# Annual Network Plan

## Covering Monitoring Operations in

## 25 California Air Districts

## July 2021

CALIFORNIA
AIR RESOURCES BOARD

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# Appendices

Abbreviations used in this document

| | |
|---|---|
| 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 |
| CARB | California Air Resources Board |
| CASTNET | Clean Air Status and Trends Network |
| CBSA | Core-Based Statistical Area |
| CFR | Code of Federal Regulations |
| CO | Carbon Monoxide |
| CSN | Chemical Speciation Network |
| DV | Design Value |
| EMP | Enhanced Monitoring Plan |
| FEM | Federal Equivalent Method |
| FRM | Federal Reference Method |
| IMPROVE | Interagency Monitoring of Protected Visual Environments |
| MATES | Multiple Air Toxics Exposure |
| MLD | Monitoring and Laboratory Division |
| NAAQS | National Ambient Air Quality Standard |
| NCore | National Core multipollutant network monitoring Station |
| NIST | National Institute of Standards and Technology |
| $NO_2$ | Nitrogen Dioxide |
| NPS | National Park Service |
| OMB | Office of Management and Budget |
| OTR | Ozone Transport Region |
| 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 |
| TSA | Technical System Audit |
| U.S. EPA | U.S. Environmental Protection Agency |
| VOC | Volatile Organic Compound |

# Executive Summary

The Annual Network Plan provides detailed information about criteria pollutant monitoring sites and instruments operating in California. Accurately measuring air quality is the foundation of California's efforts to reduce air pollution and meet air quality standards. For more than 50 years, California has maintained one of the most extensive air monitoring networks in the world, collecting data on a wide range of pollutants. The information gathered from these networks makes it possible to track progress in cleaning the air and identify the most effective actions needed to meet air quality standards.

The California Air Resources Board (CARB) and California's thirty-five local air districts, 25 of which are covered in this plan, have been measuring ambient air quality using a variety of stationary monitoring networks supplemented by mobile platforms including cars, aircraft, and ships. From the very beginning, California's air monitoring program has been a partnership between government agencies at the federal, State, and local level, along with universities and more recently with engaged community members and industry representatives.

California's different air monitoring networks are designed to meet a range of regulatory requirements, such as compliance with the federal Clean Air Act, as well as to help address research and public health priorities. Over time, the types of air pollutants being monitored and the extent of the air monitoring networks have varied as a function of new legislative mandates, community concerns, as well as our success in improving air quality in many parts of California. Air monitoring data outreach such as the Air Quality and Meteorological Information System (AQMIS), Air Quality Index, and AirNow program allow people and companies to take precautions by avoiding the outdoors or minimizing activities that contribute to air pollution when levels are unhealthy.

This executive summary briefly describes the main types of monitoring that are conducted in California. The focus of this report is on criteria pollutant monitoring being conducted by governmental agencies using regulatory grade monitoring instruments. This report does not discuss the extensive networks of low-cost sensors installed by agencies, community groups, academics, and others.

## Criteria Pollutant Monitoring

The majority of California's governmental air monitoring resources, reflected in the current statewide network of approximately 250 regulatory monitoring stations, have been dedicated to measuring ambient concentrations of criteria pollutants, which are ground-level ozone ($O_3$), particulate matter ($PM_{10}$ and $PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), and lead (Pb).

For each of these criteria pollutants, the Code of Federal Regulation (CFR) specifies a list of acceptable instruments and methods, the frequency at which samples are to be collected, and how many instruments must be duplicated at the same location for each region. The CFR also details standards to be used for locating air monitoring sites (such as population, local traffic counts, local emission sources, etc.), number of sites located in each region, and the

appropriate scale (e.g., neighborhood, urban, and regional) for the spatial objective of the particular pollutant.

Data from these monitoring networks are used for determining the attainment status for national and State ambient air quality standards, supporting public information services, forecasting expected high pollution events, and supporting the development of emissions reduction programs. Monitoring data must undergo review and validation process by the agency collecting the data before the data is deemed final for regulatory purposes. Because this type of monitoring often requires significant infrastructure and resources, these methods have limitations for widespread deployment as part of community air monitoring efforts.

## Additional Types of Air Monitoring Not Covered in the Annual Network Plan

***Toxic Air Contaminants Monitoring*:** Beginning in the 1980s, with the recognition of the health risks posed by a wide range of chemicals, California and the local air districts deployed a network of approximately 35 air toxics monitoring stations. Each of these stations take samples of toxic compounds which are then analyzed using specialized equipment. A few examples are volatile organic compounds, carbonyl compounds, toxic metals, and hexavalent chromium.

Most air toxics monitoring methods involve collecting air samples in the field and returning them to the laboratory for subsequent analysis. One significant limitation is that data from these methods may take weeks, or in some cases months, after sampling to become available as these sophisticated methods often require labor-intensive analytical procedures. Air toxic monitoring data are used to identify sources contributing to air toxic pollution and trends in the concentration of air toxics over time. Data can be used to support regulatory and enforcement actions when collected in a scientifically defensible manner.

***Greenhouse Gas Emission Monitoring*:** With the passage of the California Global Warming Solutions Act of 2006 (AB 32), CARB collaborated with federal agencies and universities to deploy a network of 15 tall towers and other stations across California to measure greenhouse gases (GHG), study regional GHG emissions trends throughout the state, and evaluate regional and statewide emissions inventories.

Evaluating regional and statewide GHG emissions requires highly accurate and precise measurements of ambient GHGs. The GHG network currently uses state-of-the-art, air monitoring instrumentation (cavity ring-down spectrometry) to measure carbon dioxide ($CO_2$), methane ($CH_4$), and nitrous oxide ($N_2O$). In conjunction with the ground-based network, airborne and spaceborne remote sensing measurements are conducted to screen large spatial regions for methane "hot spots".

***Remote Sensing*:** Remote sensing instrumentation measures reflected or emitted radiation to collect information about air pollutant concentrations and meteorological conditions. Remote sensing instruments can be deployed on ground-based (mobile and stationary), airborne (i.e., aircraft), and spaceborne (i.e., satellites) platforms. Fence-line remote sensing applications can monitor emissions from facilities such as refineries. When deployed on aircraft or satellites, remote sensing systems can survey large spatial areas and identify the general location of concentrated air pollution.

***Community-Scale Air Monitoring*:** Recognizing the need to understand air quality at the neighborhood level, CARB and the local air districts have periodically undertaken community-focused air monitoring studies. With the advent of low-cost air sensors in the last decade, many community groups and individuals are now also measuring air quality and deploying their own grassroots monitoring networks. As a result, community-level air monitoring network is continually expanding throughout California neighborhoods by community members, universities, private entities, and government agencies.

Continued usage of fence-line monitoring, advancements in air sensors, and additional mobile monitoring studies are important pieces to local air monitoring programs. Community-level air monitoring programs are expected to continue expanding in California with the adoption of Assembly Bill 617 (AB 617) in 2017. Monitoring methods commonly used for community air monitoring include:

- *Fence-line Monitoring*: Fence-line monitoring is a monitoring strategy in which air quality is measured at the perimeter of a known or potential emission source. Air districts may require fence-line monitoring at facilities that emit or potentially emit air pollutants and greenhouse gases. Depending on the air pollutant that is expected to be emitted, fence-line monitoring can utilize a wide variety of measurement tools such as air sensors, passive samplers, remote sensing systems, and real-time instrumentation. This type of monitoring may be used to help determine where and when leaks are occurring, the rate emissions are leaving the source, and what chemicals are present. AB 1647 and AB 617 include new requirements for enhanced fence-line and community monitoring in the vicinity of major stationary sources such as refineries.

- *Air Sensors*: Air quality sensors measure air pollutants on a real-time or near real-time basis and are generally low in cost, highly portable, and can require less power, siting infrastructure, and expertise than other air monitoring methods. Currently, no low-cost (i.e., $2,000 or less) sensors meet federal reference or federal equivalent method requirements and many have not been robustly evaluated to determine the accuracy of their measurements. However, sensor technology is rapidly developing and performance is expected to improve over time. Sensors have the potential to provide hyper-local air quality data as part of coordinated, well-designed, community-led air monitoring efforts. The resulting data may be of sufficient quality to help understand spatial variability, identify areas with relatively higher pollutant concentrations for further investigation, complement existing air monitoring networks, and evaluate personal exposure to air pollution.

- *Mobile Monitoring*: Mobile monitoring platforms collect environmental data while in motion, for example in a car or van. Instrumentation is utilized that can quickly measure air pollutant concentrations and provide instantaneous snapshots of air pollutant concentrations at a specific location and time. Mobile platforms can deploy a variety of instrumentation ranging from sensors, research-grade instrumentation, and remote sensing devices. Mobile platforms have the ability to measure real-time air pollutant concentrations at fine spatial gradients which can be used to identify persistent elevated pollutant concentrations and indicate potential contributing sources. These

mobile monitoring platforms provide a valuable means of identifying areas that may need additional measurements and/or inspections or inquiries.

## Conclusion

Monitoring networks and studies provide critical information for identifying and mitigating California's most significant air quality challenges. This Annual Network Plan documents California's network of regulatory ambient air quality monitors and describes how they meet Federal air monitoring and quality assurance requirements.

# 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) annually. ANPs are required to include 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 CARB Primary Quality Assurance Organization (PQAO) is comprised of 32 of the 35 local air districts in California. The districts in the CARB PQAO may elect to prepare their own ANP or have their information included in the CARB ANP. The CARB 2021 ANP covers the monitoring networks of 25 districts within the CARB PQAO. Seven districts in the CARB PQAO will prepare their own ANPs and submit them directly to the U.S. EPA. Three other districts in California, the Bay Area Air Quality Management District (AQMD), San Diego County 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 2021 ANP details the operations of the monitoring networks in 2020 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 districts, CARB, 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 monitoring station, Chemical Speciation Network (CSN), 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

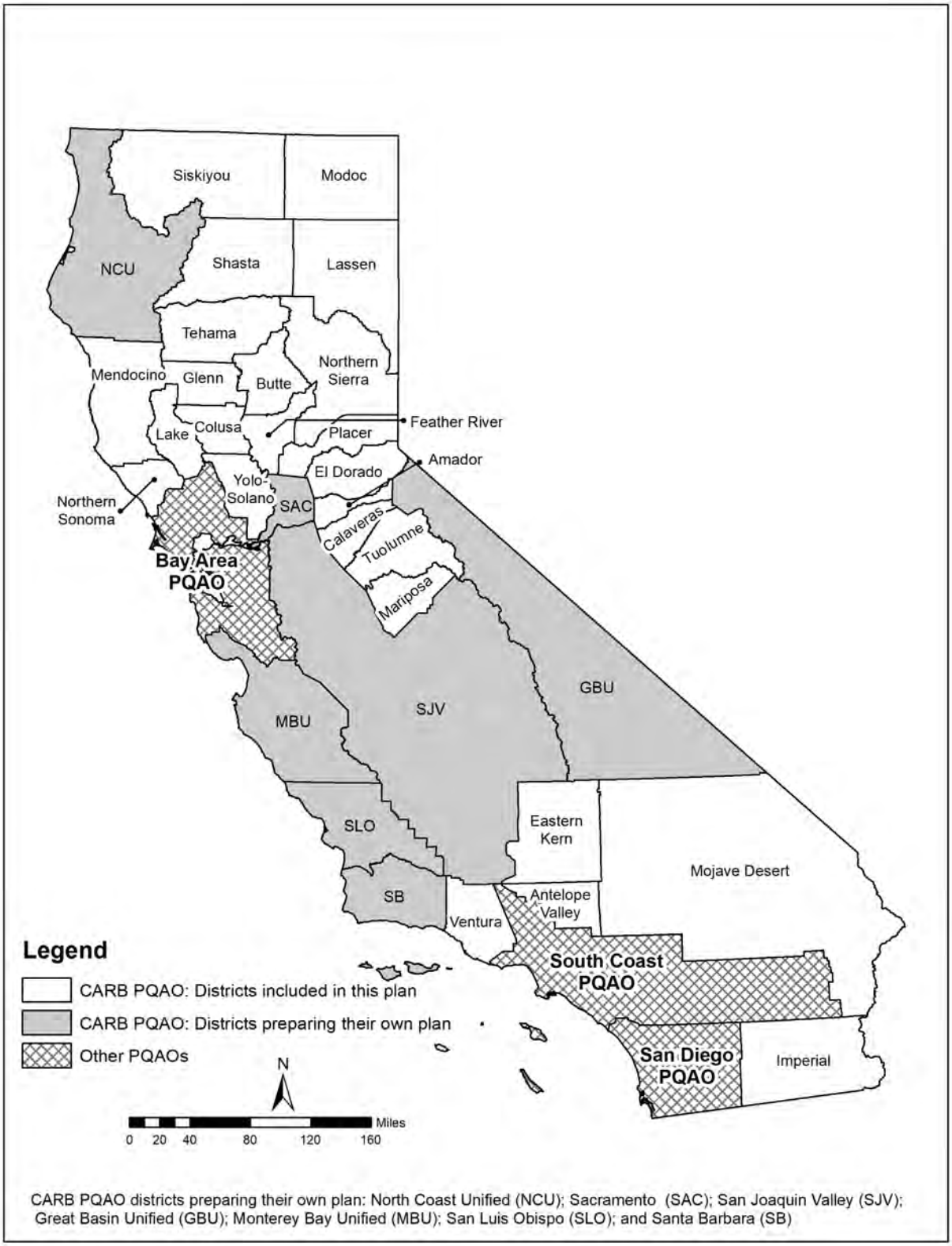
The CARB 2021 ANP will be available for a 30 day public inspection and comment period prior to its submittal to the U.S. EPA. If public comments are received, CARB will provide a response to the comments when the plan is submitted to the U.S. EPA. The final version of the CARB ANP is available for download from *https://www.arb.ca.gov/aqd/amnr/amnr.htm*.

Table 1: Districts in the CARB Primary Quality Assurance Organization

| Districts Included in the CARB ANP | |
|---|---|
| Amador County APCD | Antelope Valley AQMD |
| Butte County AQMD | Calaveras County APCD |
| Colusa County APCD | Eastern Kern APCD |
| El Dorado County AQMD | 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 | |
| **Districts Drafting Their Own ANP** | |
| Great Basin Unified APCD | Monterey Bay ARD |
| North Coast Unified AQMD | Sacramento Metropolitan AQMD |
| San Joaquin Valley APCD | San Luis Obispo County APCD |
| Santa Barbara County APCD | |

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

Figure 1: California Primary Quality Assurance Organizations



## 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 standards, understanding spatial and temporal variation in air pollutants, and evaluating pollutant exposure. Monitors are operated by CARB, local air districts, and other entities including the 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 ($PM_{10}$), CO, $NO_2$, $SO_2$, and Pb, which are the federal criteria pollutants. Meteorological parameters, volatile organic compounds (VOCs), 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 jurisdiction 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 air 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, local air districts develop strategies, programs, and regulations to achieve needed emission reductions. Data from the ambient air monitoring network are then used to assess the efficacy of those strategies, programs, and regulations.

The pollutants and the number of monitors at each monitoring site in the area 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 (AQS ID) | CO | $NO_2$ | Ozone | $SO_2$ | $PM_{10}$ | $PM_{2.5}$ | CARB Operated |
|---|---|---|---|---|---|---|---|---|
| Amador | Jackson-Clinton (06-005-0002) | | | 1 | | | | Yes |
| Antelope Valley | Lancaster-Division (06-037-9033) | 1 | 1 | 1 | | 1 | 1 | |
| Butte | Chico-East (06-007-0008) | 1 | 1 | 1 | | 1 | 2 | Yes |
| | Gridley (06-007-4001) | | | | | | 1 | Yes |
| | Paradise-Airport (06-007-0007) | | | 1 | | | | Yes |
| | Paradise-Theater (06-007-2002) | | | | | | 1 | Yes |
| Calaveras | San Andreas (06-009-0001) | | | 1 | | 1 | 1 | Yes |
| Colusa | Colusa-Sunrise Blvd (06-011-1002) | | | 1 | | 1 | 2 | Yes |
| Eastern Kern | Canebrake (06-029-0017) | | | | | 1 | | |
| | Mojave (06-029-0011) | | | 1 | | 1 | 1 | Yes |
| | Ridgecrest-Ward (06-029-0018) | | | | | 1 | 1 | |
| El Dorado | Cool (06-017-0020) | | | 1 | | | | Yes |
| | Echo Summit (06-017-0012) | | | 1 | | | | Yes |
| | Placerville (06-017-0010) | | | 1 | | | | Yes |
| | South Lake Tahoe (06-017-0011) | | | | | 1 | | Yes |
| Feather River | Sutter Buttes (06-101-0004) | | | 1 | | | | Yes |
| | Yuba City (06-101-0003) | | 1 | 1 | | 1 | 2 | Yes |
| Glenn | Willows-Colusa (06-021-0003) | | | 1 | | 1 | 1 | Yes |
| Imperial | Brawley-Main (06-025-0007) | | | | | 1 | 1 | |
| | Calexico-Ethel (06-025-0005) | 1 | 1 | 1 | 1 | 1 | 3 | Yes |
| | El Centro-9th (06-025-1003) | | 1 | 1 | | 1 | 1 | |
| | Niland-English (06-025-4004) | | | 1 | | 1 | | |
| | Westmorland (06-025-4003) | | | 1 | | 1 | | |
| Lake | Anderson Spring (06-033-3010) | | | | | 1 | | |
| | Glenbrook (06-033-3011) | | | | | 1 | | |
| | Lakeport-S.Main (06-033-3002) | | | 1 | | 1 | 1 | |
| Mariposa | Jerseydale (06-043-0006) | | | 1 | | | | Yes |
| | Yosemite Village (06-043-1001) | | | | | 1 | 1 | Yes |
| | Yosemite NP-Turtleback (06-043-0003)* | | | 1 | | | | |
| Mendocino | Fort Bragg-300 Dana (06-045-0010) | | | | | 1 | | |
| | Ukiah-Gobbi (06-045-0008) | | | 1 | | | | |
| | Ukiah-Library (06-045-0006) | | | | | | 1 | |
| | Willits-Justice Center (06-045-2002) | | | | | | 1 | |
| Mojave Desert | Barstow (06-071-0001) | 1 | 1 | 1 | | 1 | | |
| | Blythe-Murphy (06-065-9003) | | | 1 | | | | Yes |
| | Hesperia-Olive (06-071-4001) | | | 1 | | 1 | | |
| | Joshua Tree-Black Rock (06-071-9002)* | | | 1 | | | | |
| | Joshua Tree-Pinto Wells (06-065-1004)* | | | 1 | | | | |
| | Lucerne Valley (06-071-0013) | | | | | 1 | | |
| | Mojave NP (06-071-1001)* | | | 1 | | | | |
| | Phelan (06-071-0012) | | | 1 | | | | |
| | Trona-Athol/Telescope (06-071-1234) | | 1 | 1 | 1 | 1 | | |
| | Victorville-Park (06-071-0306) | 1 | 1 | 1 | 1 | 1 | 2 | |
| Northern Sierra | Chester (06-063-1007) | | | | | | 1 | |
| | Grass Valley (06-057-0005) | | | 1 | | | 2 | |
| | Portola (06-063-1010) | | | | | | 3 | |
| | Quincy-N Church (06-063-1006) | | | | | | 2 | |
| | Truckee-Fire Station (06-057-1001) | | | | | | 2 | |
| | White Cloud Mountain (06-057-0007)** | | | 1 | | | | Yes |
| Northern Sonoma | Cloverdale (06-097-0001) | | | | | 1 | | |
| | Guerneville-Church (06-097-3002) | | | | | 1 | | |
| | Healdsburg-Matheson (06-097-0002) | | | | | 1 | | |
| | Healdsburg-Airport (06-097-1003) | | | 1 | | | | |

| District | Site (AQS ID) | CO | $NO_2$ | Ozone | $SO_2$ | $PM_{10}$ | $PM_{2.5}$ | CARB Operated |
|---|---|---|---|---|---|---|---|---|
| Placer | Auburn-Atwood (06-061-0003) | | | 1 | | | 1 | |
| | Colfax-City Hall (06-061-0004) | | | 1 | | | 1 | |
| | Lincoln-Moore (06-061-2003) | | | 1 | | | 1 | |
| | Roseville-N Sunrise (06-061-0006) | | 1 | 1 | | 1 | 3 | Yes |
| | Tahoe City-Fairway (06-061-1004) | | | 1 | | | 1 | |
| Shasta | Anderson-North (06-089-0007) | | | 1 | | 1 | | |
| | Lassen Volcanic NP (06-089-3003)* | | | 1 | | | | |
| | Redding-Health Dept (06-089-0004) | | | 1 | | 1 | 2 | |
| | Shasta Lake-Lake (06-089-0009) | | | 1 | | | | |
| | Shasta Lake-La Mesa (06-089-0008) | | | | | 1 | | |
| Siskiyou | Yreka (06-093-2001) | | | 1 | | | 1 | |
| Tehama | Red Bluff-Walnut (06-103-0007) | | | 1 | | 1 | 1 | |
| | Tuscan Butte (06-103-0004) | | | 1 | | | | Yes |
| Tuolumne | Sonora-Barretta (06-109-0005) | | | 1 | | | | Yes |
| Ventura | El Rio-Rio Mesa School (06-111-3001) | | 1 | 1 | | 1 | 1 | |
| | Ojai-East Ojai (06-111-1004) | | | 1 | | | 1 | |
| | Piru-Pacific (06-111-0009) | | | 1 | | | 1 | |
| | Simi Valley-Cochran (06-111-2002) | | 1 | 1 | | 1 | 2 | |
| | Thousand Oaks (06-111-0007) | | | 1 | | | 1 | |
| Yolo-Solano | Davis-UCD Campus (06-113-0004) | | 1 | 1 | | | 1 | Yes |
| | Vacaville-Merchant (06-095-3001) | | | | | 1 | | |
| | Vacaville-Ulatis (06-095-3003) | | | 1 | | | | |
| | West Sacramento-15$^{th}$ (06-113-2001) | | | | | 1 | | |
| | Woodland-Gibson (06-113-1003) | | | 1 | | 1 | 1 | |

* These sites are operated by National Park Service (NPS).

** White Cloud Mountain did not operate in 2020

Note: CARB operating sites are delineated with grey shading.

# 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 the ANPs. These elements are described in the following sections and identified at the monitor-level in the detailed site reports 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
- Maximum Ozone Concentration
- Maximum Precursor Emissions Impact
- 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. 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 be adequate to 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 as follows:

- *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 spatial scale 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**

| Appropriate Site Type | Appropriate Spatial 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 | Urban, regional |
| Regional transport | Urban, regional |
| Welfare-related impacts | Urban, regional |

The types of monitoring sites and the spatial scales designated in the area covered by this ANP are listed in Table 4 and included in the detailed site reports in Appendix A. The site type is listed first following the spatial scale. Note that a monitor may have more than one site type.

Table 4: Site Type and Spatial Scale in the Districts Covered by this ANP

| District | Site | CO | $NO_2$ | Ozone | $SO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|---|
| Amador | Jackson-Clinton | | | pop/n | | | |
| Antelope Valley | Lancaster-Division | pop/m | pop/m | pop/m | | pop/n | pop/n |
| Butte | Chico-East | pop/n | pop/n | pop/n | | pop/n | pop/n |
| | Gridley | | | | | | pop/n |
| | Paradise-Airport | | | high/r | | | |
| | Paradise-Theater | | | | | | gen/n |
| Calaveras | San Andreas | | | high/n | | gen/n | gen/n |
| Colusa | Colusa-Sunrise Blvd | | | gen/r | | high,pop/n | pop/ n |
| Eastern Kern | Canebrake | | | | | gen,pop/u | |
| | Mojave | | | high/r | | pop/n | high/n |
| | Ridgecrest-Ward | | | | | high/n | pop/n |
| El Dorado | Cool | | | high/r | | | |
| | Echo Summit | | | trans/r | | | |
| | Placerville | | | high/r | | | |
| | South Lake Tahoe | | | | | pop/m | |
| Feather River | Sutter Buttes | | | high,trans/r | | | |
| | Yuba City | | pop/n | high/n | | pop/n | pop/n |
| Glenn | Willows-Colusa | | | pop/n | | pop/n | pop/n |
| Imperial | Brawley-Main | | | | | pop/n | pop/n |
| | Calexico-Ethel | pop/n | pop/n | gen/n | pop/n | pop/n | pop/n |
| | El Centro-9th | | pop/n | high/n | | pop/n | pop/n |
| | Niland-English | | | pop/n | | pop/n | |
| | Westmorland | | | pop/r | | pop/m | |
| Lake | Anderson Spring | | | | | pop/u | |
| | Glenbrook | | | | | pop/u | |
| | Lakeport-S.Main | | | pop/u | | gen/n | pop/n |
| Mariposa | Jerseydale | | | high/r | | | |
| | Yosemite Village | | | | | pop/m | pop/ m |
| | Yosemite NP-Turtleback* | | | gen/r | | | |
| Mendocino | Fort Bragg-300 Dana | | | | | gen/n | |
| | Ukiah-Gobbi | | | pop/n | | | |
| | Ukiah-Library | | | | | | pop/n |
| | Willits-Justice Center | | | | | | pop/n |
| Mojave Desert | Barstow | pop/m | pop/m | pop/m | | pop/n | |
| | Blythe-Murphy | | | gen/n | | | |
| | Hesperia-Olive | | | pop/n | | gen,pop/n | |
| | Joshua Tree-Black Rock* | | | high/r | | | |
| | Joshua Tree-Pinto Wells* | | | gen/r | | | |
| | Lucerne Valley | | | | | pop/n | |
| | Mojave NP* | | | gen/r | | | |
| | Phelan | | | pop/n | | | |
| | Trona-Athol/Telescope | | source/n | pop/n | source/n | high,source/n | |
| | Victorville-Park | pop/n | pop/n | pop/n | pop/n | pop/n | trans,pop/n |
| Northern Sierra | Chester | | | | | | pop/n |
| | Grass Valley | | | pop/n | | | pop/n |
| | Portola | | | | | | pop/n |
| | Quincy-N Church | | | | | | pop/n |
| | Truckee-Fire Station | | | | | | pop/n |
| | White Cloud Mountain | | | gen/r | | | |
| Northern Sonoma | Cloverdale | | | | | pop/n | |
| | Guerneville-Church | | | | | pop/n | |
| | Healdsburg-Matheson | | | | | pop/n | |
| | Healdsburg-Airport | | | gen/u | | | |

| District | Site | CO | $NO_2$ | Ozone | $SO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|---|
| Placer | Auburn-Atwood | | | pop/n | | | pop/n |
| | Colfax-City Hall | | | pop/n | | | pop/n |
| | Lincoln-Moore | | | pop/n | | | pop/n |
| | Roseville-N Sunrise | | pop/n | high/n | | high/n | pop/n |
| | Tahoe City-Fairway | | | gen/u | | | gen/u |
| Shasta | Anderson-North | | | pop/n | | high/n | |
| | Lassen Volcanic NP* | | | gen/r | | | |
| | Redding-Health Dept | | | pop,high/n | | high/n | pop/n |
| | Shasta Lake-Lake | | | pop/n | | | |
| | Shasta Lake-La Mesa | | | | | pop/n | |
| Siskiyou | Yreka | | | high,trans,pop/n | | | pop/n |
| Tehama | Red Bluff-Walnut | | | pop/n | | high/n | gen/n |
| | Tuscan Butte | | | high/r | | | |
| Tuolumne | Sonora-Barretta | | | high/n | | | |
| Ventura | El Rio-Rio Mesa School | | pop/u | pop/u | | pop/n | pop/n |
| | Ojai-East Ojai | | | pop/u | | | pop/n |
| | Piru-Pacific | | | pop/n | | | high/n |
| | Simi Valley-Cochran | | high/u | high/u | | pop/n | high/n |
| | Thousand Oaks | | | pop/u | | | pop/n |
| Yolo-Solano | Davis-UCD Campus | | pop/n | pop/n | | | pop/n |
| | Vacaville-Merchant | | | | | pop/n | |
| | Vacaville-Ulatis | | | high,pop/n | | | |
| | West Sacramento-15th | | | | | pop/n | |
| | Woodland-Gibson | | | pop/n | | pop/n | pop/ n |

* These sites are operated by National Park Service (NPS).
Site Types: gen-general background; high-highest concentration; pop-population exposure; trans-regional transport; source-source oriented
Spatial Scales: m-middle scale; n-neighborhood scale; u-urban scale; r-regional scale

## 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 agricultural and residential burn periods, geyser air monitoring, and state designations. These are outside of the scope of the ANP.

## 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
- Industrial
- Non-EPA federal
- Tribal
- EPA
- Other *

* U.S. EPA states that "Other" is intended for a monitor for a parameter not addressed by 40 CFR Part 58. (i.e., it will not be allowed for criteria pollutants or monitoring network such as NCore, PAMs or NATTS).

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 air quality standards.

In this ANP, all the monitors identified as non-EPA federal monitors are operated by the NPS. Industrial monitors and EPA monitors are not operated in the area covered by this ANP. Tribal monitors are operated on tribal lands by tribal entities and are outside of the scope of this ANP. Table 5 shows the types of monitors, their monitoring objectives and the network affiliations. Some monitors are operated under specific types of monitoring network programs. Examples of the network affiliations are PAMS, NCore, Near-road and CSN. The full list can be found at *https://aqs.epa.gov/aqsweb/documents/codetables/networks.html.*

Table 5: Monitoring Objective, Monitor Type and Network Affiliation

| District | Site | Monitoring Objective | Monitor Type* | Network Affiliation** |
|---|---|---|---|---|
| Amador | Jackson-Clinton | NAAQS Comparison | SLAMS | |
| Antelope Valley | Lancaster-Division | NAAQS Comparison, Public Info. | SLAMS | |
| Butte | Chico-East | NAAQS Comparison, Public Info. | SLAMS | CSN Supplemental |
| | Gridley | Public Info. | SLAMS | |
| | Paradise-Airport | NAAQS Comparison | SLAMS | |
| | Paradise-Theater | Public Info. | SLAMS | |
| Calaveras | San Andreas | NAAQS Comparison, Public Info. | SLAMS | |
| Colusa | Colusa-Sunrise Blvd | NAAQS Comparison | SLAMS | |
| Eastern Kern | Canebrake | NAAQS Comparison | SLAMS | |
| | Mojave | NAAQS Comparison | SLAMS | |
| | Ridgecrest-Ward | NAAQS Comparison | SLAMS | |
| El Dorado | Cool | NAAQS Comparison | SLAMS | |
| | Echo Summit | NAAQS Comparison | SLAMS | |
| | Placerville | NAAQS Comparison | SLAMS | |
| | South Lake Tahoe | NAAQS Comparison | SLAMS | |
| Feather River | Sutter Buttes | NAAQS Comparison | SLAMS | |
| | Yuba City | NAAQS Comparison, Public Info. | SLAMS | |
| Glenn | Willows-Colusa | NAAQS Comparison, Public Info. | SLAMS | |
| Imperial | Brawley-Main | NAAQS Comparison | SLAMS | |
| | Calexico-Ethel | NAAQS Comparison, Public Info. | SLAMS | CSN Supplemental |
| | El Centro-9th | NAAQS Comparison | SLAMS | |
| | Niland-English | NAAQS Comparison | SLAMS | |
| | Westmorland | NAAQS Comparison | SLAMS | |
| Lake | Anderson Spring | Public Info. | SLAMS | |
| | Glenbrook | Public Info. | SLAMS | |
| | Lakeport-S.Main | NAAQS Comparison | SLAMS | |
| Mariposa | Jerseydale | NAAQS Comparison | SPM | |
| | Yosemite Village | NAAQS Comparison, Public Info. | SLAMS | |
| | Yosemite NP-Turtleback | NAAQS Comparison | non-EPA Federal | CASTNET |
| Mendocino | Fort Bragg-300 Dana | NAAQS Comparison | SLAMS | |
| | Ukiah-Gobbi | NAAQS Comparison | SLAMS | |
| | Ukiah-Library | NAAQS Comparison | SLAMS | |
| | Willits-Justice Center | NAAQS Comparison | SLAMS | |
| Mojave Desert | Barstow | NAAQS Comparison | SLAMS | |
| | Blythe-Murphy | NAAQS Comparison, Public Info. | SLAMS | |
| | Hesperia-Olive | NAAQS Comparison | SLAMS | |
| | Joshua Tree-Black Rock | NAAQS Comparison | non-EPA Federal | CASTNET |
| | Joshua Tree-Pinto Wells | Public Info. | non-EPA Federal | |
| | Lucerne Valley | NAAQS Comparison | SLAMS | |
| | Mojave NP | Public Info. | non-EPA Federal | |
| | Phelan | NAAQS Comparison | SLAMS | |
| | Trona-Athol/Telescope | NAAQS Comparison | SLAMS | |
| | Victorville-Park | NAAQS Comparison | SLAMS | |
| Northern Sierra | Chester | NAAQS Comparison | SLAMS | |
| | Grass Valley | NAAQS Comparison | SLAMS | |
| | Portola | NAAQS Comparison | SLAMS | CSN Supplemental |
| | Quincy-N Church | NAAQS Comparison | SLAMS | |
| | Truckee-Fire Station | NAAQS Comparison | SLAMS | |
| | White Cloud Mountain | NAAQS Comparison | SLAMS | |
| Northern Sonoma | Cloverdale | NAAQS Comparison | SLAMS | |
| | Guerneville-Church | NAAQS Comparison | SLAMS | |
| | Healdsburg-Matheson | NAAQS Comparison | SLAMS | |
| | Healdsburg-Airport | NAAQS Comparison | SLAMS | |

| District | Site | Monitoring Objective | Monitor Type* | Network Affiliation** |
|---|---|---|---|---|
| Placer | Auburn-Atwood | NAAQS Comparison | SLAMS | |
| | Colfax-City Hall | NAAQS Comparison, Public Info. | SLAMS | |
| | Lincoln-Moore | NAAQS Comparison, Public Info. | SLAMS | |
| | Roseville-N Sunrise | NAAQS Comparison, Public Info. | SLAMS | |
| | Tahoe City-Fairway | NAAQS Comparison, Public Info. | SLAMS | |
| Shasta | Anderson-North | NAAQS Comparison | SLAMS | |
| | Lassen Volcanic NP | NAAQS Comparison, Research | non-EPA Federal | CASTNET |
| | Redding-Health Dept | NAAQS Comparison | SLAMS | |
| | Shasta Lake-Lake | NAAQS Comparison | SLAMS | |
| | Shasta Lake-La Mesa | NAAQS Comparison | SLAMS | |
| Siskiyou | Yreka | NAAQS Comparison | SLAMS | |
| Tehama | Red Bluff-Walnut | NAAQS Comparison | SLAMS | |
| | Tuscan Butte | NAAQS Comparison | SPM | |
| Tuolumne | Sonora-Barretta | NAAQS Comparison | SLAMS | |
| Ventura | El Rio-Rio Mesa School | NAAQS Comparison | SLAMS | PAMS |
| | Ojai-East Ojai | NAAQS Comparison | SLAMS | |
| | Piru-Pacific | NAAQS Comparison | SLAMS | |
| | Simi Valley-Cochran | NAAQS Comparison, Public Info. | SLAMS | PAMS |
| | Thousand Oaks | NAAQS Comparison | SLAMS | |
| Yolo-Solano | Davis-UCD Campus | NAAQS Comparison, Public Info. | SLAMS | |
| | Vacaville-Merchant | NAAQS Comparison | SLAMS | |
| | Vacaville-Ulatis | NAAQS Comparison | SLAMS | |
| | West Sacramento-15th | NAAQS Comparison | SLAMS | |
| | Woodland-Gibson | NAAQS Comparison | SLAMS | |

* There are no other network types such as CSN, STN, IMPROVE, NATTS, NCore, or Near-road in the area covered by this ANP.

# Section 4: Additional Information about the Monitors

## Required Monitor Information

U.S. EPA regulations (40 CFR Part 58.10) require that the annual monitoring network plan lists specific additional information that characterizes the nature and location of the monitors. U.S. EPA Region 9 identified all of the information that is required on each site/monitor basis. The full list of required information is included in Table 6. This detailed information for each site can be found in the detailed site tables in Appendix A of this ANP.

**Table 6: Required Detailed Monitoring Site Information**

| |
|---|
| Local site name |
| AQS ID |
| GPS coordinates (decimal degrees) |
| Street Address |
| County |
| Distance to roadways (meters) |
| Traffic count (AADT, year) |
| Groundcover (e.g. paved, vegetative, dirt, sand, gravel) |
| Representative statistical area name (i.e. MSA, CBSA, other) |
| Pollutant, POC |
| Primary / QA Collocated / Other |
| Parameter code |
| Basic monitoring objective(s) |
| Site type(s) |
| Monitor type |
| Network affiliation(s), if applicable |
| Instrument manufacturer and model |
| Method code |
| FRM/FEM/ARM/other |
| Collecting Agency |
| Analytical Lab (i.e. weigh lab, toxics lab, other) |
| Reporting Agency |
| Spatial scale (e.g. micro, neighborhood) |
| Monitoring start date |
| Current sampling frequency |
| Required sampling frequency |
| Sampling season |
| Probe height (meters) |
| Distance from supporting structure (meters) |
| Distance from obstructions on roof. Include horizontal distance + vertical height above probe for obstructions nearby (meters). |
| Distance from obstructions not on roof. Include horizontal distance + vertical height above probe for obstructions nearby (meters). |
| Distance from tree drip-lines (meters) |
| Distance to furnace or incinerator flue (meters) |
| Distance between monitors fulfilling a QA collocation requirement (meters). |
| Unrestricted airflow (degrees around probe/inlet or percentage of monitoring path) |
| Probe material for reactive gases NO/$NO_2$/$NO_y$, $SO_2$, $O_3$; PAMS: VOCs, Carbonyls |

**Table 6 continued**

| |
|---|
| Residence time for reactive gases NO/$NO_2$/$NO_y$, $SO_2$, $O_3$; PAMS: VOCs, Carbonyls (seconds) |
| Will there be changes within the next 18 months? (Y/N) |
| Is it suitable for comparison against the annual $PM_{2.5}$? (Y/N) |
| Frequency of flow rate verification for manual PM samplers, including Pb samplers |
| Frequency of flow rate verification for automated PM analyzers |
| Frequency of one-point QC check for gaseous instruments |
| Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters |
| Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors |

## Information on the continuous $PM_{2.5}$ non-FEM monitors

The federal regulations require that monitors are FRMs, FEMs, or ARMs and meet certain siting criteria in order for the data to be used for national ambient air quality standards (NAAQS) comparison. While all continuous $PM_{10}$ monitors discussed in this report are FEM monitors, there are some continuous $PM_{2.5}$ monitors that are non-FEMs. Table 7 lists the continuous $PM_{2.5}$ non-FEM monitoring sites covered in this ANP. The continuous $PM_{2.5}$ data reported from these non-FEM monitors are excluded from NAAQS comparison. However, many of these non-FEM monitors are California Approved Samplers (CAS) and the data are used for State designation purposes and/or in AirNow for Air Quality Index reporting.

Table 7: Monitoring Sites Operating Continuous $PM_{2.5}$ Non-FEM monitors

| District | Site |
|---|---|
| Butte | Gridley (06-007-4001) |
| | Paradise-Theater (06-007-2002) |
| Colusa | Colusa-Sunrise Blvd (06-011-1002)* |
| Feather River | Yuba City (06-101-0003)* |
| Glenn | Willows-Colusa (06-021-0003) |
| Imperial | Calexico (06-025-0005)* |
| Mariposa | Yosemite Village (06-043-1001) |
| Northern Sierra | Chester (06-063-1007) |
| | Portola (06-063-1010) |
| | Quincy-N Church Street (06-063-1006) |
| | Truckee-Fire Station (06-057-1001) |
| Placer | Colfax-City Hall (06-061-0004) |
| | Lincoln-Moore Street (06-061-2003) |
| | Roseville-N Sunrise Ave (06-061-0006)* |
| | Tahoe City-Fairway Drive (06-061-1004) |
| Yolo-Solano | Davis-UCD Campus (06-113-0004) |

* These non-FEM monitors were converted to FEM in 2020 (Colusa, 12/14/20; Yuba City, 4/9/20; Calexico, 12/10/20; and Roseville, 12/11/20).

## Core-Based Statistical Areas

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 (Figure 2).

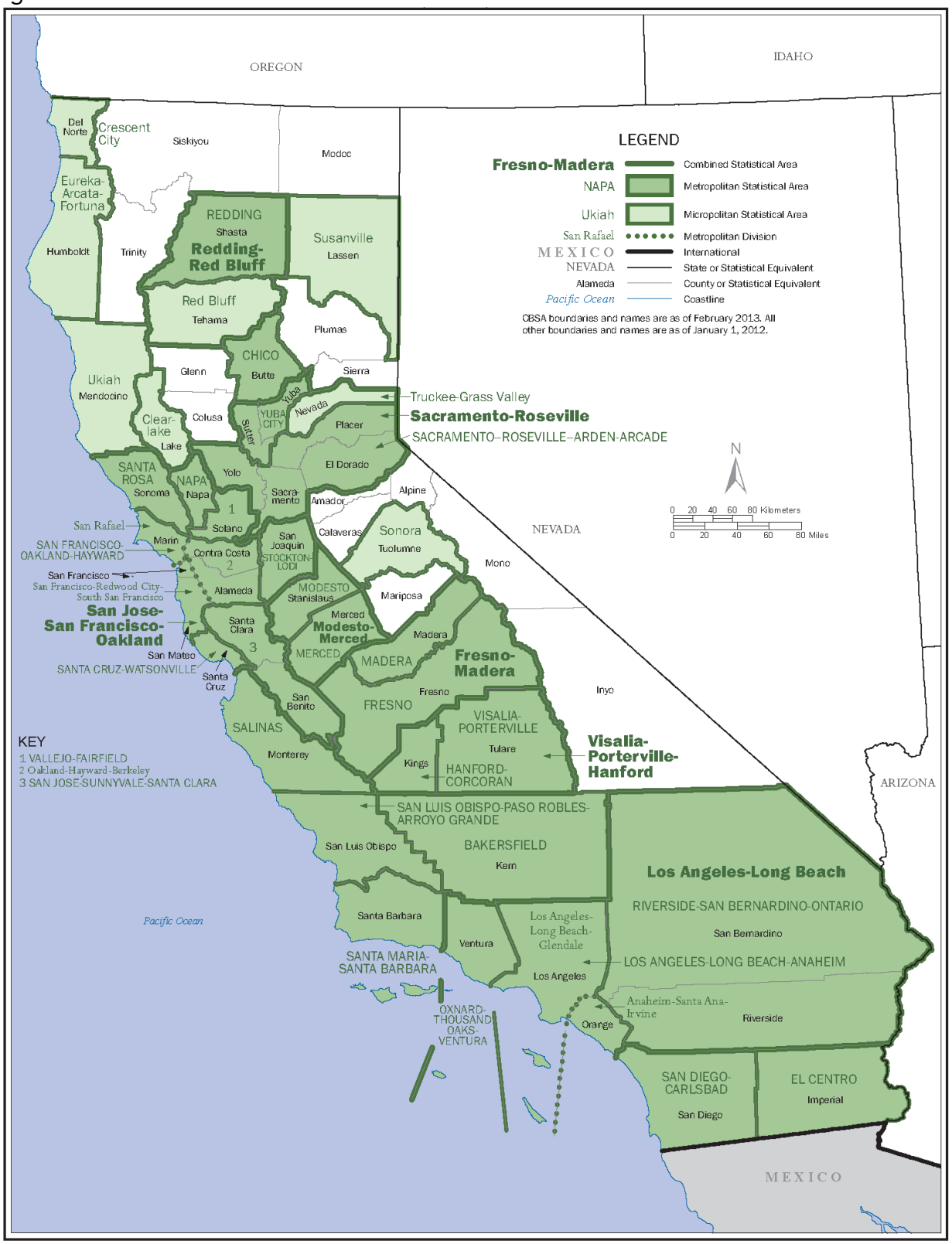
U.S. EPA specifies the number of monitors required for each pollutant based on the CBSA. Table 8 contains a comprehensive list of CBSAs and associated air districts for California. Several of the 25 air districts covered by this ANP are located in CBSAs that also include air districts that are preparing 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 CARB specify that districts and CARB must communicate with each other when changes to the network are being considered. When proposed changes are communicated between districts and CARB, 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 CARB website at *https://ww2.arb.ca.gov/our-work/programs/quality-assurance/qm-document-repository/roles-responsibility-agreements*.

## Assessing the $PM_{2.5}$ monitoring network

The Roles and Responsibilities outlined in the documents described above direct CARB to coordinate all changes to the $PM_{2.5}$ monitoring network with local air districts, the general public and affected CARB divisions. Any $PM_{2.5}$ network changes are thoroughly reviewed by CARB and district working groups, both separately and in coordinated discussions, and impacts on all CFR requirements are assessed. CARB and the local air districts then work together, and with U.S. EPA Region 9, to mitigate impacts of any changes to the monitoring network, particularly with regard to any changes that impact any monitors that have violated the NAAQS. Public comment is solicited through the ANP process as required by 40 CFR 58.10(c) and any comments received are addressed in either this document or in the documents of the individual district Annual Network Plans.

Figure 2: Core-Based Statistical Areas in California




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

Table 8: List of Core-Based Statistical Areas included in CARB ANP and Other ANP in California

| CBSA Name* | County | Included in the CARB 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.

# Section 5: 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.

This ANP uses 2010 census populations to determine official minimum monitoring requirements. Upon direction from U.S. EPA, this ANP also includes the most recent available population census estimates (July 1, 2020) to estimate any changes to these requirements.

## Section 5A: Ozone

### Minimum Number of Ozone Monitoring Sites

The criteria for minimum monitoring requirements for ozone are shown in Table 9. The requirements are based on the population of the Metropolitan Statistical Area (MSA) and the magnitude of the design value (i.e. if the design value is greater or equal to 85% or less than 85% of the ozone standard). There are no minimum monitoring requirements outside of MSAs. NCore and SLAMS monitors can be used to meet minimum monitoring requirements for ozone. In the absence of a valid design value, requirements for "less than 85% of any ozone NAAQS" apply.

**Table 9: Minimum Ozone Monitoring Requirements for SLAMS**

| Metropolitan Statistical Area population | Most recent 3-year design value concentrations ≥85% of any Ozone NAAQS | Most recent 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 MSA, 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 10, the 11 MSAs covered by this ANP met the minimum ozone monitoring requirements for ozone in 2020. Sites from districts not covered by this ANP are also listed to provide a complete picture of all the sites contributing towards the minimum monitoring requirements in each MSA. Note that percentages are relative to the 0.070 ppm 8-hour ozone standard and high concentration sites are denoted with bold text.

SPMs and non-EPA federal ozone monitors are operated in some areas covered by this ANP, but cannot be counted towards the minimum monitoring requirements. Information about these monitors is provided in Appendix A of this ANP.

## Table 10: CBSAs with Minimum Ozone Monitoring Requirements

| Metropolitan Statistical Area | 2010 Census Population (2020 Population Estimate*) | 2018-2020 Design Value (% of NAAQS) *DV Site* | Required # of Sites | SLAMS Sites Operating in 2020 (District where site is located) ***Highest Concentration Sites Denoted by Bold Text*** |
|---|---|---|---|---|
| Bakersfield | 839,361 (901,362) | 0.093 ppm (133%) *Edison* | 2 | **Arvin-Di Giorgio (San Joaquin Valley)**<br>Bakersfield-5558 California Avenue (San Joaquin Valley)<br>**Bakersfield-Municipal Airport (San Joaquin Valley**)<br>**Edison (San Joaquin Valley)**<br>Maricopa-Stanislaus Street (San Joaquin Valley)<br>**Mojave-923 Poole Street (Eastern Kern)**<br>Oildale-3311 Manor Street (San Joaquin Valley)<br>Shafter-Walker Street (San Joaquin Valley) |
| Chico | 220,000 (212,744) | 0.073 ppm (104%) *Paradise* | 1 | Chico-East Avenue (Butte County)<br>**Paradise-4405 Airport Road (Butte County)** |
| El Centro | 174,528 (180,267) | 0.078 ppm (111%) *Calexico* | 1 | **Calexico-Ethel Street (Imperial)**<br>**El Centro-9th Street (Imperial)**<br>Niland-English Road (Imperial)<br>Westmorland (Imperial) |
| Los Angeles-Long Beach-Anaheim | 12,828,837 (13,109,903) | 0.107 ppm (153%) *Glendora* | 4 | Anaheim-Pampas Lane (South Coast)<br>Azusa (South Coast)<br>Compton-700 North Bullis Road (South Coast)<br>**Glendora-Laurel (South Coast)**<br>La Habra (South Coast)<br>Lancaster-43301 Division Street (Antelope Valley)<br>Long Beach-Signal Hill (South Coast)<br>Los Angeles-LAX (South Coast)<br>Los Angeles-North Main Street (South Coast)<br>Mission Viejo-26081 Via Pera (South Coast)<br>North Hollywood (South Coast)<br>Pasadena-S Wilson Avenue (South Coast)<br>Pico Rivera-4144 San Gabriel (South Coast)<br>Pomona (South Coast)<br>Reseda (South Coast)<br>**Santa Clarita (South Coast)**<br>West Los Angeles-VA Hospital (South Coast) |
| Oxnard-Thousand Oaks-Ventura | 823,318 (841,387) | 0.077 ppm (110%) *Simi Valley* | 3 | El Rio-Rio Mesa School #2 (Ventura)<br>Ojai-Ojai Avenue (Ventura)<br>Piru-3301 Pacific Avenue (Ventura)<br>**Simi Valley-Cochran Street (Ventura)**<br>Thousand Oaks-Moorpark Road (Ventura) |
| Redding | 177,223 (179,027) | 0.068 ppm (97%) *Anderson/ Shasta* | 1 | Anderson-North Street (Shasta County)<br>**Redding-Health Dept Roof (Shasta County)**<br>Shasta Lake-13791 Lake Blvd (Shasta County) |

| Metropolitan Statistical Area | 2010 Census Population (2020 Population Estimate*) | 2018-2020 Design Value (% of NAAQS) *DV Site* | Required # of Sites | SLAMS Sites Operating in 2020 (District where site is located) ***Highest Concentration Sites Denoted by Bold Text*** |
|---|---|---|---|---|
| Riverside-San Bernardino-Ontario | 4,224,851 (4,678,371) | 0.114 ppm (163%) *Redlands* | 3 | Banning Airport (South Coast)<br>Barstow (Mojave Desert)<br>Blythe-445 West Murphy Street (Mojave Desert)<br>**Crestline (South Coast)**<br>Fontana-Arrow Highway (South Coast)<br>Hesperia-Olive Street (Mojave Desert)<br>Indio-Jackson Street (South Coast)<br>Lake Elsinore-W Flint Street (South Coast)<br>Mira Loma-Van Buren (South Coast)<br>Palm Springs-Fire Station (South Coast)<br>Perris (South Coast)<br>Phelan (Mojave Desert)<br>Redlands-Dearborn (South Coast)<br>Riverside-Rubidoux (South Coast)<br>**San Bernardino-4th Street (South Coast)**<br>Trona-Athol and Telegraph (Mojave Desert)<br>Upland (South Coast)<br>Victorville-14306 Park Avenue (Mojave Desert)<br>Winchester-33700 Borel Road (South Coast) |
| Sacramento-Roseville-Arden Arcade | 2,149,127 (2,374,749) | 0.086 ppm (123%) *Auburn* | 2 | Auburn-11645 Atwood Road (Placer County)<br>Colfax-City Hall (Placer County)<br>**Cool-Highway 193 (El Dorado County)**<br>Davis-UCD Campus (Yolo-Solano)<br>Echo Summit (El Dorado County)<br>Elk Grove (Sacramento)<br>**Folsom (Sacramento)**<br>Lincoln-2885 Moore Rd (Placer County)<br>North Highlands (Sacramento)<br>**Placerville-Gold Nugget Way (El Dorado County)**<br>**Roseville-N Sunrise Blvd (Placer County)**<br>Sacramento-Del Paso Manor (Sacramento)<br>Sacramento-T St (Sacramento)<br>Sloughhouse (Sacramento)<br>Tahoe City-221 Fairway Drive (Placer County)<br>Woodland-Gibson Road (Yolo-Solano) |
| Santa Rosa | 483,878 (489,819) | 0.051 ppm (73%) *Healdsburg* | 1 | **Healdsburg-Municipal Airport (Northern Sonoma)**<br>Sebastopol (Bay Area) |
| Vallejo-Fairfield | 413,344 (446,935) | 0.059ppm (84%) *Fairfield* | 2 | Fairfield-Chadbourne Road (Bay Area)<br>Vallejo-304 Tuolumne Street (Bay Area)<br>**Vacaville-Ulatis Drive (Yolo-Solano)** |
| Yuba City | 166,892 (176,545) | 0.076 ppm (109%) *Sutter Buttes* | 1 | **Sutter Buttes-S Butte (Feather River)**<br>**Yuba City-Almond Street (Feather River)** |

* Source: U.S. Census Bureau. Retrieved from *https://www.census.gov/programs-surveys/popest.html*

## Seasonal Ozone Monitoring

The ozone monitoring season is year-round in California; however, monitoring at the six sites shown in Table 11 have operated on a seasonal basis since they were established. The ozone monitoring season for these sites is April through October, the period in which peak ozone is expected or when sites are physically accessible. A seasonal waiver for ozone monitoring in 2020 at these sites was granted by U.S. EPA. The waiver must be updated each year, and a copy of the waiver request for 2021 is provided in Appendix B.

**Table 11: Seasonal Ozone Monitoring Sites**

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

*The White Cloud Mountain site has not operated since 2016 due to shelter and power issues. A date for the relocation and startup of a new site is unknown at this time.

## Section 5B: Nitrogen Dioxide ($NO_2$)

### Minimum Number of $NO_2$ Monitoring Sites

Federal regulations specify three types of $NO_2$ minimum monitoring requirements:

- Area-wide;
- Near-road $NO_2$ monitoring, and;
- Monitoring in communities with susceptible populations

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 CBSAs in California that meet the population thresholds for required area-wide $NO_2$ monitoring are the Los Angeles-Long Beach-Anaheim, Riverside-San Bernardino-Ontario, Sacramento-Roseville-Arden Arcade, San Diego-Carlsbad, San Francisco-Oakland-Hayward and San Jose-Sunnyvale-Santa Clara. 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 AQMD, Sacramento Metropolitan AQMD, San Diego County APCD, and Bay Area AQMD. 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 (AADT) counts on road segments within the CBSA. One monitor is required in CBSAs with a population of one million or more. A second monitor is required in CBSAs with a population greater than or equal to 2.5 million; or CBSA's with populations greater than or equal to 1 million and roadway AADT greater than or equal to 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. 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 12.

The near-road areas with road segments with the highest AADT for the Bakersfield, 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 in the CARB PQAO is addressed in the ANPs prepared by the San Joaquin Valley APCD and the Sacramento Metropolitan AQMD. Information about near-road $NO_2$ monitoring for the other PQAOs in California can also be found in the ANPs prepared by the San Diego County APCD, South Coast AQMD and the Bay Area AQMD.

## Table 12: CBSAs with Near-Road $NO_2$ Monitoring Requirements

| CBSA | Population 2010 Census (2020 Population Estimate) | Area-wide Monitoring | Maximum AADT (2019)* | Required Near-road Sites | Near-road Sites; AQS ID (District where sites are located) |
|---|---|---|---|---|---|
| Bakersfield | 839,361 (901,362) | No | 159,000 | 1 | Bakersfield–Westwind; 060292019 (San Joaquin Valley) |
| Fresno | 930,450 (1,000,918) | Yes | 157,000 | 1 | Fresno-2482 Foundry Park; 060192016 (San Joaquin Valley) |
| Los Angeles-Long Beach-Anaheim | 12,828,837 (13,109,903) | Yes | 504,000 | 2 | Anaheim-Route 5; 060590008 (South Coast) Long Beach-Route 710; 060374008 (South Coast) |
| Riverside-San Bernardino-Ontario | 4,224,851 (4,678,371) | Yes | 278,000 | 2 | Ontario-Etiwanda; 060710026 (South Coast) Ontario-Route 60; 060710027 (South Coast) |
| Sacramento-Roseville-Folsom | 2,149,127 (2,374,749) | Yes | 277,000 | 2 | Sacramento-Bercut Drive; 060670015 (Sacramento) - - ** |
| San Diego-Chula Vista-Carlsbad | 3,095,313 (3,332,427) | Yes | 312,000 | 2 | Rancho Carmel Drive; 060731017 (San Diego) San Ysidro; 060731025 (San Diego) ** |
| San Francisco-Oakland-Berkeley | 4,335,391 (4,696,902) | Yes | 291,000 | 2 | Laney College; 060010012 (Bay Area) Berkeley-Aquatic Park; 060010013 (Bay Area) |
| San Jose-Sunnyvale-Santa Clara | 1,836,911 (1,971,160) | Yes | 270,000 | 2 | San Jose-Knox Ave; 060850006 (Bay Area) - - ** |

* Source: Traffic Census Program, California Department of Transportation http://www.dot.ca.gov/trafficops/census/.
** Near-road sites were in the planning/construction stages and not yet operating in 2020.

As part of the final rule revising the $NO_2$ NAAQS in 2010 (75 FR 6474), U.S. EPA required the Regional Administrators to identify an additional 40 monitoring sites nationwide that would be located in areas representing susceptible and vulnerable populations. Seven of these sites are located in California, and the locations of them are shown in Table 13 along with the responsible monitoring agency. More information on this monitoring can be found in the ANPs prepared by the Bay Area AQMD, the San Diego County APCD, the San Joaquin Valley APCD and the South Coast AQMD.

**Table 13: Regional Administrator Required $NO_2$ Monitoring Site**

| District | Site (AQS ID) |
|---|---|
| San Diego | Sherman Elementary School (060731026) |
| Bay Area | Oakland West (060010011) |
| San Joaquin Valley | Parlier (060194001) |
| | Bakersfield-Muni (060292012)* |
| South Coast | Long Beach North (060374002) |
| | Los Angeles-Main St. (060371103) |
| | San Bernardino (060719004) |

* The San Joaquin Valley APCD's 2019 Air Monitoring Network Plan discussed Bakersfield Muni as the required $NO_2$ monitoring site for susceptible and vulnerable populations.

## Section 5C: 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 with a population more than 2.5 million, and by January 1, 2017 for all other CBSAs.

**Table 14: CBSAs with CO Minimum Monitoring Requirements**

| CBSA | Population 2010 Census (2020 Population Estimate) | Required # of Near-road Sites | Near-road Sites (AQS ID; District where sites are located) |
|---|---|---|---|
| Los Angeles-Long Beach-Anaheim | 12,828,837 (13,109,903) | 1 | Anaheim-Route 5; 060590008 (South Coast) |
| Riverside-San Bernardino-Ontario | 4,224,851 (4,678,371) | 1 | Ontario-Etiwanda; 060710026 (South Coast) |
| Sacramento-Roseville-Folsom | 2,149,127 (2,374,749) | 1 | Sacramento-Bercut Drive; 060670015 (Sacramento) |
| San Diego-Chula Vista-Carlsbad | 3,095,313 (3,332,427) | 1 | Rancho Carmel Dr. ; 060731017 (San Diego) |
| San Francisco-Oakland-Berkeley | 4,335,391 (4,696,902) | 1 | Laney College; (060010012 (Bay Area) Berkeley-Aquatic Park; 060010013 (Bay Area) |
| San Jose-Sunnyvale-Santa Clara | 1,836,911 (1,971,160) | 1 | San Jose-Knox Ave; 060850006 (Bay Area) |

As shown in Table 14, 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 that have 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, Bay Area AQMD, and the Sacramento Metropolitan AQMD.

Several districts covered by this ANP (Antelope Valley, Butte County, Imperial County and Mojave Desert) operate five area-wide CO monitors as listed in Table 2. The data from these monitors are used for various purposes such as estimating the general population exposure and also determining the impact of emissions from wildfires. CO concentrations at area-wide monitors are well below the standard, and California has long attained federal and State CO standards. 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 5D: Sulfur Dioxide (SO2)

## 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:

$$CBSA\ PWEI\ = \frac{CBSA\ Population\ \times \sum_{County} Emission}{1{,}000{,}000}$$

One monitor is required in CBSAs with PWEIs equal to or greater than 5,000 but less than 100,000; two monitors are required in CBSAs with PWEIs equal to or 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 15, two CBSAs that contain a district covered by this plan meet the PWEI threshold and have minimum monitoring requirements for $SO_2$. Site types identified as population exposure, high concentration, source oriented, general background, or regional transport can satisfy minimum monitoring requirements. $SO_2$ monitors at NCore sites shall be counted toward minimum monitoring requirements.

The most recent emission data available to calculate PWEI was from the 2020 CARB Emission Inventory.

**Table 15: CBSAs with Minimum Monitoring Requirements for $SO_2$**

| CBSA | District covered by this ANP | Other District ANPs covering this CBSA | County $SO_2$ (TPY) (2020 Data)* | Population 2010 Census (2020 Population Estimate) | PWEI | Required Sites | SLAMS Sites Operating in 2020 |
|---|---|---|---|---|---|---|---|
| Los Angeles-Long Beach-Anaheim | Antelope Valley AQMD | South Coast AQMD | Los Angeles: 4,818<br>Orange: 475 | 12,828,837 (13,109,903) | 67,903 (69,946) | 1 | Costa Mesa (South Coast)<br>Fontana (South Coast)<br>Long Beach (South Cost)<br>Los Angeles-Main Street (South Coast)<br>Los Angeles-Hastings (South Coast) |
| Riverside-San Bernardino-Ontario | Mojave Desert AQMD | South Coast AQMD | Riverside: 329<br>San Bernardino: 1,752 | 4,224,851 (4,678,371) | 8,792 (9,678) | 1 | Rubidoux (South Coast)<br>Trona (Mojave Desert)<br>Victorville (Mojave Desert) |

* Source: Criteria Pollutant Emission Inventory Data, California Air Resources Board
*https://ww2.arb.ca.gov/criteria-pollutant-emission-inventory-data*

All districts covered by this ANP met the minimum monitoring requirements for $SO_2$ in 2020. In December 2017, U.S. EPA designated all areas of California as unclassifiable/attainment for the federal $SO_2$ standard.

## Section 5E: Lead (Pb)

### Minimum Number of Pb Monitoring Sites

Monitoring is required near Pb sources which are expected or have been shown to contribute to a maximum Pb concentration in excess of the federal standard. Specifically, monitoring is required at airports which emit more than 1.0 tons per year or non-airport sources which emit 0.50 tons per year or more of Pb. None of the areas covered by this ANP exceed the threshold for source monitoring.

Pb monitoring at NCore site is no longer required. However, agencies that operate NCore sites are required to obtain approval to terminate an existing Pb monitor.

## Section 5F: $PM_{10}$

### Minimum Number of $PM_{10}$ Monitoring Sites

Monitoring requirements for $PM_{10}$ are based on population and air quality conditions in each MSA. The criteria for determining the minimum number of monitoring sites is listed in Table 16. 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 16: Minimum Monitoring Requirements for $PM_{10}$ Monitoring Sites**

| Population | High Concentration (Exceeds NAAQS by ≥20%) | Medium Concentration (≥80% of NAAQS) | Low Concentration (<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 that are greater than or equal to 100,000 are shown in Table 17. 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 only included in Table 17 if needed to meet minimum monitoring requirements because of the complex nature of PM monitoring.

Eleven MSAs include at least a portion of the areas covered by this ANP. The Los Angeles-Long Beach-Anaheim MSA 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 AQMD.

The monitors operated in districts covered by this ANP are adequate to meet minimum monitoring requirements in the remaining ten MSAs; however, there are additional monitors operated in these areas that are 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 APCD, and Sacramento Metropolitan AQMD.

## Table 17: CBSAs with Minimum Monitoring Requirements for $PM_{10}$

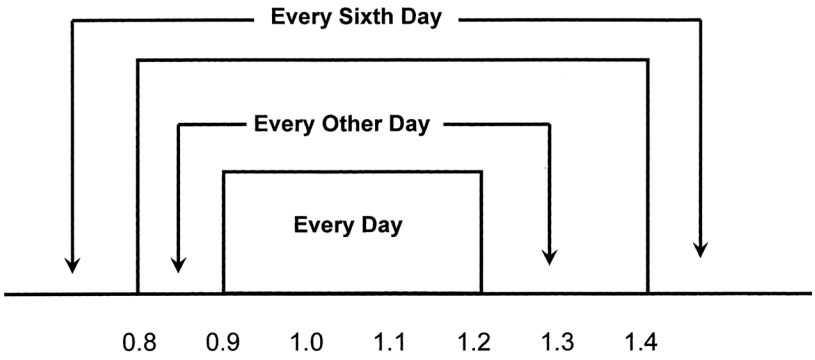
| Metropolitan Statistical Area | 2010 Census Population (2020 Population Estimate) | 2020 Max Concentration (% of NAAQS) *Max Concentration Site* | Required[1] Sites | SLAMS Sites Operating in 2020 (District where site is located) |
|---|---|---|---|---|
| Bakersfield | 839,361 (901,362) | 517 µg/m$^3$ (345%) *Oildale* | 4-8 | Canebrake (Eastern Kern); Mojave (Eastern Kern); Ridgecrest (Eastern Kern); Bakersfield-California (San Joaquin); Bakersfield-Golden (San Joaquin); Oildale (San Joaquin) |
| Chico | 220,000 (212,744) | 391 µg/m$^3$ (261%) *Chico-East Ave* | 1-2 | Chico-East Ave (Butte County) |
| El Centro | 174,528 (181,267) | 286 µg/m$^3$ (191%) *Westmorland* | 1-2 | Brawley (Imperial County); Calexico-Ethel St (Imperial County); El Centro (Imperial County); Niland (Imperial County); Westmorland (Imperial County) |
| Los Angeles-Long Beach-Anaheim | 12,828,837 (13,109,903) | 296 µg/m$^3$ (197%) *Anaheim-Pampas* | 6-10 | Lancaster (Antelope Valley); Anaheim-Pampas Ln (South Coast); Azusa (South Coast); Glendora-Laurel (South Coast); (South) Long Beach-Webster (South Coast); Los Angeles-N Main St (South Coast); Los Angeles-LAX (South Coast; Mission Viejo (South Coast); Santa Clarita (South Coast) |
| Oxnard-Thousand Oaks-Ventura | 823,318 (841,387) | 200 µg/m$^3$ (133%) *El Rio* | 4-8[1] | Simi Valley (Ventura County); El Rio (Ventura County) |
| Redding | 177,223 (179,027) | 108 µg/m$^3$ (72%) *Anderson* | 0 | Redding (Shasta County); Anderson (Shasta County); Shasta Lake (Shasta County) |
| Riverside-San Bernardino-Ontario | 4,224,851 (4,678,371) | 680 µg/m$^3$ (453%) *Mecca* | 6-10 | Barstow (Mojave Desert); Lucerne Valley (Mojave Desert); Victorville (Mojave Desert); Trona (Mojave Desert); Hesperia (Mojave Desert); Banning (South Coast); Crestline (South Coast); Indio-Jackson St (South Coast); Mecca (South Coast); Palm Springs (South Coast) |
| Sacramento-Roseville-Arden Arcade | 2,149,127 (2,374,749) | 298 µg/m$^3$ (199%) *Sacramento-T St* | 6-10 | So. Lake Tahoe (El Dorado County); Roseville-N Sunrise (Placer County); North Highlands (Sacramento); Del Paso (Sacramento); Sacramento-T St (Sacramento); Sacramento-Branch (Sacramento); Woodland-Gibson Rd (Yolo-Solano); West Sacramento (Yolo-Solano) |
| Santa Rosa | 483,878 (489,819) | 140 µg/m$^3$ (93%) *Healdsburg* | 1-2 | Cloverdale (Northern Sonoma); Healdsburg (Northern Sonoma); Guerneville (Northern Sonoma) |
| Vallejo-Fairfield | 413,344 (446,935) | 326 µg/m$^3$ (217%) *Vacaville-Merchant St* | 3-4[1] | Vacaville-Merchant St (Yolo-Solano) |
| Yuba City | 166,892 (176,545) | 269 µg/m$^3$ (179%) *Yuba City-Almond St* | 1-2 | Yuba City-Almond St (Feather River) |

[1] The minimum monitoring requirements were impacted by exceptional events in 2020 in most areas. Some of these impacts will be addressed under the Exceptional Event Rule (81 FR 68216) while others did not lead to exceedances of the standard or will not affect any upcoming regulatory determinations. Existing monitoring meets the needs of the local air districts and the communities; CARB is committed to working with U.S. EPA and the local air districts to ensure that monitoring levels continue to protect public health and safety.

## $PM_{10}$ Sampling Frequency Requirements for Primary FRM Monitors

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 18. Note that exceptional events are included in the concentrations shown.

**Table 18: Required Sampling Frequency for $PM_{10}$ FRM Monitors**

| Site Name | District | AQS ID | 2020 Max Concentration | Ratio of Max Concentration to Standard | Required Sampling Frequency[1] | Current Sampling Frequency |
|---|---|---|---|---|---|---|
| Anderson Springs | Lake | 060333010-1 | 91 | 0.59 | 1:6 | 1:6 |
| Glenbrook | Lake | 060333011-1 | 64 | 0.43 | 1:6 | 1:6 |
| Lakeport | Lake | 060333002-1 | 133 | 0.89 | 1:2 | 1:6 |
| Anderson | Shasta | 060890007-1 | 108 | 0.72 | 1:6 | 1:6 |
| Redding | Shasta | 060890004-2 | 95 | 0.63 | 1:6 | 1:6 |
| Shasta Lake | Shasta | 060890008-1 | 105 | 0.70 | 1:6 | 1:6 |
| Red Bluff | Tehama | 061030007-1 | 172 | 1.15 | 1:1 | 1:6 |
| Vacaville | Yolo-Solano | 060953001-2 | 326 | 2.17 | 1:6 | 1:6 |
| West Sacramento | Yolo-Solano | 061132001-1 | 173 | 1.15 | 1:1 | 1:6 |
| Woodland | Yolo-Solano | 061131003-1 | 223 | 1.49 | 1:6 | 1:6 |

[1] Wildfires in 2020 impacted many monitoring sites covered in this ANP. Based solely on these exceptional events, several of these monitoring sites moved into a higher sampling frequency category. These monitors are either below the NAAQS or not located in areas impacted by upcoming regulatory determinations, so will not qualify for exceptional event demonstrations. CARB is working with local air districts to evaluate sampling frequencies at all monitoring sites impacted by the massive wildfires.

# Section 5G: $PM_{2.5}$

## 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 MSA, as shown in Table 19. Each MSA is required to have at least one monitoring site situated to measure maximum concentrations at a neighborhood or larger scale.

**Table 19: 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 were only included in Table 20 if needed to meet minimum monitoring requirements because of the complex nature of PM monitoring.

## $PM_{2.5}$ 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 Bay Area AQMD, Sacramento Metropolitan AQMD, San Joaquin Valley APCD, 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 MSA should be continuous monitors. In each MSA, 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 only included in Table 21 if needed to meet minimum monitoring requirements.

## Table 20: CBSAs with Minimum Monitoring Requirements for $PM_{2.5}$

| Metropolitan Statistical Area | 2010 Census Population (2020 Population Estimate) | 2020 Design Value (% of NAAQS)[1] Design Value Site | | Required Sites | SLAMS Sites Operating in 2020 (District where site is located) Highest Concentration Site Types Denoted by Bold Text |
|---|---|---|---|---|---|
| | | 24-hour | Annual | | |
| Bakersfield | 839,361 (901,362) | 64 µg/m$^3$ (183%) *Bakersfield-California* | 17.6 µ/m$^3$ (147%) *Bakersfield-Planz* | 2 | Bakersfield-California (San Joaquin)<br>Bakersfield-Planz (San Joaquin)<br>**Mojave (Eastern Kern)**<br>Ridgecrest (Eastern Kern) |
| Chico* | 220,000 (212,744) | 59 µg/m$^3$ (169%) *Chico-East Ave* | 12.2 µg/m$^3$ (102%) *Chico-East Ave* | 1 | Chico-East Ave (Butte) |
| El Centro | 174,528 (180,267) | 34 µg/m$^3$ (97%) *Calexico-Ethel St* | 12.1 µg/m$^3$ (101%) *Calexico-Ethel St* | 1 | Brawley (Imperial)<br>Calexico-Ethel St (Imperial)<br>El Centro (Imperial) |
| Los Angeles-Long Beach-Anaheim | 12,828,837 (13,109,903) | 37 µg/m$^3$ (106%) *Los Angeles-N Main, Pico Rivera* | 13.0 µg/m$^3$ (104108 *Compton-N Bullis* | 3 | Lancaster (Antelope Valley)<br>Compton-N Bullis (South Coast)<br>Long Beach-Rte 710 (South Coast)<br>Los Angeles-N Main (South Coast)<br>Pico Rivera (South Coast) |
| Oxnard-Thousand Oaks-Ventura | 823,318 (841,387) | 23 µg/m$^3$ (66%) *El Rio, Piru* | 8.0 µg/m$^3$ (67%) *Thousand Oaks* | 2 | El Rio (Ventura)<br>Ojai (Ventura)<br>**Piru (Ventura)**<br>**Simi Valley (Ventura)**<br>Thousand Oaks (Ventura) |
| Redding | 177,223 (179,027) | 64 µg/m$^3$ (183%) *Redding* | 11.1 µg/m$^3$ (93%) *Redding* | 1 | Redding-Health Dept (Shasta) |
| Riverside-San Bernardino-Ontario* | 4,224,851 (4,678,371) | 36 µg/m$^3$ (103%) *Mira Loma, Ontario* | 14.2 µg/m$^3$ (118%) *Ontario* | 3 | Victorville (Mojave Desert)<br>**Mira Loma (South Coast)**<br>Ontario (South Coast) |
| Sacramento-Roseville-Arden Arcade | 2,149,127 (2,374,749) | 85 µg/m$^3$ (243%) *Woodland* | 11.9 µg/m$^3$ (99%) *Del Paso, Woodland* | 3 | Auburn-Atwood St (Placer County)<br>**Del Paso-Avalon Dr (Sacramento)**<br>Roseville-N Sunrise Blvd (Placer)<br>Sacramento-Bercut (Sacramento)<br>Woodland (Yolo-Solano) |
| Santa Rosa | 483,878 (489,819) | 42 µg/m$^3$ (120%) *Sebastopol-Morris* | 7.4 µg/m$^3$ (62%) *Sebastopol-Morris* | 1 | Sebastopol-Morris St (Bay Area) |
| Vallejo-Fairfield | 413,344 (446,935) | 51 µg/m$^3$ (146%) *Vallejo* | 11.2 µg/m$^3$ (93%) *Vallejo* | 1 | **Vallejo-Tuolumne St (Bay Area)** |
| Yuba City | 166,892 (176,545) | 52 µg/m$^3$ (91%) *Yuba City* | 11.7 µg/m$^3$ (78%) *Yuba City* | 1 | Yuba City-Almond St (Feather River) |

[1] Many monitoring sites were impacted by exceptional events in 2018, 2019 and 2020. Some of these impacts will be addressed under the Exceptional Event Rule (81 FR 68216) while others did not lead to exceedances of the standard but impacted the minimum monitoring requirements. CARB is working with local air districts to evaluate minimum monitoring requirements for all impacted areas.

Table 21: CBSAs with Minimum Monitoring Requirements for Continuous $PM_{2.5}$

| Metropolitan Statistical Area | Minimum # of Required Sites | Required Continuous Monitors | Sites with Continuous Monitors Operating in 2020 (District where site is located) |
|---|---|---|---|
| Bakersfield | 2 | 1 | Mojave (Eastern Kern); Ridgecrest (Eastern Kern) |
| Chico | 1 | 1 | Chico-East Ave (Butte); Gridley (Butte)*; Paradise (Butte)* |
| El Centro | 1 | 1 | Calexico (Imperial)[1] |
| Los Angeles-Long Beach-Anaheim | 3 | 2 | Lancaster (Antelope Valley); Anaheim (South Coast);Glendora-Laurel (South Coast)*; Long Beach-Rte 710 (South Coast); Long Beach (South) (South Coast); Los Angeles-N Main St (South Coast)*; Reseda (South Coast)*; Santa Clarita (South Coast)* |
| Oxnard-Thousand Oaks-Ventura | 2 | 1 | El Rio (Ventura); Ojai (Ventura);Piru (Ventura); Simi Valley (Ventura); Thousand Oaks (Ventura) |
| Redding | 1 | 1 | Redding (Shasta)[2] |
| Riverside-San Bernardino-Ontario | 3 | 2 | Victorville (Mojave Desert); Banning (South Coast)*; Crestline (South Coast)*; Lake Elsinore (South Coast)*; Mira Loma (South Coast)[+]; Ontario (South Coast); Rubidoux (South Coast); Temecula/Winchester (South Coast)*; Upland (South Coast)* |
| Sacramento-Roseville-Arden Arcade | 3 | 2 | Auburn (Placer); Colfax (Placer)[+]; Lincoln (Placer)*; Roseville (Placer)[3]; Tahoe City (Placer)[+]; Del Paso (Sacramento)[4]; Elk Grove (Sacramento)[+]; Folsom (Sacramento)[5]; Sacramento-T St (Sacramento)[6]; Sacramento-Bercut (Sacramento)[7]; Sloughhouse (Sacramento); Davis (Yolo-Solano)[+] |
| Santa Rosa | 1 | 1 | Sebastopol (Bay Area) |
| Vallejo-Fairfield | 1 | 1 | Vallejo (Bay Area) |
| Yuba City | 1 | 1 | Yuba City (Feather River)[8] |

*These sites operate continuous SLAMS monitors reporting only under non-regulatory parameter codes 88501 or 88502.

[+] These sites operate continuous monitors reporting under non-regulatory parameter codes 88501 or 88502 but not as SLAMS monitors (e.g., SPM or Other).

[1]The Calexico site replaced the non-regulatory continuous monitor with an FEM on 12/10/20.

[2]The Redding $PM_{2.5}$ FRM monitor was replaced with an FEM monitor in December 2020. The air district is currently working to update information in AQS and upload all relevant data.

[3]The Roseville site replaced the non-regulatory continuous monitor with an FEM monitor on 12/11/20.

[4]The Del Paso sire replaced FRM monitoring with an FEM on 12/11/20 due to COVID-19 restrictions. This FEM will not be permanently operated at the site; the site, however, operates a continuous non-regulatory SLAMS monitor.

[5]The Folsom site was temporarily closed for a station re-build on 7/10/19..

[6]The Sacramento-T Street site replaced the non-regulatory continuous monitor with an FEM on 12/11/20.

[7]The Sacramento-Bercut site began operating an FEM on 12/30/20.

[8]The Yuba City site replaced the non-regulatory continuous monitor with an FEM on 4/10/20.

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

Sampling frequency for 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 22. Sites located in areas with more severe air quality conditions generally are required to 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 23 and also in Appendix A. Exceptional events are included in the determination of the design values shown here.

**Table 22: 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 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 23: Required $PM_{2.5}$ Sampling Frequency for FRM monitors**

| Site Name | AQS ID | District | 2020 24-hr DV | 2020 Annual DV | Required Sampling Frequency | Current Sampling Frequency |
|---|---|---|---|---|---|---|
| Colusa[1] | 060111002 | Colusa | 48 | 10.2 | 1:6 | 1:1 |
| Calexico[2] | 060250005 | Imperial | 34 | 12.1 | 1:3 | 1:1 |
| Brawley | 060250007 | Imperial | 24 | 9.4 | 1:3 | 1:3 |
| El Centro | 060251003 | Imperial | 20 | 8.8 | 1:3 | 1:3 |
| Lakeport[1] | 060333002 | Lake | 55 | 7.2 | 1:6 | 1:6 |
| Truckee* | 060571001 | Northern Sierra | 41 | 7.3 | 1:3 | 1:3 |
| Roseville[1] | 060610006 | Placer | 43 | 10.6 | 1:6 | 1:1 |
| Quincy | 060631006 | Northern Sierra | 57 | 11.2 | 1:3 | 1:1 |
| Portola | 060631010 | Northern Sierra | 52 | 15.9 | 1:3 | 1:3 |
| Redding*[1] | 060890004 | Shasta | 64 | 11.1 | 1:6 | 1:1 |
| Yuba City[3] | 061010003 | Feather River | 52 | 11.7 | 1:3 | 1:1 |
| Woodland[1] | 061131003 | Yolo-Solano | 85 | 11.9 | 1:6 | 1:6 |
| Colusa[1] | 060111002 | Colusa | 48 | 10.2 | 1:6 | 1:1 |

*DV based on incomplete data.
[1]Colusa, Lakeport, Redding, Roseville, and Woodland were granted waivers to allow 1:6 sampling (Letter from G.Yoshimura, EPA to R.Ramalingam on November 5, 2020). An updated waiver request for the Lakeport and Woodland sites is included in Appendix C of this ANP. The Colusa, Redding and Roseville sites will be operating FEM monitors in 2021.
[2] The Calexico primary monitor was replaced with an FEM on 12/10/20 and will operate with a collocated FRM in 2021.
[3]Yuba City FRM was replaced with an FEM on 12/7/20.

## 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 $PM_{2.5}$ NAAQS. 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 annual $PM_{2.5}$ 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 regulatory language referenced in 40 CFR 58 Appendix C 2.9 indicates that IMPROVE samplers used

for regional background/regional transport requirements can be considered SLAMS.[1] 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 24: Regional Background and Transport Sites for $PM_{2.5}$**

| Regional Background Sites (Monitor Type/AQS ID) | Regional Transport Sites (Monitor Type/AQS ID) |
|---|---|
| Northern: Point Reyes National Seashore (EPA/060410002)<br>Southern: San Rafael Wilderness (EPA/060839000) | Vallejo (SLAMS/060950004) |

All districts covered by this ANP meet the requirements for $PM_{2.5}$ minimum monitoring, near-road monitoring, and continuous monitoring. CARB 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.

[1] January 13, 2017 email communication from A.Meburst, EPA, to R.Fine/G.Sweigert/T.Najita/W.Tasat citing 40 CFR 58 Appendix C 2.9.

# Section 6: Other Federal Monitoring Requirements

## Chemical Speciation Network (CSN)

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 25 lists the California sites in the National Speciation Trends Network (STN) and State speciation network.

**Table 25: $PM_{2.5}$ CSN Sites in California**

| Site Name | AQS ID | District | National STN Site | State Speciation Site |
|---|---|---|---|---|
| Anaheim-Pampas* | 060590007 | South Coast | | x |
| Bakersfield-California Ave | 060290014 | San Joaquin Valley | x | |
| Calexico-Ethel St | 060250005 | Imperial County | | x |
| Chico-East Ave | 060070008 | Butte County | | x |
| El Cajon-Lexington | 060731022 | San Diego | x | |
| Fontana-Arrow* | 060712002 | South Coast | | x |
| Fresno-Garland | 060190011 | San Joaquin Valley | x | |
| Livermore-Rincon* | 060010007 | Bay Area | | x |
| Los Angeles-North Main St* | 060371103 | South Coast | x | x |
| Modesto-14th | 060990005 | San Joaquin Valley | | x |
| Oakland-West* | 060010011 | Bay Area | | x |
| Portola-Gulling | 060631010 | Northern Sierra | | x |
| Riverside-Rubidoux* | 060658001 | South Coast | x | 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 |

* District supplemental speciation monitor

## 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.

## National Core Multipollutant Network (NCore) Monitoring

Sites in the NCore Monitoring 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 includes rural and metropolitan sites. As shown in Table 26, seven NCore sites are located in California; none of the sites are located in the districts covered by this ANP, although the Freson-Garland site is operated by CARB. More information about specific sites can be found in the ANPs submitted by districts in which the sites are located.

**Table 26: NCore Sites in California**

| Site | AQS ID | District | Site Type |
|---|---|---|---|
| El Cajon-Lexington Elementary | 060731022 | San Diego | Urban |
| Fresno-Garland | 060190011 | San Joaquin Valley | Urban |
| Los Angeles-N Main St. | 060371103 | South Coast | Urban |
| Riverside-Rubidoux | 060658001 | South Coast | Urban |
| Sacramento-Del Paso Manor | 060670006 | Sacramento | Urban |
| San Jose-Jackson | 060850005 | Bay Area | Urban |
| White Mountain Research Station | 060270002 | Great Basin | Rural |

## Photochemical Assessment Monitoring Station (PAMS)

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.

On October 1, 2015, U.S. EPA substantially revised the PAMS requirements in 40 CFR part 58 Appendix D. As part of the revision, U.S. EPA required state and local monitoring agencies to make PAMS measurements (including hourly averaged mixing height) at NCore sites in CBSAs with a population of 1,000,000 or more. The revisions also required state monitoring agencies with moderate and above 8-hour ozone nonattainment areas and states in the Ozone Transport Region (OTR) to develop and implement an Enhanced Monitoring Plan (EMP) detailing enhanced ozone and ozone precursor monitoring activities to be performed to better understand area specific ozone issues.

In California, the Bay Area AQMD, Sacramento Metropolitan AQMD, San Diego County APCD, San Joaquin Valley 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. Due to the significant resources required to operate and maintain VOC measurements at

the PAMS, the age of equipment, and changes to the monitoring regulations, the Ventura County APCD terminated VOC sampling at the Simi Valley and El Rio sites with U.S. EPA's approval in 2019. The Ventura County APCD continues to monitor $NO_2$/NOx at Simi Valley and El Rio sites; upper air meteorological parameters at the Simi Valley upper air site; and surface meteorological parameters at its six monitoring sites.

Ventura County does not have any NCore sites and its CBSA (Oxnard-Thousand Oaks-Ventura) is under 1,000,000. However, Ventura County is nonattainment - serious for ozone and is required to develop and implement an EMP. CARB worked with Ventura County APCD and U.S. EPA Region 9 to develop an EMP in 2019, and also the EMP was updated as part of the CARB 5-year Network Assessment in 2020.

Ozone air quality continues to improve in the Ventura County due to the implementation of Ventura County APCD and State programs designed to reduce local and statewide ozone precursor emissions and ozone formation; therefore, no additional ozone or ozone precursor monitoring is planned or needed for the Ventura County nonattainment area at this time.

## Special Purpose Monitors (SPM)

In 2020, no SPM monitors were operating in the area covered by this ANP.

# Section 7: Federal Quality Assurance Requirements

## CARB 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 additional monitor must be an FRM monitor.

Table 27 A reflects the total number of primary monitors in 2020, but not necessarily the total number operating at any one time. In December 2020, several FRM monitors were replaced with FEM monitors due to COVID-19 restrictions. These additional FEM monitors are reflected in this table, even though they were in place for only a few weeks in 2020. An additional table, Table 27B, reflects the current number of primary monitors in place.

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 $PM_{2.5}$ NAAQS. 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, CARB 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 CARB 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 requirement.

## Table 27 A: 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) |
|---|---|---|---|---|
| 143 (FRM) | R&P Model 2000 with VSCC | 4 | 1 | Roseville-N Sunrise – 143/143 (Placer)[1] |
| 145 (FRM) | R&P Model 2025 with VSCC | 19 | 3 | Bakersfield-California – 145/145 (San Joaquin Valley)<br>Calexico-Ethel – 145/145 (Imperial)[2]<br>Fresno-Garland – 145/145 (San Joaquin Valley)[3]<br>Portola – 145/145 (Northern Sierra)<br>Sacramento-Del Paso – 145/145 (Sacramento) |
| 170 (FEM)[4] | Met One BAM 1020 with VSCC | 51 | 8 | Folsom – 170/170 (Sacramento)[5]<br>Modesto – 170/143 (San Joaquin Valley)[6]<br>Salinas – 170/143 (Monterey Bay)<br>Simi Valley – 170/170 (Ventura)<br>Madera – 170/145 (San Joaquin Valley)[7]<br>Stockton – 170/170 (San Joaquin Valley)<br>Victorville – 170/170 (Mojave Desert) |
| 181 (FEM) | Thermo TEOM 1400 | 1 | 1 | Keeler – 181/145 (Great Basin) |
| 204 (FEM)[8] | Teledyne BAM 602 | 1 | 1 | |
| 209 (FEM)[9] | Met One BAM-1022 with VSCC or TE-PM2.5C | 3 | 1 | Clovis – 209/145 (San Joaquin Valley)<br>Redding – 209/143 (Shasta) |
| 238 (FEM) | Teledyne TEOM T640X | 3 | 1 | Bishop/White Mountain – 238/145 (Great Basin) |

[1]Roseville (Placer) FRM (143) replaced by FEM (170) on 12/7/20. CARB is reviewing monitoring network for new collocation site.
[2]Calexico (Imperial) FRMs (145/145) suspended on 12/9/20 due to COVID-19 restrictions; FEM (170) installed on 12/10/20; one FRM (145) replaced by FRM (143) and resumed operations on 4/1/21. Site will be collocation site for FEM (170).
[3] Fresno-Garland (San Joaquin Valley) FRM (145) switched to FEM (170) on 12/7/20. Site is now FEM/FRM collocation site for 170.
[4]Total number reflects all monitors, including those added as part of COVID-19 restrictions. Number of required collocated monitors reflects this. Once COVID-19 restrictions are lifted, required collocated monitoring will be reassessed.
[5]Folsom-Natoma (Sacramento) site temporarily closed for station renovations on 7/19/19.
[6]Modesto (San Joaquin Valley) FRM (143) discontinued on 12/7/20.
[7]Madera (San Joaquin Valley) FRM (145) discontinued on 12/7/20.
[8]No collocated monitor in 2020; Clovis FEM (204) switched to FEM (209) on 12/18/19. Hanford (San Joaquin Valley) FEM (204) switched to FEM (170) on 7/1/20.
[9]Clovis FEM (209) was replaced with an FEM (170) on 7/1/20. Redding became the collocation site on 12/6/20.

### Table 27B: Current 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) |
|---|---|---|---|---|
| 143 (FRM)[1] | R&P Model 2000 with VSCC | 2 | 1 | |
| 145 (FRM) | R&P Model 2025 with VSCC | 9 | 1 | Bakersfield-California – 145/145 (San Joaquin Valley)<br>Portola – 145/145 (Northern Sierra)<br>Sacramento-Del Paso – 145/145 (Sacramento) |
| 170 (FEM)[2] | Met One BAM 1020 with VSCC | 50 | 8 | Folsom – 170/170 (Sacramento)<br>Calexico – 170/143 (Imperial)<br>Salinas – 170/143 (Monterey Bay)<br>Simi Valley – 170/170 (Ventura)<br>Fresno-Garland – 170/145 (San Joaquin Valley)<br>Yuba City – 170/170 (Feather River)<br>Victorville – 170/170 (Mojave Desert)<br>Sacramento-T St – 170/143 (Sacramento)<br>Grass Valley – 170/143 (Northern Sierra) |
| 181 (FEM) | Thermo TEOM 1400 | 1 | 1 | Keeler – 181/145 (Great Basin) |
| 204 (FEM)[3] | Teledyne BAM 602 | 1 | 1 | |
| 209 (FEM) | Met One BAM-1022 with VSCC or TE-PM2.5C | 2 | 1 | Redding – 209/143 (Shasta)) |
| 238 (FEM) | Teledyne TEOM T640X | 3 | 1 | Bishop/White Mountain – 238/145 (Great Basin)[4] |

[1]Previous collocation with FRM (143/143) replaced with FEM (170). CARB is reviewing replacement of remaining two FRM (143) monitors with FEM (170), which may remove requirement for collocation.
[2]San Luis Obispo FEM (170) closed on 1/13/21 and not counted here.
[3]Only FEM (204) monitor is at Corcoran (San Joaquin Valley). San Joaquin Valley plans to discontinue monitoring using this method. CARB is reviewing collocation needs.
[4]Great Basin plans to relocate its collocation site from Bishop/White Mountain to Lee Vining.

## $PM_{10}$ 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 primary monitors, regardless of method code.

**Table 28: Collocation Requirements for $PM_{10}$**

| Number of Primary FRM Monitors* | # of Required Collocated Monitors | Sites with Collocated Monitors - Method Types (District) |
|---|---|---|
| 23 | 3 | Bakersfield-California – 063/063 (San Joaquin Valley)<br>Sacramento-Del Paso – 063/063 (Sacramento)<br>Keeler-Cerro – 127/127 (Great Basin)<br>Fresno-Drummond – 162/162 (San Joaquin Valley) |

## Pb Collocation Status

There is one Pb monitor in the CARB PQAO located at the Sacramento-Del Paso Manor sites. However, Pb collocation for NCore sites is addressed by U.S. EPA at the national level. Thus, CARB is not required to collocate for lead at the NCore sites.

## CARB Quality Management Branch (QMB)

The information in this section, along with the information available on CARB's Quality Assurance website, *https://ww2.arb.ca.gov/our-work/programs/quality-assurance*, provides an overview of CARB'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), Standards Laboratory Section (SLS) 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, SLS 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. CARB's audit program meets the federal requirements for conducting annual performance evaluations. Audits are conducted by using independent National Institute of Standards and Technology (NIST) traceable standards.

SLS is responsible for ensuring air monitoring equipment and QAS standards are in compliance with federally establish acceptance criteria and traceable to national and international standards. QAS is responsible for conducting performance audits of criteria and non-criteria gaseous analyzers, particulate matter samplers, meteorological equipment, and laboratory analyses utilized for generating ambient pollutant level measurements. QAS also performs site reviews as well as reports quality assessment and quality control results. In addition, QAS performs technical system audits (TSA). QMS is responsible for ensuring that CARB meets its federally mandated PQAO responsibilities and provides quality assurance oversight of the PQAO districts.

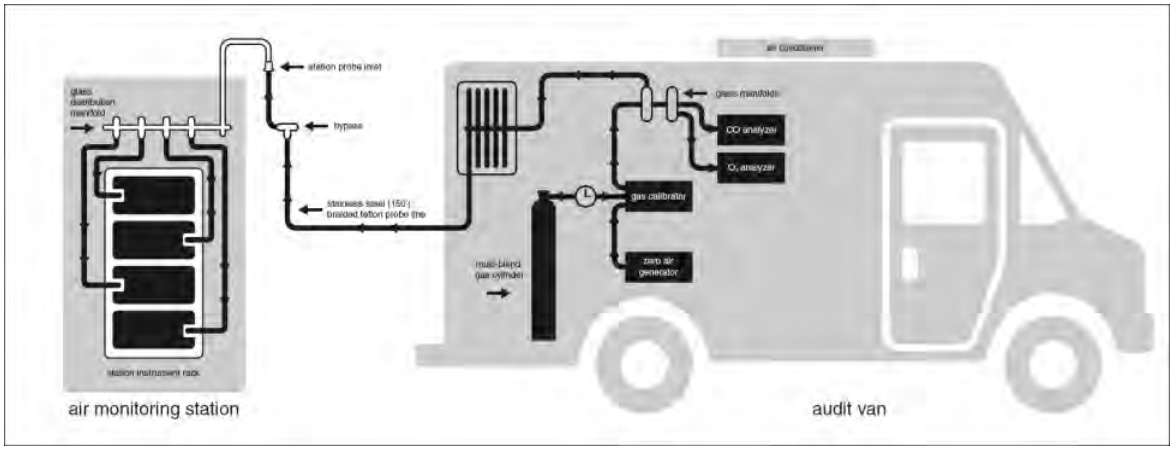
## CARB Quality Assurance Activities

### 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 CO, $NO_2$, $H_2S$, $SO_2$, 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.

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.

**Figure 4: Through-the-Probe Audit**




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 sensors 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 such as trees infringing on the minimum distance required from probe 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.

## Technical System Audit

A Technical System Audit (TSA) is an on-site inspection and review of a monitoring organization's entire ambient air monitoring program. CARB conducts TSAs of monitoring organizations within its PQAO in accordance with U.S. EPA Quality Assurance Guidance Document: Conducting Technical Systems Audits of Ambient Air Monitoring Programs, EPA-454/B-17-004, November 2017. Each local air district within a PQAO must be audited on a six year schedule. The entire measurement system is reviewed which includes sample collection, sample analysis, and data processing. TSAs include a review of staff records, procedures, instrumentation, facilities, and documentation to assure compliance with all applicable requirements. Following evaluation of available information, a report is issued which includes a summary of the audit process, and a summary of findings and recommendations to correct any issues identified.

## 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 CARB 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 analyzes 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 staffs review these data and take 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.

## Identifying and Correcting Deficiencies

During a performance audit, if a parameter fails to meet critical criteria (QA Handbook Volume II, Appendix D) or CARB control limits, 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 CARB'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).

## Audit Report Summary

Information about each air monitoring station audited by QMB is available at *https://ww2.arb.ca.gov/applications/quality-assurance-air-monitoring-site-list-generator-1*. 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 2020 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. Notably for 2020, the audit program was fully functional from January through mid-March before being curtailed for the remainder of the year under the constraints imposed by the pandemic. Following the guidance on priorities from the March 30$^{th}$ U.S. EPA memo, the program was abbreviated to continuing in accordance with the federal mandate for PM and ozone only. All ozone monitors received an annual assessment and all PM monitors, with a few exceptions, received a semi-annual assessment. Unfortunately, not all PM assessments met the criteria of being five to seven months apart. Further, audits during this period were not completed for CO, $NO_2$ and $SO_2$ gaseous monitors as well as a few PM audits for Lake County APCD and Sacramento AQMD, as result of the regional stay-at-home order.

In addition, as required by 40 CFR Part 58.15, CARB submits a data certification letter along with the required AQS reports (AMP450NC and AMP600) to U.S.EPA annually. The most recent certification letter was sent to the U.S. EPA on July 3, 2020

# Section 8: Proposed and Recently Implemented Monitoring Site Changes

CARB 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 CARB is currently aware of in the areas covered by this ANP.

## Ambient Air Monitoring Priorities During Covid-19 Response

Due to the statewide stay-at-home order in March 2020, CARB was forced to reduce or discontinue its filter-based monitoring operations during the COVID-19 response. All operations were implemented with personnel health and safety requirements following recommendations from the California Department of Public Health and Center for Disease Control guidelines.

In early December 2020, a new statewide stay-at-home order required CARB to further reduce its operations. CARB's air monitoring laboratory support was limited to only 3 sites (Bakersfield–California, Bakersfield–Southeast Planz, and Portola), which were deemed critical for area designations. CARB worked closely with the U.S. EPA and local agencies to inform them of the situation and the potential impacts. In February 2021, CARB received approval to resume its air monitoring operations for all programs at all sites.

| District | Site (AQS ID) | Comment |
|---|---|---|
| Butte County APCD | Paradise-Theater (060072002) | CARB is planning to consolidate the two Paradise monitoring stations to a single new location due to the potential demolition of the Theater building. The new site will be located at 5913 Clark Road. Lease negotiations are underway. |
| | Paradise-Airport (060070007) | |
| Colusa County APCD | Colusa-Sunrise (*060111002)* | The $PM_{2.5}$ FRM was converted to FEM BAM-1022 in December 2020 shortly after the lab shutdown*. Once the pandemic allows CARB to proceed, the BAM-1022 will be converted to a FEM BAM-1020. |
| Eastern Kern APCD | Mojave (060290011) | The site was relocated in September 2020 to a temporary site off of US-58. As of March 2021, the lessor backed out of the intended relocation site and is offering to CARB with two alternative sites on the Air and Spaceport property. |
| El Dorado APCD | Placerville (060170010) | CARB is currently working to move the CARB operated Placerville-Gold Nugget station to El Dorado High School property. Lease negotiations are in process. The station move timeline is pending lease approval and construction/power work - no timeline for the move has been established at this time. |
| Feather River AQMD | Yuba City (*061010003)* | CARB has switched the $PM_{2.5}$ FRM to $PM_{2.5}$ FEM in April 2020; this change does not require formal U.S.EPA approval. A collocated $PM_{2.5}$ FEM BAM-1020 was installed March 2021 to meet PQAO continuous collocation requirements. |
| Imperial County APCD | Calexico-Ethel (06250005) | CARB replaced the 145 primary FRM monitor with a 170 monitor in December 2020, and the 145 collocated monitor with a 143 monitor on a 1:12 schedule in April 2021. |
| Mendocino County AQMD | Willits-Justice Center (060452002) | District relocated its $PM_{2.5}$ site from Willits -Justice Center to Willits - Blosser Lane. The monitoring start date at the new site was February 5, 2021. |
| Northern Sierra AQMD | White Cloud Mountain (060570007) | Monitoring site is no longer available due to shelter and power issues. CARB is currently in the process of requesting U.S. EPA 's approval to close the site and establish a new site in the area. |
| Northern Sonoma County APCD | Healdsburg-Airport (060971003) | The ozone monitor was shut down in June 2020 and the shut-down was approved by U.S. EPA. |
| Placer County APCD | Roseville-N Sunrise (060610006) | The $PM_{2.5}$ non-FEM was converted to FEM in December 2020. The $PM_{2.5}$ FEM BAM is designated as the primary monitor since the lab shutdown*. The $PM_{2.5}$ FRM and collocated FRM samplers are being removed. |
| Shasta County APCD | Anderson-North Street (060890007) | District is planning to shut down the Anderson and Shasta Lake $PM_{10}$ monitors. |
| | Shasta Lake-La Mesa (060890008) | |
| | Redding - Health Department (060890004) | District will be changing the BAM-1022 monitor from a special purpose monitor to a SLAMS monitor starting on December 6, 2020. |
| Yolo-Solano AQMD | Woodland (061131003) | District has temporarily switched the $PM_{2.5}$ FRM to $PM_{2.5}$ FEM on January 1, 2021, and they will be switching back to FRM in July 2021; this change does not require EPA approval. |

* The lab shutdown filter processing 12/7/2020. With the exception of Bakersfield CA St., Bakersfield Planz and Portola, the lab resumed operations on 4/1/2021.

CARB operates multiple sites in districts that are not covered by this ANP. Below are proposed and recently implemented changes to the CARB operated sites in Sacramento Metro AQMD and San Joaquin Valley APCD. For more detailed information of changes in these districts, please see the individual district plans.

| District | Site (AQS ID) | Comment |
|---|---|---|
| Sacramento Metro AQMD | Sacramento-1309 T St. (060670010) | The Sacramento T St. site has been operating the $PM_{2.5}$ BAM as the primary monitor once the lab shutdown*. The site will operate a 2000i FRM collocation sampler (method143) when the lab starts up. |
| San Joaquin Valley APCD | Stockton–Hazelton (060771002) | The Stockton–Hazelton monitoring site is planned to close during the summer of 2021 due the demolition of the building located at the site. CARB is actively looking into a new site on the same property as the existing Hazelton site. No lease finalized. - no timeline for the move has been established at this time.<br>The collocated $PM_{2.5}$ FEM BAM was removed in order to make room for the install of the FEM $PM_{10}$ BAM after the lab shutdown*. The 170/170 collocation has been relocated to the Yuba City. |
| | Bakersfield-California Ave (060290014) | CARB is planning to replace $PM_{10}$ FRM Hi-Vol (163) to continuous 122 monitor. |
| | Fresno-Garland (*060190011*) | The $PM_{2.5}$ FEM BAM-1020 was converted to the site primary monitor when the lab shutdown*. When the lab starts up, the $PM_{2.5}$ FRM collocation will continue as a 170/145 on a 1:3 schedule. The primary FRM and collocated $PM_{2.5}$ and $PM_{10}$ BAM will be removed. |
| | Modesto-14$^{th}$ St. (060990005) | The collocated $PM_{2.5}$ 2000i FRM sampler will be removed from the Modesto station as this collocation is no longer needed to meet CFR continuous collocated requirements within the PQAO. |
| | Visalia (061072002) | Site will have to be relocated after December 2021. The lessor at a proposed site recently backed out of the lease negotiations requiring CARB to identify another alternative site.<br>CARB replaced $PM_{2.5}$ 145 monitor with a170 monitor on 12/9/2020. |

* The lab shutdown filter processing 12/7/2020. With the exception of Bakersfield CA St., Bakersfield Planz and Portola, the lab resumed operations on 4/1/2021.

## Section 9: Network Information Resources

While this ANP includes a great deal of information about the ambient air quality monitoring network, much more information, including summaries of the pollutant data from the monitors around the State is readily 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.

CARB'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 *https://ww2.arb.ca.gov/applications/quality-assurance-air-monitoring-site-search-1*. A more general MLD web page that provides links to other aspects of ambient monitoring is located at *https://ww2.arb.ca.gov/our-work/programs/ambient-air-monitoring-regulatory*

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 CARB 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*.

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