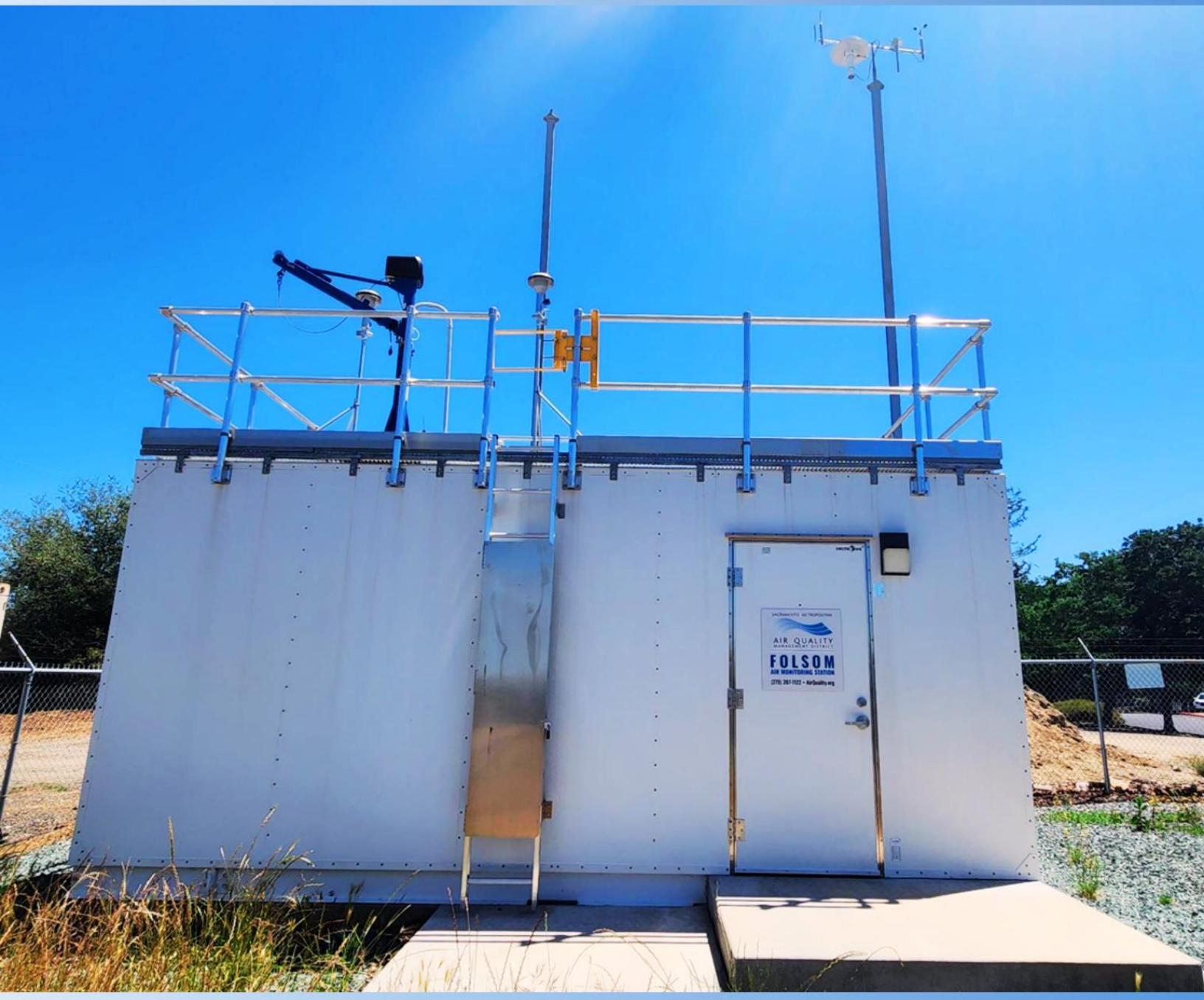
2023 Annual Network Plan



Sacramento Metropolitan
Air Quality Management District

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On the Cover: Folsom Air Monitoring Station

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List of Abbreviations and Acronyms

Abbreviation	Definition
µg/m3	Microgram per cubic meter
AAC Lab	Atmospheric Analysis and Consulting, Inc.
AADT	Annual average daily traffic
AB617	Assembly Bill 617
AGL	Above ground level
ANP	Annual Network Plan
AQI	Air Quality Index
AQS	Air Quality System
ARM	Approved regional monitor
Auto-GC	Automatic gas chromatography analyzer
BAM	Beta attenuation monitor
BTX	Benzene, toluene, and xylenes
CAP III	California Alternative Plan III
CARB	California Air Resources Board
CBSA	Core-based Statistical Area
CFR	Code of Federal Regulation
CO	Carbon monoxide
CSN	Chemical Speciation Network
District	Sacramento Metropolitan Air Quality Management District
DV	Design Value
EMP	Enhanced Monitoring Plan
ERG	Eastern Research Group, Inc.
FEM	Federal equivalent method
FR	Federal Register
FRM	Federal reference method
m	Meter(s)
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NCore	National Core Multiple-pollutant Monitoring Stations
NEI	National Emission Inventory
NMHC	Non-methane hydrocarbon
NO_2	Nitrogen dioxide
NOX	Oxides of nitrogen
NOY	Reactive Oxides of Nitrogen
O_3	Ozone
PAMS	Photochemical Assessment Monitoring Station
Pb	Lead
PM	Particulate matter
PM_{10}	Particulate matter, 10 micrometers or smaller
$PM_{2.5}$	Particulate matter, 2.5 micrometers or smaller
PM_{COARSE}	Particulate matter, between 10 and 2.5 micrometers
ppb	Parts per billion
ppm	Parts per million
PQAO	Primary quality assurance organization

PWEI	Population weighted emission index
QA	Quality assurance
QC	Quality control
RASS	Radio acoustic sounding system
RTI	Research Triangle Institute
RWP	Radar wind profiler
Sac Metro Air District	Sacramento Metropolitan Air Quality Management District
SACDOT	Sacramento County Department of Transportation
SASS	Speciated air sampling system
SCC	Sacramento City Code
SIP	State Implementation Plan
SLAMS	State and local air monitoring stations
SO_2	Sulfur dioxide
SPM	Special purpose monitor
STN	Speciation Trends Network
TAPI	Teledyne Advanced Pollution Instrumentation
TC	Total Carbon
TEI	Thermo Environmental Instruments
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile organic compound
VSCC	Very sharp cut cyclone

Section 1 Introduction

State and local agencies that conduct ambient air monitoring for regulatory purposes are required by Title 40, Code of Federal Regulations (40 CFR), Section 58.10 to submit an Annual Network Plan (ANP) to the United States Environmental Protection Agency (U.S. EPA) no later than July 1st of each year. The report must contain specific monitoring network information and must be presented for a 30-day public review period prior to submittal to the U.S. EPA. This ANP will be posted on Sacramento Metropolitan Air Quality Management District's ('Sac Metro Air District's' or 'District's') website for public review and comment from September 13, 2023 through October 13, 2023. No public comment was received. prior submission to U.S. EPA. This ANP covers the time period: January 1, 2022 – December 31, 2022. It focuses on the monitors that operate within Sacramento County, which is a part of Sacramento-Arden Arcade-Roseville Metropolitan Statistical Area (Sacramento MSA).

The primary purpose of this ANP is to document the existing Sacramento County air monitoring network and to discuss proposed changes in the ambient air monitoring network that may occur within 18 months following the submittal of this report. The plan includes information on monitors that are a part of State and Local Air Monitoring Stations (SLAMS) network, National Core Multi-Pollutant Monitoring Stations (Ncore), Chemical Speciation Network (CSN), Speciation Trends Network (STN), Special Purpose Monitor (SPM) sites, and Photochemical Assessment Monitoring Station (PAMS) network. The plan states whether each monitor in the ambient air monitoring network meets the requirements of 40 CFR Part 58, including Appendix A, C, D, and E, where applicable. 40 CFR Part 58, Appendix B, does not apply to the District's monitoring network because the District does not operate any air monitors regulated by Appendix B, which pertains only to the Prevention of Significant Deterioration monitors. This report includes Federal Reference Method (FRM) and Federal Equivalent Method (FEM).

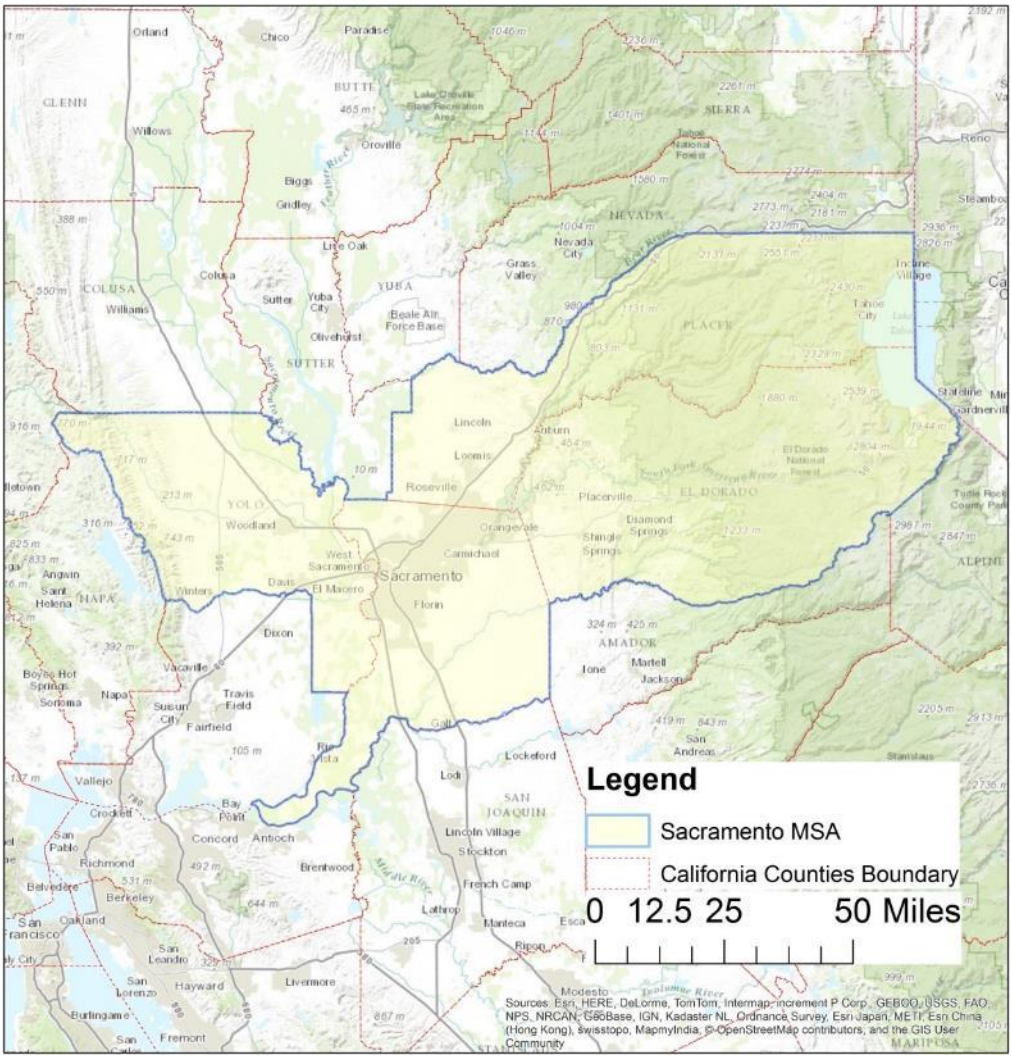
This report is not an extensive analysis of the design of the local air monitoring network. An extensive analysis of the air monitoring network is provided in a network assessment report, which is required every five years. The network assessment report analyzes and determines if the air monitoring network meets the monitoring objectives as defined in 40 CFR Part 58, Appendix D. It also provides recommendations to determine "whether new sites are needed, whether existing sites are no longer needed and can be terminated, and whether new technologies are appropriate for incorporation into the ambient air monitoring network" (40 CFR Section 58.10). The most recent five-year network assessment report (5YNA), 5-Year Air Monitoring Network Assessment, was completed and submitted to U.S. EPA Region 9 on June 9, 2023. The report is available on the District's website at http://www.airquality.org/Air-Quality-Health/Air-Monitoring.

Any shared monitoring responsibilities between the District and neighboring monitoring organizations in the Sacramento MSA are discussed in Section 3, Minimum Monitoring Requirements. For details on monitors in neighboring counties within the Sacramento MSA, please refer to the latest Annual Monitoring Network Plan published by California Air Resources Board (CARB).

Section 2 Network Operations

Sac Metro Air District is the local air quality regulatory and monitoring organization with jurisdiction in Sacramento County, California. Sacramento County is in the middle of California's Central Valley and is a part of the Sacramento-Arden Arcade-Roseville Metropolitan Statistical Area. Sacramento MSA also includes Placer, El Dorado, and Yolo Counties. Sacramento MSA has an estimated population of 2.4 million, including 1.59 million in Sacramento County[1]. Figure 1 shows a map of Sacramento MSA.

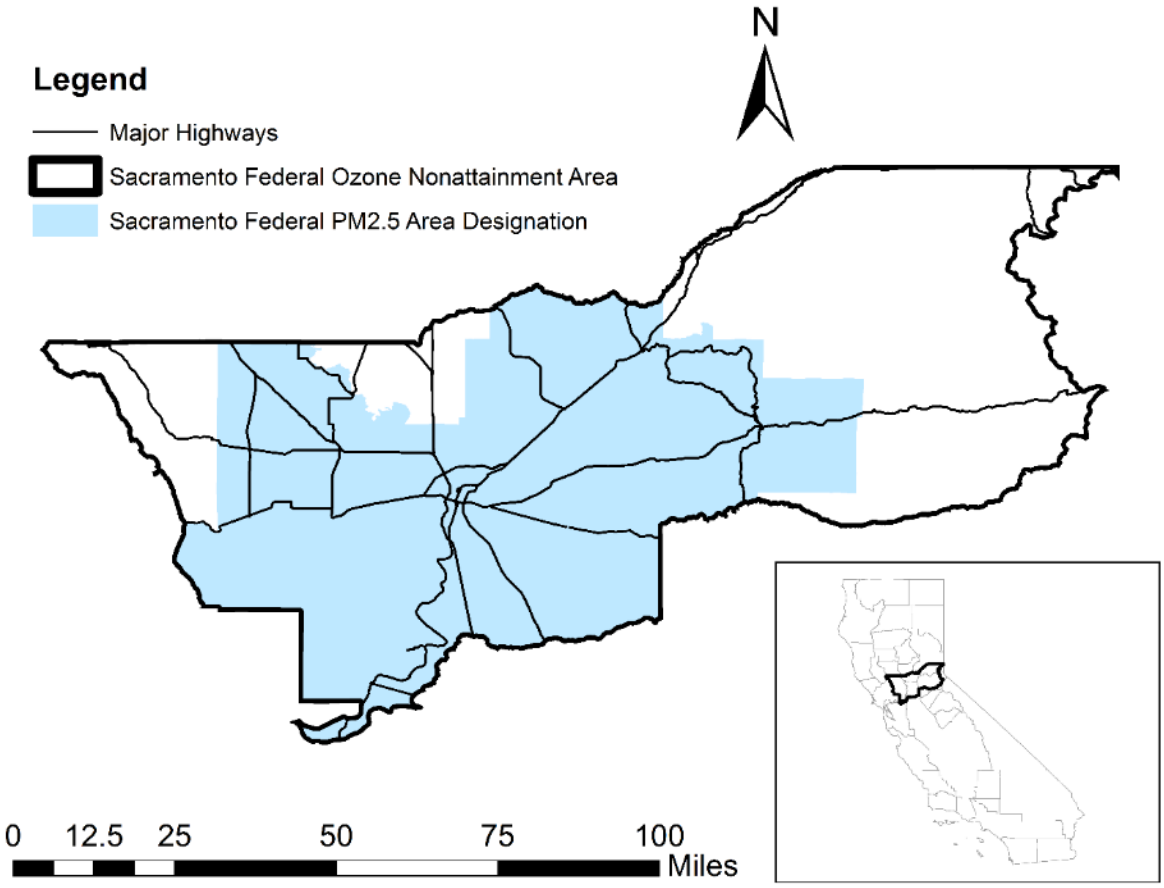
Figure 1 Counties within Sacramento-Arden Arcade-Roseville, California, MSA



[1] United States Census Bureau, QuickFacts, 2022 Population Estimates (accessed 14 May 2023)

A portion of the Sacramento MSA is a nonattainment area for the federal 2015 8-hr ozone (O_3) standard and is referred to as the Sacramento Federal Ozone Nonattainment Area[2]. This area includes all of Sacramento and Yolo Counties and portions of Placer, El Dorado, Solano, and Sutter Counties. The Sacramento region was also designated as nonattainment for the 2006 24-hour particulate matter with size of 2.5 microns or smaller ($PM_{2.5}$) standard (Figure 2). The region met the 2006 24-hour $PM_{2.5}$ standard in 2015 (82 FR 21711) and will continue to reduce $PM_{2.5}$ levels through various programs and strategies. Sacramento County has met the particulate matter with size of 10 microns or smaller (PM_{10}) air quality standard since 2002[3]. Sacramento County is designated as attainment for the most recent federal health standards for carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). U.S. EPA has designated Sacramento County as unclassifiable/attainment for the 2008 federal lead (Pb) standard[4].

Figure 2 Sacramento Federal O_3 and $PM_{2.5}$ Nonattainment Area



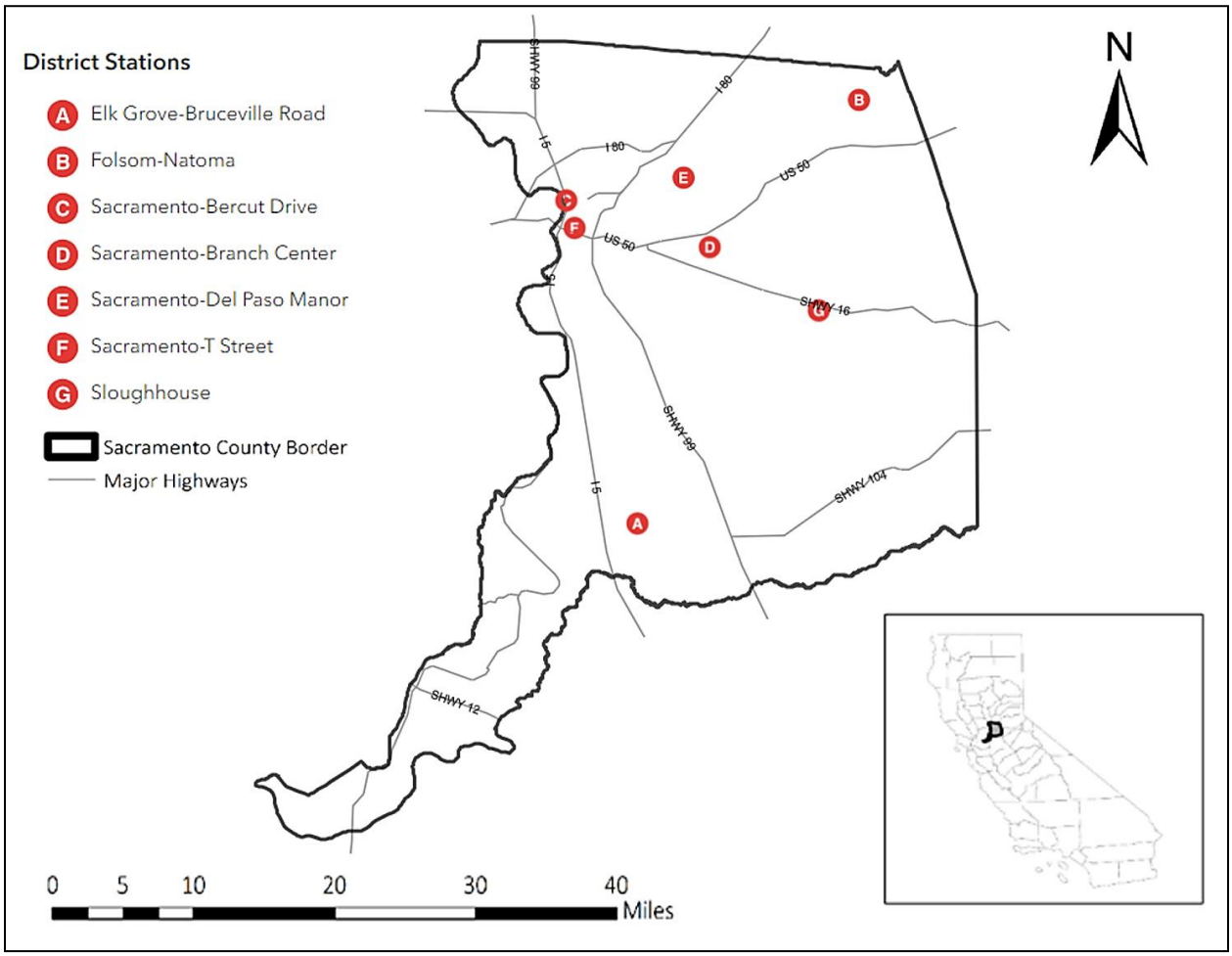
[2] https://www.regulations.gov/document/EPA-HQ-OAR-2017-0548-0420

[3] The Camp Fire in 2018 and numerous wildfires in 2020 caused PM_{10} exceedances that violated the 24-hour PM_{10} health standard. In 2021, the District submitted an exceptional event demonstration to U.S. EPA for the 2018 exceedances that have regulatory impacts. In a letter from U.S EPA to CARB signed on 7/27/2022, the U.S. EPA concurred with the exceptional event demonstration to exclude the data that was impacted by the Camp Fire. For the 2020 exceedances, the District included an analysis in the Second 10-year PM10 Maintenance Plan for Sacramento County that the exceedances on September 8, 11, 12 and 13 were due to wildfire smoke.

[4] https://www.epa.gov/lead-designations/lead-designations-final-nonattainment-designations-rounds-1-and-2; 70 FR 72097

Sac Metro Air District operates six air monitoring sites within Sacramento County. CARB operates the seventh site at the Sacramento-T Street location. Figure 3 provides the location of air monitoring sites in Sacramento County. Sac Metro Air District monitors all criteria air pollutants[5], except lead. Lead monitoring was discontinued in 2020 with U.S. EPA's approval. The District also monitors for non-criteria air pollutants and meteorological parameters. Table 2-1 through Table 2-3 list the criteria pollutants, non-criteria pollutants and meteorological parameters measured at each station located in Sacramento County. Each monitoring instrument is categorized by a monitor type: SLAMS or SPM. A SLAMS monitor may be further sub-divided into one or more network affiliations (e.g., PAMS, Ncore, near-road, CSN STN). Unless otherwise noted, all monitors listed in Table 2-1 through Table 2-3 are SLAMS monitor type. Each of the tables are color coded to identify network affiliations, if any.

Figure 3 Air Monitoring Sites in Sacramento County



[5] O_3, CO, NO_2, SO_2, $PM_{2.5}$, PM_{10}

Table 2-1 Criteria Pollutants Measured by Stations

Station Name	O_3	CO	NO_2	SO_2	Pb	PM_{10} (Hourly)	PM_{10} (24-hr)	$PM_{2.5}$ (Hourly)	$PM_{2.5}$ (24-hr)
Sacramento-Bercut Dr.		✓	✓						✓
Sacramento-Branch Center #2							✓		
Elk Grove-Bruceville	✓		✓					✓	
Sacramento-Del Paso Manor	✓	✓	✓	✓			✓	✓	✓
Folsom-Natoma St.	✓		✓					✓	
Sloughhouse	✓							✓	
Sacramento-T Street	✓		✓			✓		✓	✓

Note: All monitors are part of the SLAMS federal air quality surveillance network unless noted otherwise

No affiliation or not applicable

Near Road

Photochemical Assessment Monitoring Station (PAMS)

National Core Multi-pollutant Monitoring Stations (NCORE)

Multiple affiliation types (Includes SLAMS, PAMS & NCORE)

Table 2-2 Non-Criteria Pollutants Measured by Stations

Station Name	Reactive Nitrogen Compound (NO_Y)	Non-methane hydrocarbon (NMHC)	Volatile Organic Compound (VOC)	Carbonyl	$PM_{10-2.5}$	Speciated $PM_{2.5}$	Black Carbon (BC)
Sacramento-Bercut Dr.							✓
Sacramento-Branch Center #2							
Elk Grove-Bruceville		✓(A)	✓(B)				
Sacramento-Del Paso Manor	✓	✓(A)	✓	✓	✓	✓	✓
Folsom-Natoma St.	✓(B)	✓(A)	✓(B)				
Sloughhouse							
Sacramento-T Street						✓	

Note: All monitors are part of the SLAMS federal air quality surveillance network unless noted otherwise

(A) These monitors are on a temporary shutdown due to instrument malfunction and are being replaced

(B) These monitors have pending discontinuation, see Section 4 for proposed changes to the air monitoring network

(C) This monitor is on a temporary shutdown due to site renovation, see Section 4 for proposed changes to the air monitoring network

Special purpose monitor ([SPM] not part of SLAMS)

No affiliation or not applicable

Near Road

Photochemical Assessment Monitoring Station (PAMS)

National Core Multi-pollutant Monitoring Stations (NCORE)

Carbon Speciation Network (CSN)

Multiple affiliation types (Includes SLAMS, NCORE and CSN)

Table 2-3 Meteorology Measured by Stations

Station Name	Outdoor Tempera-ture	Relative Humidity	Solar Radiation	Ultraviolet Radiation	Barometric Pressure	Precipita-tion	Wind Di-rection & Speed	Ceilometer
Sacramento-Bercut Dr.	✓						✓	
Sacramento-Branch Center #2								
Elk Grove-Bruceville	✓	✓	✓	✓	✓	✓	✓	✓
Sacramento-Del Paso Manor	✓	✓	✓				✓	
Folsom-Natoma St.	✓	✓	✓				✓	
Sloughhouse							✓(A)	
Sacramento-T Street	✓(A)	✓(A)					✓(A)	

Note: All monitors are part of the SLAMS federal air quality surveillance network unless noted otherwise
(A) "Other" monitor type (not part of SLAMS)
No affiliation or not applicable
Near Road
Photochemical Assessment Monitoring Station (PAMS)
Multiple affiliation types (includes SLAMS, PAMS and NCORE)

The primary focus of the current ambient air monitoring network is the data collection of criteria pollutants. The data collected from the air monitoring stations supports State Implementation Plan (SIP) development, attainment/nonattainment decisions, public notification, and air quality modeling and research efforts. The network is designed to meet three basic monitoring objectives as required by 40 CFR Part 58, Appendix D: (1) provide air pollution data to the general public in a timely manner; (2) support compliance with ambient quality standards and emissions strategy development; and (3) support air pollution research studies. An overview of monitoring objectives is in Table 2-4.

Table 2-4 Monitoring Objectives of Criteria Pollutants

Station Name	O_3	CO	NO_2	SO_2	Pb	PM_{10} (Hourly)	PM_{10} (24-hr)	$PM_{2.5}$ (Hourly)	$PM_{2.5}$ (24-hr)
Sacramento-Bercut Dr.		N,P,R	N,P,R						N,P,R
Sacramento-Branch Center #2							N,P		
Elk Grove-Bruceville	N,P		N,P					P	
Sacramento-Del Paso Manor	N,P,R	N,P,R	N,P,R	N,P,R			N,P,R(A)	P,R	N,P,R
Folsom-Natoma St.	N,P		N,P					N,P,R	
Sloughhouse	N,P							N,P,R	
Sacramento-T Street	N,P		N,P			N,P		N,P	

(40) (A) There are three PM_{10} monitors at Sacramento-Del Paso Manor; the primary monitor for NAAQS comparison and its collocated (audit) monitor with parameter code 88102 have objectives of N and P; the last PM_{10} monitor with parameter code 85101, used in the calculation of Particulate Matter with size between 10 and 2.5 micrometers (PMCoarse), has objectives of P and R.

Monitoring objective abbreviation:
N – National Ambient Air Quality Standards (NAAQS) Comparison
P – Public Info
R – Research

There are different types of monitoring sites to support these monitoring objectives. Examples of these include: sites that are located in the highest pollutant concentration area, sites that are located in areas of high population density to monitor for population exposure, and sites that determine general background concentration levels. A complete list of different types of monitoring sites is contained in 40 CFR Part 58, Appendix D. In addition, a spatial scale of representativeness is assigned to the air monitors to identify "the link between general monitoring objectives, site types and the physical location of a particular monitor" (40 CFR Part 58, Appendix D). Table 2-5 summarizes the site type and spatial scale. Description and further explanation on site type and spatial scale can be found in 40 CFR Part 58, Appendix D.

For in-depth details on individual monitors, see Appendix A, which documents the monitor type, affiliation, monitoring objectives, type of site, and spatial scale by each monitor. It also provides a statement of purpose and pollutant specific information, such as whether a $PM_{2.5}$ monitor is suitable for comparison to the national ambient air quality standard, 1-point quality control (QC) check frequency and distance to other PM monitors. All monitors operated in the District's ambient air monitoring network meet the requirements of 40 CFR Part 58, including Appendices A, C, D, and E.

Table 2-5 Type of Site and Spatial Scale

Site	Pollutant	Site Type	Spatial Scale: Micro	Neighborhood	Urban	Not Applicable
Sacramento-Bercut Dr.	CO	Source Oriented	●			
	NO_2	Source Oriented	●			
	$PM_{2.5}$	Source Oriented	●			
	BC	Source Oriented				●
Sacramento-Branch Center #2	PM_{10}	Highest Concentration		●		
Elk Grove-Bruceville	O_3	Upwind/Background			●	
	NO_2	Upwind/Background			●	
	$PM_{2.5}$	General/Background			●	
Sacramento-Del Paso Manor	O_3	Population Exposure		●		
	CO	Population Exposure		●		
	NO_2	Population Exposure		●		
	SO_2	Population Exposure			●	
	PM_{10}	Population Exposure		●		
	$PM_{2.5}$	Population Exposure, Highest Concentration		●		
	BC	Population Exposure				●
Folsom-Natoma St.	O_3	Maximum Ozone, Population Exposure		●		
	NO_2	Highest Concentration		●		
	$PM_{2.5}$	Population Exposure		●		
Sloughhouse	O_3	Maximum Ozone		●		
	$PM_{2.5}$	Upwind/background			●	
Sacramento-T Street	O_3	Upwind/background			●	
	NO_2	Population Exposure		●		
	PM_{10}	Population Exposure		●		
	$PM_{2.5}$	Population Exposure		●		

Section 3 Minimum Monitoring Requirements

Section 3.1 General

The minimum number of monitoring sites required for each pollutant is based on one or more applicable factors, as described in 40 CFR Part 58, Appendix D. Examples of these factors include: MSA population, core-based statistical area (CBSA) population, pollutant design value, pollutant maximum concentration, attainment status, annual average daily traffic (AADT), population weighted emission index (PWEI), SIP, maintenance plan and U.S. EPA's national emission inventory (NEI) data requirements.

Sacramento MSA meets or exceeds minimum monitoring requirement for all criteria pollutants – O_3, $PM_{2.5}$ (manual and continuous methods), PM_{10}, NO_2, SO_2, CO, and Pb. Details of the monitors representing Sacramento MSA (or CBSA, ID#40900) are provided in Table 3-1. As mentioned in Section 2, Sacramento MSA has 2.4 million residents and covers all El Dorado, Placer, Sacramento, and Yolo Counties.

Sac Metro Air District has an agreement with CARB to share specific portions of the monitoring responsibility in the Sacramento MSA. A copy of this agreement is available upon request. Placer County Air Pollution Control District, the air quality agency for Placer County, and Yolo-Solano Air Quality Management District, the air quality agency for Yolo County, also operate air monitoring stations within the Sacramento MSA. Appendix B lists the number of monitors operated by CARB and different air districts in Sacramento MSA.

Table 3-1 2022 Sacramento MSA Design Value and SLAMS Monitoring Site Requirement

Pollutant and Type (if applicable)		Sites Required[A]	Sites in Sacramento MSA	Additional sites needed	Notes[B]
O_3		2	15	0	• 0.081 ppm at Auburn (06-061-0003) with wildfire impact[C]
CO	Near-road	2	1	1[I]	• Sacramento-Bercut Dr. is one of the two required near-road monitors • Sacramento-Del Paso satisfies the NCore and CO Maintenance Plan requirements
	Non-near-road	1	1	0	
NO_2	Near-road	2	1	1[I]	• Highest AADT: 272,000 (U.S. Highway 50 east of 15/16th Street)[D] • Sacramento-Del Paso Manor serves as both PAMS and area-wide monitor
	Area-wide	1	6	0	
SO_2		1	1	0	• Total SO_2: 1,250 tons[E] • Population Weighted Emission Index: 3,020 million persons-tons per year[F] • Sacramento-Del Paso Manor satisfies the NCore requirement
$PM_{2.5}$	FRM/FEM	3	8	0	• 24-hr standard: 65 µg/m3 at Auburn (06-061-0003) with wildfire impact [C] • Annual Standard: 11.7 µg/m3 at Sacramento-Bercut (06-067-0015) with wildfire impact [C]
	Continuous	2	10	0	
PM_{10}		2-4[G]	8	0	• Estimated number of exceedances: 3.8 days at West Sacramento (06-113-2001) with wildfire impact [C]
$PM_{10-2.5}$		1	1	0	• Required at the Sacramento-Del Paso Manor as an NCORE requirement
Pb	NCORE	0	0	0	• Monitor discontinued in May 2020 due to low ambient concentration and EPA removed requirements for Pb monitoring at NCore stations
	Source oriented	0	0	0	• No non-airport source greater than 0.5 tons per year or airport source greater than 1.0 tons per year[H]

Source: U.S. EPA Air Quality System (AQS) Site/Monitor Data Report (AMP 500) and Design Value Report (AMP 480), accessed on 10 Aug 2023

Units' abbreviation: ppm – part per million; µg/m^3 – microgram per cubic meter

[A] For site requirement information, see 40 CFR Part 58, Appendix D

[B] Design values are included for O_3, $PM_{2.5}$, PM_{10} because it helps to determine the number of sites required

[C] The design values shown in this table include wildfire smoke impact in 2020 and 2021; the District will address these impacts under the Exceptional Event Rule (81 FR 68216) as necessary

[D] California Department of Transportation, 2020 Traffic Volumes, accessed 04 April 2023

[E] 2020 National Emission Inventory, accessed 10 May, 2023

[F] Per 40 CFR Part 58, Appendix D, $PWEI = \frac{Total\ SO_2 \times MSA\ population}{1{,}000{,}000}$

[G] According to 40 CFR Part 58, Appendix D, PM_{10} monitoring requirement for the Sacramento MSA is listed to be six to ten monitors instead of two to four. This requirement is based on the highest ambient PM_{10} concentrations in the Sacramento MSA, which exceeded 120% of the NAAQS. Because the highest 2021 ambient concentrations in Sacramento were impacted by wildfire smoke, the District believes its long-standing requirement of two to four monitors is still relevant and meets the needs of its communities. (Two to four monitors are appropriate for areas with a peak concentration less than 80% of NAAQS.) The air districts in Sacramento MSA or CARB currently operate eight PM_{10} monitors in the MSA. The District looks forward to working with U.S EPA, CARB, and other local air districts to ensure current and future monitoring levels continue to protect health and safety.

[H] 2020 National Emission Inventory (updated March 2023), accessed 25 April 2023

[I] The District is working with EPA and CARB to investigate potential sites, determine appropriate timeline, and funding to implement a 2nd near-road site.

Section 3.2 Photochemical Assessment Monitoring Station

The District operated the legacy PAMS network from 1994 through 2020. Elk Grove-Bruceville, Sacramento-Del Paso Manor, and Folsom-Natoma St. were the type I, II, III PAMS sites, respectively. The 2015 review of National Ambient Air Quality Standards for Ozone (80 FR 65292) required PAMS sites to be at the NCORE sites. In addition, it also required each State to draft an Enhanced Monitoring Plan (EMP) for areas with moderate or higher ozone nonattainment to include additional monitoring that is needed at other sites for the region. Since the Sacramento ozone federal nonattainment area is classified as "moderate,"[6] it is required to have enhanced ozone monitoring activities. The District, CARB, and neighboring air districts worked together to determine the appropriate monitoring plan. Details are provided in Enhanced Monitoring Plan portion of the 2020 Monitoring Network Assessment drafted by CARB.

For the purposes of the new PAMS requirements, Sacramento-Del Paso Manor will be the core PAMS station. Elk Grove-Bruceville Rd. and Folsom-Natoma St. will both serve as enhanced ozone monitoring sites. Table 3-2 lists the instruments the District plans to operate at the PAMS and at the enhanced ozone monitoring sites. Changes needed to realign the PAMS network are as followed:

- On March 20, 2023, the U.S. EPA approved the District's request (Appendix D) to discontinue PAMS parameters that are identified in CARB's Enhanced Monitoring Plan (namely, speciated volatile organic compound [VOC] at Elk Grove-Bruceville Rd. and Folsom-Natoma St. and the reactive oxides of nitrogen at Folsom-Natoma St.).
- To accommodate the large automatic gas chromatography analyzer (Auto-GC) and its support equipment, the District will have to rebuild the PAMS station at Sacramento-Del Paso Manor. Construction efforts began in 2022 but challenges like increased power needs have delayed construction of the site significantly. The physical construction work is scheduled to start late 2023 and be completed prior to the 2024 PAMS season.
- The District will be submitting a waiver to operate some of the required meteorological instruments (ultraviolet radiation, precipitation, and barometric pressure) at Elk-Bruceville Rd. instead of Sacramento-Del Paso Manor.

Table 3-2 Enhanced PAMS Monitoring

Site Name	O_3	NO_2	VOC	Carbonyl	NMHC(C)	Meteorology	Ceilometer
Elk Grove-Bruceville Rd.	✓	✓	✗(A)		✓(D)	✓()	✓
Sacramento-Del Paso Manor	✓	✓	✓(B)	✓	✓(D)	✓(F)	
Folsom-Natoma St.	✓	✓	✗(A)		✓(D)	✓(G)	

(A) VOC at Elk Grove-Bruceville and Folsom-Natoma St. are no longer needed under the enhanced PAMS monitoring plan and will be discontinued
(B) An Auto-GC will replace the existing canister sampling system as required under the new PAMS requirements
(C) Non-methane hydrocarbon, a precursor for O_3
(D) The NMHC analyzers at Elk-Grove Bruceville and Folsom Natoma St. are on a temporary shutdown due to instrument malfunction and will be replaced
(E) Surface meteorology at Elk Grove-Bruceville includes: temperature, relative humidity, wind direction and speed, solar radiation, ultraviolet radiation, precipitation, and barometric pressure
(F) Surface meteorology at Sacramento-Del Paso Manor includes: temperature, relative humidity, wind direction and speed, and solar radiation
(G) Surface meteorology at Folsom-Natoma St. includes: temperature, relative humidity, wind direction and speed, and solar radiation

[6] 2018-11838.pdf (govinfo.gov)

Section 3.3 Operating Schedule

All instruments operated by the District meet the operating schedule requirements as specified in 40 CFR Section 58.12. All continuous monitors report hourly data and monitor air pollutants year-round, unless otherwise specified in Appendix A. Non-continuous monitors are operated by following the sampling schedule in Table 3-3 and are operated year-round, except: VOC and carbonyl samplers related to PAMS that are operated from July through September.

Table 3-3 Sampling Schedule for PM, Pb, and VOC monitors in Sacramento

Site	Pollutant[A]	Sampling Schedule: Epi-sodic / 1 in 6 days / 1 in 3 days / Daily / Hourly	Note
Sacramento-Bercut Dr	$PM_{2.5}$		A continuous sampler replaced the 24-hr sampler in Dec 2020
Sacramento-Branch Center #2	PM_{10}		Max. 24-hr concentration: 55 µg/m3; ratio to standard: 0.37
Elk Grove-Bruceville	$PM_{2.5}$		Non-FRM/FEM
	VOC		Under the PAMS Enhanced Monitoring Plan the District has discontinued the monitor
Sacramento-Del Paso Manor	Pb	(monitor discontinued in May 2020)	
	PM_{10}		Max. 24-hr concentration: 41 µg/m3; ratio to standard: 0.27
	$PM_{10-2.5}$		
	$PM_{2.5}$		In January through March 2021, a continuous FEM monitor operated as the primary $PM_{2.5}$ monitor in lieu of the 24-hr FRM monitor due to the CARB laboratory's COVID-19 related closure
	AutoGC (VOC)		Will commence operation once site renovation is complete
Folsom-Natoma St.	$PM_{2.5}$		
	VOC		Under the PAMS Enhanced Monitoring Plan the District has discontinued the monitor
Sloughhouse	$PM_{2.5}$		
Sacramento-T Street	PM_{10}		
	$PM_{2.5}$		Special Purpose Monitor

Source: Design values from U.S. EPA Air Quality System Raw Data Report (AMP 350), accessed on 10 Aug 2023

[A] Operating schedule requirements can be found in 40 CFR Section 58.12

Section 4 Recent and Proposed Modifications to the Network

This section discusses recent and proposed modifications to the Sacramento County air monitoring network. It includes modifications that occurred within the 2022 calendar year and modifications that may occur within the next 18 months, following this annual network plan submittal. Unless specifically noted below, Sac Metro Air District is not formally requesting approval for modification through this network plan from CARB or U.S EPA. Prior to a network modification, the District will work with the CARB to submit to U.S. EPA the required documentation for official review and approval of proposed system modifications. Sac Metro Air District is a part of the CARB's primary quality assurance organization and works with CARB to ensure air monitoring requirements are met.

Section 4.1 Sacramento-Bercut Dr.

1. Due to the COVID-19 pandemic in December 2020, use of the $PM_{2.5}$ 24-hr FRM sampler was temporarily suspended because the $PM_{2.5}$ mass analysis laboratory weighing the 24-hr sampling filter had shut down. It was replaced with a continuous $PM_{2.5}$ FEM sampler. The District is making the replacement permanent and will work with U.S. EPA and CARB to discontinue the $PM_{2.5}$ 24-hr FRM sampler.

Section 4.2 Sacramento-Branch Center #2

(No change is anticipated.)

Section 4.3 Elk Grove-Bruceville Rd.

1. As noted in the PAMS Enhanced Monitoring Plan[7], the District discontinued the speciated VOC episodic measurements after receiving approval from U.S. EPA on March 20, 2023. A copy of the approval letter is provided in Appendix D.
2. The District is considering adding a PM_{10} monitor at this site to provide more localized information in the growing southern portion of Sacramento County.

Section 4.4 Sacramento-Del Paso Manor

1. Sacramento-Del Paso Manor was established in the 1970s with a small number of monitoring equipment units. The amount of equipment has steadily increased due to PAMS and NCore requirements, and the existing station configuration cannot accommodate any more equipment. Renovation and site expansion are expected to begin in late 2023 and will allow the station to accommodate additional equipment required by PAMS in 40 CFR Part 58, Appendix D. After the station expansion project is completed, the District will replace the existing PAMS VOC canister sampling with a continuous Auto-GC instrument.
2. The District is evaluating replacing the PM_{10} filter based method with a PM_{10} continuous monitoring at this site. PM_{10} continuous monitoring provides real-time air quality information to the public.
3. Due to the same COVID-19 pandemic situation as noted above under changes to Sacramento-Bercut Dr., a continuous $PM_{2.5}$ FEM sampler was operated in lieu of the 24-hr $PM_{2.5}$ FRM 24-hr sampler. The District will continue to operate a PM2.5 FEM sampler concurrently to the $PM_{2.5}$ FRM sampler. The $PM_{2.5}$ FRM sampler will remain the primary $PM_{2.5}$ sampler.

[7] Provided in California Air Resources Board's 2020 Monitoring Network Assessment

Section 4.5 Folsom-Natoma St.

1. As noted in the PAMS Enhanced Monitoring Plan[8], the District discontinued the speciated VOC episodic and reactive nitrogen compound (NOY) measurements after receiving approval from U.S. EPA on March 20, 2023 . A copy of the approval letter is provided in Appendix D.

Section 4.6 North Highlands-Blackfoot Way

1. In July 2022, the District was given a notice (Attachment 1 in Appendix E) to vacate the area promptly and remove the air monitoring station from the premises. The District notified the U.S. EPA the discontinuation of all monitors at this location. The last day of monitoring operation was July 31, 2022. A copy of the notification letter is provided in Appendix E. The District will work on installing an air monitoring station near the discontinued North Highlands-Blackfoot Way location to measure PM_{10} concentrations and if resources are available, ozone concentrations.

Section 4.7 Sloughhouse-Sloughhouse Rd.

(No change is anticipated.)

Section 4.8 Near-road site #2

1. 40 CFR Part 58 requires state or local air monitoring organizations to operate a second near-road monitoring site if any traffic count in the metropolitan area surpasses 250,000 in annual average daily traffic. As noted, in the June 2023 5-Year Air Monitoring Network Assessment, the Sacramento MSA exceeded traffic volume threshold for a second near-road monitoring site according to 40 CFR Part 58 (2015-2019 traffic volume exceeded the threshold, 2020 traffic volume fell below the threshold). The District is working with U.S. EPA and CARB to determine the appropriate timing, location, and funding for a second near-road monitoring site.

Section 5 Quality Assurance and Other Monitoring Requirements for the PQAO

40 CFR Part 58, Appendix A, requires monitoring activities to satisfy quality assurance criteria. Most of these activities are required and met on a primary quality assurance organization (PQAO) level. Sac Metro Air District is a part of the CARB's PQAO and works with the PQAO to meet the quality assurance requirements. Currently, there are collocated $PM_{2.5}$ FRM and PM_{10} FRM monitors at Sacramento-Del Paso Manor. There is a collocated $PM_{2.5}$ FEM monitor at Folsom-Natoma St. For these collocated monitors, the primary monitor and audit monitor use the same U.S. EPA FRM/FEM method designation.

After receiving an approval from U.S. EPA in April 2020, the District has discontinued the Pb monitor at Del Paso Manor in May 2020. Thus, collocation for lead will not be conducted at this location.

40 CFR Part 58, Appendix D, 4.7.3, requires each State to "install and operate at least one $PM_{2.5}$ site to monitor for regional background and at least one $PM_{2.5}$ site to monitor regional transport." In CARB's 2018 Annual Monitoring Network Report, it identified Point Reyes National Seashore and San Rafael Wilderness sites as the state's regional background sites and Vallejo as the regional transport site for $PM_{2.5}$. Please refer to the CARB's 2018 Annual Monitoring Network Report for updates or more information.

[8] Provided in California Air Resources Board's 2020 Monitoring Network Assessment

Section 6 Process to Review Changes to $PM_{2.5}$ Monitoring Network

40 CFR Section 58.10(c) requires this annual network plan to "provide for the review of changes to a $PM_{2.5}$ monitoring network that impact the location of a violating $PM_{2.5}$ monitor." There is no current plan to relocate or discontinue any $PM_{2.5}$ monitors that impact a violating monitor. Any changes to the $PM_{2.5}$ monitoring network with impact to the location of a violating $PM_{2.5}$ monitor will be documented in this section when triggered by future annual network plan changes.

Section 7 Data Submission Requirements

CARB submitted precision, accuracy, and raw data for all District operated monitors until the end of 2017. Starting in 2018, Sac Metro Air District has submitted its air monitoring data directly to AQS after conducting its data validation process. The quarterly data submittal process also includes Quality Assurance (QA) data required by 40 CFR Part 58. In an agreement with CARB, Sac Metro Air District will certify all data the District generates and submits. Since CARB continues to weigh and analyze the $PM_{2.5}$ FRM filters for Sac Metro Air District, CARB will continue to submit and certify that data. CARB will also submit and certify the PM coarse data. Copies of the annual data certification provided to U.S. EPA are provided in Appendix C.

- 2022 Annual data certification submitted: August 17, 2023
- 2022 Annual data certification ($PM_{2.5}$ FRM and PM Coarse only) submitted: March 30. 2023

Section 8 Community-Scale Monitoring and Outreach

The District is fully committed to effectively reducing air pollution and protecting the public health of all Sacramento County residents. As a direct result, the District has initiated additional monitoring efforts to help advance environmental justice. Partnerships with sister agencies, businesses, community members, and non-profit organizations bring together resources, experiences, and solutions to benefit the communities and improve overall air quality. While these monitoring efforts are not federally mandated, they provide valuable information that supports the objectives of timely public information, the development of emission reduction strategies, and air pollution research studies. Below are examples of ongoing monitoring projects and their projected development over the next 18 months. For more detailed information refer to the District's most recent 5-Year Air Monitoring Network Assessment.

- California Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017) was signed into law to establish a new community-focused program to reduce air pollution. The District recommended several communities, that are disproportionally impacted by air pollution, within Sacramento County to CARB. The South Sacramento/Florin community was selected as one of the 10 inaugural communities across the state. With collaboration of community members, the District initiated a three-phased air monitoring approach. Phase 1 involved deploying portable sensors to provide real time monitoring of $PM_{2.5}$ concentrations and to increase air quality awareness and outreach. Phase 2 sites were selected based community identified areas and included a combination of mid-grade/research equipment and portable sensors aimed to collect detailed air quality data. The Phase 3 Portable Laboratory location was selected based off Phase 2 monitoring and includes a suite of professionally-grade equipment aimed to collect data for a variety of pollutants including PM2.5, VOCs, BC, Total Carbon, NO, NO2, O3, and carbonyl compounds. Phase 3 monitoring is scheduled to continue for a minimum of one year. Data collection will aid in understanding localized air pollution to develop emission reduction strategies to reduce cumulative air pollution burden for the community.

The EPA awarded a grant to the District in 2020 to conduct a study on toxic pollutants from mobile sources in the underserved communities of South Sacramento-Florin and North Sacramento. The District is extending the monitoring period for air toxics and black carbon (BC) at the six Phase 2 community sites in South Sacramento by six months, completing a year of monitoring. Three of the six community sites will include high time resolution measurements of benzene, toluene, and xylenes (BTX). Additionally, high time resolution measurements of BTX, BC, particulate matter, nitrogen dioxide, and meteorology will be conducted at a site in another Sacramento overburdened community for one year. Overall, the study aims to provide valuable insights into toxic pollutants from mobile sources and their effects on the health of underserved communities in Sacramento County, supporting efforts to address environmental justice concerns.

- In collaboration with other government agencies and independent organizations, the District has supported air monitoring programs to provide air quality sensor data to underserved communities within Sacramento County. In conjunction with Valley Vision, Civic Thread (formerly WALKSacramento), Breathe CA, and Green Tech Education, the District continues to support these efforts by these groups to provide the North Sacramento Norwood and Oak Park neighborhoods with localized $PM_{2.5}$ data in their communities.

- The District has collaborated with the City of Sacramento to develop a multi-pronged project aimed to advance the Mayor's Commission on Climate Change. The project involved deploying 200 portable air sensors to city residents, schools, and businesses, prioritizing underserved communities. In addition, the project included a mobile on-road monitoring campaign for measurements of hyperlocal conventional air pollution to provide a high-quality snapshot of ambient concentrations. These efforts will provide a fine resolution picture and aid the District and City pollution reduction.

Appendix A Detailed Site and Monitor Information

Detailed site information covered in this appendix reflects air monitoring operation from January 1, 2022-December 31, 2022.

Appendix A.1 Sacramento-Bercut Dr.

This is an approved near-road monitoring site. Located one mile from Downtown Sacramento, this site is expected to measure the highest NO_2 concentration due to the emissions from mobile sources on Interstate 5, which is about 20 meters (m) from the site. The site started operation on October 13, 2015.

Table A-1 Sacramento-Bercut Dr. Metadata

Site Name	Sacramento-Bercut Dr.
AQS Site Number	06-067-0015
Geographic Coordinates	38.593328°N, 121.503728°W
Location	On the downwind side of Interstate 5, one mile north-northwest of Downtown Sacramento
Address	100 Bercut Dr., Sacramento, CA 95811
County	Sacramento
Metropolitan Statistical Area	Sacramento-Arden Arcade-Roseville
Distance from Roadway	Interstate 5: 20 m Bercut Dr.: 5 m
Annual Average Daily Traffic (Vehicles/Day)	Interstate 5: 205,000 (California Department of Transportation, 2021) Bercut Dr. at Bannon St.: 3,575 (City of Sacramento, 2019)
Ground Cover	Pavement, with vegetation

Figure 4 Sacramento-Bercut Dr. Site Photo

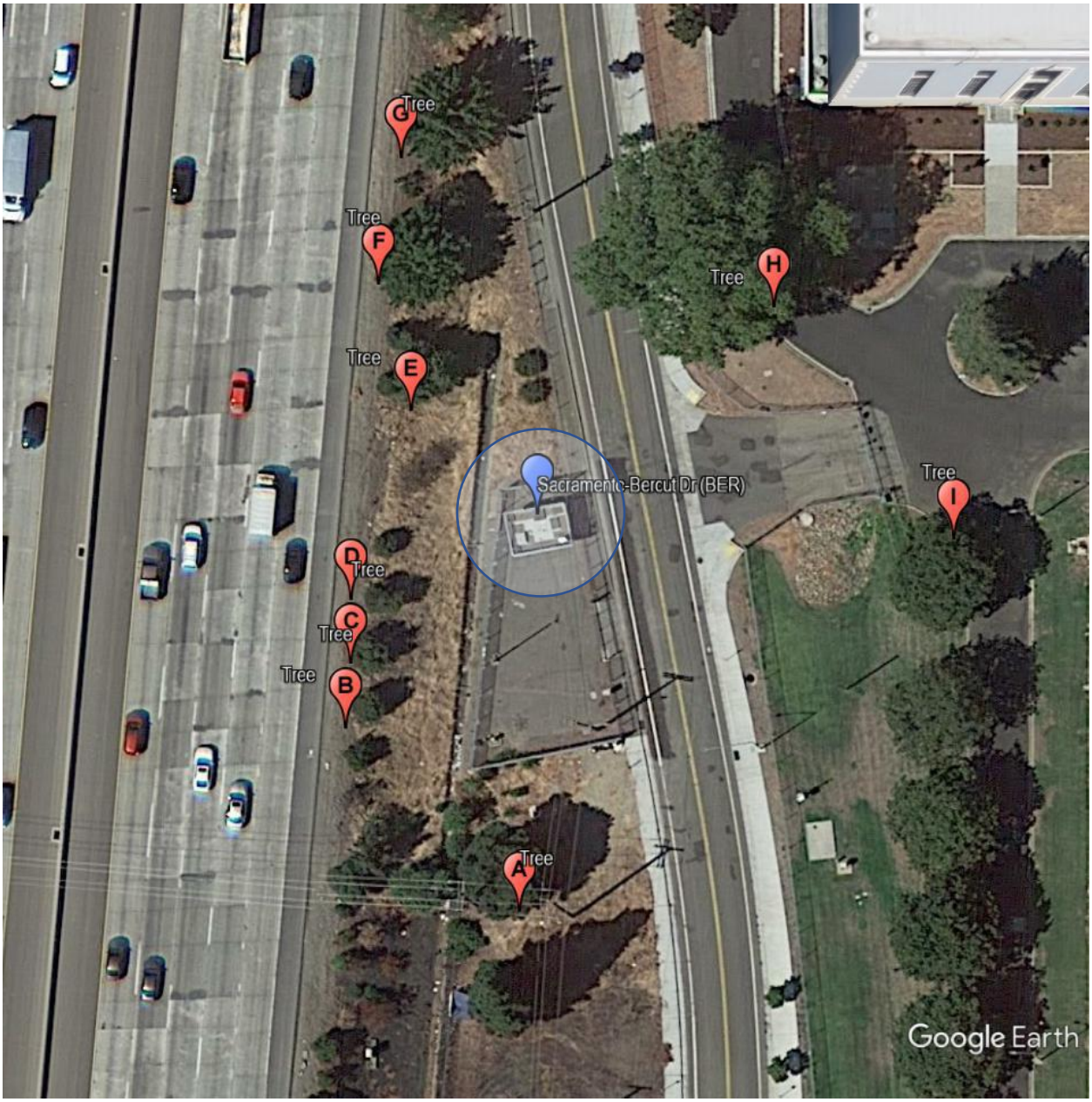
Figure 5 Panoramic Photo Looking North from Sacramento-Bercut Dr.

Figure 6 Panoramic Photo Looking East from Sacramento-Bercut Dr.

Figure 7 Panoramic Photo Looking South from Sacramento-Bercut Dr.

Figure 8 Panoramic Photo Looking West from Sacramento-Bercut Dr.

Figure 9 Google Earth Satellite Image of Sacramento-Bercut Dr.



Source: Google Earth, imagery date 8/17/2018

The circle in Figure 9 indicates there are no trees within a 10 m radius, which satisfies the siting criterion that requires drip lines of trees to be at least 10 m away from probes and inlets (40 CFR Part 58, Appendix E). Also, heights of potential flow obstacles were calculated on-site with trigonometry on 5/2/2023 and are provided in Table A-2 thru Table A-4. Except for tree “H,” each inlet and sampler have 360° of unrestricted airflow. Discussion for tree “H” is noted under Table A-4.

Table A-2 Distance between Object and Probe or Inlet at Sacramento-Bercut Dr.

	Gaseous Probe	Black Carbon Inlet	$PM_{2.5}$ Inlet (24-hr FRM)	$PM_{2.5}$ Inlet (Continuous)
Object A (Tree)	37.0	37.0	34.1	33.6
Object B (Tree)	Tree removed			
Object C (Tree)	Tree removed			
Object D (Tree)	Tree removed			
Object E (Tree)	Tree removed			
Object F (Tree)	28.0	26.0	26.9	26.7
Object G (Tree)	26.1	27.3	27.3	31.9
Object H (Tree)	31.0	30.7	26.5	27.7
Object I (Tree)	42.3	44.3	40.2	42.3

All units are in meter

Table A-3 Object Protrusion Above Probe or Inlet at Sacramento-Bercut Dr.

	Gaseous Probe	Black Carbon Inlet	$PM_{2.5}$ Inlet (24-hr FRM)	$PM_{2.5}$ Inlet (Continuous)
Object A (Tree)	8.3	8.7	7.4	4.8
Object B (Tree)	Tree removed			
Object C (Tree)	Tree removed			
Object D (Tree)	Tree removed			
Object E (Tree)	Tree removed			
Object F (Tree)	1.2	1.5	1.4	3.2
Object G (Tree)	6.7	6.4	5.8	8.0
Object H (Tree)	19.9	20.8	17.4	17.4
Object I (Tree)	7.2	7.9	7.3	6.9

All units are in meter

Table A-4 Distance vs. Protrusion Ratio at Sacramento-Bercut Dr.

	Gaseous Probe	Black Carbon Inlet	$PM_{2.5}$ Inlet (24-hr FRM)	$PM_{2.5}$ Inlet (Continuous)
Object A (Tree)	4.5	4.3	4.6	7.0
Object B (Tree)	Tree removed			
Object C (Tree)	Tree removed			
Object D (Tree)	Tree removed			
Object E (Tree)	Tree removed			
Object F (Tree)	23.3	17.3	19.2	8.4
Object G (Tree)	3.9	4.3	4.7	4.0
Object H (Tree)[(A)]	1.6	1.5	1.5	1.6
Object I (Tree)	5.9	5.6	5.5	6.1

Must be greater than or equal to 2 to meet U.S. EPA siting criteria

[(A)] Tree H is an old growth heritage tree, as defined by Chapter 12.64 of Sacramento City Code (SCC). It is protected by SCC from removal or significant pruning. Since the tree is directly downwind of the emission source, it has limited scavenging effect and does not interfere with the emission source being monitored. Before the air monitoring site was established, U.S. EPA staff had authorized the District to leave this tree in place (email correspondence with Elfego Felix, U.S. EPA Region 9, on August 6, 2013).

Site	Sacramento-Bercut Dr	Sacramento-Bercut Dr
Start Date	10/13/2015	10/13/2015
Collecting Agency	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District
Pollutant	NO_2	CO
Parameter Code	42602	42101
Parameter Occurrence	1	1
Manufacturer/Model	TAPI200UP	TAPI 300U
Sampling Method	Instrumental	Instrumental
Method Code	200	593
Analysis Method	Photolytic-Chemiluminescence	Gas Filter Correlation
FRM/FEM/ARM/Other	FEM	FRM
Monitoring Objective	NAAQS comparison, public info, research	NAAQS comparison, public info, research
Statement of Purpose	Monitors near road emission at region's highest fleet equivalent AADT roadway	Monitors near road emission at region's highest fleet equivalent AADT roadway
Monitor Type	SLAMS	SLAMS
Affiliation	Near Road	Near Road
Site Type	Source Oriented	Source Oriented
Spatial Scale	Micro	Micro
Sampling Frequency	Continuous	Continuous
Sampling Season	Year Round	Year Round
Distance from Supporting Structure or Roof	1.9	1.9
Distance from flow obstructions on roof (m)	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	34.8	34.8
Distance from nearest tree drip line (m)	12	12
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable
Unrestricted airflow (deg)	336	336
Probe height (m, agl)	4.6	4.6
Probe material	Teflon	Teflon
Residence time (seconds)	17.1	18.6
Changes in next 18 months?	No	No
Frequency of 1-pt QC Check	Every other day	Every other day
Audit Date(s)	4/11/22	8/2/21[(A)]

[(A)] This monitor malfunctioned during the attempted audit on 4/11/22

Site	Sacramento-Bercut Dr		
Start Date	10/30/2015	11/1/2016	12/30/2020
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	CARB	Sac Metro Air District
Reporting Agency	Sac Metro Air District	CARB	Sac Metro Air District
Pollutant	Black Carbon	PM2.5	PM2.5
Parameter Code	84313	88101	88101
Parameter Occurrence	1	1	3
Manufacturer/Model	Magee Scientific	R & P 2025	Met One 1020
Sampling Method	Aethalometer	Low volume with VSCC	Very sharp cut cyclone
Method Code	894	145	170
Analysis Method	Optical Absorption	Gravimetric	Beta Attenuation
FRM/FEM/ARM/Other	Other	FRM	FEM
Monitoring Objective	Public info, research	NAAQS comparison, public info, research	NAAQS comparison, public info, research
Statement of Purpose	Determines component of PM emission	Monitors near road emission	Monitors near road emission
Monitor Type	SLAMS	SLAMS	SLAMS
Affiliation	Near Road	Near Road	Near Road
Site Type	Source Oriented	Source Oriented	Source Oriented
Spatial Scale	Not applicable	Micro	Micro
Sampling Frequency	Continuous	1 in 3 days	Continuous
Sampling Season	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	1.5	2.2	2.2
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	34.8	34.8	34.8
Distance from nearest tree drip line (m)	13	16	13
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	336	336	336
Probe height (m, agl)	4.2	5.0	4.8
Probe material	Aluminum	Aluminum	Aluminum
Residence time (seconds)	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	Yes	No
Frequency of flow rate verification	Monthly	Monthly	Bi-monthly
Audit Date(s)	Not applicable	7/19/20, 10/19/20[A]	4/11/22, 10/11/22

[A] Operation of this monitor was suspended in Dec 2020 after a temporary continuous PM2.5 FEM monitor was installed during the COVID-19 pandemic; the District is working to make the changes permanent

Site	Sacramento-Bercut Dr.		
Start Date	10/30/2015	10/30/2015	10/30/2015
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	Outdoor Temperature	Wind Direction	Wind Speed
Parameter Code	62101	61104	61103
Parameter Occurrence	1	1	1
Manufacturer/Model	Climatronics 100093	Climatronics F-460	Climatronics F-460
Sampling Method	Instrumental	Instrumental	Instrumental
Method Code	042	020	020
Analysis Method	Machine Average	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	Other	Other	Other
Monitoring Objective	Public info, research	Public info, research	Public info, research
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor Type	Other	Other	Other
Affiliation	Near Road	Near Road	Near Road
Site Type	Not applicable	Not applicable	Not applicable
Spatial Scale	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	No supporting structure	No supporting structure	No supporting structure
Distance from flow obstructions on roof (m)	Not applicable	Not applicable	Not applicable
Distance from flow obstructions not on roof (m)	Not applicable	Not applicable	Not applicable
Distance from nearest tree drip line (m)	Not applicable	Not applicable	Not applicable
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	336	336	336
Probe height (m, agl)	10.0	10.0	10.0
Probe material	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No
Frequency of 1-pt QC Check	Not applicable	Not applicable	Not applicable
Audit Date(s)	4/11/22	4/11/22	4/11/22

Appendix A.2 Sacramento-Branch Center #2

Sacramento-Branch Center #2 is a PM_{10} monitoring site. This site was established in 2006 to replace the former Sacramento-Branch Center site, which was approximately one-quarter mile to the north. The site was moved because nearby trees at the previous location obstructed the airflow, and the former monitoring site did not meet siting requirements.

The objective of this site is to measure the representative PM_{10} concentration, as documented in the original site initiation reports filed in the late 1980s.

Table A-5 Sacramento-Branch Center #2 Metadata

Site Name	Sacramento-Branch Center #2
AQS Site Number	06-067-0284
Geographic Coordinates	38.551290°N, 121.336590°W
Location	Rooftop of building in the middle of County Maintenance Yard, located 10 miles east-southeast of downtown Sacramento.
Address	3847 Branch Center Road, Sacramento, CA 95827
County	Sacramento
Metropolitan Statistical Area	Sacramento--Arden-Arcade--Roseville, CA
Distance from Roadway	62 m
Annual Average Daily Traffic (Vehicles/Day)	Bradshaw Rd South of Old Placerville Rd.: 42,381 (SACDOT, 7/13/2017)
Ground Cover	Paved

Figure 10 Sacramento-Branch Center #2 Site Photo

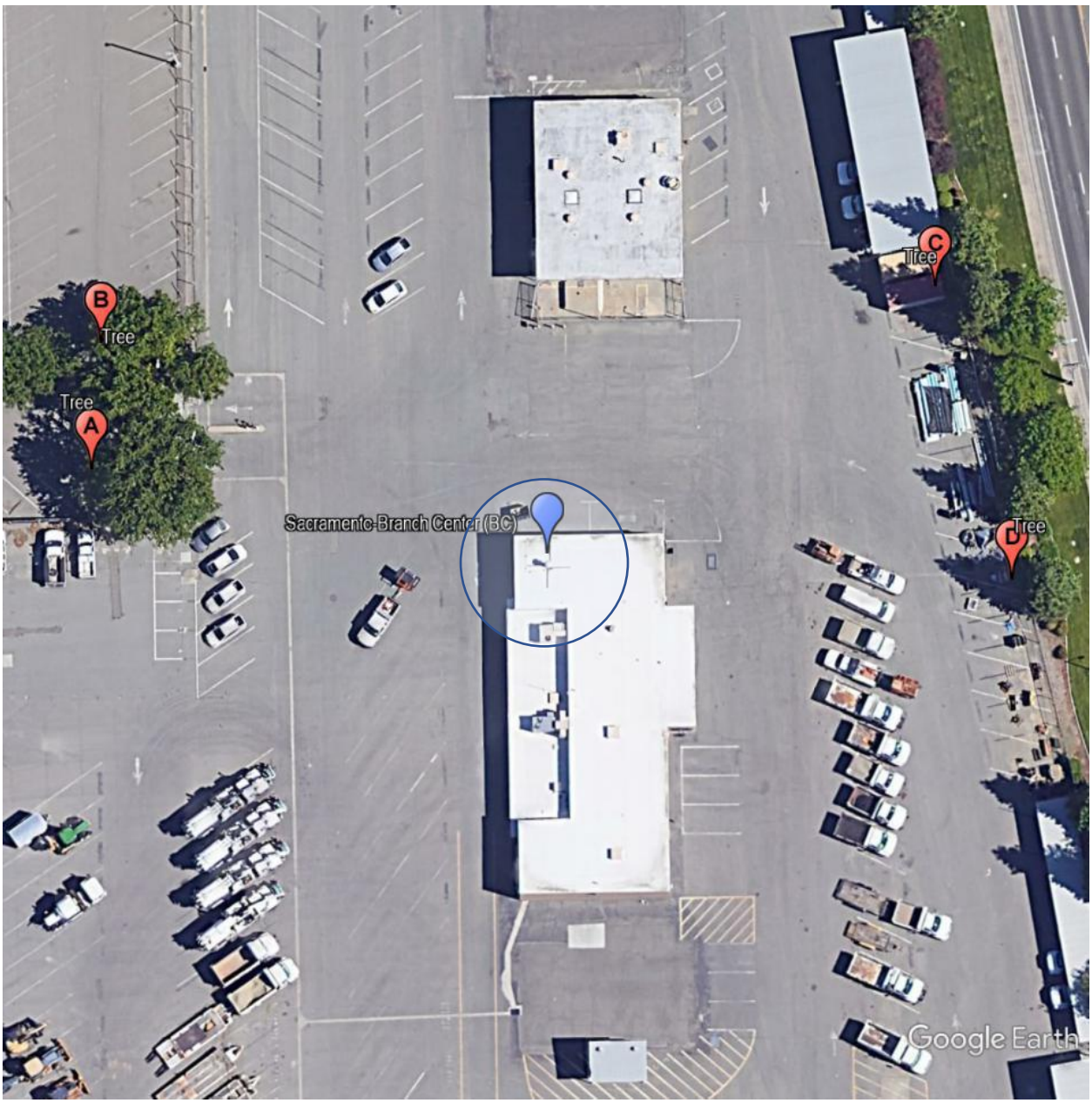
Figure 11 Panoramic Photo Looking North from Sacramento-Branch Center #2

Figure 12 Panoramic Photo Looking East from Sacramento-Branch Center #2

Figure 13 Panoramic Photo Looking South from Sacramento-Branch Center #2

Figure 14 Panoramic Photo Looking West from Sacramento-Branch Center #2

Figure 15 Google Earth satellite image of Sacramento-Branch Center #2



Source: Google Earth, imagery date: 9/13/2019

The circle in Figure 15 indicates no trees exist within a 10 m radius, which satisfy a siting criterion that requires drip lines of trees to be at least 10 m away from probes and inlets (40 CFR Part 58, Appendix E). Also, heights of the trees were calculated on-site with trigonometry on 5/2/2023. Object C and D mark the tallest tree northeast and southeast of the station, respectively. Analyses in Table A-6 Distance between Object and Probe or Inlet at Sacramento-Branch Center #2 Table A-6 through Table A-8 show the objects identified above do not restrict air flow to the roof top inlets and samplers. Therefore, each inlet and sampler have 360° of unrestricted airflow.

Table A-6 Distance between Object and Probe or Inlet at Sacramento-Branch Center #2

	PM_{10} Inlet
Object A (Tree)	41.5
Object B (Tree)	48.8
Object C (Tree)	55.5
Object D (Tree)	51.8

All units in meter

Table A-7 Object Protrusion Above Probe or Inlet at Sacramento- Branch Center #2

	PM_{10} Inlet
Object A (Tree)	6.5
Object B (Tree)	4.2
Object C (Tree)	12.8
Object D (Tree)	10.9

All units in meter

Table A-8 Distance vs. Protrusion Ratio at Sacramento- Branch Center #2

	PM_{10} Inlet
Object A (Tree)	6.4
Object B (Tree)	11.6
Object C (Tree)	4.3
Object D (Tree)	4.8

Must be greater than or equal to 2 to meet U.S. EPA siting criteria

Site	Sacramento-Branch Center
Start Date	4/1/2006
Collecting Agency	Sac Metro Air District
Analytical Lab	Sac Metro Air District
Reporting Agency	Sac Metro Air District
Pollutant	PM_{10}
Parameter Code	81102
Parameter Occurrence	1
Manufacturer/Model	Sierra Anderson 1200
Sampling Method	Hi Volume
Method Code	063
Analysis Method	Gravimetric
FRM/FEM/ARM/Other	FRM
Monitoring Objective	NAAQS comparison, public info
Statement of Purpose	Measures PM_{10} concentration
Monitor Type	SLAMS
Affiliation	None
Site Type	Highest concentration
Spatial Scale	Neighborhood
Sampling Frequency	1 in 6 days
Sampling Season	Year Round
Distance from Supporting Structure or Roof	2.0
Distance from flow obstructions on roof (m)	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction
Distance from nearest tree drip line (m)	37
Distance to furnace or incinerator flue (m)	No furnace/flue
Distance between collocated PM monitors (m)	Not collocated
Unrestricted airflow (deg)	360
Probe height (m, agl)	6.2
Probe material	Not applicable
Residence time (seconds)	Not applicable
Changes in next 18 months?	No
Frequency of flow rate verification	Monthly
Audit Date(s)	4/21/22, 10/14/22

Appendix A.3 Elk Grove-Bruceville

Bruceville air monitoring site is in a rural area 4 miles south of Elk Grove, CA, and 20 miles south of Downtown Sacramento. It was initiated in 1992 to replace the former Sacramento-Meadowview Road O_3 monitoring site.

This site is the upwind O_3 and ozone precursor monitoring site for the Sac Metro Air District's network. Under the legacy PAMS network, it was a Type I site. It is now one of the two additional PAMS enhanced monitoring sites. The District installed a ceilometer at Elk Grove-Bruceville (instead of the main PAMS site at Sacramento-Del Paso Manor) in January 2018 after receiving a waiver from U.S. EPA.

Site Name	Elk Grove-Bruceville
AQS Site Number	06-067-0011
Geographic Coordinates	38.302560°N, 121.420830°W
Location	Rural area located 4 miles south of Elk Grove, CA.
Address	12490 Bruceville Rd, Elk Grove, CA 95758
County	Sacramento
Metropolitan Statistical Area	Sacramento--Arden-Arcade--Roseville, CA
Distance from Roadway	76 m
Annual Average Daily Traffic (Vehicles/Day)	Bruceville Rd south of Lambert Rd.: 2,340 (SACDOT, 9/21/2017)
Ground Cover	Vegetated

Figure 16 Elk Grove-Bruceville Site Photo

Figure 17 Panoramic Photo Looking North from Elk Grove-Bruceville

Figure 18 Panoramic Photo Looking East from Elk Grove-Bruceville

Figure 19 Panoramic Photo Looking South from Elk Grove-Bruceville

Figure 20 Panoramic Photo Looking West from Elk Grove-Bruceville

Figure 21 Google Earth satellite image of Elk Grove-Bruceville

Source: Google Earth, imagery date: 9/13/2019

The circle in Figure 21 indicates no trees exist within a 10 m radius, which satisfy the siting criterion that requires drip lines of trees to be at least 10 m away from probes and inlets (40 CFR Part 58, Appendix E). Also, heights of the trees were calculated on-site with trigonometry on 4/25/2023. Analyses in Table A-9 through Table A-11 show the objects identified above do not restrict air flow to the roof top inlets and samplers. Therefore, each inlet and sampler have 360° of unrestricted airflow.

Table A-9 Distance between Object and Probe or Inlet at Elk Grove-Bruceville

	Gaseous Probe	VOC Probe	$PM_{2.5}$ Inlet
Object A (Tree)	24.0	24.0	24.0
Object B (Tree)	Tree removed		
Object C (Tree)	49.8	49.8	49.8
Object D (Building)	37.9	37.9	37.9

All units are in meter

Table A-10 Object Protrusion Above Probe or Inlet at Elk Grove-Bruceville

	Gaseous Probe	VOC Probe	$PM_{2.5}$ Inlet
Object A (Tree)	0.8	0.4	-0.1
Object B (Tree)	Tree Removed		
Object C (Tree)	4.7	4.3	3.9
Object D (Building)	-1.6	-2.1	-2.5

All units are in meter; a negative value indicates that the inlet or probe is taller than the object; thus, airflow is not obstructed no matter the distance

Table A-11 Distance vs. Protrusion Ratio at Elk Grove-Bruceville

	Gaseous Probe	VOC Probe	$PM_{2.5}$ Inlet
Object A (Tree)	30.0	60.0	N/A
Object B (Tree)	Tree Removed		
Object C (Tree)	10.6	11.6	12.8
Object D (Building)	N/A	N/A	N/A

Must be greater than or equal to 2 to meet U.S. EPA siting criteria; N/A indicates that the inlet or probe is taller than the object and airflow is not obstructed

Site	Elk Grove-Bruceville			
Start Date	7/1/1992	7/1/1992	7/1/1996	6/1/1994
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	AAC Lab
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	O_3	NO_2	Total NMHC	Speciated VOC[B]
Parameter Code	44201	42602	43102	43102
Parameter Occurrence	1	1	1	2
Manufacturer/Model	TAPI 400E	TAPI200UP	TEI 55C	Xontech 910A/912
Sampling Method	Instrumental	Instrumental	Instrumental	6L Pressurized Canister
Method Code	087	200	164	177
Analysis Method	Ultraviolet Absorption	Photolytic-Chemiluminescenc	Flame Ionization Detector	Dual Flame Ionization Detector
FRM/FEM/ARM/Other	FEM	FEM	Other	Other
Monitoring Objective	NAAQS comparison, public info	NAAQS comparison, public info	Public info, research	Research
Statement of Purpose	Measures background O_3 concentration at upwind site	Measures background ozone precursor concentration	Measures background ozone precursor concentration	Measures background ozone precursor concentration
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS
Affiliation	PAMS	PAMS	PAMS	PAMS
Site Type	Upwind/Background	Upwind/Background	Upwind/Background	Upwind/Background
Spatial Scale	Urban	Urban	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Episodic Sampling
Sampling Season	Year Round	Year Round	Year Round	July thru Sept.
Distance from Supporting Structure or Roof	1.2	1.2	1.2	1.7
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	22	22	22	22
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	4.5	4.5	4.5	4.9
Probe material	FEP Teflon	FEP Teflon	FEP Teflon	Stainless Steel
Residence time (seconds)	18.9	16.4	16.9	2.0
Changes in next 18 months?	No	No	No	Yes
Frequency of 1-pt QC Check	Every other day	Every other day	Every other day	Pre- and post-seasonally check
Audit Date(s)	4/13/22	4/13/22	Temporary shutdown[A]	Not applicable

[A] U.S. EPA Region 9 approved the temporary shut down on 12/1/17

[B] U.S. EPA Region 9 approved the discontinuation on 3/20/23

Site	Elk Grove-Bruceville
Start Date	1/30/2003
Collecting Agency	Sac Metro Air District
Analytical Lab	Sac Metro Air District
Reporting Agency	Sac Metro Air District
Pollutant	$PM_{2.5}$
Parameter Code	88501
Parameter Occurrence	3
Manufacturer/Model	Met One 1020 BAM
Sampling Method	Very sharp cut cyclone
Method Code	731
Analysis Method	Beta Attenuation
FRM/FEM/ARM/Other	Other
Monitoring Objective	Public info [A]
Statement of Purpose	Measures background concentration and transport of $PM_{2.5}$ from San Joaquin Valley for $PM_{2.5}$ forecasting
Monitor Type	SPM
Affiliation	None
Site Type	General/Background
Spatial Scale	Urban
Sampling Frequency	Continuous
Sampling Season	Year Round
Distance from Supporting Structure or Roof	2.1
Distance from flow obstructions on roof (m)	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction
Distance from nearest tree drip line (m)	21.0
Distance to furnace or incinerator flue (m)	No furnace/flue
Distance between collocated PM monitors (m)	Not collocated
Unrestricted airflow (deg)	360
Probe height (m, agl)	5.4
Probe material	Not applicable
Residence time (seconds)	Not applicable
Changes in next 18 months?	No
Frequency of flow rate verification	Bi-monthly
Audit Date(s)	4/13/22, 10/10/22

[A] This $PM_{2.5}$ monitor is operating as a non-FEM sampler

Site	Elk Grove-Bruceville			
Start Date	8/1/1996	8/1/1996	7/1/1997	8/1/1997
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	Outdoor Temperature	Relative Humidity	Barometric Pressure	Precipitation
Parameter Code	62101	62201	64101	65102
Parameter Occurrence	1	1	1	1
Manufacturer/Model	Met One 060A-2	Met One 083E-0-6	Met One 092	Met One 370C
Sampling Method	Instrumental	Instrumental	Instrumental	Bucket
Method Code	042	012	011	011
Analysis Method	Machine Average	Hygroscopic Plastic Film	Aneroid	Continuous or Incremental
FRM/FEM/ARM/Other	Other	Other	Other	Other
Monitoring Objective	Public info	Public info	Public info	Public info
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor Type	Other	Other	Other	Other
Affiliation	PAMS	PAMS	PAMS	PAMS
Site Type	Not applicable	Not applicable	Not applicable	Not applicable
Spatial Scale	Not applicable	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	No supporting structure	No supporting structure	No supporting structure	No supporting structure
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	Not applicable	Not applicable	Not applicable	Not applicable
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	10.0	10.0	10.0	2.3
Probe material	Not applicable	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No	No
Frequency of 1-pt QC Check	N/A	N/A	N/A	N/A
Audit Date(s)	4/13/22	Not applicable	4/13/22	Not applicable

Site	Elk Grove-Bruceville			
Start Date	8/1/1996	8/1/1997	8/1/1996	8/1/1996
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	Solar Radiation	UV Radiation	Wind Direction	Wind Speed
Parameter Code	63301	63302	61104	61103
Parameter Occurrence	1	1	1	1
Manufacturer/Model	Campbell Scientific CMP-6	Kipp & Zonen CUV-5	Climatronics100076S	Climatronics100075S
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental
Method Code	011	011	020	020
Analysis Method	Pyranometer	UV Radiometer (Photometer)	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	Other	Other	Other	Other
Monitoring Objective	Public info	Public info	Public info, research	Public info, research
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor Type	Other	Other	Other	Other
Affiliation	PAMS	PAMS	PAMS	PAMS
Site Type	Not applicable	Not applicable	Not applicable	Not applicable
Spatial Scale	Not applicable	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	No supporting structure	No supporting structure	No supporting structure	No supporting structure
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	Not applicable	Not applicable	Not applicable	Not applicable
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	10.0	10.0	10.0	10.0
Probe material	Not applicable	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No	No
Frequency of 1-pt QC Check	N/A	N/A	N/A	N/A
Audit Date(s)	Not applicable	Not applicable	4/13/22	4/13/22

Site	Elk Grove-Bruceville	Elk Grove-Bruceville
Start Date	1/17/2018	6/1/1996
Collecting Agency	Sac Metro Air District	Sac Metro Air District
Analytical Lab	N/A	N/A
Reporting Agency	N/A	N/A
Pollutant	Mixing Height	Upper Level Wind and Virtual Temperature
Parameter Code	Not applicable	Not applicable
Parameter Occurrence	Not applicable	Not applicable
Manufacturer/Model	Vaisala Ceilometer CL51	Radian LAP-3000 with RASS option
Sampling Method	Not applicable	Not applicable
Method Code	Not applicable	Not applicable
Analysis Method	Light Detection and Ranging	915 MHz Radar Wind Profiler, with RASS
FRM/FEM/ARM/Other	Other	Other
Monitoring Objective	Public info, research	Public info, research
Statement of Purpose	Measures representative upper level meteorology	Measures representative upper level meteorology
Monitor Type	Other	Other
Affiliation	PAMS	PAMS
Site Type	Not applicable	Not applicable
Spatial Scale	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous
Sampling Season	Year Round	Year Round
Distance from Supporting Structure or Roof	No supporting structure	No supporting structure
Distance from flow obstructions on roof (m)	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction
Distance from nearest tree drip line (m)	> 20 m	> 20 m
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360
Probe height (m, agl)	Not applicable	Not applicable
Probe material	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable
Changes in next 18 months?	No	No
Frequency of 1-pt QC Check	N/A	N/A
Audit Date(s)	N/A	Malfunctioned[(A)]

[(A)] According to the PAMS Network Operations report submitted to U.S. EPA on 9/15/17 and internal District QC document, the radar wind profiler malfunctioned starting 10/25/16; the ceilometer is replacing the radar wind profiler as the new PAMS requirement

Appendix A.4 Sacramento-Del Paso Manor

This air monitoring site was initiated in 1979 and eventually became the largest air monitoring site in the Sacramento Valley Air Basin. This site is also one of the largest in Northern California, in terms of number of parameters measured. In October 2009, U.S. EPA Region 9 approved Sacramento-Del Paso Manor as an NCore site. This is one of six NCore sites operating in California. Also, Sacramento-Del Paso Manor is a design value site for $PM_{2.5}$, which means that this site has the highest $PM_{2.5}$ design value in the $PM_{2.5}$ non-attainment area.

Located just downwind of Downtown Sacramento, Sacramento-Del Paso Manor was a PAMS Type II primary site under the legacy PAMS network. It is now one of the 43 national PAMS sites required under the 2015 revision to the O_3 standard.

Speciation monitors at this site are part of the Chemical Speciation Network and Speciated Trends Network. A URG3000N sampler was installed in April 2009. The Met One Spiral Aerosol Speciation Sampler has been in service for many years.

Table A-12 Sacramento-Del Paso Manor Metadata

Site Name	Sacramento-Del Paso Manor
AQS Site Number	06-067-0006
Geographic Coordinates	38.613740°N, 121.368040°W
Location	Neighborhood park located 7 miles east-northeast of downtown Sacramento.
Address	2701 Avalon Drive, Sacramento, CA 95821
County	Sacramento
Metropolitan Statistical Area	Sacramento--Arden-Arcade--Roseville, CA
Distance from Roadway	56 m
Annual Average Daily Traffic (Vehicles/Day)	Avalon Dr. south of Annette St.: 1,000 (estimated, two-lanes suburban local residential road)
Ground Cover	Vegetated

Figure 22 Sacramento-Del Paso Manor Site Photo

Figure 23 Panoramic Photo Looking North from Sacramento-Del Paso Manor

Figure 24 Panoramic Photo Looking East from Sacramento-Del Paso Manor

Figure 25 Panoramic Photo Looking South from Sacramento-Del Paso Manor

Figure 26 Panoramic Photo Looking West from Sacramento-Del Paso Manor

Figure 27 Google Earth Satellite Image of Sacramento-Del Paso Manor

Source: Google Earth, imagery date: 6/4/21

The circle in Figure 27 indicates no trees exist within a 10 m radius, which satisfy the siting criterion that requires drip lines of trees to be at least 10 m away from probes and inlets (40 CFR Part 58, Appendix E). Also, heights of the trees were calculated on-site with trigonometry on 4/26/2023. Analyses in Table A-13 through Table A-18 show the objects identified above do not restrict air flow to the roof top inlets and samplers. Therefore, each inlet and sampler have 360° of unrestricted airflow.

Table A-13 Distance between Object and Probe or Inlet at Sacramento-Del Paso Manor

	Gaseous Probe	NO_Y Probe	PM_{10} Inlet (Primary)	PM_{10} Inlet (Collocated)	Black Carbon Inlet	VOC Inlet[(A)]
Object A (Tree)	28.0	25.0	25.0	23.0	28.0	30.0
Object B (Tree)	40.8	36.9	36.9	36.9	38.8	41.8
Object C (Tree)	30.2	26.4	26.4	29.2	30.2	31.3
Object D (Building)	16.0	15.0	15.0	20.0	17.0	19.0
Object E (Tree)	40.8	39.9	39.9	42.1	40.9	40.9
Object F (Building)	34.0	37.0	37.0	37.0	36.0	33.0

All units are in meter

[(A)] This inlet is not currently in use

Table A-14 Distance between Object and Probe or Inlet at Sacramento-Del Paso Manor

	$PM_{2.5}$ Inlet (Primary)	$PM_{2.5}$ Inlet (Collocated)	$PM_{10\text{-}2.5}$ Inlet	$PM_{2.5}$ Inlet (Continuous)	$PM_{2.5}$ Speciation	Carbon Speciation
Object A (Tree)	31.0	28.0	27.0	28.0	28.0	30.0
Object B (Tree)	40.9	41.8	37.9	41.8	40.8	42.9
Object C (Tree)	28.4	31.3	27.4	29.3	31.3	30.3
Object D Building)	15.0	17.0	15.0	18.0	20.0	19.0
Object E (Tree)	38.0	39.9	38.8	39.9	42.9	40.9
Object F (Building)	32.0	32.0	34.0	33.0	35.0	31.0

All units are in meter

Table A-15 Object Protrusion Above Probe or Inlet at Sacramento-Del Paso Manor

	Gaseous Probe	NO_Y Probe	PM_{10} Inlet (Primary)	PM_{10} Inlet (Collocated)	Black Carbon Inlet	VOC Inlet[(A)]
Object A (Tree)	-0.5	-5.5	-0.8	-0.8	-0.3	-0.6
Object B (Tree)	3.1	-1.8	2.9	2.9	3.8	3.1
Object C (Tree)	6.5	0.6	5.3	6.4	6.7	6.1
Object D (Building)	-0.5	-5.1	-0.4	-0.4	-0.3	-0.6
Object E (Tree)	9.7	4.2	8.9	8.6	9.2	8.9
Object F (Building)	0.7	-3.8	0.9	0.9	1.0	1.1

All units are in meter; a negative value indicates that the inlet or probe is taller than the object; thus, airflow is not obstructed no matter the distance.

[(A)] This inlet is not currently in use

Table A-16 Object Protrusion Above Probe or Inlet at Sacramento-Del Paso Manor

	$PM_{2.5}$ Inlet (Primary)	$PM_{2.5}$ Inlet (Collocated)	$PM_{10\text{-}2.5}$ Inlet	$PM_{2.5}$ Inlet (Continuous)	$PM_{2.5}$ Speciation	Carbon Speciation
Object A (Tree)	-0.5	-0.9	0.0	-0.9	-1.0	-0.4
Object B (Tree)	2.4	3.2	2.2	3.2	3.8	2.6
Object C (Tree)	5.6	6.2	5.4	5.8	6.2	6.0
Object D (Building)	-0.5	-0.5	-0.5	-0.5	-0.5	-0.4
Object E (Tree)	8.3	8.8	9.2	8.8	9.4	9.0
Object F (Building)	1.2	1.2	1.3	1.3	1.4	1.2

All units are in meters; a negative value indicates that the inlet or probe is taller than the object; thus, airflow is not obstructed no matter the distance

Table A-17 Distance vs. Protrusion Ratio at Sacramento-Del Paso Manor

	Gaseous Probe	NO_Y Probe	PM_{10} Inlet (Primary)	PM_{10} Inlet (Collocated)	Black Carbon Inlet	VOC Inlet[(A)]
Object A (Tree)	N/A	N/A	N/A	N/A	N/A	N/A
Object B (Tree)	13.2	-20.5	12.7	12.7	10.2	13.5
Object C (Tree)	4.6	44.0	5.0	4.6	4.5	5.1
Object D (Building)	N/A	N/A	N/A	N/A	N/A	N/A
Object E (Tree)	4.2	9.5	4.5	4.9	4.4	4.6
Object F (Building)	48.5	N/A	41.1	41.1	36.0	30.0

Must be greater than or equal to 2 to meet U.S. EPA siting criteria; N/A indicates inlet or probe is taller than the object and airflow is not obstructed.
[(A)] This inlet is not currently in use

Table A-18 Distance vs. Protrusion Ratio at Sacramento-Del Paso Manor

	$PM_{2.5}$ Inlet (Primary)	$PM_{2.5}$ Inlet (Collocated)	$PM_{10\text{-}2.5}$ Inlet	$PM_{2.5}$ Inlet (Continuous)	$PM_{2.5}$ Speciation	Carbon Speciation
Object A (Tree)	N/A	N/A	N/A	N/A	N/A	N/A
Object B (Tree)	17.0	13.1	17.2	12.7	10.7	17.2
Object C (Tree)	5.2	5.0	5.2	5.1	5.0	5.1
Object D (Building)	N/A	N/A	N/A	N/A	N/A	N/A
Object E (Tree)	4.6	4.6	4.2	4.5	4.6	4.5
Object F (Building)	26.6	26.6	26.1	25.3	26.9	28.1

Must be greater than or equal to 2 to meet U.S. EPA siting criteria; N/A indicates inlet or probe is taller than the object and airflow is not obstructed.

Site	Sacramento-Del Paso Manor			
Start Date	1/1/1981	1/1/1981	1/1/1980	1/1/1983
Collecting Agency	Sac Metro Air	Sac Metro Air	Sac Metro Air	Sac Metro Air
Analytical Lab	Sac Metro Air	Sac Metro Air	Sac Metro Air	Sac Metro Air
Reporting Agency	Sac Metro Air	Sac Metro Air	Sac Metro Air	Sac Metro Air
Pollutant	O_3	CO	NO_2	NOY
Parameter Code	44201	42101	42602	42600
Parameter Occurrence	1	1	1	1
Manufacturer/Model	TAPI 400E	TAPI 300EU	TAPI200UP	TEI 42I-Y
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental
Method Code	087	593	200	574
Analysis Method	Ultraviolet Absorption	Gas Filter Correlation	Photolytic-Chemiluminescence	Chemiluminescence
FRM/FEM/ARM/Other	FEM	FRM	FEM	Other
Monitoring Objective	NAAQS comparison, public info, research	NAAQS comparison, public info, research	NAAQS comparison, public info, research	Public info, research
Statement of Purpose	Measures elevated summer O_3 levels near the downwind edge of the central business district	Measures representative wintertime CO concentration in populated area	Measures O_3 precursor emission near downwind edge of central business district	Measures representative concentration in populated area
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS
Affiliation	NCORE, PAMS	NCORE	NCORE, PAMS	NCORE
Site Type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Spatial Scale	Neighborhood	Neighborhood	Neighborhood	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	2.1	2.1	2.1	Not applicable
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	28	28	28	26
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	5.4	5.4	5.4	10.0
Probe material	FEP Teflon	FEP Teflon	FEP Teflon	FEP Teflon
Residence time (seconds)	15.4	13.4	14.8	4.0
Changes in next 18 months?	No	No	No	No
Frequency of 1-pt QC Check	Every fourth day	Every fourth day	Every fourth day	Every fourth day
Audit Date(s)	12/13/22	2/11/19[A]	12/13/22	Not applicable

[A] This monitor was not functioning properly during the attempted audits on 12/13/22 and 8/2/21; and due to the COVID-19 pandemic, it was not audited in 2020; otherwise, this monitor passes all other QA and QC requirements.

Site	Sacramento-Del Paso Manor			
Start Date	1/1/1980	8/1/1994	9/22/2000	1/1/2001
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	AAC Lab	AAC Lab
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	SO_2	Total NMHC	Speciated VOC	Carbonyl
Parameter Code	42401	43102	43102	Multiple
Parameter Occurrence	1 (1 hr), 2 (5-min.)	2	1	1
Manufacturer/Model	TAPI 100EU	TEI 55C	Xontech 910A/912	Xontech 925
Sampling Method	Instrumental	Instrumental	6L Pressurized Canister	DNPH Silica gel
Method Code	600	164	123	202
Analysis Method	Ultraviolet Fluorescence	Flame Ionization Detector	Dual Flame Ionization Detector	(multiple)
FRM/FEM/ARM/Other	FEM	Other	Other	Other
Monitoring Objective	NAAQS comparison, public info, research	Public info, research	Research	Research
Statement of Purpose	Measures representative concentration in populated area	Measures O_3 precursor emission near downwind edge of central business district	Measures O_3 precursor emission near downwind edge of central business district	Measures O_3 precursor emission near downwind edge of central business district
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS
Affiliation	NCORE	PAMS	PAMS	PAMS
Site Type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Spatial Scale	Urban	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	1 in 3 days	1 in 3 days
Sampling Season	Year Round	Year Round	July thru Sep	July thru Sep
Distance from Supporting Structure or Roof	2.1	2.1	2.2	2.2
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	28	28	30	30
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	5.4	5.4	5.5	5.5
Probe material	FEP Teflon	FEP Teflon	Stainless Steel	Stainless Steel
Residence time (seconds)	17.7	17.0	3.0	3.0
Changes in next 18 months?	No	No	Yes	No
Frequency of 1-pt QC Check	Every fourth day	Every fourth day	Pre- and post-seasonally check	Pre- and post-seasonally check
Audit Date(s)	12/13/22	Temporary shutdown[(A)]	Not applicable	Not applicable

[(A)] U.S. EPA Region 9 approved the temporary shut down on 12/1/17

Site	Sacramento-Del Paso Manor			
Start Date	1/1/1998	1/1/1986	1/1/1986	12/21/2020
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	Black Carbon	PM_{10} (Primary monitor)	PM_{10} (Audit monitor)	PM2.5
Parameter Code	84313	81102	81102	88101
Parameter Occurrence	1	1	2	3
Manufacturer/Model	Magee Scientific	Sierra Anderson	Sierra Anderson	Met One BAM1020
Sampling Method	Aethalometer	Hi Volume	Hi Volume	Very sharp cut cyclone
Method Code	894	063	063	170
Analysis Method	Optical Absorption	Gravimetric	Gravimetric	Beta Attenuation
FRM/FEM/ARM/Other	Other	FRM	FRM	FEM
Monitoring Objective	Research	NAAQS comparison, public info, research	NAAQS comparison	NAAQS comparison, public info, research
Statement of Purpose	Originally installed for CRPAQS study in 1999[(A)]	Measures wintertime elevated PM level from motor vehicles and residential wood combustion	Collocated for QA purpose and provides substitute data if necessary	Measures wintertime elevated PM level from motor vehicles and residential wood combustion
Monitor Type	SPM	SLAMS	SLAMS	SLAMS
Affiliation	None	None	None	NCORE
Site Type	Population Exposure	Population Exposure	Population Exposure	Highest concentration, population exposure
Spatial Scale	Not applicable	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	Continuous	1 in 6 days	1 in 6 days	Continuous
Sampling Season	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	1.9	2.0	2.0	2.1
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	28	26	28	29
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	2.2 m	2.2 m	Not applicable
Unrestricted airflow (deg)	360	360	360	336
Probe height (m, agl)	5.2	5.3	5.3	5.4
Probe material	Aluminum	Not applicable	Not applicable	Aluminum
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	Yes	Yes	No
Frequency of flow rate verification	Monthly	Monthly	Monthly	Bi-monthly
Audit Date(s)	Not applicable	2/23/22, 9/15/22	2/23/22, 9/15/22	2/23/22, 9/15/22

[(A)] California Regional Particulate Air Quality Study

Site	Sacramento-Del Paso Manor			
Start Date	1/1/1999	2/1/1999	5/1/2000	2/1/2000
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	CARB	CARB	N/A	RTI
Reporting Agency	CARB	CARB	CARB	RTI
Pollutant	$PM_{2.5}$ (Primary monitor)	$PM_{2.5}$ (Audit monitor)	$PM_{2.5}$	$PM_{2.5}$ Mass Speciated
Parameter Code	88101	88101	88502	88502
Parameter Occurrence	1	2	3	5
Manufacturer/Model	R & P 2025	R & P 2025	Met One 1020	Met One SASS
Sampling Method	Very sharp cut cyclone	Very sharp cut cyclone	Very sharp cut cyclone	Sharp cut cyclone
Method Code	145	145	731	810
Analysis Method	Gravimetric	Gravimetric	Beta Attenuation	Gravimetric
FRM/FEM/ARM/Other	FRM	FRM	Other	Other
Monitoring Objective	NAAQS Comparison, research, public info	NAAQS Comparison	Public info, research[A]	Research
Statement of Purpose	Measures wintertime elevated PM level from motor vehicles and residential wood combustion	Collocated for QA purpose and provides substitute data if necessary	Provides real time PM Measurement from motor vehicles and residential wood combustion	Provides speciation data on urban PM emission
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS
Affiliation	NCORE	NCORE	NCORE	CSN STN,
Site Type	Highest concentration, population exposure	Highest concentration, population exposure	Highest concentration, population exposure	Highest concentration, population exposure
Spatial Scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	Daily	1 in 12 days	Continuous	1 in 3 days
Sampling Season	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	2.1	2.1	2.1	2.1
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	29	30	29	29
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	1.6 m	1.6 m	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	5.4	5.4	5.4	5.4
Probe material	Not applicable	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	Yes	No
Frequency of flow rate verification	Monthly	Monthly	Bi-monthly	Monthly
Audit Date(s)	2/23/22, 9/15/22	2/23/22, 9/15/22	7/6/20, 10/14/20[B]	4/22/22

[A] This $PM_{2.5}$ monitor is not comparable to NAAQS because it is not an FRM or FEM sampler

[B] Operation of this monitor was suspended in Dec 2020 after a temporary continuous PM2.5 FEM monitor was installed during the COVID-19 pandemic; the District is working to make the change permanent

Site	Sacramento-Del Paso Manor	
Start Date	4/1/2009	4/1/2012
Collecting Agency	Sac Metro Air District	Sac Metro Air District
Analytical Lab	RTI	CARB
Reporting Agency	RTI	CARB
Pollutant	OC & EC	PM10
Parameter Code	(multiple)[A]	85101
Parameter Occurrence	5	7
Manufacturer/Model	URG 3000N	R & P 2025
Sampling Method	Quartz filter and cyclone inlet	Very sharp cut cyclone
Method Code	842, 826	127
Analysis Method	(multiple)	Gravimetric
FRM/FEM/ARM/Other	Other	FRM
Monitoring Objective	Research	Public info, research
Statement of Purpose	Provides speciation data on urban PM emission	Measures PM mass to provide $PM_{10-2.5}$ data
Monitor Type	SLAMS	Other
Affiliation	CSN STN, NCORE	None
Site Type	Highest concentration	Population Exposure
Spatial Scale	Neighborhood	Neighborhood
Sampling Frequency	1 in 3 days	1 in 3 days
Sampling Season	Year Round	Year Round
Distance from Supporting Structure or Roof	2.1	2.1
Distance from flow obstructions on roof (m)	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction
Distance from nearest tree drip line (m)	30	28
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360
Probe height (m, agl)	5.4	5.4
Probe material	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable
Changes in next 18 months?	No	No
Frequency of flow rate verification	Monthly	Monthly
Audit Date(s)	4/22/22	2/23/22[B]

[A] 88355, 88357, 88370, 88374, 88375, 88376, 88377, 88378, 88380, 88383, 88384, 88385, 88388

[B] This monitor was malfunctioning during the second audit attempt in 2022

Site	Sacramento-Del Paso Manor				
Start Date	8/1/1994	8/1/1994	9/1/1994	8/1/1994	8/1/1994
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	Outdoor Temperature	Relative Humidity	Solar Radiation	Wind Direction	Wind Speed
Parameter Code	62101	62201	63301	61104	61103
Parameter Occurrence	1	1	1	1	1
Manufacturer/Model	Climatronics 100093	Climatronics 101669	Climatronics 100848	Climatronics F-460	Climatronics F-460
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental	Instrumental
Method Code	042	012	011	020	020
Analysis Method	Machine Average	Hygroscopic Plastic Film	Pyranometer	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	Other	Other	Other	Other	Other
Monitoring Objective	Public info, research	Public info, research	Public info	Public info, research	Public info, research
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor Type	SLAMS	SLAMS	Other	Other	Other
Affiliation	NCORE, PAMS				
Site Type	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Spatial Scale	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	No supporting structure	No supporting structure	No supporting structure	No supporting structure	No supporting structure
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360	360
Probe height (m, agl)	10.0	10.0	10.0	10.0	10.0
Probe material	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No	No	No
Frequency of 1-pt QC Check	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Audit Date(s)	8/5/21	Not applicable	Not applicable	8/5/21	8/5/21

Appendix A.5 Folsom-Natoma St.

This site has been in operation since 1996. This site replaced the former Folsom-Leidesdorff Street site. Approximately 20 miles northeast of Downtown Sacramento, Folsom-Natoma St. site is the maximum summertime O_3 monitoring site within Sacramento County for days with prevailing afternoon southwesterly winds. This was a PAMS Type III site under the legacy PAMS network. It is now one of the two additional PAMS enhanced monitoring sites.

From mid-2019 through most of 2020, this air monitoring station was demolished and re-constructed to replace the 20-30 years old wooden shelter. The new shelter now sits in the footprint of the old shelter.

Table A-19 Folsom-Natoma St. Metadata

Site Name	Folsom-Natoma Street
AQS Site Number	06-067-0012
Geographic Coordinates	38.683304°N, 121.164457°W
Location	Folsom City Hall (parking lot), located 20 miles east-northeast of downtown Sacramento.
Address	50 Natoma Street, Folsom, CA 95630
County	Sacramento
Metropolitan Statistical Area	Sacramento--Arden-Arcade--Roseville, CA
Distance from Roadway	206 m
Annual Average Daily Traffic (Vehicles/Day)	Natoma St. at Coloma St (intersection total): 14,628 (City of Folsom, 2017)
Ground Cover	Vegetated

Figure 28 Folsom-Natoma St. Site Photo

Figure 29 Panoramic Photo Looking North from Folsom-Natoma St.

Figure 30 Panoramic Photo Looking East from Folsom-Natoma St.

Figure 31 Panoramic Photo Looking South from Folsom-Natoma St.

Figure 32 Panoramic Photo Looking West from Folsom-Natoma St.

Figure 33 Google Earth Satellite Image of Folsom-Natoma St.

Source: Google Earth, imagery date: 6/4/2021

The circle over Folsom-Natoma St. in Figure 33 indicates no trees exist within a 10 m radius, which satisfy the siting criterion that requires drip lines of trees to be at least 10 m away from probes and inlets (40 CFR Part 58, Appendix E). A site survey was conducted on 4/26/2023 to identify flow obstacle. Results are provided in provided in Table A-20 through Table A-22.

Table A-20 Distance between Object and Probe or Inlet at Folsom-Natoma St.

	Gaseous Probe	$PM_{2.5}$ Inlet (Primary)	$PM_{2.5}$ Inlet (Collocated)
Object A (Tower) [(A)]	N/A	N/A	N/A
Object B (Building)	10.8	9.7	6.9
Object C (Building)	8.7	7.7	9.7
Object D (Building)	4.5	4.4	9.7
Object E (Building)	9.9	8.9	5.6
Object F (Tree)	17.9	17.9	15.8
Object G (Tree)	30.9	30.9	30.9
Object H (Tree)	27.7	29.7	30.8
Object I (Tree)	24.9	25.9	24.9

All units are in meter

[(A)] This is an open lattice style communication tower, airflow is not obstructed by this structure

Table A-21 Object Protrusion Above Probe or Inlet at Folsom-Natoma St.

	Gaseous Probe	$PM_{2.5}$ Inlet (north)	$PM_{2.5}$ Inlet (south)
Object A (Tower)	N/A	N/A	N/A
Object B (Building)	-2.8	-2.9	-1.8
Object C (Building)	-2.7	-2.7	-2.7
Object D (Building)	-2.7	-2.8	-2.9
Object E (Building)	-2.1	-1.9	-2.6
Object F (Tree)	1.6	1.6	1.7
Object G (Tree)	1.5	1.6	1.6
Object H (Tree)	3.3	3.6	3.2
Object I (Tree)	1.5	1.7	1.6

All units are in meter

Table A-22 Distance vs. Protrusion Ratio at Folsom-Natoma St.

	Gaseous Probe	$PM_{2.5}$ Inlet (north)	$PM_{2.5}$ Inlet (south)
Object A (Tower)	N/A	N/A	N/A
Object B (Building)	N/A	N/A	N/A
Object C (Building)	N/A	N/A	N/A
Object D (Building)	N/A	N/A	N/A
Object E (Building)	N/A	N/A	N/A
Object F (Tree)	11.2	11.2	9.3
Object G (Tree)	20.6	19.3	19.3
Object H (Tree)	8.4	8.3	9.6
Object I (Tree)	16.6	15.2	15.6

Must be greater than or equal to 2 to meet U.S. EPA siting criteria; N/A indicates inlet or probe is taller than the object and airflow is not obstructed

Site	Folsom-Natoma St.				
Start Date	7/1/1996	7/1/1996	7/1/2011	7/1/1996	7/1/1996
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	AAC
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	O_3	NO_2	NOY[B]	Total NMHC	Speciated VOC[B]
Parameter Code	44201	42602	42600	43102	43102
Parameter Occurrence	1	1	1	1	2
Manufacturer/Model	TAPI 400E	TAPI200UP	TEI 42I-Y	TEI 55C	Xontech 910A/912
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental	6L Pressurized Canister
Method Code	087	200	674	164	123
Analysis Method	Ultraviolet Absorption	Photolytic-Chemiluminesc	Chemiluminesc ence	Flame Ionization Detector	Dual Flame Ionization Detector
FRM/FEM/ARM/Other	FEM	FEM	Other	Other	Other
Monitoring Objective	NAAQS comparison, public info	NAAQS comparison, public info	Public info, research	Public info, research	Research
Statement of Purpose	Measure highest summer O_3 level downwind of urban area	Measures concentration downwind of urban area	Measures representative concentration	Measures concentration downwind of urban area	Measures concentration downwind of urban area
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Affiliation	PAMS	PAMS	PAMS	PAMS	PAMS
Site Type	Max O_3 Concentration, Population Exposure	Highest concentration	Population Exposure	Highest concentration	Highest concentration
Spatial Scale	Neighborhood	Neighborhood	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Continuous	1 in 3 days
Sampling Season	Year Round	Year Round	Year Round	Year Round	July thru Sep
Distance from Supporting Structure or Roof	2.3	2.3	Not applicable	2.3	1.9
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	15.5	15.5	14.6	15.5	15.5
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360	360
Probe height (m, agl)	5.5	5.5	10.0	5.5	5.5
Probe material	FEP Teflon	FEP Teflon	FEP Teflon	FEP Teflon	Stainless Steel
Residence time (seconds)	17.9	17.9	9.0	13.7	3.0
Changes in next 18 months?	No	No	Yes	No	Yes
Frequency of 1-pt QC Check	Every other day	Every other day	Every other day	Every other day	Pre- and post-seasonally
Audit Date(s)	4/21/22	4/21/22	Not applicable	Temp. shutdown[A]	Not applicable

[A] U.S. EPA Region 9 approved the temporary shut down on 12/1/17

[B] U.S. EPA Region 9 approved the discontinuation on 3/20/23

Site	Folsom-Natoma St.	
Start Date	4/1/2013	7/1/2015
Collecting Agency	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District
Pollutant	$PM_{2.5}$ (Primary monitor)	$PM_{2.5}$ (Audit monitor)
Parameter Code	88101	88101
Parameter Occurrence	3	4
Manufacturer/Model	Met One 1020 BAM	Met One 1020 BAM
Sampling Method	Very sharp cut cyclone	Very sharp cut cyclone
Method Code	170	170
Analysis Method	Beta Attenuation	Beta Attenuation
FRM/FEM/ARM/Other	FEM	FEM
Monitoring Objective	NAAQS comparison, public info, research	NAAQS comparison, public info, research
Statement of Purpose	Measures representative concentration	Collocated for QA purpose and provides substitute data if necessary
Monitor Type	SLAMS	SLAMS
Affiliation	None	None
Site Type	Population Exposure	Population Exposure
Spatial Scale	Neighborhood	Neighborhood
Sampling Frequency	Continuous	Continuous
Sampling Season	Year Round	Year Round
Distance from Supporting Structure or Roof	2.2	2.2
Distance from flow obstructions on roof (m)	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction
Distance from nearest tree drip line (m)	13.0	12.0
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	1.8	1.8
Unrestricted airflow (deg)	360	360
Probe height (m, agl)	5.4	5.4
Probe material	Aluminum	Aluminum
Residence time (seconds)	Not applicable	Not applicable
Changes in next 18 months?	No	No
Frequency of flow rate verification	Bi-monthly	Bi-monthly
Audit Date(s)	4/21/22, 10/12/22	4/21/22, 10/12/22

Site	Folsom-Natoma St.				
Start Date	7/1/1996	7/1/1996	7/1/1996	7/1/1996	7/1/1996
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	Outdoor Temperature	Relative Humidity	Solar Radiation	Wind Direction	Wind Speed
Parameter Code	62101	62201	63301	61104	61103
Parameter Occurrence	1	1	1	1	1
Manufacturer/Model	Climatronics 100093	Climatronics 101669	Climatronics 100848	Climatronics F-460	Climatronics F-460
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental	Instrumental
Method Code	042	012	011	020	020
Analysis Method	Machine Average	Hygroscopic Plastic Film	Pyranometer	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	Other	Other	Other	Other	Other
Monitoring Objective	Public info	Public info	Public info	Public info, research	Public info, research
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Affiliation	PAMS	PAMS	PAMS	PAMS	PAMS
Site Type	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Spatial Scale	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	No supporting structure	No supporting structure	No supporting structure	No supporting structure	No supporting structure
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360	360
Probe height (m, agl)	10.0	10.0	10.0	10.0	10.0
Probe material	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No	No	No
Frequency of 1-pt QC Check	N/A	N/A	N/A	N/A	N/A
Audit Date(s)	8/9/21[(A)]	Not applicable	Not applicable	4/21/22	4/21/22

[(A)] This monitor was malfunctioning during audit attempt in 2022

Appendix A.6 North Highlands-Blackfoot

North Highlands-Blackfoot has been in operation since 1979. The objective of the original site was to collect data in support of a proposed power plant project at McClellan Air Force Base, which was located 3 miles southwest of the site. The proposed power plant project was canceled in the early 1980's; and the air force base was closed in 2001. This entire site was designated as SPM upon its establishment. During an annual review of network design in the mid-1990s, Sac Metro Air District needed additional SLAMS (which was known as National Air Monitoring Stations) sites for SO_2 and PM_{10} to meet minimum monitoring requirements. Thus, the designations of those monitors were changed to SLAMS. The SO_2 monitor, however, was terminated in late 2010. The CO monitor was terminated in May 2020.

In late July 2022, the District was given a notice (Attachment 1 in Appendix E) to vacate the area promptly and remove the air monitoring station from the premises. The District notified the U.S. EPA the discontinuation of all monitors at this location. Following a closing audit (Appendix F), the last day of monitoring operation was July 31, 2022. The District will continue to work with U.S. EPA and CARB to evaluate whether a relocation site is needed.

Appendix A.7 Sloughhouse

Located in a rural area 16.5 miles southeast of Downtown Sacramento, Sloughhouse was established in 1997 as a seasonal (April-October) O_3 special purpose monitoring site to measure elevated afternoon O_3 concentrations, under northwesterly winds, in support of Sac Metro Air District's summer Spare the Air (O_3 episodic control measure) program. It was sited to cover "data gaps" in the O_3 monitoring network, which is used for forecasting summer AQI levels.

A tree 10 m southeast of the O_3 inlet was removed in May 2011 to comply with 40 CFR Part 58, Appendix E (Probe and Monitoring Path Siting Criteria). After the tree removal, the O_3 monitor was re-classified from SPM to SLAMS and began continuous monitoring year-round.

From November 2008 through February 2013, seasonal (November–February) $PM_{2.5}$ data was collected with a special purpose monitor (Met One Instruments e-BAM). In November 2013, a non-FEM $PM_{2.5}$ sampler was installed to improve data quality. The sampling season was also increased to year-round. In June 2017, a FEM $PM_{2.5}$ sampler replaced the non-FEM sampler.

Table A-23 Sloughhouse Metadata

Site Name	Sloughhouse
AQS Site Number	06-067-5003
Geographic Coordinates	38.494475°N, W121.211131°
Location	Fire Station in rural area located 16.5 miles east-southeast of downtown Sacramento.
Address	7250 Sloughhouse Road, Sloughhouse, CA 95683
County	Sacramento
Metropolitan Statistical Area	Sacramento--Arden-Arcade--Roseville, CA
Distance from Roadway	27 m
Annual Average Daily Traffic (Vehicles/Day)	Sloughhouse Rd south of Jackson Rd: 1,000 (Estimated)
Ground Cover	Vegetated

Figure 34 Sloughhouse Site Photo

Figure A-35 Panoramic Photo Looking North from Sloughhouse

Figure 36 Panoramic Photo Looking East from Sloughhouse

Figure 37 Panoramic Photo Looking South from Sloughhouse

Figure 38 Panoramic Photo Looking West from Sloughhouse

Figure 39 Google Earth Satellite Image of Sloughhouse

Source: Google Earth, imagery date: 9/13/19

The circle in Figure 39 indicates no trees exist within a 10 m radius, which satisfy the siting criterion that requires drip lines of trees to be at least 10 m away from probes and inlets (40 CFR Part 58, Appendix E). Also, height of the tree and building was calculated on-site with trigonometry on 4/27/2023. Analyses in Table A-24 through Table A-26 show the objects identified above do not restrict air flow to the roof top inlets and samplers. Therefore, each inlet and sampler have 360° of unrestricted airflow.

Table A-24 Distance between Object and Probe or Inlet at Sloughhouse

	Gaseous Probe	$PM_{2.5}$ Inlet
Object A (Tree)	52.8	52.6
Object B (Tree)	22.4	23.6
Object C (Building)	14.7	15.2
Object D (Tree)	23.9	24.9

All units are in meter

Table A-25 Object Protrusion Above Probe or Inlet at Sloughhouse

	Gaseous Probe	$PM_{2.5}$ Inlet
Object A (Tree)	11.2	11.6
Object B (Tree)	8.5	7.6
Object C (Building)	-3.2	-3.8
Object D (Tree)	1.6	1.2

All units are in meter; a negative value indicates that the inlet or probe is taller than the object; thus, airflow is not obstructed no matter the distance

Table A-26 Distance vs. Protrusion Ratio at Sloughhouse

	Gaseous Probe	$PM_{2.5}$ Inlet
Object A (Tree)	4.7	4.5
Object B (Tree)	2.6	3.1
Object C (Building)	N/A	N/A
Object D (Tree)	15.0	20.8

Must be greater than or equal to 2 to meet U.S. EPA siting criteria; N/A indicates inlet or probe is taller than the object and airflow is not obstructed

Site	Sloughhouse-Sloughhouse Rd.		
Start Date	7/1/1997	7/1/1997	7/1/1997
Collecting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Analytical Lab	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Reporting Agency	Sac Metro Air District	Sac Metro Air District	Sac Metro Air District
Pollutant	O_3	Wind Direction	Wind Speed
Parameter Code	44201	61104	61103
Parameter Occurrence	1	1	1
Manufacturer/Model	TAPI 400E	Climatronics F-460	Climatronics F-460
Sampling Method	Instrumental	Instrumental	Instrumental
Method Code	087	020	020
Analysis Method	Ultraviolet Absorption	Vector Summation	Vector Summation
FRM/FEM/ARM/Other	FEM	Other	Other
Monitoring Objective	NAAQS comparison, public info	Public info	Public info
Statement of Purpose	Measures elevated O_3 concentration under northwesterly wind	Measures representative meteorology	Measures representative meteorology
Monitor Type	SLAMS	Other	Other
Affiliation	None	None	None
Site Type	Max O_3 concentration	Not applicable	Not applicable
Spatial Scale	Neighborhood	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	1.7	2.8	2.8
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	18.3	18.0	18.0
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable
Distance with nearest PM monitor (m)	1.5 m (lo vol)	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360
Probe height (m, agl)	5.0	6.1	6.1
Probe material	FEP Teflon	Not applicable	Not applicable
Residence time (seconds)	7.8	Not applicable	Not applicable
Changes in next 18 months?	No	No	No
Frequency of 1-pt QC Check	Every other day	N/A	N/A
Audit Date(s)	4/21/22	4/21/22	4/21/22

Site	Sloughhouse-Sloughhouse Rd.
Start Date	5/1/2017
Collecting Agency	Sac Metro Air District
Analytical Lab	N/A
Reporting Agency	CARB
Pollutant	$PM_{2.5}$
Parameter Code	88101
Parameter Occurrence	3
Manufacturer/Model	Met One 1020 BAM
Sampling Method	Very sharp cut cyclone
Method Code	170
Analysis Method	Beta Attenuation
FRM/FEM/ARM/Other	FEM
Monitoring Objective	NAAQS comparison, public info, research
Statement of Purpose	Measures rural, background $PM_{2.5}$ concentration
Monitor Type	SLAMS
Affiliation	None
Site Type	Upwind/Background
Spatial Scale	Urban
Sampling Frequency	Continuous
Sampling Season	Year Round
Distance from Supporting Structure or Roof	2.2
Distance from flow obstructions on roof (m)	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction
Distance from nearest tree drip line (m)	17
Distance to furnace or incinerator flue (m)	No furnace/flue
Distance between collocated PM monitors (m)	Not collocated
Distance with nearest PM monitor (m)	Not applicable
Unrestricted airflow (deg)	360
Probe height (m, agl)	5.2
Probe material	Not applicable
Residence time (seconds)	Not applicable
Changes in next 18 months?	No
Frequency of flow rate verification	Bi-monthly
Audit Date(s)	4/21/22, 10/12/22

Appendix A.8 Sacramento-1309 T Street

The Sacramento-1309 T Street site is operated by the California Air Resources Board/Monitoring and Laboratory Division/Special Purpose Monitoring Section. This site has been operating since 1989.

Table A-27 Sacramento-T Street Metadata

Site Name	Sacramento-1309 T Street
AQS Site No.	06-067-0010
Geographic Coordinates	38.568440°N, 121.4931190°W
Location	Residential area located in downtown Sacramento
Address	1309 T Street, Sacramento, CA 95814
County	Sacramento
Representative Area (MSA)	Sacramento--Arden-Arcade--Roseville, CA
Distance from roadway	30 m
Annual Average Daily Traffic (Vehicles/Day)	T St. at 13th St.: 4,061 (City of Sacramento, 2019)
Ground Cover	Rooftop site (residential area is paved)

Site	Sacramento-1309 T St.	
Start Date	12/1/1998	4/28/2020
Collecting Agency	CARB	CARB
Analytical Lab	N/A	N/A
Reporting Agency	CARB	CARB
Pollutant	O3	NO2
Parameter Code	44201	42602
Parameter Occurrence	1	1
Manufacturer/Model	TAPI 400E	THERMO 42iQ
Sampling Method	Instrumental	Instrumental
Method Code	087	074
Analysis Method	Ultraviolet Absorption	Chemiluminescence
FRM/FEM/ARM/Other	FEM	FEM
Monitoring Objective	NAAQS comparison, public info	NAAQS comparison, public info
Statement of Purpose	Measures representative concentration in urban area	Measures representative concentration in urban area
Monitor Type	SLAMS	SLAMS
Affiliation	None	None
Site Type	Upwind/Background	Population Exposure
Spatial Scale	Urban	Neighborhood
Sampling Frequency	Continuous	Continuous
Sampling Season	Year Round	Year Round
Distance from Supporting Structure or Roof	3.0	3.0
Distance from flow obstructions on roof (m)	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction
Distance from nearest tree drip line (m)	50.0	50.0
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable
Distance with nearest PM monitor (m)	1.0 - 2.0 m	1.0 - 2.0 m
Unrestricted airflow (deg)	360	360
Probe height (m, agl)	11.7	11.7
Probe material	FEP Teflon	FEP Teflon
Residence time (seconds)	5.4	6.0
Changes in next 18 months?	No	No
Frequency of 1-pt QC Check	Daily	Daily
Audit Date(s)	8/24/22	8/24/22

Site	Sacramento-1309 T Street			
Start Date	5/1/2013	1/14/2020	12/11/2020	4/1/2021
Collecting Agency	CARB	CARB	CARB	CARB
Analytical Lab	CARB	CARB	CARB	CARB
Reporting Agency	CARB	CARB	CARB	CARB
Pollutant	PM10	PM2.5 Mass	PM2.5	PM2.5
Parameter Code	81102	88502	88101	88101
Parameter Occurrence	4	5	3	2
Manufacturer/Model	Met One 4 Models	Met One SASS	Met One 1020	THERMO 2000i
Sampling Method	Instrumental	Low volume with VSCC	Low volume with VSCC	Low volume with VSCC
Method Code	122	810	170	143
Analysis Method	Beta Attenuation	Gravimetric	Beta Attenuation	Gravimetric
FRM/FEM/ARM/Other	FEM	Other	FEM	FRM
Monitoring Objective	NAAQS comparison, public info	Research	NAAQS comparison, public info	NAAQS comparison, public info
Statement of Purpose	Measures representative concentration in urban area	Provide speciation data of urban emission	Measures representative concentration in urban area	Measures representative concentration in urban area
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS
Affiliation	None	None	None	None
Site Type	Population Exposure	Highest concentration population exposure	Population Exposure, highest concentration	Population exposure
Spatial Scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sampling Frequency	Continuous	1 in 6 days	Continuous	1 in 12 days
Sampling Season	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	2.0	2.0	2.0	2.0
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	50.0	50.0	50.0	50.0
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	1.0 - 2.0 m	1.0 - 2.0 m	1.0 - 2.0 m	1.0 - 2.0 m
Distance with nearest PM monitor (m)	1.0 - 2.0 m	1.0 - 2.0 m	1.0 - 2.0 m	1.0 - 2.0 m
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	10.0	10.0	10.0	10.0
Probe material	Not applicable	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No	Yes
Frequency of flow rate verification	Bi-Monthly	Monthly	Bi-Monthly	Monthly
Audit Date(s)	2/25/22, 8/24/22	Not applicable	2/25/22, 8/24/22	2/25/22, 8/24/22

Site	Sacramento-1309 T Street			
Start Date	7/1/2015	7/1/2015	2/1/1992	2/1/1992
Collecting Agency	CARB	CARB	CARB	CARB
Analytical Lab	N/A	N/A	N/A	N/A
Reporting Agency	CARB	CARB	CARB	CARB
Pollutant	Outdoor	Relative Humidity	Wind Direction	Wind Speed
Parameter Code	62101	62201	61104	61103
Parameter Occurrence	2	2	1	1
Manufacturer/Model	Vaisala OT/RH	Vaisala OT/RH	RM Young Model	RM Young Model
Sampling Method	Instrumental	Instrumental	Instrumental	Instrumental
Method Code	059	059	066	066
Analysis Method	Vaisala HMP155	Vaisala HMP155	Ultrasonic Anemometer	Ultrasonic Anemometer
FRM/FEM/ARM/Other	Other	Other	Other	Other
Monitoring Objective	Public info	Public info	Public info	Public info
Statement of Purpose	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology	Measures representative meteorology
Monitor Type	Other	Other	Other	Other
Affiliation	None	None	None	None
Site Type	Not applicable	Not applicable	Not applicable	Not applicable
Spatial Scale	Not applicable	Not applicable	Not applicable	Not applicable
Sampling Frequency	Continuous	Continuous	Continuous	Continuous
Sampling Season	Year Round	Year Round	Year Round	Year Round
Distance from Supporting Structure or Roof	9.0	9.0	9.0	9.0
Distance from flow obstructions on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from flow obstructions not on roof (m)	No obstruction	No obstruction	No obstruction	No obstruction
Distance from nearest tree drip line (m)	50.0	50.0	50.0	50.0
Distance to furnace or incinerator flue (m)	No furnace/flue	No furnace/flue	No furnace/flue	No furnace/flue
Distance between collocated PM monitors (m)	Not applicable	Not applicable	Not applicable	Not applicable
Distance with nearest PM monitor (m)	Not applicable	Not applicable	Not applicable	Not applicable
Unrestricted airflow (deg)	360	360	360	360
Probe height (m, agl)	15.0	15.0	15.0	15.0
Probe material	Not applicable	Not applicable	Not applicable	Not applicable
Residence time (seconds)	Not applicable	Not applicable	Not applicable	Not applicable
Changes in next 18 months?	No	No	No	No
Frequency of flow rate verification	N/A	N/A	N/A	N/A
Audit Date(s)	Not applicable	Not applicable	Not applicable	Not applicable

Appendix B Minimum Monitoring Requirement Assessment

Table B-1 Number of SLAMS Monitoring Site Within Sacramento MSA

Pollutant/Type (if applicable)		Required in MSA[A]	CARB[B]	EDCAQMD[C]	PCAPCD[D]	SMAQMD[E]	YSAQMD[F]	Total
O_3		2	6	0	4	4	1	15
CO		3	0	0	0	2	0	2
NO_2	Area-wide	1	3	0	0	3	0	6
	Near-road	2[G]	0	0	0	1	0	1
SO_2		1	0	0	0	1	0	1
Pb	NCore	0	0	0	0	0	0	0
	Source Oriented	0	0	0	0	0	0	0
PM_{10}		2-4[H]	3	0	0	3[I]	2	8
$PM_{2.5}$	FEM/FRM	3	2	0	1	4	1	8
	Continuous[J]	2	2	0	3	5	0	10
$PM_{10-2.5}$		1	0	0	0	1	0	1

Source: U.S. EPA Air Quality System Extract Site/Monitor Report (AMP 500), access on 23 May 2022

[A] Number of monitors required in Sacramento MSA

[B] CARB – California Air Resources Board

[C] EDCAQMD – El Dorado County Air Quality Management District

[D] PCAPCD – Placer County Air Pollution Control District

[E] SMAQMD – Sacramento Metropolitan Air Quality Management District

[F] YSAQMD – Yolo-Solano Air Quality Management District

[G] The District is working with EPA and CARB to investigate potential sites, determine appropriate timeline, and funding to implement a 2nd near-road monitor

[H] According to 40 CFR Part 58, Appendix D- PM_{10} monitoring requirement for the Sacramento MSA is listed to be six to ten PM_{10} monitors instead of two to four. This requirement is based on the highest ambient PM_{10} concentrations in the Sacramento MSA exceeding 120% of the PM10 NAAQS. Because the highest 2020 ambient concentrations in Sacramento were severely impacted by historical wildfire smoke blanketing most of California and the West Coast, the District believes its long-standing requirement of two to four monitors is still relevant and meets the needs of its communities. (Two to four monitors are appropriate for areas with a peak concentration less than 80% of NAAQS.) The air districts in Sacramento MSA or CARB currently operate eight PM_{10} monitors in the MSA. The District looks forward to working with U.S EPA, CARB, and other local air districts to ensure current and future monitoring levels continue to protect health and safety.

[I] The North Highlands-Blackfoot Way PM_{10} monitor was discontinued in July 2022; the tally will be updated in the next annual network plan

[J] Includes non-FRM/FEM continuous monitors

Appendix C Data Certification Letters to U.S. EPA and CARB

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

August 8, 2023

Martha Guzman
Regional Administrator
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105

RE: 2022 Data Certification

Dear Martha Guzman:

Sacramento Metropolitan Air Quality Management District (Sac Metro Air District) operates Federal Reference Method and Federal Equivalent Method monitors at its State and Local Air Monitoring Stations and Special Purpose Monitor sites. We are responsible for submitting and certifying our air quality data to the U.S. Environmental Protection Agency Air Quality System in accordance with Title 40, Code of Federal Regulation, Part 58 (40 CFR Part 58).

This letter certifies Sac Metro Air District's 2022 data on criteria air pollutants is complete and accurate to the best of our knowledge, taking into consideration the quality assurance findings. Along with this letter, we are submitting the Certification Evaluation and Concurrence report (AMP600) and Quicklook report (AMP450NC) with focus on the SO_2 5-minute average data.

Sac Metro Air District is concurring with some of the AQS recommendations found in AMP600. Exceptions are noted in Table 1 in this letter; Sac Metro Air District recommends certifying these data despite findings in AMP600. Table 2 lists the parameters not recommended for certification and the rationale. This is included for documentation purposes.

Note that California Air Resources Board (CARB) continues to support Sac Metro Air District by submitting and certifying data for all particulate matter (PM) gravimetric filters weighed and analyzed by CARB's laboratory. Namely, these are the $PM_{2.5}$ filters collected at Sacramento-Del Paso Manor (DPM). It also includes the PM_{10} filters collected at DPM for determining $PM_{10-2.5}$.

If you have any questions regarding Sac Metro Air District's data or certification report, please contact Ms. Janice Lam Snyder, Program Manager of Monitoring, Planning, and Rules Division at 916-491-0929 or jlam@airquality.org.

Sincerely,

Mark S. Loutzenhiser

Mark Loutzenhiser
Division Manager, Monitoring, Planning, and Rules Division
Enclosures: Certification Evaluation and Concurrence (AMP600)
Quicklook All Parameters (AMP450NC)

777 12th Street, Ste. 300 • Sacramento, CA 95814
Tel: 279-207-1122 • Toll Free: 800-880-9025
AirQuality.org

cc: Gwen Yoshimura, U.S. Environmental Protection Agency Region IX
(yoshimura.gwen@epa.gov)

Fletcher Glover, U.S. Environmental Protection Agency Region IX
(Clover.Fletcher@epa.gov)

Michael Benjamin, California Air Resources Board
(mbenjami@arb.ca.gov)

Jin Xu, California Air Resources Board
(Jin.Xu@arb.ca.gov)

Craig Anderson, California Air Resources Board
(Craig.Anderson@arb.ca.gov)

Dwight Oda, California Air Resources Board
(doda@arb.ca.gov)

Michael Miguel, California Air Resources Board
(michael.miguel@arb.ca.gov)

Kyle Vagadori, California Air Resources Board
(kyle.vagadori@arb.ca.gov)

Janice Lam Snyder, Monitoring, Planning, and Rules Division
(jlam@airquality.org)

Levi Ford, MPR/Air Monitoring Section
(lford@airquality.org)

David Yang, MPR/Planning & Data Analysis Section
(dyang@airquality.org)

Table 2: Parameters Not Recommended for Certification

Site	Parameter & POC	Reason for AQS' Recommendation	District Comment
North Highlands 06-067-0002	NO_2 42602-1	Annual summary completeness < 70% 1-point QC completeness < 65% Annual performance evaluation audit missing or 1 level	This analyzer did not operate in 2022. It malfunctioned several years ago and could not be repaired. A replacement analyzer was diverted to the Sac-Bercut near road site when that analyzer had storm damage in 2019. This station was permanently discontinued in July 2022 due to a notice from the property owner to vacate the premises.
Del Paso Manor 06-067-0006	CO 42101-1	Annual summary completeness < 70% 1-point QC completeness < 65% Annual performance evaluation audit missing or 1 level	This analyzer malfunctioned starting in July 2021 and was sent to the factory for repair. The District was not able to operate this monitor in 2022 due to resource constraint.

The full 19-page data certification package to U.S. EPA is available for public review upon request.

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

March 30, 2023

Jin Xu
Manager, Air Quality Analysis Section
California Air Resources Board
Air Quality Planning and Science Division
P.O. Box 2815
Sacramento, CA 95812

RE: 2022 Data Certification

Dear Jin Xu:

Sacramento Metropolitan Air Quality Management District (Sac Metro Air District) and California Air Resources Board (CARB) shares responsibility in collecting and analyzing particulate matter (PM) gravimetric filters in Sacramento County, California. It includes $PM_{2.5}$ filters collected at Sacramento-Del Paso Manor (DPM). It also includes the PM_{10} filters collected at DPM for determining $PM_{10-2.5}$.

In support of the U.S. Environmental Protection Agency (U.S. EPA) data certification requirements, Sac Metro Air District reviewed the Certification Evaluation and Concurrence report (AMP600) and Quicklook report (AMP450NC) from U.S. EPA Air Quality System. Contrary to AQS AMP 600 report recommending against certification of $PM_{2.5}$ and $PM_{10-2.5}$ data, we are recommending certification of these data because:

1. Despite a large exceedance of coefficient of variation (CV) within the CARB primary quality assurance organization (PQAO) sites, the Del Paso Manor $PM_{2.5}$ monitor has a much lower coefficient of variation and is just shy of the criteria, and
2. Due to sampler malfunction, the Sac Metro Air District could not operate the PM_{10} sampler beyond May 14, 2022; all of the data collected prior to May is recommended for certification.

If you have any questions, please contact Ms. Janice Lam Snyder, Program Manager of Air Monitoring, Planning & Data Analysis, at 916-491-0929 or jlam@airquality.org.

Sincerely,

Mark S. Loutzenhiser

Mark Loutzenhiser
Division Manager, Program Coordination Division

Enclosures: Certification Evaluation and Concurrence (AMP600)
Quicklook All Parameters (AMP450NC)

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Tel: 916-874-4800 • Toll Free: 800-880-9025
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cc: Craig Anderson, California Air Resources Board
(Craig.Anderson@arb.ca.gov)

Dwight Oda, California Air Resources Board
(doda@arb.ca.gov)

Michael Miguel, California Air Resources Board
(michael.miguel@arb.ca.gov)

Kyle Vagadori, California Air Resources Board
(kyle.vagadori@arb.ca.gov)

Janice Lam Snyder, Program Coordination Division
(jlam@airquality.org)

Levi Ford, PCD/Air Monitoring Section
(lford@airquality.org)

David Yang, PCD/Planning & Data Analysis Section
(dyang@airquality.org)

The full 13-page data certification package to CARB is available for public review upon request.

Appendix D Approval Letter for Legacy PAMS Monitors Discontinuation

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street

March 20, 2023

Mark Loutzenhiser
Division Manager, Program Coordination Division
Sacramento Metropolitan Air Quality Management District
777 12th Street, 3rd Floor
Sacramento, California 95814-1908

Dear Manager Loutzenhiser,

This letter transmits the U.S Environmental Protection Agency's (EPA's) formal approval of Sacramento Metropolitan Air Quality Management District's (SMAQMD's) December 20, 2022 letter requesting changes to its Photochemical Assessment Monitoring Stations (PAMS) network. Specifically, the EPA approves the discontinuation of PAMS speciated volatile organic compound (VOC) parameters at the Folsom Natoma (Air Quality System (AQS) ID: 06-067-0012) and Elk Grove Bruceville (AQS ID: 06-067-0011) monitoring sites, as well as reactive oxides of nitrogen (NO_y) parameters at the Folsom Natoma monitoring site. As part of the California Air Resources Board's (CARB's) 2020 5-year Network Assessment Plan, Appendix A-1 of the Enhanced Monitoring Plan, CARB supported discontinuation of VOC and NO_y monitoring at the Folsom Natoma and Elk Grove Bruceville sites to offset the demands at the Del Paso Manor (AQS ID: 06-067-0006) NCore site and save staff time and resources. EPA acknowledges that the PAMS requirements were revised when EPA promulgated the 2015 8-hour Ozone National Ambient Air Quality Standards on October 1, 2015, and we support SMAQMD's efforts to assess which PAMS measurements are currently necessary and appropriate.

SMAQMD stated in their letter that they are currently working to expand the Del Paso Manor building to accommodate the new PAMS requirements and is in the development phase to renovate the Del Paso Manor site structure. The Del Paso Manor site will satisfy NCore and PAMS requirements specified in 40 CFR 58 Appendix D. Since NO_y monitoring is required for all NCore sites, EPA encourages SMAQMD to continue NO_y operation at the Folsom Natoma monitoring site until Del Paso Manor NO_y is fully operational to maintain a continuous data record.

If you have any questions, please feel free to contact me at (415) 972-3134 or Shaye Hong at (415) 947-4104.

Sincerely,

DENA VALLANO

Digitally signed by DENA VALLANO
Date: 2023.03.20 07:19:08 -07'00'

Dena Vallano
Manager, Monitoring and Analysis Section

cc (via email): Kyle Vagadori, CARB
Peishi (Bob) Gu, CARB
Janice Lam Snyder, SMAQMD
David Yang, SMAQMD
Levi Ford, SMAQMD

Appendix E Letter Notifying EPA of the Immediate Discontinuation of North Highlands air monitoring station

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

July 28, 2022

Gwen Yoshimura
Air Quality Analysis Office
Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105-3901

Subject: Immediate shut down and removal of the North Highlands - Blackfoot (AQS ID: 06-067-0002) Ambient Air Monitoring Site per request of new property owners

Dear Gwen Yoshimura:

On July 18th, 2022, the District was contacted by KB Homes, the new property owner of North Highlands – Blackfoot way site to immediately remove the District's air monitoring trailer and equipment from their property since they are developing 250 residential homes on the property. For the past several years, the District has been unsuccessful in reaching the previous property owners to secure a lease and the property owners are now KB Homes. Following the initial contact, the District received a letter from KB Homes on July 26, 2022 (Attachment 1) formally requesting removal since they are starting to grade the property and will be building a wall on the property line. KB Homes was not amenable to allowing us to stay on the property due to their planned development. Due to the deteriorating condition of the air monitoring structure, moving the structure is not an option.

Due to the urgent nature and unforeseen circumstances, District is notifying the United States Environmental Protection Agency (EPA) the need to terminate the North Highlands - Blackfoot ambient air monitoring site (AQS ID: 06-067-0002) and its parameters. **Table 1** lists the parameters that will be terminated. The District scheduled a close out audit with the California Air Resources Board (CARB) which occurred on July 26, 2022. The last date of sampling will be July 31, 2022. We will remove all equipment on August 1, 2022 in order to vacate the premises as soon as possible per the request of the new property owners. This work includes coordination of the shutdown of power and removing the trailer (demolition of the trailer), etc.

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Table 1. North Highland Parameters

Pollutant	Manufacture / Model	Parameter Code	Monitor Type
O3	TAPI 400E	44201	SPM
NO2	TAPI 200UP	42602	SPM
PM10	Sierra Anderson 1200	81102	SLAMS

In the upcoming months, the District will work with EPA and CARB to evaluate whether there is a need to relocate the station to continue to meet any federal air quality monitoring requirements.

We look forward to discussing this further. If you have any questions, please contact me directly at (916) 491-0929.

Sincerely,

Janice Lam Snyder
Program Manager
Program Coordination Division
Sac Metro Air Quality Management District

CC:
Shaye Hong, USEPA
Kyle Vagadori, CARB, MLD
Peishi (Bob) Gu, CARB, Planning
Mark Loutzenhiser, SMAQMD, Program Coordination
Levi Ford, SMAQMD, Air Monitoring
David Yang, SMAQMD, Planning

Attachment 1

KB Home 3005 Douglas Blvd, Suite 250, Roseville, CA 95661

July 26, 2022

Air Quality Management District
777 12th St., 3rd Floor
Sacramento, CA 95814-1908
Attn. Mr. Levi Ford

Dear Mr. Ford,

During the development of KB Home Lakes at Antelope project we discovered that a trailer owned by AQMD is encroaching on the property being developed. There is grading needed at this location and eventually a wall that will be installed on the property line that the AQMD trailer crosses.

KB Home respectfully requests that AQMD relocate this unit so that the Lakes at Antelope development may complete its work. This may require the trailer to be approximately five (5) feet from the PL for work to progress.

The site is currently being graded and your urgency in this matter is greatly appreciated.

Please let us know if there is any further information you need.

Kind regards,

Matt Hogan
VP Land Development

Attachments:
1. plan view trailer location
2. photo of trailer and PL

Appendix F Final Performance Audit North Highlands-Blackfoot Way

CALIFORNIA AIR RESOURCES BOARD

Final Performance Audit

North Highlands-Blackfoot Way

July 26, 2022

Auditors: Leena Khangura, Harnek Nijjar

AQS ID: 060670002 ARB Site ID: 34294

Quality Assurance Section
Monitoring and Laboratory Division

Manager: Ranjit Bhullar
Phone: (916) 322-0223

Report Contents:
Executive Summaries
Audit Data
Technical Appendices
Site and Monitor Surveys

When this report has been finalized, it will be available at: https://ww2.arb.ca.gov/applications/quality-assurance-district-access-page

Executive Summary North Highlands-Blackfoot Way

Gaseous Monitors

July 26, 2022

Parameter	Audit Point	Audit Level	Percent Difference	Pass / Fail
O3 Ozone ID#: 10913	1	7	-1.6	PASS
	2	5	-2.7	PASS
	3	4	-2.7	PASS
	4	2	-5.2 (-0.9 ppb)	PASS
	5	1	3.6 (0.2 ppb)	PASS

* Audit Levels 1 and 2 are subject to ± 15% difference and ± 1.5 ppb control limits

Control and Warning Limits

Parameter	Control Limit	Warning
Gaseous Monitors (Ozone) Audit Levels 3-10	± 10% difference from Audit Standard	± 7% difference from Audit Standard
Gaseous Monitors (CO, SO2, NO2) Audit Levels 3-10	± 15% difference from Audit Standard	± 10% difference from Audit Standard
Gaseous Monitors (O3, SO2, NO2) Audit Levels 1-2	± 15% difference from Audit Standard OR ± 1.5 ppb difference, whichever is greater	± 10% difference from Audit Standard
Gaseous Monitors (CO) Audit Levels 1-2	± 15% difference from Audit Standard OR ± 30 ppb difference, whichever is greater	± 10% difference from Audit Standard

Operating Agency: Sacramento Metropolitan AQMD
Site Operator: Rudy Paez
Auditors: Leena Khangura, Harnek Nijjar

AQS ID: 060670002
CARB Site #: 34294
Van: F Quarter: 3

Page 2

Executive Summary North Highlands-Blackfoot Way

Flow-based Monitors

July 26, 2022

Parameter	Serial #/ID	Percent Difference from Audit Standard		Percent Difference from Design Flow		Leak Check
PM10 HiVol	3097	0.7	PASS	0.7	PASS	N/A

Control and Warning Limits

Parameter	Control Limit	Warning
Flow Rate - PM 10 (Filter-based, High Volume)	± 7% difference from Audit Standard ± 10% difference from Design flow rate	± 5% difference from Audit Standard
Temperature (ambient and filter)	± 2° Celsius	none
Pressure	± 10 mmHg	none
Leak Rate	varies based on sampler	none
Clock (PST)	± 5 minutes	± 2 minutes

Operating Agency: Sacramento Metropolitan AQMD AQS ID: 060670002
Site Operator: Rudy Paez CARB Site #: 34294
Auditors: Leena Khangura, Harnek Nijjar Van: F Quarter: 3

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Audit Information North Highlands-Blackfoot Way

Ozone (O3)

July 26, 2022

Audit Point	Audit Level*	Audit Indicated (ppm)	Audit Actual (ppm)	Station Indicated (ppm)	Station Actual (ppm)	Difference (%)
Pre-Zero	--	-0.0002	--	-0.0011	--	--
Audit Point 1	7	0.1296	0.1274	0.1254	0.1254	-1.6
Audit Point 2	5	0.0832	0.0819	0.0797	0.0797	-2.7
Audit Point 3	4	0.0532	0.0525	0.0511	0.0511	-2.7
Audit Point 4	2	0.0173	0.0173	0.0164	0.0164	-5.2 (-0.9 ppb)
Audit Point 5	1	0.0054	0.0056	0.0058	0.0058	3.6 (0.2 ppb)
Post-Zero	--	-0.0005	--	0.0001	--	--

* Audit Levels 1 and 2 are subject to 15% difference and 1.5ppb control limits

Calibration

Last Calibration Date: 07-21-2022
Cal Std Model: API T700U
Cal Std ID: 10956
Cal Std Cert Date: 06-02-2022
Cal Gas Expiration Date: N/A

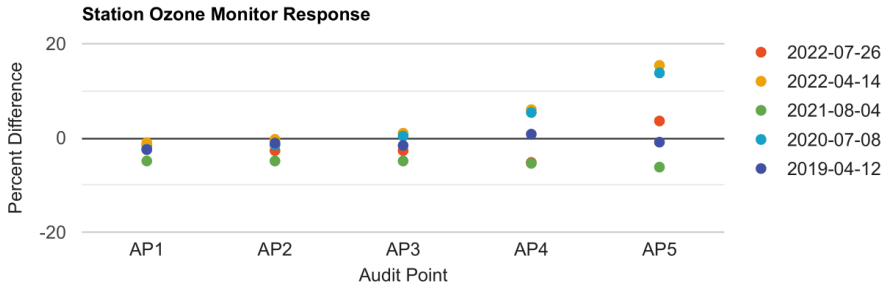
Checks & Maintenance

Last Filter Change Date: 07-18-2022
Residence Time: 19.0 seconds
Zero/Span Check Freq: every other day
1-pt QC Check Freq: every other day
Last Zero Air Chk Date: 11-30--0001

Statistics

Avg % Diff: -1.7
Std Dev: 3.2
Correlation: 0.99990
Upper 95% Confidence Limit: 4.6
Lower 95% Confidence Limit: -8.1

Audit Data Comparison



Failures and Warnings

All audit parameters are within specified limits!

Comments

Audited Instrument (Method): API/Teledyne 400/400A, 400E, T400
Instrument ID/SN: 10913
Evaluation Type: Annual P.E.

AQS ID: 060670002
CARB Site #: 34294
Van: F Quarter: 3

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Audit Information North Highlands-Blackfoot Way

PM10 Hi-Vol

July 26, 2022

Audit Display (CFM)	**Audit Flow** (CFM)	**Station Flow** (Indicated)	**Station Flow** (CFM)	**Percent Difference**	**Percent Difference from Design***
40.3	40.3	40.6	40.6		
40.3	40.3	40.6	40.6		
40.3	40.3	40.6	40.6		
	Average: 40.3		Average: 40.6	**0.7**	**0.7**

*Design flow rate limits are approximately 36 to 44 CFM for PM10 Hi-Vol samplers.

	Audit Sensor Display Reading	**Audit Actual Values**
Ambient Temperature (°C):	20.7	20.7
Ambient Pressure (mmHg):	755.5	755.2

Calibration and Maintenance

Last Calibration Date: 10-21-2021
Cal Std Model: BGI Hi Vol
Cal Std ID: 20121445
Cal Std Cert Date: 03-20-2021

Flow Check Schedule: EVERY 30 DAYS
Maintenance Schedule: EVERY 30 DAYS

Failures and Warnings

All audit parameters are within specified limits!

Comments

Audited Instrument (Method): Anderson SA1200
Instrument ID/SN: 3097
Evaluation Type: Annual P.E.

AQS ID: 060670002
CARB Site #: 34294
Van: F Quarter: 3

Technical Appendix North Highlands-Blackfoot Way

Gaseous Monitors

July 26, 2022

O3 (ID #10913)

Ozone Audit Standard (ID #)	Certification Date	Slope	Intercept	Line Loss (%)	Audit Zero Avg
API T400 (106365)	2022-07-13	0.99631	0.0003	1.5473	-0.0001

O3 Equation

Audit Actual = (((Audit Indicated * Slope) + Intercept) * (1 - Line Loss/100))

Operating Agency: Sacramento Metropolitan AQMD
Site Operator: Rudy Paez
Auditors: Leena Khangura, Harnek Nijjar

AQS ID: 060670002
CARB Site #: 34294
Van: F Quarter: 3

Technical Appendix North Highlands-Blackfoot Way

Flow-based Monitors

July 26, 2022

PM10 HiVol (ID #3097)

	Audit Standard (ID #)	Certification Date	Slope	Intercept
Flow:	BGI Hi-Vol (F010468)	2022-01-19	1.0071	-0.288
Temperature:	Traceable 4000 (192001346)	2022-01-19	0.9993	0.054
Pressure:	Vaisala PTB330 (20112216)	2022-01-20	1.0004	-0.5701

Equations

Pressure Drop Audit Flow = Flow Std Slope * SQRT((ΔPressure * (Temp + 273.15)) / Pressure) + Flow Std Intercept

-- OR --

Audit Flow = (Flow Std Slope * displayed Audit Flow) + Flow Std Intercept

Operating Agency: Sacramento Metropolitan AQMD AQS ID: 060670002
Site Operator: Rudy Paez CARB Site #: 34294
Auditors: Leena Khangura, Harnek Nijjar Van: F Quarter: 3

Site Information and Report Summary

North Highlands-Blackfoot Way

July 26, 2022

Site Information

Address: 7834 Aztec Way
North Highlands, CA 95660

Latitude: N 38.71209 County: Sacramento

Longitude: W -121.38108 CBSA*: Sacramento--Roseville--Arden-Arcade, CA

Elevation (m): 33 Date Established*: 1/1/1980

Site Photos Taken?: Yes

Logbook Up To Date?: Yes

Site Map Redrawn?: No

Site Conditions

Inside/Shelter Temp	Topography	Traffic
Inside Temp (IT): 25.1 °C	Site: Level	Description: Residential
IT Controlled?: Yes	Region: Level	Distance: 100 meters
IT Recorded: Yes	Ground Cover: Dirt	Count (veh/day): 1000
IT Last Cal Date: 2022-04-04	Urbanization: Suburban	**Non-Vehicular Local Sources**
Gaseous Parameters	Land Use*: RESIDENTIAL	Description: None
Probe clean?: Yes	Location Setting*: SUBURBAN	Distance: N/A
Manifold clean?: Yes		Direction: N/A
Cleaning Schedule: Annual		
Autocalibrator: Teledyne API T700U		

*Data taken from the U.S. EPA AQS database on 11/14/2022.

Action Items

* Audit conducted per District's request; District has been asked by the land owner to clear the area by 7/29/2022. As a result, audits for 2022 will not be six months apart.

Comments

* Site closing audit conducted at District's request.
* Site diagram verified;
* Residence time re-calculated.
* NO2 analyzer is not operational. AQDA #8456 was issued in August of 2021 and is still open for this issue.
* District must develop and implement a procedure for verifying zero air generators.

Operating Agency: Sacramento Metropolitan AQMD AQS ID: 060670002
Site Operator: Rudy Paez CARB Site #: 34294
Auditors: Leena Khangura, Harnek Nijjar Van: F Quarter: 3

Monitor Surveys

North Highlands-Blackfoot Way

July 26, 2022

AQS ID: 060670002

Monitor Category	Ozone	PM10 Hi-Vol
Evaluation Type	Annual P.E.	Annual P.E.
Manufacturer/Model	API/Teledyne 400/400A, 400E, T400	Anderson SA1200
ID/Serial #	10913	3097
Parameter Code-POC*	44201 - 1	81102 - 1
Method Code*	87	63
Method Description*	INSTRUMENTAL - ULTRA VIOLET ABSORPTION	HI-VOL SA/GMW-1200 - GRAVIMETRIC
Data for Record? (AQS)	Yes	Yes
Monitor Type*	SPM	SLAMS
Monitor Objective Type* (Site Type)	POPULATION EXPOSURE	POPULATION EXPOSURE
Spatial Scale*	URBAN SCALE	NEIGHBORHOOD
PQAO	California Air Resources Board	California Air Resources Board
Collecting Agency*	Sacramento County APCD	Sacramento County APCD
Reporting Agency*	Sacramento County APCD	Sacramento County APCD
Networks*	none	none
First Year of Data*	1980	1993
Current Sampling Frequency	CONTINUOUS	EVERY 6TH DAY
Collocated Designation	--	--
Distance to Collocated Monitor	n/a	n/a
Inlet Height Above Ground	5.1	4.9
Inlet Height Above Structure	1.7	1.5
Distance From Obstructions on Roof (Horizontal)	N/A (none)	N/A (none)
Height Above Inlet for Obstructions on Roof	0.0	0.0
Distance From Obstructions Not on Roof (Horizontal)	--	--
Height Above Inlet for Obstructions Not on Roof	--	--
Distance From Trees (Dripline)	--	--
Distance to Furnace, Flue, or A/C	--	--
Distance to Nearest Roadway	n/a	n/a
Unrestricted Airflow	360 degrees	360 degrees

*data taken from AQS *all distances in meters *all distances in meters

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