



# San Diego County Air Pollution Control District

## MONITORING AND TECHNICAL SERVICES DIVISION Annual Air Quality Monitoring Network Report 2022

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## **Chapter 1: Introduction – Annual Network Report Requirements**

### **Section 1.1 Federal Citation**

In 2007, the U.S. Environmental Protection Agency (EPA) finalized amendments to the ambient air monitoring regulations. These amendments: revised the technical requirements for certain types of sites, programs, and analyzers; added pollutants and programs; and specified sampling frequencies. Monitoring agencies are required to submit annual monitoring network reports, conduct network assessments every five years, perform quality assurance activities, and, in certain instances, establish new monitoring programs. The regulations from Title 40, Part 58, Section 10(a) of the Code of Federal Regulations (40 CFR 58.10, (a)(1)) state that:

*The State, or where applicable local, agency shall adopt and submit to the Regional Administrator an annual monitoring network plan which shall provide for the establishment and maintenance of an air quality surveillance system that consists of a network of [State or Local Air Monitoring Stations] SLAMS monitoring stations including [Federal Reference Method]FRM, [Federal Equivalence Method]FEM, and [Approved Regional Method] ARM monitors that are part of SLAMS, [National Core] Ncore stations, [Speciation Trends Network] STN stations, State speciation stations, [Special Purpose Monitor] SPM stations, and/or, in serious, severe and extreme ozone nonattainment areas, PAMS stations, and SPM monitoring stations. The plan shall include a statement of purposes for each monitor and evidence that siting and operation of each monitor meets the requirements of appendices A, C, D, and E of this part, where applicable. The annual monitoring network plan must be made available for public inspection for at least 30 days prior to submission to EPA.*

This document is prepared and submitted as part of these requirements. It describes the network of ambient air quality monitors, samplers, and analyzers operated by San Diego County Air Pollution Control District (District) staff in fulfillment of EPA regulations governing network compliance that are updated every July 1. This Annual Network Report (ANR) serves to evaluate whether the current monitoring strategies are meeting the requirements of the District, to determine compliance with all current Federal, and State regulations as it pertains to the ambient Air Quality Network (AAQN). It also serves to identify and report needs for additions, relocations, or terminations of monitoring sites or instrumentation to continue to meet federal requirements.

The Ambient Air Quality Monitoring Network measures air pollutants on a regional level. The District also has a Community Air Protection Program (CAPP) that is devoted to Environmental Justice and the monitoring of toxic air contaminants at a microscale and localized level. The District has a separate network of air monitoring sites within Environmental Justice communities to measure pollutants that are of interest to the community. Although the CAPP has a separate network of monitoring sites for Environmental Justice communities, there is some overlap with the Ambient Air Quality Monitoring Network. The District's Ambient Air Quality Monitoring Network sites at Sherman Elementary School (SES) and at the Otay Mesa-Donovan State Prison (DVN) fall within the Portside Environmental Justice Community and the International Border Community, respectively.

In addition, as part of the AB-423 legislation, the District approved a separate Comprehensive Monitoring Plan in the fall of 2022. The Comprehensive Monitoring Plan discusses the decision process and tools the District uses when determining placement of a new monitoring location (regional or community-based) and the pollutants to measure at that location.



## **Section 1.2 Purpose, Scope, and Organization of Annual Network Report**

In San Diego County, there are several locations where the ambient air quality is routinely measured for air pollutants. These sites are operated by the District. The measured data provide the public with information on the status of the air quality and the progress being made to improve air quality. The data can be used by health researchers, business interests, environmental groups, and others.

This report describes the network of ambient air quality monitors within the San Diego Air Basin (SDAB) and meets the requirements for an Annual Network Report as listed in Title 40 of the Code of Federal Regulations (CFR), Part 58.10. The 40 CFR 58.10 require that the report be submitted to the EPA, including any public comments, by July 1, of each year.

As required by the CFR, this report includes equipment which have federal reference methods (FRM) or federal equivalent methods (FEM) designations. While the CFR also requires reporting of approved regional methods (ARM), no ARMs are in operation in San Diego County at this time. Air monitoring samplers and analyzers are designated as FRM and FEM. Only air pollution concentrations measured by FRM and FEM monitors and samplers are compared against the National Ambient Air Quality Standards (NAAQS) for the criteria pollutants (listed in Section 1.4) set by the EPA so that EPA will determine the attainment status. There are no Special Purpose Monitors (SPM) currently in the Network. This report also includes information regarding non-regulatory and non-criteria pollutant monitoring.

## **Section 1.3 Public Comments Information**

Pursuant to Federal regulations, the draft report will be available for a minimum of 30 days for public inspection period. Notice of availability of the report was posted on the District's website ([www.sdapcd.org](http://www.sdapcd.org)). Comments regarding this report and the District response(s) before submittal to EPA will be listed in the Chapter 2 Overview of the Air Quality Monitoring Network (Section 2.5). Any comments regarding this report and answered by the District after submittal to the EPA, will be forwarded to EPA Region 9 headquarters.

Please submit any comments in writing to David Medina, Senior Chemist, Ambient Air Quality Section, [david.medina@sdapcd.org](mailto:david.medina@sdapcd.org), or mail/deliver to District headquarters at David Medina c/o San Diego County Air Pollution Control District, 10124 Old Grove Road, San Diego, CA, 92131.

Note: The Ambient Air Quality Air Pollution Monitoring Network measures air pollutants on a regional level. The District also has a Community Air Protection Program (CAPP) that is devoted to Environmental Justice and the monitoring of toxic air contaminants at a microscale and localized level.

### **Section 1.3.1 District Contact Information**

For information regarding this report, air monitoring stations, laboratory operations, field and laboratory equipment, procedures of the field and laboratory equipment, or general oversight of the air monitoring programs contact: David Medina, Senior Chemist, Ambient Air Quality Section, [david.medina@sdapcd.org](mailto:david.medina@sdapcd.org) (858) 586-2780.

For information about daily field operations regarding the equipment at the stations, contact: Victor Padilla, Supervisor of Technicians, Electronic Technicians Section, [victor.padilla@sdapcd.org](mailto:victor.padilla@sdapcd.org), (858) 586-2785.





For information regarding ambient air quality data, meteorological data, episode modeling, air quality forecasting, and smoke management plans contact: Adam Canter, Senior Meteorologist, [adam.canter@sdapcd.org](mailto:adam.canter@sdapcd.org), (858) 586-2771.

The District now has an independent Quality Assurance (QA) Section starting January 2023. For information regarding the quality assurance of the ambient air monitoring data, contact: Melin Lu, Senior Chemist, QA Section, [melin.lu@sdapcd.org](mailto:melin.lu@sdapcd.org), (858) 860-4071.

### **Section 1.3.2 Additional Air Pollution Information**

Additional information regarding San Diego's ambient air quality monitoring network, including pollutant data summaries for the various monitors in the network, are available from a variety of sources. This section lists several additional sources for related information.

Similar information is available on the Environmental Protection Agency (EPA) and California Air Resources Board (CARB) websites, but the links to these locations change frequently. Key words to search at their website are: Ambient Air Quality Monitoring, National Ambient Air Quality Standards, Fine Particle (PM<sub>2.5</sub>) Designations, The Plain English Guide to the Clean Air Act, About Air Toxics, Health and Ecological Effects, Air Trends, PAMS Information, Green House Gases, Stratospheric Ozone, Environmental Justice, as well as the names of the chapters of this document, etc.

CARB's Monitoring and Laboratory Division (MLD) maintains web pages with information about all the existing monitoring sites that routinely monitor and submit air quality data in California. These web pages also include detailed local maps showing the location of the sites. This information can be found at [Air Quality Monitoring | California Air Resources Board](#) and [Ambient Air Monitoring – Regulatory | California Air Resources Board](#).

CARB's annual network report contains listings of all the monitoring sites in the State, along with the years for which the data are available for each monitor/sampler in California. Summaries of the official air quality data from sites around the State can be found at: [iADAM Air Quality Data Statistics \(ca.gov\)](http://www.arb.ca.gov/adam/welcome.html) (<http://www.arb.ca.gov/adam/welcome.html>). Pollution data is available on the District's website (<http://www.sdapcd.org/>). Other helpful websites to visit are: <http://airnow.gov/>, and at [https://aqs.epa.gov/aqsweb/documents/data\\_mart\\_welcome.html](https://aqs.epa.gov/aqsweb/documents/data_mart_welcome.html).

### **Section 1.4 Description of Monitoring**

The EPA has set National Ambient Air Quality Standards (NAAQS) for six common air pollutants, which are called criteria pollutants. These pollutants are known to cause health effects and harm the environment. It is the role of the San Diego County APCD to measure for these criteria pollutants. In addition, the EPA requires that the San Diego County APCD operates additional monitoring programs. This document details the current monitoring network in the SDAB for the criteria pollutants, monitoring programs, and site detail the District must report, and they are listed below:



#### Monitoring Programs

- National Core (Ncore)
- Speciation Trends Network (STN)
- Chemical Speciation Network (CSN)
- Special Purpose Monitoring (SPM)
- Near-road
- Border 2020
- Photochemical Assessment Monitoring Stations (PAMS)

#### Criteria Pollutants

- Ozone (O<sub>3</sub>)
- Nitrogen Dioxide (NO<sub>2</sub>)
- Carbon Monoxide (CO)
- Sulfur Dioxide (SO<sub>2</sub>)
- Lead (Pb)
- Particulate Matter (PM)

#### Site Information

- Site Location
- Site Type
- Site Objective
- Spatial Scale
- Sampling Schedule
- Equipment
- Sampling Method
- Monitoring Objective

### **Section 1.4.1 Network Design Theory**

Ambient air monitoring networks (Network) are designed to fulfill several criteria. A general summary of the criteria are below.

#### Network Design Objectives

1. Provide data to the public in a timely manner.
2. Support compliance with NAAQS and emissions strategy development.
3. Support air pollution research studies.

#### Logistical

1. Minimal interference and perturbation of wind flow by obstacles.
2. Proximity to headquarters.
3. Availability of electrical power and communications.
4. Cost of site lease, relocation, or new deployment, site improvements, e.g. fence, road, etc.
5. Safety, security, and accessibility.
6. Flat, level footprint for shelter, platforms, and concrete pad.
7. Gravel or paved road access.

#### Other

1. Funding.
2. Staffing.
3. Drive time from location to location (congestion patterns).
4. Longevity of the site location.
5. Development of the area surrounding the monitoring location.
6. Proximity to other monitors.
7. Homogeneity in space and with respect to speciation.
8. Devoid of source influences (point sources, mobile sources, etc.).

### **Section 1.5 San Diego Air Basin Description**

San Diego County lies in the southwest corner of California, has an area of 4,526 square miles, and encompasses the San Diego Air Basin (SDAB) and includes part of the Salton Sea Air Basin. Most of the County's population and pollutant emissions are concentrated in the western portion of the County in the SDAB, which extends to the mountains in the near east. The topography in the SDAB, along with local meteorology, influences the pollutants in the basin. San Diego County also shares an international border with Mexico. The neighboring city of Tijuana forms a binational airshed with San Diego. The Air Pollution Control District has air monitoring stations set-up throughout the SDAB to monitor for these pollutants.



### **Section 1.5.1 San Diego Topography**

The topography of San Diego County is highly diverse and comprises of coastal plains and lagoons, flatlands and mesas, broad valleys, canyons, foothills, mountains, and deserts. Generally, building structures are on the flatlands, mesas, and valleys, while the canyons and foothills tend to be sparsely developed. This segmentation is what has carved the region into a conglomeration of separate cities that led to low density housing and an automobile-centric environment.

To the west of San Diego are the beaches and the Pacific Ocean, to the south is Tijuana, Mexico and the Baja California Peninsula, to the near east are the mountains, to the far east is the desert (the Salton Sea Air Basin), and to the north is the South Coast Air Basin (the greater Los Angeles-Riverside-San Bernardino area/Air Basin).

### **Section 1.5.2 San Diego Climate**

The climate is classified as Mediterranean, but it is diverse because of the topography. The climate is dominated by the Pacific High-pressure system that results in mild, dry summers and mild, wet winters. San Diego experiences over 150 days above 70°F and 8” to 12” of rainfall annually (mostly, November – March). El Niño and La Niña patterns have large effects on the annual rainfall received in San Diego.

An El Niño is a warming of the surface waters of the eastern Pacific Ocean. It is a climate pattern that occurs across the tropical Pacific Ocean that is associated with drastic weather occurrences, including enhanced rainfall in Southern California. La Niña is a term for cooler than normal sea surface temperatures across the Eastern Pacific Ocean. San Diego receives less than normal rainfall during La Niña years.

The Pacific High-pressure system drives the prevailing winds in the SDAB. The winds tend to blow onshore in the daytime and offshore at night. In the summer, an inversion layer is created over the coastal areas and increases the O<sub>3</sub> levels. In the winter, San Diego often experiences a shallow inversion layer which tends to increase carbon monoxide and PM<sub>2.5</sub> concentration levels due to the increased use of residential wood burning.

In the fall months, the SDAB is often impacted by Santa Ana winds. These winds are the result of a high-pressure system over the Nevada-Utah region that overcomes the westerly wind pattern and forces hot, dry winds from the east to the Pacific Ocean. These winds are powerful and incessant. They blow the air basin’s pollutants out to sea. However, a weak Santa Ana can transport air pollution from the South Coast Air Basin and greatly increase the San Diego ozone concentrations. A strong Santa Ana also primes the vegetation for firestorm conditions.

### **Section 1.5.3 Population**

According to the official 2020 U.S. census the population for San Diego County is 3.3 million. The County population has been increasing by a growth rate of 0.46% annually.



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## **Chapter 2: Overview of the Air Quality Monitoring Network**

### **Section 2.1 Executive Summary of the Air Quality Monitoring Network**

The District operated nine (9) monitoring sites in 2022 that collected criteria pollutant data (Figure 2.1). The District's monitoring network has been designed to provide criteria pollutant monitoring coverage to the majority of the inhabited regions of the County (Table 2-1 & Table 2-2).

Since the San Diego County Air Pollution Control District was established by the County Board of Supervisors in 1955, occasional air monitoring has been performed in remote portions of the County, including the mountain and desert areas. Historical measurements have shown relatively low levels of air pollution in these areas. Population and growth in these areas have remained low enough that routine air sampling has not been necessary. Measurements have shown that harmful air contaminants are found in areas where population is dense, traffic patterns are heavy, and industrial sources are concentrated. As pollutants are carried inland by prevailing winds, they are frequently trapped against the mountain slopes by a temperature inversion layer, generally occurring between 1500 and 2500 feet above sea level. Therefore, our air monitoring stations are found between the coast and the mountain foothills up to approximately 2000 feet. The monitoring network needs to be large enough to cover the diverse range of topography, meteorology, emissions, and air quality in San Diego, while adequately representing the large population centers. This monitoring network plays a critical role in assessing San Diego County's clean air progress and in determining pollutant exposures throughout the County.

Ambient concentration data are collected for a wide variety of pollutants in the SDAB. These pollutants are: ozone (O<sub>3</sub>), fine particulate matter 2.5 micrometers and less in diameter (PM<sub>2.5</sub>), particulate matter 10 micrometers and less in diameter (PM<sub>10</sub>), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), and lead (Pb). The District also measures additional compounds, including reactive oxides of Nitrogen (NO<sub>y</sub>), and PAMS parameters [carbonyls, and Volatile Organic Compounds (VOCs)]. Monitoring for meteorological parameters is also conducted at most monitoring locations. Data for all the pollutants are needed to better understand the nature of the ambient air quality in San Diego County, as well as to inform the public regarding the quality of the air they breathe. Not all pollutants are monitored at all sites, but most sites monitor for multiple pollutants. A particular site's location and monitoring purpose determine the actual pollutants measured at that site.

A fundamental purpose of air monitoring is to distinguish between areas where pollutant levels exceed the ambient air quality standards and areas where those standards are not exceeded. Health-based ambient air quality standards are set at levels that preclude adverse impacts to human health (allowing for a margin of safety). The District develops strategies and regulations to achieve the emission reductions necessary to meet all health-based standards. Data from the ambient monitoring network are then used to indicate the success of the regulations and control strategies in terms of the rate of progress towards attaining the standards or to demonstrate that standards have been attained and maintained. Thus, there is an established feedback loop between the emission reduction programs and the ambient monitoring programs. Over the years, Federal, State, and District regulatory/strategic measures have proven to be extremely successful at reducing levels of harmful air contaminants. Monitors once placed throughout the County to document the frequent and regular exceedance of ozone, nitrogen dioxide, carbon monoxide, and particulate matter standards now document the continued downward concentration trends of these pollutants.



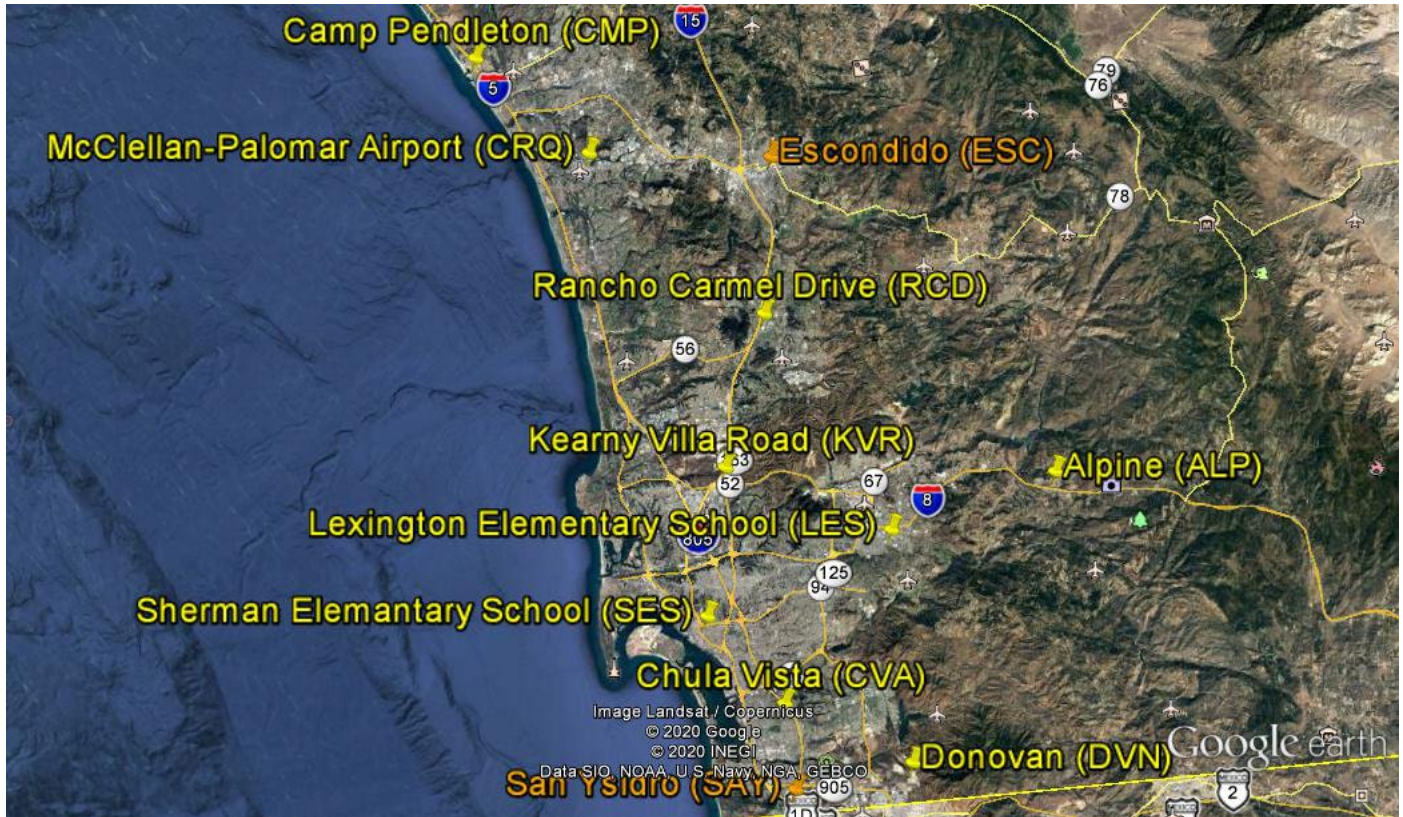
**Section 2.1.1 Overview of the Pollutant Monitoring Network**

This section lists all the monitoring locations in the SDAB undertaken by the District for this report year. Table 2-1 below is a list of the District’s stations and their locations. Figure 2.1 shows where these monitoring locations are on a map of the County. Table 2-2 lists all the samplers, analyzers, and other instrumentation at these monitoring sites.

**Table 2-1 List of Network Sites**

Station Name	Station Abbreviation	Address	Latitude/ Longitude	AQS ID
Alpine-Padre Dam	ALP	2300 W. Victoria Dr.	32.842312° -116.768277°	06-073-1006
Camp Pendleton	CMP	21441 W. B St.	33.217020° -117.396179°	06-073-1008
Chula Vista	CVA	84 E. J St.	32.631243° -117.059086°	06-073-0001
Otay Mesa – Donovan	DVN	480 Alta Rd.	32.578162° -116.921388°	06-073-1014
*Escondido	ESC	600 E. Valley Pkwy.	33.127765° -117.075093°	06-073-1002
Kearny Villa Rd.	KVR	6125A Kearny Villa Rd.	32.845713° -117.123979°	06-073-1016
Lexington Elementary School	LES	533 B. First St.	32.789569° -116.944308°	06-073-1022
McClellan-Palomar Airport	CRQ	2192 Palomar Airport Rd.	33.130898° -117.272392°	06-073-1023
Rancho Carmel Dr. (1 <sup>st</sup> Near-road Site)	RCD	11403 Rancho Carmel Dr.	32.985428° -117.082213°	06-073-1017
*San Ysidro (2 <sup>nd</sup> Near-road Site)	SAY	198 W. San Ysidro Blvd.	32.552809° -117.047328°	06-073-1025
Sherman Elementary School	SES	450B 24 <sup>th</sup> St.	32.710177° -117.142665°	06-073-1026

\*Orange= Still in development. District is seeking a new monitoring site in Escondido. San Ysidro Near-road site is expected to be operational in 2023.



\*Orange= In development

Figure 2.1 San Diego APCD Air Quality Monitoring Network



**Table 2-2 Air Monitoring Sites with Associated Monitors/Samplers & Sample Frequency**

		ALP Alpine	CMP Camp Pendleton	CVA Chula Vista	DVN Donovan	LES Lexington Elementary	KVR Kearny Villa Rd.	CRO Palomar Airport	RCD Rancho Carmel Dr.	SES Sherman Elementary School
AMBIENT	O <sub>3</sub>	7/24	7/24	7/24	7/24	7/24	7/24			7/24
	NO <sub>2</sub>	7/24	7/24	7/24	7/24	7/24	7/24		7/24	7/24
	CO								7/24	
NCORE	NOy-TLE					7/24				
	CO-TLE					7/24				
	SO <sub>2</sub> -TLE					7/24				
LEAD (Airports) (Hi-Vol)							1:6			
PM <sub>10</sub>	Continuous	7/24	7/24		7/24	7/24				7/24
	(Manual)			1:6	1:6	1:3				
PM <sub>10-2.5</sub>	(Manual)					1:3				
PM <sub>2.5</sub> CSN FRM n-FEM	(non-FEM Continuous)	7/24	7/24		7/24	7/24				7/24
	(Manual)			1:3		1:1	1:3		1:3	1:3
	(Speciation)					1:3				
STN	Channel 1 (Metals)					1:3				
	Channel 2 (Inorganic Ions)					1:3				
	Channel 3 (Wood Smoke)									
PAMS	(VOCs)					7/24				
	(Carbonyls)					1:3				
TOXICS CA-TAC (CARB) (APCD)	(VOCs)			1:6		1:6				
	(Total Metals & Cr <sup>6+</sup> )			1:12		1:12				
	(Aldehydes/ Carbonyls)			1:6		1:6				
	(Total Metals)				1:6	1:6				1:6
	(Aldehydes/ Carbonyls)				1:6					1:6
METEOROLOGICAL PARAMETERS & Others	Wind Speed	7/24	7/24	7/24	7/24	7/24	7/24			7/24
	Wind Direction	7/24	7/24	7/24	7/24	7/24	7/24			7/24
	External Temperature	7/24	7/24	7/24	7/24	7/24	7/24		7/24	7/24
	% Relative Humidity	7/24				7/24	7/24			
	Internal Temperature	7/24	7/24	7/24	7/24	7/24	7/24		7/24	7/24
	Barometric Pressure					7/24	7/24			
	Solar Radiation					7/24	7/24			
	Ultraviolet Radiation					7/24				
	Precipitation					7/24				





- **Yellowed** areas indicate a collocation of samplers to satisfy Federal QA requirements for PM<sub>2.5</sub> FRM monitors, PM<sub>10</sub>, and TSP samplers with a sampling frequency of 1:6.
- The official PAMS season is from June to the end of August. VOCs are sampled and analyzed on an hourly basis (7/24). For PAMS Carbonyls there are three 8-hour samples collected every three days (1:3) with one collocated 8-hour sample collected every 6 days (1:6).
- All sample times are set to Pacific Standard Time.
- The District operates, calibrates, and audits all instruments listed in Table 2-2, except for the CARB's Xontech 924's at the Chula Vista and El Cajon stations (operation only) and ATECs.
- Not all collected samples are analyzed by District personnel. Some samples are sent to the EPA or CARB laboratories for subsequent analysis. They are noted in Table 2-5 as EPA or CARB.
- CA TAC stands for the California Toxics Air Contaminant Monitoring network.

Sampling frequencies are designated as follows:

7/24= a sampler that operates continually with no media changes needed (Please note that a filter tape roll is used on the non-FEM Continuous BAM sampler and changed as needed).

1:1= a sampler that requires a sample deposition media (filter, DNPH cartridge, or Summa canister); it runs daily for a duration of 24 hours. The media are manually loaded, collected, and programmed to run on a weekly basis.

1:3= a sampler that requires a sample deposition media (filter, DNPH cartridge, or Summa canister); it runs every three (3) days for a duration of 24 hours. The media are manually loaded, collected, and programmed in between sample days.

1:6= a sampler that requires a sample deposition media (filter, DNPH cartridge, or Summa canister); it runs every six (6) days for a duration of 24 hours. The media are manually loaded, collected, and programmed on a weekly basis.

1:12= a sampler that requires a sample deposition media (filter, DNPH cartridge, or Summa canister); it runs every twelve (12) days for a duration of 24 hours. The media are manually loaded, collected, and programmed on a biweekly basis.



Tables 2-3 to 2-8 use the same Glossary (see below)

**Glossary of Terms**

Monitor Type

E= EPA  
O= Other  
SLAMS= State & Local monitoring stations  
SPM= Special purpose monitor  
CATAC= California Toxics Monitoring

Site Type

HC= Highest concentration  
PE= Population exposure  
SO= Source oriented  
UPBD= Upwind background  
G/B= General/Background  
RT= Regional Transport  
WRI= Welfare related impacts  
QA= Quality assurance

Method (Sampling/Analysis)

CL= Chemiluminescence  
CT= Low Volume, size selective inlet, continuous  
FL= Fluorescence  
HV= High volume  
IR= Nondispersive infrared  
SI= High volume, size selective inlet  
SP= Low volume, size selective inlet, speciated  
SQ= Low volume, size selective inlet, sequential  
UV= Ultraviolet absorption  
Canister= Evacuated stainless steel canisters  
Cartridges= Di-nitrophenylhydrazine cartridges  
FSL= Fused Silica Lined  
Filter= Quartz filters  
Auto= GCFID continuous  
CAPS= Cavity Attenuated Phase Shift  
BS= Broadband Spectroscopy

Monitor Designation

PRI= Primary  
QAC= Collocated

Network Affiliation

BG= Border Grant  
CSN STN= Trends Speciation  
CSN SU= Supplemental Speciation  
NATTS= National Air Toxics Trends Stations  
NCORE= National Core Multi-pollutants  
NR= Near-road  
PAMS= Photochemical Assessment Monitoring

Spatial Scale

MI= Micro  
MS= Middle  
NS= Neighborhood

Objective (Federal)

NAAQS= Suitable for NAAQS comparison  
Research= Research support  
PI= Public Information  
N/A= Not Applicable  
O= Other



**Section 2.1.2 Overview of the Gaseous Pollutant Monitoring Network**

Table 2-3 below is a summary of the criteria gaseous pollutants and NO<sub>y</sub> monitoring network.

**Table 2-3 Gaseous Pollutants Monitoring Network**

Abbreviation	ALP	CMP	CVA	LES		KVR	DVN	RCD	SES
Name	Alpine	Camp Pendleton	Chula Vista	Lexington Elementary School		Kearny Villa Rd.	Donovan	Rancho Carmel Dr.	Sherman Elementary School
AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1022		06-073-1016	06-073-1014	06-073-1017	06-073-1026
O <sub>3</sub>	Monitor Type	SLAMS	SLAMS	SLAMS		SLAMS	SLAMS		SLAMS
	Method	UV	UV	UV		UV	UV		UV
	Affiliation	Not Applicable	Not Applicable	Not Applicable		PAMS, Ncore	Not Applicable	Not Applicable	Not Applicable
	Spatial Scale	US	NS	NS		NS	NS		NS
	Site Type	HC	PE	PE		PE	PE		PE
	Objective (Federal)	PI, NAAQS	PI, NAAQS	PI, NAAQS		PI, NAAQS	PI, NAAQS		PI, NAAQS
	Equipment	Thermo 49i	Thermo 49i	Thermo 49i		Thermo 49i	Thermo 49i		Thermo 49i
NO <sub>2</sub> & NO <sub>y</sub>	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Method	CAPS	CAPS	CAPS	CL	CL	CL	CL	CAPS
	Affiliation	Not Applicable	Not Applicable	Not Applicable		PAMS, Ncore	Not Applicable	Not Applicable	NA
	Spatial Scale	NS	NS	NS		NS	NS	NS	NS
	Site Type	PE	PE	PE		PE	PE	HC	PE
	Objective (Federal)	PI, NAAQS	PI, NAAQS	PI, NAAQS		PL Research	PI, Research	PI, NAAQS	PI, NAAQS
	Equipment	Teledyne T500U	Teledyne T500U	Teledyne T500U		Teledyne T500U	Thermo 42i-y	Thermo 42i	Thermo 42i
CO	Monitor Type			SLAMS				SLAMS	
	Method			IR				IR	
	Affiliation			Ncore				Not Applicable	
	Spatial Scale			NS				NS	
	Site Type			PE				PE	
	Objective (Federal)			PI, NAAQS				PI, NAAQS	
	Equipment			Thermo, 48i-TLE				Thermo, 48i-TLE	
SO <sub>2</sub>	Monitor Type			SLAMS					
	Method			FL					
	Affiliation			Ncore					
	Spatial Scale			NS					
	Site Type			PE					
	Objective (Federal)			PI, NAAQS					
	Equipment			Thermo 43i-TLE					



**Section 2.1.3 Overview of the Pb-TSP Sampling Network**

Table 2-4 below is a summary of the lead particulates sampling network (regulatory method only).

**Table 2-4 Lead Sampling Network**

Abbreviation	CRQ		
Name	Palomar Airport		
AQS ID	06-073-1023		
Lead	Monitor Type	SLAMS	SLAMS
	Designation	O	QAC
	Method	HV	HV
	Affiliation	Not Applicable	Not Applicable
	Spatial Scale	MI	MI
	Site Type	SO	QA
	Objective (Federal)	NAAQS	NAAQS
	Analysis	APCD	APCD
	Frequency	1:6	1:6
	Equipment	Tisch TE-5170BLVFC+	Tisch TE-5170BLVFC+





**Section 2.1.5 Overview of the PM<sub>10</sub> Sampling Network**

Table 2-6 below is a summary of the PM<sub>10</sub> sampling network.

**Note:** The T640x analyzers were installed in 2022. The start dates are as follows, Alpine: 9/8/2022, Camp Pendleton: 8/30/2022, Lexington Elementary School: 8/11/2022, Donovan: 8/2/2022, Sherman Elementary School 8/11/2022.

**Table 2-6 PM<sub>10</sub> Sampling Network**

Abbreviation	ALP	CMP	CVA	DVN			LES		SES	
Name	Alpine	Camp Pendleton	Chula Vista	Donovan			Lexington Elementary School		Sherman Elementary School	
AQS ID	06-0731006	06-073-1008	06-073-0001	06-073-1014			06-073-1022		06-073-1026	
PM <sub>10</sub>	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	
	Designation	O	O	O	O	QAC	QAC	O	O	O
	Method	BS	BS	SQ	SQ	SQ	SQ	SQ	BS	BS
	Affiliation	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Ncore	Ncore	Not Applicable
	Spatial Scale	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Site Type	PE	PE	PE	HC	PE	PE	PE	PE	PE
	Objective (Federal)	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS
	Frequency	7/24	7/24	1:6	1:6	1:6	7/24	1:6	7/24	7/24
	Equipment	Teledyne T640x	Teledyne T640x	Met One E-SEQ-FRM w/o VSCC	Met One E-SEQ-FRM w/o VSCC	Met One E-SEQ-FRM w/o VSCC	Teledyne T640x	Met One E-SEQ-FRM w/o VSCC	Teledyne T640x	Teledyne T640x



**Section 2.1.6 Overview of the PAMS Network**

Table 2-7 below is a summary of the Photochemical Assessment Monitoring Stations (PAMS) network.

**Table 2-7 PAMS Sampling Network**

Abbreviation	LES			
Name	Lexington			
AQS ID	06-073-1022			
PAMS	Monitor Type	SLAMS	SLAMS	SLAMS
	Method	Auto	Cartridges	Cartridges
	Affiliation	PAMS	PAMS	PAMS
	Spatial Scale	NS	NS	NS
	Site Type	PE	PE	PE
	Objective (Federal)	Research	Research	Research
	Analysis By	APCD	APCD	APCD
	Frequency	24/7	1:3	1:6
	Equipment	Agilent GCFID / Markes	Atec 8000	Atec 8000



### **Section 2.2 Summary of the Minimum Monitoring Requirements for the SDAB**

The EPA regulations specify the minimum number of sites at which State and Local air agencies must deploy monitors. The State and Local agencies generally find they need to deploy more monitors than are minimally required to fulfill State and Local purposes for monitoring. For example, often California air quality standards are more stringent than National standards, so many areas need more monitors than required by the EPA to show compliance with both State and National standards.

For pollutants monitoring, the minimum requirements for the number of monitors are in the 40 CFR 58, Appendix D “Network Design Criteria for Ambient Air Quality Monitoring”. Each pollutant or monitoring program has different requirements for determining the minimum number of monitors needed for a Metropolitan Statistical Area (MSA) and the requirements can change yearly. The County of San Diego encompasses the San Diego County air basin and part of the Salton Sea air basin, as outlined by the California Air Resources Board. Some pollutants have additional monitoring requirements associated with them, e.g. PM<sub>2.5</sub> monitoring has requirements for continuous and sequential monitors. This section summarizes the minimum monitoring requirements from the criteria pollutant chapters in this report. For greater detail, refer to the specific pollutant’s chapter.

Note: when the number of monitors required is based on the MSA population, it is taken from the latest U.S. Census. In the non-Census years, the MSA population is extrapolated by the San Diego Association of Governments (SANDAG) and that number is used by the District.

The U.S. EPA regulations specify the minimum number of samplers and monitors (also referred to as analyzers) needed for ambient air monitoring, including those required for collocation. These numbers vary annually, by program, and by within each pollutant. Table 2-8 summarizes these totals listed in the subsequent chapters. Much of this equipment overlaps and can serve multiple functions and/or programs. For example, there are two different requirements for the NO<sub>y</sub> analyzer: one for the PAMS program and one for the Ncore program. These dual requirements are listed in Table 2-8, but the details allowing for one NO<sub>y</sub> analyzer to be used for both programs are listed in the NO<sub>2</sub> chapter and this is true for the other parameters as well.





**Table 2-8 Summary of Minimum Monitoring Requirements**

Parameter	Requirements for Monitors/Samplers for CFR Programs	Number of Equipment Required	Number of Equipment Active	Number of Equipment Needed
O <sub>3</sub>	CFR EPA Table D-2 only=	2	7	0
	Ncore & PAMS only=	1	1	0
NO <sub>2</sub> , True- NO <sub>2</sub> , NO <sub>y</sub>	Near-road=	2	1	1
	Area-Wide=	1	1	0
	Regional Administrator=	1	1	0
	PAMS true-NO <sub>2</sub> =	1	1	0
	Ncore & PAMS NO <sub>y</sub> =	1	1	0
	Near-road=	1	1	0
CO	Regional Administrator	0	0	0
	Ncore=	1	1	0
	SIP=	1	1	0
	PWEI=	1	1	0
SO <sub>2</sub>	Ncore=	1	1	0
Pb-TSP	Source (non-Airport)=	0	0	0
	Source (Airport)=	0	0	0
	Airport Study=	0	0	0
	Airport Study Exceedance=	1	1	0
	Regional Administrator=	0	0	0
	QA Collocation=	1	1	0
PM <sub>2.5</sub> Samplers	CFR EPA Table D-2 only=	3	5	0
	California Particulate Matter Network (non-microscale)=	5	4	1
	DV Maximum Concentration, 24-Hr =	1	1	0
	DV Maximum Concentration, Annual Average=	1	1	0
	Expected Maximum Concentration, 24-Hr =	1	1	0
	Expected Maximum Concentration, Annual Average=	1	1	0
	Near-road=	1	0	0
	Poor Air Quality=	1	1	0
	Ncore=	1	1	0
	QA Collocation=	1	1	0
PM <sub>2.5</sub> Continuous	Minimum number required=	2	5	0
	Minimum number of PM <sub>2.5</sub> continuous collocated with PM <sub>2.5</sub> manual=	1	1	0
	Ncore=	1	1	0
	QA collocation PM <sub>2.5</sub> continuous with PM <sub>2.5</sub> continuous=	1	0	0
PM <sub>2.5</sub> Speciation	PM <sub>2.5</sub> STN & CSN Speciation=	2	1	1
	Ncore=	1	1	0
PM <sub>10</sub> Samplers	CFR EPA Table D-2 only=	6-10	6	0
	Ncore=	1	1	0
	QA collocation	1	1	0
Ncore	PM <sub>2.5</sub> -Continuous=	1	1	0
	PM <sub>2.5</sub> -Manual (Integrated/filter-based)=	1	1	0
	PM <sub>2.5</sub> -Speciated=	1	1	0
	PM <sub>10-2.5</sub> =	1	1	0
	Ncore & PAMS O <sub>3</sub> =	1	1	0
	SO <sub>2</sub> -TLE=	1	1	0
	CO-TLE=	1	1	0
	Ncore & PAMS NO/NO <sub>y</sub> =	1	1	0
	Wind speed/Wind direction=	1	1	0
	% Relative Humidity=	1	1	0
Ambient temperature=	1	1	0	
PAMS	Hourly averaged speciated volatile organic compounds (VOCs)=	1	1	0
	Three 8-hour averaged carbonyl samples per day on a 1 in 3 day schedule =	1	1	0
	Ncore & PAMS O <sub>3</sub> =	1	1	0
	NO=	1	1	0
	True-NO <sub>2</sub> =	1	1	0
	Ncore & PAMS NO <sub>y</sub>	1	1	0
	Ncore & PAMS Hourly averaged ambient temperature=	1	1	0
	Ncore & PAMS Hourly vector-averaged wind direction=	1	1	0
	Hourly average atmospheric pressure=	1	1	0
	Ncore & PAMS Hourly averaged relative humidity=	1	1	0
	Hourly precipitation=	1	1	0
	Hourly averaged mixing-height=	1	1	0
	Hourly averaged solar radiation=	1	1	0
Hourly averaged ultraviolet radiation	1	1	0	



### **Section 2.3 Summary of Minimum Monitoring Requirements (Data)**

The EPA regulations specify, when applicable:

- how samplers, analyzers, and stations are positioned, to collect data that can be compared to the National standards (NAAQS),
- how the samplers and analyzers are checked using established EPA methodologies, and
- that this data can be legally certified.

#### **Section 2.3.1 Suitability for Comparison to the NAAQS (Data)-Criteria Pollutants**

The CFR requires that for O<sub>3</sub>, NO<sub>2</sub>, CO, SO<sub>2</sub>, Pb-TSP, PM<sub>2.5</sub>, PM<sub>10</sub> data to be used in regulatory determinations of compliance with the NAAQS, these instruments must be sited according to Federal Regulations (these requirements are listed in 1)a)i)(1)(a)(i)Appendix A:) and the sampling frequency must be in accordance with Federal regulations (sampling frequencies for each pollutant are in their respective chapters). All the District's instruments meet or exceed all minimum monitoring requirements for siting and sampling frequencies, and the data from them can be compared to the NAAQS and the data can be certified.

#### **Section 2.3.2 Quality Control/Quality Assurance (Data)-Criteria Pollutants**

All the District's O<sub>3</sub>, NO<sub>2</sub>, CO, SO<sub>2</sub>, Pb-TSP, PM<sub>2.5</sub>, PM<sub>10</sub> samplers and analyzers were calibrated, flow checked, one-point checked, internally/District-audited, and externally-NPAP & NPEP audited according to EPA methodologies and the data can be certified.

#### **Section 2.3.3 Reporting/Certifying (Data)-Criteria Pollutants**

All the ambient data from the O<sub>3</sub>, NO<sub>2</sub>, CO, SO<sub>2</sub>, Pb-TSP, PM<sub>2.5</sub>, PM<sub>10</sub> samplers and analyzers were reviewed for validity and the verified data were uploaded into EPA's AQS database quarterly.

All QA and QC reports regarding the O<sub>3</sub>, NO<sub>2</sub>, CO, SO<sub>2</sub>, Pb-TSP, PM<sub>2.5</sub>, PM<sub>10</sub> instruments were reviewed for validity and the verified data were uploaded into EPA's AQS database quarterly.

All reviewed and verified ambient data and all reviewed and verified QA/QC reports regarding the O<sub>3</sub>, NO<sub>2</sub>, CO, SO<sub>2</sub>, Pb-TSP, PM<sub>2.5</sub>, PM<sub>10</sub> instruments, were certified in a letter to the EPA Region 9 Authorities on June 2, 2023.

#### **Section 2.3.4 Unsuitability for Comparison to the NAAQS (Data)-non-Criteria Pollutants & Other**

The District analyzes for other pollutants: PM<sub>2.5</sub> (continuous) in non-FEM mode, PAMS-VOCs, PAMS-Carbonyls, and Toxics-Carbonyls. These instruments have no NAAQS to compare. All these instruments meet or exceed all minimum monitoring requirements for siting and sampling frequencies.

#### **Section 2.3.5 Quality Control/Quality Assurance (Data)-non-Criteria Pollutants & Others**

All QA/QC functions on the District's PM<sub>2.5</sub> (continuous) in non-FEM mode, PAMS-VOC, PAMS-Carbonyls, and Toxics-Carbonyls instruments met or exceeded EPA requirements.

#### **Section 2.3.6 Reporting/Certifying (Data)-non-Criteria Pollutants & Others**

All the data from the PAMS-VOC, PAMS-Carbonyls, and Toxics-Carbonyls instruments were reviewed for validity and the verified data were uploaded into EPA's AQS. The verified data were uploaded to the EPA's AQS database. This data is non-certifiable and is not included in the annual Data Certification Report.



## **Section 2.4 Recent Planned and Unplanned Changes to the Network**

The EPA Region 9 governing authority approves the District's distribution of monitors and the location of the collocated sites for compliance with Federal regulations. Any station or equipment changes will be undertaken in partnership and advisement with the EPA (and CARB, when applicable). Before any SLAMS monitor is decommissioned, the District will follow the procedures listed in 40 CFR Part 58.14, "System Modifications" and any proposed changes to the air monitoring network will be documented in the Annual Network Report. The District will provide a minimum 30-day period for public review, prior to any change, when possible. If a station or analyzer is to relocate, parallel sampling will be undertaken, when possible.

Changes to the monitoring network may occur outside the Annual Network Report approval and the planning process, due to unforeseen circumstances such as eviction, safety concerns, etc. Any changes due to circumstances beyond the District's control will be communicated in writing to the EPA Regional Authority and identified in the subsequent Annual Network Report.

**Note:** all listed timelines for construction activities are an estimate, as all construction activities require city permitting, construction work goes out to the competitive bid process, and these are handled by the County Department of General Services and the District has no control over these timelines.

### **Section 2.4.1 Station Changes (Relocations, Shutdowns, and Additions)**

The section discusses all the station changes in the network (planned and unplanned).

#### **Section 2.4.1.1 Relocations**

- **Escondido** – Operational timeline – TBD.

In 2015, the District was evicted from the Escondido site. During the set-up of the new site, the County announced (in March 2022) the plan for a new high density, affordable housing project to be built on the County land adjacent to the monitoring station. The project would impact the air monitoring at the site. The District will locate an alternative location (TBD) in the Escondido area for the air monitoring station and meet the EPA siting requirements. Escondido is an important site for our regional Air Monitoring Network and provides valuable air pollution data for our inland North County. An estimated timeline for the new Escondido site is TBD.

- **San Ysidro (SAY) PM<sub>2.5</sub>** – Operational timeline – 2023

Construction to install Shelter to be performed in early 2023. Once completed, it will serve multiple capacities/programs: The District provides monthly updates to the EPA Grant Office on the status of the completion of the Shelter.

- EPA Border 2025 program (PM<sub>2.5</sub> continuous and Black Carbon continuous analyzers).
- EPA NO<sub>2</sub> Near-road program for the location of the 2<sup>nd</sup> required site (true-NO<sub>2</sub> analyzer)
- Community Air Monitoring (State AB 617) for Environmental Justice monitoring.

- **Camp Pendleton** – Operational timeline unknown

This station needs to be relocated (EPA R9 2017 TSA recommendation) elsewhere in the north coastal region. Data is often affected by emissions from the upwind motor pool. A weak node in the power grid, causes frequent power outages which have cascading ramifications: loss of data; equipment repairs; additional field QA/QC; etc. The District has significant site/base access complications. Once a new location is identified, the District will submit a 58.14 request to EPA to the EPA R9 Authorities for approval. All station relocations must be approved by EPA first. The District has no plans of relocating Camp Pendleton in calendar year 2023.



### **Section 2.4.1.2 Station Shutdowns (Temporary or Permanent):**

- **Chula Vista Temporary Shutdown** –Temporary Shutdown timeline – TBD  
The entire site will need to be demolished and rebuilt. The District does not plan on discontinuing monitoring at the station in calendar year 2023. The District will seek formal approval with EPA R9 Authorities before any action is taken.

### **Section 2.4.1.3 Station Additions**

- **Near the Otay Mesa Point-of-Entry (POE)** – Operational timeline – TBD  
The EPA Border 2025 Authorities have requested that PM<sub>2.5</sub>-continuous and Black Carbon-continuous analyzers be located near the Otay Mesa POE. The District has received landlord approval to deploy a sampling platform at the State of California Highway Patrol Truck Safety Inspection facility along east Via de la Amistad. As with the San Ysidro site, this location will serve multiple purposes:
  - EPA Border 2025 program (PM<sub>2.5</sub> continuous and Black Carbon continuous analyzers).
  - Ambient pollutants (exact parameters unknown)
  - Community Air Monitoring (State AB 617) program (exact parameters unknown)

### **Section 2.4.2 Monitor/Sampler/Equipment Replacements, Shutdowns, and Additions**

The section discusses the monitor/sampler changes in the network with respect to the pollutant or program.

#### **Section 2.4.2.1 Replacements**

- **Continuous Particulate Matter (PM) Analyzers** – Operational timeline –2023.  
In 2019, the District recorded a maximum PM<sub>10</sub> concentration of 199 µg/m<sup>3</sup>. This has triggered the requirement for 6 to 10 monitors. The District operated sequential PM<sub>10</sub> monitors at four sites. This included Otay Mesa-Donovan, Lexington Elementary School in El Cajon and Chula Vista. In 2022, Continuous Federal Equivalence Method (FEM) Particulate Matter (PM<sub>2.5</sub> and PM<sub>10</sub>) Analyzers (T640x) were deployed at Camp Pendleton, Alpine, Otay Mesa-Donovan, Sherman Elementary School, and Lexington Elementary School. The District was awarded grant funding in 2022, as part of the American Rescue Plan (ARP), to purchase FEM analyzers to provide continuous PM data. The addition of the T640x analyzers (to measure both PM<sub>2.5</sub> & PM<sub>10</sub>) fulfills the requirement for a minimum of six analyzers for PM<sub>10</sub> monitoring. In 2023, the District will deploy additional T640x analyzers at Chula Vista, Rancho Carmel Dr. (Near-road site), Kearny Villa Road, and San Ysidro (2<sup>nd</sup> Near-road site). The District is also researching the PM<sub>1.0</sub> reporting option on the analyzer.

#### **Section 2.4.2.2 Shutdowns**

- **Pb-TSP at McClellan Palomar Airport (CRQ)** – Shutdown timeline is unknown (EPA dependent)  
All the measured concentrations at the Palomar Airport location are well below 50% of the NAAQS. In 2017 the District petitioned the EPA to decommission lead sampling at this airport. EPA is not approving the previously requested discontinuation of Pb monitoring at Palomar Airport, but EPA Region 9 will continue to work with EPA Headquarters to determine discontinuation eligibility.

#### **Section 2.4.2.3 Additions**

- **Ozone Field Transfer Standards** – Operational timeline – TBD.  
The District will add a second ozone analyzer to every station that measures for ozone. It will serve as an ozone transfer standard, so the ozone nightly automated QC checks can be official/Level 3 at all ozone sampling locations.



#### **Section 2.4.2.4 Other**

- **Calibration & Audit Schedule** – Operational timeline TBD
- The District is adding the second near-road monitoring site in San Ysidro in 2023 and will incorporate scheduled calibrations and audits to the District schedule. Two additional stations (Escondido, Otay Mesa-CHP) in TBD will also need to be included at a future date. In addition, an independent QA section will be incorporated into the District to satisfy EPA requirements. Audits will be scheduled to be in accordance with EPA requirements detailed in the Code of Federal Regulations, Title 40 pertaining to ambient air monitoring programs. **Electronic Field Logbooks** – Operational timeline – TBD. The District is in the process of converting to a cloud-based electronic logbook for air monitoring programs and duties performed at air monitoring stations.

#### **Section 2.5 List of Public Comments to this Report and the District Response(s)**

This section will address comments from the public regarding inquires to this report. Questions that are emailed to the District are included below with a response. The Draft version of the 2022 Annual Network Report was posted on May 23, 2023. It was posted for 30 days to allow for public comment. The final draft of the 2022 Annual Network Report was submitted by July 1, 2023.

**Note:** No questions were submitted to the District for the 2022 Annual Network Report.

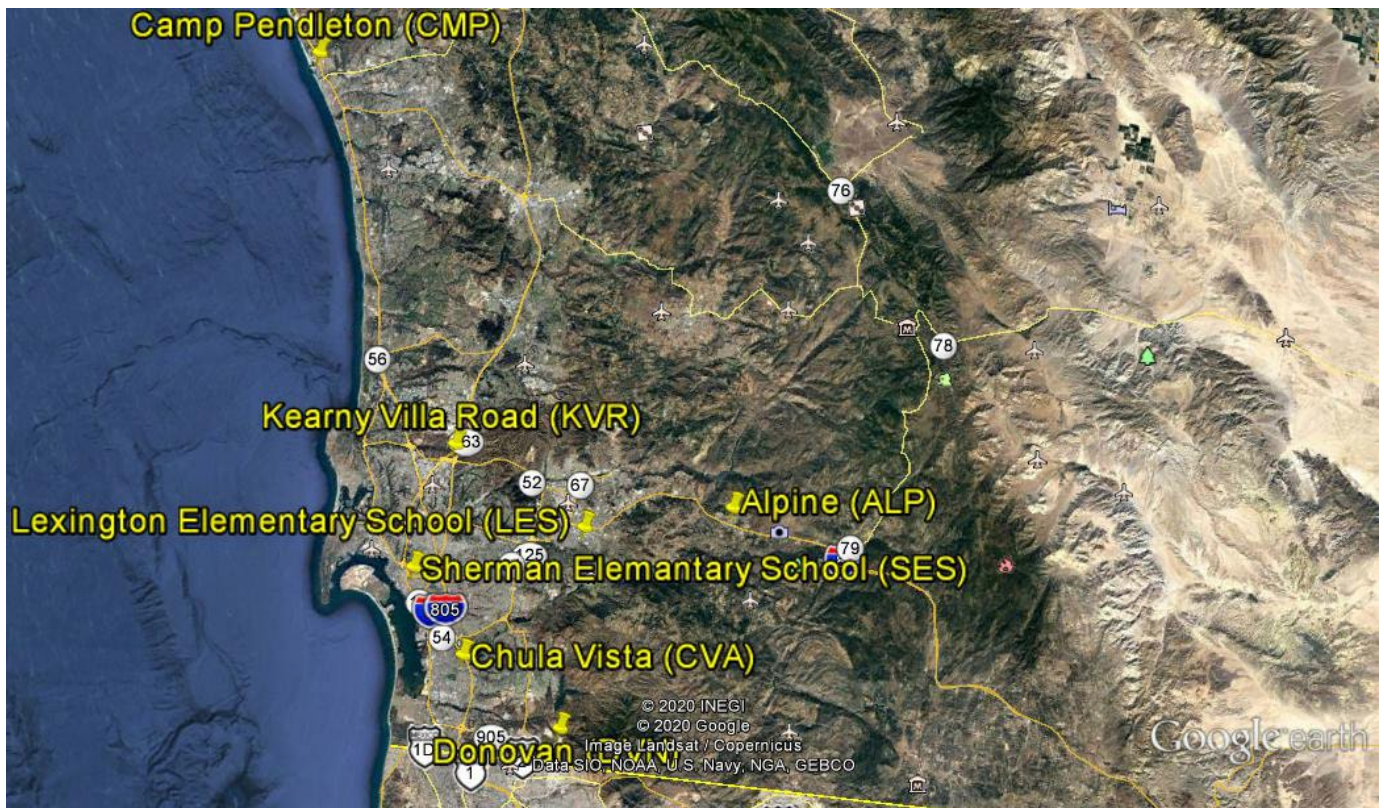


## Chapter 3: Ozone (O<sub>3</sub>)

### Section 3.1 Ozone Introduction

Ambient level Ozone was sampled on a continuous (7/24) basis at locations throughout the SDAB (**Figure 3.1**) and referenced to the ozone standard of the year (Table 3-1). The sampling equipment are listed in Table 3-2. Please note:

- In 2015, the District was evicted from the Escondido site. The District is seeking an alternative location (TBD) for the air monitoring station in Escondido.



**Figure 3.1 Ozone Network Map**

**Table 3-1 Ozone State and Federal Standards for the Year**

Pollutant	Averaging Time	Ambient Air Quality Standards		
		California Standards Concentration	National Standards	
			Primary	Secondary
Ozone (O <sub>3</sub> )	1 hour	0.09 ppm (180 µg/m <sup>3</sup> )	Not Applicable	Not Applicable
	8 hour	0.07 ppm (137 µg/m <sup>3</sup> )	0.07 ppm (137 µg/m <sup>3</sup> )	0.07 ppm (137 µg/m <sup>3</sup> )



**Table 3-2 Ozone Monitoring Network**

Abbreviation	ALP	CMP	CVA	LES	KVR	DVN	SES
Name	Alpine	Camp Pendleton	Chula Vista	Lexington Elementary School	Kearny Villa Rd.	Donovan	Sherman Elementary School
AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1022	06-073-1016	06-073-1014	06-073-1026
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Method	UV	UV	UV	UV	UV	UV	UV
Affiliation	Not Applicable	Not Applicable	Not Applicable	PAMS, Ncore	Not Applicable	Not Applicable	Not Applicable
Spatial Scale	US	NS	NS	NS	NS	NS	NS
Site Type	HC	PE	PE	PE	PE	PE	PE
Objective (Federal)	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS
Equipment	Thermo 49i	Thermo 49i	Thermo 49i	Thermo 49i	Thermo 49i	Thermo 49i	Thermo 49i

**Glossary of Terms**

Monitor Type

E= EPA  
 O= Other  
 SLAMS= State & Local monitoring station  
 SPM= Special purpose monitor  
 CATAC= California Toxics Monitoring

Site Type

HC= Highest concentration  
 PE= Population exposure  
 SO= Source oriented  
 UPBD= Upwind background  
 G/B= General/Background  
 RT= Regional Transport  
 WRI= Welfare related impacts  
 QA= Quality assurance

Method (Sampling/Analysis)

CL= Chemiluminescence  
 CT= Low Volume, size selective inlet, continuous  
 FL= Fluorescence  
 HV= High volume  
 IR= Nondispersive infrared  
 SI= High volume, size selective inlet  
 SP= Low volume, size selective inlet, speciated  
 SQ= Low volume, size selective inlet, sequential  
 UV= Ultraviolet absorption  
 Canister= Evacuated stainless steel canisters  
 Cartridges= Di-nitrophenylhydrazine cartridges  
 FSL= Fused Silica Lined  
 Filter= Quartz filters  
 Auto= GCFID continuous

Monitor Designation

PRI= Primary  
 QAC= Collocated

Network Affiliation

BG= Border Grant  
 CSN STN= Trends Speciation  
 CSN SU= Supplemental Speciation  
 NATTS= National Air Toxics Trends Stations  
 NCORE= National Core Multi-pollutants  
 NR= Near-road  
 PAMS= Photochemical Assessment Monitoring

Spatial Scale

MI= Micro  
 MS= Middle  
 NS= Neighborhood

Objective (Federal)

NAAQS= Suitable for NAAQS comparison  
 Research= Research support  
 PI= Public Information  
 N/A= Not Applicable  
 O= Other



**Section 3.2 Ozone Minimum Monitoring Requirements**

The District is federally mandated to monitor O<sub>3</sub> levels in accordance with the CFR. This section will state the different monitoring requirements for each program, e.g. ambient, PAMS, Ncore, etc. that the District operates and references therein (Note: only the passages applicable/informative to the District are referenced). These monitors can serve as fulfilling other O<sub>3</sub> network requirements, e.g. ambient O<sub>3</sub> monitor can fulfill a PAMS O<sub>3</sub> monitor requirement.

The District meets or exceeds all minimum requirements for O<sub>3</sub> monitoring for all programs.

**Section 3.2.1 Ozone Minimum Monitoring Requirements-Design Value Criteria (8-Hr)**

The District is required to operate a minimum number of O<sub>3</sub> monitors irrespective of O<sub>3</sub> network affiliations. To ascertain the minimum number of monitors required, the Design Value (DV) must be calculated. The DV is derived by averaging the 4<sup>th</sup> highest for the last three years. Table 3-3 lists these DV requirements.

*4.1(a) Ozone (O<sub>3</sub>) Design Criteria<sup>1</sup>*

*...local agencies must operate O<sub>3</sub> sites for various locations depending upon area size (in terms of population and geographic characteristics) and typical peak concentrations (expressed in percentages below, or near the O<sub>3</sub> NAAQS). Specific SLAMS O<sub>3</sub> site minimum requirements are included in Table D-2 of this appendix. The Ncore sites are expected to complement the O<sub>3</sub> data collection that takes place at single-pollutant SLAMS sites, and both types of sites can be used to meet the network minimum requirements. The total number of O<sub>3</sub> sites needed to support the basic monitoring objectives of public data reporting, air quality mapping, compliance, and understanding O<sub>3</sub>-related atmospheric processes will include more sites than these minimum numbers required in Table D-2 of this appendix....*

*Table D-2 of Appendix D to Part 58— SLAMS Minimum O<sub>3</sub> Monitoring Requirements*

<i>MSA population</i>	<i>Most recent 3-year design value concentrations ≥85% of any O<sub>3</sub> NAAQS</i>	<i>Most recent 3-year design value concentrations &lt;85% of any O<sub>3</sub> NAAQS</i>
<i>350,000 - &lt; 4 million</i>	<i>2</i>	<i>1</i>

**Table 3-3 Ozone Minimum Monitoring Requirements-Design Value Criteria (8-Hr)**

What is the Maximum 8-Hr Design Value?  <b>2020-2022</b> (ppm)	Is the Maximum 8-Hr Design Value ≥ 85% of the NAAQS? <b>2020-2022</b> (yes/no)	Is the Maximum 8-Hr Design Value < 85% of the NAAQS? <b>2020-2022</b> (yes/no)	Does the Maximum 8-Hr Design Value Meet the NAAQS? <b>2020-2022</b> (yes/no)	MSA & County  (name)	Population Estimated from 2020 Census <sup>2</sup>  (#)	Number of Monitors Required  (#)	Number of Monitors Active  (#)	Number of Monitors Needed  (#)
0.079	yes	no	no	San Diego	3.3 Million	2	7	0

<sup>1</sup>(2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.1 “Ozone (O<sub>3</sub>) Design Criteria”, subsection 4.1(a), list the requirements needed to fulfill the Ozone (O<sub>3</sub>) Design Criteria.

<sup>2</sup> Based on the official U.S Census statistics.





**Section 3.2.2 Ozone Minimum Monitoring Requirements-Maximum Concentration Site Design Value**

All Districts are required to categorize at least one monitor/sampling site in the air basin as an area of maximum concentration. A concentration is calculated for this site. The DV is derived by averaging the 4<sup>th</sup> highest for the last three years. Table 3-4 lists these maximum concentrations site requirements.

*4.1(b) Ozone (O<sub>3</sub>) Design Criteria<sup>3</sup>*

*Within an O<sub>3</sub> network, at least one O<sub>3</sub> site for each MSA, or CSA if multiple MSAs are involved, must be designed to record the maximum concentration for that particular metropolitan area...*

**Table 3-4 Ozone Minimum Monitoring Requirements-Maximum Concentration Site Design Value**

Maximum 8-Hr Design Value Site <b>2020-2022</b> (name)	Maximum 8-Hr Design Value Concentration <b>2020-2022</b> (ppm)
Alpine (ALP) 06-073-1006	0.079

**Section 3.2.3 Ozone Minimum Monitoring Requirements-Ozone Season**

All Districts are required to sample for ozone during ozone season as defined by Table D-3. Table 3-5 lists the ozone sampling season for the SDAB.

*4.1(i) Ozone (O<sub>3</sub>) Design Criteria<sup>4</sup>*

*Ozone monitoring is required at SLAMS monitoring sites only during the seasons of the year that are conducive to O<sub>3</sub> formation (i.e., “ozone season”) as described below in Table D-3... Ozone monitors at Ncore stations are required to be operated year-round (January to December).*

*Table D-3 to Appendix D of part 58. Ozone Monitoring Season by State*

State	Begin Month	End Month
California	January	December

**Table 3-5 Ozone Minimum Monitoring Requirements-Ozone Sampling Season**

Required Ozone Sampling Season (range)	Active Ozone Sampling Season (range)	Does Active Ozone Sampling Season Meet Requirements? (yes/no)
January-December (annually)	January-December (annually)	yes

<sup>3</sup>(2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.1 “Ozone (O<sub>3</sub>) Design Criteria”, subsection 4.1(b), list the requirements needed to fulfill the Ozone (O<sub>3</sub>) Design Criteria.

<sup>4</sup>(2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.1 “Ozone (O<sub>3</sub>) Design Criteria”, subsection 4.1(i), list the requirements needed to fulfill the Ozone (O<sub>3</sub>) Design Criteria.



**Section 3.2.4 Ozone Minimum Monitoring Requirements-Ncore & PAMS**

The District is required to operate Ncore and Photochemical Assessment Monitoring Stations (PAMS) sites. There are several associated requirements to operate these sites. One of the overlapping requirements is to operate O<sub>3</sub> monitors. Table 3-6 lists Ozone (O<sub>3</sub>) Monitoring requirements.

*Ncore*

*3. Design Criteria for Ncore Sites<sup>5</sup>*

*(b) The Ncore sites must measure, at a minimum, PM<sub>2.5</sub> particle mass using continuous and integrated/filter-based samplers, speciated PM<sub>2.5</sub>, PM<sub>10-2.5</sub> particle mass, O<sub>3</sub>, SO<sub>2</sub>, CO, NO/NO<sub>x</sub>, wind speed, wind direction, relative humidity, and ambient temperature.*

*PAMS*

*5 Network Design for Photochemical Assessment Monitoring Stations (PAMS) and Enhanced Ozone Monitoring<sup>6</sup>*

*(a) State and local monitoring agencies are required to collect and report PAMS measurements at each Ncore Site...*

*(b)... PAMS measurements include: ... (3) Hourly averaged O<sub>3</sub>;*

**Table 3-6 Ozone Minimum Monitoring Requirements-PAMS**

Number of O <sub>3</sub> Monitors Required at Ncore & PAMS Sites (#)	Number of O <sub>3</sub> Monitors Active at Ncore & PAMS Sites (#)	Number of O <sub>3</sub> Monitors Needed at PAMS & Ncore Sites (#)	Location of O <sub>3</sub> Monitors at Ncore & PAMS Sites (name)
1	1	0	Lexington Elementary School (LES) 06-073-1022

**Section 3.2.5 Ozone Minimum Monitoring Requirements-Summary**

Table 3-7 summarizes all the O<sub>3</sub> minimum monitoring requirements from Sections 3.2.1 to 3.2.4.

**Table 3-7 Ozone Minimum Monitoring Requirements-Summary**

Requirements for O <sub>3</sub> Monitors for CFR Programs (name)	Number of O <sub>3</sub> Monitors Required (#)	Number of O <sub>3</sub> Monitors Active (#)	Number of O <sub>3</sub> Monitors Needed (#)
CFR EPA Table D-2 only=	2	7	0
Ncore & PAMS only=	1	1	0

**Section 3.3 Ozone Suitability for Comparison to the NAAQS**

The CFR requires that for O<sub>3</sub> data to be used in regulatory determinations of compliance with the O<sub>3</sub> NAAQS, the O<sub>3</sub> monitors must be sited according to Federal Regulations<sup>7</sup> and the sampling frequency

<sup>5</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 3(b), “Network Design for NCore Sites.

<sup>6</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 5(a)-(b)(3), “Network Design for Photochemical Assessment Monitoring Stations (PAMS)”, -subpart (3) “Ozone Monitoring Requirements”

<sup>7</sup> (2021) 40 CFR Part 58, Appendix E, “Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring” and Table E-4.



must be in accordance with Federal Regulations.<sup>8</sup> All District O<sub>3</sub> monitors meet or exceed all minimum monitoring requirements and sampling frequencies, as to be able to be compared to the NAAQS. Table 3-8 summarizes these requirements.

**Table 3-8 Ozone Suitability for Comparison to the NAAQS- Sampling Equipment**

Parameter	Code	Unit	Code	Duration	Code	Equipment	Method	Code	Sampling Frequency	Method ID	
Ozone	O <sub>3</sub>	44201	ppm	007	1-Hr	1	Thermo 49 series	Ultraviolet absorption	047	7/24	EQOA-0880-047

### **Section 3.4 Ozone Concentrations for San Diego**

Over the last few years, the ozone concentration has been fluctuating. This section will illustrate the different metrics for comparison.

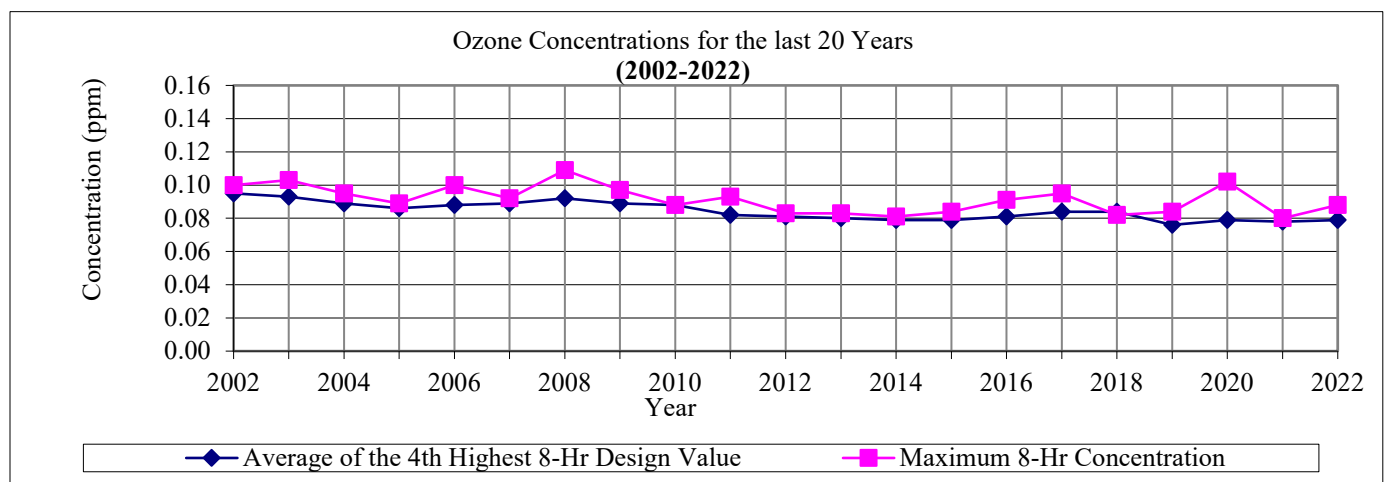
#### **Section 3.4.1 Ozone Concentrations for San Diego-for the Last 20 Years**

San Diego has realized a significant decrease in the 3-yr average of the exceedance days for ozone and has seen a sharp decrease in its 8-hour Design Value (3-year average of the 4<sup>th</sup> highest 8-hour concentration) since 1990 (Table 3-9 and Figure 3.2).

Note: “Days Above the National 8-Hr Standard” in Table 3-9 reflect the ozone standard for that year.

**Table 3-9 Ozone Concentrations for San Diego-for the Last 20 Years, 2002-2022**

Design Value (ppm)	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Design Value (ppm)	0.095	0.093	0.089	0.086	0.088	0.089	0.092	0.089	0.088	0.082	0.081	0.080	0.079	0.079	0.081	0.084	0.084	0.082	0.079	0.078	0.079
Maximum 8-Hr Concentration (ppm)	0.100	0.103	0.095	0.089	0.100	0.092	0.109	0.097	0.088	0.093	0.083	0.083	0.081	0.084	0.091	0.095	0.082	0.084	0.102	0.080	0.088
Days above the National 8-Hr Standard	31	38	23	24	38	27	35	24	14	10	10	7	12	13	13	54	23	19	33	16	24



**Figure 3.2 Ozone Concentrations for San Diego-for the Last 20 Years Graph**

<sup>8</sup> (2021) 40 CFR Part 58, Subpart B, Section 58.12, “Operating Schedules”.



**Section 3.4.2 Ozone Concentrations for San Diego-by Site for the Year**

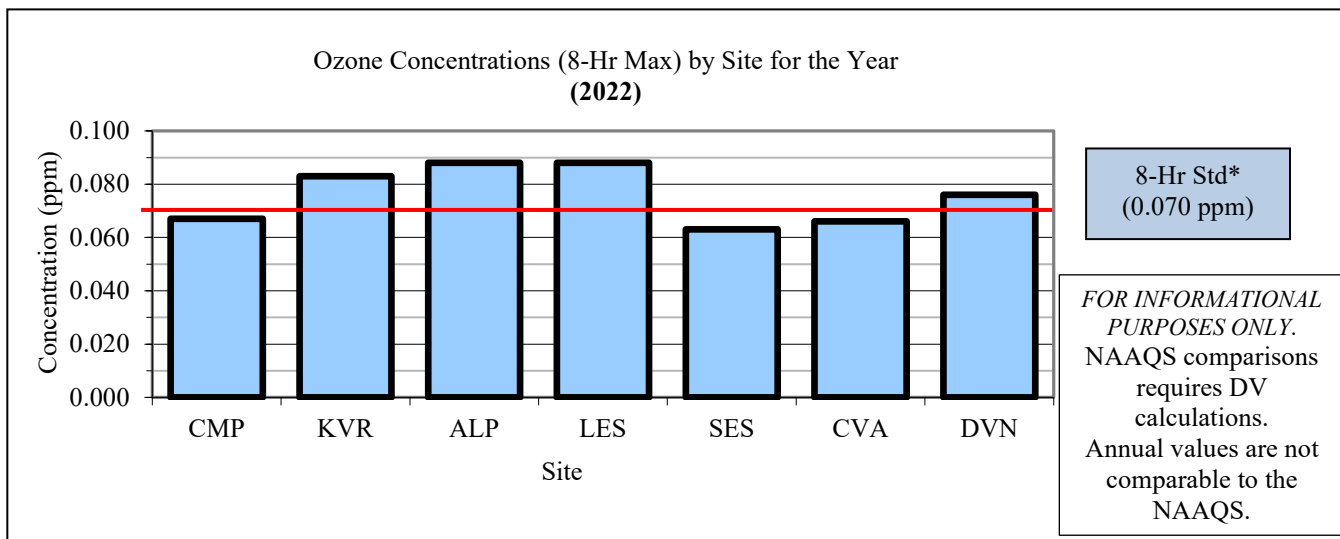
Table 3-10 lists the maximum ozone measurements for every ozone monitoring location and Figure 3.3 show the values graphically with respect to the National Standard for the year.

*FOR INFORMATIONAL PURPOSES ONLY*

NAAQS comparison requires DV calculations. Annual values are not comparable to the NAAQS

**Table 3-10 Ozone Concentrations for San Diego-by Site for the Year, 2022**

No. (#)	Site (name)	Site Abbreviation (name)	Maximum 8-Hr Concentration (ppm)	Number of Days Above the National Standard (#)	Annual Average (ppm)
1	Camp Pendleton	CMP	0.067	0	0.042
2	Kearny Villa Rd.	KVR	0.083	2	0.045
3	Alpine	ALP	0.088	24	0.054
4	Lexington Elementary School	LES	0.088	2	0.047
5	Sherman Elementary School	SES	0.063	0	0.042
6	Chula Vista	CVA	0.066	0	0.043
7	Donovan	DVN	0.076	2	0.043



**Figure 3.3 Ozone Concentrations for San Diego-by Site for the Year Graph**

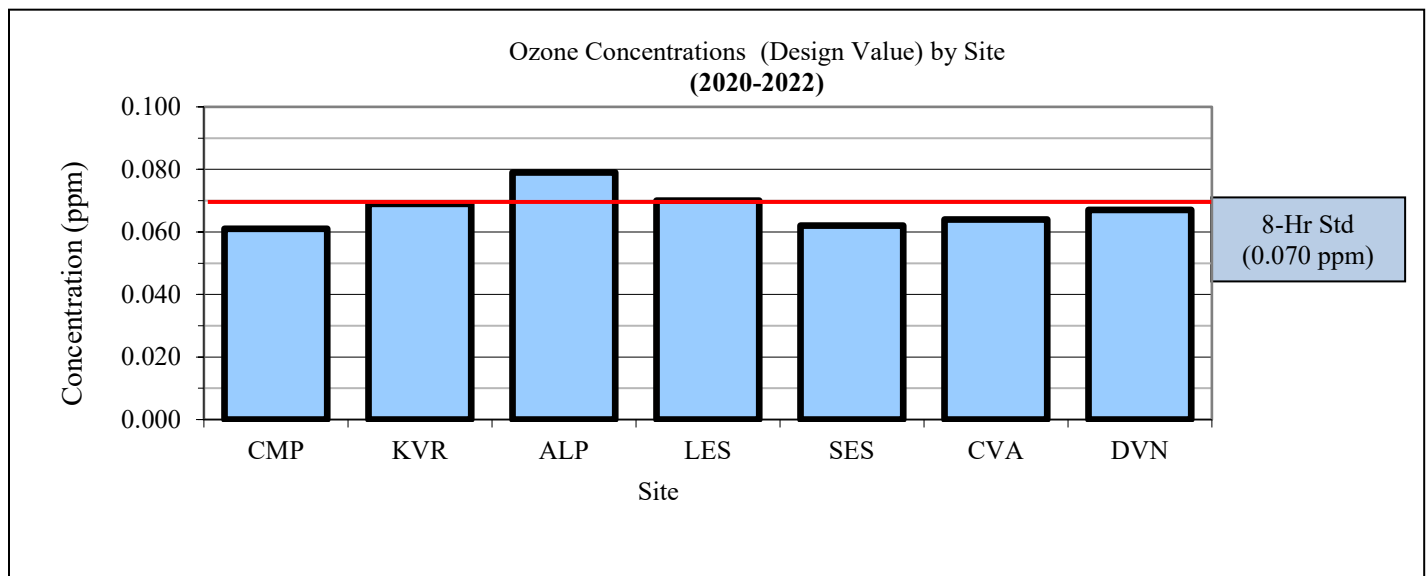


**Section 3.4.3 Ozone Concentrations for San Diego-by Site for Design Value**

Table 3-11 lists the maximum ozone measurements for every ozone monitoring location and Figure 3.4 shows the values graphically for the Design Value.

**Table 3-11 Ozone Concentrations for San Diego-by Site for Design Value, 2020-2022**

No. (#)	Site (name)	Site Abbreviation (name)	Concentration of 8-Hr Design Value (ppm)	Is the 8-Hr Design Value ≥ 85% of the NAAQS? (yes/no)	Does the 8-Hr Design Value Meet the NAAQS? (yes/no)
1	Camp Pendleton	CMP	0.061	yes	yes
2	Kearny Villa Rd.	KVR	0.069	yes	yes
3	Alpine	ALP	0.079	yes	no
4	Lexington Elementary School	LES	0.070	yes	no
5	Sherman Elementary School	SES	0.062	yes	yes
6	Chula Vista	CVA	0.064	yes	yes
7	Donovan	DVN	0.067	yes	yes



**Figure 3.4 Ozone Concentrations for San Diego-by Site for Design Value Graph**

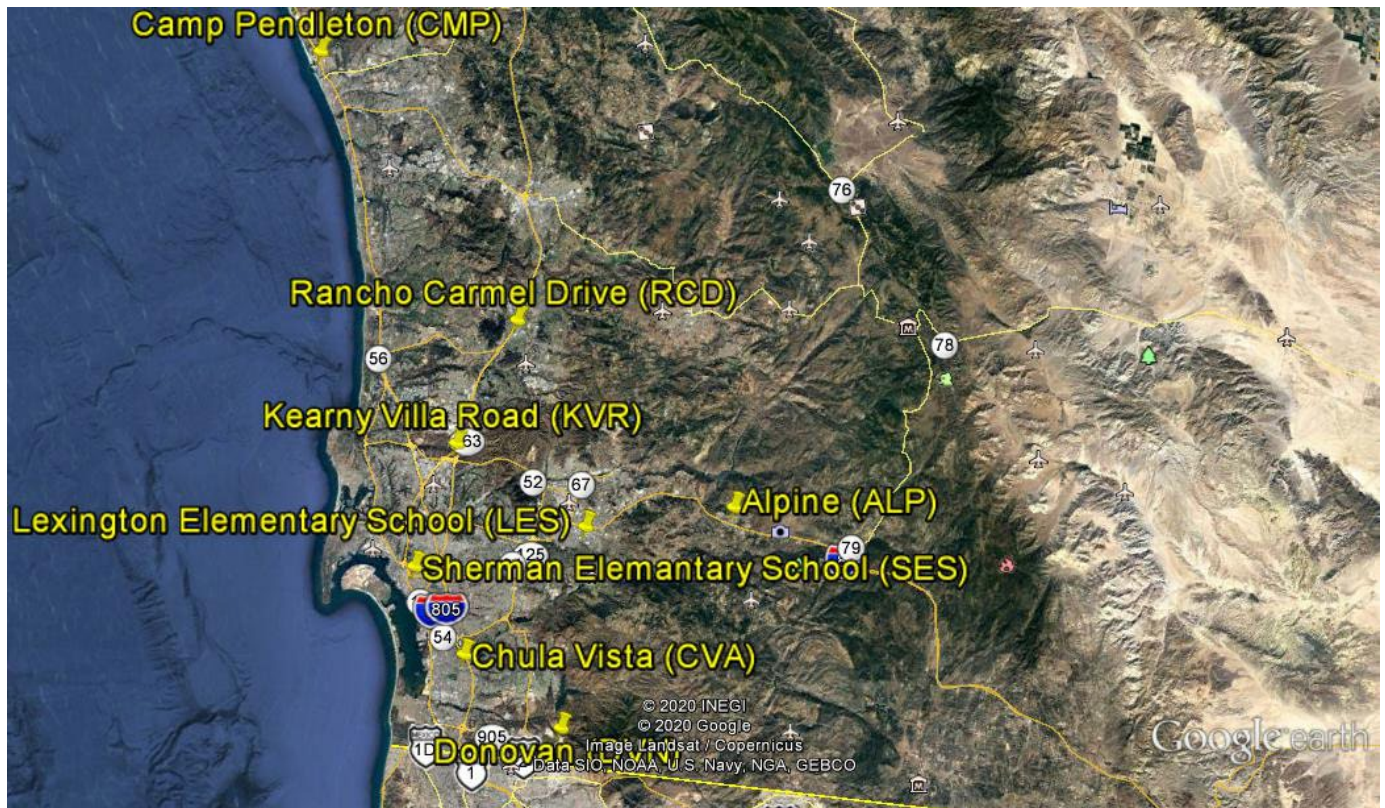


## **Chapter 4: Nitrogen Dioxide (NO<sub>2</sub>) and Reactive Oxides of Nitrogen (NO<sub>y</sub>)**

### **Section 4.1 Nitrogen Dioxide and Reactive Oxides of Nitrogen Introduction**

Ambient level nitrogen dioxide was sampled on a continuous basis at locations throughout the SDAB (Figure 4.1) and referenced to the nitrogen dioxide standards of the year (Table 4-1). The sampling equipment are listed in Table 4-2. Please note:

- In 2015, the District was evicted from the Escondido site. The District is seeking an alternative location (TBD) for the air monitoring station in Escondido.



**Figure 4.1 Nitrogen Dioxide & NO<sub>y</sub> Network Map**

**Table 4-1 Nitrogen Dioxide State and National Standards for the Year\***

Pollutant	Averaging Time	Ambient Air Quality Standards		
		California Standards	National Standards	
		Concentration	Primary	Secondary
Nitrogen Dioxide (NO <sub>2</sub> )	1 hour	0.18 ppm (339 µg/m <sup>3</sup> )	0.100 ppm (188 µg/m <sup>3</sup> )	Not Applicable
	Annual Arithmetic Mean	0.030 ppm (57 µg/m <sup>3</sup> )	0.053 ppm (137 µg/m <sup>3</sup> )	0.053 ppm (137 µg/m <sup>3</sup> )

\*The NO<sub>y</sub> analyzer is non-regulatory; therefore there are no NAAQS to compare. The NO<sub>x</sub> and NO<sub>y</sub> measurements are comparable in the SDAB.



**Table 4-2 Nitrogen Dioxide & Reactive Oxides of Nitrogen Monitoring Network**

Abbreviation	ALP	CMP	CVA	LES		KVR	DVN	RCD	SES
Name	Alpine	Camp Pendleton	Chula Vista	Lexington Elementary School		Kearny Villa Rd.	Donovan	Rancho Carmel Dr.	Sherman Elementary School
AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1022		06-073-1016	06-073-1014	06-073-1017	06-073-1026
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Designation	PRI	PRI	PRI	Not Applicable		PRI	PRI	PRI	PRI
Method	CAPS	CAPS	CAPS	CL	CAPS	CAPS	CAPS	CAPS	CAPS
Affiliation	Not Applicable	Not Applicable	Not Applicable	Ncore, PAMS	Ncore, PAMS	Not Applicable	SLAMS	NR	NR
Spatial Scale	US	NS	NS	NS	NS	NS	NS	MI	NS
Site Type	PE	PE	PE	PE	PE	PE	HC	SO	PE
Objective (Federal)	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, Research	PL, Research	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS
Equipment	Teledyne T500U	Teledyne T500U	Teledyne T500U	Thermo 42i-y	Teledyne T500U	Teledyne T500U	Teledyne T500U	Teledyne T500U	Teledyne T500U

**Glossary of Terms**

Monitor Type

E= EPA  
 O= Other  
 SLAMS= State & Local monitoring station  
 SPM= Special purpose monitor  
 CATAC= California Toxics Monitoring

Site Type

HC= Highest concentration  
 PE= Population exposure  
 SO= Source oriented  
 UPBD= Upwind background  
 G/B= General/Background  
 RT= Regional Transport  
 WRI= Welfare related impacts  
 QA= Quality assurance

Method (Sampling/Analysis)

CL= Chemiluminescence  
 CT= Low Volume, size selective inlet, continuous  
 FL= Fluorescence  
 HV= High volume  
 IR= Nondispersive infrared  
 SI= High volume, size selective inlet  
 SP= Low volume, size selective inlet, speciated  
 SQ= Low volume, size selective inlet, sequential  
 UV= Ultraviolet absorption  
 Canister= Evacuated stainless steel canisters  
 Cartridges= Di-nitrophenylhydrazine cartridges  
 FSL= Fused Silica Lined  
 Filter= Quartz filters  
 Auto= GCF ID continuous  
 CAPS=Cavity Attenuated Phase Shift

Monitor Designation

PRI=Primary  
 QAC=Collocated

Network Affiliation

BG= Border Grant  
 CSN STN= Trends Speciation  
 CSN SU= Supplemental Speciation  
 NATTS= National Air Toxics Trends Stations  
 NCORE= National Core Multi-pollutants  
 NR= Near-road  
 PAMS= Photochemical Assessment Monitoring

Spatial Scale

MI= Micro  
 MS= Middle  
 NS= Neighborhood

Objective (Federal)

NAAQS= Suitable for NAAQS comparison  
 Research= Research support  
 PI= Public Information  
 N/A= Not Applicable  
 O= Other



**Section 4.2 Nitrogen Dioxide Minimum Monitoring Requirements**

The District is federally mandated to monitor NO<sub>2</sub> levels in accordance with the CFR. This section will state the different minimum monitoring requirements for each program, e.g. ambient, Near-road, PAMS, etc., that the District operates and the references therein (Note: only the passages applicable/informative to the District are referenced). These monitors can serve to fulfill other NO<sub>2</sub> network requirements, e.g. ambient NO<sub>2</sub> monitor can fulfill a PAMS NO<sub>2</sub> monitor requirement.

The District meets or exceeds all minimum requirements for NO<sub>2</sub> monitoring for all programs except for the following:

- Establishment of the 2<sup>nd</sup> Near-road location (expected start in 2023).

**Section 4.2.1 Nitrogen Dioxide Minimum Monitoring Requirements -Near-road**

To measure concentrations for some pollutants in communities located by roadways, the EPA instituted the Near-road monitoring program. Table 4-3 lists the Near-road monitors required for the SDAB.

*4.3.2(a) Requirement for Near-road NO<sub>2</sub> Monitors<sup>9</sup>*

*Within the NO<sub>2</sub> network, there must be one microscale near-road NO<sub>2</sub> monitoring station in each CBSA with a population of 1,000,000 or more persons to monitor a location of expected maximum hourly concentrations sited near a major road with high AADT counts as specified in paragraph 4.3.2(a)(1) of this appendix. An additional near-road NO<sub>2</sub> monitoring station is required for any CBSA with a population of 2,500,000 persons or more, or in any CBSA with a population of 1,000,000 or more persons that has one or more roadway segments with 250,000 or greater AADT counts to monitor a second location of expected maximum hourly concentrations. CBSA populations shall be based on the latest available census figures.*

**Table 4-3 Nitrogen Dioxide Minimum Monitoring Requirements -Near-road**

MSA & County (name)	Population Estimated from 2020 Census <sup>10</sup> (#)	Number of NO <sub>2</sub> Near-road Monitors Required (#)	Are Additional NO <sub>2</sub> Near-road Monitors Required? (yes/no)	Number of Additional NO <sub>2</sub> Near-road Monitors Required (#)	Number of NO <sub>2</sub> Near-road Monitors Active (#)	Number of NO <sub>2</sub> Near-road Monitors Needed (#)
San Diego	3.3 Million	2	YES	1	1	1

**Section 4.2.1.1 Nitrogen Dioxide Minimum Monitoring Requirements -Near-road (first site)**

The first Near-road site must be sited in the area of the highest traffic count, adjusted for High Density (FE=Fleet Equivalency) vehicles. The first NO<sub>2</sub> near-road location is on Rancho Carmel Drive (RCD).

**Section 4.2.1.2 Nitrogen Dioxide Minimum Monitoring Requirements -Near-road (second site)**

The criteria for the second Near-road location are more flexible than the criteria for the first site. The second site is not necessarily the next location according to FE ranking. The EPA prescribes that the second site be selected so that it is differentiated from the first by one or more factors affecting traffic emissions and/or pollution transport (e.g. fleet mix, terrain, geographic area, different roadway, public health, etc). The District has successfully located an area near the San Ysidro Point-of-Entry (POE) at

<sup>9</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.3 “Nitrogen Dioxide (NO<sub>2</sub>) Design Criteria”, subpart 4.3.2 “Requirement for Near-road monitors”

<sup>10</sup> Based on initial counts of official U.S Census statistics.





Fire Station #29 (at Interstate-5 and Cottonwood Road), near an Environmental Justice community. This site has been:

- Fully endorsed by Casa Familiar, a Community Based Organization (CBO) with a focus on local Environmental Justice efforts.
- Endorsed by EPA-National Authorities.
- Verbally approved by EPA-National Authorities.
- Visited and verbally approved by EPA-Region 9 Authorities during the 2017 TSA.

Consequently, the District entered into an MOU with the City of San Diego Fire Department in 2019 and began the construction process in 2020 (operational timeline Early 2023). All Near-road candidate locations must be formally approved by EPA. This process requires filling out an EPA Near-road template. Table 4-4 is the formal application for the San Ysidro Near-road location.

**Table 4-4 Nitrogen Dioxide Minimum Monitoring Requirements -Near-road (second site) Matrix**

No.	Condition	Notes
1	Plan submitted by July 1, 2017	None
2	Submitted for public comment	Yes in the Annual Network Reports
3	Anticipated start-up	Early 2023
4	AQS #	06-073-1025
5	Address and coordinates	32.552833°, - 117.047360° 198 W San Ysidro Blvd, San Diego, CA 92173 at Fire Station #29
6	Sampling & analysis method	NO <sub>2</sub> (True-NO <sub>2</sub> )- Method 212 PM <sub>2.5</sub> (continuous)- Method code 733 BC-1060 (continuous)- Method code 879
7	Sampling & analysis duration	NO <sub>2</sub> (True-NO <sub>2</sub> )- year-long & 24/7 PM <sub>2.5</sub> (continuous)- year-long & 24/7 BC-1060 (continuous)- year-long & 24/7
8	Any plans to remove or move the monitor within 18 months?	No
9	Monitoring objective & spatial scale	Public Information, NAAQS, Microscale for NO <sub>2</sub> Public Information, Microscale for all else
10	CBSA	San Diego-Carlsbad-San Marcos
11	CBSA population & year	3.3 million (from 2010 census)
12	Maximum AADT counts & year (2018)	<b>FE AADT (estimated)= 90,002</b> <b>AADT= 65,000</b> <b>HDc (estimated)= 2,778</b> <b>Ranking (County)= 231</b> (of 500 County-wide ranked segments) If you take out the road segments that cannot be used, because of their proximity to the 1 <sup>st</sup> near road site and take out the road segments that cannot be used due to planned and current highway expansion (Interstate 5 between State Routes 56 and 78), the <b>Ranking (County, adjusted)= 203</b> <i>FE AADT= (AADT – HDc) + (HDm x HDc)</i> <i>HDc= High density count (trucks)</i> <i>HDm= High density multiplier (10)</i>
13	Correct number of required Nox (NO <sub>2</sub> ) monitors?	Two NO <sub>2</sub> (Teledyne T500U True-NO <sub>2</sub> ) monitors based on population
14	Are all road segments ranked?	Yes, by FE & AADT



15	How is fleet mix considered?	A high volume of passenger vehicles with a number of buses and diesel delivery style vehicles queue at the border crossing.
16	How is roadway design considered?	Station will be about 2 meters lower than the target road segment
17	How is congestion considered (congestion rating)?	A/B at the road segment, but about 1.5 km south (downwind) at the San Ysidro POE, "F".
18	How is terrain considered?	Some hills about 0.5 km downwind of the site. Otherwise, flat terrain for several kilometers upwind of the location
19	How is meteorology considered?	The typical wind direction varies by the time of day with nighttime/early morning hours, the winds are generally light out of the northeast, due to drainage and land breezes. These northeast winds are a stronger in the fall and winter, than other months. By late morning/afternoon, the winds are usually from the west or southwest. Occasionally, the winds will blow from the northwest. This is the onshore sea breeze flow that develops in the coastal environment almost every day. The only time this wind pattern is interrupted is if there is a storm system or a Santa Ana occurs. When onshore winds are blowing, emissions from the I-5 will be measured here.
20	How is population exposure considered?	Residential community (see "Other" sections at the end of the table)
21	1 <sup>st</sup> Near-road site?	Interstate-15 (I-15) at Rancho Carmel Dr. is on a hill overlooking I-15. This site is in the north mid-county along the busiest road segments in the air basin. Much of the multi-axle vehicles use this route to Los Angeles/Riverside/Inland Empire.  2 <sup>nd</sup> Near-road site in San Ysidro will be even with I-5, will be at the southernmost point of the air basin, and will have a higher mix of cars compared to trucks with much longer idle times.
22	Distance from the target road?	30 meters to road
23	Will the vertical inlet be within 2-7 meters?	Yes
24	Will the probe distance from supporting structures be a least 1 meter away vertically or horizontally?	Yes
25	Will the air flow between the probe and the outside nearest edge of the target road segment be unobstructed?	Yes

The San Ysidro POE is the busiest in the U.S. Vehicles emit air pollution when moving and at idle. Residents and a local Community Based Organization (CBO) in the San Ysidro area, Casa Familiar, are concerned with the air quality impacts of the POE in their community along the freeways leading to and from the POE. Upon investigation using CalEnviroScreen, EJ Screen, NATA database, Customs data, and local health statistics, the San Ysidro area is greatly impacted by the POE. Air quality measurements in this area will help to determine if steps are needed to improve the air quality in these communities.

The San Ysidro POE averages about 2 million vehicles and 600,000 pedestrian crossings a month or approximately 70,000 vehicle and 20,000 pedestrian crossings a day. These are only the northbound (from Mexico to the United States) statistics, but a large percentage of the morning northbound crossings return southbound (from the United States to Mexico) in the evening. During peak commuting times, the POE has a long vehicle queue flowing from south to north in the morning and reversed in the evening. Wait times and queue length are day of the week and holiday dependent. Normally, the Mon-Fri traffic



experiences wait time of about 60 minutes, weekend traffic wait/engine idle times of 90-120 minutes are common, and holidays longer yet. Air pollution control devices on engines at idle operate inefficiently, thus increasing microscale air pollution impacts in the areas adjacent to the POE.

Road segments near the San Ysidro POE have a lower traffic count when compared to elsewhere in the County. The District believes the actual traffic count is higher, because of the long queues of cars (up to 3+ kilometers long, depending on metrics above) in the POE lanes. These queues of idling vehicles are expected to increase the effective traffic count, but there is no mechanism to account for this phenomenon.

The San Ysidro community is part of the South Region, as defined by the County of San Diego Health and Human Services Agency (HHSA). According to the most recent San Diego County HHSA health data portal (2011-2017), the South Region is routinely in the higher percentiles for coronary heart disease, stroke, asthma, and COPD for indicators for poor health, as compared to the other regions in the county. Numerous publications and studies have linked these health issues to air pollution, specifically, particulate matter, ozone, nitrogen dioxide, and diesel exhaust. Table 4-5 lists these health indicators and compares the rates to the other regions in the county. For 2011-2017 the South Region was:

**Table 4-5 Common Air Pollution Related Health Issues in the South Region of San Diego**

Parameter	Rating
Coronary Heart Disease Related Deaths	2 <sup>nd</sup>
Coronary Heart Disease Related Hospitalizations	Alternates between 1 <sup>st</sup> and 2 <sup>nd</sup>
Coronary Heart Disease Related Emergency Room Visits	Alternates between 3 <sup>rd</sup> and 4 <sup>th</sup>
Stroke Related Deaths	5 <sup>th</sup>
Stroke Related Hospitalizations	2 <sup>nd</sup>
Stroke Related Emergency Room Visits	3 <sup>rd</sup>
Asthma Related Deaths	Insufficient data
Asthma Related Hospitalizations	3 <sup>rd</sup>
Asthma Related Emergency Room Visits	2 <sup>nd</sup>
COPD Related Deaths	5 <sup>th</sup>
COPD Related Hospitalizations	Alternates between 2 <sup>nd</sup> and 3 <sup>rd</sup>
COPD Related Emergency Room Visits	Alternates between 1 <sup>st</sup> and 2 <sup>nd</sup>

The EPA has several on-line science-based tools, CalEnviroScreen, EJScreen, National Ambient Air Toxics Assessment (NATA) database, etc., that identify pollution from multiple sources, the effects, and those communities most at risk. The community of San Ysidro has several of these elevated markers that indicate a higher vulnerability to air pollution. Compared to other areas, this location ranks in the higher percentile bracket for PM<sub>2.5</sub>, Pesticide, and Toxic release emissions, as well as higher percentile for cardiovascular disease, linguistic isolation, poverty, and less than a high school education.

EPA, CARB, academia, and others have sponsored or participated in various special sampling projects along both sides of the San Ysidro-Otay Mesa border area. Findings have indicated that PM<sub>2.5</sub> and toxic compounds are elevated and trend high with an increase in the border traffic/wait times and these data are not represented in current EPA pollution screening tools, e.g. EJScreen. District-run Toxics often record the highest concentrations in the SDAB. These indicators, in addition to having the busiest POE in the United States located in San Ysidro, lead to a need for additional air pollution monitoring in the community of San Ysidro.



In 2022, the International Border Community, which includes San Ysidro, was identified as an Environmental Justice area. The District will expand the Community Air Protection Program throughout the International Border Community for additional air pollution monitoring.

**Section 4.2.1.3 Nitrogen Dioxide Minimum Monitoring Requirements -Near-road (summary)**

This section summarizes the Near-road information (Table 4-6)

**Table 4-6 Nitrogen Dioxide Minimum Monitoring Requirements -Near-road (summary)**

MSA (name)	County (name)	Population Estimated from 2020 Census (#)	MAX AADT (2020) (#)	Location of Near-road Sites (#)	Is Near-road Site Active? (yes/no)	Number of Near-road Site(s) Needed (#)
San Diego	San Diego	3.3 Million	332,356	Rancho Carmel Dr. (RCD) 06-073-1017	yes	0
			74,000	San Ysidro Blvd. (SAY)* 06-073-1025	NO	1

\*Site is in the construction phase; expected operational timeline is the 2023 year.

**Section 4.2.2 Nitrogen Dioxide Minimum Monitoring Requirements-Area-wide**

The District is required to designate a monitor that routinely measures high concentrations of nitrogen dioxide. This monitor cannot be used for Regional Administrator needs. Table 4-7 lists the Area-wide NO<sub>2</sub> Monitoring requirements for the SDAB.

*4.3.3(a) Requirement for Area-wide NO<sub>2</sub> Monitoring <sup>11</sup>*

*Within the NO<sub>2</sub> network, there must be one monitoring station in each CBSA with a population of 1,000,000 or more persons to monitor a location of expected highest NO<sub>2</sub> concentrations representing the neighborhood or larger spatial scales....*

**Table 4-7 Nitrogen Dioxide Minimum Monitoring Requirements-Area-wide**

MSA & County (name)	Population Estimated from 2020 Census (#)	Number of Area-wide NO <sub>2</sub> Monitors Required (#)	Number of Area-wide NO <sub>2</sub> Monitors Active (#)	Number of Area-wide NO <sub>2</sub> Monitors Needed (#)	Location of Area-wide Site (name)	Does Area-wide Site Meet NAAQS? (yes/no)
San Diego	3.3 Million	1	1	0	Donovan (DVN) 06-073-1014	yes

<sup>11</sup> (2021) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 4, "Pollutant-Specific Design Criteria for SLAMS Sites", part 4.3 "Nitrogen Dioxide (NO<sub>2</sub>) Design Criteria", subpart 4.3.3 "Requirement for Area-wide Monitoring"



**Section 4.2.3 Nitrogen Dioxide Minimum Monitoring Requirements-Regional Administrator**

To obtain a pollutant profile in certain areas, often in or near Environmental Justice locations, the monitoring of NO<sub>2</sub> may be required by the EPA Regional Administrator. The Sherman station in Sherman Heights satisfies this requirement see Table 4-8 for this requirement.

*4.3.4(a) Regional Administrator Required Monitoring<sup>12</sup>*

*The Regional Administrators... require a minimum of forty additional NO<sub>2</sub> monitoring stations nationwide in any area... with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations.*

**Table 4-8 Nitrogen Dioxide Minimum Monitoring Requirements-Regional Administrator**

Number of Regional Administrator NO <sub>2</sub> Monitors Required (#)	Number of Regional Administrator NO <sub>2</sub> Monitors Active (#)	Number of Regional Administrator NO <sub>2</sub> Monitors Needed (#)	Location of Regional Administrator Site (name)	Does Regional Administrator Site Meet NAAQS? (yes/no)
1	1	0	Sherman Elementary School (SES) 06-073-1026	Yes

**Section 4.2.4 Minimum Monitoring Requirements for true-NO<sub>2</sub>, PAMS**

The District is required to operate PAMS sites. There are several associated requirements to operate a PAMS site (see the PAMS chapter for more detail). One of the requirements is to operate a NO<sub>2</sub> monitor. Table 4-9 lists the PAMS NO<sub>2</sub> Monitoring requirements for the SDAB.

*5(a) Network Design for Photochemical Assessment Monitoring Stations (PAMS) and Enhanced Ozone Monitoring<sup>13</sup>*

*(a) State and local monitoring agencies are required to collect and report PAMS measurements at each Ncore site required under paragraph 3(a) of this appendix located in a CBSA with a population of 1,000,000 or more, based on the latest available census figures.*

*(b) PAMS measurements include...(4) Hourly averaged nitrogen oxide (NO), true nitrogen dioxide (NO<sub>2</sub>), and total reactive nitrogen (NO<sub>y</sub>);*

**Table 4-9 Minimum Monitoring Requirements for true-NO<sub>2</sub>, PAMS**

PAMS Sites/Locations (name)	Number of true-NO <sub>2</sub> Monitors Required at PAMS Sites (#)	Number of true-NO <sub>2</sub> Monitors Active at PAMS Sites (#)	Number of true-NO <sub>2</sub> Monitors Needed at PAMS Sites (#)
Lexington Elementary School (LES) 06-073-1022	1	1	0

<sup>12</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.3 “Nitrogen Dioxide (NO<sub>2</sub>) Design Criteria”, subpart 4.3.4 “Requirement for Regional Administrator Monitoring”

<sup>13</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 5, “Network Design for Photochemical Assessment Monitoring Stations (PAMS)”, part (b) “PAMS measurements include”, -subpart (4) “Hourly averaged nitrogen dioxide”



**Section 4.2.5 Reactive Oxides of Nitrogen Minimum Monitoring Requirements for Ncore & PAMS**

The District is federally mandated to monitor NO<sub>y</sub> levels in accordance with the CFR. This section will state the different minimum monitoring requirements for each program, e.g. Ncore, PAMS, etc. that the District operates and the references therein (Note: only the passages applicable/informative to the District are referenced). Table 4-11 summarizes these requirements.

*Ncore*

*3.1 Design Criteria for Ncore Sites<sup>14</sup>*

*(b) The Ncore sites must measure, at a minimum, PM<sub>2.5</sub> particle mass using continuous and integrated/filter-based samplers, speciated PM<sub>2.5</sub>, PM<sub>10-2.5</sub> particle mass, O<sub>3</sub>, SO<sub>2</sub>, CO, NO/NO<sub>y</sub>, wind speed, wind direction, relative humidity, and ambient temperature.*

*PAMS*

*5 Network Design for Photochemical Assessment Monitoring Stations (PAMS) and Enhanced Ozone Monitoring<sup>15</sup>*

*(b) ... PAMS measurements include: ... (4) Hourly averaged nitrogen oxide (NO), true nitrogen dioxide (NO<sub>2</sub>), and total reactive nitrogen (NO<sub>y</sub>);*

**Table 4-10 Reactive Oxides of Nitrogen Minimum Monitoring Requirements-PAMS & Ncore**

Number of NO <sub>y</sub> Monitors Required at Ncore & PAMS Sites (#)	Number of NO <sub>y</sub> Monitors Active at Ncore & PAMS Sites (#)	Number of NO <sub>y</sub> Monitors Needed at PAMS & Ncore Sites (#)	Ncore & PAMS Sites (name)
1	1	0	Lexington Elementary School (LES) 06-073-1022

**Section 4.2.6 NO<sub>2</sub>, true-NO<sub>2</sub>, & NO<sub>y</sub> Minimum Monitoring Requirements-Summary**

Table 4-11 summarizes all the NO<sub>2</sub> minimum monitoring requirements from Sections 4.2.1 to 4.2.5.

**Table 4-11 NO<sub>2</sub>, true-NO<sub>2</sub>, & NO<sub>y</sub> Minimum Monitoring Requirements-Summary**

Requirements for NO <sub>2</sub> Monitors for CFR Programs (name)	Number of Monitors Required (#)	Number of Monitors Active (#)	Number of Monitors Needed (#)
Near-road=	2	1	1*
Area-Wide=	1	1	0
Regional Administrator=	1	1	0
PAMS for true-NO <sub>2</sub> =	1	1	0
Ncore & PAMS NO <sub>y</sub> =	1	1	0

\*Under Construction. Expected start date of early 2023.

<sup>14</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 3(b), “Network Design for NCore Sites.

<sup>15</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 5(a)-(b)(3), “Network Design for Photochemical Assessment Monitoring Stations (PAMS)”, -subpart (4) “Hourly averaged nitrogen oxide (NO), true nitrogen dioxide (NO<sub>2</sub>), and total reactive nitrogen (NO<sub>y</sub>)”



**Section 4.3 Nitrogen Dioxide Suitability for Comparison to the NAAQS**

The CFR requires that for NO<sub>2</sub> data to be used in regulatory determinations of compliance with the NO<sub>2</sub> NAAQS, the NO<sub>2</sub> monitors must be sited according to Federal Regulations<sup>16</sup> and the sampling frequency must be in accordance with Federal regulations<sup>17</sup>. All District NO<sub>2</sub> monitors meet or exceed all minimum monitoring requirements and sampling frequencies, as to be able to be compared to the NAAQS. Table 4-12 summarizes these requirements. There is no NAAQS for NO<sub>y</sub>.

**Table 4-12 Nitrogen Dioxide & Reactive Oxides of Nitrogen Sampling Equipment**

	Parameter	Code	Unit	Code	Duration	Code	Equipment	Method	Code	Frequency	Method ID
Amb	Nitrogen dioxide NO <sub>2</sub>	42602	ppm	007	1-Hr	1	Teledyne T500U	Cavity Attenuated Phase Shift (CAPS)	212	7/24	EQNA-0514-212
Ncore	Reactive Oxides of Nitrogen Not Applicable Nitric oxide NO <sub>y</sub> NO <sub>y</sub> -NO NO	42600 42612 42601	ppb	008	1-Hr	1	Thermo 42i-y	Chemiluminescence	574	7/24	Not Applicable

**Section 4.4 Nitrogen Dioxide Concentrations for San Diego**

Over the last few years, the maximum 1-hour nitrogen dioxide concentration levels have been fluctuating between 55-86 ppb. This section will illustrate the different metrics for comparison.

**Section 4.4.1 Nitrogen Dioxide Concentrations for San Diego-for the Last 20 Years**

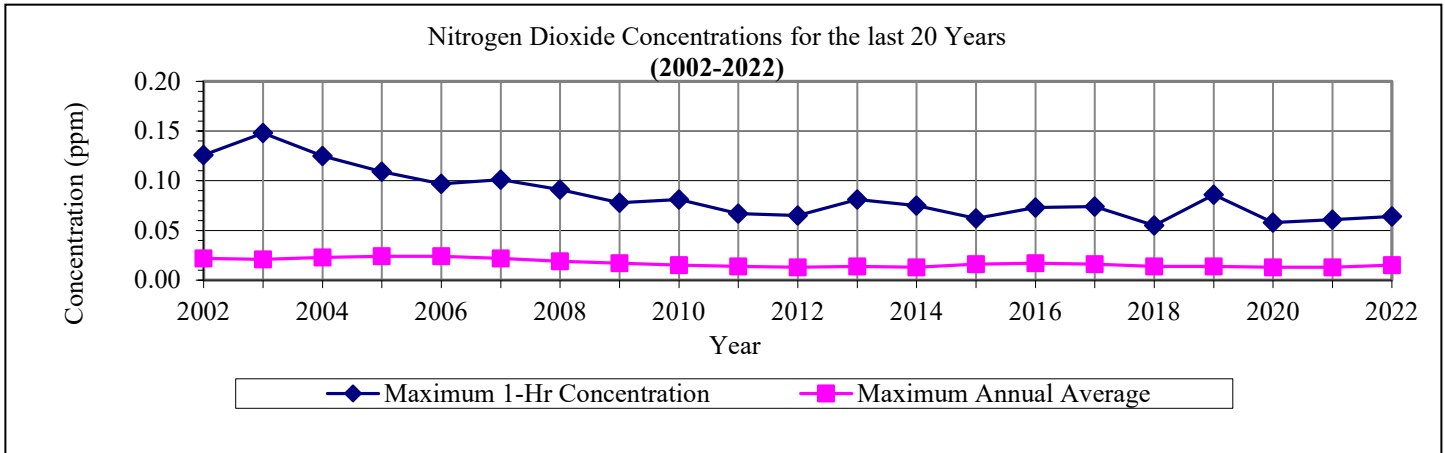
San Diego has measured a decrease in maximum NO<sub>2</sub> concentrations (Table 4-13) over the last twenty years. Over the last 15 years, the maximum 1-hour NO<sub>2</sub> concentrations have been below 0.10 ppm. Improved emission control technology on mobile sources and emissions should contribute to a decrease in NO<sub>2</sub> concentrations. Note: the “Days Above the National 1-Hr Standard.” Row reflect the NO<sub>2</sub> standard for that year.

**Table 4-13 Nitrogen Dioxide Concentrations for San Diego-for the Last 20 Years, 2002-2022**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Maximum 1-Hr Concentration (ppm)	0.126	0.148	0.125	0.109	0.097	0.101	0.091	0.078	0.081	0.067	0.065	0.081	0.075	0.062	0.073	0.074	0.055	0.086	0.058	0.061	0.064
Maximum Annual Average (ppm)	0.022	0.021	0.023	0.024	0.024	0.022	0.019	0.017	0.015	0.014	0.013	0.014	0.013	0.016	0.017	0.016	0.014	0.014	0.013	0.013	0.015
Days above the National 1-Hr Standard	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

<sup>16</sup> (2021) 40 CFR Part 58, Appendix E, “Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring” and Table E-4.

<sup>17</sup> (2021) 40 CFR Part 58, Subpart B, Section 58.12, “Operating Schedules”.



**Figure 4.2 Nitrogen Dioxide Concentrations for San Diego-for the Last 20 Years Graph**

**Section 4.4.2 Nitrogen Dioxide Concentrations for San Diego-by Site for the Year**

Table 4-14 lists the maximum nitrogen dioxide measurements and NO<sub>y</sub>-NO for each nitrogen dioxide monitoring location and Ncore, respectively; Figure 4.3 shows the values graphically with respect to the National Standard for the year.

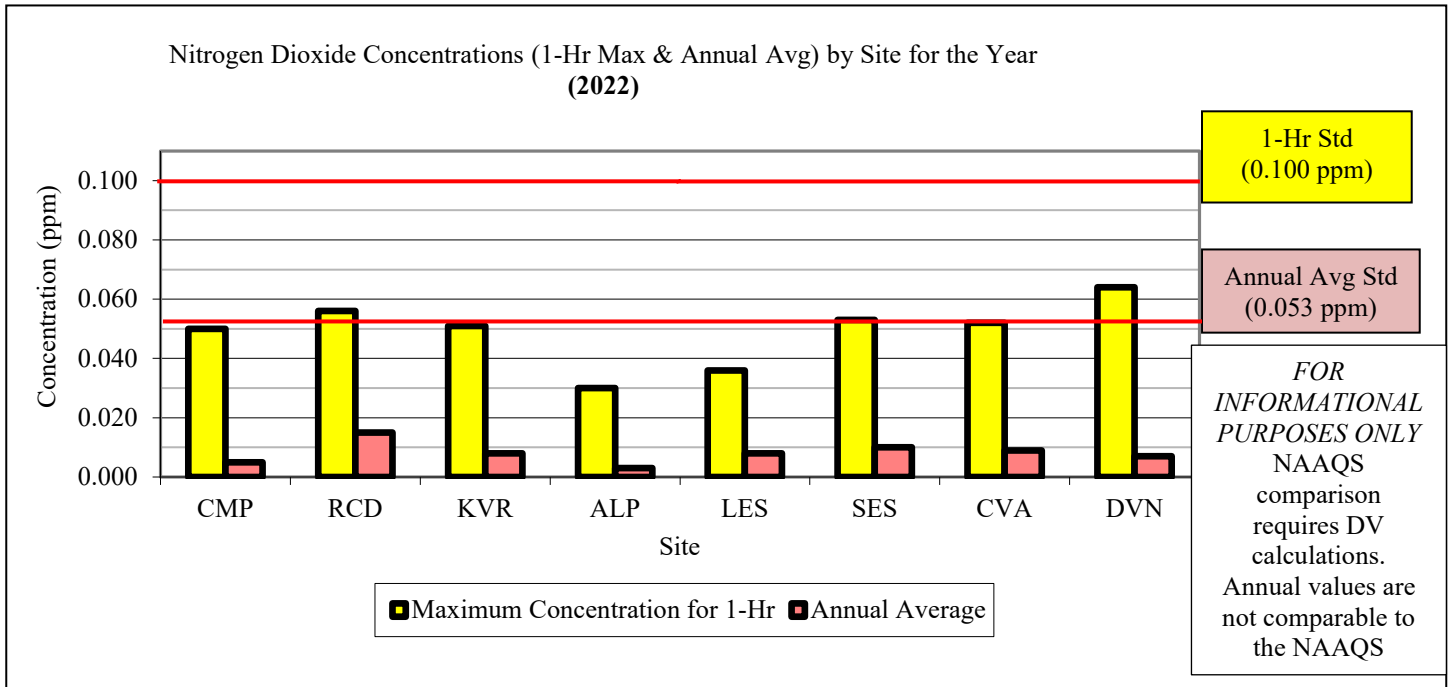
*FOR INFORMATIONAL PURPOSES ONLY*

NAAQS comparison requires DV calculations. Annual values are not comparable to the NAAQS

**Table 4-14 Nitrogen Dioxide Concentrations for San Diego- by Site for the Year, 2022**

No. (#)	Site (name)	Site Abbreviation	Maximum 1-Hr Concentration (ppm)	Number of Days Above the National Standard (#)	Annual Average (ppm)
1	Camp Pendleton	CMP	0.050	0	0.005
2	Rancho Carmel Dr.	RCD	0.056	0	0.015
3	Kearny Villa Rd.	KVR	0.051	0	0.008
4	Alpine	ALP	0.030	0	0.003
5	Lexington Elementary School	LES	0.036	0	0.008
6	Sherman Elementary School	SES	0.053	0	0.010
7	Chula Vista	CVA	0.052	0	0.009
8	Donovan	DVN	0.064	0	0.007





**Figure 4.3 Nitrogen Dioxide Concentrations for San Diego-by Site for the Year Graph**

**Section 4.4.3 Nitrogen Dioxide Concentrations for San Diego-by Site for the Design Value**

Table 4-15 lists the maximum nitrogen dioxide measurements and NO<sub>y</sub>-NO for each nitrogen dioxide monitoring location and Ncore, respectively; **Figure 4.4** shows the values graphically with respect to the National Standard for the year.

**Table 4-15 Nitrogen Dioxide Concentrations for San Diego-by Site for the Design Value, 2020-2022**

No. (#)	Site (name)	Site Abbreviation	Maximum Concentration 1-Hr DV (ppm)	Number of Days Above the National Standard (#)
1	Camp Pendleton	CMP	43	0
2	Rancho Carmel Dr.	RCD	48	0
3	Kearny Villa Rd.	KVR	37	0
4	Alpine	ALP	20	0
5	Lexington Elementary School	LES	33	0
6	Sherman Elementary School	SES	45	0
7	Chula Vista	CVA	42	0
8	Donovan	DVN	50	0

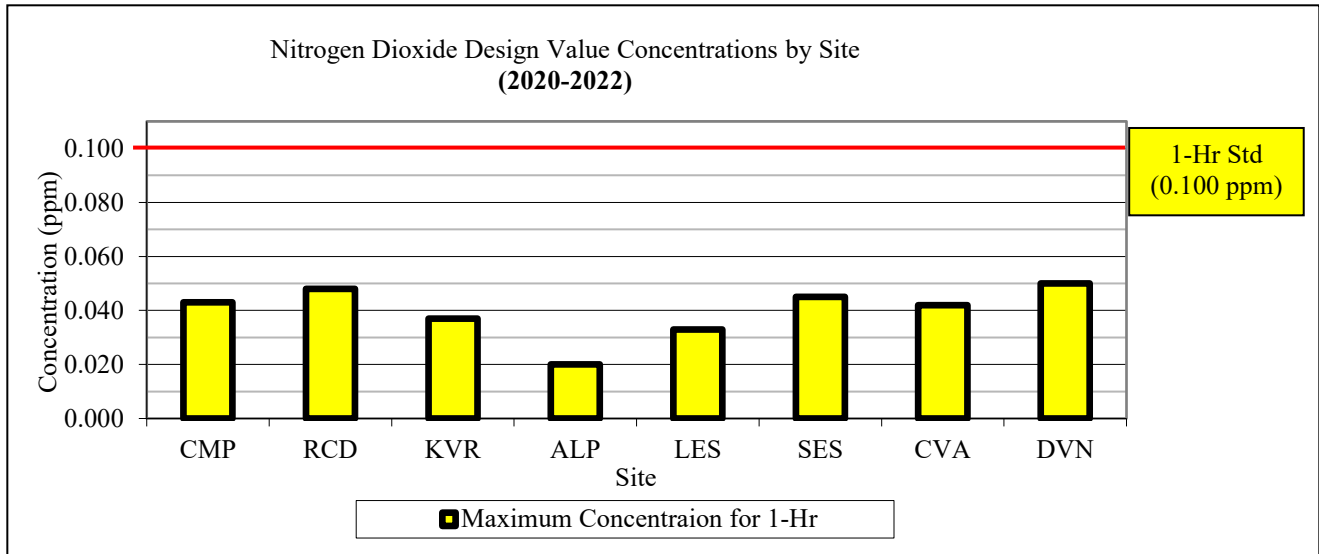


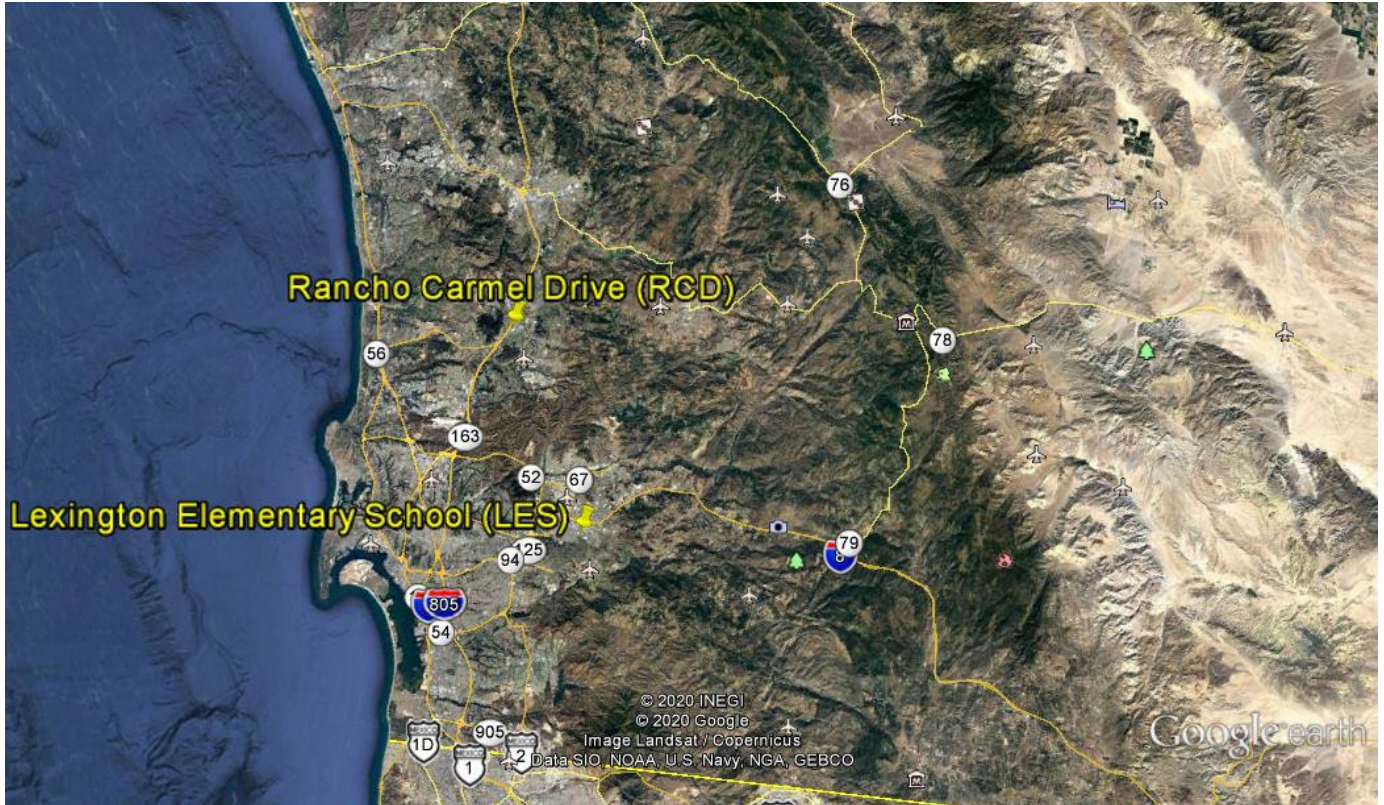
Figure 4.4 Nitrogen Dioxide Concentrations for San Diego-by Site for the Design Value Graph



## Chapter 5: Carbon Monoxide (CO)

### Section 5.1 Carbon Monoxide Introduction

Carbon monoxide (CO) was sampled on a continuous basis at two (2) locations in the SDAB (Figure 5.1 and Table 5-2) and referenced to the carbon monoxide standards of the year (Table 5-1). The sampling equipment are listed in Table 5-2. Trace level CO was sampled at the Lexington-Ncore site. For Ncore details, see Chapter 10:– Ncore for a complete list of all the requirements.



**Figure 5.1 Carbon Monoxide Network Map**

**Table 5-1 Carbon Monoxide State and National Standards for the Year**

Ambient Air Quality Standards				
Pollutant	Averaging Time	California Standards	National Standards	
		Concentration	Primary	Secondary
Carbon Monoxide (CO)	1 hour	20 ppm (23 mg/m <sup>3</sup> )	35 ppm (40 mg/m <sup>3</sup> )	Not Applicable
	8 hour	9 ppm (10 mg/m <sup>3</sup> )	9 ppm (10 mg/m <sup>3</sup> )	Not Applicable



**Table 5-2 Carbon Monoxide Monitoring Network**

Abbreviation	LES	RCD
Name	Lexington Elementary School	Rancho Carmel Dr.
AQS ID	06-073-1022	06-073-1017
Monitor Type	SLAMS	SLAMS
Method	IR	IR
Affiliation	NCORE, PAMS	NR
Spatial Scale	NS	MI
Site Type	PE	SO
Objective (Federal)	PI, NAAQS	PI, NAAQS
Equipment	Thermo 48i-TLE	Thermo 48i-TLE

**Glossary of Terms**

Monitor Type

E= EPA  
 O= Other  
 SLAMS= State & Local monitoring station  
 SPM= Special purpose monitor  
 CATAC= California Toxics Monitoring

Site Type

HC= Highest concentration  
 PE= Population exposure  
 SO= Source oriented  
 UPBD= Upwind background  
 G/B= General/Background  
 RT= Regional Transport  
 WRI= Welfare related impacts  
 QA= Quality assurance

Method (Sampling/Analysis)

CL= Chemiluminescence  
 CT= Low Volume, size selective inlet, continuous  
 FL= Fluorescence  
 HV= High volume  
 IR= Nondispersive infrared  
 SI= High volume, size selective inlet  
 SP= Low volume, size selective inlet, speciated  
 SQ= Low volume, size selective inlet, sequential  
 UV= Ultraviolet absorption  
 Canister= Evacuated stainless steel canisters  
 Cartridges= Di-nitrophenylhydrazine cartridges  
 FSL= Fused Silica Lined  
 Filter= Quartz filters  
 Auto= GCFID continuous

Monitor Designation

PRI= Primary  
 QAC= Collocated

Network Affiliation

BG= Border Grant  
 CSN STN= Trends Speciation  
 CSN SU= Supplemental Speciation  
 NATTS= National Air Toxics Trends Stations  
 NCORE= National Core Multi-pollutants  
 NR= Near-road  
 PAMS= Photochemical Assessment Monitoring

Spatial Scale

MI= Micro  
 MS= Middle  
 NS= Neighborhood

Objective (Federal)

NAAQS= Suitable for NAAQS comparison  
 Research= Research support  
 PI= Public Information  
 N/A= Not Applicable  
 O= Other



**Section 5.2 Carbon Monoxide Minimum Monitoring Requirements**

The District is federally mandated to monitor CO levels in accordance with the CFR. This section will state the different monitoring requirements for each program, e.g. ambient, PAMS, Ncore, Near-road, etc. that the District operates and references therein (Note: only the passages applicable/informative to the District are referenced). These monitors can serve as fulfilling other CO network requirements, e.g. ambient CO monitor can fulfill a PAMS CO monitor requirement.

The District meets or exceeds all minimum requirements for CO monitoring for all programs.

**Section 5.2.1 Carbon Monoxide Minimum Monitoring Requirements-Near-road**

In an effort to measure concentrations for some pollutants in communities located by highly trafficked roadways, the EPA instituted the Near-road monitoring program. Table 5-3 lists the Near-road requirements.

*4.2 Carbon Monoxide (CO) Design Criteria<sup>18</sup>*

*4.2.1 General Requirements (a) Except as provided in subsection (b), one CO monitor is required to operate collocated with one required near-road NO<sub>2</sub> monitor, as required in Section 4.3.2 of this part, in CBSAs having a population of 1,000,000 or more persons. If a CBSA has more than one required near-road NO<sub>2</sub> monitor, only one CO monitor is required to be collocated with a near-road NO<sub>2</sub> monitor within that CBSA.*

**Table 5-3 Carbon Monoxide Minimum Monitoring Requirements-Near-road**

MSA & County	Population from 2020 Census <sup>19</sup>	Are Near-road NO <sub>2</sub> Monitors Required	Are Collocated CO Monitors Required	Number of Collocated CO Monitors Required	Number of Collocated CO Monitors Active	Number of Collocated CO Monitors Needed
(name)	(#)	(yes/no)	(yes/no)	(#)	(#)	(#)
San Diego	3.3 Million	Yes	Yes	1	1	0

**Section 5.2.2 Carbon Monoxide Minimum Monitoring Requirements-Regional Administrator**

Table 5-4 lists the Regional Administrator Designated CO Monitoring requirements for the SDAB.

*4.2.2(a) Regional Administrator Required Monitoring<sup>20</sup>*

*The Regional Administrators, in collaboration with states, may require additional CO monitors above the minimum number of monitors required in 4.2.1 of this part...*

<sup>18</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.2 “Carbon Monoxide (CO) Design Criteria”, section 4.21, “General Requirements

<sup>19</sup> Based on official U.S Census statistics.

<sup>20</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.2.2 “Carbon Monoxide (CO) Design Criteria”, subpart (a), “Regional Administrator Required Monitoring”



**Table 5-4 Carbon Monoxide Minimum Monitoring Requirements-Regional Administrator**

Number of Regional Administrator sites Required* (#)	Number of Regional Administrator sites Active (#)	Number of Regional Administrator sites Needed (#)
0	0	0

\* CO emissions in Barrio Logan were so far below the NAAQS that EPA approved the decommissioning of CO monitoring there.

**Section 5.2.3 Carbon Monoxide Minimum Monitoring Requirements-Ncore**

The District is required to operate a CO monitor as part of the Ncore multipollutant monitoring program. This program was designed to measure pollutants at lower levels, low ppb-ppt range. Table 5-5 lists the Ncore CO requirements.

*3(b) Design Criteria for Ncore Sites<sup>21</sup>  
 The Ncore sites must measure, at a minimum...CO...*

**Table 5-5 Carbon Monoxide Minimum Monitoring Requirements-Ncore**

Number of CO Monitors Required at Ncore Sites (#)	Number of CO Monitors Active at Ncore Sites (#)	Number of CO Monitors Needed at Ncore Sites (#)	Ncore Sites/Location (name)
1	1	0	Lexington Elementary School (LES) 06-073-1022

**Section 5.2.4 Carbon Monoxide Minimum Monitoring Requirements-State (SIP)**

The District must operate one non-source monitor as part of the 2004 Revision to the California State Implementation Plan (SIP) for Carbon Monoxide<sup>22</sup>. Table 5-6 summarizes these requirements.

**Table 5-6 Carbon Monoxide Minimum Monitoring Requirements-State (SIP)**

Number of CO Monitors Required for the SIP (#)	Number of CO Monitors Active for the SIP (#)	Number of CO Monitors Needed for the SIP (#)	SIP Sites/Locations (name)
1	1	0	Lexington Elementary School (LES) 06-073-1022

<sup>21</sup> (2021) 40 CFR Part 58, App. D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 3, “Design Criteria for NCore sites”, subpart (b)  
<sup>22</sup> [http://www.arb.ca.gov/planning/sip/co/final\\_2004\\_co\\_plan\\_update.pdf](http://www.arb.ca.gov/planning/sip/co/final_2004_co_plan_update.pdf)



**Section 5.2.5 Carbon Monoxide Minimum Monitoring Requirements-Summary**

Table 5-7 summarizes all the CO minimum monitoring requirements.

**Table 5-7 Carbon Monoxide Minimum Monitoring Requirements-Summary**

Requirements for CO Monitors for CFR Programs (name)	Number of CO Monitors Required (#)	Number of CO Monitors Active (#)	Number of CO Monitors Needed (#)
Near-road=	1	1	0
Regional Administrator	0	0	0
Ncore=	1	1	0
SIP=	1	1	0

**Section 5.3 Carbon Monoxide Suitability for Comparison to the NAAQS**

The CFR requires that for CO data to be used in regulatory determinations of compliance with the CO NAAQS, the CO monitors must be sited according to Federal Regulations<sup>23</sup> and the sampling frequency must be in accordance with Federal regulations<sup>24</sup>. All District CO monitors meet or exceed all minimum monitoring requirements and sampling frequencies, as to be able to be compared to the NAAQS. Table 5-8 summarizes these requirements.

**Table 5-8 Carbon Monoxide Suitability for Comparison to the NAAQS-Sampling Equipment**

	Parameter	Code	Unit	Code	Duration	Code	Equipment	Method	Code	Frequency	Method ID	
Amb	Carbon monoxide*	CO	42101	ppm	007	1-Hr	1	Thermo 48i-TLE	Nondispersive infrared	554	7/24	RFCA-0981-554
Ncore	Carbon monoxide Trace Level	CO	42101	ppb	008	1-Hr	1	Thermo 48i-TLE	Nondispersive infrared	554	7/24	RFCA-0981-554

\*Carbon monoxide analyzer operates in the 20 ppm range.

**Section 5.4 Carbon Monoxide Concentrations for San Diego**

This section will illustrate the different metrics for comparison for carbon monoxide concentration levels.

**Section 5.4.1 Carbon Monoxide Concentrations for San Diego-for the Last 20 years**

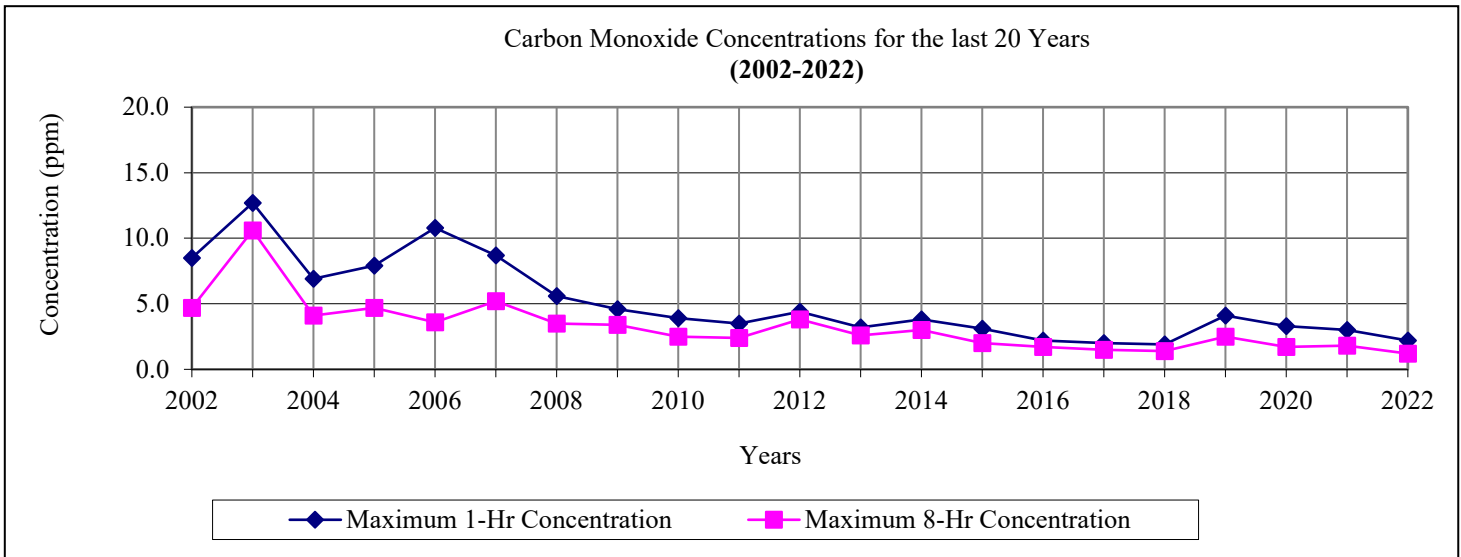
In San Diego, CO concentrations have decreased over the years (Table 5-9) and is shown graphically in Figure 5.2. The 2003 Wildfires caused the SDAB to exceed the standards for CO, but the exceedances are considered an exceptional event and do not have a lasting impact in the air basin. Even with the last two wildfires in 2003 and 2007, the County still qualifies for attainment status. Note: the “Days Above the National Standard” row in Table 5-9 reflect the carbon monoxide standards for that year.

**Table 5-9 Carbon Monoxide Concentrations for San Diego-for the Last 20 Years, 2002-2022**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Maximum 1-Hr Concentration (ppm)	8.5	12.7	6.9	7.9	10.8	8.7	5.6	4.6	3.9	3.5	4.4	3.2	3.8	3.1	2.2	2.0	1.9	4.1	3.3	3.0	2.2
Maximum 8-Hr Concentration (ppm)	4.7	10.6	4.1	4.7	3.6	5.2	3.5	3.4	2.5	2.4	3.8	2.6	3.0	2.0	1.7	1.5	1.4	2.5	1.7	1.8	1.2
Days above the National Standard	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

<sup>23</sup> (2021) 40 CFR Part 58, Appendix E, “Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring” and Table E-4.

<sup>24</sup> (2021) 40 CFR Part 58, Subpart B, Section 58.12, “Operating Schedules”



**Figure 5.2 Carbon Monoxide Concentrations for San Diego-for the Last 20 Years Graph**

**Section 5.4.2 Carbon Monoxide Concentrations for San Diego-by Site for the Year**

Table 5-10 lists the maximum carbon monoxide measurements for each carbon monoxide monitoring location and Ncore; Figure 5.3 shows the values graphically with respect to the National Standard.

*FOR INFORMATIONAL PURPOSES ONLY*  
 Annual values are not comparable to the NAAQS

**Table 5-10 Carbon Monoxide Concentrations for San Diego-by Site for the Year, 2022**

No. (#)	Site (name)	Site Abbreviation	Maximum 8-Hr Concentration (ppm)	Maximum 1-Hr Concentration (ppm)	Number of Days Above the National Standard (#)	Annual Average (ppm)
1	Lexington Elementary School	LES	1.1	1.5	0	0.51
2	Rancho Carmel Dr.	RCD	1.2	2.2	0	0.29



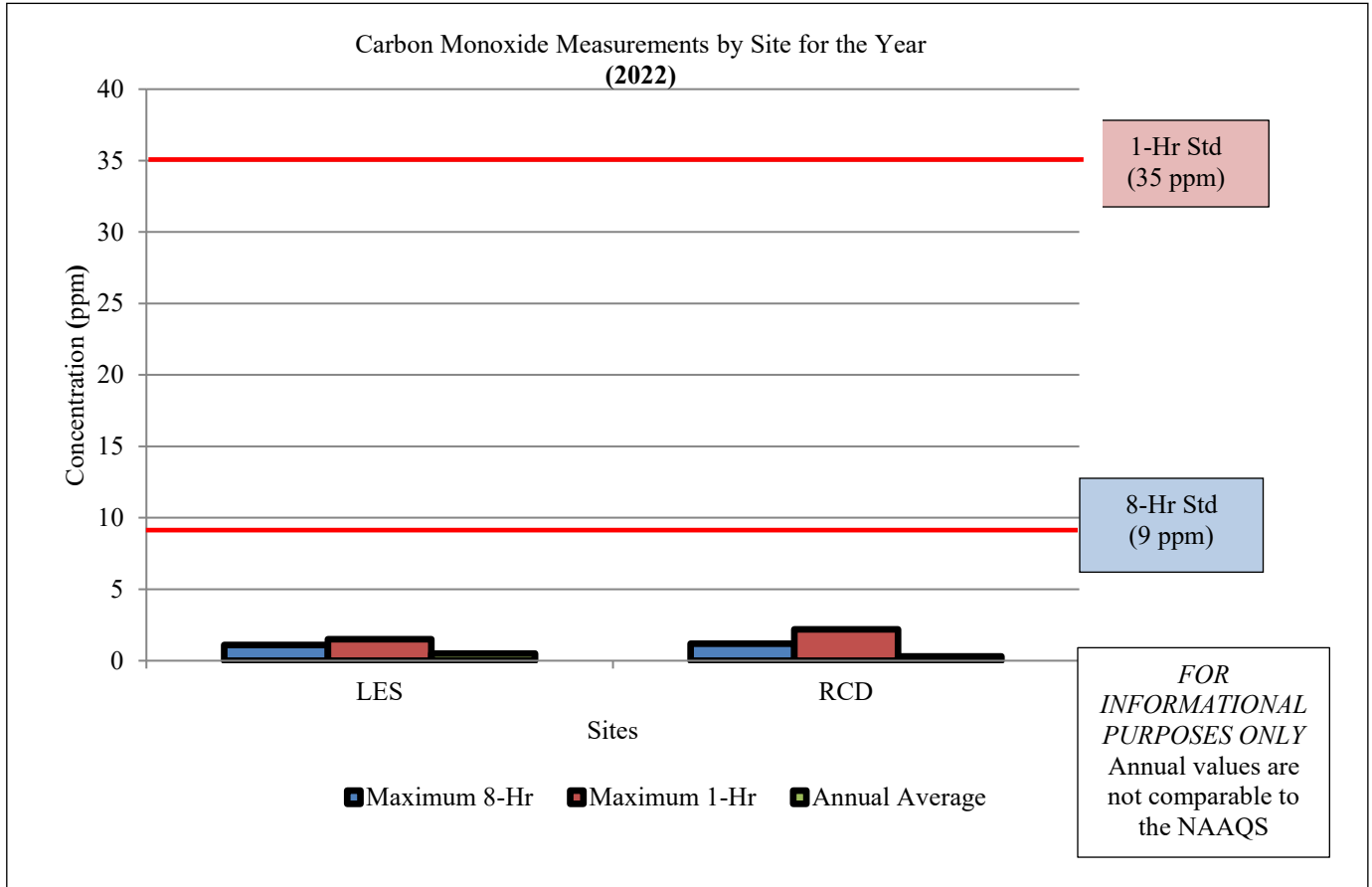


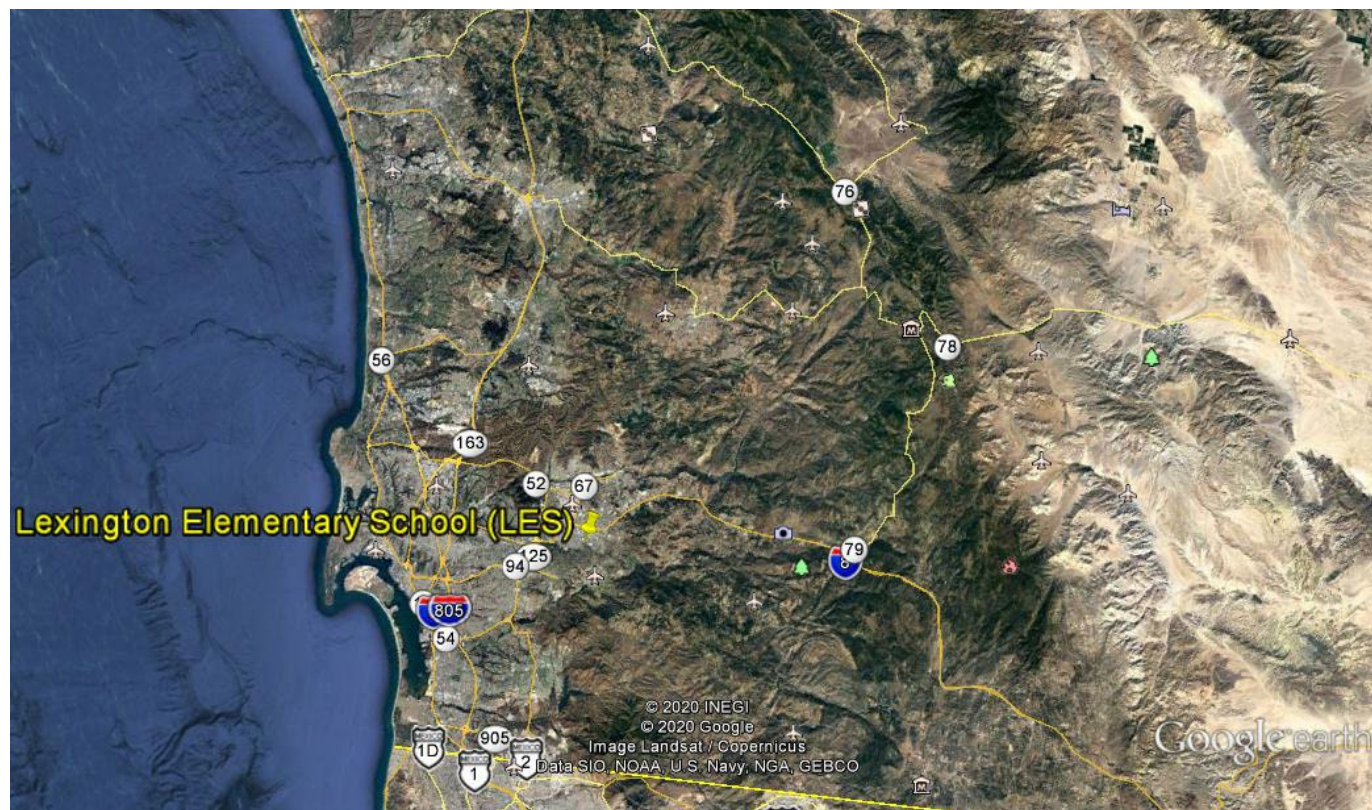
Figure 5.3 Carbon Monoxide Concentrations for San Diego-by Site for the Year Graph



## Chapter 6: Sulfur Dioxide (SO<sub>2</sub>)

### Section 6.1 Sulfur Dioxide Introduction

Only trace level sulfur dioxide is sampled for at one (1) location (Figure 6.1) in the SDAB and is referenced to the sulfur dioxide standards of the year (Table 6-1). Trace-level SO<sub>2</sub> was sampled at the Lexington-Ncore site. Table 6-2 lists the equipment. See Chapter 10:– Ncore for detailed requirements.



**Figure 6.1 Sulfur Dioxide Network Map**

**Table 6-1 Sulfur Dioxide State and National Standards for the Year**

Ambient Air Quality Standards				
Pollutant	Averaging Time	California Standards	National Standards	
		Concentration	Primary	Secondary
Sulfur Dioxide (SO <sub>2</sub> )	1 hour	0.25 ppm (665 µg/m <sup>3</sup> )	75 ppb (196 µg/m <sup>3</sup> )	Not Applicable
	3 hour	Not Applicable	Not Applicable	0.5 ppm (1300 µg/m <sup>3</sup> )
	24 hour	0.04 ppm (105 µg/m <sup>3</sup> )	Not Applicable in San Diego	Not Applicable
	Annual Arithmetic Mean	Not Applicable	Not Applicable in San Diego	Not Applicable



**Table 6-2 Sulfur Dioxide Monitoring Network**

Abbreviation	LES
Name	Lexington Elementary School
AQS ID	06-073-1022
Monitor Type	SLAMS
Method	FL
Affiliation	Ncore
Spatial Scale	NS
Site Type	PE
Objective (Federal)	PI, NAAQS
Equipment	Thermo 43i-TLE

**Glossary of Terms**

Monitor Type

E= EPA  
 O= Other  
 SLAMS= State & Local monitoring station  
 SPM= Special purpose monitor  
 CATAC= California Toxics Monitoring

Site Type

HC= Highest concentration  
 PE= Population exposure  
 SO= Source oriented  
 UPBD= Upwind background  
 G/B= General/Background  
 RT= Regional Transport  
 WRI= Welfare related impacts  
 QA= Quality assurance

Method (Sampling/Analysis)

CL= Chemiluminescence  
 CT= Low Volume, size selective inlet, continuous  
 FL= Fluorescence  
 HV= High volume  
 IR= Nondispersive infrared  
 SI= High volume, size selective inlet  
 SP= Low volume, size selective inlet, speciated  
 SQ= Low volume, size selective inlet, sequential  
 UV= Ultraviolet absorption  
 Canister= Evacuated stainless steel canisters  
 Cartridges= Di-nitrophenylhydrazine cartridges  
 FSL= Fused Silica Lined  
 Filter= Quartz filters  
 Auto= GCFID continuous

Monitor Designation

PRI= Primary  
 QAC= Collocated

Network Affiliation

BG= Border Grant  
 CSN STN= Trends Speciation  
 CSN SU= Supplemental Speciation  
 NATTS= National Air Toxics Trends Stations  
 NCORE= National Core Multi-pollutants  
 NR= Near-road  
 PAMS= Photochemical Assessment Monitoring

Spatial Scale

MI= Micro  
 MS= Middle  
 NS= Neighborhood

Objective (Federal)

NAAQS= Suitable for NAAQS comparison  
 Research= Research support  
 PI= Public Information  
 N/A= Not Applicable  
 O= Other



**Section 6.2 Sulfur Dioxide Minimum Monitoring Requirements**

The District is federally mandated to monitor SO<sub>2</sub> levels in accordance with the CFR. This section will state the different monitoring requirements for each program, ambient, Ncore, etc. that the District operates and the references therein (Note: only the passages applicable/informative to the District are referenced). These monitors can serve as fulfilling other SO<sub>2</sub> network requirements, e.g. ambient SO<sub>2</sub> monitor can fulfill a PAMS SO<sub>2</sub> monitor requirement.

The District meets or exceeds all minimum requirements for SO<sub>2</sub> monitoring for all programs.

**Section 6.2.1 Sulfur Dioxide Minimum Monitoring Requirements-Ncore**

The District is required to operate an Ncore site. There are several associated requirements to operate this site. Table 6-3 lists Ncore Sulfur Dioxide (SO<sub>2</sub>) monitoring requirements.

*3.1 Design Criteria for Ncore Sites<sup>25</sup>*

*(b) The Ncore sites must measure, at a minimum, PM<sub>2.5</sub> particle mass using continuous and integrated/filter-based samplers, speciated PM<sub>2.5</sub>, PM<sub>10-2.5</sub> particle mass, O<sub>3</sub>, SO<sub>2</sub>, CO, NO/NO<sub>x</sub>, wind speed, wind direction, relative humidity, and ambient temperature.*

**Table 6-3 Sulfur Dioxide Minimum Monitoring Requirements-Ncore**

MSA & County	Number of Ncore SO <sub>2</sub> Monitors Required (#)	Number of Ncore SO <sub>2</sub> Monitors Active (#)	Number of Ncore SO <sub>2</sub> Monitors Needed (#)	Met NAAQS? (yes/no)
San Diego	1	1	0	yes

**Section 6.2.2 Sulfur Dioxide Minimum Monitoring Requirements-Ambient**

The procedure to determine the minimum number of ambient level monitors required is different than the other gaseous criteria pollutants. It is based on the total SO<sub>2</sub> emissions in the air basin with respect to the population of the air basin. Table 6-4 lists these requirements.

*4.4.2(a) Sulfur Dioxide Design Criteria Requirement for Monitoring by Population Weighted Emissions Index<sup>26</sup>*  
*The population weighted emissions index (PWEI) shall be calculated by States for each core based statistical area (CBSA) they contain or share with another State or States for use in the implementation of or adjustment to the SO<sub>2</sub> monitoring network. The PWEI shall be calculated by multiplying the population of each CBSA, using the most current census data or estimates, and the total amount of SO<sub>2</sub> in tons per year emitted within the CBSA area, using an aggregate of the most recent county level emissions data available in the National Emissions Inventory for each county in each CBSA. The resulting product shall be divided by one million, providing a PWEI value, the units of which are million persons-tons per year. For any CBSA with a calculated PWEI value equal to or greater than 1,000,000, a minimum of three SO<sub>2</sub> monitors are required within that CBSA. For any CBSA with a calculated PWEI value equal to or greater than 100,000, but less than 1,000,000, a minimum of two SO<sub>2</sub> monitors are required within that CBSA. For any CBSA with a calculated PWEI value equal to or greater than 5,000, but less than 100,000, a minimum of one SO<sub>2</sub> monitor is required within that CBSA.*

<sup>25</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 3(b), “Network Design for NCore Sites.

<sup>26</sup> (2021) CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.4 “Sulfur Dioxide (SO<sub>2</sub>) Design Criteria, subpart 4.4.2(a) “Requirement for Monitoring by the Population Weighted Emissions Index”



If the PWEI is below a certain threshold, the EPA allows Districts the minimum required SO<sub>2</sub> monitor to be the Ncore SO<sub>2</sub> required monitor. Table 6-5 lists these requirements.

*4.4 Sulfur Dioxide (SO<sub>2</sub>) Design Criteria<sup>27</sup>*

*4.4.2(1) The SO<sub>2</sub> monitoring site(s) required as a result of the calculated PWEI in each CBSA shall satisfy minimum monitoring requirements if the monitor is sited within the boundaries of the parent CBSA and is one of the following site types: population exposure, highest concentration, source impacts, general background, or regional transport. SO<sub>2</sub> monitors at Ncore stations may satisfy minimum monitoring requirements if that monitor is located within a CBSA with minimally required monitors under this part.*

**Table 6-4 Sulfur Dioxide Minimum Monitoring Requirements – 2020 EPA NEI SO<sub>2</sub>**

MSA & County (name)	Population from 2020 Census <sup>28</sup> (yes/no)	Total SO <sub>2</sub> Emissions from NEI (tons/yr)	Total SO <sub>2</sub> Emissions ÷ 1,000,000 (TPY-1M)	Calculated PWEI= Total SO <sub>2</sub> Emissions x Population (Mpeople-TPY)
San Diego	3.3 Million	539	0.000539	1,777.9

**Table 6-5 Sulfur Dioxide Minimum Monitoring Requirements-Ambient**

Calculated PWEI (MP-TPY)	Are the Emissions <5,000 MP-TPY? (yes/no)	Number of Required SO <sub>2</sub> Monitors (#)	Number of Active SO <sub>2</sub> Monitors (#)	Number of Ambient SO <sub>2</sub> Monitors Needed (#)
1,777.9	Yes	1	1	0

**Section 6.2.3 Sulfur Dioxide Minimum Monitoring Requirements-Summary**

Table 6-6 summarizes all the SO<sub>2</sub> minimum monitoring requirements from Sections 6.2.1 to 6.2.2.

**Table 6-6 Sulfur Dioxide Minimum Monitoring Requirements-Summary**

CFR Programs Requirements for SO <sub>2</sub> Monitors (name)	Number of SO <sub>2</sub> Monitors Required (#)	Number of Active SO <sub>2</sub> Monitors (#)	Number of Needed SO <sub>2</sub> Monitors (#)
PWEI	1	1	0*
Ncore	1	1	0*

\*For the SDAB, the PWEI is less than 5,000, which means the Ncore SO<sub>2</sub> monitor is allowed to be used in the count for required PWEI SO<sub>2</sub> monitors; therefore, the total count of SO<sub>2</sub> monitor is “1” in the SDAB.

<sup>27</sup> (2021) CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.4 “Sulfur Dioxide (SO<sub>2</sub>) Design Criteria, subpart 4.4.2(1) “Requirement for Monitoring by the Population Weighted Emissions Index”

<sup>28</sup> Based on initial counts of official U.S Census statistics.



**Section 6.3 Sulfur Dioxide Suitability for Comparison to the NAAQS**

The CFR requires that for SO<sub>2</sub> data to be used in regulatory determinations of compliance with the SO<sub>2</sub> NAAQS, the SO<sub>2</sub> monitors must be sited according to Federal Regulations<sup>29</sup> and the sampling frequency must be in accordance with Federal regulations<sup>30</sup>. All District SO<sub>2</sub> monitors meet or exceed all minimum monitoring requirements and sampling frequencies, as to be able to be compared to the NAAQS. Table 6-7 summarizes these requirements.

**Table 6-7 Sulfur Dioxide Suitability for Comparison to the NAAQS-Sampling Equipment**

	Parameter	Code	Unit	Code	Duration	Code	Equipment	Method	Code	Frequency	Method ID	
None	Sulfur dioxide Trace Level	SO <sub>2</sub>	42101	ppb	008	1-Hr	1 5-min	Thermo 43i-TLE	Fluorescence	560	7/24	EQSA-0486-060

**Section 6.4 Sulfur Dioxide Concentrations for San Diego**

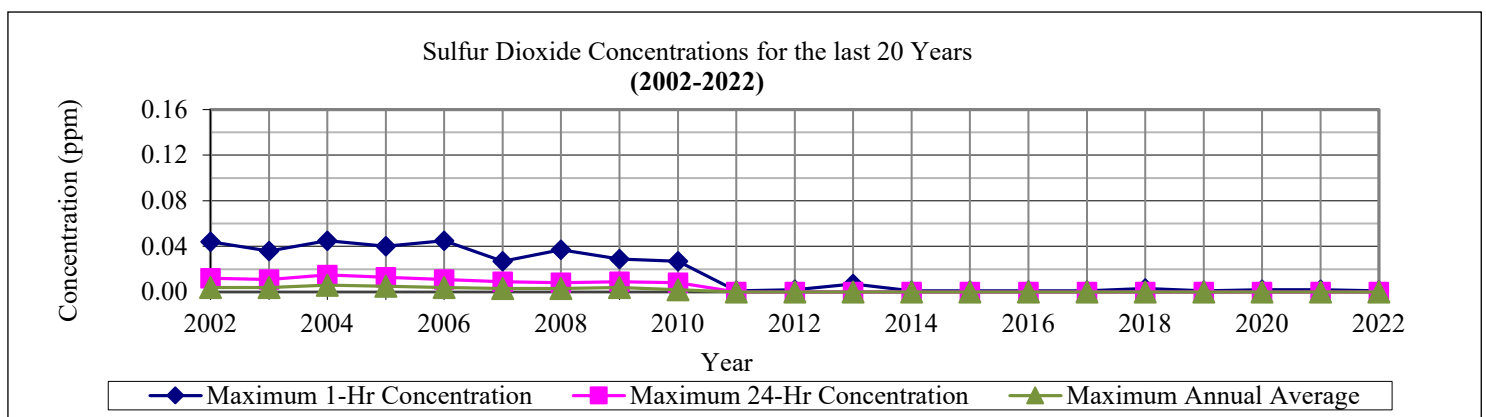
Over the years, sulfur dioxide concentration levels have been decreasing. This section will illustrate the different metrics for comparison.

**Section 6.4.1 Sulfur Dioxide Concentrations for San Diego-for the Last 20 Years**

Emissions of sulfur dioxide (SO<sub>2</sub>) have declined tremendously in California over the last 20 years, due to improved source controls and switching from fuel oil to natural gas for electric generation and industrial boilers. Note: the “Days Above National Standard” row in Table 6-8 reflects the SO<sub>2</sub> standards for that year and are shown graphically in Figure 6.2.

**Table 6-8 Sulfur Dioxide Concentrations for San Diego-for the Last 20 Years, 2002-2022**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Maximum 1-Hr Concentration (ppm)	0.044	0.036	0.045	0.040	0.045	0.027	0.037	0.029	0.027	0.001	0.002	0.007	0.001	0.001	0.001	0.001	0.003	0.001	0.002	0.002	0.001
Maximum 24-Hrs Concentration (ppm)	0.012	0.011	0.015	0.013	0.011	0.009	0.008	0.009	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Maximum Annual Average (ppm)	0.004	0.004	0.006	0.005	0.004	0.003	0.003	0.004	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Days above the National Standard	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



**Figure 6.2 Sulfur Dioxide Concentrations for San Diego-for the Last 20 Years Graph**

<sup>29</sup> (2021) 40 CFR Part 58, Appendix E, “Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring” and Table E-4.

<sup>30</sup> (2021) 40 CFR Part 58, Subpart B, Section 58.12, “Operating Schedules”

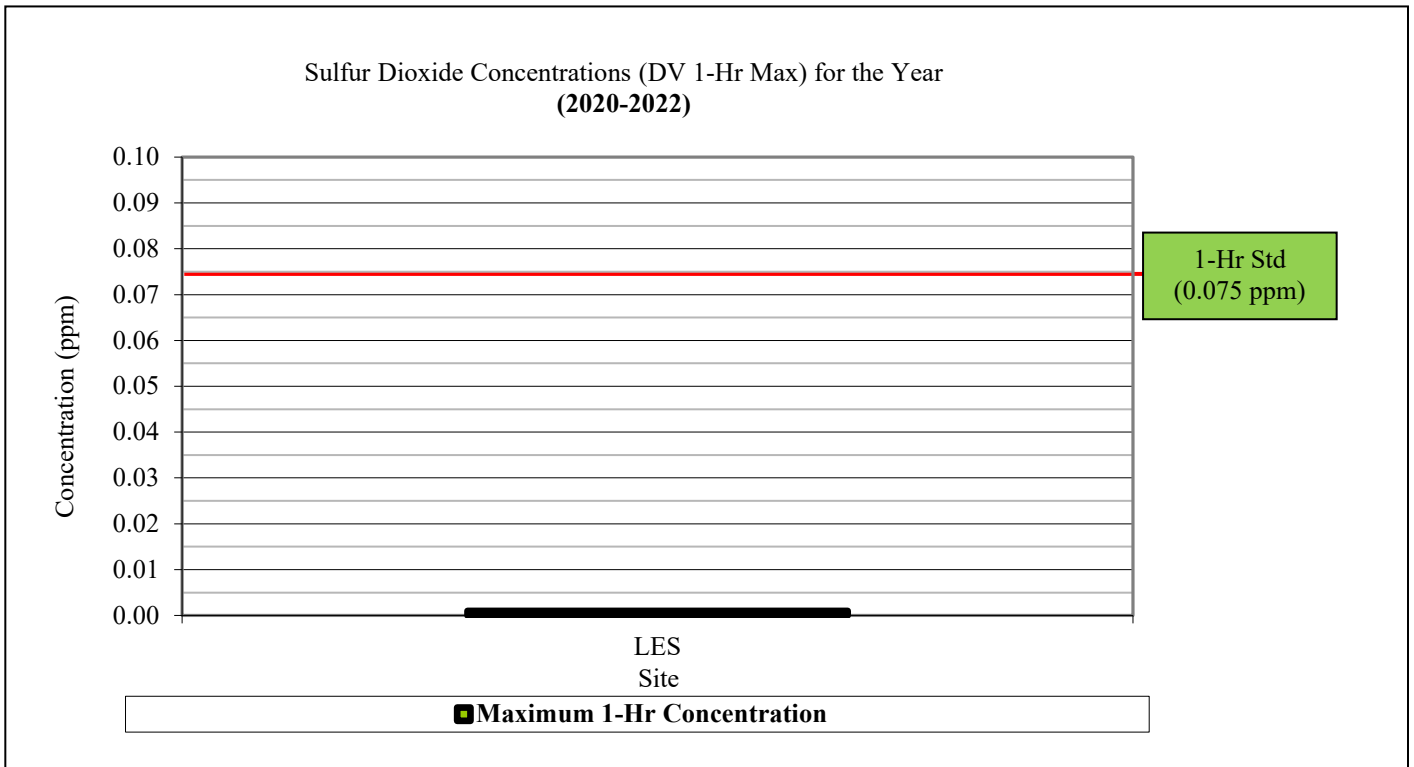


**Section 6.4.2 Sulfur Dioxide Concentrations for San Diego-by Site for the Design Value**

Table 6-9 lists the maximum sulfur dioxide measurements for the Ncore monitoring location and Figure 6.3 shows the values graphically with respect to the National Standard.

**Table 6-9 Sulfur Dioxide Concentrations for San Diego-by Site for the Design Value, 2020-2022**

Site  (site)	Site Abbreviation	Design Value Maximum Concentration 1-Hr  (ppm)	Number of Days Above the National Standard  (#)
Lexington Elementary School	LES	0.001	0



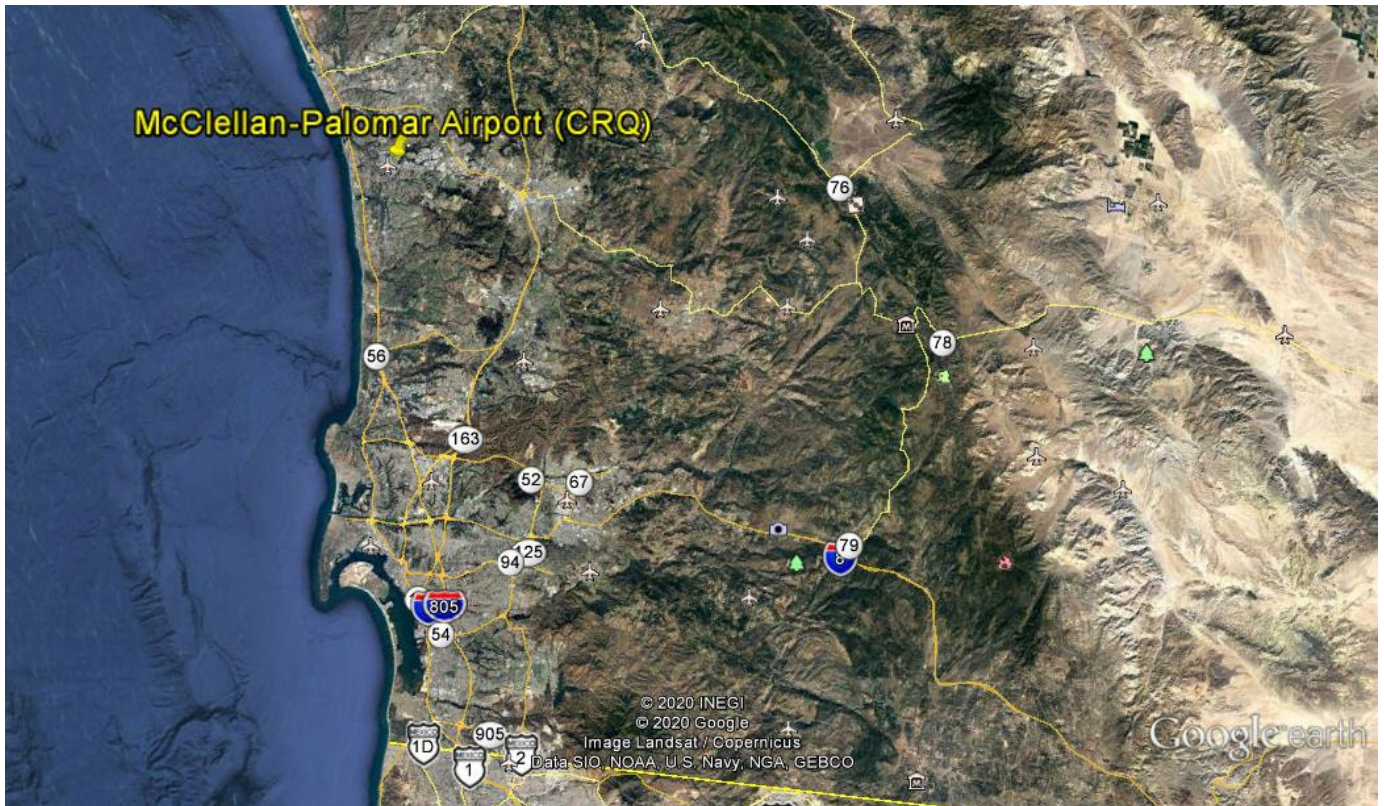
**Figure 6.3 Sulfur Dioxide Concentrations for San Diego-by Site for the Design Value Graph**



## Chapter 7: Lead (Pb)

### Section 7.1 Lead Introduction

Regulatory Lead (Pb) was sampled for at one location in the SDAB (Figure 7.1 and Table 7-2) and referenced to the lead standards of the year (Table 7-1). Source level lead was sampled at McClellan-Palomar airport.



**Figure 7.1 Lead Network Map**

**Table 7-1 Lead State and National Standards for the Year**

Ambient Air Quality Standards				
Pollutant	Averaging Time	California Standards	National Standards	
		Concentration	Primary	Secondary
Lead (Pb)	30 Day Average	1.5 $\mu\text{g}/\text{m}^3$	Not Applicable	Not Applicable
	Calendar Quarter	Not Applicable	1.5 $\mu\text{g}/\text{m}^3$ (for certain areas)	1.5 $\mu\text{g}/\text{m}^3$ (for certain areas)
	Rolling 3-Month Average	Not Applicable	0.15 $\mu\text{g}/\text{m}^3$	0.15 $\mu\text{g}/\text{m}^3$





**Table 7-2 Lead Sampling Network (regulatory collection and analysis)**

Abbreviation	CRQ		
Name	Palomar Airport		
AQS ID	06-073-1023		
Lead	Monitor Type	SLAMS	SLAMS
	Monitor Designation	PRI	QAC
	Method	HV	HV
	Affiliation	Not Applicable	Not Applicable
	Spatial Scale	MI	MI
	Site Type	SO	QA
	Objective (Federal)	NAAQS	NAAQS
	Analysis	APCD	APCD
	Frequency	1:6	1:6
	Equipment	Tisch TE-5170BLVFC+	Tisch TE-5170BLVFC+

**Glossary of Terms**

Monitor Type

E= EPA  
 O= Other  
 SLAMS= State & Local monitoring station  
 SPM= Special purpose monitor  
 CATAC= California Toxics Monitoring

Site Type

EXDN= Extreme downwind  
 HC= Highest concentration  
 MXO= Maximum ozone concentration  
 MXP= Maximum precursor impact  
 PE= Population exposure  
 SO= Source oriented  
 UPBD= Upwind background  
 G/B= General/Background  
 RT= Regional Transport  
 WRI= Welfare related impacts  
 QA= Quality assurance

Method (Sampling/Analysis)

CL= Chemiluminescence  
 CT= Low Volume, size selective inlet, continuous  
 FL= Fluorescence  
 HV= High volume  
 IR= Nondispersive infrared  
 SI= High volume, size selective inlet  
 SP= Low volume, size selective inlet, speciated  
 SQ= Low volume, size selective inlet, sequential  
 UV= Ultraviolet absorption  
 Canister= Evacuated stainless steel canisters  
 Cartridges= Di-nitrophenylhydrazine cartridges  
 FSL= Fused Silica Lined  
 Filter= Quartz filters

Spatial Scale

MI= Micro  
 MS= Middle  
 NS= Neighborhood  
 US= Urban Scale

Affiliation

BG= Border Grant  
 CSN STN= Trends Speciation  
 CSN SU= Supplemental Speciation  
 NATTS= National Air Toxics Trends Stations  
 NCORE= National Core Multi-pollutant Monitoring Stations  
 NR= Near-road  
 PAMS= Photochemical Assessment Monitoring Stations  
 UNPAMS= Unofficial PAMS site

Monitor Designation

PRI= Primary  
 QAC= Collocated  
 O= Other

Objective (Federal)

NAAQS= Suitable for NAAQS comparison  
 Research= Research support  
 PI= Public Information



### **Section 7.2 Lead Minimum Monitoring Requirements**

The District is federally mandated to monitor Pb levels in accordance with the CFR. This section will state the different minimum monitoring requirements for each program, e.g. ambient, Ncore, Airports, etc. that the District operates and the references therein (Note: only the passages applicable/informative to the District are referenced).

The District meets or exceeds all minimum requirements for Pb monitoring for all programs.

#### **Section 7.2.1 Lead Minimum Monitoring Requirements-Source (non-Airport) & Source (Airport)**

The procedure to determine the minimum number of non-Airport source level monitors required is based on any non-Airport source emitting more than 0.5 tons/year of Pb emissions. Table 7-3 lists these requirements for non-Airport sources. The procedure to determine the minimum number of Airport source level monitors is the same, except that the threshold is 1.0 tons/year. Table 7-4 lists these requirements for Airport source level sampling. The sources and their Pb emissions are from the latest published EPA NEI database.

#### *4.5(a) Lead (Pb) Design Criteria<sup>31</sup>*

*State and, where appropriate, local agencies are required to conduct ambient air Pb monitoring near Pb sources which are expected to or have been shown to contribute to a maximum Pb concentration in ambient air in excess of the NAAQS, taking into account the logistics and potential for population exposure. At a minimum, there must be one source-oriented SLAMS site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons per year and from each airport which emits 1.0 or more tons per year based on either the most recent National Emission Inventory (<http://www.epa.gov/ttn/chief/einformation.html>) or other scientifically justifiable methods and data (such as improved emissions factors or site-specific data) taking into account logistics and the potential for population exposure...*

**Table 7-3 Lead Minimum Monitoring Requirements-Source (non-Airport) based on the 2020 NEI**

MSA & County (name)	From NEI <sup>32</sup> Any Non-Airport Pb Sources >0.5 TPY? (yes/no)	From NEI What is the Largest Non-Airport Pb Source?	From NEI What is the Largest Non-Airport Pb Emissions Rate? (TPY)	Number of Non-Airport Sources Pb Monitors Required (#)	Number of Non-Airport Sources Pb Monitors Active (#)	Number of Non-Airport Sources Pb Monitors Needed (#)
San Diego	No	Camp Pendleton	0.23	0	0	0

**Table 7-4 Lead Minimum Monitoring Requirements-Source (Airport) based on the 2020 NEI**

MSA & County (name)	From NEI Any Airport Pb Sources >=1.0 TPY? (yes/no)	From NEI What is the Largest Airport Pb Source (TPY)	From NEI What is the Largest Airport Pb Emissions Rate? (TPY)	Number of Airport Sources Pb Monitors Required (#)	Number of Airport Sources Pb Monitors Active (#)	Number of Airport Sources Pb Monitors Needed (#)
San Diego	No	Montgomery Field	0.62	0	0	0

<sup>31</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.5 “Lead (Pb) Design Criteria”, subsection (a)

<sup>32</sup> Most complete and recent EPA NEI Data base, 2017



**Section 7.2.2 Lead Minimum Monitoring Requirements-Special Study (Airport)**

One EPA regulation states that if an airport emits less than 1.0 TPY of Pb emissions, no source sampling is required. The EPA added a regulation that listed several airports to undergo temporary Pb sampling, regardless if the NEI listed Pb emissions were less than 1.0 TPY. If emissions exceeded the NAAQS by 50%, the sampler was to become permanent, or until the emissions were proven to be less than 50% of the NAAQS (over a minimum 3-yr period). Table 7-5 lists these requirements.

*4.5(iii) Lead (Pb) Design Criteria<sup>33</sup>*

*...agencies are required to conduct ambient air Pb monitoring near each of the airports listed in Table D-3A for a period of 12 consecutive months ...Any monitor that exceeds 50 percent of the Pb NAAQS on a rolling 3-month average (as determined according to 40 CFR part 50, Appendix R) shall become a required monitor under paragraph 4.5E of this Appendix, and shall continue to monitor for Pb unless a waiver is granted ...*

*Table D-3A Airports to be Monitored for Lead*

<b>Airport</b>	<b>County</b>	<b>State</b>
McClellan-Palomar	San Diego	CA
Gillespie Field	San Diego	CA

**Table 7-5 Lead Minimum Monitoring Requirements – Airport (Special Study) Results**

Names of Airport Monitors Required (name)	Was Airport Testing Done? (yes/no)	Did the Airport Pass? (yes/no)	Does the Airport Require Continued Sampling? (yes/no)	Is Continued Sampling Active? (yes/no)	Number of Continued Sampling Sites Needed (#)
McClellan-Palomar	yes	NO	YES	YES	0
*Gillespie Field	yes	yes	no	Not Applicable*	Not Applicable

**\*Gillespie Field**

The Airport study at Gillespie Field officially concluded and it was determined by EPA to discontinue all lead sampling at this airport.

**McClellan-Palomar**

The Airport study at McClellan-Palomar Airport officially concluded and the airport did not pass the minimum tolerances. Consequently, permanent sampling was established. The concentrations for lead have met the waiver criteria (three continuous years of sampling at this location and less than 50% of the NAAQS) and the District has requested the cessation of regulatory lead sampling. At this time, EPA is not approving the District’s requested discontinuation of Pb monitoring at Palomar Airport, but EPA Region 9 will continue to work with EPA Headquarters to determine discontinuation eligibility.

<sup>33</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.5 “Lead (Pb) Design Criteria”, subsection (iii)



**Section 7.2.3 Lead Minimum Monitoring Requirements-Regional Administrator**

The EPA Regional Administrator may require additional lead sampling beyond what is required in section 4.5 particularly near industrial sources of lead. No industrial sources of lead have required additional monitoring as directed by the EPA Regional Administrator. Table 7-6 lists these requirements.

*4.5 Lead (Pb) Design Criteria<sup>34</sup>*

*The EPA Regional Administrator may require additional monitoring beyond the minimum monitoring requirements contained in paragraph 4.5(a) of this appendix ...*

**Table 7-6 Lead Minimum Monitoring Requirements-Regional Administrator**

MSA & County (name)	Number of Regional Administrator Pb Monitors Required (#)	Number of Regional Administrator Pb Monitors Active (#)	Number of Regional Administrator Pb Monitors Needed (#)
San Diego	0	0	0

**Section 7.2.4 Lead Minimum Monitoring Requirements-QA Collocation & Filter Submittal to EPA**

Table 7-7 summarizes the collocation requirements for quality assurance purposes.

*3.4.4.1 A PQAO must<sup>35</sup> (a) Have 15 percent of the primary monitors (not counting non-source oriented Ncore sites in PQAO) collocated. Values of 0.5 and greater round up; and (b) Have at least one collocated quality control monitor (if the total number of monitors is less than three).*

*3.4.7... In addition<sup>36</sup>, each year, four collocated samples from PQAOs with less than or equal to five ... must be sent to an independent laboratory, the same laboratory as the performance evaluation audit, for analysis.*

**Table 7-7 Lead Minimum Monitoring Requirements-QA Collocation & Filter Submittal to EPA**

Number of Pb-TSP Samplers Required (#)	Number of Pb-TSP Samplers Active (#)	Number of Pb-TSP Samplers Calculated for Collocation (#)	Number of Pb-TSP Samplers Active for Collocation (#)	Number of Pb-TSP Samplers Needed for Collocation (#)	Location of Collocated Site (name)	Are four collocated samples sent to PEP laboratory for analysis? (yes/no)
1	1	1 x (15%) = 1	1	0	Palomar (CRQ) 06-073-1023	Yes

<sup>34</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.5 “Lead (Pb) Design Criteria”, subsection (c)

<sup>35</sup> (2021) 40 CFR Part 58, Appendix A, Section 3, Measurement Quality Check Requirements, chapter 3.4, “Pb”, section 3.4.4.1 (a)-(b)

<sup>36</sup> (2021) 40 CFR Part 58, Appendix A, Section 3, Measurement Quality Check Requirements, chapter 3.4, “Pb”, section 3.4.7



### **Section 7.2.5 Lead Minimum Monitoring Requirements-Summary**

Table 7-8 summarizes the Pb minimum monitoring requirements.

**Table 7-8 Lead Minimum Monitoring Requirements-Summary**

CFR Programs Pb-TSP Samplers Requirements (name)	Number of Pb-TSP Samplers Required (#)	Number of Pb-TSP Samplers Active (#)	Number of Pb-TSP Samplers Needed (#)
Source (non-Airport) =	0	0	0
Source (Airport)=	0	0	0
Airport Study=	0	0	0
Airport Study Exceedance=	1*	1	0
Regional Administrator=	0	0	0
QA Collocation=	1	1	0
QAC filters sent to EPA for analysis	4	4	0

\* The District is seeking EPA approval to discontinue regulatory lead sampling at Palomar Airport.

### **Section 7.3 Lead Suitability for Comparison to the NAAQS**

The CFR requires that for Pb data to be used in regulatory determinations of compliance with the Pb NAAQS, the Pb monitors must be sited according to Federal Regulations<sup>37</sup> and the sampling frequency must be in accordance with Federal regulations. All District Pb monitors meet or exceed all minimum monitoring requirements and sampling frequencies, as to be able to be compared to the NAAQS. Table 7-9 and **Table 7-10 summarize these requirements.**

**Table 7-9 Lead Suitability for Comparison to the NAAQS-Sampling Equipment**

Parameter	Code	Unit	Code	Duration	Code	Equipment	Method	Code	Frequency	Method ID	
Lead	Pb	14129	µg/m <sup>3</sup> LC	105	24-Hr	7	Tisch TE-5170 BLVFC+	ICP/MS Acid filter extract with hot nitric acid	192	1:6	EQL-0710-192

#### **Section 7.3.1 Lead Suitability for Comparison to the NAAQS – Operating Frequency**

The CFR requires that for Pb-TSP data to be used in regulatory determinations of compliance with the Pb NAAQS, the Pb-TSP samplers' sampling frequency must be in accordance with Federal regulations. All District Pb-TSP samplers meet or exceed all minimum monitoring requirements for the sampling frequency and can be compared to the NAAQS.

Table 7-10 summarizes these requirements.

##### *58.12 Operating schedules*

*For PM<sub>10</sub> samplers, a 24-hour sample must be taken from midnight to midnight (local standard time) to ensure national consistency. The minimum monitoring schedule for the site in the area of expected maximum concentration shall be based on the relative level of that monitoring site concentration with respect to the 24-hour standard as illustrated in Figure 1 below.... The minimum sampling schedule for all*

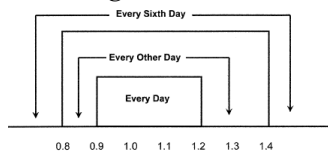


Figure 1 – Ratio to Standard

*other sites in the area remains once every six days.*

<sup>37</sup> (2021) 40 CFR Part 58, Appendix E, “Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring” and Table E-4.



**Table 7-10 Lead Suitability for Comparison to the NAAQS-Sampling Equipment**

What is the Minimum EPA Permitted Sampling Frequency? (#)	What is the Actual Sampling Frequency? (#)	Does the Actual Sampling Frequency Meet EPA Specifications? (yes/no)
1:6	1:6	yes

**Section 7.4 Lead Concentrations for San Diego**

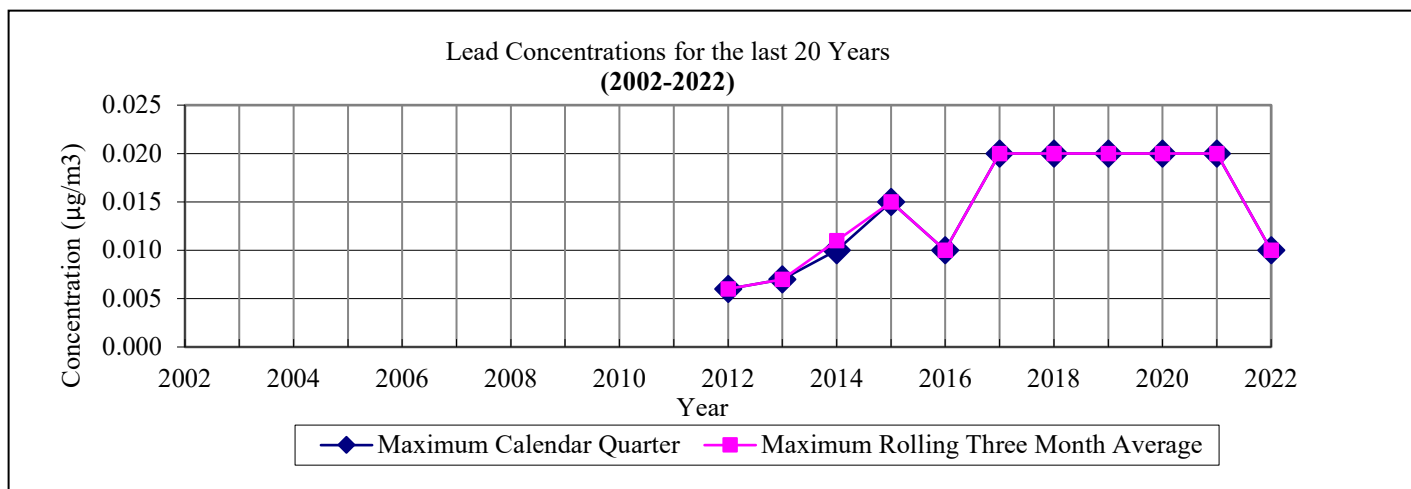
Over the years, lead concentrations decreased so much that ambient sampling was no longer required. In 2012, the EPA lowered the NAAQS and sampling resumed. This section will illustrate the different metrics for comparison.

**Section 7.4.1 Lead Concentrations for San Diego-for the Last 20 Years**

The rapid decrease in lead emissions since the 1980s can be attributed primarily to phasing out the lead in gasoline in the 1970s by EPA and CARB. Note: the “Days Above National Standard” row in Table 7-11 and Figure 7.2 reflect the lead standard for that year. No Testing (NT) was done in the SDAB from 1997 until 2012. The measured concentration for 2012 is from the Ncore location, which is categorized as neighborhood scale and representative concentrations. The airport sampler is categorized as source impact and microscale, and is not considered representative concentrations.

**Table 7-11 Lead Concentrations for San Diego-for the Last 20 Years, 2002-2022**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Maximum Calendar Quarter (µg/m <sup>3</sup> )	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.006	0.007	0.010	0.015	0.010	0.020	0.020	0.020	0.020	0.020	0.010
Maximum Rolling 3-Month Average (µg/m <sup>3</sup> )	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.006	0.007	0.011	0.015	0.010	0.020	0.020	0.020	0.020	0.020	0.010
Days above the National Standard	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0	0	0	0	0	0	0	0	0	0	0



**Figure 7.2 Lead Concentrations for San Diego-for the Last 20 Years**



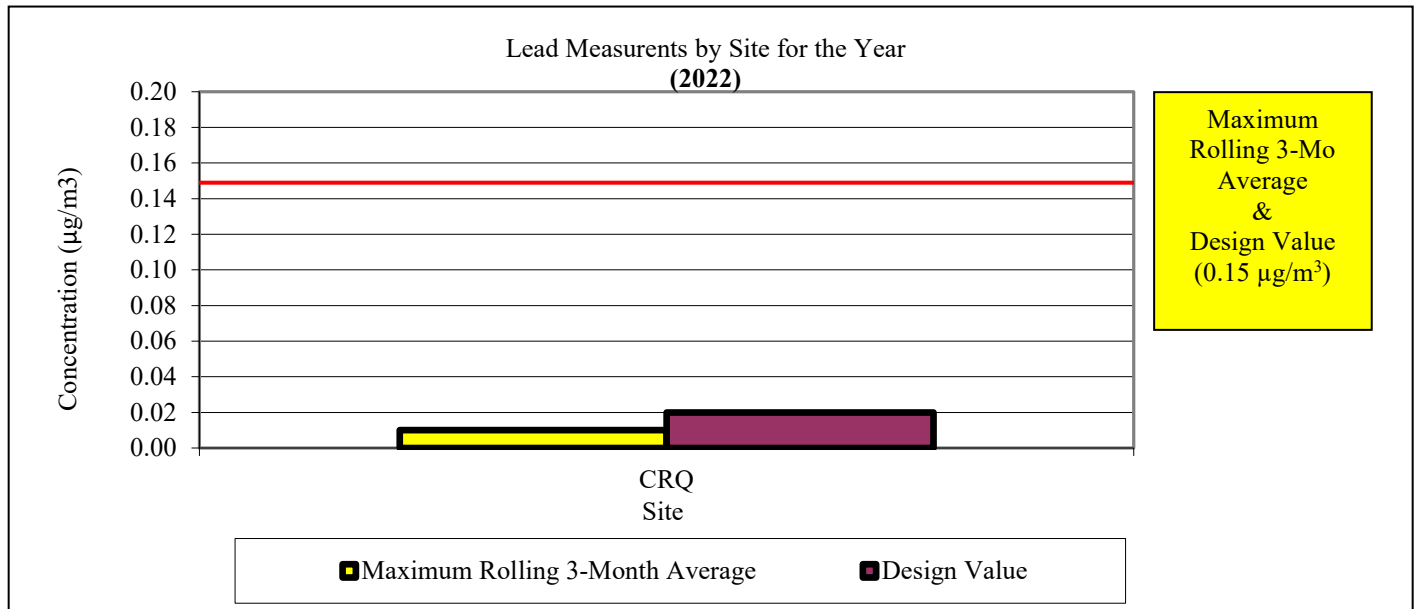
**Section 7.4.2 Lead Concentrations for San Diego-by Site for the Year**

Table 7-12 lists the maximum lead measurements for each lead monitoring location; Figure 7.3 shows the values graphically with respect to the National Standard.

**Table 7-12 Lead Concentrations for San Diego-by Site for the Year, 2022**

Site  (name)	Site Abbreviation	Maximum Rolling 3-Month Average <b>2022</b> ( $\mu\text{g}/\text{m}^3$ )	Design Value <b>2022</b> ( $\mu\text{g}/\text{m}^3$ )	Number of Days Above the NAAQS <b>2022</b> (#)
Palomar Airport*	CRQ	0.010	0.020	0

\*Source impact and microscale monitors.



**Figure 7.3 Lead Concentrations for San Diego-by Site for the Year Graph**

The measured concentrations at the Palomar Airport location have been consistently well below the NAAQS and they have been for three (3) continuous years of operation. At this time, EPA is not approving the District's requested discontinuation of Pb monitoring at Palomar Airport, but EPA Region 9 will continue to work with EPA Headquarters to determine discontinuation eligibility.

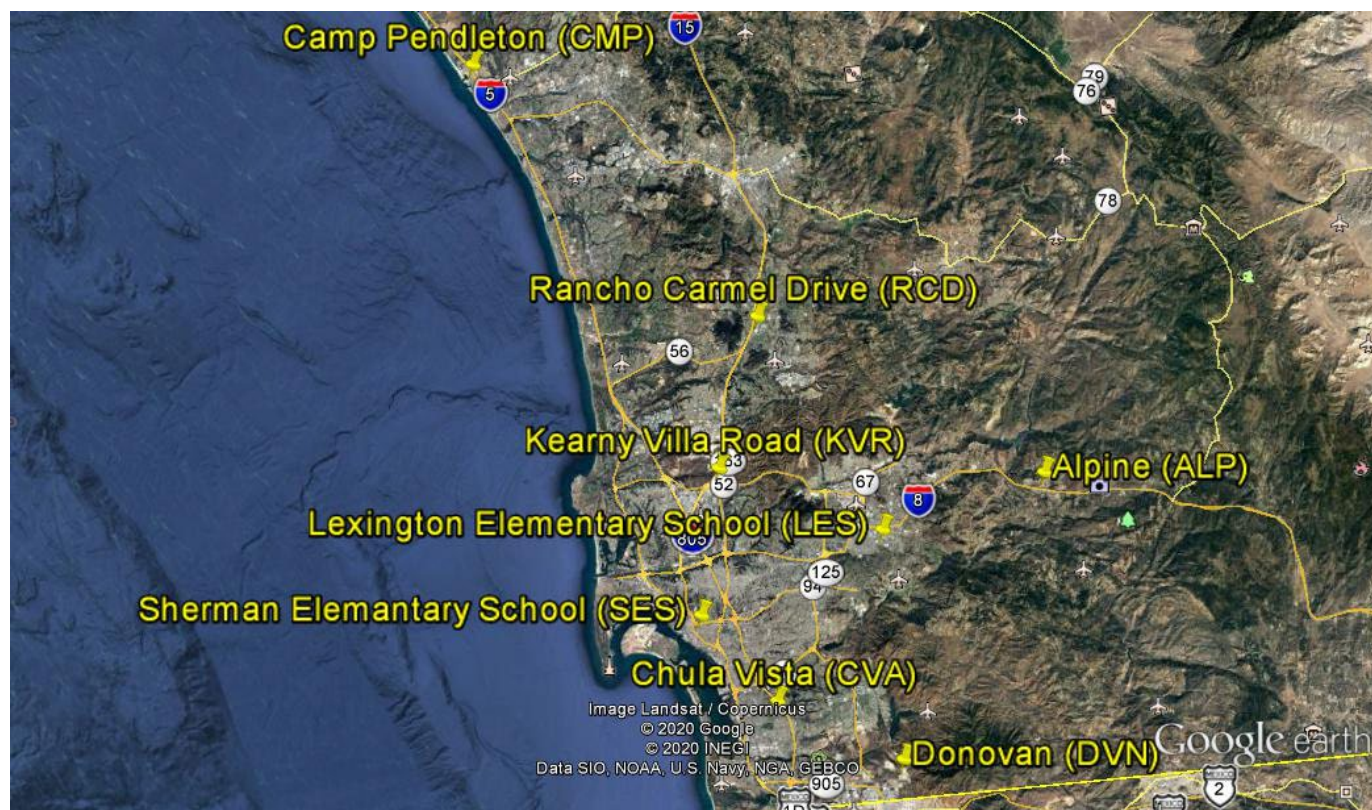


## Chapter 8: Particulate Matter 2.5 $\mu\text{m}$ (PM<sub>2.5</sub>)

### Section 8.1 PM<sub>2.5</sub> Introduction

PM<sub>2.5</sub> was sampled on both a continuous basis and sequentially (on a schedule set by the EPA) at several locations in the SDAB (Figure 8.1 and Table 8-2) and were referenced to the PM<sub>2.5</sub> standards of the year (Table 8-1), when applicable. The equipment is listed in Table 8-2. Please note:

- In 2015, the District was evicted from the Escondido site. The District is seeking an alternative location (TBD) for the air monitoring station in Escondido.



**Figure 8.1 PM<sub>2.5</sub> Network Map**

**Table 8-1 PM<sub>2.5</sub> State and National Standards for the Year**

Ambient Air Quality Standards				
Pollutant	Averaging Time	California Standards	National Standards	
		Concentration	Primary	Secondary
Fine Particulate Matter (PM <sub>2.5</sub> )	24 hour	Not Applicable	35 $\mu\text{g}/\text{m}^3$	35 $\mu\text{g}/\text{m}^3$
	Annual Arithmetic Mean	12 $\mu\text{g}/\text{m}^3$	12 $\mu\text{g}/\text{m}^3$	15 $\mu\text{g}/\text{m}^3$





**Table 8-2 PM<sub>2.5</sub> Sampling Network**

Site Abbreviation	ALP		CMP		CVA	LES			KVR		DVN		SES			RCD		
Site Name	Alpine		Camp Pendleton		Chula Vista	Lexington Elementary School			Kearny Villa Rd.		Donovan		Sherman Elementary School			Rancho Carmel Dr.		
AQS ID	06-073-1006		06-073-1008		06-073-0001	06-073-1022			06-073-1016		06-073-1014		06-073-1026			06-073-1017		
PM <sub>2.5</sub> (non-specified)	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS		
	Designation	O	O	O	O	PRI	O	PRI	O	PRI	QAC	O	O	O	O	PRI	PRI	
	Method	CT (non-FEM)	BS	CT (non-FEM)	BS	SQ (FRM)	CT (non-FEM)	SQ (FRM)	BS	SQ (FRM)	SQ (FRM)	CT (non-FEM)	BS	CT (non-FEM)	BS	SQ (FRM)	SQ (FRM)	
	Affiliation	N/A	N/A	N/A	N/A	N/A	NCore	NCore	NCore	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NR	
	Spatial Scale	US	US	US	US	NS	US	NS	NS	NS	NS	NS	NS	NS	NS	NS	MS	
	Site Type	PE	PE	PE	PE	PE	PE	HC	PE	PE	PE	PE	PE	PE	PE	PE	PE	SO
	Objective (Federal)	PI, Research	NAAQS	PI, Research	NAAQS	NAAQS	PI, Research	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS	PI, Research	NAAQS	PI, Research	NAAQS	NAAQS	NAAQS
	Analysis	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD
	Frequency	7/24	7/24	7/24	7/24	1:3	7/24	1:1	7/24	1:3	1:6	7/24	7/24	7/24	7/24	1:3	1:3	
	Equipment	Met One BAM-1020	Teledyne T640x*	Met One BAM-1020	Teledyne T640x*	Met One E-SEQ-FRM	Met One BAM-1020	Met One E-SEQ-FRM	Teledyne T640x*	Met One E-SEQ-FRM	Met One E-SEQ-FRM	Met One BAM-1020	Teledyne T640x*	Met One BAM-1020	Teledyne T640x*	Met One E-SEQ-FRM	Met One E-SEQ-FRM	
PM <sub>2.5</sub> (specified)	Monitor Type					SLAMS	SLAMS											
	Method					SP & SQ	SP & SQ											
	Affiliation					NCore, CSN, STN	NCore, CSN, STN											
	Spatial Scale					NS	NS											
	Site Type					PE	PE											
	Objective (Federal)					Research	Research											
	Analysis					EPA	EPA											
	Frequency					1:3	1:3											
Equipment					URG-3000N	Met One SuperSASS												

\*Teledyne T640x replaced BAM-1020 mid-year. They operate as a Federal Equivalence Method (FEM). Installation dates: ALP (9/8/2022), CMP (8/30/2022), LES (8/11/2022), DVN (8/2/2022), SES (5/16/2022). Remaining PM<sub>2.5</sub> sites will have T640x analyzers installed in early 2023.



### Glossary of Terms

#### Monitor Type

E= EPA  
O= Other  
SLAMS= State & Local monitoring station  
SPM= Special purpose monitor  
CATAC= California Toxics Monitoring

#### Site Type

HC= Highest concentration  
PE= Population exposure  
SO= Source oriented  
UPBD= Upwind background  
G/B= General/Background  
RT= Regional Transport  
WRI= Welfare related impacts  
QA= Quality assurance

#### Method (Sampling/Analysis)

CL= Chemiluminescence  
CT= Low Volume, size selective inlet, continuous  
FL= Fluorescence  
HV= High volume  
IR= Nondispersive infrared  
SI= High volume, size selective inlet  
SP= Low volume, size selective inlet, speciated  
SQ= Low volume, size selective inlet, sequential  
UV= Ultraviolet absorption  
Canister= Evacuated stainless steel canisters  
Cartridges= Di-nitrophenylhydrazine cartridges  
FSL= Fused Silica Lined  
Filter= Quartz filters  
Auto= GCFID continuous  
BS = Broadband Spectroscopy

#### Monitor Designation

PRI=Primary  
QAC= Collocated

#### Network Affiliation

BG= Border Grant  
CSN STN= Trends Speciation  
CSN SU= Supplemental Speciation  
NATTS= National Air Toxics Trends Stations  
NCORE= National Core Multi-pollutants  
NR= Near-road  
PAMS= Photochemical Assessment Monitoring

#### Spatial Scale

MI= Micro  
MS= Middle  
NS= Neighborhood

#### Objective (Federal)

NAAQS= Suitable for NAAQS comparison  
Research= Research support  
PI= Public Information  
N/A= Not Applicable  
O= Other



**Section 8.2 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements**

The District is federally mandated to monitor PM<sub>2.5</sub> levels in accordance with the CFR. This section will state the needs for PM<sub>2.5</sub> manual method samplers only. The District uses the PM<sub>2.5</sub> manual sampler to satisfy all minimum monitoring requirements, other than those requirements that specifically state PM<sub>2.5</sub> continuous sampler. This section will also state the different monitoring requirements for each program, e.g. ambient, manual, NCore, speciated, etc. that the District operates and references therein (Note: only the passages applicable/informative to the District are referenced). These monitors can serve as fulfilling other PM<sub>2.5</sub> network requirements, e.g. ambient PM<sub>2.5</sub> sampling can fulfill an NCore requirement.

The District meets or exceeds all minimum requirements for PM<sub>2.5</sub> manual monitoring for all programs except for the following:

- Change in the number of PM<sub>2.5</sub> FRM SIP samplers, due to relocations.

**Section 8.2.1 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-Design Criteria (24-Hr. & Annual Average)**

The District is required to operate a minimum number of PM<sub>2.5</sub> samplers irrespective of the PM<sub>2.5</sub> network affiliation. To ascertain the minimum number of samplers required for ambient air sampling, the Highest Concentration value must be calculated. Table 8-3 – Table 8-5 summarize these requirements.

*4.7.1(a) Fine Particulate Matter (PM<sub>2.5</sub>) Design Criteria.<sup>38</sup>*

*...agencies must operate the minimum number of required PM<sub>2.5</sub> SLAMS sites listed in Table D-5 of this appendix...*

*Table D-5 of Appendix D to Part 58—PM<sub>2.5</sub> Minimum Monitoring Requirements*

<i>MSA population</i>  (#)	<i>Most recent 3-year design value <math>\geq 85\%</math> of any PM<sub>2.5</sub> NAAQS</i>  (#)	<i>Most recent 3-year design value <math>&lt; 85\%</math> of any PM<sub>2.5</sub> NAAQS</i>  (#)
<i>&gt;1,000,000</i>	3	2

**Table 8-3 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-Design Criteria (Annual Average)**

Annual Design Value	Annual Design Value Location	Is the Annual Design Value $\geq 85\%$ of the NAAQS? (yes/no)	Is the Annual Design Value $< 85\%$ of the NAAQS? (yes/no)	Does the Annual Design Value Meet the NAAQS? (yes/no)
<b>2020-2022</b> ( $\mu\text{g}/\text{m}^3$ )	(name)			
9.8	Lexington Elementary School (LES) 06-073-1022	NO	yes	yes

<sup>38</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.7 “Fine Particulate Matter (PM<sub>2.5</sub>) Design Criteria”, subsection 4.7.1 General Requirements (a)



**Table 8-4 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-Design Criteria (24-Hr)**

24-hr Design Value  2020-2022 (µg/m <sup>3</sup> )	Annual Design Value Location  (name)	Is the 24-hr Design Value ≥ 85% of the NAAQS? (yes/no)	Is the 24-hr Design Value < 85% of the NAAQS? (yes/no)	Does the 24-hr Design Value Meet the NAAQS? (yes/no)
23	Chula Vista (CVA) 06-073-0001	NO	yes	yes

**Table 8-5 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-Ambient**

MSA & County  (name)	Population Estimated from 2020 Census <sup>39</sup> (#)	Number of Required PM <sub>2.5</sub> Manual Samplers (#)	Number of Active PM <sub>2.5</sub> Manual Samplers (#)	Number of Needed PM <sub>2.5</sub> Manual Samplers (#)
San Diego	3.3 Million	3	5	0

**Section 8.2.2 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-State (SIP)**

In 1998, the San Diego Air Pollution Control District, in partnership with the California Air Resources Board (ARB), developed a PM-fine monitoring network to implement the new PM<sub>2.5</sub> NAAQS and is outlined in the “California Particulate Matter Monitoring Network Description”.<sup>40</sup> Table 8-6 summarizes these requirements.

The EPA Region 9 governing authority approved the ARB’s statewide distribution plan for the placement of the PM<sub>2.5</sub> monitors within each district and the location of the collocated monitors for each district to satisfy the sampling and quality assurance requirements of 40 CFR Part 58. Any changes to the PM<sub>2.5</sub> network in the SDAB will be undertaken in partnership and with advisement of ARB. If a PM<sub>2.5</sub> monitor is violating the NAAQS and the District is forced to relocate the station or the sampler, the District will provide a minimum 30-day period for public review, prior to the relocation of the monitor or the station.

**Table 8-6 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements- State (SIP)**

MSA & County  (name)	Population Estimated from 2020 Census (#)	Number of PM <sub>2.5</sub> Manual Samplers Required (non- microscale) (#)	Number of PM <sub>2.5</sub> Manual Samplers Active (#)	Number of PM <sub>2.5</sub> Manual Samplers Needed (#)
San Diego	3.3 Million	5	4*	1*

\* The Near-road is microscale and cannot be used in this total

<sup>39</sup> Based on the most recent official U.S Census statistics.

<sup>40</sup> <http://www.arb.ca.gov/aqd/pm25/pmfdsign.htm>



**Section 8.2.3 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-Site of Expected Maximum Concentration (24-Hr & Annual Average)**

The District is required to designate PM<sub>2.5</sub> sampling locations for specific purposes or needs. One of these designations is called the site of expected maximum concentrations with respect to the 24-Hr and annual average NAAQS. For the District these locations can change yearly. For both the 24-Hr and annual average NAAQS, these locations routinely alternate between Escondido (when operational), Lexington, and Sherman monitoring locations. Table 8-7 summarize these requirements.

*4.7.1(b)(1) Fine Particulate Matter (PM<sub>2.5</sub>) Design Criteria.<sup>41</sup>*

*At least one monitoring station is to be sited at neighborhood or larger scale in an area of expected maximum concentration.*

**Table 8-7 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-Site of Expected Maximum Concentration (Annual Average) & 24-Hr**

Site of Expected Maximum Concentration for Design Value Annual NAAQS  (name)	Site of Expected Maximum Concentration for 24-Hr NAAQS  (name)
Lexington Elementary School (LES) 06-073-1022	Lexington Elementary School (LES) 06-073-1022

**Section 8.2.4 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-Near-road**

The District is required to have a PM<sub>2.5</sub> sampler at a near-road location. The District is required to operate two near-road sites. The District installed a PM<sub>2.5</sub> FRM sampler at the first near-road site (RCD), thus fulfilling our near-road particulate requirement. Table 8-8 lists these requirements.

*4.7.1(b)(2) Fine Particulate Matter (PM<sub>2.5</sub>) Design Criteria.<sup>42</sup>*

*For CBSAs with a population of 1,000,000 or more persons, at least one PM<sub>2.5</sub> monitor is to be collocated at a near-road NO<sub>2</sub> station required in section 4.3.2(a) of this appendix.*

<sup>41</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.7 “Fine Particulate Matter (PM<sub>2.5</sub>) Design Criteria”, subsection 4.7.1 General Requirements, (b) “Specific Design Criteria for PM<sub>2.5</sub>, (1)

<sup>42</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.7 “Fine Particulate Matter (PM<sub>2.5</sub>) Design Criteria”, subsection (b)(2)



**Table 8-8 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-Near-road**

MSA & County (name)	Population Estimated from 2020 Census (#)	Are PM <sub>2.5</sub> Near-road Samplers Required? (yes/no)	Number of PM <sub>2.5</sub> Near-road Samplers Required? (#)	Number of PM <sub>2.5</sub> Near-road Samplers Active (#)	Number of PM <sub>2.5</sub> Near-road Samplers Needed (#)	Near-road Site Location Name (name)
San Diego	3.3 million	YES	1	1	0	Rancho Carmel Dr. (RCD) 06-073-1017

**Section 8.2.5 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-Site of Poor Air Quality**

The District is required to designate PM<sub>2.5</sub> sampling locations for specific purposes or needs. One of these designations is called the site of Poor Air Quality with respect to the 24-Hr and annual average NAAQS (Note: the site that serves as fulfilling the requirement for the location of maximum concentration cannot also be the site of poor air quality). Table 8-9 summarizes these requirements.

*4.7.1(b)(3) Fine Particulate Matter (PM<sub>2.5</sub>) Design Criteria<sup>43</sup>  
 For areas with additional required SLAMS, a monitoring station is to be sited in an area of poor air quality.*

**Table 8-9 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-Site of Poor Air Quality**

Site of Poor Air Quality (name)
Sherman Elementary School (SES) 06-073-1026

**Section 8.2.6 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-NCORE**

The District is required to operate a PM<sub>2.5</sub> sampler as part of the NCore multipollutant monitoring program. This program was designed to measure pollutants at lower levels, as well as other pollutants. For the NCore program, the District is required to collect PM<sub>2.5</sub> and PM<sub>coarse</sub> (PM<sub>10-2.5</sub>) data. PM<sub>coarse</sub> data is obtained by operating collocated PM<sub>10</sub> and PM<sub>2.5</sub> samplers of the same make and model and on the same sampling frequency. The PM<sub>2.5</sub> concentrations are then subtracted from the PM<sub>10</sub> concentrations to get the PM<sub>coarse</sub> fraction. Table 8-10 lists the NCore PM<sub>2.5</sub> requirements.

*3(b) Design Criteria for NCore Sites<sup>44</sup>  
 The NCore sites must measure, at a minimum, PM<sub>2.5</sub> particle mass using continuous and integrated/filter-based samplers, speciated PM<sub>2.5</sub>, PM<sub>10-2.5</sub> particle mass, speciated PM<sub>10-2.5</sub>...*

*4.8.1(a) Coarse Particulate Matter (PM<sub>10-2.5</sub>) Design Criteria.<sup>45</sup>  
 The only required monitors for PM<sub>10-2.5</sub> are those required at NCore Stations.*

<sup>43</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.7 “Fine Particulate Matter (PM<sub>2.5</sub>) Design Criteria”, subsection (b)(3)

<sup>44</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 3, “Design Criteria for NCore sites”, subpart (b)

<sup>45</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.8 “Coarse Particulate Matter (PM<sub>2.5</sub>) Design Criteria”, subsection 4.8.1(a)



**Table 8-10 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-NCORE**

Number of PM <sub>2.5</sub> Samplers Required at NCore Sites (#)	Number of PM <sub>2.5</sub> Samplers Active at NCore Sites (#)	Number of PM <sub>2.5</sub> Samplers Needed at NCore Sites (#)	Can this PM <sub>2.5</sub> Sampler be used for PMcoarse? (yes/no)	Number of PM <sub>2.5</sub> Samplers Needed for PMcoarse? (#)	NCore Site Location Name (name)
1	1	0	yes	0	Lexington Elementary School (LES) 06-073-1022

**Section 8.2.7 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements- QA Collocation**

For quality assurance purposes, there are requirements for analyzers or samplers of the same make and model to be collocated. In 1998, the District and the ARB gave criteria for choosing a site for collocation. Collocation guidance is from the CFR. Table 8-11 summarizes these requirements.

*3.2.3.1 Collocated Quality Control Sampling Procedures for PM<sub>2.5</sub><sup>46</sup>*

*For each distinct monitoring method designation (FRM or FEM) that a PQAO is using for a primary monitor, the PQAO must have 15 percent of the primary monitors of each method designation collocated (values of 0.5 and greater round up)...*

**Table 8-11 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements- QA Collocation**

Number of PM <sub>2.5</sub> Samplers Required from Table D-5 (#)	Number of PM <sub>2.5</sub> Samplers Active (#)	Number of PM <sub>2.5</sub> Samplers Needed for Collocation (#)	Number of PM <sub>2.5</sub> Samplers Active for Collocation (#)	Number of PM <sub>2.5</sub> Samplers Needed for Collocation (#)	Collocation Site Name (name)
3	5	5 x (15%) = 1	1	0	Kearny Villa Rd. (KVR) 06-073-1016

The District meets or exceeds all minimum requirements for PM<sub>2.5</sub> collocation.

**Section 8.2.8 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-Summary**

Table 8-12 summarizes all the PM<sub>2.5</sub> manual minimum monitoring requirements from Sections 8.2.1 to 8.2.7.

<sup>46</sup> (2021) 40 CFR Part 58, Appendix A, Section 3.2.3.1, Quality System Requirements, PM<sub>2.5</sub>, 3.2.3.1



**Table 8-12 PM<sub>2.5</sub> Manual Minimum Monitoring Requirements-Summary**

CFR Programs PM <sub>2.5</sub> Samplers Requirements (name)	Number of PM <sub>2.5</sub> Samplers Required (#)	Number of PM <sub>2.5</sub> Samplers Active (#)	Number of PM <sub>2.5</sub> Samplers Needed (#)
CFR EPA Table D-2 only=	3	5	0
California Particulate Matter Network (non-microscale)=	5	4	1
DV Maximum Concentration, 24-Hr =	1	1	0
DV Maximum Concentration, Annual Average=	1	1	0
Expected Maximum Concentration, 24-Hr =	1	1	0
Expected Maximum Concentration, Annual Average=	1	1	0
Near-road=	1	1	0
Poor Air Quality=	1	1	0
NCore=	1	1	0
QA Collocation=	1	1	0

**Section 8.3 PM<sub>2.5</sub> Continuous Minimum Monitoring Requirements**

The District is federally mandated to monitor PM<sub>2.5</sub> levels in accordance with the CFR. This section will state the needs for PM<sub>2.5</sub> continuous method samplers only and will state the different monitoring requirements for each program, e.g. ambient, NCore, etc. that the District operates and references therein (Note: only the passages applicable/informative to the District are referenced).

The District meets or exceeds all minimum requirements for PM<sub>2.5</sub> continuous monitoring for all programs.

**Section 8.3.1 PM<sub>2.5</sub> Continuous Minimum Monitoring Requirements-Ambient**

The District is required to operate a minimum number of PM<sub>2.5</sub> continuous samplers irrespective of the PM<sub>2.5</sub> network affiliation. Table 8-13 summarizes these requirements.

*4.7.2 Fine Particulate Matter (PM<sub>2.5</sub>) Design Criteria. Requirement for Continuous PM<sub>2.5</sub> Monitoring<sup>47</sup>  
 The State, or where appropriate, local agencies must operate continuous PM<sub>2.5</sub> analyzers equal to at least one-half (round up) the minimum required sites listed in Table D-5 of this appendix.*

**Table 8-13 PM<sub>2.5</sub> Continuous Minimum Monitoring Requirements-Ambient**

Minimum Number of PM <sub>2.5</sub> Manual Samplers Required from Table D-5 (#)	Minimum Number of PM <sub>2.5</sub> Continuous Analyzers Required= ½ Minimum Number of Required PM <sub>2.5</sub> Manual Samplers Round Up (#)	Number of PM <sub>2.5</sub> Continuous Analyzers Active (#)	Number of PM <sub>2.5</sub> Continuous Analyzers Needed (#)
3	3 x (½) = 2	5	0

<sup>47</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.7 “Fine Particulate Matter (PM<sub>2.5</sub>) Design Criteria”, subsection 4.7.2, “Requirement for Continuous PM<sub>2.5</sub> Monitoring”





**Section 8.3.2 PM<sub>2.5</sub> Continuous Minimum Monitoring Requirements-Collocation with Manual**

The District is required to operate a minimum number of PM<sub>2.5</sub> continuous analyzers collocated with PM<sub>2.5</sub> manual samplers. Table 8-14 summarizes these requirements.

*4.7.2 Fine Particulate Matter (PM<sub>2.5</sub>) Design Criteria. Requirement for Continuous PM<sub>2.5</sub> Monitoring<sup>48</sup>  
 At least one required continuous analyzer in each MSA must be collocated with one of the required FRM/FEM/ARM monitors*

**Table 8-14 PM<sub>2.5</sub> Continuous Minimum Monitoring Requirements-Collocation with Manual**

Minimum Number of PM <sub>2.5</sub> Continuous Analyzers Required to be Collocated with PM <sub>2.5</sub> Manual Samplers (#)	Minimum Number of PM <sub>2.5</sub> Continuous Analyzers Actively Collocated with PM <sub>2.5</sub> Manual Samplers (#)	Minimum Number of PM <sub>2.5</sub> Continuous Analyzers Needed to be Collocated with PM <sub>2.5</sub> Manual Samplers (#)	Collocation Locations (name)
1	1	0	Lexington Elementary School (LES) 06-073-1022

**Section 8.3.3 PM<sub>2.5</sub> Continuous Minimum Monitoring Requirements-NCORE**

The District is required to operate a PM<sub>2.5</sub> continuous sampler as part of the NCore multipollutant monitoring program. Table 8-15 lists the NCore PM<sub>2.5</sub> continuous requirements.

*3. Design Criteria for NCore Sites<sup>49</sup>  
 (b) The NCore sites must measure, at a minimum, PM<sub>2.5</sub> particle mass using continuous*

**Table 8-15 PM<sub>2.5</sub> Continuous Minimum Monitoring Requirements-NCORE**

Number of PM <sub>2.5</sub> Continuous Analyzers Required at NCore Sites (#)	Number of PM <sub>2.5</sub> Continuous Analyzers Active at NCore Sites (#)	Number of PM <sub>2.5</sub> Continuous Analyzers Needed at NCore Sites (#)	NCORE Location (name)
1	1	0	Lexington Elementary School (LES) 06-073-1022

<sup>48</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.7 “Fine Particulate Matter (PM<sub>2.5</sub>) Design Criteria”, subsection 4.7.2, “Requirement for Continuous PM<sub>2.5</sub> Monitoring”

<sup>49</sup> (2021) 40 CFR Part 58, App. D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 3, “Design Criteria for NCore sites”, subpart (b)



**Section 8.3.4 PM<sub>2.5</sub> Continuous Minimum Monitoring Requirements-Collocation**

For quality assurance purposes, there are requirements for analyzers or samplers of the same make and model to be collocated. Table 8-16 summarize these requirements.

*3.2.3.2(b) Collocated Quality Control Sampling Procedures for PM 2.5... monitors selected for collocation must also meet the following requirements:<sup>50</sup>  
 ... Table A-2 of this appendix demonstrates the collocation procedure with a PQAQO having one type of primary FRM and multiple primary FEMs.*

Table A-2

#Primary FEMS of a unique method designation	#Collocated	#Collocated with an FRM	#Collocated with same method designation
1-9	1	1	0
10-16	2	1	1

**Section 8.3.4.1 PM<sub>2.5</sub> Continuous Minimum Monitoring Requirements- Collocation with Manual**

See Section 8.3.2

**Section 8.3.4.2 PM<sub>2.5</sub> Continuous Minimum Monitoring Requirements- QA Collocation with Continuous**

Years prior to 2022, the District did not operate any PM<sub>2.5</sub> continuous analyzer (BAM 1020) in FEM mode (BAM 1020 analyzers operated as non-FEM). None of these were designated as a primary analyzer. The non-FEM could not be used for comparison to the NAAQS. Starting in late 2022, the District replaced non-FEM continuous analyzers with FEM continuous analyzers (Teledyne T640x). The District plans to deploy these FEM continuous analyzers throughout the Ambient Monitoring Network in 2023. Table 8-16 summarizes the requirement for continuous samplers designated as FEM.

**Table 8-16 PM<sub>2.5</sub> Continuous Minimum Monitoring Requirements-Collocation**

Number of PM <sub>2.5</sub> Continuous Samplers Designated as FEM (#)	Number of PM <sub>2.5</sub> Continuous Samplers Required for Collocation (from Table A-2) (#)	Number of PM <sub>2.5</sub> Continuous Samplers Needed for Collocation (#)
5*	0	0

\* Deployed FEM analyzers in late 2022 to replace non-FEM analyzers. Collocated samplers to be at the KVR site.

**Section 8.3.5 PM<sub>2.5</sub> Continuous Minimum Monitoring Requirements-Summary**

Table 8-17 summarizes all the PM<sub>2.5</sub> continuous monitoring requirements from Sections 8.3.1 to 8.3.4.

**Table 8-17 PM<sub>2.5</sub> Continuous Minimum Monitoring Requirements-Summary**

CFR Programs PM <sub>2.5</sub> Continuous Requirements (name)	Number of PM <sub>2.5</sub> Continuous Required (#)	Number of PM <sub>2.5</sub> Continuous Active (#)	Number of PM <sub>2.5</sub> Continuous Needed (#)
Minimum number required=	2	5	0
Minimum number of continuous collocated w/ manual=	1	1	0
NCore=	1	1	0
QA collocation PM <sub>2.5</sub> continuous with PM <sub>2.5</sub> continuous	0	0	0

<sup>50</sup> (2021) 40 CFR Part 58, App. A, Section 3.2.3, “Collocated Quality Control Sampling Procedures for PM<sub>2.5</sub>”, Subsection 3.2.3.2(b)



**Section 8.4 PM<sub>2.5</sub> Speciation Minimum Monitoring Requirements**

The State is federally mandated to monitor PM<sub>2.5</sub> speciation in accordance with the CFR. This section will state the needs for PM<sub>2.5</sub> speciation method instruments.

The District meets or exceeds all minimum requirements for PM<sub>2.5</sub> State Regional monitoring.

**Section 8.4.1 PM<sub>2.5</sub> Speciation Minimum Monitoring Requirements-Ambient**

One of the requirements is for the STN & CSN network to maintain the current speciation network as designed by the governing authorities. Table 8-18 lists these requirements.

*4.7.4 PM<sub>2.5</sub> Chemical Speciation Site Requirements.<sup>51</sup>*

*Each State shall continue to conduct chemical speciation monitoring and analyses at sites designated to be part of the PM<sub>2.5</sub> Speciation Trends Network*

**Table 8-18 PM<sub>2.5</sub> Speciation Minimum Monitoring Requirements-Ambient**

Established PM <sub>2.5</sub> CSN Samplers (Sites) (#)	Established PM <sub>2.5</sub> STN Samplers (Sites) (#)	Are the PM <sub>2.5</sub> CSN & STN Monitor (Sites) Active? (yes/no)	Number of PM <sub>2.5</sub> CSN & STN Monitor (Sites) Needed? (#)
Lexington Elementary School (LES) 06-073-1022	Lexington Elementary School (LES) 06-073-1022	Yes	0
Escondido (ESC) 06-073-1002	Escondido (ESC) 06-073-1002	No	1*

\*Escondido is temporarily closed for remodeling. Once the construction is completed, sampling will resume.

**Section 8.4.2 PM<sub>2.5</sub> Speciation Minimum Monitoring Requirements-NCore**

The District is required to operate PM<sub>2.5</sub> speciation samplers as part of the NCore multipollutant monitoring program. Table 8-19 lists these requirements.

*3.(b) Design Criteria for NCore Sites<sup>52</sup>*

*The NCore sites must measure, at a minimum... speciated PM<sub>2.5</sub>...*

**Table 8-19 PM<sub>2.5</sub> Speciation Minimum Monitoring Requirements-NCore**

Number of NCore Site(s) (#)	Location of NCore Site(s) (name)	Are the Monitors (Sites) Active (yes/no)	Number of Monitors (Sites) Needed (#)
1	Lexington Elementary School (LES) 06-073-1022	Yes	0

<sup>51</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.7 “Fine Particulate Matter (PM<sub>2.5</sub>) Design Criteria”, subsection 4.7.4.

<sup>52</sup> (2021) 40 CFR Part 58, App D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 3, “Design Criteria for NCore Sites”, subsection (b).



**Section 8.4.3 PM<sub>2.5</sub> Speciation Minimum Monitoring Requirements-Summary**

Table 8-20 summarizes all the PM<sub>2.5</sub> speciation minimum monitoring requirements.

**Table 8-20 PM<sub>2.5</sub> Speciation Minimum Monitoring Requirements-Summary**

CFR Programs PM <sub>2.5</sub> Other Requirements (name)	Number of PM <sub>2.5</sub> Speciation Required (#)	Number of PM <sub>2.5</sub> Speciation Active (#)	Number of PM <sub>2.5</sub> Speciation Needed (#)
PM <sub>2.5</sub> STN and CSN Speciation=	2	1	1*
NCORE=	1	1	0

\*Escondido is temporarily closed for remodeling. Once the construction is completed, sampling will resume.

**Section 8.5 PM<sub>2.5</sub> Suitability for Comparison to the NAAQS**

The CFR requires that certain operating and siting parameters be met for an instrument to be suitable to be compared to the NAAQS. Some PM<sub>2.5</sub> instrumentation are not compared to the NAAQS. This includes PM<sub>2.5</sub> speciation samplers, and PM<sub>2.5</sub> analyzers not operating in regulatory mode (non-FEM BAM PM<sub>2.5</sub> continuous samplers). All District PM<sub>2.5</sub> samplers are sited to specified CFR parameters to collect valid data. This section will list those requirements.

**Section 8.5.1 PM<sub>2.5</sub> Manual Suitability for Comparison to the NAAQS**

The CFR requires that for PM<sub>2.5</sub> Manual data to be used in regulatory determinations of compliance with the PM<sub>2.5</sub> NAAQS, the PM<sub>2.5</sub> samplers must be sited according to Federal Regulations<sup>53</sup> and the sampling frequency must be in accordance with Federal Regulations.<sup>54</sup> All District PM<sub>2.5</sub> Manual samplers meet or exceed all minimum monitoring requirements and sampling frequencies, as to be able to be compared to the NAAQS. Table 8-21 summarizes these requirements.

**Table 8-21 PM<sub>2.5</sub> Manual Suitability for Comparison to the NAAQS – Sampling Equipment**

Parameter	Code	Unit	Code	Duration	Code	Equipment	Method	Code	Frequency	Method ID	
Particulate Matter ≤ 2.5 µm (manual)	PM <sub>2.5</sub>	88101	µg/m <sup>3</sup> LC STD	105 001	24-Hr	7	Met One E-SEQ-FRM PM <sub>2.5</sub> Air Sampler w/VSCC	Gravimetric	545	1:3	RFPS-0717-245

**Section 8.5.2 PM<sub>2.5</sub> Continuous Unsuitability for Comparison to the NAAQS**

The CFR requires that for PM<sub>2.5</sub> FEM data to be used in regulatory determinations of compliance with the PM<sub>2.5</sub> NAAQS, the PM<sub>2.5</sub> FEM samplers must operate according to FEM designation requirements. In 2014, the District received approval from the EPA Region IX authorities to operate the PM<sub>2.5</sub> Continuous samplers (BAM 1020) in non-FEM mode. The District operated the PM<sub>2.5</sub> continuous samplers (BAM 1020) at 36% relative humidity, per the manufacturer’s recommendation. Therefore, the PM<sub>2.5</sub> BAM 1020 continuous samplers cannot be compared to the NAAQS. In late 2022, the District replaced the non-FEM samplers (BAM 1020) to FEM (T640x). The PM<sub>2.5</sub> continuous samplers are an important tool to define and develop abatement strategies to curtail PM<sub>2.5</sub> pollution. The PM<sub>2.5</sub> continuous samplers are used for trends analysis and real-time reporting for public information. Table 8-22 summarizes the equipment requirements.

<sup>53</sup> (2021) 40 CFR Part 58, Appendix E, “Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring” and Table E-4.

<sup>54</sup> (2021) 40 CFR Part 58, Subpart B, Section 58.12, “Operating Schedules”



**Table 8-22 PM<sub>2.5</sub> Continuous Unsuitability for Comparison to the NAAQS – Sampling Equipment**

Parameter	Code	Unit	Code	Duration	Code	Equipment	Method	Code	Frequency	Method ID	
Particulate Matter ≤ 2.5 µm (continuous)	PM <sub>2.5</sub>	88502	µg/m <sup>3</sup> LC	105	1-Hr	1	Met One BAM 1020 w/VSCC	Beta Attenuation	733	7/24	Not Applicable
		88101						Teledyne T640x	Broadband Spec.	238	7/24

**Section 8.5.3 PM<sub>2.5</sub> Speciation Unsuitability for Comparison to the NAAQS**

There are no NAAQS for the PM<sub>2.5</sub> Speciation program. Table 8-23 summarizes the equipment requirements.

**Table 8-23 PM<sub>2.5</sub> Speciation Unsuitability for Comparison to the NAAQS – Sampling Equipment**

Parameter	Code	Unit	Code	Duration	Code	Equipment	Method	Code	Frequency	Method ID	
Particulate Matter ≤ 2.5 µm (speciated)	PM <sub>2.5</sub> CSN	See ARB or EPA	See EPA	See EPA	24-Hr	7	URG-3000N	See EPA	See EPA	1:3 or 1:6	Not Applicable
Particulate Matter ≤ 2.5 µm (speciated)	PM <sub>2.5</sub> STN	See ARB or EPA	See EPA	See EPA	24-Hr	7	Met One SuperSASS	See EPA	See EPA	1:3 or 1:6	Not Applicable

**Section 8.6 PM<sub>2.5</sub> Manual Operating Schedule**

PM<sub>2.5</sub> Manual samplers must operate on a specified frequency based upon several factors, e.g. maximum concentration, percentage to the NAAQS, etc. This section will list those requirements. Table 8-24 to Table 8-27 summarize these requirements.

*58.12(d)(1)(i) Operating schedules for manual PM<sub>2.5</sub> samplers<sup>55</sup>*

*Manual PM<sub>2.5</sub> samplers at required SLAMS stations without a collocated continuously operating PM<sub>2.5</sub> monitor must operate on at least a 1-in-3 day schedule unless a waiver for an alternative schedule has been approved per paragraph (d)(1)(ii) of this section.*

*(ii) For SLAMS PM<sub>2.5</sub> sites with both manual and continuous PM<sub>2.5</sub> monitors operating, the monitoring agency may request approval for a reduction to 1-in-6 day PM<sub>2.5</sub> sampling or for seasonal sampling from the EPA Regional Administrator.*

*(iii) Required SLAMS stations whose measurements determine the 24-hour design value for their area and whose data are within ±5 percent of the level of the 24-hour PM<sub>2.5</sub> NAAQS must have an FRM or FEM operate on a daily schedule if that area's design value for the annual NAAQS is less than the level of the annual PM<sub>2.5</sub> standard. A continuously operating FEM or ARM PM<sub>2.5</sub> monitor satisfies this requirement unless it is identified in the monitoring agency's annual monitoring network plan as not appropriate for comparison to the NAAQS and the EPA Regional Administrator has approved that the data from that monitor may be excluded from comparison to the NAAQS. The daily schedule must be maintained until the referenced design value no longer meets these criteria for 3 consecutive years.*

*(2) Manual PM<sub>2.5</sub> samplers at NCore stations and required regional background and regional transport sites must operate on at least a 1-in-3 day sampling frequency.*

*(3) Manual PM<sub>2.5</sub> speciation samplers at STN stations must operate on at least a 1-in-3 day sampling frequency ...*

<sup>55</sup> (2021) 40 CFR Part 58, Section 58.12, Subpart B, "Operating Schedules", (d) For manual PM<sub>2.5</sub> samplers (1)(i) to (3)



**Table 8-24 PM<sub>2.5</sub> Operating Schedule-for All PM<sub>2.5</sub> Instruments**

	Camp Pendleton	Rancho Carmel Dr.	Alpine	Lexington Elementary School (NCore, PAMS, DV 24-hr)	Kearny Villa Rd.	Donovan	Chula Vista	Sherman Elementary School
PM <sub>2.5</sub> -manual FRM		1:3		1:1	1:3		1:3	1:3
PM <sub>2.5</sub> -continuous non-FEM	7/24		7/24	7/24		7/24		7/24
PM <sub>2.5</sub> -continuous FEM*	7/24		7/24	7/24		7/24		7/24
PM <sub>2.5</sub> -speciation				1:3				

Note: Historically, the DV alternates between three FRM locations (Downtown, Escondido, and El Cajon). While the Downtown site at Sherman Elementary School began operating, there is not enough data for the DV and the Escondido site is still temporarily inoperable, due to relocation; therefore, El Cajon (Lexington Elementary School) is the DV location. Once the new sites have been operational for 3 continuous calendar years (for DV calculations purposes) this DV location designation will be re-evaluated in the subsequent Annual Network Report. \*Teledyne T640x FEM analyzers replaced BAM non-FEM in 2022. Installation dates: ALP (9/8/2022), CMP (8/30/2022), LES (8/11/2022), DVN (8/2/2022), SES (5/16/2022).

**Table 8-25 PM<sub>2.5</sub> Manual Operating Schedule-for Manual Samplers Collocated with Continuous Samplers (DV-24-hr)**

Is the 24-hr DV PM <sub>2.5</sub> Manual sampler Collocated with PM <sub>2.5</sub> Continuous Samplers? (yes/no)	Location of 24-hr DV PM <sub>2.5</sub> Manual sampler Collocated with PM <sub>2.5</sub> Continuous Samplers (name)	Calculations 24-hr DV		Any 24-Hr DV NAAQS Exceedances over the Last 3-years (yes/no)	What is the Required Sampling Frequency? (#)	What is the Actual Sampling Frequency? (#)	Does the Actual Sampling Frequency Meet EPA Specifications (yes/no)
		(years)	( $\mu\text{g}/\text{m}^3$ )				
yes	Lexington Elementary School (LES) 06-073-1022	2020-2022	23	NO	1:1	1:1	yes
		2019-2021	23	NO			
		2018-2020	22	NO			
		2017-2019	19	NO			
		2016-2018	19	NO			
		2015-2017	18	NO			

**Table 8-26 PM<sub>2.5</sub> Manual Operating Schedule-NCore**

Is there a NCore PM <sub>2.5</sub> Manual Sampler? (yes)	Location of NCore PM <sub>2.5</sub> Manual Sampler (name)	What is the Minimum EPA Sampling Frequency? (#)	What is the Actual Sampling Frequency? (#)	Does the Actual Sampling Frequency Meet EPA Specifications? (yes/no)
yes	Lexington Elementary School (LES) 06-073-1022	1:3	1:1	yes



**Table 8-27 PM<sub>2.5</sub> Speciation Operating Schedule-NCORE**

Is there a NCore PM <sub>2.5</sub> Speciation Sampler?	Location of NCore PM <sub>2.5</sub> Speciation Sampler	What is the Minimum EPA Sampling Frequency?	What is the Actual Sampling Frequency?	Does the Actual Sampling Frequency Meet EPA Specifications?
(yes)	(name)	(#)	(#)	(yes/no)
yes	Lexington Elementary School (LES) 06-073-1022	1:3	1:3	yes

**Section 8.7 PM<sub>2.5</sub> Manual Concentrations for San Diego**

As with the State, PM<sub>2.5</sub> concentrations in the San Diego Air Basin have declined over the years. This section will illustrate the different metrics for comparison.

**Section 8.7.1 PM<sub>2.5</sub> Manual Concentrations for San Diego-for the Last 20 Years**

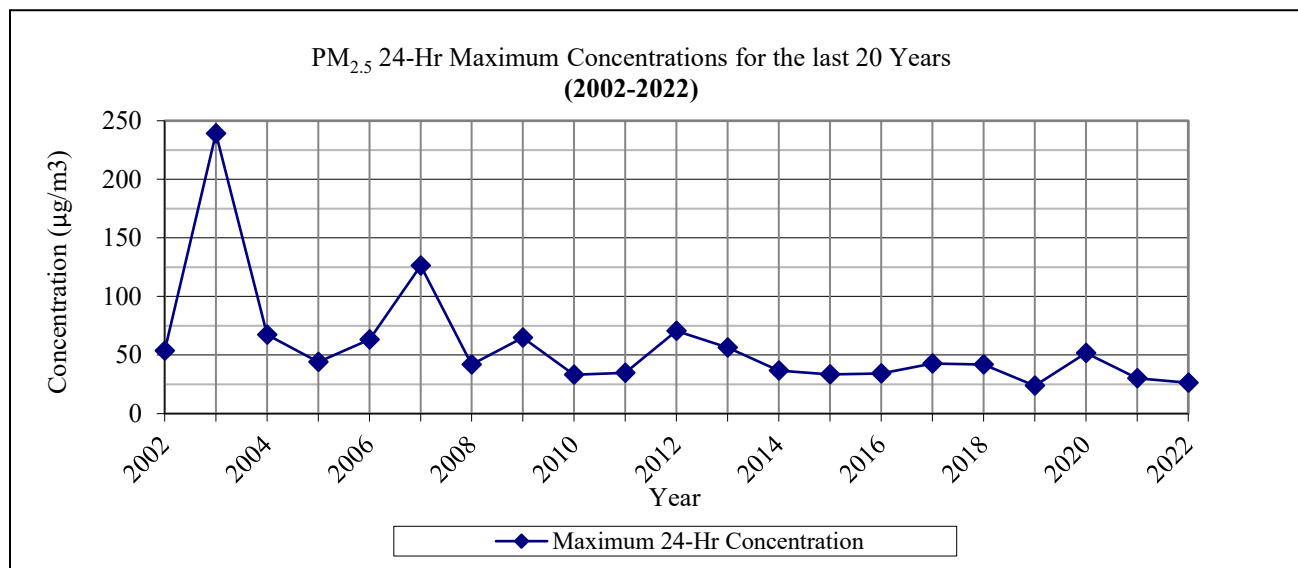
Annual average PM<sub>2.5</sub> FRM concentrations in the County have declined over the years, see Table 8-28. The 98th percentile of 24-Hr PM<sub>2.5</sub> concentrations showed substantial variability within this period, a reflection of changes in meteorology and the influence of the 2003 and 2007 wildfires. Furthermore, the standard was lowered in 2007, which corresponded to increased incidents of “Days above the Standard”. Note: the “Days Above the Standard” row in Table 8-28 reflects the PM<sub>2.5</sub> standard for that year. Figure 8.2 graphs the SDAB PM<sub>2.5</sub> concentrations over the years.

**Table 8-28 PM<sub>2.5</sub> Manual Concentrations for San Diego-for the Last 20 Years (24-Hr), 2002-2022**

Maximum 24-Hr Concentration ( $\mu\text{g}/\text{m}^3$ )	2002	2003*	2004	2005	2006	2007*	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	53.6	239.2	67.3	44.1	63.3	126.2	42.0	65.0	33.3	34.7	70.7	56.3	36.7	33.5	34.4	42.7	41.9	23.8	51.9	30.2	26.4
Days above the National Std	0	2	1	0	1	17	3	3	0	0	2	2	1	0	0	1	1	0	3	0	0

n/a= not applicable

\*Wildfires in San Diego County



**Figure 8.2 PM<sub>2.5</sub> Manual Concentrations for San Diego-for the Last 20 Years (24-Hr) Graph**



**Section 8.7.2 PM<sub>2.5</sub> Manual Concentrations for San Diego-by Site for the Year**

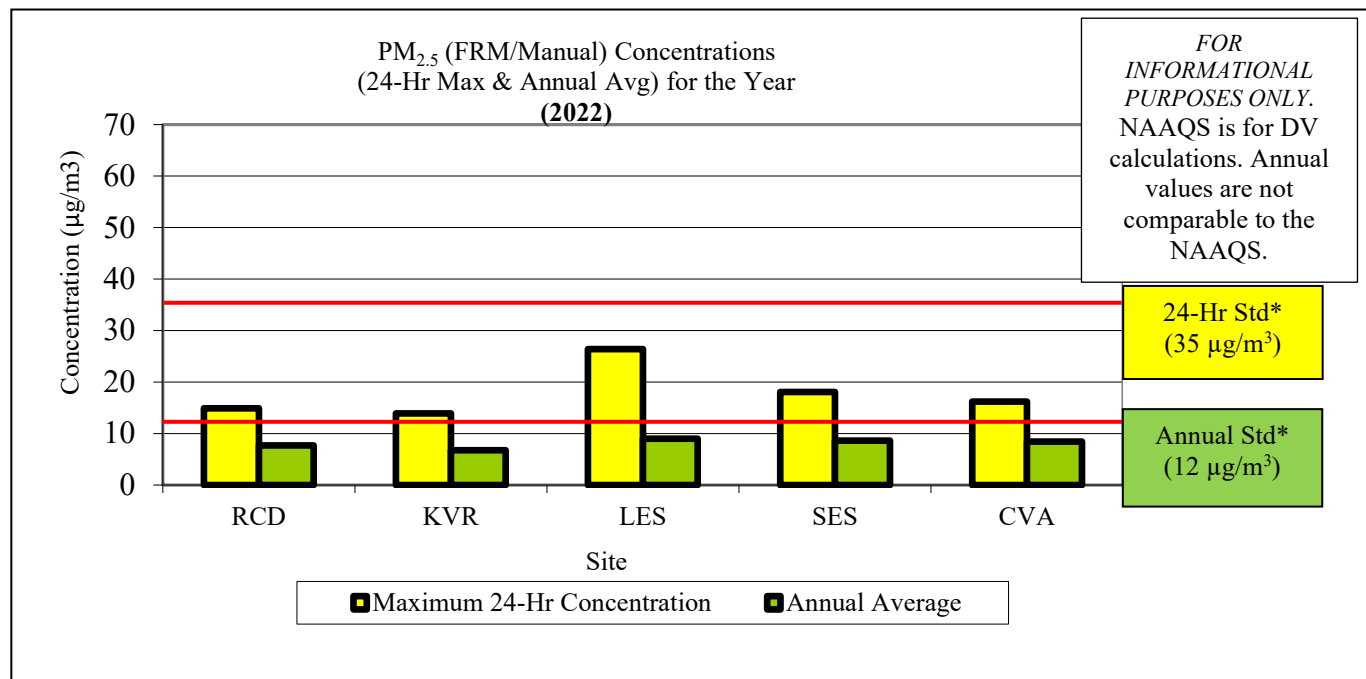
Table 8-29 lists the maximum PM<sub>2.5</sub> Manual measurements for each PM<sub>2.5</sub> Manual method monitoring location and Figure 8.3 shows the values graphically with respect to the National Standard.

*FOR INFORMATIONAL PURPOSES ONLY.*

NAAQS is for DV calculations. Annual values are not comparable to the NAAQS.

**Table 8-29 PM<sub>2.5</sub> Manual Concentrations for San Diego-by Site for the Year (24-Hr & Annual Average), 2022**

Manual Method	No	Site	Site	Maximum 24-Hr	Annual	Number of
	(#)	(name)	Abbreviation	Concentration	Average	Days Above the
				( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	National Standard
						(#)
	1	Rancho Carmel Dr.	RCD	14.9	7.69	0
	2	Kearny Villa Rd.	KVR	13.9	6.76	0
	3	Lexington Elementary School	LES	26.4	8.97	0
	4	Sherman Elementary School	SES	18.1	8.63	0
	5	Chula Vista	CVA	16.2	8.44	0



**Figure 8.3 PM<sub>2.5</sub> Manual Concentrations for San Diego-by Site for the Year (24-Hr & Annual Average) Graph**



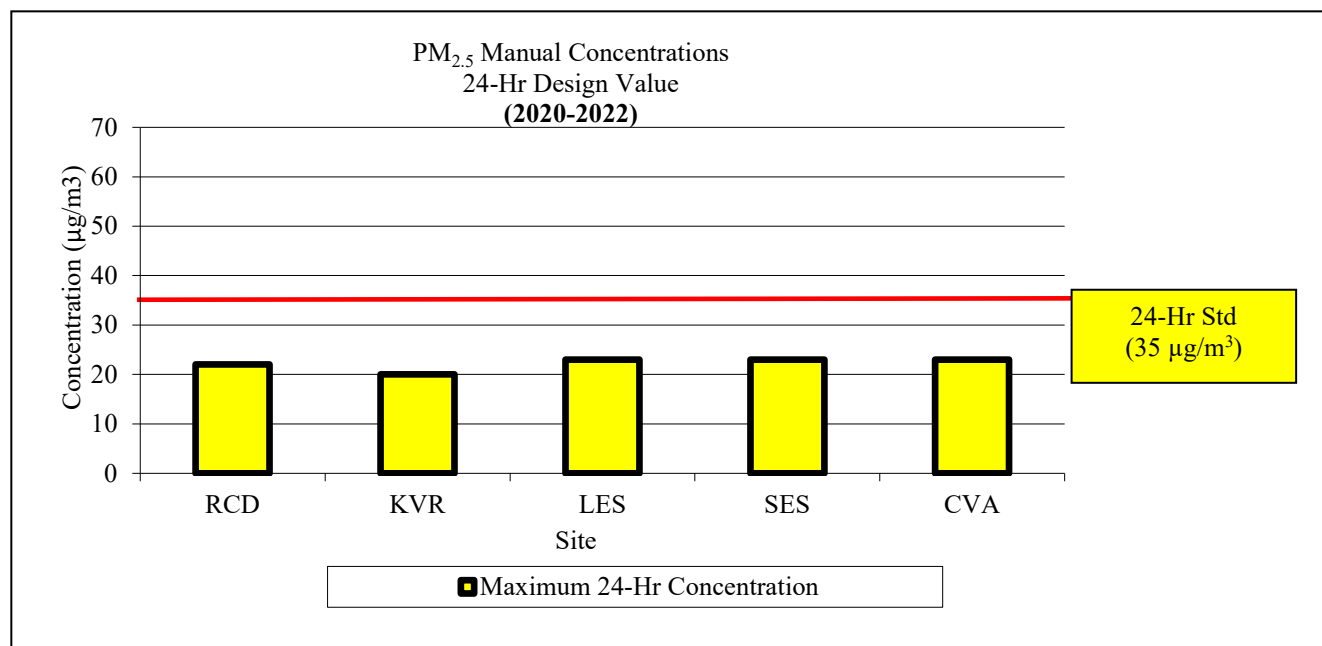


**Section 8.7.3 PM<sub>2.5</sub> Manual Concentrations for San Diego-by Site for the Design Value (24-Hr)**

Table 8-30 lists the PM<sub>2.5</sub> Manual 24-Hr Design Values for each PM<sub>2.5</sub> Manual method monitoring location and Figure 8.4 shows the concentrations graphically with respect to the National Standard.

**Table 8-30 PM<sub>2.5</sub> Manual Concentrations for San Diego-by Site for the Design Value (24-Hr), 2020-2022**

Manual Method	No	Site	Site Abbrev	24-Hr Design Value	Number of Days Above the 24-Hr NAAQS	Is the 24-Hr Design Value $\geq$ 85% of the NAAQS?	Is the 24-Hr Design Value $<$ 85% of the NAAQS?	Does the 24-Hr Design Value Meet the NAAQS?
	(#)	(name)		( $\mu\text{g}/\text{m}^3$ )	(#)	(yes/no)	(yes/no)	(yes/no)
	1	Rancho Carmel Dr.	RCD	22	0	no	yes	yes
	2	Kearny Villa Rd.	KVR	20	0	no	yes	yes
	3	Lexington Elementary School	LES	23	0	no	yes	yes
	4	Sherman Elementary School	SES	23	0	no	yes	yes
	5	Chula Vista	CVA	23	0	no	yes	yes



**Figure 8.4 PM<sub>2.5</sub> Manual Concentrations for San Diego-by Site for the Design Value (24-Hr) Graph**

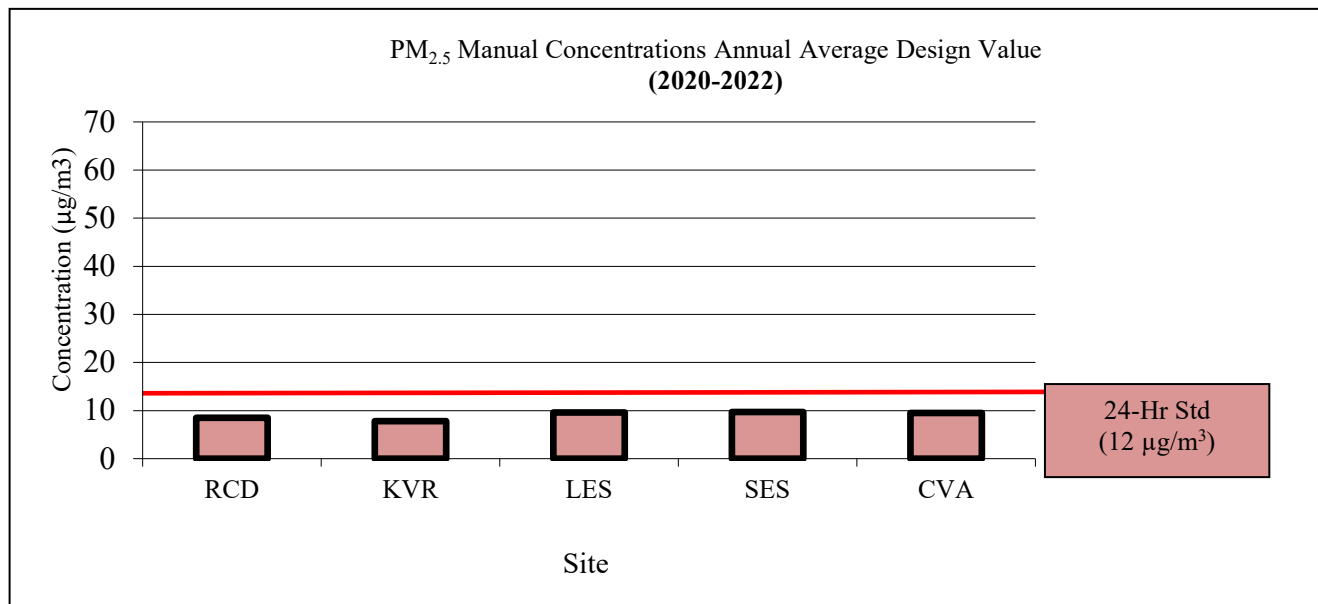


**Section 8.7.4 PM<sub>2.5</sub> Manual Concentrations for San Diego-by Site for the Design Value (Annual Average)**

Table 8-31 lists the PM<sub>2.5</sub> Manual annual average Design Values for each PM<sub>2.5</sub> Manual method monitoring location and Figure 8.5 shows the concentrations graphically with respect to the National Standard.

**Table 8-31 PM<sub>2.5</sub> Manual Concentrations for San Diego-by Site for the Design Value (Annual Average), 2020-2022**

Manual Method	No	Site	Site Abbrev	Design Value for the Annual Avg	Is the Annual Avg Design Value $\geq$ 85% of the NAAQS?	Is the Annual Avg. Design Value $<$ 85% of the NAAQS?	Does the Annual Avg Design Value Meet the NAAQS?
	(#)	(name)		2020-2022 ( $\mu\text{g}/\text{m}^3$ )	2022 (yes/no)	2022 (yes/no)	2022 (yes/no)
	1	Rancho Carmel Dr.	RCD	8.5	no	yes	yes
	2	Kearny Villa Rd.	KVR	7.8	no	yes	yes
	3	Lexington Elementary School	LES	9.6	no	yes	yes
	4	Sherman Elementary School	SES	9.7	no	yes	yes
	5	Chula Vista	CVA	9.5	no	yes	yes



**Figure 8.5 PM<sub>2.5</sub> Manual Concentrations for San Diego-by Site for the Design Value (Annual Average) Graph**



**Section 8.8 PM<sub>2.5</sub> Continuous Concentrations for San Diego**

In late 2022, the District transitioned from continuous analyzers (BAM 1020) operating as non-Federal Equivalence Method (non-FEM) analyzers to continuous analyzers (T640x) operating as a FEM. The District PM<sub>2.5</sub> continuous non-FEM samplers cannot be compared to the NAAQS, because they are non-regulatory units; therefore, the values cannot be compared to the PM<sub>2.5</sub> standards and can only be used for trends analysis and public information. The non-FEM PM<sub>2.5</sub> continuous samplers were operated at 36% relative humidity (per manufacturer recommendation), which made them operate as non-regulatory. The new FEM continuous PM<sub>2.5</sub> analyzers will be compared to the NAAQS. The District will transition to all continuous FEM PM<sub>2.5</sub> samplers throughout the monitoring network in 2023.

**Section 8.8.1 PM<sub>2.5</sub> Continuous Concentrations for San Diego-by Site for the Year (24-Hr & Annual Average)**

Table 8-32 lists the maximum PM<sub>2.5</sub> continuous 24-Hr measurements and Annual Average for each PM<sub>2.5</sub> continuous monitoring location and Figure 8.6 shows the concentrations graphically. The measurements are not the Design Value (Yearly only).

Note: *FOR INFORMATIONAL PURPOSES ONLY*. Not a full year of FEM data.

**Table 8-32 PM<sub>2.5</sub> Continuous Concentrations for San Diego-by Site for the Year (24-Hr & Annual Average), 2022**

Continuous Method	No.	Site	Site Abbreviation	Maximum 24-Hr Concentration	Annual Average
	(#)	(name)		( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )
	1	Camp Pendleton	CMP	18.0	8.4
	2	Alpine	ALP	18.7	6.3
	3	Lexington Elementary School	LES	27.3	10.3
	4	Sherman Elementary School	SES	20.8	10.3
	5	Donovan	DVN	30.7	12.4

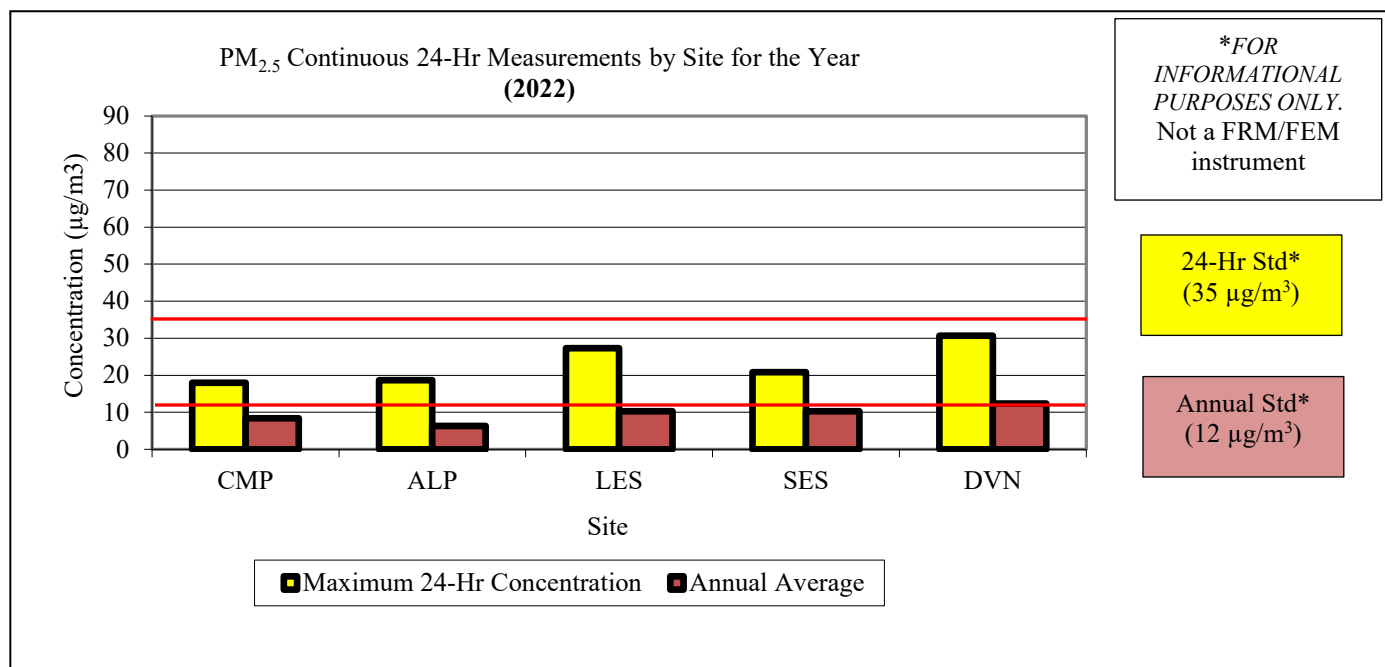


Figure 8.6 PM<sub>2.5</sub> Continuous Yearly 24-Hr & Annual Average Measurements by Site Graph

**Section 8.8.2 PM<sub>2.5</sub> Continuous Concentrations for San Diego-by Site for the Design Value (24-Hr & Annual Average)**

Table 8-33 lists the PM<sub>2.5</sub> continuous 24-Hr Design Values and Annual Average Design Values for each PM<sub>2.5</sub> continuous monitoring location and **Figure 8.7** shows the values graphically.

Note: *FOR INFORMATIONAL PURPOSES ONLY.* Not an FRM/FEM instrument.

**Table 8-33 PM<sub>2.5</sub> Continuous Concentrations for San Diego-by Site for the Design Value (24-Hr & Annual Average), 2020-2022**

Continuous Method	No.	Site	Site Abbreviation	24-Hr Design Value	Design Value Annual Average
	(#)	(name)		(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )
Continuous Method	1	Camp Pendleton	CMP	22.5	8.8
	2	Alpine	ALP	15.3	6.2
	3	Lexington Elementary School	LES	22.8	10.7
	4	Sherman Elementary School	SES	24.0	10.2
	5	Donovan	DVN	32.6	12.9

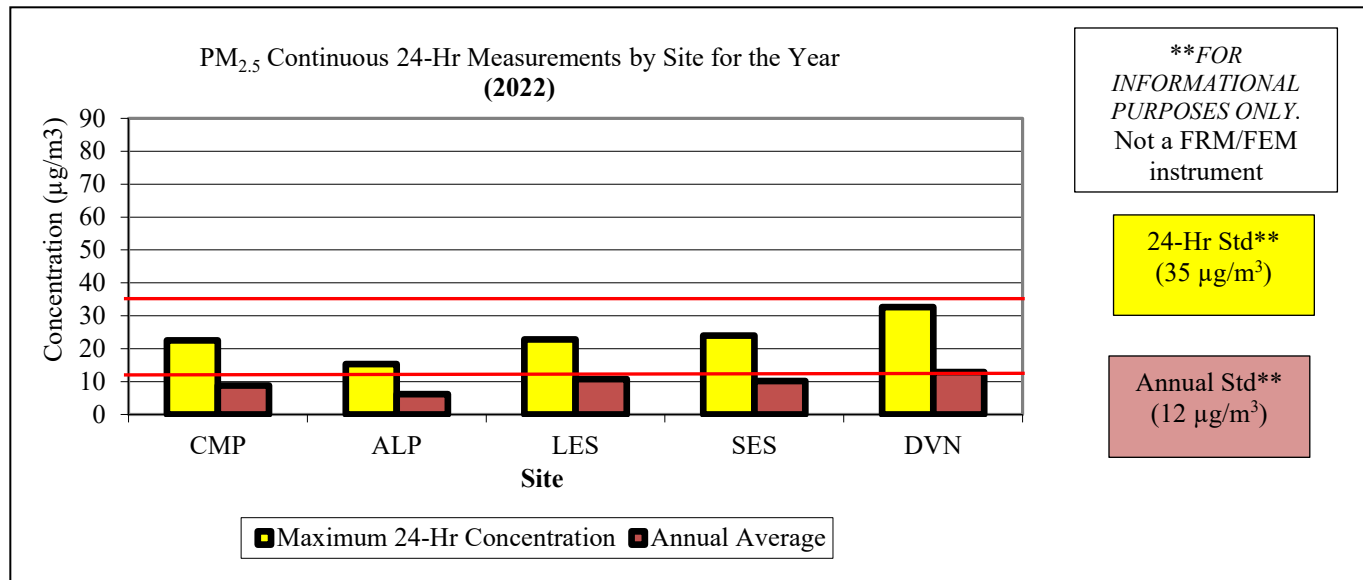


Figure 8.7 PM<sub>2.5</sub> Continuous Concentrations for San Diego-by Site for the Design Value (24-Hr & Annual Average) Graph

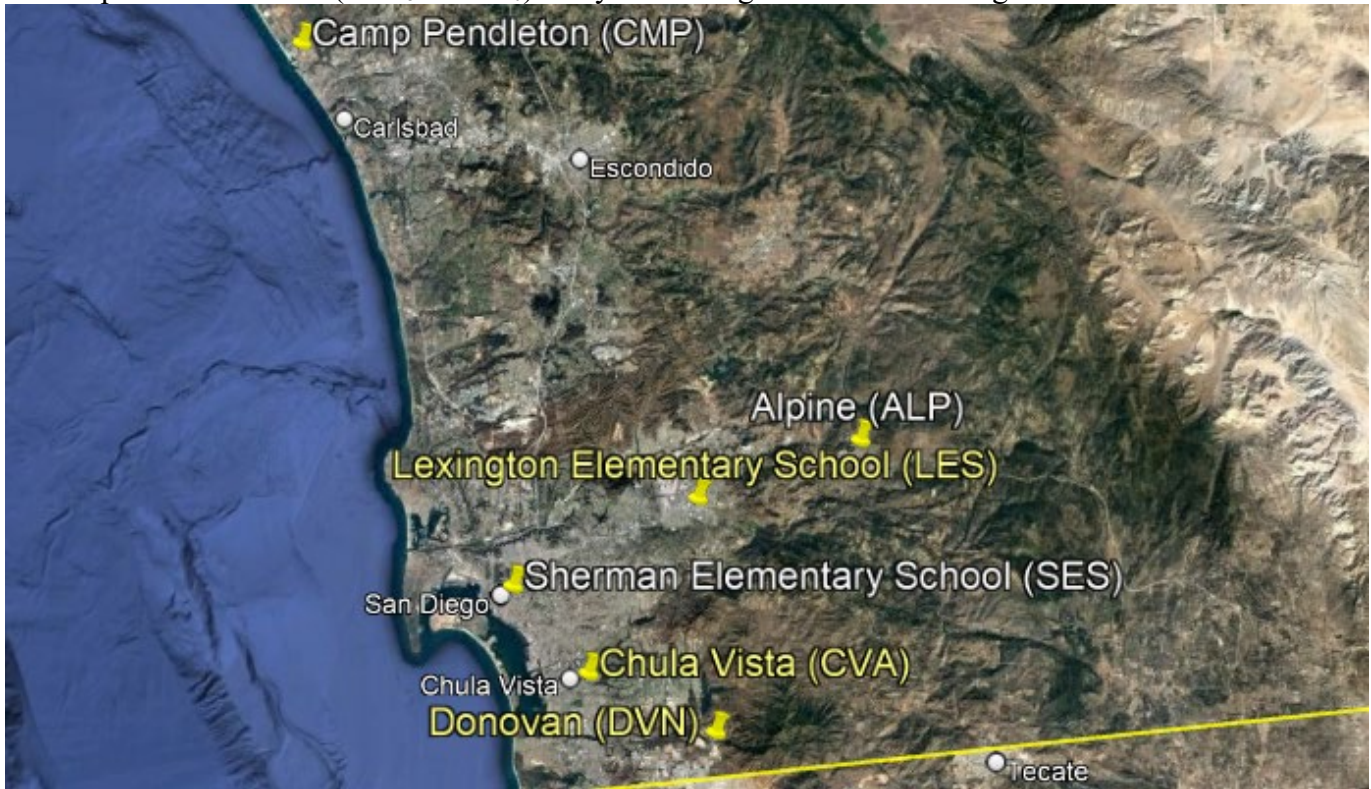


## Chapter 9: Particulate Matter 10 $\mu\text{m}$ (PM<sub>10</sub>)

### Section 9.1 PM<sub>10</sub> Introduction

PM<sub>10</sub> was sampled at locations throughout the SDAB (Figure 9.1) and referenced to the PM<sub>10</sub> standards of the year (Table 9-1). The equipment is listed in **Table 9-2**. A PM<sub>10</sub> (Lo-Vol) sampler at the Lexington Elementary School (LES) location is part of the paired Lo-Vol samplers needed to calculate PM<sub>coarse</sub>. Please Note:

- In 2015, the District was evicted from the Escondido site. The District is seeking an alternative location (TBD) for the air monitoring station in Escondido.
- In 2019, the District recorded a maximum PM<sub>10</sub> concentration of 199  $\mu\text{g}/\text{m}^3$ . This triggered a requirement for 6 to 10 monitors. The District deployed continuous particulate matter (PM<sub>2.5</sub> & PM<sub>10</sub>) analyzers (T640x) at Lexington Elementary School, Donovan, Camp Pendleton, Sherman Elementary School, and Alpine in late 2022 to meet this requirement. New sites added to the PM<sub>10</sub> network are labeled in white on the map below (Fig 9.1). The District will deploy additional particulate matter (PM<sub>2.5</sub> & PM<sub>10</sub>) analyzers throughout the monitoring network in 2023.



**Figure 9.1 PM<sub>10</sub> Overall Map**

**Table 9-1 PM<sub>10</sub> State and National Standards for the Year**

Pollutant	Averaging Time	Ambient Air Quality Standards		
		California Standards	National Standards	
		Concentration	Primary	Secondary
Fine Particulate Matter (PM <sub>10</sub> )	24 hour	50 $\mu\text{g}/\text{m}^3$	150 $\mu\text{g}/\text{m}^3$	150 $\mu\text{g}/\text{m}^3$
	Annual Arithmetic Mean	20 $\mu\text{g}/\text{m}^3$	Not Applicable	Not Applicable



**Table 9-2 PM<sub>10</sub> Sampling Network**

Abbreviation	ALP	CMP	CVA	DVN			LES		SES
Name	Alpine	Camp Pendleton	Chula Vista	Donovan			Lexington Elementary School		Sherman Elementary School
AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1014			60-076-1022		06-073-1026
Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Monitor Designation	PRI	PRI	PRI	PRI	QAC	PRI	PRI	PRI	PRI
Method	BS	BS	SQ	SQ	SQ	BS	SQ	BS	BS
Affiliation	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	NCore	Not Applicable	Not Applicable
Spatial Scale	NS	NS	NS	NS	NS	NS	NS	NS	NS
Site Type	PE	PE	PE	HC	PE	PE	PE	PE	PE
Objective (Federal)	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS
Frequency	7/24	7/24	1:6	1:6	1:6	7/24	1:6	7/24	7/24
Equipment	Teledyne T640x*	Teledyne T640x*	Met One E-SEQ-FRM w/o VSCC	Met One E-SEQ-FRM w/o VSCC	Met One E-SEQ-FRM w/o VSCC	Teledyne T640x*	Met One E-SEQ-FRM w/o VSCC	Teledyne T640x*	Teledyne T640x*

\*Teledyne T640x installation dates: ALP (9/8/2022), CMP (8/30/2022), LES (8/11/2022), DVN (8/2/2022), SES (5/16/2022).

**Glossary of Terms**

Monitor Type

E= EPA  
 O= Other  
 SLAMS= State & Local monitoring station  
 SPM= Special purpose monitor  
 CATAC= California Toxics Monitoring

Site Type

HC= Highest concentration  
 PE= Population exposure  
 SO= Source oriented  
 UPBD= Upwind background  
 G/B= General/Background  
 RT= Regional Transport  
 WRI= Welfare related impacts  
 QA= Quality assurance

Method (Sampling/Analysis)

CL= Chemiluminescence  
 CT= Low Volume, size selective inlet, continuous  
 FL= Fluorescence  
 HV= High volume  
 IR= Nondispersive infrared  
 SI= High volume, size selective inlet  
 SP= Low volume, size selective inlet, speciated  
 SQ= Low volume, size selective inlet, sequential  
 UV= Ultraviolet absorption  
 Canister= Evacuated stainless steel canisters  
 Cartridges= Di-nitrophenylhydrazine cartridges  
 FSL= Fused Silica Lined  
 Filter= Quartz filters  
 Auto= GC/FID continuous  
 BS= Broadband Spectroscopy

Monitor Designation

PRI= Primary  
 QAC=Collocated

Network Affiliation

BG= Border Grant  
 CSN STN= Trends Speciation  
 CSN SU= Supplemental Speciation  
 NATTS= National Air Toxics Trends Stations  
 NCore= National Core Multi-pollutants  
 NR= Near-road  
 PAMS= Photochemical Assessment Monitoring

Spatial Scale

MI= Micro  
 MS= Middle  
 NS= Neighborhood

Objective (Federal)

NAAQS= Suitable for NAAQS comparison  
 Research= Research support  
 PI= Public Information  
 N/A= Not Applicable  
 O= Other



**Section 9.2 PM<sub>10</sub> Minimum Monitoring Requirements**

The District is federally mandated to monitor PM<sub>10</sub> levels in accordance with the CFR. This section will state the different monitoring requirements for each program, e.g. ambient, NCore, etc. that the District operates and references therein (Note: only the passages applicable/informative to the District are referenced). These monitors can serve as fulfilling other PM<sub>10</sub> network requirements, e.g. ambient PM<sub>10</sub> sampler can fulfill an NCore PM<sub>10</sub> sampler requirement.

The District meets or exceeds all minimum requirements for PM<sub>10</sub> monitoring for all programs.

**Section 9.2.1 PM<sub>10</sub> Minimum Monitoring Requirements-Ambient**

All Districts are required to operate a minimum number of PM<sub>10</sub> samplers irrespective of the PM<sub>10</sub> network affiliation. These monitors can serve as fulfilling other PM<sub>10</sub> network requirements. To ascertain the minimum number of samplers required, the Maximum Concentration value must be calculated and is summarized in Table 9-3 to Table 9-4.

*4.6(a) Particulate Matter (PM<sub>10</sub>) Design Criteria.<sup>56</sup>*

*Table D-4 indicates the approximate number of permanent stations required in MSAs to characterize national and regional PM<sub>10</sub> air quality trends and geographical patterns...*

*Table D-4 of Appendix D to Part 58—PM<sub>10</sub> Minimum Monitoring Requirements (Approximate Number of Stations per MSA)*

<i>Population Category</i>	<i>High Concentration (120% of NAAQS<sup>2</sup>)</i>	<i>Medium Concentration (&gt;80% of NAAQS)</i>	<i>Low Concentration (&lt;80% of NAAQS)</i>
<i>&gt;1,000,000</i>	<i>6-10</i>	<i>4-8</i>	<i>2-4</i>

**Table 9-3 PM<sub>10</sub> Minimum Monitoring Requirement-Design Criteria for the Year, 2022 (24-Hr)**

24-hr Maximum Concentration 2022 (µg/m <sup>3</sup> )	24-hr Maximum Concentration Location (name)	<u>High Concentration</u> Is the 24-hr Maximum Concentration ≥ 120% of the NAAQS? (yes/no)	<u>Medium Concentration</u> Is the 24-hr Maximum Concentration > 80% of the NAAQS? (yes/no)	<u>Low Concentration</u> Is the 24-hr Maximum Concentration < 80% of the NAAQS? (yes/no)	Does the 24-hr Maximum Concentration Meet the NAAQS? (yes/no)
243	DVN	yes	yes	no	no

**Table 9-4 PM<sub>10</sub> Minimum Monitoring Requirements-Ambient**

MSA & County (name)	Population Estimated from 2020 Census <sup>57</sup> (#)	Number of PM <sub>10</sub> Samplers Required (#)	Number of PM <sub>10</sub> Sequential Samplers Active (#)	Number of PM <sub>10</sub> Continuous Samplers Deployed (#)	Number of PM <sub>10</sub> Samplers Needed (#)
San Diego	3.3 million	6 - 10	4	6	0

<sup>56</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 4, “Pollutant-Specific Design Criteria for SLAMS Sites”, part 4.6 “Particulate Matter (PM<sub>10</sub>) Design Criteria” and Table D-4

<sup>57</sup> Based on the most recent official U.S Census statistics.





**Section 9.2.2 PM<sub>10</sub> Minimum Monitoring Requirements-NCORE**

The District is required to operate a PM<sub>10</sub> sampler as part of the NCore multipollutant monitoring program for the calculation of PM<sub>10-2.5</sub> data. Table 9-5 lists the NCore PM<sub>10</sub> requirements.

*3(b) Design Criteria for NCore Sites<sup>58</sup>*

*The NCore sites must measure, at a minimum, PM<sub>2.5</sub> particle mass using continuous and integrated/filter-based samplers, speciated PM<sub>2.5</sub>, PM<sub>10-2.5</sub> particle mass...*

**Table 9-5 PM<sub>10</sub> Minimum Monitoring Requirements-NCORE**

Number of PM <sub>10</sub> Samplers Required for NCore Sites* (#)	Number of PM <sub>10</sub> Samplers Active at NCore Sites (#)	Number of PM <sub>10</sub> Samplers Needed at NCore Sites (#)	Name of NCore Site  (name)
1	1	0	Lexington Elementary School (LES) 06-073-1022

\*While the PM<sub>10</sub> sampler is not specifically needed to fulfill NCore requirement, it is needed for PM<sub>10-2.5</sub> (PMcoarse) measurements.

**Section 9.2.3 PM<sub>10</sub> Manual Minimum Monitoring Requirements-QA Collocation**

Collocation guidance is from the CFR. Table 9-6 summarizes these requirements.

*3.3.4 Collocated Quality Control Sampling Procedures for Manual PM<sub>10</sub><sup>59</sup>*

*...For manual PM<sub>10</sub> samplers, a PQAO must: (a) Have 15 percent of the primary monitors collocated (values of 0.5 and greater round up) ... (b) If an organization has no sites with daily concentrations within plus or minus 20 percent of the NAAQS...(e)*

**Table 9-6 PM<sub>10</sub> Manual Minimum Monitoring Requirements-Collocation**

Number of PM <sub>10</sub> Samplers Required (#)	Number of PM <sub>10</sub> Samplers Active (#)	Number of PM <sub>10</sub> Samplers Required for Collocation (#)	Number of PM <sub>10</sub> Samplers Active for Collocation (#)	Number of PM <sub>10</sub> Samplers Needed for Collocation (#)	Location of Collocated Site(s)  (name)
2 - 4	4	4 x (15%) = 1	1	0	Donovan (DVN) 06-073-1014

**Section 9.2.4 PM<sub>10</sub> Minimum Monitoring Requirements-Summary**

Table 9-7 summarizes all the PM<sub>10</sub> minimum monitoring requirements from Sections 9.2.1 to 9.2.3.

<sup>58</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Sec. 3, “Design Criteria for NCore sites”, subpart (b)

<sup>59</sup> (2021) 40 CFR Part 58, Appendix A, Section 3.3.4, “Collocated Quality Control Sampling Procedures for Manual PM<sub>10</sub>”, subsection 3.3.4.1 (a)-(e)



**Table 9-7 PM<sub>10</sub> Minimum Monitoring Requirements-Summary**

CFR Programs PM <sub>10</sub> Samplers Requirements (name)	Number of PM <sub>10</sub> Samplers Required (#)	Number of PM <sub>10</sub> Samplers Active (#)	Number of PM <sub>10</sub> Samplers Needed (#)
CFR EPA Table D-2 only=	6-10	6*	0
NCore=	1	1	0
QA collocation	1	1	0

\* Continuous PM<sub>10</sub> samplers (T640x) deployed in late 2022. Number of PM<sub>10</sub> samplers now meet the requirement.

**Section 9.3 PM<sub>10</sub> Suitability for Comparison to the NAAQS**

Many different criteria are required for PM<sub>10</sub> data to be considered to be suitable for comparison to the NAAQS, e.g. siting, sampling frequency, etc. This section will state those criteria.

**Section 9.3.1 PM<sub>10</sub> Suitability for Comparison to the NAAQS - Equipment & Siting**

The CFR requires that for PM<sub>10</sub> data to be used in regulatory determinations of compliance with the PM<sub>10</sub> NAAQS, the PM<sub>10</sub> monitors must be sited according to Federal Regulations<sup>60</sup>. All District PM<sub>10</sub> samplers meet or exceed all minimum monitoring requirements and can be compared to the NAAQS. Table 9-8 summarizes them.

**Table 9-8 PM<sub>10</sub> Suitability for Comparison to the NAAQS, Equipment & Siting**

	Parameter	Code	Unit	Code	Duration	Code	Equipment	Method	Code	Frequency	Method ID	
Amb	Particulate Matter ≤ 10 µm (Lo-Vol)	PM <sub>10</sub>	81102	µg/m <sup>3</sup> STD	001	24-Hr	7	Met One E-SEQ-FRM Sampler w/o VSCC	Gravimetric	246	1:6	RFPS-0717-246
NCore	Particulate Matter ≤ 10 µm (Lo-Vol)	PM <sub>10</sub>	85101 81102	µg/m <sup>3</sup> LC STD	105 001	24-Hr	7	Met One E-SEQ-FRM Sampler w/o VSCC	Gravimetric	246 246	1:3	RFPS-0717-246
Amb	Particulate Matter ≤ 10 µm	PM <sub>10</sub>	81102	µg/m <sup>3</sup> STD	001	1-Hr	1	Teledyne T640x*	Broadband Spec.	239	7/24	EQPM-0516- 239
NCore	Particulate Matter ≤ 10 µm	PM <sub>10</sub>	85101 81102	µg/m <sup>3</sup> LC STD	105 001	1-Hr	1	Teledyne T640x*	Broadband Spec	239	7/24	EQPM-0516- 239

\*Teledyne T640x installation dates: ALP (9/8/2022), CMP (8/30/2022), LES (8/11/2022), DVN (8/2/2022), SES (5/16/2022).

**Section 9.3.2 PM<sub>10</sub> Suitability for Comparison to the NAAQS - Sampling Frequency**

The CFR requires that for PM<sub>10</sub> data to be used in regulatory determinations of compliance with the PM<sub>10</sub> NAAQS, the PM<sub>10</sub> monitors’ sampling frequency must be in accordance with Federal regulations<sup>61</sup>. All District PM<sub>10</sub> samplers meet or exceed all minimum monitoring requirements for the sampling frequency and can be compared to the NAAQS. Table 9-9 summarizes these requirements.

*58.12(e) Operating schedules*

*For PM<sub>10</sub> samplers, a 24-hour sample must be taken from midnight to midnight (local standard time) to ensure national consistency. The minimum monitoring schedule for the site in the area of expected maximum concentration shall be based on the relative level of that monitoring site concentration with respect to the 24-hour standard as illustrated in Figure 1 below.... The minimum sampling schedule for all other sites in the area remains once every six days.*

<sup>60</sup> (2021) 40 CFR Part 58, Appendix E, “Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring” and Table E-4.

<sup>61</sup> (2021) 40 CFR Part 58, Subpart B, Section 58.12, “Operating Schedules.”

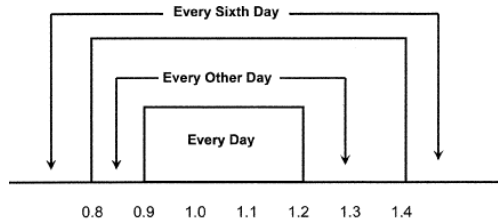


Figure 1 – Ratio to Standard

**Table 9-9 PM<sub>10</sub> Suitability for Comparison to the NAAQS - Sampling Frequency, 2022**

Site of Expected Maximum Concentration for 24-Hr (name)	Maximum Concentration for 24-Hr ( $\mu\text{g}/\text{m}^3$ )	Is Site of Expected Maximum Concentration for 24-Hr < 80% to the NAAQS (yes/no)	What is the Minimum EPA Permitted Sampling Frequency? (#)	What is the Actual Sampling Frequency? (#)	Does the Actual Sampling Frequency Meet EPA Specifications? (yes/no)
Donovan (DVN) 06-073-1014	243	no	1:6	1:6	yes

**Section 9.4 PM<sub>10</sub> Concentrations for San Diego**

PM<sub>10</sub> concentrations do not correlate well to growth in population or vehicle usage, and high PM<sub>10</sub> concentrations do not always occur in high population areas. Emissions from stationary sources and motor vehicles form secondary particles that contribute to PM<sub>10</sub> in many areas. This section will illustrate the different metrics for comparison.

**Section 9.4.1 PM<sub>10</sub> Concentrations for San Diego-for the Last 20 Years**

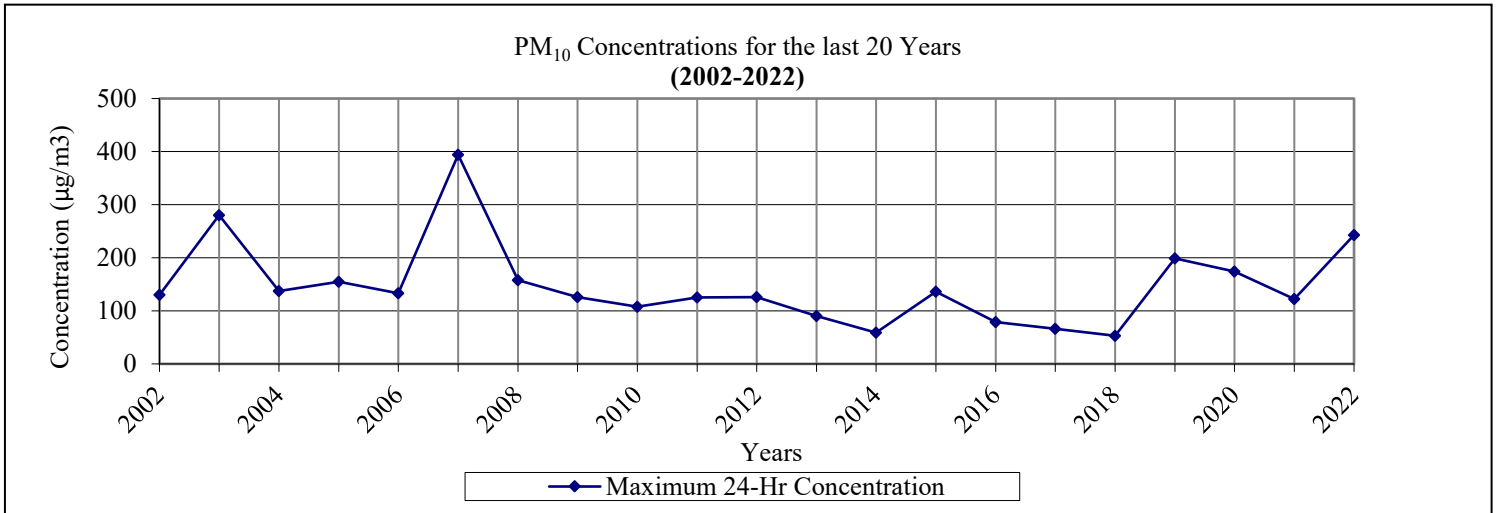
The three-year average of the annual average shows a large decrease; however, there is a great deal of variability from year-to-year. Much of this variability is due to meteorological conditions rather than changes in emissions. Note: the “Days Above the National 24-Hr Standard” row in Table 9-10 and Figure 9.2 reflect the PM<sub>10</sub> standard for that year.

**Table 9-10 PM<sub>10</sub> Concentrations for San Diego - for the Last 20 Years, 2002-2022**

Maximum 24-Hr Concentration ( $\mu\text{g}/\text{m}^3$ )	2002	* 2003	2004	2005	2006	* 2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Days above the National Standard	0	2	0	2	0	2	1	0	0	0	0	0	0	0	0	0	0	1	2	0	3



\*Due to the firestorms of 2003 and 2007, the 24-hr value exceeded the National standard for those years. The firestorms are considered as exceptional events, and they do not have a lasting impact in the SDAB. Even with the last two firestorms, the County still qualifies for attainment status.

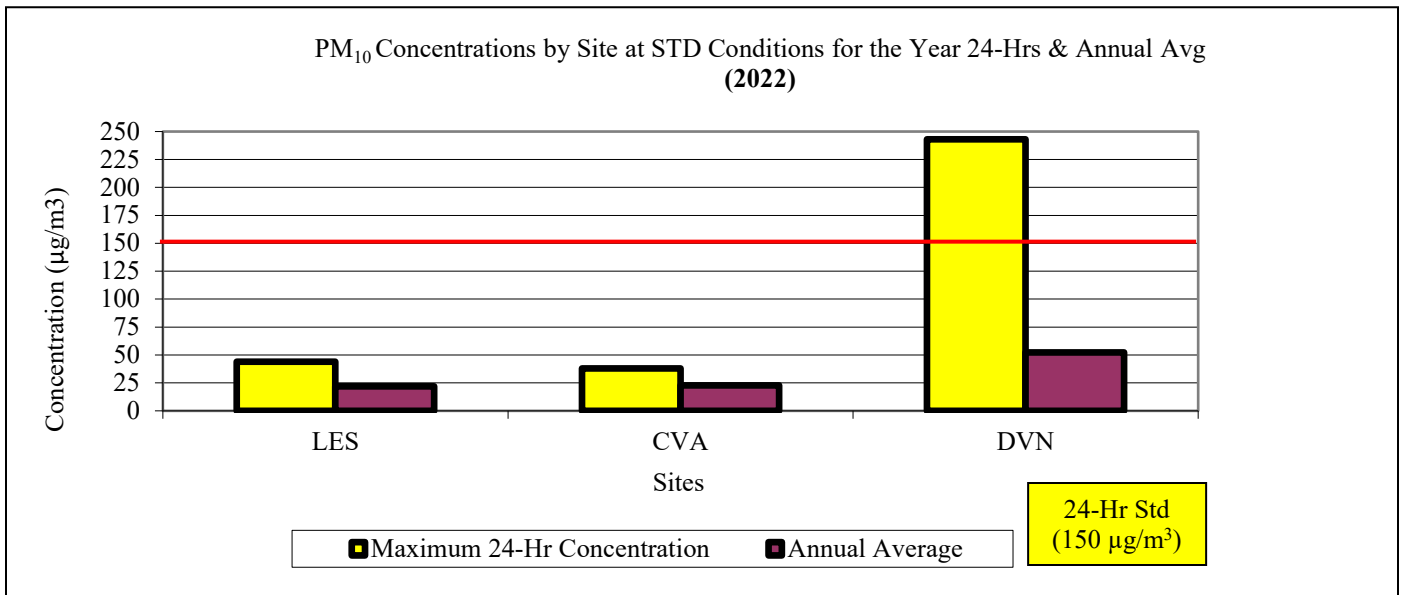


**Figure 9.2 PM<sub>10</sub> Concentrations for San Diego-for the Last 20 Years Graph**  
**Section 9.4.2 PM<sub>10</sub> Concentrations for San Diego - by Site at Standard Conditions (STD) for the Year (24-Hr & Annual Average)**

Data from the Lexington Elementary School PM<sub>10</sub> sampler is reported in Local conditions (LC) and Standard Conditions (STD) conditions and PM<sub>10</sub> data at Chula Vista and Donovan are reported only in Standard conditions. The Standard concentration is shown in Table 9-11 and Figure 9.3. The PM<sub>10</sub> samplers are operated in Local Conditions (LC) and must be converted to STD conditions.

**Table 9-11 PM<sub>10</sub> Concentrations for San Diego-by Site at Standard Conditions (STD) for the Year, 2022**

No. (#)	Site	Site Abbreviation	Maximum Concentration for 24-hrs (µg/m <sup>3</sup> )	Annual Average (µg/m <sup>3</sup> )	Number of Days Above the National Standard (#)
1	Lexington Elementary School	LES	44	22.0	0
2	Chula Vista	CVA	38	22.9	0
3	Donovan	DVN	243	52.4	3



**Figure 9.3 PM<sub>10</sub> Concentrations for San Diego - by Site at Standard Conditions (STD) for the Year**

**Section 9.4.3 PM<sub>10</sub> Concentrations for San Diego - by Site at Local Conditions (LC) for the Year (24-Hr & Annual Average)**

Table 9-12 and Figure 9.4 illustrate the data in Local Conditions (LC).



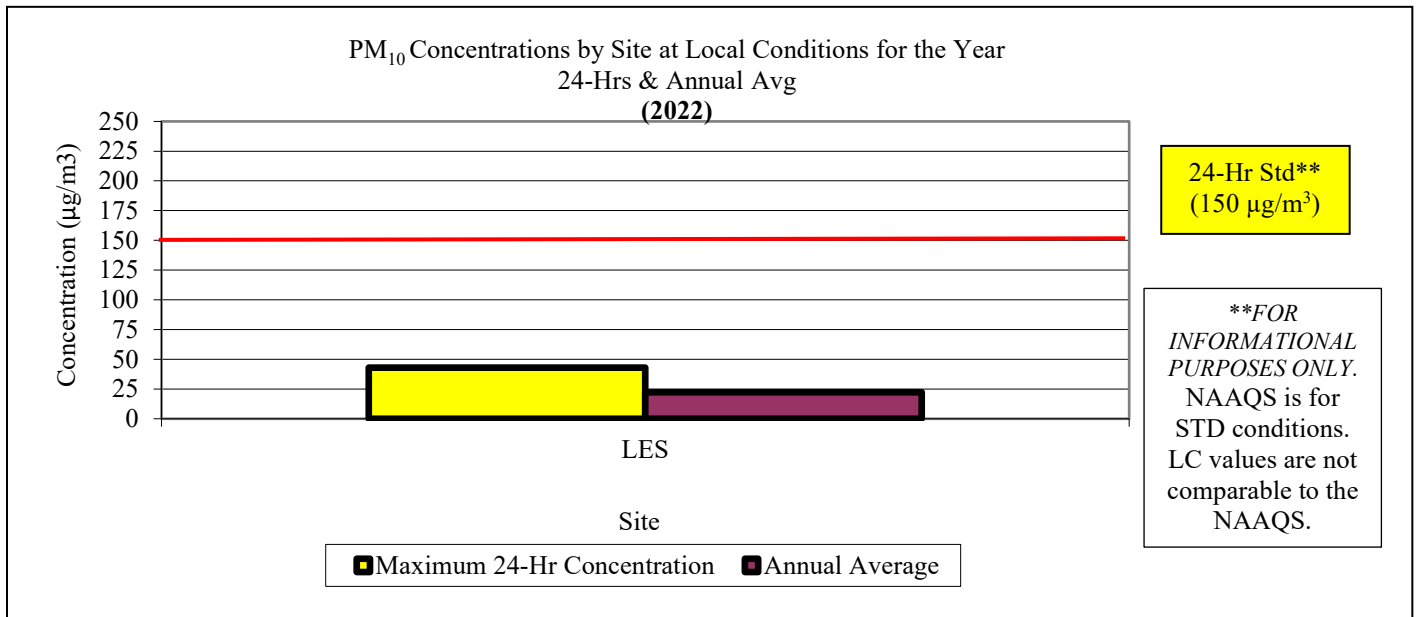
*FOR INFORMATIONAL PURPOSES ONLY.*

NAAQS is for DV calculations. Annual values are not comparable to the NAAQS.

**Table 9-12 PM<sub>10</sub> Concentrations for San Diego - by Site at Local Conditions (LC) for the Year, 2022**

No. (#)	Site	Site Abbreviation	Maximum Concentration for 24-hrs ( $\mu\text{g}/\text{m}^3$ )	Annual Average ( $\mu\text{g}/\text{m}^3$ )
1	Lexington Elementary School	LES	43	22.2
2	Chula Vista	CVA	*	*
3	Donovan	DVN	*	*

\*The District only submits PM<sub>10</sub> data in local conditions for LES as part of PMcoarse data. No PM<sub>10</sub> data reported in local conditions at Chula Vista and Donovan.



**Figure 9.4 PM<sub>10</sub> Concentrations for San Diego - by Site at Local Conditions (LC) for the Year Graph (24-Hr & Annual Average)**



## Chapter 10: National Core (NCore)

### Section 10.1 NCore Introduction

National Core (NCore) is a multi-pollutant network that integrates several advanced measurement systems for particles, as well as pollutant gases with the existing equipment for a Photochemical Assessment Monitoring Station (PAMS). The EPA designated the El Cajon-Lexington Elementary School (Figure 10.1) as the NCore site for the SDAB, so there is additional instrumentation, including PM<sub>coarse</sub> (values calculated from paired Low-Volume particulate samplers, by subtracting the measured concentrations from a PM<sub>2.5</sub> Low Volume sampler from the measured concentrations from a PM<sub>10</sub> Low Volume sampler. **Note:** PM<sub>coarse</sub> data will be calculated from PM data collected from the T640x analyzer that has been deployed at the designated NCore site at El Cajon – Lexington Elementary School), CO (trace level), SO<sub>2</sub> (trace level), and NO<sub>y</sub> (Reactive Nitrogen Oxides).

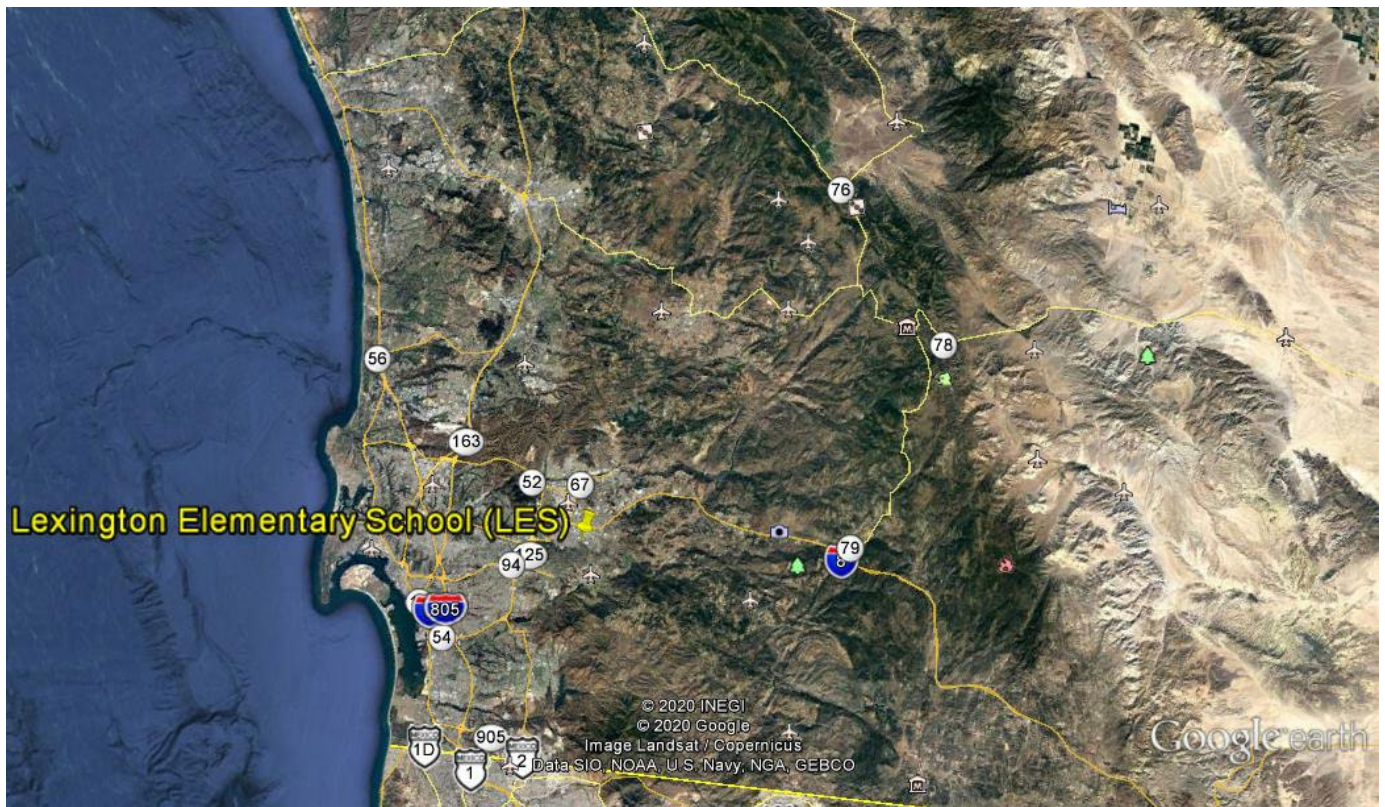


Figure 10.1 NCore Network Map



### **Section 10.1.1 NCore Minimum Monitoring Requirements**

The District is federally mandated to measure multipollutants at lower levels for the NCore program in accordance with the CFR. This section will state the different monitoring requirements for each part of the NCore program (Note: only the passages applicable/informative to the District are referenced).

The District meets or exceeds all minimum requirements for NCore monitoring.

### **Section 10.1.2 PM<sub>10</sub> Minimum Monitoring Requirements-Ambient**

Several Districts are required to operate instrumentation that is specific to the NCore program. Prior to 2016, participation was based on the population of the CBSA. Now, EPA directives are to maintain existing NCore stations. Table 10-1 summarizes these requirements.

#### *3. Design Criteria for NCore Sites<sup>62</sup>*

*(b) The NCore sites must measure, at a minimum, PM<sub>2.5</sub> particle mass using continuous and integrated/filter-based samplers, speciated PM<sub>2.5</sub>, PM<sub>10-2.5</sub> particle mass, O<sub>3</sub>, SO<sub>2</sub>, CO, NO/NO<sub>y</sub>, wind speed, wind direction, relative humidity, and ambient temperature. (1) Although the measurement of NO<sub>y</sub> is required in support of a number of monitoring objectives, available commercial instruments may indicate little difference in their measurement of NO<sub>y</sub> compared to the conventional measurement of NO<sub>x</sub>, particularly in areas with relatively fresh sources of nitrogen emissions. Therefore, in areas with negligible expected difference between NO<sub>y</sub> and NO<sub>x</sub> measured concentrations, the Administrator may allow for waivers that permit NO<sub>x</sub> monitoring to be substituted for the required NO<sub>y</sub> monitoring at applicable NCore sites.*

**Table 10-1 NCore Minimum Monitoring Requirements-Equipment & Summary**

Parameters	Number of Monitors Required (#)	Number of Monitors Active (#)	Number of Monitors Needed (#)
PM <sub>2.5</sub> -Continuous=	1	1	0
PM <sub>2.5</sub> -Manual (Integrated/filter-based)=	1	1	0
PM <sub>2.5</sub> -Speciated=	1	1	0
PM <sub>10-2.5</sub> (PMcoarse)=	1	1	0
NCore & PAMS O <sub>3</sub> =	1	1	0
SO <sub>2</sub> -TLE=	1	1	0
CO-TLE=	1	1	0
NCore & PAMS NO/NO <sub>y</sub> =	1	1	0
NCore & PAMS Wind speed/Wind direction=	1	1	0
NCore & PAMS % Relative Humidity=	1	1	0
NCore & PAMS Ambient temperature=	1	1	0

\*PM<sub>10</sub>-Manual sampling is not officially required, but PM<sub>10-2.5</sub> sampling is required. In order obtain PM<sub>10-2.5</sub> concentrations, PM<sub>2.5</sub>-Manual and PM<sub>10</sub>-Manual samplers must be run concurrently with the difference between the two to serve as the PM<sub>10-2.5</sub> concentrations.

<sup>62</sup> (2021) 40 CFR, Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring," Section 3, "Design Criteria for NCore Sites", part (b)





**Section 10.2 NCore Suitability for Comparison to the NAAQS**

Requirements for the sampling frequency of monitors for NCore pollutants are in the 40 CFR Part 58- “Ambient Air Quality Surveillance”, Subpart B, Section 58.12 “Operating Schedules” and are shown in Table 10-2.

**Table 10-2 NCore Suitability for Comparison to the NAAQS-Frequency & Equipment**

Parameter	Code	Unit	Code	Duration	Code	Equipment	Method	Code	Sampling Frequency	Method ID
Ozone	O <sub>3</sub> 44201	ppm	007	1-Hr	1	Thermo 49 series	Ultraviolet absorption	047	7/24	EQOA-0880-047
Carbon monoxide Trace Level	CO 42101	ppb	008	1-Hr	1	Thermo 48i-TLE	Nondispersive infrared	554	7/24	RFCA-0981-054
Sulfur dioxide Trace Level	SO <sub>2</sub> 42401	ppb	008	1-Hr	1 5-min	Thermo 43i-TLE	Fluorescence	560	7/24	EQSA-0486-060
Particulate Matter ≤ 2.5 µm (continuous)	PM <sub>2.5</sub> 88502	µg/m <sup>3</sup> LC	105	1-Hr	1	Met One BAM 1020 w/VSCC	Beta Attenuation	733	7/24	Not Applicable
Particulate Matter ≤ 2.5 µm (continuous)	PM <sub>2.5</sub> 88502	µg/m <sup>3</sup> LC	105	1-Hr	1	Teledyne T640x*	Broadband Spectroscopy	238	7/24	EQPM-0516-238
Particulate Matter ≤ 10 µm (continuous)	PM <sub>10</sub> 85101 LC 81102-STD	µg/m <sup>3</sup> LC STD	105	1-Hr	1	Teledyne T640x*	Broadband Spectroscopy	239	7/24	EQPM-0516-239
Particulate Matter ≤ 2.5 µm (speciated)	PM <sub>2.5</sub> CSN See EPA	See EPA	See EPA	24-Hr	7	URG-3000N	See EPA	See EPA	1:3	Not Applicable
Particulate Matter ≤ 2.5 µm (speciated)	PM <sub>2.5</sub> STN See EPA	See EPA	See EPA	24-Hr	7	Met One SuperSASS	See EPA	See EPA	1:3	Not Applicable
Particulate Matter ≤ 10 µm (Lo-Vol)	PM <sub>10</sub> 85101-LC 81102-STD	µg/m <sup>3</sup> LC STD	105 001	24-Hr	7	Met One E-SEQ-FRM Sampler w/o VSCC	Gravimetric	246	1:3	RFPS-0717-246
Particulate Matter ≤ 2.5 µm (manual)	PM <sub>2.5</sub> 88101	µg/m <sup>3</sup> LC STD	105 001	24-Hr	7	Met One E-SEQ-FRM Sampler w/VSCC	Gravimetric	545	1:1 or 1:3	RFPS-0717-245

\*Teledyne T640x installation dates at NCore (LES): 8/11/2022. Replaced Met One Bam 1020.



### **Section 10.3 NCore Concentrations**

The instrumentation needed for NCore designation are: PM<sub>coarse</sub> (calculated values from paired PM<sub>10</sub> & PM<sub>2.5</sub> Low Volume samplers); CO (trace level); SO<sub>2</sub> (trace level); NO<sub>y</sub> (total reactive Nitrogen Oxides). Table 10-3 to Table 10-7 list the data.

**Table 10-3 NCore Concentrations for PM<sub>10-2.5</sub> (PM<sub>coarse</sub>)**

PM <sub>coarse</sub> (µg/m <sup>3</sup> )*	2016	2017	2018	2019	2020	2021	2022
Max. 24-Hr. Concentration	29.6	30.0	26.2	27.1	30.4	24.4	25.3
98th Percentile of 24-Hr Concentration	26.3	25.1	22.3	23.7	22.6	20.4	21.6
Average of the Quarterly Means	14.0	13.3	13.4	10.8	13.3	12.8	12.7

\*Note: PM<sub>coarse</sub> (PM<sub>c</sub>) does not have FRM or FEM designation and cannot be compared to any NAAQS. FSD and ECA were combined

**Table 10-4 NCore Concentrations for CO-TLE**

CARBON MONOXIDE (ppm)	2016	2017	2018	2019	2020	2021	2022
Maximum 1-Hr. Concentration	1.7	1.5	1.5	1.3	1.6	1.2	1.5
Maximum 8-Hr. Concentration	1.3	1.4	1.1	1.0	1.4	1.1	1.1

**Table 10-5 NCore Concentrations for SO<sub>2</sub>-TLE**

SULFUR DIOXIDE (ppm)	2016	2017	2018	2019	2020	2021	2022
Maximum 1-Hr SO <sub>2</sub>	0.001	0.001	0.003	0.001	0.002	0.002	0.001
Maximum 24-Hr SO <sub>2</sub>	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Annual Average SO <sub>2</sub>	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**Table 10-6 NCore Concentrations for NO<sub>y</sub>-NO**

NO <sub>y</sub> -NO (ppm)**	2016	2017	2018	2019	2020	2021	2022
Maximum 1-Hr. Concentration	**	**	0.049	0.041	0.043	0.040	0.037
Annual Average	**	**	0.009	0.009	0.008	0.008	0.008

\*\*The NO<sub>y</sub> sampler was not operational at the temporary NCore site at Floyd Smith Drive.

**Table 10-7 NCore Concentrations for NO<sub>2</sub>**

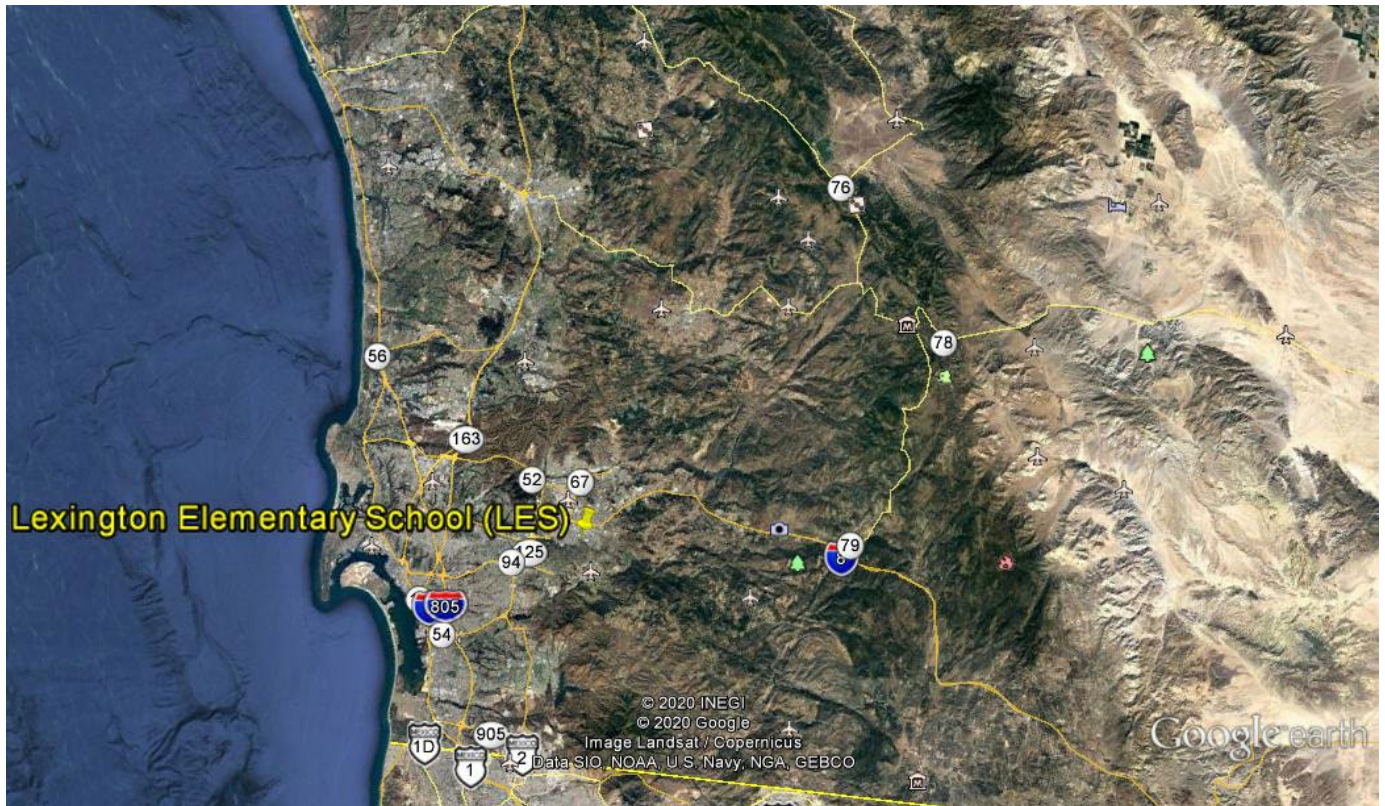
NO <sub>2</sub> (ppm)	2016	2017	2018	2019	2020	2021	2022
Maximum 1-Hr. Concentration	0.057	0.044	0.045	0.086	0.044	0.038	0.036
Annual Average	0.009	0.010	0.007	0.014	0.008	0.006	0.008



## **Chapter 11: Photochemical Assessment Monitoring Stations (PAMS)**

### **Section 11.1 PAMS Introduction**

PAMS and PAMS-related sampling will be conducted at Lexington Elementary School in El Cajon (see Figure 11.1). As yet, there are no NAAQS standards to compare the data. The location and equipment are listed in Table 11-1.



**Figure 11.1 PAMS (Carbonyls and VOCs) Network Map**

The range of compounds for the PAMS program is in excess of 50 different possible ozone precursors and other compounds (See Table 11-5 and Table 11-6). The toxicity is gauged by risk factors instead of limits.



**Table 11-1 PAMS Sampling Network**

Abbreviation	LES			
Name	Lexington Elementary School			
AQS ID	06-073-1022			
PAMS	Monitor Type	SLAMS	SLAMS	SLAMS
	Method	Auto	Cartridges	Cartridges
	Affiliation	PAMS	PAMS	PAMS
	Spatial Scale	NS	NS	NS
	Site Type	PE	PE	PE
	Objective (Federal)	Research	Research	Research
	Analysis By	APCD	APCD	APCD
	Frequency	24/7	1:3	1:6
	Equipment	GCFID	Atec 8000	Atec 8000

**Glossary of Terms**

Monitor Type

E= EPA  
 O= Other  
 SLAMS= State & Local monitoring station  
 SPM= Special purpose monitor  
 CATAC= California Toxics Monitoring

Site Type

HC= Highest concentration  
 PE= Population exposure  
 SO= Source oriented  
 UPBD= Upwind background  
 G/B= General/Background  
 RT= Regional Transport  
 WRI= Welfare related impacts  
 QA= Quality assurance

Method (Sampling/Analysis)

CL= Chemiluminescence  
 CT= Low Volume, size selective inlet, continuous  
 FL= Fluorescence  
 HV= High volume  
 IR= Nondispersive infrared  
 SI= High volume, size selective inlet  
 SP= Low volume, size selective inlet, speciated  
 SQ= Low volume, size selective inlet, sequential  
 UV= Ultraviolet absorption  
 Canister= Evacuated stainless steel canisters  
 Cartridges= Di-nitrophenylhydrazine cartridges  
 FSL= Fused Silica Lined  
 Filter= Quartz filters  
 Auto= GCFID continuous

Monitor Designation

PRI= Primary  
 QAC= Collocated

Network Affiliation

BG= Border Grant  
 CSN STN= Trends Speciation  
 CSN SU= Supplemental Speciation  
 NATTS= National Air Toxics Trends Stations  
 NCORE= National Core Multi-pollutants  
 NR= Near-road  
 PAMS= Photochemical Assessment Monitoring

Spatial Scale

MI= Micro  
 MS= Middle  
 NS= Neighborhood

Objective (Federal)

NAAQS= Suitable for NAAQS comparison  
 Research= Research support  
 PI= Public Information  
 N/A= Not Applicable  
 O= Other



### **Section 11.2 PAMS Minimum Monitoring Requirements**

The PAMS program is a multipronged approach to understand, predict, and control ozone concentrations. Ozone is not emitted directly; it is created by the interactions of several different pollutants/emissions, e.g. oxides of nitrogen (NO<sub>x</sub>), and volatile organic compounds (VOC), some carbonyls, etc. This enhanced monitoring network to track these different emissions has several different monitoring requirements, e.g. laboratory needs, meteorological needs, etc. that the District operates and references therein (Note: only the passages applicable/informative to the District are referenced). This section will state these requirements. Some of these monitors or samplers can serve as fulfilling other network requirements, e.g. ambient O<sub>3</sub> monitor can fulfill a PAMS O<sub>3</sub> monitoring requirement.

The District meets or exceeds all minimum requirements for PAMS monitoring.

#### **Section 11.2.1 PAMS Minimum Monitoring Requirements-Equipment**

The District is required to operate equipment required for the PAMS parameters for a minimum sampling period. Table 11-2 lists these requirements.

*5. Network Design for Photochemical Assessment Monitoring Stations (PAMS) and Enhanced Ozone Monitoring. (a) State and local monitoring agencies are required to collect and report PAMS measurements at each NCore site required under paragraph 3(a) of this appendix located in a CBSA with a population of 1,000,000 or more, based on the latest available census figures. (b) PAMS measurements include:<sup>63</sup>*

- (1) Hourly averaged speciated volatile organic compounds (VOCs);*
- (2) Three 8-hour averaged carbonyl samples per day on a 1 in 3 day schedule, or hourly averaged formaldehyde;*
- (3) Hourly averaged O<sub>3</sub>;*
- (4) Hourly averaged nitrogen oxide (NO), true nitrogen dioxide (NO<sub>2</sub>), and total reactive nitrogen (NO<sub>y</sub>);*
- (5) Hourly averaged ambient temperature;*
- (6) Hourly vector-averaged wind direction;*
- (7) Hourly vector-averaged wind speed;*
- (8) Hourly average atmospheric pressure;*
- (9) Hourly averaged relative humidity;*
- (10) Hourly precipitation;*
- (11) Hourly averaged mixing-height;*
- (12) Hourly averaged solar radiation; and*
- (13) Hourly averaged ultraviolet radiation.*

<sup>63</sup> (2021) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 5(a) & (b), "Network Design for Photochemical Assessment Monitoring Stations (PAMS) and Enhanced Ozone Monitoring Pollutant-Specific Design Criteria for SLAMS Sites"



**Table 11-2 PAMS Minimum Sampling Requirements-Equipment & Summary**

CFR Programs PAMS Requirements (name)	Equipment Required (#)	Equipment On-hand (#)	Equipment Active (#)	Equipment Needed (#)
Hourly averaged speciated volatile organic compounds (VOCs)=	1	1	1	0
Three 8-hour averaged carbonyl samples per day on a 1:3=	1	1	1	0
NCore & PAMS O <sub>3</sub> =	1	1	1	0
NO=	1	1	1	0
True-NO <sub>2</sub> =	1	1	1	0
NCore & PAMS NO <sub>y</sub> =	1	1	1	0
NCore & PAMS Hourly averaged ambient temperature=	1	1	1	0
NCore & PAMS Hourly vector-averaged wind direction=	1	1	1	0
Hourly average atmospheric pressure=	1	1	1	0
NCore & PAMS Hourly averaged relative humidity=	1	1	1	0
Hourly precipitation=	1	1	1	0
Hourly averaged mixing-height=	1	1	1	0
Hourly averaged solar radiation=	1	1	1	0
Hourly averaged ultraviolet radiation=	1	1	1	0

**Section 11.2.2 PAMS Minimum Monitoring Requirements-Sampling Season**

The District is required to operate PAMS parameters for a minimum sampling period. This section lists that requirement in Table 11-3.

*5. Network Design for Photochemical Assessment Monitoring Stations (PAMS) and Enhanced Ozone Monitoring<sup>64</sup>*

*(g) At a minimum, the monitoring agency shall collect the required PAMS measurements during the months of June, July, and August.*

**Table 11-3 PAMS Minimum Monitoring Requirements-Minimum Sampling Season**

Minimum PAMS Monitoring Period (months)	Actual PAMS Monitoring Period (months)	Is the PAMS Monitoring Period Active? (yes/no)
June-August	June-August	Yes

**Section 11.3 PAMS Sampling Frequency & Equipment**

During the non-PAMS season, the auto-GC will not be operational.

<sup>64</sup> (2021) 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring,” Section 5, “Network Design for Photochemical Assessment Monitoring Stations (PAMS) and Enhanced Ozone Monitoring”, Part (g).



The auto-GC will sample every hour (24-hour sampling / daily). During the PAMS season (June to August), the PAMS carbonyls samplers will collect three samples that each have an 8-hour sampling duration. The 8-hour samples are collected on a set time schedule, as follows:

1. 0400 – 1200
2. 1200 – 2000
3. 2000 – 0400

See Table 11-4 for the summary of equipment used and Table 11-5 and Table 11-6 for the parameters.

**Table 11-4 PAMS Sampling Equipment**

Pollutant	Abbreviation	Samplers	Collection Method	Collection Frequency	Analytical Method	Parameter Code	Method Code
Volatile Organic Compounds	VOCs	n/a	Auto GC	24/7	GC-FID	Table 10.15	n/a
Carbonyl Compounds	n/a	Atec 8000	DNPH cartridges	1:3	HPLC	Table 10.16	202



**Table 11-5 PAMS VOC Parameter Codes**

Compound	Parameter
Ethylene	43203
Acetylene	43206
Ethane	43202
Propylene	43205
Propane	43204
Isobutane	43214
1-Butene	43280
n-Butane	43212
trans-2-Butene	43216
cis-2-Butene	43217
Isopentane	43221
1-Pentene	43224
n-Pentane	43220
Isoprene	43243
Trans-2-pentene	43226
cis-2-Pentene	43227
2,2-Dimethylbutane	43244
Cyclopentane	43242
2,3-Dimethylbutane	43284
2-Methylpentane	43285
3-Methylpentane	43230
1-Hexene	43245
n-Hexane	43231
Methylcyclopentane	43262
2,4-Dimethylpentane	43247
Benzene	45201
cyclohexane	43248
2-Methylhexane	43263
2,3-Dimethylpentane	43291
3-Methylhexane	43249

Compound	Parameter
2,2,4-Trimethylpentane	43250
n-Heptane	43232
Methylcyclohexane	43261
2,3,4-Trimethylpentane	43252
Toluene	45202
2-Methylheptane	43960
3-Methylheptane	43253
n-Octane	43233
Ethylbenzene	45203
m-Xylene	45205
p-Xylene	45206
Styrene	45220
o-Xylene	45204
n-Nonane	43235
Isopropylbenzene	45210
$\alpha$ -Pinene	43256
n-Propylbenzene	45209
m-Ethyltoluene	45212
p-Ethyltoluene	45213
1,3,5-Trimethylbenzene	45207
o-Ethyltoluene	45211
$\beta$ -Pinene	43257
1,2,4-Trimethylbenzene	45208
n-Decane	43238
1,2,3-Trimethylbenzene	45225
m-Diethylbenzene	45218
p-Diethylbenzene	45219
Undecane	43954
Total PAMS	43000
Total NMOC	43102

**Table 11-6 PAMS Carbonyls Parameter Codes**

Compound	Parameter
Formaldehyde	43502
Acetaldehyde	43503
Acetone	43551





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# APPENDICES



## **Appendix A: Site Description Introduction**

The appendices list the stations that comprise the San Diego Air Pollution Control District’s ambient air quality network (Network) along with specific information required by the EPA for each monitor. This specific information is cross-referenced against the requirements for siting.

Federal requirements for the monitoring objectives and spatial scales, Table A-1, are in the CFR annual update on July 1 of every year, 40 CFR Part 58, Subpart G-Federal Monitoring, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”. Table A-1 summarizes these requirements and Table A-2 defines the terminology and lists the monitor types and the definitions.

**Table A-1 Relationship between Site Types and Scales or Representativeness**

Site Type	Definition	Appropriate Siting Scales	Permissible Scales & Definitions
Highest concentration,	Site located to determine the highest concentrations expected to occur in the area covered by the network	Micro, Middle, Neighborhood, Urban	Micro (0 – 100 meters), Middle (100 – 500 meters) Neighborhood (500 meters – 4 kilometers) Urban (4 – 50 kilometers)
Maximum ozone concentrations	Occurring downwind from the area of maximum precursor emissions.	Micro, Middle, Neighborhood, Urban	Micro (0 – 100 meters), Middle (100 – 500 meters) Neighborhood (500 meters – 4 kilometers) Urban (4 – 50 kilometers)
Maximum precursor impact	Are typically placed near the downwind boundary of the central business district (CBD) or primary area of precursor emissions mix	Micro, Middle, Neighborhood, Urban	Micro (0 – 100 meters), Middle (100 – 500 meters) Neighborhood (500 meters – 4 kilometers) Urban (4 – 50 kilometers)
Population Exposure	Sites located to determine typical concentrations in areas of high population density	Neighborhood, Urban	Neighborhood (500 meters – 4 kilometers) Urban (4 – 50 kilometers)
Source Oriented	Site located to determine the impact of significant sources or source categories on air quality	Micro, Middle, Neighborhood	Micro (0 – 100 meters), Middle (100 – 500 meters) Neighborhood (500 meters – 4 kilometers)
General/Background	Sites located to determine general background concentration levels	Urban, Regional	Urban (4 – 50 kilometers) Regional (50 – 1,000 kilometers)
Regional transport	Sites located to determine the extent of regional pollutant transport among populated areas and in support of secondary standards.	Urban, Regional	Urban (4 – 50 kilometers) Regional (50 – 1,000 kilometers)
Welfare-related impacts	Sites located to measure air pollution impacts on visibility, vegetation damage, or other welfare based impacts	Urban, Regional	Urban (4 – 50 kilometers) Regional (50 – 1,000 kilometers)
Upwind Background	Sites located to measure overwhelming incoming transport of ozone. Situated in the predominant upwind direction from the maximum precursor emissions location	Neighborhood Urban Regional	Neighborhood (500 meters – 4 kilometers) Urban (4 – 50 kilometers) Regional (50 – 1,000 kilometers)
Quality Assurance	Site located for quality assurance requirements	Micro, Middle, Neighborhood, Urban	Micro (0 – 100 meters), Middle (100 – 500 meters) Neighborhood (500 meters – 4 kilometers) Urban (4 – 50 kilometers)



**Table A-2 Summary of Definitions in the Site Description Template**

**Glossary of Terms**

Monitor Type

E= EPA  
 O= Other  
 SLAMS= State & Local monitoring station  
 SPM= Special purpose monitor  
 CATAAC= California Toxics Monitoring

Site Type

HC= Highest concentration  
 PE= Population exposure  
 SO= Source oriented  
 UPBD= Upwind background  
 G/B= General/Background  
 RT= Regional Transport  
 WRI= Welfare related impacts  
 QA= Quality assurance

Method (Sampling/Analysis)

CL= Chemiluminescence  
 CT= Low Volume, size selective inlet, continuous  
 FL= Fluorescence  
 HV= High volume  
 IR= Nondispersive infrared  
 SI= High volume, size selective inlet  
 SP= Low volume, size selective inlet, speciated  
 SQ= Low volume, size selective inlet, sequential  
 UV= Ultraviolet absorption  
 Canister= Evacuated stainless steel canisters  
 Cartridges= Di-nitrophenylhydrazine cartridges  
 FSL= Fused Silica Lined  
 Filter= Quartz filters  
 Auto= GCFID continuous  
 CAPS=Cavity Attenuated Phase Shift  
 BS=Broadband Spectroscopy  
Monitor Designation  
 PRI= Primary  
 QAC= Collocated

Network Affiliation

BG= Border Grant  
 CSN STN= Trends Speciation  
 CSN SU= Supplemental Speciation  
 NATTS= National Air Toxics Trends Stations  
 NCORE= National Core Multi-pollutants  
 NR= Near-road  
 PAMS= Photochemical Assessment Monitoring

Spatial Scale

MI= Micro  
 MS= Middle  
 NS= Neighborhood

Objective (Federal)

NAAQS= Suitable for NAAQS comparison  
 Research= Research support  
 PI= Public Information  
 N/A= Not Applicable  
 O= Other

Federal requirements for correctly siting the inlet sample probe(s) are in the 40 CFR Part 58, Subpart G- Federal Monitoring, Appendix E, “Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring”.

This specific information is presented in a site description template required by the EPA in all network plans. The pollutant monitors must be assigned a specific scale, type, monitoring objective, and designation. These parameters have specific guidelines that must be followed in order for the data collected from the monitors to be considered valid. Additionally, each monitor must meet certain physical parameters, e.g., distance from each other, distance from the road, distance from obstructions, etc. Table A-3 Summary of Probe Monitoring Paths summarizes these requirements. Figure A.1 illustrates the distances PM samplers must be from the nearest traffic lane.

**Modifications to the Site Template and General Information**

The EPA supplies monitoring organizations with a site description template to use for the input of site information in the Annual Network Report. The District has modified the site description template into two tables. The section of the EPA template that lists the distance from obstructions, collocated monitors, etc., has been moved into a separate table with a more detailed accounting of the requirements provided in Table A-3.

The traffic count is referenced to the closest cross street listed in the current Traffic Count database maintained by the San Diego Association of Governments (SANDAG). At some station locations, the closest cross street with an Annual Average Daily Traffic (AADT) count may be several hundred meters away. The vehicle count is estimated visually (this is stated, when applicable) and the traffic count for the closest major thoroughfare is also reported for comparison purposes. Traffic count data from SANDAG is done in 5-year allotments. All Traffic counts used for this report is from the latest SANDAG report.



**Table A-3 Summary of Probe Monitoring Paths**

Pollutant (name)	Scale <maximum monitoring path length> (name)	Height from the ground to the probe, inlet or 80% of monitoring path <sup>1</sup> (meters)	Horizontal and vertical distance from supporting structures <sup>2</sup> to probe, inlet, or 90% of monitoring path <sup>1</sup> (meters)	Distance from trees to probe, inlet, or 90% of the monitoring path <sup>1</sup> (meters)	Average daily traffic count (#)	Distance from roadways to probe, inlet, or monitoring path <sup>1,10</sup> (meters)
SO <sub>2</sub> <sup>3,4,5,6</sup>	Middle Neighborhood	Min= 2, Max= 15	> 1	> 10	For all scales Not Applicable	For all scales Not Applicable
	Urban	Min= 2, Max= 15	> 1	> 10		
	Regional	Min= 2, Max= 15	> 1	> 10		
		Min= 2, Max= 15	> 1	> 10		
CO <sup>4,5,7</sup>	Micro	Min= 3.5, Max= 15	> 1	> 10	For micro scale Not Applicable	For micro scale Min= 2, Max= 10
	Middle Neighborhood	Min= 2, Max= 15 Min= 2, Max= 15	> 1 > 1	> 10 > 10	For all other scales ≤ 10,000 15,000 20,000 30,000 40,000 50,000 ≥ 60,000	For all other scales 10 25 45 80 115 135 150
O <sub>3</sub> <sup>3,4,5</sup>	Middle Neighborhood	Min= 2, Max= 15	> 1	> 10	For all scales ≥10,000 15,000 20,000 40,000 70,000 ≥ 110,000	For all scales 10 20 30 50 100 250
	Urban	Min= 2, Max= 15	> 1	> 10		
	Regional	Min= 2, Max= 15	> 1	> 10		
		Min= 2, Max= 15	> 1	> 10		
NO <sub>y</sub> & NO <sub>2</sub> <sup>3,4,5</sup>	Micro	Min= 2, Max= 7	> 1	> 10	For all scales ≥ 10,000 15,000 20,000 40,000 70,000 ≥ 110,000	For all scales 10 20 30 50 100 250
	Middle Neighborhood	Min= 2, Max= 15	> 1	> 10		
	Urban	Min= 2, Max= 15	> 1	> 10		
	Regional	Min= 2, Max= 15	> 1	> 10		
		Min= 2, Max= 15	> 1	> 10		
PAMS <sup>3,4,5</sup>	Neighborhood	Min= 2, Max= 15	> 1	> 10	For all scales > 10,000 15,000 20,000 40,000 70,000 ≥ 110,000	For all scales 10 20 30 50 100 250
	Urban	Min= 2, Max= 15	> 1	> 10		
Pb <sup>3,4,5,6,8</sup> PM <sup>3,4,5,6,8,9</sup>	Micro	Min= 2, Max= 7	> 2	> 10		Min= 5, Max= 15 (street canyon) Min= 2, Max= 10 (street)
	Neighborhood	Min= 2, Max= 15	> 2	> 10		See Figure E-1 (below)
	Urban	Min= 2, Max= 15	> 2	> 10		

<sup>1</sup>Monitoring path for open path analyzers is applicable only to middle or neighborhood scale CO monitoring, middle, neighborhood, urban, and regional scale Now monitoring, and all applicable scales for monitoring SO<sub>2</sub>, O<sub>3</sub> and O<sub>3</sub> precursors.

<sup>2</sup>When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

<sup>3</sup> Should be > 20 meters from the dripline of tree(s) and must be 10 meters from the dripline when the tree(s) act as an obstruction

<sup>4</sup>Distance from sampler, probe, or 90% of monitoring path to obstacle, such as a building, must be at least twice the height the obstacle protrudes above the sampler, probe, or monitoring path. Sites not meeting this criterion may be classified as middle scale.

<sup>5</sup>Must have unrestricted airflow 270 degrees around the probe or sampler; 180 degrees if the probe is on the side of a building or a wall.

<sup>6</sup>The sampler, probe, or monitoring path should be away from minor source, such as furnace or incineration flues. The separation distance is dependent on the height of the minor source's emission point, the type of waste burned, and the quality of the fuel (sulfur, ash, or lead content). This criterion is designed to avoid undue influences from minor sources.

<sup>7</sup>For microscale CO monitoring sites, the probe must be > 10 meters from a street intersection and preferably at a midblock location

<sup>8</sup> Collocated monitors must be within 4 meters of each other and at least 2 meters apart for flow rates > 200 liters/min or at least 1 meter apart for samplers having flow rates < 200 liters/min

<sup>9</sup> For particulate sampling, a minimum of 2 meters of separation from walls, parapets, and structures is required for rooftop site placement.

<sup>10</sup> Measured from the edge of the nearest lane to the sampler or inlet.

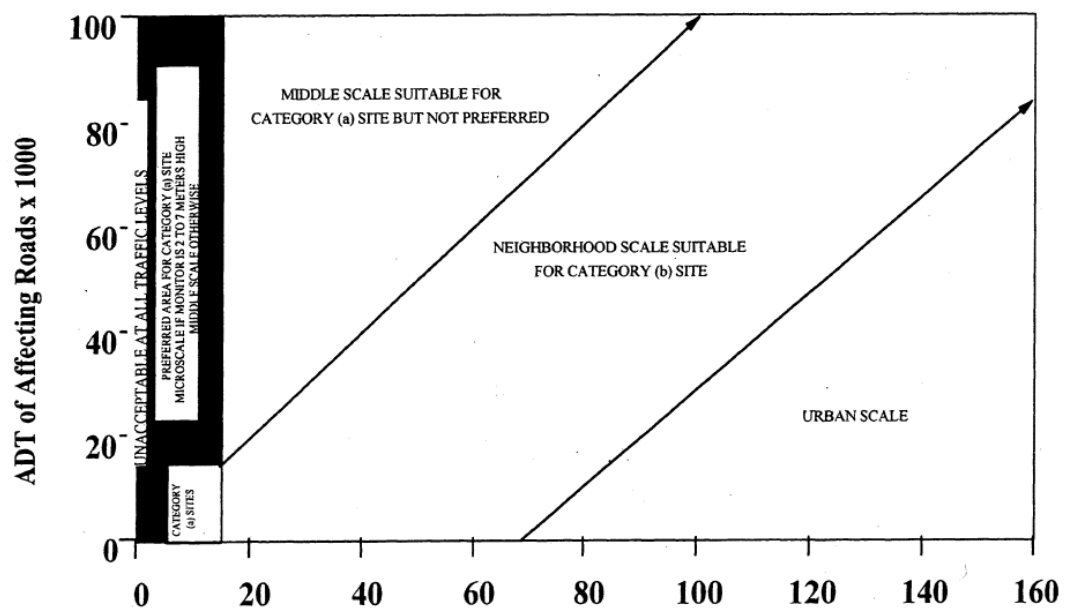


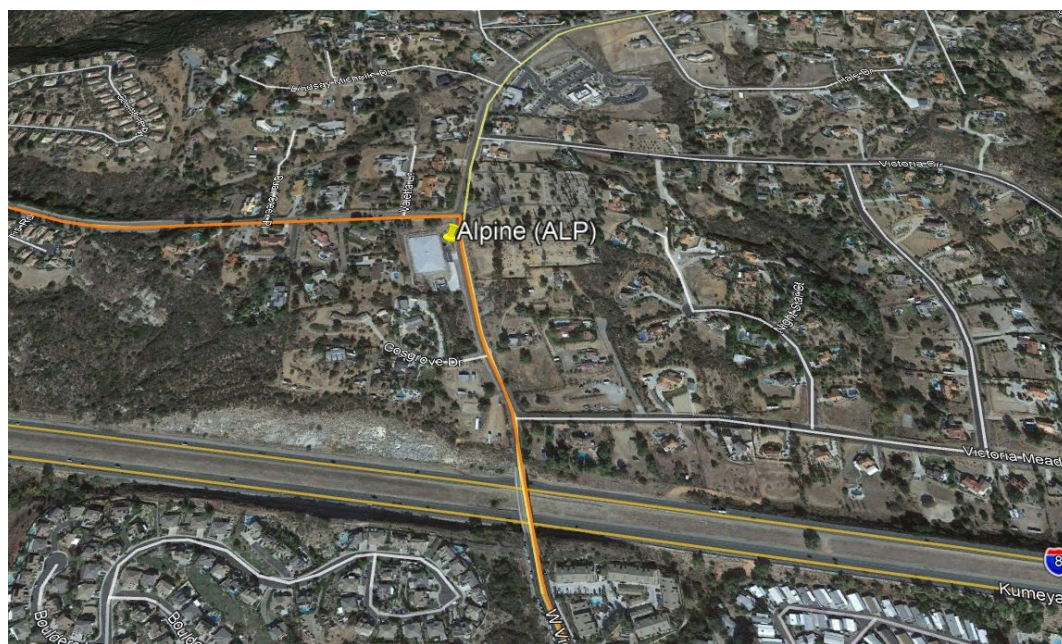
Figure A.1 Distance of PM samplers to nearest traffic lane



## **Appendix B: Alpine Station Description**

**Table B-1 General Site Information**

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Alpine
Year Established:	1/1/1972
Site Address:	2300 W. Victoria Dr.
Site Name Abbreviation:	ALP
AQS Number:	06-073-1006
Latitude:	32.842312°
Longitude:	-116.768277°
Elevation above Sea Level:	627 m
General Location:	Trailer adjacent to Padre Reservoir
Ground Cover:	Asphalt
Distance to Road:	17 m west= W. Victoria Drive
Traffic Count (2016 AADT):	W. Victoria Dr. estimated= 500 (no traffic count is available) The closest cross-street with a traffic count is Alpine Blvd. at W. Victoria Dr. (south/slightly upwind 760 m) = 3,300
Site Description:	Due to its geographical location, each year the Alpine station records the highest ozone levels within the air basin. All particulate equipment is on the rooftop of the station.
Monitoring Objectives:	The Alpine location is used to assess downwind transport of fine particulates (PM <sub>2.5</sub> ). NO <sub>2</sub> data continues to provide information on trends and are an indication of the relative effectiveness of NO <sub>x</sub> regulatory and control measures. The Alpine site also provides information used in making burn/no-burn decisions.
Planned Changes:	<i>none</i>



**Figure B.1 Alpine – Picture of the Location of the Station**



**Table B-2 Alpine - Gaseous Pollutants Monitor Designations + Other**

Pollutant	O <sub>3</sub>	NO <sub>2</sub>	Other Zero Air	Other Calibrator
POC	1	1	N/A	N/A
Monitor designation	Primary	Primary	N/A	N/A
Parameter code	44201	42602 (NO <sub>2</sub> )	N/A	N/A
Basic monitoring objective	Public Information, NAAQS	Public Information, NAAQS	N/A	N/A
Site type	Highest Concentration	Population Exposure	N/A	N/A
Monitor type	SLAMS	SLAMS	N/A	N/A
Network affiliation	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Thermo 49i	Teledyne-API T500U	Teledyne-API 701H	Teledyne-API T700U
Method code	047	212	N/A	N/A
FRM/FEM/ARM/Other	FEM	FEM	N/A	N/A
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Urban Scale	Urban Scale	N/A	N/A
Monitoring start date	1/1/1979	1/1/2022	4/29/2015	4/29/2015
Current sampling frequency	Continuous	Continuous	N/A	N/A
Required sampling frequency	Continuous	Continuous	N/A	N/A
Sampling season	Year-round	Year-round	N/A	N/A
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A
Any PM Lo-Vol sampler w/in 2m	N/A	N/A	N/A	N/A
12/2Probe material for reactive gases	Borosilicate glass	Borosilicate glass	N/A	N/A
Residence time for reactive gases	8.30	5.81	N/A	N/A
Any changes within the next 18 months?	No	Yes	No	No
Suitable for comparison to the NAAQS?	Yes	Yes	N/A	N/A
Frequency of QC check (one-point)	1:1	1:1	1:1	N/A
Annual Performance Evaluation date	11/18/2022	11/09/2022	09/20/2022	N/A
NPAP date	*	*	N/A	N/A

\*Not done this year





**Table B-3 Alpine - Particulate Pollutants Monitor Designations**

Pollutant	PM <sub>2.5</sub> Continuous (non-FEM)	PM <sub>2.5</sub> Continuous (FEM)	PM <sub>10</sub> Continuous (FEM)	Black Carbon
POC	1	3	3	1
Monitor designation	Other	Primary	Primary	Other
Parameter code	88502 (LC)	88101 (LC)	81102 (STP)	88313
Basic monitoring objective	Public Information, NAAQS	NAAQS	NAAQS	Public Information
Site type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Met One BAM 1020	Teledyne-API T640x	Teledyne-API T640x	Met One BC 1060
Method code	733	238	239	879
FRM/FEM/ARM/Other	Other (non-FEM)	FEM	FEM	Other
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Urban Scale	Urban Scale	Urban Scale	Urban Scale
Monitoring start date	4/2015	9/8/2022	9/8/2022	6/2020
Current sampling frequency	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	None	None	None	None
Any PM Hi-Vol sampler w/in 2m	None	None	None	None
Probe material for reactive gases	N/A	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	Yes	No	No	No
Suitable for comparison to the NAAQS?	No	Yes	Yes	No
Frequency of flow rate verification	Semi-Monthly	Semi-Monthly	Semi-Monthly	Monthly
Semi-Annual flow rate audits dates	04/28/2022, 09/08/2022	11/16/2022	11/16/2022	04/28/2022, 11/16/2022
Additional QA flow rate check dates*	01/14/2022, 07/06/2022, 09/08/2022	09/08/2022	09/08/2022	01/12/2022, 07/06/2022
PEP date	**	**	**	N/A

\*Additional QA checks are not official audits

\*\*Not done this year



**Table B-4 Alpine - Meteorology Equipment Designations + Other**

Pollutant	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp	Meteorological Rel. Humidity
POC	1	1	1	1	1
Monitor designation	N/A	N/A	N/A	N/A	N/A
Parameter code	62107	61101	61104	62101	62201
Basic monitoring objective	N/A	N/A	N/A	N/A	N/A
Site type	N/A	N/A	N/A	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Qualimetrics	Qualimetrics 2030	Qualimetrics 2020	Rotronics	Rotronics
Method code	012	050	020	040	012
FRM/FEM/ARM/Other	Other	Other	Other	Other	Other
Collecting agency	APCD	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD	APCD
Spatial scale	Urban	Urban	Urban	Urban	Urban
Monitoring start date	4/2015	4/2015	4/2015	4/2015	1972
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A	N/A
Probe material for reactive gases	N/A	N/A	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	No	No	No	No	No
Suitable for comparison to the NAAQS?	N/A	N/A	N/A	N/A	N/A
Frequency of QC check (one-point)	N/A	N/A	N/A	N/A	N/A
Annual Performance Evaluation date	11/16/2022	11/18/2022	*	11/16/2022	11/16/2022
NPAP date	N/A	**	**	**	**

\* Not performed this year

\*\* EPA subcontractor does not have the equipment to audit



**Table B-5 Alpine - Distance the Equipment are from Influences**

(meters)	Gas Inlet	NOy Inlet	Pb-TSP, PRI (44.5 cfm)	Pb-TSP, QAC (44.5 cfm)	PM <sub>10</sub> , PRI (16.7 lpm)	PM <sub>10</sub> , QAC (16.7 lpm)	BC 1060	PM <sub>2.5</sub> FRM, PRI (16.7 lpm)	PM <sub>2.5</sub> FRM, QAC (16.7 lpm)	PM <sub>2.5</sub> non-FEM (16.7 lpm)	PM <sub>2.5</sub> STN (6.7 lpm)	PM <sub>2.5</sub> CSN (22.0 lpm)	† PAMS-VOC* (50 ccppm)	† PAMS-VOC, QAC (50 ccppm)	† PAMS-Carbonyls (1.5 lpm)	† Toxics-VOC (50 ccppm)	† Toxics-VOC, QAC (50 ccppm)	Toxics-Metals (12 lpm)	Meteorology
Gas Inlet	n/a						4.1			1.2									5.9
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM <sub>10</sub> , PRI																			
PM <sub>10</sub> , QAC																			
BC 1060	4.1						n/a			3.1									4.8
PM <sub>2.5</sub> FRM, PRI																			
PM <sub>2.5</sub> FRM, QAC																			
PM <sub>2.5</sub> non-FEM	1.2						3.1			n/a									4.7
PM <sub>2.5</sub> STN																			
PM <sub>2.5</sub> CSN																			
†PAMS-VOC																			
†PAMS-VOC QAC																			
†PAMS-Carbonyls																			
†Toxics-VOC																			
†Toxics-VOC, QAC																			
Toxics-Metals																			
Meteorology	5.9						4.8			4.7									n/a
<i>height from ground</i>	6.7						6.0			6.8									10.2
<i>distance: from the road</i>	17.0						16.0			16.0									14.4
<i>from the supporting structure (wood deck)</i>	2.2						1.4			2.3									5.6
<i>from obstructions on roof</i>	N						N			N									N
<i>from obstructions not on roof</i>	N						N			N									N
<i>from the closest tree</i>	37.0						40.0			38.0									38.0
<i>from furnace/flue</i>	N						N			N									N
<i>unrestricted air flow (degrees)</i>	360						360			360									360

n/a= Not Applicable; N= None; †On the side of the station/trailer; \*Currently no canister sampling for PAMS. PAMS re-engineered program at Lexington Elementary School.



Figure B.2 Alpine – Pictures (Directional) from the Rooftop



## Appendix C: Camp Pendleton Station Description

**Table C-1 General Site Information**

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Camp Pendleton
Year Established:	4/1997
Site Address:	21441 West B St.
Site Name Abbreviation:	CMP
AQS Number:	06-073-1008
Latitude:	33.217063 <sup>o</sup>
Longitude:	-117.396169 <sup>o</sup>
Elevation above Sea Level:	16 m
General Location:	Trailer in the W corner of the parking lot across the Corporal Training facility and above the Del Mar beach on Camp Pendleton.
Ground Cover:	Asphalt
Distance to Road:	41 m west= B St.
Traffic Count (2017 AADT):	B St. estimated= 500 (No traffic count is available for the base) The closest area with a traffic count, Interstate 5 (east/downwind 440 m)= 171,000
Site Description:	This station is a trailer located within the Marine Corps Camp Pendleton Base and sits atop a bluff overlooking the Pacific Ocean. In 1997, it replaced the Oceanside station about 7.6 km south east (east of I-5) of the CMP location. Due to its geographical location, this station records over-water transport from the South Coast Air Basin. Diesel truck motor pool 61 m west of the stations and at the base of the bluffs.
Monitoring Objectives:	This site functions as a transport site due to its geographical location. It is used to provide information on trends for the pollutants, including Ozone, NO <sub>x</sub> , and PM <sub>2.5</sub> .
Planned Changes:	<i>Not within the next 18-mon, but due to structures and heavy machinery (motor pool) encroaching on the station, as well as frequent power outages, this station will need to be relocated at some point. Once a suitable replacement location has been secured, the District will work with EPA to formalize the relocation process.</i>



**Figure C.1 Camp Pendleton – Picture of the Location of the Station**



**Table C-2 Camp Pendleton - Gaseous Pollutants Monitor Designations + Other**

Pollutant	O <sub>3</sub>	NO <sub>2</sub>	Other Zero Air	Other Calibrator
POC	1	1	N/A	N/A
Monitor designation	Primary	Primary	N/A	N/A
Parameter code	44201	42602 (NO <sub>2</sub> )	N/A	N/A
Basic monitoring objective	Public Information, NAAQS	Public Information, NAAQS	N/A	N/A
Site type	Population Exposure	Population Exposure	N/A	N/A
Monitor type	SLAMS	SLAMS	N/A	N/A
Network affiliation	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Thermo 49i	Teledyne API T500U	Teledyne-API 701H	Teledyne-API T700U
Method code	047	212	N/A	N/A
FRM/FEM/ARM/Other	FEM	FEM	N/A	N/A
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Not Applicable	Not Applicable
Monitoring start date	1997	1997	4/29/2015	4/29/2015
Current sampling frequency	Continuous	Continuous	N/A	N/A
Required sampling frequency	Continuous	Continuous	N/A	N/A
Sampling season	Year round	Year round	N/A	N/A
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	N/A	N/A
Residence time for reactive gases	5.03	7.16	N/A	N/A
Any changes within the next 18 months?	No	Yes	No	No
Suitable for comparison to the NAAQS?	Yes	Yes	N/A	N/A
Frequency of QC check (one-point)	1:1	1:1	1:1	N/A
Annual Performance Evaluation date	03/03/2022	03/09/2022	08/23/2022	N/A
NPAP date	*	*	N/A	N/A

\* Not performed this year



**Table C-3 Camp Pendleton - Particulate Pollutants Monitor Designations**

Pollutant	PM <sub>2.5</sub> Continuous (non-FEM)	PM <sub>2.5</sub> Continuous (FEM)	PM <sub>10</sub> Continuous (FEM)
POC	1	3	3
Monitor designation	Other	Primary	Primary
Parameter code	88502 (LC)	88101 (LC)	88102(STP)
Basic monitoring objective	Public Information, Research	NAAQS	NAAQS
Site type	N/A	Population Exposure	Population Exposure
Monitor type	O	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A
Instrument manufacturer & model	Met One BAM 1020	Teledyne-API T640x	Teledyne-API T640x
Method code	733	238	239
FRM/FEM/ARM/Other	Other (non-FEM)	FEM	FEM
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Urban	Urban Scale	Urban Scale
Monitoring start date	10/24/2005	8/30/2022	8/30/2022
Current sampling frequency	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	None	None	None
Any PM Hi-Vol sampler w/in 2m	None	None	None
Probe material for reactive gases	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A
Any changes within the next 18 months?	Yes	No	No
Suitable for comparison to the NAAQS?	No	Yes	Yes
Frequency of flow rate verification	Semi-monthly	Semi-Monthly	Semi-Monthly
Semi-Annual flow rate audits dates	03/23/2022, 08/23/2022	12/28/2022	12/28/2022
Additional QA flow rate check dates*	05/27/2022, 08/30/2022	08/30/2022	08/30/2022
PEP date	**	**	**

\*Additional QA checks are not official audits

\*\*Not done this year



**Table C-4 Camp Pendleton - Meteorological Equipment Designations + Other**

Pollutant	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp
POC	1	1	1	1
Monitor designation	N/A	N/A	N/A	N/A
Parameter code	62107	61101	61104	62101
Basic monitoring objective	N/A	N/A	N/A	N/A
Site type	N/A	N/A	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Qualimetrics 4480	Qualimetrics 2030	Qualimetrics 2020	Qualimetrics 4480
Method code	012	050	020	040
FRM/FEM/ARM/Other	Other	Other	Other	Other
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	1997	1997	1997	1997
Current sampling frequency	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A
Probe material for reactive gases	N/A	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	No	No	No	No
Suitable for comparison to the NAAQS?	N/A	N/A	N/A	N/A
Frequency of QC check (one-point)	N/A	N/A	N/A	N/A
Annual Performance Evaluation date	08/24/2022	12/28/2022	*	08/24/2022
NPAP date	N/A	**	**	**

\*Not performed this year

\*\*EPA subcontractor does not have the equipment to audit.





**Table C-5 Camp Pendleton - Distance the Equipment are from Influences**

(meters)	Gas Inlet	NOy Inlet	Pb-TSP, PRI (44.5 cfm)	Pb-TSP, QAC (44.5 cfm)	PM <sub>10</sub> , PRI (16.7 lpm)	PM <sub>10</sub> , QAC (16.7 lpm)	BC 1060	PM <sub>2.5</sub> FRM, PRI (16.7 lpm)	PM <sub>2.5</sub> FRM, QAC (16.7 lpm)	PM <sub>2.5</sub> , PM <sub>10</sub> FEM (16.7 lpm)	PM <sub>2.5</sub> STN (6.7 lpm)	PM <sub>2.5</sub> CSN (22.0 lpm)	† PAMS-VOC* (50 ceppm)	† PAMS-VOC, QAC (50 ceppm)	† PAMS-Carbonyls (1.5 lpm)	† Toxics-VOC (50 ceppm)	† Toxics-VOC, QAC (50 ceppm)	Toxics-Metals (12 lpm)	Meteorology
Gas Inlet	n/a									1.5									5.3
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM <sub>10</sub> , PRI																			
PM <sub>10</sub> , QAC																			
BC 1060																			
PM <sub>2.5</sub> FRM, PRI																			
PM <sub>2.5</sub> FRM, QAC																			
PM <sub>2.5</sub> , PM <sub>10</sub> FEM	1.5									n/a									5.7
PM <sub>2.5</sub> STN																			
PM <sub>2.5</sub> CSN																			
†PAMS-VOC																			
†PAMS-VOC QAC																			
†PAMS-Carbonyls																			
†Toxics-VOC																			
†Toxics-VOC, QAC																			
Toxics-Metals																			
Meteorology	5.3									5.7									n/a
<i>height from ground</i>	5.6									5.6									10.7
<i>distance: from the road</i>	45									47									45
<i>from the supporting structure (wood deck)</i>	2.2									2.2									7.3
<i>from obstructions on roof</i>	N									N									N
<i>from obstructions not on roof</i>	N									N									N
<i>from the closest tree</i>	40									40									41
<i>from furnace/flue</i>	N									N									N
<i>unrestricted air flow (degrees)</i>	360									360									360

n/a= Not Applicable; N= None; †On the side of the station/trailer; \* PAMS canister sampling is not being performed. PAMS sampling is performed at Lexington Elementary School as part of the PAMS re-engineering

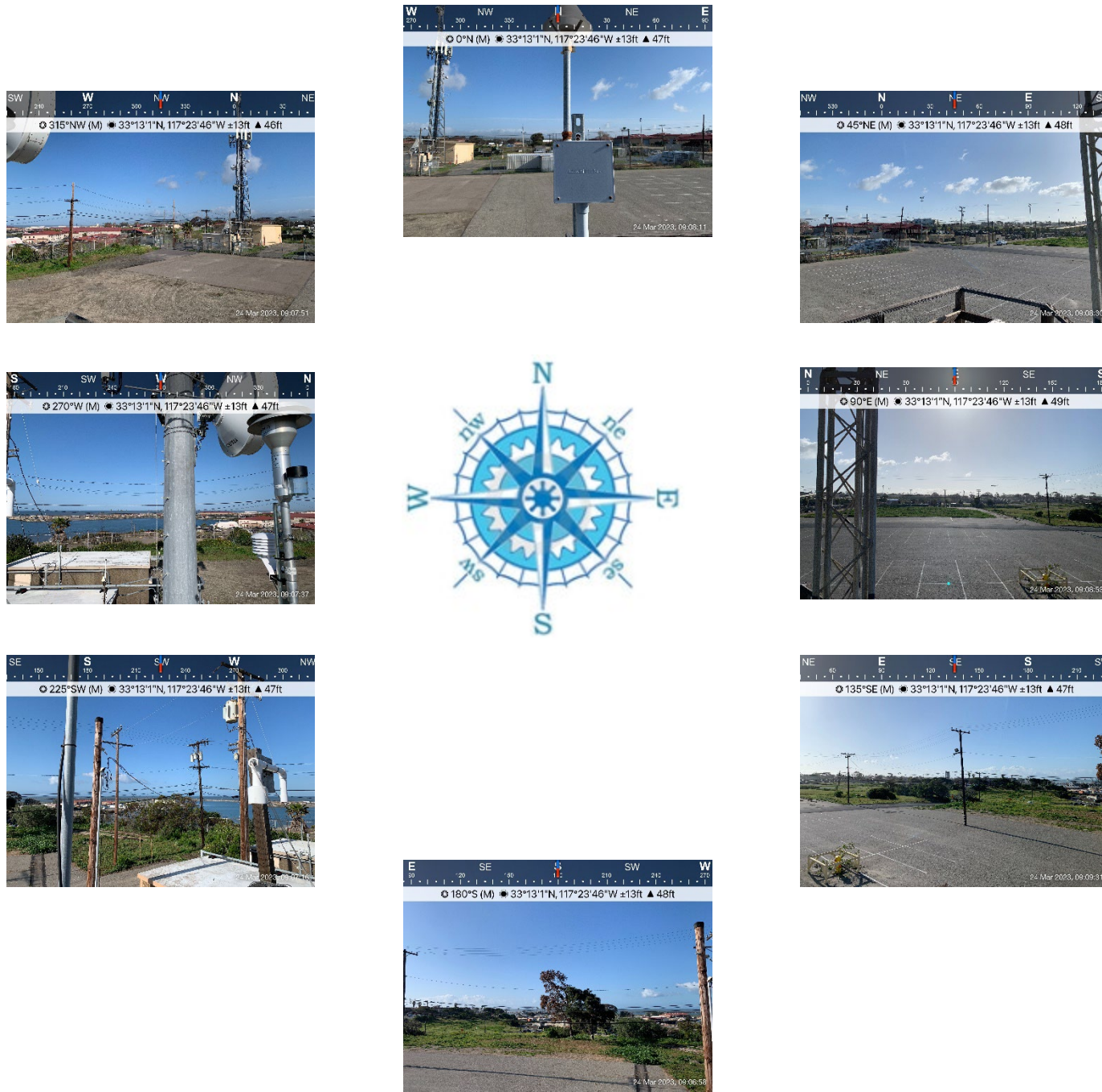


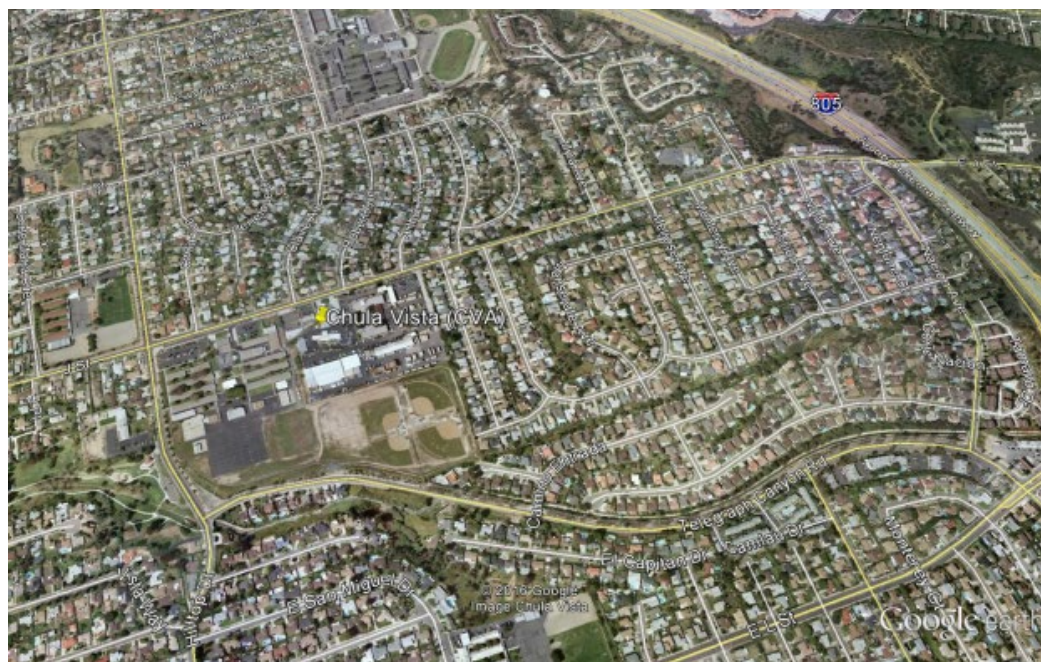
Figure C.2 Camp Pendleton – Pictures (Directional) from the Rooftop



## **Appendix D: Chula Vista Station Description**

**Table D-1 General Site Information**

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Chula Vista
Year Established:	01/20/1972
Site Address:	84 East J St.
Site Name Abbreviation:	CVA
AQS Number:	06-073-0001
Latitude:	32.631175°
Longitude:	-117.059115°
Elevation above Sea Level:	55 m
General Location:	Trailer in the W corner of the Chula Vista Elementary School District offices parking lot
Ground Cover:	Asphalt
Distance to Road:	51 m northwest= E. J St.; 301 m south-southeast Hilltop Dr.
Traffic Count (2016 AADT):	Hilltop Dr. at E. J St.= 9,100
Site Description:	This station is a trailer located on the western corner of the Chula Vista Elementary School District Administration property, immediately south of Chula Vista Fire Station No. 2.
Monitoring Objectives:	Helps track trends for an area that has a high rate of asthma.
Planned Changes:	<i>This station and work area will be demolished and reconfigured, respectively (date TBD). During this phase, there will be no sampling (EPA approved).</i>



**Figure D.1 Chula Vista – Pictures of the Location of the Station**



**Table D-2 Chula Vista - Gaseous Pollutants Monitor Designations + Other**

Pollutant	O <sub>3</sub>	NO <sub>2</sub>	Other Zero Air	Other Calibrator
POC	1	1	N/A	N/A
Monitor designation	Primary	Primary	N/A	N/A
Parameter code	44201	42602 (NO <sub>2</sub> )	N/A	N/A
Basic monitoring objective	Public Information, NAAQS	Public Information, NAAQS	N/A	N/A
Site type	Population Exposure	Population Exposure	N/A	N/A
Monitor type	SLAMS	SLAMS	N/A	N/A
Network affiliation	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Thermo 49i	Teledyne-API T500U	Teledyne-API 701H	Teledyne-API T700U
Method code	047	212	N/A	N/A
FRM/FEM/ARM/Other	FEM	FEM	N/A	N/A
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	N/A	N/A
Monitoring start date	1972	1972	2015	2015
Current sampling frequency	Continuous	Continuous	N/A	N/A
Required sampling frequency	Continuous	Continuous	N/A	N/A
Sampling season	Year-round	Year-round	N/A	N/A
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	N/A	N/A
Residence time for reactive gases	5.59	3.85	N/A	N/A
Any changes within the next 18 months?	Yes	Yes	Yes	Yes
Suitable for comparison to the NAAQS?	Yes	Yes	N/A	N/A
Frequency of QC check (one-point)	1:1	1:1	1:1	N/A
Annual Performance Evaluation date	03/24/2022	03/24/2022	11/02/2022	N/A
NPAP date	9/7/2022	*	N/A	N/A

\*Not done this year



**Table D-3 Chula Vista - Particulate Pollutants Monitor Designations**

Pollutant	PM <sub>2.5</sub> Manual	PM <sub>10</sub> Manual
POC	1	1
Monitor designation	Primary	Primary
Parameter code	88101 (LC)	81102 (STP)*
Basic monitoring objective	NAAQS	NAAQS
Site type	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS
Network affiliation	N/A	N/A
Instrument manufacturer & model	Met One E-SEQ-FRM	Met One E-SEQ-FRM
Method code	545	246
FRM/FEM/ARM/Other	FRM	FRM
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	1999	1986
Current sampling frequency	1:3	1:6
Required sampling frequency	1:3	1:6
Sampling season	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	None	None
Any PM Hi-Vol sampler w/in 2m	None	None
Probe material for reactive gases	N/A	N/A
Residence time for reactive gases	N/A	N/A
Any changes within the next 18 months?	Yes	Yes
Suitable for comparison to the NAAQS?	Yes	Yes
Frequency of flow rate verification	Monthly	Monthly
Semi-Annual flow rate audits dates	02/09/2022, 08/31/2022	02/09/2022, 08/31/2022
Additional QA flow rate check dates**	04/18/2022, 11/21/2022	04/18/2022, 11/21/2022
PEP date	5/11/2022, 8/24/2022	N/A

\* Flow checks and operations are in LC and concentration data is in STD

\*\* Additional QA checks are not official audits



**Table D-4 Chula Vista - Other Pollutants Monitor Designations**

Pollutant	Toxics-VOC	Toxics-Metals	Toxics-Cr(VI)	Toxics-Aldehyde
POC	See ARB	See ARB	See ARB	See ARB
Monitor designation	N/A	N/A	N/A	N/A
Parameter code	See ARB	See ARB	See ARB	See ARB
Basic monitoring objective	Research	Research	Research	Research
Site type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type	CA Toxics	CA Toxics	CA Toxics	CA Toxics
Network affiliation	CA Toxics	CA Toxics	CA Toxics	CA Toxics
Instrument manufacturer & model	Xontech 910	Xontech 924	Xontech 924	Xontech 924
Method code	See ARB	See ARB	See ARB	See ARB
FRM/FEM/ARM/Other	Other	Other	Other	Other
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	ARB	ARB	ARB	ARB
Reporting agency	ARB	ARB	ARB	ARB
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	1988	1988	1988	1988
Current sampling frequency	1:12	1:12	1:12	1:12
Required sampling frequency	1:6	1:6	1:6	1:6
Sampling season	Year-round	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A
Probe material for reactive gases	N/A	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	Yes	Yes	Yes	Yes
Suitable for comparison to the NAAQS?	N/A	N/A	N/A	N/A
Frequency of flow rate verification	N/A	N/A	N/A	N/A
Annual Performance Evaluation date	N/A	N/A	N/A	N/A
NPAP date	N/A	N/A	N/A	N/A



**Table D-5 Chula Vista - Meteorological Equipment Designations + Other**

Pollutant	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp
POC	1	1	1	1
Monitor designation	N/A	N/A	N/A	N/A
Parameter code	62107	61101	61104	62101
Basic monitoring objective	N/A	N/A	N/A	N/A
Site type	N/A	N/A	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Qualimetrics 4480	Qualimetrics 2030	Qualimetrics 2020	RM Young 41382VF
Method code	012	050	020	040
FRM/FEM/ARM/Other	Other	Other	Other	Other
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	1972	1972	1972	1998
Current sampling frequency	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A
Probe material for reactive gases	N/A	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	Yes	Yes	Yes	Yes
Suitable for comparison to the NAAQS?	N/A	N/A	N/A	N/A
Frequency of QC check (one-point)	N/A	N/A	N/A	N/A
Annual Performance Evaluation date	08/31/2022	N/A	N/A	11/02/2022
NPAP date	N/A	*	*	*

Note: Deck needs repairs (TBD)

\* EPA subcontractor does not have the equipment to audit.



**Table D-6 Chula Vista - Distance the Equipment are from Influences**

(meters)	Gas Inlet	NOy Inlet	Pb-TSP, PRI (44.5 cfm)	Pb-TSP, QAC (44.5 cfm)	PM <sub>10</sub> , PRI, (16.7 lpm)	PM <sub>10</sub> , QAC (16.7 lpm)	BC 1060	PM <sub>2.5</sub> FRM, PRI (16.7 lpm)	PM <sub>2.5</sub> FRM, QAC (16.7 lpm)	PM <sub>2.5</sub> non-FEM (16.7 lpm)	PM <sub>2.5</sub> STN (6.7 lpm)	PM <sub>2.5</sub> CSN (22.0 lpm)	† PAMS-VOC (50 ccpm)	† PAMS-VOC, QAC	† PAMS-Carbonyls (1.5 lpm)	Toxics-VOC (50 ccpm)	Toxics-VOC, QAC (50 ccpm)	Toxics-Metals (12 lpm)	Meteorology
Gas Inlet	n/a				4.8			n/a								1.4		n/a	8.0
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM <sub>10</sub> , PRI	4.8				n/a			7.5								4.8		11.9	n/a
PM <sub>10</sub> , QAC																			
BC 1060																			
PM <sub>2.5</sub> FRM, PRI	n/a				7.5			n/a								n/a		4.4	n/a
PM <sub>2.5</sub> FRM, QAC																			
PM <sub>2.5</sub> non-FEM																			
PM <sub>2.5</sub> STN																			
PM <sub>2.5</sub> CSN																			
†PAMS-VOC																			
†PAMS-VOC, QAC																			
†PAMS-Carbonyls																			
Toxics-VOC	1.4				4.8			n/a								n/a		n/a	8.2
Toxics-VOC, QAC																			
Toxics-Metals	n/a				11.9			4.4								n/a		n/a	9.9
Meteorology	8.0				n/a			n/a								8.2		9.9	n/a
<i>height from ground</i>	6.1				2.1			2.1								5.4		2.2	10.7
<i>distance: from the road</i>	61				63			60								61		56	55
<i>from the supporting structure</i>	N				N			N								N		N	6.9
<i>from obstructions on roof</i>	N				N			N								N		N	N
<i>from obstructions not on roof</i>	N				N			N								N		N	N
<i>from the closest tree</i>	N				N			N								N		N	N
<i>from furnace/flue</i>	N				N			N								N		N	N
<i>unrestricted air flow (degrees)</i>	360				270			270								360		270	360

n/a= Not Applicable; N= None; †On the side of the station/trailer





Figure D.2 Chula Vista – Pictures (Directional) from the Ground



## Appendix E: Donovan Station Description

**Table E-1 General Site Information**

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Donovan
Year Established:	1/2005 PM <sub>10</sub> sampler original site date; Relocated 800 m east on 7/2014
Site Address:	Donovan State Prison Rd. (200 m west of Alta Rd.)
Site Name Abbreviation:	DVN
AQS Number:	06-073-1014
Latitude:	32.578267°
Longitude:	-116.921359°
Elevation above Sea Level:	185 m
General Location:	200 m east of Alta Rd on the Donovan Prison Rd.
Ground Cover:	Asphalt
Distance to Road:	26 m north= Donovan Prison Rd.
Traffic Count (2016 AADT):	Donovan Prison Rd. AADT estimated= 300 (No traffic count available) The closest cross-street with a traffic count, Olay Mesa Rd. at Alta Rd. southwest/downwind 2,100 m = 6,400
Site Description:	This site is situated at the entrance to the Richard J. Donovan Correctional Facility.
Monitoring Objectives:	This site is primarily used to measure neighborhood scale concentrations in the southeast county. This site is also near the District's International Border Environmental Justice Community.
Planned Changes:	none



**Figure E.1 Donovan – Picture of the Location**



**Table E-2 Donovan - Gaseous Pollutants Monitor Designations + Other**

Pollutant	O <sub>3</sub>	NO <sub>2</sub>	Other Zero Air	Other Calibrator
POC	1	1	N/A	N/A
Monitor designation	Primary	Primary	N/A	N/A
Parameter code	44201	42602 (NO <sub>2</sub> )	N/A	N/A
Basic monitoring objective	Public Information, NAAQS	Public Information, NAAQS	N/A	N/A
Site type	Population Exposure	Highest Concentration	N/A	N/A
Monitor type	SLAMS	SLAMS	N/A	N/A
Network affiliation	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Thermo 49i	Teledyne-API T500U	Teledyne-API 701H	Teledyne-API T700U
Method code	047	212	N/A	N/A
FRM/FEM/ARM/Other	FEM	FEM	N/A	N/A
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	N/A	N/A
Monitoring start date	7/2014	7/2014	7/2014	2015
Current sampling frequency	Continuous	Continuous	N/A	N/A
Required sampling frequency	Continuous	Continuous	N/A	N/A
Sampling season	Year-round	Year-round	N/A	N/A
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	N/A	N/A
Residence time for reactive gases	7.10	7.60	N/A	N/A
Any changes within the next 18 months?	No	Yes	No	No
Suitable for comparison to the NAAQS?	Yes	Yes	N/A	N/A
Frequency of QC check (one-point)	1:1	1:1	1:1	N/A
Annual Performance Evaluation date	03/22/2022	02/23/2022	06/15/2022	N/A
NPAP date	*	*	N/A	N/A

\*Not performed this year



**Table E-3 Donovan - Particulate Pollutants Monitor Designations**

Pollutant	PM <sub>2.5</sub> Continuous (non-FEM)	PM <sub>2.5</sub> Continuous (FEM)	PM <sub>10</sub> Continuous (FEM)	PM <sub>10</sub> Manual (Lo-Vol)	PM <sub>10</sub> Manual (Lo-Vol)	Black Carbon
POC	1	3	3	1	2	1
Monitor designation	Other	Primary	Primary	Primary	Collocated	Other
Parameter code	88502 (LC)	88101 (LC)	81102 (STP)	81102 (STP)*	81102 (STP)*	88313
Basic monitoring objective	Public Information, Research	NAAQS	NAAQS	NAAQS	QAC	Public Information
Site type	Population Exposure	Population Exposure	Population Exposure	Highest Concentration	Highest Concentration	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Met One BAM 1020	Teledyne-API T640x	Teledyne-API T640x	Met One E-SEQ-FRM	Met One E-SEQ-FRM	Met One BC 1060
Method code	733	238	239	246	246	879
FRM/FEM/ARM/Other	Other (non-FEM)	FEM	FEM	FRM	FRM	Other
Collecting agency	APCD	APCD	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD	APCD	APCD
Spatial scale	Population Exposure	Urban Scale	Urban Scale	Neighborhood Scale	Neighborhood Scale	Urban Scale
Monitoring start date	1/2015	8/2/2022	8/2/2022	7/2014	3/2017	7/2021
Current sampling frequency	Continuous	Continuous	Continuous	1:6	1:6	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	1:6	1:12	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	None	None	None	None	None	None
Any PM Hi-Vol sampler w/in 2m	None	None	None	None	None	None
Probe material for reactive gases	N/A	N/A	N/A	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	Yes	No	No	No	No	No
Suitable for comparison to the NAAQS?	No	Yes	Yes	No	No	No
Frequency of flow rate verification	Semi-monthly	Semi-Monthly	Semi-Monthly	Monthly	Monthly	Monthly
Semi-Annual flow rate audits dates	02/02/2022, 08/02/2022	11/23/2022	11/23/2022	02/02/2022, 08/04/2022	02/02/2022, 08/04/2022	02/03/2022, 11/23/2022
Additional QA flow rate check dates**	04/11/2022, 08/02/2022	08/02/2022, 10/21/2022	08/02/2022, 10/21/2022	05/23/2022, 10/21/2022	05/23/2022, 10/21/2022	N/A
PEP date	***	***	***	***	***	N/A

\* Flow checks and operations are in LC and concentration data is in STD

\*\* Additional QA checks are not official audits

\*\*\* Not performed this year



**Table E-4 Donovan - Other Pollutants Monitor Designations**

Pollutant	TOXICS-Metals	TOXICS-Metals	TOXICS-Metals
POC	1	2	3
Monitor designation	Primary	Collocated	Not Applicable
Basic monitoring objective	Research	Research	Research
Site type	Population Exposure	Population Exposure	Population Exposure
Monitor type	Other (SDAPCD Network)	Other (SDAPCD Network)	Other (SDAPCD Network)
Network affiliation	N/A	N/A	N/A
Instrument manufacturer & model	Xontech 924	Xontech 924	Met One E-SEQ-FRM w/TSP w/oVSCC
Method code	305	305	*
FRM/FEM/ARM/Other	Other	Other	Other
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Middle	Middle	Middle
Monitoring start date	7/2014	7/2014	07/2020
Current sampling frequency	1:6	1:12	1:6
Required sampling frequency	1:6	1:12	1:6
Sampling season	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	None
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	None
Probe material for reactive gases	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A
Any changes within the next 18 months?	No	No	No
Suitable for comparison to the NAAQS?	N/A	N/A	N/A
Frequency of flow rate verification	N/A	N/A	Monthly
Semi-Annual flow rate audits dates	N/A	N/A	02/02/2022, 08/24/2022
Additional QA flow rate check dates**	N/A	N/A	04/22/2022, 10/19/2022
Annual Performance Evaluation date	N/A	N/A	N/A
NPAP date	N/A	N/A	N/A

\*Method code not available

\*\*Additional QA checks are not official audits



**Table E-5 Donovan – Other Additional Pollutants Monitor Designations**

Pollutant	TOXICS-Carbonyls	TOXICS-Carbonyls
POC	1	2
Monitor designation	Primary	Collocated
Basic monitoring objective	Research	Research
Site type	Population Exposure	Population Exposure
Monitor type	Other (SDAPCD Network)	Other (SDAPCD Network)
Network affiliation	N/A	N/A
Instrument manufacturer & model	Atec 8000	Atec 8000
Method code	202	202
FRM/FEM/ARM/Other	Other	Other
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Middle	Middle
Monitoring start date	2017	2017
Current sampling frequency	1:6	1:12
Required sampling frequency	1:6	1:12
Sampling season	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A
Probe material for reactive gases	N/A	N/A
Residence time for reactive gases	N/A	N/A
Any changes within the next 18 months?	No	No
Suitable for comparison to the NAAQS?	N/A	N/A
Frequency of flow rate verification	N/A	N/A
Semi-Annual flow rate audits dates	N/A	N/A
Additional QA flow rate check dates	N/A	N/A
Annual Performance Evaluation date	N/A	N/A
NPAP date	N/A	N/A



**Table E-6 Donovan - Meteorological Equipment Monitor Designations + Other**

Pollutant	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp
POC	1	1	1	1
Monitor designation	N/A	N/A	N/A	N/A
Parameter code	62107	61101	61104	62101
Basic monitoring objective	N/A	N/A	N/A	N/A
Site type	N/A	N/A	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Qualimetrics 4480	Qualimetrics 2030	Qualimetrics 2020	RM Young 41382VF
Method code	012	050	020	040
FRM/FEM/ARM/Other	Other	Other	Other	Other
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	7/2014	7/2014	7/2014	7/2014
Current sampling frequency	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A
Probe material for reactive gases	N/A	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	No	No	No	No
Suitable for comparison to the NAAQS?	N/A	N/A	N/A	N/A
Frequency of QC check (one-point)	N/A	N/A	N/A	N/A
Annual Performance Evaluation date	11/23/2022	11/23/2022	*	*
NPAP date	N/A	**	**	**

\*Not performed this year.

\* \*The EPA subcontractor does not have the equipment to audit.



**Table E-7 Donovan - Distance the Equipment are from Influences**

(meters)	Gas Inlet	NOy Inlet	Pb-TSP, PRI (44.5 cfm)	Pb-TSP, QAC (44.5 cfm)	PM <sub>10</sub> , PRI (16.7 lpm)	PM <sub>10</sub> , QAC (16.7 lpm)	BC 1060	PM <sub>2.5</sub> FRM, PRI (16.7 lpm)	E-Seq TSP Metals (16.7 lpm)	PM <sub>2.5</sub> FEM – T640x (16.7 lpm)	SuperSASS (OCEC)*	PM <sub>2.5</sub> CSN (22.0 lpm)	† PAMS-VOC (50 ccpm)	† Toxics-Carbonyls, PRI (1.5 lpm)	† Toxics-Carbonyls, QAC, (1.5 lpm)	Toxics-VOC (50 ccpm)	Toxics-VOC, QAC (50 ccpm)	Toxics-Metals (12 lpm)	Meteorology
Gas Inlet	n/a				1.5	1.4	4.6		2.4	1.5	4.1								6.9
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM <sub>10</sub> , PRI	1.5				n/a	1.1	2.1		3.3	4.0	1.5			6.6	5.9				5.4
PM <sub>10</sub> , QAC	1.4				1.1		3.2		2.6	2.8	2.7			5.5	4.9				6.1
BC 1060	4.6				2.1	3.2			4.4	5.9	1.4			7.9	7.1				5.1
PM <sub>2.5</sub> FRM, PRI																			
E-Seq TSP Metals	2.4				3.3	2.6	4.4				4.6			3.4	2.7				6.0
PM <sub>2.5</sub> FEM	1.5				4.0	2.8	5.9		2.5	n/a	5.5			3.4	3.1				7.8
SuperSASS (OC/EC)	4.1				1.5	2.7	1.4		4.6	5.5				8.0	2.7				6.0
PM <sub>2.5</sub> CSN																			
†PAMS-VOC																			
†Toxics-Carbonyls	4.7				6.6	5.5	7.9		3.4	3.4	8.0								9.0
†Tox-Carbonyl,QAC	4.1				5.9	4.9	7.1		2.7	3.1	2.7			0.9					8.4
Toxics-VOC																			
Toxics-VOC, QAC																			
Toxics-Metals																			
Meteorology	6.9				5.4	6.1	5.2		6.0	7.8	6.0			9.0	8.4				n/a
<i>height from ground</i>	6.6				6.4	6.4	5.9		6.4	6.7	6.4			6.3	6.2				10.5
<i>distance: from the road</i>	30				32	31	34		30	29	34			27	27				35
<i>from the supporting structure (wood deck)</i>	2.1				2.0	2.0	1.4		2.0	2.3	2.0			5.3	5.2				6.1
<i>from obstructions on roof</i>	N				N	N	N		N	N	N			N	N				N
<i>from obstructions not on roof</i>	N				N	N	N		N	N	N			N	N				N
<i>from the closest tree</i>	N				N	N	N		N	N	N			N	N				N
<i>from furnace/flue</i>	N				N	N	N		N	N	N			N	N				N
<i>unrestricted air flow (degrees)</i>	360				360	360	360		360	360	360			360	360				360

n/a= Not Applicable; N= None; †On the side of the station/trailer \*SuperSASS = District's Community Air Protection Program



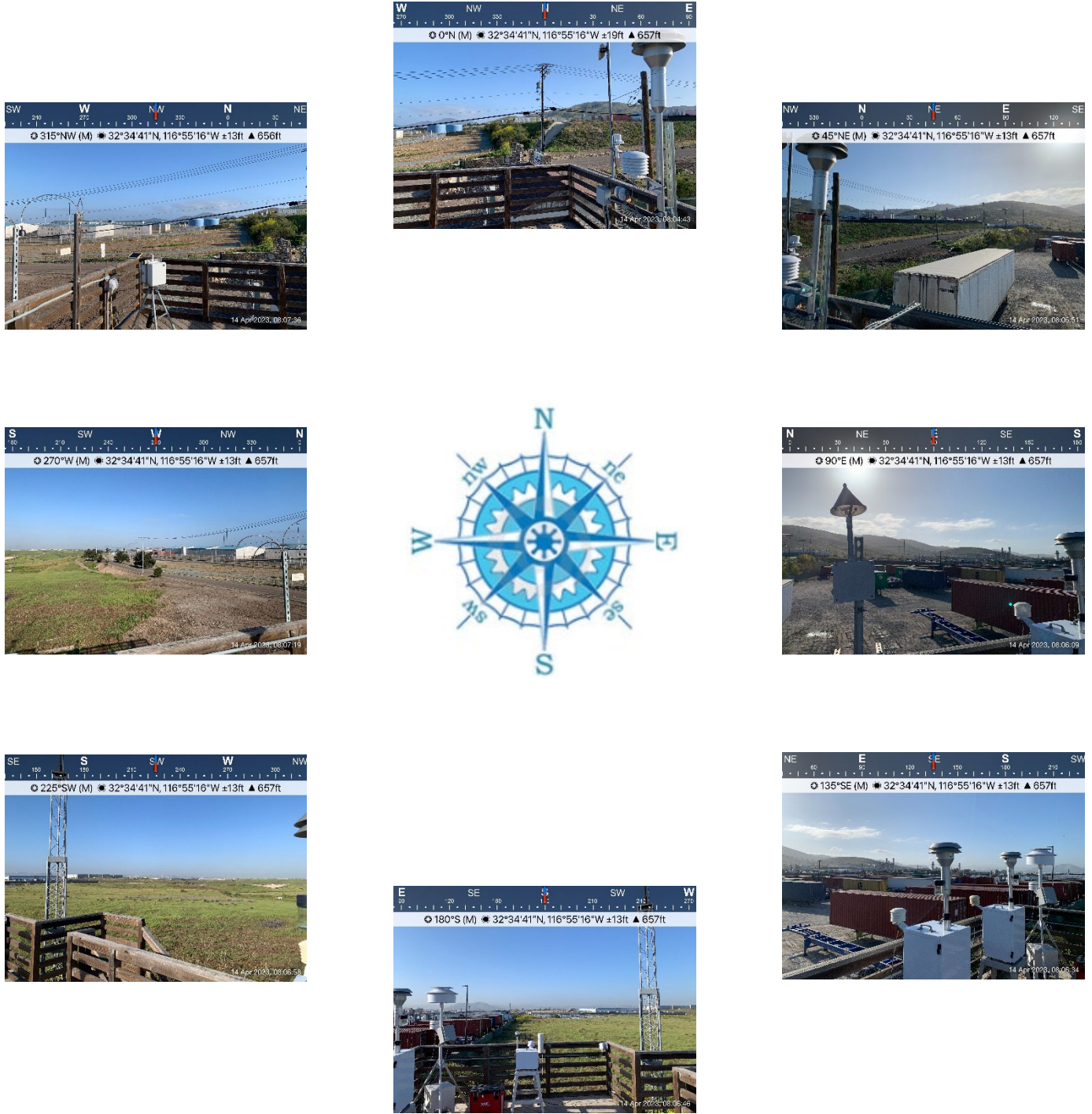


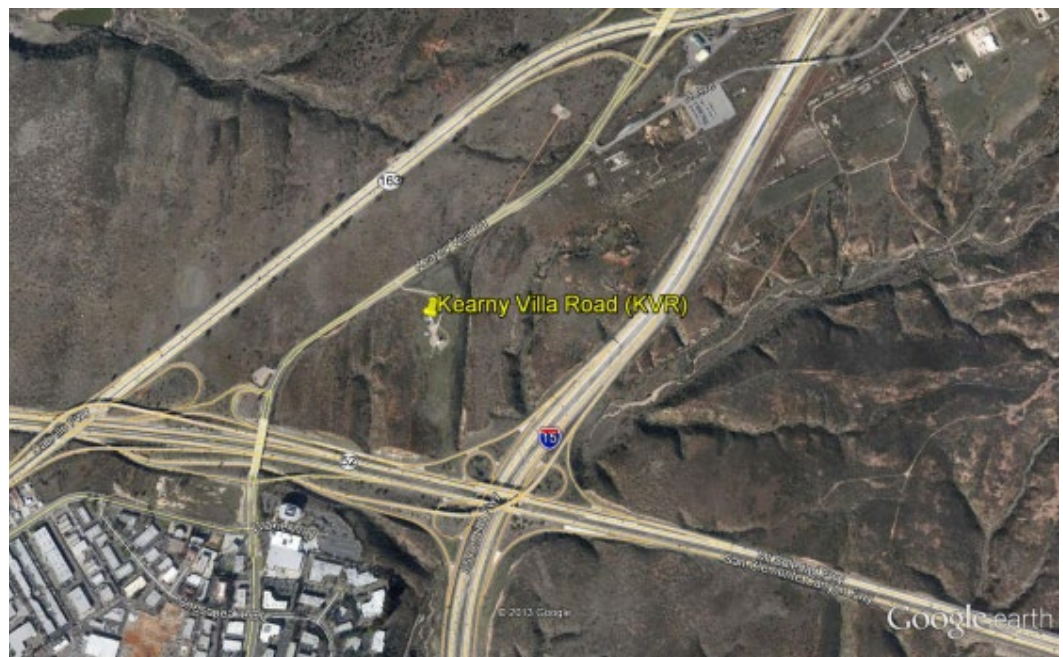
Figure E.2 Donovan – Pictures (Directional) from the Rooftop



## Appendix F: Kearny Villa Road Station Description

**Table F-1 General Site Information**

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Kearny Villa Rd.
Year Established:	11/5/2010
Site Address:	6125A Kearny Villa Rd.
Site Name Abbreviation:	KVR
AQS Number:	06-073-1016
Latitude:	32.845722 <sup>o</sup>
Longitude:	-117.123983 <sup>o</sup>
Elevation above Sea Level:	132 m
General Location:	Trailer in the SW corner of Camp Elliot (adjacent to Marine Corps Air Station Miramar).
Ground Cover:	Asphalt & Packed dirt
Distance to Road:	180 m west= Kearny Villa Rd. 542 m southwest= Ruffin Rd.
Traffic Count (2016 AADT):	Kearny Villa Rd. at Ruffin Rd = 15,400
Site Description:	When this location housed only a wind profiler, it was originally called Miramar (MMR). In 2010, when the District relocated the Overland station (KMA) alongside the wind profiler for the PAMS program, it was formally re-designated as KVR. The profiler is decommissioned; the station is located on the southeast section of Marine Corps Air Station Miramar (MCAS) called Camp Elliot.
Monitoring Objectives:	It provides representative data for a large area and is quality assurance location for the PM <sub>2.5</sub> Manual program.
Planned Changes:	none



**Figure F.1 Kearny Villa Road – Picture of the Location**



**Table F-2 Kearny Villa Road - Gaseous Pollutants Monitor Designations + Other**

Pollutant	O <sub>3</sub>	NO <sub>2</sub>	Other Zero Air	Other Calibrator
POC	1	1	N/A	N/A
Monitor designation	Primary	Primary	N/A	N/A
Parameter code	44201	42602 (NO <sub>2</sub> )	N/A	N/A
Basic monitoring objective	Public Information, NAAQS	Public Information, NAAQS	N/A	N/A
Site type	Population Exposure	Population Exposure	N/A	N/A
Monitor type	SLAMS	SLAMS	N/A	N/A
Network affiliation	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Thermo 49i	Teledyne-API T500U	Teledyne-API 701H	Teledyne-API T700U
Method code	047	212	N/A	N/A
FRM/FEM/ARM/Other	FEM	FEM	N/A	N/A
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	N/A	N/A
Monitoring start date	11/2010	11/2010	11/2010	2015
Current sampling frequency	Continuous	Continuous	N/A	N/A
Required sampling frequency	Continuous	Continuous	N/A	N/A
Sampling season	Year-round	Year-round	N/A	N/A
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	N/A	N/A
Residence time for reactive gases	5.53	3.62	N/A	N/A
Any changes within the next 18 months?	No	Yes	No	No
Suitable for comparison to the NAAQS?	Yes	Yes	N/A	N/A
Frequency of QC check (one-point)	1:1	1:1	N/A	N/A
Annual Performance Evaluation date	02/11/2022	02/25/2022	11/08/2022	N/A
NPAP date	2/22/2022	*	N/A	N/A

\*Not performed this year



**Table F-3 Kearny Villa Road - Particulate Pollutants Monitor Designations**

Pollutant	PM <sub>2.5</sub> Manual	PM <sub>2.5</sub> Manual
POC	1	2
Monitor designation	Primary	Collocated
Parameter code	88101 (LC)	88101 (LC)
Basic monitoring objective	NAAQS	NAAQS
Site type	Population Exposure	QAC
Monitor type	SLAMS	SLAMS
Network affiliation	N/A	N/A
Instrument manufacturer & model	Met One E-SEQ-FRM	Met One E-SEQ-FRM
Method code	545	545
FRM/FEM/ARM/Other	FRM	FRM
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	11/5/2010	11/5/2010
Current sampling frequency	1:3	1:6
Required sampling frequency	1:3	1:12
Sampling season	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	None	None
Any PM Hi-Vol sampler w/in 2m	None	None
Probe material for reactive gases	N/A	N/A
Residence time for reactive gases	N/A	N/A
Any changes within the next 18 months?	No	No
Suitable for comparison to the NAAQS?	Yes	Yes
Frequency of flow rate verification	Monthly	Monthly
Semi-Annual flow rate audits dates	02/03/2022, /27/2022	02/03/2022, 07/27/2022
Additional QA flow rate check dates*	05/10/2022, 10/27/2022	05/10/2022, 10/27/2022
PEP date	5/11/2022	5/11/2022

\*Additional QA checks are not official audits



**Table F-4 Kearny Villa Road - Meteorological Equipment Designations + Other**

Pollutant	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp	Meteorological Rel. Humidity
POC	1	1	1	1	1
Monitor designation	N/A	N/A	N/A	N/A	N/A
Parameter code	62107	61101	61104	62101	62201
Basic monitoring objective	N/A	N/A	N/A	N/A	N/A
Site type	N/A	N/A	N/A	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Qualimetrics 4480	Qualimetrics 2030	Qualimetrics 2020	RM Young 41382VF	RM Young 41382VF
Method code	012	050	020	040	012
FRM/FEM/ARM/Other	O	O	O	O	O
Collecting agency	APCD	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	11/5/2010	11/5/2010	11/5/2010	11/5/2010	11/5/2010
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	Year round	Year round	Year round	Year round	Year round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A	N/A
Probe material for reactive gases	N/A	N/A	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	No	No	No	No	No
Suitable for comparison to the NAAQS?	N/A	N/A	N/A	N/A	N/A
Frequency of QC check (one-point)	N/A	N/A	N/A	N/A	N/A
Annual Performance Evaluation date	10/12/2022	11/22/2022	*	10/12/2022	10/12/2022
NPAP date	N/A	**	**	**	**

\*Not performed this year.

\* \*EPA subcontractor does not have the equipment to audit



**Table F-5 Kearny Villa Road - Meteorological Equipment (Additional) Designations**

Pollutant	Barometric Pressure	Solar Radiation
POC	1	1
Monitor designation	N/A	N/A
Parameter code	64101	63301
Basic monitoring objective	N/A	N/A
Site type	N/A	N/A
Monitor type	SLAMS	SLAMS
Network affiliation	N/A	N/A
Instrument manufacturer & model	Met One 092	Eppley 8-48
Method code	014	011
FRM/FEM/ARM/Other	Other	Other
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	11/5/2010	11/5/2010
Current sampling frequency	Continuous	Continuous
Required sampling frequency	Continuous	Continuous
Sampling season	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A
Probe material for reactive gases	N/A	N/A
Residence time for reactive gases	N/A	N/A
Any changes within the next 18 months?	No	No
Suitable for comparison to the NAAQS?	N/A	N/A
Frequency of QC check (one-point)	N/A	N/A
Annual Performance Evaluation date	10/12/2022	11/22/2022
NPAP date	*	*

\*Not performed this year



**Table F-6 Kearny Villa Road - Distance the Equipment are from Influences**

(meters)	Gas Inlet	NOy Inlet	Pb-TSP, PRI (44.5 cfm)	Pb-TSP, QAC (44.5 cfm)	PM <sub>10</sub> , PRI (16.7 lpm)	PM <sub>10</sub> , QAC (16.7 lpm)	BC 1060	PM <sub>2.5</sub> FRM, PRI (16.7 lpm)	PM <sub>2.5</sub> FRM, QAC (16.7 lpm)	PM <sub>2.5</sub> non-FEM (16.7 lpm)	PM <sub>2.5</sub> STN (6.7 lpm)	PM <sub>2.5</sub> CSN (22.0 lpm)	† PAMS-VOC (50 ceppm)	† PAMS-VOC, QAC (50 ceppm)	† PAMS-Carbonyls (1.5 lpm)	Toxics-VOC (50 ceppm)	Toxics-VOC, QAC (50 ceppm)	RADNET	Meteorology
Gas Inlet	n/a							2.8	2.0									1.7	7.1
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM <sub>10</sub> , PRI																			
PM <sub>10</sub> , QAC																			
BC 1060																			
PM <sub>2.5</sub> FRM, PRI	2.8							n/a	2.1									4.1	5.9
PM <sub>2.5</sub> FRM, QAC	2.0							2.1	n/a									2.7	7.2
PM <sub>2.5</sub> non-FEM																			
PM <sub>2.5</sub> STN																			
PM <sub>2.5</sub> CSN																			
†PAMS-VOC																			
†PAMS-VOC, QAC																			
†PAMS-Carbonyls																			
Toxics-VOC																			
Toxics-VOC, QAC																			
RADNET	1.7							4.1	2.7										7.9
Meteorology	7.1							5.9	7.2									7.9	n/a
<i>height from ground</i>	6.1							6.1	6.1									6.6	11.4
<i>distance: from the road</i>	140							142	145									146	139
<i>from the supporting structure (wood deck)</i>	2.1							2.0	2.0									2.5	n/a
<i>from obstructions on roof</i>	N							N	N									N	N
<i>from obstructions not on roof</i>	N							N	N									N	N
<i>from the closest tree</i>	N							N	N									N	N
<i>from furnace/flue</i>	N							N	N									N	N
<i>unrestricted air flow (degrees)</i>	360							360	360									360	360

n/a= Not Applicable; N= None; †On the side of the station/trailer

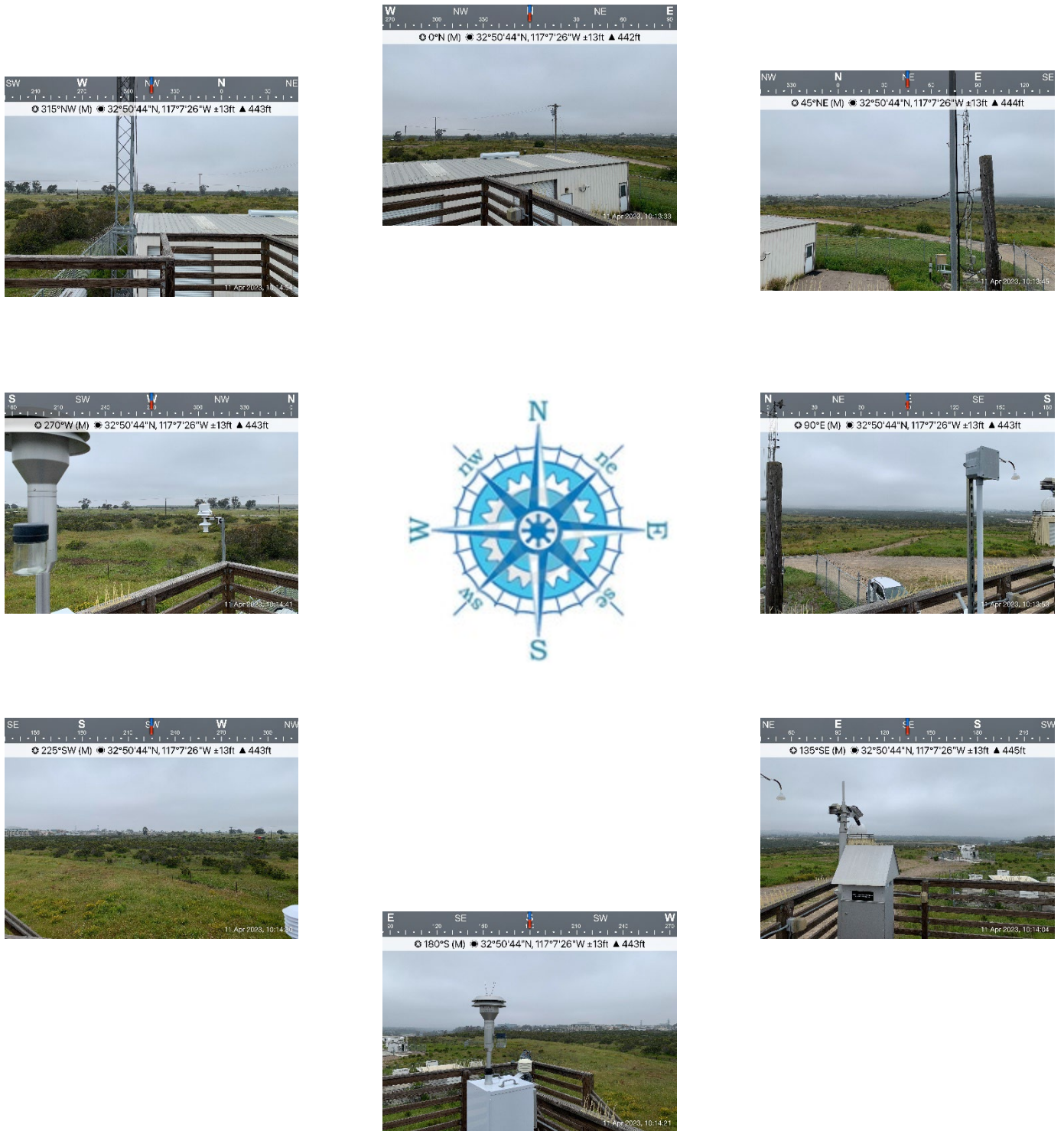


Figure F.2 Kearny Villa Road – Pictures (Directional) from the Rooftop





## Appendix G: Lexington Elementary School Station Description

**Table G-1 General Site Information**

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	El Cajon – Lexington Elementary School
Year Established:	6/2016
Site Address:	533 B. First St.
Site Name Abbreviation:	LES
AQS Number:	06-073-1022
Latitude:	32.789562°
Longitude:	-116.944318°
Elevation above Sea Level:	143 m
General Location:	Trailer on the Lexington Elementary School property off First & Redwood St.
Ground Cover:	Cement pad
Distance to Road:	26.5 m west= First St.
Traffic Count (2016 AADT):	First St.= 5,700
Site Description:	This station is a trailer off the parking lot for the Lexington Elementary School. This area is primarily residences.
Monitoring Objectives:	The El Cajon site represents a major population center located in an inland valley, downwind of the heavily populated coastal zone. It is impacted from the transportation corridor of Interstate 8 and its major arteries. It is classified as a PAMS and NCore site
Planned Changes:	<i>Site of equipment for PAMS re-engineering.        Not within 18-mon, but there is no room for expansion, the District will research the viability of reclassifying the Escondido site as NCore. Once this is proven and the Escondido site is operational, the District will work with EPA to formalize the relocation process.</i>



**Figure G.1 Lexington Elementary School – Picture of the Location**



**Table G-2 Lexington Elementary School - Gaseous Pollutants Monitor Designations + Other**

Pollutant	O <sub>3</sub>	CO-TLE	SO <sub>2</sub> -TLE	NO <sub>y</sub> -TLE	True-NO <sub>2</sub>	Other Zero Air	Other Calibrator
POC	1	1	1	1	2	N/A	N/A
Monitor designation	Primary	Primary	Primary	Other	Collocated	N/A	N/A
Parameter code	44201	42101	42401	42612 (NO <sub>y</sub> -NO <sub>2</sub> )	42602	N/A	N/A
Basic monitoring objective	Public Information, NAAQS	Public Information, NAAQS	Public Information, NAAQS	Public Information, Research	Public Information, Research	N/A	N/A
Site type	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	N/A	N/A
Network affiliation	PAMS, NCore	PAMS, NCore	NCore	PAMS, NCore	PAMS, NCore	N/A	N/A
Instrument manufacturer & model	Thermo 49i	Thermo 48i-TLE	Thermo 43i-TLE	Thermo 42i-y	Teledyne T500U	Teledyne-API 701H	Teledyne-API T700u
Method code	047	554	560	574	212	N/A	N/A
FRM/FEM/ARM/Other	FEM	FRM	FEM	Other	FEM	N/A	N/A
Collecting agency	APCD	APCD	APCD	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	N/A	N/A
Monitoring start date	7/2016	7/2016	7/2016	2/2018	9/2020	7/2016	7/2016
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous	N/A	N/A
Required sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous	N/A	N/A
Sampling season	Year-round	Year-round	Year-round	Year-round	Year-round	N/A	N/A
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	Borosilicate glass	Borosilicate glass	Borosilicate glass	N/A	N/A
Residence time for reactive gases	5.21	16.64	17.58	7.18	9.28	N/A	N/A
Any changes within the next 18 months?	No	No	No	No	No	No	No
Suitable for comparison to the NAAQS?	Yes	Yes	Yes	Yes	Yes	N/A	N/A
Frequency of QC check (one-point)	1:1	1:1	1:1	1:1	1:1	N/A	N/A
Annual Performance Evaluation date	03/25/2022	05/18/2022, 12/20/2022	05/18/2022, 12/13/2022	05/25/2022, 12/07/2022	03/25/2022	*	N/A
NPAP date	*	*	*	*	*	N/A	N/A

\*Not performed this year.



**Table G-3 Lexington Elementary School - Particulate Pollutants Monitor Designations**

Pollutant	PM <sub>2.5</sub> Manual	PM <sub>2.5</sub> STN	PM <sub>2.5</sub> CSN	PM <sub>10</sub> Manual (Lo-Vol)	PM <sub>coarse</sub> Manual (paired samplers)	PM <sub>2.5</sub> Continuous (non-FEM)
POC	1	1	1	1	1	1
Monitor designation	Primary	Other	Other	Other	Other	Other
Parameter code	88101 (LC)	See RTI	See RTI	85101 (LC) 81102 (STP)	86101 (LC)	88502 (LC)
Basic monitoring objective	NAAQS	Research	Research	NAAQS	Research	Public Information, Research
Site type	Highest Concentration	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Highest Concentration
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	NCore	NCore, CSN STN	NCore, CSN STN	NCore	NCore	NCore
Instrument manufacturer & model	Met One E-SEQ-FRM	Met One Super SASS	URG-3000N	Met One E-SEQ-FRM	Met One E-SEQ-FRM	Met One BAM 1020
Method code	545	See RTI	See RTI	246	247	733
FRM/FEM/ARM/Other	FRM	Other	Other	FRM	Other	Other (non-FEM)
Collecting agency	APCD	APCD	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	EPA	EPA	APCD	APCD	APCD
Reporting agency	APCD	EPA	EPA	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	6/2016	6/2016	6/2016	6/2016	6/2016	6/2016
Current sampling frequency	1:3	1:3	1:3	1:3	1:3	Continuous
Required sampling frequency	1:1	1:6	1:6	1:3	1:3	Continuous
Sampling Season	Year-round	Year-round	Year-round	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	None	None	None	None	None	None
Any PM Hi-Vol sampler w/in 2m	None	None	None	None	None	None
Probe material for reactive gases	N/A	N/A	N/A	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	No	No	No	No	No	Yes
Suitable for comparison to the NAAQS?	Yes	No	No	Yes	No	No
Frequency of flow rate verification	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Semi-Annual flow rate audits dates	05/25/2022, 12/08/2022	06/02/2022, 12/29/2022	06/02/2022, 12/29/2022	05/25/2022, 12/08/2022	05/25/2022, 12/13/2022	06/22/2022, 08/11/2022
Additional QA flow rate check dates**	02/02/2022, 08/04/2022	02/02/2022, 08/05/2022	02/03/2022, 08/04/2022	02/03/2022, 08/04/2022	02/02/2022, 08/04/2022	02/04/2022, 08/03/2022, 08/11/2022
PEP date	8/24/2022***, 8/30/2022	N/A	N/A	N/A	N/A	N/A

\*Not performed this year

\*\*Additional QA checks are not official audits

\*\*\*Power loss. Re-set for 8/30/2022



**Table G-4 Lexington Elementary School - Particulate Pollutants Monitor Designations (Cont.)**

Pollutant	PM <sub>2.5</sub> Continuous (FEM)	PM <sub>10</sub> Continuous (FEM)	PM <sub>coarse</sub> (FEM Continuous)
POC	3	3	3
Monitor designation	Primary	Primary	Primary
Parameter code	88101 (LC)	81102 (STP) 85101 (LC)	86101 (LC)
Basic monitoring objective	NAAQS	NAAQS	Research
Site type	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	NCore
Instrument manufacturer & model	Teledyne-API T640x	Teledyne-API T640x	Teledyne-API T640x
Method code	238	239	240
FRM/FEM/ARM/Other	FEM	FEM	Other
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	8/11/2022	8/11/2022	8/11/2022
Current sampling frequency	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous
Sampling Season	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	None	None	None
Any PM Hi-Vol sampler w/in 2m	None	None	None
Probe material for reactive gases	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A
Any changes within the next 18 months?	No	No	No
Suitable for comparison to the NAAQS?	Yes	Yes	No
Frequency of flow rate verification	Monthly	Monthly	Monthly
Semi-Annual flow rate audits dates	12/13/2022	12/13/2022	12/13/2022
Additional QA flow rate check dates*	08/11/2022	08/11/2022	08/11/2022
PEP date	N/A	N/A	N/A

\*Additional QA checks are not official audits



**Table G-5 Lexington Elementary School - Other Pollutants Monitor Designations**

Pollutant	PAMS-VOC*	PAMS-Carbonyls*	PAMS-Carbonyls*
POC	TBD	1 for 3-8hr samples	2 for 1-8hr sample
Monitor designation	Other	Primary	Collocated
Parameter code	See PAMS Table 10.15	See PAMS Table 10.16	See PAMS Table 10.16
Basic monitoring objective	Research	Research	Research
Site type	N/A	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	PAMS	PAMS	PAMS
Instrument manufacturer & model	Agilent / Markes	Atec 8000	Atec 8000
Method code	228	202	202
FRM/FEM/ARM/Other	Other	Other	Other
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	6/2021*	6/2021*	6/2021*
Current sampling frequency	continuous	1:3	1:6
Required sampling frequency	continuous	1:3	1:6
Sampling season	June-August	June-August	June-August
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A
Probe material for reactive gases	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A
Any changes within the next 18 months?	No	No	No
Suitable for comparison to the NAAQS?	N/A	N/A	N/A
Frequency of flow rate verification	N/A	N/A	N/A
Annual Performance Evaluation date	N/A	N/A	N/A
NPAP date	N/A	N/A	N/A



**Table G-6 Lexington Elementary School - Other Pollutants Monitor (Additional) Designations**

Pollutant	Toxics-Metals	Toxics-Carbonyls	Toxics-Carbonyls
POC	1	1	2
Monitor designation	Not Applicable	Primary	Collocated
Basic monitoring objective	Research	Research	Research
Site type	N/A	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A
Instrument manufacturer & model	Xonteck 924	Atec 8000	Atec 8000
Method code	305	202	202
FRM/FEM/ARM/Other	Other	Other	Other
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	7/18/2017	2017	2017
Current sampling frequency	1:6	1:6	1:12
Required sampling frequency	1:6	1:6	1:12
Sampling season	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A
Probe material for reactive gases	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A
Any changes within the next 18 months?	No	No	No
Suitable for comparison to the NAAQS?	N/A	N/A	N/A
Frequency of flow rate verification	N/A	N/A	N/A
Annual Performance Evaluation date	N/A	N/A	N/A
NPAP date	N/A	N/A	N/A



**Table G-7 Lexington Elementary School - Meteorological Equipment Monitor Designations + Other**

Pollutant	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp	Meteorological Rel. Humidity
POC	1	1	1	1	1
Monitor designation	N/A	N/A	N/A	N/A	N/A
Parameter code	62107	61101	61104	62101	62201
Basic monitoring objective	N/A	N/A	N/A	N/A	N/A
Site type	N/A	N/A	N/A	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	PAMS, NCore	PAMS, NCore	PAMS, NCore	PAMS, NCore	PAMS, NCore
Instrument manufacturer & model	Qualimetrics 4480	Qualimetrics 2030	Qualimetrics 2020	RM Young 41382VF	RM Young 41382VF
Method code	012	050	020	040	012
FRM/FEM/ARM/Other	Other	Other	Other	Other	Other
Collecting agency	APCD	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	7/2016	7/2016	7/2016	7/2016	7/2016
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A	N/A
Probe material for reactive gases	N/A	N/A	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	No	No	No	No	No
Suitable for comparison to the NAAQS?	N/A	N/A	N/A	N/A	N/A
Frequency of QC check (one-point)	N/A	N/A	N/A	N/A	N/A
Annual Performance Evaluation date	*	*	*	*	*
NPAP date	N/A	**	**	**	**

\* Not performed this year

\*\*EPA subcontractor does not have the equipment to audit.



**Table G-8 Lexington Elementary School - Meteorological Equipment (Additional) Designations**

Pollutant	Meteorological Barometric Press.	Solar Radiation	Ultraviolet Radiation	Rainfall	Ceilometer
POC	1	1	1	1	1
Monitor designation	N/A	N/A	N/A	N/A	N/A
Parameter code	64101	63301	63302	65102	61301
Basic monitoring objective	N/A	N/A	N/A	N/A	N/A
Site type	N/A	N/A	N/A	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	PAMS, NCore	PAMS, NCore	PAMS, NCore	PAMS, NCore	PAMS, NCore
Instrument manufacturer & model	Met One 092	Eppley SPP	Kipp & Zonen SUV5	Met One 370D (8" Rain Gauge)	Vaisala CL-51
Method code	014	011	011	015	128
FRM/FEM/ARM/Other	Other	Other	Other	Other	Other
Collecting agency	APCD	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	03/2017	04/2019	01/2020	10/2019	08/26/2021
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round	Year Round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A	N/A
Probe material for reactive gases	N/A	N/A	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	No	No	No	No	No
Suitable for comparison to the NAAQS?	N/A	N/A	N/A	N/A	N/A
Frequency of QC check (one-point)	N/A	N/A	N/A	N/A	N/A
Annual Performance Evaluation date	*	*	*	*	N/A
NPAP date	**	**	**	**	N/A

\* Not performed this year

\*\*EPA subcontractor does not have the equipment to audit.





**Table G-9 Lexington Elementary School - Distance the Equipment are from Influences**

(meters)	Gas Inlet	NOy Inlet	Pb-TSP, PRI (44.5 cfm)	Pb-TSP, QAC (44.5 cfm)	PM <sub>10</sub> , PRI (16.7 lpm)	PM <sub>10</sub> , QAC (16.7 lpm)	BC 1060	PM <sub>2.5</sub> FRM, PRI (16.7 lpm)	PM <sub>2.5</sub> FRM, QAC (16.7 lpm)	PM <sub>2.5</sub> FEM (T640x) (16.7 lpm)	PM <sub>2.5</sub> STN (6.7 lpm)	PM <sub>2.5</sub> CSN (22.0 lpm)	*PAMS-VOC-Auto GC	† PAMS-Carbonyls (Atec 8000)	† PAMS-Carbonyls (Atec 8000) -QAC	Toxics-VOC (50 ccpm)	Toxics-VOC, QAC (50 ccpm)	Toxics-Metals (12 lpm)	Meteorology
Gas Inlet	n/a	3.9			2.3			1.3		2.0	3.3	2.0	2.0	1.7	1.4	1.1		3.2	5.6
NOy Inlet	3.9	n/a			4.8			4.1		4.8	5.8	4.7	4.3	4.7	4.5	4.5		5.6	1.9
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM <sub>10</sub> , PRI	2.3	4.8			n/a			1.3		1.1	2.8	2.4	3.2	3.4	3.4	3.0		4.0	6.4
PM <sub>10</sub> , QAC																			
BC 1060																			
PM <sub>2.5</sub> FRM, PRI	1.3	4.1			1.3			n/a		1.8	3.5	2.6	2.9	2.7	2.2	1.8		4.0	5.8
PM <sub>2.5</sub> FRM, QAC																			
PM <sub>2.5</sub> FEM	2.0	4.8			1.1			1.8		n/a	1.7	1.2	2.2	2.7	3.1	2.6		2.8	6.3
PM <sub>2.5</sub> STN	3.3	5.8			2.8			3.5		1.7	n/a	1.4	2.3	3.3	3.8	3.6		2.2	7.2
PM <sub>2.5</sub> CSN	2.0	4.7			2.4			2.6		1.2	1.4	n/a	1.1	2.0	2.6	2.4		1.7	6.3
*PAMS-VOC	2.0	4.3			3.2			2.9		2.2	2.3	1.1	n/a	1.5	2.4	2.3		1.3	6.0
†PAMS-Carbonyls	1.7	4.7			3.4			2.7		2.7	3.3	2.0	1.5	n/a	1.1	1.1		2.1	6.4
†PAMS-Carbonyls-co	1.4	4.5			3.4			2.2		3.1	3.8	2.6	2.4	1.1	n/a	1.1		3.1	6.3
Toxics-VOC	1.1	4.5			3.0			1.8		2.6	3.6	2.4	2.3	1.1	1.1	n/a		3.1	6.2
Toxics-VOC, QAC																			
Toxics-Metals	3.2	5.6			4.0			4.0		2.9	2.2	1.7	1.3	2.1	3.1	3.1		n/a	6.9
Meteorology	5.6	1.9			6.4			5.8		6.3	7.2	6.3	6.0	6.3	6.3	6.2		6.9	n/a
<i>height from ground</i>	6.6	10.2			6.5			6.5		6.6	6.4	6.6	6.9	6.0	5.8	5.9		6.6	12.4
<i>distance: from the road</i>	22.9	23.2			22.2			21.8		23.7	24.7	24.5	24.8	23.0	23.4	22.9		24.7	23.4
<i>from the supporting structure (wood deck)</i>	2.2	5.7			2.0			2.0		2.1	2.0	2.2	2.5	6.0	5.8	5.9		2.1	7.9
<i>from obstructions on roof</i>	N	N			N			N		N	N	N	N	N	N	N		N	N
<i>from obstructions not on roof</i>	N	N			N			N		N	N	N	N	N	N	N		N	N
<i>from the closest tree</i>	6.2	9.3			4.1			5.6		4.2	4.2	5.2	6.3	7.0	6.4	6.3		6.5	9.5
<i>unrestricted air flow (degrees)</i>	360	360			360			360		360	360	360	360	360	360	360		360	360

n/a= Not Applicable; N= None; †On the side of the station/trailer. \*This is the manifold inlet for the PAMS Auto-GC. (No PAMS canister sampling).

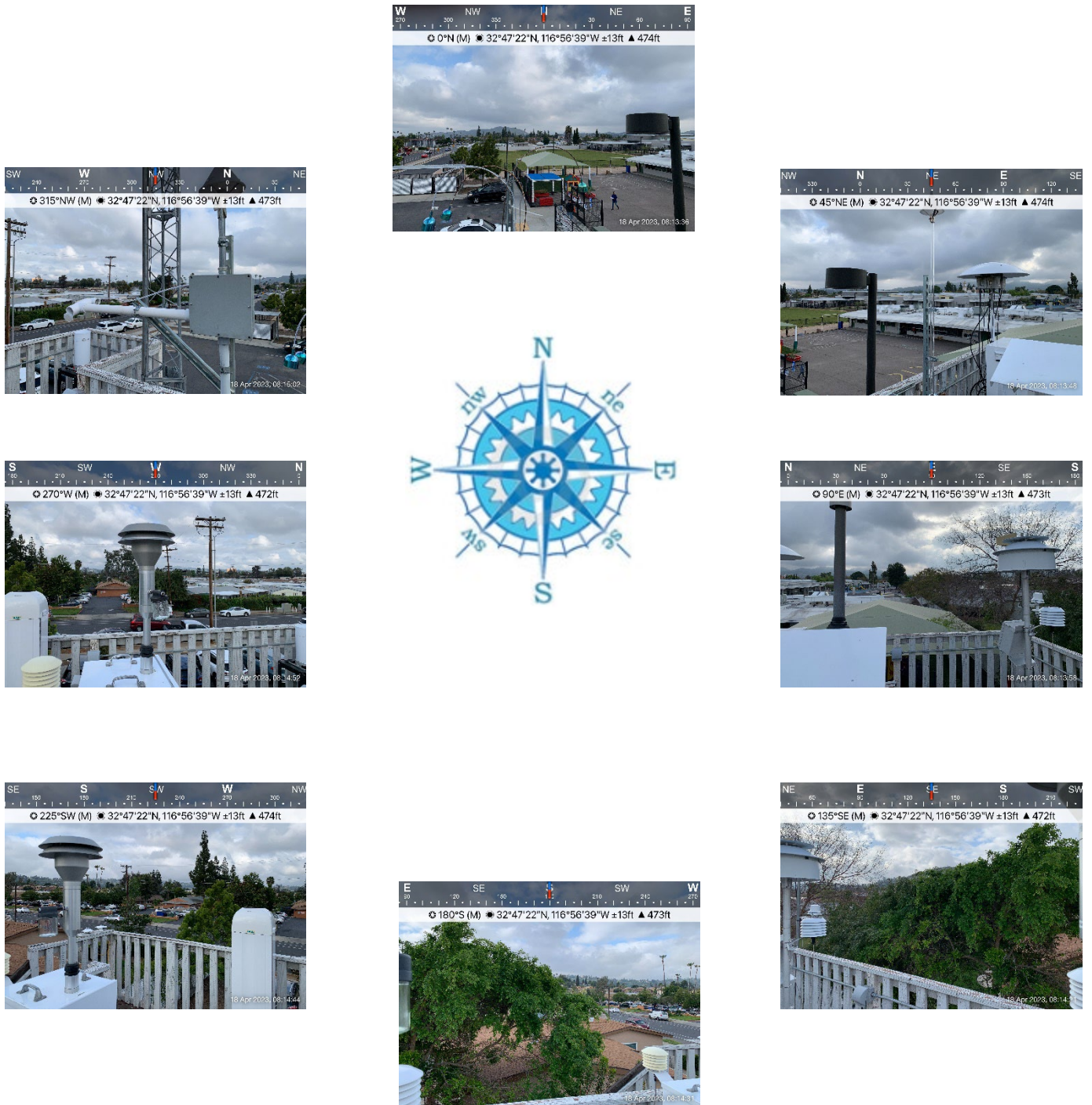


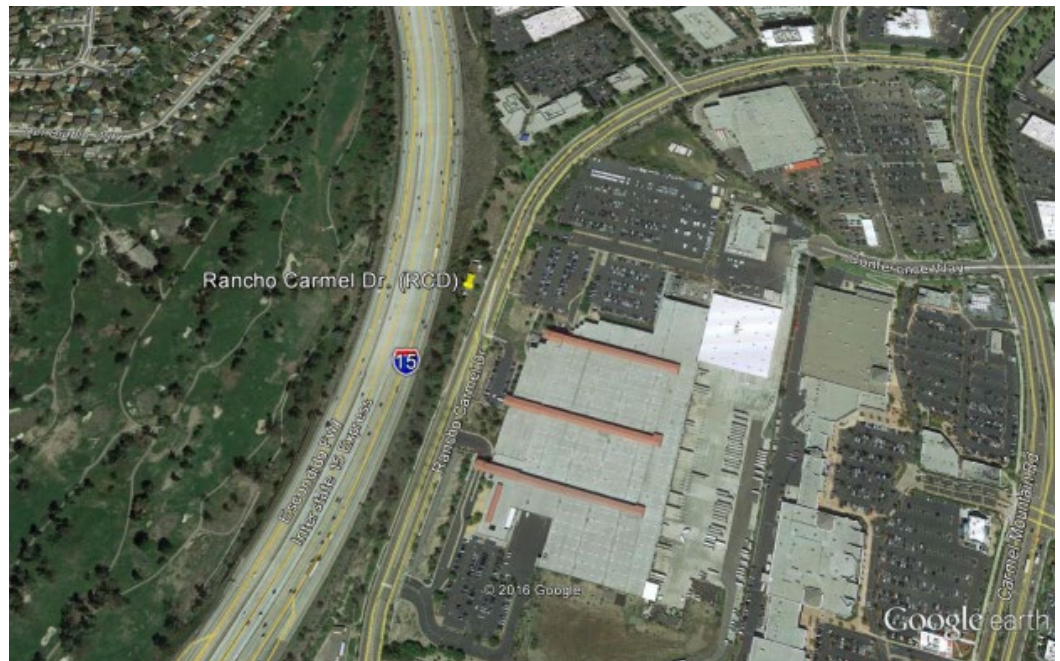
Figure G.2 Lexington Elementary School – Pictures (Directional) from the Rooftop



## Appendix H: Rancho Carmel Drive Station Description

**Table H-1 General Site Information**

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Rancho Carmel Drive
Year Established:	3/26/2015
Site Address:	11403 Rancho Carmel Drive
Site Name Abbreviation:	RCD
AQS Number:	06-073-1017
Latitude:	32.985442°
Longitude:	-117.082180°
Elevation above Sea Level:	218 m
General Location:	On City of San Diego Pump Station grounds
Ground Cover:	Packed Dirt
Distance to Road:	33 meters to I-15 North; 24 meters to Rancho Carmel Drive
Traffic Count (2020 AADT):	AADT (FE adjusted) for I-15= 332,356 (estimate) 2016 AADT for Rancho Carmel Dr. at Carmel Mtn Rd.(700 meters downwind) = 16,100
Site Description:	Is on the hill overlooking I-15. The probe is horizontal.
Monitoring Objectives:	This is the 1 <sup>st</sup> near-road site. It measures NO <sub>2</sub> , CO, and PM <sub>2.5</sub> contributions from I-15
Planned Changes:	none



**Figure H.1 Rancho Carmel Drive - Picture of the Location of the Station**



**Table H-2 Rancho Carmel Drive - Gaseous Pollutants Monitor Designations + Other**

Pollutant	NO <sub>2</sub>	CO	Other Zero Air	Other Calibrator
POC	1	1	N/A	N/A
Monitor designation	Primary	Primary	N/A	N/A
Parameter code	42602 (NO <sub>2</sub> )	42101	N/A	N/A
Basic monitoring objective	Public Information, NAAQS	Public Information, NAAQS	N/A	N/A
Site type	Source Oriented	Source Oriented	N/A	N/A
Monitor type	SLAMS	SLAMS	N/A	N/A
Network affiliation	Near-road	Near-road	N/A	N/A
Instrument manufacturer & model	Teledyne-API T500U	Thermo 48i-TLE *	Teledyne-API 701H	Teledyne-API T700U
Method code	212	554	N/A	N/A
FRM/FEM/ARM/Other	FEM	FRM	N/A	N/A
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Micro Scale	Micro Scale	N/A	N/A
Monitoring start date	3/2015	4/2015	3/2015	3/2015
Current sampling frequency	Continuous	Continuous	N/A	N/A
Required sampling frequency	Continuous	Continuous	N/A	N/A
Sampling season	Year-round	Year-round	N/A	N/A
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	N/A	N/A
Residence time for reactive gases	5.56	6.84	N/A	N/A
Any changes within the next 18 months?	Yes	No	No	No
Suitable for comparison to the NAAQS?	Yes	Yes	N/A	N/A
Frequency of QC check (one-point)	1:1	1:1	N/A	N/A
Annual Performance Evaluation date	05/03/2022	05/03/2022	05/12/2022	N/A
NPAP Date	**	9/7/2022	N/A	N/A

\* Instrument operated at ambient level range of 20 ppm

\*\*Not performed this year



**Table H-3 Rancho Carmel Drive - Particulate Pollutants Monitor Designations**

Pollutant	PM <sub>2.5</sub> Manual
POC	1
Monitor designation	Primary
Parameter code	88101 (LC)
Basic monitoring objective	NAAQS
Site type	Source Oriented
Monitor type	SLAMS
Network affiliation	Near-road
Instrument manufacturer & model	Met One E-SEQ-FRM
Method code	545
FRM/FEM/ARM/Other	FRM
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Neighborhood Scale
Monitoring start date	06/2019
Current sampling frequency	1:3
Required sampling frequency	1:3
Any PM Lo-Vol sampler w/in 1m	None
Any PM Hi-Vol sampler w/in 2m	None
Probe material for reactive gases	N/A
Residence time for reactive gases	N/A
Any changes within the next 18 months?	No
Suitable for comparison to the NAAQS?	Yes
Frequency of flow rate verification	Monthly
Semi-Annual flow rate audits dates	05/03/2022, 11/23/2022
Additional QA flow rate check dates**	01/06/2022, 07/08/2022, 09/16/2022
PEP date	2/2/2022

\*Additional QA checks are not official audits



**Table H-4 Rancho Carmel Drive - Meteorological Equipment Designations + Other**

Pollutant	Other Internal Temp	Meteorological External Temp
POC	1	1
Monitor designation	N/A	N/A
Parameter code	62107	62101
Basic monitoring objective	N/A	N/A
Site type	N/A	N/A
Monitor type	SLAMS	SLAMS
Network affiliation	N/A	N/A
Instrument manufacturer & model	Qualimetrics 4480	RM Young 41382VF
Method code	012	040
FRM/FEM/ARM/Other	Other	Other
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Micro-scale	Micro-scale
Monitoring start date	03/2015	03/2015
Current sampling frequency	Continuous	Continuous
Required sampling frequency	Continuous	Continuous
Sampling season	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A
Probe material for reactive gases	N/A	N/A
Residence time for reactive gases	N/A	N/A
Any changes within the next 18 months?	No	No
Suitable for comparison to the NAAQS?	N/A	N/A
Frequency of QC check (one-point)	N/A	N/A
Annual Performance Evaluation date	05/12/2022	05/26/2022
NPAP date	N/A	*

\*Not performed this year



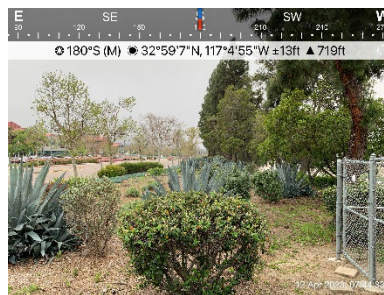
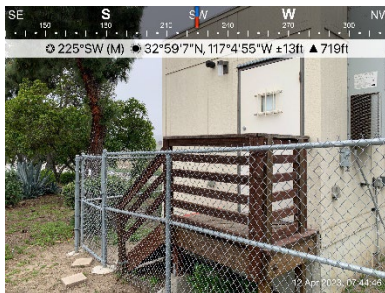
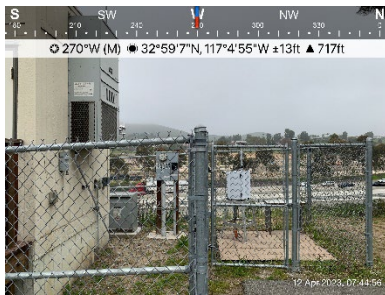
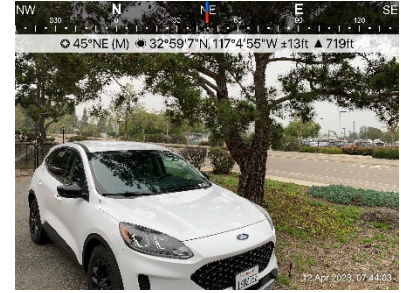
**Table H-5 Rancho Carmel Drive - Distance the Equipment are from Influences**

(meters)	Gas Inlet	NOy Inlet	Pb-TSP, PRI (44.5 cfm)	Pb-TSP, QAC (44.5 cfm)	PM <sub>10</sub> , PRI (16 lpm)	PM <sub>10</sub> , QAC (16 lpm)	BC 1060	PM <sub>2.5</sub> FRM, PRI (16.7 lpm)***	PM <sub>2.5</sub> FRM, QAC (16.7 lpm)	PM <sub>2.5</sub> non-FEM (16.7 lpm)	PM <sub>2.5</sub> STN (6.7 lpm)	PM <sub>2.5</sub> CSN (22.0 lpm)	† PAMS-VOC (50 ccpm)	† PAMS-VOC, QAC (50 ccpm)	† PAMS-Carbonyls (1.5 lpm)	† Toxics-VOC (50 ccpm)	† Toxics-VOC, QAC (50 ccpm)	Toxics-Metals (12 lpm)	Meteorology
Gas Inlet	n/a							4.8											
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM <sub>10</sub> , PRI																			
PM <sub>10</sub> , QAC																			
BC 1060																			
PM <sub>2.5</sub> FRM, PRI	4.8																		
PM <sub>2.5</sub> FRM, QAC																			
PM <sub>2.5</sub> non-FEM																			
PM <sub>2.5</sub> STN																			
PM <sub>2.5</sub> CSN																			
†PAMS-VOC																			
†PAMS-VOC, QAC																			
†PAMS-Carbonyls																			
†Toxics-VOC																			
†Toxics-VOC, QAC																			
Toxics-Metals																			
Meteorology																			
<i>height from ground</i>	2.5							2.0											
<i>distance from the road</i>	35							22											
<i>from the supporting structure(wall)</i>	**1.3							N											
<i>from obstructions on roof (deck)**</i>	N							N											
<i>from obstructions not on roof</i>	N							N											
<i>from the closest tree</i>	8U 4.6 D							7.9											
<i>from furnace/flue</i>	N							N											
<i>unrestricted air flow (degrees)</i>	270							270											

n/a= Not Applicable; N= None; †On the side of the station/trailer U= upwind; D=downwind

\*\* It is a horizontal probe placed in the direction of the prevailing wind flow. It goes directly from the analyzer inside the station and out the side of the building with a ledge-like support under the glass.

\*\*\* PM<sub>2.5</sub> sampler is at street level and on no supporting structure.



**Figure H.2 Rancho Carmel Drive– Pictures (Directional) from the Ground\***

\*There is no deck from which to take pictures. The probe is horizontal from the side of station on an incline, so all pictures are taken from behind the stations (about 5 meters behind the probe for safety reasons).





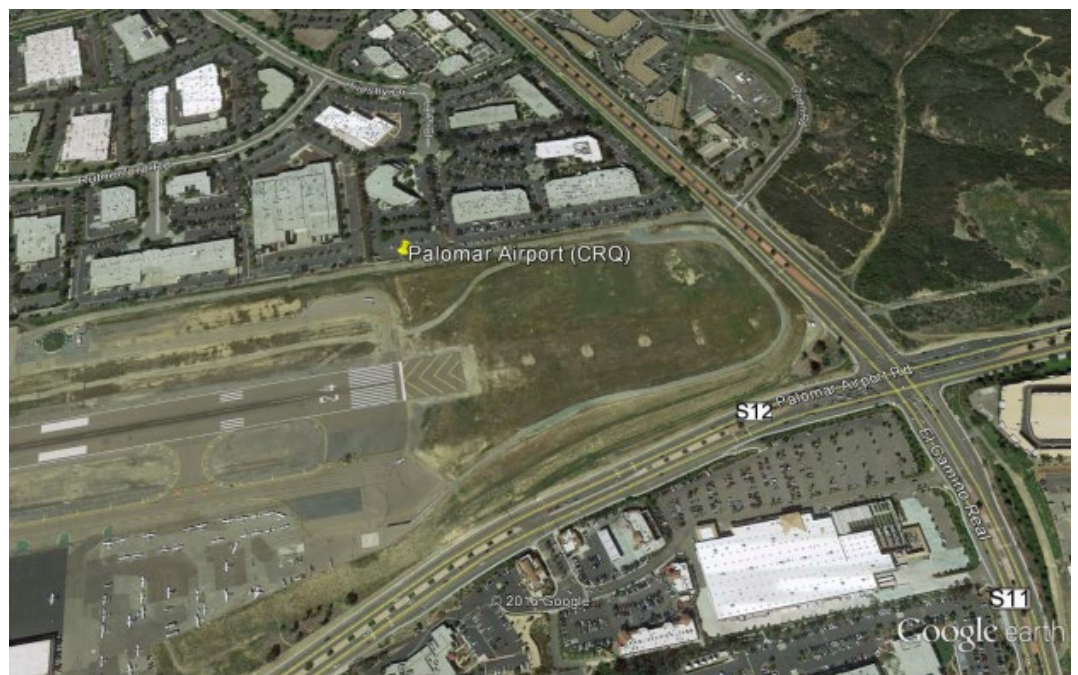
**Figure H.3 Rancho Carmel Drive– Gas Inlet**



## Appendix I: McClean - Palomar Airport Station Description

**Table I-1 General Site Information**

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	McClellan-Palomar (Palomar)
Year Established:	3/10/2012 at old location; 11/1/2014 at current location
Site Address:	2192 Palomar Airport Rd.
Site Name Abbreviation:	CRQ
AQS Number:	06-073-1023
Latitude:	33.130822 <sup>o</sup>
Longitude:	-117.272686 <sup>o</sup>
Elevation above Sea Level:	92 m
General Location:	Adjacent to the business park (immediately north of the paved access road)
Ground Cover:	Paved
Distance to Road:	380 m east= El Camino Real
Traffic Count (2016 AADT):	El Camino Real at Palomar Airport Rd. (27,300)
Site Description:	Adjacent to business park. In 2014, the samplers were moved from the blast shield area to the current location. There is an auxiliary Airport only access road about 3 meters from the samplers with an AADT= 8; because of this low traffic count, the El Camino Real Drive AADT was used. Additionally, the measurements from the road used El Camino Real Drive.
Monitoring Objectives:	To quantify airborne lead particulates from the combustion of aviation gasoline.
Planned Changes:	<i>In 2017, site was being petitioned by the District to the EPA for decommissioning.</i>



**Figure I.1 Palomar Airport – Picture of the Location**



**Table I-2 Palomar Airport – Particulate Pollutants Monitor Designations**

Pollutant	Pb-TSP Hi-Vol (primary)	Pb-TSP Hi-Vol (collocated)
POC	1	2
Monitor designation	PRI	QAC
Parameter code	14129	14129
Basic monitoring objective	NAAQS	NAAQS
Site type	Source Oriented	Source Oriented
Monitor type	SLAMS	SLAMS
Network affiliation	N/A	N/A
Instrument manufacturer & model	Tisch TE-5170BLVFC+	Tisch TE-5170BLVFC+
Method code	192	192
FRM/FEM/ARM/Other	FRM	FRM
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Micro Scale	Micro Scale
Monitoring start date	3/10/2012 (old site) 11/1/2014 (current site)	3/10/2012 (old site) 11/1/2014 (current site)
Current sampling frequency	1:6	1:12
Required sampling frequency	1:6	1:12
Sampling season	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A
Probe material for reactive gases	N/A	N/A
Residence time for reactive gases	N/A	N/A
Any changes within the next 18 months?	Yes	Yes
Suitable for comparison to the NAAQS?	Yes	Yes
Frequency of flow rate verification	Monthly	Monthly
Semi-Annual flow rate audits dates	03/16/2022, 09/28/2022	03/16/2022, 09/28/2022
Additional QA flow rate check dates*	06/29/2022, 12/09/2022	06/29/2022, 12/09/2022
PEP date	9/8/2022	9/8/2022

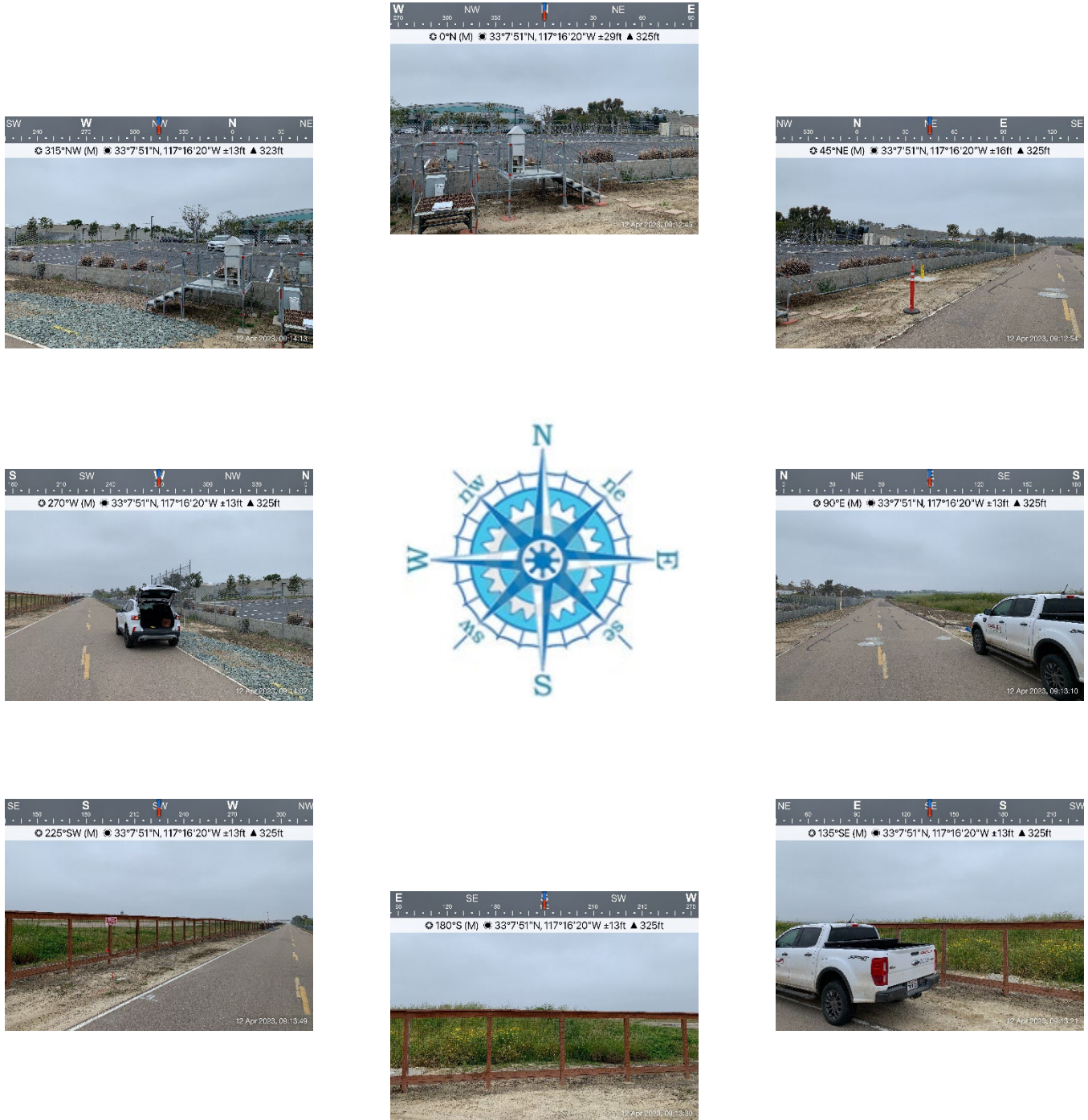
\* Additional QA checks are not official audits



**Table I-3 Palomar Airport - Distance the Equipment are from Influences**

(meters)	Gas Inlet	NOy Inlet	Pb-TSP, PRI (44.5 cfm)	Pb-TSP, QAC (44.5 cfm)	PM <sub>10</sub> , PRI (16 lpm)	PM <sub>10</sub> , QAC (16 lpm)	BC 1060	PM <sub>2.5</sub> FRM, PRI (16.7 lpm)	PM <sub>2.5</sub> FRM, QAC (16.7 lpm)	PM <sub>2.5</sub> non-FEM (16.7 lpm)	PM <sub>2.5</sub> STN (6.7 lpm)	PM <sub>2.5</sub> CSN (22.0 lpm)	† PAMS-VOC (50 ccpm)	† PAMS-VOC, QAC (50 ccpm)	† PAMS-Carbonyls (1.5 lpm)	† Toxics-VOC (50 ccpm)	† Toxics-VOC QAC (50 ccpm)	Toxics-Metals (12 lpm)	Meteorology
Gas Inlet																			
NOy Inlet																			
Pb-TSP, PRI			n/a	3.0															
Pb-TSP, QAC			3.0	n/a															
PM <sub>10</sub> , PRI																			
PM <sub>10</sub> , QAC																			
BC 1060																			
PM <sub>2.5</sub> FRM, PRI																			
PM <sub>2.5</sub> FRM, QAC																			
PM <sub>2.5</sub> non-FEM																			
PM <sub>2.5</sub> STN																			
PM <sub>2.5</sub> CSN																			
†PAMS-VOC																			
†PAMS-VOC QAC																			
†PAMS-Carbonyls																			
†Toxics-VOC																			
†Toxics-VOC, QAC																			
Toxics-Metals																			
Meteorology																			
<i>height from ground</i>			2.3	2.3															
<i>distance: from the road</i>			313	317															
<i>from the supporting structure</i>			1.2	1.2															
<i>from obstructions on roof</i>			N	N															
<i>from obstructions not on roof</i>			N	N															
<i>from the closest tree</i>			28.8	28.8															
<i>from furnace/flue</i>			N	N															
<i>unrestricted air flow (degrees)</i>			360	360															

n/a= Not Applicable; N= None; †On the side of the station/trailer



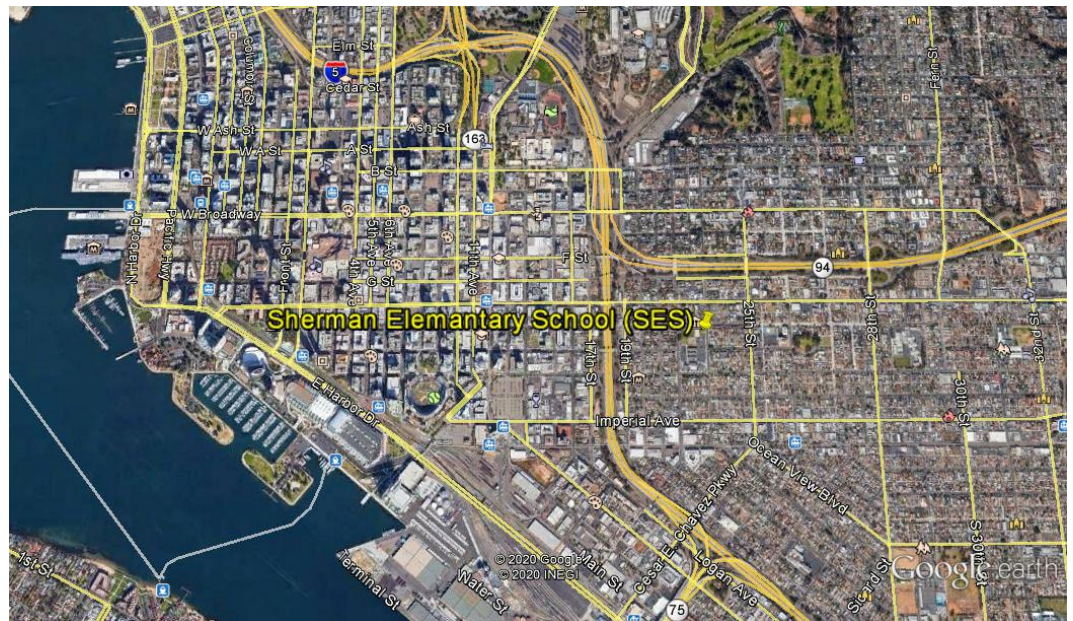
**Figure I.2 Palomar Airport – Pictures (Directional) from the Ground\***  
\*The sampler is situated at ground level



## Appendix J: Sherman Elementary School Station Description

**Table J-1 General Site Information**

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Sherman Elementary School
Site Address:	2019 450B 24 <sup>th</sup> St.
Site Name Abbreviation:	SES
AQS Number:	06-073-1026
Latitude:	32.710177 <sup>o</sup>
Longitude:	-117.142665 <sup>o</sup>
Elevation above Sea Level:	35 m
General Location:	At the junction of SR 94 and I-5 and downwind of Downtown San Diego and the Bay
Ground Cover:	Paved
Distance to Road:	14 m east= 24 <sup>th</sup> Street; 281 m NE= Market St & 25 St
Traffic Count (2016 AADT):	Market St. & 25 St.= 12,600
Site Description:	This site is downwind of the San Diego Bay industrial zone, and captures emissions from Interstates 5, 805, 15 and SR 94, downtown San Diego, Lindbergh Field, North Island Naval Air Station, marine terminals, NASSCO shipyards, Continental Maritime shipyard, Southwest Marine, and train yards.
Monitoring Objectives:	This site is in an Environmental Justice area. Forecasting of PM <sub>2.5</sub> levels for several monitoring sites (from Chula Vista to Kearny Mesa) is partially based upon the values collected at this site. This location is useful for capturing high NO <sub>2</sub> concentrations, and assessing ozone transport from the south (Baja, Mexico).
Planned Changes:	None



**Figure J.1 Sherman Elementary School – Picture of the Location**



**Table J-2 Sherman Elementary School - Gaseous Pollutants Monitor Designations + Other**

Pollutant	O <sub>3</sub>	True-NO <sub>2</sub>	Other Zero Air	Other Calibrator
POC	1	2	N/A	N/A
Monitor designation	Primary	Collocated	N/A	N/A
Parameter code	44201	42602	N/A	N/A
Basic monitoring objective	Public Information, NAAQS	Public Information, Research	N/A	N/A
Site type	Population Exposure	Population Exposure	N/A	N/A
Monitor type	SLAMS	SLAMS	N/A	N/A
Network affiliation	N/A	Area-wide	N/A	N/A
Instrument manufacturer & model	Thermo 49i	Teledyne-API T500U	Teledyne-API 701H	Teledyne-API T700U
Method code	047	212	N/A	N/A
FRM/FEM/ARM/Other	FEM	FEM	N/A	N/A
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	N/A	N/A
Monitoring start date	07/2019	06/30/2021	08/2019	08/2019
Current sampling frequency	Continuous	Continuous	N/A	N/A
Required sampling frequency	Continuous	Continuous	N/A	N/A
Sampling season	Year-round	Year-round	N/A	N/A
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	N/A	N/A
Residence time for reactive gases	6.58	4.09	N/A	N/A
Any changes within the next 18 months?	No	No	No	No
Suitable for comparison to the NAAQS?	Yes	Yes	N/A	N/A
Frequency of QC check (one-point)	1:1	1:1	N/A	N/A
Annual Performance Evaluation date	06/24/2022	06/29/2022	08/03/2022	N/A
NPAP date	*	*	N/A	N/A

\*Not done this year



**Table J-3 Sherman Elementary School - Particulate Pollutants Monitor Designations**

Pollutant	PM <sub>2.5</sub> Manual	PM <sub>2.5</sub> Continuous (non-FEM)	PM <sub>2.5</sub> Continuous (FEM)	PM <sub>10</sub> Continuous (FEM)
POC	1	1	3	3
Monitor designation	Primary	Other	Primary	Primary
Parameter code	88101 (LC)	88502 (LC)	88101 (LC)	88102 (STP)
Basic monitoring objective	NAAQS	PI, Research	NAAQS	NAAQS
Site type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	Not Applicable	Not Applicable	N/A	N/A
Instrument manufacturer & model	Met One E-SEQ-FRM	Met One BAM 1020	Teledyne-API T640x	Teledyne-API T640x
Method code	545	733	238	239
FRM/FEM/ARM/Other	FRM	Other (non-FEM)	FEM	FEM
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Population Exposure	Neighborhood Scale	Neighborhood Scale
Monitoring start date	01/2020	08/2019	5/16/2022	5/16/2022
Current sampling frequency	1:3	Continuous	Continuous	Continuous
Required sampling frequency	1:3	Continuous	Continuous	Continuous
Any PM Lo-Vol sampler w/in 1m	None	None	Year-round	Year-round
Any PM Hi-Vol sampler w/in 2m	None	None	None	None
Probe material for reactive gases	N/A	None	None	None
Residence time for reactive gases	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	No	Yes	N/A	N/A
Suitable for comparison to the NAAQS?	Yes	No	Yes	Yes
Frequency of flow rate verification	Monthly	Semi-monthly	Semi-monthly	Semi-Monthly
Semi-Annual flow rate audits dates	06/08/2022, 12/27/2022	05/16/2022	08/10/2022, 12/27/2022	08/10/2022, 12/27/2022
Additional QA flow rate check dates*	03/17/2022, 09/15/2022	03/30/2022	05/16/2022, 09/27/2022	05/16/2022, 09/27/2022
PEP date	**	N/A	**	**

\*Additional QA checks are not official audits

\*\*Not done this year





**Table J-4 Sherman Elementary School - Other Pollutants Monitor Designations**

Pollutant	TOXICS- VOC	TOXICS- Metals
POC	1	1
Monitor designation	N/A	N/A
Basic monitoring objective	Research	Research
Site type	Population Exposure	Population Exposure
Monitor type	Other (SDAPCD Network)	Other (SDAPCD Network)
Network affiliation	N/A	N/A
Instrument manufacturer & model	Xontech 901 (Fused Silica Lined)	Met One E-SEQ-FRM
Method code	210	*
FRM/FEM/ARM/Other	Other	Other
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	N/A	07/2020
Current sampling frequency	1:6	1:6
Required sampling frequency	N/A	N/A
Sampling season	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	None
Any PM Hi-Vol sampler w/in 2m	N/A	None
Probe material for reactive gases	N/A	N/A
Residence time for reactive gases	N/A	N/A
Any changes within the next 18 months?	No	No
Suitable for comparison to the NAAQS?	N/A	N/A
Frequency of flow rate verification	N/A	Monthly
Semi-Annual flow rate audits dates	N/A	06/08/2022, 12/27/2022
Additional QA flow rate check dates***	N/A	03/17/2022, 09/15/2022
Annual Performance Evaluation date	N/A	N/A
NPAP date	N/A	N/A

\*Method code not available

\*\*Additional QA checks are not official audits



**Table J-5 Sherman Elementary School - Meteorological Equipment Designations + Other**

Pollutant	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp
POC	1	1	1	1
Monitor designation	N/A	N/A	N/A	N/A
Parameter code	62107	61101	61104	62101
Basic monitoring objective	N/A	N/A	N/A	N/A
Site type	N/A	N/A	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Qualimetrics 4480	Qualimetrics 2030	Qualimetrics 2020	RM Young 41382VF
Method code	012	050	020	040
FRM/FEM/ARM/Other	Other	Other	Other	Other
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	07/2019	07/2019	07/2019	07/2019
Current sampling frequency	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	N/A	N/A	N/A	N/A
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A
Probe material for reactive gases	N/A	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	No	No	No	No
Suitable for comparison to the NAAQS?	N/A	N/A	N/A	N/A
Frequency of QC check (one-point)	Monthly	N/A	N/A	Monthly
Annual Performance Evaluation date	07/29/2022	07/29/2022	*	07/29/2022
NPAP date	N/A	**	**	**

\*Not performed this year.

\* \*EPA subcontractor does not have the equipment to audit.



**Table J-6 Sherman Elementary School - Distance the Equipment are from Influences**

(meters)	Gas Inlet	NOy Inlet	Pb-TSP, PRI (44.5 cfm)	Pb-TSP, QAC (44.5 cfm)	PM <sub>10</sub> , PRI, (16.7 lpm)	PM <sub>10</sub> , QAC (16.7 lpm)	BC 1060	PM <sub>2.5</sub> FRM, PRI* (16.7 lpm)	E-Seq TSP Metals (16.7 lpm)	PM <sub>2.5</sub> non-FEM (16.7 lpm)	PM <sub>2.5</sub> STN (6.7 lpm)	PM <sub>2.5</sub> CSN (22.0 lpm)	† PAMS-VOC (50 ccpm)	† PAMS-VOC, QAC	† PAMS-Carbonyls (1.5 lpm)	Toxics-VOC (50 ccpm)	Toxics-Carbonyls (50 ccpm)	Toxics-Metals (12 lpm)	Meteorology
Gas Inlet	n/a							2.2	3.6	1.3							3.2		5.2
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM <sub>10</sub> , PRI, Hi-Vol																			
PM <sub>10</sub> , QAC, Hi-Vol																			
BC 1060																			
PM <sub>2.5</sub> FRM, PRI†	2.2							n/a	1.6	1.2							2.0		6.4
E-Seq TSP Metals	3.6							1.6	n/a	2.3							3.3		7.2
PM <sub>2.5</sub> non-FEM	1.3							1.2	2.3	n/a							2.9		5.7
PM <sub>2.5</sub> STN																			
PM <sub>2.5</sub> CSN																			
†PAMS-VOC																			
†PAMS-VOC, QAC																			
†PAMS-Carbonyls																			
Toxics-VOC																			
Toxics-Carbonyls	3.2							2.0	3.3	2.9									7.2
Toxics-Metals																			
Meteorology	5.2							6.4	7.2	5.7							7.2		n/a
<i>height from ground</i>	6.1							5.9	6.0	6.0							6.3		11.0
<i>distance: from the road</i>	14.5							15.8	16.6	14.7							16.7		15.5
<i>from the supporting structure (wood deck)</i>	2.2							2.0	2.0	2.1							3.7		7.05
<i>from obstructions on roof</i>	N							N	N	N							N		N
<i>from obstructions not on roof</i>	N							N	N	N							N		N
<i>from the closest tree</i>	14.8							16.1	17.8	14.4							16.8		14.0
<i>from furnace/flue</i>	N							N	N	N							N		N
<i>unrestricted air flow (degrees)</i>	360							360	360	360							360		360

n/a= Not Applicable; N= None; †On the side of the station/trailer

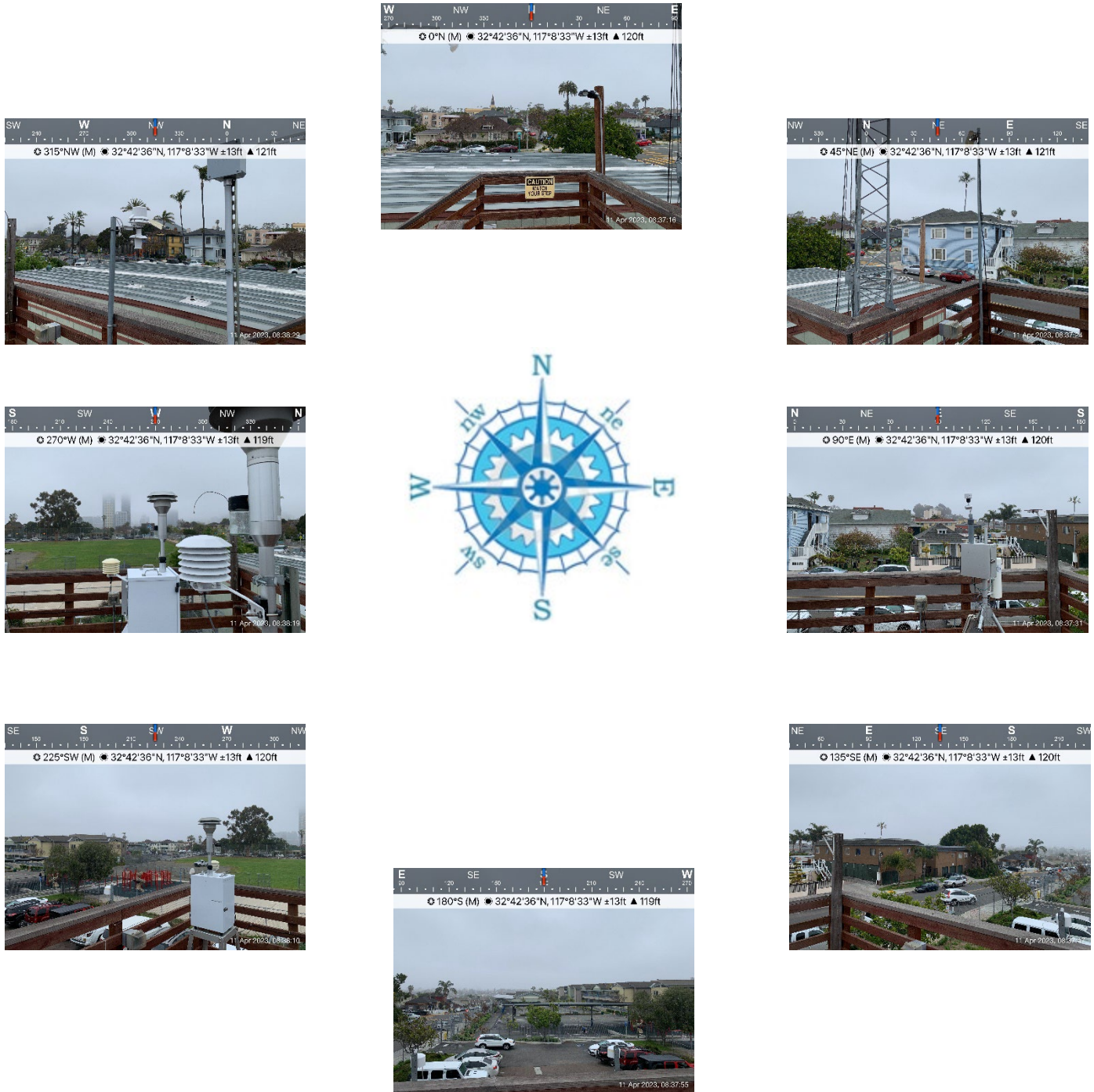


Figure J.2 Sherman Elementary – Pictures (Directional) from the rooftop