Maricopa County Environmental Services Department

Air Quality Division

2001 Network Review

Acknowledgments

The Maricopa County Air Monitoring Unit continued to strive for excellence in maintaining the Maricopa County Air Monitoring Network. The network changed this year with the closing of two sites, the opening of one new one, and the relocation of another. The Air Monitoring Unit continues to be under the direct supervision of Warren Kosters (Air Quality Program Coordinator). Two new technicians were hired this year (Del Hawkins and Steve Thomas). The network review will highlight some of these changes and provide a summary of all the air monitoring data collected for 2001. We would like to thank all of the air monitoring staff for the excellent job they did in maintaining our air-monitoring network. They are (upper left) Larry Seals, Steve Thomas, Gary Ensminger, Bill Searle, Dale Foster, Ben Davis, and Trixie Torrez, (lower left) Del Hawkins, Joe Hameed, and Marilyn McGilberry

Steve Peplau
Division Manager
Air Quality Division

Warren Kosters
Air Quality Program Coordinator
Air Quality Division

Table of Contents

Abstract

The 2001 Annual Air Monitoring Network Review is being submitted by the Maricopa County Environmental Services Department (MCESD), Air Quality Division to the United States Environmental Protection Agency (USEPA) Region 9. The network review evaluates the adequacy of the monitoring network with respect to the monitoring objectives and spatial scales. This is required by 40 CFR Part 58, Appendix F. The National Air Monitoring Stations (NAMS) and State and Local Air Monitoring Stations (SLAMS) are evaluated for their location and density. Data summaries, procedural changes, special projects, and new air monitoring sites are also included in the review.

Network Design

In general, the following six basic monitoring objectives and five measuring scales were used to evaluate the network design (see Table -1, -2). Additional items such as safety, security, accessibility, geographic location, and fiscal and personnel resources were also used during the network evaluation.

Site Monitoring Objectives

Table -1

1. Determine highest concentrations expected to occur in the area covered by the network
2. Determine representative concentrations in areas of high population density
3. Determine the impact on ambient pollution levels of significant sources or source categories
4. Determine general background concentration levels
5. Determine the extent of regional pollutant transport from populated areas, with regards to the secondary standards (such as visibility impairment and effects on vegetation)
6. Determine the welfare-related impacts in more rural and remote areas

When establishing a new monitoring site or reviewing an old site, one must link monitoring objectives to the physical location of the site. This can be done by correctly matching the spatial scale represented by the sample of monitored air with the spatial scale most appropriate for the monitoring objective of the station. Thus, spatial scale represents the physical dimensions of the air parcel nearest the monitor, where pollutant concentrations are reasonably uniform (40 CFR Part 58, App. D) (see Table -1, -2). Combining the spatial scale with the monitoring objective gives the how and why air monitoring sites are located in particular areas.

Spatial Measurement Scale

Table –2

Name	**Define parameter (radius)**
Micro Scale	0 to 100 meters
Middle Scale	100 to 500 meters
Neighborhood Scale	0.5 to 4 kilometers
Urban Scale	4 to 50 kilometers
Regional Scale	10 to 100s of kilometers

Since it is physically and fiscally impossible to monitor the air quality everywhere within the county, a representative sample of the air quality must be obtained. This sample is based on the monitoring objectives and

the spatial measurement scale. For example, there might be several locations where the highest concentration of carbon monoxide is expected to occur. However, only one or two sites may be established to represent all of the high concentration areas. The same reasoning can be used for all criteria pollutants. This does not mean that the number of monitoring sites is fixed. To the contrary, the network must be dynamic enough to maintain a current representative sample of the air quality.

The underlying purpose of this review, other than legal obligation, is to refine the monitoring network to ensure that the citizens of Maricopa County are provided with quality and relevant pollution data. The data is used to determine the attainment status for the valley. Mathematical models are created using the data to determine the effectiveness of control programs on pollution levels. Also, other models are created to determine the possible locations of new sites and help in pollution forecasts. One of the programs where the data is being used is providing the public with real time pollution data.

Projects and Network Changes

Air quality issues such as ozone attainment, the new 8-hr ozone standard, and issuing permits for new power plants are diverse and controversial subjects for the citizens of Maricopa County. Since no policies can be made without quality data, the Maricopa County Air Monitoring Unit strives to provide the most reliable and relevant air monitoring data to the public. The following is a list of projects and changes that have occurred during the year 2001.

I. Maricopa County continues to run part of its carbon monoxide (CO) monitors and ozone (O_3) monitors on a seasonal basis (see Table -3). Having part of the network operating seasonally allows us to upgrade instruments, perform preventive maintenance, expand the life expectancy of the instruments, reduce replacement costs, and better utilize our QA and QC resources on the remaining instruments.

Seasonal Monitors
Table -3

Seasonal Carbon Monoxide monitors (Sept. 1- Apr. 1)	**Seasonal Ozone monitors (Apr. 1 – Oct. 1)**
1. Glendale Site	1. Cave Creek
2. Maryvale Site	2. Emergency Management Site
3. Mesa Site	3. Falcon Field Site
4. North Phoenix Site	4. Glendale Site
5. South Phoenix Site	5. Humboldt Mountain Site
6. South Scottsdale Site	6. Maryvale Site
7. Surprise Site	7. Rio Verde Site
8. Tempe Site	8. Surprise Site
9. West Chandler Site	9. Tempe Site
	10. West Chandler Site

II. The Emergency Management and the Lake Pleasant sites were shutdown. The Cave Creek site was brought on line. These actions were part of the modification of the ozone network for the new eight-hour standard (see ADDITIONAL COMMENTS).

III. MCESD will request the Mesa site's (04-013-1003) ozone monitor be changed from year round to seasonal monitoring. This would be in conjunction with the reevaluation of the ozone network. The monitor was determined to be redundant, but was not shutdown due to possible public pressures.

IV. MCESD has been participating in the Joint Air Toxic Assessment Project (JATAP) in conjunction with ADEQ and Phoenix area Urban Tribal Communities. We have been providing space at our existing sites (South Phoenix) for Hazardous Air Pollutants (HAP) monitoring. We have assisted in building emissions inventory and determining new monitoring sites.

V. MCESD continues its residential wood-burning program. This program restricts residential wood burning and encourages alternate forms of transportation during periods of forecasted high carbon monoxide or particulates.

VI. The MCESD, ADEQ, USEPA, and the City of Phoenix continued to pursue possible solutions for keeping a particulate monitor in the general area of the current Salt River site (see ADDITIONAL COMMENTS).

VII. Maricopa County has improved its dissemination of pollution data to the public by posting our one-hour continuous data on an interactive map located on our website http://www.maricopa.gov/envsvc/AIR/AIRDAY/air_map.asp. MCESD continues to participate in the EPA Ozone Mapping website (http://www.epa.gov/airnow) (see ADDITIONAL COMMENTS).

VIII. The Higley Site was established in the southeast valley for possible replacement for the Chandler Site. The Chandler Site may remain because of future freeway construction (see ADDITIONAL COMMENTS). The particulate sampler at the Gilbert site was shutdown as of 12/31/01 (see ADDITIONAL COMMENTS).

IX. MCESD continues to evaluate its PM-10 network for possible additional sites for determining the impact on ambient pollution levels of significant sources or source categories. The significant sources would include industry and agriculture. Resource allocation, both financial and personnel, continue to remain a obstacle in establishing new monitoring sites

Network Summary

CRITERIA AIR POLLUTANTS

The following discussion focuses on Maricopa County's Ambient Air Monitoring Network relative to the criteria pollutants and monitoring objectives of the National Air Monitoring Stations (NAMS), State and Local Air Monitoring Stations (SLAMS), and Special Purpose Monitors (SPM).

The MCESD Air Monitoring Unit maintained twenty-seven ambient air monitoring sites throughout Maricopa County (Table -5). The history of these sites range from 1961 (Central Phoenix) to 2001 (Cave Creek). Land use patterns around these sites vary from heavy populated urban areas to sparsely populated rural settings. Site elevation ranges from near the Salt River channel to the top of Humboldt Mountain. MCESD monitors for the following "criteria pollutants": Carbon Monoxide, Ozone, Particulates, Nitrogen Dioxide, and Sulfur Dioxide (Table -6). MCESD no longer monitors for lead (Pb).

Maricopa County Ambient Air Monitoring Sites

(Table -5)

Sites	Site Abbr.	AIRS Code
Blue Point	BP	04-013-9702
Cave Creek	CC	04-013-4008
Chandler	CH	04-013-0021
Central Phoenix	CP	04-013-3002
Durango Complex	DC	04-013-9812
Emergency Mgt.	EM	04-013-3004
Falcon Field	FF	04-013-1010
Fountain Hills	FH	04-013-9704
Gilbert	GI	04-013-3005
Glendale	GL	04-013-2001
Greenwood	GR	04-013-3010
Higley	HI	04-013-4006
Humboldt Mountain	HM	04-013-9508
Lake Pleasant	LP	04-013-9805

Sites	Site Abbr.	AIRS Code
Maryvale	MA	04-013-3006
Mesa	ME	04-013-1003
Mount Ord (ADEQ)	MO	04-013-9701
North Phoenix	NP	04-013-1004
Pinnacle Peak	PP	04-013-2005
Rio Verde	RV	04-013-9706
Salt River	SA	04-013-3007
South Phoenix	SP	04-013-4003
South Scottsdale	SS	04-013-3003
Surprise	SU	04-013-4007
Tempe	TE	04-013-4005
West Chandler	WC	04-013-4004
W. Indian School Rd.	WI	04-013-0016
West Phoenix	WP	04-013-0019

Criteria Pollutant by Sites

(Table -6)

O3		CO		PM-10		NO2	SO2
BP (n)	ME (s)	CP (n)	WI (n)	CH (n)	SA (sp)	CP (n)	CP (n)
CC (sp)	NP (s)	GL (s)	WP (n)	CP (n)	SP (n)	GR (s)	SS (n)
CP (n)	PP (s)	GR (s)	SU (sp)	**DC** (s)	SS (n)	SS (n)	
EM (s)	RV (s)	TE (sp)		HI (sp)	SU (sp)	TE (sp)	
FF (s)	SP (s)	MA (s)		**GI (s)**	WC (s)	WP (s)	
FH (n)	SS (n)	ME (s)		GL (n)	WP (n)		
GL (s)	SU (sp)	NP (s)		GR (s)		(n) = NAMS	
HM (s)	TE (sp)	SP (s)		MA (s)		(s) = SLAMS	
LP (s)	WC (s)	SS (s)		ME (s)		(sp) = Special Purpose	
MA (s)	WP (s)	WC (s)		NP (s)		**Bold = changes to site**	
						Underline = changes to site are pending	

Criteria pollutants are found all over the United States. These pollutants can injure health, harm the environment and cause property damage. EPA designates these pollutants criteria air pollutants because the agency has regulated them by first developing health-based criteria (science-based guidelines) as the basis for setting permissible levels. One set of limits (primary standard) protects against adverse health effects; another set of limits (secondary standard) is intended to prevent environmental and property damage. A geographic area that meets or surpasses the primary standard is called an "attainment area"; areas that don't meet the primary standard are called "non-attainment areas". Although EPA has been regulating criteria air pollutants since the 1970 Clean Air Act was passed, many urban areas are classified as non-attainment for at least one criteria air pollutant. It has been estimated that about 121 million Americans live in non-attainment areas.

The following are general summations of the 2001 Criteria Pollutant Data (see Table -7, -8):

EXCEEDANCE SUMMARY 2001

(Table -7)

Carbon Monoxide (CO)	No Exceedances of the 1hr or 8hr NAAQS standard were logged		
Ozone(O3)	No Exceedances of 1- Hour NAAQS were logged. **See table -11 for proposed 8-Hour NAAQS summary**		
Nitrogen Dioxide (NO2)	No Exceedances of NAAQS were logged		
Sulfur Dioxide (SO2)	No Exceedances of NAAQS were logged		
Particulates (PM-10)	**There were six days where at least one monitor exceeded the 24 hr. (>150 ug/m3) standard:**		
	Site	Date	Value
	DC	10/16/01	189.1 ug/m3
	HI	10/16/01	175.9 ug/m3
	SA	5/25/01	275.5 ug/m3
	SA	9/10/01	172.7 ug/m3
	SA	9/28/01	170.0 ug/m3
	SA	10/16/01	280.9 ug/m3
	SA	10/22/01	184.8 ug/m3
	SA	12/27/01	157.6 ug/m3
	Two sites exceeded the PM-10 Annual standard (less than or equal to 50 ug/m3)		
	Site	Value	
	DC	58 ug/m3	
	SA	94 ug/m3	

DATA COMPLETENESS 2001 – ALL SITES

(Table -8)

	Actual amount of data collected	Number of Scheduled Samples	Data Completeness * (collected/available)
Carbon Monoxide	80,522	82,272	97.9%
Ozone	119,070	124,248	95.8%
PM-10	962	976	98.6%
PM-10 (continuous)	7,696	8,760	87.9%
Nitrogen Dioxide	40,463	43,800	92.4%
Sulfur Dioxide	16,591	17,520	94.7%
Grand Total	**265,304**	**277,576**	**95.6%**

Minimum data completeness is 75%

AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

(Table -9)

Pollutant	Averaging Time	Primary Standard	Secondary Standard
Carbon Monoxide (CO)	1-hr	35 PPM	
	8-hr	9 PPM	
Ozone (O_3)	1-hr	0.12 PPM	0.12 PPM
	8-hr	0.08 PPM	0.08 PPM
Nitrogen Dioxide (NO_2)	Annual	0.05 PPM	0.05 PPM
Particulate Matter (PM-10)	24-hr	150 $\mu g/m^3$	150 $\mu g/m^3$
	Annual	50 $\mu g/m^3$	50 $\mu g/m^3$
Sulfur Dioxide (SO_2)	3-hr	---	0.5 PPM
	24-hr	0.14 PPM	
	Annual	0.03 PPM	
Lead (Pb)	Quarterly	1.5 $\mu g/m^3$	1.5 $\mu g/m^3$

CARBON MONOXIDE (CO)

During 2001, thirteen CO monitors were reported as operational to the USEPA Aerometric Information and Retrieval System (AIRS). Three of the monitors were classified as NAMS, eight as SLAMS, and two reported as SPM (Table -6). For Calendar Year 2001, no exceedances of the CO 1-hour standard were recorded at any MCESD monitoring sites (see Table -7, -9). The following is the 2001 data summary for 1-hour carbon monoxide at Maricopa County monitoring sites (Table -10).

2001 1-HOUR CARBON MONOXIDE SUMMARY

(Table -10)

Site	CO 1-HR AVG. MAX. (PPM) Date	CO 1-HR AVG. 2^{ND} High (PPM) Date	Number of Exceedances	Number of Samples
Central Phoenix	6.0 12/20/01	5.8 10/19/01	0	8556
Glendale	4.7 12/12/01	4.7 12/13/01	0	5021
Greenwood	7.0 01/04/01	6.9 02/05/01	0	8548
Maryvale	9.0 01/01/01	7.5 12/19/01	0	5008
Mesa	4.6 12/20/01	3.8 11/16/01	0	5006
North Phoenix	5.2 12/19/01	4.7 12/20/01	0	4908
South Phoenix	6.8 12/7/01	6.3 12/19/01	0	5027
South Scottsdale	4.5 12/18/01	4.4 12/20/01	0	4954
Surprise	2.6 10/25/01	2.5 11/03/01	0	5673
Tempe	4.3 01/08/01	4.2 10/25/01	0	5723
West Chandler	3.3 12/17/01	3.1 01/22/01	0	4929
W. Indian School	8.0 01/01/01	7.7 01/05/01	0	8567
West Phoenix	8.4 12/19/01	8.2 12/14/01	0	8558

For Calendar Year 2001, no exceedances of the CO 8-hour standard were recorded at any MCESD monitoring site (see Table -7, -9,). The following is the 2001 data summary for 8-hour average carbon monoxide at Maricopa County monitoring sites.

2001 8-HOUR CARBON MONOXIDE SUMMARY
(Table -11)

Site	CO 8–HR AVG. MAX (PPM) Date	CO 8–HR AVG. 2^{ND} High (PPM) Date	Number of Exceedances
Central Phoenix	4.8 01/01/01	4.2 01/06/01	0
Glendale	3.1 12/29/01	2.8 12/07/01	0
Greenwood	5.2 01/01/01	4.6 10/20/01	0
Maryvale	7.6 01/01/01	5.2 12/19/01	0
Mesa	2.9 01/07/01	2.6 12/29/01	0
North Phoenix	2.5 12/20/01	2.5 12/21/01	0
South Phoenix	4.5 01/01/01	3.4 12/19/01	0
South Scottsdale	3.2 01/06/01	3.1 12/19/01	0
Surprise	1.2 01/10/01	1.0 01/09/01	0
Tempe	3.2 12/21/01	3.0 12/29/01	0
West Chandler	2.2 12/18/01	2.1 11/17/01	0
W. Indian School	6.8 01/01/01	6.5 01/06/01	0
West Phoenix	7.5 01/01/01	6.5 01/06/01	0

Carbon Monoxide is the most widely distributed and most commonly occurring air pollutant. Total emissions of CO to the atmosphere exceed all other pollutants combined, on a weight basis. Fortunately, CO does not persist in the atmosphere, but is quickly converted to Carbon Dioxide (CO_2). Carbon monoxide can reach dangerous levels in very localized areas or hotspots such as heavily traveled intersections or city streets. In addition, CO has been implicated in ozone formation. Most people are familiar with carbon monoxide and are aware that automobiles produce this deadly odorless and colorless gas. In Maricopa County, more than 70% of all the manmade CO comes from vehicle emissions. In fact, this gas is produced almost anytime something is burned. All substances that are living (plants, animals) or that were once living (wood, coal, oil, gasoline) are composed of carbon compounds. If these substances are burned in the presence of sufficient oxygen, the carbon is converted to carbon dioxide gas (CO_2). If, as is often the case, not enough oxygen is present, carbon monoxide gas is produced. For example, high concentrations of carbon monoxide can be found in cigarette smoke.

Carbon monoxide's danger lies in the extremely strong affinity that hemoglobin has for it. Hemoglobin, the special oxygen-transporting material in the red blood cell, has approximately 200 times stronger affinity for CO than for oxygen. Therefore, if both CO and O_2 are present the bonding between the CO and hemoglobin will prevent the O_2 from exchanging with your body. This puts a heavy burden on people with heart disease and can aggravate angina, but even healthy people can suffer from harmful side effects from CO. In 2000 Maricopa County achieved its fourth year of compliance with the eight-hour carbon monoxide standard. However, the urbanized area of Maricopa County currently remains in serious non-attainment for carbon monoxide. The Maricopa Association of Governments (MAG) submitted a Revised MAG 1999 Serious Area CO Plan to the USEPA in March 2001. MAG is also preparing a maintenance plan for submission to the USEPA, so that Maricopa County can be re-designated an attainment area for the eight-hour CO standard.

OZONE (O_3)

During 2001, twenty-one ozone monitors were reported as operational in USEPA Aerometric Information and Retrieval System (AIRS). Four of the monitors were identified as NAMS, thirteen were identified as SLAMS, and three were identified as a Special Purpose Monitor (SPM) (Table -6).

For Calendar Year 2001, no exceedances of the ozone 1-hour average standard were recorded at Maricopa County NAMS / SLAMS monitoring sites (Table -7, -8). The following is the 2001 data summary for the 1-hour average ozone at Maricopa County monitoring sites (Table -12).

2001 ONE HOUR OZONE SUMMARY

(Table -12)

Site	Max. (PPM) Date	2ND High (PPM) Date	3RD High (PPM) Date	4TH High (PPM) Date	# of Exceed	Samples
Blue Point	.111 08/15/01	.104 08/17/01	.093 08/18/01	.093 06/21/01	0	8529
# Cave Creek	.112 08/10/01	.100 08/17/01	.096 08/06/01	.092 08/25/01	0	# 2153
Central Phoenix	.091 08/11/01	.091 08/06/01	.090 08/17/01	.090 08/10/01	0	8486
# Emergency Mgt.	.073 05/22/01	.072 04/18/01	.072 05/08/01	.072 05/12/01	0	# 1444
Falcon Field	.111 08/15/01	.100 08/19/01	.097 08/17/01	.095 06/22/01	0	5046
Fountain Hills	.110 08/17/01	.106 08/15/01	.098 08/18/01	.097 06/09/01	0	8633
Glendale	.116 08/06/01	.099 08/02/01	.098 08/11/01	.098 07/12/01	0	5045
Humboldt Mt.	.098 08/17/01	.096 08/10/01	.096 06/05/01	.096 08/16/01	0	5042
# Lake Pleasant	.085 07/03/01	.083 07/02/01	.082 07/10/01	.080 06/05/01	0	# 2578
Maryvale	.097 08/11/01	.091 08/15/01	.089 07/02/01	.089 08/06/01	0	5008
Mesa	.093 08/11/01	.092 08/06/01	.088 08/17/01	.084 08/15/01	0	8114
Mt Ord (ADEQ)	.102 08/17/01	.089 08/20/01	.089 07/26/01	.089 06/21/01	0	3286
North Phoenix	.110 08/06/01	.101 08/10/01	.098 07/02/01	.097 08/11/01	0	8586
Pinnacle Peak	.107 08/10/01	.103 08/06/01	.102 08/17/01	.100 08/09/01	0	8549
Rio Verde	.102 08/17/01	.100 07/26/01	.099 07/01/01	.096 05/30/01	0	5060
South Phoenix	.098 08/11/01	.094 08/15/01	.092 08/06/01	.086 08/17/01	0	8438
South Scottsdale	.102 08/10/01	.101 08/15/01	.094 08/17/01	.092 07/04/01	0	8115
Surprise	.093 08/14/01	.088 08/16/01	.087 08/12/01	.083 08/15/01	0	6114
Tempe	.099 08/05/01	.099 08/11/01	.096 08/06/01	.093 07/04/01	0	7170
West Chandler	.105 08/11/01	.100 08/15/01	.096 08/05/01	.092 08/13/01	0	4951
West Phoenix	.099 08/06/01	.094 08/11/01	.094 07/02/01	.089 08/15/01	0	8184

# Indicates <75% data available

For Calendar Year 2001, there were twelve sites that exceeded the 8-hour primary standard for ozone. The following is the 2001 data summary for 8-hour Ozone at Maricopa County monitoring sites (Table -13).

2001 PROPOSED EIGHT HOUR AVERAGE OZONE SUMMARY
(Table -13)

Site	8-HR MAX (PPM) Date	2ND HIGH (PPM) Date	3RD HIGH (PPM) Date	4TH HIGH (PPM) Date	Number of DAYS > .085
Blue Point	.086 08/15/01	.081 08/17/01	.080 08/18/01	.080 06/22/01	1
Cave Creek	.100 08/10/01	.086 08/06/01	.083 08/17/01	.083 08/09/01	2
Central Phoenix	.079 08/10/01	.077 08/06/01	.076 08/11/01	.076 08/05/01	0
# Emergency Mgt.	.067 05/08/01	.066 05/22/01	.064 05/05/01	.063 05/12/01	0
Falcon Field	.090 08/19/01	.085 08/15/01	.082 08/17/01	.081 06/22/01	2
Fountain Hills	.087 08/17/01	.086 08/09/01	.085 08/15/01	.084 08/05/01	3
Glendale	.092 08/06/01	.085 07/12/01	.080 08/11/01	.078 08/02/01	2
Humboldt Mt.	.088 06/05/01	.087 06/15/01	.085 08/16/01	.085 08/10/01	4
# Lake Pleasant	.077 07/03/01	.074 06/05/01	.073 05/08/01	.073 07/02/01	0
Maryvale	.083 08/11/01	.075 08/ 1/01	.075 08/10/01	.074 07/02/01	0
Mesa	.078 08/06/01	.078 08/11/01	.078 08/19/01	.074 08/16/01	0
Mt Ord (ADEQ)	.082 08/17/01	.080 06/15/01	.078 08/09/01	.077 07/03/01	0
North Phoenix	.094 08/06/01	.088 08/10/01	.086 07/02/01	.086 07/12/01	4
Pinnacle Peak	.095 08/10/01	.089 08/09/01	.087 08/17/01	.086 08/06/01	4
Rio Verde	.084 06/06/01	.084 08/09/01	.083 08/10/01	.083 08/17/01	0
South Phoenix	.086 08/11/01	.083 08/06/01	.080 08/15/01	.077 08//01/01	1
South Scottsdale	.089 08/10/01	.082 08/05/01	.079 08/15/01	.079 08/06/01	1
Surprise	.074 08/11/01	.073 08/14/01	.072 08/16/01	.072 09/09/01	0
Tempe	.089 08/11/01	.083 08/5/01	.082 08/15/01	.080 08/19/01	1
West Chandler	.087 08/11/01	.084 08/15/01	.083 08/05/01	.078 06/16/01	1
West Phoenix	.082 08/06/01	.079 08/11/01	.076 09/09/01	.075 07/12/01	0

# Indicates <75% data available

On July 18, 1997 the Environmental Protection Agency proposed a new ozone standard to ensure a more effective and efficient protection of public health and the environment. The new proposed Primary Standard for Ozone is the three-year average of the 4th high of the forward rolling eight-hour average, which is less than 0.08 PPM. It should be noted that US Supreme Court has recently allowed the USEPA to implement the new ozone standard.

For Calendar Year 2001, there were six sites that violated the 8-hour proposed primary standard for ozone. One of those sites was the Mt. Ord monitoring site, which was operated by ADEQ for the year 2001. Since the site is located in the same place as the old MCESD site, MCESD 1999 data was averaged with ADEQ 2000 and 2001 data to determine whether the site violated the standard. The following is the 2001 data summary for 8-hour Ozone at Maricopa County monitoring sites (Table -14).

PROPOSED 8-HR OZONE STANDARD SUMMARY
(Table -14)

Site	1999 4th high Truncate	2000 4th high Truncate	2001 4th high Truncate	3 Yr. Avg. of 4th high Actual	3 Yr. Avg. of 4th high Truncate PPM
Blue Point	0.088	0.088	0.080	0.085333	0.085
Central Phoenix	0.078	0.077	0.076	0.077	0.077
Falcon Field	0.082	0.075	0.081	0.079333	0.079
Fountain Hills	0.086	0.085	0.084	0.085	0.085
Glendale	0.083	0.081	0.078	0.080667	0.08
Humboldt Mt.	0.088	0.083	0.085	0.085333	0.085
Maryvale	0.080	0.081	0.074	0.078333	0.078
Mesa	0.084	0.076	0.074	0.078	0.078
Mt Ord (ADEQ)	0.088	0.090	0.077	0.085	0.085
North Phoenix	0.084	0.087	0.086	0.085667	0.085
Pinnacle Peak	0.085	0.086	0.086	0.085667	0.085
Rio Verde	0.085	0.086	0.083	0.084667	0.084
South Phoenix	0.075	0.084	0.077	0.078667	0.078
South Scottsdale	0.072	0.080	0.079	0.077	0.077
West Phoenix	0.091	0.081	0.075	0.082333	0.082

■ Indicates violation of standard # Indicates <75% data available

Ozone is a naturally occurring compound in which three oxygen atoms combine together. This is an unstable combination, and ozone is continually going through a natural cycle of being formed and then converting back to the more stable "normal" double oxygen compound. The cycle occurs fairly rapidly. In the stratosphere (6 miles and more above the earth), natural ozone has a beneficial effect of screening out harmful ultraviolet light from the sun. Ozone is a major component of the brown haze smog in our breathing air. Ozone is not directly emitted into the air, but rather forms in a complex reaction that involves heat, sunlight, and a "soup" of toxic pollutants, especially Volatile Organic Compounds (VOC). Some of the most common sources are gasoline vapors, chemical solvents, and combustion products of fuels and consumer products. Ozone is created by sunlight acting on nitrates (NOx) and VOC from motor vehicles and stationary sources, and can be carried hundreds of miles from their origins. Ozone affects the respiratory system in people, animals, and the growth of plants. In 2001 Maricopa County achieved its fifth year of compliance with the one-hour standard. However, the urbanized area of Maricopa County currently retains its designation as a serious non-attainment area. MAG is preparing a maintenance plan for submission to the USEPA to allow Maricopa County to be re-designated to an attainment area for the one-hour ozone standard.

PARTICULATE MATTER (PM-10)

During 2001, sixteen PM-10 monitors were reported as operational in USEPA Aerometric Information and Retrieval System (AIRS). Six monitors were identified as NAMS, seven were identified as SLAMS, and three were identified as SPM (Table -6). The Central Phoenix site (CP) has both a Tapered Element Oscillating Microbalance (TEOM) monitor and a 6-day SSI High Volume Monitor.

For Calendar Year 2001 eight exceedances of the PM-10 24-hour standard and four exceedances of the PM-10 annual standard were recorded at Maricopa County monitoring sites (see Table -7, -9). The following is the 2001 data summary for particulates at Maricopa County monitoring sites (Table -15, -16).

2001 PARTICULATES - PM-10 SUMMARY
(Table -15)

Site	24hr Avg. Max. (μg/m3)	24hr Avg. 2nd High (μg/m3)	Number of Exceedances	Expected Exceedances	Annual Avg. (μg/m3)	Completeness Percentage (%)
Central Phoenix	124	65	0	0	38	98
Chandler	146	99	0	0	48	100
Durango Complex	* 189	142	1	6	* 58	100
Gilbert	121	119	0	0	39	100
Glendale	110	64	0	0	33	95
Greenwood	145	99	0	0	49	97
Higley	* 176	93	1	6	50	97
Maryvale	123	94	0	0	38	97
Mesa	98	55	0	0	30	100
North Phoenix	99	55	0	0	30	100
Salt River	* 281	* 275	6	43	* 94	98
South Phoenix	143	92	0	0	50	98
South Scottsdale	110	53	0	0	33	100
Surprise	107	52	0	0	27	97
West Chandler	134	58	0	0	34	100
West Phoenix	142	91	0	0	43	100

* Indicates an Exceedance of the Standard # Indicates <75% data available

Particulate Matter is the term for solid or liquid particles found in the air. While some particles are large or dark enough to be seen as soot or smoke, others can only be seen through an electron microscope. In 1987 the EPA replaced the TSP (Total Suspended Particulates) air quality standard with a PM-10 (particles measuring less than ten microns) Standard. Research found that PM-10 has the ability to reach the lower regions of the respiratory tract. PM-10 affects the respiratory system in people and animals. Particulates that have high acid levels can cause damage to man-made materials and reduce visibility. In 2000 the urbanized area of Maricopa County remained a serious non-attainment area for particulates. A Revised MAG 1999 Serious Area Particulate Plan was submitted to the USEPA in February 2000. In the April 13, 2000 Federal Register, the USEPA proposed approval of the provisions of the MAG Particulate Plan pertaining to the annual particulate standard. The following is a list of sites that do and do not violate the 24 hr NAAQS for Particulates in 2001 (Table -16). An expected exceedance rate of greater than one indicates a violation of the standard.

2001 24-HR PARTICULATES VIOLATIONS

(Table -16)

Site	1999		2000		2001		Expected Exceedance Rate 24hr Avg.
	Max. 24hr	No. of Exp. Exc.	Max. 24hr	No. of Exp. Exc.	Max. 24hr	No. of Exp. Exc.	
Central Phoenix	85	0	135	0	124	0	< 1.0
Chandler	110	0	202	6.6	146	0	2.2
Durango Complex	148	0	300	11.8	189	6	5.9
Gilbert	90	0	128	0	121	0	< 1.0
Glendale	77	0	122	0	110	0	< 1.0
Greenwood	117	0	164	11.8	145	0	3.9
Higley	NA	NA	# 327	# 8.3	176	6	NA
Maryvale	104	0	173	6.1	123	0	2.0
Mesa	80	0	126	0	98	0	< 1.0
North Phoenix	70	0	114	0	99	0	< 1.0
Salt River	256	51	244	42.7	281	49	47.5
South Phoenix	# 126	0	175	6.1	143	0	2.0
South Scottsdale	87	0	100	0	110	0	< 1.0
Surprise	NA	NA	NA	NA	107	0	NA
West Chandler	151	0	135	0	134	0	< 1.0
West Phoenix	111	0	151	0	142	0	< 1.0

■ Indicates violation of standard # Indicates <75% data available

Fine particles (PM-2.5 particles measuring less than 2.5 microns) are respirable. They enter the body and are deposited in the pulmonary tissues. Epidemiological studies have shown a causal relationship between particulates and excess mortality, aggravation of bronchitis, and small reversible changes in the pulmonary function in children. Currently, Maricopa County does not operate any PM 2.5 monitors. However, the Arizona Department of Environmental Quality (ADEQ) does operate seven PM 2.5 monitors within Maricopa County. They are the Estrella, Palo Verde, Greenwood, Supersite, Tempe Community Center, Desert West, Magnet School Traditional (which was moved to MCESD West Phoenix site June 13, 2000), and ASU West. ADEQ reports the PM-2.5 data in their annual report.

NITROGEN DIOXIDE (NO_2)

All parts of Maricopa County are in attainment for nitrogen dioxide. During 2001, five NO_2 monitors were operational and were reported in USEPA Aerometric Information and Retrieval System (AIRS). Two monitors were designated as NAMS monitors, two designated as SLAMS, and one was designated as SPM (see Table -6).

For Calendar Year 2001, no exceedances of the NO_2 annual standard were recorded at Maricopa County NAMS/SLAMS monitoring sites (see Table -7, -9). The following is the 2001 data summary for Nitrogen Dioxide at Maricopa County monitoring sites (see Table -17).

2001 NITROGEN DIOXIDE

(Table -17)

Site	NO2 Avg. 1-HRMax. (PPM) Date	NO2 Avg. 2ND High (PPM) Date	Number of Samples	Annual Avg. (PPM)	NO2 Avg. 24-HR Max (PPM) Date	NO2 Avg. 2ND High (PPM) Date
Central Phoenix	.094 01/12/01	.088 01/04/01	8389	.028	.060 12/18/01	.055 10/27/01
Greenwood	.118 01/04/01	.097 12/20/01	7941	.037	.072 01/05/01	.070 10/26/01
South Scottsdale	.077 05/08/01	.077 10/19/01	8193	.021	.046 12/19/01	.044 12/18/01
Tempe	.099 11/20/01	.077 11/21/01	7420	.022	.062 11/21/01	.042 12/18/01
West Phoenix	.078 06/29/01	.076 12/29/01	8520	.025	.056 12/20/01	.055 12/19/01

* Indicates an Exceedance of the Standard # Indicates <75% data available

Nitrogen Dioxide belongs to a family of highly reactive gases called nitrogen oxides. These gases form when fuel is burned at high temperatures, and are emitted primarily from automobile exhaust and power plants. Exposure to nitrogen dioxide can irritate the lungs and lower resistance to respiratory infections, particularly in people with existing respiratory illness such as asthma.

SULFUR DIOXIDE (SO_2)

Maricopa County is in attainment for sulfur dioxide. During 2001, two SO_2 monitors were operational and were reported in USEPA Aerometric Information and Retrieval System (AIRS). Both of these monitors were designated NAMS sites (see Table -6). For Calendar Year 2001 no exceedances of the SO_2 annual, 24-hour, or 3-hour standard were recorded at Maricopa County NAMS/SLAMS monitoring sites (see Table -7, -9). The following is the 2001 data summary for Nitrogen Dioxide at Maricopa County monitoring sites (see Table -18).

2001 SULFUR DIOXIDE

(Table -18)

Site	3-HR MAX (PPM) Date	. 24-HR MAX (PPM) Date	Annual Avg. (PPM)	Number of Exceed.	Number Samples
Central Phoenix	.017 12/28/01	.009 12/18/01	.002	0	8405
South Scottsdale	.008 03/05/01	.006 03/10/01	.001	0	8196

* Indicates an Exceedance of the Standard

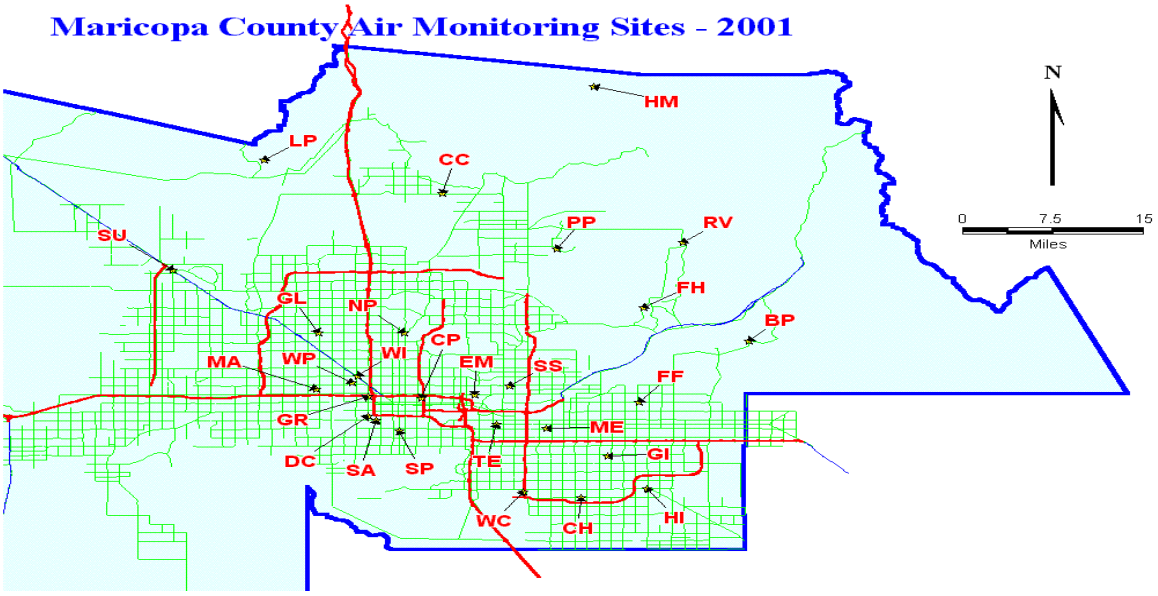
SO_2 is emitted largely from burning high-sulfur coal, oil, and diesel fuel. Because this gas is usually found in association with particulate pollution, as SO_2 is the precursor for fine sulfate particles, separating the health effects of these two pollutants is difficult. Together SO_2 and PM-10 make up a major portion of the pollutant load in many cities, acting separately and in concert to damage public health.

LEAD/TSP

Because of the history of no violations of the standard and declining concentrations Maricopa County discontinued monitoring at its two Lead/TSP monitors, Central Phoenix and the Fairgrounds sites in 1997.

MARICOPA COUNTY AIR MONITORING SITES 2001

For a map of the MCESD Air Monitoring Network go online at:
http://www.maricopa.gov/sbeap/AIR_MONI.HTM



Site Abbr.	Site Name	Site Location
BP	Blue Point	Usery Pass & Bush Highway
CC	Cave Creek	32nd St. & Carefree Highway
CH	Chandler	Pecos & McQueen
CP	Central Phoenix	19th St & Roosevelt
DC	Durango Complex	27th Ave. & Durango St.
EM	Emergency Management	52nd St. & McDowell Rd.
FF	Falcon Field	McKellips & Greenfield
FH	Fountain Hills	Palisades & Fountain Hills Blvd.
GI	Gilbert	Guadalupe & Lindsey Rd.
GL	Glendale	59th Ave & W. Olive
GR	Greenwood	27th Ave. & Interstate 10
HI	Higley Site	Chandler Blvd. & Higley Rd.
HM	Humboldt Mountain	Top of Humboldt Mountain
LP	Lake Pleasant	Desert Outdoor Center
MA	Maryvale	61st Ave. & Encanto
ME	Mesa	Broadway Rd. & Alma School Rd.
NP	North Phoenix	7th Street & Dunlap Avenue
PP	Pinnacle Peak	Pima Rd & Pinnacle Peak
RV	Rio Verde	Forest Rd & Del Ray Ave.
SA	Salt River Site	22nd Ave. & Lower Buckeye
SP	South Phoenix	Central Ave. & Broadway
SS	South Scottsdale	Scottsdale Rd. & Thomas Rd.
SU	Surprise	Reems Rd. and Grand Ave.
TE	Tempe Site	Apache Blvd. & College Ave.
WC	West Chandler	Ellis Rd. & Frye Blvd.
WI	W. Indian School	33rd Ave. & W. Indian School. Rd.
WP	West Phoenix	39th Ave. & Earll Dr.

Site Specifications

Site	Latitude	Longitude	Site Location	AIRS ID
BP	33: 33' 09.263"	-111: 36' 25.465"	Usery Pass & Bush Highway	04-013-9702
CC	33: 49.32'	-112: 1.02'	32nd St. & Carefree Highway	04-013-4008
CH	33: 17' 09.630"	-111: 49' 03.691"	Pecos & McQueen	04-013-0021
CP	33: 27' 29.130"	-112: 02' 28.809"	19th St & Roosevelt	04-013-3002
DC	33: 25' 60"	-112: 07' 12"	27th Ave. & Durango St.	04-013-9812
EM	33: 28' 11.649"	-111: 57' 59.411"	52nd St. & McDowell Rd.	04-013-3004
FF	33: 27' 09.371"	-111:43' 58.462"	McKellips & Greenfield	04-013-1010
FH	33: 36' 39.545"	-111: 40' 16.368"	Palisades & Fountain Hills Blvd.	04-013-9704
GI	33: 21' 38.482"	-111: 46' 07.890"	Guadalupe & Lindsey Rd.	04-013-3005
GL	33: 34' 09.487"	-112: 11' 26.855"	59th Ave & W. Olive	04-013-2001
GR	33: 27' 38.872"	-112: 07' 00.526"	27th Ave. & Interstate 10	04-013-3010
HI	33: 18.47'	-111: 43.33'	Higley Rd. & Chandler Blvd	04-013-4006
HM	33: 58' 53.255"	-111: 47' 50.478"	Top of Humboldt Mountain	04-013-9508
LP	33: 52' 12.175"	-112: 17' 13.330"	Desert Outdoor Center	04-013-9805
MA	33: 28' 28.611"	-112: 11' 32.055"	61st Ave. & Encanto	04-013-3006
ME	33: 24' 37.798"	-111: 51' 51.518"	Broadway Rd. & Alma School Rd.	04-013-1003
NP	33: 33' 37.055"	-112: 03' 55.797"	7th Street & Dunlap Avenue	04-013-1004
PP	33: 42' 43.440"	-111: 51' 05.644"	Pima Rd & Pinnacle Peak	04-013-2005
RV	33: 43' 06.418"	-111: 40' 16.142"	Forest Rd & Del Ray Ave.	04-013-9706
SA	33: 25' 03.788"	-112: 06' 12.194"	22nd Ave. & lower Buckeye	04-013-3007
SP	33: 24' 12.410"	-112: 04' 23.196"	Central Ave. & Broadway	04-013-4003
SS	33: 28' 46.049"	-111: 54' 59.250"	Scottsdale Rd. & Thomas Rd.	04-013-3003
SU	33: 39.18'	-112: 22.65'	Reems Rd & Grand Ave	04-013-4007
TE	33: 24.67'	-111:56.10'	College Ave. & Apache Blvd.	04-013-4005
WC	33: 17.93'	-111: 53.04'	Ellis St. & Frye Rd.	04-013-4004
WI	33: 29' 40.950"	-112: 07' 48.825"	33rd Ave. & Indian School Rd.	04-013-0016
WP	33: 29' 01.280"	-112: 08' 31.463"	39th Ave. & Earll Dr.	04-013-0019

Maricopa County Blue Point Air Monitoring Site

Blue Point (BP) (04-013-9702)
Location: Bush Highway and Usery Pass Road
Spatial Scale: Urban
Monitoring Objective: High Down Wind Maximum Concentrations, category (a)

Site Description*:* The Blue Point site became operational in July 1995 and is located in a Maricopa County Sheriffs Sub-Station in Tonto National Forest. This site represents the maximum ozone concentration, and urban scale down wind transport conditions. This site is located approximately 40 miles east from the Phoenix metropolitan area. Ozone is the only criteria pollutant monitored at this NAMS station. A wind speed and direction instrument was installed at the site.

	1999	2000	2001
Max. 1-hr O3 Avg. (PPM)	0.108	0.108	0.111
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.0922	0.090	.0864
Number of Daily Exceedances >0.08	7	11	1
Three year avg. of 4th High	* 0.087	* 0.088	* .085

*Indicates an Exceedance of the Standard

Cave Creek Site (CC) (04-013-4008)
Location: 32nd St. & Care free Highway
Spatial Scale: Urban
Monitoring Objective: Down Wind Maximum Concentrations

Site Description*:* The Cave Creek site became operational in August 2001 and is located in the Maricopa County Cave Creek Recreation Area (Park Office). This site was chosen through discussions on modifying the ozone network for the new 8-hr ozone standard (see ADDITIONAL COMMENTS). Ozone is the only criteria pollutant monitored at this SLAMS station. Wind speed and direction are also monitored at the site.

	1999	2000	2001
Max. 1-hr O3 Avg. (PPM)	Not operating	Not operating	0.112
Number exceedances 1-hr O3	Not operating	Not operating	0
Max. 8-hr O3 Avg. (PPM)	Not operating	Not operating	.100
Number of Daily Exceedances >0.08	Not operating	Not operating	2
Three year avg. of 4th High	Not operating	Not operating	NA

*Indicates an Exceedance of the Standard


Maricopa County Central Phoenix Air Monitoring Site

Central Phoenix (CP) (04-013-3002)
Location: 1845 E. Roosevelt
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure category (b)

Site Description: The Central Phoenix site has been in existence for over three decades and has provided a long-term historical database with high data recovery. The site is representative of high population exposure (greater than 5000 people per square mile) in the central Phoenix area. This site is a NAMS location for Carbon Monoxide, Ozone, PM-10, SO_2 and NO_2 criteria pollutants. Maricopa County also maintains a continuous (TEOM) monitor for PM10 daily forecasts during the winter season.

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	7.2	5.3	4.8
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O3 Avg. (PPM)	0.1099	0.094	0.091
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.0884	0.088	0.079
Number of Daily Exceedances >0.08	7	1	0
Three year avg. of 4th High	0.078	0.078	0.077
Max. 24-hr PM-10 Avg. (ug/m3)	84.9	135	124
Number exceedances 24-hr PM-10	0	0	0
Annual PM-10 Avg. (ug/m3)	44	46	38
Annual NO2 Avg. (PPM)	0.033	0.031	0.028
Max. 24-hr SO2 Avg. (PPM)	0.019	0.015	0.009
Number of Exceedances	0	0	0
Annual SO2 Avg. (PPM)	0.002	0.002	.002

*Indicates an Exceedance of the Standard

Maricopa County Chandler Air Monitoring Site

Chandler (CH) (04-013-0021)
Location: 1475 E. Pecos
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure, category (b)

Site Description: The Chandler site is located on the property of the City of Chandler's Wastewater Treatment Plant (CWTP). The area immediately surrounding the CWTP was a low population density area; however, it is experiencing rapid residential growth. The site is a NAMS (category b) location for PM10 Particulates. Future air quality data from this location may be threatened since the CWTP has given notice of proposed expansion plans where the platform presently stands. Additionally, the site has become a storage location for street signs, water valves, and other municipal equipment. The site often measures a higher than expected particulate value, which has become more indicative of yard activity than reliable ambient air quality data. The present Arizona State Department of Environmental Quality (ADEQ) site located at Higley is being considered as a replacement.

	1999	2000	2001
Max. 24-hr PM-10 Avg. (ug/m3)	110.0	202	146
Number exceedances 24-hr PM-10	0	1	0
Annual PM-10 Avg. (ug/m3)	* 61	* 57	48

*Indicates an Exceedance of the Standard

Maricopa County Durango Complex Air Monitoring Site

Durango Complex (DC) (04-013-9812)
Location: 2702 AC Esterbrook Blvd
Spatial Scale: Middle
Monitoring Objective: Maximum Concentration

Site Description: This site is located one mile Northwest of the existing Salt River site on the Maricopa County Flood Control District storage yard. Sampling began on January 6,1999 with the intent to replace the Salt River site. However, the USEPA determined that the site is not equivalent to the Salt River site. Particulates (SLAMS PM-10) and wind speed and direction are monitored at the site.

	1999	2000	2001
Max. 24-hr PM-10 Avg. (ug/m3)	147.5	* 300	* 189
Number exceedances 24-hr PM-10	0	2	1
Annual PM-10 Avg. (ug/m3)	* 66	* 70	* 58

*Indicates an exceedance of the Standard

Maricopa County Emergency Management Air Monitoring Site

Emergency Management (EM) (04-013-3004)

Location: 2035 N. 52nd Street
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: Monitoring began at this site in November 1993. This site is located at the Emergency Management Operations Center. Seasonal ozone is the criteria pollutant monitored at this SLAMS site. Through discussions on modifying the ozone network for the new 8-hr ozone standard, the site was shut down as of June 2001.

	1999	2000	2001
Max. 1-hr O3 Avg. (PPM)	0.118	.088	# 0.073
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.097	.078	# 0.067
Number of Daily Exceedances >0.08	7	0	0
Three year avg. of 4th High	0.084	0.079	NA

* Indicates Violation of Standard # Indicates <75 % data available

Maricopa County Falcon Field Mesa Airport Air Monitoring Site

Falcon Field (FF) (04-013-1010)
Location: 4530 E. McKellips
Spatial Scale: Urban
Monitoring Objective: High Population Exposure

Site Description: Ozone is the seasonal SLAMS criteria pollutant monitored at this station. Monitoring began in June of 1989. It is located near an airfield in a fire station with the area having a lower population density. Measurements are representative of ozone concentrations down wind over large portions of an urban area with dimensions of several to 50 or more kilometers.

	1999	2000	2001
Max. 1-hr O3 Avg. (PPM)	0.114	0.097	0.111
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.091	0.083	0.090
Number of Daily Exceedances >0.08	6	0	2
Three year avg. of 4th High	0.082	0.080	.079

* Indicates Violation of Standard

Maricopa County Fountain Hills Air Monitoring Site

Fountain Hills (FH) (04-013-9704)
Location: 16426 E. Palisades
Spatial Scale: Neighborhood
Monitoring Objective: High Down Wind Concentrations, category (b)

Site Description: The site is located at a Fountain Hills fire station. This site became operational in April of 1996. The site monitors ozone (NAMS category b) and wind speed and direction. This site is located approximately 15 miles downwind from the Phoenix metropolitan area. This site represents the high-density population areas on the fringes of the central basin district along the predominant summer/fall daytime wind direction.

	1999	2000	2001
Max. 1-hr O3 Avg. (PPM)	0.114	0.117	0.110
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.091	0.089	0.087
Number of Daily Exceedances >0.08	6	4	3
Three year avg. of 4th High	* 0.086	* 0.085	* 0.085

* Indicates Violation of Standard

Maricopa County Gilbert Air Monitoring Site

Gilbert (GI) (04-013-3005)
Location: 525 N. Lindsay
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: Monitoring began at this site in November 1993 and was designated from Special Purpose Monitor to SLAMS in 1996. The site is located at a City of Gilbert water well pump house. PM-10 is the only criteria pollutant monitored at this site. With two other PM-10 monitors located within 3 miles of the site, the Gilbert site was determined to be redundant. The site will be completely shutdown as of Jan 1, 2002. The EPA and ADEQ were notified and agreed with the shutdown.

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	2.4	#Jan.-Feb. 2.0	Shut off
Number exceedances 8-hr CO	0	0	Shut off
Max. 24-hr PM-10 Avg. (ug/m3)	89.9	128	121
Number exceedances 24-hr PM-10	0	0	0
Annual PM-10 Avg. (ug/m3)	45	49	39

*Indicates an Exceedance of the Standard # Indicates <75% data available


Maricopa County Glendale Air Monitoring Site

Glendale (GL) (04-013-2001)
Location: 6000 W. Olive
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: The Glendale site was established over two decades ago and is located on the grounds of Glendale Community College in a growing residential area. Homes, various strip malls, food establishments, and parks surround the site. Seasonal Carbon Monoxide, Seasonal Ozone, (SLAMS) and PM-10 (NAMS category b) are the criteria pollutants monitored at this station.

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	3.8	3.5	3.1
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O3 Avg. (PPM)	0.108	0.100	0.116
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.083	0.088	0.092
Number of Daily Exceedances >0.08	0	1	2
Three year avg. of 4th High	0.076	0.078	0.080
Max. 24-hr PM-10 Avg. (ug/m3)	76	122	110
Number exceedances 24-hr PM-10	0	0	0
Annual PM-10 Avg. (ug/m3)	36	41	33

* Indicates an Exceedance of the Standard

Maricopa County Greenwood Air Monitoring Site

Greenwood (GR) (04-013-3010)
Location: Southwest Corner of 27th Avenue and I-10
Spatial Scale: Middle Scale
Monitoring Objective: High Population Exposure

Site Description: Monitoring began at this site in December 1993. The station is bordered on the north by Interstate-10, on the west and south by neighborhood homes, and to the east by Greenwood cemetery. Interstate-17 is approximately one mile to the east of the site. Carbon Monoxide, NO_2, and PM-10 are the criteria pollutants monitored at this SLAMS facility.

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	6.7	5.6	5.2
Number exceedances 8-hr CO	0	0	0
Max. 24-hr PM-10 Avg. (ug/m3)	117.3	* 164	145
Number exceedances 24-hr PM-10	0	2	0
Annual PM-10 Avg. (ug/m3)	* 58	* 61	49
Annual NO2 Avg. (PPM)	.040	.036	.037

* Indicates an Exceedance of the Standard


Maricopa County Higley Air Monitoring Site

Higley (HI) (04-013-4006)
Location: 15400 So. Higley Rd. Gilbert AZ
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure with High Concentration

Site Description: Originally, in 1994 ADEQ set up to monitor for background particulate concentrations near the urban limits of Maricopa County. Since then, urban expansion has enveloped the site, so it no longer serves their purpose. MCESD installed a PM-10 HI-VOL in the second quarter of 2000. The data from this site was compared to the Chandler Site and was found to be comparable. If the City of Chandler requests MCESD to remove the Chandler Site it is our intention for the Higley site to replace the Chandler site. The ADEQ removed its DICHOT PM10 sampler 4th quarter 2001.

	1999	2000	2001
Max. 24-hr PM-10 Avg. (ug/m3)	not operating	* 327	* 176
Number exceedances 24-hr PM-10		1	1
Annual PM-10 Avg. (ug/m3)		#72	50

* Indicates an Exceedance of the Standard # Indicates <75% data available

Maricopa County Humboldt Mountain Air Monitoring Site

Humboldt Mountain (HM) (04-013-9508)

Location: Humboldt Mountain Summit
Spatial Scale: Regional
Monitoring Objective: High Downwind Concentrations

Site Description: This site become operational in May 1996. The Humboldt Mountain site is located on Federal Aviation Agency property, in a National Forest Service building, in the Tonto National Forest. This site is located approximately 40 miles north- northeast from the Phoenix metropolitan area at an altitude of 5230 feet. Ozone is the only criteria pollutant that is monitored at this seasonal SLAMS site.

	1999	2000	2001
Max. 1-hr O3 Avg. (PPM)	0.098	0.095	0.098
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.091	0.086	0.088
Number of Daily Exceedances >0.08	7	3	4
Three year avg. of 4th High	* 0.086	* 0.087	* 0.085

* Indicates Violation of Standard

Maricopa County Lake Pleasant Air Monitoring Site

Lake Pleasant (LP) (04-013-9805)
Location: 41402 North 87th Ave.
Spatial Scale: Urban
Monitoring Objective: High Downwind Concentrations

Site Description: This station is located within the boundaries of a Maricopa County Park surrounded by desert wilderness. The site is operating at the Desert Recreational facility as a display along with indigenous reptiles and amphibians. The Lake Pleasant site operated as a seasonal SLAMS site for Ozone. Through discussions on modifying the ozone network for the new 8-hr ozone standard, the site was shut down as of June 2001. Most of the equipment at the site was used to create the Cave Creek site.

	1999	2000	2001
Max. 1-hr O3 Avg. (PPM)	0.095	0.097	# 0.085
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.084	0.090	# 0.077
Number of Daily Exceedances >0.08	0	3	0
Three year avg. of 4th High	#	0.082	NA

* Indicates Violation of Standard # Indicates <75% data available

Maricopa County Maryvale Air Monitoring Site

Maryvale (MA) (04-013-3006)
Location: 6180 W. Encanto Blvd.
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: Monitoring began at this site in November 1993. This monitoring station is located at the Maryvale Phoenix Police Station. The site is surrounded by residential neighborhoods with a City of Phoenix park to the West. Carbon Monoxide, Ozone, (seasonal) and PM-10 are the criteria pollutants monitored at this SLAMS station.

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	7.2	7.0	7.6
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O3 Avg. (PPM)	0.112	0.100	0.097
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.086	0.091	0.083
Number of Daily Exceedances >0.08	2	1	0
Three year Avg. of 4th High	0.081	0.082	0.078
Max. 24-hr PM-10 Avg. (ug/m3)	104.4	173*	123
Number exceedances 24-hr PM-10	0	1	0
Annual PM-10 Avg. (ug/m3)	45	48	38

* Indicates Violation of Standard

Maricopa County Mesa Air Monitoring Site

Mesa (ME) (04-013-1003)
Location: 370 S. Brooks
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: This site is located at Brooks Reservoir at the western edge of the city near the Tempe border. It is centered in an area that is residential, industrial, and a small amount of agricultural. An open field borders the site on the west, commercial development to the north, light industry east and south of the site. Carbon Monoxide, Ozone, and PM-10 are the criteria pollutants monitored at this SLAMS site.

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	4.4	4.3	2.9
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O3 Avg. (PPM)	0.1248	0.102	0.093
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.096	0.089	0.078
Number of Daily Exceedances >0.08	3	1	0
Three year Avg. of 4th High	0.082	0.080	0.078
Max. 24-hr PM-10 Avg. (ug/m3)	80.1	126	98
Number exceedances 24-hr PM-10	0	0	0
Annual PM-10 Avg. (ug/m3)	35	37	30

***** Indicates Violation of Standard


Maricopa County Mt. Ord Air Monitoring Site

Mount Ord (MO)
Location: Mount Ord Summit
Spatial Scale: Regional
Monitoring Objective: Maximum Down Wind Concentration

Site Description: ADEQ has taken over the site as of 1/1/2000. This site became operational in May 1996. The Mount Ord site is located in an U.S. Forest Service building, adjacent to a Class I Wilderness Area, in the Tonto National Forest. This site is located 46 miles downwind (NE) from the Phoenix metropolitan area, at an altitude of 7280 feet. Ozone is the criteria pollutant monitored at this station. MCESD shutdown the site as 01/2000. ADEQ operated their seasonal ozone monitor at the site for the year 2001. The 2001 3-yr avg. of 4th high 8-hr ozone value was calculated with both ADEQ and MCESD data.

	1999	2000 ADEQ	2001 ADEQ
Max. 1-hr O3 Avg. (PPM)	0.103	0.111	0.102
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.094	.091	0.082
Number of Daily Exceedances >0.08	8	9	0
Three year Avg. of 4th High	0.087	* 0.089	* 0.085

* Indicates Violation of Standard

Maricopa County North Phoenix Air Monitoring Site

North Phoenix (NP) (04-013-1004)
Location: 601 E. Butler
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: This site is located in the Sunnyslope area of North Phoenix. Sunnyslope is an old established neighborhood, primarily residential. High-density population surrounds the site. Carbon Monoxide, Ozone, and PM-10 (SLAMS) are monitored at this site, along with temperature inversion.

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	3.5	3.1	2.5
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O3 Avg. (PPM)	0.110	0.107	0.110
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.0884	0.092	0.094
Number of Daily Exceedances >0.08	3	4	4
Three year Avg. of 4th High	* 0.088	* 0.086	* 0.085
Max. 24-hr PM-10 Avg. (ug/m3)	70	114	99
Number exceedances 24-hr PM-10	0	0	0
Annual PM-10 Avg. (ug/m3)	34	37	30

* Indicates Violation of Standard


Maricopa County Pinnacle Peak Air Monitoring Site

Pinnacle Peak (PP) (04-013-2005)
Location: 25000 Windy Walk Way
Spatial Scale: Urban
Monitoring Objective: High Down Wind Concentrations

Site Description: This SLAMS site for ozone is located at a golf course country club and is surrounded by residential homes. It is located in a geographic area of low-density population (less than 2500 people per square mile). In previous years, ozone exceedances have been recorded due to transport of ozone and precursors from more urbanized areas of metro-Phoenix.

	1999	2000	2001
Max. 1-hr O3 Avg. (PPM)	0.119	0.117	0.107
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.0908	0.092	0.095
Number of Daily Exceedances >0.08	4	5	4
Three year Avg. of 4th High	0.084	* 0.085	* 0.085

* Indicates an Exceedance of the Standard


Maricopa County Rio Verde Air Monitoring Site

Rio Verde (RV) (04-013-9704)
Location: N. Forest Rd.
Spatial Scale: Urban
Monitoring Objective: High Downwind Concentrations.

Site description: This seasonal ozone site became operational in spring of 1997. The monitor is located at the fire station / County Sheriff's office sub-station located in a residential area surrounded by the desert of Tonto National forest. The site is eight miles north of the Fountain Hills NAMS station, on the edge of a Class I Wilderness Area.

	1999	2000	2001
Max. 1-hr O3 Avg. (PPM)	0.111	0.117	0.102
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.0931	0.089	0.084
Number of Daily Exceedances >0.08	5	5	0
Three year Avg. of 4th High	NA	NA	0.084

*Indicates an Exceedance of the Standard # Indicates <75% data available


Maricopa County Salt River Air Monitoring Site

Salt River (SA) (04-013-3007)
Location: 3045 S. 22nd Avenue
Spatial Scale: Middle Scale
Monitoring Objectives: Maximum Concentration and the impact of significant sources or source categories on ambient conditions

Site Description: Monitoring began at the Salt site on January 14, 1994. This site is located at a City of Phoenix vehicle maintenance yard in an industrial area. The site has one 6-day SS HIVOL particulate monitor. The main purpose of the monitor is to measure Maximum concentration and to determine the impact on ambient pollution levels of significant sources or source categories. The sources around the site include sand and gravel, metal recycling, pre-cast manufacturing, and paved and unpaved haul road (see ADDITIONAL COMMENTS section).

	1999	2000	2001
Max. 24-hr PM-10 Avg. (ug/m3)	* 256.1	* 244	* 281
Number exceedances 24-hr PM-10	9	6	6
Annual PM-10 Avg. (ug/m3)	* 101	* 101	* 94

*Indicates an Exceedance of the Standard

Maricopa County South Phoenix Air Monitoring Site

South Phoenix (SP) (04-013-4003)
Location: 4732 S. Central
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: The site is at the edge of a high population area, but also borders on a mixture of residential and commercial (retails stores, food establishments, and office parks) land use. The station has two high population areas (> 5000 people per mile^2) north and west of the site. Carbon Monoxide, Ozone, and PM-10 (SLAMS) are the criteria pollutants monitored at this station. The site was reopened October 1999 with a new AIRS code (04-013-4003).

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	4.6	5.9	4.5
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O3 Avg. (PPM)	0.0906	0.102	0.098
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.0774	0.087	0.086
Number of Daily Exceedances >0.08	0	3	1
Three year Avg. of 4th High	0.077	0.078	0.078
Max. 24-hr PM-10 Avg. (ug/m3)	# 126	* 175	143
Number exceedances 24-hr PM-10	0	1	0
Annual PM-10 Avg. (ug/m3)	* 59	* 61	50

* Indicates an Exceedance of the Standard # Indicates <75% data available


Maricopa County South Scottsdale Air Monitoring Site

South Scottsdale (SS) (04-013-3003)
Location: 2857 N. Miller
Spatial Scale: Urban Neighborhood
Monitoring Objective: High Population Exposure, category (b)

Site Description: The South Scottsdale site is located within a City of Scottsdale Fire Station. The area North of the site is defined as high density residential with over 5000 persons per square mile with surrounding residential density of (2500 to 5000 persons per square mile). This site is located 12 miles east of metropolitan Central Phoenix. Carbon Monoxide, (SLAMS) Ozone**,** NO_2, SO_2, and PM-10 (All NAMS) are the criteria pollutants monitored at this station.

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	4.3	3.3	3.2
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O3 Avg. (PPM)	.0897	0.099	0.102
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.077	0.087	0.089
Number of Daily Exceedances >0.08	0	1	1
Three year Avg. of 4th High	0.076	0.077	0.077
Max. 24-hr PM-10 Avg. (ug/m3)	87	100	110
Number exceedances 24-hr PM-10	0	0	0
Annual PM-10 Avg. (ug/m3)	40	40	33
Annual NO2 Avg. (PPM)	0.030	0.030	.021
Max. 24-hr SO2 Avg. (PPM)	0.019	0.018	0.006
Number of Exceedances	0	0	0
Annual SO2 Avg. (PPM)	0.001	0.001	0.001

* Indicates an Exceedance of the Standard

Maricopa County Surprise Air Monitoring Site

Surprise (SU) (04-013-4007)
Location: 18600 N. Reems Rd
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: The site is located in the City of Surprise Fire and Police Station #2. The site is at the edge of a growing population area in the northwest valley. The land use around the site consists of high-density housing, subdivisions of single family homes and light commercial (strip malls). The site started operations November 2000. Carbon Monoxide, Ozone, and PM-10 are the criteria pollutants monitored at this station.

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	Not Operating	# 1.0	1.2
Number exceedances 8-hr CO		0	0
Max. 1-hr O3 Avg. (PPM)	Not Operating	#0.049	0.093
Number exceedances 1-hr O3		0	0
Max. 8-hr O3 Avg. (PPM)	Not Operating	# 0.043	0.074
Number of Daily Exceedances >0.08		0	0
Three year Avg. of 4th High	Not Operating	NA	NA
Max. 24-hr PM-10 Avg. (ug/m3)	Not Operating	#	107
Number exceedances 24-hr PM-10		NA	0
Annual PM-10 Avg. (ug/m3)		#	27

* Indicates an Exceedance of the Standard # Indicates <75% data available

Maricopa County Tempe Air Monitoring Site

Tempe (TE) (04-013-4005)
Location: Between University and Broadway Rd. on College Ave North of Daley Park
Spatial Scale: Neighborhood Scale
Monitoring Objective: High Population Exposure

Site Description: This site is being considered to fill in a spatial gap between the metropolitan Phoenix area and the city of Mesa. Ozone (SPM), Carbon Monoxide (SPM), and Nitrogen Dioxide (SPM) will be monitored at the site.

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	not operating	# 3.7	3.2
Number exceedances 8-hr CO		0	0
Max. 1-hr O3 Avg. (PPM)	not operating	# 0.099	0.099
Number exceedances 1-hr O3		0	0
Max. 8-hr O3 Avg. (PPM)	not operating	# 0.086	0.089
Number of Daily Exceedances >0.08		1	1
Three year Avg. of 4th High	not operating	NA	NA
Annual NO2 Avg. (PPM)	not operating	# 0.022	.022

* Indicates an Exceedance of the Standard # Indicates <75% data available

Maricopa County West Chandler Air Monitoring Site

West Chandler (WC) (04-013-3009) (04-013-4004)
Location: Frye Rd & Ellis
Spatial Scale: Neighborhood Scale
Monitoring Objective: High Population Exposure

Site Description: This site was set up in December 1994 and began monitoring in January 1995. This site was located at the City of Chandler's Fire Station Number three. The Fire Station is located next to major freeway construction with agricultural fields to the west of the site. The site was closed as of May 2000 and reopened in October 2000. The new site is located ½ mile south of the old West Chandler location. Carbon Monoxide, Ozone, and PM-10 are the criteria pollutants that will continue to be monitored at this SLAMS site.

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	2.9	# 2.5	2.2
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O3 Avg. (PPM)	0.0978	# 0.100	0.105
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.0755	# 0.089	0.087
Number of Daily Exceedances >0.08	0	1	1
Three year Avg. of 4th High	0.074	NA	NA
Max. 24-hr PM-10 Avg. (ug/m3)	151	135	134
Number exceedances 24-hr PM-10	0	0	0
Annual PM-10 Avg. (ug/m3)	* 54	44	34

* Indicates an Exceedance of the Standard # Indicates <75% data available

Maricopa County West Indian School Road Air Monitoring Site

West Indian School Rd. (WI) (04-013-0016)
Location: 3315 West Indian School Road
Spatial Scale: Micro-scale,
Monitoring Objective: Maximum Pollutant Concentration and Impact of Significant Sources, category (a)

Site Description: The site is located at the City of Phoenix, Wellness Evaluation Center. This site is used to monitor micro-scale maximum concentrations and is based on high vehicular traffic. The Average Weekday Traffic (AWT) volume past this location on Indian School Road estimates 55,000 vehicles. The site is also in close proximity to Grand Ave. and 35th Ave., which have AWT volumes of about 35,000 vehicles. Carbon Monoxide is monitored at this NAMS site.

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	7.6	6.8	6.8
Number exceedances 8-hr CO	0	0	0

* Indicates an Exceedance of the Standard

Maricopa County West Phoenix Air Monitoring Site

West Phoenix (WP) (04-013-0019)
Location: 3847 W. Earll
Spatial Scale: Neighborhood
Monitoring Objective: High Population Exposure

Site Description: This site became operational in 1984. It is located about one-mile southwest of the West Indian School Road micro-scale CO monitor. The spatial scale for the West Phoenix site is neighborhood. It is located in an area of stable, high population density. Carbon Monoxide, PM-10 (b) (both NAMS category b) with Ozone, NO_2, Delta T (SLAMS) are the criteria pollutants monitored at this site.

	1999	2000	2001
Max. 8-hr CO Avg. (PPM)	7.7	7.4	7.5
Number exceedances 8-hr CO	0	0	0
Max. 1-hr O3 Avg. (PPM)	0.115	0.099	0.099
Number exceedances 1-hr O3	0	0	0
Max. 8-hr O3 Avg. (PPM)	0.0996	0.088	0.082
Number of Daily Exceedances >0.08	7	1	0
Three year Avg. of 4th High	* 0.085	* 0.086	0.082
Max. 24-hr PM-10 Avg. (ug/m3)	110.5	151	142
Number exceedances 24-hr PM-10	0	0	0
Annual PM-10 Avg. (ug/m3)	* 53	* 53	43
Annual NO2 Avg. (PPM)	0.030	0.029	.025

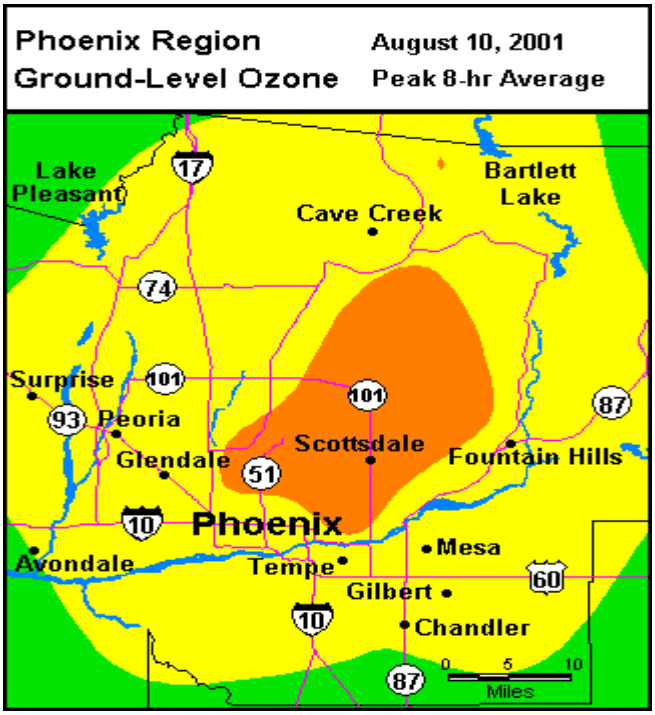
* Indicates an Exceedance of the Standard

ADDITIONAL COMMENTS

EPA Ozone Mapping

One of the exciting programs MCESD participated in this year was the EPA's Environmental Monitoring for Public Access and Community Tracking (EMPACT) program. It is a presidential initiative designed to provide time-relevant environmental information in an easily understood format. One way in which the EMPACT Program provides easier access to pollution data is through the Ozone Mapping Project. This project employs the AIRNOW website http://www.epa.gov/airnow to provide real time air pollution (ozone) maps for major metropolitan areas around the United States, including the Phoenix Metropolitan Area. The goals of the US EPA's AIRNOW website are as follows:

1) Provide real-time air pollution data in an understandable, visual format.
2) Provide information about the public health and environmental effects of air pollution.
3) Provide the public with information about ways in which they can protect their health, and actions they can take to reduce pollution.



Map-1

This website can be used as a tool for which the public can plan their daily activities and limit their exposure to air pollution. One-hour and eight-hour average peak ozone concentration maps (see Map -1) and a real-time eight-hour ozone animation map are provided. Colors on the map indicate different concentrations of ozone pollution. The one-hour average values are given in parts per billion. The eight-hour averages were converted into Air Quality Index (AQI) numbers. The AQI is based on the NAAQS. The index was developed to convert pollution measurements into a common index that the general public can more easily understand. Different colors on the map correspond to different categories of air quality and health impacts (Table -17).

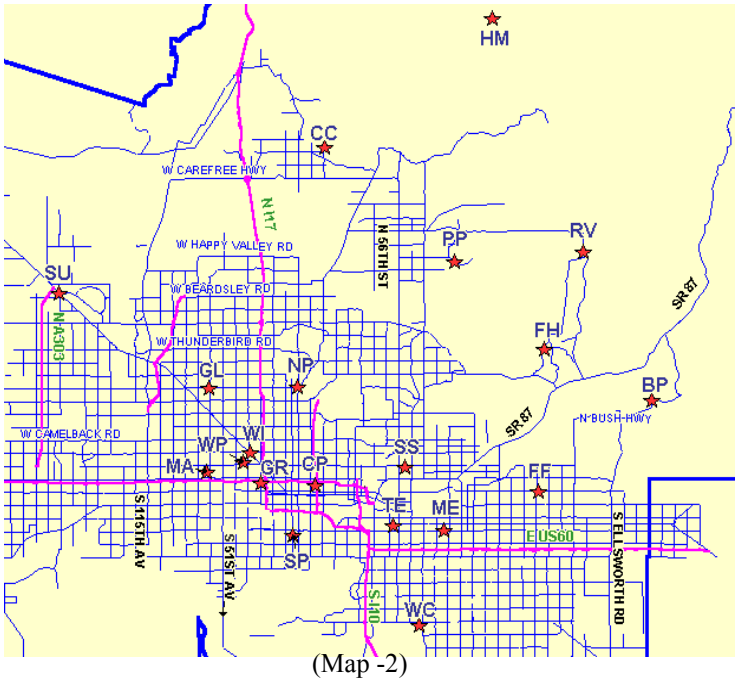
Air Quality Index
(Table -17)

Index	Color	Air Quality	Health Impact
0 - 50	Green	Good	No harmful effects expected.
51 - 100	Yellow	Moderate	Unusually sensitive people should consider limiting prolonged outdoor exertion.
101 - 150	Orange	Unhealthy for Sensitive Groups	Active children & adults, people with respiratory disease (i.e. asthma) should limit prolonged outdoor exertion.
151 - 200	Red	Unhealthy	Everyone should observe caution. Avoid prolonged outdoor exertion
201 - 300	Purple	Very Unhealthy	Avoid all outdoor exertion. Use extreme caution outdoors
301 - 500	Maroon	Hazardous	Everyone should avoid all outdoor exertion.

The animated map is updated every hour from 8am to 8pm seven days a week. Updates to the site will be made during the ozone season (May through October). Archived maps of the 1998, 1999, and 2000 ozone seasons are available. MCESD plans to continue with the project for the 2002 Ozone Season.

Maricopa County's Interactive Pollution Map

In keeping with our mission statement of "Ensuring a Safe and Health Environment" MCESD has brought real-time pollution data on the Internet. All of the MCESD continuous data will be available to the public through an interactive map (see Map –2). The air pollutants that are available include carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, and particulates. All of the values are currently one-hour averages. The information is updated on an hourly basis at half past the hour. Data can be accessed at this web address http://www.maricopa.gov/envsvc/AIR/AIRDAY/air_map.asp.



(Map -2)

One of the major problems in providing "real-time" pollution data to a public medium is providing quality data. This data goes through an automated quality assurance check before it is broadcast however; sometimes-invalid data does make it through. Normal quality assurance checks take between 1-3 months. Consequently, information provided at this site should be used for informational purposes only and should not be relied on as completely accurate. In particular, materials published in the Federal Register take precedence in any discrepancies with those found on this web site

Salt River Air Monitoring Site

The Salt River PM_{10} monitoring site near 19th Avenue and Lower Buckeye Road has recorded violations of the annual and 24hr PM_{10} National Ambient Air Quality Standard (NAAQS) every year of its operation. As a result, the EPA will probably call for a revision to state implementation plan (SIP).

An additional issue is that the monitoring site, which has been located on City of Phoenix property, must be relocated at the end of 2002. The City due to substantial construction on the property has requested removal of the equipment. Efforts to find a suitable replacement site with comparably high PM_{10} concentrations and a comparable industrial emissions mix have been conducted by the Maricopa County Department of Environmental

Salt River Service Center.

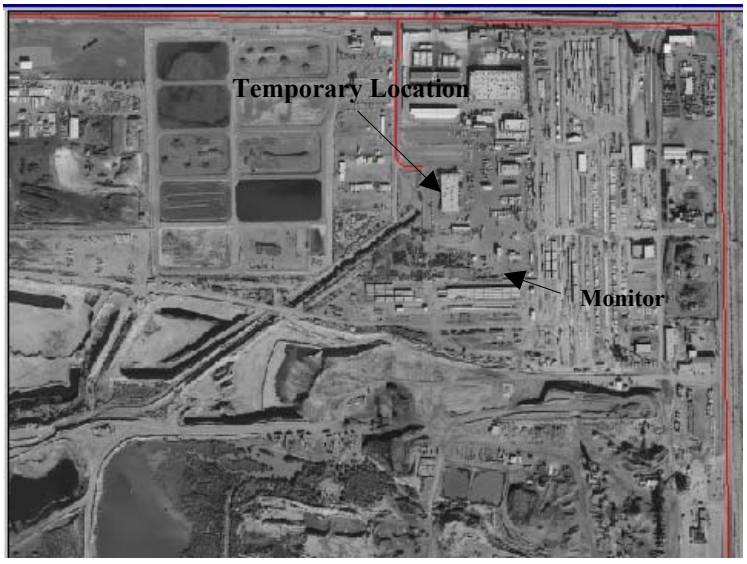


Fig. -1

Services and staff from the Assessment Section of the Air Quality Division of ADEQ with limited success. Two candidate sites (Durango and 43rd Ave) have been identified which are two to three miles away. As part of the SIP demonstration, the ADEQ will conduct an analysis of the PM_{10} concentrations and source attributions for the two alternatives and commit along with MCESD to long-term data collection as a component of the SIP. For the Salt River Study the Salt River monitor will be moved to the top of a building approximately 150 yards northwest of the original site (see Fig. –1). This will allow MCESD to continue to monitor in the area, as an alternative site is determined.

Arizona Department of Environmental Quality (ADEQ)

MCESD continues to hold quarterly meetings with ADEQ. The purpose of these meetings is to maintain the lines of communication between MCESD and ADEQ and help coordinate air monitoring activities within Maricopa County. Subjects discussed this year included providing access to sites for special studies, reevaluation of the ozone network, and the Salt River Monitoring Site Air Quality Study. MCESD and ADEQ have greatly benefited from these meetings and intend to continue them into the year 2002. Through the inter-governmental agreement, MCESD continues to provide ADEQ with electronic access to its air monitoring data. Congruently, ADEQ continues to provide MCESD with access to their air monitoring data.

Reevaluation of Ozone Network

Since the USEPA will soon be implementing the new 8-hr ozone standard, environmental agencies around the Phoenix Metro Area had a workshop on modifying the existing ozone network. ADEQ provided several suggestions on modifying the network to maximize coverage and better utilize resources. Some of the major ideas for the MCESD ozone network are as follows:

1. The Lake Pleasant site should be moved to the Cave Creek area to better monitor ozone formation.
2. The Emergency Management site should be shutdown because it was determined to be redundant.
3. The Mesa ozone monitor should be shutdown because it was determined to be redundant.
4. An ozone monitor should be established in the area around the old Perryville site (west valley).
5. The Roosevelt ozone monitor should be reestablished.
6. An ozone monitor should be established in the Gila Bend area southwest of the Phoenix Metro Area.

MCESD has moved the Lake Pleasant site to The Cave Creek Recreational Area. The Emergency Management has been shutdown. The Mesa Site has a long history and the daily values are published in several newspapers. There might be a public outcry if this data is not available. MCESD will recommend the Mesa Site ozone monitor be changed to a seasonal monitor to help save on resource but still proved data to the public.

Chandler and Higley Sites

The City of Chandler has also informed MCESD that it will be remodeling the area around our Chandler site (04-031-0021). MCESD looked for a new site that is comparable to and in the same general area as the existing site. The Higley ADEQ site was found to have similar land use patterns as Chandler. A particulate monitor was established in May 2000 with the purpose of comparing both sets of data. Since the Chandler Site has a particulate monitor that is designated as NAMS, sufficient data must be collected to make a comprehensive

comparison between the two sites. The remodeling is scheduled to take place in two to four years. Analysis of the data has shown that the Higley Site is equivalent to the Chandler Site. On a side note, MCESD has found out the Chandler Site will be less than a half of a mile (north) of the construction of the Santan Loop 202 (Fig.2). That part of the freeway is scheduled for construction in 2005-2007. With such a large construction project, MCESD believes that the monitor should remain at its current location as long as possible to monitor before, during, and after construction. However if the City of Chandler still needs us to remove the monitor the Higley Site will be used has a replacement site.

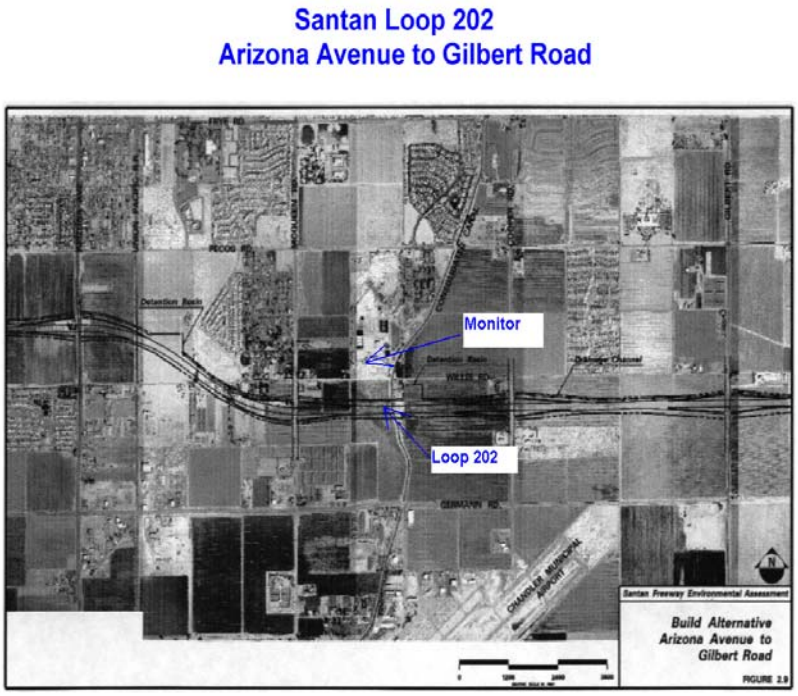


Fig. 2

Gilbert Site

Maricopa County has shut down the Gilbert site as of 12/31/01. The site contained a 6-day PM-10 monitor. The following is a summary of the Gilbert air monitoring particulate data, which operated from 1994 to the present. There has not been an exceedance of the 24-hr PM-10 standard since 7/9/97. Additionally, there has not been an exceedance of the Annual standard since 1995.

The monitor was established at the City of Gilbert Maintenance Facility (near Lindsay Rd. & Guadalupe Rd.) as a State and Local air monitoring site (SLAMS) for particulates. The monitoring objective for the site is high population exposure. The spatial scale is neighborhood. The site was established to monitor the effects of agriculture on nearby population centers. This was achieved because of the large agricultural field just north of the site. However, in 2000-2001 the City of Gilbert started to expand their maintenance facilities around the monitor. The facility has expanded into the farm field to the north of the site. The entire area, including the park to the south, has been or will be scheduled to be developed in the near future. All of the agricultural areas around the monitor have been or will be developed. With the recent and future development projects at and near the site, the monitoring objective of high population exposure for particulates no longer applies to the site.

There are two PM-10 monitors within 5 miles of the Gilbert site. They are the Chandler Site to the southwest and the recently established Higley Site to the southeast. Both of these sites have the same monitoring objectives and spatial scale as the Gilbert Site. Furthermore, both sites are near active agricultural operations. The following is a comparison of the particulate data for the Gilbert Site to the Chandler and Higley sites:

Years	Gilbert	Chandler	Higley
1995 Annual Avg. (ug/m^3)	* 50	* 52	Not Operating
1995 Exceedances of the 24 hr Standard	1	2	
1996 Annual Avg. (ug/m^3)	44	* 62	Not Operating
1996 Exceedances of the 24 hr Standard	0	0	
1997 Annual Avg. (ug/m^3)	48	* 61	Not Operating
1997 Exceedances of the 24 hr Standard	1	1	
1998 Annual Avg. (ug/m^3)	43	45	Not Operating
1998 Exceedances of the 24 hr Standard	0	0	
1999 Annual Avg. (ug/m^3)	45	* 60.9	Not Operating
1999 Exceedances of the 24 hr Standard	0	0	
2000 Annual Avg. (ug/m^3)	49	* 57	# 72
2000 Exceedances of the 24 hr Standard	0	1	1

*** Indicates exceedance of standard Indicates # <75% data available**

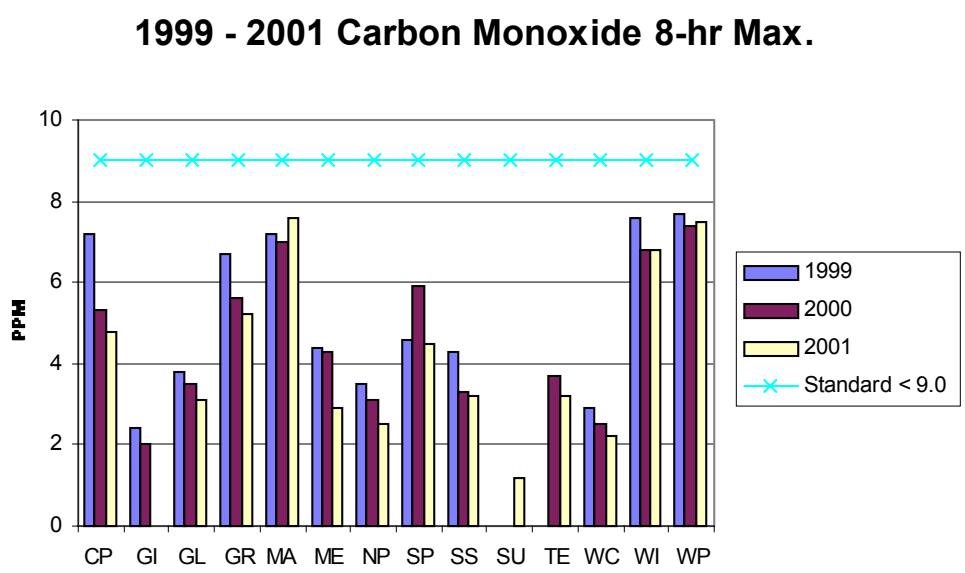
The Chandler Site clearly meets or exceeds the Gilbert Site for the Annual Average and number of exceedances of the 24-hr. standard. The Higley Site also meets or exceeds the Gilbert Site, since the site started operating in mid 2000. Since there are two other monitors with the same monitoring objectives and scales, the Gilbert Site becomes redundant. Additionally, shutting down this site would allow MCESD to use its resources in setting up and maintaining a future particulate site in the South Phoenix area.

POLLUTION TRENDS

The following charts are three-year trends for the criteria pollutants:

Carbon Monoxide

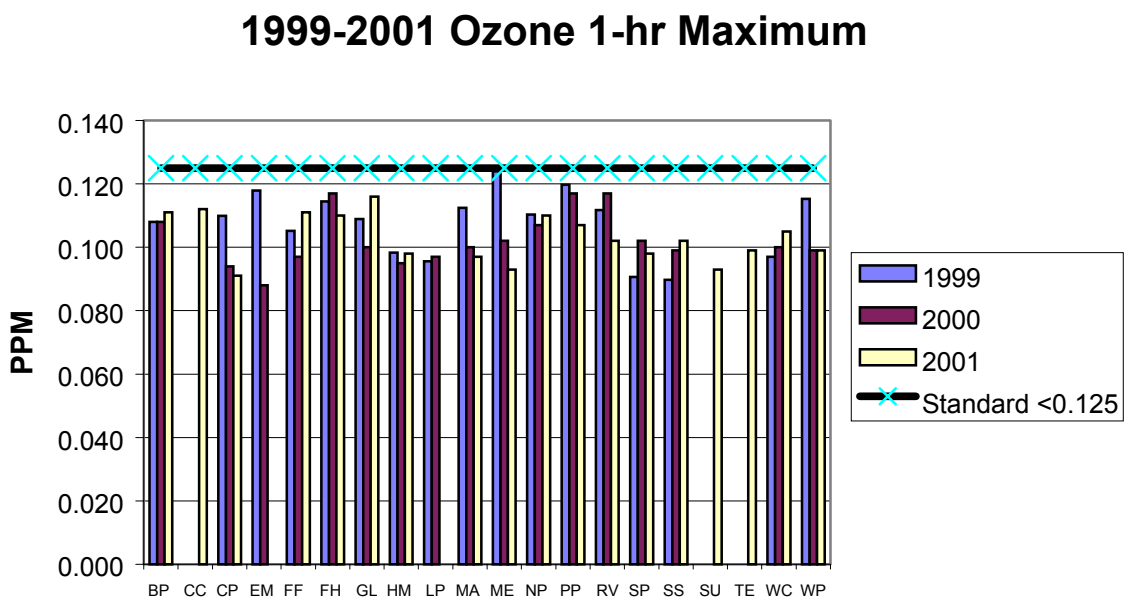
Maricopa County 2000 Carbon Monoxide Max 8-Hour Avg. (Chart –1)



(Chart -1)

Ozone

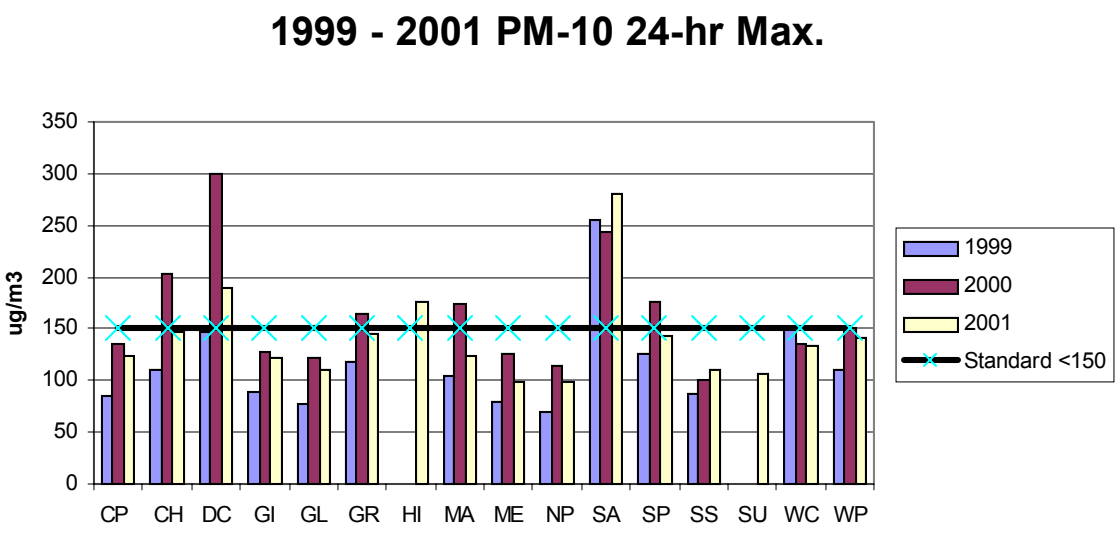
Maricopa County 2000 Ozone Max 1-Hour Avg. (Chart –2)



(Chart –2)

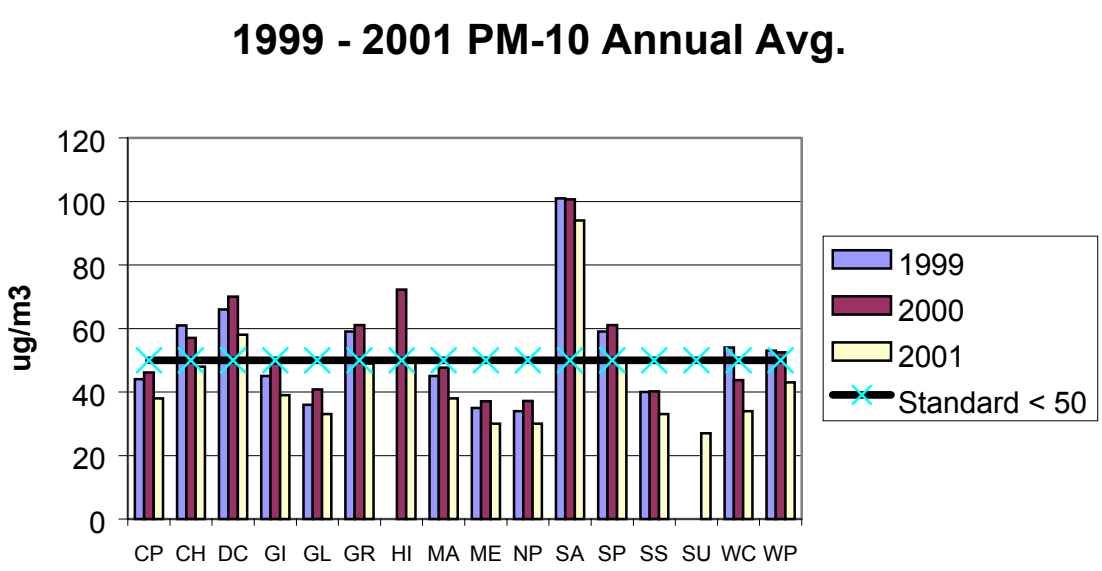
Particulates

Maricopa County 2000 PM-10 Max 24-Hour Avg. (Chart –3)



(Chart –3)

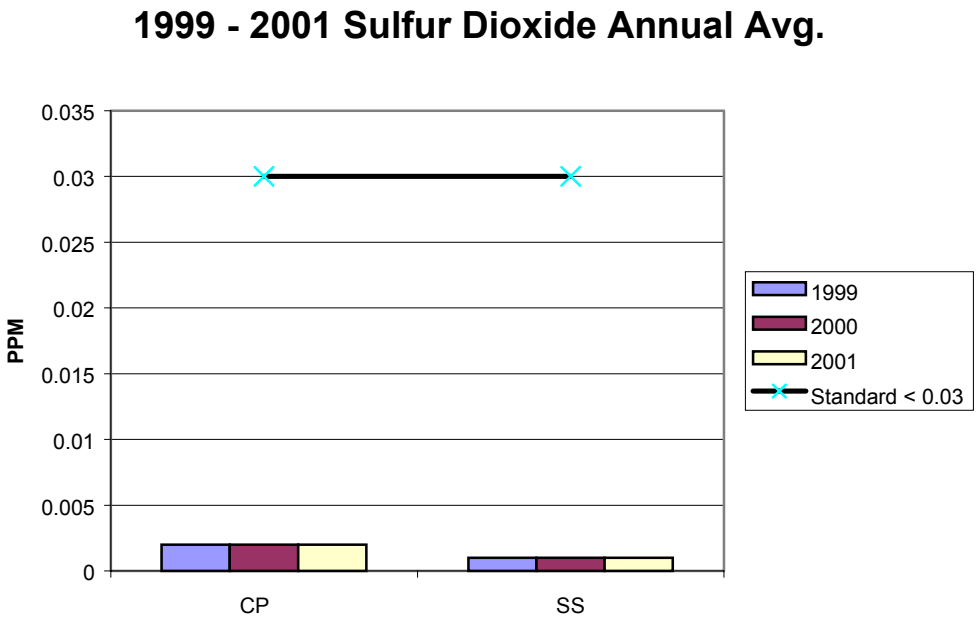
Maricopa County 2000 PM-10 Annual Avg. (Chart –4)



(Chart –4)

Sulfur Dioxide

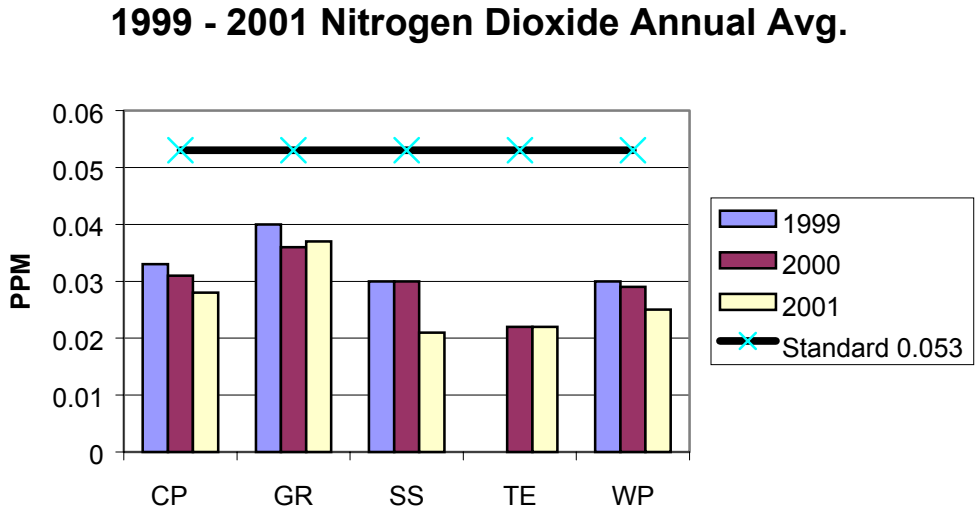
Maricopa County 2000 Sulfur Dioxide Annual Average (Chart –5)



(Chart –5)

Nitrogen Dioxide

Maricopa County 2000 Nitrogen Dioxide Annual Average Readings (Chart –6)



(Chart –6)

REFERENCES

1. Phase 1 Recommendations for Maricopa County Air Quality Monitoring Network, Final Report, AV-R-93/6008, Aero-Vironment, Inc., Monrovia, CA, March 1993

2. Phase II Recommendations for Maricopa County Air Quality Monitoring Network, AV-R-93/6025, Aero-Vironment, Inc., Monrovia, CA, March 1993

3. Air Quality Modeling of Carbon Monoxide Concentrations in Support of the Federal Implementation Plan for Phoenix, AZ, SYSAPP-93/039, Systems Application International, San Rafael, CA, April 30, 1993.

4. Code of Federal Regulations, Chapter 40, Part 58, Appendix D, 1997.

5. Maricopa Association of Governments, Transportation Planning Office, Average Weekday Traffic Analysis for 1995 (Map dated August 1999).

6. Maricopa Association of Governments, Total Resident Population Density, 1994, by Traffic Analysis Zone (Map dated 1998).

7. Maricopa County 1999 and 2000 Network Reviews.

8. http://www.epa.gov/rgytgrnj/programs/artd/air/quality/quality.htm

9. http://www.maricopa.gov/sbeap/airday.htm

10. http://www.maricopa.gov/sbeap/AIR_MONI.HTM

11. http://www.epa.gov/empact

12. http://www.epa.gov/oar/aqtrnd00/sixpoll.html

13. SLAMS / NAMS / PAMS Network Review Guidance--EPA-454/R-98-003

14. Guideline on data handling conventions of the PM NAAQS

Appendix

Preliminary ADEQ Air Monitoring Data Y2001 data for Maricopa County

Ozone 1 - Hour Average

	Supersite Site	Date		Palo Verde Site	Date		Mt. Ord Site	Date
Max (PPM)	.101	8/6		.085	8/7		.102	8/17
2nd	.095	8/15		.085	5/8		.089	8/20
3rd	.094	8/16		.083	8/16		.089	7/26
4th	.093	8/11		.081	8/11		.089	6/21
# of Exceedances	0			0			0	
# of Sample Hours	8489			4385			3286	

Ozone 8 - Hour Average

	Supersite Site	Date		Palo Verde Site	Date		Mt. Ord Site	Date
Max (PPM)	.087	8/6		.077	8/16		.082	8/17
2nd	.081	8/10		.077	8/7		.080	6/15
3rd	.081	8/11		.075	5/5		.078	8/9
4th	.080	8/16		.074	5/8		.077	7/3
# of Exceedances	1			0			0	
# of Sample Days	353			182			137	

Nitrogen Dioxide

	Supersite Site	Date		Palo Verde Site	Date
1 - Hour Average:					
Max (PPM)	.063	4/17		.043	10/26
2nd	.062	1/4		.041	10/16
24 - Hour Average:					
Max	.049	12/19		.018	10/30
2nd	.043	12/20		.017	10/19
# of Samples Hours	4567			4431	
Annual Average	.024			.005	

Carbon Monoxide 1 - Hour Average

	Supersite Site	Date		Grand Avenue Site	Date
Max (PPM)	7.0	12/19		10.3	12/19
2nd	6.5	12/20		9.6	10/25
3rd	6.4	1/4		9.0	1/5
4th	6.1	1/5		7.8	10/19
# of Exceedances	0			0	
# of Sample Hours	8488			4989	

Carbon Monoxide 8 - Hour Average

	Supersite Site	Date		Grand Avenue Site	Date
Max (PPM)	5.7	12/20		6.6	12/20
2nd	5.2	1/6		6.1	1/6
3rd	4.8	10/27		5.9	12/19
4th	4.7	11/18		5.3	1/5
# of Exceedances	0			0	
# of Sample Days	353			208	