2023 Annual Air Monitoring Network Plan

A summary of the ambient air monitoring network in 2022 and proposed network changes through 2024

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

June 2023

About the Bay Area Air Quality Management District

The California Legislature created the Air District in 1955 as the first regional air pollution control agency in the country. The Air District is tasked with regulating stationary sources of air pollution in the nine counties that surround San Francisco Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties. It is governed by a 24-member Board of Directors composed of locally elected officials from each of the nine Bay Area counties.

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AADT	Annual Average Daily Traffic
AGL	Above Ground Level
ANP	Annual Network Plan
APCD	Air Pollution Control District
AQMD	Air Quality Management District
AQS	Air Quality System; the EPA national air quality database
ARM	Approved Regional Method
Air District	Bay Area Air Quality Management District
BAM	Beta Attenuation Monitor, a type of continuous $PM_{2.5}$ monitor
BAAQMD	Bay Area Air Quality Management District
BC	Black Carbon
CARB	California Air Resources Board
CBSA	Core Based Statistical Area
CDP	Census Designated Place
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CSN	Chemical Speciation Network
DRI	Desert Research Institute
EPA	U.S. Environmental Protection Agency
FE-AADT	Fleet Equivalent Annual Average Daily Traffic
FEM	Federal Equivalent Method
FRM	Federal Reference Method
GC	Gas Chromatograph
GCMS	Gas Chromatograph Mass Spectrometer
GPS	Global Positioning System
HAPS	Hazardous Air Pollutants
HiVol	High Volume
HPLC	High Performance Liquid Chromatograph
H_2S	Hydrogen Sulfide
IMPROVE	Interagency Monitoring of Protected Visual Environments
Maintenance Plan	A Plan submitted by states to EPA that outlines how the NAAQS will be maintained for a particular region
MBARD	Monterey Bay Air Resources District (formerly the Monterey Bay Unified Air Pollution Control District)
NAAQS	National Ambient Air Quality Standard
NATTS	National Air Toxics Trends Station
NCore	National Core multipollutant monitoring stations
NEI	National Emissions Inventory
NO	Nitric Oxide
NO_2	Nitrogen Dioxide

NO_x	Oxides of Nitrogen
NO_y	Total Reactive Nitrogen
NSCAPCD	Northern Sonoma County Air Pollution Control District
NSR	New Source Review
O_3	Ozone
PAMS	Photochemical Assessment Monitoring Stations
Pb	Lead
ppb	Parts per billion
PM	Particulate Matter
PM_{10}	Particulates less than or equal to 10 microns in size
$PM_{10-2.5}$	PM Coarse – particulates less than or equal to 10 microns and greater than 2.5 microns in size
$PM_{2.5}$	Particulates less than or equal to 2.5 microns in size
POC	Parameter Occurrence Code
PWEI	Population Weighted Emissions Index
SIP	State Implementation Plan – A Plan submitted by states to EPA that outlines how the NAAQS will be met for an area
SLAMS	State or Local Air Monitoring Station
SO_2	Sulfur Dioxide
SPM	Special Purpose Monitor
STN	Speciation Trends Network
Toxics	Gaseous VOC hazardous air pollutants
TSP	Total Suspended Particulate
UFP	Ultrafine Particulate less than or equal to 0.1 microns
VOC	Volatile Organic Compound

1. Introduction

Federal regulations established by the US Environmental Protection Agency (US EPA) require state and local agencies that conduct ambient air monitoring for regulatory purposes to submit an Annual Network Plan (ANP) to the EPA each year by July 1st. ANPs must include detailed information about the monitoring sites and instruments operating in the ambient air monitoring network. This ANP has been prepared to satisfy the regulatory requirements set forth in 40 CFR § 58.10, summarizing the Bay Area Air Quality Management District's (Air District's) regulatory air monitoring activities in 2022 and describing proposed changes to the network through 2024.

Except where otherwise noted, each monitor meets the requirements of 40 CFR part 58, appendices A, B, C, D, and E, where applicable.

2. Network Description

2.1 Network Design

As a regional air pollution control agency, the Air District is tasked with regulating stationary sources of air pollution in the nine counties that surround San Francisco Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma. Among other activities such as air quality planning, rulemaking, permitting, and enforcement, the Air District maintains a network of ambient air quality monitoring sites across the Bay Area. The objectives of the Air District's ambient air monitoring activities are to:

- collect air pollution measurements for comparison to the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) [see Table 2.1 below],
- provide air pollution data to the public in a timely manner,
- support development of strategies to improve air quality, and
- support air pollution research studies.

The Air District carefully designs its air monitoring network to accomplish these objectives by determining where air pollution measurements should be performed, what pollutants should be monitored at each location, and how frequently measurements should be made, among other factors. The design of the Air District's air monitoring network is further influenced by several national programs established by the US EPA:

- **State or Local Air Monitoring Stations (SLAMS) –** The SLAMS make up the long-term ambient air quality monitoring sites that are operated by state or local agencies for a variety of purposes including comparisons with the NAAQS. The SLAMS network includes stations affiliated with other programs below, but it does not include Special Purpose Monitors (SPM) or short-term monitoring studies.
- **Special Purpose Monitors (SPMs) –** SPMs are typically established for special monitoring projects that are conducted to gain better knowledge about certain pollutants and impacts

on the surrounding community. These monitors are not counted when showing compliance with the minimum monitoring requirements discussed throughout this network plan.

- **National Core (NCore) Network –** The NCore multi-pollutant stations are part of an overall strategy to integrate multiple monitoring networks and measurements. EPA regulations require NCore multi-pollutant sites to measure particles ($PM_{2.5}$, speciated $PM_{2.5}$, $PM_{10-2.5}$, speciated $PM_{10-2.5}$), O_3, SO_2, CO, nitrogen oxides ($NO/NO_2/NO_y$), and certain meteorological parameters.
- **Photochemical Assessment Monitoring Stations (PAMS) –** The purpose of the PAMS program is to provide enhanced monitoring of ozone and its precursors, oxides of nitrogen (NO_x) and volatile organic compounds (VOC).
- **$PM_{2.5}$ Chemical Speciation Network (CSN) and Speciation Trends Network (STN) –** As part of the effort to monitor fine particulate matter, the CSN and STN gather data on the chemical makeup of these particles.

Table 2.1 - California and National Ambient Air Quality Standards[(a)]

Pollutant	Averaging Time	California Standard	National Standard
Carbon monoxide	1-hour	20 ppm	35 ppm
	8-hour	9.0 ppm	9 ppm
Hydrogen sulfide	1-hour	0.03 ppm	--
Lead	30-day average	1.5 µg/m^3	--
	Calendar quarter	--	--
	Rolling 3-month average	--	0.15 µg/m^3
Nitrogen dioxide	1-hour	0.18 ppm	100 ppb
	Annual arithmetic mean	0.030 ppm	--
Ozone	1-hour	0.09 ppm	--
	8-hour	0.070 ppm	0.070 ppm
PM_{10}	24-hour	50 µg/m^3	150 µg/m^3
	Annual arithmetic mean	20 µg/m^3	--
$PM_{2.5}$	24-hour	--	35 µg/m^3
	Annual arithmetic mean	12 µg/m^3	12.0 µg/m^3 [(b)]
Sulfates	24-hour	25 µg/m^3	--
Sulfur dioxide	1-hour	0.25 ppm	75 ppb
	24-hour	0.04 ppm	--
	Annual arithmetic mean	--	--
Vinyl chloride	24-hour	0.010 ppm	--
Visibility reducing particles	8-hour	See note (c)	--

Notes:
(a) A full list of CAAQS and NAAQS and the Air District's attainment status for each pollutant can be found at http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status and more detailed information about the NAAQS can be found at: https://www.epa.gov/criteria-air-pollutants/naaqs-table.
(b) On January 6, 2023, EPA announced its proposed decision to revise the annual $PM_{2.5}$ NAAQS to within the range of 9.0 and 10.0 µg/m^3. More information can be found at https://www.epa.gov/pm-pollution/national-ambient-air-quality-standards-naaqs-pm.
(c) Particles in sufficient amount to produce an extinction coefficient of 0.23 per km when the relative humidity is less than 70 percent.

The Air District also conducts additional monitoring to meet local needs not met by the national programs, including monitoring of meteorological conditions and toxic air contaminants, as well as additional monitoring to support our understanding of particulate matter (PM). Monitors that are not used for comparison with the NAAQS or for certain other regulatory purposes are considered Special Purpose Monitors.

The population centers throughout the Bay Area represent a variety of conditions in terms of population size, the mix of local emissions sources, topography, and meteorological conditions. While resources do not allow for monitoring sites in every city, EPA regulations require the Air District to place monitoring sites at locations that reasonably represent other areas with similar pollution sources. This approach allows the Air District to estimate air pollution levels to which many people throughout the region are exposed even if they are not near an actual monitoring site. Generally, locations for permanent air monitoring sites are initially based on knowledge of population density, local wind patterns, topography, and sources of air emissions, while the final site selection is determined after considering logistical constraints and analyzing available air quality data from previous monitoring or modeling studies.

The SLAMS network is specifically designed to meet the basic objectives of the Clean Air Act as defined in the Code of Federal Regulations (CFR). To meet its monitoring objectives, the Air District collects ambient air data at locations with a variety of monitoring site types. The site types defined in 40 CFR part 58, appendix D include:

- **Highest concentration or maximum ozone concentration -** Sites expected to have the highest concentration, even if populations are sparse in that area. High concentrations may be found close to major sources, or further downwind if pollutants are transported from sources located further away. Higher concentrations of some pollutants such as ozone or secondary particulate matter are expected further downwind from the emissions sources since time is needed for the chemical reactions in the atmosphere that produce these secondary pollutants. Based on EPA's interpretation of the regulations, highest concentrations are determined by a monitoring site's design value, which is the metric used for comparing air quality data to the NAAQS.
- **Population oriented or population exposure -** Sites established to measure typical concentrations in areas of high population density. In most cases, these sites are located within the largest cities in each county.
- **Source impact or source oriented -** Sites established to determine the impact of significant sources or source categories on air quality. Typically, these sites are located downwind of potential major sources of pollutants. Examples of source oriented SO_2 and H_2S monitors include those near the Chevron, Marathon, Martinez Refining Company, Phillips 66, and Valero refineries. Near-road sites that are located by heavily trafficked major roadways and lead monitoring sites near general aviation airports are also examples of source-impact or source-oriented monitoring due to their proximity to significant sources of PM, NO_2, CO, toxics, or lead.
- **Upwind background -** Sites in areas that have no nearby significant emissions from mobile, area, or industrial sources. At these sites, the measured concentrations reflect the transported air quality levels from upwind areas.

- **General background -** Sites established to determine general background concentration levels in the absence of significant upwind sources.
- **Regional transport -** Sites established to determine the extent of regional pollutant transport among populated areas. The Air District shares a common boundary with six other air districts: Monterey Bay Air Resources District, San Joaquin Valley APCD, Sacramento Metropolitan AQMD, Yolo-Solano AQMD, Lake County AQMD, and Northern Sonoma County APCD. When upwind areas have higher levels of air pollution, pollutants may be transported into the Bay Area and contribute to higher air pollution levels than we may otherwise experience due to sources within our own jurisdiction. The Air District operates monitoring sites near some of its borders to measure the air pollution concentrations transported into and out of Air District jurisdiction.
- **Welfare-related impacts -** Sites located to measure impacts on visibility, vegetative damage, or other welfare-based impacts.

In addition to the monitoring objectives listed in 40 CFR part 58, appendix D, the Air District also prioritizes characterizing air quality in communities experiencing disproportionate impacts from air pollution. As part of that air monitoring objective, the Air District considers the locations of these overburdened communities and the unique mix of sources each experience in the design of the long-term air monitoring networks. One example of criteria used to identify overburdened communities used in the Air District's regulations are census tracts that score at or above the 70th percentile in CalEnviroScreen, Version 4.0 and areas that are within 1,000 feet of the boundaries of those census tracts. Figure 2.1 shows the monitoring locations along with the areas that meet those criteria. Many monitoring sites are located in or near overburdened communities.

Other programs that provide air monitoring data to meet this objective are the Community Health Protection Program and the Major Stationary Source Community Air Monitoring Program. The Air District's Community Health Protection Program includes community-scale monitoring to identify and understand sources contributing to pollution. These efforts include areas identified and supported under Assembly Bill 617[1] and a community-partnered project funded by EPA American Rescue Plan grant for enhanced air monitoring. Information gathered through these efforts may inform many Air District programs including the long-term regulatory monitoring station locations that will be evaluated in the 2025 Network Assessment. Moreover, as part of the Major Stationary Source Community Air Monitoring Program, the Air District is in the process of enhancing monitoring in communities near refineries.[2] As discussed in Section 2.3, the Air District is currently preparing the first site in Benicia to further characterize and track the air quality in communities near the Valero Refinery.

Each site type is also associated with a spatial scale. To further clarify the relationship between monitoring objectives, site types, and the physical location of a monitoring site, the concept of spatial scale of representativeness was defined as the physical dimensions surrounding an air

[1] Under Assembly 617, the Richmond-San Pablo area was selected for a Community Air Monitoring Plan. More information can be found at: https://www.baaqmd.gov/community-health/community-health-protection-program/richmond-area-community-health-protection-program/community-air-monitoring.

[2] The Air District launched its Major Stationary Source Community Air Monitoring Program with the goal of establishing air monitoring stations in areas where large stationary sources of pollution may contribute to near-source impacts that are not captured by the Air District's monitoring network. More information can be found at: https://www.baaqmd.gov/about-air-quality/special-air-monitoring-projects.

monitoring site throughout which the actual pollutant concentrations can be assumed to be reasonably similar.

EPA further explains that the homogeneity of the surrounding area refers to both pollutant concentrations and nearby geography or topography, land use, or mix of sources. For example, a neighborhood scale site would define similar concentrations over a 0.5 – 4 km range with relatively uniform land use and nearby sources. The spatial scale must also conform to established criteria for the distance from roadways and traffic volume. If a monitoring site is located close to a significant source or a collection of sources like a large roadway, the spatial scale would need to be smaller than neighborhood scale because the concentrations over the 0.5 – 4 km range would no longer be similar over those physical dimensions. There are different distance requirements for each pollutant, which can be found in 40 CFR part 58, appendix E.

Monitoring sites in the Air District network are designed to match the correct spatial scale with the appropriate site type, the air pollutant being measured, and the monitoring objective. Descriptions of spatial scales are described below:

- **Microscale -** Defines the concentrations in air volumes associated with area dimensions ranging from several meters up to about 100 meters.
- **Middle scale -** Defines the concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometer.
- **Neighborhood scale -** Defines concentrations within some extended area of the city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers range. The neighborhood and urban scales listed below have the potential to overlap in applications that concern secondarily formed or homogeneously distributed air pollutants.
- **Urban scale -** Defines concentrations within an area of city-like dimensions, on the order of 4 to 50 kilometers. Within a city, the geographic placement of sources may result in there being no single site that can be said to represent air quality on an urban scale.
- **Regional scale -** Typically defines a rural area of reasonably homogeneous geography without large sources and extends from tens to hundreds of kilometers.

Table 2.2 lists the appropriate site type and spatial scale combinations that meet EPA requirements for network design.

Table 2.2 - SLAMS Site Types and Appropriate Spatial Scales

Site Type	Appropriate Spatial Scale
Highest Concentration	Micro, middle, neighborhood
Population Exposure	Neighborhood, urban
Source Oriented	Micro, middle, neighborhood
General Background	Urban, regional
Regional Transport	Urban, regional

To meet the above monitoring objectives and regulatory requirements, in 2022, the Air District operated 32 air monitoring stations across all counties within its jurisdiction. Table 2.3 identifies the pollutants measured at each station and Figure 2.1 shows their locations. Additional details about the stations, including their site types and spatial scales, are provided in Section 4.

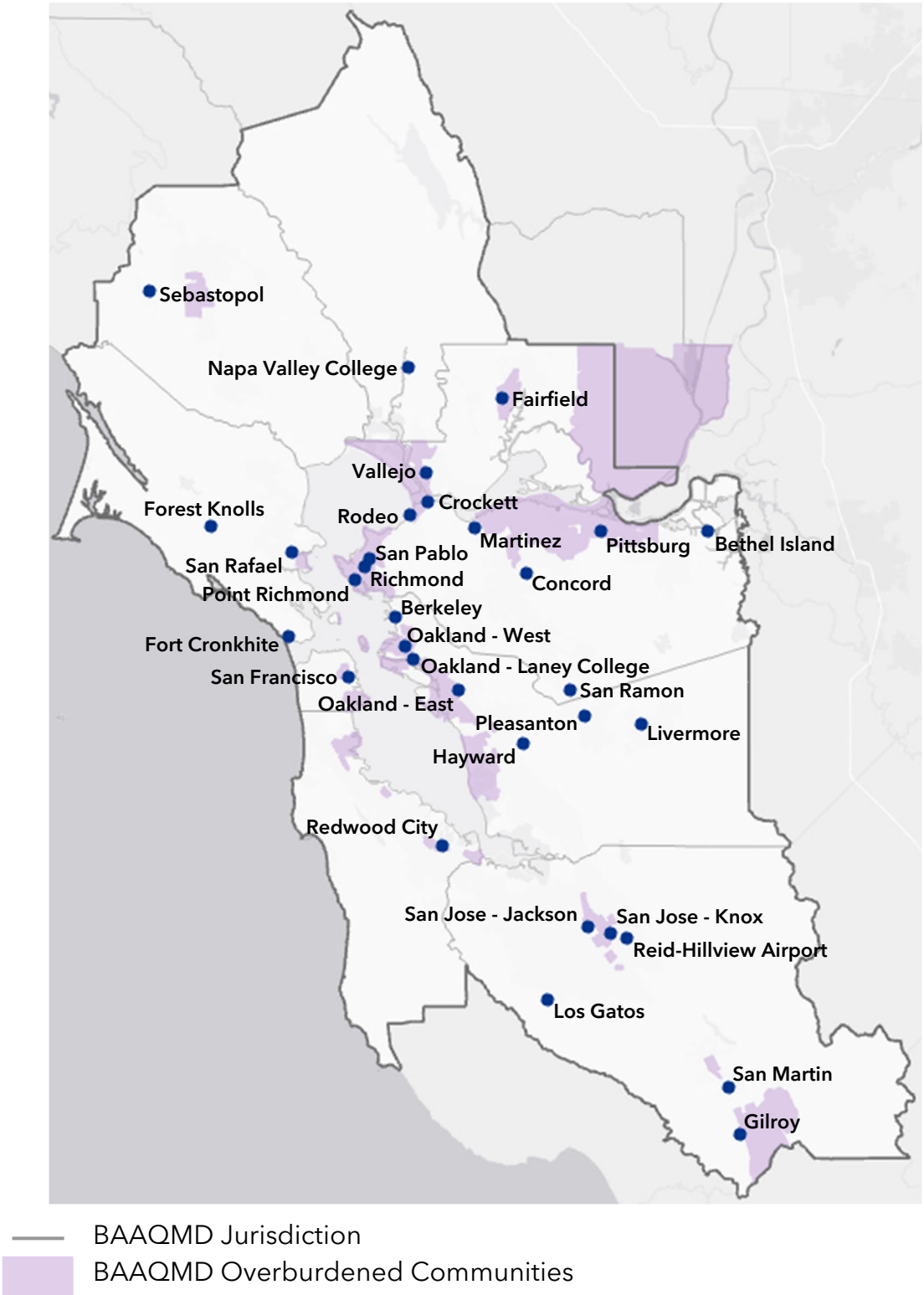
Monitor Type: SLAMS SPM

Table 2.3 - Air District Ambient Air Monitoring Stations, Monitored Pollutants, Site Types, and Network Affiliations in 2022[a,b]

Site		Monitored Pollutants															
		Criteria Pollutants								Other Pollutants							
		CO	Lead (TSP)	NO_2	O_3	PM_{10}	$PM_{2.5}$ (Continuous FEM)	$PM_{2.5}$ (FRM)	SO_2	Carbonyls	NO_y	$PM_{10-2.5}$	Speciated $PM_{2.5}$	VOCs	BC	H_2S	UFP
1	Berkeley Aquatic Park[c]	Near-road		Near-road	Near-road		Near-road							Near-road	Near-road		Near-road
2	Bethel Island																
3	Concord																
4	Crockett																
5	Fairfield																
6	Forest Knolls																
7	Fort Cronkhite													(e)			
8	Gilroy																
9	Hayward																
10	Livermore			PAMS	PAMS					(g)				(g)			
11	Los Gatos																
12	Martinez																
13	Napa Valley College[d]																
14	Oakland - East																
15	Oakland - Laney College	Near-road		Near-road			Near-road							Near-road	Near-road		Near-road
16	Oakland - West																
17	Pittsburg																
18	Pleasanton	Near-road		Near-road			Near-road							Near-road			
19	Point Richmond																
20	Redwood City																
21	Reid-Hillview Airport																
22	Richmond - 7th Street																
23	Rodeo																
24	San Francisco																
25	San Jose – Jackson	NCore			NCore[f]		NCore	NCore	NCore		NCore[f]	NCore	NCore & CSN				
26	San Jose – Knox	Near-road		Near-road			Near-road							Near-road	Near-road		Near-road
27	San Martin																
28	San Pablo																
29	San Rafael																
30	San Ramon																
31	Sebastopol																
32	Vallejo																

Notes:
(a) See the list of terms on pages iii – iv for definitions.
(b) Site types are denoted by the fill color of a grid cell and network affiliations are noted as text.
(c) The Berkeley site went offline on October 1, 2021 and resumed operations January 2023.
(d) The Napa Valley College site ceased operations on May 25, 2021. The Air District is in the process of relocating the site.
(e) The Fort Cronkhite monitor ceased operations on December 31, 2022 due to building closure. The Air District has requested to have the monitor relocated on the property.
(f) In March 2014, the Air District requested a waiver to discontinue NO_y monitoring at San Jose; EPA subsequently approved the waiver (see Appendix F). Under this approval, the Air District will monitor NO_y at Livermore, which is the official PAMS site in the Bay Area.
(g) This table reflects operations in 2022. VOC and carbonyl measurements required for PAMS monitoring will begin on June 1, 2023.

Figure 2.1 - Air District Ambient Air Monitoring Sites in 2022



Notes:
(1) Air District Regulation 2, Rule 1 defines overburdened communities as census tracts that score at or above the 70th percentile in CalEnviroScreen, Version 4.0, as well as areas that are within 1,000 feet of the boundaries of those census tracts.
(2) The Berkeley site went offline on October 1, 2021 and resumed operations in January 2023.
(3) The Napa Valley College site went offline on May 25, 2021. The Air District is in the process of relocating the site.

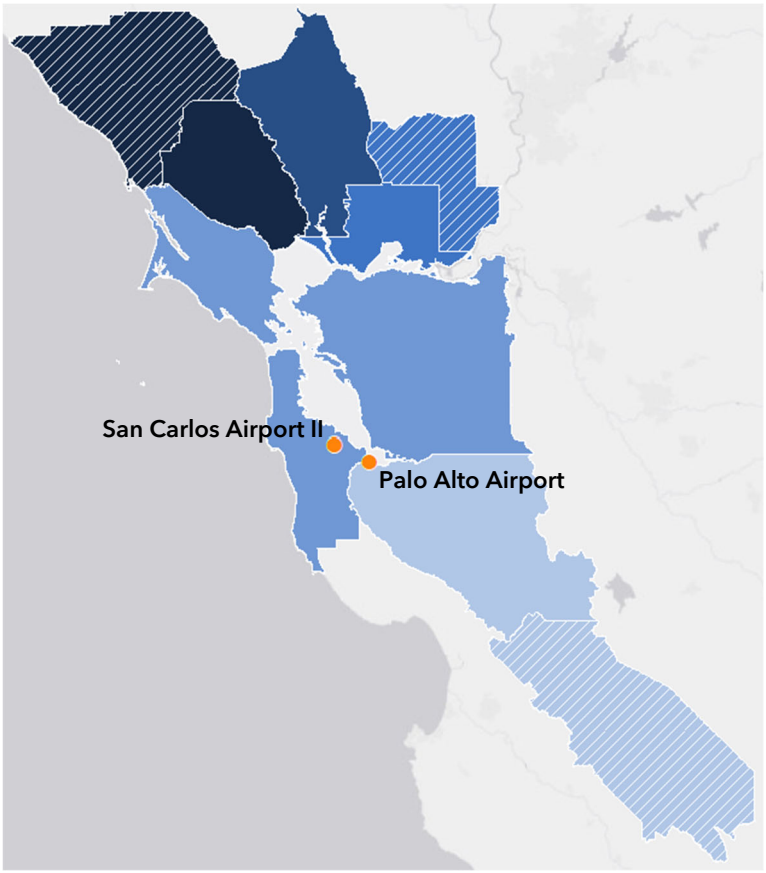
Table 2.4 - Non-Operational Air District Monitoring Sites in 2022[(a)]

Site		Monitored Pollutants
		Lead (TSP)
1	Palo Alto Airport	
2	San Carlos Airport II	

Monitor Type: SLAMS SPM

Notes:
(a) This table includes monitoring stations that were not operational in 2022 but that the Air District has not yet received approval from EPA to shut down. Section 2.3 includes additional details about non-operational sites.

Figure 2.2 - Non-Operational Air District Monitoring Sites in 2022



CBSAs

- Santa Rosa-Petaluma
- Napa
- Vallejo
- San Francisco-Oakland-Berkeley
- San Jose-Sunnyvale-Santa Clara

Station Type

- SLAMS
- SPM

Note: Crosshatched areas are outside of the BAAQMD

2.2 Minimum Monitoring Requirements

For criteria pollutants, the US EPA has established minimum monitoring requirements, which are specified in federal regulations (40 CFR part 58, appendix D). The Air District met or exceeded all minimum monitoring requirements for most criteria pollutants in 2022. The three instances for which minimum requirements were not met in 2022 – $PM_{2.5}$, PM_{10}, and airport lead – were due to circumstances beyond the Agency's control. The Air District's ongoing efforts to resolve these issues are discussed in the $PM_{2.5}$, PM_{10}, and lead portions of this section.

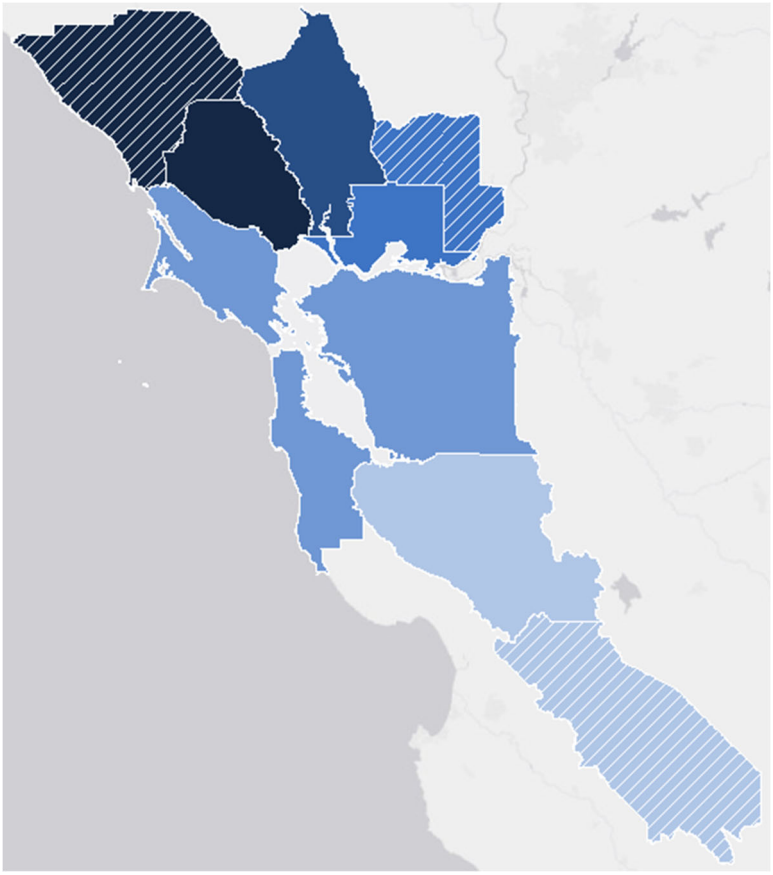
EPA minimum monitoring requirements are not based on the Air District, city, or county boundaries. Instead, they are based on Core Based Statistical Areas (CBSAs) – geographic areas that consist of one or more counties anchored by an urban center of at least 10,000 people plus adjacent counties that are socioeconomically tied to the urban center by commuting. CBSAs are further classified as Metropolitan Statistical Areas (MSAs) if the population is 50,000 or greater, or they are classified as Micropolitan Statistical Areas (μSAs) if the population is less than 50,000. There are five CBSAs in the Bay Area:

- San Francisco-Oakland-Berkeley
- San Jose-Sunnyvale-Santa Clara
- Santa Rosa-Petaluma
- Vallejo
- Napa

It should be noted that some of these CBSAs are not entirely within the jurisdiction of the Air District. Specifically, the southern portion of the San Jose-Sunnyvale-Santa Clara CBSA is within the jurisdiction of the Monterey Bay Air Resources District, the northern portion of the Santa Rosa-Petaluma CBSA is within the jurisdiction of the Northern Sonoma County Air Pollution Control District, and the northern and eastern portions of the Vallejo CBSA are within the jurisdiction of the Yolo-Solano Air Quality Management District. This is shown graphically in Figure 2.3.

Figure 2.3 - Core Based Statistical Areas (CBSAs) in the Bay Area[1]

Santa Rosa-Petaluma[2]
Napa[3]
Vallejo[4]
San Francisco-Oakland-Berkeley[5]
San Jose-Sunnyvale-Santa Clara[6]



Notes:
(1) Crosshatched areas are outside of the BAAQMD

(2) Includes Sonoma County

(3) Includes Napa County

(4) Includes Solano County

(5) Includes Alameda, Contra Costa, Marin, San Francisco, and San Mateo counties

(6) Includes Santa Clara and San Benito counties

Minimum monitoring requirements are determined by evaluating certain data for each CBSA as described in 40 CFR part 58, appendix D. The population of an area is among the data that must be considered and for O_3, $PM_{2.5}$, and NO_2, it must be based on the most recently available census. For SO_2, population data may be based on either a census or population estimates, and no required data source is specified for CO and PM_{10}. For consistency across the Air District, the minimum monitoring requirements discussed below are based on the 2020 US Census, which is also the conservative approach since the 2022 population estimates are lower than the 2020 Census populations for all five CBSAs. Table 2.5 below provides the 2020 Census populations for each CBSA.

Table 2.5 - 2020 Census Population for Bay Area CBSAs

Core Based Statistical Area	2020 Census Population[(1)]	2022 Population Estimates[(2)]
San Francisco-Oakland-Berkeley	4,749,008	4,579,599
San Jose-Sunnyvale-Santa Clara	2,000,468	1,938,524
Santa Rosa-Petaluma	488,863	482,650
Vallejo	453,491	448,747
Napa	138,019	134,300

Notes:
(1) Data source: US Census Bureau. (2023). *2020 Decennial Census.* Retrieved from: https://data.census.gov.
(2) Data source: US Census Bureau. (2023). *Annual Resident Population Estimates for Metropolitan and Micropolitan Statistical Areas and Their Geographic Components for the United States: April 1, 2020 to July 1, 2022*. Retrieved from: https://www.census.gov/data/tables/time-series/demo/popest/2020s-total-metro-and-micro-statistical-areas.html.

Many minimum monitoring requirements are also based on the monitored level of pollutant concentrations. The information for the highest site in a CBSA/MSA is given in the tables below and is based on 2020-2022 data. Air quality design values for the Bay Area can be found on EPA's website at https://www.epa.gov/air-trends/air-quality-design-values.

When portions of the same CBSA fall under the jurisdiction of multiple air districts, both agencies must independently meet the full minimum monitoring requirements of 40 CFR part 58, appendix D unless they establish a written agreement to share responsibility for meeting the requirements together. The Air District has several such agreements, which are discussed below and in the pollutant-specific sections of this plan. As a result of these agreements, some monitors identified in this plan count toward the minimum monitoring requirements even though they are located in other air districts. As minimum monitoring requirements change over time and as we perform periodic network evaluations, we re-evaluate our existing monitoring agreements and consider the need for additional agreements to ensure minimum requirements continue to be met.

Monitoring Agreements with Yolo/Solano AQMD

The Bay Area network met all minimum monitoring requirements for all criteria pollutants in the Vallejo CBSA, therefore, no interagency agreements were needed with Yolo/Solano AQMD. The Air District will continue to assess the minimum monitoring requirements in the Five-Year Network Assessments and work with the other air districts to meet them.

Monitoring Agreements with Monterey Bay Air Resources District

The Bay Area and Monterey air districts share minimum monitoring requirements for the San Jose–Sunnyvale–Santa Clara CBSA. This CBSA includes Santa Clara County (Bay Area) and San Benito County (Monterey). Shared pollutant monitoring agreements include O_3, $PM_{2.5}$, PM_{10}, and near-road NO_2, CO, and $PM_{2.5}$. Within its own network, the Bay Area Air District meets minimum monitoring requirements for O_3, $PM_{2.5}$, and near-road NO_2, CO, and $PM_{2.5}$. PM_{10} is the only pollutant for which the Bay Area does not meet the minimum requirements on its own, and therefore has a monitoring agreement with Monterey Bay for PM_{10}. Monterey Bay needs agreements for O_3, $PM_{2.5}$, and near-road NO_2, CO, and $PM_{2.5}$ monitoring. Existing agreements are in Appendices A through D.

Monitoring Agreements with Northern Sonoma County APCD

The Bay Area and Northern Sonoma County air districts share minimum monitoring requirements for the Santa Rosa - Petaluma MSA. Shared pollutant monitoring agreements only include O_3. On December 29, 2020, the Northern Sonoma County APCD notified the Air District that EPA had approved the shutdown of the Healdsburg Airport O_3 monitoring site. Due to the shutdown, Northern Sonoma County APCD no longer met minimum monitoring requirements for O_3 with their own network. Both Air Districts have entered into an interagency agreement that specifies that the agencies recognize this shared responsibility for O_3 monitoring in the Santa Rosa – Petaluma MSA and will coordinate appropriately to ensure minimum monitoring requirements continue to be met. See Appendix E for the current agreement.

2.2.1 Minimum Monitoring Requirements for Ozone

The number of required O_3 monitors in each MSA is determined by the MSA population and design value, as specified in Section 4.1 and Table D-2 of 40 CFR part 58, appendix D. O_3 design values are calculated for each site according to 40 CFR part 50, appendix U by taking the 3-year average (in this case 2020-2022) of the 4th highest daily maximum 8-hour concentration.

Table 2.6 below summarizes the minimum monitoring requirements for ozone and the number of active monitors in 2022. The design values shown for each MSA in this table are the highest design values of all monitors in the MSA. The 2022 Air District monitoring network for O_3 is also shown graphically in Figure 2.4.

The Air District monitoring site in Napa was temporarily closed during 2022. The Napa Valley College site went offline in 2021 due to the loss of the lease, and the Air District is in the process of relocating to another site. According to Table D-2 of 40 CFR part 58, appendix D, no monitors are required for MSAs with population between 50,000 and less than 350,000 where the most recent 3-year design value concentration was below 85% of any O_3 NAAQS. Since the 2020 census population for Napa was 138,019 and the most recent valid 3-year design value was 0.058 ppm, which is less than 85% of the O_3 NAAQS, no monitors are required for the Napa MSA. However, the Air District is not requesting discontinuation of ozone monitoring in Napa, and is relocating to a new site to resume monitoring operations in Napa.

As shown in Table 2.6, the Air District network meets or surpasses the O_3 minimum monitoring requirements. Therefore, no monitoring agreement was needed between the Air District and any other air district to comply with the minimum monitoring requirement for O_3. As described in Appendix E, Northern Sonoma County APCD notified the Air District that the EPA approved the shutdown of the Healdsburg Airport O_3 monitoring site in June 2020 and therefore Northern Sonoma County APCD and the Air District established an agreement to maintain minimum monitoring requirements in the Santa Rosa – Petaluma MSA in December 2020.

Ozone Special Purpose Monitors

Six ozone monitors in the Bay Area are designated as special purpose monitors (SPMs): Berkeley, Hayward, Oakland - East, San Pablo, San Rafael, and San Ramon. All of the ozone SPMs meet the requirements in 40 CFR part 58, appendix A but only San Ramon meets the

requirements in appendix E. None of the ozone SPMs are counted towards meeting minimum ozone monitoring requirements.

Four of the monitors (Berkeley, Oakland - East, San Pablo, and San Rafael) are too close to a roadway to meet the siting requirements of 40 CFR part 58, appendix E. The proximity of these sites to the roadway may bias the O_3 concentrations lower than if they were located further away from the roadway. However, these monitors continue to be representative of population exposure in the near-road environment and are considered NAAQS-comparable since they could show a valid violation of the NAAQS.

The Berkeley site went offline on October 1, 2021 due to vandalism and electrical theft. After electrical services were restored and the site was repaired, the site resumed operations effective January 2023.

The Hayward O_3 monitor also does not meet 40 CFR part 58, appendix E siting requirements and its classification as an SPM was approved by EPA as part of the 2019 annual network plan (see Appendix G for the Air District's request and EPA's approval).

Monitoring Agreements for Ozone

In 2014, the Air District and the Monterey Bay Air Resources District established a monitoring agreement for ozone monitoring in the San Jose-Sunnyvale-Santa Clara CBSA (see Appendix A).

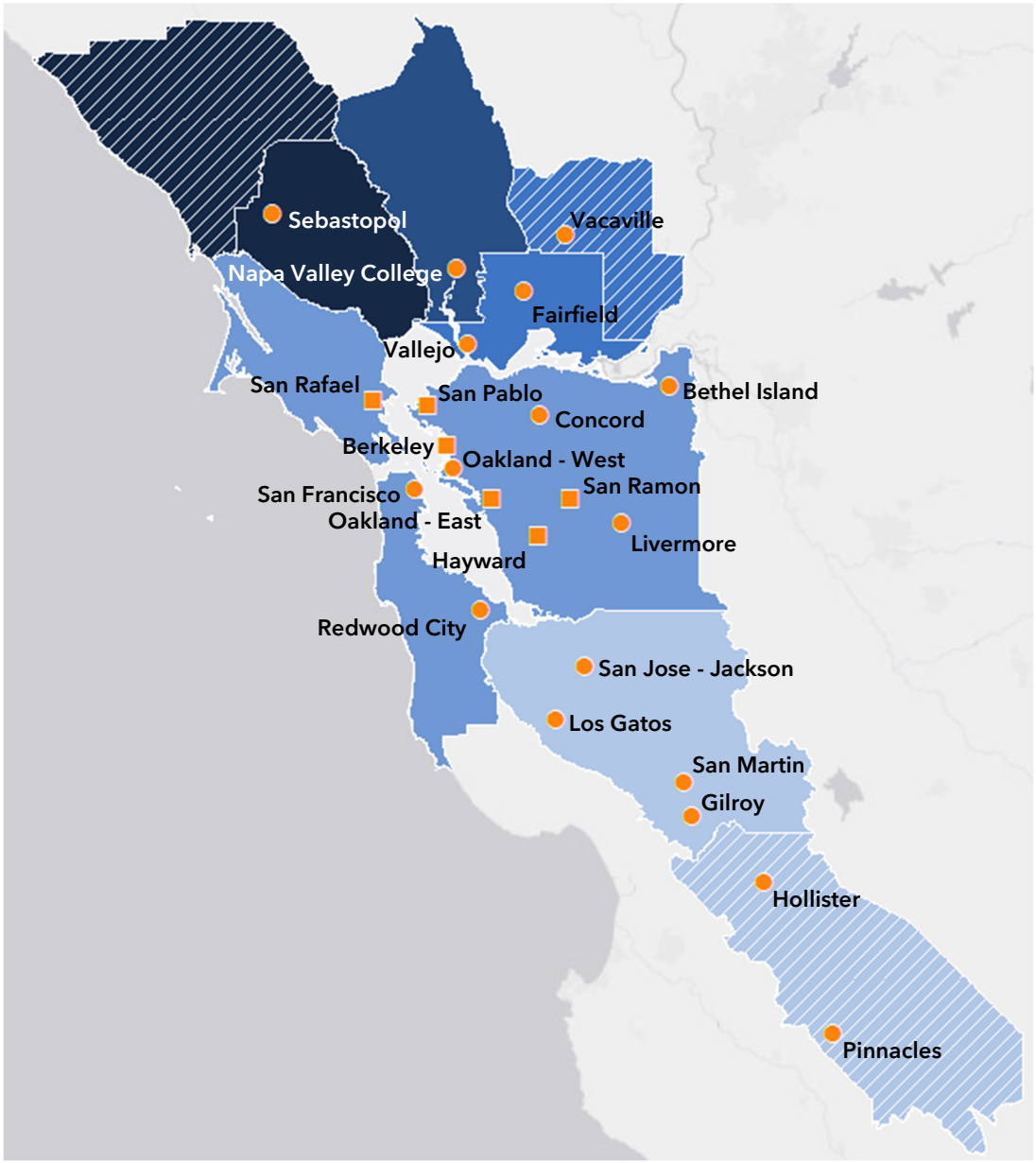
In 2020, the Air District and the Northern Sonoma County APCD established a monitoring agreement for ozone monitoring in the Santa Rosa-Petaluma CBSA after EPA approved closure of the Healdsburg Airport ozone monitoring site (see Appendix E).

Table 2.6 - Minimum Monitoring Requirements for Ozone

MSA	County or Counties	2020 Census Population	2022 8-hour Design Value (ppm)	Design Value Site (AQS ID)	Number of SLAMS		
					Required	Active	Additional Needed
San Francisco-Oakland-Berkeley	San Francisco, San Mateo, Alameda, Marin, Contra Costa	4,749,008	0.069	Livermore (06-001-0007), Bethel Island (06-013-1002)	3	6	0
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	2,000,468	0.069	San Martin (06-085-2006)	2	6[(a)]	0
Santa Rosa-Petaluma	Sonoma	488,863	0.052	Sebastopol (06-097-0004)	1	1	0
Vallejo	Solano	453,491	0.064	Fairfield 06-095-0005, Vacaville-Ulatis Drive (06-095-3003)	2	3[(b)]	0
Napa	Napa	138,019	0.054[(d)]	Napa Valley College[(d)] (06-055-0004)	0	0[(c)]	0

Notes:
(a) Two of the six monitors are not in the BAAQMD. The Hollister and Pinnacles National Park sites are in the Monterey Bay Air Resources District. The Pinnacles National Park site is part of the CASTNET program and was designated SLAMS in 2010 by the EPA.
(b) One of the three monitors is not in the BAAQMD; specifically, the Vacaville-Ulatis Drive monitor is in the Yolo-Solano AQMD.
(c) The Napa CBSA has a single ozone monitor at Napa Valley College, which is in the process of relocating to another site. However, the 3-year design value has been flagged as invalid because the monitor went offline in 2021. The most recent valid design value was 0.058 ppm (for 2018-2020 data), which is less than 85% of the NAAQS. Therefore, no monitors are required based on the population and design value criteria according to Table D-2 of 40 CFR Part 58 Appendix D.

Figure 2.4 - Ozone Monitors in the San Francisco Bay Area in 2022



Notes:
(1) Crosshatched areas are outside of the BAAQMD.
(2) The Berkeley site went offline on October 1, 2021 and resumed operations January 2023.
(3) The Napa Valley College site went offline on May 25, 2021. The Air District is in the process of relocating the site.

2.2.2 Minimum Monitoring Requirements for $PM_{2.5}$

The number of required $PM_{2.5}$ monitors in each MSA is determined by the MSA population and design value, as specified in Sections 4.7.1, 4.7.2, and Table D-5 of 40 CFR part 58, appendix D. 24-hour $PM_{2.5}$ design values are calculated by taking the 3-year average (2020-2022) of the annual 98th percentiles for each site, and annual design values are calculated by taking the 3-year average (2020-2022) of the annual means for each site.

Table 2.7 below summarizes the minimum monitoring requirements for $PM_{2.5}$ and the number of active monitors in 2022. The design values shown for each MSA in this table are the highest design values of all monitors in the MSA. The 2022 Air District monitoring network for $PM_{2.5}$ is also shown graphically in Figure 2.5.

In 2022, every $PM_{2.5}$ monitor in the network was a Federal Reference Method (FRM) or Federal Equivalent Method (FEM), and the primary monitor at every site was a continuous FEM. While the near-road sites at Oakland - Laney College, Berkeley Aquatic Park, Pleasanton, and San Jose – Knox are considered micro-scale because of their distance to roadways, they are considered area-wide sites since they represent many similar locations throughout their MSAs and are therefore comparable to the NAAQS (see 40 CFR part 58, appendix D, §4.7.1(b)). The Pleasanton site is designated as an SPM, meets the requirements of 40 CFR part 58, appendices A, C, and E, and although it is comparable to the NAAQS, it does not count towards minimum monitoring requirements.

There were no active monitors in the Napa MSA in 2022. The Napa Valley College site went offline in 2021, and the Air District is in the process of relocating to another site. According to Table D-5 of 40 CFR part 58, appendix D, one monitor is required for MSAs with population between 50,000 and less than 500,000 where the most recent 3-year design value concentration is 85% or above for any $PM_{2.5}$ NAAQS. Since the 2020 census population for Napa was 138,019 and the most recent valid 3-year 24-hour design value was 46 $\mu g/m^3$, which is more than 85% of the 24-hour $PM_{2.5}$ NAAQS, one monitor is required for the Napa MSA. The Air District is in the process of relocating to a new site to continue monitoring operations in Napa.

In addition to the requirement for a minimum number of $PM_{2.5}$ SLAMS, EPA requires that a certain number of sites operate continuous $PM_{2.5}$ monitors (40 CFR part 58, appendix D, §4.7.2). Currently, all the primary $PM_{2.5}$ monitors in the Air District network are continuous FEMs. Therefore, the requirement to operate continuous $PM_{2.5}$ monitors equal to at least one-half (rounding up) the number of $PM_{2.5}$ SLAMS monitors is met.

Monitoring Agreements for $PM_{2.5}$

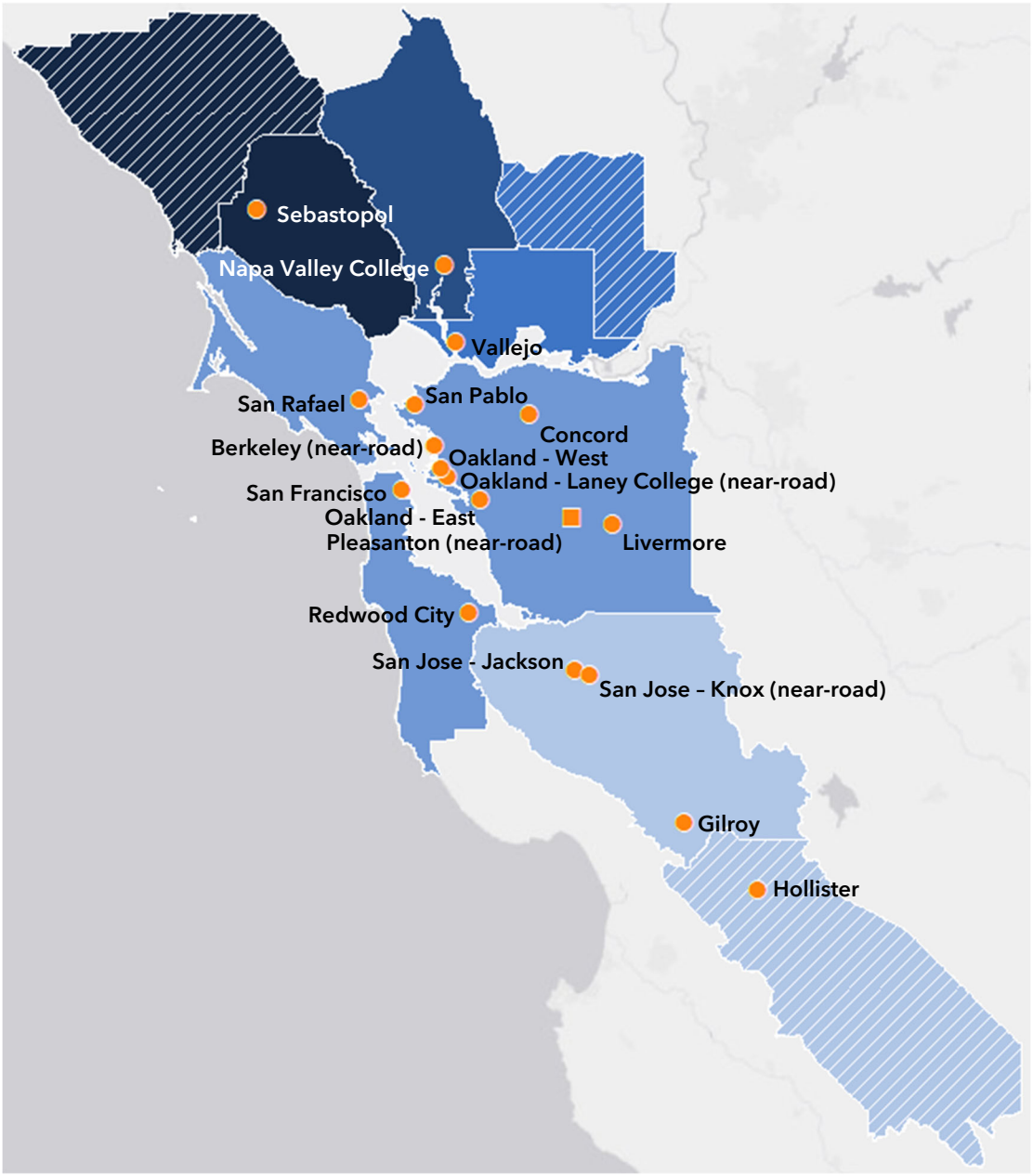
In 2013, the Air District and the Monterey Bay Air Resources District established a monitoring agreement for $PM_{2.5}$ monitoring in the San Jose-Sunnyvale-Santa Clara CBSA (see Appendix B).

Table 2.7 – Minimum Monitoring Requirements for FRM/FEM $PM_{2.5}$ SLAMS

MSA	Counties	2020 Census Population[a]	2022 24-Hour Design Value (µg/m³)[b]	2022 24-Hour Design Value Site (AQS ID)[c]	2022 Annual Design Value (µg/m³)[d]	2022 Annual Design Value Site (AQS ID)[c]	Number of SLAMS		
							Required	Active	Additional Needed
San Francisco-Oakland-Berkeley	San Francisco, San Mateo, Alameda, Marin, Contra Costa	4,749,008	36	Pleasanton (06-001-0015)	10.0	San Pablo (06-013-1004)	3	10[e]	0
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	2,000,468	36	San Jose – Jackson (06-085-0005)	10.7	San Jose – Knox (06-085-0006)	3	4[f]	0
Santa Rosa-Petaluma	Sonoma	488,863	22[g]	Sebastopol[g] (06-097-0004)	7.3[g]	Sebastopol[g] (06-097-0004)	0[g]	1	0
Vallejo	Solano	453,491	33	Vallejo (06-095-0004)	9.4	Vallejo (06-095-0004)	1	1	0
Napa	Napa	138,019	36[h]	Napa Valley College[h] (06-055-0004)	8.9[h]	Napa Valley College[h] (06-055-0004)	1[h]	0	1

Notes:
(a) Per 40 CFR Part 58 Appendix D, Table D-5 footnote 2, minimum monitoring requirements for $PM_{2.5}$ are based on MSA populations from the latest available census figures.
(b) Daily design values are calculated by taking the 3-year average (2020-2022) of the 98th percentiles for each site.
(c) The design values in this table are the highest design value of monitors in the MSA.
(d) Annual design values are calculated at each monitoring site by taking the 3-year average (2020-2022) of the annual means for each site.
(e) Two monitors, Oakland – Laney College and Berkeley Aquatic Park, are near-road and classified as micro-scale sites but are considered area-wide sites and can be counted toward meeting the area-wide monitoring requirement. However, the Berkeley site went offline on October 1, 2021 and resumed operations January 2023.
(f) One monitor, San Jose – Knox, is near-road and classified as a micro-scale site but is considered an area-wide site and can be counted toward meeting the area-wide requirement. Additionally, one monitor is not in the BAAQMD. The Hollister monitoring site is in the Monterey Bay Air Resources District.
(g) The Santa Rosa-Petaluma CBSA has a single $PM_{2.5}$ monitor at Sebastopol. However, the design value has been flagged as invalid because the data for 2021 do not meet completeness criteria due to an instrument malfunction that caused the July – September 2021 completeness to be 70%. If the 24-hour and annual design values were considered valid, no monitors would be required in the Santa Rosa-Petaluma CBSA since the population is less than 500,000 and the design values are less than 85% of the $PM_{2.5}$ NAAQS. The maximum number of monitors that could be required in a CBSA with this size population is one, and that is the number of active monitors. As a result, the Air District is meeting this requirement in any case.
(h) The Napa CBSA has a single $PM_{2.5}$ monitor at Napa Valley College, which is in the process of relocating to another site. However, the 3-year design value has been flagged as invalid because the monitor went offline in 2021. The most recent complete 24-hour design value was 46 µg/m³ (for 2018-2020 data), which is more than 85% of the NAAQS. Therefore, one monitor is required based on the population and design value criteria according to Table D-5 of the 40 CFR Part 58 Appendix D.

Figure 2.5 – $PM_{2.5}$ Monitors in the San Francisco Bay Area in 2022



Notes:
(1) Crosshatched areas are outside of the BAAQMD.
(2) The Berkeley site went offline on October 1, 2021 and resumed operations January 2023.
(3) The Napa Valley College site went offline on May 25, 2021. The Air District is in the process of relocating the site.

The $PM_{2.5}$ network design requirements and the minimum number of near-road $PM_{2.5}$ monitors in the PQAO (40 CFR part 58, appendix D, §4.7.1(b)(2)) and the QA requirements for the collocation of $PM_{2.5}$ monitors (40 CFR part 58, appendix A, §3.2.5) are discussed below.

Near-Road $PM_{2.5}$ Sites

Along with the 2012 $PM_{2.5}$ NAAQS revision, EPA revised the $PM_{2.5}$ network design criteria to require at least one $PM_{2.5}$ monitor at near-road sites in CBSAs with populations of 1 million or greater (40 CFR part 58, appendix D §3.7.1 (b)(2)). The minimum monitoring requirements are met and shown in Table 2.8.

Monitoring Agreements for Near-Road $PM_{2.5}$ Monitoring

In 2015 the Air District established a monitoring agreement with the Monterey Bay Air Resources District for near-road $PM_{2.5}$ monitoring in the San Jose-Sunnyvale-Santa Clara CBSA (see Appendix D).

Table 2.8 – Near-Road Monitoring for $PM_{2.5}$

Metropolitan Statistical Area	County or Counties	2020 Census Population	Number of Near-road $PM_{2.5}$ SLAMS	
			Required	Active
San Francisco-Oakland-Berkeley	San Francisco, San Mateo, Alameda, Marin, Contra Costa	4,749,008	1	2[(a,b)]
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	2,000,468	1	1
Santa Rosa-Petaluma	Sonoma	488,863	0	0
Vallejo	Solano	453,491	0	0
Napa	Napa	138,019	0	0

Notes:
(a) The Berkeley site went offline on October 1, 2021 and resumed operations January 2023.
(b) The Pleasanton monitoring site meets siting for a near-road monitoring objective and the $PM_{2.5}$ SPM is comparable to the NAAQS since it meets the requirements in Appendices A, C, and E. However, the $PM_{2.5}$ monitor at that site is an SPM, and as such, is not counted toward fulfilling this requirement.

Area of Expected Maximum Concentration

Network design requirements for $PM_{2.5}$ require sites in each MSA located in areas of expected maximum concentrations (40 CFR part 58, appendix D). The Air District siting for $PM_{2.5}$ considers the potential effect on air quality from many $PM_{2.5}$ source types, including stationary and area sources, roadways, residential wood burning, and agriculture. The primary objective of these maximum concentration SLAMS is to determine compliance with the $PM_{2.5}$ NAAQS. Because the NAAQS are based on annual means and the 98th percentile daily average $PM_{2.5}$ concentrations, these sites should be located where the annual mean and/or 98th percentile concentration are expected to be highest, even though other locations may experience higher concentrations on a specific day. EPA has determined that the current $PM_{2.5}$ monitoring network in the Bay Area meets this requirement.

Review of Changes to the $PM_{2.5}$ Network

The Air District provides for the review of changes to the $PM_{2.5}$ monitoring network that impact the location of a violating $PM_{2.5}$ site through an evaluation of the amount and distribution of $PM_{2.5}$ (direct and precursor) source emissions through emissions inventory and modeling work for other programs and uses this work to assess the effectiveness of the ambient monitoring network for each 5-Year Network Assessment, or more frequently if needed.

Regional Background and Transport Sites

Every state is required to operate at least one regional transport site and one regional background site (40 CFR part 58, appendix D, §4.7.3). These state-wide requirements are met by CARB's network. More information about transport and background sites in California can be found in CARB's Annual Monitoring Network Report.

$PM_{2.5}$ Filter Analysis for Other Air Districts and PQAO Responsibility

$PM_{2.5}$ filter samples collected by the North Coast AQMD and Monterey Bay Air Resources District are weighed by staff at the Air District's laboratory. The Air District, however, is not the Primary Quality Assurance Organization (PQAO) for these samples. Therefore, the $PM_{2.5}$ concentration data are sent back to the collecting agencies for their review, data validation, and certification. The Air District is the certifying agency for samples collected within the Air District jurisdiction only.

Minimum Monitoring Requirements for Collocated $PM_{2.5}$

In 2022, the Air District operated 17 primary $PM_{2.5}$ monitors (SLAMS and SPMs); these primary monitors were all MetOne BAM continuous FEMs (method 170). EPA requires collocation at 15% of the sites (round up) which equates to three collocated monitors, the first and third collocated monitors must be an FRM and the second must be the same FEM method as the primary monitor (see 40 CFR part 58, appendix A, §3.2.3). In 2022, the Bay Area had three sites with collocated $PM_{2.5}$ monitors, San Jose-Jackson and Concord with FEM-primary and FRM-collocated, and Vallejo with a FEM/FEM primary/collocated pair, as shown in Table 2.9 below. Historically, the San Jose-Jackson, Concord and Vallejo sites have had some of the highest $PM_{2.5}$ design values in the Bay Area, which is why these sites were selected for collocated monitoring.

Table 2.9 – Collocated $PM_{2.5}$ Monitors for the FEM Network

Method Code	# Primary Monitors	# Required Collocated Monitors	Active Collocated FRM Monitors	Active Collocated FEM Monitors (same method as primary)
170	17	3	San Jose-Jackson Concord	Vallejo

2.2.3 Minimum Monitoring Requirements for PM_{10}

The number of required PM_{10} monitors in each MSA is determined by MSA population and 24-hour maximum concentrations, as specified in Section 4.6 and Table D-4 of 40 CFR part 58, appendix D. Table 2.10 shows the highest PM_{10} concentrations from 2020 through 2022 along with the corresponding minimum monitoring requirements.

Per 40 CFR part 58, appendix D, §4.6, the appropriate number of PM_{10} monitors in an MSA is dependent on population and the level of 24-hour PM_{10} concentrations compared to specific concentration ranges:

- Low (<124 $\mu g/m^3$)
- Medium, and (>124 $\mu g/m^3$ and < 186 $\mu g/m^3$)
- High concentration ranges (>186 $\mu g/m^3$)

A historic number of wildfires were ignited throughout northern California by lightning strikes on August 16, 2020. Many of these fires continued to burn until October and November 2020. Smoke plumes from these wildfire events caused high PM_{10} concentrations driven largely by increases in $PM_{2.5}$ concentrations (since PM_{10} includes $PM_{2.5}$), as evidenced by satellite imagery, measurements, news reports, and other corroborating information suggesting a clear causal relationship between these concentrations and nearby emissions from lightning caused wildfires. On September 12, 2020, the 24-hour PM_{10} concentration spiked to 165 $\mu g/m^3$, which is the highest 24-hour PM_{10} concentration measured in the San Francisco-Oakland-Berkeley CBSA over a 3-year period from 2020 through 2022. The elevated PM_{10} concentrations caused by higher $PM_{2.5}$ from the 2020 wildfires have triggered additional PM_{10} minimum monitoring requirements in the Bay Area.

In the coming year, the Air District will be performing an evaluation of the PM monitoring network. This evaluation will include an analysis to determine which areas have been impacted by elevated $PM_{2.5}$ concentrations and where additional measurements may be needed to reflect the coarse PM fraction. While the table below suggests additional PM_{10} monitors may be needed in the San Francisco-Oakland-Berkeley, San Jose-Sunnyvale-Santa Clara, and Vallejo CBSAs, it would be premature to draw final conclusions about the adequacy of the network and the need for additional monitors before the network evaluation has been performed. Throughout the course of our network evaluation, the Air District will work with EPA, CARB, and the other agencies with which we share monitoring responsibility to ensure minimum monitoring requirements are met and monitoring levels continue to protect public health and safety.

Monitoring Agreements for PM_{10}

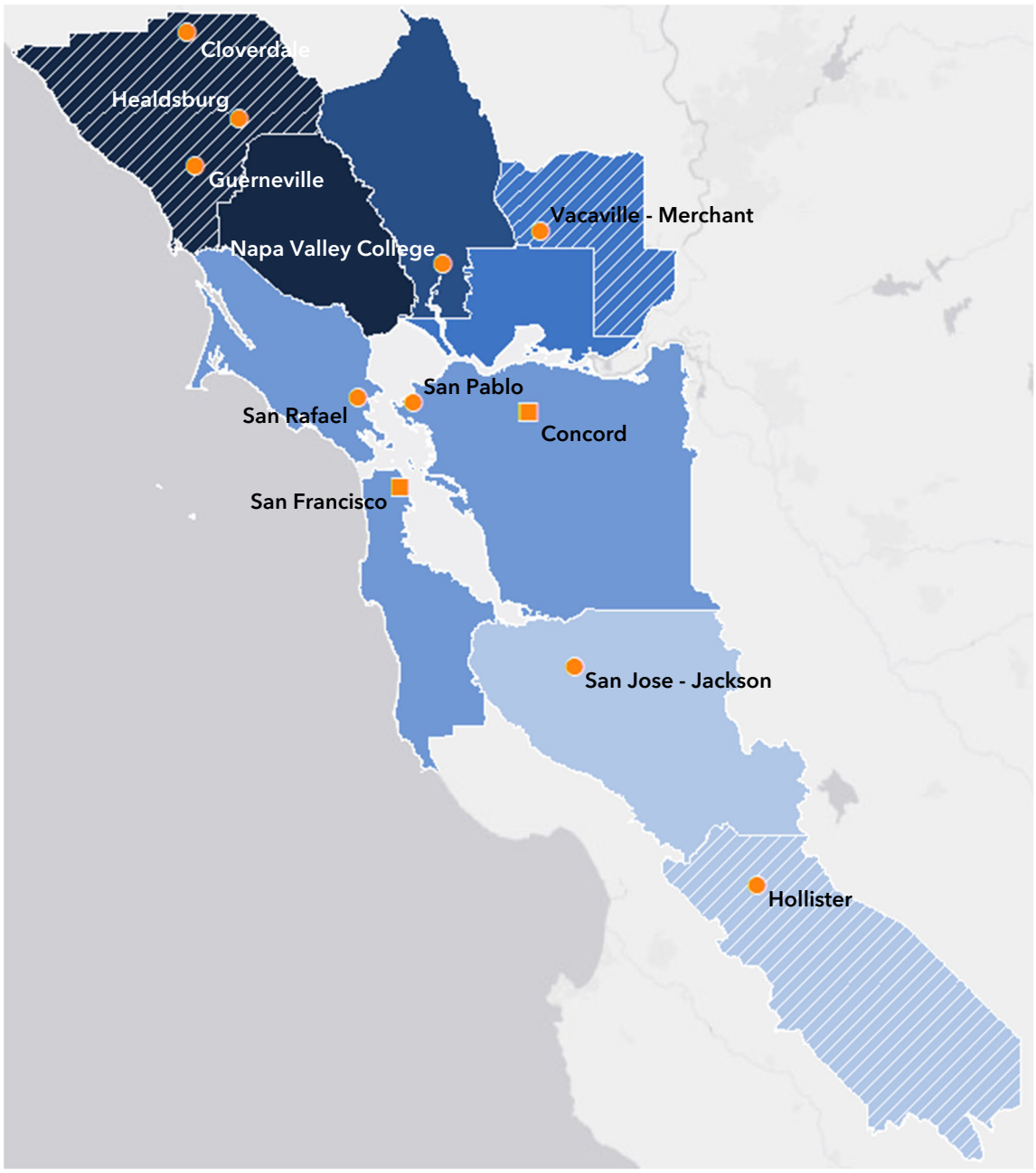
In 2013 the Air District and the Monterey Bay Air Resources District established a monitoring agreement for PM_{10} monitoring in the San Jose–Sunnyvale–Santa Clara CBSA (see Appendix B). No other monitoring agreements for PM_{10} exist as they were not previously needed. As mentioned above, the Air District will work with the other agencies with which we share monitoring responsibility to ensure minimum monitoring requirements are met and monitoring levels are protective of public health and safety.

Table 2.10 – Minimum Monitoring Requirements for PM_{10}

MSA	Counties	2020 Census Population	Highest 24-Hour Concentration from 2020-2022 ($\mu g/m^3$) [Date]	Highest 24-Hour Concentration Site (AQS ID)	Number of SLAMS		
					Required[a]	Active	Additional Needed
San Francisco-Oakland-Berkeley	San Francisco, San Mateo, Alameda, Marin, Contra Costa	4,749,008	165 [09/12/2020]	Concord (06-013-0002)	4-8	2	2-6[b]
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	2,000,468	159 [08/19/2020]	Hollister (06-069-0002)	4-8	2[c]	2-6[b]
Santa Rosa-Petaluma	Sonoma	488,863	140 [09/11/2020]	Guerneville (06-097-3002)	1-2	3[d]	0
Vallejo	Solano	453,491	326 [08/19/2020]	Vacaville (06-095-3001)	3-4	1[e]	2-3[b]
Napa	Napa	138,019	122 [09/12/2020]	Napa (06-055-0004)	0-1	0[f]	0-1[f]

Notes:
(a) The number of PM_{10} monitors required depends on the population of the MSA and the highest 24-hour PM_{10} concentration as described in Table D-4 of 40 CFR Part 58 Appendix D.
(b) The Air District will be performing an evaluation of the entire PM monitoring network in the coming year and will determine at that time how many additional monitors may be needed.
(c) One of the two monitors is not in the BAAQMD. The Hollister monitoring site is in the Monterey Bay Air Resources District.
(d) These monitors are not in the BAAQMD. The Healdsburg, Guerneville, and Cloverdale monitoring sites are in the Northern Sonoma APCD.
(e) This monitor is not in the BAAQMD. The Vacaville monitoring site is in the Yolo-Solano AQMD.
(f) The Napa CBSA has a single PM_{10} monitor at Napa Valley College, which is in the process of relocating to another site.

Figure 2.6 - PM_{10} Monitors in the San Francisco Bay Area in 2022



Notes:
(1) Crosshatched areas are outside of the BAAQMD; San Pablo is a collocated PM_{10} SLAMS
(2) The Napa Valley College site went offline on May 25, 2021. The Air District is in the process of relocating the site.

Minimum Monitoring Requirements for Collocated PM_{10}

EPA requires a network of manual PM_{10} samplers to have collocated monitoring at 15% (or at least one) of the monitoring sites within a PQAO (40 CFR part 58, appendix D, §3.3.4). All primary PM_{10} SLAMS in the Bay Area network are manual methods (method codes 063, 141, and 127). Table 2.11 summarizes the collocation of PM_{10} in the Bay Area during 2022.

Table 2.11 - Collocated PM_{10} Monitoring in the Bay Area in 2022

Method Codes	Number of Primary Manual SLAMS	Number of Required Collocated Manual SLAMS	Number of Active Collocated Manual SLAMS
063, 141, 127	4	1	1 (San Pablo)

Collocated PM_{10} monitoring was moved to San Pablo on October 17, 2016 since the site could accommodate the logistics of collocation.

Although the collocated sampler is only required to operate on a 1:12 schedule, the Air District operates the sampler 1:6 throughout the year; the collocated sampling frequency may be reevaluated in the future.

PM_{10} Special Purpose Monitors

Special purpose PM_{10} monitoring at Concord and San Francisco is conducted at a sampling frequency of 1:12. These SPM monitors meet 40 CFR part 58, appendices E and A and are considered NAAQS comparable since they could show a valid violation of the NAAQS but are not counted toward meeting the minimum monitoring requirements since they don't meet sample frequency requirements of 40 CFR part 58 §58.12. The Bethel Island PM_{10} SPM was discontinued on March 16, 2020.

2.2.4 Minimum Monitoring Requirements for SO_2

The number of required SO_2 monitors in each CBSA is determined by the product of the total amount of SO_2 emissions in the CBSA and its population as specified in 40 CFR part 58, appendix D, §4.4.2. The resulting value is defined as the Population Weighted Emissions Index (PWEI), which "shall be calculated by multiplying the population of each CBSA, using the most current census data or estimates, and the total amount of SO_2 in tons per year emitted within the CBSA area, using an aggregate of the most recent county level emissions data available in the National Emissions Inventory for each county in each CBSA" (40 CFR part 58, appendix D, §4.4.2(a)). As shown in Table 2.12, the 2020 census population was selected over the estimates because it provides a more conservative PWEI and is consistent with the methodology for other pollutants.

The minimum monitoring requirements are as follows:

- For any CBSA with a calculated PWEI value equal to or greater than 1,000,000, a minimum of three SO_2 monitors are required within that CBSA.
- For any CBSA with a calculated PWEI value equal to or greater than 100,000, but less than 1,000,000, a minimum of two SO_2 monitors are required within that CBSA.

- For any CBSA with a calculated PWEI value equal to or greater than 5,000, but less than 100,000, a minimum of one SO_2 monitor is required within that CBSA.

In addition to minimum monitoring requirements by the PWEI, EPA requires trace-level SO_2 monitoring at NCore sites (40 CFR part 58, appendix D, §4.4.5), which is fulfilled by a trace-level SO_2 monitor at the San Jose – Jackson NCore site in the San Jose-Sunnyvale-Santa Clara CBSA.

The Data Requirements Rule (DRR) for the 2010 1-hour SO_2 NAAQS also requires monitoring or modeling to characterize ambient SO_2 concentrations near SO_2 sources that emit more than 2,000 tons per year. While there is no single source in the Bay Area that exceeds this emission threshold, EPA required further air quality characterization of three sources in the San Francisco-Oakland-Berkeley CBSA:

- the Marathon (formerly Tesoro) refinery,
- the Martinez Refining Company (formerly Shell) refinery, and
- the Eco Services Operations Corporation sulfuric acid plant.

In 2016, EPA approved the SO_2 SLAMS in Martinez as meeting this requirement.

Table 2.12 summarizes the minimum monitoring requirements for SO_2 and the number of active SLAMS monitors in the Bay Area for 2022. The emissions data are from the 2020 National Emissions Inventory (NEI).

As shown in Table 2.12, the Air District monitoring network meets or surpasses the minimum monitoring requirements for SO_2 based on the PWEI, NCore, and DRR requirements. The Air District may add additional SO_2 SLAMS around the five refineries to further characterize the air quality in the communities near refineries per our Major Stationary Source Community Air Monitoring program under Regulation 3, Schedule X.

Table 2.12 - Minimum Monitoring Requirements for SO_2

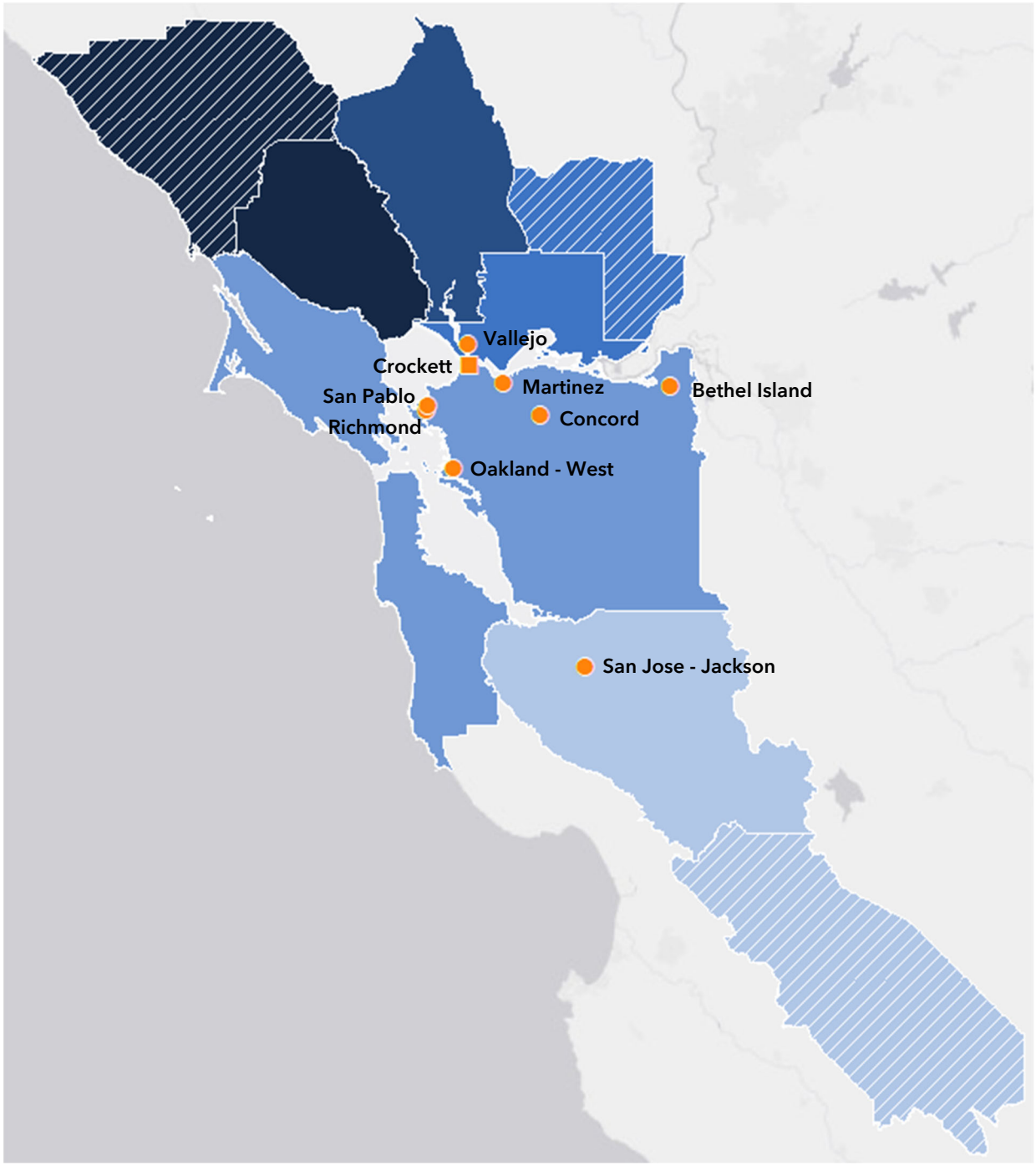
MSA	Counties	2020 Census Population	SO_2 Emissions (tons/yr)[a]	PWEI (million-person-tons/yr)	Number of SLAMS		
					Required	Active	Additional Needed
San Francisco-Oakland-Berkeley	San Francisco, San Mateo, Alameda, Marin, Contra Costa	4,749,008	3,597	17,083	1[b]	6	0
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	2,000,468	370	740	1[c]	1	0
Santa Rosa-Petaluma	Sonoma	488,863	16	8	0	0	0
Vallejo	Solano	453,491	101	46	0	1	0
Napa	Napa	138,019	9	1	0	0	0

Notes:
(a) Based on data from the 2020 National Emissions Inventory.
(b) There is a requirement for one SO_2 monitor both from the PWEI and from the final SO_2 DRR. These requirements can be met by the same monitor, so the requirement is stated as one monitor. However, the Air District intends to continue operating more SO_2 monitors than are required to characterize the effects of sources in this CBSA.
(c) A trace-level SO_2 monitor is required at the San Jose – Jackson site as part of the NCore program (40 CFR Part 58 Appendix D, § 4.4.5). There are no monitoring requirements based on the PWEI for the San Jose-Sunnyvale-Santa Clara CBSA.

SO_2 Special Purpose Monitor

The Crockett SO_2 monitor is too close to a nearby tree to meet 40 CFR part 58, appendix E siting requirements. Therefore, it is designated as a source-oriented SPM and is not counted towards minimum monitoring requirements. However, this monitor meets the requirements of 40 CFR part 58, appendix A and is considered NAAQS comparable since it could show a valid violation of the NAAQS.

Figure 2.7 - SO_2 Monitors in the San Francisco Bay Area in 2022



2.2.5 Minimum Monitoring Requirements for NO_2

The US EPA has revised the minimum monitoring requirements for NO_2 a number of times over the last decade. First on April 12, 2010; then on March 7, 2013; and again on December 30, 2016. The current requirements as specified in Section 4.3 of 40 CFR part 58, appendix D are as follows:

- **Near-road NO_2 monitoring –**
    - Within the NO_2 network, there must be one microscale near-road NO_2 monitoring site in each CBSA with a population of 1,000,000 or more persons (based on the latest available census figures) to monitor a location of expected maximum hourly concentrations sited near a major road with high annual average daily traffic (AADT) counts.
    - An additional near-road NO_2 monitoring site is required for any CBSA with a population of 2,500,000 persons or more, or in any CBSA with a population of 1,000,000 or more persons that has one or more roadway segments with 250,000 or greater AADT counts.
- **Area-wide NO_2 monitoring –** Within the NO_2 network, there must be one monitoring site representing the neighborhood or larger spatial scales in each CBSA with a population of 1,000,000 or more persons to monitor a location of expected highest NO_2 concentrations.
- **Regional Administrator required monitoring –** The US EPA Regional Administrators, in collaboration with States, required a minimum of forty NO_2 monitoring sites nationwide sited in locations to protect susceptible and vulnerable populations. In implementing this requirement, EPA selected existing area-wide SLAMS in areas with susceptible and vulnerable populations.

These requirements are summarized in Table 2.13 and discussed further below.

Near-road NO_2 Monitoring

As shown in Table 2.13, the Air District is required to operate two near-road monitors in the San Francisco-Oakland-Berkeley CBSA since it has a population greater than 2,500,000.[3] Consistent with these requirements, the Air District has two active near-road NO_2 SLAMS in this area – one in Berkeley and one at Oakland - Laney College. The locations of these monitors are shown in Figure 2.9. However, the Berkeley site went offline on October 1, 2021 due to vandalism and electrical theft. After electrical services were restored and the site was repaired, the site resumed operations effective January 2023. Table 2.13 also shows that the Air District is required to operate one near-road NO_2 monitor in the San Jose-Sunnyvale-Santa Clara CBSA. This requirement is met through operation of the San Jose – Knox site, which is also shown in Figure 2.9.

A requirement for a second near-road monitor in the San Jose-Sunnyvale-Santa Clara CBSA was temporarily triggered in previous years as the CBSA has a population above 1,000,000 and it had three roadway segments with an AADT equal to or greater than 250,000. However,

[3] The requirement for a second near-road monitor could alternatively be triggered in the San Francisco-Oakland-Berkeley CBSA based on a population greater than 1,000,000 and one or more roadway segments with AADT counts greater than 250,000.

according to the most recently available AADT data from Caltrans, the maximum AADT for all segments in the area has dropped below the 250,000-count threshold. This can be seen graphically in Figure 2.13, which shows the AADT for all segments in the San Jose-Sunnyvale-Santa Clara CBSA (based on the back post mile breakpoint) that were within 10% of the 250,000 threshold at any point since 2017. Virtually all of the segments shown in Figure 2.13 exhibit a downward trend in AADT, which predates the COVID-19 pandemic. While AADT may have been lower than expected in 2020, the tradeoffs between lower commuting and higher goods movement have not been evaluated, nor have the ongoing reductions in commuting traffic due to remote workplace policies. Due to this downward trend, a second near-road monitor is no longer required in the area. The Air District will continue to track these trends in AADT to determine if the requirement for a second near-road monitor is triggered in future years.

Monitoring Agreements for Near-Road NO_2 Monitoring

In 2015 the Air District and the Monterey Bay Air Resources District established a monitoring agreement for near-road NO_2 monitoring in the San Jose-Sunnyvale-Santa Clara CBSA (see Appendix D).

Area-wide NO_2 Monitoring

As shown in Table 2.13, the Air District is required to operate one area-wide monitor each in the San Francisco-Oakland-Berkeley and San Jose-Sunnyvale-Santa Clara CBSAs as they both have populations greater than 1,000,000. The Air District is also meeting this requirement as it is operating six area-wide monitors in the San Francisco-Oakland-Berkeley CBSA and one in the San Jose-Sunnyvale-Santa Clara CBSA. These monitoring sites are depicted in Figure 2.10.

Regional Administrator Required Monitoring

The Oakland - West monitoring site was selected by EPA as one of the 40 nationwide sites for monitoring near susceptible and vulnerable populations. The Air District is meeting this requirement through continued operation of that site.

Note that because the US EPA selected existing area-wide SLAMS in areas with susceptible and vulnerable populations in order to fulfill requirements for Regional Administrator Required Monitoring, the Oakland - West monitor serves to satisfy this requirement and requirements for area-wide NO_2 monitoring. As a result, it is counted as an active monitor in both of the respective columns in Table 2.13 below.

In total, the Air District operated eighteen NO_2 monitoring sites in 2022. The locations of all NO_2 sites are shown in Figure 2.12 and the spatial scales are summarized in Table 2.14. Thirteen of the sites are discussed above with respect to the near-road, area-wide, and Regional Administrator monitoring requirements. The remaining five sites are shown in Figure 2.11. Of these, three (Oakland - East, San Pablo, and San Rafael) are classified as middle scale based on traffic counts and the distance of the monitors to the nearest traffic lane. As a result, these sites are not counted toward meeting the area-wide monitoring requirements of 40 CFR part 58, appendix D, §4.3.3. The other two sites (Pleasanton and San Ramon) are SPMs and are described further below.

Special Purpose Monitors

San Ramon is an NO_2 SPM that was originally part of the Air District's voluntary PAMS program and meets the requirements of 40 CFR part 58, appendices E and A. Beginning in 2014, the San Ramon NO_2 SPM was operated on a seasonal schedule from April through November. However, in 2019 the Air District began operating it year-round. Therefore, NO_2 data meet the data completeness requirement and can be compared to the NAAQS but cannot be counted towards meeting the minimum monitoring requirements.

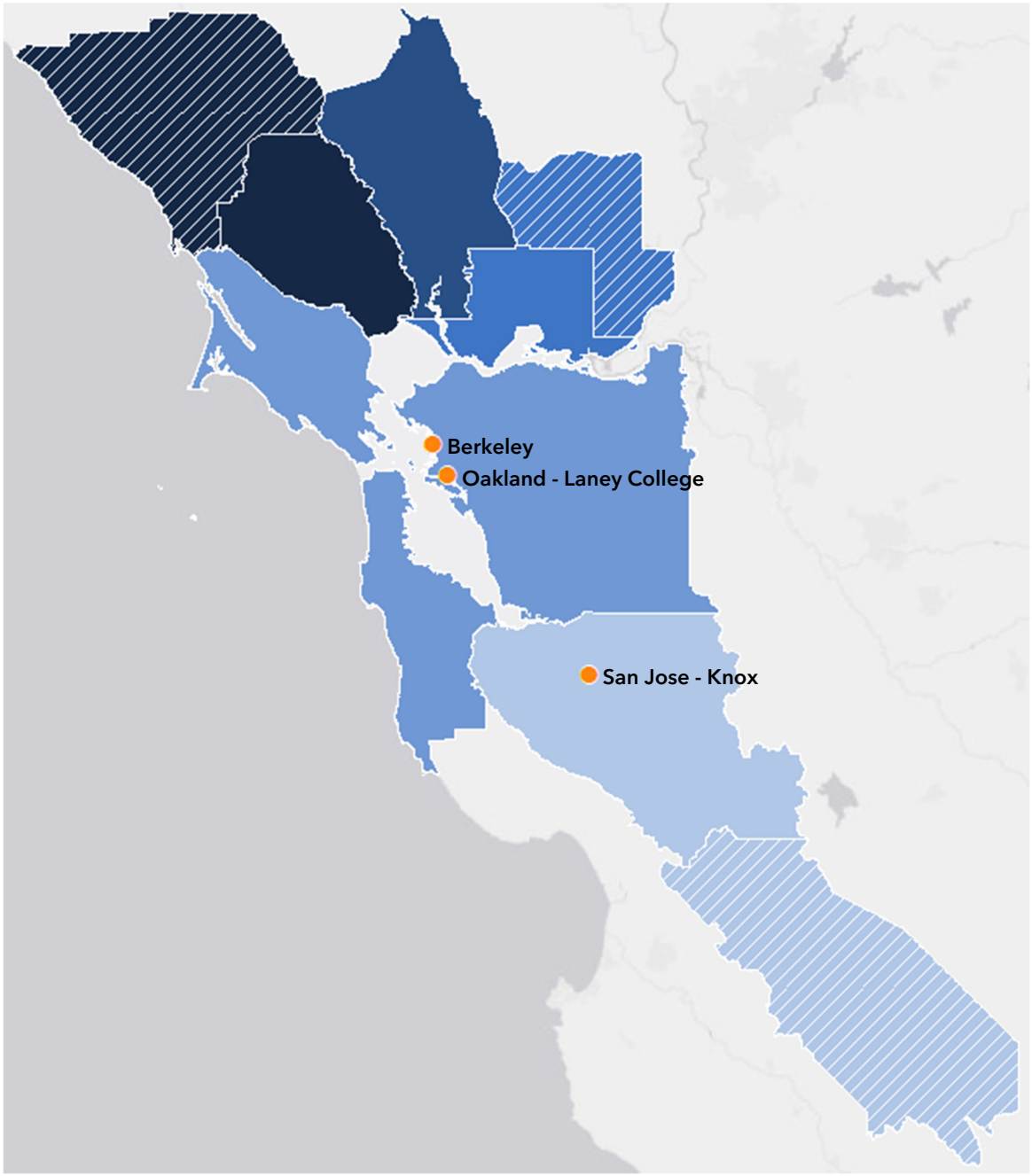
The Pleasanton NO_2 monitor is an SPM, which is considered micro-scale because of its distance to roadways, but it is also considered to be an area-wide site since it represents many similar locations throughout its MSA. Pleasanton meets the requirements of 40 CFR part 58, appendices A and E, and is comparable to the NAAQS but as an SPM it does not count towards minimum monitoring requirements.

Table 2.13 - Minimum Monitoring Requirements for NO_2

CBSA	2020 Census Population	Maximum AADT (2020)[a]	Max AADT Road Segment	Near-road Monitors			Area-wide Monitors			Monitors Near Susceptible and Vulnerable Populations		
				Required	Active	Additional Needed	Required	Active	Additional Needed	Required	Active	Additional Needed
San Francisco-Oakland-Berkeley	4,749,008	260,000	I-880 between Winton Ave & A St	2	2[b]	0	1	6[c]	0	1	1[c]	0
San Jose-Sunnyvale-Santa Clara	2,000,468	232,000	Highway 101 between 280/680 Junction & Tully Rd	1	1[d]	0	1	1	0	0	0	0
Santa Rosa - Petaluma	488,863	136,000	Highway 101 between Route 12 Junction & Baker Ave	0	0	0	0	1	0	0	0	0
Vallejo	453,491	205,000	I-80 between Route 12 Junction & Suison Valley Road	0	0	0	0	1	0	0	0	0
Napa	138,019	120,000	I-80 between Solano/Napa County Line & Napa/Solano County Line	0	0	0	0	0[e]	0	0	0	0

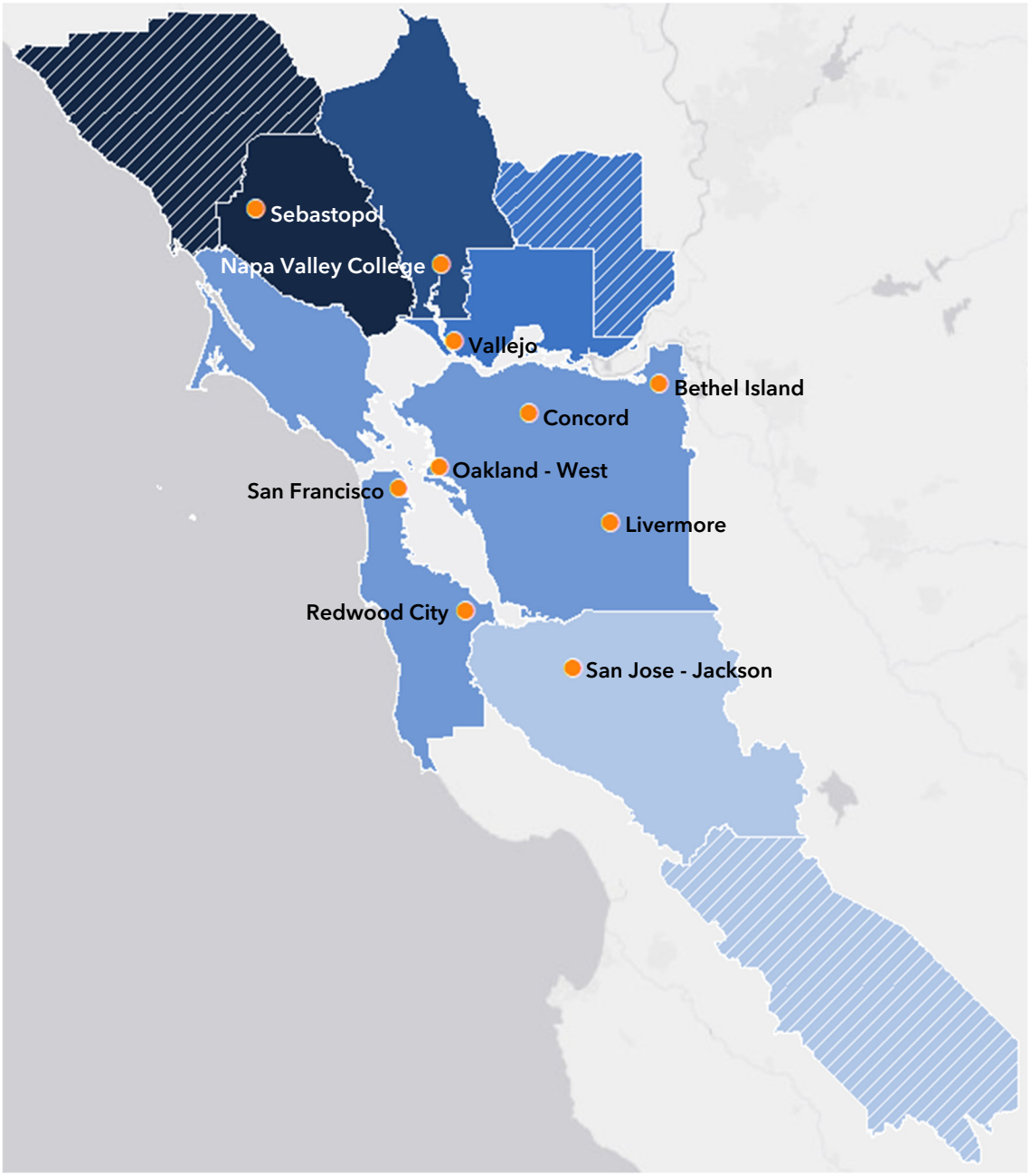
Notes:
(a) Data sources: Caltrans. (n.d.). 2020-AADT [Data set]. Retrieved from https://dot.ca.gov/programs/traffic-operations/census; Caltrans. (2021). Traffic Volumes AADT [GIS data set]. Retrieved from https://gisdata-caltrans.opendata.arcgis.com/datasets/d8833219913c44358f2a9a71bda57f76_0/about.
(b) The Pleasanton site meets siting for a near-road monitoring objective. However, the NO_2 monitor at that site is an SPM, and as such, is not counted toward fulfilling this requirement. In addition, the Berkeley site went offline on October 1, 2021 and resumed operations January 2023.
(c) In addition to serving as one of the required area-wide monitors for the San Francisco-Oakland-Berkeley CBSA, the Oakland – West monitoring site was selected by EPA as one of the 40 nationwide sites for monitoring near susceptible and vulnerable populations. As both of these requirements can be met by the same site, Oakland - West is counted as an active monitor in this table for both requirements.
(d) This monitor is shared with Monterey Bay Air Resources District. The monitoring agreement is in Appendix C.
(e) The Napa CBSA has a single NO_2 monitor at Napa Valley College, which is in the process of relocating to another site. Although no monitors are required, the Air District is proceeding with relocating to a new site to continue monitoring operations in Napa.

Figure 2.8 - Near-Road NO_2 SLAMS in the San Francisco Bay Area in 2022



Notes:
(1) Crosshatched areas are outside of the BAAQMD.
(2) The Berkeley site went offline on October 1, 2021 and resumed operations January 2023.

Figure 2.9 - Area-wide NO_2 SLAMS in the San Francisco Bay Area in 2022



CBSAs

- Santa Rosa-Petaluma
- Napa
- Vallejo
- San Francisco-Oakland-Berkeley
- San Jose-Sunnyvale-Santa Clara

Station Type

- Area-wide NO_2 SLAMS

Notes:
(1) Crosshatched areas are outside of the BAAQMD.
(2) The Napa Valley College site went offline on May 25, 2021. The Air District is in the process of relocating the site.

Figure 2.10 - NO_2 SPMs and Middle-scale SLAMS in the San Francisco Bay Area in 2022

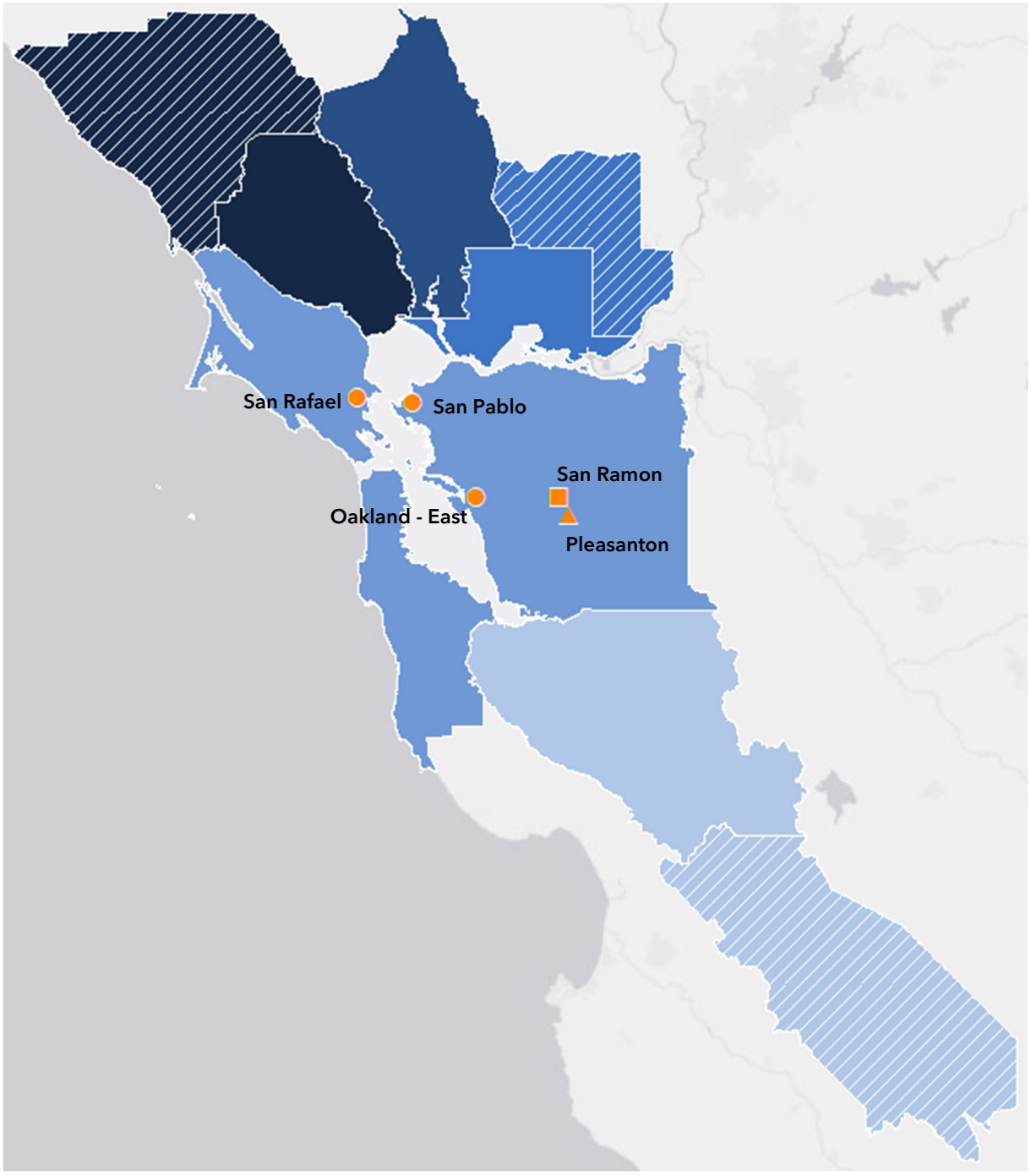
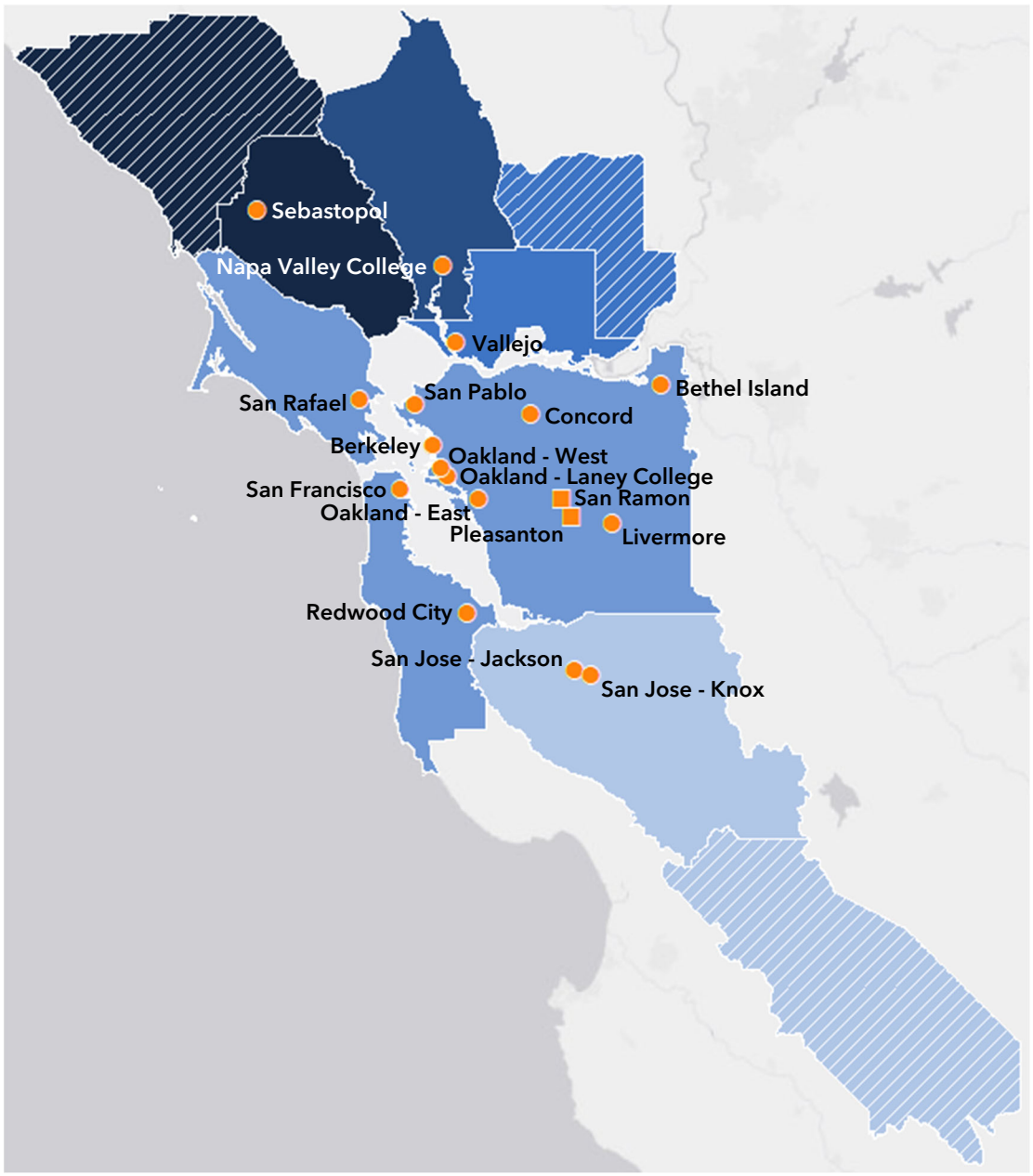


Figure 2.11 - NO_2 Monitors in the San Francisco Bay Area in 2022



Notes:
(1) Crosshatched areas are outside of the BAAQMD.
(2) The Berkeley site went offline on October 1, 2021 and resumed operations January 2023.
(3) The Napa Valley College site went offline on May 25, 2021. The Air District is in the process of relocating the site.

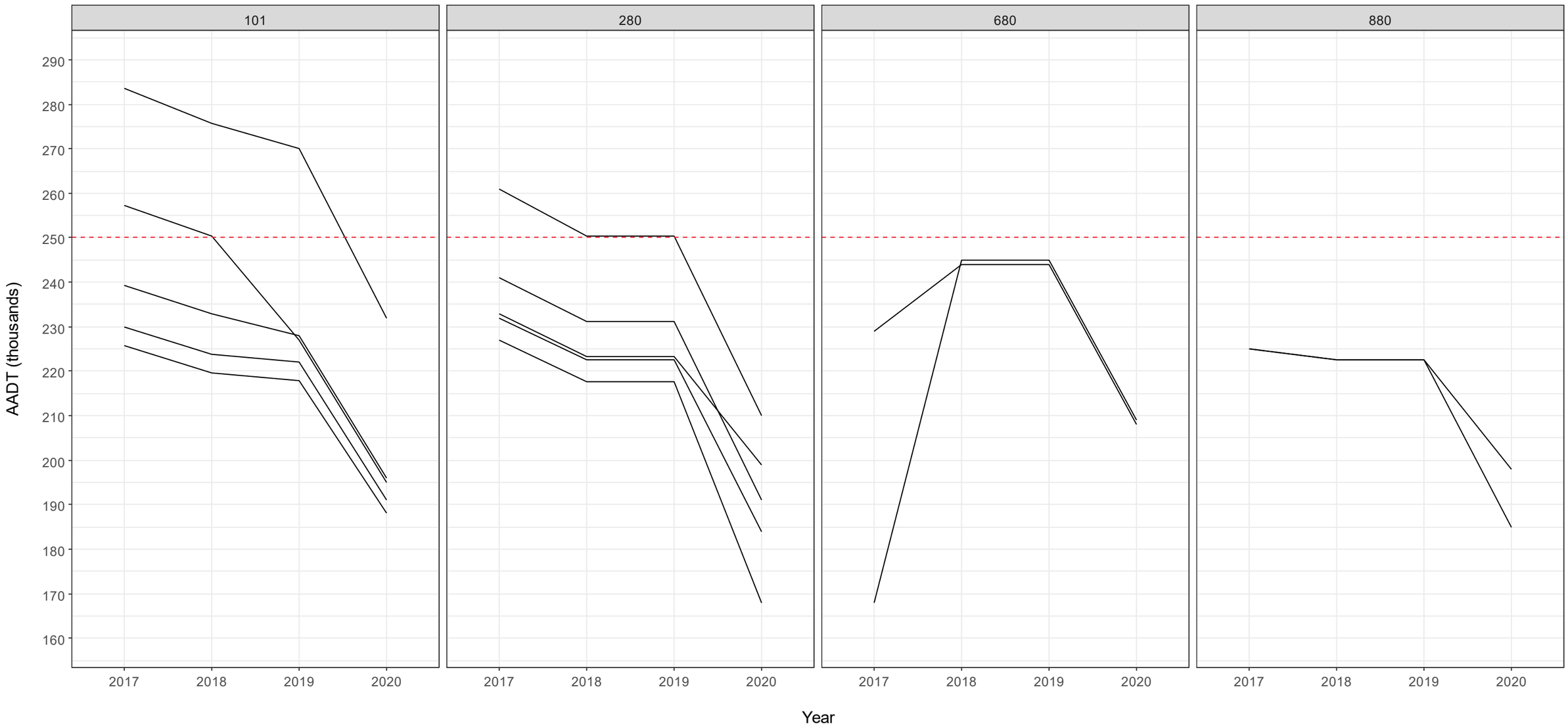
Table 2.14 - Spatial Scale of NO_2 Monitors

CBSA	Counties	2020 Census Population	Scale[(a)]	Sites
San Francisco-Oakland-Berkeley	Alameda, Contra Costa, Marin, San Francisco, San Mateo	4,749,008	Micro	Berkeley
				Oakland - Laney College
				Pleasanton[(b)]
			Middle	Oakland - East
				San Pablo
				San Rafael
			Neighborhood	Concord
				Livermore
				Oakland - West
				Redwood City
				San Francisco
				San Ramon[(b)]
			Urban	Bethel Island
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	2,000,468	Micro	San Jose - Knox
			Middle	--
			Neighborhood	San Jose - Jackson
Santa Rosa-Petaluma	Sonoma	488,863	Micro	--
			Middle	--
			Neighborhood	Sebastopol
Vallejo	Solano	453,491	Micro	--
			Middle	--
			Neighborhood	Vallejo
Napa	Napa	138,019	Micro	--
			Middle	--
			Neighborhood	Napa Valley College

Notes:
(a) Micro- and middle-scale sites are not counted towards meeting the requirement for monitoring area-wide concentrations, unless it is determined that they are representative of many such locations in the same CBSA and represent area-wide air quality.

(b) Pleasanton and San Ramon are SPMs and are not counted toward meeting the requirement for monitoring near-road and area-wide concentrations, respectively.

Figure 2.12 - Trend in Annual AADT Counts by Route for Selected Roadway Segments in the San Jose-Sunnyvale-Santa Clara CBSA[a,b]



Notes:
(a) Data sources: Caltrans. (n.d.). *Traffic Volumes: Annual Average Daily Traffic (AADT)* [Data sets, 2017 - 2020]. Retrieved from https://dot.ca.gov/programs/traffic-operations/census.

(b) The selected roadway segments are those with AADT values within 10% (in any year) of the 250,000-count threshold (red dashed line) for a second near-road NO_2 monitor in CBSAs with a population of 1,000,000 or more persons.

2.2.6 Minimum Monitoring Requirements for CO

In 2022, the Air District operated 15 CO SLAMS: at least one within each of the nine Bay Area counties plus four near-road monitors and additional monitors in large cities. Figure 2.14 shows the entire CO monitoring network for 2022.

Effective October 31, 2011, EPA revised 40 CFR part 58, appendix D for carbon monoxide (CO) monitoring. As specified in Section 4.2 of 40 CFR part 58, appendix D, the revision requires one CO monitor collocated with a near-road NO_2 monitor in CBSAs having a population of 1 million or more. If a CBSA is required to have more than one near-road NO_2 monitor, only one CO monitor is required to be collocated with a near-road NO_2 monitor within that CBSA.

Table 2-15 shows the minimum monitoring requirements for CO applied to the Bay Area CBSAs. The Air District operates CO monitors at all near-road sites, and meets the minimum monitoring requirements for CO.

Monitoring Agreements for Near-Road CO Monitoring

In 2015 the Air District and the Monterey Bay Air Resources District established a monitoring agreement for near-road CO monitoring in the San Jose-Sunnyvale-Santa Clara CBSA (see Appendix D).

Table 2.15 - Minimum Monitoring Requirements for CO

CBSA	County or Counties	Population 2020 Census	Near-road Monitors Required	Near-road Monitors Active	Near-road Monitors Needed
San Francisco-Oakland-Berkeley	San Francisco, San Mateo, Alameda, Marin, Contra Costa	4,749,008	1	2[(a)]	0
San Jose-Sunnyvale-Santa Clara	Santa Clara, San Benito	2,000,468	1	1[(b)]	0
Santa Rosa – Petaluma	Sonoma	488,863	0	0	0
Vallejo	Solano	453,491	0	0	0
Napa	Napa	138,019	0	0[(c)]	0

Notes:
(a) The Pleasanton site meets siting for a near-road monitoring objective, but as an SPM it is not counted toward fulfilling this requirement. In addition, the Berkeley site went offline on October 1, 2021 and resumed operations January 2023.
(b) This monitor is shared with the Monterey Bay Air Resources District. See Appendix D for the monitoring agreement.
(c) The Napa CBSA has a single CO monitor at Napa Valley College, which is in the process of relocating to another site. Although no monitors are required, the Air District is proceeding with relocating to a new site to continue monitoring operations in Napa.

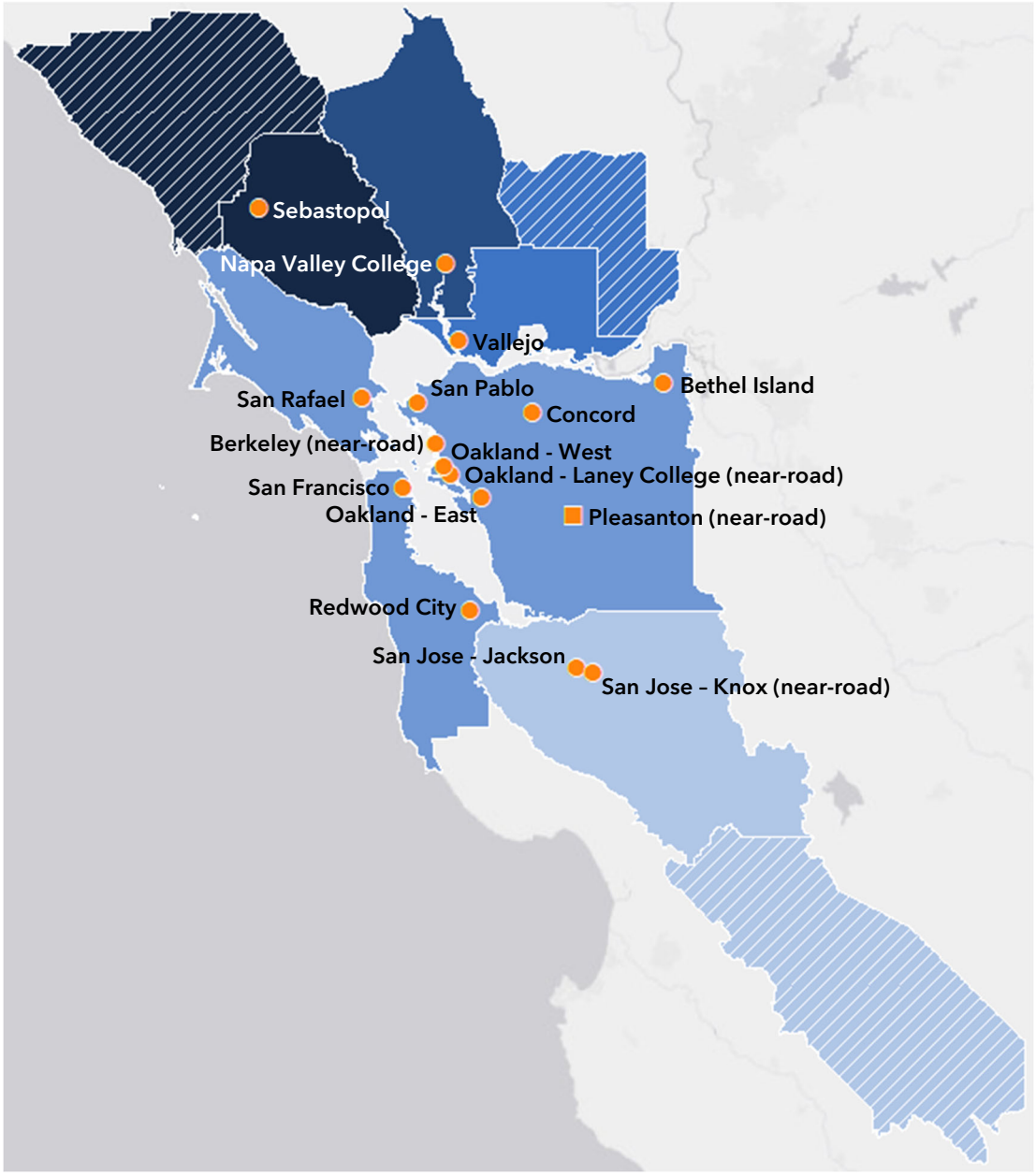
In light of the minimum monitoring requirements for CO and the operation of 15 CO SLAMS across the region, the Air District intends to work with EPA in a process outside of this annual network plan to close several of the sites or convert them to SPMs.

In addition to minimum monitoring requirements for near-road CO, EPA also requires trace-level CO monitoring at NCore sites (40 CFR part 58, appendix D, §4.4.5), which is fulfilled by a trace-level CO monitor at the San Jose-Jackson NCore site.

Special Purpose Monitors

The Pleasanton CO monitor is an SPM that meets the requirements of 40 CFR part 58, appendices A and E, and is comparable to the NAAQS, but as an SPM it does not count towards minimum monitoring requirements.

Figure 2.13 - CO Monitors in the San Francisco Bay Area in 2022



Notes:
(1) Crosshatched areas are outside of the BAAQMD.
(2) The Berkeley site went offline on October 1, 2021 and resumed operations January 2023.
(3) The Napa Valley College site went offline on May 25, 2021. The Air District is in the process of relocating the site.

2.2.7 Minimum Monitoring Requirements for Lead

40 CFR part 58, appendix D, §4.5(a) requires monitoring near lead sources which are expected to or have been shown to contribute to a maximum lead concentration in ambient air in excess of the NAAQS, taking into account the logistics and potential for population exposure. These monitors are to be sited, considering logistics and the potential for population oriented, where the ambient Pb concentration is expected to be at its maximum. The applicable sources are identified by having emissions greater than 0.5 tons per year for non-airport sources and greater than 1.0 tons per year for airports. In the Bay Area, there are no sources meeting this criterion according to the 2020 National Emissions Inventory (NEI). However, 40 CFR part 58, appendix D, §4.5(a)(iii) separately required source-oriented monitoring near an additional 15 airports to evaluate air quality near airports with emissions from piston engine aircraft using leaded fuel that may approach 0.50 tons per year. This includes three airports in the Bay Area - Palo Alto, San Carlos, and Reid-Hillview. One of the airport lead monitoring sites is also required to operate a collocated sampler under 40 CFR Part 58, Appendix A.

40 CFR part 58, appendix D, §4.5(a)(iii) further states that "[a]ny monitor that exceeds 50 percent of the Pb NAAQS on a rolling 3-month average (as determined according to 40 CFR part 50, Appendix R) shall become a required monitor under paragraph 4.5(c) of this Appendix, and shall continue to monitor for Pb unless a waiver is granted allowing it to stop operating as allowed by the provisions in paragraph 4.5(a)(ii) of this appendix."

As described below, each of the airport lead sites in the Bay Area have been either permanently or temporarily shut down due to logistical problems beyond the Air District's control that made it impossible to continue operation at their current locations. The Air District will continue to work with EPA to determine an appropriate path forward for airport lead monitoring.

Palo Alto Airport

The Palo Alto Airport lead monitoring site was shut down at the end of December 2014 because Santa Clara County sold the property to the city of Palo Alto. The sale triggered FAA review of various operational plans and permits, revealing that the lead sampler location violated FAA regulations. Since EPA and the Air District were unsuccessful in finding a suitable alternate location, the Air District intends to request EPA approval to shut down this site outside of the annual network plan process.

San Carlos Airport

The San Carlos Airport lead monitoring site was moved about 120 yards to the southeast because the property owner at the original site did not renew the lease. Data collected at the original site ended on September 13, 2013 and resumed at the new location (San Carlos Airport II) on March 25, 2015.

As of Tuesday, April 11, 2017, the TSP-Pb monitoring at the San Carlos Airport II monitoring site has been discontinued due to circumstances beyond the Air District's control. The San Carlos Airport management informed the Air District site operator that the Air District is no longer allowed access to the site, citing the expired lease. The Air District had tried unsuccessfully to renegotiate the lease since November 2016. The airport management is requiring that a shutdown provision be included in the renewed lease. However, the Air

District cannot commit to the provision, since it is EPA, not the Air District, who has the authority to approve closure of the site. The Air District notified EPA of the discontinuation on April 13, 2017. The Air District intends to request approval from EPA to shut down the San Carlos Airport II monitoring site outside the annual network plan process.

Reid-Hillview Airport

The Reid-Hillview Airport lead monitor temporarily ceased operating on June 20, 2020 due to electrical hazards and the subsequent site repair. The monitor resumed operation on May 24, 2021 but recent developments may impact lead monitoring at this site in future years. As of January 1, 2022, Santa Clara county no longer permits the sale of leaded aviation fuel at the airport. In addition, on August 17, 2021 the Santa Clara County Board of Supervisors unanimously voted to seek closure of the airport prior to 2031, which is the soonest date that it could close under the terms of existing grants from the Federal Aviation Administration. The Air District currently plans to continue operating the Reid-Hillview Airport site pending the county's efforts to close the airport. However, given those efforts, new prohibitions on the sale of leaded fuel at the airport, and logistical challenges associated with siting additional monitoring equipment, it is not feasible for the Air District to pursue placement of a collocated sampler at this location.

Table 2.16 summarizes the minimum monitoring requirements for source-oriented lead at airports and collocation requirements are provided in Table 2-17.

Table 2.16 - Requirements for Source Oriented Lead Monitoring at Airports in the San Francisco Bay Area in 2022

Source Name	Address	Lead Emissions (tons/yr)[a]	Number of SLAMS		
			Required	Active	Additional Needed
San Carlos Airport	620 Airport Way San Carlos 94070	0.12	1	0[b]	1[b]
Palo Alto Airport	1925 Embarcadero Rd. Palo Alto 94303	0.25	1	0[c]	1[c]
Reid-Hillview Airport	2500 Cunningham Ave. San Jose 95148	0.32	1	1	0

Notes:

(a) Based on data from the 2020 National Emissions Inventory.

(b) The San Carlos Airport II monitor began operation on March 25, 2015 but was shut down on April 11, 2017 due to an expired lease and the inability to establish a new one. The Air District intends to request approval to shut down this site.

(c) The Palo Alto Airport monitor was shut down in December 2014, after it was found to violate FAA regulations and would need to be relocated. The Air District has subsequently decided to request approval to shut down this site.

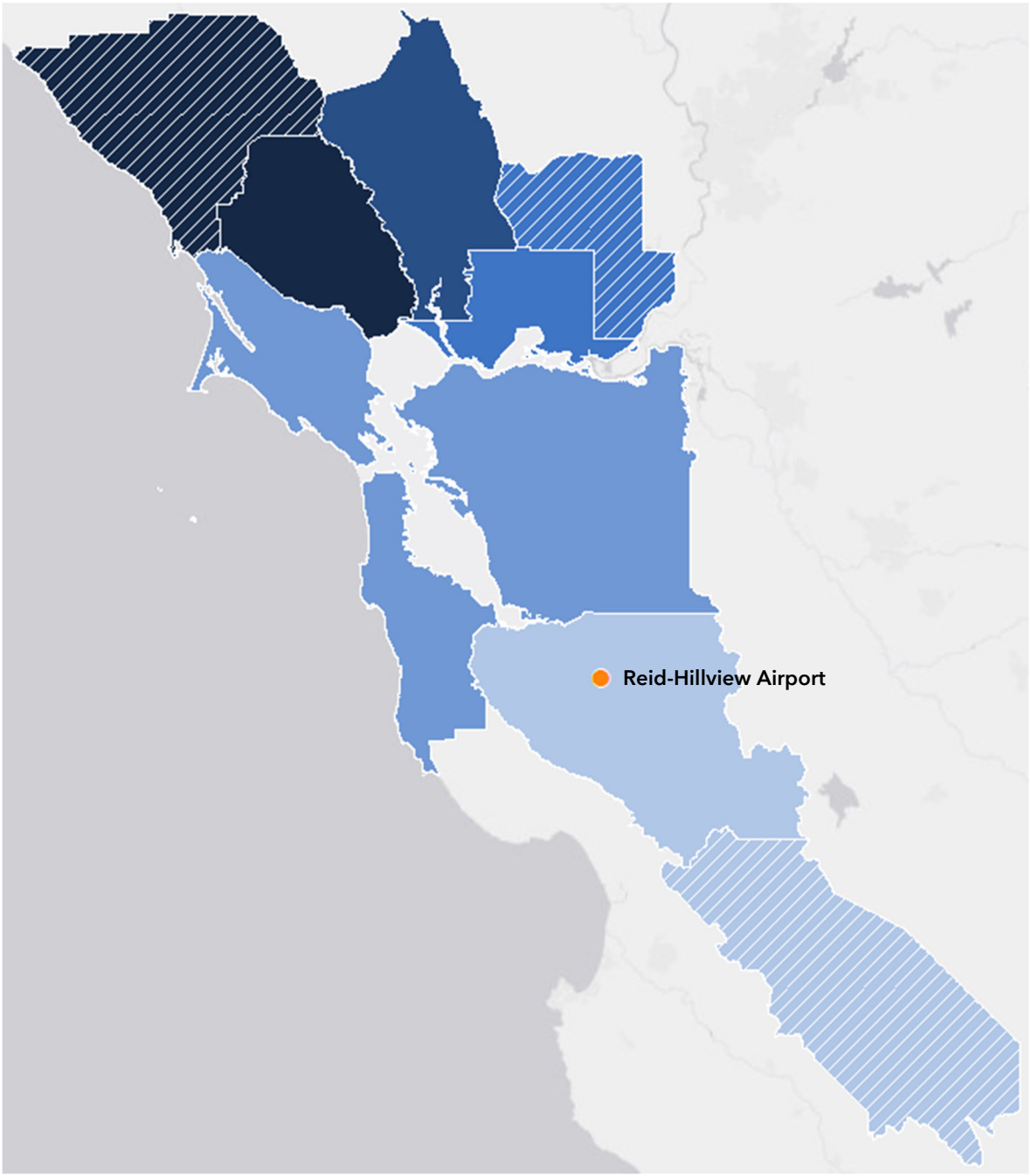
Table 2.17 - Collocated Source Oriented Lead Monitoring Requirements at Airports in the San Francisco Bay Area in 2022

Source Name	Address	Lead Emissions (tons/yr)[a]	Collocated Monitors Required	Active Monitors	Additional Monitors Needed
San Carlos Airport	620 Airport Way San Carlos 94070	0.12	1	0[b]	1[b]

Notes:
(a) Based on data from the 2020 National Emissions Inventory.

(b) The San Carlos Airport II sampler began operation on March 25, 2015 but was shut down on April 11, 2017 due to an expired lease and the inability to establish a new one. The Air District intends to request EPA approval to shut down this site as well as the Palo Alto Airport lead monitoring site. Operation of a collocated monitor at Reid-Hillview Airport is also not feasible due to logistical constraints associated with siting additional monitoring equipment at the airport, recent prohibitions on the sale of leaded fuel at the airport, and Santa Clara County's intention to seek expedited closure of the airport.

Figure 2.14 - Lead Monitors in the San Francisco Bay Area in 2022



2.3 Network Modifications

When the Air District intends to modify the air monitoring network, the proposed changes are included in the ANP. The ANP is posted on the Air District website for 30 days for public comment on the proposed changes. After the public comment period, the Air District reviews and considers the comments before making final decisions on any changes. The Air District submits the Annual Monitoring Network Plan with public comments to the EPA Region 9 Regional Administrator by July 1st each year.

Before shutting down a SLAMS (State or Local Air Monitoring Station) monitor, 40 CFR part 58.14(c) requires that the Air District obtain the Regional Administrator's written approval. The Regional Administrator will normally approve the shutdown of a SLAMS monitor when any of the following situations apply:

1. Criteria pollutant monitors which have shown attainment of the national standards during the previous five years may be removed if the probability is less than 10% that the monitor will exceed 80% of NAAQS during the next three years, and if the monitor is not required by an attainment or maintenance plan.
2. CO, PM_{10}, SO_2, or NO_2 monitors not required by an attainment or maintenance plan may be removed if the monitor has shown consistently lower concentrations than another monitor for the same pollutant in the same county during the previous five years and is expected to remain higher during the following five years given expected implementation of control measures in the area.
3. Criteria pollutant monitors that have not violated the national standards in the most recent five years may be removed if the State Implementation Plan (SIP) provides a method of representing the air quality in the applicable county in the absence of monitoring.
4. $PM_{2.5}$ monitors may be removed when EPA determines that measurements are not comparable to the relevant NAAQS because of siting issues in accordance with 40 CFR 58.30.
5. Criteria pollutant monitors that are located upwind of an urban area to characterize transport into the area may be removed if the monitor has not recorded violations of the relevant NAAQS in the previous five years and the monitor is being replaced by another monitor characterizing transport.
6. Criteria pollutant monitors not eligible for removal under any of the above criteria may be relocated to a nearby location with the same scale of representation if logistical problems beyond the agency's control make it impossible to continue operation at its current site.

EPA may also approve other requests for discontinuation on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a NAAQS and if the requirements of 40 CFR part 58, appendix D continue to be met.

The closure of an SPM does not require approval from EPA (see 40 CFR 58.20(f)), but changing the monitor type from SLAMS to SPM requires approval of the Regional Administrator.

2.3.1 Modifications Made to the Network in 2022

Berkeley Aquatic Park

The Berkeley site went offline on October 1, 2021 after it was vandalized, requiring substantial site repairs and restoration of electrical services. The site resumed operations on January 2023.

Fort Cronkhite

The Fort Cronkhite site went offline on December 31, 2022. The building on the NPS site where the instrument is located (Building T-1111) has been closed until further notice. NPS is waiting for a contract to be finalized, which entails further testing of the site for potential hazards and any remediation work that may be required. It may take up to two years until the building re-opens, if it is possible, depending on the results of the site testing. The Air District has requested to have the monitor relocated on the property.

Livermore Site Relocation

The Air District has been notified that the location of the existing Livermore – Rincon site will be demolished to make way for a mixed-use development project. In October 2019, the Air District secured a lease agreement for a new site located 0.75 miles to the east of the existing location near Lawrence Elementary School at 2451 Portola Avenue in Livermore, CA. The Air District began developing the Livermore – Portola site in early 2020. However, due to the pandemic, site development was stalled until September 2020, when construction activities were able to resume. The Livermore – Portola site began operations on January 1, 2023. The Air District plans to shut down Livermore – Rincon as soon as feasible but will attempt to collect data at both sites concurrently to the extent that keeping Livermore – Rincon operational is possible. As of January 2023, the parameters in operation at the Livermore – Portola site were O_3, NO_2, and $PM_{2.5}$. The Air District will submit a request for a network modification for relocation of the Livermore site under separate cover.

PAMS Measurements at the Livermore Site

The Air District is required to operate a core PAMS site beginning June 2021. Typically core PAMS monitoring is required to be located at the NCore site, however EPA approved a waiver for the Air District to fulfill this requirement at the Livermore site rather than the San Jose – Jackson NCore site since the Livermore site is critical for regional ozone modeling in the Bay Area. However, PAMS monitoring at the Livermore – Rincon site was delayed due to maintenance issues at the site, pandemic-related construction delays and material shortages, and relocation of monitoring operations to the new Livermore – Portola location. With the exception of meteorology, PAMS monitoring for most additional parameters will begin on June 1, 2023. Due to construction delays, we anticipate meteorology monitoring to begin on June 1, 2024.

Napa Site Relocation

On February 26, 2021, the Napa Valley Community College District notified the Air District that due to scheduled construction of the Napa Valley College's student housing project, the BAAQMD air monitoring station could no longer remain at the site beyond June 1, 2021, and the lease was being terminated. The Air District conducted a shutdown audit on May 14, 2021, and the Napa Valley College site discontinued operations on May 25, 2021.

In March 2022, the Air District secured a new site location in Napa at 1732 Jefferson Street, which is 0.5 mile from the former Napa-Jefferson station. Currently, the Air District is developing the new site. However, due to construction delays, the Air District anticipates monitoring to begin by Q2 2024. The Air District will submit a request for a network modification for relocation of the Napa site under separate cover.

2.3.2 Proposed Modifications to the Network through 2024

Palo Alto Airport

The Palo Alto Airport lead monitoring site was shut down at the end of December 2014 because Santa Clara County sold the property to the city of Palo Alto. The Air District will request EPA approval to shut down this site outside of the annual network plan process in 2023.

San Carlos Airport

As of Tuesday, April 11, 2017, the TSP-Pb monitoring at the San Carlos Airport II monitoring site has been discontinued due to circumstances beyond the Air District's control. The San Carlos Airport management informed the Air District site operator that the Air District is no longer allowed access to the site, citing the expired lease. The Air District notified EPA of the discontinuation on April 13, 2017. The Air District will request approval from EPA to shut down the San Carlos Airport II monitoring site outside of the annual network plan process in 2023.

Major Stationary Source Community Air Monitoring

In 2014, the Air District's Board of Directors adopted a resolution committing the agency to further reducing emissions from petroleum refineries. Among those commitments was preparation of Air District Regulation 12, Rule 15 (Petroleum Refining Emissions Tracking) for adoption by the Board. As originally envisioned, Regulation 12, Rule 15 would have required the refinery operators to prepare and submit an annual emissions inventory, establish fenceline monitoring systems to measure air pollution concentrations at or near the property boundaries, and establish community air monitoring systems to measure ambient air pollution concentrations in the communities surrounding the facilities. The Board adopted this legislation in 2016 but in response to concerns about the refinery operators having responsibility for siting and operating community monitors, the Air District removed those requirements from the rule before it was adopted and assumed responsibility for implementing the Major Stationary Source Community Air Monitoring Program itself. Activities for this program are funded by fees paid by facilities pursuant to Regulation 3, Schedule X. See the section of the page on *Community Air Monitoring Near Refineries* at https://www.baaqmd.gov/about-air-quality/special-air-monitoring-projects for information about the program.

Following a public workshop held on June 30, 2021 to gather input on the location of the community air monitoring station near the Valero refinery in Benicia, the Air District established a lease agreement with the City of Benicia in late 2021 for placement of a station at the Benicia Fire Museum at 900 E 2nd Street. A site analysis for the placement of the station at this location is available at the link above. In June 2022, the Air District began site

development activities. Monitoring at the Benicia Fire Museum station is expected to begin by Q4 2023.

Expanding air monitoring in communities near the Chevron, Marathon, Martinez Refining Company, and Phillips 66 refineries is ongoing.

Reclassification of CO SLAMS as SPMs

As discussed above, in light of the minimum monitoring requirements for CO and the operation of sixteen CO SLAMS across the region, and the findings of our 2020 Network Assessment, the Air District intends to work with EPA in a process outside of this annual network plan to close several of the sites or convert them to SPMs.

2.4 Data Submission Requirement

After all data review procedures are complete, the Air District submits monthly air quality and associated precision and accuracy reports to the EPA AQS database within 90 days of the end of every month. By May 1 each year, the Air District submits a data certification letter to EPA Region 9 stating that the previous calendar year of data is complete and correct. The certification letter for 2022 data was submitted to EPA Region 9 on May 1, 2023.

3. Special Monitoring Programs

3.1 NCore

In October 2006, EPA revised 40 CFR parts 53 and 58 to establish the National Core multi-pollutant monitoring stations (NCore) program. These sites replace the National Air Monitoring Station (NAMS) network that previously existed and are intended to be long-term sites useful for a variety of applications including air quality trends analyses, model evaluation, and tracking metropolitan area statistics at a national level. NCore sites must measure $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$, $PM_{10\text{-}2.5}$ particle mass, O_3, SO_2, CO, NO/NO_y, wind speed, wind direction, relative humidity, and ambient temperature.

EPA designed the national NCore network to have a mixture of urban and rural sites. In California, EPA required numerous sites in the state that would represent a large urban area. Recommendations for locating NCore urban sites are found in 40 CFR part 58, appendix D, and other EPA publications:

- Urban NCore stations are to be located at neighborhood or urban scale to provide representative exposure levels throughout the metropolitan area population.
- Urban NCore stations should be located where significant pollution levels exist.
- Population oriented monitoring is highly recommended.
- No biasing local pollutant emission sources should be within 500 meters at urban stations.
- Collocation with other network programs (such as NATTS, CSN, CASTNET, IMPROVE, NADP, PAMS) is encouraged.

- Siting of monitors at NCore sites must meet SLAMS requirements as specified in 40 CFR Part 58.

EPA and the Air District cooperatively agreed to establish an NCore site in San Jose effective January 1, 2011. San Jose was chosen as the NCore site because it is the city with largest population in the Bay Area and it is an urban area with significant air pollution problems.

San Jose is located in the southern part of the Bay Area and lies within the Santa Clara Valley. Wind patterns in the Santa Clara Valley are influenced greatly by the terrain, resulting in a prevailing flow roughly parallel to the valley's northwest-southeast orientation. During the daytime a sea breeze commonly carries pollutants from San Francisco, San Mateo, and Alameda counties southward into the Santa Clara Valley, while a drainage flow carrying pollutants in the opposite direction occurs during the nighttime hours.

The monitoring objective for the current San Jose – Jackson monitoring site is population exposure and, at a neighborhood spatial scale, it is intended to represent air quality levels over a large area having a high population density.

The San Jose – Jackson site is located on Jackson Street, 1.6 km northwest of the downtown core and has been in operation since 2002. Table 3.1 lists the NCore monitors operating at the site including the sampling methodology, sampling frequency, and spatial scale.

Because ambient concentrations of CO and SO_2 are well below the NAAQS at population-oriented sites across the U.S., EPA requires NCore sites to use higher sensitivity instruments than conventional instruments for these pollutants (note the use of Trace Level-Enhanced (TLE) type instruments for CO and SO_2).

$PM_{10-2.5}$ is measured using the difference between measurements of a pair of Partisol-Plus Model 2025 Sequential samplers, with one configured as a $PM_{2.5}$ sampler and the other configured as a PM_{10} sampler.

On March 10, 2016, EPA issued a final rule revising monitoring requirements in 40 CFR part 58. As a result, lead monitoring at NCore sites is not required after April 27, 2016.

In March 2014, the Air District requested a waiver to discontinue NO_y monitoring at San Jose because the past three years of data showed an insignificant statistical difference between NO_x and NO_y and was approved by the EPA (see Appendix F). Under this approval, Livermore is the official PAMS site in the Bay Area and the Air District will monitor NO_y at that location in addition to speciated $PM_{2.5}$.

Table 3.1 - NCore Monitors at the San Jose - Jackson Site in 2022

Pollutant	Monitoring Method	Sampling Frequency	Spatial Scale
CO (trace level)	TECO 48i TLE	Continuously	Neighborhood
O_3	TECO 49i	Continuously	Neighborhood
SO_2 (trace level)	TECO 43i TLE	Continuously	Neighborhood
$PM_{2.5}$ – filter-based FRM	Partisol-Plus 2025 w/VSCC	1:3	Neighborhood
$PM_{2.5}$ – continuous FEM	Met One FEM BAM 1020	Continuously	Neighborhood
PM2.5 Speciation (carbon)	URG-3000N Sequential Particulate Speciation System	1:3	Neighborhood
$PM_{2.5}$ Speciation (all other compounds)	Met One SASS	1:3	Neighborhood
NO_y	API 200EU/NO_y	Continuously	Neighborhood
NO (from NO_y Analyzer)	API 200EU/NO_y	Continuously	Neighborhood
$PM_{10\text{-}2.5}$	Partisol-Plus 2025 Sequential $PM_{10\text{-}2.5}$ Air Sampler Pair	1:3	Neighborhood
Meteorological	n/a[a]	Continuously	n/a

Notes:
(a) EPA approved a waiver to use meteorological data from the San Jose Airport as official data for the NCore site.

3.2 Photochemical Assessment Monitoring Stations

The Photochemical Assessment Monitoring Stations (PAMS) network is an ozone and ozone precursor monitoring network operated by state and local agencies. Following the 1990 amendments to the Clean Air Act, EPA's air monitoring regulations at 40 CFR part 58 required air pollution control agencies to establish PAMS in ozone nonattainment areas classified as serious, severe, or extreme. While the Bay Area is classified as marginal nonattainment for ozone, the Air District voluntarily conducted unofficial PAMS monitoring for many years to improve our understanding of ozone formation in the area, improve air quality forecasting, improve photochemical model performance, measure the progress of air quality improvements, and inform adjustments to ozone control strategies.

On October 1, 2015, EPA substantially revised the PAMS requirements in 40 CFR part 58 Appendix D. As part of the revision, EPA required PAMS measurements at NCore sites in CBSAs with a population of 1,000,000 or more. The required measurements include:

- Hourly averaged speciated volatile organic compounds (VOCs),
- Three 8-hour averaged carbonyl samples per day on a 1 in 3 day schedule, or hourly averaged formaldehyde,
- Hourly averaged O_3,
- Hourly averaged nitrogen oxide (NO), true nitrogen dioxide (NO_2), and total reactive nitrogen (NO_y),

- Hourly averaged ambient temperature,
- Hourly vector-averaged wind direction,
- Hourly vector-averaged wind speed,
- Hourly average atmospheric pressure,
- Hourly averaged relative humidity,
- Hourly precipitation,
- Hourly averaged mixing-height,
- Hourly averaged solar radiation, and
- Hourly averaged ultraviolet radiation.

These measurements were originally required to begin at the respective NCore sites by June 1, 2019, although EPA subsequently delayed implementation to June 1, 2021.

The San Jose – Jackson site is the Air District's only NCore site and the population of the San Jose-Sunnyvale-Santa Clara CBSA exceeds 1 million people. As a result, PAMS monitoring would have been required at that site by 40 CFR part 58. However, the Air District requested (and EPA subsequently approved) a waiver to operate the required PAMS site at the existing Livermore site (AQS ID 06-001-0007). Livermore was selected as a PAMS site because it typically has the highest annual number of days exceeding the ozone NAAQS in the Bay Area. In addition, the required meteorological measurements would not have been possible at San Jose – Jackson due to the flight path for the San Jose International Airport and the Livermore site already had meteorological sensors measuring wind, temperature, and solar radiation as well as air monitoring instruments for measuring NO/NO_2 and ozone. Under the approval, the Air District will monitor NO_y and true NO_2 year-round and will perform speciated $PM_{2.5}$ measurements at the Livermore PAMS site.

Full implementation of PAMS monitoring at the Livermore – Rincon site has been delayed due to maintenance issues at the site, pandemic-related construction delays and material shortages, and relocation of monitoring operations to the new Livermore – Portola location. With the exception of meteorology, PAMS monitoring will begin on June 1, 2023 at the Livermore - Portola site. Due to construction delays, we anticipate meteorology monitoring to begin on June 1, 2024.

In light of the new PAMS requirements, the Air District will evaluate its former voluntary PAMS monitoring program in future network evaluations.

3.3 $PM_{2.5}$ Chemical Speciation Network

After completing a review of the $PM_{2.5}$ NAAQS in 1997, EPA established the $PM_{2.5}$ Chemical Speciation Network (CSN) to support a variety of efforts such as:

- the assessment of trends in data on the chemical species of fine particulate,
- the development of effective State Implementation Plans (SIPs),
- the development of emission control strategies and tracking progress of control programs,
- aiding in the interpretation of health studies, and
- characterizing annual and seasonal spatial variation of aerosols.

The CSN includes two types of sites. Sites in the Speciation Trends Network (STN) are predominantly located in large urban areas and support the study of long-term trends in the chemical composition of $PM_{2.5}$. The other sites in the network are SLAMS supplemental sites. STN sites must be designated as part of the network and approved by the EPA Administrator.

CSN sites collect aerosol samples over a 24-hour period, which are analyzed for elemental and organic carbon, ions, and thirty-three elements. All STN sites operate on a 1-in-3 day sample collection schedule, while the majority of the SLAMS supplemental sites operate on a 1-in-6 day schedule. All of the CSN data including operational parameters (e.g., sample flow rate, sample volume, average ambient temperature) are reported to EPA's Air Quality System (AQS). For a complete list of the parameters that are reported to AQS, see EPA's website at https://www.epa.gov/amtic/chemical-speciation-network-parameters-reported-air-quality-system-aqs.

Within its network, the Air District operates one national STN site at San Jose – Jackson. $PM_{2.5}$ carbon components are measured on filters collected by a URG-3000N Sequential Particulate Speciation System while all other compounds are measured on filters collected using a Met One Spiral Ambient Speciation Sampler (SASS). As described above the sampler operates 24 hours, from midnight to midnight, and samples are collected on a 1:3 schedule. The resulting samples are analyzed by an EPA national contract laboratory.

In addition to the official STN site at San Jose – Jackson, the Air District also performs speciated $PM_{2.5}$ measurements using SASS samplers for all components including $PM_{2.5}$ carbon at its Livermore, Oakland – West, and Vallejo sites. While not part of the national CSN program, these measurements contribute to local monitoring objectives. These sites were selected because they may have a different $PM_{2.5}$ composition than at San Jose – Jackson. In particular, Oakland – West was selected because it is downwind of the Port of Oakland, which is a major source of diesel particulate matter. Livermore and Vallejo were selected to aid in determining the sources of $PM_{2.5}$ on days when those sites exceed the $PM_{2.5}$ standards, since exceedances can often occur on days when the air flow is from the Central Valley. The Air District operates all three sites on a 1:6 schedule, and the Air District's own laboratory performs the gravimetric and chemical analyses.

3.4 Supplemental Measurements of Gaseous Toxic Air Contaminants

The Clean Air Act Amendments of 1990 required EPA to set emission standards for major sources of Hazardous Air Pollutants (HAPs). The Act also required EPA to assess the risks to human health from HAPs. As of 2012 EPA had listed 187 compounds as HAPs and are known to cause or are suspected of causing cancer, birth defects, reproduction problems, and other serious illnesses. Exposure to certain levels of some HAPs can cause difficulty breathing, nausea, or other illnesses and can even cause death. HAPs can be either gases or components of particulate matter and the list includes general categories of pollutants like volatile organic compounds (VOCs), carbonyls (aldehydes and ketones), metals, and polycyclic aromatic hydrocarbons (PAHs). CARB also maintains a list of officially designated toxic compounds in air called Toxic Air Contaminants (TACs) that includes all HAPs as well as other pollutants including Hydrogen Sulfide and Diesel Particulate Matter.

In the Bay Area, TACs are emitted daily by industrial and chemical manufacturing processes, commercial activities, refinery operations, gasoline marketing, and motor vehicles. Ambient concentrations vary by proximity to sources and current meteorological conditions. The objectives of the toxics monitoring program are to:

- Establish trends and evaluate the effectiveness of TAC reduction strategies,
- Characterize ambient concentrations in local areas,
- Provide data to support and evaluate dispersion and deposition models,
- Provide data to the scientific community to support studies to reduce uncertainty about the relationships between ambient levels of TACs, actual human exposure to air toxics, and health effects from such exposures.

This section describes Air District supplemental, long-term measurements of VOCs that are also TACs, which we refer to as toxics monitoring sites. Figure 3.1 is a map of the 21 toxics monitoring sites operating in 2022. They are located at existing Air District monitoring sites to measure a wide range of contaminant levels throughout the Bay Area. The sites are generally located in major population centers or downwind of major industrial sources such as refineries. There is also an ambient background site at Fort Cronkhite; however, the Fort Cronkhite site went offline on December 31, 2022, as discussed in Section 2.3.1. In addition, the Berkeley site went offline on October 1, 2021 due to electrical theft. Once electrical services were restored in January 2022, staff began working on site repairs and instrument upgrades. The site resumed operations and completed its startup audit on July 27, 2022, and all site parameters began reporting online effective January 2023.

Air samples are collected at Air District toxics monitoring sites for a 24-hour period on a 1:12 schedule. A 1:12 schedule allows samples to be taken on a different day of the week over the course of months. This is the same schedule EPA and CARB use for their ambient air toxics monitoring programs, thereby allowing Bay Area toxics concentrations to be compared to concentrations measured elsewhere across the country.

Gaseous VOC toxics are measured by collecting air in 6-liter SUMMA stainless steel canisters using Xontech 901 samplers. The sampler continuously collects an ambient air sample for 24-hours to ensure the capture of transient and intermittent toxic releases. The air in the canister is analyzed for 22 compounds in the Air District Laboratory using gas chromatography mass spectrometry.

In addition to the Air District's ambient air toxics monitoring program, CARB also conducts ambient air toxics monitoring for VOCs on a 1:12 schedule at two sites: San Francisco and San Jose – Jackson, as a part of their Air Toxics program. CARB supplies the canisters and performs the laboratory analyses, while Air District staff operates the CARB sampler and ships the canisters to CARB. Because the Air District also does toxics monitoring at San Francisco and San Jose, the two sets of data allow calculation of the measurement precision at these sites, and by extrapolation, an estimate of the precision of the toxics measurement program.

For quality assurance purposes, once a quarter at San Francisco, an additional canister sample is taken on a scheduled sample day using a collocated sampler. Both samples are analyzed by the Air District laboratory, and the results allow an additional measure of precision. Additionally, at least

one canister per month is chosen at random for a second re-analysis. The results are submitted to AQS for both the San Francisco collocated sample and the randomly selected replicate analysis.

The Air District laboratory analyzes the 22 gaseous toxic compounds shown in Table 3.2. The compounds selected for analysis were those that had high toxicity or were known to have high emissions in the Bay Area, or a combination of the two. Another consideration was whether the current methodology could accurately detect a compound at reasonable expense, based on previous CARB studies. Some compounds, such as carbon tetrachloride, are measured because their concentrations do not change much over time. This is useful because carbon tetrachloride or other similar, stable compounds can be used for quality control purposes. If the measurement of such a control is unusually high or low, there may be a problem in the sampling, transport, storage, or analysis procedures.

Table 3.2 – Toxic Air Contaminants Measured by the Air District in 2022

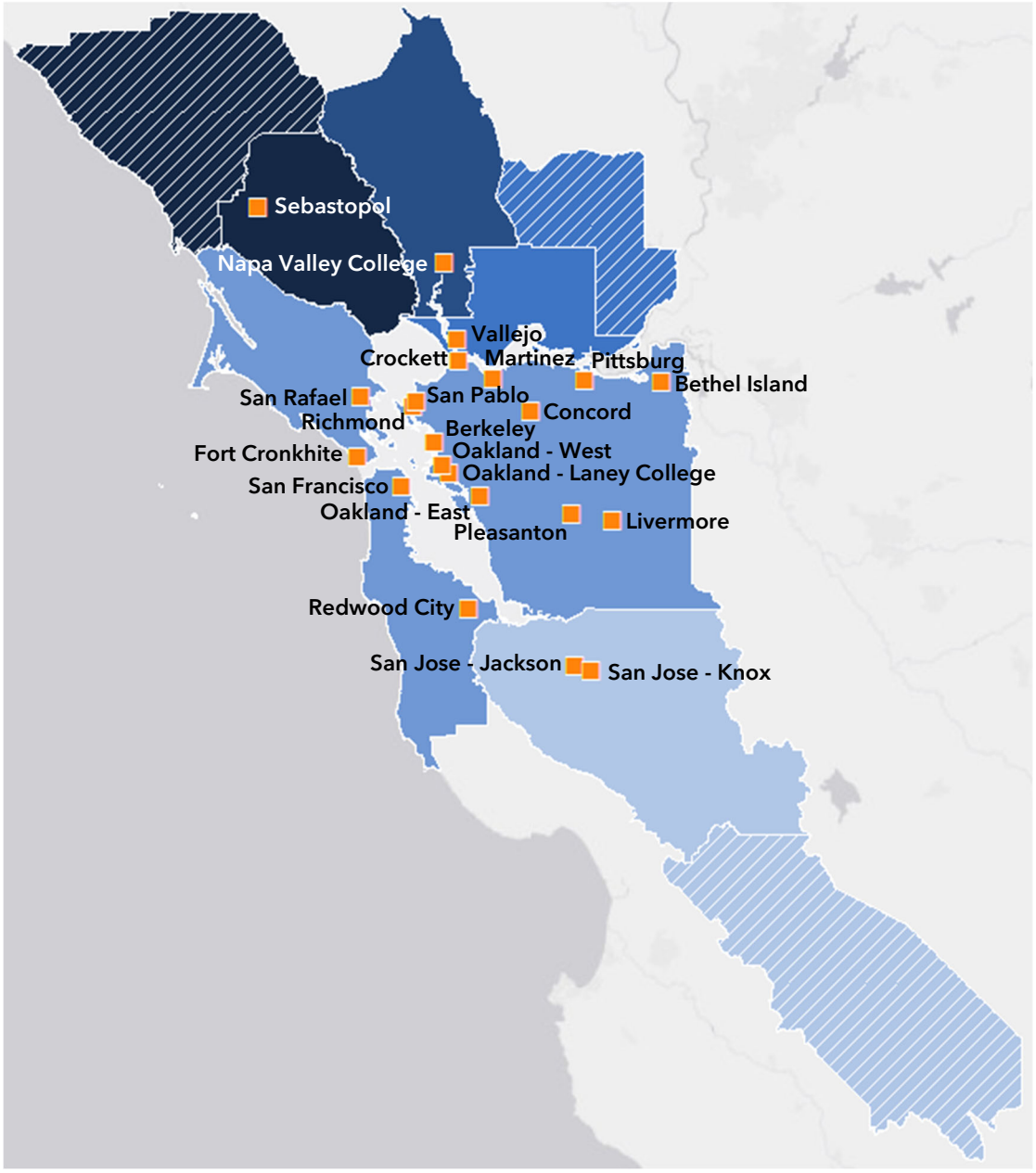
Compound[(a)]	Parameter Code
1,3-Butadiene	43218
Acetone	43551
Acetonitrile	43702
Acrylonitrile	43704
Benzene	45201
Carbon tetrachloride	43804
Chloroform	43803
Dichloromethane	43802
Ethyl alcohol	43302
Ethylbenzene	45203
Ethylene dibromide	43843

Compound[(a)]	Parameter Code
Ethylene dichloride	43815
Freon 113	43207
m/p Xylene	45109
Methyl chloroform	43814
Methyl ethyl ketone	43552
o-Xylene	45204
Tetrachloroethylene	43817
Toluene	45202
Trichloroethylene	43824
Trichlorofluoromethane	43811
Vinyl chloride	43860

Notes:
(a) Method Code 142 is associated with all measurements listed.

In addition to the compounds listed above, formaldehyde and acetaldehyde are measured at San Jose - Jackson on a 1:12 schedule (was on a 1:6 schedule until August 6, 2018). These compounds are highly reactive and cannot be accurately measured using a canister sample. Instead, the compounds are collected by passing air through a chemically treated cartridge using a Xontech 924 sampler. Samples are analyzed at the Air District laboratory using High Performance Liquid Chromatography (HPLC). Metals are also measured at the San Jose – Jackson station.

Figure 3.1 – Toxic Air Contaminant Monitoring Stations in the San Francisco Bay Area in 2022



Notes:
(1) Crosshatched areas are outside of the BAAQMD.
(2) The Berkeley site went offline on October 1, 2021 and resumed operations January 2023.
(3) The Napa Valley College site went offline on May 25, 2021. The Air District is in the process of relocating the site.

3.5 Meteorology

The Air District collects measurements of ambient meteorological parameters to support many of its programs. Air District programs that use meteorological data include air quality forecasting, photochemical modeling, source modeling, and data analysis. To obtain high quality data for use in regulatory applications, the Air District considers EPA recommendations for siting, instrumentation, data accuracy, and quality assurance.

The placement of meteorological stations depends on the use of the data. Sites chosen for air quality forecasting are in areas that show the general wind and temperature patterns within the Air District. Photochemical modeling sites are chosen to show boundary conditions, general conditions, and upper air meteorological conditions. Source modeling sites are chosen to be representative of the source and receptor domain to be modeled. Sites used for data analysis are usually located near high pollution areas to determine the relationship between source areas and downwind high concentration areas, as well as the general atmospheric conditions occurring during pollution episodes.

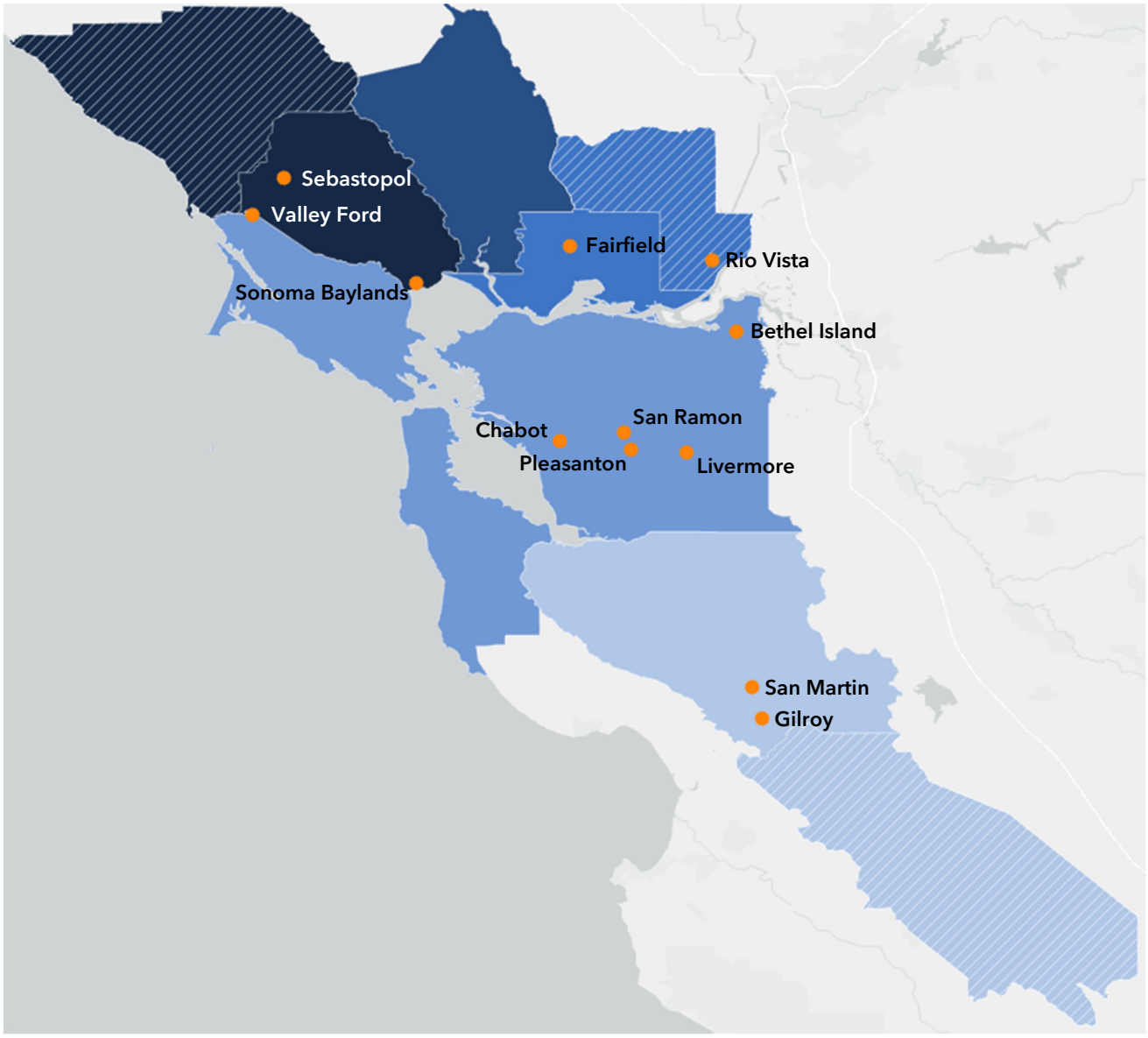
Because most Air District air monitoring stations are in urban or suburban neighborhoods near multi-story buildings and trees, it is not possible to place meteorological systems that meet EPA meteorological siting recommendations at all Air District air monitoring stations. EPA recommends that wind speed and direction sensors be located at a height of 10 meters or at plume height if the use is source-oriented modeling. In addition, the distance between the sensors and any obstruction should be at least 10 times the height of the obstruction.

In 2022, the meteorological network consisted of 12 sites (Bethel Island, Chabot, Fairfield, Gilroy, Livermore, Pleasanton, Rio Vista, San Martin, San Ramon, Sebastopol, Sonoma Baylands, and Valley Ford), as shown in Figure 3.2. Eight are adjacent to Air District air monitoring sites (Bethel Island, Fairfield, Gilroy, Livermore, Pleasanton, San Martin, San Ramon, and Sebastopol). The other air monitoring sites have obstructions to air flow nearby, necessitating placement of the meteorological sites further away. Additionally, to meet forecasting or photochemical modeling needs, some meteorological sites have been placed on ridges or mountain-tops, such as at Chabot and Livermore. Sensors used in the Air District's meteorological network include wind speed and direction, temperature, relative humidity, precipitation, and pressure. In the coming year, the Air District will be conducting a robust assessment of the existing meteorological network to ensure that the network is properly aligned with the Air District's current and upcoming programs, priorities, and resources.

Hourly-averaged data are made available to Air District staff and the public on the Air District's web page and are archived in the Meteorology and Measurement Division's meteorological database. Each site is visited monthly by Air District staff for a visual inspection of the instrumentation and a technician visits the site to correct problems, if needed. Data are also reviewed on an ongoing basis by Air District meteorologists producing daily air quality forecasts for the Bay Area.

Data recorded at airports, oil refineries, sewage treatment plants, universities, and private companies are included in the Meteorology and Measurement Division's meteorological database if they meet EPA recommended siting and maintenance specifications.

Figure 3.2 – Air District Meteorological Monitoring Stations in 2022



Notes: (a) Crosshatched areas are outside of the BAAQMD.

4. Detailed Site and Monitor Information

Monitors that are operated to determine compliance with the NAAQS must be operated in accordance with EPA requirements in 40 CFR part 58. The following monitoring terms and definitions are used in the detailed site information tables below, which describe each of the monitors that were operating at air monitoring sites in 2022. The descriptions include siting information about the physical properties of the site and monitors, detailed descriptions of the individual monitors at the site and their monitoring objective, site type, and spatial scale of representativeness.

AQS ID – The 9-digit code that identifies each site in the EPA's AQS database.

GPS coordinates (decimal degrees) – The latitude and longitude of the site from the World Geodetic System (WGS-84) used as the reference coordinate system for Global Positioning System (GPS).

Distance to roadways from the gaseous probe (meters) – 40 CFR part 58, appendix E, §6.0: specifies the distance monitors must be from roadways to be considered neighborhood- or urban-scale. Recommended distances are found in Table E-1 for NO_x and O_3, Table E-2 for CO, and Figure E-1 for PM.

Traffic count – The annual average daily traffic (AADT) count.

Groundcover – 40 CFR part 58 appendix E, 3.0: states that particulate samplers should not be located in an unpaved area unless there is vegetative ground cover year-round, so that the impact of wind-blown dusts will be kept to a minimum.

Statistical Area – The Core Based Statistical Area (CBSA) or Metropolitan Statistical Area (MSA) the site is located within.

Pollutant, POC – The pollutant being measured and its Parameter Occurrence Code (POC). There may be multiple instruments measuring a pollutant at a site. Each instrument of the same pollutant is assigned a unique POC to differentiate it from the others in EPA's AQS database.

Primary/QA Collocated/Other – This row applies to parameters that have collocation requirements as well as parameters that are combined at a site level for design value calculations. This currently includes $PM_{2.5}$, PM_{10}, $PM_{10-2.5}$, Pb, and NO_2. Non-PM, Pb, and NO_2 monitors are listed as "N/A".

Parameter code – The 5-digit code assigned to each pollutant in the EPA's AQS database.

Basic monitoring objective(s) – The purpose for monitoring at that location. Choices include public information, NAAQS comparison, and research.

Site type(s) – Choices include extreme downwind, highest concentration, max ozone concentration, max precursor emissions impact, population exposure, source oriented, general/ background, regional transport, welfare-related impacts, quality assurance, and other.

Monitor type(s) – Choices include SLAMS, Special Purpose (SPM), Industrial, Non-EPA Federal, Tribal, EPA, and Other.

Network affiliation(s) – Some monitors are used for specific types of monitoring networks. Examples that apply to the Bay Area include: CSN STN, CSN Supplemental, NATTS, Ncore, Near Road, and Unofficial PAMS. The full list may be found at: https://aqs.epa.gov/aqsweb/documents/codetables/networks.html

Instrument manufacturer and model – Details about the instrumentation used to measure the pollutant.

Method code – Based on the instrument manufacturer and model, a method code is assigned and is reported to the EPA AQS database system. 40 CFR part 58, appendix C, §2.0: requires that the monitor used must be from EPA's current List of Designated Reference and Equivalent Methods.

FRM/FEM/ARM/other – FRMs (Federal Reference Methods) and FEMs (Federal Equivalent Methods) are approved by EPA for criteria pollutant monitoring to determine compliance with the NAAQS. An ARM (Approved Regional Method) may be approved by EPA as an alternative to an FRM or FEM, however, no ARMs are used in the Bay Area.

Collecting Agency – The agency that operates the instrument at a site, which currently is the Air District for all BAAQMD sites in this report.

Analytical Lab – The agency that weighs particulate filters or does chemical analysis of particulate filters or air samples.

Reporting Agency – The agency that uploads air monitoring data to the EPA's AQS database.

Spatial scale – The relative distance over which the air pollution measurements are representative. Choices are micro, middle, neighborhood, urban, regional, national, or global scales.

Monitor start date – The date valid data collection began for that pollutant at an air monitoring station.

Current sampling frequency – This reflects the sampling frequency used for district monitors in 2022. This frequency describes if the monitor is operated continuously or intermittently. Intermittent sampling for particulate matter ($PM_{2.5}$, PM_{10}, PM_{10}-Pb, and TSP-Pb) and toxics is performed by collecting a sample (filter, air canister or other) either every day, every 3rd day, every 6th day or every 12th day (1:1, 1:3, 1:6, 1:12). Samples are subsequently analyzed for the pollutant of interest, for example, $PM_{2.5}$ mass or lead concentrations. The Air District at times elects to operate a monitor more frequently than is required. For more information about how the

current sampling frequency compares to the required sampling frequency, see the sections on minimum monitoring requirements for that pollutant.

Required sampling frequency – This reflects the required sampling frequency for manual $PM_{2.5}$ monitors prescribed by 40 CFR part 58.12(d) and 58.20(b).

Sampling season – The date range (season) monitors are operated.

Probe height (meters) – 40 CFR part 58, appendix E, §2.0: requires that probe height be 2-15 meters above ground level (AGL).

Distance from supporting structure (meters) – 40 CFR part 58, appendix E, §2.0: requires the probe be at least 1 meter vertically or horizontally away from any supporting structure unless it is a roof, in which case 1 meter separation is required.

Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters) – 40 CFR part 58, appendix E, §4.0: requires that the distance from the obstacle to the probe or inlet must be at least twice the height that the obstacle protrudes above the probe or inlet. PM samplers must have a 2-meter separation from walls, parapets and structures.

Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters) – 40 CFR part 58, appendix E, §4.0: requires that the distance from the obstacle to the probe or inlet must be at least twice the height that the obstacle protrudes above the probe or inlet.

Distance from trees (meters) – 40 CFR part 58, appendix E, §5.0: requires that probe be at least 10 meters from the nearest tree drip line.

Distance to furnace or incinerator flue (meters) – 40 CFR part 58, appendix E, §3.0: requires that scavenging be minimized by keeping the probe away from furnace or incineration flues or other minor sources of SO_2 or NO_x. The separation distance should take into account the heights of the flues, type of waste or fuel burned, and the sulfur content of the fuel.

Distance between monitors fulfilling a QA collocation requirement (meters) – Collocated $PM_{2.5}$, PM_{10}, and Pb monitors must be 2-4 meters apart for flow rates >200L/m and 1-4 meters apart for flow rates <200 L/m (40 CFR part 58, appendix A, §3.2.3.4(c), 3.3.4.1(c), and 3.4.4.2(b)).

For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s) – 40 CFR part 58, appendix A, §3.2.3.4(c), 3.3.4.1(c), and 3.4.4.2(b) require that PM monitors with flow rates <200L/m have at least a 1-meter separation.

For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2 m of the HiVol? If yes, please list distance (meters) and instrument(s) – 40 CFR part 58, Appendix A, §3.2.3.4(c), 3.3.4.1(c), and 3.4.4.2(b) require that PM monitors with flow rates > 200L/m have at least a 2-meter separation.

Unrestricted airflow (degrees) – 40 CFR part 58, appendix E, §4.0: requires the probe or inlet to have unrestricted airflow in an arc of at least 180 degrees. This arc must include the predominant wind direction for the season of greatest pollutant concentration potential.

Probe material for reactive gases – 40 CFR part 58, appendix E, §9.0: requires that either Pyrex glass or FEP Teflon be used for intake sampling lines.

Residence time for reactive gases (seconds) – 40 CFR part 58, appendix E, §9.0: requires a residence time of 20 seconds or less for reactive gas monitors.

Will there be changes within the next 18 months? – Describes if any changes are expected to occur to that monitor at that station within the next 18 months.

Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS? – 40 CFR part 58.30: $PM_{2.5}$ data from monitors that are located at relatively unique micro-scale, localized hot spot, or unique middle-scale impact sites, and do not represent area-wide concentrations, are not eligible for comparison to the Annual $PM_{2.5}$ NAAQS (they are eligible for comparison to the 24-hour $PM_{2.5}$ NAAQS). Currently, all of the $PM_{2.5}$ sites in the Bay Area are considered to be representative of area-wide concentrations.

Frequency of flow rate verification for manual PM samplers, including Pb samplers – 40 CFR part 58, appendix A, §3.2.1, 3.3.1, 3.3.2, 3.4.1, 3.4.2: require that a one-point flow rate verification check must be performed at least once every month for low-volume PM and Pb-PM_{10} samplers and quarterly for hi-volume PM samplers.

Frequency of flow rate verification for automated PM analyzers – 40 CFR part 58, appendix A, §3.2.1, 3.3.1, 3.3.2: require that a one-point flow rate verification check must be performed at least once every month for low-volume PM samplers and quarterly for hi-volume PM samplers.

Frequency of one-point QC check for gaseous instruments – 40 CFR part 58, appendix A, §3.1.1: requires that QC checks be performed at least once every two weeks.

Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters – 40 CFR part 58, appendix A, §3.1.2: requires that SO_2, CO, O_3, and NO_2 monitors have annual performance evaluations.

Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors – 40 CFR part 58, appendix A, §3.2.2, 3.3.3, 3.4.3: require that PM samplers have flow rate checks every six months.

4.1 Berkeley Aquatic Park

Table 4.1 - Berkeley Aquatic Park Site Information

AQS ID	06-001-0013
GPS coordinates	37.864767, -122.302741
Location	Trailer within 50m east of Interstate 80
Address	1 Bolivar Drive, Berkeley, CA 94710
County	Alameda
Distance to road from gaseous probe (meters)	I-80: 8 University Ave: 250
Traffic count (AADT, year)	I-80: 280,400 (2017) University Ave: 18,800 (2017) Traffic count data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Gravel, grass, small plants.
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	O_3, NO_2, CO, $PM_{2.5,}$ BC, Toxics, UFP
Spatial Scale	Microscale (100 m)
Notes	The site is located 8 m downwind from I-80 and is designated as a near-road monitoring site, which is a category of sites designed to be representative of population exposure in the near-road environment. Due to the prevalence of areas that have large roadways adjacent to population centers, Berkeley Aquatic Park is considered to be representative of area-wide air quality. The Berkeley site went offline on October 1, 2021 due to electrical theft. Once electrical services were restored in January 2022, staff began working on site repairs and instrument upgrades. The site resumed operations and completed its startup audit on July 27, 2022, and all site parameters began reporting online effective January 2023.

Table 4.2 - Berkeley Aquatic Park Monitor Details

Pollutant, POC	O_3, 1	NO_2, 1	CO, 1	$PM_{2.5}$, 3	BC, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	Primary	N/A	Primary	N/A	N/A
Parameter code	44201	42602	42101	88101	84313	See toxics section
Basic monitoring objective(s)	Public Information	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research	Research
Site type(s)	Population Exposure	Population Exposure & Source Oriented	Population Exposure & Source Oriented	Population Exposure & Source Oriented	Population Exposure & Source Oriented	Population Exposure
Monitor type(s)	SPM	SLAMS	SLAMS	SLAMS	SPM	SPM
Network affiliation(s)	N/A	Near Road	Near Road	Near Road	N/A	N/A
Instrument manufacturer and model	TECO 49c	TECO 42i	TECO 48i	Met One FEM BAM 1020	Teledyne API model 633	Xontech 90110A
Method code	047	074	054	170	894	210
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM	N/A	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District	Air District
Spatial scale	Micro	Micro	Micro	Micro	Micro	Micro
Monitor start date	07/01/2016	07/01/2016	07/01/2016	07/01/2016	07/01/2016	07/23/2016
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	N/A	N/A	N/A
Sampling season	01/01 - 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01-12/31	01/01 – 12/31
Probe height (meters)	6	6	6	5	4	5
Distance from supporting structure (meters)	>1	>1	>1	>2	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	4, 0	4, 0	4, 0	5, 0.75	6, 1	4, 0
Distance from trees (meters)	25	25	25	25	25	25
Distance to furnace or incinerator flue (meters)	None	None	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	N/A	N/A	Glass
Residence time for reactive gases (seconds)	17	19	19	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	Y	N/A	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	Bi-weekly	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	See Table 4.69	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	See Table 4.69	N/A	N/A

4.2 Bethel Island

Table 4.3 - Bethel Island Site Information

AQS ID	06-013-1002
GPS coordinates	38.006311, -121.641918
Location	Trailer in parking lot
Address	5551 Bethel Island Rd, Bethel Island, CA 94511
County	Contra Costa
Distance to road from gaseous probe (meters)	Bethel Island Rd: 63 Sandmound Blvd: 110
Traffic count (AADT, year)	Bethel Island Rd: 13,050 (2010) Sandmound Blvd: 4,270 (2010) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Gravel surrounded by grassy fields
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	O_3, CO, NO_2, SO_2, Toxics
Spatial Scale	Urban scale (4 – 50 km)
Notes	The site is located east of sea-level gap (the Carquinez Strait) and within the transport corridor between the San Francisco Bay Area and the Central Valley, both of which are major sources of ozone, ozone precursors, and particulates. The PM_{10} SPM at Bethel Island was closed on March 16, 2020.

Table 4.4 - Bethel Island Monitor Details

Pollutant, POC	O_3, 1	CO, 1	NO_2, 1	SO_2, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A	Primary	N/A	N/A
Parameter code	44201	42101	42601 / 42602	42401	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Regional Transport & Max Ozone Concentration	General / Background	Regional Transport	Regional Transport	General / Background
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	TECO 43i	Xontech 901
Method code	047	054	074	060	210
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District
Spatial scale	Urban	Urban	Urban	Urban	Neighborhood
Monitor start date	03/01/1981	03/01/1981	03/01/1981	03/01/1981	03/27/1998
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	N/A	N/A
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	7	7	7	7	6
Distance from supporting structure (meters)	>1	>1	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from trees (meters)	13	13	13	13	13
Distance to furnace or incinerator flue (meters)	None	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	Teflon	Glass
Residence time for reactive gases (seconds)	15	16	17	16	N/A
Will there be changes within the next 18 months?	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	Every other day	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	See Table 4.69	See Table 4.69	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	N/A	N/A

4.3 Concord

Table 4.5 - Concord Site Information

AQS ID	06-013-0002
GPS coordinates	37.936013, -122.026154
Location	One-story commercial building
Address	2956-A Treat Blvd, Concord, CA 94518
County	Contra Costa
Distance to road from gaseous probe (meters)	Treat Blvd: 181 Oak Grove Rd: 244
Traffic count (AADT, year)	Treat Blvd: 39,860 (2017) Oak Grove Rd: 24,910 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located within the city of Concord, which is the largest city in Contra Costa County. The monitoring site located near a shopping center and surrounded by residential neighborhoods within the Diablo Valley where locally emitting pollutants can be trapped under the right meteorological conditions: surface-based inversions during winter months and hot stagnant conditions in the summer months. The site is also six miles south of the Tesoro and the Shell Refineries, both potential major sources of SO_2. PM_{10} monitoring was changed from 1:6 to 1:12 sampling effective January 1, 2013 to accommodate limited resources. Because the Bay Area is well above the minimum monitoring requirements for PM_{10}, EPA approved this decrease in sampling frequency as well as converting these PM_{10} monitors from SLAMS to SPMs. Therefore, this monitor is no longer counted in PM_{10} minimum monitoring requirements.

Table 4.6 - Concord Monitor Details

Pollutant, POC	O_3, 1	CO, 1	NO_2, 1	SO_2, 1	PM_{10}, 1	$PM_{2.5}$, 3	$PM_{2.5}$, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A	Primary	N/A	Primary	Primary	QA Collocated	N/A
Parameter code	44201	42101	42601 / 42602	42401	81102	88101	88101	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure & Source Oriented	Population Exposure	Population Exposure & Highest Concentration	Population Exposure	Population Exposure & Source Oriented
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS	SPM	SLAMS	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	TECO 43i	Andersen HiVol 1200	Met One BAM 1020	Partisol-Plus 2025i w/VSCC	Xontech 901
Method code	047	054	074	060	063	170	145	210
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM	FRM	FEM	FRM	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	Air District	N/A	Air District	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Urban	Urban	Urban	Urban
Monitor start date	04/09/1980	02/21/1980	2/21/1980	02/21/1980	11/04/1986	1/1/2013	2/8/2019	08/08/1989
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	1:12	Continuous	1:3	1:12
Required sampling frequency	N/A	N/A	N/A	N/A	N/A	N/A	1:3	N/A
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01-12/31	01/01-12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	9	9	9	9	6	6	6	9
Distance from supporting structure (meters)	>1	>1	>1	>1	>2	>2	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None	None	None
Distance from trees (meters)	24	24	24	24	15	22	15	24
Distance to furnace or incinerator flue (meters)	None	None	None	None	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A	N/A	No	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	No	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	Teflon	N/A	N/A	N/A	Glass
Residence time for reactive gases (seconds)	9	10	10	10	N/A	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	N/A	N/A	Y	Y	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	N/A	Quarterly	N/A	Bi-weekly	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	N/A	Bi-weekly	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	Every other day	N/A	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	See Table 4.69	See Table 4.69	N/A	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	N/A	See Table 4.69	See Table 4.69	See Table 4.69	N/A

4.4 Crockett

Table 4.7 - Crockett Site Information

AQS ID	06-013-1001
GPS coordinates	38.054920, -122.233229
Location	Pump house
Address	End of Kendall Avenue, Crockett, CA 94525
County	Contra Costa
Distance to road from gaseous probe (meters)	San Pablo Ave: 68
Traffic count (AADT, year)	San Pablo Ave: 2,797 (2013) Traffic count data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Vegetative
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	SO_2, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site located is 0.9 miles downwind of the Phillips 66 Refinery where prevailing west winds can transport SO_2 emissions from the refinery over the town of Crockett, a predominately residential community. Crockett is classified as an SPM site. EPA siting criteria require the probe be located at least 10 meters from the drip line of all trees within the 180-degree arc of unrestricted airflow for source-oriented monitoring as determined by the predominant wind direction and the direction of the refinery. The closest tree drip line within the 180-degree arc is less than 10 meters from the probe, which does not meet siting criteria. The Air District has been unable to negotiate with the local homeowner's association for the removal of this tree. Even though the siting criteria for a SLAMS site cannot be met, the site is still suitable for source-oriented monitoring as an SPM site.

Table 4.8 - Crockett Monitor Details

Pollutant, POC	SO_2, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A
Parameter code	42401	See toxics section
Basic monitoring objective(s)	NAAQS comparison	Research
Site type(s)	Population Exposure & Source Oriented	Population Exposure & Source Oriented
Monitor type(s)	SPM	SPM
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	TECO 43i	Xontech 901
Method code	060	210
FRM/FEM/ARM/other	FEM	N/A
Collecting Agency	Air District	Air District
Analytical Lab	N/A	Air District
Reporting Agency	Air District	Air District
Spatial scale	Neighborhood	Neighborhood
Monitor start date	01/01/1979	06/05/1999
Current sampling frequency	Continuous	1:12
Required sampling frequency	N/A	N/A
Sampling season	01/01 – 12/31	01/01 - 12/31
Probe height (meters)	6	6
Distance from supporting structure (meters)	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from trees (meters)	1	1
Distance to furnace or incinerator flue (meters)	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	270	270
Probe material for reactive gases	Teflon	Glass
Residence time for reactive gases (seconds)	11	N/A
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A

4.5 Fairfield

Table 4.9 - Fairfield Site Information

AQS ID	06-095-0005
GPS coordinates	38.227066, -122.075624
Location	Small trailer in open field
Address	1010 Chadbourne Rd, Fairfield, CA 94534
County	Solano
Distance to road from gaseous probe (meters)	Cordelia Rd: 194 Chadbourne Rd: 705
Traffic count (AADT, year)	Cordelia Rd: 4,819 (2013) Chadbourne Rd: 3,674 (2013) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Vegetative
Statistic Area	Vallejo-Fairfield CBSA
Pollutants Measured	O_3
Spatial Scale	Urban scale (4 - 50 km)
Notes	The site is located in the Carquinez Strait region, the only sea level gap between the Bay Area and the Central Valley and located in a rural area between Fairfield and Suisun City, which has a combined population of approximately 140,000. Prevailing westerly winds during the summer season have the potential to transport ozone and ozone precursors coming from the Bay Area. Occasionally easterly winds transport ozone from the Central Valley to Fairfield.

Table 4.10 - Fairfield Monitor Details

Pollutant, POC	O_3, 1
Primary/QA Collocated/Other	N/A
Parameter code	44201
Basic monitoring objective(s)	NAAQS comparison
Site type(s)	Population Exposure & Regional Transport
Monitor type(s)	SLAMS
Network affiliation(s)	N/A
Instrument manufacturer and model	TECO 49i
Method code	047
FRM/FEM/ARM/other	FEM
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Urban
Monitor start date	05/29/2002
Current sampling frequency	Continuous
Required sampling frequency	N/A
Sampling season	01/01 - 12/31
Probe height (meters)	4
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	>50
Distance to furnace or incinerator flue (meters)	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	4
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check for gaseous instruments	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

4.6 Forest Knolls

Table 4.11 - Forest Knolls Site Information

AQS ID	06-041-2001
GPS coordinates	38.015136, -122.689531
Location	Roof
Address	6 Castro Street, Forest Knolls, CA 94933
County	Marin
Distance to road from probe (meters)	Sir Francis Drake Blvd at Mountain View: 902 Sir Francis Drake Blvd at Montezuma Road: 18 Castro St: 13 Montezuma Road: 55
Traffic count (AADT, year)	Sir Francis Drake Blvd at Montezuma Road: 4,300 (est. 2019) Castro St: <150 (est. 2019) Montezuma Road: <500 (est. 2019) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistic Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	BC
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located in the San Geronimo Valley about 10 miles west to northwest of San Rafael and was deployed in response to community interest about wood smoke in the area and to better characterize wood smoke impacts in sheltered valley locations where winter wood burning often is the primary source of home heating. Lagunitas-Forest Knolls is a Census Designated Place (CDP) with a population of approximately 1,800. Wintertime meteorological conditions are frequently conducive to trapping wood smoke in the valley, particularly during cold evenings with stagnant wind conditions.

Table 4.12 - Forest Knolls Monitor Details

Pollutant, POC	BC, 1
Primary/QA Collocated/Other	N/A
Parameter code	84313
Basic monitoring objective(s)	Research
Site type(s)	Population Exposure
Monitor type(s)	SPM
Network affiliation(s)	N/A
Instrument manufacturer and model	Teledyne API AE-633
Method code	894
FRM/FEM/ARM/other	N/A
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	01/16/2013
Current sampling frequency	Continuous
Required sampling frequency	N/A
Sampling season	01/01-12/31
Probe height (meters)	5
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	4
Distance to furnace or incinerator flue (meters)	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check for gaseous instruments	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

4.7 Fort Cronkhite

Table 4.13 - Fort Cronkhite Site Information

AQS ID	06-041-0004
GPS coordinates	37.832725, -122.527658
Location	At ground level behind a ranger residence
Address	Building 1111, Fort Cronkhite, Sausalito, CA 94965
County	Marin
Distance to road from probe (meters)	Bunker Road: 16
Traffic count (AADT, year)	Bunker Road: 1039 (2018) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Vegetative
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	Toxics
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located within the Golden Gate National Recreation Area (GGNRA) near the visitor center at Fort Cronkhite on the north side of the Golden Gate gap which opens into the San Francisco Bay and is not near any significant sources of air toxics. Due to prevailing westerly winds the site can be representative of background levels of air toxics that are transported into the Bay Area from the Pacific Ocean. However, under the right conditions the site may measure contributions from anthropogenic sources such as ships from the nearby shipping channel or local vehicle traffic within the GGNRA. On December 31, 2022, the site went offline because the building where the instrument is located (Building T-1111) has been closed until further notice. NPS is waiting for a contract to be finalized, which entails further testing of the site for potential hazards and any remediation work that may be required. It may take up to two years until the building re-opens, if it is possible, depending on the results of the site testing. The Air District has requested to have the monitor relocated on the property.

Table 4.14 - Fort Cronkhite Monitor Details

Pollutant, POC	Toxics, 3
Primary/QA Collocated/Other	N/A
Parameter code	See toxics section
Basic monitoring objective(s)	Research
Site type(s)	General / Background
Monitor type(s)	SPM
Network affiliation(s)	N/A
Instrument manufacturer and model	Xontech 901
Method code	210
FRM/FEM/ARM/other	N/A
Collecting Agency	Air District
Analytical Lab	Air District
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	03/26/1987
Current sampling frequency	1:12
Required sampling frequency	N/A
Sampling season	01/01 - 12/31
Probe height (meters)	7
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	20
Distance to furnace or incinerator flue (meters)	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Glass
Residence time for reactive gases (seconds)	N/A
Will there be changes within the next 18 months?	Y – relocation
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check for gaseous instruments	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

4.8 Gilroy

Table 4.15 - Gilroy Site Information

AQS ID	06-085-0002
GPS coordinates	36.999571, -121.574684
Location	Next to water pump station
Address	9th and Princevalle St, Gilroy, CA 95020
County	Santa Clara
Distance to road from gaseous probe (meters)	Princevalle St: 18 9th St: 16 8th St.: 142 10th St: 185
Traffic count (AADT, year)	Princevalle St: 3,627 (2018) 9th St: 1,386 (2019) 8th St.: 2,574 (2019) 10th St: 12,700 (2008) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA
Pollutants Measured	O_3, $PM_{2.5}$
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located in a residential area of Gilroy on the west side of the Santa Clara Valley where prevailing northwesterly afternoon winds carry ozone and ozone precursors from the San Jose area. When temperatures are hot, and solar insolation is strong, these precursors react and can form high concentrations of ozone in the Gilroy area. Light winds combined with surface-based inversions during the winter months can also cause elevated particulate levels.

Table 4.16 - Gilroy Monitor Details

Pollutant, POC	O_3, 1	$PM_{2.5}$, 3
Primary/QA Collocated/Other	N/A	Primary
Parameter code	44201	88101
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison
Site type(s)	Population Exposure & Regional Transport	Population Exposure & Regional Transport
Monitor type(s)	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	TECO 49i	Met One FEM BAM 1020
Method code	047	170
FRM/FEM/ARM/other	FEM	FEM
Collecting Agency	Air District	Air District
Analytical Lab	N/A	N/A
Reporting Agency	Air District	Air District
Spatial scale	Neighborhood	Neighborhood
Monitor start date	07/01/1980	10/31/2009
Current sampling frequency	Continuous	Continuous
Required sampling frequency	N/A	N/A
Sampling season	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	5	4
Distance from supporting structure (meters)	>1	No supporting structure / ground level
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	N/A
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A	1.8[(a)]
Distance from trees (meters)	26	26
Distance to furnace or incinerator flue (meters)	14	14
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	No
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	Teflon	N/A
Residence time for reactive gases (seconds)	14	N/A
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	Y
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	Bi-weekly
Frequency of one-point QC check for gaseous instruments	Every other day	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	See Table 4.69

Notes:
(a) The $PM_{2.5}$ monitor is outdoors, ground based. The probe is 4 m above ground. A nearby shelter is 1.8 m away and the eve of the shelter is 0.12 m above the probe height. This is not an obstruction because the probe is more than twice the distance that the eve extends above the probe. The shelter has a slanted roof that peaks at a height of 3.99 m. The probe is 3.9 m away from the roof peak, which is 0.99 m above the probe. This is not an obstruction because the probe is more than twice the distance that the roof peak extends above the probe.

4.9 Hayward

Table 4.17 - Hayward Site Information

AQS ID	06-001-2001
GPS coordinates	37.654456, -122.031547
Location	Pump house near water tank
Address	3466 La Mesa Drive, Hayward, CA 94542
County	Alameda
Distance to road from gaseous probe (meters)	Hayward Blvd: 26 La Mesa Dr: 38 Farmhill Drive: 205
Traffic count (AADT, year)	Hayward Blvd: 4,293 (2010) La Mesa Drive: 500 (2007) Farmhill Drive: 2,500 (<2006) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	O_3
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located on the east side of Hayward at an elevation of 951 feet, which it is the highest elevation ozone site in Air District jurisdiction and can give indication of ozone levels aloft and sub-regional transport from the Oakland area on the west site of the East Bay Hills. The Hayward site is also important because it provides air quality forecasting information on residual ozone concentrations from the previous day. Although there is a large water tank onsite in the upwind direction, the instrument probe is high enough so that the tank is not an obstruction to airflow at the site. As part of the 2019 annual network plan the Air District requested that EPA approve the conversion of the ozone monitor from SLAMS to SPMs and the request was approved. Therefore, this monitor is no longer counted in ozone minimum monitoring requirements (See Appendix G).

Table 4.18 - Hayward Monitor Details

Pollutant, POC	**O_3, 1**
Primary/QA Collocated/Other	N/A
Parameter code	44201
Basic monitoring objective(s)	NAAQS comparison & Research
Site type(s)	Regional Transport
Monitor type(s)	SPM
Network affiliation(s)	N/A
Instrument manufacturer and model	TECO 49i
Method code	047
FRM/FEM/ARM/other	FEM
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	05/31/1977
Current sampling frequency	Continuous
Required sampling frequency	N/A
Sampling season	01/01-12/31
Probe height (meters)	7
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	11
Distance to furnace or incinerator flue (meters)	N/A
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	16
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check for gaseous instruments	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors)	N/A

4.10 Livermore

Table 4.19 - Livermore Site Information

AQS ID	06-001-0007
GPS coordinates	37.687526, -121.784217
Location	One-story commercial building
Address	793 Rincon Avenue, Livermore, CA 94551
County	Alameda
Distance to road from gaseous probe (meters)	Rincon Ave: 68 Pine St: 95 Interstate 580: 1,320 Portola Ave: 722
Traffic count (AADT, year)	Rincon Ave: 3,091 (2013) Pine St: 4,263 (2013) Portola Ave: 21,747 (2016) Interstate 580: 202,000 (2016) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	O_3, NO_2, $PM_{2.5}$, Speciated $PM_{2.5}$, BC, Toxics, UFP
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located west of the city center in a residential neighborhood within the Livermore Valley, an east-west oriented inland valley between the San Francisco Bay and the Central Valley. Livermore can have the highest ozone levels in the Bay Area when ozone precursors are transported from the Hayward and Niles Canyon Gaps to the west, and from the San Ramon Valley to the north. Light winds combined with surface-based inversions during the winter months can also cause elevated particulate matter levels. The Air District was notified that the location of the existing Livermore - Rincon site will be demolished. The proposed new location is 0.75 miles to the east of the existing location at 2451 Portola Avenue in Livermore. The Livermore – Rincon site began operations on January 1, 2023. Livermore is part of an unofficial PAMS program and measures hourly speciated hydrocarbons. The EPA approved a request to conduct PAMS monitoring at Livermore (see Appendix H). Under this approval, NO_y will be discontinued at San Jose - Jackson and will begin at the new Livermore – Portola site. With the exception of meteorology, PAMS monitoring will begin on June 1, 2023. Due to construction delays, we anticipate meteorology monitoring to begin on June 1, 2024.

Table 4.20 - Livermore Monitor Details

Pollutant, POC	O_3, 1	NO_2, 1	$PM_{2.5}$, 3	Speciated $PM_{2.5}$, 5	BC, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	Primary	Primary	Other	N/A	N/A
Parameter code	44201	42601 / 42602	88101	88502 (pm mass) – many others see Section 5.5.1	84313	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison & Research	NAAQS comparison	Research	Research	Research
Site type(s)	Max Ozone Concentration, Population Exposure	Population Exposure	Population Exposure, Highest Concentration	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SLAMS	SLAMS	SLAMS	SPM	SPM	SPM
Network affiliation(s)	Unofficial PAMS	Unofficial PAMS	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 42i	Met One FEM BAM 1020	Met One SASS	Teledyne API AE-633	Xontech 901
Method code	047	074	170	810	894	210
FRM/FEM/ARM/other	FEM	FRM	FEM	N/A	N/A	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District	Air District
Analytical Lab	Air District	Air District	Air District	Air District	N/A	Air District
Reporting Agency	Air District	Air District	Air District	N/A	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	01/01/2000	12/31/1999	03/01/2011	06/11/2008	01/01/2012	01/11/2000
Current sampling frequency	Continuous	Continuous	Continuous	1:6	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	N/A	N/A	N/A
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01-12/31	01/01 - 12/31
Probe height (meters)	6	6	5	5	6	6
Distance from supporting structure (meters)	>1	>1	>2	>2	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None
Distance from trees (meters)	51	51	52	55	52	51
Distance to furnace or incinerator flue (meters)	17	17	21	17	17	17
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	No	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360	270
Probe material for reactive gases	Teflon	Teflon	N/A	N/A	N/A	Glass
Residence time for reactive gases (seconds)	13	13	N/A	N/A	N/A	N/A
Will there be changes within the next 18 months?	Y – relocation	Y – relocation	Y – relocation	Y – relocation	Y – relocation	Y – relocation
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	Y	N	N/A	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	Monthly	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	Bi-weekly	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	N/A	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	N/A	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	See Table 4.69	See Table 4.69	N/A	N/A

4.11 Los Gatos

Table 4.21 - Los Gatos Site Information

AQS ID	06-085-1001
GPS coordinates	37.226862, -121.979675
Location	Top of fire station's hose drying tower
Address	306 University Ave, Los Gatos, CA 95030
County	Santa Clara
Distance to road From gaseous probe (meters)	University Ave: 37 Bentley Ave: 27 State Route 17: 291 State Route 9: 121
Traffic count (AADT, year)	University Ave: 13,000 (2016) Bentley Ave: 1,000 (2020) State Route 17: 97,000 (2017) State Route 9: 34,700 (2017) Traffic count data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA
Pollutants Measured	O_3
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located in the city of Los Gatos near the downtown area at a fire station surrounded by residential neighborhoods. Los Gatos is situated at the base of the Santa Cruz Mountains where prevailing northerly winds can transport ozone and ozone precursors from the densely populated areas of the south bay area.

Table 4.22 - Los Gatos Monitor Details

Pollutant, POC	O_3, 1
Primary/QA Collocated/Other	N/A
Parameter code	44201
Basic monitoring objective(s)	NAAQS comparison
Site type(s)	Population Exposure
Monitor type(s)	SLAMS
Network affiliation(s)	N/A
Instrument manufacturer and model	TECO 49i
Method code	047
FRM/FEM/ARM/other	FEM
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	04/01/1972
Current sampling frequency	Continuous
Required sampling frequency	N/A
Sampling season	01/01 - 12/31
Probe height (meters)	11.0
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A
Distance from trees (meters)	16
Distance to furnace or incinerator flue (meters)	4
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	16
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check for gaseous instruments	Daily
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

4.12 Martinez

Table 4.23 - Martinez Site Information

AQS ID	06-013-2001
GPS coordinates	38.012816, -122.134467
Location	Small sampling shelter next to fire station
Address	521 Jones St, Martinez, CA 94553
County	Contra Costa
Distance to road from gaseous probe (meters)	Jones St: 22 Alhambra Ave: 19
Traffic count (AADT, year)	Jones St: 2,000 (2008) Alhambra Ave: 25,001 (2012) Traffic count data were updated on April 1, 2020 reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	SO_2, Toxics
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located near downtown Martinez and is 0.5 miles south of the Shell Refinery and 2.5 miles west of the Tesoro Refinery. The Carquinez Strait borders the city to the north and the prevailing winds are typically from the west, but north and east winds can transport SO_2 emissions from these refineries to the populated areas of the city of Martinez.

Table 4.24 - Martinez Monitor Details

Pollutant, POC	SO_2, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A
Parameter code	42401	See toxics section
Basic monitoring objective(s)	NAAQS comparison	Research
Site type(s)	Population Exposure & Source Oriented	Population Exposure
Monitor type(s)	SLAMS	SPM
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	TECO 43i	Xontech 901
Method code	060	210
FRM/FEM/ARM/other	FEM	N/A
Collecting Agency	Air District	Air District
Analytical Lab	N/A	Air District
Reporting Agency	Air District	Air District
Spatial scale	Neighborhood	Neighborhood
Monitor start date	07/02/1973	06/01/2002
Current sampling frequency	Continuous	1:12
Required sampling frequency	N/A	N/A
Sampling season	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	7	7
Distance from supporting structure (meters)	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from trees (meters)	11	11
Distance to furnace or incinerator flue (meters)	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	Teflon	Glass
Residence time for reactive gases (seconds)	13	N/A
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A

4.13 Napa Valley College

Table 4.25 - Napa Valley College Site Information

AQS ID	06-055-0004
GPS coordinates	38.278849, -122.275024
Location	Trailer in parking lot
Address	North College Parking, Napa, CA 94558
County	Napa
Distance to road from gaseous probe (meters)	Napa Valley Hwy Rt 221: 100 Imola Ave Rt 121: 200
Traffic count (AADT, year)	Napa Valley Hwy Rt 221: 36,000 (2017) Imola Ave (Route 121): 25,400 (2017) Traffic count data were updated on April 1, 2020 and reflect the latest available data
Groundcover	Paved
Statistical Area	Napa CBSA
Pollutants Measured	O_3, NO_2, CO, PM_{10}, $PM_{2.5}$, Toxics
Spatial Scale	Neighborhood scale (0.5 - 4 km)
Notes	The site is located in the Napa Valley about 2 miles south of downtown Napa in an open space near a mixed residential and commercial neighborhood with no large industrial sources in the immediate vicinity. In summer months, Napa can have elevated ozone levels when central Bay Area ozone precursors are transported north to the city. Agricultural burning and fireplace usage during the fall and winter months can also result in high particulate matter concentrations. The site was opened on April 1, 2018 as a replacement to the Napa – Jefferson St. site. The Napa site relocation request was approved by EPA on June 12, 2015 (see Appendix I). The Napa Valley College site discontinued operations on May 25, 2021 due to the loss of a lease since the site is being developed into housing. The Air District has secured a new site location in Napa at 1732 Jefferson Street, which is 0.5 mile from the former Napa-Jefferson station. However, due to construction delays, the Air District anticipates monitoring to begin by Q2 2024. The Air District will submit a request for a network modification under separate cover.

Table 4.26 - Napa Valley College Monitor Details

Pollutant, POC	O_3, 1	NO_2, 1	CO, 1	PM_{10}, 1	$PM_{2.5}$, 3	Toxics, 3
Primary/QA Collocated/Other	Primary	Primary	N/A	Primary	Primary	N/A
Parameter code	44201	42601 / 42602	42101	81102	88101	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure & Highest Concentration	Population Exposure
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49c	TECO 42i	TECO 48i	Tisch Env. HiVol TE-60	Met One FEM BAM 1020	Xontech 901
Method code	047	074	054	141	170	210
FRM/FEM/ARM/other	FEM	FRM	FRM	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	Air District	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	04/01/2018	04/01/2018	04/01/2018	09/23/2002	04/01/2018	04/01/2018
Current sampling frequency	Continuous	Continuous	Continuous	1:6	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	1:6	N/A	N/A
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	5	5	5	4	5	5
Distance from supporting structure (meters)	>1	>1	>1	>2	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None
Distance from trees (meters)	N/A	N/A	N/A	N/A	N/A	N/A
Distance to furnace or incinerator flue (meters)	N/A	N/A	N/A	N/A	N/A	N/A
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	No	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	N/A	N/A	Glass
Residence time for reactive gases (seconds)	12	15	14	N/A	N/A	N/A
Will there be changes within the next 18 months?	Y – relocation	Y – relocation	Y – relocation	Y – relocation	Y – relocation	Y – relocation
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	N/A	Y	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	Quarterly	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	N/A	N/A	N/A
Dates of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	See Table 4.69	N/A	N/A	N/A
Date of semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	See Table 4.69	See Table 4.69	N/A

4.14 Oakland - East

Table 4.27 - Oakland - East Site Information

AQS ID	06-001-0009
GPS coordinates	37.743065, -122.169935
Location	Two-story commercial building
Address	9925 International Blvd, Oakland, CA 94603
County	Alameda
Distance to road from gaseous probe (meters)	International Blvd: 19 98th St: 43 99th St: 23
Traffic count (AADT, year)	International Blvd: 21,988 (2011) 98th St: 31,340 (<2006) 99th St: 100 (2008) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	O_3, CO, NO_2, $PM_{2.5}$, Toxics
Spatial Scale	Middle scale (100 m – 500 m)
Notes	The site is located seven miles southeast of downtown Oakland, on a commercial strip in a residential area. Oakland is the largest city in Alameda County, with a population of approximately 400,000 and has large emission sources within its boundaries, such as a major maritime port, an international airport, extensive areas of industry, and several major freeways. These sources have the potential to emit significant amounts of ozone precursors, particulates and toxic compounds. Light winds combined with wood burning, vehicular traffic, and surface-based inversions during winter can also cause elevated particulate concentrations. The spatial scale of representativeness for ozone and $PM_{2.5}$ is middle scale based on the distance to roadways and traffic counts. Based on an EPA Region 9 review of the requirements, the ozone monitor was changed from a SLAMS to SPM. Consequently, this monitor cannot be used toward meeting the minimum monitoring requirements for ozone. However, the Air District considers the $PM_{2.5}$ monitor to represent area-wide air quality and, therefore, comparable to the NAAQS because the site represents many similar locations throughout the metropolitan area.

Table 4.28 - Oakland - East Monitor Details

Pollutant, POC	O_3, 1	CO, 1	NO_2, 1	$PM_{2.5}$, 3	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A	Primary	Primary	N/A
Parameter code	44201	42101	42601 / 42602	88101	See toxics section
Basic monitoring objective(s)	Research	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SPM	SLAMS	SLAMS	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	Met One FEM BAM 1020	Xontech 901
Method code	047	054	074	170	210
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District
Spatial scale	Middle	Middle	Middle	Middle	Middle
Monitor start date	11/01/2007	11/01/2007	11/01/2007	10/01/2009	11/01/2007
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	N/A	N/A
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	10	10	10	7	9
Distance from supporting structure (meters)	>1	>1	>1	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from trees (meters)	21	21	21	21	21
Distance to furnace or incinerator flue (meters)	8	8	8	5	8
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	N/A	Glass
Residence time for reactive gases (seconds)	15	16	16	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	Y	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	See Table 4.69	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	See Table 4.69	N/A

4.15 Oakland - Laney College

Table 4.29 – Oakland - Laney College Site Information

AQS ID	06-001-0012
GPS coordinates	37.793624, -122.263376
Location	Trailer east of Interstate 880
Address	Laney College 8th St. parking lot, Aisle J, Oakland, CA 94607
County	Alameda
Distance to road from gaseous probe (meters)	I-880: 20 8th St: 116 Fallon St: 130 5th Ave: 419
Traffic count (AADT, year)	Interstate 880: 219,000 (2017) 8th St: 16,055 (2012) Fallon St: 4,000 (2014) 5th Ave: <5,000 (2014) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	NO_2, CO, $PM_{2.5,}$ BC, Toxics, UFP
Spatial Scale	Microscale (100 m)
Notes	The site is located 20 m downwind of I-880 (along a segment of roadway that typically has among the highest Fleet Equivalent AADT (FE-AADT) in the Bay Area) and designated as a near-road monitoring site, which are a category of sites designed to representative of population exposure in the near-road environment. Due to the prevalence of areas that have large roadways adjacent to population centers, Berkley Aquatic Park is considered to be representative of area-wide air quality.

Table 4.30 – Oakland - Laney College Monitor Details

Pollutant, POC	NO_2, 1	CO, 1	$PM_{2.5}$, 3	BC, 1	Toxics, 3
Primary/QA Collocated/Other	Primary	N/A	Primary	N/A	N/A
Parameter code	42601 / 42602	42101	88101	84313	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	Public Information	Research
Site type(s)	Source Oriented & Population Exposure	Source Oriented & Population Exposure	Source Oriented & Population Exposure	Source Oriented	Population Exposure
Monitor type(s)	SLAMS	SLAMS	SLAMS	SPM	SPM
Network affiliation(s)	Near Road	Near Road	Near Road	N/A	N/A
Instrument manufacturer and model	TECO 42i	TECO 48i	Met One FEM BAM 1020	Teledyne API AE-633	Xontech 901
Method code	074	054	170	894	210
FRM/FEM/ARM/other	FRM	FRM	FEM	N/A	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District
Spatial scale	Micro	Micro	Micro	Micro	Micro
Monitor start date	02/01/2014	02/01/2014	02/01/2014	02/01/2014	02/04/2014
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	N/A	N/A
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01-12/31	01/01 – 12/31
Probe height (meters)	6	6	5	5	5
Distance from supporting structure (meters)	>1	>1	>2	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from trees (meters)	None	None	None	None	None
Distance to furnace or incinerator flue (meters)	None	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	No	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	N/A	N/A	Glass
Residence time for reactive gases (seconds)	16	16	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	Y	N/A	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	Bi-weekly	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	N/A	N/A	N/A
Dates of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	N/A	N/A	N/A
Date of semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	See Table 4.69	N/A	N/A

4.16 Oakland - West

Table 4.31 - Oakland - West Site Information

AQS ID	06-001-0011
GPS coordinates	37.814781, -122.282347
Location	Shelter in parking lot
Address	1100 21st St, Oakland, CA 94607
County	Alameda
Distance to road from gaseous probe (meters)	Grand Ave: 34 Linden St: 33 Adeline St: 168 21st St: 80
Traffic count (AADT, year)	Grand Ave: 19,796 (2012) Linden St: 500 (2015) Adeline St: 8,596 (2013) 21st St: 600 (2015) Traffic count data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	O_3, CO, NO_2, SO_2, $PM_{2.5,}$ Speciated $PM_{2.5}$, BC, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located one mile downwind of the Port of Oakland, which is considered a major area source of diesel particulate matter emissions. Studies have shown that the West Oakland community is exposed to higher concentrations of diesel particulate matter than elsewhere in the Bay Area, resulting in higher potential cancer risks. Diesel-truck traffic emissions from the Port of Oakland, vehicle traffic from nearby highways (I-80, I-880, I-980, and I-550), ship traffic, and additional nearby sources can contribute to high levels of pollution in the area. This site has also been designated one of the 40 nationwide locations for community monitoring of NO_2 intended to characterize vulnerable and susceptible populations.

Table 4.32 - Oakland - West Monitor Details

Pollutant, POC	O_3, 1	CO, 1	NO_2, 1	SO_2, 1	$PM_{2.5}$, 3	Speciated $PM_{2.5}$, 5	BC, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A	Primary	N/A	Primary	Other	N/A	N/A
Parameter code	44201	42101	42601 / 42602	42401	88101	88502 (pm mass) – many others see SASS section	84313	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research	Research	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure, Highest Concentration	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SPM	SPM	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	TECO 43i	Met One FEM BAM 1020	Met One SASS	Teledyne API AE-633	Xontech 901
Method code	047	054	074	060	170	810	894	210
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM	FEM	N/A	N/A	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	N/A	Air District	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District	N/A	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	12/13/2010	02/25/2009	02/25/2009	02/25/2009	12/18/2012	02/12/2009	03/17/2009	03/02/2009
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous	1:6	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	6	6	6	6	5	5	5	6
Distance from supporting structure (meters)	>1	>1	>1	>1	>2	>2	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None	None	None
Distance from trees (meters)	40	40	40	40	40	39	40	40
Distance to furnace or incinerator flue (meters)	None	None	None	None	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A	No	No	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	Teflon	N/A	N/A	Glass	Glass
Residence time for reactive gases (seconds)	12	12	13	12	N/A	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	N/A	Y	N	N/A	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	N/A	N/A	Monthly	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	Bi-weekly	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	Every other day	N/A	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	See Table 4.69	See Table 4.69	N/A	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	N/A	See Table 4.69	See Table 4.69	N/A	N/A

4.17 Palo Alto Airport

Table 4.33 - Palo Alto Airport Site Information

AQS ID	06-085-2010
GPS coordinates	37.457621, -122.112286
Location	The end of the runway in the aircraft run-up zone
Address	1925 Embarcadero Road, Palo Alto, CA 94303
County	Santa Clara
Groundcover	Paved
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA
Pollutants Measured	Lead (TSP) [not operational in 2022]
Spatial Scale	Micro scale (100 m)
Notes	The site is located just south of the runway at the Palo Alto Airport and was one of the 15 airports chosen by EPA for required TSP-lead monitoring due to expected lead emissions from piston engine aircraft utilizing this airport.

Table 4.34 - Palo Alto Airport Monitor Details

Pollutant, POC	Lead (TSP), 3
Primary/QA Collocated/Other	Primary
Parameter code	14129
Basic monitoring objective(s)	NAAQS Comparison & Research
Site type(s)	Source Oriented
Monitor type(s)	SLAMS
Network affiliation(s)	N/A
Instrument manufacturer and model	Tisch TE-HVPLUS-BL
Method code	191
FRM/FEM/ARM/other	FEM
Collecting Agency	Air District
Analytical Lab	RTI
Reporting Agency	Air District
Spatial scale	Micro
Monitor start date	02/03/2012
Current sampling frequency	1:6
Required sampling frequency	N/A
Sampling season	01/01 - 12/31
Probe height (meters)	2.0
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	>20
Distance to furnace or incinerator flue (meters)	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	No
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Will there be changes within the next 18 months?	Yes – will seek site closure
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	Quarterly
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check for gaseous instruments	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	Site closed Dec 2014 due to FAA violations in siting

4.18 Pittsburg

Table 4.35 - Pittsburg Site Information

AQS ID	Not applicable
GPS coordinates	38.007069, -121.868056
Location	Shelter
Address	1398 E Leland Rd, Pittsburg, CA, 94565
County	Contra Costa
Distance to road from gaseous probe (meters)	E Leland Rd: 75 Loveridge Rd: 260
Traffic count (AADT, year)	E Leland Rd: 25,080 (2006) Loveridge Rd: 23,432 (2006) Traffic count data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Vegetative
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	BC, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is in the urban area of Pittsburg and located along a transport corridor between the Bay Area and the Central Valley, which is in the vicinity/downwind of several industrial facilities along the Carquinez Strait.

Table 4.36 - Pittsburg Monitor Details

Pollutant, POC	BC, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A
Parameter code	84313	See toxics section
Basic monitoring objective(s)	Research	Research
Site type(s)	Population Exposure	Population Exposure
Monitor type(s)	SPM	SPM
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	Teledyne API AE-633	Xontech 901
Method code	894	210
FRM/FEM/ARM/other	N/A	N/A
Collecting Agency	Air District	Air District
Analytical Lab	N/A	Air District
Reporting Agency	Air District	Air District
Spatial scale	Neighborhood	Neighborhood
Monitor start date	06/27/2017	06/27/2017
Current sampling frequency	Continuous	1:12
Required sampling frequency	N/A	N/A
Sampling season	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	3	3
Distance from supporting structure (meters)	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from trees (meters)	None	None
Distance to furnace or incinerator flue (meters)	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	N/A	Glass
Residence time for reactive gases (seconds)	N/A	N/A
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A

4.19 Pleasanton

Table 4.37 - Pleasanton Site Information

AQS ID	06-001-0015
GPS coordinates	37.701222, -121.903019
Location	Interstate 580 near Hopyard interchange
Address	Owen's Court, Pleasanton, CA 94588
County	Alameda
Distance to road from gaseous probe (meters)	Owen's Court: 53 I-580: 179
Traffic count (AADT, year)	Owen's Court: 21,800 (2018) I-580: 231,500 (2016) Traffic count data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Gravel
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	NO_2, CO, $PM_{2.5}$, Toxics
Spatial Scale	Microscale (100 m)
Notes	The site is in a commercial area in the city of Pleasanton and 179 m downwind from the I-580 and designated as a near-road monitoring site, which is a category of sites designed to representative of population exposure in the near-road environment. Due to the prevalence of areas that have large roadways adjacent to population centers, Pleasanton is considered to be representative of area-wide air quality. The site began operation on April 1, 2018 and was deployed at the request of an Air District board member.

Table 4.38 - Pleasanton Monitor Details

Pollutant, POC	NO_2, 1	CO, 1	$PM_{2.5}$, 3	Toxics, 3
Primary/QA Collocated/Other	Primary	N/A	Primary	N/A
Parameter code	42601 / 42602	42101	88101	See toxics section
Basic monitoring objective(s)	NAAQS Comparison	NAAQS Comparison	NAAQS Comparison	Public Information
Site type(s)	Source Oriented & Population Exposure	Source Oriented & Population Exposure	Source Oriented & Population Exposure	Population Exposure
Monitor type(s)	SPM	SPM	SPM	SPM
Network affiliation(s)	Near Road	Near Road	Near Road	N/A
Instrument manufacturer and model	TECO 42i	TECO 48i	Met One FEM BAM 1020	Xontech 901
Method code	074	054	170	210
FRM/FEM/ARM/other	FRM	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District
Spatial scale	Micro	Micro	Micro	Micro
Monitor start date	04/01/2018	04/01/2018	04/01/2018	04/01/2018
Current sampling frequency	Continuous	Continuous	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	N/A
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	5	5	5	5
Distance from supporting structure (meters)	>1	>1	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None
Distance from trees (meters)	None	None	None	None
Distance to furnace or incinerator flue (meters)	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	N/A	Glass
Residence time for reactive gases (seconds)	14	14	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	Y	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	N/A	N/A
Dates of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	N/A	N/A
Date of semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	See Table 4.69	N/A

4.20 Point Richmond

Table 4.39 - Point Richmond Site Information

AQS ID	06-013-0005
GPS coordinates	37.926162, -122.385561
Location	Air monitoring shelter next to fire station
Address	140 W. Richmond Ave, Richmond, CA 94801
County	Contra Costa
Distance to road From gaseous probe (meters)	Washington Ave: 25 W. Richmond Ave: 10 Park Place: 27 Interstate 580: 266
Traffic count (AADT, year)	Washington Ave: 1,587 (2017) W. Richmond Ave: 4,405 (2006) Park Place: 1,877 (2017) Interstate 580: 82,000 (2017) Traffic count data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	H_2S
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is in the downtown area of the Point Richmond neighborhood, which is 0.2 miles downwind of the southern fence line boundary of the Chevron refinery. Although prevailing winds in the area are from the south-southwest, occasional northerly winds will transport H_2S emissions from the refinery to the community. H_2S gases at Chevron can be emitted from the processing units, one mile to the north, or the Chevron Richmond Long Wharf Complex, one mile to the west, where crude oil and other feedstock chemicals from tankers are unloaded.

Table 4.40 - Point Richmond Monitor Details

Pollutant, POC	H_2S, 1
Primary/QA Collocated/Other	N/A
Parameter code	42402
Basic monitoring objective(s)	Public Information
Site type(s)	Population Exposure & Source Oriented
Monitor type(s)	SPM
Network affiliation(s)	N/A
Instrument manufacturer and model	TECO 43i
Method code	020
FRM/FEM/ARM/other	N/A
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	01/01/1999
Current sampling frequency	Continuous
Required sampling frequency	N/A
Sampling season	01/01 - 12/31
Probe height (meters)	3
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A
Distance from trees (meters)	17
Distance to furnace or incinerator flue (meters)	7
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	7
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check for gaseous instruments	Every other week
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

4.21 Redwood City

Table 4.41 - Redwood City Site Information

AQS ID	06-081-1001
GPS coordinates	37.482934, -122.203500
Location	One-story commercial building
Address	897 Barron Ave, Redwood City, CA 94063
County	San Mateo
Distance to road from gaseous probe (meters)	Barron Ave: 13 Bay Road: 24 Warrington Ave: 131 US Highway 101: 455
Traffic count (AADT, year)	Barron Ave: 1,100 (2020) Warrington Ave: 1,400 (2020) Bay Road: 3,770 (2012) U.S. Highway 101: 222,600 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	O_3, CO, NO_2, $PM_{2.5}$, Toxics, UFP
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is in a commercial/industrial zone bordered by U.S. Highway 101 on one side and residential areas on the other three sides. Being midway between San Francisco and San Jose, the site is well positioned to monitor ozone precursors and ozone moving southward across the peninsula as they are channeled by the coastal mountains to the west. Although the sea breeze typically keeps pollution levels low, when winds are light, high levels of ozone precursors, ozone, or particulates can occur due to the large number of sources in the area. Light winds combined with wood burning, vehicular traffic, and surface-based inversions during winter can also cause elevated particulate concentrations.

Table 4.42 - Redwood City Monitor Details

Pollutant, POC	O_3, 1	CO, 1	NO_2, 1	$PM_{2.5}$, 3	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A	Primary	Primary	N/A
Parameter code	44201	42101	42601 / 42602	88101	See Toxics Section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	Met One FEM BAM 1020	Xontech 901
Method code	047	054	074	170	210
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	07/01/1976	03/01/1967	03/01/1967	10/01/2009	7/11/2001
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	N/A	N/A
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12 /31
Probe height (meters)	7	7	7	6	7
Distance from supporting structure (meters)	>1	>1	>1	>2	>2
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from trees (meters)	46	46	46	40	10
Distance to furnace or incinerator flue (meters)	13	13	13	14	13
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	N/A	Glass
Residence time for reactive gases (seconds)	15	16	16	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	Y	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	See Table 4.69	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	See Table 4.69	N/A

4.22 Reid-Hillview Airport

Table 4.43 - Reid-Hillview Airport Site Information

AQS ID	06-085-2011
GPS coordinates	37.329841, -121.815438
Location	The end of the runway in the aircraft run-up zone
Address	2500 Cunningham Ave., San Jose, CA 95148
County	Santa Clara
Groundcover	Paved
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA
Pollutants Measured	Lead (TSP)
Spatial Scale	Micro scale (100 m)
Notes	The site is located just south of the runway at the Reid-Hillview and was one of the 15 airports chosen by EPA for required TSP-lead monitoring due to expected lead emissions from piston engine aircraft utilizing this airport.

Table 4.44 - Reid-Hillview Monitor Details

Pollutant, POC	Lead (TSP), 3
Primary/QA Collocated/Other	Primary
Parameter code	14129
Basic monitoring objective(s)	NAAQS Comparison & Research
Site type(s)	Source Oriented
Monitor type(s)	SLAMS
Network affiliation(s)	N/A
Instrument manufacturer and model	Tisch TE-HVPLUS-BL
Method code	191
FRM/FEM/ARM/other	FEM
Collecting Agency	Air District
Analytical Lab	ERG
Reporting Agency	Air District
Spatial scale	Micro
Monitor start date	02/03/2012
Current sampling frequency	1:6
Required sampling frequency	N/A
Sampling season	01/01 - 12/31
Probe height (meters)	1.6[(a)]
Distance from supporting structure (meters)	N/A
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	> 20
Distance to furnace or incinerator flue (meters)	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	No
Unrestricted airflow (degrees)	360
Probe material for reactive gases	N/A
Residence time for reactive gases (seconds)	N/A
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	Quarterly
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check for gaseous instruments	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	See Table 4.69

Notes:
(a) The probe height of the lead sampler at Reid-Hillview is set to the height of the fence standing between the samplers and Tully Road in order to place the sampler within the area designated by EPA for sampling. This was a requirement of the Reid-Hillview Airport and was designed to ensure that the samplers were in unquestionable compliance with the FAA requirements in 14 CFR Part 77. Operation of the samplers at the airport was contingent on meeting this requirement. Movement of the sampler to achieve a probe height greater than or equal to 2 meters would result in the sampler being located off airport property.

4.23 Richmond – 7th St

Table 4.45 - Richmond – 7th St Site Information

AQS ID	06-013-0006
GPS coordinates	37.948172, -122.364852
Location	Fire station
Address	1065 7th Street, Richmond, CA 94801
County	Contra Costa
Distance to road from gaseous probe (meters)	7th St: 22 Hensley St: 30 Richmond Parkway: 200
Traffic count (AADT, year)	7th St: 3,546 (2012) Hensley St: 3,700 (2012) Richmond Parkway: 32,000 (2012) Traffic count data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	SO_2, H_2S, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located near the eastern fence line of the Chevron refinery in North Richmond 0.5 miles east of the refinery boundary where public exposure to the highest H_2S and SO_2 concentrations are expected. Normally, monitoring is done downwind of the prevailing wind direction. However, the prevailing winds are from the south, and carry emissions over San Pablo Bay. Because it is impractical to monitor over San Pablo Bay, a monitoring site was chosen downwind of the secondary wind direction, on the east side of the refinery.

Table 4.46 - Richmond – 7th St Monitor Details

Pollutant, POC	SO_2, 1	H_2S, 1	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A	N/A
Parameter code	42401	42402	See toxics section
Basic monitoring objective(s)	NAAQS comparison	Public information	Research
Site type(s)	Population Exposure & Source Oriented	Population Exposure & Source Oriented	Population Exposure
Monitor type(s)	SLAMS	SPM	SPM
Network affiliation(s)	N/A	N/A	N/A
Instrument manufacturer and model	TECO 43i	TECO 43i	Xontech 901
Method code	060	020	210
FRM/FEM/ARM/other	FEM	N/A	N/A
Collecting Agency	Air District	Air District	Air District
Analytical Lab	N/A	N/A	Air District
Reporting Agency	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitor start date	07/01/1980	01/01/1999	10/14/1992
Current sampling frequency	Continuous	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	8	8	8
Distance from supporting structure (meters)	>1	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None
Distance from trees (meters)	10	10	10
Distance to furnace or incinerator flue (meters)	12	12	12
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360
Probe material for reactive gases	Teflon	Teflon	Glass
Residence time for reactive gases (seconds)	8	9	N/A
Will there be changes within the next 18 months?	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other week	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A

4.24 Rodeo

Table 4.47 - Rodeo Site Information

AQS ID	06-013-0007
GPS coordinates	38.034331, -122.270336
Location	Single story storage area at fire station
Address	326 Third Street, Rodeo, CA 94572
County	Contra Costa
Distance to road from gaseous probe (meters)	Third St: 13 Parker St: 249
Traffic count (AADT, year)	Third St: 500 (2007) Parker St: 9,484 (2013) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	H_2S
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located in a residential area 0.6 miles southwest of the Phillips 66 refinery on the northeastern boundary of the town of Rodeo. Although the prevailing winds in the area are from the southwest, northeast winds can transport H_2S emissions from the refinery to the populated areas of the town of Rodeo.

Table 4.48 - Rodeo Monitor Details

Pollutant, POC	H_2S, 1
Primary/QA Collocated/Other	N/A
Parameter code	42402
Basic monitoring objective(s)	Public information
Site type(s)	Population Exposure & Source Oriented
Monitor type(s)	SPM
Network affiliation(s)	N/A
Instrument manufacturer and model	TECO 43i
Method code	020
FRM/FEM/ARM/other	N/A
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	04/01/2002
Current sampling frequency	Continuous
Required sampling frequency	N/A
Sampling season	01/01 – 12/31
Probe height (meters)	7
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None
Distance from trees (meters)	>50
Distance to furnace or incinerator flue (meters)	11
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	6
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check for gaseous instruments	Every other week
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

4.25 San Carlos Airport II

Table 4.49 - San Carlos Airport II Site Information

AQS ID	06-081-2004
GPS coordinates	37.508162, -122.246305
Location	The end of the runway in the aircraft run-up zone
Address	620 Airport Drive, San Carlos, CA 94070
County	San Mateo
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	Lead (TSP) [not operational in 2022]
Spatial Scale	Micro scale (100 m)
Notes	The site is located just south of the runway at the San Carlos Airport and was one of the 15 airports chosen by EPA for required TSP-lead monitoring due to expected lead emissions from piston engine aircraft utilizing this airport. TSP-lead monitoring at the San Carlos II site (both primary and collocated) started on March 25, 2015. The original San Carlos Airport I site was inappropriately sited and had to be moved because it violated FAA air space restrictions. This new site has a different AQS site ID (06-081-2004) than the original San Carlos Airport I site because the new site is about 120 meters to the southeast and farther away from the aircraft run-up area. Three-month rolling averages during 2015 and 2016 at this site ranged from 0.016 µg/m^3 to 0.025 µg/m^3. The TSP-lead monitoring at the San Carlos Airport II monitoring site was discontinued on April 11, 2017 due to circumstances beyond the Air District's control. The Air District notified EPA of the discontinuation of data collection on April 13, 2017. The Air District intends to seek approval from EPA to close this site.

Table 4.50 - San Carlos Airport II Monitor Details

Pollutant, POC	Lead (TSP), 3	Lead (TSP), 5
Primary/QA Collocated/Other	Primary	QA Collocated
Parameter code	14129	14129
Basic monitoring objective(s)	NAAQS Comparison & Research	NAAQS Comparison & Research
Site type(s)	Source Oriented	Source Oriented
Monitor type(s)	SLAMS	SLAMS
Network affiliation(s)	N/A	N/A
Instrument manufacturer and model	Tisch TE-HVPLUS-BL	Tisch TE-HVPLUS-BL
Method code	191	191
FRM/FEM/ARM/other	FEM	FEM
Collecting Agency	Air District	Air District
Analytical Lab	ERG	ERG
Reporting Agency	Air District	Air District
Spatial scale	Micro	Micro
Monitor start date	03/25/2015	03/25/2015
Current sampling frequency	1:6	1:12
Required sampling frequency	N/A	N/A
Sampling season	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	2.1	2.1
Distance from supporting structure (meters)	N/A	N/A
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from trees (meters)	>30	>30
Distance to furnace or incinerator flue (meters)	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	2.8	2.8
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	No	No
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	N/A	N/A
Residence time for reactive gases (seconds)	N/A	N/A
Will there be changes within the next 18 months?	Yes – the Air District will seek approval to close this site	Yes – the Air District will seek approval to close this site
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	Quarterly	Quarterly
Frequency of flow rate verification for automated PM analyzers	N/A	N/A
Frequency of one-point QC check for gaseous instruments	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A

4.26 San Francisco

Table 4.51 - San Francisco Site Information

AQS ID	06-075-0005
GPS coordinates	37.765946, -122.399044
Location	One-story commercial building
Address	10 Arkansas St, Suite N, San Francisco, CA 94107
County	San Francisco
Distance to road from gaseous probe (meters)	16th St: 32 Interstate 280: 300 Arkansas St: 17 U.S. Highway 101: 504
Traffic count (AADT, year)	16th St: 11,764 (2012) Arkansas St: 1,750 (2015) Interstate 280: 106,000 (2015) U.S. Highway 101: 226,000 (2015) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	O_3, CO, NO_2, PM_{10}, $PM_{2.5}$, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located near the northern boundary of the Potrero Hill neighborhood in San Francisco, which is adjacent to light industrial activities and residential neighborhoods, and is between two major roadways: U.S. 101 and I-280. Although the westerly wind sea breeze usually keeps pollution levels low, light wind conditions and surface-based inversions can result in elevated concentrations of ozone precursors and/or particulate matter. PM_{10} monitoring was changed from 1:6 to 1:12 sampling effective January 1, 2013 to accommodate limited resources. Because the Bay Area is well above the minimum monitoring requirements for PM_{10}, EPA approved this decrease in sampling frequency as well as converting these PM_{10} monitors from SLAMS to SPMs. Therefore, this monitor is no longer counted in PM_{10} minimum monitoring requirements.

Table 4.52 - San Francisco Monitor Details

Pollutant, POC	O_3, 1	CO, 1	NO_2, 1	PM_{10}, 1	$PM_{2.5}$, 3	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A	Primary	Primary	Primary	N/A
Parameter code	44201	42101	42601 / 42602	81102	88101	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SLAMS	SLAMS	SLAMS	SPM	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	Andersen HiVol 1200	Met One FEM BAM 1020	Xontech 910A901
Method code	047	054	074	063	170	210
FRM/FEM/ARM/other	FEM	FRM	FRM	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	Air District	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	01/01/1986	01/01/1986	NO: 12/01/1985 NO_2: 01/01/1986	11/16/1986	10/01/2009	01/22/1991
Current sampling frequency	Continuous	Continuous	Continuous	1:12	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	N/A	N/A	N/A
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	11	11	11	8	8	8
Distance from supporting structure (meters)	>1	>1	>1	>2	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None
Distance from trees (meters)	15	15	15	18	16	14
Distance to furnace or incinerator flue (meters)	5	5	5	7	7	4
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	No	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	N/A	N/A	Glass
Residence time for reactive gases (seconds)	13	13	14	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	N/A	Y	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	Quarterly	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	See Table 4.69	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	See Table 4.69	See Table 4.69	N/A

4.27 San Jose – Jackson

Table 4.53 - San Jose - Jackson Site Information

AQS ID	06-085-0005
GPS coordinates	37.348497, -121.894898
Location	Top floor of two-story commercial building
Address	158 E. Jackson St, San Jose, CA 95112
County	Santa Clara
Distance to road from gaseous probe (meters)	Jackson St: 15 4th St: 35
Traffic count (AADT, year)	Jackson St: 5,992 (2007) 4th St: 7,300 (2014) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA
Pollutants Measured	O_3, CO, NO_2, SO_2, NO_y, PM_{10}, $PM_{10\text{-}2.5}$, $PM_{2.5F}$, $PM_{2.5C}$, Speciated $PM_{2.5}$, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is in the center of the northern Santa Clara Valley in downtown San Jose, which is near a number of major freeways, the San Jose International Airport, and commercial and residential areas. Prevailing northwesterly winds can transport ozone and ozone precursors from the central and northern portions of the Bay Area to the Santa Clara Valley. Light winds combined with surface-based inversions within the valley during winter months can also cause elevated particulate matter concentrations. San Jose – Jackson was approved as a NCore station in 2009 and began operation on January 1, 2011. On October 11, 2019, EPA approved a request to discontinue NO_y monitoring (see Appendix F), but as part of new PAMS requirements, the Air District plans to monitor NO_y at Livermore in starting 2022. The Air District also discontinued monitoring for the NATTS program on July 1, 2018 (see Section 3.2)

Table 4.54 - San Jose - Jackson Monitor Details

Pollutant, POC	O_3, 1	CO [(a)], 1	NO_2, 1	SO_2 [(a)], 1	NO_y, 2	PM_{10}, 1	Toxics, 3	$PM_{10-2.5}$, 1	$PM_{2.5}$, 1 [(b)]	$PM_{2.5}$, 3	Speciated $PM_{2.5}$, 5
Primary/QA Collocated/Other	N/A	N/A	Primary	N/A	N/A	Primary	N/A	Primary	QA Collocated	Primary	Other
Parameter code	44201	42101	42601 / 42602	42401	42600	81102	See toxics section	86101	88101	88101	88502 (pm mass) – many others see SASS section
Basic monitoring objective(s)	NAAQS comparison & Research	NAAQS comparison & Research	NAAQS comparison & Research	NAAQS comparison & Research	Research	NAAQS comparison	Research	Research	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure & Highest Concentration	Population Exposure
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SPM	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation(s)	NCore	NCore	N/a	NCore	NCore	N/A	N/a	NCore	NCore	NCore	NCore, CSN STN
Instrument manufacturer and model	TECO 49i	TECO 48iTLE	TECO 42i	TECO 43iTLE	API 200 EU/NO_y	Partisol 2025 without VSCC	Xontech 924 & 901	Partisol 2025 without VSCC	Partisol-Plus 2025 w/VSCC	Met One FEM BAM 1020	Met One SASS
Method code	047	554	074	560	699	127	202 & 210	176	145	170	810
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM	N/A	FRM	N/A	FRM	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	N/A	Air District	Air District	Air District	Air District	N/A	RTI
Reporting Agency	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District	RTI
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	11/01/2002	11/01/2002	11/01/2002	02/10/2009	01/13/2011	10/15/2002	10/04/2002	1/1/2011	10/05/2002	10/01/2012	10/05/2002
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous	1:6	1:12	1:3 (NCore)	1:3 (NCore)	Continuous	1:3
Required sampling frequency	N/A	N/A	N/A	N/A	N/A	1:6	N/A	N/A	1:3	N/A	N/A
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 – 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	12	12	12	12	12	9	10	9	9	10	9
Distance from supporting structure (meters)	>1	>1	>1	>1	>1	>2	>1	>2	>2	>2	>2
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None	None	None	None	None	None
Distance from trees (meters)	>50	>50	>50	>50	>50	>50	>50	>50	>50	>50	>50
Distance to furnace or incinerator flue (meters)	5	5	5	5	3	3	5	2	2	4	3
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0	4.0	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A	N/A	No	N/A	N/A	No	No	No
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360	360	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	Teflon	Teflon	N/A	Glass	N/A	N/A	N/A	N/A
Residence time for reactive gases (seconds)	13	15	14	15	7	N/A	N/A	N/A	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	Y	N	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	Y	N
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	N/A	N/A	Monthly	N/A	Monthly	Monthly	N/A	Monthly
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	Every other day	Every other day	N/A	N/A	N/A	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	See Table 4.69	See Table 4.69	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	N/A	N/A	See Table 4.69	N/A	See Table 4.69	See Table 4.69	See Table 4.69	See Table 4.69

Notes:
(a) Trace level instruments required for CO and SO_2 at NCore sites
(b) $PM_{2.5}$ POC 1 was the primary sampler from October 2002 through September 2012 and was changed to be the collocated sampler after October 1, 2012 when $PM_{2.5}$ POC 3 became operational as the primary monitor.

4.28 San Jose – Knox

Table 4.55 - San Jose - Knox Site Information

AQS ID	06-085-0006
GPS coordinates	37.338202, -121.849892
Location	Trailer within 50m of freeway
Address	1007 Knox Ave. San Jose, CA 95122
County	Santa Clara
Distance to road from gaseous probe (meters)	Hwy 101: 16 I-280/680: 262 Story Rd: 234 Knox Ave: 236
Traffic count (AADT, year)	Hwy 101: 283,500 (2017) I-280/680: 211,000 (2017) Story Rd: 20,571 (2016) Knox Ave: 2,500 (2020) Traffic count data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Gravel
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA
Pollutants Measured	NO_x, CO, $PM_{2.5C}$, Toxics, BC, UFP
Spatial Scale	Microscale (100 m)
Notes	The site is 16 m downwind from US-101 (along a segment of roadway that typically has among highest Fleet Equivalent AADT (FE-AADT) in Santa Clara County) and designated as a near-road monitoring site, which is a category of sites designed to representative of population exposure in the near-road environment. Due to the prevalence of areas that have large roadways adjacent to population centers, San Jose – Knox is considered to be representative of area-wide air quality.

Table 4.56 - San Jose - Knox Monitor Details[a]

Pollutant, POC	NO_2, 1	CO, 1	$PM_{2.5}$, 3	BC, 1	Toxics, 3
Primary/QA Collocated/Other	Primary	N/A	Primary	N/A	N/A
Parameter code	42601 / 42602	42101	88101	84313	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	Public Information	Research
Site type(s)	Source Oriented & Population Exposure	Source Oriented & Population Exposure	Source Oriented & Population Exposure	Source Oriented	Population Exposure
Monitor type(s)	SLAMS	SLAMS	SLAMS	SPM	SPM
Network affiliation(s)	Near Road	Near Road	Near Road	N/A	N/A
Instrument manufacturer and model	TECO 42i	TECO 48i	Met One FEM BAM 1020	Teledyne API AE-633	Xontech 901
Method code	074	054	170	894	210
FRM/FEM/ARM/other	FRM	FRM	FEM	N/A	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District
Spatial scale	Micro	Micro	Micro	Micro	Micro
Monitor start date	09/01/2014	09/01/2014	09/01/2014	09/01/2014	08/15/2014
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	N/A	N/A
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01-12/31	01/01 – 12/31
Probe height (meters)	6	6	5	6	5
Distance from supporting structure (meters)	>1	>1	>2	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from trees (meters)	8[a]	8[a]	8[a]	8	8
Distance to furnace or incinerator flue (meters)	None	None	None	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	No	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	N/A	N/A	Glass
Residence time for reactive gases (seconds)	16	15	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	Y	N/A	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	Bi-weekly	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	N/A	N/A	N/A
Dates of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	N/A	N/A	N/A
Dates semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	See Table 4.69	N/A	N/A

Notes:
(a) Due to siting logistics constraints and in an effort to meet the objective of characterizing near-road emissions in the best segment in this MSA, the San Jose – Knox site was chosen even though the distance to the closest tree is less than 10 meters. Region 9 EPA was involved in the development of this site, were aware of the tree placement, and concurred on the siting choice, approving this site as meeting the requirements for near-road monitoring

4.29 San Martin

Table 4.57 - San Martin Site Information

AQS ID	06-085-2006
GPS coordinates	37.079379, -121.600031
Location	Air monitoring shelter next to maintenance shed
Address	13030 Murphy Ave, San Martin, CA 95046
County	Santa Clara
Distance to road from gaseous probe (meters)	Murphy Ave: 57 US Highway 101: 455 Monterey Rd: 561 San Martin Ave: 931
Traffic count (AADT, year)	Murphy Ave: 1,768 (2018) US Highway 101: 128,100 (2017) Monterey Rd: 15,054 (2018) San Martin Ave: 7,795 (2017) Traffic count data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Vegetative
Statistical Area	San Jose-Sunnyvale-Santa Clara CBSA
Pollutants Measured	O_3
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located at the South County Airport in an agricultural area at the south end of the Santa Clara Valley approximately 24 miles southeast of downtown San Jose and 0.3 miles west of US-101. Prevailing winds can transport ozone and ozone precursors down the valley from the densely populated San Jose area as well as the surrounding San Francisco Bay Area.

Table 4.58 - San Martin Monitor Details

Pollutant, POC	O_3, 1
Primary/QA Collocated/Other	N/A
Parameter code	44201
Basic monitoring objective(s)	NAAQS comparison
Site type(s)	Highest Concentration & Population Exposure & Regional Transport
Monitor type(s)	SLAMS
Network affiliation(s)	N/A
Instrument manufacturer and model	TECO 49i
Method code	047
FRM/FEM/ARM/other	FEM
Collecting Agency	Air District
Analytical Lab	N/A
Reporting Agency	Air District
Spatial scale	Neighborhood
Monitor start date	04/30/1994
Current sampling frequency	Continuous
Required sampling frequency	N/A
Sampling season	01/01-12/31
Probe height (meters)	5
Distance from supporting structure (meters)	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	N/A
Distance from trees (meters)	26
Distance to furnace or incinerator flue (meters)	N/A
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A
Unrestricted airflow (degrees)	360
Probe material for reactive gases	Teflon
Residence time for reactive gases (seconds)	16
Will there be changes within the next 18 months?	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A
Frequency of flow rate verification for automated PM analyzers	N/A
Frequency of one-point QC check for gaseous instruments	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A

4.30 San Pablo

Table 4.59 - San Pablo Site Information

AQS ID	06-013-1004
GPS coordinates	37.960400, -122.356811
Location	One story commercial building
Address	1865-D Rumrill Blvd, San Pablo, CA 94806
County	Contra Costa
Distance to road from gaseous probe (meters)	Rumrill Blvd: 16
Traffic count (AADT, year)	Rumrill Blvd:,15,433 (2013) Traffic count data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	O_3, NO_x, SO_2, CO, PM_{10}, $PM_{2.5\,C}$, Toxics, UFP
Spatial Scale	Middle scale (100 – 500 m)
Notes	The site is located in the most populated portion of western Contra Costa County and is almost surrounded by the city of Richmond. The nearby areas have heavy industry, high traffic volume including two major freeways, and is 1.2 miles downwind of the Chevron refinery. Light winds combined with surface-based inversions during winter months can cause elevated particulate matter concentrations. The spatial scale of representativeness for ozone and $PM_{2.5}$ is middle scale based on the distance to roadways and traffic counts. Based on an EPA Region 9 review of the requirements, the ozone monitor was changed from a SLAMS to SPM. Consequently, this monitor cannot be used toward meeting the minimum monitoring requirements for ozone. However, the Air District considers the $PM_{2.5}$ monitor to represent area-wide air quality and, therefore, comparable to the NAAQS because the site represents many similar locations throughout the metropolitan area. On October 19, 2016, a collocated PM_{10} monitor was added for quality assurance purposes.

Table 4.60 - San Pablo Monitor Details

Pollutant, POC	O_3, 1	CO, 1	NO_2, 1	SO_2, 1	PM_{10}, 1	PM_{10}, 2	$PM_{2.5}$, 3	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A	Primary	N/A	Primary	QA Collocated	Primary	N/A
Parameter code	44201	42101	42601 / 42602	42401	81102	81102	88101	See toxics section
Basic monitoring objective(s)	Public Information	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure & Source Oriented	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SPM	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	TECO 43i	Tisch Env. HiVol TE-60	Tisch Env. HiVol TE-6000	Met One FEM BAM 1020	Xontech 901
Method code	047	054	074	060	141	141	170	210
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM	FRM	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	Air District	Air District	Air District	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District
Spatial scale	Middle	Middle	Middle	Neighborhood	Middle	Middle	Middle	Middle
Monitor start date	09/13/2002	09/13/2002	09/13/2002	09/13/2002	09/23/2002	10/19/2016	12/12/2012	09/05/2002
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	1:6	1:12	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	N/A	1:6	N/A	N/A	N/A
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31
Probe height (meters)	9	9	9	9	5	5	6	8
Distance from supporting structure (meters)	>1	>1	>1	>1	>2	>2	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None	None	None
Distance from trees (meters)	>50	>50	>50	>50	>50	>50	>50	>50
Distance to furnace or incinerator flue (meters)	7	7	7	7	8	5	6	6
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	3	3	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	No	No	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	Teflon	N/A	N/A	N/A	Glass
Residence time for reactive gases (seconds)	9	10	10	9	N/A	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	N/A	N/A	N/A	Y	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	N/A	Quarterly	Quarterly	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	N/A	N/A	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	Every other day	N/A	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	See Table 4.69	See Table 4.69	N/A	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	N/A	See Table 4.69	See Table 4.69	See Table 4.69	N/A

4.31 San Rafael

Table 4.61 - San Rafael Site Information

AQS ID	06-041-0001
GPS coordinates	37.972310, -122.520004
Location	Second floor of two-story commercial building
Address	534 4th Street, San Rafael, CA 94901
County	Marin
Distance to road from gaseous probe (meters)	4th St: 18 Irwin St: 48 US Highway 101: 112 3rd St: 124
Traffic count (AADT, year)	4th St:8,830 (2017) Irwin St: 19,859 (2017) US Highway 101: 156,500 (2017) 3rd St: 28,142 (2017) Traffic count data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	O_3, NO_x, CO, PM_{10}, $PM_{2.5C}$, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located is at a commercial building about a block east of US-101 and near major highway access ramps, and 0.5 miles east of the downtown San Rafael, which is the largest city in Marin County. While afternoon westerly wind sea breezes typically keep pollutant concentrations low, light winds combined with wood burning, vehicular traffic, and surfaced-based inversions during winter can cause elevated particulate matter concentrations. The spatial scale of representativeness for ozone and $PM_{2.5}$ is middle scale based on the distance to roadways and traffic counts. Based on an EPA Region 9 review of the requirements, the ozone monitor was changed from a SLAMS to SPM. Consequently, this monitor cannot be used toward meeting the minimum monitoring requirements for ozone. However, the Air District considers the $PM_{2.5}$ monitor to represent area-wide air quality and, therefore, comparable to the NAAQS because the site represents many similar locations throughout the metropolitan area.

Table 4.62 - San Rafael Monitor Details

Pollutant, POC	O_3, 1	CO, 1	NO_2, 1	PM_{10}, 1	$PM_{2.5}$, 3	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A	Primary	Primary	Primary	N/A
Parameter code	44201	42101	42601 / 42602	81102	88101	See toxics section
Basic monitoring objective(s)	Public Information	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SPM	SLAMS	SLAMS	SLAMS	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	Andersen HiVol 1200	Met One FEM BAM 1020	Xontech 901
Method code	047	054	074	063	170	210
FRM/FEM/ARM/other	FEM	FRM	FRM	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	Air District	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District	Air District
Spatial scale	Middle	Middle	Middle	Middle	Middle	Middle
Monitor start date	07/01/1976	10/01/1967	NO: 01/01/1968 NO_2:10/01/1967	11/04/1986	10/27/2009	01/01/1985
Current sampling frequency	Continuous	Continuous	Continuous	1:6	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	1:6	N/A	N/A
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	12	12	12	8	9	12
Distance from supporting structure (meters)	>1	>1	>1	>2	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	H Dist = 23[(a)] V Dist above probe = 17	H Dist = 23[(a)] V Dist above probe = 17	H Dist = 23[(a)] V Dist above probe = 17	H Dist = 22[(a)] V Dist above probe = 21	H Dist = 25[(a)] V Dist above probe = 20	None
Distance from trees (meters)	14	14	14	13	10	14
Distance to furnace or incinerator flue (meters)	4	4	4	2	3	5
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	No	N/A	N/A
Unrestricted airflow (degrees)	320	320	320	320	320	360
Probe material for reactive gases	Teflon	Teflon	Teflon	N/A	N/A	Glass
Residence time for reactive gases (seconds)	10	11	13	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	N/A	Y	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	Quarterly	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	See Table 4.69	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	See Table 4.69	See Table 4.69	N/A

Notes:
(a) The "obstruction not on the roof" is between zero degrees (north) and 40 degrees (northeast) leaving greater than 270 degrees of unobstructed airflow. The prevailing winds are from the south and lay within the unobstructed arc.

4.32 San Ramon

Table 4.63 - San Ramon Site Information

AQS ID	06-013-2007
GPS coordinates	37.743649, -121.934188
Location	Top of trailer
Address	9885 Alcosta Blvd, San Ramon, CA 94582
County	Contra Costa
Distance to road from gaseous probe (meters)	Alcosta Blvd (Montevideo): 300 Pine Valley Rd: 350 Alcosta Blvd (S of Bollinger): 100 Estero Dr: 250
Traffic count (AADT, year)	Alcosta Blvd (Montevideo): 9582 (2015) Alcosta Blvd (S. of Bollinger): 21,000 (2017) Pine Valley Rd: 9,500 (2018) Estero Dr: <500 (est. 2012) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Gravel
Statistical Area	San Francisco-Oakland-Berkeley CBSA
Pollutants Measured	O_3, NO_x
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located in the city of San Ramon along the I-680 corridor, which connects the Livermore Valley with the San Ramon Valley and other major cities of Contra Costa County. During summer months, localized north winds can be channeled southward from Concord and Walnut Creek along the I-680 corridor and pass through San Ramon before turning eastward into the Livermore Valley transporting ozone and ozone precursors to the area. San Ramon is part of the unofficial PAMS program and measures hourly speciated hydrocarbons (see Section 3.4). While the site meets Appendix A and E and eligible for NAAQS comparison, monitors are designated as SPMS and are not used toward meeting the minimum monitoring requirements. In late 2013, the Air District decided to not operate the NO_x monitor during winter months.

Table 4.64 - San Ramon Monitor Details

Pollutant, POC	O_3, 1	NO_2, 1
Primary/QA Collocated/Other	N/A	Primary
Parameter code	44201	42601 / 42602
Basic monitoring objective(s)	Research, NAAQS comparison	Research
Site type(s)	Population Exposure	Population Exposure
Monitor type(s)	SPM	SPM
Network affiliation(s)	Unofficial PAMS	Unofficial PAMS
Instrument manufacturer and model	TECO 49i	TECO 42i
Method code	047	074
FRM/FEM/ARM/other	FEM	FRM
Collecting Agency	Air District	Air District
Analytical Lab	N/A	N/A
Reporting Agency	Air District	Air District
Spatial scale	Neighborhood	Neighborhood
Monitor start date	01/01/2012	01/01/2012
Current sampling frequency	Continuous	Continuous
Required sampling frequency	N/A	N/A
Sampling season	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	6	6
Distance from supporting structure (meters)	>1	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None
Distance from trees (meters)	62	62
Distance to furnace or incinerator flue (meters)	None	None
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A
Unrestricted airflow (degrees)	360	360
Probe material for reactive gases	Teflon	Teflon
Residence time for reactive gases (seconds)	18	18
Will there be changes within the next 18 months?	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A

4.33 Sebastopol

Table 4.65 - Sebastopol Site Information

AQS ID	06-097-0004
GPS coordinates	38.403765, -122.818294
Location	Top of two-story commercial building
Address	103 Morris Street, Sebastopol, CA 95472
County	Sonoma
Distance to road from gaseous probe (meters)	Morris St.: 80 Highway 12: 70
Traffic count (AADT, year)	Morris St.: 1,120 (2018) Highway 12: 23,000 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	Santa Rosa CBSA
Pollutants Measured	O_3, NO_x, CO, $PM_{2.5C}$, Toxics, UFP
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located in a commercial area on the eastern portion of the city of Sebastopol near State Route 12 and 116 with no large industrial sources in the immediate area. While afternoon westerly wind sea breezes typically keep pollutant concentrations low, light winds combined with wood burning, vehicular traffic, and surfaced-based inversions during winter can cause elevated particulate matter concentrations.

Table 4.66 - Sebastopol Monitor Details

Pollutant, POC	O_3, 1	CO, 1	NO_2, 1	$PM_{2.5}$, 3	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A	Primary	Primary	N/A
Parameter code	44201	42101	42601 / 42602	88101	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure & Highest Concentration	Population Exposure
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	Met One FEM BAM 1020	Xontech 901
Method code	047	054	074	170	210
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	01/09/2014	01/09/2014	01/09/2014	01/09/2014	01/11/2014
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	1:12
Required sampling frequency	N/A	N/A	N/A	N/A	N/A
Sampling season	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31	01/01 – 12/31
Probe height (meters)	12	12	12	9	11
Distance from supporting structure (meters)	>1	>1	>1	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None
Distance from trees (meters)	12	12	12	12	12
Distance to furnace or incinerator flue (meters)	4	4	4	4	4
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	N/A	Glass
Residence time for reactive gases (seconds)	10	12	13	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	Y	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	Bi-weekly	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	See Table 4.69	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	See Table 4.69	N/A

4.34 Vallejo

Table 4.67 - Vallejo Site Information

AQS ID	06-095-0004
GPS coordinates	38.102507, -122.237976
Location	One-story commercial building
Address	304 Tuolumne St, Vallejo, CA 94590
County	Solano
Distance to road from probe (meters)	Tuolumne St: 18 Solano Ave: 33 Capitol St: 30 Interstate 80: 700
Traffic count (AADT, year)	Tuolumne St: 8,332 (2008) Capitol St: 500 (2008) Solano Ave: 8,588 (2008) Interstate 80: 159,600 (2017) Traffic counts data were updated on April 1, 2020 and reflect the latest available data.
Groundcover	Paved
Statistical Area	Vallejo-Fairfield CBSA
Pollutants Measured	O_3, NO_x, SO_2, CO, $PM_{2.5C}$, Speciated $PM_{2.5}$, Toxics
Spatial Scale	Neighborhood scale (0.5 – 4 km)
Notes	The site is located in a mixed commercial and residential neighborhood one mile east of downtown and 0.5 miles west of I-80. Southerly winds can transport ozone and ozone precursors into Vallejo from the heavily populated central Bay Area. Easterly winds can also transport particulate matter from the Central Valley through the Carquinez Strait during winter months. Light winds combined with wood burning, vehicular traffic, and surfaced-based inversions during winter can cause elevated particulate matter concentrations. A collocated $PM_{2.5}$ FEM BAM is operated at Vallejo because this site has one of the highest $PM_{2.5}$ design values in the Bay Area. Additionally, numerous refineries are located to the south and east can be significant sources of SO_2.

Table 4.68 - Vallejo Monitor Details

Pollutant, POC	O_3, 1	CO, 1	NO_2, 1	SO_2, 1	$PM_{2.5}$, 3	$PM_{2.5}$, 4	Speciated $PM_{2.5}$, 5	Toxics, 3
Primary/QA Collocated/Other	N/A	N/A	Primary	N/A	Primary	QA Collocated	Other	N/A
Parameter code	44201	42101	42601 / 42602	42401	88101	88101	88502 (pm mass) – many others see SASS section	See toxics section
Basic monitoring objective(s)	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	NAAQS comparison	Research	Research
Site type(s)	Population Exposure	Population Exposure	Population Exposure	Population Exposure & Source Impact	Population Exposure & Highest Concentration & Regional Transport	Population Exposure	Population Exposure	Population Exposure
Monitor type(s)	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SPM	SPM
Network affiliation(s)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer and model	TECO 49i	TECO 48i	TECO 42i	TECO 43i	Met One FEM BAM 1020	Met One FEM BAM 1020	Met One SASS	Xontech 901
Method code	047	054	074	060	170	170	810	210
FRM/FEM/ARM/other	FEM	FRM	FRM	FEM	FEM	FEM	N/A	N/A
Collecting Agency	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District
Analytical Lab	N/A	N/A	N/A	N/A	Air District	Air District	Air District	Air District
Reporting Agency	Air District	Air District	Air District	Air District	Air District	Air District	Air District	Air District
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitor start date	07/01/1976	07/01/1976	07/01/1976	07/01/1976	01/01/2011	01/01/2013	06/11/2008	05/01/1986
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	1:6	1:12
Required sampling frequency	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sampling season	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 - 12/31	01/01 – 12/31
Probe height (meters)	9	9	9	9	6	6	7	10
Distance from supporting structure (meters)	>1	>1	>1	>1	>2	>2	>2	>1
Distance from obstructions on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None	None	None
Distance from obstructions not on roof (meters). Include horizontal distance + vertical height above probe for obstructions nearby (meters).	None	None	None	None	None	None	None	None
Distance from trees (meters)	>50	>50	>50	>50	>50	>50	>50	>50
Distance to furnace or incinerator flue (meters)	4	4	4	4	3	3	5	4
Distance between monitors fulfilling a QA collocation requirement (meters)	N/A	N/A	N/A	N/A	4	4	N/A	N/A
For low volume PM instruments (flow rate < 200 liters/minute) is any PM instrument within 1m of the LoVol? If yes, please list distance (meters) and instruments(s).	N/A	N/A	N/A	N/A	No	No	No	N/A
For high volume PM instrument (flow rate > 200 liters/minute), is any PM instrument within 2m of the HiVol? If yes, please list distance (meters) and instrument(s).	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Unrestricted airflow (degrees)	360	360	360	360	360	360	360	360
Probe material for reactive gases	Teflon	Teflon	Teflon	Teflon	N/A	N/A	N/A	Glass
Residence time for reactive gases (seconds)	8	10	10	10	N/A	N/A	N/A	N/A
Will there be changes within the next 18 months?	N	N	N	N	N	N	N	N
Is it suitable for comparison against the annual $PM_{2.5}$ NAAQS?	N/A	N/A	N/A	N/A	Y	Y	N	N/A
Frequency of flow rate verification for manual PM samplers, including Pb samplers	N/A	N/A	N/A	N/A	N/A	N/A	Monthly	N/A
Frequency of flow rate verification for automated PM analyzers	N/A	N/A	N/A	N/A	Bi-weekly	Bi-weekly	N/A	N/A
Frequency of one-point QC check for gaseous instruments	Every other day	Every other day	Every other day	Every other day	N/A	N/A	N/A	N/A
Date of Annual Performance Evaluation conducted in the past calendar year for gaseous parameters	See Table 4.69	See Table 4.69	See Table 4.69	See Table 4.69	N/A	N/A	N/A	N/A
Date of two semi-annual flow rate audits conducted in the past calendar year for PM monitors	N/A	N/A	N/A	N/A	See Table 4.69	See Table 4.69	See Table 4.69	N/A

Table 4.69 - Criteria Pollutant Performance Evaluation and Semi-Annual Flow Audit Dates

Local Site Name (AQS ID)	O_3	NO_2	SO_2	CO	$PM_{2.5}$	PM_{10}	Pb
Berkeley Aquatic Park (06-001-0013)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Bethel Island (06-013-1002)	2022-05-12	2022-05-12	2022-05-12	2022-05-12	n/a	n/a	n/a
Concord (06-013-0002-1)	2022-01-25 2022-07-21	2022-01-25 2022-07-21	2022-01-25 2022-07-21	2022-01-24 2022-05-03	2022-01-24 2022-05-03	2022-01-24 2022-05-03 2022-07-20	n/a
Concord (06-013-0002-3)	n/a	n/a	n/a	n/a	2022-01-24 2022-05-03 2022-07-20	n/a	n/a
Crockett (06-013-1001)	n/a	n/a	2022-04-05	n/a	n/a	n/a	n/a
Fairfield (06-095-0005)	2022-01-10 2022-04-04 2022-07-18	n/a	n/a	n/a	n/a	n/a	n/a
Forest Knolls (06-041-2001)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Fort Cronkhite (06-041-0004)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Gilroy (06-085-0002)	2022-01-13 2022-04-07 2022-07-12	n/a	n/a	n/a	2022-01-13 2022-04-07 2022-07-12	n/a	n/a
Hayward (06-001-2001)	2022-01-06 2022-04-06 2022-07-20	n/a	n/a	n/a	n/a	n/a	n/a
Livermore (06-001-0007)	2022-02-08 2022-08-10	2022-02-08 2022-08-10	n/a	n/a	2022-02-07 2022-05-25 2022-08-10	n/a	n/a
Los Gatos (06-085-1001)	2022-01-11 2022-04-05 2022-07-13	n/a	n/a	n/a	n/a	n/a	n/a
Martinez (06-013-2001)	n/a	n/a	2022-01-19 2022-07-13	n/a	n/a	n/a	n/a
Napa Valley College (06-055-0004)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Oakland - East (06-001-0009)	2022-05-10	2022-05-10	n/a	2022-05-10	2022-02-18 2022-05-09 2022-07-25	n/a	n/a
Oakland - Laney College (06-001-0012)	n/a	2022-03-23 2022-09-13	n/a	2022-03-23 2022-09-13	2022-03-16 2022-05-24 2022-09-13	n/a	n/a
Oakland - West (06-001-0011)	2022-05-11	2022-05-11	2022-05-11	2022-05-11	2022-01-26 2022-05-09 2022-07-25	n/a	n/a
Pittsburg (N/A)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Pleasanton (06-001-0015)	n/a	2022-02-09 2022-08-11	n/a	2022-02-09 2022-08-11	2022-02-07 2022-05-25 2022-08-11	n/a	n/a
Point Richmond (06-013-0005)	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Local Site Name (AQS ID)	O_3	NO_2	SO_2	CO	$PM_{2.5}$	PM_{10}	Pb
Redwood City (06-081-1001)	2022-02-03 2022-07-26	2022-02-03 2022-07-26	n/a	2022-02-03 2022-07-26	2022-02-03 2022-05-02 2022-07-26	n/a	n/a
Reid-Hillview Airport (06-085-2011)	n/a	n/a	n/a	n/a	n/a	n/a	2022-03-29 2022-06-21 2022-09-21
Richmond - 7th St (06-013-0006)	n/a	n/a	2022-04-06	n/a	n/a	n/a	n/a
Rodeo (06-013-0007)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
San Francisco (06-075-0005)	2022-06-02	2022-06-02	n/a	2022-06-02	2022-02-24 2022-06-01 2022-09-01	2022-02-24 2022-06-01 2022-09-01	n/a
San Jose – Jackson (06-085-0005)	2022-06-07	2022-06-07	2022-03-08 2022-08-18	2022-03-08	2022-03-08[a] 2022-06-06[a] 2022-08-16[a]	2022-03-08 2022-06-06 2022-08-16	n/a
San Jose – Knox (06-085-0006)	n/a	2022-05-31	n/a	2022-05-31	2022-03-07 2022-05-31 2022-08-16	n/a	n/a
San Martin (06-085-2006)	2022-01-13 2022-04-07 2022-07-12	n/a	n/a	n/a	n/a	n/a	n/a
San Pablo (06-013-1004)	2022-05-04	2022-05-04	2022-05-04	2022-05-04	2022-01-24 2022-05-03 2022-08-02	2022-01-24[b] 2022-05-03 2022-08-02	n/a
San Rafael (06-041-0001)	2022-03-22 2022-09-14	2022-03-22 2022-09-14	n/a	2022-03-22 2022-09-14	2022-03-21 2022-06-08 2022-09-12	2022-03-21 2022-06-08 2022-09-12	n/a
San Ramon (06-013-2007)	2022-05-17	2022-05-17	n/a	n/a	n/a	n/a	n/a
Sebastopol (06-097-0004)	2022-01-20 2022-07-19	2022-01-20 2022-07-19	n/a	2022-01-20 2022-07-19	2022-01-20 2022-04-22 2022-07-19	n/a	n/a
Vallejo (06-095-0004)	2022-04-26	2022-04-26	2022-04-26	2022-04-26	2022-01-31[c] 2022-04-25[c] 2022-08-01[c]	n/a	n/a

Notes:

(a) Semi-Annual flow audits for both POC-1 and POC-3 occurred on the same dates.

(b) Semi-Annual flow audits for both POC-1 and POC-2 occurred on the same date.

(c)Semi-Annual flow audits for both POC-3 and POC-4 occurred on the same dates.

Appendix A

Ozone Monitoring Agreement between the Air District and MBARD

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

June 4, 2014

Mr. Michael J. Gilroy
Deputy Air Pollution Control Officer
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940

Dear Mr. Gilroy:

The Bay Area Air Quality Management District has signed the Ozone monitoring agreement as described in your letter of May 23, 2014 (attached). We will continue to operate the Ozone monitors at San Jose, Los Gatos, Gilroy, and San Martin as stated in your letter. We will advise you well in advance if any of these monitors are shutdown or moved to another location.

Sincerely,

Eric D. Stevenson
Director, Technical Services Division

Enclosure

MBUAPCD
Monterey Bay Unified Air Pollution Control District
Serving Monterey, San Benito, and Santa Cruz Counties

24580 Silver Cloud Court
Monterey, CA 93940
PHONE: (831) 647-9411 • FAX: (831) 647-8501

May 23, 2014

Mr. Eric D. Stevenson
Director, Technical Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Subject: Shared Ozone Monitoring Responsibilities

Dear Mr. Stevenson:

For Ozone monitoring in the San Jose-Sunnyvale-Santa Clara Metropolitan Statistical Area (MSA), both of our agencies are required to meet the full minimum monitoring requirements of 40 CFR Part 58 Appendix D, section (2)(e) in the absence of an Ozone monitoring agreement. The Monterey Bay Unified Air Pollution Control District (MBUAPCD) currently operates one SLAMS Ozone monitor in this MSA (at Hollister) but two monitors are required. Therefore, MBUAPCD would like this letter to serve as a monitoring agreement between our two agencies.

The MBUAPCD requests BAAQMD reply to this letter confirming agreement to continue operation of the SLAMS Ozone monitors at San Jose, Los Gatos, Gilroy, and San Martin. Both agencies will advise each other if changes to the instruments listed below are planned.

	AQS#	Parameter	Method	POC
San Jose	060850005	44201	047	1
Los Gatos	060851001	44201	047	1
Gilroy	060850002	44201	047	1
San Martin	060852006	44201	047	1
Hollister	060690002	44201	047	1

Sincerely,

Michael J Gilroy
Deputy Air Pollution Control Officer
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940
(831) 647-9411

Appendix B

PM_{10} Monitoring Agreement between the Air District and MBARD

MBUAPCD
Monterey Bay Unified Air Pollution Control District
Serving Monterey, San Benito, and Santa Cruz Counties

24580 Silver Cloud Court
Monterey, CA 93940
PHONE: (831) 647-9411 • FAX: (831) 647-8501

January 22, 2013

Mr. Eric D. Stevenson
Director, Technical Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Mr. Stevenson,

In response to your letters dated December 13, 2012, and January 14, 2013, the District will continue the operation of the Hollister air monitoring station (AQS#: 060690002) for purpose of meeting 40 CFR Part 58, Appendix D minimum monitoring requirements. The District's intention is to continue operation of this SLAMs site for both PM_{10} and $PM_{2.5}$ FEM BAM indefinitely. Should the District need to revisit this in the future, we will coordinate with BAAQMD prior to any changes to the station.

Sincerely,

Michael J Gilroy
Deputy Air Pollution Control Officer
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Ct.
Monterey, CA 93940
(831) 647-9411

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

January 14, 2013

Mr. William Chevalier
Supervising Air Monitoring Specialist
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940

Dear Mr. Chevalier:

During a recent review of the Annual Network Report for the Bay Area Air Quality Management District (BAAQMD), EPA Region 9 pointed out that we do not have a written agreement to share minimum monitoring requirements with neighboring Air Districts. For PM_{10} monitoring in the San Jose-Sunnyvale-Santa Clara Metropolitan Statistical Area (MSA), both of our agencies are required to meet the full minimum monitoring requirements of 40 CFR Part 58 Appendix D, section (2)(e) in the absence of a PM_{10} monitoring agreement.

The San Jose-Sunnyvale-Santa Clara MSA must have two SLAMS PM_{10} monitors to meet EPA minimum monitoring requirements. The BAAQMD operates one SLAMS PM_{10} monitor at San Jose and will continue to operate this instrument indefinitely.

The BAAQMD requests Monterey Bay Unified Air Pollution Control District reply to this letter confirming agreement to continue operating the SLAMS PM_{10} monitor at Hollister. As part of the agreement, both agencies will advise each other if changes to the instruments (as shown below) are planned.

	AQS#	Parameter	Method	POC
San Jose	060850005	81102	127	1
Hollister	060690002	81102	122	3

Sincerely,

Eric D. Stevenson
Director, Technical Services Division

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

December 13, 2012

Mr. William Chevalier
Supervising Air Monitoring Specialist
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940

Dear Mr. Chevalier:

During a recent review of the Annual Network Report for the Bay Area Air Quality Management District (BAAQMD), EPA Region 9 pointed out that we do not have a written agreement to share minimum monitoring requirements with neighboring Air Districts. For $PM_{2.5}$ monitoring in the San Jose-Sunnyvale-Santa Clara Metropolitan Statistical Area (MSA), both of our agencies are required to meet the full minimum monitoring requirements of 40 CFR Part 58 Appendix D, section (2)(e) in the absence of a $PM_{2.5}$ monitoring agreement.

The San Jose-Sunnyvale-Santa Clara MSA must have three SLAMS $PM_{2.5}$ monitors to meet EPA minimum monitoring requirements. The BAAQMD operates two SLAMS $PM_{2.5}$ monitors (San Jose and Gilroy) and both instruments are FEM BAM operating continuously. Additionally, the San Jose site has a collocated filter measurement as of October 1, 2012 for quality assurance purposes. The BAAQMD will continue to operate all of the above instruments indefinitely.

The BAAQMD requests Monterey reply to this letter confirming agreement to continue operation of the SLAMS $PM_{2.5}$ FEM BAM at Hollister. As part of the agreement, both agencies will advise each other if changes to the instruments (as shown below) are planned.

	AQS#	Parameter	Method	POC
San Jose	060850005	88101	170	3 (Primary)
San Jose	060850005	88101	145	1 (QA – collocated)
Gilroy	060850002	88101	170	3
Hollister	060690002	88101	170	3

Sincerely,

Eric D. Stevenson
Director, Technical Services Division

Appendix C

NO_2 Monitoring Agreement Between the Air District and MBARD

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

June 4, 2014

Mr. Michael J. Gilroy
Deputy Air Pollution Control Officer
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940

Dear Mr. Gilroy:

The Bay Area Air Quality Management District has signed the NO_2 monitoring agreement as described in your letter of May 23, 2014 (attached). We will continue to operate the NO_2 monitor at San Jose as stated in your letter. We will advise you well in advance if this monitor is shutdown or moved to another location.

Sincerely,

Eric D. Stevenson
Director, Technical Services Division

Enclosure

MBUAPCD
Monterey Bay Unified Air Pollution Control District
Serving Monterey, San Benito, and Santa Cruz Counties

24580 Silver Cloud Court
Monterey, CA 93940
PHONE: (831) 647-9411 • FAX: (831) 647-8501

May 23, 2014

Mr. Eric D. Stevenson
Director, Technical Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Subject: Shared NO/NO2/NOX Monitoring Responsibilities

Dear Mr. Stevenson:

40 CFR Part 58 Appendix D, section (2)(e), requires air monitoring of oxides of nitrogen to be performed to meet minimum federal requirement for the San Jose-Sunnyvale-Santa Clara Metropolitan Statistical Area (MSA). The Monterey Bay Unified Air Pollution Control District (MBUAPCD) currently does not operate any SLAMS NO_2 monitors in this MSA and would like this letter to serve as a monitoring agreement between our two agencies.

The MBUAPCD requests the Bay Area Air Quality Management District reply to this letter confirming agreement to continue operation of the SLAMS NO_2 monitor at San Jose and advise MBUAPCD if changes to this instrument are planned.

	AQS#	Parameter	Method	POC
San Jose	060850005	42602	074	1

Sincerely,

Michael J Gilroy
Deputy Air Pollution Control Officer
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940
(831) 647-9411

Appendix D

CO, NO_2, and $PM_{2.5}$ Near-road Monitoring Agreement between the Air District and MBARD

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

May 14, 2015

Mr. Michael J. Gilroy
Deputy Air Pollution Control Officer
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940

Dear Mr. Gilroy:

The Bay Area Air Quality Management District has signed the shared near-road CO, NO_2 and $PM_{2.5}$ monitoring agreement as described in your letter of May 13, 2015 (attached). We will continue to operate these monitors at the San Jose Knox monitoring site (060850006) as stated in your letter. We will advise you in advance if any of these monitors are shutdown or moved to another location.

Sincerely,

Eric D. Stevenson
Director, Meteorology, Measurement and Rules Division

Enclosure

MBUAPCD
Monterey Bay Unified Air Pollution Control District
Serving Monterey, San Benito, and Santa Cruz Counties

24580 Silver Cloud Court
Monterey, CA 93940
PHONE: (831) 647-9411 • FAX: (831) 647-8501

May 13, 2015

Mr. Eric D. Stevenson
Director, Technical Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Subject: Shared Near-Road CO, NO2, and $PM_{2.5}$ Monitoring Responsibilities

Dear Mr. Stevenson:

40 CFR Part 58 Subparts 58.10(a)(7), 58.13(e)(1), and Appendix D section 4.3.1, requires near-road monitoring of CO, NOx, and $PM_{2.5}$ to be performed to meet minimum federal requirements for the San Jose-Sunnyvale-Santa Clara Core Based Statistical Area (CBSA), 41940. The Bay Area Air Quality Management District (BAAQMD) established a near-road monitor in San Jose on September 1, 2014 and will take responsibility for meeting these near-road requirements as they currently exist. The Monterey Bay Unified Air Pollution Control District (MBUAPCD) currently does not operate any Near-Road CO, NO2, and $PM_{2.5}$ monitors in this MSA and would like this letter to serve as a monitoring agreement between our two agencies.

The MBUAPCD requests the Bay Area Air Quality Management District reply to this letter confirming agreement to continue operation of the Near-Road CO, NO2, and $PM_{2.5}$ monitors at San Jose-Knox Avenue and advise MBUAPCD if changes to this instrument are planned.

	AQS#	Parameter	Method	POC
San Jose	060850006	42101	054	1
San Jose	060850006	42602	074	1
San Jose	060850006	88101	170	1

Sincerely,

Michael J Gilroy
Deputy Air Pollution Control Officer
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940
(831) 647-9411

Appendix E

Ozone Monitoring Agreement Between the Air District and NSCAPCD

NORTHERN SONOMA COUNTY AIR POLLUTION CONTROL DISTRICT
150 Matheson Street, Healdsburg, CA 95448 • PH: (707) 433-5911 • FX: (707) 433-4823

December 29, 2020

Dr. Ranyee Chiang, Director
Meteorology and Measurements Division
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Subject: Agreement of Shared Ozone (O_3) Monitoring Responsibilities

Dear Dr. Chiang:

40 CFR, Part 58 Appendix D, section (2)(e), requires air monitoring of ozone to be performed in order for our agencies to meet the minimum monitoring requirements for our shared Santa Rosa Metropolitan Statistical Area (MSA). The Santa Rosa MSA is required to have a minimum of one ozone monitor to meet Environmental Protection Agency (EPA) minimum monitoring requirements.

The Bay Area Air Quality Management District (BAAQMD) currently operates one State or Local Monitoring Station (SLAMS) ozone monitor in our shared MSA located at its Sebastopol site. The Northern Sonoma County Air Pollution Control District (NSCAPCD) recently decommissioned, with EPA and CARB approval, one State or Local Monitoring Station (SLAMS) ozone monitor in our shared MSA located at the Healdsburg Airport.

The NSCAPCD is hereby notifying BAAQMD of the decommission its Healdsburg Airport site. The EPA approval of decommission is enclosed for reference. The CARB also discussed and anticipated the decommission of the Healdsburg airport site in its recent 5-year network assessment.

The EPA has requested that the NSCAPCD and BAAQMD recognize the shared MSA monitoring responsibility and agree to ongoing collaboration to ensure the continued operation of at least one ozone monitor. In the spirit of inter-agency collaboration, the NSCAPCD and BAAQMD agree that:

- The NSCAPCD and BAAQMD share the Santa Rosa MSA and the EPA minimum monitoring requiring is at least one ozone monitor for the MSA; and
- The NSCAPCD and BAAQMD recognize that the Santa Rosa MSA currently relies on BAAQMD SLAM ozone monitor at the Sebastopol location to meet the MSA monitoring requirement; and
- BAAQMD shall notify the NSCAPCD of any changes to the Sebastopol ozone monitor and the NSCAPCD shall notify BAAQMD if it re-establishes an ozone monitor; and
- The NSCAPCD and the BAAQMD shall collaborate and include the CARB and the EPA as necessary or required to maintain at least one ozone monitor for the MSA, or meet future ozone monitoring requirements, should they change.

Robert Bamford
Air Pollution Control Officer
Northern Sonoma County Air Pollution Control District
150 Matheson Street
Healdsburg, CA 95448
(707) 433-5911

Dr. Ranyee Chiang, Director
Meteorology and Measurements Division
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Enclosures: EPA December 14, 2020 approval of decommission of the NSCAPCD Healdsburg ozone monitor.

Appendix F

EPA Approval to End Monitoring of NO_y at the San Jose – Jackson NCore Site

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

October 30, 2017

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Eric Stevenson
Director of Technical Services
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Dear Mr. Stevenson:

This letter transmits our approval of the Bay Area Air Quality Management District (BAAQMD) request to shut down the agencies' NOy monitor in concert with continued operation of a NOx monitor at the San Jose-Jackson Street NCore station (AQS site ID: 06-085-0005). This request is being made so that the NOy monitor can be installed and operated at the proposed PAMS station in Livermore, California (AQS site ID: 06-001-0007). Requests to allow monitoring for NOx instead of NOy at NCore stations are covered in our monitoring regulations (see Appendix D to Part 58, Section 3. (b)(1)). According to these rules, a waiver for measuring NOx in lieu of NOy must be approved by the Environmental Protection Agency's (EPA) Administrator. This authority has been delegated to the Director of the Air Quality Assessment Division in EPA's Office of Air Quality Planning and Standards.

In considering your request to operate NOx in lieu of NOy at the San Jose-Jackson Street NCore station, we worked with EPA Region 9 on an evaluation of the NOy and NOx data at the San Jose-Jackson Street station and a review of the rationale for why the proposed PAMS station is better suited for NOy measurements. After careful consideration of your request to move the NOy monitor to the proposed PAMS station in Livermore and operate NOx at San Jose-Jackson Street we are pleased to approve the shut-down of NOy at the San Jose-Jackson Street NCore station. We note that PAMS measurements are required to operate minimally during June, July, and August, while NCore measurements are required to operate year-round. Since the Livermore site would be the only BAAQMD location with both NOy and true NO_2, we expect that you will operate these measurements year-round. Let us know if this is not possible.

The strength of the rationale to prioritize operation of NOy at Livermore over San Jose-Jackson Street is that it allows for collocating NOy with a true NO_2 monitor at Livermore. This collocation of NOy and true NO_2 will ensure that calculations of NOz are made with the most appropriate monitoring technologies. This is consistent with our authority to allow such a waiver since differences between NOy and true NO_2 + NO are expected to be larger than differences between NOy and NOx chemiluminescence monitors, as is the case for the existing monitors at San Jose-Jackson Street.

If you have any questions regarding this letter, please feel free to contact me at (415) 972-3851, or Anna Mebust of my staff at (415) 972-3265.

cc: (via email): Tim Hanley, OAQPS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

October 30, 2017

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Eric Stevenson
Director of Technical Services
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Dear Mr. Stevenson:

This letter transmits our approval of the Bay Area Air Quality Management District (BAAQMD) request to shut down the agencies' NOy monitor in concert with continued operation of a NOx monitor at the San Jose-Jackson Street NCore station (AQS site ID: 06-085-0005). This request is being made so that the NOy monitor can be installed and operated at the proposed PAMS station in Livermore, California (AQS site ID: 06-001-0007). Requests to allow monitoring for NOx instead of NOy at NCore stations are covered in our monitoring regulations (see Appendix D to Part 58, Section 3. (b)(1)). According to these rules, a waiver for measuring NOx in lieu of NOy must be approved by the Environmental Protection Agency's (EPA) Administrator. This authority has been delegated to the Director of the Air Quality Assessment Division in EPA's Office of Air Quality Planning and Standards.

In considering your request to operate NOx in lieu of NOy at the San Jose-Jackson Street NCore station, we worked with EPA Region 9 on an evaluation of the NOy and NOx data at the San Jose-Jackson Street station and a review of the rationale for why the proposed PAMS station is better suited for NOy measurements. After careful consideration of your request to move the NOy monitor to the proposed PAMS station in Livermore and operate NOx at San Jose-Jackson Street we are pleased to approve the shut-down of NOy at the San Jose-Jackson Street NCore station. We note that PAMS measurements are required to operate minimally during June, July, and August, while NCore measurements are required to operate year-round. Since the Livermore site would be the only BAAQMD location with both NOy and true NO_2, we expect that you will operate these measurements year-round. Let us know if this is not possible.

The strength of the rationale to prioritize operation of NOy at Livermore over San Jose-Jackson Street is that it allows for collocating NOy with a true NO_2 monitor at Livermore. This collocation of NOy and true NO_2 will ensure that calculations of NOz are made with the most appropriate monitoring technologies. This is consistent with our authority to allow such a waiver since differences between NOy and true NO_2 + NO are expected to be larger than differences between NOy and NOx chemiluminescence monitors, as is the case for the existing monitors at San Jose-Jackson Street.

Thank you for your program's efforts in working through the issue of optimizing your network to meet multiple needs at NCore and PAMS. For any technical questions on NCore, you may contact Tim Hanley at hanley.tim@epa.gov and 919-541-4417. For technical questions on PAMS, you may contact Kevin Cavender at cavender.kevin@epa.gov and 919-541-2364.

Sincerely,

Richard A. Wayland

Richard A. Wayland
Director
Air Quality Assessment Division

cc: Matthew J. Lakin, EPA Region 9

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

March 3, 2014

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

Dear Ms. Kurpius:

Since January 2011, the Bay Area Air Quality Management District (Air District) has been operating a federally mandated NOy instrument as part of EPA NCore requirements at our San Jose NCore site; AQS ID 06-085-0005. Hourly average data from this monitor have been submitted to the EPA AQS data base using the required method code 599 and parameter code 42600.

Analysis of 24 hourly NOx vs. NOy averages indicate statistically insignificant differences between NOx and NOy measurements as demonstrated in the three figures (24 hr NOx vs NOy correlation, by year) included below. To enable more efficient utilization of both fiscal and personnel resources within the Air District Air Monitoring Section, we are requesting that the EPA Administrator grant a waiver permitting NOx monitoring to be substituted for the required NOy monitoring at the Air District NCore site, as allowed in ***40CFR Part 58 Appendix D.3: Design Criteria for NCore Sites.***

The EPA NCore requirements from 40CFR Part 58 Appendix D.3: Design Criteria for NCore Sites as last amended on Dec. 27th 2010 includes the following in paragraph 3 (b) (1);

Although the measurement of NOy is required in support of a number of monitoring objectives, available commercial instruments may indicate little difference in their measurement of NOy compared to the conventional measurement of NOX, particularly in areas with relatively fresh sources of nitrogen emissions. Therefore, in areas with negligible expected difference between NOy and NOX measured concentrations, the Administrator may allow for waivers that permit NOX monitoring to be substituted for the required NOy monitoring at applicable NCore sites.

All data represented in the figures below is available for further analysis in the EPA AQS data base, or can be provided upon request if independent verification by EPA is desired. We propose to close this monitor immediately upon receipt of the Administrator's letter providing the requested waiver.

939 ELLIS STREET • SAN FRANCISCO CALIFORNIA 94109 • 415.771.6000 • www.baaqmd.gov

Please contact Glen Colwell at (415) 749-4672 if you have any questions or concerns.

Sincerely,

Eric D. Stevenson
Director of Technical Services

cc: K. Hoag, EPA Region 9
G. Yoshimura, EPA Region 9
E. Felix, EPA Region 9
K. Malone,
M. Flagg, EPA Region 9

Figure 1 – NCore BAAQMD San Jose: NOx vs. NOy 2013 24 Hr Correlation: R2 = 0.995

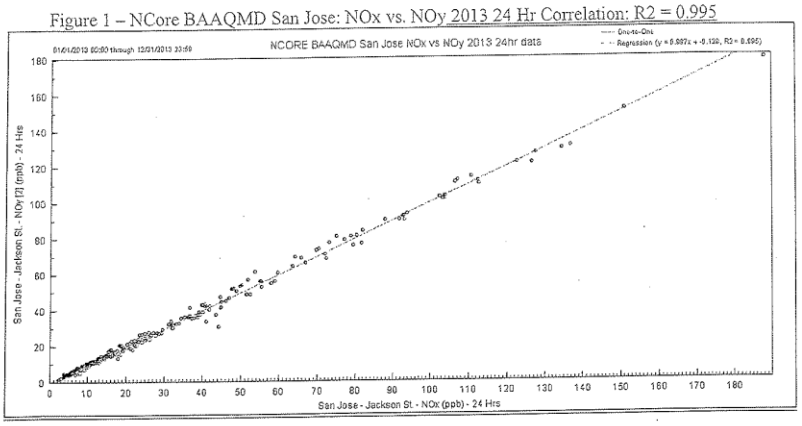


Figure 2 – NCore BAAQMD San Jose: NOx vs. NOy 2012 24 Hr Correlation: R2 = 0.994

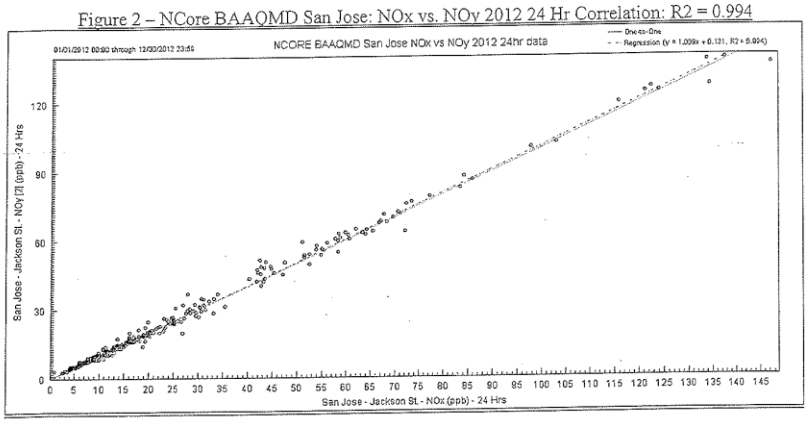
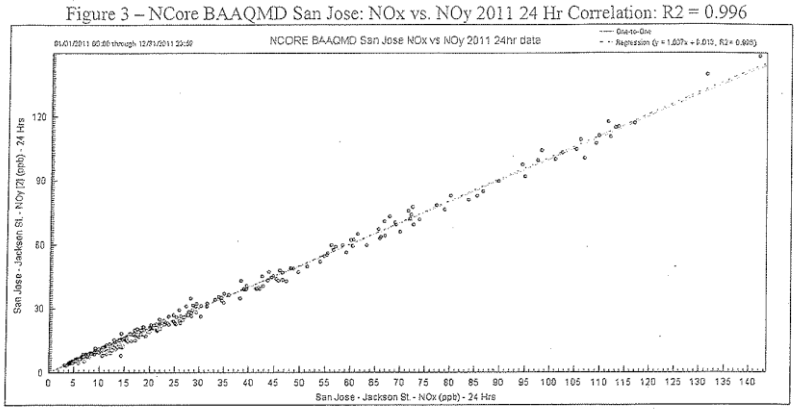


Figure 3 – NCore BAAQMD San Jose: NOx vs. NOy 2011 24 Hr Correlation: R2 = 0.996



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

OCT 11 2017

MEMORANDUM

SUBJECT: Request for OAQPS Approval: NO_y Waiver for the Bay Area Air Quality Management District's San Jose-Jackson NCore Site

FROM: Matthew J. Lakin
Acting Director, Air Division

TO: Richard A. Wayland
Director, Air Quality Assessment Division

I am writing to transmit a request from the Bay Area Air Quality Management District (BAAQMD) for a waiver of the requirement for observations of total reactive nitrogen oxides (NO_y) at the San Jose-Jackson National Core multi-pollutant monitoring (NCore) site (AQS ID: 06-085-0005). BAAQMD communicated this request in their *2016 Air Monitoring Network Plan* (Network Plan), submitted June 29, 2017. As you are aware, 40 CFR 58 Appendix D Section 3(b)(1) allows for the U.S. Environmental Protection Agency (EPA) Administrator to issue waivers to substitute nitrogen oxides (NO_x) for required NO_y monitoring at applicable NCore sites, which has been delegated to your office.

NO_y monitoring is currently required for NCore and will be required for Photochemical Assessment Monitoring Stations (PAMS) beginning in June 2019 for BAAQMD. In Appendix H of their Network Plan, BAAQMD requested a waiver from EPA to locate required PAMS measurements at Livermore (AQS ID: 06-001-0007) rather than at San Jose-Jackson. BAAQMD is requesting this waiver because Livermore is important for regional modeling, as it is the maximum concentration and design value site for the Bay Area ozone (O_3) nonattainment area. Making Livermore an official PAMS will also allow for better tracking of O_3 precursor trends, since it has operated as an unofficial PAMS for the past seven years. An initial assessment of BAAQMD's request suggests that it meets the criteria in 40 CFR 58 Appendix D Section 5(c) for the waiver. EPA Region 9 intends to address this request through the annual network plan approval.

BAAQMD is requesting a waiver from the NCore requirement for NO_y at San Jose-Jackson in order to move the NO_y instrument to Livermore, as part of the required PAMS measurements. Locating NO_y at Livermore with PAMS rather than at San Jose-Jackson with NCore will allow for collocation of NO_y with important O_3 precursor measurements. Additionally, BAAQMD has included analysis in their Network Plan, Appendix F, and in previous NO_y waiver requests, showing little difference between NO_y and NO_x concentrations at San Jose-Jackson.

Based on our position on BAAQMD's waiver request to locate PAMS at Livermore, as well as your approval of NO_y waivers for other agencies under similar circumstances, we recommend that you approve BAAQMD's request for an NO_y waiver at San Jose-Jackson.

If you have any questions regarding this letter, please feel free to contact me at (415) 972-3851, or Anna Mebust of my staff at (415) 972-3265.

cc: (via email): Tim Hanley, OAQPS

Appendix G

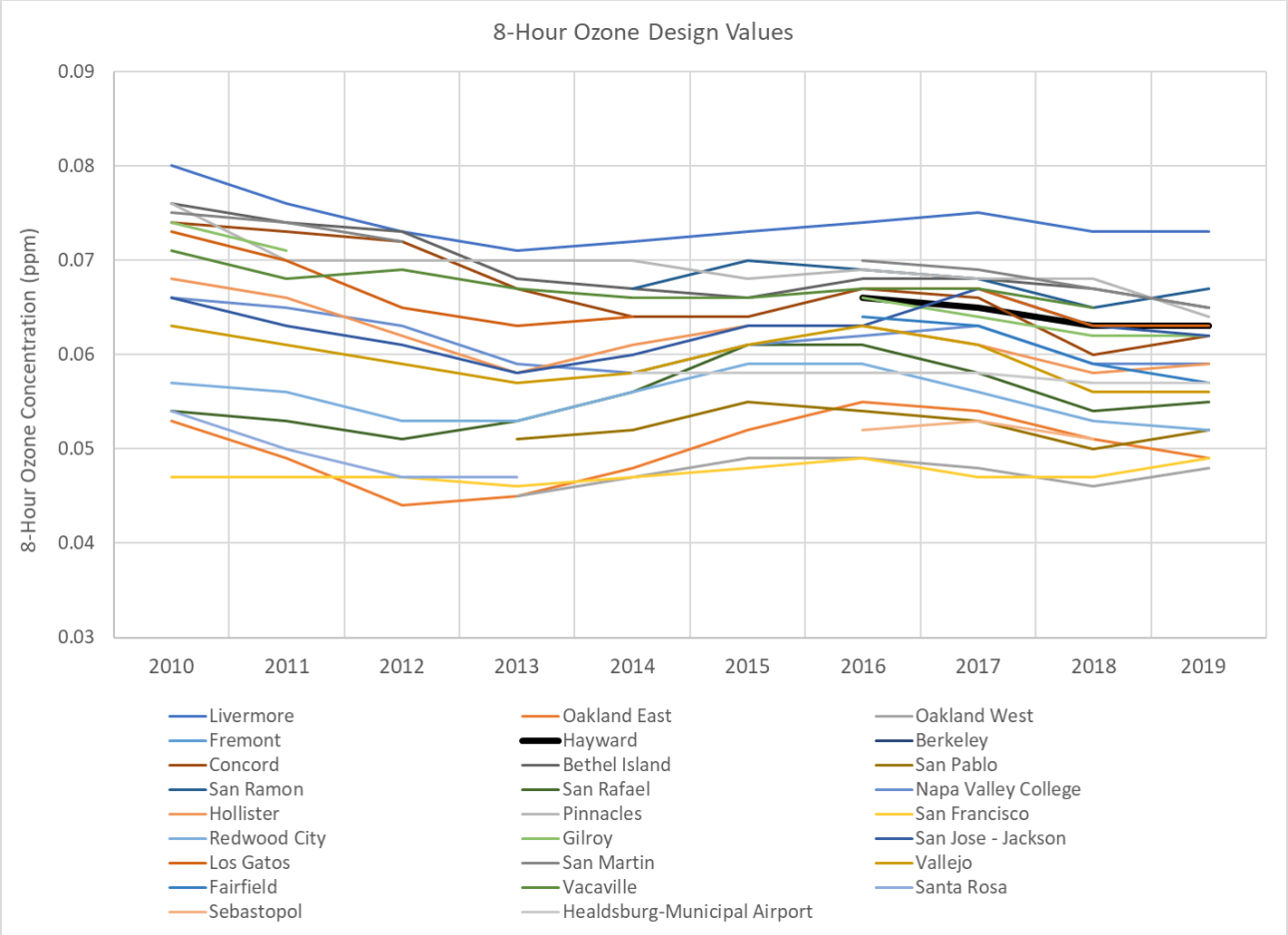
Correspondence Regarding Conversion of the Hayward SLAMS to an SPM

(see original request in 2019 ANP, copied below for convenience)

As noted in section 2.2.1, EPA noted in their 2018 TSA that the Hayward O_3 monitor does not meet 40 CFR 58 Appendix E siting requirements and that it should, therefore, be classified as an SPM. The Air District is requesting that EPA approve the closure of the Hayward ozone monitor as a SLAMS since it meets the criteria of 40 CFR 58.14 (c) and 58.14 (c) (2) which state:

> *(c) State, or where appropriate, local agency requests for SLAMS monitor station discontinuation, subject to the review of the Regional Administrator, will be approved if any of the following criteria are met and if the requirements of appendix D to this part, if any, continue to be met. Other requests for discontinuation may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a NAAQS and if the requirements of appendix D to this part, if any, continue to be met.*
>
> *…*
>
> *(2) Any SLAMS monitor for CO, PM_{10}, SO_2, or NO_2 which has consistently measured lower concentrations than another monitor for the same pollutant in the same county (or portion of a county within a distinct attainment area, nonattainment area, or maintenance area, as applicable) during the previous five years, and which is not specifically required by an attainment plan or maintenance plan, if control measures scheduled to be implemented or discontinued during the next five years would apply to the areas around both monitors and have similar effects on measured concentrations, such that the retained monitor would remain the higher reading of the two monitors being compared.*

The figure below shows that the Hayward site has never been the maximum concentration site for the San Francisco-Oakland-Berkeley CBSA nor for the San Francisco Bay Area nonattainment area. More specifically, the Livermore and San Martin sites, located in the Bay Area's two maximum ozone areas downwind of urban precursors, have always measured higher design values than the Hayward site. Therefore, the discontinuation of the Hayward O_3 monitor as a SLAMS does not compromise data collection needed for implementation of the NAAQS. The Air District intends to continue operating the Hayward ozone monitor as an SPM as resources allow. If the SLAMS closure is approved, the Hayward O_3 SPM will not be counted towards minimum monitoring requirements in future years, however, the San Francisco-Oakland-Berkeley CBSA will still meet minimum monitoring requirements.


8-Hour Ozone Design Values
8-Hour Ozone Concentration (ppm)
0.09
0.08
0.07
0.06
0.05
0.04
0.03
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
Livermore
Oakland East
Oakland West
Fremont
Hayward
Berkeley
Concord
Bethel Island
San Pablo
San Ramon
San Rafael
Napa Valley College
Hollister
Pinnacles
San Francisco
Redwood City
Gilroy
San Jose - Jackson
Los Gatos
San Martin
Vallejo
Fairfield
Vacaville
Santa Rosa
Sebastopol
Healdsburg-Municipal Airport

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

October 28, 2020

Dr. Ranyee Chiang
Director of Meteorology and Measurements
Bay Area Air Quality Management District
375 Beale Street
San Francisco, California 94105

Dear Dr. Chiang:

Thank you for your submission of the Bay Area Air Quality Management District (BAAQMD) *2019 Air Monitoring Network Plan* on July 1, 2020. We have reviewed the submitted document based on the requirements set forth in 40 CFR Part 58. Based on the information provided in the plan, the U.S. Environmental Protection Agency (EPA) approves all portions of the network plan except those specifically identified below. With this plan approval, we also formally approve a system modification for the following site: Hayward (AQS ID: 06-001-2001). More information about this approval is included in enclosure B.

Please note that we cannot approve portions of the annual network plan for which the information in the plan is insufficient to judge whether the requirement has been met, or for which the information provided does not meet the requirements as specified in 40 CFR 58.10 and the associated appendices. EPA Region 9 also cannot approve portions of the plan for which the EPA Administrator has not delegated approval authority to the regional offices. Enclosure A (*A. Annual Monitoring Network Plan Checklist*) is the checklist EPA used to review your plan for items that are required to be included in the annual network plan along with our assessment of whether the plan submitted by your agency addresses those requirements. Items highlighted in yellow are those EPA Region 9 is not acting on, as we either lack the authority to approve the specific item, or we have determined that a requirement is either not met or information in the plan is insufficient to judge whether the requirement has been met. Items highlighted in green in enclosure A require attention in order to improve next year's plan.

We also want to thank you for your timely submission of the *Five-Year Assessment of the Fixed-Site Air Monitoring Network* for the BAAQMD, as required under 40 CFR Part 58.10. We recognize that preparing the network assessment was a significant project and we appreciate your effort.

All comments conveyed via this letter and enclosures should be addressed prior to submittal of next year's annual monitoring network plan to EPA.

If you have any questions regarding this letter or the enclosed comments, please feel free to contact me at (415) 947-4134 or Bilal Qazzaz (415) 947-3532.

Sincerely,

GWEN YOSHIMURA Digitally signed by GWEN YOSHIMURA Date: 2020.10.28 15:33:59 -07'00'

Gwen Yoshimura, Manager
Air Quality Analysis Office

Enclosures:
A. Annual Monitoring Network Plan Checklist
B. Approval of BAAQMD Request to Discontinue Hayward Air Monitoring Station as a State and Local Air Monitoring Station and Convert to a Special Purpose Monitor

cc (via email): Charles Knoderer, BAAQMD
Kate Hoag, BAAQMD
Jin Xu, California Air Resources Board (CARB)

B. Approval of BAAQMD Request to discontinue Hayward Air Monitoring Station as a State and Local Air Monitoring Station and convert to a Special Purpose Monitor

Per 40 CFR 58.14, monitoring agencies are required to obtain EPA approval for the discontinuation of SLAMS monitors and per 40 CFR 58.11(c), a change in the designation of a monitoring site from SLAMS to SPM requires approval of the Regional Administrator. BAAQMD's Hayward station (AQS ID: 06-001-2001) consists of one criteria pollutant monitor for O_3. Discontinuation of the Hayward monitor as a SLAMS was specifically reviewed under 40 CFR 58.14(c), which states that requests for discontinuation "may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a [National Ambient Air Quality Standard (NAAQS)] and if the requirements of appendix D to this part, if any, continue to be met."

In evaluating this request, EPA reviewed the information provided by BAAQMD in their annual network plan submitted July 1, 2020 and certified O_3 data submitted to EPA's Air Quality System (AQS) associated with the four most recently available 2015 8-hour O_3 design values (2016-2019) design values. This monitor was in attainment of the 2015 8-hour O_3 NAAQS for the period of 2016-2019 and was found to have lower design values than the highest monitoring site in Alameda County, Livermore (AQS ID: 06-001-007). With the discontinuation of O_3 monitoring at the Hayward site, BAAQMD will continue to operate four O_3 SLAMS monitors in the San Francisco-Oakland-Berkeley Metropolitan Statistical Area (MSA), which exceeds the minimum monitoring requirement for this MSA.

Based on these analyses, the discontinuance of the O_3 monitor at Hayward does not compromise data collection needed for implementation of the 2015 8-hour O_3 NAAQS and will not prevent BAAQMD from meeting 40 CFR 58 Appendix D requirements. Therefore, EPA approves BAQAMD's discontinuation of the Hayward O_3 SLAMS monitor on a case-by-case basis per 40 CFR 58.14(c). Please include this network modification and EPA's approval in your next annual network plan.

Appendix H

Initial Plan for PAMS Required Sites

Air District voluntarily operated two unofficial PAMS sites (Livermore and San Ramon) as a PAMS-like network to better understand ozone formation episodes and enhance forecasting capabilities (see Section 5.4 for more details). While a PAMS network was previously required for only serious, severe, or extreme ozone nonattainment areas, the recently revised monitoring rule (80 FR 65292; October 26, 2015) requires PAMS measurements June 1 through August 31 at NCore sites that are located in Core-Based Statistical Areas (CBSAs) with populations of 1,000,000 or more, starting in 2019.

Based on 40 CFR part 58 Appendix D, State air monitoring agencies are required to begin making PAMS measurements at their NCore location(s) by June 1, 2020. The EPA is delaying the start date for the revised PAMS monitoring site network established in 40 CFR part 58, Appendix D. This final action extends the start date from June 1, 2020, to June 1, 2021. As a result of the, delay the BAAQMD will not begin making PAMS measurements at the Livermore (approved NCore-waiver site location) in 2020, and will work with EPA to begin measurements in the fall of 2021.

The PAMS measurements at this site must include hourly measurements of speciated VOCs, O_3, NO, true NO_2, NO_y, ambient temperature, wind speed, wind direction, atmospheric pressure, relative humidity, precipitation, mixing-height, solar radiation, and UV radiation. In addition, three 8-hour average carbonyl samples in a day are required on a 1 in 3 day schedule. The initial plan for implementing this requirement is to be submitted to EPA for their approval by July 1, 2018 (40 CFR 50.10(a)(10). USEPA has indicated that it is working on a proposed rule to extend the start date of PAMS measurements and expects that this proposed rule change will be signed by June 1, 2019. As a result of the, delay the BAAQMD will not begin making PAMS measurements at the Livermore (approved NCore-waiver site location) in 2020, and will work with EPA to begin measurements on or before the final revised start date for this network. However, EPA has requested that monitoring agencies submit the following information by July 1, 2017.

Network Decision

☐ The NCore site located at San Jose – Jackson will serve as the location of the required PAMS site and will measure the following parameters described below. An inventory of equipment used at the site(s) is provided in Attachment 2.

☐ We request a waiver from implementing PAMS at an otherwise required NCore site entirely, or to make PAMS measurements at alternative locations such as existing PAMS sites or existing NATTS sites. The Air District is requesting approval for an alternate location, the current unofficial-PAMS site in Livermore, per 40

CFR 58 Appendix D 5(c). Rationale for this waiver is provided in Attachment 1. An inventory of equipment the Air District expects to use at the site is provided in Attachment 2.

Auto GC Decision

Volatile organic compounds (VOCs) – Table H-1 includes a draft list of the targeted VOCs not yet finalized by EPA.

☐ We will measure hourly speciated VOC measurements with an auto-gas chromatograph (GC). An inventory of equipment the Air District expects to use at the site is provided in Attachment 2.

☐ We request a waiver to allow three 8-hour samples every third day as an alternative to daily hourly speciated VOC measurements at locations (insert locations).

Meteorology Measurements Decision

EPA is suggesting the use of ceilometers for determining mixing height, however other types of meteorological equipment that provide for an indication of mixing height can be proposed.

☐ Will measure wind direction, wind speed, temperature, humidity, atmospheric pressure, precipitation, solar radiation, ultraviolet radiation, and mixing height. An inventory of equipment the Air District expects to use at the site is provided in Attachment 2.

☐ We request a waiver to allow meteorological measurements to be obtained from other nearby sites.

Other Required Measurements

Carbonyls – The Air District intends to meet the carbonyl sampling requirement with continuous formaldehyde sampling if instrumentation that meets performance specifications is identified. The Air District prefers this option due to added value of increased temporal resolution and significant resource savings in operational expenses and staff time. If this option is not technically feasible, the Air District will conduct discrete cartridge sampling using a Xontech 924 or similar instrumentation (has not yet been purchased) and the national contract lab for analyses and data reporting. If selected, cartridge sampling will be conducted at a frequency of three 8-hour samples on a one-in-three day basis.

Table H-1 lists the target carbonyls analyzed by the contract lab if the discrete sampling option is chosen (not yet finalized by EPA).

Nitrogen Oxides – The Air District will monitor for NO and NO_y (total oxides of nitrogen) in addition to true NO_2. The true NO_2 is required to be measured with a direct reading NO_2 analyzer, cavity attenuated phase shift (CAPS) spectroscopy or photolytic-converter NO_x analyzer. An inventory of equipment the Air District expects to use at the site is provided in Attachment 2.

Table H-1. PAMS Target Compound List

Priority Compounds				Optional Compounds			
1	1,2,3-trimethylbenzene [a]	19	n-hexane [b]	1	1,3,5-trimethylbenzene	19	m-diethlybenzene
2	1,2,4-trimethylbenzene [a]	20	n-pentane	2	1-pentene	20	methylcyclohexane
3	1-butene	21	o-ethyltoluene [a]	3	2,2-dimethylbutane	21	methylcyclopentane
4	2,2,4-trimethylpentane [b]	22	o-xylene [a,b]	4	2,3,4-trimethylpentane	22	n-decane
5	acetaldehyde [b,c]	23	p-ethyltoluene [a]	5	2,3-dimethylbutane	23	n-heptane
6	acetone [c,d]	24	Propane	6	2,3-dimethylpentane	24	n-nonane
7	benzene [a,b]	25	propylene	7	2,4-dimethylpentane	25	n-octane
8	c-2-butene	26	styrene [a,b]	8	2-methylheptane	26	n-propylbenzene [a]
9	ethane [d]	27	toluene [a,b]	9	2-methylhexane	27	n-undecane
10	ethylbenzene [a,b]	28	t-2-butene	10	2-methylpentane	28	p-diethylbenzene
11	Ethylene			11	3-methylheptane	29	t-2-pentene
12	formaldehyde [b,c]			12	3-methylhexane	30	α/β-pinene
13	Isobutane			13	3-methylpentane	31	1,3 butadiene [b]
14	Isopentane			14	Acetylene	32	benzaldehyde [c]
15	Isoprene			15	c-2-pentene	33	carbon tetrachloride [b]
16	m&p-xylenes [a,b]			16	cyclohexane	34	Ethanol
17	m-ethyltoluene [a]			17	cyclopentane	35	Tetrachloroethylene [b]
18	n-butane			18	isopropylbenzene [b]		

Source: Revisions to the Photochemical Assessment Monitoring Stations Compound Target List. U.S. EPA, November 20, 2013

[a] Important SOAP (Secondary Organic Aerosols Precursor) Compounds

[b] HAP (Hazardous Air Pollutant) Compounds

[c] Carbonyl compounds

[d] Non-reactive compounds, not considered to be VOC for regulatory purposes

Attachment 1: PAMS Required Site Location Waiver Request and Rationale

The Bay Area Air Quality Management District (Air District) is requesting that EPA approve a waiver to operate the required PAMS site at our current unofficial PAMS location at Livermore (AQS ID 06-001-0007), rather than our NCore site at San Jose – Jackson (AQS ID 06-085-0005). The Livermore site has been the design value site for the Bay Area ozone nonattainment area since 2003-2005. As such, it is the critical site for any required attainment modeling, and therefore it will be more useful to have precursor and meteorological measurements at Livermore than at San Jose – Jackson. Due to the flight path for the San Jose International Airport, meteorological measurements are impossible to conduct at the San Jose – Jackson site, so implementing PAMS at Livermore allows for these measurements at the same location as the O_3 and O_3 precursor measurements, which is also preferable for model validation. Finally, the Air District has conducted O_3 precursor measurements at the Livermore site since 2010, making it a better site to continue to assess trends in the concentrations of these precursors.

Attachment 2: Current Equipment Plans for the PAMS Required Site

Table H-2. PAMS Target Compound List

Parameter	Equipment
VOC	Perkin Elmer TD300 with Clarus GC
True NO_2	API T500U (CAPS)
NO/NO_y	API T200 EU/NO_y
Carbonyls	Continuous formaldehyde sampler or Xontech 924 or similar
Mixing Height	Vaisala CL-51 (ceilometer)
Wind Direction, Wind Speed	Climatronics F460 cup and vane
Ambient Temperature	Campbell Scientific CS107
Relative Humidity	Vaisala HMP-45
Barometric Pressure	Vaisala PTB110
Solar Radiation	Eppley 8-48
UV Radiation	Eppley TUVR
Precipitation	Texas Electronics TR-525USW (tipping bucket)

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

OCT 30 2017

Mr. Eric Stevenson
Director of Technical Services
Bay Area Air Quality Management District
375 Beale Street
San Francisco, California 94105

Dear Mr. Stevenson:

Thank you for your submission of the Bay Area Air Quality Management District's (BAAQMD's) 2016 *Air Monitoring Network Plan* on June 29, 2017. We have reviewed the submitted document based on the requirements set forth under 40 CFR 58. Based on the information provided in the plan, the U.S. Environmental Protection Agency (EPA) approves all portions of the network plan except those specifically identified below. With this plan approval, we also formally approve the waiver to locate your required PAMS site at Livermore (AQS ID: 06-001-0007) rather than at San Jose-Jackson (AQS ID: 06-085-0005). We are also transmitting approval from the Office of Air Quality Planning and Standards (OAQPS) of your request for a waiver to operate a NO_x monitor in lieu of NO_y at San Jose-Jackson, in order to locate the NO_y monitor at Livermore to support PAMS. More information about these approvals is in Enclosures D and E.

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

The third enclosure (*C. Annual Monitoring Network Plan Checklist*) is the checklist EPA used to review your plan for overall items that are required to be included in the annual network plan along with our assessment of whether the plan submitted by your agency addresses those requirements. The fourth enclosure (*D. EPA approval of the waiver request to locate PAMS at Livermore*) documents EPA's approval of the request for a waiver to locate your required PAMS site at Livermore rather than at San Jose-Jackson, as requested in Appendix H of your plan. The fifth and final enclosure (*E. EPA approval of an NO_y waiver at San Jose-Jackson*) includes a copy of correspondence between EPA Region 9 and EPA OAQPS discussing and granting

approval of a waiver to operate a NO_x monitor in lieu of NO_y at San Jose-Jackson, based on the information provided in Appendices F and H and elsewhere in your plan.

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

If you have any questions regarding this letter or the enclosed comments, please feel free to contact me at (415) 947-4134 or Anna Mebust at (415) 972-3265.

Sincerely,

Gwen Yoshimura, Manager
Air Quality Analysis Office

Enclosures:

A. Annual Monitoring Network Plan Items where EPA is Not Taking Action
B. Additional Items Requiring Attention
C. Annual Monitoring Network Plan Checklist
D. EPA approval of the waiver request to locate PAMS at Livermore
E. EPA correspondence and approval of an NO_y waiver at San Jose-Jackson

cc (via email): Charley Knoderer, BAAQMD
Gayle Sweigert, California Air Resources Board (CARB)
Sunghoon Yoon, CARB
Ranjit Bhullar, CARB

Appendix I

EPA Approval to Relocate the Napa – Jefferson St Site

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

JUN 12 2015

Mr. Eric Stevenson
Director of Meteorology, Measurements and Rules Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

Dear Mr. Stevenson:

This letter is in response to Bay Area Air Quality Management District's (BAAQMD's) request for approval for the relocation of State/Local Air Monitoring Station (SLAMS) $PM_{2.5}$, PM_{10}, CO, NO_x, and O_3 monitoring at the Napa site (AQS ID 06-055-0003) to a new site at the Napa Valley College Campus (38.278881°, -122.274948°). Additionally, BAAQMD is requesting approval for the relocation of the current Napa collocated PM_{10} monitor to the San Pablo site (AQS ID 06-013-1004).

Per 40 CFR 58.14, monitoring agencies are required to obtain the U.S. Environmental Protection Agency's (EPA) approval for the relocation of SLAMS monitors. On April 28, 2015, we received your official request to 1) relocate the Napa station due to lack of an acceptable lease agreement and associated habitability issues, and 2) relocate the collocated PM_{10} monitor due to insufficient space at the new Napa site and inability to meet 40 CFR 58 Appendix E criteria.

Napa Site Relocation

After a visit to the proposed relocation site and upon our review of the documentation BAAQMD has provided, pursuant to 40 CFR 58.14, we approve your selection for the relocation of the current Napa station. Specifically, we have determined that your request meets the provisions under 40 CFR 58.14(c)(6), namely that logistical problems beyond BAAQMD's control make it impossible to continue operation at the current site. In addition to the logistical lease and habitability issues, the O_3 monitor at this site is located closer to Jefferson Street than is specified for neighborhood scale O_3 sites. EPA believes that our April 24, 2013 waiver from the Appendix E "spacing from roadways" siting requirement (per 40 CFR 58 Appendix E, section 10) is still justified based on the data and do not expect a substantive amount of O_3 scrubbing at the Jefferson street location which would compromise the comparison of the collected O_3 data to the NAAQS. However, we also support BAAQMD's desire to have the Napa MSA site meet all the siting requirements of 40 CFR 58 Appendix E for O_3 as a long-term solution to this siting issue.

BAAQMD worked with the Napa Valley College Campus to find a new location that meets requirements described in 40 CFR 58 and its associated appendices for all the pollutants measured at the site. The replacement site (Napa Valley College Campus) is 2.5 miles southeast of the current Napa site and is expected to be at the same scale of representation (i.e., measuring similar $PM_{2.5}$, PM_{10}, CO, NO_x, and O_3 concentrations from similar sources), free from trees and other obstructions in all directions, and the predominant wind pattern and direction are assumed to be similar to the current site based on the

proposed site's close proximity to the previous site. Based on the weight of evidence and pursuant to 40 CFR 58.14(c)(6), EPA concludes that the relocation does not compromise data collection needed for implementation of the NAAQS, provided that the trailer will be placed in the expected location and meets the appropriate requirements in 40 CFR 58.

Collocated PM_{10} Monitor Relocation

Upon our review of the documentation you have provided, pursuant to 40 CFR 58.14, we approve your selection for the relocation of the collocated PM_{10} monitor currently located at the Napa site to the San Pablo site. Specifically, we have determined that your request meets the provisions under 40 CFR 58.14(c)(6), namely that logistical problems beyond BAAQMD's control make it impossible to continue operation at the current and proposed Napa sites.

Accordingly, BAAQMD provided adequate supporting documentation and data analysis justifying the selection of the relocation to the San Pablo site instead of the San Jose-Jackson NCore site (06-085-0005), due to the latter not meeting 40 CFR 58 Appendix E siting requirements with the addition of the collocated PM_{10} monitor, and already having a PM_{10} monitor as a part of the $PM_{2.5-10}$ network that has a different method designation, precluding it's eligibility as a collocated PM_{10} monitor based on 40 CFR 58 Appendix A.3.3.1. The new San Pablo PM_{10} monitor is expected to be at the same scale of representation (i.e., measuring similar PM_{10}, concentrations from similar sources), free from trees and other obstructions in all directions. Based on the weight of evidence and pursuant to 40 CFR 58.14(c)(6), EPA concludes that the PM_{10} monitor relocation does not compromise data collection needed for implementation of the NAAQS and meets the appropriate requirements in 40 CFR 58.

Please attach this approval letter and update the relevant monitor and site information in your next Annual Ambient Air Quality Monitoring Network Plan and Network Assessment. As this is a relocation, the data from the old and new Napa sites will be combined to form one continuous data record for design value calculations with an anticipated end date of July 31, 2015 at the old site and start date of August 1, 2015 at the new site. Please note these changes, along with the collocated PM_{10} monitor relocation in the AQS comment field for both the old and new AQS sites. Should you have any questions, please feel free to contact me at (415) 947-4534 or Dena Vallano at (415) 972-3134.

Sincerely,

Meredith Kurpius, Manager
Air Quality Analysis Office

cc (via email):
K. Malone, BAAQMD
J. Hesson, BAAQMD
M. Beacon, BAAQMD

Appendix J

Public Comment and Air District Response

From: Karen Porter
To: BAAQMD Analysis
Subject: Opposition to Draft 2023 Annual Air Monitoring Network Plan Proposal Re PAO
Date: Monday, June 26, 2023 4:55:59 PM

In its Draft 2023 Plan ("plan"), the Air District states its intent to request EPA approval to shut down its lead sampling equipment at its current site at the Palo Alto Airport ("PAO"). The District says the reason is that, after the City of Palo Alto (the "City") took over PAO in 2014, the FAA raised concerns about the equipment's location, and since then, the District has been unable to reach agreement with the EPA on another suitable location. The last measurement at PAO to have been reported was included in the District's 2014 plan, which showed 0.66 tons/year of lead emissions associated with PAO - higher than either the San Carlos or Reid-Hillview Airports. At that time, the District said its objective was to move the equipment to a suitable site and resume lead monitoring. The draft plan does not provide further explanation as to what efforts the District has made over the nine years since 2014, nor the EPA's specific response to any outreach. If the FAA is creating obstacles to this effort, that also has not been specifically disclosed.

As stated on PAO's website and in its 2022 noise complaint report, the airport encompasses 102 acres and saw 163,620 operations (either a take-off or landing) in 2022. Virtually all take-offs go over the City's neighbor, East Palo Alto, which is much less affluent than Palo Alto and has a majority-minority population. East Palo Alto thus bears much of the impact of lead emissions associated with PAO, but very few, if any, of the economic benefits.

In August 2021, the environmental advocacy group EarthJustice published its list of the 100 top lead-producing airports in the U.S. (https://earthjustice.org/wp-content/uploads/top100leadpollutingairports_2021-08-23.pdf). PAO had the dubious distinction of being #19 on the list. The list also noted the airport's impact on minority and low-income populations.

Failure to resume monitoring would be particularly outrageous since the Environmental Protection Agency just last October issued its "Proposed Finding that Lead Emissions from Aircraft Engines that Operate on Leaded Fuel Cause or Contribute to Air Pollution that May Reasonably Be Anticipated to Endanger Public Health and Welfare," available at federalregister.gov/d/2022-22223. The agency's proposed finding expressly applies to piston-engine aircraft, and virtually all of the aircraft that use PAO are piston-engine aircraft. The EPA's proposed finding emphasizes the harm - especially to children - posed by lead emissions:

> [T]he scientific evidence has long been established demonstrating that young children (due to rapid growth and development of the brain) are vulnerable to a range of neurological effects resulting from exposure to lead. Low levels of lead in young children's blood have been linked to adverse effects on intellect, concentration, and academic achievement, and as the EPA has previously noted “there is no evidence of a threshold below which there are no harmful effects on cognition from [lead] exposure.

As the plan notes, 40 CFR Part 58, Appendix D, section 4.5(a)(iii), explicitly requires lead monitoring to be conducted at PAO. As also noted, the District's ability to shut down monitoring at PAO is limited by 40 CFR Part 58.14(c). That regulation provides the conditions under which equipment may be removed, none of which apply here UNLESS the lead monitoring equipment is "relocated to a nearby location with the same scale of representation."

Accordingly, the District should renew and reenergize its efforts to secure the Environmental Protection Agency's approval of a suitable location for the lead monitoring equipment as soon as possible, and not simply abdicate its responsibility to protect the health and well-being of communities around PAO and disregard federal law. To the extent the Federal Aviation Administration is hampering this effort, this must also be exposed and overcome. PAO's 102 acres should be large enough for one or more appropriate sites. The time for re-starting lead monitoring at PAO is long overdue, particularly considering the volume of current operations and disproportionate impact on East Palo Alto. The ongoing harm to people, wildlife, and the environment warrants no less.

Sincerely,

Karen Porter
Palo Alto, CA

The Air District released the 2023 Ambient Air Monitoring Network Plan for public comment from May 25, 2023 through June 26, 2023. One comment was received (see page J-2 through J-3). Below is the Air District's response.

Air District Response: The Air District agrees that lead in aviation gasoline is a serious health concern, particularly for children and communities living near airports using piston-engine aircraft. This is clear from studies of the levels of lead in the blood of children in communities that are impacted by emissions from these aircraft, including a recent study focusing on Reid-Hillview Airport in San Jose. The Air District is already concerned that the use of lead in general aviation fuel poses a significant health risk. It's unlikely that additional ambient air quality measurements of lead would either strengthen or weaken that concern. The authority for addressing the problem lies with the EPA and they are taking steps to address it through the recently proposed endangerment finding noted in the comment letter. In January 2023, the Air District was part of a coalition of local governments that submitted a comment to the EPA to "commend the EPA on taking this necessary and long overdue step toward regulating lead emissions from piston-engine aircraft and urge it to finalize its proposed endangerment finding with haste." As discussed in Section 2.2.7, due to logistical problems beyond the Air District's control, the Palo Alto Airport site was shut down as the location violated FAA regulations. The Air District and EPA were unsuccessful in finding a suitable alternative location at the Palo Alto Airport that would meet both EPA and FAA requirements. While the Air District intends to reengage with EPA on site selection, if no suitable alternative location is found, the Air District plans to request EPA approval to shut down the site, considering the constraints and the current level of lead emissions (0.25 tons/year based on data from the 2020 National Emissions Inventory) at the Palo Alto Airport.