Appendices – Volume II
Event Specific Material

For April 30, 2008

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Appendix I
Event Air Quality Advisories

ADEQ Arizona Department of Environmental Quality

Janet Napolitano, Governor
Stephen A. Owens, ADEQ Director

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.epa.gov/airnow/aqibroch

NEW!!! CLICK HERE FOR UPDATED 2008 OZONE SEASON STATS NEW!!!

AIR QUALITY FORECAST FOR WEDNESDAY, APRIL 30, 2008

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 MON 04/28/2008	TODAY TUE 04/29/2008	TOMORROW WED 04/30/2008	EXTENDED THU 05/01/2008
NOTICES (*SEE BELOW FOR DETAILS)	**NONE**	**NONE**	**OZONE HEALTH WATCH** **PM-10 HEALTH WATCH**	**NONE**
AIR POLLUTANT	Highest AQI Reading/Site (Preliminary data only)			
O3*	**90** **NORTH PHOENIX**	**84** **MODERATE**	**97** **MODERATE**	**87** **MODERATE**
CO*	**13** **WEST INDIAN SCHOOL**	**11** **GOOD**	**8** **GOOD**	**9** **GOOD**
PM-10*	**59** **BUCKEYE**	**68** **MODERATE**	**90** **MODERATE**	**57** **MODERATE**
PM-2.5*	**65** **DURANGO**	**58** **MODERATE**	**54** **MODERATE**	**51** **MODERATE**

* 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 message for Tuesday, Apr 29: Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.

Health message for Wednesday, Apr 30: Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.

Synopsis and Discussion

An Ozone Health Watch AND a PM10 Health has been issued for Wednesday, April 30, 2008

Ozone levels continue to hold in the mid to upper "Moderate" range with little relief. It's only going to get worse before it gets better as a trough of low pressure moves through the western U.S. the next couple of days. The tail end of the disturbance will impact Arizona Wednesday with winds increasing to 30 mph at times across the deserts, even stronger in higher elevations of Arizona. Yuma is already indicating that another transport situation is underway with Ozone in the upper "Moderate" range on Tuesday. That means that today and likely tomorrow should see some high levels across the Phoenix forecast. An increase in winds also means we could see areas of blowing dust across the dry deserts (now 65 consecutive days without measurable rain in Phoenix). As a result of this latest weather system and its potential impact on the Valley's air quality, we are **issuing both an Ozone and PM10 Health Watch for Wednesday**. The situation will be re-evaluated tomorrow, but conditions should improve Thursday and Friday as the system exits the region. Check back then for the latest. Have a good day! –J.Paul

MONITORING SITE MAPS: STATIC MAP - http://www.azdeq.gov/environ/air/monitoring/images/map.jpg
INTERACTIVE MAPS - http://aqwww.maricopa.gov/AirMonitoring/SitePollutionMap.aspx
http://www.airnow.gov/

POLLUTION MONITOR READINGS FOR MONDAY, APRIL 28, 2008

O3 (OZONE)

For facts on new 8-hr ozone standard go to: http://www.epa.gov/air/ozonepollution/pdfs/2008_03_aqi_changes.pdf
For maps go to: http://www.airnow.gov/index.cfm?action=airnow.currentconditions

SITE NAME	MAX 8-HR VALUE (PPB)	MAX AQI	AQI COLOR CODE
Alamo Lake (La Paz County)	NOT AVBL	NOT AVBL	NOT AVBL
Apache Junction (Pinal County)	64	64	
Blue Point	50	42	
Buckeye	65	67	
Casa Grande (Pinal County)	67	74	
Cave Creek	71	87	
Central Phoenix	66	71	
Combs School (Pinal County)	62	58	
Dysart	67	74	
Falcon Field	61	54	
Fountain Hills	64	64	
Glendale	70	84	
Humboldt Mountain	66	71	
Maricopa (Pinal County)	65	67	
North Phoenix	72	90	
Phoenix Supersite	NOT AVBL	NOT AVBL	NOT AVBL
Pinal Air Park (Pinal County)	65	67	
Pinnacle Peak	67	74	
Queen Valley (Pinal County)	66	71	
Rio Verde	66	71	
South Phoenix	68	77	
South Scottsdale	64	64	
Tempe	67	74	
Tonto Nat'l Mon. (Gila County)	66	71	
West Chandler	65	67	
West Phoenix	71	87	
Yuma (Yuma County)	70	84	

CO (CARBON MONOXIDE)

SITE NAME	MAX 8-HR VALUE (PPM)	MAX AQI	AQI COLOR CODE
Central Phoenix	0.8	9	
Greenwood	0.9	10	
Phoenix Supersite	NOT AVBL	NOT AVBL	NOT AVBL
West Indian School	1.1	13	
West Phoenix	1.0	11	

PM-10 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (ug/m3)	MAX AQI	AQI COLOR CODE
Buckeye	72.3	59	
Central Phoenix	39.9	36	
Combs School (Pinal County)	87.8	67	
Coyote Lakes	46.0	42	
Durango	59.1	53	
Greenwood	58.2	53	
Higley	62.0	54	
Maricopa (Pinal County)	73.6	60	
Phoenix Supersite	38.3	35	
South Phoenix	59.2	53	
West Forty Third	63.0	55	
West Phoenix	48.5	44	

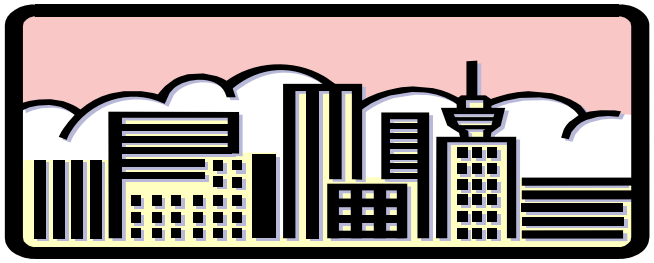
PM-2.5 (PARTICLES)

(Some data derived from light-scattering equipment)

For maps go to: http://www.airnow.gov/

SITE NAME	MAX 24-HR VALUE (ug/m3)	MAX AQI	AQI COLOR CODE
Durango	21.3	65	
Dysart	6.5	21	
Estrella Mountain Park	10.5	34	
Phoenix Supersite	14.6	47	
Vehicle Emissions Lab	8.0	26	
West Phoenix	12.6	41	

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 08/14/2007**}

ADEQ AIR POLLUTION HEALTH WATCH ISSUANCE NOTICE

Issuance Date and Time:	Tuesday, April 29, 2008 11:30 a.m.
Valid for Date(s):	Wednesday, April 30, 2007
Pollutant:	Course Particulates (PM-10)
Message:	Elevated particulate levels combined with breezy to windy conditions Wednesday may lead to concentrations approaching the health standard.

Detailed air quality forecast information is available on:

- The internet at www.azdeq.gov
- A telephone recording at 602-771-2367

Duty Forecaster:	Christopher Reith	602-771-2360
	Joe Paul	602-771-2363

CKR 01/18/2005

ADEQ Arizona Department of Environmental Quality

Janet Napolitano, Governor
Stephen A. Owens, ADEQ Director

MARICOPA COUNTY
DUST CONTROL ACTION FORECAST
ISSUED TUESDAY, APRIL 29, 2008

Three-day weather outlook:

A trough of low pressure will move through the western U.S. the next several days with the tail end of the disturbance impacting Arizona Wednesday afternoon. Winds will increase out of southwest and west to around 30 mph at times across the deserts, lasting into early hours of Thursday before decreasing. Cooler air will filter in behind the system which means afternoon desert temperatures will only be in the upper 80s on Thursday. Winds will be much lighter Thursday afternoon through Friday. The risk of exceeding the 24-hr PM10 health standard in Phoenix will be "Moderate" on Wednesday, dropping back to "Low" by Thursday.

R I S K F A C T O R S

	WINDS		STAGNATION		RISK LEVEL
Day #1: Wed 04/30/2008	Southwest winds 15 to 25 mph with stronger gusts possible at times are expected during the afternoon hours.	+	Little to no stagnation is expected.	=	**MODERATE**
Day #2: Thu 05/01/2008	West winds 10 to 15 mph are expected during the afternoon hours.	+	Slightly stagnant conditions are expected early with improvement by the afternoon.	=	**LOW**
Day #3: Fri 05/02/2008	West winds 5 to 10 mph are likely much of the day.	+	Somewhat stagnant conditions are expected early with improvement by the afternoon.	=	**LOW**

To review the complete air quality forecast for the Phoenix metropolitan area visit www.azdeq.gov or call 602-771-2367 for recorded forecast information.

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Appendix J
Event National Weather Service Advisories & Events

Event Record Details

Event: **High Wind**
Begin Date: **30 Apr 2008, 03:51:00 AM PST**
Begin Location: **Not Known**
End Date: **30 Apr 2008, 16:13:00 PM PST**
End Location: **Not Known**
Magnitude: **50**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 3.0K**
Crop Damage: **$ 0.0K**

State: **California**
Map of Counties

Zones affected: **Western Mojave Desert**

Description:
EVENT NARRATIVE: Strong winds between Barstow, Fort Irwin, and Newberry Springs caused blowing and drifting dust and sand, which closed several roads during the morning hours. A school bus got stuck in three feet of sand covering a road in Newberry Springs. One power line was blown down near Fort Irwin. The peak gust measured during the event was 57 mph 29 miles SSW of Searles Valley at 0351 PST. EPISODE NARRATIVE: Yet another low pressure system moving through the Pacific Northwest brought high winds to portions of the Mojave Desert and southern Great Basin.

Please see the NCDC Contact Page if you have questions or comments.

Event Record Details

Event: **High Wind**
Begin Date: **30 Apr 2008, 13:00:00 PM MST**
Begin Location: **Not Known**
End Date: **30 Apr 2008, 14:00:00 PM MST**
End Location: **Not Known**
Magnitude: **53**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 0.0K**
Crop Damage: **$ 0.0K**

State: **Arizona**
Map of Counties

Zones affected: **Little Colorado River Valley I**

Description:
EVENT NARRATIVE: A strong cold front produced wind gusts to 61 MPH in Leupp. Blowing dust occasionally reduced the visibility to 3/4 of a mile. EPISODE NARRATIVE: A very strong cold front brought strong winds to northern Arizona with the highest wind gusts in the Little Colorado River Valley.

Event Record Details

Event: **High Wind**
Begin Date: **30 Apr 2008, 15:00:00 PM MST**
Begin Location: **Not Known**
End Date: **30 Apr 2008, 16:30:00 PM MST**
End Location: **Not Known**
Magnitude: **54**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 0.0K**
Crop Damage: **$ 0.0K**

State: **Arizona**
Map of Counties

Zones affected: **Little Colorado River Valley I**

Description:
EVENT NARRATIVE: A strong cold front produced wind gusts to 62 MPH at the St Johns Airport. EPISODE NARRATIVE: A very strong cold front brought strong winds to northern Arizona with the highest wind gusts in the Little Colorado River Valley.

Event Record Details

Event: **High Wind**
Begin Date: **30 Apr 2008, 14:00:00 PM MST**
Begin Location: **Not Known**
End Date: **30 Apr 2008, 15:15:00 PM MST**
End Location: **Not Known**
Magnitude: **51**
Fatalities: **0**
Injuries: **0**
Property Damage: **$ 0.0K**
Crop Damage: **$ 0.0K**

State: **Arizona**
Map of Counties

Zones affected: **Little Colorado River Valley I**

Description:
EVENT NARRATIVE: A strong cold front brought wind gusts to 59 MPH at the Winslow Airport. EPISODE NARRATIVE: A very strong cold front brought strong winds to northern Arizona with the highest wind gusts in the Little Colorado River Valley.

WWUS75 KPSR 301855
NPWPSR

URGENT - WEATHER MESSAGE
NATIONAL WEATHER SERVICE PHOENIX AZ
1155 AM MST WED APR 30 2008

.STRONG GUSTY WEST WINDS IN IMPERIAL COUNTY THROUGH EARLY THURSDAY MORNING.

CAZ033-010300-
/O.NEW.KPSR.WI.Y.0020.080430T1855Z-080501T0800Z/
IMPERIAL COUNTY-
INCLUDING THE CITIES OF...BRAWLEY...CALEXICO...EL CENTRO...
GLAMIS...IMPERIAL...AND THE SALTON SEA
1155 AM PDT WED APR 30 2008

...WIND ADVISORY IN EFFECT UNTIL 1 AM PDT THURSDAY...

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS ISSUED A WIND ADVISORY...WHICH IS IN EFFECT UNTIL 1 AM PDT THURSDAY. THE ADVISORY IS IN EFFECT FOR IMPERIAL COUNTY IN SOUTHEAST CALIFORNIA.

A STRONG LOW PRESSURE SYSTEM AND ASSOCIATED COLD FRONT WILL MOVE ACROSS THE AREA TODAY. GUSTY WEST WINDS TO 30 MPH...WITH GUSTS TO 40 MPH...CAN BE EXPECTED THROUGH LATE TONIGHT IN IMPERIAL COUNTY. SOME LOCATIONS THAT ARE LIKELY TO EXPERIENCE THE STRONGEST WINDS INCLUDE THE IMPERIAL VALLEY...AND POINTS ALONG INTERSTATE 8 WEST OF EL CENTRO. LOCAL REDUCTIONS IN VISIBILITY ARE POSSIBLE DUE TO BLOWING DUST AND SAND.

WINDS THIS STRONG CAN MAKE DRIVING DIFFICULT...ESPECIALLY FOR HIGH PROFILE VEHICLES. IN ADDITION...STRONG WINDS OVER DESERT AREAS COULD RESULT IN BRIEFLY LOWERED VISIBILITIES TO WELL UNDER A MILE AT TIMES IN BLOWING DUST OR BLOWING SAND. USE EXTRA CAUTION.

$$
JR/AJ

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Appendix K
Event Related News Stories

APPENDIX K

EVENT RELATED NEWS STORIES

Normally, Appendix K would contain information on Event Related News Stories for the day being evaluated as an Exceptional Event. However, since there are no archived Event Related News Stories reported for April 30, 2008, this Appendix does not contain this information.

Appendix L
Event Air Quality Data

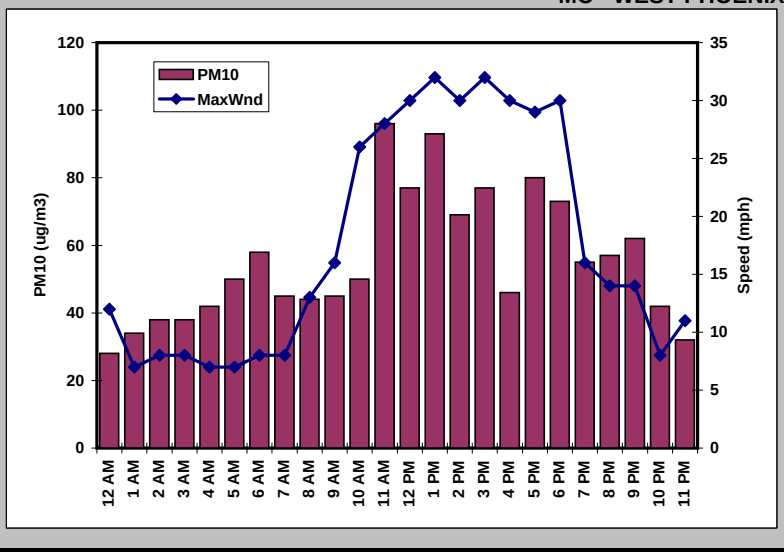
For April 30, 2008

Appendix L: EVENT AIR QUALITY DATA

16477 (112.14Wx33.48N)

MC - WEST PHOENIX

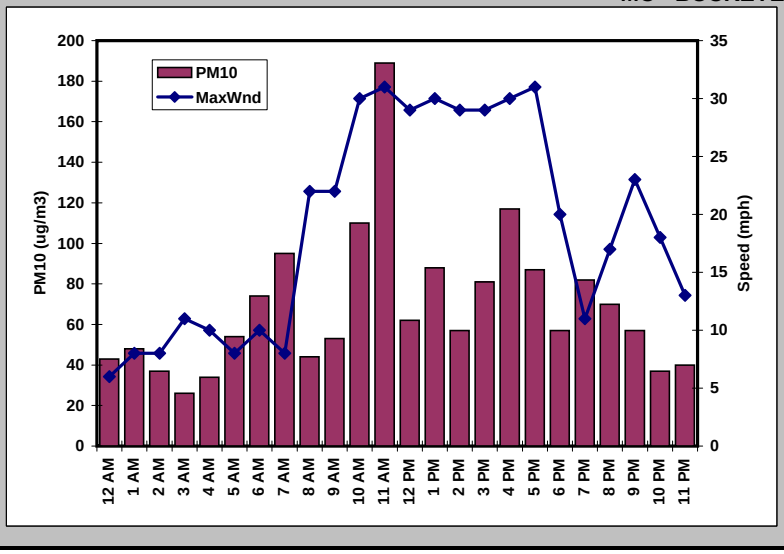
04/30/08	PM10	WndDir	MaxWnd
12 AM	28	244	12
1 AM	34	186	7
2 AM	38	189	8
3 AM	38	257	8
4 AM	42	50	7
5 AM	50	68	7
6 AM	58	68	8
7 AM	45	54	8
8 AM	44	246	13
9 AM	45	216	16
10 AM	50	236	26
11 AM	96	245	28
12 PM	77	237	30
1 PM	93	249	32
2 PM	69	250	30
3 PM	77	252	32
4 PM	46	250	30
5 PM	80	266	29
6 PM	73	262	30
7 PM	55	257	16
8 PM	57	261	14
9 PM	62	255	14
10 PM	42	256	8
11 PM	32	273	11



21525 (112.62Wx33.37N)

MC - BUCKEYE

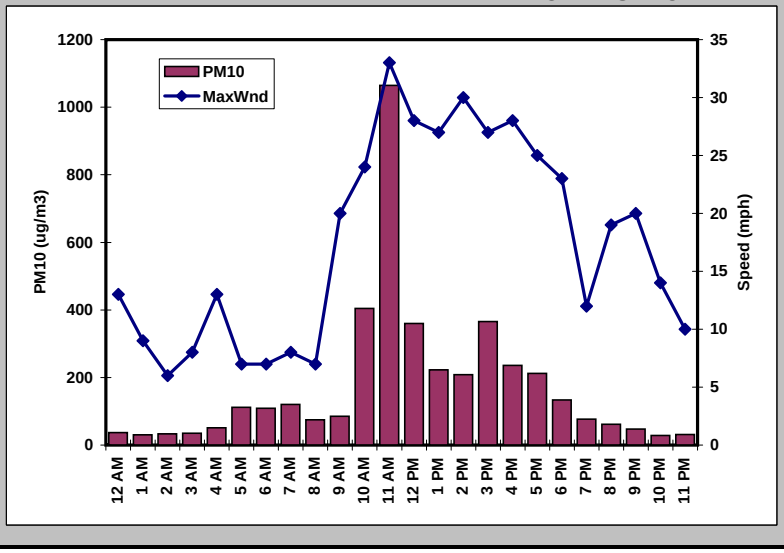
04/30/08	PM10	WndDir	MaxWnd
12 AM	43	208	6
1 AM	48	211	8
2 AM	37	185	8
3 AM	26	209	11
4 AM	34	215	10
5 AM	54	205	8
6 AM	74	209	10
7 AM	95	257	8
8 AM	44	235	22
9 AM	53	229	22
10 AM	110	236	30
11 AM	189	243	31
12 PM	62	244	29
1 PM	88	253	30
2 PM	57	255	29
3 PM	81	253	29
4 PM	117	256	30
5 PM	87	251	31
6 PM	57	258	20
7 PM	82	264	11
8 PM	70	223	17
9 PM	57	223	23
10 PM	37	232	18
11 PM	40	240	13



16659 (112.14Wx33.41N)

MC - WEST FORTY THIR

04/30/08	PM10	WndDir	MaxWnd
12 AM	37	330	13
1 AM	30	102	9
2 AM	33	119	6
3 AM	35	194	8
4 AM	51	53	13
5 AM	112	52	7
6 AM	109	46	7
7 AM	120	9	8
8 AM	75	354	7
9 AM	85	225	20
10 AM	404	233	24
11 AM	1065	255	33
12 PM	360	256	28
1 PM	223	247	27
2 PM	208	239	30
3 PM	366	244	27
4 PM	236	245	28
5 PM	212	260	25
6 PM	134	267	23
7 PM	77	271	12
8 PM	62	248	19
9 PM	47	226	20
10 PM	28	235	14
11 PM	31	227	10

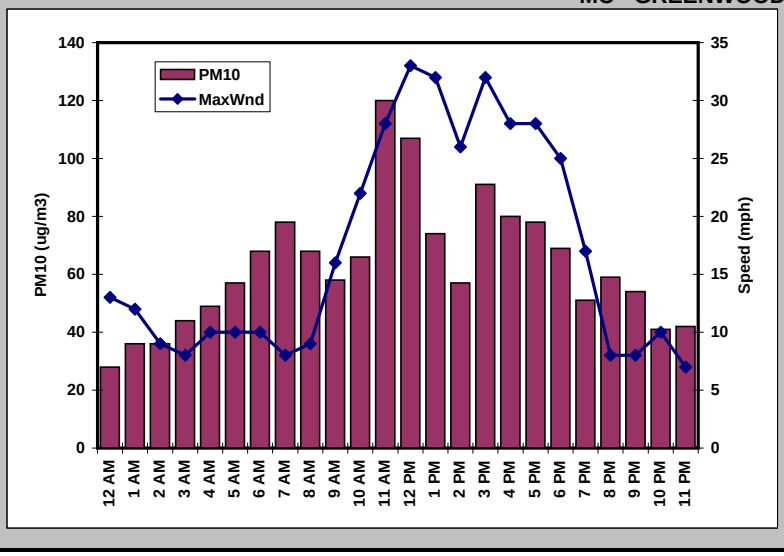


Appendix L: EVENT AIR QUALITY DATA

16372 (112.12Wx33.46N)

MC - GREENWOOD

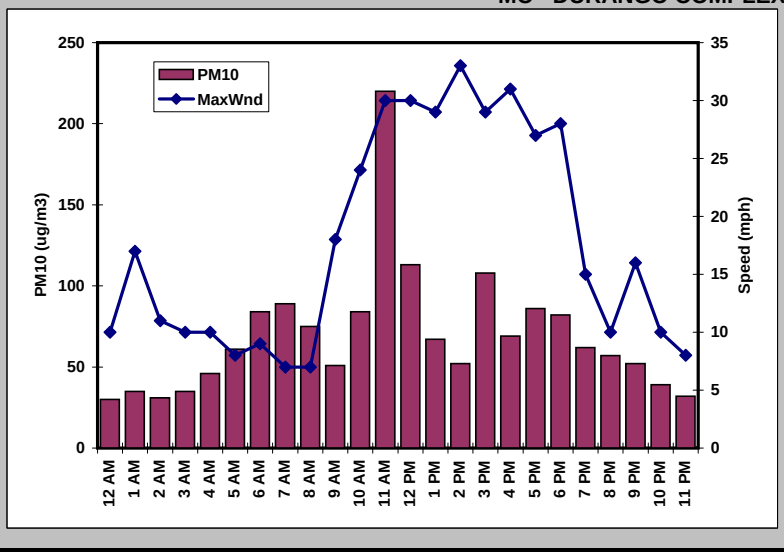
04/30/08	PM10	WndDir	MaxWnd
12 AM	28	267	13
1 AM	36	218	12
2 AM	36	213	9
3 AM	44	122	8
4 AM	49	47	10
5 AM	57	65	10
6 AM	68	59	10
7 AM	78	50	8
8 AM	68	317	9
9 AM	58	204	16
10 AM	66	230	22
11 AM	120	247	28
12 PM	107	248	33
1 PM	74	254	32
2 PM	57	245	26
3 PM	91	246	32
4 PM	80	250	28
5 PM	78	259	28
6 PM	69	263	25
7 PM	51	258	17
8 PM	59	262	8
9 PM	54	266	8
10 PM	41	226	10
11 PM	42	261	7



16375 (112.12Wx33.43N)

MC - DURANGO COMPLEX

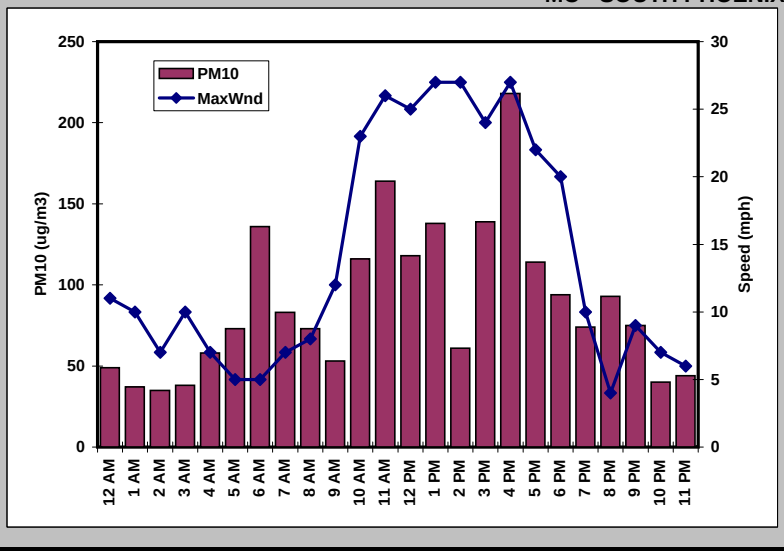
01/00/00	PM10	WndDir	MaxWnd
12 AM	30	258	10
1 AM	35	223	17
2 AM	31	211	11
3 AM	35	202	10
4 AM	46	47	10
5 AM	61	59	8
6 AM	84	61	9
7 AM	89	12	7
8 AM	75	342	7
9 AM	51	221	18
10 AM	84	240	24
11 AM	220	260	30
12 PM	113	270	30
1 PM	67	261	29
2 PM	52	248	33
3 PM	108	256	29
4 PM	69	253	31
5 PM	86	275	27
6 PM	82	273	28
7 PM	62	277	15
8 PM	57	274	10
9 PM	52	237	16
10 PM	39	250	10
11 PM	32	253	8



16377 (112.08Wx33.40N)

MC - SOUTH PHOENIX

01/00/00	PM10	WndDir	MaxWnd
12 AM	49	242	11
1 AM	37	225	10
2 AM	35	238	7
3 AM	38	91	10
4 AM	58	60	7
5 AM	73	81	5
6 AM	136	73	5
7 AM	83	5	7
8 AM	73	312	8
9 AM	53	251	12
10 AM	116	248	23
11 AM	164	259	26
12 PM	118	261	25
1 PM	138	263	27
2 PM	61	264	27
3 PM	139	260	24
4 PM	218	260	27
5 PM	114	252	22
6 PM	94	275	20
7 PM	74	274	10
8 PM	93	245	4
9 PM	75	253	9
10 PM	40	238	7
11 PM	44	252	6

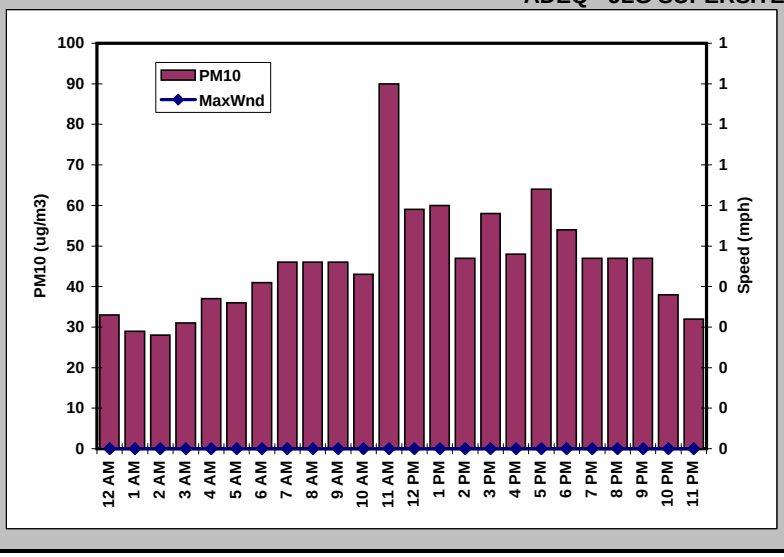


Appendix L: EVENT AIR QUALITY DATA

16328 (112.10Wx33.50N)

ADEQ - JLG SUPERSITE

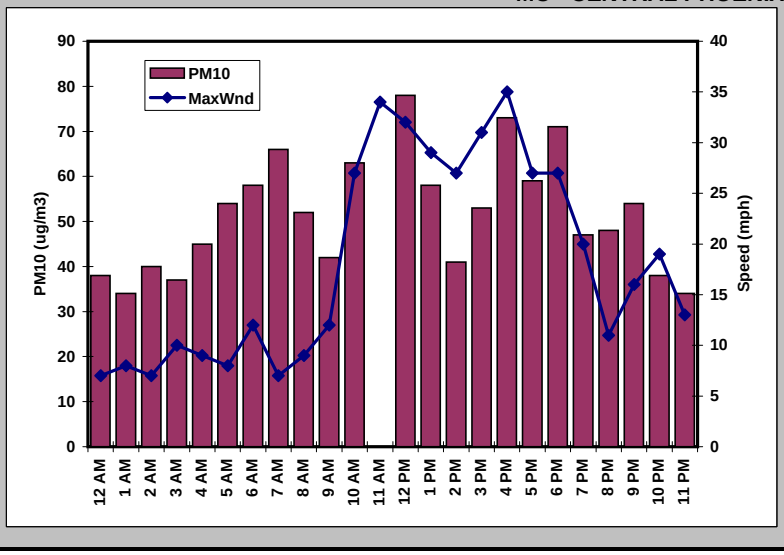
04/30/08	PM10	WndDir	MaxWnd
12 AM	33	23	
1 AM	29	98	
2 AM	28	130	
3 AM	31	85	
4 AM	37	71	
5 AM	36	83	
6 AM	41	82	
7 AM	46	81	
8 AM	46	142	
9 AM	46	204	
10 AM	43	229	
11 AM	90	244	
12 PM	59	242	
1 PM	60	248	
2 PM	47	250	
3 PM	58	255	
4 PM	48	251	
5 PM	64	269	
6 PM	54	267	
7 PM	47	257	
8 PM	47	239	
9 PM	47	265	
10 PM	38	267	
11 PM	32	278	



16329 (112.05Wx33.46N)

MC - CENTRAL PHOENIX

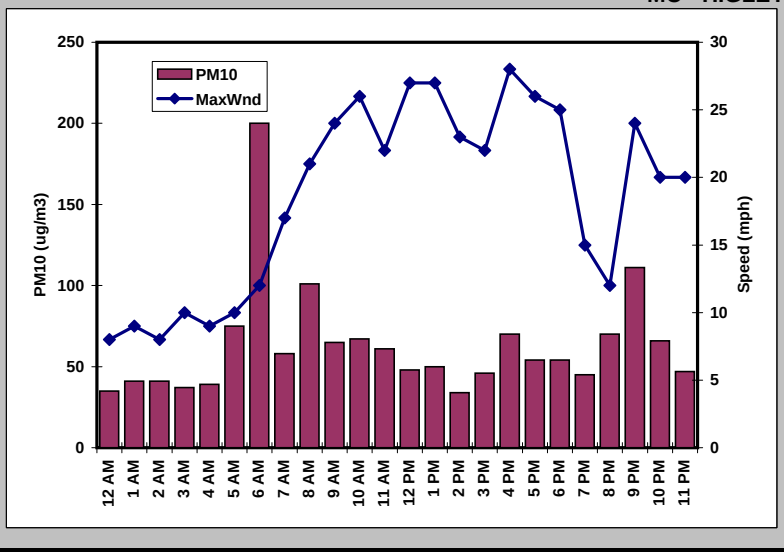
04/30/08	PM10	WndDir	MaxWnd
12 AM	38	303	7
1 AM	34	65	8
2 AM	40	83	7
3 AM	37	100	10
4 AM	45	71	9
5 AM	54	78	8
6 AM	58	79	12
7 AM	66	62	7
8 AM	52	32	9
9 AM	42	249	12
10 AM	63	240	27
11 AM		267	34
12 PM	78	262	32
1 PM	58	271	29
2 PM	41	257	27
3 PM	53	265	31
4 PM	73	262	35
5 PM	59	273	27
6 PM	71	273	27
7 PM	47	276	20
8 PM	48	277	11
9 PM	54	264	16
10 PM	38	257	19
11 PM	34	249	13



16505 (111.72Wx33.31N)

MC - HIGLEY

04/30/08	PM10	WndDir	MaxWnd
12 AM	35	187	8
1 AM	41	129	9
2 AM	41	103	8
3 AM	37	111	10
4 AM	39	111	9
5 AM	75	116	10
6 AM	200	148	12
7 AM	58	180	17
8 AM	101	188	21
9 AM	65	223	24
10 AM	67	229	26
11 AM	61	249	22
12 PM	48	247	27
1 PM	50	266	27
2 PM	34	259	23
3 PM	46	246	22
4 PM	70	247	28
5 PM	54	250	26
6 PM	54	253	25
7 PM	45	256	15
8 PM	70	199	12
9 PM	111	202	24
10 PM	66	208	20
11 PM	47	205	20

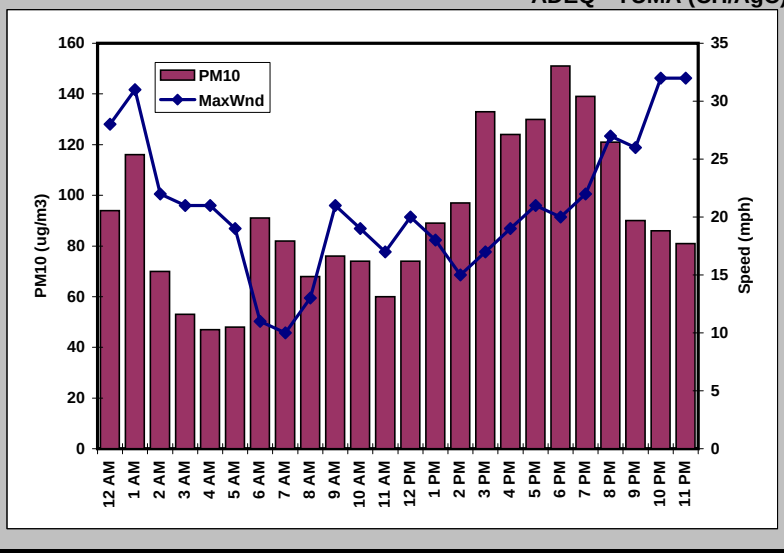


Appendix L: EVENT AIR QUALITY DATA

17027 (114.65Wx32.68N)

ADEQ - YUMA (CH/AgC)

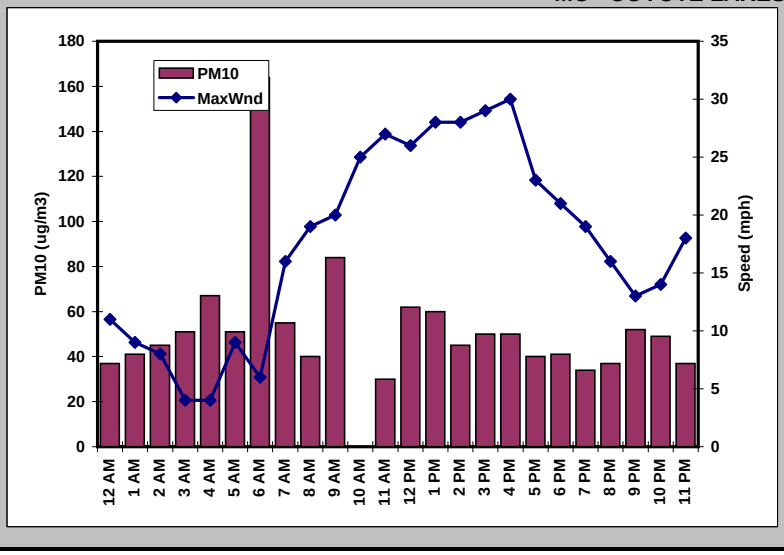
01/00/00	PM10	WndDir	MaxWnd
12 AM	94	299	28
1 AM	116	282	31
2 AM	70	275	22
3 AM	53	265	21
4 AM	47	256	21
5 AM	48	244	19
6 AM	91	243	11
7 AM	82	242	10
8 AM	68	237	13
9 AM	76	286	21
10 AM	74	252	19
11 AM	60	255	17
12 PM	74	267	20
1 PM	89	268	18
2 PM	97	263	15
3 PM	133	267	17
4 PM	124	271	19
5 PM	130	281	21
6 PM	151	281	20
7 PM	139	286	22
8 PM	121	290	27
9 PM	90	289	26
10 PM	86	287	32
11 PM	81	295	32



127530 (112.31Wx33.67N)

MC - COYOTE LAKES

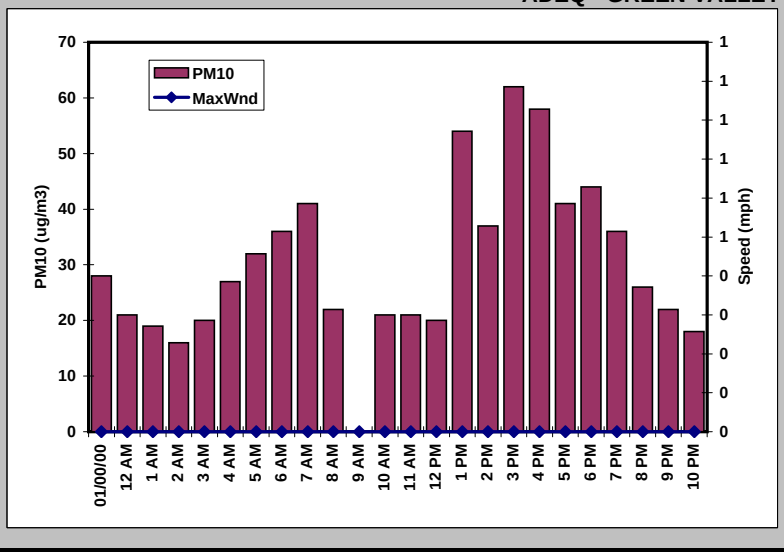
01/00/00	PM10	WndDir	MaxWnd
12 AM	37	202	11
1 AM	41	195	9
2 AM	45	195	8
3 AM	51	150	4
4 AM	67	94	4
5 AM	51	158	9
6 AM	164	357	6
7 AM	55	193	16
8 AM	40	209	19
9 AM	84	215	20
10 AM		222	25
11 AM	30	223	27
12 PM	62	234	26
1 PM	60	231	28
2 PM	45	233	28
3 PM	50	235	29
4 PM	50	238	30
5 PM	40	239	23
6 PM	41	235	21
7 PM	34	248	19
8 PM	37	261	16
9 PM	52	186	13
10 PM	49	205	14
11 PM	37	220	18



128562 (111.01Wx31.83N)

ADEQ - GREEN VALLEY

01/00/00	PM10	WndDir	MaxWnd
12 AM	28	229	
1 AM	21	234	
2 AM	19	231	
3 AM	16	237	
4 AM	20	228	
5 AM	27	230	
6 AM	32	219	
7 AM	36	206	
8 AM	41	205	
9 AM	22	225	
10 AM		214	
11 AM	21	221	
12 PM	21	217	
1 PM	20	214	
2 PM	54	234	
3 PM	37	227	
4 PM	62	227	
5 PM	58	227	
6 PM	41	220	
7 PM	44	223	
8 PM	36	236	
9 PM	26	233	
10 PM	22	219	
11 PM	18	216	



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Appendix M
Event Meteorological / Air Quality Tables

For April 30, 2008

Note: The enclosed tables summarize the meteorological and air quality data for the April 30, 2008, high wind event. Highlighting is applied to the data in the tables. When the reported wind gust or maximum wind speed is greater than 15 miles per hour, the hourly data record is highlighted yellow. If the wind gust or maximum wind speed exceeds 25 mph, the hourly data record is highlighted orange. Stations prefixed with a 2 digit number are AzMet stations. All AzMet wind speed data were adjusted from 3-meters to 10-meters by applying a correction factor for height as discussed in the AzMet network description contained in Appendix B of this document.

Appendix M: EVENT METEOROLOGICAL / AIR QUALITY TABLES

23179 (114.62Wx34.77N) 04/30/08

NWS-NEEDLES

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-NEEDLES	12	77	10		14		SW
	1	74	10		14		W
	2	71	10		10		SW
	3	70	10		10		W
	4	69	10		11		W
	5	71	10		10		W
	6	74	10		0		-
	7	79	10		18		W
	8	**80**	**10**		**14**	**24**	**W**
	9	**82**	**10**		**16**	**24**	**NW**
	10	**83**	**10**		**14**	**23**	**W**
	11	**85**	**10**		**15**	**22**	**W**
	12	**86**	**10**		**11**	**20**	**SW**
	1	**88**	**10**		**17**	**22**	**SW**
	2	**89**	**10**		**18**	**26**	**W**
	3	**88**	**10**		**15**	**29**	**W**
	4	**87**	**10**		**26**	**31**	**W**
	5	**84**	**10**		**18**	**23**	**W**
	6	81	10		9		NW
	7	**78**	**10**		**10**	**23**	**W**
	8	75	10		8		W
	9	73	10		6		W
	10	**73**	**10**		**22**	**30**	**N**
	11	**69**	**10**		**30**	**43**	**N**

93167 (113.94Wx35.26N) 04/30/08

NWS-KINGMAN

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-KINGMAN	12	68	10		15		S
	1	67	10		20		SW
	2	**65**	**10**		**21**	**25**	**S**
	3	62	10		11		S
	4	**63**	**10**		**8**	**21**	**SW**
	5	59	10		3		*VR
	6	64	10		14		SW
	7	**67**	**10**		**24**	**30**	**SW**
	8	**68**	**10**		**28**	**34**	**SW**
	9	**70**	**10**		**26**	**38**	**SW**
	10	**72**	**10**		**24**	**32**	**SW**
	11	**74**	**10**		**25**	**34**	**SW**
	12	**76**	**10**		**25**	**33**	**SW**
	1	77	10		M		
	2	**76**	**10**		**22**	**30**	**SW**
	3	**77**	**10**		**22**	**32**	**S**
	4	**76**	**10**		**22**	**30**	**S**
	5	**74**	**10**		**23**	**30**	**SW**
	6	**71**	**10**		**18**	**28**	**SW**
	7	67	10		15		SW
	8	63	10		14		SW
	9	63	10		16		SW
	10	**62**	**10**		**18**	**41**	**N**
	11	**57**	**10**		**28**	**34**	**N**

20 (114.61Wx34.97N) 04/30/08

20-MOHAVE

	Hr	T(F)	RH	Rn	Spd	Max	Dir
20-MOHAVE	**12**	**77**	**17**	**0**	**11**	**19**	**SW**
	1	**76**	**19**	**0**	**11**	**23**	**SW**
	2	72	22	0	9	12	SW
	3	69	24	0	9	13	W
	4	**66**	**27**	**0**	**7**	**15**	**SW**
	5	**66**	**26**	**0**	**6**	**17**	**SE**
	6	69	24	0	4	12	SE
	7	72	24	0	6	14	S
	8	**76**	**17**	**0**	**14**	**22**	**W**
	9	**79**	**14**	**0**	**12**	**19**	**SW**
	10	**81**	**12**	**0**	**11**	**19**	**SW**
	11	**83**	**11**	**0**	**11**	**22**	**SW**
	12	**85**	**10**	**0**	**12**	**24**	**S**
	1	**86**	**10**	**0**	**10**	**24**	**S**
	2	**88**	**10**	**0**	**12**	**20**	**S**
	3	**90**	**8**	**0**	**11**	**25**	**S**
	4	**91**	**8**	**0**	**13**	**24**	**SW**
	5	**88**	**7**	**0**	**18**	**26**	**SW**
	6	**84**	**8**	**0**	**16**	**24**	**SW**
	7	**80**	**9**	**0**	**15**	**26**	**W**
	8	**76**	**10**	**0**	**10**	**20**	**SW**
	9	**73**	**11**	**0**	**10**	**17**	**SW**
	10	70	13	0	6	14	SW
	11	**69**	**11**	**0**	**18**	**33**	**N**

23158 (114.72Wx33.62N) 04/30/08

NWS-BLYTHE

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-BLYTHE	12	72	10		9		S
	1	69	10		11		S
	2	68	10		10		S
	3	67	10		7		SW
	4	68	10		0		-
	5	69	10		13		W
	6	72	10		14		SW
	7	75	10		11		SW
	8	**78**	**10**		**13**	**18**	**SW**
	9	80	10		9		SW
	10	**81**	**10**		**6**	**16**	***VR**
	11	**85**	**10**		**11**	**16**	**W**
	12	**89**	**10**		**13**	**23**	**SW**
	1	**90**	**10**		**15**	**20**	**SW**
	2	**88**	**10**		**11**	**21**	**SW**
	3	90	10		14		SW
	4	88	10		20		SW
	5	84	10		17		SW
	6	**81**	**10**		**11**	**21**	**SW**
	7	74	10		7		S
	8	72	10		14		S
	9	74	10		0		-
	10	66	10		7		E
	11	68	10		8		NE

08 (114.45Wx33.88N) 04/30/08

08-PARKER

	Hr	T(F)	RH	Rn	Spd	Max	Dir
08-PARKER	**12**	**71**	**36**	**0**	**15**	**22**	**S**
	1	**71**	**36**	**0**	**12**	**22**	**S**
	2	65	44	0	7	13	S
	3	**65**	**35**	**0**	**11**	**19**	**S**
	4	**63**	**44**	**0**	**9**	**16**	**S**
	5	61	54	0	9	13	S
	6	61	56	0	8	12	S
	7	**67**	**51**	**0**	**10**	**16**	**S**
	8	**71**	**45**	**0**	**13**	**17**	**S**
	9	**74**	**37**	**0**	**9**	**18**	**S**
	10	**78**	**31**	**0**	**9**	**16**	**S**
	11	**81**	**26**	**0**	**9**	**16**	**S**
	12	**82**	**28**	**0**	**13**	**20**	**S**
	1	**83**	**27**	**0**	**15**	**24**	**S**
	2	**84**	**26**	**0**	**17**	**23**	**S**
	3	**85**	**25**	**0**	**18**	**26**	**S**
	4	**85**	**21**	**0**	**20**	**28**	**S**
	5	**83**	**20**	**0**	**17**	**24**	**S**
	6	**80**	**22**	**0**	**18**	**26**	**S**
	7	**73**	**32**	**0**	**10**	**16**	**S**
	8	67	43	0	9	13	S
	9	**67**	**41**	**0**	**11**	**18**	**S**
	10	**74**	**16**	**0**	**14**	**27**	**W**
	11	**73**	**12**	**0**	**14**	**21**	**W**

28 (114.56Wx34.93N) 04/30/08

28-MOHAVE-2

	Hr	T(F)	RH	Rn	Spd	Max	Dir
28-MOHAVE-2	12	72	28	0	7	13	SW
	1	**74**	**25**	**0**	**10**	**16**	**W**
	2	**72**	**26**	**0**	**6**	**18**	**S**
	3	68	28	0	3	10	NE
	4	64	37	0	6	10	SE
	5	59	49	0	4	8	S
	6	62	46	0	4	7	N
	7	70	38	0	3	11	SW
	8	76	25	0	3	8	SE
	9	78	25	0	6	12	SW
	10	**80**	**21**	**0**	**7**	**16**	**SW**
	11	**81**	**20**	**0**	**8**	**17**	**SW**
	12	**82**	**21**	**0**	**9**	**18**	**SW**
	1	**83**	**21**	**0**	**8**	**17**	**S**
	2	**84**	**20**	**0**	**10**	**22**	**S**
	3	**85**	**19**	**0**	**14**	**23**	**S**
	4	**86**	**16**	**0**	**13**	**25**	**SW**
	5	**85**	**13**	**0**	**13**	**21**	**SW**
	6	**83**	**11**	**0**	**12**	**21**	**W**
	7	**78**	**13**	**0**	**6**	**16**	**W**
	8	**76**	**12**	**0**	**10**	**16**	**W**
	9	**72**	**16**	**0**	**10**	**16**	**SW**
	10	69	19	0	6	13	SW
	11	**67**	**20**	**0**	**11**	**26**	**N**

23199 (115.67Wx32.82N) 04/30/08

NWS-EL CENTRO

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-EL CENTRO	12	70	10		13		W
	1	**75**	**10**		**32**	**43**	**W**
	2	**73**	**10**		**29**	**41**	**W**
	3	**70**	**10**		**17**	**25**	**W**
	4	**71**	**10**		**26**	**39**	**W**
	5	**71**	**10**		**21**	**30**	**W**
	6	**74**	**10**		**26**	**34**	**W**
	7	**76**	**10**		**21**	**31**	**W**
	8	**80**	**10**		**28**	**34**	**W**
	9	**83**	**10**		**18**	**30**	**W**
	10	**86**	**10**		**18**	**29**	**W**
	11	**86**	**10**		**24**	**32**	**W**
	12	**87**	**10**		**15**	**25**	**W**
	1	**89**	**10**		**25**	**30**	**W**
	2	**88**	**10**		**24**	**31**	**W**
	3	**86**	**9**		**26**	**39**	**W**
	4	**81**	**10**		**29**	**38**	**W**
	5	**76**	**10**		**33**	**41**	**W**
	6	**71**	**10**		**26**	**37**	**W**
	7	**68**	**10**		**26**	**34**	**W**
	8	**67**	**10**		**23**	**31**	**W**
	9	**66**	**10**		**22**	**29**	**W**
	10	64	10		10		W
	11	64	10		15		SW

03144 (115.58Wx32.83N) 04/30/08

NWS-IMPERIAL CO

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-IMPERIAL CO	12	69	10		15		W
	1	**71**	**10**		**21**	**29**	**W**
	2	**72**	**10**		**23**	**31**	**W**
	3	**70**	**10**		**22**	**30**	**W**
	4	**70**	**10**		**22**	**37**	**NW**
	5	**69**	**9**		**23**	**31**	**W**
	6	**73**	**10**		**20**	**30**	**W**
	7	**75**	**10**		**28**	**37**	**W**
	8	**79**	**10**		**28**	**37**	**W**
	9	**81**	**9**		**29**	**40**	**W**
	10	**84**	**10**		**15**	**25**	**NW**
	11	**85**	**10**		**18**	**28**	**W**
	12						
	1	**86**	**6**	**HZ**	**10**	**20**	**NW**
	2	86	9		11		NW
	3	**85**	**10**		**24**	**30**	**W**
	4	**81**	**10**		**24**	**32**	**W**
	5	**76**	**9**		**24**	**33**	**W**
	6	**71**	**9**		**30**	**38**	**W**
	7	**68**	**10**		**25**	**34**	**W**
	8	**66**	**10**		**21**	**29**	**W**
	9	**65**	**10**		**17**	**26**	**W**
	10	63	10		15		W
	11	61	10		9		W

17027 (114.65Wx32.68N) 04/30/08

ADEQ - YUMA (CH/AgC)

	Hr	T(F)	RH	PM	Spd	Max	Dir
ADEQ - YUMA (CH/AgC)	**12**	**76**	**19**	**94**	**18**	**28**	**NW**
	1	**74**	**17**	**116**	**16**	**31**	**W**
	2	**70**	**23**	**70**	**11**	**22**	**W**
	3	**67**	**26**	**53**	**11**	**21**	**W**
	4	**67**	**23**	**47**	**10**	**21**	**W**
	5	**64**	**24**	**48**	**8**	**19**	**SW**
	6	65	24	91	4	11	SW
	7	69	22	82	5	10	SW
	8	73	21	68	5	13	SW
	9	**77**	**15**	**76**	**12**	**21**	**W**
	10	**81**	**11**	**74**	**10**	**19**	**W**
	11	**83**	**11**	**60**	**7**	**17**	**W**
	12	**84**	**13**	**74**	**10**	**20**	**W**
	1	**85**	**14**	**89**	**9**	**18**	**W**
	2	**87**	**14**	**97**	**9**	**15**	**W**
	3	**87**	**15**	**133**	**10**	**17**	**W**
	4	**87**	**14**	**124**	**11**	**19**	**W**
	5	**85**	**17**	**130**	**13**	**21**	**W**
	6	**82**	**20**	**151**	**11**	**20**	**W**
	7	**78**	**22**	**139**	**13**	**22**	**W**
	8	**74**	**26**	**121**	**19**	**27**	**W**
	9	**71**	**29**	**90**	**18**	**26**	**W**
	10	**70**	**32**	**86**	**20**	**32**	**W**
	11	**68**	**35**	**81**	**20**	**32**	**NW**

Appendix M: EVENT METEOROLOGICAL / AIR QUALITY TABLES

24 (113.96Wx32.74N) 04/30/08

24-ROLL

	Hr	T(F)	RH	Rn	Spd	Max	Dir
24-ROLL	12	66	39	0	4	8	W
	1	63	49	0	4	9	SE
	2	63	43	0	4	14	SW
	3	61	42	0	5	8	W
	4	58	48	0	3	9	N
	5	56	50	0	2	6	S
	6	59	45	0	3	7	W
	7	67	45	0	2	7	W
	8	73	37	0	4	9	SW
	9	75	37	0	7	10	SW
	10	**79**	**28**	**0**	**8**	**16**	**W**
	11	84	14	0	8	14	W
	12	**85**	**17**	**0**	**10**	**16**	**W**
	1	**86**	**17**	**0**	**11**	**15**	**W**
	2	**89**	**15**	**0**	**10**	**16**	**W**
	3	**90**	**14**	**0**	**10**	**17**	**W**
	4	**89**	**15**	**0**	**11**	**18**	**W**
	5	**85**	**20**	**0**	**9**	**17**	**W**
	6	77	36	0	6	10	W
	7	66	59	0	6	9	SW
	8	66	48	0	8	10	SW
	9	64	52	0	8	10	SW
	10	64	50	0	6	14	SW
	11	64	47	0	5	9	W

07 (113.19Wx33.95N) 04/30/08

07-AGUILA

	Hr	T(F)	RH	Rn	Spd	Max	Dir
07-AGUILA	12	68	18	0	8	13	W
	1	**69**	**16**	**0**	**5**	**16**	**SW**
	2	64	22	0	3	7	N
	3	60	23	0	6	12	E
	4	58	23	0	7	11	E
	5	52	29	0	3	9	E
	6	53	26	0	4	8	E
	7	64	20	0	7	12	SE
	8	72	14	0	8	14	S
	9	**74**	**13**	**0**	**9**	**18**	**NW**
	10	**77**	**12**	**0**	**5**	**16**	**S**
	11	**80**	**9**	**0**	**14**	**26**	**SW**
	12	**81**	**9**	**0**	**17**	**27**	**W**
	1	**83**	**8**	**0**	**17**	**32**	**W**
	2	**83**	**8**	**0**	**19**	**29**	**W**
	3	**83**	**8**	**0**	**19**	**30**	**W**
	4	**82**	**9**	**0**	**18**	**26**	**W**
	5	**81**	**10**	**0**	**17**	**24**	**W**
	6	**78**	**11**	**0**	**13**	**22**	**W**
	7	74	12	0	9	14	W
	8	72	14	0	7	14	W
	9	67	16	0	5	11	W
	10	65	18	0	6	11	W
	11	61	18	0	3	7	SE

23 (113.12Wx33.48N) 04/30/08

23-HARQUAHALA

	Hr	T(F)	RH	Rn	Spd	Max	Dir
23-HARQUAHALA	12	69	19	0	8	11	S
	1	66	26	0	3	6	S
	2	61	31	0	5	10	S
	3	61	29	0	6	10	S
	4	60	32	0	7	13	S
	5	60	33	0	9	13	S
	6	**62**	**33**	**0**	**9**	**15**	**S**
	7	**68**	**27**	**0**	**12**	**18**	**S**
	8	**74**	**18**	**0**	**13**	**17**	**S**
	9	**78**	**14**	**0**	**17**	**24**	**S**
	10	**80**	**12**	**0**	**18**	**27**	**SW**
	11	**83**	**10**	**0**	**17**	**30**	**SW**
	12	**85**	**10**	**0**	**21**	**32**	**SW**
	1	**86**	**9**	**0**	**19**	**31**	**SW**
	2	**86**	**9**	**0**	**20**	**32**	**SW**
	3	**86**	**10**	**0**	**18**	**28**	**SW**
	4	**86**	**10**	**0**	**17**	**25**	**SW**
	5	**84**	**11**	**0**	**15**	**24**	**SW**
	6	**81**	**12**	**0**	**12**	**21**	**SW**
	7	**75**	**14**	**0**	**9**	**17**	**W**
	8	**72**	**19**	**0**	**7**	**15**	**SW**
	9	68	25	0	7	14	S
	10	66	31	0	10	14	S
	11	66	34	0	9	12	S

02 (114.75Wx32.71N) 04/30/08

02-YUMA VALLEY

	Hr	T(F)	RH	Rn	Spd	Max	Dir
02-YUMA VALLEY	**12**	**76**	**19**	**0**	**19**	**33**	**NW**
	1	**72**	**20**	**0**	**16**	**26**	**W**
	2	**66**	**31**	**0**	**10**	**18**	**W**
	3	**63**	**34**	**0**	**10**	**16**	**W**
	4	**63**	**30**	**0**	**8**	**18**	**W**
	5	**61**	**33**	**0**	**7**	**18**	**SW**
	6	63	29	0	5	13	W
	7	68	27	0	5	8	SW
	8	73	23	0	5	13	W
	9	**77**	**17**	**0**	**12**	**20**	**W**
	10	**81**	**14**	**0**	**10**	**20**	**W**
	11	**83**	**14**	**0**	**9**	**17**	**W**
	12	**84**	**15**	**0**	**12**	**20**	**W**
	1	**85**	**17**	**0**	**11**	**22**	**W**
	2	**86**	**17**	**0**	**10**	**17**	**W**
	3	**87**	**18**	**0**	**11**	**19**	**W**
	4	**86**	**18**	**0**	**12**	**19**	**W**
	5	**84**	**18**	**0**	**14**	**22**	**W**
	6	**81**	**21**	**0**	**13**	**22**	**W**
	7	**77**	**24**	**0**	**13**	**23**	**W**
	8	**73**	**27**	**0**	**18**	**28**	**NW**
	9	**70**	**31**	**0**	**18**	**26**	**W**
	10	**68**	**33**	**0**	**20**	**30**	**W**
	11	**68**	**36**	**0**	**20**	**32**	**NW**

14 (114.53Wx32.74N) 04/30/08

14-YUMA NORTH GILA

	Hr	T(F)	RH	Rn	Spd	Max	Dir
14-YUMA NORTH GILA	12	71	27	0	4	11	SW
	1	72	21	0	9	14	W
	2	66	31	0	4	10	W
	3	63	36	0	6	9	S
	4	64	29	0	6	12	SW
	5	58	40	0	5	11	SW
	6	63	28	0	6	12	SW
	7	68	28	0	4	8	S
	8	73	23	0	3	11	W
	9	**76**	**16**	**0**	**10**	**17**	**W**
	10	**80**	**13**	**0**	**10**	**18**	**W**
	11	**83**	**12**	**0**	**9**	**17**	**SW**
	12	**84**	**13**	**0**	**9**	**18**	**SW**
	1	**86**	**13**	**0**	**10**	**22**	**W**
	2	**87**	**14**	**0**	**10**	**23**	**W**
	3	**87**	**14**	**0**	**11**	**18**	**W**
	4	**87**	**14**	**0**	**11**	**19**	**W**
	5	**86**	**16**	**0**	**11**	**17**	**W**
	6	**82**	**20**	**0**	**10**	**16**	**W**
	7	**76**	**26**	**0**	**8**	**16**	**W**
	8	**73**	**30**	**0**	**9**	**17**	**W**
	9	**70**	**33**	**0**	**10**	**20**	**W**
	10	**68**	**35**	**0**	**10**	**17**	**W**
	11	66	40	0	5	14	W

19040 (114.63Wx32.61N) 04/30/08

ADEQ - YUMA MESA

	Hr	T(F)	RH		Spd	Max	Dir
ADEQ - YUMA MESA	12	69	32		1	9	NW
	1	69	25		4	14	NW
	2	67	26		6	13	W
	3	63	31		3	7	W
	4	57	46		3	8	S
	5	58	39		3	10	W
	6	57	42		4	7	SE
	7	64	40		3	7	SE
	8	71	25		4	7	E
	9	76	18		3	8	N
	10	80	15		4	10	W
	11	82	14		5	13	W
	12	83	13		5	13	SW
	1	**85**	**13**		**6**	**15**	**W**
	2	87	14		6	14	W
	3	87	16		6	14	NW
	4	87	16		6	14	W
	5	**85**	**18**		**7**	**15**	**W**
	6	**81**	**23**		**7**	**15**	**W**
	7	76	26		4	10	NW
	8	72	28		4	10	NW
	9	69	30		4	10	NW
	10	67	34		4	12	NW
	11	65	35		4	11	N

03145 (114.62Wx32.65N) 04/30/08

NWS-YUMA MCAS

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-YUMA MCAS	12	76	10		10		NW
	1	**75**	**10**		**15**	**23**	**W**
	2	70	10		8		W
	3	68	10		0		-
	4	67	10		6		SW
	5	67	10		0		-
	6	66	10		3		S
	7	73	10		5		SE
	8	78	10		0		-
	9	82	10		10		W
	10	85	10		6		W
	11	87	10		6		W
	12	89	10		10		W
	1	92	10		9		W
	2	91	10		11		NW
	3	92	10		11		W
	4	91	10		14		W
	5	90	10		10		W
	6	85	10		13		W
	7	81	10		8		NW
	8	77	10		9		NW
	9	74	10		10		W
	10	72	10		10		NW
	11	71	10		10		N

19 (112.90Wx32.93N) 04/30/08

19-PALOMA

	Hr	T(F)	RH	Rn	Spd	Max	Dir
19-PALOMA	12	66	26	0	5	7	SW
	1	64	28	0	6	8	SW
	2	58	42	0	5	8	SW
	3	**60**	**40**	**0**	**7**	**15**	**SW**
	4	**69**	**29**	**0**	**13**	**19**	**S**
	5	**67**	**31**	**0**	**12**	**16**	**S**
	6	**68**	**32**	**0**	**14**	**19**	**S**
	7	**73**	**28**	**0**	**14**	**22**	**S**
	8	**78**	**25**	**0**	**15**	**21**	**SW**
	9	**82**	**18**	**0**	**15**	**22**	**SW**
	10	**84**	**14**	**0**	**15**	**22**	**SW**
	11	**86**	**13**	**0**	**16**	**24**	**SW**
	12	**88**	**13**	**0**	**18**	**26**	**SW**
	1	**90**	**10**	**0**	**19**	**28**	**SW**
	2	**91**	**7**	**0**	**19**	**28**	**SW**
	3	**91**	**6**	**0**	**20**	**35**	**SW**
	4	**89**	**9**	**0**	**18**	**26**	**W**
	5	**86**	**12**	**0**	**13**	**22**	**W**
	6	**83**	**15**	**0**	**16**	**27**	**SW**
	7	**79**	**20**	**0**	**18**	**27**	**SW**
	8	**76**	**21**	**0**	**17**	**25**	**S**
	9	**73**	**24**	**0**	**15**	**22**	**S**
	10	**70**	**26**	**0**	**9**	**19**	**S**
	11	66	38	0	7	10	S

03148 (112.72Wx32.89N) 04/30/08

NWS-GILA BEND

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-GILA BEND	12						
	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						

Appendix M: EVENT METEOROLOGICAL / AIR QUALITY TABLES

10 (112.46Wx33.62N) 04/30/08

10-WADDELL

	Hr	T(F)	RH	Rn	Spd	Max	Dir
10-WADDELL	12	77	10	0	4	13	SW
	1	74	12	0	4	10	S
	2	74	12	0	6	11	SW
	3	74	14	0	5	10	SW
	4	64	22	0	1	5	NW
	5	58	28	0	1	3	NW
	6	58	37	0	0	2	N
	7	68	29	0	1	3	N
	8	**77**	**15**	**0**	**7**	**16**	**SW**
	9	**78**	**15**	**0**	**11**	**18**	**S**
	10	**80**	**13**	**0**	**9**	**19**	**S**
	11	**83**	**9**	**0**	**10**	**20**	**SW**
	12	**84**	**8**	**0**	**11**	**24**	**SW**
	1	**86**	**7**	**0**	**12**	**25**	**SW**
	2	**87**	**7**	**0**	**11**	**24**	**SW**
	3	**88**	**7**	**0**	**11**	**20**	**SW**
	4	**87**	**6**	**0**	**11**	**22**	**SW**
	5	**86**	**6**	**0**	**10**	**18**	**SW**
	6	**83**	**7**	**0**	**9**	**18**	**SW**
	7	80	8	0	4	12	SW
	8	77	10	0	2	7	W
	9	77	12	0	5	13	SW
	10	74	16	0	5	10	S
	11	71	18	0	4	8	SW

127530 (112.31Wx33.67N) 04/30/08

MC - COYOTE LAKES

	Hr	T(F)		PM	Spd	Max	Dir
MC - COYOTE LAKES	12	78		37	5	11	S
	1	75		41	3	9	S
	2	73		45	3	8	S
	3	68		51	0	4	SE
	4	65		67	1	4	E
	5	67		51	1	9	S
	6	67		164	0	6	N
	7	**78**		**55**	**3**	**16**	**S**
	8	**80**		**40**	**7**	**19**	**SW**
	9	**83**		**84**	**8**	**20**	**SW**
	10	**85**			**9**	**25**	**SW**
	11	**87**		**30**	**9**	**27**	**SW**
	12	**88**		**62**	**12**	**26**	**SW**
	1	**90**		**60**	**12**	**28**	**SW**
	2	**92**		**45**	**12**	**28**	**SW**
	3	**93**		**50**	**13**	**29**	**SW**
	4	**92**		**50**	**13**	**30**	**SW**
	5	**90**		**40**	**12**	**23**	**SW**
	6	**87**		**41**	**11**	**21**	**SW**
	7	**82**		**34**	**7**	**19**	**W**
	8	**80**		**37**	**6**	**16**	**W**
	9	78		52	4	13	S
	10	76		49	5	14	SW
	11	**75**		**37**	**8**	**18**	**SW**

16378 (112.19Wx33.57N) 04/30/08

MC - GLENDALE

	Hr	T(F)	RH		Spd	Max	Dir
MC - GLENDALE	**12**	**78**	**11**		**7**	**17**	**SW**
	1	75	13		4	12	S
	2	73	14		4	10	S
	3	71	15		3	7	NW
	4	70	17		4	7	SE
	5	66	22		2	6	NE
	6	67	23		2	6	E
	7	70	23		3	6	NE
	8	75	18		5	14	SW
	9	**79**	**16**		**9**	**22**	**SW**
	10	**81**	**12**		**12**	**28**	**SW**
	11	**82**	**10**		**16**	**32**	**SW**
	12	**83**	**8**		**20**	**36**	**SW**
	1	**85**	**9**		**16**	**29**	**SW**
	2	**86**	**11**		**14**	**28**	**SW**
	3	**88**	**10**		**13**	**29**	**SW**
	4	**87**	**8**		**15**	**29**	**SW**
	5	**86**	**7**		**15**	**28**	**W**
	6	**84**	**8**		**14**	**28**	**SW**
	7	**81**	**9**		**10**	**18**	**SW**
	8	**80**	**10**		**8**	**16**	**W**
	9	**78**	**13**		**8**	**18**	**SW**
	10	76	16		4	14	SW
	11	73	18		6	13	SW

26 (112.68Wx33.40N) 04/30/08

26-BUCKEYE

	Hr	T(F)	RH	Rn	Spd	Max	Dir
26-BUCKEYE	12	73	14	0	6	10	SW
	1	72	16	0	4	8	S
	2	68	25	0	2	8	E
	3	63	31	0	2	9	NE
	4	61	33	0	3	7	W
	5	61	36	0	4	9	SW
	6	63	39	0	1	4	E
	7	**70**	**33**	**0**	**5**	**16**	**SW**
	8	**75**	**28**	**0**	**10**	**17**	**SW**
	9	**78**	**20**	**0**	**12**	**19**	**S**
	10	**81**	**14**	**0**	**15**	**29**	**SW**
	11	**82**	**12**	**0**	**17**	**34**	**SW**
	12	**84**	**11**	**0**	**16**	**27**	**SW**
	1	**86**	**11**	**0**	**14**	**26**	**SW**
	2	**87**	**11**	**0**	**16**	**26**	**SW**
	3	**87**	**9**	**0**	**18**	**28**	**W**
	4	**86**	**9**	**0**	**18**	**28**	**W**
	5	**83**	**9**	**0**	**15**	**25**	**SW**
	6	**81**	**10**	**0**	**13**	**24**	**W**
	7	72	19	0	7	12	W
	8	**69**	**24**	**0**	**9**	**19**	**SW**
	9	**75**	**18**	**0**	**13**	**24**	**SW**
	10	**73**	**20**	**0**	**11**	**17**	**SW**
	11	**69**	**25**	**0**	**9**	**15**	**SW**

21525 (112.62Wx33.37N) 04/30/08

MC - BUCKEYE

	Hr	T(F)	RH	PM	Spd	Max	Dir
MC - BUCKEYE	12	72	24	43	3	6	SW
	1	68	28	48	2	8	SW
	2	68	26	37	3	8	S
	3	70	24	26	6	11	SW
	4	68	26	34	7	10	SW
	5	65	34	54	4	8	SW
	6	66	39	74	2	10	SW
	7	72	36	95	2	8	W
	8	**77**	**30**	**44**	**10**	**22**	**SW**
	9	**80**	**23**	**53**	**13**	**22**	**SW**
	10	**84**	**17**	**110**	**16**	**30**	**SW**
	11	**86**	**14**	**189**	**19**	**31**	**SW**
	12	**88**	**13**	**62**	**17**	**29**	**SW**
	1	**90**	**14**	**88**	**18**	**30**	**W**
	2	**91**	**14**	**57**	**18**	**29**	**W**
	3	**91**	**13**	**81**	**19**	**29**	**W**
	4	**88**	**13**	**117**	**20**	**30**	**W**
	5	**85**	**14**	**87**	**17**	**31**	**W**
	6	**82**	**16**	**57**	**12**	**20**	**W**
	7	75	22	82	7	11	W
	8	**74**	**24**	**70**	**7**	**17**	**SW**
	9	**76**	**23**	**57**	**9**	**23**	**SW**
	10	**73**	**25**	**37**	**10**	**18**	**SW**
	11	70	29	40	8	13	SW

16477 (112.14Wx33.48N) 04/30/08

MC - WEST PHOENIX

	Hr	T(F)		PM	Spd	Max	Dir
MC - WEST PHOENIX	12	78		28	4	12	SW
	1	76		34	2	7	S
	2	74		38	4	8	S
	3	74		38	3	8	W
	4	70		42	4	7	NE
	5	68		50	2	7	E
	6	68		58	3	8	E
	7	72		45	3	8	NE
	8	77		44	3	13	SW
	9	**81**		**45**	**6**	**16**	**SW**
	10	**83**		**50**	**11**	**26**	**SW**
	11	**84**		**96**	**13**	**28**	**SW**
	12	**86**		**77**	**13**	**30**	**SW**
	1	**87**		**93**	**14**	**32**	**W**
	2	**89**		**69**	**13**	**30**	**W**
	3	**90**		**77**	**14**	**32**	**W**
	4	**89**		**46**	**13**	**30**	**W**
	5	**87**		**80**	**14**	**29**	**W**
	6	**85**		**73**	**12**	**30**	**W**
	7	**82**		**55**	**7**	**16**	**W**
	8	80		57	6	14	W
	9	78		62	5	14	W
	10	76		42	4	8	W
	11	75		32	5	11	W

23111 (112.38Wx33.54N) 04/30/08

NWS-LUKE AFB

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-LUKE AFB	12						
	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						

03186 (112.38Wx33.42N) 04/30/08

NWS-GOODYEAR

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-GOODYEAR	12						
	1						
	2						
	3						
	4						
	5	64	40		6		SW
	6	66	20		6		*VR
	7	73	7		7		W
	8	82	10		15		SW
	9	**82**	**20**		**16**	**25**	**SW**
	10	**86**	**10**		**17**	**29**	**SW**
	11	**86**	**7**		**17**	**29**	**W**
	12	**90**	**10**		**17**	**29**	**SW**
	1	**90**	**10**		**17**	**29**	**SW**
	2	**93**	**10**		**23**	**29**	**SW**
	3						
	4	**86**	**20**		**17**	**29**	**SW**
	5	**88**	**10**		**17**	**29**	**W**
	6						
	7	75	10		9		SW
	8						
	9						
	10						
	11						

16659 (112.14Wx33.41N) 04/30/08

MC - WEST FORTY THIR

	Hr	T(F)		PM	Spd	Max	Dir
MC - WEST FORTY THIR	12	78		37	3	13	NW
	1	77		30	3	9	E
	2	75		33	3	6	SE
	3	76		35	4	8	S
	4	72		51	5	13	NE
	5	68		112	4	7	NE
	6	68		109	3	7	NE
	7	74		120	4	8	N
	8	78		75	4	7	N
	9	**83**		**85**	**6**	**20**	**SW**
	10	**87**		**404**	**13**	**24**	**SW**
	11	**89**		**1065**	**16**	**33**	**W**
	12	**90**		**360**	**15**	**28**	**W**
	1	**92**		**223**	**14**	**27**	**SW**
	2	**93**		**208**	**14**	**30**	**SW**
	3	**93**		**366**	**15**	**27**	**SW**
	4	**92**		**236**	**15**	**28**	**SW**
	5	**89**		**212**	**14**	**25**	**W**
	6	**85**		**134**	**13**	**23**	**W**
	7	81		77	6	12	W
	8	**79**		**62**	**6**	**19**	**W**
	9	**80**		**47**	**10**	**20**	**SW**
	10	77		28	7	14	SW
	11	74		31	4	10	SW

Appendix M: EVENT METEOROLOGICAL / AIR QUALITY TABLES

16372 (112.12Wx33.46N) 04/30/08

MC - GREENWOOD

MC - GREENWOOD

Hr	T(F)		PM	Spd	Max	Dir
12	78		28	4	13	W
1	75		36	3	12	SW
2	76		36	5	9	SW
3	74		44	3	8	SE
4	72		49	4	10	NE
5	70		57	4	10	NE
6	71		68	5	10	NE
7	75		78	4	8	NE
8	80		68	3	9	NW
9	**82**		**58**	**5**	**16**	**SW**
10	**84**		**66**	**10**	**22**	**SW**
11	**85**		**120**	**13**	**28**	**SW**
12	**86**		**107**	**14**	**33**	**W**
1	**88**		**74**	**13**	**32**	**W**
2	**90**		**57**	**12**	**26**	**SW**
3	**90**		**91**	**13**	**32**	**SW**
4	**90**		**80**	**12**	**28**	**W**
5	**88**		**78**	**12**	**28**	**W**
6	**84**		**69**	**11**	**25**	**W**
7	**81**		**51**	**6**	**17**	**W**
8	78		59	4	8	W
9	76		54	3	8	W
10	76		41	4	10	SW
11	72		42	2	7	W

03184 (112.08Wx33.69N) 04/30/08

NWS-DEER VALLEY

NWS-DEER VALLEY

Hr	T(F)	VR	Dust	Spd	Max	Dir
12	76	10		11		SW
1	74	10		8		S
2	72	10		7		S
3	68	10		7		E
4	68	10		6		E
5	68	10		9		E
6	70	10		7		E
7	73	10		9		SE
8	77	10		9		SW
9	**79**	**10**		**11**	**21**	**SW**
10	**82**	**10**		**13**	**26**	**SW**
11	**84**	**10**		**21**	**34**	**SW**
12	**86**	**10**		**23**	**31**	**SW**
1	**87**	**10**		**15**	**41**	**SW**
2	**88**	**10**		**18**	**30**	**W**
3	**89**	**10**		**18**	**26**	**W**
4	**88**	**10**		**23**	**29**	**W**
5	**85**	**10**		**15**	**25**	**SW**
6	**83**	**10**		**15**	**29**	**SW**
7	80	10		7		SW
8	77	10		3		S
9	77	10		11		SW
10	75	10		8		SW
11	72	10		8		SW

16390 (112.07Wx33.56N) 04/30/08

MC - NORTH PHOENIX

MC - NORTH PHOENIX

Hr	T(F)			Spd	Max	Dir
12	75			1	6	SW
1	73			2	7	S
2	72			2	5	SE
3	69			1	4	NE
4	68			3	7	E
5	66			2	6	NE
6	66			2	4	NE
7	72			3	7	N
8	75			2	6	NW
9	**79**			**6**	**17**	**SW**
10	**82**			**8**	**22**	**SW**
11	**84**			**10**	**25**	**SW**
12	**85**			**10**	**23**	**W**
1	**86**			**9**	**31**	**W**
2	**88**			**10**	**27**	**SW**
3	**89**			**11**	**27**	**SW**
4	**88**			**9**	**27**	**W**
5	**86**			**10**	**22**	**W**
6	**83**			**10**	**27**	**W**
7	**80**			**5**	**17**	**SW**
8	78			2	5	SW
9	76			5	13	W
10	75			4	10	W
11	73			3	7	W

16375 (112.12Wx33.43N) 04/30/08

MC - DURANGO COMPLEX

MC - DURANGO COMPLEX

Hr	T(F)		PM	Spd	Max	Dir
12	76		30	5	10	W
1	**78**		**35**	**5**	**17**	**SW**
2	77		31	5	11	SW
3	74		35	4	10	S
4	70		46	3	10	NE
5	67		61	3	8	NE
6	70		84	3	9	NE
7	77		89	2	7	N
8	81		75	3	7	N
9	**85**		**51**	**4**	**18**	**SW**
10	**86**		**84**	**11**	**24**	**SW**
11	**86**		**220**	**16**	**30**	**W**
12	**86**		**113**	**16**	**30**	**W**
1	**89**		**67**	**13**	**29**	**W**
2	**92**		**52**	**12**	**33**	**W**
3	**93**		**108**	**14**	**29**	**W**
4	**92**		**69**	**14**	**31**	**W**
5	**89**		**86**	**15**	**27**	**W**
6	**85**		**82**	**12**	**28**	**W**
7	**81**		**62**	**8**	**15**	**W**
8	77		57	4	10	W
9	**77**		**52**	**6**	**16**	**SW**
10	75		39	5	10	W
11	73		32	4	8	W

16328 (112.10Wx33.50N) 04/30/08

ADEQ - JLG SUPERSITE

ADEQ - JLG SUPERSITE

Hr			PM	Spd		Dir
12			33	2		NE
1			29	2		E
2			28	2		SE
3			31	4		E
4			37	3		E
5			36	4		E
6			41	5		E
7			46	4		E
8			46	2		SE
9			46	6		SW
10			43	7		SW
11			90	9		SW
12			59	9		SW
1			60	9		W
2			47	8		W
3			58	9		W
4			48	8		W
5			64	8		W
6			54	7		W
7			47	3		W
8			47	2		SW
9			47	2		W
10			38	2		W
11			32	3		W

16329 (112.05Wx33.46N) 04/30/08

MC - CENTRAL PHOENIX

MC - CENTRAL PHOENIX

Hr	T(F)		PM	Spd	Max	Dir
12	77		38	2	7	NW
1	75		34	2	8	NE
2	72		40	3	7	E
3	72		37	5	10	E
4	68		45	3	9	E
5	66		54	4	8	E
6	69		58	5	12	E
7	75		66	4	7	NE
8	82		52	3	9	NE
9	85		42	5	12	W
10	**85**		**63**	**12**	**27**	**SW**
11	**86**			**17**	**34**	**W**
12	**87**		**78**	**17**	**32**	**W**
1	**89**		**58**	**15**	**29**	**W**
2	**90**		**41**	**14**	**27**	**W**
3	**91**		**53**	**16**	**31**	**W**
4	**91**		**73**	**16**	**35**	**W**
5	**89**		**59**	**14**	**27**	**W**
6	**85**		**71**	**14**	**27**	**W**
7	**81**		**47**	**9**	**20**	**W**
8	78		48	6	11	W
9	**78**		**54**	**7**	**16**	**W**
10	**78**		**38**	**10**	**19**	**W**
11	75		34	4	13	W

16377 (112.08Wx33.40N) 04/30/08

MC - SOUTH PHOENIX

MC - SOUTH PHOENIX

Hr	T(F)		PM	Spd	Max	Dir
12	80		49	3	11	SW
1	82		37	3	10	SW
2	78		35	2	7	SW
3	76		38	4	10	E
4	71		58	2	7	NE
5	69		73	2	5	E
6	70		136	2	5	E
7	76		83	2	7	N
8	80		73	3	8	NW
9	83		53	4	12	W
10	**86**		**116**	**8**	**23**	**W**
11	**87**		**164**	**9**	**26**	**W**
12	**89**		**118**	**9**	**25**	**W**
1	**90**		**138**	**10**	**27**	**W**
2	**91**		**61**	**9**	**27**	**W**
3	**92**		**139**	**10**	**24**	**W**
4	**92**		**218**	**11**	**27**	**W**
5	**90**		**114**	**8**	**22**	**W**
6	**87**		**94**	**9**	**20**	**W**
7	84		74	3	10	W
8	80		93	1	4	SW
9	80		75	2	9	W
10	78		40	2	7	SW
11	75		44	2	6	W

15 (112.10Wx33.48N) 04/30/08

15-PHOENIX ENCANTO

15-PHOENIX ENCANTO

Hr	T(F)	RH	Rn	Spd	Max	Dir
12	68	28	0	2	5	N
1	65	34	0	0	3	E
2	72	18	0	3	7	SW
3	70	21	0	2	6	NE
4	65	26	0	1	5	N
5	64	27	0	1	3	NE
6	66	29	0	2	6	E
7	72	25	0	2	5	NE
8	77	20	0	2	8	W
9	80	16	0	5	14	SW
10	**82**	**12**	**0**	**11**	**22**	**SW**
11	**83**	**11**	**0**	**13**	**23**	**SW**
12	**84**	**11**	**0**	**13**	**26**	**SW**
1	**86**	**11**	**0**	**13**	**23**	**W**
2	**88**	**12**	**0**	**11**	**24**	**SW**
3	**88**	**10**	**0**	**13**	**24**	**SW**
4	**88**	**9**	**0**	**14**	**23**	**W**
5	**86**	**7**	**0**	**12**	**22**	**W**
6	**84**	**8**	**0**	**12**	**21**	**W**
7	80	10	0	5	13	W
8	77	12	0	2	8	W
9	74	17	0	1	4	W
10	73	18	0	2	7	W
11	73	16	0	2	5	W

23183 (111.99Wx33.44N) 04/30/08

NWS-PHX SKY HARBOR

NWS-PHX SKY HARBOR

Hr	T(F)	VR	Dust	Spd	Max	Dir
12	83	10		0		-
1	76	10		0		-
2	76	10		6		SE
3	70	10		10		E
4	70	10		8		E
5	69	10		11		SE
6	70	10		8		E
7	74	10		6		E
8	79	10		0		-
9	82	10		8		SW
10	**86**	**10**		**16**	**23**	**SW**
11	**88**	**10**		**18**	**30**	**W**
12	**89**	**10**		**20**	**26**	**W**
1	**91**	**10**		**18**	**29**	**W**
2	**91**	**10**		**14**	**20**	**SW**
3	**92**	**10**		**17**	**26**	**W**
4	**90**	**10**		**20**	**30**	**W**
5	**88**	**10**		**17**	**23**	**W**
6	86	10		17		W
7	83	10		10		W
8	82	10		9		W
9	77	10		6		S
10	77	10		6		S
11	74	10		3		S

Appendix M: EVENT METEOROLOGICAL / AIR QUALITY TABLES

12 (112.11Wx33.62N) 04/30/08

12-PHOENIX GREENWAY

	Hr	T(F)	RH	Rn	Spd	Max	Dir
12-PHOENIX GREENWAY	12	76	11	0	6	12	SW
	1	70	21	0	2	7	S
	2	69	17	0	1	6	SE
	3	66	20	0	0	0	N
	4	66	19	0	2	6	NE
	5	64	22	0	1	4	NE
	6	66	22	0	2	7	NE
	7	70	21	0	3	8	NE
	8	75	18	0	4	12	SW
	9	**77**	**17**	**0**	**8**	**15**	**S**
	10	**80**	**12**	**0**	**11**	**20**	**SW**
	11	**81**	**10**	**0**	**13**	**24**	**SW**
	12	**82**	**8**	**0**	**16**	**26**	**SW**
	1	**84**	**8**	**0**	**14**	**24**	**SW**
	2	**86**	**10**	**0**	**13**	**23**	**SW**
	3	**87**	**10**	**0**	**12**	**24**	**SW**
	4	**87**	**8**	**0**	**12**	**23**	**SW**
	5	**85**	**6**	**0**	**13**	**23**	**SW**
	6	**83**	**6**	**0**	**12**	**21**	**SW**
	7	**80**	**8**	**0**	**6**	**16**	**SW**
	8	73	15	0	1	5	SE
	9	74	15	0	5	13	SW
	10	75	15	0	7	12	SW
	11	72	18	0	6	12	SW

16368 (112.02Wx33.82N) 04/30/08

MC - CAVE CREEK

	Hr	T(F)	RH		Spd	Max	Dir
MC - CAVE CREEK	**12**	**75**	**16**		**4**	**16**	**SW**
	1	71	18		3	7	E
	2	69	19		4	9	E
	3	70	19		5	10	E
	4	67	22		3	8	E
	5	66	22		5	8	E
	6	68	23		5	10	E
	7	72	24		7	14	SE
	8	**75**	**24**		**7**	**20**	**S**
	9	**77**	**21**		**11**	**23**	**SW**
	10	**80**	**19**		**12**	**25**	**S**
	11	**82**	**17**		**12**	**28**	**SW**
	12	**84**	**14**		**14**	**32**	**SW**
	1	**85**	**12**		**14**	**31**	**SW**
	2	**86**	**12**		**14**	**32**	**SW**
	3	**86**	**14**		**15**	**32**	**SW**
	4	**86**	**14**		**15**	**34**	**SW**
	5	**84**	**11**		**14**	**26**	**SW**
	6	**82**	**11**		**11**	**22**	**SW**
	7	77	13		6	14	SW
	8	71	16		1	6	S
	9	71	17		3	10	S
	10	**73**	**22**		**7**	**16**	**SW**
	11	**71**	**24**		**6**	**15**	**SW**

27 (111.97Wx33.73N) 04/30/08

27-DESERT RIDGE

	Hr	T(F)	RH	Rn	Spd	Max	Dir
27-DESERT RIDGE	12	73	15	0	4	14	W
	1	68	24	0	2	6	SE
	2	65	32	0	2	3	E
	3	64	29	0	1	3	E
	4	64	25	0	2	8	SE
	5	62	26	0	2	6	E
	6	67	20	0	4	10	SE
	7	71	21	0	6	11	S
	8	73	22	0	6	13	S
	9	**75**	**20**	**0**	**9**	**20**	**SW**
	10	**77**	**16**	**0**	**13**	**25**	**SW**
	11	**79**	**12**	**0**	**18**	**30**	**W**
	12	**80**	**11**	**0**	**19**	**32**	**W**
	1	**82**	**9**	**0**	**19**	**37**	**W**
	2	**84**	**12**	**0**	**16**	**29**	**W**
	3	**85**	**12**	**0**	**14**	**36**	**W**
	4	**85**	**11**	**0**	**15**	**26**	**W**
	5	**84**	**8**	**0**	**14**	**26**	**W**
	6	**81**	**8**	**0**	**15**	**26**	**W**
	7	**78**	**8**	**0**	**9**	**23**	**W**
	8	73	18	0	1	5	SW
	9	68	26	0	2	8	S
	10	72	17	0	5	11	W
	11	70	20	0	6	13	W

16393 (112.13Wx33.49N) 04/30/08

MC - WEST INDIAN SCH

	Hr				Spd	Max	Dir
MC - WEST INDIAN SCH	12				6	14	SW
	1				4	10	SW
	2				5	10	SW
	3				0	9	N
	4				3	8	NE
	5				3	7	E
	6				4	10	E
	7				4	10	NE
	8				1	10	SW
	9				**7**	**17**	**SW**
	10				**11**	**26**	**SW**
	11				**15**	**32**	**SW**
	12				**15**	**32**	**SW**
	1				**15**	**30**	**SW**
	2				**13**	**28**	**W**
	3				**15**	**30**	**W**
	4				**15**	**30**	**W**
	5				**13**	**29**	**W**
	6				**13**	**26**	**W**
	7				**6**	**15**	**W**
	8				6	13	W
	9				5	11	W
	10				4	9	W
	11				5	11	W

15 (112.10Wx33.48N) 04/30/08

15-PHOENIX ENCANTO

	Hr	T(F)	RH	Rn	Spd	Max	Dir
15-PHOENIX ENCANTO	12	68	28	0	2	5	N
	1	65	34	0	0	3	E
	2	72	18	0	3	7	SW
	3	70	21	0	2	6	NE
	4	65	26	0	1	5	N
	5	64	27	0	1	3	NE
	6	66	29	0	2	6	E
	7	72	25	0	2	5	NE
	8	77	20	0	2	8	W
	9	80	16	0	5	14	SW
	10	**82**	**12**	**0**	**11**	**22**	**SW**
	11	**83**	**11**	**0**	**13**	**23**	**SW**
	12	**84**	**11**	**0**	**13**	**26**	**SW**
	1	**86**	**11**	**0**	**13**	**23**	**W**
	2	**88**	**12**	**0**	**11**	**24**	**SW**
	3	**88**	**10**	**0**	**13**	**24**	**SW**
	4	**88**	**9**	**0**	**14**	**23**	**W**
	5	**86**	**7**	**0**	**12**	**22**	**W**
	6	**84**	**8**	**0**	**12**	**21**	**W**
	7	80	10	0	5	13	W
	8	77	12	0	2	8	W
	9	74	17	0	1	4	W
	10	73	18	0	2	7	W
	11	73	16	0	2	5	W

16398 (111.92Wx33.48N) 04/30/08

MC - SOUTH SCOTTSDAL

	Hr	T(F)	RH		Spd	Max	Dir
MC - SOUTH SCOTTSDAL	12	71	16		1	7	W
	1	68	20		0	3	SE
	2	66	20		3	6	NE
	3	66	18		4	9	SE
	4	66	21		3	9	SE
	5	63	24		2	6	E
	6	65	25		2	8	E
	7	71	26		2	8	SE
	8	76	26		5	10	S
	9	84	21		2	11	SW
	10	**88**	**17**		**4**	**22**	**SW**
	11	**89**	**12**		**12**	**27**	**W**
	12	**90**	**11**		**13**	**30**	**W**
	1	**92**	**11**		**12**	**26**	**W**
	2	**93**	**13**		**13**	**26**	**W**
	3	**93**	**13**		**11**	**25**	**W**
	4	**92**	**12**		**13**	**29**	**W**
	5	**90**	**9**		**12**	**27**	**W**
	6	**85**	**10**		**11**	**23**	**W**
	7	**81**	**11**		**8**	**17**	**W**
	8	77	12		2	7	NW
	9	74	14		2	6	W
	10	73	18		3	12	SW
	11	72	21		4	10	S

03192 (111.91Wx33.62N) 04/30/08

NWS-SCOTTSDALE

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-SCOTTSDALE	12	76	10		0		-
	1	75	10		0		-
	2	71	10		5		E
	3	70	10		3		SE
	4	69	10		6		SE
	5	69	10		0		-
	6	70	10		3		E
	7	72	10		7		SE
	8	74	10		3		SE
	9	79	10		3		*VR
	10	83	10		10		SW
	11	**83**	**10**		**17**	**25**	**W**
	12	86	10		13		W
	1	**86**	**10**		**14**	**21**	**W**
	2	**88**	**10**		**14**	**26**	**W**
	3	**89**	**10**		**14**	**23**	**SW**
	4	**88**	**10**		**10**	**23**	**SW**
	5	**86**	**10**		**14**	**22**	**W**
	6	**83**	**10**		**11**	**24**	**W**
	7	81	10		7		SW
	8	78	10		3		S
	9	77	10		6		W
	10	76	10		5		W
	11	73	10		6		*VR

53128 (111.80Wx33.27N) 04/30/08

NWS-CHANDLER

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-CHANDLER	12						
	1						
	2						
	3						
	4						
	5	68	40		16		SE
	6	70	0		M		
	7	73	35		14		S
	8	79	30		17		S
	9	**82**	**30**		**17**	**29**	**SW**
	10	**84**	**25**		**23**	**31**	**SW**
	11	**88**	**25**		**20**	**32**	**SW**
	12	**88**	**25**		**11**	**22**	**SW**
	1	90	30		17		SW
	2						
	3	**91**	**30**		**17**	**34**	**SW**
	4						
	5	**88**	**30**		**23**	**34**	**SW**
	6	**82**	**25**		**23**	**29**	**SW**
	7	**79**	**15**		**11**	**25**	**SW**
	8						
	9						
	10						
	11						

23104 (111.65Wx33.31N) 04/30/08

NWS-WILLIAMS FLD

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-WILLIAMS FLD	12	66	10		6		SE
	1	64	10		8		E
	2	64	10		8		E
	3	64	10		7		E
	4	63	10		9		E
	5	61	30		8		E
	6	64	30		9		E
	7	73	30		10		SE
	8	82	30		11		S
	9						
	10	**84**	**30**		**15**	**24**	**SW**
	11	**86**	**30**		**14**	**24**	**SW**
	12	**88**	**30**		**15**	**28**	**W**
	1	88	30		11		W
	2	**91**	**30**		**9**	**18**	**W**
	3	**91**	**30**		**13**	**21**	**W**
	4	**91**	**30**		**21**	**30**	**S**
	5	**88**	**30**		**20**	**30**	**W**
	6	**84**	**30**		**11**	**17**	**W**
	7	79	10		5		W
	8						
	9						
	10						
	11						

Appendix M: EVENT METEOROLOGICAL / AIR QUALITY TABLES

16406 (111.85Wx33.71N) 04/30/08

MC - PINNACLE PEAK

	Hr				Spd	Max	Dir
MC - PINNACLE PEAK	12				4	18	W
	1				6	14	SW
	2				5	14	SW
	3				6	13	SW
	4				2	12	SE
	5				5	13	SW
	6				4	14	SW
	7				8	17	SW
	8				7	15	SW
	9				7	15	W
	10				9	21	W
	11				12	29	W
	12				14	34	W
	1				17	36	W
	2				13	28	W
	3				12	29	W
	4				12	30	W
	5				12	28	NW
	6				11	25	NW
	7				7	24	W
	8				2	6	W
	9				3	15	W
	10				3	14	W
	11				4	10	W

16376 (111.73Wx33.61N) 04/30/08

MC - FOUNTAIN HILLS

	Hr	T(F)	RH		Spd	Max	Dir
MC - FOUNTAIN HILLS	12	78	12		6	10	SW
	1	74	14		4	7	SW
	2	72	15		3	5	SW
	3	68	18		1	5	W
	4	66	22		1	4	NW
	5	64	25		2	5	W
	6	65	28		0	5	N
	7	73	22		3	13	S
	8	77	21		8	17	S
	9	79	19		8	18	SW
	10	82	16		9	23	SW
	11	85	12		11	31	SW
	12	86	10		12	29	SW
	1	87	10		12	27	SW
	2	89	11		9	32	W
	3	90	12		10	25	W
	4	90	12		10	31	W
	5	88	10		11	26	W
	6	85	9		8	26	W
	7	82	9		6	19	W
	8	81	9		6	17	W
	9	81	10		7	18	W
	10	77	14		6	14	SW
	11	73	20		5	10	SW

16417 (111.61Wx33.55N) 04/30/08

MC - BLUE POINT

	Hr	T(F)			Spd	Max	Dir
MC - BLUE POINT	12	77			4	15	SW
	1	73			0	6	NW
	2	71			0	5	NE
	3	67			2	7	NE
	4	61			2	6	E
	5	60			2	8	SW
	6	71			6	17	SE
	7	75			9	18	S
	8	77			9	22	S
	9	79			11	23	S
	10	82			12	29	SW
	11	84			12	29	SW
	12	86			13	28	W
	1	88			13	29	W
	2	88			10	24	W
	3	89			9	25	W
	4	90			12	28	W
	5	88			14	28	W
	6	85			10	26	W
	7	80			7	18	W
	8	77			6	9	SW
	9	74			6	11	S
	10	75			12	24	S
	11	74			15	26	SW

16405 (111.93Wx33.41N) 04/30/08

MC - TEMPE

	Hr	T(F)			Spd	Max	Dir
MC - TEMPE	12	73			1	6	E
	1	69			1	7	SE
	2	65			1	5	E
	3	64			2	6	E
	4	64			2	8	E
	5	61			2	6	E
	6	64			2	9	E
	7	72			4	10	SE
	8	77			4	10	S
	9	81			1	10	S
	10	84			3	17	SW
	11	86			5	19	SW
	12	87			5	21	W
	1	88			5	21	W
	2	90			5	22	SW
	3	91			6	20	SW
	4	90			6	27	SW
	5	88			6	23	SW
	6	86			5	19	SW
	7	81			2	10	W
	8	77			2	7	W
	9	74			4	15	S
	10	77			5	13	S
	11	72			4	9	SE

03185 (111.73Wx33.46N) 04/30/08

NWS-MESA FF

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-MESA FF	12						
	1						
	2						
	3						
	4						
	5	68	30		15		SE
	6	68	40		15		SE
	7	72	40		11	29	SE
	8	75	30		11	20	S
	9	77	30		10		SW
	10	81	30		11	17	SW
	11	86	30		11	18	SW
	12	88	30		14	23	W
	1	88	30		17	23	NW
	2	90	30		17	23	SW
	3	90	30		17	29	W
	4						
	5	86	25		17	29	W
	6						
	7						
	8						
	9						
	10						
	11						

16381 (111.73Wx33.45N) 04/30/08

MC - FALCON FIELD

	Hr	T(F)	RH		Spd	Max	Dir
MC - FALCON FIELD	12	76	10		6	11	SE
	1	74	11		6	11	SE
	2	74	11		7	12	SE
	3	72	12		7	13	SE
	4	71	12		10	16	SE
	5	70	14		11	17	SE
	6	69	17		9	15	SE
	7	72	19		8	14	SE
	8	76	18		9	18	S
	9	79	15		9	18	S
	10	82	11		8	20	SW
	11	84	8		9	23	SW
	12	86	8		10	25	SW
	1	86	7		11	26	W
	2	88	8		8	24	W
	3	90	10		11	25	SW
	4	89	8		11	27	SW
	5	88	6		10	25	SW
	6	85	6		9	22	W
	7	81	8		5	13	W
	8						N
	9						N
	10	77	11		5	23	SW
	11	74	15		11	21	S

16478 (111.88Wx33.30N) 04/30/08

MC - WEST CHANDLER

	Hr	T(F)	RH		Spd	Max	Dir
MC - WEST CHANDLER	12	76	11		4	11	S
	1	75	11		5	11	S
	2	74	12		5	12	S
	3	71	14		5	13	S
	4	69	19		4	9	SE
	5	66	21		5	11	E
	6	69	23		6	13	S
	7	72	23		7	14	S
	8	76	21		6	14	S
	9	80	12		9	19	SW
	10	83	8		12	27	SW
	11	85	9		11	23	SW
	12	87	8		12	27	W
	1	88	8		12	25	W
	2	90	10		12	27	SW
	3	91	9		14	29	SW
	4	90	6		15	28	SW
	5	88	5		14	26	SW
	6	86	6		13	29	SW
	7	84	7		7	17	W
	8	80	8		5	11	SW
	9	77	13		9	22	SW
	10	75	16		12	26	S
	11	72	19		10	19	S

16380 (111.87Wx33.41N) 04/30/08

MC - MESA

	Hr	T(F)	RH		Spd	Max	Dir
MC - MESA	12	79	10		2	11	S
	1	76	12		3	6	S
	2	73	14		4	8	E
	3	71	15		5	8	E
	4	68	17		6	10	SE
	5	67	19		4	9	SE
	6	68	23		6	11	SE
	7	72	24		7	15	S
	8	76	21		7	15	S
	9	80	15		6	16	SW
	10	84	11		7	21	SW
	11	87	8		13	26	W
	12	87	8		14	30	W
	1	88	8		13	26	W
	2	90	10		11	26	W
	3	91	10		14	30	W
	4	90	9		13	27	W
	5	89	6		13	28	W
	6	86	6		12	23	W
	7	83	8		8	15	W
	8	80	9		5	11	W
	9	79	12		4	14	SW
	10	77	15		11	23	S
	11	73	19		8	20	SW

16505 (111.72Wx33.31N) 04/30/08

MC - HIGLEY

	Hr	T(F)		PM	Spd	Max	Dir
MC - HIGLEY	12			35	4	8	S
	1			41	4	9	SE
	2			41	5	8	E
	3			37	6	10	E
	4			39	5	9	E
	5			75	6	10	SE
	6			200	5	12	SE
	7			58	8	17	S
	8			101	12	21	S
	9			65	11	24	SW
	10			67	12	26	SW
	11			61	10	22	W
	12			48	12	27	SW
	1			50	11	27	W
	2			34	9	23	W
	3			46	10	22	SW
	4			70	13	28	SW
	5			54	13	26	W
	6			54	10	25	W
	7			45	6	15	W
	8			70	6	12	S
	9			111	9	24	S
	10			66	10	20	SW
	11			47	11	20	SW

Appendix M: EVENT METEOROLOGICAL / AIR QUALITY TABLES

30 (111.58Wx35.21N) 04/30/08

30-FLAGSTAFF

	Hr	T(F)	RH	Rn	Spd	Max	Dir
30-FLAGSTAFF	12	53	17	0	9	20	W
	1	53	19	0	10	20	W
	2	52	20	0	10	17	W
	3	50	22	0	10	17	W
	4	49	24	0	10	19	W
	5	48	26	0	10	18	W
	6	50	24	0	13	23	W
	7	53	22	0	14	23	SW
	8	55	20	0	17	36	SW
	9	57	17	0	17	31	SW
	10	59	18	0	17	30	SW
	11	60	17	0	18	32	SW
	12	60	17	0	19	34	SW
	1	61	17	0	17	33	SW
	2	62	18	0	19	35	SW
	3	62	16	0	19	36	S
	4	60	15	0	19	33	S
	5	59	14	0	16	31	S
	6	58	13	0	15	31	SW
	7	54	14	0	9	19	SW
	8	52	15	0	9	18	SW
	9	51	20	0	11	25	SW
	10	50	28	0	10	19	SW
	11	48	26	0	11	19	SW

31 (112.42Wx34.59N) 04/30/08

31-PRESCOTT

	Hr	T(F)	RH	Rn	Spd	Max	Dir
31-PRESCOTT	12	60	21	0	3	9	SE
	1	61	20	0	4	14	SE
	2	59	21	0	3	12	S
	3	56	24	0	6	17	SW
	4	55	24	0	4	10	SW
	5	51	31	0	2	9	SW
	6	55	30	0	6	14	SW
	7	59	25	0	10	18	SW
	8	61	23	0	12	20	SW
	9	63	20	0	12	21	SW
	10	64	20	0	14	27	SW
	11	64	20	0	15	26	SW
	12	66	19	0	15	26	SW
	1	67	16	0	17	32	SW
	2	68	14	0	18	30	SW
	3	68	13	0	20	32	SW
	4	68	12	0	22	35	SW
	5	66	13	0	18	30	SW
	6	64	14	0	19	28	SW
	7	61	20	0	17	26	SW
	8	59	24	0	10	21	SW
	9	56	29	0	2	9	S
	10	56	25	0	6	14	S
	11	55	26	0	8	15	SW

32 (111.34Wx34.23N) 04/30/08

32-PAYSON

	Hr	T(F)	RH	Rn	Spd	Max	Dir
32-PAYSON	12	66	13	0	10	17	SW
	1	64	14	0	10	18	SW
	2	61	17	0	6	12	SW
	3	61	16	0	7	13	S
	4	58	19	0	5	11	S
	5	56	23	0	4	9	S
	6	55	23	0	3	7	N
	7	61	18	0	7	16	S
	8	62	21	0	11	21	S
	9	64	22	0	14	28	S
	10	66	22	0	14	25	SW
	11	67	18	0	13	24	S
	12	67	16	0	16	29	SW
	1	68	14	0	16	28	SW
	2	68	13	0	16	26	SW
	3	69	13	0	14	26	SW
	4	69	14	0	13	22	SW
	5	68	16	0	12	23	SW
	6	67	16	0	12	26	SW
	7	64	13	0	6	18	S
	8	62	12	0	8	18	SW
	9	61	14	0	9	19	SW
	10	60	17	0	9	18	SW
	11	60	20	0	10	17	SW

29 (111.87Wx33.39N) 04/30/08

29-MESA

	Hr	T(F)	RH	Rn	Spd	Max	Dir
29-MESA	12	77	11	0	3	9	S
	1	75	12	0	1	3	SE
	2	71	14	0	2	5	E
	3	69	16	0	3	6	E
	4	67	19	0	4	8	E
	5	66	19	0	3	7	E
	6	69	22	0	5	11	SE
	7	73	22	0	4	9	SE
	8	78	20	0	7	14	S
	9	82	14	0	7	18	S
	10	85	10	0	8	21	SW
	11	87	7	0	12	24	SW
	12	89	8	0	10	20	SW
	1	90	7	0	9	23	SW
	2	92	9	0	10	23	SW
	3	92	9	0	12	23	W
	4	91	8	0	11	20	SW
	5	89	6	0	11	22	SW
	6	87	6	0	10	20	SW
	7	84	7	0	6	13	W
	8	80	9	0	3	7	W
	9	78	11	0	5	12	S
	10	76	14	0	9	19	S
	11	73	18	0	7	15	S

22 (111.64Wx33.26N) 04/30/08

22-QUEEN CREEK

	Hr	T(F)	RH	Rn	Spd	Max	Dir
22-QUEEN CREEK	12	64	26	0	7	9	SE
	1	62	25	0	5	8	E
	2	64	18	0	5	9	E
	3	60	30	0	6	8	SE
	4	58	35	0	7	10	SE
	5	58	35	0	8	11	SE
	6	62	34	0	9	12	SE
	7	69	28	0	12	17	SE
	8	75	22	0	9	16	S
	9	80	14	0	14	23	SW
	10	82	12	0	14	23	SW
	11	84	10	0	14	25	SW
	12	86	10	0	12	21	SW
	1	88	9	0	13	27	SW
	2	89	9	0	11	23	W
	3	90	9	0	15	28	W
	4	89	9	0	19	28	W
	5	87	9	0	17	25	SW
	6	84	7	0	14	24	W
	7	79	9	0	6	20	SW
	8	76	12	0	9	23	SW
	9	76	12	0	17	24	SW
	10	74	14	0	15	24	SW
	11	70	17	0	10	17	S

16317 (111.33Wx34.23N) 04/30/08

ADEQ - PAYSON WELL S

	Hr	T(F)	RH		Spd		Dir
ADEQ - PAYSON WELL S	12	65	10		12		SW
	1	64	12		10		SW
	2	61	13		7		SW
	3	59	14		5		SW
	4	57	16		3		SW
	5	55	17		3		S
	6	56	19		3		E
	7	60	17		8		S
	8	63	19		9		S
	9	66	18		11		S
	10	69	16		12		SW
	11	69	14		11		S
	12	71	11		12		SW
	1	72	10		14		SW
	2	72	9		13		SW
	3	72	9		13		SW
	4	71	11		12		SW
	5	69	13		11		SW
	6	67	13		9		SW
	7	64	10		6		SW
	8	62	10		7		SW
	9	61	10		9		SW
	10	61	12		10		SW
	11	60	16		10		SW

06 (111.97Wx33.07N) 04/30/08

06-MARICOPA

	Hr	T(F)	RH	Rn	Spd	Max	Dir
06-MARICOPA	12	65	26	0	3	7	SE
	1	62	30	0	2	6	SE
	2	63	25	0	5	9	SE
	3	63	29	0	6	9	S
	4	65	28	0	9	14	S
	5	63	34	0	9	12	S
	6	65	36	0	9	15	S
	7	72	30	0	13	17	S
	8	77	23	0	13	18	SW
	9	82	13	0	12	20	SW
	10	84	10	0	11	22	SW
	11	86	9	0	11	24	SW
	12	88	9	0	9	18	SW
	1	90	9	0	9	20	SW
	2	91	10	0	12	24	SW
	3	91	9	0	18	29	SW
	4	89	8	0	18	28	SW
	5	88	6	0	17	26	W
	6	85	7	0	14	22	SW
	7	79	13	0	10	17	SW
	8	73	23	0	9	13	S
	9	72	21	0	13	20	S
	10	70	23	0	11	16	S
	11	68	26	0	12	19	S

05 (111.60Wx32.98N) 04/30/08

05-COOLIDGE

	Hr	T(F)	RH	Rn	Spd	Max	Dir
05-COOLIDGE	12	59	42	0	5	8	SW
	1	61	33	0	6	9	S
	2	62	33	0	5	7	S
	3	58	40	0	6	8	SE
	4	55	48	0	4	8	S
	5	55	49	0	3	7	S
	6	59	47	0	3	5	E
	7	69	34	0	7	14	S
	8	75	25	0	11	17	S
	9	78	24	0	10	16	S
	10	80	22	0	9	19	SW
	11	82	21	0	10	20	SW
	12	84	19	0	8	17	SW
	1	86	18	0	9	24	SW
	2	86	16	0	11	25	SW
	3	86	15	0	14	23	SW
	4	84	15	0	14	24	SW
	5	83	15	0	13	25	SW
	6	79	18	0	11	17	SW
	7	73	25	0	7	15	SW
	8	71	22	0	10	19	SW
	9	72	18	0	13	22	SW
	10	66	29	0	7	12	SW
	11	60	40	0	5	7	SW

04 (109.68Wx32.81N) 04/30/08

04-SAFFORD

	Hr	T(F)	RH	Rn	Spd	Max	Dir
04-SAFFORD	12	65	11	0	3	6	SW
	1	64	11	0	2	8	S
	2	63	12	0	3	8	SW
	3	62	12	0	5	11	SE
	4	57	17	0	3	7	SE
	5	51	22	0	3	12	SE
	6	58	16	0	5	13	E
	7	68	14	0	7	10	E
	8	77	9	0	6	11	NE
	9	81	7	0	6	12	NE
	10	84	6	0	8	18	NE
	11	86	5	0	19	33	NW
	12	88	6	0	22	35	NW
	1	88	5	0	20	35	W
	2	88	6	0	17	30	W
	3	88	6	0	17	37	W
	4	87	5	0	17	36	W
	5	85	6	0	15	26	SW
	6	80	8	0	13	22	SW
	7	76	10	0	11	24	SW
	8	76	8	0	14	23	W
	9	71	8	0	4	12	S
	10	70	7	0	8	16	N
	11	68	8	0	9	19	NW

Appendix M: EVENT METEOROLOGICAL / AIR QUALITY TABLES

13 (111.23Wx32.46N) 04/30/08

13-MARANA

	Hr	T(F)	RH	Rn	Spd	Max	Dir
13-MARANA	12	71	11	0	2	7	SE
	1	68	13	0	1	5	SE
	2	64	16	0	3	7	E
	3	63	19	0	4	8	E
	4	64	20	0	7	11	E
	5	64	19	0	4	9	E
	6	66	18	0	4	9	E
	7	74	12	0	7	21	SE
	8	79	10	0	8	20	S
	9	82	9	0	9	18	SW
	10	84	8	0	6	19	SW
	11	88	7	0	12	23	SW
	12	90	6	0	18	29	W
	1	90	6	0	19	30	SW
	2	90	6	0	20	29	W
	3	90	6	0	20	32	SW
	4	88	6	0	18	29	SW
	5	86	7	0	16	26	SW
	6	82	8	0	16	25	SW
	7	77	9	0	11	18	SW
	8	74	9	0	9	16	SW
	9	71	11	0	5	9	SW
	10	68	13	0	5	11	SW
	11	64	17	0	2	5	SE

01 (110.95Wx32.28N) 04/30/08

01-TUCSON

	Hr	T(F)	RH	Rn	Spd	Max	Dir
01-TUCSON	12	65	15	0	3	9	E
	1	66	14	0	5	16	E
	2	63	18	0	3	8	E
	3	60	21	0	4	7	E
	4	61	21	0	4	8	E
	5	58	26	0	4	7	E
	6	61	26	0	6	10	E
	7	69	18	0	7	14	E
	8	76	12	0	7	14	E
	9	80	10	0	7	15	SE
	10	83	8	0	10	20	SW
	11	84	8	0	11	23	SW
	12	86	7	0	12	26	SW
	1	86	7	0	13	26	SW
	2	87	7	0	11	23	SW
	3	87	7	0	13	28	SW
	4	86	8	0	14	26	W
	5	85	7	0	12	23	SW
	6	82	5	0	10	21	SW
	7	79	6	0	9	19	SW
	8	76	8	0	8	14	SW
	9	74	10	0	6	14	SW
	10	70	16	0	2	7	S
	11	63	23	0	3	8	E

09 (109.93Wx32.46N) 04/30/08

09-BONITA

	Hr	T(F)	RH	Rn	Spd	Max	Dir
09-BONITA	12	67	10	0	12	20	W
	1	64	12	0	5	15	W
	2	58	17	0	4	11	SE
	3	51	22	0	3	7	NE
	4	45	28	0	4	8	NE
	5	48	24	0	4	9	NE
	6	57	19	0	3	11	NE
	7	67	13	0	4	12	SE
	8	71	12	0	13	25	SW
	9	74	9	0	16	24	SW
	10	76	7	0	14	29	SW
	11	78	7	0	17	30	W
	12	79	8	0	15	36	W
	1	80	8	0	20	34	W
	2	80	8	0	22	34	W
	3	80	8	0	22	37	W
	4	79	9	0	22	34	W
	5	77	10	0	20	34	W
	6	73	10	0	16	26	W
	7	69	9	0	11	22	SW
	8	64	10	0	6	15	W
	9	62	11	0	9	16	W
	10	57	18	0	5	9	NW
	11	53	23	0	3	8	SW

23160 (110.96Wx32.13N) 04/30/08

NWS-TUCSON INTL

	Hr	T(F)	VR	Dust	Spd	Max	Dir
NWS-TUCSON INTL	12	76	10		17	24	SW
	1	71	10		8		S
	2	72	10		10		SE
	3	69	10		3		*VR
	4	68	10		6		SE
	5	64	10		11		SE
	6	70	10		7		E
	7	74	10		14	21	S
	8	78	10		22	30	S
	9	81	10		21	32	SW
	10	84	10		18	28	SW
	11	85	10		15	26	SW
	12	88	10		17	25	SW
	1	89	10		23	31	W
	2	88	10		21	33	SW
	3	87	10		18		W
	4	86	10		22	30	SW
	5	83	10		20	29	SW
	6	79	10		15	26	SW
	7	76	10		13	20	SW
	8	72	10		7		SW
	9	72	10		6		S
	10	70	10		0		-
	11	68	10		6		*VR

34 (109.73Wx32.05N) 04/30/08

34-KANSAS SETTLEMENT

	Hr	T(F)	RH	Rn	Spd	Max	Dir
34-KANSAS SETTLEMENT	12	64	15	0	6	15	SW
	1	58	23	0	5	12	S
	2	54	29	0	8	16	S
	3	53	32	0	5	10	S
	4	51	25	0	4	12	E
	5	51	28	0	3	12	S
	6	55	33	0	5	11	S
	7	63	32	0	10	17	S
	8	67	26	0	13	23	S
	9	71	23	0	14	26	SW
	10	73	20	0	16	27	SW
	11	75	18	0	20	33	SW
	12	77	17	0	24	38	SW
	1	78	16	0	24	35	SW
	2	79	13	0	24	37	W
	3	78	16	0	21	37	SW
	4	76	16	0	24	37	SW
	5	73	16	0	22	36	SW
	6	71	15	0	21	30	SW
	7	68	12	0	17	30	SW
	8	61	20	0	9	22	SW
	9	60	21	0	13	18	SW
	10	57	26	0	5	9	SE
	11	58	26	0	7	17	SW

33 (109.48Wx32.33N) 04/30/08

33-BOWIE

	Hr	T(F)	RH	Rn	Spd	Max	Dir
33-BOWIE	12	74	8	0	10	19	SW
	1	72	9	0	9	17	SW
	2	69	10	0	6	14	W
	3	62	11	0	4	8	NW
	4	58	14	0	4	8	NW
	5	51	34	0	3	9	SW
	6	57	29	0	1	6	NW
	7	71	12	0	5	11	NE
	8	75	11	0	10	28	SW
	9	76	10	0	16	31	SW
	10	79	8	0	15	32	SW
	11	81	7	0	18	30	SW
	12	83	7	0	17	33	SW
	1	84	8	0	18	39	W
	2	84	8	0	17	40	SW
	3	84	8	0	16	28	W
	4	83	8	0	17	31	W
	5	81	9	0	16	32	W
	6	78	9	0	13	26	SW
	7	76	8	0	13	24	SW
	8	74	7	0	12	26	SW
	9	72	9	0	12	25	SW
	10	69	13	0	7	18	SW
	11	68	13	0	7	14	W

128562 (111.01Wx31.83N) 04/30/08

ADEQ - GREEN VALLEY

	Hr			PM	Spd		Dir
ADEQ - GREEN VALLEY	12			28	7		SW
	1			21	9		SW
	2			19	9		SW
	3			16	11		SW
	4			20	11		SW
	5			27	11		SW
	6			32	11		SW
	7			36	13		SW
	8			41	16		SW
	9			22	18		SW
	10				20		SW
	11			21	18		SW
	12			21	20		SW
	1			20	20		SW
	2			54	20		SW
	3			37	20		SW
	4			62	20		SW
	5			58	22		SW
	6			41	18		SW
	7			44	16		SW
	8			36	13		SW
	9			26	13		SW
	10			22	11		SW
	11			18	13		SW

16511 (110.94Wx31.34N) 04/30/08

ADEQ - NOGALES POST

	Hr			PM	Spd		Dir
ADEQ - NOGALES POST	12			70	2		S
	1			58	3		SE
	2			47	2		SE
	3			93	1		SW
	4			53	1		S
	5			60	1		SW
	6			73	1		S
	7			99	2		S
	8			74	7		S
	9			114	9		S
	10			136	9		SW
	11			68	9		SW
	12			143	11		S
	1			249	13		SW
	2			161	14		SW
	3			83	12		SW
	4			140	13		SW
	5			84	11		SW
	6			60	9		SW
	7			63	7		SW
	8			63	6		SW
	9			80	6		SW
	10			73	6		S
	11			39	5		S

16361 (109.55Wx31.33N) 04/30/08

ADEQ - AGUA PRIETA F

	Hr	T(F)	RH		Spd		Dir
ADEQ - AGUA PRIETA F	12	70	11		4		SW
	1	69	11		3		SW
	2	66	12		1		S
	3	66	12		2		W
	4	64	13		2		W
	5	63	14		2		SW
	6	62	15		1		N
	7	68	13		8		S
	8	72	12		12		S
	9	75	10		15		S
	10	77	9		15		S
	11	79	8		13		SW
	12	81	7		14		SW
	1	82	7		13		SW
	2	83	6		16		SW
	3	82	7		17		W
	4	81	9		15		SW
	5	79	9		15		SW
	6	77	10		13		SW
	7	74	10		8		SW
	8	72	10		8		SW
	9	70	9		8		SW
	10	68	10		11		SW
	11	66	11		7		S

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Appendix N
Event Visibility Camera Images

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Phoenix Visibility Network Cameras

The visibility cameras aimed at South Mountain and the Estrella Mountains capture images every 15 minutes. Both cameras are looking south. The Estrella Mountains camera shows the southwestern portions of the Valley, looking toward the Salt River channel upwind of the West 43rd Ave. monitor. The South Mountain Camera shows downtown Phoenix with South Mountain in the background as well as a portion of the Estrella Mountains in the extreme upper right hand corner of the camera view. On April 30, 2008, the South Mountain camera images show a prevalence of haze during the early morning hours over downtown Phoenix, likely brought on by drainage from the east caused by light easterly winds. Because winds somewhat abruptly changed from these light easterlies to strong and gusty westerlies and southwesterlies, the transition from morning haze to windblown dust is difficult to see. The Estrella Mountains camera images do show a reduction in visibility related to strong and gusty winds beginning in the late morning. As the cameras both face towards the south, the dust causing the continued reduction in visibility captured by the Estrella Mountains camera (and to a lesser extent the South Mountain camera) comes in from the right hand side of the images.

The upper right hand portion of the South Mountain images depicts the area of near West 43rd Ave. and provides an opportunity to see any windblown dust propagating down the Salt River channel in front of the Estrella Mountains and South Mountain. Due to the importance of that portion of the images, and in order to better see the area, images were zoomed in to allow for a closer, more detailed look. Unfortunately, due to the general uniform haze across the Valley throughout the morning hours, these images are not able to clearly show the propagation of dust from west to east across the Phoenix Metro area. As winds changed from light easterlies to gusty west and southwesterlies during the 9:00 a.m. hour, the background Estrella Mountains and South Mountain terrain becomes almost completely obscured. Some slight clearing can actually be seen during the 10:00 a.m. hour in the both the zoomed in as well as the full South Mountain images (pp. 6-7). This clearing is due to the general uniform morning haze lifting and being dispersed back toward the east due to the sudden onset of strong westerly winds associated with an approaching frontal system. This clearing, however, occurs almost concurrently with the influx of windblown dust into the Phoenix Metro area due to those same winds. Visibility is poorest during the 12:00 p.m. and 1:00 p.m. hours in the South Mountain images, and this is consistent with the timing of the highest PM_{10} concentrations recorded on April 30, 2008.

The Estrella Mountains images more clearly show a reduction in visibility due to windblown dust despite the presence of a general haze across much of the Valley. This reduction becomes most apparent in these images beginning at the 10:00 a.m. hour when dust moves into the images from right to left. The base of the Estrella Mountains is where the visibility reduction is most evident, as some of the details of the terrain visible in earlier images become obscured due to windblown dust in the Salt River channel. This timing is concurrent with increased winds throughout much of the Valley and coincides with wind gusts at West 43rd Ave. of greater than 20 mph. During the period from about 10:00 a.m. through about 3:00 p.m., when visibility is noticeably impacted across the Valley, winds reached peak gusts above 30 mph at the West 43rd Ave. monitor site while maintaining hourly maximum wind gusts near or above 25-30 mph elsewhere across the Valley.

Appendix N - South Mountain Camera – (Zoomed View)
April 30, 2008 - 7:00 a.m. to 11:00 a.m.

View of pristine conditions in the frame of South Mountain and Estrella Mountain from the South Mountain Camera located on North Mountain looking south. Peak in the far ground, visible in the photograph, is in the Estrella range. The south end of the Estrella range is 26.1 miles from the camera and is not visible on the map. South Mountain is at a range of 17 to 20 miles.		

7:00 a.m.	7:15 a.m.	7:30 a.m.	7:45 a.m.
			
8:00 a.m.	8:15 a.m.	8:30 a.m.	8:45 a.m.
			
9:00 a.m.	9:15 a.m.	9:30 a.m.	9:45 a.m.
			
10:00 a.m.	10:15 a.m.	10:30 a.m.	10:45 a.m.
			

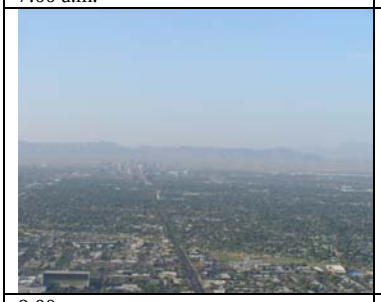
Appendix N - South Mountain Camera – (Zoomed View)
April 30, 2008 - 11:00 a.m. to 3:00 p.m.

View of pristine conditions in the frame of South Mountain and Estrella Mountain from the South Mountain Camera located on North Mountain looking south. Peak in the far ground, visible in the photograph, is in the Estrella range. The south end of the Estrella range is 26.1 miles from the camera and is not visible on the map. South Mountain is at a range of 17 to 20 miles.		

11:00 a.m.	11:15 a.m.	11:30 a.m.	11:45 a.m.
			
12:00 p.m.	12:15 p.m.	12:30 p.m.	12:45 p.m.
			
1:00 p.m.	1:15 p.m.	1:30 p.m.	1:45 p.m.
			
2:00 p.m.	2:15 p.m.	2:30 p.m.	2:45 p.m.
			

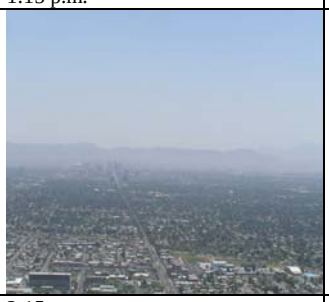
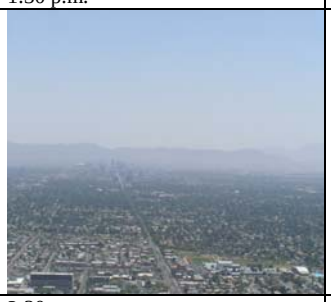
Appendix N - South Mountain Camera – April 30, 2008 – 7:00 a.m. to 11:00 a.m.

View of Pristine Conditions from the South Mountain Camera located on North Mountain looking toward the downtown Phoenix area with South Mountain visible in the background. Peak in the far ground, visible in the photograph, is in the Estrella range. The south end of the Estrella range is 26.1 miles from the camera and is not visible on the map. South Mountain is at a range of 17 to 20 miles.		

7:00 a.m.	7:15 a.m.	7:30 a.m.	7:45 a.m.
			
8:00 a.m.	8:15 a.m.	8:30 a.m.	8:45 a.m.
			
9:00 a.m.	9:15 a.m.	9:30 a.m.	9:45 a.m.
			
10:00 a.m.	10:15 a.m.	10:30 a.m.	10:45 a.m.
			

Appendix N - South Mountain Camera – April 30, 2008 - 11:00 a.m. to 3:00 p.m.

View of Pristine Conditions from the South Mountain Camera located on North Mountain looking toward the downtown Phoenix area with South Mountain visible in the background. Peak in the far ground, visible in the photograph, is in the Estrella range. The south end of the Estrella range is 26.1 miles from the camera and is not visible on the map. South Mountain is at a range of 17 to 20 miles.		

11:00 a.m.	11:15 a.m.	11:30 a.m.	11:45 a.m.
			
12:00 p.m.	12:15 p.m.	12:30 p.m.	12:45 p.m.
			
1:00 p.m.	1:15 p.m.	1:30 p.m.	1:45 p.m.
			
2:00 p.m.	2:15 p.m.	2:30 p.m.	2:45 p.m.
			

Appendix N – Estrella Camera – April 30, 2008 - 7:00 a.m. to 11:00 a.m.

View of Pristine Conditions from the Estrella Camera in the West Valley looking south at the Sierra Estrella.		

7:00 a.m.	7:15 a.m.	7:30 a.m.	7:45 a.m.
			
8:00 a.m.	8:15 a.m.	8:30 a.m.	8:45 a.m.
			
9:00 a.m.	9:15 a.m.	9:30 a.m.	9:45 a.m.
			
10:00 a.m.	10:15 a.m.	10:30 a.m.	10:45 a.m.
			

Appendix N – Estrella Camera – April 30, 2008 - 11:00 a.m. to 3:00 p.m.

View of Pristine Conditions from the Estrella Camera in the West Valley looking south at the Sierra Estrella.		

11:00 a.m.	11:15 a.m.	11:30 a.m.	11:45 a.m.
			
12:00 p.m.	12:15 p.m.	12:30 p.m.	12:45 p.m.
			
1:00 p.m.	1:15 p.m.	1:30 p.m.	1:45 p.m.
			
2:00 p.m.	2:15 p.m.	2:30 p.m.	2:45 p.m.
			

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Appendix O
Event Source Contribution Assessment

APPENDIX O

EVENT SOURCE CONTRIBUTION ASSESSMENT

Windblown Emission Analyses
West 43rd Avenue Monitor
April 30, 2008

Introduction

The recording of several exceedances of the federal 24-hour PM_{10} ambient air quality standard at the West 43rd Avenue monitoring station in Phoenix in 2008 has focused new attention on the question of contributing sources in the Salt River area. All of the exceedances in question occurred during high wind events, with peak hourly PM_{10} concentrations correlating with highest wind velocity hours. This correlation strongly implicates windblown dust as a primary contributor to measured PM_{10} concentrations. Previous analyses of the wind trajectories leading to the monitoring site immediately prior to peak hourly PM_{10} levels on each of four exceedance days reveal that lands likely to generate the monitored dust lie to the west-southwest of the monitoring site. To evaluate the categories and emission significance of lands contributing to windblown dust loads, a sequence of analyses was conducted by the Maricopa Association of Governments (MAG) and Sierra Research.

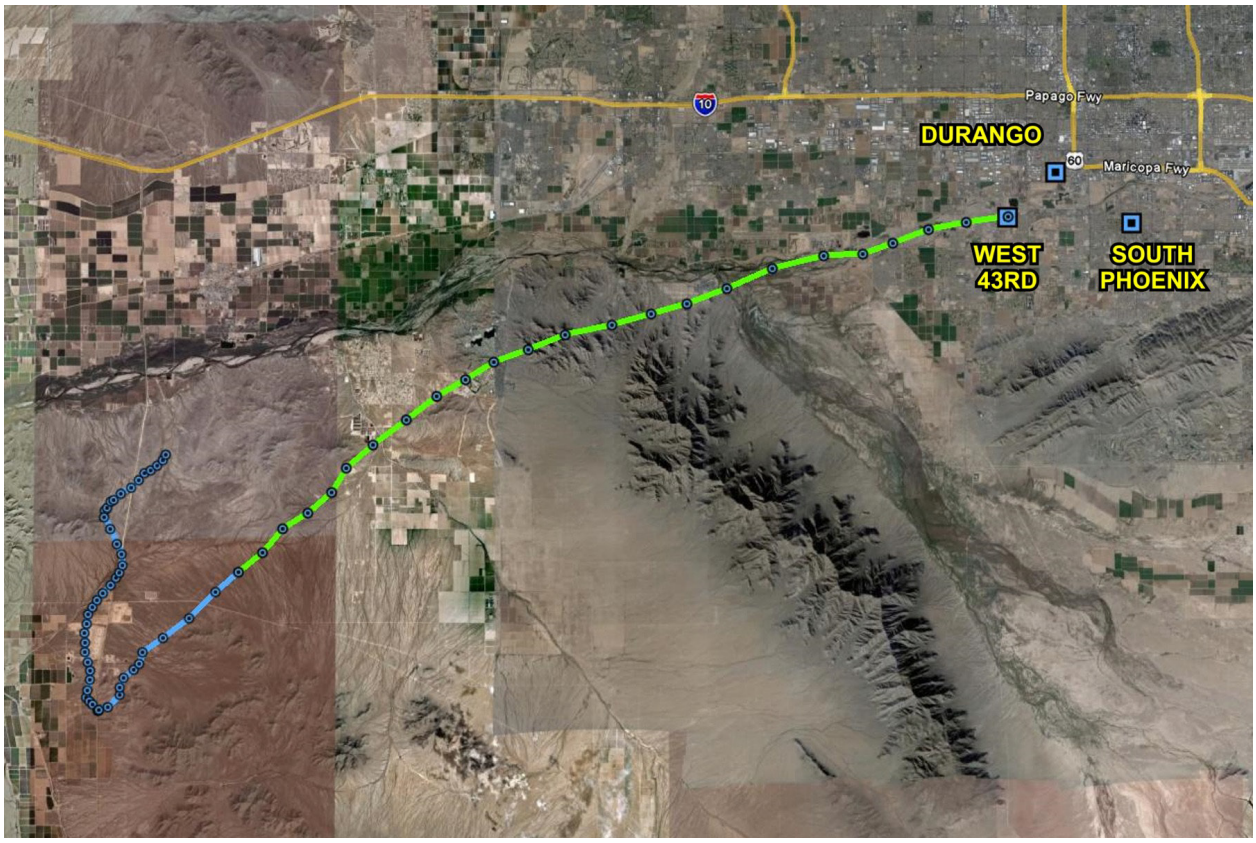
Contributing Land Uses

A MAG analysis of land uses began with work done by Sierra Research to study circumstances causing PM_{10} exceedances at a critical Salt River area air quality monitoring site operated by the Maricopa County Air Quality Department (MCAQD). Sierra Research plotted wind parcel back-trajectories from the West 43rd Avenue monitoring station starting from the peak PM_{10} hour on each of four exceedances days in 2008. These days are March 14, April 30, May 21, and June 4, 2008. The back-trajectories were plotted in 5-minute links based on 5-minute average wind speed and wind direction data recorded at the West 43rd Avenue station by MCAQD. The back-trajectory plot for April 30, as an example, is shown in Figure 1. These back-trajectories revealed that winds accompanying peak PM_{10} concentrations typically blew from the west-southwest to the West 43rd Avenue station, crossing a mosaic of agricultural, residential, industrial, and riverbed lands.

MAG staff used land use GIS files to determine the zoned uses of all lands within ½ mile of each back-trajectory track over which wind parcels travelled during the two hours prior to delivering the peak PM_{10} concentration to the West 43rd Avenue monitor. Lands under active construction on each exceedance day were identified from MCAQD earthmoving permit records. Parcel areas were aggregated within seven general categories for which limited emission factor data were available: vacant, agriculture, construction, open/restricted access, riverbed, sand and gravel/landfill, and other lands. The uses of these land categories are generally defined as follows:

- Vacant – represents undeveloped land to which public access is not restricted;
- Agriculture – represents lands under agricultural cultivation;
- Construction – represents lands being developed for long term use that will include ground coverage elements such as pavement, structures, or landscaping that will prevent the generation of windblown dust;
- Passive/restricted open space – represents undeveloped or partially developed lands to which public vehicular access is restricted (these lands include public parks, national forests, military posts, and Indian reservations);
- Riverbed – represents riverbed channels of the Salt and Gila River branches;
- Landfill/sand and gravel – represents lands being used for mineral extraction or waste deposit;
- Other – represents developed lands that are protected from windblown dust generation by elements such as paving, structures, and landscaping.

Figure 1
April 30, 2008 Back-Trajectory



These categories correspond to those used in the windblown dust emission inventory published in the MCAQD's 2008 Periodic PM_{10} Emission Inventory[1] with the exception of the riverbed category, which was split out from the passive/restricted open space category and reported separately. The separate reporting and analysis of windblown emissions from riverbed lands was deemed necessary because of the finer soil texture and higher emission rate in comparison to other restricted open space lands, and because of the high prevalence of riverbed lands in the zones along the mapped back-trajectories.

The total acreages reported within each of these seven categories within ½ mile of the wind back-trajectory for the two hours preceding the peak PM_{10} concentrations recorded at the West 43rd Avenue monitoring station on each of the exceedance days are shown in Table 1.

Table 1
Total Acreage Within ½ Mile of April 30, 2008 Back-Trajectory by Land Use Category

Category	1st Hour	2nd Hour
Vacant	1,131	5,692
Agriculture	229	118
Construction	192	114
Passive/Restricted	0	132
Riverbed	3,584	111
Sand & Gravel	942	121
Other	4,265	1,066
Total	10,343	7,354

Windblown dust emissions on these lands are controlled by MCAQD Rules 310, 310.01, and 316. Under these rules, disturbed soil surfaces are to be stabilized to reduce windblown emissions. When wind speeds are high, however, even stabilized soil surfaces will produce windblown emissions, but at lower rates than non-stabilized soils. Periodically, MCAQD conducts compliance surveys of lands regulated by these rules. The most recent compliance analysis is published in the Department's 2008 PM_{10} Periodic Emission Inventory.[2] The compliance analysis reports rule effectiveness rates for each of the three rules and compliance rates with agricultural best management practices on agricultural lands. These rule effectiveness rates were used in this analysis, as was done in the windblown dust portion of the 2008 PM_{10} Periodic Emission Inventory (2008 PEI), to represent the fractions of stabilized and non-stabilized lands in each land use category. A listing of the 2008 rule effectiveness rates by rule and affected land use category are shown in Table 2.

[1] 2008 PM_{10} Periodic Emissions Inventory for the Maricopa County, Arizona, Nonattainment Area, Appendix 4, Windblown Dust Emission Estimates Methodology, Final Draft, Maricopa County Air Quality Department, June 2010.
[2] 2008 PM10 Periodic Emissions Inventory for the Maricopa County, Arizona, Nonattainment Area, Appendix 3, Final Draft, Maricopa County Air Quality Department, June 2010

Table 2 Rule Effectiveness Rates from 2008 PM_{10} Periodic Emission Inventory			
Rule Number	Affected Land Use Categories	Stabilized Fraction	Non-Stabilized Fraction
310	Construction	82.99%	17.01%
310.01	Vacant, Open/Restricted,	80.76%	19.24%
316	Sand and Gravel/ Landfill	49.62%	50.38%
Best Management Practices	Agricultural	55.33%	44.67%

The stabilized and non-stabilized fractions reported in the 2008 PEI were used to split appropriate land use acreages along each back-trajectory into stabilized and non-stabilized subtotals. However, further evaluation of the agricultural data revealed that compliance fractions related to controls applied to lands that were exposed with wind erosion and not covered with protective crops or crop residues. As a result, MAG staff conducted an independent analysis of the months during which protective crops were being grown on lands within ½ mile of each back-trajectory. This analysis shows much of the land in each back-trajectory zone was being used to cultivate alfalfa during the exceedance days, which fully protected these lands from wind erosion and greatly reduced emissions from agricultural lands in the aggregate. For other crops, the analysis quantified the acreage within each back-trajectory zone devoted to each of 8 other crop types, and determined the monthly activity calendar for each crop showing the months during which tilling, planting, irrigating, crop growth, and harvesting activities occurred. These data were used to refine the estimates of stabilized and non-stabilized land fractions for agricultural lands on each exceedance day. For purposes of calculating the stabilized and non-stabilized fractions of agricultural lands as a whole, we assumed that:

- lands being tilled, planted, or harvested were disturbed;
- lands with emergent growth of alfalfa, corn, grain, hay, or sorghum were undisturbed (by virtue of the continuous soil coverage provided by these crop);
- lands being cultivated for cotton, orchards, or vegetables were disturbed through the cultivation cycle (by virtue of the lack of soil coverage afforded by these crops);
- fallow lands were disturbed; and
- all disturbed agricultural lands were subject to partial control through application of the compliance fractions reported in the 2008 PEI.

Table 3 shows these data for the April 30, 2008 back-trajectory zone. Because the database used for this analysis (Arizona Cotton Research and Protection Council GIS Data) was different from that used in the original quantification of back-trajectory land use acreages, the totals of agricultural lands within the back-trajectory zones are somewhat different. Because of the high threshold friction velocities needed to generate emissions from both undisturbed and disturbed agricultural lands, these differences do not affect the resulting land category contributions to windblown PM_{10}. The full results of the MAG analysis are presented in Attachment 1.

Table 3 Crop Type Status and Acreage in April 30, 2008 Back-Trajectory Zone					
Crop	Cultivation Status	Total Acres		Disturbed Acres	
		1st Hour	2nd Hour	1st Hour	2nd Hour
Cotton	Planting	0	0	0	0
Alfalfa	Crop in Field	499	0		
Corn	Irrigating	0	0		
Fallow	No Activity	0	0	0	0
Grain	Crop in Field	0	0		
Hay	Crop in Field	0	0		
Orchard	Crop in Field	0	0	0	0
Sorghum	No Activity	0	0	0	0
Vegetable	Irrigating	0	0		
Total		499	0	0	0
Non-Compliance Fraction				44.67%	44.67%
Net Disturbed Acres				0	0
Net Disturbed Faction				0.00%	0.00%

When the refined agricultural disturbed land fractions are combined with the rule effectiveness rates from the 2008 PEI, the resulting acreages of undisturbed and disturbed lands with each land use category were calculated and are shown in Table 4 for the April 30, 2008 back-trajectory.

Windblown PM_{10} Emission Equations by Land Use

The windblown PM_{10} emissions of each land use category during each high wind transport hour were computed as a product of two factors: (1) a PM_{10} emission factor, in units of pounds of emission per hour per acre, specific to the land use category and 5-minute average wind velocities within each back-trajectory hour; and (2) the acreage by land use category within ½ mile on either side of the back-trajectory wind path for each hour studied. The windblown PM_{10} emission factor by land use category was derived from data published in a paper by W.A. Nickling and J.A. Gillies that described the 1985 wind tunnel emission testing conducted on exposed soils in desert portions of Arizona.[3] Nickling and Gillies fitted their research data to the classical Prandtl equation for near-surface wind velocity profiles.[4] This equation relates wind speed at any height above ground to the friction velocity and roughness height specific to the soil surface. The friction velocity is the coefficient of a logarithmic equation relating wind velocity

[3] Evaluation of Aerosol Production Potential of Type Surfaces in Arizona, prepared for Engineering-Science by W.G. Nickling and J.A. Gillies, for EPA Contract No. 68-02-380, September 1986

[4] Meteorologische Anwendung der Stromungslehre, Beitr. Phys. D. Freien Atm., vol. XIX, pp. 188-202, L. Prandtl, 1932

Table 4 Acreage by Land Use Category and Stability Status Within ½ Mile of April 30, 2008 Back-Trajectory			
Land Use Category/ Stability Status	Fraction of Land Use Category Total Acreage	April 30, 2008	
		1st Hour, Acres	2nd Hour, Acres
Vacant/Undisturbed	80.76%	914	4,604
Vacant/Disturbed	19.24%	216	1,089
Agriculture/Undisturbed	100.00%/100.00% (1st/2nd hr)	229	118
Agriculture/Disturbed	0.00%/0.00% (1st/2nd hr)	0	0
Construction/Undisturbed	82.99%	159	94
Construction/Disturbed	17.01%	33	19
Passive-Restricted/ Undisturbed	80.76%	0	107
Passive-Restricted/Disturbed	19.24%	0	25
Riverbed/Undisturbed	80.76%	2,898	90
Riverbed/Disturbed	19.24%	686	21
Sand & Gravel/Undisturbed	49.62%	762	98
Sand & Gravel/Disturbed	50.38%	180	23
Other	100.00%	4,265	1,066
	Subtotal/Undisturbed	9,228	6,176
	Subtotal/Disturbed	1,115	1,178
	Total	10,343	7,354

to height above the ground. The friction velocity, or slope of the wind velocity curve, is itself a function of the wind velocity. The soil roughness height is the maximum height above the soil surface at which the wind velocity remains zero due to the sheltering effects of surface roughness. Research by Bagnold and others has found that wind erosion of surface soil particles commences at a minimum threshold wind velocity, and below this velocity wind erosion emissions are effectively zero.[5] Nickling and Gillies measured threshold velocities at each of 13 test sites and converted these values to equivalent threshold wind speeds measured at a 10-meter height (the typical height above ground for wind velocity sensors) using the Prandtl equation. Based on these data, Nickling and Gillies formulated emission factor equations for each of five land use categories: desert lands, riverbed (fluvial) lands, construction sites, mine tailing lands, and agricultural lands. The emission factors were developed by regression analysis as power equations using the computed friction velocity as an independent variable. These equations are presented in Table 5.

[5] The Physics of Blown Sand and Desert Dunes, R.A. Bagnold, Morrow Press, New York, 1941

Table 5 Nickling and Gillies Windblown PM_{10} Emission Factor Equations by Land Use Category	
Land Use Category	PM_{10} Emission Factor Equation, gm/cm^2-sec
Natural and disturbed desert	$F = 7.99 \times 10^{-13} u_*^{2.99}$
Fluvial sites	$F = 1.59 \times 10^{-13} u_*^{3.32}$
Construction sites	$F = 5.82 \times 10^{-15} u_*^{4.24}$
Mine tailings	$F = 1.59 \times 10^{-12} u_*^{2.93}$
Agricultural lands	$F = 1.445 \times 10^{-18} u_*^{6.026}$

The friction velocity is calculated through the Prandtl equation as a function of the roughness height and the wind velocity measured at a 10-meter height. The modified Prandtl equation used in this analysis is:

$$u_* = (u_z * k)/\ln(z/z_0)$$

where:

u_* = friction velocity, cm/sec
u_z = measured wind velocity at z height = 10-meter height, cm/sec
k = von Karman coefficient, ~= 0.4
z = height of wind measurement = 10 meters
z_0 = roughness height, cm

The roughness heights and threshold friction velocities reported by Nickling and Gillies for each of the 13 sites tested are shown in Table 6. This table also reports the threshold friction velocities in units of miles per hour measured at a 10-meter height for comparison with wind velocities reported at the West 43rd Avenue monitoring station.

The Nickling and Gillies study contains substantial information about each site tested. A discussion of how this information was used to select roughness heights and threshold friction velocities for undisturbed and disturbed lands within each land use category found in the exceedance day back-trajectory zones is presented in Attachment 2. The emission factor equations, together with the roughness heights and threshold friction velocities, used to compute emissions for each land use category, are shown in Table 7.

Table 6 Nickling and Gillies Windblown PM_{10} Emission Factor Constants					
		Roughness Height Z_0, cm	Threshold Friction Velocity		
Location	Land Use Category		@Z_0, m/s	@10 m., m/s	@10 m., mph
Yuma, AZ	Scrub Desert	0.0163	0.386	11.33	25.3
Yuma, AZ	Disturbed Scrub Desert	0.0731	0.320	8.11	18.1
Algodones, CA	Dune Flats	0.0166	0.625	18.31	41.0
Mesa, AZ	Agricultural	0.0331	0.569	15.63	35.0
Yuma, AZ	Agricultural	0.0224	0.582	16.59	37.1
Maricopa, AZ	Agricultural	0.1255	0.578	13.82	30.9
Casa Grande, AZ	Abandoned Agricultural	0.0067	0.246	7.80	17.4
Tucson, AZ	Santa Cruz River Terrace	0.0204	0.180	5.18	11.6
Mesa, AZ	Salt River Channel	0.0100	0.218	6.68	14.9
Ajo, AZ	Mine Tailings	0.0176	0.228	6.65	14.9
Hayden, AZ	Mine Tailings	0.0141	0.172	5.11	11.4
Glendale, AZ	Construction Site	0.0301	0.530	14.69	32.9
Tucson, AZ	Construction Site	0.0181	0.251	7.26	16.2

Table 7 PM_{10} Emission Equations and Coefficients Selected to Represent Land Use Categories			
Land Use Category	Roughness Height Z_o, (cm)	Threshold Friction Velocity (mph)	PM_{10} Emission Factor Equation
Vacant – Undisturbed	0.0163	25.3	$F = 7.99 \times 10^{-13} u_*^{2.99}$
Vacant – Disturbed	0.0731	18.1	$F = 7.99 \times 10^{-13} u_*^{2.99}$
Agriculture – Undisturbed	0.0067	17.4	$F = 1.445 \times 10^{-18} u_*^{6.026}$
Agriculture – Disturbed	0.0278	41.2	$F = 1.445 \times 10^{-18} u_*^{6.026}$
Construction – Undisturbed	0.0163	25.3	$F = 5.82 \times 10^{-15} u_*^{4.24}$
Construction – Disturbed	0.0241	28.2	$F = 5.82 \times 10^{-15} u_*^{4.24}$
Passive/Restricted - Undisturbed	0.0163	25.3	$F = 7.99 \times 10^{-13} u_*^{2.99}$
Passive/Restricted - Disturbed	0.0731	18.1	$F = 7.99 \times 10^{-13} u_*^{2.99}$
River Terrain - Undisturbed	0.0100	14.9	$F = 1.59 \times 10^{-13} u_*^{3.32}$
River Terrain – Disturbed	0.0204	11.6	$F = 1.59 \times 10^{-13} u_*^{3.32}$
Sand & Gravel – Undisturbed	0.0163	25.3	$F = 1.59 \times 10^{-12} u_*^{2.93}$
Sand & Gravel - Disturbed	0.0731	18.1	$F = 1.59 \times 10^{-12} u_*^{2.93}$

PM_{10} Emissions by Anthropogenic and Nonanthropogenic Sources

PM_{10} emissions were calculated for each back-trajectory hour using emission factors derived from the Nickling and Gillies data, 5-minute wind speed averages recorded at the West 43rd Avenue monitoring station, and the land use acreage along each back-trajectory computed by MAG staff.

The emission factor equations were used to compute PM_{10} emissions for each 5-minute portion of each back-trajectory hour. For each 5-minute period, the measured average wind speed was compared to the threshold friction velocity calculated at a 10-meter height to determine whether the threshold wind speed necessary to the generation of windblown PM_{10} on each land use, undisturbed and disturbed, had been exceeded. If the threshold velocity was exceeded, the appropriate Nickling and Gillies emission factor equation was used to compute PM_{10} emissions in units of gm/cm^2-sec. Emissions for each 5-minute period within each hour and within each land use category were converted to units of lb/acre-hr and then summed to produce hourly average PM_{10} emission rates per land use category. A sample calculation of the hourly average emission rate from riverbed-undisturbed lands using the 5-minute average wind speeds measured during the first back-trajectory hour on April 30, 2008 is presented in Table 8. The emission rates for the other land use categories and the 2nd hour were calculated using a similar methodology.

Table 8
Average Hourly PM_{10} Rate for Riverbed-Undisturbed Land on 1st Hour of April 30, 2008 Back-Trajectory

5-Minute Segment	Average Wind Speed (mph)	PM_{10} Emission Rate (lb/acre-hr)
09:00-09:05	13.6	0.00
09:05-09:10	14.4	0.00
09:10-09:15	16.1	2.24
09:15-09:20	15.0	1.77
09:20-09:25	17.2	2.79
09:25-09:30	16.6	2.48
09:30-09:35	15.4	1.93
09:35-09:40	15.9	2.15
09:40-09:45	13.1	0.00
09:45-09:50	11.8	0.00
09:50-09:55	12.1	0.00
09:55-10:00	12.2	0.00
Average	14.5	1.11

The land use category emission rates were then multiplied by the acreages within each appropriate land use category to derive PM_{10} emissions for each back-trajectory hour by land use category. A sample land use category emission calculation for the first back-trajectory of April 30, 2008 is presented in Table 9. The appearance of zeros as PM_{10} emission rates resulted when

none of the 5-minute wind speed averages exceeded the threshold friction velocity for that land use category.

Table 9
Land Use Category PM_{10} Emissions for 1st Back-Trajectory Hour of April 30, 2008

Land Use Category	PM_{10} Emission Factor (lb/ac-hr)	Area Within Back-Trajectory Zone (ac)	PM_{10} Emissions (lb/hr)
Vacant/Undisturbed	0.00	914.4	0
Vacant/Disturbed	0.00	216.3	0
Agriculture/Undisturbed	0.00	229.3	0
Agriculture/Disturbed	0.00	0.0	0
Construction/Undisturbed	0.00	159.3	0
Construction/Disturbed	0.41	32.7	13
Passive-Restricted/Undisturbed	0.00	0.0	0
Passive-Restricted/Disturbed	0.00	0.0	0
Riverbed/Undisturbed	1.11	2,898.4	3,223
Riverbed/Disturbed	2.05	685.6	1,402
Sand & Gravel/Undisturbed	0.00	761.8	0
Sand & Gravel/Disturbed	0.00	180.2	0
Other	0.00	4,264.7	0
Total		10,342.6	4,638

EPA guidance on exceptional event determinations requires the analysis of emissions from anthropogenic sources.[6] The land use categories shown in Table 9 were grouped within anthropogenic and nonanthropogenic categories, and the hourly PM_{10} emissions within each of these groupings were summed to assess the fractional contribution of anthropogenic and nonanthropogenic sources to peak hourly PM_{10} concentrations measured on exceedance days at the West 43rd Avenue site. The groupings of anthropogenic and nonanthropogenic land use categories are shown in Table 10.

The PM_{10} emissions for each of the two back-trajectory hours on each exceedance day were summed together to calculate total emissions over each exceedance day back-trajectory by land use category. These land use category emissions were then grouped by anthropogenic and nonanthropogenic categories to assess the relative contribution of nonanthropogenic sources to exceedances recorded at the West 43rd Avenue monitoring station during 2008. A summary of the results of these calculations for the April 30, 2008 exceedance day is presented in Table 11.

[6] Federal Register/ Vol. l72, No. 55, Thursday, March 22,2007/ Rules and Regulations, Environmental Protection Agency, 40 CFR Parts 50 and 51, Treatment of Data Influenced by Exceptional Events, Final Rule.

Table 10 Anthropogenic and Nonanthropogenic Land Use Categories		
Land Use Category	Anthropogenic	Nonanthropogenic
Vacant/Undisturbed		X
Vacant/Disturbed	X	
Agriculture/Undisturbed	X	
Agriculture/Disturbed	X	
Construction/Undisturbed	X	
Construction/Disturbed	X	
Passive-Restricted/Undisturbed		X
Passive-Restricted/Disturbed	X	
Riverbed/Undisturbed		X
Riverbed/Disturbed	X	
Sand & Gravel/Undisturbed	X	
Sand & Gravel/Disturbed	X	
Other	X	

Table 11 Anthropogenic and Nonanthropogenic Windblown PM_{10} Emissions From West 43rd Avenue Monitor Back-Trajectory Lands on April 30, 2008			
	PM_{10} Emissions (lb)		% of
Land Use Category	Anthropogenic	Nonanthropogenic	Anthropogenic
Vacant/Undisturbed	-	0	
Vacant/Disturbed	1,501	-	20.7%
Agriculture/Undisturbed	0	-	0.0%
Agriculture/Disturbed	0	-	0.0%
Construction/Undisturbed	0	-	0.0%
Construction/Disturbed	277	-	3.8%
Passive-Restricted/Undisturbed	-	0	
Passive-Restricted/Disturbed	0	-	0.0%
Riverbed/Undisturbed	-	8,234	
Riverbed/Disturbed	2,408	-	33.3%
Sand & Gravel/Undisturbed	0	-	0.0%
Sand & Gravel/Disturbed	3,053	-	42.2%
Other		-	
Total	7,240	8,234	
% of Grand Total	46.8%	53.2%	

Attachment 1

Analysis of Agricultural Crop Coverage and Cultivation Calendars in the Salt River Area

Table 1 Disturbed and Undisturbed Agricultural Crop Acreage for One-Mile Swath of Trajectory (1/2 mile each side)

	3/14/2008		4/30/2008		5/21/2008		6/4/2008	
	1st HR	2nd HR	1st HR	2nd HR	1st HR	2nd HR	1st HR	2nd HR
Disturbed Agriculture (Acre)								
COTTON	577	1,090	0	0	0	0	0	0
GRAIN	0	0	0	0	0	0	317	0
Disturbed Total	**577**	**1,090**	**0**	**0**	**0**	**0**	**317**	**0**
Undisturbed Agriculture (Acre)								
ALFALFA	4,377	5,856	499	0	623	0	692	0
CORN	26	108	0	0	0	0	0	0
COTTON	0	0	0	0	0	0		
FALLOW	251	78	0	0	34	0	52	0
GRAIN	668	1,314	0	0	132	0	0	0
HAY	268	0	0	0	0	0	93	0
ORCHARD	38	0	0	0	0	0	0	0
SORGHUM	0	0	0	0	0	0	0	0
VEGETABLE	0	0	0	0	0	0	0	0
Undisturbed Total	**5,628**	**7,356**	**499**	**0**	**789**	**0**	**836**	**0**

Agricultural Area Data Source: Arizona Cotton Research and Protection Council (ACRPC) GIS Data.

DRAFT Crop Calendar for Maricopa County												
(Usual Field Activity by Month and Crop)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Alfalfa[1]												
Corn - Silage[1]												
Cotton[1]												
Grain[2]												
Orchard[3]												
Hay[2]												
Sorghum - Grain[3]												
Vegetables[1]												
Days of Interest			3/14/08	4/16/08 4/30/08		6/4/08						

Field Activities Legend	
• Tilling =	
• Planting =	
• Irrigated =	
• Crop in Field =	
• Harvest =	
• No Activity =	

Notes

1. Salt River PM-10 TSD (2003 meetings with Maricopa County Farm Bureau and U of A Cooperative Extension).

2. "Usual Planting and Harvesting Dates for U.S. Crops", Agricultural Handbook Number 628, USDA, ARS, NASS, December 1997.

3. Communication with Maricopa County Farm Bureau, May 11, 2010. In 2008, sorghum was grown for grain instead of silage. Common practice is to plant sorghum in July in the same field that corn had been harvested from in July, with little tillage.

4. Cotton fields must be plowed down by February 15th and cannot be irrigated until March 15th as required by Pink Bollworm Program.

5. Planting - fields are either irrigated prior to planting or shortly after planting.

Attachment 2

Use of Nickling and Gillies Test Data in Characterizing Emission Potential of Salt River Area Lands

The Nickling and Gillies study of windblown PM_{10} emissions from Arizona lands under different use patterns constitutes the best available information on the emission potential of undeveloped lands upwind of the W. 43rd Avenue monitoring station.[7] The challenge in using the data was to best match the surface soil conditions found at the 13 sampling sites in 1985 with conditions existing at lands upwind of the monitoring station in 2008. This appendix discusses how these matches were developed.

Critical Parameters

As discussed in the report, Nickling and Gillies fit their field data to the classical Prandtl wind velocity equation and a series of power equations relating PM_{10} emissions to wind velocity. The Prandtl equation assumes a logarithmic relationship between wind velocity and the height above ground surface at which the wind velocity is measured. The coefficient linking these two parameters is referred to as the friction velocity (u_*). Nickling and Gillies developed PM_{10} emission factor equations for five different land use categories that use the friction velocity as the sole independent variable. A second Prandtl equation coefficient, that dictates the magnitude of the friction velocity, is the soil roughness height (Zo) at the point of wind velocity measurement. The soil roughness height is calculated from wind velocity profile measurements and represents the height below which the wind velocity is effectively zero due to the sheltering effects of soil surface elements.

The final parameter of significance in computing windblown PM_{10} emission rates is the threshold friction velocity. This is the velocity above which shear forces on the soil surface commence the saltating, or bouncing, movement of sand particles that is the primary mechanism for the dislodgement and entrainment into the air of fine soil particles. At wind speeds below the threshold friction velocity, no windblown PM10 emissions are generated.

Land Use Categories Tested

Nickling and Gillies conducted wind tunnel emission studies on five categories of land use:

- desert lands,
- fluvial, or riverbed, lands,
- construction sites,
- mine tailing piles, and
- agricultural lands.

[7] Evaluation of Aerosol Production Potential of Type Surfaces in Arizona, prepared for Engineering-Science by W.G. Nickling and J.A. Gillies, for EPA Contract No. 68-02-380, September 1986

Of the 13 sites tested among these land use categories, most were fairly disturbed. Only two of the test sites were relatively undisturbed: a scrub desert site near Yuma, AZ, and an abandoned farm near Casa Grande, AZ. The lack of test data from undisturbed sites offered one of the more significant challenges in using Nickling and Gillies test data to represent disturbed and undisturbed portions of lands upwind of the W. 43rd Avenue station.

Desert Lands

One of the more expansive land use categories, in terms of acres of undeveloped land along wind back-trajectories impacting the monitoring station, is vacant lands. This category includes lands that are not in productive use, but which are partially disturbed by human trespass. Much of the land within this category constitutes open desert. As a result, the surface soil characteristics of lands within this category were assumed to be very similar to those in the "desert" category tested by Nickling and Gillies. Nickling and Gillies tested two desert soil sites near Yuma, AZ, one of which had been disturbed by off-road vehicle traffic and one of which was relatively undisturbed by anthropogenic activities.

The undisturbed site was located on federal land under the control of the U.S. Bureau of Land Management. The soil surface was crusted, but the crust was extremely delicate and broke with the slightest pressure. Saltating particles easily broke the crust once the wind tunnel tests were initiated. The soil surface contained widely scattered pebble deposits, and was sparsely vegetated with low grasses. This structure is very representative of undisturbed desert soils in the Salt River area.

The disturbed site was located within the University of Arizona's Agricultural Research Station at Yuma. The surface soil was very loose from vehicle disturbance and also sparsely vegetated with low grasses. Data from these two sites were used to represent undisturbed and disturbed vacant lands in the Salt River area, respectively.

A second related land use category identified in the back-trajectory zones upwind of the W. 43rd Avenue monitoring station was restricted access open areas. Access to these lands is limited by fencing, barriers, active enforcement, or other means. Land that fill within this category include parks, military lands, national forest land, and privately owned fenced lands. Because the surface soils on these lands are essentially desert soils, the soil characteristics of these lands were also represented by the desert soils test data collected by Nickling and Gillies.

Finally, Nickling and Gillies also conducted testing of windblown emissions from sand dunes in the Algodones Dunes area near Brawley, CA. Because there are no sand dunes of significance within the Salt River area, these test data were not used to represent surface soil conditions for any land use category in this analysis.

Fluvial Sites

Fluvial, or riverbed, lands typically contain higher concentrations of fine silts than alluvial desert lands, and are capable of higher PM_{10} emission rates at lower threshold friction velocities as a

result. Nickling and Gillies tested two riverbed sites, one on the Salt River channel near Mesa, AZ, and a second on the Santa Cruz River channel near Tucson, AZ.

Both riverbed sites were somewhat disturbed. The Salt River test site was located in the river channel among large silt lenses in an area heavily disturbed by vehicle traffic. The Santa Cruz River site, however, was located on a terrace above the main channel and was moderately disturbed. The soil in this latter site also contained small gravel particles that provided limited wind sheltering to exposed silt.

On the basis of the descriptions in the Nickling and Gillies report, the Salt River test site data was selected to represent disturbed riverbed soils, and the Santa Cruz River data was used to represent undisturbed soils. Because of the higher silt content of the fluvial soils, the characteristics of undisturbed desert soils were not considered to be similar to those of undisturbed riverbed sites.

Construction Sites

Two construction sites were tested by Nickling and Gillies, one in Glendale, AZ, and a second in Tucson, AZ. The Glendale site was being developed the west campus of the Arizona State University, and had been severely disturbed by earthmoving equipment, but had also been heavily watered as part of a dust control operation. During testing, the soil surface was found to have formed a crust from water application that increased the threshold friction velocity and reduced the windblown PM_{10} emission rate. Data from this site was used to represent undisturbed construction sites in the Salt River area.

The Tucson site was located on the south side of I-10, where a major motel complex was being constructed. The site had been leveled by earthmoving equipment and the surface soil was heavily pulverized. The soil surface at this site contained more loose particles than the Glendale site, apparently as a result of less dust control watering and more recent vehicle disturbance. Data collected at this site, as a result, was used to represent disturbed construction lands along the back-trajectories upwind of the W. 43rd Avenue monitor.

Mine Tailings

Two mine tailings piles were tested by Nickling and Gillies. Emissions from these structures were of interest because of the high silt content of the finely ground mill waste, and the lack of any sheltering vegetation or larger particles on the surfaces of these piles. One of the piles tested was on the property of the Phelps-Dodge Company in Ajo, AZ, and the second was located near Hayden, AZ.

The Ajo tailings had very little cohesive structure on the surface, resulting in high PM10 emissions rates at low threshold velocities. The Hayden tailings possessed greater cementation and greater variability in particle size, but also contained a higher silt content than the Ajo tailings. The higher silt content appeared to provide a slight crust when the tailings surfaces were watered and then allowed to dry.

The very fine and uniform particle sizes of soils in these tailing piles are unlike any soils found in the Salt River area. The tailing piles were formed through the pulverization of quarried rock to release precious minerals, especially copper, through chemical extraction. No soils or rock in the Salt River area are processed to this degree, or in any other fashion to produce such fine, noncohesive material. As a result, the test data from these sites were not used to represent any of the undeveloped lands in the Salt River area.

The mining of riverbed material for use as sand and gravel in the construction industry is a significant land use in the Salt River area. In this process however, silt is an undesirable by-product, and material processing operations are designed to produce a minimum of this fine material. Much of the exposed surface at sand and gravel mines capable of generating windblown PM10 is actually desert soil upon which processing operations are located. As a result, the surface soil characteristics of these sites were represented by the disturbed and undisturbed desert land data collected by Nickling and Gillies.

Agricultural Lands

Nickling and Gillies conducted emissions tests on three active and one abandoned farm site in 1985. The active sites were located near Mesa, Yuma, and Maricopa, AZ, and the abandoned farm site was located near Casa Grande, AZ. Soil conditions related to windblown emissions at the farms in the Mesa and Yuma areas were found to be relatively similar. These sites were characterized as having been recently tilled and awaiting planting. No dust control measures had been applied at either site, and the soil surface was somewhat cloddy from the recent plowing. The active farming site at Maricopa was found to have been recently tilled while the soil had been relatively damp, resulting in large, dried clods on the soil surface that were heavily crusted and responsible for a relatively high surface roughness. As a result, the test data from the Maricopa site were substantially different from data collected at the other two active sites. Because of this difference, and the unique conditions found at the Maricopa site, the data from this site were not used to represent soil conditions on agricultural lands in the Salt River area. Instead, the data collected at Mesa and Yuma were averaged together to represent these lands.

The abandoned farm land near Casa Grande, AZ, was also unusual compared to lands found in the Salt River area. The Casa Grande site had not been cultivated for a number of years, and the soil surface showed significance evidence of wind erosion and a return to desert conditions. Additionally, however, lands in this portion of Pinal County are known to have high alkaline contents – hence their abandonment from cultivation – and high windblown dust potential. Because of these unique properties, data collected at this site by Nickling and Gillies were not used to represent any land use category in the Salt River area.

Separate analyses of crop coverages and cultivation calendars in the Salt River area have found that significant fractions of agricultural lands are covered by maturing crops during the high wind season in the spring of each year. As a result, soil surface characteristics for lands with cover crops – such as alfalfa, corn, and grains – were estimated using classical protocols. The roughness height for these lands was calculated to be $1/30^{th}$ of the height of the lowest continuous crop, which is 3 inches for freshly mowed alfalfa, resulting in a roughness height of 0.254 cm. The friction velocity for vegetated fields was assumed to be the same as that

measured on disturbed fields by Nickling and Gillies. The resulting calculated threshold friction velocity of 34.1 mph at a 10-meter height for undisturbed fields was found to be less than the value of 41.2 mph measured on disturbed fields, meaning that this approach resulted in a conservatively low calculated value that would not underestimate the emissions from undisturbed fields.

Appendix P
Event Control Measures Report

APPENDIX P

EVENT CONTROL MEASURES REPORT

PM_{10} Control Measures Reporting Form
High Wind Exceptional Event Demonstration

Date of Flagged Event: April 30, 2008

PM_{10} Planning Area: Maricopa County PM_{10} Nonattainment Area

Exceeding Monitor(s): West 43rd Ave.

AQI/High Wind/Dust Forecast (rolling three-day forecast) issued?

Yes	No
X	

Type: PM_{10} Health Watch (issued the day prior)

In the spaces below, please provide information about the 72-hour period preceding the event, the day of the event, and the 72-hour period following the event. For a list of control measures for the planning area, see back of this form. Account for minimum 2-mile area around exceeding monitor(s). Please attach additional information if necessary.

Complaints:
- April 28, 2008: One (1) complaint received re: commercial trackout; complaint inspection did not observe any violations of Rule 310.
- April 28, 2008: One (1) complaint inspection of dust control permit determined that an adjacent vacant lot was the origin of dust. Vacant lot was found in compliance on 5/13/08, before issuance of a 60-day letter.
- May 1, 2008: One (1) complaint inspection of dust from a weekly rodeo; complaint inspection noted a water truck on-site, and did not observe any violations of Rule 310.01.

Inspections:
- April 28, 2008: One (1) inspection of dust control permit; no violations of Rule 310 were observed.
- April 30, 2008: One (1) inspection of dust control permit; no violations of Rule 310 were observed.

Notices or Enforcement Actions:
(None identified within the timeframe and geographic area included in this analysis.)

Regulating Agency: Maricopa County Air Quality Department

Information Supplied By: Jo Crumbaker, Planning & Analysis Division Manager

Date Completed: August 6, 2010

Measures included in the Maricopa County PM_{10} Five Percent Plan:
(committed measure numbers in parentheses)

1. Extensive dust control training program (2).
2. Dust managers/Coordinators at earthmoving sites < than or equal to 5 acres (3,16).
3. Increase proactive Rule 310 and 316 inspections (9, 10, 44).
4. Strengthen Rule 310 to promote continuous compliance (36 thru 38, 28).
5. Conduct nighttime and weekend inspections (8).
6. Ban leaf blowers from blowing debris into streets (21).
7. Prohibit use of leaf blowers on unstabilized surfaces (45).
8. Implement a leaf blower outreach program (22).
9. Ban ATV use on high pollution advisory days (23).
10. Pave or stabilize existing unpaved parking lots (25).
11. Pave or stabilize unpaved road shoulders (28).
12. Strengthen and increase enforcement of Rule 310.01 for vacant lots (31, 32)
13. Recover costs for stabilizing vacant lots (33).
14. Restrict and enforce vehicle use/parking on vacant lots (31, 32).
15. Increase fines for open burning (34).
16. Restrict use of outdoor fireplaces/pits/ambience fireplaces (35).
17. Other wood burning restrictions in SB 1552 (47, 48).
18. Repave or overlay paved roads with rubberized asphalt (53).

Emission Source Categories:
1. Agriculture – Agricultural Best Management Practices (AgBMP) Program.
2. Point sources – Permit Conditions (stack, fugitive, and area source emissions).
3. Construction – Rules 310 and 310.01; sand and gravel – Rule 316.
4. Windblown, area sources – mobile, roadway, vacant lots, fires, et al.

Appendix Q
Event Preliminary Assessment & Notification

Preliminary Notification of Exceptional Event
Submitted June 30, 2009

ARIZONA DEPARTMENT
OF
ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Janice K. Brewer
Governor

Benjamin H. Grumbles
Director

June 30, 2009

Electronic Submittal (to be followed by U.S. Mail)

Deborah Jordan, Air Division Director
U.S. Environmental Protection Agency, Region IX
Air-1
75 Hawthorne Street
San Francisco, CA 94105

SUBJECT: Submittal of Preliminary Documenation of Exceptional/Natural Events in Arizona, 2008 and Request for Concurrence

Dear Ms. Jordan:

The purpose of this letter is to notify the Environmental Protection Agency (EPA) of information regarding exceptional events that resulted in exceedances of the 24-hour PM_{10} National Ambient Air Quality Standards (NAAQS), or the Limited Maintenance Plan threshold concentration, throughout the State of Arizona during 2008. After preliminary investigations of the unusual nature of the exceedances, the Arizona Department of Environmental Quality (ADEQ) is has determined that the aforementioned sample data are exceptional events in the Air Quality Subsystem (AQS) database. The events that have been flagged in AQS, and for which preliminary documentation is being submitted with this letter, are listed in Table 1 (enclosed).

Attached to this letter are the preliminary assessment reports or documentation for the exceptional events (Enclosure 1 binder). These events qualify for flagging under ADEQ's Air Quality Natural and Exceptional Events Policy - Policy Number 2009.001, Rev 002 (NEEP). This policy was revised on June 22, 2007, after a multiple month stakeholder process and transmitted to you on June 23, 2007. These analyses rely upon the "Technical Criteria Document for Determination of Natural and Exception Event" finalized on December 12, 2005. ADEQ concludes it is important to exclude these readings because of their exceptional causes. ADEQ will be requesting EPA to provide written concurrence with the flagging determinations after the final demonstrations are submitted in the near future. ADEQ is working with your staff to add certain components to our assessment reports to improve clarity of the reports. These should be finalized in the next few months.

Enclosure 2 (CD) is a compact disc containing an electronic copy of the exceptional/natural event analyses in Enclosure 1. Those who are being copied on this letter will only receive Enclosures 2.

All of these events have been made available for informal public review and comment at stakeholder meetings, consistent with the requirement in our NEEP to hold such meetings prior to finalizing the attached assessments. Please note that prior to submittal of the final documentation for these events, the final demonstration reports will be made available for a formal 30-day public review and comment period as required by the Federal Exceptional Events Rule (EER).

If you have any questions related to this request, please do not hesitate to contact me at (602) 771-2308 or Steven Peplau, Air Quality Assessment Manager, at (602) 771-2274.

Sincerely,

Nancy C. Wrona, Director
Air Quality Division

Enclosures (2)

NCW:AJ:mbl

Cc: Colleen McKaughan, USEPA, Region IX (w/Enclosure 2)
John Kelley, USEPA, Region IX (w/Enclosure 2)
Coleman Owen, USEPA, Region IX (w/Enclosure 2)
Lawrence Odle, Director, MCAQD (w/Enclosure 2)
Don Gabrielson, PCAQCD (w/Enclsoure 2)
Mack Luckie, YMPO (w/Enclosure 2)

INDEX OF 2008 EXCEPTIONAL EVENTS
PRELIMINARY DOCUMENTATION

TAB	Agency *	Date	Monitor (Operator/Type)	AQS ID **	24-hr Avg PM_{10} (or $PM_{2.5}$)	Maximum Winds	Nature of Event
1	ADEQ	1/1/2008	Nogales Post Office PM2.5 (ADEQ/BAM)	04-023-0004	52	Calm	Smoke from Mexico
	ADEQ	1/1/2008	Nogales Post Office (PM2.5 FRM primary)	04-023-0004	47	Calm	Smoke from Mexico
	ADEQ	1/1/2008	Nogales Post Office (PM2.5 FRM collocated)	04-023-0004	47	Calm	Smoke from Mexico
2	ADEQ	1/26/2008	Nogales Post Office (ADEQ/BAM)	04-023-0004	204	Calm	Dust from Mexico
3	ADEQ	2/27/2008	Nogales Post Office (ADEQ/BAM)	04-023-0004	166	Calm	Dust from Mexico
4	MCAQD	3/2/2008	Buckeye (Maricopa Co. [MC]/TEOM)	04-013-4011	160	36 mph	Frontal system passage
	ADEQ	3/2/2008	Yuma Courthouse (ADEQ/TEOM)	04-027-0004	161	46 mph	Frontal system passage
5	MCAQD	3/14/2008	West 43rd Ave (MC/TEOM)	04-013-4009	251	43 mph	Low pressure trough
6	MCAQD	4/16/2008	West 43rd Ave (MC/TEOM)	04-013-4009	155	28 mph	Frontal system passage
7	MCAQD	4/30/2008	West 43rd Ave (MC/TEOM)	04-013-4009	173	41 mph	Frontal system passage
8	ADEQ	5/12/2008	Paul Spur (ADEQ/FRM - Primary)	04-003-0011 (1)	160	34 mph	Frontal system passage
	ADEQ	5/12/2008	Paul Spur (ADEQ/FRM - Collocated)	04-003-0011 (2)	156	34 mph	Frontal system passage
9	ADEQ	5/18/2008	Nogales Post Office (ADEQ/BAM)	04-023-0004	169	Calm	Dust from Mexico
10	MCAQD	5/21/2008	West 43rd Ave (MC/TEOM)	04-013-4009	279	37 mph	Frontal system passage
	ADEQ	5/21/2008	Yuma Courthouse (ADEQ/TEOM)	04-027-0004	164	37 mph	Frontal system passage
11	ADEQ	5/22/2008	Nogales Post Office (ADEQ/BAM)	04-023-0004	217	49 mph	Frontal system passage
12	MCAQD	6/4/2008	Yuma Courthouse (ADEQ/TEOM)	04-027-0004	386	40 mph	Frontal system passage
	MCAQD	6/4/2008	Buckeye (Maricopa Co. [MC]/TEOM)	04-013-4011	204	40 mph	Frontal system passage
	MCAQD	6/4/2008	West 43rd Ave (MC/TEOM)	04-013-4009	194	40 mph	Frontal system passage
	ADEQ	6/4/2008	Coyote Lakes (MC/TEOM)	04-013-4014	187	40 mph	Frontal system passage
13	MCAQD	7/1/2008	Buckeye (Maricopa Co. [MC]/TEOM)	04-013-4011	172	49 mph	Monsoon Storm
14	MCAQD	7/4/2008	Buckeye (Maricopa Co. [MC]/TEOM)	04-013-4011	223	39 mph	Monsoon Storm
15	MCAQD	10/11/2008	South Phoenix (Maricopa Co. [MC]/TEOM)	04-013-4003	162	34 mph	Frontal system passage
16	MCAQD	10/22/2008	Coyote Lakes (MC/TEOM)	04-013-4014	168	35 mph	Strong pressure gradient
17	ADEQ	10/26/2008	Nogales Post Office (ADEQ/BAM)	04-023-0004	157	Calm	International transport
18	PDEQ	10/27/2008	Santa Clara (R&P 2000)	04-019-1026	173	46 mph	Strong pressure gradient
19	ADEQ	10/31/2008	Nogales Post Office (ADEQ/BAM)	04-023-0004	159	Calm	International transport
	ADEQ	11/1/2008	Nogales Post Office (ADEQ/BAM)	04-023-0004	234	Calm	International transport
20	MCAQD	11/7/2008	Durango (Maricopa Co. [MC]/TEOM)	04-013-9812	249	Calm	Ag-related exceedance (cannot flag)
21	ADEQ	11/8/2008	Nogales Post Office (ADEQ/BAM)	04-023-0004	168	Calm	International transport

Public Comment Period
TBA

INDEX OF 2008 EXCEPTIONAL EVENTS
PRELIMINARY DOCUMENTATION

TAB	Agency *	Date	Monitor (Operator/Type)	AQS ID **	24-hr Avg PM_{10} (or $PM_{2.5}$)	Maximum Winds	Nature of Event
21	ADEQ	11/8/2008	Nogales Post Office (PM10 FRM)	04-023-0004	??	Calm	International transport
22	MCAQD	11/9/2008	Durango (Maricopa Co. [MC]/TEOM)	04-013-9812	170	40 mph	High winds
	MCAQD	11/9/2008	South Phoenix (Maricopa Co. [MC]/TEOM)	04-013-4003	230	40 mph	High winds
	MCAQD	11/9/2008	West 43rd Ave (MC/TEOM)	04-013-4009	248	40 mph	High winds
	ADEQ	11/9/2008	Yuma Courthouse (ADEQ/TEOM)	04-027-0004	252	47 mph	High winds
23	ADEQ	11/16/2008	Nogales Post Office (ADEQ/BAM)	04-023-0004	171	Calm	International transport
	ADEQ	11/17/2008	Nogales Post Office (ADEQ/BAM)	04-023-0004	206	Calm	International transport
24	ADEQ	11/20/2008	Nogales Post Office (ADEQ/BAM)	04-023-0004	161	Calm	International transport
25	ADEQ	11/22/2008	Nogales Post Office (ADEQ/BAM)	04-023-0004	179	Calm	International transport
26	ADEQ	12/20/2008	Nogales Post Office PM2.5 FRM Primary	04-023-0004	36	Calm	International transport
	ADEQ	12/20/2008	Nogales Post Office PM2.5 FRM Collocated	04-023-0004	37	Calm	International transport
27	ADEQ	12/31/2008	Nogales Post Office (ADEQ/BAM)	04-023-0004	156	Calm	International transport

* Agency: ADEQ – Arizona Department of Environmental Quality
MCAQD – Maricopa County Air Quality Department
PCAQCD – Pinal County Air Quality Control District

** EPA Air Quality System Identification Number

{LMP Flag} – Value below NAAQS flagged for LMP eligibility

Type Abbreviations: FRM – Federal Reference Method Filter Based Monitor
BAM – Beta-Attenuation Mass Monitor (Continuous monitor)
TEOM – Tapered Element Oscillating Microbalance Monitor (Continuous monitor).

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov
Janice K. Brewer
Governor
Benjamin H. Grumbles
Director

Assessment of Qualification for Treatment under the Arizona Natural and Exceptional Events Policy for the High Particulate (PM_{10}) Concentration Events in the Phoenix Area on April 30, 2008

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 Tuesday, April 29, 2008, in response to a tightening pressure gradient associated with the tail end of a trough of low pressure and cold frontal passage through Arizona, ADEQ air quality forecasters issued the Maricopa County Dust Control Action Forecast calling for a moderate risk of wind-blown dust and thus a moderate risk for unhealthy PM_{10} levels in the Phoenix area for Wednesday, April 30th. The Dust Control Action Forecast called for southwesterly winds of 15 to 25 mph with stronger gusts possible during the afternoon. In anticipation of the high winds and blowing dust, a PM_{10} Health Watch was issued for April 30th (See Attachments). These forecasts/advisories satisfy the requirement in 40 CFR 51.930(a)(1).

This regional high-wind event created the potential for a wind-blown dust event with a moderate risk of exceeding the PM_{10} National Ambient Air Quality Standards (NAAQS) in Maricopa County. Strong winds did occur and were observed throughout portions of Maricopa County and much of the Phoenix Metro area on April 30th, 2008. Beginning in the morning and continuing until the early evening hours of April 30th, strong southwesterly winds generated blowing dust which moved into portions of the Phoenix Metro area. 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." A discussion of commonly employed Best Available Control Measures (BACM) for dust in Maricopa and Yuma counties can be found in "High Wind Exceptional Events and Control Measures for PM_{10} Areas" (see "References").

The initialization of a wind-blown dust event is evident in the Phoenix visible camera images, as well as the Arizona Meteorological Network (AzMET), Maricopa County (MC), and National Weather Service (NWS) monitors (see Fig. 1). Strong winds gusting to 30 mph at the NWS Phoenix Sky Harbor station and as high as 41 mph at the NWS Deer Valley station were reported between 9:00 a.m. and 6:00 p.m., while many other Valley monitoring locations measured wind gusts over 20 mph. Due to the spatial variability of PM sources both within and outside of the Phoenix urban core, the PM_{10} NAAQS was only exceeded at the West 43rd Ave. monitor operated by Maricopa County (see Section 2 for more detail). The fact that ambient concentrations exceeded the NAAQS satisfies the criteria in 40 CFR 50.1(j) that the event "affects air quality." The following are the key PM_{10} 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 43rd Ave (MC/TEOM)	**04-013-4009***	**172**	**1065**	**1100**	**RJ**
Durango Complex (MC/TEOM)	**04-013-9812***	**69**	**220**	**1100**	None
Greenwood (MC/TEOM)	**04-013-3010***	**63**	**121**	**1100**	None
Higley (MC/TEOM)	**04-013-4006***	**63**	**200**	**0600**	None
West Phoenix (MC/TEOM)	**04-013-0019***	**55**	**96**	**1100**	None
Central Phoenix (MC/TEOM)	**04-013-3002***	**51**	**78**	**1200**	None
JLG Supersite (ADEQ/TEOM)	**04-013-9997***	**46**	**91**	**1100**	None
Coyote Lakes (MC/TEOM)	**04-013-4014***	**53**	**165**	**0600**	None
South Phoenix (MC/TEOM)	**04-013-4003***	**88**	**218**	**1600**	None

* EPA Air Quality System Identification Number
** 24-hr PM_{10} 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 stakeholders meetings on November 19, 2008, and March 19, 2009, in Phoenix, Arizona. Following the stakeholders meetings, ADEQ supplemented and finalized the analysis and a public comment period was held from October 15, 2009 through November 13, 2009. This finalized document and any comments received are being submitted to EPA to satisfy the requirements in 40 CFR 50.14(c)(3)(i).

NORTHWEST PHOENIX

10-Waddell

Hr	T(F)	RH	Rn	Spd	Max	Dir
1	77	10	-	3	11	SW
2	74	12	-	3	8	SW
3	74	12	-	5	9	SW
4	74	14	-	4	8	SW
5	64	22	-	1	4	NW
6	58	28	-	1	3	NW
7	58	37	-	0	2	N
8	68	29	-	1	3	NE
9	77	15	-	6	13	SW
10	78	15	-	9	15	S
11	80	13	-	7	16	SW
12	83	9	-	9	17	SW
1	84	8	-	9	20	W
2	86	7	-	10	20	SW
3	87	7	-	9	20	SW
4	88	7	-	9	17	SW
5	87	6	-	9	18	W
6	85	6	-	8	15	SW
7	83	7	-	7	15	SW
8	80	8	-	3	10	W
9	77	10	-	2	6	W
10	77	12	-	4	11	SW
11	74	16	-	4	8	SW
12	43	65	-	3	7	E

NWS-Phoenix Sky Harbor

NWS-Phoenix Sky Harbor

Hr	T(F)	VR	Dust	Spd	Gust	Dir
1	83	0		0	0	N
2	76	0		0	0	N
3	76	0		6	6	SE
4	70	0		10	10	E
5	70	0		8	8	E
6	69	0		11	11	SE
7	70	0		8	8	E
8	74	0		6	6	E
9	79	0		0	0	N
10	82	0		8	8	SW
11	86	0		16	23	SW
12	88	0		18	30	W
1	89	0		20	26	W
2	91	10		18	29	W
3	91	10		14	20	SW
4	92	10		17	26	W
5	90	10		20	30	W
6	88	10		17	23	W
7	86	10		17	17	W
8	83	10		10	10	W
9	82	10		9	9	W
10	77	10		6	6	S
11	77	10		6	6	S
12	74	10		3	3	S

NWS-Deer Valley Airport

NWS-Deer Valley Airport

Hr	T(F)	VR	Dust	Spd	Gust	Dir
1	76	10		11	11	SW
2	74	10		8	8	S
3	72	10		7	7	S
4	68	10		7	7	E
5	68	10		6	6	E
6	68	10		9	9	E
7	70	10		7	7	E
8	73	10		9	9	SE
9	77	10		9	9	SW
10	79	10		11	21	SW
11	82	10		13	26	SW
12	84	10		21	34	SW
1	86	10		23	31	SW
2	87	10		15	41	SW
3	88	10		18	30	W
4	89	10		18	26	W
5	88	10		23	29	W
6	85	10		15	25	SW
7	83	10		15	29	SW
8	80	10		7	7	SW
9	77	10		3	3	S
10	77	10		11	11	SW
11	75	10		8	8	SW
12	72	10		9	8	SW

Event Contrib. Analysis

Hourly PM_{10} Conc. (µg/m^3)

MONITORS:

1-W43RD
2-Mon 2
3-Mon 3

Monitor:	24-Hr. Avg PM_{10} with Event	w/o Event
1-W43RD	172	66

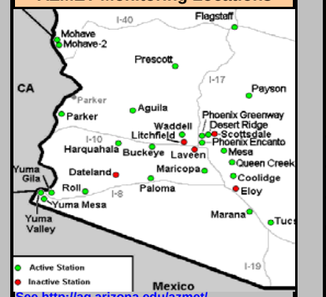
> NAAQS | < NAAQS

Pink=Event Contrib.

Conclusion: As shown above, the PM_{10} concentration would have been below the NAAQS "BUT FOR" the event contribution (hours highlighted in pink).

Hr	1
1	36.6
2	30.5
3	32.8
4	35
5	51.4
6	112
7	109
8	120
9	75.3
10	95
11	404
12	1065
1	360
2	223
3	208
4	366
5	236
6	212
7	134
8	77.4
9	62.5
10	46.8
11	28.5
12	30.6

AZMET Monitoring Locations



See http://ag.arizona.edu/azmet/

wnd @3m agl / Dir corrected to true north

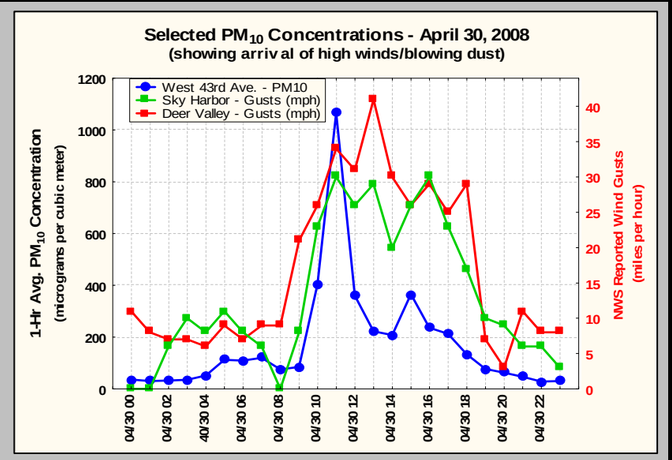
HIGHLIGHTING	Col.	Parameter
Max Wind	T(F)	Temp. (Deg. F.)
> 15 mph	RH	Rel Humidity %
>25 mph	Rn	Rain (Inches/hr)
HR - Time (End)	Spd	Avg Speed mph
A.M.	Max	Max Speed mph
P.M.	Dir	Wind Dir. (from)

Figure 1. Key Data for Event of April 30, 2008

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

SUMMARY OF EVENT

Beginning at 11:00 am, Deer Valley Airport experienced gusts from the southwest up to 41 mph. By noon, widespread dust aloft was observed. The visibility at Goodyear was 7 statute miles and winds valley-wide were from the southwest between 12 to 28 mph with gusts between 18 to 41 mph.



PARKER

08-Parker

Hr	T(F)	RH	Rn	Spd	Max	Dir
1	71	37	-	12	18	S
2	71	36	-	9	18	S
3	65	44	-	6	11	S
4	65	35	-	9	15	S
5	63	44	-	7	13	S
6	61	54	-	7	11	S
7	61	56	-	6	10	S
8	67	51	-	8	13	S
9	71	45	-	10	14	S
10	74	37	-	7	15	SW
11	78	31	-	8	13	SW
12	81	26	-	8	13	S
1	82	28	-	11	16	S
2	83	27	-	13	20	S
3	84	27	-	14	19	S
4	85	25	-	15	21	S
5	85	21	-	17	23	S
6	83	21	-	14	19	S
7	80	22	-	15	22	SW
8	73	32	-	9	13	S
9	67	43	-	7	11	S
10	67	41	-	9	15	S
11	74	16	-	11	22	W
12	73	12	-	12	17	W

BUCKEYE

26-Buckeye

Hr	T(F)	RH	Rn	Spd	Max	Dir
1	73	15	-	5	8	SW
2	72	16	-	4	6	SW
3	67	25	-	2	6	E
4	63	31	-	2	7	NE
5	61	33	-	2	6	W
6	61	36	-	3	7	SW
7	63	39	-	1	3	E
8	70	33	-	4	13	SW
9	75	28	-	8	14	SW
10	78	20	-	10	15	SW
11	81	14	-	12	24	SW
12	82	12	-	14	28	SW
1	84	11	-	13	22	SW
2	86	11	-	12	21	SW
3	87	11	-	13	21	W
4	87	9	-	15	23	W
5	85	9	-	15	23	W
6	83	9	-	12	21	W
7	81	11	-	11	19	W
8	72	19	-	6	9	W
9	69	24	-	7	16	W
10	75	18	-	11	20	SW
11	73	20	-	9	14	SW
12	69	25	-	7	13	SW

MARICOPA

06-Maricopa

Hr	T(F)	RH	Rn	Spd	Max	Dir
1	65	26	-	3	6	SE
2	62	30	-	2	5	S
3	63	25	-	4	7	S
4	63	29	-	5	7	S
5	65	28	-	7	11	S
6	63	34	-	7	10	S
7	65	36	-	8	12	S
8	72	30	-	10	14	S
9	77	23	-	10	15	SW
10	82	13	-	10	16	SW
11	84	10	-	9	18	W
12	86	9	-	9	20	SW
1	88	9	-	7	15	W
2	90	9	-	7	16	SW
3	91	10	-	10	19	W
4	91	9	-	15	24	SW
5	89	8	-	15	23	SW
6	88	6	-	14	21	W
7	85	7	-	11	18	W
8	79	13	-	8	14	SW
9	73	23	-	7	10	SW
10	72	21	-	11	17	S
11	70	23	-	9	13	S
12	68	26	-	10	16	SW

Historical Distribution

5-Yr. Dist. of Values (µg/m^3)

MONITORS:

1-WEST 43RD AVE

Column Index

Yr - All Data (5-Yrs)
Sea - Data for Spring season only (5-Yrs)

Cum. Freq.	Mon 1 Yr	Mon 1 Sea
Min	5	8
0.5%	9	9
1.0%	11	11
2.5%	15	13
5%	19	19
10%	29	28
25%	44	46
50%	65	63
75%	91	82
90%	121	107
95%	139	125
97.5%	157	134
99.0%	192	194
99.5%	227	220
Max	313	313
Flagged Value	172	

Conclusion: Flagged Value is exceptional in nature (ie greater than 95% of all data)

YUMA

02-YumaValley

Hr	T(F)	RH	Rn	Spd	Max	Dir
1	76	19	-	15	27	NW
2	72	20	-	13	22	NW
3	66	31	-	9	15	W
4	63	34	-	8	13	W
5	63	30	-	7	15	W
6	61	33	-	6	15	SW
7	63	29	-	4	11	W
8	68	27	-	4	7	W
9	73	23	-	4	11	W
10	77	17	-	10	17	NW
11	81	14	-	8	17	W
12	83	14	-	7	14	W
1	84	15	-	10	17	W
2	85	17	-	9	18	W
3	87	17	-	8	14	W
4	87	18	-	9	16	W
5	86	18	-	10	16	W
6	84	19	-	12	18	NW
7	81	21	-	10	18	W
8	77	24	-	10	19	NW
9	73	27	-	15	23	NW
10	70	31	-	15	21	NW
11	68	33	-	17	24	NW
12	67	36	-	17	27	NW

PALOMA

19-Paloma

Hr	T(F)	RH	Rn	Spd	Max	Dir
1	66	26	-	4	6	SW
2	64	28	-	5	7	SW
3	58	42	-	4	7	W
4	60	41	-	6	12	SW
5	69	29	-	11	16	S
6	67	31	-	10	13	S
7	69	32	-	11	15	S
8	73	29	-	12	18	S
9	78	25	-	12	17	SW
10	82	18	-	13	18	SW
11	84	14	-	13	18	SW
12	86	13	-	13	20	W
1	88	13	-	15	22	SW
2	91	10	-	16	23	SW
3	91	7	-	15	23	SW
4	91	6	-	16	29	W
5	89	9	-	15	21	W
6	86	12	-	11	18	W
7	83	15	-	13	22	SW
8	79	20	-	15	22	SW
9	76	21	-	14	20	SW
10	73	24	-	12	18	SW
11	71	26	-	7	16	S
12	65	38	-	6	9	SW

MARANA

13-Marana

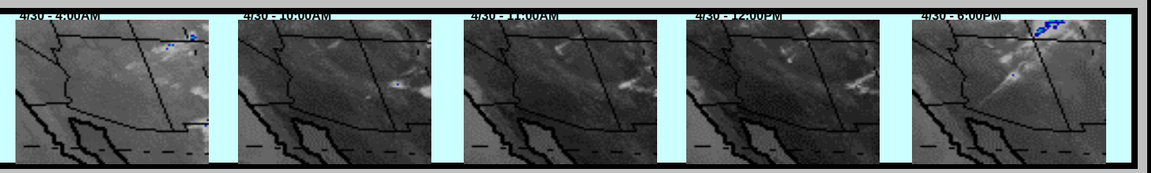
Hr	T(F)	RH	Rn	Spd	Max	Dir
1	71	11	-	2	6	SE
2	69	13	-	1	4	SE
3	64	16	-	2	6	SE
4	63	19	-	3	7	E
5	64	20	-	6	9	SE
6	64	19	-	4	7	SE
7	65	18	-	4	7	E
8	74	12	-	6	17	SE
9	79	10	-	7	17	S
10	82	9	-	7	15	SW
11	84	8	-	5	16	SW
12	88	7	-	10	18	W
1	90	6	-	15	24	W
2	90	6	-	15	25	W
3	91	6	-	16	24	W
4	90	7	-	17	26	W
5	89	6	-	15	24	SW
6	87	7	-	13	22	SW
7	82	8	-	13	20	W
8	77	9	-	9	15	W
9	74	9	-	8	13	SW
10	71	11	-	4	7	SW
11	68	13	-	4	9	W
12	64	17	-	2	4	SE

TUCSON

01-Tucson

Hr	T(F)	RH	Rn	Spd	Max	Dir
1	65	15	-	2	7	E
2	66	14	-	4	13	E
3	63	18	-	3	6	E
4	60	21	-	3	6	E
5	61	21	-	3	6	E
6	58	26	-	3	6	E
7	61	26	-	5	8	E
8	69	18	-	6	12	E
9	76	12	-	6	12	E
10	80	10	-	6	12	S
11	83	8	-	9	17	SW
12	84	8	-	9	18	SW
1	85	7	-	10	21	SW
2	86	7	-	11	21	SW
3	87	7	-	9	18	SW
4	87	7	-	11	23	SW
5	87	8	-	12	22	W
6	85	7	-	9	18	SW
7	82	5	-	9	17	SW
8	79	6	-	8	16	SW
9	76	8	-	6	12	SW
10	74	10	-	5	12	SW
11	70	16	-	2	6	S
12	63	23	-	2	6	E

GOES-West Satellite



Surface Visibility Cameras

Prepared by S. Kendall, A. Juniel, B. Busby and B. Paris/ ADEQ 3/19/09

Assessment under the Technical Criteria Document (TCD)

1. Properly qualify and validate the air quality measurement to be flagged. As this was a filter sampling date (1-in-6 run day), data from both the continuous analyzers and filter based monitors were examined. The air quality monitoring data were reviewed by the agency responsible for operation of the monitor. All hourly PM_{10} readings from the West 43rd Ave. monitoring site were valid for April 30, 2008. 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 by the continuous monitor located at the West 43rd Ave. monitoring site operated by Maricopa County.

2. Review suspected contributing sources. The NWS, AzMET, and MC 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 April 30th. Strong westerly to southwesterly winds occurred in the Phoenix area due to a low pressure system approaching from the west. The plot of hourly PM_{10} concentration and max wind data in the upper right corner of Figure 1 confirms the nearly identical timing of the elevated PM_{10} concentrations and the strong wind gusts recorded by the West 43rd Ave. monitor. The high wind event was a regional phenomenon that affected the entire Phoenix Metro area. However, PM sources are highly variable across space; therefore, the locations of higher PM_{10} concentrations (namely the Salt River channel) are likely an indication that these locations (or areas upwind of these locations) contain greater sources of PM than other locations within the Phoenix Metropolitan area. While no specific source allocation can be determined for this particular day, the 2005 ADEQ revised PM_{10} SIP for the Salt River area (attached) contains modeled source contributions on high wind days (see section 4.2 – Source Categories). Results estimate that approximately 76% of PM_{10} concentrations can be attributed to windblown dust, of which 21% is from agricultural fields, 15% from alluvial channels, and 21% from vacant lots. It is not clear whether similar source allocations can be assumed for this April 30, 2008, high wind event.

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 a measured concentration in excess of normal historical fluctuations, including background (i.e., concentrations greater than the 95th percentile). Additionally, the winds associated with the elevated PM_{10} concentrations may be characterized as unusual as described in "Impact of Exceptional Events' 'Unusual Winds' on PM_{10} Concentrations" (see "References").

4. Examine the meteorological conditions before and during the event. The MC and NWS 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 central Arizona until approximately 9:00 a.m., when several stations reported gusty winds over 20 mph. This timing corresponds to the onset of elevated PM_{10} concentrations recorded at the West 43rd Ave. monitoring site, which remained elevated through the afternoon hours until a time when winds, including those reported at Sky Harbor and Deer Valley airports, decreased to below 20 mph.

5. Perform a qualitative attribution to emission source(s). All evidence indicates the elevated PM_{10} 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 April 30, 2008. Visual evidence of reduced visibility can be seen in the images located in the lower right portion of Figure 1. These images, along with the graph of West 43rd wind gusts and PM_{10} concentrations, provide proof that the elevated PM_{10} concentrations in Phoenix were coincident with strong gusty winds and can be attributed to soil emissions.

6. Estimation of Contribution from Source or Event. The primary source appears to be wind-blown dust over central Arizona 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 exceedance or violation but for the event (i.e., the contribution during the event overwhelmed the 24-hour average).

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 concentration in West 43rd Ave. was attributed to a natural event.

Conclusion

Transport of dust from soils by high winds. The elevated PM_{10} event on April 30, 2008, 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" (RJ) flag 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.

Appendix R
Event Public Process & Comments

Transmittal of Assessment Report of April 30, 2008
Submitted November 17, 2009

ARIZONA DEPARTMENT
OF
ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Janice K. Brewer
Governor

Benjamin H. Grumbles
Director

NOV 17 2009

Electronic Submittal (to be followed by U.S. Mail)

Deborah Jordan, Air Division Director
U.S. Environmental Protection Agency, Region IX
Air-1
75 Hawthorne Street
San Francisco, CA 94105

SUBJECT: Submittal of Final Demonstrations of the 2008 Greater Phoenix Area Exceptional/Natural Events and Request for Concurrence

Dear Ms. Jordan:

The purpose of this letter is to request the Environmental Protection Agency's (EPA) review of information regarding exceptional events that resulted in exceedances of the 24-hour PM_{10} National Ambient Air Quality Standards (NAAQS) in the Greater Phoenix Area in 2008. After investigating the unusual nature of the exceedances, the Arizona Department of Environmental Quality (ADEQ) is recommending that EPA concur with ADEQ's findings that the aforementioned sample data are exceptional events in the Air Quality Subsystem (AQS) database. ADEQ staff worked with EPA staff to add certain components to the assessment reports to improve clarity and better document the conditions that caused the exceedances. The events that have been flagged, and for which final demonstrations have been prepared to provide EPA a basis for applying concurrence flags, are listed in Table 1 (enclosed).

Enclosed in this letter are detailed analyses of exceptional events titled "Assessment of Qualification for Treatment under the Arizona Natural and Exceptional Events Policy for the High Particulate (PM_{10}) Concentration Events in the..." (Enclosure 1 binder). This policy was revised on June 22, 2007, after a multiple month stakeholder process and transmitted to you on June 23, 2007. These analyses rely upon the "Technical Criteria Document for Determination of Natural and Exceptional Event" finalized on December 12, 2005. ADEQ concludes it is important to exclude these readings because of their exceptional causes. ADEQ requests EPA provide written concurrence with the flagging determinations contained in the attached assessment reports.

To help understand the nature of exceptional/natural events in Arizona, ADEQ researched threshold wind speeds that suspend dust into the air and special circumstances that lead to elevated dust levels. This research is described in the white paper titled "Impact of Exceptional Events 'Unusual Winds' in PM_{10} Concentrations in Arizona." ADEQ also examined the effectiveness of PM_{10} control measure for high wind events in Arizona. This research is described in the white paper titled "High Wind Exceptional Events and Control Measures for PM_{10} Areas." Future submittals will refer to these white papers as reference material. Copies of the white papers have been included in Enclosure 1 and were available during the public comment period.

As required by EPA's Exceptional Event Rule (40 CFR 50.14 (c)(3)(i)) and ADEQ Policy 2009.001, ADEQ requested comments on its flagging of these exceptional/natural events, on its final demonstrations, and on the two white papers. ADEQ made copies of the demonstrations and the white papers available for public review for a 30-day public comment period beginning October 15, 2009, on the ADEQ Web-site and at the ADEQ library in Phoenix. No comments were received from the public during the comment period. Enclosure 2 contains a copy of the affidavit of publication of the public notice of the 30-day comment period.

Enclosure 3 (Excel spreadsheet) is a checklist created by EPA that ADEQ staff used in the preparation of the assessment reports to ensure that the analyses meet the requirements of the Federal Exceptional Events Rule (EER, May 21, 2007).

Enclosure 4 (CD) is a compact disc containing an electronic copy of the exceptional/natural event analyses in Enclosure 1, along with this letter and Enclosures 2 and 3.

Those who are being copied on this letter will only receive Enclosures 2 through 4.

If you have any questions related to this request, please do not hesitate to contact me at (602) 771-2308 or Steven Peplau, Air Quality Assessment Manager, at (602) 771-2274.

Sincerely,

Nancy C. Wrona, Director
Air Quality Division

Enclosures (4)

cc: Colleen McKaughan, USEPA, Region IX (w/enclosures 2-4)
John Kelley, USEPA, Region IX (w/enclosures 2-4)
Coleman Owen, USEPA, Region IX (w/enclosures 2-4)
Lawrence Odle, Director, MCAQD (w/enclosures 2-4)
Don Gabrielson, PCAQCD (w/enclosures 2-4)

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
1110 West Washington Street • Phoenix, Arizona 85007
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Janice K. Brewer
Governor
Benjamin H. Grumbles
Director

Assessment of Qualification for Treatment under the Arizona Natural and Exceptional Events Policy for the High Particulate (PM_{10}) Concentration Events in the Phoenix Area on April 30, 2008

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 Tuesday, April 29, 2008, in response to a tightening pressure gradient associated with the tail end of a trough of low pressure and cold frontal passage through Arizona, ADEQ air quality forecasters issued the Maricopa County Dust Control Action Forecast calling for a moderate risk of wind-blown dust and thus a moderate risk for unhealthy PM_{10} levels in the Phoenix area for Wednesday, April 30th. The Dust Control Action Forecast called for southwesterly winds of 15 to 25 mph with stronger gusts possible during the afternoon. In anticipation of the high winds and blowing dust, a PM_{10} Health Watch was issued for April 30th (See Attachments). These forecasts/advisories satisfy the requirement in 40 CFR 51.930(a)(1).

This regional high-wind event created the potential for a wind-blown dust event with a moderate risk of exceeding the PM_{10} National Ambient Air Quality Standards (NAAQS) in Maricopa County. Strong winds did occur and were observed throughout portions of Maricopa County and much of the Phoenix Metro area on April 30th, 2008. Beginning in the morning and continuing until the early evening hours of April 30th, strong southwesterly winds generated blowing dust which moved into portions of the Phoenix Metro area. 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." A discussion of commonly employed Best Available Control Measures (BACM) for dust in Maricopa and Yuma counties can be found in "High Wind Exceptional Events and Control Measures for PM_{10} Areas" (see "References").

The initialization of a wind-blown dust event is evident in the Phoenix visible camera images, as well as the Arizona Meteorological Network (AzMET), Maricopa County (MC), and National Weather Service (NWS) monitors (see Fig. 1). Strong winds gusting to 30 mph at the NWS Phoenix Sky Harbor station and as high as 41 mph at the NWS Deer Valley station were reported between 9:00 a.m. and 6:00 p.m., while many other Valley monitoring locations measured wind gusts over 20 mph. Due to the spatial variability of PM sources both within and outside of the Phoenix urban core, the PM_{10} NAAQS was only exceeded at the West 43rd Ave. monitor operated by Maricopa County (see Section 2 for more detail). The fact that ambient concentrations exceeded the NAAQS satisfies the criteria in 40 CFR 50.1(j) that the event "affects air quality." The following are the key PM_{10} 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 43rd Ave (MC/TEOM)	**04-013-4009***	**172**	**1065**	**1100**	**RJ**
Durango Complex (MC/TEOM)	**04-013-9812***	**69**	**220**	**1100**	None
Greenwood (MC/TEOM)	**04-013-3010***	**63**	**121**	**1100**	None
Higley (MC/TEOM)	**04-013-4006***	**63**	**200**	**0600**	None
West Phoenix (MC/TEOM)	**04-013-0019***	**55**	**96**	**1100**	None
Central Phoenix (MC/TEOM)	**04-013-3002***	**51**	**78**	**1200**	None
JLG Supersite (ADEQ/TEOM)	**04-013-9997***	**46**	**91**	**1100**	None
Coyote Lakes (MC/TEOM)	**04-013-4014***	**53**	**165**	**0600**	None
South Phoenix (MC/TEOM)	**04-013-4003***	**88**	**218**	**1600**	None

* EPA Air Quality System Identification Number
** 24-hr PM_{10} 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 stakeholders meetings on November 19, 2008, and March 19, 2009, in Phoenix, Arizona. Following the stakeholders meetings, ADEQ supplemented and finalized the analysis and a public comment period was held from October 15, 2009 through November 13, 2009. This finalized document and any comments received are being submitted to EPA to satisfy the requirements in 40 CFR 50.14(c)(3)(i).

16659 (112.14Wx33.41N)

MC - WEST FORTY THIR

Hr	T(F)		PM	Spd	Max	Dir
1	78		36	2	13	NW
2	77		30	1	9	E
3	75		32	2	6	SE
4	76		35	4	9	S
5	72		51	2	13	NE
6	68		112	3	7	NE
7	68		109	3	7	NE
8	74		119	3	8	N
9	78		75	3	7	N
10	83		85	5	20	SW
11	87		404	13	23	SW
12	89		1065	16	33	W
1	90		359	15	28	W
2	92		222	13	27	SW
3	93		208	13	30	SW
4	93		365	15	27	SW
5	92		236	15	28	SW
6	89		212	13	25	W
7	85		133	12	23	W
8	81		77	6	12	W
9	79		62	6	19	W
10	80		46	9	21	SW
11	77		28	7	14	SW
12	74		30	3	9	SW

NWS-Phoenix Sky Harbor

Hr	T(F)	VR	Dust	Spd	Gust	Dir
1	83	10		0	0	N
2	76	10		0	0	N
3	76	10		6	6	SE
4	70	10		10	10	E
5	70	10		8	8	E
6	69	10		11	11	SE
7	70	10		8	8	E
8	74	10		6	6	E
9	79	10		0	0	N
10	82	10		8	8	SW
11	86	10		16	23	SW
12	88	10		18	30	W
1	89	10		20	26	W
2	91	10		18	29	W
3	91	10		14	20	SW
4	92	10		17	26	W
5	90	10		20	30	W
6	88	10		17	23	W
7	86	10		17	17	W
8	83	10		10	10	W
9	82	10		9	9	W
10	77	10		6	6	S
11	77	10		6	6	S
12	74	10		3	3	S

NWS-Deer Valley Airport

Hr	T(F)	VR	Dust	Spd	Gust	Dir
1	76	10		11	11	SW
2	74	10		8	8	S
3	72	10		7	7	S
4	68	10		7	7	E
5	68	10		6	6	E
6	68	10		9	9	E
7	70	10		7	7	E
8	73	10		9	9	SE
9	77	10		9	9	SW
10	79	10		11	21	SW
11	82	10		13	26	SW
12	84	10		21	34	SW
1	86	10		23	31	SW
2	87	10		15	41	SW
3	88	10		18	30	W
4	89	10		18	26	W
5	88	10		23	29	W
6	85	10		15	25	SW
7	83	10		15	29	SW
8	80	10		7	7	SW
9	77	10		3	3	S
10	77	10		11	11	SW
11	75	10		8	8	SW
12	72	10		5	5	SW

Event Contrib. Analysis

Hourly PM_{10} Conc. ($\mu g/m^3$)

MONITORS:

1-W43RD
2-Mon 2
3-Mon 3

24-Hr. Avg PM_{10}

Monitor:	with Event	w/o Event
1-W43RD	172	66

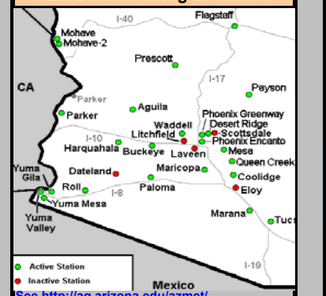
> NAAQS | < NAAQS

Pink=Event Contrib.

Conclusion: As shown above, the PM_{10} concentration would have been below the NAAQS "BUT FOR" the event contribution (hours highlighted in pink).

Hr	1
1	36.6
2	30.5
3	32.8
4	35
5	51.4
6	112
7	109
8	120
9	75.3
10	85
11	404
12	1065
1	360
2	223
3	208
4	366
5	236
6	212
7	134
8	77.4
9	62.5
10	46.8
11	28.5
12	30.6

AZMET Monitoring Locations



See http://ag.arizona.edu/azmet/
wnd @3m agl / Dir corrected to true north

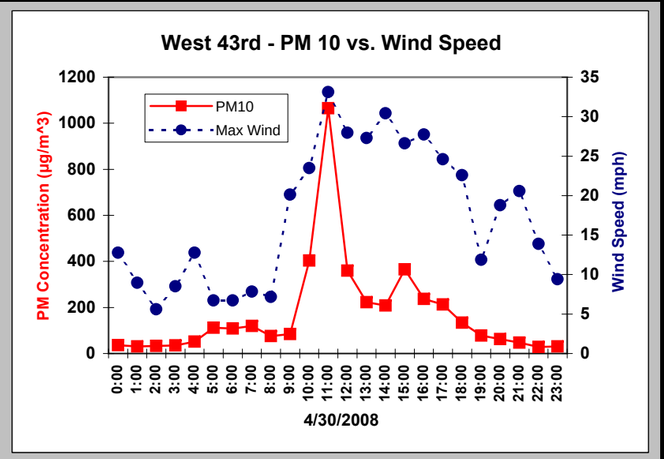
HIGHLIGHTING	Col.	Parameter
Max Wind	T(F)	Temp. (Deg. F.)
> 15 mph	RH	Rel Humidity %
>25 mph	Rn	Rain (Inches/hr)
HR - Time (End)	Spd	Avg Speed mph
A.M.	Max	Max Speed mph
P.M.	Dir	Wind Dir. (from)

Figure 1. Key Data for Event of April 30, 2008

WIND & PM10 DATA	ECA	KEY	PM10 & WIND PLOT
	HIST		Wx IMAGERY
	DIST		PHX VIS. CAMERAS

SUMMARY OF EVENT

Beginning at 11:00 am, Deer Valley Airport experienced gusts from the southwest up to 41 mph. By noon, widespread dust aloft was observed. The visibility at Goodyear was 7 statute miles and winds valley-wide were from the southwest between 12 to 28 mph with gusts between 18 to 41 mph.



16375 (112.12Wx33.43N)

MC - DURANGO COMPLEX

Hr	T(F)		PM	Spd	Max	Dir
1	76		30	5	10	W
2	78		35	5	17	SW
3	77		31	5	11	SW
4	74		34	3	10	S
5	70		46	3	9	NE
6	67		60	2	8	NE
7	70		83	3	9	NE
8	77		89	2	7	N
9	81		75	2	7	N
10	85		51	4	18	SW
11	86		83	11	23	SW
12	86		219	15	30	W
1	86		112	15	30	W
2	89		67	12	29	W
3	92		51	12	33	W
4	93		108	14	29	W
5	92		69	13	31	W
6	89		85	14	27	W
7	85		82	12	28	W
8	81		62	8	15	W
9	77		56	4	10	W
10	77		51	5	16	SW
11	75		38	5	10	W
12	73		32	3	8	W

16377 (112.08Wx33.40N)

MC - SOUTH PHOENIX

Hr	T(F)		PM	Spd	Max	Dir
1	80		49	2	11	SW
2	82		36	2	10	SW
3	78		35	2	7	SW
4	76		37	2	10	E
5	71		57	2	7	NE
6	69		72	2	5	E
7	70		135	2	5	E
8	76		82	2	7	N
9	80		73	3	9	NW
10	83		52	2	12	W
11	86		115	7	23	W
12	87		163	9	26	W
1	89		117	9	25	W
2	90		138	9	27	W
3	91		61	9	27	W
4	92		139	9	24	W
5	92		218	10	27	W
6	90		114	8	22	W
7	87		94	8	20	W
8	84		73	3	10	W
9	80		92	1	4	SW
10	80		74	2	9	W
11	78		40	2	7	SW
12	75		44	1	6	W

16329 (112.05Wx33.46N)

MC - CENTRAL PHOENIX

Hr	T(F)		PM	Spd	Max	Dir
1	77		37	2	7	NW
2	75		34	1	8	NE
3	72		40	2	7	E
4	72		37	4	10	E
5	68		45	3	9	E
6	66		53	4	9	E
7	69		58	5	12	E
8	75		65	4	7	NE
9	82		52	2	9	NE
10	85		42	4	12	W
11	85		62	11	27	SW
12	86			17	34	W
1	87		77	16	32	W
2	89		57	14	29	W
3	90		41	13	27	W
4	91		53	15	31	W
5	91		73	15	35	W
6	89		59	14	27	W
7	85		70	14	27	W
8	81		47	9	20	W
9	78		48	6	11	W
10	78		53	7	16	W
11	78		38	10	19	W
12	75		33	3	13	W

Historical Distribution

5-Yr. Dist. of Values ($\mu g/m^3$)

MONITORS:

1-WEST 43RD AVE

Column Index

Yr - All Data (5-Yrs)
Sea - Data for Spring season only (5-Yrs)

Cum. Freq.	Mon 1 Yr	Mon 1 Sea
Min	5	8
0.5%	9	9
1.0%	11	11
2.5%	15	13
5%	19	19
10%	29	28
25%	44	46
50%	65	63
75%	91	82
90%	121	107
95%	139	125
97.5%	157	134
99.0%	192	194
99.5%	227	220
Max	313	313
Flagged Value	172	

Conclusion: Flagged Value is exceptional in nature (ie greater than 95% of all data)

16398 (111.92Wx33.48N)

MC - SOUTH SCOTTSDAL

Hr	T(F)	RH		Spd	Max	Dir
1	71	16		1	7	W
2	68	20		0	3	SE
3	66	20		3	6	NE
4	66	18		4	9	SE
5	66	21		3	9	SE
6	63	24		2	6	E
7	65	25		2	8	E
8	71	26		2	8	SE
9	76	26		5	10	S
10	84	21		2	11	SW
11	88	17		4	22	SW
12	89	12		12	27	W
1	90	11		13	30	W
2	92	11		12	26	W
3	93	13		13	26	W
4	93	13		11	25	W
5	92	12		13	29	W
6	90	9		12	27	W
7	85	10		11	23	W
8	81	11		8	17	W
9	77	12		2	7	NW
10	74	14		2	6	W
11	73	18		3	12	SW
12	72	21		4	10	S

16478 (111.88Wx33.30N)

MC - WEST CHANDLER

Hr	T(F)	RH		Spd	Max	Dir
1	76	11		4	11	S
2	75	11		4	11	S
3	74	12		5	12	S
4	71	14		5	13	S
5	69	19		3	9	SE
6	66	21		3	11	E
7	69	23		5	13	S
8	72	23		7	15	S
9	76	21		6	14	S
10	80	12		9	19	SW
11	83	8		12	27	SW
12	85	9		11	23	SW
1	87	8		11	27	W
2	88	8		11	26	W
3	90	10		11	27	SW
4	91	9		13	29	SW
5	90	6		15	28	SW
6	88	5		13	26	SW
7	86	6		12	29	SW
8	84	7		7	17	W
9	80	8		5	11	SW
10	77	13		9	22	SW
11	75	16		12	26	S
12	72	19		9	19	S

16380 (111.87Wx33.41N)

MC - MESA

Hr	T(F)	RH		Spd	Max	Dir
1	79	10		2	11	S
2	76	12		3	6	S
3	73	14		4	8	E
4	71	15		5	8	E
5	68	17		6	10	SE
6	67	19		4	9	SE
7	68	23		6	11	SE
8	72	24		7	15	S
9	76	21		7	15	S
10	80	15		6	16	SW
11	84	11		7	21	SW
12	87	8		13	26	W
1	87	8		14	30	W
2	88	8		13	26	W
3	90	10		11	26	W
4	91	10		14	30	W
5	90	9		13	27	W
6	89	6		13	28	W
7	86	6		12	23	W
8	83	8		8	15	W
9	80	9		5	11	W
10	79	12		4	14	SW
11	77	15		11	23	S
12	73	19		6	20	SW

16505 (111.72Wx33.31N)

MC - HIGLEY

Hr	T(F)		PM	Spd	Max	Dir
1	72		35	4	9	S
2	70		40	2	9	SE
3	64		40	4	9	E
4	62		37	6	10	E
5	61		39	5	9	E
6	59		75	5	10	SE
7	63		199	5	12	SE
8	74		58	8	17	S
9	77		101	11	21	S
10	81		65	10	24	SW
11	84		66	11	26	SW
12	87		61	9	22	W
1	88		47	11	27	SW
2	90		49	10	27	W
3	92		34	8	23	W
4	92		46	9	23	SW
5	91		70	13	28	SW
6	89		54	12	26	W
7	86		53	9	25	W
8	82		44	6	15	W
9	78		69	5	13	S
10	76		111	9	23	S
11	74		66	10	20	SW
12	72		47	11	20	SW

Prepared by S. Kendall, A. Juniel, B. Busby and B. Paris/ ADEQ 3/19/09

Assessment under the Technical Criteria Document (TCD)

1. Properly qualify and validate the air quality measurement to be flagged. As this was a filter sampling date (1-in-6 run day), data from both the continuous analyzers and filter based monitors were examined. The air quality monitoring data were reviewed by the agency responsible for operation of the monitor. All hourly PM_{10} readings from the West 43rd Ave. monitoring site were valid for April 30, 2008. 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 by the continuous monitor located at the West 43rd Ave. monitoring site operated by Maricopa County.

2. Review suspected contributing sources. The NWS, AzMET, and MC 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 April 30th. Strong westerly to southwesterly winds occurred in the Phoenix area due to a low pressure system approaching from the west. The plot of hourly PM_{10} concentration and max wind data in the upper right corner of Figure 1 confirms the nearly identical timing of the elevated PM_{10} concentrations and the strong wind gusts recorded by the West 43rd Ave. monitor. The high wind event was a regional phenomenon that affected the entire Phoenix Metro area. However, PM sources are highly variable across space; therefore, the locations of higher PM_{10} concentrations (namely the Salt River channel) are likely an indication that these locations (or areas upwind of these locations) contain greater sources of PM than other locations within the Phoenix Metropolitan area. While no specific source allocation can be determined for this particular day, the 2005 ADEQ revised PM_{10} SIP for the Salt River area (attached) contains modeled source contributions on high wind days (see section 4.2 – Source Categories). Results estimate that approximately 76% of PM_{10} concentrations can be attributed to windblown dust, of which 21% is from agricultural fields, 15% from alluvial channels, and 21% from vacant lots. It is not clear whether similar source allocations can be assumed for this April 30, 2008, high wind event.

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 a measured concentration in excess of normal historical fluctuations, including background (i.e., concentrations greater than the 95th percentile). Additionally, the winds associated with the elevated PM_{10} concentrations may be characterized as unusual as described in "Impact of Exceptional Events' 'Unusual Winds' on PM_{10} Concentrations" (see "References").

4. Examine the meteorological conditions before and during the event. The MC and NWS 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 central Arizona until approximately 9:00 a.m., when several stations reported gusty winds over 20 mph. This timing corresponds to the onset of elevated PM_{10} concentrations recorded at the West 43rd Ave. monitoring site, which remained elevated through the afternoon hours until a time when winds, including those reported at Sky Harbor and Deer Valley airports, decreased to below 20 mph.

5. Perform a qualitative attribution to emission source(s). All evidence indicates the elevated PM_{10} 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 April 30, 2008. Visual evidence of reduced visibility can be seen in the images located in the lower right portion of Figure 1. These images, along with the graph of West 43rd wind gusts and PM_{10} concentrations, provide proof that the elevated PM_{10} concentrations in Phoenix were coincident with strong gusty winds and can be attributed to soil emissions.

6. Estimation of Contribution from Source or Event. The primary source appears to be wind-blown dust over central Arizona 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 exceedance or violation but for the event (i.e., the contribution during the event overwhelmed the 24-hour average).

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 concentration in West 43rd Ave. was attributed to a natural event.

Conclusion

Transport of dust from soils by high winds. The elevated PM_{10} event on April 30, 2008, 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" (RJ) flag 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.

ATTACHMENTS AND REFERENCES

FOR EXCEPTIONAL EVENTS ANALYSIS

The following are supplemental materials helpful in understanding the exceptional event summarized in the main report. In addition, the reader is referred to the following references.

REFERENCES

Arizona Department of Environmental Quality (ADEQ), *Air Quality Exceptional and Natural Events Policy*, Policy Number 2009.002 (April 28, 1999; revised January 10, 2006 and June 22, 2007).

Arizona Department of Environmental Quality (ADEQ), *Technical Criteria Document for Determination of Natural Exceptional Events for Particulate Matter Equal to or Less Than Ten Microns in Aerodynamic Diameter (PM_{10})* (May 31, 2000).

Arizona Department of Environmental Quality (ADEQ), *Technical Criteria Document for Determination of Natural and Exceptional Events* (December 12, 2005).

Arizona Department of Environmental Quality (ADEQ), *Impact of Exceptional Events 'Unusual Winds' on PM_{10} Concentrations* (October 14, 2009).

Arizona Department of Environmental Quality (ADEQ), *High Wind Exceptional Events and Control Measures for PM_{10} Areas* (October 14, 2009).

Environmental Protection Agency (EPA), *The Treatment of Data Influenced by Exceptional Events (Exceptional Event Rule)*, 73 FR 70597; 40 CFR Parts 50 and 51 (November 21, 2008).

ADEQ Arizona Department of Environmental Quality

Janet Napolitano, Governor
Stephen A. Owens, ADEQ Director

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.epa.gov/airnow/aqibroch

NEW!!! CLICK HERE FOR UPDATED 2008 OZONE SEASON STATS NEW!!!

AIR QUALITY FORECAST FOR WEDNESDAY, APRIL 30, 2008

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 MON 04/28/2008	TODAY TUE 04/29/2008	TOMORROW WED 04/30/2008	EXTENDED THU 05/01/2008
NOTICES (*SEE BELOW FOR DETAILS)	**NONE**	**NONE**	**OZONE HEALTH WATCH** **PM-10 HEALTH WATCH**	**NONE**
AIR POLLUTANT	Highest AQI Reading/Site (Preliminary data only)			
O3*	**90** **NORTH PHOENIX**	**84** **MODERATE**	**97** **MODERATE**	**87** **MODERATE**
CO*	**13** **WEST INDIAN SCHOOL**	**11** **GOOD**	**8** **GOOD**	**9** **GOOD**
PM-10*	**59** **BUCKEYE**	**68** **MODERATE**	**90** **MODERATE**	**57** **MODERATE**
PM-2.5*	**65** **DURANGO**	**58** **MODERATE**	**54** **MODERATE**	**51** **MODERATE**

* 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 message for Tuesday, Apr 29: Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.

Health message for Wednesday, Apr 30: Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.

Synopsis and Discussion

An Ozone Health Watch AND a PM10 Health has been issued for Wednesday, April 30, 2008

Ozone levels continue to hold in the mid to upper "Moderate" range with little relief. It's only going to get worse before it gets better as a trough of low pressure moves through the western U.S. the next couple of days. The tail end of the disturbance will impact Arizona Wednesday with winds increasing to 30 mph at times across the deserts, even stronger in higher elevations of Arizona. Yuma is already indicating that another transport situation is underway with Ozone in the upper "Moderate" range on Tuesday. That means that today and likely tomorrow should see some high levels across the Phoenix forecast. An increase in winds also means we could see areas of blowing dust across the dry deserts (now 65 consecutive days without measurable rain in Phoenix). As a result of this latest weather system and its potential impact on the Valley's air quality, we are **issuing both an Ozone and PM10 Health Watch for Wednesday**. The situation will be re-evaluated tomorrow, but conditions should improve Thursday and Friday as the system exits the region. Check back then for the latest. Have a good day! –J.Paul

MONITORING SITE MAPS: STATIC MAP - http://www.azdeq.gov/environ/air/monitoring/images/map.jpg
INTERACTIVE MAPS - http://aqwww.maricopa.gov/AirMonitoring/SitePollutionMap.aspx
http://www.airnow.gov/

POLLUTION MONITOR READINGS FOR MONDAY, APRIL 28, 2008

O3 (OZONE)

For facts on new 8-hr ozone standard go to: http://www.epa.gov/air/ozonepollution/pdfs/2008_03_aqi_changes.pdf
For maps go to: http://www.airnow.gov/index.cfm?action=airnow.currentconditions

SITE NAME	MAX 8-HR VALUE (PPB)	MAX AQI	AQI COLOR CODE
Alamo Lake (La Paz County)	NOT AVBL	NOT AVBL	NOT AVBL
Apache Junction (Pinal County)	64	64	
Blue Point	50	42	
Buckeye	65	67	
Casa Grande (Pinal County)	67	74	
Cave Creek	71	87	
Central Phoenix	66	71	
Combs School (Pinal County)	62	58	
Dysart	67	74	
Falcon Field	61	54	
Fountain Hills	64	64	
Glendale	70	84	
Humboldt Mountain	66	71	
Maricopa (Pinal County)	65	67	
North Phoenix	72	90	
Phoenix Supersite	NOT AVBL	NOT AVBL	NOT AVBL
Pinal Air Park (Pinal County)	65	67	
Pinnacle Peak	67	74	
Queen Valley (Pinal County)	66	71	
Rio Verde	66	71	
South Phoenix	68	77	
South Scottsdale	64	64	
Tempe	67	74	
Tonto Nat'l Mon. (Gila County)	66	71	
West Chandler	65	67	
West Phoenix	71	87	
Yuma (Yuma County)	70	84	

CO (CARBON MONOXIDE)

SITE NAME	MAX 8-HR VALUE (PPM)	MAX AQI	AQI COLOR CODE
Central Phoenix	0.8	9	
Greenwood	0.9	10	
Phoenix Supersite	NOT AVBL	NOT AVBL	NOT AVBL
West Indian School	1.1	13	
West Phoenix	1.0	11	

PM-10 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (ug/m3)	MAX AQI	AQI COLOR CODE
Buckeye	72.3	59	
Central Phoenix	39.9	36	
Combs School (Pinal County)	87.8	67	
Coyote Lakes	46.0	42	
Durango	59.1	53	
Greenwood	58.2	53	
Higley	62.0	54	
Maricopa (Pinal County)	73.6	60	
Phoenix Supersite	38.3	35	
South Phoenix	59.2	53	
West Forty Third	63.0	55	
West Phoenix	48.5	44	

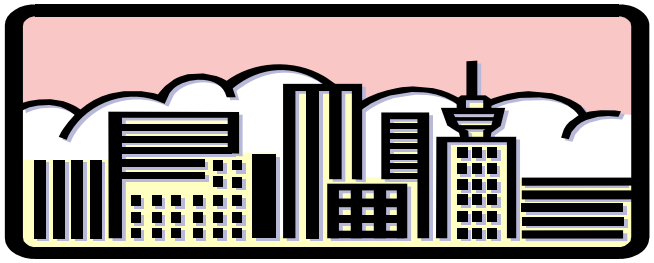
PM-2.5 (PARTICLES)

(Some data derived from light-scattering equipment)

For maps go to: http://www.airnow.gov/

SITE NAME	MAX 24-HR VALUE (ug/m3)	MAX AQI	AQI COLOR CODE
Durango	21.3	65	
Dysart	6.5	21	
Estrella Mountain Park	10.5	34	
Phoenix Supersite	14.6	47	
Vehicle Emissions Lab	8.0	26	
West Phoenix	12.6	41	

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 08/14/2007**}

ADEQ AIR POLLUTION HEALTH WATCH ISSUANCE NOTICE

Issuance Date and Time:	Tuesday, April 29, 2008 11:30 a.m.
Valid for Date(s):	Wednesday, April 30, 2007
Pollutant:	Course Particulates (PM-10)
Message:	Elevated particulate levels combined with breezy to windy conditions Wednesday may lead to concentrations approaching the health standard.

Detailed air quality forecast information is available on:

- The internet at www.azdeq.gov
- A telephone recording at 602-771-2367

Duty Forecaster:	Christopher Reith	602-771-2360
	Joe Paul	602-771-2363

CKR 01/18/2005

ADEQ Arizona Department of Environmental Quality

Janet Napolitano, Governor
Stephen A. Owens, ADEQ Director

MARICOPA COUNTY
DUST CONTROL ACTION FORECAST
ISSUED TUESDAY, APRIL 29, 2008

Three-day weather outlook:

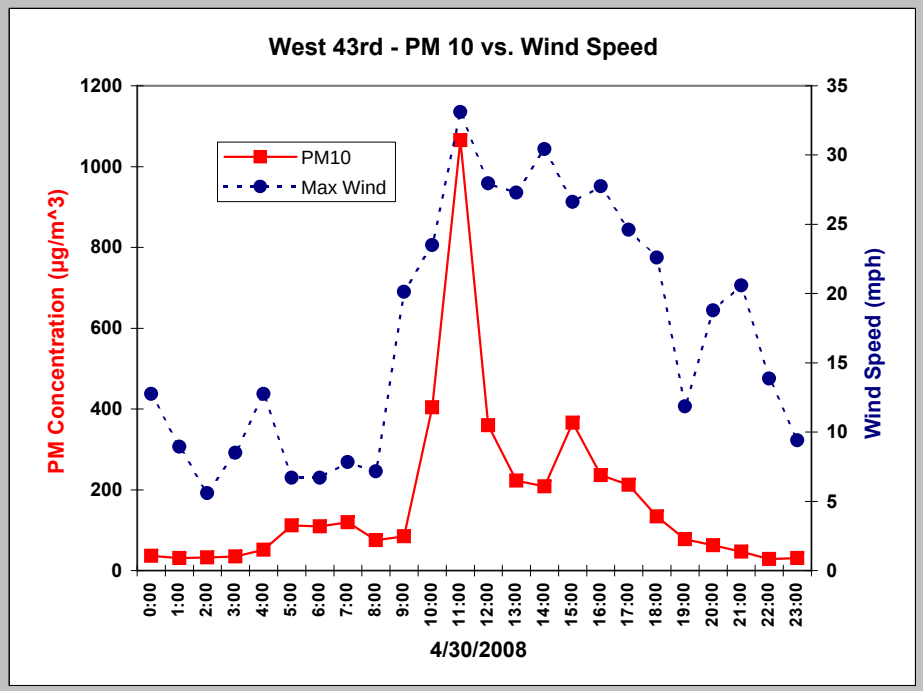
A trough of low pressure will move through the western U.S. the next several days with the tail end of the disturbance impacting Arizona Wednesday afternoon. Winds will increase out of southwest and west to around 30 mph at times across the deserts, lasting into early hours of Thursday before decreasing. Cooler air will filter in behind the system which means afternoon desert temperatures will only be in the upper 80s on Thursday. Winds will be much lighter Thursday afternoon through Friday. The risk of exceeding the 24-hr PM10 health standard in Phoenix will be "Moderate" on Wednesday, dropping back to "Low" by Thursday.

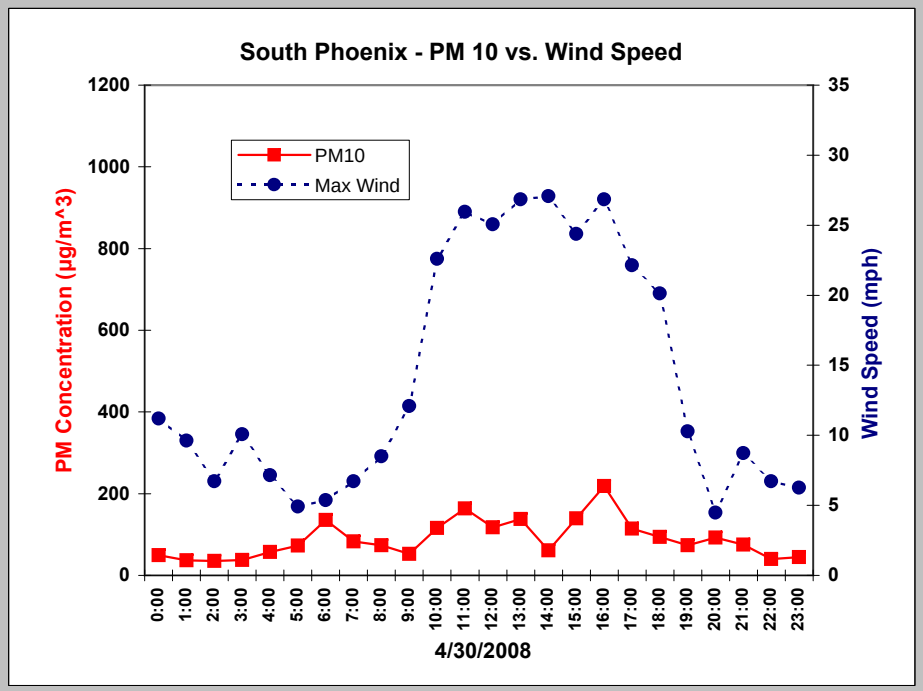
R I S K F A C T O R S

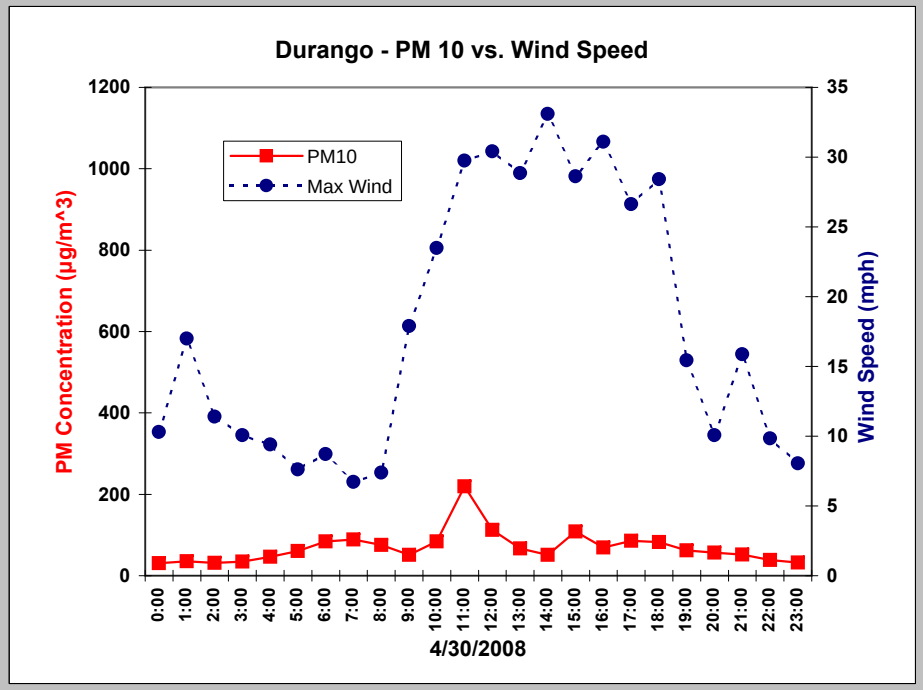
	WINDS		STAGNATION		RISK LEVEL
Day #1: Wed 04/30/2008	Southwest winds 15 to 25 mph with stronger gusts possible at times are expected during the afternoon hours.	+	Little to no stagnation is expected.	=	**MODERATE**
Day #2: Thu 05/01/2008	West winds 10 to 15 mph are expected during the afternoon hours.	+	Slightly stagnant conditions are expected early with improvement by the afternoon.	=	**LOW**
Day #3: Fri 05/02/2008	West winds 5 to 10 mph are likely much of the day.	+	Somewhat stagnant conditions are expected early with improvement by the afternoon.	=	**LOW**

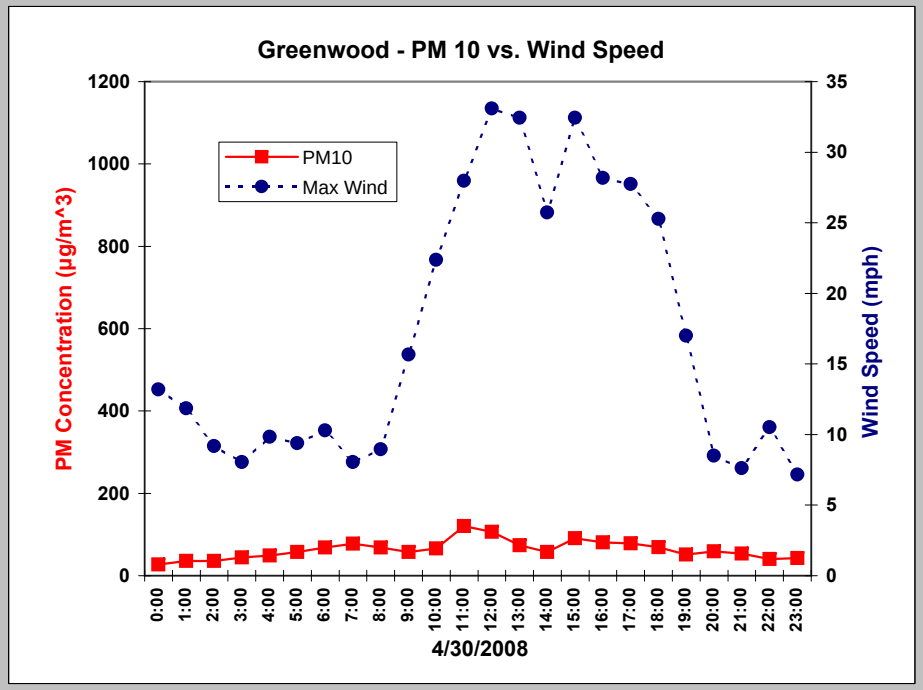
To review the complete air quality forecast for the Phoenix metropolitan area visit www.azdeq.gov or call 602-771-2367 for recorded forecast information.

04/30/2008 - ADDITIONAL GRAPHS

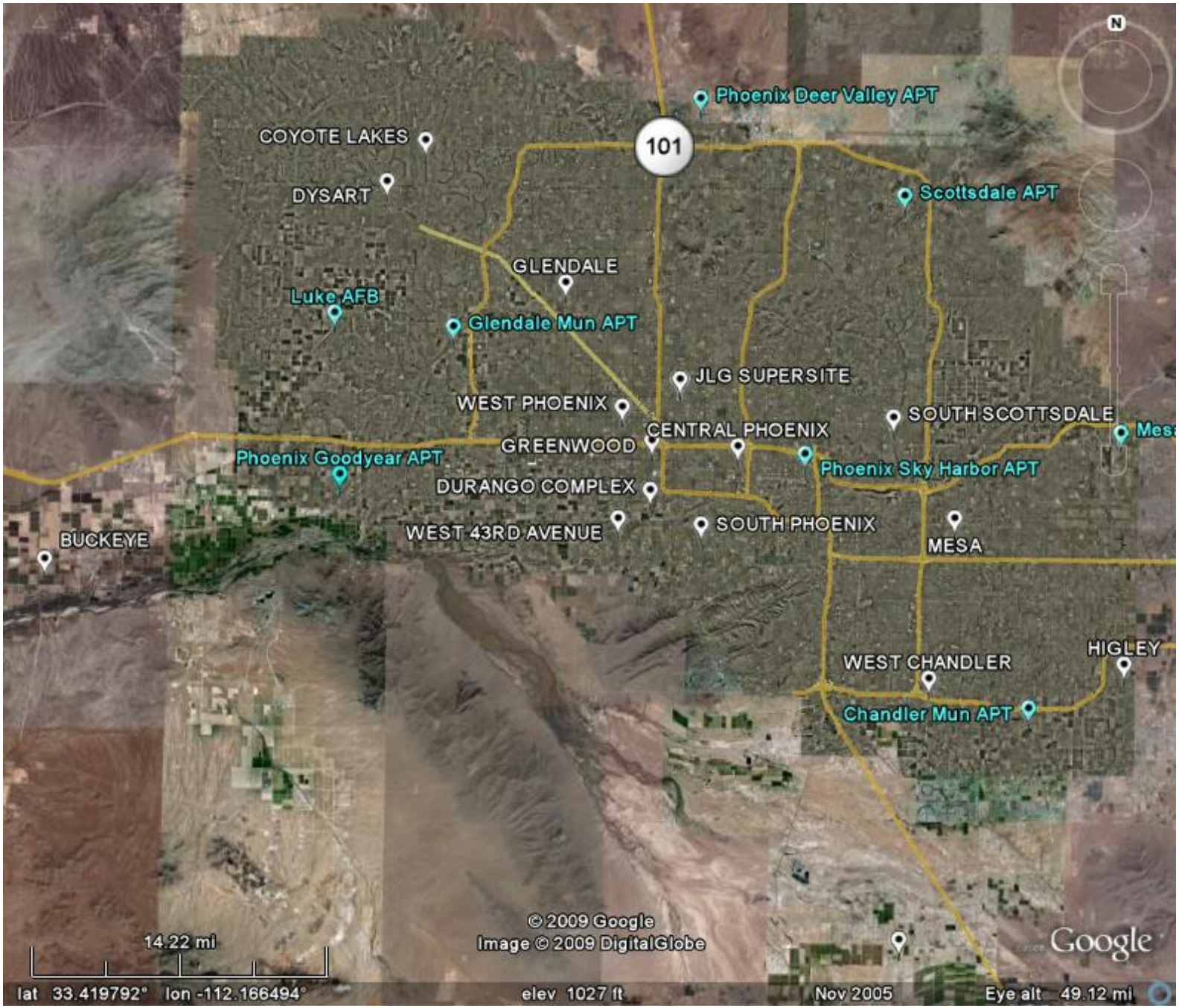






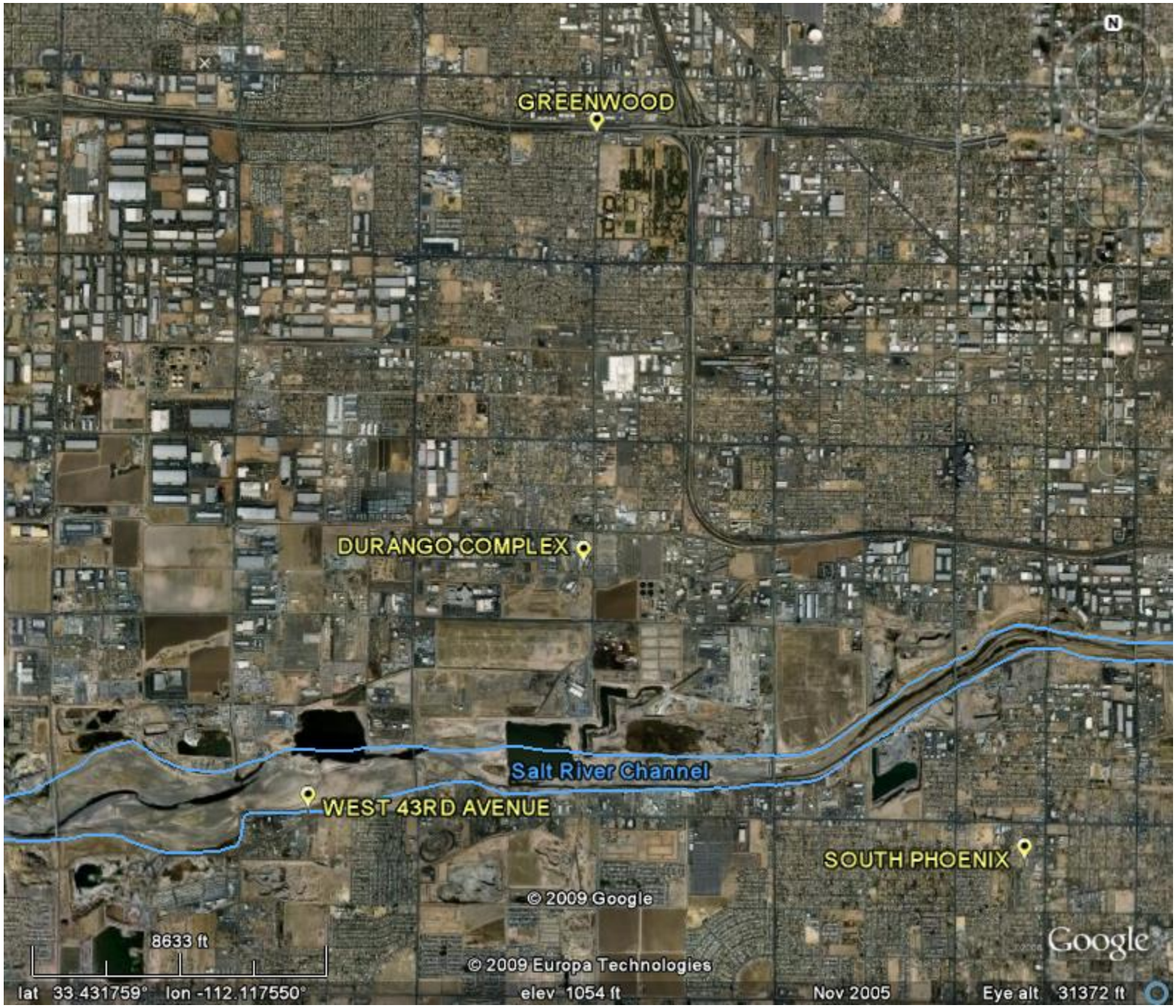


Phoenix Area PM_{10} and Meteorological Monitors



Source: US EPA, ADEQ, & Google Earth

Salt River Area PM_{10} and Meteorological Monitors



Source: US EPA, ADEQ, & Google Earth

CHAPTER 4: OVERVIEW OF PM_{10} CONTROL MEASURES

4.1 INTRODUCTION

Chapter 1.2.2 of this SIP ("Regulatory History of the Metropolitan Maricopa PM_{10} Nonattainment Area") notes that on July 25, 2002, EPA approved the Maricopa Serious PM_{10} Nonattainment Area, and granted Arizona's request, in accordance with CAA § 188(e), to extend the CAA deadline for attainment of the annual and 24-hour PM_{10} standards from December 31, 2001, to December 31, 2006 (67 FR 48718).

Because the attainment deadline for this plan revision is also December 31, 2006, and the measures must be applied to all similar sources throughout the Phoenix Nonattainment Area (see 67 FR 44369, July 2, 2002), the control strategies must meet the "Most Stringent Measures" test, as well as the “Best Available Control Measures/Technology” test. In its July 25, 2002, approval of the Maricopa County Plan, EPA defined “most stringent measures” (MSMs) as the most stringent measures included in any state implementation plan, or being implemented in any state, that are economically and technologically feasible for the nonattainment area in question. “Best Available Control Measures” (BACM) must be applied in serious nonattainment areas, also taking into account the economic and technological feasibility of each measure.

This chapter details the proposed BACM and MSM that were evaluated for each significant source category.

4.2 SOURCE CATEGORIES

The Salt River Study Area 2002 base year emissions inventory is described in Chapter 3.0 and the TSD’s Chapter 4.0. The 2002 emissions source category contributions to ambient PM_{10} are depicted in Table 4.2.1. The average concentrations are derived from the modeled concentrations outlined in the TSD, Chapter 6.

Assumptions used to calculate trackout emissions appear in Appendix K “Methodology for Weighting Trackout Emissions” and Appendix P “Mapping Weighted Trackout Emissions into Predicted Concentrations” of the October 2004 TSD. Calculation methodology for street sweeping emissions reductions appears in Appendix L “Street Sweeping Reductions” of the October 2004 TSD.

Table 4.2.1 2002 Salt River Study Area Source Category Contributions to Ambient PM_{10} Concentrations

Source Category	Average Low Wind Day Contribution	Average High Wind Day Contribution	Highest Contribution($\mu g/m^3$)	
	Percentage Contribution	Percentage Contribution	Low Wind Day	High Wind Day
Industrial Sources	**25.9%**	**8.3%**	**60.2**	**31.8**
Point Emissions	2.7%	1.1%	5.3	3.0
Area Emissions	23.2%	7.2%	54.9	28.8
Construction	**5.8%**	**0.9%**	**6.0**	**4.4**
Area Sources	**4.2%**	**0.7%**	**8.0**	**3.1**
Unpaved Parking Lots	1.7%	0.2%	0.8	1.4
Unpaved Shoulders	2.5%	0.4%	7.2	1.7

Table 4.2.1 2002 Salt River Study Area Source Category Contributions to Ambient PM_{10} Concentrations				
Source Category	**Average Low Wind Day Contribution**	**Average High Wind Day Contribution**	**Highest Contribution($\mu g/m^3$)**	
	Percentage Contribution	**Percentage Contribution**	**Low Wind Day**	**High Wind Day**
Roads & Trackout	**63.7%**	**13.5%**	**73.6**	**42.7**
Freeway	0.4%	0.2%	0.7	0.4
Primary Roads	43.6%	9.3%	44.8	33.3
Secondary Roads	7.5%	1.5%	6.9	1.5
Trackout	12.1%	2.5%	21.2	7.5
Agricultural Tillage	**0.4%**	**NA**	**0.2**	**NA**
Windblown Dust	**NA**	**76.7%**	**NA**	**290.1**
Agricultural Fields	NA	21.3%	NA	**84.9**
Alluvial Channels	NA	14.9%	NA	**79.5**
Construction	NA	3.5%	NA	**14.0**
Industrial	NA	7.3%	NA	**33.6**
Disturbed Areas	NA	5.2%	NA	**25.9**
Stockpiles	NA	3.6%	NA	**12.6**
Vacant Lots	NA	20.9%	NA	**39.6**

Note: Bold concentrations exceed the 5 $\mu g/m^3$ threshold for significant sources.

In Table 4.2.2, the modeled contributions for each of the source categories are given for the 2006 attainment case. These percentages are similar to the 2002 case, but with several significant differences. For example, the windblown contribution decreases from 77% to 59% from 2002 to 2006.

Table 4.2.2 Salt River Study Area Source Category Contributions to Ambient PM_{10} Concentrations for the 2006 Attainment Case		
Source Category	**Average Low Wind Day Contribution**	**Average High Wind Day Contribution**
	Percentage Contribution	**Percentage Contribution**
Industrial Sources	**29.7%**	**12.1%**
Point Source Emissions	4.4%	3.1%
Area Emissions	25.2%	8.9%
Construction	**5.2%**	**1.8%**
Area Sources	**7.1%**	**2.1%**
Unpaved Parking Lots	0.5%	0.6%
Unpaved Shoulders	6.6%	1.5%
Roads & Trackout	**58.0%**	**24.7%**
Freeway	0.9%	0.4%
Primary Roads	48.3%	21.6%
Secondary Roads	6.8%	1.9%
Trackout	2.0%	0.7%
Agricultural Tillage	**0.1%**	**NA**
Windblown Dust	**NA**	**59.4%**
Agricultural Fields	NA	8.9%
Alluvial Channels	NA	15.4%
Construction	NA	4.2%
Industrial	NA	6.7%
Disturbed Areas	NA	10.1%
Stockpiles	NA	5.9%
Vacant Lots	NA	8.4%