AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

MONITORING AND TECHNICAL SERVICES DIVISION

ANNUAL AIR QUALITY MONITORING NETWORK PLAN 2017

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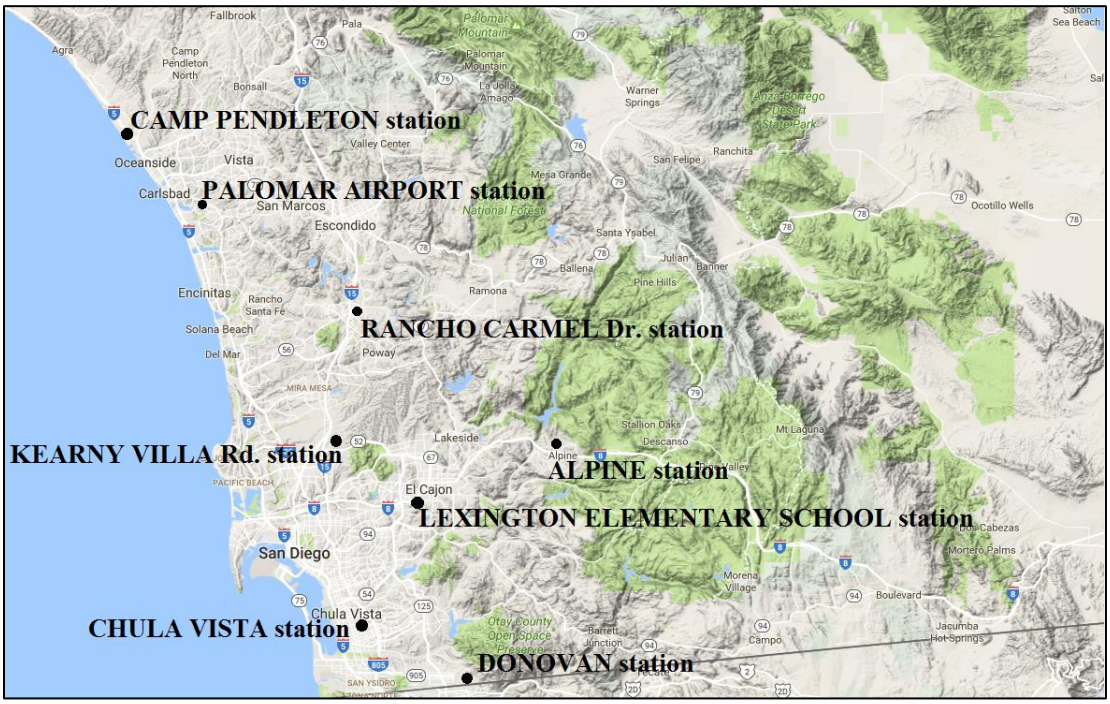

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICIES

ACRONYMS

SYMBOLS	DEFINITION
>	Greater than
<	Less than
≥	Greater than or equal to
≤	Less than or equal to
%	percent
%RH	Relative Humidify
µg/m^3	micrograms per cubic meter
7/24	Monitor that operates 24 hours a day, 7 days a week

A	DEFINITION
AAQS	Ambient Air Quality Standards
AADT	Average Actual Daily Traffic
Acid Rain	Rain which is especially acidic, which typically is composed of sulfuric and/or nitric acid. Formed by the combination of nitrogen and sulfur oxides with water vapor in the atmosphere.
Aerosol	Particles of solid or liquid matter that can remain suspended in air for long periods of time because of extremely small size and/or weight
Area wide	Stationary sources of pollution
Attainment Area	a geographic area which is in compliance with the NAAQS
Air Explorer	AQS data analysis tool
AirNow	AQI real time data
ALP	Alpine monitoring location
AMP reports	Series of AQS retrieval reports
Ambient Air	The air occurring at a particular time and place outside of structures.
AMTIC	Ambient Monitoring Technical Information Center
APCD	Air Pollution Control District; a county agency with authority to regulate sources of air pollution within the county and governed by the county supervisors.
AQI	Air Quality Index
AQMD	Air Quality Management District; a group of counties or an individual county with authority to regulate sources of air pollution within the region and governed by a regional air pollution control board.
AQS	Air Quality System
ARM	Approved Regional Method
Automated	Pre-programmed sequence of QC functions that start based on the time
B	**DEFINITION**
BAM	Beta Attenuation Monitor
BURN	Agricultural Burning refers to the intentional use of fire for the burning of vegetation produced wholly from the growing and harvesting of crops in agricultural operations. This includes the burning of grass and weeds in fence rows, ditch banks, and berms in non-tillage orchard operations, fields being prepared for cultivation, agricultural wastes, and the operation or maintenance of a system for the delivery of water for agricultural operations.
C	**DEFINITION**
CAA	Clean Air Act
CARB	California Air Resources Board
CASAC	Clean Air Science Advisory Committee
CASTNET	Clean Air Status and Trends Network
CA TACv	California Air Toxics monitoring
CBSA	Core Bases Statistical Area
CFR	Code of Federal Regulations
CL	Chemiluminescence method is based upon the emission of photons in the reaction between ozone and nitric oxide (NO) to form nitrogen dioxide and oxygen.
CMP	Camp Pendleton monitoring location
CO	Carbon monoxide
CO_2	Carbon dioxide
Collocated	A monitor/sampler that is located within 1-4 meters, depending on the sampling rate of another one of the same sampling method.

Continuous	A sampler that operates on a 7/24 schedule
Criteria pollutants	An air pollutant for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set.
CRQ	McClellan-Palomar Airport monitoring location
CSA	Core based Statistical Area
Cr(VI) or (Cr^{+6})	Chromium 6
CSN	Monitors that are part of the Chemical Speciation Network (carbon analyses)
CT	Low volume, continuous sampler, size selective inlet method is based upon a regulated low flow (<200 LPM) instrument that operates 7 / 24.
CVA	Chula Vista monitoring location
D	**DEFINITION**
DVN	Donovan monitoring station
DMR	Del Mar monitoring station
DNPH	2,4 –dinitrophenyl hydrazine; a derivatizing agent on cartridges used to collect carbonyl samples
DTN	San Diego/Beardsley St. monitoring location
E	**DEFINITION**
EIR	Environmental Impact Report
EC	Elemental Carbon
ECA	El Cajon monitoring station
EPA	Environmental Protection Agency
ESC	Escondido monitoring station
EXDN	Extreme downwind site type
F	**DEFINITION**
FDMS	Filter Dynamic Measurement System
FE	Fleet equivalency
FEM	Federal Equivalent Method
FIP	Federal Implementation Plan
FL	Fluorescence method is based upon the principle that SO_2 molecules absorb ultraviolet (UV) light and become excited at one wavelength, then decay to a lower energy state emitting UV light at a different wavelength. The intensity of fluorescence is proportional to the SO2 concentration.
FOIA	Freedom of Information Act
FR	Federal Register
FRM	Federal Reference Method
FSL	Fused silica lined
FY	Fiscal Year
G	**DEFINITION**
G/B	General/Background site type
GC/FID	Gas Chromatography with a flam ionization detector
GC/MS	Gas Chromatography followed by mass spectroscopy
H	**DEFINITION**
HAP	Hazardous Air Pollutant; An air pollutant considered by the EPA to be particular hazardous to health.
HC	Highest concentration site type
HD	High density
HPLC	High Performance Liquid Chromatography
Hr	Hour
Hydrocarbon	Any of a large number of compounds containing various combinations of hydrogen and carbon atoms.
I	**DEFINITION**
ICP/MS	Inductively Coupled Plasma Mass Spectrometry
IMPROVE	Interagency Monitoring of Protected Visual Environments
Inversion	A layer of warm air in the atmosphere that lies over a layer of cooler air, trapping pollutants.
IO	Inorganic
IR	Nondispersive infrared method is based upon the absorption of infrared radiation by CO in a non-dispersive photometer. Infrared energy from a source is passed through a cell containing the gas sample to be analyzed, and the quantitative absorption of energy by CO in the sample cell is measured by a suitable detector.
K	**DEFINITION**
KVR	Kearny Villa Road monitoring location

L	DEFINITION
Lat	Latitude
Level I calibrator	A calibrator that is certified according to EPA specifications
Level II calibrator	A calibrator that is not certified
Lon	Longitude
M	**DEFINITION**
Manual (sequential)	A sampler that requires a media change and operates on a schedule set by the EPA.
MDL	Method Detection Limit
Met	Meteorological
MI	Microscale is an expanse of uniform pollutant concentrations, ranging from several meters up to 100m.
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
Mobile Sources	Sources of air pollution that are not stationary, e.g. automobiles.
Monitoring	The sampling and analysis of air pollutants in ambient air or from individual pollutant sources.
MS	Middle Scale is an expanse of uniform pollutant concentrations, ranging from about 100 meters to 0.5 kilometers
MSA	Metropolitan Statistical Area
MXO	Maximum ozone concentration site type
MXP	Maximum ozone precursor site type
N	**DEFINITION**
NAAQS	National Ambient Qir Quality Standard
NACAA	National Association of Clean Air Agencies
NAMS	National Air Monitoring Station
NAFTA	North American Trade Agreement
NATA	National Air Toxics Assessment
NATTS	National Air Toxics Trends Sites
NCore	National Core multipollutant monitoring stations
NEI	National Emissions Inventory
NEPA	non-EPA Federal monitor type
NIST	National Institute of Standards and Technology
NOAA	National Oceanic and Atmospheric Administration
Non-Methane Hydrocarbons (aka ROGs)	A chemical gas composed of hydrocarbons that may contribute to the formation of smog.
NOx	Oxides of Nitrogen
NO	Nitric oxide
NO_2	Nitrogen dioxide
NOy	Reactive oxides of nitrogen
NPAP	National Performance Audit Program
NPEP	National Performance Evaluation Program
NPS	National Parks Service
NS	Neighborhood Scale is an expanse with dimensions, ranging in the 0.5 kilometer to 4.0 kilometer range.
NSR	New Source Review; a program used in development of permits for modifying industrial facilities which are in a non-attainment area.
Non-Attainment Area	A geographic area identified by the EPA as not meeting the NAAQS for a given pollutant.
NTIS	National Technical Information Service
O	**DEFINITION**
OAQPS	Office of Air Quality Planning and Standards
OC	Organic Carbon
OTAQ	Office of Transportation and Air Quality
OTM	Otay Mesa monitoring location
O_3	Ozone
Ozone layer	A layer of ozone 12-15 miles above the earth's surface which helps to filter out harmful UV rays from the sun.

Ozone ground level	Exists at the earth's surface and is a harmful component of smog.
Ozone precursors	Chemicals, such as hydrocarbons, occurring naturally or anthropogenic, which contribute to the formation of ozone.
P	**DEFINTION**
P&A	Precision and Accuracy
PAH	Polynuclear Aromatic Hydrocarbon
PAMS	Photochemical Assessment Monitoring Stations
PAMS Type I	Designation for areas which are subjected to overwhelming incoming transport of ozone. Located in the predominant morning upwind direction from the area of maximum precursor emissions (upwind and background). Typically located near the upwind edge of the photochemical grid model domain.
PAMS Type II	Designation for areas immediately downwind of the area of maximum precursor Emissions (maximum precursor emissions impact) and are placed near the downwind boundary of the central business district or primary area of precursor emissions mix.
PAMS Type III	Maximum ozone concentrations occurring downwind for the area of maximum precursor emissions. Typically these sites are located 10-30 miles from the fringe of the urban area.
Pb	Lead
PE	Population exposure site type
PEP	Performance Evaluation Program
Photochemical reaction	A term referring to chemical reactions brought about by the light energy of the sun.
PM	Particulate Matter
$PM_{2.5}$	An air pollutant of particle size of 2.5 micrometers or less, which is inhalable.
PM_{10}	An air pollutant of particle size of 10 micrometers or less, which is inhalable.
PMcoarse (PMc)	the resultant particles of the subtraction of $PM_{2.5}$ from PM_{10}. Coarse particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers
POC	Parameter Occurrence Code
ppb	Parts per billion
ppm	Parts per million
ppt	Parts per trillion
PQAO	Primary Quality Assurance Organization
PWEI	Populated Weighted Emissions Index
Q	**DEFINITION**
QA	Quality Assurance and Quality Assurance site type
QAC	Quality Assurance Collocated monitor type
QAPP	Quality Assurance Project Plan
QC	Quality Control
QIP	Quality Improvement Plan
QMP	Quality Management Plan
Qtr	Quarter
R	**DEFINITION**
RASS	Radar Acoustic Sounding System
ROG	Reactive Organic Gas (aka non-Methane hydrocarbons); a chemical gas composed of hydrocarbons that may contribute to the formation of smog.
RT	Regional transport site type
RTI	Research Triangle Institute
RTP	Research Triangle Park
S	**DEFINTION**
SDAB	San Diego Air Basin
SI	High volume, manual, size selective method is based upon a regulated high flow (>200 LPM) instrument that operates on a set schedule.
SIP(M)	State Implementation Plan
SLAMS	State/Local Air Monitoring Station
S/L/T	State, Local, and Tribal agencies
Smog	A combination of smoke, ozone, hydrocarbons, nitrogen oxides, and other chemically reactive compounds, which can result in a murky brown haze, which has adverse health effects.

SMP	System Management Plan
Speciation	Collection of a $PM_{2.5}$ sample that has its composition analyzed
SO	Source oriented site type
SOP	Standard Operating Procedures
SO_2	Sulfur dioxide
SOW	Statement of Work
SP	Low volume, speciated method is based upon a regulated low flow (< 200 LPM) instrument that operates on a set schedule
SPM	Special Purpose monitor type
SQ	Low volume, sequential, size selective inlet method is based upon a regulated low flow (< 200 LPM) instrument that operates on a set schedule.
STN	Monitors that are part of the Speciation Trends Network (ions and wood smoke)
STAG	State Air Grand (federal)
SU	Supplemental Speciation
T	**DEFINITION**
TA	Trend Analysis monitoring is useful for comparing and analyzing air pollution concentrations over time. Trend analyses show the progress (or lack of progress) in improving air quality for an area over a period of years.
TAC	Toxic Air Contaminant
TAD	Technical Assistance Document
TLE	Trace Level
Toxics (Air Toxics)	Generic term referring to a harmful chemical or group of chemicals in the air that are especially harmful to health.
Toxic Hot Spot	An area where the concentration of air toxics is at a level where individuals may be exposed to an elevated risk of adverse health effects.
TTN	Technology Transfer Network
TR	Pollutant Transport is the movement of a pollutant between air basins. Transport monitoring is used to help determine whether observed pollutant concentrations are locally generated or generated outside of the air basin and blown ("transported") in, thereby raising local ambient air pollutant concentrations.
Trends	STN or CSN monitor type
TSP	Total Suspended Particulate
U	**DEFINITION**
UNPAMS	Unofficial PAMS monitor type
UPBD	Upwind background
US	Urban Scale is Citywide pollutant conditions with dimensions ranging from 4 to 50 kilometers.
UV	Ultraviolet Absorption method is based upon the absorption of UV light by the ozone molecule and subsequent use of photometry to measure reduction of light at 254 nm, as expressed by the Beer-Lambert Law.
V	**DEFINITION**
VOC	Volatile Organic Compounds
W	**DEFINITION**
WD	Wind Direction
WF	Welfare Effects monitoring is used to measure air pollution impacts on visibility, vegetation damage, architectural damage, or other welfare-based impacts.
WS	Wind Speed
Y	**DEFINITION**
Yr	Year
Z	**DEFINITION**
ZAG	Zero Air Generator

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CHAPTER 1 ANNUAL NETWORK PLAN REQUIREMENTS

Section 1.0.0 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, added provisions for the monitoring of PM_{10} and $PM_{2.5}$, and reduced certain monitoring requirements for criteria pollutants. Monitoring agencies are required to submit annual monitoring network plans, 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:

> *Beginning July 1, 2007, 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 SLAMS monitoring stations including FRM, FEM, and ARM monitors that are part of SLAMS, NCore stations, STN stations, State speciation stations, 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 partial fulfillment of these requirements. It describes the network of ambient air quality monitors, samplers, and analyzers operated by San Diego Air Pollution Control District (District) staff in fulfillment of EPA regulations governing network compliance that are updated every July 1. This annual comprehensive review serves to evaluate whether the current monitoring strategies are meeting the needs of the District, to determine compliance with all current Federal, State, and Local regulations and to aid in the development of future monitoring strategies and decisions. It also serves to identify and report needs for additions, relocations, or terminations of monitoring sites or instrumentation.

Section 1.1.0 Purpose, Scope, and Organization of Annual Network Plan

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 plan 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. The terms FRM and FEM denote monitoring instruments that produce measurements of the ambient pollution levels (or concentrations) that the regulations allow to be compared to the ambient air quality standards for regulatory purposes. This report also includes information regarding non-regulatory and non-criteria pollutant monitoring.

Section 1.2.0 Public Comments Information

Pursuant to Federal regulations, the draft report was available for a minimum of 30 days for public inspection period, ending June 30. Notice of availability of the report was posted on the District's website (www.sdpacd.org), at least 30 days prior to EPA submission. Comments regarding this report and the District's response(s) before submittal to EPA are listed in the Executive Summary chapter. Comments regarding this report and answered by the District after July 1 will be forwarded to EPA Region IX headquarters (at the time of the submittal of this report, there were no comments to report).

Please submit any comments in writing to David Shina, Senior Chemist, Ambient Air Quality Section, david.shina@sdcounty.ca.gov, or mail/deliver to District headquarters at David Shina c/o San Diego Air Pollution Control District, 10124 Old Grove Road, San Diego, CA, 92131.

Section 1.2.1 District Contact Information

For information regarding this report, air monitoring stations, laboratory operations, or general oversight of the monitoring program contact: David Shina, Senior Chemist, Ambient Air Quality Section, david.shina@sdcounty.ca.gov, (858) 586-2768.

For information about daily field operations regarding the equipment at the stations, contact: David Craig, Supervisor of Technicians, Technicians section, david.craig@sdcounty.ca.gov, (858) 586-2785.

For information about the collection of ambient air quality data, meteorological data, episode modeling, air quality forecasting, and smoke management plans contact: Bill Brick, Chief of Monitoring & Technical Services, Bill.Brick@sdcounty.ca.gov , (858) 586-2770.

Section 1.2.2 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 a number of additional sources for related information.

Similar information is available on EPA websites, including comprehensive historical information. Sample topics addressed include the following: National Ambient Air Quality Standards, Fine Particle ($PM_{2.5}$) Designations, The Plain English Guide to the Clean Air Act, About Air Toxics, Health and Ecological Effects, Air Trends, PAMS Information, Global Warming, and Stratospheric Ozone, as well as others.

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

ARB'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. To review any data from this report, go to http://www.arb.ca.gov/aqd/netrpt/netrpt.htm. Summaries of the official air quality data from sites around the State can be found at: http://www.arb.ca.gov/adam/welcome.html. 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.

Section 1.3.0 Description of Monitoring

This document details the current monitoring network in the SDAB for the criteria pollutants: ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, lead and particulate matter. Also, there are additional monitoring programs the District must detail: National Core (NCore), Speciation Trends Network (STN), Chemical Speciation Network (CSN), Photochemical Assessment Monitoring Stations (PAMS), Toxics, Near-road, and Special Purpose Monitoring (SPM). Specific site information includes location information, site type, objectives, spatial scale, sampling schedule, equipment used, sampling method used, and monitor objective.

Section 1.3.1 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/drive time.
3. Availability of 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.
4. Longevity of the site location.
5. Buildup of the area surrounding the 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 1.4.0 San Diego Air Basin Description

The San Diego Air Basin (SDAB) covers roughly 4,200 square miles, lies in the southwest corner of California, and encompasses all of San Diego County and a portion of the Salton Sea Air Basin. The population and emissions are concentrated mainly in the western portion of the County.

Section 1.4.1 Topography

The topography of San Diego County is highly varied, being comprised 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.

The topography of San Diego County is unique and varied. To the west of San Diego are its 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).

The topography also drives the pollutant levels. The SDAB is not classified as a contributor, but it is classified as a transport recipient. The transport pollutants are O_3, NOx and Volatile Organic Compounds (VOCs), that are transported from the South Coast Air Basin to the north and, when the wind shifts direction, Tijuana, Mexico, to the south.

Section 1.4.2 Climate

The climate of San Diego is classified as Mediterranean, but is incredibly 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 an average of 201 days above 70 °F and 9-13" 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 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_3 levels. In the winter, San Diego often experiences a shallow inversion layer which tends to increase carbon monoxide and $PM_{2.5}$ 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 O_3 concentrations. A strong Santa Ana also primes the vegetation for firestorm conditions.

Section 1.4.3 Population

The population of San Diego County has been increasing by about 1.5% per year, in general. The 2010 census population was 3.2 million. It is estimated to be 3.4 million for 2018.

CHAPTER 2 VIEW OF THE AIR QUALITY MONITORING NETWORK

Section 2.0.0 Executive Summary of the Air Quality Monitoring Network

The District operated eight (8) monitoring sites that collected criteria pollutant data (Figure 2.0). The District's monitoring network has been designed to provide criteria pollutant monitoring coverage to the majority of the inhabited regions of the County (Tables 2.0 & 2.1).

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 deemed necessary. As harmful air contaminants are most likely to be found in areas where population is dense, traffic patterns are heavy, and industrial sources are concentrated, one would expect such contaminants to be most prevalent in the western portion of San Diego County. Measurements show this to be true. 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. The most important of these, in the San Diego Air Basin, are: ozone, fine particulate matter 2.5 micrometers and less in diameter, particulate matter 10 micrometers and less in diameter, and a number of toxic compounds. Other pollutants measured include oxides of nitrogen, carbon monoxide, sulfur dioxide, and lead. Monitoring for meteorological parameters is also conducted at most monitoring locations. Data for all of 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 2.0.1 Overview of the Gaseous Pollutant Monitoring Network

This section lists all the monitoring locations in the SDAB undertaken by the District for this report year. Table 2.0 below is a list of the District's stations and the pertinent locations. Figure 2.0 show where these monitoring locations are on a map of the County. Table 2.1 lists all the samplers, analyzers, and other instrumentation at these monitoring sites.

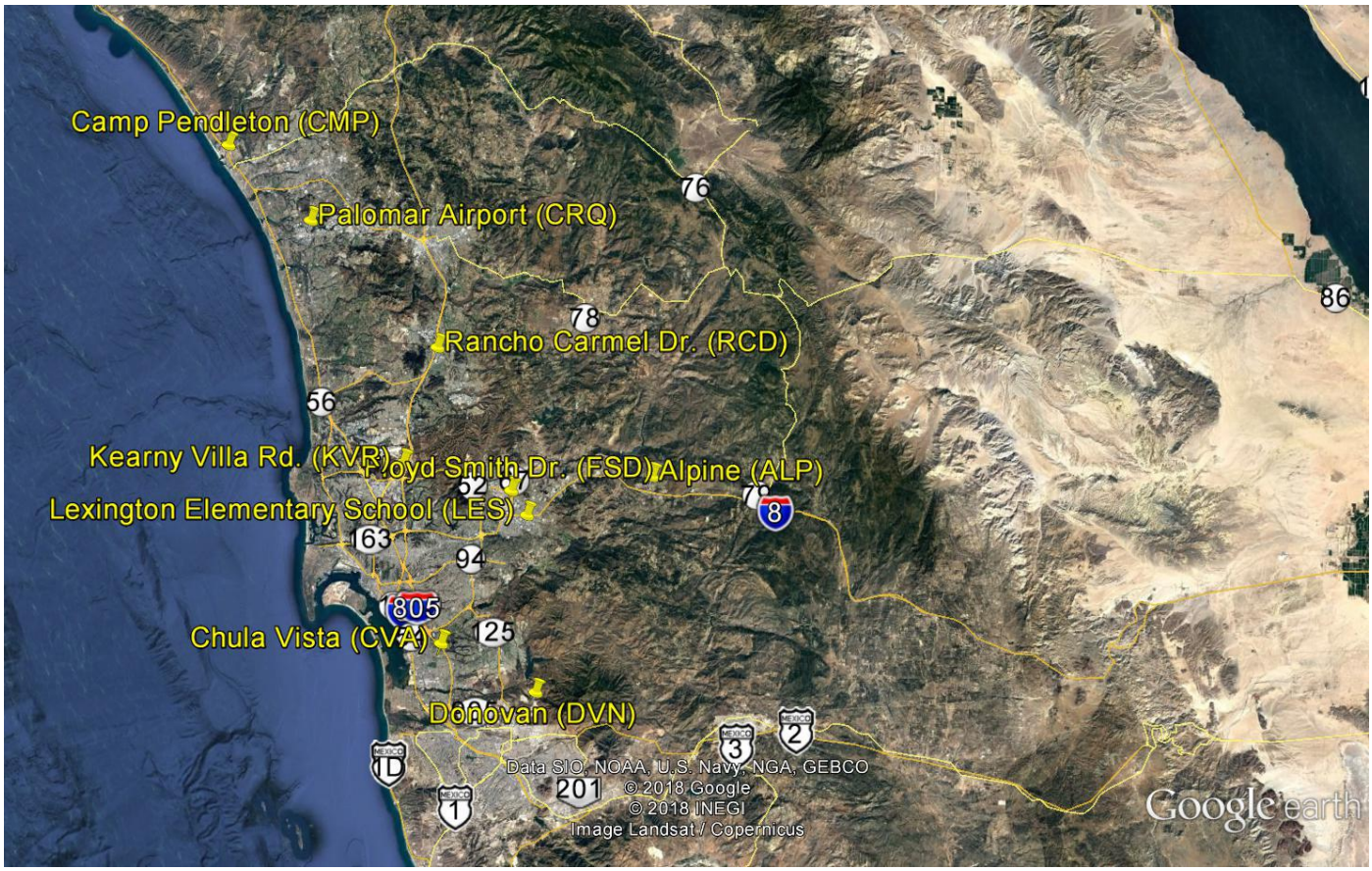
Table 2.0 List of Network Sites

Station Name	Station Abbreviation	Address	Latitude/ Longitude	AQS ID
Alpine	ALP	2300 W. Victoria Dr.	32.842312° -116.768277°	06-073-1006
Camp Pendleton	CMP	21441 W. B St.	33.217063° -117.396169°	06-073-1008
Chula Vista	CVA	84 E. J St.	32.631175° -117.264086°	06-073-0001
Del Mar	DMR	225 9th Street	32.952106° -116.921359°	06-073-1001
Donovan	DVN	480 Alta Rd.	32.578267° -116.921359°	06-073-1014
El Cajon-Floyd Smith Drive	FSD	10537 Floyd Smith Drive	32.817907° -116.968302°	06-073-1018
Kearny Villa Rd.	KVR	6125A Kearny Villa Rd.	32.845722° -117.123983°	06-073-1016
Lexington Elementary School	LES	533 B. First St.	32.789562° -116.944318°	06-073-1022
Rancho Carmel Dr. (1st Near-road Site)	RCD	11403 Rancho Carmel Dr.	32.985442° -117.082180°	06-073-1017
McClellan-Palomar Airport	CRQ	2192 Palomar Airport Rd.	33.130846° -117.272668°	06-073-1023
*Escondido	ESC	600 E. Valley Pkwy.	33.127757° -117.075119°	06-073-1002
*Sherman Elementary School	SES	450B 24th St.	32.710192° -117.142779°	06-073-1026
*San Ysidro (2nd Near-road Site)	SAY	198 W. San Ysidro Blvd.	32.552819° -117.047380°	06-073-1025
**Otay Mesa	OTM	UNKNOWN	UNKNOWN	06-073-1027

*Not operational yet. These sites have been approved by the EPA and are currently undergoing construction.

**The District is searching for a location along Via de la Amistad between Roll Dr. and Enrico Fermi Dr.

Figure 2.0 San Diego APCD Air Quality Monitoring Network



Legend

Yellow stickpins= station location
Yellow name= name of the station
Letters in parenthesis= abbreviation of the station name

Table 2.1 Air Monitoring Sites with Associated Monitors/Samplers & Sample Frequency

		ALP Alpine	CMP Camp Pendleton	CVA Chula Vista	DVN Donovan	LES Lexington Elementary School	KVR Kearny Villa Rd.	CRQ Palomar	RCD Rancho Carmel Drive
AMBIENT	O_3	7/24	7/24	7/24	7/24	7/24	7/24		
	NO_2	7/24	7/24	7/24	7/24	7/24	7/24		7/24
	CO								7/24
NCORE	NOy-TLE					*			
	CO-TLE					7/24			
	SO_2-TLE					7/24			
LEAD	(NCore) (Hi-Vol)								
	(Airports) (Hi-Vol)							1:6	
PM10	(NCore) (Lo-Vol)					1:6			
	(Ambient) (Hi-Vol)			1:6	1:6		1:6		
PM2.5 FEM	(Continuous)	7/24	7/24		7/24	7/24			
PM2.5 FRM	(Manual)			1:3		1:1	1:3		
PM2.5 CSN	(Speciation)								
PM2.5 STN	Channel 1 (Metals)					1:6			
	Channel 2 (Inorganic Ions)					1:6			
	Channel 3 (Wood Smoke)								
PAMS	(VOCs)	✓	✓			✓			
	(Carbonyls)					✓			
TOXICS CA-TAC (CARB)	(VOCs)			1:6		1:6			
	(Total Metals)			✓		✓			
	(Cr^{+6})			✓		✓			
	(Aldehydes/ Carbonyls)			✓		✓			
TOXICS (APCD)	(VOCs)				✓				
	(Total Metals)				✓	✓			
	(Aldehydes/ Carbonyls)				✓				
METEROLOGICAL PARAMETERS + Others	Wind Speed./ Wind Dir.	✓	✓	✓	✓	✓	✓		
	External Temperature	✓	✓	✓	✓	✓	✓		
	% Relative Humidity	✓				✓	✓		
	Internal Temperature	✓	✓	✓	✓	✓	✓		
	Barometric Pressure						✓		
	Solar Radiation						✓		
	**Radio Acoustic Sounding System (RASS)						✓**		

*Not Operational
**The RAAS is now no longer operational.

- Yellowed areas indicate a collocation of samplers to satisfy Federal QA requirements for $PM_{2.5}$ FRM monitors, PM10, and TSP samplers with a sampling frequency of 1:12.
- The collocated $PM_{2.5}$ PAMS-VOCs sampler have the same sampling frequency as the main sampler.
- All sample times are set to Pacific Standard Time.
- The District operates, calibrates, and audits all instruments listed in Table 2.1, except for the CARB's Xontech 924's at the Chula Vista and El Cajon stations (operation only).
- 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 2.4 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 BAM 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 2.2 – 2.7 use the same Glossary (see below)

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
Q= 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

Network 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= Monitors at sites meeting near road designs as per Part 58
PAMS= Photochemical Assessment Monitoring Stations

Monitor Designation
PRI= Primary
QAC= Collocated
O= Other

Objective (Federal)
NAAQS= Suitable for NAAQS comparison
Research= Research support
PI= Public Information
N/A= Not Applicable

Section 2.0.2 Overview of the Gaseous Pollutant Monitoring Network

Table 2.2 is a summary of the criteria gaseous pollutants and NOy monitoring network.

Table 2.2 Gaseous Pollutants Monitoring Network

	Abbreviation	ALP	CMP	CVA	LES	KVR	DVN	RCD
	Name	Alpine	Camp Pendleton	Chula Vista	Lexington	Kearny Villa Rd	Donovan	Rancho Carmel Dr.
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1022	06-073-1016	06-073-1014	06-073-1017
O_3	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	
	Method	UV	UV	UV	UV	UV	UV	
	Affiliation	PAMS	PAMS	Not Applicable	PAMS, NCore	PAMS	Not Applicable	
	Spatial Scale	US	NS	NS	NS	NS	NS	
	Site Type	MXO	UPDB	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_2 & NOy	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Designation	PRI	PRI	PRI	PRI	PRI	PRI	PRI
	Method	CL	CL	CL	CL	CL	CL	CL
	Affiliation	PAMS	PAMS	Not Applicable	PAMS	PAMS	SLAMS	Not Applicable
	Spatial Scale	US	NS	NS	NS	NS	NS	NS
	Site Type	PE	UPBD	PE	PE	PE	PE	PE
	Objective (Federal)	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS
	Equipment	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i
CO	Monitor Type				SLAMS			SLAMS
	Method				IR			IR
	Affiliation				Not Applicable			Not Applicable
	Spatial Scale				NS			NS
	Site Type				PE			PE
	Objective (Federal)				PI, NAAQS			PI, NAAQS
	Equipment				Thermo 48i			Thermo 48i
SO_2	Monitor Type				SLAMS			
	Method				FL			
	Affiliation				NCore			
	Spatial Scale				NS			
	Site Type				PE			
	Objective (Federal)				PI, NAAQS			
	Equipment				Thermo 43i-TLE			

Section 2.0.3 Overview of the Pb-TSP Monitoring Network

Table 2.3 below is a summary of the lead particulates monitoring network.

Table 2.3 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 2.0.4 Overview of the $PM_{2.5}$ Monitoring Network

Table 2.4 below is a summary of the $PM_{2.5}$ monitoring network.

Table 2.4 $PM_{2.5}$ Sampling Network

	Abbreviation	ALP	CMP	CVA	LES		KVR		DVN
	Name	Alpine	Camp Pendleton	Chula Vista	Lexington Elementary School		Kearny Villa Rd		Donovan
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1022		06-073-1016		06-073-1014
PM2.5 (non-speciated)	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Designation	O	O	PRI	O	PRI	PRI	QAC	O
	Method	CT (non-FEM)	CT (non-FEM)	SQ (FRM)	CT (non-FEM)	SQ (FRM)	SQ (FRM)	SQ (FRM)	CT (non-FEM)
	Affiliation	N/A	N/A	N/A	N/A	NCORE	N/A	N/A	N/A
	Spatial Scale	US	NS	NS	US	NS	NS	NS	NS
	Site Type	PE	UPBD	PE	PE	PE	PE	QA	PE
	Objective (Federal)	PI, Research	PI, Research	NAAQS	PI, Research	NAAQS	NAAQS	NAAQS	PI, Research
	Analysis	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD
	Frequency	7/24	7/24	1:3	7/24	1:3	1:3	1:12	7/24
	Equipment	Met One BAM	Met One BAM	Thermo 2025	Met One BAM	Thermo 2025	Thermo 2025	Thermo 2025	Met One BAM
PM2.5 (speciated)	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 SASS			

N/A= Not Applicable

Section 2.0.5 Overview of the PM_{10} Monitoring Network

Table 2.5 below is a summary of the PM_{10} monitoring network.

Table 2.5 PM_{10} Sampling Network

	Abbreviation	CVA	DVN		KVR	LES
	Name	Chula Vista	Donovan		Kearny Villa Rd	Lexington
	AQS ID	06-073-0001	06-07- 1014		06-073-1016	60-076-1022
PM10	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
PM10	Designation	O	QAC	QAC	QAC	O
PM10	Method	SI	SI	SI	SI	SP
PM10	Affiliation	Not Applicable	Not Applicable	Not Applicable	Not Applicable	NCore
PM10	Spatial Scale	NS	NS	NS	NS	NS
PM10	Site Type	PE	PE	PE	PE	HC
PM10	Objective (Federal)	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS
PM10	Frequency	1:6	1:6	1:12	1:6	1:6
PM10	Equipment	Graseby Metal Works body w/ Sierra Anderson 1200 Head	Graseby Metal Works body w/ Sierra Anderson 1200 Head	Graseby Metal Works body w/ Sierra Anderson 1200 Head	Graseby Metal Works body w/ Sierra Anderson 1200 Head	Thermo 2025 w/o VSCC (Lo-Vol)

Section 2.0.6 Overview of the PAMS Monitoring Network

Table 2.6 is a summary of the PAMS monitoring network.

Table 2.6 PAMS Sampling Network

	Abbreviation	ALP	CMP		LES	
	Name	Alpine	Camp Pendleton		Lexington	
	AQS ID	06-073-1006	06-073-1008		06-073-1022	
PAMS	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Method	Canister	Canister	Canister	Canister	Cartridges
	Affiliation	PAMS (Type III)	PAMS (Type I)	PAMS (Type I)	PAMS (Type II)	PAMS (Type II)
	Spatial Scale	US	NS	NS	NS	NS
	Site Type	MXO	UPBD	QA	MXP	MXP
	Objective (Federal)	Research	Research	Research	Research	Research
	Analysis By	APCD	APCD	APCD	APCD	APCD
	Frequency	1:6	1:6	1:6	1:6	1:6
	Equipment	Xontech 910/912	Xontech 910/912	Xontech 910/912	Xontech 910/912	Xontech 925

[1] In late 2016, the Floyd Smith Dr. station moved back to its original location at Lexington Elementary School

Section 2.0.7 Overview of the TOXICS Monitoring Network

Table 2.7 is a summary of the toxics monitoring network.

Table 2.7 Toxics Program Sampling Network

	Abbreviation	CVA				LES					DVN		
	Name	Chula Vista				Lexington					Donovan		
	AQS ID	06-073-0001				06-073-1022					06-073-1014		
Toxics	Pollutant	Toxics-VOCs	Toxics-Metals	Toxics-Cr^{+6}	Toxics-Aldehydes/Carbonyls	Toxics-VOCs	Toxics-Metals	Toxics-Cr^{+6}	Toxics-Aldehydes/Carbonyls	Toxics-Metals	Toxics-VOCs	Toxics-Metals	Toxics-Aldehydes/Carbonyls
	Monitor Type	CA TAC	CA TAC	CA TAC	CA TAC	CA TAC	CA TAC	CA TAC	CA TAC	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Method	Canister	Filter	Filter	Cartridges	Canister	Filter	Filter	Cartridges	Filter	Canister	Filter	Cartridges
	Affiliation	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Spatial Scale	NS	NS	NS	NS	NS	NS	NS	NS	NS	MI	MI	MI
	Site Type	PE	PE	PE	PE	PE	PE	PE	PE	PE	SO	SO	SO
	Objective (Federal)	Research	Research	Research	Research	Research	Research	Research	Research	Research	Research	Research	Research
	Analysis By	ARB	ARB	ARB	ARB	ARB	ARB	ARB	ARB	APCD	APCD	APCD	APCD
	Frequency	1:12	1:12	1:12	1:12	1:12	1:12	1:12	1:12	1:6	1:6	1:6	1:6
	Equipment	Xontech 910/912	Xontech 924	Xontech 924	Xontech 924	Xontech 910/912	Xontech 924	Xontech 924	Xontech 924	Xontech 924	Xontech 910A FSL	Xontech 924	Xontech 924

Section 2.1.0 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. $PM_{2.5}$ 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 (aka 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.

Table 2.8 Summary of Minimum Monitoring Requirements

Parameter	Requirements for Monitors for CFR Programs	Number of Monitors Required	Number of Monitors Active	Number of Monitors Needed
O_3	CFR EPA Table D-2 only=	2	6	None
	PAMS only=	3	3	None
	NCore only=	2	1	None
NO_2	Near-road=	2	1	1
	Regional Administrator=	1	0	None*
	Area-Wide=	1	1	None
	PAMS only=	1	1	None
NOy	NCore=	1	0	None**
	PAMS=	1	1	None
CO	Near-road=	1	1	None
	NCore=	1	1	None
	PAMS=	1	1	None
	SIP=	1	1	None
SO_2	PWEI=	0	0	None
	NCore only=	1	1	None
Pb	Source (non-Airport)=	0	0	None
	Source Airport=	0	0	None
	Airport Study=	0	0	None
	Airport Study Exceedance=	1*	1	None
	Regional Administrator=	0	0	None
	Collocation=	1	1	None
$PM_{2.5}$	CFR EPA Table D-2 only=	3	5	None
	California Particulate Matter Network=	5	3	None
	Expected Maximum Concentration, 24-Hr =	1	1	None
	Expected Maximum Concentration, Annual Average=	1	1	None
	Near-road=	1	0	1
	Poor Air Quality=	1	1	None
	NCore=	1	1	None
	Collocation=	1	1	None
PM_{10}	CFR EPA Table D-2 only=	2 - 4	4	None
	NCore only=	1	1	None
	Collocation=	1	1	None
PAMS	PAMS-VOC sites=	2	2	None
	PAMS-VOC sites (Type 2)=	1	1	None
	PAMS-VOC ozone season sampling frequency=	3-hr	No	None***
	PAMS-Carbonyl sites=	1	1	None
	PAMS-Carbonyl ozone season sampling frequency=	3-hr	Yes	None
	Minimum # of NOx monitors = # of Type 2 sites=	2	2	None
	Minimum # of NOy monitors at non-Type 2 sites=	1	1* at Type 2	None
	Minimum # of CO monitors at one Type 2 sites=	1	1	None
	Minimum # of O3 monitors = # of PAMS sites=	3	3	None
	Minimum # of meteorological sensors = # of PAMS sites=	3	3	None
	Minimum # of upper atmosphere sensors=	1	0	1****
NCore	$PM_{2.5}$-Continuous=	1	1	None
	$PM_{2.5}$-Manual (Integrated/filter-based)=	1	1	None
	$PM_{2.5}$-Speciated=	1	1	None
	$PM_{10-2.5}$=	1	1	None
	O_3=	1	1	None
	SO_2-TLE=	1	1	None
	CO-TLE=	1	1	None
	NO/NOy=	1	1	None**
	Wind speed/Wind direction=	1	1	None
	% Relative Humidity=	1	1	None
	Ambient temperature=	1	1	None
	PM_{10}-Manual (Integrated/filter-based)=	1	1	None
	Pb-TSP=	1	1	None

*The District was evicted from this location in Barrio Logan in late 2016. A new EPA approved site in Sherman Heights is being constructed.

**Due to logistical issues, this monitor was not operational in 2017, but is in 2018.

***Per EPA approval, not operational till PAMS re-engineering in 2019

****Per EPA approval, equipment is broken and will be replace for the PAMS re-engineering in 2019

Section 2.2.0 Summary of Minimum Monitoring Requirements (Data)

The EPA regulations specify, when applicable:

- How samplers, monitors, and stations are positioned, so as 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 2.2.1 Suitability for Comparison to the NAAQS (Data)-Criteria Pollutants

The CFR requires that for O_3, NO_2, CO, SO_2, Pb, $PM_{2.5}$, PM_{10} data to be used in regulatory determinations of compliance with the NAAQS, these instruments must be sited according to Federal Regulations and the sampling frequency must be in accordance with Federal regulations. All the District's O_3, NO_2, CO, SO_2, Pb, $PM_{2.5}$ (manual), PM_{10} monitors and samplers meet or exceed all minimum monitoring requirements and sampling frequencies, as to be able to be compared to the NAAQS and the data can be certified.

Section 2.2.2 Quality Control/Quality Assurance (Data)-Criteria Pollutants

All the District's O_3, NO_2, CO, SO_2, Pb, $PM_{2.5}$ (manual), PM_{10} monitors and samplers were flow checked, calibrated, and audited according to EPA methodologies and the data can be certified.

Section 2.2.3 Reporting/Certifying (Data)-Criteria Pollutants

All the data from the O_3, NO_2, CO, SO_2, Pb, $PM_{2.5}$ (manual), PM_{10} monitors and samplers were reviewed for validity and the verified data were uploaded into EPA's AQS database quarterly.

All Quality Assurance and flow check reports regarding the O_3, NO_2, CO, SO_2, Pb, $PM_{2.5}$ (manual), PM_{10} monitors and samplers were uploaded into the EPA's database quarterly.

All reviewed and verified data from these monitors and samplers, all Quality Assurance, and flow check reports regarding the O_3, NO_2, CO, SO_2, Pb, $PM_{2.5}$ (manual), PM_{10} monitors and samplers were certified in a letter to the EPA Region 9 Authorities by May 1.

Section 2.2.4 Unsuitability for Comparison to the NAAQS (Data)-non-Criteria Pollutants & Other

The District samples or analyzes for other pollutants: $PM_{2.5}$ (continuous) in non-FEM mode, PAMS-VOC, PAMS-Carbonyls, TOXICS-VOC, TOXIC-Carbonyls, and TOXIC-Metals. These samplers have no NAAQS to compare, but these instruments are sited according to Federal Regulations and the sampling frequency are in accordance with Federal regulations.

Section 2.2.5 Quality Control/Quality Assurance (Data)-non-Criteria Pollutants & Others

All the District's $PM_{2.5}$ (continuous) in non-FEM mode, PAMS-VOC, PAMS-Carbonyls, TOXICS-VOC, TOXIC-Carbonyls, and TOXIC-Metals monitors or samplers were flow checked, calibrated, and audited, when applicable, according to EPA methodologies.

Section 2.2.6 Reporting/Certifying (Data)-non-Criteria Pollutants & Others

All the data from the $PM_{2.5}$ (continuous) in non-FEM mode, PAMS-VOC, PAMS-Carbonyls, TOXICS-VOC, TOXIC-Carbonyls, and TOXIC-Metals samplers/analyzers were reviewed for validity and the verified data were uploaded into EPA's AQS database quarterly for $PM_{2.5}$ (continuous) in non-FEM mode and annually for the others. All Quality Assurance and flow check reports, when applicable, regarding the $PM_{2.5}$ (continuous) in non-FEM mode and the others were reviewed and verified ambient data uploaded into EPA's AQS database. This data is non-certifiable and is not included in the annual Data Certification Report to EPA.

Section 2.3.0 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 changes will be undertaken in partnership and direct advisement with the EPA (and CARB, when applicable). Before decommissioning any SLAMS monitor, the District will follow the procedure listed in 40 CFR Part 58.14, "System Modifications". Any proposed changes to the air monitoring network will be documented in the Annual Network Plan. If any 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, if 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 monitoring network plan (ANP) and the planning process due to unforeseen circumstances, e.g. eviction or other situations that occur after the ANP has been posted for public inspection and approved by the EPA Regional and National Administrators. Any changes to the network due to circumstances beyond the District's control will be communicated in writing to the EPA Regional Authority, the EPA National Authority (and CARB authorities, when applicable), and identified in the subsequent Annual Network Plan.

Section 2.3.1 Station Relocations, Shutdowns, and Additions

The section discusses all the station changes in the network.

Section 2.3.1.1 Relocations (temporary)

None for 2017.

Section 2.3.1.2 Relocations (permanent)

None for 2017. The Downtown/Sherman Elementary School station relocation is still underway.

Section 2.3.1.3 Shutdowns (temporary):

TEMPORARY SHUTDOWN - Chula Vista Temporary Station Shutdown

The wood deck will be demolished and rooftop sampling will be permanently relocated to ground level (EPA approved this configuration in the 2017 TSA). The EPA Regional Authorities have given the District permission to temporarily shut down all sampling, while reconstruction is conducted. At the time of the writing of this report, it is anticipated that the temporary shutdown will be in late 2018/early 2019.

TEMPORARY SHUTDOWN - San Ysidro (SAY) $PM_{2.5}$ Temporary Station (second location)

The District was asked by the EPA to locate a $PM_{2.5}$ continuous sampler as close to the San Ysidro border crossing as possible (Note: this is a non-Regulatory sampler, so the data can only be used for comparison purposes). This was to be a temporary study, so permanent siting was not sought and obtained; eventually the District was evicted from this location.

The EPA reclassified this study to be permanent. So, a new permanent location has been found. A $PM_{2.5}$ (continuous) analyzer will be deployed at the 2nd Near-road station in San Ysidro (please see Addition section below and the NO_2 Near-road chapter for more information.

Section 2.3.1.4 Shutdowns (permanent):

None for 2017.

Section 2.3.1.5 Addition

ADDITION - 2nd Near-road in San Ysidro

The District has an EPA approved location for the 2nd Near-road site in the community of San Ysidro, near the border crossing at Fire and Rescue Station #29. This site is about 1 mile north of the border crossing (see the NO_2 chapter for greater detail). Start-up is anticipated for late 2018/early 2019.

ADDITION – Otay Mesa Point-of-Entry

At the time of the writing of this report, the EPA has requested that a $PM_{2.5}$-continuous sampler be located at or near the Otay Mesa POE. The District is actively pursuing siting this sampler near the Truck Crossing entry point. Start-up is anticipated for early/mid 2019.

Section 2.3.2 Monitor/Sampler/Equipment Relocations, Shutdowns, Additions, and Changes

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

$PM_{2.5}$

RELOCATION - Kearny Villa Rd. (KVR) $PM_{2.5}$ Manual Collocated Sampler

Per EPA's recommendation, the District will relocate the $PM_{2.5}$ manual collocated sampler from Kearny Villa Rd. to a location of higher concentrations (the most logical site would be Escondido; typically, an area of higher concentrations) in 2018/2019.

ADDITION (in process) – Rancho Carmel Dr. (RCD)

At the time of the writing of this report, the District is in the process of installing a $PM_{2.5}$ FRM sampler at this near-road site, thus fulfilling our near-road particulate requirement. Anticipated start-up, late 2018.

PM_{10}

DECOMISSIOINING– Kearny Villa Rd. (KVR) PM_{10}

Based on our average concentration, the District is only required to operate 2-4 samplers. This station is surrounded by loose dirt and a dirt road. EPA has recommended decommissioning PM_{10} sampling here. Please see Appendix A for the EPA 58.14 report.

DECOMISSIOINING– Chula Vista (CVA) PM_{10}

Based on our average concentration, the District is only required to operate 2-4 samplers. This station routinely registers the lowest concentrations in the SDAB. Please see Appendix A for the EPA 58.14 report.

Pb-TSP

DECOMISSIONING – McClellan Palomar Airport (CRQ)

At the time of the writing of this report all the measured concentrations at the Palomar Airport location are well below 50% of the NAAQS. The District is petitioning to decommission regulatory lead sampling at this airport. Please see Appendix B of this chapter for the EPA report.

$PM_{2.5}$ (manual and continuous)

REPLACEMENT –

The District will begin replacing older $PM_{2.5}$ units with new units, starting in 2018 and continuing through 2019 for the continuous units and 2020 for the manual units.

OZONE FIELD TRANSFER STANDARDS

ADDITION –

In late 2018, the District will add a second ozone analyzer at 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 1.

PAMS

ADDITION PAMS RE-ENGINEERING

For 2019, the PAMS program will undergo a complete re-engineering. One of the requirements for this re-engineering is for it to be undertaken at our Lexington Elementary School (LES) NCore location. Much of equipment needed for the re-engineering will be purchased in 2018. Please see Appendix C for the PAMS Implementation Plan.

QC Functions

CHANGE

1. The District has re-sequenced all nightly QC checks to be: Monday-Saturday for Precision Checks; and, Sunday for SPANS.
2. All ambient level Precision Checks have been lowered allow for lower audits.
3. All ambient level calibrations levels have been lowered to allow for lower audits.
4. All ambient level certification levels have been lowered to allow for lower calibrations and audits.

For 2019

Section 2.4.0 List of Public Comments to this Report and the District Response(s)

The section addresses the comments from the public regarding inquiries to this report.

1. Posted for Public Review on April 13, 2018.

Chapter 2

Executive Summary

Appendices

CHAPTER 2, APPENDIX A

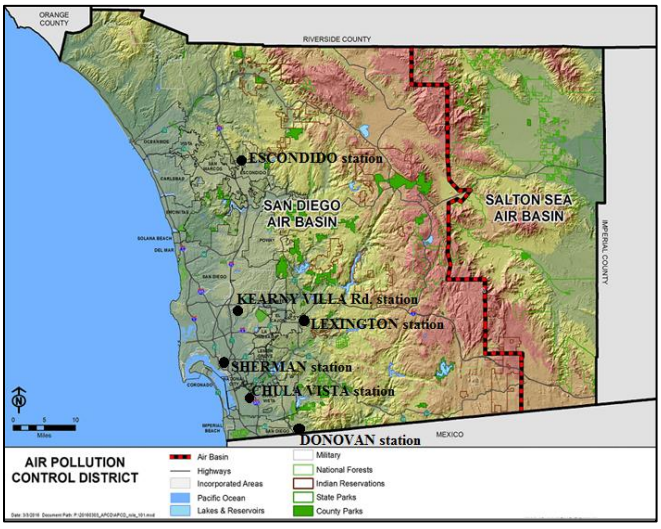
MONITORING & TECHNICAL SERVICES DIVISION
AMBIENT AIR QUALITY SECTION

58.14 REPORT

FOR

THE DECOMMISSIONING OF PM_{10} SAMPLING AT THE KEARNY VILLA RD. & CHULA VISTA STATIONS

February 16, 2018



Authors:

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Adam Canter
Associate Meteorologist, Meteorology and Modeling Section

San Diego APCD Formal Request to Decommission PM_{10} Sampling at the Kearny Villa Rd. and Chula Vista Stations

Request:
The San Diego Air Pollution Control District (District) is requesting the decommissioning of the PM_{10} samplers at the Kearny Villa Road (KVR) and Chula Vista (CVA) stations that are designated to measure ambient levels of particulate air pollution.

Reason(s):

1. The measured levels of PM_{10} concentrations at these locations are less than 80% of the NAAQS.
2. According to the 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_{10}) Design Criteria," the District is only required to operate the following PM_{10} samplers (See Table 1 PM_{10} Minimum Monitoring Requirements-Summary).
3. For KVR, the grounds surrounding the station are an open field. This adversely influences the true measured concentrations (the District cannot pave any area, due to proximity to vernal pools).
4. For KVR, the EPA recommended decommissioning during the 2017 Technical Systems Audit, based on items 1-3.

Monitor/Station Decommissioning Requirements

- Monitors are eligible based on 40 CFR 58.14 (c)(1)
- No longer needed/measure concentrations well below the NAAQS - 40 CFR 58.14(c).

Other Information

Table 1 PM_{10} Minimum Monitoring Requirements - Summary

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Is the Design Value Site Low/Medium/High Concentration?	Number of PM_{10} Samplers Required (#)	Number of PM_{10} Samplers Active (#)	Number of PM_{10} Samplers Needed (#)
San Diego	San Diego	3.4 million	Low	2 - 4	4	None

At the time for the writing of this report, the District has four (4) active PM_{10} samplers located at:

1. Donovan (the Design Value site)
2. Lexington Elementary School (NCore)
3. Chula Vista
4. Kearny Villa Rd.

By late-2018/2019, two more stations, Escondido and Sherman Elementary School, should be active and they will have PM_{10} samplers, bringing the total to six (6) stations, including KVR and CVA. If the PM_{10} samplers from KVR and CVA are allowed to be decommissioned, the total will be at the EPA minimum of two (2) stations with PM_{10} samplers. Once the Escondido and Sherman Elementary School stations become active, the total will be the EPA maximum of four (4) stations. Please note: the District will continue to operate the KVR and CVA PM_{10} samplers until EPA makes an official ruling.

Calculation Information
An accounting of the last five (5) years of data for the monitors/samplers that are regulatory and can be compared to the NAAQS.

- All data are from AQS
- Student's t-value for n-1 degrees of freedom at 90% confidence interval
  (5 trials-1= 4) at 90% confidence interval= 2.132
- Probability of less than 10% of exceeding 80%

  Average + {[(Student's t-value for n-1 degrees of freedom at 90% confidence interval) * Standard deviation)] ÷ (Sqrt (n))}

Sampler Decommission Applicability for KVR

An accounting of the last five (5) years of data for the samplers that are regulatory and can be compared to the NAAQS are in Tables 3a-3b.

Table 3a KVR PM_{10} Sampler Maximum 24-hr Concentration

Pollutant	NAAQS	2013 ($\mu g/m_3$)	2014 ($\mu g/m_3$)	2015 ($\mu g/m_3$)	2016 ($\mu g/m_3$)	2017 ($\mu g/m_3$)	Average ($\mu g/m_3$)	Std Dev	Units	n	t	NAAQS ($\mu g/m_3$)
PM_{10}	24-Hr	39	39	39	36	47	40.0	4.12	ppm	5	2.132	150.0

Table 3b KVR PM_{10} Sampler Eligibility for Decomissioning

Pollutant	NAAQS	80% NAAQS	(c)(1) Probability		
PM_{10}	24-Hr	120.0	43.9	µg/m3	yes

Sampler Decommission Applicability for CVA

An accounting of the last five (5) years of data for the samplers that are regulatory and can be compared to the NAAQS are in Tables 4a-4b.

Table 4a CVA PM_{10} Sampler Maximum 24-hr Concentration

Pollutant	NAAQS	2013 ($\mu g/m_3$)	2014 ($\mu g/m_3$)	2015 ($\mu g/m_3$)	2016 ($\mu g/m_3$)	2017 ($\mu g/m_3$)	Average ($\mu g/m_3$)	Std Dev	Units	n	t	NAAQS ($\mu g/m_3$)
PM_{10}	24-Hr	38	37	46	48	59	45.6	8.91	ppm	5	2.132	150.0

Table 4b CVA PM_{10} Sampler Eligibility for Decomissioning

Pollutant	NAAQS	80% NAAQS	(c)(1) Probability		
PM_{10}	24-Hr	120.0	54.1	µg/m3	yes

CHAPTER 2, APPENDIX B

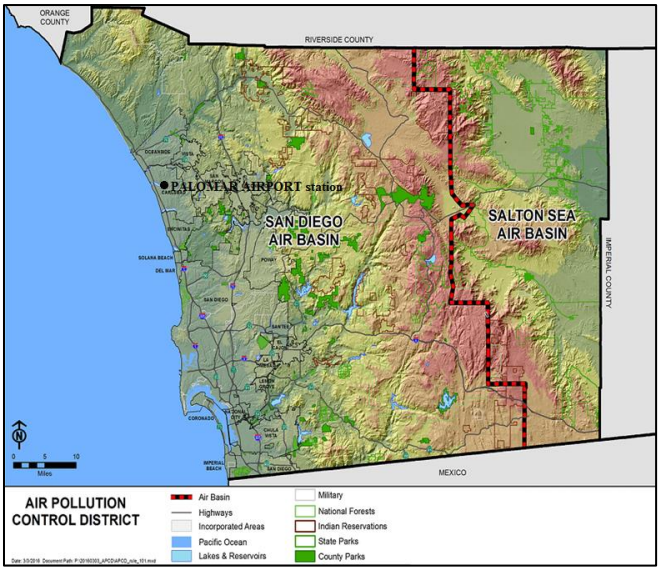
MONITORING & TECHNICAL SERVICES DIVISION
AMBIENT AIR QUALITY SECTION

40 CFR PART 58 APP. D 4.5(a)(iii) REPORT

FOR

THE DECOMMISSIONING OF LEAD SAMPLING AT THE PALOMAR AIRPORT STATION

April 18, 2018



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San Diego APCD Formal Request to Decommission Lead sampling at the Palomar Airport Station.

Request:
The San Diego Air Pollution Control District (District) is requesting the decommissioning of lead (Pb) sampling via TSP at the Palomar Airport (CRQ) station that is designated to measure source levels of airborne lead particulate pollution.

Reason(s):
The measured levels of lead Pb concentrations at this location are less than 50% of the NAAQS.

Monitor/Station Decommission Requirements

- Monitors are eligible based on 40 CFR 58, Appendix D, Section 4.5(a)(iii)
  (ii) The Regional Administrator may waive the requirement in paragraph 4.5(a) for monitoring near Pb sources if the State or, where appropriate, local agency can demonstrate the Pb source will not contribute to a maximum Pb concentration in ambient air in excess of 50 percent of the NAAQS (based on historical monitoring data, modeling, or other means). The waiver must be renewed once every 5 years as part of the network assessment required under § 58.10(d).
- No longer needed/measured concentrations less than 50% of the NAAQS.

Monitor Decommission Applicability for CRQ Using 50% of the NAAQS
If a sampler is collecting data that is shown to be less than of 50% of the NAAQS, that sampler/site is eligible for decommissioning. Table1 shows the maximum rolling 3-mo rolling average for Pb concentrations at CRQ for each of the three operational years (2015-2017); they are well less than 50% of the NAAQS. Furthermore, the measured concentrations at Palomar were comparable to the concentrations at our NCore location. Table 2 shows the maximum 3-mo rolling average at the NCore site for its operational years (2014-2016) for comparison purposes.

Table 1 CRQ Maximum 3-month Average

Pollutant	NAAQS	2015 ($\mu g/m^3$)	2016 ($\mu g/m^3$)	2017 ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	50% NAAQS
Pb	Rolling 3-mo Average	0.02	0.01	0.02	0.15	0.08

Table 2 NCore Maximum 3-month Average

Pollutant	NAAQS	2014 ($\mu g/m^3$)	2015 ($\mu g/m^3$)	2016 ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	50% NAAQS
Pb	Rolling 3-mo Average	0.01	0.01	0.01	0.15	0.08

Other Information

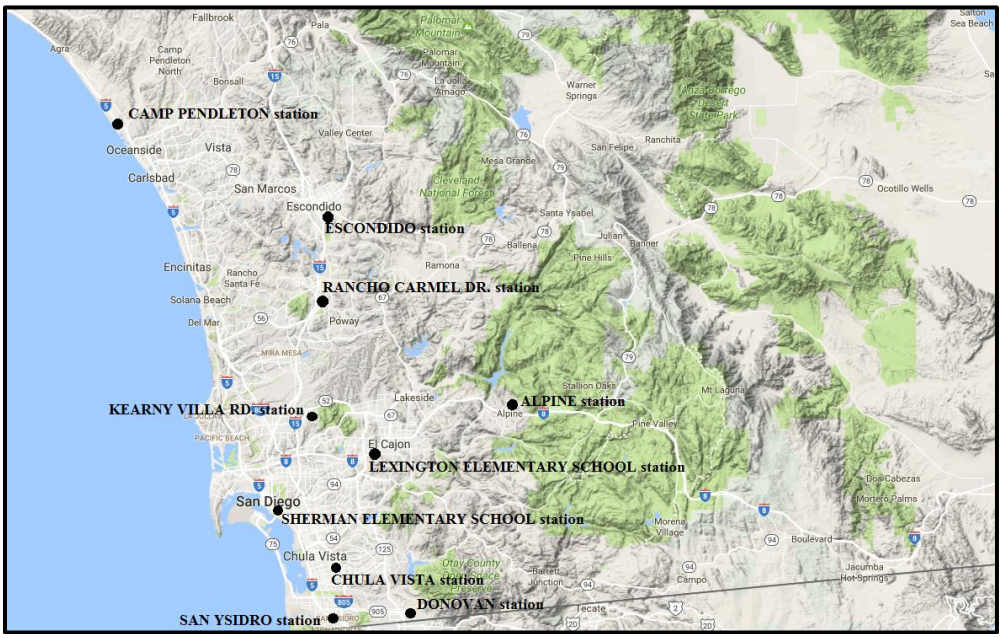
1. We have been sampling at the current location (starting 11/1/2014) for three (3) contiguous years.
2. The EPA's NEI database shows that the total emissions for lead at McClellan-Palomar Airport have been declining over the last several years. See below:
   - 2008 0.59496707 Tons/year
   - 2011 0.38627340 Tons/year
   - 2014 0.35957746 Tons/year

CHAPTER 2, APPENDIX C

MONITORING & TECHNICAL SERVICES DIVISION
AMBIENT AIR QUALITY SECTION

PAMS IMPLEMENTATION PLAN

April 18, 2018



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PAMS Minimum Monitoring Requirements

The U.S. Environmental Protection Agency (EPA) Photochemical Assessment Monitoring Stations (PAMS) program was initiated to provide data to evaluate and support the development of air quality models and track trends in ozone precursor concentrations, so as to aid ongoing efforts to attain the ozone National Ambient Air Quality Standard (NAAQS). The EPA completed a multiyear re-evaluation of the PAMS program and codified these amendments. These amendments are included in the total requirements for PAMS and are listed in their entirety in the Title 40, Part 58, Appendix D-Network Design Criteria for Ambient Air Quality Monitoring, Chapter 5 Network Design for Photochemical Assessment Monitoring Stations (PAMS) and Enhanced Ozone Monitoring Code of Federal Regulations (CFR) and are below (Please Note-only those requirements that pertain to the San Diego APCD (District) are included):

(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:

(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 O3;

(4) Hourly averaged nitrogen oxide (NO), true nitrogen dioxide (NO_2), and total reactive nitrogen (NOy);

(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.

(e) The EPA Regional Administrator may grant a waiver to allow representative meteorological data from nearby monitoring stations to be used to meet the meteorological requirements in paragraph 5(b) where the monitoring agency can demonstrate the data is collected in a manner consistent with EPA quality assurance requirements for these measurements.

(g) At a minimum, the monitoring agency shall collect the required PAMS measurements during the months of June, July, and August.

(h) States with Moderate and above 8-hour O3 nonattainment areas and states in the Ozone Transport Region as defined in 40 CFR 51.900 shall develop and implement an Enhanced Monitoring Plan (EMP) detailing enhanced O3 and O3 precursor monitoring activities to be performed. The EMP shall be submitted to the EPA Regional Administrator no later than October 1, 2019 or two years following the effective date of a designation to a classification of Moderate or above O3 nonattainment, whichever is later. At a minimum, the EMP shall be reassessed and approved as part of the 5-year network assessments required under 40 CFR 58.10(d). The EMP will include monitoring activities deemed important to understanding the O3 problems in the state. Such activities may include, but are not limited to, the following:

(1) Additional O3 monitors beyond the minimally required under paragraph 4.1 of this appendix,

(2) Additional NO_X or NOy monitors beyond those required under 4.3 of this appendix,

(3) Additional speciated VOC measurements including data gathered during different periods other than required under paragraph 5(g) of this appendix, or locations other than those required under paragraph 5(a) of this appendix, and

(4) Enhanced upper air measurements of meteorology or pollution concentrations.

Current PAMS Network Information

To ensure uniformity and compliance with the changes to the PAMS program, monitoring organizations are to submit a PAMS Implementation Plan for required PAMS locations and any waivers to the EPA Regional Offices. This document is prepared and submitted as fulfillment of this requirement. It describes the ambient air quality monitors, samplers, analyzers, sampling schedules, sampling durations, and targets and optional compounds that will be used to fulfill these new PAMS requirements of the 40 CFR, Part 58, Appendix D to Part 58, Chapter 5-Network Design for Photochemical Assessment Monitoring Stations and Enhanced Ozone Monitoring.

DECISION: PAMS Network

☐ As a result of the PAMS re-engineering, the District will reorganize and reconfigure the PAMS network to reflect these changes and be instituted at the NCore location for the San Diego-Carlsbad CBSA location at the Lexington Elementary School (LES) station. All required post-PAMS re-engineering equipment will be deployed at the NCore/LES station, except for the ceilometer (please see the Meteorology Measurements chapter for further information). A complete inventory of the equipment is in Table 1 PAMS Equipment at NCore/Lexington Elementary School.

Table 1 PAMS Equipment at NCore/Lexington Elementary School

Parameter	Manufacturer	Analysis Method	Collection Method	Reference Method	Frequency	Duration
O_3	Thermo 49i	Ultraviolet	Not Applicable	EQOA-0880-047	1:1	24/7
NOx (optional)	Thermo 42i	Chemiluminescence	Not Applicable	RFNA-1289-074	1:1	24/7
NOy	Thermo 42i-NOy	Chemiluminescence	Not Applicable	Not Applicable	1:1	24/7
NO_2	T-API T-500U	Cavity Attenuated Phase Shift	Not Applicable	EQNA-0514-212	1:1	24/7
Wind speed	Qualimetrics Model 2030	Anemometer	Not Applicable	Not Applicable	1:1	24/7
Wind direction	Qualimetrics Model 2020	Cup and Vane	Not Applicable	Not Applicable	1:1	24/7
Temperature	RM Young Model 41382VF	Thermocouple	Not Applicable	Not Applicable	1:1	24/7
Relative humidity	RM Young Model 41382VF	Capacitance	Not Applicable	Not Applicable	1:1	24/7
Atmospheric pressure	Met One Model 092	Digital Barometer	Not Applicable	Not Applicable	1:1	24/7
Precipitation	Met One Model 370	Tipping bucket	Bucket	Not Applicable	1:1	24/7
Solar radiation	Met One Model 094	Photoelectric cell	Not Applicable	Not Applicable	1:1	24/7
Ultraviolet radiation	Konen SUV5	Photoelectric cell	Not Applicable	Not Applicable	1:1	24/7
VOC	Xontech 901	Agilent-Markes Unity w/ Agilent 7890B GC (8-channels)	Summa Canisters	TO-14A	1:6	24-hr
Carbonyls	Atec 8000	Agilent Series 1200 HPLC	DNPH cartridges	TO-11A	1:3	Three 8-hr

DECISION: VOC-Auto GC

☐ The District will opt in the National Contract to procure the Agilent-Markes Unity with Agilent 7890B GC (8-channels) auto GC and follow TO-14A and the District SOP. A complete list of the target compounds via GC analysis are in Table 2 PAMS VOC Target Compounds. Initially, the District will optimize the PAMS analysis for the compounds. After the Target Compound analysis is optimized, the District will phase in the Optional compounds, methodically adjusting and vetting the changes to the PAMS analysis method to account for these additional compounds.

Table 2 PAMS VOC Target Compounds

	PRIORITY Compounds
1	1,2,3-Trimethylbenzene
2	1,2,4-Trimethylbenzene
3	1-Butene
4	2,2,4-Trimethylpentane
5	Benzene
6	cis-2-Butene
7	Ethane
8	Ethylbenzene
9	Ethylene
10	Isobutane
11	Isopentane
12	Isoprene
13	m-Xylene
14	p-Xylene
15	m-ethyltoluene (3-ethyltoluene)
16	n-Butane
17	n-Hexane
18	n-Pentane
19	o-ethyltoluene (2-ethyltoluene)
20	o-Xylene
21	p-ethyltoluene (4-ethyltoluene)
22	Propane
23	Propylene
24	Styrene
25	Toluene
26	trans-2-Butene

	OPTIONAL Compounds
1	1,3,5-Trimethylbenzene
2	1-Pentene
3	2,2-Dimethylbutane
4	2,3,4-Trimethylpentane
5	2,3-Dimethylbutane
6	2,3-Dimethylpentane
7	2-Methylheptane
8	2-Methylhexane
9	3-Methylpentane
10	Acetylene
11	cis-2-Pentene
12	Cyclohexane
13	Cyclopentane
14	Isopropylbenzene
15	m-Diethylbenzene
16	n-Decane
17	n-Heptane
18	n-Nonane
19	n-Octane
20	n-Propylbenzene
21	n-Undecane
22	p-Diethylbenzene
23	Trans-2-pentene
24	α/β-Pinene
25	1,3-Butadiene
26	Carbon tetrachloride

DECISION: Meteorological Measurements

☐ Except for mixing height, all surface meteorological measurements will be undertaken at the NCore/LES station. Table 3a PAMS Meteorological Measurements has a list of all the equipment manufacturers.

Table 3a PAMS Meteorological Measurement Equipment

Parameter	Manufacturer	Analysis Method	Collection Method	Reference Method	Frequency	Duration
Wind speed	Qualimetrics Model 2030	Anemometer	Not Applicable	Not Applicable	1:1	24/7
Wind direction	Qualimetrics Model 2020	Cup and Vane	Not Applicable	Not Applicable	1:1	24/7
Temperature	RM Young Model 41382VF	Thermocouple	Not Applicable	Not Applicable	1:1	24/7
Relative humidity	RM Young Model 41382VF	Capacitance	Not Applicable	Not Applicable	1:1	24/7
Atmospheric pressure	Met One Model 092	Digital Barometer	Not Applicable	Not Applicable	1:1	24/7
Precipitation	Met One Model 370	Tipping bucket	Bucket	Not Applicable	1:1	24/7
Solar radiation	Met One Model 094	Photoelectric cell	Not Applicable	Not Applicable	1:1	24/7
Ultraviolet radiation	Konen SUV5	Photoelectric cell	Not Applicable	Not Applicable	1:1	24/7

☐ The District requests a waiver to allow mixing height measurements to be undertaken at a different location. There is no area to safely situate the ceilometer at the NCore/LES location (The recent EPA Region 9 Technical Systems Audit has verified this reality). Rationale for this non-NCore location is in Appendix 1 Alternate Ceilometer Location. The proposed equipment is in Table 3b PAMS Mixing Height Equipment.

Table 3b PAMS Mixing Height Equipment

Parameter	Manufacturer	Analysis Method	Collection Method	Reference Method	Frequency	Duration
Mixing Height	Vaisala CL31	Laser Pulse	Not Applicable	Not Applicable	1:1	24/7

DECISION: Carbonyls

☐ The District will undertake carbonyl sampling with a frequency of three 8-hour samples on a one-in-three (1:3) day basis; analysis at District laboratory and will follow TO-11A and the District SOP. See Table 4 PAMS Carbonyl Equipment. A complete list of the target compounds via HPLC analysis are in Table 5 PAMS Carbonyls Target Compounds.

Table 4 PAMS Carbonyl Equipment

Parameter	Manufacturer	Analysis Method	Collection Method	Reference Method	Frequency	Duration
Carbonyls	Atec 8000	Agilent Series 1200 HPLC	DNPH cartridges	TO-11A	1:3	Three 8-hr

Table 5 PAMS Carbonyls Target Compounds

PRIORITY Compounds			OPTIONAL Compounds	
1	Acetaldehyde		1	Benzaldehyde
2	Acetone		2	Propionaldehyde
3	Formaldehyde			

DECISION: Nitrogen Oxides

☐ The District will monitor for NO and NOy (total oxides of nitrogen) in addition to true NO_2. See Table 6 PAMS Nitrogen Oxides Equipment.

Table 6 PAMS Nitrogen Oxides Equipment

Parameter	Manufacturer	Analysis Method	Collection Method	Reference Method	Frequency	Duration
NOx (optional)	Thermo 42i	Chemiluminescence	Not Applicable	RFNA-1289-074	1:1	24/7
NOy	Thermo 42i-NOy	Chemiluminescence	Not Applicable	Not Applicable	1:1	24/7
NO_2	T-API T-500U	Cavity Attenuated Phase Shift	Not Applicable	EQNA-0514-212	1:1	24/7

PAMS Purchasing Information

The District will opt in the National Contract to procure the following:

1. Agilent-Markes Unity with Agilent 7890B GC (8-channels) auto GC.
2. Agilent Chemstation software for the auto GC.
3. Teledyne-API Model T500U CAPS Nitrogen Dioxide Analyzer.
4. Vaisala CL31Ceilometer.
5. Gas standards, if made available

Please note: the District will make every effort to procure the equipment & instruments stated in Tables 1-6, but with current Federal purchasing requirements regarding the competitive bid process, the District may be compelled to procure equipment and instruments other than listed in the aforementioned tables. At the minimum, the District will stipulate that the equipment must meet or be better than EPA tolerances.

APPENDIX 1 ALTERNATE CEILOMETER LOCATION

PAMS re-engineering will require the San Diego Air Pollution Control District (District) to operate a ceilometer within its air monitoring network. Ideally, this would be located at our NCore site at Lexington Elementary School in El Cajon. Unfortunately, this site does not have room for a ceilometer and there is no room for expansion of our footprint on the school property (EPA R9 staff verified this during their most recent TSA). Another location must therefore be found.

One logical location would be at the District's Kearny Villa Road site. However, this site is in the flight pattern of the Miramar Marine Corps Air Station. Based on our experience with locating an atmospheric wind profiler at this site, the approval process would take an extremely long time with no guarantee of ever getting it approved.

A very similar location to El Cajon in terms of geography and meteorology is the District's Escondido site. This site is currently under renovation with a completion data in late 2018/early 2019. The District therefore proposes to install the Escondido site by July 1, 2019. This location will document the boundary layer typical of much of San Diego county.

CHAPTER 3 OZONE (O_3)

Section 3.0.0 Ozone Introduction

Ambient level Ozone was sampled on a continuous (7/24) basis at locations throughout the SDAB (Figure 3.0) and referenced to the ozone standard of the year (Table 3.0). The sampling equipment are listed in Table 3.1. Please note:

- In 2016, the District was evicted from our Downtown site and are in the process of locating a station in the Sherman Heights area.
- In 2015, the District was evicted from our Escondido site (it was on the City of Escondido property) and are in the process of relocating the station 20 meters southeast of the original location to be on San Diego County property.

Figure 3.0 Ozone Network Map

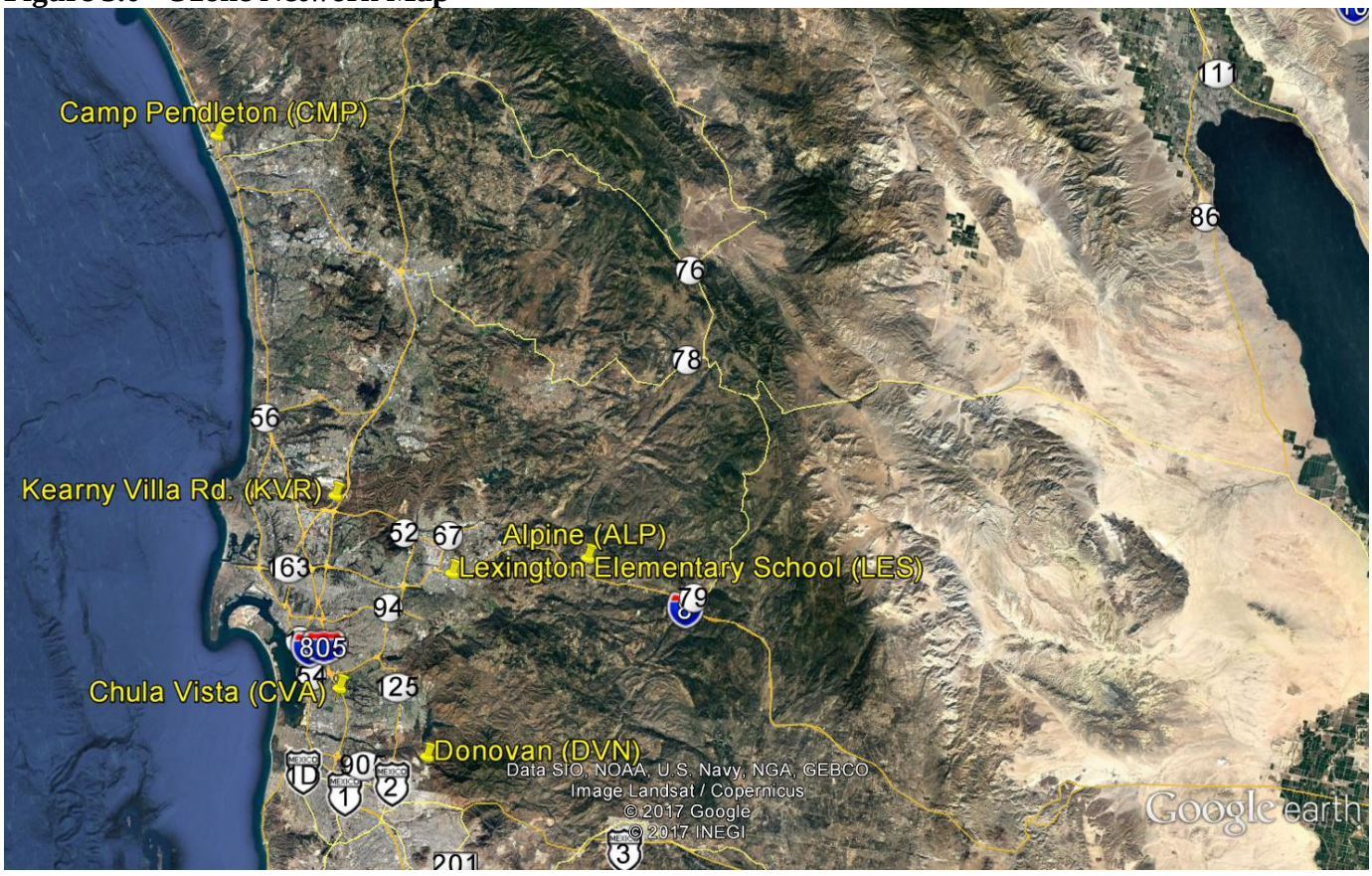


Table 3.0 Ozone State and Federal Standards for the Year

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards		National Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		

Table 3.1 Ozone Monitoring Network

	Abbreviation	ALP	CMP	CVA	LES	KVR	DVN
	Name	Alpine	Camp Pendleton	Chula Vista	Lexington	Kearny Villa Rd	Donovan
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1022	06-073-1016	06-073-1014
O_3	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Method	UV	UV	UV	UV	UV	UV
	Affiliation	PAMS	PAMS	Not Applicable	PAMS, NCore	Not Applicable	Not Applicable
	Spatial Scale	US	NS	NS	NS	NS	NS
	Site Type	MXO	UPDB	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

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
Q= 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= Monitors at sites meeting near road designs as per Part 58
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 3.1.0 Ozone Minimum Monitoring Requirements

The District is federally mandated to monitor O_3 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_3 network requirements, e.g. ambient O_3 monitor can fulfill a PAMS O_3 monitor requirement.

The District meets or exceeds all minimum requirements for O_3 monitoring for all programs.

Section 3.1.1 Ozone Minimum Monitoring Requirements-Design Value Criteria (8-Hr)

The District is required to operate a minimum number of O_3 monitors irrespective of O_3 network affiliations. To ascertain the minimum number of monitors required, the Design Value (DV) must be calculated. The DV is derived by averaging the last three years. Table 3.2 lists these DV requirements.

4.1 Ozone (O_3) Design Criteria[A]
(a) State, and where appropriate, local agencies must operate O_3 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_3 NAAQS). Specific SLAMS O_3 site minimum requirements are included in Table D-2.

Table D–2 of Appendix D to Part 58— SLAMS Minimum O_3 Monitoring Requirements

MSA population	*Most recent 3-year design value concentrations ≥85% of any O_3 NAAQS*	*Most recent 3-year design value concentrations <85% of any O_3 NAAQS*
350,000 - < 4 million	*2*	*1*

Table 3.2 Ozone Minimum Monitoring Requirements-Design Value Criteria (8-Hr), 2015-2017

What is the Maximum 8-Hr Design Value? (ppm)	Is the Maximum 8-Hr Design Value ≥ 85% of the NAAQS? (yes/no)	Is the Maximum 8-Hr Design Value < 85% of the NAAQS? (yes/no)	Does the Maximum 8-Hr Design Value Meet the NAAQS? (yes/no)	MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Number of Monitors (Sites) Required (#)	Number of Monitors (Sites) Active (#)	Number of Monitors (Sites) Needed (#)
0.084	Yes	No	No	San Diego	San Diego	3.4 million	2	6	None

Section 3.1.2 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 last three years. Table 3.3 lists these maximum concentrations site requirements.

4.1 Ozone (O_3) Design Criteria[B]
(b) Within an O_3 network, at least one O_3 site for each MSA must be designed to record the maximum concentration for that particular metropolitan area…

[A] (2016) 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_3) Design Criteria", subsection 4.1(a), list the requirements needed to fulfill the Ozone (O_3) Design Criteria.
[B] (2016) 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_3) Design Criteria", subsection 4.1(a), list the requirements needed to fulfill the Ozone (O_3) Design Criteria.

Table 3.3 Ozone Minimum Monitoring Requirements-Maximum Concentration Site Design Value, 2015-2017

Maximum 8-Hr Design Value Site (name)	Maximum 8-Hr Design Value Site AQS ID (#)	Maximum 8-Hr Design Value (ppm)
Alpine (ALP)	06-073-1006	0.084

Section 3.1.3 Ozone Minimum Monitoring Requirements-Ozone Season

All Districts are required to sample for ozone during ozone season as defined by Table D-3. Table 3.4 lists the ozone sampling season for the SDAB.

4.1 Ozone (O_3) Design Criteria[C]
(i) Ozone monitoring is required at SLAMS monitoring sites only during the seasons of the year that are conducive to O_3 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 3.4 Ozone Minimum Monitoring Requirements-Ozone 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

Section 3.1.4 Ozone Minimum Monitoring Requirements-PAMS

The District is required to operate Photochemical Assessment Monitoring Stations (PAMS). There are several associated requirements to operate a PAMS site (see the PAMS chapter for more detail). One of the requirements is to operate O_3 monitors. Table 3.5 lists PAMS Ozone (O_3) Monitoring requirements.

5. Network Design for Photochemical Assessment Monitoring Stations (PAMS) and Enhanced Ozone Monitoring[D]
(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:…(3) Hourly averaged O_3;

[C] (2016) 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_3) Design Criteria", subsection 4.1(i), list the requirements needed to fulfill the Ozone (O_3) Design Criteria.
[D] (2016) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 5, "Network Design for Photochemical Assessment Monitoring Stations (PAMS)", -subpart (3) "Ozone Monitoring Requirements"

Table 3.5 Ozone Minimum Monitoring Requirements-PAMS

Number of O_3 Monitors Required at PAMS Sites (#)	Number of O_3 Monitors Active at PAMS Sites (#)	Number of O_3 Monitors Needed at PAMS Sites (#)	PAMS Sites/Locations (name)	PAMS Sites/Locations AQS ID (#)
3	3	None	Lexington (LES) Alpine (ALP) Camp Pendleton (CMP)	06-073-1022 06-073-1006 06-073-1008

Section 3.1.5 Ozone Minimum Monitoring Requirements-NCore

The District is required to operate an O_3 monitor as part of the NCore multipollutant monitoring program. This program was designed to measure pollutants at lower levels, low ppb-ppt range. Unlike the other gaseous pollutant requirements for NCore, O_3 is not required to be quantified at the lower (trace) levels. Table 3.6 lists the NCore O_3 requirements.

> *3. Design Criteria for NCore Sites*[E]
> *(b) The NCore sites must measure, at a minimum, $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$, $PM_{10-2.5}$ particle mass, O_3, SO_2, CO, NO/NO_Y, wind speed, wind direction, relative humidity, and ambient temperature.*

Table 3.6 Ozone Minimum Monitoring Requirements-NCore

Number of O_3 Monitors Required for NCore Sites (#)	Number of O_3 Monitors Active at NCore Sites (#)	Number of O_3 Monitors Needed at NCore Sites (#)	NCore Sites/Locations (name)	NCore Sites/Locations AQS ID (#)
1	1	None	Lexington (LES)	06-073-1022

Section 3.1.6 Ozone Minimum Monitoring Requirements-Summary

Table 3.7 summarizes all the O_3 minimum monitoring requirements from Sections 3.1.1-3.1.5.

Table 3.7 Ozone Minimum Monitoring Requirements-Summary

Requirements for O_3 Monitors for CFR Programs (name)	Number of O_3 Monitors Required (#)	Number of O_3 Monitors Active (#)	Number of O_3 Monitors Needed (#)
CFR EPA Table D-2 only=	2	6	None
PAMS only=	3	3	None
NCore only=	1	1	None

[E] (2016) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore sites", subpart (b)

Section 3.2.0 Ozone Suitability for Comparison to the NAAQS

The CFR requires that for O_3 data to be used in regulatory determinations of compliance with the O_3 NAAQS, the O_3 monitors must be sited according to Federal Regulations[F] and the sampling frequency must be in accordance with Federal Regulations[G]. All District O_3 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_3	44201	ppm	007	1-Hr	1	Thermo 49 series	Ultraviolet absorption	047	7/24	EQOA-0880-047

Section 3.3.0 Ozone Concentrations for San Diego

Over the last few years, the ozone concentration has been fluctuating between 79-83 ppb. This section will illustrate the different metrics for comparison.

Section 3.3.1 Ozone Concentrations for San Diego-for the Last 20 Years

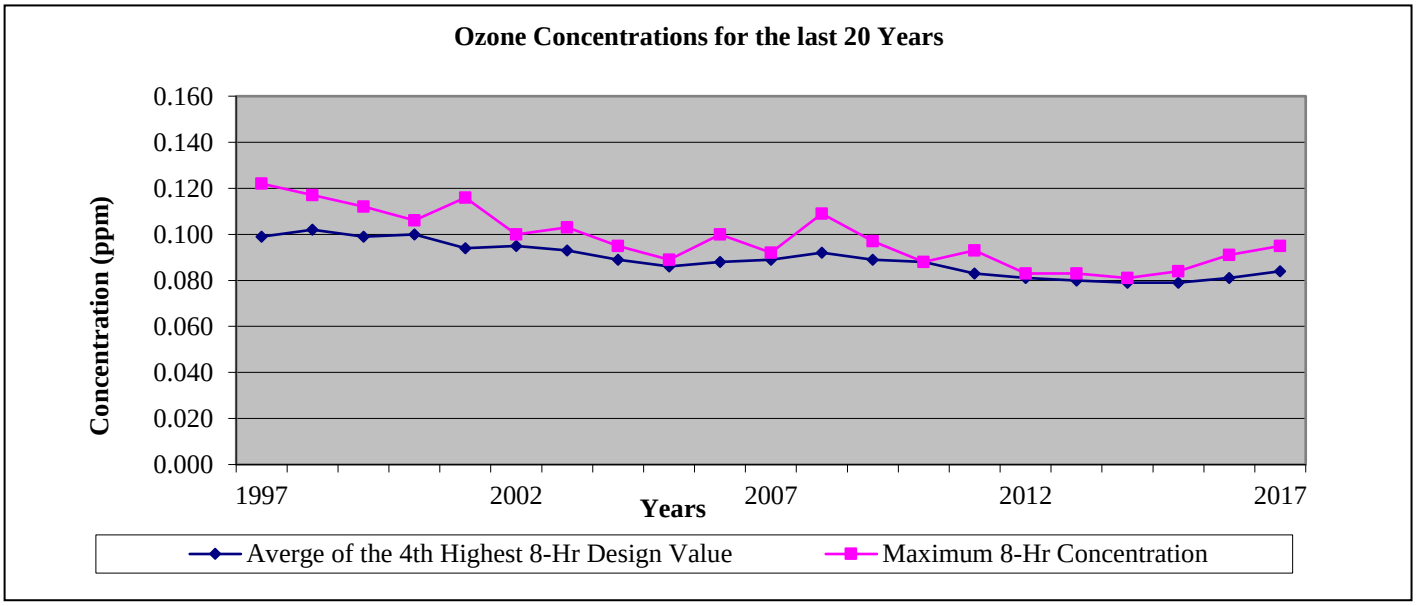
San Diego has realized a significant decrease in the 3-yr average of the exceedance days for ozone and has seen a sharp decrease in its 8-hour Design Value since 1990 (Table 3.9 and Figure 3.1). Note: the "Days Above the National 8-Hr Standard." row in Table 3.9 reflect the ozone standard for that year.

Table 3.9 Ozone Concentrations for San Diego-for the Last 20 Years, 1997-2017

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Average of the 4th Highest 8-Hr Design Value (ppm)	0.099	0.102	0.099	0.100	0.094	0.095	0.093	0.089	0.086	0.088	0.089	0.092	0.089	0.088	0.083	0.081	0.080	0.079	0.079	0.081	0.084
Maximum 8-Hr Concentration (ppm)	0.122	0.117	0.112	0.106	0.116	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
Days above the National 8-Hr Standard	43	58	44	46	43	31	38	23	24	38	27	35	24	14	10	10	7	12*	13	13	55

*Includes data impacted by local fires. These days have been coded as Exceptional Events in the AQS.

Figure 3.1 Ozone Concentrations for San Diego-for the Last 20 Years Graph, 1997-2017



[F] (2016) 40 CFR Part 58, Appendix E, "Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring" and Table E-4.
[G] (2016) 40 CFR Part 58.12, Subpart B, "Operating Schedules".

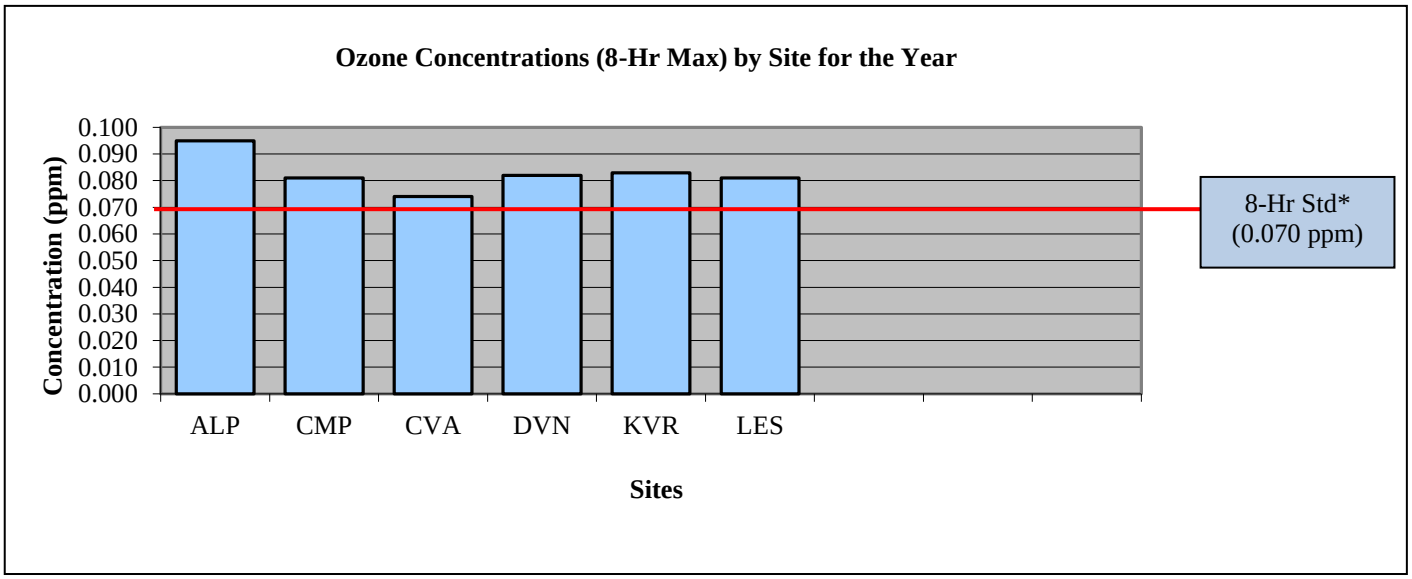
Section 3.3.2 Ozone Concentrations for San Diego-by Site for the Year

Table 3.10 lists the maximum ozone measurements for every ozone monitoring location and Figure 3.2 show the values graphically with respect to the National Standard for the year (Note: these are not Design Value concentrations, so the comparison to the standard is for informational use only).

Table 3.10 Ozone Concentrations for San Diego-by Site for the Year, 2017

No. (#)	Site (name)	Site Abbreviation (name)	Maximum Concentration for 8-Hrs (ppm)	Number of Days Above the National Standard (#)	Annual Average (ppm)
1	Alpine	ALP	0.095	49	0.045
2	Camp Pendleton	CMP	0.081	4	0.035
3	Chula Vista	CVA	0.074	1	0.029
4	Donovan	DVN	0.082	6	0.034
5	Kearny Villa Road	KVR	0.083	6	0.033
6	Lexington	LES	0.081	8	0.032

Figure 3.2 Ozone Concentrations for San Diego-by Site for the Year Graph, 2017



*Note: the NAAQS is written for Design Value calculations; therefore the concentrations calculated for the year are not comparable to the NAAQS. The listed NAAQS is for informational purposes only.

Section 3.3.3 Ozone Concentrations for San Diego-by Site for Design Value

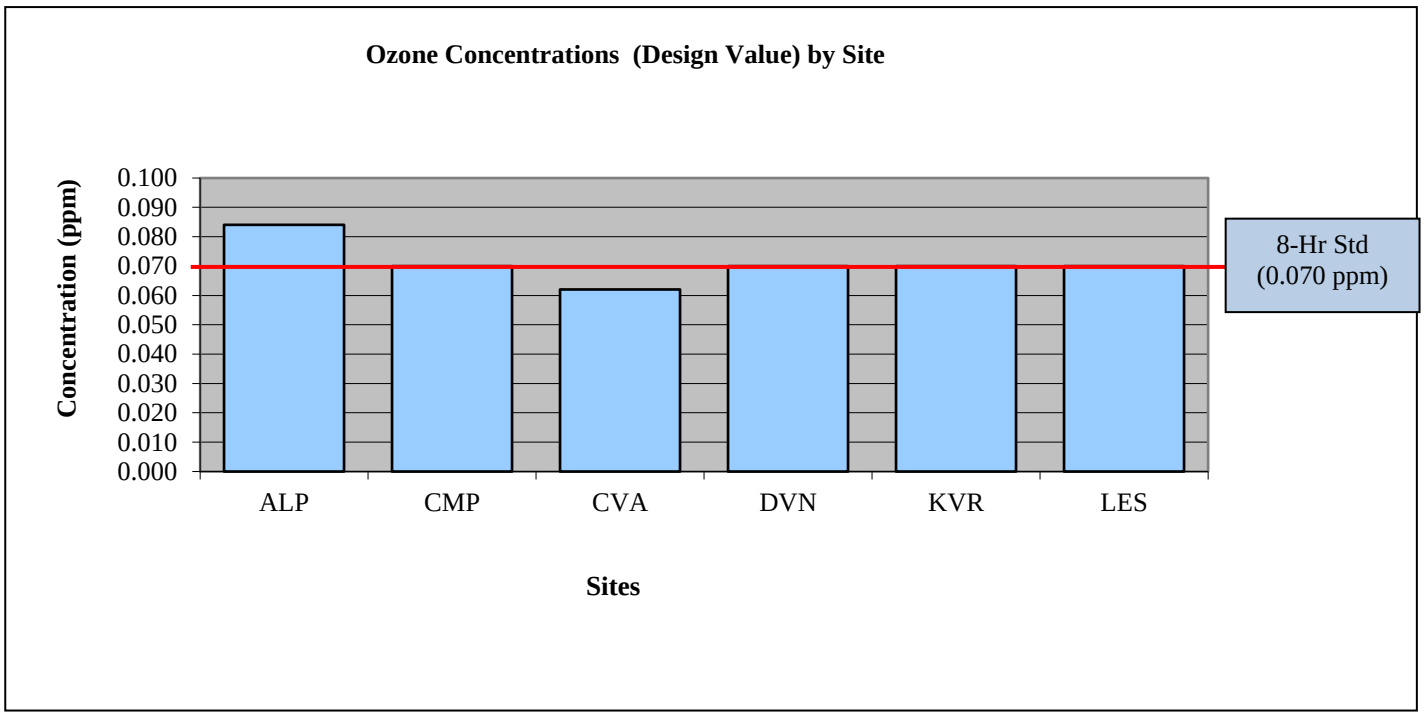
Table 3.11 lists the maximum ozone measurements for every ozone monitoring location and Figure 3.3 show the values graphically for the Design Value.

Table 3.11 Ozone Concentrations for San Diego-by Site for Design Value, 2015-2017

No. (#)	Site (name)	Site Abbreviation (name)	Design Value for 8-Hrs (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	Alpine	ALP	0.084	Yes	No
2	Camp Pendleton	CMP	0.070	Yes	Yes
3	Chula Vista	CVA	0.062	Yes	Yes
4	Donovan	DVN	0.070	Yes	Yes
5	Kearny Villa Road	KVR	0.070	Yes	Yes
6	Lexington Elementary	LES*	0.070	Yes	Yes

*FSD & LES were combined to for this calculation

Figure 3.3 Ozone Concentrations for San Diego-by Site for Design Value Graph, 2015-2017



CHAPTER 4 NITROGEN DIOXIDE (NO_2) AND REACTIVE OXIDES OF NITROGEN (NOY)

Section 4.0.0 Nitrogen Dioxide and Reactive Oxides of Nitrogen Introduction

Ambient level nitrogen dioxide was sampled on a continuous basis at locations throughout the SDAB (Figure 4.0) and referenced to the nitrogen dioxide standards of the year (Table 4.0). The sampling equipment are listed in Table 4.1. Please note:

- In 2016, the District was evicted from our Downtown site and are in the process of locating a station in the Sherman Heights area.
- In 2015, the District was evicted from our Escondido site (it was on the City of Escondido property) and are in the process of relocating the station 20 meters south east of the original location to be on San Diego County property.
- NOy sampling was not undertaken at the new NCore location in 2017.

Figure 4.0 Nitrogen Dioxide & NOy Network Map

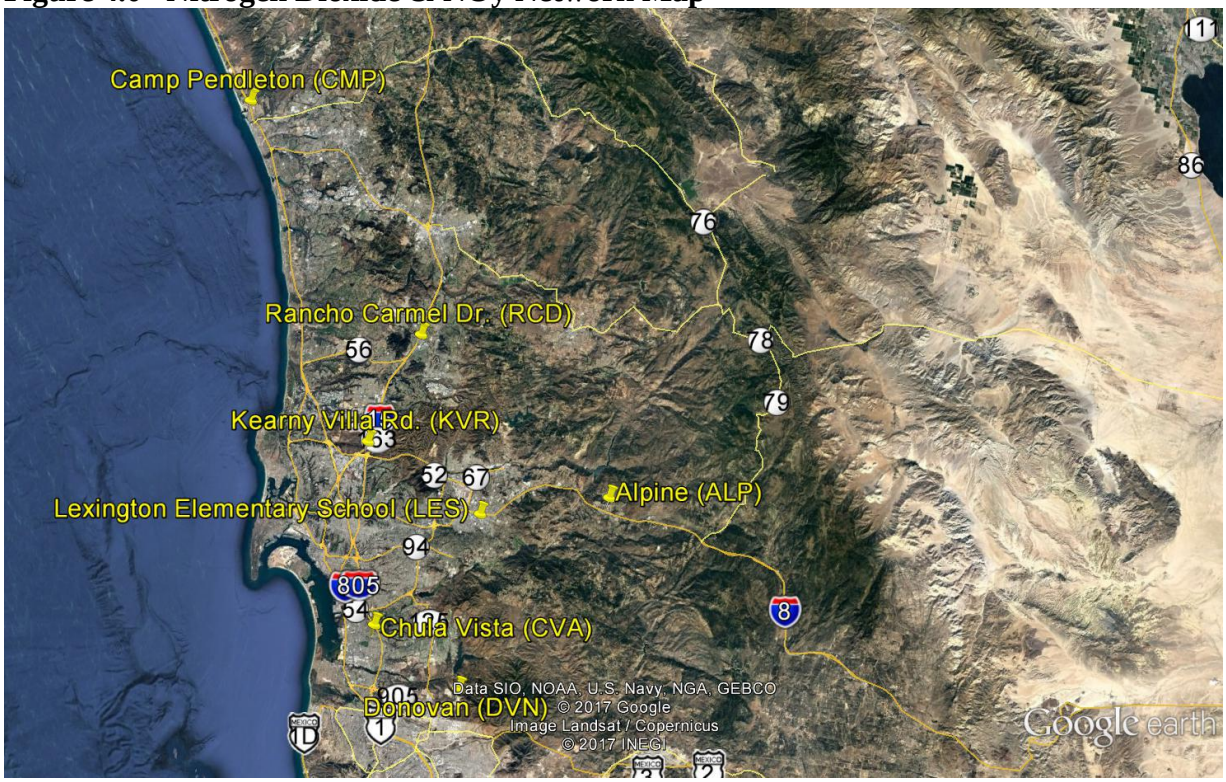


Table 4.0 Nitrogen Dioxide State and National Standards for the Year*

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards		National Standards		
		Concentration	Method	Primary	Secondary	Method
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	

*The NOy analyzer is non-regulatory; therefore there are no NAAQS to compare. The NOx and NOy measurements are comparable in the SDAB.

Table 4.1 Nitrogen Dioxide & Reactive Oxides of Nitrogen Sampling Network

	Abbreviation	ALP	CMP	CVA	LES	KVR	DVN	RCD
	Name	Alpine	Camp Pendleton	Chula Vista	Lexington Elementary School	Kearny Villa Rd	Donovan	Rancho Carmel Dr.
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1022	06-073-1016	06-073-1014	06-073-1017
NO_2 & NOy	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Designation	PRI	PRI	PRI	PRI	PRI	PRI	PRI
	Method	CL	CL	CL	CL	CL	CL	CL
	Affiliation	PAMS	PAMS	Not Applicable	PAMS	Not Applicable	SLAMS	Not Applicable
	Spatial Scale	US	NS	NS	NS	NS	NS	MI
	Site Type	PE	UPBD	PE	PE	PE	PE	SO
	Objective (Federal)	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS
	Equipment	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i

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
Q= 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= Monitors at sites meeting near road designs as per Part 58
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 4.1.0 Nitrogen Dioxide Minimum Monitoring Requirements

The District is federally mandated to monitor NO_2 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 as fulfilling other NO_2 network requirements, e.g. ambient NO_2 monitor can fulfill a PAMS NO_2 monitor requirement.

The District meets or exceeds all minimum requirements for NO_2 monitoring for all programs except for the following:

- Establishment of the 2nd Near-road location (highlighted in red).

Section 4.1.1 Nitrogen Dioxide Minimum Monitoring Requirements -Near-road

In an effort to measure concentrations for some pollutants in communities located by roadways, the EPA instituted the Near-road monitoring program. Table 4.2 lists the Near-road monitors required for the SDAB.

> *4.3 Nitrogen Dioxide (NO_2) Design Criteria* [A]
> *4.3.2 Requirement for Near-road NO_2 Monitors*
> *(a) Within the NO_2 network, there must be one microscale near-road NO_2 monitoring station in each CBSA with a population of 500,000 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_2 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 500,000 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.*
>
> *(1) The near-road NO_2 monitoring stations shall be selected by ranking all road segments within a CBSA by AADT and then identifying a location or locations adjacent to those highest ranked road segments, considering fleet mix, roadway design, congestion patterns, terrain, and meteorology, where maximum hourly NO_2 concentrations are expected to occur and siting criteria can be met in accordance with appendix E of this part. Where a State or local air monitoring agency identifies multiple acceptable candidate sites where maximum hourly NO_2 concentrations are expected to occur, the monitoring agency shall consider the potential for population exposure in the criteria utilized to select the final site location. Where one CBSA is required to have two near-road NO_2monitoring stations, the sites shall be differentiated from each other by one or more of the following factors: fleet mix; congestion patterns; terrain; geographic area within the CBSA; or different route, interstate, or freeway designation.*

Table 4.2 Nitrogen Dioxide Minimum Monitoring Requirements -Near-road

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Number of NO_2 Near-road Monitors Required (#)	Are Additional NO_2 Near-road Monitors Required? (yes/no)	Number of Additional NO_2 Near-road Monitors Required (#)	Number of NO_2 Near-road Monitors Required (total) (#)	Number of NO_2 Near-road Monitors Active (#)	Number of NO_2 Near-road Monitors Needed (#)
San Diego	San Diego	3.4 Million	1	Yes	1	2	1	1

[A] (2016) 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_2) Design Criteria", subpart 4.3.2 "Requirement for Near-road monitors"

Section 4.1.1.1 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_2 near-road location is off of Rancho Carmel Drive (RCD).

Section 4.1.1.2 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, i.e. fleet mix, terrain, geographic area, different roadway, etc. The District has successfully located an area near the San Ysidro Point-of-Entry (POE).

This location is at Interstate-5 at Cottonwood Road at Fire Station #29. This site has been verbally approved by EPA-National authorities and visited by EPA Region 9 authorities; consequently, the District entered into negotiations with the City regarding the terms of the Memorandum of Understanding. All Near-road candidate locations must be formally approved by EPA. This process requires filling out an EPA Near-road template. Table 4.3 is the formal application for the San Ysidro Near-road location.

Table 4.3 Nitrogen Dioxide Minimum Monitoring Requirements -Near-road (second site) Matrix

No.	Condition	Notes
1	Plan submitted by July 1, 2014	No. All previous siting attempts did not come to fruition
2	Submitted for public comment	Yes in the 2016 & 2017 Network Plans
3	Anticipated start-up	October 2018
3	AQS #	06-073-1025
5	Address and coordinates	32.552833°, -117.047360° 198 W San Ysidro Blvd, San Diego, CA 92173 in Fire Station #29 parking lot
6	Sampling & analysis method	NOx (Chemiluminescence) & PM2.5 (continuous)
7	Sampling & analysis duration	NOx=24/7 (Year-long), PM2.5(continuous)= 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 NOx Public Information, Microscale for non-FEM PM2.5(continuous)
10	CBSA	San Diego-Carlsbad-San Marcos
11	CBSA population & year	3.4 million (estimated from 2010 census)
12	Maximum AADTcounts & year	**FE AADT (estimated)=** 69,457 **AADT=** 49,000 **HDc (estimated)=** 2,273 **Ranking (County)=** 283 (of 500 County-wide ranked segments) If you take out the road segments that cannot be used, because of their proximity to the 1st near road site and if you take out the road segments that cannot be used due to planned highway expansion (Interstate 5 between State Routes 56 and 78), the **Ranking (County, adjusted)=** 241 Note: FE AADT= (AADT - HDc) + (HDm x HDc) HDc= High density count (trucks) HDm= High density multiplier (10)
13	Correct number of required NOx (NO2) monitors?	Two NOx (NO2) 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 2 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 at this site varies by the time of day. In the nighttime and early morning hours the winds are generally light out of the northeast, due to drainage and land breezes. These northeast winds are a bit stronger in the fall and winter than in the spring and summer months. By the late morning and continuing through the afternoon, the winds are usually from the west or southwest. Occasionally, but less frequently, 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 at the monitor. When northeast winds are blowing, or a Santa Ana occurs, emissions from I-5 will not be measured.
20	How is population exposure considered?	Residential community (see "Other" sections at the end of the table)
21	1st 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. 2nd Near-road site in San Ysidro will be almost flush with I-5, will be at the southernmost point of the air basin, and will have a higher mix of cars compared to trucks.
22	Distance from the target road?	3035 meters to on-ramp; 40 meters to target road segment
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. Several tall bushes must be removed and two trees must be removed.

The San Ysidro border crossing is one of the busiest POEs in the world. Vehicles entering and exiting the this POE emit air pollution when moving and at idle. Residents in the San Ysidro area have expressed concerns over the air quality impacts of this traffic in their communities along the freeways leading to and from the POE. Air quality measurements are needed in this area of the County to determine what steps, if any, 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 from north to south in the evening. Wait times and queue length are day of the week and holiday dependent, with holidays greatly

increasing wait times to hours. Normally, the Mon-Fri traffic experiences wait time of about 60 minutes, and weekend traffic wait times of 90-120 minutes are common.

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 to be higher, because of the long queues of cars (up to 7,000 feet long, depending on aforementioned metrics) in the multiple POE lanes. These queues of idling vehicles should increase the effective traffic count, but there is no mechanism to account for this phenomenon, thus the appearance of a low traffic count. Furthermore, the number of pedestrian crossings adds to the traffic count. Pedestrians can be dropped off at the POE, not cross the border, whereby not being tabulated in the vehicle crossing summary report. All this equates to a higher potential traffic count.

The most vulnerable to the effects of air pollution tend to be the very young and the elderly. The effects of air pollution are especially difficult for individuals with asthma, heart issues, and other related illnesses. Socioeconomic factors also play a role. People who have less than a high school education, households with linguistic isolation (English is not the primary language spoken at home), those in poverty, and populations with high unemployment rates to be more vulnerable to the harmful effects of air pollution.

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 pollution vulnerability to air pollution. Compared to other areas, this location ranks in the higher percentile bracket for $PM_{2.5}$, Pesticide, and Toxic release emissions, as well as higher percentile for cardiovascular disease, linguistic isolation, poverty, and less than a high school education.

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 comprehensive HHSA Health Status Report (2012), the South Region routinely is 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 4.4 lists these health indicators and compares the rates to the other regions in the county. For 2000-2009, the South Region was:

Table 4.4 Common Air Pollution Related Health Issues in the South Region of San Diego

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

San Ysidro is home to one of the busiest POEs in the world. The POE is largely a vehicle gateway to the United States. Vehicles emit air pollution both moving and at idle. There are many markers that indicate that the deleterious effects of air pollution are affecting the community. These markers all lead to a need for an air pollution monitoring presence in the community of San Ysidro.

Section 4.1.1.3 Nitrogen Dioxide Minimum Monitoring Requirements -Near-road (summary)

This section summarizes the Near-road information (Table 4.5)

Table 4.5 Nitrogen Dioxide Minimum Monitoring Requirements -Near-road (summary)

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	MAX AADT (2014) (#)	Location of Near-road Sites (#)	Are Near-road Sites Active? (yes/no)
San Diego	San Diego	3.4 million	370,947 69,457	Rancho Carmel Dr. San Ysidro Blvd.	yes NO

Section 4.1.2 Nitrogen Dioxide Minimum Monitoring Requirements-Area-wide

The District is required to label a monitor that routinely measures high concentrations of nitrogen dioxide. The Donovan monitor consistently registers the highest Maximum Concentration for 1-hr. and for the Annual Average therefore it is designed the Area-wide monitor. Table 4.6 lists the Area-wide NO_2 Monitoring requirements for the SDAB.

> *4.3 Nitrogen Dioxide (NO_2) Design Criteria*[B]
> *4.3.3 Requirement for Area-wide NO2 Monitoring*
> *(a) Within the NO_2 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_2 concentrations representing the neighborhood or larger spatial scales. PAMS sites collecting NO_2 data that are situated in an area of expected high NO_2 concentrations at the neighborhood or larger spatial scale may be used to satisfy this minimum monitoring requirement when the NO_2 monitor is operated year round. Emission inventories and meteorological analysis should be used to identify the appropriate locations within a CBSA for locating required area-wide NO_2 monitoring stations. CBSA populations shall be based on the latest available census figures.*

Table 4.6 Nitrogen Dioxide Minimum Monitoring Requirements-Area-wide

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Number of Area-wide NO_2 Monitors Required (#)	Number of Area-wide NO_2 Monitors Active (#)	Number of Area-wide NO_2 Monitors Needed (#)	Location of Area-wide Site (name)	AQS ID of Area-wide Site (#)	Does Area-wide Site Meet NAAQS? (yes/no)
San Diego	San Diego	3.4 Million	1	1	None	Donovan	06-073-1014	yes

[B] (2016) 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_2) Design Criteria", subpart 4.3.3 "Requirement for Area-wide Monitoring"

Section 4.1.3 Nitrogen Dioxide Minimum Monitoring Requirements-Regional Administrator

In an effort to obtain a pollutant profile in certain areas, often in or near Environmental Justice locations, the monitoring of nitrogen dioxide may be required by the EPA Regional Administrator. The Downtown station in Barrio Logan was in an Environmental Justice area and the District sampled for NO_2 as part of the Regional Administrator program. Due to eviction, the District was forced to relocate this station to Sherman Heights, about 1.2-km downwind of Barrio Logan. This new location has been designated a Regional Administrator monitor. Table 4.7 lists the Regional Administrator Designated NO_2 Monitoring requirements for the SDAB.

4.3 Nitrogen Dioxide (NO_2) Design Criteria[C]
4.3.4 Regional Administrator Required Monitoring
(a) The Regional Administrators, in collaboration with States, must require a minimum of forty additional NO_2 monitoring stations nationwide in any area, inside or outside of CBSAs, above the minimum monitoring requirements, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations.

Table 4.7 Nitrogen Dioxide Minimum Monitoring Requirements-Regional Administrator

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Number of Regional Administrator NO_2 Monitors Required (#)	Number of Regional Administrator NO_2 Monitors Active (#)	Number of Regional Administrator NO_2 Monitors Needed (#)	Location of Regional Administrator Site (name)	AQS ID of Regional Administrator Site (#)	Does Regional Administrator Site Meet NAAQS? (yes/no)
San Diego	San Diego	3.4 Million	1	*0	*0	Not Applicable	Not Applicable	Not Applicable

*The District was evicted from this location in Barrio Logan in late 2016. A new EPA approved site in Sherman Heights is being undertaken and will fulfill this requirement.

Section 4.1.4 Nitrogen Dioxide Minimum Monitoring Requirements-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 NOx monitors. Table 4.8 lists the PAMS NOx (NO_2) Monitoring requirements for the SDAB.

5.Network Design for Photochemical Assessment Monitoring Stations (PAMS)[D]
The PAMS program provides more comprehensive data on O_3 air pollution in areas classified as serious, severe, or extreme nonattainment for O_3 than would otherwise be achieved through the NCore and SLAMS sites. More specifically, the PAMS program includes measurements for …oxides of nitrogen…

5.1 PAMS Monitoring Objectives. PAMS design criteria are site specific. Concurrent measurements of NO_2 ... Design criteria for the PAMS network are based on locations...

5.3 Minimum Monitoring Network Requirements. A Type 2 site is required for each area... The minimum required number and type of monitoring sites and sampling requirements are listed in Table D-6 of this appendix.

Table D-6 of Appendix D to Part 58- Minimum Required PAMS Monitoring Locations and Frequencies

Measurement	***Where Required***	***Sampling Frequency***
NOx	*All Type 2 Sites*	*Hourly during the ozone monitoring season*

C (2016) 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_2) Design Criteria", subpart 4.3.4 "Requirement for Regional Administrator Monitoring"
D (2015) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 5, "Network Design for Photochemical Assessment Monitoring Stations (PAMS)", -subpart (4) "Hourly averaged nitrogen dioxide"

Table 4.8 Nitrogen Dioxide Minimum Monitoring Requirements-PAMS

PAMS Type 2 Sites/Locations (name)	PAMS Type 2 Sites/Locations AQS ID (#)	Number of NO_2 Monitors Required at PAMS Type 2 Sites (#)	Number of NO_2 Monitors Active at PAMS Type 2 Sites (#)	Number of NO_2 Monitors Needed at PAMS Type 2 Sites (#)
Lexington (LES)	06-073-1022	1	1	None

Section 4.1.5 Nitrogen Dioxide Minimum Monitoring Requirements-Summary

Table 4.9 summarizes all the NO_2 minimum monitoring requirements from Sections 4.1.1-4.1.4.

Table 4.9 Nitrogen Dioxide Minimum Monitoring Requirements-Summary

Requirements for NO_2 Monitors for CFR Programs (name)	Number of NO_2 Monitors Required (#)	Number of NO_2 Monitors Active (#)	Number of NO_2 Monitors Needed (#)
Near-road=	2	1	1
Regional Administrator=	1	0	0*
Area-Wide=	1	1	0
PAMS only=	1	1	0

*The District was evicted from this location in Barrio Logan in late 2016. A new EPA approved site in Sherman Heights is being undertaken and will fulfill this requirement.

Section 4.2.0 Reactive Oxides of Nitrogen Minimum Monitoring Requirements

The District is federally mandated to monitor NOy 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).

> *4.3 Nitrogen Dioxide (NO_2) Design Criteria*[E]
> *4.3.6 NO_y Monitoring*
> *(a) NO/NO_y measurements are included within the NCore multi-pollutant site requirements and the PAMS program. These NO/NO_y measurements will produce conservative estimates for NO_2 that can be used to ensure tracking continued compliance with the NO_2 NAAQS. NO/NO_y monitors are used at these sites because it is important to collect data on total reactive nitrogen species for understanding O_3 photochemistry.*

The District meets or exceeds all minimum requirements for NO_y monitoring except for the following:

- In 2014, the District received a waiver from the EPA granting temporary suspension of NOy monitoring at our temporary NCore location at Floyd Smith Drive (highlighted in red). When the District moved back to the original NCore location, NOy sampling did not resume, due to logistical issues, but will resume in 2018.

[E] (2016) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Pollutant-Specific Design Criteria for SLAMS Sites", part 4.3 "Nitrogen Dioxide (NO_2) Design Criteria", subpart 4.3.6 "NOy Monitoring"

Section 4.2.1 Reactive Oxides of Nitrogen Minimum Monitoring Requirements-PAMS

The District is required to operate a NOy monitor as part of the PAMS monitoring program. Table 4.10 lists the PAMS NOy monitoring requirements.

5. Network Design for Photochemical Assessment Monitoring Stations (PAMS) and Enhanced Ozone Monitoring[F]
5.3 Minimum Monitoring Network Requirements. A Type 2 site is required for each area... The minimum required number and type of monitoring sites and sampling requirements are listed in Table D-6 of this appendix. Any alternative plans may be put in place in lieu of these requirements, if approved by the Administrator.

Table D-6 of Appendix D to Part 58- Minimum Required PAMS Monitoring Locations and Frequencies

Measurement	***Where Required***	***Sampling Frequency***
NOy	*One site per area at a Type 3 or Type 1 site*	*Hourly during the ozone monitoring season*

Table 4.10 Reactive Oxides of Nitrogen Minimum Monitoring Requirements-PAMS

Number of NOy Monitors Required (#)	Number of NOy Monitors Active (#)	Number of NOy Monitors Needed (#)	Location of NOy Monitor Site (name)	AQS ID of NOy Monitor Site (#)
1	1 (Type II)	*0	Lexington (LES)	06-073-1022

*Not operational in 2017.

Section 4.2.2 Reactive Oxides of Nitrogen Minimum Monitoring Requirements-NCore

The District is required to operate a NOy monitor as part of the NCore multipollutant monitoring program. This program was designed to measure pollutants at lower levels, low ppb-ppt range, also called trace level. Table 4.11 lists the NCore NOy requirements.

3. Design Criteria for NCore Sites[G]
(b) The NCore sites must measure, at a minimum, $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$, $PM_{10-2.5}$ particle mass, speciated $PM_{10-2.5}$, O_3, SO_2, CO, NO/NO_y, wind speed, wind direction, relative humidity, and ambient temperature. NCore sites in CBSA with a population of 500,000 people (as determined in the latest Census) or greater shall also measure Pb either as Pb-TSP or Pb-PM_{10}. The EPA Regional Administrator may approve an alternative location for the Pb measurement where the alternative location would be more appropriate for logistical reasons and the measurement would provide data on typical Pb concentrations in the CBSA.

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

[F] (2016) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 5, "Network Design for Photochemical Assessment Monitoring Stations (PAMS)", -subpart (4) "Total reactive nitrogen (NOy)"
[G] (2016) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore sites", subpart (b) NCore sites must measure at a minimum.

Table 4.11 Reactive Oxides of Nitrogen Minimum Monitoring Requirements-NCore

MSA	County	Number of NCore NOy Monitors Required (#)	Number of NCore NOy Monitors Active (#)	Number of NCore NOy Monitors Needed (#)
San Diego	San Diego	1	*0	*0

*Not operational in 2017.

Section 4.2.3 Reactive Oxides of Nitrogen Minimum Monitoring Requirements-Summary

Table 4.12 summarizes all the NOy minimum monitoring requirements from Sections 4.2.1-4.2.2.

Table 4.12 Reactive Oxides of Nitrogen Minimum Monitoring Requirements-Summary

Requirements for NO_y Monitors for CFR Programs (name)	Number of NO_y Monitors Required (#)	Number of NO_y Monitors Active (#)	Number of NO_y Monitors Needed (#)
PAMS=	1	0	1*
NCore=	1	0	0

*Not operational in 2017, but operational in 2018.

Section 4.3.0 Nitrogen Dioxide Suitability for Comparison to the NAAQS

The CFR requires that for NO_2 data to be used in regulatory determinations of compliance with the NO_2 NAAQS, the NO_2 monitors must be sited according to Federal Regulations[H] and the sampling frequency must be in accordance with Federal regulations[I]. All District NO_2 monitors meet or exceed all minimum monitoring requirements and sampling frequencies, as to be able to be compared to the NAAQS. Table 4.13 summarizes these requirements. There is no NAAQS for NOy.

Table 4.13 Nitrogen Dioxide & Reactive Oxides of Nitrogen Sampling Equipment

	Parameter		Code	Unit	Code	Duration	Code	Equipment	Method	Code	Frequency	Method ID
Amb	Oxides of Nitrogen Nitrogen dioxide Nitric oxide	NOx NO_2 NO	42603 42602 42601	ppm	007	1-Hr	1	Thermo 42 series	Chemiluminescence	074	7/24	RFNA-1289-074
NCore	Reactive Oxides of Nitrogen Not Applicable Nitric oxide	NOy NOy-NO NO	42600 42612 42601	ppb	008	1-Hr	1	Thermo 42i-NOy	Chemiluminescence	574	7/24	Not Applicable

Section 4.4.0 Nitrogen Dioxide Concentrations for San Diego

Over the last few years, the nitrogen dioxide concentration levels have been fluctuating between 62-81 ppb. This section will illustrate the different metrics for comparison.

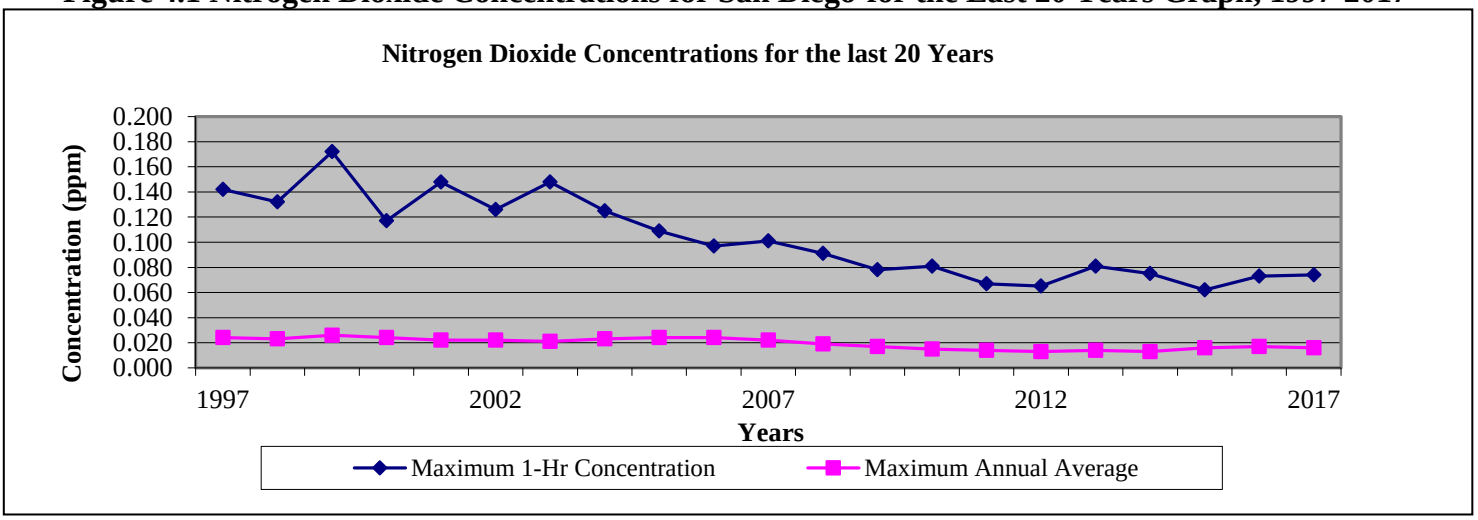
Section 4.4.1 Nitrogen Dioxide Concentrations for San Diego-for the Last 20 Years

San Diego has realized a steady decrease in the measured concentrations (Table 4.14). The trend is a result of improved emission control technology on mobile sources and emissions should continue to decrease. Note: the "Days Above the National 1-Hr Standard." row reflect the NO_2 standard for that year.

Table 4.14 Nitrogen Dioxide Concentrations for San Diego-for the Last 20 Years, 1997-2017

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Maximum 1-Hr Concentration (ppm)	0.142	0.132	0.172	0.117	0.148	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
Maximum Annual Average (ppm)	0.024	0.023	0.026	0.024	0.022	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
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

Figure 4.1 Nitrogen Dioxide Concentrations for San Diego-for the Last 20 Years Graph, 1997-2017



[H] (2016) 40 CFR Part 58, Appendix E, "Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring" and Table E-4.
[I] (2016) 40 CFR Part 58.12, Subpart B, "Operating Schedules".

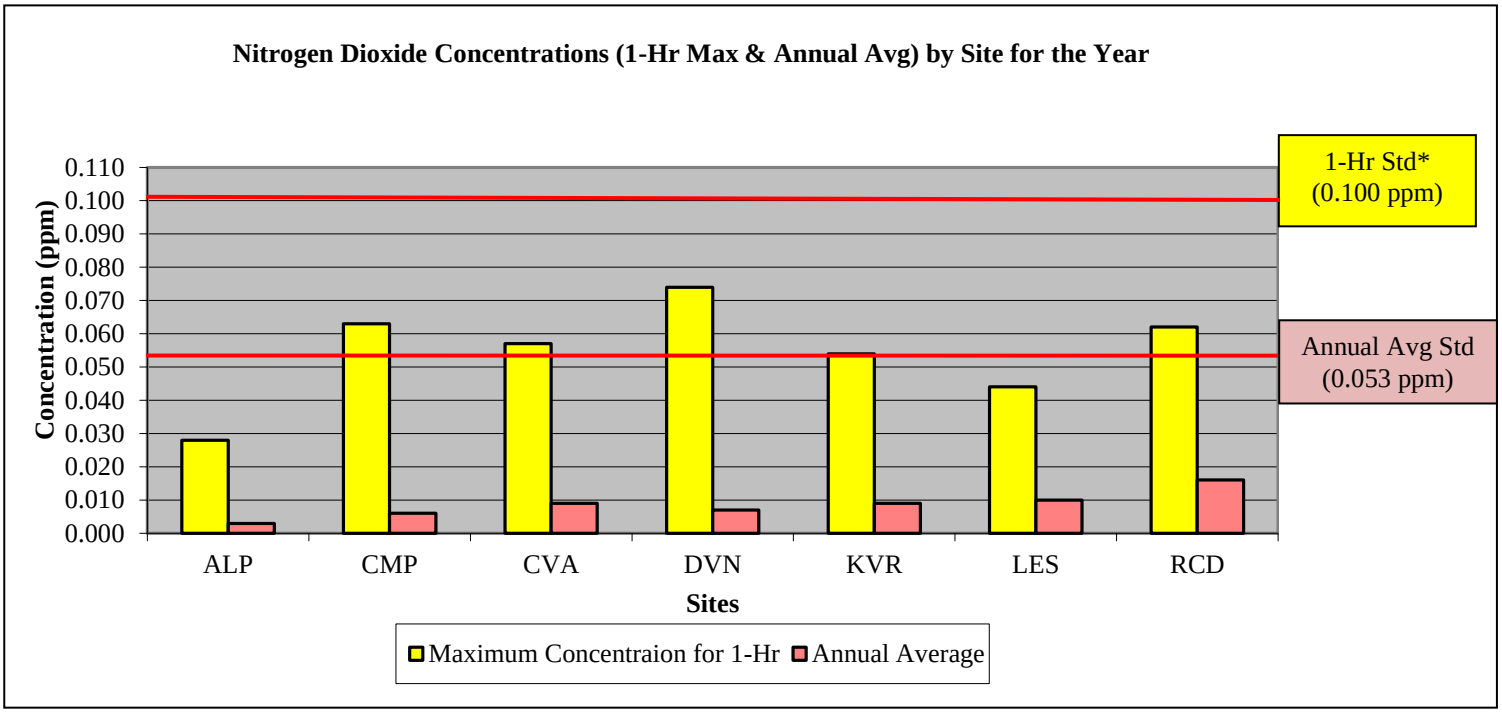
Section 4.4.2 Nitrogen Dioxide Concentrations for San Diego-by Site for the Year

Table 4.15 lists the maximum nitrogen dioxide measurements and NOy-NO for each nitrogen dioxide monitoring location and NCore, respectively; figure 4.2 shows the values graphically with respect to the National Standard for the year (Note: these are not Design Value calculations, so the comparison to the standard is for informational use only).

Table 4.15 Nitrogen Dioxide Concentrations for San Diego- by Site for the Year, 2017

No. (#)	Site (name)	Site Abbreviation	Maximum Concentration for 1-Hr (ppm)	Number of Days Above the National Standard (#)	Annual Average (ppm)
1	Alpine	ALP	0.028	0	0.003
2	Camp Pendleton	CMP	0.063	0	0.006
3	Chula Vista	CVA	0.057	0	0.009
4	Donovan	DVN	0.074	0	0.007
5	Kearny Villa Rd	KVR	0.054	0	0.009
6	Lexington	LES	0.044	0	0.010
7	Rancho Carmel Dr.	RCD	0.062	0	0.016

Figure 4.2 Nitrogen Dioxide Concentrations for San Diego-by Site for the Year Graph, 2017



**Note: the 1-Hr NAAQS is calculated using a Design Value, therefore this data cannot be directly compared to the 1-Hr NAAQS; it can be used informational purposes only. Only the Annual Average can be directly compared to the NAAQS

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

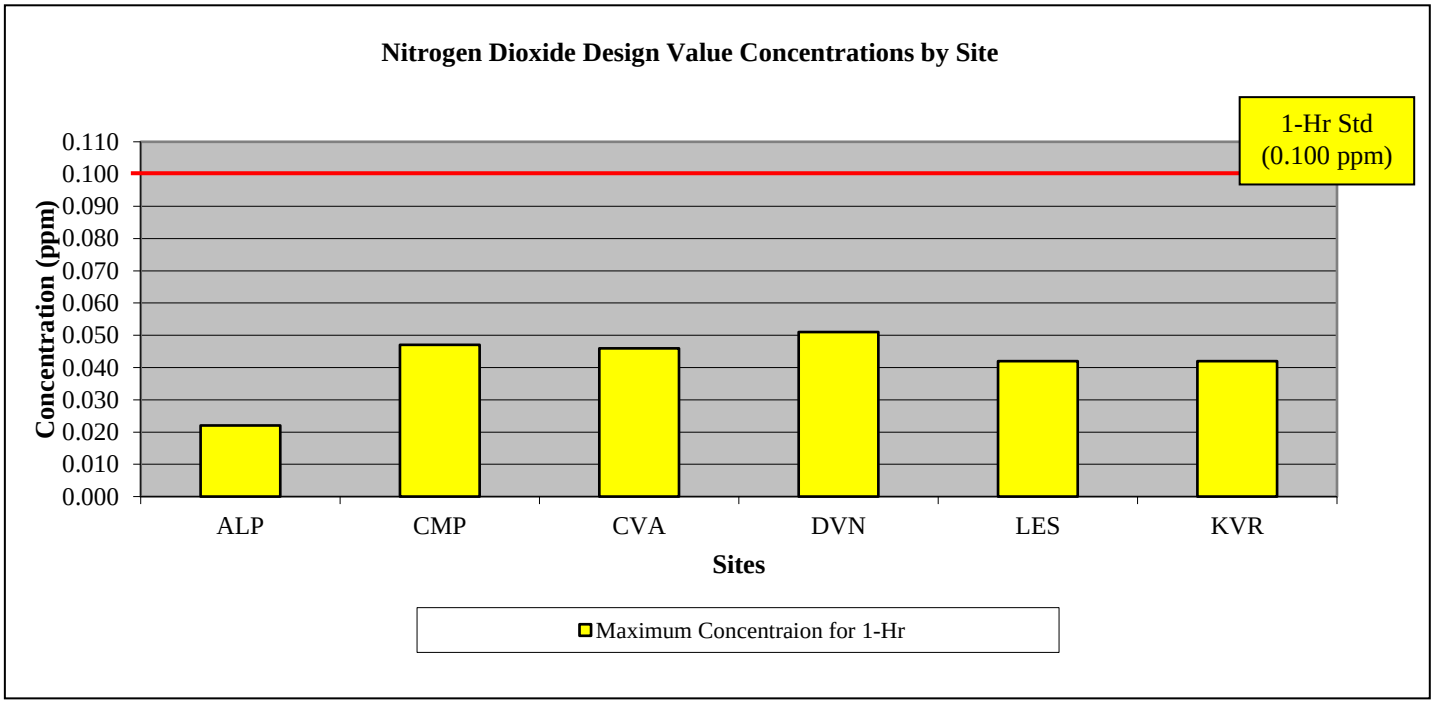
Table 4.16 lists the maximum nitrogen dioxide measurements and NOy-NO for each nitrogen dioxide monitoring location and NCore, respectively; figure 4.3 shows the values graphically with respect to the National Standard for the year.

Table 4.16 Nitrogen Dioxide Concentrations for San Diego-by for the Site Design Value, 2015-2017

No. (#)	Site (name)	Site Abbreviation	Design Value Maximum Concentration for 1-Hr (ppm)	Number of Days Above the National Standard (#)
1	Alpine	ALP	0.022	0
2	Camp Pendleton	CMP	0.047	0
3	Chula Vista	CVA	0.046	0
4	Donovan	DVN	0.051	0
5	Kearny Villa Rd	KVR	0.042	0
6	Lexington	LES*	00.42	0
7	Rancho Carmel Dr.	RCD**	0.052	0

*FSD & LES were combined to for this calculation.
**2.5 years

Figure 4.3 Nitrogen Dioxide Concentrations for San Diego-by Site for the Design Value Graph, 2015-2017



CHAPTER 5 CARBON MONOXIDE (CO)

Section 5.0.0 Carbon Monoxide Introduction

Carbon monoxide (CO) was sampled on a continuous basis at 2 locations in the SDAB (Figure 5.0 and Table 5.1) and referenced to the carbon monoxide standards of the year (Table 5.0). The sampling equipment are listed in Table 5.1. Trace level CO was sampled at the Lexington-NCore site. For NCore details, see section 10 – NCore for a complete list of all the requirements. Please note:

- In 2016, the District was evicted from our Downtown site and are in the process of locating a station in the Sherman Heights area. CO monitoring will not resume at the new site per EPA approval.
- In 2015, the District was evicted from our Escondido site (it was on the City of Escondido property) and are in the process of relocating the station 20 meters south east of the original location to be on San Diego County property. CO monitoring will not resume at the new site per EPA approval.

Figure 5.0 Carbon Monoxide Network Map

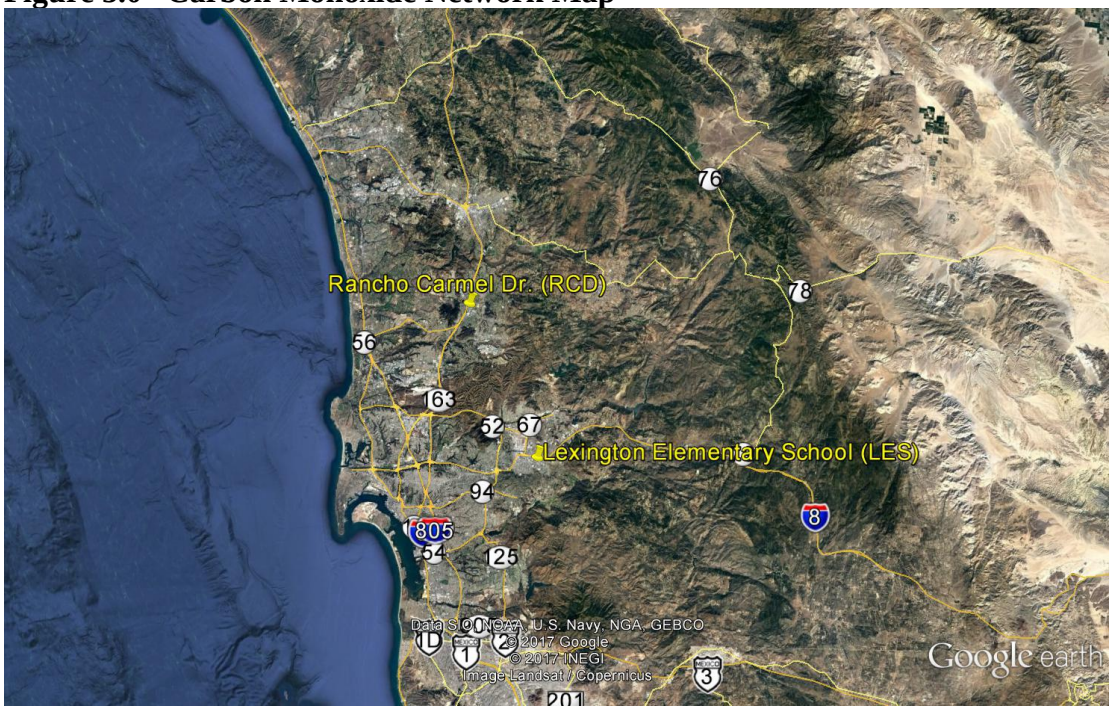


Table 5.0 Carbon Monoxide State and National Standards for the Year

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards		National Standards		
		Concentration	Method	Primary	Secondary	Method
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	

Table 5.1 Carbon Monoxide Sampling Network

	Abbreviation	LES	RCD
	Name	Lexington Elementary School	Rancho Carmel Dr.
	AQS ID	06-073-1022	06-073-1017
CO	Monitor Type	SLAMS	SLAMS
CO	Method	IR	IR
CO	Affiliation	NCORE, PAMS	Not Applicable
CO	Spatial Scale	NS	MI
CO	Site Type	PE	SO
CO	Objective (Federal)	PI, NAAQS	PI, NAAQS
CO	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
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
Q= 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 5.1.0 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 5.1.1 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 5.2 lists the Near-road requirements.

4.2 Carbon Monoxide (CO) Design Criteria[A]

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_2 monitor, as required in Section 4.3.2 of this part, in CBSAs having a population of 1,000,000 or more persons…

Table 5.2 Carbon Monoxide Minimum Monitoring Requirements-Near-road

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Are Near-road NO_2 Monitors Required (yes/no)	Are Collocated CO Monitors Required (yes/no)	Number of Collocated CO Monitors Required (#)	Number of Collocated CO Monitors Active (#)	Number of Collocated CO Monitors Needed (#)
San Diego	San Diego	3.4 million	Yes	Yes	1	1	0

Section 5.1.2 Carbon Monoxide Minimum Monitoring Requirements-Regional Administrator

In an effort to obtain a pollutant profile in certain areas, often in or near Environmental Justice locations or in areas considered to have a vulnerable population, the monitoring of CO may be required by the EPA Regional Administrator. The Downtown/Barrio Logan station was in an Environmental Justice area and the District sampled for CO as a legacy monitor. CO emissions in Barrio Logan were so far below the NAAQS that monitoring is not required as part of the Regional Administrator program. Table 5.3 lists the Regional Administrator Designated CO Monitoring requirements for the SDAB.

4.2.2 Regional Administrator Required Monitoring[B]

(a) 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, where the minimum monitoring requirements are not sufficient to meet monitoring objectives…

Table 5.3 Carbon Monoxide Minimum Monitoring Requirements-Regional Administrator

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Number of Regional Administrator sites Required (#)	Number of Regional Administrator sites Active (#)	Number of Regional Administrator sites Needed (#)
San Diego	San Diego	3.4 million	0	0	0

[A] (2016) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 4, "Pollutant-Specific Design Criteria for SLAMS Sites", part 4.2.1 "Carbon Monoxide (CO) Design Criteria", subpart (a), "General Requirements

[B] (2016) 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"

Section 5.1.3 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 5.4 lists the NCore CO requirements.

> *3. Design Criteria for NCore Sites*[C]
> *(b) The NCore sites must measure, at a minimum, $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$, $PM_{10-2.5}$ particle mass, speciated $PM_{10-2.5}$, O_3, SO_2, CO, NO/NO_y, wind speed, wind direction, relative humidity, and ambient temperature. NCore sites in CBSA with a population of 500,000 people or greater shall also measure Pb either as Pb-TSP or Pb-PM_{10}.*

Table 5.4 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/Locations (name)	NCore Sites/Locations AQS ID (#)
1	1	None	Lexington (LES)	06-073-1022

Section 5.1.4 Carbon Monoxide Minimum Monitoring Requirements-PAMS

The District is required to operate Photochemical Assessment Monitoring Stations (PAMS). There are several associated requirements to operate a PAMS site (see the PAMS chapter for more detail). One of the requirements is to operate CO monitors. Table 5.5 lists the PAMS Carbon Monoxide (CO) Monitoring requirements for the SDAB. Please Note: the EPA has re-engineered the PAMS program, but the new requirements are not mandatory until 2019; therefore, the District followed 2015 regulations.

> *5.Network Design for Photochemical Assessment Monitoring Stations (PAMS)*[C]
> *5.3 Minimum Monitoring Network Requirements. A Type 2 site is required for each area. Overall, only two sites are required for each area, providing all chemical measurements are made. For example, if a design includes two Type 2 sites, then a third site will be necessary to capture the NO_y measurement. The minimum required number and type of monitoring sites and sampling requirements are listed in Table D-6 of this appendix…*

Table D-6 of Appendix D to Part 58- Minimum Required PAMS Monitoring Locations and Frequencies

Measurement	***Where Required***	***Sampling Frequency***
CO	*One site per area at a Type 2 site*	*Hourly during the ozone monitoring season*

Table 5.5 Carbon Monoxide Minimum Monitoring Requirements-PAMS

PAMS Type 2 Sites/Locations (name)	PAMS Type 2 Sites/Locations AQS ID (#)	Number of CO Monitors Required at PAMS Type 2 Sites (#)	Number of CO Monitors Active at PAMS Type 2 Sites (#)	Number of CO Monitors Needed at One PAMS Type 2 Site (#)
Lexington (LES)	06-073-1022	1	1	None

[C] (2016) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore sites", subpart (b)
[D] (2015) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 5, "Network Design for Photochemical Assessment Monitoring Stations (PAMS)", -subpart (4) "Hourly averaged carbon monoxide"

Section 5.1.5 Carbon Monoxide Minimum Monitoring Requirements-State (SIP)

The District must operate one ambient level or non-source monitor as part of the 2004 Revision to the California State Implementation Plan (SIP) for Carbon Monoxide[D]. Table 5.6 Summaries 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)	SIP Sites/Locations AQS ID (#)
1	1	None	Lexington (LES)	06-073-1022

Section 5.1.6 Carbon Monoxide Minimum Monitoring Requirements-Summary

Table 5.7 summarizes all the CO minimum monitoring requirements from Sections 5.1.0-5.1.5

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	None
NCore=	1	1	None
PAMS	1	1	None
SIP=	1	1	None

[D] http://www.arb.ca.gov/planning/sip/co/final_2004_co_plan_update.pdf

Section 5.2.0 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[E] and the sampling frequency must be in accordance with Federal regulations[F]. 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
Ambient	Carbon monoxide	CO	42101	ppm	007	1-Hr	1	Thermo 48 series	Nondispersive infrared	054	7/24	RFCA-0981-054
NCore	Carbon monoxide Trace Level	CO	42101	ppb	008	1-Hr	1	Thermo 48i-TLE	Nondispersive infrared	554	7/24	RFCA-0981-054

Section 5.3.0 Carbon Monoxide Concentrations for San Diego

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

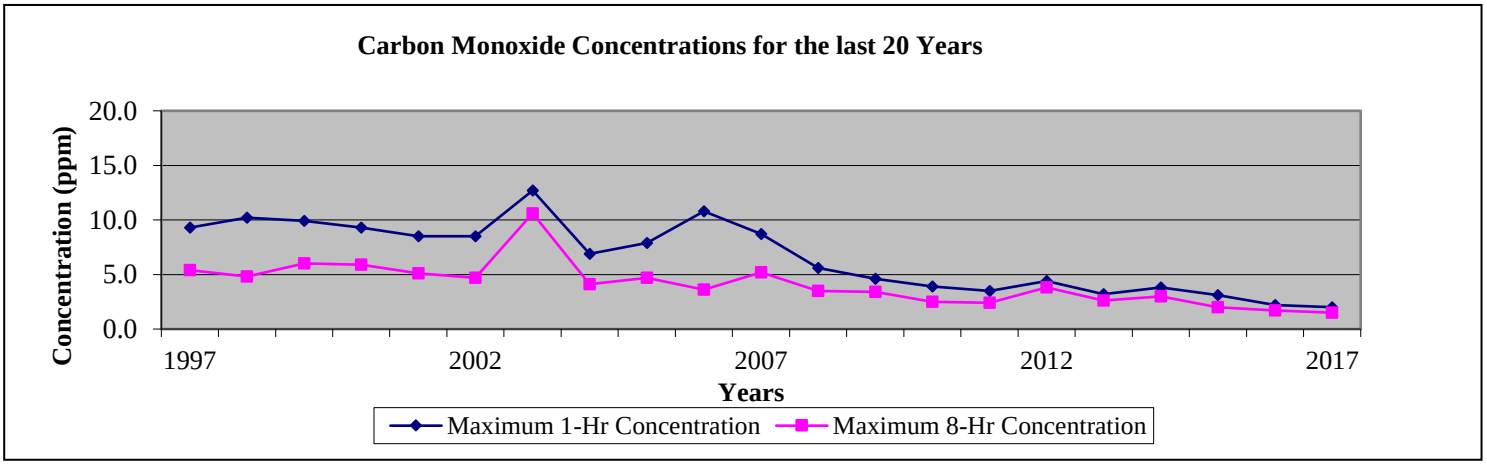
Section 5.3.1 Carbon Monoxide Concentrations for San Diego-for the Last 20 years

San Diego has realized a significant decrease over the years (Table 5.9) and is shown graphically in Figure 5.2 for CO concentrations. 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, 1997-2017

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Maximum 1-Hr Concentration (ppm)	9.3	10.2	9.9	9.3	8.5	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
Maximum 8-Hr Concentration (ppm)	5.4	4.8	6.0	5.9	5.1	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
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 5.1 Carbon Monoxide Concentrations for San Diego-for the Last 20 Years Graph, 1997-2017



[E] (2016) 40 CFR Part 58, Appendix E, "Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring" and Table E-4.

[F] (2016) 40 CFR Part 58.12, Subpart B, "Operating Schedules".

Section 5.3.2 Carbon Monoxide Concentrations for San Diego-by Site for the Year

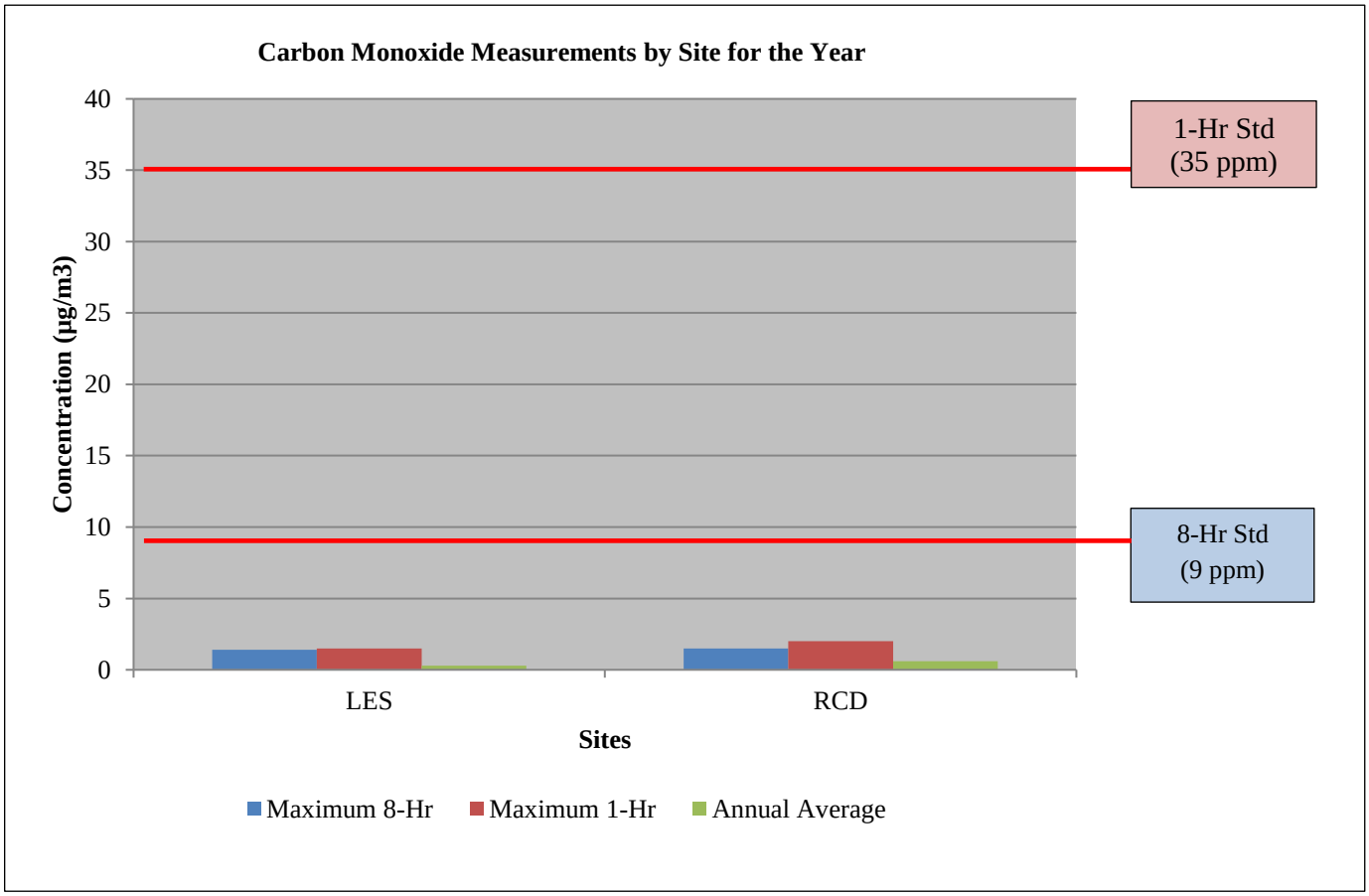
Table 5.10 lists the maximum carbon monoxide measurements for each carbon monoxide monitoring location and NCore; Figure 5.2 shows the values graphically with respect to the National Standard.

Table 5.10 Carbon Monoxide Concentrations for San Diego-by Site for the Year, 2017

No. (#)	Site (name)	Site Abbreviation	Maximum Concentration for 8-Hr (ppm)	Maximum Concentration for 1-Hr (ppm)	Number of Days Above the National Standard (#)	Annual Average (ppm)
1	Lexington	LES*	1.4	1.5	0	0.3
3	Rancho Carmel Dr.	RCD	1.5	2.0	0	0.6

*FSD & LES were combined for this calculation

Figure 5.2 Carbon Monoxide Concentrations for San Diego-by Site for the Year Graph, 2017



CHAPTER 6 SULFUR DIOXIDE (SO_2)

Section 6.0.0 Sulfur Dioxide Introduction

Only trace level sulfur dioxide is sampled for at one location (Figure 6.0) in the SDAB and is referenced to the sulfur dioxide standards of the year (Table 6.0). Trace-level SO_2 was sampled at the Lexington-NCore site. Table 6.1 lists the equipment. See section 11 – NCore for detailed requirements. Please note:

- The El Cajon Station-Floyd Smith Drive station was relocated back to its original location at Lexington Elementary School (see the Executive Summary for more information).

Figure 6.0 Sulfur Dioxide Network Map

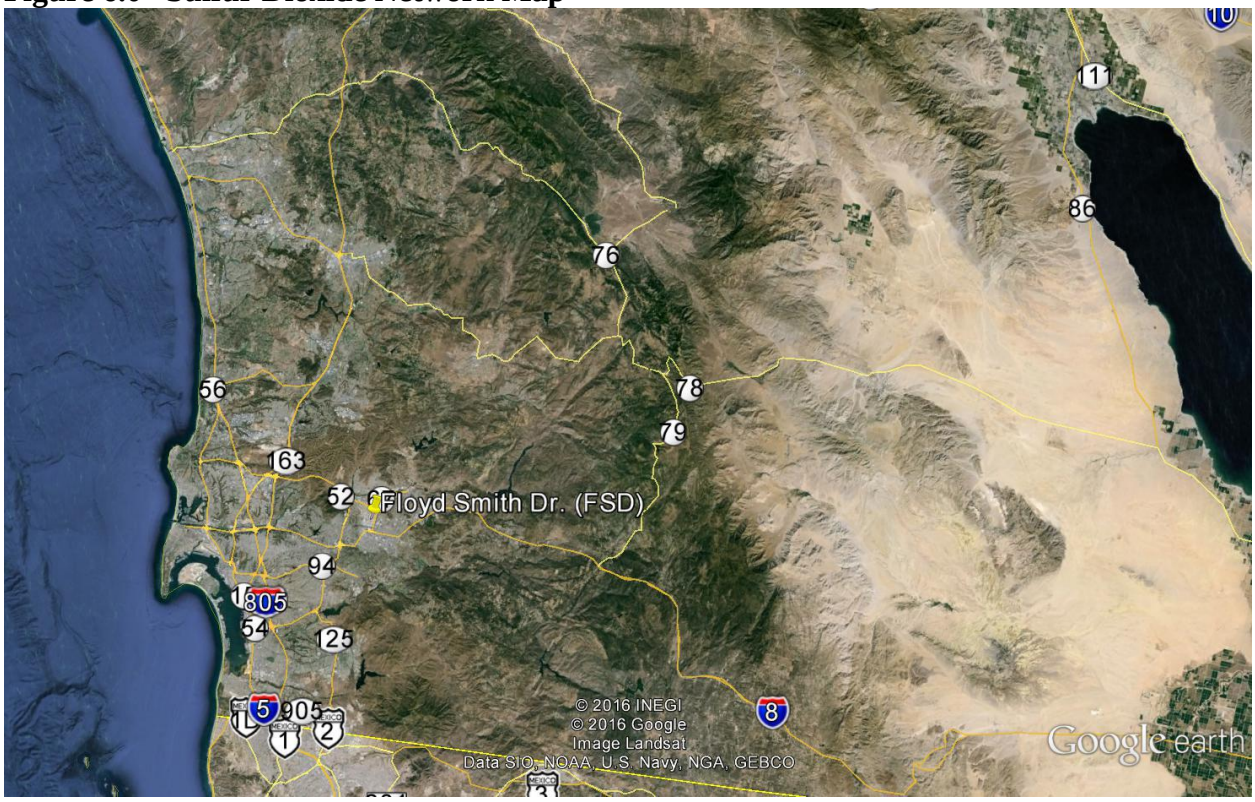


Table 6.0 Sulfur Dioxide State and National Standards for the Year

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards		National Standards		
		Concentration	Method	Primary	Secondary	Method
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)	—	

Table 6.1 Sulfur Dioxide Sampling Network

	Abbreviation	LES
	Name	Lexington Elementary School
	AQS ID	06-073-1022
SO_2	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
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
Q= 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 6.1.0 Sulfur Dioxide Minimum Monitoring Requirements

The District is federally mandated to monitor SO_2 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_2 network requirements, e.g. ambient SO_2 monitor can fulfill a PAMS SO_2 monitor requirement.

The Districts meets or exceeds all minimum requirements for SO_2 monitoring for all programs.

Section 6.1.1 Sulfur Dioxide Minimum Monitoring Requirements-Ambient

The procedure to determine the minimum number of ambient (or non-source) level monitors required is different than the other gaseous criteria pollutants. It is based on the total SO_2 emissions in the air basin with respect to the population of the air basin. Tables 6.2a & b lists these requirements.

4.4 Sulfur Dioxide (SO_2) Design Criteria[A]
4.4.2 Requirement for Monitoring by the Population Weighted Emissions Index.
(a) 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_2 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_2 in tons per year emitted within the CBSA area, using an aggregate of the most recent county level emissions data available in the National Emissions Inventory for each county in each CBSA. 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_2 monitors are required within that CBSA. For any CBSA with a calculated PWEI value equal to or greater than 100,000, but less than 1,000,000, a minimum of two SO_2 monitors are required within that CBSA. For any CBSA with a calculated PWEI value equal to or greater than 5,000, but less than 100,000, a minimum of one SO_2 monitor is required within that CBSA.

Table 6.2a Sulfur Dioxide Minimum Monitoring Requirements - EPA NEI SO_2 Emissions for the Year, 2015

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Total SO_2 Emissions from 2014 NEI (TPY)	Total SO_2 Emissions ÷ 1,000,000 (TPY)	Calculated PWEI= Total SO_2 Emissions x Population (MP-TPY)
San Diego	San Diego	3.4 million	1,266.271	0.001266	4,305.321

Table 6.2b Sulfur Dioxide Minimum Monitoring Requirements-Ambient

Calculated PWEI (MP-TPY)	Are the Emissions <5,000 MP-TPY? (yes/no)	Number of Required Ambient Monitors (#)	Number of Active Ambient Monitors (#)	Number of Ambient Monitors Needed (#)
4,305.321	Yes	0	0	None

[A] (2016) 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_2) Design Criteria, subpart 4.4.2(a) "Requirement for Monitoring by the Population Weighted Emissions Index"

Section 6.1.2 Sulfur Dioxide Minimum Monitoring Requirements-NCore

If the PWEI is below a certain threshold, the EPA allows Districts the minimum required SO_2 monitor to be the NCore SO_2 required monitor. Table 6.3 lists these requirements

4.4 Sulfur Dioxide (SO_2) Design Criteria[B]

(1) The SO_2 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 (as defined in section 1.1.1 of this appendix): population exposure, highest concentration, source impacts, general background, or regional transport. SO_2 monitors at NCore stations may satisfy minimum monitoring requirements if that monitor is located within a CBSA with minimally required monitors under this part. Any monitor that is sited outside of a CBSA with minimum monitoring requirements to assess the highest concentration resulting from the impact of significant sources or source categories existing within that CBSA shall be allowed to count towards minimum monitoring requirements for that CBSA.

3. Design Criteria for NCore Sites[C]

(b) The NCore sites must measure, at a minimum, $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$, $PM_{10-2.5}$ particle mass, speciated $PM_{10-2.5}$, O_3, SO_2, CO, NO/NOy, wind speed, wind direction, relative humidity, and ambient temperature.

Table 6.3 Sulfur Dioxide Minimum Monitoring Requirements-NCore

MSA	County	Number of NCore SO_2 Monitors Required (#)	Number of NCore SO_2 Monitors Active (#)	Number of NCore SO_2 Monitors Needed (#)	Met NAAQS? (yes/no)
San Diego	San Diego	1	1	None	Yes

Section 6.1.3 Sulfur Dioxide Minimum Monitoring Requirements-Summary

Table 6.4 summarizes all the SO_2 minimum monitoring requirements from Sections 6.1.1-6.212.

Table 6.4 Sulfur Dioxide Minimum Monitoring Requirements-Summary

CFR Programs Requirements for SO_2 Monitors (name)	Number of SO_2 Monitors Required (#)	Number of Active SO_2 Monitors (#)	Number of Needed SO_2 Monitors (#)
PWEI=	0	0	None
NCore only=	1	1	None

[B] (2016) 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_2) Design Criteria, subpart 4.4.2(1) "Requirement for Monitoring by the Population Weighted Emissions Index"

[C] (2016) 40 CFR Part 58 "Ambient Air Quality Surveillance", Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore Sites", subsection (b).

Section 6.2.0 Sulfur Dioxide Suitability for Comparison to the NAAQS

The CFR requires that for SO_2 data to be used in regulatory determinations of compliance with the SO_2 NAAQS, the SO_2 monitors must be sited according to Federal Regulations[D] and the sampling frequency must be in accordance with Federal regulations[E]. All District SO_2 monitors meet or exceed all minimum monitoring requirements and sampling frequencies, as to be able to be compared to the NAAQS. Table 6.5 summarizes these requirements.

Table 6.5 Sulfur Dioxide Suitability for Comparison to the NAAQS-Sampling Equipment

	Parameter		Code	Unit	Code	Duration	Code	Equipment	Method	Code	Frequency	Method ID
NCore	Sulfur dioxide Trace Level	SO_2	42101	ppb	008	1-Hr	1 5-min	Thermo 43i-TLE	Fluorescence	560	7/24	EQSA-0276-009

Section 6.3.0 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.

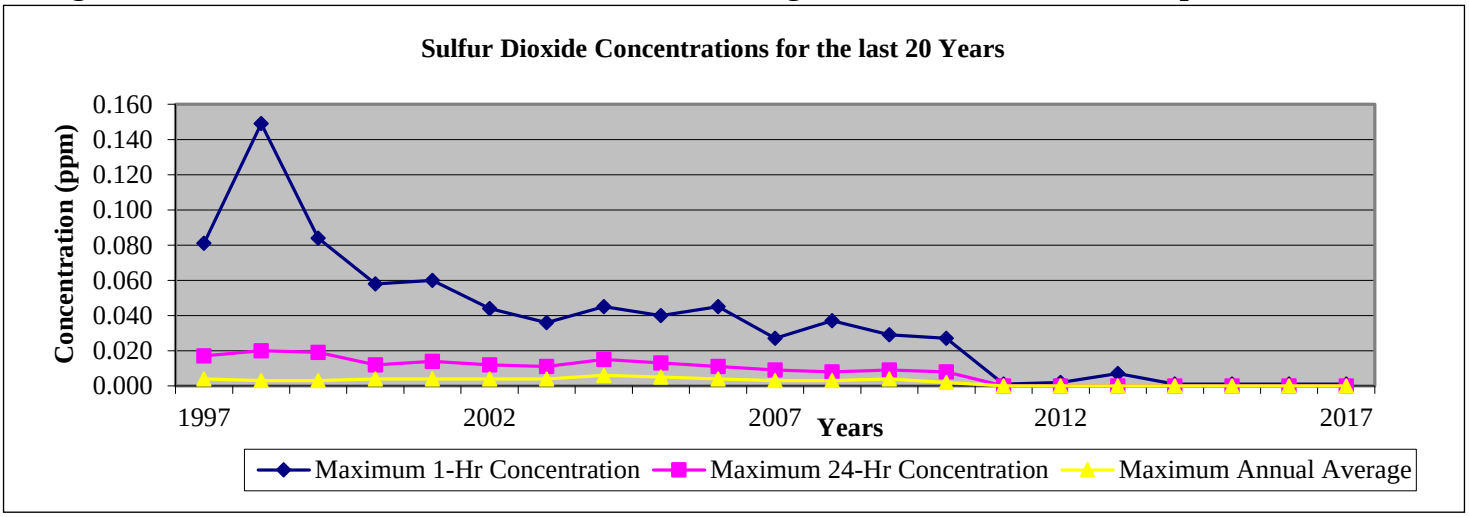
Section 6.3.1 Sulfur Dioxide Concentrations for San Diego-for the Last 20 Years

Emissions of sulfur dioxide (SO_2) 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 6.6 reflects the SO_2 standards for that year and are shown graphically in Figure 6.1.

Table 6.6 Sulfur Dioxide Concentrations for San Diego-for the Last 20 Years 1997-2017

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Maximum 1-Hr Concentration (ppm)	.081	0.149	0.084	0.058	0.060	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
Maximum 24-Hrs Concentration (ppm)	0.017	0.020	0.019	0.012	0.014	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
Maximum Annual Average (ppm)	0.004	0.003	0.003	0.004	0.004	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
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 6.1 Sulfur Dioxide Concentrations for San Diego-for the Last 20 Years Graph, 1997-2017



[D] (2015) 40 CFR Part 58, Appendix E, "Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring" and Table E-4.

[E] (2015) 40 CFR Part 58.12, Subpart B, "Operating Schedules".

Section 6.3.2 Sulfur Dioxide Concentrations for San Diego-by Site for the Design Value

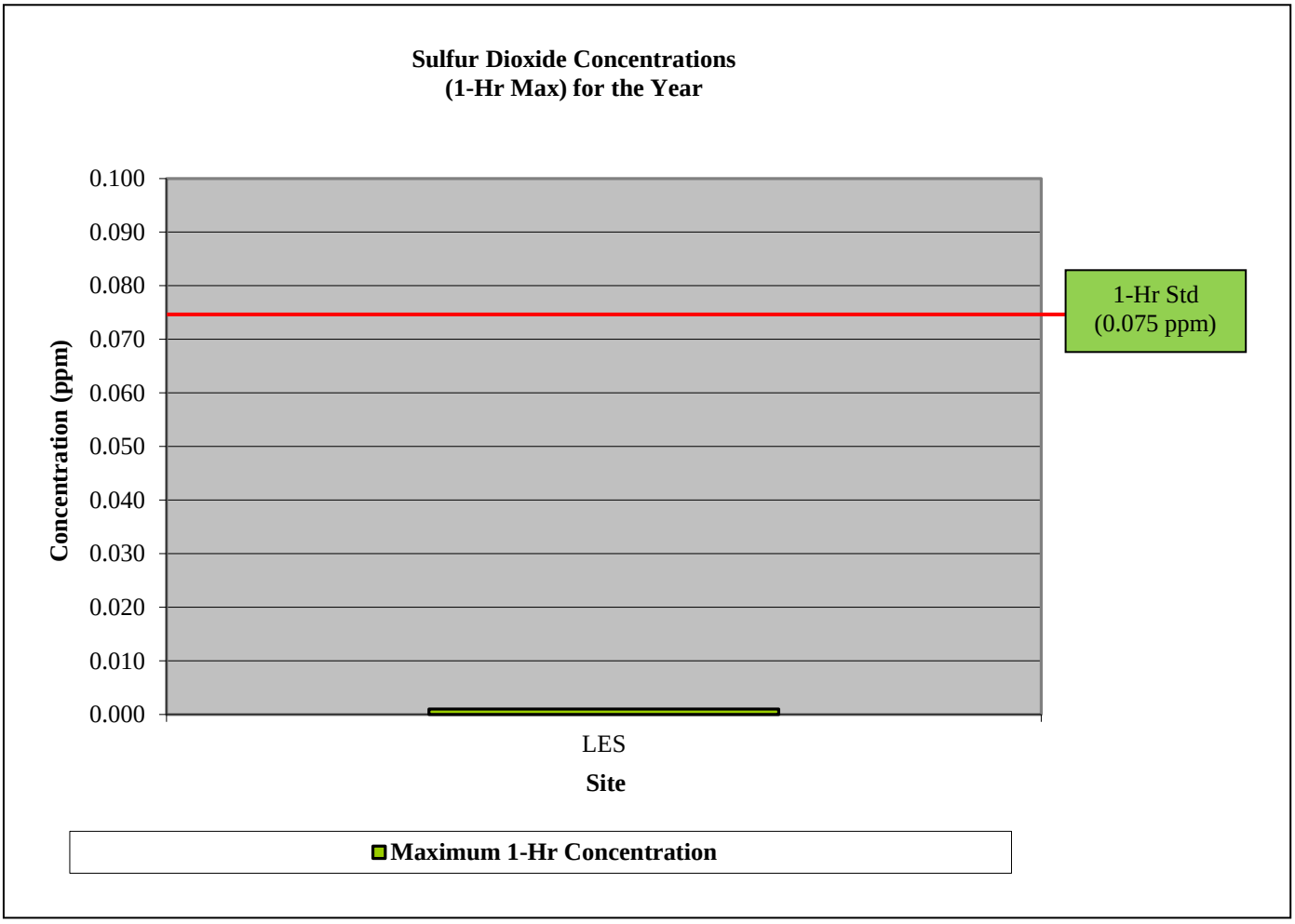
Table 6.7 lists the maximum sulfur dioxide measurements for the NCore monitoring location and Figure 6.2 shows the values graphically with respect to the National Standard.

Table 6.7 Sulfur Dioxide Concentrations for San Diego-by Site for the Design Value, 2015-2017

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

***LES & FSD combined.

Figure 6.2 Sulfur Dioxide Concentrations for San Diego-by Site for the Design Value Graph, 2015-2017



CHAPTER 7 LEAD (PB)

Section 7.0.0 Lead Introduction

Lead (Pb) was sampled for at one location in the SDAB (Figure 7.0 and Table 7.1) and referenced to the lead standards of the year (Table 7.0). Source level lead was sampled at McClellan-Palomar airport.

Figure 7.0 Lead Map Network Map

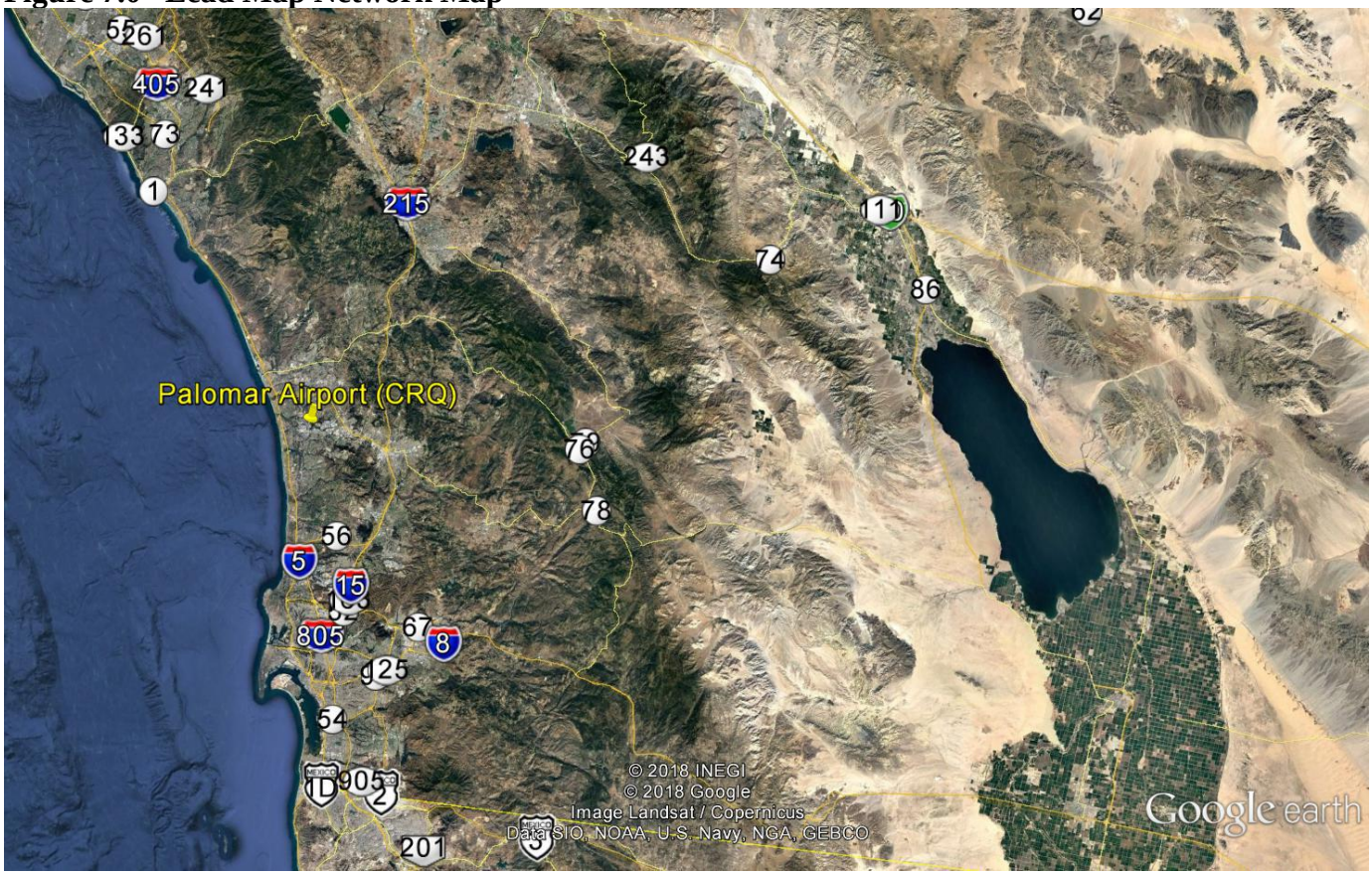


Table 7.0 Lead State and National Standards for the Year

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards		National Standards		
		Concentration	Method	Primary	Secondary	Method
Lead[11,12]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		

Table 7.1 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+

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
Q= 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 7.1.0 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 7.1.1 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. The sources and their Pb emissions are from the EPA NEI database. Table 7.2 lists these requirements for non-Airport source level sampling.

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 7.3 lists these requirements for Airport source level sampling.

> 4.5 *Lead (Pb) Design Criteria.*[A]
> *(a) 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/eiinformation.html)...*

Table 7.2 Lead Minimum Monitoring Requirements-Source (non-Airport)

MSA (name)	County (name)	From NEI* 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	San Diego	No	Camp Pendleton	0.33	0	0	0

*At the time of the writing of this report, the most recent EPA NEI database was 2014; the 2017 Database was not published.

Table 7.3 Lead Minimum Monitoring Requirements-Source (Airport)

MSA (name)	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	San Diego	No	Montgomery Field	0.59	0	0	0

*At the time of the writing of this report, the most recent EPA NEI database was 2014; the 2017 Database was not published.

[A] (2016) 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)

Section 7.1.2 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. In 2011, 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 the analyzed emissions exceeded the NAAQS by 50%, the sampler was to become permanent, or until the emissions were proven to be less than 80% of the NAAQS (over a minimum 3-yr period). Table 7.4 lists these requirements.

> *4.5 Lead (Pb) Design Criteria.*[B]
> *(iii) State and, where appropriate, local 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 commencing no later than December 27, 2011. Monitors shall be sited to measure the maximum Pb concentration in ambient air, taking into account logistics and the potential for population exposure, and shall use an approved Pb-TSP Federal Reference Method or Federal Equivalent Method. 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 4.5(c) of this Appendix, and shall continue to monitor for Pb unless a waiver is granted allowing it to stop operating as allowed by the provisions in paragraph 4.5(a)(ii)*

Table D-3A Airports to be Monitored for Lead

Airport	**County**	**State**
McClellan-Palomar	San Diego	*CA*
Gillespie Field	San Diego	*CA*

Table 7.4 Lead Minimum Monitoring Requirements - Airport (Special Study) Results

Names of Airport Monitors Required (name)	Was Airport Testing Done? (yes/no)	Is Airport Testing Concluded? (yes/no)	Did the Airport Pass? (yes/no)	Does the Airport Require Permanent Sampling? (yes/no)	Is Permanent Sampling Active? (name)
McClellan-Palomar	Yes	Yes	No	Yes	Yes
Gillespie Field	Yes	Yes	Yes	No	Not Applicable*

*Gillespie Field

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

McClellan-Palomar

The Airport study at McClellan-Palomar Airport has officially concluded. McClellan-Palomar Airport did not pass the minimum tolerances established by the EPA. This required the District to sample for lead at Palomar Airport until such time as the measured concentrations are below the Federal standard for a minimum of three years (see 2012 Annual Network Plan for greater discussion).

At the time of the writing of this report, measured concentrations for lead have met the waiver criteria set forth in the 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), paragraph 4.5(a)(ii). If this trend continues, cessation of sampling at McClellan-Palomar Airport will be requested in 2018 (three continuous years of sampling at this location).

[B] (2016) 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 7.1.3 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. As yet, industrial sources of lead, etc. in the SDAB have not required additional monitoring as directed by the EPA Regional Administrator. Table 7.5 list these requirements.

> *4.5 Lead (Pb) Design Criteria*[C]
> *(c) The EPA Regional Administrator may require additional monitoring beyond the minimum monitoring requirements contained in paragraph 4.5(a) of this appendix where the likelihood of Pb air quality violations is significant or where the emissions density, topography, or population locations are complex and varied. The EPA Regional Administrators may require additional monitoring at locations including, but not limited to, those near existing additional industrial sources of Pb, recently closed industrial sources of Pb, airports where piston-engine aircraft emit Pb, and other sources of re-entrained Pb dust.*

Table 7.5 Lead Minimum Monitoring Requirements-Regional Administrator

MSA (name)	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	San Diego	0	0	0

Section 7.1.4 Lead Minimum Monitoring Requirements-Collocation

Table 7.6 summarizes the collocation requirements for quality assurance purposes.

> *3. Measurement Quality Check Requirements*[D]
> *3.4.4.1 A PQAO must:*
> *(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).*

Table 7.6 Lead Minimum Monitoring Requirements-Collocation

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)	AQS ID of Collocated Site (#)
1	1	1 x (15%) = 1	1	0	Palomar (CRQ)	06-073-1023

[C] (2016) 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)
[D] (2016) 40 CFR Part 58, Appendix A, Section 3, Measurement Quality Check Requirements, chapter 3.4, section 3.4.4.1

Section 7.1.5 Lead Minimum Monitoring Requirements-Summary

Table 7.7 summarizes the Pb minimum monitoring requirements.

Table 7.7 Lead Minimum Monitoring Requirements-Summary

CFR Programs Requirements for Pb-TSP Samplers (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
Collocation=	1	1	0

*McClellan-Palomar Airport did not pass the minimum tolerance established by the EPA, which requires the District to sample for lead until such time as the measured concentrations are below the NAAQS (a minimum of 3-yrs).

Section 7.2.0 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[E] 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. Tables 7.8 & 7.9 summarize these requirements.

Table 7.8 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^3 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 7.2.1 Lead Suitability for Comparison to the NAAQS – Operating Frequency

Lead sample collection via TSP samplers must operate on a specified frequency based upon federal regulations. Table 7.9 summarizes these requirements.

> *58.12 Operating schedules[F]*
> *(b) For Pb manual methods, at least one 24-hour sample must be collected every 6 days except during periods or seasons exempted by the Regional Administrator.*
>
> *3. Measurement Quality Check Requirements[G]*
> *3.4.4.2 The collocated quality control monitors should be deployed according to the following protocol:*
> *(c) Sample the collocated quality control monitor on a 1-in-12 day schedule…*

Table 7.9 Lead Suitability for Comparison to the NAAQS – Operating Frequency

What is the Minimum EPA Required Sampling Frequency? (#)	What is the Actual SDAPCD Sampling Frequency? (#)		What is the Minimum EPA Required Sampling Frequency for Collocation? (#)	What is the Actual EPA Required Sampling Frequency for Collocation? (#)
1:6	1:6		1:12	1:12

[E] (2016) 40 CFR Part 58, Appendix E, "Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring" and Table E-4.
[F] (2016) 40 CFR Part 58.12, Subpart B, "Operating Schedules".
[G] (2016) 40 CFR Part 58, Appendix A, Section 3, Measurement Quality Check Requirements, chapter 3.4, section 3.4.4.2

Section 7.3.0 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.

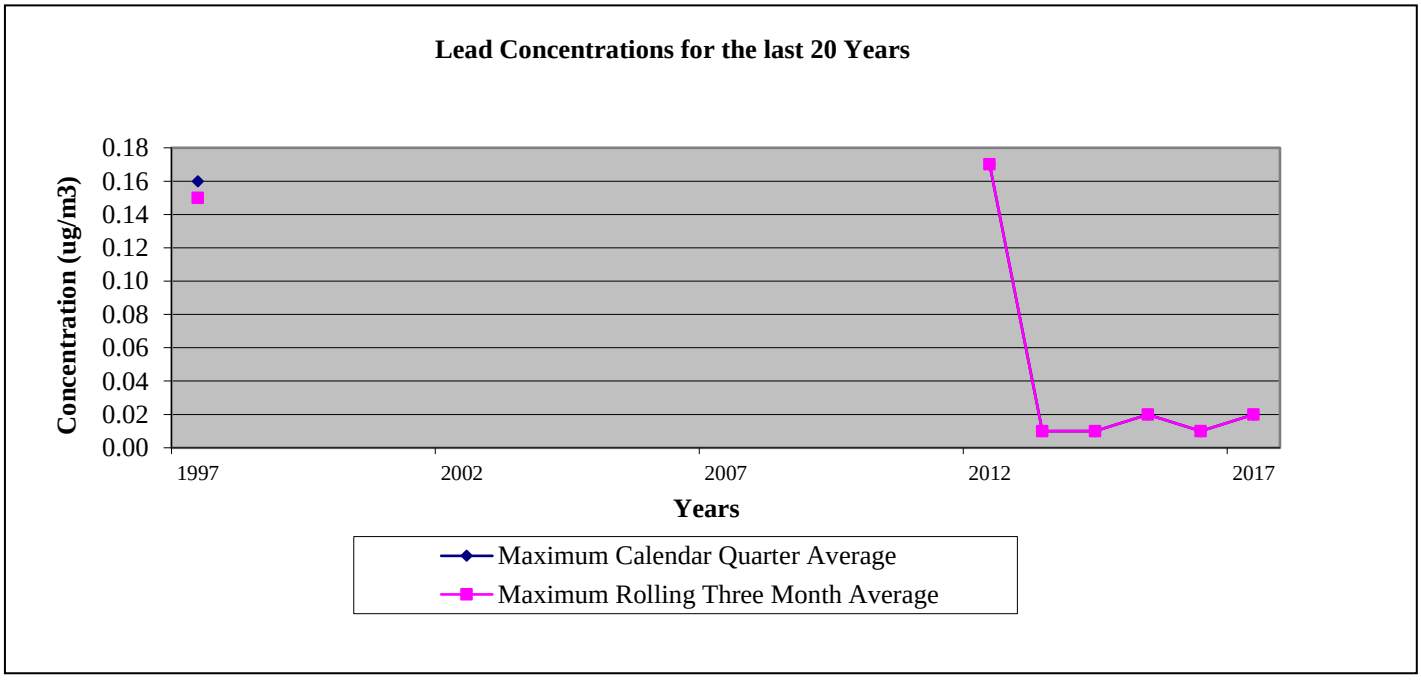
Section 7.3.1 Lead Concentrations for San Diego-for the Last 20 Years

The rapid decrease in lead emissions (Table 7.10) over the last 20 plus years can be attributed primarily to phasing out the lead in gasoline. Note: the "Days Above National Standard" row in Table 7.10 and Figure 7.1 reflect the lead standard for that year. No Testing (NT) was done in the SDAB from 1997 until 2012. The measured concentrations for 2012 are from the NCore location, which is categorized as neighborhood scale and representative concentrations. The airport sampler is categorized as source impact and microscale, and are not considered representative concentrations.

Table 7.10 Lead Concentrations for San Diego-for the Last 20 Years, 1997-2017

Maximum Calendar Quarter ($\mu g/m^3$)	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	0.160	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.17	0.01	0.02	0.015	0.010	0.02
Maximum Rolling 3-Month Average ($\mu g/m^3$)	0.150	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.17	0.01	0.02	0.015	0.010	0.02
Days above the National Standard	0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0	0	0	0	0	0

Figure 7.1 Lead Concentrations for San Diego-for the Last 20 Years, 1997-2017



Section 7.3.2 Lead Concentrations for San Diego-by Site for the Year

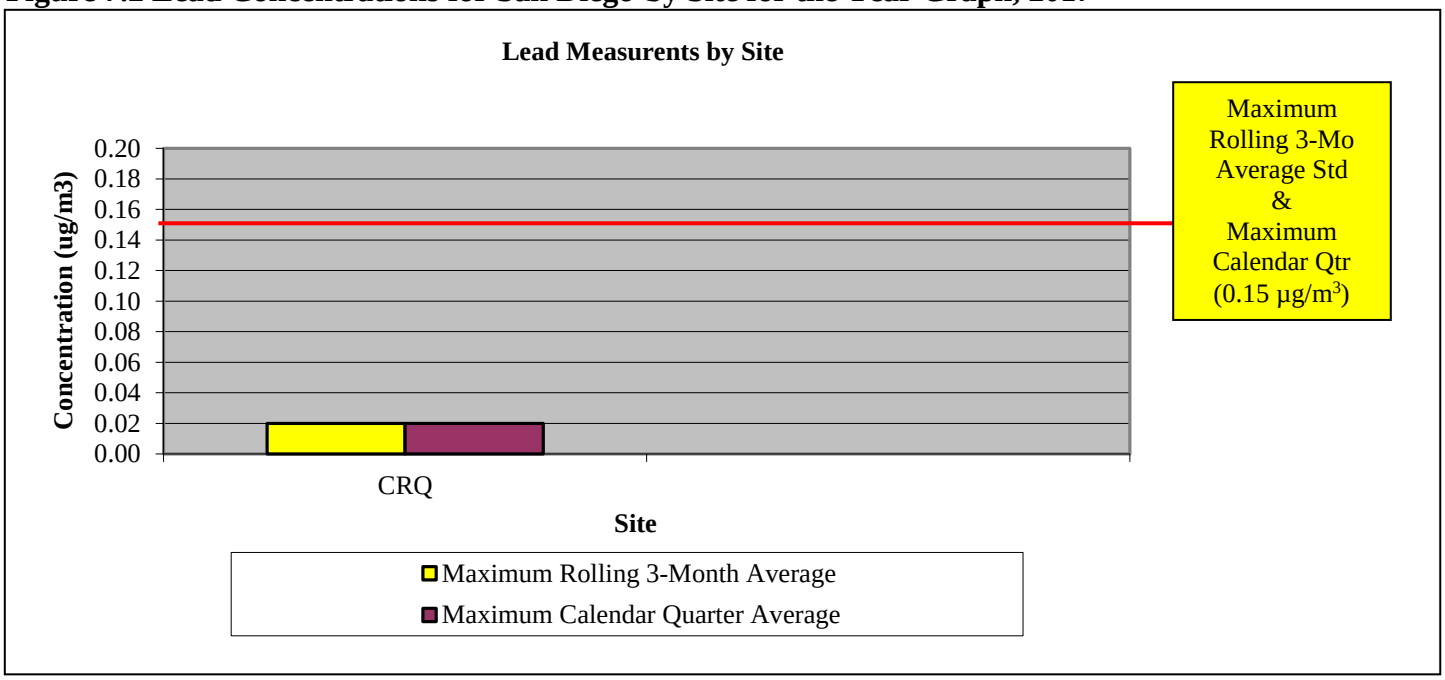
Table 7.11 lists the maximum lead measurements for each lead monitoring location; Figure 7.2 shows the values graphically with respect to the National Standard.

Table 7.11 Lead Concentrations for San Diego-by Site for the Year, 2017

No. (#)	Site (name)	Site Abbreviation	Maximum Rolling 3-Month Average ($\mu g/m^3$)	Design Value Maximum Calendar Quarter ($\mu g/m^3$)	Number of Days Above the NAAQS (#)
2	*Palomar Airport	CRQ	0.02		0

*Source impact and microscale monitors.

Figure 7.2 Lead Concentrations for San Diego-by Site for the Year Graph, 2017



The measured concentrations at the Palomar Airport location have been consistently well below the NAAQS and has repeated for (3) contiguous years of operations. Because of this, the District is petitioning the EPA to decommission Pb-TSP sampling at this location (see the Executive Summary chapter for the request).

CHAPTER 8 PARTICULATE MATTER 2.5 µM ($PM_{2.5}$)

Section 8.0.0 $PM_{2.5}$ Introduction

$PM_{2.5}$ was sampled on both a continuous basis and sequentially (on a schedule set by the EPA) at several locations in the SDAB (Figure 8.0 and Table 8.1) and were referenced to the $PM_{2.5}$ standards of the year (Table 8.0), when applicable. The equipment is listed in Table 8.1. Please note:

- In 2016, the District was evicted from our Downtown site and are in the process of locating a station in the Sherman Heights area.
- In 2015, the District was evicted from our Escondido site (it was on the City of Escondido property) and are in the process of relocating the station 20 meters south east of the original location to be on San Diego County property.
    - $PM_{2.5}$ FRM/sequential samplers are at KVR, LES, and CVA.
    - $PM_{2.5}$ non-FEM/continuous samplers are at CMP, LES, ALP, and DVN.
    - $PM_{2.5}$-CSN & STN samplers are at LES.

Figure 8.0 $PM_{2.5}$ Network Map

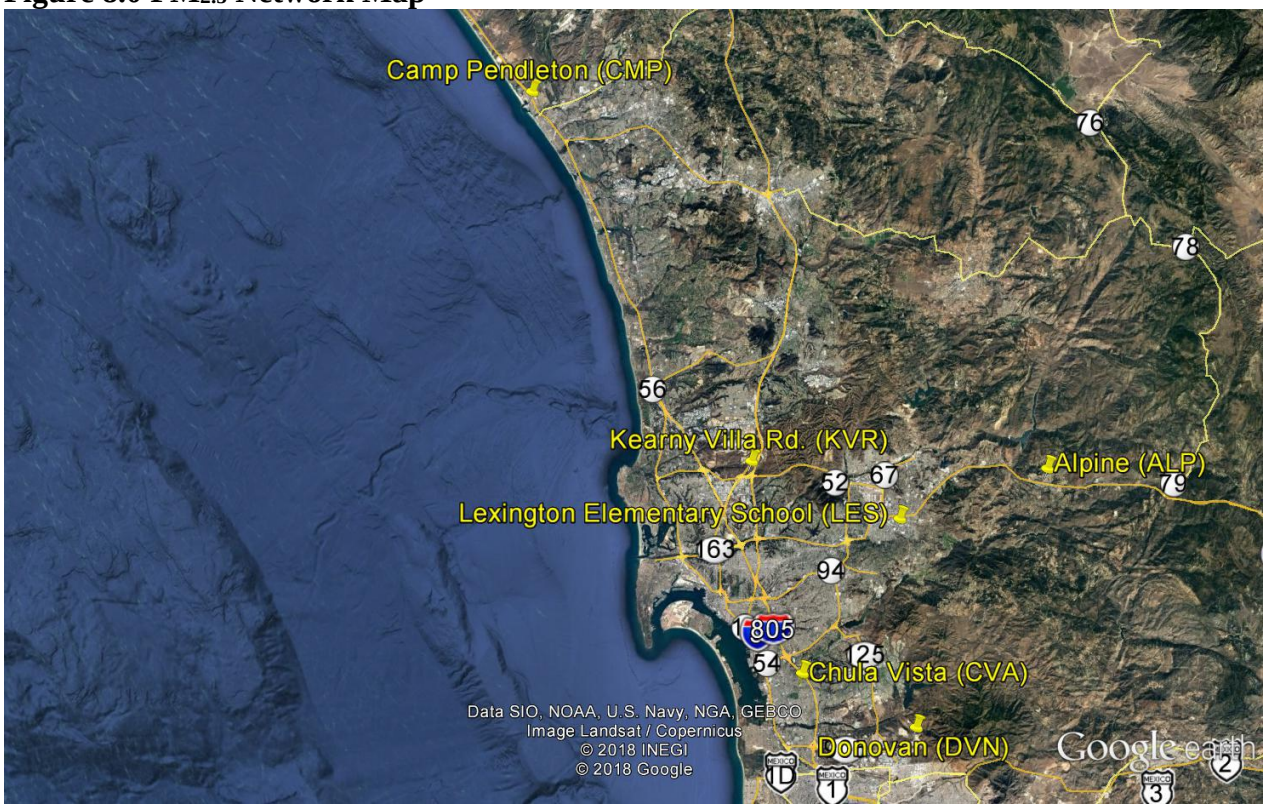


Table 8.0 $PM_{2.5}$ State and National Standards for the Year

Ambient Air Quality Standards						
Pollutant	**Averaging Time**	**California Standards**		**National Standards**		
		Concentration	**Method**	**Primary**	**Secondary**	**Method**
Fine Particulate Matter (PM2.5)[8]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	

Table 8.1 $PM_{2.5}$ Sampling Network

	Abbreviation	ALP	CMP	CVA	LES		KVR		DVN
	Name	Alpine	Camp Pendleton	Chula Vista	Lexington Elementary School		Kearny Villa Rd		Donovan
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1022		06-073-1016		06-073-1014
PM2.5 (non-speciated)	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Designation	O	O	PRI	PRI	O	PRI	QAC	O
	Method	CT (non-FEM)	CT (non-FEM)	SQ (FRM)	SQ (FRM)	CT (non-FEM)	SQ (FRM)	SQ (FRM)	CT (non-FEM)
	Affiliation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Spatial Scale	US	NS	NS	NS	NS	NS	NS	NS
	Site Type	PE	UPBD	PE	PE	UPBD	PE	QA	PE
	Objective (Federal)	PI, Research	PI, Research	NAAQS	NAAQS	PI, Research	NAAQS	NAAQS	PI, Research
	Analysis	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD
	Frequency	7/24	7/24	1:3	1:3	7/24	1:3	1:12	7/24
	Equipment	Met One BAM	Met One BAM	Thermo 2025	Thermo 2025	Met One BAM	Thermo 2025	Thermo 2025	Met One BAM
PM2.5 (speciated)	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 SASS			

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
Q= 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= Monitors at sites meeting near road designs as per Part 58
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 8.1.0 $PM_{2.5}$ Manual Minimum Monitoring Requirements

The District is federally mandated to monitor $PM_{2.5}$ levels in accordance with the CFR. This section will state the needs for $PM_{2.5}$ manual method samplers only. The District uses the $PM_{2.5}$ manual sampler to satisfy all minimum monitoring requirements, other than those requirements that specifically state $PM_{2.5}$ 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 $PM_{2.5}$ network requirements, e.g. ambient $PM_{2.5}$ sampling can fulfill an NCore requirement.

The District meets or exceeds all minimum requirements for $PM_{2.5}$ Manual monitoring for all programs except for the following:

- Establishment of the 2nd Near-road location (highlighted in red).
- Change in the number of $PM_{2.5}$ FRM SIP samplers.

The District is part of the Statewide $PM_{2.5}$ monitoring program and has additional minimum monitoring requirements for ambient level concentrations only. This section will discuss those requirements as well.

Section 8.1.1 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Design Criteria (24-Hr. & Annual Average)

The District is required to operate a minimum number of $PM_{2.5}$ samplers irrespective of the $PM_{2.5}$ network affiliation. To ascertain the minimum number of samplers required for ambient air sampling, the Highest Concentration value must be calculated. Tables 8.2a - 8.2c summarize these requirements. Note: The location of maximum concentration routinely alternates between Escondido, Lexington (El Cajon), and Downtown monitoring locations for both the 24-Hr and annual average.

> *4.7 Fine Particulate Matter ($PM_{2.5}$) Design Criteria.* [A]
> *4.7.1 General Requirements.*
> *(a) State, and where applicable local, agencies must operate the minimum number of required $PM_{2.5}$ SLAMS sites listed in Table D-5 of this appendix. The NCore sites are expected to complement the $PM_{2.5}$ data collection that takes place at non-NCore SLAMS sites, and both types of sites can be used to meet the minimum $PM_{2.5}$ network requirements.*

Table D–5 of Appendix D to Part 58—$PM_{2.5}$ Minimum Monitoring Requirements

MSA population	*Most recent 3-year design value ≥85% of any $PM_{2.5}$ NAAQS*	*Most recent 3-year design value <85% of any $PM_{2.5}$ NAAQS*
>1,000,000	*3*	*2*

To calculate the number of samplers needed, Use *Table D-5*

Table 8.2a $PM_{2.5}$ Manual Minimum Monitoring Requirements-Ambient

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Number of Required $PM_{2.5}$ Manual Samplers (#)	Number of Active $PM_{2.5}$ Manual Samplers (#)	Number of Needed $PM_{2.5}$ Manual Samplers (#)
San Diego	San Diego	3.4 million	3	4	None

[A] (2016) 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 ($PM_{2.5}$) Design Criteria", subsection 4.7.1 General Requirements (a)

Table 8.2b $PM_{2.5}$ Manual Minimum Monitoring Requirements-Design Criteria (Annual Average), 2015-2017

Annual Design Value ($\mu g/m^3$)	Annual Design Value Location (name)	Annual Design Value Site AQS ID (#)	Is the Annual Design Value ≥ 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)
9.7	Chula Vista Kearny Villa Rd. **Lexington**	06-073-0001 06-073-1016 06-073-1022	No	Yes	Yes

Table 8.2c $PM_{2.5}$ Manual Minimum Monitoring Requirements-Design Criteria (24-Hr), 2015-2017

24-Hr Design Value ($\mu g/m^3$)	24-Hr Design Value Location (name)	24-Hr Design Value Site AQS ID (#)	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)
22	**Chula Vista** Kearny Villa Rd. Lexington	06-073-0001 06-073-1016 06-073-1022	No	Yes	Yes

Section 8.1.2 $PM_{2.5}$ 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 $PM_{2.5}$ NAAQS and is outlined in the 1998 (and 2002 update) "California Particulate Matter Monitoring Network Description" [B]. The PM-fine network is designed to collect ambient PM-fine data as required by the 40 CFR Part 50 for use in designating areas as attainment/non-attainment, developing control programs, and tracking progress of these control programs. Table 8.3 summarizes these requirements.

The EPA Region 9 governing authority approved the ARB's statewide distribution plan for the placement of the $PM_{2.5}$ monitors within each district and the location of the collocated monitors for each district to satisfy the sampling and quality assurance requirements, respectively, of 40 CFR Part 58. Any changes to the $PM_{2.5}$ network in the San Diego Air Basin will be undertaken in partnership and advisement with the ARB. Additionally, if a $PM_{2.5}$ 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 8.3 $PM_{2.5}$ Manual Minimum Monitoring Requirements- State (SIP)

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Minimum Number of $PM_{2.5}$ Manual Samplers Required (#)	Number of Active $PM_{2.5}$ Manual Samplers (#)	Number of Monitors $PM_{2.5}$ Manual Needed (#)
San Diego	San Diego	3.4 million	5	3*	2*

* The Escondido & Downtown stations (and $PM_{2.5}$ samplers) are temporarily closed, due to remodeling.

[B] http://www.arb.ca.gov/aqd/pm25/pmfdsign.htm

Section 8.1.3 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Site of Expected Maximum Concentration (24-Hr & Annual Average)

The District is required to designate $PM_{2.5}$ 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, Lexington, and Downtown monitoring locations. Tables 8.4 summarize these requirements.

4.7 Fine Particulate Matter ($PM_{2.5}$) Design Criteria.[C]
4.7.1 General Requirements.
(b) Specific Design Criteria for $PM_{2.5}$.
(1) At least one monitoring station is to be sited at neighborhood or larger scale in an area of expected maximum concentration.

Table 8.4 $PM_{2.5}$ 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 Design Value Annual NAAQS AQS ID (#)		Site of Expected Maximum Concentration for 24-Hr NAAQS (name)	Site of Expected Maximum Concentration for 24-Hr NAAQS AQS ID (#)
Lexington	06-073-1022		Lexington	06-073-1022

Section 8.1.4 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Near-road

The District is required to have a $PM_{2.5}$ sampler at a near-road location. The District is required to operate two near-road sites. At the time of the writing of this report, the District is in the process of installing a $PM_{2.5}$ FRM sampler at the first near-road site (RCD), thus fulfilling our near-road particulate requirement. Table 8.5 lists these requirements.

4.7 Fine Particulate Matter ($PM_{2.5}$) Design Criteria. [D]
4.7.1 General Requirements.
(b) Specific Design Criteria for $PM_{2.5}$.
(2) For CBSAs with a population of 1,000,000 or more persons, at least one $PM_{2.5}$ monitor is to be collocated at a near-road NO_2 station required in section 4.3.2(a) of this appendix.

Table 8.5 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Near-road

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Are $PM_{2.5}$ Near-road Samplers Required? (yes/no)	Are Collocated $PM_{2.5}$ Near-road Samplers Required? (yes/no)	Number of Collocated $PM_{2.5}$ Near-road Samplers Required? (#)	Number of Active $PM_{2.5}$ Near-road Samplers Collocated (#)	Number of Needed $PM_{2.5}$ Near-road Samplers (#)
San Diego	San Diego	3.4 million	Yes	Yes	1	0	1

[C] (2016) 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 ($PM_{2.5}$) Design Criteria", subsection 4.7.1 General Requirements, (b) "Specific Design Criteria for PM2.5, (1) [D] (2016) 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 ($PM_{2.5}$) Design Criteria", subsection (b)(2)

Section 8.1.5 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Site of Poor Air Quality

The District is required to designate $PM_{2.5}$ 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 be also be the site of poor air quality). For the District these locations can change yearly. Table 8.6 summarizes these requirements.

4.7 Fine Particulate Matter ($PM_{2.5}$) Design Criteria. [E]
4.7.1 General Requirements.
(b) Specific Design Criteria for $PM_{2.5}$.
(3) For areas with additional required SLAMS, a monitoring station is to be sited in an area of poor air quality.

Table 8.6 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Site of Poor Air Quality

Site of Poor Air Quality (name)	Site of Poor Air Quality AQS ID (#)
Chula Vista	06-073-0001

Section 8.1.6 $PM_{2.5}$ Manual Minimum Monitoring Requirements-NCore

The District is required to operate a $PM_{2.5}$ 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 $PM_{2.5}$ and PM_{coarse} ($PM_{10-2.5}$) data. PM_{coarse} data is the obtained by operating collocated PM_{10} and $PM_{2.5}$ samplers of the same make and model and on the same sampling frequency. The $PM_{2.5}$ concentrations are then subtracted from the PM_{10} concentrations to get the PM_{coarse} fraction. Table 8.7 lists the NCore $PM_{2.5}$ requirements.

3. Design Criteria for NCore Sites[F]
(b) The NCore sites must measure, at a minimum, $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$, $PM_{10-2.5}$ particle mass, speciated $PM_{10-2.5}$, O_3, SO_2, CO, NO/NO_y, wind speed, wind direction, relative humidity, and ambient temperature.

4.8 Coarse Particulate Matter ($PM_{10-2.5}$) Design Criteria. [G]
4.8.1 General Monitoring Requirements.
(a) The only required monitors for $PM_{10-2.5}$ are those required at NCore Stations.

Table 8.7 $PM_{2.5}$ Manual Minimum Monitoring Requirements-NCore

Number of $PM_{2.5}$ Samplers Required at NCore Sites (#)	Number of $PM_{2.5}$ Samplers Active at NCore Sites (#)	Number of $PM_{2.5}$ Samplers Needed at NCore Sites (#)	Can this $PM_{2.5}$ Sampler be used for PMcoarse? (yes/no)	Is a $PM_{2.5}$ Sampler Needed for PMcoarse? (yes/no)	NCore Sites/Locations (name)	NCore Sites/Locations AQS ID (#)
1	1	None	yes	None	Lexington (LES)	06-073-1022

[E] (2016) 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 ($PM_{2.5}$) Design Criteria", subsection (b)(3)
[F] (2016) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore sites", subpart (b)
[G] (2016) 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 ($PM_{2.5}$) Design Criteria", subsection 4.8.1(a)

Section 8.1.7 $PM_{2.5}$ Manual Minimum Monitoring Requirements-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 8.8 summarizes these requirements.

> *3. Measurement Quality Check Requirements*[H]
> *3.2.5.1 Each EPA designated Federal reference method (FRM) or Federal equivalent method (FEM) within a primary quality assurance organization must:(a) Have 15 percent of the monitors collocated (values of 0.5 and greater round up)*

Table 8.8 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Collocation

Number of Samplers Required for Collocation (#)	Number of Samplers Active for Collocation (#)	Number of Samplers Needed for Collocation (#)	Number of Samplers Active for Collocation (#)	Number of Samplers Needed for Collocation (#)	Location of Collocated Site(s) (name)	Collocated Site AQS ID (#)
3	5	5 x (15%) = 1	1	None	Kearny Villa Rd	06-073-1016

The District and the ARB sited the $PM_{2.5}$ collocation site in partnership. The collocated sampler must be spaced 1-4 meters from the primary sampler and should be located at an area of high concentration.

Section 8.1.8 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Summary

Table 8.9 summarizes all the $PM_{2.5}$ manual minimum monitoring requirements from Sections 8.1.1-8.1.7.

Table 8.9 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Summary

CFR Programs Requirements for $PM_{2.5}$ Manual Samplers (name)	Number of $PM_{2.5}$ Manual Samplers Required (#)	Number of $PM_{2.5}$ Manual Samplers Active (#)	Number of $PM_{2.5}$ Manual Samplers Needed (#)
CFR EPA Table D-2 only=	3	5	None
California Particulate Matter Network=	5	3	2
Expected Maximum Concentration, 24-Hr =	1	1	None
Expected Maximum Concentration, Annual Average=	1	1	None
Near-road=	1	0	1
Poor Air Quality=	1	1	None
NCore=	1	1	None
Collocation=	1	1	None

[H] (2016) 40 CFR Part 58, Appendix A, Section 3.2.3.1, Quality System Requirements, PM2.5, 3.2.3.1

Section 8.2.0 $PM_{2.5}$ Continuous Minimum Monitoring Requirements

The District is federally mandated to monitor $PM_{2.5}$ levels in accordance with the CFR. This section will state the needs for $PM_{2.5}$ 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 $PM_{2.5}$ continuous monitoring for all programs.

Section 8.2.1 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-Ambient

The District is required to operate a minimum number of $PM_{2.5}$ continuous samplers irrespective of the $PM_{2.5}$ network affiliation. Table 8.10 summarizes these requirements.

> *4.7 Fine Particulate Matter ($PM_{2.5}$) Design Criteria.*[I]
> *4.7.2 Requirement for Continuous $PM_{2.5}$ Monitoring.*
> *The State, or where appropriate, local agencies must operate continuous $PM_{2.5}$ analyzers equal to at least one-half (round up) the minimum required sites listed in Table D-5 of this appendix.*

Table 8.10 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-Ambient

Number of $PM_{2.5}$ Manual Samplers Required (#)	Number of $PM_{2.5}$ Continuous Samplers Required= (½ Minimum Number of) Required $PM_{2.5}$ Manual Samplers Rounded Up (#)	Number of $PM_{2.5}$ Continuous Samplers Active (#)	Number of $PM_{2.5}$ Continuous Samplers Needed (#)
3	3 x (½) = 2	4	None

Section 8.2.2 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-Collocation with Manual Sampler(s)

The District is required to operate a minimum number of $PM_{2.5}$ continuous analyzers collocated with $PM_{2.5}$ manual samplers. Table 8.11 summarizes these requirements.

> *4.7 Fine Particulate Matter ($PM_{2.5}$) Design Criteria.*[I]
> *4.7.2 Requirement for Continuous $PM_{2.5}$ Monitoring.*
> *The State, or where appropriate, local agencies must operate continuous $PM_{2.5}$ analyzers equal to at least one-half (round up) the minimum required sites listed in Table D-5 of this appendix. At least one required continuous analyzer in each MSA must be collocated with one of the required FRM/FEM/ARM monitors…*

Table 8.11 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-Collocation

Number of $PM_{2.5}$ Continuous Samplers Required to be Collocated with $PM_{2.5}$ Manual Samplers (#)	Number of $PM_{2.5}$ Continuous Samplers Actively Collocated with $PM_{2.5}$ Manual Samplers (#)	Number of $PM_{2.5}$ Continuous Samplers Needed to be Collocated with $PM_{2.5}$ Manual Samplers (#)	Collocation Locations (name)	Collocation Locations AQS ID (#)
1	1	0	Lexington (LES)	06-073-1022

[I] (2016) 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 ($PM_{2.5}$) Design Criteria", subsection 4.7.2

Section 8.2.3 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-Regional Background Site

The District is required to designate $PM_{2.5}$ sampling locations for specific purposes or needs. One of these designations is called the site that registers background concentrations. Table 8.12 summarizes these requirements.

> *4.7 Fine Particulate Matter ($PM_{2.5}$) Design Criteria.* [J]
> *4.7.3 Requirement for $PM_{2.5}$ Background and Transport Sites. Each State shall install and operate at least one $PM_{2.5}$ site to monitor for regional background and transport…*

Table 8.12 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Regional Background Site

Background Site (name)	Background Site AQS ID (#)
Lexington	06-073-1022

Section 8.2.4 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-Regional Transport Site

The District is required to designate $PM_{2.5}$ sampling locations for specific purposes or needs. One of these designations is called the site of that registers transport concentrations. Table 8.13 summarizes these requirements.

> *4.7 Fine Particulate Matter ($PM_{2.5}$) Design Criteria.* [J]
> *4.7.3 Requirement for $PM_{2.5}$ Background and Transport Sites. Each State shall install and operate at least one $PM_{2.5}$ site to monitor for regional background and transport*

Table 8.13 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Regional Transport Site

Transport Site (name)	Transport Site AQS ID (#)
Camp Pendleton	06-073-1008

Section 8.2.5 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-NCore

The District is required to operate a $PM_{2.5}$ continuous sampler as part of the NCore multipollutant monitoring program. Table 8.14 lists the NCore $PM_{2.5}$ continuous requirements.

> *3. Design Criteria for NCore Sites* [K]
> *(b) The NCore sites must measure, at a minimum, $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$…*

Table 8.14 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-NCore

Number of $PM_{2.5}$ Continuous Samplers Required at NCore Sites (#)	Number of $PM_{2.5}$ Continuous Samplers Active at NCore Sites (#)	Number of $PM_{2.5}$ Continuous Samplers Needed at NCore Sites (#)	NCore Sites/Locations (name)	NCore Sites/Locations AQS ID (#)
1	1	0	Lexington (LES)	06-073-1022

[J] (2016) 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 ($PM_{2.5}$) Design Criteria", subsection 4.7.3

[K] (2016) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore sites", subpart (b)

Section 8.2.6 $PM_{2.5}$ 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 8.15 summarize these requirements

3.2.3.2 In addition, monitors selected for collocation must also meet the following requirements:[L]
(b) For each primary monitor designated as an EPA FEM used by the PQAO, 50 percent of the monitors designated for collocation, or the first if only one collocation is necessary, shall be collocated with a FRM quality control monitor and 50 percent of the monitors shall be collocated with a monitor having the same method designation as the FEM primary monitor. If an odd number of collocated monitors is required, the additional monitor shall be a FRM quality control monitor. An example of the distribution of collocated monitors for each unique FEM is provided below. Table A-2 of this appendix demonstrates the collocation procedure with a PQAO 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*

Table 8.15 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-Collocation

Number of $PM_{2.5}$ Continuous Samplers Required (#)	Number of $PM_{2.5}$ Continuous Samplers Required for Collocations (from Table A-2) (#)	Number of $PM_{2.5}$ Continuous Samplers Needed for Collocation (#)
1	0	0

Section 8.2.7 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-Summary

Table 8.16 summarizes all the $PM_{2.5}$ continuous minimum monitoring requirements from Sections 8.2.1 - 8.2.6.

Table 8.16 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-Summary

CFR Programs Requirements for $PM_{2.5}$ Continuous Samplers (name)	Number of $PM_{2.5}$ Continuous Samplers Required (#)	Number of $PM_{2.5}$ Continuous Samplers Active (#)	Number of $PM_{2.5}$ Continuous Samplers Needed (#)
Ambient=	2	4	None
$PM_{2.5}$ continuous collocated with $PM_{2.5}$ manual=	1	1	None
Regional Background=	1	1	None
Regional Transport=	1	1	None
NCore=	1	1	None
$PM_{2.5}$ continuous collocated with $PM_{2.5}$ continuous=	0	0	None

[L] (2016) 40 CFR Part 58, Appendix A, Section 3.2.3.1, Quality System Requirements, PM2.5, 3.2.3

Section 8.3.0 $PM_{2.5}$ Speciation Minimum Monitoring Requirements

The District is federally mandated to monitor $PM_{2.5}$ speciation levels in accordance with the CFR. This section will state the needs for $PM_{2.5}$ speciation method samplers only. This section will also state the different monitoring requirements for each program 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 $PM_{2.5}$ speciation monitoring except for:

- At the Escondido station (highlighted in red)

Section 8.3.1 $PM_{2.5}$ 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 8.17 lists these requirements.

> *4.7 Fine Particulate Matter ($PM_{2.5}$) Design Criteria.*[M]
> *4.7.4 $PM_{2.5}$ Chemical Speciation Site Requirements. Each State shall continue to conduct chemical speciation monitoring and analyses at sites designated to be part of the $PM_{2.5}$ Speciation Trends Network.*

Table 8.17 $PM_{2.5}$ Speciation Minimum Monitoring Requirements-Ambient

Established $PM_{2.5}$ CSN Samplers (Sites) (#)	Established $PM_{2.5}$ STN Samplers (Sites) (#)	AQS ID of $PM_{2.5}$ CSN & STN Monitors (Sites) (#)	Are the $PM_{2.5}$ CSN & STN Monitor (Sites) Active? (yes/no)	Are $PM_{2.5}$ CSN & STN Monitor (Sites) Needed? (yes/no)
Lexington	Lexington	06-073-1022	Yes	None
Escondido	Escondido	06-073-1002	No	1*

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

Section 8.3.2 $PM_{2.5}$ Speciation Minimum Monitoring Requirements-NCore

The District is required to operate $PM_{2.5}$ speciation samplers as part of the NCore multipollutant monitoring program. Table 8.18 lists these requirements.

> *3. Design Criteria for NCore Sites*[N]
> *(b) The NCore sites must measure, at a minimum… speciated $PM_{2.5}$…*

Table 8.18 $PM_{2.5}$ Speciation Minimum Monitoring Requirements-NCore

Number of NCore Site(s) (#)	Location of NCore Site(s) (name)	AQS ID of Monitors (Sites) (#)	Are the Monitors (Sites) Active (yes/no)	Are Monitors (Sites) Needed (yes/no)
1	Lexington	06-073-1022	Yes	None

Section 8.3.3 $PM_{2.5}$ Speciation Minimum Monitoring Requirements-Summary

Table 8.19 summarizes all the $PM_{2.5}$ speciation minimum monitoring requirements.

Table 8.19 $PM_{2.5}$ Speciation Minimum Monitoring Requirements-Summary

CFR Programs Requirements for $PM_{2.5}$ Manual Samplers (name)	Number of $PM_{2.5}$ CSN & STN Samplers Required (#)	Number of $PM_{2.5}$ CSN & STN Samplers Active (#)	Number of $PM_{2.5}$ CSN & STN Samplers Needed (#)
Existing Network=	2	1	1
NCore=	1	1	None

[M] (2016) 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 ($PM_{2.5}$) Design Criteria", subsection 4.7.4.

[N] (2016) 40 CFR Part 58, App D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore Sites", subsection (b).

Section 8.4.0 $PM_{2.5}$ 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. Not all $PM_{2.5}$ instrumentation have a NAAQS to compare, $PM_{2.5}$ speciation samplers, and not all $PM_{2.5}$ analyzers are operated in regulatory mode, $PM_{2.5}$ continuous samplers; therefore, they cannot be compared to the NAAQS. All District $PM_{2.5}$ samplers are sited to specified CFR parameters to collect valid data. This section will list those requirements.

Section 8.4.1 $PM_{2.5}$ Manual Suitability for Comparison to the NAAQS

The CFR requires that for $PM_{2.5}$ Manual data to be used in regulatory determinations of compliance with the $PM_{2.5}$ NAAQS, the $PM_{2.5}$ samplers must be sited according to Federal Regulations[O] and the sampling frequency must be in accordance with Federal Regulations[P]. All District $PM_{2.5}$ Manual samplers meet or exceed all minimum monitoring requirements and sampling frequencies, as to be able to be compared to the NAAQS. Table 8.20a summarizes these requirements.

Table 8.20a $PM_{2.5}$ 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)	$PM_{2.5}$	88101	$\mu g/m^3$ LC STD	105 001	24-Hr	7	R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC	Gravimetric	145	1:1 or 1:3	EQPM-0202-145 or RFPS-0498-118

Section 8.4.2 $PM_{2.5}$ Continuous Unsuitability for Comparison to the NAAQS

The CFR requires that for $PM_{2.5}$ FEM data to be used in regulatory determinations of compliance with the $PM_{2.5}$ NAAQS, the $PM_{2.5}$ FEM samplers must operate according to FEM designation requirements. In 2014, the District received approval from the EPA Region IX authorities to operate the $PM_{2.5}$ Continuous samplers in non-FEM mode. There are several ways to operate the $PM_{2.5}$ continuous sampler in non-FEM/non-regulatory mode. One of the conditions for FEM operational status of the $PM_{2.5}$ continuous sampler is to run it at 35% relative humidity. The District operates all $PM_{2.5}$ continuous samplers at 36% relative humidity, per the manufacturer's recommendation. Therefore, the $PM_{2.5}$ continuous samplers cannot be compared to the NAAQS. Table 8.20b summarizes the equipment requirements.

The $PM_{2.5}$ continuous samplers are an important tool to define and develop abatement strategies to curtail $PM_{2.5}$ pollution. The $PM_{2.5}$ continuous samplers are used for trends analysis and real-time reporting for public information.

Table 8.20b $PM_{2.5}$ 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)	$PM_{2.5}$	88502	$\mu g/m^3$ LC	105	1-Hr	1	Met One BAM 1020 w/VSCC	Beta Attenuation	733	7/24	Not Applicable

Section 8.4.3 $PM_{2.5}$ Speciation Unsuitability for Comparison to the NAAQS

There are no NAAQS for the $PM_{2.5}$ Speciation program. All samplers are sited as to be able to be compared to collect valid data though. Table 8.20c summarizes the equipment requirements.

Table 8.20c $PM_{2.5}$ 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)	$PM_{2.5}$ 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)	$PM_{2.5}$ STN	See ARB or EPA	See EPA	See EPA	24-Hr	7	Met One SASS	See EPA	See EPA	1:3 or 1:6	Not Applicable

[O] (2016) 40 CFR Part 58, Appendix E, "Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring" and Table E-4.

[P] (2016) 40 CFR Part 58.12, Subpart B, "Operating Schedules".

Section 8.5.0 $PM_{2.5}$ Manual Operating Schedule

$PM_{2.5}$ 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. Tables 8.21-8.25 summarize these requirements.

> *58.12 Operating schedules*[Q]
> *(d) For manual $PM_{2.5}$ samplers:*
> *(1)(i) Manual $PM_{2.5}$ samplers at required SLAMS stations without a collocated continuously operating $PM_{2.5}$ 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 $PM_{2.5}$ sites with both manual and continuous $PM_{2.5}$ monitors operating, the monitoring agency may request approval for a reduction to 1-in-6 day $PM_{2.5}$ 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 $PM_{2.5}$ 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 $PM_{2.5}$ standard. A continuously operating FEM or ARM $PM_{2.5}$ 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 $PM_{2.5}$ 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 $PM_{2.5}$ speciation samplers at STN stations must operate on at least a 1-in-3 day sampling frequency …*

Table 8.21 $PM_{2.5}$ Manual Operating Schedule-for Manual Samplers not Collocated with Continuous Samplers

$PM_{2.5}$ Manual samplers that are NOT Collocated with $PM_{2.5}$ Continuous Sites/samplers (name)	Sites/samplers AQS ID (#)	What is the Minimum EPA Permitted Sampling Frequency? (#)	What is the Actual Sampling Frequency? (#)
Kearny Villa Rd.	06-073-1016	1:3	1:3
Chula Vista	06-073-0001	1:3	1:3
Lexington	06-073-1022	1:1	1:1

[Q] (2016) 40 CFR Part 58.12, Subpart B, "Operating Schedules", (d) For manual PM2.5 samplers (1)(i)

Table 8.22 $PM_{2.5}$ Manual Operating Schedule-for Manual Samplers Collocated with Continuous Samplers

$PM_{2.5}$ Manual Sites/samplers that are Collocated with $PM_{2.5}$ Continuous Sites/samplers (name)	Sites/samplers AQS ID (#)	Within 10% of the Annual NAAQS? (yes/no)	Within 10% of the 24-Hr NAAQS? (yes/no)	Any Exceedance of the 24-Hr NAAQS each year for the last 3 years (yes/no)	Minimum EPA Permitted Sampling Frequency without a Waiver? (#)	What is the Actual Sampling Frequency? (#)
Lexington	06-073-1022	No	No	No	Yes	1:1

Table 8.23a $PM_{2.5}$ Manual Operating Schedule-for 24-Hr Design Value Samplers, 2015-2017

24-Hr Design Value (µg/m^3)	24-Hr Design Value Location (name)	Is the 24-Hr Design Value within ±5% of the NAAQS? (yes/no)	Is a Daily (1:1) Sampling Frequency Required at the Site of Highest Concentration? (yes/no)	Is the Site of Highest Concentration operating on a Daily (1:1) Sampling Frequency? (yes/no)
22	Chula Vista	No	No	Yes

Table 8.23b $PM_{2.5}$ Manual Operating Schedule-ACTUAL for 24-Hr Design Value Samplers, 2015-2017

Lexington Site 24-Hr Design Value (µg/m^3)	Is the Lexington Site the Actual 24-Hr Design Value (yes/no)	ACTUAL 24-Hr Design Value Location (name)	ACTUAL 24-Hr Design Value Concentration (µg/m^3)	ACTUAL 24-Hr Design Value Location (µg/m^3)
18	No	Lexington	22	Chula Vista

Table 8.24 $PM_{2.5}$ Manual Operating Schedule-NCore

$PM_{2.5}$ Manual Sampler NCore (name)	Site/sampler AQS ID (#)	What is the Minimum EPA Permitted Sampling Frequency? (#)	What is the Actual Sampling Frequency? (#)
Lexington	06-073-1022	1:3	1:1

Table 8.25 $PM_{2.5}$ Speciation Operating Schedule-NCore

$PM_{2.5}$ STN Sampler Location (name)	Site/sampler AQS ID (#)	What is the Minimum EPA Permitted Sampling Frequency? (#)	What is the Actual Sampling Frequency? (#)
Lexington	06-073-1022	1:3	1:3

Section 8.6.0 $PM_{2.5}$ Manual Concentrations for San Diego

As with the State, $PM_{2.5}$ concentrations in the San Diego Air Basin have declined over the years. This section will illustrate the different metrics for comparison.

Section 8.6.1 $PM_{2.5}$ Manual Concentrations for San Diego-for the Last 20 Years

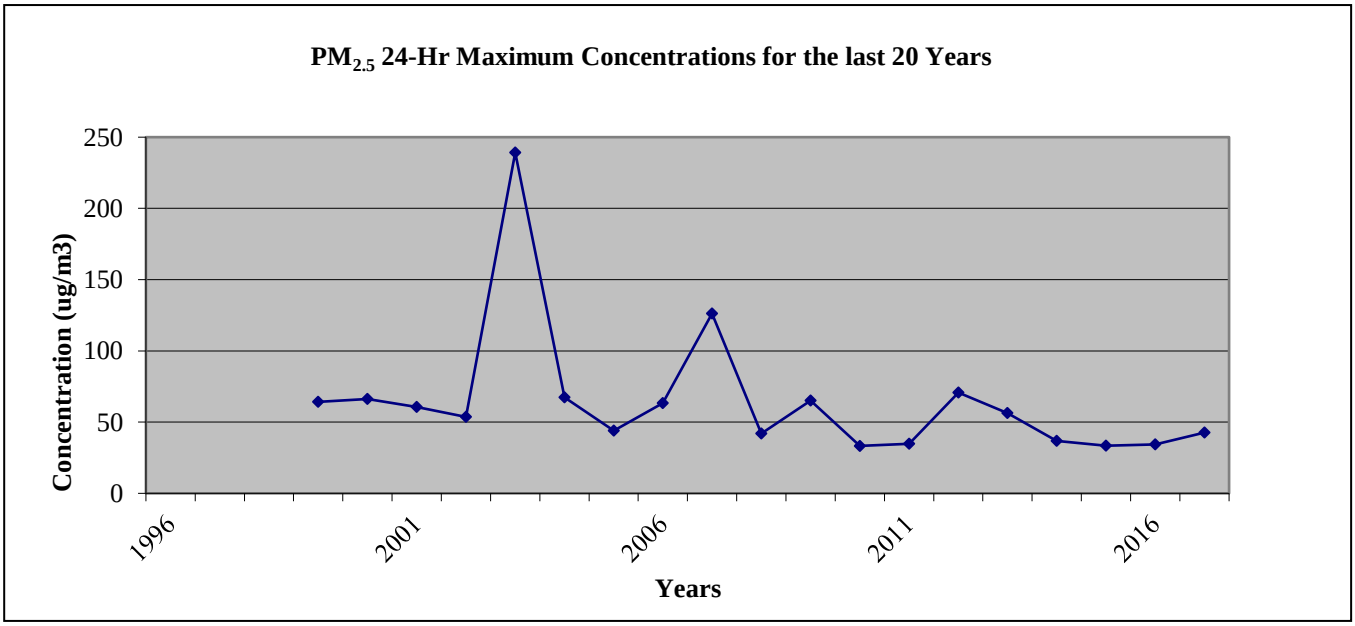
Annual average $PM_{2.5}$ FRM concentrations in the County have declined over the years, see Table 8.2624.7. The high maximum 24-Hr concentrations measured in 2003 and 2007 were due to severe wildfires that occurred in Southern California. The 98th percentile of 24-Hr $PM_{2.5}$ concentrations showed 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 an increased incidents of "Days above the Standard". Note: the "Days Above the Standard" row in Table 8.26 reflects the $PM_{2.5}$ standard for that year. Figure 8.1 graphs the SDAB $PM_{2.5}$ trends over the years.

Table 8.26 $PM_{2.5}$ Manual Concentrations for San Diego-for the Last 20 Years (24-Hr), 1997-2017

Maximum 24-Hr Concentration ($\mu g/m^3$)	1997	1998	1999	2000	2001	2002	2003 *	2004	2005	2006	2007 *	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	n/a	n/a	64.3	66.3	60.0	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
Days above the National Std	n/a	n/a	0	2	0	0	2	1	0	1	17	3	3	0	0	2	2	1	0	0	1

n/a= not applicable
*Wildfires in San Diego County

Figure 8.1 $PM_{2.5}$ Manual Concentrations for San Diego-for the Last 20 Years (24-Hr) Graph, 1997-2017



Section 8.6.2 $PM_{2.5}$ Manual Concentrations for San Diego-by Site for the Year

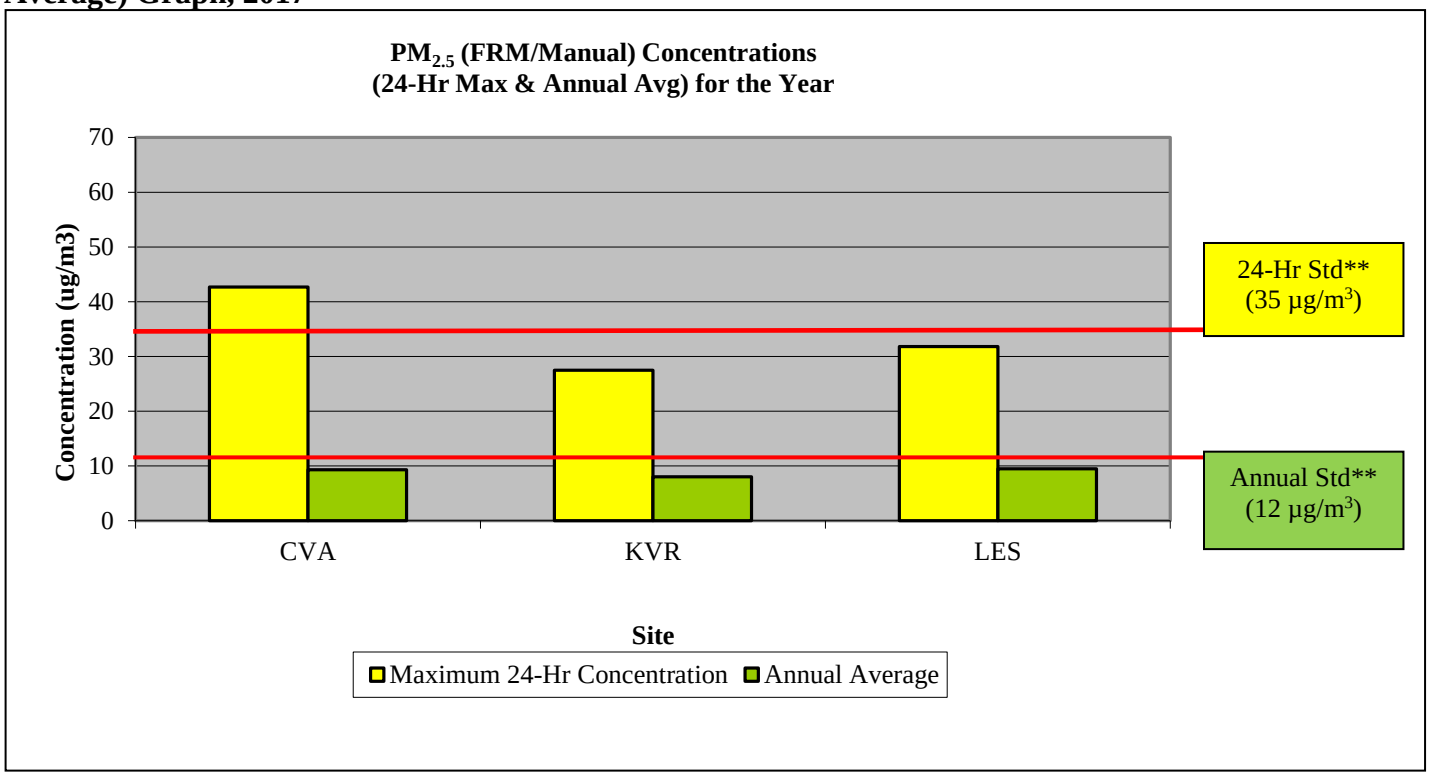
Table 8.27 lists the maximum $PM_{2.5}$ Manual measurements for each $PM_{2.5}$ Manual method monitoring location in Figure 8.2 shows the values graphically with respect to the National Standard. Note the NAAQS is calculated as a Design Value and these measurements are for the calendar year; therefore, the comparison to the NAAQS is for informational purpose only.

Table 8.27 $PM_{2.5}$ Manual Concentrations for San Diego-by Site for the Year (24-Hr & Annual Average), 2017

Manual Method	No (#)	Site (name)	Site Abbreviation	Maximum Concentration For 24-Hr (µg/m³)	Annual Average (µg/m³)	Number of Days Above the National Standard (#)
	1	Chula Vista	CVA	4.27	9.3	1
	2	Kearny Villa Rd	KVR	27.5	8.0	0
	3	Lexington	LES	31.8	9.5	0

*****Not operational for an entire year

Figure 8.2 $PM_{2.5}$ Manual Concentrations for San Diego-by Site for the Year (24-Hr & Annual Average) Graph, 2017



****** The NAAQS is calculated as a Design Value and these measurements are for the calendar year; therefore, the comparison to the NAAQS is for informational purpose only.

Section 8.6.3 $PM_{2.5}$ Manual Concentrations for San Diego-by Site for the Design Value (24-Hr)

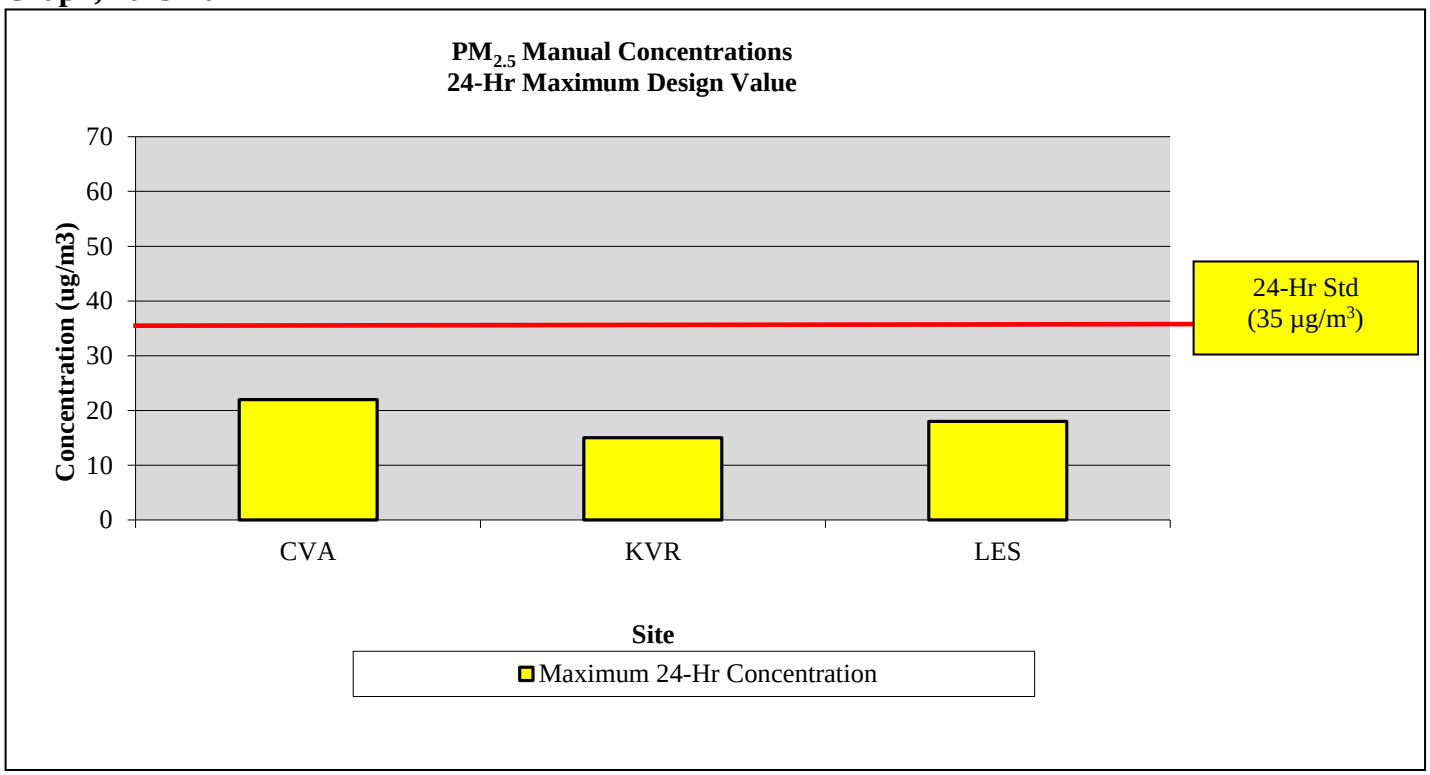
Table 8.28a lists the maximum $PM_{2.5}$ Manual 24-Hr measurements for each $PM_{2.5}$ Manual method monitoring location in Table 8.28a and Figure 8.3a shows the values graphically with respect to the National Standard.

Table 8.28a $PM_{2.5}$ Manual Concentrations for San Diego-by Site for the Design Value (24-Hr), 2015-2017

Manual Method	No (#)	Site (name)	Site Abbrev	Design Value Maximum Concentration for 24-Hr ($\mu g/m^3$)	Number of Days Above the NAAQS (#)	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)
	1	Chula Vista	CVA	22	1	No	Yes	Yes
	2	Kearny Villa Rd	KVR	15	0	No	Yes	Yes
	3	*Lexington	LES	18	0	No	Yes	Yes

*Not sampled for 3-yrs

Figure 8.3a $PM_{2.5}$ Manual Concentrations for San Diego-by Site for the Design Value (24-Hr) Graph, 2015-2017



Section 8.6.4 $PM_{2.5}$ Manual Concentrations for San Diego-by Site for the Design Value (Annual Average)

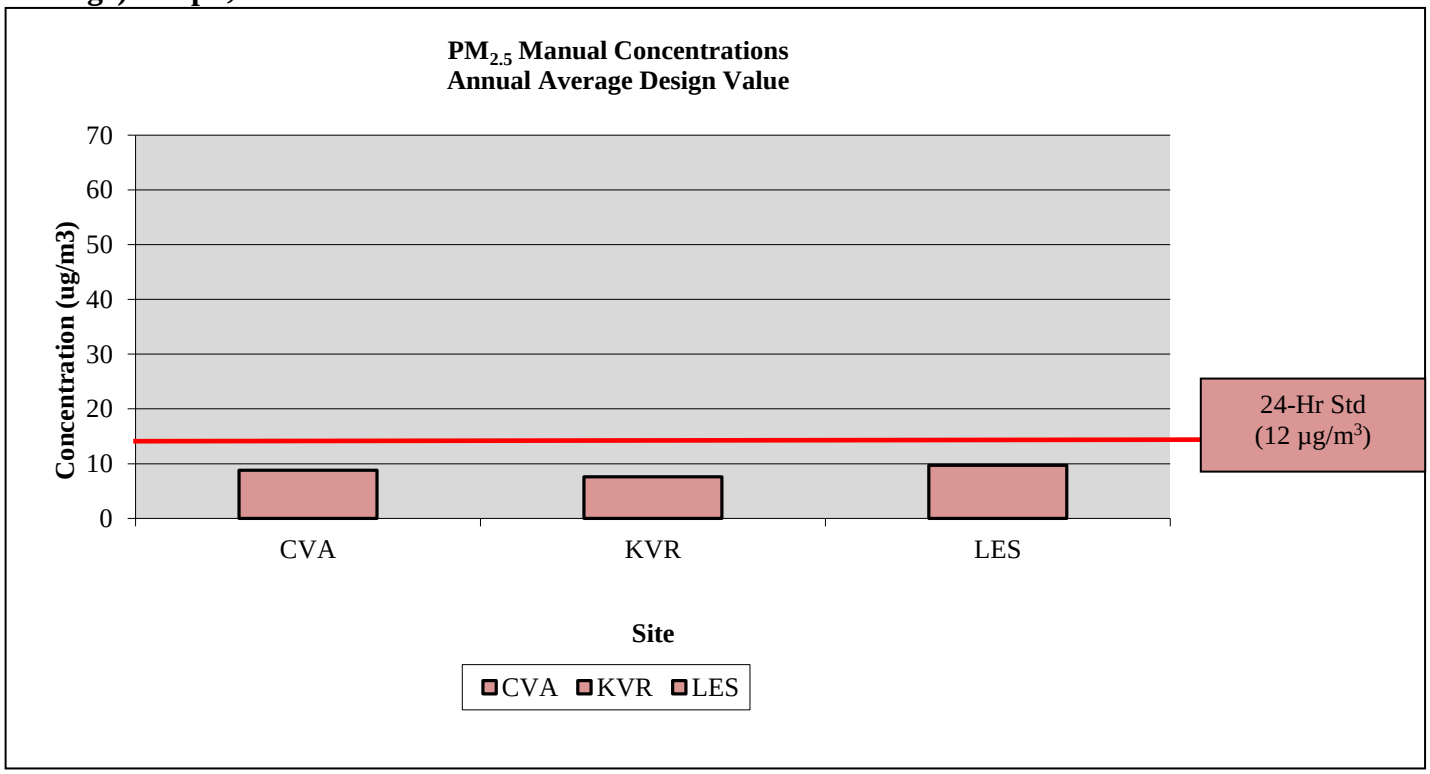
Table 8.28b lists the $PM_{2.5}$ Manual annual average Design Value measurements for each $PM_{2.5}$ Manual method monitoring location in Figure 8.3 shows the values graphically with respect to the National Standard.

Table 8.28b $PM_{2.5}$ Manual Concentrations for San Diego-by Site for the Design Value (Annual Average), 2015-2017

Manual Method	No (#)	Site (name)	Site Abbrev	Design Value for the Annual Avg ($\mu g/m^3$)	Number of Days Above the NAAQS (#)	Is the Annual Avg Design Value ≥ 85% of the NAAQS? (yes/no)	Is the Annual Avg. Design Value < 85% of the NAAQS? (yes/no)	Does the Annual Avg Design Value Meet the NAAQS? (yes/no)
	1	Chula Vista	CVA	8.8	1	No	Yes	Yes
	2	Kearny Villa Rd	KVR	7.6	0	No	Yes	Yes
	3	Lexington	LES	9.7	0	No	Yes	Yes

*Not sampled for an entire year

Figure 8.3b $PM_{2.5}$ Manual Concentrations for San Diego-by Site for the Design Value (Annual Average) Graph, 2015-2017



Section 8.7.0 $PM_{2.5}$ Continuous Concentrations for San Diego

All District $PM_{2.5}$ continuous samplers cannot be compared to the NAAQS, because they are non-regulatory units; therefore, the values cannot be compared to the $PM_{2.5}$ standards and can only be used for trends analysis and public informational use. ALL $PM_{2.5}$ continuous samplers are operated at 36% relative humidity, which makes them non-regulatory.

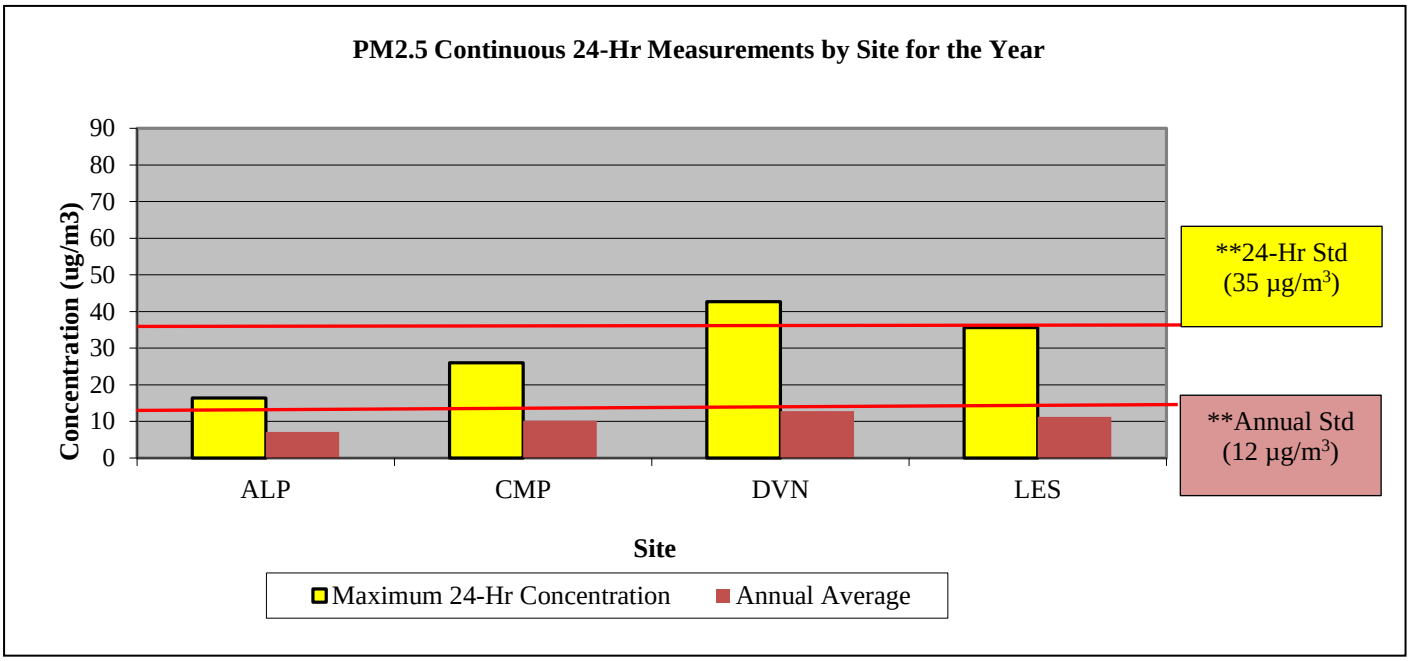
Section 8.7.1 $PM_{2.5}$ Continuous Concentrations for San Diego-by Site for the Year (24-Hr & Annual Average)

Table 8.29 lists the maximum $PM_{2.5}$ continuous 24-Hr measurements and Annual Average for each $PM_{2.5}$ continuous monitoring location and Figure 8.4 shows the values graphically. The measurements are not the Design Value (Yearly only).

Table 8.29 $PM_{2.5}$ Continuous Concentrations for San Diego-by Site for the Year (24-Hr & Annual Average), 2017

Continuous Method	No. (#)	Site (name)	Site Abbreviation	Maximum Concentration for 24-Hr (µg/m^3)	Annual Average (µg/m^3)
	1	Alpine	ALP	16.4	7.1
	2	Camp Pendleton	CMP	26.0	10.2
	3	Donovan	DVN	42.7	12.8
	4	Lexington	LES	35.6	11.2

Figure 8.4 $PM_{2.5}$ Continuous Yearly 24-Hr & Annual Average Measurements by Site Graph, 2017



****** The measurements are not the Design Value (Yearly only) and all $PM_{2.5}$ continuous samplers are not regulatory; therefore the values cannot be compared to the $PM_{2.5}$ standards and can only be used for trends analysis and public informational use.

Section 8.7.2 $PM_{2.5}$ Continuous Concentrations for San Diego-by Site for the Design Value (24-Hr & Annual Average)

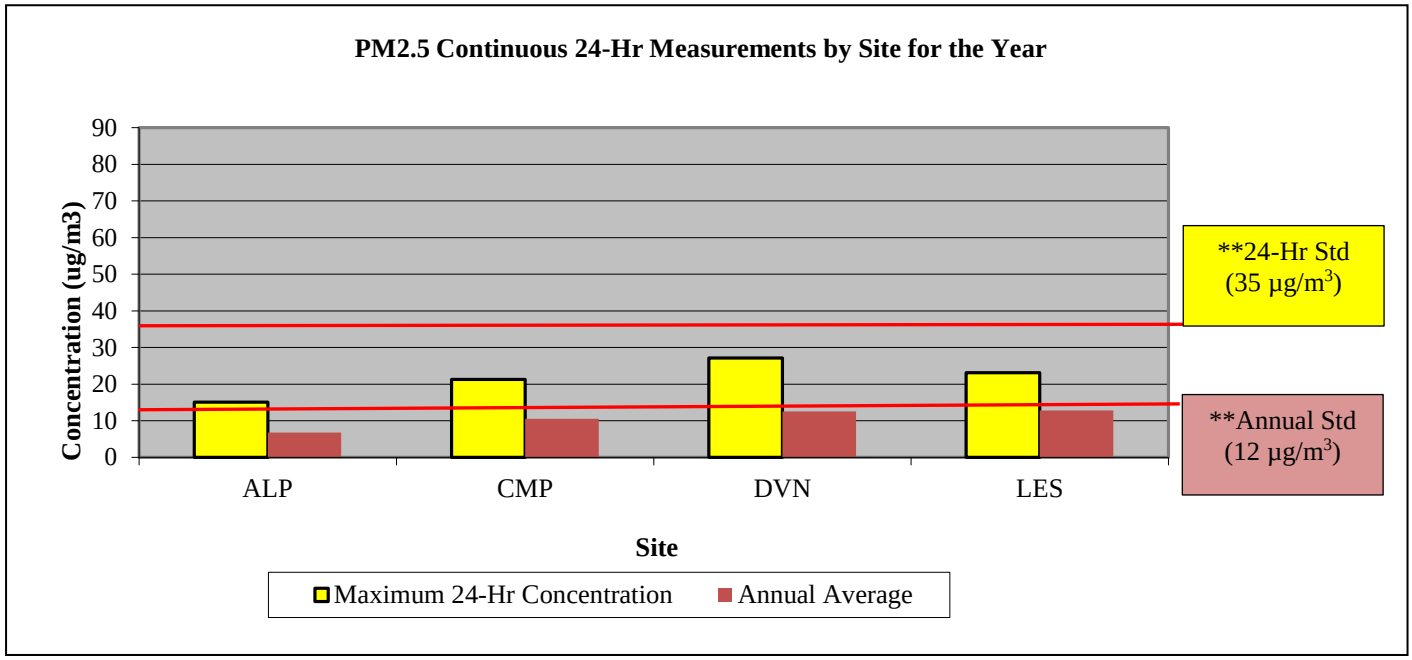
Table 8.30 lists the maximum $PM_{2.5}$ continuous 24-Hr measurements and Annual Average for each $PM_{2.5}$ continuous monitoring location and Figure 8.5 shows the values graphically. While the measurements are the Design Value, all $PM_{2.5}$ continuous samplers are not regulatory; therefore the values cannot be compared to the $PM_{2.5}$ standards and can only be used for trends analysis and public informational use.

Table 8.30 $PM_{2.5}$ Continuous Concentrations for San Diego-by Site for the Design Value (24-Hr & Annual Average), 2015-2017

Continuous Method	No. (#)	Site (name)	Site Abbreviation	Design Value Maximum Concentration for 24-Hr (µg/m^3)	Design Value Annual Average (µg/m^3)
	1	Alpine	ALP	15.1	6.8
	2	Camp Pendleton	CMP	21.3	10.5
	3	Donovan	DVN	27.1	12.5
	4	*Lexington	LES	23.1	12.8

* Two year DV

Figure 8.5 $PM_{2.5}$ Continuous Concentrations for San Diego-by Site for the Design Value (24-Hr & Annual Average) Graph, 2015-2017



All $PM_{2.5}$ continuous samplers are not regulatory; therefore the values cannot be compared to the $PM_{2.5}$ standards and can only be used for trends analysis and public informational use.

CHAPTER 9 PARTICULATE MATTER 10 µM (PM_{10})

Section 9.0.0 PM_{10} Introduction

PM_{10} was sampled for at locations throughout the SDAB (Figure 9.0) and referenced to the PM_{10} standards of the year (Table 9.0). The equipment are listed in Table 9.1. There is a PM_{10} (Lo-Vol) sampler at the Lexington Elementary School (LES) location that is also part of the paired Lo-Vol samplers needed to calculate PMcoarse. Please Note:

- In 2016, the District was evicted from our Downtown site and are in the process of locating a station in the Sherman Heights area.
- In 2015, the District was evicted from our Escondido site (it was on the City of Escondido property) and are in the process of locating the station 20 meters southeast of the original location (on San Diego County property).

Figure 9.0 PM_{10} Overall Map

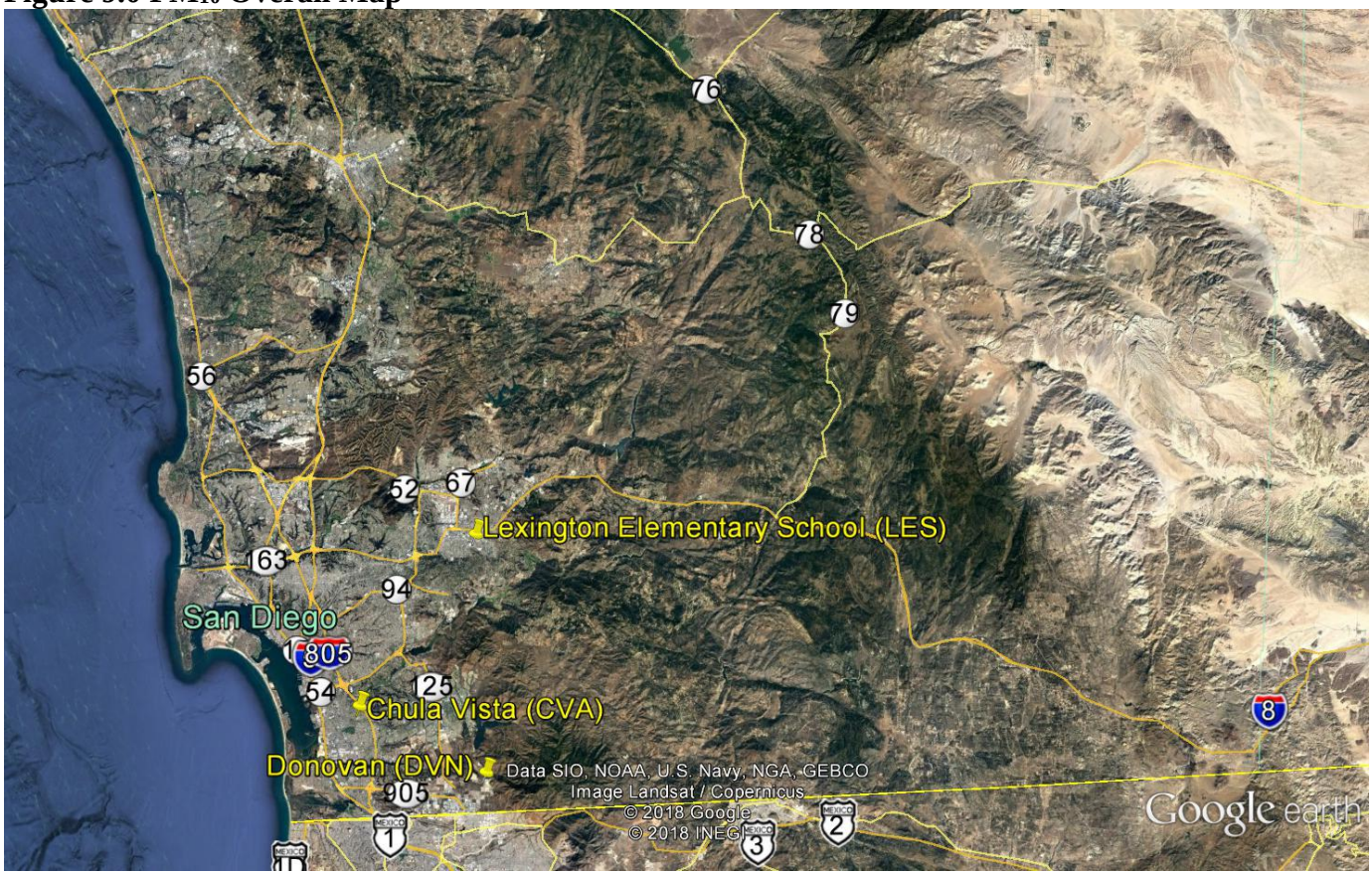


Table 9.0 PM_{10} State and National Standards for the Year

Ambient Air Quality Standards						
Pollutant	**Averaging Time**	**California Standards**		**National Standards**		
		Concentration	**Method**	**Primary**	**Secondary**	**Method**
Respirable Particulate Matter (PM10)[8]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		

Table 9.1 PM_{10} Sampling Network

	Abbreviation	CVA		DVN	LES	KVR
	Name	Chula Vista		Donovan	Lexington Elementary School	Kearny Villa Rd
	AQS ID	06-07- 0001		06-073-1014	06-073-1022	06-073-1016
PM10	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
PM10	Designation	O	QAC	O	O	O
PM10	Method	SI	SI	SI	SI	SI
PM10	Affiliation	Not Applicable	Not Applicable	Not Applicable	NCORE	Not Applicable
PM10	Spatial Scale	NS	NS	NS	NS	NS
PM10	Site Type	PE	PE	HC	PE	PE
PM10	Objective (Federal)	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS
PM10	Frequency	1:6	1:6	1:6	1:3	1:6
PM10	Equipment	Graseby Metal Works body w/ Sierra Anderson 1200 Head	Graseby Metal Works body w/ Sierra Anderson 1200 Head	Graseby Metal Works body w/ Sierra Anderson 1200 Head	Thermo 2025 w/o Very Sharp Cut Cyclone	Graseby Metal Works body w/ Sierra Anderson 1200 Head

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
Q= 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 9.1.0 PM_{10} Minimum Monitoring Requirements

The District is federally mandated to monitor PM_{10} 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_{10} network requirements, e.g. ambient PM_{10} sampler can fulfill an NCore PM_{10} sampler requirement.

The District meets or exceeds all minimum requirements for PM_{10} monitoring for all programs.

Section 9.1.1 PM_{10} Minimum Monitoring Requirements-Ambient

All Districts are required to operate a minimum number of PM_{10} samplers irrespective of the PM_{10} network affiliation. These monitors can serve as fulfilling other PM_{10} network requirements, e.g. ambient PM_{10} sampling can fulfill a NCore PM_{10} sampling requirement. To ascertain the minimum number of samplers required, the Highest Concentration value must be calculated and is summarized in tables 9.2a - 9.2b.

> *4.6 Particulate Matter (PM_{10}) Design Criteria.*[A]
> *(a) Table D-4 indicates the approximate number of permanent stations required in MSAs to characterize national and regional PM_{10} air quality trends and geographical patterns. The number of PM_{10} stations in areas where MSA populations exceed 1,000,000 must be in the range from 2 to 10 stations, while in low population urban areas, no more than two stations are required. A range of monitoring stations is specified in Table D-4 because sources of pollutants and local control efforts can vary from one part of the country to another and therefore, some flexibility is allowed in selecting the actual number of stations…*

Table D-4 of Appendix D to Part 58—PM_{10} Minimum Monitoring Requirements
(Approximate Number of Stations per MSA)

Population Category	*High Concentration (120% of NAAQS[2]*	*Medium Concentration (>80% of NAAQS)*	*Low Concentration (<80% of NAAQS)*
>1,000,000	*6-10*	*4-8*	*2-4*

Table 9.2a PM_{10} Minimum Monitoring Requirement-Design Criteria for the Year (24-Hr), 2017

Site of Expected Maximum Concentration (name)	Site of Expected Maximum Concentration AQS ID (#)	Maximum Concentration for 24-Hr (µg/m^3)	Does the Maximum Concentration for 24-Hr meet the NAAQS? (yes/no)	High Concentration Is the 24-Hr Design Value ≥ 120% of the NAAQS? (yes/no)	Medium Concentration Is the 24-Hr Design Value > 80% of the NAAQS? (yes/no)	Low Concentration Is the 24-Hr Design Value < 80% of the NAAQS? (yes/no)
Donovan (DVN)	06-073-1014	66	Yes	No	No	Yes

Table 9.2b PM_{10} Minimum Monitoring Requirements-Ambient

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Number of PM_{10} Samplers Required (#)	Number of PM_{10} Samplers Active (#)	Number of PM_{10} Samplers Needed (#)
San Diego	San Diego	3.4 million	2 - 4	4	0

[A] (2016) 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_{10}) Design Criteria" and Table D-4

Section 9.1.2 PM_{10} Minimum Monitoring Requirements-NCore

The District is required to operate a PM_{10} sampler as part of the NCore multipollutant monitoring program for the calculation of $PM_{10-2.5}$ data. Table 9.3 lists the NCore PM_{10} requirements.

> *3. Design Criteria for NCore Sites*[B]
> *(b) The NCore sites must measure, at a minimum, $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$, $PM_{10-2.5}$ particle mass…*

Table 9.3 PM_{10} Minimum Monitoring Requirements-NCore

Number of PM_{10} Samplers Required for NCore Sites (#)	Number of PM_{10} Samplers Active at NCore Sites (#)	Number of PM_{10} Samplers Needed at NCore Sites (#)	Name of NCore Site (name)	AQS ID of NCore Site (#)
1	1	0	Lexington (LES)	06-073-1022

While the PM10 sampler is not specifically needed to fulfill NCore requirement, it is needed for PM10-2.5 measurements.

Section 9.1.3 PM_{10} Manual Minimum Monitoring Requirements-Collocation

Collocation guidance is from the CFR. Table 9.4 summarizes these requirements.

> *3. Measurement Quality Check Requirements*[C]
> *3.3 Measurement Quality Checks of Manual Methods. Table A-2 of this appendix provides a summary of the types and frequency of the measurement quality checks that will be described in this section.*
>
> *3.3.1 Collocated Sampling Procedures for PM_{10}. For each network of manual PM_{10} methods, select 15 percent (or at least one) of the monitoring sites within the primary quality assurance organization for collocated sampling. … However, PM_{10} samplers used in the $PM_{10-2.5}$ network, may be counted along with the PM_{10} samplers in the PM_{10} network as long as the PM_{10} samplers in both networks are the same method.*

Table 9.4 PM_{10} Manual Minimum Monitoring Requirements-Collocation

Number of PM_{10} Samplers Required (#)	Number of PM_{10} Samplers Active (#)	Number of PM_{10} Samplers Required for Collocation (#)	Number of PM_{10} Samplers Active for Collocation (#)	Number of PM_{10} Samplers Needed for Collocation (#)	Location of Collocated Site(s) (name)	AQS ID of Collocation Site(s) (#)
2 - 4	3*	3 x (15%) = 1	1	0	Donovan (DVN)	06-073-1014

*The NCore PM_{10} sampler is a Lo-Vol sampler, so it is not included in the number of active samplers for collocation.

Section 9.1.4 PM_{10} Minimum Monitoring Requirements-Summary

Table 9.5 summarizes all the PM_{10} minimum monitoring requirements from Sections 9.1.1-9.1.3.

Table 9.5 PM_{10} Minimum Monitoring Requirements-Summary

CFR Programs Requirements for PM_{10} Samplers (name)	Number of PM_{10} Samplers Required (#)	Number of PM_{10} Samplers Active (#)	Number of PM_{10} Samplers Needed (#)
CFR EPA Table D-2 only=	2 - 4	4	0
NCore only=	1	1	0
Collocation=	1	1	0

[B] (2016) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore sites", subpart (b)
[C] (2016) 40 CFR Part 58, Appendix A, Section 3, Measurement Quality Requirements, subpart 3.3.1

Section 9.2.0 PM_{10} Suitability for Comparison to the NAAQS

Many different criteria are required for PM_{10} 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 9.2.1 PM_{10} Suitability for Comparison to the NAAQS - Equipment & Siting

The CFR requires that for PM_{10} data to be used in regulatory determinations of compliance with the PM_{10} NAAQS, the PM_{10} monitors must be sited according to Federal Regulations[D] . All District PM_{10} samplers meet or exceed all minimum monitoring and can be compared to the NAAQS. Table 9.6 summarizes these requirements.

Table 9.6 PM_{10} Suitability for Comparison to the NAAQS, Equipment & Siting

	Parameter		Code	Unit	Code	Duration	Code	Equipment	Method	Code	Frequency	Method ID
Ambient	Particulate Matter ≤ 10 µm (Hi-Vol)	PM_{10}	85101 81102	µg/m^3 LC STD	105 001	24-Hr	7	Graseby Metal Works 2000H w/ Sierra Anderson 1200 Head	Gravimetric	063 063	1:6	RFPS-1287-063
NCore	Particulate Matter ≤ 10 µm (Lo-Vol)	PM_{10}	85101 81102	µg/m^3 LC STD	105 001	24-Hr	7	R & P Model 2025 PM-2.5 Sequential Air Sampler w/o VSCC	Gravimetric	127 127	1:3	RFPS-1298-127

Section 9.2.2 PM_{10} Suitability for Comparison to the NAAQS - Sampling Frequency

The CFR requires that for PM_{10} data to be used in regulatory determinations of compliance with the PM_{10} NAAQS, the PM_{10} monitors' sampling frequency must be in accordance with Federal regulations[E]. All District PM_{10} samplers meet or exceed all minimum monitoring requirements for the sampling frequency and can be compared to the NAAQS. Table 9.7 summarizes these requirements.

> *58.12 Operating schedules*
> *(e) For PM_{10} 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…. The minimum sampling schedule for all other sites in the area remains once every six days.*

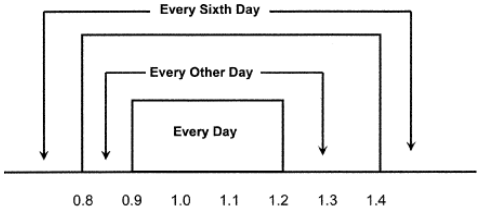


Figure 1 – Ratio to Standard

Table 9.7 PM_{10} Suitability for Comparison to the NAAQS - Sampling Frequency

Site of Expected Maximum Concentration for 24-Hr (name)	AQS ID of Expected Maximum Concentration for 24-Hr (#)	Maximum Concentration for 24-Hr (µg/m^3)	Is Site of Expected Maximum Concentration for 24-Hr < 0.8 to the NAAQS (yes/no)	What is the Minimum EPA Permitted Sampling Frequency? (#)	What is the Actual Sampling Frequency? (#)
Donovan (DVN)	06-073-1014	66	Yes	1:6	1:6

[D] (2016) 40 CFR Part 58, Appendix E, "Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring" and Table E-4.
[E] (2016) 40 CFR Part 58.12, Subpart B, "Operating Schedules".

Section 9.3.0 PM_{10} Concentrations for San Diego

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

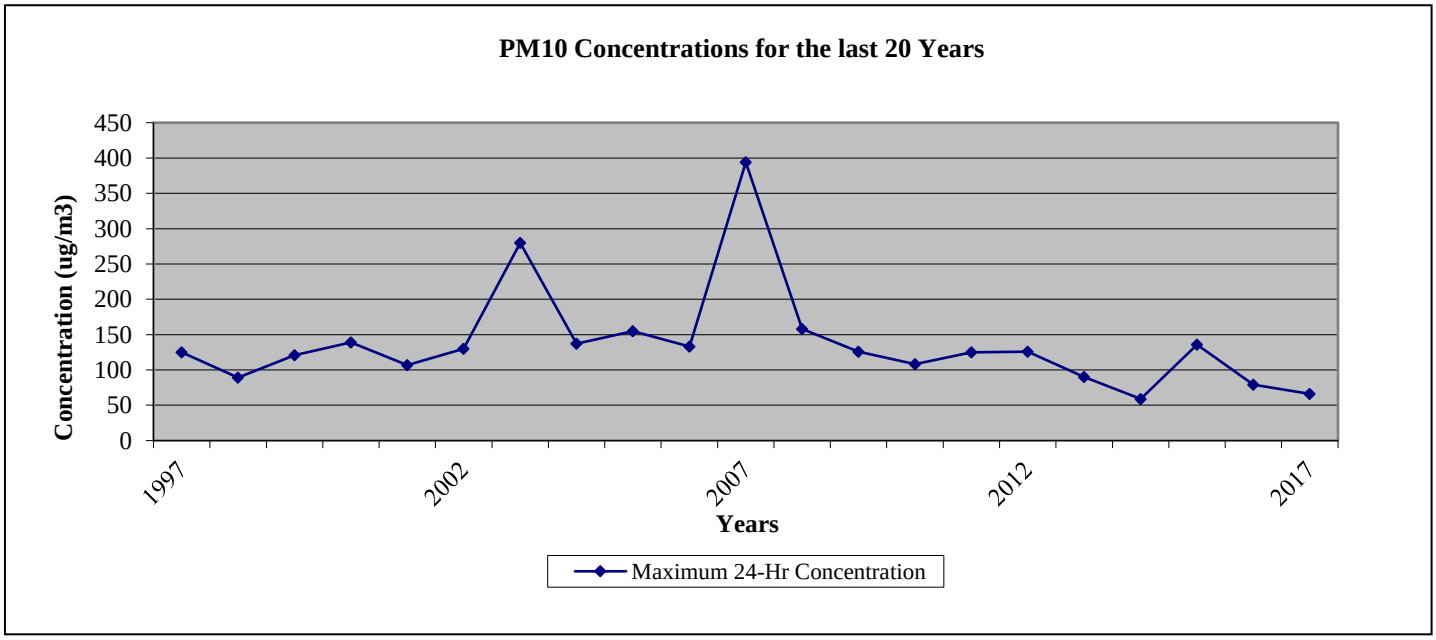
Section 9.3.1 PM_{10} Concentrations for San Diego-for the Last 20 Years

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. Due to the firestorms of 2003 and 2007, the 24-hr standard exceeded the National 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. Note: the "Days Above the National 24-Hr Standard" row in Table 9.8 and Figure 9.1 reflect the PM_{10} standard for that year.

Table 9.8 PM_{10} Concentrations for San Diego - for the Last 20 Years, 1997-2017

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Maximum 24-Hr Concentration (µg/m³)	125	89	121	139	107	130	280	137	155	133	394	158	126	108	125	126	90	29	136	79	66
Days above the National Standard	0	0	0	0	0	0	2	0	2	0	2	1	0	0	0	0	0	0	0	0	0

Figure 9.1 PM_{10} Concentrations for San Diego-for the Last 20 Years Graph, 1997-2017



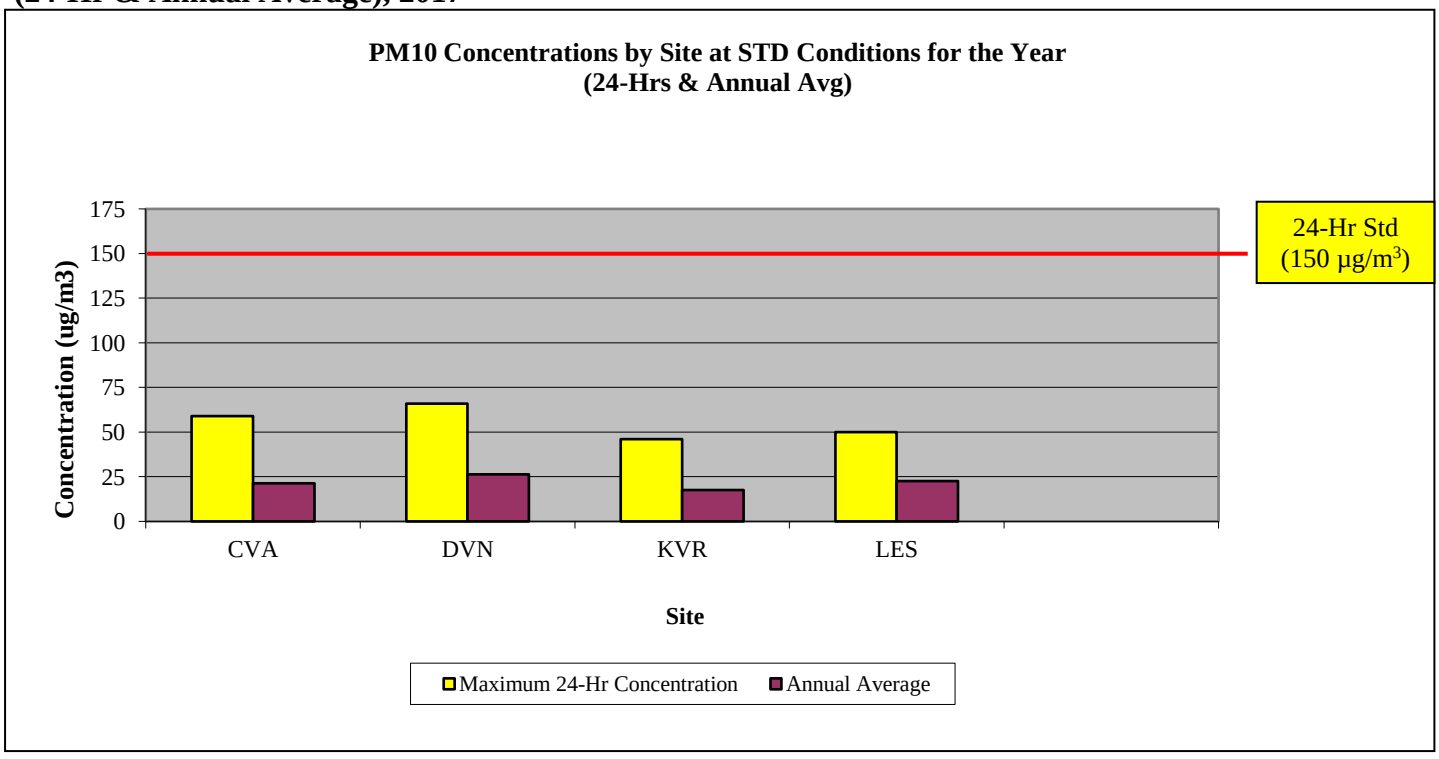
Section 9.3.2 PM_{10} Concentrations for San Diego - by Site at Standard Conditions (STD) for the Year (24-Hr & Annual Average)

All data from the PM_{10} samplers are reported in STD conditions, as can be seen in Table 9.9 and Figure 9.2. The PM_{10} (Lo-Vol) sampler presents the data in LC and must be converted to STD conditions.

Table 9.9 PM_{10} Concentrations for San Diego-by Site at Standard Conditions (STD) for the Year (24-Hr & Annual Average), 2017

No. (#)	Site	Site Abbreviation	Maximum Concentration for 24-hrs (µg/m³)	Annual Average (µg/m³)	Number of Days Above the National Standard (#)
1	Chula Vista	CVA	59	21.4	0
2	Donovan	DVN	66	26.3	0
3	Kearny Villa Rd.	KVR	46	17.6	0
4	Lexington	LES	50	22.5	0

Figure 9.2 PM_{10} Concentrations for San Diego - by Site at Standard Conditions (STD) for the Year (24-Hr & Annual Average), 2017



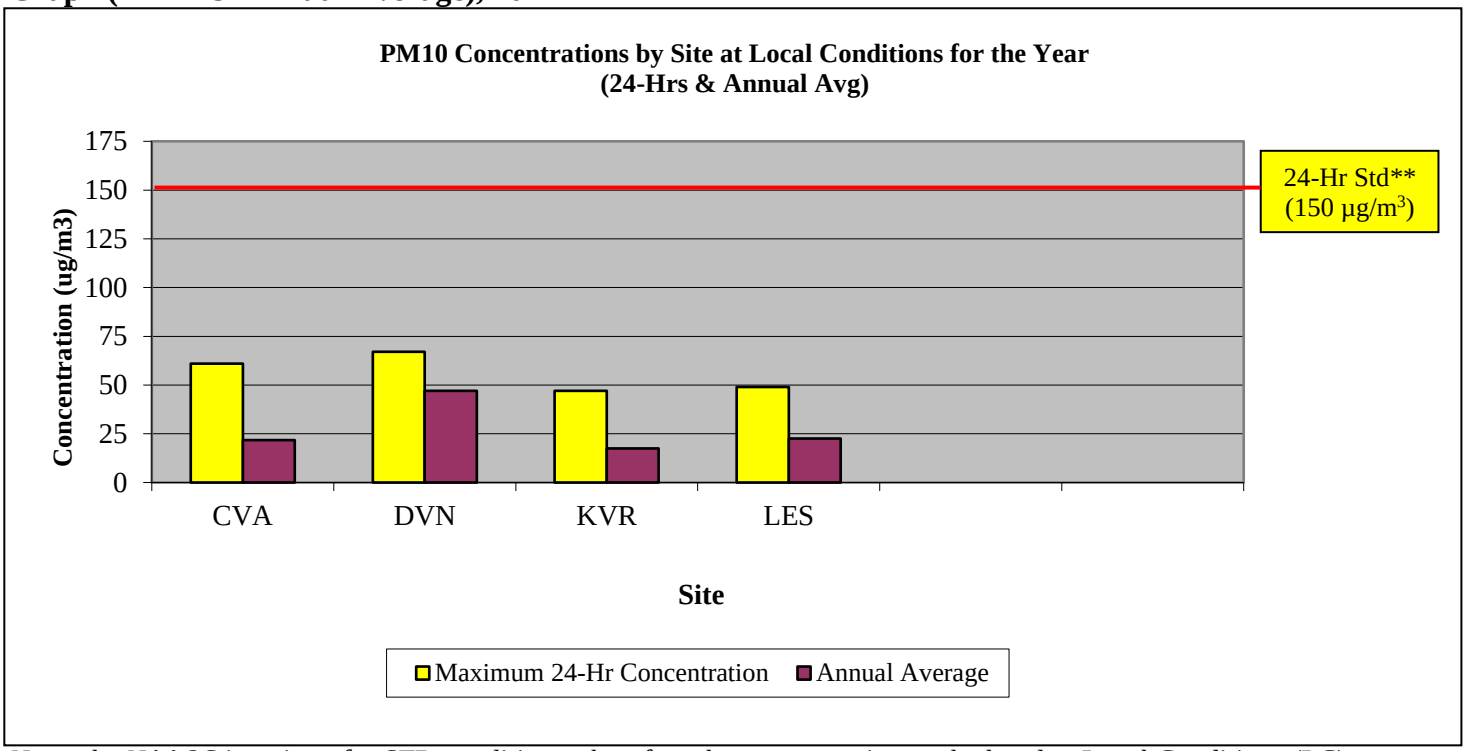
Section 9.3.3 PM_{10} Concentrations for San Diego - by Site at Local Conditions (LC) for the Year (24-Hr & Annual Average)

Table 9.10 and Figure 9.3 illustrate the data in Local Conditions (LC). Note the NAAQS is written for STD conditions; therefore the concentrations calculated to Local Conditions (LC) conditions are not comparable to the NAAQS.

Table 9.10 PM_{10} Concentrations for San Diego - by Site at Local Conditions (LC) for the Year (24-Hr & Annual Average), 2017

No. (#)	Site	Site Abbreviation	Maximum Concentration for 24-hrs ($\mu g/m^3$)	Annual Average ($\mu g/m^3$)
1	Chula Vista	CVA	61	21.7
2	Donovan	DVN	67	26.3
3	Kearny Villa Rd.	KVR	47	17.5
4	Lexington	LES	49	22.5

Figure 9.3 PM_{10} Concentrations for San Diego - by Site at Local Conditions (LC) for the Year Graph (24-Hr & Annual Average), 2017



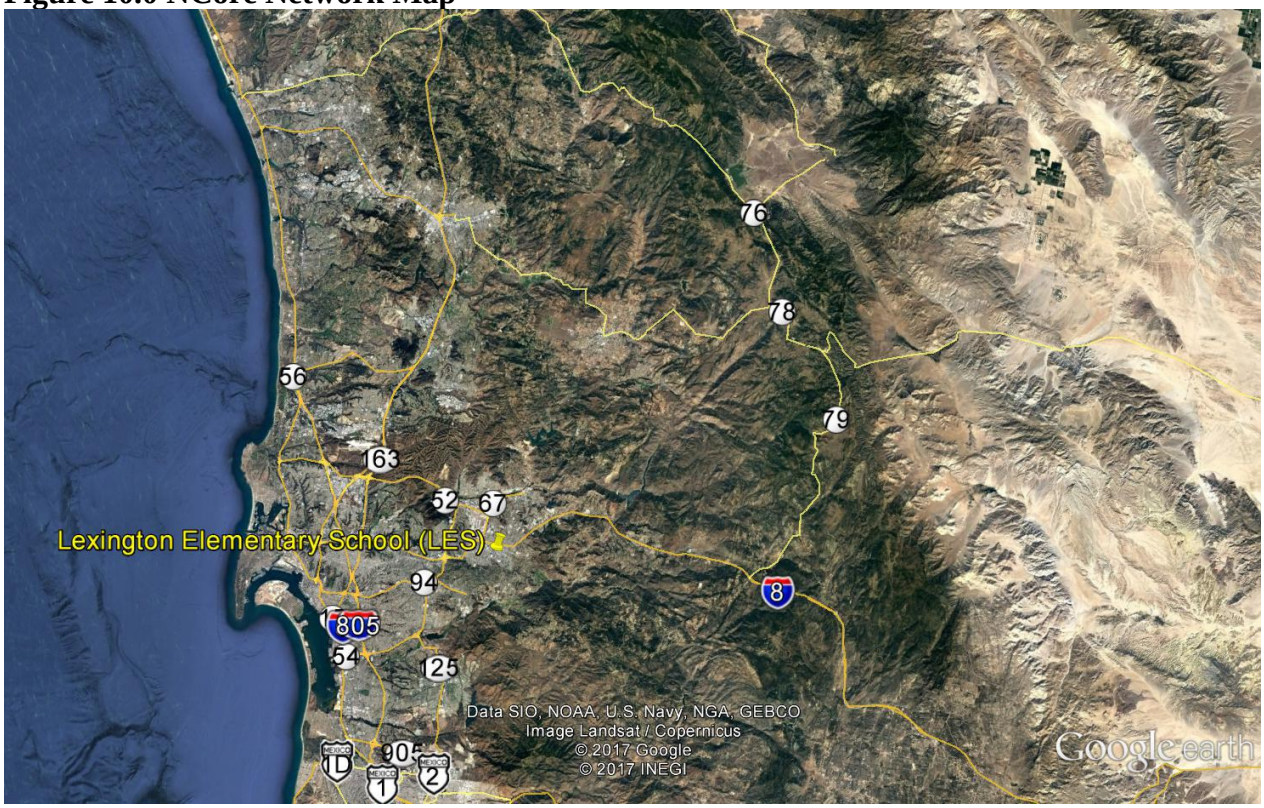
Note: the NAAQS is written for STD conditions; therefore the concentrations calculated to Local Conditions (LC) are not comparable to the NAAQS. The listed NAAQS is for informational purposes only.

CHAPTER 10 NATIONAL CORE (NCORE)

Section 10.0.0 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 10.0) as the NCore site for the SDAB, so there is additional instrumentation, including PM_{coarse} (values calculated from paired Low-Volume particulate samplers, by subtracting the measured concentrations from a $PM_{2.5}$ Low Volume sampler from the measured concentrations from a PM_{10} Low Volume sampler, CO (trace level), SO_2 (trace level), and NOy (Reactive Nitrogen Oxides).

Figure 10.0 NCore Network Map



Section 10.1.0 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 10.1.1 PM_{10} 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*[A]
> *(b) The NCore sites must measure, at a minimum, $PM_{2.5}$ particle mass using continuous and integrated/filter-based samplers, speciated $PM_{2.5}$, $PM_{10-2.5}$ particle mass, O_3, SO_2, CO, NO/NO_Y, wind speed, wind direction, relative humidity, and ambient temperature.(1) Although the measurement of NO_y is required in support of a number of monitoring objectives, available commercial instruments may indicate little difference in their measurement of NO_y compared to the conventional measurement of NO_X, particularly in areas with relatively fresh sources of nitrogen emissions. Therefore, in areas with negligible expected difference between NO_y and NO_X measured concentrations, the Administrator may allow for waivers that permit NO_X monitoring to be substituted for the required NO_y monitoring at applicable NCore sites.*

Table 10.1 NCore Minimum Monitoring Requirements-Equipment

Parameters	Number of Monitors Required (#)	Number of Monitors Active (#)	Number of Monitors Needed (#)
$PM_{2.5}$-Continuous	1	1	0
$PM_{2.5}$-Manual (Integrated/filter-based)	1	1	0
$PM_{2.5}$-Speciated	1	1	0
$PM_{10-2.5}$	1	1	0
O_3	1	1	0
SO_2-TLE	1	1	0
CO-TLE			
NO/NOy	1	1	0
Wind speed/ Wind direction	1	1	0
% Relative Humidity	1	1	0
Ambient temperature	1	1	0
**PM_{10}-Manual (Integrated/filter-based)	1	1	0

* PM_{10}-Manual sampling is not officially required, but $PM_{10-2.5}$ sampling is required. In order obtain $PM_{10-2.5}$ concentrations, $PM_{2.5}$-Manual and PM_{10}-Manual samplers must be run concurrently with the difference between the two to serve as the $PM_{10-2.5}$ concentrations.

[A] (2016) 40 CFR Part 58, Subpart G-Federal Monitoring, Appendix D, Section 3-Design Criteria for NCore sites

Section 10.2.0 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_3	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_2	42101	ppb	008	1-Hr	1 5-min	Thermo 43i-TLE	Fluorescence	560	7/24	EQSA-0276-009
Particulate Matter ≤ 2.5 µm (non-speciated)	$PM_{2.5}$	88101	µg/m^3 LC STD	105 001	24-Hr	7	R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC	Gravimetric	145	1:3	EQPM-0202-145 or RFPS-0498-118
Particulate Matter ≤ 2.5 µm (speciated)	$PM_{2.5}$ 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)	$PM_{2.5}$ STN	See EPA	See EPA	See EPA	24-Hr	7	Met One SASS	See EPA	See EPA	1:3	Not Applicable
Particulate Matter ≤ 10 µm (Hi-Vol)	PM_{10}	88501-LC 81102-STD	µg/m^3 LC STD	105 001	24-Hr	7	R & P Model 2025 PM-2.5 Sequential Air Sampler w/o VSCC	Gravimetric	145	1:3	EQPM-0202-145 or RFPS-0498-118
Particulate Matter ≤ 2.5 µm (manual)	$PM_{2.5}$	88101	µg/m^3 LC STD	105 001	24-Hr	7	R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC	Gravimetric	145	1:1 or 1:3	EQPM-0202-145 or RFPS-0498-118

Section 10.3.0 NCore Concentrations

The instrumentation needed for NCore designation are: PM_{coarse} (calculated values from paired PM_{10} & $PM_{2.5}$ Low Volume samplers); CO (trace level); SO_2 (trace level); NOy (total reactive Nitrogen Oxides). Tables 10.3a-10.3d list the data.

Table 10.3a NCore Concentrations for PMcoarse

*PMcoarse (µg/m^3)	2011	2012	2013	2014	2015	2016	2017
Max. 24-Hr. Concentration	30.7	29.0	29.6	21.8	31.2	29.6	30.0
98th Percentile of 24-Hr Concentration	24.8	26.0	25.7	21.8	24.6	26.3	25.1
Average of the Quarterly Means	13.2	13.1	13.9	13.8	13.5	14.0	13.3

*Note: PMcoarse (PMc) does not have FRM or FEM designation and cannot be compared to any NAAQS.
FSD and ECA were combined

Table 10.3b NCore Concentrations for CO-TLE

CARBON MONOXIDE (ppm)	2011	2012	2013	2014	2015	2016	2017
Maximum 1-Hr. Concentration	1.8	2.3	1.9	2.0	1.4	1.7	1.5
Maximum 8-Hr. Concentration	1.3	1.9	1.2	1.8	1.1	1.3	1.4

Table 10.3c NCore Concentrations for SO_2-TLE

SULFUR DIOXIDE (ppm)	2011	2012	2013	2014	2015	2016	2017
Maximum 1-Hr SO_2	0.001	0.002	0.007	0.001	0.001	0.001	0.001
Maximum 24-Hr SO_2	0.000	0.000	0.001	0.001	0.000	0.000	0.000
Annual Average SO_2	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 10.3d1 NCore Concentrations for NOy-NO

*NOy –NO (ppm)	2011	2012	2013	2014	2015	2016	2017
Maximum 1-Hr. Concentration	0.048	0.059	0.049	**	**	**	***
Annual Average	0.012	0.013	0.012	**	**	**	***

**The NOy sampler was not operational at the temporary NCore site at Floyd Smith Drive.
*** NOy sampling did not resume at the new NCore location in 2017 (it resumed in 2018).

Table 10.3d2 NCore Concentrations for NO_2

*NO_2 (ppm)	2011	2012	2013	2014	2015	2016	2017
Maximum 1-Hr. Concentration	0.049	0.059	0.051	0.048	0.059	0.057	0.044
Annual Average	0.012	0012	0.012	*	0.010	0.009	0.010

*Not sampled for an entire year, so no calculations

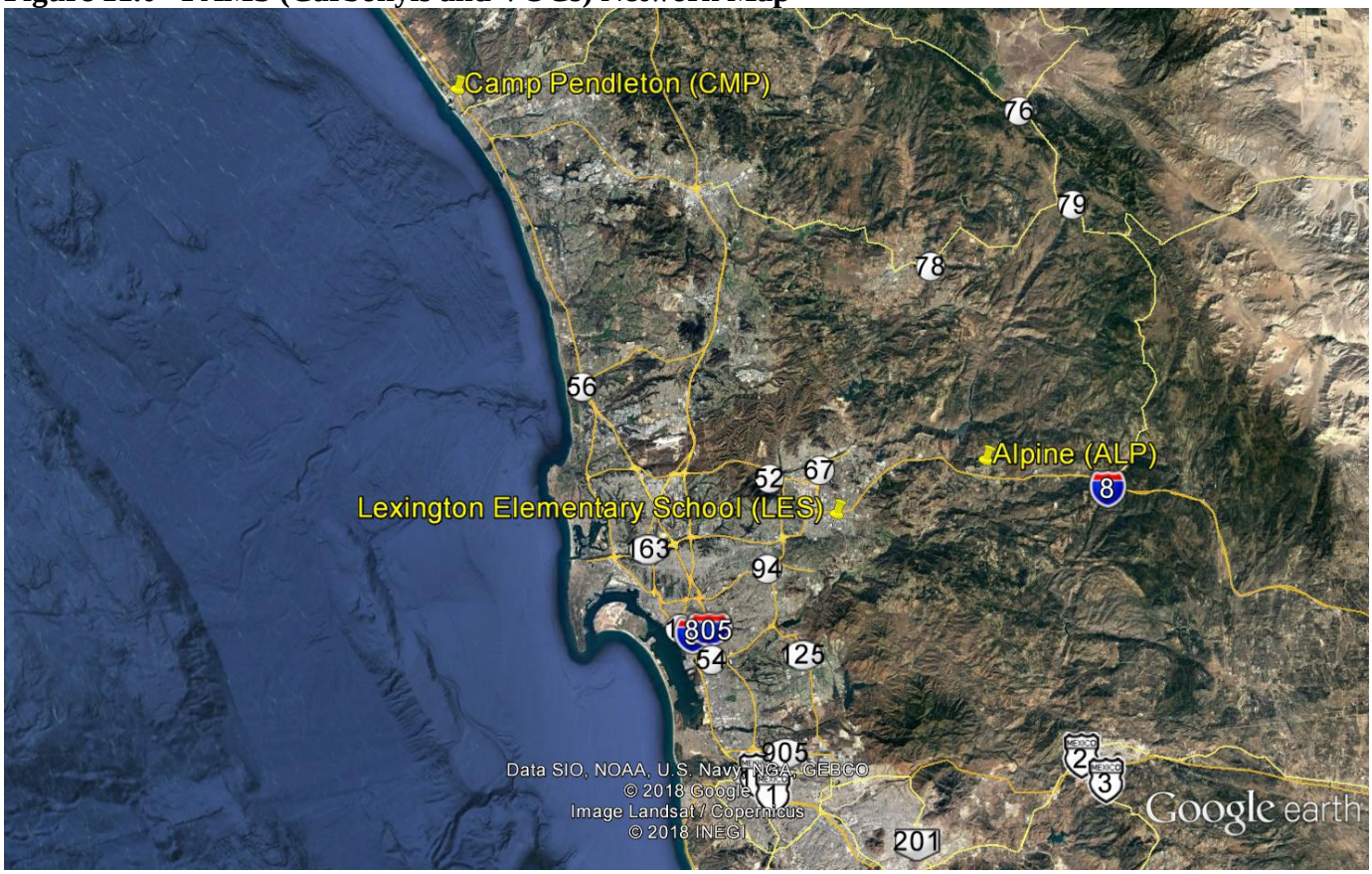
CHAPTER 11 PHOTOCHEMICAL ASSESSMENT MONITORING STATIONS (PAMS)

Section 11.0.0 PAMS Introduction

PAMS and PAMS-related sampling was conducted at three sites (see Figure 11.0). As yet, there are no NAAQS standards to compare the data. The locations and equipment are listed in Table 11.0. Please note:

- Per EPA approval, PAMS-VOC was temporarily suspended in August and will resume when PAMS re-engineering is operational in 2019.

Figure 11.0 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 Tables 11.14 and 11.15). The toxicity is gauged by risk factors instead of limits.

Table 11.0 PAMS Sampling Network

	Abbreviation	ALP	CMP		LES	
	Name	Alpine	Camp Pendleton		Lexington Elementary School	
	AQS ID	06-073-1006	06-073-1008		06-073-1022	
PAMS	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Method	Canister	Canister	Canister	Canister	Cartridges
	Affiliation	PAMS (Type III)	PAMS (Type I)	PAMS (Type I)	PAMS (Type II)	PAMS (Type II)
	Spatial Scale	US	NS	NS	NS	NS
	Site Type	MXO	UPBD	QA	MXP	MXP
	Objective (Federal)	Research	Research	Research	Research	Research
	Analysis By	APCD	APCD	APCD	APCD	APCD
	Frequency	1:6	1:6	1:6	1:6	1:6
	Equipment	Xontech 910/912	Xontech 910/912	Xontech 910/912	Xontech 910/912	Xontech 925

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
Q= 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 11.1.0 PAMS Minimum Monitoring Requirements

The PAMS program is a multipronged approached 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 (NOx), 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_3 monitor can fulfill a PAMS O_3 monitoring requirement.

The District meets or exceeds all minimum requirements for PAMS monitoring except for the following:

- Carbonyl sampling at Kearny Villa Rd. (highlighted in red)
- Upper Air Meteorology at Kearny Villa Rd. (highlighted in red)

Section 11.1.1 PAMS Minimum Monitoring Requirements-Sampling Season (24-Hr & 3-Hr)

The District is required to operate equipment required for the PAMS parameters for a minimum sampling period. Table 11.1 lists these requirements.

> *5.2 Monitoring Period.* [A]
> *PAMS precursor monitoring must be conducted annually throughout the months of June, July and August (as a minimum) when peak O3 values are expected in each area. Alternate precursor monitoring periods may be submitted for approval to the Administrator as a part of the annual monitoring network plan required by § 58.10.*

Table 11.1 PAMS Minimum Monitoring Requirements-Sampling Season (24-Hr & 3-Hr)

Minimum PAMS Monitoring Period (months)	Actual PAMS Monitoring Period 24-Hr Samples (months)	Is the PAMS Monitoring Period 24-Hr Samples Adequate? (yes/no)	Actual PAMS Monitoring Period 3-Hr Samples (months)	Is the PAMS Monitoring Period 3-Hr Samples Adequate? (yes/no)
June-July	Jan-Dec 24-hr samples	Yes	July-Oct 3-Hr samples	Yes

[A] (2015) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 4, "Pollutant-Specific Design Criteria for SLAMS Sites", part 5.2, "Monitoring Period"

Section 11.1.2 PAMS Minimum Monitoring Requirements-VOC

The District is required to operate Type 2 sites to monitor the magnitude and type of precursor emissions in the area where maximum precursor emissions are expected to impact and are suited for the monitoring of urban air toxic pollutants. Table 11.2 lists these requirements.

5.Network Design for Photochemical Assessment Monitoring Stations (PAMS)[B]
The PAMS program provides more comprehensive data on O_3 air pollution in areas classified as serious, severe, or extreme nonattainment for O_3 than would otherwise be achieved through the NCore and SLAMS sites. More specifically, the PAMS program includes measurements for O_3, oxides of nitrogen, VOC, and meteorology.

5.1 PAMS Monitoring Objectives. PAMS design criteria are site specific. Concurrent measurements of O_3, oxides of nitrogen, speciated VOC, CO, and meteorology are obtained at PAMS sites. Design criteria for the PAMS network are based on locations relative to O_3 precursor source areas and predominant wind directions associated with high O_3 events. Specific monitoring objectives are associated with each location. The overall design should enable characterization of precursor emission sources within the area, transport of O_3 and its precursors, and the photochemical processes related to O_3 nonattainment. Specific objectives that must be addressed include assessing ambient trends in O_3, oxides of nitrogen, VOC species, and determining spatial and diurnal variability of O_3, oxides of nitrogen, and VOC species. Specific monitoring objectives associated with each of these sites may result in four distinct site types. Detailed guidance for the locating of these sites may be found in reference 9 of this appendix.

5.3 Minimum Monitoring Network Requirements. A Type 2 site is required for each area. Overall, only two sites are required for each area, providing all chemical measurements are made. For example, if a design includes two Type 2 sites, then a third site will be necessary to capture the NO_y measurement. The minimum required number and type of monitoring sites and sampling requirements are listed in Table D-6 of this appendix.

Table D–6 of Appendix D to Part 58—Minimum Required PAMS Monitoring Locations and Frequencies

No	***Measurement* (A)**	***Where required* (B)**	***Sampling frequency*[1] *(all daily except for upper air meteorology)* (C)**
1	*Speciated VOC*[2]	*Two sites per area, one of which must be a Type 2 site*	*During the PAMS monitoring period:* *(1) Hourly auto GC, or* *(2) Eight 3-hour canisters, or* *(3) 1 morning and 1 afternoon canister with a 3-hour or less averaging time plus Continuous Total Non-methane Hydrocarbon measurement.*
2	*Carbonyl sampling*	*Type 2 site in areas classified as serious or above for the 8-hour ozone standard*	*3-hour samples every day during the PAMS monitoring period.*
3	*NO_X*	*All Type 2 sites*	*Hourly during the ozone monitoring season.*
4	*NO_y*	*One site per area at the Type 3 or Type 1 site*	*Hourly during the ozone monitoring season.*
5	*CO (ppb level)*	*One site per area at a Type 2 site*	*Hourly during the ozone monitoring season.*
6	*Ozone*	*All sites*	*Hourly during the ozone monitoring season.*
7	*Surface met*	*All sites*	*Hourly during the ozone monitoring season.*
8	*Upper air meteorology*	*One representative location within PAMS area*	*Sampling frequency must be approved as part of the annual monitoring network plan required in 40 CFR 58.10.*

[B] (2015) 40 CFR Part 58, Appendix D, Section 5, "Network Design for Photochemical Assessment Monitoring Stations (PAMS), Table D-6

Table 11.2 PAMS Minimum Monitoring Requirements-VOC
(Table D-6, Item #1B)

Minimum Number of VOC Sites Required (#)	Number of Active VOC Sites (#)	PAMS Type Site Designation (#)	Minimum Number of Type 2 VOC Sites Required (#)	Number of Active Type 2 VOC Sites (#)	Number of Needed Type 2 VOC Sites (#)
2	Floyd Smith Dr. Alpine Camp Pendleton	Type 2 Type 3 Type 1	1	1	None

Table 11.3 PAMS Minimum Monitoring Requirements-VOC Sampling Frequency*
(Table D-6, Item #1C)

Is There a Continuous Total NMHC analyzer? (yes/no)	How many 3-Hr Samples (#)	Time of Day? (#)	Number of Needed Samples (#)
No	0	n/a	None*

*EPA approved until PAMS program is retooled (2019)

Section 11.1.3 PAMS Minimum Monitoring Requirements-Carbonyls

The District is required to operate PAMS stations for Carbonyl speciation analysis. The PAMS requirements are diverse and are interrelated. This section will state these requirements stepwise according to their listing in the CFR[C]. Tables 11.4 & 11.5 summarize these requirements.

Table 11.4 PAMS Minimum Monitoring Requirements-Carbonyls Type 2 Stations
(Table D-6, Item #2B)

Is Attainment Status Severe? (yes/no)	Minimum Number of Carbonyl Sites Required (#)	Number of Active Carbonyl Sites (#)	PAMS Type Site Designation (#)	Minimum Number of Type 2 Carbonyl Sites Required (#)	Number of Active Type 2 Carbonyl Sites (#)	Number of Needed Type 2 Carbonyl Sites (#)
No	1*	Lexington	Type 2	1	1	None

***Legacy from initial attainment status.

Table 11.5 PAMS Minimum Monitoring Requirements-Carbonyl Sampling Frequency
(Table D-6, Item #2C)

How many 3-Hr Samples (#)	Time of Day? (#)	Number of Needed Samples (#)
4	2-morning samples 2-afternoon samples	None None

[C] (2015) 40 CFR Part 58, Appendix D, Section 5, "Network Design for Photochemical Assessment Monitoring Stations (PAMS), Table D-6

Section 11.1.4 PAMS Minimum Monitoring Requirements-Gaseous Instrumentation

The District is required to operate PAMS stations for certain gaseous parameters. The PAMS requirements are diverse and are interrelated. This section will state these requirements stepwise according to their listing in the CFR[D]. Tables 11.6 – 11.8 summarize these requirements.

Table 11.6 PAMS Minimum Monitoring Requirements-Gaseous Instruments, NOx (Table D-6, Items #3B & #3C)

Type 2 Sites (#)	Type 2 Sites with NOx Monitors (#)	Number of NOx Monitors Needed at Type 2 Sites (#)		Are the NOx Monitors Hourly (yes/no)	Number of NOx Monitors Hourly Needed at Type 2 Sites (#)
Lexington	Lexington	None		yes	None

Table 11.7 PAMS Minimum Monitoring Requirements-Gaseous Instruments, NOy (Table D-6, Item #4B & #4C)

PAMS Sites (#)	Type Sites (#)	NOy Monitors (yes/no)	Number of NOy Monitors Needed (#)		Are the NOy Monitors Hourly (yes/no)	Number of NOy Monitors Hourly Needed at Type 2 Sites (#)
Alpine Lexington*	3 2	No Yes*	None		yes	None

*The District measures for NOy at the NCore location, a PAMS Type 2 site. The District was granted a waiver by the EPA Region IX Authority in 2011 to designate this site/location to satisfy the PAMS NOy requirement. NOx monitors are used at the PAMS Type 1 and 3 sites. Due to logistics, the NOy was not activated until 2018.

Table 11.8 PAMS Minimum Monitoring Requirements-Gaseous Instruments, CO (Table D-6, Item #5B & #5C)

PAMS Sites (#)	Type Sites (#)	CO Monitors (yes/no)	Number of CO Monitors Needed (#)		Are the CO1 Monitors Hourly (yes/no)	Number of NOy Monitors Hourly Needed at Type 2 Sites (#)
Lexington	2	yes	None		yes	None

Table 11.9 PAMS Minimum Monitoring Requirements-Gaseous Instruments, O_3 (Table D-6, Items #6B & #6C)

PAMS Sites (#)	Type Sites (#)	O3 Monitors (yes/no)	Number of O3 Monitors Needed (#)		Are the O3 Monitors Hourly (yes/no)	Number of O3 Monitors Hourly Needed at Type 2 Sites (#)
Camp Pendleton Alpine Lexington	1 3 2	No No Yes	None		yes	None

[D] (2015) 40 CFR Part 58, Appendix D, Section 5, "Network Design for Photochemical Assessment Monitoring Stations (PAMS), Table D-6

Section 11.1.5 PAMS Minimum Monitoring Requirements-Meteorological Parameters

The District is required to operate PAMS stations for meteorological parameters. The PAMS requirements are diverse and are interrelated. This section will state these requirements stepwise according to their listing in the CFR[E]. Tables 11.10 & 11.11 summarize these requirements.

Table 11.10 PAMS Minimum Monitoring Requirements-Gaseous Instruments, Surface Meteorology (Table D-6, Items #7B & #7C)

PAMS Sites (#)	Type Sites (#)	Surface Meteorology (yes/no)	Number of Surface Meteorology Needed (#)		Are the Surface Meteorology Hourly (yes/no)	Number of Surface Meteorology Hourly Sites Needed (#)
Camp Pendleton Alpine Lexington	1 3 2	Yes Yes No	None		yes	None

Table 11.11 PAMS Minimum Monitoring Requirements, Upper Air (Table D-6, Items #8B & #8C)

Minimum Number of Upper Air Meteorology Required in a PAMS area (#)	Number of Active Upper Air Meteorology Sites (#)	Number of Upper Air Meteorology Sites Needed (#)	Upper Air Meteorology Site Location (name)		Does Sampling Frequency Follow Approved Plan (yes/no)
1	0*	1*	Kearny Villa Road		No* Irrepairably broken

*EPA has approved not replacing this equipment until the PAMS re-engineering in 2019.

Section 11.1.6 PAMS Minimum Monitoring Requirements-Summary

Table 11.12 summarizes all the PAMS minimum monitoring requirements from tables 11.2-11.11.

Table 11.12 PAMS Summary of Minimum Monitoring Requirements

CFR Programs Requirements for PAMS (name)	Minimum Requirement (#)	Active	Number of Needed Requirements
PAMS-VOC sites	2	2	None
PAMS-VOC sites (Type 2)	1	1	None
PAMS-VOC ozone season sampling frequency	3-hr	No	None*
PAMS-Carbonyl sites	1	1	None
PAMS-Carbonyl ozone season sampling frequency	3-hr	Yes	None
Minimum # of NOx monitors = # of Type 2 sites	2	2	None
Minimum # of NOy monitors at non-Type 2 sites	1	1* at Type 2	None
Minimum # of CO monitors at one Type 2 sites	1	1	None
Minimum # of O3 monitors = # of PAMS sites	3	3	None
Minimum # of meteorological sensors = # of PAMS sites	3	3	None
Minimum # of upper atmosphere sensors	1	0	1

[E] (2015) 40 CFR Part 58, Appendix D, Section 5, "Network Design for Photochemical Assessment Monitoring Stations (PAMS), Table D-6

Section 11.2 PAMS Sampling Frequency & Equipment

During the non-PAMS season (November to the end of June), the samples have a 24-hour sampling duration. During the PAMS season (July to the end of October), the samplers collect four samples that each have a 3-hour sampling duration. The 3-hour samples are collected on a set time schedule, as follows: 0200 – 0500, 0500 – 0800, 1200 – 1500, and 1600 – 1900. See Table 11.13 for the summary of equipment used and tables 11.14-11.15 for the parameters.

Table 11.13 PAMS Sampling Equipment

Pollutant	Abbreviation	Samplers	Collection Method	Collection Frequency	Analytical Method	Parameter Code	Method Code
Volatile Organic Compounds	VOC's	Xontech 910/912	Summa Canister	1:6	GC-FID	Table 11.15	126
Carbonyl Compounds	n/a	Xontech 925	DNPH cartridges	1:6	HPLC	Table 11.15	202
Carbonyl Compounds	n/a	Xontech 924	DNPH cartridges	1:6	HPLC	Table 11.15	202

Table 11.14 PAMS VOC Parameter Codes

Compound	Parameter
Ethylene	43203
Acetylene	43206
Ethane	43202
Propylene	43205
Propane	43204
Isobutane	43214
Isobutylene	43270
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-Cimethylbutane	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

Compound	Parameter
3-Methylhexane	43249
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
n-Propylbenzene	45209
1-Ethyl 3-methylbenzene	45212
1-Ethyl 4-methylbenzene	45213
1,3,5-Trimethylbenzene	45207
1-Ethyl 2-methylbenzene	45211
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 11.15 PAMS Carbonyls

Compound	Parameter
Formaldehyde	43502
Acetaldehyde	43503
Acetone	43551

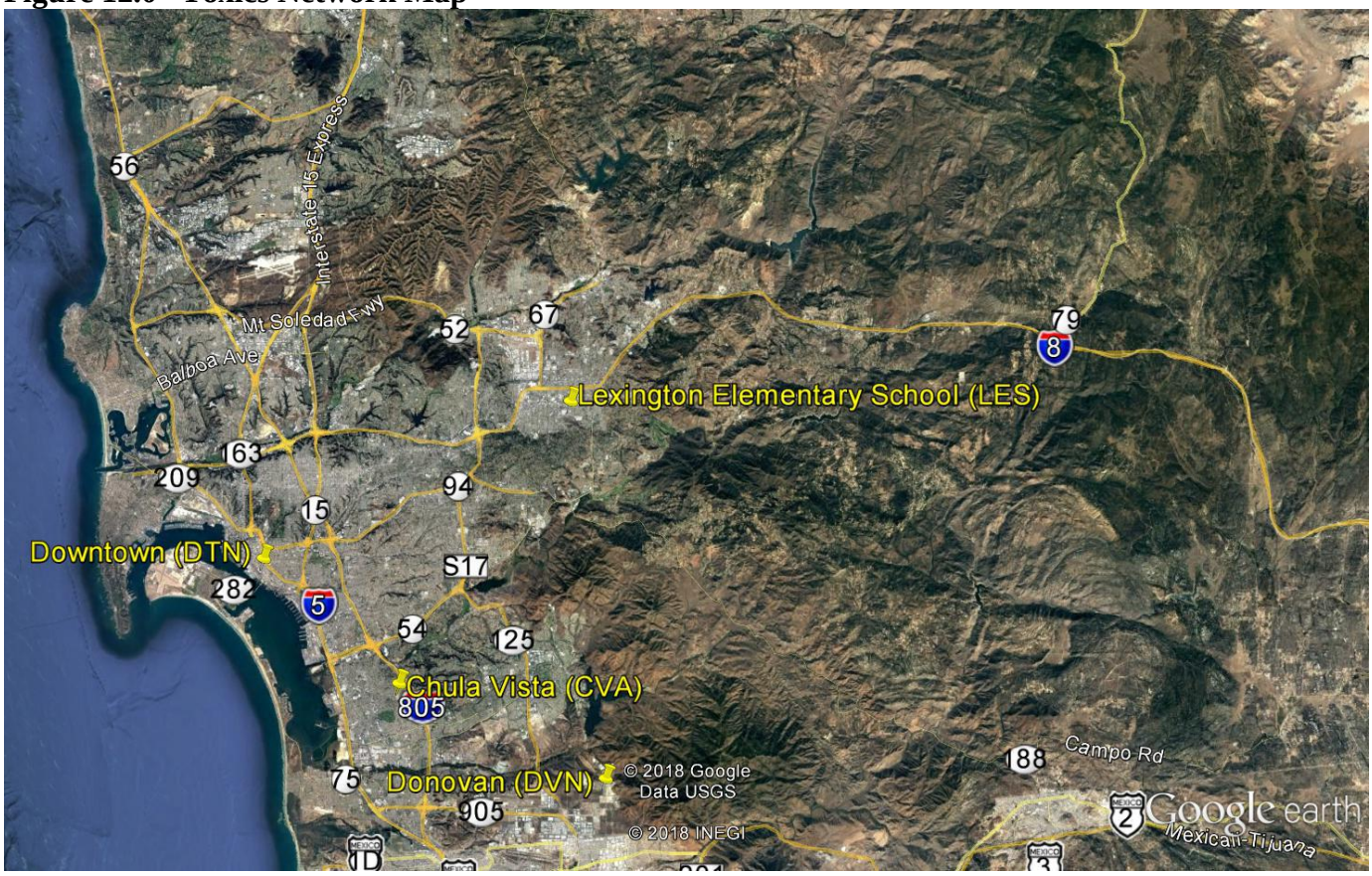
CHAPTER 12 TOXICS PROGRAM

Section 12.0.0 Toxics Introduction

Toxics-related sampling was conducted at five sites; three SDAPCD sites and two CARB sites (Figure 12.0 and Table 12.0). As of yet, there are no NAAQS standards which to compare the data. Please note:

- In 2016, the District was evicted from our Downtown (DTN) site and are in the process of locating a station in the Sherman Heights (SES) area. Sampling is suspended until the new station is built.
- In 2015, the District was evicted from our Escondido (ESC) site (it was on the City of Escondido property) and are in the process of relocating the station 20 meters south east of the original location to be on San Diego County property. Sampling is suspended until the new station is built.
    - Toxics-VOC at DVN (temporarily suspended for SES and ESC)
    - Toxics-Metals at DVN (temporarily suspended for SES and ESC)
    - Toxics-Carbonyls at DVN (temporarily suspended for SES and ESC)
- CARB CA-TAC program (Toxics-Metals, VOC, and Carbonyls) at CVA & LES

Figure 12.0 Toxics Network Map



The range of defined compounds for the Toxics program is in excess of 100 different possible carcinogenic, irritant, and mutagenic chemicals. Their toxicities are gauged by risk factors rather than limits like there are for the criteria pollutants.

Table 12.0 Toxics Sampling Network

	Abbreviation	CVA				LES					DVN	
	Name	Chula Vista				Lexington Elementary School					Donovan	
	AQS ID	06-073-0001				06-073-1022					06-073-1014	
Toxics	Pollutant	Toxics-VOCs	Toxics-Metals	Toxics-Cr^{+6}	Toxics-Aldehydes	Toxics-VOCs	Toxics-Metals	Toxics-Cr^{+6}	Toxics-Aldehydes	Toxics-Metals	Toxics-VOCs	Toxics-Metals
	Monitor Type	CA TAC	CA TAC	CA TAC	CA TAC	CA TAC	CA TAC	CA TAC	CA TAC	Not Applicable	Not Applicable	Not Applicable
	Method	Canister	Filter	Filter	Cartridges	Canister	Filter	Filter	Cartridges	Filter	Canister	Filter
	Affiliation	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Spatial Scale	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	SN
	Site Type	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE
	Objective (Federal)	Research	Research	Research	Research	Research	Research	Research	Research	Research	Research	Research
	Analysis By	ARB	ARB	ARB	ARB	ARB	ARB	ARB	ARB	APCD	APCD	APCD
	Frequency	1:12	1:12	1:12	1:12	1:12	1:12	1:12	1:12	1:6	1:6	1:6
	Equipment	Xontech 910/912	Xontech 924	Xontech 924	Xontech 924	Xontech 910/912	Xontech 924	Xontech 924	Xontech 924	Xontech 924	Xontech 910A FSL	Xontech 924

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
Q= 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= Monitors at sites meeting near road designs as per Part 58
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 12.1.0 Toxics Minimum Monitoring Requirements

There are no minimum monitoring requirements for the Toxics program.

Section 12.2.0 Toxics Sampling Frequency & Equipment Used

The EPA established the minimum collection frequency for VOCs, aldehydes, and other Hazardous Air Pollutants (HAPs) with respect to 24-hour integrated samples and are listed in Table 12.1. The VOC & Carbonyls analyzed compounds are in Table 12.2a & b, respectively.

Table 12.1 Toxics Equipment

Pollutant	Abbrev.	Collection Equipment	Collection Method	Collection Frequency	Analytical Method	Parameter Code	Method Code
Volatile Organic Compounds	VOCs	Xonteck 910A-FSL (SDAPCD) Xonteck 910/912 (ARB)	Fused Silica Lined (SDAPCD) Summa Canister (ARB)	1:6 (SDAPCD) 1:12 (ARB)	GC-MS	Table 12.1.b (SDAPCD) (See ARB)	210
Aldehydes/ Carbonyls	none	XonTech 924 Atec 8000	DNPH cartridge	1:12 (ARB) 1:6 (SDAPCD)	HPLC	(See ARB)	(See ARB) 202
Cr (VI)	none	XonTech 924	Teflon Filter	1:12 (ARB)	IC	(See ARB)	(See ARB)
Metals	none	XonTech 924	Teflon Filter	1:12 (SDAPCD) 1:12 (ARB)	Not analyzed (SDAPCD) (See ARB)	Not analyzed (SDAPCD) (See ARB)	Not analyzed (SDAPCD) (See ARB)

Table 12.2a Toxics VOC

Compound	Parameter
Dichlorodifluoromethane	43823
Chloromethane	43801
4-Methyl-2-pentanone (MIBK)	43560
Trichloroethene	43824
Bromomethane	43819
Chloroethane	43812
Trichlorofluoromethane	43811
cis-1,3-Dichloropropene	43831
1,2-Dichloroethane	43815
2-Methyl-1,3-butadiene	43243
1,1-Dichloroethene	43826
Carbon Tetrachloride	43804
Methylene Chloride	43802
Trichlorotrifluoroethane	43207
trans-1,2-Dichloroethene	43838
1,1,2,2-Tetrachloroethane	43818
1,1-Dichloroethane	43813
cis-1,2-Dichloroethene	43839
1,1,1-Trichloroethane	43814
1,2-Dichloropropane	43829
2-Methoxy-2-methylpropane	43372
1,2-Dichloroethane	43815
4-Ethyltoluene	45213

Compound	Parameter
4-Ethyltoluene	45213
1,3,5-Trimethylbenzene	45207
1,2,4-Trimethylbenzene	45208
1,3-Dichlorobenzene	45806
1,4-Dichlorobenzene	45807
1,2-Dichlorobenzene	45805
1,2,4-Trichlorobenzene	45810
Hexachlorobutadiene	43844
Acetonitrile	43702
Vinyl acetate	43447
n-Hexane	43231
Ethyl acetate	43209
Methyl methacrylate	43441
Dichlorotetrafluoroethane	43208
Benzyl chloride	45809
Toluene	45202
1,2-Dibromoethane	43843
trans-1,3-Dichloropropene	43830
Chlorobenzene	45801
Ethylbenzene	45203
m,p-Xylene	45109
Tetrachloroethene	43817
1,1,2-Trichloroethane	43820

Compound	Parameter
1,3-Butadiene	43218
Chloroform	43803
Naphthalene	45850
2-Butanone	43552
Bromoform	43806
Styrene	45220
o-Xylene	45204
Acrylonitrile	43704
Acrolein	43505
Acetone	43551
Benzene	45201
Vinyl Chloride	43860

Table 12.2b Carbonyls

Compound	Parameter
Formaldehyde	43502
Acetaldehyde	43503
Acetone	43551

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APPENDICES

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 A1, 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 A1 summarizes these requirements and Table a2 defines the terminology and lists the monitor types and the definitions.

Table A1 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 A2 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
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
Q= 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

Network Affiliation
BG= Border Grant
CSN STN= Trends Speciation
CSN SU= Supplemental Speciation
NATTS= National Air Toxics Trends Stations
NCORE= National Core Multi-pollutant Monitoring
NR= Monitors at sites meeting near road designs
PAMS= Photochemical Assessment Monitoring
UNPAMS= Unofficial PAMS site

Monitor Designation
PRI= Primary
QAC= Collocated
O= Other

Objective (Federal)
Data= Provide pollution data in a timely manner
NAAQS= Suitable for NAAQS comparison
Research= Research support
PI= Public Information

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 A3 summarizes these requirements. Figure A1 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 plan. 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 A3.

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.

Table A3 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[1] (meters)	Horizontal and vertical distance from supporting structures[2] to probe, inlet, or 90% of monitoring path[1] (meters)	Distance from trees to probe, inlet, or 90% of the monitoring path[1] (meters)	Average daily traffic count (#)	Distance from roadways to probe, inlet, or monitoring path[1,10] (meters)
SO_2[3,4,5,6]	Middle Neighborhood Urban Regional	Min= 2, Max= 15 Min= 2, Max= 15 Min= 2, Max= 15 Min= 2, Max= 15	> 1 > 1 > 1 > 1	> 10 > 10 > 10 > 10	For all scales Not Applicable	For all scales Not Applicable
CO[4,5,7]	Micro Middle Neighborhood	Min= 3.5, Max= 15 Min= 2, Max= 15 Min= 2, Max= 15	> 1 > 1 > 1	> 10 > 10 > 10	For micro scale Not Applicable For all other scales ≤ 10,000 15,000 20,000 30,000 40,000 50,000 ≥ 60,000	For micro scale Min= 2, Max= 10 For all other scales 10 25 45 80 115 135 150
O_3[3,4,5]	Middle Neighborhood Urban Regional	Min= 2, Max= 15 Min= 2, Max= 15 Min= 2, Max= 15 Min= 2, Max= 15	> 1 > 1 > 1 > 1	> 10 > 10 > 10 > 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
NOy & NO_2[3,4,5]	Micro Middle Neighborhood Urban, Regional	Min= 2, Max= 7 Min= 2, Max= 15 Min= 2, Max= 15 Min= 2, Max= 15 Min= 2, Max= 15	> 1 > 1 > 1 > 1 > 1	> 10 > 10 > 10 > 10 > 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
PAMS[3,4,5]	Neighborhood Urban	Min= 2, Max= 15 Min= 2, Max= 15	> 1 > 1	> 10 > 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
Pb[3,4,5,6,8] PM[3,4,5,6,8,9]	Micro Neighborhood Urban	Min= 2, Max= 7 Min= 2, Max= 15 Min= 2, Max= 15	> 2 > 2 > 2	> 10 > 10 > 10		Min= 5, Max= 15 (street canyon) Min= 2, Max= 10 (street) See Figure E-1 (below)

[1]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_2, O_3 and O_3 precursors.

[2]When probe is located on a rooftop, this separation distance is in reference to walls, parapets, or penthouses located on roof.

[3] 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

[4]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.

[5]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.

[6]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.

[7]For microscale CO monitoring sites, the probe must be > 10 meters from a street intersection and preferably at a midblock location

[8] 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

[9] For particulate sampling, a minimum of 2 meters of separation from walls, parapets, and structures is required for rooftop site placement.

[10] Measured from the edge of the nearest lane to the sampler or inlet.

Figure A1 Distance of PM samplers to nearest traffic lane

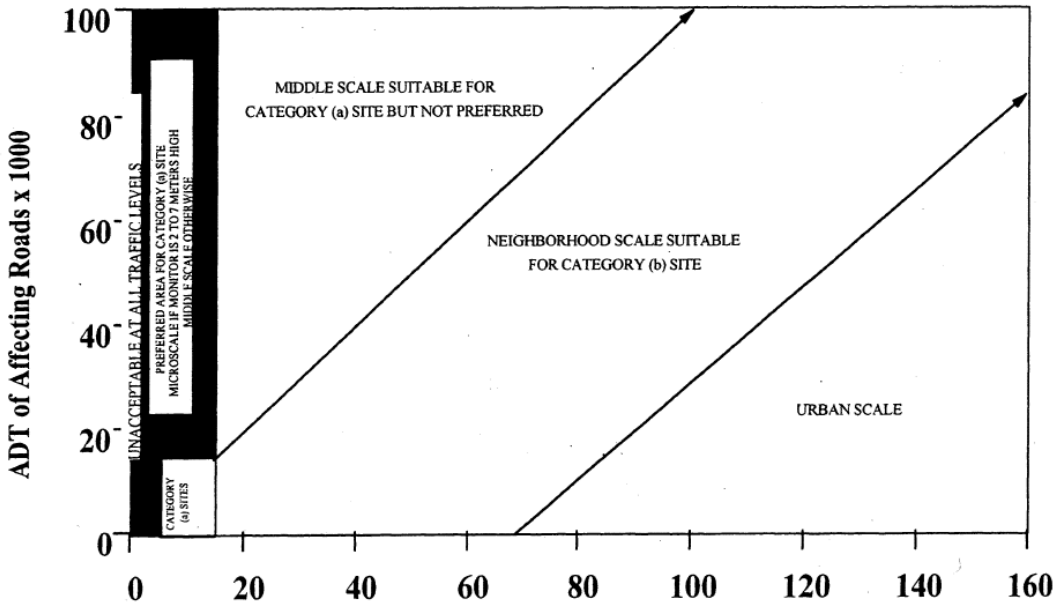


Figure E-1. Distance of PM samplers to nearest traffic lane (meters)

Appendix 1.0.0 Alpine Station Description and Statement of Purpose

Table 1.1 General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Alpine
Year Established:	4/29/2015
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 (2013 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 a PAMS Type III site, intended to monitor maximum ozone concentrations occurring downwind from the area of maximum precursor emissions (NO_x and VOCs). It is also a site used to assess downwind transport of fine particulates ($PM_{2.5}$). NO_2 data continues to provide information on trends and are an indication of the relative effectiveness of NO_x regulatory and control measures. The Alpine site also provides information used in making burn/no-burn decisions.
Planned Changes:	*Cease collection of PAMS-VOC in 2019.*

Figure 1.1 Alpine – Picture of the Location of the Station

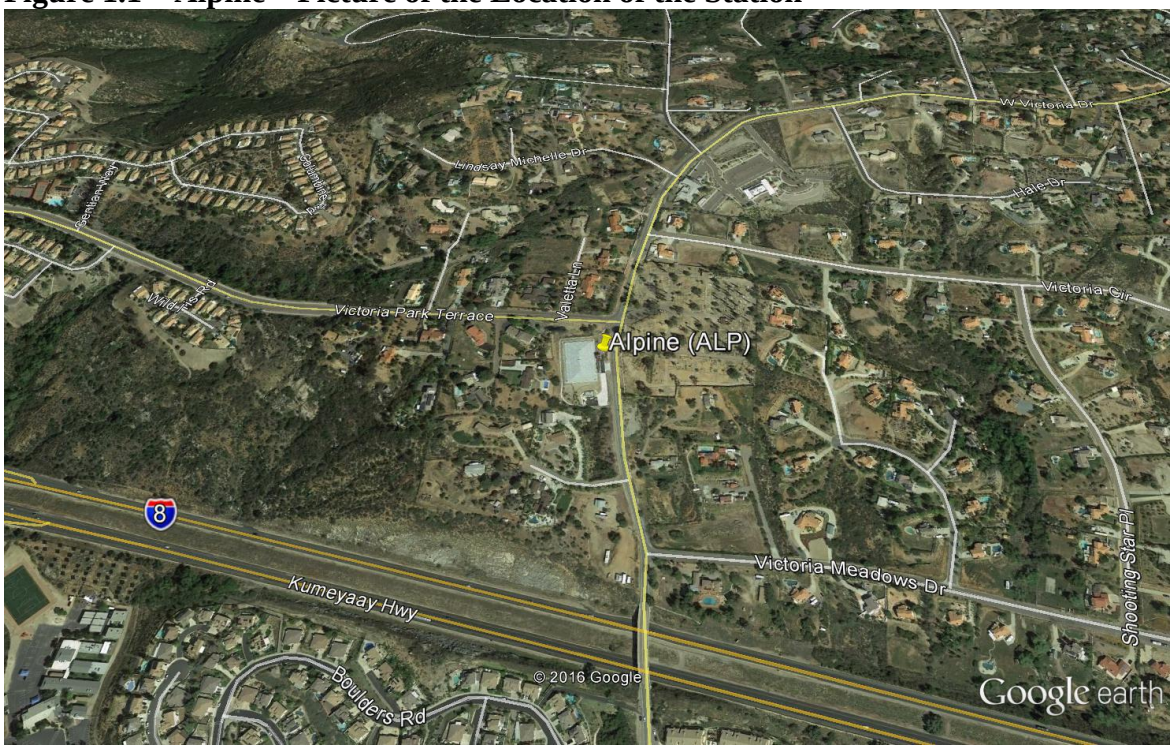


Table 1.2a Alpine - Gaseous Pollutants Monitor Designations + Other

Pollutant	O_3	NO_2	Other Zero Air	Other Calibrator
POC	1	1	N/A	N/A
Monitor designation	Other	Primary	N/A	N/A
Parameter code	44201	42602 (NO_2)	N/A	N/A
Basic monitoring objective	Public Information, NAAQS	Public Information, NAAQS	N/A	N/A
Site type	Maximum ozone concentrations	Population Exposure	N/A	N/A
Monitor type	SLAMS	SLAMS	N/A	N/A
Network affiliation	PAMS	PAMS	N/A	N/A
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Teledyne-API 701H	Teledyne-API T700u
Method code	047	074	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	Urban Scale	Urban Scale	N/A	N/A
Monitoring start date	4/29/2015	4/29/2015	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	3.28	6.22	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	11/9	11/14	10/25	N/A
NPAP (ARB) date	*	*	N/A	N/A

***Not done this year**

Table 1.2b Alpine - Particulate Pollutants Monitor Designations

Pollutant	**$PM_{2.5}$ Continuous (non-FEM)**
POC	1
Monitor designation	Other
Parameter code	88502 (LC)
Basic monitoring objective	Public Information, NAAQS
Site type	Population Exposure
Monitor type	SLAMS
Network affiliation	N/A
Instrument manufacturer & model	Met One BAM 1020
Method code	733
FRM/FEM/ARM/Other	Other (non-FEM)
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Urban Scale
Monitoring start date	4/29/2015
Current sampling frequency	Continuous
Required sampling frequency	Continuous
Sampling season	Year-round
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?	No
Frequency of flow rate verification	Semi-Monthly
Semi-Annual flow rate audits dates	5/10, 11/6
NPAP (ARB) date	*

***Not done this year

Table 1.2c Alpine - Other Pollutants Monitor Designations

Pollutant	**PAMS-VOC**
POC	1 for 3-Hr samples 2 for 24-Hr samples
Monitor designation	Other
Parameter code	See PAMS Table 12.2b
Basic monitoring objective	Research
Site type	Maximum ozone concentrations
Monitor type	SLAMS
Network affiliation	PAMS Type III
Instrument manufacturer & model	Xontech 910 & 912
Method code	126
FRM/FEM/ARM/Other	Other
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Urban Scale
Monitoring start date	4/29/2015
Current sampling frequency	1:6
Required sampling frequency	1:6
Sampling season	3-Hr (Jul-Oct) 24-Hr (Nov-Jun)
Any PM Lo-Vol sampler w/in 1m	N/A
Any PM Hi-Vol sampler w/in 2m	N/A
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?	N/A
Frequency of QC check (one-point)	N/A
Annual Performance Evaluation date	N/A
NPAP (ARB) date	N/A

Table 1.2d 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	PAMS	PAMS	PAMS	PAMS	PAMS
Instrument manufacturer & model	Qualimetrics	Qualimetrics	Qualimetrics	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	4/29/2015	4/29/2015	4/29/2015	4/29/2015	4/29/2015
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	10/26	10/26	10/26	10/26	10/26
NPAP (ARB) date	N/A	*	*	*	*

*ARB does not have the equipment to audit.

Table 1.3 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_{10}, PRI (40 cfm)	PM_{10}, QAC (40 cfm)	PM_{10} PRI (16.7 lpm)	$PM_{2.5}$ FRM, PRI (16.7 lpm)	$PM_{2.5}$ FRM, QAC (16.7 lpm)	$PM_{2.5}$ non-FEM (16.7 lpm)	$PM_{2.5}$ STN (6.7 lpm)	$PM_{2.5}$ 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									n/a			n/a						n/a
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM_{10}, PRI																			
PM_{10}, QAC																			
PM_{10}, PRI																			
$PM_{2.5}$ FRM, PRI																			
$PM_{2.5}$ FRM, QAC																			
$PM_{2.5}$ non-FEM	n/a									n/a			n/a						n/a
$PM_{2.5}$ STN																			
$PM_{2.5}$ CSN																			
†PAMS-VOC	n/a									n/a			n/a						n/a
†PAMS-VOC QAC																			
†PAMS-Carbonyls																			
†Toxics-VOC																			
†Toxics-VOC, QAC																			
Toxics-Metals																			
Meteorology	n/a									n/a			n/a						n/a
Height from ground	7.2									5.0			4.8						7.2
Distance: from the road	11.7									11.7			11.7						11.7
from the supporting structure (deck)	N									N			N						N
from obstructions on roof	N									N			N						N
from obstructions not on roof	N									N			N						N
from the closest tree	38.8									38.8			38.8						38.8
from furnace/flue	N									N			N						N
Unrestricted air flow (degrees)	360									360			360						360

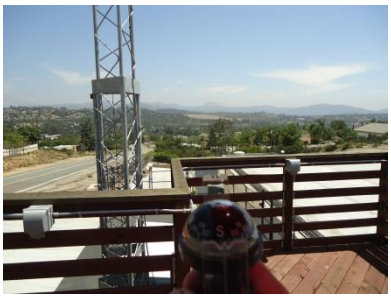
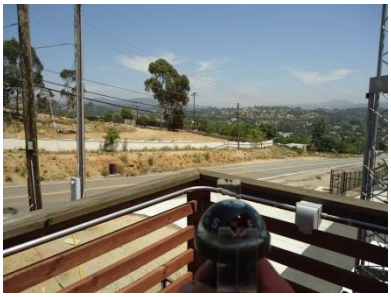
n/a= Not Applicable; N= None; †On the side of the station/trailer

Figure 1.2 Alpine – Pictures (Directional) from the Rooftop







Appendix 2.0.0 Camp Pendleton Station Description and Statement of Purpose

Table 2.1 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 O
Longitude:	-117.396169 O
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 (2013 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)= 172,000
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 an upwind, PAMS Type I background characterization site.
Planned Changes:	*Due to structures and heavy machinery encroaching on the station, this station may need to be relocated.*

Figure 2.1 Camp Pendleton – Picture of the Location of the Station

Table 2.2a Camp Pendleton - Gaseous Pollutants Monitor Designations + Other

Pollutant	O_3	NO_2	Other Zero Air	Other Calibrator
POC	1	1	N/A	N/A
Monitor designation	Other	Primary	N/A	N/A
Parameter code	44201	42602 (NO_2)	N/A	N/A
Basic monitoring objective	Public Information, NAAQS	Public Information, NAAQS	N/A	N/A
Site type	Upwind Background	Upwind Background	N/A	N/A
Monitor type	SLAMS	SLAMS	N/A	N/A
Network affiliation	PAMS	PAMS	N/A	N/A
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Teledyne-API 701H	Teledyne-API T700u
Method code	047	074	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	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	8.96 sec	14.93 sec	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	8/21	8/24	8/15	N/A
NPAP (ARB) date	8/23	8/23	N/A	N/A

Table 2.2b Camp Pendleton - Particulate Pollutants Monitor Designations

Pollutant	**$PM_{2.5}$ Continuous (non-FEM)**
POC	1
Monitor designation	Other
Parameter code	88502 (LC)
Basic monitoring objective	Public Information, Research
Site type	UPBD
Monitor type	O
Network affiliation	N/A
Instrument manufacturer & model	Met One BAM 1020
Method code	733
FRM/FEM/ARM/Other	Other (non-FEM)
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Urban
Monitoring start date	10/24/2005
Current sampling frequency	Continuous
Required sampling frequency	Continuous
Sampling season	Year-round
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?	No
Frequency of flow rate verification	Semi-monthly
Semi-Annual flow rate audits dates	8/30, 3/8
NPAP (ARB) date	8/23

Table 2.2c Camp Pendleton - Other Pollutants Monitor Designations

Pollutant	**PAMS-VOC**	**PAMS-VOC (collocated)**
POC	1 for 3-Hr samples 2 for 24-Hr samples	1 for 3-Hr samples 2 for 24-Hr samples
Monitor designation	O	QAC
Parameter code	See PAMS Table 12.2b	See PAMS Table 12.2b
Basic monitoring objective	Research	Research
Site type	Upwind background	Quality Assurance
Monitor type	SLAMS	O
Network affiliation	PAMS Type I	N/A
Instrument manufacturer & model	Xontech 910 & 912	Xontech 910 & 912
Method code	126	126
FRM/FEM/ARM/Other	N/A	N/A
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	1997	7/2011
Current sampling frequency	1:6	1:6
Required sampling frequency	1:6	1:6
Sampling season	3-Hr (Jul-Oct) 24-Hr (Nov-Jun)	3-Hr (Jul-Oct) 24-Hr (Nov-Jun)
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	N/A	N/A
NPAP (ARB) date	N/A	N/A

Table 2.2d 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	PAMS	PAMS	PAMS	PAMS
Instrument manufacturer & model	Qualimetrics	Qualimetrics	Qualimetrics	Rotronics
Method code	012	050	020	040
FRM/FEM/ARM/Other	O	O	O	O
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	8/11	8/11	8/11	8/11
NPAP (ARB) date	N/A	*	*	*

*ARB does not have the equipment to audit.

Table 2.3 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_{10}, PRI (40 cfm)	PM_{10}, QAC (40 cfm)	PM_{10} PRI (16.7 lpm)	$PM_{2.5}$ FRM, PRI (16.7 lpm)	$PM_{2.5}$ FRM, QAC (16.7 lpm)	$PM_{2.5}$ non-FEM (16.7 lpm)	$PM_{2.5}$ STN (6.7 lpm)	$PM_{2.5}$ 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									n/a			n/a						n/a
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM_{10}, PRI																			
PM_{10}, QAC																			
PM_{10}, PRI																			
$PM_{2.5}$ FRM, PRI																			
$PM_{2.5}$ FRM, QAC																			
$PM_{2.5}$ non-FEM	n/a									n/a			n/a						n/a
$PM_{2.5}$ STN																			
$PM_{2.5}$ CSN																			
†PAMS-VOC	n/a									n/a			n/a						n/a
†PAMS-VOC QAC																			
†PAMS-Carbonyls																			
†Toxics-VOC																			
†Toxics-VOC, QAC																			
Toxics-Metals																			
Meteorology	n/a									n/a			n/a						n/a
Height from ground	5.9									5.0			5.6						10
Distance: from the road	41									41			41						41
from the supporting structure (deck)	5.6									3.9			1.7						N
from obstructions on roof	N									N			N						N
from obstructions not on roof	N									N			N						N
from the closest tree	35									35			35						35
from furnace/flue	N									N			N						N
Unrestricted air flow (degrees)	360									360			360						360

n/a= Not Applicable; N= None; †On the side of the station/trailer

Figure 2.2 Camp Pendleton – Pictures (Directional) from the Rooftop








Appendix 3.0.0 Chula Vista Station Description and Statement of Purpose

Table 3.1 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^{O}
Longitude:	-117.059115^{O}
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 (2013 AADT):	Hilltop Dr. at E. J St.= 9,200
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:	A new wood deck will replace the old one in 2018/19. All rooftop equipment will be placed at street level. May replace PM_{10} Hi-Vol sampler with a T-640x analyzer.

Figure 3.1 Chula Vista – Pictures of the Location of the Station

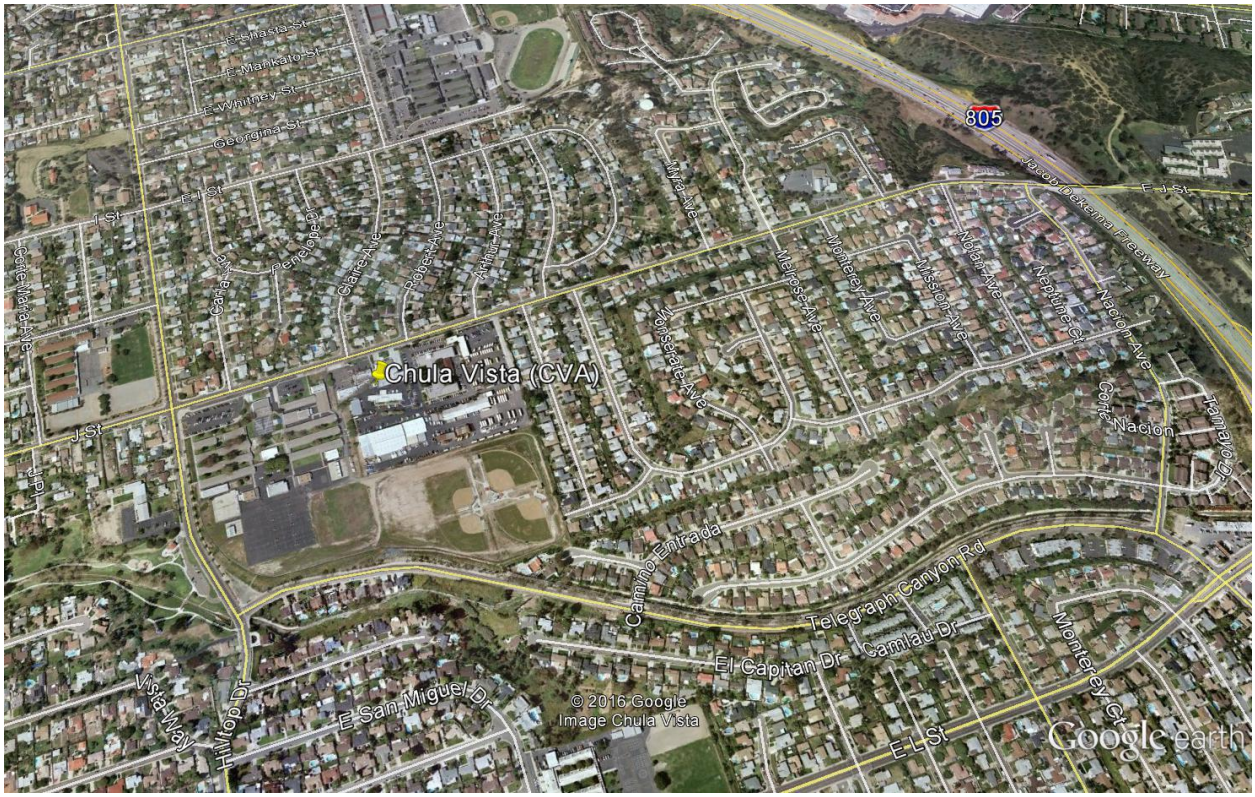


Table 3.2a Chula Vista - Gaseous Pollutants Monitor Designations + Other

Pollutant	O_3	NO_2	Other Zero Air	Other Calibrator
POC	1	1	N/A	N/A
Monitor designation	Other	Primary	N/A	N/A
Parameter code	44201	42602 (NO_2)	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	Thermo 42i	Teledyne-API 701H	Teledyne-API T700u
Method code	047	074	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	Neighborhood Scale	Neighborhood Scale	N/A	N/A
Monitoring start date	1974	1974	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	5.24 sec	9.07 sec	N/A	N/A
Any changes within the next 18 months?	Yes	Yes	Yes	No
Suitable for comparison to the NAAQS?	Yes	Yes	N/A	N/A
Frequency of QC check (one-point)	1:14	1:1	N/A	N/A
Annual Performance Evaluation date	4/11	5/26	6/22	N/A
NPAP (ARB) date	8/16	8/16	N/A	N/A

Table 3.2b Chula Vista - Particulate Pollutants Monitor Designations

Pollutant	**$PM_{2.5}$ Manual (FRM)**	**PM_{10} Manual**	**PM_{10} Manual (collocated)**
POC	1	1 (LC) 2 (STD)	2 (LC) 3 (STD)
Monitor designation	Primary	Primary	Quality Assurance
Parameter code	88101 (LC)	85101 (LC) 81102 (STD)	85101 (LC) 81102 (STD)
Basic monitoring objective	NAAQS	NAAQS	NAAQS
Site type	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A
Instrument manufacturer & model	Thermo 2025	GMW 2000H w/ SA 1200 Head	GMW 2000H w/ SA 1200 Head
Method code	145 (LC)	063	063
FRM/FEM/ARM/Other	FRM	FRM	FRM
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	1999	1986	10/6/2012
Current sampling frequency	1:3	1:6	1:12
Required sampling frequency	1:3	1:6	1:12
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	Yes	Yes
Suitable for comparison to the NAAQS?	Yes	Yes	Yes (if PRI does not run)
Frequency of flow rate verification	Monthly	Monthly	Monthly
Semi-Annual flow rate audits dates	5/22, 10/24	2/22, 8/2	2/22, Decommissioned
NPAP (ARB) date	8/16	8/16	Decommissioned
PEP (EPA) date	2/15, 11/15	N/A	N/A

Table 3.2c 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 (ARB) date	N/A	N/A	N/A	N/A

Table 3.2d 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	Qualimetrics	Qualimetrics	Rotronics
Method code	012	050	020	040
FRM/FEM/ARM/Other	O	O	O	O
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	8/2	8/2	8/2	8/2
NPAP (ARB) date	N/A	*	*	*

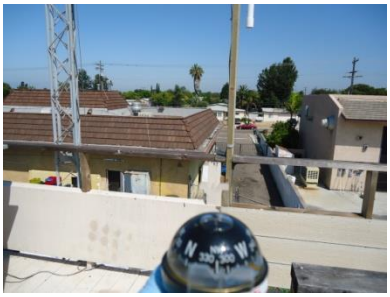
*ARB does not have the equipment to audit.

Table 3.3 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_{10}, PRI, Hi-Vol (40 cfm)	PM_{10}, QAC, Hi-Vol (40 cfm)	PM_{10} PRI, Lo-Vol (16.7 lpm)	$PM_{2.5}$ FRM, PRI (16.7 lpm)	$PM_{2.5}$ FRM, QAC (16.7 lpm)	$PM_{2.5}$ non-FEM (16.7 lpm)	$PM_{2.5}$ STN (6.7 lpm)	$PM_{2.5}$ 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				n/a	n/a		n/a								n/a		n/a	n/a
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM_{10}, PRI, Hi-Vol	n/a				n/a	2.1		2.4								4.0		6.2	n/a
PM_{10}, QAC, Hi-Vol	n/a				2.1	n/a		2.1								2.2		4.3	n/a
PM_{10}, PRI, Lo-Vol																			
$PM_{2.5}$ FRM, PRI	n/a				2.4	2.1		n/a								2.0		4.0	n/a
$PM_{2.5}$ FRM, QAC																			
$PM_{2.5}$ non-FEM																			
$PM_{2.5}$ STN																			
$PM_{2.5}$ CSN																			
†PAMS-VOC																			
†PAMS-VOC, QAC																			
†PAMS-Carbonyls																			
Toxics-VOC	n/a				4.0	2.2		2.0								n/a		2.2	n/a
Toxics-VOC, QAC																			
Toxics-Metals	n/a				6.2	4.3		4.0								2.2		n/a	n/a
Meteorology	n/a				n/a	n/a		n/a								n/a		n/a	n/a
Height from ground	6.5				5.1	5.1		5.6								5.5		5.7	10
Distance: from the road	51				51	51		51								51		51	51
from the supporting structure (deck)	N				N	N		N								N		N	N
from obstructions on roof	N				N	N		N								N		N	N
from obstructions not on roof	N				N	N		N								N		N	N
from the closest tree	N				N	N		N								N		N	N
from furnace/flue	N				N	N		N								N		N	N
Unrestricted air flow (degrees)	360				360	360		360								360		360	360

n/a= Not Applicable; N= None; †On the side of the station/trailer

Figure 3.2 Chula Vista – Pictures (Directional) form the Rooftop



Appendix 4.0.0 Donovan Station Description and Statement of Purpose

Table 4.1 General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Donovan
Year Established:	1/2005 PM10 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 ^{O}
Longitude:	-116 .921359 ^{O}
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 (2013 AADT):	Donovan Prison Rd. AADT estimated= 300 (No traffic count available) The closest cross-street with a traffic count, Otay 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.
Planned Changes:	May replace the PM_{10} sampler with a T-640x analyzer.

Figure 4.1 Donovan – Picture of the Location

Table 4.2a Donovan - Gaseous Pollutants Monitor Designations + Other

Pollutant	O_3	NO_2	Other Zero Air	Other Calibrator
POC	1	1	N/A	N/A
Monitor designation	Other	Primary	N/A	N/A
Parameter code	44201	42602 (NO_2)	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	Thermo 42i	Teledyne-API 701	Teledyne-API T700u
Method code	047	074	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	Neighborhood Scale	Neighborhood Scale	N/A	Not Applicable
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	1.56 sec	0.69 sec	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)	1:14	1:1	N/A	N/A
Annual Performance Evaluation date	5/23	5/24	6/23	N/A
NPAP (ARB) date	8/22	8/22	N/A	N/A

*Not done this year

Table 4.2b Donovan - Particulate Pollutants Monitor Designations

Pollutant	$PM_{2.5}$ Continuous (non-FEM)	PM_{10} Manual (Hi-Vol)	PM_{10} Manual (Hi-Vol)
POC	1	1	2
Monitor designation	Other	Other	Other
Parameter code	88502 (LC)	85101 (LC) 81102 (STD)	85101 (LC) 81102 (STD)
Basic monitoring objective	Public Information, Research	NAAQS	QAC
Site type	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A
Instrument manufacturer & model	Met One BAM 1020	GMW 2000H w/ SA 1200 Head	GMW 2000H w/ SA 1200 Head
Method code	733	063	063
FRM/FEM/ARM/Other	Other (non-FEM)	FRM	FRM
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Population Exposure	Neighborhood Scale	Neighborhood Scale
Monitoring start date	1/21/2015	7/2014	3/2017
Current sampling frequency	Continuous	1:6	1:6
Required sampling frequency	Continuous	1:6	1:6
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?	No	No	No
Frequency of flow rate verification	Semi-monthly	monthly	monthly
Semi-Annual flow rate audits dates	5/25, 11/3	6/29, 12/26	6/29, 12/26
NPAP (ARB) date	*	*	*

*Not done this year

Table 4.2c Donovan - Other Pollutants Monitor Designations

Pollutant	TOXICS-VOC	TOXICS-VOC (collocated)	TOXICS-Metals
POC	1	1	1
Monitor designation	Not Applicable	QAC	Not Applicable
Parameter code	See Toxics sec Table	See Toxics sec Table	Collected; Not analyzed
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 910A (Fused Silica Lined)	Xontech 910A (Fused Silica Lined)	Xontech 924
Method code	210	210	Collected; Not analyzed
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	7/2014	7/2014	7/2014
Current sampling frequency	1:12	1:12	1:12
Required sampling frequency	1:6	1:6	1:6
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?	Yes	Yes	Yes
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 (ARB) date	N/A	N/A	N/A

Table 4.2d 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	Qualimetrics	Qualimetrics	Rotronics
Method code	012	050	020	040
FRM/FEM/ARM/Other	O	O	O	O
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	8/10	8/10	8/10	8/10
NPAP (ARB) date	N/A	*	*	*

*ARB does not have the equipment to audit.

Table 4.3 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_{10}, PRI, Hi-Vol (40 cfm)	PM_{10}, QAC, Hi-Vol (40 cfm)	PM_{10} PRI, Lo-Vol (16.7 lpm)	$PM_{2.5}$ FRM, PRI (16.7 lpm)	$PM_{2.5}$ FRM, QAC (16.7 lpm)	$PM_{2.5}$ non-FEM (16.7 lpm)	$PM_{2.5}$ STN (6.7 lpm)	$PM_{2.5}$ 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				n/a					n/a						n/a	n/a	n/a	n/a
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM_{10}, PRI, Hi-Vol	n/a				n/a					5.7						6.0	6.0	2.7	n/a
PM_{10}, QAC, Hi-Vol																			
PM_{10}, PRI, Lo-Vol																			
$PM_{2.5}$ FRM, PRI																			
$PM_{2.5}$ FRM, QAC																			
$PM_{2.5}$ non-FEM	n/a				5.7					n/a						3.3	3.3	3.7	n/a
$PM_{2.5}$ STN																			
$PM_{2.5}$ CSN																			
†PAMS-VOC																			
†PAMS-VOC, QAC																			
†PAMS-Carbonyls																			
Toxics-VOC	n/a				n/a					n/a						n/a	0.4	3.4	n/a
Toxics-VOC, QAC	n/a				n/a					n/a						0.4	n/a	3.4	n/a
Toxics-Metals	n/a				2.7											3.4	3.4	n/a	n/a
Meteorology	n/a				n/a					n/a						n/a	n/a	n/a	n/a
Height from ground	6.4				5.8					6.4						7.0	7.0	6.1	n/a
Distance: from the road	26				26					26						26	26	26	26
from the supporting structure (deck)	N				N					N						N	N	N	N
from obstructions on roof	N				N					N						N	N	N	N
from obstructions not on roof	N				N					N						N	N	N	N
from the closest tree	N				N					N						N	N	N	N
from furnace/flue	N				N					N						N	N	N	N
Unrestricted air flow (degrees)	360				360					360						360	360	360	360

n/a= Not Applicable; N= None; †On the side of the station/trailer

Figure 4.2 Donovan – Pictures (Directional) from the Rooftop

Appendix 5.0.0 Kearny Villa Road Station Description and Statement of Purpose

Table 5.1 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 O
Longitude:	-117.123983 O
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 (2013 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 2011, when the District relocated the Overland station alongside the wind profiler, it was formally redesignated as KVR. Both are located on the southeast section of Marine Corps Air Station Miramar (MCAS) called Camp Elliot.
Monitoring Objectives:	This site is a PAMS II location. It provides representative data for a large area and is quality assurance location for the $PM_{2.5}$ Manual program.
Planned Changes:	PAMS-Carbonyl sampling will resume in mid-2016

Table 5.1 Kearny Villa Road – Picture of the Location

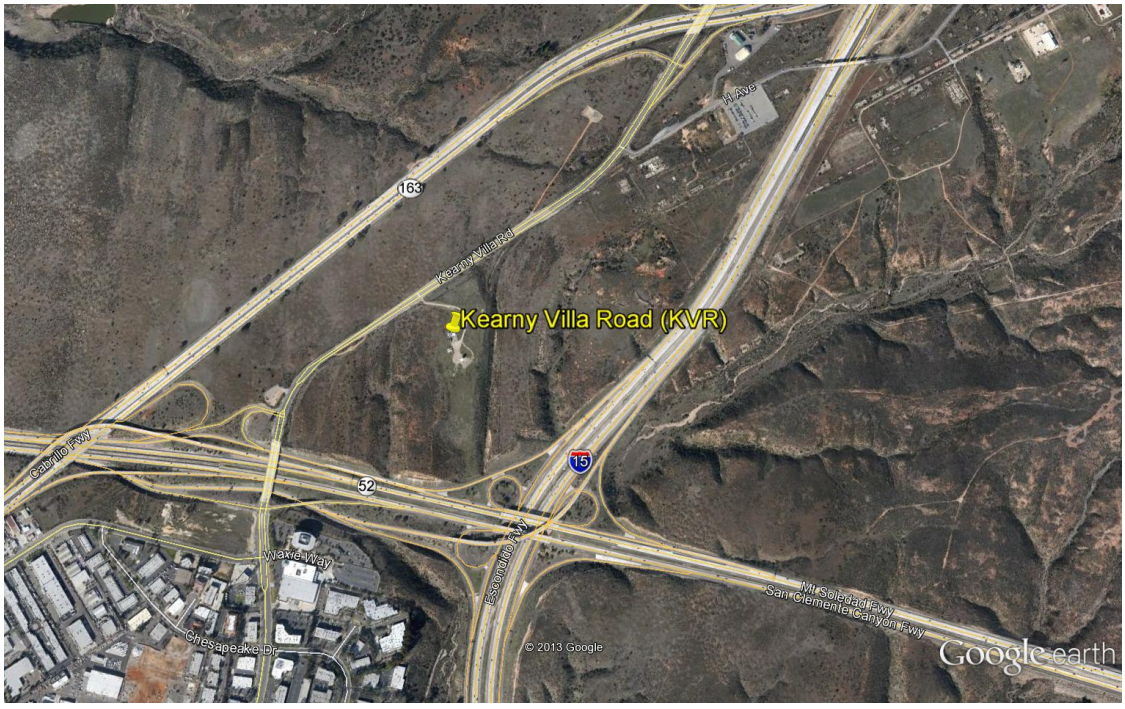


Table 5.2a Kearny Villa Road - Gaseous Pollutants Monitor Designations + Other

Pollutant	O_3	NO_2	Other Zero Air	Other Calibrator
POC	1	1	N/A	N/A
Monitor designation	N/A	PRI	N/A	N/A
Parameter code	44201	42602 (NO_2)	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	PAMS	PAMS	N/A	N/A
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Teledyne-API 701H	Teledyne-API T700u
Method code	047	074	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	Neighborhood Scale	Neighborhood Scale	N/A	Not Applicable
Monitoring start date	11/5/2010	11/5/2010	11/5/2010	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	6.00 sec	10.05 sec	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)	1:14	1:1	N/A	N/A
Annual Performance Evaluation date	3/10	3/2	3/3	N/A
NPAP (ARB) date	*	*	N/A	N/A

*Not done this year

Table 5.2b Kearny Villa Road - Particulate Pollutants Monitor Designations

Pollutant	**$PM_{2.5}$ Manual**	**$PM_{2.5}$ Manual (collocated)**	**PM_{10} Manual Hi-Vol**
POC	1	2	1
Monitor designation	PRI	QAC	PRI
Parameter code	88101 (LC)	88101 (LC)	85101 (LC) 81102 (STD)
Basic monitoring objective	NAAQS	NAAQS	NAAQS
Site type	Population Exposure	QAC	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A
Instrument manufacturer & model	Thermo 2025	Thermo 2025	GMW 2000H w/ SA 1200 Head
Method code	145	145	063
FRM/FEM/ARM/Other	FRM	FRM	FRM
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	11/5/2010	11/5/2010	11/5/2010
Current sampling frequency	1:3	1:12	1:6
Required sampling frequency	1:3	1:12	1:6
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	Yes
Frequency of flow rate verification	Monthly	Monthly	Monthly
Semi-Annual flow rate audits dates	3/28, 7/10	3/28, 7/10	3/9, 7/28
NPAP (ARB) date	*	*	*
PEP (EPA) date	2/15, 8/17, 11/15	N/A	N/A

*Not done this year

Table 5.2d1 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	Qualimetrics	Qualimetrics	Rotronics	Rotronics
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	3/10	3/10	3/10	3/10	3/10
NPAP (ARB) date	N/A	*	*	*	*

*ARB does not have the equipment to audit

Table 5.2d2 Kearny Villa Road - Meteorological Equipment (Additional) Designations

Pollutant	Barometric Pressure	Solar Radiation	**Upper-air wind & temperature
POC	1	1	N/A
Monitor designation	N/A	N/A	N/A
Parameter code	64101	63301	N/A
Basic monitoring objective	N/A	N/A	N/A
Site type	N/A	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	PAMS	PAMS	PAMS
Instrument manufacturer & model	Rotronics	Eppley	Radian LAP 3000
Method code	014	011	N/A
FRM/FEM/ARM/Other	O	O	O
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	11/5/2010	11/5/2010	1999
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	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 QC check (one-point)	N/A	N/A	N/A
Annual Performance Evaluation date	3/10	3/10	N/A
NPAP (ARB) date	*	*	N/A

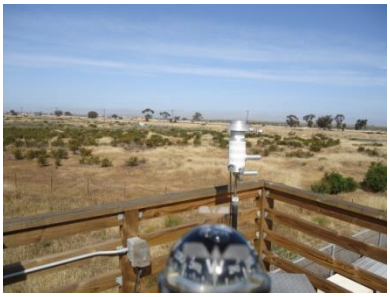
*Not done this year
**The Equipment is not operational and must be replaced

Table 5.3 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_{10}, PRI, Hi-Vol (40 cfm)	PM_{10}, QAC, Hi-Vol (40 cfm)	PM_{10} PRI, Lo-Vol (16.7 lpm)	$PM_{2.5}$ FRM, PRI (16.7 lpm)	$PM_{2.5}$ FRM, QAC (16.7 lpm)	$PM_{2.5}$ non-FEM (16.7 lpm)	$PM_{2.5}$ STN (6.7 lpm)	$PM_{2.5}$ 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				n/a			n/a	n/a										n/a
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM_{10}, PRI, Hi-Vol	n/a				n/a			2.0	2.9										n/a
PM_{10}, QAC, Hi-Vol																			
PM_{10}, PRI, Lo-Vol																			
$PM_{2.5}$ FRM, PRI	n/a				2.0			n/a	2.0										n/a
$PM_{2.5}$ FRM, QAC	n/a				2.9			2.0	n/a										n/a
$PM_{2.5}$ non-FEM																			
$PM_{2.5}$ STN																			
$PM_{2.5}$ CSN																			
†PAMS-VOC																			
†PAMS-VOC, QAC																			
†PAMS-Carbonyls																			
Toxics-VOC																			
Toxics-VOC, QAC																			
Toxics-Metals																			
Meteorology	n/a				n/a			n/a	n/a										n/a
Height from ground	7.6				7.0			7.0	7.0										10
Distance: from the road	180				180			180	180										180
from the supporting structure (deck)	N				N			N	N										N
from obstructions on roof	N				N			N	N										N
from obstructions not on roof	N				N			N	N										N
from the closest tree	N				N			N	N										N
from furnace/flue	N				N			N	N										N
Unrestricted air flow (degrees)	360				360			360	360										360

n/a= Not Applicable; N= None; †On the side of the station/trailer

Figure 5.2 Kearny Villa Road – Pictures (Directional) from the Rooftop



Appendix 6.0.0 Lexington Elementary School Station Description and Statement of Purpose

Table 6.1 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 (2013 AADT):	First St.= 4,900
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 Type II site, being a maximum ozone precursor emissions impact site.
Planned Changes:	Site of equipment for PAMS re-engineering

Figure 6.1 Floyd Smith Dr. – Picture of the Location

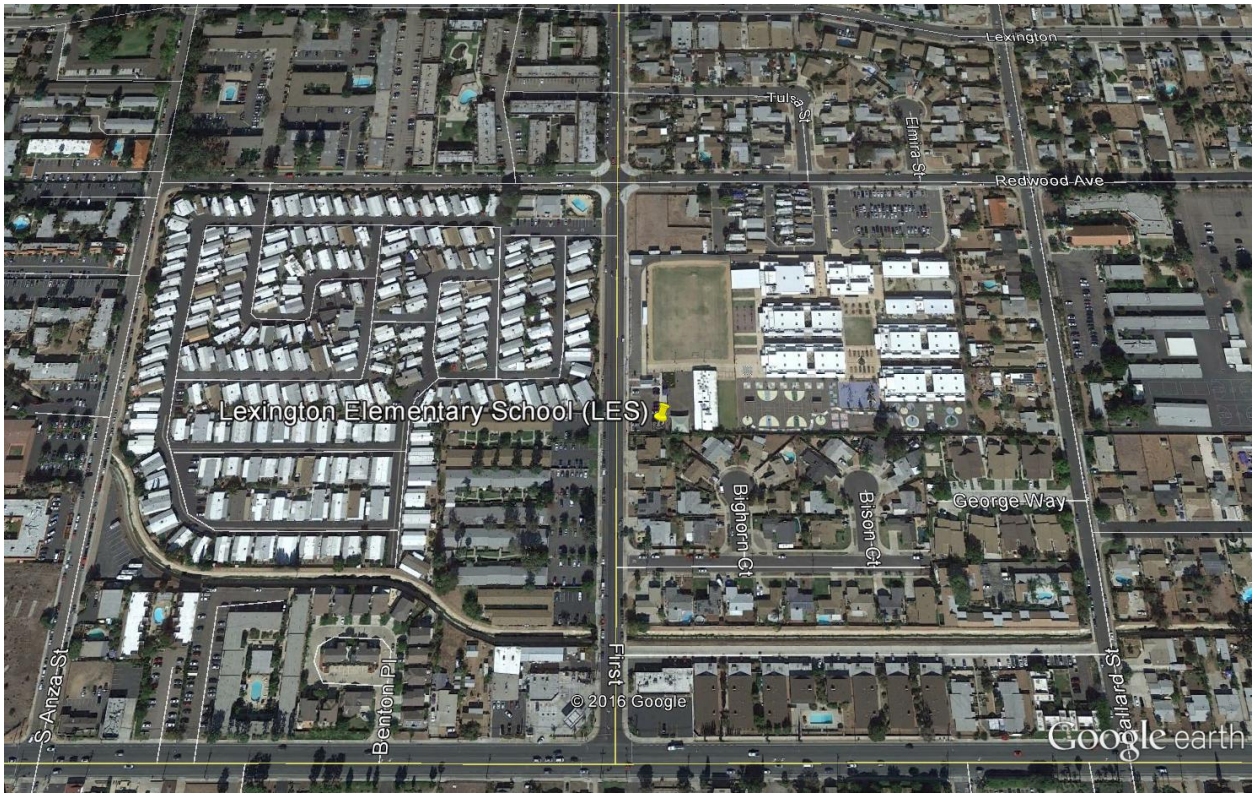


Table 6.2a Lexington Elementary School - Gaseous Pollutants Monitor Designations + Other

Pollutant	O_3	NO_2	CO-TLE	SO_2-TLE	NOy-TLE	Other Zero Air	Other Calibrator
POC	1	1	3	3	3	N/A	N/A
Monitor designation	Other	Primary	N/A	N/A	N/A	N/A	N/A
Parameter code	44201	42602 (NO_2)	42101	42401	42612 ($NOy-NO_2$)	N/A	N/A
Basic monitoring objective	Public Information, NAAQS	Public Information, NAAQS	Public Information, NAAQS	Public Information, NAAQS	Public Information, NAAQS	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	PAMS, NCore	NCore	PAMS, NCore	N/A	N/A
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Thermo 48i-TLE	Thermo 43i-TLE	Thermo 42i-NOy	Teledyne-API 701H	Teledyne-API T700u
Method code	047	074	554	560	574	N/A	N/A
FRM/FEM/ARM/Other	FEM	FRM	FRM	FEM	Other	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	7/2016	*	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	12.68 sec	16.32 sec	17.37 sec	18.29 sec	*	N/A	N/A
Any changes within the next 18 months?	Yes	Yes	Yes	Yes	Yes	Yes	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	8/31	9/13	2/24, 9/7	2/23, 9/7	**	9/6	N/A
ARB (NPAP) date	8/24	8/24	*	*	**	N/A	N/A

*Not done this year

**Not operational in 2017

Table 6.2b Lexington Elementary School - Particulate Pollutants Monitor Designations

Pollutant	$PM_{2.5}$ Manual	$PM_{2.5}$ STN	$PM_{2.5}$ CSN	PM_{10} Manual (Lo-Vol)	PM_{coarse} Manual (paired samplers)	$PM_{2.5}$ Continuous (non-FEM)
POC	1	1	1	2 (LC) 3 (STD)	1	1
Monitor designation	Primary	Other	Other	Other	Other	Other
Parameter code	88101 (LC)	See RTI	See RTI	85101 (LC) 81102 (STD)	86101 (LC)	88502 (LC)
Basic monitoring objective	NAAQS	Research	Research	NAAQS	Research	PI, 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	N/A
Instrument manufacturer & model	Thermo 2025	Met One SASS	URG-3000N	Thermo 2025	Thermo 2025	Met One BAM 1020
Method code	145	See RTI	See RTI	127	176	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	Population Exposure
Monitoring start date	6/2016	6/2016	6/2016	6/2016	6/2016	6/2016
Current sampling frequency	1:3	1:6	1:6	1:3	1:3	Continuous
Required sampling frequency	1:3	1:6	1:6	1:3	1:3	Continuous
Any PM Lo-Vol sampler w/in 1m	None	None	None	None	None	Year-round
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	None
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	Yes	Yes	Yes	Yes	No
Suitable for comparison to the NAAQS?	Yes	No	No	Yes	No	No
Frequency of flow rate verification	Monthly	Monthly	Monthly	Monthly	Monthly	Semi-monthly
Semi-Annual flow rate audits dates	6/2, 12/28	6/14, 12/29	6/14, 12/29	6/2, 12/28	6/2, 12/28	6/2, 12/28
ARB date	8/24	*	*	8/24	8/24	8/24
PEP (EPA) date	*	N/A	N/A	N/A	N/A	N/A

*Not done this year

Table 6.2c Lexington Elementary School - Other Pollutants Monitor Designations

Pollutant	PAMS-VOC	PAMS-Carbonyls	Toxics-VOC	Toxics-Metals	Toxics-Cr(VI)	Toxics-Aldehyde	Toxics-Metals
POC	1 for 3-Hr samples 2 for 24-Hr samples	1 for 3-Hr samples 2 for 24-Hr samples	See ARB	See ARB	See ARB	See ARB	1
Monitor designation	Other	Other	N/A	N/A	N/A	N/A	Not Applicable
Parameter code	See PAMS Table 12.2b	See PAMS Table 12.2c	See ARB	See ARB	See ARB	See ARB	Collected; Not analyzed
Basic monitoring objective	Research	Research	Research	Research	Research	Research	Research
Site type	Maximum Precursor Impact	Maximum Precursor Impact	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	CA Toxics	CA Toxics	CA Toxics	CA Toxics	Other (SDAPCD Network)
Network affiliation	PAMS Type II	PAMS Type II	CA Toxics	CA Toxics	CA Toxics	CA Toxics	N/A
Instrument manufacturer & model	Xontech 910 & 912	Xontech 925	Xontech 910	Xontech 924	Xontech 924	Xontech 924	Xontech 924
Method code	126	202	See ARB	See ARB	See ARB	See ARB	Collected; Not analyzed
FRM/FEM/ARM/Other	Other	Other	Other	Other	Other	Other	Other
Collecting agency	APCD	APCD	APCD	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	ARB	ARB	ARB	ARB	APCD
Reporting agency	APCD	APCD	ARB	ARB	ARB	ARB	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	7/2016	7/2016	1988	1988	1988	1988	2017
Current sampling frequency	1:6	1:6	1:12	1:12	1:12	1:12	1:6
Required sampling frequency	1:6	1:6	1:6	1:6	1:6	1:6	1:6
Sampling season	3-Hr (Jul-Oct) 24-Hr (Nov-Jun)	3-Hr (Jul-Oct) 24-Hr (Nov-Jun)	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	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	N/A	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	N/A
Any changes within the next 18 months?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Suitable for comparison to the NAAQS?	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Frequency of flow rate verification	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Annual Performance Evaluation date	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ARB date	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 6.2d 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	Qualimetrics	Qualimetrics	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	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	9/15	9/15	9/15	9/15	9/15
NPAP (ARB) date	N/A	*	*	*	*

*ARB does not have the equipment to audit.

Table 6.3 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_{10}, PRI (40 cfm)	PM_{10}, QAC (40 cfm)	PM_{10} PRI (16.7 lpm)	$PM_{2.5}$ FRM, PRI (16.7 lpm)	$PM_{2.5}$ FRM, QAC (16.7 lpm)	$PM_{2.5}$ non-FEM (16.7 lpm)	$PM_{2.5}$ STN (6.7 lpm)	$PM_{2.5}$ 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	4.1					n/a	n/a		n/a	n/a	n/a	n/a		n/a	n/a		n/a	n/a
NOy Inlet	4.1	n/a																	
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM_{10}, PRI																			
PM_{10}, QAC																			
PM_{10}, PRI	n/a	n/a					n/a	1.5		1.5	3.3	2.8	n/a		n/a	3.5		4.6	n/a
$PM_{2.5}$ FRM, PRI	n/a	n/a					1.5	n/a		1.4	3.0	2.2	n/a		n/a	3.4		3.8	n/a
$PM_{2.5}$ FRM, QAC																			
$PM_{2.5}$ non-FEM	n/a	n/a					1.5	1.4		n/a	1.7	1.3	n/a		n/a	2.7		3.0	n/a
$PM_{2.5}$ STN	n/a	n/a					3.3	3.0		1.7	n/a	1.4	n/a		n/a	3.5		2.2	n/a
$PM_{2.5}$ CSN	n/a	n/a					2.8	2.2		1.3	1.4	n/a	n/a		n/a	2.2		1.8	n/a
†PAMS-VOC	n/a	n/a					n/a	n/a		n/a	n/a	n/a	n/a		n/a	n/a		n/a	n/a
†PAMS-VOC QAC																			
†PAMS-Carbonyls	n/a	n/a					n/a	n/a		n/a	n/a	n/a	n/a		n/a	n/a		n/a	n/a
Toxics-VOC	n/a	n/a					3.5	3.4		2.7	3.5	2.2	n/a		n/a	n/a		n/a	n/a
Toxics-VOC, QAC																			
Toxics-Metals	n/a	n/a					4.6	3.8		3.0	2.2	1.8	n/a		n/a	n/a		n/a	n/a
Meteorology	n/a	n/a					n/a	n/a		n/a	n/a	n/a	n/a		n/a	n/a		n/a	n/a
Height from ground	7.1	7.1					6.5	6.5		6.4	6.3	6.5	6.4		6.4	6.4		6.0	10.0
Distance: from the road	16.8	16.8					16.8	16.8		16.8	16.8	16.8	16.8		16.8	16.8		16.8	16.8
from the supporting structure (deck)	N	N					N	N		N	N	N	N		N	N		N	N
from obstructions on roof	N	N					N	N		N	N	N	N		N	N		N	N
from obstructions not on roof	N	N					N	N		N	N	N	N		N	N		N	N
from the closest tree	11.7	13.4					11.0	11.5		10.0	8.3	10.3	11.5		11.6	11.4		10.1	N
Unrestricted air flow (degrees)	360						360	360		360	360	360	360		360	360		360	360

n/a= Not Applicable; N= None; †On the side of the station/trailer

Figure 6.2 Lexington Elementary School – Pictures (Directional) from the Rooftop

Appendix 7.0.0 Rancho Carmel Drive Station Description and Statement of Purpose

Table 7.1 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 (2013 AADT):	AADT (FE adjusted) for I-15= 370,947 (estimated) 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 1st near-road site. It measures NO_2 & CO contributions from I-15
Planned Changes:	$PM_{2.5}$ FRM will be added to this site in 2018

Figure 7.1 Rancho Carmel Drive - Picture of the Location of the Station

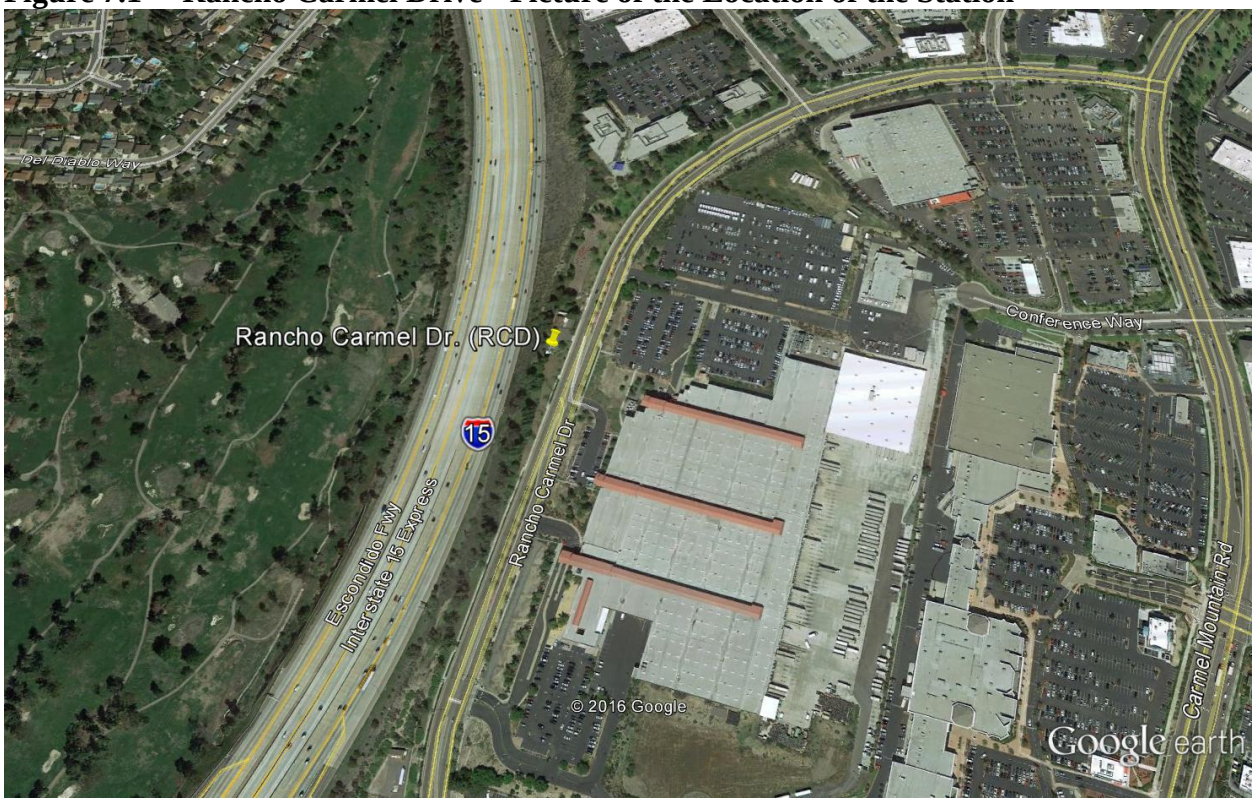


Table 7.2a Rancho Carmel Drive - Gaseous Pollutants Monitor Designations + Other

Pollutant	NO_2	CO	Other Zero Air	Other Calibrator
POC	1	1	N/A	N/A
Monitor designation	Primary	Other	N/A	N/A
Parameter code	42602 (NO_2)	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	Thermo 42i	Thermo 48i	Teledyne-API 701H	Teledyne-API T700u
Method code	074	054	N/A	N/A
FRM/FEM/ARM/Other	FRM	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	3/26/2015	4/24/2015	3/26/2015	3/26/2015
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	12.82 sec	14.47 sec	N/A	N/A
Any changes within the next 18 months?	Yes	Yes	Yes	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	11/14	11/1	11/8	N/A
NPAP (ARB) Date	*	*	N/A	N/A

*Not done this year

Table 7.3 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_{10}, PRI (40 cfm)	PM_{10} QAC (40 cfm)	PM_{10} PRI (16.7 lpm)	$PM_{2.5}$ FRM, PRI (16.7 lpm)	$PM_{2.5}$ FRM, QAC (16.7 lpm)	$PM_{2.5}$ non-FEM (16.7 lpm)	$PM_{2.5}$ STN (6.7 lpm)	$PM_{2.5}$ 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																		
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM_{10}, PRI																			
PM_{10}, QAC																			
PM_{10}, PRI																			
$PM_{2.5}$ FRM, PRI																			
$PM_{2.5}$ FRM, QAC																			
$PM_{2.5}$ non-FEM																			
$PM_{2.5}$ STN																			
$PM_{2.5}$ CSN																			
†PAMS-VOC																			
†PAMS-VOC, QAC																			
†PAMS-Carbonyls																			
†Toxics-VOC																			
†Toxics-VOC, QAC																			
Toxics-Metals																			
Meteorology																			
Height from ground	3																		
Distance: from the road	18.1																		
from the supporting structure(deck)	N																		
*from obstructions on roof (deck)***	N																		
from obstructions not on roof	N																		
from the closest tree	11 U 5.6 D																		
from furnace/flue	N																		
Unrestricted air flow (degrees)	270																		

n/a= Not Applicable; N= None; †On the side of the station/trailer U= upwind; D=downwind

**This is the only horizontal probe in the Network. There is no wood deck support.

Figure 7.2 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 picture are taken from behind the stations (about 5 meters behind the probe for safety reasons).

Appendix 8.0.0 McClellan-Palomar Airport Station Description and Statement of Purpose

Table 8.1 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 and current location
Site Address:	2192 Palomar Airport Rd.
Site Name Abbreviation:	CRQ
AQS Number:	06-073-1023
Latitude:	33.130822 O
Longitude:	-117.272686 O
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 (2013 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:	This site has been petitioned to the EPA for decommissioning.

Figure 8.1 Palomar Airport – Picture of the Location

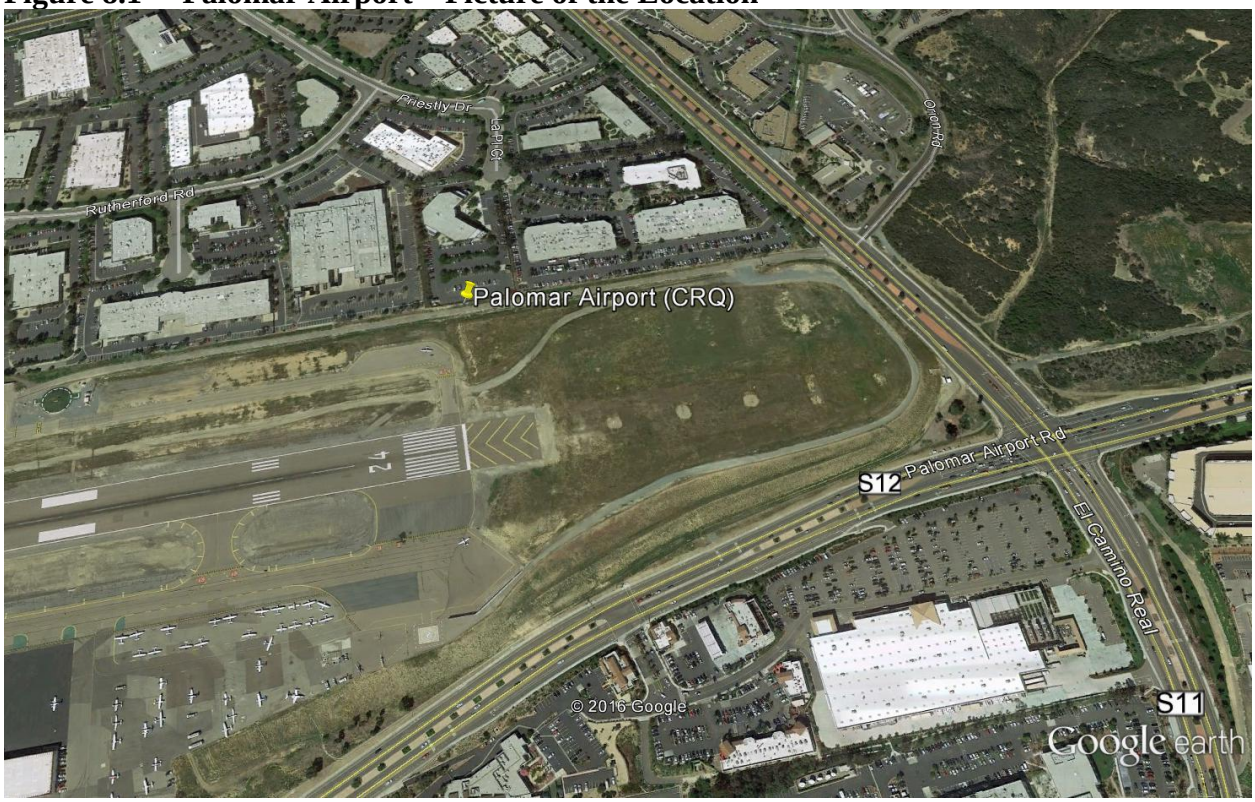


Table 8.2a Palomar Airport - Particulate Pollutants Monitor Designations

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	3/20, 9/27	3/20, 9/27
NPAP (ARB) date	*	*
PEP (EPA) date	*	*

*Not done this year

Table 8.3 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_{10}, PRI (40 cfm)	PM_{10}, QAC (40 cfm)	PM_{10} PRI (16.7 lpm)	$PM_{2.5}$ FRM, PRI (16.7 lpm)	$PM_{2.5}$ FRM, QAC (16.7 lpm)	$PM_{2.5}$ non-FEM (16.7 lpm)	$PM_{2.5}$ STN (6.7 lpm)	$PM_{2.5}$ 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_{10}, PRI																			
PM_{10}, QAC																			
PM_{10}, PRI																			
$PM_{2.5}$ FRM, PRI																			
$PM_{2.5}$ FRM, QAC																			
$PM_{2.5}$ non-FEM																			
$PM_{2.5}$ STN																			
$PM_{2.5}$ CSN																			
†PAMS-VOC																			
†PAMS-VOC QAC																			
†PAMS-Carbonyls																			
†Toxics-VOC																			
†Toxics-VOC, QAC																			
Toxics-Metals																			
Meteorology																			
Height from ground			2.1	2.1															
Distance: from the road			356	356															
from the supporting structure			N	N															
from obstructions on roof			N	N															
from obstructions not on roof			N	N															
from the closest tree			32.0	28.8															
from furnace/flue			N	N															
Unrestricted air flow (degrees)			360	360															

n/a= Not Applicable; N= None; †On the side of the station/trailer

Figure 8.1 Palomar Airport – Pictures (Directional) from the Ground*








*The sampler is situated at ground level

Appendix 9.0.0 Del Mar Station Description and Statement of Purpose

Table 9.1 General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Del Mar
Year Established:	10/14/1983; closed 4/2017
Site Address:	225 9th St.
Site Name Abbreviation:	DMR
AQS Number:	06-073-1001
Latitude:	32.952106°
Longitude:	-117.264086°
Elevation above Sea Level:	39 m
General Location:	Trailer in the NW corner of the Winston School parking lot
Ground Cover:	Asphalt
Distance to Road:	12.2 m west= Stratford Ct.
Traffic Count (2013 AADT):	9th St. estimated AADT= 3,000 (No traffic count available) The closest cross-street with a traffic count, Del Mar Heights Rd. at Camino Del Mar (SE/downwind 512 m)= 14,800
Site Description:	This station is a trailer located on the western section of the fence line of Winston School parking lot in the city of Del Mar.
Monitoring Objectives:	The primary function of this site is to monitor background levels of ozone on non-transport days, and to measure ozone concentrations during periods of over-water transport from the South Coast Air Basin.
Planned Changes:	The District was evicted from this site in early 2017. The EPA approved permanent (no relocation) decommissioning.

Figure 9.1 Del Mar – Picture of the Location of the Station

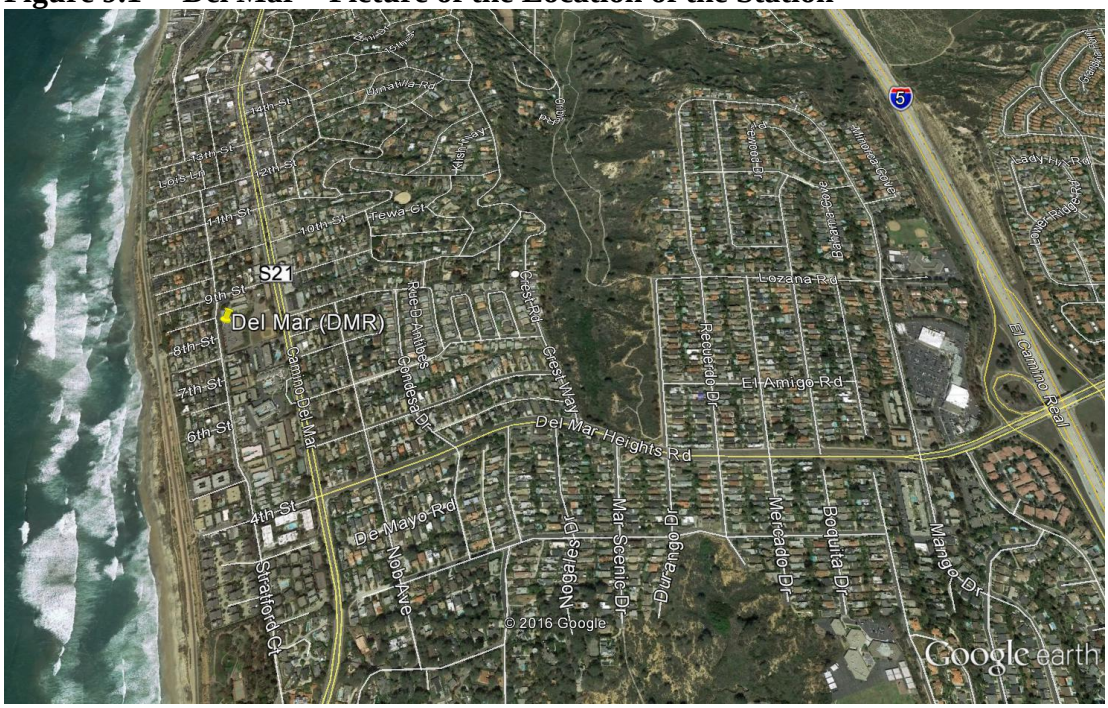


Table 9.2a Del Mar - Gaseous Pollutants Monitor Designations + Other

Pollutant	O_3	Other Zero Air	Other Calibrator
POC	1	N/A	N/A
Monitor designation	O	N/A	N/A
Parameter code	44201	N/A	N/A
Basic monitoring objective	Public Information, NAAQS	N/A	N/A
Site type	General/ Background	N/A	N/A
Monitor type	SLAMS	N/A	N/A
Network affiliation	N/A	N/A	N/A
Instrument manufacturer & model	Thermo 49i series	Teledyne-API 701H	Teledyne-API 700
Method code	047	N/A	N/A
FRM/FEM/ARM/Other	FRM	N/A	N/A
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Not Applicable	Not Applicable
Monitoring start date	10/1983	2015	2011
Current sampling frequency	Continuous	N/A	N/A
Required sampling frequency	Continuous	N/A	N/A
Sampling season	Year- round	N/A	N/A
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	Teflon	N/A	N/A
Residence time for reactive gases	4.62 sec	N/A	N/A
Any changes within the next 18 months?	No	Yes	No
Suitable for comparison to the NAAQS?	Yes	N/A	N/A
Frequency of QC check (one-point)	1:14	N/A	N/A
Annual Performance Evaluation date	*	*	N/A
NPAP (ARB) date	*	N/A	N/A

*Decommissioned before audit

Table 9.2b Del Mar - Meteorology Equipment Designations + Other

Pollutant	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction
POC	1	1	1
Monitor designation	N/A	N/A	N/A
Parameter code	62107	61101	61104
Basic monitoring objective	N/A	N/A	N/A
Site type	N/A	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A
Instrument manufacturer & model	Qualimetrics	Qualimetrics	Qualimetrics
Method code	012	050	020
FRM/FEM/ARM/Other	O	O	O
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	1983	1983	1983
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	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 QC check (one-point)	N/A	N/A	N/A
Annual Performance Evaluation date	*	*	*
NPAP (ARB) date	N/A	**	**

*Decommissioned before audit

**ARB does not have the equipment to audit.

Table 9.3 Del Mar - Distance the Equipment are from Influences

(metric)	Gas Inlet	NOy Inlet	Pb-TSP, PRI (44.5 cfm)	Pb-TSP , QAC (44.5 cfm)	PM_{10}, PRI (40 cfm)	PM_{10}, QAC (40 cfm)	PM_{10} PRI (16.7 lpm)	$PM_{2.5}$ FRM, PRI (16.7 lpm)	$PM_{2.5}$ FRM, QAC (16.7 lpm)	$PM_{2.5}$ non-FEM (16.7 lpm)	$PM_{2.5}$ STN (6.7 lpm)	$PM_{2.5}$ 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																		n/a
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM_{10}, PRI																			
PM_{10}, QAC																			
PM_{10}, PRI																			
$PM_{2.5}$ FRM, PRI																			
$PM_{2.5}$ FRM, QAC																			
$PM_{2.5}$ non-FEM																			
$PM_{2.5}$ STN																			
$PM_{2.5}$ CSN																			
†PAMS-VOC																			
†PAMS-VOC QAC																			
†PAMS-Carbonyls																			
†Toxics-VOC																			
†Toxics-VOC, QAC																			
Toxics-Metals																			
Meteorology	n/a																		n/a
Height from ground	4.2																		10
Distance: from the road	12.2																		12.2
from the supporting structure (roof)	3																		n/a
from obstructions on roof	n/a																		n/a
from obstructions not on roof	N																		N
from the closest tree	19.7																		19.7
from furnace/flue	N																		N
Unrestricted air flow (degrees)	360																		360

n/a= n/a= Not Applicable; N= None; †On the side of the station/trailer

Figures 9.2 Del Mar – Pictures (Directional) from the Ground*

*There is no deck from which to take pictures.