Annual Network Plan

Covering Monitoring Operations in 25 California Air Districts

June 2016

California Environmental Protection Agency
Air Resources Board

Table of Contents

Section 1 Introduction 3

Section 2 Monitoring Network Overview 6

Section 3 Site and Monitoring Information 8

Section 4 Federal Minimum Monitoring Requirements 14

- 4A Ozone 14
- 4B Nitrogen Dioxide 17
- 4C Carbon Monoxide 19
- 4D Sulfur Dioxide 20
- 4E Lead 21
- 4F PM_{10} 22
- 4G $PM_{2.5}$ 25

Section 5 Other Federal Monitoring Requirements 31

Section 6 Federal Quality Assurance Requirements 34

Section 7 Recent and Proposed Site Changes 40

Section 8 Information Resources for Network Information 44

Appendices

A: Detailed Site Reports A-1

B: Ozone Seasonal Waiver/Approval of Reduced $PM_{2.5}$ Sampling Frequency B-1

C: Supporting Documentation for Site Changes C-1

Abbreviations used in this document

ARB	California Air Resources Board
ANP	Annual Network Plan
APCD	Air Pollution Control District
AQMD	Air Quality Management District
AQS	Air Quality System
ARD	Air Resources District
ARM	Approved Regional Method
AQDA	Air Quality Data Action
CAN	Corrective Action Notification
CBSA	Core-Based Statistical Area
CFR	Code of Federal Regulations
CO	Carbon monoxide
CSN	Chemical Speciation Network
DV	Design Value
FEM	Federal Equivalent Method
FRM	Federal Reference Method
MLD	Monitoring and Laboratory Division
NAAQS	National Ambient Air Quality Standard
NCore	National Core multipollutant network monitoring site
NIST	National Institute of Standards and Technology
NO_2	Nitrogen dioxide
NPS	National Park Service
OMB	Office of Management and Budget
PAMS	Photochemical Assessment Monitoring Site
PM_{10}	Particulate Matter with an aerodynamic diameter <10 micrometers
$PM_{2.5}$	Particulate Matter with an aerodynamic diameter <2.5 micrometers
PQAO	Primary Quality Assurance Organization
PWEI	Population Weighted Emissions Index
QAS	Quality Assurance Section
QMB	Quality Management Branch
QMS	Quality Management Section
SLAMS	State and Local Air Monitoring Site
SO_2	Sulfur dioxide
SPM	Special Purpose Monitor
STN	Speciated Trends Network
TPY	Tons Per Year
U.S. EPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound

Section 1: Introduction

Federal regulations require state and local agencies that conduct ambient air monitoring for regulatory purposes to submit an Annual Network Plan (ANP) to the U.S. Environmental Protection Agency (U.S. EPA). ANPs are required to provide detailed information about sites and instruments operating in the ambient air monitoring network. This ANP meets the federal regulatory requirements set forth in 40 CFR 58.10 and Appendices A through E.

The Air Resources Board (ARB) Primary Quality Assurance Organization (PQAO) is comprised of 32 of the 35 air districts in California. The districts in the ARB PQAO may elect to prepare their own ANP or have their information included in the ARB ANP. The 2016 ARB ANP covers the monitoring networks of 25 districts within the ARB PQAO. Seven districts in the ARB PQAO will prepare their own ANPs and submit them directly to U.S. EPA. Three other districts in California, the Bay Area Air Quality Management District (AQMD), San Diego Air Pollution Control District (APCD), and South Coast AQMD represent their own PQAOs and are responsible for preparing their own ANPs and submitting them directly to U.S. EPA.

The 2016 ANP details the operations of the monitoring networks in 2015 and describes the changes that are planned to occur within the next 18 months. Consistent with direction from U.S. EPA, this ANP describes monitors operated by local districts, ARB, and other agencies such as the National Park Service (NPS), within the jurisdictions of the districts covered by this report. As required by federal regulations, this ANP includes detailed information about monitors using Federal Reference Methods (FRM), Federal Equivalent Methods (FEM), or Approved Regional Methods (ARM) that are included in the State and Local Air Monitoring (SLAMS) network, National Core (NCore) Multipollutant Network, Chemical Speciation Network (CSN) or at Special Purpose Monitor (SPM) stations, and Photochemical Assessment Monitoring Stations (PAMS).

Areas Covered in this Network Plan

The geographic boundaries of the 25 air districts covered in this ANP as well as the districts preparing their own ANPs are identified in Table 1 and Figure 1. Monitoring sites operated by districts that are not covered by this ANP are included when necessary to demonstrate fulfillment of federal monitoring requirements.

Public Inspection and Comment Period

The ARB ANP was available for a 30 day public inspection and comment period prior to its submittal to the U.S. EPA. The final version of the ARB ANP is available for download from http://www.arb.ca.gov/aqd/amnr/amnr.htm.

Table 1: Districts in the ARB Primary Quality Assurance Organization

Districts included in the ARB ANP	Districts drafting their own ANP
Amador County APCD	Great Basin Unified APCD
Antelope Valley AQMD	Monterey Bay Unified APCD[1]
Butte County AQMD	North Coast Unified AQMD
Calaveras County APCD	Sacramento Metropolitan AQMD
Colusa County APCD	San Joaquin Valley APCD
Eastern Kern APCD	San Luis Obispo County APCD
El Dorado County AQMD	Santa Barbara County APCD
Feather River AQMD	
Glenn County APCD	
Imperial County APCD	
Lake County AQMD	
Lassen County APCD	
Mariposa County APCD	
Mendocino County AQMD	
Modoc County APCD	
Mojave Desert AQMD	
Northern Sierra AQMD	
Northern Sonoma County APCD	
Placer County APCD	
Shasta County AQMD	
Siskiyou County APCD	
Tehama County APCD	
Tuolumne County APCD	
Ventura County APCD	
Yolo-Solano AQMD	

[1] Now doing business as the Monterey Bay Air Resources District

Figure 1: California Primary Quality Assurance Organizations

ARB PQAO districts preparing their own plan: North Coast Unified (NCU); Sacramento (SAC); San Joaquin Unified (SJU); Great Basin Unified (GBU); Monterey Bay Unified (MBU); San Luis Obispo (SLO); and Santa Barbara (SB)

Section 2: Monitoring Network Overview

California's ambient air monitoring network includes over 250 sites and more than 700 monitors, making it one of the most extensive in the world. Many regions in California are characterized by complex terrain, variable meteorological conditions, and diverse emission sources. A large monitoring network is critical for assessing the State's progress in meeting clean air objectives, understanding spatial and temporal variation in air pollutants, and evaluating pollutant exposure. Monitors are operated by ARB, local air districts, and other entities, including the National Park Service (NPS), private contractors, and tribal authorities. Tribal monitors are not included in this report.

Ambient concentration data are collected for a wide variety of pollutants including ozone, particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$), particulate matter with a diameter of 10 microns or less (PM_{10}), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb), which are the federal criteria pollutants. Meteorological parameters, volatile organic compounds (VOC), and a host of toxic air contaminants are also monitored at a number of sites. While toxics, VOCs, and meteorological monitoring play an integral role in California's air quality programs, the focus of this ANP, as specified by federal requirements, is on sites that conduct monitoring of the federal criteria pollutants, as well as PAMS data, within the jurisdictions of districts covered by this ANP.

Although most sites monitor for multiple pollutants, not all pollutants are monitored at every site because the data needs vary by locale. One fundamental purpose of monitoring is to distinguish between areas where pollutant levels violate the ambient air quality standards and areas that meet ambient air quality standards. Areas in violation of a standard usually have increasingly stringent mandates to reduce the sources of pollution that result in the exceedances. Based in part on monitoring data, air quality agencies develop strategies, programs, and regulations to achieve needed emission reductions. Data from the ambient monitoring network are then used to assess the efficacy of strategies, programs, and regulations. The pollutants monitored at sites in the districts covered by this ANP are shown in Table 2; additional site and monitor-level details are provided in Appendix A.

Table 2: Pollutants Monitored in the Districts Covered by this ANP

District	Site	CO	NO_2	Ozone	SO_2	PM_{10}	$PM_{2.5}$	ARB Operated
Amador	Jackson-Clinton			x				Yes
Antelope Valley	Lancaster	x	x	x		x	x	
Butte	Chico	x	x	x		x	x	Yes
	Gridley						x*	Yes
	Paradise			x				Yes
Calaveras	San Andreas			x		x	x	Yes
Colusa	Colusa-Sunrise			x		x	x	Yes
Eastern Kern	Mojave			x		x	x	Yes
	Ridgecrest					x	x	
	Canebrake					x		

Table 2 continued:

District	Site	CO	NO_2	Ozone	SO_2	PM_{10}	$PM_{2.5}$	ARB Operated
El Dorado	Cool			x				Yes
	Echo Summit			x				Yes
	Placerville			x				Yes
	South Lake Tahoe					x		Yes
Feather River	Sutter Buttes			x				Yes
	Yuba City		x	x		x	x	Yes
Glenn	Willows-Colusa			x		x	x*	Yes
Imperial	Calexico-Ethel	x	x	x	x	x	x	Yes
	Brawley					x	x	
	El Centro	x	x	x		x	x	
	Niland			x		x		
	Westmorland			x		x		
Lake	Glenbrook					x*		
	Lakeport			x		x*	x	
Mariposa	Jerseydale			x				Yes
	Yosemite Village					x	x*	Yes
Mendocino	Fort Bragg					x		
	Ukiah-Gobbi			x				
	Ukiah-Library						x	
	Willits						x	
Mojave Desert	Barstow	x	x	x		x		
	Hesperia			x		x		
	Lucerne Valley					x		
	Phelan			x				
	Trona		x	x	x	x		
	Victorville	x	x	x	x	x	x	
Northern Sierra	White Cloud			x				Yes
	Grass Valley			x			x	
	Portola						x	
	Quincy						x	
	Truckee						x	
	Chester						x*	
Northern Sonoma	Cloverdale					x		
	Guerneville					x		
	Healdsburg-Matheson					x		
	Healdsburg-Muni			x				
Placer	Roseville		x	x		x	x	Yes
	Auburn-Atwood			x			x	
	Colfax			x			x	
	Lincoln			x			x*	
	Tahoe City			x			x*	
Shasta	Anderson			x		x		
	Redding-Health Dept			x		x	x	
	Shasta Lake-Lake Blvd			x				
	Shasta Lake-La Mesa					x		
	Lassen Volcanic NP			x				
Siskiyou	Yreka			x		x	x	
Tehama	Tuscan Butte			x				Yes
	Red Bluff-Walnut			x		x	x*	
Tuolumne	Sonora			x				Yes
Ventura	El Rio		x	x		x	x	
	Ojai			x			x	
	Piru			x			x	
	Simi Valley		x	x		x	x	
	Thousand Oaks			x			x	
Yolo-Solano	Davis-UCD		x	x			x*	Yes
	Vacaville-Merchant					x		
	Vacaville-Ulatis			x				
	West Sacramento					x		
	Woodland			x		x	x	

*Indicates that monitors are not FRM or FEMs and measurements are not NAAQS comparable.

Section 3: Site and Monitoring Information

U.S. EPA requires the federal site type, federal monitoring objective, and federal monitor type to be included in ANPs. These elements are described in the following sections and identified at the monitor-level in Appendix A.

Federal Site Type

Monitoring sites must be capable of informing air quality program managers about peak air pollution levels, typical levels in populated areas, air pollution transported into and out of a city or region, and air pollution levels near specific sources. For these reasons, U.S. EPA requires that each monitor at a site be designated, at a minimum, with one of the following site types established in the Air Quality System (AQS) database:

- Extreme Downwind
- Highest Concentration
- Max Ozone Concentration
- Population Exposure
- Source Oriented
- Upwind Background
- General Background
- Regional Transport
- Welfare-Related Impacts
- Quality Assurance
- Other

U.S. EPA requires that a monitor be designated with an appropriate site type so that the data collected can be used to support a specific federal monitoring objective, which are discussed in more detail below. The site type designations are at the monitor level rather than the site level because U.S. EPA has determined that a single site type may not describe all of the monitors at a particular site

Federal regulations note that the spatial scale of representativeness of a monitor should be consistent with the stated site type. The spatial scale of representativeness is a measure of the physical dimensions of the air mass through which pollutant concentrations are expected to be relatively homogeneous. The scales of representativeness that are most relevant to ambient air monitoring are defined below:

- *Microscale*: Measured concentrations are expected to be similar for an area ranging from several meters up to about 100 meters.
- *Middle scale*: Measured concentrations are expected to be similar for areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometer.
- *Neighborhood scale*: Measured concentrations are expected to be similar within some extended area of the city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers range.
- *Urban scale*: Measured concentrations are expected to be similar within an area of city-like dimensions, on the order of 4 to 50 kilometers.

- *Regional scale*: Measured concentrations are expected to be similar within a rural area of reasonably homogeneous geography without large sources, and extend from tens to hundreds of kilometers.
- *National and global scales*: These measurement scales represent concentrations characterizing the nation and the globe as a whole.

The scale(s) of representativeness that is generally most appropriate for each of the most common federal site types are shown in Table 3, which is based on Table D-1 in Appendix D of 40 CFR 58.

Table 3: Site Type and Recommended Spatial Scale

Site type	Appropriate siting scales
Highest concentration	Micro, middle, neighborhood (*sometimes* urban or regional for secondarily formed pollutants)
Population exposure	Neighborhood, urban
Source oriented	Micro, middle, neighborhood
General background & regional transport	Urban, regional
Welfare-related impacts	Urban, regional

Federal Monitoring Objective

The federal monitoring objectives are defined in Appendix D of 40 CFR 58. Federal monitoring regulations require that each monitor measuring a criteria pollutant is sited to meet at least one monitoring objective. The three federal monitoring objectives are:

- To provide air quality data to the public in a timely manner;
- To support compliance with national ambient air quality standards; and
- To support air quality research studies.

Many air quality agencies operate monitors with multiple objectives in mind. For example, monitoring is conducted to provide both air quality data to the public as well as to support compliance with national ambient air quality standards. There are a number of monitoring purposes besides the federal monitoring objectives that are directly related to the needs of state and local agencies. Some of the most common state and local monitoring purposes include determination of agriculture and residential burn periods, geyser air monitoring, and state designations. These are outside of the scope of the ANP. More information about these programs can be found on the ARB website: http://www.arb.ca.gov/homepage.htm.

Federal Monitor Type

The federal monitor type refers to the agency operating the monitor or the specific purpose for which the monitor is operated. There are seven federal monitor types:

- SLAMS
- SPM
- Tribal
- Industrial
- EPA
- Non-EPA federal
- Other

Most monitors established and operated by state and local air agencies are identified as SLAMS. SLAMS monitors meet specific siting and quality assurance criteria defined in federal regulations. Some monitors are identified as SPMs, and are operated by state and local monitoring agencies to fulfill very specific or short-term monitoring goals. SPMs are required to meet 40 CFR Part 58 Appendix A requirements and 40 CFR Part 58 Appendix E requirements are optional. Many SPMs operated in California by state and local agencies do fulfill these requirements. SPMs that operate for more than two years can be used by U.S. EPA to determine compliance with federal standards. Tribal monitors are operated on tribal lands by tribal entities and are outside of the scope of this ANP. In California, most monitors identified as non-EPA federal monitors are operated by the NPS.

Detailed Monitor Information

In addition to the site type, monitoring objective, and monitor type, federal regulations require agencies to report an extensive set of details about each monitor in operation in their ANPs. The required, monitor-level information is reported in Appendix A of this ANP, where the sites are grouped by the air district where they are located.

Appendix A of this ANP also lists the location of each monitor, including the Core-Based Statistical Area (CBSA) in which each monitor is located. CBSAs are defined by the United States Office of Management and Budget (OMB) and provide a consistent set of geographical areas for federal agencies to use in collecting, tabulating, and publishing statistical data. Two types of areas are included as CBSAs: Metropolitan Statistical Areas and Micropolitan Statistical Areas, which differ by population threshold. A Metropolitan Statistical Area has an urban core with a population of 50,000 or more, whereas a Micropolitan Statistical Area has an urban core with a population of at least 10,000, but less than 50,000. Several counties in California are sparsely populated and do not meet the classification requirements for incorporation into a CBSA.

U.S. EPA specifies the number of monitors required for each pollutant based on the OMB statistical areas. Older standards base the number of required monitors on population and air quality within a Metropolitan Statistical Area or Micropolitan Statistical Area. More recent standards, such as the federal SO_2 standard, use the newer collective term, CBSA. Table 4 contains a comprehensive list of CBSAs and associated air districts for California. Several of the 25 air districts covered by this ANP are located in CBSAs that also include air districts that are preparing their own ANPs. Information

regarding monitors operated by districts outside of those covered by this ANP will be included in this plan when necessary to demonstrate fulfillment of federal monitoring requirements.

For CBSAs that include multiple districts, fulfillment of minimum monitoring requirements is dependent upon coordination between air monitoring staff, particularly when changes to the monitoring network are considered. The Roles and Responsibilities documents developed by ARB specify that districts and ARB must communicate with each other when changes to the network are being considered. When proposed changes are communicated between districts and ARB, staff from both agencies will work closely to evaluate impacts on minimum monitoring requirements and develop pathways that ensure federal requirements are met. The Roles and Responsibilities documents are available on the ARB website at http://www.arb.ca.gov/aaqm/qa/pqao/repository/rr_docs.htm.

Figure 2: Core-Based Statistical Areas in California

U.S. DEPARTMENT OF COMMERCE Economics and Statistics Administration U.S. Census Bureau

Table 4: Core-Based Statistical Areas in California

CBSA Name*	County	Included in the ARB ANP?	Included in other ANP?
Bakersfield	Kern	Yes; Eastern Kern	San Joaquin Valley
Chico	Butte	Yes	--
Clearlake	Lake	Yes	--
Crescent City	Del Norte	No	North Coast Unified
El Centro	Imperial	Yes	--
Eureka-Arcata-Fortuna	Humboldt	No	North Coast Unified
Fresno	Fresno	No	San Joaquin Valley
Hanford-Corcoran	Kings	No	San Joaquin Valley
Los Angeles-Long Beach-Anaheim	Los Angeles; Orange	Yes; Antelope Valley	South Coast
Madera	Madera	No	San Joaquin Valley
Merced	Merced	No	San Joaquin Valley
Modesto	Stanislaus	No	San Joaquin Valley
Napa	Napa	No	Bay Area
Oxnard-Thousand Oaks-Ventura	Ventura	Yes	--
Red Bluff	Tehama	Yes	--
Redding	Shasta	Yes	--
Riverside-San Bernardino-Ontario	Riverside; San Bernardino	Yes, Mojave Desert	South Coast
Sacramento-Roseville-Arden Arcade	El Dorado; Placer; Sacramento; Yolo	Yes; Placer, Yolo-Solano, and El Dorado	Sacramento Metropolitan
Salinas	Monterey	No	Monterey Bay
San Diego-Carlsbad	San Diego	No	San Diego County
San Francisco-Oakland-Hayward	Alameda; Contra Costa; Marin; San Francisco; San Mateo	No	Bay Area
San Jose-Sunnyvale-Santa Clara	San Benito; Santa Clara	No	Bay Area
San Luis Obispo-Paso Robles-Arroyo Grande	San Luis Obispo	No	San Luis Obispo County
Santa Cruz-Watsonville	Santa Cruz	No	Monterey Bay
Santa Maria-Santa Barbara	Santa Barbara	No	Santa Barbara County
Santa Rosa	Sonoma	Yes; Northern Sonoma	Bay Area
Sonora	Tuolumne	Yes	--
Stockton-Lodi	San Joaquin	No	San Joaquin Valley
Susanville	Lassen	Yes	--
Truckee-Grass Valley	Nevada	Yes	--
Ukiah	Mendocino	Yes	--
Vallejo-Fairfield	Solano	Yes; Yolo-Solano	Bay Area
Visalia-Porterville	Tulare	No	San Joaquin Valley
Yuba City	Sutter; Yuba	Yes	--

**Micropolitan Statistical Areas are delineated with grey shading; Metropolitan Statistical Areas are not shaded.*

Note that Lassen County APCD and Modoc County APCD are covered by this ANP; however, no ambient air quality monitors are currently sited in these districts.

Section 4: Federal Minimum Monitoring Requirements

For criteria pollutants, U.S. EPA has established minimum monitoring requirements that are specified in federal regulations (Appendix D of Title 40, Part 58 of the CFR). Generally, requirements are based on the population from the most recent census data, the severity of the air quality problem, as specified by the design value, or emissions.

Section 4A: Ozone

Minimum Number of Ozone Monitoring Sites

The criteria for minimum monitoring requirements for ozone are shown in Table 5. In the absence of a design value, one monitor is required for each metropolitan statistical area. There are no minimum monitoring requirements outside of metropolitan statistical areas (i.e. areas with without an urban core or less than 50,000 people). Only SLAMS monitors can be used to meet minimum monitoring requirements for ozone.

Table 5: Minimum Monitoring Requirements for Ozone Sites

Metropolitan Statistical Area population	3-year design value concentrations ≥85% of any Ozone NAAQS	3-year design value concentrations <85% of any Ozone NAAQS
>10 million	4	2
4 - 10 million	3	1
350,000 - <4 million	2	1
50,000 - <350,000	1	0

Within each Metropolitan Statistical Area, at least one site should be sited to capture maximum ozone concentrations and the site type should be identified as 'Highest Concentration.' As shown in Table 6, the 11 metropolitan statistical areas covered by this ANP met minimum ozone monitoring requirements for ozone in 2015. Sites from districts not covered by this ANP are listed to provide a complete picture of all of the sites contributing towards the minimum monitoring requirements in each Metropolitan Statistical Area. High concentration sites are denoted with bold text.

Table 6: CBSAs with Minimum Ozone Monitoring Requirements

Metropolitan Statistical Area	Population (2010 Census)	2013-2015 Design Value (% of NAAQS) *DV Site*	# Required Sites	SLAMS Sites Operating in 2015 (District where site is located) *High Concentration Sites Denoted by Bold Text*
Bakersfield	839,361	0.090 ppm (129%) *Bakersfield-Municipal Airport*	2	**Arvin-Di Giorgio (San Joaquin Valley)** Bakersfield-5558 California Avenue (San Joaquin Valley) **Bakersfield-Municipal Airport (San Joaquin Valley**) Edison (San Joaquin Valley) Maricopa-Stanislaus Street (San Joaquin Valley) **Mojave-923 Poole Street (Eastern Kern)** Oildale-3311 Manor Street (San Joaquin Valley) Shafter-Walker Street (San Joaquin Valley)

Table 6 continued:

Metropolitan Statistical Area	Population (2010 Census)	2013-2015 Design Value (% of NAAQS) *DV Site*	# Required Sites	SLAMS Sites Operating in 2015 (District where site is located) *High Concentration Sites Denoted by Bold Text*
Chico	220,000	0.074 ppm (106%) *Paradise*	1	Chico-East Avenue (Butte County) **Paradise-4405 Airport Road (Butte County)**
El Centro	174,528	0.078 ppm (114%) *El Centro*	1	Calexico-Ethel Street (Imperial) **El Centro-9th Street (Imperial)** Niland-English Road (Imperial) Westmorland (Imperial)
Los Angeles-Long Beach-Anaheim	12,828,837	0.094 ppm (134%) *Santa Clarita*	4	Lancaster-43301 Division Street (Antelope Valley) Anaheim-Pampas Lane (South Coast) Azusa (South Coast) Burbank (South Coast) Compton-700 North Bullis Road (South Coast) Costa Mesa-Mesa Verde Drive (South Coast) Glendora-Laurel (South Coast) La Habra (South Coast) Long Beach-2425 Webster Street (South Coast) Los Angeles-LAX (South Coast) Los Angeles-North Main Street (South Coast) Mission Viejo-26081 Via Pera (South Coast) Pasadena-S Wilson Avenue (South Coast) Pico Rivera-4144 San Gabriel (South Coast) Pomona (South Coast) Reseda (South Coast) **Santa Clarita (South Coast)** West Los Angeles-VA Hospital (South Coast)
Oxnard-Thousand Oaks-Ventura	823,318	0.077 ppm (110%) *Simi Valley*	2	El Rio-Rio Mesa School #2 (Ventura) Thousand Oaks-Moorpark Road (Ventura) Ojai-Ojai Avenue (Ventura) Piru-3301 Pacific Avenue (Ventura) **Simi Valley-Cochran Street (Ventura)**
Redding	177,223	0.067 ppm (98%) *Anderson*	1	**Anderson-North Street (Shasta County)** Redding-Health Dept Roof (Shasta County) Shasta Lake-13791 Lake Blvd (Shasta County)
Riverside-San Bernardino-Ontario	4,224,851	0.102 ppm (146%) *Crestline*	3	Barstow (Mojave Desert) Blythe-445 West Murphy Street (Mojave Desert) Hesperia-Olive Street (Mojave Desert) Phelan (Mojave Desert) Trona-Athol and Telegraph (Mojave Desert) Victorville-14306 Park Avenue (Mojave Desert) Banning Airport (South Coast) **Crestline (South Coast)** Fontana-Arrow Highway (South Coast) Indio-Jackson Street (South Coast) Lake Elsinore-W Flint Street (South Coast) Mira Loma-Van Buren (South Coast) Palm Springs-Fire Station (South Coast) Perris (South Coast) **Redlands-Dearborn (South Coast)** Riverside-Rubidoux (South Coast) San Bernardino-4th Street (South Coast) Upland (South Coast) Winchester-33700 Borel Road (South Coast)

Table 6 continued:

Metropolitan Statistical Area	Population (2010 Census)	2013-2015 Design Value (% of NAAQS) *DV Site*	# Required Sites	SLAMS Sites Operating in 2015 (District where site is located) *High Concentration Sites Denoted by Bold Text*
Sacramento-Roseville-Arden Arcade	2,149,127	0.081 (116%) *Placerville*	2	**Cool-Highway 193 (El Dorado County)** Echo Summit (El Dorado County) **Placerville-Gold Nugget Way (El Dorado County)** Auburn-11645 Atwood Road (Placer County) Colfax-City Hall (Placer County) Lincoln-1445 1st Street (Placer County) **Roseville-N Sunrise Blvd (Placer County)** Tahoe City-221 Fairway Drive (Placer County) Elk Grove (Sacramento) Folsom (Sacramento) North Highlands (Sacramento) Sacramento-Del Paso Manor (Sacramento) Sacramento-Goldenland (Sacramento) Sacramento-T St (Sacramento) Sloughhouse (Sacramento) Davis-UCD Campus (Yolo-Solano) Woodland-Gibson Road (Yolo-Solano)
Santa Rosa	483,878	0.058 ppm (83%) *Healdsburg-Muni*	1	Sebastopol (Bay Area) **Healdsburg-Municipal Airport (Northern Sonoma)**
Vallejo-Fairfield	413,344	0.066 ppm (94%) *Vacaville-Ulatis*	2	Fairfield-Chadbourne Road (Bay Area) Vallejo-304 Tuolumne Street (Bay Area) **Vacaville-Ulatis Drive (Yolo-Solano)**
Yuba City	166,892	0.073 ppm (104%) *Sutter Buttes*	1	**Sutter Buttes-S Butte (Feather River)**Yuba City-Almond Street (Feather River)

SPMs and non-EPA Federal ozone monitors are operated in some areas covered by this ANP. Information about these monitors is provided in Appendix A of this ANP.

Seasonal Ozone Monitoring

The ozone monitoring season is year-round in California; however, monitoring at the six sites shown in Table 7 have operated on a seasonal basis since they were established. A seasonal waiver for ozone monitoring in 2016 at these sites was granted and ozone monitoring will be limited to April through October, the period in which peak ozone is expected or when sites are physically accessible. A copy of the waiver approved by U.S. EPA is provided in Appendix B.

Table 7: Seasonal Ozone Monitoring Sites

AQS Site ID	Site Name	District	Start Year
060170012	Echo Summit	El Dorado County	2000
060170020	Cool-Highway 193	El Dorado County	1996
060430006	Jerseydale	Mariposa County	1995
060570007	White Cloud Mountain	Northern Sierra	1995
061010004	Sutter Butte	Feather River	1993
061030004	Tuscan Buttes	Tehama County	1995

Section 4B: Nitrogen Dioxide (NO_2)

Minimum Number of NO_2 Monitoring Sites

Federal regulations specify minimum area-wide and near-road NO_2 monitoring requirements. Area-wide monitoring must be conducted in CBSAs with populations of one million or more. For these areas, a minimum of one monitor is required and should be sited to capture the highest concentrations at a neighborhood or larger spatial scale. PAMS sites can be used to meet area-wide minimum monitoring requirements if they meet siting criteria.

The Los Angeles-Long Beach-Anaheim, Riverside-San Bernardino-Ontario, and Sacramento-Roseville-Arden Arcade CBSAs are the only areas in California that meet the population thresholds for required area-wide NO_2 monitoring. The areas of expected highest concentration in these CBSAs are not within the jurisdictions of the districts covered by this ANP. As such, area-wide NO_2 monitoring for these CBSAs is addressed in the ANPs prepared by the South Coast Air Quality Management District and the Sacramento Metropolitan Air Quality Management District. Although not required, NO_2 monitors are operated in several districts covered by this ANP. Information about these monitors can be found in Appendix A of this ANP.

Near-road NO_2 monitoring requirements are based on population of the CBSA and Annual Average Daily Traffic counts (AADT) on road segments within the CBSA. One monitor is required in CBSAs with 500,000 or more people. Two monitors are required in CBSAs with populations $\geq$ 2.5 million or in CBSAs with 500,000 or more people and AADTs $\geq$ 250,000 on one or more road segments. Near-road monitors should be sited to capture maximum one hour concentrations at a micro spatial scale. The near-road requirements are being implemented in phases, over the course of several years, and districts are still in the process of establishing required sites.

For informational purposes, all of the CBSAs in California that are required by current federal regulations to conduct near-road NO_2 monitoring are shown in Table 8. Based on the population thresholds and traffic counts, the CBSAs in the scope of this ANP that are required to conduct near-road NO_2 monitoring include: the Los Angeles-Long Beach-Anaheim, Riverside-San Bernardino-Ontario, Sacramento-Roseville-Arden Arcade, and Oxnard-Thousand Oaks-Ventura Metropolitan Statistical Areas.

The near-road areas with road segments with the highest AADT for the Los Angeles-Long Beach-Anaheim, Riverside-San Bernardino-Ontario, and Sacramento-Roseville-Arden Arcade CBSAs are not within the jurisdiction of the districts covered by this ANP. Near-road NO_2 monitoring for these CBSAs is addressed in the ANPs prepared by the South Coast Air Quality Management District and the Sacramento Metropolitan Air Quality Management District. Information about near-road NO_2 monitoring in the for the other CBSAs can also be found in the ANPs prepared by the San Joaquin Valley Unified Air Pollution Control District, San Diego County Air Pollution Control District, and the Bay Area Air Quality Management District.

U.S. EPA recently issued a proposal to remove the requirement for near-road NO_2 monitoring stations in areas with populations between 500,000 and 1 million based on the low concentrations measured by near-road monitors in much larger urban areas. Areas with populations between 500,000 and 1 million, which include Ventura County, were scheduled to begin monitoring by 2017. Ventura County is continuing to work with ARB, and U.S. EPA to ensure that they comply with the revised requirements. This proposal may also affect near-road requirements in multiple CBSAs in the San Joaquin Valley. More information about affected CBSAs in the San Joaquin Valley can be found in the Annual Network Plan prepared by the San Joaquin Valley Unified APCD.

Table 8: CBSAs with Near-Road NO_2 Monitoring Requirements

CBSA	Population (2010 Census)	Area-wide Monitoring Required?	Maximum AADT (2014)*	Required Near-road Sites	Near-road Sites Operating in 2015 (District where sites are located)
Bakersfield**	839,631	No	144,000	1	-- (San Joaquin Valley)
Fresno**	930,450	No	141,000	1	-- (San Joaquin Valley)
Los Angeles-Long Beach-Anaheim	12,828,837	Yes	602,600	2	Anaheim-Route 5 (South Coast) Long Beach-Route 710 (South Coast)
Modesto**	514,453	No	140,000	1	-- (San Joaquin Valley)
Oxnard-Thousand Oaks-Ventura	823,318	No	183,000	1	-- (Ventura)
Riverside-San Bernardino-Ontario	4,224,851	Yes	267,000	2	Ontario-Etiwanda (South Coast) Ontario-Route 60 (South Coast)
Sacramento-Roseville-Arden Arcade	2,149,127	Yes	251,000	2	Sacramento-Bercut Drive (Sacramento)
San Diego-Carlsbad	3,095,313	Yes	299,000	2	Rancho Carmel Dr. (San Diego)
San Francisco-Oakland-Hayward	4,335,391	Yes	277,000	2	Laney College (Bay Area)
San Jose-Sunnyvale-Santa Clara	1,836,911	Yes	253,000	1	San Jose-Knox Ave (Bay Area)
Stockton-Lodi**	685,306	No	145,000	1	-- (San Joaquin Valley)

**Traffic data are courtesy of California Department of Transportation*
***Near-road sites were in the planning stages and not yet operating in 2015.*

Federal regulations also require NO_2 monitoring in select areas with susceptible and vulnerable populations. The locations of these areas in California were determined by the U.S. EPA Regional Administrator and include Fresno County, Los Angeles County, San Bernardino County, San Diego County, the City of Oakland, and the City of Long Beach. These areas are outside of the scope of this ANP; however, information regarding the monitoring can be found in the ANPs prepared by the Bay Area AQMD, the San Diego APCD, and the San Joaquin Valley Unified APCD.

All districts covered by this ANP met the minimum monitoring requirements for NO_2 in 2015.

Section 4C: Carbon Monoxide (CO)

Minimum Number of CO Monitoring Sites

The only federal requirement for CO monitoring is for near-road CO monitoring. In CBSAs with a population of one million or more, one CO monitor is required to operate collocated with one near-road NO_2 monitor. If a CBSA has more than one near-road NO_2 monitoring site, a CO monitor is only required at one near-road site in the CBSA. The CO monitor was required to be operational by January 1, 2015 in CBSAs having a population of 2.5 million, and by January 1, 2017 for all other CBSAs.

Table 9: CBSAs with CO Minimum Monitoring Requirements

CBSA	Population (2010 Census)	Required Near-road Sites	Near-road Sites Operating in 2015
Los Angeles-Long Beach-Anaheim	12,828,837	1	Anaheim-Route 5 (South Coast)
Riverside-San Bernardino-Ontario	4,224,851	1	Ontario-Etiwanda (South Coast)
Sacramento-Roseville-Arden Arcade	2,149,127	1	Sacramento-Bercut Drive (Sacramento)

As shown in Table 9, three CBSAs that include a district covered by this ANP meet the population threshold and have minimum monitoring requirements for CO; however, the near-road areas with road segments with the highest AADT for the Los Angeles-Long Beach-Anaheim, Riverside-San Bernardino-Ontario, and Sacramento-Roseville-Arden Arcade CBSAs are not within the areas covered by this ANP. Subsequently, near-road monitoring for these CBSAs is addressed in the ANPs prepared by the South Coast AQMD and the Sacramento Metropolitan AQMD. Several districts covered by this ANP conduct area wide CO monitoring. Information about these monitors is provided in Appendix A.

Regional Administrators may require additional CO monitoring in other areas where data or other indicators suggest that concentrations may approach or exceed the NAAQS.

Section 4D: Sulfur Dioxide (SO_2)

Minimum Number of SO_2 Monitoring Sites

Monitoring regulations for SO_2 are based on the population weighted emissions index (PWEI) in a CBSA. The PWEI considers population and aggregated county-level emissions data and is calculated using the equation:

$$\frac{CBSA\ Population \times CBSA\ Emissions}{1{,}000{,}000}$$

One monitor is required in CBSAs with PWEIs greater than 5,000 but less than 100,000; two monitors are required in CBSAs with PWEIs greater than 100,000 but less than one million; and three monitors are required in CBSAs with PWEI values of one million or more. As shown in Table 10, two CBSAs that contain a district covered by this plan meet the PWEI threshold and have minimum monitoring requirements for SO_2. NCore sites and other monitors with the site type identified as population exposure, high concentration, source impacts, general background, or regional transport can be counted toward minimum monitoring requirements.

The most recent data available to calculate PWEI were the 2010 U.S. census data and emissions data from the 2012 ARB Emission Inventory.

Table 10: CBSAs with Minimum Monitoring Requirements for SO_2

CBSA	District covered by this ANP	Other District ANPs covering this CBSA	County SO_2 (TPY) (2012 Data)	CBSA Population (2010 Census)	PWEI	Required Sites	SLAMS Sites Operating in 2015
Los Angeles-Long Beach-Anaheim	Antelope Valley AQMD	South Coast AQMD	Los Angeles: 5,929 Orange: 619	12,828,837	84,094	2	Costa Mesa (South Coast) Fontana (South Coast) Long Beach (South Cost) Los Angeles-Main Street (South Coast) Los Angeles-Hastings (South Coast)
Riverside-San Bernardino-Ontario	Mojave Desert AQMD	South Coast AQMD	Riverside: 311 San Bernardino: 2,057	4,224,851	10,005	1	Rubidoux (South Coast) Trona (Mojave Desert) Victorville (Mojave Desert)

The SO_2 Data Requirements Rule also requires monitoring in areas with a stationary source with emissions greater than 2,000 tons per year. None of the emission sources in the areas covered by this ANP exceed the 2,000 tons per year threshold for source monitoring established by the SO_2 Data Requirements Rule. All districts covered by this ANP met the minimum monitoring requirements for SO_2 in 2015.

Section 4E: Lead (Pb)

Minimum Number of Pb Monitoring Sites

Federal regulations for Pb monitoring are based on emission sources and population. One source oriented SLAMS site measuring the maximum concentration is required in areas with non-airport Pb sources that emit 0.5 tons per year or more and also in areas with airport sources that emit 1.0 ton per year or more. None of the areas covered by this ANP exceed the threshold for source monitoring. Monitoring at NCore sites is required in CBSAs with populations of 500,000 or more; however, there are no NCore sites located in areas covered by this ANP. Additional monitoring may be required by the Regional Administrator under certain circumstances outlined in federal regulations. However, none of the areas covered by this ANP are required to conduct Pb monitoring.

Although not federally required, ARB has conducted Pb monitoring at Calexico-Ethel Street in Imperial County since 1994. Due to the persistently low concentrations detected in ambient air, U.S. EPA approved the closure of the Pb monitor at Calexico-Ethel Street in 2015. Documentation of the closure of the Calexico Pb monitor was provided in the ANP prepared in 2015 by ARB. With the closure of the site in Imperial County, none of the areas covered in this ANP conduct Pb monitoring.

Section 4F: PM_{10}

Minimum Number of PM_{10} Monitoring Sites

Monitoring requirements for PM_{10} are based on population and air quality conditions in each metropolitan statistical area. The criteria for determining the minimum number of monitoring sites is listed in Table 11. The number of sites is given as a range rather than an absolute number because the goal of establishing a network of monitoring sites is to characterize national and regional air quality trends and geographic patterns, which can vary in complexity from place to place.

Table 11: Minimum Monitoring Requirements for PM_{10} Monitoring Sites

Population	High Concentration (DV exceeds NAAQS by ≥20%)	Medium Concentration (DV ≥80% of NAAQS)	Low Concentration (DV <80% of NAAQS)
> 1 million	6 – 10 sites	4 – 8 sites	2 – 4 sites
500,000 - 1 million	4 – 8 sites	2 – 4 sites	1 – 2 sites
250,000 - 500,000	3 – 4 sites	1 – 2 sites	0 – 1 sites
100,000 - 250,000	1 – 2 sites	0 – 1 sites	0 sites

The number of required monitoring sites in CBSAs with populations ≥100,000 are shown in Table 12. Only sites designated as SLAMS may be counted to meet PM_{10} minimum monitoring requirements. In contrast to the information presented on the gaseous monitoring network, sites outside of the scope of this ANP are were only included in Table 12 if needed to meet minimum monitoring requirements because of the complex nature of PM monitoring.

Table 12: CBSAs with Minimum Monitoring Requirements for PM_{10}

Metropolitan Statistical Area	Population (2010 Census)	2015 Max Concentration (% of NAAQS) *Max Concentration Site (District where site is located)*	Required # of Sites	SLAMS Sites Operating in 2015 (District where site is located)
Bakersfield	839,361	105 ug/m^3 (70%) *Bakersfield-California Ave (San Joaquin)*	1-2	Mojave (Eastern Kern) Ridgecrest (Eastern Kern) Canebrake (Eastern Kern)
Chico	220,000	49 ug/m^3 (33%) *Chico-East Ave (Butte County)*	0	Chico-East Ave (Butte County)
El Centro	174,528	305 ug/m^3 (203%) *Brawley (Imperial County)*	1-2	Calexico-Ethel St (Imperial County) Brawley (Imperial County) El Centro (Imperial County) Westmorland (Imperial County) Niland (Imperial County)
Los Angeles-Long Beach-Anaheim	12,828,837	76 ug/m^3 (51%) *Azusa (South Coast)*	2-4	Azusa (South Coast) Glendora-Laurel (South Coast) Lancaster (Antelope Valley) Los Angeles-N Main St (South Coast) Los Angeles-LAX (South Coast) Santa Clarita (South Coast) Long Beach-PCH (South Coast) Anaheim-Pampas Ln (South Coast) Long Beach-Webster (South Coast) Mission Viejo (South Coast)
Oxnard-Thousand Oaks-Ventura	823,318	93 ug/m^3 (62%) *El Rio (Ventura County)*	1-2	Simi Valley (Ventura County) El Rio (Ventura County)

Table 12 continued:

Metropolitan Statistical Area	Population (2010 Census)	2015 Max Concentration (% of NAAQS) *Max Concentration Site (District where site is located)*	Required # of Sites	SLAMS Sites Operating in 2015 (District where site is located)
Redding	177,223	91 ug/m^3 (61%) *Redding(Shasta County)*	0	Redding (Shasta County) Anderson (Shasta County) Shasta Lake (Shasta County)
Riverside-San Bernardino-Ontario	4,224,851	109 ug/m^3 (73%) *Indio-Jackson St (South Coast)*	2-4	Barstow (Mojave Desert) Lucerne Valley (Mojave Desert) Victorville (Mojave Desert) Trona (Mojave Desert) Hesperia (Mojave Desert)
Sacramento-Roseville-Arden Arcade	2,149,127	71 ug/m^3 (47%) *Woodland-Gibson Rd (Yolo-Solano)*	2-4	So. Lake Tahoe (El Dorado County) Roseville-N Sunrise (Placer County) Woodland-Gibson Rd (Yolo-Solano) West Sacramento (Yolo-Solano)
Santa Rosa	483,878	58 ug/m^3 (39%) *Cloverdale (Northern Sonoma)*	0-1	Cloverdale (Northern Sonoma) Healdsburg (Northern Sonoma) Guerneville (Northern Sonoma)
Vallejo-Fairfield	413,344	42 ug/m^3 (28%) *Vacaville-Merchant St (Yolo-Solano)*	0-1	Vacaville-Merchant St (Yolo-Solano)
Yuba City	166,892	51 ug/m^3 (34%) *Yuba City-Almond St (Feather River)*	0	Yuba City-Almond St (Feather River)

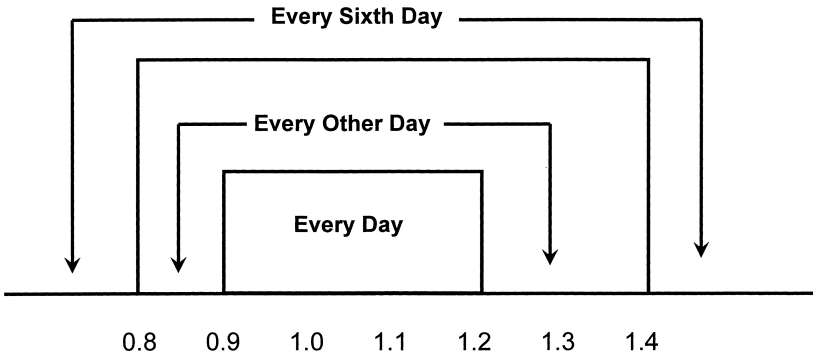
Eleven Metropolitan Statistical Areas include at least a portion of the areas covered by this ANP. The Los Angeles-Long Beach-Anaheim Metropolitan Statistical Area includes the Antelope Valley AQMD; however, most of the area is under the jurisdiction of the South Coast AQMD. Monitoring sites operated by South Coast AQMD are necessary to meet minimum monitoring requirements for PM_{10} and include sites located in areas where high concentrations are expected. The sole monitoring site run by Antelope Valley AQMD is not needed to meet minimum monitoring requirements for this area but serves to complement the network of monitors operated by South Coast.

The monitors operated in districts covered by this ANP are adequate to meet minimum monitoring requirements in the other ten Metropolitan Statistical Areas; however, additional monitors are operated in these areas in jurisdictions outside of the scope of this ANP. Information about these monitors can be found in the ANPs prepared by the South Coast AQMD, San Joaquin Valley Unified APCD, and the Sacramento Metropolitan AQMD

<u>PM_{10} Sampling Frequency Requirements for Primary FRM Monitors</u>

Federal regulations establish procedures for determining an appropriate sampling frequency for PM_{10} monitors. All 24-hour samples must be taken from midnight to midnight, local standard time, to ensure consistency among measurements nationwide. Figure 3, reproduced from Figure 1 in 40 CFR 58.12e, shows the required sampling frequency based upon the ratio of the design value to the standard.

Figure 3: Required Sampling Frequency for manual PM_{10} monitors



The calculated required sampling frequencies for all FRM PM_{10} monitors in the districts covered by this ANP are shown in Table 13. Note that exceptional events are included in the concentrations shown.

Table 13: Required Sampling Frequency for PM_{10} FRM Sites

Site Name	District	AQS ID	2015 Max Concentration	Max Concentration: Standard Ratio	Required Sampling Frequency	Current Sampling Frequency
Colusa	Colusa	060111002	74	0.49	1:6	1:6
Ridgecrest	Eastern Kern	060290015	36	0.24	1:6	1:6
Canebrake	Eastern Kern	060290017	67	0.45	1:6	1:6
Calexico*	Imperial	060250005	134	0.89	1:2	1:6
Brawley**	Imperial	060250007	304	2.03	1:6	1:6
El Centro*	Imperial	060251003	165	1.10	1:1	1:6
Westmorland*	Imperial	060254003	193	1.29	1:2	1:6
Niland**	Imperial	060254004	250	1.67	1:6	1:6
Anderson	Shasta	060890007	91	0.61	1:6	1:6
Redding	Shasta	060890004	80	0.53	1:6	1:6
Roseville**	Placer	060610006	36	0.24	1:6	1:6
Shasta Lake	Shasta	060890008	87	0.58	1:6	1:6
Red Bluff	Tehama	061030007	77	0.51	1:6	1:6
Vacaville	Yolo-Solano	060953001	42	0.28	1:6	1:6
West Sacramento	Yolo-Solano	061132001	57	0.38	1:6	1:6
Woodland	Yolo-Solano	061131003	71	0.47	1:6	1:6
Yreka***	Siskiyou	060932001	66	0.44	1:6	1:6

* Primary manual monitor shutdown in 2015, continuous monitor operating as primary monitor in 2016
** Site operates manual and continuous monitors
*** Monitor shutdown 12/26/2015
Additional Notes: The PM_{10} FRM monitors in Lake County at Glenbrook (AQS ID: 060333011) and Lakeport (AQS ID: 060333001) were not included in this table as these monitors report PM_{10} data in local conditions (i.e., 85101) and not in standard conditions (i.e., 81102). PM_{10} data are required to be reported in standard conditions for NAAQS comparison.

All PM_{10} monitors in the districts covered by this ANP met minimum monitoring and sampling frequency requirements in 2015.

Section 4G: $PM_{2.5}$

Minimum Number of $PM_{2.5}$ Monitoring Sites

The minimum number of monitoring sites that are required for the $PM_{2.5}$ network is based on population and air quality within each metropolitan statistical area, as shown in Table 14. Each Metropolitan Statistical Area is required to have at least one monitoring site situated to measure maximum concentrations at a neighborhood or larger scale.

Table 14: Minimum Monitoring Requirements for $PM_{2.5}$

Population	DV ≥ 85% of any $PM_{2.5}$ NAAQS	DV < 85% of any $PM_{2.5}$ NAAQS
> 1 million	3 sites	2 sites
500,000 - 1 million	2 sites	1 site
50,000 - <500,000	1 site	0 sites

Only SLAMS sites situated to measure concentrations that are representative of area-wide $PM_{2.5}$ concentrations should be used to meet minimum monitoring requirements. NCore and PAMS sites can count towards meeting minimum monitoring requirements if the site(s) are representative of area-wide $PM_{2.5}$ concentrations. In contrast to the information presented on the gaseous monitoring network, sites outside of the scope of this ANP are were only included in Table 15 if needed to meet minimum monitoring requirements because of the complex nature of PM monitoring.

Table 15: CBSAs with Minimum Monitoring Requirements for $PM_{2.5}$

Metropolitan Statistical Area	Population (2010 Census)	2015 Design Value (% of NAAQS) *Design Value Site (District where site is located)*		Required # of Sites	SLAMS Sites Operating in 2015 (District where site is located) *High Concentration Sites Denoted by Bold Text*
		24-hour	Annual		
Bakersfield	839,361	77 ug/m^3 (220%) *Bakersfield-Planz (San Joaquin)*	20.8 ug/m^3 (173%) *Bakersfield-Planz (San Joaquin)*	2	**Mojave (Eastern Kern)** Ridgecrest (Eastern Kern)
Chico	220,000	29 ug/m^3 (83%) *Chico-East Ave (Butte County)*	9.3 ug/m^3 (77%) *Chico-East Ave (Butte County)*	0	**Chico-East Ave (Butte County)**
El Centro	174,528	31 ug/m^3 (89%) *Calexico-Ethel St (Imperial County)*	12.9 ug/m^3 (108%) *Calexico-Ethel St (Imperial County)*	1	**Calexico-Ethel St (Imperial)** Brawley (Imperial) El Centro (Imperial)
Los Angeles-Long Beach-Anaheim	12,828,837	34 ug/m^3 (97%) *LA-N Main St (South Coast)*	12.3 ug/m^3 (103%) *LA-N Main St (South Coast)*	3	Azusa (South Coast) Glendora-Laurel (South Coast) **Los Angeles-N Main St (South Coast)** Reseda (South Coast) Santa Clarita (South Coast) Compton-N Bullis (South Coast) Pico Rivera (South Coast) Pasadena-Wilson Ave (South Coast) **Long Beach-North (South Coast)** Long Beach-PCH (South Coast) Lancaster (Antelope Valley) Anaheim-Pampas Ln (South Coast) Mission Viejo (South Coast) Long Beach-Rte710 (South Coast)

Table 15 continued:

Metropolitan Statistical Area	Population (2010 Census)	2015 Design Value (% of NAAQS) *Design Value Site (District where site is located)*		Required # of Sites	Sites Operating in 2015 (District where site is located) *High Concentration Sites Denoted by Bold Text*
		24-hour	Annual		
Oxnard-Thousand Oaks-Ventura	823,318	22 ug/m^3 (63%) *Simi Valley (Ventura County)*	9.5 ug/m^3 (79%) *El Rio (Ventura County)*	1	Thousand Oaks (Ventura) Piru (Ventura) Ojai (Ventura) **Simi Valley (Ventura)** **El Rio (Ventura)**
Redding	177,223	17 ug/m^3 (49%) *Redding (Shasta County)*	6.2 ug/m^3 (52%) *Redding (Shasta County)*	0	**Redding-Health Dept (Shasta County)**
Riverside-San Bernardino-Ontario	4,224,851	40 ug/m^3 (114%) *Mira Loma (South Coast)*	14.0 ug/m^3 (117%) *Mira Loma (South Coast)*	3	Indio (South Coast) Palm Springs (South Coast) Rubidoux (South Coast) **Mira Loma (South Coast)** Lake Elsinore (South Coast) Victorville (Mojave Desert) Fontana (South Coast) Big Bear (South Coast) San Bernardino (South Coast) Winchester-Borel Rd (South Coast) Upland (South Coast) Crestline (South Coast)
Sacramento-Roseville-Arden Arcade	2,149,127	35 ug/m^3 (100%) *Del Paso (Sacramento)*	10.2 ug/m^3 (85%) *Del Paso (Sacramento)*	3	Auburn-Atwood St (Placer County) Roseville-N Sunrise Blvd (Placer County) **Del Paso-Avalon Dr (Sacramento)** Sacramento-T St (Sacramento) Folsom-Natoma St (Sacramento) Sacramento-Stockton Blvd (Sacramento) Sloughhouse (Sacramento) Elk Grove (Sacramento) Davis (Yolo-Solano) Woodland (Yolo-Solano)
Santa Rosa	483,878	NA	NA	0*	Sebastopol-Morris St (Bay Area)
Vallejo-Fairfield	413,344	29 ug/m^3 (83%) *Vallejo (Bay Area)*	9.8 ug/m^3 (82%) *Vallejo (Bay Area)*	0	**Vallejo-Tuolumne St (Bay Area)**
Yuba City	166,892	27 ug/m^3 (77%) *Yuba City (Feather River)*	9.1 ug/m^3 (76%) *Yuba City (Feather River)*	0	**Yuba City-Almond St (Feather River)**

* Site began operating in 2014. Design value not calculated due to limited data. The number of required sites is estimated from 2014-2015 data.

$PM_{2.5}$ Near-Road Monitoring

Federal regulations require that at least one $PM_{2.5}$ monitor is collocated at a near-road NO_2 monitoring site in CBSAs with a million or more people. No near-road sites are located in the areas covered by this ANP. Information about near-road sites can be found in the ANPs prepared by the Sacramento Metropolitan AQMD and South Coast AQMD.

$PM_{2.5}$ Continuous Monitoring

Federal regulations require that at least half of the minimum number of required monitors operated in each Metropolitan Statistical Area should be continuous monitors. In each Metropolitan Statistical Area, at least one continuous monitor should be collocated with a required FRM/FEM/ARM monitor unless one of the required monitors is a continuous monitor. Sites outside of the scope of this ANP were included in Table 16 if needed to meet minimum monitoring requirements.

Table 16: CBSAs with Minimum Monitoring Requirements for Continuous $PM_{2.5}$

Metropolitan Statistical Area	Minimum # of Required Sites	# of Required Continuous Monitors	Sites with Continuous Monitors Operating in 2015 (District where site is located)
Bakersfield	2	1	Mojave (Eastern Kern)
Chico	0	0	Chico-East Ave (Butte County)
El Centro	1	1	--
Los Angeles-Long Beach-Anaheim	3	2	Lancaster (Antelope Valley) Glendora-Laurel (South Coast) Los Angeles-N Main St (South Coast) Reseda (South Coast) Santa Clarita (South Coast) Long Beach-PCH (South Coast)
Oxnard-Thousand Oaks-Ventura	1	1	Thousand Oaks (Ventura) Piru (Ventura) Ojai (Ventura) Simi Valley (Ventura) El Rio (Ventura)
Redding	0	0	--
Riverside-San Bernardino-Ontario	3	2	Banning (South Coast) Rubidoux (South Coast) Mira Loma (South Coast) Lake Elsinore (South Coast) Winchester-Borel Rd (South Coast) Upland (South Coast) Crestline (South Coast)
Sacramento-Roseville-Arden Arcade	3	2	Auburn-Atwood St (Placer County) Roseville-N Sunrise Blvd (Placer County) Colfax (Placer County) Lincoln (Placer County) Tahoe City (Placer County) Del Paso-Avalon Dr (Sacramento) Sacramento-T St (Sacramento) Folsom-Natoma St (Sacramento) Sloughhouse (Sacramento) Elk Grove (Sacramento) Davis (Yolo-Solano)
Santa Rosa*	0	0	Sebastopol-Morris St (Bay Area)
Vallejo-Fairfield	0	0	Vallejo-Tuolumne St (Bay Area)
Yuba City	0	0	Yuba City-Almond St (Feather River)

*Monitoring began in 2014. Minimum number of sites based on 2014 and 2015 data.

ARB is currently working with the district to identify a suitable location for a continuous SLAMS monitor in the El Centro CBSA.

$PM_{2.5}$ Sampling Frequency Requirements for Primary FRM Monitors

Sampling frequency for manual FRM $PM_{2.5}$ monitoring can vary by site. Determination of the required sampling frequency for $PM_{2.5}$ monitors is based upon the site level design value and a number of different factors identified in federal regulations and summarized in Table 17. Sites located in areas with more severe air quality conditions generally are required collect measurements more frequently than other sites.

The current and required sampling frequency for $PM_{2.5}$ FRM monitors located in districts covered by this ANP are shown in Table 18 and also in the Appendix A. Exceptional events are included in the determination of the design values shown here.

Table 17: Criteria for Minimum Sampling Frequency for FRM $PM_{2.5}$ Monitoring

1:6 may be approved by Regional Administrator	**1:3**	**1:1**
Collocated with continuous FRM/FEM/ARM monitor	Not collocated with continuous FRM/FEM/ARM monitor	Not collocated with continuous FRM/FEM/ARM monitor
AND	**OR**	**AND**
Annual DV is <90% of NAAQS and not the highest in the area	Annual DV is ± 10% of NAAQS and highest in the area	24 hour DV is ± 5% of NAAQS and the highest in the area
AND	**OR**	**AND**
24 hour DV is <90% of NAAQS and not the highest in the area	24 hour DV is ± 10% of NAAQS and highest in the area	Annual DV is below annual NAAQS
AND	**OR**	
24 hour NAAQS has not been exceeded one or more times in each of the past three years	24 hour NAAQS has been exceeded one or more times in each of the past three years	
	OR	
	NCore Site	
	OR	
	Required regional background site	
	OR	
	Required regional transport site	

Table 18: Required $PM_{2.5}$ Sampling Frequency for FRM monitors

Site Name	AQSSiteID	District	2015 Annual DV	2015 24-hr DV	Required Sampling Frequency	Current Sampling Frequency
Chico-East	060070008	Butte	9.3	29	1:3	1:1
Colusa[1]	060111002	Colusa	7.6	22	1:3	1:6
Calexico	060250005	Imperial	12.9	31	1:3	1:1
Brawley	060250007	Imperial	7.0	17	1:3	1:3
El Centro	060251003	Imperial	6.6	18	1:3	1:3
Ridgecrest[2]	060290015	Eastern Kern	5.1	11	1:3	1:6
Lakeport	060333001	Lake	4.0	10	1:3	1:3
Lancaster[3]	060379033	Antelope Valley	6.1	16	1:3	1:1
Grass Valley[1]	060570005	Northern Sierra	5.3	34	1:1	1:6
Truckee	060571001	Northern Sierra	6.1	19	1:3	1:3
Roseville[1]	060610006	Placer	7.8	20	1:3	1:6
Quincy	060631006	Northern Sierra	9.5	34	1:1	1:3
Portola	060631010	Northern Sierra	14.9	50	1:3	1:3
Victorville[4]	060710306	Mojave Desert	7.1	23	1:3	1:1
Redding[5]	060890004	Shasta	6.2	17	1:3	1:6
Yreka[5]	060932001	Siskiyou	7.9	49	1:3	1:6
Yuba City	061010003	Feather River	9.1	27	1:3	1:1
Woodland[5]	061131003	Yolo-Solano	7.0	19	1:3	1:6

[1]Colusa, Grass Valley, and Roseville were granted waivers to allow 1:6 sampling (Correspondence from M. Kurpius, EPA to K. Magliano on January 27, 2015 provided in Appendix B of this ANP); The 2015 DV at Grass Valley was impacted by exceptional events in 2014, which have been flagged and the district intends to request for exclusion.
[2]Ridgecrest is scheduled to be changed to a continuous monitor in the near future.
[3]Lancaster switched from FRM (Method 117) (1:6) to FEM (Method 170) (1:1) on 4/7/2016
[4]Victorville switched its primary monitor from FRM (Method 117) (1:6) to FEM (Method 170) (1:1) on 3/31/2016
[5]ARB is working with local air districts to reassess the current sampling schedules and assist in applying for additional funding to comply with monitoring needs

Suitability for comparison to the annual $PM_{2.5}$ standard

The CFR states that for $PM_{2.5}$ FRM or FEM monitors used in area-wide monitoring, and that meet siting criteria, the reported data are comparable to the annual $PM_{2.5}$ standard. For a $PM_{2.5}$ monitor to be considered area-wide, the concentration values measured by the monitor should be representative of concentrations expected over an area with dimensions of a few kilometers. The $PM_{2.5}$ FRM and FEM monitors included in this report are sited per the definition of area-wide monitoring in the CFR and meet applicable requirements; therefore, the FRM and FEM data are suitable for comparison to the $PM_{2.5}$ NAAQS.

Requirements for $PM_{2.5}$ Background and Transport Sites

Within each state, federal regulations require at least one site measuring concentrations representative of regional background and at least one site representative of regional transport. The regional background and regional transport sites must be SLAMS monitors but may use non-FRM collection procedures including those employed by

IMPROVE samplers and continuous samplers. Federal regulations require that monitors required to characterize regional background and transport have a minimum sampling frequency of one in every three days (1:3). The monitors sited to meet these requirements are listed below:

Table 19: Regional Background and Transport Sites for $PM_{2.5}$

Regional Background Sites (Monitor Type/AQS ID)	Regional Transport Sites (Monitor Type/AQS ID)
--	Vallejo (SLAMS/060950004)

All districts covered by this ANP meet the requirements for $PM_{2.5}$ minimum monitoring, near-road monitoring, and continuous monitoring. ARB is working with local air districts to reassess the current sampling schedules and assist in applying for additional funding to comply with sampling frequency requirements and associated continuous collocation requirements. ARB is currently evaluating the network to identify a suitable site for characterizing regional $PM_{2.5}$ background.

Section 5: Other Federal Monitoring Requirements

Speciation Trends Network Monitoring

Federal regulations also require that states continue to conduct speciated particulate measurements at CSN sites. These measurements are intended to support development of SIPs and research activities. Some districts in California conduct additional speciated particulate measurements to fulfill specific local objectives. Table 20 lists the California sites in the National Speciation Trends Network (STN) and State speciation network.

Table 20: $PM_{2.5}$ CSN Sites in California

Site Name	AQS ID	District	National STN Site	State Speciation Site
Bakersfield-California Ave	060290014	San Joaquin Valley	x	
Calexico-Ethel St	060250005	Imperial County		x
Chico-East Ave	060070008	Butte County		x
El Cajon-Floyd Smith Dr	060731018	San Diego	x	
Escondido*	060731002	San Diego	x	x
Fresno-Garland	060190011	San Joaquin Valley	x	
Livermore-Rincon	060010007	Bay Area		x
Los Angeles-North Main St	060371103	South Coast	x	
Modesto-14th	060990005	San Joaquin Valley		x
Oakland-West	060010011	Bay Area		x
Portola-Gulling	060631010	Northern Sierra		x
Rubidoux	060658001	South Coast	x	
Sacramento-Del Paso Manor	060670006	Sacramento	x	
Sacramento-T Street	060670010	Sacramento		x
San Jose-Jackson	060850005	Bay Area	x	
Vallejo-Tuolumne	060950004	Bay Area		x
Visalia-Church St	061072002	San Joaquin Valley		x

*Escondido speciation sampler was shut down 8/31/2015

PM Monitor Spacing

Federal regulations require that high volume monitors, defined as monitors that have a sample flow rate > 200 liters per minute, are more than 2 meters away from all other PM samplers. Further, low volume monitors, those with a sample flow rate < 200 liters per minute, are required to be more than 1 meter away from all other PM monitors.

The PM monitors in the districts covered by this ANP meet spacing requirements with the exception of the high volume PM_{10} monitor at Calexico. This monitor was less than 2 meters away from other PM monitors at the site; however, the high volume was shutdown in January 2016.

National multi-pollutant Core (NCore) Monitoring

Sites in the NCore Monitoring Network measure multiple pollutants to support a wide-range of air quality management objectives. NCore sites are intended to be long-term sites that will generate datasets useful for trend analyses and model evaluation. The NCore Monitoring Network includes rural and metropolitan sites. As shown in Table 21, five NCore sites are located in California; however, none of the sites are located in the districts covered by this ANP. More information about specific sites can be found in the ANPs submitted by districts in which the site in located.

Table 21: NCore Sites in California

Site	AQS ID	District	Site Type
Sacramento-Del Paso Manor	060670006	Sacramento	Urban
Fresno-Garland	060190011	San Joaquin Valley	Urban
White Mountain Research Station	060270002	Great Basin	Rural
Los Angeles-N Main St	060371103	South Coast	Urban
Riverside-Rubidoux	060658001	South Coast	Urban

Photochemical Assessment Monitoring Station (PAMS) Network

Ozone nonattainment areas classified as serious, severe, or extreme were required to establish PAMS site(s) which provide enhanced monitoring of ozone, NOx, VOCs, and meteorological parameters. The enhanced monitoring is intended to provide comprehensive data to evaluate the nature of ozone pollution and craft effective planning strategies to improve air quality in effected areas.

In California, Sacramento Metropolitan AQMD, San Diego APCD, San Joaquin Valley Unified APCD, Santa Barbara County APCD, South Coast AQMD, and Ventura County APCD have established PAMS sites. Ventura County is the only district covered by this ANP that conducts monitoring as part of the PAMS program. In recent years, the PAMS program has been re-engineered and, as discussed in last year's ANP, the extent of Ventura County's continued participation in the PAMS program is not clear. However, in 2015, the Ventura County's PAMS monitoring included measurements of more than 50 target VOCs at the Simi Valley and El Rio sites; and measurement of upper air meteorological parameters at the Simi Valley upper air site.

Special Purpose Monitors (SPM)

In 2015, six SPM monitors were operating in the area covered by this ANP.

- Two $PM_{2.5}$ FEM monitors were located at Calexico-Ethel Street (Imperial). These operated from 1/1/2014 to 12/22/2015.
- One $PM_{2.5}$ non-FEM monitor was started on 1/29/2015 at Red Bluff-Walnut St (Tehama).
- One $PM_{2.5}$ non-FEM monitor was started during the summer of 2015 at Yreka (Siskiyou) and the district is in the process of uploading monitor information to AQS.
- One ozone monitor was established on 7/1/1995 at Jerseydale (Mariposa).
- One ozone monitor was established at Tuscan Butte (Tehama) on 6/1/1995.

The SPM ozone monitors at Jerseydale and Tuscan Butte have operated for more than 2 years and are comparable to the NAAQS. The two SPMs at Calexico-Ethel did not meet 40 CFR Part 58 Appendix E siting requirements. In an effort to resolve the siting issue, an AQDA was issued in February 2012. ARB worked diligently with district staff and the site owner to improve siting conditions; however, these monitors were shutdown on 12/22/2015 before the siting issue was fully resolved. The other SPM monitors covered by this ANP meet 40 CFR Part 58 Appendix A and E siting requirements.

Section 6: Federal Quality Assurance Requirements

ARB PQAO Collocation Requirements

Appendix A of 40 CFR 58 includes requirements for collocation of samplers to ensure that measurements of $PM_{2.5}$, PM_{10}, and Pb are of comparable quality throughout monitoring networks located in each PQAO.

$PM_{2.5}$ Collocation Status

Federal regulations require that 15 percent of the FEM and FRM monitors in the network of primary $PM_{2.5}$ monitors must have a collocated monitor. Collocated FRM monitors must have the same method of measurement.

For each site with collocated $PM_{2.5}$ FEM monitors, half of the collocated monitors must have the same method of measurement and half must be FRM monitors. If there are an odd number of required collocated monitors then the addition monitor must be an FRM.

Table 22: Collocation Requirements for $PM_{2.5}$ Monitoring Methods

Method Type	Method Description	# of Primary Monitors	# of Required Collocated Monitors	Sites with Collocated Monitors - Method Type (District)
117 (FRM)*	R&P Model 2000 with WINS	--	--	See footnote
118 (FRM)*	R&P Model 2025 with WINS	--	--	See footnote
143 (FRM)	R&P Model 2000 with VSCC	4	1	Roseville-N Sunrise - 143/143 (Placer)
145 (FRM)	R&P Model 2025 with VSCC	18	3	Bakersfield-California – 145/145 (San Joaquin Valley) Calexico-Ethel – 145/145 (Imperial) Fresno-Garland – 145/145 (San Joaquin Valley) Portola - 145/145 (Northern Sierra) Sacramento-Del Paso – 145/145 (Sacramento)
170 (FEM)	Met One BAM 1020 with VSCC	35	5	Madera – 170/145 (San Joaquin Valley) Modesto – 170/143 (San Joaquin Valley)** Salinas – 170/117 (Monterey Bay) Simi Valley - 170/170 (Ventura) Stockton – 170/170 (San Joaquin Valley) Victorville – 170/117 (Mojave Desert)
181 (FEM)	Thermo TEOM 1400	2	1	Keeler – 181/145 (Great Basin)

Notes: The GRIMM monitors operated by North Coast AQMD were not considered for collocation because U.S.EPA granted a waiver for NAAQS comparison (5/20/2016) and the 2013-2015 data are now reported under parameter code 88502 and are not comparable to the NAAQS.
*ARB is in the process of converting all 117 and 118 monitors to 143 and 145 monitors, respectively. The monitors targeted for conversion 117 and 118 monitors were included in the 143 and 145 monitor counts. The 118 monitor at Ridgecrest will be replaced with a continuous monitor once parallel monitoring has been completed.
**Collocated monitor is not required; however, ARB has chosen to continue operating collocated monitors to provide additional quality assurance information.

Federal regulations require that 80 percent of collocated $PM_{2.5}$ monitors are located at sites where the design values are within 20 percent of the federal $PM_{2.5}$ standards. However, California is a large state in which environmental conditions can cause significant variation in ambient $PM_{2.5}$ concentrations across spatial and temporal scales.

Thus, ARB determined that limiting the focus of collocation efforts on meeting the 80 percent metric would result in collocated monitors being tightly clustered in a limited geographic range, which would not adequately represent the range of environmental conditions in the PQAO that could potentially affect $PM_{2.5}$ measurements.

The current locations of collocated $PM_{2.5}$ samplers were collaboratively identified by ARB and local districts as representative of areas of expected high concentrations as well as areas with environmental conditions that could potentially affect measurements, which effectively addresses the quality control function of the collocated monitoring.

PM_{10} Collocation Status

Federal regulations require that 15 percent of PM_{10} sites using manual FRMs in a PQAO have collocated monitors. Collocated monitors must use the same method of measurement as the primary FRM monitor.

Per U.S. EPA's guidance, the required number of collocation sites was determined by counting all of the PM_{10} FRM monitors, regardless of method code.

Table 23: Collocation Requirements for PM_{10}

Number of Primary FRM monitors*	# of Required Collocated Monitors	Sites with Collocated Monitors - Method Types (District)
34	5	Bakersfield-California 063/063 (San Joaquin Valley) Sacramento-Del Paso 063/063 (Sacramento) Keeler-Cerro 127/127 (Great Basin) Fresno-Drummond 162/162 (San Joaquin Valley)

*Includes PM_{10} monitors in Lake County, which report in local conditions

ARB is currently evaluating locations in the ARB PQAO to identify sites to collocate an additional PM_{10} monitor.

Pb Collocation Status

On December 14, 2010, U.S. EPA finalized the rule for the revised federal Pb standard, which also specifies the collocation requirements for Pb. The regulations specify that PQAOs that have a combination of source and non-source Pb sites have 15 percent of their Pb monitoring sites collocated. The regulations also require that the Pb network be treated independently from the PM network, and that the first collocation site be at the highest Pb concentration site within the network. Moreover, the regulations specify that if a PQAO has no source or non-source Pb monitoring, and the only Pb monitoring is conducted at NCore sites, then the collocated Pb monitor must be of the same method designation as the primary Pb monitor.

The ARB PQAO requires no source or non-source Pb monitoring. However, the ARB PQAO does have three NCore sites located at Fresno-Garland, Sacramento-Del Paso Manor, and White Mountain Research Station. Pb collocation at the NCore sites is

being handled at the national level. Thus, ARB is not required to collocate for Pb at these three sites.

ARB Quality Management Branch (QMB)

The information in this section, along with the information available on ARB's Quality Assurance website, http://www.arb.ca.gov/aaqm/qa/qa.htm, provides an overview of ARB's QMB compliance status with the requirements of 40 CFR Part 58, Appendices A, C, and E. The compliance status overview is part of the annual network plan requirement.

QMB Background

The Quality Assurance Section (QAS) and Quality Management Section (QMS) fulfill the QMB mission to ensure ambient air quality data meet or exceed the quality and program objectives of the end users. QAS and QMS perform various quality assurance activities to verify that the data collected comply with procedures and regulations set forth by U.S. EPA and can be considered good quality data and data-for-record.

The quality assurance activities are achieved through various audits which are independent from the ambient air monitoring program responsibilities. California's large network and unique ambient air monitoring challenges require a comprehensive state of the art audit program. ARB's audit program meets the federal requirements for conducting annual performance evaluations and has been designated as equivalent to the National Performance Audit Program. Audits are conducted by using independent National Institute of Standards and Technology (NIST) traceable standards and must adhere to federally established acceptance criteria.

QAS is responsible for conducting performance audits of criteria and non-criteria pollutant analyzers, particulate matter samplers, meteorological equipment, and laboratory analyses utilized for generating ambient level measurements. QAS also performs site reviews as well as reports quality assessment and quality control results. QMS is responsible for ensuring that ARB meets its federally mandated PQAO responsibilities. QMS performs system audits and provides quality assurance oversight of the PQAO districts.

During a performance audit, if a parameter fails to meet critical criteria (QA Handbook Volume II, Appendix D), an Air Quality Data Action (AQDA) request is issued to the facility operator. All AQDAs must be investigated by the operator and resolved to bring the parameter in question into compliance. The station operator completes the AQDA by documenting the resolution, specifying the time period during which data were potentially affected, and recommending whether the data are to be released, corrected, or invalidated. QMB reviews the completed AQDA and discusses any concerns with the operator. A finalized copy of the AQDA is forwarded to the operator and ARB's Air Quality Analysis Section. Other issues identified as systematic or operational criteria

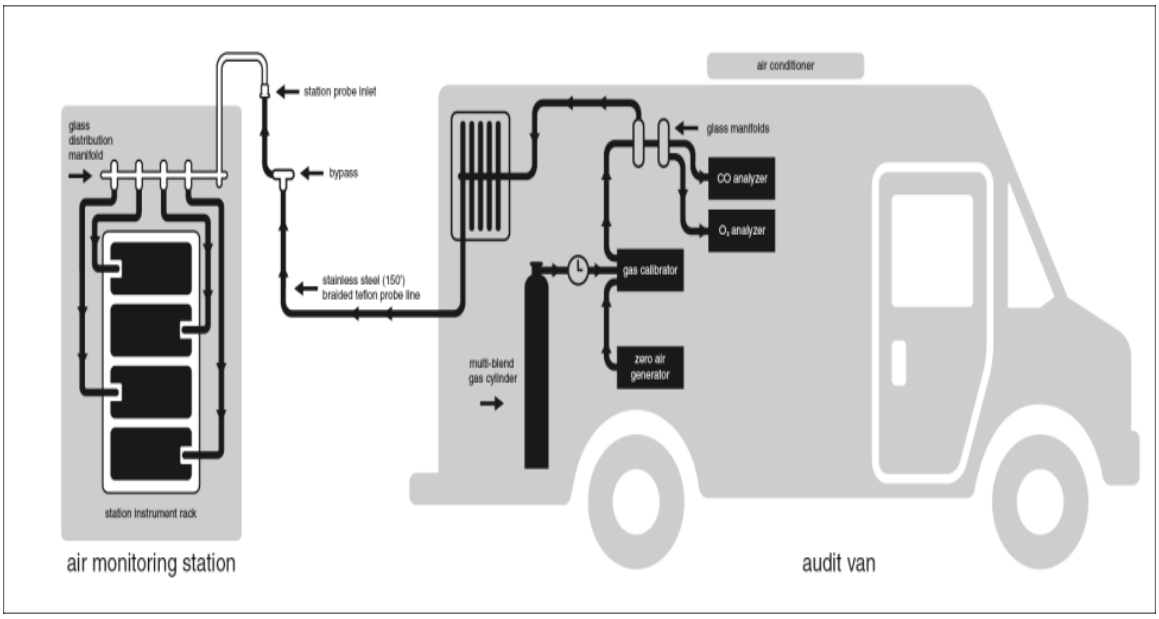
that may impact or potentially impact data quality are documented through the issuance of a Corrective Action Notification (CAN).

ARB Quality Assurance Activities

Monitoring Station Audits

Annually, QAS conducts through-the-probe (TTP) audits for all continuous gaseous analyzers in the network. TTP audits of the gaseous analyzers, which monitor for carbon monoxide, nitrogen dioxide, hydrogen sulfide, sulfur dioxide, and ozone, are conducted in accordance with U.S. EPA requirements (Title 40, CFR, Part 58, Appendix A). These audits verify the accuracy of the gaseous analyzers and ensure the integrity of the entire sampling system. For most TTP audits, an audit van is transported by QAS to the ambient air monitoring station. Audit vans house the necessary instrumentation and equipment to allow the audit to be conducted at the same condition as the station instruments. TTP audits, depicted in Figure 4, are conducted by introducing NIST traceable gases from the van into the station sampling probe inlet at various concentrations. QAS compares the results obtained from the station analyzer to the known values generated in the van.

Figure 4: Through-the-Probe Audit



TTP audit methodology can identify deficiencies caused by poor analyzer response, pollutant scavenging contaminants, and sampling system leaks. Deficiencies like these can cause the gaseous analyzers to fail an audit and possibly affect the quality of the ambient air data.

Biannually, QAS determines the accuracy of each particulate matter sampler in the network by comparison of the instrument's flow rate to either a certified orifice or a mass

flow meter. These devices are certified against a NIST traceable flow device or calibrator. The audit device is connected in-line with the sampler's flow path and the flow rate is measured while the sampler is operating under normal sampling conditions. The true flow is calculated from the audit device's calibration curve. The sampler's flow is then compared to the true flow and a percent difference is determined for verifying compliance.

QAS also conducts annual audits of meteorological sensor s using NIST traceable equipment. Accurate meteorological data are important for characterizing meteorological processes such as transport and diffusion, and to make air quality forecasts and burn-day decisions.

An integral part of a performance audit is conducting a siting evaluation. Stations that meet siting criteria at the time of initial setup may no longer conform due to updated regulations or changes in surrounding conditions and land use. Physical measurements and observations are noted on the site survey or accompanying documentation to determine compliance with 40 CFR Part 58, Appendix E requirements. Many of the siting issues result from the growth of vegetation/trees infringing on the minimum distance required from probes/inlets.

Laboratory Performance and System Audits

Laboratory mass analysis performance audits are conducted annually by QAS. These audits utilize NIST certified weights, hygrometers, and temperature sensors to verify the accuracy of the laboratory balance, relative humidity, and temperature sensors.

QMB conducts system audits to determine whether a district's air monitoring program satisfies the requirements of 40 CFR Part 58 and U.S. EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II. Compliance with these regulations is necessary if the data are to be considered data-for-record per the California Code of Regulations (Title 17, Article 3, Section 70301). Data meeting these requirements are eligible to be used in actions taken pursuant to the federal and California Clean Air Acts.

Quality Assessment and Quality Control

QAS ensures the quality of the data collected by the air monitoring stations operating in California through the analysis of precision data submitted to U.S. EPA's AQS database. Precision checks for gaseous/continuous samplers are required once every two weeks. These precision checks are conducted nightly at ARB and some district operated sites, and weekly or bi-weekly at other district sites. Precision checks for non-continuous, collocated particulate matter samplers are to be performed at least every 12 days. QAS staff analyze the precision data in accordance with 40 CFR 58, Appendix A.

Air monitoring staff perform a one-point flow rate verification at least once every month on the filter-based and automated PM analyzers. Air monitoring staff review these data

and takes corrective action when the results exceed U.S. EPA's requirements. These flow rate verifications are used to assess bias of the automated instruments in accordance with 40 CFR Part 58, Appendix A, 3.2.3. These bias estimates are further verified by the semi-annual flow rate audits that are conducted five to seven months apart in each calendar year. In the course of auditing the $PM_{2.5}$ FRM and continuous samplers, the date of the last six months of flow rate and leak checks performed by the air monitoring staff are recorded.

Audit Report Summary

Information about each air monitoring station audited by QMB is available at: http://www.arb.ca.gov/qaweb/sitelist_create.php. This web page provides the map location, latitude and longitude coordinates, site photos, the pollutants monitored, along with a detailed site survey of the instrumentation and physical parameters for each site.

The 2015 calendar year audit dates for both the gaseous analyzers and PM monitors and residence time for each gas analyzer operating at the monitoring sites covered in this report are provided in the detailed site tables in Appendix A. Audit results are directly submitted to AQS quarterly per Appendix A of 40 CFR Part 58.

In addition, as required by 40 CFR Part 58.15, ARB submits a data certification letter along with the required AQS reports (AMP450NC and AMP600) to U.S.EPA, annually. The last certification letter was sent to the U.S. EPA on May 10, 2016.

Section 7: Proposed and Recently Implemented Monitoring Site Changes

ARB utilizes the annual network plan process to document and provide the public opportunities to comment on any proposed changes to the monitoring network. Any received comments are formally addressed via letters and are documented in the network plan. The network plan is submitted to the U.S. EPA annually for formal approval of all network modifications.

This section lists the proposed and recently implemented monitoring site changes that ARB is currently aware of in the areas covered by this ANP.

Antelope Valley APCD

- Lancaster: $PM_{2.5}$ FRM monitor shutdown on 4/7/2016; FEM monitor now operated as primary monitor.

Butte County APCD

- Gridley: Site lease ends in May 2016 and it is likely that monitoring will be able to continue at the current location; however, the property owner has expressed concerns regarding the current monitoring trailer. ARB is in the planning process of replacing the monitoring trailer with a monitoring shelter.

Eastern Kern APCD

- Ridgecrest: Replacement of $PM_{2.5}$ FRM and PM_{10} FRM monitors with FEM monitors is planned for 2016.

El Dorado County AQMD

- Echo Summit: Site did not operate in 2015 due to issues with the site lease. These issues have since been resolved and the monitoring at the site was restarted for the 2016 ozone season.

- Placerville: Relocation of monitoring site is in the planning stage due to the development of the property and pending loss of current site lease. At this point in time, ARB has initiated the process of identifying a new site location and proactively starting the paperwork process. The paperwork has been in process for about 10 months between MLD and other involved state agencies. The lease expires Feb 2018 but the driver on the timeline for vacating the site is the property owner's timeline for development. There is a 180 day notice requirement for termination of the lease and that notice has not been served.

Feather River APCD

- The collocated non-FEM PM2.5 monitor was shutdown on 12/31/2015. A primary FRM $PM_{2.5}$ monitor, for NAAQS comparison, and a supplementary non-FEM $PM_{2.5}$ monitor, for AQI reporting, continue to operate at the site.

Imperial County APCD

- Brawley: The District is conducting a five year comparison of PM_{10} FRM and FEM monitoring data to support eventual shutdown of the FRM monitor. Installation of a Very Sharp Cut Cyclone inlet on the $PM_{2.5}$ FRM monitor is planned for the second quarter of 2016.

- Calexico: Lead monitoring was discontinued on October 3, 2015. ARB submitted a shutdown request in the 2015 ANP and U.S. EPA approved this request in November 2015. The PM_{10} FRM monitor was shutdown on 1/19/2016 and replaced with a PM_{10} FEM monitor. Two SPM $PM_{2.5}$ FEM monitors were shutdown on 12/22/2015. A non-FEM continuous $PM_{2.5}$ monitor was installed on 1/1/2016 for real-time reporting purposes.

- El Centro: The PM_{10} FEM monitor started on 7/1/2015 and the PM_{10} FRM monitor was shutdown on 12/31/2015. The FEM monitor is now operating as the primary monitor. Relocation to a more suitable location is being considered as vegetation and other siting issues have persisted at the current location.

- Niland: The District is conducting a five year comparison of PM_{10} FRM and FEM monitoring data to support eventual shutdown of the FRM monitor.

- Westmorland: The PM_{10} FEM monitor started on 7/1/2015 and the PM_{10} FRM monitor was shutdown on 12/31/2015. The FEM monitor is now operating as the primary monitor.

Lake County

- Lakeport: Site relocation is progressing. The new monitoring shelter is installed and acquisition of equipment, testing of communications, and comparison of monitoring data is ongoing. The new site is expected to be fully operational in a few months.

Mojave Desert AQMD

- Victorville: The primary and collocated $PM_{2.5}$ FRM monitors were expected to be shutdown at the end of 2015; however, this was delayed due to a roof repair at the monitoring site. $PM_{2.5}$ FEM monitors will operate as the primary and collocated monitors after roof repair at the site is completed in 2016.

Northern Sierra AQMD

- Grass Valley: Replacement of the non-FEM $PM_{2.5}$ monitor with an FEM is planned for early 2016.

- Truckee: The supplementary $PM_{2.5}$ FRM monitor (Method Code 118) was shutdown 8/31/2015.

- White Cloud: The site is currently not operating due to issues with the existing shelter. ARB is currently working on replacing the shelter.

Placer County APCD

- Roseville-N Sunrise: The FRM PM_{10} monitor was shutdown on 3/31/2015. The PM_{10} FEM monitor began operating as the primary monitor on 4/1/2015. A collocated FRM $PM_{2.5}$ (Method Code 143) began operating on 4/18/2015.

- Auburn-DeWitt: The PM_{10} FRM monitor was shutdown on 5/19/2015. The shutdown was approved by U.S. EPA on November 23, 2015 and the correspondence follows in Appendix C.

- Colfax: The PM_{10} FRM monitor shutdown on 5/19/2015. The shutdown was approved by U.S. EPA on November 23, 2015 and the correspondence follows in Appendix C.

Shasta County APCD

- The $PM_{2.5}$ monitors at Redding-Buckeye and Redding Toyon were shutdown. The shutdown was approved by U.S. EPA on November 23, 2015 and the correspondence follows in Appendix C.

Siskiyou County APCD

- Yreka: The ozone monitor moved to a new shed on the site. The PM_{10} FRM monitor was shutdown on 12/26/2015. The shutdown was approved by U.S. EPA on November 23, 2015 and the correspondence follows in Appendix C. A non-FEM continuous $PM_{2.5}$ monitor started during the summer of 2015.

Tehama County APCD

- Red Bluff-Walnut: Replacement of the non-FEM $PM_{2.5}$ monitor with an FEM monitor occurred in March 2016. Documentation is included in Appendix C of this ANP.

Ventura County APCD

- All glass sample trains used in ozone and NO_2 sampling at all District sites will be changed in 2016.

- District will continue to work with U.S. EPA Regional office on Phase 3 near-road NO_2 monitoring requirements.

ARB operates multiple sites in districts that are not covered by this ANP. Below are proposed and recently implemented changes to these ARB operated sites. Changes to ARB operated sites may also be reported in the ANPs prepared by the district's where the ARB-operated monitoring sites are located.

Santa Barbara County APCD

- Armory: Site needs to be relocated due to pending termination of site lease.

San Luis Obispo County APCD

- SLO-Higuera St.: Operation of the BAM1020 PM_{10} and $PM_{2.5}$ monitors has been suspended as of 9/8/2015 per ARB Health and Safety Unit. Operation is expected to resume by the third quarter in 2016.

San Joaquin Valley Unified APCD

- Arvin: The relocation of the Bear Mountain SLAMS monitoring site to the Di Giorgio SLAMS monitoring site was approved by U.S. EPA on May 2, 2016. A copy of the approval letter is included in Appendix C.

Section 8: Network Information Resources

While this report includes a great deal of information about the ambient air quality monitoring network, much more information is readily available, including summaries of the pollutant data from the monitors around the State. Much of this information is available on the web. This section lists a number of additional sources of such information. Also listed is contact information for the agencies responsible for the monitoring covered in this report.

ARB's Monitoring and Laboratory Division (MLD) maintains web pages with information about all the existing monitoring sites that routinely monitor and submit air quality data in California. The pages also include detailed local maps showing the location of the sites. This information can be found at: http://www.arb.ca.gov/aaqm/mldaqsb/amn.htm. A more general MLD web page that provides links to other aspects of ambient monitoring is located at: http://www.arb.ca.gov/aaqm/aaqm.htm.

Summaries of the official air quality data from sites around the State can be found at: http://www.arb.ca.gov/adam/welcome.html. Summaries of the most recent preliminary data can be viewed at: http://www.arb.ca.gov/aqmis2/aqmis2.php. These last two sources of information are maintained by ARB staff of the Air Quality Planning and Science Division, as is the following more general web page that lists links to other aspects of the ambient air quality data program: http://www.arb.ca.gov/html/ds.htm.

Agency contacts for ARB

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