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Pinal County Air Quality Control District

2014 Ambient Monitoring Network Plan And 2013 Data Summary

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Pinal County Air Quality
31 N. Pinal St., Bldg. F
P.O. Box 987
Florence AZ, 85132
(520) 866-6929
www.pinalcountyaz.gov

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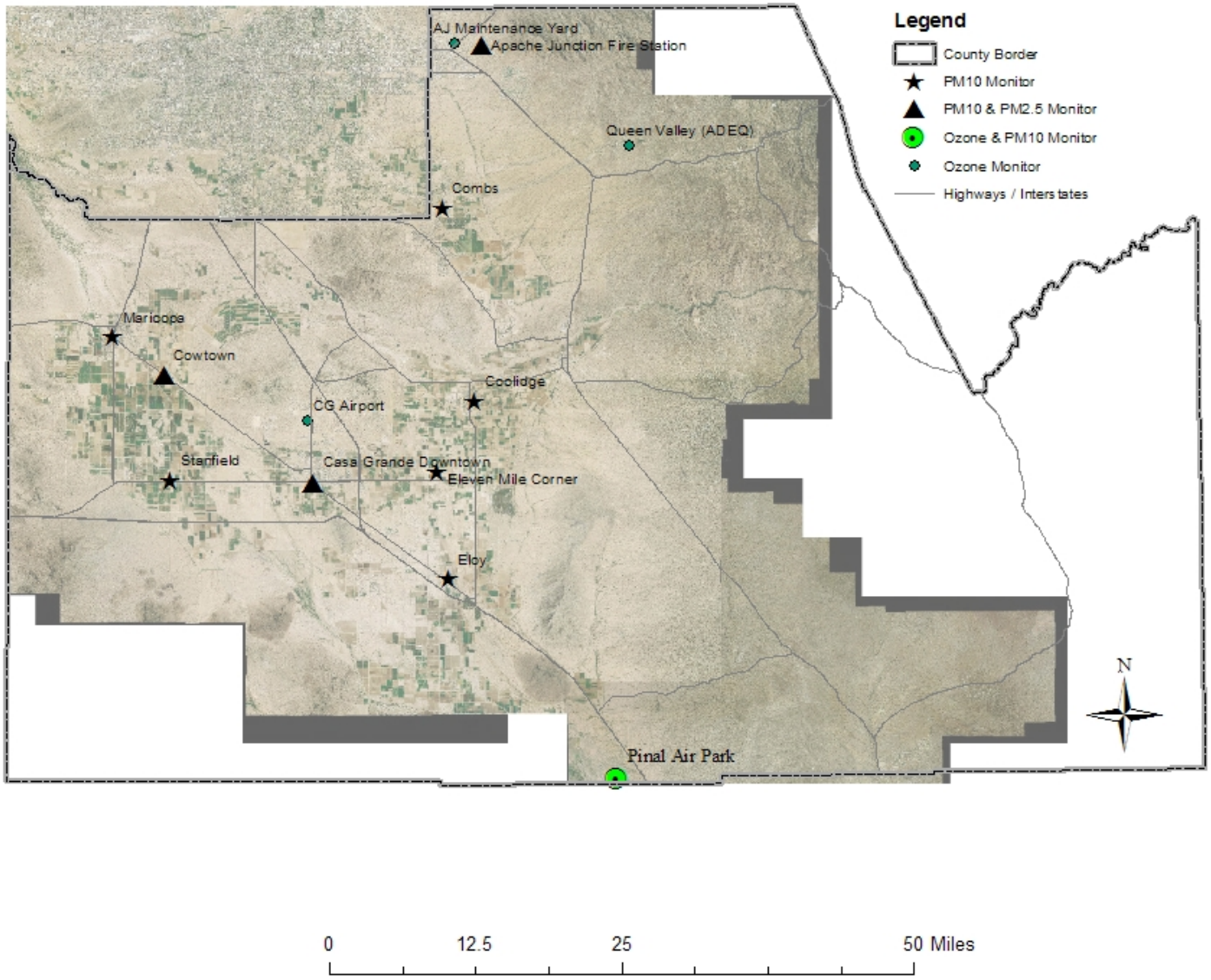
Pinal County Air Quality Control District
Monitoring Network



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Executive Summary

Regarding Pinal County's air quality monitoring network, this summarizes major changes implemented during the current year and proposed for the next year.

EPA commented on the 2012 network plan and noted that Pinal County's network lacked at least one collocated site for a $PM_{2.5}$ monitoring method (Partisol 2025). Collocation is a side by side measurement to provide a comparison of the instruments accuracy; it does not increase the frequency of sample collection. In response to the comment, Pinal County made a request to EPA for grant money to purchase new equipment to satisfy this requirement. The request was granted and the equipment was ordered in February 2014. EPA rules require that the collocation measurement be measured at the highest 24-hour site. Therefore, the instrument will be located at the Cowtown site.

On May 9, 2012, a dust storm impacted the filter-based PM_{10} monitor at the Pinal Air Park site. To verify the isolated nature of the event, a continuous PM_{10} TEOM was installed as a special purpose monitor on June 7, 2012, as allowed by EPA regulations. However, additional wind-related PM_{10} exceedances were recorded on April 8, 2013 and October 9, 2013. Because of the additional exceedances the TEOM will be maintained at the site as an SPM monitor for at least the remainder of the 2014 year. A filter-based PM_{10} monitor also remains in place.

EPA commented on the 2013 network plan that the Combs School, Cowtown, Pinal County Housing, City of Maricopa, and Pinal Air Park sites should be SLAMS monitors and not SPM monitors. In response, Pinal County is proposing to change the Combs School and City of Maricopa sites to SLAMS. The Pinal County housing site was changed to SLAMS in the 2013 network plan. The Pinal Air Park site is still being evaluated and its status will be determined in next year's plan. Pinal County proposes to retain the SPM designation for the Cowtown PM10 monitor pending completion of the relocation process currently underway. The site will be evaluated once the final location is determined and data has been collected at the new site.

EPA's comment on the 2012 monitoring plan noted the lack of a continuous $PM_{2.5}$ method in Pinal County's network. In response, a BAM-1020 (method code 170) continuous $PM_{2.5}$ monitor was obtained from ADEQ and installed on November 8, 2013. The continuous analyzer will operate next to a filter-based monitor for a year to evaluate performance. During that time, the monitor and the data will not be considered a regulatory method for comparison to the NAAQS. Future status of the monitor will be reviewed in the next network review.

In July of 2008 Pinal County received permission to change the Casa Grande Downtown $PM_{2.5}$ monitoring frequency from 1-in-3 to 1-in-6. EPA has also commented that the Casa Grande Downtown $PM_{2.5}$ monitoring frequency should change from 1-in-6 to 1-in-3. In response Pinal County has ordered an additional Partisol 2025 monitor, using 103 grant money, to allow 1-in-3 sampling at the site. The monitor was ordered in February, 2014 along with the monitors for the Cowtown site. Once the monitor arrives it will be installed and replace the method code 098 monitors currently at the site.

The Pinal Air Park ozone monitor is currently operating on seasonal schedule from April 1 through October 31. EPA commented that without additional justification, the monitor should

operate year-round as required by the monitoring rules. Based on internal discussions, Pinal County is proposing to change the Pinal Air Park ozone monitor from seasonal to year-round. This change will take effect during the fall of 2014 (i.e. the monitor will not but shut down at the end of October as has been done in past years under the seasonal schedule).

As the PM_{10} SIP process has progressed, numerous requests have been made for Pinal County to begin to collect 5-minute concentration data. The 5 minute data can be used to support exceptional event demonstrations but is not used for comparison to the NAAQS. Pinal County concurred with the importance of the data and designed the improvements necessary. Pinal County began collecting 5-minute data on July 26, 2013. The sites to collect 5-minute data will include Pinal County Housing, City of Maricopa, Cowtown, Stanfield, and Combs School.

During the fall of 2013 Pinal County was notified by the landowner of the Cowtown site that they did not want to continue the current Pinal County use of the property. Pinal County negotiated a two year extension on the lease so that the Cowtown site can be relocated. A lease agreement allows Pinal County to use the property through January 20, 2016. As part of the relocation process, Pinal County must find suitable replacement sites and collect concurrent data for a period of 1 year. Currently, Pinal County has identified two locations and has use agreements in place and anticipates beginning data collection in May or early June of 2014. At the conclusion of the data collection an evaluation will be conducted to determine the appropriate replacement site.

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Introduction

This document provides two distinct products: 1) a description of the Pinal County Air Quality monitoring system in the form of an Annual Monitoring Network Plan, and 2) a summary of data obtained from the network.

40 Code of Federal Regulations (CFR) Part 58.10 requires an annual monitoring network plan to summarize the air quality surveillance system consisting of State and Local Air Monitoring Stations (SLAMS) and Special Purpose Monitors (SPM) operated under state and local authority. According to the regulation, the Annual Monitoring Network Plan must be submitted to the Regional Administrator by July 1 each year.

The annual monitoring network plan must identify the purpose of each monitor and provide evidence that both the siting and the operation of each monitor meet the requirements in 40 CFR Part 58 appendices A, C, D, and E below:

- Appendix A – Quality Assurance Requirements for SLAMS, SPMs, and PSD (Prevention of Significant Deterioration) 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

Pinal County Air Quality operates air quality monitors that record ambient concentrations of several criteria pollutants. Criteria pollutants are those that the United States Environmental Protection Agency (EPA) has defined as a potential risk to health, and correspondingly defined a National Ambient Air Quality Standard (NAAQS).[1] The standards are intended to protect public health and welfare by setting limits on the allowable level of each pollutant in the ambient air.

The criteria pollutants are particulate matter less than or equal to 10 microns (PM_{10}), particulate matter less than or equal to 2.5 microns ($PM_{2.5}$), ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb).

Areas in which monitored air quality shows that the NAAQS are violated are defined as nonattainment for the offending pollutant. A nonattainment designation requires an area-specific curative implementation plan, typically including stricter air quality permitting regulations on industrial facilities, mobile source emission controls and additional regulations on development. Generally, areas with monitored air quality that meet the standards are defined as attainment. Areas without sufficient monitoring data may also be defined as unclassifiable. Figure i.1 illustrates the current pollutant-specific nonattainment areas in Pinal County.

This document is arranged with several sections. Each section will address specific requirements of 40 CFR Part 58 or provide summary air quality data. The sections are organized accordingly:

Section 1 describes the NAAQS standard for each pollutant monitored by Pinal County Air Quality. Section 2 describes 40 CFR Part 58 defined monitoring objectives and scales of representation. Section 3 provides Pinal County's network design, measures compliance with minimum site requirements, and provides an overview of how the Pinal County network

[1] See Clean Air Act ("CAA") §§ 108,109, and 40 CFR §50.1 *et seq.*

achieves precision measurements. Section 4 describes each site in the network and evaluates the sites for compliance with siting requirements set forth by EPA. Section 5 describes the proposed changes to the monitoring network. Section 6 analyzes data trends and compares the data collected to the standard.

The appendices of this document presents a list of all the abbreviations used in the document (Appendix A), a picture and summary table for each monitoring site operated by Pinal County Air Quality (Appendix B), a tabular summary of the monitoring data (Appendix C), and summarizes the public comment period and hearing conducted in relation to this document (Appendix D).

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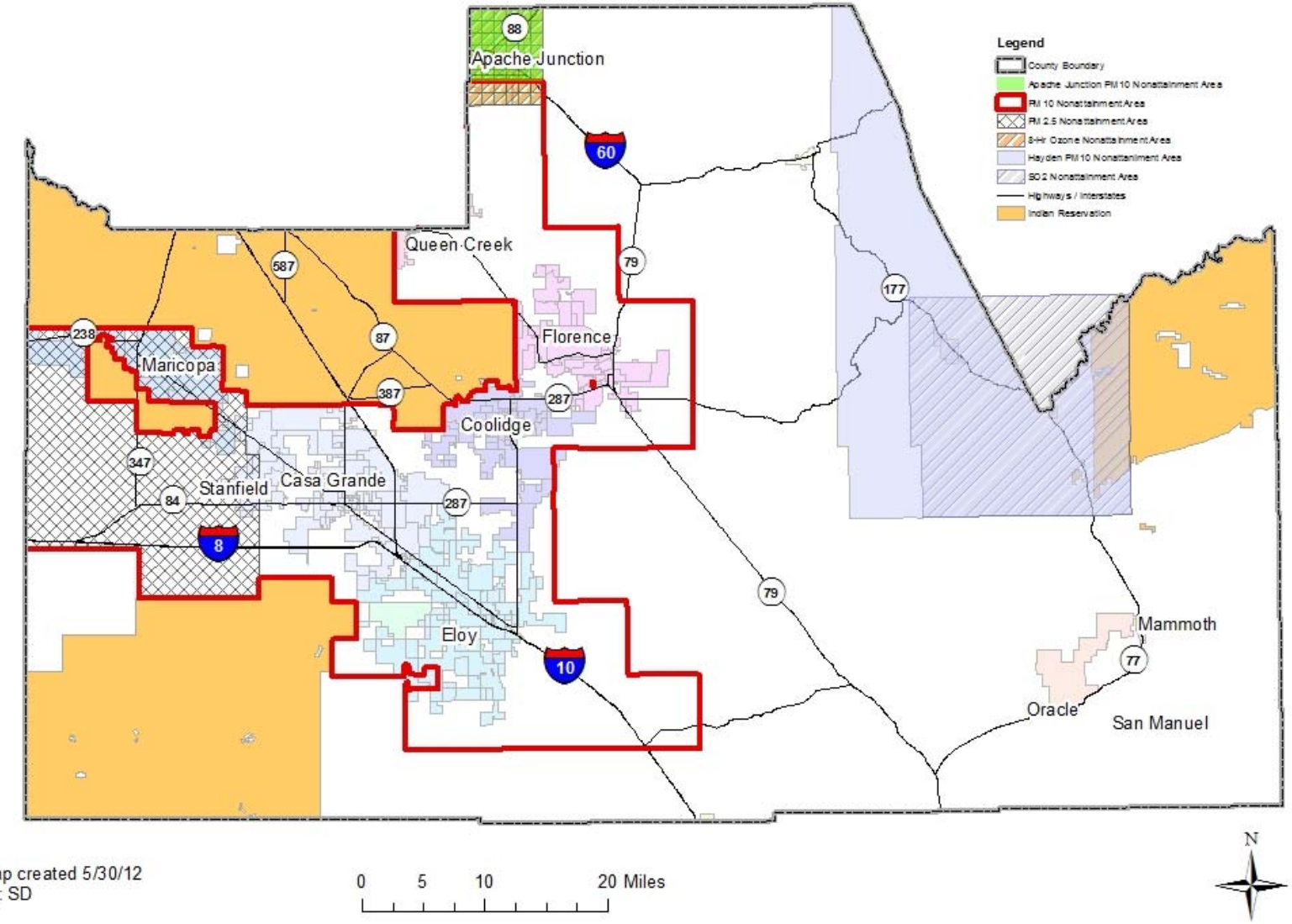
Figure i-1

Pinal County Nonattainment Areas



Map created 5/30/12
By: SD

1.0 National Ambient Air Quality Standards (NAAQS)

This section provides a brief description of the National Ambient Air Quality Standards (NAAQS) for ozone, particulate matter, lead, nitrogen dioxide, and carbon monoxide. As background, the Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS) for six criteria pollutants; ozone, particulate matter, lead, nitrogen dioxide, carbon monoxide, and sulfur dioxide. The Clean Air Act established two types of national air quality standards for these pollutants. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against visibility impairment, damage to animals, crops, vegetation, and buildings.

Ozone

Ozone has been shown to cause various health effects. Symptoms can include chest pain, congestion, coughing, and throat irritation. Ozone exposure can also increase the effects of asthma, bronchitis and emphysema and extended exposure can result in permanent lung damage and reduced lung function.

The one-hour standard was established in 1971 and set at a level of 0.08 parts per million (ppm). In 1979, the standard was revised to 0.12ppm and was an exceedance based standard, which required that the number of expected exceedance be less than or equal to 1.0. An exceedance of the one-hour ozone standard occurred if an observed one-hour average was greater than 0.120 ppm. Generally, the number of daily exceedances (only the daily maximum counts as an exceedance) equals the expected exceedance rate. Thus, the standard effectively allowed only one exceedance to be recorded per calendar year.

EPA updated the ozone standard in 1997 and created an 8-hour standard. The 8-hour primary ozone standard was 0.08 ppm. The decision to revise the standards was challenged in court by a number of parties and ultimately reached the U.S. Supreme Court. In 2001, the Court unanimously upheld the constitutionality of the 1970 Clean Air Act provision that authorizes EPA to set NAAQS to protect public health and welfare. EPA proceeded with implementing the 8-hour standard by making nonattainment designations in April 2004 and revoking the 1-hour standard in August 2005.

The latest revision to the ozone NAAQS was made on March 12, 2008. The 8-hour standard was set to a level of 0.075 ppm. In addition to changing the level of the standard, EPA specified the level of the standard to the third decimal. An area will meet the revised standard if the three-year average of the annual fourth-highest daily maximum 8-hour average at every ozone monitor is less than or equal to 0.075 ppm. In 2010 EPA agreed to review the 2008 ozone NAAQS but subsequently retracted the proposed revisions and held the standard at the 2008 level.

The Clean Air Act requires EPA to designate areas as attainment (meeting the standards), nonattainment (not meeting the standards), or unclassifiable (insufficient data to classify) after the Agency sets a new standard, or revises an existing standard.

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Table 1-1

National Ambient Air Quality Standards for Ozone			
Primary Standards	**Averaging Time**	**Secondary Standards**	**Averaging Time**
0.075 ppm (2008 std)	8-hour [1]	Same as Primary	Same as Primary
0.08 ppm (1997 std)	8-hour [2]	Same as Primary	Same as Primary
0.12 ppm	1-hour [3] (Applies only in limited areas)	Same as Primary	Same as Primary

1 To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)

2 (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm. (b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

3 (a) The standard was attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1. (b) As of June 15, 2005 EPA revoked the 1-hour ozone standard in all areas except the 8-hour ozone nonattainment Early Action Compact (EAC) areas.

Particulate Matter (PM_{10} and $PM_{2.5}$)

Particulate matter less than 10 micrometers in diameter has been shown to cause health effects in the lungs and heart. Health effects include an increase in asthma symptoms, decreased lung function, irregular heartbeats and heart attacks.

The nation's air quality standards for particulate matter were first established in 1971 and were not significantly revised until 1987, when EPA changed the indicator of the standards to regulate inhalable particles smaller than, or equal to, 10 micrometers in diameter (that's about 1/4 the size of a single grain of table salt).

Ten years later, after a lengthy review, EPA revised the PM standards, setting separate standards for fine particles ($PM_{2.5}$). The 1997 standards also retained slightly revised standards for PM_{10} which were intended to regulate "inhalable coarse particles" that ranged from 2.5 to 10 micrometers in diameter. PM_{10} measurements, however, contain both fine and coarse particles.

EPA revised the air quality standards for particle pollution in 2006. The 2006 standards tightened the 24-hour fine particle standard from 65 micrograms per cubic meter ($\mu g/m^3$) to 35 $\mu g/m^3$, and retained annual fine particle standard at 15 $\mu g/m^3$. The Agency decided to retain the existing 24-hour PM_{10} standard of 150 $\mu g/m^3$. The Agency revoked the annual PM_{10} standard, because available evidence does not suggest a link between long-term exposure to PM_{10} and health problems.

In December of 2012 EPA again revised the $PM_{2.5}$ standard. The annual fine particle standard was lowered to 12.0 $\mu g/m^3$. The annual secondary standard was set at 15.0 $\mu g/m^3$, and the 24-hour standard of 35 $\mu g/m^3$ remained the same.

The Clean Air Act requires EPA to review the latest scientific information and standards every five years. Before new standards are established, policy decisions undergo rigorous

review by the scientific community, industry, public interest groups, the general public and the Clean Air Scientific Advisory Committee (CASAC).

Table 1-2

National Ambient Air Quality Standards for Particle Pollution				
Pollutant	**Primary Standard**	**Averaging Times**	**Secondary Standard**	**Averaging Times**
Particulate Matter (PM_{10})	150 µg/m^3 (1997 std)	24-hour (1)	Same as Primary	Same as Primary
Particulate Matter ($PM_{2.5}$)	12.0 µg/m^3 (2012 std)	Annual (2) (Arith. Mean)	15.0 µg/m^3 (1997 std)	Same as Primary
	35 µg/m^3 (2006 std)	24-hour (3)	Same as Primary	Same as Primary

Footnotes:

(1) - Not to be exceeded more than once per year on average over 3 years.

(2) - To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 12.0 µg/m^3 (effective March 18, 2013).

(3) - To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35µg/m^3 (effective December 17, 2006).

PM10 Nonattainment Status

On May 22, 2012 the EPA Region 9 Administrator signed the West Pinal PM_{10} nonattainment designation. Based on 2009-2011 data a significant portion of western Pinal County was included in this new nonattainment area (Figure 1-1). On May 31, 2012 the document was officially published in the Federal Register.

Designations for the Pinal portions of the Gila River Indian Community, the Ak-Chin Indian Community, and the Florence Village and San Lucy Farms areas of the Tohono O'odham Nation were deferred until completion of the formal consultation process. EPA determined that the San Carlos Apache Nation and the main portion of the Tohono O'odham Nation were not contributing to violations of the PM10 standard in Pinal County and did not re-designate these areas.

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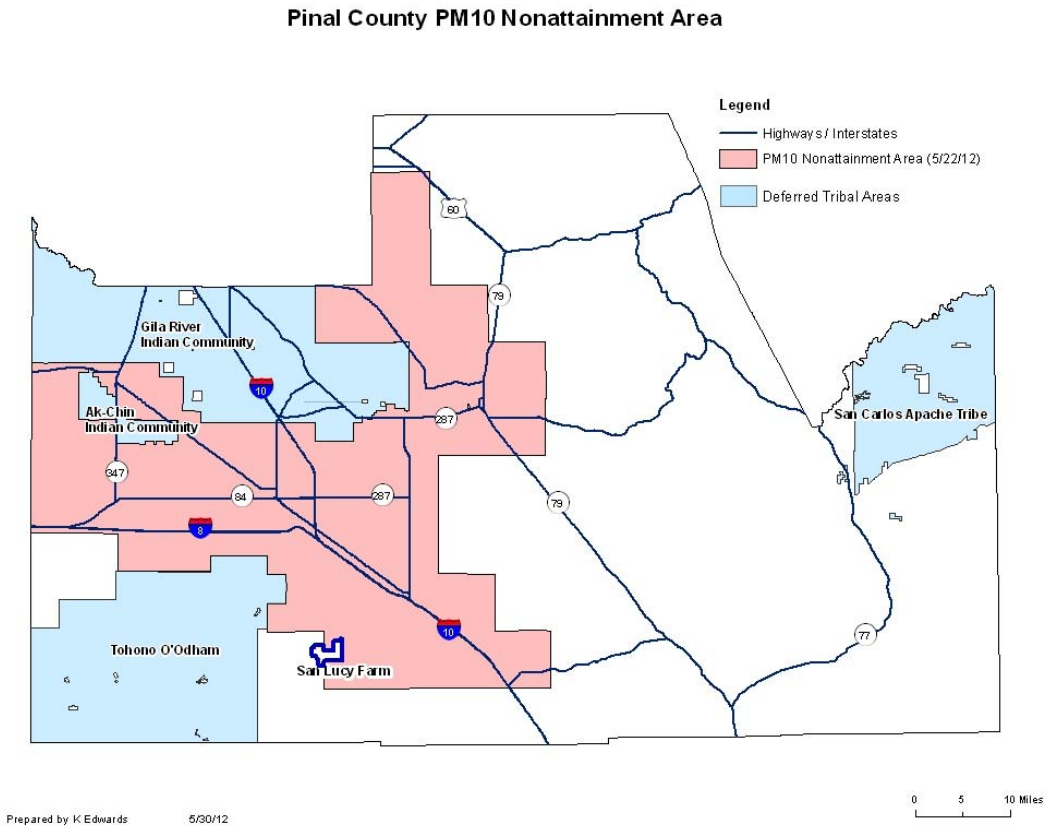
Figure 1-1



PM2.5 Nonattainment Designation

On February 3, 2011, the U.S. Environmental Protection Agency (EPA) issued final air quality designations for the 2006 24-hour $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) for Pinal County, Plumas County, California and Shasta County, California. The designations became effective March 7, 2011.

EPA deferred final designations for these areas in November 2009 when the Agency designated all other areas of the country. EPA deferred action on Pinal County to evaluate the reasons for high fine particle concentrations measured by the violating monitor. The Pinal County designation included a portion of the county (Figure 1-2) based upon air quality monitoring data from 2006-2008.

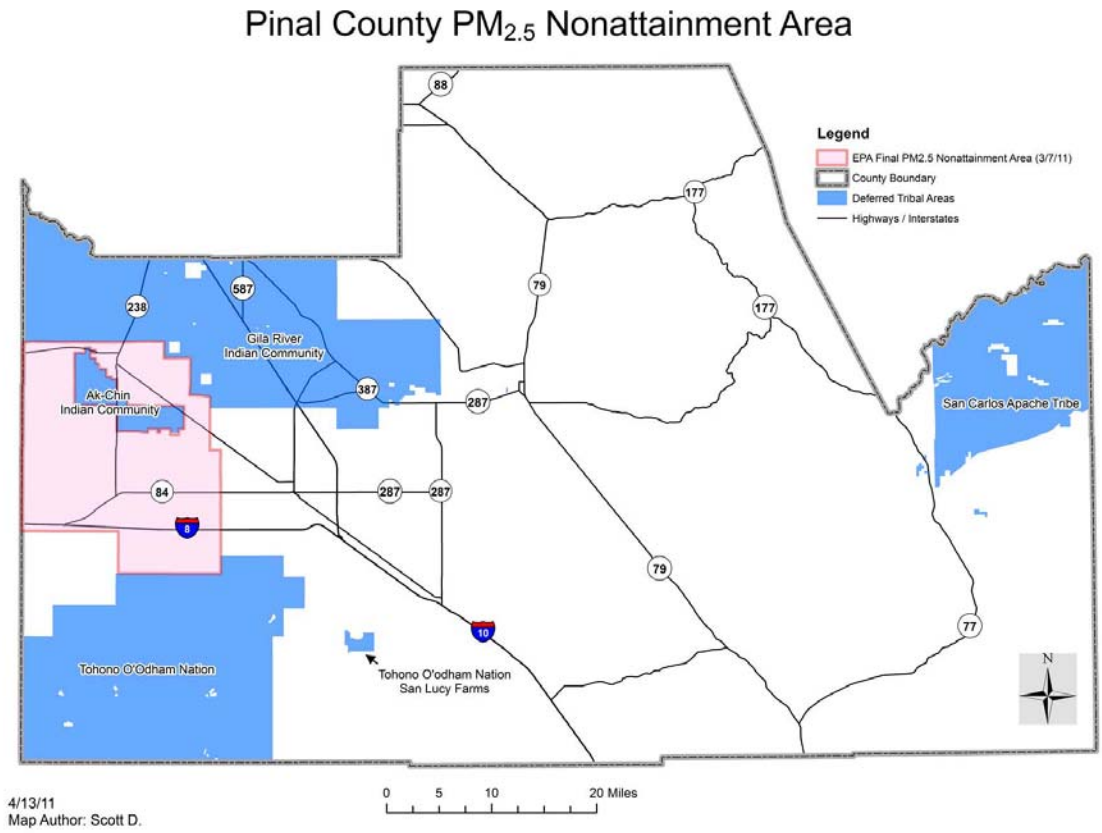
On October 4, 2013, the U.S. EPA determined that the West Central Pinal County nonattainment area attained the 2006 24-hour fine particle ($PM_{2.5}$) NAAQS (78FR 54394; Effective Date October 4, 2013). EPA's determination was based upon complete, quality assured, and certified ambient air monitoring data from 2010 – 2012, showing that the area had attained the 2006 24-hour $PM_{2.5}$ NAAQS.

Based on EPA's clean data determination, the requirements for this area to submit an attainment demonstration, together with Reasonably Available Control Measures (RACM), a Reasonable Further Progress (RFP) plan, contingency measures, and attainment deadlines are suspended for so long as the area continues to attain the 2006 24-hour $PM_{2.5}$ NAAQS.[3] Clean data determination

suspends most of the State Implementation Plan (SIP) planning requirements but do not re-designate areas as "attainment."

ADEQ published a proposed revision to the State Implementation Plan for the West Central Pinal County PM2.5 nonattainment area in February of 2014. A public hearing was held on March 13, 2014.

Figure 1-2



Lead

Lead is abundant in the environment and has some negative health effects. High levels of lead in the body can cause damage to the immune system, the kidneys and to the nervous system. Studies have also shown that high lead levels can impart the reproductive system and the blood's capacity to carry oxygen.

On October 15, 2008, EPA substantially strengthened the national ambient air quality standards for lead. The revised standards are 10 times tighter than the previous standards, set in 1978. EPA revised the level of the primary (health-based) standard from 1.5 micrograms per cubic meter ($\mu g/m^3$), to 0.15 $\mu g/m^3$ measured as total suspended particles (TSP). The secondary (welfare-based) standard is identical in all respects to the primary standard.

The averaging time and form of the lead standard were also revised. The calculation method for the averaging time was changed to use to a 'rolling' three month period with a

maximum (not-to-be-exceeded) form, evaluated over a three-year period. This replaces the previous approach of using calendar quarters. A rolling three month average considers each of the 12 three-month periods associated with a given year, not just the four calendar quarters within that year.

See section 3.8 of the document for additional information on lead monitoring.

Table 1-3

National Ambient Air Quality Standards for Lead			
Primary Standard	**Averaging Times**	**Secondary Standard**	**Averaging Times**
0.15 $\mu g/m^3$ (2008 standard)	Rolling 3-Month Avg.[1]	Same as Primary	Same as Primary

Footnotes: (1) – Form of the standard requires evaluation of data collected over a 3 year period

Nitrogen Dioxide

Nitrogen dioxide has been shown to have negative impacts on the respiratory system. Short-term exposure can cause irritation to the airway and an increase in asthma symptoms. Long-term exposure can lead to permanent respiratory damage.

On January 22, 2010, EPA strengthened the health-based National Ambient Air Quality Standard (NAAQS) for nitrogen dioxide (NO_2). EPA set a new 1-hour NO_2 standard at the level of 100 parts per billion (ppb). In addition to establishing an averaging time and level, EPA also set a new "form" for the standard. The form for the 1-hour NO_2 standard is the 3-year average of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations. EPA retained, with no change, the current annual average NO_2 standard of 53 ppb.

To determine compliance with the new standard, EPA established a new ambient air monitoring and reporting requirements for NO_2. In urban areas, monitors are required near major roads as well as in other locations where maximum concentrations are expected. Additional monitors are required in large urban areas to measure the highest concentrations of NO_2 that occur more broadly across communities.
These changes will not affect the secondary NO_2 standard, set to protect public welfare.

Monitoring guidance provided by EPA targets new monitoring in large population centers and near-roadway measurements. The monitoring requirements are as follows: 1) Core Based Statistical Areas (CBSA) greater that 500,000 will require 1 monitoring site, 2) population center greater than 2,500,000 will require 2. Based upon current population Pinal County will not be required to implement NO_2 monitoring as these sites will be installed in Maricopa County.

Table 1-4

National Ambient Air Quality Standards for Nitrogen Dioxide			
Primary Standard	**Averaging Times**	**Secondary Standard**	**Averaging Times**
100 ppb (2010 std)	1-hour		
53 ppb (1996 std)	Annual	Same as Primary	Same as Primary

Carbon Monoxide

Carbon Monoxide reduces the ability of blood to carry oxygen. Short-term effects include chest pain and the inability of the body to respond after exercise or stress. Long-term effects can include permanent damage to organs including the heart and brain. Extreme exposure can even cause death.

On August 31, 2011 EPA finalized a revision to the carbon monoxide (CO) standard that retained the current standards and added minimum monitoring requirements. The primary standard for CO consists of a 1-hour standard and an 8-hour standard. EPA has not set a secondary standard for CO. The 1-hour CO standard is 35 ppm and the 8-hour is 9 ppm with both not be exceeded more than one per year.

The ambient air monitoring requirements for CO require one CO monitor be collocated with a near road NO_2 monitor for any CBSA greater than 1,000,000 people. Based upon current population Pinal County will not be required to implement CO monitoring as the required site will be installed in Maricopa County

Table 1-5

National Ambient Air Quality Standards for Carbon Monoxide			
Primary Standard	**Averaging Times**	**Secondary Standard**	**Averaging Times**
35 ppm (2011 std)	1-hour		
9 ppm (2011 std)	8-hour		

Sulfur Dioxide

Sulfur dioxide has been shown to have heath effects on the respiratory system. Short-term exposure has been shown to increase the effects of asthma and increase the difficulty of breathing. Long-term exposure can result in permanent damage to respiratory system as well as exacerbating asthma, bronchitis and heart disease.

On June 22, 2010 EPA finalized a revision to the primary Sulfur Dioxide (SO_2) standard. The current primary SO_2 standard is 75 ppb averaged over 1-hour. In order to meet the standard the 99th percentile of 1-hour daily maximum concentrations averaged over 3 years must equal or be less than 75 ppb. The secondary SO_2 standard is 0.5 ppm averaged over 3-hours and is not be exceeded more than once per year.

The primary source of SO_2 in Pinal County is copper mining operations and copper smelters. Since Arizona Revised Statues (ARS) retains the authority to regulate copper smelters at the State level, the Arizona Department of Environmental Quality (ADEQ) has historically conducted any SO_2 monitoring that has occurred in Pinal County. ADEQ operated a sulfur dioxide (SO_2) analyzer in San Manuel, Pinal County, until December of 2007. The San Manuel site was discontinued as proposed in the State Implementation Plan (SIP) and ADEQ Network Plan and subsequent attainment finding by EPA for the area.

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Table 1-6

National Ambient Air Quality Standards for Sulfur Dioxide			
Primary Standard	**Averaging Times**	**Secondary Standard**	**Averaging Times**
75 ppb	1-hour	0.5 ppm	3-hour

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2.0 Monitoring Objectives and Spatial Scales

The design of an Ambient Air Quality Monitoring Network should meet six basic monitoring objectives listed in Appendix D of 40 CFR Part 58. These six objectives are:

1. Determine the highest concentrations expected to occur in the areas covered by the network.
2. Determine representative concentrations in areas of high population density.
3. Determine the impact on ambient pollution levels of significant sources or source categories.
4. Determine general background concentration levels.
5. Determine the extent of regional pollutant transport among populated areas.
6. Determine the welfare related impacts in more rural and remote areas in support of secondary standards.

A State and Local Air Monitoring Station (SLAMS) network consists of monitoring stations that provide data to meet these monitoring objectives. Monitoring stations generally correspond to a spatial scale identified in 40 CFR Part 58 Appendix D. Spatial scale of representativeness is described in terms of the physical dimension of the air parcel nearest to a monitoring station throughout which actual pollutant concentrations are reasonably similar. Table 2.1 lists these spatial scales.

Table 2-1: Spatial Scales

Spatial Scale	Dimension
Microscale	Several meters up to 100 meters
Middle scale	100 meters up to 0.5 kilometers
Neighborhood Scale	0.5 kilometers to 4.0 kilometers
Urban Scale	4 kilometers to 50 kilometers
Regional Scale	Tens to hundreds of kilometers

40 CFR Part 58 Appendix D also describes the relationship between the monitoring objectives and the spatial scales that are generally most appropriate for each objective. Table 2.2 summarizes this relationship.

Table 2-2: Monitoring Objectives

Monitoring Objective	Appropriate Siting Scales
Highest Concentration	Micro, Middle, Neighborhood (Sometimes urban)
Population	Neighborhood, Urban
Source Impact	Micro, Middle, Neighborhood
General / Background	Neighborhood, Urban, Regional
Regional Transport	Urban / Regional
Welfare-related impact	Urban / Regional

A Special Purpose Monitor (SPM) is a monitor that is included in an agency's monitoring network, but not part of the SLAMS network. SPMs are generally used to monitor specific sources, although any of the above siting scales may be appropriate. In December 2006 the EPA revised 40 CFR 58.20 indicating that where a SPM operates for

more than 24 months all data collected may be eligible for comparison to the relevant NAAQS.

40 CFR Part 50 and 53 define Federal Reference Methods (FRM) and Federal Equivalent Methods (FEM), which provide precise methodology for quantifying ambient concentrations of air pollutants. FRMs are monitoring methods that are associated with the NAAQS for the pollutant described in the appendices to 40 CFR 50 and determined by EPA to be FRMs. FEMs are alternative monitoring methods that have been designated by EPA as obtaining "equivalent" results when compared to the FRM, as determined by 40 CFR 53. An additional option for air monitoring agencies is the Approved Regional Method (ARM). This designation requires the applying agency to conduct specific field testing and evaluation demonstrating that the method meets Class III precision and accuracy requirements listed in Subpart C of 40 CFR Part 53.

Pinal County Air Quality uses FRMs to collect filter based PM_{10} and $PM_{2.5}$ samples and automated FEMs for continuous PM_{10} and ozone. In November 2013 Pinal County installed a Met One BAM 1020 FEM continuous $PM_{2.5}$ monitor at the Casa Grande Downtown site. This was done to address comments received from EPA that Pinal lacked a continuous $PM_{2.5}$ method. After a period of data collection the performance evaluation of the instrument will be conducted to determine comparability to the $PM_{2.5}$ national ambient air quality standard. The conclusion of this evaluation and decision regarding future use will be provided in the 2015 Monitoring Network Plan.

Three types of PM_{10} monitors are used throughout the monitoring network: 1) the filter-based high-volume sampler, 2) filter based medium volume sampler, and 3) the Tapered Element Oscillating Microbalance (TEOM) which measures PM_{10} on a continuous basis.

One type of $PM_{2.5}$ monitor is currently being used throughout the monitoring network, a filter based medium volume sampler equipped with the appropriate size fractioning device.

A process for relocating violating $PM_{2.5}$ monitors is described at 40 CFR Part 58.10 (c). The rule requires that the annual monitoring network plan must document how States and local agencies provide for the review of changes to a $PM_{2.5}$ monitoring network that impact the location of a violating $PM_{2.5}$ monitor or the creation/change to a community monitoring zone, including a description of the proposed use of spatial averaging for purposes of making comparisons to the annual $PM_{2.5}$ NAAQS as set forth in appendix N to 40 CFR Part 50. The affected State or local agency must document the process for obtaining public comment and include any comments received through the public notification process within their submitted plan.

Pinal County Air Quality does not intend to establish community monitoring zones as described in the rule or utilize spatial averaging for comparison to the $PM_{2.5}$ NAAQS. For the time period covered by this plan, Pinal County Air Quality does not intend to relocate any violating $PM_{2.5}$ monitors. In the event that a violating $PM_{2.5}$ monitor is relocated the following process will be utilized to address the required public comment process:

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 plan.
3. If the change must be accomplished prior to annual monitoring plan submittal, Pinal County 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 affected monitor.

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3.0 Network Design and Measurement Quality

3.1 Network Design

This section provides a list of monitoring site designations. Table 3.1 and Table 3.2 identify Pinal County Air Quality's current SLAMS and SPM designations, respectively.

The SIP as it applies to Pinal County does not make any SLAMS designations. In 2000 Pinal County compiled its first annual network review which included SLAM/SPM site designations. The past annual network reviews have been submitted to both ADEQ and EPA for comment.

Table 3-1: SLAMS Summary

Site Name	AQS ID	Classification	Scale	Objective	Pollutant
Apache Junction Fire Station	040213002	SLAMS	Neighborhood	Population	$PM_{2.5}$
Apache Junction Fire Station	040213002	SLAMS	Neighborhood	Population	PM_{10}
Apache Junction Maint.Yard	040213001	SLAMS	Neighborhood	Population	O_3
Casa Grande Airport	040213003	SLAMS	Neighborhood	Population	O_3
Pinal Air Park	040213007	SLAMS	Regional	Transport	O_3
Casa Grande Downtown	040210001	SLAMS	Neighborhood	Population	$PM_{2.5}$
Coolidge Maintenance Yard	040213004	SLAMS	Neighborhood	Population	PM_{10}
Eloy City Complex	040213014	SLAMS	Neighborhood	Population	PM_{10}
Pinal Air Park	040213007	SLAMS	Regional	Background	PM_{10}
Pinal County Housing Complex (HiVol)	040213011	SLAMS	Neighborhood	Population	PM_{10}
Stanfield County Complex TEOM	040213008	SLAMS	Neighborhood	Population	PM_{10}
Casa Grande Downtown TEOM	040210001	SLAMS	Neighborhood	Population	PM_{10}
Cowtown Road	040213013	SLAMS	Middle Scale	Source Impact	$PM_{2.5}$
County Complex Maricopa TEOM	040213010	SLAMS	Neighborhood	Population	PM_{10}
Combs School TEOM	040213009	SLAMS	Neighborhood	Population	PM_{10}
Pinal County Housing Complex TEOM	040213011	SLAMS	Neighborhood	Population	PM_{10}

Table 3-2: SPM Summary

Site Name	AQS ID	Classification	Scale	Objective	Pollutant
Pinal Air Park TEOM	040213002	SPM	Regional	Background	PM_{10}
Cowtown Road TEOM	040213013	SPM	Middle Scale	Source Impact	PM_{10}

Pinal County Air Quality proposes to retain the SPM designation for the monitors listed in Table 3.2. The ozone analyzer at Pinal Air Park will begin to operation on a year-

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round schedule beginning in 2015. The PM_{10} TEOM analyzers at Maricopa and Combs School will become SLAMS monitors. The Pinal Air Park TEOM will retain an SPM designation as we continue to evaluate the data to determine if it will become a SLAMS monitor. Pinal County proposes to retain the SPM designation for the Cowtown PM10 monitor pending completion of the relocation process currently underway. Details are provided in Sections 4.0 and 5.0.

3.2 AQS Requirements

In 2002 Pinal County Air Quality began entering local monitoring data into the EPA's AQS database. 40 CFR 58.16 requires that all ambient air quality data and associated quality assurance checks for all criteria pollutants be submitted to EPA via AQS. Additionally, an annual data certification is required by 40 CFR 58.15. The certification must be sent to EPA Region IX by May 1 stating that the data has been submitted correctly. Pinal County Air Quality submitted an annual data certification for 2013 on April 23, 2014. Precision data for 2013 were submitted to AQS as of January 2014.

3.3 Minimum Network Requirements

40 CFR Part 58 Appendix D defines minimum monitoring requirements based on the population of the Metropolitan Statistical Area (MSA) and the design value for each NAAQS. Pinal County is part of the Phoenix-Mesa-Glendale MSA, which has a population of 4,192,887 (US Census Bureau, 2010 Census data, http://2010.census.gov/2010census/data/index.php). Within Appendix D the EPA recognizes that State or local agencies must consider MSA/CSA boundaries and their own political boundaries and geographical characteristics in designing their air monitoring networks. The Appendix states that there may be situations where the EPA Regional Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. 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.

Based on similar comments received on the 2013 Network Plan, ADEQ, Maricopa County and Pinal County began working on a document that clearly defines each organization's monitoring requirements under the MSA/CSA. At this time only the first draft of the document has been created and it is currently under review by each agency. A finalized document is expected to be completed during 2014 and will be included in the 2015 Network Plan.

The design value is a calculated value based upon the highest recorded concentration at a site in the attainment or nonattainment area. The process for computing the value for each criteria pollutant is described in the appendices of 40 CFR Part 50. For the purpose of this document the design values listed are the highest calculated concentrations recorded in Pinal County. Tables 3.3 through 3.5 list the minimum monitor requirements for $PM_{2.5}$, PM_{10}, and Ozone, respectively.

Table 3-3 $PM_{2.5}$ Monitoring Requirements (SLAMS)

Population (MSA)	Most recent 3 yr design value ≥ 85% NAAQS	Most recent 3 yr design value <85% NAAQS
>1M	3	2
500K-1M	2	1
50K-500K	1	0

Table 3-4 PM_{10} Monitoring Requirements (SLAMS)

Population (MSA)	High Concentration Exceeds NAAQS by 20% or more (>180µg/m^3)	Medium Concentration Exceeds 80% of NAAQS (>120µg/m^3)	Low Concentration Less than 80% NAAQS (<120 µg/m^3)
>1M	6-10	4-8	2-4
500K-1M	4-8	2-4	1-2
250K-500K	3-4	1-2	0-1
100K-250K	1-2	0-1	0

Table 3-5 Ozone Monitoring Requirements (SLAMS)

Population (MSA)	Most recent 3 yr design value ≥ 85% NAAQS	Most recent 3 yr design value <85% NAAQS
>10M	4	2
4-10M	3	1
350K-4M	2	1
50K-350K	1	0

Tables 3.6, 3.7 and 3.8 depict Pinal County's minimum monitoring requirements for PM_{10}, $PM_{2.5}$ and ozone. The tables below show the minimum monitoring requirements are being met.

These tables include SLAMS and SPM monitors operated in Pinal County, and do not include monitors operated in other areas of the MSA. 40 CFR 58.20 states that SPM monitors may not be used to show compliance with the minimum monitoring requirements but EPA commented on the 2011 plan that SPM data must be included when computing the area design value. This plan re-evaluates the minimum requirement for each pollutant according to EPA direction. The results show no change in the required number of sites for $PM_{2.5}$, no change in the required number of sites for PM_{10}, and no change required number of sites for ozone in the network.

Table 3.6 lists the minimum monitoring requirements for ozone. The highest 8-hour ozone concentration site in Pinal County is the Queen Valley ozone site. The calculated ozone design value using the Queen Valley 3-year average of the 4th highest 8-hour average for the period of 2011-2013 is 0.076 ppm. This value is ≥ 85% of the NAAQS, which requires a minimum of three ozone monitors in the MSA.

Table 3-6: Minimum Monitoring Requirements for Ozone (O_3)

MSA	Counties	Population (US Census 2010)	8-hour Design Value (2011-2013)	Design Value Site (Pinal County)	Minimum Monitors Required	# of Active SLAMS Monitors	Monitors Needed
Phoenix-Mesa-Glendale	Pinal and Maricopa	4,192,887	0.076	Queen Valley 04-021-8001	3	4	0

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Table 3.7 lists the minimum monitoring requirements for PM_{10}. The highest PM_{10} concentration recorded at a SLAMS or SPM site over the last 3 years of operation (2011-2013) was 2315.7 µg/m^3 at Cowtown (July 5th, 2011 and flagged as an Exceptional Event in AQS). The value exceeds the NAAQS by 20% or more and is considered a high concentration area. The high concentration designation requires six to ten monitors in the MSA.

Table 3-7: Minimum Monitoring Requirements for PM_{10}

MSA	Counties	Population (US Census 2010)	Design Value (2011-2013)	Design Value Site (Pinal County)	Minimum Monitors Required	# of SLAMS Active Monitors	Monitors Needed
Phoenix-Mesa-Glendale	Pinal and Maricopa	4,192,887	2315.7	Cowtown 04-021-3013	6 to 10	7	0

Table 3.8 illustrates the minimum monitoring requirements for $PM_{2.5}$. The highest $PM_{2.5}$ 3-year average recorded at a Pinal County SLAMS or SPM site was at Cowtown. Because the Cowtown site is not comparable to the annual NAAQS, the next highest site is the Casa Grande site. The calculated $PM_{2.5}$ design value for the Cowtown and Casa Grande sites are as follows: 1) 3-year average of the annual means is 9.3 µg/m^3 (Casa Grande), 2) 3-year average of the 98th percentiles is 33 µg/m^3 (Cowtown). The 24-hour design value is > 85% of the NAAQS and the annual design value is <85% of the NAAQS. Considering the 24 hour and annual values the network requires three SLAMS monitors in the MSA.

Table 3-8: Minimum Monitoring Requirements for $PM_{2.5}$

MSA	Counties	Population (US Census 2010)	Design Value (2011-2013)	Design Value Site (Pinal County)	Minimum Monitors Required	# of Active SLAMS Monitors	Monitors Needed
Phoenix-Mesa-Glendale	Pinal and Maricopa	4,192,887	9.3 (annual) 33 (24-hour)	Casa Grande 04-021-0001 Cowtown 04-021-3013	3	3	0

3.4 Minimum Sample Frequency

$PM_{2.5}$ - The monitoring rule at 40 CFR 58.12 (d)(1) states that required manual $PM_{2.5}$ samplers at SLAMS stations must operate on at least a 1-in-3 day schedule at sites without a collocated continuously operating $PM_{2.5}$ monitor. For SLAMS $PM_{2.5}$ sites with both manual and continuous $PM_{2.5}$ monitors operating, the monitoring agency may request approval from the EPA Regional Administrator for a reduction to 1-in-6 day $PM_{2.5}$ sampling at SLAMS stations or for seasonal sampling. The EPA Regional Administrator may grant sampling frequency reductions after consideration of factors including, but not limited to, the historical $PM_{2.5}$ data quality assessments, the location of current $PM_{2.5}$ design value sites, and their regulatory data needs. Sites that have design values that are within plus or minus 10 percent of the NAAQS (±10% of 35µg/m^3 is 31.5-38.5) and sites where the 24-hour values exceed the NAAQS for a period of 3 years are required to maintain at least a 1-in-3 day sampling frequency. Sites that have a design

value within plus or minus 5 percent of the daily $PM_{2.5}$ NAAQS (±5% of 35µg/m^3 is 33.25-36.75) must have an FRM or FEM operating on a daily schedule.

In 2008 Pinal County proposed and received approval from EPA Region IX to reduce the sample frequency at the Casa Grande site from 1-in-3 to 1-in-6 after the end of the 2008 sample year. This change was implemented on January 1, 2009. During 2007 samples were collected on the 1-in-3 schedule. Prior to 2007 the site operated at a 1-in-6 frequency for 8 years. During the time this site has operated the 3 year average of the 98th percentile value has not exceeded 21µg/m^3. With this change in sample frequency equipment was made available to begin collecting precision $PM_{2.5}$ measurements at the site. Sample frequencies are summarized in Table 3.9. In 2013 Pinal County requested, and received, 103 grant money to purchase equipment to correct a 2012 EPA network comment requiring the collocation of $PM_{2.5}$ method 145 and returning the Casa Grande site to a 1-in-3 sampling schedule. That equipment was ordered in February 2014 and will be installed once it arrives.

The Cowtown $PM_{2.5}$ sample frequency had been 1-in-6 since the sampler was installed in August 2006. According to 40CFR 58.12 (d)(1) 1-in-3 sampling is required based upon the current design value. In February of 2011 an FDMS TEOM was installed at the site. Pinal County evaluated the operation of the instrument for several months and determined the performance was not adequate to represent PM_{10} and $PM_{2.5}$ concentrations on an ongoing basis. Because the instrument performance was not acceptable, it was removed from the site for future evaluation. The filter based PM_{10} sampler at the site was discontinued at the close of 2011 and converted to $PM_{2.5}$. The existing and new $PM_{2.5}$ samplers began alternate sampling on January 1, 2012 to meet a 1-in-3 sample schedule. In response to comments made by EPA during the review of the 2011 Network Plan, 103 grant money was requested and granted to purchase a Partisol 2025, method 145, to replace the two alternating samplers currently located at the site. The sampler was ordered in February, 2014 and will be installed once it arrives.

A Comment received from EPA of the 2012 Plan suggested Pinal County was deficient by not having a continuous $PM_{2.5}$ method in the network (Reference 40 CFR Part 58 Appendix D 4.1.7). To correct this deficiency, Pinal County has acquired a continuous $PM_{2.5}$ BAM, method 170, which was installed at the Casa Grande Downtown site on November 8, 2013. Pinal County will operate the continuous method for a one year period after which an evaluation will be conducted to determine instrument performance. During this time the instrument will not be considered a regulatory method for comparison to the applicable NAAQS. The conclusion of the evaluation process will be included in the next monitoring network review along with a statement regarding the methods comparability to the NAAQS.

Additionally, EPA commented on the 2013 Network Plan that Pinal County should have two continuous $PM_{2.5}$ monitors instead of one that is in operation currently. 40 CFR 58 Appendix D 4.7.2 states that the number of continuous $PM_{2.5}$ monitors must equal at least one half (rounding up) of the minimum required monitoring sites. The Cowtown site is the design value site and it is characterized as a "local hot spot" site and is therefore not comparable to the annual standard. Pinal County conferred with EPA region IX and was instructed to use the 24-hr design value. Table 3.8 shows that the 24-hr design value for

the Cowtown site is 33 µg/m^3, which is more than 85% of the NAAQS. Accordingly, using table D-5 of Appendix D of 40CFR58 (pictured below), Pinal County would be required to have two continuous sites. Pinal County had abnormally high $PM_{2.5}$ concentrations in 2013 due to dust storm activity which elevated the 3-year average above the 85% of NAAQS. Pinal County has not had concentrations that high since 2009. If Pinal County returned to average concentration readings in 2014, the 3-year average would return to being below 85% of the NAAQS. Pinal County is currently evaluating the Met One BAM 1020 for use as a continuous monitor and will be making a determination on its suitability prior to January 1, 2015. At that time Pinal County will use the 3-year average of 2012-2014 to determine the required minimum number of continuous $PM_{2.5}$ sites.

TABLE D-5 OF APPENDIX D TO PART 58—$PM_{2.5}$ MINIMUM MONITORING REQUIREMENTS

MSA population[1] [2]	Most recent 3-year design value ≥85% of any $PM_{2.5}$ NAAQS[3]	Most recent 3-year design value <85% of any $PM_{2.5}$ NAAQS[3] [4]
>1,000,000	3	2
500,000-1,000,000	2	1
50,000-<500,000[5]	1	0

Table 3-9 $PM_{2.5}$ Sampling Frequencies

Site Name	3-Year Average of 98th percentile 2011-2013	Current Sample Frequency	Required Frequency
Casa Grande	19	1 in 6[a]	1 in 3 [a]
Apache Junction	17	1 in 3	1 in 3
Cowtown	33	1 in 3	1 in 3

Footnotes:
a – 1 in 6 sampling approved by EPA R9 in 2008

PM_{10} - The monitoring rule at 40 CFR 58.12 (e) states that for PM_{10} 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. Pinal County currently operates a continuous monitor at its maximum PM_{10} concentration site. Therefore, no change to the PM_{10} sample frequency is required.

3.5 Measurement Quality Checks

To provide a quality assurance demonstration, Appendix A of 40 CFR Part 58 requires a minimum number of collocated sampling sites based on the total number of manual (filter-based) particulate monitoring sites in the network. Generally, precision sampling involves operating two identical collocated samplers at the same location on the same sampling schedule.

Appendix A of 40 CFR Part 58 Section 3.3.1 requires fifteen percent of the filter based PM_{10} monitoring sites, by collection method, in a network to be collocated. Additionally, the sites having annual mean particulate matter concentrations among the highest 25 percent for all the sites in the network must be selected. Pinal County Air Quality

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currently operates five filter based PM_{10} sites that utilize medium-volume samplers. On July 1, 2013 Pinal County replaced all of the high-volume samplers in the network (methods 062 and 063) with medium-volume sampler (method 098). The chart below represents both the requirements for high-volume and medium-volume collocation because the transition occurred mid-year. The 2014 Network plan will reflect only the medium-volume requirements. This topic is described further in Section 5.0.

The Pinal County Housing site was utilized to collect the required PM_{10} collocated High-Volume samples because this site has one of the highest annual mean particulate matter concentrations. The Coolidge site was chosen for the medium-volume collocation site because it had the highest annual mean of the remaining sites. The Pinal County Housing site was historically used as the high volume filter-based collocation site but filter-based monitors were removed on 07/01/2013. The PM_{10} TEOM is now the SLAMS monitor of record at Pinal County Housing. This subject is discussed further in section 5.0. Table 3.10 summarizes the status of collocated sites in the PM_{10} network

Table 3-10: Minimum Collocated Monitoring Requirements for PM_{10}

Sampling Method	Parameter Code	Total Number of Sites	Required Collocated Sites	Number of Collocated Sites
High-Volume (Wedding) (January - June)	062	2	1	1 (Pinal County Housing)
High-Volume (Andersen) (January – June)	063	3	1	0
Medium-Volume (Partisol) (July – December)	98	4	1	1 (Coolidge)

Appendix A of 40 CFR Part 58 does not require collocation of continuous PM_{10} monitors. Measurement quality of continuous TEOM instrument is achieved through flow verification checks conducted at least once per month.

Appendix A of 40 CFR Part 58 Section 3.2.5 requires $PM_{2.5}$ networks to include collocated sampling at fifteen percent of the monitoring sites in a network. Pinal County Air Quality operates three $PM_{2.5}$ sites with one collocated measurement made at Casa Grande Downtown. This was a change made in 2009 to correct a deficiency noted in the 2007 plan. Additionally 80 percent of the collocated audit monitors should be deployed at sites with annual average or daily concentrations estimated to be within ±20 percent of the applicable NAAQS and the remainder at those the monitoring organizations designate as high value sites. The values at Casa Grande are typically higher than Apache Junction by approximately 25%.

Table 3-11: Minimum Collocated Monitoring Requirements for $PM_{2.5}$

Sampling Method	Parameter Code	Total Number of Sites	Required Collocated Sites	Number of Collocated Sites
Medium-Volume (R&P Model 2000)	143	2	1	1 (Casa Grande Downtown)

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Sampling Method	Parameter Code	Total Number of Sites	Required Collocated Sites	Number of Collocated Sites
Medium-Volume (R&P Model 2025)	145	1	1	0

EPA review of the Pinal County 2011 Network Plan noted a lack of collocated $PM_{2.5}$ method code 145 monitors. In response Pinal County requested, and received, 103 grant money to obtain additional units. Those units were ordered in February, 2014 and will be installed once they arrive. Further discussion can be found in section 5.0

3.6 Ozone Season Definition

Beginning in 2015, in response to both internal and external suggestion, Pinal County proposes to eliminate the seasonal operation of the Pinal Air Park ozone site and move to a year round schedule. The Casa Grande Airport and Apache Junction Maintenance Yard will continue to operate on a year-round schedule.

3.7 Quality System Requirements

Pinal County Air Quality submitted a Quality Assurance Project Plan (QAPP) to EPA Region IX in January 2007. The QAPP covered all aspects of the ambient monitoring network operations, filter weighing process, and data quality review. All instrument SOPs were completed and included in the QAPP. EPA provided feedback on the QAPP in July of 2008. Pinal County Air Quality revised the QAPP in response to EPA comment and re-submitted the document on October 16th, 2012. The QAPP was approved by EPA on January 3rd, 2013. Pinal County Air quality revised appropriate sections of the QAPP to address comments received during the most recent TSA audit and the addition of new equipment to the network. This revised QAPP was submitted in December, 2013.

All flow rate standards used by Pinal County are traceable to NIST Standards and are recertified annually. The ozone standard is verified by the California Air Resource Board on an annual basis and the ozone transfer standard is verified by Pinal County Staff monthly.

Through ADEQ, Pinal County is a participant in the EPA National Performance Audit Program (NPAP) and the PM Performance Evaluation Program (PEP). Pinal County sites are included in the EPA sponsored audit programs. The most recent semi-annual flow audits and annual performance audits are shown below in Tables 3.11 and 3.12. ADEQ conducts performance audits of Pinal County monitors according to frequencies described in 40 CFR Part 58. All flow rate standards used by ADEQ are traceable to NIST Standards and a recertified annually. The ozone standard used by ADEQ is checked twice per year.

Currently, EPA does not consider Pinal County Air Quality a primary quality assurance organization (PQAO) as defined by 40 CFR Part 58 Appendix A, paragraph 3.1.1. On February 13, 2013 Pinal County and ADEQ entered into a Memorandum of Understanding (MOU) addressing a number of technical and administrative items pertinent to establishing PQAO status. The MOU also creates a mechanism to pass

through EPA $PM_{2.5}$ funding to Pinal County. This information has been made available to EPA Region IX as supporting information to support the PQAO designation request.

Table 3-12: Semi-Annual Flow Rate Audits

Site	AQS ID	Parameter	Audit Date 1	Audit Date 2
Apache Junction Fire Station	04-021-3002	$PM_{2.5}$	02/07/2013	08/06/2013
Apache Junction Fire Station	04-021-3002	PM_{10}	02/07/2013	08/06/2013
Apache Junction Fire Station TEOM	04-021-3002	PM_{10}	02/07/2013	a
Casa Grande Downtown(POC 1 & 2)	04-021-0001	$PM_{2.5}$	04/30/2013	10/08/2013
Casa Grande Downtown TEOM	04-021-0001	PM_{10}	04/16/2013	10/08/2013
Combs TEOM	04-021-3009	PM_{10}	04/30/2013	10/16/2013
Coolidge	04-021-3004	PM_{10}	04/30/2013	10/08/2013
Cowtown	04-021-3013	$PM_{2.5}$	01/09/2013	07/16/2013
Cowtown TEOM	04-021-3013	PM_{10}	01/09/2013	07/16/2013
Eloy	04-021-3014	PM_{10}	01/09/2013	07/16/2013
(City of) Maricopa TEOM	04-021-3010	PM_{10}	04/16/2013	10/08/2013
Pinal Air Park	04-021-3007	PM_{10}	01/09/2013	07/16/2013
Pinal County Housing (POC 1 & 2)	04-021-3011	PM_{10}	06/12/2013	a
Pinal County Housing TEOM	04-021-3011	PM_{10}	6/12/2013	11/26/2013
Stanfield TEOM	04-021-3008	PM_{10}	01/09/2013	07/10/2013

a – monitor was discontinued on 07/01/2013

Table 3-13: Annual Performance Audits

Site	AQS ID	Parameter	Audit Date
Apache Junction Maint.Yard	04-021-3001	O_3	07/25/2013
Casa Grande Airport	04-021-3003	O_3	04/16/2013
Pinal Air Park	04-021-3007	O_3	07/16/2013

3.8 Lead Monitoring Network Description

The strengthening of the Lead NAAQS resulted in a revision to 40CFR Part 58.10. The revision requires state and local agencies to describe required lead monitoring networks in the annual monitoring network plan and submit the description to the Regional Administrator by July 1, 2009. Additionally on December 14, 2010 the Environmental Protection Agency (EPA) revised the ambient monitoring requirements for measuring airborne lead. These rule amendments improved the lead monitoring network to better assess compliance with the revised National Ambient Air Quality Standards (NAAQS) established in November 2008. EPA lowered the lead emissions monitoring threshold from 1.0 tons per year (tpy) to 0.50 tpy. Air quality monitoring agencies will use this threshold to determine if an air quality monitor is required to be placed near a facility emitting lead.

Appendix D to Part 58 entitled, "Network Design Criteria for Ambient Air Quality Monitoring", requires states and local agencies to establish ambient lead monitoring under two specific conditions:

> 1) Source-oriented SLAMS level monitoring located to measure the maximum lead concentration in ambient air resulting from each lead source which emits 0.5 tons or more tons per year based on either the most recent National Emission Inventory (NEI) (*http://www.epa.gov/ttn/chief/ eiinformation.html*) or other scientifically justifiable methods and data (such as improved emissions factors or site-specific data), and

2) Lead monitoring in each CBSA with a population equal to or greater than 500,000 people as determined by the latest available census figures. At a minimum, there must be one non-source-oriented SLAMS site located to measure neighborhood scale lead concentrations in urban areas impacted by re-entrained dust from roadways, closed industrial sources which previously were significant sources of lead, hazardous waste sites, construction and demolition projects, or other fugitive dust sources of lead.

To assess a potential point-source triggered requirement for ambient lead monitoring in Pinal County the 2005 NEI and internal emission inventory reports were reviewed by Pinal County Air Quality Staff. Table 3.11 summarizes lead emission calculated by NEI or reported through the Toxics Release Inventory (TRI) in 2005. As reported to NEI in 2005 only one source in Pinal County exceeded the 0.5 ton per year threshold. A review of the ASARCO LLC Ray Operations Mine 2007 emission inventory report, which is required through an air quality operating permit, shows a revision to the annual lead emission rate from 1.27tpy to 0.014tpy. The revision was described in a May 12, 2008 letter accompanying the annual emission inventory submittal. Air Quality permit management reviewed and accepted the revised emission rate.

The second pathway for required ambient lead monitoring arises through CBSA/MSA population. Pinal County is included in the Phoenix-Mesa-Glendale, AZ MSA with a 2010 population of 4,192,887 million people. This is above the 500,000 person population threshold described above. Although Pinal County is included in the MSA the majority of the population resides in Maricopa County.

After review of the inventory and MSA population, Pinal County Air Quality has concluded that monitoring for ambient lead in the county will not be conducted. This conclusion is based upon the following; 1) no point source in the county emits lead above the 0.5 ton per year threshold and, 2) Pinal County assumes that the MSA required monitoring will be conducted in Maricopa County. Pinal County Air Quality will revisit the need and feasibility of lead monitoring as source emissions and economic conditions change.

Table 3-14: NEI 2005 Point Source Lead Emissions in Pinal County

Facility Name	2005 NEI v 2 Emissions (tpy)	TRI2005 TRI Emissions (tpy)
FABRICATED PRODUCTS INC. DBA S EAFAB METALS CO.	0.00555	0.00555
ASARCO LLC RAY OPERATIONS MINE	0.00025	1.27275

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4.0 Monitoring Site Descriptions

This section describes the purpose and classification of each monitoring site operated by Pinal County Air Quality. Appendix B contains images and summary tables for each site. The changes that have occurred or are planned at each site are detailed within each subsection. Each site has been evaluated for compliance with the siting criteria listed in 40 CFR Part 58 Appendix D (Network Design) and Appendix E (Probe and Path Siting).

4.1 Apache Junction Fire Station

This site is located behind Apache Junction Fire Station #2 on Bureau of Land Management (BLM) property. Apache Junction lies at the fringe of the Phoenix metropolitan area, where urban development meets the Tonto National Forest and Superstition Wilderness. The site sits on the eastern boundary of the City of Apache Junction with residential homes to the east. Undisturbed desert immediately surrounds the site to the north, south and west with residential homes beyond that. The Superstition Mountain Range is located approximately one mile east of the site. The purpose of the site is to quantify $PM_{2.5}$ and PM_{10} concentrations affecting the surrounding population on a neighborhood scale. This site is included in the statewide $PM_{2.5}$ network.

The site consists of a High-Volume PM_{10} sampler, a sequential $PM_{2.5}$ sampler and a PM_{10} TEOM. The High-Volume PM_{10} sampler operates on a one in six day schedule and the $PM_{2.5}$ sampler operates on a one in three day schedule.

The site was established in 1999 and consisted of two Andersen FRM $PM_{2.5}$ monitors, one of which operated every third day. The samplers did not take precision samples; instead their operation alternated. One sampler was operated on each run day so that the number of site visits was reduced. In June 2004 a sequential R&P FRM $PM_{2.5}$ sampler was installed to replace the Andersen $PM_{2.5}$ monitors.

One High-Volume PM_{10} sampler from the Apache Junction Maintenance Yard (described in section 4.2) was moved to this site on July 1, 2003. Samples were collected at both sites until January 1, 2004 to develop a correlation between the two sites. The correlation was discussed further in the July 2004 version of the Ambient Monitoring Network Review and Data Summary document in section 5.3.1. As of January 1, 2004 the Apache Junction Fire Station site is the only PM_{10} site in Apache Junction.

On August 20, 2011, a PM_{10} TEOM began operation at site in response to a recorded exceedance at the filter based PM_{10} sampler on July 8, 2011. The TEOM has been in operation for more than the 4 consecutive quarters as required by 50 CFR App. K 3.1 (f)(1)-(3). This portion of the regulation encourages monitoring agencies to implement continuous monitoring after a measured exceedance and generally states that EPA will not calculate expected exceedances from that monitor if everyday sampling is subsequently initiated and maintained for 4 calendar quarters (and 75% completeness is maintained). The extended operation was due to 5 exceedances recorded on August 26, August 28, September 2, September 6, and November 4 of 2011. In January of 2013 ADEQ submitted documentation and received approval from EPA to exclude a number of exceedances in the Phoenix area as wind blow dust exceptional events. Four of the five

exceedances recorded in Apache Junction were included in EPA's concurrence with ADEQ's exemption request. This results in only one recorded exceedances at Apache Junction occurring on September 6, 2011. Because the sampler was operated in a discretionary manor and no exceedances have been recorded since September 6, 2011, the sampler was discontinued July 01, 2013. The 1-in-6 day filter based PM_{10} sampler remains in place. See section 5.0 for a related description.

The high-volume sampler remained in operation until July 01, 2013 when it was replaced with a Medium Volume PM_{10} sampler, method 98.

The site meets 40 CFR Part 58 Appendix D and E criteria.

4.2 Apache Junction Maintenance Yard

This site is located within the Pinal County Public Works Yard and is in the center of Apache Junction. Three major roads surround the site: State Highway 88, Idaho Road, and Superstition Boulevard. The maintenance yard area is graveled, well maintained, and historically activity in the yard has not adversely affected the samplers. The historical purpose of this site was to quantify PM_{10} concentrations affecting the surrounding population on a neighborhood scale, quantify carbon monoxide concentrations near a major intersection on a middle scale, and quantify ozone concentrations on the eastern boundary of the Phoenix metropolitan area. The ozone concentration at this site reflects both regional transport and neighborhood scale population exposure.

Historically, the site consisted of two Wedding High-Volume PM_{10} monitors that collected precision samples on a one in six-day schedule, an ozone monitor, a carbon monoxide monitor, a wind system, a barometric pressure sensor and a temperature and relative humidity sensor. The inlet funnel on the ozone monitor was changed from stainless steel to Pyrex glass in 2001. The site has met 40 CFR Part 58 Appendix D and E criteria since then.

In an effort to better utilize the resources available to Pinal County Air Quality, the District removed the carbon monoxide monitor located at this site on May 28th, 2002. The reasoning behind this is discussed in detail in section 6.1 of this document.

One of the PM_{10} High-Volume monitors located at this site was moved to the Apache Junction Fire Station site on July 1, 2003. PM_{10} monitoring took place at both sites until January 1, 2004, so that a correlation between the two sites could be developed. On January 1, 2004 the remaining PM_{10} High Volume monitor was moved to the Pinal County Housing site in order to create a co-located PM_{10} site. Refer to section 4.12 of this document for details on the Pinal County Housing site.

The existing tower at the Apache Junction Maintenance Yard site, on which the wind system is mounted, historically was not stable enough to produce accurate wind direction measurements. The mounting of the meteorological equipment was reconfigured in May 2007 so that accurate measurements could be taken.

The site meets 40 CFR Part 58 Appendix D and E criteria.

4.3 Casa Grande Airport

This site is located within the Casa Grande Municipal Airport. Casa Grande lies about twenty miles south of the Phoenix urban area, in a broad desert plain largely dominated by open field agriculture. A small industrial park is located within the airport complex and there are residential subdivisions to the north, south, and east of the airport. The airport is on the north edge of Casa Grande, although the entire surrounding area is growing rapidly. To the east of the airport approximately a quarter of a mile is a major thoroughfare, Pinal Avenue.

The objective of this site is to quantify ozone concentrations south of the Phoenix metropolitan area. The ozone concentration at this site reflects both regional transport and neighborhood scale population exposure.

In the past carbon monoxide was also monitored at this site. In an effort to better utilize the resources available to Pinal County Air Quality, the District removed the carbon monoxide monitor located at this site on October 11, 2002.

In August 2006 a new site shelter was installed. On May 20th, 2010 the wind system, barometric pressure sensor and a temperature and relative humidity sensor were removed for cost saving reasons. There is a National Weather Service site on the airport property that is currently being used for meteorological data. The site currently consists of only an ozone analyzer.

The site meets 40 CFR Part 58 Appendix D and E criteria.

4.4 Casa Grande Downtown

This site is located on the roof of an Arizona Department of Economic Security building in the downtown area of Casa Grande. A core business district surrounds the site followed by residential areas in all directions. The purpose of the site is to quantify $PM_{2.5}$ and PM_{10} concentrations affecting the surrounding population on a neighborhood scale.

Historically, the site consisted of a High-Volume PM_{10} sampler and a $PM_{2.5}$ FRM sampler. The samplers were moved further away from a nearby furnace flue in September of 2001. The High-Volume PM_{10} sampler operated on a one in six-day schedule. The $PM_{2.5}$ monitor at this site was upgraded from an Andersen $PM_{2.5}$ FRM sampler to a single channel R&P $PM_{2.5}$ FRM sampler in March 2004. The $PM_{2.5}$ FRM sampler had operated on a one in six day schedule since 1999. On January 1, 2007 the sample frequency was changed to one in three days to meet new monitoring requirements. In March of 2007 a second $PM_{2.5}$ FRM sampler was installed so that operation could alternate between the two and reduce trips to the site. A continuous PM_{10} TEOM was installed in March of 2007.

For the first sample of 2009, the sample frequency of the two $PM_{2.5}$ samplers was changed from a frequency of 1 in 3 to 1 in 6 to allow for precision measurement. This change was proposed in the 2007 network plan.

On December 31, 2008 the High Volume PM_{10} sampler was moved from Casa Grande Downtown to Stanfield and replaced with a PM_{10} Thermo Partisol.

On December 31, 2010 the PM_{10} Partisol sampler at Casa Grande Downtown was discontinued. The PM_{10} TEOM was designated as a SLAMS monitor as of January 1, 2011.

Pinal County has acquired a continuous $PM_{2.5}$ BAM, method 170, which was installed at the Casa Grande Downtown site on November 8, 2013. Pinal County will operate the continuous method for a one year period after which an evaluation will be conducted to determine instrument performance. During this time the instrument will not be considered a regulatory method for comparison to the applicable NAAQS. The conclusion of the evaluation process will be include in the next monitoring network review along with a statement regarding the methods comparability to the NAAQS.

The site meets 40 CFR Part 58 Appendix D and E criteria.

4.5 Combs School

This site is located within the J.O. Combs Elementary School District campus and is approximately ten miles south of Apache Junction in an area that is rapidly being developed for residential use. The area has historically been dominated by open field agriculture, although residential developments have been built or are being planned to the north, south, east and west of the site. Historically this site has been used to quantify both ozone and PM_{10} concentrations southeast of the Phoenix metropolitan area. The ozone concentration at this site reflected regional transport and neighborhood population exposure. The PM_{10} concentration at this site reflects neighborhood scale population exposure.

This site was installed in June of 2002 and ozone data recording began in July 2002, thus data for a portion of the 2002 ozone season are missing. In March of 2007 a continuous PM_{10} TEOM was added at the site. The ozone analyzer was discontinued May 18, 2011.

The site meets 40 CFR Part 58 Appendix D and E criteria.

4.6 Coolidge Maintenance Yard

This site is located within the Pinal County Public Works Yard on the east side of Coolidge. Coolidge lies about thirty miles southeast of the Phoenix urban area in a desert basin largely dominated by open field agriculture. Residential homes surround the site to the north, south, and east. West of the site is a railroad track with a business district on the other side. The purpose of this site is to quantify PM_{10} concentrations affecting the surrounding population on a neighborhood scale.

The site consists of a High-Volume PM_{10} sampler, which collects samples on a one in six-day schedule. Due to a scheduled demolition, the monitor was moved from the roof of a cargo trailer to a ground level stand in June of 2002. The monitor was moved

approximately fifteen meters to the south and the inlet height was reduced from 5.6 meters to 3.4 meters.

On July 01, 2013 the hi-volume sampler was replaced with two medium-volume PM_{10} samplers, method 98. The two medium-volume samplers are needed to meet the collocation requirement for the method.

The site meets 40 CFR Part 58 Appendix D and E criteria.

4.7 Cowtown Road

This site is located approximately four miles southeast of the City of Maricopa. The site also lies within an irrigated agricultural plain, with active and retired agricultural operations to the north, northwest and east. Feedlots, a grain processing complex, and a commercial composting facility operate to the south, southwest and southeast. The site is also in proximity to an unpaved agricultural road and the Casa Grande-Maricopa Highway, a paved two lane roadway, both situated to the south of the monitoring site. This site is used to look at several PM_{10} sources in the area, including agriculture, the grain-processing complex, the feedlots and county dirt roads.

The site was installed and data recording began in November of 2001. Since neither a quarterly nor annual average can be obtained from the two months of 2001 data this document will contain 2002 and subsequent data from this site. The site first consisted of a TEOM that collected continuous PM_{10} data, a wind system, and a temperature and relative humidity sensor. The area immediately surrounding the site was fenced off (at least 100 feet in all directions) in September of 2003 in order to stabilize the surrounding soil. The surrounding soil has subsequently been stabilized relatively well with the exception of the area to the south of the samplers. This area is a right of way that runs along the Casa Grande – Maricopa Highway and it was regularly disturbed by farm machinery (for instance a tractor and disc) in order to control weeds. In December of 2006 the right of way area adjacent to the site was fenced off to prevent this activity. Since December 2006 this site meets 40 CFR Part 58 Appendix D and E criteria.

A new shelter was installed at this site in August 2003 to accommodate additional equipment. A time-lapse video system was installed at this time and was operated until July 2006. The TEOM at this site was upgraded to a new unit in June 2004. The new unit still sampled PM_{10} and had the filter dynamics measurement system (FDMS) installed as an option. This option is designed to better account for particles that are in a gaseous form. The FDMS unit had difficultly operating in the harsh environment at this site from the beginning. Due to the maintenance problems with the FDMS unit, a TEOM unit without the FDMS option was set up as the primary monitor in January 2005.

The FDMS TEOM was operated periodically during 2005 in an effort to find ways to maintain the sampler in this harsh environment. During May and June of 2005 the FDMS TEOM was operated along with the collocated regular TEOM unit, both collecting PM_{10}. During this time it was found that the regular TEOM unit was reading approximately 30% higher than the FDMS TEOM unit. District staff worked with representatives from the manufacturer of the units, R&P, to determine the cause of this discrepancy.

Two issues were identified with the regular TEOM unit. First, it was found that the five-minute averages of this unit often recorded a large negative number directly after an extremely large positive number (1000 $\mu g/m^3$ or more). The manufacturer of the unit concluded that the flow controllers were over correcting for the extremely large particulate matter concentrations and correspondingly creating the negative numbers. The second issue identified was that the unit often recorded elevated noise vibrations when extremely large concentrations were recorded. This was a result of a large amount of particulate matter being deposited on the oscillating microbalance in a short amount of time. In order to correct both of these discrepancies the main inlet flow on the regular TEOM unit was reduced to 1 liter per minute (from 3 liters per minute) in August 2005. The manufacturer has used this alternate setting in other areas with extremely high particulate matter concentrations. The main flow setting of 1 liter per minute still retains the FEM status of the unit.

A filter based Andersen FRM PM_{10} unit and a filter based Andersen FRM $PM_{2.5}$ unit were installed at this site in August of 2005. The units were both operated on a one in six day schedule. This allowed PM_{10}, $PM_{2.5}$ and surrogate coarse data to be collected. Coarse material refers to particulate matter that is between 2.5 microns and 10 microns in size. The surrogate coarse data is extrapolated by subtracting the PM_{10} concentration from the $PM_{2.5}$ concentration.

Comparing the regular PM_{10} TEOM data (with the main flow set at 1 liter per minute) to the FRM filter based PM_{10} data yielded an excellent correlation. The average percent error between the two is 7.0% for calendar year 2009. This demonstrates that setting the main flow to 1 liter per minute on a regular PM_{10} TEOM is an appropriate operating method in this harsh environment. During 2009 the average concentration at the site decreased compared to prior years. As the trend continued the 1 liter flow adjustment had to be reassessed as described below.

Subsequent attempts during 2005 to build a suitable correlation between the regular PM_{10} TEOM and the FDMS PM_{10} TEOM unit were not successful. The FDMS PM_{10} TEOM continued to read approximately 15% below the regular PM_{10} TEOM. This does not appear to be a logical relationship since the FDMS unit is designed to better account for particles that are in a gaseous form and thus should be slightly higher than the regular PM_{10} TEOM. Further conversations with the manufacturer of the unit suggest the dryer that is built into the FDMS unit is scavenging coarse material. At this time Pinal County Air Quality has concluded that the FDMS TEOM unit is not suitable for measuring PM_{10} in this harsh environment that has a large coarse fraction. (The manufacturer may have a second-generation drier available in the future that would prevent the scavenging of coarse material in situations like this.) Due to the difficulty and expense of operating the FDMS TEOM in this environment, the instrument was shut down in May of 2007.

The time-lapse video system was relocated to the Stanfield site in July of 2006. The Cowtown site was several hundred yards from the feedlots being observed and did not allow the camera to record an overall view of the dust events.

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On January 15, 2009 the PM_{10} and $PM_{2.5}$ Anderson samplers were replaced with Thermo PM_{10} and $PM_{2.5}$ Partisol samplers which also hold an EPA Federal Reference Method designation. Both the PM_{10} and $PM_{2.5}$ instruments operated on a 1 in 6 day schedule.

On August 12, 2010 the main flow of TEOM was changed from 1 liter per minute to 3 liters per minute. The instrument was set to 1 liter per minute in 2005 to address instrument response to very high concentrations. A review of the instrument and data indicated that typical concentrations had decrease to a level where the 3 liters per minutes was appropriate. A comparison to PM_{10} values collected with the on-site filter based instrument compares well to the TEOM. No adverse conditions or readings have been observed after the change was made.

In September of 2010 a fixed location digital camera system was installed at the site and collects an image every 15 minutes.

In February of 2011 a Thermo-Fisher 1405DF FDMS TEOM was installed at the site. Pinal County evaluated the operation of the instrument for a 10 month period to determine if performance was adequate to represent PM_{10} and $PM_{2.5}$ concentrations. Additional details are provided below

The 2011 Network Review proposed to revise the scale classification of the Cowtown site from micro scale to middle scale. An evaluation of the site characteristics, specifically removal of cattle and related facilities adjacent to the site, necessitated this proposed change.

In May of 2011 the Thermo-Fisher 1405DF FDMS TEOM was discontinued and removed from the site. Pinal County determined that the cost of operation was excessive, comparison to filter measurements lacked necessary accuracy, and daily performance of the instrument was not reliable enough to utilize the instrument in the short term. When time, staffing, and funds are available the instrument will be re-evaluated.

On December 31, 2011 the filter based PM_{10} sampler at the site was discontinued. This was done in order to convert the sampler to $PM_{2.5}$ and collect more frequent $PM_{2.5}$ samples using two units. $PM_{2.5}$ sample frequency changed to 1 in 3 effective January 1, 2012. EPA commented on the 2011 plan that SPM data must be included when computing the area design value. The results showed a shortage of one $PM_{2.5}$ SLAMS monitor in the network. To correct this, Pinal County changed the Cowtown $PM_{2.5}$ samplers from SPM to SLAMS.

The site meets 40 CFR Part 58 Appendix D and E criteria.

4.8 Eloy County Complex

This site is located on the roof of the Pinal County Justice Court building. Eloy also lies in the agricultural basin of the County. A small business district to the north and south and residential homes to the east and west surround the site. The purpose of this site is to quantify PM_{10} concentrations affecting the surrounding population on a neighborhood scale.

This site replaced the Eloy City Complex site, which was approximately 300 yards to the south, in March 2007. The site consists of a High-Volume PM_{10} sampler, which collects samples on a one in six-day schedule.

On July 01, 2013 the hi-volume sampler was replaced with a medium-volume PM_{10} sampler, method 98.

The site meets 40 CFR Part 58 Appendix D and E criteria.

4.9 Maricopa County Complex (City of Maricopa)

This site is adjacent to the County Complex in city of Maricopa. Maricopa lies about fifteen miles south of the Phoenix urban area. Historically the area was a small residential area surrounded by pecan orchards, cattle feedlots, and open-field agriculture. In the early 2000s, development added a substantial number of houses near the monitoring site and additional subdivisions were built in every direction. This site was used to quantify ozone concentrations and is currently used to quantify PM_{10} concentrations in the area. The ozone concentration at this site reflects both regional transport and neighborhood scale population exposure. The PM_{10} concentration at this site reflects neighborhood scale population exposure.

This site was installed in June of 2002 and an ozone sampling began in July 2002, thus data for a portion of the 2002 ozone season are missing. The ozone monitor is operated seasonally. In December 2004 a PM_{10} TEOM unit was installed. Therefore, only data beginning January 2005 are included in the document.

In June of 2010 the shelter housing the ozone and TEOM equipment was moved approximately 50 yards from a location on the east side of the complex to a location on the south side of the complex. The move did not result in substantial changes in site exposure or pollutant concentrations, a change of address or a change in AQS site ID.

The ozone analyzer was discontinued May 18, 2011.

The site meets 40 CFR Part 58 Appendix D and E criteria.

4.10 Pinal Air Park

This site is located at water well number two within the Pinal Air Park complex. Pinal Air Park lies about twenty miles northwest of Tucson, at the Pinal/Pima County line. The site is immediately surrounded by undisturbed desert on all sides with an industrial park and airport lying to the west. The purpose of this site is to quantify background PM_{10} concentrations and transport ozone concentrations on a regional scale. This site serves as a background particulate matter site for the central and western portion of the county, which is dominated by agriculture and low elevations (generally around 1500 feet).

The site includes a High-Volume PM_{10} sampler, which collects samples on a one in six-day schedule, an ozone monitor that is operated seasonally, and a continuous PM_{10} TEOM.

An ozone analyzer was installed in June of 2002 to assess regional transport from the Tucson metropolitan area. Data collection from this ozone monitor did not begin until July of 2002, thus the data set for 2002 only includes a portion of the ozone season. The ozone concentration at this site reflects both regional transport and neighborhood scale population exposure.

On June 7, 2012, a PM_{10} TEOM began operation in response to a recorded exceedance at the filter based PM_{10} sampler. The TEOM will operate for 24 months after which the data will be evaluated to determine the future need of a continuous method at the site. The TEOM will be maintained as an SPM monitor during this time. See Section 5.0 for additional details.

On July 01, 2013 the hi-volume sampler was replaced with a medium-volume PM_{10} sampler, method 98.

The site meets 40 CFR Part 58 Appendix D and E criteria.

4.11 Pinal County Housing Complex

This site is located within the Pinal County Housing Complex and is approximately eleven miles east of Casa Grande in the heart of the agricultural basin of the County. The site was installed in July of 2002 to replace the Eleven Mile Corner site, which was approximately 1 mile to the south. The Pinal County Housing site better represents the particulate matter impact on the surrounding population since the site is adjacent to a subdivision. The site was originally located within a fenced area that houses the sewer lift station for the subdivision. The enclosure is immediately surrounded by native desert growth with active and retired agricultural areas beyond that in all directions. The County Housing subdivision lies just to the southeast of the enclosure. A small dairy, two cotton gins, and the Pinal County Fairgrounds are approximately one mile to the south of the Pinal County Housing Complex site. This site is used to evaluate several PM_{10} sources in the area, including cotton gins, fairground activity, and agricultural activity.

The site originally consisted of a High-Volume PM_{10} sampler running on a one in six day schedule, a continuous PM_{10} TEOM, a wind system, and a relative humidity and temperature sensor. On January 1, 2004 a second High-Volume PM_{10} sampler was installed to collect precision samples. This replaced the Apache Junction Maintenance Yard as the precision site in the network.

During 2005 it was discovered that one of the High-Volume PM_{10} samplers, PCH West, was not operating properly; the second High-Volume sampler, PCH East, has operated within specifications throughout this time period. The malfunctioning Anderson High-Volume PM_{10} sampler was removed from service in July 2006. This particular unit had a quick connect device to secure the inlet that none of the other Andersen High-Volume units operated by the District have. It appears this quick connect device has deteriorated over time and was causing the unit to operate outside of the required specifications. Since one of the Anderson High-Volume units was retired, two Wedding High-Volume units were installed at this site in July 2006 to collect precision samples.

In 2009 the site was moved approximately 20 yards to the south. A new fenced area and shelter were installed. The move did not result in substantial changes in site exposure or pollutant concentrations, a change of address or a change in AQS site ID.

In December of 2012 the Meteorological system was upgraded. A new 10m tower was installed and a new set of instruments was installed. Currently on the site is a wind system, barometric pressure sensor and a temperature and relative humidity sensor.

On July 01, 2013 the TEOM was changed from an SPM to a SLAMS monitor and the hi-volume samplers, which previously carried a SLAMS designation, were shut down.

The site meets 40 CFR Part 58 Appendix D and E criteria.

4.12 Stanfield County Complex

This site is located behind the Stanfield County Complex. Stanfield lies about fifteen miles west of Casa Grande, and about thirty miles south of the Phoenix urban area. Residential homes surround the site on all sides, but the surrounding landscape is dominated by open-field agriculture. Sizeable feedlot and dairy operations lie about three miles to the north, east and west. The purpose of this site is to quantify PM_{10} concentrations affecting the surrounding population on a neighborhood scale.

Historically, the site consisted of a High-Volume PM_{10} sampler, which collected samples on a one in six-day schedule. In February 2006 a PM_{10} TEOM was installed at this site to collect continuous data. In April 2006 the Wedding High-Volume sampler was replaced with a medium volume Anderson FRM sampler. The Anderson sampler was replaced with an FRM Partisol medium volume sampler in November 2007.

A time-lapse video system which was previously installed at the Cowtown site (described in section 3.9) was added to this site in July 2006. The new location will allow the camera to record an overall view of the dust events observed at the feedlots that are approximately three miles west of the site. The video system was removed from the site in September 2010.

On December 31, 2008 the PM_{10} Partisol sampler at Stanfield was replaced with the High-Volume sampler from Casa Grande Downtown. On December 31, 2009 the PM_{10} High-Volume sampler at Stanfield was discontinued and the PM_{10} TEOM was designated as a SLAMS monitor as of January 1, 2010.

The site meets 40 CFR Part 58 Appendix D and E criteria.

4.13 Queen Valley

This site is located at the Queen Valley water tank. Queen Valley is approximately sixteen miles southeast of Apache Junction and just south of the Superstition Wilderness Class I area. The site is on the south edge of Queen Valley and is surrounded by rugged terrain and native vegetation. The equipment at the site is owned and operated by ADEQ. This is an ADEQ SLAMS site which is part of the Photochemical Assessment

Monitoring Station (PAMS) network that provides data regarding ozone transport from the Phoenix urban area. ADEQ operates instruments at this site to measure ozone, reactive nitrogen oxides (NOy), and PAMS volatile organic compounds. ADEQ also operates a nephelometer, temperature and relative humidity sensors at the site. The ozone data from this site is included in Appendix B of this document because the site demonstrates ozone transport into Pinal County. Please refer to the State of Arizona Monitoring Network Plan for additional information.

Queen Valley is also the location for an Interagency Monitoring of Protected Visual Environments (IMPROVE) sampler. This sampler provides particulate matter and speciation data for assessing the impact of particulates on visibility at the nearby Superstition Wilderness Class I area. Historically Pinal County Air Quality served as the operator for the IMPROVE sampler. Due to budget cuts and personnel shortages primary responsibility for operations was returned to ADEQ on June 1, 2011.

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5.0 Proposed Changes to the Network

This section describes any new sites that Pinal County Air Quality plans to install and summarizes recent changes to the network.

5.1 Addition of three R&P 2025 $PM_{2.5}$ Samplers

EPA commented on the 2011 plan and noted a shortage of a collocated site using filter-based samplers, method 145. To correct this, Pinal County proposed adding two medium-volume filter based $PM_{2.5}$ samplers, method 145 to the Cowtown Rd site. A 103 grant request was made to acquire these samplers and approved. The samplers were ordered in February of 2014 and will be installed before the end of 2014.

In addition EPA commented in the 2011 Network Plan review that the Casa Grande $PM_{2.5}$ site should be operating on a 1-in-3 schedule. Pinal County has previously received permission from EPA in 2008 to operate on a 1-in-6 schedule. In 2012 Pinal County requested 103 grant money for an additional medium-volume automated sampler. This request was approved and the unit was ordered in February 2014. The new sampler will be installed before the end of 2014 and the site will return to a 1-in-3 sampling frequency.

5.2 Convert the Cowtown, Maricopa, Pinal County Housing, Pinal Air Park and Combs school TEOMs to SLAMS

EPA commented on the 2012 Network Plan that the Cowtown, Maricopa, Pinal County Housing, Combs and Pinal Air Park sites had been active for longer than 24 months and should be designated as SLAMS monitors. Pinal County concurs with EPA's comment on the Combs and Maricopa sites and proposes that both monitors be designated as SLAMS.

The Pinal County Housing site was converted to SLAMS on July 1, 2013 when the high-volume samplers at the site were shut down. This change was discussed in the 2013 Network Plan.

The Pinal Air Park monitor began operation in July of 2012 and has not been in operation for 24 months. The monitor has shown two exceedances in that time period and the data is currently under review. The decision to convert it to SLAMS, maintain as SPM, or discontinue will be made by the end of 2014 and will be addressed in the 2015 Network Plan.

The Cowtown PM10 monitor will be maintained as SPM until the conclusion of an ongoing relocation study described further in Section 5.3. Upon completion of the relocation study PCAQCD will make a determination regarding designation of the PM10 monitor.

5.3 Cowtown site relocation study

During the fall of 2013 Pinal County was notified by the current landowner of the Cowtown site that they did not want to continue the current Pinal County use of the property. Pinal County negotiated a two year extension on the lease so that the Cowtown site can be relocated. The new lease extends use of the site through January 20, 2016. Currently, Pinal County has identified two locations and has use agreements in place and anticipates beginning data collection in May or early June of 2014. This process includes identify potential replacement sites, collecting 1 year of concurrent data, and conducting a data evaluation. Pinal County has identified several possible sites and will be conducting a one year study to determine if one of the locations is an as acceptable replacement for the Cowtown Site.

An update on this process will be included in the 2015 Network Plan.

5.4 Pinal Air Park Ozone Conversion

In 2011 Pinal County requested and received permission to modify the Pinal Air Park ozone monitor season. EPA has since commented that Pinal County should return the Pinal Air Park site on a year-round basis. Pinal County has also received internal requests to return to a year-round monitoring season. Based on these comments Pinal County will begin a year-round schedule starting in October of 2014. The ozone monitor will not be shut down in October as usual and will instead continue operation to maintain the year-round schedule.

5.5 Installation of PM2.5 BAM at Casa Grande Downtown

Pinal County has acquired a continuous $PM_{2.5}$ BAM, method 170, which was installed at the Casa Grande Downtown site in November, 2013. The addition of this method is required by rule as described in 40 CFR Part 58 Appendix D 4.1.7. Pinal County will operate the continuous method for a one year period after which an evaluation will be conducted to determine instrument performance. During this time the instrument will not be considered a regulatory method for comparison to the applicable NAAQS. The conclusion of the evaluation process will be included in the next monitoring network review along with a statement regarding the methods comparability to the NAAQS. See section 3.4 for additional detail.

5.6 Addition of 5-minute Data

During the SIP process Pinal County received comment from multiple sources requesting the addition of 5-minute PM_{10} concentration data. In response, Pinal County designed the required network changes to accomplish this goal. The chosen method was to use data loggers to record the concentration data from the TEOMs and have the data logger calculate the 5-minute averages. The data loggers are directly polled by the Airvision software. Pinal County chose to collect 5-minute data for all sites in the non-attainment area. Cowtown, Pinal County Housing, Casa Grande, and Stanfield were started in July and August of 2013. Additional equipment was required for the Combs site and has been ordered. The 5-minute data recording at the Combs site will begin as soon as all of the equipment arrives.

6.0 Data Trends

This section provides an overall description of the pollutants currently collected and provides trends for O_3, PM_{10} and $PM_{2.5}$ in Pinal County. Appendix C of the document includes a complete data set for each pollutant.

In order to discuss this information, it is necessary to clarify the dual meanings for the word "exceedance". The common understanding, an exceedance occurs whenever a value exceeds a reference value. However, for purposes of defining what constitutes a violation of several of the ambient air quality standards, relevant EPA regulations define "exceedances" as discrete events, and the various standards define a violation as respectively occurring when either the actual or the expected number of exceedances is greater than one per year.

In contrast, all other ambient air quality standards rely on numerical averaging to define what complies with or violates the standard. For those standards, a monitored value above the defined standard may contribute toward an average that violates the standard, but that monitored value does not constitute an "exceedance" in a regulatory sense.

In the case of the eight-hour ozone standard, the first three observed eight-hour concentrations above the standard reference value are not even considered for purposes of determining compliance, and only the fourth high value counts towards the calculated average that may violate the standard. This document will use the term excursion to denote values that are greater than a numerical averaging standard.

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6.1 Carbon Monoxide

The largest source of carbon monoxide is vehicles, which produce the pollutant through the incomplete combustion of fuels. Elevated levels generally occur near major intersections where large numbers of vehicles pass through at a slow rate. Peak concentrations are generally recorded between November and February. This is caused by vehicles producing more carbon monoxide in cold weather and the inversion conditions at this time of year trapping a stable and stagnate layer of air near the earth's surface.

The carbon monoxide NAAQS has two forms, a one-hour standard of 35 ppm, and an eight-hour standard of 9 ppm.

Carbon Monoxide monitoring was discontinued at the Apache Junction and Casa Grande sites as of May of 2002 and October of 2002, respectively.

Between 1996 and 2002, the highest one-hour average recorded at either monitoring site was approximately 10% of the standard and the highest eight-hour average recorded was approximately 15% of the standard. Considering the relatively low levels and to better utilize resources, the carbon monoxide monitors were discontinued. If the NAAQS or conditions change and carbon monoxide monitoring is potentially required, Pinal County will evaluate the possibility of resuming data collection.

Refer to Section 1.0 for a detailed description of the carbon monoxide standards and Appendix C for data summaries.

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6.2 Ozone

Ozone can be found both as a natural component of the atmosphere and as a pollutant. The ozone layer located in the stratosphere, approximately eight to thirty miles above the earth's surface, absorbs harmful ultraviolet radiation before it can reach the earth's surface. The ozone found at the earth's surface is a pollutant produced through chemical reactions that involve volatile organic compounds, nitrogen oxides, and sunlight. Sources of volatile organic compounds include vehicles and other gasoline powered motors, industrial processes, and biogenic emissions from plants. Sources of nitrogen oxides include vehicles, construction equipment, trains, electric power plants, industrial sources, and biogenic emissions from soil.

The official ozone season in Arizona, as defined by EPA, is January through December. Many ozone monitors in Arizona operate year round, however when reviewing historic ozone data it can be seen that the highest concentrations generally occur during the months of April through October when temperatures are highest.

Refer to Section 1.0 for a detailed description of the ozone standards and Appendix C for 1-hour and 8-hour data summaries. The following subsections discuss the ozone trends in Pinal County

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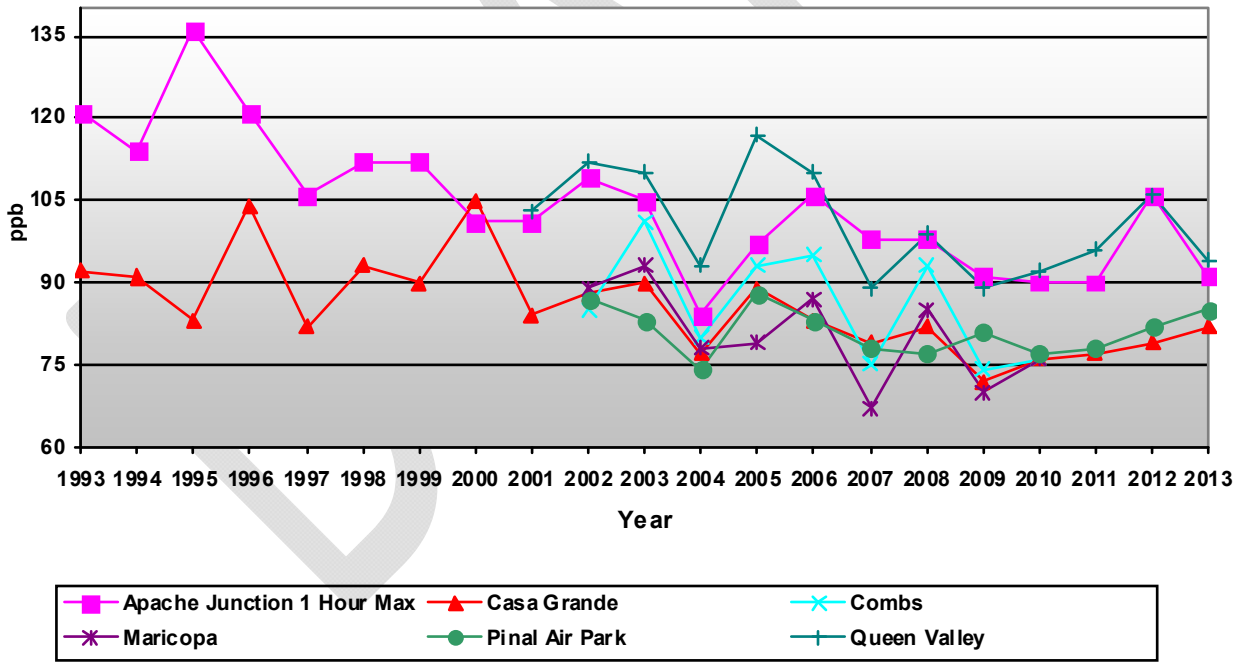
6.2.1 One-Hour Ozone

Pinal County met the former one-hour ozone standard. Even though this standard has been revoked, one-hour ozone data will continue to be reported in this document to assess trends. A single exceedance of the one-hour standard was recorded in Apache Junction in 1995 but was not a violation because the standard allowed one exceedance per calendar year. No exceedances of the 1-hour standard were recorded at Casa Grande, Queen Valley, Combs, Maricopa, or Pinal Air Park.

Daily maximum one-hour averages at Apache Junction and Queen Valley in 2013 were among the highest downwind of the Phoenix metropolitan area. The sites recorded concentrations of 91 and 94 PPB, respectively. In 2013 the Apache Junction and Queen Valley sites saw a decrease while the Casa Grande and Pinal Air Park sites saw a minor increase. In general, the long term trend is downward as evident with Casa Grande and Apache Junction, the two long term sites.

Figure 6-1 shows the one-hour maximum readings recorded at Apache Junction, Casa Grande, Queen Valley, and Pinal Air Park. Collection of ozone data at Combs and Maricopa were discontinued in 2011.

Figure 6-1: One-Hour Ozone Trends – Maximum Concentration

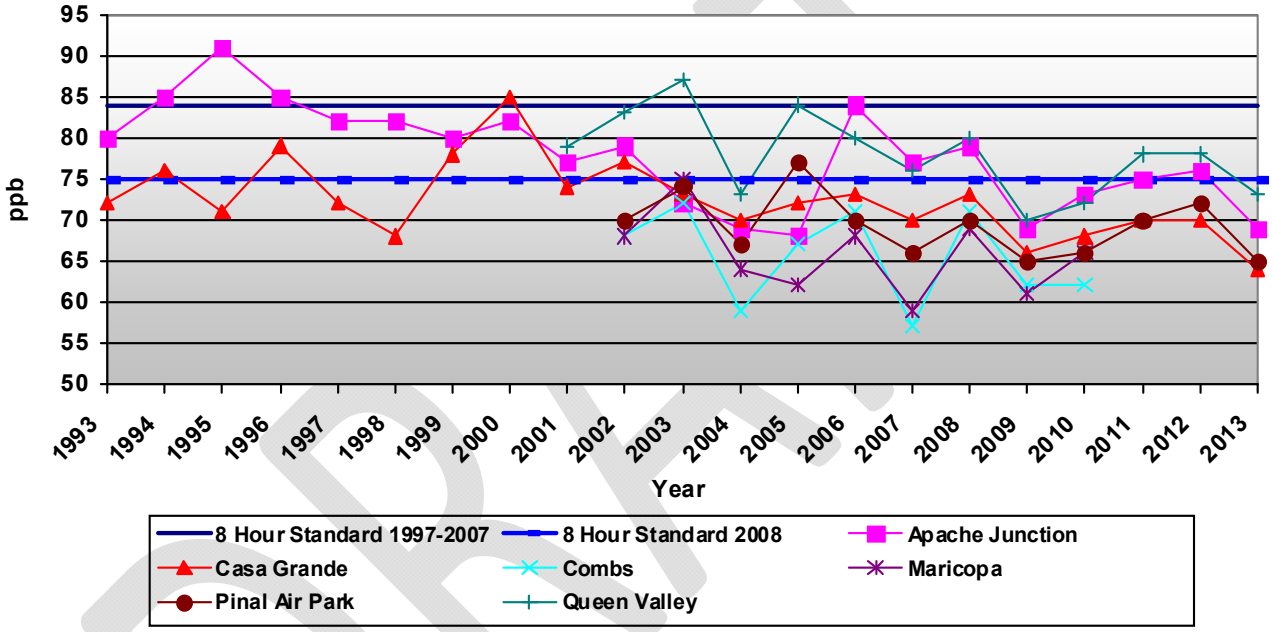


6.2.2 Eight-Hour Ozone

Daily maximum 8-hour averages decreased at all Pinal County monitoring sites in 2013. In general, the 8-hour average ozone concentrations have decreased over the long-term at the two sites with the greatest period of record, Apache Junction and Casa Grande. Overall, 2009 was a low ozone year across all networks in Arizona.

Figure 6-2 shows the fourth highest eight-hour average recorded at Apache Junction, Casa Grande, Queen Valley, and Pinal Air Park. Combs and Maricopa were discontinued in 2011.

Figure 6-2: Eight-Hour Ozone Trends – 4th Highest Concentrations



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6.3 Particulate Matter smaller than 10 microns (PM_{10})

PM_{10} is airborne particles less than or equal to ten microns (1 micron = 10^{-4} centimeters) in diameter. PM_{10} can result from many sources, such as re-entrained dust from vehicles traveling on paved roads, vehicles traveling on unpaved roads, earth moving activities, bulk material handling, windblown dust, and combustion processes.

Refer to section 1.0 for a detailed description of the PM_{10} standards and Appendix C for a summary of PM_{10} data collected throughout Pinal County.

The following subsections discuss the values, trends and contributing sources for each PM_{10} monitoring site.

An initial Pinal County NEAP was adopted in 1997. Underlying EPA guidance calls for a five-year review of such a plan. In 2002 Pinal County Air Quality proposed to renew the existing NEAP. Although EPA did not comment on the 1997 Pinal County NEAP, the EPA expressed a number of concerns as part of the review process in 2002. As a result of the review, the EPA informed Pinal County Air Quality that it would not approve a NEAP for the area at that time. The data included in this document invokes the 1997 NEAP in reporting data through the five-year anniversary date of December 5, 2002. However, none of the data collected after this date has been subjected to the 1997 NEAP.

In 2006 ADEQ initiated a NEAP program to identify regional windblown events, or natural events that resulted in elevated PM_{10} concentrations. Pinal County continuous PM_{10} TEOM data was reviewed as part of this process. When a regional windblown event was identified as a contributor to elevated PM_{10} concentrations or exceedances, the continuous TEOM data was submitted to the EPA Region IX office for concurrence. The EPA did not concur that the 2006 Pinal County data should be flagged as a natural event since Best Available Control Measures (BACM) were not implemented in Pinal County during this time period. The data presented in this document includes all PM_{10} concentrations recorded in 2006; the natural events have not been removed.

In March of 2007 EPA replaced the Natural Events Action Plan with the Treatment of Data Influenced by Exceptional Events Rule. This new rule allows monitoring agencies to submit documentation to EPA that shows an exceedance would not have occurred "but for" the exceptional event. Pinal County Air Quality submitted Exceptional Events packages to EPA asking that thirty two events be excluded from the 2007 PM_{10} data set, sixteen events from the 2008 PM_{10} data set. EPA did not offer concurrence on the submittal. Events which have occurred after 2008 have been flagged in AQS. This document does not exclude any of the 2007 - 2013 PM_{10} exceedances since EPA the events have not received EPA concurrence.

On May 6th, 2013 EPA did concur with multiple exceptional events submitted by ADEQ that included the Apache Junction site. The concurred dates are on August 26, August 28, September 2, and November 4 of 2011.

6.3.1 24-Hour PM_{10} Trends

Figure 6-3, 6-4, and 6-5 illustrate maximum 24-hour average PM_{10} values collected throughout Pinal County. To better illustrate the range in concentrations the figures are separated into three categories, continuous monitor sites that traditionally exceed the PM10 standard, continuous monitor sites that typically meet or are below the standard, and filter based monitor sites. Maximum PM_{10} concentrations typically vary from year to year because they result from local sources or high wind events.

Figure 6-3 shows trends at sites that have traditionally exceeded the standard. It is evident from the illustration that each of the sites has recorded 24-hour average concentrations in excess of the PM_{10} standard of 150µg/m^3. The 2011 record shows a marked increase in maximum concentration that is directly related to an exceptionally large thunderstorm caused dust storm that occurred on July 5th with decreases at all sites for 2012. In 2013 several summertime thunderstorms generated dust storms which impacted the county leading to elevated concentrations at several monitoring sites. The 2013 concentrations during the dust storms were much less than those observed in 2011. Note that for 2007-2013 days flagged as exceptional event by Pinal County were not removed from the data set.

Figure 6-3 Maximum 24-Hour PM_{10} Concentration – Typically violating monitors

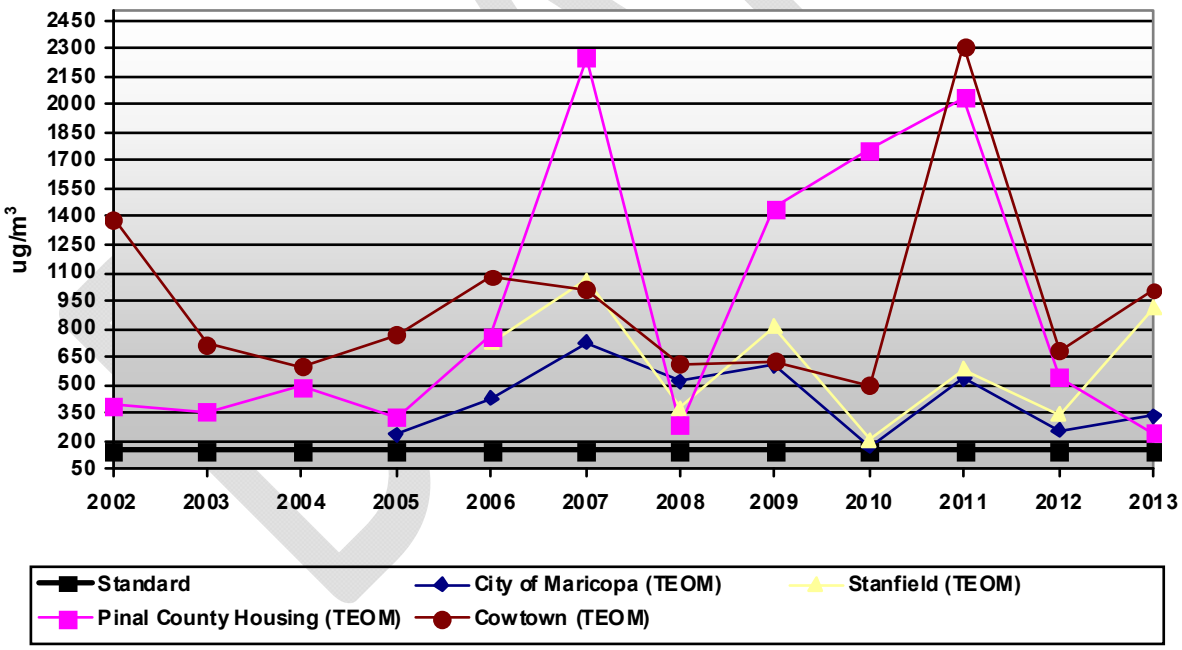


Figure 6-4 shows 24-hour trends for sites with concentrations typically less than the standard. Apache Junction and the Casa Grande site are historically below the standard for the period of record. The first exception is July 8, 2011 at the Apache Junction site. This was the first exceedance ever recorded in Apache Junction and prompted the installation of a PM_{10} TEOM continuous monitor in August 2011. The Pinal Air Park TEOM was added on June 7th, 2012 in response to a filter based exceedance recorded on May 9th, 2012. That exceedance is the first one ever recorded at that site. In 2013 the maximum concentration values increased at all the sites as a result of the thunderstorm generated dust storms.

Figure 6-4: Maximum 24-Hour PM_{10} Concentration – Typically compliant monitors

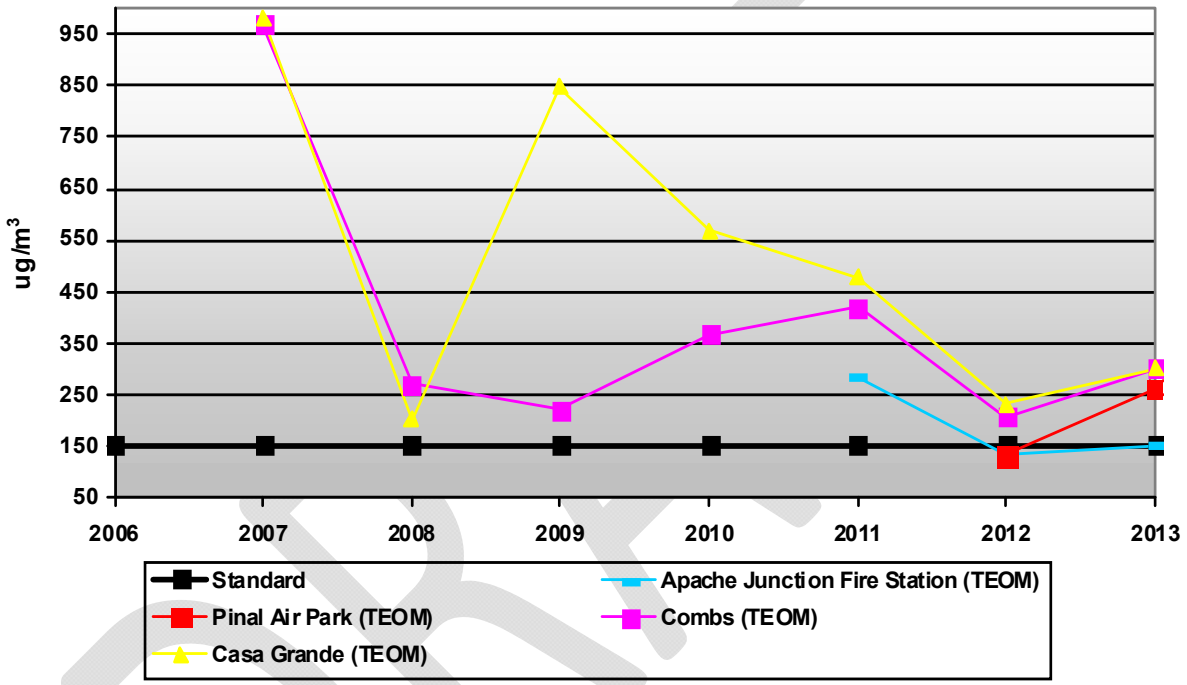
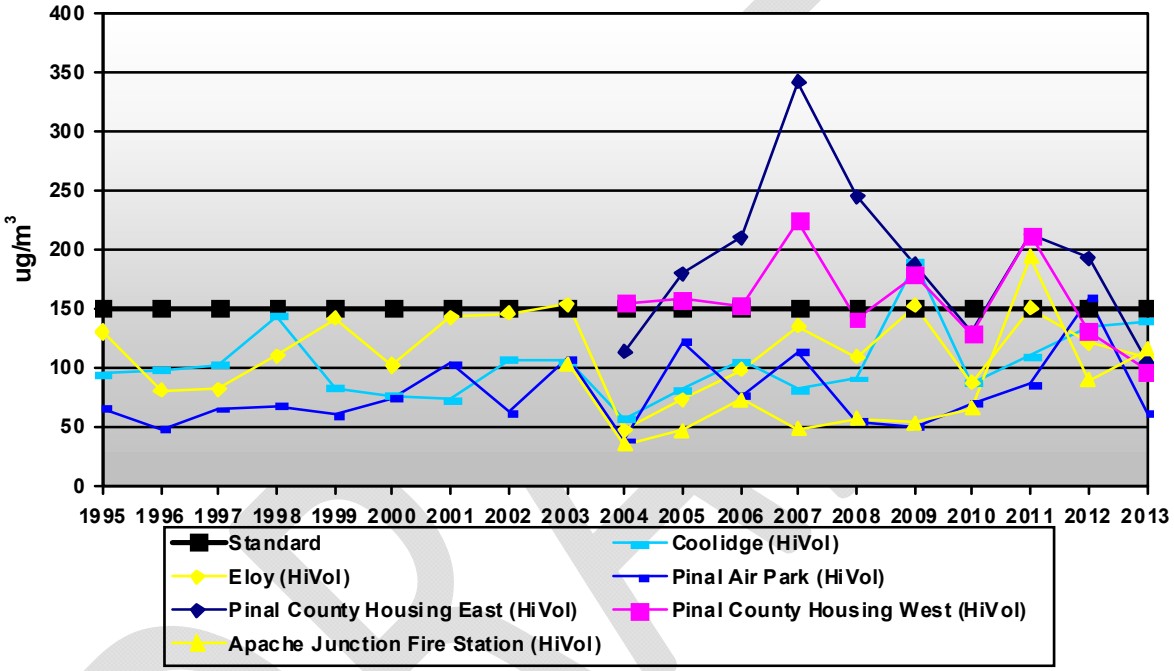


Figure 6-5 shows the 24-hour trends for Pinal County's filter based sampler sites. Eloy, Coolidge, Apache Junction, and Pinal Air Park have historically remained below the standard. In 2011 the first exceedance ever recorded for the Apache Junction site prompted the installation of a PM_{10} TEOM continuous monitor in August 2011. In 2012 Pinal Air Park had the first exceedance ever recorded for the site which prompted the installation of a PM_{10} TEOM continuous monitor. In 2013 most sites had relatively similar readings to 2012. Apache Junction and Coolidge increased slightly while Eloy, Pinal County Housing and Pinal Air Park all decreased.

Figure 6-5: Maximum 24-Hour PM_{10} Concentration - Filter Based Sites



6.4 Particulate Matter smaller than 2.5 microns ($PM_{2.5}$)

$PM_{2.5}$ is airborne particles less than or equal to 2.5 microns (1 micron = 10^{-4} centimeters) in diameter. $PM_{2.5}$ generally results from the combustion of fuels in motor vehicles, power generation, industrial processes, and from burning wood in residential fireplaces. Refer to section 1.0 for a detailed description of the $PM_{2.5}$ standards and Appendix C for a summary of $PM_{2.5}$ data collected throughout Pinal County.

Special considerations for comparing $PM_{2.5}$ data to the standard are described at 40 CFR Subpart D (58.30). The subpart states that $PM_{2.5}$ sites with unique-middle scale or micro-scale representation and hot-spot sites are only eligible for comparison to the 24-hour $PM_{2.5}$ standard. The Cowtown site is characterized as a "local hot spot" site according to this definition and can only be used for comparison to the 24-hour $PM_{2.5}$ standard.

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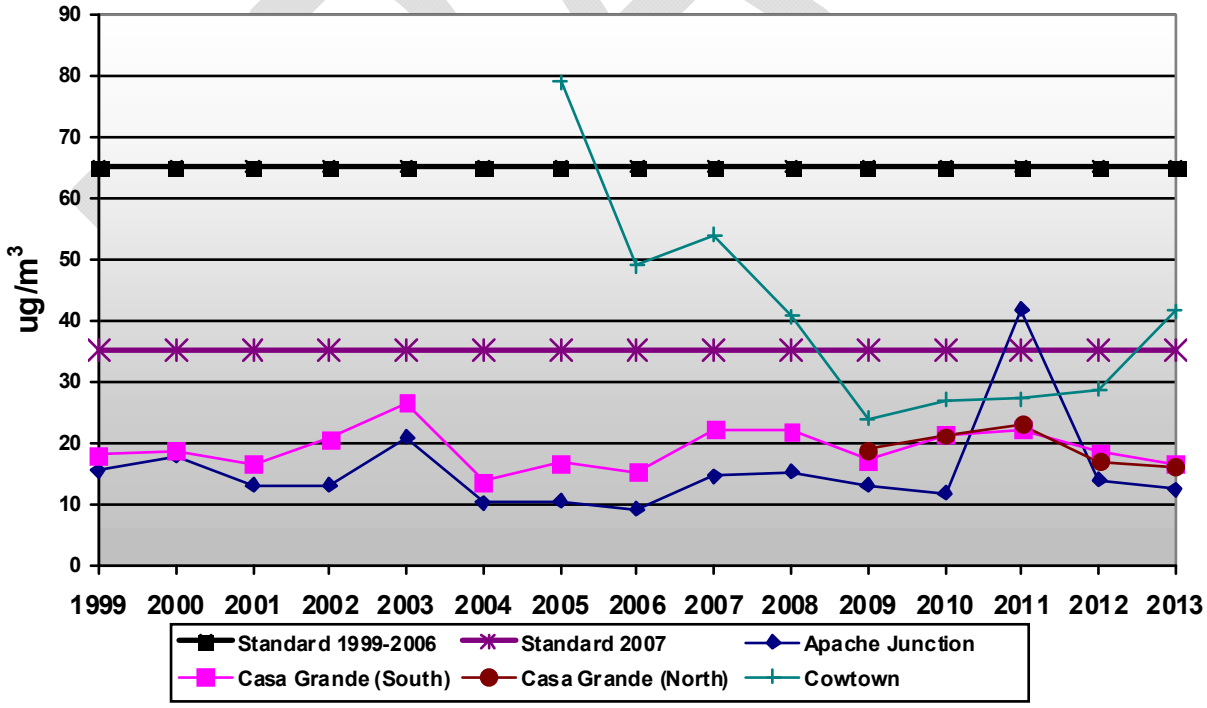
6.4.1 $PM_{2.5}$ 24-Hour Trends

Figure 6-10 illustrates 98th percentile $PM_{2.5}$ values collected at Apache Junction, Casa Grande, and Cowtown. It is evident from the illustration that the Apache Junction and Casa Grande sites are typically below the standard over the period of record. Both sites show a historical concentration range between 9 and 27µg/m^3. The significant increase in the Apache Junction 2011 concentration is related to a series of exceptionally strong thunderstorms July 5th thru July 8th where the monitor recorded two consecutives runs above the standard. The Apache Junction three year average of the 98th percentile value is still well below the standard at 23µg/m^3. The 24-Hour values at Casa Grande are typically higher than Apache Junction by approximately 25%.

The Cowtown site shows values above 35µg/m^3 for the first four years of operation followed by the 2009 24-hour 98th percentile value falling below 35µg/m^3. The three year average of the 98th percentile value dropped from 61µg/m^3 in 2007, to 40 in µg/m^3 in 2009, to below the standard in 2010 at 31µg/m^3 and remained below the standard at 28µg/m^3 in 2012. In 2013 Apache Junction and Casa Grande continued to decline while the Cowtown site had its highest concentration since 2007. Some of the high values can be attributed to the numerous thunderstorm generated dust storms that impacted the county. Even with the elevated concentration in 2013, the three year average remained below the standard at 33µg/m^3. The site now meets the $PM_{2.5}$ 24-hour NAAQS.

Figure 6-6: Network-Wide 24-Hour 98th Percentile $PM_{2.5}$ Trends

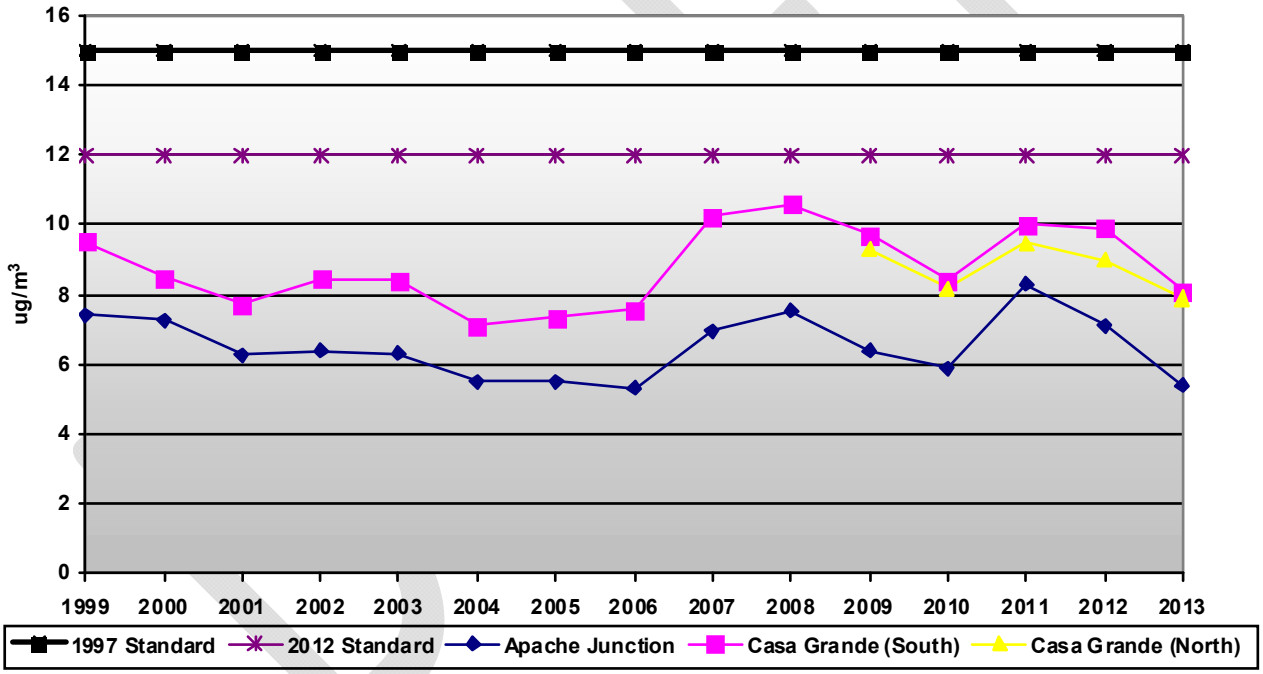


6.4.2 $PM_{2.5}$ Annual Trends

Figure 6-11 illustrates annual average $PM_{2.5}$ values collected at Apache Junction and Casa Grande. Both sites show concentrations with a range between 5 and 11µg/m^3. Concentrations trended downward starting in 2008 with a low in 2010 which was associated with a rainy spring pattern. From 2010 the concentration trended upward in 2011 primarily due to dust outflows associated with an above average summer thunderstorm season. 2012 and 2013 have shown a slight downward trend. As with seen in the 24-Hour averages, the values at Casa Grande are typically higher than Apache Junction by approximately 25%. Both sites remain below both the 2012 standard of 12µg/m^3.

As described in the introduction to this section, Cowtown is not comparable to the annual standard.

Figure 6-7: Network-Wide Annual Average $PM_{2.5}$ Trends



Appendix A

Acronyms & Abbreviations

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Acronyms & Abbreviations used in this document

ADT	Average Daily Traffic
AQS	Air Quality System
ADEQ	Arizona Department of Environmental Quality
ARM	Approved Regional Method
BACM	Best Available Control Measures
CAA	Clean Air Act
CASAC	Clean Air Scientific Advisory Committee
CBSA	Core Based Statistical Area
CFR	Code of Federal Regulations
CO	Carbon Monoxide
EPA	Environmental Protection Agency
FDMS	Filter Dynamics Measurement System
FEM	Federal Equivalent Methods
FRM	Federal Reference Methods
HiVol	High Volume PM_{10} sampler
IMPROVE	Interagency Monitoring of Protected Visual Environments
MET	Meteorological
MSA	Metropolitan Statistical Area
N/A	Not Applicable
NAAQS	National Ambient Air Quality Standards
NEAP	Natural Events Action Plan
NO_2	Nitrogen Dioxide
O_3	Ozone
PAMS	Photochemical Assessment Monitoring Station
PCAQCD	Pinal County Air Quality Control District
Pb	Lead
PM_{10}	Particulate Matter less than or equal to 10 microns
$PM_{2.5}$	Particulate Matter less than or equal to 2.5 microns
ppm	Parts Per Million
ppb	Parts Per Billion
PSD	Prevention of Significant Deterioration
QAPP	Quality Assurance Project Plan
R&P	Rupprecht and Patashnick
SLAMS	State and Local Air Monitoring Stations
SO_2	Sulfur Dioxide
SPM	Special Purpose Monitor
TEOM	Tapered Element Oscillating Microbalance
$\mu g/m^3$	Micrograms per Cubic Meter

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Appendix B

PCAQCD Monitoring Site Descriptions

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All sites in this appendix have the following common characteristics:

Table B-1 Common Site Information

Parameter	Description
Representative statistical area name	Phoenix-Mesa-Glendale MSA (Pinal Portion)
Collecting Agency	PCAQCD
Reporting Agency	PCAQCD
Analytical Lab for filter sites	PCAQCD
Basic Monitoring Objective	NAAQS

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Apache Junction Fire Station – AJFS **AQS Site ID: 04-021-3002**

3955 E. Superstition Blvd. TE, Apache Junction, Arizona

Latitude: 33.421194° **Longitude:** -111.503222° **Map Datum:** WGS 84

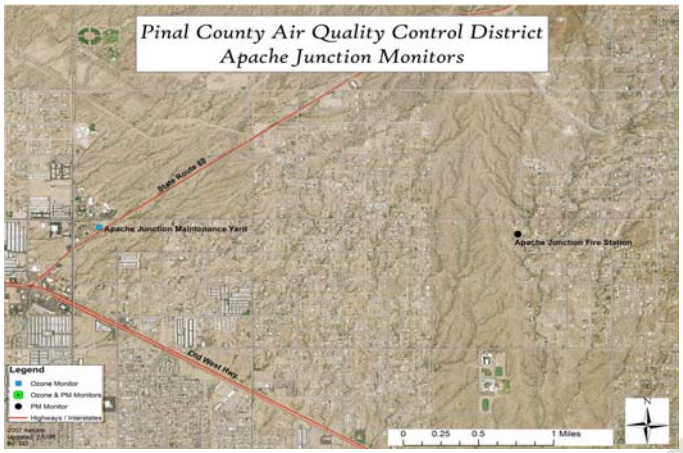

Table B-2 Apache Junction Fire Station (AJFS)

Parameter	Instrument #1	Instrument #2	Instrument #3
Pollutant/Monitor Type	PM_{10} FRM	$PM_{2.5}$ FRM	PM_{10} FEM
AQS IDs (Parameter /Method /POC)	881102/062/POC1	88101/145/POC1	88102/079/ POC3
Date Parameter Established	1/3/2003	1/6/1999	8/20/2011
County ID	AJ	AJE	AJ TEOM PM_{10}
Sampler Make & Model	R&P 2000H	R&P 2025	R&P 1400a (A/B)
Classification	SLAMS	SLAMS	SPM
Scale	Neighborhood	Neighborhood	Neighborhood
Site Type / Objective	Population	Population	Population
Inlet Height	3.5 meters	3.7 meters	3.5 meters
Distance from Tree Drip line	21.9 meters	25.7 meters	31.3 meters
Obstructions on Roof Description and Height	None	None	None
Distance and Direction from Obstruction	N/A	N/A	N/A
Obstructions not on Roof Description and Height	None	None	None
Distance and Direction from Obstruction	N/A	N/A	N/A
Distance from supporting structure	N/A	N/A	N/A
Airflow Arch	360°	360°	360°
Furnace or Incinerator Flue	None	None	None
Distance and Direction	N/A	N/A	N/A
Distance between Collocated Samplers	6.7 meters	6.7 meters	9.4
Nearest Road	Arroya	Arroya	Arroya
Distance and Direction to Road	43.6 meters - NE	39.9 meters - NE	36.6
Traffic Count (ADT)	17 cars per day	17 cars per day	17 cars per day
Schedule	1 in 6 days	1 in 3 days	Continuous
Surrounding Area	Residential / Desert	Residential / Desert	Residential / Desert
Site Groundcover	Gravel / Vegetative	Gravel / Vegetative	Pavement
Frequency of flow rate verifications	Monthly	Monthly	Monthly
Last two flow rate audits	2/7/13, 8/6/13	2/7/13, 8/6/13	7/10/12, 2/7/13
Does Site Meet App D&E Criteria	Yes	Yes	Yes

Notes: *The photo was taken while facing west.
*The site is comparable to the 24-hour and annual PM2.5 NAAQS

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Apache Junction Maintenance Yard -AJ AQS Site ID: 04-021-3001

305 E. Superstition Blvd., Apache Junction, Arizona

Latitude: 33.4214° **Longitude:** -111.5436°' **Map Datum:** WGS 84

Table B-3 Apache Junction Maintenance Yard (AJ)

Parameter	Instrument #1	Instrument #2	Instrument #3
Pollutant/Monitor Type	O_3 FEM	Wind	Temp & RH / Pressure
AQS IDs (Parameter /Method /POC)	44201/112/ POC1	N/A	N/A
Date Parameter Established	5/13/1992	1993	1994
County ID	AJ O_3	AJ MET	AJ MET
Sampler Make & Model	API 400	RM Young 05305 AQ	Vaisala HMP 45C/CS105
Classification	SLAMS	N/A	N/A
Scale	Neighborhood	N/A	N/A
Site Type / Objective	Population	N/A	N/A
Inlet Height	3.5 meters	10 meters	3.8 meters
Distance from Tree Drip line	12 meters	20 meters	12 meters
Obstructions on Roof Description and Height	None	None	None
Distance and Direction from Obstruction	N/A	N/A	N/A
Obstructions not on Roof Description and Height	Building – 4 meters	None	Building – 4 meters
Distance and Direction from Obstruction	5 meters - SW	N/A	5 meters - SW
Distance from supporting structure	N/A	N/A	N/A
Airflow Arch	360°	360 °	360 °
Furnace or Incinerator Flue	None	None	None
Distance and Direction	N/A	N/A	N/A
Distance between Collocated Samplers	N/A	N/A	N/A
Nearest Road	Hwy 88	Hwy 88	Hwy 88
Distance and Direction to Road	35 meters - E	27meters - E	35 meters - E
Traffic Count (ADT)	17466 (2008)	17466 (2008)	17466 (2008)
Schedule	Jan-Dec	Continuous	Continuous
Probe Material	Glass	N/A	N/A
Residence Time	5.6 sec	N/A	N/A
Surrounding Area	Gravel lot	Gravel lot	Gravel lot
Site Groundcover	Gravel	Gravel	Gravel
Frequency of one point QC check	Bi-weekly	N/A	N/A
Last annual performance evaluation	7/15/13	N/A	N/A
Does Site Meet App D&E Criteria	Yes	N/A	N/A

Notes: The photo was taken while facing west.

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Casa Grande Airport - CGA AQS Site ID: 04-021-3003

660 W. Aero Dr., Casa Grande, Arizona

Latitude: 32.954361° **Longitude:** -111.76225° **Map Datum:** WGS 84

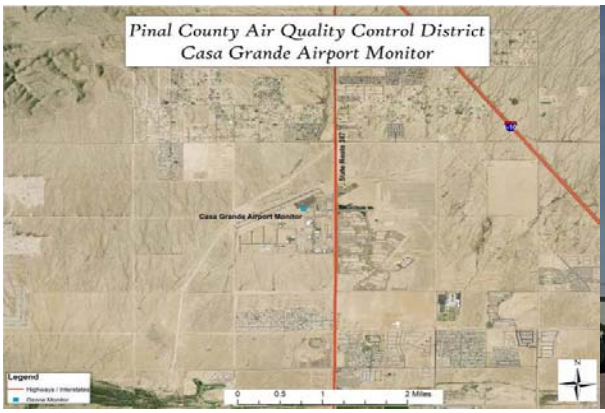

Table B-4 Casa Grande Airport (CGA)

Parameter	Instrument #1
Pollutant/Monitor Type	O_3 FEM
AQS IDs (Parameter /Method /POC)	44201/112/ POC1
Date Parameter Established	5/1/1992
County ID	CG O_3
Sampler Make & Model	API 400E
Classification	SLAMS
Scale	Neighborhood
Site Type / Objective	Population/Transport
Inlet Height	4.1 meters
Distance from Tree Dripline[2]	8.1 meters
Obstructions on Roof Description and Height	None
Distance and Direction from Obstruction	N/A
Obstructions not on Roof Description and Height	Tower – 14 meters
Distance and Direction from Obstruction	6 meters - N
Distance from supporting structure	N/A
Airflow Arch	360°
Furnace or Incinerator Flue	None
Distance and Direction	N/A
Distance between Collocated Samplers	N/A
Nearest Road	SR387
Distance and Direction to Road	494 meters - E
Traffic Count (ADT)	19965 (2008)
Schedule	Jan-Dec
Probe Material	Glass
Residence Time	5.6 sec
Surrounding Area	Parking Lot / Tarmac
Site Groundcover	Pavement
Frequency of one point QC check	Bi-weekly
Last annual performance evaluation	4/16/13
Does Site Meet App D&E Criteria	Yes

Notes: *The photo was taken while facing northeast. *The tree indicated is a bank of bushes to the north of the shelter; the height of the bushes is below the inlet and therefore, does not constitute as an obstruction.

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Casa Grande Downtown – CGD AQS Site ID: 04-021-0001

401 Marshall St., Casa Grande, Arizona

Latitude: 32.877583° **Longitude:** -111.752222° **Map Datum:** WGS 84

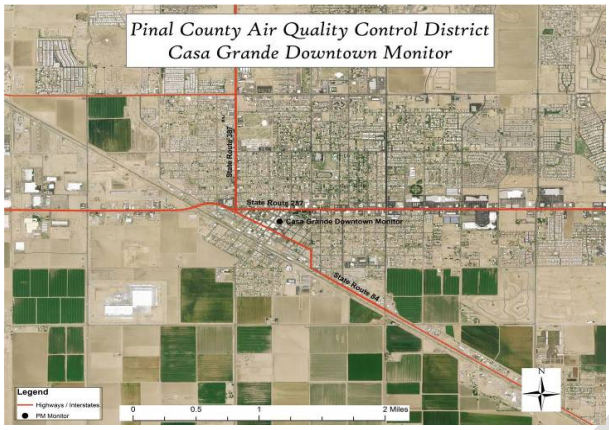

Table B-5 Casa Grande Downtown (CGD)

Parameter	Instrument #1	Instrument #2	Instrument #3
Pollutant/Monitor Type	$PM_{2.5}$	$PM_{2.5}$	PM_{10}
AQS IDs (Parameter /Method /POC)	88101/143/POC 2	88101/143/POC 1	81102/079/POC 3
Date Parameter Established	1/6/1999	1/1/2009	3/30/2007
County ID	CGN $PM_{2.5}$	CGS $PM_{2.5}$	CG PM_{10}
Sampler Make & Model	R&P 2000-H	R&P 2000-H	R&P 1400a (A/B)
Classification	QA COLLOCATED	SLAMS	SLAMS
Scale	Neighborhood	Neighborhood	Neighborhood
Site Type/Objective	Population	Population	Population
Inlet Height	6.1 meters	6.1 meters	6.1 meters
Distance from Tree Drip line	16.4 meters	19.0 meters	24.8 meters
Obstructions on Roof Description and Height	None	None	None
Distance and Direction from Obstruction	N/A	N/A	N/A
Obstructions not on Roof Description and Height	None	None	None
Distance and Direction from Obstruction	N/A	N/A	N/A
Distance from supporting structure	N/A	N/A	N/A
Airflow Arch	360°	360º	360º
Furnace or Incinerator Flue	Furnace Flue	Furnace Flue	Furnace Flue
Distance and Direction	9.1 meters - S	5.1 meters - S	11.0 meters - S
Distance between Collocated Samplers	2.8 meters (QA Collocated)	2.8 meters (QA Collocated)	3.4 meters to CGN
Nearest Road	Marshall St.	Marshall St.	Marshall St.
Distance and Direction to Road	18.4 meters – E	19.5 meters - E	20.1 meters - E
Traffic Count (ADT)	4022 (2009)	4022 (2009)	4022 92009)
Schedule	1 in 6 days	1 in 6 days	Continuous
Surrounding Area	Business District	Business District	Business District
Site Groundcover	Pavement	Pavement	Pavement
Frequency of flow rate verifications	Monthly	Monthly	Monthly
Last two flow rate audits	4/30/13, 10/8/13	4/30/13, 10/8/13	4/16/13, 10/8/13
Does Site Meet App D&E Criteria	Yes	Yes	Yes

Notes: *The photo was taken while facing northwest.
*The site is comparable to the 24-hour and annual PM2.5 NAAQS

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Table B-5 continued Casa Grande Downtown (CGD)

Parameter	**Instrument #1**
Pollutant/Monitor Type	$PM_{2.5}$
AQS IDs (Parameter /Method /POC)	88101/170/POC 3
Date Parameter Established	1/6/1999
County ID	CGN $PM_{2.5}$ BAM
Sampler Make & Model	Met One BAM 1020
Classification	SPM
Scale	Neighborhood
Site Type/Objective	Population
Inlet Height	6.2 meters
Distance from Tree Drip line	16.4 meters
Obstructions on Roof Description and Height	None
Distance and Direction from Obstruction	N/A
Obstructions not on Roof Description and Height	None
Distance and Direction from Obstruction	N/A
Distance from supporting structure	N/A
Airflow Arch	360°
Furnace or Incinerator Flue	Furnace Flue
Distance and Direction	9.1 meters - S
Distance between Collocated Samplers	5.4 meters
Nearest Road	Marshall St.
Distance and Direction to Road	18.4 meters – E
Traffic Count (ADT)	4022 (2009)
Schedule	Continuous
Surrounding Area	Business District
Site Groundcover	Pavement
Frequency of flow rate verifications	Monthly
Last two flow rate audits	
Does Site Meet App D&E Criteria	Yes

DRAFT

Combs School – CB **AQS Site ID: 04-021-3009**

301 E. Combs Rd., Queen Creek, Arizona

Latitude: 33.219111° **Longitude:** -111.561111° **Map Datum:** WGS 84

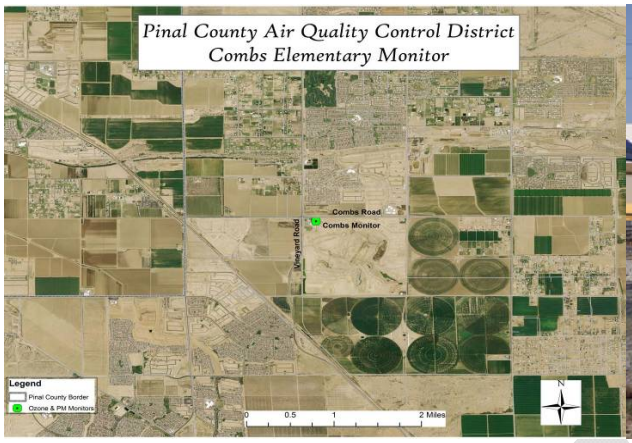

Table B-6 Combs School (CB)

Parameter	**Instrument #1**
Pollutant/Monitor Type	PM_{10} FEM
AQS IDs (Parameter /Method /POC)	81102/079/POC 3
Date Parameter Established	3/21/2007
County ID	CB PM_{10}
Sampler Make & Model	R&P 1400a (A/B)
Classification	SLAMS
Scale	Neighborhood
Site Type / Objective	Population / Transport
Inlet Height	4.1 meters
Distance from Tree Drip line	22.9 meters
Obstructions on Roof Description and Height	None
Distance and Direction from Obstruction	N/A
Obstructions not on Roof Description and Height	School Building – 4 meters
Distance and Direction from Obstruction	7.2 meters - N
Distance from supporting structure	N/A
Airflow Arch	360°
Furnace or Incinerator Flue	None
Distance and Direction	N/A
Distance between Collocated Samplers	N/A
Nearest Road	Combs Rd.
Distance and Direction to Road	89.5 meters - N
Traffic Count (ADT)	11069 cars per day
Schedule	Continuous
Probe Material	N/A
Residence Time	N/A
Surrounding Area	School Grounds / Residential
Site Groundcover	Concrete / Dirt Road
Frequency of flow rate verifications	Monthly
Last two flow rate audits	4/30/13, 10/16/13
Does Site Meet App D&E Criteria	Yes

Notes: The picture was taken facing west.

DRAFT

Coolidge Maintenance Yard – CLDG AQS Site ID: 04-021-3004
212 E. Broadway, Coolidge, Arizona

Latitude: 32.978556° **Longitude:** -111.514833° **Map Datum:** WGS 84

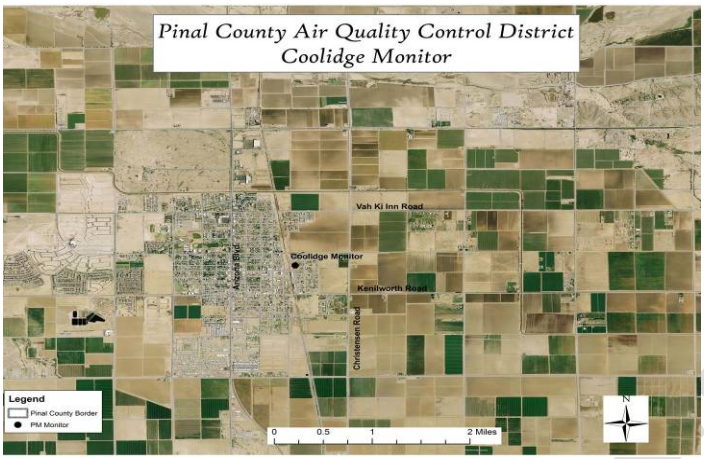

Table B-7 Coolidge Maintenance Yard (CLDG)

Parameter	Instrument #1	Instrument #2
Pollutant/Monitor Type	PM_{10} FRM	PM_{10} FRM
AQS IDs (Parameter /Method /POC)	81102/062/POC 1	81102/062/POC 2
Date Parameter Established	4/30/1992	4/30/1992
County ID	CLDGS	CLDGN
Sampler Make & Model	Wedding HiVol	Wedding HiVol
Classification	SLAMS	QA COLLOCATED
Scale	Neighborhood	Neighborhood
Site Type / Objective	Population	Population
Inlet Height	3.5 meters	3.5 meters
Distance from Tree Drip line	None	None
Obstructions on Roof Description and Height	None	None
Distance and Direction from Obstruction	N/A	N/A
Obstructions not on Roof Description and Height	Building – 3.2 meters	Building – 3.2 meters
Distance and Direction from Obstruction	6.7 meters - NE	6.5 meters - NE
Distance from supporting structure	N/A	N/A
Airflow Arch	360°	360°
Furnace or Incinerator Flue	None	None
Distance and Direction	N/A	N/A
Distance between Collocated Samplers	N/A	N/A
Nearest Road	Pacific St.	Pacific St.
Distance and Direction to Road	8.8 meters – W	8.8 meters – W
Traffic Count (ADT)	164 cars per day	164 cars per day
Schedule	1 in 6 days	1 in 6 days
Surrounding Area	Residential	Residential
Site Groundcover	Gravel / Vegetative	Gravel / Vegetative
Frequency of flow rate verifications	Quarterly	Quarterly
Last two flow rate audits	4/30/13, 10/8/13	4/30/13, 10/8/13
Does Site Meet App D&E Criteria	Yes	Yes

Notes: The photo was taken facing west.

DRAFT

Cowtown Road – CWTN AQS ID: 04-021-3013

1.1 37580 W. Maricopa-Casa Grande Highway, Maricopa, Arizona

Latitude: 33.01053 **Longitude:** -111.97205° **Map Datum:** WGS 84

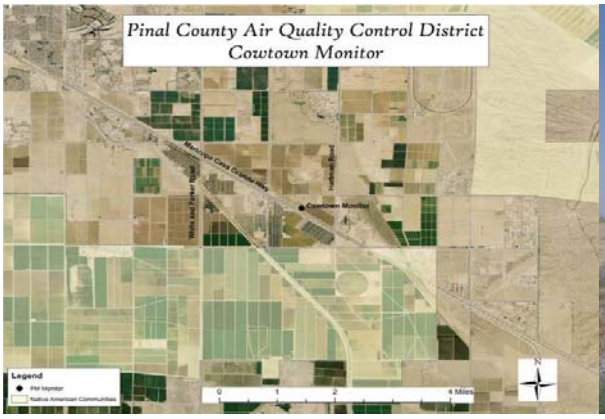

Table B-8 Cowtown Road (CWTN)

Parameter	Instrument #1	Instrument #2	Instrument #3
Pollutant/Monitor Type	PM_{10} FEM	$PM_{2.5}$ FRM	$PM_{2.5}$ FRM
AQS IDs (Parameter /Method /POC)	81102/079/POC 3	88101/143/POC 2	88101/143/POC 1
Date Parameter Established	11/1/2001	1/1/2012	8/14/2005
County ID	CWTN TEOM	CWTN EAST PM2.5	CWTN WEST PM2.5
Sampler Make & Model	R&P 1400a (A/B)	R&P 2000-H	R&P 2000-H
Classification	SPM	SPM	SPM
Scale	Middle Scale	Middle Scale	Middle Scale
Site Type / Objective	Population/Source Impact	Population/Source Impact	Population/Source Impact
Inlet Height	3.2 meters	3.4 meters	3.4 meters
Distance from Tree Drip line	None	None	None
Obstructions on Roof Description and Height	None	None	None
Distance and Direction from Obstruction	N/A	N/A	N/A
Obstructions not on Roof Description and Height	None	None	None
Distance and Direction from Obstruction	N/A	N/A	N/A
Distance from supporting structure	N/A	N/A	N/A
Airflow Arch	360º	360º	360º
Furnace or Incinerator Flue	None	None	None
Distance and Direction	N/A	N/A	N/A
Distance between Collocated Samplers	6.2 meters	1.2 meters	1.2 meters
Nearest Road	Casa Grande-Maricopa Hwy	Casa Grande-Maricopa Hwy	Casa Grande-Maricopa Hwy
Distance and Direction to Road	53.6 meters - S	65.5 meters - S	65.5 meters - S
Traffic Count (ADT)	5394 (2009)	5394 (2009)	5394 (2009)
Schedule	Continuous	1 in 6 days	1 in 6 days
Surrounding Area	Agricultural/Feedlots	Agricultural/Feedlots	Agricultural/Feedlots
Site Groundcover	Vegetative	Vegetative	Vegetative
Frequency of flow rate verifications	Monthly	Monthly	Monthly
Last two flow rate audits	1/9/13, 7/16/13	1/9/13, 7/16/13	1/9/13, 7/16/13
Does Site Meet App D&E Criteria	Yes	Yes	Yes

Notes: *The picture was taken facing north.
*The site is only comparable to the 24-hour PM2.5 NAAQS. Since it is a middle scale, hot spot site it is not comparable to the annual PM2.5 NAAQS

DRAFT

Table B-8 continued Cowtown Road (CWTN)

Parameter	Instrument #4	Instrument #5
Pollutant Type	Wind	Temp&RH/Pressure
Date Established	2002	2002
County ID	CWTN MET	CWTN MET
Sampler Make & Model	RM Young 05305 AQ	Vaisala HMP35C/PTA427
Classification	N/A	N/A
Scale	N/A	N/A
Site Type / Objective	N/A	N/A
Inlet Height	3.5 meters	2.9 meters
Distance from Tree Drip line	None	None
Obstructions on Roof Description and Height	None	None
Distance and Direction from Obstruction	N/A	N/A
Obstructions not on Roof Description and Height	None	None
Distance and Direction from Obstruction	N/A	N/A
Distance from supporting structure	N/A	N/A
Airflow Arch	360º	360º
Furnace or Incinerator Flue	None	None
Distance and Direction	N/A	N/A
Distance between Collocated Samplers	N/A	N/A
Nearest Road	Casa Grande-Maricopa Hwy	Casa Grande-Maricopa Hwy
Distance and Direction to Road	53.6 meters - S	53.6 meters - S
Traffic Count (ADT)	5394 (2009)	5394 (2009)
Schedule	Continuous	Continuous
Surrounding Area	Agricultural / Feedlots	Agricultural / Feedlots
Site Groundcover	Vegetative	Vegetative
Frequency of flow rate verifications	N/A	N/A
Last two flow rate audits	N/A	N/A
Does Site Meet App D&E Criteria	N/A	N/A

DRAFT

Eloy County Complex - ELY AQS Site ID: 04-021-3014

801 N. Main St, Eloy, Arizona

Latitude: 32.757639° **Longitude:** -111.554861° **Map Datum:** WGS 84

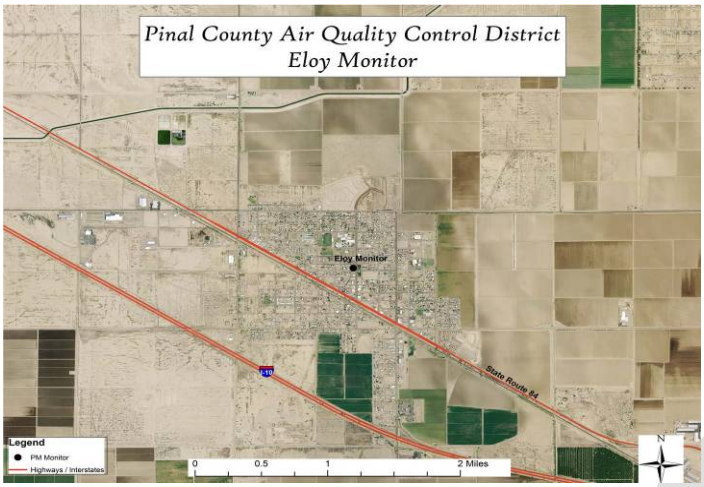

Table B-9 Eloy County Complex (ELY)

Parameter	Instrument #1
Pollutant/Monitor Type	PM_{10} FRM
AQS IDs (Parameter /Method /POC)	81102/063/POC 1
Date Parameter Established	3/1/2007
County ID	ELY
Sampler Make & Model	R&P 2000H
Classification	SLAMS
Scale	Neighborhood
Site Type / Objective	Population
Inlet Height	5.2 meters
Distance from Tree Drip line	N/A
Obstructions on Roof Description and Height	None
Distance and Direction from Obstruction	N/A
Obstructions not on Roof Description and Height	None
Distance and Direction from Obstruction	N/A
Distance from supporting structure	N.A
Airflow Arch	360°
Furnace or Incinerator Flue	None
Distance and Direction	N/A
Distance between Collocated Samplers	N/A
Nearest Road	Main St.
Distance and Direction to Road	31.0 meters – W
Traffic Count (ADT)	2302 (2010)
Schedule	1 in 6 days
Surrounding Area	Residential / Business
Site Groundcover	Pavement
Frequency of flow rate verifications	Monthly
Last two flow rate audits	1/9/13, 7/16/13
Does Site Meet App D&E Criteria	Yes

Notes: The picture was taking facing south.

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(City of) Maricopa County Complex - MCPA AQS Site ID: 04-021-3010
44625 W. Garvey Rd., Maricopa, Arizona

Latitude: 33.01053° **Longitude:** -111.97205° **Map Datum:** WGS 84

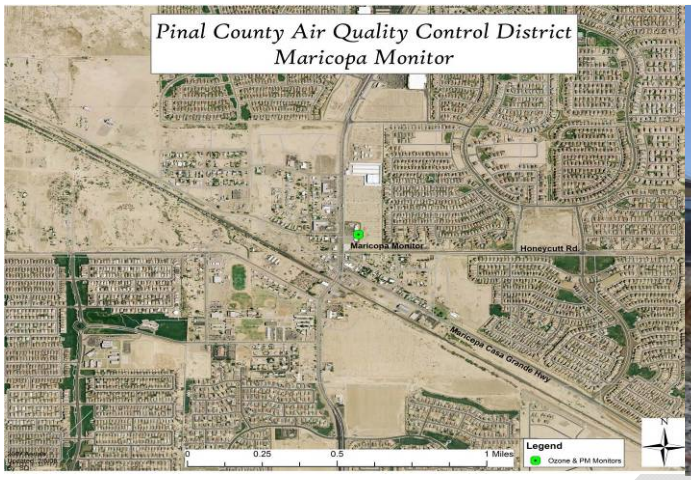


Table B-11 (City of) Maricopa County Complex (MCPA)

Parameter	Instrument #1
Pollutant/Monitor Type	PM_{10} FEM
AQS IDs (Parameter /Method /POC)	81102/079/POC 3
Date Parameter Established	12/7/2004
County ID	MCPA PM_{10}
Sampler Make & Model	R&P 1400a (A/B)
Classification	SPM
Scale	Neighborhood
Site Type / Objective	Population
Inlet Height	3.2 meters
Distance from Tree Drip line	None
Obstructions on Roof Description and Height	None
Distance and Direction from Obstruction	N/A
Obstructions not on Roof Description and Height	Building – 5.2 meters
Distance and Direction from Obstruction	4.8 meters - W
Distance from supporting structure	N/A
Airflow Arch	360º
Furnace or Incinerator Flue	None
Distance and Direction	NA
Distance between Collocated Samplers	1.4 meters
Nearest Road	Maricopa Road (SR 347)
Distance and Direction to Road	63 meters - W
Traffic Count (ADT)	33547 (2009)
Schedule	Continuous
Surrounding Area	Vacant Lot / Business
Site Groundcover	Gravel / Vegetative
Frequency of flow rate verifications	Monthly
Last two flow rate audits	4/16/13, 10/8/13
Does Site Meet App D&E Criteria	Yes

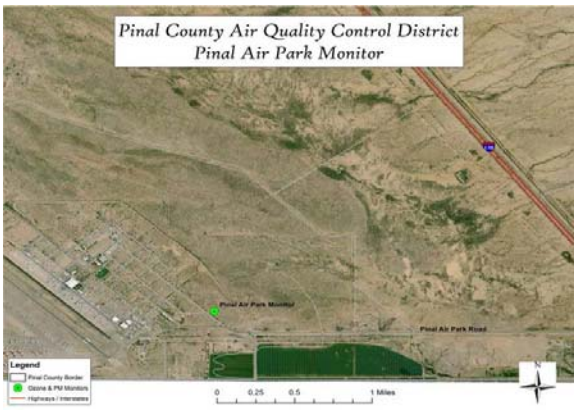
Notes: The picture was taken facing east.

DRAFT

Pinal Air Park – PP AQS Site ID: 04-021-3007

Water Well #2, Pinal Air Park Rd., Marana, Arizona

Latitude: 32.508306° **Longitude:** -111.308056° **Map Datum:** WGS 84



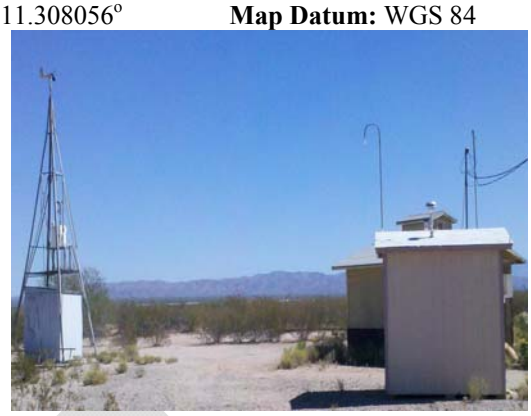


Table B-12 Pinal Air Park (PP)

Parameter	Instrument #1	Instrument #2	Instrument #3
Pollutant/Monitor Type	PM_{10} FRM	O_3 FEM	PM_{10} FEM
AQS IDs (Parameter /Method /POC)	81102/063/POC 1	44201/112/POC 1	81102/079/POC 3
Date Parameter Established	11/14/1992	6/15/2002	6/7/2012
County ID	PP PM_{10}	PP O_3	PP TEOM
Sampler Make & Model	R&P 2000H	API 400	R&P 1400a (A/B)
Classification	SLAMS	SPM	SPM
Scale	Regional	Regional	Regional
Site Type / Objective	Background	Transport	Background
Inlet Height	4 meters	4.1 meters	4 meters
Distance from Tree Drip line	None	None	None
Obstructions on Roof Description and Height	None	None	None
Distance and Direction from Obstruction	N/A	N/A	N/A
Obstructions not on Roof Description and Height	None	None	None
Distance and Direction from Obstruction	N/A	N/A	N/A
Distance from supporting structure	N/A	N/A	N/A
Airflow Arch	360°	360°	360°
Furnace or Incinerator Flue	None	None	None
Distance and Direction	N/A	N/A	N/A
Distance between Collocated Samplers	16.1 meters	16.1 meters	16.1 meters
Nearest Road	Service blacktop	Service blacktop	Service blacktop
Distance and Direction to Road	65 meters – E	54.2 meters – E	54.2 meters – E
Traffic Count (ADT)	~1100 (Estimate)	~1100 (Estimate)	~1100 (Estimate)
Schedule	1 in 6 days	Jan - Dec	Continuous
Probe Material	N/A	Glass	N/A
Residence Time	N/A	5.6 sec	N/A
Surrounding Area	Desert	Desert	Desert
Site Groundcover	Vegetative	Vegetative	Vegetative
Frequency of flow rate verifications	Monthly	N/A	Monthly
Last two flow rate audits	1/9/13, 7/16/13	N/A	6/12/13, 11/26/13
Frequency of one point QC check	N/A	Bi-weekly	N/A
Last annual performance evaluation	N/A	7/16/13	N/A
Does Site Meet App D&E Criteria	Yes	Yes	Yes

Notes: The picture was taken facing east.

ADT is estimated because no traffic counts have been performed. Estimates came from stationed guards.

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Pinal County Housing Complex - PCH **AQS Site ID: 04-021-3011**

970 N. Eleven Mile Corner Rd., Casa Grande, Arizona

Latitude: 32.891056° **Longitude:** -111.5705° **Map Datum:** WGS 84

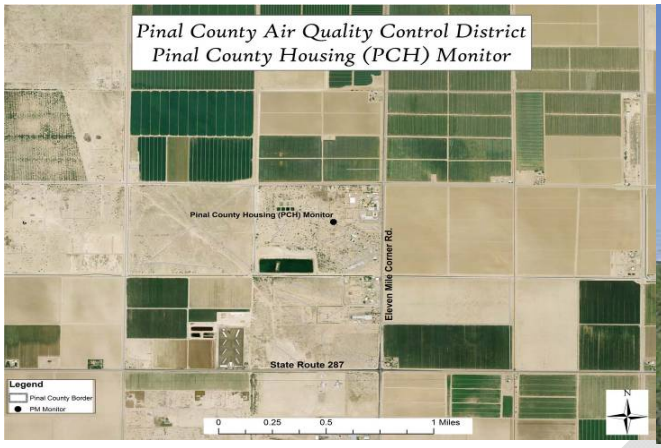

Table B-13 Pinal County Housing Complex (PCH)

Parameter	Instrument #1
Pollutant/Monitor Type	PM_{10} FEM
AQS IDs (Parameter /Method /POC)	81102/079/POC 3
Date Parameter Established	8/1/2002
County ID	PCH TEOM
Sampler Make and Model	R&P 1400a (A/B)
Classification	SLAMS
Scale	Neighborhood
Site Type / Objective	Population
Inlet Height	2.9 meters
Distance from Tree Drip line	7.3 meters (below inlet)
Obstructions on Roof Description and Height	None
Distance and Direction from Obstruction	N/A
Obstructions not on Roof Description and Height	None
Distance and Direction from Obstruction	N/A
Distance from supporting structure	N/A
Airflow Arch	360°
Furnace or Incinerator Flue	None
Distance & Direction	N/A
Distance between Collocated Samplers	5.7 meters to HiVol
Nearest Road	Eleven Mile Corner Rd.
Distance & Direction to Road	400 meters – E
Traffic Count (ADT)	4141 (2009)
Schedule	Continuous
Surrounding Area	Agricultural / Residential
Site Groundcover	Gravel / Vegetative
Frequency of flow rate verifications	Monthly
Last two flow rate audits	6/12/13, 11/26/13
Does Site Meet App D&E Criteria	Yes

Notes: The picture was taken facing south.

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Table B-13 Pinal County Housing Complex (PCH) cont.

Parameter	Instrument#4	Instrument #5
Pollutant Type	Wind	Temp & RH/Pressure
Date Parameter Established	2002	2002
County ID	PCH MET	PCH MET
Sampler Make and Model	RM Young 05305 AQ	Vaisala HMP35C/PTA427
Classification	N/A	N/A
Scale	N/A	N/A
Site Type / Objective	N/A	N/A
Measurement Height	10.0 meters	10.0 meters
Distance from Tree Drip line	7.3 meters	7.3 meters
Obstructions on Roof Description and Height	None	None
Distance and Direction from Obstruction	N/A	N/A
Obstructions not on Roof Description and Height	None	None
Distance and Direction from Obstruction	N/A	N/A
Distance from supporting structure	N/A	N/A
Airflow Arch	360º	360º
Furnace or Incinerator Flue	None	None
Distance & Direction	N/A	N/A
Distance between Collocated Samplers	N/A	N/A
Nearest Road	Eleven Mile Corner Rd.	Eleven Mile Corner Rd.
Distance & Direction to Road	400 meters – E	400 meters – E
Traffic Count (ADT)	4141 (2009)	4141 (2009)
Schedule	Continuous	Continuous
Surrounding Area	Agricultural / Residential	Agricultural / Residential
Site Groundcover	Gravel / Vegetative	Gravel / Vegetative
Frequency of flow rate verifications	N/A	N/A
Last two flow rate audits	N/A	N/A
Does Site Meet App D&E Criteria	N/A	N/A

DRAFT

Queen Valley - QV AQS Site ID: 04-021-8001
10 S. Queen Anne Dr., Queen Valley, Arizona

Latitude: 33.293465° **Longitude:** -111.285594° **Map Datum:** WGS 84

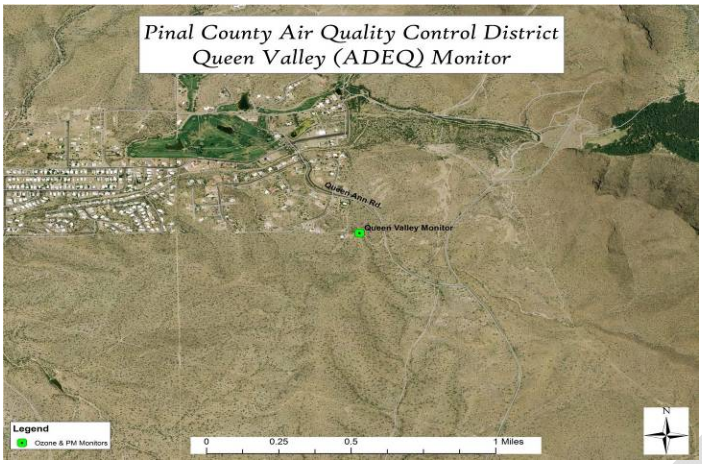

Table B-14 Queen Valley (QV)

Parameter	Instrument #1	Instrument #2
Pollutant/Monitor Type	O_3 *	$PM_{2.5}$, PM_{10}
AQS IDs (Parameter /Method /POC)	*	N/A
Date Parameter Established	2001	2001
County ID	QV	QVA
Sampler Make & Model	TEI 49C	Version II IMPROVE
Classification	SLAMS	SPM
Scale	Urban	Urban
Site Type / Objective	Highest Concentration	Visibility
Inlet Height	4.7 meters	5.4 meters
Distance from Tree Drip line	2.3 meters	6.0 meters
Obstructions on Roof Description and Height	None	None
Distance and Direction from Obstruction	N/A	N/A
Obstructions not on Roof Description and Height	None	None
Distance and Direction from Obstruction	N/A	N/A
Distance from supporting structure	N/A	N/A
Airflow Arch	360°	360°
Furnace or Incinerator Flue	None	None
Distance and Direction	N/A	N/A
Distance between Collocated Samplers	2.1 meters	2.1 meters
Nearest Road	Queen Anne Dr.	Queen Anne Dr.
Distance and Direction to Road	93 meters – E	93 meters – E
Traffic Count (ADT)	785 cars per day	785 cars per day
Schedule	Apr-Oct	1 in 3 days
Surrounding Area	Desert / Residential	Desert / Residential
Site Groundcover	Vegetative	Vegetative
Frequency of one point QC check	Bi-weekly	N/A
Last annual performance evaluation	Unknown*	N/A
Does Site Meet App D&E Criteria	Yes	N/A

Notes: The picture was taken facing east.
*For additional detail refer to ADEQ's State of Arizona Monitoring Network Plan.

DRAFT

Stanfield County Complex - STNF AQS Site ID: 04-021-3008
36697 W. Papago Dr., Stanfield, Arizona

Latitude: 32.881194° **Longitude:** -111.962° **Map Datum:** WGS 84

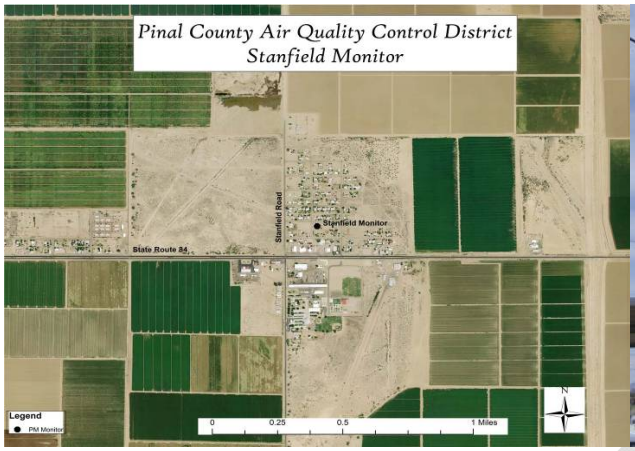

Table B-16 Stanfield County Complex (STNF)

Parameter	Instrument #1	Instrument #2	Instrument #3
Pollutant/Monitor Type	PM_{10} FEM	Wind	Temp & RH/Pressure
AQS IDs(Parameter/Method/POC)	81102/079/POC 3	N/A	N/A
Date Parameter Established	2/1/2006	2007	2007
County ID	STNF TEOM	STNF MET	STNF MET
Sampler Make & Model	R&P 1400a (A/B)	RM Young 05305 AQ	Vaisala HMP45C
Classification	SLAMS	N/A	N/A
Scale	Neighborhood	N/A	N/A
Objective	Population	N/A	N/A
Inlet Height	4.8 meters	9.2 meters	3.0 meters
Distance from Tree Drip line	None	None	None
Obstructions on Roof Description and Height	None	None	None
Distance and Direction from Obstruction	N/A	N/A	N/A
Obstructions not on Roof Description and Height	FD Engine Carport – 3.7 meters	FD Engine Carport – 3.7 meters	FD Engine Carport – 3.7 meters
Distance and Direction from Obstruction	3.9 meters – S	7 meters – W	2.0 meters – W
Distance from supporting structure	N/A	N/A	N/A
Airflow Arch	360º	360º	360º
Furnace or Incinerator Flue	None	None	None
Distance and Direction	N/A	N/A	N/A
Distance between Collocated Samplers	2.3 meters	N/A	N/A
Nearest Road	Navajo Way	Navajo Way	Navajo Way
Distance and Direction to Road	21.2 meters – W	400 meters – E	400 meters – E
Traffic Count (ADT)	91 cars per day	91 cars per day	91 cars per day
Schedule	Continuous	Continuous	Continuous
Surrounding Area	Residential	Residential	Residential
Site Groundcover	Gravel/Vegetative	Gravel/Vegetative	Gravel/Vegetative
Frequency of flow rate verifications	Monthly	N/A	N/A
Last two flow rate audits	1/9/13, 7/10/13	N/A	N/A
Does Site Meet App D&E Criteria	Yes	Yes	Yes

Notes: The picture was taken facing northwest.

DRAFT

Appendix C

PCAQCD Ambient Air Monitoring Data

Please refer to Section 1.0 for a detailed description of the NAAQS for ozone, PM_{10} and $PM_{2.5}$.

DRAFT

APACHE JUNCTION CARBON MONOXIDE DATA (in ppm)
1 HOUR AVERAGES

STANDARD: In order to meet the standard the second highest reading must be less than or equal to 35 ppm.

Table C-1

Yea	Maximum Reading	2nd Highest Reading	Number of Daily Exceedances	Number of Sample Hours
1996	2.60	2.60	0	4884
1997	2.20	2.00	0	8675
1998	2.00	2.00	0	8609
1999	1.90	1.70	0	8057
2000	1.48	1.39	0	8543
2001	3.74	3.54	0	6610
2002[a]	1.28	1.21	0	3533

APACHE JUNCTION CARBON MONOXIDE DATA (in ppm)
8 HOUR AVERAGES

STANDARD: In order to meet the standard the second highest reading must be less than or equal to 9 ppm.

Table C-2

Year	Maximum Reading	2nd Highest Reading	Number of Daily Exceedances	Number of Sample Hours
1996	1.08	1.00	0	4873
1997	1.16	1.01	0	8680
1998	1.28	1.08	0	8613
1999	0.91	0.86	0	8017
2000	0.69	0.69	0	8549
2001	1.06	0.90	0	6633
2002 [a]	0.79	0.75	0	3552

Footnotes:
a - Carbon Monoxide monitoring was discontinued at the Apache Junction site on 5/28/2002. The 2002 readings only represent part of the 2002 carbon monoxide season.

DRAFT

CASA GRANDE CARBON MONOXIDE DATA (in ppm)
1 HOUR AVERAGES

STANDARD: In order to meet the standard the second highest reading must be less than or equal to 35 ppm.

Table C-3

Year	Maximum Reading	2nd Highest Reading	Number of Daily Exceedances	Number of Sample Hours
1996	1.60	1.50	0	8728
1997	1.50	1.50	0	8595
1998	3.90	3.60	0	8513
1999	2.10	1.50	0	7625
2000	2.45	2.25	0	8416
2001	1.53	1.10	0	8326
2002[a]	1.23	1.22	0	6715

CASA GRANDE CARBON MONOXIDE DATA (in ppm)
8 HOUR AVERAGES

STANDARD: In order to meet the standard the second highest reading must be less than or equal to 9 ppm.

Table C-4

Year	Maximum Reading	2nd Highest Reading	Number of Daily Exceedances	Number of Sample Hours
1996	1.19	1.16	0	8734
1997	1.29	1.11	0	8634
1998	1.46	1.46	0	8525
1999	0.86	0.80	0	7621
2000	0.95	0.84	0	8420
2001	0.77	0.76	0	8355
2002[a]	0.81	0.76	0	6745

Footnotes:
a - Carbon Monoxide monitoring was discontinued at the Casa Grande site on 10/11/2002. The 2002 readings only represent part of the 2002 carbon monoxide season.

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APACHE JUNCTION OZONE DATA (in ppm)
1 HOUR AVERAGES

Table C-5

Year	Maximum Reading	2nd Highest Reading	3rd Highest Reading	4th Highest Reading	Number of Daily Exceedances	Expected Exceedance Rate
1993	0.121	0.11	0.106	0.103	0	0
1994	0.114	0.11	0.108	0.108	0	0
1995	0.136	0.122	0.121	0.114	1	1
1996	0.121	0.115	0.114	0.114	0	0
1997	0.106	0.097	0.096	0.096	0	0
1998	0.112	0.112	0.111	0.106	0	0
1999	0.112	0.111	0.109	0.105	0	0
2000	0.101	0.101	0.098	0.096	0	0
2001	0.101	0.096	0.095	0.092	0	0
2002	0.109	0.097	0.095	0.095	0	0
2003	0.105	0.096	0.094	0.091	0	0
2004	0.084	0.079	0.079	0.079	0	0
2005	0.097	0.089	0.085	0.083	0	0
2006[a]	0.106	0.105	0.104	0.095	N/A	N/A
2007	0.098	0.096	0.095	0.094	N/A	N/A
2008	0.098	0.094	0.092	0.091	N/A	N/A
2009	0.091	0.089	0.085	0.08	N/A	N/A
2010	0.09	0.087	0.086	0.084	N/A	N/A
2011	0.09	0.088	0.086	0.084	N/A	N/A
2012	0.106	0.091	0.091	0.087	N/A	N/A
2013	0.091	0.088	0.087	0.087	N/A	N/A

Footnotes:
a - The 1-hour ozone standard was revoked in August 2005. One-hour averages are listed here for trend analysis.

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APACHE JUNCTION OZONE DATA (in ppm)
8 HOUR AVERAGES

Table C-6

Year	Maximum Reading	2nd Highest Reading	3rd Highest Reading	4th Highest Reading	3 Year Avg of the 4th Highest	Number of Daily Excursions
1993	0.086	0.082	0.08	0.08	N/A	1
1994	0.089	0.087	0.085	0.085	N/A	5
1995	0.095	0.093	0.093	0.091	0.085	8
1996	0.092	0.086	0.085	0.085	0.087	6
1997	0.084	0.083	0.082	0.082	0.086	0
1998	0.091	0.089	0.082	0.082	0.083	2
1999	0.091	0.089	0.081	0.08	0.081	2
2000	0.087	0.084	0.082	0.082	0.081	1
2001	0.081	0.081	0.078	0.077	0.079	0
2002	0.081	0.081	0.08	0.079	0.079	0
2003	0.09	0.074	0.072	0.072	0.076	1
2004	0.07	0.07	0.07	0.069	0.073	0
2005	0.076	0.074	0.071	0.068	0.069	0
2006	0.094	0.09	0.087	0.084	0.074	4
2007	0.083	0.08	0.079	0.077	0.076	0
2008[b]	0.082	0.081	0.081	0.079	0.08	7
2009	0.076	0.071	0.07	0.069	0.075	1
2010	0.078	0.077	0.075	0.073	0.074	2
2011	0.079	0.075	0.075	0.075	0.072	1
2012	0.079	0.078	0.077	0.076	0.075	4
2013	0.074	0.073	0.069	0.069	0.073	0

Footnotes:
b - The 8-hour ozone standard was revised effective May 27, 2008. The previous eight-hour average of 0.080 ppm was lowered to 0.075 ppm.

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CASA GRANDE OZONE DATA (in ppm)
1 HOUR AVERAGES

Table C-7

Year	Maximum Reading	2nd Highest Reading	3rd Highest Reading	4th Highest Reading	Number of Daily Exceedances	Expected Exceedance Rate
1993	0.092	0.09	0.084	0.082	0	0
1994	0.091	0.091	0.09	0.088	0	0
1995	0.083	0.083	0.081	0.08	0	0
1996	0.104	0.091	0.085	0.084	0	0
1997	0.082	0.082	0.08	0.079	0	0
1998	0.093	0.079	0.076	0.075	0	0
1999	0.09	0.087	0.084	0.084	0	0
2000	0.105	0.094	0.09	0.089	0	0
2001	0.084	0.084	0.083	0.083	0	0
2002	0.088	0.088	0.083	0.083	0	0
2003	0.09	0.089	0.086	0.083	0	0
2004	0.077	0.077	0.076	0.074	0	0
2005	0.089	0.088	0.081	0.08	0	0
2006[a]	0.083	0.083	0.082	0.08	N/A	N/A
2007	0.079	0.078	0.075	0.074	N/A	N/A
2008	0.082	0.08	0.08	0.079	N/A	N/A
2009	0.072	0.071	0.071	0.07	N/A	N/A
2010	0.076	0.073	0.073	0.072	N/A	N/A
2011	0.077	0.074	0.073	0.073	N/A	N/A
2012	0.079	0.078	0.078	0.077	N/A	N/A
2013	0.082	0.082	0.081	0.078	N/A	N/A

Footnotes:
a - The 1-hour ozone standard was revoked in August 2005. One-hour averages are listed here for trend analysis.

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CASA GRANDE OZONE DATA (in ppm)
8 HOUR AVERAGES

Table C-8

Year	Maximum Reading	2nd Highest Reading	3rd Highest Reading	4th Highest Reading	3 Year Avg of the 4th Highest	Number of Daily Excursions
1993	0.081	0.074	0.073	0.072	N/A	0
1994	0.079	0.077	0.076	0.076	N/A	0
1995	0.077	0.074	0.073	0.071	0.073	0
1996	0.086	0.081	0.08	0.079	0.075	1
1997	0.075	0.074	0.073	0.072	0.074	0
1998	0.07	0.069	0.069	0.068	0.073	0
1999	0.083	0.083	0.079	0.078	0.072	0
2000	0.087	0.086	0.086	0.085	0.077	5
2001	0.078	0.078	0.074	0.074	0.079	0
2002	0.08	0.079	0.079	0.077	0.078	0
2003	0.077	0.074	0.073	0.073	0.074	0
2004	0.072	0.07	0.07	0.07	0.073	0
2005	0.081	0.075	0.073	0.072	0.071	0
2006	0.076	0.077	0.074	0.073	0.071	0
2007	0.071	0.071	0.071	0.07	0.071	0
2008[b]	0.077	0.077	0.074	0.073	0.072	2
2009	0.068	0.067	0.066	0.066	0.069	0
2010	0.071	0.07	0.068	0.068	0.069	0
2011	0.072	0.07	0.07	0.07	0.068	0
2012	0.073	0.071	0.07	0.07	0.069	0
2013	0.077	0.067	0.065	0.064	0.068	1

Footnotes:
b - The 8-hour ozone standard was revised effective May 27, 2008. The previous eight-hour average of 0.080 ppm was lowered to 0.075 ppm.

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COMBS OZONE DATA (in ppm)
1 HOUR AVERAGES

Table C-9

Year	Maximum Reading	2nd Highest Reading	3rd Highest Reading	4th Highest Reading	Number of Daily Exceedances	Expected Exceedance Rate
2002	0.085	0.080	0.080	0.078	0	0
2003	0.101	0.096	0.090	0.086	0	0
2004	0.080	0.069	0.068	0.067	0	0
2005	0.093	0.091	0.088	0.087	0	0
2006[a]	0.095	0.091	0.089	0.086	N/A	N/A
2007	0.075	0.072	0.071	0.070	N/A	N/A
2008	0.093	0.092	0.086	0.085	N/A	N/A
2009	0.074	0.070	0.070	0.069	N/A	N/A
2010	0.076	0.073	0.070	0.069	N/A	N/A

Footnotes:
a - The 1-hour ozone standard was revoked in August 2005. One-hour averages are listed here for trend analysis.

COMBS OZONE DATA (in ppm)
8 HOUR AVERAGES

Table C-10

Year	Maximum Reading	2nd Highest Reading	3rd Highest Reading	4th Highest Reading	3 Year Avg of the 4th Highest	Number of Daily Excursions
2002	0.075	0.074	0.071	0.068	N/A	0
2003	0.081	0.073	0.073	0.072	N/A	0
2004	0.064	0.062	0.060	0.059	0.066	0
2005	0.080	0.077	0.069	0.067	0.066	0
2006	0.079	0.073	0.072	0.071	0.066	0
2007	0.063	0.062	0.061	0.057	0.065	0
2008[b]	0.074	0.072	0.071	0.071	0.066	0
2009	0.063	0.063	0.063	0.062	0.063	0
2010	0.067	0.064	0.063	0.062	0.063	0

Footnotes:
b - The 8-hour ozone standard was revised effective May 27, 2008. The previous eight-hour average of 0.080 ppm was lowered to 0.075 ppm.

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CITY OF MARICOPA OZONE DATA (in ppm)
1 HOUR AVERAGES

Table C-11

Year	Maximum Reading	2nd Highest Reading	3rd Highest Reading	4th Highest Reading	Number of Daily Exceedances	Expected Exceedance Rate
2002	0.089	0.086	0.077	0.075	0	0
2003	0.093	0.092	0.085	0.085	0	0
2004	0.078	0.072	0.072	0.071	0	0
2005	0.079	0.078	0.075	0.069	0	0
2006[a]	0.087	0.080	0.0074	0.074	N/A	N/A
2007	0.067	0.065	0.064	0.063	N/A	N/A
2008	0.085	0.078	0.076	0.075	N/A	N/A
2009	0.070	0.069	0.068	0.066	N/A	N/A
2010	0.076	0.073	0.072	0.071	N/A	N/A

Footnotes:
a - The 1-hour ozone standard was revoked in August 2005. One-hour averages are listed here for trend analysis.

CITY OF MARICOPA OZONE DATA (in ppm)
8 HOUR AVERAGES

Table C-12

Year	Maximum Reading	2nd Highest Reading	3rd Highest Reading	4th Highest Reading	3 Year Avg of the 4th Highest	Number of Daily Excursions
2002	0.083	0.080	0.073	0.068	N/A	0
2003	0.082	0.077	0.075	0.075	N/A	0
2004	0.072	0.067	0.065	0.064	0.069	0
2005	0.070	0.069	0.067	0.062	0.067	0
2006	0.082	0.077	0.068	0.068	0.065	0
2007	0.061	0.060	0.059	0.059	0.063	0
2008[b]	0.073	0.070	0.070	0.069	0.065	0
2009	0.066	0.062	0.062	0.061	0.063	0
2010	0.068	0.068	0.066	0.066	0.065	0

Footnotes:
b - The 8-hour ozone standard was revised effective May 27, 2008. The previous eight-hour average of 0.080 ppm was lowered to 0.075 ppm.

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PINAL AIR PARK OZONE DATA (in ppm)
1 HOUR AVERAGES

Table C-13

Year	Maximum Reading	2nd Highest Reading	3rd Highest Reading	4th Highest Reading	Number of Daily Exceedances	Expected Exceedance Rate
2002	0.087	0.085	0.079	0.078	0	0
2003	0.083	0.08	0.08	0.079	0	0
2004	0.074	0.073	0.072	0.072	0	0
2005	0.088	0.085	0.084	0.084	0	0
2006[a]	0.083	0.079	0.077	0.076	N/A	N/A
2007	0.078	0.073	0.07	0.07	N/A	N/A
2008	0.077	0.077	0.075	0.074	N/A	N/A
2009	0.081	0.074	0.072	0.071	N/A	N/A
2010	0.077	0.075	0.073	0.072	N/A	N/A
2011	0.078	0.076	0.076	0.075	N/A	N/A
2012	0.082	0.08	0.079	0.079	N/A	N/A
2013	0.085	0.084	0.084	0.083	N/A	N/A

Footnotes:
a - The 1-hour ozone standard was revoked in August 2005. One-hour averages are listed here for trend analysis.

PINAL AIR PARK OZONE DATA (in ppm)
8 HOUR AVERAGES

Table C-14

Year	Maximum Reading	2nd Highest Reading	3rd Highest Reading	4th Highest Reading	3 Year Avg of the 4th Highest	Number of Daily Excursions
2002	0.08	0.074	0.072	0.07	N/A	0
2003	0.076	0.075	0.075	0.074	N/A	0
2004	0.069	0.069	0.068	0.067	0.07	0
2005	0.079	0.079	0.078	0.077	0.072	0
2006	0.075	0.072	0.071	0.07	0.071	0
2007	0.072	0.071	0.068	0.066	0.071	0
2008[b]	0.071	0.071	0.071	0.07	0.068	0
2009	0.073	0.066	0.065	0.065	0.067	0
2010	0.07	0.069	0.067	0.066	0.067	0
2011	0.073	0.071	0.07	0.07	0.067	0
2012	0.076	0.074	0.074	0.072	0.069	1
2013	0.081	0.067	0.065	0.065	0.069	1

Footnotes:
b - The 8-hour ozone standard was revised effective May 27, 2008. The previous eight-hour average of 0.080 ppm was lowered to 0.075 ppm.

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QUEEN VALLEY OZONE DATA (in ppm)
1 HOUR AVERAGES

Table C-15

Year	Maximum Reading	2nd Highest Reading	3rd Highest Reading	4th Highest Reading	Number of Daily Exceedances	Expected Exceedance Rate
2001	0.103	0.103	0.098	0.093	0	0
2002	0.112	0.11	0.106	0.099	0	0
2003	0.11	0.11	0.107	0.107	0	0
2004	0.093	0.092	0.092	0.087	0	0
2005	0.117	0.113	0.11	0.105	0	0
2006[a]	0.11	0.109	0.103	0.102	N/A	N/A
2007	0.089	0.088	0.088	0.087	N/A	N/A
2008	0.099	0.095	0.093	0.091	N/A	N/A
2009	0.089	0.089	0.087	0.08	N/A	N/A
2010	0.092	0.089	0.085	0.082	N/A	N/A
2011	0.096	0.092	0.087	0.086	N/A	N/A
2012	0.106	0.094	0.09	0.087	N/A	N/A
2013	0.094	0.092	0.087	0.084	N/A	N/A

Footnotes:
a - The 1-hour ozone standard was revoked in August 2005. One-hour averages are listed here for trend analysis.

QUEEN VALLEY OZONE DATA (IN ppm)
8 HOUR AVERAGES

Table C-16

Year	Maximum Reading	2nd Highest Reading	3rd Highest Reading	4th Highest Reading	3 Year Avg of the 4th Highest	Number of Daily Excursions
2001	0.084	0.084	0.08	0.079	N/A	0
2002	0.085	0.083	0.083	0.083	N/A	1
2003	0.094	0.091	0.09	0.087	0.083	4
2004	0.077	0.076	0.074	0.073	0.081	0
2005	0.097	0.096	0.086	0.084	0.081	3
2006	0.091	0.087	0.08	0.08	0.079	2
2007	0.077	0.077	0.076	0.076	0.08	0
2008[b]	0.085	0.082	0.082	0.08	0.078	9
2009	0.076	0.075	0.071	0.07	0.075	2
2010	0.075	0.074	0.073	0.072	0.074	1
2011	0.083	0.08	0.079	0.078	0.073	5
2012	0.082	0.08	0.079	0.078	0.076	8
2013	0.079	0.077	0.075	0.073	0.076	2

Footnotes:
b - The 8-hour ozone standard was revised effective May 27, 2008. The previous eight-hour average of 0.080 ppm was lowered to 0.075 ppm.

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24 HOUR PM_{10} AVERAGES (IN $\mu g/m^3$)

Table C-17

Year	Reading Maximum	Number of Daily Exceedances	Expected Exceedance Rate	3 Year Average of the Expected Exceedance Rate
Apache Junction North (HiVol)				
1995	67.72	0	0	N/A
1996	34.05	0	0	N/A
1997	81	0	0	0
1998	61.45	0	0	0
1999	64	0	0	0
2000	111.4	0	0	0
2001	49.1	0	0	0
2002 [b]	61.5	0	0	0
2003 [j]	94.5	0	0	0
Apache Junction South (HiVol)				
1995	67.91	0	0	N/A
1996	36.93	0	0	N/A
1997	81.33	0	0	0
1998	62.73	0	0	0
1999	63.5	0	0	0
2000	107.3	0	0	0
2001	93.5	0	0	0
2002 [b]	62.4	0	0	0
2003 [b,g]	91.3	0	0	0
Apache Junction Fire Station (HiVol)				
2003 [b,h]	103.3	0	0	N/A
2004	35.7	0	0	N/A
2005	47	0	0	0
2006	73	0	0	0
2007	48.2	0	0	0
2008	57	0	0	0
2009	54	0	0	0
2010	66	0	0	0
2011	194	1	5.75	1.9
2012	90	0	0	1.9
2013 [t]	115	0	0	1.9
Apache Junction Fire Station (TEOM)				
2011	283	5	10.2	Avg. > 1.0
2012	131	0	0	Avg. > 1.0

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2013[u]	152	0	0	3.4
Casa Grande Downtown (HiVol)				
1999	64.3	0	0	0
2000	82.5	0	0	0
2001	104.2	0	0	0
2002 [b]	68.5	0	0	0
2003	98.7	0	0	0
2004	52.8	0	0	0
2005	79.2	0	0	0
2006	81.2	0	0	0
2007	112	0	0	0
2008	74	0	0	0
Casa Grande Downtown (47mm)				
2009	109	0	0	0
2010 [q]	136	0	0	0
Casa Grande (TEOM)				
2007	983	7	7	N/A
2008	203	3	3	N/A
2009	848	4	4	4.7
2010	569	1	1	2.7
2011	479	14	14	6.3
2012	233	2	2	5.6
2013	302	4	4	6.7
Combs (TEOM)				
2007	970	31	44.6	N/A
2008	270	4	4	N/A
2009	220	4	4	17.5
2010	366	1	1	3
2011	419	12	12	5.7
2012	206	5	5	6
2013	300	3	3	6.7
Coolidge (HiVol)				
1999	83.6	0	0	0
2000	76.5	0	0	0
2001	73.4	0	0	0
2002 [b]	106.4	0	0	0
2003	105.7	0	0	0
2004	57.5	0	0	0
2005	81.4	0	0	0
2006	105.5	0	0	0
2007	82	0	0	0
2008	91	0	0	0
2009	189	1	6	2
2010	87	0	0	2
2011	110	0	0	2

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2012	134	0	0	0
2013[t]	139	0	0	0
Cowtown (47mm)				
2005 [b,k]	787.9	8	N/A	Avg. > 1.0
2006	606	39	278	Avg. > 1.0
2007	759	24	167	Avg. > 1.0
2008	465	24	146	197
2009	230	5	31	115
2010	275	3	18	65
2011	828	12	79.9	43
Cowtown (TEOM)				
2002 [a,b]	1390.6	209	209	Avg. > 1.0
2003	718.5	150	150	Avg. > 1.0
2004 [b]	600.1	105	105	155
2005 [b]	769.6	163	163	139
2006	1078.9	228	238	169
2007	1014	189	190	197
2008	609	173	175	201
2009	631	53	53	139
2010	497	28	28	85
2011	2316	98	98	60
2012	682	64	64	62.3
2013	1007	67	67	76.3
Eloy (HiVol)				
1999	141.6	0	0	0
2000	102.1	0	0	0
2001	142.2	0	0	0
2002 [b]	146.3	0	0	0
2003	153.9	0	0	0
2004	46.8	0	0	0
2005	72.9	0	0	0
2006	98.7	0	0	0
2007 [o]	136	0	0	0
2008	109	0	0	0
2009	153	0	0	0
2010	87	0	0	0
2011	155	0	0	0
2012	121	0	0	0
2013[t]	108	0	0	0
Mammoth (HiVol)				
1999 [b]	50	0	0	0
2000	63.5	0	0	0
2001	99.2	0	0	0
2002 [b]	52.5	0	0	0

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2003	89.4	0	0	0
2004	30.8	0	0	0
2005	32.5	0	0	0
2006	30.7	0	0	0
2007	40	0	0	0
2008	35	0	0	0
2009	42	0	0	0
2010[r]	46	0	0	0
City of Maricopa (TEOM)				
2005 [l]	239.1	18	18	Avg. > 1.0
2006	429	21	21	Avg. > 1.0
2007	724	20	20	21
2008	520	6	6	16
2009	607	11	11	12
2010	172	2	2	6.3
2011	531	15	15	9.3
2012	258	7	9	8.6
2013	334	4	4	9.3
Pinal Air Park (HiVol)				
1999	60.4	0	0	0
2000	74.2	0	0	0
2001 [b]	103.3	0	0	0
2002 [b]	62	0	0	0
2003	107.8	0	0	0
2004	38.8	0	0	0
2005	122.4	0	0	0
2006	76.8	0	0	0
2007	113	0	0	0
2008	55	0	0	0
2009	51	0	0	0
2010	70	0	0	0
2011	86	0	0	0
2012	159	1	6.1	2
2013[t]	61	0	0	2
Pinal Air Park (TEOM)				
2012	133	0	0	0
2013	262	2	2	1.0
Pinal County Housing West (HiVol)				
2002 [b,f]	166.1	1	N/A	Avg. > 1.0
2003	288.6	2	11.5	Avg. > 1.0
2004	155.1	1	5.8	Avg. > 1.0
2005 [b]	157.7	1	6.1	7.8
2006	152.5	0	0	4
2007	224	1	6.5	4.2
2008	141	0	0	3.3

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2009	179	2	13.1	6.5
2010	128	0	0	4.4
2011	212	3	18.4	10.5
2012	131	0	0	6.1
2013[v]	97	0	0	6.1
Pinal County Housing East (HiVol)				
2004	113.6	0	0	0
2005	179.4	2	11.9	Avg. > 1.0
2006	209.7	3	20.2	10.7
2007	341	1	6.1	12.7
2008	245	1	5.7	10.7
2009	187	1	6	5.9
2010	130	0	0	3.9
2011	271	3	18.1	8
2012	193	1	6.1	8.1
2013[v]	104	0	0	8.1
Pinal County Housing (TEOM)				
2002 [b,f]	394.5	9	9	Avg. > 1.0
2003	357.8	11	11	Avg. > 1.0
2004	490.7	7	7	9
2005	326	17	17	11.7
2006	913	33	33.6	19.2
2007	2253	19	20	23.5
2008	285	10	10	21.2
2009	1445	17	17	15.7
2010	1761	6	6	11
2011	2040	21	21	14.7
2012	538	5	5	10.6
2013	242	5	5	10.3
Riverside (HiVol)				
2003 [b,i]	100.7	0	0	N/A
2004	34.4	0	0	N/A
2005	35.2	0	0	0
2006	82.7	0	0	0
2007	65	0	0	0
2008	52	0	0	0
2009	51	0	0	0
2010[r]	47	0	0	0
Stanfield (HiVol)				
1999	106.6	0	0	0
2000	148.7	0	0	0
2001	134.2	0	0	0
2002 [b]	351.5	2	13	4
2003 [b]	170.5	1	6.1	6.1
2004	80.9	0	0	6.1

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2005	172.5	1	5.8	4
Stanfield (47mm)				
2006 [m]	182	2	13.1	Avg. > 1.0
2007	374	6	39.6	Avg. > 1.0
2008	201	2	11.8	21.5
2009[p]	121	0	0	17.1
Stanfield (TEOM)				
2006 [b,n]	727.4	25	26.5	Avg. > 1.0
2007	1062	25	25.2	Avg. > 1.0
2008	375	14	14	21.9
2009	815	14	14	17.7
2010	205	1	1	9.7
2011	586	23	23	12.7
2012	343	12	12	12
2013	913	17	17	17.3

Footnotes:
a - At least one data point during this year was flagged due to an exceptional event and excluded from calculation.
b - At least one quarter during this year had less than 75% data recovery
f - Monitoring began at the Pinal County Housing site on 8/1/2002. The Pinal County Housing site replaced the Eleven Mile Corner site.
g - The Apache Junction South monitor was discontinued on 7/1/2003, and relocated to Apache Junction Fire Station.
h - Monitoring began at the Apache Junction Fire Station site on 7/2/2003.
i - Monitoring began at the Riverside site on 3/10/2003.
j - The Apache Junction North monitor was discontinued on 1/1/2004, and relocated to Pinal County Housing.
k - 47mm filter based monitoring began at the Cowtown site on 8/14/05, and data reporting began as of 10/1/05.
l - Monitoring began at the (City of) Maricopa site on 12/4/04, and data reporting began as of 1/1/05.
m - The Wedding HiVol sampler was replaced on 4/12/06 with an Andersen RAAS10-100 sampler at the Stanfield site.
n - Beginning in February of 2006 a R&P TEOM 1400a sampler was installed at the Stanfield site.
o – On 3/2/07 the Andersen HiVol was relocated from a City of Eloy building to a Pinal County building approximately 650 feet to the north-northeast.
p – Filter based monitoring was discontinued at Stanfield on 1/1/10
q – Filter based monitoring was discontinued at Casa Grande Downtown on 1/1/10
r – Riverside and Mammoth were discontinued on 5/15/11
s – Continuous PM10 monitoring began at Apache Junction Fire Station on 8/20/12t – HiVol sampler replaced on 07/01/2013 with medium-volume sampler
u – Apache Junction TEOM discontinued on 07/01/2013
v – Pinal County Housing HiVol discontinued on 07/01/2014

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24 HOUR $PM_{2.5}$ AVERAGES (in $\mu g/m^3$)

Table C-19

Year	Maximum Reading	98th Percentile	3 year average of the 98th percentile
Apache Junction			
1999	18.7	15.5	N/A
2000	44.5	18	N/A
2001	14	13.1	16
2002	23.5	13.1	15
2003 [a]	38	21.1	16
2004	17	10.3	15
2005	12.7	10.6	14
2006	10.7	9.3	10
2007	15.9	14.6	12
2008	23.3	15.4	13
2009	14.6	13.1	14
2010	13.1	11.9	14
2011	67.2	41.9	22
2012	21.1	14	23
2013	14.3	12.6	23
Casa Grande (South)			
1999	19.5	18.1	N/A
2000	22.2	18.9	N/A
2001	18.1	16.7	18
2002	23.5	20.8	19
2003	32.2	26.7	21
2004	16.6	13.7	20
2005	19.3	16.9	19
2006	16.1	15.4	15
2007	26.6	22.4	18
2008	23.5	22	20
2009	29	17.3	21
2010	25.4	21.4	20
2011	31.1	22.3	20
2012	20.9	18.5	21
2013	17.6	16.6	19
Casa Grande (North) [c]			
2009	28.9	19	N/A
2010	22.1	21.3	N/A
2011	28.7	23.2	21
2012	18.8	17	24
2013	18	16.3	19
Cowtown			
2005 [a,b]	144.8	78.9	N/A
2006	69.4	48.9	N/A
2007	59.7	53.9	61
2008	41.7	40.7	48
2009	29.4	24	40
2010	39.5	27.1	31
2011	41.2	27.2	26

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2012	32.6	28.9	28
2013	43.5	41.7	33

Footnotes:

a – At least one quarter during this year had less than 75% data recovery

b - 47mm filter based monitoring began at the Cowtown site on August 14, 2005 and data reporting began October 10, 2005.

c – Beginning January 1, 2009 a the second $PM_{2.5}$ sampler, Casa Grande Downtown North, began sampling on the same day as Casa Grande Downtown South to collect precision data on a 1 in 6 schedule.

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ANNUAL $PM_{2.5}$ AVERAGES (in $\mu g/m^3$)

Table C-20

Year	Annual Average	3 year average of the annual means
Apache Junction		
1999	7.4	N/A
2000	7.3	N/A
2001	6.3	7
2002	6.4	6.6
2003 [a]	6.3	6.3
2004 [a]	5.5	6.1
2005	5.5	5.8
2006	5.3	5.4
2007	7	5.9
2008	7.5	6.6
2009	6.4	7
2010	5.9	6.6
2011	8.3	6.8
2012	7.1	7.1
2013	5.4	6.9
Casa Grande (South)		
1999	9.5	N/A
2000	8.5	N/A
2001	7.7	8.5
2002	8.5	8.2
2003	8.4	8.2
2004	7.1	8
2005	7.3	7.6
2006	7.6	7.3
2007	10.3	8.4
2008	10.6	9.5
2009	9.7	10.2
2010	8.4	9.5
2011	10	9.3
2012	9.9	9.4
2013	8.1	9.3
Casa Grande (North) [c]		
2009	9.6	N/A
2010	8.2	N/A
2011	9.5	6.1
2012	9	8.9
2013	**7.9**	**8.8**
Cowtown		
2005 [a,b,d]	33.1	N/A
2006 [d]	22.7	N/A
2007 [d]	22.5	26
2008 [d]	19.6	21.6
2009 [d]	14.2	18.8

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2010 [d]	12.4	15.4
2011 [d]	13.2	13.2
2012	14.8	13.3
2013	14.9	14.3

Footnotes:

a - At least one quarter during this year had less than 75% data recovery

b - 47mm filter based monitoring began at the Cowtown site on August 14, 2005 and data reporting began October 10, 2005.

c – Beginning January 1, 2009 a the second $PM_{2.5}$ sampler, Casa Grande Downtown North, began sampling on the same day as Casa Grande South to collect precision data on a 1 in 6 schedule.

d – The Cowtown site is not comparable to the annual standard. Annual averages are listed here for trend analysis.

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Appendix D

Public Comments

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Appendix D

This appendix summarizes the public comment period and hearing conducted in relation to this document.

D.1 Public Comment Period

Pinal County Air Quality posted the draft 2014 Ambient Monitoring Network Plan and 2013 Data Summary on the department's website for the period starting May 23, 2014 through June 23, 2014. During this time period the document was also be available for review at the Pinal County Air Quality offices located at 31 North Pinal Street, Building F, Florence, Arizona. Public comments were due to Pinal County no later than close of business on June 27, 2014.

PUBLIC NOTICE OF AMBIENT MONITORING NETWORK PLAN

PUBLIC COMMENT PERIOD AND PUBLIC HEARING

Pursuant to 40 Code of Federal Regulations (CFR) §58.10 Pinal County Air Quality will make its annual monitoring network plan available for public inspection for 30 days prior to submission to the United States Environmental Protection Agency. The Annual Ambient Monitoring Network Review and Data Summary presents changes to and data collected from the air quality monitoring network. The document will be posted at http://pinalcountyaz.gov/Departments/AirQuality/Pages/MonitoringNetworkPublicNotice.aspx for thirty days beginning May 23, 2014. During this time period the document will also be available for review at the Pinal County Air Quality offices located at 31 North Pinal Street, Building F, Florence, Arizona from 8:30 AM to 4:30 PM, Monday thru Friday. Additionally, a public hearing will be held June 20, 2014 at 10:00 AM at 31 North Pinal Street, Building F, Ocotillo Room, Florence, Arizona.

Public comments may be submitted in writing to Pinal County Air Quality, Attention: Josh DeZeeuw, P.O. Box 987, Florence, Arizona, 85132, or comments may be given orally at the scheduled public hearing on June 20, 2014. Written or oral public comments are due before the close of business on June 27, 2014. Additional information is available by calling 520-866-6929.

D.2 Public Hearing

D.3 Public Comment

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