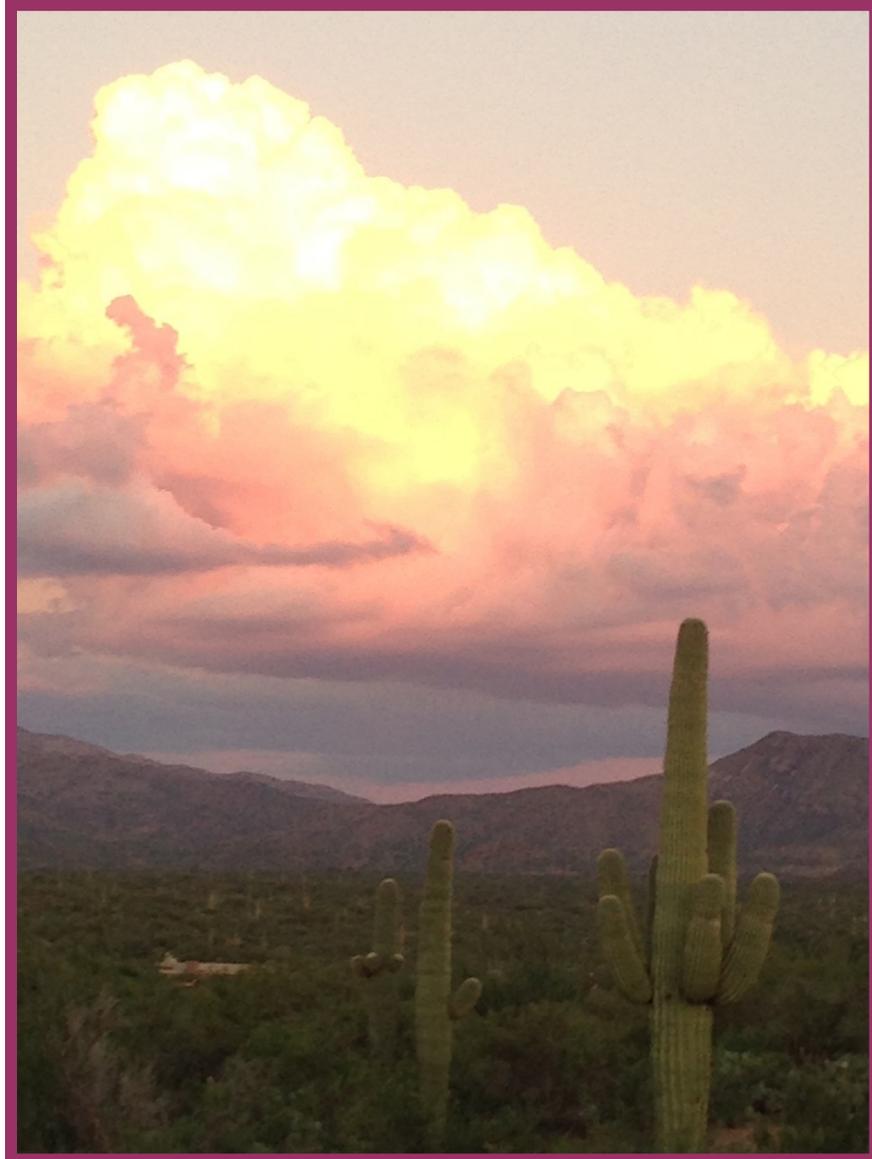


# 2017 Ambient Air Monitoring Network Plan



**PIMA COUNTY**

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ENVIRONMENTAL QUALITY  
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AQ 398

# 2017 Ambient Air Monitoring Network Plan

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## I. INTRODUCTION

This document constitutes the 2017 Ambient Air Monitoring Network Plan for the Pima County air monitoring network. The Pima County Department of Environmental Quality (PDEQ) has prepared this document to be submitted to the U.S. Environmental Protection Agency (USEPA), Region IX. The purpose of the Ambient Air Monitoring Network Plan is to determine if the network is achieving the air monitoring objectives specified in **40 CFR Part 58 Appendix D**, which mandate adherence to certain number, type and location requirements of monitoring sites and specific site criteria such as monitoring inlet height. The plan should also determine if modifications should be made to the network (e.g. through the termination or relocation of unnecessary stations or addition of new stations). In addition, the plan is necessary in order to ensure that the residents of Pima County are provided adequate, representative and useful air quality data, and to provide adequate protection to public health.

The designated ambient air pollutants monitored and reported by PDEQ are carbon monoxide (CO), ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter with an aerodynamic diameter of 10 micrometers or less in size (PM<sub>10</sub>) and particulate matter with aerodynamic diameter of 2.5 micrometers or less in size (PM<sub>2.5</sub>). This pollutant data is submitted to the EPA Air Quality System (AQS) database for determination of compliance with National Ambient Air Quality Standards (NAAQS). This report contains statistical data summaries for the 2017 calendar year and provides a site by site assessment of the monitoring network with respect to EPA site criteria.

The Pima County monitoring network includes both State or Local Air Monitoring Stations (SLAMS) and Special Purpose monitors (SP). SLAMS monitors comprise the required network monitors that are used for NAAQS comparisons and follow the monitoring objectives listed on page 7. SP monitors are used to conduct special purpose studies and to enhance the network coverage of air quality monitoring data.

Pima County has a designated National Core (NCore) site at the Children's Park location, which also monitors for reactive oxides of nitrogen (NO<sub>x</sub>), particulate matter, coarse fraction (PM<sub>10-2.5</sub>) and speciated PM<sub>2.5</sub> particulate matter.

**Attachment A** contains the response letter from EPA for the 2016 Ambient Air Monitoring Plan submitted by PDEQ.

### **PDEQ Made The Following Network Improvements and Anticipated Modifications In 2017:**

1. Based on the 2014 EPA Technical System Audit findings, PDEQ made the classification change from Special Purpose to SLAMS for the following monitors / stations:
  - Carbon Monoxide / Children’s Park NCore
  - Nitrogen Dioxide / Children’s Park NCore
  - Ozone / Green Valley, Tangerine, Rose Elementary, Coachline and Fairgrounds
2. Replaced the FRM samplers at the Orange Grove and South Tucson stations with continuous PM<sub>10</sub> FEM monitors.
3. Replaced all analog data loggers with digital data loggers at all stations.
4. Relocated the current primary PM<sub>2.5</sub> FRM at the Children’s Park NCore station to the roof of the shelter, and changed its designation from primary to collocation.
5. Changed the designation of the PM<sub>2.5</sub> FEM continuous sampler at the Children’s Park NCore station from non-primary to primary.
6. Replaced the FRM sampler with the continuous PM<sub>2.5</sub> FEM monitor at the Orange Grove station.
7. Relocated the PM coarse PM<sub>10</sub> – PM<sub>2.5</sub> sampler at the Children’s Park NCore station to the roof of the shelter.

### **PDEQ’s anticipated network modifications in 2018:**

1. Closure of PDEQ filter weigh lab.
2. Closure of CO monitoring at the Cherry /Glenn, Golf Links and Kolb and Craycroft/22<sup>nd</sup> St. monitoring sites. **Attachment B** contains the acceptance letter from EPA for this change.
3. Replace monitoring shelter at the Rose Elementary site.
4. Parameter Code change for PM<sub>2.5</sub> at the Geronimo, Green Valley, Rose Elementary and Coachline monitoring sites from 88501 to 88502 per EPA’s request in 2016 Annual Network Plan Checklist response number 70.
5. Continue impact analysis of development near the Tangerine ozone and PM<sub>10</sub> monitoring station, and if necessary change the station spatial scale and site type to correspond with changes to area development.

## Near-Road Monitoring

EPA developed new rules for minimum monitoring requirements for nitrogen dioxide (NO<sub>2</sub>) in February, 2010. Under these new rules, state and local air monitoring agencies are required to install near-road NO<sub>2</sub> monitoring stations at locations where peak hourly NO<sub>2</sub> concentrations are expected to occur within the near-road environment in larger urban areas. Implementation of this requirement involves a three-phased approach, with initial installations in areas with populations greater than 1,000,000 to be completed by January 1, 2014. The second phase requires areas with 1) populations greater than 2,500,000 or, 2) populations greater than 500,000 with one or more roadway segments having 250,000 or greater Average Daily Traffic count to have a second near road monitor installed by January 1, 2015. The third phase requires areas with populations greater than 500,000 but less than 1,000,000 to complete installations by January 1, 2017.

With most installations of phase one and two monitoring stations complete, and sufficient NO<sub>2</sub> data reported to ascertain with some certainty the concentration levels of NO<sub>2</sub> in the near-road environment, it has been determined that measured NO<sub>2</sub> levels are lower than expected, and in some cases, lower than neighborhood locations in the same urban areas. Based on the results of the lower than expected NO<sub>2</sub> monitoring for phase one and two, EPA has proposed to not require phase three monitoring. EPA formally finalized this approach in December 2016 (Attachment C). When EPA developed the near road monitoring requirements, Pima County was identified as a phase three county. With EPA proposing to remove near road requirements for phase three areas, Pima County has not developed a proposed near road-monitoring plan. Recently, population estimates place Tucson's Core Base Statistical Area (CBSA) over one million, which triggers the requirement for a near-road monitor as required under a phase one area. PDEQ has been working with EPA regarding the necessity and basis for an original phase three area being reclassified as a phase one area based on new population estimates. EPA has not developed guidance, implementation strategies, or funding for new phase one areas in the country. PDEQ and EPA continue to work on this issue.

### General comment regarding monitoring station siting criteria:

The locations of monitoring stations in the PDEQ network require considerable planning to conform to all of the siting requirements specified in 40 CFR 58 Appendix E. Locations are chosen only after carefully considering the intent and installation logistics of each station. Some stations remain static, and easily maintain all siting criteria, and others fall victim to urban evolution and nature. Development happens and trees grow, modifying the original circumstances. Development can change those circumstances to the point that relocation or designation change of a station is required. Tree growth is more forgivable in that it can be modified by removal or trimming, but sometimes this is not possible for a number of reasons. Going to the effort of relocating a station because of tree growth is not generally practical. Modifying the station information to categorize trees as an obstruction is preferable, as long as siting criteria still meets the minimum requirements for obstructions. Most of the trees near PDEQ monitoring stations are typical of Sonoran Desert indigenous species, namely mesquite and palo verde, both of which have small, relatively sparse leaves, and in most cases do not totally block airflow, or provide large surfaces for particulate deposition. However, PDEQ has several stations that have been compromised by substantial tree growth, and in each section for those stations, the category for degrees of unrestricted airflow will reflect the reality of tree growth at those stations, and the obstructed airflow will be identified by direction in degrees.

## II. BACKGROUND

Pima County Air Quality Control District met all the National Ambient Air Quality Standards (NAAQS) in 2017. The criteria pollutants that are a concern for Pima County are ozone and particulate matter (PM<sub>10</sub>). Ozone has been very close to the standard notably with 2017 reaching 98% of the standard. Particulate matter (PM<sub>10</sub>) levels are elevated during drought conditions and high winds which have caused exceedances of the NAAQS.

### Regional Evaluation

In order to evaluate existing and proposed monitoring stations and their stated objectives, regional information is used. The regional information consists of the most current values for population, major urban developments and directions of growth, traffic and highway data, major industries and aerial photographs showing topography. Population (census tract) data can act as a guide in evaluation of the representativeness of a site for determining population exposure. The 2010 census shows Pima County population at 980,263 and the city of Tucson population at 520,116. **Figure 1** on page 12 illustrates the Eastern Pima County Tucson Air Planning Area (TAPA). The various incorporated areas and other agency lands are shown, as well as the named mountain peaks that define the planning area for Eastern Pima County, which includes the Tucson Metropolitan area. The Tucson Metropolitan Statistical Area (MSA) has incurred a population increase of approximately 4.1% since the 2010 census, based on 2017 estimates by the US Census Bureau.

### Average Daily Traffic (ADT)

Traffic data is necessary for site evaluations since a large portion of air pollutants in the Tucson basin are caused by vehicular traffic. Traffic volumes and density maps are used in evaluating the monitoring network. This data is routinely compiled and used by local transportation and planning agencies. An analysis of the most current traffic data indicates that the network continues to meet the requirements for the monitoring site type and corresponding spatial scales as initially established. The Average Daily Traffic (ADT) numbers are 24 - hour, two - way volume of average weekday traffic.

### Latitude and Longitude

Latitude and Longitude data is also provided for the monitoring sites using Datum WGS84 AZ Central in Decimal.Degrees.

## Local Geography and Meteorology

Tucson, Arizona is a major metropolitan area situated in the Santa Cruz river valley, which is encompassed by the Sonoran Desert at an elevation between 2300 and 2800 feet. Basin and range topography characterizes the region with rugged mountain ranges encircling the valley floor with mountain peak elevations in excess of 9000 feet, thus delineating the Tucson Air Planning Area. The flat or gently rolling valley terrain slopes from the higher south and southeast toward the lower northwest following the Santa Cruz river drainage.

The climate of Tucson is characterized by a hot season normally starting in April and ending in October, and a generally mild winter. Maximum daily temperatures from May through September are usually above 90 degrees Fahrenheit. The average rainfall is around eleven inches per year. Tucson International Airport records show an average of 240 clear days a year (days with less than 50% total cloud cover). The remaining periods include the winter prefrontal situations more common in the north and the prolonged seasons of convective summer storms. Wind velocity and direction changes, associated with the large scale pressure systems, frequently result in localized dust storms.

The mountain-valley circulation, along with surface heating during the day and radiational cooling at night, create a predominantly southeast to northwest wind path in the basin. Airflows generally tend to be downvalley (from the southeast) at night and early morning hours, reversing to the upvalley direction (from the northwest) during the day. These downvalley / upvalley flows are strongly influenced by localized upslope / downslope terrain. The normal upvalley airflow is from the northwest, and parallels the Santa Cruz River, but decays well before sunset. This is followed by an hour of light, erratic flows which turn into the downvalley flow from the southeast, and reach their maximum and stabilized speed in four to six hours. The air temperature drops steadily during this interval until the sun rises. The downvalley direction continues for two to five hours past sunrise and then transforms into a short calm period prior to the change to upvalley flows.

The southeasterly “monsoon” regime that occurs primarily in the months of July and August is a large scale synoptic feature with considerable yearly variation both in intensity and timing. At the Tucson International Airport, the winds become strong, gusty and southeasterly with high relative humidity, cloud cover and frequent thunderstorms. The mountain - valley circulation tends to be suppressed during this time period.

Atmospheric temperature inversions occur almost daily in the Tucson air basin. During the winter months these inversions may become severe with particulate and other pollutants becoming concentrated, remaining near the ground level causing haze. When the sun sets, the ground and surface air cools faster than the air several hundred feet above the surface. Since air temperature normally decreases with increasing altitude, the warm and cool layers are reversed or “inverted”, hence the name ‘temperature inversion’. These temperature inversions are usually strongest on cold, clear winter nights, where there is an absence of cloud cover. Consequently, the inversions “lock” the pollutants near the surface. As the sun causes the cool air layer close to the ground to warm up, vertical mixing and horizontal transport disperse the air pollutants. In the early evening, the low level air inversion begins to form again and often coincides with the evening traffic rush hour.

### Definition of Monitoring Objectives, Site Types and Spatial Scales

The Pima County ambient air monitoring network is designed to meet three basic monitoring objectives. These objectives listed in **Appendix D, 1.1 of 40 CFR Part 58** are:

1. To provide air pollution data to the general public in a timely manner;
2. To comply with ambient air quality protocols and standards in order for data to be used for comparison to the NAAQS;
3. To support research studies.

The monitoring stations which comprise the Pima County network are designed to meet at least one of six basic monitoring site types. As listed in **Appendix D, 1.1.1 of 40 CFR Part 58**, the site types:

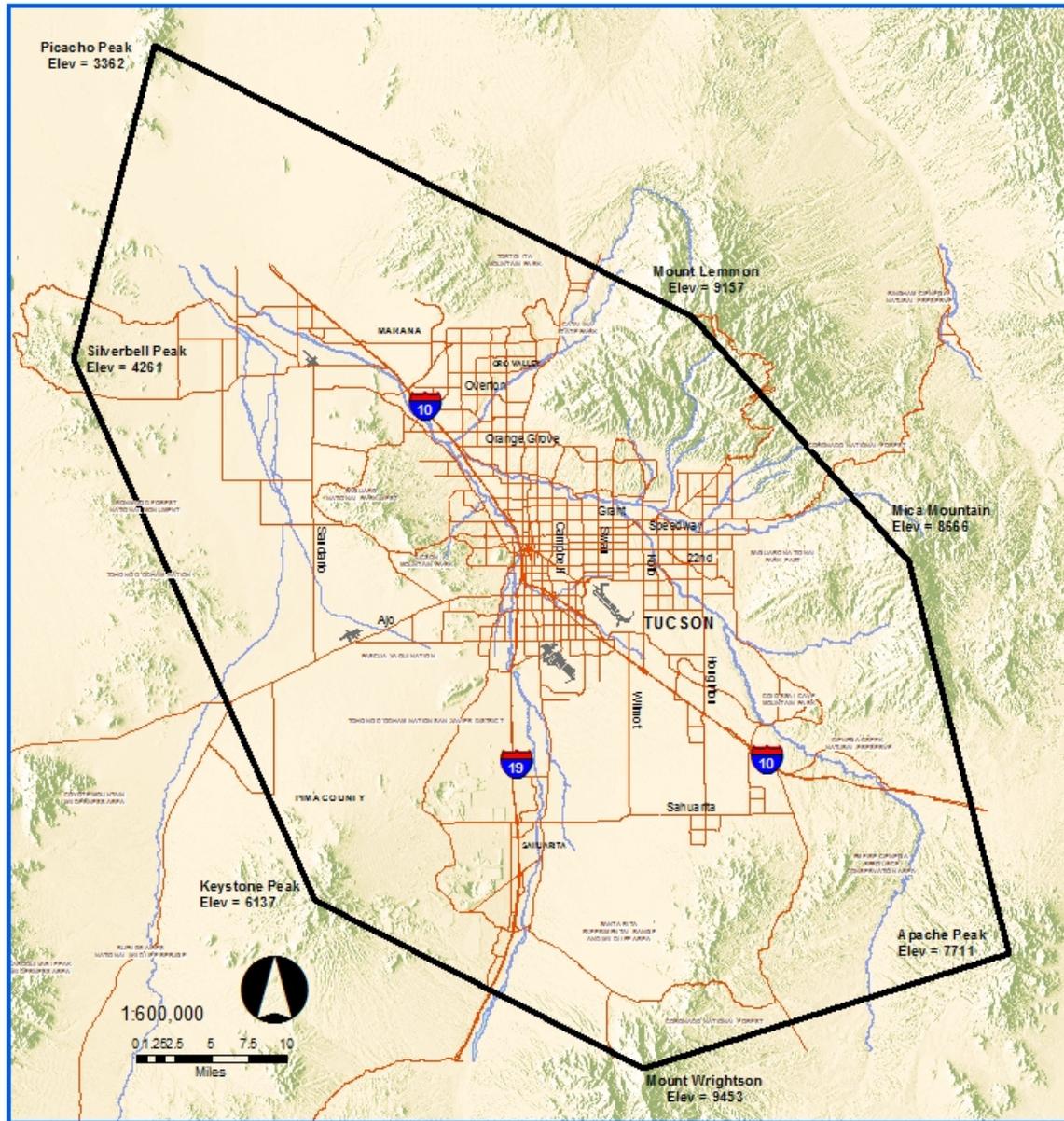
1. Determine the area of highest concentrations expected to occur in the network;
2. Determine representative concentrations in areas of high population density;
3. Determine the impact on ambient pollution levels of significant sources or source categories;
4. Determine general background concentration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

The link between general monitoring objectives, site types and the geographical location of a monitoring station is defined as the spatial scale of representativeness, and the relationship is indicated in **Table 1** (next page). The goal of each station is to represent a specific air parcel throughout which actual pollution concentrations are reasonably homogeneous. The spatial scales are defined in **Appendix D, 1.2 of 40 CFR Part 58** as follows:

1. *Microscale* defines concentrations in air volumes associated with area dimensions from 1 meter to 100 meters;
2. *Middle Scale* defines concentrations typical of areas from 100 meters to 500 meters;
3. *Neighborhood Scale* defines concentrations typical of areas with dimensions in the 0.5 to 4.0 kilometer range;
4. *Urban Scale* defines the overall, city – wide conditions with dimensions in the 4 to 50 kilometer range;
5. *Regional Scale* usually defines a rural area with dimensions as much as hundreds of kilometers;
6. *National and Global Scales* represent concentrations which characterize nations and the globe as a whole (Pima County does not employ stations under this category).

**Table 1**

<b>Monitoring Site Types</b>	<b>Appropriate Spatial Scales</b>
Highest Concentration	Micro, Middle, Neighborhood, sometimes Urban
Population Exposure	Neighborhood, Urban
Source Impact	Micro, Middle, Neighborhood
General / Background	Urban, Regional
Regional Transport	Urban, Regional
Welfare-Related Impacts	Urban, Regional



## Eastern Pima County Tucson Air Planning Area

The portion of Pima County within the geographical coordinate boundary

- 2 - 22nd / Craycroft
- 3 - 22nd / Alvemon
- 4 - Geronimo
- 5 - South Tucson
- 8 - Corona de Tucson
- 9 - Santa Clara
- 10 - Green Valley
- 11 - Children's Park
- 12 - Orange Grove
- 13 - Tangerine
- 14 - Rose Elementary
- 15 - Coachline
- 16 - Cherry / Glenn
- 17 - Fairgrounds
- 18 - Saguaro National Park East
- 23 - Golf Links / Kolb

- TAPA Boundary
- Major Streets
- Washes

Revised: March 2018

Comments  
All information is provided as is, with all faults, and without warranty of any kind, expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.



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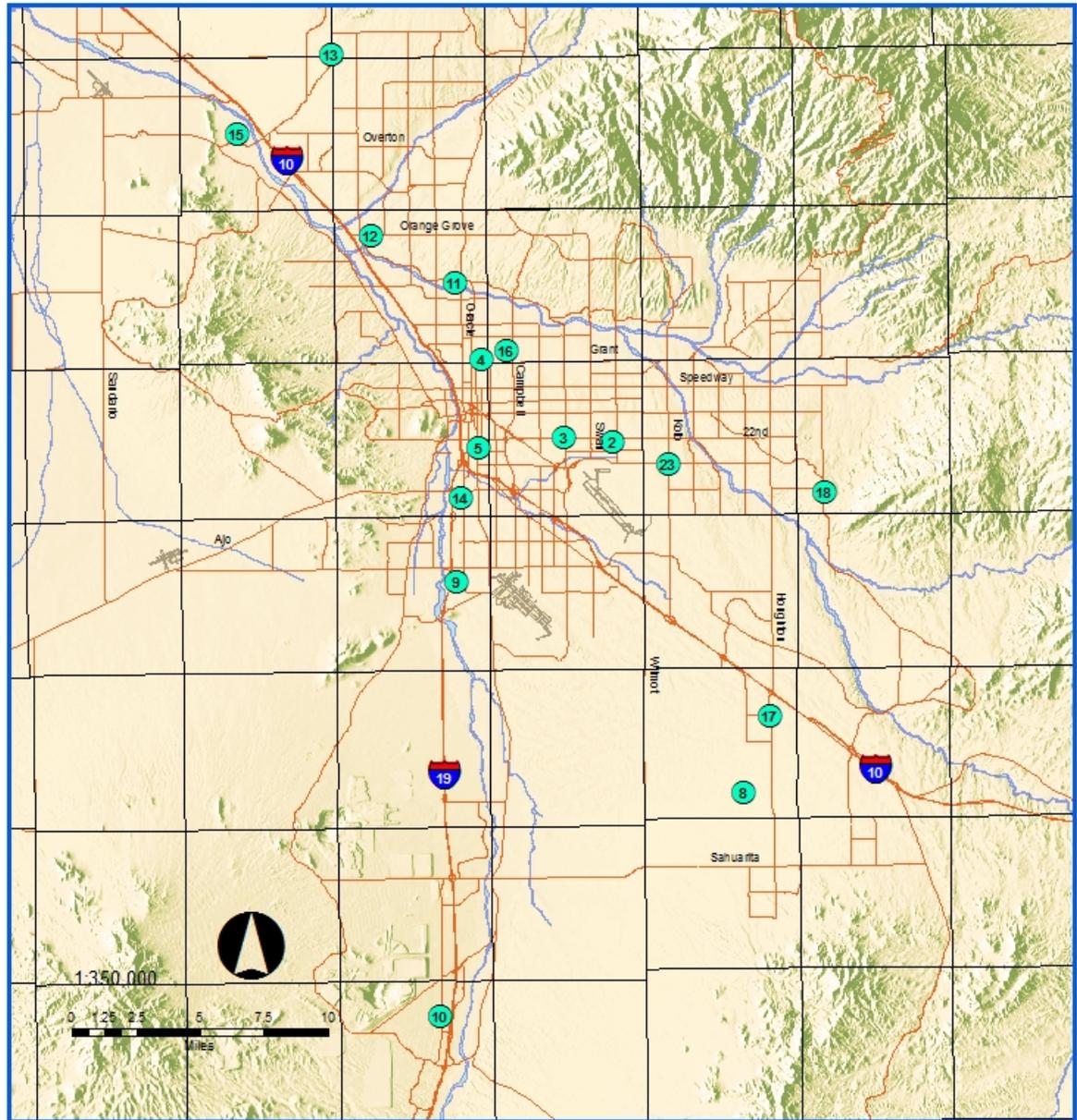
**III. SUMMARY TABLES AND MAP**

**Table 2**  
**Active Particulate Monitoring Sites for 2017**  
 (Map located on Page 14)

Map #	Pollutant		Address	Site Name
4	PM <sub>10</sub>	PM <sub>2.5</sub>	2498 N. Geronimo	Geronimo
5	PM <sub>10</sub>		1601 S. 6 <sup>th</sup> Ave.	South Tucson
8	PM <sub>10</sub>		22000 S. Houghton Rd.	Corona de Tucson
9	PM <sub>10</sub>		6910 S. Santa Clara Ave.	Santa Clara School
10	PM <sub>10</sub>	PM <sub>2.5</sub>	601 N. La Canada Dr.	Green Valley
11		PM <sub>2.5</sub>	400 W. River Rd.	Children's Park NCore
12	PM <sub>10</sub>	PM <sub>2.5</sub>	3401 W. Orange Grove Rd.	Orange Grove
13	PM <sub>10</sub>		12101 N. Camino de Oeste	Tangerine
14		PM <sub>2.5</sub>	710 W. Michigan	Rose Elementary
15		PM <sub>2.5</sub>	9597 N. Coachline Blvd.	Coachline

**Table 3**  
**Active Gaseous Pollutant Monitoring Sites for 2017**  
 (Map located on Page 14)

Map #	Pollutant					Address	Site Name
2	CO	O <sub>3</sub>		NO <sub>2</sub>		1237 S. Beverly Ave.	Craycroft & 22nd St.
3	CO					3895 E. 22 <sup>nd</sup> St.	Alvernon & 22 <sup>nd</sup> St.
10		O <sub>3</sub>				601 N. La Canada Dr.	Green Valley
11	CO	O <sub>3</sub>	SO <sub>2</sub>	NO <sub>2</sub>	NO <sub>Y</sub>	400 W. River Rd.	Children's Park NCore
13		O <sub>3</sub>				12101 N. Camino de Oeste	Tangerine
14		O <sub>3</sub>				710 W. Michigan	Rose Elementary
15		O <sub>3</sub>				9597 N. Coachline Blvd.	Coachline
16	CO					2745 N. Cherry Ave.	Cherry & Glenn
17		O <sub>3</sub>				11330 S. Houghton Rd.	Fairgrounds
18		O <sub>3</sub>				3905 S. Old Spanish Trail	Saguaro National Park, East
23	CO					2601 S. Kolb Rd.	Golf Links & Kolb



# Pima County Monitoring Sites

- 2 - 22nd / Craycroft
- 3 - 22nd / Alvemon
- 4 - Geronimo
- 5 - South Tucson
- 8 - Corona de Tucson
- 9 - Santa Clara
- 10 - Green Valley
- 11 - Children's Park NCore
- 12 - Orange Grove
- 13 - Tangerine
- 14 - Rose Elementary
- 15 - Coachline
- 16 - Cherry / Glenn
- 17 - Fairgrounds
- 18 - Saguaro National Park East
- 23 - Golf Links / Kolb

- PDEQ Monitoring Sites
- Major Streets
- Washes

Revised: March 2018

**Comments**  
 All information is provided as is, with all faults, and without warranty of any kind, expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.



Prepared By  
 Pima County Department  
 of  
 Environmental Quality

**Table 4**  
**Ambient Air Monitoring Network Summary**  
 (Key Located on Page 17)

CARBON MONOXIDE											
SITE NAME AND LOCATION	SITE ID	PARAMETER	CLASSIFICATION	DATES	METHOD	SITE ELEVATION (FEET)	SAMPLE HEIGHT (METER)	SPATIAL SCALE	SAMPLE FREQUENCY	POC	MONITORING SITE TYPE
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(h)
Craycroft & 22 <sup>nd</sup> St. 1237 S. Beverly Ave.	04-019-1011	42101	SLAMS	Jul-73 Present	054	2582	4.4	Neighborhood	Continuous	1	Population Exposure
Alvernon & 22 <sup>nd</sup> St. 3895 E. 22nd Street	04-019-1014	42101	SLAMS	Mar-75 Present	054	2516	3.8	Microscale	Continuous	1	Highest Concentration
Children's Park NCore 400 W. River Road	04-019-1028	42101	SLAMS	Oct-98 Present	554	2286	4.25	Neighborhood	Continuous	1	Population Exposure
Cherry & Glenn 2745 N. Cherry Ave.	04-019-1021	42101	Special Purpose	Feb-89 Present	054	2400	4.9	Neighborhood	Continuous/Seasonal	1	Population Exposure
									January 1 - March 31		
									October 1- December 31		
Golf Links & Kolb 2601 South Kolb	04-019-1031	42101	Special Purpose	Sept-02 Present	054	2661	3	Microscale	Continuous/Seasonal	1	Highest Concentration
									Jan. 1 - March 31		
									Oct. 1- December 31		

NITROGEN DIOXIDE											
SITE NAME AND LOCATION	SITE ID	PARAMETER	CLASSIFICATION	DATES	METHOD	SITE ELEVATION (FEET)	SAMPLE HEIGHT (METER)	SPATIAL SCALE	SAMPLE FREQUENCY	POC	MONITORING SITE TYPE
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(h)
Craycroft & 22 <sup>nd</sup> St. 1237 S. Beverly Ave.	04-019-1011	42602	SLAMS	Jan-73 Present	074	2582	4.4	Neighborhood	Continuous	1	Population Exposure
Children's Park NCore 400 W. River Road	04-019-1028	42602	SLAMS	May-98 Present	074	2286	4.25	Neighborhood	Continuous	1	Highest Concentration
REACTIVE OXIDES OF NITROGEN											
Children's Park NCore 400 W. River Road	04-019-1028	42600	SLAMS	Oct-10 Present	674	2286	10.0	Neighborhood	Continuous	1	Population Exposure

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<b>SULFUR DIOXIDE</b>											
<b>SITE NAME AND LOCATION</b>	<b>SITE ID</b>	<b>PARAMETER</b>	<b>CLASSIFICATION</b>	<b>DATES</b>	<b>METHOD</b>	<b>SITE ELEVATION (FEET)</b>	<b>SAMPLE HEIGHT (METER)</b>	<b>SPATIAL SCALE</b>	<b>SAMPLE FREQUENCY</b>	<b>POC</b>	<b>MONITORING SITE TYPE</b>
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(h)
Children's Park NCore 400 W. River Road	04-019-1028	42401	SLAMS	October 10 Present	560	2286	4.25	Neighborhood	Continuous	1	Population Exposure

<b>OZONE</b>											
<b>SITE NAME AND LOCATION</b>	<b>SITE ID</b>	<b>PARAMETER</b>	<b>CLASSIFICATION</b>	<b>DATES</b>	<b>METHOD</b>	<b>SITE ELEVATION (FEET)</b>	<b>SAMPLE HEIGHT (METER)</b>	<b>SPATIAL SCALE</b>	<b>SAMPLE FREQUENCY</b>	<b>POC</b>	<b>MONITORING SITE TYPE</b>
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(h)
Craycroft & 22nd St. 1237 S. Beverly Ave.	04-019-1011	44201	SLAMS	July-73 Present	047	2582	4.4	Neighborhood	Continuous	1	Population Exposure
Green Valley 601 N. La Canada Dr.	04-019-1030	44201	SLAMS	July-03 Present	047	2910	3.3	Neighborhood	Continuous	1	Population Exposure
Children's Park NCore 400 W. River Road	04-019-1028	44201	SLAMS	Sept-97 Present	047	2286	4.25	Neighborhood	Continuous	1	Population Exposure
Tangerine 12101 N Camino De Oeste	04-019-1018	44201	SLAMS	Oct-89 Present	047	2638	3.75	Urban	Continuous	1	Highest Concentration
Rose Elementary 710 W Michigan	04-019-1032	44201	SLAMS	July-03 Present	047	2387	4.1	Neighborhood	Continuous	1	Population Exposure
Coachline 9597 N Coachline Blvd	04-019-1034	44201	SLAMS	July-03 Present	047	2110	3.4	Neighborhood	Continuous	1	Population Exposure
Fairgrounds 11330 S Houghton Rd	04-019-1020	44201	SLAMS	Oct-89 Present	047	3078	3.6	Urban	Continuous	1	General / Background
Saguaro National Park 3905 S Old Spanish Trail	04-019-0021	44201	SLAMS	Jun-82 Present	047	3089	4.1	Neighborhood	Continuous	1	Maximum Ozone Concentration

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PM10											
SITE NAME AND LOCATION	SITE ID	PARAMETER	CLASSIFICATION	DATES	METHOD	SITE ELEVATION (Feet)	SAMPLE HEIGHT (Meter)	SPATIAL SCALE	SAMPLE FREQUENCY	POC	MONITORING SITE TYPE
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(h)
Geronimo 2498 N. Geronimo	04-019-1113	81102	SLAMS	June- 07 Present	122	2452	4.6	Neighborhood	Continuous	1	Population Exposure
South Tucson 1601 S. 6th Ave.	04-019-1001	81102	SLAMS	Sep-88 Present	127- Ended 9/30/17	2420	6.9	Neighborhood	1 Day	1	Population Exposure
					127 -Ended 9/30/17				Collocated Every 6 Day- Ended 9/30/17	2	
					122 -Started 10/1/17				Continuous	5	
Corona De Tucson 22000 S. Houghton Rd.	04-019-0008	81102	SLAMS	Mar-87 Present	126	3078	2.1	Regional	6 Day	1	General / Background
Santa Clara 6910 S. Santa Clara Ave.	04-019-1026	81102	SLAMS	Jul-94 Present	126	2540	6.45	Neighborhood	6 Day	1	Population Exposure
									Collected Every 12 Day	2	
Green Valley 601 N. La Canada Dr.	04-019-1030	81102	SLAMS	Feb-01 Present	122	2910	4.25	Neighborhood	Continuous	1	Population Exposure
Orange Grove 3401 W. Orange Grove Rd.	04-019-0011	81102	SLAMS	Jan-85 Present	127- Ended 6/30/17	2234	2.65	Neighborhood	1 Day	2	Highest Concentration
					127- Ended 6/30/17				Collocated Every 6 Day - Ended 6/30/17	4	
					122 Started 7/1/17				Continuous	5	
Tangerine 12101 N. Camino De Oeste	04-019-1018	81102	SLAMS	Jan-94 Present	126	2638	4.5	Urban	6 Day	1	General / Background

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CHEMICAL SPECIATION											
SITE NAME AND LOCATION	SITE ID	PARAMETER	CLASSIFICATION	DATES	METHOD	SITE ELEVATION (Feet)	SAMPLE HEIGHT (Meter)	SPATIAL SCALE	SAMPLE FREQUENCY	POC	MONITORING SITE TYPE
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(h)
Children's Park NCore 400 W. River Road	04-019-1028	88502	SLAMS	Feb-02 Present	810	2286	3.0		3 Day	5	Population Exposure

PM 2.5											
SITE NAME AND LOCATION	SITE ID	PARAMETER	CLASSIFICATION	DATES	METHOD	SITE ELEVATION (Feet)	SAMPLE HEIGHT (Meter)	SPATIAL SCALE	SAMPLE FREQUENCY	POC	MONITORING SITE TYPE
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(h)
Geronimo 2498 N. Geronimo	04-019-1113	88501	Other	July-03 Present	733	2452	4.6	Neighborhood	Continuous	3	Population Exposure
Green Valley 601 N. La Canada Dr.	04-019-1030	88501	Other	July-03 Present	733	2910	4.8	Neighborhood	Continuous	3	Population Exposure
Children's Park NCore 400 W. River Road	04-019-1028	88101	SLAMS	Jan-99 Present	118 - Ended 6/30/17	2286	3.1	Neighborhood	3 Day –Ended 6/30/17	1	Population Exposure
					118				Collocated Every 6 Day	2	
Children's Park NCore 400 W. River Road	04-019-1028	88101	SLAMS	Jan-11	170	2286	4.3	Neighborhood	Continuous	3	Population Exposure
Orange Grove 3401 W. Orange Grove Rd	04-019-0011	88101	SLAMS	Jan-99 Present	118 - Ended 6/30/17	2234	2.65	Neighborhood	3 Day	1	Population Exposure
					170 - Started 7/1/17				Continuous	3	
Rose Elementary 710 W. Michigan	04-019-1032	88501	Other	July-03 Present	733	2387	4.9	Neighborhood	Continuous	3	Population Exposure
Coachline 9597 N. Coachline Blvd	04-019-1034	88501	Other	July-03 Present	733	2100	4.9	Neighborhood	Continuous	3	Population Exposure

**KEY TO SUMMARY TABLES**

Information Provided Based On EPA's 2017 Air Quality System (AQS) Data.

- (a) Site ID - Site Identification Code Used In The AQS Database
- (b) Parameter - Code Used In The AQS Database To Describe The Pollutant Monitored
- (c) Classification – Described On Page 2
- (d) Dates - Dates Sampling Began And Ended
- (e) Method - Code Used In The AQS Database Indicating The Type Of Instrument Used
- (f) Site Elevation - Site Elevation In Feet
- (g) Sample Height - Sample Inlet Height In Meters, Specific Height Range Required For Uniform Collection
- (h) Spatial Scale And Monitoring Site Type - Described On Page 11
- (i) Sample Frequency - Frequency Of Sampling Days
- (j) POC - Parameter Occurrence Code - Used To Distinguish Between Two Or More Instruments Measuring The Same Parameter At The Same Time

**IV. CURRENT MONITORING NETWORK EVALUATIONS**

**PM<sub>10</sub> MONITORING NETWORK REQUIREMENTS**

The PDEQ PM<sub>10</sub> network consists of seven monitoring sites in eastern Pima County, Arizona. The 2017 network used several different types of PM<sub>10</sub> samplers: R& P Partisol 2000, R& P Partisol-Plus 2025 Sequential and BAM 1020. **40 CFR Part 58, app. D, 4.6** Particulate matter (PM<sub>10</sub>) design criteria, provided guidance in determining the minimum number of required PM<sub>10</sub> SLAMS sites for 2017. In July of 2017, PDEQ installed a continuous PM<sub>10</sub> FEM monitor at the Orange Grove station to replace the FRM sampler. In October of 2017, PDEQ also installed a continuous PM<sub>10</sub> FEM monitor at the South Tucson Station to replace the FRM sampler. These changes were implemented to provide near real –time data to the public and at the same time reduce the amount of filter-based samplers.

**Table 5**  
**2017 PM<sub>10</sub> Design Criteria**

<b>Population Pima County</b>	<b>MSA 8520 Tucson Population Category</b>	<b>Max Concentration Site 2015-2017</b>	<b>Max Concentration (µg/m<sup>3</sup>)</b>	<b>PM<sub>10</sub> Sites # Required</b>	<b>PM<sub>10</sub> Sites # Operating</b>
2010 Census 980,263	500,000 – 1,000,000	Geronimo	85	1-2 SLAMS monitors	7 SLAMS monitors
<sup>a</sup> 2017 Estimated Population 1,022,769	>1,000,000			2-4 SLAMS monitors	

a. U.S. Census Bureau 2017 population estimate of the Tucson area (MSA 8520) is 1,022,769

**Violation History**

The PM<sub>10</sub> 24 hour standard remains at 150 µg/m<sup>3</sup>. Since the promulgation of the PM<sub>10</sub> standard, July 31, 1987, there has been one violation of the standard. In 1999, the PM<sub>10</sub> standard was violated with four recorded exceedances at the Orange Grove location and two exceedances at the South Tucson location. Subsequently, the monitoring schedules for the Orange Grove and South Tucson locations have been changed from every six day sampling to every day sampling, as indicated in **40 CFR Part 50, app. K** and **40 CFR Part 58.13**. Exceedances of the 24 hour standard have been recorded at monitoring sites in the PDEQ PM<sub>10</sub> network at the following locations: In 2013, one exceedance on April 8<sup>th</sup> at the South Tucson location and on April 9<sup>th</sup> there was one exceedance each, at the South Tucson, Geronimo, and Green Valley stations. These exceedances may also be considered as an Exceptional Event dependent on approval from EPA. In 2014, there were three exceedances on July 25 at the Green Valley, Geronimo, Orange Grove monitoring sites. These exceedances may also be considered as an Exceptional Event dependent on approval from EPA. In 2015 through 2017, there were no recorded exceedances for PM<sub>10</sub>.

**Quality Assurance for Particulate Matter PM<sub>10</sub>**

All data quality assessment requirements, as outlined in **40 CFR Part 58, app. A**, have been met for 2017. The precision of PM<sub>10</sub> data is derived from the co-located PM<sub>10</sub> samplers at the Santa Clara site. The difference in concentration between the two samplers running side-by-side is used to calculate the precision of the data. At the end of each calendar quarter, a combined precision probability interval for monitors is calculated by EPA.

The accuracy of PM<sub>10</sub> sampling is assessed by auditing the flow rate of at least 25% of the samplers each calendar quarter, such that each sampler is audited at least once per year. The difference in the flow rate between the audit flow measurement and the flow indicated by the sampler is used to calculate accuracy.

**Table 6**  
**Precision and Accuracy Tests**

<b>Protocol</b>	<b>Instrument</b>	<b>Frequency</b>	<b>Date Completed 2017</b>
Flow rate verification	Met One BAM 1020	Weekly	
Flow Rate Audit	BAM 1020	Semi Annually	Green Valley 03/01, 06/16, 09/14, 11/29 Geronimo 03/02, 06/13, 09/15, 12/01 South Tucson 12/19 Orange Grove 9/15, 11/29
Flow rate verification	R& P Partisol 2000, R& P Partisol-Plus 2025 Sequential	Monthly	
Flow Rate Audit	R& P Partisol 2000, R& P Partisol-Plus 2025 Sequential	Semi Annually	Corona de Tucson 03/01, 06/15, 09/14, 12/13 Santa Clara 03/13, 06/16, 09/25, 12/19 Santa Clara (co-located) 03/13, 06/16, 09/25, 12/19 Tangerine 03/03, 06/13, 09/14, 11/29 South Tucson 03/10, 06/20, 09/20 South Tucson (co-located) 03/10, 06/20, 09/20 Orange Grove 03/01, 06/13 Orange Grove (co-located) 03/01, 06/15
NPAP Audit			None

**Table 7**  
**Collocated PM<sub>10</sub> Monitors**

<b>Method</b>	<b># Required Collocation Monitors</b>	<b># Primary Monitors</b>	<b># Collocated Monitors</b>
81102	1	7	1

**Table 8**  
**2017 Annual Summary Statistics**  
 (NAAQS: 150 µg/m<sup>3</sup> 24- Hour Average)

Site	Highest 24- Hour Value (µg/m <sup>3</sup> )	2 <sup>nd</sup> Highest 24-Hour Value (µg/m <sup>3</sup> )	Annual Average (µg/m <sup>3</sup> )
Orange Grove 0011	105	85	30.1
Corona de Tucson 0008	43	42	16.5
Santa Clara 1026	58	56	26.2
Green Valley 1030	55	54	14.1
Geronimo 1113	95	92	31.7
Tangerine 1018	49	45	19.4
South Tucson 1001	83	83	41.2

**Particulate Matter Weigh Lab**

Pima County Department of Environmental Quality operates a filter weigh lab for the processing of Pima County’s PM<sub>10</sub> and PM<sub>2.5</sub> network filters, excluding PM<sub>2.5</sub> speciation filters. This weigh lab follows all requirements set forth in **Appendix L of 40 CFR Part 50**.

**Sampling Schedule Calculation**

The design value for the Tucson area network was determined using the PM<sub>10</sub> SIP Development Guideline, Section 6.3.1 “Table look-up” procedure. Three years of sampling data, 2015 – 2017, were used. For that period, the Geronimo monitoring location was determined to have the highest design value (including possible exceptional events). That value was 85µg/m<sup>3</sup>. The ratio of this value to the 24 hour standard of 150 µg/m<sup>3</sup>, .60, was then compared to the brackets in Figure 1 from 40 CFR 58.12(e) to arrive at a minimum PM<sub>10</sub> sampling frequency of every sixth day. Geronimo is a continuous monitor sampling site.

**PM<sub>2.5</sub> MONITORING NETWORK REQUIREMENTS**

The PDEQ PM<sub>2.5</sub> network consists of six monitoring sites in eastern Pima County, Arizona, **40 CFR Part 58.20, App. D. 4.7**. PM<sub>2.5</sub> design criteria provided guidance on the required number of SLAMS monitors. Two SLAMS Federal Reference Method (FRM) monitors were initiated in January, 1999 at the Orange Grove and Children’s Park sites. In July of 2017, PDEQ installed a continuous PM<sub>2.5</sub> FEM monitor at the Orange Grove station to replace the FRM sampler. This change was implemented to provide near real –time data to the public and at the same time reduce the amount of filter-based samplers.

Pima County operates two FEM continuous and one FRM SLAMS monitor, and four non-regulatory continuous monitors.

**Table 9**  
**Design Criteria**  
**PM<sub>2.5</sub> SLAMS (FRM and FEM)**

<b>Population Pima County</b>	<b>MSA 8520 Tucson Population Category</b>	<b>Design Value Site</b>	<b>Annual Design Value Years 2015-2017</b>	<b>Daily Design Value Years 2015-2017</b>	<b>PM<sub>2.5</sub> Sites # Required</b>	<b>PM<sub>2.5</sub> Sites # Operating</b>
2010 Census 980,263	500,000 – 1,000,000	Orange Grove	6.1 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	Requires 1 SLAMS Monitor <85% of NAAQS	2 SLAMS Monitors
2017 Estimated Population 1,022,769	>1,000,000				Requires 2 SLAMS Monitors	

**Table 10**  
**Collocated PM<sub>2.5</sub> Monitors**

<b>Method</b>	<b># Required Collocation Monitors</b>	<b># Primary Monitors</b>	<b># Collocated Monitors</b>
88101 Method(s) 170/145	1	2	1

**General Statement regarding changes to the PM<sub>2.5</sub> network:**

PDEQ does not have any violating monitors or proposals to move or change any monitors at this time. In the event of proposed changes to the PM<sub>2.5</sub> network or violating monitors, PDEQ would detail all information and present it to the public for comment and would forward all comments and information to EPA for approval. After approval, PDEQ would then initiate any changes.

### Regional Transport or Background:

ADEQ operates an FEM monitor at their Alamo Lake site for regional background, and an FEM monitor at their Yuma Supersite for regional transport.

The PDEQ SLAMS FRM monitor is a filter-based low-volume sampler located at the Children's Park NCore site that collects a sample for 24 hours on a 1 in 6 day cycle for precision assessment.

The PDEQ SLAMS FEM monitors at the Orange Grove and Children's park locations collect samples on a continuous hourly basis.

Continuous PM<sub>2.5</sub> monitoring was initiated in May, 2000 at the Green Valley site using Beta Mass Attenuation (Met One BAM 1020) and a sharp-cut cyclone. This installation was a pilot project and was followed by similar installations at the Rose Elementary and Coachline monitoring sites. All three sites were a part of the EMPACT project (Environmental Monitoring for Public Access and Community Tracking), designed to provide near real-time data to the public via the internet and PDEQ web pages. A fourth monitor was added at the Geronimo site to provide fine particulate data for AQI reporting. These monitors provide automatic concentration measurement on an hourly basis, and output the reading to the site data logger, which is then polled every hour, and the data posted on the PDEQ website. The PM<sub>2.5</sub> monitors at these four sites are operated as non-regulatory, intended only to provide information to the public. They are operated under the same Quality Control and Quality Assurance protocols as regulatory monitors to assure meaningful data are provided, but they are operated using alternative instrument settings (50 minute sample, 4 minute count time) that do not conform to FEM designation parameters for PM<sub>2.5</sub>. This setting does not compromise the accuracy of the readings, and is inherent in the original design and designation of all FEM PM<sub>10</sub> BAM 1020 monitors. The data obtained by FRM, continuous, FEM and non-regulatory monitors in Tucson are submitted quarterly to the EPA's Air Quality System (AQS) database.

Pima County Department of Environmental Quality operates a filter weigh lab for the processing of Pima County's PM<sub>10</sub> and PM<sub>2.5</sub> network filters, excluding PM<sub>2.5</sub> speciation filters. This weigh lab follows all requirements set forth in **40 CFR Part 50, App. L**.

The PM<sub>2.5</sub> Chemical Speciation Trends Network was established by EPA in 1999 to determine the chemical speciation of fine particulates. PM<sub>2.5</sub> speciation monitoring began in Pima County at the Children's Park NCore location in February, 2002. The samples are analyzed for forty eight elements, cations, nitrate, sulfate, organic and elemental carbon. Analysis and reporting are completed by University of California at Davis and Sonoma Technology Inc.

### Violation History

The PM<sub>2.5</sub> standard (December 14, 2012): the annual PM<sub>2.5</sub> standard is met when the three year average of the spatially averaged annual mean is less than or equal to 12ug/m<sup>3</sup> and the 24 hour standard is met when the three year average of the 98<sup>th</sup> percentile value at each site is less than or equal to 35ug/m<sup>3</sup>. No exceedances of the annual or 24 - hour NAAQS were recorded in Tucson in 2017.

**Quality Assurance for Particulate Matter PM<sub>2.5</sub>**

All data quality assessment requirements as outlined in **40 CFR Part 58, app. A** have been met in 2017, and include both internal and EPA PEP audits, and the co-located sampler at the Children’s Park NCore site.

The accuracy of PM<sub>2.5</sub> sampling is assessed by auditing the flow rate every six months. The difference in the flow rate between the audit flow measurement and the flow indicated by the sampler is used to calculate accuracy. A combined accuracy probability interval is calculated for PM<sub>2.5</sub> along with separate probability limits for each audit concentration level for automated analyzers. Pima County reports the results of all valid precision and accuracy tests on a quarterly basis to the Air Quality System (AQS) database.

**Table 11**  
**Precision and Accuracy Tests**

<b>Protocol</b>	<b>Instrument</b>	<b>Frequency</b>	<b>Date Completed 2017</b>
Flow rate verification	Met One BAM 1020	Weekly	
Flow Rate Audit	Met One BAM 1020	Semi - Annually	Green Valley 03/01, 06/16, 09/14, 11/29 Geronimo 03/02, 06/13, 09/15, 12/01 Rose Elementary 03/10, 06/20, 09/22, 11/29 Coachline 03/03, 06/13, 09/13, 11/29 Children’s Park NCore 03/10, 06/14, 09/13, 12/01 Orange Grove 9/15, 11/29
Flow rate verification	R& P Partisol-Plus 2025 Sequential R & P 2000	Monthly	
Flow Rate Audit	R& P Partisol-Plus 2025 Sequential R& P 2000 (Co-located) Met One SASS (Speciation) URG – 3000N (Speciation)	Semi - Annually	Orange Grove 03/01, 06/13 Children’s Park NCore 03/10, 06/14, 09/12, 12/01 Children’s Park NCore (Co-located) 03/10, 06/14, Children’s Park NCore (Speciation, SASS) 03/10,06/14, 09/29, 12/26 Children’s Park NCore (Speciation, URG) 03/10, 06/14, 09/29, 12/26
NPAP Audit			Children’s Park NCore Met One BAM 1020, R& P Partisol-Plus 2025 and Orange Grove, 2/8, 5/16, 8/8 and 11/8

**Table 12**  
**Annual Summary Statistics**  
 (NAAQS PM<sub>2.5</sub>: 12 µg/m<sup>3</sup> Annual Average, 35 µg/m<sup>3</sup> 24 Hour Average)

Site	Highest 24- Hour Value (µg/m <sup>3</sup> )	2 <sup>nd</sup> Highest 24-Hour Value (µg/m <sup>3</sup> )	98 <sup>th</sup> % Value (µg/m <sup>3</sup> )	Annual Average (µg/m <sup>3</sup> )
Orange Grove (Meth. 170)	23	19	18.9	8.1
Children’s Park NCore (Meth. 170)	21	19	16.1	6.7
Green Valley	16	15	12.5	7.2
Geronimo	23	23	16.3	6.7
Rose Elementary	18	18	15.5	7.5
Coachline	21	18	15.5	7.4

**PM<sub>10</sub> - 2.5 (PM-COARSE) MONITORING NETWORK REQUIREMENTS**

Pima County is monitoring for PM- Coarse at the Children’s Park NCore station as part of the monitoring requirements for an NCore station. PM-Coarse is the arithmetic difference between separate but concurrent collocated measurements of PM<sub>10</sub> and PM<sub>2.5</sub>, also referred to as PM<sub>10-2.5</sub>. Pima County is following the requirements set forth in **40 CFR Part 50, App O**. The collocation for PM<sub>10-2.5</sub> is fulfilled by the national NCore Network.

The PM<sub>10-2.5</sub> is described on page 40.

**Table 13**  
**PM-Coarse Annual Summary Statistics**

Site	Highest 24- Hour Value (µg/m <sup>3</sup> )	2 <sup>nd</sup> Highest 24-Hour Value (µg/m <sup>3</sup> )	Annual Average (µg/m <sup>3</sup> )
Children’s Park NCore PM10 – PM2.5 (86101)	48	46	14.7

**OZONE (O<sub>3</sub>) MONITORING NETWORK REQUIREMENTS**

Ozone (O<sub>3</sub>) is currently being monitored at seven locations in Tucson and one location in Green Valley. Pima County monitors year round for ozone. EPA has revised the minimum monitoring requirements for ozone. The design criteria for ozone monitoring is described in **40 CFR Part 58, app. D, Table D-2.**

**Table 14**  
**O<sub>3</sub> Design Criteria**

<b>Population Pima County</b>	<b>MSA 8520 Tucson Population Category</b>	<b>Design Value Site</b>	<b>8- Hour Design Value (2015-2017)</b>	<b>O<sub>3</sub> Sites # Required</b>	<b>O<sub>3</sub> Sites # Operating</b>
2010 Census 980,263	500,000 – 1,000,000	Saguaro Park	0.069 ppm	Requires 2 SLAMS Monitors	8 SLAMS Monitors
2017 Estimated Population 1,022,769	>1,000,000			Same Requirement	

**Violation History**

On October 26, 2015, EPA strengthened the ozone standard from 0.075 ppm to 0.070 ppm, keeping the form of the standard as the three year average of the fourth highest daily maximum eight hour average ozone concentration. The secondary standard is identical to the primary standard. Pima County has not violated the ozone standard in 2017.

**Quality Assurance for Ozone**

All data quality assessment requirements outlined in **40 CFR Part 58, app. A,** have been met in 2017. The requirements include precision checks a minimum of every other week with a check gas range between 0.01 and 0.10 ppm with Pima County performing the precision check at 0.070 ppm, representing the highest level we are likely to achieve. The annual internal audits for accuracy are performed with four point check levels at zero, 0.035ppm, 0.055ppm, and 0.085ppm. Pima County maintains an ozone primary standard which is verified annually for accuracy by the California Air Resources Board in Sacramento.. All valid precision and accuracy tests are reported to the Air Quality System (AQS) database on a quarterly basis.

**Table 15**  
**Ozone Audit Dates 2017**

Site	Audit Dates
Craycroft & 22nd St.	6/19, 12/22
Children's Park NCore	3/14, 9/12
Fairgrounds	6/15, 12/13
Tangerine	3/3, 9/14
Saguaro Park	6/12, 12/13
Coachline	3/3, 9/13
Rose Elementary	6/21, 12/20
Green Valley	6/16, 12/13

**NPAP Ozone TTP Audit Dates 2017**

Site	Audit Date
Coachline	2/8
Craycroft & 22nd St.	5/16
Children's Park NCore	11/8

**Table 16**  
**2017 Annual Summary Statistics**  
(NAAQS: 0.070 ppm 4<sup>th</sup> highest 8- Hour Average)

Site	1st Max. 1-HR Avg (ppm)	1st Max. 8- HR Avg (ppm)	4th Max. 8- HR Avg (ppm)
Craycroft & 22nd St. 1011	0.079	0.074	0.067
Children's Park NCore 1028	0.079	0.074	0.068
Fairgrounds 1020	0.078	0.074	0.070
Tangerine 1018	0.083	0.075	0.070
Saguaro Park 0021	0.082	0.077	0.073
Coachline 1034	0.076	0.073	0.069
Rose Elementary 1032	0.076	0.073	0.066
Green Valley 1030	0.078	0.074	0.067

**CARBON MONOXIDE (CO) MONITORING NETWORK REQUIREMENTS**

Carbon Monoxide is monitored at five locations throughout the eastern Pima County. The revised requirements for Carbon Monoxide **40 CFR Part 58, app. D, 4.2** state that there is no minimum number of CO monitoring sites required. Pima County is operating under the auspices of the CO Limited Maintenance Plan (LMP) and has maintained the same number of sites in order to meet and exceed the requirements of the LMP.

**Table 17**  
**2017 CO Design Criteria**

<b>Population Pima County</b>	<b>MSA 8520 Tucson Population Category</b>	<b>1- Hour Design Value 2016-2017</b>	<b>CO Monitors # Required</b>	<b>CO Monitors # Operating</b>
2010 Census 980,263	500,000 – 1,000,000	1.8 ppm	No Specific Requirement	3 SLAMS Monitors 2 SP Monitors
2017 Estimated Population 1,022,769	>1,000,000		<sup>a</sup> Requires 1	

a. Requires one, collocated with one required Near-Road NO<sub>2</sub> monitor, per **40 CFR Part 58, app. D, 4.2.1 and 4.3.2**. Refer to Page 7 of this Plan for additional information on Near-Road Monitoring.

Motor vehicles are the primary source of carbon monoxide (CO) in the Tucson area. In spite of increased vehicular traffic, CO levels have dropped considerably since the county began monitoring in 1973. The dramatic decrease can primarily be contributed to the progress made by automobile manufacturers in meeting federally mandated tailpipe emissions standards and to the state vehicle inspection / maintenance programs.

**Violation History**

No exceedances of the National Ambient Air Quality Standards for CO were recorded in Tucson from 1989 through 2017. In January 1988, the eight - hour health standard of nine parts per million was exceeded once at two monitoring sites on the same day. The last exceedance of the eight - hour standard prior to 1988 occurred in December 1986 at a special purpose microscale location (Broadway / Craycroft). Pima County’s status for CO was reclassified to attainment with the implementation of a Limited Maintenance Plan on April 25, 2000 by the EPA. The Carbon Monoxide Limited Maintenance Plan was developed in conjunction with Pima Association of Governments and approved by EPA to help mitigate any future violations. The plan allows for additional mobile monitoring of CO at high volume intersections, and a microscale site located at Golf Links & Kolb was established, September, 2002.

**Quality Assurance for Carbon Monoxide**

All data quality assessment requirements as outlined in **40 CFR Part 58, app. A**, have been met in 2017. The precision of SLAMS automated analyzers is based on one-point precision QC checks with a minimum frequency of every two weeks, when each analyzer is challenged by a known concentration of a check gas. For CO the concentrations are between 1.0 and 10.0 ppm. The requirements include annual audits performed in-house for accuracy. Three levels are reported of the four audit point levels that are used for CO. The audit levels are: level two at 0.900 - 2.99 ppm, level three at 3.0 -7.99 ppm, level four at 8.0 -15.99 ppm and level five at 16.0 -30.99 ppm. All valid precision and accuracy tests are reported to the Air Quality System (AQS) database on a quarterly basis.

**Table 18**  
**Carbon Monoxide Audit Dates 2017**

Site	Audit Dates
Craycroft & 22nd St.	6/19, 12/27
Children’s Park NCore	3/14, 9/20
Cherry & Glenn; Seasonal	3/31, 12/22
Alvernon & 22 <sup>nd</sup> St	3/2, 9/26
Golf Links & Kolb; Seasonal	3/31, 12/21

**NPAP Carbon Monoxide TTP Audit Dates 2017**

Site	Audit Date
Craycroft & 22nd St.	5/16
Children’s Park NCore	11/8

**Table 19**  
**Annual Summary Statistics**  
(NAAQS: 35ppm 1-Hour Average, 9ppm 8- Hour Average)

Site	1st Max. 1- HR Avg (ppm)	2nd Max. 1- HR Avg (ppm)	1st Max.8- HR Avg (ppm)	2nd Max. 8- HR Avg (ppm)
Craycroft & 22nd St 1011	2.0	1.5	1.0	0.9
Alvernon & 22nd St. 1014	1.8	1.7	1.2	1.0
Cherry & Glenn 1021	1.9	1.8	1.3	1.2
Children’s Park NCore 1028	1.3	1.1	1.0	0.7
Golf Links & Kolb 1031	1.1	1.1	0.8	0.7

**NITROGEN DIOXIDE (NO<sub>2</sub>) MONITORING NETWORK REQUIREMENTS**

Nitrogen dioxide (NO<sub>2</sub>) is currently measured at two locations in Tucson. The Environmental Protection Agency has revised the NO<sub>2</sub> requirements. The **40 CFR Part 58, app. D, 4.3**, design criteria document states that there are no minimum requirements for the number of NO<sub>2</sub> monitoring sites in Pima County.

**Table 20**  
**2017 NO<sub>2</sub> Design Criteria**

<b>Population Pima County</b>	<b>MSA 8520 Tucson Population Category</b>	<b>Annual Design Value</b>	<b>1- Hour 98<sup>th</sup> Percentile Design Value</b>	<b># of Required NO<sub>2</sub> Monitors</b>	<b># of NO<sub>2</sub> Monitors</b>
2010 Census 980,263	500,000 – 1,000,000	8.42 ppb	37.1 ppb	No Requirement	2 SLAMS monitors
2017 Estimated Population 1,022,769	>1,000,000			<sup>a</sup> Require 1 microscale	1 SLAMS microscale monitor
				<sup>b</sup> Requires 1 area-wide	1 SLAMS area-wide monitor

- a. Requires one microscale near-road NO<sub>2</sub> monitor for populations over 1,000,000 per **40 CFR Part 58, app. D, 4.3.2**.
- b. Requires one area-wide NO<sub>2</sub> monitor for populations greater than 1,000,000 per **40 CFR Part 58, app. D, 4.3.3(a)**.

**Historical Nitrogen Dioxide Monitoring**

Nitrogen dioxide (NO<sub>2</sub>) levels remain well below federal standards. The Craycroft and 22<sup>nd</sup> St. monitor has been operational since 1973, measuring typical neighborhood NO<sub>2</sub> concentrations. Much of the data has been used in studies measuring the effects of NO<sub>2</sub> as a precursor to ozone formation.

A NO<sub>2</sub> analyzer was operating at the Pomona site from 1988 until 1996, when the site was closed. The site was re-established at the Children’s Park location in May, 1998, one mile east of the original Pomona Site, and allows for continued monitoring on the north side of Tucson and in the lower valley area.

A NO<sub>2</sub> analyzer was operating at the Downtown site until early 1989. From 1995 to December 2001, NO<sub>2</sub> monitoring was conducted at Saguaro National Park East to establish baseline conditions in a Class I Wilderness Area.

**Quality Assurance for NO<sub>2</sub>**

All data quality assessment requirements outlined in **40 CFR Part 58, app. A**, have been met for 2017.

The requirements include precision QC checks with a minimum frequency of every other week with a check gas range between 0.01 and 0.10 ppm and annual internal audits for accuracy with three point check levels between 0.008 - 0.019 ppm, 0.02 - 0.049 ppm, 0.05 - 0.099 ppm and 0.10 - 0.299 ppm . All valid precision and accuracy tests are reported to the Air Quality System (AQS) database on a quarterly basis. The 2017 precision and accuracy tests will be reported in ppb.

**Table 21**  
**Nitrogen Dioxide Audit Dates 2017**

Site	Audit Date
Craycroft & 22nd St.	6/19, 12/27
Children’s Park NCore	3/20, 9/21

**NPAP Nitrogen Dioxide TTP Audit Dates 2017**

Site	Audit Date
Craycroft & 22nd St.	5/16

**Table 22**  
**(Annual Summary Statistics)**

(NAAQS: 100 ppb 1- Hour Average)  
(98<sup>th</sup> percentile of the 1-hour concentrations averaged over three years)  
(53 ppb Annual Average)

Site	1st Max. 1- Hour Avg (ppb)	1 - Hour 98 <sup>th</sup> Percentile (ppb)	Annual Mean (ppb)
Craycroft & 22nd St. 1011	44.5	37.4	8.42
Children’s Park NCore 1028	42.6	36.0	8.32

**REACTIVE OXIDES OF NITROGEN (NO<sub>x</sub>)  
MONITORING NETWORK REQUIREMENTS**

Reactive Oxides of Nitrogen are currently monitored at one location in Pima County fulfilling the NCore site requirement.

**Quality Assurance for NO<sub>x</sub>**

All data quality assessment requirements outlined in **40 CFR Part 58, app. A**, have been met for 2017.

The requirements include precision QC checks with a minimum frequency of every other week with a check gas range between 0.01 and 0.10 ppm and annual internal audits for accuracy with three point check levels between 0.008 - 0.019 ppm, 0.02 – 0.049 ppm and 0.05 – 0.099 ppm . All valid precision and accuracy tests are reported to the Air Quality System (AQS) database on a quarterly basis. The 2017 precision and accuracy tests will be reported in ppb.

**Table 23**  
**Reactive Oxides of Nitrogen Audit Dates 2017**

Site	Audit Dates
Children’s Park NCore	3/20,9/21

**NPAP Reactive Oxides of Nitrogen TTP Audit Dates 2017**

Site	Audit Dates
None	None

**Table 24**  
**Annual Summary Statistics**

Site	1st Max. 1- Hour Avg (ppb)	Annual Mean (ppb)
Children’s Park NCore 1028	90.5	9.8

**SULFUR DIOXIDE (SO<sub>2</sub>) MONITORING NETWORK REQUIREMENTS**

Sulfur Dioxide (SO<sub>2</sub>) is currently monitored at one location in Pima County. On October 1, 2010, an SO<sub>2</sub> trace monitor was added at the Children’s Park NCore location as required for an NCore site. The SO<sub>2</sub> monitor at the Craycroft & 22<sup>nd</sup> St. site was discontinued on December 31, 2010.

The Environmental Protection Agency has revised the SO<sub>2</sub> requirements. The design criteria indicated in **40 CFR Part 58, app. D, 4.4**, states that there are no minimum requirements for the number of SO<sub>2</sub> monitoring sites.

**Table 25**  
**2017 SO<sub>2</sub> Design Criteria**

<b>Population Pima County</b>	<b>MSA 8520 Tucson Population Category</b>	<b>Total SO<sub>2</sub> Based on 2014 NEI (tons/year)</b>	<b>Population Weighted Emissions Index (a)</b>	<b>1- HR Design Value (ppb)</b>	<b># of Required SO<sub>2</sub> Monitors</b>	<b># of SO<sub>2</sub> Monitors</b>
2010 Census 980,263	500,000 – 1,000,000	1483	1516.7	2.6	No Requirement	1 NCore SLAMS
2017 Estimated Population 1,022,769	>1,000,000				No Requirement	

(a) - million persons - tons/year

**Historical Sulfur Dioxide Monitoring**

Ambient concentrations of sulfur dioxide (SO<sub>2</sub>) in Tucson have historically remained well below all federal standards, and in recent years have been extremely low. With new trace SO<sub>2</sub> monitoring we can now get more accurate readings at very low levels. There are no major stationary sources of SO<sub>2</sub> in the Tucson air planning area.

**Quality Assurance for SO<sub>2</sub>**

All data quality assessment requirements outlined in **40 CFR Part 58, app. A**, have been met for 2017.

The requirements include precision checks every other week with a check gas range between 0.01 and 0.10 ppm and annual internal audits for accuracy with three point check levels between 0.050 - 0.0999 ppm, 0.0080 – 0.0199 ppm and 0.0200 – 0.0499 ppm. All valid precision and accuracy tests are reported to the Air Quality System (AQS) database on a quarterly basis.

**Table 26**  
**Sulfur Dioxide Audit Dates 2017**

Site	Audit Dates
Children's Park NCore	3/14, 9/21

**NPAP Sulfur Dioxide TTP Audit Dates 2017**

Site	Audit Dates
Children's Park NCore	11/08

**Table 27**  
**Annual Summary Statistics**  
**Sulfur Dioxide NAAQS**

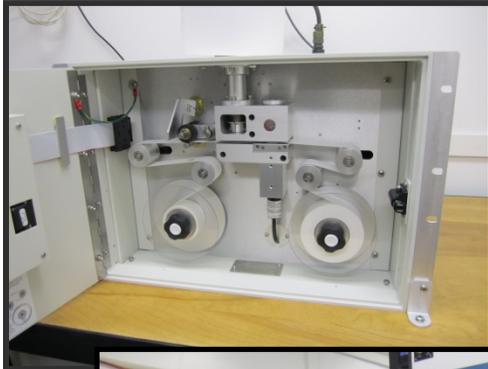
(75 ppb 1- Hour Average)

(99<sup>th</sup> percentile of the 1- hour daily maximum concentrations, averaged over 3 years)

Site	1st Max. 1- Hour Avg (ppb)	1-Hour 99th Percentile (ppb)	Annual Mean (ppb)
Children's Park NCore 1028	3.8	1.9	0.1

**V. DETAILED SITE AND MONITOR INFORMATION**

**CHILDREN’S PARK NCore: AQS # 040191028**



<b>Site Description</b>	
<b>Site Name</b>	<b>CHILDREN’S PARK NCore</b>
<b>AQS ID</b>	040191028
<b>Address</b>	400 W. River Road, Tucson, AZ
<b>Latitude / Longitude</b>	32.295150 / -110.982300
<b>Elevation</b>	2286
<b>Surrounding landscape</b>	Gravel in walled compound, dirt parking lot, dry river bed
<b>Location description</b>	This site is located at the confluence of the Rillito River and Pima Wash, a natural low spot in the local topography. Single - family residences and a popular county park with exercise trails extend to the north, northwest, and west, respectively. Heavy commercial usage dominates to the south and east, including large shopping malls and automobile dealerships.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>CHILDREN'S PARK NCore</b>
<b>Pollutant</b>	<b>PM<sub>2.5</sub> PRIMARY MONITOR START DATE 7/1/2017</b>
Method Code	170
Number of monitors	1
Parameter code / POC	88101 / 3
Basic monitoring objective / Statement of Purpose	NAAQS Comparison / Population Exposure
Site Type	Population Exposure
Instrument Manufacturer / Model	Met One / BAM 1020
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical Lab	n/a
Monitor type	SLAMS
Monitor Network Affiliation	NCore
Scale	Neighborhood
Number of daily observations	356
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.3 meters
Degrees of unrestricted air flow	360
Distance from supporting structure	1.81 meters (to roof top)
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	16 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	1.83 meters
Nearest roads distance & direction to monitor / ADT	Arizona State Route 77 runs north - south 0.5 kilometers to the east, providing six lanes of heavily used arterial routing with a 2012 ADT of 44,000.
	River Road runs east – west 0.5 kilometers to the north, with a 2016 ADT of 34,857
Suitable for comparison to PM <sub>2.5</sub> Annual NAAQS	YES
Site meets 40 CFR 58, Appx. A,C,D,E	YES
MSA	Tucson, AZ 8520

**Comments:** Continuous PM<sub>2.5</sub> sampling began at this neighborhood scale site on January 23, 2011.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>CHILDREN'S PARK NCore</b>
<b>Pollutant</b>	<b>PM<sub>2.5</sub> PRIMARY      CLOSED 6/30/2017</b>
Method Code	118
Number of monitors	1
Parameter code/ POC	88101 /1
Basic monitoring objective / Statement of Purpose	NAAQS Comparison / Population Exposure
Site Type	Population Exposure
Instrument Manufacturer / Model	R & P/ Partisol-Plus 2025
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical Lab	PDEQ
Monitor type	SLAMS
Monitor Network Affiliation	NCore
Scale	Neighborhood
Number of daily observations	59
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Every three days
Probe height	3.1 meters above the ground on a platform located in a city water well site.
Degrees of unrestricted air flow	290, from 280 to 210, includes predominant wind direction from 135 (SE)
Distance from supporting structure	2.08 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	8.0 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	1.2 meters /Every twelve days (after April 27, 2013 every six days) / R& P 2025
Nearest roads distance & direction to monitor / ADT	Arizona State Route 77 runs north - south 0.5 kilometers to the east, providing six lanes of heavily used arterial routing with a 2012 ADT of 44,000.
	River Road runs east – west 0.5 kilometers to the north, with a 2016 ADT of 34,857
Suitable for comparison to PM <sub>2.5</sub> Annual NAAQS	Yes
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** Sampling began in 1999.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>CHILDREN'S PARK NCore</b>
<b>Pollutant</b>	<b>PM<sub>2.5</sub> COLLOCATED</b>
Method Code	118
Number of monitors	1
Parameter code/ POC	88101 / POC 2
Basic monitoring objective / Statement of Purpose	To comply with ambient air quality protocols and standards in order for data to be used for comparison to the NAAQS
Site Type	Population Exposure
Instrument Manufacturer / Model	R & P / Partisol-Plus 2025
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical Lab	PDEQ
Monitor type	SLAMS
Monitor Network Affiliation	NCore
Scale	Neighborhood
Number of daily observations	59
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Every twelve days; after April 27, 2013 every six days
Probe height	4.4 meters above the ground on a platform on top of shelter
Degrees of unrestricted air flow	360
Distance from supporting structure	2.44 meters (to roof top)
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	17 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	1.8 meters /Every twelve days (after April 27, 2013 every six days) / R& P 2025
Nearest roads distance & direction to monitor / ADT	Arizona State Route 77 runs north - south 0.5 kilometers to the east, providing six lanes of heavily used arterial routing with a 2012 ADT of 44,000.
	River Road runs east – west 0.5 kilometers to the north, with a 2016 ADT of 34,857
Suitable for comparison to PM <sub>2.5</sub> Annual NAAQS	Yes
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** This is the collocated monitor for Children's Park NCore PM<sub>2.5</sub>.

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<b>Site Name</b>	<b>CHILDREN'S PARK NCore</b>
<b>Pollutant</b>	<b>PM COARSE PM<sub>10</sub>-PM<sub>2.5</sub> (OTHER)</b>
Method Code	176
Number of monitors	2
Parameter code / POC	86101/ 1
Basic monitoring objective / Statement of Purpose	Research support / NCore requirement
Site Type	Population exposure
Instrument Manufacturer / Model	R & P / Partisol-Plus 2025 Sampler Pair
Quarterly flow rate Audit dates	03/15, 06/27, 09/16, 12/16
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical Lab	PDEQ
Monitor type	SLAMS
Monitor Network Affiliation	NCore
Scale	Neighborhood
Number of daily observations	85
Number / Dates of exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Every sixth day
Probe height	4.4 meters above the ground on a platform on top of shelter
Degrees of unrestricted air flow	360
Distance from supporting structure	2.44 meters (to roof top)
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	15 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ schedule / Collocated monitor type	1.4 m / 1 in 6 days / n/a
Nearest roads distance & direction to monitor /ADT	Arizona State Route 77 runs north - south 0.5 kilometers to the east, providing six lanes of heavily used arterial routing with a 2012 ADT of 44,000.
	River Road runs east – west 0.5 kilometers to the north, with a 2016 ADT of 34,857
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** The subtraction method for determining the coarse PM fraction was initiated in 2011, using a matched pair of Partisol- Plus samplers.

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<b>Site Name</b>	<b>CHILDREN'S PARK NCore</b>
<b>Pollutant</b>	<b>PM<sub>2.5</sub> SPECIATION</b>
Method code	810
Number of monitors	1
Parameter code / POC	Speciated parameters/ 5
Basic monitoring objective / Statement of purpose	Research support for the Chemical Speciation Network (CSN)
Site type	Population Exposure
Instrument Manufacturer / Model	Met One/ Super SASS
FRM/FEM/ARM/other	Other
Collecting agency / Reporting agency	<b>Pima County Department of Environmental Quality/ RTP</b>
Analytical lab	<b>UCD</b>
Monitor type	SLAMS
Monitor Network Affiliation	CSN Supplemental ; NCore
Scale	Neighborhood
Number of daily observations	80
Number / Dates of exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Every three days
Probe height	3 meters above the ground on a platform located in a city water well site.
Degrees of unrestricted air flow	290, from 290 to 200, includes predominant wind direction from 135 (SE)
Distance from supporting structure	1.83 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	SASS 5.2 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	Collocation is fulfilled by the National NCore network.
Nearest roads distance & direction to monitor / ADT	Arizona State Route 77 runs north - south 0.5 kilometers to the east, providing six lanes of heavily used arterial routing with a 2012 ADT of 44,000.
	River Road runs east – west 0.5 kilometers to the north, with a 2016 ADT of 34,857
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** Sampling began for PM<sub>2.5</sub> Speciation in 2000.

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<b>Site Name</b>	<b>CHILDREN'S PARK NCore</b>
<b>Pollutant</b>	<b>CARBON MONOXIDE</b>
Method code	554
Number of monitors	1
Parameter code / POC	42101/ 1
Basic monitoring objective / Statement of purpose	NAAQS comparison / NCore requirement
Site type	Population Exposure
Instrument Manufacturer / Model	Thermo Scientific / 48i -TLE
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	Special Purpose Monitor / SLAMS January, 2017
Monitor Network Affiliation	NCore
Scale	Neighborhood
Number of hourly observations	8725
Number / Dates of standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.25 meters above the ground on a shelter in a city water well site
Probe material / Residence time	FEP Teflon/ 11.84 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.70 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	18.6 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	Arizona State Route 77 runs north - south 0.5 kilometers to the east, providing six lanes of heavily used arterial routing with a 2012 ADT of 44,000.
	River Road runs east – west 0.5 kilometers to the north, with a 2016 ADT of 34,857
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** This site began monitoring for Carbon Monoxide in October, 1998.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>CHILDREN'S PARK NCore</b>
<b>Pollutant</b>	<b>OZONE</b>
Method code	047
Number of monitors	1
Parameter code / POC	44201/ 1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Maintenance of long term ozone monitoring at this location
Site type	Population Exposure
Instrument Manufacturer / Model	Thermo Scientific / 49i
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	n/a
Monitor type	SLAMS
Monitor Network Affiliation	NCore
Scale	Neighborhood
Number of hourly observations	8743
Number / Dates of 8-hour standard exceedances in 2017	One / 06/15
Historical exceedances	One in 1999; One in 2002; One in 2014
Current Sampling frequency / Season	Continuous
Probe height	4.25 meters above the ground on a shelter located in a city water well site.
Probe material / Residence time	FEP Teflon / 12.3 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.73 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	15.2 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ schedule/collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	Arizona State Route 77 runs north - south 0.5 kilometers to the east, providing six lanes of heavily used arterial routing with a 2012 ADT of 44,000.
	River Road runs east – west 0.5 kilometers to the north, with a 2016 ADT of 34,857
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** This site began August of 1997 and is a relocation (1.5 kilometers, northeast) of the Pomona site. This site is representative of a neighborhood scale in the north central region of the air planning area where ozone levels are generally expected to be high due to the low altitude and the prevailing southeasterly winds.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>CHILDREN'S PARK NCore</b>
<b>Pollutant</b>	<b>NITROGEN DIOXIDE</b>
Method code	074
Number of monitors	1
Parameter code / POC	42602/ 1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Maintenance of long term monitoring at this location
Site type	Highest Concentration
Instrument Manufacturer / Model	Thermo Scientific / 42i
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	Special Purpose / SLAMS January, 2017
Monitor Network Affiliation	Proposed NCore
Scale	Neighborhood / Area Wide Monitoring
Number of hourly observations	8668
Number / Dates of standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.25 meters above the ground on a shelter located in a city water well site
Probe material / Residence time	FEP Teflon / 6.1 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.70 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	18.6 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ schedule/collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	Arizona State Route 77 runs north - south 0.5 kilometers to the east, providing six lanes of heavily used arterial routing with a 2012 ADT of 44,000.
	River Road runs east – west 0.5 kilometers to the north, with a 2016 ADT of 34,857
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** The site began monitoring for Nitrogen Dioxide in May, 1998, and is a relocation (1.5 kilometers, northeast) of the Pomona site.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>CHILDREN'S PARK NCore</b>
<b>Pollutant</b>	<b>REACTIVE OXIDES OF NITROGEN (NO<sub>y</sub>)</b>
Method code	674
Number of monitors	1
Parameter code / POC	42600/ 1
Basic monitoring objective / Statement of purpose	Research support / Comply with NCore requirements
Site type	Population Exposure
Instrument Manufacturer / Model	Thermo Scientific / 42i - Y
FRM/FEM/ARM/other	n/a
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	SLAMS
Monitor Network Affiliation	NCore
Scale	neighborhood
Number of daily observations	8648
Number / Dates of standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / season	Continuous
Probe height	10.0 meters above the ground on a shelter located in a city water well site
Probe material / Residence time	FEP Teflon / 0.6 seconds to converter; 5.68 seconds from converter to analyzer.
Degrees of unrestricted air flow	360
Distance from supporting structure	0.36 meters probe to mast; 7.31 meters probe to shelter
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	24.3 meters, horizontal, inlet well above tree tops
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ schedule/collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	Arizona State Route 77 runs north - south 0.5 kilometers to the east, providing six lanes of heavily used arterial routing with a 2012 ADT of 44,000.
	River Road runs east – west 0.5 kilometers to the north, with a 2016 ADT of 34,857
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** The site began monitoring for reactive oxides of nitrogen in October, 2010 for the NCore site requirements, using a Thermo 42i-y instrument with remote converter mounted at the requisite 10 meters.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>CHILDREN'S PARK NCore</b>
<b>Pollutant</b>	<b>SULFUR DIOXIDE</b>
Method code	560
Number of monitors	1
Parameter code / POC	42401/ 1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Comply with NCore requirements
Site type	Population Exposure
Instrument Manufacturer / Model	Thermo Scientific / 43i - TLE
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	SLAMS
Monitor Network Affiliation	NCore
Scale	neighborhood
Number of hourly observations	8679
Number / Dates of 1-hour standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.25 meters above the ground on a shelter located in a city water well site
Probe material / Residence time	FEP Teflon / 10.79 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.70 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	18.6 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	Arizona State Route 77 runs north - south 0.5 kilometers to the east, providing six lanes of heavily used arterial routing with a 2012 ADT of 44,000.
	River Road runs east – west 0.5 kilometers to the north, with a 2016 ADT of 34,857
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** Sulfur Dioxide sampling began October 1, 2010 to conform to NCore site requirements.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>CHILDREN'S PARK NCore</b>
<b>Pollutant</b>	<b>METEOROLOGICAL DATA</b>
Method code	061, 040, 011
Number of monitors	4
Parameter code / POC	61103, 61104, 62101, 62201
Basic monitoring objective / Statement of purpose	Research support / Source determination for criteria pollutants
Site type	n/a
Instrument Manufacturer / Model	WD/WS –MET ONE 50.5; Temp/RH – VAISALA HMP45AC
FRM/FEM/ARM/other	n/a
Collecting agency / Reporting agency	PDEQ, PDEQ
Analytical lab	n/a
Monitor type	n/a
Scale	n/a
Number of daily observations	365
Number / Dates of 24-hour standard exceedances in 2017	n/a
Historical exceedances	n/a
Current Sampling frequency / Season	continuous
Probe height	WD/WS – 10m ; Temp/RH – 4.25m
Degrees of unrestricted air flow	360
Distance from supporting structure	n/a
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	WD/WS – 16.5m ; Temp/RH – 12.8m
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors / Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	Arizona State Route 77 runs north - south 0.5 kilometers to the east, providing six lanes of heavily used arterial routing with a 2012 ADT of 44,000.
	River Road runs east – west 0.5 kilometers to the north, with a 2016 ADT of 34,857
Site meets 40 CFR 58, Appx. A,C,D,E	YES
MSA	Tucson, AZ 8520

**GREEN VALLEY: AQS # 040191030**



<b>Site Description</b>	
<b>Site Name</b>	<b>GREEN VALLEY</b>
<b>AQS ID</b>	040191030
<b>Address</b>	601 N. La Canada Drive, Green Valley, AZ
<b>Latitude / Longitude</b>	31.87952 / -110.996440
<b>Elevation</b>	2910
<b>Surrounding landscape</b>	Dirt, sparse desert vegetation
<b>Location description</b>	This site is situated in a residential / commercial area. Open pit copper mines and tailings ponds are located four kilometers to the west of the community.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>GREEN VALLEY</b>
<b>Pollutant</b>	<b>PM<sub>10</sub></b>
Method code	122
Number of monitors	1
Parameter code / POC	81102/1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Provide air pollution data to the public in a timely manner
Site type	Population Exposure
Instrument Manufacturer / Model	Met One/ BAM 1020
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	Special Purpose/ SLAMS
Scale	Neighborhood
Number of hourly observations	8509
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	April 9, 2013; July 25, 2014.
Current Sampling frequency / Season	Continuous
Probe height	4.25 meters above the ground on a shelter near the Pima County Government Center.
Degrees of unrestricted air flow	360
Distance from supporting structure	1.63 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	12.5 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors / Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	100 meters west of La Canada with a 2016 ADT of 11,193 0.5 kilometers west of Interstate 19 with a 2011 ADT of 31,000
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
CBSA	Green Valley, AZ 46060
MSA	Tucson, AZ 8520

**Comments:** This site is fifty kilometers south of Downtown Tucson in the retirement community of Green Valley. PM<sub>10</sub> monitoring commenced in September 1989 at the established TSP site there. ASARCO and Freeport-McMoRan operate several open pit mines and tailings ponds just west of the community. The monitoring objective is to monitor the population exposure to this potentially significant source of airborne particulates. The monitor was relocated in February 2001, approximately 1 kilometer north of the original Esperanza site, to the Pima County Government Center at 601 N. La Canada Drive. The new site is considered a continuation of the original site. PM<sub>10</sub> levels were below the health standards in the years 1989 through 2012. In 2013, there was one exceedance resulting from an intense regional dust storm that may be considered as an Exceptional Event, dependent on approval from EPA.

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<b>Site Name</b>	<b>GREEN VALLEY</b>
<b>Pollutant</b>	<b>PM<sub>2.5</sub></b>
Method code	733
Number of monitors	1
Parameter code / POC	88501/3 Anticipated change to 88502 January, 2018
Basic monitoring objective / Statement of purpose	Provide air pollution data to the public in a timely manner / Population Exposure
Site type	Population Exposure
Instrument Manufacturer / Model	Met-One / BAM 1020
FRM/FEM/ARM/other	other
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	OTHER
Scale	Neighborhood
Number of hourly observations	8635
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.25 meters above the ground on a shelter near the Pima County Government Center.
Degrees of unrestricted air flow	360
Distance from supporting structure	2.03 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	10.7 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors / Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	100 meters west of La Canada with a 2016 ADT of 11,193
	0.5 kilometers west of Interstate 19 with a 2011 ADT of 31,000
Suitable for comparison to PM <sub>2.5</sub> Annual NAAQS	n/a
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
CBSA	Green Valley, AZ 46060
MSA	Tucson, AZ 8520

**Comments:** This site is fifty kilometers south of Downtown Tucson in the retirement community of Green Valley. This monitor was initially installed in May of 2000 as part of the Environmental Monitoring for Public Access and Community Tracking (EMPACT) program. Pima County began reporting the PM<sub>2.5</sub> data to EPA July, 2003.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>GREEN VALLEY</b>
<b>Pollutant</b>	<b>OZONE</b>
Method code	047
Number of monitors	1
Parameter code / POC	44201/1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Provide air pollution data to the public in a timely manner
Site type	Population Exposure
Instrument Manufacturer / Model	Thermo Scientific / 49i
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	SLAMS January, 2017
Scale	Neighborhood
Number of hourly observations	8719
Number / Dates of 8-hour standard exceedances in 2017	1/ June 15
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	3.3 meters above the ground on a shelter near the Pima County Government Center.
Probe material / Residence time	FEP Teflon / 12.83 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.4 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	10.8 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	100 meters west of La Canada with a 2016 ADT of 11,193 0.5 kilometers west of Interstate 19 with a 2011 ADT of 31,000
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
CBSA	Green Valley, AZ 46060
MSA	Tucson, AZ 8520

**Comments:** This site is fifty kilometers south of Downtown Tucson in the retirement community of Green Valley. This site was initially established in April of 2002 as part of the Environmental Monitoring for Public Access and Community Tracking (EMPACT) program. Pima County began reporting the ozone data to EPA July, 2003.

**CORONA de TUCSON: AQS # 040190008**



Site Description	
<b>Site Name</b>	<b>CORONA de TUCSON</b>
<b>AQS ID</b>	040190008
<b>Address</b>	22001 S. Houghton Road, Tucson, AZ
<b>Latitude / Longitude</b>	32.00474 / -110.79260
<b>Elevation</b>	3078
<b>Surrounding landscape</b>	Gravel within enclosure; dirt, sparse desert vegetation surrounding
<b>Location description</b>	This site is situated in an undisturbed natural desert area.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>CORONA de TUCSON</b>
<b>Pollutant</b>	<b>PM<sub>10</sub></b>
Method code	126
Number of monitors	1
Parameter code / POC	81102/ 1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Upwind Background
Site type	Upwind Background
Instrument Manufacturer/Model	R&P 2000
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	PDEQ
Monitor type	SLAMS
Scale	Regional
Number of daily observations	57
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Every six days
Probe height	2.08 meters (to ground)
Degrees of unrestricted air flow	360
Distance from supporting structure	2.08 meters (to ground/ free standing)
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	23.4 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	1.6 kilometers west of Houghton Road with a 2016 ADT of 9,477
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** This site is the only regional scale monitor in the network. PM<sub>10</sub> sampling was started here in September 1988, in conjunction with existing total suspended particulates (TSP) sampling. This site exhibits the lowest network concentrations. TSP sampling was discontinued in May 1989. Hi - Vol sampling for PM<sub>10</sub> was substituted with dichotomous sampling during the last quarter of 1989 in support of the state sponsored Tucson PM<sub>10</sub> Source Apportionment Study. Hi - Vol PM<sub>10</sub> sampling resumed in January 1990. Low -Vol PM<sub>10</sub> R& P 2000 sampling began in March, 2006.

**ORANGE GROVE: AQS # 040190011**



<b>Site Description</b>	
<b>Site Name</b>	<b>ORANGE GROVE</b>
<b>AQS ID</b>	040190011
<b>Address</b>	3401 W. Orange Grove Road, Tucson, AZ
<b>Latitude / Longitude</b>	32.32255 / -111.037700
<b>Elevation</b>	2234
<b>Surrounding landscape</b>	Gravel in fenced compound, dirt road shoulders
<b>Location description</b>	This site is situated in a residential area with light commerce and industry. There is an asphalt batch plant and redi-mix concrete operations with a large gravel pit less than three kilometers to the west of the site in the Santa Cruz River bed area.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>ORANGE GROVE</b>
<b>Pollutant</b>	<b>PM<sub>10</sub> PRIMARY</b>
Method code	127
Number of monitors	2
Parameter code / POC	81102/ 2 <b>Closed 6/30/2017</b>
Basic monitoring objective / Statement of purpose	NAAQS Comparison / Highest Concentration
Site type	Highest Concentration
Instrument Manufacturer/Model	R&P 2025 Sequential
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ /PDEQ
Analytical lab	PDEQ
Monitor type	SLAMS
Scale	Neighborhood
Number of daily observations	164
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	Exceedances of the 24 – hour standard: two in 1988, four in 1999, one in 2002, one in 2003, one in 2009 ; one in 2014
Current Sampling frequency / Season	Every day
Probe height	2.2 meters above the ground in a city water well site
Degrees of unrestricted air flow	360
Distance from supporting structure	n/a
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	19.2 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors / Schedule / Collocated monitor type	1.2 meters /Every day; reported every 6 <sup>th</sup> day/ R& P 2025 Sequential
Nearest roads distance & direction to monitor / ADT	37 meters west of Camino de la Tierra with a 2015 ADT of 3,713 and 70 meters south of Orange Grove Road with a 2015 ADT of 26,928 2 kilometers east of Interstate 10 with a 2012 ADT of 110,000
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** Established in February 1985, this site is the oldest of the PM<sub>10</sub> monitoring sites in the network. Orange Grove was chosen as the initial PM<sub>10</sub> monitoring site and the design value site for Group II in the Tucson air planning area based on historically high TSP data. This neighborhood scale site is located near the confluence of the Santa Cruz, Rillito, and Canada del Oro Rivers in the Tucson Valley. This site is situated near the freeway and railway tracks, therefore high PM<sub>10</sub> values are expected here. Dichotomous sampling was started at this site in July of 1993. The dichotomous ran in co-location with a HI-VOL- SA/1200 model from 1993 to 1996. The site was converted to dichotomous only operations on October 1, 1996 continuing until December 1998. Hi-Vol sampling resumed in January 1999, but was replaced with co-located low volume sequential samplers in 2004.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>ORANGE GROVE</b>
<b>Pollutant</b>	<b>PM<sub>10</sub> PRIMARY</b>
Method code	122
Number of monitors	1
Parameter code / POC	81102/ 5 <b>Start date 7/1/2017</b>
Basic monitoring objective / Statement of purpose	NAAQS Comparison / Highest Concentration
Site type	Highest Concentration
Instrument Manufacturer/Model	Met One/BAM1020
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ /PDEQ
Analytical lab	PDEQ
Monitor type	SLAMS
Scale	Neighborhood
Number of daily observations	184
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	Exceedances of the 24 – hour standard: two in 1988, four in 1999, one in 2002, one in 2003, one in 2009 ; one in 2014
Current Sampling frequency / Season	Continuous
Probe height	2.1 meters above the ground in a city water well site
Degrees of unrestricted air flow	360
Distance from supporting structure	2.1 meters (to ground)
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	19.2 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors / Schedule / Collocated monitor type	1.2 meters /Every day; reported every 6 <sup>th</sup> day/ R& P 2025 Sequential
Nearest roads distance & direction to monitor / ADT	37 meters west of Camino de la Tierra with a 2015 ADT of 3,713 and 70 meters south of Orange Grove Road with a 2015 ADT of 26,928
	2 kilometers east of Interstate 10 with a 2012 ADT of 110,000
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** Established in February 1985, this site is the oldest of the PM<sub>10</sub> monitoring sites in the network. Orange Grove was chosen as the initial PM<sub>10</sub> monitoring site and the design value site for Group II in the Tucson air planning area based on historically high TSP data. This neighborhood scale site is located near the confluence of the Santa Cruz, Rillito, and Canada del Oro Rivers in the Tucson Valley. This site is situated near the freeway and railway tracks, therefore high PM<sub>10</sub> values are expected here. Dichotomous sampling was started at this site in July of 1993. The dichotomous ran in co-location with a HI-VOL- SA/1200 model from 1993 to 1996. The site was converted to dichotomous only operations on October 1, 1996 continuing until December 1998. Hi-Vol sampling resumed in January 1999, but was replaced with co-located low volume sequential samplers in 2004. In 2017, the low volume sequential samplers were replaced with Met One Bam 1020 samplers to provide near real time data to the public and at the same time reduce the filter based sampling.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>ORANGE GROVE</b>
<b>Pollutant</b>	<b>PM<sub>10</sub> COLLOCATED</b>
Method code	127
Number of monitors	2
Parameter code / POC	81102 / 4 <b>Closed June 30, 2017</b>
Basic monitoring objective / Statement of purpose	To comply with ambient air quality protocols and standards in order for data to be used for comparison to the NAAQS
Site type	Highest Concentration
Instrument Manufacturer/Model	R&P 2025 Sequential
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ /PDEQ
Analytical lab	PDEQ
Monitor type	SLAMS
Scale	Neighborhood
Number of daily observations	147
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	One in 2002; One in 2009; One in 2014
Current Sampling frequency / Season	Every six days
Probe height	2.2 meters above the ground in a city water well site
Degrees of unrestricted air flow	360
Distance from supporting structure	n/a
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	19.2 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors / Schedule / Collocated monitor type	1.2 meters /Every day ; reported every 6 <sup>th</sup> day/ R& P 2025 Sequential
Nearest roads distance & direction to monitor / ADT	37 meters west of Camino de la Tierra with a 2015 ADT of 3,713 and 70 meters south of Orange Grove Road with a 2015 ADT of 26,928
	2 kilometers east of Interstate 10 with a 2012 ADT of 110,000
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

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<b>Site Name</b>	<b>ORANGE GROVE</b>
<b>Pollutant</b>	<b>PM<sub>2.5</sub></b>
Method code	145
Number of monitors	1
Parameter code / POC	88101/ 1 <b>Closed 6/30/2017</b>
Basic monitoring objective / Statement of purpose	NAAQS Comparison / Highest expected concentration
Site type	Population Exposure
Instrument Manufacturer / Model	R&P Partisol-Plus 2025
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	PDEQ
Monitor type	SLAMS
Scale	Neighborhood
Number of daily observations	61
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Every three days
Probe height	2.1 meters above the ground in a city water well site
Degrees of unrestricted air flow	360
Distance from supporting structure	n/a
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	20.3 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors / Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	37 meters west of Camino de la Tierra with a 2015 ADT of 3,713 and 70 meters south of Orange Grove Road with a 2015 ADT of 26,928
	2 kilometers east of Interstate 10 with a 2012 ADT of 110,000
Suitable for comparison to PM <sub>2.5</sub> Annual NAAQS	Yes
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** PM<sub>2.5</sub> sampling began at this neighborhood scale site in January, 1999. It is located near the confluence of the Santa Cruz, Rillito and Canada del Oro Rivers in the Tucson Valley, toward the northwest end of the air planning area. The site is situated near a freeway and railroad tracks.

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<b>Site Name</b>	<b>ORANGE GROVE</b>
<b>Pollutant</b>	<b>PM<sub>2.5</sub></b>
Method code	170
Number of monitors	1
Parameter code / POC	88101/ 3 <b>Started 7/1/2017</b>
Basic monitoring objective / Statement of purpose	NAAQS Comparison / Highest expected concentration
Site type	Population Exposure
Instrument Manufacturer / Model	Met One/ BAM 1020
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	PDEQ
Monitor type	SLAMS
Scale	Neighborhood
Number of daily observations	173
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	2.1 meters above the ground in a city water well site
Degrees of unrestricted air flow	360
Distance from supporting structure	n/a
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	20.3 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors / Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	37 meters west of Camino de la Tierra with a 2015 ADT of 3,713 and 70 meters south of Orange Grove Road with a 2015 ADT of 26,928
	2 kilometers east of Interstate 10 with a 2012 ADT of 110,000
Suitable for comparison to PM <sub>2.5</sub> Annual NAAQS	Yes
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** PM<sub>2.5</sub> sampling began at this neighborhood scale site in January, 1999. It is located near the confluence of the Santa Cruz, Rillito and Canada del Oro Rivers in the Tucson Valley, toward the northwest end of the air planning area. The site is located near a freeway and railroad tracks. In 2017, the low volume sequential samplers were replaced with Met One Bam 1020 samplers to provide near real time data to the public and at the same time reduce the filter based sampling.

**SOUTH TUCSON: AQS # 040191001**



<b>Site Description</b>	
<b>Site Name</b>	<b>SOUTH TUCSON</b>
<b>AQS ID</b>	040191001
<b>Address</b>	1601 S. 6 <sup>th</sup> Avenue, South Tucson, AZ
<b>Latitude / Longitude</b>	32.20195 / -110.967900
<b>Elevation</b>	2420
<b>Surrounding landscape</b>	Primarily paved parking lots; gravel and desert landscaping surrounding building.
<b>Location description</b>	This site is situated in a dense residential / commercial area. There are numerous unpaved alleys and lots in the vicinity.

**Comments:** From January 1985 to September 1988 this site approached or exceeded TSP standards. PM<sub>10</sub> sampling began here in September 1988. On March 8, 1993, the samplers were relocated from the original site to the new South Tucson Governmental Complex, which is less than two blocks north and across S. 6<sup>th</sup> Avenue. Levels at this location are representative of area - wide emissions patterns with high population exposure. The annual means for 1989 through 1999 were below the health standard. The 24 - hour NAAQS was exceeded twice in 1999 and 2002. Two co-located PM<sub>10</sub> samplers were operational at this site from June 1991 to June 1999. Co-location of the PM<sub>10</sub> samplers was discontinued when a third sampler was added and every day sampling began on June 23, 1999. In March, 2004, the Hi -Vol samplers were replaced with co-located Low -Vol sequential samplers. In 2017, the low volume sequential samplers were replaced with Met One Bam 1020 samplers to provide near real time data to the public and at the same time reduce the filter based sampling.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>SOUTH TUCSON</b>
<b>Pollutant</b>	<b>PM<sub>10</sub> PRIMARY</b>
Method code	127
Number of monitors	2
Parameter code / POC	81102 /1 <b>Closed 9/30/2017</b>
Basic monitoring objective / Statement of purpose	NAAQS Comparison / Population Exposure
Site type	Population Exposure
Instrument Manufacturer / Model	R&P 2025 Sequential
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	PDEQ
Monitor type	SLAMS
Scale	Neighborhood
Number of daily observations	258
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	Exceedances of the 24 – hour standard: two in 1999; two in 2002; one in 2009; two in 2013
Current Sampling frequency / Season	Every day
Probe height	6.9 meters above the ground on the roof of the South Tucson Governmental Complex Building.
Degrees of unrestricted air flow	360
Distance from supporting structure	2.2 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	13.2 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	1.7 meters/ Every day; reported every 6 <sup>th</sup> day/ R&P 2025 Sequential
Nearest roads distance & direction to monitor / ADT	41 meters east of South 6 <sup>th</sup> Avenue with a 2017 ADT of 12,212
	528 meters south of 22 <sup>nd</sup> Street with a 2015 ADT of 28,374
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

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<b>Site Name</b>	<b>SOUTH TUCSON</b>
<b>Pollutant</b>	<b>PM<sub>10</sub> COLLOCATED</b>
Method code	127
Number of monitors	2
Parameter code / POC	81102 / 2 <b>Closed 9/30/2017</b>
Basic monitoring objective / Statement of purpose	To comply with ambient air quality protocols and standards in order for data to be used for comparison to the NAAQS
Site type	Population Exposure
Instrument Manufacturer / Model	R&P 2025 Sequential
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	PDEQ
Monitor type	SLAMS
Scale	Neighborhood
Number of daily observations	167
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	One in 1999; one in 2013; one in 2014
Current Sampling frequency / Season	Every six days
Probe height	6.9 meters above the ground on the roof of the South Tucson Governmental Complex Building.
Degrees of unrestricted air flow	360
Distance from supporting structure	2.2 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	15.4 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	1.7 meters/ Every day; reported every 6 <sup>th</sup> day/ R&P 2025 Sequential
Nearest roads distance & direction to monitor / ADT	41 meters east of South 6 <sup>th</sup> Avenue with a 2017 ADT of 12,212 528 meters south of 22 <sup>nd</sup> Street with a 2015 ADT of 28,374
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**MONITORING INFORMATION**

<b>Site Name</b>	<b>SOUTH TUCSON</b>
<b>Pollutant</b>	<b>PM<sub>10</sub> Primary</b>
Method code	122
Number of monitors	1
Parameter code / POC	81102 /5 <b>Started 10/1/2017</b>
Basic monitoring objective / Statement of purpose	NAAQS Comparison / Population Exposure
Site type	Population Exposure
Instrument Manufacturer / Model	Met One / BAM 1020
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	PDEQ
Monitor type	SLAMS
Scale	Neighborhood
Number of daily observations	91
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	Exceedances of the 24 – hour standard: two in 1999; two in 2002; one in 2009; two in 2013
Current Sampling frequency / Season	Continuous
Probe height	6.9 meters above the ground on the roof of the South Tucson Governmental Complex Building.
Degrees of unrestricted air flow	360
Distance from supporting structure	2.2 meters (to roof)
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	13.2 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	41 meters east of South 6 <sup>th</sup> Avenue with a 2017 ADT of 12,212 528 meters south of 22 <sup>nd</sup> Street with a 2015 ADT of 28,374
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**SANTA CLARA SCHOOL: AQS# 040191026**



Site Description	
<b>Site Name</b>	<b>SANTA CLARA SCHOOL</b>
<b>AQS ID</b>	040191026
<b>Address</b>	6910 S. Santa Clara Avenue, Tucson, AZ
<b>Latitude / Longitude</b>	32.125950 / -110.982600
<b>Elevation</b>	2540
<b>Surrounding landscape</b>	Large flat roof, paved parking lots and streets, grass playground.
<b>Location description</b>	This site is situated in a Southwest Tucson residential district.

**Comments:** This site is located south of Interstate 10 and east of Interstate 19 and provides a representative neighborhood scale site on Tucson’s south side. Being near the fringe of the city limits, this site should track transport values that develop with a southerly wind from a combination of desert, agricultural land, and silt flood plain that is found on the Tohono O’Odham Indian Reservation (San Xavier district) 500 meters south of the site. The Hi- Vol sampler was replaced in April, 2006, with a Low- Vol sampler. A co – located monitor was added February, 2016.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>SANTA CLARA SCHOOL</b>
<b>Pollutant</b>	<b>PM<sub>10</sub></b>
Method code	126
Number of monitors	1
Parameter code / POC	81102 /1
Basic monitoring objective / Statement of purpose	NAAQS Comparison / Population Exposure
Site type	Population Exposure
Instrument Manufacturer / Model	R&P 2000
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	PDEQ
Monitor type	SLAMS January, 2017
Scale	Neighborhood
Number of daily observations	58
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	Exceedances of the 24 – hour standard: One on 10/27/2008
Current Sampling frequency / Season	Every six days
Probe height	6.45 meters above the ground on the roof of the Santa Clara Elementary School.
Degrees of unrestricted air flow	360
Distance from supporting structure	2.01 meters (to roof)
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	23.9 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors / Schedule / Collocated monitor type	1.7 meters
Nearest roads distance & direction to monitor / ADT	450 meters east of Interstate 19 with a 2012 ADT of 38,000
	800 meters south of Valencia Road with a 2017 ADT of 43,516
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**MONITORING INFORMATION**

<b>Site Name</b>	<b>SANTA CLARA SCHOOL</b>
<b>Pollutant</b>	<b>PM<sub>10</sub> COLLOCATED</b>
Method code	126
Number of monitors	1
Parameter code / POC	81102 /2
Basic monitoring objective / Statement of purpose	To comply with ambient air quality protocols and standards in order for data to be used for comparison to the NAAQS
Site type	Population Exposure
Instrument Manufacturer / Model	R&P 2000
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	PDEQ
Monitor type	SLAMS January, 2017
Scale	Neighborhood
Number of daily observations	29
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	Exceedances of the 24 – hour standard: One on 10/27/2008
Current Sampling frequency / Season	Every twelve days
Probe height	6.45 meters above the ground on the roof of the Santa Clara Elementary School.
Degrees of unrestricted air flow	360
Distance from supporting structure	2.01 meters (to roof)
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	23.9 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors / Schedule / Collocated monitor type	1.7 meters
Nearest roads distance & direction to monitor / ADT	450 meters east of Interstate 19 with a 2012 ADT of 38,000
	800 meters south of Valencia Road with a 2017 ADT of 43,516
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**TANGERINE: AQS # 040191018**



Previous



Current

<b>Site Description</b>	
<b>Site Name</b>	<b>TANGERINE</b>
<b>AQS ID</b>	040191018
<b>Address</b>	12101 N. Camino de Oeste, Tucson, AZ
<b>Latitude / Longitude</b>	32.425250 / -111.063500
<b>Elevation</b>	2638
<b>Surrounding landscape</b>	Dirt, sparse desert vegetation to the east; high density, tri-level and multi-unit apartments directly west of station.
<b>Location description</b>	This site has been situated in a relatively undisturbed natural desert area for most of its existence, but residential development in recent years have been built to within 35 meters to the west, and low density residential developments are encroaching from the south, east and north to within 3 kilometers to 5 kilometers.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>TANGERINE</b>
<b>Pollutant</b>	<b>PM<sub>10</sub></b>
Method code	126
Number of monitors	1
Parameter code / POC	81102/ 1
Basic monitoring objective / Statement of purpose	NAAQS Comparison / General Background
Site type	General Background
Instrument Manufacturer / Model	R&P 2000
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	PDEQ
Monitor type	SLAMS
Scale	Urban
Number of daily observations	59
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Every six days
Probe height	4.5 meters above the ground on a shelter on Tucson's far northwest side
Degrees of unrestricted air flow	360
Distance from supporting structure	2.01 meters (to roof)
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	11.28 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors / schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	Tangerine Road runs approximately east – west 70 meters south of the site with a 2016 ADT of 14,824
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

\* See comment on page 3, PDEQ's anticipated modifications to network in 2018

**Comments:** The primary objective of this site is to assess background concentrations and to assess transport impact from outlying sources during exceptional wind events. As part of the urban haze/visibility study, dichotomous samplers were installed at this site in July 1993. PM<sub>10</sub> data from these samplers was used to supplement the existing PM<sub>10</sub> network from October 1996 to December 1998, when the dichotomous samplers were relocated and a Hi-Vol sampler was installed to continue PM<sub>10</sub> monitoring. In 2005, the Hi-Vol PM<sub>10</sub> sampler was replaced with a Low –Vol R& P 2000 sampler.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>TANGERINE</b>
<b>Pollutant</b>	<b>OZONE</b>
Method code	047
Number of monitors	1
Parameter code / POC	44201 / 1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Highest Concentration
Site type	Highest Concentration
Instrument Manufacturer / Model	Thermo Scientific / 49i
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	n/a
Monitor type	SLAMS January, 2017
Scale	Urban
Number of hourly observations	8731
Number / Dates of 8-hour standard exceedances in 2017	3/ June 15, June 16 and April 20
Historical exceedances	One in 2002; One in 2009; One in 2014
Current Sampling frequency / Season	Continuous
Probe height	3.75 meters above the ground on a shelter on Tucson's far northwest side.
Probe material / Residence time	FEP Teflon / 9.53 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.24 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	11.99 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	Tangerine Road runs approximately east – west 70 meters south of the site with a 2016 ADT of 14,824
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** Tangerine was established in November 1989. Ozone concentrations at this site have been the highest in the network on occasion. This may be due to the prevailing southeasterly winds transporting ozone from the urban area. Concentrations remain high well into the night and early morning.

**GERONIMO: AQS # 040191113**



<b>Site Description</b>	
<b>Site Name</b>	<b>GERONIMO</b>
<b>AQS ID</b>	040191113
<b>Address</b>	2498 N. Geronimo Tucson, AZ
<b>Latitude / Longitude</b>	32.251840 / -110.965300
<b>Elevation</b>	2398
<b>Surrounding landscape</b>	Dirt, dead shrubs, unpaved road shoulders
<b>Location description</b>	This site is situated in a residential area in a City of Tucson water well site.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>GERONIMO</b>
<b>Pollutant</b>	<b>PM<sub>10</sub></b>
Method code	122
Number of monitors	1
Parameter code / POC	81102 / 1
Basic monitoring objective / Statement of purpose	NAAQS Comparison / Provide air pollution data to the public in a timely manner
Site type	Population Exposure
Instrument Manufacturer / Model	Met One / BAM 1020
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	SLAMS January, 2017
Scale	Neighborhood
Number of hourly observations	8561
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	One on 7/22/2009; one on 04/09/2013; one on 07/25/2014
Current Sampling frequency / Season	Continuous
Probe height	4.6m
Degrees of unrestricted air flow	320, from 150 to 110, does not include predominant wind direction from 135(SE)
Distance from supporting structure	1.83 meters (to roof)
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	9.6 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	154.8 meters north of Grant Road with a 2016 ADT 33,210
	617.6 meters east of Stone Avenue with a 2012 ADT 21,000
	397.5 meters west of North 1 <sup>st</sup> Avenue with a 2015 ADT 37,033
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** This monitor was initially installed in July 1, 2007 for Air Quality Index reporting using a continuous monitor. This is a Special Purpose site situated in a residential area, monitoring for population exposure. There was one exceedance on April 9, 2013 that may be considered as an Exceptional Event dependent on the approval from EPA.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>GERONIMO</b>
<b>Pollutant</b>	<b>PM<sub>2.5</sub></b>
Method code	733
Number of monitors	1
Parameter code / POC	88501 /3 Anticipated change to 88502 January, 2018
Basic monitoring objective / Statement of purpose	Provide air pollution data to the public in a timely manner / Population Exposure
Site type	Population Exposure
Instrument Manufacturer / Model	Met One / BAM 1020
FRM/FEM/ARM/other	Other
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	n/a
Monitor type	Other
Scale	Neighborhood
Number of hourly observations	8571
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.6 meters
Degrees of unrestricted air flow	320, from 150 to 110, does not include predominant wind direction from 135(SE)
Distance from supporting structure	1.98 meters (to roof)
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	9.8 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	154.8 meters north of Grant Road with a 2016 ADT 33,210
	617.6 meters east of Stone Avenue with a 2012 ADT 21,000
	397.5 meters west of North 1 <sup>st</sup> Avenue with a 2015 ADT 37,033
Suitable for comparison to PM <sub>2.5</sub> Annual NAAQS	n/a
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** This monitor was initially installed in July of 2001 for Air Quality Index reporting using a continuous monitor. Pima County began reporting the PM<sub>2.5</sub> data to EPA July, 2003. This is site situated in a residential area, monitoring for population exposure.

**ROSE ELEMENTARY: AQS # 040191032**



<b>Site Name</b>
<b>AQS ID</b>
<b>Address</b>
<b>Latitude / Longitude</b>
<b>Elevation</b>
<b>Surrounding landscape</b>
<b>Location description</b>

**MONITORING INFORMATION**

<b>Site Name</b>	<b>ROSE ELEMENTARY</b>
<b>Pollutant</b>	<b>PM<sub>2.5</sub></b>
Method code	733
Number of monitors	1
Parameter code / POC	88501 /3 Anticipated change to 88502 January, 2018
Basic monitoring objective / Statement of purpose	Provide air pollution data to the public in a timely manner / Population Exposure
Site type	Population Exposure
Instrument Manufacturer / Model	Met One / BAM 1020
FRM/FEM/ARM/other	Other
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	Other
Scale	Neighborhood
Number of hourly observations	8255
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.9 meters above the ground on the roof of a shelter located on the grounds of Rose Elementary School
Degrees of unrestricted air flow	360
Distance from supporting structure	2.39 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	11.8 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	12 <sup>th</sup> Avenue 235 meters to the east with a 2011 ADT of 22,000
	Ajo Way 528 meters to the north with a 2015 ADT of 23, 797
	Interstate 19 runs north-south half a kilometer to the west with a 2012 ADT 80,000
Suitable for comparison to PM <sub>2.5</sub> Annual NAAQS	n/a
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** This monitor was initially installed in October of 2000 as part of the Environmental Monitoring for Public Access and Community Tracking (EMPACT) program. This area was identified as having higher than normal number of pediatric asthma cases. Pima County began reporting the PM<sub>2.5</sub> data to EPA July, 2003.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>ROSE ELEMENTARY</b>
<b>Pollutant</b>	<b>OZONE</b>
Method code	047
Number of monitors	1
Parameter code / POC	44201/ 1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Provide air pollution data to the public in a timely manner
Site type	Population Exposure
Instrument Manufacturer / Model	Thermo Scientific / 49i
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ/PDEQ
Analytical lab	n/a
Monitor type	SLAMS January, 2017
Scale	Neighborhood
Number of hourly observations	8633
Number / Dates of 8-hour standard exceedances in 2017	1/ June15
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.1 meters above the ground on the roof of a shelter located on the grounds of Rose Elementary School.
Probe material / Residence time	FEP Teflon / 11.3 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.63 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	11.4 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	12 <sup>th</sup> Avenue 235 meters to the east with a 2011 ADT of 22,000
	Ajo Way 528 meters to the north with a 2015 ADT of 23, 797
	Interstate 19 runs north-south half a kilometer to the west with a 2012 ADT 80,000
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** This site was initially established in October of 2000 as part of the Environmental Monitoring for Public Access and Community Tracking (EMPACT) program. This area was identified as having higher than normal number of pediatric asthma cases. Pima County began reporting the ozone data to EPA July, 2003.

**COACHLINE: AQS # 040191034**



<b>Site Description</b>	
<b>Site Name</b>	<b>COACHLINE</b>
<b>AQS ID</b>	040191034
<b>Address</b>	9597 N. Coachline, Tucson, AZ
<b>Latitude / Longitude</b>	32.380820 / -111.127160
<b>Elevation</b>	2104
<b>Surrounding landscape</b>	Dirt within walled compound, residential neighborhood
<b>Location description</b>	The site is situated in a residential neighborhood. The normally dry Santa Cruz River runs northwest between the Interstate and the neighborhood and contributes to airborne dust through previous deposition of fine clay soils throughout the floodplain. This area has previously been used for farming and ranching, and sand and gravel operations are still in operation five to ten kilometers upstream to the southwest.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>COACHLINE</b>
<b>Pollutant</b>	<b>PM<sub>2.5</sub></b>
Method code	733
Number of monitors	1
Parameter code / POC	88501/ 3 Anticipated change to 88502 January, 2018
Basic monitoring objective / Statement of purpose	Provide air pollution data to the public in a timely manner / Population Exposure
Site type	Population Exposure
Instrument Manufacturer / Model	Met One / BAM 1020
FRM/FEM/ARM/other	Other
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	Other
Scale	Neighborhood
Number of hourly observations	8490
Number / Dates of 24-hour standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.9 meters above the ground on a shelter on Tucson's far northwest side
Degrees of unrestricted air flow	280, from 250 to 170, includes predominant wind direction from 135 (SE)
Distance from supporting structure	2.39 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	9.41 meters
Distance from trees	6.6 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	approximately 1.25 kilometers west of Interstate 10 with a 2012 ADT of 77,000
	.5 kilometer north of Twin Peaks Road 2015 ADT of 5,992
Suitable for comparison to PM <sub>2.5</sub> Annual NAAQS	n/a
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** This monitor was initially installed in March of 2001 as part of the Environmental Monitoring for Public Access and Community Tracking (EMPACT) program. This area was identified as having higher than normal number of pediatric asthma cases. Pima County began reporting the PM<sub>2.5</sub> data to EPA July, 2003.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>COACHLINE</b>
<b>Pollutant</b>	<b>OZONE</b>
Method code	047
Number of monitors	1
Parameter code / POC	44201 / 1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Provide air pollution data to the public in a timely manner
Site type	Population Exposure
Instrument Manufacturer/Model	Thermo Scientific / 49i
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	SLAMS January, 2017
Scale	Neighborhood
Number of hourly observations	8364
Number / Dates of 8-hour standard exceedances in 2017	2/ June 14 and June 15
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	3.4 meters above the ground on a shelter on Tucson's far northwest side
Probe material / Residence time	FEP Teflon / 11.41 seconds
Degrees of unrestricted air flow	310, from 230 to 180, includes predominant wind direction from 135 (SE)
Distance from supporting structure	1.3 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	7 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	approximately 1.25 kilometers west of Interstate 10 with a 2012 ADT of 77,000
	.5 kilometer north of Twin Peaks Road 2015 ADT of 5,992
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** This site was initially established in April of 2001 as part of the Environmental Monitoring for Public Access and Community Tracking (EMPACT) program. This area was identified as having higher than normal number of pediatric asthma cases. Pima County began reporting the ozone data to EPA July, 2003.

**CRAYCROFT & 22<sup>ND</sup> ST.: AQS # 040191011**



<b>Site Description</b>	
<b>Site Name</b>	<b>CRAYCROFT &amp; 22<sup>ND</sup> ST.</b>
<b>AQS ID</b>	040191011/ 1
<b>Address</b>	1237 S. Beverly Avenue, Tucson, AZ
<b>Latitude / Longitude</b>	32.204420 / -110.878067
<b>Elevation</b>	2582
<b>Surrounding landscape</b>	Dirt, ephemeral weeds
<b>Location description</b>	This site is situated in a predominately residential eastside area with commercial activity lining nearby arterial routes. There is a large covered water reservoir north of the location.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>CRAYCROFT &amp; 22<sup>ND</sup> ST.</b>
<b>Pollutant</b>	<b>CARBON MONOXIDE</b>
Method code	054
Number of monitors	1
Parameter code / POC	42101 /1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Population Exposure
Site type	Population Exposure
Instrument Manufacturer / Model	TECO / 48i-TLE
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	SLAMS
Scale	Neighborhood
Number of hourly observations	8633
Number / Dates of standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.4 meters above the ground on the roof of a shelter located in a city water well site.
Probe material / Residence time	FEP Teflon / 12.14 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.3 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	22.0 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	260 meters west is Craycroft Road with a 2015 ADT of 25,760 260 meters north is 22 <sup>nd</sup> Street with a 2015 ADT of 43,289
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** This site is one of the oldest in the monitoring network, originally established in 1973, and has operated continuously to the present.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>CRAYCROFT &amp; 22<sup>ND</sup> ST.</b>
<b>Pollutant</b>	<b>OZONE</b>
Method code	047
Number of monitors	1
Parameter code / POC	44201 /1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Maintenance of long term monitoring at this location
Site type	Population Exposure
Instrument Manufacturer / Model	Thermo Scientific / 49i
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	SLAMS
Scale	Neighborhood
Number of hourly observations	8275
Number / Dates of 8-hour standard exceedances in 2017	1/ June 15
Historical exceedances	One in 1997, 1999, 2002, 2011
Current Sampling frequency / Season	Continuous
Probe height	4.4 meters above the ground on the roof of a shelter located in a city water well site.
Probe material / Residence time	FEP Teflon / 9.06 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.3 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	22.0 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	260 meters west is Craycroft Road with a 2015 ADT of 25,760 260 meters north is 22 <sup>nd</sup> Street with a 2015 ADT of 43,289
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** This site is one of the oldest in the monitoring network, originally established in 1973, and operated continuously to the present.

Pima County 2017 Ambient Air Monitoring Network Plan

<b>Site Name</b>	<b>CRAYCROFT &amp; 22<sup>ND</sup> ST.</b>
<b>Pollutant</b>	<b>NITROGEN DIOXIDE</b>
Method code	074
Number of monitors	1
Parameter code / POC	42602 /1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Maintenance of long term monitoring at this location
Site type	Population Exposure
Instrument Manufacturer / Model	Thermo Scientific / 42i
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	SLAMS
Scale	Neighborhood / Area Wide Monitoring
Number of hourly observations	8604
Number / Dates of standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.4 meters above the ground on the roof of a shelter located in a city water well site
Probe material / Residence time	FEP Teflon / 10.32 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.3 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	22.0 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	260 meters west is Craycroft Road with a 2015 ADT of 25,760 260 meters north is 22 <sup>nd</sup> Street with a 2015 ADT of 43,289
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** This site is one of the oldest in the monitoring network, originally established in 1973, and operated continuously to the present.

**ALVERNON & 22<sup>ND</sup> ST.: AQS # 040191014**



<b>Site Description</b>	
<b>Site Name</b>	<b>ALVERNON &amp; 22<sup>ND</sup> ST.</b>
<b>AQS ID</b>	040191014
<b>Address</b>	3895 E. 22 <sup>nd</sup> Street, Tucson, AZ
<b>Latitude / Longitude</b>	32.207390 / -110.910650
<b>Elevation</b>	2516
<b>Surrounding landscape</b>	Gravel in walled compound, paved streets and sidewalks
<b>Location description</b>	This site is situated in a commercial area near a high traffic count intersection. A large regional park is located to the northwest of the site.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>ALVERNON &amp; 22<sup>ND</sup> ST.</b>
<b>Pollutant</b>	<b>CARBON MONOXIDE</b>
Method code	054
Number of monitors	1
Parameter code / POC	42101 / 1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Highest Concentration
Site type	Highest Concentration
Instrument Manufacturer / Model	TECO / 48i-TLE
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	SLAMS
Scale	Microscale
Number of hourly observations	8744
Number / Dates of standard exceedances in 2017	0
Historical exceedances	Years: 1975 - 1986 and 1988
Current Sampling frequency / Season	Continuous
Probe height	3.8 meters above the ground attached to a wall near 22 <sup>nd</sup> Street at a Tucson Water well site
Probe material / Residence time	FEP Teflon / 52 seconds
Degrees of unrestricted air flow	320 , from 5 to 325 includes predominant wind direction from 135 (SE; directly from intersection of 22 <sup>nd</sup> St. and Alvernon Way).
Distance from supporting structure	1.15 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	2.6 meters / Height of obstruction above probe = 0.9 meters
Distance from trees	10.7 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	60 meters west of Alvernon Way with a 2017 ADT of 24,455 10 meters north of 22 <sup>nd</sup> Street with a 2015 ADT of 37,351
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** The site was relocated in October, 2001 to a Tucson Water well site 50 meters west of the original location. The move was necessitated by an intersection improvement project and anticipated construction on the northwest corner. The shelter was moved again in January, 2004, to a different corner within the well site, and the probe was attached to a wall in virtually the same location as before the shelter was moved, so airflow from the intersection would remain unrestricted. Alvernon and 22<sup>nd</sup> St. continues to measure the highest CO concentrations in the network. The prevailing morning- hour southeasterly winds usually disperse CO generated in the intersection. During stagnant conditions, especially during the winter inversion formation, CO generated in the intersection has a longer residence time. Although population exposure is limited at this location, Alvernon & 22<sup>nd</sup> St. is representative of worst-case intersections in Tucson. This site has been operating continuously since 1975. No exceedances of the eight-hour health standard were recorded in 1989 through 2017.

**CHERRY & GLENN: AQS # 040191021**



<b>Site Name</b>
<b>AQS ID</b>
<b>Address</b>
<b>Latitude / Longitude</b>
<b>Elevation</b>
<b>Surrounding landscape</b>
<b>Location description</b>

**MONITORING INFORMATION**

<b>Site Name</b>	<b>CHERRY &amp; GLENN</b>
<b>Pollutant</b>	<b>CARBON MONOXIDE</b>
Method code	054
Number of monitors	1
Parameter code / POC	42101 /1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Population Exposure
Site type	Population Exposure
Instrument Manufacturer / Model	Thermo Scientific / 48c
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	n/a
Monitor type	Special Purpose
Scale	Neighborhood
Number of hourly observations	4154
Number / Dates of standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous / Seasonal monitor operation from Jan 1- March 31 and Oct.1 – Dec. 31
Probe height	4.9 meters above the ground on a shelter in a city water well site.
Probe material / Residence time	FEP Teflon / 5.65 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.1meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	8.7 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	0.8 kilometers north of Grant Road with a 2015 ADT of 22,736
	0.5 kilometers west of Campbell Avenue with a 2014 ADT of 35,740
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** Cherry & Glenn was established as a special purpose site in February 1989, in order to assess the CO levels at a distance (less than 1 kilometer) from a typical high-volume intersection. This site has historically recorded very low levels of CO during the summer months. Consequently, in 2001, seasonal monitoring began with sampling from October through March.

**GOLF LINKS & KOLB: AQS # 040191031**



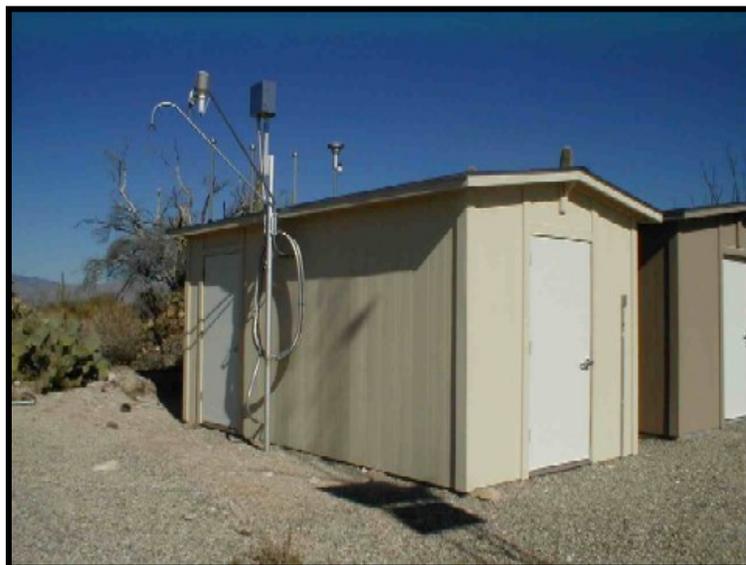
<b>Site Name</b>
<b>AQS ID</b>
<b>Address</b>
<b>Latitude / Longitude</b>
<b>Elevation</b>
<b>Surrounding landscape</b>
<b>Location description</b>

**MONITORING INFORMATION**

<b>Site Name</b>	<b>GOLF LINKS &amp; KOLB</b>
<b>Pollutant</b>	<b>CARBON MONOXIDE</b>
Method code	054
Number of monitors	1
Parameter code / POC	42101 / 1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Highest Concentration
Site type	Highest Concentration
Instrument Manufacturer / Model	Thermo Scientific/ 48C
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	n/a
Monitor type	Special Purpose
Scale	Microscale
Number of hourly observations	4330
Number / Dates of standard exceedances in 2017	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous / Seasonal Monitor operating Jan. 1- March 31 and Oct. 1 – Dec. 31
Probe height	3.0 meters above the ground on a pole located next to Kolb road
Probe material / Residence time	FEP Teflon / 39.62 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	2.97 meters (to ground)
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	2.7 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	100 meters south of Golf Links, with a 2017 ADT of 30,581 2 meters east of Kolb Road, with a 2015 ADT of 40,034
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** Golf Links & Kolb was established as a special purpose site in September 2002, as part of the Carbon Monoxide Limited Maintenance Plan. Inlet placement qualifies it as a microscale site, and sighting it on the southeastern quarter of the intersection provides an opposite wind direction compliment to the Alvernon & 22<sup>nd</sup> St. site. This site is operated seasonally, from October through March.

**SAGUARO PARK EAST: AQS # 040190021**



<b>Site Description</b>	
<b>Site Name</b>	<b>SAGUARO PARK EAST</b>
<b>AQS ID</b>	040190021
<b>Address</b>	3905 South Old Spanish Trail, Tucson, AZ
<b>Latitude / Longitude</b>	32.174538 / -110.737116
<b>Elevation</b>	3089
<b>Surrounding landscape</b>	Natural desert
<b>Location description</b>	This site is situated in the National Park. The nearby light residential area has no significant local sources of ozone precursors.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>SAGUARO PARK EAST</b>
<b>Pollutant</b>	<b>OZONE</b>
Method code	047
Number of monitors	1
Parameter code / POC	44201 /1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Highest Concentration
Site type	Maximum ozone concentration
Instrument Manufacturer / Model	Thermo Scientific / 49i
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	n/a
Monitor type	SLAMS
Scale	Neighborhood
Number of hourly observations	8749
Number / Dates of 8-hour standard exceedances in 2017	5/ May 12, June 14 and 15, April 20 and 21
Historical exceedances	one in 1999, 2003, 2005, 2008; three in 2011; one in 2014
Current Sampling frequency / Season	Continuous
Probe height	4.1 meters above the ground in Saguaro National Park East on the roof of a shelter that is one kilometer south of the administration building.
Probe material / Residence time	FEP Teflon / 8.78 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.22 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a – (trailer was removed)
Distance from trees	9.14 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	80 meters east to Old Spanish Trail with a 2017 ADT of 2,177 105 meters south of Escalante with a 2015 ADT of 2,740
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** The Saguaro National Park site has been active since 1982. The operation of the site was taken over by the National Park Service in 1987. The Park Service returned operation of the site to Pima County in 1993. Geographically, Saguaro National Park is on the eastern edge of the Tucson metropolitan area. Ozone data from this site has been used to study how the levels of ozone affect natural vegetation.

**FAIRGROUNDS: AQS # 040191020**



<b>Site Description</b>	
<b>Site Name</b>	<b>FAIRGROUNDS</b>
<b>AQS ID</b>	040191020
<b>Address</b>	11330 S. Houghton Road, Tucson, AZ
<b>Latitude / Longitude</b>	32.047680 / -110.774350
<b>Elevation</b>	3078
<b>Surrounding landscape</b>	Natural desert vegetation on lag gravel
<b>Location description</b>	This site is situated in an undisturbed natural desert area to the north and east. The Pima County Fairgrounds and drag strip are located directly southwest of the site.

**MONITORING INFORMATION**

<b>Site Name</b>	<b>FAIRGROUNDS</b>
<b>Pollutant</b>	<b>OZONE</b>
Method code	047
Number of monitors	1
Parameter code / POC	44201 / 1
Basic monitoring objective / Statement of purpose	NAAQS comparison / Background
Site type	Background
Instrument Manufacturer / Model	Thermo Scientific / 49i
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	n/a
Monitor type	SLAMS January, 2017
Scale	Urban
Number of hourly observations	8638
Number / Dates of 8-hour standard exceedances in 2017	3/ April 20, June 14 and 15
Historical exceedances	One in 2008 and 2011
Current Sampling frequency / Season	Continuous
Probe height	3.6 meters above the ground on a shelter on Tucson's far southeast side
Probe material / Residence time	FEP Teflon / 8.53 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.22 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	n/a
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	n/a
Nearest roads distance & direction to monitor / ADT	53 meters west of Houghton road with a 2015 ADT of 11,752
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

**Comments:** Fairgrounds was established in October 1989. Ozone concentrations at this site have been the highest in the network on occasion. This may be due to the afternoon wind shift that takes place almost daily in the Tucson basin. The wind may be transporting urban ozone precursors or stable ozone to the far east end of the Tucson air planning area.

**ATTACHMENT A**

**EPA Approval of Pima County Department of Environmental Quality  
2016 Ambient Air Monitoring Network Plan**



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**REGION IX**

**75 Hawthorne Street**

**San Francisco, CA 94105-3901**

**OCT 30 2017**

Ms. Ursula Nelson  
Director, Pima County Department of Environmental Quality  
33 North Stone Avenue, Suite 700  
Tucson, Arizona 85701-1429

Dear Ms. Nelson:

Thank you for your submission of the Pima County Department of Environmental Quality's (PDEQ's) *2016 Ambient Air Monitoring Network Plan* on June 26, 2017. We have reviewed the submitted document based on the requirements set forth under 40 CFR 58. Based on the information provided in the plan, the U.S. Environmental Protection Agency (EPA) approves all portions of the network plan except those specifically identified below.

Please note that we cannot approve portions of the annual network plan for which the information in the plan is insufficient to judge whether the requirement has been met, or for which the information, as described, does not meet the requirements as specified in 40 CFR 58.10 and the associated appendices. EPA Region 9 also cannot approve portions of the plan for which the EPA Administrator has not delegated approval authority to the regional offices. Accordingly, the first enclosure (*A. Annual Monitoring Network Plan Items where EPA is Not Taking Action*) provides a listing of specific items of your agency's annual monitoring network plan where EPA is not taking action. The second enclosure (*B. Additional Items Requiring Attention*) is a listing of additional items in the plan that EPA wishes to bring to your agency's attention.

The third enclosure (*C. Annual Monitoring Network Plan Checklist*) is the checklist EPA used to review your plan for overall items that are required to be included in the annual network plan along with our assessment of whether the plan submitted by your agency addresses those requirements.

The first two enclosures highlight a subset of the more extensive list of items reviewed in the third enclosure. All comments conveyed via this letter (and enclosures) should be addressed (through corrections within the plan, additional information being included, or discussion) in next year's annual monitoring network plan.

If you have any questions regarding this letter or the enclosed comments, please feel free to contact me at (415) 947-4134 or Jennifer Williams at (415) 972-3938.

Sincerely,

A handwritten signature in blue ink, appearing to read "Gwen Yoshimura", with a long horizontal flourish extending to the right.

Gwen Yoshimura, Manager  
Air Quality Analysis Office

Enclosures:

- A. Annual Monitoring Network Plan Items where EPA is Not Taking Action
- B. Additional Items Requiring Attention
- C. Annual Monitoring Network Plan Checklist

cc (via email): Mike Draper, PDEQ

## A. Annual Monitoring Network Plan Items where EPA is Not Taking Action

We are not acting on the portions of annual network plans where either EPA Region 9 lacks the authority to approve specific items of the plan, or EPA has determined that a requirement is either not met or information in the plan is insufficient to judge whether the requirement has been met.

- EPA identified items in your agency's annual monitoring network plan where a requirement was not being met or information in the plan was insufficient to judge whether the requirement was being met based on 40 CFR 58.10 and the associated appendices. Therefore, we are not acting on the following items:

Item	Checklist Row	Issue
Parameter code for each monitor	70	Not Meeting Requirement
Distance from the drip line of closest tree(s)	80	Not Meeting Requirement
Distance from obstructions not on roof	79	Insufficient to Judge
Distance from supporting structure	77	Not Meeting Requirement and Insufficient to Judge
Method code and description	71	Insufficient to Judge

Additional information for each of these items may be found for the row listed in column 2, in the third enclosure (*C. Annual Monitoring Network Plan Checklist*).

## **B. Additional Items Requiring Attention**

- [Items 56, 57, 58] According to 2014-2016 census estimates, the Tucson MSA is required to implement near-road NO<sub>2</sub>, CO, and PM<sub>2.5</sub> monitoring. Please continue to work with EPA to determine the appropriate timeline associated with this requirement.

## C. ANNUAL MONITORING NETWORK PLAN CHECKLIST

(Updated February 9, 2017)

Year: 2017

Agency: Pima County Department of Environmental Quality

40 CFR 58.10(a)(1) requires that each Annual Network Plan (ANP) shall provide for the documentation of the establishment and maintenance of an air quality surveillance system that consists of a network of SLAMS monitoring stations that can include FRM, FEM, and ARM monitors that are part of SLAMS, NCore, CSN, PAMS, and SPM stations.

40 CFR 58.10(a)(1) further directs that, "The plan shall include a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E of this part, where applicable. The Regional Administrator may require additional information in support of this statement." On this basis, review of the ANPs is based on the requirements listed in 58.10 along with those in Appendices A, C, D, and E.

EPA Region 9 will not take action to approve or disapprove any item for which Part 58 grants approval authority to the Administrator rather than the Regional Administrators, but we will do a check to see if the required information is included and correct. The items requiring approval by the Administrator are: PAMS, NCore, and Speciation (STN/CSN).

Please note that this checklist summarizes many of the requirements of 40 CFR Part 58, but does not substitute for those requirements, nor do its contents provide a binding determination of compliance with those requirements. The checklist is subject to revision in the future and we welcome comments on its contents and structure.

Key:

White	meets the requirement
Yellow	requirement is not met, or information is insufficient to make a determination. Action requested in next year's plan or outside the ANP process (items listed in Enclosure A).
Green	item requires attention in order to improve next year's plan (items listed in Enclosure B).

	<b>ANP requirement</b>	<b>Citation within 40 CFR 58<sup>1</sup></b>	<b>Was the information submitted?<sup>2</sup> If yes, page #s.</b>	<b>Does the information provided<sup>3</sup> meet the requirement?<sup>4</sup></b>	<b>Notes</b>
<b>GENERAL PLAN REQUIREMENTS</b>					
1.	Submit plan by July 1 <sup>st</sup>	58.10 (a)(1)	Yes	Yes	
2.	30-day public comment / inspection period	58.10 (a)(1); 58.10 (c)	Yes	Yes	Public comment period started on May 22, 2017.
3.	Statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E, where applicable	58.10 (a)(1)	Yes Pages 35-90	Yes	
4.	Modifications to SLAMS network – case when we are not approving system modifications	58.10 (a)(2); 58.10 (b)(5); 58.10 (e); 58.14	Yes Pages 3-4	Yes	
5.	Modifications to SLAMS network – case when we are approving system modifications per 58.14	58.10 (a)(2); 58.10 (b)(5); 58.10 (e); 58.14	Yes Pages 3-4	Yes	In last year's plan, EPA approved the reclassification of SPMs to SLAMS for: <ul style="list-style-type: none"> <li>• Children's Park NCore CO and NO<sub>2</sub></li> <li>• Coachline O<sub>3</sub></li> <li>• Fairgrounds O<sub>3</sub></li> <li>• Green Valley PM<sub>10</sub> and O<sub>3</sub></li> <li>• Geronimo PM<sub>10</sub></li> <li>• Rose Elementary O<sub>3</sub></li> <li>• Santa Clara PM<sub>10</sub></li> <li>• Tangerine PM<sub>10</sub> and O<sub>3</sub></li> </ul>
6.	Does plan include documentation (e.g., attached approval letter) for system modifications that have been approved since last ANP approval?		Yes Attachment A and B	Yes	
7.	Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal	58.10 (b)(5)	NA	NA	
8.	Precision/Accuracy reports submitted to AQS	58.16 (a)	Yes Pages 22, 24, 27		

<sup>1</sup> Unless otherwise noted.

<sup>2</sup> Response options: NA (Not Applicable), Yes, No, or Incomplete.

<sup>3</sup> Assuming the information is correct.

<sup>4</sup> Response options: NA (Not Applicable) – [reason], Yes, No, Insufficient to Judge, or Incorrect

	<b>ANP requirement</b>	<b>Citation within 40 CFR 58<sup>1</sup></b>	<b>Was the information submitted?<sup>2</sup> If yes, page #s.</b>	<b>Does the information provided<sup>3</sup> meet the requirement?<sup>4</sup></b>	<b>Notes</b>
9.	Annual data certification submitted	58.15	Yes Attachment to plan	Yes	
10.	Statement that SPMs operating an FRM/FEM/ARM that meet Appendix E also meet either Appendix A or an approved alternative. Documentation for any Appendix A approved alternative should be included. <sup>5</sup>	58.11 (a)(2)	Yes Pages 36-90	Yes	
11.	SPMs operating FRM/FEM/ARM monitors for over 24 months are listed as comparable to the NAAQS or the agency provided documentation that requirements from Appendices A, C, or E were not met. <sup>6</sup>	58.20 (c)	Yes Pages 35-90	Yes	
12.	For agencies that share monitoring responsibilities in an MSA/CSA: this agency meets full monitoring requirements or an agreement between the affected agencies and the EPA Regional Administrator is in place	App D 2(e)	Yes Page 2	Yes	The plan states that Pima County does not share monitoring responsibilities with ADEQ at this time.

**GENERAL PARTICULATE MONITORING REQUIREMENTS (PM<sub>10</sub>, PM<sub>2.5</sub>, Pb-TSP, Pb-PM<sub>10</sub>)**

13.	Designation of a primary monitor if there is more than one monitor for a pollutant at a site.	App. A 3.2.3	Yes Pages 35-90	Yes	
14.	Distance between QA collocated monitors. For low volume PM instruments (flow rate < 200 liters/minute) > 1 m. For high volume PM instruments (flow rate > 200 liters/minute) > 2m. [Note: waiver request or the date of previous waiver approval must be included if the distance deviates from requirement.]	App. A 3.2.3.4 (c) and 3.3.4.2 (c)	Yes Pages 35-90	Yes	

<sup>5</sup> Alternatives to the requirements of appendix A may be approved for an SPM site as part of the approval of the annual monitoring plan, or separately.

<sup>6</sup> This requirement only applies to monitors that are eligible for comparison to the NAAQS per 40 CFR §§58.11(e) and 58.30.

	ANP requirement	Citation within 40 CFR 58 <sup>1</sup>	Was the information submitted? <sup>2</sup> If yes, page #s.	Does the information provided <sup>3</sup> meet the requirement? <sup>4</sup>	Notes
<b>PM<sub>2.5</sub> –SPECIFIC MONITORING REQUIREMENTS</b>					
15.	Document how states and local agencies provide for the review of changes to a PM <sub>2.5</sub> monitoring network that impact the location of a violating PM <sub>2.5</sub> monitor.	58.10 (c)	Yes Page 20	Yes	
16.	Identification of any PM <sub>2.5</sub> FEMs and/or ARMs not eligible to be compared to the NAAQS due to poor comparability to FRM(s) [Note 1: must include required data assessment.] [Note 2: Required SLAMS must monitor PM <sub>2.5</sub> with NAAQS-comparable monitor at the required sample frequency.]	58.10 (b)(13) 58.11 (e)	NA	NA	
17.	Minimum # of monitoring sites for PM <sub>2.5</sub> [Note 1: should be supported by MSA ID, MSA population, DV, # monitoring sites, and # required monitoring sites] [Note 2: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.]	App. D 4.7.1(a) and Table D-5	Yes Page 20	Yes	Minimum monitoring tables provide two MSA populations, the 2010 official census and the 2015 estimated census. Not provided is the 2016 estimated census, which has a population of 1,016,2016 (released March 2017).  According to census estimates (2014-2016) and concentrations, the minimum number of PM <sub>2.5</sub> sites is two and Pima County currently operates two SLAMS sites; Pima is therefore meeting this requirement.
18.	Requirements for continuous PM <sub>2.5</sub> monitoring (number of monitors and collocation)	App. D 4.7.2	Yes Page 16	Yes	
19.	FRM/FEM/ARM PM <sub>2.5</sub> QA collocation	App. A 3.2.3	Yes Page 20	Yes	
20.	PM <sub>2.5</sub> Chemical Speciation requirements for official STN sites	App. D 4.7.4	NA	NA	This is a state requirement fulfilled by ADEQ.
21.	Identification of sites suitable and sites not suitable for comparison to the annual PM <sub>2.5</sub> NAAQS as described in Part 58.30	58.10 (b)(7)	Yes Page 35-90	Yes	
22.	Required PM <sub>2.5</sub> sites represent area-wide air quality	App. D 4.7.1(b)	Yes Page 36-38, 58	Yes	
23.	For PM <sub>2.5</sub> , within each MSA, at least one site at neighborhood or larger scale in an area of expected maximum concentration	App. D 4.7.1(b)(1)	Yes, Page 58	Yes	

	<b>ANP requirement</b>	<b>Citation within 40 CFR 58<sup>1</sup></b>	<b>Was the information submitted?<sup>2</sup> If yes, page #s.</b>	<b>Does the information provided<sup>3</sup> meet the requirement?<sup>4</sup></b>	<b>Notes</b>
24.	If additional SLAMS PM <sub>2.5</sub> is required, there is a site in an area of poor air quality	App. D 4.7.1(b)(3)	Yes Page 36-38, 58		
25.	States must have at least one PM <sub>2.5</sub> regional background and one PM <sub>2.5</sub> regional transport site.	App. D 4.7.3	NA	NA	
26.	Sampling schedule for PM <sub>2.5</sub> - applies to year-round and seasonal sampling schedules (note: date of waiver approval must be included if the sampling season deviates from requirement)	58.10 (b)(4); 58.12(d); App. D 4.7	Yes Page 16, 36-38, 58	Yes	
27.	Frequency of flow rate verification for automated and manual PM <sub>2.5</sub> monitors	App. A 3.2.1	Yes Page 22	Yes	
28.	Dates of two semi-annual flow rate audits conducted in <b>CY2016</b> for PM <sub>2.5</sub> monitors [Note: 5 -7 month interval is recommended but not a requirement.]	App. A 3.2.2	Yes Page 22	Yes	

**PM<sub>10</sub> –SPECIFIC MONITORING REQUIREMENTS**

29.	Minimum # of monitoring sites for PM <sub>10</sub> [Note: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.]	App. D, 4.6 (a) and Table D-4	Yes Page 17	Yes	Minimum monitoring tables provide two MSA populations, the 2010 official census and the 2015 estimated census. Not provided is the 2016 estimated census, which has a population of 1,016,2016 (released March 2017).  According to census estimates (2014-2016) and concentrations, the minimum number of PM <sub>10</sub> sites is 2-4 and Pima County currently operates seven SLAMS sites; Pima is therefore meeting this requirement.
30.	Manual PM <sub>10</sub> method collocation (note: continuous PM <sub>10</sub> does not have this requirement)	App. A 3.3.4	Yes Page 18	Yes	
31.	Sampling schedule for PM <sub>10</sub>	58.10 (b)(4); 58.12(e); App. D 4.6	Yes Page 19	Yes	
32.	Frequency of flow rate verification for automated and manual PM <sub>10</sub> monitors	App. A 3.3.1 and 3.3.2	Yes Page 18	Yes	
33.	Dates of two semi-annual flow rate audits conducted in <b>CY2016</b> for PM <sub>10</sub> monitors [Note: 5 -7 month interval is recommended but not a requirement.]	App. A 3.3.3	Yes Page 18	Yes	

	ANP requirement	Citation within 40 CFR 58 <sup>1</sup>	Was the information submitted? <sup>2</sup> If yes, page #s.	Does the information provided <sup>3</sup> meet the requirement? <sup>4</sup>	Notes
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**Pb –SPECIFIC MONITORING REQUIREMENTS**

34.	Minimum # of monitors for non-NCore Pb [Note: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.]	App D 4.5	Yes Page 33	Yes	The 2005 NEI was used for this assessment. In future plans, please use a more current NEI.
35.	Pb collocation: for non-NCore sites	App A 3.4.4 and 3.4.5	NA	NA	
36.	Any source-oriented Pb site for which a waiver has been granted by EPA Regional Administrator	58.10 (b)(10)	NA	NA	
37.	Any Pb monitor for which a waiver has been requested or granted by EPA Regional Administrator for use of Pb-PM <sub>10</sub> in lieu of Pb-TSP	58.10 (b)(11)	NA	NA	
38.	Designation of any Pb monitors as either source-oriented or non-source-oriented	58.10 (b)(9)	Yes Pages 46-47	Yes	
39.	Sampling schedule for Pb	58.10 (b)(4); 58.12(b); App A 3.4.4.2 (c) and 3.4.5.3 (c)	Yes Pages 15, 46-47	Yes	
40.	Frequency of flow rate verification for Pb monitors audit	App A 3.4.1 and 3.4.2	Yes Page 34	Yes	
41.	Dates of two semi-annual flow rate audits conducted in <b>CY2016</b> for Pb monitors [Note: 5 -7 month interval is recommended but not a requirement.]	App A 3.4.3	Yes Page 34	Yes	

**GENERAL GASEOUS MONITORING REQUIREMENTS**

42.	Frequency of one-point QC check (gaseous)	App. A 3.1.1	Yes Pages 24, 27, 29-31	Yes	
43.	Date of Annual Performance Evaluation (gaseous) conducted in <b>CY2016</b>	App. A 3.1.2	Yes Pages 25, 27, 29-30, 32	Yes	

	<b>ANP requirement</b>	<b>Citation within 40 CFR 58<sup>1</sup></b>	<b>Was the information submitted?<sup>2</sup> If yes, page #s.</b>	<b>Does the information provided<sup>3</sup> meet the requirement?<sup>4</sup></b>	<b>Notes</b>
<b>O<sub>3</sub> –SPECIFIC MONITORING REQUIREMENTS</b>					
44.	Minimum # of monitoring sites for O <sub>3</sub> [Note 1: should be supported by MSA ID, MSA population, DV, # monitoring sites, and # required monitoring sites] [Note 2: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.] [Note 3: monitors that do not meet traffic count/distance requirements to be neighborhood or urban scale (40 CFR Appendix E, Table E-1) cannot be counted towards meeting minimum monitoring requirements]	App D 4.1(a) and Table D-2	Yes Page 24	Yes	Minimum monitoring tables provide two MSA populations, the 2010 official census and the 2015 estimated census. Not provided is the 2016 estimated census, which has a population of 1,016,2016 (released March 2017).  According to census estimates (2014-2016) and concentrations, the minimum number of O <sub>3</sub> sites is 2-4 and Pima County currently operates seven SLAMS sites; Pima is therefore meeting this requirement.
45.	Identification of maximum concentration O <sub>3</sub> site(s)	App D 4.1 (b)	Yes Page 14	Yes	
46.	Sampling season for O <sub>3</sub> (Note: Waivers must be renewed annually. EPA expects agencies to submit re-evaluations of the relevant data each year with the ANP. EPA will then respond as part of the ANP response.)	58.10 (b)(4); App D 4.1(i)	Yes Page 14	Yes	
<b>NO<sub>2</sub> –SPECIFIC MONITORING REQUIREMENTS</b>					
47.	Minimum monitoring requirements for area-wide NO <sub>2</sub> monitor in location of expected highest NO <sub>2</sub> concentrations representing neighborhood or larger scale (operation required by 1/1/13)	App D 4.3.3	Yes Page 43	Yes	
48.	Minimum monitoring requirements for susceptible and vulnerable populations monitoring (aka RA40) NO <sub>2</sub> (operation required by January 1, 2013)	App D 4.3.4	NA	NA	
49.	Identification of required NO <sub>2</sub> monitors as either near-road, area-wide, or vulnerable and susceptible population (aka RA40)	58.10 (b)(12)	Yes Page 43, 80	Yes	

	<b>ANP requirement</b>	<b>Citation within 40 CFR 58<sup>1</sup></b>	<b>Was the information submitted?<sup>2</sup> If yes, page #s.</b>	<b>Does the information provided<sup>3</sup> meet the requirement?<sup>4</sup></b>	<b>Notes</b>
<b>NEAR ROADWAY – SPECIFIC MONITORING REQUIREMENTS</b>					
In CBSAs $\geq$ 2.5 million, the following near-roadway minimum monitoring requirements apply:					
50.	Two NO <sub>2</sub> monitors	App. D 4.3.2(a); 58.13(c)(3) and (4)	NA	NA	
51.	One CO monitor	App. D 4.2.1(a); 58.13(e)(2)	NA	NA	
52.	One PM <sub>2.5</sub> monitor	App. D 4.7.1(b)(2); 58.13(f)(2)	NA	NA	
In CBSAs $\geq$ 1 million and AADT $\geq$ 250K, the following near-roadway minimum monitoring requirements apply:					
53.	Two NO <sub>2</sub> monitors	App. D 4.3.2(a); 58.13(c)(3) and (4)	NA	NA	
54.	One CO monitor (by 1/1/2017)	App. D 4.2.1(a); 58.13(e)(2)	NA	NA	
55.	One PM <sub>2.5</sub> monitor (by 1/1/2017)	App. D 4.7.1(b)(2); 58.13(f)(2)	NA	NA	
In CBSAs $\geq$ 1 million and $\leq$ 2.5 million <b>AND</b> AADT $<$ 250K, the following near-roadway minimum monitoring requirements apply:					
56.	One NO <sub>2</sub> monitors	App. D 4.3.2(a); 58.13(c)(3)	Yes Page 4	NA	According to 2014-2016 census estimates, the Tucson MSA is required to implement a near-road NO <sub>2</sub> monitor. Please continue to work with EPA to determine the appropriate timeline associated with this requirement.
57.	One CO monitor (by 1/1/2017)	App. D 4.2.1(a); 58.13(e)(2)	Yes Page 4	NA	According to 2014-2016 census estimates, the Tucson MSA is required to implement a near-road CO monitor. Please continue to work with EPA to determine the appropriate timeline associated with this requirement.

	<b>ANP requirement</b>	<b>Citation within 40 CFR 58<sup>1</sup></b>	<b>Was the information submitted?<sup>2</sup> If yes, page #s.</b>	<b>Does the information provided<sup>3</sup> meet the requirement?<sup>4</sup></b>	<b>Notes</b>
58.	One PM <sub>2.5</sub> monitor (by 1/1/2017)	App. D 4.7.1(b)(2); 58.13(f)(2)	Yes Page 4	NA	According to 2014-2016 census estimates, the Tucson MSA is required to implement a near-road PM <sub>2.5</sub> monitor. Please continue to work with EPA to determine the appropriate timeline associated with this requirement.

**SO<sub>2</sub> –SPECIFIC MONITORING REQUIREMENTS**

59.	Minimum monitoring requirements for SO <sub>2</sub> based on PWEI and/or RA required monitors under Appendix D 4.4.3 [Note: Only monitors considered to be required SLAMs are eligible to be counted towards meeting minimum monitoring requirements.]	App D 4.4	Yes Page 31	Yes	
60.	Monitors used to meet Data Requirements Rule (operational no later than January 1, 2017.)	51.1203(c)	NA	NA	

**NCORE –SPECIFIC MONITORING REQUIREMENTS**

61.	NCORE site and all required parameters operational: year-round O <sub>3</sub> , SO <sub>2</sub> , CO, NO <sub>y</sub> , NO, PM <sub>2.5</sub> mass, PM <sub>2.5</sub> continuous, PM <sub>2.5</sub> speciation, PM <sub>10-2.5</sub> mass, resultant wind speed at 10m, resultant wind direction at 10m, ambient temperature, relative humidity. NO <sub>y</sub> waiver, if applicable.	App. D 3(b)	Yes Pages 35-48	Yes	
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**SITE OR MONITOR - SPECIFIC REQUIREMENTS (OFTEN INCLUDED IN DETAILED SITE INFORMATION TABLES)**

62.	AQS site identification number for each site	58.10 (b)(1)	Yes Pages 35-90	Yes	
63.	Location of each site: street address and geographic coordinates	58.10 (b)(2)	Yes Pages 35-90	Yes	
64.	MSA, CBSA, CSA or other area represented by the monitor	58.10 (b)(8)	Yes Pages 35-90	Yes	

	<b>ANP requirement</b>	<b>Citation within 40 CFR 58<sup>1</sup></b>	<b>Was the information submitted?<sup>2</sup> If yes, page #s.</b>	<b>Does the information provided<sup>3</sup> meet the requirement?<sup>4</sup></b>	<b>Notes</b>
65.	Parameter occurrence code for each monitor	Needed to determine if other requirements (e.g., min # and collocation) are met	Yes Pages 35-90	Yes	
66.	Basic monitoring objective for each monitor	App D 1.1; 58.10 (b)(6)	Yes Pages 35-90		
67.	Site type for each monitor	App D 1.1.1	Yes Pages 35-90	Yes	
68.	Monitor type for each monitor, and Network Affiliation(s) as appropriate	Needed to determine if other requirements (e.g., min # and collocation) are met	Yes Pages 35-90	Yes	<p>The following monitor were converted from SPM to SLAMS in January 2017:</p> <ul style="list-style-type: none"> <li>• Children's Park NCore CO and NO<sub>2</sub></li> <li>• Coachline O<sub>3</sub></li> <li>• Fairgrounds O<sub>3</sub></li> <li>• Green Valley PM<sub>10</sub> and O<sub>3</sub></li> <li>• Geronimo PM<sub>10</sub></li> <li>• Rose Elementary O<sub>3</sub></li> <li>• Santa Clara PM<sub>10</sub></li> <li>• Tangerine PM<sub>10</sub> and O<sub>3</sub></li> </ul> <p>Currently, the following monitors are listed as SPM that are long-running monitors. Please work with EPA to determine if they should be converted to SLAMS:</p> <ul style="list-style-type: none"> <li>• Cherry &amp; Glenn CO</li> <li>• Golf Links &amp; Kolb CO</li> </ul>
69.	Scale of representativeness for each monitor as defined in Appendix D	58.10(b)(6); App D	Yes Pages 35-90	Yes	

	<b>ANP requirement</b>	<b>Citation within 40 CFR 58<sup>1</sup></b>	<b>Was the information submitted?<sup>2</sup> If yes, page #s.</b>	<b>Does the information provided<sup>3</sup> meet the requirement?<sup>4</sup></b>	<b>Notes</b>
70.	Parameter code for each monitor	Needed to determine if other requirements (e.g., min # and collocation) are met	Yes Pages 35-90	Not Meeting Requirement	The following parameter codes should be changed in AQS from 88501 to 88502 in order to be used for AQI purposes: <ul style="list-style-type: none"> <li>• Green Valley PM<sub>2.5</sub></li> <li>• Geronimo PM<sub>2.5</sub></li> <li>• Rose Elementary PM<sub>2.5</sub></li> <li>• Coachline PM<sub>2.5</sub></li> </ul>
71.	Method code and description (e.g., manufacturer & model) for each monitor	58.10 (b)(3); App C 2.4.1.2	Yes Pages 35-90	Insufficient to Judge	The following method codes are incompatible with the method description: <ul style="list-style-type: none"> <li>• Childrens Park NCore NO<sub>2</sub> – 074, Ecotech / 9841 T</li> <li>• Tangerine O<sub>3</sub> – 047/087, Thermo Scientific / 49c and 49i</li> </ul>
72.	Sampling start date for each monitor	Needed to determine if other requirements (e.g., min # and collocation) are met	Yes Pages 13-16	Yes	
73.	Distance of monitor from nearest road	App E 6	Yes Pages 35-90	Yes	
74.	Traffic count of nearest road	App E	Yes Pages 35-90	Yes	
75.	Groundcover	App E 3(a)	Yes Pages 35-90	Yes	
76.	Probe height	App E 2	Yes Pages 35-90	Yes	

	<b>ANP requirement</b>	<b>Citation within 40 CFR 58<sup>1</sup></b>	<b>Was the information submitted?<sup>2</sup> If yes, page #s.</b>	<b>Does the information provided<sup>3</sup> meet the requirement?<sup>4</sup></b>	<b>Notes</b>
77.	Distance from supporting structure (vertical and horizontal, if applicable, should be provided)	App E 2	Yes Pages 35-90	Not meeting requirement and Insufficient to Judge	<p>Childrens Park NCore</p> <ul style="list-style-type: none"> <li>• PM<sub>2.5</sub> FEM -1.73m (Must be 1.8m or higher according to the method)</li> </ul> <p>Corona de Tucson</p> <ul style="list-style-type: none"> <li>• PM<sub>10</sub> – Listed as “NA”</li> </ul> <p>Orange Grove</p> <ul style="list-style-type: none"> <li>• PM<sub>10</sub> Primary and QA Collocated – Listed as “NA”</li> <li>• PM<sub>2.5</sub> – Listed as “NA”</li> </ul> <p>Golf Links &amp; Kolb</p> <ul style="list-style-type: none"> <li>• CO – “NA”</li> </ul>
78.	Distance from obstructions on roof (horizontal distance to the obstruction and vertical height of the obstruction above the probe should be provided)	App E 4(b)	Yes Pages 35-90	Yes	
79.	Distance from obstructions not on roof (horizontal distance to the obstruction and vertical height of the obstruction above the probe should be provided)	App E 4(a)	Yes Pages 35-90	Insufficient to Judge	<p>22<sup>nd</sup> Street &amp; Alvernon</p> <ul style="list-style-type: none"> <li>• CO – 2m from obstruction. Need height of obstruction above the probe to determine whether this requirement is met.</li> </ul> <p>All sites with trees: Need height of obstruction above the probe to determine whether this requirement is met.</p>
80.	Distance from the drip line of closest tree(s)	App E 5	Yes Pages 35-90	Not meeting requirement	<p>The requirement is not being met for the following monitors:</p> <ul style="list-style-type: none"> <li>• Childrens Park NCore – PM<sub>2.5</sub> Primary and Collocated: 8.0m</li> <li>• Childrens Park NCore- Pb Primary: 8.4m and Collocated: 6.6m (shut down)</li> <li>• Green Valley – O<sub>3</sub>: 8.5m</li> <li>• Tangerine – PM<sub>10</sub>: 6.4m, O<sub>3</sub>: 8.3m</li> <li>• Geronimo – PM<sub>10</sub>: 9.3m</li> <li>• Coachline – O<sub>3</sub>: 5.3m</li> <li>• Cherry &amp; Glenn – CO: 8.7m</li> <li>• Golf Links &amp; Kolb – CO: 2.7m</li> <li>• Saguaro Park West – O<sub>3</sub>: 8.0m</li> </ul>
81.	Distance to furnace or incinerator flue	App E 3(b)	Yes Pages 35-90	Yes	

	<b>ANP requirement</b>	<b>Citation within 40 CFR 58<sup>1</sup></b>	<b>Was the information submitted?<sup>2</sup> If yes, page #s.</b>	<b>Does the information provided<sup>3</sup> meet the requirement?<sup>4</sup></b>	<b>Notes</b>
82.	Unrestricted airflow (expressed as degrees around probe/inlet or percentage of monitoring path)	App E, 4(a) and 4(b)	Yes Pages 35-90	Yes	
83.	Probe material (NO/NO <sub>2</sub> /NO <sub>y</sub> , SO <sub>2</sub> , O <sub>3</sub> ; For PAMS: VOCs, Carbonyls)	App E 9	Yes Pages 35-90	Yes	
84.	Residence time (NO/NO <sub>2</sub> /NO <sub>y</sub> , SO <sub>2</sub> , O <sub>3</sub> ; For PAMS: VOCs, Carbonyls)	App E 9	Yes Pages 35-90	Yes	

### Public Comments on Annual Network Plan

Were comments submitted to the S/L/T agency during the public comment period?	No
Were comments included in ANP submittal?	NA
Were any of the comments substantive? If yes, which ones? If comments were not substantive provide rationale.	NA
Were S/L/T responses to substantive comments included in ANP submittal?	NA
Were the S/L/T responses to substantive comments adequate?	NA
Do the substantive comments require separate EPA response (i.e., agency response wasn't adequate)?	NA
Are the sections of the annual network plan that received substantive comments approvable after consideration of comments? If yes, provide rationale	NA

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**ATTACHMENT B**

**EPA Approval of Pima County Department of Environmental Quality  
Network Modifications**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

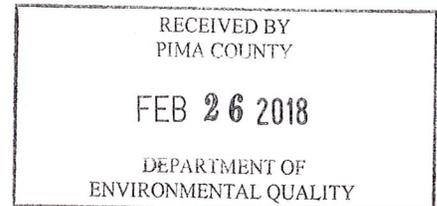
REGION IX

75 Hawthorne Street

San Francisco, CA 94105-3901

FEB 22 2018

Ms. Ursula Nelson, Director  
Pima County Department of Environmental Quality  
33 North Stone Avenue, Suite 700  
Tucson, Arizona 85701-1429



Dear Ms. Nelson:

This letter provides the Environmental Protection Agency's (EPA's) review and approval for the Pima County Department of Environmental Quality's (PDEQ's) discontinuation of the carbon monoxide (CO) State or Local Air Monitoring Station (SLAMS) monitor at 22<sup>nd</sup> & Craycroft (AQS ID: 04-019-1011) and the CO Special Purpose Monitors (SPMs) at Cherry & Glenn (AQS ID: 04-019-1021) and Golf Links & Kolb (AQS ID: 04-019-1031). Per 40 CFR 58.14, monitoring agencies are required to obtain EPA approval for the discontinuation of SLAMS monitors.

Discontinuation of the 22<sup>nd</sup> & Craycroft CO monitor was reviewed by EPA against criteria contained in 40 CFR 58.14(c)(1). According to data submitted to EPA's Air Quality System (AQS), the 22<sup>nd</sup> & Craycroft monitor was in attainment of the CO 1-hour and 8-hour National Ambient Air Quality Standards (NAAQS) from 2012 through 2016. Based on these five design values, there is less than 10 percent probability of exceeding 80 percent of the CO 1-hour and 8-hour NAAQS during the next three years at this monitor. Additionally, the CO SPMs at Golf Links & Kolb and Cherry & Glenn were in attainment of the CO 1-hour and 8-hour NAAQS from 2012 through 2016. Preliminary, uncertified 2017 data also supports these trends.

These monitors are not specifically required by an attainment or maintenance plan, and are not the last monitors in a nonattainment or maintenance area. Furthermore, discontinuance of these monitors does not compromise data collection needed for implementation of the CO NAAQS and will not prevent PDEQ from meeting 40 CFR 58 Appendix D requirements. After these discontinuations, there will still be two SLAMS CO monitors in the Tucson maintenance area at 22<sup>nd</sup> & Alvernon (AQS ID: 04-019-1014) and Children's Park (AQS ID: 04-019-1028).

Based on this analysis, EPA approves the discontinuation of CO monitors at 22<sup>nd</sup> & Craycroft, Golf Links & Kolb, and Cherry & Glenn. Please include these network modifications and EPA's approval in your next Annual Network Plan. Please also note these changes in the relevant AQS site comment fields.

If there are any questions regarding this letter, please feel free to contact me at (415) 947-4134 or Jennifer Williams of my staff at (415) 972-3938.

Sincerely,

A handwritten signature in blue ink, appearing to read "Gwen Yoshimura", with a long horizontal flourish extending to the right.

Gwen Yoshimura, Manager  
Air Quality Analysis Office

cc (via email):       Rupesh Patel, PDEQ  
                              Mike Draper, PDEQ

**ATTACHMENT C**

**Revision to the Near-road NO<sub>2</sub> Minimum Monitoring Requirements**

## **FACT SHEET**

### **Revision to the Near-road NO<sub>2</sub> Minimum Monitoring Requirements**

#### **ACTION**

On December 22, 2016, the U.S. Environmental Protection Agency (EPA) revised the minimum monitoring requirements for near-road nitrogen dioxide (NO<sub>2</sub>) monitoring.

Specifically, the EPA removed the requirement for near-road NO<sub>2</sub> monitoring stations in Core Based Statistical Areas (CBSAs) having populations between 500,000 and 1,000,000 persons, that had been scheduled to be installed and operational by January 1, 2017.

Current near-road NO<sub>2</sub> monitoring data indicate air quality levels in the near-road environment are well below the National Ambient Air Quality Standard (NAAQS) for NO<sub>2</sub>. In light of this information, and the relationship between population, traffic, and expected NO<sub>2</sub> concentrations in the near-road environment, EPA expects measured near-road NO<sub>2</sub> concentrations in relatively smaller CBSAs (e.g., CBSAs with populations less than 1,000,000 persons) would exhibit similar and, more likely, lower concentrations than what is being measured in larger urban areas.

This action does not modify the requirements for near-road NO<sub>2</sub> monitors in more populated areas, area-wide NO<sub>2</sub> monitoring, or for monitoring of NO<sub>2</sub> in areas with susceptible and vulnerable populations.

#### **BACKGROUND**

In support of the 2010 NO<sub>2</sub> National Ambient Air Quality Standard (75 FR 6474), the EPA revised the requirements for minimum numbers of ambient NO<sub>2</sub> monitors. This action included requirements:

- for new monitoring near major roads in larger urban areas,
- to characterize NO<sub>2</sub> concentrations representative of wider spatial scales in larger urban areas (area-wide monitors), and
- for monitors intended to characterize NO<sub>2</sub> exposures of susceptible and vulnerable populations.

Originally, the near-road component of the ambient NO<sub>2</sub> monitoring network was required to be completely operational by January 1, 2013. However, in 2012, through a public notice and comment rulemaking, the EPA established three phases for the installation of near-road NO<sub>2</sub> monitoring stations. The revised installation schedule allowed more time for states to establish the near-road NO<sub>2</sub> monitoring network on a schedule consistent with available resources.

- Phase 1: In CBSAs with a population of 1,000,000 or more persons, one near-road NO<sub>2</sub> monitor shall be reflected in the state Annual Monitoring Network Plan submitted July 1, 2013, and that monitor shall be operational by January 1, 2014.
- Phase 2: In CBSAs where two near-road NO<sub>2</sub> monitors are required (either because the CBSA has a population of 2,500,000 or more persons, or has a population of 500,000 or more persons plus one or more roadway segments having annual average daily traffic [AADT] counts of 250,000 or more), the second near-road NO<sub>2</sub> monitor shall be reflected in the state Annual Monitoring Network Plan submitted July 1, 2014, and that monitor shall be operational by January 1, 2015.
- Phase 3: In CBSAs with a population of at least 500,000 persons, but less than 1,000,000 persons, one near-road NO<sub>2</sub> monitor shall be reflected in the state Annual Monitoring Network Plan submitted July 1, 2016, and the monitor shall be operational by January 1, 2017.

Today's action removes the requirement to install and operate monitors for Phase 3 of the near-road monitoring network.

#### **FOR MORE INFORMATION**

- A copy of the rule and fact sheet are available on EPA's website at <https://www.epa.gov/no2-pollution/ambient-nitrogen-dioxide-monitoring-requirements>.
- For further information about the rulemaking, contact Neilson Watkins at EPA's Office of Air Quality Planning and Standards at (919) 541-5522 or [watkins.nealson@epa.gov](mailto:watkins.nealson@epa.gov).