQI Index
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
01-31 March 2009


Daily Max 24-Hr Avg PM-10
AQI Index
140
120
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
01-31 March 2009
(Striping Indicates Unhealthy Concentrations)


Daily Max 24-Hr Avg PM-2.5
AQI Index
100
80
60
40
20
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
01-31 March 2009

Narrative: Coarse particle pollution (PM-10) returned to the Valley in a big way on several days during March 2009, but before elaborating on that, it should be pointed out that ozone levels began their seasonal rise this month. Longer day lengths, higher sun angles, warming daytime temperatures, and suspected periodic transport of ozone and its precursors (NOx & VOCs) from California all contributed to this rise. Using the AQI (Air Quality Index) as its basis, the table below details some recent Phoenix metro ozone climatology:

NOTEWORTHY 8-HOUR OZONE LEVELS

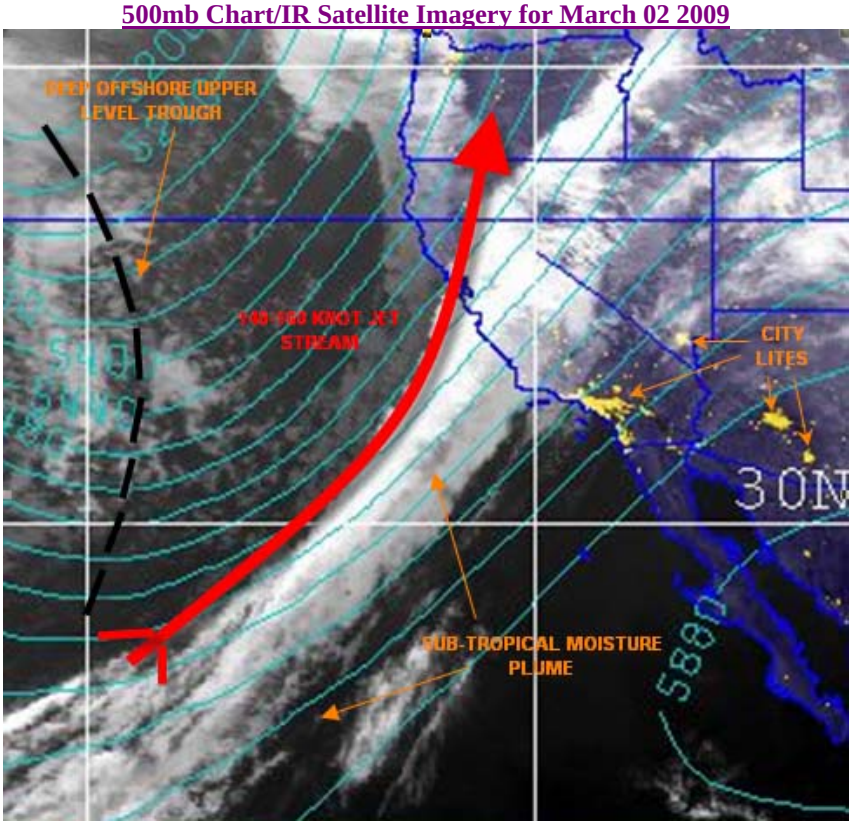
[PERIOD OF RECORD 2004-2008]

(Back-calculated using revised 2008 8-hour ozone standard)

8-HOUR OZONE AQI LEVEL	DATE
Earliest 51+	March 10 2007
Average 51+	March 17
Latest 51+	March 25 2006 & 2008
In 2009	March 15
Earliest 90+	March 15 2007
Average 90+	April 08
Latest 90+	April 21 2008
Earliest 101+	April 14 2005
Average 101+	April 26
Latest 101+	May 09 2007

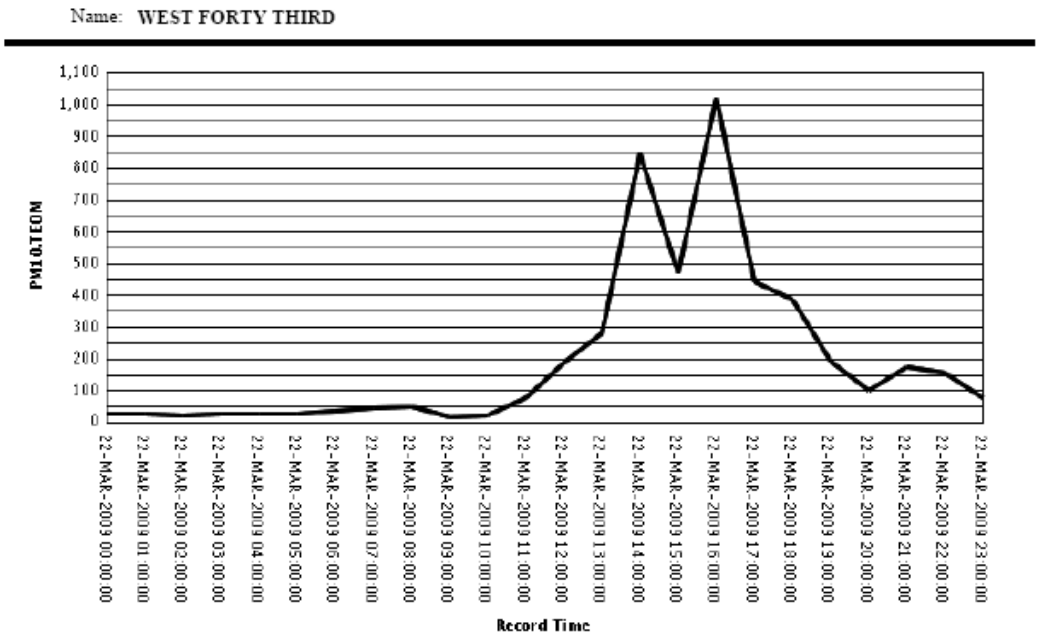
The synoptic weather pattern during the first few days of the month featured a rather strong ridge aloft over the southwest U.S. and a deep trough over the eastern Pacific. (See the annotated satellite image below). This resulted in afternoon highs in the 80's in Phoenix thru the 4th and continued a trend that had persisted thru the last week of February. A series of dry trough and frontal passages then ensued that brought periods of gusty winds, but not much cloud cover and practically no rainfall. Local daytime temperatures were back in the 80-90 degree F range from the 16th thru the 21st as a warm ridge again became established over the area. Overnight inversions began to increase in strength and depth as the local air mass began to stagnate; afternoon winds were mostly <15 mph from the 13th thru the 20th. This, along with the continued lowering of soil moisture, contributed to increasing local PM-10 levels on the 17th – well into the moderate range of the AQI by the 19th.

500mb Chart/IR Satellite Imagery for March 02 2009



March 2009 was very dry for the Valley with rainfall being confined to trace amounts reported on the 9th of the month. The lack of significant rainfall since early February, along with the antecedent weather and soil conditions mentioned above, set the stage for the inevitable lengthy blowing dust episodes that typically occur during the spring months in association with high wind events. These wind events are spawned by strong but dry upper level trough and surface frontal passages. The first high wind and dense blowing dust episode occurred on the 22nd and was the result of a strong but dry upper level trough and surface frontal passage. The prospect of a lengthy and strong wind event prompted the National Weather Service to issue a Wind Advisory for all of Maricopa County that was valid from 11:00 a.m. to 11:00 p.m. By afternoon winds over the Valley gusted up to 40 mph and blowing dust was in progress by 4:00 p.m. with visibilities as low as seven miles reported at local airports. The end result was a PM-10 exceedance at the West Forty Third monitoring site where a peak hourly PM-10 concentration of

1023.7ug/m3 was recorded at 4:00 p.m. The time series graph for this event can be seen below, followed by some photography from the local VISNET cameras:



Considerable suspended dust lingered over the entire metro area city thru much of the following day, and the following series of images from VISNET illustrates that situation very well:

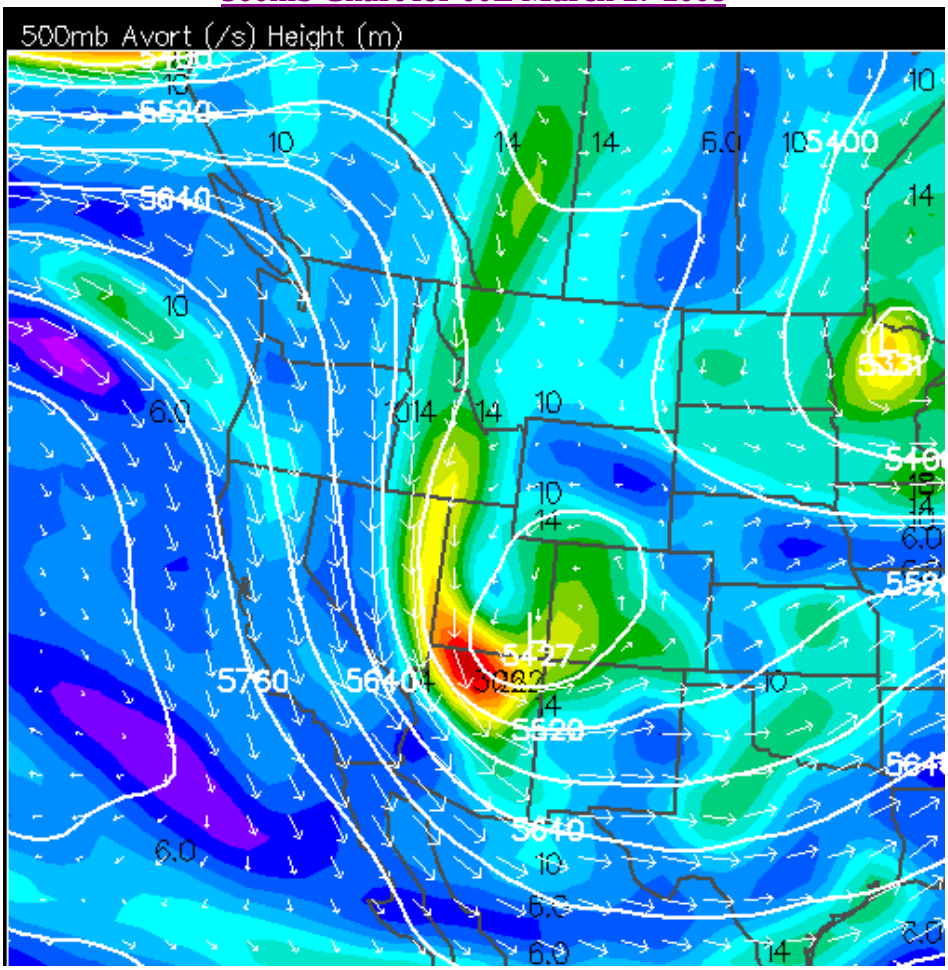

03/23/2009 07:00 AM


03/23/2009 07:00 AM


Live Camera Sites
South Mountain
Estrella Mountains
White Tank Mountains
Camelback Mountain
Superstition Mountains
Phoenix Region Visibility Index
Current Index
25
Details
EXCELLENT
GOOD
FAIR
POOR
VERY POOR
03/23/2009 10:00 AM

The second wind/dust event was much more significant in several ways. The 500mb weather chart below for the afternoon of the 26th shows that the synoptic weather pattern included a cold core upper level low height center situated near the Four Corners region and an intense positive-tilt trough over the southwestern U.S. Note that the tightest contour gradient with this feature is over and just upstream from AZ.

500mb Chart for 00Z March 27 2008



Winds over the Phoenix area gusted to 25 mph during the morning hours and during the afternoon and evening hours were southwest to northwesterly 25-40 mph sustained with gusts as high as 53 mph. The National Weather Service once again issued a Wind Advisory that was in effect from noon until 11:00 pm.; this wind event also merited a special review by the NWS, an excerpt of which follows:

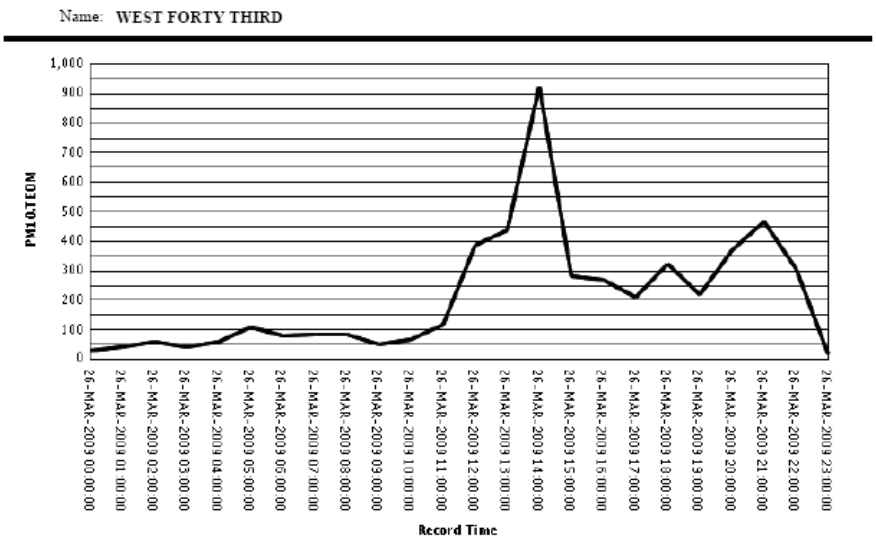
Record Winds in Central Arizona
Updated: 12:00 PM March 27, 2009

An intense low pressure system moved through the Four Corners region on March 26, 2009, bringing windy conditions to much of the region. An associated cold front moved through central Arizona during the evening hours, with winds intensifying directly behind the front. Sustained winds of 30 to 40 MPH with gusts over 50 MPH were recorded. Numerous power poles were reported blown down in the Phoenix area, leaving 1200 people without power for several hours. The strong northerly winds also created hazardous flying conditions due to wind shear, causing a full stoppage at Sky Harbor for nearly one hour.

Hourly Observations from Phoenix Sky Harbor Thursday, March 26, 2009

DATE/TIME	Temp (°F)	Dew (°F)	Wind Dir (MPH)	Wind Speed (MPH)	Press (mb)
26 Mar 1:51 PM	78	22	WSW	14G22	1002.0
26 Mar 2:51 PM	82	25	W	22G35	1000.8
26 Mar 3:51 PM	82	22	W	23G37	1000.7
26 Mar 4:51 PM	82	19	WNW	32G40	1000.4
26 Mar 5:51 PM	80	23	NW	29G39	1000.8
26 Mar 6:51 PM	74	21	NW	26G37	1002.8
26 Mar 7:51 PM	69	6	N	33G43	1004.9
26 Mar 8:51 PM	64	-1	N	37G44	1007.0
26 Mar 9:51 PM	62	-5	NNW	28G53	1008.9
26 Mar 10:51 PM	60	-2	NNW	17G25	1010.7
26 Mar 11:51 PM	59	-2	NNW	18G26	1011.0
27 Mar 12:51 AM	58	-1	NNW	18G25	1011.3

Widespread blowing dust was reported by 4:00 p.m. and visibilities ultimately dropped to as low as 21/2 miles at local airports. Incredibly, only one monitoring site – West Forty Third – registered a PM-10 exceedance along with a peak hourly concentration of 925.7ug/m3 at 2:00 p.m. It's time series graph and a VISNET photo are shown below:



The chart below gives an idea of the frequency and impact of high wind-generated blowing dust events on the Phoenix metropolitan area as of late:

10 MOST RECENT VALLEY BLOWING DUST/PM-10 EXCEEDANCE EVENTS

***Preliminary Data**

Day of Week	Date	Highest AQI/Site*	# of Site Exceedances
THURSDAY	MARCH 26 2008	128/West Forty Third	1
SUNDAY	MARCH 22 2009	122/West Forty Third	1
SUNDAY	NOVEMBER 09 2008	147/West Forty Third	3
WEDNESDAY	OCTOBER 22 2008	107/Coyote Lakes	1
SATURDAY	OCTOBER 11 2008	104/South Phoenix	1
FRIDAY	JULY 04 2008	140/Buckeye	1
TUESDAY	JULY 01 2008	109/Buckeye	1
WEDNESDAY	JUNE 04 2008	125/Buckeye	3
WEDNESDAY	MAY 21 2008	163/West Forty Third	1
WEDNESDAY	APRIL 30 2008	109/West Forty Third	1

–Reith