2022 Air Monitoring Network Plan

Final

Maricopa County
AIR QUALITY
DEPARTMENT

ACKNOWLEDGEMENTS

In 2021, the Maricopa County Air Quality Department's Air Monitoring Division operated and maintained 23 ambient air monitoring sites throughout Maricopa County. Air Monitoring Division team members include: one manager, one quality assurance officer, three supervisors, two air quality data coordinators, one management analyst, and thirteen technicians.

Maricopa County Air Quality Department would especially like to thank its personnel for their excellent job in helping to maintain Maricopa County's air monitoring program.

The Maricopa County Air Quality Department gratefully acknowledges the assistance of other agencies which may provide data and comments to this review, including the Arizona Department of Environmental Quality, Pinal County Air Quality Control District, and the Tribal air monitoring organizations adjacent to Maricopa County.

Last, MCAQD would like to thank the United States Environmental Protection Agency's Region 9 personnel for their guidance and support regarding our air monitoring program.

Cover photos: From the left: Eastwood site
Durango Complex site

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ABSTRACT

In 2021, the Maricopa County Air Quality Department (MCAQD) Air Monitoring Division successfully operated a robust air quality surveillance system that monitored for regulated ambient air pollutants as per *40 CFR Parts 50 and 58*. The air monitoring data produced are intended for regulatory compliance determinations of criteria air pollutants. Unless otherwise noted, each monitor meets the requirements of *40 CFR Part 58 – Subpart G - Appendices A, B, C, D, and E,* where applicable.

The MCAQD strives to provide the most reliable and relevant air monitoring data to the public. Air quality issues are diverse and are of great interest to the citizens of Maricopa County. High-quality data are a cornerstone of developing and implementing effective SIPs, EE packages, and operating permits for new and existing sources, for the protection of human health and the environment.

This 2022 Air Monitoring Network Plan (AMNP) provides information regarding the air monitoring surveillance system operating within Maricopa County, covers changes made to the air monitoring network in 2021, and discusses network changes planned for 2022. Please refer to Appendix VII for the glossary of terms and acronyms.

Network Modifications and Site Updates

This section summarizes network modifications and site updates made in 2021, and changes planned for 2022. In 2021, one new site became operational. There were no site closures in 2021 or planned for 2022.

Summary of Past Network Modifications and Site Updates

Date	Site	Monitor/ Type	Description
February 2021	Thirty-Third (04-013-4020)	CO, $PM_{2.5}$	Relocated monitoring of CO and $PM_{2.5}$ from this site to the new Eastwood site.
March 2021	**New Site:** Eastwood (04-013-4021)	CO, NO_2, $PM_{2.5}$, Ambient Temperature, Barometric Pressure, Relative Humidity, Wind Speed, Wind Direction	Eastwood is MCAQD's new near-road monitoring site which replaced the Diablo (04-013-4019) near-road monitoring site. Since the Diablo site permanently closed in 2020, temporary CO and $PM_{2.5}$ monitoring occurred at the Thirty-Third site until the Eastwood site was completed and operational.
March 2021	Falcon Field (04-013-1010)	Wind Speed Wind Direction	Due to safety concerns, securing the wind tower to the roof was no longer possible and caused MCAQD to discontinue monitoring for wind speed and direction at this site. MCAQD is currently searching for a new location where a shelter can be established. Wind measurements will resume when the new shelter is established.
June 2021	South Phoenix (04-013-4003)	Solar Radiation	Began monitoring solar radiation for enhanced support to modeling activities.
December 2021	Durango Complex (04-013-9812), South Phoenix (04-013-4003), West Phoenix (04-013-0019)	Black Carbon	Deployed MetOne Black Carbon BC1060 Monitors at three sites to measure the effects of wildfire smoke on air quality.
December 2021	Glendale (04-013-2001)	Site Updates	Modified the deck due to safety concerns, replaced the flooring in the shelter due to damage, and repainted the shelter.
2021	Various	Data Loggers	Replaced outdated ESC-8832 data loggers with the Agiliare$_{LLC}$/ESC-8864 data loggers.

Proposed Network Modifications and Site Updates

For 2022, MCAQD does not anticipate any significant interruptions to monitoring operations. MCAQD plans on continuously updating existing sites and improving site safety and security. Improvements to power supplies or communication systems will occur as needed. The following table lists projects planned for 2022.

Planned Date	Site	Monitor/ Type	Description
2022	Falcon Field (04-013-1010)	Ozone Wind Speed Wind Direction	MCAQD is currently searching for a new site location. This change will improve access and sample line configuration and allow for a wind tower to be secured. Due to safety concerns at the current site location, MCAQD discontinued monitoring for wind speed and wind direction in March of 2021. These measurements will resume once the new shelter is established.
2022	Cave Creek (04-013-4008)	Ozone	MCAQD will be relocating analyzer and meteorological parameters to a shelter less than 100 feet from current location. Relocation provides better access and data reliability for monitoring at the site.
2022	TBD	Data Loggers	MCAQD plans to continue replacing outdated ESC-8832 data loggers with Agiliare$_{LLC}$/ESC-8864 data loggers.
2022	Buckeye (04-013-4011)	Ozone, CO, PM10	Maricopa County will be selling the current site location; thus, the site will need to be relocated to a new Maricopa County compound approximately 100 yards to the East of the current location.

INTRODUCTION

Each year, MCAQD produces a comprehensive AMNP, or Plan, that provides vital information regarding the air monitoring surveillance system operating within Maricopa County. The Plan addresses the United States Environmental Protection Agency's (U.S. EPA) requirements for operating the surveillance system as per *40 CFR Part 58 - Ambient Air Quality Surveillance.* As per *40 CFR Part 58, Subpart B §58.10(a)(1),* the EPA requires each air monitoring organization (MO) operating within the U.S. and its territories to develop and submit this Plan annually by July 1st, following a 30-day public comment period. Each year MCAQD solicits comments from the public during the public comment period and holds an open forum public meeting. As needed, MCAQD amends the final draft based on any comments received. The final AMNP is submitted to EPA Region 9 for review and approval. The EPA Region 9 Administrator, or their representative, must approve any requests for network changes and waivers. EPA Region 9 completes the review process within 120 days. MCAQD will post the final AMNP on the MCAQD Air Monitoring website.

In addition to the annual data certification process, the AMNP helps MCAQD continuously review, assess, and improve how well the air monitoring surveillance system, or network, is performing. Data certification for 2021 was submitted on April 25, 2022. The design and performance of the ambient air monitoring network and data certification process are covered by the regulatory requirements found in:

- *40 CFR Part 58 – Ambient Air Quality Surveillance: Subpart A (General Provisions), Subpart B (Monitoring Network), Subpart C (Special Purpose Monitors (SPM)), Subpart D (Comparability of Ambient Data to the NAAQS), Subpart F (Air Quality Index (AQI) Reporting), and Subpart G (Federal Monitoring).*

The AMNP also addresses the following regulatory requirements:

- *40 CFR Part 58 Appendix A - Quality Assurance Requirements for Monitors used in Evaluations of National Ambient Air Quality Standards*
- *40 CFR Part 58 Appendix C - Ambient Air Quality Monitoring Methodology*
- *40 CFR Part 58 Appendix D - Network Design Criteria for Ambient Air Quality Monitoring*
- *40 CFR Part 58 Appendix E - Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring*
- *40 CFR Part 58, Appendix G – Uniform Air Quality Index (AQI) and Daily Reporting*

The following information is covered in this AMNP:

- Purpose and type of monitoring conducted at each site;
- Detailed descriptions and metadata for each site;
- Metadata for each pollutant monitor;
- Three years of Criteria Pollutant (CP) data from each monitor;
- Design value metrics that identify the monitoring site with the highest O_3, and $PM_{2.5}$ concentrations measured over the past 3 years;
- The minimum quantity of monitors required for each CP network;
- Summaries of pollutant data by network and required statistical analyses;
- The quality and suitability of pollutant data for comparison to the NAAQS;
- The compliance status of monitors, including exceedance days and violations;
- Proposed changes to the pollutant networks, sites, monitoring and analytical laboratory methods planned for 2022;
- Brief information regarding special purpose and/or research-driven air monitors, if operated;
- The reporting of real-time pollutant and meteorological data to the public via the MCAQD web map and AIRNow;
- Any requests for waivers from specific air monitoring requirements, if applicable;
- Interagency correspondence regarding the air monitoring program; and
- Public comments received MCAQD's responses regarding the final draft AMNP.

Figure 1 and 2 show the MCAQD's air monitoring sites and monitoring instrumentation.

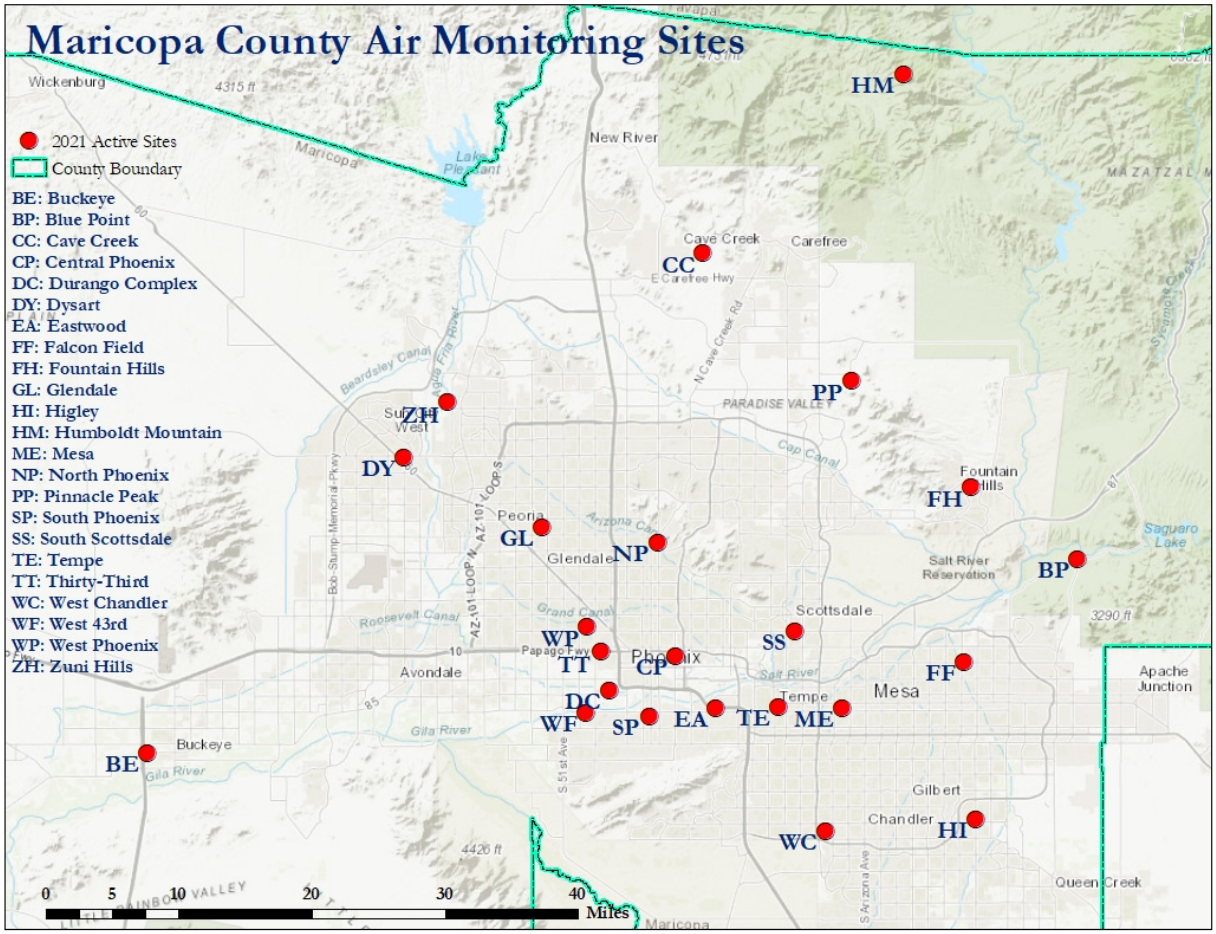


Figure 1. 2021 Maricopa County Air Monitoring Sites

Maricopa County - Air Monitoring Instrumentation																			
Site		AQS Code	CO	NO_2	O_3	SO_2	PM_{10}	$PM_{2.5}$	$PM_{2.5}$ Filter	Black Carbon	WS / WD	Baro Press	Amb Temp	Rel Hum	Rain Gauge	Solar Rad	Shelter Temps	Multi-Gas Calibrator	Active Instruments[2]
Buckeye	BE	04-013-4011	1	1	1		1				1	1	1	1			1	2	11
Blue Point	BP	04-013-9702			1						1		1	1			1		5
Cave Creek	CC	04-013-4008			1						1		1	1	1		1		6
Central Phoenix	CP	04-013-3002	1	1	1	1	1				1	1	1	1			2	2	13
Durango Complex	DC	04-013-9812				1	1	1		*1	1	1	1	1			1	1	9
Dysart	DY	04-013-4010			1		1				1	1	1	1			1		7
Eastwood	EA	04-013-4021	1	1				1			1	1	1	1			1	2	10
Falcon Field	FF	04-013-1010			1								1	1			1		4
Fountain Hills	FH	04-013-9704			1						1	1	1	1			1		6
Glendale	GL	04-013-2001			1		1	1			1	1	1	1			1		8
Higley	HI	04-013-4006					1				1	1	1	1			1		6
Humboldt Mountain	HM	04-013-9508			1								1	1			1		4
Mesa	ME	04-013-1003	1		1		1	1		**1	1	1	1	1			1	1	10
North Phoenix	NP	04-013-1004			1		1	1		**1	1	1	1	1			1		8
Pinnacle Peak	PP	04-013-2005			1					**1	1	1	1	1			1		6
South Phoenix	SP	04-013-4003	1		1		1	1		*1	1	1	1	1		1	2	1	12
South Scottsdale	SS	04-013-3003			1		1				1	1	1	1			2		8
Tempe	TE	04-013-4005			1		1	1			1	1	1	1	1		2		10
Thirty-Third[1]	TT	04-013-4020		1							1						1	2	5
West Chandler	WC	04-013-4004	1		1		1				1	1	1	1			2	1	10
West 43rd	WF	04-013-4009					1				1	1	1	1			1		6
West Phoenix	WP	04-013-0019	1	1	1		1	1	1	*1	1	1	1	1			1	2	13
Zuni Hills	ZH	04-013-4016					1				1	1	1	1			1		6
Active Instruments			**7**	**5**	**17**	**2**	**15**	**8**	**1**	**3**	**21**	**18**	**22**	**22**	**2**	**1**	**28**	**14**	

Total # of Criteria Pollutant Monitors **55**
Total # of Active Instruments **186**
Total # of Active Sites **23**

NOTES:
Black Carbon 1060 * 04/1 - 09/30 (O_3 Season)
** 10/1 - 03/31 ($PM_{2.5}$)

[1] CO and PM2.5 Analyzers removed from site on 2/28/21

[2] Active instruments will increase and decrease based on location of Black Carbon.

Last updated: 09May22

Figure 2. MCAQD Air Monitoring Instruments by Site

Clean Air Act and Criteria Pollutants

The Clean Air Act (CAA), and its amendments, provide the framework for pertinent State/Local/Tribal (S/L/T) agencies to assess and protect air quality through an air monitoring program. Unless generated for research, special studies, or unless otherwise noted, each monitor meets the requirements of *40 CFR Part 58 – Subpart G - Appendices A, B, C, D, and E,* where applicable. This means that the data MCAQD produces are of acceptable quality for NAAQS comparisons and compliance determinations, which is the primary purpose for generating the data. Please note that *Appendix B* applies to PSD monitoring only and that no PSD monitoring was conducted within Maricopa County.

MCAQD monitors for five CPs, which are:

1. Carbon monoxide (CO)
2. Nitrogen oxides (NO_x) with nitrogen dioxide (NO_2) used as the indicator compound
3. Ozone (O_3)
4. Particulate matter ≤10 micrometers (PM_{10}) and ≤2.5 micrometers ($PM_{2.5}$)
5. Sulfur dioxide (SO_2)

The National Ambient Air Quality Standards

The U.S. EPA regulates CPs according to the NAAQS, which establish ambient levels for each CP using health and welfare-based criteria. There are two sets of NAAQS standards. As per *CAA §109(b)*, the primary NAAQS are designed to provide an adequate margin of safety that is requisite to protecting public health. The secondary NAAQS are designed to protect public welfare from any known or anticipated adverse effects associated with the presence of a CP in the ambient air such as damage to properties such as farm crops and buildings, visibility impairment in national parks and wilderness areas, and for the protection of ecosystems. NAAQS are geared toward improving air quality in geographical areas where the current quality is unacceptable as well as preventing air quality deterioration in geographical areas where the air is relatively free of pollution. Since each CP has different health effects and environmental damage potential, NAAQS level(s) are different for each pollutant. Some pollutants have standards for both long-term and short-term averaging times. The short-term standards are designed to protect against acute health effects, while the long-term standards are designed to protect against chronic health effects.

The NAAQS are not static. The CAA requires that they undergo periodic review using the most recent medical, epidemiological, physiological, and ecosystem research available. Historically, when a NAAQS level changes; the new level(s) is lower. The NAAQS review is a lengthy process that assesses the science upon which each NAAQS is based as well as the standard itself. The Clean Air Scientific Advisory Committee (CASAC) provides independent advice to the U.S. EPA concerning the need to change a standard. In addition, comments are solicited from the public. More information regarding the NAAQS review process is available at EPA's website.

U.S. EPA's Regional Offices oversee the enforcement of the CAA, and MCAQD falls under the jurisdiction of EPA Region9. U.S. EPA OAQPS oversees the air monitoring program at a national level, leads regulatory and/or policy changes affecting air monitoring operations and quality requirements, and engages in the review of the NAAQS. Table 1 shows a summary of the primary and secondary NAAQS levels for each CP.

Table 1. National Ambient Air Quality Standards

Pollutant		Standard Type	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3-month average	0.15 µg/m^3	Not to be exceeded
Nitrogen Dioxide (NO_2)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb	Annual Mean
Ozone (O_3) *		primary and secondary (2015)	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
		primary and secondary (2008)	8 hours	0.075 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Matter (PM)	$PM_{2.5}$	primary	1 year	12.0 µg/m^3	Annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m^3	Annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24 hours	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

*Maricopa County is designated as Moderate for 2008 and Marginal for 2015.

Source: https://www.epa.gov/criteria-air-pollutants/naaqs-table
https://www3.epa.gov/airquality/greenbook/anayo_az.html

Forecasting and Reporting Air Quality Conditions

This section provides information regarding the use and reporting of continuous, real-time data at the County and national level. It also provides historical information on how the reporting of air quality conditions has improved over the years.

Air Quality Forecasting

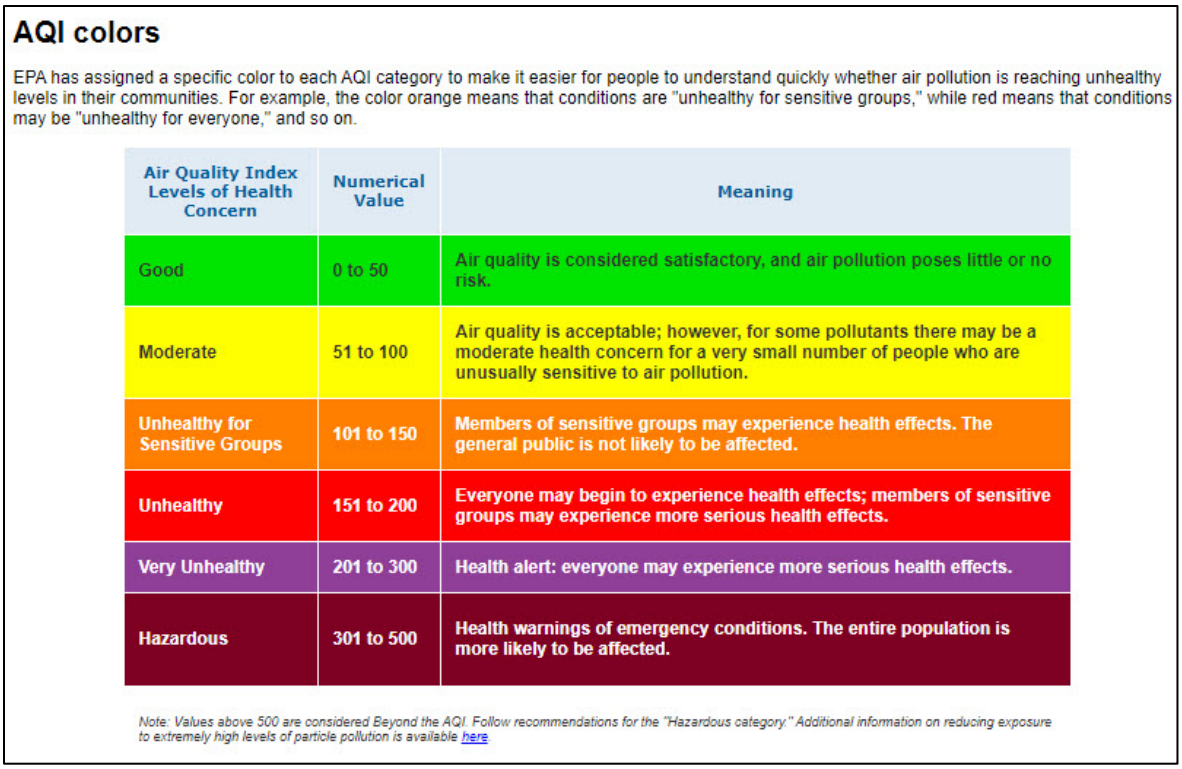
Forecasting air quality depends upon having air quality data available that can be put into a model which generates information needed for meteorologists to make forecasts. Monitoring instrumentation measures and reports hourly data to monitoring organizations (MO) for distribution to AirNow. The readily available data are invaluable to air quality forecasters because they can better predict what the AQI(s) will be.

ADEQ and MCAQD developed a year-round air quality forecasting and "restriction" reporting process for the Phoenix metropolitan area. In Maricopa County, ADEQ is lead for air quality forecasting and issuing a "High Pollution Advisory" (HPA) or a "Health Watch" (HW), while MCAQD designates a "No Burn Day". MCAQD's CLEAN AIR MAKE MORE website provides a description of each of these restrictions and provides helpful information on improving air quality. Figure 3 shows an overview of the content available.

Figure 3. MCAQD Clean Air Make More Website

The EPA Air Quality Index and NowCast

Since the 1950s, as per *40 CFR Part 58, Appendix G, the Uniform Air Quality Index (AQI) and Daily Reporting*, the EPA has required that MOs report air quality conditions to the public regarding CP health risks based upon data from their network. To do so, EPA developed the AQI, which is a health risk communication tool that converts CP concentrations into six health-impact related color-coded indices based upon the NAAQS. Members of the public used the AQI forecast to reduce their exposure to air pollution and its associated health effects by modifying their daily activities. The AQI graduated color scheme is shown in Figure 4.



AQI colors

EPA has assigned a specific color to each AQI category to make it easier for people to understand quickly whether air pollution is reaching unhealthy levels in their communities. For example, the color orange means that conditions are "unhealthy for sensitive groups," while red means that conditions may be "unhealthy for everyone," and so on.

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 to 300	Health alert: everyone may experience more serious health effects.
Hazardous	301 to 500	Health warnings of emergency conditions. The entire population is more likely to be affected.

Note: Values above 500 are considered Beyond the AQI. Follow recommendations for the "Hazardous category." Additional information on reducing exposure to extremely high levels of particle pollution is available here.

Figure 4. The Air Quality Index

Source: *40 CFR Part 58, Appendix G – Uniform Air Quality Index and Daily Reporting*
Air Quality Index (AQI) Basics

In the early 2000s, AirNow began using "NowCast" values that tried to reflect current conditions. However, values were based upon each pollutant's NAAQS averaging time, and it was recognized that these formulas do not respond well to real-time, rapidly changing air quality conditions. For instance, in the desert areas of the Southwest during the Monsoon Season, dust storms often emerge and dissipate within several hours. These events can drive PM_{10}, and sometimes $PM_{2.5}$, concentrations into the unhealthy range. Since the NAAQS averaging time for PM_{10} is 24 hours, a dust storm the evening before can cause air quality conditions to show in the orange range or higher the following day even though the sky is clear and no impact for the prior day's event is affecting present conditions. Smoke from a brief fire can adversely affect air quality for $PM_{2.5}$ likewise.

The abundance of continuous data in the last decade has furthered our understanding of pollutants, especially $PM_{2.5}$. This information helped improve the NowCast formulas so values better reflect rapidly changing conditions. To develop the new formulas, EPA analyzed millions of data points gathered from all parts of the U.S. Since PM_{10}, $PM_{2.5}$, and O_3 make up most air pollution concerns throughout the U.S., the updated NowCast reports on health risks related to these pollutants, only.

The formulas use a shorter averaging time when a pollutant's concentration is high and a longer averaging time when a pollutant's concentration is low, and conditions are stable. To read more about how the most recent NowCast formulas were developed visit the AirNow FAQ section.

AirNow Web Maps

The EPA's AirNow website communicates the status of air quality conditions throughout the country. The MCAQD has participated in the AirNow program since 2001. The MCAQD distributes 1-hour continuous CP and select meteorological data to the AirNow website. The AirNow maps cover a geographical area as far east as Queen Creek, as far south as Casa Grande, and as far west as the town of Palo Verde. Air quality data from other Local, Tribal, and National Park Service air monitoring operations within Arizona populate the map as well.

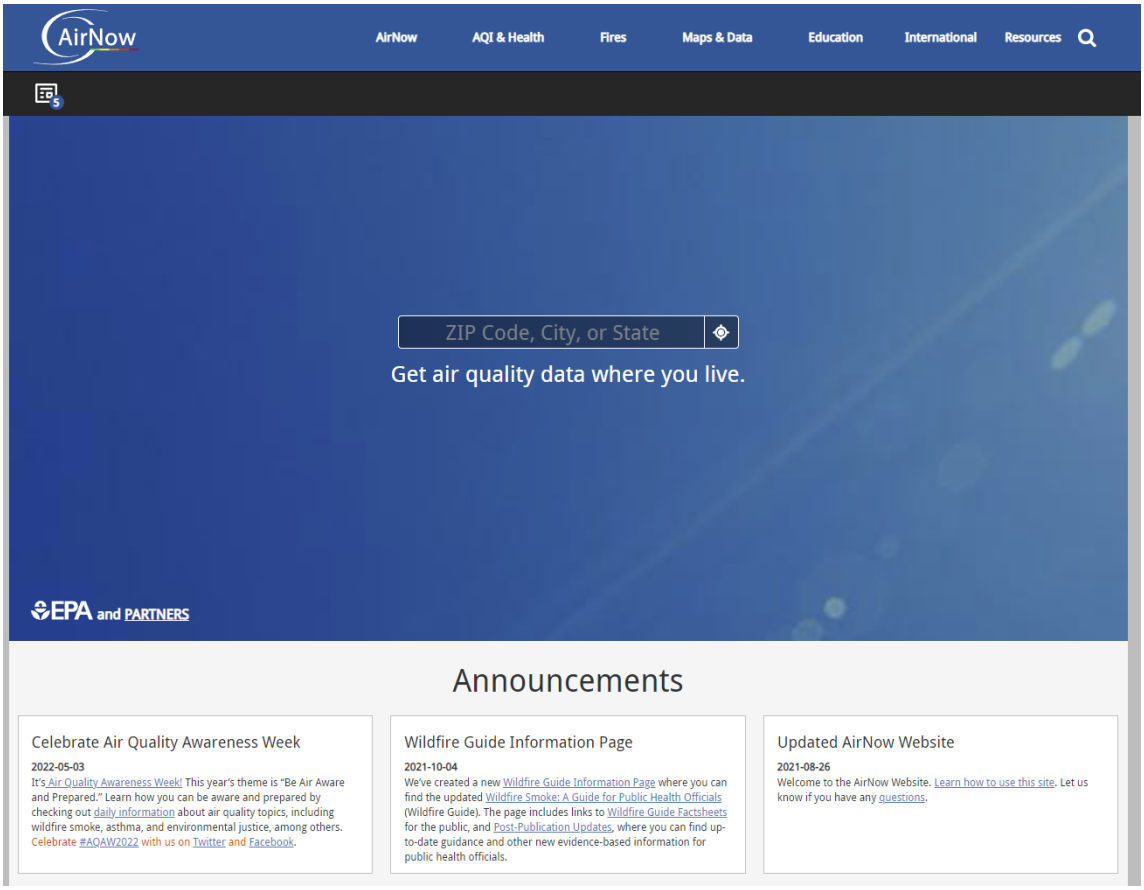


Figure 5. EPA AirNow Website

The Maricopa County Interactive Air Quality Map

The MCAQD provides real-time data on our website using an interactive air quality map with three layers of information. Figure 6 shows the default Current Conditions map, which uses the latest NowCast formula to provide a site's Maximum NowCast value for either PM_{10}, $PM_{2.5}$ or O_3, as well as the latest formulas for each of the three pollutants' NowCast values. The second tab shows the AQI developed by an unofficial, rolling formula. The third tab shows the Raw Data map, which provides hourly CO, NO_2, O_3, $PM_{2.5}$, SO_2, and 5-minute concentrations for PM_{10} and meteorological data from each site.

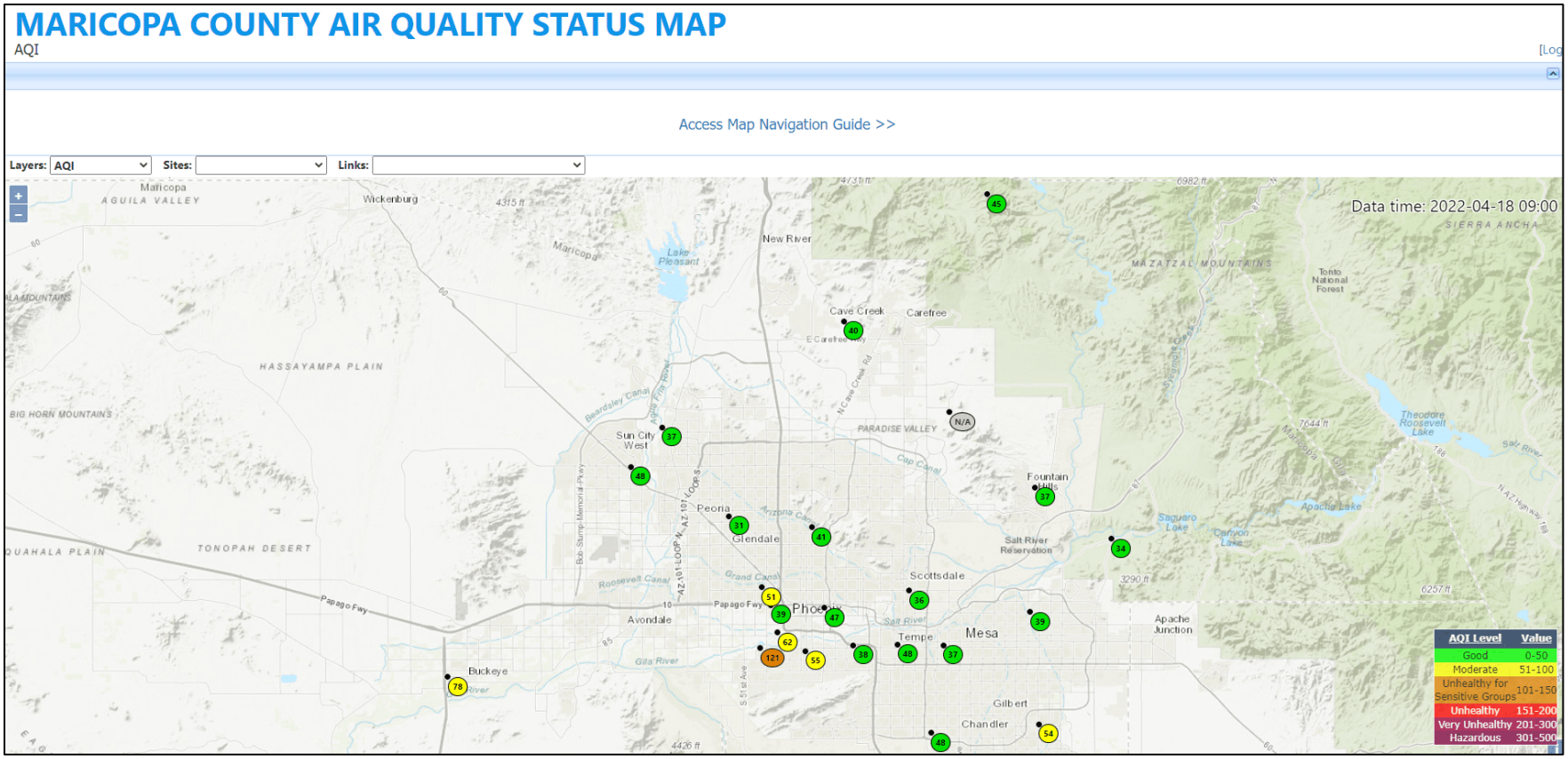


Figure 6. MCAQD Air Quality Status Map

Information Regarding Compliance of Criteria Pollutants

Unless otherwise noted, the information regarding air pollutants in this section was compiled from various pages at the U.S. EPA's Air and Radiation website.

Carbon Monoxide (CO)

In 2021, there were no exceedance days or violations of the CO NAAQS at any MCAQD site.

Nitrogen Oxides (NO_X) with Nitrogen Dioxide (NO_2) as the Indicator Compound

In 2021, there were no exceedances of the 1-hour or annual NO_2 NAAQS.

Ozone (O_3)

In 2021, there were fifty (50) days when at least one O_3 monitor exceeded the 2015 8-hour NAAQS, and sixteen (16) sites violated the standard. For the 2008 8-hour NAAQS, there were twenty-eight (28) days and sixteen (16) sites that violated the standard. For more information regarding the O_3 exceedance days and NAAQS violations, refer to the Summary of 2021 Criteria Pollutant NAAQS Status section of this document.

Particulate Matter (PM)

In 2021, there were eight days when at least one PM_{10} monitor exceeded the 2012 24-hour PM_{10} NAAQS level. For $PM_{2.5}$, there were three days when at least one monitor exceeded the 2012 24-hour NAAQS level, but no monitors violated the NAAQS. For more information regarding the PM exceedance days and NAAQS violations, refer to the Summary of 2021 Criteria Pollutant NAAQS Status section of this document.

Sulfur Dioxide (SO_2)

In 2021, there were no exceedances or violations of the primary or secondary SO_2 NAAQS.

Lead (Pb)

As of December 2019, MCAQD no longer monitors for Pb. Ambient air monitoring for Pb occurs at the Arizona Department of Environmental Quality JLG Supersite's NCore monitoring station (04-013-9997).

AIR MONITORING STRATEGIES AND SURVEILLANCE SYSTEM DESIGN

Overview of Air Monitoring Requirements and System Design

The MCAQD operated and maintained 23 ambient air monitoring sites throughout Maricopa County. The sites' start-up dates range from 1961 for Central Phoenix to 2021 for the new Eastwood site. Land use patterns around the sites vary from densely populated urban areas to sparsely populated rural settings. The sites' elevations range from 845 feet above sea level at Buckeye to 5190 feet above sea level at the top of Humboldt Mountain. The MCAQD chose each site and its pollutant monitors based on specific EPA requirements, special requests from EPA, and/or specific needs of the County.

The *40 CFR Parts 50 and 58* provide the requirements for operating an ambient air monitoring program. The MCAQD holds the Primary Quality Assurance Organization (PQAO) designation for the County's ambient air monitoring network and is fully responsible for designing and operating the total air monitoring surveillance system and managing the pollutant data generated. The MCAQD operates air monitors at EPA-approved State and Local Air Monitoring Stations (SLAMS), which includes the near-road stations. On occasion, special air monitoring initiatives involve temporarily operating CP monitors designated as Special Purpose Monitors (SPM), as well as special studies.

This section details how each CP network is designed to obtain "representative" data. The *40 CFR Part 58 Appendix D* covers the requirements for designing the air monitoring network. To determine compliance with the NAAQS, EPA-approved air monitors must collect the CP data. The EPA classifies approved monitor methods into one of three categories: a federal reference method (FRM), a federal equivalent method (FEM), or an approved regional method (ARM). The MCAQD uses FRM and FEM instruments. This practice ensures high-quality data of like kind are used for compliance-driven decisions.

However, data from research monitors, e.g., noncompliance-related monitors, can be used to develop state and/or federal attainment and maintenance plans, further evaluate regional air quality models used in developing emissions control strategies, tracking trends in air pollution, and evaluating the impact control measures are having on improving air quality. Any short-term research data collected by the MCAQD can be made available to decision makers; but the data are not reported to AQS.

Within Maricopa County, the ADEQ collects compliance data as well as research data at the JLG Supersite via the following EPA monitoring networks: National Core multi-pollutant site (NCore), Photochemical Ambient Monitoring Stations (PAMS), Chemical Speciation Network (CSN), and National Air Toxics Trends Stations (NATTS). The ADEQ also collects air toxics samples for the Urban Air Toxics Monitoring Program (UATMP) at MCAQD's South Phoenix site. The data from these networks are reported to EPA and should be available in AQS and/or another EPA database.

In addition to producing an annual network plan, the EPA requires a five-year network assessment as per *40 CFR Part 58.10*. The 5-year assessment is best served by collaborating with EPA, ADEQ, and other local and/or tribal Monitoring Organizations. MCAQD last completed the assessment in 2020. The assessment process continues to improve, and MCAQD works with other MOs regarding CP network design issues as needed. The MOs within Arizona may provide support to each other by exchanging technical services and/or knowledge when problems arise with instrumentation or when conducting special studies.

Basic Air Monitoring Objectives

Each ambient air monitor must have a designated basic monitoring objective. The objectives in Table 2 apply to establishing required SLAMS monitoring stations and choosing the general locations for additional monitoring sites. The objectives are not listed based on importance or priority; however, each objective is important and must be considered individually.

Table 2. Basic SLAMS Air Monitoring Objectives

Objective	Description
Provide air pollution data to the general public in a timely manner	Data can be presented to the public in a number of ways including air quality maps, newspapers, MOs, and EPA websites, and as part of weather forecasts and public advisories.
Support compliance with ambient air quality standards and emissions strategy development	Data from EPA-approved monitors for NAAQS pollutants will be used for comparing an area's air pollution levels.
Support for air pollution research studies	Supplemental data useful with health effect assessments, atmospheric processes, or monitoring methods development work.

Source: *40 CFR Part 58 Appendix D, 1.1(a – c)*

Monitor Types

Pollutant monitor type must be designated as shown in Table 3 and are based upon how the data will be used and how long the monitor will remain in operation. The MCAQD's air monitoring network is comprised of SLAMS, which gather data for comparison to the NAAQS. The MCAQD may operate SPMs temporarily; however, no SPMs were operated in 2021.

Table 3. Monitor Types*

Name	Description
SLAMS (State and Local Air Monitoring Stations)	EPA-approved, compliance monitor typically operated on a long-term basis. Measure criteria pollutants for comparison to the NAAQS.
SPM (Special Purpose Monitors)	A monitor typically operated on a short-term basis and not necessarily EPA-approved. These monitors are useful for gathering and reporting preliminary information regarding air quality in a local area quickly and over a short-term period, which is less than two years. In the event of a geographical area's population increasing or data indicating that a SLAMS is more appropriate; an SPM may be reclassified to SLAMS and potentially outfitted with a different method. *40 CFR Part 58.20 Subpart C*
PSD (Prevention of Significant Deterioration)	A monitor typically operated for less than two years prior to a source opening in a protected Class A area and usually required by the permitting authority. PSDs are operated for the purpose of establishing the effect on air quality of the emissions from a proposed source for purposes of preventing significant deterioration to a "protected" area, e.g., a Class 1 area. Class 1 areas include national parks and wilderness areas where a major effort is underway to improve visibility and air quality.

* Reference *40 CFR Part 58*

Site Types

To support the three basic monitoring objectives, each site must be identified as one of the six "site types" shown below and may vary within each pollutant's network. The site type is key to informing air quality professionals and the public about a pollutant's peak concentration levels. Table 4 shows the site types as defined by EPA.

Table 4. Site Types

Sites for determining the ***highest concentrations*** expected to occur in the area covered by the network.
Sites for measuring typical concentrations in areas of ***high population density (population exposure)***.
Sites for determining the impact of significant ***sources*** or source categories on air quality.
Sites for determining general ***background concentration*** levels.
Sites for determining the extent of ***regional pollutant transport*** among populated areas and in support of secondary standards.
Sites for measuring air pollution ***impacts to visibility, vegetation damage, or other welfare-based impacts***.

Source: Adapted from *40 CFR Part 58, Appendix D.1*

Monitoring Scales (Spatial Scales of Representativeness)

To help link the site type with a monitor's basic monitoring objective and physical location, EPA uses the spatial scale of representativeness concept as described in 40 *CFR Part 58, Appendix D 1.2 (a) and (b).* The goal is to correctly match the spatial scale represented by an air sample with the spatial scale most appropriate for the site type, air pollutant to be measured, and the monitoring objective. Table 5 shows the scales of representativeness that are of most interest for the air monitoring site types described above.

Table 5. Spatial Scales of Representativeness

Name	Distance
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	10s to 100s of kilometers
National and Global Scales	Characterize the nation and the globe as a whole

Source: Adapted from *40 CFR Part 58, Appendix D 1.2*

Overview of the Air Monitoring Sites

According to the U.S. Census Bureau, Maricopa County's most recent population estimate is 4, 496,588 people (U.S. Census Bureau: Quick Facts Population Estimate for Maricopa County). As per *40 CFR Part 58*, the EPA mandates the minimum quantity of monitors required by a pollutant's network to properly represent the County's population. The MCAQD pollutant networks are designed using the concept of spatial scale representativeness and monitoring objectives. This results in CP networks that meet, and in most cases exceed, the minimum quantity of monitors required by EPA. Additional information on the siting of air monitors can be found in the Appendix II of this AMNP.

Table 6. MCAQD Air Monitoring Sites

Site Name	Code	AQS ID#	Latitude	Longitude	Location
Blue Point	BE	04-013-4011	33.36985	-112.62068	MC Hwy. 85 & AZ Hwy. 85
Buckeye	BP	04-013-9702	33.54558	-111.60972	Usery Pass & Bush Hwy.
Cave Creek	CC	04-013-4008	33.82169	-112.01726	32nd St. & Carefree Hwy.
Central Phoenix	CP	04-013-3002	33.45797	-112.04659	19th St. & Roosevelt St.
Durango Complex	DC	04-013-9812	33.42650	-112.11821	27th Ave. & Durango St.
Dysart	DY	04-013-4010	33.63718	-112.34185	Dysart Rd & Bell Rd.
Eastwood	EA	04-013-4021	33.41046	-112.00264	36th St. & Broadway
Falcon Field	FF	04-013-1010	33.45224	-111.73327	McKellips Rd. & Greenfield Rd.
Fountain Hills	FH	04-013-9704	33.61092	-111.72534	E. Palisades Blvd. & Fountain Hills Blvd.
Glendale	GL	04-013-2001	33.30995	-111.72003	59th Ave. & W. Olive Ave.
Higley	HI	04-013-4006	33.30995	-111.72003	Higley Rd. & Williams Field Rd.
Humboldt Mountain	HM	04-013-9508	33.98280	-111.79871	Top of Humboldt Mountain
Mesa	ME	04-013-1003	33.41018	-111.86536	Alma School Rd & Broadway Rd.
North Phoenix	NP	04-013-1004	33.56034	-112.06627	7th St. & Dunlap Ave.
Pinnacle Peak	PP	04-013-2005	33.70639	-111.85575	Alma School Rd. & Happy Valley Rd.
South Phoenix	SP	04-013-4003	33.40314	-112.07526	Central Ave. & Broadway Rd.
South Scottsdale	SS	04-013-3003	33.47968	-111.91711	Miller Rd. & Thomas Rd
Tempe	TE	04-013-4005	33.41123	-111.93471	College Ave. & Apache Blvd.
Thirty-Third	TT	04-013-4020	33.46173	-112.12796	33rd Ave. & Interstate 10
West Chandler	WC	04-013-4004	33.40635	-112.14426	Ellis St. & Frye Rd.
West 43rd Avenue	WF	04-013-4009	33.29896	-111.88426	43rd Ave. & Broadway Rd.
West Phoenix	WP	04-013-0019	33.48378	-112.14256	39th Ave. & Earll Dr.
Zuni Hills	ZH	04-013-4016	33.68719	-112.29416	109th Ave. & Deer Valley Rd.

SUMMARY OF NETWORK RESULTS AND REQUIRED INFORMATION

Determining Data Quality and Acceptability

This section details the results obtained from our 2021 monitoring year. The EPA has established data quality and measurement quality objectives for CP data. In addition to *40 CFR Part 58*, the EPA *QA Handbook for Air Pollution Measurement Systems: "Volume II: Ambient Air Quality Monitoring Program* provides extensive information regarding the quality system and its components. There are seven data quality indicators (DQI) established by the EPA to determine the quality of ambient air data. Data must meet each indicator's requirement to be certified and acceptable for use by decision makers for NAAQS compliance determinations, researchers, and the public.

These indicators are precision, bias, completeness, comparability, detectability, representativeness, and sensitivity. "Timeliness" of data collection, validation, and upload to AQS are important as well. "Accuracy" is now defined as a measure of the overall agreement of a measurement to a known value and includes a combination of random error (precision) and systematic error (bias) components of both sampling and analytical operations. The MCAQD's personnel evaluate data using these indicators, with precision, bias, and completeness being the most crucial to evaluate on an ongoing basis.

Data Completeness

Before considering any data set valid, it must first pass a data recovery, or completeness, test. The test requirements begin with checking completeness at hourly and 24-hour concentration values, or 'samples. The CP pollutant data measurements from continuous analyzers are based on a valid hour, while filter samples from manual samplers are based on a 24-hour sampling period from midnight to midnight. Equation 1 shows the calculation for the data completeness percentage, which is the quantity of valid measurements divided by the quantity of scheduled measurements multiplied by one hundred. For CP data, completeness must be greater than 75% for a data set to pass the first validity test. Furthermore, CP data completeness requirements may vary and use multiple levels of data aggregation, e.g., 1-hour, 3-hour, 8-hour, 24-hour, quarterly, annual, and multiple years.

Equation 1:

$$\text{Data Completeness Percentage} = \frac{\text{Qty. of Valid Measurements}}{\text{Qty. of Measurements Scheduled}} (100)$$

Table 7. 2021 Criteria Pollutant Data Completeness for SLAMS

Pollutant	CO	O_3	NO_2	SO_2	$PM_{2.5}$	PM_{10}	TOTAL
Percent Complete	97.9	98.2	97.0	98.5	95.6	96.8	97.2

Source: EPA AQS database – *2021 Data Completeness Report (AMP430)*

Summary of 2021 Criteria Pollutant Data

This section covers the 2021 data generated by each network.

Carbon Monoxide (CO)

Figure 7 shows the CO monitoring sites operating in 2021. A CO monitor is required at one MCAQD near-road site. The Thirty-Third site monitored for CO until Eastwood became operational. At that time, the CO monitor was moved to Eastwood. The CO data were reported to AQS, and the data are suitable for comparison to the NAAQS.

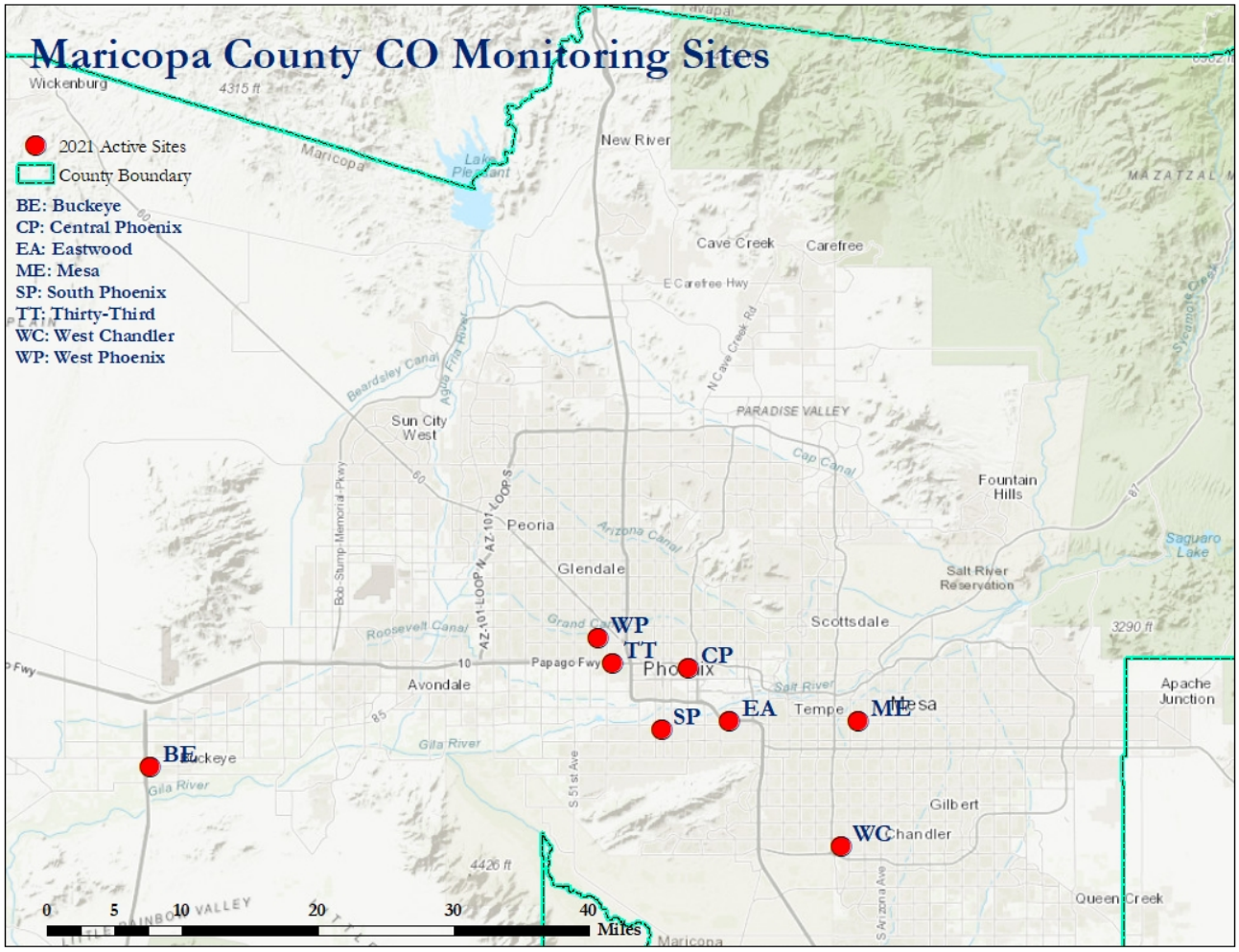


Figure 7. 2021 CO Monitoring Sites

In 2021, no exceedances or violations of the 1-hour or 8-hour CO NAAQS occurred at any MCAQD sites, and concentrations remained well below NAAQS levels. Table 8 shows the maximum and second maximum 8-hour CO averages measured.

Table 8. 2021 8-hour CO Average Data Summary

Site	CO 8-hour Average Maximum (ppm)	CO 8-hour Average 2nd Maximum (ppm)
Buckeye	0.6	0.6
Central Phoenix	2.0	2.0
Eastwood	1.0	1.0
Mesa	1.1	1.1
South Phoenix	1.7	1.6
*Thirty-Third	2.3	1.9
West Chandler	1.2	1.1
West Phoenix	3.5	2.6

* - Site temporarily monitoring for CO in 2021

Source: EPA AQS database – *2021 Quicklook Criteria Report (AMP450)*

Table 9. 2021 CO Monitor Requirements

CBSA	Population & Census Year (2020)	Required Near-Road Monitors	Active Near-Road Monitors	Additional Near-Road Monitors Needed
38060	4,496,588	1	1	0

Source: U.S. Census Bureau: Quick Facts Population Estimate for Maricopa County

Nitrogen Dioxide (NO_2)

Table 9 shows the five NO_2 monitoring sites which operated in 2021. The NO_2 monitors at the Buckeye, Central Phoenix, and West Phoenix sites are designated as SLAMS, which represent the NO_2 concentrations within Maricopa County. The near-road network requires two NO_2 monitors in the metropolitan area. The Thirty-Third and Eastwood site monitors are the designated near-road monitors representing the microscale by collecting source-oriented emissions from vehicular traffic on heavily travelled highways within Maricopa County.

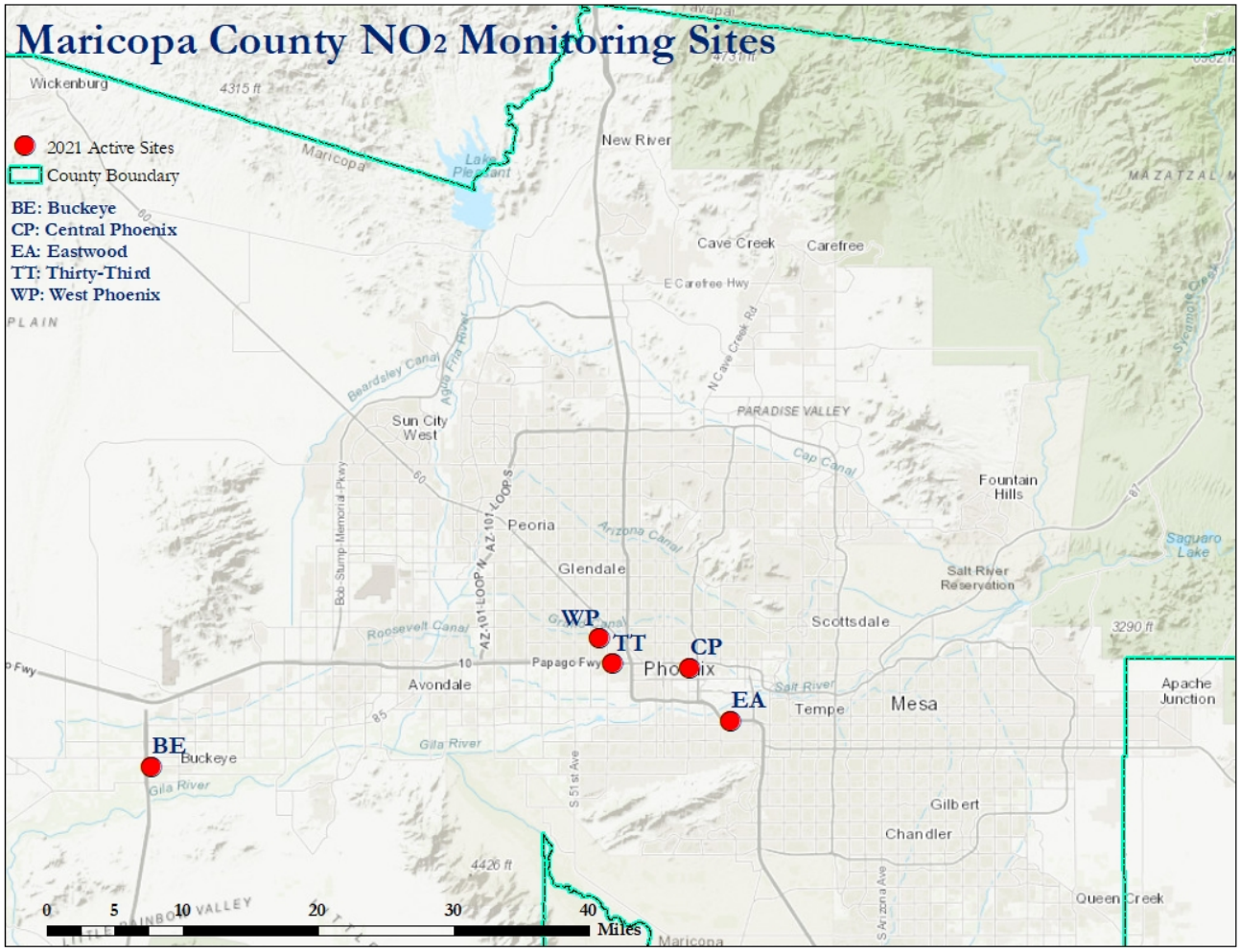


Figure 8. 2021 NO_2 Monitoring Sites

Data from both the area-wide and near-road monitors were reported to AQS, and the data are suitable for comparison to the NAAQS. Table 10 shows that no exceedances or violations of the NO_2 annual or 1-hour NAAQS were recorded at Maricopa County monitoring sites in 2021.

Table 10. 2021 NO_2 1-hour Data Summary

Site Name	NO_2 Maximum (ppb)	NO_2. 98th Percentile (ppb)	NO_2 3-Year Average of the 98th Percentiles (ppb)	NO_2 Annual Average (ppb)
Buckeye	40.0	33.0	34.0	8.05
Central Phoenix	60.0	54.0	53.3	15.44
Eastwood	57.0	52.0	52.0*	16.04
Thirty-Third	65.0	59.0	58.0	25.94
West Phoenix	55.0	47.0	47.3	14.66

*- Site established in 2021, 1 year average provided.

Source: EPA AQS database - *2019 – 2021 Quicklook Criteria Report (AMP450)*

Additional information required by EPA for the near-road NO_2 monitors is shown in Table 11.

Table 11. 2021 NO_2 Monitor Requirements

CBSA	Population & Census Year (2020)	Max AADT Counts (2020)	Required Near-Road Monitors	Active Near-Road Monitors	Needed Near-Road Monitors	Required Area-Wide Monitors	Active Area-Wide Monitors	Needed Area-Wide Monitors
38060	4,496,588	295,833	2	2	0	1	4	0

Sources: U.S. Census Bureau: Quick Facts Population Estimate for Maricopa County
ADOT – Traffic Monitoring – Annual Average Daily Traffic Count

Ozone (O_3)

Figure 9 shows the seventeen SLAMS O_3 monitors which operated in 2021. The data were reported to AQS, and data are suitable for comparison to the NAAQS.

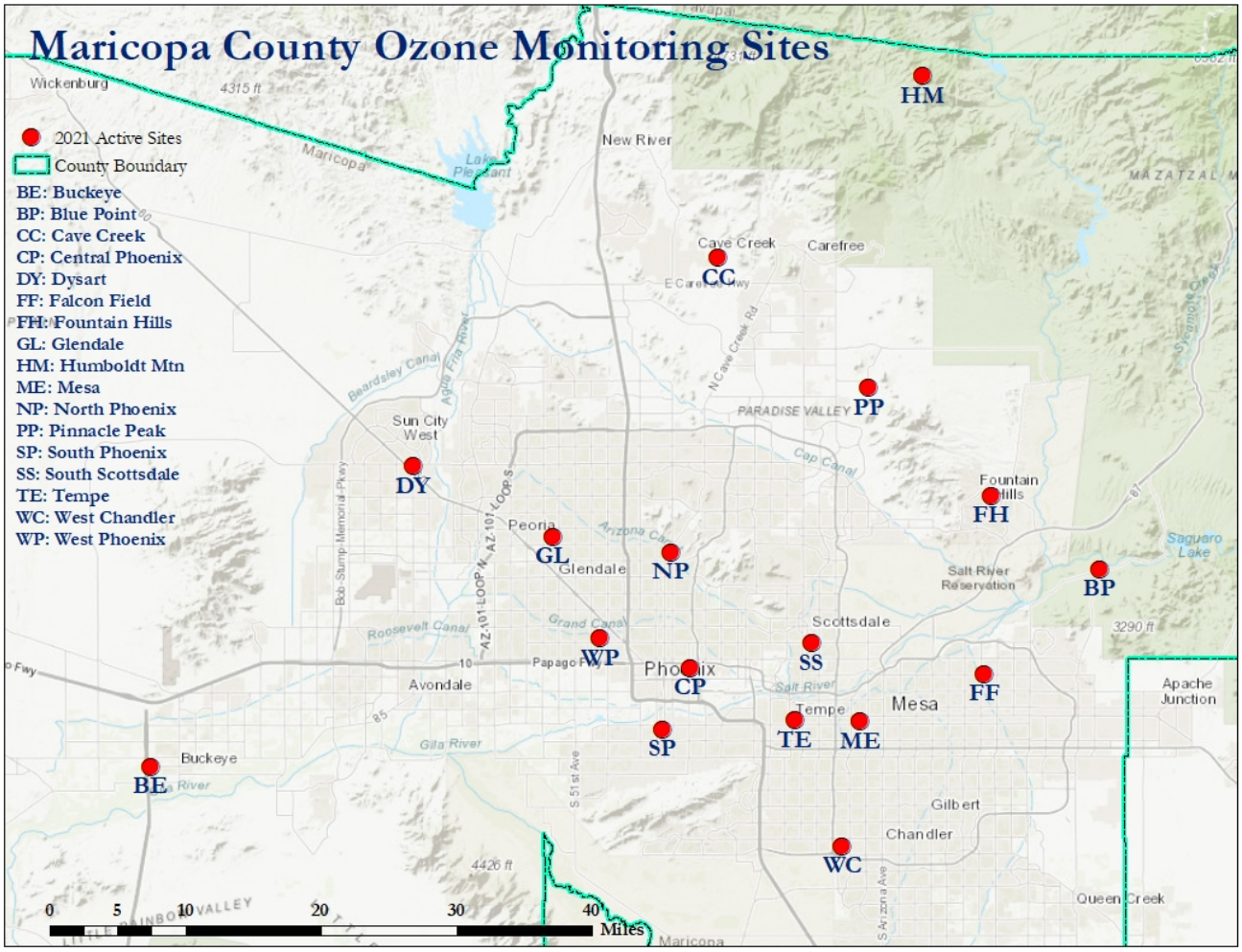


Figure 9. 2021 O_3 Monitoring Sites

Table 12. 2021 O_3 Eight-hour Average Summary

Site	1st 8-hr Maximum (ppm)	2nd 8-hr Maximum (ppm)	3rd 8-hr Maximum (ppm)	4th 8-hr Maximum (ppm)	Qty. of Days > 0.070 ppm
Blue Point	0.076†	0.075†	0.075†	0.072†	5
Buckeye	0.078†	0.073†	0.072†	0.071	7
Cave Creek	0.091†	0.085†	0.074†	0.074†	7
Central Phoenix	0.91†	0.084†	0.082†	0.081†	20
Dysart	0.093†	0.082†	0.078†	0.077†	12
Falcon Field	0.089†	0.087†	0.082†	0.080†	30
Fountain Hills	0.098†	0.082†	0.078†	0.076†	10
Glendale	0..097†	0.080†	0.079†	0.079†	18
Humboldt Mt.	0.074†	0.066	0.066	0.066	1
Mesa	0.0.85†	0.083†	0.083†	0.083†	32
North Phoenix	0.108†	0.085†	0.082†	0.081†	31
Pinnacle Peak	0..107†	0.086†	0.080†	0.079†	24
South Phoenix	0.080†	0.076†	0.074†	0.074†	7
South Scottsdale	0.096†	0.085†	0.082†	0.081†	28
Tempe	0.086†	0.083†	0.080†	0.079†	19
West Chandler	0.081†	0.076†	0.074†	0.073†	8
West Phoenix	0.081†	0.0.78†	0.078†	0.078†	11

† - Indicates an exceedance of the 2015 8-hr NAAQS

Source: EPA AQS database - *2021 Quicklook Criteria Report* (*AMP450)*
MCAQD 2021 O_3 Exceedance Day Report

Table 13. 2021 O_3 Monitor Requirements

CBSA		38060
County		Maricopa
Population & Census Year (2020)		4,496,588
3-Year Design Value		0.079
3-Year Design Value Site(s)	AQS ID	04-013-2005
	Site Name	Pinnacle Peak
	Monitoring Organization	MCAQD
MCAQD 8-Hour Maximum Concentration		0.108
MCAQD 8-Hour Maximum Concentration Site(s)	AQS ID	04-013-1004
	Site Name	North Phoenix
MSA Maximum 8-Hour Concentration		0.108
MSA Maximum Concentration Site(s)	AQS ID	04-013-1004
	Site Name	North Phoenix
	Monitoring Organization	MCAQD
Required Monitors		3
Active Monitors		17
Additional Monitors Needed		0

Sources: EPA AQS database – *2021 Quicklook Criteria Report (AMP450)*
U.S. Census Bureau: Quick Facts Population Estimate for Maricopa County

Particulate Matter ≤10 Micrometers (PM_{10})

Figure 10 shows the fifteen PM_{10} SLAMS monitors which operated in 2021. All PM_{10} monitoring stations operate continuous PM_{10} analyzers that collect 5-minute and hourly averaged data. All data were submitted to AQS and are suitable for comparison to the NAAQS. The EPA does not require PM_{10} analyzers to be collocated at the PQAO level or the national level.

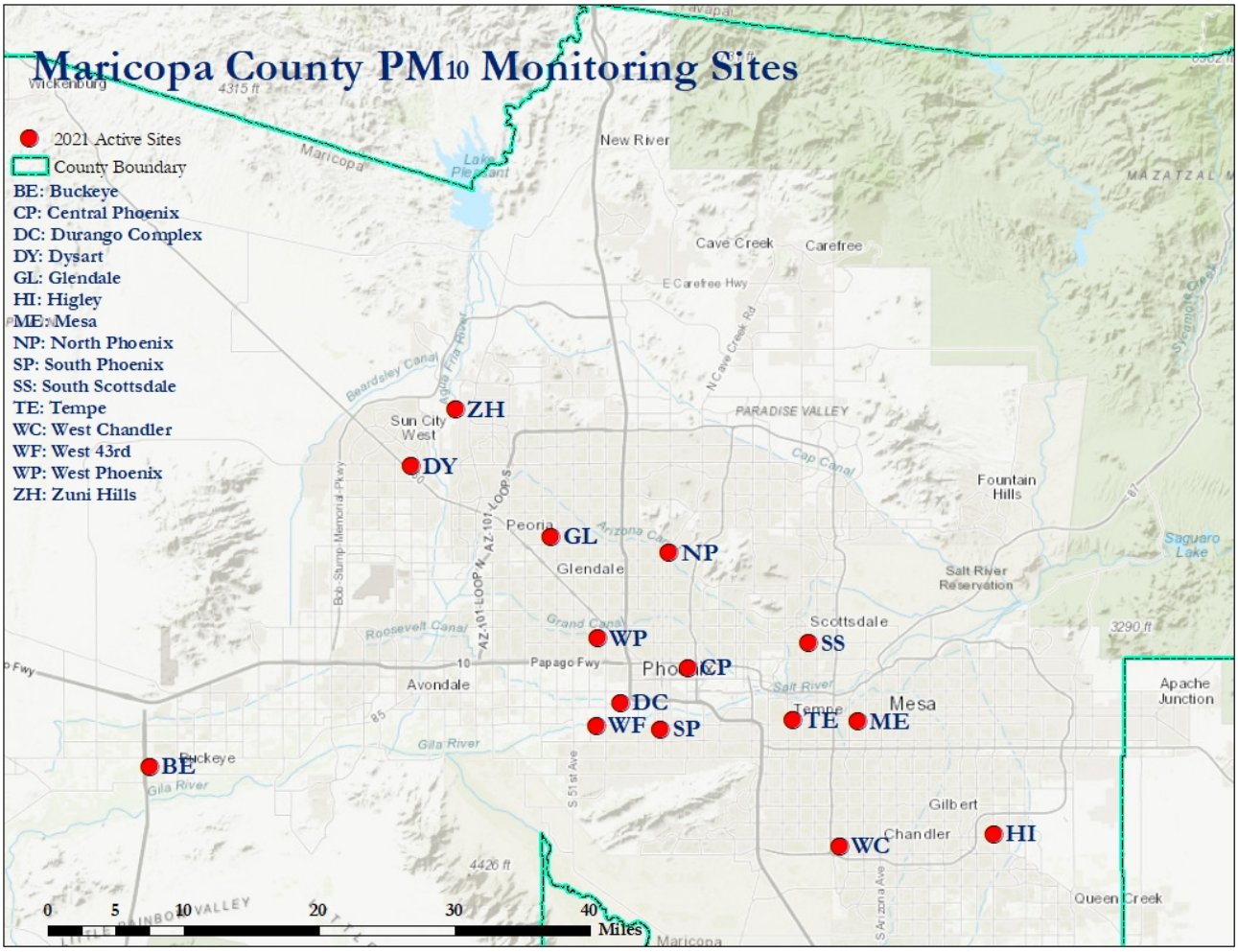


Figure 10. 2021 PM_{10} Monitoring Sites

The PM_{10} NAAQS are violated when the expected number of exceedances at a monitor is more than one per year on average over three years. The expected number of exceedances for a site is estimated using a formula provided in *40 CFR Part 50 Appendix K*. The formula uses the number of days sampling occurs and the number of valid samples that can be collected. A 3-year average of these estimated days is then used to determine compliance. Effective December 18, 2006, EPA revoked the PM_{10} annual primary standard; however, the annual weighted average is displayed on Table 14 for informational purposes.

In recent years, some PM_{10} exceedances occurring in the Maricopa County CBSA have been successfully attributed to an Exceptional Event (EE). Per the EPA's Exceptional Event Rule, an EE is an uncontrollable event that was caused by natural sources of pollution or an event that is not expected to recur at a given location. ADEQ makes the determination of which events to classify as exceptional, then they submit documentation to EPA supporting the contention that the exceedance(s) was due to an EE. If EPA R9

concurs, the PM_{10} concentrations measured during the EE are not used to determine compliance with the NAAQS. The EE counts shown below on Table 14 are current as of this review's publishing.

In 2021, there were eight days that exceeded the 24-hour PM_{10} NAAQS at MCAQD's sites, and two sites, Buckeye and West 43rd, violated the NAAQS. Table 14 shows the PM_{10} 24-hour NAAQS status and data summary, including EE data values.

Table 14. 2021 PM_{10} 24-Hour Data Summary Including EE Data

Site Name	Maximum 24-Hour Average ($\mu g/m^3$)	2nd Maximum 24-Hour Average ($\mu g/m^3$)	Number of 24-hour NAAQS Exceedances	Expected Exceedance Rate	Annual Weighted Average ($\mu g/m^3$)	Quantity of EEs
Buckeye	258†‡	162†‡	2	2	44.4	2
Central Phoenix	170†‡	125	1	1	36.8	1
Durango Complex	163†‡	139	1	1	42.9	1
Dysart	170†‡	155†‡	2	2	30.1	2
Glendale	173†‡	140	1	1	21.9	1
Higley	219†‡	207†‡	2	2.1	37.0	2
Mesa	199†‡	170†‡	2	2.1	22.2	2
North Phoenix	143	98	0	0	21.3	0
South Phoenix	144	92	0	0	33.4	0
South Scottsdale	188†‡	180†‡	2	2	29.8	2
Tempe	208†‡	158†‡	2	2.1	25.2	2
West Chandler	181†‡	165†‡	3	3	30.7	3
West 43rd Avenue	177†‡	166†‡	3	3	60.7	2
West Phoenix	250†	141	1	1.1	32.4	1
Zuni Hills	248†‡	142	1	1	25.5	1

† - Indicates an exceedance of the standard
‡ - Data are associated with exceptional event flag

Sources: EPA AQS database - *2021 Quicklook Criteria Report (AMP450)*
MCAQD 2021 PM_{10} Exceedance Day Report for quantity of site exceedance days and EEs

Table 15. 2021 PM_{10} Monitor Requirements

CBSA		38060
County		Maricopa
Population & Census Year (2019)		4,496,588
MCAQD Maximum 24-Hour Concentration		258
MCAQD Maximum Concentration for Site	AQS ID	04-013-4011
	Site Name	Buckeye
MSA Maximum 24-Hour Concentration		285
MSA Maximum Concentration Site	AQS ID	04-021-7001
	Site Name	Sacaton
	Monitoring Organization	PCAQCD
Required Monitors		6-10
Active Monitors		15
Additional Monitors Needed		0

Sources: EPA AQS database – *2021 Quicklook Criteria Report (AMP450)*
U.S. Census Bureau: Quick Facts Population Estimate for Maricopa County

Particulate Matter ≤2.5 Micrometers ($PM_{2.5}$)

Figure 11 shows the nine $PM_{2.5}$ sites which operated in 2021. All $PM_{2.5}$ monitors are designated as SLAMS. Data were reported to AQS, and data are suitable for comparison to the NAAQS.

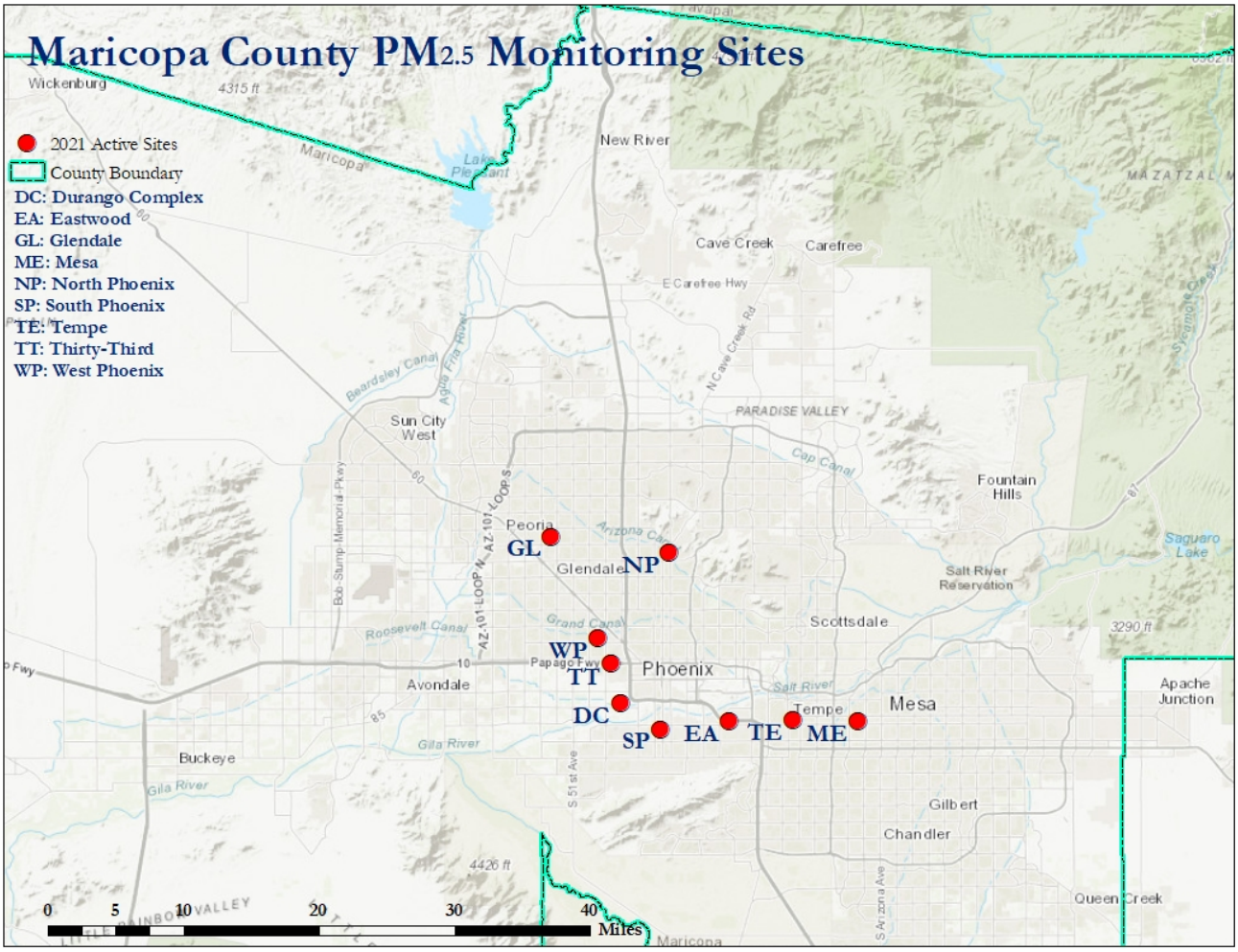


Figure 11. 2021 $PM_{2.5}$ Monitoring Sites

Each $PM_{2.5}$ site operates a continuous FEM monitor that provides hourly concentration data used for NAAQS comparison. To meet the EPA's QA collocation requirements for the $PM_{2.5}$ network, a secondary monitor is operated at the West Phoenix site. This site operates one FEM continuous analyzer designated as the primary monitor and one FRM filter based $PM_{2.5}$ sampler designated as the secondary monitor. The FRM filter-based secondary sampler collects a 24-hour filter sample for QA purposes every 12 days. The U.S. EPA OAQPS produces the annual sampling calendar each year and posts it on the AMTIC website.

In addition to the secondary monitor's data being used for QA purposes, if necessary, the data can be substituted for the primary monitor's data as per *40 CFR Part 50 Appendix N*. The EPA may reference data from the secondary monitor to better evaluate air quality in the area.

Maricopa County is currently in attainment for $PM_{2.5}$. The MCAQD continually assesses the existing $PM_{2.5}$ network to ensure it adequately represents air quality in Maricopa County. To determine compliance with the annual $PM_{2.5}$ NAAQS requires that three years of the annual average of 24-hour data be used from each monitor. To determine compliance with the 24-hour NAAQS requires that three years of the 98th percentile data be used from each $PM_{2.5}$ monitor. For data to be acceptable for comparison to the annual and the 24-hour NAAQS, a site's $PM_{2.5}$ monitor must meet all EPA-required operating and QA criteria.

Required General Statement Regarding Changes to the $PM_{2.5}$ Network

In the event MCAQD needed to move or change a violating $PM_{2.5}$ monitor, this procedure would be followed. MCAQD would hold a public hearing regarding the requested change. Details and documentation of the requested change, as well as all public comments, would then be forwarded to the EPA R9 for approval. Any action on MCAQD's part will be dependent on EPA R9 approval. Please note that this statement is general in nature and required in this AMNP by *40 CFR Part 58*. MCAQD does not currently have any violating $PM_{2.5}$ monitors, nor does it have any proposals to move any $PM_{2.5}$ monitors.

2021 $PM_{2.5}$ Data Summary

In 2021, there were three days that exceeded the 24-hour $PM_{2.5}$ NAAQS at one or more MCAQD sites and two sites, South Phoenix and West Phoenix, violated the NAAQS. Table 166 summarizes the 24-hour and annual data from the primary monitors only, including EE data values if any.

Table 16. 2021 $PM_{2.5}$ 24-Hour and Annual Averages

Site Name	Maximum 24-Hour Average Concentration ($\mu g/m^3$)	2nd Maximum 24-Hour Average Concentration ($\mu g/m^3$)	98th Percentile 24-Hour Average Concentration ($\mu g/m^3$)	Annual Average Concentration ($\mu g/m^3$)
Durango Complex	53.5†	33.6	27.2	10.23
Eastwood	22.6	20.1	16.2	*
Glendale	51.2†	25.9	17.8	6.99
Mesa	72.3†	26.5	18.1	6.79
North Phoenix	61.2†	23.9	16.2	7.29
South Phoenix	74.5†	33.4	30.5	9.62
Tempe	47.1†	24.9	21.9	7.59
Thirty-Third	*	*	*	*
West Phoenix	222.4†	38.8†	26.0	10.72

† - Indicates an exceedance of the standard.
* - Indicates that the mean does not satisfy summary criteria
Source: EPA AQS database – *2021 Quicklook Criteria Report (AMP450)*

The Annual $PM_{2.5}$ NAAQS Status

Compliance with the primary and secondary annual NAAQS is determined by averaging three consecutive years of a site's annual mean value using the 24-hour, or daily, concentrations. The annual $PM_{2.5}$ NAAQS is met when the 3-year annual average concentration is less than or equal to 12.0 $\mu g/m^3$ at each eligible monitoring site. All 3-year averages were below the $PM_{2.5}$ annual NAAQS. Table 17 summarizes the 3-year annual average data.

Table 17. $PM_{2.5}$ 3-Year Annual Averages

Site Name	2019 Annual Average Concentration ($\mu g/m^3$)	2020 Annual Average Concentration ($\mu g/m^3$)	2021 Annual Average Concentration ($\mu g/m^3$)	3-Year Annual Average Concentration ($\mu g/m^3$)
Durango Complex	8.38	10.52	10.23	9.71
Eastwood	not operating	not operating	7.48*	not available
Glendale	6.34	7.63	6.99	6.97
Mesa	5.20	7.30	6.79	6.43
North Phoenix	6.31	7.88	7.29	7.16
South Phoenix	7.48	10.45	9.62	9.18
Tempe	5.79	6.78	7.59	6.72
Thirty-Third	not operating	*	**	not available
West Phoenix	8.17	10.47	10.72	9.79

* - Indicates that the mean does not satisfy summary criteria, e.g., data completeness
** - The site ceased operation 2/28/2021.
Source: EPA AQS database - *2019 – 2021 Quicklook Criteria Report (AMP450)*

2021 24-Hour $PM_{2.5}$ NAAQS Status

Compliance with the primary and secondary 24-hour $PM_{2.5}$ NAAQS is determined by averaging 3-consecutive years of the 24-hour 98th percentile concentration values from all eligible sites. The 24-hour NAAQS is met when 3-year average concentration values is less than or equal to 35 $\mu g/m^3$. In 2021, there were three exceedance days, but no violations of the primary or secondary 24-hour NAAQS occurred. Table 18 summarizes the 3-year 24-hour 98th percentile data from the FEM analyzers.

Table 18. $PM_{2.5}$ 3-Year 24-Hour Averages of the 98th Percentile

Site Name	2019 98th Percentile 24-Hour Average Concentration ($\mu g/m^3$)	2020 98th Percentile 24-Hour Average Concentration ($\mu g/m^3$)	2021 98th Percentile 24-Hour Average Concentration ($\mu g/m^3$)	3-Year 98th Percentile 24-Hour Average Concentration ($\mu g/m^3$)
Durango Complex	21.7	28.8	27.2	25.9
Eastwood	not operating	not operating	16.2	not available
Glendale	15.1	19.0	17.8	17.3
Mesa	11.1	17.4	18.1	15.5
North Phoenix	14.5	18.4	16.2	16.4
South Phoenix	21.4	34.1	30.5	28.7
Tempe	11.9	15.6	21.9	16.5
Thirty-Third	not operating	36.7	*	not available
West Phoenix	23.4	33.9	26.0	27.8

* - Indicates that the mean does not satisfy summary criteria, e.g., data completeness

Source: EPA AQS database – *2019 - 2021 Quicklook Criteria Report (AMP450)*

Table 19 shows additional information required by EPA. The $PM_{2.5}$ annual and daily design values include any measurements submitted as an EE for EPA's concurrence. In 2021, there were no EEs submitted for $PM_{2.5}$ exceedances. Maricopa County exceeds the minimum requirement for $PM_{2.5}$ monitors for the CBSA.

Table 19. 2021 $PM_{2.5}$ Data Required by EPA

CBSA		38060
County		Maricopa
Population & Census Year (2019)		4,496,588
MCAQD Annual Design Value		9.7 µg/m^3
MCAQD Annual Design Value Site	AQS ID	04-013-9812
	Site Name	Durango Complex
MCAQD 24-Hour Design Value		28 µg/m^3
MCAQD 24-Hour Design Value Sites	AQS ID	04-013-4003
	Site Name	South Phoenix
MCAQD Max 24-Hour Concentration		222.4 µg/m^3
MCAQD Max 24-Hour Concentration Site	AQS ID	04-013-0019
	Site Name	West Phoenix
MSA Max 24-Hour Concentration		222.4 µg/m3
MSA Max 24-Hour Concentration Site	AQS ID	04-013-0019
	Site Name	West Phoenix
	Monitoring Organization	MCAQD
Required Monitors		3
Active Monitors		8
Additional Monitors Needed		0

Sources: EPA AQS database - *2021 Preliminary Design Value Report (AMP480) and 2021 Quicklook Criteria Parameter Report (AMP450)*
U.S. Census Bureau: Quick Facts Population Estimate for Maricopa County

Sulfur Dioxide (SO_2)

Figure 12 shows the two SO_2 SLAMS monitors which operated in 2021. The data were reported to AQS, and the data are suitable for NAAQS comparison.

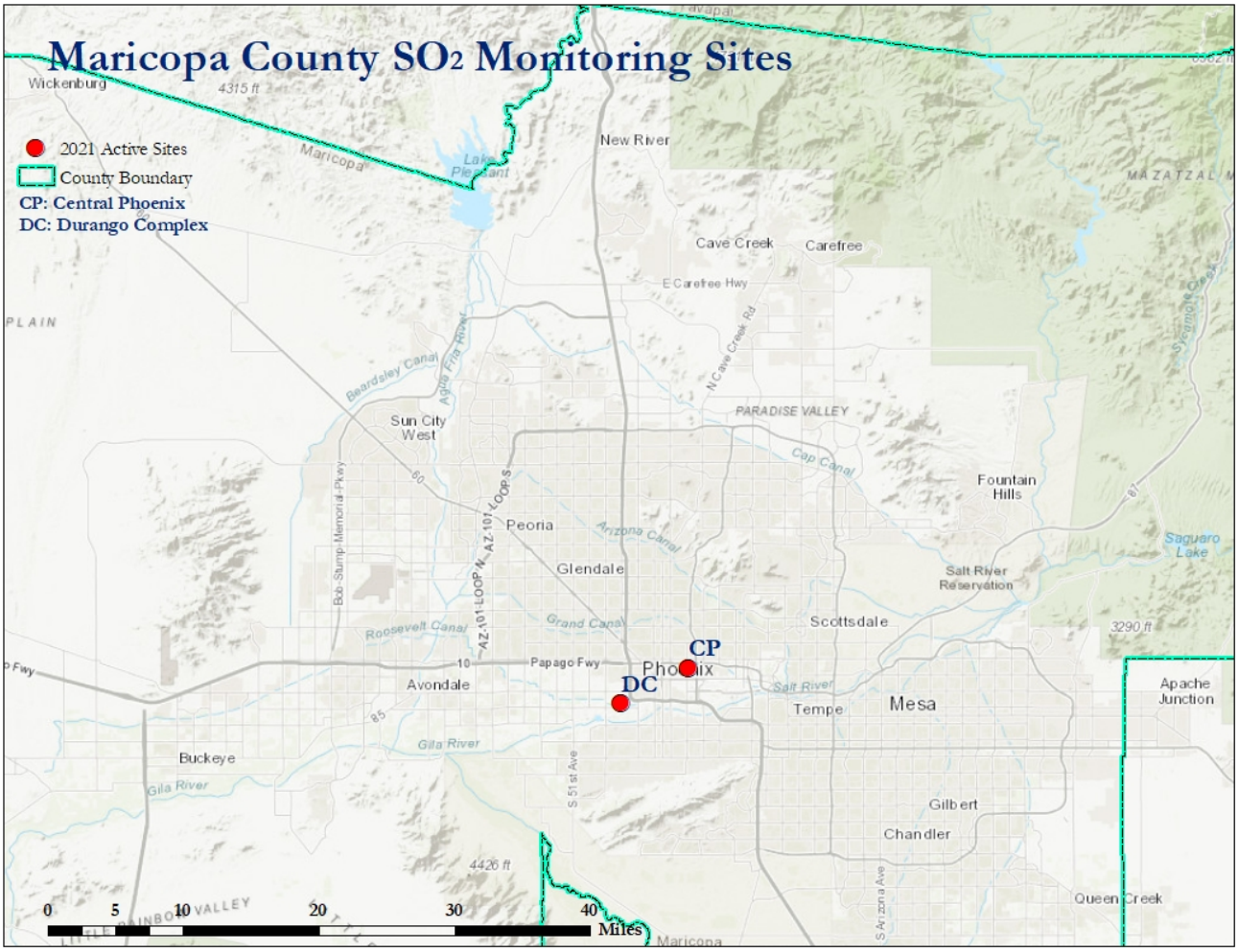


Figure 12. 2021 SO_2 Monitoring Sites

Sulfur dioxide has a 1-hour primary standard and a 3-hour secondary standard. In 2021, no exceedances of the SO_2 primary 1-hour or secondary 3-hour standard were recorded at Maricopa County monitoring sites; and no site violated the SO_2 NAAQS. The EPA requires that the highest 5-minute average per hour per day be reported to AQS; however, there is no 5-minute SO_2 NAAQS standard.

Table 20. 2021 SO_2 Data Summary

Site	1-hour Maximum Concentration (ppb)	1-hour 2nd Maximum Concentration (ppb)	1-hour 99th Percentile (ppb)
Central Phoenix	26.0	13.0	7.0
Durango Complex	8.0	7.0	6.0

Source: EPA AQS database – *2021 Quicklook Criteria Parameters Report (AMP450)*

The minimum required quantity of SO_2 monitors operating within the MCAQD's network is based on either the Population Weighted Emissions Index (PWEI) and/or the EPA R9 Administrator's input (see *40 CFR Part 58 - Appendix D 4.4.3).*

Table 21. 2021 SO_2 Monitor Requirements

CBSA	County	Population & Census Year (2020)	Total SO_2 Emitted (2017) (tpy)	Population Weighted Emission Index	Required Monitors	Active Monitors	Additional Monitors Needed
38060	Maricopa	4,496,588	1378	3810	0	2	0

Sources: The EPA's National Emissions Inventories (NEI) database – 2017 NEI Data
U.S. Census Bureau: Quick Facts Population Estimate for Maricopa County

Summary of 2021 Criteria Pollutant NAAQS Status

This section summarizes information regarding the status of each pollutant relative to its NAAQS level. It also provides detailed information regarding pollutants that are in NAAQS violation. Table 22 summarizes the 2021 NAAQS exceedances and violations by pollutant.

Table 22. 2021 NAAQS Exceedances and Violation Summary

Pollutant	NAAQS Status
O_3	• On fifty (50) unique days, at least one monitor exceeded the 2015 8-hour primary/secondary NAAQS. • On twenty-eight (28) days, at least one monitor exceeded the 2008 8-hour primary/secondary NAAQS. • Sixteen (16) sites will violate the 2015 8-hour primary/secondary NAAQS unless EPA Region 9 concurs with the EE demonstration submittals.
PM_{10}	• On eight (8) unique days, at least one monitor exceeded the 24-hour primary/secondary 1987 NAAQS. • Three (3) sites will violate the primary/secondary 1987 NAAQS unless EPA Region 9 concurs with the EE demonstration submittals. If submittals are approved, then no site will violate the NAAQS.
$PM_{2.5}$	• On three (3) unique days, at least one monitor exceeded the 2012 24-hour primary/secondary NAAQS. • No sites violated the 24-hour or annual primary/secondary 2012 NAAQS.
SO_2	• No exceedances or violations of the primary annual or 1-hour 2010 NAAQS or the annual secondary 2010 NAAQS occurred.
NO_2	• No exceedances or violations of the 1-hour or annual primary 2010 NAAQS or annual secondary 2012 NAAQS occurred.
CO	• No exceedances or violations of the 1-hour or 8-hour primary 2011 NAAQS occurred.

2021 O_3 Exceedance, Violation, and Exceptional Event Information

This section discusses the monitoring results of the O_3 network, and the 2015 NAAQS violation status based upon years 2019 through 2021.

O_3 NAAQS Exceedances

The 2015 O_3 NAAQS level of 0.070 ppm is exceeded when a rolling 8-hour average is 0.071 ppm or higher. Fifty exceedance days occurred in 2021. Figure 13 shows the 2021 O_3 exceedance dates and concentrations by site. Exceedance day values associated with an EE are shown in red in the table below.

The 2008 O3 NAAQS level of 0.075 ppm is exceeded when a rolling 8-hour average is 0.076 ppm or higher. Twenty-eight exceedances occurred in 2021. Figure 13 shows the 2021 O_3 exceedance dates and concentrations by site. Exceedance day values associated with an EE are shown in red in the table below.

O_3 Exceptional Events and Status of EPA Concurrence

Thirty-eight (38) exceedance days appear to be influenced by smoke from wildfires for which EE packages are being developed for submittal to EPA. The EPA must concur with the EE demonstration package before O_3 data can be omitted from NAAQS comparisons.

O_3 NAAQS Violation Status - Including Exceptional Event Data

A site violates the 2015 O_3 NAAQS when its 3-year average of the 4th highest rolling 8-hour average concentration measured during a year exceeds 0.070 ppm. Figure 14 shows the sites that violated the 2015 O_3 NAAQS and includes 2019 through 2021 average data associated with EE submittals.

Figure 15 shows the sites that would violate the 2008 O_3 NAAQS in 2021, if the EPA concurs with the EE demonstration packages submitted for 2019 through 2021. The graph also shows that no sites would violate the 2008 O_3 NAAQS.

2021 Ozone Exceedance Days

Ozone 8-Hr Avg. 2015 NAAQS > 0.070 ppm

Date	Buckeye	Blue Point	Cave Creek	Central Phoenix	Dysart	Falcon Field	Fountain Hill	Glendale	Humboldt M	Mesa	North Phoeni	Pinnacle Pea	South Phoeni	South Scottsdale	Tempe	West Chandle	West Phoeni
05/05/21		0.072								0.072		0.072					
05/06/21		0.076				0.075				0.071		0.078					
05/12/21										0.071	0.072	0.074					
05/13/21			0.071									0.072					
05/24/21		0.075				0.076	0.074	0.072		0.075	0.076	0.073		0.071		0.071	
05/26/21												0.071					
05/27/21											0.072	0.074					
05/28/21											0.071	0.072					
06/09/21											0.071						
06/11/21	0.071		0.085	0.074	0.077	0.078	0.082	0.079	0.074	0.072	0.082	0.086	0.072	0.075	0.073		
06/12/21				0.073	0.071	0.080		0.075		0.081	0.076	0.073		0.073	0.077		
06/15/21		*	0.091	0.091	0.093	0.089	0.098	0.097		0.085	0.108	0.107	0.080	0.096	0.083		0.076
06/16/21		*				0.076	0.074			*	0.072			0.074			
06/18/21		*										0.072					
06/24/21						0.072			*								
06/26/21						0.073			*	0.072							
06/28/21					0.075			0.072	*								
06/29/21	0.071			0.080		0.072		0.072	*	0.076	0.073		0.076	0.074	0.078		0.078
07/01/21				0.082		0.078	0.073	0.071	*	0.083	0.078	0.071	0.073	0.080	0.086	0.081	0.074
07/02/21										0.072				0.071			
07/04/21						0.072				0.073							
07/08/21		0.071				0.077 †	0.073 †				0.075			0.079			0.072
07/09/21						0.071											
07/13/21						0.071					0.073			0.071			
07/14/21										0.071							
07/17/21				0.075		0.077				0.080	0.071			0.075	0.078	0.073	
07/19/21		0.071		0.073		0.078	0.073	0.074		0.073	0.077	0.074		0.078			0.072
07/20/21						0.071				0.071	0.080	0.072		0.078			0.073
07/21/21			0.073		0.078		0.072	0.076			0.074	0.074		0.072			
07/22/21		0.075	0.074	0.071		0.082	0.078			0.076	0.074	0.077		0.080	0.074		
07/27/21						0.073				0.073	0.079	0.080		0.075			
07/28/21		0.071	0.071	0.081	0.072	0.087	0.076	0.075		0.083	0.085	0.079		0.085	0.079	0.076	0.076
07/30/21	0.072				0.073			0.073									
07/31/21				0.071		0.080				0.080	0.071			0.075	0.075	0.073	
08/01/21						0.073											
08/02/21				0.079	0.073	0.073		0.073		0.077	0.075	0.071	0.074	0.079	0.073	0.074	0.077
08/03/21	0.078			0.084	0.076	0.076		0.073		0.083	0.075		0.074	0.080	0.079	0.072	0.081
08/04/21	0.073		0.074	0.078	0.082	0.077		0.080		0.077	0.081	0.076		0.081	0.076		0.078
08/05/21				0.074		0.077	0.073			0.075	0.073	0.071		0.082	0.073		
08/06/21						0.073				0.072							
08/17/21												0.072					
08/24/21										0.074					0.073		
08/25/21				0.073							0.081						
08/26/21					0.073	0.076		0.074		0.071	0.072			0.076			
08/27/21				0.075	0.074			0.075		0.076	0.073			0.075	0.074		
08/28/21				0.071						0.082	0.076			0.080	0.078		
08/29/21								0.075									
09/03/21				0.075		0.074				0.079			0.072	0.076	0.080	0.072	
09/04/21				0.078		0.077		0.079		0.080	0.081	0.071		0.080	0.079		0.078
09/05/21				0.071		0.072				0.076	0.077			0.077	0.074		
Exceedance Days	5	7	7	20	12	30	10	18	1	32	31	24	7	28	19	8	11
Maximum Value	0.078	0.076	0.091	0.091	0.093	0.089	0.098	0.097	0.074	0.085	0.108	0.107	0.080	0.096	0.086	0.081	0.081
4th Highest Value >0.070	0.071	0.072	0.074	0.081	0.077	0.080	0.076	0.079		0.083	0.081	0.079	0.074	0.081	0.079	0.073	0.078

* - no data - monitor down

† - value corrected since original report issued

NOTES:

Total Number of Days where at least one monitor exceeded the NAAQS **50**

Exceedances qualifying for an EE submittal to EPA are shown in RED type

Highlighted dates indicate at least one site on that day exceeded the 2008 NAAQS

All sites are located in or near the Ozone Nonattainment Area

Please see ADEQ for information on additional statewide ozone sites

Figure 13. 2021 O_3 Exceedance Days

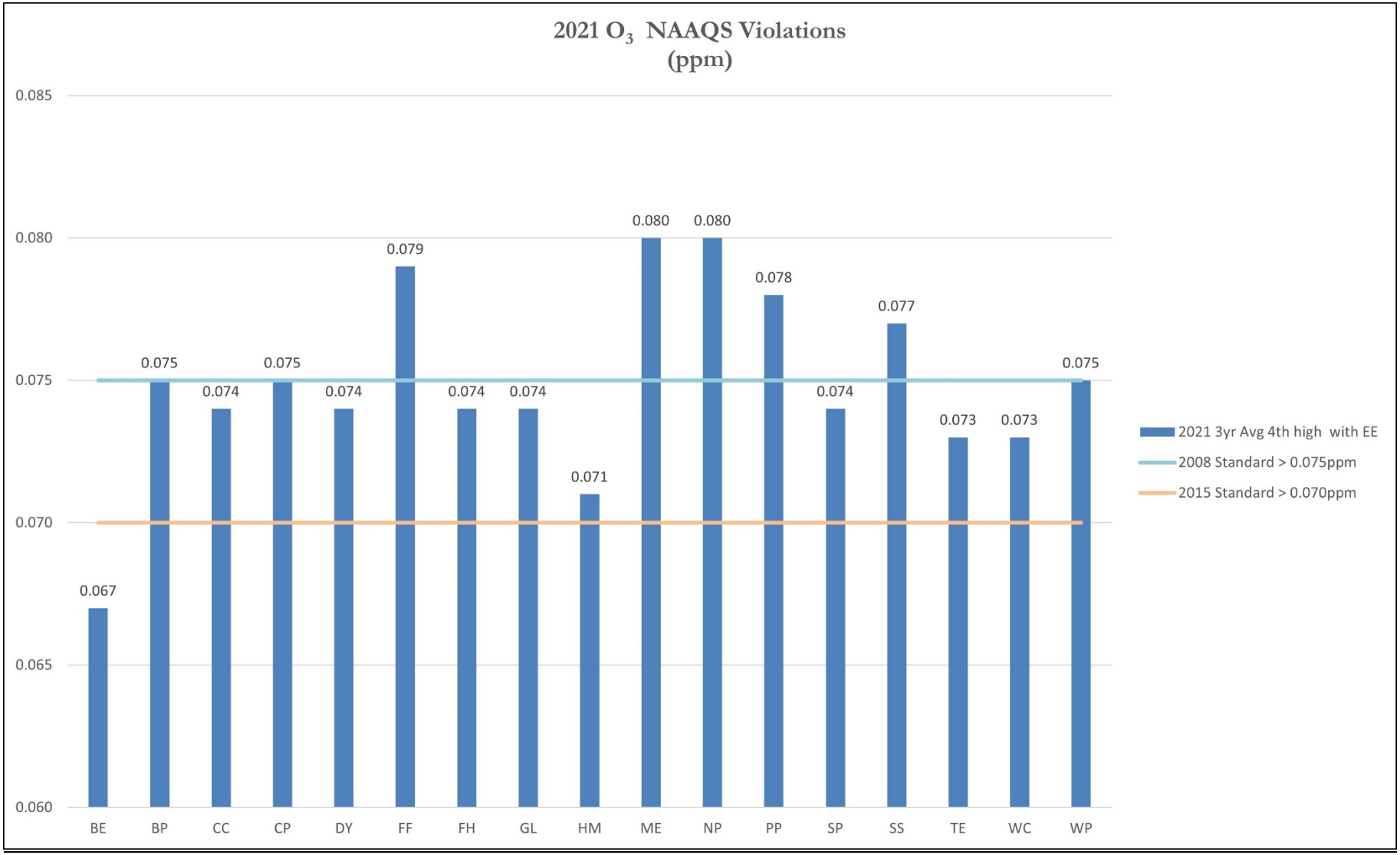


Figure 14. 2021 O_3 NAAQS Violations by Site including Exceptional Event

Source: *AQS 2021 O3 8-Hour Maximum Values Report (AMP440)*

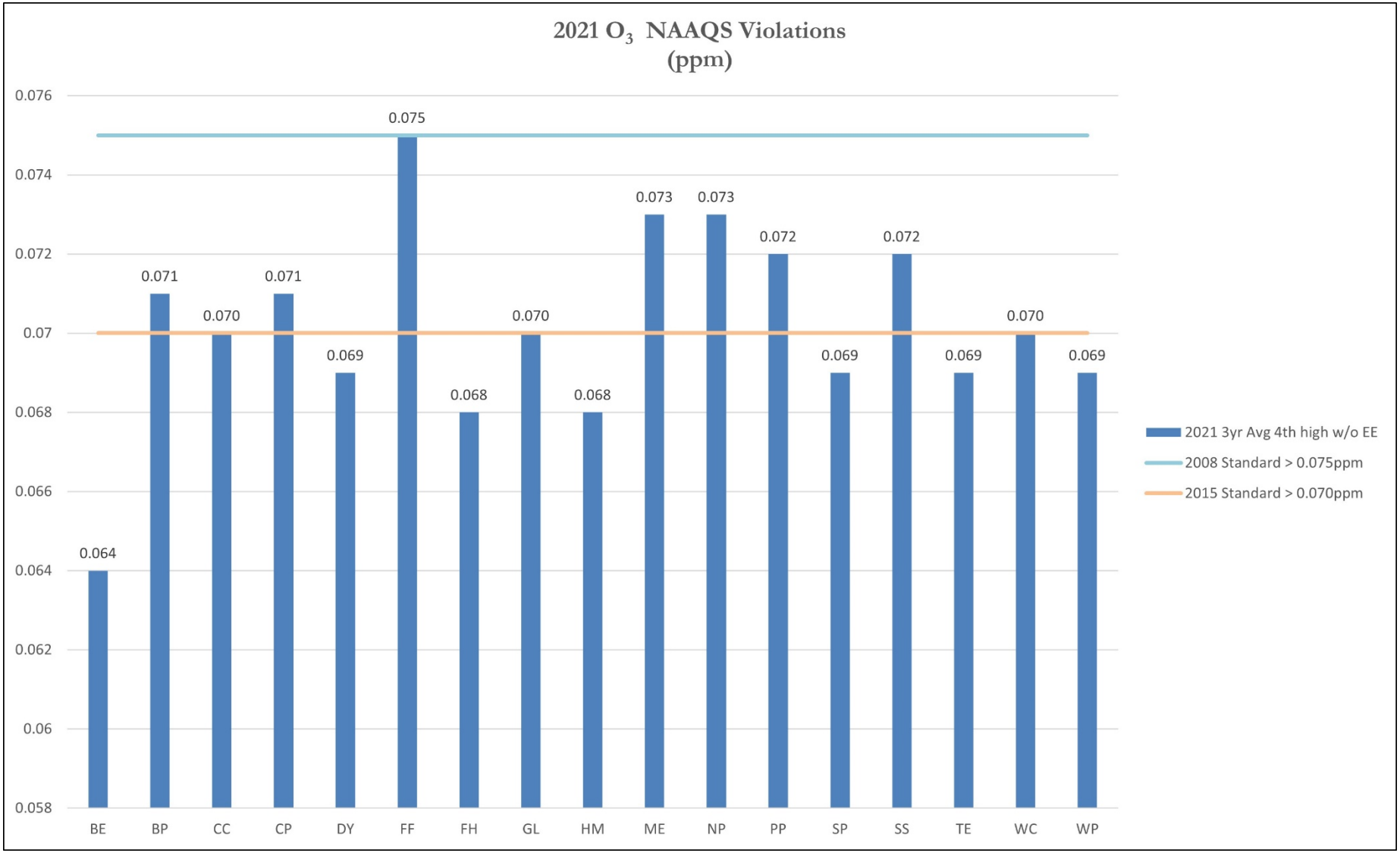


Figure 15. 2021 O_3 NAAQS Violations by Site excluding Exceptional Events

2021 PM_{10} Exceedance, Violation, and Exceptional Event Information

This section discusses the monitoring results of the PM_{10} network and NAAQS violation status based upon years 2019 - 2021.

PM_{10} NAAQS Exceedances

A PM_{10} exceedance occurs when a monitor's 24-hour average concentration from midnight-to-midnight is 155.5 µg/m^3 or higher. Figure 16 shows the site and date of PM_{10} exceedances that occurred in 2021. All 2021 exceedances of the PM_{10} NAAQS qualify for Exceptional Events consideration and demonstration packages will be developed for EPA's review. The 24-hour concentrations shown below include hourly PM_{10} data flagged as an Exceptional Event in red.

2021 Exceedance Days of the 24-Hr PM_{10} NAAQS

PM_{10} 24-Hr Avg. NAAQS ≥ 155 µg/m^3

	Buckeye	Central Phoenix	Durango Complex	Dysart	Glendale	Higley	Mesa	North Phoenix	South Phoenix	South Scottsdale	Tempe	West Chandler	West 43rd	West Phoenix	Zuni Hills
01/01/21														250.1	
03/03/21						208.0							177.9		
07/09/21							199.2			188.7	208.5	166.4			
07/10/21				170.4	173.0										248.6
07/12/21	163.1														
10/11/21	259.0			155.9								160.9			
10/12/21		170.9	163.3			219.8	170.4			180.7	158.9	181.5	166.6		
12/01/21													156.0		
Exceedance Days	2	1	1	2	1	2	2	0	0	2	2	3	3	1	1

NOTE: Exceedances qualifying for an EE sumbittal to EPA are shown in RED

Number of Days in 2021 when at least one monitor exceeded the 24-Hr PM_{10} NAAQS: 8

Figure 16. 2021 PM_{10} Exceedance Days

PM_{10} Exceptional Events and Status of EPA Concurrence

Table 23 shows the EE qualifier associated with each exceedance. Please note that data holding EE concurrence from EPA are not included when determining compliance with the NAAQS.

Table 23. 2021 PM_{10} Exceptional Event Information

Exceedance Date	Site	24-hr Avg. Conc.(µg/m3)	Qualifies as EE?	EE Qualifier Code*	Qualifier Code Description
01/01/2021	WP	250.1	Y	rh	fireworks
03/03/2021	HI	208	Y	rj	high winds
	WF	177.9	Y		
07/09/2021	ME	199.2	Y	rj	high winds
	SS	188.7	Y		
	TE	208.5	Y		
	WC	166.4	Y		
07/10/2021	DY	170.4	Y	rj	high winds
	GL	173	Y		
	ZH	208.6	Y		
07/12/2021	BE	163.1	Y	rj	high winds
10/11/2021	BE	259	Y	rj	high winds
	DY	155.9	Y		
	WC	160.9	Y		
10/12/2021	CP	170.9	Y	rj	high winds
	DC	163.3	Y		
	HI	219.8	Y		
	ME	170.4	Y		
	SS	180.7	Y		
	TE	158.9	Y		
	WF	166.6	Y		
	WC	181.5	Y		

The following information contrasts the PM_{10} NAAQS violation status with and without EPA concurrence. The EPA has yet to concur or not with EE demonstration package submittals for 2019, 2020, and 2021.

PM_{10} 24-Hour NAAQS Violation Status - Including Exceptional Event Data

As per *40 CFR Part 50.6 (a)*, a site violates the primary and/or secondary 24-hour PM_{10} NAAQS when the calculated "rate of expected exceedances" is greater than one (> 1) when averaged over three consecutive years. Table 244 includes EE data and shows the maximum three-year 24-hour PM_{10} averages, the calculation of expected exceedances for each year, and the calculation of three-year average for the rate of expected exceedances. If the EPA does not concur with the EE demonstration packages submitted for years 2019 through 2021; then, three sites within the MCAQD network will violate the PM_{10} NAAQS as shown in the 3-Year Average Rate of Expected Exceedance column.

Table 24. 2021 Violations of the PM_{10} 24-Hour NAAQS Including EE Data

Site	2019		2020		2021		3-Year Average Rate of Expected Exceedances
	24-Hour Maximum (µg/m³)	Expected Exceedances	24-Hour Maximum (µg/m³)	Expected Exceedances	24-Hour Maximum (µg/m³)	Expected Exceedances	
Buckeye	237‡	1	165‡	1	258‡	2	1.3†
Central Phoenix	84	0	214‡	1	170‡	1	0.7
Durango Complex	123	0	141	0	163‡	1	0.3
Dysart	73	0	136	0	170‡	2	0.7
Glendale	44	0	92	0	173‡	1	0.3
Higley	114	0	131	0	219‡	2.1	0.7
Mesa	48	0	129	0	199‡	2.1	0.7
North Phoenix	50	0	116	0	143	0	0.0
South Phoenix	72	0	98	0	144	0	0.0
South Scottsdale	74	0	192‡	1	188‡	2	1.0
Tempe	67	0	134	0	208‡	2.1	0.7
West Chandler	76	0	263‡	1.1	181‡	3	1.4†
West 43rd	235‡	3	226‡	3.1	177‡	3	3.0†
West Phoenix	58	0	159‡	1	250†	1.1	0.7
Zuni Hills	113	0	111	0	248‡	1	0.3

‡ - MCAQD flagged this exceedance as an EE in AQS

†- indicates a violation of the NAAQS

Source: EPA AQS database - *2019 - 2021 – Quicklook Criteria Parameters Report (AMP450)*

PM_{10} 24-Hour NAAQS Violation Status - Excluding Exceptional Event Data

The ADEQ submits EE packages to EPA Region 9 for the 2021 PM_{10} exceedance days. If EPA concurs with the EE demonstration packages submitted for 2019 through 2020, then no sites will violate the PM_{10} NAAQS in 2021. Table 25 excludes PM_{10} data considered the result of an EE, regardless of the EPA's concurrence status. The NAAQS violation status is shown in the 3-Year Average Rate of Expected Exceedance column.

Table 25. 2021 Violations of the PM_{10} NAAQS Excluding Data Flagged as an EE

Site	2019		2020		2021		3-Year Average Rate of Expected Exceedances
	24-hour Maximum (µg/m³)	Expected Exceedances	24-hour Maximum (µg/m³)	Expected Exceedances	24-hour Maximum (µg/m³)	Expected Exceedances	
Buckeye	131	0	138	0	149	0	0
Central Phoenix	84	0	100	0	125	0	0
Durango Complex	123	0	141	0	131	0	0
Dysart	73	0	136	0	137	0	0
Glendale	44	0	76	0	107	0	0
Higley	114	0	131	0	134	0	0
Mesa	48	0	129	0	170	0	0
North Phoenix	50	0	116	0	98	0	0
South Phoenix	72	0	98	0	92	0	0
South Scottsdale	74	0	107	0	103	0	0
Tempe	67	0	134	0	83	0	0
West Chandler	76	0	89	0	89	0	0
West 43rd Avenue	150	0	130	0	155	1	0.33
West Phoenix	58	0	120	0	141	0	0
Zuni Hills	113	0	111	0	122	0	0

Source: EPA AQS database – *2019 - 2021 Maximum Values Report (AMP440)*

2021 $PM_{2.5}$ Exceedance, Violation, and Exceptional Event Information

This section discusses the monitoring results of the $PM_{2.5}$ network in 2021. It includes NAAQS exceedance information and violation status for 2021.

$PM_{2.5}$ Annual NAAQS Exceedance and Violation Status

The annual primary NAAQS for $PM_{2.5}$ is 12.0 µg/m^{3}and the secondary NAAQS for $PM_{2.5}$ is 15.0 µg/m^3. In 2021, there were no violations of either annual NAAQS levels. Each site's annual $PM_{2.5}$ average was shown previously on Table 25.

$PM_{2.5}$ 24-Hour NAAQS Exceedance and Violation Status

The 24-hour primary and secondary NAAQS levels for $PM_{2.5}$ are 35 µg/m^3. If the 24-hour block-average concentration from midnight-to-midnight at a site is 35.5 µg/m^3 or higher, then it is counted as an exceedance. If the 24-hour 3-year average of the 98th percentile exceeds 35 µg/m^3, then the 24-hour NAAQS is violated.

2021 Exceedance Days of the 24-Hr $PM_{2.5}$ NAAQS

$PM_{2.5}$ 24-Hr Avg. NAAQS ≥ 35.5 µg/m^3

	Durango Complex	Glendale	Mesa	North Phoenix	South Phoenix	Tempe	Thirty-Third	West Phoenix
01/01/2021	53.5	51.2	72.3	61.2	74.5	47.1	113.4	222.4
01/02/2021								36.4
12/05/2021								38.8
Exceedance Days	1	1	1	1	1	1	1	3
* - no monitor								
		Number of Days in 2021 where at least one monitor exceeded the 24-Hr $PM_{2.5}$ NAAQS						3

NOTES:
Exceedances qualifying for an EE sumbittal to EPA are shown in RED
Diablo - sampling discontinued on 01/12/2020
Thirty-Third - $PM_{2.5}$ sampling started 01/01/2020

Figure 17. 2021 $PM_{2.5}$ Exceedance Days

$PM_{2.5}$ Exceptional Events and Status of EPA Concurrence

There were no $PM_{2.5}$ EEs for 2021, the exceedance days did not warrant seeking EE submittal packages due to no risk of the exceedance triggering a violation of the NAAQS.

Information Regarding Maricopa County's Supplementary Air Monitoring Programs

Small Sensor Studies

PurpleAir® Sensors

In partnership with EPA OAQPS, MCAQD launched a three-phase monitoring project to gather pollutant data using low-cost sensors. The knowledge gained from these projects will help EPA better determine how pollutant measurements from low-cost sensors compare to those of regulatory analyzers or samplers. Phase I started in late 2018 and concluded in 2019. It used low-cost small sensors to help locate spatial hotspots of pollution, identify sources, and observe pollution dynamics during the wintertime burn season. Phase II will provide data that will help determine how well the PurpleAir® sensors measure PM pollution, as well as the effects of an arid, hot climate on the sensors' performance and longevity. Phase II continued through 2020. Phase III involved testing a variety of popular, leading small sensors at the West Phoenix site and continued through Spring 2021.

Use of Low-Cost NO_2 Sensors and VOC sampling to Understand Ozone Formation in Maricopa County

The Maricopa County Air Quality Department partnered with Arizona State University (ASU) to use Clarity Node-S low-cost sensors (LCS) to better understand how nitrogen dioxide (NO_2) contributes to ozone formation in Maricopa County. Twelve LCS were collocated with a federal reference method (FRM) NO_2 monitor and a federal equivalent method (FEM) ozone monitor. Using the resulting calibrated LCS data, ASU compared the ratio of NO_2 to ozone to better understand the impact of NO_2 on ozone formation. The next step is to use the NO_2 data, O_3 data, and VOC data, to find a correlation between the pollutants.

Shared Air Monitoring Responsibilities

For the MCAQD monitoring network, EPA requested that we work with the other S/L/T MOs within the MSA/CBSA to develop a shared monitoring agreement as specified by EPA Region 9. This is to ensure that each pollutant's network is adequately represented throughout Maricopa and Pinal Counties, which is the MSA/CBSA geographical area. In 2019, we checked in with EPA Region 9 representatives regarding their direction on how to proceed with this requirement. We are dependent upon representatives at EPA Region 9 to provide the specifics needed in such an agreement before we can satisfy this requirement. As of May 2022, no agreement has been developed. MCAQD will again ask for guidance from EPA Region 9 on what steps can be taken to complete this task.

Information Regarding Additional Air Monitoring within Maricopa County

ADEQ operates its own air monitoring surveillance system within the State of Arizona, which includes the JLG Supersite in central Phoenix. JLG Supersite is part of the national air monitoring surveillance system and numerous SLAMS monitors operate there. In addition, ADEQ collects research data for other air monitoring programs at both the JLG Supersite and MCAQD's South Phoenix site. The research data support EPA's air monitoring programs that include, but are not limited to, identifying airborne air toxics and ozone precursors, identifying the chemical composition of $PM_{2.5}$, and measuring visual haze.

Specifically, ADEQ performs air monitoring in Maricopa County for the Chemical Speciation Network (CSN), the Interagency Monitoring of Protected Visual Environments (IMPROVE), the National Air Toxics Trends Stations (NATTS), the National Core multi-pollutant monitoring stations (NCore), the Photochemical Assessment Monitoring Stations (PAMS), and the Urban Air Toxics Monitoring Program (UATMP). They also operate visibility cameras and meteorological monitors within the County. Occasionally, ADEQ may temporarily use other sites for special projects.

For more information about ADEQ's network, consult the ADEQ Air Quality Division's website.

REFERENCES

- The eCFR Title 40, Parts 50, 53, and 58
- U.S. EPA Office of Air and Radiation: https://www.epa.gov/aboutepa/about-office-air-and-radiation-oar
- U.S. EPA Criteria Pollutant Information: https://www.epa.gov/criteria-air-pollutants
- U.S. EPA NAAQS Information: https://www.epa.gov/criteria-air-pollutants/naaqs-table
- U.S. EPA Network Assessments/Plans webpage: https://www.epa.gov/amtic/state-monitoring-agency-annual-air-monitoring-plans-and-network-assessments
- U.S. EPA NowCast Presentation: https://www3.epa.gov/airnow/ani/pm25_aqi_reporting_nowcast_overview.pdf
- U.S. EPA AIRNow webpage: https://gispub.epa.gov/airnow/
- U.S. EPA AQS AirData website: https://www.epa.gov/outdoor-air-quality-data
- U.S. EPA NowCast Calculator webpage: https://www3.epa.gov/airnow/aqicalctest/nowcast.htm
- U.S. EPA OAQPS QA Webpage: Ambient Air Monitoring Quality Assurance | US EPA
- U.S. EPA Exceptional Events webpage: https://www.epa.gov/air-quality-analysis/treatment-data-influenced-exceptional-events
- U.S. EPA List of Areas Protected by the Regional Haze Program: https://www.epa.gov/visibility/list-areas-protected-regional-haze-program
- U.S. EPA National Emissions Inventory database: https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data
- EPA Metadata Specifications: https://www.epa.gov/geospatial/epa-metadata-technical-specification
- EPA Region 9 Air Program Information: http://www.epa.gov/region9/air/index.html
- Arizona SIP Information: https://azdeq.gov/SIP
- ADEQ Natural and Exceptional Events Information: https://azdeq.gov/naturalandexceptional_events
- MCAQD Online Interactive Air Quality Map: http://alert.fcd.maricopa.gov/alert/Google/v3/airnow.html

- MCAQD Annual Monitoring Plans and Network Assessments: http://www.maricopa.gov/1669/Air-Monitoring-Network-Plans-Assessments

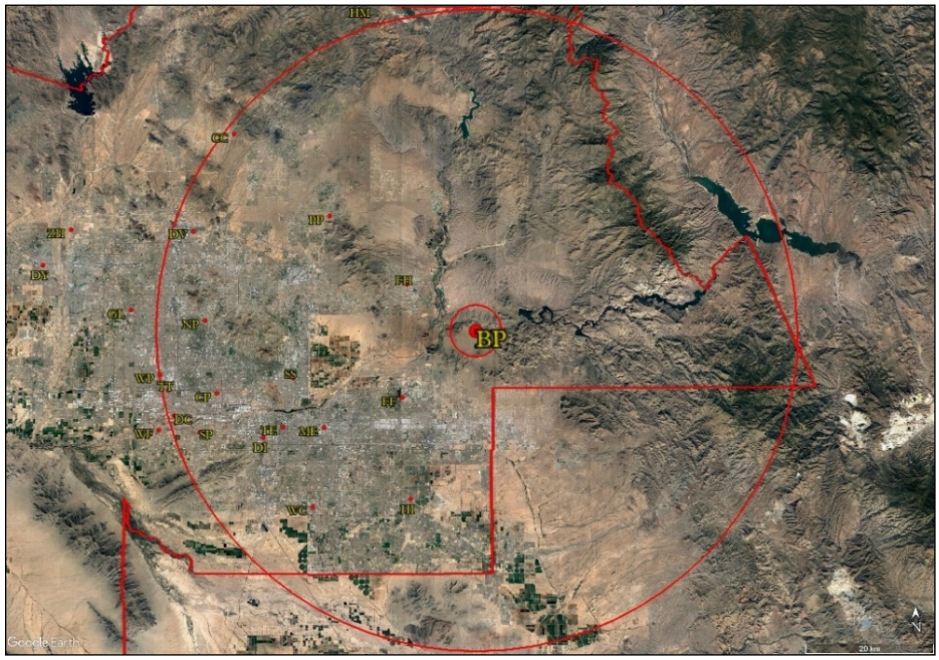
- MCAQD Clean Air Make More Restrictions Web page: https://cleanairmakemore.com/our-air/restrictions/

- MCAQD Dusts Sources, Control and Training: https://www.maricopa.gov/1913/Dust-Sources-Control-and-Training

APPENDIX I - AIR MONITORING DATA BY SITE

Site information includes site location, spatial scale, site type, and site description.

Blue Point (BP) (04-013-9702)



Site Location	Bush Hwy. & Usery Pass Rd., Maricopa County
Spatial Scale	Urban
Site Type	Maximum O_3 Concentration

Site Description: This site began operating in July 1995. This SLAMS location monitors for O_3. Meteorological monitoring includes ambient temperature and wind speed/direction.

This site is located approximately 40 miles east of the Phoenix metropolitan area and represents maximum O_3 concentrations downwind from an urban area.

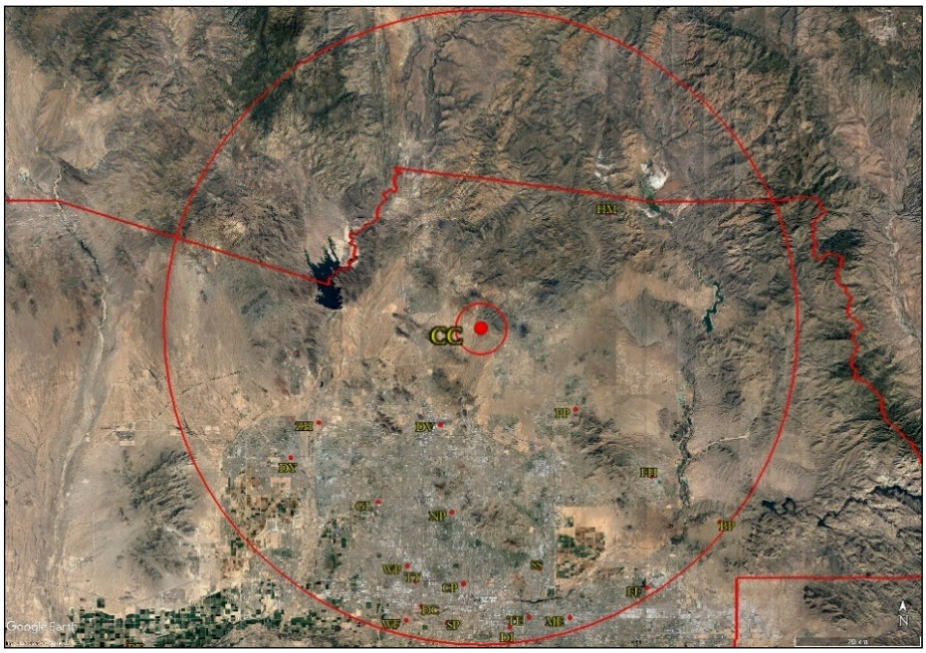
Buckeye (BE) (04-013-4011)

Site Location	AZ Hwy. 85 & MC Hwy. 85, Buckeye
Spatial Scale	Neighborhood for CO, and PM_{10} Urban for NO_2 and O_3
Site Type	Population Exposure and Upwind Background for O_3

Site Description: The Buckeye site began operating in August 2004. This SLAMS location monitors for CO, NO_2, O_3, and PM_{10}. Meteorological monitoring includes ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

The site is located at the Maricopa County Department of Transportation - Southwest Facility. The immediate area is agriculture and encroaching residential development.

Cave Creek (CC) (04-013-4008)

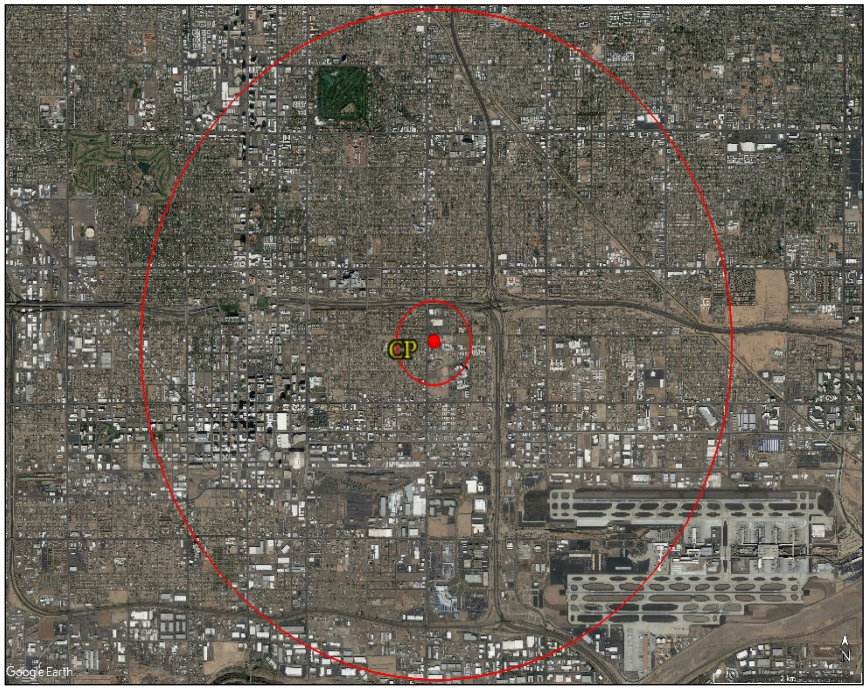


Site Location	32nd St. & Carefree Hwy., Cave Creek
Spatial Scale	Urban
Site Type	Maximum O_3 Concentration

Site Description: The Cave Creek site began operating in July 2001. This SLAMS location monitors for O_3. Meteorological monitoring includes ambient temperature, barometric pressure, rain, relative humidity, and wind speed/direction.

The site is located at the Maricopa County Cave Creek Recreation Area - Park Office.

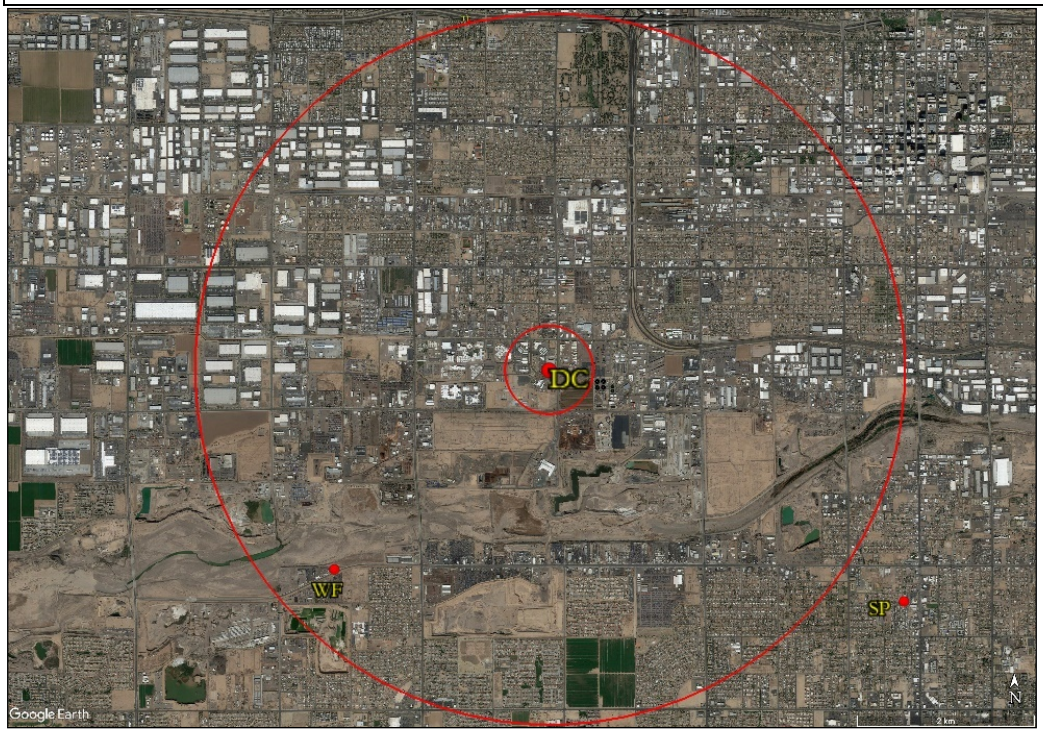
Central Phoenix (CP) (04-013-3002)



Site Location	19th St. & Roosevelt St., Phoenix
Spatial Scale	Neighborhood
Site Type	Population Exposure for CO, O_3, and PM_{10} Highest Concentration for NO_2 and SO_2

Site Description: The Central Phoenix site began operating in June 1962. This SLAMS location monitors for CO, PM_{10}, NO_2, O_3, and SO_2. Meteorological monitoring includes ambient temperature, barometric pressure, and wind speed/direction.

Durango Complex (DC) (04-013-9812)

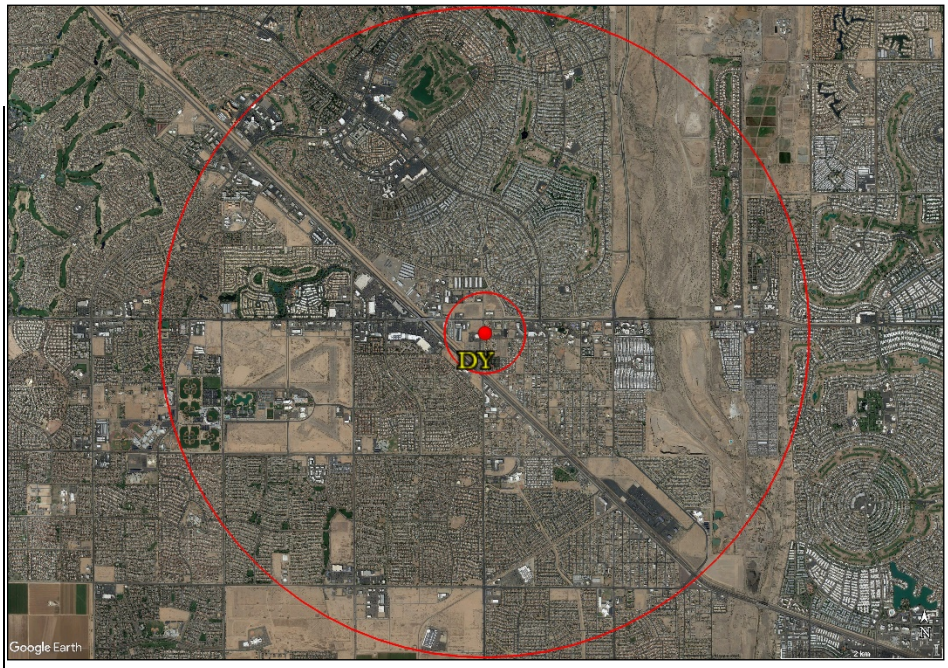


Site Location	27th Ave & Durango St., Phoenix
Spatial Scale	Neighborhood
Site Type	Highest Concentration

Site Description: This site began operating in January 1999. This SLAMS location monitors for PM_{10}, $PM_{2.5}$, and SO_2. Meteorological monitoring includes ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

The site is located inside the Maricopa County Flood Control District storage yard.

Dysart (DY) (04-013-4010)



Site Location	Bell Rd. & Dysart Rd., Surprise
Spatial Scale	Neighborhood
Site Type	Population Exposure

Site Description: The Dysart site began operating in July 2003. This SLAMS location monitors for O_3 and PM_{10}. Meteorological monitoring includes ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

The site is located at the Maricopa County Facility Maintenance Yard on the corner of Bell Rd. and Dysart Rd. The site is in a growing population area in the northwest valley and is surrounded by a variety of land use.

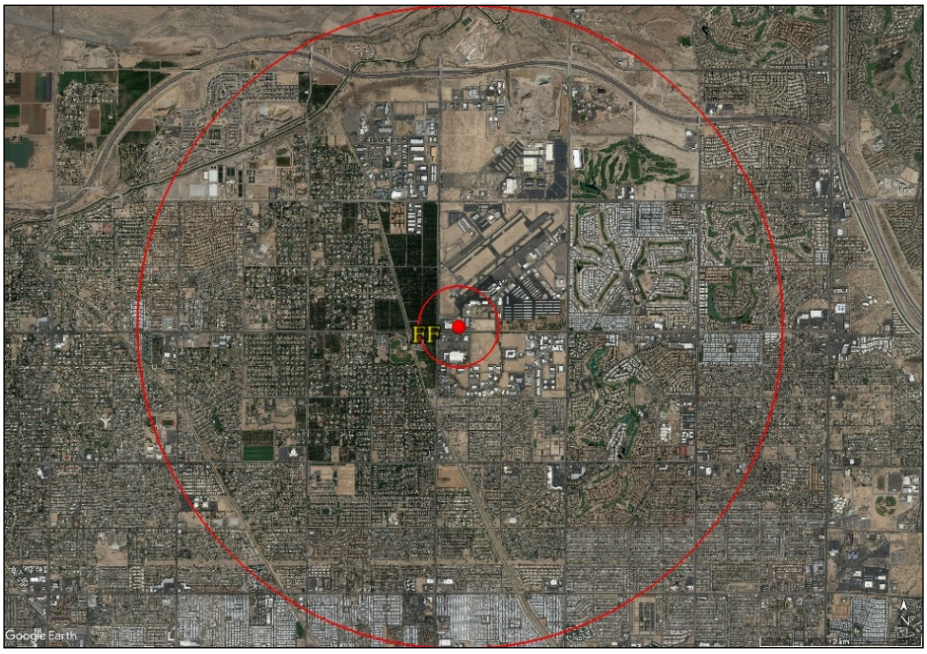
Eastwood (EA) (04-013-4021)

Site Location	36th Street & Interstate 10
Spatial Scale	Micro
Site Type	Source-Oriented

Site Description: The Eastwood site began operating in March 2021. This SLAMS location monitors for CO, NO_2, and $PM_{2.5}$. Meteorological monitoring includes ambient temperature, relative humidity, and wind speed/direction.

The site is one of two near-road air monitoring sites and is located on the south side of the I-10 East.

Falcon Field (FF) (04-013-1010)

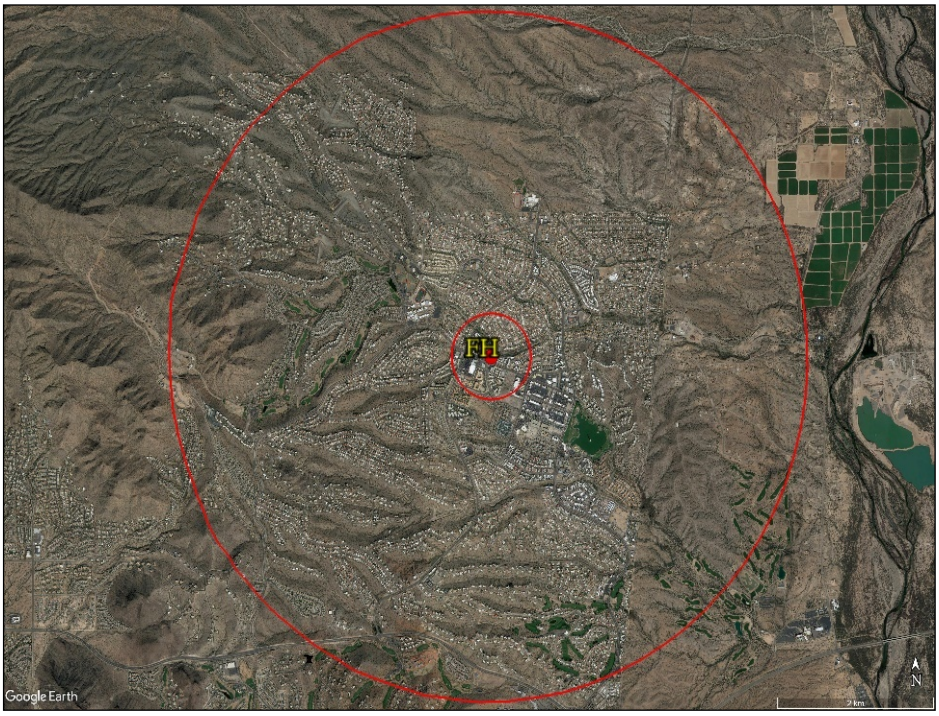


Site Location	Greenfield Rd. & McKellips Rd., Mesa
Spatial Scale	Neighborhood
Site Type	Population Exposure

Site Description: This site began operating in June 1989. This SLAMS location monitors for O_3. Meteorological monitoring includes ambient temperature and relative humidity.

The site is located at a fire station near an airfield within a growing residential area. In 2020, wind speed and direction monitoring ceased at this location due to no longer being able to secure a wind tower to the roof of the fire station. The search for a new location in the same general area where an air monitoring shelter can be installed is underway.

Fountain Hills (FH) (04-013-9704)

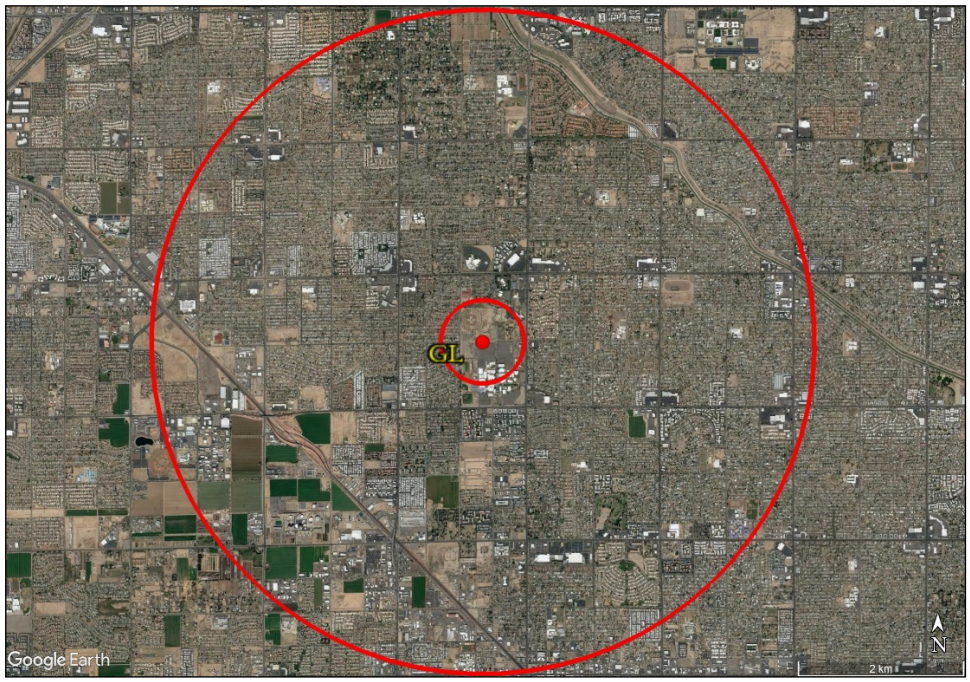


Site Location	Fountain Hills Blvd. & Palisades Blvd., Fountain Hills
Spatial Scale	Neighborhood
Site Type	Maximum O_3 Concentration

Site Description: The site began operating in April 1996 at a Fountain Hills fire station. This SLAMS location monitors for O_3 only. Meteorological monitoring includes ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

The site is located approximately 15 miles northeast of the Phoenix metropolitan area and represents maximum O_3 concentrations downwind from an urban area. Furthermore, the site sits on the fringes of the central basin district along the predominant summer/fall daytime wind direction.

Glendale (GL) (04-013-2001)

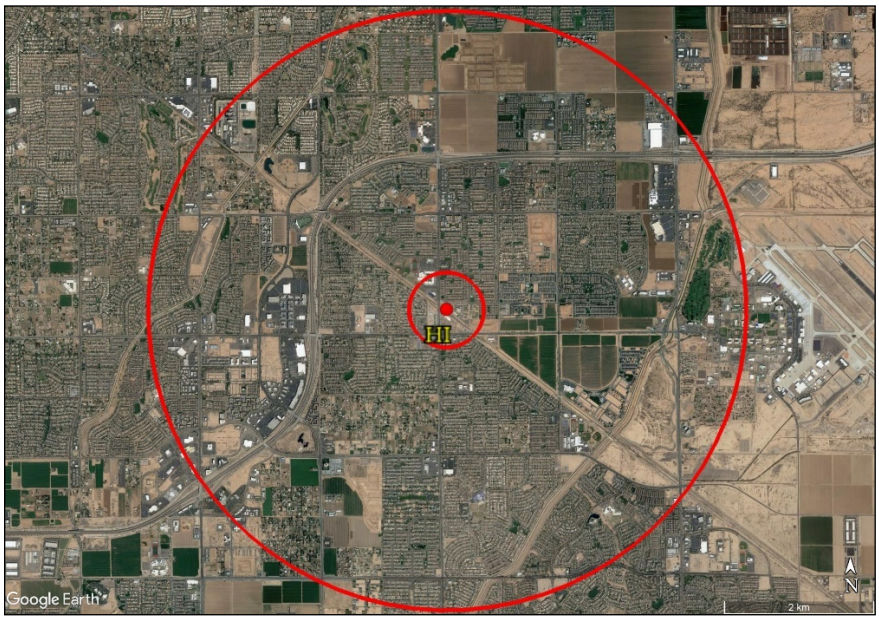


Site Location	59th Ave. & Olive Ave., Glendale
Spatial Scale	Neighborhood
Site Type	Population Exposure

Site Description: The site began operating in January 1974. This SLAMS location monitors for O_3, PM_{10}, and $PM_{2.5}$. Meteorological monitoring includes ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

The site is located on the grounds of Glendale Community College near homes, various strip malls, food establishments, and parks.

Higley (HI) (04-013-4006)

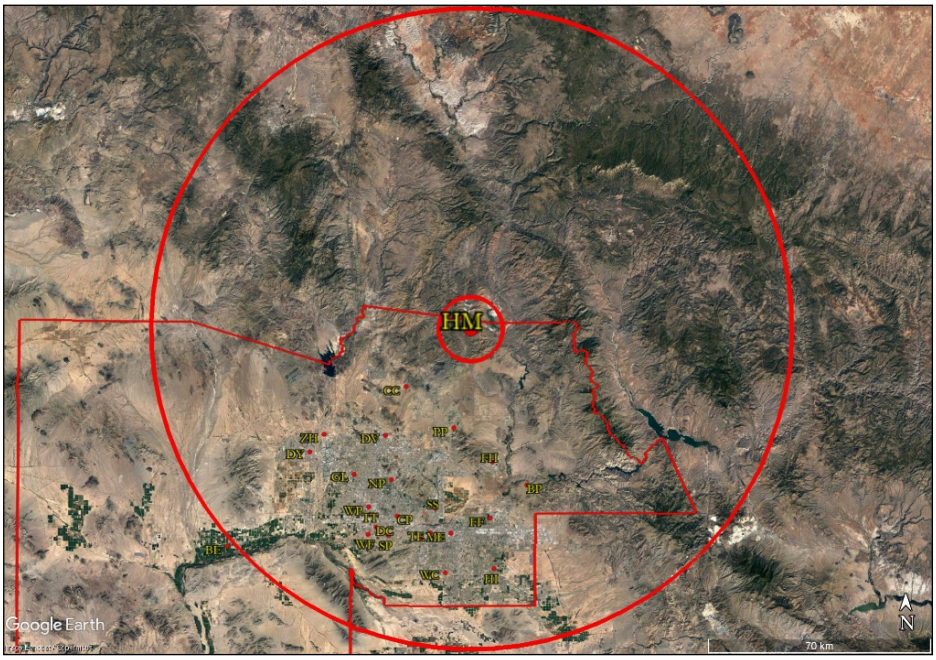


Site Location	Higley Rd. & Williams Field Rd., Gilbert
Spatial Scale	Neighborhood
Site Type	Population Exposure

Site Description: Originally, ADEQ began monitoring at this site in 1994 to measure background particulate concentrations near the urban limits of Maricopa County. The MCAQD assumed operating this site in July 2000. This SLAMS location monitors for PM_{10}. Meteorological monitoring includes ambient temperature, barometric pressure, and wind speed/direction.

The site is in a suburban area near homes, strip malls, and schools with limited agricultural operations nearby.

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

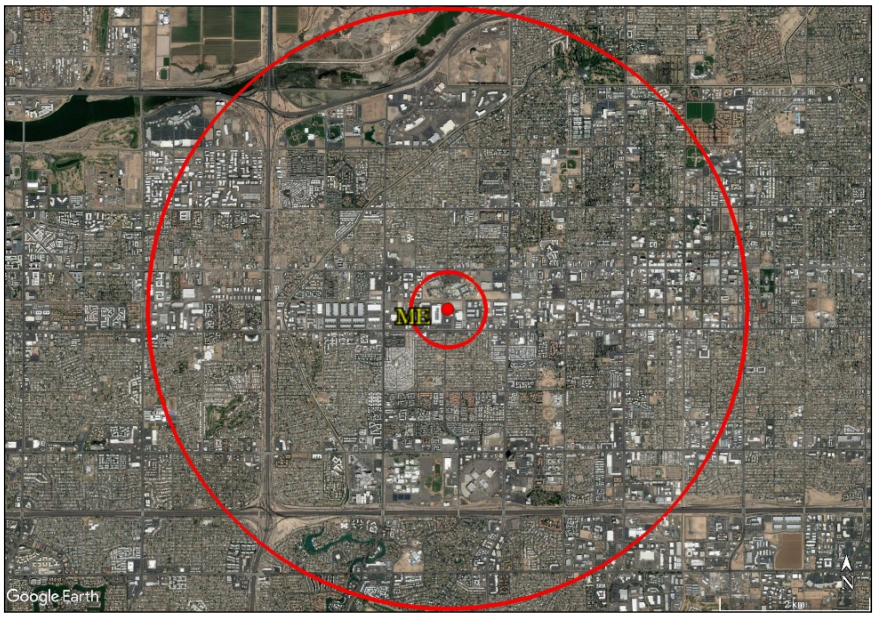


Site Location	Humboldt Mtn. Summit
Spatial Scale	Regional
Site Type	Maximum O_3 Concentration

Site Description: This site began operating in August 1995. This SLAMS location monitors for O_3. Meteorological monitoring includes ambient temperature and relative humidity.

The site is located on Federal Aviation Agency (FAA) property within the Tonto National Forest. In 2019, the long-anticipated move of the station into a new facility occurred. The new station is about 15 meters away from the National Forest Service building that once housed it. This site is located approximately 40 miles NE of the Phoenix metropolitan area at an elevation of 5190 feet and represents extreme downwind O_3 concentrations.

Mesa (ME) (04-013-1003)

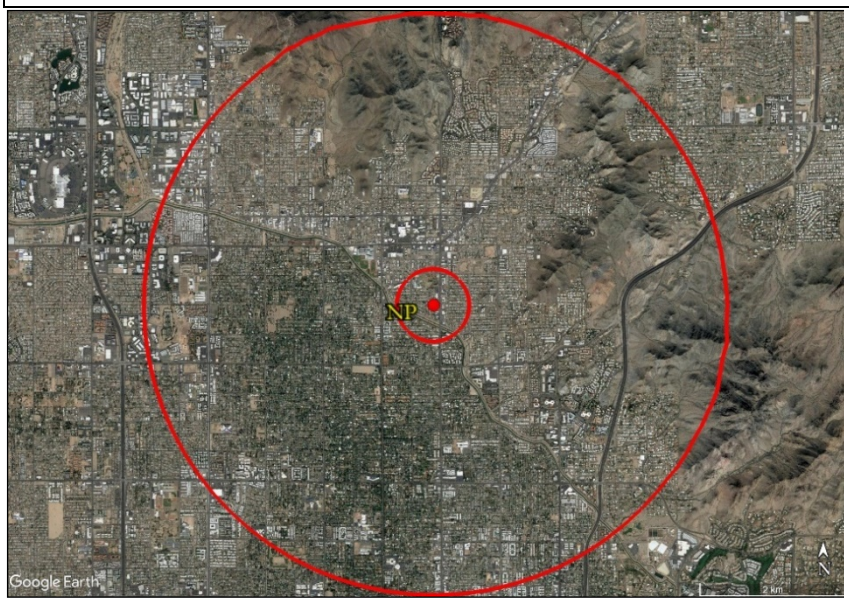


Site Location	Broadway Rd. & Brooks Ave., Mesa
Spatial Scale	Neighborhood
Site Type	Population Exposure

Site Description: This site began operating in January 1978. This SLAMS location monitors for CO, O_3, PM_{10}, and $PM_{2.5}$. Meteorological monitoring includes ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

The site is located at Mesa Brooks Reservoir, which is an area that contains residential, commercial, and industrial properties.

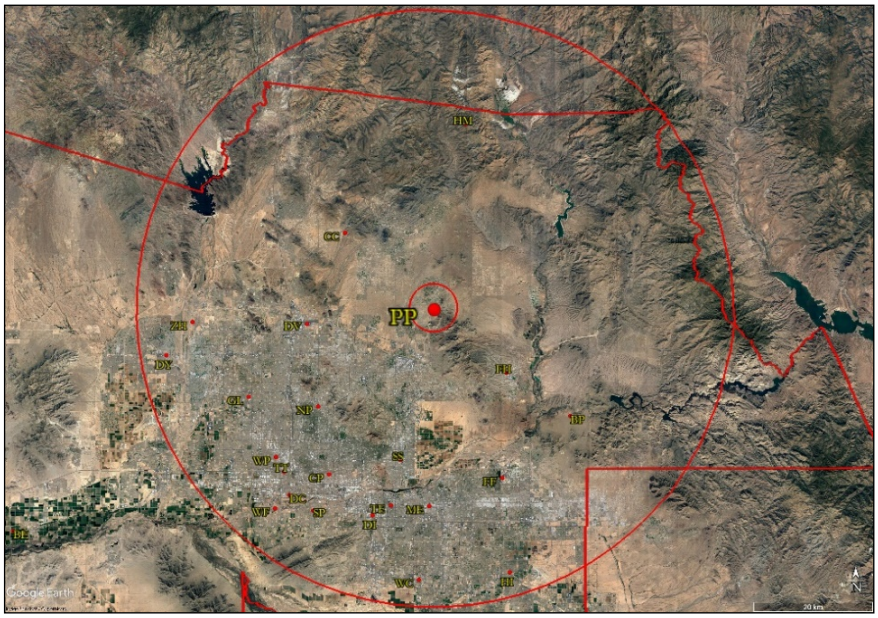
North Phoenix (NP) (04-013-1004)



Site Location	7th St. & Butler Ave., Phoenix
Spatial Scale	Neighborhood
Site Type	Population Exposure for PM_{10} & $PM_{2.5}$; Max Concentration for O_3

Site Description: This site began operating in January 1975. This SLAMS location monitors for O_3, and PM_{10}, $PM_{2.5}$. Meteorological monitoring includes ambient temperature, barometric pressure, and wind speed/direction.

Pinnacle Peak (PP) (04-013-2005)

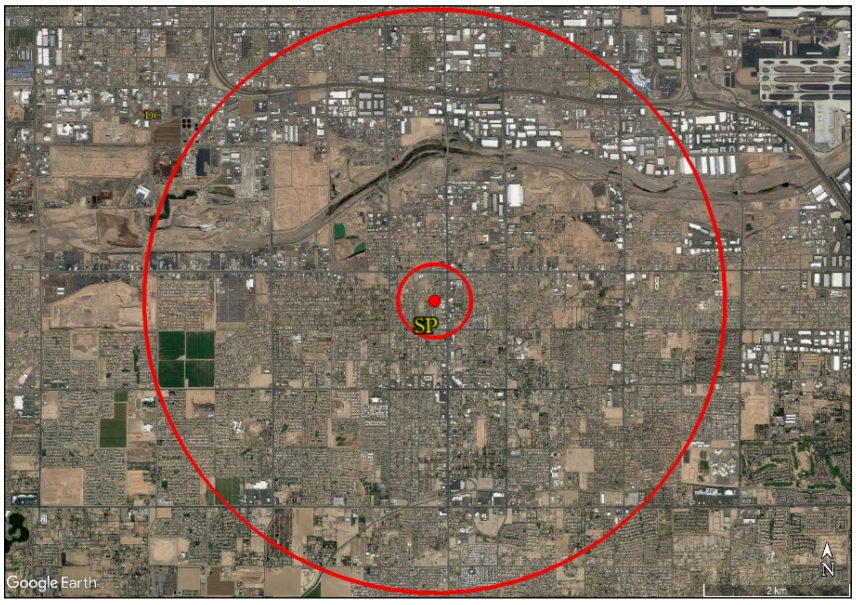


Site Location	Alma School & Happy Valley Rd., Scottsdale
Spatial Scale	Urban
Site Type	Maximum O_3 Concentration

Site Description: This site began operating in February 1988. This SLAMS location monitors for O_3 only. Meteorological monitoring includes ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

The site is located approximately 25 miles NE of the Phoenix metropolitan area and represents maximum O_3 concentrations downwind from an urban area. This site measures O_3 concentrations related to the transport of O_3 from central metropolitan Phoenix.

South Phoenix (SP) (04-013-4003)

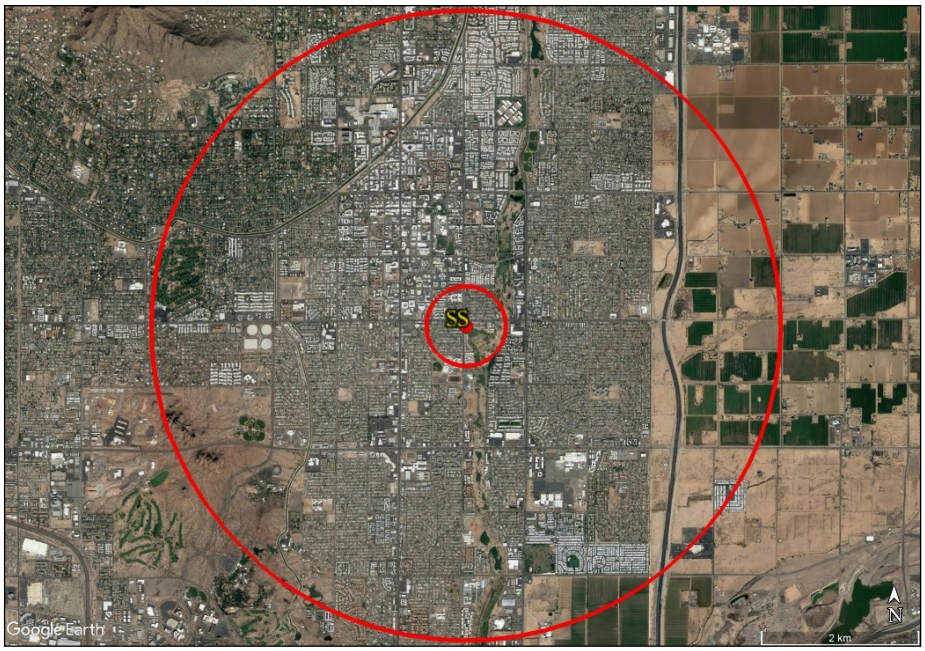


Site Location	Central Ave. & Broadway Rd., Phoenix
Spatial Scale	Neighborhood
Site Type	Population Exposure

Site Description: The site began operating in October 1999. This SLAMS location monitors for CO, O_3, PM_{10}, and $PM_{2.5}$. Meteorological monitoring includes ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

The site borders a mixture of high population density residential and commercial properties.

South Scottsdale (SS) (04-013-3003)

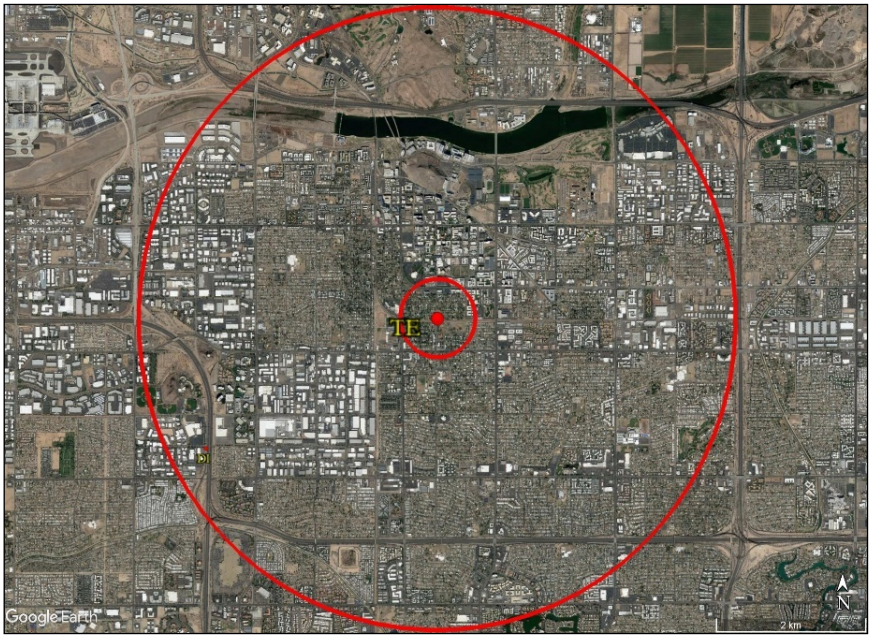


Site Location	Thomas Rd. & Miller Rd., Scottsdale
Spatial Scale	Neighborhood
Site Type	Population Exposure

Site Description: This site began operating in January 1974. This SLAMS location monitors for O_3 and PM_{10}. Meteorological monitoring includes ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

The station is in a residential area.

Tempe (TE) (04-013-4005)



Site Location	Apache Blvd. & College Ave., Tempe
Spatial Scale	Neighborhood
Site Type	Population Exposure

Site Description: This site began operating in 2000. This SLAMS location monitors for O_3, PM_{10}, and $PM_{2.5}$. Meteorological monitoring includes ambient temperature, rain, and wind speed/direction.

The station is near the ASU Tempe Campus and surrounded by residential homes, high-density residential properties, and a railroad track.

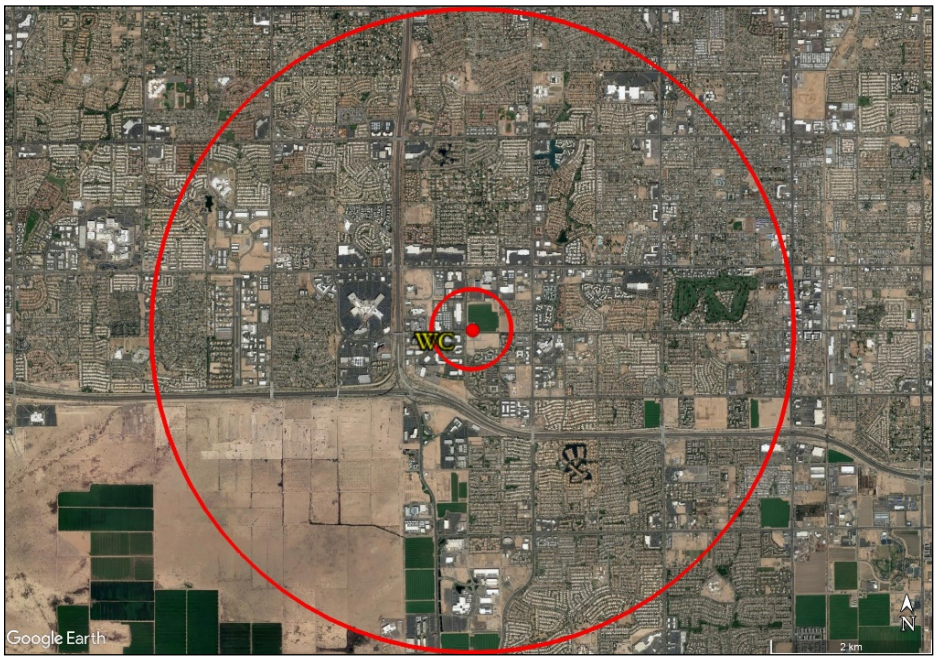
Thirty-Third (TT) (04-013-4020)

Site Location	Interstate-10 & 33rd Ave., Phoenix
Spatial Scale	Micro
Site Type	Source-Oriented

Site Description: This site began operating in September 2015. This SLAMS location monitors for NO_2; and temporarily monitored for CO and $PM_{2.5}$ from January 2020 through February 2021. This change was needed to remain compliant with EPA requirements in lieu of the Diablo site closing. CO and $PM_{2.5}$ were removed from the Thirty-Third site and relocated to the new Eastwood site in March 2021. Meteorological monitoring includes ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

The site is one of two near-road air monitoring sites and is located on the south side embankment adjacent to the I-10 and oriented on an east-west section of the highway, midway downslope from 33rd Avenue toward the I-10.

West Chandler (WC) (04-013-4004)



Site Location	Frye Rd. & Ellis St., Chandler
Spatial Scale	Neighborhood
Site Type	Population Exposure

Site Description: This site began operating in January 1995, This SLAMS location monitors for CO, O_3, and PM_{10}. Meteorological monitoring includes ambient temperature, barometric pressure, relative humidity, and wind speed/direction.

The site is surrounded by residential, agricultural, and heavy industrial operations, such as semiconductor manufacturing plants and liquid air storage. The PM_{10} monitor's scale of representativeness was first established as middle scale, but it was changed to neighborhood in June 2019 to better reflect land use currently surrounding the site and to match general monitoring requirements found in *40 CFR Part 58 Appendix D, Table D-1*.

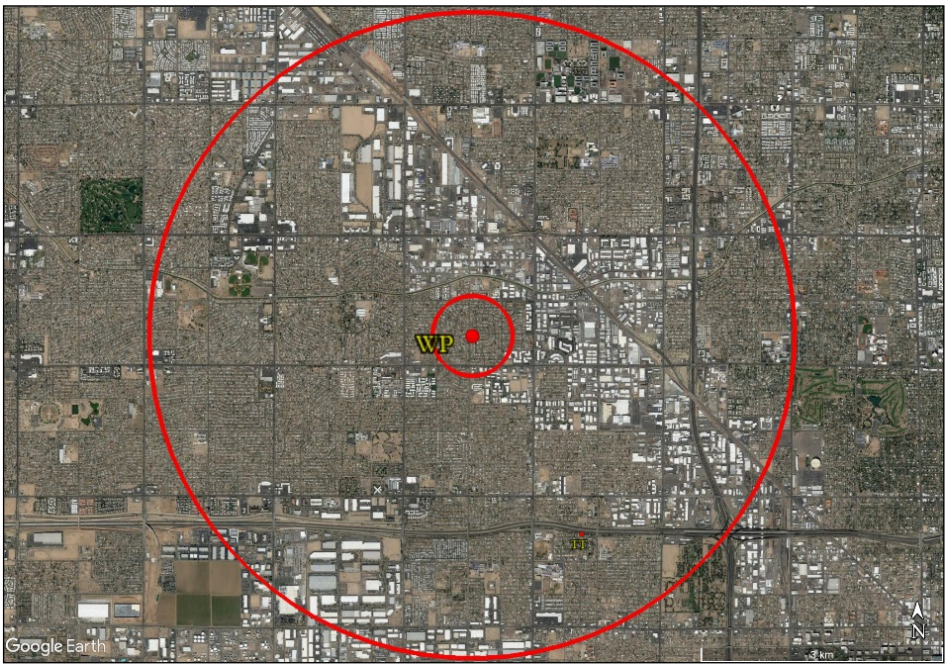
West 43rd Avenue (WF) (04-013-4009)

Site Location	43rd Ave. & Broadway Rd., Phoenix
Spatial Scale	Middle
Site Type	Highest Concentration

Site Description: This site began operating in April 2002. This SLAMS location monitors for PM_{10}. Meteorological monitoring includes ambient temperature, barometric pressure, and wind speed/direction.

The site is located near a combination of heavy industrial operations and residential homes to measure maximum PM_{10} concentrations. The sources around the site include sand and gravel operations, automobile and metal recycling facilities, landfills, paved and unpaved haul roads, and cement casting.

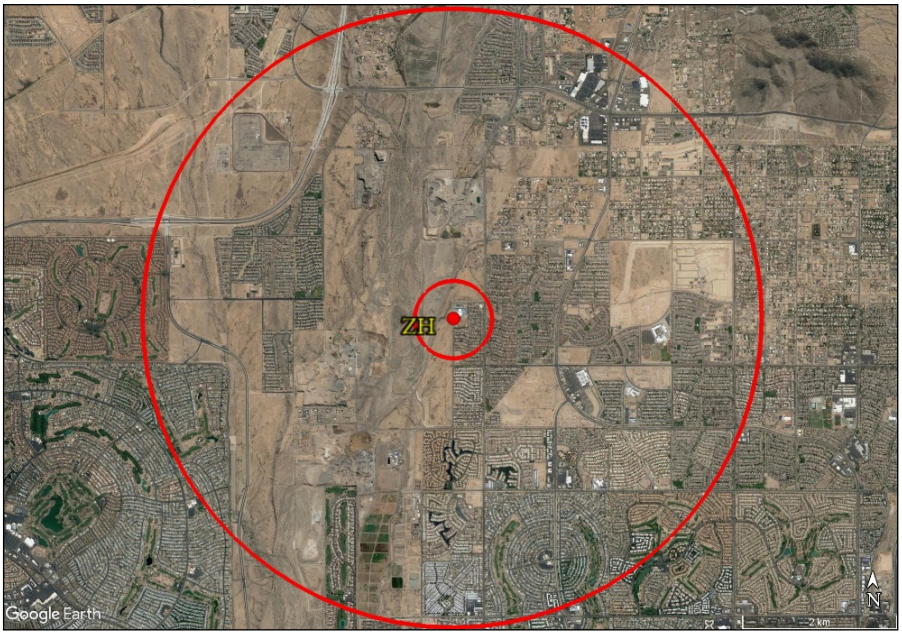
West Phoenix (WP) (04-013-0019)



Site Location	39th Ave. & Earll Dr., Phoenix
Spatial Scale	Neighborhood
Site Type	Population Exposure for CO, NO_2, O_3, PM_{10}, and Highest Concentration for $PM_{2.5}$

Site Description: This site began operating in January 1984. This SLAMS location monitors for CO, NO_2, O_3, PM_{10}, and $PM_{2.5}$. Meteorological monitoring includes ambient temperature, barometric pressure, and wind speed/direction. The site is in an area of stable, high-density, residential properties. This is the QA collocation site for $PM_{2.5}$ where one filter based $PM_{2.5}$ FRM sampler operates alongside a continuous $PM_{2.5}$ FEM analyzer as per *40 CFR Part 58 Appendix A*.

Zuni Hills (ZH) (04-013-4016)



Site Location	109th Ave. & Deer Valley Rd., Phoenix
Spatial Scale	Neighborhood
Site Type	Population Exposure

Site Description: This site began operating in December 2009. This SLAMS location monitors for PM_{10}. Meteorological monitoring includes ambient temperature and wind speed/direction.

The station is located on the campus of the Zuni Hills Elementary School.

APPENDIX II - EPA-REQUIRED SITE METADATA

This appendix provides site and monitor metadata required by *40 CFR §58.10 and Appendices A, B, C, D, and E,* as applicable. Information includes, but is not limited to, quality assurance metrics, site identification and type, each monitor's type, and scale of representativeness as well as basic monitoring objective, collection frequency of air samples, i.e., operating schedule.

(See Appendix VII for the Glossary)

BLUE POINT	
County Abbreviation: BP AQS ID: 04-013-9702 Address: Bush Highway & Usery Pass Rd., Maricopa County Lat/Long Coordinates: 33.54558 N, -111.60972 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa	
General Information	
Pollutant	**O_3**
Parameter Code	44201
Parameter Occurrence Code	1
Collection Frequency	Continuous
Analysis Method (filter samples only)	Not Applicable
Any Proposal to Remove or Move Monitor?	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs	
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	25
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable
Frequency of Flow Rate Verifications	
Number of PE Audits Performed in 2021	2
Dates of PE Audits	05/13/21 11/19/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes
Date of Annual Data Certification Submission	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable	
Appendix C Requirements - Monitoring Methodology	
Date Sampling Started	01/01/1993
Monitor Type	SLAMS
Monitor Make - Model	Teledyne API – Model 400T
Method Code	087
Method Type (FRM, FEM, ARM)	FEM
Appendix D Requirements - Network Design Criteria	
Site Type	Max Ozone Concentration
Basic Monitoring Objective	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)	Urban
Monitoring Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria	
Distance between collocated samplers	Not Applicable
Probe Height (distance above ground level to inlet)	4.4 meters

BLUE POINT		
Airflow Arc (degrees around probe/inlet)		360º
Probe/Sample Line Material (Gases)		FEP
Pollutant Sample Residence Time (seconds) (Gases)		8.51
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters
	Vertical	2 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction
	Vertical	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction
	Vertical	11 meters
Distance from Dripline of Closest Tree(s)		11 meters
Distance to Furnace or Flue		No Furnace or Flue
Nearest Major Roadway		Bush Highway
Distance and Direction to Road		160 meters, S
Average Daily Traffic Count		1,000
Groundcover		Pavement

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

BUCKEYE				
County ID: BE AQS ID: 04-013-4011 Address 26453 W MC85 Coordinates: 33.36985 N, -112.62068 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa				
General Information				
Pollutant	**CO**	**NO_2**	**O_3**	**PM_{10}**
Parameter Code	42101	42602	44201	81102
Parameter Occurrence Code	1	1	1	1
Collection Frequency	Continuous	Continuous	Continuous	Continuous
Analysis Method (filter samples only)	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Any Proposal to Remove or Move Monitor?	No	No	No	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes	Yes	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes	Yes	Yes	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs				
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	26	26	26	Not Applicable
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly	Bi-Weekly	Bi-Weekly	
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable	Not Applicable	Not Applicable	27
Frequency of Flow Rate Verifications				Bi-Weekly
Number of PE Audits Performed in 2021	3	2	2	
Dates of PE Audits	01/25/21 06/14/21 08/09/21	01/11/21 07/12/21	06/01/21 12/13/21	01/11/21 04/28/21 07/12/21 10/04/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22	04/22/22	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable				
Appendix C Requirements - Monitoring Methodology				
Date Sampling Started	08/01/2004	08/01/2004	08/01/2004	08/01/2004
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS
Monitor Make - Model	Teledyne API – Model 300T	Teledyne API – Model 200T	Teledyne API – Model 400T	Thermo – TEOM 1405-S
Method Code	093	099	087	079
PM Monitor Flow Type	Not Applicable	Not Applicable	Not Applicable	Low Volume
PM Monitor Collection Type	Not Applicable	Not Applicable	Not Applicable	Size Specific
Method Type (FRM, FEM, ARM)	FRM	FRM	FEM	FEM
Appendix D Requirements - Network Design Criteria				

BUCKEYE					
Site Type		Population Exposure	Population Exposure	Upwind Background	Population Exposure
Basic Monitoring Objective		NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)		Neighborhood	Urban	Urban	Neighborhood
Monitoring Season		Sep-Mar	Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?		Yes	Yes	Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria					
Distance between collocated samplers		Not Applicable	Not Applicable	Not Applicable	Not Applicable
Probe Height (distance above ground level to inlet)		4 meters	4 meters	4 meters	4 meters
Probe Sample Line Material		FEP	FEP	FEP	Not Applicable
Pollutant Sample Residence Time (seconds)		9.87	9.87	9.87	Not Applicable
Airflow Arc		360º	360º	360º	360º
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters	0 meters	0 meters	0 meters
	Vertical	4.4 meters	4.4 meters	4.4 meters	4.4 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction	no obstruction
Distance from Dripline of Closest Tree(s)		7.6 meters	7.6 meters	7.6 meters	7.6 meters
Distance to Furnace or Flue		No Furnace or Flue	No Furnace or Flue	No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway		U.S. Hwy 85	U.S. Hwy 85	U.S. Hwy 85	U.S. Hwy 85
Distance and Direction to Road		31 meters, N	31 meters, N	31 meters, N	31 meters, N
Average Daily Traffic Count		3,000	3,000	3,000	3,000
Groundcover		Pavement	Pavement	Pavement	Pavement

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

CAVE CREEK	
County ID: CC AQS ID: 04-013-4008 Address: 37019 N Lava Lane, Phoenix Coordinates: 33.82169 N, -112.01726 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa	
General Information	
Pollutant	**O_3**
Parameter Code	44201
Parameter Occurrence Code	1
Collection Frequency	Continuous
Analysis Method (filter samples only)	Not Applicable
Any Proposal to Remove or Move Monitor?	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs	
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	26
Frequency of 1-Point QC (Precision) Checks	Bi-weekly
2Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable
Frequency of Flow Rate Verifications	
Number of PE Audits Performed in 2021	3
Dates of PE Audits	03/09/21 04/06/21 10/05/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes
Date of Annual Data Certification Submission	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable	
Appendix C Requirements - Monitoring Methodology	
Date Sampling Started	07/20/2001
Monitor Type	SLAMS
Monitor Make - Model	Teledyne - API Model 400T
Method Code	087
Method Type (FRM, FEM, ARM)	FEM
Appendix D Requirements - Network Design Criteria	
Site Type	Max Ozone Concentration
Basic Monitoring Objective	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)	Urban
Monitoring Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria	
Distance between collocated samplers	Not Applicable
Probe Height (distance above ground level to inlet)	4.4 meters
Airflow Arc	360º

CAVE CREEK		
Probe Sample Line Material		FEP
Pollutant Sample Residence Time (seconds)		9.95 seconds
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters
	Vertical	2 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction
	Vertical	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction
	Vertical	10 meters
Distance from Dripline of Closest Tree(s)		10 meters
Distance to Furnace or Flue		No Furnace or Flue
Nearest Major Roadway		32nd Street
Distance and Direction to Road		240 meters, NE
Average Daily Traffic Count		1,000
Groundcover		Pavement

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

CENTRAL PHOENIX					
County ID: CP AQS ID: 04-013-3002 Address: 1645 E Roosevelt St., Phoenix Coordinates: 33.45797 N, -112.04659 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa					
General Information					
Pollutant	**CO**	**NO_2**	**O_3**	**SO_2**	**PM_{10}**
Parameter Code	42101	42602	44201	42401	81102
Parameter Occurrence Code	1	6	1	4	4
Collection Frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Analysis Method (filter samples only)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Any Proposal to Remove or Move Monitor?	No	No	No	No	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes	Yes	Yes	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes	Yes	Yes	Yes	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs					
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	26	26	27	26	Not Applicable
Frequency of 1-Point QC (Precision) Checks	Bi-weekly	Bi-weekly	Bi-weekly	Bi-weekly	
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	26
Frequency of Flow Rate Verifications					Bi-weekly
Number of PE Audits Performed in 2021	2	3	2	2	4
Dates of PE Audits	05/11/21 11/23/21	01/06/21 04/27/21 10/12/21	06/07/21 12/07/21	05/26/21 09/16/21	01/06/21 04/13/21 07/07/21 10/14/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes	Yes	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22	04/22/22	04/22/22	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable					
Appendix C Requirements - Monitoring Methodology					
Date Sampling Started	10/01/1966	01/01/1967	06/01/1967	01/01/1965	04/01/1985

CENTRAL PHOENIX						
Monitor Type		SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Monitor Make - Model		Teledyne API - Model 300T	Teledyne API - Model 200T	Teledyne API - Model 400T	Teledyne API - Model 100T	Thermo - TEOM 1405-S
Method Code		093	099	087	100	079
PM Monitor Flow Type		Not Applicable	Not Applicable	Not Applicable	Not Applicable	Low Volume
PM Monitor Collection Type		Not Applicable	Not Applicable	Not Applicable	Not Applicable	Size Specific
Method Type (FRM, FEM, ARM)		FRM	FRM	FEM	FEM	FEM
Appendix D Requirements - Network Design Criteria						
Site Type		Population Exposure	Highest Concentration	Population Exposure	Highest Concentration	Population Exposure
Basic Monitoring Objective		NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)		Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring Season		Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?		Yes	Yes	Yes	Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria						
Distance between collocated samplers		Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Probe Height (distance above ground level to inlet)		4.4 meters	4.4 meters	4.4 meters	4.4 meters	4.4 meters
Airflow Arc		360º	360º	360º	360º	360º
Probe Sample Line Material		FEP	FEP	FEP	FEP	Not Applicable
Pollutant Sample Residence Time (seconds)		14.5	14.5	14.5	14.5	Not Applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters	0 meters	0 meters	0 meters	0 meters
	Vertical	2 meters	2 meters	2 meters	2 meters	2.4 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of	Horizontal	no obstruction	no obstruction	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction	no obstruction	no obstruction

CENTRAL PHOENIX						
obstruction above probe/inlet)						
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction	no obstruction	no obstruction
Distance from Dripline of Closest Tree(s)		no tree	no tree	no tree	no tree	no tree
Distance to Furnace or Flue		No Furnace or Flue	No Furnace or Flue	No Furnace or Flue	No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway A		16th Street	16th Street	16th Street	16th Street	16th Street
Distance and Direction to Road		88 meters, W	88 meters, W	88 meters, W	88 meters, W	91 meters, W
Average Daily Traffic Count		24,000	24,000	24,000	24,000	24,000
Nearest Major Roadway B		Roosevelt St.	Roosevelt St.	Roosevelt St.	Roosevelt St.	Roosevelt St.
Distance and Direction to Road		75 meters, N	75 meters, N	75 meters, N	75 meters, N	75 meters, N
Average Daily Traffic Count		21,637	21,637	21,637	21,637	21,637
Groundcover		Pavement	Pavement	Pavement	Pavement	Pavement

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

DURANGO COMPLEX			
County ID: DC AQS ID: 04-013-9812 Address: 2702 RC Esterbrooks Blvd., Phoenix Coordinates: 33.42650 N, -112.11812 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa			
General Information			
Pollutant	**PM_{10}**	**$PM_{2.5}$**	**SO_2**
Parameter Code	81102	88101	42401
Parameter Occurrence Code	1	3	1
Collection Frequency	Continuous	Continuous	Continuous
Analysis Method (filter samples only)	Not Applicable	Not Applicable	Not Applicable
Any Proposal to Remove or Move Monitor?	No	No	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable	Yes	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes	Yes	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs			
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	Not Applicable	Not Applicable	28
Frequency of 1-Point QC (Precision) Checks			Bi-Weekly
Number of Flow Rate Checks Performed in 2021 (PM)	28	28	Not Applicable
Frequency of Flow Rate Verifications	Bi-Weekly	Bi-Weekly	
Number of PE Audits Performed in 2021	5	5	3
Dates of PE Audits	01/20/21 04/13/21 05/12/21 07/14/21 10/05/21	01/19/21 04/13/21 05/12/21 07/14/21 10/05/21	02/18/21 05/12/21 11/02/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable			
Appendix C Requirements - Monitoring Methodology			
Date Sampling Started	07/01/1999	07/01/2005	01/01/2011
Monitor Type	SLAMS	SLAMS	SLAMS
Monitor Make - Model	Thermo - TEOM 1405-DF	Thermo - TEOM 1405-DF	Teledyne API – 100T
Method Code	208	182	100
PM Monitor Flow Type	Low Volume	Low Volume	Not Applicable
PM Monitor Collection Type	Dichotomous	Dichotomous	Not Applicable
Method Type (FRM, FEM, ARM)	FEM	FEM	FEM
Appendix D Requirements - Network Design Criteria			

DURANGO COMPLEX				
Site Type		Population Exposure	Highest Concentration	Highest Concentration
Basic Monitoring Objective		NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)		Neighborhood	Neighborhood	Middle
Monitoring Season		Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?		Yes	Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria				
Distance between collocated samplers		Not Applicable	Not Applicable	Not Applicable
Distance between PM monitor inlets?		0 meters	0 meters	Not Applicable
Probe Height (distance above ground level to inlet)		4.4 meters	4.4 meters	4.4 meters
Airflow Arc		360º	360º	360º
Probe Sample Line Material		Not Applicable	Not Applicable	FEP
Pollutant Sample Residence Time (seconds)		Not Applicable	Not Applicable	6.51
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters	0 meters	0 meters
	Vertical	2 meters	2 meters	2 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstructions	no obstructions	no obstructions
	Vertical	no obstructions	no obstructions	no obstructions
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	12 meters	12 meters	12 meters
	Vertical	6 meters	6 meters	6 meters
Distance from Dripline of Closest Tree(s)		10.7 meters	10.7 meters	10.7 meters
Distance to Furnace or Flue		No Furnace or Flue	No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway		27th Ave	27th Ave	27th Ave
Distance and Direction to Road		78 meters, E	76 meters, E	76 meters, E
Average Daily Traffic Count		16,000	16,000	16,000
Groundcover		Pavement	Pavement	Pavement

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

DYSART		
County ID: DY AQS ID: 04-013-4010 Address: 16825 N Dysart Rd., Surprise Coordinates: 33.63718 N, -112.34185 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa		
General Information		
Pollutant	**O_3**	**PM_{10}**
Parameter Code	44201	81102
Parameter Occurrence Code	1	1
Collection Frequency	Continuous	Continuous
Analysis Method (filter samples only)	Not Applicable	Not Applicable
Any Proposal to Remove or Move Monitor?	No	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs		
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	26	Not Applicable
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly	
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable	26
Frequency of Flow Rate Verifications		Bi-Weekly
Number of PE Audits Performed in 2021	3	4
Dates of PE Audits	02/01/21 04/13/21 10/11/21	01/20/21 04/13/21 07/08/21 10/11/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable		
Appendix C Requirements - Monitoring Methodology		
Date Sampling Started	7/21/2003	07/14/2003
Monitor Type	SLAMS	SLAMS
Monitor Make - Model	Teledyne API – 400T	Thermo - TEOM 1405-S
Method Code	087	079
PM Monitor Flow Type	Not Applicable	Low Volume
PM Monitor Collection Type	Not Applicable	Size Specific
Method Type (FRM, FEM, ARM)	FEM	FEM
Appendix D Requirements - Network Design Criteria		
Site Type	Population Exposure	Population Exposure
Basic Monitoring Objective	NAAQS Comparison	NAAQS Comparison

DYSART			
Monitoring Scale (Spatial Scale Represented)		Neighborhood	Neighborhood
Monitoring Season		Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?		Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria			
Distance between collocated samplers		Not Applicable	Not Applicable
Probe Height (distance above ground level to inlet)		5.4 meters	5.2 meters
Airflow Arc		360º	360º
Probe Sample Line Material		FEP	Not Applicable
Pollutant Sample Residence Time (seconds)		4.79	Not Applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters	0 meters
	Vertical	3 meters	3 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstructions	no obstructions
	Vertical	no obstructions	no obstructions
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	15.2 meters	15.2 meters
	Vertical	3 meters	3 meters
Distance from Dripline of Closest Tree(s)		no tree	no tree
Distance to Furnace or Flue		No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway A		Dysart	Dysart
Distance and Direction to Road		17 meters, W	12 meters, W
Average Daily Traffic Count		12,000	12,000
Nearest Major Roadway B		Bell Rd	Bell Rd
Distance and Direction to Road		495 meters, N	460 meters, N
Average Daily Traffic Count		43,000	43,000
Groundcover		Pavement / Gravel	Pavement / Gravel

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

Eastwood			
County ID: EA			
AQS ID: 04-013-4021			
Address: 4135 S. 36th Street, Phoenix			
Coordinates: 33.41046 N, -112.00264 W			
Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa			
General Information			
Pollutant	**CO**	**NO_2**	**$PM_{2.5}$**
Parameter Code	42101	42602	88101
Parameter Occurrence Code	1	1	3
Collection Frequency	Continuous	Continuous	Continuous
Analysis Method (Filter samples only	Not Applicable	Not Applicable	Not Applicable
Analytical Laboratory (filter samples only)	Not Applicable	Not Applicable	Not Applicable
Any Proposal to Remove or Move Monitor?	No	No	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes	Yes
Is site suitable for comparison to the *annual* PM2.5 NAAQS as per *§58.30*?	Not Applicable	Not Applicable	Yes
Are Data Comparable to Respective NAAQS?	Yes	Yes	Ye s
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs			
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	25	23	Not Applicable
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly	Bi-Weekly	
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable	Not Applicable	22
Frequency of Flow Rate Verifications			Bi-Weekly
Number of PE Audits Performed in 2021	2	2	3
Dates of PE Audits	03/18/21 09/09/21	06/03/21 08/25/21	06/03/21 09/09/21 12/02/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable			
Appendix C Requirements - Monitoring Methodology			
Date Sampling Started	03/05/2021	03/05/2021	03/05/2021
Monitor Type	SLAMS	SLAMS	SLAMS
Monitor Make - Model	Teledyne - API 300T	Teledyne - API 200T	Thermo - TEOM 1405-DF
Method Code	93	99	182
PM Monitor Flow Type	Not Applicable	Not Applicable	Low Volume
PM Monitor Collection Type	Not Applicable	Not Applicable	Dichotomous
Method Type (FRM, FEM, ARM)	FRM	FRM	FEM
Appendix D Requirements - Network Design Criteria			
Site Type	Source-Oriented	Source-Oriented	Source-Oriented

Basic Monitoring Objective	NAAQS Comparison		NAAQS Comparison	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)	Micro		Micro	Micro
Monitoring Season	Jan-Dec		Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes		Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria				
Distance between collocated samplers	Not Applicable		Not Applicable	Not Applicable
Probe Height (distance above ground level to inlet)	4.3 meters		4.3 meters	5 meters
Airflow Arc	360º		360º	360º
Probe Sample Line Material	FEP		FEP	Not Applicable
Pollutant Sample Residence Time (seconds)	7.33		7.33	Not Applicable
Filter Sample Material	Not Applicable		Not Applicable	Not Applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters	0 meters	0 meters
	Vertical	2 meters	2 meters	0.6 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction
Distance from Dripline of Closest Tree(s)	no tree		no tree	no tree
Distance to Furnace or Flue	No Furnace or Flue		No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway	I-10		I-10	I-10
Distance and Direction to Road	24 meters, N		24 meters, N	24 meters, N
Average Daily Traffic Count	245,632		245,632	245,632
Groundcover	Gravel		Gravel	Gravel

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

FALCON FIELD	
County ID: FF AQS ID: 04-013-1010 Address: 4530 E McKellips Rd, Mesa Coordinates: 33.45244 N, -111.73327 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa	
General Information	
Pollutant	**O_3**
Parameter Code	44201
Parameter Occurrence Code	1
Collection Frequency	Continuous
Analysis Method (filter samples only)	Not Applicable
Any Proposal to Remove or Move Monitor?	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs	
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	26
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable
Frequency of Flow Rate Verifications	
Number of PE Audits Performed in 2021	2
Dates of PE Audits	01/07/21 07/06/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes
Date of Annual Data Certification Submission	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable	
Appendix C Requirements - Monitoring Methodology	
Date Sampling Started	06/01/1989
Monitor Type	SLAMS
Monitor Make - Model	Teledyne API – 400T
Method Code	087
Method Type (FRM, FEM, ARM)	FEM
Appendix D Requirements - Network Design Criteria	
Site Type	Population Exposure
Basic Monitoring Objective	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)	Neighborhood
Monitoring Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria	
Distance between collocated samplers	Not Applicable
Probe Height (distance above ground level to inlet)	4.4 meters
Airflow Arc	360º
Probe Sample Line Material	FEP
Pollutant Sample Residence Time (seconds)	19.11

FALCON FIELD		
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	1 meter
	Vertical	2 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction
	Vertical	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	24.4 meters
	Vertical	3 meters
Distance from Dripline of Closest Tree(s)		no tree
Distance to Furnace or Flue		No Furnace or Flue
Nearest Major Roadway		McKellips
Distance and Direction to Road		58 meters, S
Average Daily Traffic Count		29,000
Groundcover		Pavement

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

FOUNTAIN HILLS	
County ID: FH AQS ID: 04-013-9704 Address: 16426 E. Palisades Blvd., Fountain Hills Coordinates: 33.61092 N, -111.72534 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa	
General Information	
Pollutant	**O_3**
Parameter Code	44201
Parameter Occurrence Code	1
Collection Frequency	Continuous
Analysis Method (filter samples only)	Not Applicable
Any Proposal to Remove or Move Monitor?	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs	
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	26
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable
Frequency of Flow Rate Verifications	
Number of PE Audits Performed in 2021	2
Dates of PE Audits	02/24/21 09/08/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes
Date of Annual Data Certification Submission	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable	
Appendix C Requirements - Monitoring Methodology	
Date Sampling Started	04/01/1996
Monitor Type	SLAMS
Monitor Make – Model	Teledyne API – 400T
Method Code	087
Method Type (FRM, FEM, ARM)	FEM
Appendix D Requirements - Network Design Criteria	
Site Type	Population Exposure
Basic Monitoring Objective	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)	Neighborhood
Monitoring Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria	
Distance between collocated samplers	Not Applicable
Probe Height (distance above ground level to inlet)	4.4 meters
Airflow Arc	360°
Probe Sample Line Material	FEP

FOUNTAIN HILLS		
Pollutant Sample Residence Time (seconds)		9.01
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	2 meters
	/Vertical	0 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstructions
	Vertical	no obstructions
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	24.4 meters
	Vertical	4.8 meters
Distance from Dripline of Closest Tree(s)		15 meters
Distance to Furnace or Flue		No Furnace or Flue
Nearest Major Roadway		Palisades Blvd
Distance and Direction to Road		70 meters, SW
Average Daily Traffic Count		8,000
Groundcover		Pavement

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

GLENDALE			
County ID: GL AQS ID: 04-013-2001 Address: 6001 W Olive, Glendale Coordinates: 33.57453 N, -112.19193 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa			
General Information			
Pollutant	**O_3**	**PM_{10}**	**$PM_{2.5}$**
Parameter Code	44201	81102	88101
Parameter Occurrence Code	1	1	3
Collection Frequency	Continuous	Continuous	Continuous
Analysis Method (filter samples only)	Not Applicable	Not Applicable	Not Applicable
Any Proposal to Remove or Move Monitor?	No	No	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable	Not Applicable	Yes
Are Data Comparable to Respective NAAQS?	Yes	Yes	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs			
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	26	Not Applicable	Not Applicable
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly		
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable	25	25
Frequency of Flow Rate Verifications		Bi-Weekly	Bi-Weekly
Number of PE Audits Performed in 2021	2	4	4
Dates of PE Audits	05/06/21 10/07/21	02/25/21 05/06/21 08/12/21 11/04/21	02/25/21 05/06/21 08/12/21 11/04/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable			
Appendix C Requirements - Monitoring Methodology			
Date Sampling Started	01/01/1974	07/01/1987	6/1/2011
Monitor Type	SLAMS	SLAMS	SLAMS
Monitor Make - Model	Teledyne API – 400T	Thermo - TEOM 1405-DF	Thermo - TEOM 1405-DF
Method Code	087	208	182
PM Monitor Flow Type	Not Applicable	Low Volume	Low Volume
PM Monitor Collection Type	Not Applicable	Dichotomous	Dichotomous
Method Type (FRM, FEM, ARM)	FEM	FEM	FEM

GLENDALE				
Appendix D Requirements - Network Design Criteria				
Site Type		Population Exposure	Population Exposure	Population Exposure
Basic Monitoring Objective		NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)		Neighborhood	Neighborhood	Neighborhood
Monitoring Season		Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?		Yes	Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria				
Distance between collocated samplers		Not Applicable	Not Applicable	Not Applicable
Distance between PM_{10} and $PM_{2.5}$ monitors		Not Applicable	0 meters	0 meters
Probe Height (distance above ground level to inlet)		4.4 meters	4.4 meters	4.4 meters
Airflow Arc		360º	360º	360º
Probe Sample Line Material		FEP	Not Applicable	Not Applicable
Pollutant Sample Residence Time (seconds)		9.16	Not Applicable	Not Applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters	0 meters	0 meters
	Vertical	2 meters	2 meters	2 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstructions	no obstructions	no obstructions
	Vertical	no obstructions	no obstructions	no obstructions
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstructions	no obstructions	no obstructions
	Vertical	no obstructions	no obstructions	no obstructions
Distance from Dripline of Closest Tree(s)		no tree	no tree	no tree
Distance to Furnace or Flue		No Furnace or Flue	No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway A		Olive Ave	Olive Ave	Olive Ave
Distance and Direction to Road		225 meters, S	227 meters, S	227 meters, S
Average Daily Traffic Count		25,000	25,000	25,000
Nearest Major Roadway B		59th Ave	59th Ave	59th Ave
Distance and Direction to Road		475 meters, E	430 meters, E	430 meters, E
Average Daily Traffic Count		30,500	30,500	30,500
Groundcover		Pavement	Pavement	Pavement

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

HIGLEY	
County ID: HI AQS ID: 04-013-4006 Address: 2207 S Higley Rd., Gilbert Coordinates: 33.30995 N, -111.72003 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa	
General Information	
Pollutant	**PM_{10}**
Parameter Code	81102
Parameter Occurrence Code	1
Collection Frequency	Continuous
Analysis Method (filter samples only)	Not Applicable
Any Proposal to Remove or Move Monitor?	Yes
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable
Are Data Comparable to Respective NAAQS?	Not Applicable
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs	
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	Not Applicable
Frequency of 1-Point QC (Precision) Checks	
Number of Flow Rate Verifications Performed in 2021 (PM)	26
Frequency of Flow Rate Verifications	Bi-Weekly
Number of PE Audits Performed in 2021	4
Dates of PE Audits	02/03/21 05/13/21 08/05/21 11/09/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes
Date of Annual Data Certification Submission	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable	
Appendix C Requirements - Monitoring Methodology	
Date Sampling Started	07/01/2000
Monitor Type	SLAMS
Monitor Make - Model	Thermo – TEOM 1405-S
Method Code	079
PM Monitor Flow Type	Low Volume
PM Monitor Collection Type	Size Specific
Method Type (FRM, FEM, ARM)	FEM
Appendix D Requirements - Network Design Criteria	
Site Type	Population Exposure
Basic Monitoring Objective	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)	Neighborhood
Monitoring Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria	
Distance between collocated samplers	Not Applicable

HIGLEY		
Probe Height (distance above ground level to inlet)		4.4 meters
Airflow Arc		360°
Probe Sample Line Material		Not Applicable
Pollutant Sample Residence Time (seconds)		Not Applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters
	Vertical	2 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstructions
	Vertical	no obstructions
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	7.6 meters
	Vertical	1.5 meters
Distance from Dripline of Closest Tree(s)		15.2 meters
Distance to Furnace or Flue		No Furnace or Flue
Nearest Major Roadway A		Higley Rd
Distance and Direction to Road		117 meters, E
Average Daily Traffic Count		11,500
Nearest Major Roadway B		Williams Field Rd
Distance and Direction to Road		410 meters, S
Average Daily Traffic Count		11,500
Groundcover		Pavement

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

HUMBOLDT MOUNTAIN	
County ID: HM AQS ID: 04-013-9508 Address: E State Hwy 562- FAA Radar Station, Tonto National Forest Coordinates: 33.98280 N, -111.79871 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa	
General Information	
Pollutant	**O_3**
Parameter Code	44201
Parameter Occurrence Code	1
Collection Frequency	Continuous
Analysis Method (filter samples only)	Not Applicable
Any Proposal to Remove or Move Monitor?	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs	
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	26
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly
Number of Flow Rate Verifications Performed in 2021 (PM or Pb)	Not Applicable
Frequency of Flow Rate Verifications	
Number of PE Audits Performed in 2021	2
Dates of PE Audits	04/15/21 10/14/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes
Date of Annual Data Certification Submission	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable	
Appendix C Requirements - Monitoring Methodology	
Date Sampling Started	08/01/1995
Monitor Type	SLAMS
Monitor Make – Model	Teledyne API – 400T
Method Code	087
Method Type (FRM, FEM, ARM)	FEM
Appendix D Requirements - Network Design Criteria	
Site Type	Maximum O_3 Concentration
Basic Monitoring Objective	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)	Regional
Monitoring Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria	
Distance between collocated samplers	Not Applicable
Probe Height (distance above ground level to inlet)	4 meters
Airflow Arc	360°

HUMBOLDT MOUNTAIN		
Probe Sample Line Material		FEP
Pollutant Sample Residence Time (seconds)		8.96
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters
	Vertical	2 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction
	Vertical	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction
	Vertical	no obstruction
Distance from Dripline of Closest Tree(s)		no tree
Distance to Furnace or Flue		No Furnace or Flue
Nearest Major Roadway - Remote Mountaintop - Access using E. State Hwy 562		No Major Roadway
Distance and Direction to Road		Not Applicable
Average Daily Traffic Count		Not Applicable
Groundcover		Soil / Vegetation

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

MESA				
County ID: ME AQS ID: 04-013-1003 Address: 310 S Brooks, Mesa Coordinates: 33.41018 N, -111.86536 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa				
General Information				
Pollutant	**CO**	**O_3**	**PM_{10}**	**$PM_{2.5}$**
Parameter Code	42101	44201	81102	88101
Parameter Occurrence Code	1	1	1	3
Collection Frequency	Continuous	Continuous	Continuous	Continuous
Analysis Method (filter samples only)	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Any Proposal to Remove or Move Monitor?	No	No	No	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes	Yes	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable	Not Applicable	Not Applicable	Yes
Are Data Comparable to Respective NAAQS?	Yes	Yes	Yes	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs				
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	26	26	Not Applicable	Not Applicable
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly	Bi-Weekly		
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable	Not Applicable	26	26
Frequency of Flow Rate Verifications			Bi-Weekly	Bi-Weekly
Number of PE Audits Performed in 2021	4	2	4	4
Dates of PE Audits	01/29/21 06/11/21 07/08/21 08/06/21	04/22/21 10/01/21	02/03/21 05/14/21 08/06/21 11/10/21	02/03/21 05/14/21 08/06/21 11/10/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22	04/22/22	04/22/22

MESA					
Appendix B Requirements - PSD Monitoring - Not Applicable					
Appendix C Requirements - Monitoring Methodology					
Date Sampling Started		01/01/1978	11/1/2012	11/1/2012	11/1/2012
Monitor Type		SLAMS	SLAMS	SLAMS	SLAMS
Monitor Make - Model		Teledyne API – 300T	Teledyne API – 400T	Thermo - TEOM 1405-DF	Thermo - TEOM 1405-DF
Method Code		093	087	208	182
PM Monitor Flow Type		Not Applicable	Not Applicable	Low Volume	Low Volume
PM Monitor Collection Type		Not Applicable	Not Applicable	Dichotomous	Dichotomous
Method Type (FRM, FEM, ARM)		FRM	FEM	FEM	FEM
Appendix D Requirements - Network Design Criteria					
Site Type		Population Exposure	Population Exposure	Population Exposure	Population Exposure
Basic Monitoring Objective		NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)		Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring Season		Sep-Mar	Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?		Yes	Yes	Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria					
Distance between collocated samplers		Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance between PM_{10} and $PM_{2.5}$ monitors		Not Applicable	Not Applicable	0 meters	0 meters
Probe Height (distance above ground level to inlet)		4.4 meters	4.4 meters	4.4 meters	4.4 meters
Airflow Arc		360º	360º	360º	360º
Probe Sample Line Material		FEP	FEP	Not Applicable	Not Applicable
Pollutant Sample Residence Time (seconds)		8.12	8.12	Not Applicable	Not Applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters	0 meters	0 meters	0 meters
	Vertical	2 meters	2 meters	2 meters	2 meters
	Horizontal	no obstruction	no obstruction	no obstruction	no obstruction

MESA					
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Vertical	no obstruction	no obstruction	no obstruction	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction	no obstruction
Distance from Dripline of Closest Tree(s)		no tree	no tree	no tree	no tree
Distance to Furnace or Flue		No Furnace or Flue	No Furnace or Flue	No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway		Broadway Rd.	Broadway Rd.	Broadway Rd.	Broadway Rd.
Distance and Direction to Road		305 meters, S	305 meters, S	305 meters, S	305 meters, S
Average Daily Traffic Count		33,000	33,000	33,000	33,000
Groundcover		Pavement/Gravel	Pavement/Gravel	Pavement/Gravel	Pavement/Gravel

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

NORTH PHOENIX			
County ID: NP AQS ID: 04-013-1004 Address: 601 E Butler Dr., Phoenix Coordinates: 33.56034 N, -112.06627 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa			
General Information			
Pollutant	**O_3**	**PM_{10}**	**$PM_{2.5}$**
Parameter Code	44201	81102	88101
Parameter Occurrence Code	1	1	3
Collection Frequency	Continuous	Continuous	Continuous
Analysis Method (filter samples only)	Not Applicable	Not Applicable	Not Applicable
Any Proposal to Remove or Move Monitor?	No	No	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable	Not Applicable	Yes
Are Data Comparable to Respective NAAQS?	Yes	Yes	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs			
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	26	Not Applicable	Not Applicable
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly		
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable	27	27
Frequency of Flow Rate Verifications		Bi-Weekly	Bi-Weekly
Number of PE Audits Performed in 2021	2	3	3
Dates of PE Audits	06/08/21 12/07/21	02/23/21 08/03/21 11/10/21	02/23/21 08/03/21 11/10/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable			
Appendix C Requirements - Monitoring Methodology			
Date Sampling Started	01/01/1975	9/1/2011	9/1/2011
Monitor Type	SLAMS	SLAMS	SLAMS
Monitor Make - Model	Teledyne API – 400T	Thermo - TEOM 1405-DF	Thermo - TEOM 1405-DF
Method Code	087	208	182
PM Monitor Flow Type	Not Applicable	Low Volume	Low Volume
PM Monitor Collection Type	Not Applicable	Dichotomous	Dichotomous

NORTH PHOENIX				
Method Type (FRM, FEM, ARM)		FEM	FEM	FEM
Appendix D Requirements - Network Design Criteria				
Site Type		Max Ozone Concentration	Population Exposure	Population Exposure
Basic Monitoring Objective		NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)		Neighborhood	Neighborhood	Neighborhood
Monitoring Season		Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?		Yes	Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria				
Distance between collocated samplers		Not Applicable	Not Applicable	Not Applicable
Distance between PM_{10} and $PM_{2.5}$ monitors		Not Applicable	0 meters	0 meters
Probe Height (distance above ground level to inlet)		4.6 meters	4.5 meters	4.5 meters
Airflow Arc		360º	360º	360º
Probe Sample Line Material		FEP	Not Applicable	Not Applicable
Pollutant Sample Residence Time (seconds)		6.02	Not Applicable	Not Applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters	0 meters	0 meters
	Vertical	2 meters	2 meters	2 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction
Distance from Dripline of Closest Tree(s)		3 meters	3 meters	3 meters
Distance to Furnace or Flue		No Furnace or Flue	No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway		7th Street	7th Street	7th Street
Distance and Direction to Road		75 meters, E	75 meters, E	75 meters, E
Average Daily Traffic Count (ADT)		32,000	32,000	32,000
Groundcover		Gravel	Gravel	Gravel

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

PINNACLE PEAK	
County ID: PP AQS ID: 04-013-2005 Address: 24295 N Alma School Rd., Scottsdale Coordinates: 33.70639 N, -111.85575 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa	
General Information	
Pollutant	**O_3**
Parameter Code	44201
Parameter Occurrence Code	1
Collection Frequency	Continuous
Analysis Method (filter samples only)	Not Applicable
Any Proposal to Remove or Move Monitor?	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs	
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	25
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly
Number of Flow Rate Verifications Performed in 2021 (PM or Pb)	Not Applicable
Frequency of Flow Rate Verifications	
Number of PE Audits Performed in 2021	2
Dates of PE Audits	03/12/21 07/09/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes
Date of Annual Data Certification Submission	4/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable	
Appendix C Requirements - Monitoring Methodology	
Date Sampling Started	02/01/1988
Monitor Type	SLAMS
Monitor Make - Model	Teledyne API – 400T
Method Code	087
Method Type (FRM, FEM, ARM)	FEM
Appendix D Requirements - Network Design Criteria	
Site Type	Max Ozone Concentration
Basic Monitoring Objective	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)	Urban
Monitoring Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria	
Distance between collocated samplers	Not Applicable
Probe Height (distance above ground level to inlet)	4.7 meters
Airflow Arc	360º
Probe Sample Line Material	FEP

PINNACLE PEAK		
Pollutant Sample Residence Time (seconds)		5.34
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters
	Vertical	2.7 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction
	Vertical	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction
	Vertical	no obstruction
Distance from Dripline of Closest Tree(s)		10 meters
Distance to Furnace or Flue		No Furnace or Flue
Nearest Major Roadway		Happy Valley Rd.
Distance and Direction to Road		61 meters, S
Average Daily Traffic Count		16,000
Groundcover		Pavement / Grass

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

SOUTH PHOENIX				
County ID: SP AQS ID: 04-013-4003 Address: 33 W Tamarisk St., Phoenix Coordinates: 33.40314 N, -112.07526 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa				
General Information				
Pollutant	**CO**	**O_3**	**PM_{10}**	**$PM_{2.5}$**
Parameter Code	42101	44201	81102	88101
Parameter Occurrence Code	1	1	1	3
Collection Frequency	Continuous	Continuous	Continuous	Continuous
Analysis Method (filter samples only)	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Any Proposal to Remove or Move Monitor?	No	No	No	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes	Yes	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable	Not Applicable	Not Applicable	Yes
Are Data Comparable to Respective NAAQS?	Yes	Yes	Yes	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs				
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	26	26	Not Applicable	Not Applicable
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly	Bi-Weekly		
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable	Not Applicable	26	26
Frequency of Flow Rate Verifications			Bi-Weekly	Bi-Weekly
Number of PE Audits Performed in 2021	2	2	4	4
Dates of PE Audits	04/06/21 11/02/21	04/20/21 11/02/21	02/23/21 05/04/21 08/10/21 11/02/21	02/23/21 05/04/21 08/10/21 11/02/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22	04/22/22	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable				
Appendix C Requirements - Monitoring Methodology				
Date Sampling Started	10/01/1999	10/01/1999	7/1/2007	05/01/2010
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS
Monitor Make - Model	Teledyne API – 300T	Teledyne API – 400T	Thermo - TEOM 1405-DF	Thermo - TEOM 1405-DF

SOUTH PHOENIX					
Method Code		093	087	208	182
PM Monitor Flow Type		Not Applicable	Not Applicable	Low Volume	Low Volume
PM Monitor Collection Type		Not Applicable	Not Applicable	Dichotomous	Dichotomous
Method Type (FRM, FEM, ARM)		FRM	FEM	FEM	FEM
Appendix D Requirements - Network Design Criteria					
Site Type		Population Exposure	Population Exposure	Population Exposure	Population Exposure
Basic Monitoring Objective		NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)		Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring Season		Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?		Yes	Yes	Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria					
Distance between collocated samplers		Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance between PM_{10} and $PM_{2.5}$ monitors		Not Applicable	Not Applicable	0 meters	0 meters
Probe Height (distance above ground level to inlet)		4.4 meters	4.4 meters	4.3 meters	4.3 meters
Airflow Arc		360º	360º	360º	360º
Probe Sample Line Material		FEP	FEP	Not Applicable	Not Applicable
Pollutant Sample Residence Time (seconds)		5.29	5.29	Not Applicable	Not Applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters	0 meters	0 meters	0 meters
	Vertical	2 meters	2 meters	2 meters	2 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	11 meters	11 meters	11 meters	11 meters
	Vertical	3 meters	3 meters	3 meters	3 meters
Distance from Dripline of Closest Tree(s)		11 meters	11 meters	11 meters	11 meters

SOUTH PHOENIX				
Distance to Furnace or Flue	No Furnace or Flue	No Furnace or Flue	No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway A	Central Ave.	Central Ave.	Central Ave.	Central Ave.
Distance and Direction to Road	168 meters, E	168 meters, E	165 meters, E	165 meters, E
Average Daily Traffic Count	24,000	24,000	24,000	24,000
Nearest Major Roadway B	Broadway Rd.	Broadway Rd.	Broadway Rd.	Broadway Rd.
Distance and Direction to Road	385 meters, N	385 meters, N	385 meters, N	385 meters, N
Average Daily Traffic Count	18,000	18,000	18,000	18,000
Groundcover	Pavement	Pavement	Pavement	Pavement

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

SOUTH SCOTTSDALE		
County ID: SS AQS ID: 04-013-3003 Address: 2857 N Miller Rd., Scottsdale Coordinates: 33.47968 N, -111.91711 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa		
General Information		
Pollutant	**O_3**	**PM_{10}**
Parameter Code	44201	81102
Parameter Occurrence Code	1	1
Collection Frequency	Continuous	Continuous
Analysis Method (filter samples only)	Not Applicable	Not Applicable
Any Proposal to Remove or Move Monitor?	No	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs		
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	27	Not Applicable
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly	
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable	27
Frequency of Flow Rate Verifications		Bi-Weekly
Number of PE Audits Performed in 2021	4	5
Dates of PE Audits	01/06/21 01/08/21 07/09/21 12/08/21	02/03/21 02/23/21 05/10/21 08/04/21 11/23/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable		
Appendix C Requirements - Monitoring Methodology		
Date Sampling Started	01/01/1974	09/01/2012
Monitor Type	SLAMS	SLAMS
Monitor Make - Model	Teledyne API – 400T	Thermo - TEOM 1405-S
Method Code	087	079
PM Monitor Flow Type	Not Applicable	Low Volume
PM Monitor Collection Type	Not Applicable	Size Specific
Method Type (FRM, FEM, ARM)	FEM	FEM
Appendix D Requirements - Network Design Criteria		
Site Type	Population Exposure	Population Exposure

SOUTH SCOTTSDALE			
Basic Monitoring Objective		NAAQS Comparison	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)		Neighborhood	Neighborhood
Monitoring Season		Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?		Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria			
Distance between collocated samplers		Not Applicable	Not Applicable
Probe Height (distance above ground level to inlet)		4.4 meters	3 meters
Airflow Arc		360º	360º
Probe Sample Line Material		FEP	Not Applicable
Pollutant Sample Residence Time (seconds)		8.43	Not Applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0.46 meters	0 meters
	Vertical	2.4 meters	0.46 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	3 meters	no obstruction
	Vertical	2.4 meters	no obstruction
Distance from Dripline of Closest Tree(s)		no tree	no tree
Distance to Furnace or Flue		No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway A		Thomas Rd.	Thomas Rd.
Distance and Direction to Road		66 meters, N	62 meters, N
Average Daily Traffic Count		33,000	33,000
Nearest Major Roadway B		Miller Rd.	Miller Rd.
Distance and Direction to Road		32 meters, W	35 meters, W
Average Daily Traffic Count		13,000	13,000
Groundcover		Pavement	Pavement

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

TEMPE			
County ID: TE AQS ID: 04-013-4005 Address: 1525 S College Ave., Tempe Coordinates: 33.4123 N, -111.93471 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa			
General Information			
Pollutant	**O_3**	**PM_{10}**	**$PM_{2.5}$**
Parameter Code	44201	81102	88101
Parameter Occurrence Code	1	1	3
Collection Frequency	Continuous	Continuous	Continuous
Analysis Method (filter samples only)	Not Applicable	Not Applicable	Not Applicable
Any Proposal to Remove or Move Monitor?	No	No	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable	Not Applicable	Yes
Are Data Comparable to Respective NAAQS?	Yes	Yes	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs			
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	27	Not Applicable	Not Applicable
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly		
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable	27	27
Frequency of Flow Rate Verifications		Bi-Weekly	Bi-Weekly
Number of PE Audits Performed in 2021	2	4	4
Dates of PE Audits	05/05/21 11/03/21	02/23/21 05/05/21 08/11/21 11/03/21	02/23/21 05/05/21 08/11/21 11/03/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable			
Appendix C Requirements - Monitoring Methodology			
Date Sampling Started	07/01/2000	03/01/2012	03/01/2012
Monitor Type	SLAMS	SLAMS	SLAMS
Monitor Make - Model	Teledyne API – 400T	Thermo - TEOM 1405-DF	Thermo - TEOM 1405-DF
Method Code	087	208	182
PM Monitor Flow Type	Not Applicable	Low Volume	Low Volume

TEMPE				
PM Monitor Collection Type		Not Applicable	Dichotomous	Dichotomous
Method Type (FRM, FEM, ARM)		FEM	FEM	FEM
Appendix D Requirements - Network Design Criteria				
Site Type		Population Exposure	Population Exposure	Population Exposure
Basic Monitoring Objective		NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)		Neighborhood	Neighborhood	Neighborhood
Monitoring Season		Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?		Yes	Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria				
Distance between collocated samplers		Not Applicable	Not Applicable	Not Applicable
Distance between PM_{10} and $PM_{2.5}$ monitors		Not Applicable	0 meters	0 meters
Probe Height (distance above ground level to inlet)		4.4 meters	3.1 meters	3.1 meters
Airflow Arc		360º	360º	360º
Probe Sample Line Material		FEP	Not Applicable	Not Applicable
Pollutant Sample Residence Time (seconds)		5.89	Not Applicable	Not Applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0.46 meters	0 meters	0 meters
	Vertical	2 meters	0.76 meters	0.76 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction
Distance from Dripline of Closest Tree(s)		no tree	no tree	no tree
Distance to Furnace or Flue		No Furnace or Flue	No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway		Apache Blvd.	Apache Blvd.	Apache Blvd.
Distance and Direction to Road		370 meters, N	370 meters, N	370 meters, N
Average Daily Traffic Count		32,170	32,170	32,170
Groundcover		Gravel	Gravel	Gravel

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

THIRTY-THIRD			
County ID: TT AQS ID: 04-013-4020 Address: 3248 W Moreland Ave., Phoenix Coordinates: 33.46173 N, -112.12796 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa			
General Information			
Pollutant	**CO**	**NO_2**	**$PM_{2.5}$**
Parameter Code	42101	42602	88101
Parameter Occurrence Code	1	1	3
Collection Frequency	Continuous	Continuous	Continuous
Analysis Method (filter samples only)	Not Applicable	Not Applicable	Not Applicable
Any Proposal to Remove or Move Monitor?	Yes	No	Yes
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable	Not Applicable	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes	Yes	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs			
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	4*	26	Not Applicable
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly	Bi-Weekly	
Number of Flow Rate Verifications in 2021 (PM)	Not Applicable	Not Applicable	4*
Frequency of Flow Rate Verifications			Bi-Weekly
Number of PE Audits Performed in 2021	0*	3	1*
Dates of PE Audits	* Sampling discontinued 2/28/21	02/24/21 05/05/21 11/04/21	01/12/21 *Sampling discontinued 2/28/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable			
Appendix C Requirements - Monitoring Methodology			
Date Sampling Started	01/01/2020	09/01/2015	01/01/2020
Monitor Type	SLAMS	SLAMS	SLAMS
Monitor Make – Model	Teledyne API – 300T	Thermo 42iQ	Thermo - TEOM 1405-DF
Method Code	093	074	182
Method Type (FRM, FEM, ARM)	FEM	FRM	FEM
Appendix D Requirements - Network Design Criteria			
Site Type	Source-Oriented	Source-Oriented	Source-Oriented
Basic Monitoring Objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)	Micro	Micro	Micro
Monitoring Season	Jan-Dec	Jan-Dec	Jan-Dec

THIRTY-THIRD				
Network Meets Minimum Number of Monitors Required?		Yes	Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria				
Distance between collocated samplers		Not Applicable	Not Applicable	Not Applicable
Probe Height (distance above ground level to inlet)		7 meters	7 meters	7 meters
Airflow Arc		360º	360º	360º
Probe Sample Line Material		FEP	FEP	FEP
Pollutant Sample Residence Time (seconds)		15.08	15.08	Not applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	3 meters	3 meters	3 meters	3 meters
	0 meters	0 meters	0 meters	0 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	no obstruction	no obstruction	no obstruction	no obstruction
	no obstruction	no obstruction	no obstruction	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	no obstruction	no obstruction	no obstruction	no obstruction
	no obstruction	no obstruction	no obstruction	no obstruction
Distance from Dripline of Closest Tree(s)		15.2 meters	15.2 meters	15.2 meters
Distance to Furnace or Flue		No Furnace or Flue	No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway		I-10		
Distance and Direction to Road		13.5 meters, N		
Average Daily Traffic Count		245,632		
Groundcover		Gravel		

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

WEST 43RD AVENUE	
County ID: WF AQS ID: 04-013-4009 Address: 3940 W Broadway Rd., Phoenix Coordinates: 33.40635 N, -112.14426 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa	
General Information	
Pollutant	**PM_{10}**
Parameter Code	81102
Parameter Occurrence Code	1
Collection Frequency	Continuous
Analysis Method (filter samples only)	Not Applicable
Any Proposal to Remove or Move Monitor?	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes
Is site suitable for comparison to the *annual* $PM_{2.5}$ NAAQS as per *§58.30*?	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs	
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	Not Applicable
Frequency of 1-Point QC (Precision) Checks	
Number of Flow Rate Verifications Performed in 2021 (PM)	26
Frequency of Flow Rate Verifications	Bi-Weekly
Number of PE Audits Performed in 2021	6
Dates of PE Audits	02/03/21 03/02/21 04/13/21 06/08/21 09/14/21 12/20/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes
Date of Annual Data Certification Submission	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable	
Appendix C Requirements - Monitoring Methodology	
Date Sampling Started	04/01/2002
Monitor Type	SLAMS
Monitor Make – Model	Thermo - TEOM 1405-S
Method Code	079
PM Monitor Flow Type	Low Volume
PM Monitor Collection Type	Size Specific
Method Type (FRM, FEM, ARM)	FEM
Appendix D Requirements - Network Design Criteria	
Site Type	Highest Concentration
Basic Monitoring Objective	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)	Middle
Monitoring Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes

WEST 43RD AVENUE		
Appendix E Requirements - Probe and Monitoring Path Siting Criteria		
Distance between collocated samplers		Not Applicable
Probe Height (distance above ground level to inlet)		5 meters
Airflow Arc		360º
Probe Sample Line Material		Not Applicable
Pollutant Sample Residence Time (seconds)		Not Applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters
	Vertical	0.6 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction
	Vertical	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction
	Vertical	no obstruction
Distance from Dripline of Closest Tree(s)		4.5 meters
Distance to Furnace or Flue		No Furnace or Flue
Nearest Major Roadway A		Broadway Rd. (E of 35th Ave.)
Distance and Direction to Road		37 meters, S
Average Daily Traffic Count		12,501
Nearest Major Roadway B		35th Ave. (N. of Broadway Rd.)
Distance and Direction to Road		1 kilometer, E
Average Daily Traffic Count		19,699
Groundcover		Gravel

Sources: For QC, flow rate, and collocation assessment information - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audit dates - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

WEST CHANDLER			
County ID: WC AQS ID: 04-013-4004 Address: 275 S Ellis, Chandler Coordinates: 33.29896 N, -111.88426 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa			
General Information			
Pollutant	**CO**	**O_3**	**PM_{10}**
Parameter Code	42101	44201	81102
Parameter Occurrence Code	1	1	1
Collection Frequency	Continuous	Continuous	Continuous
Analysis Method (filter samples only)	Not Applicable	Not Applicable	Not Applicable
Any Proposal to Remove or Move Monitor?	No	No	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes	Yes
Is site suitable for comparison to the *annual* PM2.5 NAAQS as per *§58.30*?	Not Applicable	Not Applicable	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes	Yes	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs			
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	26	26	Not Applicable
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly	Bi-Weekly	
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable	Not Applicable	26
Frequency of Flow Rate Verifications			Bi-Weekly
Number of PE Audits Performed in 2021	2	2	
Dates of PE Audits	03/11/21 09/09/21	04/08/21 10/06/21	03/11/21 06/03/21 09/09/21 12/01/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable			
Appendix C Requirements - Monitoring Methodology			
Date Sampling Started	07/01/2000	07/01/2000	07/01/2000
Monitor Type	SLAMS	SLAMS	SLAMS
Monitor Make - Model	Teledyne API – 300T	Teledyne API – 400T	Thermo – TEOM 1405-S
Method Code	093	087	079
PM Monitor Flow Type	Not Applicable	Not Applicable	Low Volume

WEST CHANDLER				
PM Monitor Collection Type		Not Applicable	Not Applicable	Size Specific
Method Type (FRM, FEM, ARM)		FRM	FEM	FEM
Appendix D Requirements - Network Design Criteria				
Site Type		Population Exposure	Population Exposure	Population Exposure
Basic Monitoring Objective		NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)		Neighborhood	Neighborhood	Neighborhood
Monitoring Season		Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?		Yes	Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria				
Distance between collocated samplers		Not Applicable	Not Applicable	Not Applicable
Probe Height (distance above ground level to inlet)		4.4 meters	4.4 meters	4.4 meters
Airflow Arc		360º	360º	360º
Probe Sample Line Material		FEP	FEP	Not Applicable
Pollutant Sample Residence Time (seconds)		4.24	4.24	Not Applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters	0 meters	0 meters
	Vertical	2 meters	2 meters	2 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	14 meters	14 meters	14 meters
	Vertical	3 meters	3 meters	3 meters
Distance from Dripline of Closest Tree(s)		14 meters	14 meters	14 meters
Distance to Furnace or Flue		No Furnace or Flue	No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway A		Frye Rd.	Frye Rd.	Frye Rd.
Distance and Direction to Road		30 meters, S	30 meters, S	30 meters, S
Average Daily Traffic Count		10,566	10,566	10,566
Groundcover		Pavement / Gravel	Pavement / Gravel	Pavement / Gravel

Sources: For 1-pt. precision checks, FR verifications, and collocation assessments - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audits - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

WEST PHOENIX						
County ID: WP AQS ID: 04-013-0019 Address: 3847 W Earll, Phoenix Coordinates: 33.48378 N, -112.14256 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa						
General Information						
Pollutant	**CO**	**NO_2**	**O_3**	**PM_{10}**	**$PM_{2.5}$ Primary**	**$PM_{2.5}$ Secondary**
Parameter Code	42101	42602	44201	81102	88101	88101
Parameter Occurrence Code	1	1	1	1	3	2
Collection Frequency	Continuous	Continuous	Continuous	Continuous	Continuous	1 in 12 days
Analysis Method (filter samples only)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	*As per 40 CFR Part 50, Appendix L*
Analytical Laboratory (filter samples only)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Pace Analytical® IML Air Science Laboratory
Any Proposal to Remove or Move Monitor?	No	No	No	No	No	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes	Yes	Yes	Yes	Yes	Yes
Is site suitable for comparison to the *annual* PM2.5 NAAQS as per *§58.30*?	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Yes	Yes
Are Data Comparable to Respective NAAQS?	Yes	Yes	Yes	Yes	Yes	Yes

WEST PHOENIX						
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs						
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	26	27	27	Not Applicable	Not Applicable	Not Applicable
Frequency of 1-Point QC (Precision) Checks	Bi-Weekly	Bi-Weekly	Bi-Weekly			
Number of Flow Rate Verifications Performed in 2021 (PM)	Not Applicable	Not Applicable	Not Applicable	25	25	9
Frequency of Flow Rate Verifications				Bi-Weekly	Bi-Weekly	Bi-weekly
Number of Required Collocated Assessments in 2021 ($PM_{2.5}$ Only)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	30	
Number of Valid Collocation Assessments in 2021 ($PM_{2.5}$ Only)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	29	
Number of Collocation Assessments in 2021 ($PM_{2.5}$ Only)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	32	
Number of PE Audits Performed in 2021	2	2	2	4	4	4
Dates of PE Audits	06/09/21 12/08/21	02/02/21 09/01/21	04/01/21 07/02/21	03/03/21 06/09/21 09/01/21 12/08/21	03/03/21 06/09/21 09/01/21 12/08/21	03/08/21 06/01/21 09/07/21 12/15/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes	Yes	Yes	Yes	Yes	Yes
Date of Annual Data Certification Submission	04/22/22	04/22/22	04/22/22	04/22/22	04/22/22	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable						
Appendix C Requirements - Monitoring Methodology						
Date Sampling Started	01/01/1984	05/24/1990	01/01/1984	02/01/1988	09/01/2005	06/13/2000
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Monitor Make - Model	Teledyne - API 300T	Thermo 42iQ/Teledyne - API 200T	Teledyne - API 400T	Thermo - TEOM 1405-DF	Thermo - TEOM 1405-DF	Thermo - Partisol 2025
Notes: The same monitor collects PM_{10} and $PM_{2.5}$ hourly (continuous) measurements. The collocated Partisol 2025i sampler collects a QA filter sample once every 12 days.						

WEST PHOENIX						
Method Code	093	099	087	208	182	145
PM Monitor Flow Type	Not Applicable	Not Applicable	Not Applicable	Low Volume	Low Volume	Low Volume
PM Monitor Collection Type	Not Applicable	Not Applicable	Not Applicable	Dichotomous	Dichotomous	Size Specific & Sequential
Method Type (FRM, FEM, ARM)	FRM	FRM	FEM	FEM	FEM	FRM
Appendix D Requirements - Network Design Criteria						
Site Type	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Highest Concentration	Highest Concentration
Basic Monitoring Objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring Season	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes	Yes	Yes	Yes	Yes	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria						
Distance between collocated $PM_{2.5}$ monitors	Not Applicable	Not Applicable	Not Applicable	2 meters	2 meters	2 meters
Distance between PM_{10} and $PM_{2.5}$ monitors	Not Applicable	Not Applicable	Not Applicable	0 meters	0 meters	2 meters
Probe Height (distance above ground level to inlet)	4.3 meters	4.3 meters	4.3 meters	5 meters	5 meters	4 meters
Airflow Arc	360°	360°	360°	360°	360°	360°
Probe Sample Line Material	FEP	FEP	FEP	Not Applicable	Not Applicable	FEP
Pollutant Sample Residence Time (seconds)	8.67	8.67	8.67	Not Applicable	Not Applicable	Not Applicable
Filter Sample Material	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	FEP

WEST PHOENIX							
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters	0 meters	0 meters	0 meters	0 meters	0 meters
	Vertical	2 meters	2 meters	2 meters	0.6 meters	0.6 meters	0.5 meters
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction	no obstruction	no obstruction	no obstruction
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstruction	no obstruction	no obstruction	no obstruction	no obstruction	no obstruction
	Vertical	no obstruction	no obstruction	no obstruction	no obstruction	no obstruction	no obstruction
Distance from Dripline of Closest Tree(s)		no tree	no tree	no tree	no tree	no tree	no tree
Distance to Furnace or Flue		No Furnace or Flue	No Furnace or Flue	No Furnace or Flue	No Furnace or Flue	No Furnace or Flue	No Furnace or Flue
Nearest Major Roadway		Thomas Rd.	Thomas Rd.	Thomas Rd.	Thomas Rd.	Thomas Rd.	Thomas Rd.
Distance and Direction to Road		360 meters, S	360 meters, S	360 meters, S	360 meters, S	360 meters, S	360 meters, S
Average Daily Traffic Count		29,000	29,000	29,000	29,000	29,000	29,000
Groundcover		Gravel	Gravel	Gravel	Gravel	Gravel	Gravel

Sources: For 1-pt. precision checks, FR verifications, and collocation assessments - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audits - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

ZUNI HILLS	
County ID: ZH AQS ID: 04-013-4016 Address: 10851 W Williams Rd., Sun City Coordinates: 33.68719 N, -112.29416 W Metropolitan Statistical Area (MSA): 6200 Phoenix-Mesa	
General Information	
Pollutant	**PM_{10}**
Parameter Code	81102
Parameter Occurrence Code	1
Collection Frequency	Continuous
Analysis Method (filter samples only)	Not Applicable
Any Proposal to Remove or Move Monitor?	No
Does monitor operation meet *40 CFR Part 58, Subpart G – Appendices A, C, D, and E*?	Yes
Is site suitable for comparison to the *annual* PM2.5 NAAQS as per *§58.30*?	Not Applicable
Are Data Comparable to Respective NAAQS?	Yes
Appendix A Requirements - Quality Assurance Requirements for SLAMS and SPMs	
Number of 1-Point QC (Precision) Checks Performed in 2021 (Gases)	Not Applicable
Frequency of 1-Point QC (Precision) Checks	
Number of Flow Rate Verifications Performed in 2021 (PM)	26
Frequency of Flow Rate Verifications	Bi-Weekly
Number of PE Audits Performed in 2021	4
Dates of PE Audits	03/08/21 06/01/21 09/07/21 12/15/21
Annual Precision & PE Audit Reports Submitted to AQS?	Yes
Date of Annual Data Certification Submission	04/22/22
Appendix B Requirements - PSD Monitoring - Not Applicable	
Appendix C Requirements - Monitoring Methodology	
Date Sampling Started	12/01/2009
Monitor Type	SLAMS
Monitor Make – Model	Thermo - TEOM 1405-S
Method Code	079
PM Monitor Flow Type	Low Volume
PM Monitor Collection Type	Size Specific
Method Type (FRM, FEM, ARM)	FEM
Appendix D Requirements - Network Design Criteria	
Site Type	Population Exposure
Basic Monitoring Objective	NAAQS Comparison
Monitoring Scale (Spatial Scale Represented)	Neighborhood
Monitoring Season	Jan-Dec
Network Meets Minimum Number of Monitors Required?	Yes
Appendix E Requirements - Probe and Monitoring Path Siting Criteria	
Distance between collocated samplers	Not Applicable

ZUNI HILLS		
Probe Height (distance above ground level to inlet)		3.3 meters
Airflow Arc		360º
Probe Sample Line Material		Not Applicable
Pollutant Sample Residence Time (seconds)		Not Applicable
Distance from Supporting Structure/Roof (horizontal distance and vertical distance to probe/inlet)	Horizontal	0 meters
	Vertical	1 meter
Distance from Obstructions on Roof (horizontal distance to obstruction and vertical height of obstruction above probe/inlet)	Horizontal	no obstructions
	Vertical	no obstructions
Distance from Obstructions Not on Roof (horizontal distance to the obstruction and vertical height of obstruction above probe/inlet)	Horizontal	6 meters
	Vertical	3 meters
Distance from Dripline of Closest Tree(s)		9 meters
Distance to Furnace or Flue		No Furnace or Flue
Nearest Major Roadway		Williams Rd.
Distance and Direction to Road		200 meters, N
Average Daily Traffic Count		2,567
Groundcover		Lawn / Soil

Sources: For 1-pt. precision checks, FR verifications, and collocation assessments - EPA AQS database - *2021 QA DQI Report (AMP256)*
For PE audits - EPA AQS database - *2021 QA Raw Assessment Report (AMP251)*

APPENDIX III - 2021 DATA CERTIFICATION DOCUMENTATION

MCAQD Data Certification

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: EPOOLE

CERTIFICATION EVALUATION AND CONCURRENCE

Report Request ID: 2012760

Report Code: AMP600

Apr. 21, 2022

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region
	04	013									

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
CRITERIA			

AGENCY SELECTIONS

Maricopa County Air Quality

SELECTED OPTIONS

Option Type	Option Value
MERGE PDF FILES	YES
AGENCY ROLE	CERTIFYING

DATE CRITERIA

Start Date	End Date
2021	2021

Selection Criteria Page 1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: EPOOLE

CERTIFICATION EVALUATION AND CONCURRENCE

Report Request ID: 2012760

Report Code: AMP600

Apr. 21, 2022

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region
	04	013									

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
CRITERIA			

AGENCY SELECTIONS

Maricopa County Air Quality

SELECTED OPTIONS

Option Type	Option Value
MERGE PDF FILES	YES
AGENCY ROLE	CERTIFYING

DATE CRITERIA

Start Date	End Date
2021	2021

Selection Criteria Page 1

Data Evaluation and Concurrence Report Summary

Apr. 21, 2022

Certification Year: 2021
Certifying Agency (CA): Maricopa County Air Quality (0643)

Pollutants in Report:

Parameter Name	Code	Monitors Evaluated	Monitors Recommended for Concurrence by AQS	Monitors NOT Recommended for Concurrence by AQS
Carbon monoxide	42101	8	7	1
Nitrogen dioxide (NO2)	42602	5	5	0
Ozone	44201	17	17	0
PM10 Total 0-10um STP	81102	15	15	0
PM2.5 - Local Conditions	88101	10	10	0
Sulfur dioxide	42401	2	2	0

PQAOs in Report:

PQAO Name	PQAO Code	TSA Date
Maricopa County Air Quality	0643	03/21/22

Summary of 'N' flags for all pollutants:

PQAO	Parameter Code	AQS Site-ID	POC	AQS Recommended Flag	Cert. Agency Recommended Flag	Reason for AQS Recommendation
0643	42101	04-013-4020	1	N	Y	Annual Performance Evaluation Audit Missing or 1 Level.

Signature of Monitoring Organization Representative: Philip A McNeel

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2021
Certifying Agency Code Maricopa County Air Quality (0643)
Parameter Carbon monoxide (42101) (ppm)
PQAO Name Maricopa County Air Quality (0643)
QAPP Approval Date 12/12/2019

NPAP Audit Summary:

Number of Passed Audits	NPAP Bias	Criteria Met
		Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
04-013-0019	1	SLAMS	0.416	0.000	3.700	0	0	99	5.81	-5.02	100	- 1.11	100		Y	Y	Y	Y	S
04-013-1003	1	SLAMS	0.249	0.000	1.700	0	0	99	5.06	+/-4.15	100	0.06	100		Y	Y	Y	Y	S
04-013-3002	1	SLAMS	0.388	0.000	2.800	0	0	97	6.71	+/-5.60	100	- 4.04	100		Y	Y	Y	Y	S
04-013-4003	1	SLAMS	0.323	0.000	2.500	0	0	96	5.09	-5.63	100	- 2.81	100		Y	Y	Y	Y	S
04-013-4004	1	SLAMS	0.335	0.000	1.400	0	0	99	4.91	+4.31	100	1.08	100		Y	Y	Y	Y	S
04-013-4011	1	SLAMS	0.217	0.000	1.800	0	0	99	4.73	+/-5.17	100	1.11	100		Y	Y	Y	Y	S
04-013-4020	1	SLAMS	0.733	0.100	2.700	0	0	98	4.49	-2.72	100		0		Y	Y	N	Y	S

Submitter Comment The AMP600 report flagged the Carbon Monoxide (CO) monitor at the Thirty-Third site (04-013-4020) as missing an Annual Performance Evaluation Audit (APE). An APE was not conducted during 2021 because the CO analyzer was removed from the site on February 28th, 2021. The analyzer only operated from January 1st to February 28th, for a total of 59 days. Four 1-Point Quality Control checks were conducted during that time period, and the results were within the acceptance criteria for CO. Even though this monitor shows a missing APE, the data that were submitted during the this time met all critical criteria requirements, and MCAQD has selected a Certifying Agency Request of `Yes? for this monitor.

04-013-4021	1	SLAMS	0.327	- 0.100	1.400	0	0	96	4.61	+/-3.63	95	- 0.10	100		Y	Y	Y	Y	S

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2021
Certifying Agency Code Maricopa County Air Quality (0643)
Parameter Nitrogen dioxide (NO2) (42602) (ppb)
PQAO Name Maricopa County Air Quality (0643)
QAPP Approval Date 12/12/2019

NPAP Audit Summary:

Number of Passed Audits	NPAP Bias	Criteria Met
		Y

AQS Site ID	POC	Monitor Type	Routine Data						One Point Quality Check			Annual PE		NPAP		QAPP Appr.	Concur. Flag		
			Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	Precision	Bias	Complete	Bias	Complete	Bias	PQAO Level Criteria		Aqs Rec Flag	CA Rec Flag	Epa Concur
04-013-0019	1	SLAMS	14.7	1.0	55.0		0	98	8.32	-9.40	100	- 2.86	100		Y	Y	Y	Y	S
04-013-3002	6	SLAMS	15.4	1.0	60.0		0	98	5.71	-10.35	100	- 9.16	100		Y	Y	Y	Y	S
04-013-4011	1	SLAMS	8.0	0.0	40.0		0	99	5.38	-5.47	100	- 6.18	100		Y	Y	Y	Y	S
04-013-4020	1	SLAMS	25.9	0.0	65.0		0	99	4.09	-10.82	100	- 9.04	100		Y	Y	Y	Y	S
04-013-4021	1	SLAMS	16.0	0.0	57.0		0	91	6.37	+/-6.14	95	0.96	100		Y	Y	Y	Y	S

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2021
Certifying Agency Code Maricopa County Air Quality (0643)
Parameter Ozone (44201) (ppm)
PQAO Name Maricopa County Air Quality (0643)
QAPP Approval Date 12/12/2019

NPAP Audit Summary:

Number of Passed Audits	NPAP Bias	Criteria Met
4	2.28163	Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
04-013-0019	1	SLAMS	0.053	0.020	0.098	0	0	99	3.26	+/-3.11	100	2.54	100		Y	Y	Y	Y	S
04-013-1003	1	SLAMS	0.056	0.024	0.099	0	0	96	4.64	+/-4.36	96	- 3.01	100		Y	Y	Y	Y	S
04-013-1004	1	SLAMS	0.059	0.019	0.135	1	0	99	2.65	+/-2.31	100	- 1.35	100		Y	Y	Y	Y	S
04-013-1010	1	SLAMS	0.058	0.026	0.103	0	0	99	1.83	+/-1.73	100	1.15	100	0.99	Y	Y	Y	Y	S
04-013-2001	1	SLAMS	0.057	0.014	0.119	0	0	98	2.34	-2.32	100	- 2.90	100		Y	Y	Y	Y	S
04-013-2005	1	SLAMS	0.060	0.036	0.134	1	0	99	1.88	+/-1.73	96	1.58	100		Y	Y	Y	Y	S
04-013-3002	1	SLAMS	0.055	0.020	0.111	0	0	97	2.20	-2.10	100	- 0.20	100		Y	Y	Y	Y	S
04-013-3003	1	SLAMS	0.058	0.025	0.106	0	0	99	2.03	+/-1.94	100	0.56	100		Y	Y	Y	Y	S
04-013-4003	1	SLAMS	0.052	0.017	0.104	0	0	98	3.04	+/-2.95	100	- 3.90	100		Y	Y	Y	Y	S
04-013-4004	1	SLAMS	0.054	0.021	0.096	0	0	99	2.07	-2.96	100	- 4.37	100		Y	Y	Y	Y	S
04-013-4005	1	SLAMS	0.056	0.023	0.097	0	0	99	2.79	-3.28	100	- 2.78	100		Y	Y	Y	Y	S
04-013-4008	1	SLAMS	0.055	0.032	0.111	0	0	99	3.05	+/-3.14	100	0.47	100		Y	Y	Y	Y	S
04-013-4010	1	SLAMS	0.055	0.026	0.104	0	0	99	2.13	-2.47	100	- 1.50	100	1.45	Y	Y	Y	Y	S
04-013-4011	1	SLAMS	0.051	0.016	0.095	0	0	99	2.32	-2.32	100	- 1.56	100		Y	Y	Y	Y	S
04-013-9508	1	SLAMS	0.053	0.034	0.086	0	0	97	3.59	+/-2.94	100	- 0.06	100	3.90	Y	Y	Y	Y	S
04-013-9702	1	SLAMS	0.056	0.030	0.100	0	0	96	1.33	-1.45	96	- 0.63	100		Y	Y	Y	Y	S
04-013-9704	1	SLAMS	0.055	0.029	0.117	0	0	98	3.08	-3.13	100	1.76	100	3.11	Y	Y	Y	Y	S

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2021
Certifying Agency Code Maricopa County Air Quality (0643)
Parameter Sulfur dioxide (42401) (ppb)
PQAO Name Maricopa County Air Quality (0643)
QAPP Approval Date 12/12/2019

NPAP Audit Summary:

Number of Passed Audits	NPAP Bias	Criteria Met
		Y

AQS Site ID	POC	Monitor Type	Routine Data Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	One Point Quality Check Precision	Bias	Complete	Annual PE Bias	Complete	NPAP Bias	PQAO Level Criteria	QAPP Appr.	Concur. Flag Aqs Rec Flag	CA Rec Flag	Epa Concur
04-013-3002	4	SLAMS	0.3	0.0	26.0		0	99	4.66	-8.26	100	- 3.97	100		Y	Y	Y	Y	S
04-013-9812	1	SLAMS	0.3	0.0	8.0		0	98	5.96	-6.21	100	0.24	100		Y	Y	Y	Y	S

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2021
Certifying Agency: Maricopa County Air Quality (0643)

Parameter: PM10 Total 0-10um STP (81102) CONTINUOUS
PQAO Name: Maricopa County Air Quality (0643)
Quality Assurance Project Plan Approval Date: 12/12/2019

Monitors Summaries

			Routine Data (ug/m3)						Flow Rate Verification		Flow Rate Audit			Collocation Flag		
AQS Site ID	POC	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Bias	% Complete	Bias	% Complete	QAPP Appr.	AQS Rec Flag	CA Rec Flag	EPA Concur
04-013-0019	1	SLAMS	32.84	-.7	********	0		95	+/-1.10	100	+0.71	100	Y	Y	Y	S
04-013-1003	1	SLAMS	22.61	-4.3	********	0		97	+/-1.80	100	+0.47	100	Y	Y	Y	S
04-013-1004	1	SLAMS	21.76	-6.5	********	0		96	+/-1.18	100	+0.26	100	Y	Y	Y	S
04-013-2001	1	SLAMS	22.49	-6.7	********	0		96	+/-2.09	100	-0.59	100	Y	Y	Y	S
04-013-3002	4	SLAMS	37.24	-2.0	********	0		99	+/-1.12	100	+0.35	100	Y	Y	Y	S
04-013-3003	1	SLAMS	30.18	-1.0	********	0		97	+/-2.08	100	-0.79	100	Y	Y	Y	S
04-013-4003	1	SLAMS	33.87	-10.0	********	0		95	+/-0.54	100	-0.09	100	Y	Y	Y	S
04-013-4004	1	SLAMS	31.11	-3.0	********	0		99	+/-1.73	100	+1.61	100	Y	Y	Y	S
04-013-4005	1	SLAMS	25.69	-6.7	********	0		94	+/-2.01	100	+0.80	100	Y	Y	Y	S
04-013-4006	1	SLAMS	37.42	-6.0	********	0		97	+1.37	100	+0.21	100	Y	Y	Y	S
04-013-4009	1	SLAMS	61.02	-8.0	********	0		96	+/-1.73	100	+0.68	100	Y	Y	Y	S
04-013-4010	1	SLAMS	30.64	-4.0	********	0		99	+0.67	100	+0.89	100	Y	Y	Y	S
04-013-4011	1	SLAMS	44.87	-8.0	********	0		100	+/-0.45	100	+0.08	100	Y	Y	Y	S
04-013-4016	1	SLAMS	25.96	-4.0	********	0		98	+/-0.48	100	-0.07	100	Y	Y	Y	S
04-013-9812	1	SLAMS	43.54	-1.5	********	0		96	+/-1.25	100	-0.15	100	Y	Y	Y	S

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2021
Certifying Agency: Maricopa County Air Quality (0643)

Parameter: PM2.5 - Local Conditions (88101)
PQAO Name: Maricopa County Air Quality (0643)
Quality Assurance Project Plan Approval Date: 12/12/2019

Collocation Summary

Method	# Sites	# Sites Req	# Sites Collocated	% Collocated	CV Est	CV UB	Criteria Met?
182	9	1	1	100	10.36	12.64	Y

PEP Summary

# Methods	# Audited Methods	# PEP Required	# PEP Submitted	% Complete	Bias	Criteria Met?
1	1	8	6	75	-10.33	Y

Monitors Summaries

				Routine Data (ug/m3)						Flow Rate Audit		Collocation			PEP		Concurrence Flag			
AQS Site ID	POC	Method	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Bias	% Complete	CV	% Complete	PQAO Crit. Met	PQAO Crit. Met	QAPP Appr.	AQS Rec Flag	CA Rec Flag	EPA Concur
04-013-0019	2	145	SLAMS	9.58	2.9	26.9		0	96	+0.18	100			Y	Y	Y	Y	Y	S
04-013-0019	3	182	SLAMS	10.63	-8.6	726.1		0	98	-0.26	100	12.64	96	Y	Y	Y	Y	Y	S
04-013-1003	3	182	SLAMS	6.84	-8.8	436.8		0	98	+0.47	100			Y	Y	Y	Y	Y	S
04-013-1004	3	182	SLAMS	7.32	-8.8	160.9		0	97	+0.26	100			Y	Y	Y	Y	Y	S
04-013-2001	3	182	SLAMS	7.07	-6.4	438.2		0	98	-0.59	100			Y	Y	Y	Y	Y	S
04-013-4003	3	182	SLAMS	9.58	-9.6	290.2		0	97	-0.09	100			Y	Y	Y	Y	Y	S
04-013-4005	3	182	SLAMS	7.67	-8.6	179.5		0	95	+0.80	100			Y	Y	Y	Y	Y	S
04-013-4020	3	182	SLAMS	17.64	-1.2	371.4		0	100					Y	Y	Y	Y	Y	S
04-013-4021	3	182	SLAMS	7.89	-2.8	280.6		0	93	+1.78	100			Y	Y	Y	Y	Y	S
04-013-9812	3	182	SLAMS	10.32	-9.1	202.8		0	100	-0.15	100			Y	Y	Y	Y	Y	S

EPA Data Certification Concurrence

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: FRX

CERTIFICATION EVALUATION AND CONCURRENCE

Report Request ID: 2013869

Report Code: AMP600

Apr. 25, 2022

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region
	04										

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
CRITERIA			

AGENCY SELECTIONS

Maricopa County Air Quality

SELECTED OPTIONS

Option Type	Option Value
MERGE PDF FILES	YES
AGENCY ROLE	CERTIFYING

DATE CRITERIA

Start Date	End Date
2021	2021

Selection Criteria Page 1

Data Evaluation and Concurrence Report Summary

Certification Year: 2021
Certifying Agency (CA): Maricopa County Air Quality (0643)

Pollutants in Report:

Parameter Name	Code	Monitors Evaluated	Monitors Recommended for Concurrence by AQS	Monitors NOT Recommended for Concurrence by AQS
Carbon monoxide	42101	8	7	1
Nitrogen dioxide (NO2)	42602	5	5	0
Ozone	44201	17	17	0
PM10 Total 0-10um STP	81102	15	15	0
PM2.5 - Local Conditions	88101	10	10	0
Sulfur dioxide	42401	2	2	0

PQAOs in Report:

PQAO Name	PQAO Code	TSA Date
Maricopa County Air Quality	0643	03/21/22

Summary of 'N' flags for all pollutants:

PQAO	Parameter Code	AQS Site-ID	POC	AQS Recommended Flag	Cert. Agency Recommended Flag	Reason for AQS Recommendation
0643	42101	04-013-4020	1	N	Y	Annual Performance Evaluation Audit Missing or 1 Level.

Signature of Monitoring Organization Representative: _____

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2021
Certifying Agency Code Maricopa County Air Quality (0643)
Parameter Carbon monoxide (42101) (ppm)
PQAO Name Maricopa County Air Quality (0643)
QAPP Approval Date 12/12/2019

NPAP Audit Summary:

Number of Passed Audits	NPAP Bias	Criteria Met
		Y

			Routine Data						One Point Quality Check			Annual PE		NPAP			Concur. Flag		
AQS Site ID	POC	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	Precision	Bias	Complete	Bias	Complete	Bias	PQAO Level Criteria	QAPP Appr.	Aqs Rec Flag	CA Rec Flag	Epa Concur
04-013-0019	1	SLAMS	0.416	0.000	3.700	0	0	99	5.81	-5.02	100	- 1.11	100		Y	Y	Y	Y	Y
04-013-1003	1	SLAMS	0.249	0.000	1.700	0	0	99	5.06	+/-4.15	100	0.06	100		Y	Y	Y	Y	Y
04-013-3002	1	SLAMS	0.388	0.000	2.800	0	0	97	6.71	+/-5.60	100	- 4.04	100		Y	Y	Y	Y	Y
04-013-4003	1	SLAMS	0.323	0.000	2.500	0	0	96	5.09	-5.63	100	- 2.81	100		Y	Y	Y	Y	Y
04-013-4004	1	SLAMS	0.335	0.000	1.400	0	0	99	4.91	+4.31	100	1.08	100		Y	Y	Y	Y	Y
04-013-4011	1	SLAMS	0.217	0.000	1.800	0	0	99	4.73	+/-5.17	100	1.11	100		Y	Y	Y	Y	Y
04-013-4020	1	SLAMS	0.733	0.100	2.700	0	0	98	4.49	-2.72	100		0		Y	Y	N	Y	Y
Submitter Comment			The AMP600 report flagged the Carbon Monoxide (CO) monitor at the Thirty-Third site (04-013-4020) as missing an Annual Performance Evaluation Audit (APE). An APE was not conducted during 2021 because the CO analyzer was removed from the site on February 28th, 2021. The analyzer only operated from January 1st to February 28th, for a total of 59 days. Four 1-Point Quality Control checks were conducted during that time period, and the results were within the acceptance criteria for CO. Even though this monitor shows a missing APE, the data that were submitted during the this time met all critical criteria requirements, and MCAQD has selected a Certifying Agency Request of `Yes? for this monitor.																
04-013-4021	1	SLAMS	0.327	- 0.100	1.400	0	0	96	4.61	+/-3.63	95	- 0.10	100		Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2021
Certifying Agency Code Maricopa County Air Quality (0643)
Parameter Nitrogen dioxide (NO2) (42602) (ppb)
PQAO Name Maricopa County Air Quality (0643)
QAPP Approval Date 12/12/2019

NPAP Audit Summary:

Number of Passed Audits	NPAP Bias	Criteria Met
		Y

			Routine Data						One Point Quality Check			Annual PE		NPAP			Concur. Flag		
AQS Site ID	POC	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	Precision	Bias	Complete	Bias	Complete	Bias	PQAO Level Criteria	QAPP Appr.	Aqs Rec Flag	CA Rec Flag	Epa Concur
04-013-0019	1	SLAMS	14.7	1.0	55.0		0	98	8.32	-9.40	100	- 2.86	100		Y	Y	Y	Y	Y
04-013-3002	6	SLAMS	15.4	1.0	60.0		0	98	5.71	-10.35	100	- 9.16	100		Y	Y	Y	Y	Y
04-013-4011	1	SLAMS	8.0	0.0	40.0		0	99	5.38	-5.47	100	- 6.18	100		Y	Y	Y	Y	Y
04-013-4020	1	SLAMS	25.9	0.0	65.0		0	99	4.09	-10.82	100	- 9.04	100		Y	Y	Y	Y	Y
04-013-4021	1	SLAMS	16.0	0.0	57.0		0	91	6.37	+/-6.14	95	0.96	100		Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2021
Certifying Agency Code Maricopa County Air Quality (0643)
Parameter Ozone (44201) (ppm)
PQAO Name Maricopa County Air Quality (0643)
QAPP Approval Date 12/12/2019

NPAP Audit Summary:

Number of Passed Audits	NPAP Bias	Criteria Met
4	2.28163	Y

AQS Site ID	POC	Monitor Type	Routine Data						One Point Quality Check			Annual PE		NPAP			Concur. Flag		
			Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	Precision	Bias	Complete	Bias	Complete	Bias	PQAO Level Criteria	QAPP Appr.	Aqs Rec Flag	CA Rec Flag	Epa Concur
04-013-0019	1	SLAMS	0.053	0.020	0.098	0	0	99	3.26	+/-3.11	100	2.54	100		Y	Y	Y	Y	Y
04-013-1003	1	SLAMS	0.056	0.024	0.099	0	0	96	4.64	+/-4.36	96	- 3.01	100		Y	Y	Y	Y	Y
04-013-1004	1	SLAMS	0.059	0.019	0.135	1	0	99	2.65	+/-2.31	100	- 1.35	100		Y	Y	Y	Y	Y
04-013-1010	1	SLAMS	0.058	0.026	0.103	0	0	99	1.83	+/-1.73	100	1.15	100	0.99	Y	Y	Y	Y	Y
04-013-2001	1	SLAMS	0.057	0.014	0.119	0	0	98	2.34	-2.32	100	- 2.90	100		Y	Y	Y	Y	Y
04-013-2005	1	SLAMS	0.060	0.036	0.134	1	0	99	1.88	+/-1.73	96	1.58	100		Y	Y	Y	Y	Y
04-013-3002	1	SLAMS	0.055	0.020	0.111	0	0	97	2.20	-2.10	100	- 0.20	100		Y	Y	Y	Y	Y
04-013-3003	1	SLAMS	0.058	0.025	0.106	0	0	99	2.03	+/-1.94	100	0.56	100		Y	Y	Y	Y	Y
04-013-4003	1	SLAMS	0.052	0.017	0.104	0	0	98	3.04	+/-2.95	100	- 3.90	100		Y	Y	Y	Y	Y
04-013-4004	1	SLAMS	0.054	0.021	0.096	0	0	99	2.07	-2.96	100	- 4.37	100		Y	Y	Y	Y	Y
04-013-4005	1	SLAMS	0.056	0.023	0.097	0	0	99	2.79	-3.28	100	- 2.78	100		Y	Y	Y	Y	Y
04-013-4008	1	SLAMS	0.055	0.032	0.111	0	0	99	3.05	+/-3.14	100	0.47	100		Y	Y	Y	Y	Y
04-013-4010	1	SLAMS	0.055	0.026	0.104	0	0	99	2.13	-2.47	100	- 1.50	100	1.45	Y	Y	Y	Y	Y
04-013-4011	1	SLAMS	0.051	0.016	0.095	0	0	99	2.32	-2.32	100	- 1.56	100		Y	Y	Y	Y	Y
04-013-9508	1	SLAMS	0.053	0.034	0.086	0	0	97	3.59	+/-2.94	100	- 0.06	100	3.90	Y	Y	Y	Y	Y
04-013-9702	1	SLAMS	0.056	0.030	0.100	0	0	96	1.33	-1.45	96	- 0.63	100		Y	Y	Y	Y	Y
04-013-9704	1	SLAMS	0.055	0.029	0.117	0	0	98	3.08	-3.13	100	1.76	100	3.11	Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2021
Certifying Agency Code Maricopa County Air Quality (0643)
Parameter Sulfur dioxide (42401) (ppb)
PQAO Name Maricopa County Air Quality (0643)
QAPP Approval Date 12/12/2019

NPAP Audit Summary:

Number of Passed Audits	NPAP Bias	Criteria Met
		Y

AQS Site ID	POC	Monitor Type	Routine Data						One Point Quality Check			Annual PE		NPAP		QAPP Appr.	Concur. Flag		
			Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	Precision	Bias	Complete	Bias	Complete	Bias	PQAO Level Criteria		Aqs Rec Flag	CA Rec Flag	Epa Concur
04-013-3002	4	SLAMS	0.3	0.0	26.0		0	99	4.66	-8.26	100	- 3.97	100		Y	Y	Y	Y	Y
04-013-9812	1	SLAMS	0.3	0.0	8.0		0	98	5.96	-6.21	100	0.24	100		Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Gaseous Pollutants

Certifying Year 2021
Certifying Agency Code Maricopa County Air Quality (0643)
Parameter Sulfur dioxide (42401) (ppb)
PQAO Name Maricopa County Air Quality (0643)
QAPP Approval Date 12/12/2019

NPAP Audit Summary:

Number of Passed Audits	NPAP Bias	Criteria Met
		Y

AQS Site ID	POC	Monitor Type	Routine Data						One Point Quality Check			Annual PE		NPAP		QAPP Appr.	Concur. Flag		
			Mean	Min	Max	Exceed. Count	Outlier Count	Perc. Comp.	Precision	Bias	Complete	Bias	Complete	Bias	PQAO Level Criteria		Aqs Rec Flag	CA Rec Flag	Epa Concur
04-013-3002	4	SLAMS	0.3	0.0	26.0		0	99	4.66	-8.26	100	- 3.97	100		Y	Y	Y	Y	Y
04-013-9812	1	SLAMS	0.3	0.0	8.0		0	98	5.96	-6.21	100	0.24	100		Y	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2021
Certifying Agency: Maricopa County Air Quality (0643)

Parameter: PM10 Total 0-10um STP (81102) CONTINUOUS
PQAO Name: Maricopa County Air Quality (0643)
Quality Assurance Project Plan Approval Date: 12/12/2019

Monitors Summaries

			Routine Data (ug/m3)						Flow Rate Verification		Flow Rate Audit			Collocation Concurrence Flag		
AQS Site ID	POC	Monitor Type	Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Bias	% Complete	Bias	% Complete	QAPP Appr.	AQS Rec Flag	CA Rec Flag	EPA Concur
04-013-0019	1	SLAMS	32.84	-.7	********		0	95	+/-1.10	100	+0.71	100	Y	Y	Y	Y
04-013-1003	1	SLAMS	22.61	-4.3	********		0	97	+/-1.80	100	+0.47	100	Y	Y	Y	Y
04-013-1004	1	SLAMS	21.76	-6.5	********		0	96	+/-1.18	100	+0.26	100	Y	Y	Y	Y
04-013-2001	1	SLAMS	22.49	-6.7	********		0	96	+/-2.09	100	-0.59	100	Y	Y	Y	Y
04-013-3002	4	SLAMS	37.24	-2.0	********		0	99	+/-1.12	100	+0.35	100	Y	Y	Y	Y
04-013-3003	1	SLAMS	30.18	-1.0	********		0	97	+/-2.08	100	-0.79	100	Y	Y	Y	Y
04-013-4003	1	SLAMS	33.87	-10.0	********		0	95	+/-0.54	100	-0.09	100	Y	Y	Y	Y
04-013-4004	1	SLAMS	31.11	-3.0	********		0	99	+/-1.73	100	+1.61	100	Y	Y	Y	Y
04-013-4005	1	SLAMS	25.69	-6.7	********		0	94	+/-2.01	100	+0.80	100	Y	Y	Y	Y
04-013-4006	1	SLAMS	37.42	-6.0	********		0	97	+1.37	100	+0.21	100	Y	Y	Y	Y
04-013-4009	1	SLAMS	61.02	-8.0	********		0	96	+/-1.73	100	+0.68	100	Y	Y	Y	Y
04-013-4010	1	SLAMS	30.64	-4.0	********		0	99	+0.67	100	+0.89	100	Y	Y	Y	Y
04-013-4011	1	SLAMS	44.87	-8.0	********		0	100	+/-0.45	100	+0.08	100	Y	Y	Y	Y
04-013-4016	1	SLAMS	25.96	-4.0	********		0	98	+/-0.48	100	-0.07	100	Y	Y	Y	Y
04-013-9812	1	SLAMS	43.54	-1.5	********		0	96	+/-1.25	100	-0.15	100	Y	Y	Y	Y

Data Evaluation and Concurrence Report for Particulate Matter

Certifying Year: 2021
Certifying Agency: Maricopa County Air Quality (0643)

Parameter: PM2.5 - Local Conditions (88101)
PQAO Name: Maricopa County Air Quality (0643)
Quality Assurance Project Plan Approval Date: 12/12/2019

Collocation Summary

Method	# Sites	# Sites Req	# Sites Collocated	% Collocated	CV Est	CV UB	Criteria Met?
182	9	1	1	100	10.36	12.64	Y

PEP Summary

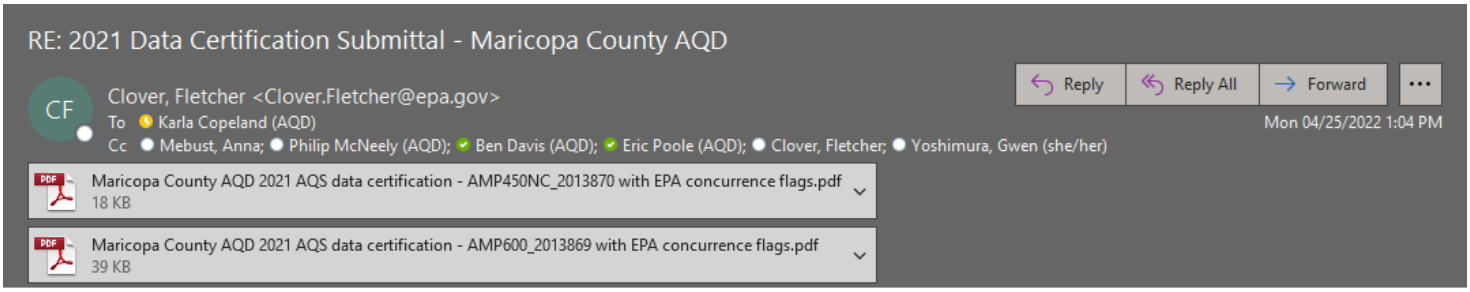
# Methods	# Audited Methods	# PEP Required	# PEP Submitted	% Complete	Bias	Criteria Met?
1	1	8	6	75	-10.33	Y

Monitors Summaries

AQS Site ID	POC	Method	Monitor Type	Routine Data (ug/m3) Mean	Min	Max	Exceed. Count	Outlier Count	% Complete	Flow Rate Audit Bias	Flow Rate Audit % Complete	Collocation CV	Collocation % Complete	PQAO Crit. Met	PEP PQAO Crit. Met	QAPP Appr.	Concurrence Flag AQS Rec Flag	Concurrence Flag CA Rec Flag	Concurrence Flag EPA Concur
04-013-0019	2	145	SLAMS	9.58	2.9	26.9		0	96	+0.18	100			Y	Y	Y	Y	Y	Y
04-013-0019	3	182	SLAMS	10.63	-8.6	726.1		0	98	-0.26	100	12.64	96	Y	Y	Y	Y	Y	Y
04-013-1003	3	182	SLAMS	6.84	-8.8	436.8		0	98	+0.47	100			Y	Y	Y	Y	Y	Y
04-013-1004	3	182	SLAMS	7.32	-8.8	160.9		0	97	+0.26	100			Y	Y	Y	Y	Y	Y
04-013-2001	3	182	SLAMS	7.07	-6.4	438.2		0	98	-0.59	100			Y	Y	Y	Y	Y	Y
04-013-4003	3	182	SLAMS	9.58	-9.6	290.2		0	97	-0.09	100			Y	Y	Y	Y	Y	Y
04-013-4005	3	182	SLAMS	7.67	-8.6	179.5		0	95	+0.80	100			Y	Y	Y	Y	Y	Y
04-013-4020	3	182	SLAMS	17.64	-1.2	371.4		0	100					Y	Y	Y	Y	Y	Y
04-013-4021	3	182	SLAMS	7.89	-2.8	280.6		0	93	+1.78	100			Y	Y	Y	Y	Y	Y
04-013-9812	3	182	SLAMS	10.32	-9.1	202.8		0	100	-0.15	100			Y	Y	Y	Y	Y	Y

Data Concurrence and Evaluation Report for Lead

Error! Reference source not found.**2021 Data Certification Acceptance Correspondence**



Hello Karla,

Thank you for certifying 2021 AQS data for Maricopa County Air Quality Department; Maricopa County AQD has fully met part 58.15 of the Code of Federal Regulations. The data certification letter and its accompanying reports have been logged into our system, and copies of an AMP600 and AMP450NC with EPA concurrence flags are attached for your review. If you have any questions, please let me know.

Regards,

Fletcher Clover

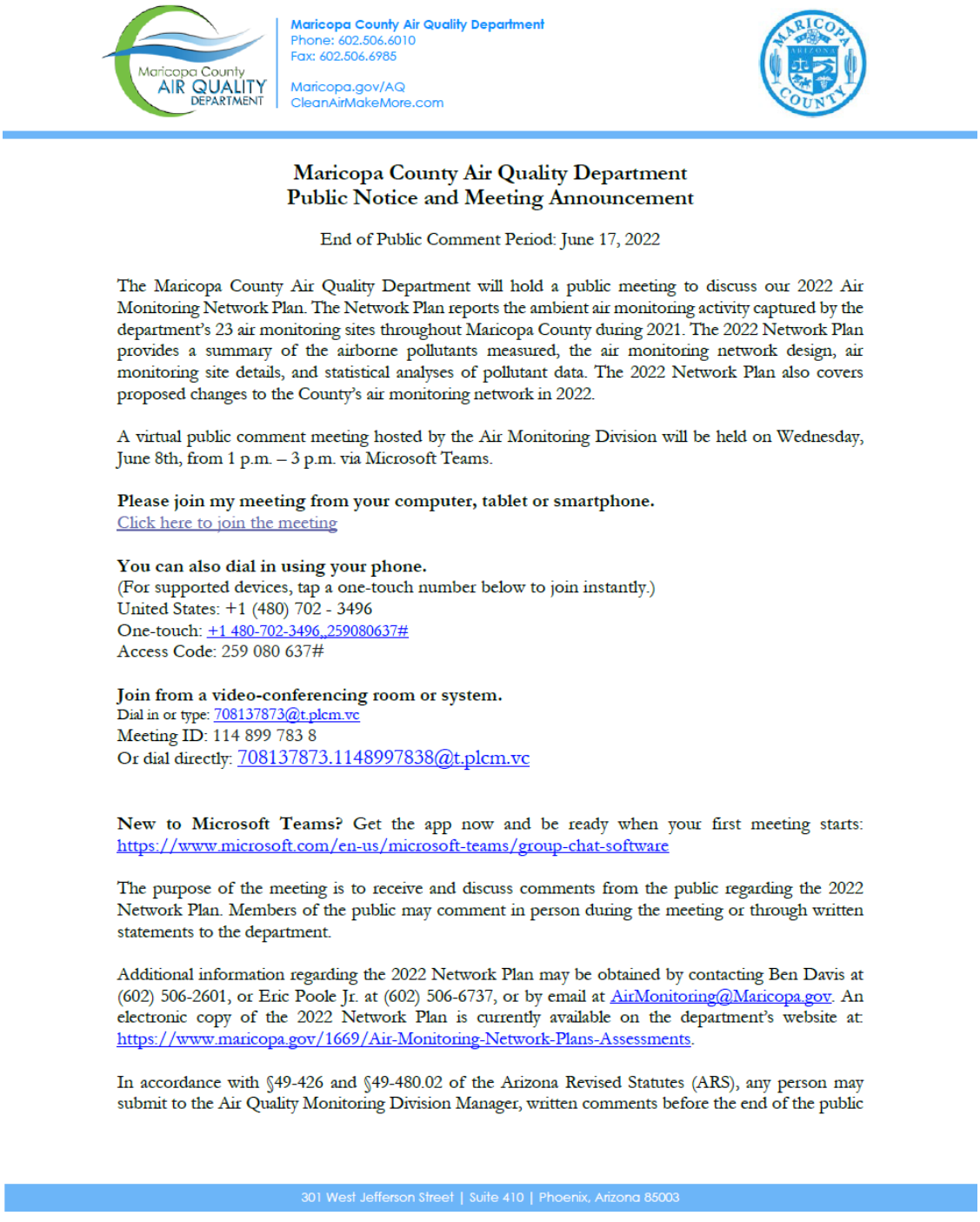
APPENDIX IV - EPA CORRESPONDENCE

APPENDIX V - ARIZONA INTERAGENCY CORRESPONDENCE

APPENDIX VI - PUBLIC NOTICE AND COMMENT INFORMATION

Figure 18 shows the public comment period announcement, which appeared in *The Record Reporter* on May 18th and May 25th, 2022. The public comment period was from May 18th, 2022, to June 17th, 2022. Additionally, the public notice was posted on the Maricopa County Air Quality Department website at Maricopa.gov/1624/Public-Notices.

2022 Public Comment Period Announcement



Maricopa County Air Quality Department
Phone: 602.506.6010
Fax: 602.506.6985
Maricopa.gov/AQ
CleanAirMakeMore.com

Maricopa County Air Quality Department
Public Notice and Meeting Announcement

End of Public Comment Period: June 17, 2022

The Maricopa County Air Quality Department will hold a public meeting to discuss our 2022 Air Monitoring Network Plan. The Network Plan reports the ambient air monitoring activity captured by the department's 23 air monitoring sites throughout Maricopa County during 2021. The 2022 Network Plan provides a summary of the airborne pollutants measured, the air monitoring network design, air monitoring site details, and statistical analyses of pollutant data. The 2022 Network Plan also covers proposed changes to the County's air monitoring network in 2022.

A virtual public comment meeting hosted by the Air Monitoring Division will be held on Wednesday, June 8th, from 1 p.m. – 3 p.m. via Microsoft Teams.

Please join my meeting from your computer, tablet or smartphone.
Click here to join the meeting

You can also dial in using your phone.
(For supported devices, tap a one-touch number below to join instantly.)
United States: +1 (480) 702 - 3496
One-touch: +1 480-702-3496,,259080637#
Access Code: 259 080 637#

Join from a video-conferencing room or system.
Dial in or type: 708137873@t.plcm.vc
Meeting ID: 114 899 783 8
Or dial directly: 708137873.1148997838@t.plcm.vc

New to Microsoft Teams? Get the app now and be ready when your first meeting starts: https://www.microsoft.com/en-us/microsoft-teams/group-chat-software

The purpose of the meeting is to receive and discuss comments from the public regarding the 2022 Network Plan. Members of the public may comment in person during the meeting or through written statements to the department.

Additional information regarding the 2022 Network Plan may be obtained by contacting Ben Davis at (602) 506-2601, or Eric Poole Jr. at (602) 506-6737, or by email at AirMonitoring@Maricopa.gov. An electronic copy of the 2022 Network Plan is currently available on the department's website at: https://www.maricopa.gov/1669/Air-Monitoring-Network-Plans-Assessments.

In accordance with §49-426 and §49-480.02 of the Arizona Revised Statutes (ARS), any person may submit to the Air Quality Monitoring Division Manager, written comments before the end of the public

301 West Jefferson Street | Suite 410 | Phoenix, Arizona 85003

Figure 18

comment period. Any written comment shall state the name and mailing address of the person, shall be signed by the person, his agent, or his attorney. Written comments may be mailed to the Air Monitoring Division's address at: 2145 S. 11th Ave, Phoenix, AZ 85007 or emailed to: AirMonitoring@Maricopa.gov. All comments are due to the department on Wednesday, June 17th, 2022 by 5 p.m.

Copies of the document and other records may be obtained by contacting the department's Records Division at 602-506-6201 or submitting a public record request online at: https://www.maricopa.gov/5073/Public-Records-Request.

MCAQD will take reasonable measures to provide access to department services to individuals with limited ability to speak, write, or understand English and/or to those with disabilities. Requests for language interpretation services or for disability accommodations must be made at least 48 hours in advance by contacting: (602) 506-6443.

MCAQD tomará medidas razonables para proveer acceso a los servicios del departamento para personas con capacidad limitada para hablar, escribir o entender Inglés y / o para las personas con discapacidad. Las solicitudes de servicios de interpretación del lenguaje o de alojamiento de discapacidad deben hacerse por lo menos 48 horas de antelación poniéndose en contacto con: (602) 506-6443.

Public Meeting Attendance – June 8th

Attendance to the virtual open forum meeting was taken by Eric Poole Jr. in lieu of a sign-in sheet, and a list of attendees is shown on Table 26.

Table 26. 2021 Open Forum Meeting Attendees

Name	Agency
Eric Poole Jr	Maricopa County Air Quality Department
Ben Davis	Maricopa County Air Quality Department
Karla Copeland	Maricopa County Air Quality Department

Public Comments Received and MCAQD Responses

As stated in the announcement, the open forum meeting provides an opportunity for members of the public and air monitoring community to discuss the County's air monitoring network. No comments were received during the 30-day comment period.

APPENDIX VII - GLOSSARY

Glossary of Acronyms and Terms

ADEQ:	Arizona Department of Environmental Quality
AADT:	annual average daily traffic count
aka:	Also known as
AMD:	Air Monitoring Division
AMNP:	Air Monitoring Network Plan - an annual report produced for U.S. EPA each calendar year that provides comprehensive information regarding the performance of the County's air quality surveillance system, e.g., network of SLAMS and SPM monitoring stations and / or sites, and the data collected and reported to EPA. The plan includes proposed future changes to the system as well.
Analysis Method	Refers to the laboratory method used to process and analyze PM and Pb filter samples.
Analyzer:	A monitor that samples the air and produces real-time data without collecting a sample that must be laboratory analyzed.
ANSI:	American National Standards Institute
AQI:	Air Quality Index - the index that applies to each criteria pollutant and shows the concentration of each pollutant relative to its respective standard. When the AQI reaches 101, the pollutant's concentration has exceeded the NAAQS.
AQS:	Air Quality System, sometimes defined as the Air Quality Subsystem. The AQS is the U.S. EPA's ambient air database.
ASQ:	American Society for Quality
Attainment:	Attainment refers to a geographical area as being "in compliance" with a NAAQS and the U.S. Clean Air Act. After several years of no violations of a NAAQS, the U.S. EPA can classify a geographic area as in attainment for a particular CP.
AWT:	Average Weekday Traffic count
BAM:	Beta Attenuation Monitor. A continuous particulate measuring instrument used previously by MCAQD to measure PM_{10}.
CAA:	Clean Air Act
CASAC:	Clean Air Scientific Advisory Committee
CBSA:	Core-Based Statistical Area – is defined by the U.S. Office of Management and Budget as a statistical geographic entity consisting of the county or counties associated with at least one urbanized area/urban cluster of at least 10,000 in population, plus adjacent counties having a high degree of social and economic integration.

CFR:	The *Code of Federal Regulations* is published annually and contains the codification of the general and permanent rules published in the *Federal Register* by the executive departments and agencies of the Federal Government. An *eCFR* is a free electronic version; however, it is not the legal version.
Class I Area:	Federally designated areas of special national or regional scenic, recreational, or historic value where maximum protection of environmental quality is highest. Class 1 areas are subject to special protection including mandated visibility requirements to prevent significant deterioration.
CP:	Criteria Pollutant, or the Central Phoenix site, depending upon context
CO:	Carbon monoxide, a criteria pollutant
Collocated:	The practice of establishing a second pollutant monitor within a specified distance and of a specified type at a monitoring site for quality assurance purposes.
Continuous Monitor:	A method of monitoring air pollutants that is continually measuring the quantity of the pollutant, either gaseous or particulate. Continuous monitors are analyzers that can obtain real-time or short-term averages of pollutants. Continuous monitors may also be referred to as "automated" monitors.
Criteria Pollutants:	Six pollutants (CO, O_3, NO_2, Pb, PM, and SO_2) that have NAAQS established by the U.S. EPA.
CSA:	Combined Statistical Area - is defined by the U.S. Office of Management and Budget as when very large cities combine two or more CBSAs, these larger areas are referred to as combined statistical areas
CSN:	The chemical speciation network - a nationwide, research air monitoring network designed to ferret-out the chemical constitutes of and to discern trends in $PM_{2.5}$ pollution. This program is managed by the U.S. EPA OAQPS.
Delta T:	The difference between two levels of temperature measurements - Delta T is measured in the MCAQD network at heights of 2 and 10 meters. A higher temperature at the upper level indicates a temperature inversion.
Design Value:	A design value is a statistic that describes the air quality status of a given area relative to the level of the NAAQS. For a concentration-based standard, the air quality design value is simply the standard-related test statistic. The design value of a pollutant monitoring network is the highest sample value in the network used to compare to the NAAQS; i.e., the 24-hour $PM_{2.5}$ design value for the network is the monitor with the highest 3-year average of the 98^{th} percentile.
Distance from Obstructions Not on Roof:	Means the horizontal distance and vertical height in meters from obstructions such as trees, walls, etc. that are higher than the sample probe/inlet.

Distance from Obstructions on Roof:	Means the horizontal distance and vertical height in meters from obstructions on a roof such as a parapets, penthouses, and firewalls to the sample probe/inlet.
Distance from Supporting Structure:	Means the horizontal distance and vertical height in meters from a building or shelter roof to the sample probe/inlet. A roof supports all monitors; whether it be the roof of a building, trailer (room/shelter), or monitor housing cabinet.
EBAM:	E-Beta Attenuation Monitor - is a rugged, portable, battery or solar-operated analyzer that is suitable for obtaining and reporting continuous measurements of particulate matter in remote locations. EBAMs are often equipped with wind speed and direction instrumentation as well. EBAMs are particularly useful for temporary measurements of PM related to an event.
EPA R9:	Environmental Protection Agency Region 9
EE:	Exceptional Event – a high CP pollution event that is considered to be uncontrollable and caused by natural sources of pollution or an event that is not expected to recur at a given location. An EE can apply to any CP, but in Maricopa County, most recent EEs have been related to high PM_{10} events.
Event:	Generally, refers to a high pollution day where a NAAQS was exceeded.
Exceedance:	Generally, refers to a high pollution day where a NAAQS was exceeded.
FDMS-TEOM:	Filter Dynamics Measurement System-Tapered Element Oscillating Microbalance - a continuous particulate analyzer used by MCAQD to measure $PM_{2.5}$.
FEM:	Federal Equivalent Method - an EPA-approved method of sampling and analyzing the ambient air for an air pollutant, i.e., includes the monitor and its operating firmware and procedure(s). An FEM must pass required testing found in *40 CFR Part 53* and show CP data produced are similar to the Federal Reference Method (FRM). Continuous particulate matter and some gaseous analyzers are FEMs.
Filter-based sampler:	A method of monitoring particulate pollution that involves exposing a pre-weighed filter to a specific flow rate for a prescribed period of time, usually midnight to midnight, or 1440 minutes. The filters are then post-weighed to determine the mass of particulates per volume, e.g., $\mu g/m^3$. Filter samples are stored for a period and can be referenced later if needed.
FRM:	Federal Reference Method - an EPA-approved method of sampling and/or analyzing the ambient air for an air pollutant, i.e., includes the monitor and its operating firmware and procedure(s). An FRM must pass required testing found in *40 CFR Part 53* and show CP data produced are accurate based on acceptable precision and bias limits. These methods are the baseline that all other methods reference, e.g., Federal Equivalency Methods (FEM).

HAPs:	Hazardous Air Pollutants - airborne chemicals that are been listed in the federal Clean Air Act and have an associated standard or process requirement determined for it.
Sample Probe/Inlet Height:	Means the vertical height in meters *above the roof*, or additional supporting structure on top of the roof if present, to the air sample intake. In general, gas samples enter through a probe at the end of the sample line and PM and Pb samples enter through an inlet that helps control the aerodynamic size of particles sampled.
MAG:	Maricopa Association of Governments
MCAQCED:	Maricopa County Air Quality Compliance and Enforcement Division
MCAQD:	Maricopa County Air Quality Department
Metadata:	refers to data that provide information about other data; and typically includes geospatial and non-geospatial information. See EPA Metadata Specifications
MO:	Monitoring organization
Monitor:	Monitor is a term that refers to an instrument, sampler, analyzer, or other device that measures or assists in the measurement of atmospheric air pollutants and which is acceptable for use in ambient air surveillance under the applicable provisions of *40 CFR Part 58 Appendix C.*
µg/m^3:	micrograms per cubic meter
µm:	micrometers
MSA:	Metropolitan Statistical Area is designated by the U.S. Office of Management and Budget as a geographical area based on the concept of a core area with a large population nucleus, plus adjacent communities having a high degree of economic and social integration within that core. Metropolitan and micropolitan statistical areas are the two categories of CBSAs. Metropolitan areas have populations greater than 50,000, and micropolitan areas have populations between 10,000 and 50,000. The MCAQD operates air monitoring stations within the Phoenix-Mesa MSA, which includes portions of Maricopa and Pinal County.
NAAQS:	National Ambient Air Quality Standards - health and welfare-based standards established by the U.S. EPA that set permissible airborne concentration levels for the CPs.
NATTS:	National Air Toxics Trend Stations - a nationwide, research air monitoring program designed to measure toxic air pollutant trends. This program is managed by the U.S. EPA OAQPS.
NCore:	National Core multi-pollutant is a national network of multi-pollutant monitoring sites used to represent the nation as a whole. There are currently ~75 NCore sites, 1 to 3 per state plus Washington D.C., Virgin Islands, and Puerto Rico located in both urban and rural areas. This program is managed by the U.S. EPA OAQPS.

Network:	All stations of a given type or types
NO_2:	Nitrogen dioxide. The indicator compound used to gauge the ambient concentration of NO_x.
NO_X:	Nitrogen oxide(s), a criteria pollutant. NO_x is the sum of nitric oxide (NO), NO_2, and other nitrogen-containing compounds.
Nonattainment:	Means a geographical area is "not in compliance" with the NAAQS and the U.S. Clean Air Act. After several years of violating a NAAQS, the EPA can classify a geographic area as being in nonattainment for a particular criteria pollutant.
O_3:	Ozone, a criteria pollutant
OAQPS:	The U.S. EPA Office of Air Quality Planning and Standards, located in Research Triangle Park, N.C., which serves as EPA "Headquarters" for ambient air monitoring guidance and the NAAQS reviews.
PAMS:	Photochemical Ambient Monitoring Stations - a nationwide, research air monitoring program designed to measure specific airborne chemicals that are known to be "precursor pollutants" that form ozone when combined with ultraviolet light and heat. This program is managed by the U.S. EPA OAQPS.
PCAQCD:	Pinal County Air Quality Control District
Pb:	Lead, a criteria pollutant
Performance Evaluation (PE) Audit:	Refers to the AMD QA section's audits on pollutant monitors. • For gaseous analyzers, the EPA requires that an Annual Performance Evaluation be performed on each analyzer at least once annually, e.g., as per *40 CFR Part 58, Appendix A, §3.2.2.*, 25 percent of the monitors operating within each gaseous pollutant's network are evaluated quarterly; thereby, each monitor is evaluated once per year. • For PM and Pb monitors, e.g., analyzers and samplers, EPA requires that a Semi-Annual Flow Rate Audit be performed on each monitor at least twice annually, e.g., as per *40 CFR Part 58, Appendix A, §§3.2.4 and 3.3.4*, and *40 CFR Part 58, Appendix A, §3.4,* respectively.
PM:	Particulate matter, also known as "particulates", project manager, or preventative maintenance depending on context
$PM_{2.5}$:	Particulate matter 2.5 micrometers in aerometric diameter or smaller, a criteria pollutant. $PM_{2.5}$ is also referred to as "fine" particulate matter.
PM_{10}:	Particulate matter 10 micrometers in aerometric diameter or smaller, a criteria pollutant
$PM_{10\text{-}2.5}$ and / or PM_c:	"Coarse" particulate matter is less than 10 micrometers, but recently, has come to mean PM_{10} minus $PM_{2.5}$, not currently regulated as a lone criteria pollutant.
ppb:	parts per billion

ppm:	parts per million
PQAO:	Primary quality assurance organization - a monitoring organization (MO) or other organization that is responsible for a set of air monitoring stations that monitor the same pollutant and for which data quality assessments can be pooled. Each criteria pollutant sampler/monitor at a monitoring station in the SLAMS and SPM networks must be associated with one, and only one, primary quality assurance organization.
Primary Standard:	The portion of the NAAQS designed to protect public health.
Probe:	The end of a sample line where a gas sample is extracted from the atmosphere for delivery to a point analyzer for pollutant analysis
Probe/Inlet Height:	The vertical height in meters *above ground level* to the air sample intake location for an analyzer or sampler
Probe (Sample) Line Material:	Refers to the chemical composition of the sample line tubbing.
QA:	Quality assurance – generally refers to the administrative or managerial processes in place to verify that quality control activities are successfully carried out by personnel and that data produced meet specified quality requirements prior to use, i.e., written guidance documents, program oversight activities, etc.
QC:	Quality control – generally refers to the technical activities in place to produce high quality data, i.e., air monitoring instruments operate within specified criteria, data collection from sites, etc.
Quality System:	The overall system of technical activities that measure the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer. (see *ANSI/ASQ E4-2004)*
Rapid Response:	Rapid Response Notification System - a communication tool used by MCAQD to manage high pollution events by alerting residents, intergovernmental personnel, and stakeholders of increasing PM concentrations.
Sampler:	A type of air monitor that collects a physical sample for analysis. Air samples may be collected onto a filter, cartridge, or other medium, or into a device such as a canister.
Sample Residence Time:	This measurement applies to CO, NO_2, O_3, and SO_2 sample lines and it mean the amount of time in seconds that it takes for a sample of air to travel from the probe intake to the bulkhead of the point analyzer. EPA recommends a residence time of 10 seconds, but 20 second is the maximum allowable.
Secondary Standard:	The portion of the NAAQS designed to protect public welfare and the environment.

SIP:	State Implementation Plan - a SIP is a plan produced by state and/or local regulatory agencies that specifies obligations that will be taken for a geographic area in nonattainment to meet the NAAQS for a criteria pollutant. SIPs are also developed for maintaining compliance with the NAAQS.
Site:	A site is a geographic location. One or more air monitoring stations can be located at a site.
SLAMS:	State and Local Air Monitoring Station - the SLAMS network consists of approximately 5,000 monitoring stations nationwide whose size and distribution is largely determined by the needs of State and local air pollution control agencies to meet their respective SIP requirements. Other types of monitoring stations include: NCore (national core) and SPM (special purpose). Currently, the MCAQD operates SLAMS only.
SO_2:	Sulfur dioxide, a criteria pollutant
SPM:	Special Purpose Monitor - a special purpose monitor provides data for special studies needed by the State and local agencies to support SIPs and other air program activities. The SPMs are not permanently established as part of a particular pollutant's monitoring station(s); their location can be adjusted easily to accommodate changing needs and priorities.
SSI:	Size Selective Inlet - the inlet used on high- and low-volume particulate samplers and analyzers to determine the size of particles sampled or measured by the monitor. The particle size separation process usually employs impaction, filtration, or cyclonic flow.
Station:	A station may comprise a single CP monitor, or a group of monitors with a shared objective, located at a particular site.
TEOM:	Tapered Element Oscillating Microbalance - an automated, continuous FEM PM analyzer used by MCAQD to measure PM_{10} and/or $PM_{2.5}$ concentrations, depending upon the instrument model and air sample inlet configuration(s).
tpy:	tons per year
UATMP:	Urban Air Toxics Monitoring Program - a nationwide research air monitoring program designed to measure toxic air pollutants within urban areas. This program is managed by the U.S. EPA OAQPS.
U.S. EPA:	United States Environmental Protection Agency
VOC:	Volatile Organic Compound - VOCs are chemical compounds that can easily vaporize and enter the atmosphere. There are many natural and artificial sources of VOCs; solvents and gasoline make up some of the largest artificial sources. VOCs will react with NO_x in the presence of sunlight to create ground-level O_3 pollution.

Volume: The amount of air sampled for analysis. Volume is calculated by multiplying a monitor's flowrate by the collection time, usually in minutes.

Volume = flowrate X minutes

The amount of data in a file or database.