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Assessment of Qualification for Treatment under the Arizona Natural and Exceptional Events Policy for the High Particulate (PM₁₀) Concentration Events in the Phoenix Area on April 16, 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 Monday, April 14, 2008, ADEQ air quality forecasters were monitoring a potential wind-blown dust event for the middle part of the work week. A PM₁₀ Health Watch was issued for the Phoenix Metro area for Tuesday, April 15, as strong winds capable of producing blowing dust were expected to occur late in the day on Tuesday. At the time the forecast was issued on Monday, forecasters were considering extending the PM₁₀ Health Watch through Wednesday as the timing of the high winds was not certain. Ultimately, the PM₁₀ Health Watch was allowed to expire on Tuesday, April 15. While “occasional periods of blowing dust” were forecast for West Valley locations for Wednesday, April 16th, winds were not expected to remain strong enough throughout the day to cause an exceedance of the PM₁₀ health standard in Phoenix. The forecasts/advisories satisfy the requirement in 40 CFR 51.930(a)(1).

The forecast for April 16th mentioned the possibility for strong winds capable of producing occasional periods of wind-blown dust. Particulate pollution in the form of wind-blown dust was forecast to be in the mid-moderate range of the Air Quality Index (AQI) for Wednesday, April 16th. During the late afternoon to early evening hours of April 16th, strong and gusty westerly winds generated blowing dust in

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 PM₁₀ Areas” (see “References”).

The initialization of the 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 were reported between the 12:00 p.m. and 7:00 p.m. hours at several Phoenix area monitoring locations. In addition, trained weather spotters at the Goodyear Airport NWS station reported several hours of blowing dust during the event. Due to the spatial variability of PM sources both within and outside of the Phoenix urban core, the PM₁₀ 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 PM₁₀ monitor readings for the monitors examined in this report:

Monitor (Operator/Type)	AQS ID	24-hr Avg PM ₁₀	1-hr Max PM ₁₀	Max Time	Flag**
PHOENIX METRO AREA					
West 43 rd Ave (MC/TEOM)	04-013-4009*	155	639	1400	RJ
South Phoenix (MC/TEOM)	04-013-4003*	105	277	1800	None
Durango Complex (MC/TEOM)	04-013-9812*	85	238	1400	None
Greenwood (MC/TEOM)	04-013-3010*	70	144	1400	None
Higley (MC/TEOM)	04-013-4006*	61	108	2000	None
West Phoenix (MC/TEOM)	04-013-0019*	69	146	2000	None
Central Phoenix (MC/TEOM)	04-013-3002*	69	123	1400	None
Coyote Lakes (MC/TEOM)	04-013-4014*	62	122	1200	None

* EPA Air Quality System Identification Number

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

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

The preliminary findings from this analysis were presented at 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).

Assessment under the Technical Criteria Document (TCD)

1. Properly qualify and validate the air quality measurement to be flagged. As this was not a filter sampling date (1-in-6 run day), only data from the continuous analyzers were examined. The air quality monitoring data were reviewed by the agency responsible for operation of the monitor. All hourly PM₁₀ readings from the West 43rd Ave. monitoring site were valid for April 16th. Audits of the analyzers revealed operations were within acceptable tolerance. No local sources were reported as significantly contributing to the air quality episode. Exceedances of the NAAQS were recorded at the West 43rd 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 16th. Strong westerly winds were occurring in the Phoenix area due to a low pressure system approaching from the west with a cold front situated over Arizona. The plot of hourly PM₁₀ concentration and wind data in the upper right corner of Figure 1 confirms the nearly identical timing of elevated PM₁₀ and strong wind gusts at 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 PM₁₀ 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 PM₁₀ 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 PM₁₀ 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 16, 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 PM₁₀ concentrations may be characterized as unusual as described in “Impact of

Exceptional Events’ ‘Unusual Winds’ on PM₁₀ Concentrations” (see “References”).

4. Examine the meteorological conditions before and during the event. The 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 12:00 p.m., when several stations reported gusty winds that approached 30 mph. This timing corresponds to the onset of elevated PM₁₀ concentrations recorded at the West 43rd Ave. monitoring site, which remained elevated through the afternoon hours until winds decreased to below 20 mph.

5. Perform a qualitative attribution to emission source(s). All evidence indicates the elevated PM₁₀ concentrations in the Phoenix area can be attributed to soil emissions that were transported over portions of the Phoenix Metro area in Maricopa County. No source specific emission allocation is possible based on the data available for analysis. The hourly concentration data do not show any significant source other than the wind-blown dust event occurring on April 16, 2008. Observational reports of blowing dust by trained weather spotters in portions of the Phoenix Metro area is further proof that the elevated PM₁₀ concentrations were attributed to soil emissions transported by high wind gusts. These reports, as well as visual evidence of reduced visibility (Figure 1), provide proof that the elevated PM₁₀ concentrations in Phoenix 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 PM₁₀ event on April 16, 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 reading 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).

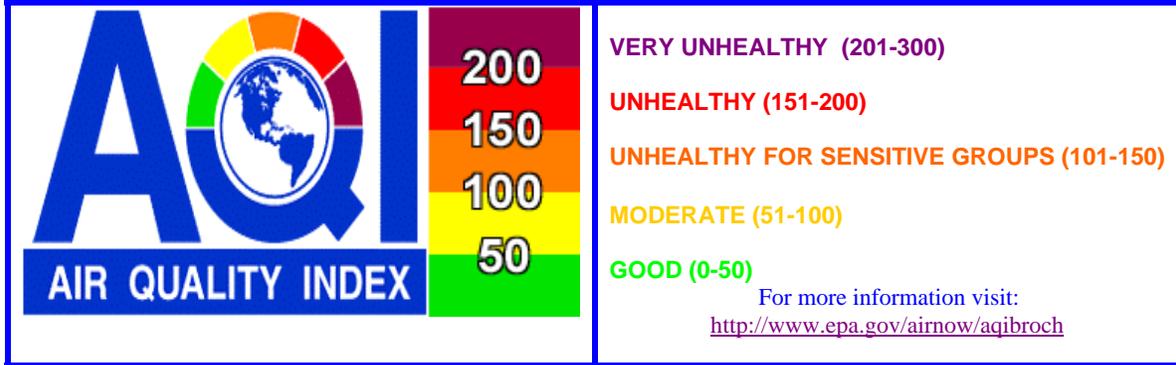
Arizona Department of Environmental Quality (ADEQ), *Technical Criteria Document for Determination of Natural Exceptional Events for Particulate Matter Equal to or Less Than Ten Microns in Aerodynamic Diameter (PM₁₀)* (May 31, 2000).

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 PM₁₀ Concentrations* (October 14, 2009).

Arizona Department of Environmental Quality (ADEQ), *High Wind Exceptional Events and Control Measures for PM₁₀ 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).



NEW!!! CLICK HERE FOR UPDATED 2008 OZONE SEASON STATS NEW!!!
AIR QUALITY FORECAST FOR TUESDAY, APRIL 15, 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 <u>SUN 04/13/2008</u>	TODAY <u>MON 04/14/2008</u>	TOMORROW <u>TUE 04/15/2008</u>	EXTENDED <u>WED 04/16/2008</u>
NOTICES (*SEE BELOW FOR DETAILS)	NONE	NONE	PM-10 HEALTH WATCH	PM-10 HEALTH WATCH EXTENSION POSSIBLE
AIR POLLUTANT	Highest AQI Reading/Site (Preliminary data only)			
O3*	48 QUEEN VALLEY & TONTO NAT'L MON	87 MODERATE	54 MODERATE	49 GOOD
CO*	13 GREENWOOD, PHX SUPERSITE, & WEST INDIAN SCHOOL	12 GOOD	09 GOOD	05 GOOD
PM-10*	49 DURANGO	50 GOOD	94 MODERATE	90 MODERATE
PM-2.5*	52 DURANGO	40 GOOD	46 GOOD	38 GOOD

* O3 = Ozone CO = Carbon Monoxide PM-10 = Particles 10 microns & smaller PM-2.5 = Particles smaller than 2.5 microns

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

Health message for Monday, Apr 14: Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.

Health message for Tuesday, Apr 15: Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.

Synopsis and Discussion

A PM-10 HEALTH WATCH HAS BEEN ISSUED FOR TUESDAY APRIL 15

The mid-latitude storm track will remain active at relatively low latitudes for this time of year and produce roller coaster type weather and air pollutant concentrations over the Phoenix area for the foreseeable future. The first in another series of strong troughs and dry cold fronts from the northwest will again cause a big increase in pressure gradient/height contour winds over the local forecast area by early Tuesday that may persist thru most of Wednesday. Afternoon temperatures in the lower 90's along with sunny skies will allow the predicted mixing depth of nearly 10K' to be realized; momentum from winds in the 30-40 mph range at that altitude will be able to mix to the surface after the noon hour. Areas of disturbed/destabilized soil will contribute to areas of blowing dust – especially over the west Valley. For this reason a PM-10 (coarse particle) Health Watch has been issued for Tuesday as a precaution for those with heart or lung disease (who may want to remain indoors). -Reith

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 SUNDAY, APRIL 13, 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)	53	45	
Blue Point	45	38	
Buckeye	53	45	
Casa Grande (Pinal County)	57	48	
Cave Creek	51	43	
Central Phoenix	53	45	
Combs School (Pinal County)	NOT AVBL	NOT AVBL	NOT AVBL
Dysart	48	41	
Falcon Field	52	44	
Fountain Hills	51	43	
Glendale	52	44	
Humboldt Mountain	55	47	
Maricopa (Pinal County)	56	47	
North Phoenix	40	34	
Phoenix Supersite	55	47	
Pinal Air Park (Pinal County)	53	45	
Pinnacle Peak	50	42	
Queen Valley (Pinal County)	57	48	
Rio Verde	51	43	
South Phoenix	54	46	
South Scottsdale	49	42	
Tempe	56	47	
Tonto Nat'l Mon. (Gila County)	57	48	
West Chandler	54	46	
West Phoenix	56	47	
Yuma (Yuma County)	52	44	

CO (CARBON MONOXIDE)

SITE NAME	MAX 8-HR VALUE (PPM)	MAX AQI	AQI COLOR CODE
Central Phoenix	0.8	09	
Greenwood	1.1	13	
Phoenix Supersite	1.1	13	
West Indian School	1.1	13	
West Phoenix	0.8	09	

PM-10 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (ug/m3)	MAX AQI	AQI COLOR CODE
Buckeye	41	38	
Central Phoenix	26	24	
Combs School(Pinal County)	NOT AVBL	NOT AVBL	NOT AVBL
Coyote Lakes	20	19	
Durango	53	49	
Greenwood	33	31	
Higley	42	39	
Maricopa (Pinal County)	48	44	
Phoenix Supersite	21	19	
South Phoenix	39	36	
West Forty Third	44	41	
West Phoenix	31	29	

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	16.0	52	
Dysart	2.6	08	
Estrella Mountain Park	7.0	23	
Phoenix Supersite	10.1	33	
Vehicle Emissions Lab	5.3	17	
West Phoenix	9.1	30	

LOCAL AIR POLLUTANTS IN DETAIL



O3 (OZONE):

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

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

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

Unit of measurement – Parts per billion (ppb).

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

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

CO (CARBON MONOXIDE):

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

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

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

Unit of measurement – Parts per million (ppm).

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

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

PM-10 & PM-2.5 (PARTICLES):

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

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

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

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

Averaging interval – 24 hours (midnight to midnight).

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

{Updated 08/14/2007}



ADEQ AIR POLLUTION HEALTH WATCH ISSUANCE NOTICE

Issuance Date and Time: Monday, April 14, 2008 11:00 a.m.

Valid for Date(s): Tuesday, April 15, 2008

Pollutant: COARSE PARTICLES (PM-10)

Message: Blowing and suspended dust due to strong and gusty winds may cause concentrations of coarse particles to approach unhealthy levels late Tuesday.

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 520-770-3172
Joe Paul 602-771-2363
Bryan Paris 602/771-7665

CKR 12/06/2007



**MARICOPA COUNTY
 DUST CONTROL ACTION FORECAST
 ISSUED MONDAY, APRIL 14, 2008**

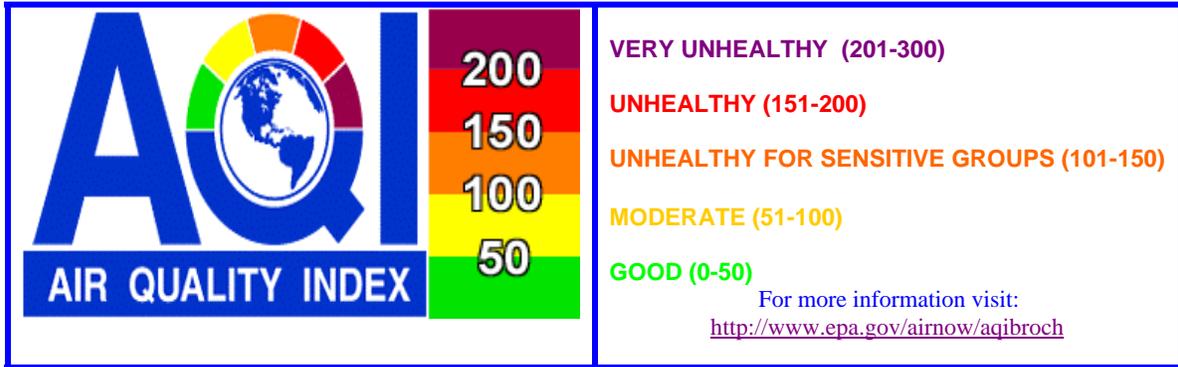
Three-day weather outlook:

Another deep upper level trough and dry surface cold front will approach and then arrive over the local forecast area late Tuesday and Wednesday. This will result in another prolonged bout of strong and gusty pre-and post-frontal winds. There will be an increasing risk of periodic blowing dust – especially over the west Valley – by Tuesday afternoon and continuing thru Wednesday along with a MODERATE risk of unhealthy levels of PM-10.

R I S K F A C T O R S

	<u>WINDS</u>	+	<u>STAGNATION</u>	=	<u>RISK LEVEL</u>
Day #1: Tue 04/15/2008	Southwesterly 15-25 mph with gusts near 35 mph by afternoon.		Rather stagnant during the morning hours ending by afternoon.		MODERATE
Day #2: Wed 04/16/2008	Southwest to westerly 15-25 mph with gusts over 30 mph much of the day.		Little if any stagnation expected.		MODERATE
Day #3: Thu 04/17/2008	Northerly 10-20 mph with gusts to 25 mph decreasing by afternoon.		Little if any stagnation expected.		LOW

The Maricopa County Dust Control Action Forecast is issued to assist in the planning of work activities to help reduce dust pollution. To review the complete air quality forecast for the Phoenix metropolitan area and the health effects of air pollution, please see ADEQ's Air Quality Forecast at <http://www.azdeq.gov/environ/air/ozone/ensemble.pdf>, or call 602-771-2367 for recorded forecast information.



NEW!!! CLICK HERE FOR UPDATED 2008 OZONE SEASON STATS NEW!!!
AIR QUALITY FORECAST FOR WEDNESDAY, APRIL 16, 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 <u>MON 04/14/2008</u>	TODAY <u>TUE 04/15/2008</u>	TOMORROW <u>WED 04/16/2008</u>	EXTENDED <u>THU 04/17/2008</u>
NOTICES (*SEE BELOW FOR DETAILS)	NONE	PM-10 HEALTH WATCH	NONE	NONE
AIR POLLUTANT	Highest AQI Reading/Site (Preliminary data only)			
O3*	64 CAVE CREEK	54 MODERATE	49 GOOD	58 MODERATE
CO*	17 GREENWOOD	9 GOOD	7 GOOD	12 GOOD
PM-10*	55 DURANGO & GREENWOOD	94 MODERATE	75 MODERATE	59 MODERATE
PM-2.5*	65 DURANGO	46 GOOD	45 GOOD	48 GOOD

* O3 = Ozone CO = Carbon Monoxide PM-10 = Particles 10 microns & smaller PM-2.5 = Particles smaller than 2.5 microns

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"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 15: Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.

Health message for Wednesday, Apr 16: Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.

Synopsis and Discussion

A PM10 HEALTH WATCH REMAINS IN EFFECT FOR TODAY, TUESDAY, APRIL 15, 2008

Happy Tax Day! It's going to be another warm one this afternoon with desert temperatures reaching the mid 90s. Monday's official high in Phoenix... 98°F! Temperatures will cool considerably the next few days as a strong dry front pushes through the region. Winds will increase later this afternoon to around 20-25 mph, lasting through the early hours on Wednesday, then decreasing to around 10-20 mph out of the west Wednesday afternoon. High pressure returns Thursday through early Saturday, producing much calmer winds and warmer temperatures, around 90°F Friday and Saturday. Yet another system is slated to impact the forecast area Saturday and Sunday. In the mean time, expect to see occasional periods of blowing dust on Tuesday and Wednesday where there is loose soil, especially in the west Valley near freshly plowed ag fields. Particulates will likely disperse late Wednesday, dropping back to the lower part of the "Moderate" category as winds begin to decrease. Ozone will also drop into the "Good" range thanks to the winds which will break up the invisible plume and scatter the precursors. It, too should rebound Thursday and Friday under high pressure. Check back tomorrow for more. 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 14, 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)	56	47	Green
Blue Point	46	39	Green
Buckeye	53	45	Green
Casa Grande (Pinal County)	59	50	Green
Cave Creek	64	64	Yellow
Central Phoenix	57	48	Green
Dysart	56	47	Green
Falcon Field	54	46	Green
Fountain Hills	57	48	Green
Glendale	60	51	Yellow
Humboldt Mountain	59	50	Green
Maricopa (Pinal County)	58	49	Green
North Phoenix	NOT AVBL	NOT AVBL	NOT AVBL
Phoenix Supersite	61	54	Yellow
Pinal Air Park (Pinal County)	56	47	Green
Pinnacle Peak	55	47	Green
Queen Creek (Pinal County)	NOT AVBL	NOT AVBL	NOT AVBL
Queen Valley (Pinal County)	59	50	Green
Rio Verde	59	50	Green
South Phoenix	59	50	Green
South Scottsdale	56	47	Green
Tempe	60	51	Yellow
Tonto Nat'l Mon. (Gila County)	59	50	Green
West Chandler	55	47	Green

West Phoenix	NOT AVBL	NOT AVBL	NOT AVBL
Yuma (Yuma County)	55	47	

CO (CARBON MONOXIDE)

SITE NAME	MAX 8-HR VALUE (PPM)	MAX AQI	AQI COLOR CODE
Central Phoenix	0.4	5	
Greenwood	1.5	17	
Phoenix Supersite	1.4	16	
West Indian School	1.3	15	
West Phoenix	1.3	15	

PM-10 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (ug/m3)	MAX AQI	AQI COLOR CODE
Buckeye	54.7	50	
Central Phoenix	38.5	35	
Combs School (Pinal County)	NOT AVBL	NOT AVBL	NOT AVBL
Coyote Lakes	38.8	35	
Durango	63.1	55	
Greenwood	62.2	55	
Higley	53.1	48	
Maricopa (Pinal County)	56.8	51	
Phoenix Supersite	40.0	36	
South Phoenix	57.1	52	
West Forty Third	61.0	54	
West Phoenix	50.5	46	

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	21.2	65	
Dysart	3.8	12	
Estrella Mountain Park	6.5	21	
Phoenix Supersite	13.1	43	
Vehicle Emissions Lab	6.1	20	
West Phoenix	12.2	40	

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}



**MARICOPA COUNTY
DUST CONTROL ACTION FORECAST
ISSUED TUESDAY, APRIL 15, 2008**

Three-day weather outlook:

Strong winds are expected later Tuesday afternoon as a dry cold front pushes through the region. This front will also drop afternoon desert temperatures to the mid 80s Wednesday and Thursday, warming to the low 90s once again by Saturday. Winds will continue through the night Tuesday into early Wednesday, dropping to around 10 to 20 mph Wednesday afternoon. The risk of exceeding the 24-hr PM10 health standard in Phoenix will be "Low" Wednesday through Friday as remnant winds clear the area out.

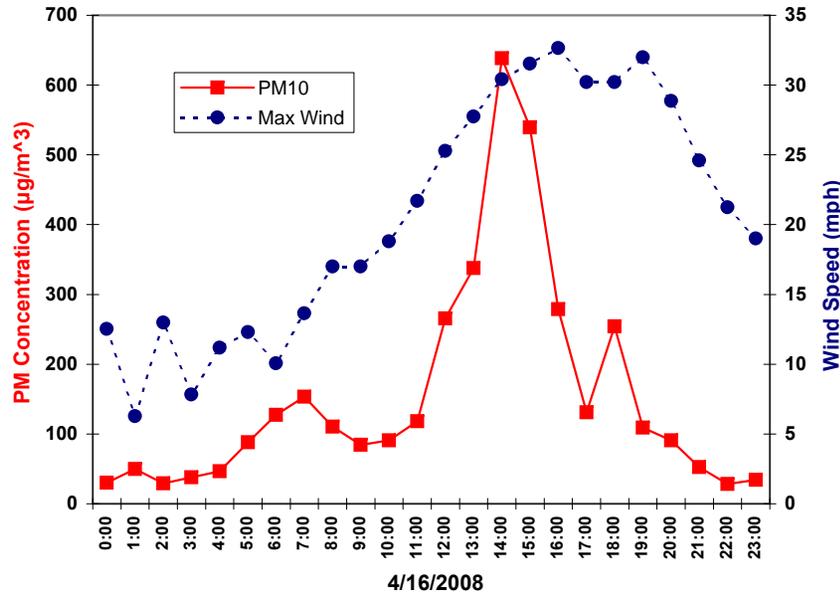
R I S K F A C T O R S

	<u>WINDS</u>	+	<u>STAGNATION</u>	=	<u>RISK LEVEL</u>
Day #1: Wed 04/16/2008	Southwest winds 5 to 15 mph are expected early, becoming 10 to 20 mph by the afternoon.		Slightly stagnant conditions are expected early with improvement by the afternoon.		LOW
Day #2: Thu 04/17/2008	North winds 5 to 15 mph are expected early, becoming northwest 5 to 10 mph during the afternoon		Slightly stagnant conditions are expected early with some improvement by the afternoon.		LOW
Day #3: Fri 04/18/2008	Light northeast winds are expected early, becoming southwest by the afternoon.		Somewhat stagnant conditions are expected early with improvement by the afternoon.		LOW

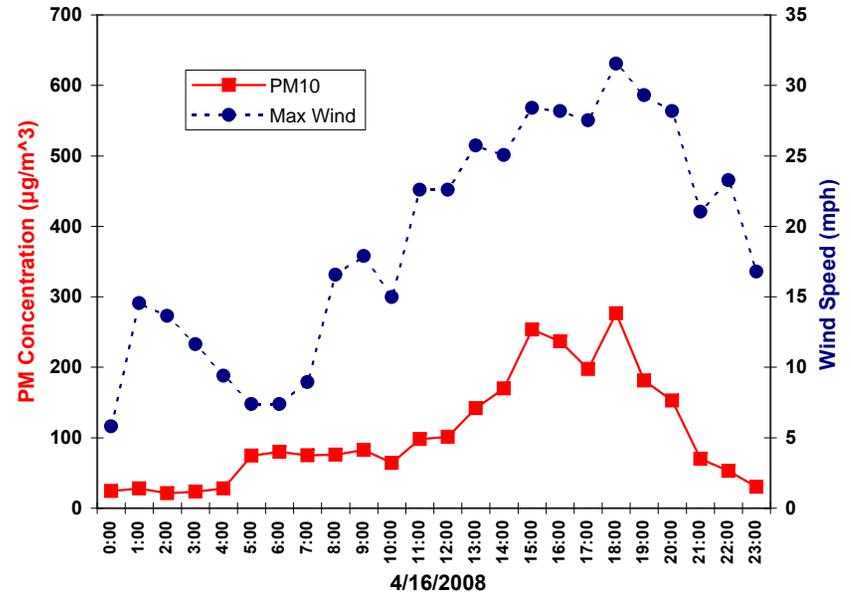
To review the complete air quality forecast for the Phoenix metropolitan area visit www.azdeq.gov or call 602-771-2367 for recorded forecast information.

04/16/2008 - ADDITIONAL GRAPHS

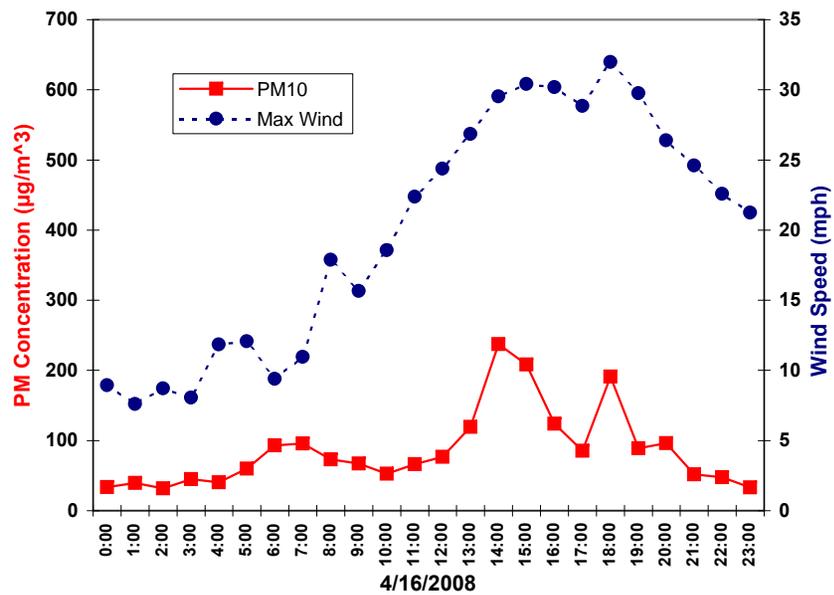
West 43rd - PM 10 vs. Wind Speed



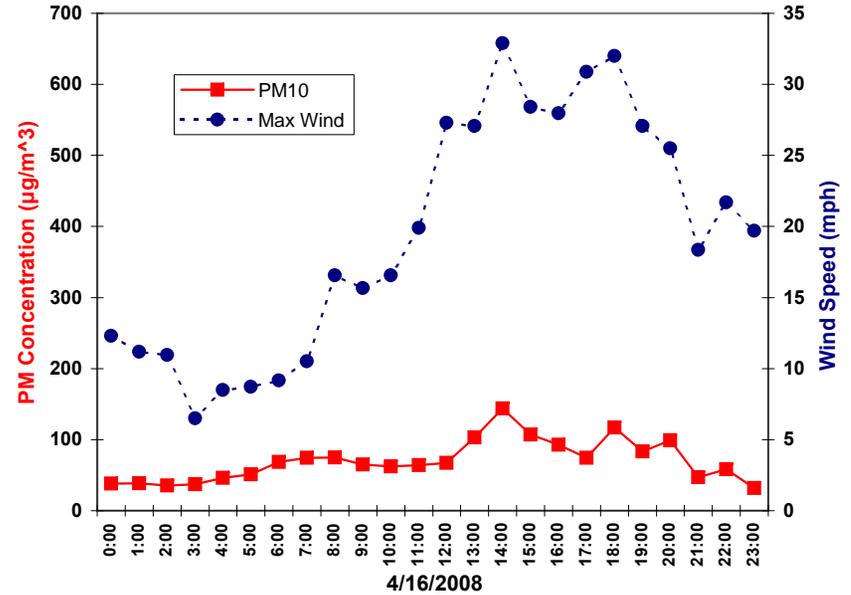
South Phoenix - PM 10 vs. Wind Speed



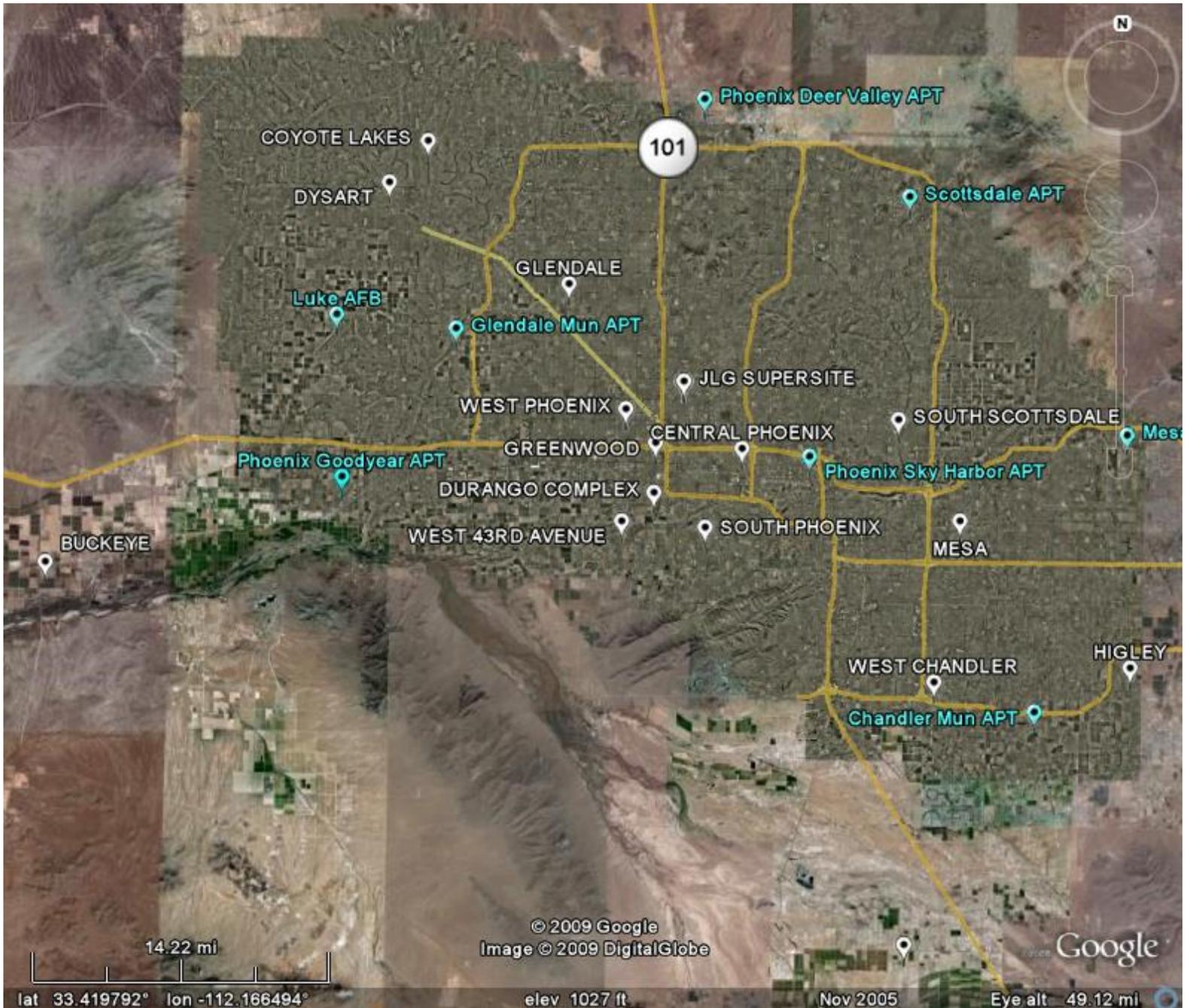
Durango - PM 10 vs. Wind Speed



Greenwood - PM 10 vs. Wind Speed

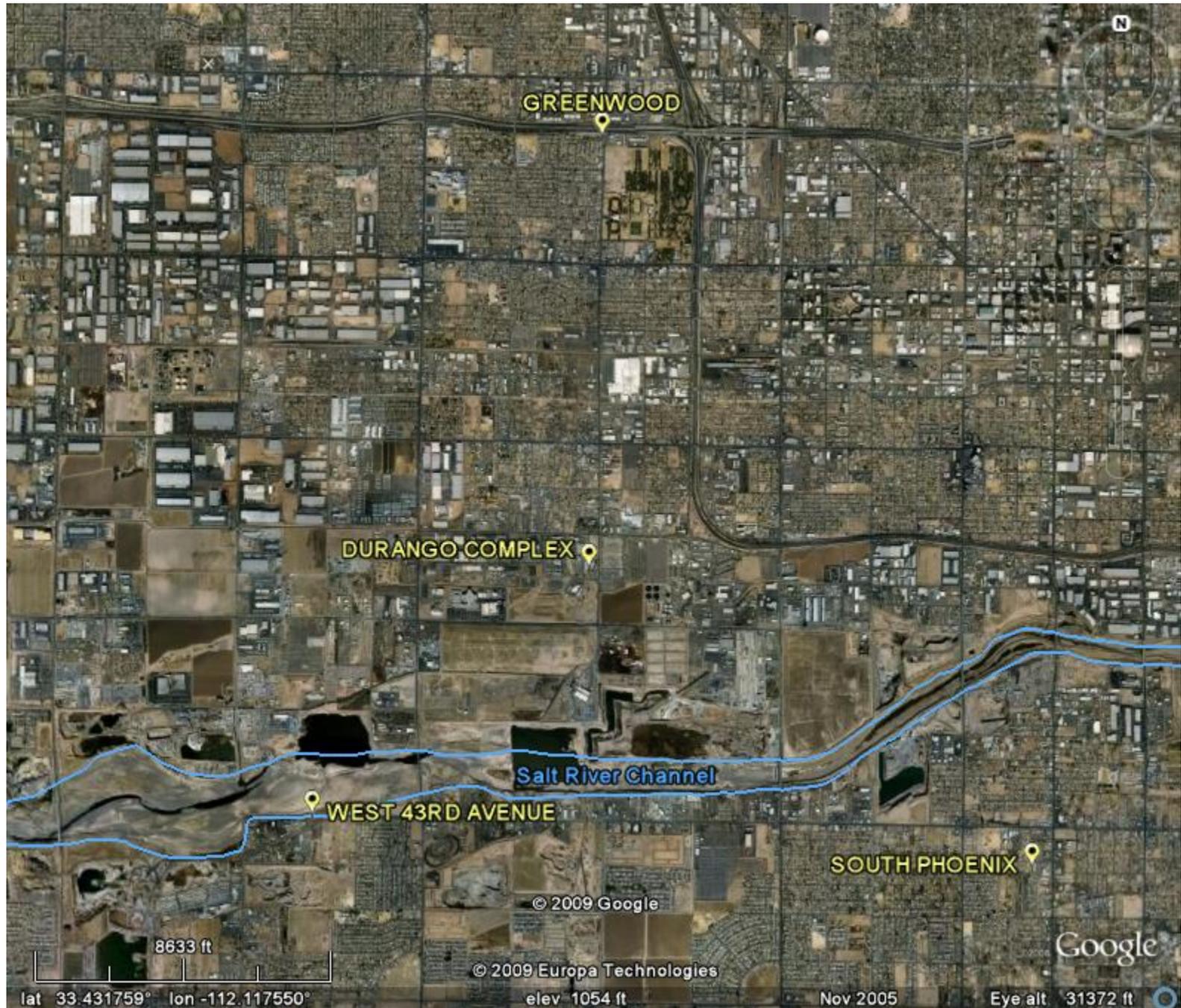


Phoenix Area PM₁₀ and Meteorological Monitors



Source: US EPA, ADEQ, & Google Earth

Salt River Area PM₁₀ and Meteorological Monitors



Source: US EPA, ADEQ, & Google Earth

CHAPTER 4: OVERVIEW OF PM₁₀ CONTROL MEASURES

4.1 INTRODUCTION

Chapter 1.2.2 of this SIP ("Regulatory History of the Metropolitan Maricopa PM₁₀ Nonattainment Area") notes that on July 25, 2002, EPA approved the Maricopa Serious PM₁₀ 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 PM₁₀ 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 PM₁₀ 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.

Source Category	Average Low Wind Day Contribution	Average High Wind Day Contribution	Highest Contribution(µg/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

Source Category	Average Low Wind Day Contribution	Average High Wind Day Contribution	Highest Contribution(µg/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 µg/m³ 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.

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%