



# State of Arizona Air Monitoring Network Plan For the Year 2014

**Arizona Department of Environmental Quality**

**Air Quality Division**

**Air Assessment Section**

**July 1, 2014**

**Final**

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## 1.0 INTRODUCTION

This document fulfills the obligation, under the Code of Federal Regulations (CFR), Title 40, § 58.10(a), requiring the Arizona Department of Environmental Quality (ADEQ) to complete and submit to the United States Environmental Protection Agency (EPA) an annual monitoring network plan for the year 2014.

This plan informs EPA Region 9 of the monitoring activities ADEQ has implemented since July 2013, as well as activities ADEQ will undertake through December 2015. However, some changes may occur after the plan is published and approved due to unforeseen events at monitoring sites, funding changes, or changes in EPA monitoring requirements. Data from ADEQ's monitors are reported to EPA's Air Quality System (AQS) database and to AirNow. In 40 CFR Part 51, EPA requires states to create, submit, and adopt State Implementation Plans (SIPs) to address the various issues and responsibilities involved with creating and implementing air quality programs. 40 CFR Part 51 Subpart J specifies that 40 CFR Part 58 Subpart -C contain the requirements for establishing air quality surveillance systems to monitor ambient air quality.

Air quality surveillance systems consist of networks of monitors located at carefully selected physical locations referred to as sites or stations. Some of the networks, sites, and monitors include:

- State and Local Air Monitoring Stations (SLAMS)
- National Core multipollutant monitoring stations (NCore)
- Photochemical Assessment Monitoring Stations (PAMS)
- Chemical Speciation Network (CSN)
- National Air Toxics Trends Sites (NATTS)
- Special Purpose Monitors (SPM)
- Urban Haze monitoring sites
- Interagency Monitoring of PROtected Visual Environments (IMPROVE)
- AirNow information sites
- Source-oriented monitoring sites operated independently by permittees (Industry)
- Meteorological sites

This Annual Monitoring Network Plan identifies the purpose(s) of each monitor and provides evidence that both the siting and the operation of each monitor meets the requirements in 40 CFR Part 58 Appendices A, C, D, and E as follows:

- Appendix A – Quality Assurance Requirements for SLAMS, SPMs, and Prevention of Significant Deterioration (PSD) Air Monitoring
- Appendix C – Ambient Air Quality Monitoring Methodology
- Appendix D – Network Design Criteria for Ambient Air Quality Monitoring
- Appendix E – Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring

The results of the annual network review and planning are used to determine how well the networks are achieving their required air monitoring objectives, how well they meet data users' needs, and how they should be modified to continue meeting their objectives and data needs. Modifications can include the termination of existing stations, relocation of stations, establishment of new stations, monitoring of additional parameters, and/or changes to the sampling schedule. The annual network review and planning are performed for the purpose of improving the monitoring networks and ensuring that they provide adequate, representative, and regulatory compliant air quality data.

## **2.0 ADEQ PROGRAM AND NETWORK DESCRIPTIONS**

ADEQ operates ambient air quality equipment for a variety of Federal and State monitoring programs. Detailed descriptions of the equipment deployed for each monitoring program are presented in Appendix C of this Network Plan. The equipment is grouped by monitoring program or network to easily compare instrument specifics. Appendix D of this Network Plan lists information on each of ADEQ's current and recently closed monitoring sites, including those sites which ADEQ shares with other agencies or serves as the local site operator. General information about the monitoring programs in which ADEQ participates is described in the following sections.

### **2.1 NAAQS Compliance Network**

ADEQ's compliance network consists of monitoring sites operated for the purpose of demonstrating compliance with the National Ambient Air Quality Standards (NAAQS) for the "criteria" pollutants: carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and lead (Pb). For each of these pollutants, EPA has established national air quality standards to protect public health. The criteria pollutants are measured using instruments designated by EPA as Federal Reference Methods (FRM) or Federal Equivalent Methods (FEM). 40 CFR Part 58 specifies the minimum requirements for determining NAAQS compliance including the following network and site criteria:

- Number and types of monitors required per Metropolitan Statistical Area (MSA) by pollutant
- Objectives and spatial scales
- Sampling frequency
- Collocation
- Special NCore-related requirements
- Meteorology
- Probe location and other restrictions within a site
- Periodic performance evaluations
- Quality Assurance
- Data reporting

### **2.2 State Implementation Plan (SIP) and Maintenance Area Network**

ADEQ maintains several air monitoring sites for the purpose of tracking compliance in areas that are currently in non-attainment for one or more of the NAAQS, and in areas where the NAAQS have been met but on-going demonstration of maintenance is required. Specific monitoring requirements for each of these areas are described in their respective SIPs and/or Maintenance Plans.

### **2.3 Source-Oriented Network**

Several major point sources in the state are required to conduct ambient monitoring for criteria pollutants, primarily PM<sub>10</sub> and SO<sub>2</sub>, as part of their air quality permit. Some of the source-generated data from these sites have been submitted to AQS. As indicated in the 2012 Network Plan, ADEQ met with Freeport-McMoRan Copper and Gold, Inc. (FMMI) to discuss the role of Primary Quality Assurance Organization (PQAO) for the Miami Golf Course PM<sub>10</sub>, Miami Townsite SO<sub>2</sub>, and Miami Jones Ranch SO<sub>2</sub> monitors. ADEQ collocated instruments at these sites to meet the PQAO requirements for submittal of these data to AQS. ADEQ installed the PM<sub>10</sub> monitor at the Miami Golf Course site in fall 2012, and the SO<sub>2</sub> monitors at the Miami Jones Ranch site and Miami Townsite in early 2013. Data are being collected from both the FMMI and ADEQ monitors at these sites for at least one year for comparability analysis and preparation of the comparative data analysis review for submittal to EPA. After data comparison of the PM10 at Miami Golf Course, the data were found to be reasonably comparable and FMMI has stopped monitoring at the site. The data comparison for the SO2 will be completed in the near future and if found to be comparable, FMMI will have the option to stop monitoring at these sites as well. Discussions with American Smelting and Refining Company (ASARCO) are ongoing to have ADEQ collocate SO<sub>2</sub> at sites in and around Hayden, AZ.

### **2.4 NCore Network**

EPA describes the nationwide NCore network, which is composed of approximately 70 urban and 20 rural sites, as a multipollutant network that integrates several advanced measurement systems for particles, pollutant gases, and meteorology. Some objectives of the NCore network include:

- Tracking long-term trends of criteria and non-criteria pollutants;
- Support for long-term health assessments which contribute to ongoing reviews of the NAAQS;
- Support to scientific studies ranging across technological, health, and atmospheric process disciplines
- Support to ecosystem assessments recognizing that national air quality networks benefit ecosystem assessments and, in turn, benefit from data specifically designed to address ecosystem analyses.

As required by 40 CFR Part 58.13, ADEQ's NCore site, JLG Supersite, was operational by January 1, 2011. In addition to the above missions and the NCore monitoring requirements set forth in the 40 CFR Part 58.13, ADEQ will use the JLG Supersite to test new technologies in various ADEQ monitoring networks. Examples include advanced communications and serial data collection, remote zero/span/precision (Z/S/P) checks and calibrations, high sensitivity instruments, and instruments that monitor additional pollutants that may be added to current CFR requirements. Additional NCore information is available from the EPA website: <http://www.epa.gov/ttn/amtic/ncore/index.html>

### **2.5 Meteorological Network**

ADEQ collects meteorological data at sites throughout the state to support the analysis of ambient air quality data and to provide support for exceptional event reporting. Meteorological measurements are also required for the NCore and PAMS networks. ADEQ continues to add meteorological instrumentation to most of ADEQ's monitoring sites that were not previously equipped, and for which there are adequate facilities to support the

meteorological tower and equipment. ADEQ currently meets the meteorological monitoring requirements for the NCore and PAMS networks.

## **2.6 Photochemical Assessment Monitoring Stations (PAMS)**

Section 182(c)(1) of the 1990 Clean Air Act (CAA) Amendments requires the Administrator to promulgate rules for enhanced monitoring of O<sub>3</sub> that includes concurrent monitoring of O<sub>3</sub>, oxides of nitrogen (NO<sub>x</sub>), total reactive nitrogen (NO<sub>y</sub>), speciated volatile organic compounds (VOC), carbonyls, CO, and meteorology to obtain comprehensive and representative O<sub>3</sub> data. Immediately following the promulgation of those rules, ADEQ began to implement a program to improve ambient monitoring activities related to the precursors of O<sub>3</sub>. The subsequent revisions to 40 CFR Part 58 (1993) required states to establish PAMS as part of their monitoring networks in O<sub>3</sub> nonattainment areas classified as serious, severe, or extreme. The principal reasons for requiring the collection of additional ambient air pollutants and meteorological data are the widespread nonattainment of the O<sub>3</sub> NAAQS and the need for a more comprehensive air quality database for O<sub>3</sub> and its precursors. ADEQ operates three PAMS sites to represent the Phoenix metropolitan area: JLG Supersite (type 2), Queen Valley (type 3), and VEI (meteorological).

EPA assembled a workgroup to evaluate the current PAMS program and to consider the possible re-invention of the PAMS program. The scope of the evaluation was extensive and included PAMS objectives, methods, network design, and quality assurance. ADEQ participates in the PAMS re-engineering process and will continue to follow its activity closely to be aware of possible future implications for the ADEQ network.

## **2.7 National Air Toxics Trend Sites (NATTS)**

The NATTS network was designed to monitor and record the concentrations of EPA identified air toxics on a national scale. Data from EPA's national monitoring activities are used to estimate national average concentrations for these air toxics compounds and to detect trends. Using this information, EPA, states, and local agencies can estimate changes to the human exposure from air toxics. Detection of increased human toxicity risk can then be used to support changes in environmental policy. As part of the National Air Toxics Assessment (NATA) process, ambient air quality data are used to assess the national toxics inventory and long-term hazardous air pollutant (HAP) trends. ADEQ's JLG Supersite is the designated NATTS site for the Phoenix MSA.

## **2.8 Chemical Speciation Network (CSN)**

The CSN was established to meet the regulatory requirements for monitoring speciated PM<sub>2.5</sub> to determine the chemical composition of these particles. The purpose of the CSN is to determine, over a period of several years, trends in concentration levels of selected ions, metals, carbon species, and organic compounds in the PM<sub>2.5</sub> samples collected at select sites throughout the country. The program began in 1999 with 54 Speciation Trends Network (STN) sites across the nation located primarily in or near larger MSAs. The network has increased to around 200 sites nationwide. PM<sub>2.5</sub> speciation monitoring at JLG Supersite includes two CSN PM<sub>2.5</sub> speciation samplers. The collocated IMPROVE samplers provide precision and bias information for the IMPROVE network and the data are reasonably comparable to the CSN speciation data. In 2009, the URG 3000N sampler was added at JLG for collecting the carbon sample in lieu of the Met One SuperSASS, which had been used to collect all three types of filter samples e.g. Quartz, Teflon, and Nylon. The laboratory analysis method for carbon samples collected by the URG also changed. These changes to the CSN program's monitoring and analytical design were

geared toward more closely matching the carbon analytes from the CSN sampler to those collected via the IMPROVE network.

## **2.9 Class 1 Area Network and IMPROVE Program**

The rural visibility monitoring networks track impairment in specified national parks and wilderness areas. These parks and wilderness areas are called federally mandatory Class 1 areas and were designated based on an evaluation required by Congress in the 1977 Federal CAA Amendments. The evaluation, performed by the United States Forest Service (USFS) and National Park Service (NPS), reviewed the areas of parks and national forests, which were designated as wilderness before 1977, were larger than 6,000 acres, and to which visual air was an important resource for the visitor experience. Of the 156 Class 1 areas designated across the nation, 12 are located in Arizona. Nine Class 1 areas are located in USFS land and three in NPS land. EPA initiated the nationally-operated IMPROVE monitoring network in 1987, whose purpose is to characterize broad regional trends and visibility conditions using monitoring data collected in or near Class 1 wilderness areas across the United States. Ten Class 1 IMPROVE sites were originally placed in and around these Class 1 areas. One of these sites, Grand Canyon National Park-Indian Gardens, has been shut down recently. Additionally, ADEQ added six other IMPROVE sites identified as Protocol sites. Refer to section 4.12 and the map in Appendix B for additional details regarding ADEQ's Class 1 Visibility and IMPROVE networks.

## **2.10 AirNow Reporting**

ADEQ reports near real-time data for of its continuous air quality monitors to the AirNow system. The AirNow system is a set of near real-time public maps which report an Air Quality Index (AQI) for the five major air pollutants regulated by the Clean Air Act. These pollutants are: ground-level O<sub>3</sub>, PM, CO, SO<sub>2</sub>, and NO<sub>2</sub>. The purpose of the AQI is to help understand what local air quality means to your health. To make it easier to understand, the AQI is divided into six color coded categories: Good, Moderate, Unhealthy for Sensitive Groups, Unhealthy, Very Unhealthy and Hazardous. ADEQ will continue to expand efforts for data submission to AirNow to support the collection and nationwide dissemination of consistently provided air quality data in the AQI. The AQI format is used by local weather forecasters, medical facilities, schools and the general public to make health-related activity decisions based on the reported local AQI.

## **2.11 Urban Haze Network**

The purpose of the Urban Haze Network is to provide State and Local policy-makers and the public with information regarding the urban haze levels, track short-term and long-term trends, assess source contributions, and better evaluate the effectiveness of air pollution control strategies. ADEQ utilizes transmissometers, particulate monitors, and/or digital camera systems to evaluate urban visibility. More than a decade of urban visibility data has been collected for the Phoenix and Tucson area. Currently, only the Phoenix metropolitan area urban visibility is monitored using high resolution cameras. Additional details regarding ADEQ's Urban Haze Network can be found in section 4.13.

## **2.12 E-BAM Network of PM<sub>2.5</sub> Special Purpose Monitors**

E-BAM monitors are special purpose monitors which provide continuous, real-time particulate concentration data that is useful for making informed smoke management decisions related to prescribed burns and wildfire

monitoring. The current network of special purpose continuous particulate monitors (listed in Table 2.12-1) is composed of lightweight, portable E-BAM monitors typically in self-contained, environmentally sealed enclosures. They can be battery or solar powered for operation at sites without fixed electrical power. Data are sampled every second and concentrations are calculated and recorded every minute. E-BAM monitors have been used by many agencies, particularly in the western United States. They are not classified as FRMs or FEMs and may not be used to demonstrate NAAQS compliance. ADEQ uses these monitors primarily in populated areas that could be impacted by smoke from prescribed burns and wildfires. In 2011 ADEQ configured the E-BAM monitors to measure PM<sub>2.5</sub> to be consistent with the National Forest Service monitors. Hourly PM<sub>2.5</sub> data from the E-BAM monitors can be viewed at: <http://www.phoenixvis.net/PPMmain.aspx>.

**Table 2.12-1 Current Locations of E-BAM Monitors**

Site Name	Address
Flagstaff Middle School	755 N. Bonito, Flagstaff, AZ 86001
Payson Well	204 W. Aero Dr., Payson, AZ 85541
Prescott College AQD	226 Grove Ave., Prescott, AZ 86301
Sedona Fire Station AQD	310 Forest Road, Sedona, AZ, 86336
Show Low	561 E. Deuce of Clubs, Show Low, AZ 85901
Springerville	323 S. Mountain Ave., Springerville, AZ 85936
Verde Ranger Station	300 E. Highway 260, Camp Verde, AZ 86322

### **2.13 Arizona / Mexico Border Network**

ADEQ works with the EPA Border Program as part of the U.S. – Mexico Border Air Monitoring Working Group. This working group’s primary priority is reviewing the air quality monitoring data and air monitoring networks in rural and urban areas along the border and evaluating the adequacy of these networks. The secondary priority of this group is to identify operational and maintenance needs, plan for future capabilities, and develop recommendations to resolve any inadequacies. Through this effort, relationships between EPA, ADEQ, Secretariat of Environment and Natural Resources (SEMARNAT), and Commission for Ecology and Sustainable Development (CEDES) are expected to develop, such that data are shared across the border and capacity is built to meet the needs of the air monitoring program objectives.

### **3.0 MONITORING NETWORK EVALUATION**

This section provides a summary of changes to ADEQ's monitoring networks completed since the 2013 Network Plan submission, as well as changes planned for July 2014 through December 2015. Any occurrence of unplanned changes due to emerging needs, budget constraints, or other circumstances will be documented in next year's Air Monitoring Network Plan, and ADEQ will communicate with EPA Region 9 regarding any significant changes on a case-by-case basis. Below is a summary of the planned network changes. Details regarding these changes can be found in Section 4 of this Monitoring Network Plan.

#### **3.1 Site Closures**

Prescott Valley – Although monitoring in Prescott Valley began in 2007, the MSA population does not require PM<sub>10</sub> or PM<sub>2.5</sub> monitoring there. Statistical analysis shows that these monitors are reporting concentrations significantly below the NAAQS. ADEQ shut down both PM<sub>10</sub> and PM<sub>2.5</sub> monitors at this site on January 1, 2014. Instruments were removed on January 16, 2013.

#### **3.2 New Sites Planned**

Lake Havasu City, AZ – ADEQ plans to add monitoring in Lake Havasu City due to it being recently designated an MSA. As there are no data from this area, modeling will be utilized to determine the area of highest concentration. The data will be used for regulatory purposes as part of the NAAQS Compliance Network and will be used to determine if monitoring will be needed in the future. An O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> monitor is planned to be added by January 2016.

Sierra Vista, AZ – ADEQ plans to add O<sub>3</sub> monitoring in Sierra Vista due to it being recently designated an MSA. As there is no data from this area, modeling will be utilized to determine the area of highest concentration. The data will be used for regulatory purposes as part of the NAAQS Compliance Network, and will be used to determine if monitoring will be needed in the future. Currently the Sierra Vista MSA has a PM<sub>10</sub> monitor and a PM<sub>2.5</sub> monitor in Douglas, AZ. These are located in the area of highest concentration and will be used to satisfy the requirements for PM<sub>10</sub> and PM<sub>2.5</sub> monitoring for the MSA. The O<sub>3</sub> monitor is planned to be added by January 2016.

#### **3.3 Network Changes – Current and Planned**

Ajo – A temperature and RH probe was added on February 11, 2014 to match the ADEQ's meteorological setup as found at all other sites.

Alamo Lake – This site is currently the transport/background site for the O<sub>3</sub> network. The site is sufficiently remote that it is being configured to be the designated background site for several pollutants. ADEQ installed a Met One PM<sub>10</sub> FEM BAM 1020 at Alamo Lake on October 30, 2013, a Met One PM<sub>2.5</sub> FEM BAM 1020 on November 15, 2013, and an Ecotech SO<sub>2</sub> 9850T on January 14, 2014. An Ecotech NO<sub>x</sub> 9841, A CO analyzer, and meteorological instruments will be installed in the next year. The SO<sub>2</sub>, NO<sub>x</sub>, and CO analyzers are designated as

SPM for the purpose of providing background data as a part of Arizona's permitting process, SIP development, and for modeling. This will allow permit applicants to use same background data throughout the entire state. The plan is to discontinue these monitors after two years of monitoring.

Flagstaff PM<sub>10</sub> and PM<sub>2.5</sub> – The statistical analysis for Flagstaff shows that PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are significantly below the NAAQS and monitors are not required for this area based on MSA population. ADEQ shut down both the PM<sub>10</sub> and PM<sub>2.5</sub> monitors on January 1, 2014. Instruments were removed on January 2, 2014. See Section 3.5 for the statistical analysis in accordance with 40 CFR §58.14(c)(1).

Payson Well Site PM<sub>10</sub> – Part of the network planning process is to assess the representativeness of the monitors for sampling ambient air. There have been several structural changes at the Payson Well Site that are limiting airflow around this monitor. These include construction of new buildings and growth of trees. ADEQ met with the site manager to define a more suitable location. On December 2, 2013, ADEQ received delivery of a shelter to house a PM<sub>10</sub> FEM BAM 1020. In May 2014 electrical power was established to the shelter at Payson Well Site and on XX, 2014 the PM<sub>10</sub> FEM BAM 1020 was thereby replacing the collocated Thermo Partisol PM<sub>10</sub> FRM monitors starting July 1, 2014. As a result, this site will no longer be collocated for PM<sub>10</sub>, as there is no collocation requirement for PM<sub>10</sub> FEM monitors.

Prescott College O<sub>3</sub> – In 2013, the administration at Prescott College contacted ADEQ with plans to renovate the building where the O<sub>3</sub> analyzer was located. The renovation was aligned so that the full 2013 O<sub>3</sub> season was monitored, and then the instrument was shut down and removed. The location of the analyzer did not meet siting requirements pertaining to the proximity of a roadway. With Grove Avenue having a daily traffic count of 17,650, a minimum distance of 30m is required. The distance to the roadway of the old location was only 8m, thus requiring ADEQ to submit a yearly waiver to EPA Region 9. The new location is still located at Prescott College, (See Figure 3.3-3) but now meets the siting requirements and is 45m from the roadway. The new location is located 180m to the southwest of the previous site and is free of any obstructions from trees or other buildings. The site change resulted in an address change from 336 Grove Ave. to 226 Grove Ave. Since the site is so close in proximity to the old site, and is now meeting siting requirements, the AQS ID will remain the same. The analyzer was shut off due to the end of O<sub>3</sub> season on November 1, 2013, and was removed from the previous location. The instrument was shut off during O<sub>3</sub> season and on January 16, 2014 a Teledyne 400e analyzer was installed, replacing the Thermo 49c analyzer for continuous monitoring of O<sub>3</sub>. Data recovery started March 1, 2014 at the beginning of O<sub>3</sub> season.

**Figure 3.3 1 Google Earth Image of the New and Old Location of the Prescott College O<sub>3</sub> Analyzer**



Prescott Valley - The statistical analysis for Prescott Valley shows that PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are significantly below the NAAQS and that monitors are not required for this area based on MSA population. ADEQ shut down both the PM<sub>10</sub> and PM<sub>2.5</sub> monitors on January 1, 2014 and instruments were removed on January 2, 2014.

**Table 3.3-1 Instruments Changes Made from July 2013 thru June 2014**

Site Name	Monitors	Date of Change	Description
Ajo	Temp and RH	11-Feb-2014	A temperature and RH sensor were installed for forecasting purposes.
Alamo Lake	PM <sub>10</sub>	30-Oct-2013	A Met One FEM BAM 1020 PM <sub>10</sub> was deployed to the site in October 2013 and designated as Background.
Alamo Lake	PM <sub>2.5</sub>	15-Nov-2013	A Met One FEM BAM 1020 PM <sub>2.5</sub> was deployed to the site in November 2013 and designated as Background.
Alamo Lake	SO <sub>2</sub>	14-Jan-2014	An Ecotech SO <sub>2</sub> 9850T was installed in January 2014 and designated as a special purpose monitor.

Site Name	Monitors	Date of Change	Description
Ajo	Temp and RH	11-Feb-2014	A temperature and RH sensor were installed for forecasting purposes.
Flagstaff Middle School	PM <sub>10</sub> , PM <sub>2.5</sub>	1-Jan-2014	Monitors were discontinued as of January 1, 2014 since multiple years of data shows that the site is significantly below the NAAQS. A special purpose PM <sub>2.5</sub> monitor (E-BAM) will continue to be used for smoke management, population exposure monitoring and reporting to the website. Ozone monitoring will continue at this site.
Payson Well Site	PM <sub>10</sub>	X-Mar-2014	Currently collocated Partisol FRM PM <sub>10</sub> monitors were replaced with a PM <sub>10</sub> FEM BAM 1020 starting on July 1, 2014. Collocation is not required at this site. Monitoring to be relocated within site property.
Prescott Valley	PM <sub>10</sub> , PM <sub>2.5</sub>	1-Jan-2014	Monitors were discontinued as of January 1, 2014 since multiple years of data shows that the site is significantly below the NAAQS. System modification (closure) is being made in compliance with 40CFR 58.14(C)(1). A special purpose PM <sub>2.5</sub> monitor (E-BAM) will continue to be used for smoke management, population exposure monitoring and reporting to the website.
Prescott College	O <sub>3</sub>	1-Nov-2013	Prescott College O <sub>3</sub> analyzer was moved to a new location on campus due to renovation of previous location. A Teledyne 400e replaced the Thermo 49c at this time. AQS ID remains the same.

**Table 3.4-2 Instrument Changes Planned for July 2014 to December 2015**

Site Name	Monitors	Date of Change	Description
Alamo Lake	CO	1-Jan-2015	A CO monitor will be deployed to the site as a SPM for background data purposes.
Alamo Lake	NO <sub>x</sub>	1-Jan-2015	An Ecotech NO <sub>x</sub> 9841 will be deployed to this site as a SPM for background data purposes by 1-Jan-2015.
Alamo Lake	Temp, RH, and Wind	1-Jan-2015	Full meteorological equipment will be deployed to this site by 1-Jan-2015.
Lake Havasu City	PM <sub>10</sub> , PM <sub>2.5</sub> , O <sub>3</sub>	1-Jan-2016	Monitors will be planned for installation at new site starting Jan. 2016.
Sierra Vista	O <sub>3</sub>	1-Jan-2016	Monitor will be planned for installation at new site starting Jan. 2016.

#### 4.0 ADEQ MONITORING NETWORKS

The minimum monitoring requirements for each pollutant are described in 40 CFR Part 58 Appendix D and are typically based on the population of urban areas. Current minimum monitoring requirements are only associated with MSAs, and there are no minimum monitoring requirements for Micropolitan Statistical Areas. Tables 4.0-1 and 4.0-2 outline metropolitan and micropolitan statistical areas in Arizona as identified by the U.S. Census Bureau.

**Table 4.0-1 Metropolitan Statistical Areas as of the 2010 Census**

<b>Metropolitan Statistical Area</b>	<b>Area included</b>	<b>Population</b>
Flagstaff	Coconino County	134,421
Lake Havasu City – Kingman	Mohave County	200,186
Phoenix – Mesa – Scottsdale	Maricopa & Pinal Counties	4,192,887
Prescott	Yavapai County	211,033
Sierra Vista-Douglas	Cochise	131,346
Tucson	Pima County	980,263
Yuma	Yuma County	195,751

**Table 4.0-2 Micropolitan Statistical Areas as of the 2010 Census**

<b>Micropolitan Statistical Area</b>	<b>County</b>	<b>Population</b>
Nogales	Santa Cruz	47,420
Payson	Gila	53,597
Safford	Graham & Greenlee Counties	37,220
Show Low	Navajo	107,449

#### 4.1 PM<sub>2.5</sub> Monitoring Network Requirements

The number of PM<sub>2.5</sub> samplers required in urban areas is based on population (see Table 4.0-1) and design values for PM<sub>2.5</sub> concentrations (see Table 4.1-1).

**Table 4.1-1 Minimum Number of PM<sub>2.5</sub> Monitors Required (40 CFR 58 Appendix D)**

Population (MSA)	Most recent 3-Yr design value $\geq$ 85% of any PM <sub>2.5</sub> NAAQS *	Most recent 3-Yr design value <85% any PM <sub>2.5</sub> NAAQS * or no Design Value Available
>1,000,000	3	2
500,000 – <1,000,000	2	1
50,000 – <500,000	1	0

\*85% Annual NAAQS ( $12 \mu\text{g}/\text{m}^3$ ) =  $10.2 \mu\text{g}/\text{m}^3$ ; 85% 24-Hour NAAQS ( $35 \mu\text{g}/\text{m}^3$ ) =  $29.75 \mu\text{g}/\text{m}^3$

The required sample collection frequency is based on the type of sampler and the design value calculated from data collected at each FRM (filter-based) or FEM (continuous) sampler (see Table 4.1-2). 40 CFR §58.12 (d)(1) states the manual PM<sub>2.5</sub> sample collection frequency requirement at required SLAMS stations as every third day at sites without a collocated continuously operating PM<sub>2.5</sub> monitor.

**Table 4.1-2 PM<sub>2.5</sub> Design Values and Sampling Frequencies at ADEQ Sites**

AQS Site ID	Site Name	2011-2013 24-Hour Design Value ( $\mu\text{g}/\text{m}^3$ )	2011-2013 Annual Design Value ( $\mu\text{g}/\text{m}^3$ )	Sample Frequency
04-003-1005	Douglas Red Cross	12	6.7	Continuous
04-012-8000	Alamo Lake <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>	Continuous
04-013-9997	JLG Supersite	22	8.5	Continuous
04-023-0004	Nogales Post Office	26	9.6	1 in 6 Day
04-027-8011	Yuma Supersite <sup>2</sup>	16	7.8	Continuous

<sup>1</sup> PM<sub>2.5</sub> monitoring will begin on November 5, 2013 and be designated as the Background site for the PM<sub>2.5</sub> Network

<sup>2</sup> Designated Transport site in the PM<sub>2.5</sub> Network

ADEQ currently operates EPA-approved FEM monitors at six PM<sub>2.5</sub> monitoring sites. An EPA-approved FEM monitor was deployed to the Alamo Lake site in January 2014; this site is designated as the PM<sub>2.5</sub> monitoring network's Background site. Yuma Supersite is designated as the required PM<sub>2.5</sub> Transport site. ADEQ operates both an EPA-approved FEM continuous monitor and a Partisol 2000 PM<sub>2.5</sub> FRM at the JLG Supersite fulfilling an NCore collocation requirement. The EPA-approved FEM sampler is designated the primary PM<sub>2.5</sub> monitor for NAAQS compliance purposes.

Several non-FEM continuous PM<sub>2.5</sub> monitors are also in operation throughout the state, most of which are associated with the Smoke Management E-BAM network. See Section 2.12 for additional details on the E-BAM network.

#### **4.1.1 PM<sub>2.5</sub> Collocation Requirements**

For the ADEQ PM<sub>2.5</sub> network, one site is required to have collocated monitoring. The Nogales Post Office site has the highest PM<sub>2.5</sub> design value in ADEQ's PM<sub>2.5</sub> network and is therefore the designated PM<sub>2.5</sub> collocated site. ADEQ operates both an EPA-approved FEM continuous instrument and two Partisol 2000 PM<sub>2.5</sub> FRM instruments at the Nogales Post Office site. The FEM BAM 1020 is designated as the primary PM<sub>2.5</sub> monitor for this site, thus enabling ADEQ to exceed the required 1-in-3 day monitoring frequency. This combination of instruments also fulfills the collocation requirement of the PM<sub>2.5</sub> network for ADEQ. The QA collocated Partisol PM<sub>2.5</sub> FRM operates on a 1-in-6 day monitoring frequency rather than the required 1-in-12 day monitoring frequency.

Additionally, ADEQ operates one Partisol 2000 PM<sub>2.5</sub> FRM instrument and one continuous PM<sub>2.5</sub> FEM monitor at the JLG Supersite. This PM<sub>2.5</sub> FEM is designated the primary instrument as required by NCore. The PM<sub>2.5</sub> FEM monitor is also labeled as an NCore PM<sub>coarse</sub> paired monitor. The PM<sub>2.5</sub> FRM instrument is labeled as a QA collocated instrument for the site. Table 4.1-3 summarizes ADEQ's PM<sub>2.5</sub> collocation requirements.

**Table 4.1-3 PM<sub>2.5</sub> FRM/FEM Collocation Details**

<b>Method Code (Instrument Type)</b>	<b># of Sites</b>	<b># of Primary Monitors</b>	<b># of Required Collocated Monitors</b>	<b># of Active Collocated Monitors</b>
143 (Partisol 2000)	2	0	0	0
170 (Met One BAM 1020)	5	5	1	2

#### **4.1.2 Relocating Any Violating PM<sub>2.5</sub> Monitors**

ADEQ does not have any violating PM<sub>2.5</sub> monitors that are being considered for relocation. A process for relocating violating PM<sub>2.5</sub> monitors is required and described in 40 CFR Part 58.10 (c). It requires the annual monitoring network plan to document how state and local agencies provide for the review of changes to a PM<sub>2.5</sub> monitoring network that impact the location of a violating PM<sub>2.5</sub> monitor or the creation/change to a community monitoring zone. The analysis includes a description of the proposed use of spatial averaging for purposes of making comparisons to the annual PM<sub>2.5</sub> NAAQS as set forth in Appendix N to Part 50. The affected agency must document the process for obtaining public comment and include any comments received through the public notification process within their submitted plan. ADEQ does not intend to establish community monitoring zones as described in the rule or utilize spatial averaging for comparison to the PM<sub>2.5</sub> NAAQS. A public comment procedure is required prior to relocation of a violating monitor and ADEQ will utilize the following procedure:

1. Evaluation of the potential replacement site will include review and comparison of available pollutant data, meteorology, climatology, terrain, and siting characteristics. This information will be documented in a brief report.
2. Make notice of such a change in the annual monitoring network plan.
3. If the change must be accomplished prior to annual monitoring network plan submittal, ADEQ will make appropriate notice via the agency Web page and invite participation from the public prior to relocation of the affected site.
4. Relocation of the monitor.

#### **4.2 PM<sub>10</sub> Monitoring Network Requirements**

The number of PM<sub>10</sub> samplers required in urban areas is based on the population of the area (see Table 4.2-1) and design values for PM<sub>10</sub> 24-hour concentrations (see Table 4.2-2). Maricopa, Pinal, and Pima Counties have delegated authority for their monitoring networks and AQS reporting. ADEQ's PM<sub>10</sub> monitoring network includes the MSAs in all other Arizona counties, as well as the PM<sub>10</sub> nonattainment areas in those counties. JLG Supersite PM<sub>10</sub> concentrations for NCore are provided by the PM<sub>10</sub> FEM BAM 1020.

**Table 4.2-1 Minimum Number of PM<sub>10</sub> Monitors Required (40 CFR 58 Appendix D)**

<b>MSA Population</b>	<b>High Concentration Exceeds 24-Hour NAAQS by 20% or more (&gt;180µg/m<sup>3</sup>)</b>	<b>Medium Concentration Exceeds 80% of 24-Hour NAAQS (&gt;120µg/m<sup>3</sup>)</b>	<b>Low Concentration Less than 80% of 24-Hour NAAQS (&lt;120 µg/m<sup>3</sup>) or no Design Value Available</b>
>1,000,000	6-10	4-8	2-4
500,000 – <1,000,000	4-8	2-4	1-2
250,000 – <500,000	3-4	1-2	0-1
100,000 – <250,000	1-2	0-1	0

The monitoring rule in 40 CFR Part 58.12(e) states that for PM<sub>10</sub> sites, "...the minimum monitoring schedule for the site in the area of expected maximum concentration shall be based on the relative level of that monitoring site concentration with respect to the 24-hour standard." ADEQ has transitioned most PM<sub>10</sub> monitors from filter-based methods to continuous methods. By July 1, 2014 all the primary PM<sub>10</sub> monitors in the ADEQ PM<sub>10</sub> network will be continuous methods. Payson Well Site will continue as the PM<sub>10</sub> collocated filter-based monitoring station until July 1, 2014. Table 4.2-2 lists the PM<sub>10</sub> network site Design Values and Annual Means

**Table 4.2-2 PM<sub>10</sub> Design Values (Estimated Exceedances) and Annual Means for ADEQ Sites**

<b>AQS Site ID</b>	<b>Site Name</b>	<b>2011 - 2013 Average Estimated Days PM<sub>10</sub>&gt;150 µg/m<sup>3</sup> Including Events</b>	<b>2011 – 2013 Average Estimated Days PM<sub>10</sub>&gt;150 µg/m<sup>3</sup> Excluding Events</b>	<b>2013 Annual Mean Concentration (µg/m<sup>3</sup>)</b>
04-003-0011	Paul Spur Chemical Lime Plant	1.0	0.7	20.6
04-003-1005	Douglas Red Cross	2.0	0.7	37.3
04-007-0008	Payson Well Site	0	0	19.1
04-007-1001	Hayden Old Jail	1.046	1.4	42.5
04-007-8000	Miami Golf Course	0	0*	22.6
04-012-8000	Alamo Lake	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>

04-013-9997	JLG Supersite	2.0	0.7	30.5
04-015-1003	Bullhead City	1.0	0.7	20.6
04-019-0001	Ajo	1.0	1.7	28.6
04-019-0020	Rillito	5.044	3.7	40.4
04-023-0004	Nogales Post Office	0*	0*	35.8
04-023-0004	Nogales Post Office	2	1.7	43.7
04-027-8011	Yuma Supersite	5.011	5.7	41.0

\* Annual values not meeting completeness criteria

<sup>1</sup> Monitoring at Alamo Lake began on Oct.. 30, 2013

#### 4.2.1 PM<sub>10</sub> Collocation Requirements

There are no collocation requirements for EPA-approved PM<sub>10</sub> FEM monitors. ADEQ has transitioned the PM<sub>10</sub> network to continuous FEM monitors. ADEQ does operate an additional Partisol 2000 FRM at the Nogales Post Office site. While the FEM is designated as the primary PM<sub>10</sub> monitor, the Partisol 2000 monitor is designated a QA collocated PM<sub>10</sub> instrument. Table 4.2-3 summarizes ADEQ's PM<sub>10</sub> collocation requirements.

**Table 4.2-3 PM<sub>10</sub> FRM/FEM Collocation Details**

Method Code	# of Sites	# of Primary Monitors	# of Required Collocated Monitors	# of Active Collocated Monitors
126 (Partisol 2000)	1	0*	0*	0*
079 (TEOM)	8	8	0	0
122 (BAM)	4	4	0	0

\* The Partisol 2000 monitors at the Payson Well Site will be replaced with a single FEM BAM 1020 beginning July 2014

### 4.3 O<sub>3</sub> Monitoring Network Requirements

**Table 4.3-1 Minimum Number of O<sub>3</sub> Monitors Required (40 CFR Part 58 Appendix D)**

<b>Population (MSA)</b>	<b>Most recent 3 year 8-hour Design Value <math>\geq</math> 85% of NAAQS (0.06375 ppm)</b>	<b>Most recent 3 year 8-hour Design Value <math>&lt;</math>85% NAAQS (0.06375 ppm) or no Design Value available</b>
>10 Million	4	2
4 – <10 Million	3	1
350,000 – <4 Million	2	1
50,000 – <350,000	1	0

The minimum monitoring requirements for O<sub>3</sub> are shown above in Table 4.3-1. ADEQ operates a network of seven O<sub>3</sub> monitors throughout Arizona (see Table 4.3-2). ADEQ is updating the O<sub>3</sub> network with remote zero/span/precision checks utilizing the Teledyne T703 UV Photometric O<sub>3</sub> Calibrator with Internal Zero Air Pump and External Zero Air Shut-Off Valve. This will allow air monitoring staff to more efficiently maintain the O<sub>3</sub> network while minimizing travel time during the O<sub>3</sub> season, and avoiding calibration during the peak hours of the day when O<sub>3</sub> levels are highest. Additionally, Maricopa, Pima, and Pinal Counties operate O<sub>3</sub> monitors.

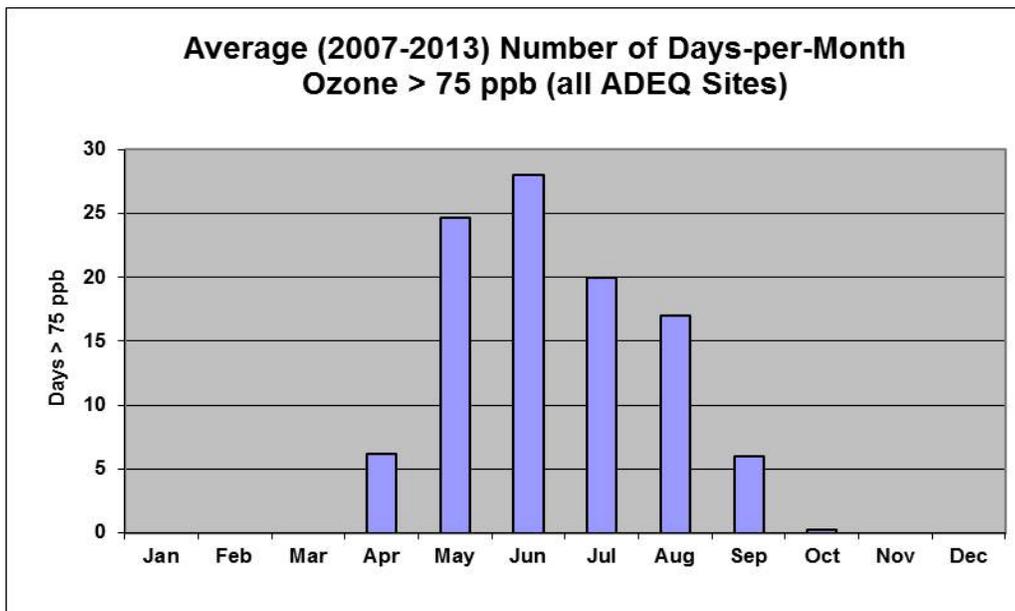
**Table 4.3-2 ADEQ O<sub>3</sub> Sites and Design Values**

<b>AQS Site ID</b>	<b>Site</b>	<b>Current Operating Schedule</b>	<b>2011-2013 Design Value (ppm)</b>
04-005-1008	Flagstaff Middle School	March - October	0.069
04-007-0010	Tonto National Monument	March - October	0.075
04-012-8000	Alamo Lake	March - October	0.072
04-013-9997	JLG Supersite	January - December	0.077
04-021-8001	Queen Valley	March - October	0.076
04-025-8033	Prescott College AQD	March - October	0.069
04-027-8011	Yuma Supersite	March - October	0.076

### 4.3.1 O<sub>3</sub> Season

In accordance with 40 CFR Part 58, Appendix D, Paragraph 4.1(i), “*Deviation from the [January-to-December] O<sub>3</sub> monitoring season must be approved by the EPA Regional Administrator, documented in the annual network plan, and updated in AQS. Information on how to analyze O<sub>3</sub> data to support a change to the O<sub>3</sub> season in support of the 8-hour standard for a specific state can be found in reference 8 to this appendix*”. Reference 8 refers to the Guideline for Selecting and Modifying the Ozone Monitoring Season Based on an 8-hour Ozone Standard. In compliance with this document, ADEQ analyzed the most recent seven years of O<sub>3</sub> data (2007-2013 O<sub>3</sub> data from ADEQ sites) to create the chart in Figure 4.3-1, which is the basis of ADEQ’s request for modifying the O<sub>3</sub> season to March through October. The only two days in October > 75 ppb occurred in 2009, which included an unusually high number of exceedance days. The O<sub>3</sub> season was extended in 2012 to include March because some parts of Arizona begin experiencing low concentrations of O<sub>3</sub> in March. ADEQ does additional monitoring in the off-season of November – February for its own purposes; however, those data are not being reported to the AQS database. The JLG Supersite will continue to operate on a January to December schedule.

**Figure 4.3-1 Average Number of Days O<sub>3</sub> > 75 ppb all ADEQ Sites Combined**



### 4.4 Pb Monitoring Network Requirements

ADEQ has operated three source-oriented TSP Hi-Vol Pb monitors between the Globe Highway site (collocated) and the Miami Golf Course site since January 2011. 40 CFR Part 58 Appendix D states that at a minimum, there must be one source-oriented SLAMS site located to measure the maximum Pb concentration in ambient air resulting from each non-airport source which emits 0.50 or more tons per year and each airport source which emits 1.0 or more tons per year. Per the National Emissions Inventory (NEI) 2011, there are no non-airport sources in the 0.5-1.0 ton per year category. For the NCore-Pb requirement, ADEQ uses the same PM<sub>10</sub> metals speciation sample that is used for the NATTS program. Eastern Research Group (ERG) currently analyzes these samples and on June 1, 2012 received EPA approval for the ICP-MS analysis method for lead in PM<sub>10</sub>. No

changes in the actual monitoring or analysis method will occur for Pb-PM<sub>10</sub> data collected at JLG Supersite; however, parameter code 85129 and method code 202 are now associated with these data in AQS.

#### 4.4.1 Pb Collocation Requirements

ADEQ's Pb network requires only one collocated site. The Globe Highway site located in Hayden, AZ has the highest design value in the Pb network and is therefore the collocated site. Although ADEQ monitors NCore-Pb at the JLG Supersite, collocated NCore-Pb sites are determined by the EPA and JLG Supersite is not a designated NCore-Pb collocated site. Table 4.4-1 summarizes ADEQ's Pb collocation requirements.

**Table 4.4-1 Pb FRM/FEM Collocation Details**

Method Code	# of Sites	# of Primary Monitors	# of Required Collocated Monitors	# of Active Collocated Monitors
191 (Pb-TSP ICP/MS)	2	2	1	1
202 (Pb-PM <sub>10</sub> ICP/MS)	1	1	0*	0

\*Pb-PM<sub>10</sub> monitor is located at an NCore site and does not require collocation

**Table 4.4-2 Pb Design Values at ADEQ Sites**

AQS Site ID	Site Name	2011-2013 Design Value (µg/m <sup>3</sup> )
04-007-1002	Globe Highway	0.27
04-007-8000	Miami Golf Course	0.06
04-013-9997	JLG Supersite	--*

\* Design Value not available

#### 4.5 SO<sub>2</sub> Monitoring Network Requirements

ADEQ operates a network of six SO<sub>2</sub> monitors throughout Arizona. Authority to operate SO<sub>2</sub> monitors has also been delegated to Maricopa and Pima Counties. Additionally, two sources, ASARCO and FMMI, operate SO<sub>2</sub> monitoring networks in Gila County for permit compliance and to support SIP rule requirements. ADEQ is currently negotiating with both sources to ensure that the monitors are operated under the required quality assurance requirements. In Miami, ADEQ runs the Miami Ridgeline site and added SO<sub>2</sub> monitors at the Miami Townsite and Jones Ranch sites, which FMMI has been monitoring. For Hayden, ADEQ currently operates an SO<sub>2</sub> monitor at Hayden Old Jail. ADEQ initiated discussions with ASARCO regarding Globe Highway and Montgomery Ranch on the best means to meet the PQAQ requirements. ADEQ also operates a trace-level SO<sub>2</sub>

monitor at its NCore site (JLG Supersite), as required by 40 CFR Part 58 Appendix D. An SO<sub>2</sub> monitor was placed at Alamo Lake in February 2014 and is designated as the background SPM monitor.

The SO<sub>2</sub> monitoring requirements in 40 CFR Part 58 Appendix D are based on a Population Weighted Emissions Index (PWEI) calculated for each CBSA. CBSAs with PWEIs greater than 5,000 require at least one SO<sub>2</sub> monitor, PWEIs greater than 100,000 require a minimum of two SO<sub>2</sub> monitors, and PWEIs greater than 1,000,000 require three SO<sub>2</sub> monitors. There are no PWEI greater than 5,000 in Arizona, but there are other SO<sub>2</sub> monitors in Arizona, which are operated by Maricopa County and Pima County.

**Table 4.5-1 SO<sub>2</sub> Design Values at ADEQ Sites**

<b>AQS Site ID</b>	<b>Site Name</b>	<b>2011-2013 1-Hour Design Value (ppb)</b>
04-012-8000	Alamo Lake	N/A
04-007-0011	Miami Jones Ranch	N/A
04-007-0009	Miami Ridgeline	105
04-007-0012	Miami Townsite	N/A
04-007-1001	Hayden Old Jail	266
04-013-9997	JLG Supersite	6

#### **4.6 NO<sub>2</sub> Monitoring Network Requirements**

ADEQ currently operates only one NO<sub>2</sub> monitor throughout the state of Arizona with one planned to be deployed this year. These NO<sub>2</sub> monitors are located at the JLG Supersite and Alamo Lake. JLG is operated to fulfill a PAMS requirement and Alamo Lake is designated as a background SPM site.

The NO<sub>2</sub> monitoring requirements set forth in 40 CFR Part 58 Appendix D are based on a combination of CBSA population and Annual Average Daily Traffic (AADT) counts. The first requirement to be considered is the CBSA population. CBSAs with populations greater than 500,000 are required to operate one near-roadway monitor, while CBSAs with populations greater than 2.5 million are required to operate two near-roadway monitors. Additionally, CBSAs with populations greater than 500,000 and containing roadway segments with 250,000 or greater AADT require two near-roadway monitors. As can be seen in table 4.0-1, two CBSAs within Arizona (Phoenix and Tucson Metro areas) contain populations greater than 500,000, and therefore, require at least one NO<sub>2</sub> near-roadway monitor. The Phoenix CBSA exceeds 2.5 million in population; therefore, two near-roadway monitors are needed in the Phoenix CBSA. Pima and Maricopa Counties will operate the required near-roadway monitors in Tucson and Phoenix, respectively.

In addition to the near-roadway monitoring requirements set forth in 40 CFR Part 58 Appendix D, there is also a requirement for area-wide NO<sub>2</sub> monitoring. CBSAs with populations of one million or more require one NO<sub>2</sub> monitor to measure NO<sub>2</sub> concentrations that represent neighborhood or larger spatial scales. The Phoenix

metropolitan area is the only area within the state of Arizona that requires ambient monitoring of NO<sub>2</sub>. The current NO<sub>2</sub> monitors operated by Maricopa and Pima Counties are meeting the current monitoring requirements set forth in 40 CFR Part 58 Appendix D. ADEQ will continue to monitor NO<sub>2</sub> at JLG Supersite as part of the NO<sub>x</sub> measurements required by the PAMS program. See Table 4.6-1 for design values.

**Table 4.6-1 NO<sub>2</sub> Design Values at ADEQ Sites**

<b>AQS Site ID</b>	<b>Site Name</b>	<b>2011-2013 1-Hour Design Value (ppb)</b>	<b>2013 Annual Mean (ppb)</b>
04-013-9997	JLG Supersite	55	16.98
04-012-8000	Alamo Lake	NA	NA

#### **4.7 Carbon monoxide (CO) Monitoring Network Requirements**

ADEQ operates only one CO monitor throughout Arizona, with plans to operate a second at Alamo Lake as a background SPM. The current CO monitor is located at the JLG Supersite and has sufficient sensitivity to monitor trace levels. This CO monitor fulfills NCore as well as PAMS monitoring requirements. Maricopa and Pima Counties operate the other required CO monitors within the State of Arizona. The Phoenix population exceeds the one million population requirement set forth in 40 CFR Part 58 Appendix D, therefore one CO monitor is required to be collocated with a near-road NO<sub>2</sub> monitor. The required near-roadway monitor in Phoenix will be operated by Maricopa County. The most recent census data show the Tucson MSA is below one million and therefore near-road CO monitoring is not required. The Trace-Level CO (COTL) analyzer that is currently operated by ADEQ exceeds the minimum monitoring requirements for the NCore and PAMS network design criteria set forth in 40 CFR Part 58 Appendix D. Due to the low range at which the JLG COTL analyzer operates, ADEQ urges some caution be exercised when utilizing these data for the purpose of NAAQS compliance. Under most circumstances, the data would be used to determine compliance with the CO NAAQS. However, due to the consistently low ambient concentrations, the trace-level analyzer's operating range is set at 0-5 ppm, which is the range most frequently measured at JLG. This operating range is well below the CO NAAQS of 9 ppm, therefore, when/if under certain rare circumstances, the CO concentrations are > 5 ppm, determining compliance with the CO NAAQS may not be possible, because measurement uncertainty increases and becomes challenging to statistically quantify. Table 4.7-1 contains the most recent Design Values for CO at JLG Supersite.

**Table 4.7-1 CO Design Values at ADEQ Sites**

<b>AQS Site ID</b>	<b>Site Name</b>	<b>2013 CO 1-Hour Max. Value (ppm)</b>	<b>2013 CO 8-Hour Max. Value (ppm)</b>
04-013-9997	JLG Supersite	3.239	2.0

#### 4.8 PAMS Monitoring Network Requirements

Network design and monitoring requirements for PAMS stations are provided in 40 CFR 58 Appendix D for areas classified as serious, severe, or extreme nonattainment for O<sub>3</sub>. Two sites are required for each area, providing all chemical measurements are made. Measurements include speciated VOCs, Carbonyls, NO<sub>x</sub>, trace-level reactive oxides of nitrogen (NO<sub>y</sub>), CO, O<sub>3</sub>, surface meteorology, and upper air meteorology. In 2008, EPA shortened the PAMS monitoring season to June through August.

ADEQ's PAMS network consists of two ambient air monitoring sites in the Phoenix-Mesa-Scottsdale MSA and a meteorological site for the collection of upper air meteorological data and solar radiation data.

##### JLG Supersite – Type 2 PAMS Site

The JLG Supersite was designated a PAMS site in 1999. Since the required manual method of eight three-hour canisters running daily is impractical due to increased expenses for staff, shipping, and analysis, ADEQ returned in 2008 to the 2006 monitoring schedule of a 24-hour canister sample every sixth day at the JLG Supersite during PAMS season for VOCs. This will be reviewed when the final results of the PAMS re-engineering program are available which is anticipated to include recommendations for changes to monitoring and new types of instruments. ADEQ also operates carbonyl, O<sub>3</sub>, CO, NO<sub>x</sub>, and surface meteorological monitoring equipment at JLG Supersite (see Table 4.8-1). Carbonyl monitoring at JLG Supersite is not currently required for PAMS, but because carbonyls are considered important for PAMS, there are no current plans to discontinue carbonyl monitoring at JLG Supersite.

**Table 4.8-1 JLG Supersite PAMS Instrumentation**

Parameter	Period of Operation	Collection Method	Frequency and Duration
VOC *	Jan-Dec	Canister Sampler	Every 6th day, 24 hrs.
Carbonyl *	Jan-Dec	Multi-port Carbonyl Sampler	Every 6 <sup>th</sup> day, 1-24 hr sample (Dec-Jan). Every 6 <sup>th</sup> day, 3 – 3 hr samples (0500-0800, 0800-1100, 1100-1400)(June-August)
CO	Jan – Dec	Trace CO	Hourly average
O <sub>3</sub>	Jan – Dec	O <sub>3</sub> Analyzer	Hourly average
NO <sub>x</sub>	Jan – Dec	NO <sub>x</sub> Analyzer	Hourly average
Meteorology	Jan – Dec	<ul style="list-style-type: none"> <li>• Wind speed/direction</li> <li>• Temperature</li> <li>• Relative humidity</li> </ul>	Hourly average

\* 24-hour VOC and Carbonyl measurements are also part of the NATTS program and collected year-round.

### Queen Valley – Type 3 PAMS Site

Queen Valley was designated a PAMS site in 2001. The site is located near the southeastern edge of the photochemical modeling grid domain and is considered to be downwind of the source of maximum precursor emissions in the Phoenix metropolitan area. Pollutants collected at the site include speciated PAMS VOCs, O<sub>3</sub>, total reactive NO<sub>y</sub>, and surface meteorology measurements. ADEQ’s Five-Year Network Assessment identified the Queen Valley site as not meeting PAMS monitoring requirements due to the lack of meteorological measurements. Meteorological instrumentation was added during the second quarter of 2011 and carbonyl samples are not required at Type 3 sites. Table 4.8-2 lists the instrumentation and monitoring schedule at the Queen Valley site.

**Table 4.8-2 Queen Valley PAMS Instrumentation**

<b>Parameter</b>	<b>Period of Operation</b>	<b>Collection Method</b>	<b>Frequency and Duration</b>
VOC	June – August	Multi-port sampler	Every 6 <sup>th</sup> day, 24 hrs, and 3 – 3 hr samples (0500-0800, 1300-1600, 1600-1900)
O <sub>3</sub>	March – October	O <sub>3</sub> Analyzer	Hourly average
NO <sub>y</sub>	June – August	NO <sub>y</sub> Analyzer	Hourly average
Meteorology	Jan – Dec	<ul style="list-style-type: none"><li>• Wind speed/direction</li><li>• Temperature</li><li>• Relative humidity</li></ul>	Hourly average

### Vehicle Emissions Laboratory – Upper Air Meteorology Site

This site is intended to be a meteorological ‘supersite’ and includes a pyranometer to measure total solar radiation, UV solar radiation, wind speed, wind direction, differential temperature (2 meters and 10 meters), and relative humidity. The National Weather Service (NWS) site at nearby Sky Harbor Airport collects barometric pressure and precipitation measurements. A Radio Acoustic Sounding System (RASS) and a Wind Profiler had also been collecting continuous upper air meteorological data for determination of mixing heights since 1998 until July 2012. The PAMS re-engineering workgroup noted the high maintenance cost and very limited use of the RASS and Wind Profiler data and unofficially recommended against its continued use – particularly if usable data is available from other sources. ADEQ considered the high operational cost and very limited data use when deciding to discontinue its operation. EPA is currently exploring the possibility of using mixing height data from some of the 1,000 ceilometers recently placed in use by NOAA.

**Table 4.8-3 Vehicle Emissions Laboratory PAMS Instrumentation**

Parameter	Period of Operation	Method	Duration
Meteorology	Jan – Dec	<ul style="list-style-type: none"> <li>• Pyranometer (total solar radiation)</li> <li>• Ultra-violet (UV solar)</li> <li>• Wind speed/direction</li> <li>• Temperature</li> <li>• Relative humidity</li> </ul>	Hourly average

**4.9 NCore Monitoring Network Requirements**

EPA has identified JLG Supersite as the required NCore site for the Phoenix metropolitan area. JLG Supersite has been a multipollutant monitoring site since its establishment in 1993. Currently, several monitoring programs are supported at this site, including: SLAMS, PAMS, NATTS, CSN, and meteorology. The required NCore parameters are listed in Table 4.9-1. The required NCore monitors were operational by January 1, 2011. . The NCore-Pb requirement is being met by using the current Partisol 2000 (PM<sub>10</sub> sample filter) for metals speciation. ADEQ recently received notice that the ERG analysis method for PM<sub>10</sub> metals speciation was approved as a Federal Equivalent Method (FEM) for the analysis of Pb. While there will be no physical changes to the instrumentation or analysis method for Pb at the NCore site, the parameter code 85129 and method code 202 are now associated with Pb-PM<sub>10</sub> data in AQS.

**Table 4.9-1 JLG Supersite NCore Instrumentation**

Required Measurement	Frequency/Duration	Status
PM <sub>2.5</sub> FEM mass	Hourly	Met One BAM 1020 FEM pair, designated primary
PM <sub>2.5</sub> FRM mass	24 hour average every 3rd day	Thermo Partisol 2000 is current instrument; PM <sub>2.5</sub> samples collected since 1999
PM <sub>10</sub> FEM mass	Hourly	Met One BAM 1020 FEM pair
PM <sub>coarse</sub> FEM mass	Hourly	Met One BAM 1020 FEM pair, difference method
PM <sub>2.5</sub> speciation - organic and elemental carbon, major ions, and trace metals	24 hour average; every 3rd day	Met One SuperSASS with URG module is current instrument; STN/CSN samples collected since 1999

Pb	24 hour average; every 6th day	Currently Pb measurements are from the NATTS PM <sub>10</sub> metals sampler. EPA recently approved ERG's ICP-MS analysis method as an FEM.
O <sub>3</sub>	Hourly	API Teledyne 400E
CO (Trace Level)	Hourly	Ecotech EC9830T
SO <sub>2</sub> (Trace Level)	Hourly	Ecotech EC9850T
NO/NO <sub>2</sub> /NO <sub>x</sub>	Hourly	Ecotech EC9841
NO/NO <sub>y</sub>	Hourly	Ecotech EC9843
Surface meteorology	Hourly	RM Young anemometer, Vaisala temperature/relative humidity probe currently in operation

#### 4.10 SIP Monitoring Network Requirements

ADEQ, along with other delegated agencies, is responsible for the preparation and submittal of SIPs for nonattainment and maintenance areas in Arizona. ADEQ is responsible for conducting ambient air monitoring for areas not included within Maricopa, Pima, and Pinal Counties or tribal lands. Permitted sources are also responsible for monitoring air quality, if it is included in their air quality permit. Some monitoring sites are specifically named in the area's SIP; other monitoring sites are not specifically named, but are representative of the air quality in that SIP area. Table 4.10-1 lists the ADEQ and source-operated monitors used to determine SIP compliance.

**Table 4.10-1 SIP Network Monitoring Requirements**

Area and County	Pollutant	Classification	ADEQ SIP Sites
Phoenix, Maricopa	CO	Maintenance/Attainment	<i>JLG Supersite</i>
Phoenix, Maricopa	O <sub>3</sub> 1-hr	Maintenance/Attainment	<i>JLG Supersite, Tonto National Monument</i>
Phoenix-Apache Junction, Maricopa and Pinal	O <sub>3</sub> 8-hr	"Basic" Nonattainment	<i>Alamo Lake, JLG Supersite, Queen Valley, Tonto National Monument</i>
Ajo, Pima	PM <sub>10</sub>	Moderate Nonattainment	<i>Ajo</i>
Bullhead City, Mohave	PM <sub>10</sub>	Maintenance/Attainment	<i>Bullhead City (Post Office)</i>
Douglas-Paul Spur, Cochise	PM <sub>10</sub>	Moderate Nonattainment	<i>Douglas Red Cross, Paul Spur Chemical Lime Plant</i>
Hayden, Gila and Pinal	PM <sub>10</sub>	Moderate Nonattainment	<i>Hayden Old Jail</i>
Miami, Gila	PM <sub>10</sub>	Moderate Nonattainment	<i>Freeport McMoRan sites: Golf Course &amp; Miami Ridgeline</i>

Area and County	Pollutant	Classification	ADEQ SIP Sites
Nogales, Santa Cruz	PM <sub>10</sub>	Moderate Nonattainment	<i>Nogales Post Office</i>
Payson, Gila	PM <sub>10</sub>	Maintenance/Attainment	<i>Payson Well Site</i>
Phoenix, Maricopa, and Pinal (Apache Junction portion) Phoenix (Salt River Area)	PM <sub>10</sub>	Serious Nonattainment	<i>JLG Supersite</i>
Rillito, Pima	PM <sub>10</sub>	Moderate Nonattainment	<i>Rillito</i>
Yuma, Yuma	PM <sub>10</sub>	Moderate Nonattainment	Yuma Supersite
Nogales, Santa Cruz	PM <sub>2.5</sub>	Nonattainment	Nogales Post Office
Ajo, Pima	SO <sub>2</sub>	Maintenance/Attainment	No network or commitment
Douglas, Cochise	SO <sub>2</sub>	Maintenance/Attainment	No network or commitment
Hayden, Gila and Pinal	SO <sub>2</sub>	Nonattainment – Primary	<i>ADEQ (SO<sub>2</sub>, MET): Hayden Old Jail</i>  <i>ASARCO (5 SO<sub>2</sub>, 3 MET [no met at Jail or Garfield]): Globe Hwy, Garfield Ave., Montgomery Ranch, Hayden Old Jail, Hayden Junction</i>
Miami, Gila	SO <sub>2</sub>	Maintenance/Attainment	<i>ADEQ: Miami Ridgeline, Miami Jones Ranch, Miami Townsite</i>  <i>Freeport McMoRan (SO<sub>2</sub>, MET) Miami Jones Ranch, Miami Townsite</i>
Morenci, Greenlee	SO <sub>2</sub>	Maintenance/Attainment	No network or commitment
San Manuel, Pima and Pinal	SO <sub>2</sub>	Maintenance/Attainment	No network or commitment
Regional Haze, 12 Class 1 areas	Visibility  Impairing pollutants (VOC, NO <sub>x</sub> , SO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> , PM <sub>2.5</sub> species)	Statewide – IMPROVE monitors	ADEQ Protocol sites: Douglas Red Cross, Organ Pipe National Monument, JLG Supersite, Queen Valley, Saguaro West National Monument, Meadview  NPS / USFS sites: Chiricahua Entrance Station, Greer Water Treatment Plant, Grand Canyon - Indian Gardens, Grand Canyon - Hance Camp, Ike's Backbone, Meadview, Petrified Forest National Park, Pleasant Valley Ranger Station, Saguaro National Park- East, Sycamore Canyon, Tonto National Monument

Note: *Sites in italics are specifically required in SIP*; others meet the general SIP requirement that representative monitoring be conducted (no specific monitoring sites are named in SIP).

#### 4.11 Source Compliance Monitoring Network Requirements

ADEQ requires select major and minor point sources in the state to conduct ambient monitoring for selected pollutants in and around their sources. Some requirements are for prevention of significant deterioration (PSD)

monitoring prior to operation of the facility. Other monitoring requirements are for the duration of the permit or timeframe specified therein. ADEQ activities have been limited to regular performance audits of instruments at some of these sites and review of ambient monitoring data submitted according to the permit requirements. Sources are required to review and validate their data and submit quality assurance documents to ADEQ with the data. Table 4.11-1 lists the monitors operated by ADEQ permitted sources.

Any data submitted to AQS needs to be approved by a PQAQO that meets EPA's QA requirements. Data from the ASARCO and FMMI monitors are being used for regulatory decisions and will need to be submitted to AQS. In spring 2012, ADEQ sent letters to ASARCO and FMMI discussing the PQAQO requirements and suggesting that they meet with ADEQ to discuss options. FMMI representatives met with ADEQ, and in January 2013, ADEQ established monitors at the existing FMMI's Miami Jones Ranch and Miami Townsite sites in the Miami, AZ area.

**Table 4.11-1 Source Compliance Monitoring Network**

Site Name	City	Pollutant(s)	AQS Submittal
Globe Highway	Winkelman	SO <sub>2</sub>	No
ASARCO – Hayden – Garfield Ave.	Hayden	SO <sub>2</sub>	No
ASARCO – Montgomery Ranch	Hayden	SO <sub>2</sub>	No
ASARCO – Hayden Junction	Hayden Junction	SO <sub>2</sub>	No
Hayden Old Jail <sup>1</sup>	Hayden	SO <sub>2</sub>	No
Chemical Lime Plant	Nelson	Meteorology	No
Drake Cement	Sycamore Canyon	PM <sub>10</sub> , PM <sub>2.5</sub> mass and ammonium speciation, Meteorology	No
FMMI - Miami Ridgeline	Miami	PM <sub>10</sub> mass and metals speciation	Yes (PM <sub>10</sub> mass only)
FMMI - Miami Golf Course	Miami	PM <sub>10</sub> mass and metals speciation, collocated	Yes (PM <sub>10</sub> mass only)
FMMI - Miami Jones Ranch <sup>1</sup>	Miami	SO <sub>2</sub>	No
FMMI - Miami Townsite <sup>1</sup>	Miami	SO <sub>2</sub>	No

Site Name	City	Pollutant(s)	AQS Submittal
PCC – Clarkdale NW	Clarkdale	PM <sub>10</sub> mass and metals speciation, Meteorology	No
PCC – Clarkdale SE	Clarkdale	PM <sub>10</sub> mass and metals speciation, Meteorology	No
Carlota Mine – Sanctuary	Globe	PM <sub>10</sub> , H <sub>2</sub> SO <sub>4</sub> , Meteorology	No

<sup>1</sup> ADEQ also operates an SO<sub>2</sub> monitor at this site. The ADEQ data are submitted to AQS while the facility data are not.

#### 4.12 Class 1 Visibility Network

As stated previously, visibility monitoring networks track impairment in specified national parks and wilderness areas called Class 1 areas based on designations made by the 1977 CAA Amendments. The evaluations, performed by the USFS and NPS, reviewed the wilderness areas of parks and national forests which were designated as wilderness before 1977, were more than 6,000 acres in size, and had visual air quality as an important resource for visitors. Of the 156 Class 1 areas designated across the nation, 12 are located in Arizona.

For the Class 1 area designations, EPA initiated a nationally operated monitoring network in 1987 called the Interagency Monitoring of PROtected Visual Environments (IMPROVE) program. The purpose of this network is to characterize broad regional trends in visibility conditions using monitoring data collected in or near Class 1 areas across the United States. Originally, the national IMPROVE network was made up of approximately 30 sites at Class 1 areas. During 1999-2000 the number of sites increased to approximately 110. ADEQ, Pima County, and federal land managers at Arizona's Class 1 areas cooperatively operate the visibility monitoring network in Arizona. The current network is described in Table 4.12-1. In addition to the Class 1 IMPROVE monitors listed in Table 4.12-1, ADEQ also operates one IMPROVE monitor at the Douglas Red Cross site, and two collocated IMPROVE monitors at the JLG Supersite. The JLG Supersite serves as an urban IMPROVE monitor and has been used to provide comparative analysis with data from the CSN network. The Douglas Red Cross site may serve multiple objectives. In 2012, a review of the data from the Douglas Red Cross site was prepared by Air Resource Specialists and provided to ADEQ. These data will be used to evaluate if this site should be continued or if it could be better utilized at another location. See the IMPROVE map in Appendix B for a spatial representation of the IMPROVE monitoring network and Class 1 areas within the state of Arizona.

**Table 4.12-1 2014 Arizona Class 1 Visibility Monitoring Network**

Geographic Area Represented	Monitoring Location
Background	Meadview, Organ Pipe National Monument

Chiricahua National Monument, Chiricahua Wilderness Area and Galiuro USFS Wilderness	Chiricahua Entrance Station
Grand Canyon National Park	Hance Camp
Mazatzal and Pine Mountain USFS Wilderness	Ike's Backbone
Mount Baldy	Greer Water Treatment Plant
Petrified Forest National Park	Petrified Forest
Saguaro National Park	East Unit and West Unit
Sierra Ancha USFS Wilderness	Pleasant Valley Ranger Station
Superstition USFS Wilderness	Tonto National Monument, Queen Valley
Sycamore Canyon USFS Wilderness	Sycamore Canyon (Camp Raymond)

#### 4.13 Urban Haze Monitoring Network

ADEQ began studying the nature and causes of urban haze by conducting studies during the winter of 1989-90 in Phoenix and during the winter of 1992-93 in Tucson. These studies recommended long-term, year-round monitoring of visibility in both areas. In 1993, ADEQ began deploying visibility monitoring equipment in Phoenix and Tucson. Executive Order 2000-3 directed by the Governor's Brown Cloud Summit was to establish options for a visibility standard or other method to track progress in improving visibility in the Phoenix area. The Summit concluded that a daily visibility index for the metropolitan area should have its characteristics defined through a public survey process. This process called for a representative cross-section of residents of Area A (as described in [House Bill 2538](#), roughly the Phoenix metropolitan area), to determine what visual air qualities are desirable, what visual range is acceptable, and how often the combination of acceptable visual range and air quality is preferred. Through a series of meetings in 2002 and early 2003, ADEQ and the Visibility Index Oversight Committee designed the visibility survey, selected a contractor to conduct the survey, oversaw the completion of the field portion of the survey, and defined a recommended visibility index. The Visibility Index Oversight Committee [Final Report](#) was issued in early 2003 summarizing the visibility index.

Equipment currently used to evaluate urban visibility includes transmissometers, nephelometers, and digital camera systems. The Phoenix urban haze network consists of a transmissometer for measuring light extinction along a fixed path length of four and a half kilometers, three nephelometers for measuring light scattering, and five digital camera systems to record visual characteristics of the urban area.

The Tucson urban haze network was shut down in September 2010. In early 2011, a draft summary report was written which summarizes the nephelometer and transmissometer data that were collected since 1997. The report provides summaries and trends in urban visibility data, as well as meteorological data summaries in the form of wind roses. This report is meant to serve as a final data summary for the Tucson Urban Haze network. Information from this report may be utilized in the future if further modifications are needed to the Urban Haze Network.

The current Phoenix urban haze sites (and their status) are described in Table 4.13-1. ADEQ continues to evaluate the Urban Haze program. The high-resolution images from these cameras can be viewed online at <http://www.phoenixvis.net>.

**Table 4.13-1 Urban Haze Monitoring Network**

Site Name	Parameter(s) Measured
<b>Phoenix Network – Operational</b>	
ADEQ Building	High Resolution Digital Camera
Banner Mesa Medical Center	High Resolution Digital Camera
Dysart	Light Scattering (Bscat) Nephelometer
Estrella	Light Scattering (Bscat) Nephelometer
Estrella Mountain Community College	High Resolution Digital Cameras
JLG Supersite	IMPROVE
North Mountain Summit	2 High Resolution Digital Cameras
Phoenix Transmissometer (Phoenix Baptist Hospital to Holiday Inn Hotel)	Transmissometer (Bext)
Vehicle Emissions Laboratory	Light Scattering (Bscat) Nephelometer

#### **4.14 Meteorology Monitoring Network**

ADEQ operates meteorological equipment at selected sites throughout its network; see Table 4.14-1. Some sites were originally established because other meteorology networks (NWS, AZMet, etc.) were not located near ADEQ's ambient air quality sites. As recommended in ADEQ's Five-Year Network Assessment, ADEQ has begun to expand the meteorology monitoring network and standardize the meteorological measurements so that all sites collect measurements of wind speed, wind direction, temperature, and relative humidity. Currently, Alamo is the only meteorological site that does not have the full suite of meteorological instruments. A temperature and/or RH probe may be added to this site within the next year to compliment the current measurements of wind speed and wind direction.

Except for the items mentioned above, ADEQ does not have any specific plans to make changes to the meteorological network, but may add additional meteorological equipment at existing SLAMS sites as resources permit. At this time, ADEQ plans to only submit meteorological data that are required by 40 CFR Part 58.16 to EPA's AQS database. If future resources allow additional meteorological data submittals to the AQS database,

ADEQ may do so on a voluntary basis. A spatial representation of ADEQ's meteorological monitoring network can be found in Appendix B.

**Table 4.14-1 Meteorology Monitoring Network**

Site	Temp.	Temp. Lapse Rate System	Relative Humidity	Wind	Total Horizontal Solar Radiation	Ultraviolet Solar Radiation	Report to AQS	Comments
Alamo Lake	X		X	X			No	
Ajo	X		X	X			No	
Douglas Red Cross	X		X	X			No	
Globe Highway	X		X	X			No	
Hayden Old Jail	X		X	X			No	
JLG Supersite	X		X	X			Yes	For NCore / PAMS support
Miami Golf Course	X		X	X			No	
Nogales Post Office	X		X	X			No	
Paul Spur Chemical Lime Plant	X		X	X			No	
Payson Well Site	X		X	X			No	
Queen Valley	X		X	X			Yes	For PAMS support
Rillito	X		X	X			No	
Vehicle Emissions	X	X	X	X	X	X	Solar only	For PAMS support

Site	Temp.	Temp. Lapse Rate System	Relative Humidity	Wind	Total Horizontal Solar Radiation	Ultraviolet Solar Radiation	Report to AQS	Comments
Laboratory								
Yuma Supersite	X		X	X			No	

## 5.0 Quality Assurance

To ensure high quality data are produced that meet the users' needs, ADEQ sustains a "quality system" as required by EPA. The U.S. EPA primarily specifies the quality assurance (QA) requirements for operating SLAMS, SPM, CSN, NCore, NATTS, PAMS, and PSD air monitors in *40 CFR Part 58 Appendix A*, the *Quality Assurance Handbook for Air Pollution Measurement Systems: Volume II: Ambient Air Quality Monitoring Program*, technical assurance documents (TADs), and other supporting guidance documents. In response, ADEQ develops quality assurance plans for air monitoring networks, which provide detailed information regarding the specifics of each air monitoring network and how data will be managed. Components of ADEQ's quality system include, but are not limited to:

- ADEQ being established as the primary quality assurance organization (PQAO) for the criteria and non-criteria pollutant air monitoring data collected and reported to AQS.
- An agency-level Quality Management Plan (QMP), which is an "umbrella" document that details, in broad terms, the strategies used to carry out QA/QC in environmental data collection activities.
- Division-level quality assurance program plans (QAPPs) with supporting standard operating procedures (SOPs) for each major, ongoing air monitoring network. Each QAPP describes:
  - Health effects of a specific pollutant and
  - Purpose for operating the monitoring station or network
  - Data quality objectives (DQOs) and/or measurement quality objectives (MQO) along with data quality indicators (DQIs) that specify the amount of tolerable error in the data using statistical metrics
    - ADEQ's precision and bias results from QC checks such as verifications and performance evaluation (PE) audits apply to ADEQ's data only while some metrics obtained by the EPA National Performance Evaluation Program (NPEP) apply to a specific network at the nationwide level.
  - Variety of regularly occurring quality control (QC) checks along with pass/fail criteria
  - Types of QA assessments and reports needed from the network,
  - Data validation processes and data reporting requirements,

- Additional items such as preventative measures taken to reduce data loss, corrective actions, and document control and management.

In addition to QAPP requirements and/or recommendations from the U.S. EPA QA Office and/or OAQPS, the EPA Region 9 QA Office provides additional QAPP requirements for agencies under their jurisdiction that distinguish between the scope of a “program” versus “project” plan. As per EPA Region 9 guidance:

- “Program Plans” describe major air monitoring networks that are essentially “permanent” with no known end dates, and
- “Project Plans” describe the specifications for special air monitoring projects of limited in scope and duration.

Per EPA Region 9 guidance, a draft comprehensive program plan was submitted to EPA Region 9 in November 2001, but this document was never approved. This document provided a broad overview of all air monitoring programs AAS operates. This document is being replaced by individual program plans, which provide more details for each major air monitoring program, or network.

All environmental data operations (EDOs) contain some level of uncertainty or error. The total measure of uncertainty is the sum of measurement and population uncertainty. Measurement uncertainty relates to how accurately a pollutant’s concentration was measured, or sampled, and occurs during the data collection process. The measurement uncertainty among ADEQ stations monitoring for the same pollutant is expected to be reasonably homogeneous because such stations operate under a set of common factors needed to effectively operate as a PQAO. Common factors typically include:

- Stations being operated by a common team of field operators and according to a common set of field standard operating procedures (SOPs),
- Common calibration facilities and standards,
- Use of a common quality assurance program/project plan (QAPPs),
- Oversight by a common quality assurance organization, and
- Support by a common management, laboratory, or headquarters.

Population uncertainty relates to how well the measurements of a pollutant from a particular air monitoring station represent the population deemed at risk. Population uncertainty is kept within tolerable limits by establishing monitoring sites at the best possible location to achieve the monitoring objective. The annual network review helps to ensure air monitoring stations remain sited correctly and target the intended population.

### **5.1 ADEQ Quality Assurance Program and Project Plans**

EPA requires PQAOs to update their QAPPs every five years so they remain current. For specific QA/QC information regarding pollutant measurements, please reference the appropriate QAPP for this information. ADEQ plans on using the pollutant-specific QAPPs for each parameter measured at the NCore station.

For criteria pollutants, ADEQ has the following QAPPs in-place:

- A Final Pb QAPP that was approved by Region 9 in January 2013.
- A Final PM QAPP that was approved by Region 9 in August 2013.
  - The EPA produces a QAPP for the Chemical Speciation Network (CSN) PM<sub>2.5</sub> monitoring program and ADEQ plans on adding any supplemental PM speciation air monitoring information as an addendum in 2015.
- A Final O<sub>3</sub> QAPP that was approved by EPA Region 9 in December 2013.
- A Final SO<sub>2</sub>QAPP that received condition approval by EPA Region 9 in December 2013. ADEQ has been addressing EPA's comments on this document and the revised Final QAPP will be submitted for approval in May 2014.
- A Final Draft NO<sub>2</sub> QAPP was submitted to EPA Region 9 in March 2014 and approval is outstanding.
- A Final Draft CO QAPP is near completion and will be submitted to EPA Region 9 in May or June 2014.

For non-criteria pollutants, ADEQ has the following QAPPs in-place:

- A Final National Air Toxics Trends Stations (NATTS), (Urban) Air Toxics Monitoring Program (ATMP), & Photochemical Assessment Monitoring Stations (PAMS) QAPP that was approved EPA Region 9 in February 2008.
  - ADEQ is in the process of updating this QAPP and the plan is to separate it into two QAPPs: one for the air toxics network, and one for the PAMS network. ADEQ plan on submitting these revised QAPPs to EPA Region 9 in late 2014 and/or early 2015.
- ADEQ plans on developing a QAPP for the meteorological network and submit it for approval to EPA Region 9 in 2014.

For special projects, ADEQ does not have any active project plans in-place at this time.

## 5.2 EPA QA Reports and Network Performance

Periodically, EPA publishes reports for some of the criteria pollutant networks, and potentially non-criteria pollutant networks, that rate and/or rank monitoring organizations' performance over a three year period. The QA Team, as well as other personnel in DM&QA, review these reports to gauge how well our networks are performing with those across the nation. If needed, corrective actions are taken to ensure data of the highest quality possible are collected. ADEQ is monitoring the PM<sub>2.5</sub> network to see how it performs nationally based on the results published in the most recent EPA report, the *3-Year Quality Assurance Report Calendar Years 2005, 2006, and 2007 The SLAMS PM2.5 Ambient Air Monitoring Program (February 2009)*.

## Appendix A – Definitions and Abbreviations

AAAD	Air Assessment Ambient Database
AAS	Air Assessment Section
AADT	Annual Average Daily Traffic
ADEQ	Arizona Department of Environmental Quality
AFL	Air Filter Lab
AMU	Air Monitoring Unit
ASARCO	American Smelting and Refining Company, LLC
ATEC	Atmospheric Technologies, Inc.
Auto GC/MS	Automated Gas Chromatograph/Mass Spectrometer
AQS	Air Quality System (EPA database)
BAM	Beta Attenuation Monitor
Bext	Total Light Extinction
Bscat	Light Scattering
CAA	Clean Air Act
CBSA	Core Based Statistical Area
CEDES	Commission for Ecology and Sustainable Development
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CSN	Chemical Speciation Network
DCS	Data Collection System
DM&QA	Data Management & Quality Assurance Unit
DQO	Data Quality Objective
E-BAM	Environment Proof - Beta Attenuation Monitor
EDO	Environmental Data Operation
EPA	Environmental Protection Agency

ERG	Eastern Research Group, Inc.
FEM	Federal Equivalent Method
FMMI	Freeport McMoRan Copper and Gold Inc.
FRM	Federal Reference Method
HAP	Hazardous Air Pollutant
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
IMPROVE	Interagency <u>M</u> onitoring of <u>P</u> rotected <u>V</u> isual <u>E</u> nvironments
MCAQD	Maricopa County Air Quality Department
MET	Meteorological Measurements (wind, temperature, relative humidity)
MQO	Measurement Quality Objective
MSA	Metropolitan Statistical Area
$\mu\text{g}/\text{m}^3$	Micrograms per Cubic Meter
NAAQS	National Ambient Air Quality Standard
NAREL	National Air and Radiation Environmental Laboratory
NATA	National Air Toxics Assessment
NATTS	National Air Toxics Trends Station
NCORE	National Core multipollutant monitoring stations
NIST	National Institute of Standards and Technology
NM	National Monument
$\text{NO}_2$	Nitrogen Dioxide
$\text{NO}_x$	Nitrogen oxides
$\text{NO}_y$	Reactive Nitrogen Oxides
NPAP	National Performance Audit Program
NPEP	National Performance Evaluation Program
NPS	National Park Service
NWS	National Weather Service

O <sub>3</sub>	Ozone
OAQPS	Office of Air Quality Planning and Standards
PAHs	Polycyclic Aromatic Hydrocarbons
PAMS	Photochemical Assessment Monitoring Station
Pb	Lead
PCAQCD	Pinal County Air Quality Control District
PDEQ	Pima County Department of Environmental Quality
PE	Performance Evaluation
PEP	Performance Evaluation Program
PM	Particulate Matter
PM <sub>10</sub>	Particulate Matter ≤ 10 microns
PM <sub>coarse</sub>	Coarse Particulate Matter between 2.5 to 10 micrometers aerodynamic diameter, may also be denoted as PM <sub>10-2.5</sub>
PM <sub>2.5</sub>	Particulate Matter ≤ 2.5 microns
POC	Parameter Occurrence Code
ppb	Parts Per Billion
ppm	Parts Per Million
PQAO	Primary Quality Assurance Organization
PSD	Prevention of Significant Deterioration
PWEI	Populated Weighted Emissions Index
QA	Quality Assurance
QAPP	Quality Assurance Program Plan
QC	Quality Control
QMP	Quality Management Plan
RASS	Radar Acoustic Sounding System
SEMARNAT	Secretariat of Environment and Natural Resources
SIP	State Implementation Plan

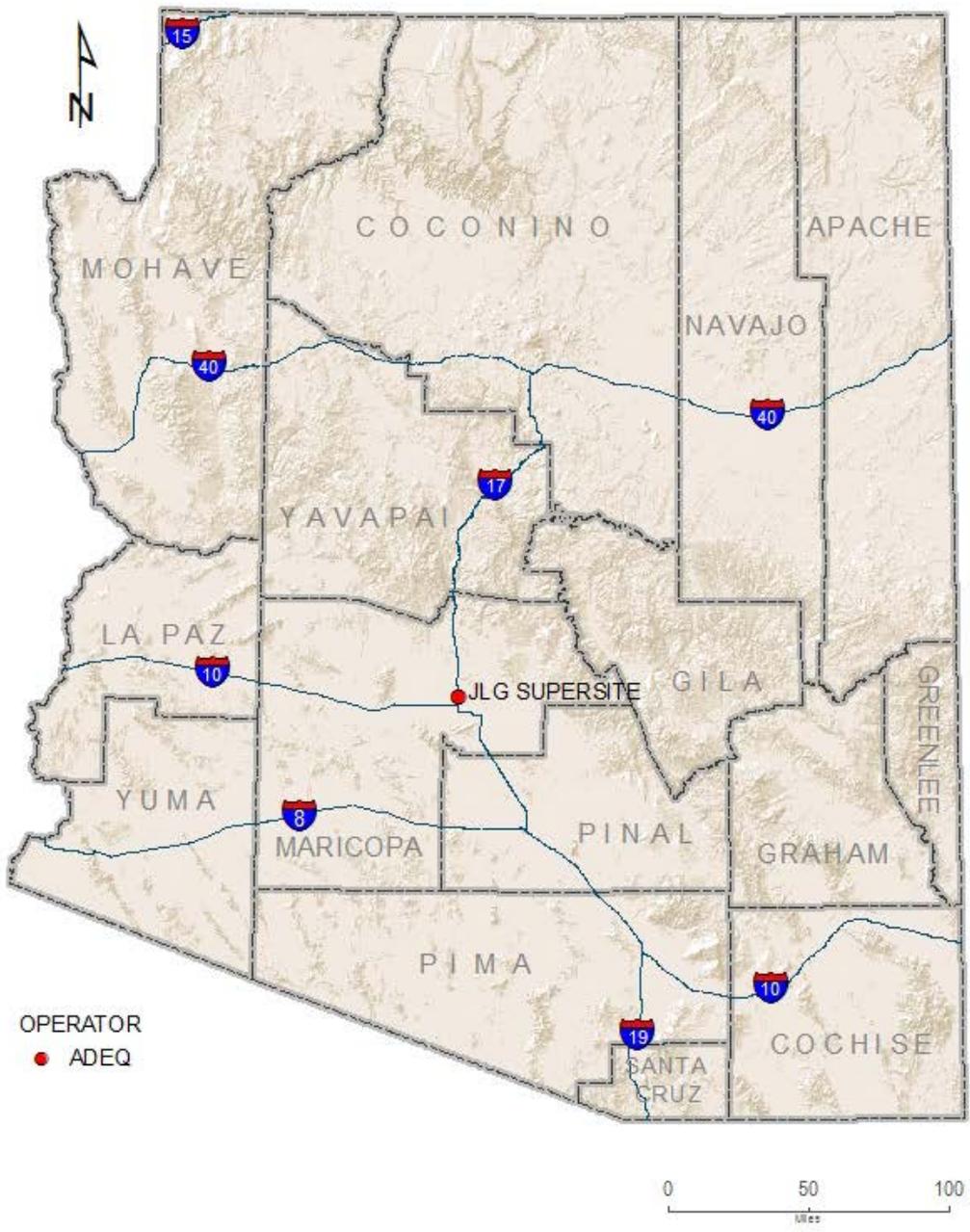
SLAMS	State and Local Air Monitoring Stations
SO <sub>2</sub>	Sulfur Dioxide
SOP	Standard Operating Procedure
SPM	Special Purpose Monitor
SRO	Southern Regional Office
STN	Speciation Trends Network
TAD	Technical Assistance Document
TEOM	Tapered Element Oscillating Microbalance
TSA	Technical System Audit
USFS	United States Forest Service
VOC	Volatile Organic Compound

## **Appendix B – Network Maps**

There are ten maps in this section illustrating the location of ADEQ and Source monitors:

- CO Network
- NO<sub>2</sub> Network
- O<sub>3</sub> Network
- SO<sub>2</sub> Network
- Pb Network
- PM<sub>10</sub> Network
- PM<sub>2.5</sub> Network
- Meteorological Network
- Urban Visibility Network
- IMPROVE Network & Class I Wilderness areas

# CO Network

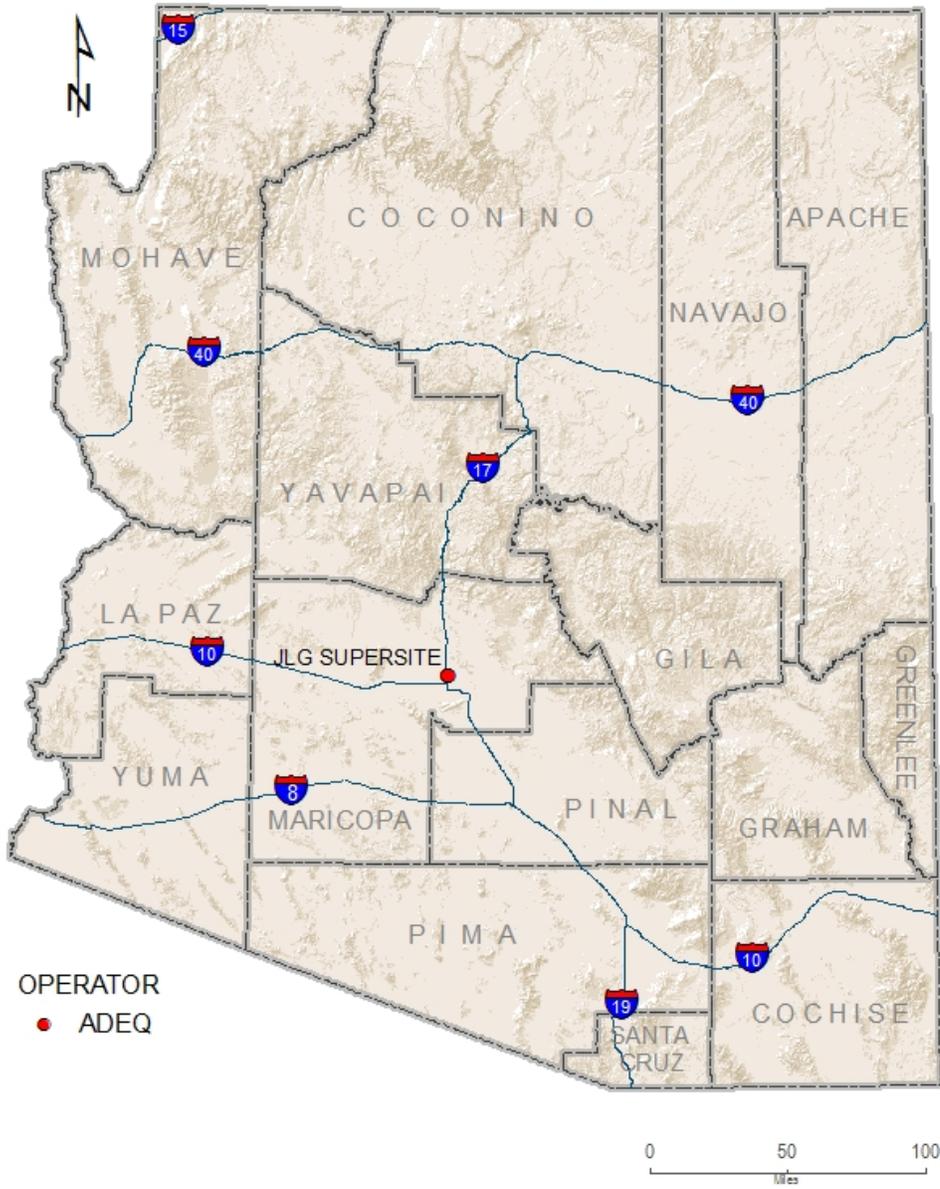


Source: AAAD



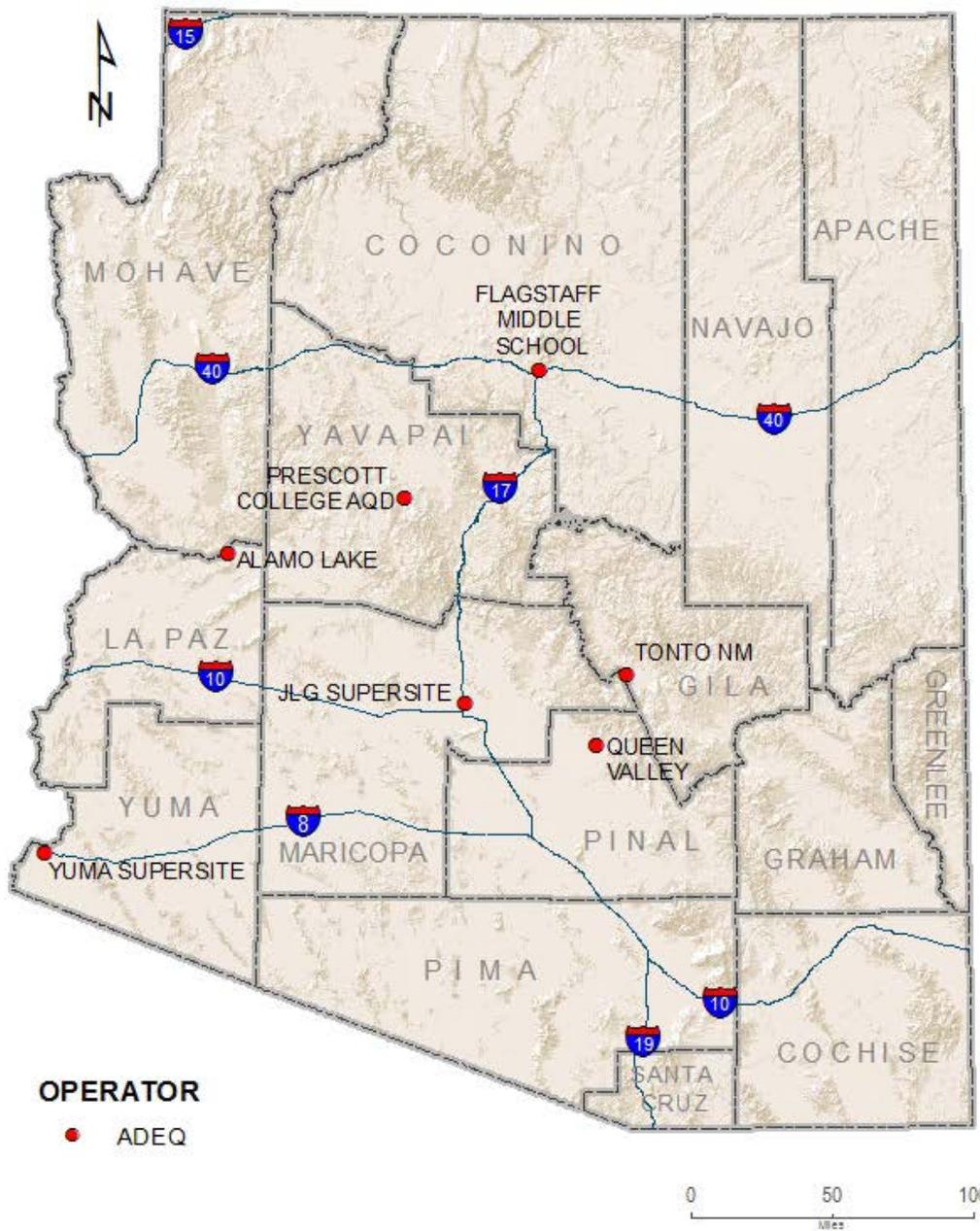
April 10, 2014 Author - N Caroli  
edited: DJ Crouse

# NO<sub>2</sub> Network



Source: AAAD  
**ADEQ**  
Arizona Department of Environmental Quality  
Jackie Brown, Governor  
Henry W. Hansen, Director  
April 10, 2014 Author - N Caroli  
edited: DJ Crouse

# O<sub>3</sub> Network

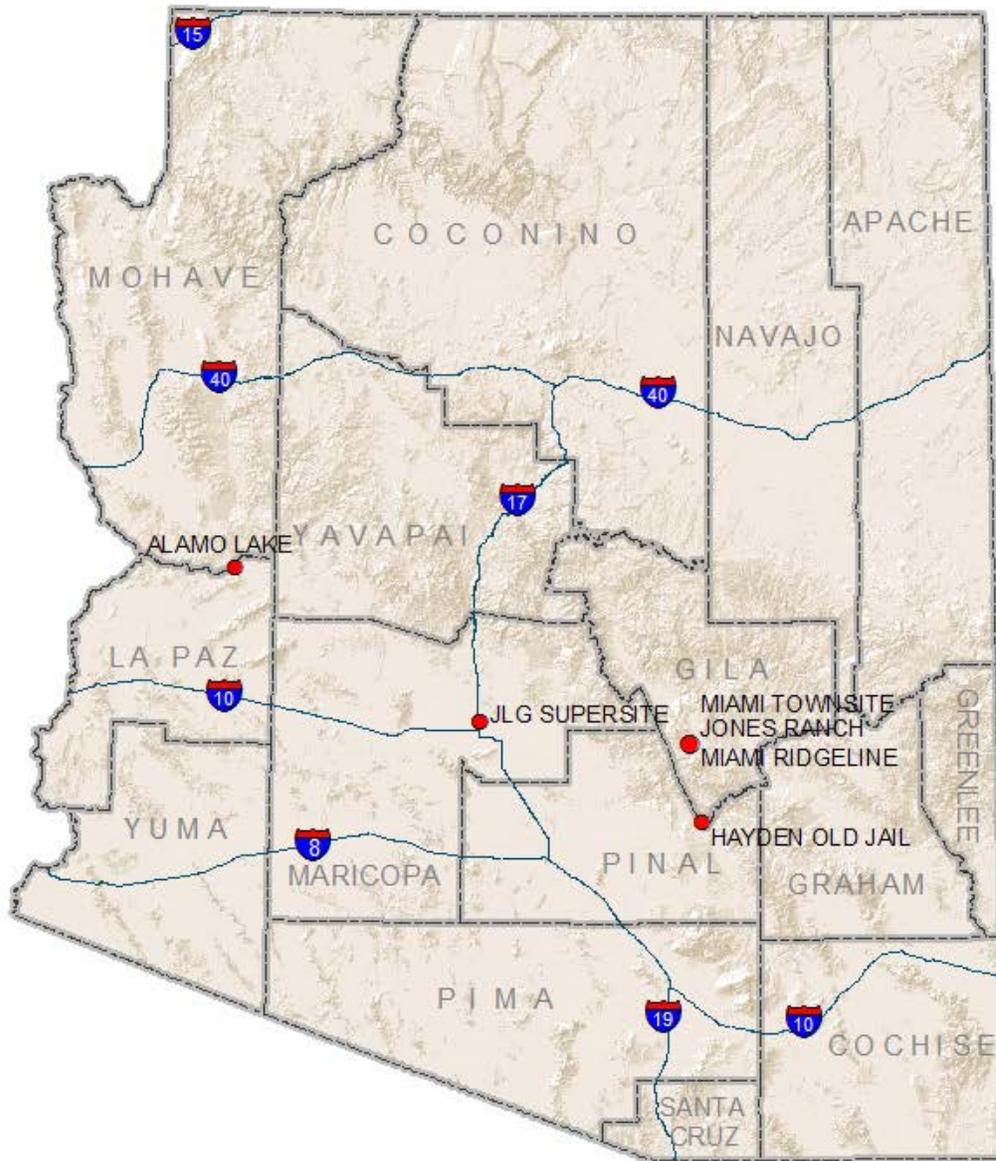


Source: AAAD



April 10, 2014 Author - N Caroli  
edited: DJ Crouse

# SO<sub>2</sub> Network



- OPERATOR
- ADEQ

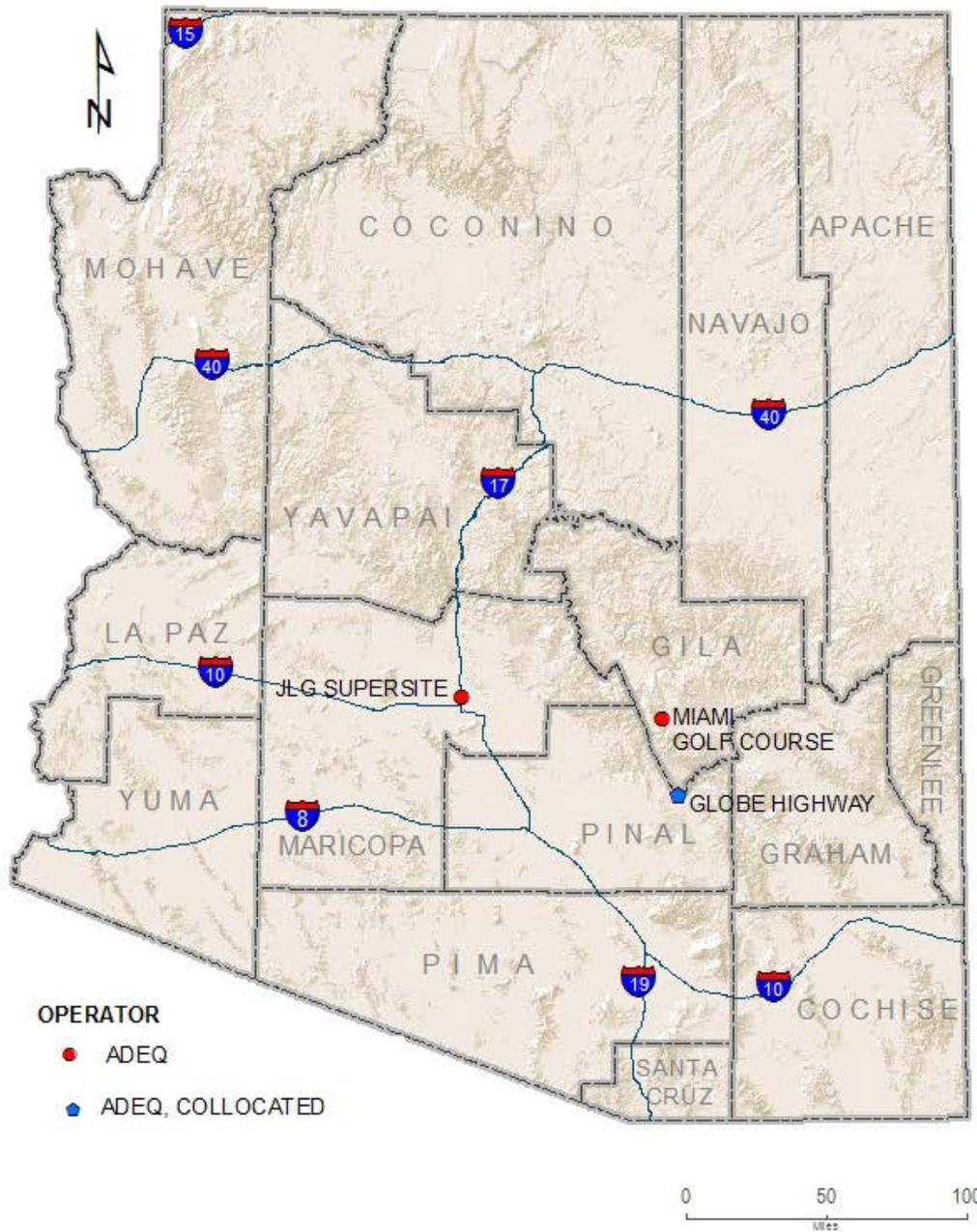
Source: AAAD



Justin K. Bowers, Governor  
Henry B. Harwin, Director

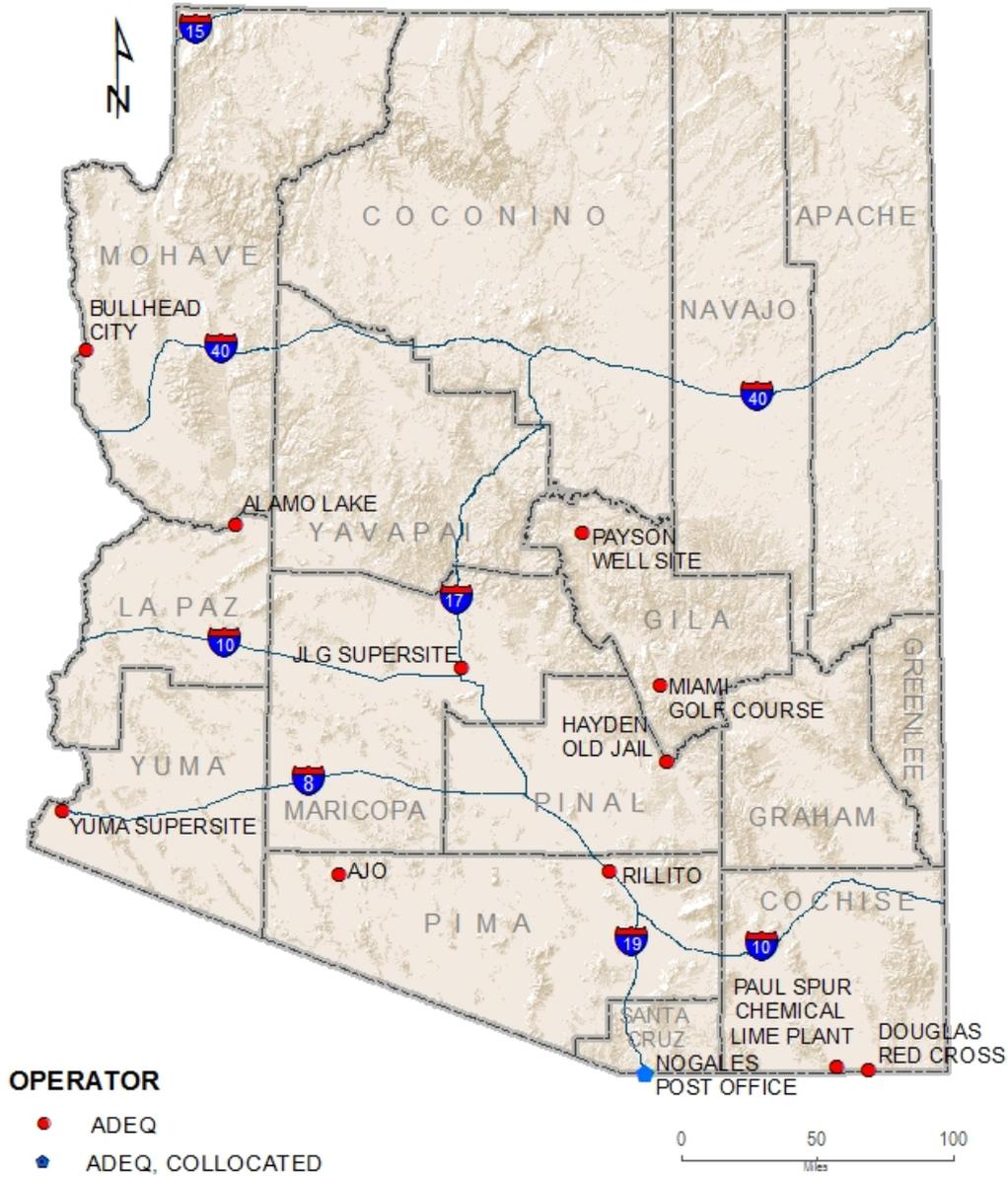
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# P b Network



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**ADEQ**  
Arizona Department  
of Environmental Quality  
L. Rick Warren, Governor  
Helen R. Connor, Director  
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# P M<sub>10</sub> Network



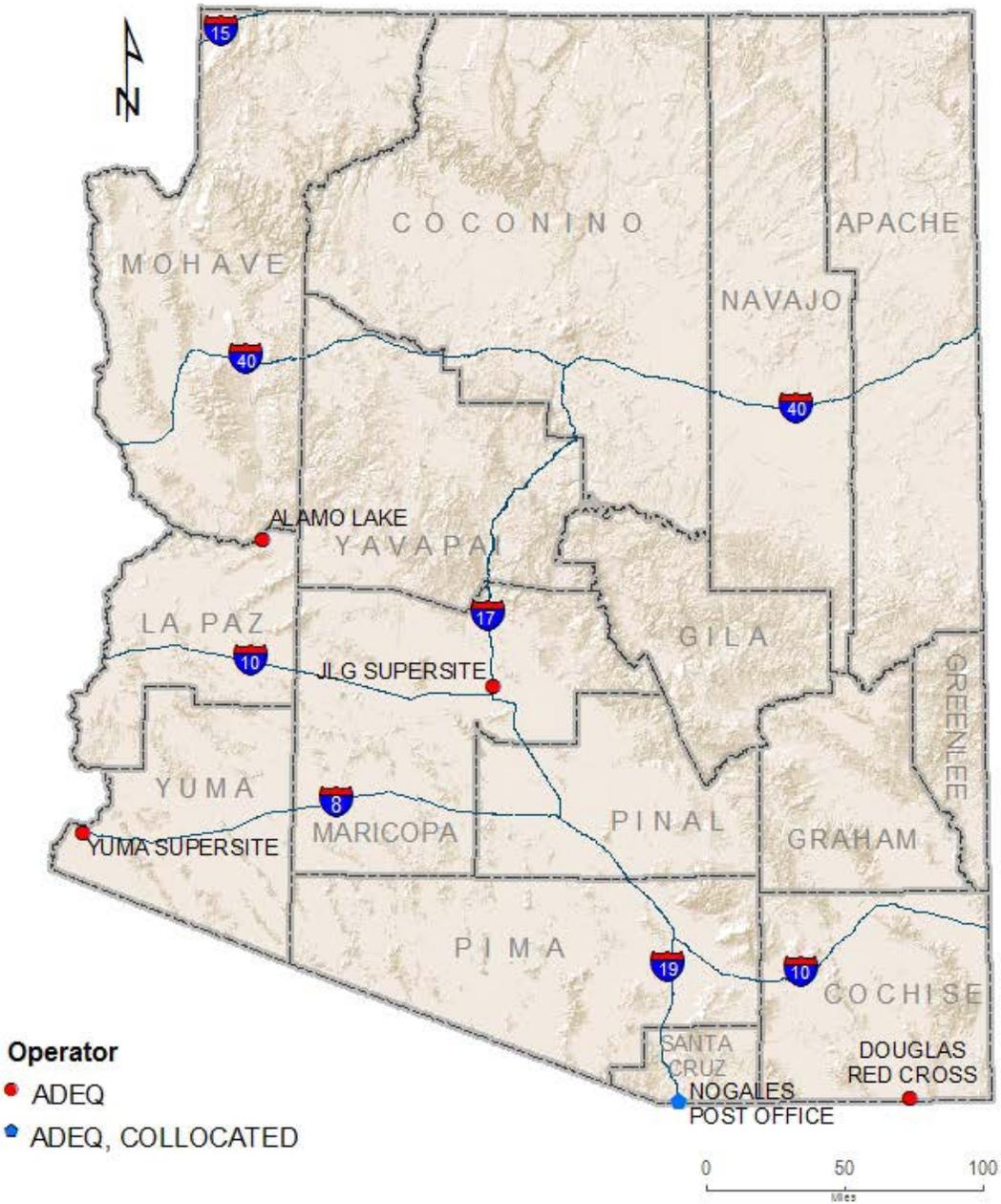
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# P M <sub>2.5</sub> Network

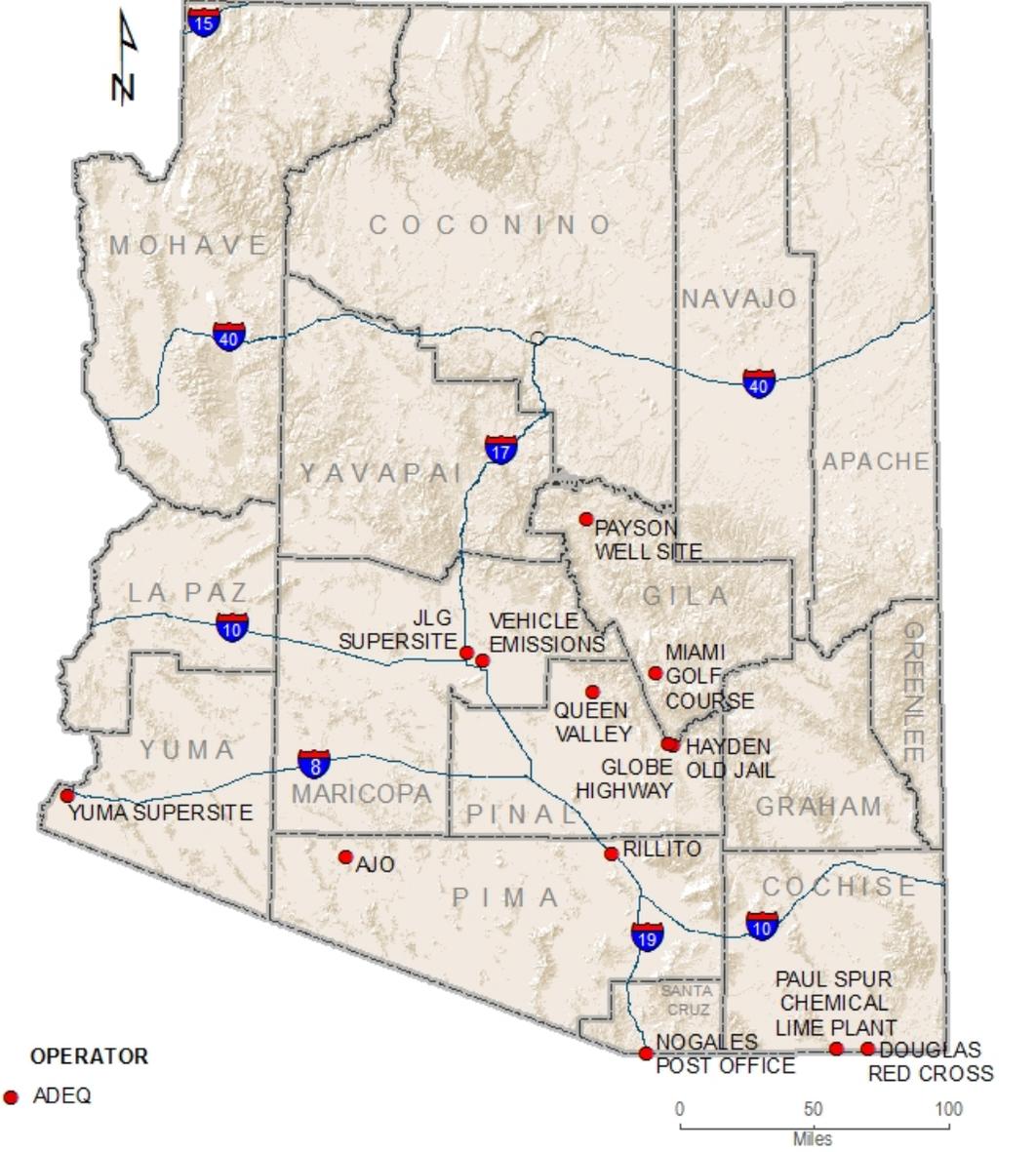


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# M e t e o r o l o g i c a l   N e t w o r k



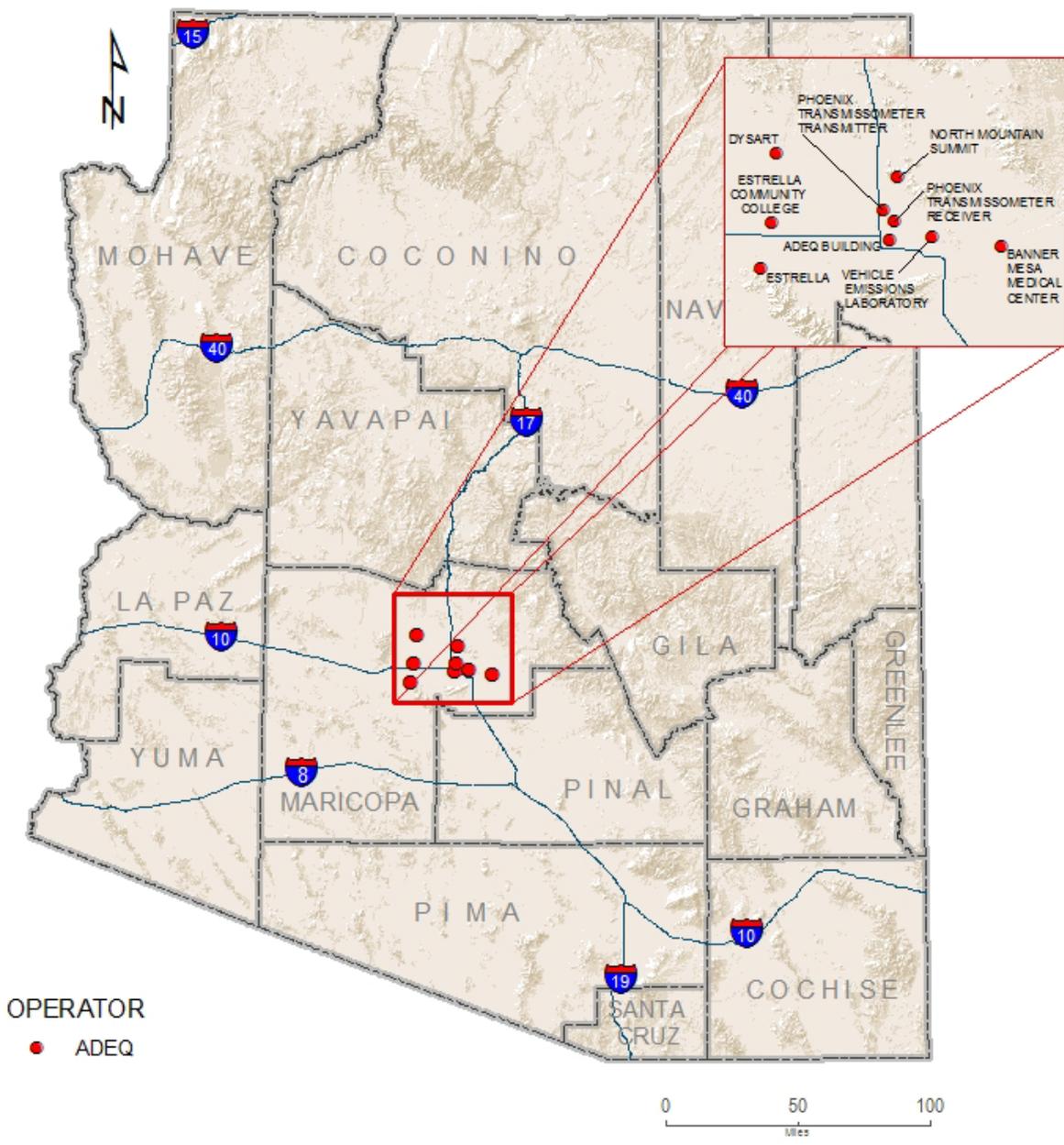
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**ADEQ**  
Arizona Department  
of Environmental Quality

Julie K. Brown, Governor  
Henry R. Danz, Director

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# Urban Visibility Network



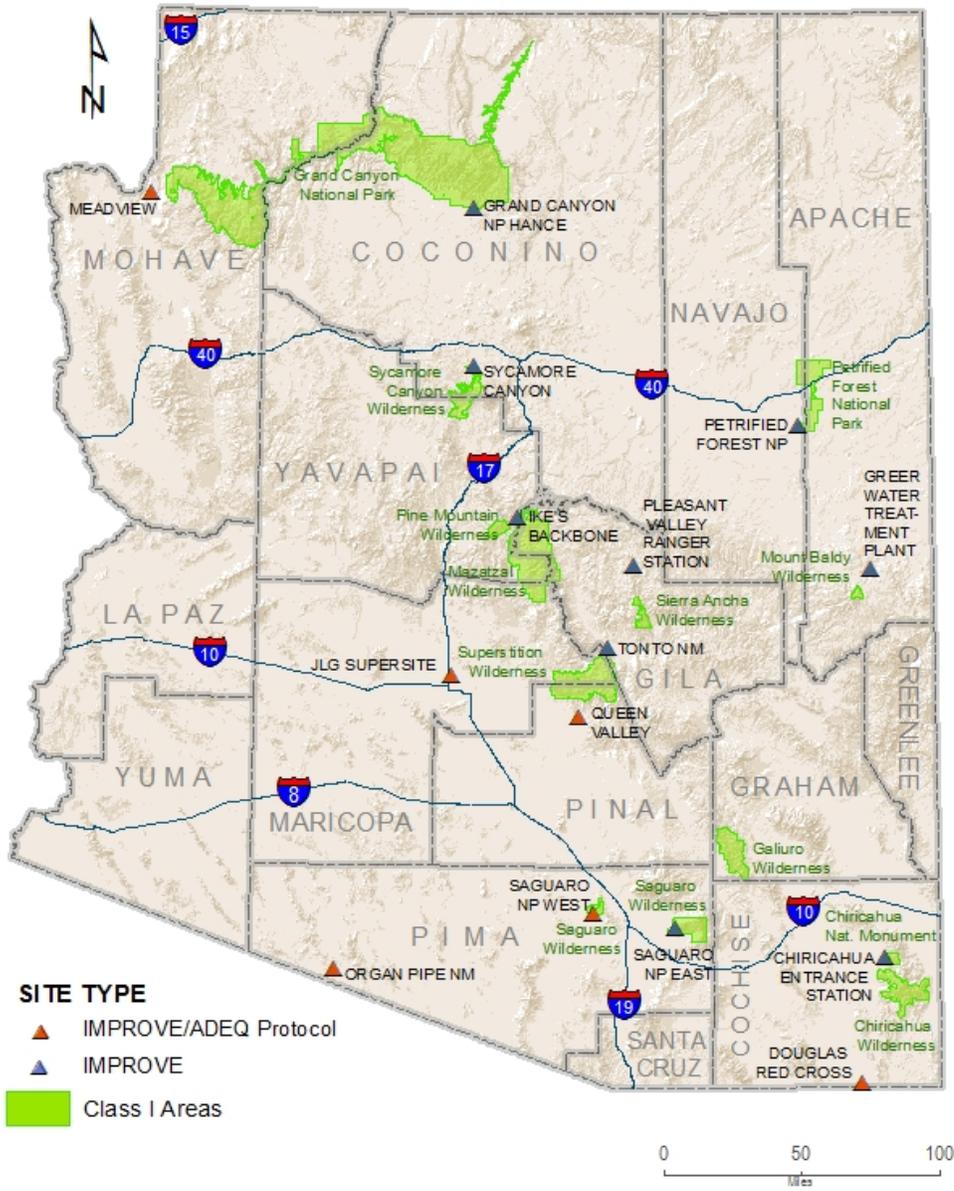
URBAN VISIBILITY NETWORK			
SITE	MONITOR TYPE	SITE	MONITOR TYPE
ADEQ BUILDING	CAMERA	NORTH MOUNTAIN SUMMIT	CAMERA
BANNER MESA MEDICAL CENTER	CAMERA	PHOENIX TRANSMISSOMETER RECEIVER	TRANSMISSOMETER
DYSART	NEPHELOMETER	PHOENIX TRANSMISSOMETER TRANSMITTER	TRANSMISSOMETER
ESTRELLA	NEPHELOMETER	VEHICLE EMISSIONS LABORATORY	NEPHELOMETER
ESTRELLA COMMUNITY COLLEGE	CAMERA		

Source: AAAD



April 14, 2014 Author - N Caroli  
edited: DJ Crouse

# IMPROVE Network & Class I Areas



James A. Bowers, Governor  
 Mary H. Darnell, Director  
 April 10, 2014 Author - N Caroli  
 edited: DJ Crouse

## Appendix C – Current Monitors by Program or Network

This appendix contains detailed information about monitors that are operated by ADEQ, or monitors that ADEQ has a strong association with (e.g. IMPROVE monitors). Only those monitors that are in operation at the time that this network plan was created are included in this appendix. Monitors that are proposed to be installed or those that were discontinued prior to the creation of this network plan are not included in this appendix. Since individual pollutants or networks have specific monitoring or siting criteria, this appendix was created so that siting criteria can be easily identified and evaluated throughout a program or network. See Appendix D for detailed information on specific monitoring sites.

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## Definitions for Appendix C – Current Monitors by Program or Network

Local Site Name	Official name for the site as written in ADEQ's AZURITE / AAAD database
Pollutant (POC)	The pollutant(s) or parameter(s) being collected or measured at the site and the POC is the Primary Occurrence Code for the instrument, as it is in ADEQ's AZURITE / AAAD
Parameter code	The AQS code representing a specific pollutant being measured or monitored
Basic monitoring objective	Purpose of monitoring for the parameter at the site (Public Information, NAAQS Comparison, or Research)
Site type(s)	A brief description of the intended purpose of the monitor's measurements (Extreme Downwind, Highest Concentration, Max Ozone Concentration, Max Precursor Impact, Population Exposure, Source Oriented, Upwind Background, General / Background, Regional Transport, Welfare-Related Impacts, Quality Assurance, or Other)
Monitor type(s)	The associated monitoring network for the monitor (IMPROVE, Index Site, Industrial, NATTS, NCore, Non-EPA Federal, PAMS, Proposed NCore, QA Collocated, SLAMS, Special Purpose, Supplemental Speciation, Trends Speciation, Tribal Monitor, Unofficial PAMS)
Instrument manufacturer and model	The specific make and model of the monitor or instrument used in the network
Method code	The AQS code representing the particular method for collecting samples of the specified instrument
FRM/FEM/ARM/other	Denotes if the instrument is a Federal Reference Method, Federal Equivalency Method, Approved Regional Method (for continuous PM <sub>2.5</sub> only), or other according to the Federal Registry
Collecting Agency	Name of agency collecting data
Analytical Lab (weight, toxics, other)	Name of laboratory performing sample analysis
Reporting Agency	Name of agency reporting the data
Spatial scale (micro, neighborhood)	Area represented by an air quality monitor (microscale: 0 – 100 m, middle scale: 0.1 – 0.5 km, neighborhood: 0.5 – 4 km, urban: 4 – 50 km, regional: ~50 – 500 km, or national/global)
Monitoring start date (MM/DD/YYYY)	Date that the monitor was started at the site
Current sampling frequency (1:3, continuous)	Frequency the instrument collects samples or measurements (e.g. hourly, daily, 1:3, 1:6, etc.)
Calculated sampling frequency (1:3 / 1:1)	Theoretical frequency for particular matter instrument based on Ratio to Standard Figure in 40CFR Part 58.12 (e.g. hourly, daily, 1:3, 1:6)
Sampling season (MM/DD-MM/DD)	Period that the instrument collects samples or measurements throughout a given year (expressed as a range of months)
Probe height (meters)	Distance the probe is from the ground in meters (O <sub>3</sub> and SO <sub>2</sub> probes must be between 2 and 15 meters; others pollutants must be between 2 to 7 meters; meteorology typically 2 or 10 meters)
Distance from supporting structure (meters)	For rooftop probe(s) only. The separation distance is in reference to walls, parapets, or penthouses located on roof
Distance from obstructions on roof (meters)	Distance the instrument inlet is from the closest obstruction on the roof in meters (probes and inlets must be at least 1 meter from obstructions)
Distance from obstructions not on roof (meters)	Distance the instrument inlet is from the closest obstruction not on the roof in meters (probes and inlets must be at least 1 meter from obstructions)
Distance from trees (meters)	Distance the instrument inlet is from the nearest tree in meters (must be a

	minimum of 10 meters from drip line)
Obstruction Height above Probe (meters)	Height the obstruction is above the inlet (distance from the obstruction to the inlet must be at least 2x the height that the obstacle protrudes above the inlet). Trees can be considered obstructions depending on density of foliage, therefore the same obstruction requirements apply to trees
Tree Height above Probe (meters)	Height the tree is above the inlet. Trees that are within 10 meters of inlet may not cause issue if the tree height is at or below the inlet height. Furthermore, as trees grow they may become obstructions, therefore it is important to capture the height of trees
Distance to furnace or incinerator flue (meters)	Distance the instrument inlet is from the nearest furnace or incinerator flue in meters (for Pb and SO <sub>2</sub> ; designed to avoid undue influences from minor sources)
Distance between collocated monitors (meters)	Distance between the centers of collocated instruments in meters (must be between 1 and 4 meters)
Unrestricted airflow (degrees)	Angular measure (in degrees) of the area around an instrument that is free from obstructions (minimum of 180°)
Restricted airflow (degrees)	Direction the airflow is restricted in degrees as they are associated with the cardinal directions (i.e. 90° = E) (must not be in the direction of the prevailing winds)
Prevailing wind direction (degrees)	Direction the wind predominately comes from in degrees during the season of greatest pollutant concentration. Used to determine if restricted airflow is in the direction of the prevailing wind.
Probe material for reactive gases	Type of material probe is made of (SO <sub>2</sub> , NO <sub>2</sub> , O <sub>3</sub> must have FEP Teflon or borosilicate glass; PAMS and VOCs must be borosilicate glass or stainless steel)
Residence time for reactive gases (seconds)	Number of seconds it takes a sample of air to travel from the inlet to the instrument (reactive gases must be less than 20 seconds)
Changes within the next 18 months? (Y/N)	Are there any planned changes to the monitoring in the next 18 months? (Y or N)
Comparison against the annual PM <sub>2.5</sub> ? (Y/N)	Are the data being compared against the annual PM <sub>2.5</sub> NAAQS standards? (Y or N)
Frequency of flow rate verification manual PM and Pb samplers	Frequency at which flow rate verifications occur for manual particulate matter and lead instruments (daily, weekly, bi-weekly, monthly)
Frequency of flow rate verification automated PM analyzers	Frequency at which flow rate verifications occur for automated particulate matter instrument (daily, weekly, bi-weekly, monthly)
Frequency of one-point QC check gaseous instruments	Frequency at which zero/span/precision checks occur for gaseous instruments (daily, weekly, bi-weekly, monthly)
Last Annual PE audit for gaseous parameters	Date the last Performance Evaluation audit was performed on the gaseous instrument. (SO <sub>2</sub> , NO <sub>2</sub> , O <sub>3</sub> , CO, etc.) (MM/DD/YYYY)
Last two semi-annual flow rate audits PM and Pb	Dates of the last two audits on the particulate matter and lead instruments flow rate. (MM/DD/YYYY, MM/DD/YYYY)

Non-Regulatory - Meteorology - Temp/RH

Local Site Name	Ajo	Douglas Red Cross	Globe Highway	Hayden Old Jail	JLG Supersite	Miami Golf Course	Nogales Post Office
Pollutant (POC)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)
Parameter code	62101, 62201	62101, 62201	62101, 62201	62101, 62201	62101, 62201	62101, 62201	62101, 62201
Basic monitoring objective	--	--	--	--	--	--	--
Site type(s)	Population Exposure	Population Exposure	Highest Concentration, Source Oriented	Source Oriented	Population Exposure	Source Oriented	Population Exposure
Monitor type(s)	--	--	--	--	--	--	--
Instrument manufacturer and model	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe
Method code	040	040	040	040	040	040	040
FRM/FEM/ARM/other	--	--	--	--	--	--	--
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--	--	--	--	--
Reporting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	02/11/2014	08/16/2012	04/15/2011	02/02/2011	07/01/1993	06/08/2011	08/11/2011
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	2.3	2	2	2.1	2	2	5.2
Distance from supporting structure (meters)	1.2	--	--	0.5	--	--	--
Distance from obstructions on roof (meters)	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	--	--	4	--	--
Distance from trees (meters)	14	13	3.6	12	4	6	5
Obstruction Height above Probe (meters)	--	--	--	--	5.5	--	--
Tree Height above Probe (meters)	--	--	--	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	270	150	330	360
Restricted airflow (degrees)	--	--	--	250-340	140-350	310-350	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--

Non-Regulatory - Meteorology - Temp/RH continued						
Local Site Name	Paul Spur Chemical Lime Plant	Payson Well Site	Queen Valley	Rillito	Vehicle Emissions Laboratory	Yuma Supersite
Pollutant (POC)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)	Temp/RH (1)	Temp R/H (1)	Temp/RH (1)
Parameter code	62101, 62201	62101, 62201	62101, 62201	62101, 62201	62101, 62201	62101, 62201
Basic monitoring objective	--	--	--	--	--	--
Site type(s)	Source Oriented	Population Exposure	Downwind	Source Oriented	Population Exposure	Population Exposure
Monitor type(s)	--	--	--	--	--	--
Instrument manufacturer and model	Vaisala HMP 155 Probe	Vaisala HMP 45C Probe	Vaisala HMP 45C Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe
Method code	040	040	040	040	040	040
FRM/FEM/ARM/other	--	--	--	--	--	--
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--	--	--	--
Reporting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Middle	Neighborhood	Regional	Middle	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	12/01/2011	05/30/1991	06/23/2003	03/30/2010	05/11/1999	03/17/2010
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	2	2	2.6	2.4	4.5	2
Distance from supporting structure (meters)	--	--	1/0/1900	--	--	1
Distance from obstructions on roof (meters)	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	5	--	--	--	1
Distance from trees (meters)	9	1	1.2	19	10	--
Obstruction Height above Probe (meters)	--	--	--	--	--	--
Tree Height above Probe (meters)	--	--	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	250	180	290	360	270
Restricted airflow (degrees)	--	--	90-270	35-105	--	0-90
Prevailing wind direction (degrees)	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--

**Non-Regulatory - Meteorology - Wind**

Local Site Name	Ajo	Douglas Red Cross	Globe Highway	Hayden Old Jail	JLG Supersite	Miami Golf Course	Nogales Post Office
Pollutant (POC)	Wind (1)	Wind (1)	Wind (1)	Wind (1)	Wind (1)	Wind (1)	Wind (1)
Parameter code	61103, 61104	61103, 61104	61103, 61104	61103, 61104	61103, 61104	61103, 61104	61103, 61104
Basic monitoring objective	--	--	--	--	--	--	--
Site type(s)	Population Exposure	Population Exposure	Highest Concentration, Source Oriented	Source Oriented	Population Exposure	Source Oriented	Population Exposure
Monitor type(s)	--	--	--	--	--	--	--
Instrument manufacturer and model	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer
Method code	020	020	020	020	020	020	020
FRM/FEM/ARM/other	--	--	--	--	--	--	--
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--	--	--	--	--
Reporting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	07/01/1969	08/06/2012	04/15/2011	02/02/2011	07/01/1993	06/08/2011	01/01/1980
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	10	10	10	10	11.5	10.5	12
Distance from supporting structure (meters)	--	--	--	--	--	--	--
Distance from obstructions on roof (meters)	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	--	--	--	--	--
Distance from trees (meters)	14	13	--	--	--	--	--
Obstruction Height above Probe (meters)	--	--	--	--	--	--	--
Tree Height above Probe (meters)	--	--	--	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--

**Non-Regulatory - Meteorology - Wind continued**

Local Site Name	Paul Spur Chemical Lime Plant	Payson Well Site	Queen Valley	Rillito	Vehicle Emissions Laboratory	Yuma Supersite
Pollutant (POC)	Wind (1)	Wind (1)	Wind (1)	Wind (1)	Wind (1)	Wind (1)
Parameter code	61103, 61104	61103, 61104	61103, 61104	61103, 61104	61103, 61104	61103, 61104
Basic monitoring objective	--	--	--	--	--	--
Site type(s)	Source Oriented	Population Exposure	Downwind	Source Oriented	Population Exposure	Population Exposure
Monitor type(s)	--	--	--	--	--	--
Instrument manufacturer and model	RM Young 5305 Anemometer	RM Young 5103 Anemometer	RM Young 5103 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer	RM Young 5305 Anemometer
Method code	020	020	020	020	020	020
FRM/FEM/ARM/other	--	--	--	--	--	--
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--	--	--	--
Reporting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Middle	Neighborhood	Regional	Middle	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	12/01/2011	05/30/1991	06/23/2003	01/08/2004	05/11/1999	03/17/2010
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/32
Probe height (meters)	10	10	9	10.4	10	10
Distance from supporting structure (meters)	--	--	6.5	--	--	6.3
Distance from obstructions on roof (meters)	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	--	--	30	--
Distance from trees (meters)	35	2	--	20	50	--
Obstruction Height above Probe (meters)	--	--	--	--	--	--
Tree Height above Probe (meters)	--	--	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	270	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--

Non-Regulatory - SPM				
Local Site Name	Flagstaff Middle School	Payson Well Site	Prescott College AQD	Sedona Fire Station AQD
Pollutant (POC)	PM <sub>2.5</sub> (1)	PM <sub>2.5</sub> (1)	PM <sub>2.5</sub> (1)	PM <sub>2.5</sub> (1)
Parameter code	--	--	--	--
Basic monitoring objective	Public Information	Public Information	Public Information	Public Information
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	Special Purpose	Special Purpose	Special Purpose	Special Purpose
Instrument manufacturer and model	Met One E-BAM	Met One E-BAM	Met One E-BAM	Met One E-BAM
Method code	--	--	--	--
FRM/FEM/ARM/other	--	--	--	--
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--	--
Reporting Agency	ADEQ	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	09/09/1999	05/16/2012	07/13/2011	12/16/2011
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	6	2	6	3.6
Distance from supporting structure (meters)	--	--	--	--
Distance from obstructions on roof (meters)	15	--	--	--
Distance from obstructions not on roof (meters)	--	6	--	3
Distance from trees (meters)	15	4	--	--
Obstruction Height above Probe (meters)	--	--	--	--
Tree Height above Probe (meters)	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--
Unrestricted airflow (degrees)	270	90	360	300
Restricted airflow (degrees)	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--
Probe material for reactive gases	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N
Comparison against the annual PM <sub>2.5</sub> ? (Y/N)	N	N	N	N
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--
Frequency of flow rate verification automated PM analyzers	Monthly	Monthly	Monthly	Monthly
Frequency of one-point QC check gaseous instruments	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--

NAAQS - SLAMS - CO	
Local Site Name	JLG Supersite
Pollutant (POC)	CO (1)
Parameter code	42101
Basic monitoring objective	NAAQS Comparison
Site type(s)	Highest Concentration
Monitor type(s)	SLAMS, NCore, PAMS
Instrument manufacturer and model	Ecotech EC9830T
Method code	588
FRM/FEM/ARM/other	FEM
Collecting Agency	ADEQ
Analytical Lab (weight, toxics, other)	--
Reporting Agency	ADEQ
Spatial Scale (micro, neighborhood)	Neighborhood
Monitoring start date (MM/DD/YYYY)	07/01/1993
Current sampling frequency (1:3, continuous)	Continuous
Calculated sampling frequency (1:3 / 1:1)	--
Sampling season (MM/DD-MM/DD)	01/01-12/31
Probe height (meters)	4.1
Distance from supporting structure (meters)	1.2
Distance from obstructions on roof (meters)	--
Distance from obstructions not on roof (meters)	10
Distance from trees (meters)	10
Obstruction Height above Probe (meters)	3.4
Tree Height above Probe (meters)	3.4
Distance to furnace or incinerator flue (meters)	--
Distance between collocated monitors (meters)	--
Unrestricted airflow (degrees)	360
Restricted airflow (degrees)	--
Prevailing wind direction (degrees)	--
Probe material for reactive gases	Glass, Teflon
Residence time for reactive gases (seconds)	1.94
Changes within the next 18 months? (Y/N)	N
Comparison against the annual PM2.5? (Y/N)	--
Frequency of flow rate verification manual PM and Pb samplers	--
Frequency of flow rate verification automated PM analyzers	--
Frequency of one-point QC check gaseous instruments	Bi-Weekly
Last Annual PE audit for gaseous parameters	02/28/2014
Last two semi-annual flow rate audits PM and Pb	--

NAAQS - SLAMS - NO<sub>2</sub>

Local Site Name	JLG Supersite
Pollutant (POC)	NO <sub>2</sub> (1)
Parameter code	42602
Basic monitoring objective	NAAQS Comparison
Site type(s)	Highest Concentration
Monitor type(s)	SLAMS
Instrument manufacturer and model	Ecotech EC9841B
Method code	074
FRM/FEM/ARM/other	FRM
Collecting Agency	ADEQ
Analytical Lab (weight, toxics, other)	--
Reporting Agency	ADEQ
Spatial Scale (micro, neighborhood)	Neighborhood
Monitoring start date (MM/DD/YYYY)	07/01/1993
Current sampling frequency (1:3, continuous)	Continuous
Calculated sampling frequency (1:3 / 1:1)	--
Sampling season (MM/DD-MM/DD)	01/01-12/31
Probe height (meters)	4.1
Distance from supporting structure (meters)	1.2
Distance from obstructions on roof (meters)	--
Distance from obstructions not on roof (meters)	10
Distance from trees (meters)	10
Obstruction Height above Probe (meters)	3.4
Tree Height above Probe (meters)	3.4
Distance to furnace or incinerator flue (meters)	--
Distance between collocated monitors (meters)	--
Unrestricted airflow (degrees)	360
Restricted airflow (degrees)	--
Prevailing wind direction (degrees)	--
Probe material for reactive gases	Glass, Teflon
Residence time for reactive gases (seconds)	1.94
Changes within the next 18 months? (Y/N)	N
Comparison against the annual PM <sub>2.5</sub> ? (Y/N)	--
Frequency of flow rate verification manual PM and Pb samplers	--
Frequency of flow rate verification automated PM analyzers	--
Frequency of one-point QC check gaseous instruments	Bi-Weekly
Last Annual PE audit for gaseous parameters	02/27/2014
Last two semi-annual flow rate audits PM and Pb	--

NAAQS - SLAMS - O<sub>3</sub>

Local Site Name	Alamo Lake	Flagstaff Middle School	JLG Supersite	Prescott College AQD	Queen Valley	Tonto National Monument	Yuma Supersite
Pollutant (POC)	O <sub>3</sub> (1)	O <sub>3</sub> (1)	O <sub>3</sub> (1)	O <sub>3</sub> (1)	O <sub>3</sub> (1)	O <sub>3</sub> (1)	O <sub>3</sub> (1)
Parameter code	44201	44201	44201	44201	44201	44201	44201
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Site type(s)	Regional Transport	Max O <sub>3</sub> Concentration	Max O <sub>3</sub> Concentration	Max O <sub>3</sub> Concentration	Downwind	Downwind	Max O <sub>3</sub> Concentration
Monitor type(s)	SLAMS	SLAMS	SLAMS, NCore, PAMS	SLAMS	SLAMS, PAMS	SLAMS	SLAMS
Instrument manufacturer and model	Teledyne API 400E	Teledyne API 400E	Teledyne API 400E	Teledyne API 400E	Teledyne API 400E	Teledyne API 400E	Teledyne API 400E
Method code	087	087	087	087	087	087	087
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM	FEM	FEM	FEM
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--	--	--	--	--
Reporting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Regional	Neighborhood	Neighborhood	Neighborhood	Regional	Regional	Neighborhood
Monitoring start date (MM/DD/YYYY)	05/20/2005	03/13/2008	07/01/1993	03/25/2008	01/01/1998	05/22/2002	05/06/2008
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	03/01-10/31	03/01-10/31	01/01-12/31	03/01-10/31	03/01-10/31	03/01-10/31	03/01-10/31
Probe height (meters)	5.5	10	4.1	6	4.5	5	4.3
Distance from supporting structure (meters)	2	2	1.2	1.5	2	2	1.6
Distance from obstructions on roof (meters)	--	4	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	10	17	--	--	--
Distance from trees (meters)	12	15	10	--	--	6	--
Obstruction Height above Probe (meters)	--	--	3.4	--	--	--	--
Tree Height above Probe (meters)	--	--	3.4	--	--	0	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--
Probe material for reactive gases	Teflon	Teflon	Glass, Teflon	Teflon	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	2.91	8.66	1.94	3.87	3.56	3.53	2.98
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N
Comparison against the annual PM <sub>2.5</sub> ? (Y/N)	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly
Last Annual PE audit for gaseous parameters	08/20/2013	06/19/2013	03/21/2014	06/04/2013	08/21/2013	07/24/2013	05/09/2013
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--

NAAQS - SLAMS - SO<sub>2</sub>

Local Site Name	Alamo Lake	Hayden Old Jail	JLG Supersite	Miami Jones Ranch	Miami Ridgeline	Miami Townsite
Pollutant (POC)	SO <sub>2</sub> (1)					
Parameter code	42401	42401	42401	42401	42401	42401
Basic monitoring objective	NAAQS Comparison					
Site type(s)	Background	Source Oriented	Population Exposure	Source Oriented	Source Oriented	Source Oriented
Monitor type(s)	SPM	SLAMS	SLAMS, NCore	SLAMS	SLAMS	SLAMS
Instrument manufacturer and model	Ecotech EC9850T	Ecotech EC9850T	Ecotech EC9850T	Ecotech EC9850T	Thermo 43C	Ecotech EC9850T
Method code	592	592	592	592	060	592
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM	FEM	FEM
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--	--	--	--
Reporting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	01/14/2014	01/01/1975	03/03/2005	02/01/2013	10/05/1995	02/01/2013
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	5.5	4.7	4.1	3.5	3.5	3.7
Distance from supporting structure (meters)	2	2.1	1.2	1	1.1	1
Distance from obstructions on roof (meters)	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	10	--	10	26.4
Distance from trees (meters)	--	12	10	--	--	10.9
Obstruction Height above Probe (meters)	--	--	3.4	--	1.5	14
Tree Height above Probe (meters)	--	--	3.4	--	--	7
Distance to furnace or incinerator flue (meters)	--	280	--	3081	1411	2300
Distance between collocated monitors (meters)	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--
Probe material for reactive gases	Teflon	Teflon	Glass, Teflon	Teflon	Teflon	Teflon
Residence time for reactive gases (seconds)	3.72	4.75	1.94	4.08	4.88	3.96
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N
Comparison against the annual PM <sub>2.5</sub> ? (Y/N)	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly
Last Annual PE audit for gaseous parameters	02/19/2014	02/04/2014	03/07/2014	08/27/2013	05/15/2013	12/10/2013
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--

NAAQS - SLAMS - Pb				
Local Site Name	Globe Highway	Globe Highway	JLG Supersite	Miami Golf Course
Pollutant (POC)	Pb (1)	Pb (2)	Pb-PM10 (1)	Pb (1)
Parameter code	14129	14129	85129	14129
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Site type(s)	Highest Concentration, Source Oriented	Highest Concentration, Source Oriented	Population Exposure	Source Oriented
Monitor type(s)	SLAMS	QA Collocated	SLAMS, NCore	SLAMS
Instrument manufacturer and model	Tisch TE-8550-BL TSP	Tisch TE-8550-BL TSP	Thermo Partisol 2000	Tisch TE-8550-BL TSP
Method code	191	191	202	191
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	PCRWRD	PCRWRD	ERG	PCRWRD
Reporting Agency	ADEQ	ADEQ	ERG	ADEQ
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	10/01/2010	10/01/2010	01/01/2005	10/01/2010
Current sampling frequency (1:3, continuous)	1:6	1:6	1:6	1:6
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	2	2	4.7	3
Distance from supporting structure (meters)	1.1	1.1	2	1.1
Distance from obstructions on roof (meters)	--	--	--	--
Distance from obstructions not on roof (meters)	65	65	9.1	--
Distance from trees (meters)	3	3	9.1	7
Obstruction Height above Probe (meters)	23	23	2.8	--
Tree Height above Probe (meters)	-1	-1	2.8	1
Distance to furnace or incinerator flue (meters)	1043	1043	--	2635
Distance between collocated monitors (meters)	2.7	2.7	--	--
Unrestricted airflow (degrees)	360	360	360	360
Restricted airflow (degrees)	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--
Probe material for reactive gases	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	Monthly	Monthly	Monthly	Monthly
Frequency of flow rate verification automated PM analyzers	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	11/05/2013, 02/07/2014	11/05/2013, 02/07/2014	02/07/2013, 08/13/2013	11/05/2013, 02/26/2014

NAAQS - SLAMS - PM<sub>10</sub>

Local Site Name	Ajo	Alamo Lake	Bullhead City	Douglas Red Cross	Hayden Old Jail	JLG Supersite	Miami Golf Course
Pollutant (POC)	PM <sub>10</sub> (3)	PM <sub>10</sub> (3)	PM <sub>10</sub> (3)	PM <sub>10</sub> (3)	PM <sub>10</sub> (3)	PM <sub>10</sub> (3)	PM <sub>10</sub> (3)
Parameter code	81102	81102	81102	81102	81102	81102	81102
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Site type(s)	Population Exposure	Background	Population Exposure	Population Exposure	Source Oriented	Population Exposure	Source Oriented
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Instrument manufacturer and model	Thermo TEOM 1400AB	Met One BAM 1020	Thermo TEOM 1400AB	Thermo TEOM 1400AB	Thermo TEOM 1400AB	Met One BAM 1020	Thermo TEOM 1400AB
Method code	079	122	079	079	079	122	079
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM	FEM	FEM	FEM
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--	--	--	--	--
Reporting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	02/11/1991	10/30/2013	11/05/1997	09/02/1998	01/06/1981	07/01/1993	7/26/2012
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	1:1	1:1	1:1	1:6	1:6	1:2	1:6
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	2.9	4.7	5	3	4.6	4.9	4
Distance from supporting structure (meters)	1.8	2.1	2	2	2	2.5	2
Distance from obstructions on roof (meters)	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	--	10	--	7	--
Distance from trees (meters)	12	--	23	11	12	7	6
Obstruction Height above Probe (meters)	--	--	--	1	--	2.6	--
Tree Height above Probe (meters)	--	--	--	--	--	2.9	0
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N
Comparison against the annual PM <sub>2.5</sub> ? (Y/N)	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	05/08/2013, 10/22/2013	02/19/2014, -	06/04/2013, 12/11/2013	07/31/2013, 01/29/2014	08/07/2013, 02/04/2014	02/07/2013, 08/13/2013	07/26/2013, 02/26/2014

NAAQS - SLAMS - PM<sub>10</sub> continued

Local Site Name	Nogales Post Office	Nogales Post Office	Paul Spur Chemical Lime Plant	Payson Well Site	Rillito	Yuma Supersite
Pollutant (POC)	PM <sub>10</sub> (3)	PM <sub>10</sub> (1)	PM <sub>10</sub> (3)	PM <sub>10</sub> (3)	PM <sub>10</sub> (3)	PM <sub>10</sub> (3)
Parameter code	81102	81102	81102	81102	81102	81102
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Site type(s)	Population Exposure	Population Exposure	Source Oriented	Population Exposure	Source Oriented	Population Exposure
Monitor type(s)	SLAMS	QA Collocated	SLAMS	SLAMS	SLAMS	SLAMS
Instrument manufacturer and model	Met One BAM 1020	Thermo Partisol 2000	Thermo TEOM 1400AB	Met One BAM 1020	Thermo TEOM 1400AB	Thermo TEOM 1400AB
Method code	122	126	079	122	079	079
FRM/FEM/ARM/other	FEM	FRM	FEM	FRM	FEM	FEM
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	ADEQ AFL	--	ADEQ AFL	--	--
Reporting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood	Middle	Neighborhood	Middle	Neighborhood
Monitoring start date (MM/DD/YYYY)	01/01/1980	01/01/1980	01/06/1991	01/01/1991	01/03/1985	12/01/2009
Current sampling frequency (1:3, continuous)	Continuous	1:6	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	1:1	1:1	1:2	1:6	1:6	1:6
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	8	7.3	3	4.75	4.3	4.5
Distance from supporting structure (meters)	2.7	2	2	2.1	2	1.8
Distance from obstructions on roof (meters)	11	15	--	--	--	--
Distance from obstructions not on roof (meters)			--	--	3	--
Distance from trees (meters)	10	10	35	17.4	20	--
Obstruction Height above Probe (meters)	2	2.7	--	--	0	--
Tree Height above Probe (meters)	0	0	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--
Distance between collocated monitors (meters)	3	3	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	Y	N	N
Comparison against the annual PM <sub>2.5</sub> ? (Y/N)	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	Monthly	--	--	--	--
Frequency of flow rate verification automated PM analyzers	Monthly	--	Monthly	Monthly	Monthly	Monthly
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	08/10/2013, 01/28/2014	08/10/2013, 01/28/2014	07/31/2013, 01/29/2014	05/22/2014, -	06/12/2013, 11/26/2013	05/09/2013, 10/22/2013

NAAQS - SLAMS - PM<sub>2.5</sub>

Local Site Name	Alamo Lake	Douglas Red Cross	JLG Supersite	JLG Supersite	Nogales Post Office	Nogales Post Office	Nogales Post Office	Yuma Supersite
Pollutant (POC)	PM <sub>2.5</sub> (3)	PM <sub>2.5</sub> (3)	PM <sub>2.5</sub> (3)	PM <sub>2.5</sub> (1)	PM <sub>2.5</sub> (3)	PM <sub>2.5</sub> (1)	PM <sub>2.5</sub> (2)	PM <sub>2.5</sub> (3)
Parameter code	88101	88101	88101	88101	88101	88101	88101	88101
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Site type(s)	Background	Population Exposure	Population Exposure	Population Exposure	Highest Concentration	Highest Concentration	Highest Concentration	Regional Transport
Monitor type(s)	SLAMS	SLAMS	SLAMS, NCore	SLAMS, NCore	SLAMS	QA Collocated	QA Collocated	SLAMS
Instrument manufacturer and model	Met One BAM 1020	Met One BAM 1020	Met One BAM 1020	Thermo Partisol 2000	Met One BAM 1020	Thermo Partisol 2000	Thermo Partisol 2000	Met One BAM 1020
Method code	170	170	170	143	170	143	143	170
FRM/FEM/ARM/other	FEM	FEM	FEM	FRM	FEM	FRM	FRM	FEM
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--	ADEQ AFL	--	ADEQ AFL	ADEQ AFL	--
Reporting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	11/15/2013	11/02/2000	07/01/2003	07/01/2003	04/01/1999	04/01/1999	04/01/1999	01/01/2010
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	1:3	Continuous	1:6	1:6	Continuous
Calculated sampling frequency (1:3 / 1:1)	1:3	1:3	1:3	1:3	1:3	1:3	1:3	1:3
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	4.8	3	5	4.7	8.3	7.3	7.3	4.6
Distance from supporting structure (meters)	2.2	2.5	2.5	2	3	2	2	1.9
Distance from obstructions on roof (meters)	--	--	--	--	12	9	8	--
Distance from obstructions not on roof (meters)	--	10	8	7.6				--
Distance from trees (meters)	--	11	8	7.6	10	10	10	--
Obstruction Height above Probe (meters)	--	--	2.5	2.8	1.7	2.7	2.7	--
Tree Height above Probe (meters)	--	--	2.5	2.8	0	0	0	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	3	3, 2	2	--
Unrestricted airflow (degrees)	360	360	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	180	180	180	--
Probe material for reactive gases	--	--	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N	N
Comparison against the annual PM <sub>2.5</sub> ? (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	Monthly	--	Monthly	Monthly	--
Frequency of flow rate verification automated PM analyzers	Monthly	Monthly	Monthly	--	Monthly	--	--	Monthly
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	02/19/2014, -	07/31/2013, 01/29/2014	05/29/2013, 11/19/2013	02/07/2013, 08/13/2013	08/01/2013, 01/28/2014	08/01/2013, 01/28/2014	08/01/2013, 01/28/2014	05/29/2013, 10/22/2013

NAAQS - CSN		
Local Site Name	JLG Supersite	JLG Supersite
Pollutant (POC)	PM <sub>2.5</sub> Speciation (7)	PM <sub>2.5</sub> Speciation (7)
Parameter code	Multiple	Multiple
Basic monitoring objective	Research	Research
Site type(s)	Population Exposure	Population Exposure
Monitor type(s)	Supplemental Speciation, NCore	Supplemental Speciation, NCore
Instrument manufacturer and model	Met One SuperSASS	URG 3000N
Method code	Various	Various
FRM/FEM/ARM/other	--	--
Collecting Agency	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	RTI	RTI
Reporting Agency	RTI	RTI
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	02/21/2000	02/21/2000
Current sampling frequency (1:3, continuous)	1:3	1:3
Calculated sampling frequency (1:3 / 1:1)	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31
Probe height (meters)	4.7	4.9
Distance from supporting structure (meters)	2	2.2
Distance from obstructions on roof (meters)	--	--
Distance from obstructions not on roof (meters)	11	12
Distance from trees (meters)	11	12
Obstruction Height above Probe (meters)	2.8	2.6
Tree Height above Probe (meters)	2.8	2.6
Distance to furnace or incinerator flue (meters)	--	--
Distance between collocated monitors (meters)	--	--
Unrestricted airflow (degrees)	360	360
Restricted airflow (degrees)	--	--
Prevailing wind direction (degrees)	--	--
Probe material for reactive gases	--	--
Residence time for reactive gases (seconds)	--	--
Changes within the next 18 months? (Y/N)	N	N
Comparison against the annual PM <sub>2.5</sub> ? (Y/N)	--	--
Frequency of flow rate verification manual PM and Pb samplers	Monthly	Monthly
Frequency of flow rate verification automated PM analyzers	--	--
Frequency of one-point QC check gaseous instruments	--	--
Last Annual PE audit for gaseous parameters	--	--
Last two semi-annual flow rate audits PM and Pb	09/18/2013, 11/19/2013	09/12/2013, 11/19/2013

NAAQS - NCore						
Local Site Name	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite
Pollutant (POC)	CO (1)	NOy (1)	O <sub>3</sub> (1)	SO <sub>2</sub> (1)	Pb-PM10 (1)	PM <sub>10-2.5</sub> (1)
Parameter code	42101	42600	44201	42401	85129	86101
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	Research
Site type(s)	Highest Concentration	Population Exposure	Max O <sub>3</sub> Concentration	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SLAMS, NCore, PAMS	NCore	SLAMS, NCore, PAMS	SLAMS, NCore	SLAMS, NCore	NCore
Instrument manufacturer and model	Ecotech EC9830T	Ecotech 9843	Teledyne API 400E	Ecotech EC9850T	Thermo Partisol 2000	Met One BAM 1020
Method code	588	591	087	592	202	185
FRM/FEM/ARM/other	FEM	FEM	FEM	FEM	FEM	FEM
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--	--	ERG	--
Reporting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ERG	ADEQ
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	07/01/1993	01/01/2011	07/01/1993	03/03/2005	01/01/2005	11/10/2010
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	1:6	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	4.1	10	4.1	4.1	4.7	4.9
Distance from supporting structure (meters)	1.2	7	1.2	1.2	2	2.5
Distance from obstructions on roof (meters)	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	10	--	10	10	9.1	7.6
Distance from trees (meters)	10	--	10	10	9.1	7.6
Obstruction Height above Probe (meters)	3.4	--	3.4	3.4	2.8	2.6
Tree Height above Probe (meters)	3.4	--	3.4	3.4	2.8	2.6
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--
Probe material for reactive gases	Glass, Teflon	Glass, Teflon	Glass, Teflon	Glass, Teflon	--	--
Residence time for reactive gases (seconds)	1.94	14.39	1.94	1.94	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	Monthly
Frequency of one-point QC check gaseous instruments	Bi-Weekly	Bi-Weekly	Bi-Weekly	Bi-Weekly	--	--
Last Annual PE audit for gaseous parameters	02/28/2014	02/27/2014	03/21/2014	02/27/2014	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	02/07/2013, 08/13/2013	--

NAAQS - NCore continued

Local Site Name	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite
Pollutant (POC)	PM <sub>2.5</sub> (3)	PM <sub>2.5</sub> (1)	PM <sub>2.5</sub> Speciation (7)	PM <sub>2.5</sub> Speciation (7)	Temp/RH (1)	Wind (1)
Parameter code	88101	88101	Multiple	Multiple	62101, 62201	61103, 61104
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	Research	Research	--	--
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SLAMS, NCore	SLAMS, NCore	Supplemental Speciation, NCore	Supplemental Speciation, NCore	--	--
Instrument manufacturer and model	Met One BAM 1020	Thermo Partisol 2000	Met One SuperSASS	URG 3000N	Vaisala HMP 155 Probe	RM Young 5305 Anemometer
Method code	170	143	Various	Various	040	020
FRM/FEM/ARM/other	FEM	FRM	--	--	--	--
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	ADEQ AFL	RTI	RTI	--	--
Reporting Agency	ADEQ	ADEQ	RTI	RTI	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	07/01/2003	07/01/2003	02/21/2000	02/21/2000	07/01/1993	07/01/1993
Current sampling frequency (1:3, continuous)	Continuous	1:3	1:3	1:3	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	1:3	1:3	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	5	4.7	4.7	4.9	2	11.5
Distance from supporting structure (meters)	2.5	2	2	2	1	7
Distance from obstructions on roof (meters)	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	8	7.6	11	12	4	--
Distance from trees (meters)	8	7.6	11	12	4	4
Obstruction Height above Probe (meters)	2.5	2.8	2.8	2.6	5.5	--
Tree Height above Probe (meters)	2.5	2.8	2.8	2.6	5.5	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	150	360
Restricted airflow (degrees)	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N
Comparison against the annual PM <sub>2.5</sub> ? (Y/N)	Y	Y	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	Monthly	Monthly	Monthly	--	--
Frequency of flow rate verification automated PM analyzers	Monthly	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	5/13/2013, 11/19/2013	02/07/2013, 08/13/2013	11/19/2013, 03/13/2014	11/19/2013, 03/13/2014	--	--

NAAQS - PAMS						
Local Site Name	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite
Pollutant (POC)	CO (1)	NOx (1)	O <sub>3</sub> (1)	Carbonyl (30,31)	Carbonyl (32)	VOC (6)
Parameter code	42101	42603	44201	Multiple	Multiple	Multiple
Basic monitoring objective	NAAQS Comparison	Research	NAAQS Comparison	Research	Research	Research
Site type(s)	Highest Concentration	Population Exposure	Max O <sub>3</sub> Concentration	Max Precursor Impact	QA Collocated	Max Precursor Impact
Monitor type(s)	SLAMS, NCore, PAMS	PAMS	SLAMS, NCore, PAMS	PAMS, NATTS	PAMS, NATTS	PAMS, NATTS
Instrument manufacturer and model	Ecotech EC9830T	Ecotech EC9841B	Teledyne API 400E	ATEC 8000	ATEC 8000	ATEC 2200
Method code	588	090	087	202	202	126
FRM/FEM/ARM/other	FEM	FEM	FEM	--	--	--
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--	ERG	ERG	ERG
Reporting Agency	ADEQ	ADEQ	ADEQ	ERG	ERG	ERG
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	07/01/1993	07/01/1993	07/01/1993	05/15/1999	05/15/1999	05/15/1999
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	1:6	NATTS not PAMS	1:6
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	06/01-08/31	06/01-08/31	06/01-08/31
Probe height (meters)	4.1	4.1	4.1	4.7	4.7	4.7
Distance from supporting structure (meters)	1.2	1.2	1.2	2	2	2
Distance from obstructions on roof (meters)	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	10	10	10	6	6	6
Distance from trees (meters)	10	10	10	6	6	6
Obstruction Height above Probe (meters)	3.4	3.4	3.4	2.8	2.8	2.8
Tree Height above Probe (meters)	3.4	3.4	3.4	2.8	2.8	2.8
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--
Probe material for reactive gases	Glass, Teflon	Glass, Teflon	Glass, Teflon	Stainless Steel	Stainless Steel	Stainless Steel
Residence time for reactive gases (seconds)	1.94	1.94	1.94	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N
Comparison against the annual PM <sub>2.5</sub> ? (Y/N)	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	Bi-Weekly	Bi-Weekly	Bi-Weekly	--	--	--
Last Annual PE audit for gaseous parameters	02/28/2014	02/27/2014	03/21/2014	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--

NAAQS - PAMS continued

Local Site Name	JLG Supersite	JLG Supersite	JLG Supersite	Queen Valley	Queen Valley	Queen Valley
Pollutant (POC)	VOC (7)	Temp/RH (1)	Wind (1)	O <sub>3</sub> (1)	NO <sub>y</sub> (1)	VOC (6)
Parameter code	Multiple	62101, 62201	61103, 61104	44201	42600	Multiple
Basic monitoring objective	Research	--	--	NAAQS Comparison	Research	Research
Site type(s)	QA Collocated	Population Exposure	Population Exposure	Downwind	Downwind	Downwind
Monitor type(s)	PAMS, NATTS	--	--	SLAMS, PAMS	PAMS	PAMS
Instrument manufacturer and model	ATEC 2200	Vaisala HMP 155 Probe	RM Young 5305 Anemometer	Teledyne API 400E	Thermo 42C TL Reactive	ATEC 8001
Method code	126	040	020	087	574	126
FRM/FEM/ARM/other	--	--	--	FEM	FEM	--
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	ERG	--	--	--	--	ERG
Reporting Agency	ERG	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Regional	Regional	Regional
Monitoring start date (MM/DD/YYYY)	05/15/1999	07/01/1993	07/01/1993	01/01/1998	01/01/1998	05/20/2001
Current sampling frequency (1:3, continuous)	NATTS not PAMS	Continuous	Continuous	Continuous	Continuous	1:6
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	06/01 - 08/31	01/01-12/31	01/01-12/31	03/01-10/31	06/01-08/31	06/01-08/31
Probe height (meters)	4.7	2	11.5	4.5	5.1	4.5
Distance from supporting structure (meters)	2	1	7	2	2.6	2
Distance from obstructions on roof (meters)	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	6	4	--	--	--	--
Distance from trees (meters)	6	4	4	--	--	--
Obstruction Height above Probe (meters)	2.8	5.5	--	--	--	--
Tree Height above Probe (meters)	2.8	5.5	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	150	360	360	360	360
Restricted airflow (degrees)	--	140-350	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--
Probe material for reactive gases	Stainless Steel	--	--	Glass, Teflon	Glass, Teflon	Stainless Steel
Residence time for reactive gases (seconds)	--	--	--	3.56	13.8	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N
Comparison against the annual PM <sub>2.5</sub> ? (Y/N)	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	Bi-Weekly	Bi-Weekly	--
Last Annual PE audit for gaseous parameters	--	--	--	08/21/2013	08/21/2013	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--

NAAQS - PAMS continued

Local Site Name	Queen Valley	Queen Valley	Vehicle Emissions Lab	Vehicle Emissions Lab	Vehicle Emissions Lab	Vehicle Emissions Laboratory	Vehicle Emissions Laboratory
Pollutant (POC)	Temp/RH (1)	Wind (1)	Delta Temp (1)	Horizontal Solar Radiation (1)	Ultraviolet Solar Radiation (1)	Temp R/H (1)	Wind (1)
Parameter code	62101, 62201	61103, 61104	62101, 61202	63301	63302, 63304	62101, 62201	61103, 61104
Basic monitoring objective	--	--	Research	Research	Research	--	--
Site type(s)	Downwind	Downwind	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	--	--	PAMS	PAMS	PAMS	--	--
Instrument manufacturer and model	Vaisala HMP 45C Probe	RM Young 5103 Anemometer	RM Young 7627	Li-Cor 200S2	Epplly TUVR UV	Rotronics MP101A Probe	RM Young 5305 Anemometer
Method code	040	020	810	011	011	040	020
FRM/FEM/ARM/other	--	--	--	--	--	--	--
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--	--	--	--	--
Reporting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Regional	Regional	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	06/23/2003	06/23/2003	08/20/2004	06/18/1999	08/20/2004	05/11/1999	05/11/1999
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	2.6	9	2.5 - 10	5	5	4.5	10
Distance from supporting structure (meters)	.5	6.5	.5	--	--	--	--
Distance from obstructions on roof (meters)	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	--	--	--	--	30
Distance from trees (meters)	--	--	10	10	10	10	50
Obstruction Height above Probe (meters)	--	--	--	--	--	--	--
Tree Height above Probe (meters)	--	--	--	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--
Unrestricted airflow (degrees)	180	360	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	--	--

**Air Toxics -NATTS**

Local Site Name	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite	JLG Supersite
Pollutant (POC)	Carbonyl (6)	Carbonyl (7)	VOC (6)	VOC (7)	SVOC (6)	PM <sub>10</sub> metals speciation (1)
Parameter code	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple
Basic monitoring objective	Research	Research	Research	Research	Research	Research
Site type(s)	Population Exposure	QA Collocated	Population Exposure	QA Collocated	Population Exposure	Population Exposure
Monitor type(s)	PAMS, NATTS	PAMS, NATTS	PAMS, NATTS	PAMS, NATTS	NATTS	NATTS
Instrument manufacturer and model	ATEC 8000	ATEC 8000	ATEC 2200	ATEC 2200	Tisch PUF+	Thermo Partisol 2000
Method code	202	202	101	101	118	202
FRM/FEM/ARM/other	--	--	--	--	--	--
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	ERG	ERG	ERG	ERG	ERG	ERG
Reporting Agency	ERG	ERG	ERG	ERG	ERG	ERG
Spatial Scale (micro, neighborhood)	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date (MM/DD/YYYY)	05/15/1999	05/15/1999	06/06/2001	06/06/2001	07/08/2007	01/01/2005
Current sampling frequency (1:3, continuous)	1:6	Every other month	1:6	Every other month	1:6	1:6
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	4.7	4.7	4.7	4.7	4.1	4.7
Distance from supporting structure (meters)	2	2	2	2	1.1	2
Distance from obstructions on roof (meters)	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	6	6	6	6	4.5	9.1
Distance from trees (meters)	6	6	6	6	4.5	9.1
Obstruction Height above Probe (meters)	2.8	2.8	2.8	2.8	3.4	2.8
Tree Height above Probe (meters)	2.8	2.8	2.8	2.8	3.4	2.8
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	320	360
Restricted airflow (degrees)	--	--	--	--	150-190	--
Prevailing wind direction (degrees)	--	--	--	--	250-260	--
Probe material for reactive gases	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N
Comparison against the annual PM <sub>2.5</sub> ? (Y/N)	--	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	Monthly
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--	02/07/2013, 08/13/2013

Air Toxics - UATMP	
Local Site Name	South Phoenix
Pollutant (POC)	VOC (6)
Parameter code	Multiple
Basic monitoring objective	Research
Site type(s)	Population Exposure
Monitor type(s)	UATMP
Instrument manufacturer and model	ATEC 8001
Method code	101
FRM/FEM/ARM/other	--
Collecting Agency	ADEQ
Analytical Lab (weight, toxics, other)	ERG
Reporting Agency	ERG
Spatial Scale (micro, neighborhood)	Neighborhood
Monitoring start date (MM/DD/YYYY)	8/5/2001
Current sampling frequency (1:3, continuous)	1:12
Calculated sampling frequency (1:3 / 1:1)	--
Sampling season (MM/DD-MM/DD)	01/01-12/31
Probe height (meters)	4.6
Distance from supporting structure (meters)	1.6
Distance from obstructions on roof (meters)	--
Distance from obstructions not on roof (meters)	8.0
Distance from trees (meters)	4.8
Obstruction Height above Probe (meters)	8.0
Tree Height above Probe (meters)	8.0
Distance to furnace or incinerator flue (meters)	--
Distance between collocated monitors (meters)	--
Unrestricted airflow (degrees)	335
Restricted airflow (degrees)	240-265
Prevailing wind direction (degrees)	250-260
Probe material for reactive gases	Stainless Steel
Residence time for reactive gases (seconds)	--
Changes within the next 18 months? (Y/N)	N
Comparison against the annual PM2.5? (Y/N)	--
Frequency of flow rate verification manual PM and Pb samplers	--
Frequency of flow rate verification automated PM analyzers	--
Frequency of one-point QC check gaseous instruments	--
Last Annual PE audit for gaseous parameters	--
Last two semi-annual flow rate audits PM and Pb	--

Visibility - Urban Haze - Camera					
Local Site Name	ADEQ Building	Banner Mesa Medical Center	Estrella Mountain Community College	North Mountain Summit	North Mountain Summit
Pollutant (POC)	Visibility (1)	Visibility (1)	Visibility (1)	Visibility (1)	Visibility (2)
Parameter code	--	--	--	--	--
Basic monitoring objective	Public Information	Public Information	Public Information	Public Information	Public Information
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	--	--	--	--	--
Instrument manufacturer and model	CANON EOS Rebel T2i	CANON EOS Rebel T2i	CANON EOS Rebel T2i	CANON EOS Rebel T2i	CANON EOS Rebel T2i
Method code	--	--	--	--	--
FRM/FEM/ARM/other	--	--	--	--	--
Collecting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--	--	--
Reporting Agency	ADEQ	ADEQ	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Urban	Urban	Urban	Urban	Urban
Monitoring start date (MM/DD/YYYY)	07/01/2002	01/01/1993	01/01/1993	01/01/1993	01/01/1993
Current sampling frequency (1:3, continuous)	Every 5 min.	Every 5 min.	Every 5 min.	Every 5 min.	Every 5 min.
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	--	--	--	--	--
Distance from supporting structure (meters)	--	--	--	--	--
Distance from obstructions on roof (meters)	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	--	--	--
Distance from trees (meters)	--	--	--	--	--
Obstruction Height above Probe (meters)	--	--	--	--	--
Tree Height above Probe (meters)	--	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--
Unrestricted airflow (degrees)	--	--	--	--	--
Restricted airflow (degrees)	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--	--	--

Visibility - Urban Haze - Nephelometer			
Local Site Name	Dysart	Estrella	Vehicle Emissions Laboratory
Pollutant (POC)	Bscat/PM2.5 (1)	Bscat/PM2.5 (1)	Bscat/PM2.5 (1)
Parameter code	--	--	--
Basic monitoring objective	Public Information	Public Information	Public Information
Site type(s)	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	--	--	--
Instrument manufacturer and model	Optec NGN 2 Nephelometer	Optec NGN 2 Nephelometer	Optec NGN 2 Nephelometer
Method code	--	--	--
FRM/FEM/ARM/other	--	--	--
Collecting Agency	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--
Reporting Agency	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Urban	Urban	Urban
Monitoring start date (MM/DD/YYYY)	01/01/2003	01/01/2003	06/25/2003
Current sampling frequency (1:3, continuous)	Every 5 min.	Every 5 min.	Every 5 min.
Calculated sampling frequency (1:3 / 1:1)	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	5	5	5
Distance from supporting structure (meters)	--	--	--
Distance from obstructions on roof (meters)	--	--	--
Distance from obstructions not on roof (meters)	--	--	--
Distance from trees (meters)	--	5	10
Obstruction Height above Probe (meters)	--	--	--
Tree Height above Probe (meters)	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--
Distance between collocated monitors (meters)	--	--	--
Unrestricted airflow (degrees)	360	360	360
Restricted airflow (degrees)	--	--	--
Prevailing wind direction (degrees)	--	--	--
Probe material for reactive gases	--	--	--
Residence time for reactive gases (seconds)	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N
Comparison against the annual PM2.5? (Y/N)	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--

Visibility - Urban Haze - Transmissometer		
Local Site Name	Phoenix Transmissometer Receiver	Phoenix Transmissometer Transmitter
Pollutant (POC)	Bext (1)	Bext (1)
Parameter code	--	--
Basic monitoring objective	Public Information	Public Information
Site type(s)	Population Exposure	Population Exposure
Monitor type(s)	--	--
Instrument manufacturer and model	Optec LVP-2 Transmissometer Receiver	Optec LVP-2 Transmissometer
Method code	--	--
FRM/FEM/ARM/other	--	--
Collecting Agency	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--
Reporting Agency	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Urban	Urban
Monitoring start date (MM/DD/YYYY)	12/01/1992	12/01/1992
Current sampling frequency (1:3, continuous)	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31
Probe height (meters)	30	27
Distance from supporting structure (meters)	--	--
Distance from obstructions on roof (meters)	5	--
Distance from obstructions not on roof (meters)	--	--
Distance from trees (meters)	--	--
Obstruction Height above Probe (meters)	--	--
Tree Height above Probe (meters)	--	--
Distance to furnace or incinerator flue (meters)	--	--
Distance between collocated monitors (meters)	--	--
Unrestricted airflow (degrees)	240	360
Restricted airflow (degrees)	--	--
Prevailing wind direction (degrees)	--	--
Probe material for reactive gases	--	--
Residence time for reactive gases (seconds)	--	--
Changes within the next 18 months? (Y/N)	N	N
Comparison against the annual PM2.5? (Y/N)	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--
Frequency of flow rate verification automated PM analyzers	--	--
Frequency of one-point QC check gaseous instruments	--	--
Last Annual PE audit for gaseous parameters	--	--
Last two semi-annual flow rate audits PM and Pb	--	--

Visibility - Urban Haze - Temp/RH			
Local Site Name	Dysart	Estrella	Phoenix Transmissometer Receiver
Pollutant (POC)	Temp R/H (1)	Temp R/H (1)	Temp R/H (1)
Parameter code	62101, 62201	62101, 62201	62101, 62201
Basic monitoring objective	--	--	--
Site type(s)	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	--	--	--
Instrument manufacturer and model	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe	Vaisala HMP 155 Probe
Method code	040	040	040
FRM/FEM/ARM/other	--	--	--
Collecting Agency	ADEQ	ADEQ	ADEQ
Analytical Lab (weight, toxics, other)	--	--	--
Reporting Agency	ADEQ	ADEQ	ADEQ
Spatial Scale (micro, neighborhood)	Urban	Urban	Urban
Monitoring start date (MM/DD/YYYY)	07/16/2003	02/11/2003	01/01/1994
Current sampling frequency (1:3, continuous)	Continuous	Continuous	Continuous
Calculated sampling frequency (1:3 / 1:1)	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	5	5	32
Distance from supporting structure (meters)	--	--	--
Distance from obstructions on roof (meters)	--	--	10
Distance from obstructions not on roof (meters)	--	--	--
Distance from trees (meters)	--	5	--
Obstruction Height above Probe (meters)	--	--	--
Tree Height above Probe (meters)	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--
Distance between collocated monitors (meters)	--	--	--
Unrestricted airflow (degrees)	360	360	360
Restricted airflow (degrees)	--	--	--
Prevailing wind direction (degrees)	--	--	--
Probe material for reactive gases	--	--	--
Residence time for reactive gases (seconds)	--	--	--
Changes within the next 18 months? (Y/N)	Y	Y	Y
Comparison against the annual PM2.5? (Y/N)	--	--	--
Frequency of flow rate verification manual PM and Pb samplers	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	--	--

Visibility - IMPROVE

Local Site Name	Chiricahua Entrance Station	Douglas Red Cross	Grand Canyon National Park - Hance Camp	Greer Water Treatment Plant	Ike's Backbone	JLG Supersite	JLG Supersite	Meadview
Pollutant (POC)	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE
Parameter code	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple
Basic monitoring objective	Research	Research	Research	Research	Research	Research	Research	Research
Site type(s)	Background	Other	Background	Other	Other	Other	Other	Background
Monitor type(s)	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE
Instrument manufacturer and model	--	--	--	--	--	--	--	--
Method code	Various	Various	Various	Various	Various	Various	Various	Various
FRM/FEM/ARM/other	Other	Other	Other	Other	Other	Other	Other	Other
Collecting Agency	NPS	ADEQ	NPS	NFS	UC Davis	ADEQ	ADEQ	NFS
Analytical Lab (weight, toxics, other)	--	--	--	--	--	--	--	--
Reporting Agency	UC Davis	UC Davis	UC Davis	UC Davis	UC Davis	UC Davis	UC Davis	UC Davis
Spatial Scale (micro, neighborhood)	Regional	Regional	Regional	Regional	Regional	Neighborhood	Neighborhood	Regional
Monitoring start date (MM/DD/YYYY)	03/02/1988	06/02/2004	09/24/1997	02/29/2000	04/02/2000	04/25/2001	04/25/2001	09/04/1991
Current sampling frequency (1:3, continuous)	1:3	1:3	1:3	1:3	1:3	1:3	1:3	1:3
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	4	3	--	4.5	4.5	5.5	5.5	4.5
Distance from supporting structure (meters)	--	--	--	1.5	1	--	--	--
Distance from obstructions on roof (meters)	--	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	10	8	--	--	5	10	10	--
Distance from trees (meters)	10	6	--	50	23	10	10	--
Obstruction Height above Probe (meters)	--	--	--	--	--	--	--	--
Tree Height above Probe (meters)	--	--	--	--	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	4	4	--
Unrestricted airflow (degrees)	360	360	--	360	360	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	N	N	N	N	N	N	N	N
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	--	01/28/2014	--	08/28/2013	10/23/2013	12/02/2013	12/02/2013	06/05/2013

Visibility - IMPROVE - continued

Local Site Name	Organ Pipe National Monument	Petrified Forest National Park	Pleasant Valley Ranger Station	Queen Valley	Saguaro National Park East	Saguaro National Park West	Sycamore Canyon	Tonto National Monument
Pollutant (POC)	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE
Parameter code	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple
Basic monitoring objective	Research	Research	Research	Research	Research	Research	Research	Research
Site type(s)	Other	Background	Other	Other	Background	Other	Background	Background
Monitor type(s)	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE	IMPROVE
Instrument manufacturer and model	--	--	--	--	--	--	--	--
Method code	Various	Various	Various	Various	Various	Various	Various	Various
FRM/FEM/ARM/other	Other	Other	Other	Other	Other	Other	Other	Other
Collecting Agency	NPS	NPS	NFS	ADEQ	NPS	NPS	ADEQ / UC Davis	NPS
Analytical Lab (weight, toxics, other)	--	--	--	--	--	--	--	--
Reporting Agency	UC Davis	UC Davis	UC Davis	UC Davis	UC Davis	UC Davis	UC Davis	UC Davis
Spatial Scale (micro, neighborhood)	Regional	Regional	Regional	Regional	Regional	Regional	Regional	Regional
Monitoring start date (MM/DD/YYYY)	01/15/2003	03/02/1988	02/10/2000	04/30/2001	06/04/1988	04/19/2001	09/11/1991	04/23/1988
Current sampling frequency (1:3, continuous)	1:3	1:3	1:3	1:3	1:3	1:3	1:3	1:3
Calculated sampling frequency (1:3 / 1:1)	--	--	--	--	--	--	--	--
Sampling season (MM/DD-MM/DD)	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31	01/01-12/31
Probe height (meters)	3.4	4	5	5.2	--	4	4	5
Distance from supporting structure (meters)	1.4	--	1.5	2.2	--	1.5	1.5	1.5
Distance from obstructions on roof (meters)	--	--	--	--	--	--	--	--
Distance from obstructions not on roof (meters)	--	--	--	--	--	--	--	--
Distance from trees (meters)	13	--	20	--	--	15	15	8
Obstruction Height above Probe (meters)	--	--	--	--	--	--	--	--
Tree Height above Probe (meters)	--	--	--	--	--	--	--	--
Distance to furnace or incinerator flue (meters)	--	--	--	--	--	--	--	--
Distance between collocated monitors (meters)	--	--	--	--	--	--	--	--
Unrestricted airflow (degrees)	360	360	360	360	--	360	360	360
Restricted airflow (degrees)	--	--	--	--	--	--	--	--
Prevailing wind direction (degrees)	--	--	--	--	--	--	--	--
Probe material for reactive gases	--	--	--	--	--	--	--	--
Residence time for reactive gases (seconds)	--	--	--	--	--	--	--	--
Changes within the next 18 months? (Y/N)	N	N	N	N	N	N	N	N
Comparison against the annual PM2.5? (Y/N)	N	N	N	N	N	N	N	N
Frequency of flow rate verification manual PM and Pb samplers	--	--	--	--	--	--	--	--
Frequency of flow rate verification automated PM analyzers	--	--	--	--	--	--	--	--
Frequency of one-point QC check gaseous instruments	--	--	--	--	--	--	--	--
Last Annual PE audit for gaseous parameters	--	--	--	--	--	--	--	--
Last two semi-annual flow rate audits PM and Pb	05/08/2013	--	03/07/2013	01/22/2014	--	07/10/2013	09/11/2013	06/11/2013

## Appendix D – Site Information Data Tables

Note: Some measurements are rounded and/or estimations

This appendix contains detailed information about sites that are fully or partially operated by ADEQ, as well as sites that ADEQ has a strong association with (e.g. IMPROVE sites). All current sites and those closed after July 1, 2014 are included in this appendix. Sites that were closed after July 1, 2014 contain a note indicating so in the site summary section. This appendix also contains general information about the air quality monitors at each site. See Appendix C for more detailed information on specific monitors and networks.

AQS ID	ADEQ ID	SITE NAME	PAGE
	21737	ADEQ Building	87
04-019-0001	16316	Ajo	88
04-012-8000	34961	Alamo Lake	89
	19489	Banner Mesa Medical Center	90
04-015-1003	16365	Bullhead City	91
04-003-8001	16679	Chiricahua Entrance Station	92
04-003-1005	16503	Douglas Red Cross	93
04-013-4010	19550	Dysart	95
04-013-8005	16506	Estrella	96
	21736	Estrella Mountain Community College	97
04-005-1008	16707	Flagstaff Middle School	98
04-007-1002	16593	Globe Highway	99
04-005-8102	16682	Grand Canyon National Park – Hance Camp	100
04-001-8001	16323	Greer Water Treatment Plant	101
04-007-1001	16326	Hayden Old Jail	102
04-025-8104	16421	Ike’s Backbone	103
04-013-9997	16328	JLG Supersite	104
04-015-9000	21298	Meadview	107
04-007-8000	16629	Miami Golf Course	108
04-007-0011	16631	Miami Jones Ranch	109
04-007-0009	16382	Miami Ridgeline	110
04-007-0012	16632	Miami Townsite	111
04-023-0004	16511	Nogales Post Office	112
	16480	North Mountain Summit	114
04-019-0005	16681	Organ Pipe National Monument	115
04-003-0011	16391	Paul Spur Chemical Lime Plant	116
04-007-0008	16317	Payson Well Site	117
04-001-0012	16473	Petrified Forest National Park	118
	16829	Phoenix Transmissometer Receiver	119
	16330	Phoenix Transmissometer Transmitter	120
04-007-8100	16446	Pleasant Valley Ranger Station	121
04-025-8033	133011	Prescott College AQD	122
04-021-8001	16394	Queen Valley	123
04-019-0020	16499	Rillito	125
04-019-0021	16474	Saguaro National Park East	126
04-019-9000	16475	Saguaro National Park West	127
	142818	Sedona Fire Station AQD	128
04-013-4003	16377	South Phoenix	129
04-005-8103	16476	Sycamore Canyon	130
04-007-0010	16447	Tonto National Monument	131
04-013-9998	16363	Vehicle Emissions Laboratory	132
04-027-8011	11319	Yuma Supersite	134

## Definitions for Appendix D – Site Information Data Tables

Local Site Name	Official name for the site as written in ADEQ’s AZURITE / AAAD database
Site Narrative	Brief summary of the site location and surroundings

### Site Information

AQS ID	Unique identifier from EPA’s Air Quality System database
ADEQ ID	Unique identifier from the AZURITE / AAAD database for each monitoring site
Street Address	Physical Street Address or cross streets of the monitoring site
County	Arizona county the monitor is located within
CBSA	Core Based Statistical Area that the site is located within. A CBSA is a U.S. geographic area defined by the Office of Management and Budget based around an urban center of at least 10,000 people and adjacent areas that are socioeconomically tied to the urban center by commuting.
Surrounding Area	Description of area around monitoring site (residential, commercial, industrial, agricultural, desert, forest, mobile, blighted area, and military reservation)
Distance to Roadway	Distance and direction from the edge of the nearest roadway to the instrument in meters
Traffic Count of Nearest Major Roadway	ADOT supplied traffic count for the nearest major roadway. Includes distance and direction of roadway if differs from the nearest roadway.
Groundcover	Type of surface at the base of the instrument (e.g. sand, cement, rooftop, metal, asphalt, etc.)
Latitude	The North/South geographic location of a site in decimal degrees
Longitude	The East/West geographic location of a site in decimal degrees
Elevation	The vertical distance above sea level of the site in meters
Site Established Date	Date site was first used as a monitoring site

### Monitoring Information

Pollutant	The pollutant(s) or parameter(s) being collected or measured at the site
Basic monitoring objective	Purpose of monitoring for the parameter at the site (Public Information, NAAQS Comparison, or Research.)
Site type(s)	A brief description of the intended purpose of the monitor’s measurements (Extreme Downwind, Highest Concentration, Max Ozone Concentration, Max Precursor Impact, Population Exposure, Source Oriented, Upwind Background, General / Background, Regional Transport, Welfare-Related Impacts, Quality Assurance, or Other)
Monitor type(s)	The associated monitoring network for the monitor (IMPROVE, Index Site, Industrial, NATTS, NCore, Non-EPA Federal, PAMS, Proposed NCore, QA Collocated, SLAMS, Special Purpose, Supplemental Speciation, Trends Speciation, Tribal Monitor, Unofficial PAMS)
Spatial scale	Area represented by an air quality monitor (microscale: 0 – 100 m, middle scale: 0.1 – 0.5 km, neighborhood: 0.5 – 4 km, urban: 4 – 50 km, regional: ~50 – 500 km, or national/global)
Monitor Start Date	Date that a pollutant, parameter, or measurement was started at the site
Instrument manufacture and	The specific make and model of the monitor or instrument used in the network

model	
-------	--

**Site Photos**

Aerial View	Image of site and the surrounding area (using Google Earth)
Site View	Most current photo of monitors at the site

### ADEQ Building

The high-resolution digital camera sits on the northeast corner of the building and points toward Camelback Mountain, which lies 13.4 km to the northeast. The pictures of the local view are updated every 5 minutes and can be viewed on the internet at <http://phoenixvis.net/index.aspx>. The area between the site and Camelback Mountain is primarily residential with some commercial areas.

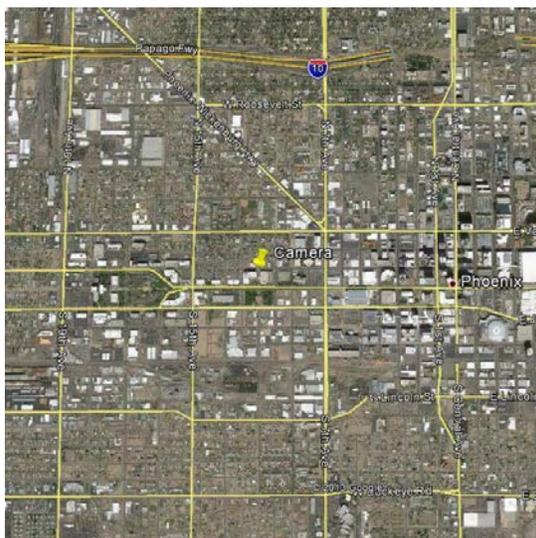
### Site Information

AQS ID	None	ADEQ ID	21737
Street Address	1110 W. Washington St. Phoenix, AZ 85007		
County	Maricopa	Groundcover	Rooftop
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4483
Surrounding Area	Residential/Commercial	Longitude	-112.0878
Distance to roadway	84 m – S – Washington St.	Elevation	329 m
Traffic count of Nearest Major Roadway	10,852 – Washington St.	Site Established Date	07/01/2002

### Monitoring Information

Pollutant	Visibility			
Basic monitoring objective	Public Information			
Site type(s)	Population Exposure			
Monitor type(s)	--			
Instrument manufacture and model	CANON EOS Rebel T2i			
Spatial scale	Urban			
Monitor Start Date	07/01/2002			

### Site Photos



Aerial view of ADEQ Building



Camera on rooftop of ADEQ Building – 4/2010

### Ajo

The site is located at the Pima County Maintenance Yard, with the wind system mounted to the north of the instruments. The closest structure to the site is an east-west oriented ADOT office/trailer to the south. To the east lie the stabilized tailings pile associated with the Ajo mining operation that closed in 1985.

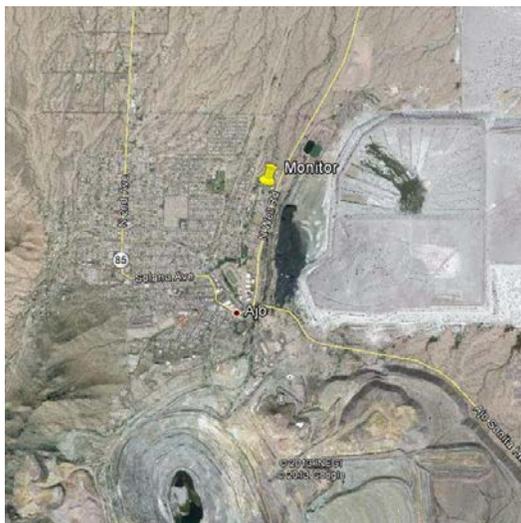
#### Site Information

AQS ID	04-019-0001	ADEQ ID	16316
Street Address	1211 Well Rd. Ajo, AZ 85321		
County	Pima	Groundcover	Gravel
CBSA	Tucson	Latitude	32.3820
Surrounding Area	Residential/Commercial	Longitude	-112.8575
Distance to roadway	109 m – E – Ajo Well Rd. 1	Elevation	515 m
Traffic count of Nearest Major Roadway	500 – Ajo Well Rd. 1	Site Established Date	07/01/1969

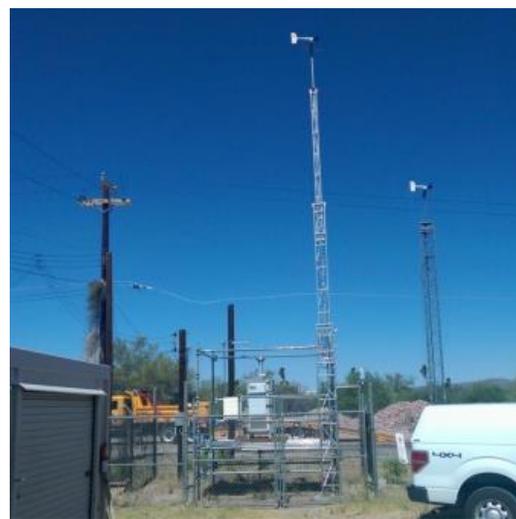
#### Monitoring Information

Pollutant	PM <sub>10</sub>	Wind	Temp/RH	
Basic monitoring objective	NAAQS Comparison	--	--	
Site type(s)	Population Exposure	Population Exposure	Population Exposure	
Monitor type(s)	SLAMS	--	--	
Instrument manufacture and model	Thermo TEOM 1400AB	RM Young 5305 Anemometer	Vaisala HMP 155 Probe	
Spatial scale	Neighborhood	Neighborhood	Neighborhood	
Monitor Start Date	02/11/1991	07/01/1969	02/11/2014	

#### Site Photos



Aerial view of Ajo



Ajo fenced area and meteorological tower –  
0/2014

### Alamo Lake

The site was established to replace the Hillside site and is located in Alamo Lake State Park, which is approximately 49 km north of Wenden, AZ. The surrounding area consists of mostly desert, with a lake about 1 km to the northeast. A small water pump/storage tank (1,000 gallon) lies 7 meters to the east of the shelter. More monitors will be added at this site over the next year as it becomes a designated background site.

### Site Information

AQS ID	04-012-8000	ADEQ ID	34961
Street Address	Alamo Lake State Park		
County	La Paz	Groundcover	Gravel
CBSA	None	Latitude	34.2439
Surrounding Area	Desert	Longitude	-113.5586
Distance to roadway	80 m – NE – Alamo Rd.	Elevation	403 m
Traffic count of Nearest Major Roadway	230 – Alamo Rd.	Site Established Date	05/20/2005

### Monitoring Information

Pollutant	O <sub>3</sub>	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Site type(s)	Regional Transport	General / Background	General / Background	General / Background
Monitor type(s)	SLAMS	SPM	SLAMS	SLAMS
Instrument manufacture and model	Teledyne API 400E	Ecotech EC9850T	Met One BAM 1020	Met One BAM 1020
Spatial scale	Regional	Regional	Regional	Regional
Monitor Start Date	05/20/2005	01/14/2014	10/30/2013	11/05/2013

### Site Photos



Regional view of Alamo Lake



Alamo Lake shelter with PM inlets – 12/2013

### Banner Mesa Medical Center

The high-resolution digital camera points to the Superstition Mountains, which lie 32 km east of the site. The pictures of the local views are updated every 5 minutes and can be viewed on the internet at <http://phoenixvis.net/index.aspx>. The area between the site and the mountains is primarily residential with some commercial areas.

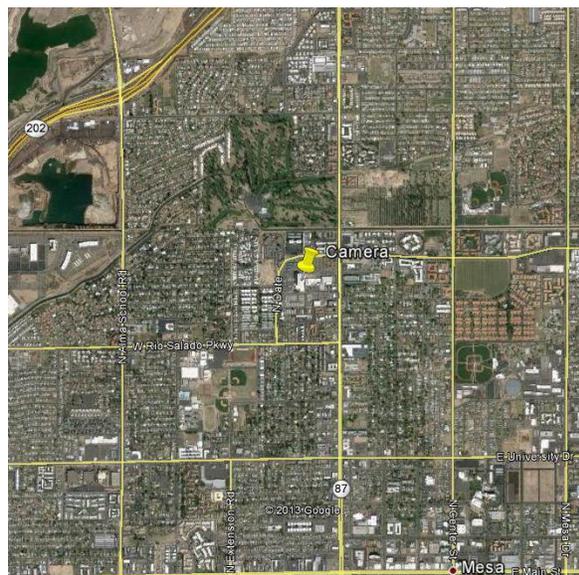
#### Site Information

AQS ID	None	ADEQ ID	19489
Street Address	525 W. Brown Rd. Mesa, AZ 85201		
County	Maricopa	Groundcover	Rooftop
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4335
Surrounding Area	Residential	Longitude	-111.8428
Distance to roadway	170 m – N – W Brown St.	Elevation	454 m
Traffic count of Nearest Major Roadway	32,760 – Country Club Dr. – 260m – E	Site Established Date	01/01/1993

#### Monitoring Information

Pollutant	Visibility			
Basic monitoring objective	Public Information			
Site type(s)	Population Exposure			
Monitor type(s)	--			
Instrument manufacture and model	CANON EOS Rebel T2i			
Spatial scale	Urban			
Monitor Start Date	01/01/1993			

#### Site Photos



Aerial view of Banner Mesa Medical Center



Banner Mesa Medical Center Camera–  
05/2013

### Bullhead City

The site is located on the rooftop of the U.S. Post Office Building, northeast of SR 95 and 7<sup>th</sup> Street. The surrounding area is commercial and residential to the west and south. The Colorado River lies to the west less than 400 meters. To the northeast/east, about 575 meters, is the Bullhead City Airport.

### Site Information

AQS ID	04-015-1003	ADEQ ID	16365
Street Address	990 Highway 95 Bullhead City, AZ 86429		
County	Mohave	Groundcover	Rooftop
CBSA	Lake Havasu City-Kingman	Latitude	35.1539
Surrounding Area	Commercial/Residential	Longitude	-114.5661
Distance to roadway	30 m – W – SR 95	Elevation	156 m
Traffic count of Nearest Major Roadway	25,500 – SR 95	Site Established Date	11/01/1997

### Monitoring Information

Pollutant	PM <sub>10</sub>			
Basic monitoring objective	NAAQS Comparison			
Site type(s)	Population Exposure			
Monitor type(s)	SLAMS			
Instrument manufacture and model	Thermo TEOM 1400AB			
Spatial scale	Neighborhood			
Monitor Start Date	11/05/1997			

### Site Photos



Aerial view of Bullhead City



Roof of Bullhead City Post Office– 06/2012

### Chiricahua Entrance Station

The site is operated by the NPS. The surrounding area is wilderness and desert. The Chiricahua National Monument lies 3.8 km to the northeast.

#### Site Information

AQS ID	04-003-8001	ADEQ ID	16679
Street Address	13063 E. Bonita Canyon Rd. Wilcox, AZ 85643		
County	Cochise	Groundcover	Dirt/Rocks
CBSA	Sierra Vista-Douglas	Latitude	32.0094
Surrounding Area	Desert	Longitude	-109.3891
Distance to roadway	99 m – E – Bonita Canyon Rd.	Elevation	1,570 m
Traffic count of Nearest Major Roadway	216 – Bonita Canyon Rd.	Site Established Date	01/01/1988

#### Monitoring Information

Pollutant	IMPROVE			
Basic monitoring objective	Research			
Site type(s)	Background			
Monitor type(s)	IMPROVE			
Instrument manufacture and model	--			
Spatial scale	Regional			
Monitor Start Date	03/02/1988			

#### Site Photos



Regional view of Chiricahua Entrance Station



Chiricahua Entrance Station shelter and IMPROVE – 07/2008

**Douglas Red Cross**

The site is located at the Red Cross building on the south side of 15<sup>th</sup> Street. The surrounding area is a mix of residential and commercial land use. The site is about 1,685 meters from the Arizona/Mexico border. Due to an oversight when loading IMPROVE data to the AQS database, a second AQS ID was created (04-003-9000) for IMPROVE data. This is an IMPROVE protocol site.

**Site Information**

AQS ID	04-003-1005	ADEQ ID	16503
Street Address	1445 E. 15 <sup>th</sup> St. Douglas, AZ 85607		
County	Cochise	Groundcover	Dirt/Grass
CBSA	Sierra Vista-Douglas	Latitude	31.3492
Surrounding Area	Commercial/Residential	Longitude	-109.5396
Distance to roadway	30 m – N – 14 <sup>th</sup> St.	Elevation	1,231 m
Traffic count of Nearest Major Roadway	2,474 – 14 <sup>th</sup> St.	Site Established Date	09/01/1998

**Monitoring Information**

Pollutant	PM <sub>10</sub>	PM <sub>2.5</sub>	Temp/RH	Wind
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	--	--
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SLAMS	SLAMS	--	--
Instrument manufacture and model	Thermo TEOM 1400AB	Met One BAM 1020	Vaisala HMP 155 Probe	RM Young 5305 Anemometer
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor Start Date	09/02/1998	11/02/2000	08/16/2012	08/06/2012

**Monitoring Information**

Pollutant	IMPROVE			
Basic monitoring objective	Research			
Site type(s)	Other			
Monitor type(s)	IMPROVE			
Instrument manufacture and model	--			
Spatial scale	Regional			
Monitor Start Date	06/02/2004			



### Dysart

The site is located in the Maricopa County Facility Maintenance Yard at the southeast corner of Bell Road and Dysart Road and is shared with MCAQD. The surrounding area is commercial and residential.

### Site Information

AQS ID	04-013-4010	ADEQ ID	19550
Street Address	16825 N. Dysart Rd. Surprise, AZ 85374		
County	Maricopa	Groundcover	Gravel
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.6370
Surrounding Area	Commercial/Residential	Longitude	-112.3393
Distance to roadway	14 m – W – Dysart Rd	Elevation	357 m
Traffic count of Nearest Major Roadway	51,673 – Bell Rd. – 150m – N	Site Established Date	01/01/2003

### Monitoring Information

Pollutant	Bscat/PM2.5	Temp R/H		
Basic monitoring objective	Public Information	--		
Site type(s)	Population Exposure	Population Exposure		
Monitor type(s)	--	--		
Instrument manufacture and model	Optec NGN 2 Nephelometer	Vaisala HMP155 Probe		
Spatial scale	Urban	Urban		
Monitor Start Date	01/01/2003	07/16/2003		

### Site Photos



Aerial view of Dysart



Dysart ADEQ Nephelometer tower attached to county shelter – 03/2013

### Estrella

The site is located in the southeast corner of the Maricopa County Maintenance Yard at Estrella Park. The surrounding area consist of the Estrella Mountains to the east, south, and west; a golf course 256 meters to the west; and a mixture of open land, agricultural lands, residential, and commercial activity to the north.

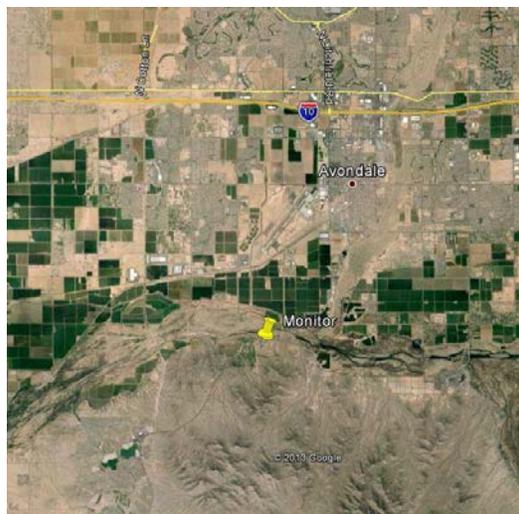
### Site Information

AQS ID	04-013-8005	ADEQ ID	16506
Street Address	15099 W. Casey Abbott Rd. Goodyear, AZ 85338		
County	Maricopa	Groundcover	Grass/Gravel
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.3833
Surrounding Area	Desert/Recreation Area	Longitude	-112.3728
Distance to roadway	258 m – N – W. Vineyard Ave.	Elevation	277 m
Traffic count of Nearest Major Roadway	910 – W. Vineyard Ave.	Site Established Date	01/01/1995

### Monitoring Information

Pollutant	Bscat/PM2.5	Temp R/H		
Basic monitoring objective	Public Information	--		
Site type(s)	Population Exposure	Population Exposure		
Monitor type(s)	--	--		
Instrument manufacture and model	Optec NGN 2 Nephelometer	Vaisala HMP155 Probe		
Spatial scale	Urban	Urban		
Monitor Start Date	01/01/2003	02/11/2003		

### Site Photos



Aerial view of Estrella



Estrella Nephelometer tower – 06/2012

### Estrella Mountain Community College

One high-resolution digital camera points to the Estrella Mountains, which lies 11 km to the southwest, and the other camera points to the White Tanks mountain range which is 20 km to the northeast. The pictures of the local views are updated every 5 minutes and can be viewed on the internet at <http://phoenixvis.net/index.aspx>. The area between the site and the mountain ranges is a mixture of residential, commercial, and agricultural uses.

#### Site Information

AQS ID	None	ADEQ ID	21736
Street Address	3000 N. Dysart Rd. Avondale, AZ 85323		
County	Maricopa	Groundcover	Rooftop
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4836
Surrounding Area	Residential	Longitude	-112.3503
Distance to roadway	155 m – S – Thomas Rd.	Elevation	305 m
Traffic count of Nearest Major Roadway	9,798 – Thomas Rd.	Site Established Date	01/01/1993

#### Monitoring Information

Pollutant	Visibility			
Basic monitoring objective	Public Information			
Site type(s)	Population Exposure			
Monitor type(s)	--			
Instrument manufacture and model	CANON EOS Rebel T2i			
Spatial scale	Urban			
Monitor Start Date	01/01/1993			

#### Site Photos



Aerial view of Estrella Mountain Community College

No photo

### Flagstaff Middle School

The site is west of Bonito Road on the rooftop of a Flagstaff Middle School building. The surrounding area is generally residential, with Thorpe Park located about 800 meters to the west, and US Route 180 approximately 415 meters to the east. At the end of 2013 the O<sub>3</sub>, and the PM<sub>10</sub>, and PM<sub>2.5</sub> Partisols, will be removed from this site. Only the PM<sub>2.5</sub> E-BAM unit will remain at the site.

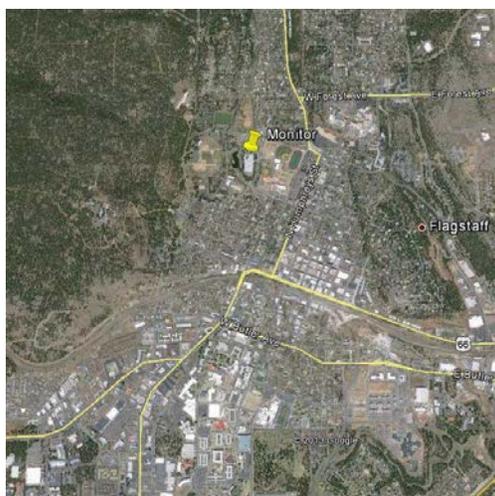
### Site Information

AQS ID	04-005-1008	ADEQ ID	16707
Street Address	755 N. Bonito St. Flagstaff, AZ 86001		
County	Coconino	Groundcover	Rooftop
CBSA	Flagstaff	Latitude	35.2061
Surrounding Area	Residential	Longitude	-111.6528
Distance to roadway	80 m – E – N. Bonito St.	Elevation	2,120 m
Traffic count of Nearest Major Roadway	3,200 – N. Bonito St.	Site Established Date	10/29/1996

### Monitoring Information

Pollutant	O <sub>3</sub>	PM <sub>2.5</sub>		
Basic monitoring objective	NAAQS Comparison	Public Information		
Site type(s)	Max O <sub>3</sub> Concentration	Population Exposure		
Monitor type(s)	SLAMS	Special Purpose		
Instrument manufacture and model	Teledyne API 400E	Met One E-BAM		
Spatial scale	Neighborhood	Neighborhood		
Monitor Start Date	03/13/2008	09/09/1999		

### Site Photos



Aerial view of Flagstaff Middle School



O<sub>3</sub> sample cane at Flagstaff – 11/2012

### Globe Highway

This site is the location of the collocated TSP Pb monitors in Hayden, AZ. ASARCO mine also maintains a SO<sub>2</sub> analyzer, Pb sampler, PM sampler, wind monitor, rain gage, and temp/RH at the site. The site is located on the southwest end of a small canyon and may be influenced by both broad and local meteorological conditions. The Site is located approximately 1 km to the east/southeast of the ASARCO smelting facility. Surrounding trees are below inlet height and have no vegetation.

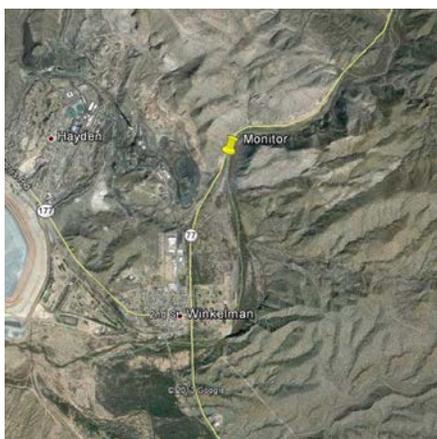
### Site Information

AQS ID	None	ADEQ ID	16593
Street Address	SR 77 Winkelman, AZ 85292		
County	Gila	Groundcover	Gravel
CBSA	Payson	Latitude	33.002
Surrounding Area	Desert/Residential	Longitude	-110.765
Distance to roadway	10 m – W – SR 77	Elevation	602 m
Traffic count of Nearest Major Roadway	2,700 – SR 77	Site Established Date	01/01/1975

### Monitoring Information

Pollutant	Pb	Pb	Temp/RH	Wind
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	--	--
Site type(s)	Highest Concentration, Source Oriented			
Monitor type(s)	SLAMS	QA Collocated	--	--
Instrument manufacture and model	Tisch TE-8550-BL TSP	Tisch TE-8550-BL TSP	Vaisala HMP 155 Probe	RM Young 5305 Anemometer
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor Start Date	10/01/2010	10/01/2010	04/15/2011	04/15/2011

### Site Photos



Aerial view of Globe Highway



Shelter, towers, and TSP monitors at Globe Highway – 07/2013

### Grand Canyon National Park - Hance Camp

The site is operated by the NPS. The site is 183 meters south of East Rim Drive and 1,931 meters south of Grandview Point turnoff. The site is in a clearing surrounded by forest.

#### Site Information

AQS ID	04-005-8102	ADEQ ID	16682
Street Address	West of SR 64 - Grand Canyon, AZ 86023		
County	Coconino	Groundcover	Dirt
CBSA	Flagstaff	Latitude	35.9731
Surrounding Area	Desert	Longitude	-111.9841
Distance to roadway	200 m – E – SR64	Elevation	2,235 m
Traffic count of Nearest Major Roadway	6,579 – SR 64	Site Established Date	09/24/1997

#### Monitoring Information

Pollutant	IMPROVE			
Basic monitoring objective	Research			
Site type(s)	Background			
Monitor type(s)	IMPROVE			
Instrument manufacture and model	--			
Spatial scale	Regional			
Monitor Start Date	09/24/1997			

#### Site Photos



Regional view of Grand Canyon NP - Hance Camp



Grand Canyon NP - Hance Camp shelter – date unknown

### Greer Water Treatment Plant

The site is located in the Apache National Forest and is operated the USFS. The surrounding area is forest with the town of Greer approximately 4 km to the south/southwest.

#### Site Information

AQS ID	04-001-8001	ADEQ ID	16323
Street Address	SR 260 & SR 373 Greer, AZ 85927		
County	Apache	Groundcover	Grass
CBSA	None	Latitude	34.0583
Surrounding Area	Forest	Longitude	-109.4400
Distance to roadway	1,600 m – N – SR 373	Elevation	2,503 m
Traffic count of Nearest Major Roadway	1,044 – SR 373	Site Established Date	01/01/2000

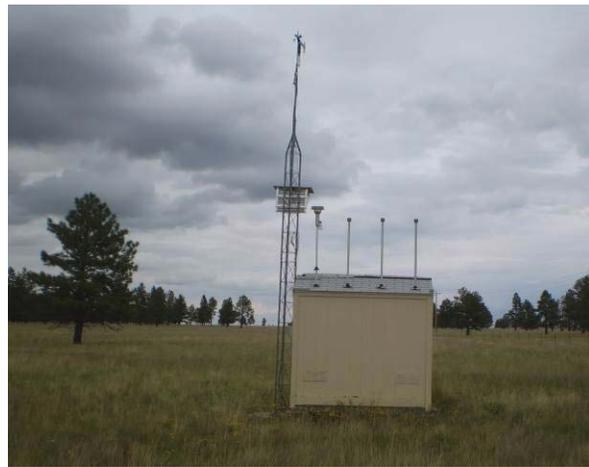
#### Monitoring Information

Pollutant	IMPROVE			
Basic monitoring objective	Research			
Site type(s)	Other			
Monitor type(s)	IMPROVE			
Instrument manufacture and model	--			
Spatial scale	Regional			
Monitor Start Date	02/29/2000			

#### Site Photos



Aerial view of Greer Water Treatment Plant



Shelter at Greer Water Treatment Plant – 09/2012

### Hayden Old Jail

The site is located in a shelter next to the old Hayden Jail building near the center of town. The instruments were previously located in the jail building and were moved to a shelter next to the jail due to safety and siting concerns. The surrounding area consists mainly of residential and commercial. The site is located approximately 1 km to the west of the ASARCO smelting facility. ASARCO mine also maintains a sulfur dioxide analyzer at the site.

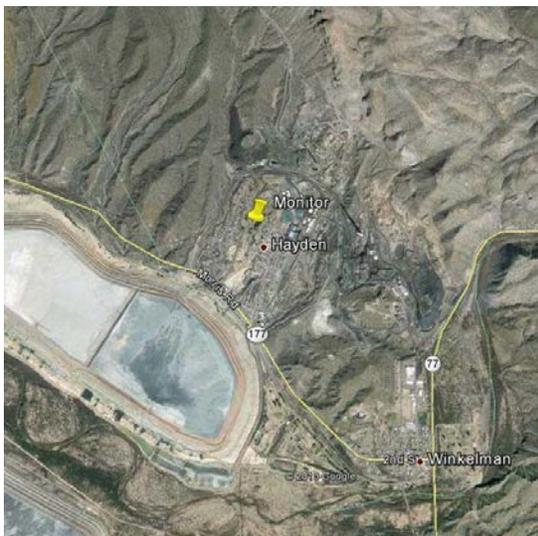
### Site Information

AQS ID	04-007-1001	ADEQ ID	16326
Street Address	Canyon Dr. & Kennecott Ave. Hayden, AZ 85235		
County	Gila	Groundcover	Shelter
CBSA	Payson	Latitude	33.0062
Surrounding Area	Residential	Longitude	-110.7864
Distance to roadway	10 m – E – Canyon Dr.	Elevation	625 m
Traffic count of Nearest Major Roadway	1,790 – Velasco Ave. – 242m – E	Site Established Date	01/01/1969

### Monitoring Information

Pollutant	SO <sub>2</sub>	PM <sub>10</sub>	Temp/RH	Wind
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	--	--
Site type(s)	Source Oriented	Source Oriented	Source Oriented	Source Oriented
Monitor type(s)	SLAMS	SLAMS	--	--
Instrument manufacture and model	Ecotech EC9850T	Thermo TEOM 1400AB	Vaisala HMP 155 Probe	RM Young 5305 Anemometer
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor Start Date	01/01/1975	01/06/1981	02/02/2011	02/02/2011

### Site Photos



Aerial view of Hayden Old Jail



Hayden Old Jail shelter, PM inlet and meteorological tower – 05/2014

### Ike's Backbone

The site is operated by the USFS. The surrounding area is Tonto National Forest, which includes Mazatzal and Pine Mountain Wilderness areas. The site is located on a small ridge with the Verde River and mountains nearby.

### Site Information

AQS ID	04-025-8104	ADEQ ID	16421
Street Address	Fossil Creek Rd. and Childs Rd. Strawberry, AZ 85544		
County	Coconino	Groundcover	Rocks/Plants
CBSA	Flagstaff	Latitude	34.3406
Surrounding Area	Forest	Longitude	-111.6825
Distance to roadway	1000m – N – Childs Rd	Elevation	1,303 m
Traffic count of Nearest Major Roadway	475 – Fossil Creek Rd. – 6500m – NE	Site Established Date	04/02/2000

### Monitoring Information

Pollutant	IMPROVE			
Basic monitoring objective	Research			
Site type(s)	Other			
Monitor type(s)	IMPROVE			
Instrument manufacture and model	--			
Spatial scale	Regional			
Monitor Start Date	04/02/2000			

### Site Photos



Regional view of Ike's Backbone



IMPROVE at Ike's Backbone – 2011

### JLG Supersite

The site was established to represent air quality in the central core of the Phoenix metropolitan area. The surrounding area is primarily residential neighborhoods, with I-17 approximately 1.6 km to the west. This is also an IMPROVE protocol site.

#### Site Information

AQS ID	04-013-9997	ADEQ ID	16328
Street Address	4530 N. 17 <sup>th</sup> Ave. Phoenix, AZ 85015		
County	Maricopa	Groundcover	Gravel
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.5038
Surrounding Area	Residential	Longitude	-112.0957
Distance to roadway	10 m – E – 17 <sup>th</sup> Ave.	Elevation	354 m
Traffic count of Nearest Major Roadway	1,557 – Campbell Ave. – 158m – S 17,639 – N 19 <sup>th</sup> Ave. – 367m – W	Site Established Date	07/01/1993

#### Monitoring Information

Pollutant	CO	NO <sub>2</sub> / NO <sub>x</sub>	NO <sub>y</sub>	O <sub>3</sub>
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison. Research	NAAQS Comparison	NAAQS Comparison
Site type(s)	Highest Concentration	Highest Concentration, Population Exposure	Population Exposure	Max O <sub>3</sub> Concentration
Monitor type(s)	SLAMS, NCore, PAMS	SLAMS, PAMS	NCore	SLAMS, NCore, PAMS
Instrument manufacture and model	Ecotech EC9830T	Ecotech EC9841B	Ecotech 9843	Teledyne API 400E
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor Start Date	07/01/1993	07/01/1993	01/01/2011	07/01/1993

#### Monitoring Information

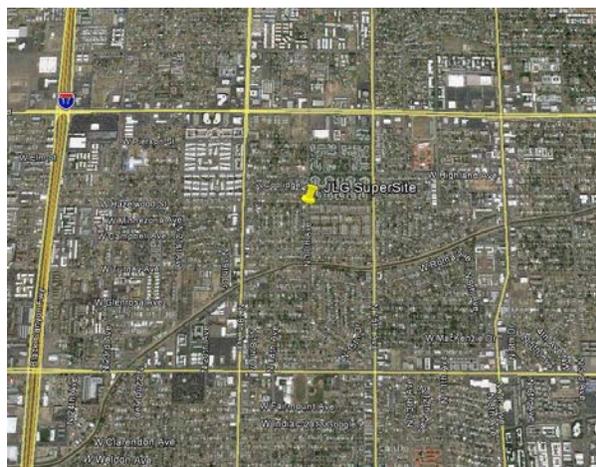
Pollutant	SO <sub>2</sub>	Carbonyl	VOC	SVOC
Basic monitoring objective	NAAQS Comparison	Research	Research	Research
Site type(s)	Population Exposure	Population Exposure, Max Precursor Impact	Population Exposure, Max Precursor Impact	Population Exposure
Monitor type(s)	SLAMS, NCore	PAMS, NATTS	PAMS, NATTS	NATTS
Instrument manufacture and model	Ecotech EC9850T	ATEC 8000	ATEC 2200	Tisch TE-1000BL
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor Start Date	03/03/2005	05/15/1999	05/15/1999	07/08/2007

<b>Monitoring Information</b>				
Pollutant	Pb-PM <sub>10</sub> / PM <sub>10</sub> metals speciation	PM <sub>10</sub>	PM <sub>10-2.5</sub>	PM <sub>2.5</sub>
Basic monitoring objective	NAAQS Comparison, Research	NAAQS Comparison	Research	NAAQS Comparison
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SLAMS, NCore, NATTS	SLAMS	NCore	SLAMS, NCore
Instrument manufacture and model	Thermo Partisol 2000	Met One BAM 1020	Met One BAM 1020	Met One BAM 1020
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor Start Date	01/01/2005	07/01/1993	11/10/2010	07/01/2003

<b>Monitoring Information</b>				
Pollutant	PM <sub>2.5</sub>	PM <sub>2.5</sub> Speciation	PM <sub>2.5</sub> Speciation	Temp/RH
Basic monitoring objective	NAAQS Comparison	Research	Research	--
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SLAMS, NCore	Supplemental Speciation, NCore	Supplemental Speciation, NCore	--
Instrument manufacture and model	Thermo Partisol 2000	Met One SuperSASS	URG 3000N	Vaisala HMP 155 Probe
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor Start Date	07/01/2003	02/21/2000	02/21/2000	07/01/1993

<b>Monitoring Information</b>				
Pollutant	Wind	IMPROVE	IMPROVE	
Basic monitoring objective	--	Research	Research	
Site type(s)	Population Exposure	Other	Other	
Monitor type(s)	--	IMPROVE	IMPROVE	
Instrument manufacture and model	RM Young 5305 Anemometer	--	--	
Spatial scale	Neighborhood	Neighborhood	Neighborhood	
Monitor Start Date	07/01/1993	04/25/2001	04/25/2001	

## Site Photos



Aerial view of JLG Supersite



Eastern side of JLG Supersite two shelters, roof top, and meteorological tower – 08/2012

### Meadview

The site is located within the Lake Mead National Recreation Area on the north end of Meadview, AZ, where the Grand Canyon meets Lake Mead. The surrounding area is primarily desert. To the southwest 64.4 km is US 93, which is the closest highway to the site and about 96.5 km to the southeast is downtown Kingman. This is an IMPROVE protocol site.

### Site Information

AQS ID	04-015-9000	ADEQ ID	21298
Street Address	Pierce Ferry Rd. Meadview, AZ 86444		
County	Mohave	Groundcover	Gravel
CBSA	Lake Havasu City-Kingman	Latitude	36.0193
Surrounding Area	Desert/Residential	Longitude	-114.0684
Distance to roadway	100 m – E – Pierce Ferry Rd	Elevation	902 m
Traffic count of Nearest Major Roadway	0 – Pierce Ferry Rd.	Site Established Date	09/04/1991

### Monitoring Information

Pollutant	IMPROVE			
Basic monitoring objective	Research			
Site type(s)	Background			
Monitor type(s)	IMPROVE			
Instrument manufacture and model	--			
Spatial scale	Regional			
Monitor Start Date	09/04/1991			

### Site Photos



Regional view of Meadview

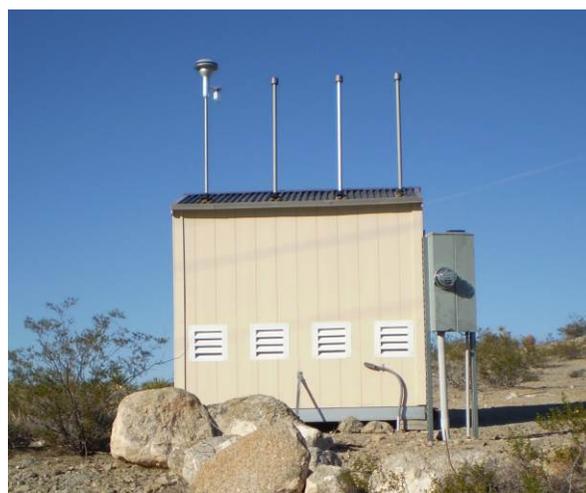


Photo of Meadview shelter – 11/2012

### Miami Golf Course

This site is the location of the TSP-Pb monitor in Miami, AZ. Freeport McMoRan Copper and Gold Inc also maintained two particulate matter monitors at the site but were removed as of January 2014. The site is located near the Cobre Valley Country Club with residential areas to the south and east and the Freeport McMoRan facility approximately 2 km to the west/southwest. Surrounding trees are below inlet height and have no vegetation.

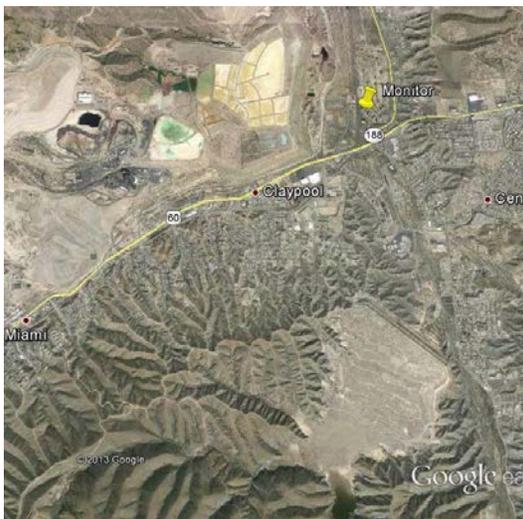
### Site Information

AQS ID	04-007-8000	ADEQ ID	16629
Street Address	SR 188 and US 60 Miami, AZ 85539		
County	Gila	Groundcover	Gravel
CBSA	Payson	Latitude	33.4190
Surrounding Area	Residential	Longitude	-110.8296
Distance to roadway	220 – SE – SR 188	Elevation	1000 m
Traffic count of Nearest Major Roadway	3,300 – SR 188	Site Established Date	01/01/1997

### Monitoring Information

Pollutant	Pb	PM <sub>10</sub>	Temp/RH	Wind
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	--	--
Site type(s)	Source Oriented	Source Oriented	Source Oriented	Source Oriented
Monitor type(s)	SLAMS	SLAMS	--	--
Instrument manufacture and model	Tisch TE-8550-BL TSP	Thermo TEOM 1400AB	Vaisala HMP 155 Probe	RM Young 5305 Anemometer
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor Start Date	10/01/2010	7/26/2012	06/08/2011	06/08/2011

### Site Photos



Aerial view of Miami Golf Course



Fenced Miami Golf Course site – 05/2014

### Miami Jones Ranch

This site is one of three SO<sub>2</sub> sites in the Miami area. Freeport McMoRan Copper and Gold Inc operate a SO<sub>2</sub> instrument at this site as well. The site is located south of the town of Miami and is over 3 km south/southwest of the smelter. The site located in the desert hills over looking the town and is off a gravel/dirt road.

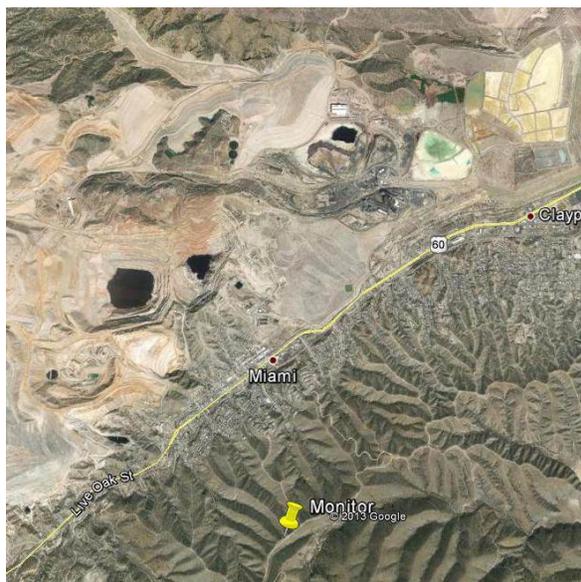
### Site Information

AQS ID	04-007-0011	ADEQ ID	16631
Street Address	Cherry Flats Rd. Miami, AZ 85539		
County	Gila	Groundcover	Gravel
CBSA	Payson	Latitude	33.3853
Surrounding Area	Residential	Longitude	-110.8673
Distance to roadway	15m – SE – Cherry Flats Rd.	Elevation	1,242 m
Traffic count of Nearest Major Roadway	n/a	Site Established Date	01/01/1997

### Monitoring Information

Pollutant	SO <sub>2</sub>			
Basic monitoring objective	NAAQS Comparison			
Site type(s)	Source Oriented			
Monitor type(s)	SLAMS			
Instrument manufacture and model	Ecotech EC9850T			
Spatial scale	Neighborhood			
Monitor Start Date	02/01/2013			

### Site Photos



Aerial view of Miami Jones Ranch



Fenced Miami Jones Ranch site – 03/2013

### Miami Ridgeline

This is one of three SO<sub>2</sub> site in the Miami area. The site is located inside on private property off of Linden Road and sits on the side of a north-south oriented ridge, which slopes in a northerly direction toward the town of Miami. The surrounding area is desert. Freeport McMoRan Copper and Gold Inc. also maintain a PM<sub>10</sub> monitor at the site. The Freeport McMoRan smelter is 1.6 km to the north of the site.

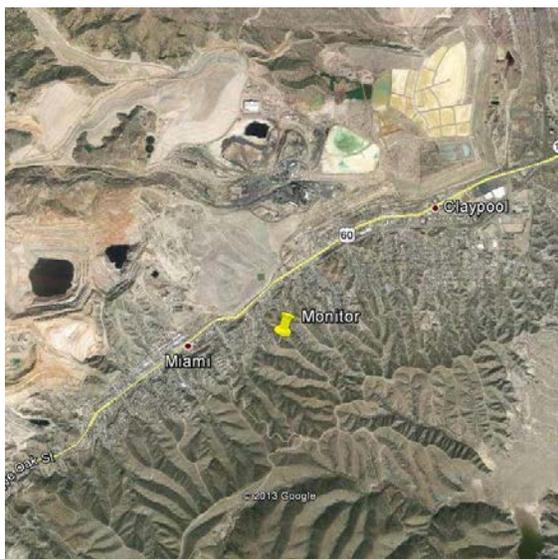
### Site Information

AQS ID	04-007-0009	ADEQ ID	16382
Street Address	4030 Linden St. Miami, AZ 85539		
County	Gila	Groundcover	Dirt
CBSA	Payson	Latitude	33.3992
Surrounding Area	Residential	Longitude	-110.8589
Distance to roadway	40 m – N – Linden St.	Elevation	1,085 m
Traffic count of Nearest Major Roadway	510 – Loomis Ave. – 230m – W	Site Established Date	01/01/1993

### Monitoring Information

Pollutant	SO <sub>2</sub>		
Basic monitoring objective	NAAQS Comparison		
Site type(s)	Source Oriented		
Monitor type(s)	SLAMS		
Instrument manufacture and model	Thermo 43C		
Spatial scale	Neighborhood		
Monitor Start Date	10/05/1995		

### Site Photos



Aerial view of Miami Ridgeline



Fenced Miami Ridgeline site – 05/2012

### Miami Townsite

This site is one of three SO<sub>2</sub> sites in the Miami area. Freeport McMoRan Copper and Gold Inc run a SO<sub>2</sub> instrument at this site as well. This site is located on the western side of Miami, near the center of the town. There is a church to the west and a Police Station to the west with residential to the north and south. The road is located to the south of the site. The smelter is over 2 km to the northwest of the site.

### Site Information

AQS ID	04-007-0012	ADEQ ID	16382
Street Address	Sullivan ST & Davis Canyon Miami, AZ 85539		
County	Gila	Groundcover	Gravel
CBSA	Payson	Latitude	33.3973
Surrounding Area	Residential	Longitude	-110.8744
Distance to roadway	16.5 m – SE – Sullivan St.	Elevation	1,042 m
Traffic count of Nearest Major Roadway	470 – Sullivan St.	Site Established Date	0/01/1997

### Monitoring Information

Pollutant	SO <sub>2</sub>			
Basic monitoring objective	NAAQS Comparison			
Site type(s)	Source Oriented			
Monitor type(s)	SLAMS			
Instrument manufacture and model	Ecotech EC9850T			
Spatial scale	Neighborhood			
Monitor Start Date	02/01/2013			

### Site Photos



Aerial view of Miami Townsite



Fenced Miami Townsite – 05/2013

**Nogales Post Office**

The site is located on the rooftop of the U.S. Post Office building, which lies approximately 670 meters north from the Arizona/Mexico Border. The surrounding area is a mixture of commercial and residential land use. This site is used to meet the PM<sub>2.5</sub> collocation requirement.

**Site Information**

AQS ID	04-023-0004	ADEQ ID	16511
Street Address	300 N. Morley Ave. Nogales, AZ 85621		
County	Santa Cruz	Groundcover	Rooftop
CBSA	Nogales	Latitude	31.3372
Surrounding Area	Residential/Commercial	Longitude	-110.9367
Distance to roadway	37.6 m – NW – Morley Ave.	Elevation	1,176 m
Traffic count of Nearest Major Roadway	7,199 – Morley Ave.	Site Established Date	01/01/1980

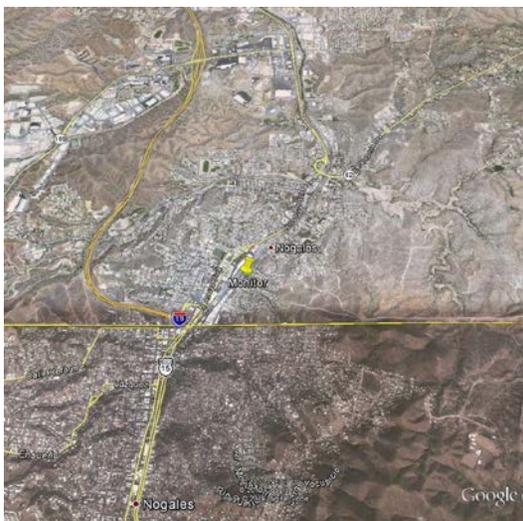
**Monitoring Information**

Pollutant	PM <sub>10</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub>
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison
Site type(s)	Population Exposure	Population Exposure	Highest Concentration	Highest Concentration
Monitor type(s)	SLAMS	QA Collocated	SLAMS	QA Collocated
Instrument manufacture and model	Met One BAM 1020	Thermo Partisol 2000	Met One BAM 1020	Thermo Partisol 2000
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor Start Date	01/01/1980	01/01/1980	04/01/1999	04/01/1999

**Monitoring Information**

Pollutant	Temp/RH	Wind		
Basic monitoring objective	--	--		
Site type(s)	Population Exposure	Population Exposure		
Monitor type(s)	--	--		
Instrument manufacture and model	Vaisala HMP 155 Probe	RM Young 5305 Anemometer		
Spatial scale	Neighborhood	Neighborhood		
Monitor Start Date	08/11/2011	01/01/1980		

## Site Photos



Aerial view of Nogales Post Office



Particulate and meteorological monitors on roof of Nogales Post Office – 04/2013

### North Mountain Summit

The site is located on a mountaintop in the North Mountain Recreation Area of Phoenix. The high-resolution digital camera faces South Mountain, which lies 27 km to the south. The pictures of the local views are updated every 5 minutes and can be viewed on the internet at <http://phoenixvis.net/index.aspx>. The surrounding area is desert recreation area to the north and west and residential with some commercial activity to the south and east.

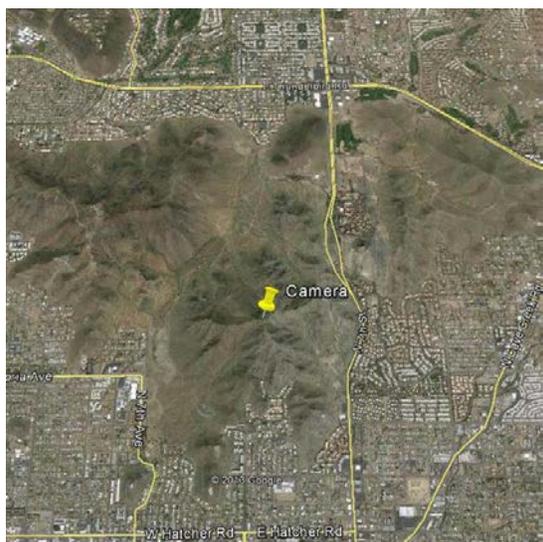
### Site Information

AQS ID	None	ADEQ ID	16480
Street Address	West side of 7 <sup>th</sup> St. in North Mountain Recreation Area Phoenix, AZ		
County	Maricopa	Groundcover	Dirt/Desert
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.5855
Surrounding Area	Residential/Desert	Longitude	-112.0722
Distance to roadway	850 m – E – 7 <sup>th</sup> St.	Elevation	625 m
Traffic count of Nearest Major Roadway	28,210 – 7 <sup>th</sup> St.	Site Established Date	01/01/1993

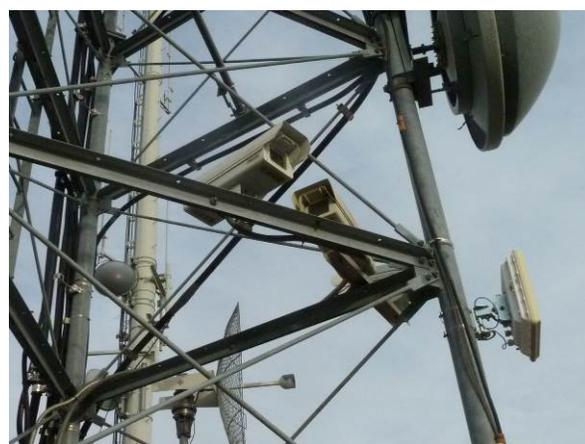
### Monitoring Information

Pollutant	Visibility	Visibility	
Basic monitoring objective	Public Information	Public Information	
Site type(s)	Population Exposure	Population Exposure	
Monitor type(s)	--	--	
Instrument manufacture and model	CANON EOS Rebel T2i	CANON EOS Rebel T2i	
Spatial scale	Urban	Urban	
Monitor Start Date	01/01/1993	01/01/1993	

### Site Photos



Aerial view of North Mountain Summit



Camera located on tower at North Mountain Summit – 04/2013

### Organ Pipe National Monument

The site is owned by the NPS, who operates the monitor at the site. The site is located 1 km south/southwest of the national monument visitor center, which is about 35.4 km south of Why, AZ. The site is about seven meters from a water pump house and lies about 540 meters east of a small mountain range. The surrounding area is predominately desert. This is an IMPROVE protocol site.

#### Site Information

AQS ID	04-019-0005	ADEQ ID	16681
Street Address	SR 85 & Puerto Blanco Rd. Ajo, AZ 85321		
County	Pima	Groundcover	Gravel
CBSA	Tucson	Latitude	31.9499
Surrounding Area	Desert	Longitude	-112.8010
Distance to roadway	400 m – E – SR 85	Elevation	505 m
Traffic count of Nearest Major Roadway	1,525 – SR 85	Site Established Date	01/01/1971

#### Monitoring Information

Pollutant	IMPROVE			
Basic monitoring objective	Research			
Site type(s)	Other			
Monitor type(s)	IMPROVE			
Instrument manufacture and model	--			
Spatial scale	Regional			
Monitor Start Date	01/15/2003			

#### Site Photos



Regional view of Organ Pipe NM



Shelter at Organ Pipe NM – 04/2014

### Paul Spur Chemical Lime Plant

The site is located approximately 1 km to the northeast of the Chemical Lime Plant, just south of SR 80 between Bisbee and Douglas, and 3.5 km north of the Arizona/Mexico border. In 2011 the meteorological instruments were re-located to this site when the Paul Spur Chemical Lime Plant South site was closed. Other than the nearby Chemical Lime Plant, the surrounding area is predominately desert. The Chemical Lime Plant is not operational at this time.

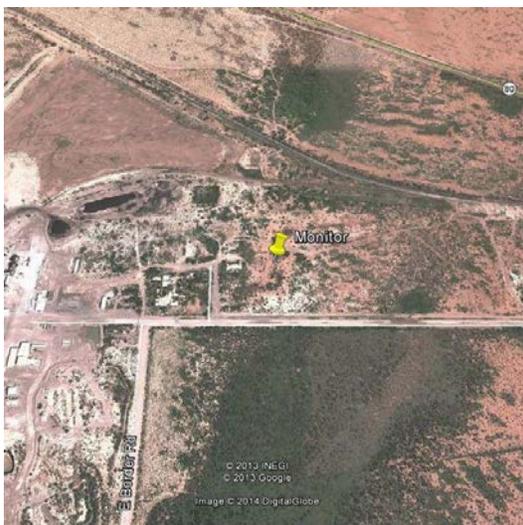
#### Site Information

AQS ID	04-003-0011	ADEQ ID	16391
Street Address	SR 80 & Paul Spur Rd. Paul Spur, AZ 85603		
County	Cochise	Groundcover	Dirt
CBSA	Sierra Vista-Douglas	Latitude	31.3658
Surrounding Area	Desert	Longitude	-109.7309
Distance to roadway	107 m – S – Paul Spur Rd.	Elevation	1,278 m
Traffic count of Nearest Major Roadway	4,920 – SR 80 – 230m – N	Site Established Date	01/01/1985

#### Monitoring Information

Pollutant	PM <sub>10</sub>	Temp/RH	Wind	
Basic monitoring objective	NAAQS Comparison	--	--	
Site type(s)	Source Oriented	Source Oriented	Source Oriented	
Monitor type(s)	SLAMS	--	--	
Instrument manufacture and model	Thermo TEOM 1400AB	Vaisala HMP 155 Probe	RM Young 5305 Anemometer	
Spatial scale	Middle	Middle	Middle	
Monitor Start Date	01/06/1991	12/01/2011	12/01/2011	

#### Site Photos



Aerial view of Paul Spur CLP



Particulate monitors and meteorological tower at Paul Spur CLP – 03/2013

### Payson Well Site

The site is located in the southern area of Payson, in a field at a well water site. To the south of the site are two tanks. In general, the surrounding area is commercial with some residential land use and 200 meters to the south east is SR 87. Site was moved 90m NE on the same parcel to meet siting requirements. The Thermo Partisol 2000 will be replaced with a continuous Met One BAM 1020 starting July 1, 2014.

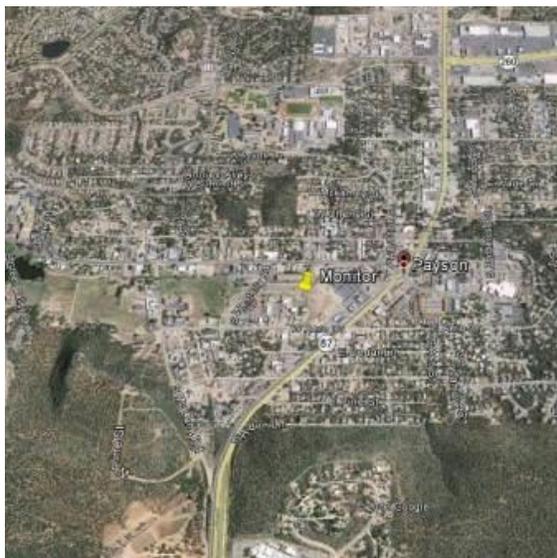
### Site Information

AQS ID	04-007-0008	ADEQ ID	16317
Street Address	204 W. Aero Dr. Payson, AZ 85541		
County	Gila	Groundcover	Gravel
CBSA	Payson	Latitude	34.2297
Surrounding Area	Residential/Commercial	Longitude	-111.3295
Distance to roadway	134 m – S – Aero Dr.	Elevation	1,501 m
Traffic count of Nearest Major Roadway	1,724 – Aero Dr.	Site Established Date	01/01/1991

### Monitoring Information

Pollutant	PM <sub>10</sub>	PM <sub>2.5</sub>	Temp/RH	Wind
Basic monitoring objective	NAAQS Comparison	Public Information	--	--
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SLAMS	Special Purpose	--	--
Instrument manufacture and model	Met One BAM 1020	Met One E-BAM	Vaisala HMP 45C Probe	RM Young 5103 Anemometer
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor Start Date	01/01/1991	05/16/2012	05/30/1991	05/30/1991

### Site Photos



Aerial view of Payson Well Site



Payson Well Site continuous particulate monitor probe and shelter – 5/2014

### Petrified Forest National Park

The site is operated by the NPS and is located 1.6 km north of park headquarters. The park sits along I-40 and the surrounding area is desert.

### Site Information

AQS ID	04-001-0012	ADEQ ID	16473
Street Address	I-40 & Petrified Forest Rd. Petrified Forest National Park, AZ		
County	Apache	Groundcover	Dirt
CBSA	None	Latitude	35.0770
Surrounding Area	Desert	Longitude	-109.7690
Distance to roadway	1,050 m – SW – I-40	Elevation	1,766 m
Traffic count of Nearest Major Roadway	15,246 – I-40	Site Established Date	03/02/1988

### Monitoring Information

Pollutant	IMPROVE			
Basic monitoring objective	Research			
Site type(s)	Background			
Monitor type(s)	IMPROVE			
Instrument manufacture and model	--			
Spatial scale	Regional			
Monitor Start Date	03/02/1988			

### Site Photos



Regional view of Petrified Forest NP



Photo of Petrified Forest NP taken from IMPROVE website – date unknown

### Phoenix Transmissometer Receiver

The site is located in downtown Phoenix on the rooftop of the Holiday Inn Hotel near 2<sup>nd</sup> Avenue and Osborn Road. The transmitter is located on top of the Phoenix Baptist Hospital 4.5 km to the northwest. The area between the two sites is a mix of residential and commercial.

#### Site Information

AQS ID	None	ADEQ ID	16829
Street Address	3600 N. 2 <sup>nd</sup> Ave. Phoenix, AZ 85013		
County	Maricopa	Groundcover	Rooftop
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4901
Surrounding Area	Commercial/Residential	Longitude	-112.0767
Distance to roadway	25 m – E – Central Ave.	Elevation	337 m
Traffic count of Nearest Major Roadway	1,5470 – Central Ave.	Site Established Date	12/01/1992

#### Monitoring Information

Pollutant	Bext	Temp R/H		
Basic monitoring objective	Public Information	--		
Site type(s)	Population Exposure	Population Exposure		
Monitor type(s)	--	--		
Instrument manufacture and model	Optec LVP-2 Transmissometer Receiver	Vaisala HMP155 Probe		
Spatial scale	Urban	Urban		
Monitor Start Date	12/01/1992	01/01/1994		

#### Site Photos



Aerial view of Phoenix Transmissometer Receiver



Phoenix Transmissometer Receiver on hotel rooftop – 12/2012

### Phoenix Transmissometer Transmitter

The transmitter is located on the rooftop of Phoenix Baptist Hospital at 19<sup>th</sup> Avenue and Bethany Home Road. The receiver is located at the Holiday Inn Hotel 4.5 km to the southeast. The area between the two sites is a mix of residential and commercial. A new LED bulb was installed in May 2014.

### Site Information

AQS ID	None	ADEQ ID	16330
Street Address	2000 W. Bethany Home Rd. Phoenix, AZ 85015		
County	Maricopa	Groundcover	Rooftop
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.5253
Surrounding Area	Commercial/Residential	Longitude	-112.1019
Distance to roadway	120 m – S – Beth. Home Rd.	Elevation	340 m
Traffic count of Nearest Major Roadway	40,950 – Bethany Home Rd.	Site Established Date	12/01/1992

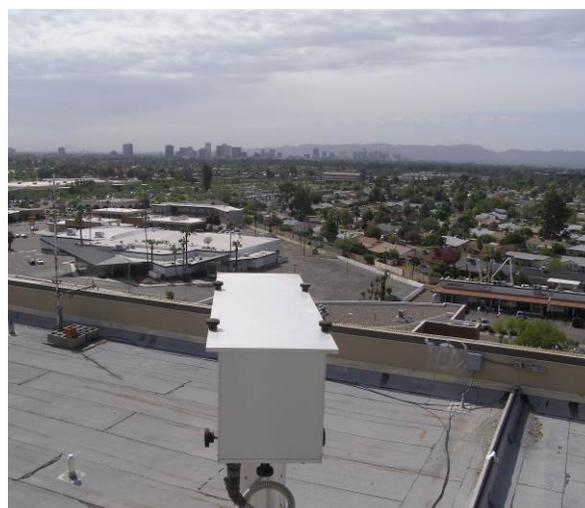
### Monitoring Information

Pollutant	Bext			
Basic monitoring objective	Public Information			
Site type(s)	Population Exposure			
Monitor type(s)	--			
Instrument manufacture and model	Optec LVP-2 Transmissometer			
Spatial scale	Urban			
Monitor Start Date	12/01/1992			

### Site Photos



Aerial view of Phoenix Transmissometer Transmitter



Phoenix Transmissometer Transmitter Pathway – 2005

### Pleasant Valley Ranger Station

The site is operated by USFS. The site is located on a hilltop south of Young, AZ, within the Sierra Ancha Wilderness and Tonto National Forest. The surrounding area is a transitional zone between desert and forest. The site lies 1,160 meters to the south of SR 288.

### Site Information

AQS ID	04-007-8100	ADEQ ID	16446
Street Address	SR 288 & Old Cherry Rd. Young, AZ 85541		
County	Gila	Groundcover	Dirt
CBSA	Payson	Latitude	34.0908
Surrounding Area	Desert/Forest	Longitude	-110.9419
Distance to roadway	250 m – N – SR288	Elevation	1,587 m
Traffic count of Nearest Major Roadway	143 – SR 288	Site Established Date	01/01/2000

### Monitoring Information

Pollutant	IMPROVE			
Basic monitoring objective	Research			
Site type(s)	Other			
Monitor type(s)	IMPROVE			
Instrument manufacture and model	--			
Spatial scale	Regional			
Monitor Start Date	02/10/2000			

### Site Photos



Regional view of Pleasant Valley Ranger Station



Shelter at Pleasant Valley Ranger Station – 09/2012

### Prescott College AQD

The site was relocated at Prescott College from the Mogollon Building to the Penstemon Building due to Mogollon Building's renovation and to meet siting requirements. The surrounding area is residential and commercial, with a high traffic street approximately 45 meters to the east.

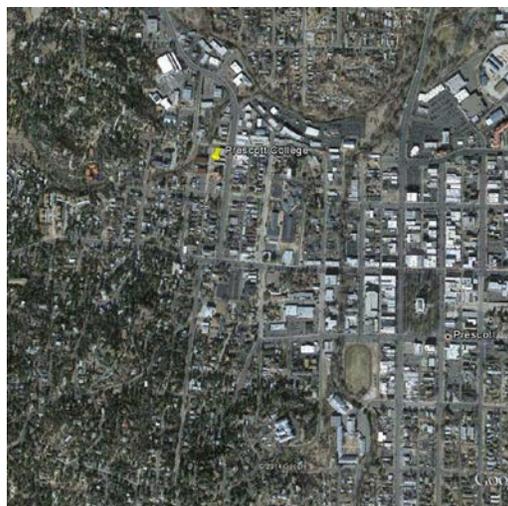
#### Site Information

AQS ID	04-025-8033	ADEQ ID	133011
Street Address	330 Grove Ave., Prescott, AZ 86301		
County	Yavapai	Groundcover	Rooftop
CBSA	Prescott	Latitude	34.5467
Surrounding Area	Residential/Commercial	Longitude	-112.4761
Distance to roadway	45m – E – Grove Ave.	Elevation	1,591 m
Traffic count of Nearest Major Roadway	13,300 – Grove Ave.	Site Established Date	12/05/2006

#### Monitoring Information

Pollutant	O <sub>3</sub>	PM <sub>2.5</sub>		
Basic monitoring objective	NAAQS Comparison	Public Information		
Site type(s)	Max O <sub>3</sub> Concentration	Population Exposure		
Monitor type(s)	SLAMS	Special Purpose		
Instrument manufacture and model	Teledyne 400e	Met One E-BAM		
Spatial scale	Neighborhood	Neighborhood		
Monitor Start Date	03/25/2008	07/13/2011		

#### Site Photos



Aerial view of Prescott College AQD



New Location of Prescott College AQD – 10/2013

### Queen Valley

The site is located in northern Pinal County on the far east/southeastern outskirts of the Phoenix metropolitan area. It is located 635 meters southeast of the small town of Queen Valley, AZ and the surrounding area is primarily desert. This is a downwind PAMS type 3 site. This is also an IMPORVE protocol site.

### Site Information

AQS ID	04-021-8001	ADEQ ID	16394
Street Address	10 S. Queen Anne Dr. Queen Valley, AZ 85219		
County	Pinal	Groundcover	Gravel
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.2938
Surrounding Area	Desert	Longitude	-111.2857
Distance to roadway	87 m – E – Queen Anne Dr.	Elevation	668 m
Traffic count of Nearest Major Roadway	1,284 – Queen Anne Dr.	Site Established Date	01/01/1998

### Monitoring Information

Pollutant	O <sub>3</sub>	NO <sub>y</sub>	VOC	Temp/RH
Basic monitoring objective	NAAQS Comparison	Research	Research	--
Site type(s)	Downwind	Downwind	Downwind	Downwind
Monitor type(s)	SLAMS, PAMS	PAMS	PAMS	--
Instrument manufacture and model	Teledyne API 400E	Thermo 42C TL Reactive	ATEC 8001	Vaisala HMP 45C Probe
Spatial scale	Regional	Regional	Regional	Regional
Monitor Start Date	01/01/1998	01/01/1998	05/20/2001	06/23/2003

### Monitoring Information

Pollutant	Wind	IMPROVE		
Basic monitoring objective	--	Research		
Site type(s)	Downwind	Other		
Monitor type(s)	--	IMPROVE		
Instrument manufacture and model	RM Young 5103 Anemometer	--		
Spatial scale	Regional	Regional		
Monitor Start Date	06/23/2003	04/30/2001		

## Site Photos



Regional view of Queen Valley



Shelter and meteorological tower at Queen Valley site – 02/2012

### Rillito

In February of 2007 the site was moved from the Water St. location 91 meters southwest to its current location at a city water pumping station. The surrounding area is primarily residential and industrial, with I-10 approximately 260 meters to the northeast. The site is located within the small town of Rillito, AZ and is approximately 500 meters to the north/northwest of the Cal Portland Rillito Cement Plant.

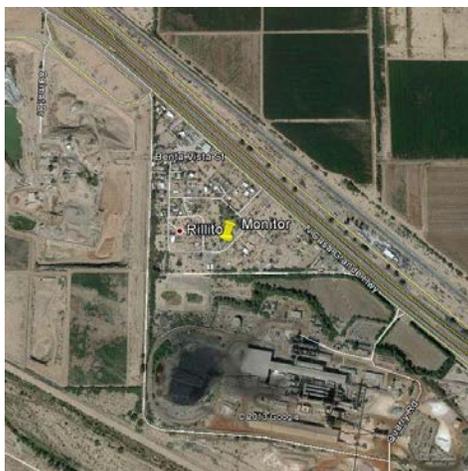
### Site Information

AQS ID	04-019-0020	ADEQ ID	16499
Street Address	8840 W. Robinson St. Rillito, AZ 85653		
County	Pima	Groundcover	Dirt
CBSA	Tucson	Latitude	32.4143
Surrounding Area	Residential	Longitude	-111.1545
Distance to roadway	10 m – S – Robinson St.	Elevation	626 m
Traffic count of Nearest Major Roadway	2,634 – I-10 Frontage Rd. – 240m – NE	Site Established Date	01/01/1985

### Monitoring Information

Pollutant	PM <sub>10</sub>	Temp/RH	Wind	
Basic monitoring objective	NAAQS Comparison	--	--	
Site type(s)	Source Oriented	Source Oriented	Source Oriented	
Monitor type(s)	SLAMS	--	--	
Instrument manufacture and model	Thermo TEOM 1400AB	Vaisala HMP 45C Probe	RM Young 5103 Anemometer	
Spatial scale	Middle	Middle	Middle	
Monitor Start Date	01/03/1985	03/30/2010	01/08/2004	

### Site Photos



Aerial view of Rillito



Rillito meteorological tower and particulate monitors on platform – 04/2013

### Saguaro National Park East

The site is located within the Saguaro National Park East, 805 meters south of park headquarters and is operated jointly by PDEQ and NPS. The area surrounding the site is scattered residential to the west and desert to the east.

#### Site Information

AQS ID	04-019-0021	ADEQ ID	16474
Street Address	3905 S. Old Spanish Trail Tucson, AZ 85730		
County	Pima	Groundcover	Dirt
CBSA	Tucson	Latitude	32.1740
Surrounding Area	Residential/Desert	Longitude	-110.7360
Distance to roadway	82 m – W – Old Spanish Tr.	Elevation	938 m
Traffic count of Nearest Major Roadway	6,198 – Old Spanish Trail	Site Established Date	06/04/1988

#### Monitoring Information

Pollutant	IMPROVE			
Basic monitoring objective	Research			
Site type(s)	Background			
Monitor type(s)	IMPROVE			
Instrument manufacture and model	--			
Spatial scale	Regional			
Monitor Start Date	06/04/1988			

#### Site Photos



Regional view of Saguaro NP East



Photo of Saguaro NP East taken from IMPROVE website – date unknown

### Saguaro National Park West

The site is located within the Saguaro National Park West. The site is operated by the NPS. The area surrounding the site is residential to the northwest and south/southeast and desert to the northeast. The site lies approximately 17 km southwest of I-10. This is an IMPROVE protocol site.

#### Site Information

AQS ID	04-019-9000	ADEQ ID	16475
Street Address	N. Sandario Rd. and W. Mile Wide Rd. Tucson, AZ		
County	Pima	Groundcover	Gravel
CBSA	Tucson	Latitude	32.2485
Surrounding Area	Desert	Longitude	-111.2175
Distance to roadway	27 m – W – Mile Wide Rd.	Elevation	718 m
Traffic count of Nearest Major Roadway	1,889 – Mile Wide Rd.	Site Established Date	12/29/1996

#### Monitoring Information

Pollutant	IMPROVE			
Basic monitoring objective	Research			
Site type(s)	Other			
Monitor type(s)	IMPROVE			
Instrument manufacture and model	--			
Spatial scale	Regional			
Monitor Start Date	04/19/2001			

#### Site Photos



Regional view of Saguaro NP West



Shelters at Saguaro NP West site – 07/2012

### Sedona Fire Station AQD

In 2011, the EBAM instrument in Sedona was moved from the Sedona Post Office site to the Sedona Fire Station site due to concerns about local emissions affecting the monitor. The Sedona Fire Station site is located approximately 300 meters to the northeast of the Sedona Post Office site. The surrounding area is composed of residential and commercial use.

#### Site Information

AQS ID	None	ADEQ ID	142818
Street Address	310 Forest Rd, Sedona, AZ 86336		
County	Coconino	Groundcover	Rooftop
CBSA	Flagstaff	Latitude	34.8683
Surrounding Area	Commercial/Residential	Longitude	-111.7633
Distance to roadway	50m – N – Forest Rd	Elevation	1,326 m
Traffic count of Nearest Major Roadway	5,689 – SR89A – 150m – E n/a	Site Established Date	12/16/2011

#### Monitoring Information

Pollutant	PM <sub>2.5</sub>			
Basic monitoring objective	Public Information			
Site type(s)	Population Exposure			
Monitor type(s)	Special Purpose			
Instrument manufacture and model	Met One E-BAM			
Spatial scale	Neighborhood			
Monitor Start Date	12/16/2011			

#### Site Photos



Aerial view of Sedona Fire Station



E-BAM on roof at Sedona Fire Station – 3/2012

### South Phoenix

The site is owned by MCAQD. ADEQ operates the toxics sampler at the site. The site is situated in South Phoenix, at the edge of a high population area, bordering a mixture of residential and commercial properties. Two high population areas are located north and west of the site.

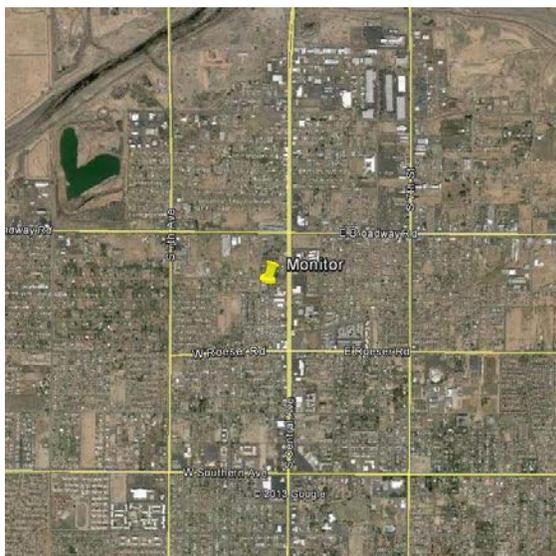
### Site Information

AQS ID	04-013-4003	ADEQ ID	16377
Street Address	33 W. Tamarisk St. Phoenix, AZ 85041		
County	Maricopa	Groundcover	Asphalt
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4030
Surrounding Area	Residential/Commercial	Longitude	-112.0750
Distance to roadway	83 m – N – Tamarisk St.	Elevation	330 m
Traffic count of Nearest Major Roadway	19,110 – Central Ave. – 165m – E	Site Established Date	01/01/1997

### Monitoring Information

Pollutant	VOC			
Basic monitoring objective	Research			
Site type(s)	Population Exposure			
Monitor type(s)	UATMP			
Instrument manufacture and model	ATEC 8001			
Spatial scale	Neighborhood			
Monitor Start Date	8/5/2001			

### Site Photos



Aerial view of South Phoenix



Shelter and meteorological tower at South Phoenix site – 04/2005

### Sycamore Canyon

The site is located near the entrance to Camp Raymond Boy Scout Camp. Minimal obstructions exist in the area surrounding the site and no routine human activity occurs in the area surrounding the site. Sycamore Canyon Wilderness Area is 800 meters south of the site.

### Site Information

AQS ID	04-005-8103	ADEQ ID	16476
Street Address	Camp Kimball Rd. Flagstaff, AZ (Camp Raymond)		
County	Coconino	Groundcover	Dirt/Grass
CBSA	Flagstaff	Latitude	35.1406
Surrounding Area	Forest	Longitude	-111.9692
Distance to roadway	33 m – NW – Boy Scout Camp Rd	Elevation	2,046 m
Traffic count of Nearest Major Roadway	15,048 – I-40 – 12km – N	Site Established Date	09/11/1991

### Monitoring Information

Pollutant	IMPROVE			
Basic monitoring objective	Research			
Site type(s)	Background			
Monitor type(s)	IMPROVE			
Instrument manufacture and model	--			
Spatial scale	Regional			
Monitor Start Date	09/11/1991			

### Site Photos



Regional view of Sycamore Canyon



Shelter at Sycamore Canyon site – 11/2012

### Tonto National Monument

The site is jointly operated by ADEQ and USFS. The site is located within the Tonto National Forest at the base of Tonto National Monument, about 40 meters south of SR 188. The area surrounding the site is desert with Roosevelt Lake about 1 km to the north.

### Site Information

AQS ID	04-007-0010	ADEQ ID	16447
Street Address	South of SR 188 Roosevelt, AZ 85545		
County	Gila	Groundcover	Dirt/Rock
CBSA	Payson	Latitude	33.6547
Surrounding Area	Desert	Longitude	-111.1074
Distance to roadway	17 m – NE – SR 188	Elevation	786 m
Traffic count of Nearest Major Roadway	800 – SR 188	Site Established Date	04/23/1988

### Monitoring Information

Pollutant	O <sub>3</sub>	IMPROVE		
Basic monitoring objective	NAAQS Comparison	Research		
Site type(s)	Downwind	Background		
Monitor type(s)	SLAMS	IMPROVE		
Instrument manufacture and model	Teledyne API 400E	--		
Spatial scale	Regional	Regional		
Monitor Start Date	05/22/2002	04/23/1988		

### Site Photos



Regional view of Tonto NM



Shelter at Tonto NM site – 08/2013

### Vehicle Emissions Laboratory

The site is located in the northwest corner of the Vehicle Emissions Laboratory property. The surrounding area is a both residential and commercial, with an open field directly to the northwest. The site is about 415 meters south of Red Mountain Freeway (Loop 202).

#### Site Information

AQS ID	04-013-9998	ADEQ ID	16363
Street Address	600 N. 40 <sup>th</sup> St. Phoenix, AZ 85008		
County	Maricopa	Groundcover	Gravel
CBSA	Phoenix-Mesa-Scottsdale	Latitude	33.4553
Surrounding Area	Residential/Commercial	Longitude	-111.9961
Distance to roadway	66 m – E – 40 <sup>th</sup> St.	Elevation	356 m
Traffic count of Nearest Major Roadway	10,740 – 40 <sup>th</sup> St.	Site Established Date	04/01/1987

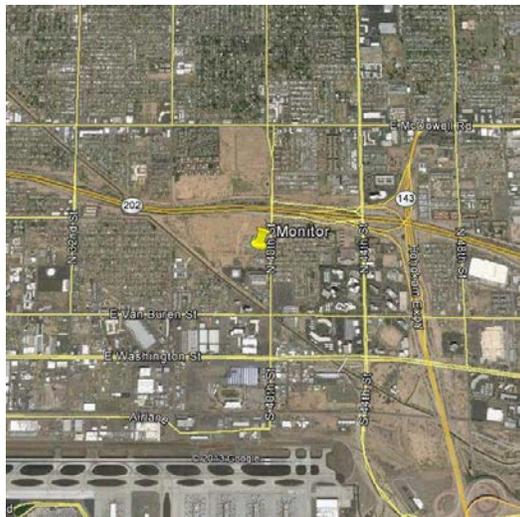
#### Monitoring Information

Pollutant	Bscat/PM2.5	Delta Temp	Horizontal Solar Raditation	Ultraviolet Solar Radiation
Basic monitoring objective	Public Information	Research	Research	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	--	PAMS	PAMS	PAMS
Instrument manufacture and model	Optec NGN 2 Nephelometer	RM Young 7627	Li-Cor 200S2	Epply TUVR UV
Spatial scale	Urban	Neighborhood	Neighborhood	Neighborhood
Monitor Start Date	06/25/2003	08/20/2004	06/18/1999	08/20/2004

#### Monitoring Information

Pollutant	Temp R/H	Wind		
Basic monitoring objective	--	--		
Site type(s)	Population Exposure	Population Exposure		
Monitor type(s)	--	--		
Instrument manufacture and model	Rotronics MP101A Probe	Vaisala HMP155 Probe		
Spatial scale	Neighborhood	Neighborhood		
Monitor Start Date	05/11/1999	05/11/1999		

## Site Photos



Aerial view of Vehicle Emissions Laboratory



Meteorological tower, and shelter at VEL –  
12/2012

### Yuma Supersite

The site was reopened in 2008 and has been used to consolidate air quality monitors in the Yuma area to one site. The site is located on the southeast corner of the Rural Metro Administration Facility property. The surrounding area is commercial and industrial, with a dirt lot adjacent to the south and I-8 1 km to the northeast. In addition to NAAQS compliance, the site is also used to help understand transport of PM and Ozone.

### Site Information

AQS ID	04-027-8011	ADEQ ID	113219
Street Address	2323 S. Arizona Ave. Yuma, AZ 85364		
County	Yuma	Groundcover	Gravel
CBSA	Yuma	Latitude	32.6903
Surrounding Area	Commercial/Industrial	Longitude	-114.6144
Distance to roadway	91 m – W – Arizona Ave.	Elevation	60 m
Traffic count of Nearest Major Roadway	12,302 – Arizona Ave.	Site Established Date	02/01/2006

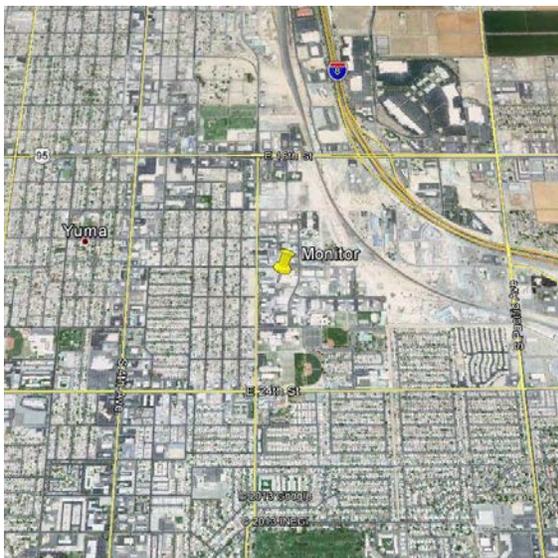
### Monitoring Information

Pollutant	O <sub>3</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Temp/RH
Basic monitoring objective	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	--
Site type(s)	Max O <sub>3</sub> Concentration	Population Exposure	Regional Transport	Population Exposure
Monitor type(s)	SLAMS	SLAMS	SLAMS	--
Instrument manufacture and model	Teledyne API 400E	Thermo TEOM 1400AB	Met One BAM 1020	Vaisala HMP 155 Probe
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor Start Date	05/06/2008	12/01/2009	01/01/2010	03/17/2010

### Monitoring Information

Pollutant	Wind			
Basic monitoring objective	--			
Site type(s)	Population Exposure			
Monitor type(s)	--			
Instrument manufacture and model	RM Young 5305 Anemometer			
Spatial scale	Neighborhood			
Monitor Start Date	03/17/2010			

## Site Photos



Aerial view of Yuma Supersite



Shelter and Meteorological Tower at Yuma Supersite – 4/2014

## **Appendix E – Criteria Pollutant Minimum Monitoring Requirements**

This appendix contains tables that summarize the criteria pollutant minimum monitoring requirements for each MSA or CBSA that ADEQ is designated as the Primary Quality Assurance Organization (PQAO). Minimum monitoring requirements for the Phoenix-Mesa-Scottsdale and Tucson MSAs are not included within this appendix as ADEQ is not the PQAO for these MSAs.

**O<sub>3</sub>**

(Note: Refer to section 4.1 and Table D-2 of Appendix D to 40 CFR Part 58)

Table 1. Minimum Monitoring Requirements for O<sub>3</sub>.

MSA	County	2010 Census Population	2011-2013 8-hr Design Value (ppb)	Design Value Site	# of Required Monitors	# of Active Monitors	# of Additional Monitors Needed
Flagstaff	Coconino	134,421	69	Flagstaff Middle School	1	1	0
Prescott	Yavapai	211,033	69	Prescott College AQD	1	1	0
Yuma	Yuma	195,751	76	Yuma Supersite	1	1	0
Lake Havasu-Kingman	Mohave	200,186	N/A	N/A	0	0	0
Sierra Vista - Douglas	Cochise	131,346	N/A	N/A	0	0	0

Monitors required for SIP or Maintenance Plan: Alamo Lake, JLG Supersite, Queen Valley, and Tonto National Monument.

**PM<sub>2.5</sub>**

(Note: Refer to sections 4.7.1, 4.7.2 and Table D-5 of Appendix D to 40 CFR Part 58)

Table 2a Minimum Monitoring Requirements for PM<sub>2.5</sub> SLAMS. (FRM/FEM/ARM, see 40CFR 58 App D Section 4.7.1 and Table D-5)

MSA	County	2010 Census Population	2011-2013 Annual Design Value (µg/m <sup>3</sup> )	Annual Design Value Site	2011-2013 Daily Design Value (µg/m <sup>3</sup> )	Daily Design Value Site	# of Required Continuous Monitors	# of Active Continuous Monitors	# of Additional Continuous Monitors Needed
Flagstaff	Coconino	134,421	5.3	Flagstaff Middle School	12	Flagstaff Middle School	0	0	0
Prescott	Yavapai	211,033	4.2	Prescott Valley	10	Prescott Valley	0	0	0
Yuma	Yuma	195,751	7.8	Yuma Supersite	16	Yuma Supersite	1	1	0
Lake Havasu-Kingman	Mohave	200,186	N/A	N/A	N/A	N/A	0	0	0
Sierra Vista - Douglas	Cochise	131,346	6.7	Douglas Red Cross	12	Douglas Red Cross	1	1	0

Monitors required for SIP or Maintenance Plan: Nogales Post Office.

Table 2b Minimum Monitoring Requirements for continuous PM<sub>2.5</sub> monitors. (FEM/ARM and non-FEM, see 40CFR 58 App D Section 4.7.2)

MSA	County	2010 Census Population	2011-2013 Annual Design Value (µg/m <sup>3</sup> )	Annual Design Value Site	2011-2013 Daily Design Value (µg/m <sup>3</sup> )	Daily Design Value Site	# of Required Continuous Monitors	# of Active Continuous Monitors	# of Additional Continuous Monitors Needed
Flagstaff	Coconino	134,421	5.2	Flagstaff Middle School	12	Flagstaff Middle School	0	1*	0
Prescott	Yavapai	211,033	4.0	Prescott Valley	9	Prescott Valley	0	1*	0
Yuma	Yuma	195,751	7.8	Yuma Supersite	15	Yuma Supersite	0	1	0
Lake Havasu-Kingman	Mohave	200,186	N/A	N/A	N/A	N/A	0	0	0
Sierra Vista - Douglas	Cochise	131,346	N/A	N/A	N/A	N/A	0	0	0

\* Continuous monitors are not FRMs, FEMs, or ARMs

Monitors required for SIP or Maintenance Plan: Nogales Post Office.

**PM<sub>10</sub>**

(Note: Refer to section 4.6 and Table D-4 of Appendix D to 40 CFR Part 58)

Table 3. Minimum Monitoring Requirements for PM<sub>10</sub>.

MSA	County	2010 Census Population	2011-2013 Max Concentration [µg/m <sup>3</sup> ]	Max Concentration Site	# of Required Monitors	# of Active Monitors	# of Additional Monitors Needed
Flagstaff	Coconino	134,421	61	Flagstaff Middle School	0	1	0
Prescott	Yavapai	211,033	90	Prescott Valley	0	1	0
Yuma	Yuma	195,751	274	Yuma Supersite	1-2	1	0
Lake Havasu-Kingman	Mohave	200,186	185	Bullhead City	0-1	1	0
Sierra Vista - Douglas	Cochise	131,346	251	Douglas Red Cross	0-1	2	0

Monitors required for SIP or Maintenance Plan: Ajo, Bullhead City, Douglas Red Cross, Hayden Old Jail, JLG Supersite, Miami Golf Course, Miami Ridgeline, Nogales Post Office, Paul Spur Chemical Lime Plant, Payson Well Site, Rillito, and Yuma Supersite.

**NO<sub>2</sub>**

(Note: Refer to section 4.3 of Appendix D to 40 CFR Part 58)

Table 4. Minimum Monitoring Requirements for NO<sub>2</sub>.

CBSA	2010 Census Population	2010 Max AADT Counts	# of Required Near-road Monitors	# of Active Near-road Monitors	# of Additional Near-road Monitors Needed	# of Required Area-wide Monitors	# of Active Area-wide Monitors	# of Additional Area-wide Monitors Needed
Flagstaff	134,421	40,500	0	0	0	0	0	0
Prescott	211,033	38,000	0	0	0	0	0	0
Yuma	195,751	37,000	0	0	0	0	0	0
Lake Havasu – Kingman	200,186	34,500	0	0	0	0	0	0
Sierra Vista - Douglas	131,346	32,000	0	0	0	0	0	0

Monitors required for SIP or Maintenance Plan: None

Monitors required for PAMS: JLG Supersite

EPA Regional Administrator-required monitors per 40 CFR 58, App. D 4.3.4: None

**SO<sub>2</sub>**

(Note: Refer to section 4.4 of Appendix D to 40 CFR Part 58)

Table 5. Minimum Monitoring Requirements for SO<sub>2</sub>.

CBSA	County	2010 Census Population	2011 Total SO <sub>2</sub> <sup>1</sup> [tons/year]	Population Weighted Emissions Index <sup>2</sup> [million persons-tons per year]	# of Required Monitors	# of Active Monitors	# of Additional Monitors Needed
Flagstaff	Coconino	134,421	10	1.34	0	0	0
Prescott	Yavapai	211,033	2000	422	0	0	0
Yuma	Yuma	195,751	12.6	2.40	0	0	0
Lake Havasu – Kingman	Mohave	200,186	14.44	2.89	0	0	0
Sierra Vista - Douglas	Cochise	131,346	3922	515	0	0	0

<sup>1</sup>Using NEI data

<sup>2</sup>Calculated by multiplying CBSA population and total SO<sub>2</sub> and dividing product by one million

Monitors required for SIP or Maintenance Plan: Hayden Old Jail and Miami Ridgeline.

EPA Regional Administrator-required monitors per 40 CFR 58, App. D 4.4.3: None

**CO**

(Note: Refer to section 4.2 of Appendix D to 40 CFR Part 58)

Table 6. Minimum Monitoring Requirements for CO.

CBSA	2010 Census Population	# of Required Near-Road Monitors	# of Active Near-Road Monitors	# of Additional Monitors Needed
Flagstaff	134,421	0	0	0
Prescott	211,033	0	0	0
Yuma	195,751	0	0	0
Lake Havasu – Kingman	200,186	0	0	0
Sierra Vista - Douglas	131,346	0	0	0

Monitors required for SIP or Maintenance Plan: JLG Supersite

EPA Regional Administrator-required monitors per 40 CFR 58, App.D 4.2.2: None

**Pb**

(Note: Refer to section 4.5 of Appendix D to 40 CFR Part 58)

Table 7a. Minimum Monitoring Requirements for Pb at NCore.

NCore Site	CBSA	2010 Census Population	# of Required Monitors	# of Active Monitors	# of Additional Monitors Needed
JLG Supersite	State-wide Requirement	4,192,887	1	1	0

Table 7b. Minimum Source-Oriented Pb Monitoring above 0.5 Tons Per Year (including airports)<sup>1</sup>

Source Name	Address	Pb Emissions (tons per year)	Emission Inventory Source & Data Year	Max 3-Month Design Value* [ $\mu\text{g}/\text{m}^3$ ]	Design Value Date (third month, year)	# of Required Monitors	# of Active Monitors	# of Additional Monitors Needed
ASARCO LLC	--	3.87	ADEQ 2011	0.27	June, 2011	1	1	0
Freeport McMoRan Copper and Gold Inc.	--	4.87	ADEQ 2011	0.06	April, 2011	1	1	0
Ernest A. Love Field	--	0.89	NEI 2011	--	--	0	0	0
Falcon Field	--	0.77	NEI 2011	--	--	0	0	0
Chandler Municipal	--	0.58	NEI 2011	--	--	0	0	0
Phoenix Goodyear	--	0.50	NEI 2011	--	--	0	0	0
Phoenix Deer Valley <sup>2</sup>	--	1.16	NEI 2011	--	--	0	0	0

\*consider data from the past 3 years.

<sup>1</sup>Monitoring Required on all non-airport sources above 0.5 TPY and on Airports above 1.0 TPY<sup>2</sup>Phoenix Deer Valley is not on the list of Airports to be monitored for Pb

Monitors required for SIP or Maintenance Plan: None

EPA Regional Administrator-required monitors per 40 CFR 58, App. D 4.5(c): None

## **Appendix F – Letter to EPA**

This appendix contains one letter to EPA. The letter is ADEQ's Request for Siting Criteria Waiver at the JLG Supersite.



Janice K. Brewer  
Governor

# ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007  
(602) 771-2300 • [www.azdeq.gov](http://www.azdeq.gov)



Henry R. Darwin  
Director

July 1, 2014

Deborah Jordan, Air Division Director  
U.S. Environmental Protection Agency, Region 9  
Air-1  
75 Hawthorne Street  
San Francisco, CA 94105

Subject: ADEQ Request for Siting Criteria Waiver  
JLG Supersite

Dear Ms. Jordan:

The Arizona Department of Environmental Quality (ADEQ) is submitting the Arizona Air Monitoring Network Plan for the Year 2014. There is one site that does not meet the distance from the nearest road or distance from trees requirements as specified in 40 CFR Part 58 Appendix E. This letter is to request EPA to waive the monitoring site requirements for the JLG Supersite.. Below is information that ADEQ has considered in the determination that this monitoring site is as representative as it would be if the siting criteria were being met.

### JLG Supersite

The JLG Supersite was established in 1993 in a central Phoenix neighborhood. Today, after 21 years, the site remains largely the same. Monitors and inlets are located on the roof of the shelters, while temperature sensitive analyzers and data loggers are inside the air-conditioned shelters. The neighboring houses remain largely the same except for the trees in the yards adjacent to the site.

The required distance from trees to probe is >10 meters. There is now a tree drip line within 10 meters on 1 sides of the site shelter. The PM10, PM2.5 (continuous and filter-based), Carbonyl, VOC, SVOC, and Pb inlets are <10 meters from the closest tree drip line. The SO2, O3, NO2, and CO inlets are currently exactly 10 meters from the closet tree drip line. This has the potential to be < 10 meters as the tree grows. The tree is located in the SSE direction from the inlet whereas the prevailing wind direction comes from the SW during the season of highest concentration (summer), therefore the tree has negligible impact on monitoring at the site. ADEQ has found that these monitor probes cannot reasonably be relocated so as to meet the siting criteria because of the physical constraints of the site.

The JLG Supersite has monitors for NAAQS (CO, NO<sub>2</sub>, O<sub>3</sub>, SO<sub>2</sub>, Pb, PM<sub>10</sub>, PM<sub>2.5</sub>), NCore, PAMS, NATTS, Toxics, IMPROVE, and meteorology. The cost of site relocation would be substantial.

ADEQ has reviewed several options. Based on the long standing historical trends, the lack of cost benefit for moving the site, the constraints of the site for modification of the probes, the low ADT of the adjacent road, the prevailing wind direction coming from the SW, and that the probes locations are just shy of the required distances for trees, ADEQ is requesting a siting criteria waiver from EPA for the placement of the PM<sub>2.5</sub> continuous PM<sub>2.5</sub> filter-based, and PM<sub>10</sub> continuous, Carbonyl, VOC, SVOC, and Pb instruments located at JLG Supersite regarding the distance from tree line siting criteria listed in 40CFR Part 58 Appendix E.

We appreciate the effort by EPA in the review of this waiver request for air monitoring siting. If you have any questions, please contact Theresa Rigney at (602) 771-2274.

Sincerely,

Eric C. Massey, Director  
Air Quality Division

cc: Meredith Kurpius, USEPA, Region 9  
Michael Flagg, USEPA, Region 9  
Theresa Rigney, ADEQ

## **Appendix G – Interagency Air Quality Monitoring for Arizona**

This appendix contains a proposed document between State and local air monitoring agencies in Arizona to outline the responsibilities delineated to each agency. As it stands, this document is not in-place and has not been approved by each State or local agency. Each State or local agency will receive forthcoming guidance from the EPA for this document in the following year after the 2014 Network Plan has been published. This is only intended for informational purposes and is included per the request of EPA Region 9.

## **Interagency Air Quality Monitoring for the State of Arizona**

### **Purpose:**

40 CFR Part 58 Appendix D(e) states that “Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator.” EPA Region 9 indicated in their response to the 2013 Network Plan that an interagency document should be in place to delineate the shared monitoring requirements by overlapping agencies. This document is to fulfill this CFR requirement, to clarify the monitoring requirements being met by each agency, and to support requirements for the monitoring networks in Arizona.

The following table outlines Minimum Monitoring Requirements in the State of Arizona as required in 40 CFR 58 Appendix D. This does not take into account the breadth of monitoring that is required by the EPA Regional Administrator for the design of a complete monitoring program. Each State or local agency must work with the EPA Regional Administrator to develop a monitoring program for their area.

This document illustrates the minimum monitoring requirements as outlined in Table 1 between all agencies in Arizona. Each agency is responsible for all other monitoring requirements not listed in Table 1 as stated in 40 CFR Part 58 for their area. Each area is defined as a specific Metropolitan Statistical Area or as a State-wide area.

### **Agencies involved:**

Maricopa County Air Quality Department (MCAQD)

Pinal County Air Quality Control District (PCAQCD)

Pima County Department of Environmental Quality (PDEQ)

Arizona Department of Environmental Quality (ADEQ)

**Table 1: Minimum Monitoring Requirements in Arizona**

Pollutant/ Station	CFR Reference	CBSA/ Source required to monitor	Requirement Type	Minimum # Required	Agency fulfillment
Ncore	40 part 58 app D 3.0	State Requirement	1 Per State	1	ADEQ and PDEQ
O <sub>3</sub>	40 part 58 app D 4.1	Phoenix-Mesa-Scottsdale MSA	Population/Design Value Based	3	MCAQD and PCAQCD
O <sub>3</sub>	40 part 58 app D 4.1	Tucson MSA	Population/Design Value Based	2	PDEQ
O <sub>3</sub>	40 part 58 app D 4.1	Yuma MSA	Population/Design Value Based	1	ADEQ
O <sub>3</sub>	40 part 58 app D 4.1	Flagstaff MSA	Population/Design Value Based	1	ADEQ
O <sub>3</sub>	40 part 58 app D 4.1	Prescott MSA	Population/Design Value Based	1	ADEQ
O <sub>3</sub>	40 part 58 app D 4.1	Sierra-Vista MSA	Population/Design Value Based	1	ADEQ
O <sub>3</sub>	40 part 58 app D 4.1	Lake Havasu City MSA	Population/Design Value Based	1	ADEQ
CO	40 part 58 app D 4.2	Phoenix-Mesa-Scottsdale MSA	Collocated with NO <sub>2</sub> by Population	1	MCAQD
NO <sub>2</sub>	40 part 58 app D 4.3	Phoenix-Mesa-Scottsdale MSA	Near-Road Population/Traffic Based	2	MCAQD
NO <sub>2</sub>	40 part 58 app D 4.3	Tucson MSA	Near-Road Population/Traffic Based	1	PDEQ
NO <sub>2</sub>	40 part 58 app D 4.3	Phoenix-Mesa-Scottsdale MSA	Population Based	1	MCAQD
SO <sub>2</sub>	40 part 58 app D 4.4	None	Weighted Population Index Based	0	None
Pb	40 part 58 app D 4.5	FMMI Smelter	Source Oriented	1	ADEQ
Pb	40 part 58 app D 4.5	ASARCO Hayden Smelter	Source Oriented	1	ADEQ
PM <sub>10</sub>	40 part 58 app D 4.6	Phoenix-Mesa-Scottsdale MSA	Population/Design Value Based	6-10	MCAQD and PCAQCD
PM <sub>10</sub>	40 part 58 app D 4.6	Tucson MSA	Population/Design Value Based	4-8	PDEQ
PM <sub>10</sub>	40 part 58 app D 4.6	Yuma MSA	Population/Design Value Based	1	ADEQ
PM <sub>10</sub>	40 part 58 app D 4.6	Flagstaff MSA	Population/Design Value Based	0	ADEQ
PM <sub>10</sub>	40 part 58 app D 4.6	Prescott MSA	Population/Design Value Based	0	ADEQ
PM <sub>10</sub>	40 part 58 app D 4.6	Sierra-Vista MSA	Population/Design Value Based	1	ADEQ
PM <sub>10</sub>	40 part 58 app D 4.6	Lake Havasu City MSA	Population/Design Value Based	1	ADEQ
PM <sub>2.5</sub>	40 part 58 app D 4.7	Phoenix-Mesa-Scottsdale MSA	Population/Design Value Based	3	MCAQD and PCAQCD
PM <sub>2.5</sub>	40 part 58 app D 4.7	Tucson MSA	Population/Design Value Based	2	PDEQ
PM <sub>2.5</sub>	40 part 58 app D 4.7	Yuma MSA	Population/Design Value Based	1	ADEQ
PM <sub>2.5</sub>	40 part 58 app D 4.7	Flagstaff MSA	Population/Design Value Based	0	ADEQ
PM <sub>2.5</sub>	40 part 58 app D 4.7	Prescott MSA	Population/Design Value Based	0	ADEQ
PM <sub>2.5</sub>	40 part 58 app D 4.7	Sierra-Vista MSA	Population/Design Value Based	1	ADEQ
PM <sub>2.5</sub>	40 part 58 app D 4.7	Lake Havasu City MSA	Population/Design Value Based	1	ADEQ
PM <sub>2.5</sub>	40 part 58 app D 4.7	Background Station	1 Per State	1	ADEQ
PM <sub>2.5</sub>	40 part 58 app D 4.7	Transport Station	1 Per State	1	ADEQ
PM <sub>2.5</sub>	40 part 58 app D 4.7	State STN Station	1 Per State	1	ADEQ
PM Coarse	40 part 58 app D 4.8	Required at Ncore Station	1 Per Ncore Station	2	ADEQ and PDEQ
PAMS	40 part 58 app D 5.0	Ozone Area Requirement	Per EPA Admin for Ozone Area	Per PAMS Plan	ADEQ