2015
Ambient Air Monitoring Network Plan

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AQ 391

2015 Ambient Air Monitoring Network Plan

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I. INTRODUCTION

This document constitutes the 2015 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 review 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 review 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_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), particulate matter with an aerodynamic diameter of 10 micrometers or less in size (PM_{10}) and particulate matter with aerodynamic diameter of 2.5 micrometers or less in size ($PM_{2.5}$). 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 2015 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 6. 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_Y), particulate matter, coarse fraction ($PM_{10-2.5}$), speciated $PM_{2.5}$ particulate matter and lead.

Pima County does not share monitoring responsibilities with Arizona Department of Environmental Quality at this time.

Schedule of EPA's review of criteria pollutants:

October, 2015 – EPA final rule of ozone standard
March, 2015 – EPA draft assessment of Sulfur Dioxide and secondary Nitrogen Dioxide

PDEQ made the following network modifications in 2015:

Installed R & P 2000 at Santa Clara to meet method designation collocation requirements. Collocated data reporting to begin January 1, 2016.

Attachment A includes the approval letter of changes requested in 2014.

PDEQ's anticipated network modifications in 2016:

Based on the 2014 EPA Technical System Audit findings, PDEQ will make the following changes, effective January, 2016:

Re-Classify PM_{10} stations from Special Purpose to SLAMS

- Geronimo, Santa Clara, Green Valley and Tangerine

Re-Classify $PM_{2.5}$ stations from Special Purpose to OTHER

- Geronimo, Green Valley, Rose Elementary and Coachline

Also based on the 2014 EPA Technical System Audit findings, PDEQ is requesting approval for a 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

PDEQ will continue impact analysis of development near the Tangerine ozone and PM_{10} monitoring station, and if necessary change the station spatial scale and site type to correspond with changes to area development.

Due to continued decreasing ambient concentrations and changes to the NAAQS, PDEQ will also change operating ranges on nitrogen dioxide and ozone analyzers to reflect current recommendations for upper range, quality control checks, and span check levels. The nitrogen dioxide analyzer at the 22/Craycroft monitoring station will be changed from a 500ppb range to a 200 ppb range, duplicating the ranges of the nitrogen dioxide and NOy analyzers at the Children's Park NCore station. Ozone analyzers network-wide will undergo changes to operating range, span check and calibration points, as well as one-point QC checks, following recommendations in the QA Handbook, Volume II, Section 10, to levels as practicable as real-world commercially available calibration instrumentation will allow, with a reasonable degree of accuracy at the lower calibration levels.

Pima County DEQ is requesting to discontinue monitoring of non-source oriented lead at the Children's Park location. Attachement B contains the letter requesting this change and the approval letter from EPA.

Near-Road Monitoring

Integral to revised minimum monitoring requirements for nitrogen dioxide (NO_2) promulgated in February, 2010, state and local air monitoring agencies are required to install near-road NO_2 monitoring stations at locations where peak hourly NO_2 concentrations are expected to occur within the near-road environment in larger urban areas. Implementation of this requirement involves a three-tiered approach, with initial installations in areas with populations greater than 1,000,000 to be completed by January 1, 2014. The second tier 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 be completed by January 1, 2015. The third tier 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 Tier I and II monitoring stations complete, and sufficient NO_2 data reported to ascertain with some certainty the concentration levels of NO_2 in the near-road environment, it has been determined that measured NO_2 levels are lower than expected, and in some cases, lower than neighborhood locations in the same urban areas. In light of this information, the logical course of action is to cancel installations of Tier III monitoring stations, which is what US EPA is proposing.

Population figures for tier placement were based on the 2010 census, and Pima County, being under the 1,000,000 mark, was slated for Tier III implementation, due January 1, 2017. Site selection and installation logistics were in progress when PDEQ was informed of the likely cancellation of the Tier III requirement, so all planning was put on hold. Several months later, PDEQ was informed that based on the most recent population data for Pima County, derived from 2014 estimates, the population had exceeded one million, and had increased to 1,004,516. This inconvenient estimation places Pima County in the Tier I category, which requires installation of a near-road NO_2 station, regardless of the logic presented in the previous paragraph.

This situation presents an interesting regulatory conundrum. With installation costs in Tucson expected to exceed $100,000, should the codified requirement, based on an estimate, supersede the reality of lower than expected measurable outcome already established in urban areas much larger than Tucson? If concentration levels in those areas are lower than expected, it does not make sense to install the same type of monitoring station in a smaller urban area with lower traffic counts.

To further complicate the issue, Pima County has the dubious distinction of being the first urban area to cross over a population demarcation into a different Tier requirement during the course of the implementation phases, and no implementation guidance has been established for this precedent.

Considering the circumstances of this situation, PDEQ questions the validity of basing this requirement on a population estimate, and will continue suspension of all planning activities for a near-road NO_2 monitoring station, pending further consideration by US EPA.

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 2015. Concentrations of the criteria pollutants have been stable over the past few years with ozone and particulate matter (PM_{10}) being the major concern for Pima County. Ozone has been very close to the standard, often within 95% of the standard. Particulate matter (PM_{10}) 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 8 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 2.5% since the 2010 census, based on 2014 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 averaged 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:

- To provide air pollution data to the general public in a timely manner;
- To comply with ambient air quality protocols and standards in order for data to be used for comparison to the NAAQS;
- 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:

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

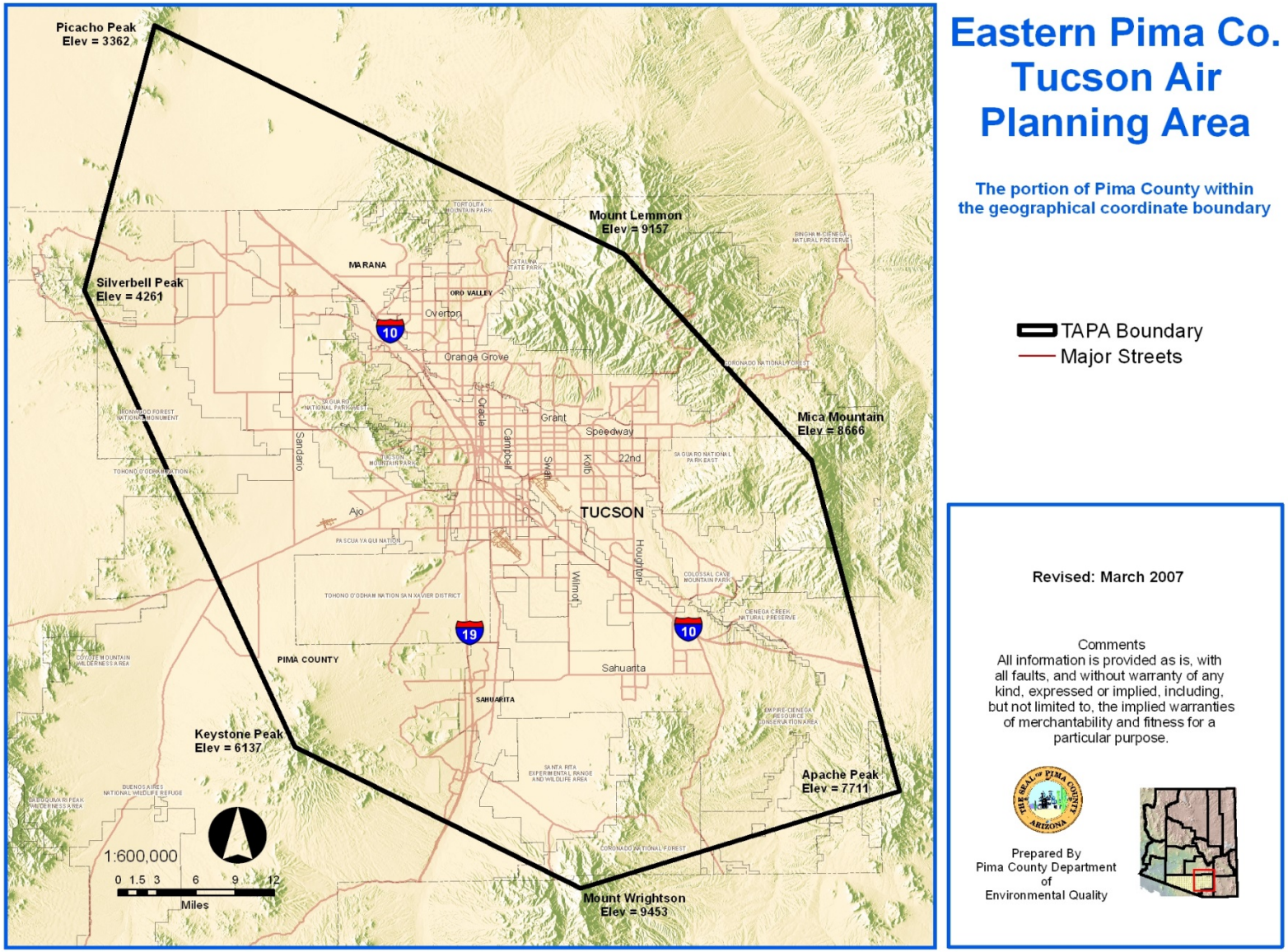
The link between general monitoring objectives, site types and the geographical location of a monitoring station is defined as the spatial scale of representativeness, and the relationship is indicated in **Table 1** (next page). The goal of each station is to represent a specific air parcel throughout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

- *Microscale* defines concentrations in air volumes associated with area dimensions from 1 meter to 100 meters;
- *Middle Scale* defines concentrations typical of areas from 100 meters to 500 meters;
- *Neighborhood Scale* defines concentrations typical of areas with dimensions in the 0.5 to 4.0 kilometer range;
- *Urban Scale* defines the overall, city – wide conditions with dimensions in the 4 to 50 kilometer range;
- *Regional Scale* usually defines a rural area with dimensions as much as hundreds of kilometers;
- *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

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

Figure 1



Eastern Pima Co. Tucson Air Planning Area

The portion of Pima County within the geographical coordinate boundary

TAPA Boundary
Major Streets

Revised: March 2007

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

TAPA 2007

III. PIMA COUNTY AIR QUALITY MONITORING NETWORK SUMMARY TABLES AND MAP

Active Particulate and Lead Monitoring Sites for 2015

Table 2

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

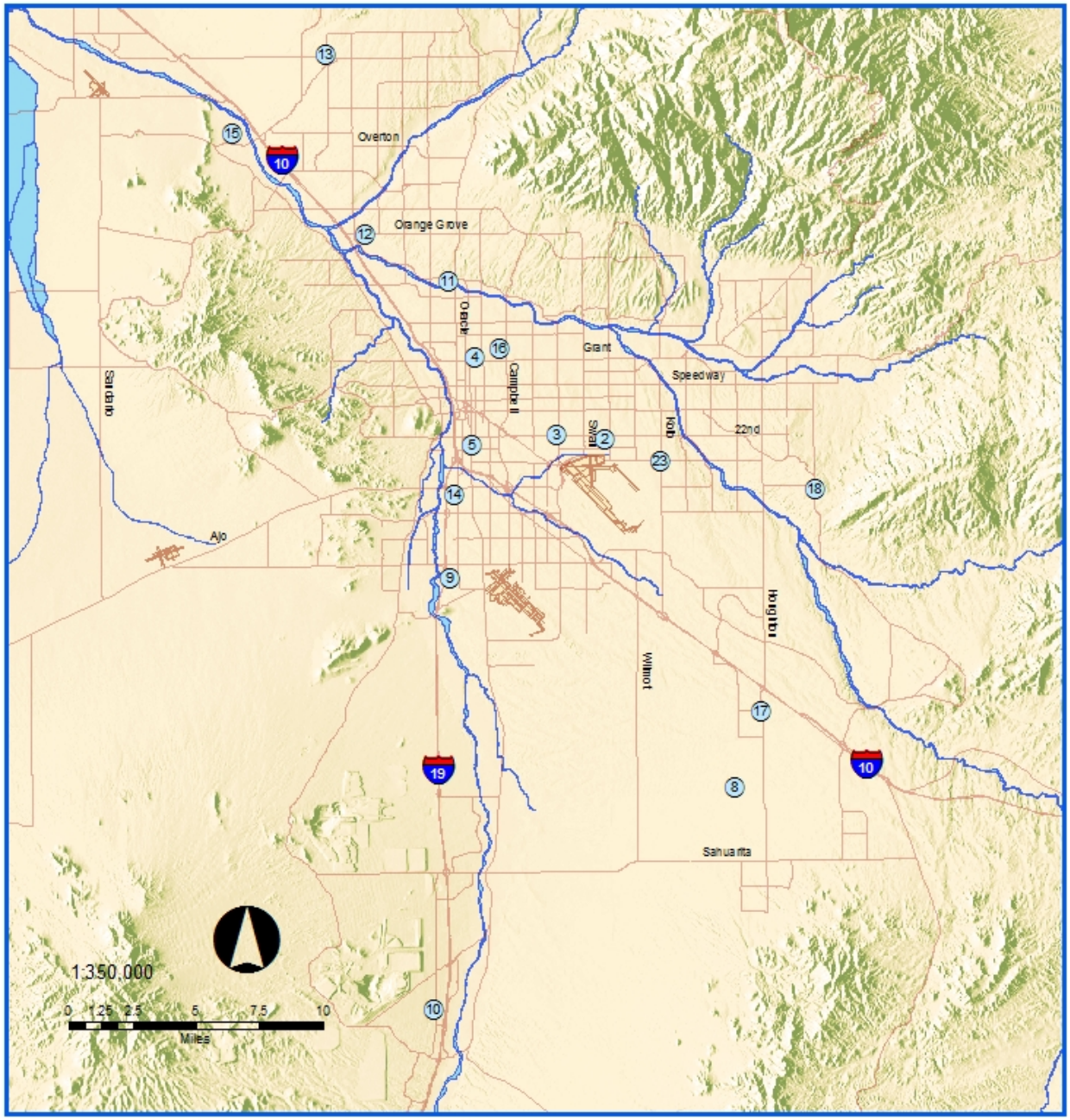
Map located on Page 12

Active Gaseous Pollutant Monitoring Sites for 2015

Table 3

Map #	Pollutant					Address	Site Name
2	CO	O_3		NO_2		1237 S. Beverly Ave.	22nd & Craycroft
3	CO					3895 E. 22nd St.	22nd & Alvernon
10		O_3				601 N. La Canada Dr.	Green Valley
11	CO	O_3	SO_2	NO_2	NO_Y	400 W. River Rd.	Children's Park NCore
13		O_3				12101 N. Camino de Oeste	Tangerine
14		O_3				710 W. Michigan	Rose Elementary
15		O_3				9597 N. Coachline Blvd.	Coachline
16	CO					2745 N. Cherry Ave.	Cherry & Glenn
17		O_3				11330 S. Houghton Rd.	Fairgrounds
18		O_3				3905 S. Old Spanish Trail	Saguaro National Park, East
23	CO					2601 S. Kolb Rd.	Golf Links & Kolb

Map located on page 12



Pima County Monitoring Sites

2 - 22nd / Craycroft
3 - 22nd / Alvernon
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

Revised: January 2015

Comments
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Environmental Quality

2015 Ambient Air Monitoring Network Summary Table
Table 4
CARBON MONOXIDE - PIMA COUNTY MONITORING NETWORK

SITE NAME AND LOCATION	SITE ID (a)	PARAMETER (b)	CLASSI-FICATION (c)	DATES (d)	METHOD (e)	ELEV. FEET (f)	SMPL HEIGHT (M) (g)	SPATIAL SCALE (h)	SMPL FREQ (i)	POC (j)	MONITORING SITE TYPE (h)
22ND & CRAYCROFT 1237 S. BEVERLY AVE.	04-019-1011	42101	SLAMS	Jul-73 PRESENT	158	2582	4.1	NEIGHBORHOOD	CONTINUOUS	1	POPULATION EXPOSURE
22ND & ALVERNON 3895 E.22ND STREET	04-019-1014	42101	SLAMS	Mar-75 PRESENT	174/054	2516	3.4	MICROSCALE	CONTINUOUS	1	HIGHEST CONCENTRATION
CHILDREN'S PARK NCore 400 W. RIVER ROAD	04-019-1028	42101	SP	Oct-98 PRESENT	554	2286	4.25	NEIGHBORHOOD	CONTINUOUS	1	POPULATION EXPOSURE
CHERRY & GLENN 2745 N. CHERRY AVE.	04-019-1021	42101	SP	Feb-89 PRESENT	54	2400	4.9	NEIGHBORHOOD	Cont/Seasonal Jan. 1 –March31 Oct. 1- Dec. 31	1	POPULATION EXPOSURE
GOLF LINKS & KOLB 2601 SOUTH KOLB	04-019-1031	42101	SP	Sept-02 PRESENT	54	2661	3	MICROSCALE	Cont/Seasonal Jan. 1 –March31 Oct. 1- Dec. 31	1	HIGHEST CONCENTRATION

NITROGEN DIOXIDE - PIMA COUNTY MONITORING NETWORK

SITE NAME AND LOCATION	SITE ID (a)	PARAMETER (b)	CLASSI-FICATION (c)	DATES (d)	METHOD (e)	ELEV. FEET (f)	SMPL HEIGHT (M) (g)	SPATIAL SCALE (h)	SMPL FREQ (i)	POC (j)	MONITORING SITE TYPE (h)
22ND & CRAYCROFT 1237 S. BEVERLY AVE.	04-019-1011	42602	SLAMS	Jan-73 PRESENT	157	2582	4.1	NEIGHBORHOOD	CONTINUOUS	1	POPULATION EXPOSURE
CHILDREN'S PARK NCore 400 W. RIVER ROAD	04-019-1028	42602	SP	May-98 PRESENT	090	2286	4.25	NEIGHBORHOOD	CONTINUOUS	1	HIGHEST CONCENTRATION

REACTIVE OXIDES OF NITROGEN - PIMA COUNTY MONITORING NETWORK

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

Key located on page 16

2015 Ambient Air Monitoring Network Summary Table

SULFUR DIOXIDE -PIMA COUNTY MONITORING NETWORK

SITE NAME AND LOCATION	SITE ID (a)	PARAMETER (b)	CLASSI-FICATION (c)	DATES (d)	METHOD (e)	ELEV. FEET (f)	SMPL HEIGHT (M) (g)	SPATIAL SCALE (h)	SMPL FREQ (i)	POC (j)	MONITORING SITE TYPE (h)
CHILDREN'S PARK NCore 400 W. RIVER ROAD	04-019-1028	42401	SLAMS	Oct-10 PRESENT	560	2286	4.25	NEIGHBORHOOD	CONTINUOUS	1	POPULATION EXPOSURE

OZONE -PIMA COUNTY MONITORING NETWORK

SITE NAME AND LOCATION	SITE ID (a)	PARAMETER (b)	CLASSI-FICATION (c)	DATES (d)	METHOD (e)	ELEV. FEET (f)	SMPL HEIGHT (M) (g)	SPATIAL SCALE (h)	SMPL FREQ (i)	POC (j)	MONITORING SITE TYPE (h)
22ND & CRAYCROFT 1237 S. BEVERLY AVE.	04-019-1011	44201	SLAMS	Jul-73 PRESENT	047	2582	4.1	NEIGHBORHOOD	CONTINUOUS	1	POPULATION EXPOSURE
GREEN VALLEY 601 N. LA CANADA DR.	04-019-1030	44201	SP	July-03 PRESENT	047	2910	3.1	NEIGHBORHOOD	CONTINUOUS	1	POPULATION EXPOSURE
CHILDREN'S PARK NCore 400 W. RIVER ROAD	04-019-1028	44201	SLAMS	Sep-97 PRESENT	047	2286	4.25	NEIGHBORHOOD	CONTINUOUS	1	POPULATION EXPOSURE
TANGERINE 12101 N. CAMINO DE OESTE	04-019-1018	44201	SP	Oct-89 PRESENT	047	2638	3.75	URBAN	CONTINUOUS	1	HIGHEST CONCENTRATION
ROSE ELEMENTARY 710 W. MICHIGAN	04-019-1032	44201	SP	July-03 PRESENT	047	2387	4.1	NEIGHBORHOOD	CONTINUOUS	1	POPULATION EXPOSURE
COACHLINE 9597 N. COACHLINE BLVD	04-019-1034	44201	SP	July-03 PRESENT	047	2110	3.1	NEIGHBORHOOD	CONTINUOUS	1	POPULATION EXPOSURE
FAIRGROUNDS 11330 S. HOUGHTON RD.	04-019-1020	44201	SP	Oct-89 PRESENT	047	3078	3.6	URBAN	CONTINUOUS	1	BACKGROUND
SAGUARO NATIONAL PARK 3905 S. OLD SPANISH TRAIL	04-019-0021	44201	SLAMS	Jun-82 PRESENT	047	3089	4.1	NEIGHBORHOOD	CONTINUOUS	1	HIGHEST CONCENTRATION

Key located on page 16

2015 Ambient Air Monitoring Network Summary Table

PM10- PIMA COUNTY MONITORING NETWORK

SITE NAME AND LOCATION	SITE ID (a)	PARAMETER (b)	CLASSI-FICATION (c)	DATES (d)	METHOD (e)	ELEV. FEET (f)	SMPL HEIGHT (M) (g)	SPATIAL SCALE (h)	SMPL FREQ (i)	POC (j)	MONITORING SITE TYPE (h)
GERONIMO 2498 N. GERONIMO	04-019-1113	81102	SP	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	127 127	2420	6.9	NEIGHBORHOOD	1 DAY collocated every 6 day	1 2	POPULATION EXPOSURE
CORONA DE TUCSON 22000 S. HOUGHTON RD.	04-019-0008	81102	SLAMS	Mar-87 PRESENT	126	3078	2.1	REGIONAL	6 DAY	1	BACKGROUND
SANTA CLARA 6910 S. SANTA CLARA AVE.	04-019-1026	81102	SP	Jul-94 PRESENT	126	2540	6.45	NEIGHBORHOOD	6 DAY	1	POPULATION EXPOSURE
GREEN VALLEY 601 N. LA CANADA DR.	04-019-1030	81102	SP	Feb-01 PRESENT	079/122	2910	4.25	NEIGHBORHOOD	CONTINUOUS	1	POPULATION EXPOSURE
ORANGE GROVE 3401 W. ORANGE GROVE RD.	04-019-0011	81102	SLAMS	Jan-85 PRESENT	127 127	2234	2.65	NEIGHBORHOOD	1 DAY collocated every 6 day	2 4	HIGHEST CONCENTRATION
TANGERINE 12101 N. CAMINO DE OESTE	04-019-1018	81102	SP	Jan-94 PRESENT	126	2638	4 .5	URBAN	6 DAY	1	BACKGROUND

LEAD -PIMA COUNTY MONITORING NETWORK

CHILDREN'S PARK NCore 400 W. RIVER ROAD	04-019-1028	14129	SLAMS	Feb-12 PRESENT	110 110	2286	2.0	NEIGHBORHOOD	6DAY Collocated every 12 days	1 2	POPULATION EXPOSURE

CHEMICAL SPECIATION -PIMA COUNTY MONITORING NETWORK

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

2015 Ambient Air Monitoring Network Summary Table
PM2.5- PIMA COUNTY MONITORING NETWORK

SITE NAME AND LOCATION	SITE ID (a)	PARAMETER (b)	CLASSI-FICATION (c)	DATES (d)	METHOD (e)	ELEV. FEET (f)	SMPL HEIGHT (M) (g)	SPATIAL SCALE (h)	SMPL FREQ (i)	POC (j)	MONITORING SITE TYPE (h)
GERONIMO 2498 N. GERONIMO	04-019-1113	88501	SP	July-03 PRESENT	733	2452	4.6	NEIGHBORHOOD	CONTINUOUS	3	POPULATION EXPOSURE
GREEN VALLEY 601 N. LA CANADA DR.	04-019-1030	88501	SP	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	118 118	2286	3.1	NEIGHBORHOOD	3 DAY collocated every 6 day	1 2	POPULATION EXPOSURE
CHILDREN'S PARK NCore 400 W. RIVER ROAD	04-019-1028	88101	SLAMS	Jan-11 PRESENT	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	2234	2.65	NEIGHBORHOOD	3 DAY	1	POPULATION EXPOSURE
ROSE ELEMENTARY 710 W. MICHIGAN	04-019-1032	88501	SP	July-03 PRESENT	733	2387	4.9	NEIGHBORHOOD	CONTINUOUS	3	POPULATION EXPOSURE
COACHLINE 9597 N. COACHLINE BLVD	04-019-1034	88501	SP	July-03 PRESENT	733	2100	4.9	NEIGHBORHOOD	CONTINUOUS	3	POPULATION EXPOSURE

Key:
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 - Elev. feet - site elevation in feet
g - SPL (M) Height - sample inlet height in meters, specific height range required for uniform collection
h - Spatial Scale and Monitoring site type - described on page 6
i - SMPL Freq - 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

Information provided based on EPA'S 2015 Air Quality System (AQS) data.

IV. CURRENT MONITORING NETWORK EVALUATIONS

PM_{10} MONITORING NETWORK REQUIREMENTS

The PDEQ PM_{10} network consists of seven monitoring sites in eastern Pima County, Arizona. The 2015 network used several different types of PM_{10} samplers: R& P Partisol 2000, R& P Partisol-Plus 2025 Sequential, BAM 1020 and TEOM 1400. **40 CFR Part 58, app. D, 4.6** Particulate matter (PM_{10}) design criteria, provided guidance in determining the minimum number of required PM_{10} SLAMS sites for 2015.

2015 PM_{10} Design Criteria
Table 5

Population Pima County	**MSA 8520 Tucson Population Category**	**Max Concentration site 2013-2015**	**Max Concentration** ($\mu g/m^3$)	**PM_{10} Sites # Required**	**PM_{10} Sites # Operating**
2010 Census 980,263	**500,000 – 1,000,000**	South Tucson	62	Requires 1-2 SLAMS monitors	3 SLAMS monitors
[a]2014 Estimated Population 1,004,516	>1,000,000			2-4 SLAMS monitors	

a. U.S. Census Bureau 2014 population estimate of the Tucson area (MSA 8520) is 1,004,516.

Violation History

The PM_{10} 24 hour standard remains at 150 $\mu g/m^3$. Since the promulgation of the PM_{10} standard, July 31, 1987, there has been one violation of the standard. In 1999, the PM_{10} 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.** In the last three years, exceedances of the 24 hour standard have been recorded at monitoring sites in the PDEQ PM_{10} network at the following locations: In 2013, one exceedance on April 8 at the South Tucson location and on April 9th 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, there were no recorded exceedances for PM_{10}.

Quality Assurance for Particulate Matter PM_{10}

All data quality assessment requirements, as outlined in **40 CFR Part 58, app. A**, have been met for 2015. The precision of PM_{10} data is derived from the co-located PM_{10} samplers at the South Tucson and Orange Grove sites; 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_{10} 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

Protocol	**Instrument**	**Frequency**	**Date Completed 2015**
Flow rate verification	Met One BAM 1020 R&P TEOM 1400	Weekly	
Flow Rate Audit	TEOM 1400AB Bam 1020	Semi - Annually	Green Valley 03/10, 09/23 Geronimo 03/24, 09/22
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 03/09, 09/24, Santa Clara 03/09, 09/23 Tangerine 03/12, 09/22 South Tucson 03/10, 09/30 South Tucson (co-located) 03/10, 09/30 Orange Grove 03/11, 09/17 Orange Grove (co-located) 03/11, 09/17
NPAP Audit			None

Table 7

Collocated PM_{10} Monitors			
Method	# Required Collocation Monitors	# Primary Monitors	# Collocated Monitors
81102	1	7	2

Table 8
Annual summary statistics: NAAQS: 150 μg/m^3 24- Hour Average.

Year 2015 Site	Highest 24- Hr Value	2nd Highest 24-Hour Value	Annual Average
Orange Grove 0011	54	53	20.8
Corona de Tucson 0008	59	30	12.6
Santa Clara 1026	55	40	18.4
Green Valley 1030	32	30	11.6
Geronimo 1113	57	53	25.3
Tangerine 1018	47	28	14.5
South Tucson 1001	62	52	20.7

Particulate Matter Weigh Lab

Pima County Department of Environmental Quality operates a filter weigh lab for the processing of Pima County's PM_{10} and $PM_{2.5}$ network filters, excluding $PM_{2.5}$ 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_{10} SIP Development Guideline, Section 6.3.1 "Table look-up" procedure. Three years of sampling data, 2013 – 2015, were used. For that period, the Orange Grove monitoring location was determined to have the highest design value (including possible exceptional events). That value was 115μg/m^3. The ratio of this value to the 24 hour standard of 150 μg/m^3, .76, was then compared to the brackets in Figure 1 from 40 CFR 58.12(e) to arrive at a minimum PM_{10} sampling frequency of every sixth day. Orange Grove operates on an every day sampling schedule.

$PM_{2.5}$ MONITORING NETWORK REQUIREMENTS

The PDEQ $PM_{2.5}$ network consists of six monitoring sites in eastern Pima County, Arizona, **40 CFR Part 58.20, App. D. 4.7.** $PM_{2.5}$ 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 addition to two FRM SLAMS monitors, Pima County operates an FEM SLAMS continuous monitor, and four non- regulatory continuous monitors.

2015 $PM_{2.5}$ Design Criteria
Table 9
PM2.5 SLAMS (FRM and FEM)

Population Pima County	MSA 8520 Tucson Population Category	Design Value Site	Annual Design Value Years 2013-2015	Daily Design Value Years 2013-2015	$PM_{2.5}$ Sites # Required	$PM_{2.5}$ Sites # Operating
2010 Census 980,263	500,000 – 1,000,000	Children's Park	5.5µg/m^3	13µg/m^3	Requires 1 SLAMS monitor <85% of NAAQS	2 SLAMS monitors
2014 estimated population 1,004,516	>1,000,000				Requires 2	

Table 10

Collocated $PM_{2.5}$ Monitors			
Method	# Required Collocation Monitors	# Primary Monitors	# Collocated Monitors
88101 Method 118	1	2	1

General Statement regarding changes to the $PM_{2.5}$ 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 $PM_{2.5}$ 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 monitors are filter-based low-volume samplers that collect a sample for 24 hours on a 1 in 3 day cycle. A co-located sampler at the Children's Park NCore site runs on a 1 in 6 day cycle for precision assessment.

Continuous $PM_{2.5}$ 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. The 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 $PM_{2.5}$ 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 $PM_{2.5}$. This setting does not compromise the accuracy of the readings, and is inherent in the original design and designation of all FEM PM_{10} 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_{10} and $PM_{2.5}$ network filters, excluding $PM_{2.5}$ speciation filters. This weigh lab follows all requirements set forth in **40 CFR Part 50, App. L**.

The $PM_{2.5}$ Chemical Speciation Trends Network was established by EPA in 1999 to determine the chemical speciation of fine particulates. $PM_{2.5}$ speciation monitoring began in Pima County at the Children's Park location in February, 2002. The samples are analyzed for forty eight elements, cations, nitrate, sulfate, organic and elemental carbon. Analysis and reporting is completed by RTI International.

Violation History

The $PM_{2.5}$ standard (December 14, 2012): the annual $PM_{2.5}$ standard is met when the three year average of the spatially averaged annual mean is less than or equal to 12ug/m^3 and the 24 hour standard is met when the three year average of the 98th percentile value at each site is less than or equal to 35ug/m^3. No exceedances of the annual or 24 - hour NAAQS were recorded in Tucson in 2015.

Quality Assurance for Particulate Matter $PM_{2.5}$

All data quality assessment requirements as outlined in **40 CFR Part 58, app. A** have been met in 2015, and include both internal and EPA PEP audits, and the co-located sampler at the Children's Park NCore site.

The accuracy of $PM_{2.5}$ 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 $PM_{2.5}$ 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

Protocol	**Instrument**	**Frequency**	**Date Completed 2015**
Flow rate verification	Met One BAM 1020	Weekly	
Flow Rate Audit	Met One BAM 1020	Semi - Annually	Green Valley 03/10, 09/23 Geronimo 03/12, 09/22 Rose Elementary 03/10, 09/23 Coachline 03/12, 09/22 Children's Park 03/26, 09/17
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 03/11, 09/17 Children's Park 03/24, 09/17 Children's Park (Co-located) 03/24, 09/17 Children's Park (Speciation, SASS) 03/24, 09/10 Children's Park (Speciation, URG) 03/24, 09/10
NPAP Audit			None

Table 12
Annual summary statistics: NAAQS $PM_{2.5}$: 12 µg/m^3 Annual Average, 35 µg/m^3 24 Hour Average.

Year 2015 Site	Highest 24 Hr Value	2nd Highest Value	98th % Value	Annual Average
Orange Grove	**19.5**	**13.0**	**9.8**	**4.6**
Children's Park (Meth. 118)	**18.2**	**10.1**	**9.6**	**4.4**
Children's Park (Meth. 170)	**19.1**	**15.1**	**10.5**	**5.1**
Green Valley	**8.1**	**7.6**	**8.0**	**2.76**
Geronimo	**19.0**	**18.2**	**15.5**	**6.05**
Rose Elementary	**25**	**23**	**17.8**	**8.64**
Coachline	**16.7**	**15.9**	**12.8**	**5.88**

$PM_{10-2.5}$ (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_{10} and $PM_{2.5}$, also referred to as $PM_{10-2.5}$. Pima County is following the requirements set forth in **40 CFR Part 50, App O**. The collocation for $PM_{10-2.5}$ is fulfilled by the national NCore Network.

The $PM_{10-2.5}$ is described on page 39.

Table 13
PM-Coarse Annual summary statistics

Year 2015	Highest 24- Hr Value	2nd Highest 24-Hour Value	Annual Average
Children's Park NCore PM_{10} - $PM_{2.5}$ (86101)	**36**	**29**	**10.68**

OZONE MONITORING NETWORK REQUIREMENTS

Ozone (O_3) 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
2015 O_3 Design Criteria

Population Pima County	MSA 8520 Tucson Population Category	Design Value Site	8- Hour Design Value (2013-2015)	O_3 Sites # Required	O_3 Sites # Operating
2010 Census 980,263	500,000 – 1,000,000	Saguaro Park 040190021	.069 ppm	Requires 2 SLAMS monitors No requirement for SP	3 SLAMS monitors 5 SP monitors
2014 Estimated Population 1,004,516	>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 2015.

Quality Assurance for Ozone

All data quality assessment requirements outlined in **40 CFR Part 58, app. A,** have been met in 2015. 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 0.075 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. Pima County passed the NPAP Ozone TTP Audit for Rose Elementary and Green Valley. All valid precision and accuracy tests are reported to the Air Quality System (AQS) database on a quarterly basis.

OZONE MONITORING NETWORK REQUIREMENTS

Table 15

Ozone Audit Dates 2015
22nd St. & Craycroft 5/27, 12/7 Children's Park 3/19, 6/23, 12/21 Fairgrounds 6/18, 12/16 Tangerine 3/12, 6/10, 12/09 Saguaro Park 6/18, 12/16 Coachline 3/12, 6/10, 12/09 Rose Elementary 6/19, 12/28 Green Valley 6/25, 12/28
NPAP Ozone TTP Audit Dates 2015
Rose Elementary 5/20, Green Valley 5/20

Table 16

Annual summary statistics: NAAQS: 0.075 ppm 4th highest 8- Hour Average
New Ozone NAAQS (as of October 26, 2015) 0.070 ppm 4th highest 8- Hour Average

Year 2015 Site	1st Max. 1-HR Avg (ppm)	1st Max. 8- HR Avg (ppm)	4th Max. 8- HR Avg (ppm)
22nd St. & Craycroft 1011	**.074**	**.068**	**.065**
Children's Park 1028	**.070**	**.064**	**.063**
Fairgrounds 1020	**.077**	**.066**	**.063**
Tangerine 1018	**.071**	**.066**	**.065**
Saguaro Park 0021	**.075**	**.071**	**.066**
Coachline 1034	**.067**	**.063**	**.062**
Rose Elementary 1032	**.078**	**.070**	**.065**
Green Valley 1030	**.064**	**.061**	**.059**

CARBON MONOXIDE 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.

2015 CO Design Criteria
Table 17

Population Pima County	MSA 8520 Tucson Population Category	1- Hour Design Value 2014-2015	CO Monitors # Required	CO Monitors # Operating
2010 Census 980,263	500,000 – 1,000,000	2.0 ppm	No Specific Requirement	2 SLAMS monitors 3 SP monitors
2014 Estimated Population 1,004,516	>1,000,000		[a] Requires 1	

a. Requires one, collocated with one required Near-Road NO_2 monitor, per **40 CFR Part 58, app. D, 4.2.1 and 4.3.2.** Refer to page 4 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 2015. 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.

CARBON MONOXIDE MONITORING NETWORK REQUIREMENTS

Quality Assurance for Carbon Monoxide

All data quality assessment requirements as outlined in **40 CFR Part 58, app. A,** have been met in 2015. 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 2015
Craycroft & 22nd St. 5/27, 12/07 Children's Park 3/13, 6/23, 12/21 Cherry & Glenn; Seasonal 3/31, 12/09 Alvernon & 22nd St. 3/11, 5/27, 12/07 Golf Links & Kolb; Seasonal 3/31, 12/16
NPAP Carbon Monoxide TTP Audit Dates 2015
None

Table 19

Annual summary statistics: NAAQS: 35ppm 1-Hour Average, 9ppm 8- Hour Average

Year 2015 Site	1st Max. 1- HR Avg	2nd Max. 1- HR Avg	1st Max. 8- HR Avg	2nd Max. 8- HR Avg
Craycroft & 22nd St 1011	**1.7**	**1.6**	**0.8**	**0.8**
Children's Park 1028	**1.0**	**1.0**	**0.8**	**0.8**
Cherry & Glenn 1021	**2.0**	**2.0**	**1.4**	**1.4**
Alvernon & 22nd St. 1014	**2.2**	**1.9**	**1.0**	**1.0**
Golf Links & Kolb 1031	**1.6**	**1.6**	**1.0**	**0.9**

NITROGEN DIOXIDE MONITORING NETWORK REQUIREMENTS

Nitrogen dioxide (NO_2) is currently measured at two locations in Tucson. The Environmental Protection Agency has revised the NO_2 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_2 monitoring sites in Pima County.

2015 NO_2 Design Criteria
Table 20

Population Pima County	MSA 8520 Tucson Population Category	Annual Design Value	1- Hour 98th Percentile Design Value	# of Required NO_2 Monitors	# of NO_2 Monitors
2010 Census 980,263	500,000 – 1,000,000	8.83ppb	42.3 ppb	No Requirement [a] Requires 1 microscale	1 SLAMS monitor 1 SP monitor
2014 Estimated Population 1,004,516	>1,000,000			[b] Require 1 microscale [c] Requires 1 area-wide	[c] 1 SLAMS area-wide monitor 1 SP monitor

a. Requires one microscale NO_2 monitor for populations over 500,000, due January 1, 2017 per **40 CFR Part 58, app. D, 4.3.2.** This requirement is under review by EPA, see page 4 of this Plan for additional information on Near-Road Monitoring, and Federal Register Proposed Rule, **81 FR 30224.**
b. Requires one microscale NO_2 monitor for populations over 500,000 per **40 CFR Part 58, app. D, 4.3.2.**
c. Requires one area-wide NO_2 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_2) levels remain well below federal standards. The Craycroft and 22nd St. monitor has been operational since 1973, measuring typical neighborhood NO_2 concentrations. Much of the data has been used in studies measuring the effects of NO_2 as a precursor to ozone formation.

A NO_2 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_2 analyzer was operating at the Downtown site until early 1989. From 1995 to December 2001, NO_2 monitoring was conducted at Saguaro National Park East to establish baseline conditions in a Class I Wilderness Area.

NITROGEN DIOXIDE MONITORING NETWORK REQUIREMENTS

Quality Assurance for NO_2

All data quality assessment requirements outlined in **40 CFR Part 58, app. A**, have been met for 2015. 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. 2015 precision and accuracy tests will be reported in ppb.

Table 21

Nitrogen Dioxide Audit Dates 2015
Craycroft & 22nd St. 5/27, 12/07 Children's Park 3/19, 6/23, 12/21
Nitrogen Dioxide TTP Audit Dates 2015
None

Table 22

Annual summary statistics: NAAQS: 100 ppb 1- Hour Average (98th percentile of the 1-hour concentrations averaged over three years); 53 ppb Annual Average

Year 2015 Site	1st Max. 1- Hour Avg	1 - Hour 98th Percentile	Annual Mean
Craycroft & 22nd St 1011	**45.4**	**40.4**	**8.56**
Children's Park 1028	**40.7**	**35.7**	**8.83**

REACTIVE OXIDES OF NITROGEN (NO_Y) 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_y

All data quality assessment requirements outlined in **40 CFR Part 58, app. A**, have been met for 2015. 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. 2015 precision and accuracy tests will be reported in ppb.

Table 23

Reactive Oxides of Nitrogen Audit Dates 2015
Children's Park NCore 3/19, 6/23, 12/21
Reactive Oxides of Nitrogen TTP Audit Dates 2015
None
NPAP Audit Dates 2015
None

Table 24
Annual summary statistics: reported in ppb

Year **2015** Site	1st Max. 1- Hour Avg	Annual Mean
Children's Park 1028	**127.2**	**10.2**

SULFUR DIOXIDE MONITORING NETWORK REQUIREMENTS

Sulfur Dioxide (SO_2) is currently monitored at one location in Pima County. On October 1, 2010, an SO_2 trace monitor was added at the Children's Park NCore location as required for an NCore site. The SO^2 monitor at the 22nd and Craycroft site was discontinued on December 31, 2010.

The Environmental Protection Agency has revised the SO_2 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_2 monitoring sites.

2015 SO_2 Design Criteria
Table 25

Population Pima County	MSA 8520 Tucson Population Category	Total SO_2 [tons/year] Based on 2011 N EI	Population Weighted Emissions Index [million persons- tons per year]	Data Requirements Rule Sources using Monitoring	1- Hour Design Value	# of Required SO_2 Monitors	# of SO_2 Monitors
2010 Census 980,263	500,000 – 1,000,000	2,184.9	2194.8		6.0 ppb	No Requirement	1 NCore SLAMS
2014 Estimated Population 1,004,516	>1,000,000					No Requirement	

Historical Sulfur Dioxide Monitoring

Ambient concentrations of sulfur dioxide (SO_2) in Tucson have historically remained well below all federal standards, and in recent years have been extremely low. With new trace SO_2 monitoring we can now get more accurate readings at very low levels. The only major stationary sources of SO_2 possibly affecting ambient concentrations in the Tucson air planning area are the coal burning generators at the Irvington Road power plant operated by Tucson Electric Power, which are in the process of being discontinued with the conversion to natural gas.

Quality Assurance for SO_2

All data quality assessment requirements outlined in **40 CFR Part 58, app. A**, have been met for 2015. 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 0.0003 - 0.0029 ppm, 0.0030 – 0.0049 ppm and 0.005 – 0.0079 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 2015
Children's Park NCore 3/13, 6/23, 12/21
Sulfur Dioxide TTP Audit Dates 2015
None

Table 27

Annual summary statistics: Sulfur Dioxide NAAQS: 75 ppb 1- Hour Average (99th percentile of the 1-hour daily maximum concentrations, averaged over 3 years)

Year 2015 Site	1st Max. 1- Hour Avg	1–Hour 99th Percentile	Annual Mean
Children's Park NCore 1028	**5.1**	**4.6**	**0.16**

LEAD MONITORING NETWORK REQUIREMENTS

Lead is currently monitored at the Children's Park NCore location in Pima County. This is a non-source-oriented monitor.

On October 15, 2008 EPA strengthened the lead standard. Research and technology has shown that adverse health effects occur at much lower levels of lead in blood than previously thought. Children are particularly vulnerable to the effects of lead. The primary standard of 1.5 ug/m3 has been lowered to 0.15ug/m3, measured as total suspended particles (TSP).The secondary standard is identical to the primary standard. According to the 2005 National Air Emissions Inventory (NEI) from EPA, Pima County has no sources of lead of one ton or more. This means that Pima County is required to perform area monitoring only, which is done at the Children's Park NCore location. Monitoring and reporting began in February 27, 2012.

The sampling schedule for lead is based on the 2015 EPA's monitoring sampling schedule with a one in six day schedule for the primary monitor and a one in twelve day schedule for the collocated lead monitor.

The design criteria indicated in **40 CFR Part 58, app. D, 4.5**, states that there is one required lead monitor.

2015 Lead Design Criteria
Table 28

NCore Site	MSA 8520 Tucson Population Category	Population Pima County	Lead Design Value	# Required monitors	# of Pb Monitors
Children's Park 040191028	500,000 – 1,000,000	2010 Census 980,263	0.00	1	1- NCore 1- Collocated
	>1,000,000	2014 Estimated Population 1,004,516		1	Same as above

Historical Lead Monitoring

Lead concentrations are extremely low in Tucson. Lead monitoring began in Pima County in 1975 at eight TSP sampling locations. In August, 1978, lead analyses were discontinued at all but two sites. Magnetic Observatory (University of Arizona) and Prince Road were selected to represent a neighborhood site and roadway site, respectively. Lead sampling was started at a third site (Broadway & Swan) in January 1983.

Lead analysis at Magnetic Observatory was discontinued in 1983 due to lack of detectable levels of lead. A TSP sampler was installed at South Tucson in 1991 for purposes of lead analysis. This site, along with the other two remaining sites, (Prince Road and Broadway & Swan) adequately fulfilled the siting criteria for measuring potential highest urban concentrations of lead in the particulate monitoring network.

In March of 1992 the Broadway & Swan lead analysis was discontinued and the TSP samplers from the South Tucson and the Magnetic Observatory sites were moved to the 22nd & Craycroft site. 22nd & Craycroft and Prince Road sites remained until March of 1997.

Quality Assurance for Lead

All data quality assessment requirements outlined in **40 CFR Part 58, app. A**, have been met for 2015. The requirements include quarterly flow rate verification and audits. All valid precision and accuracy tests are reported to the Air Quality System (AQS) database on a quarterly basis.

Table 29

Protocol	**Instrument**	**Frequency**	**Date Completed 2015**
Flow rate verification	Tisch Hi Vol with Brushless Motor	Quarterly	1/30, 2/23, 3/19, 4/29, 5/27, 6/05, 7/17 8/18, 9/21, 10/27, 11/10, 12/14 Collocated: 1/30, 2/23, 3/19, 4/29, 5/27, 6/5, 7/17 8/18, 9/21, 10/27, 11/10, 12/14
Flow Rate Audit		Semi-Annually	2/26, 3/18, 5/01, 5/28, 7/16, 10/14 Collocated: 03/24, 9/17
NPAP Audit			none

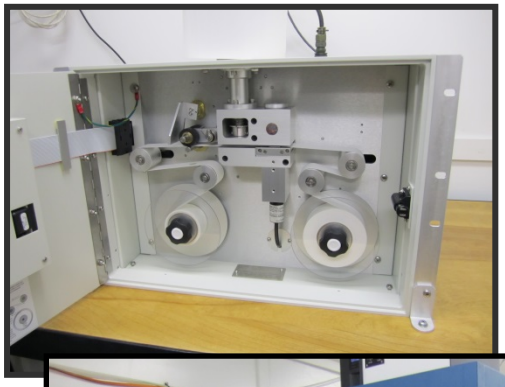
Table 30

Annual summary statistics: NAAQS Lead: 0.15 μg/m^3 three month average

Year 2015 Site	1st Max. 24- Hour Avg	2nd Max. 24- HR Avg	Annual Mean
Children's Park 1028	**.008**	**.005**	**.003**

V. DETAILED SITE AND MONITOR INFORMATION

CHILDREN'S PARK NCore: AQS # 040191028



Site Description	
Site Name	**CHILDREN'S PARK NCore**
AQS ID	040191028
Address	400 W. River Road, Tucson, AZ
Latitude / Longitude	32.295150 / -110.982300
Elevation	2286
Surrounding landscape	Gravel in walled compound, dirt parking lot, dry river bed
Location description	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

Site Name	**CHILDREN'S PARK NCore**
Pollutant	**$PM_{2.5}$ - Not a Primary Monitor**
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	353
Number / Dates of 24-hour standard exceedances in 2015	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.3 meters
Degrees of unrestricted air flow	360
Distance from supporting structure	1.73 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	14.3 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	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 2012 ADT of 33,414
Suitable for comparison to $PM_{2.5}$ Annual NAAQS	YES
Site meets 40 CFR 58, Appx. A,C,D,E	YES
MSA	Tucson, AZ 8520

Comments: Continuous $PM_{2.5}$ sampling began at this neighborhood scale site on January 23, 2011.

Site Name	**CHILDREN'S PARK NCore**
Pollutant	**$PM_{2.5}$ Primary**
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	119
Number / Dates of 24-hour standard exceedances in 2015	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 2012 ADT of 33,414
Suitable for comparison to $PM_{2.5}$ Annual NAAQS	Yes
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

Comments: Sampling began in 1999.

Site Name	CHILDREN'S PARK NCore
Pollutant	**$PM_{2.5}$ Collocated**
Method Code	118
Number of monitors	1
Parameter code/ POC	88101 / POC 2
Basic monitoring objective / Statement of Purpose	Collocated monitor / Requirement
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	30
Number / Dates of 24-hour standard exceedances in 2015	0
Historical exceedances	0
Current Sampling frequency / Season	Every twelve days; after April 27, 2013 every six days
Probe height	3.1 meters above the ground on a platform located in a city water well site.
Degrees of unrestricted air flow	270, from 290 to 200, 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 2012 ADT of 33,414
Suitable for comparison to $PM_{2.5}$ 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 $PM_{2.5}$.

Site Name	**CHILDREN'S PARK NCore**
Pollutant	**PM Coarse PM_{10}-$PM_{2.5}$ (Other)**
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	3/24 , 9/17
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	113
Number / Dates of exceedances in 2015	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 m / 1 in 3 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 2012 ADT of 33,414
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.

Site Name	**CHILDREN'S PARK NCore**
Pollutant	**$PM_{2.5}$ SPECIATION**
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	**Pima County Department of Environmental Quality/ RTP**
Analytical lab	**RTP**
Monitor type	SLAMS
Monitor Network Affiliation	CSN Supplemental ; NCore
Scale	Neighborhood
Number of daily observations	101
Number / Dates of exceedances in 2015	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 2012 ADT of 33,414
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

Comments: Sampling began for $PM_{2.5}$ Speciation in 2000.

Site Name	CHILDREN'S PARK NCore
Pollutant	CARBON MONOXIDE
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
Monitor Network Affiliation	NCore
Scale	Neighborhood
Number of houly observations	8675
Number / Dates of standard exceedances in 2015	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	14.0 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	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 2012 ADT of 33,414
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.

Site Name	**CHILDREN'S PARK NCore**
Pollutant	**OZONE**
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 daily observations	365
Number / Dates of 8-hour standard exceedances in 2015	0
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 / 5.9 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	16.4 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	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 2012 ADT of 33,414
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.

Site Name	**CHILDREN'S PARK NCore**
Pollutant	**NITROGEN DIOXIDE**
Method code	090
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	Ecotech / 9841 T
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	Special Purpose
Monitor Network Affiliation	Proposed NCore
Scale	Neighborhood
Number of hourly observations	8668
Number / Dates of standard exceedances in 2015	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 / 9.19 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	12.8 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	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 2012 ADT of 33,414
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.

Site Name	CHILDREN'S PARK NCore
Pollutant	**REACTIVE OXIDES OF NITROGEN (NO_Y)**
Method code	574/ 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	8601
Number / Dates of standard exceedances in 2015	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; 6.1 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	12.8 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 2012 ADT of 33,414
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.

Site Name	CHILDREN'S PARK NCore
Pollutant	SULFUR DIOXIDE
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 daily observations	8569
Number / Dates of 1-hour standard exceedances in 2015	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 / 12.1 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	14.0 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	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 2012 ADT of 33,414
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.

Site Name	**CHILDREN'S PARK NCore**
Pollutant	**LEAD Primary**
Method Code	110 ICAP spectra (ICP-MS)
Number of monitors	2
Parameter code / POC	14129/ 1
Basic monitoring objective/ Statement of Purpose	NAAQS comparison / Comply with NCore requirements
Site Type	Population Exposure Non- Source -Oriented
Instrument Manufacturer / Model	Tisch / Hi –Vol Plus
FRM/FEM/ARM/other	n/a
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical Lab	Pima County Regional Wastewater Reclamation Department (CRAO)
Analytical Instrument / Method	ICAP Spectra (ICP-MS) / EQL-0510-191
Monitor type	SLAMS
Monitor Network Affiliation	Proposed NCore
Scale	Neighborhood
Number of daily observations	59
Number / Dates of rolling three month average standard exceedances in 2015	0
Historical exceedances	0
Current Sampling frequency / Season	Every six days
Probe height	2.0 meters
Degrees of unrestricted air flow	300, from 270 to 210, includes predominant wind direction from 135 (SE)
Distance from supporting structure	n/a
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	8.4 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	2.3 m / 6 days/ Tisch Hi –Vol Plus
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 2012 ADT of 33,414
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

Comments: Lead sampling began February 27, 2012.

Site Name	**CHILDREN'S PARK NCore**
Pollutant	**LEAD QA Collocated**
Method Code	110 ICAP spectra (ICP-MS)
Number of monitors	2
Parameter code / POC	14129 (POC 2 as of March, 2014)
Basic monitoring objective/ Statement of Purpose	Collocated monitor / Comply with NCore requirements
Site Type	Population Exposure Non- Source -Oriented
Instrument Manufacturer / Model	Tisch Hi –Vol Plus
FRM/FEM/ARM/other	n/a
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical Lab	Pima County Regional Wastewater Reclamation Department (CRAO)
Analytical Instrument / Method	ICAP Spectra (ICP-MS) / EQL -0510-191
Monitor type	SLAMS
Monitor Network Affiliation	Proposed NCore
Scale	Neighborhood
Number of daily observations	52
Number / Dates of rolling three month average standard exceedances in 2015	0
Historical exceedances	0
Current Sampling frequency / Season	Every twelve days; Every six days starting March 7, 2015
Probe height	2.0 m
Degrees of unrestricted air flow	290, from 270 to 200, includes predominant wind direction from 135 (SE)
Distance from supporting structure	n/a
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	6.6 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	2.3 m / 12 days/ Tisch Hi –Vol Plus
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 2012 ADT of 33,414
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

Comments: Lead sampling began February 27, 2012.

Site Name	**CHILDREN'S PARK NCore**
Pollutant	METEOROLOGICAL DATA
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	356
Number / Dates of 24-hour standard exceedances in 2015	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 2012 ADT of 33,414
Site meets 40 CFR 58, Appx. A,C,D,E	YES
MSA	Tucson, AZ 8520

GREEN VALLEY: AQS # 040191030

Site Description	
Site Name	**GREEN VALLEY**
AQS ID	040191030
Address	601 N. La Canada Drive, Green Valley, AZ
Latitude / Longitude	31.87952 / -110.996440
Elevation	2910
Surrounding landscape	Dirt, sparse desert vegetation
Location description	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

Site Name	**GREEN VALLEY**
Pollutant	**PM_{10}**
Method code	079
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	Thermo Scientific /TEOM 1400AB and Met One/ BAM 1020
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	Special Purpose
Scale	Neighborhood
Number of houly observations	8283
Number / Dates of 24-hour standard exceedances in 2015	0
Historical exceedances	April 9, 2013; July 25, 2014.
Current Sampling frequency / Season	Continuous
Probe height	4.25 meters above the ground of 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 2015 ADT of 14,332
	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

Comments: This site is fifty kilometers south of Downtown Tucson in the retirement community of Green Valley. PM_{10} 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_{10} 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.

Site Name	GREEN VALLEY
Pollutant	**$PM_{2.5}$**
Method code	733
Number of monitors	1
Parameter code / POC	88501/3
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	Special Purpose
Scale	Neighborhood
Number of hourly observations	8606
Number / Dates of 24-hour standard exceedances in 2015	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.8 meters above the ground on a shelter
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 2015 ADT of 14,332
	0.5 kilometers west of Interstate 19 with a 2011 ADT of 31,000
Suitable for comparison to $PM_{2.5}$ Annual NAAQS	No
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
CBSA	Green Valley, AZ 46060

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 $PM_{2.5}$ data to EPA July, 2003.

Site Name	**GREEN VALLEY**
Pollutant	**OZONE**
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	Special Purpose
Scale	Neighborhood
Number of daily observations	359
Number / Dates of 8-hour standard exceedances in 2015	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	3.1 meters above the ground on a shelter
Probe material / Residence time	FEP Teflon / 7.95 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.2 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	8.5 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 2015 ADT of 14,332
	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

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

Monitoring Information

Site Name	CORONA de TUCSON
Pollutant	PM_{10}
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	59
Number / Dates of 24-hour standard exceedances in 2015	0
Historical exceedances	0
Current Sampling frequency / Season	Every six days
Probe height	2.08 meters
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	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 2015 ADT of 11,752
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_{10} 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_{10} was substituted with dichotomous sampling during the last quarter of 1989 in support of the state sponsored Tucson PM_{10} Source Apportionment Study. Hi - Vol PM_{10} sampling resumed in January 1990. Low -Vol PM_{10} R& P 2000 sampling began in March, 2006.

ORANGE GROVE: AQS # 040190011

Site Description	
Site Name	**ORANGE GROVE**
AQS ID	040190011
Address	3401 W. Orange Grove Road, Tucson, AZ
Latitude / Longitude	32.32255 / -111.037700
Elevation	2234
Surrounding landscape	Gravel in fenced compound, dirt road shoulders
Location description	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

Site Name	ORANGE GROVE
Pollutant	PM_{10} Primary
Method code	127
Number of monitors	2
Parameter code / POC	81102/ 2
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	361
Number / Dates of 24-hour standard exceedances in 2015	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 6th day/ R& P 2025 Sequential
Nearest roads distance & direction to monitor / ADT	37 meters west of Camino de la Tierra with a 2011 ADT of 7,894 and 70 meters south of Orange Grove Road with a 2013 ADT of 37,622
	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_{10} monitoring sites in the network. Orange Grove was chosen as the initial PM_{10} 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_{10} 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.

Site Name	**ORANGE GROVE**
Pollutant	PM_{10} Collocated
Method code	127
Number of monitors	2
Parameter code / POC	81102 (POC 4 as of March, 2014)
Basic monitoring objective / Statement of purpose	Collocation information
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	313
Number / Dates of 24-hour standard exceedances in 2015	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 6th day/ R& P 2025 Sequential
Nearest roads distance & direction to monitor / ADT	37 meters west of Camino de la Tierra with a 2011 ADT of 7,894 and 70 meters south of Orange Grove Road with a 2013 ADT of 37,622
	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

Site Name	**ORANGE GROVE**
Pollutant	**$PM_{2.5}$**
Method code	118
Number of monitors	1
Parameter code / POC	88101/ 1
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	116
Number / Dates of 24-hour standard exceedances in 2015	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 2011 ADT of 7,894 and 70 meters south of Orange Grove Road with a 2013 ADT of 37,622
	2 kilometers east of Interstate 10 with a 2012 ADT of 110,000
Suitable for comparison to $PM_{2.5}$ Annual NAAQS	Yes
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

Comments: $PM_{2.5}$ 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.

SOUTH TUCSON: AQS # 040191001

Site Description	
Site Name	**SOUTH TUCSON**
AQS ID	040191001
Address	1601 S. 6th Avenue, South Tucson, AZ
Latitude / Longitude	32.20195 / -110.967900
Elevation	2420
Surrounding landscape	Primarily paved parking lots; gravel and desert landscaping surrounding building.
Location description	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_{10} 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. 6th 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_{10} samplers were operational at this site from June 1991 to June 1999. Co-location of the PM_{10} 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.

Monitoring Information

Site Name	**SOUTH TUCSON**
Pollutant	**PM_{10}** Primary
Method code	127
Number of monitors	2
Parameter code / POC	81102 /1
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	359
Number / Dates of 24-hour standard exceedances in 2015	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	6.7 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	1.7 meters/ Every day; reported every 6th day/ R&P 2025 Sequential
Nearest roads distance & direction to monitor / ADT	41 meters east of South 6th Avenue with a 2012 ADT of 15,000
	528 meters south of 22nd Street with a 2012 ADT of 34,000
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

Site Name	**SOUTH TUCSON**
Pollutant	**PM_{10}** Collocated
Method code	127
Number of monitors	2
Parameter code / POC	81102 (POC 2 as of March, 2014)
Basic monitoring objective / Statement of purpose	Collocation sampling information
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	312
Number / Dates of 24-hour standard exceedances in 2015	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	6.7 meters
Distance to furnace or incinerator flue	n/a
Distance between collocated monitors/ Schedule / Collocated monitor type	1.7 meters/ Every day; reported every 6th day/ R&P 2025 Sequential
Nearest roads distance & direction to monitor / ADT	41 meters east of South 6th Avenue with a 2012 ADT of 15,000
	528 meters south of 22nd Street with a 2012 ADT of 34,000
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

SANTA CLARA SCHOOL: AQS# 040191026

Site Description	
Site Name	**SANTA CLARA SCHOOL**
AQS ID	040191026
Address	6910 S. Santa Clara Avenue, Tucson, AZ
Latitude / Longitude	32.125950 / -110.982600
Elevation	2540
Surrounding landscape	Large flat roof, paved parking lots and streets, grass playground.
Location description	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.

Monitoring Information

Site Name	**SANTA CLARA SCHOOL**
Pollutant	**PM_{10}**
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	Special Purpose
Scale	Neighborhood
Number of daily observations	57
Number / Dates of 24-hour standard exceedances in 2015	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	n/a
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 2013 ADT of 48,642
Site meets 40 CFR 58, Appx. A,C,D,E	Yes
MSA	Tucson, AZ 8520

TANGERINE: AQS # 040191018

Previous

Current

Site Description	
Site Name	**TANGERINE**
AQS ID	040191018
Address	12101 N. Camino de Oeste, Tucson, AZ
Latitude / Longitude	32.425250 / -111.063500
Elevation	2638
Surrounding landscape	Dirt, sparse desert vegetation to the east; high density, tri-level and multi-unit apartments directly west of station.
Location description	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

Site Name	TANGERINE
Pollutant	**PM_{10}**
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	Special Purpose
Scale	Urban
Number of daily observations	57
Number / Dates of 24-hour standard exceedances in 2015	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	6.4 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	Tangerine Road runs approximately east – west 70 meters south of the site with a 2011 ADT of 5,000
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 2016

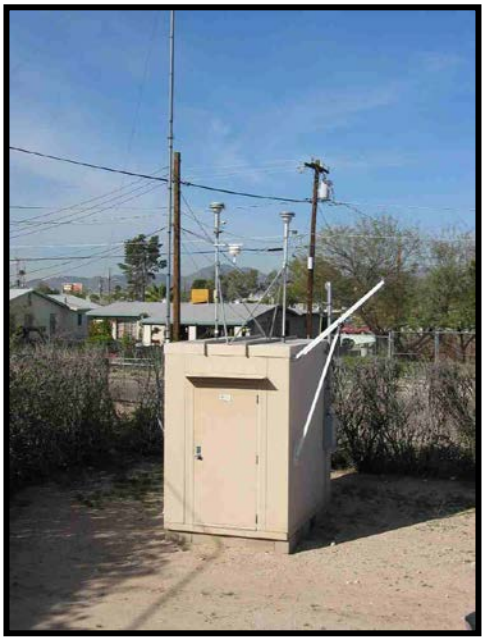
Comments: The primary objective of this site is to assess background concentrations and to assess transport impact from outlying sources during exceptional wind events**.** As part of the urban haze/ visibility study, dichotomous samplers were installed at this site in July 1993. PM_{10} data from these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

Site Name	**TANGERINE**
Pollutant	**OZONE**
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 / 49c
FRM/FEM/ARM/other	FEM
Collecting agency / Reporting agency	PDEQ/ PDEQ
Analytical lab	n/a
Monitor type	Special Purpose
Scale	Urban
Number of daily observations	364
Number / Dates of 8-hour standard exceedances in 2015	0
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 / 8.5 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	8.3 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	Tangerine Road runs approximately east – west 70 meters south of the site with a 2011 ADT of 5,000
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 2016

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



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

Monitoring Information

Site Name	**GERONIMO**
Pollutant	**PM_{10}**
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
Scale	Neighborhood
Number of hourly observations	8595
Number / Dates of 24-hour standard exceedances in 2015	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	360
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	9.3 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	154.8 meters north of Grant Road with a 2014 ADT 35,894
	617.6 meters east of Stone Avenue with a 2012 ADT 21,000
	397.5 meters west of North 1st Avenue with a 2011 ADT 34,000
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 dependant on approval from EPA.

Site Name	**GERONIMO**
Pollutant	**$PM_{2.5}$**
Method code	733
Number of monitors	1
Parameter code / POC	88501 /3
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	Special Purpose
Scale	Neighborhood
Number of hourly observations	8373
Number / Dates of 24-hour standard exceedances in 2015	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.6 meters
Degrees of unrestricted air flow	360
Distance from supporting structure	1.98 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	9.4 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	154.8 meters north of Grant Road with a 2014 ADT 35,894
	617.6 meters east of Stone Avenue with a 2012 ADT 21,000
	397.5 meters west of North 1st Avenue with a 2011 ADT 34,000
Suitable for comparison to $PM_{2.5}$ Annual NAAQS	No
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 $PM_{2.5}$ data to EPA July, 2003. This is a Special Purpose site situated in a residential area, monitoring for population exposure.

ROSE ELEMENTARY: AQS # 040191032

Site Description	
Site Name	**ROSE ELEMENTARY**
AQS ID	040191032
Address	710 W. Michigan, Tucson, AZ
Latitude / Longitude	32.173 / -110.980115
Elevation	2438
Surrounding landscape	Grass playground
Location description	The site is located in a residential neighborhood with light commercial enterprises. The Santa Cruz River, with several sand and gravel operations, parallels the interstate one kilometer to the west.

Monitoring Information

Site Name	ROSE ELEMENTARY
Pollutant	**$PM_{2.5}$**
Method code	733
Number of monitors	1
Parameter code / POC	88501 /3
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	Special Purpose
Scale	Neighborhood
Number of hourly observations	8401
Number / Dates of 24-hour standard exceedances in 2015	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	12th Avenue 235 meters to the east with a 2011 ADT of 22,000
	Ajo Way 528 meters to the north with a 2012 ADT of 28, 000
	Interstate 19 runs north-south half a kilometer to the west with a 2012 ADT 80,000
Suitable for comparison to $PM_{2.5}$ Annual NAAQS	No
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 $PM_{2.5}$ data to EPA July, 2003.

Site Name	ROSE ELEMENTARY
Pollutant	**OZONE**
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	Special Purpose
Scale	Neighborhood
Number of daily observations	357
Number / Dates of 8-hour standard exceedances in 2015	0
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 / 9.5 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	9.4 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	12th Avenue 235 meters to the east with a 2011 ADT of 22,000
	Ajo Way 528 meters to the north with a 2012 ADT of 28, 000
	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

Site Description	
Site Name	**COACHLINE**
AQS ID	040191034
Address	9597 N. Coachline, Tucson, AZ
Latitude / Longitude	32.380820 / -111.127160
Elevation	2104
Surrounding landscape	Dirt within walled compound, residential neighborhood
Location description	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

Site Name	COACHLINE
Pollutant	**$PM_{2.5}$**
Method code	733
Number of monitors	1
Parameter code / POC	88501/ 3
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	Special Purpose
Scale	Neighborhood
Number of hourly observations	8109
Number / Dates of 24-hour standard exceedances in 2015	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	5.0 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	approximately 1.25 kilometers west of Interstate 10 with a 2012 ADT of 77,000
	.5 kilometer north of Silverbell Road 2013 ADT of 16,994
Suitable for comparison to $PM_{2.5}$ Annual NAAQS	No
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 $PM_{2.5}$ data to EPA July, 2003.

Site Name	COACHLINE
Pollutant	**OZONE**
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	Special Purpose
Scale	Neighborhood
Number of daily observations	365
Number / Dates of 8-hour standard exceedances in 2015	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	3.1 meters above the ground on a shelter on Tucson's far northwest side
Probe material / Residence time	FEP Teflon / 9.3 seconds
Degrees of unrestricted air flow	310, from 230 to 180, includes predominant wind direction from 135 (SE)
Distance from supporting structure	1.1 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	n/a
Distance from trees	5.3 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	approximately 1.25 kilometers west of Interstate 10 with a 2012 ADT of 77,000
	.5 kilometer north of Silverbell Road 2013 ADT of 16,994
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.

22ND STREET & CRAYCROFT: AQS # 040191011

Site Description	
Site Name	**22ND STREET & CRAYCROFT**
AQS ID	040191011/ 1
Address	1237 S. Beverly Avenue, Tucson, AZ
Latitude / Longitude	32.204420 / -110.878067
Elevation	2582
Surrounding landscape	Dirt, ephemeral weeds
Location description	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

Site Name	22ND STREET & CRAYCROFT
Pollutant	**CARBON MONOXIDE**
Method code	158
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	Horiba / APMA370
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	SLAMS
Scale	Neighborhood
Number of hourly observations	8646
Number / Dates of standard exceedances in 2015	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.1 meters above the ground on the roof of a shelter located in a city water well site.
Probe material / Residence time	FEP Teflon / 5.3 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.2 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 2012 ADT of 34,000
	260 meters north is 22nd Street with a 2012 ADT of 48,000
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.

Site Name	**22ND STREET & CRAYCROFT**
Pollutant	**OZONE**
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 daily observations	362
Number / Dates of 8-hour standard exceedances in 2015	0
Historical exceedances	One in 1997, 1999, 2002, 2011
Current Sampling frequency / Season	Continuous
Probe height	4.1 meters above the ground on the roof of a shelter located in a city water well site.
Probe material / Residence time	FEP Teflon / 8.1 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.2 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 2012 ADT of 34,000
	260 meters north is 22nd Street with a 2012 ADT of 48,000
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.

Site Name	**22ND STREET & CRAYCROFT**
Pollutant	**NITROGEN DIOXIDE**
Method code	157
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	Horiba / APNA -370 and Thermo Scientific / 49i
FRM/FEM/ARM/other	FRM
Collecting agency / Reporting agency	PDEQ / PDEQ
Analytical lab	n/a
Monitor type	SLAMS
Scale	Neighborhood
Number of hourly observations	8513
Number / Dates of standard exceedances in 2015	0
Historical exceedances	0
Current Sampling frequency / Season	Continuous
Probe height	4.1 meters above the ground on the roof of a shelter located in a city water well site
Probe material / Residence time	FEP Teflon / 7.5 seconds
Degrees of unrestricted air flow	360
Distance from supporting structure	1.2 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 2012 ADT of 34,000
	260 meters north is 22nd Street with a 2012 ADT of 48,000
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.

22ND STREET & ALVERNON: AQS # 040191014

Site Description	
Site Name	**22ND STREET & ALVERNON**
AQS ID	040191014
Address	3895 E. 22nd Street, Tucson, AZ
Latitude / Longitude	32.207390 / -110.910650
Elevation	2516
Surrounding landscape	Gravel in walled compound, paved streets and sidewalks
Location description	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

Site Name	22ND STREET & ALVERNON
Pollutant	**CARBON MONOXIDE**
Method code	174
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	Ecotech / Serinus 30 and Thermo Scientific 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	8623
Number / Dates of standard exceedances in 2015	0
Historical exceedances	Years: 1975 - 1986 and 1988
Current Sampling frequency / Season	Continuous
Probe height	3.4 meters above the ground attached to a wall near 22nd Street at a Tucson Water well site
Probe material / Residence time	FEP Teflon / 24.4 seconds
Degrees of unrestricted air flow	320 , from 5 to 325 includes predominant wind direction from 135 (SE; directly from intersection of 22nd St. and Alvernon Way).
Distance from supporting structure	1.1 meters
Distance from obstruction on roof	n/a
Distance from obstruction not on roof	2.0 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 2014 ADT of 29,475
	10 meters north of 22nd Street with a 2012 ADT of 43,000
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. 22nd & Alvernon 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, 22nd & Alvernon 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 2015.

CHERRY & GLENN: AQS # 040191021

Site Description	
Site Name	**CHERRY & GLENN**
AQS ID	040191021
Address	2745 N. Cherry Avenue, Tucson, AZ
Latitude / Longitude	32.25658 / -110.948650
Elevation	2400
Surrounding landscape	Gravel in fenced compound, paved parking lot, streets
Location description	This site is located in a predominately residential neighborhood, approximately 0.8 km northwest of a high traffic count intersection. Directly south and west of the site is a private High School enrolling approximately 1200 students.

Monitoring Information

Site Name	CHERRY & GLENN
Pollutant	**CARBON MONOXIDE**
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	4313
Number / Dates of standard exceedances in 2015	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 / 5.47 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 2014 ADT of 34,034
	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

Site Description	
Site Name	**GOLF LINKS & KOLB**
AQS ID	040191031
Address	2601 South Kolb Road
Latitude / Longitude	32.191180 / -110.840550
Elevation	2692
Surrounding landscape	Dirt lot and easement, paved street
Location description	This site is located near the southeast corner of Golf Links and Kolb roads in a City of Tucson water reservoir site. Light commercial enterprises occupy all four corners and separate the intersection from residential neighborhoods.

Monitoring Information

Site Name	**GOLF LINKS & KOLB**
Pollutant	**CARBON MONOXIDE**
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	4338
Number / Dates of standard exceedances in 2015	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 / 28.96 seconds
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	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 2014 ADT of 37,210
	2 meters east of Kolb Road, with a 2013 ADT of 40,462
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 22/Alvernon site. This site is operated seasonally, from October through March.

SAGUARO PARK EAST: AQS # 040190021

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

Monitoring Information

Site Name	**SAGUARO PARK EAST**
Pollutant	**OZONE**
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
Scale	Neighborhood
Number of daily observations	364
Number / Dates of 8-hour standard exceedances in 2015	0
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 / 6.58 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	8.0 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	80 meters east to Old Spanish Trail with a 2015 ADT of 6,535
	105 meters south of Escalante with a 2014 ADT of 3,560
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

Site Description	
Site Name	**FAIRGROUNDS**
AQS ID	040191020
Address	11330 S. Houghton Road, Tucson, AZ
Latitude / Longitude	32.047680 / -110.774350
Elevation	3078
Surrounding landscape	Natural desert vegetation on lag gravel
Location description	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

Site Name	**FAIRGROUNDS**
Pollutant	**OZONE**
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	Special Purpose
Scale	Urban
Number of daily observations	352
Number / Dates of 8-hour standard exceedances in 2015	0
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 / 8.64 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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

OCT 27 2015

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

Dear Ms. Kramer,

Thank you for your submission of the Pima County Department of Environmental Quality's (PDEQ's) *2014 Ambient Air Monitoring Five Year Network Assessment and Plan* in June 2015. 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. With this plan approval, we also formally approve the closure of the Prince Road monitoring site (AQS ID: 04-019-1009) and re-classification of Green Valley (AQS ID: 04-019-1030), Geronimo (AQS ID: 04-019-1113), Santa Clara (AQS ID: 04-019-1026), and Tangerine (AQS ID: 04-019-1018) SPM PM_{10} monitors to SLAMS. More information about the approval of the Prince Road monitoring site is in enclosure D.

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 fourth enclosure (*D. EPA approval of the site closure request for Prince Road*) documents EPA's approval of the Prince Road site closure, as requested in your letter dated May 13, 2015.

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.

We also want to thank you for your timely submission of the 2015 network assessment as part of the *2014 Ambient Air Monitoring Five Year Network Assessment and Plan* in June 2015 for PDEQ, as required under 40 CFR Part 58.10. We recognize that preparing the network assessment was a significant project and we appreciate your effort.

The recently revised ozone NAAQS, finalized on October 1, 2015, includes language that revokes all existing seasonal ozone waivers upon the effective date of the final rule. EPA Region 9 will consider all previously approved ozone season waivers effective until December 31, 2015. In advance of the 2016 ozone monitoring season (January – December), EPA Region 9 recommends that agencies seeking new ozone waivers for the 2015 8-hour Ozone NAAQS of 0.070 ppm submit waiver requests no later than December 1, 2015.

If you have any questions regarding this letter or the enclosed comments, please feel free to contact Meredith Kurpius at (415) 947-4534 or Jennifer Williams at (415) 972-3938.

Sincerely,

Gretchen Busterud
Acting Deputy Director, Air Division

Enclosures:

A. Annual Monitoring Network Plan Items where EPA is Not Taking Action
B. Additional Items Requiring Attention
C. Annual Monitoring Network Plan Checklist
D. EPA approval of the site closure request for Prince Road

cc (via email): Ted Gould, PDEQ

Attachment B

PIMA COUNTY
ENVIRONMENTAL QUALITY

33 N. Stone Avenue, Suite 700
Tucson, Arizona 85701-1429
www.pima.gov/deq

Ursula Kramer Nelson, P.E.
Director

(520) 724-7400
FAX (520) 838-7432

March 31, 2016

Meredith Kurpius, Ph.D.
Manager, Air Quality Analysis Office
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Dear Dr. Kurpius:

We are requesting EPA's approval to discontinue monitoring non-source oriented Pb (Pb-TSP) at the Pima County Department of Environmental Quality's Children's Park NCore site, Site ID 04-019-1028. This request is being made under the provisions of 40 CFR 58.14 and recent revisions to appendix D of 40 CFR Part 58, Section 3(b) and Sections 4.5(b) and 4.5(c), published in the Federal Register on March 28, 2016.

After 3 years' worth of completed data collection, from 2013 through 2015, the calculated design value for Pb at the Children's Park NCore site is 0.00 ug/m3, which is well below the NAAQS criteria of >0.15ug/m3.

Thank you for your consideration.

Sincerely,

Theodore Gould
Environmental Planning Manager
Pima County Dept. of Env. Quality

TG/MD/vb

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAY 16 2016

Mr. Theodore Gould
Environmental Planning Manager
Pima County Department of Environmental Quality
33 North Stone Avenue
Suite 700
Tucson, Arizona 85701-1429

Dear Mr. Gould:

The U.S. Environmental Protection Agency (EPA) has reviewed your letter dated March 31, 2016, requesting approval to discontinue lead (Pb) monitoring at your Children's Park NCore site. With this letter, EPA approves closure of the Pb monitors at the Children's Park NCore site (AQS ID: 04-019-1028, POC1 and POC2).

Pima County began monitoring for Pb at Children's Park on February 27, 2012 and installed a collocated monitor on January 1, 2014. The highest three-month rolling average measured from March 2012 through the end of 2015 was 0.00 $\mu g/m^3$. As stated in the preamble to the revised monitoring rule (81 FR 17259), EPA anticipated that waiver requests for shutdown of Pb monitoring at urban NCore sites would be received based on three years of data showing design values well below the 2008 Pb National Ambient Air Quality Standards (NAAQS).

EPA approves this shutdown based on a case-by-case approval per 40 CFR 58.14(c). Discontinuance does not compromise data collection needed for implementation of the Pb NAAQS, and the requirements of Appendix D will continue to be met after this monitor is closed as Pb monitoring is no longer required at urban NCore sites.

Please include your March 31, 2016 request letter and this response in your network plan. Thank you, and feel free to contact Gwen Yoshimura at yoshimura.gwen@epa.gov or 415-947-4134 should you have any questions.

Sincerely,

Meredith Kurpius
Chief, Air Quality Analysis Office

cc (via email): Mike Draper, Pima County

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