AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

MONITORING AND TECHNICAL SERVICES DIVISION

ANNUAL AIR QUALITY MONITORING NETWORK PLAN 2016

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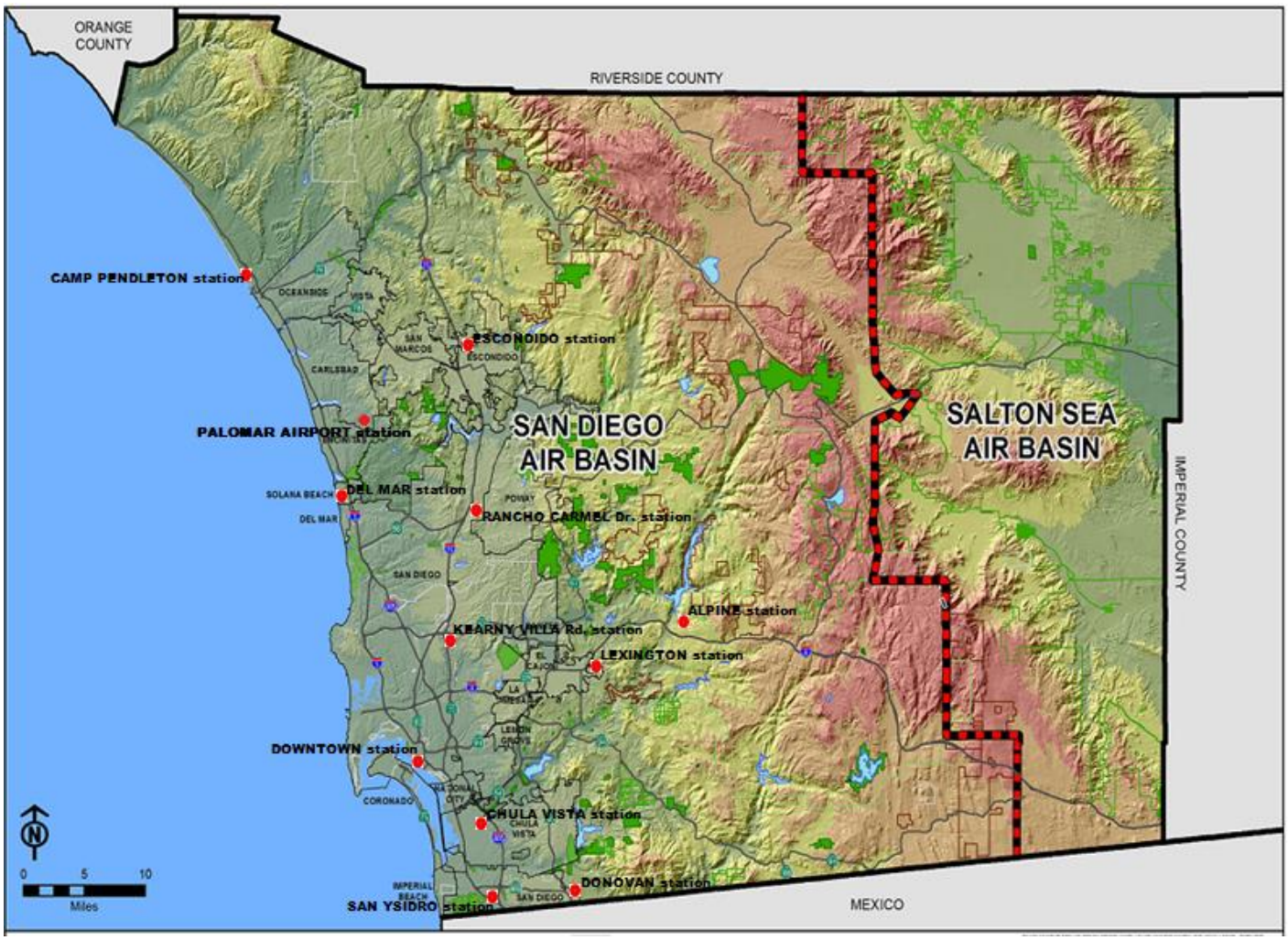

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ACRONYMS

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) (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
KMA	San Diego/Overland (aka Kearny Mesa) monitoring location
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 periodic or continuous 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 or $PM_{10-2.5}$)	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 1.2.0 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 1.3.0 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) and posted in local media, at least 30 days prior to EPA submission. Comments regarding this report and the District response(s) before submittal to EPA are listed in the Executive Summary chapter (there were no comments). Comments regarding this report and answered by the District after July 1 will be forwarded to EPA Region IX headquarters.

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 1.3.1 District Contact Information

For information regarding this report, air monitoring stations, laboratory operations, or quality 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 1.3.2 Additional Air Pollution Information

Additional information regarding San Diego's ambient air quality monitoring network, including pollutant data summaries for the various monitors in the network, are available from a variety of sources. This section lists 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 1.4.0 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 1.4.1 Network Design Theory

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

Network Design Objectives

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

Logistical

1. Minimal interference and perturbation of wind flow by obstacles.
2. Proximity to headquarters/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 1.5.0 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 1.5.1 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 1.5.2 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 1.5.3 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 3.3 million for 2016.

CHAPTER 2 OVERVIEW OF THE AIR QUALITY MONITORING NETWORK

Section 2.0.0 Executive Summary of the Air Quality Monitoring Network

The District operated 11 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.

Table 2.0 below is a list of the District's stations and the pertinent locations.

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° -117.059115°	06-073-0001
Del Mar	DMR	225 9th St.	32.952106° -117.264086°	06-073-1001
Donovan	DVN	480 Alta Rd.	32.578267° -116.921359°	06-073-1014
**Escondido	ESC	600 E. Valley Pkwy.	33.127757° -117.075119°	06-073-1002
San Diego-Beardsley St.	DTN	1110A Beardsley St.	32.701492° -117.149663°	06-073-1010
Kearny Villa Rd.	KVR	6125A Kearny Villa Rd.	32.845722° -117.123983°	06-073-1016
McClellan-Palomar Airport	CRQ	2192 Palomar Airport Rd.	33.130846° -117.272668°	06-073-1023
*El Cajon-Floyd Smith Dr.	FSD	10537 Floyd Smith Dr.	32.817907° -116.968302°	06-073-1018
*Lexington Elementary School	LES	533 B. First St.	32.789562° -116.944318°	06-073-1022
Rancho Carmel Dr.	RCD	11403 Rancho Carmel Dr.	32.985442° -117.082180°	06-073-1017
**Sherman Elementary School	SES	450B 24th St.	32.710192° -117.142779°	06-073-1026
San Ysidro (2nd location)	SAY	720 E San Ysidro Blvd.	32.543525° -117.029089°	06-073-1024
**2nd Near-road Site	To Be Determined	To Be Determined	To Be Determined	06-073-1025

* In late 2016, the station was relocated back to its original site at Lexington Elementary School
**Not operational yet

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
Red circles= cities/communities
White name= name of the city/community

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

		ALP Alpine	CMP Camp Pendleton	CVA Chula Vista	DMR Del Mar	DVN Donovan	FSD* Floyd Smith	LES* Lexington Elementary School	KVR Kearny Villa Rd.	CRQ Palomar	DTN Beardsley Street	RCD Rancho Carmel Drive	SAY2 San Ysidro2
AMBIENT	O_3	7/24	7/24	7/24	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		7/24	7/24	
	CO										7/24	7/24	
NCORE	NOy-TLE							7/24					
	CO-TLE						7/24	7/24					
	SO_2-TLE						7/24	7/24					
LEAD	(NCore) (Hi-Vol)						1:6						
	(Airports) (Hi-Vol)									1:6			
PM_{10}	(NCore) (Lo-Vol)						1:6	1:6					
	(Ambient) (Hi-Vol)			1:6		1:6			1:6		1:6		
$PM_{2.5}$ FEM	(Continuous)	7/24	7/24			7/24		7/24			7/24		7/24
$PM_{2.5}$ FRM	(Manual)			1:3			1:1	1:1	1:3		1:3		
$PM_{2.5}$ CSN	(Speciation)												
$PM_{2.5}$ STN	Channel 1 (Metals)						1:6	1:6					
	Channel 2 (Inorganic Ions)						1:6	1:6					
	Channel 3 (Wood Smoke)												
PAMS	(VOCs)	✓	✓				✓	✓					
	(Carbonyls)						✓	✓					
TOXICS CA-TAC (CARB)	(VOCs)			1:6			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)									✓**				

*In late 2016, the Floyd Smith Dr. station moved back to its original location at Lexington Elementary School.
**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 2.0.1 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	DMR	FSD[1]	LES[1]		KVR	DVN	DTN	RCD
	Name	Alpine	Camp Pendleton	Chula Vista	Del Mar	Floyd Smith Dr.	Escondido		Kearny Villa Rd	Donovan	San Diego – Beardsley	Rancho Carmel Dr.
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1001	06-073-1018	06-073-1022		06-073-1016	06-073-1014	06-073-1010	06-073-1017
O_3	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS		SLAMS	SLAMS	SLAMS	
	Method	UV	UV	UV	UV	UV	UV		UV	UV	UV	
	Affiliation	PAMS	PAMS	Not Applicable	Not Applicable	PAMS, NCore	PAMS, NCore		PAMS	Not Applicable	Not Applicable	
	Spatial Scale	US	NS	NS	NS	NS	NS		NS	NS	NS	
	Site Type	MXO	UPDB	PE	G/B	PE	PE		PE	PE	G/B	
	Objective (Federal)	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS		PI, NAAQS	PI, NAAQS	PI, NAAQS	
	Equipment	Thermo 49i	Thermo 49i	Thermo 49i	Thermo 49	Thermo 49i	Thermo 49i		Thermo 49i	Thermo 49i	Thermo 49i	
NO_2 & NOy	Monitor Type	SLAMS	SLAMS	SLAMS		SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Designation	PRI	PRI	PRI		PRI	PRI	PRI	PRI	PRI	PRI	PRI
	Method	CL	CL	CL		CL	CL	CL	CL	CL	CL	CL
	Affiliation	PAMS	PAMS	Not Applicable		PAMS	PAMS	NCORE, PAMS	PAMS	SLAMS	Not Applicable	Not Applicable
	Spatial Scale	US	NS	NS		NS	NS	NS	NS	NS	NS	NS
	Site Type	PE	UPBD	PE		PE	PE	PE	PE	PE	PE	PE
	Objective (Federal)	PI, NAAQS	PI, NAAQS	PI, NAAQS		PI, NAAQS	PI, NAAQS	PI, Research	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS
	Equipment	Thermo 42i	Thermo 42i	Thermo 42i		Thermo 42i	Thermo 42i	Thermo 42i-NOy	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i
CO	Monitor Type					SLAMS	SLAMS				SLAMS	SLAMS
	Method					IR	IR				IR	IR
	Affiliation					NCORE, PAMS	Not Applicable				SIPM	Not Applicable
	Spatial Scale					NS	NS				NS	NS
	Site Type					PE	PE				PE	PE
	Objective (Federal)					PI, NAAQS	PI, NAAQS				PI, NAAQS	PI, NAAQS
	Equipment					Thermo 48i-TLE	Thermo 48i				Thermo 48i	Thermo 48i
SO_2	Monitor Type					SLAMS	SLAMS					
	Method					FL	FL					
	Affiliation					NCore	NCore					
	Spatial Scale					NS	NS					
	Site Type					PE	PE					
	Objective (Federal)					PI, NAAQS	PI, NAAQS					
	Equipment					Thermo 43i-TLE	Thermo 43i-TLE					

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

Section 2.0.2 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	FSD	CRQ	
	Name	Floyd Smith Dr.	Palomar Airport	
	AQS ID	06-073-1018	06-073-1023	
Lead	Monitor Type	SLAMS	SLAMS	SLAMS
	Designation	O	O	QAC
	Method	HV	HV	HV
	Affiliation	NCORE	Not Applicable	Not Applicable
	Spatial Scale	NS	MI	MI
	Site Type	PE	SO	QA
	Objective (Federal)	NAAQS	NAAQS	NAAQS
	Analysis	APCD	APCD	APCD
	Frequency	1:6	1:6	1:6
	Equipment	Tisch TE-5170BLVFC+	Tisch TE-5170BLVFC+	Tisch TE-5170BLVFC+

In late 2016, the Floyd Smith Dr. station moved back to its original location at Lexington Elementary School. The Pb-TSP sampler stayed at FSD until Dec. 31, 2017; at which time, EPA gave permission to stop sampling for lead at our NCore site, so it was never transferred to Lexington Elementary School.

Section 2.0.3 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	FSD[1]		LES[1]		KVR		DTN		DVN	SAY2
	Name	Alpine	Camp Pendleton	Chula Vista	Floyd Smith Dr.		Lexington Elementary School		Kearny Villa Rd		San Diego – Beardsley		Donovan	San Ysidro
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1018		06-073-1022		06-073-1016		06-073-1010		06-073-1014	06-073-1024
$PM_{2.5}$ (non-speciated)	Monitor Type	SLAMS	SLAMS	SLAMS		SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SPM
	Designation	O	O	PRI		PRI	O	PRI	PRI	QAC	O	PRI	O	O
	Method	CT (non-FEM)	CT (non-FEM)	SQ (FRM)		SQ (FRM)	CT (non-FEM)	SQ (FRM)	SQ (FRM)	SQ (FRM)	CT (non-FEM)	SQ (FRM)	CT (non-FEM)	CT (non-FEM)
	Affiliation	N/A	N/A	N/A		NCORE	N/A	NCORE	N/A	N/A	N/A	N/A	N/A	N/A
	Spatial Scale	US	NS	NS		NS	US	NS	NS	NS	NS	NS	NS	MI
	Site Type	PE	UPBD	PE		HC	PE	PE	PE	QA	HC	HC	PE	SO
	Objective (Federal)	PI, Research	PI, Research	NAAQS		NAAQS	PI, Research	NAAQS	NAAQS	NAAQS	PI, Research	NAAQS	PI, Research	PI, Research
	Analysis	APCD	APCD	APCD		APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD
	Frequency	7/24	7/24	1:3		1:3	7/24	1:3	1:3	1:12	7/24	1:1	7/24	7/24
	Equipment	Met One BAM	Met One BAM	Thermo 2025		Thermo 2025	Met One BAM	Thermo 2025	Thermo 2025	Thermo 2025	Met One BAM	Thermo 2025	Met One BAM	Met One BAM
$PM_{2.5}$ (speciated)	Monitor Type				SLAMS	SLAMS	SLAMS	SLAMS						
	Method				SP & SQ	SP & SQ	SP & SQ	SP & SQ						
	Affiliation				NCORE, CSN STN	NCORE, CSN STN	NCORE, CSN STN	NCORE, CSN STN						
	Spatial Scale				NS	NS	NS	NS						
	Site Type				PE	PE	PE	PE						
	Objective (Federal)				Research	Research	Research	Research						
	Analysis				EPA	EPA	EPA	EPA						
	Frequency				1:3	1:3	1:3	1:3						
	Equipment				URG-3000N	Met One SASS	URG-3000N	Met One SASS						

*Not Operational at FSD

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

N/A= Not Applicable

Section 2.0.4 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	FSD/LES[1]	KVR	DTN
	Name	Chula Vista		Donovan	Floyd Smith Dr./ Lexington Elementary School	Kearny Villa Rd	San Diego – Beardsley
	AQS ID	06-07- 0001		06-073-1014	06-073-1018/ 60-076-1022	06-073-1016	06-073-1010
PM_{10}	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Designation	O	QAC	O	O	O	O
	Method	SI	SI	SI	SI	SI	SI
	Affiliation	Not Applicable	Not Applicable	Not Applicable	NCORE	Not Applicable	Not Applicable
	Spatial Scale	NS	NS	NS	NS	NS	NS
	Site Type	PE	PE	HC	PE	PE	PE
	Objective (Federal)	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS
	Frequency	1:6	1:6	1:6	1:3	1:6	1:6
	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	Graseby Metal Works body w/ Sierra Anderson 1200 Head

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

Section 2.0.5 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		FSD/LES[1]	
	Name	Alpine	Camp Pendleton		Floyd Smith Dr./ Lexington Elementary School	
	AQS ID	06-073-1006	06-073-1008		06-073-1018/ 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 2.0.6 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				FSD/LES[1]				DVN			DTN		
	Name	Chula Vista				Floyd Smith Dr./ Lexington Elementary School				Donovan			San Diego-Beardsley		
	AQS ID	06-073-0001				06-073-1018/ 06-073-1022				06-073-1014			06-073-1010		
Toxics	Pollutant	Toxics-VOCs	Toxics-Metals	Toxics-Cr^{+6}	Toxics-Aldehydes/ Carbonyls	Toxics-VOCs	Toxics-Metals	Toxics-Cr^{+6}	Toxics-Aldehydes/ Carbonyls	Toxics-VOCs	Toxics-Metals	Toxics-Aldehydes/ Carbonyls	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	Not Applicable	Not Applicable
	Method	Canister	Filter	Filter	Cartridges	Canister	Filter	Filter	Cartridges	Canister	Filter	Cartridges	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	Not Applicable	Not Applicable
	Spatial Scale	NS	NS	NS	NS	NS	NS	NS	NS	MI	MI	MI	NS	NS	NS
	Site Type	PE	PE	PE	PE	PE	PE	PE	PE	SO	SO	SO	PE	PE	PE
	Objective (Federal)	Research	Research	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	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	1:6	1:6
	Equipment	Xontech 910/912	Xontech 924	Xontech 924	Xontech 924	Xontech 910/912	Xontech 924	Xontech 924	Xontech 924	Xontech 910A FSL	Xontech 924	Xontech 924	Xontech 910A FSL	Xontech 924	Xontech 924

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

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.

Section 2.1.1 Summary of Minimum Monitoring Requirements for Collocation

The U.S. EPA regulations specify the minimum number of collocated monitors for a pollutant or program. Table 2.8 summarizes these totals.

The District meets or exceeds all minimum requirements for collocation for all programs.

Table 2.8 Summary of Minimum Monitoring Requirements for Collocation

	Pollutant or Program	Minimum Number of Required Monitors	Number of Active Monitors	Number of Needed Monitors
Collocation	$PM_{2.5}$ FRM w/ $PM_{2.5}$ FRM	1	1	None
	$PM_{2.5}$ FRM w/ $PM_{2.5}$ Continuous	1	1	None
	$PM_{2.5}$ STN w/ $PM_{2.5}$ CSN	1	1	None
	PM_{10} (Hi-Vol) w/ PM_{10} (Hi-Vol)	1	1	None
	Pb-TSP (Hi-Vol) w/ Pb-TSP (Hi-Vol)	1	1	None

Section 2.1.2 Summary of Minimum Monitoring Requirements (non-Collocated)

The U.S. EPA regulations specify the minimum number of monitors that State and Local agencies must deploy. Table 2.9 summarizes these totals.

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

- Establishment of the 2nd Near-road location.
- Establishment of a $PM_{2.5}$ sampler at a near-road location.

Table 2.9 Summary of Minimum Monitoring Requirements

Pollutant or Program			Minimum Number of Required Monitors	Number of Active Monitors	Number of Needed Monitors
Ambient Level Monitors & Samplers	O_3	O_3-ambient	2	9	None
	NO_2	NO_2-ambient	None specified	8	None
		Near road	2	1	1
	CO	CO-ambient	None specified	2	None
		Near-road	1	1	None
	SO_2	SO_2-ambient	0	0	None
	Pb	Pb-ambient	0	0	None
	$PM_{2.5}$	$PM_{2.5}$ Manual (FRM)	5	5	None
		$PM_{2.5}$ FRM for NO_2 near-road	1	0	1
		$PM_{2.5}$ Continuous	2	6	None
		$PM_{2.5}$ CSN & STN	2	2	None
	PM_{10}	PM_{10}-ambient	2 - 4	6	None
	Met	Wind Speed/Wind Direction External Temperature/Internal Temperature	9 sets	9 sets	None
NCore	Gaseous	O_3	1	1	None
		NOy-TLE	1	0	1*
		CO-TLE	1	1	None
		SO_2-TLE	1	1	None
	$PM_{2.5}$	$PM_{2.5}$ FRM	1	1	None
		$PM_{2.5}$ Continuous	1	0	1*
		PMcoarse ($PM_{10} - PM_{2.5}$)	1	1	None
		$PM_{2.5}$ STN	2	2	None
		$PM_{2.5}$ CSN	2	2	None
	Pb	Pb-NCore	1	1	None
	Met	Wind Speed/Wind Direction External Temperature/Internal Temperature	1 set	1 set	None
Airports	Pb	Pb-TSP	1	1	None
PAMS	Types	Type II-VOCs	1	1	None
		Non-Type II-VOCs	1	2	None
		Type II-Carbonyls	1	1	None
	Gaseous	O_3	3	3	None
		NOx	3	3	None
		CO	1	1	None
		NOy	1	1	None
	Met	Upper Air Meteorology	1	0**	1
		SORAD & Pbar	1	1	None
		Wind Speed/Wind Direction External Temperature/Internal Temperature Relative Humidity	3 sets	3sets	None

*EPA approved deficiency due to temporary relocation of station. Once the station is relocated to a permanent site, these monitors will be reinstated.

**EPA approved deficiency due to irreparable damage. Once PAMS re-engineering is official, this will be addressed with a ceilometer

Section 2.2.0 Summary of Minimum Monitoring Requirements (Data)

The EPA regulations specify:

- 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,
- that this data is legally certified.

Section 2.2.1 Suitability for Comparison to the NAAQS (Data)

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 monitors and samplers 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, $PM_{2.5}$, 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.

Section 2.2.2 Quality Control/Quality Assurance (Data)

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

Section 2.2.3 Reporting (Data)

All the ambient data from the O_3, NO_2, CO, SO_2, Pb, $PM_{2.5}$, 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, $PM_{2.5}$, PM_{10} monitors and samplers were uploaded into the EPA's database quarterly.

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

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 planning process due to unforeseen circumstances resulting from 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 (permanent)

RELOCATION - Floyd Smith Drive (FSD) Relocation back to original Location

The grounds on which the station was located was to undergo a multiyear (5-yr minimum) remodeling project. On 2/28/2014, the District was forced to temporarily relocate the station to a vacant area on Gillespie Field property at Floyd Smith Drive (FSD). Additionally, the District was granted a waiver from NOy sampling. It was determined that $PM_{2.5}$ continuous sampling could not be undertaken safely, so this was suspended until relocation back to the original location (Note: No 58.14 report is needed to move back to the original location).

Even though the relocation is within EPA allowable distance limits to keep the same name and AQS ID number, it was decided to mark the change with a new station name, Lexington Elementary School (LES), and a new AQS ID number, 06-073-1022. All parameters from FSD, except Pb-TSP, were moved to LES.

RELOCATION - Downtown (DTN) Station

(*See Appendix A for the Formal Request-revised for the 2016 ANP*)

The grounds on which the station was located was to undergo a multiyear (5-yr minimum) remodeling project. On 10/24/16, the District shutdown all operations and demolished the station. The District will permanently relocate to Sherman Elementary School (SES) in Sherman Heights (about 0.7 miles northeast from DTN).

RELOCATION – San Diego Overland to Kearny Villa Road.

(*See Appendix B for the Formal Request*)

The grounds on which the station was located was to undergo a multiyear (5-yr minimum) remodeling project. In early 2012, the District was forced to permanently relocate the station 0.9 miles northeast at Camp Elliot.

Section 2.3.1.2 Shutdowns (temporary):

TEMPORARY SHUTDOWN - Escondido (ESC) Station Temporary Shutdown

The Escondido station was evicted by the City of Escondido to install a bike path. Operations were halted on 8/2015. The grounds immediately adjacent to the station were being demolished to erect a new County facility. The new Escondido station will be part of this new County facility complex (about 20 meters southeast of the original location). The District was given permission by the EPA Regional Authorities to shut down operations temporarily until the new station could be completed. The new station should be completed by early 2018.

TEMPORARY SHUTDOWN - Chula Vista Temporary Station Shutdown

The wood deck will be replaced. 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, Executive Management is considering remodeling the entire facility; deck and new trailer. If a new trailer is approved, no appreciable downtime will be added to the timeline. It is anticipated that the temporary shutdown will be in 2018.

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). In the 1st quarter of 2015, the District deployed a $PM_{2.5}$ monitor on the rooftop of a 3-story building (this building was scheduled for demolition in 12-18 months) overlooking the San Ysidro border crossing into the United States (about 19 meters from the closest lane to the Point-of-Entry (POE) into the United States). The sampler is also about 16 meters above the POE. This sampler was operational on 1/27/2015.

The scheduled demolition of the building the sampler was located was moved up, so the District had to remove the sampler on 3/20/2016. A new location was found about 180 meters southwest in the Customs parking lot. This new location is at street level by the POE into Mexico. Sampling resumed on 6/8/2016. The District was evicted from this location on 8/24/2016 and the sampler has been shut down until a new and permanent location can be found (possibly with the Near-road site in San Ysidro).

Section 2.3.1.3 Shutdowns (permanent):

PERMANENT SHUTDOWN – Del Mar (DMR) Station Permanent Shutdown

(*See Appendix C for the Formal Request*)

The grounds on which the station was located was to undergo a remodeling project that could not accommodate the District. All operations were closed on 3/31/2017. At the time of the writing of this report, there are no plans to relocate this station.

Section 2.3.1.4 Addition

ADDITION - 2nd Near-road in San Ysidro

At the time of the writing of this report, the District is pursuing siting the 2nd Near-road site in the community of San Ysidro, near the border crossing (see the NO_2 chapter for greater detail).

ADDITION – Otay Mesa Point-of-Entry

At the time of the writing of this report, the EPA has requested that a PM2.5-continuous sampler be located at the Otay Mesa POE. The District is actively pursuing siting this sampler in the Truck Crossing entry point.

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.

REASSIGNMENT - Perkins Elementary School (DTN) $PM_{2.5}$ Manual Daily (1:1) Site Change to new Escondido location

Once the DTN station closes, a new $PM_{2.5}$ Manual daily (1:1) site will be needed. The locations that alternate for maximum $PM_{2.5}$ concentrations are El Cajon, Escondido, and Downtown. Only the El Cajon station will be operational for this switch, so the new daily site became LES on July 1, 2016. Note: this location may change to Escondido in 2018.

DECOMISSIOINING (under consideration) – Kearny Villa Rd. (KVR)

Based on our average concentration, the District is only required to operate three (3) samplers. The District will research (with input from ARB) the possibility of decommissioning $PM_{2.5}$ sampling in 2018/2019, if using EPA 58.14 criteria proves decommissioning viable. If found to be viable, the District will petition the EPA with a 58.14 report in that year's ANP, to decommission this sampler.

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.

$PM_{2.5}$ SPECIATION

DECOMISSIONING $PM_{2.5}$-Speciation - El Cajon (FSD), Escondido (ESC), and Downtown (DTN)

For several years, the District has been operating a supplemental $PM_{2.5}$-Speciation program for the analysis of black carbon via SASS samplers at the El Cajon (NCore/background), Escondido (borderline Environmental Justice area), and Downtown (Environmental Justice area) air monitoring sites. This entire program was permanently decommissioned in 2016.

PM_{10}

RELOCATION - Chula Vista (CVA) PM_{10} Collocated Sampler Relocated to Donovan (DVN)

The District relocated the collocated PM_{10} sampler from Chula Vista to Donovan. It was fully operational January 1, 2017. The Donovan site is the area of maximum PM_{10} concentrations.

DECOMISSIONING (under consideration) – Kearny Villa Rd. (KVR) and Chula Vista (CVA) and possibly Escondido (ESC)

Based on our average concentration, the District is only required to operate 2-4 PM_{10} samplers. The District will research the possibility of decommissioning these samplers in 2018/2019. If found to be viable, the District will petition the EPA with a 58.14 report in the subsequent ANP, to decommission these samplers (Note: all these sites have collocated $PM_{2.5}$ samplers).

CO

DECOMISSIONING - Escondido (ESC) and Downtown (DTN)

(See Appendix D for the formal request/58.14 report)

Both of these stations are shutdown for relocation. The measured concentrations at these sites are well below the NAAQS and meet the criteria for decommissioning. When operations at these stations resume, the District is requesting that CO no longer be monitored. If these stations become operational before EPA has made a ruling, the District will not resume CO monitoring.

Pb-TSP

DECOMISSIONING - El Cajon-Redwood Ave. (ECA) & El Cajon- Floyd Smith Dr. (FSD)

(*See Appendix E for the EPA approval communication*)

EPA is allowing the decommissioning of lead monitoring at NCore locations, if certain criteria are met, which are a minimum of 3-years of sampling and no exceedance of the NAAQS or < 50% of the NAAQS. The measured concentrations at both NCore locations are well below the NAAQS and have been sampled for duration longer than 3 years. The formal request for the decommissioning of NCore Pb sampling granted by the EPA and sampling was shutdown December 31, 2016.

DECOMISSIONING (under consideration) – McClellan Palomar Airport (CRQ)

At the time of the writing of this report all the measured concentrations at the Palomar Airport location have been well below 50% of the NAAQS. If this pattern continues for three (3) contiguous years of operations (December 2017 will be three contiguous years), the District will petition the EPA to decommission Pb-TSP sampling at this location with a 58.14 report in early 2018, public notice will be given, and referenced in the 2018 ANP (Note: sampling will continue until EPA makes an official ruling).

DATALOGGERS

REPLACEMENT – All sites

In late 2016, the District received Agilaire 8872 data loggers and they will replace the 8832 data loggers in 2017.

MANIFOLD DELIVERY SYSTEM, CALIBRATIONS, & AUDITS

RECONFIGURATION – All sites

The District will be converting the manifold delivery systems for all the stations to the SCAQMD style, no glass, all Teflon, and no blower with the analyzer pumps pulling the air samples. Once this is completed, the District will begin through-the-probe (TTP) calibrations for the gaseous pollutants.

TOXICS

TOXICS-CARBONYLS SAMPLER REPLACEMENT – All sites

In late 2016, the District received Atec 8000 samplers for the carbonyls and will replace the Xontech 925 samplers in 2017.

TOXICS-VOC SAMPLER REPLACEMENT – All sites

In late 2016, the District received Xontech 901 samplers for the VOCs and will replace the Xontech 910 samplers in 2017.

PAMS

PAMS-CARBONYLS SAMPLER REPLACEMENT – All sites

In late 2016, the District received Atec 8000 samplers for the carbonyls and will replace the Xontech 925 samplers in 2017.

DECOMISSIONING/REASSIGNMENT PAMS-CARBONYLS at Kearny Villa Rd (KVR) and Downtown (DTN)

In 2016, the District reclassified the KVR and DTN sites as part of the Toxics-Carbonyls network; therefore, they are no longer part of the PAMS network.

PAMS-VOC SAMPLER REPLACEMENT – All sites

In late 2016, the District received Xontech 901 samplers for the VOCs and will replace the Xontech 910 samplers in 2017.

ADDITION PAMS RE-ENGINEERING

For 2018, 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. All the following equipment additions and program changes will be added to LES, assuming complete EPA funding:

- Auto GC
- NO_2 direct
- Precipitation monitor
- Ultraviolet radiation
- Ceilometer (Note: this will be at the Kearny Villa Road location- the current location of the Radio Acoustic Sounding System; there is no space for this instrument at the LES-NCore location).
- PAMS- Carbonyl sampling frequency change to 1:3 with 3-8 hour samples

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.

Section 2.4.1 Public Comments

This report was posted for public viewing on April 1, 2017. At the time of the submission of this report to EPA, there were no public comments to address.

Chapter 2

Executive Summary

Appendices

APPENDIX A

San Diego APCD Formal Request for Relocation of the Perkins Elementary School (DTN) Monitoring Station to Sherman Heights at Sherman Elementary School (SES) – ***REVISED***

Request:
The San Diego Air Pollution Control District (District) is requesting the relocation of the samplers, analyzers, and analyzer/sampler support infrastructure from the Perkins Elementary School (DTN) site in Barrio Logan to Sherman Elementary School (SES) in Sherman Heights.

Reason(s):
Perkins Elementary School is expanding, reorganizing and remodeling the school grounds. The DTN station is in the middle of the new/planned expansion area. This reconstruction and expansion is expected to take five (5) or more years. In late 2015, the School Authorities enacted the eviction clause in the MOU and requested that DTN station be removed by July 31, 2016. The DTN station is in an Environmental Justice (EJ) location, and is the site of the expected maximum concentration for $PM_{2.5}$. (Note: The site of maximum concentration for $PM_{2.5}$ often alternates between our Escondido, El Cajon, and Downtown monitoring locations. Rather than change the site yearly and since the Downtown station is in an EJ location, the District, in conjunction with the EPA, designated this location as the site of maximum annual concentration for $PM_{2.5}$ emissions.)

All avenues to find an alternate and permanent air monitoring location in the Barrio Logan area were unproductive. The District then expanded our search criteria to include the Logan Heights and Sherman Heights area. It was determined that Sherman Elementary School in Sherman Heights is an adequate relocation site.

The old downtown site at Perkins Elementary School was 380 meters upwind of Interstaste-5 (in the daytime). The new location at Sherman Elementary School will be 440 meters downwind (in the daytime) of Interstate-5 and 290 meters south of State Route 94 (possible nighttime downwind influence).

This new Sherman Elementary School location has the potential to register higher concentrations of ozone and particulate matter than the Perkins Elementary School site, because it is downwind of Interstate-5, as well as adjacent to State Route 94. It is also downwind of the Perkins Elementary School location, so it should capture much of the same emissions from the industries that are along the bay.

Monitor/Station Relocation Requirements

- Monitors are eligible based on 40 CFR 58.14 (c)(1)-(5).
- Logistical problems beyond the District's control - 40 CFR 58.14(c)(6)

Tables A1-A4 list all the samplers and monitors at DTN with associated pertinent metadata.

Appendix A Table A1 Downtown-Gaseous Pollutants

Pollutant	O_3	NO_2	CO
POC	1	1	1
Monitor designation	Other	Primary	Other
Parameter code	44201	42602 (NO_2)	42101
Basic monitoring objective	PI, NAAQS	PI, NAAQS	PI, 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 49i	Thermo 42i	Thermo 48i
Method code	047	074	054
FRM/FEM/ARM/Other	FEM	FRM	FRM
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	7/2005	7/2005	7/2005
Current sampling frequency	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round

Appendix A Table A2 Downtown-Particulate Pollutants

Pollutant	$PM_{2.5}$ Continuous	$PM_{2.5}$ Manual	$PM_{2.5}$ CSN, SU	PM_{10} Manual
POC	1	1	1	1
Monitor designation	Other	Primary	N/A	Other
Parameter code	88502 (LC)	88101 (LC)	88320-88331	85101 (LC) 81102 (STD)
Basic monitoring objective	PI, Research	NAAQS	Research	NAAQS
Site type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	Supplemental Speciation	SLAMS
Network affiliation	N/A	N/A	CSN SU SDAPCD Network	N/A
Instrument manufacturer & model	Met One BAM 1020	Thermo 2025	Met One SASS	GMW 2000H w/ SA 1200 Head
Method code	733	145	815-814	063
FRM/FEM/ARM/Other	Other (non-FFEM)	FRM	Other	FRM
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	7/2005	7/2005	8/10/2008	7/2005
Current sampling frequency	Continuous	1:3	1:6	1:6
Required sampling frequency	Continuous	1:3	1:6	1:6
Sampling season	Year-round	Year-round	Year-round	Year-round

Appendix A Table A3 Downtown-Other Pollutants

Pollutant	TOXIC-VOC	TOXIC-Metals	Toxics-Carbonyls
POC	1	1	1
Monitor designation	N/A	N/A	N/A
Parameter code	See Toxics	Collected; not analyzed	See Toxics
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 924	Xontech 924
Method code	210	Collected; not analyzed	202
FRM/FEM/ARM/Other	Other	Other	Other
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	1/2007	1/2005	7/2012
Current sampling frequency	1:6	1:12	1:6
Required sampling frequency	1:6	1:6	1:6
Sampling season	Year-round	Year-round	Year-round

Appendix A Table A4 Downtown-Meteorological Equipment Designations

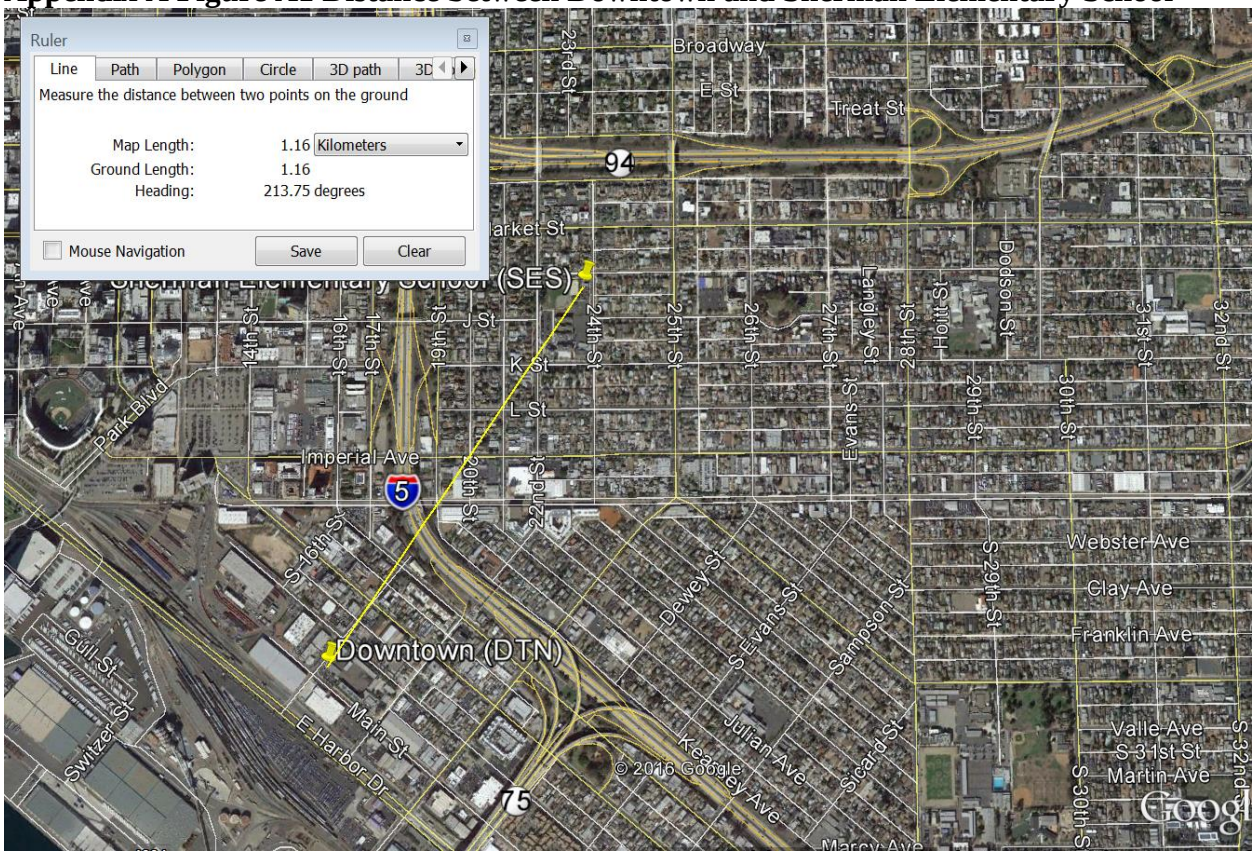
Pollutant	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp
POC	1	1	1	1
Monitor designation	N/A	N/A	N/A	N/A
Parameter code	62107	61101	61104	62101
Basic monitoring objective	N/A	N/A	N/A	N/A
Site type	N/A	N/A	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS	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
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	7/2005	7/2005	7/2005	7/2005
Current sampling frequency	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round

New Site Location (Sherman Elementary School)

Sherman Elementary School (SES), AQS ID# 06-073-1026, approximate Google Earth coordinates of 32.710202° and -117.142777°. The approximate distance is about 1.16 kilometers northeast of the Downtown station location (Figure A1). It was logistically impossible to undertake parallel sampling, because the construction of the new SES station has not yet begun (still in the permitting phase) and we were evicted from DTN effective immediately.

Figure B1 shows how the new SES station will be positioned between two major roadways, State Route (SR) 94 and Interstate (I)-5, that feed the downtown San Diego business district. SR 94 is a major route from east San Diego to downtown San Diego. I-5 is the only north-south interstate that directly feeds the downtown San Diego business district; it also connects to the San Ysidro border crossing.

Appendix A Figure A1 Distance between Downtown and Sherman Elementary School



Sherman Elementary School vs. Beardsley St. Measured Parameters
Appendix A Table A5 compares what is planned to be measured at SES vs. what was measured at DTN.

Appendix A Table A5 Expected Measured Parameters at SES vs. DTN

Parameter	Downtown (DTN) old site	Sherman (SES) new site	Comment
O_3	yes	yes	
NO_2	yes	yes	
CO	yes	NO	The measured concentrations are so low that the District will petition to decommission this monitor; so no start-up at the new location/SES (see Appendix D for the request)
$PM_{2.5}$ Manual	yes	yes	
$PM_{2.5}$ Continuous	yes	yes	
$PM_{2.5}$ CSN Supplemental	yes	NO	Per Executive Management directive; this was discontinued in 2016
PM_{10} Manual	yes	yes	
Toxics-VOCs	yes	yes	
Toxics-Metals	yes	yes	
Toxics-Aldehydes/Carbonyls	yes	yes	
Internal temperature	yes	yes	
External temperature	yes	yes	
Wind speed	yes	yes	
Wind direction	yes	yes	

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

General Table A6 & A7 Information

- The Design Value (DV) Calculations are three years.
- The posted year in the columns are the last year of the data set, e.g. 2009-2011 for the DV
- The Design Value (DV) Calculations are three years.
- 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)) }
- 2017 NAAQS are used

Appendix A Table A6 Design Values and Averages for Pollutants (Downtown)

Pollutant	NAAQS	2011	2012	2013	2014	2015	Avg	Std Dev	Units	n	t	NAAQS (2017)
O_3	8-Hr DV	0.059	0.057	0.055	0.057	0.060	0.058	0.0019	ppm	5	2.132	0.070
NO_2	Annual Average	0.014	0.013	0.014	0.013	0.013	0.013	0.0005	ppm	5	2.132	0.100
	1-Hr DV	0.06	0.057	0.056	0.057	0.057	0.057	0.0015	ppm	5	2.132	0.053
CO	1-Hr	2.8	2.6	3	2.7	2.6	2.7	0.17	ppm	5	2.132	35.0
	8-Hr	2.4	1.9	2.1	1.9	1.9	2.0	0.22	ppm	5	2.132	9.0
$PM_{2.5}$	24-Hr DV	23.6	23.2	22.1	22.8	21.3	22.6	0.91	$\mu g/m^3$	5	2.132	35.0
Manual	Annual Average DV	11	10.8	10.7	10.5	10	10.6	0.38	$\mu g/m^3$	5	2.132	12.0
PM_{10} Manual	24-Hr	56	53	65	59	53	57.2	5.02	$\mu g/m^3$	5	2.132	150.0

Appendix A Table A7 Eligibility for Relocation (Downtown)

Pollutant	NAAQS	80% NAAQS	(c)(1) Probability			(c)(2)	(c)(3) *	(c)(4) **	(c)(5) *	(c)(6) ***
O_3	8-Hr DV	0.056	0.059	ppm	NO	N/A	N/A	N/A	N/A	Yes
NO_2	Annual Average	0.080	0.014	ppm	Yes	Yes	N/A	N/A	N/A	Yes
	1-Hr DV	0.042	0.059	ppm	NO	Yes	N/A	N/A	N/A	Yes
CO	1-Hr	28.0	2.9	ppm	Yes	Yes	N/A	N/A	N/A	Yes
	8-Hr	7.2	2.2	ppm	Yes	Yes	N/A	N/A	N/A	Yes
$PM_{2.5}$	24-Hr DV	28.0	23.5	$\mu g/m^3$	Yes	N/A	N/A	No	N/A	Yes
Manual	Annual Average DV	9.6	11.0	$\mu g/m^3$	NO	N/A	N/A	No	N/A	Yes
PM_{10} Manual	24-Hr	120.0	62.0	$\mu g/m^3$	yes	Yes	N/A	N/A	N/A	Yes

*No absence of data; site is relocating as to be able to characterize the same pollutant profile.
**All samplers and monitors are sited properly, so as to be able to be compare to the NAAQS
*** District was evicted from this location; therefore, beyond the District's control
N/A= Not Applicable

APPENDIX B

San Diego APCD Formal Request for Relocation of San Diego-Overland (KMA) Monitoring Station to Kearny Villa Rd. (KVR)

Request:
The San Diego Air Pollution Control District (District) is requesting the relocation of the samplers, analyzers, and support infrastructure from the San Diego-Overland (KMA) site to Kearny Villa Road (KVR). (Note: This move occurred in early 2012, but the formal request was not completed prior to be move, ideally 2009-2010. EPA requested that this formality be completed).

Reason(s):
The grounds on which the KMA station is located will undergo a complete reorganization and remodeling and is expected to last more than five (5) years (still under construction). The first phase of the reconstruction is the area where KMA is located. This location is the collocation site for both $PM_{2.5}$ & PM_{10} (Note: PM_{10} collocation was discontinued with the move), as well as a PAMS TYPE II site for VOCs and Carbonyls (Note: both were discontinued in 2010 and 2016, respectively).

The District relocated KMA about 1.13 kilometers northeast to Camp Elliot where the closest street is Kearny Villa Road (KVR) to give the new station its name. The new station is now located about 0.39 km downwind of State Route 52 (the old site was upwind). KVR is also about 0.33 km closer to State Route 163 than KMA was.

This new KVR location has the potential to register slightly higher concentrations of ozone and particulate matter than the KMA site, because KVR is closer to State Route 163, as well as downwind of State Route 52.

Monitor/Station Relocation Requirements

- Monitors are eligible based 40 CFR 58.14 (c)(1)-(5).
- Logistical problems beyond the District's control - 40 CFR 58.14(c)(6).

Tables B1-B4 list all the samplers and monitors at KMA with associated pertinent metadata.

Appendix B Table B1 Kearny Mesa-Gaseous Pollutants

Pollutant	**O_3**	**NO_2**
POC	1	1
Monitor designation	Other	Primary
Parameter code	44201	42602 (NO_2)
Basic monitoring objective	PI, NAAQS	PI, NAAQS
Site type	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS
Network affiliation	N/A	N/A
Instrument manufacturer & model	Thermo 49	Thermo 42
Method code	047	074
FRM/FEM/ARM/Other	FEM	FRM
Spatial scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	4/1974	4/1974
Current sampling frequency	Continuous	Continuous
Required sampling frequency	Continuous	Continuous
Sampling season	Year-round	Year-round

Appendix B Table B2 Kearny Mesa-Particulate Pollutants

Pollutant	**$PM_{2.5}$ Manual**	**$PM_{2.5}$ Manual (collocated)**	**PM_{10} Manual**	**PM_{10} Manual (collocated)**
POC	1	1	1	1
Monitor designation	Primary	Primary	Other	Other
Parameter code	88101 (LC)	88101 (LC)	85101 (LC) 81102 (STD)	85101 (LC) 81102 (STD)
Basic monitoring objective	NAAQS	NAAQS	NAAQS	NAAQS
Site type	Population Exposure	Quality Assurance	Population Exposure	Quality Assurance
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Thermo 2025	Thermo 2025	GMW 2000H w/ SA 1200 Head	GMW 2000H w/ SA 1200 Head
Method code	145	145	063	063
FRM/FEM/ARM/Other	FRM	FRM	FRM	FRM
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	9/1999	9/1999	7/2005	7/2005
Current sampling frequency	1:3	1:3	1:6	1:6
Required sampling frequency	1:3	1:3	1:6	1:6
Sampling season	Year-round	Year-round	Year-round	Year-round

Appendix B Table B3 Kearny Mesa-Other Pollutants

Pollutant	PAMS-VOC	PAMS-VOC (collocated)	PAMS-Carbonyls
POC	1	1	1
Monitor designation	Other	Other	N/A
Parameter code	n/a	n/a	n/a
Basic monitoring objective	Research	Research	Research
Site type	Population Exposure	Quality Assurance	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	PAMS Type II	PAMS Type II	PAMS Type II
Instrument manufacturer & model	Xontech 910/912	Xontech 910/912	Xontech 925
Method code	126	126	202
FRM/FEM/ARM/Other	Other	Other	Other
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	1994	1994	1/2005
Current sampling frequency	1:6	1:6	1:12
Required sampling frequency	1:6	1:6	1:6
Sampling season	Year-round	Year-round	Year-round

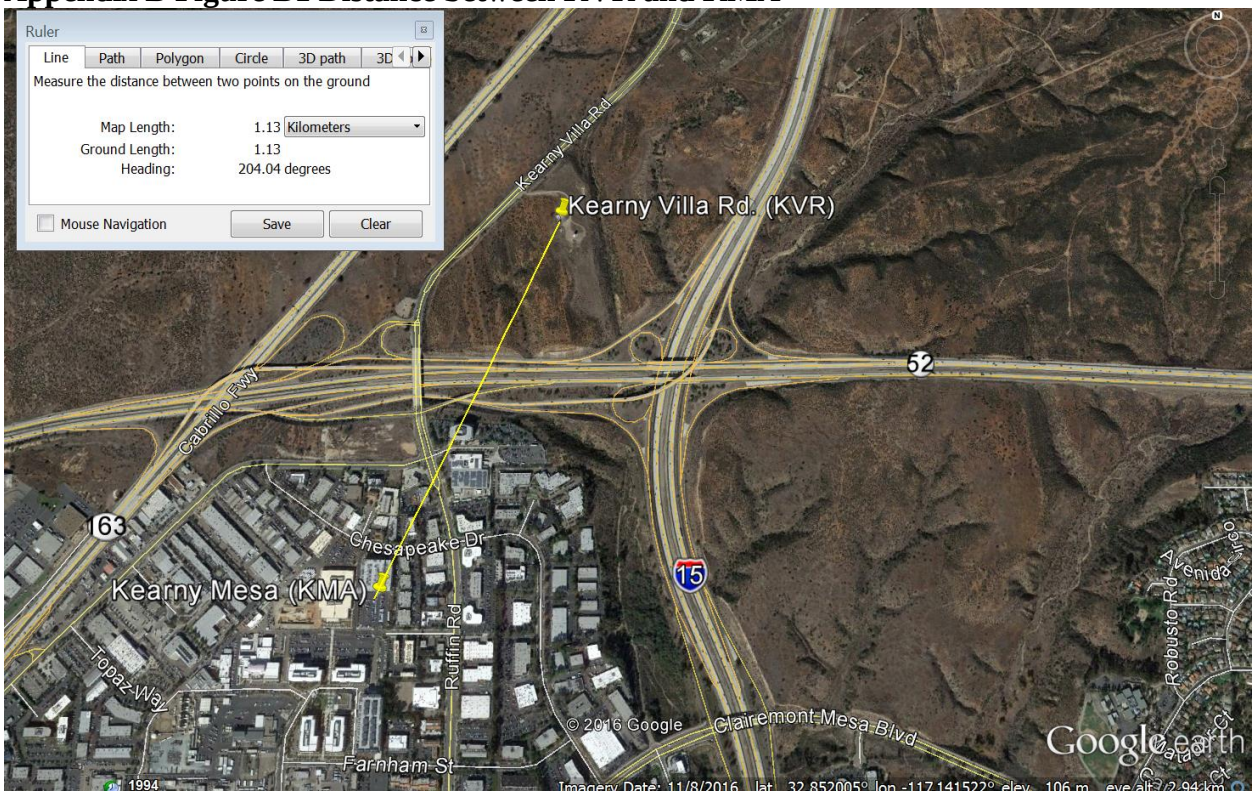
Appendix B Table B4 Kearny Mesa-Meteorological Equipment Designations

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
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	4/1974	4/1974	4/1974	4/1974
Current sampling frequency	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round

New Site Location (Kearny Villa Road)

Kearny Villa Road (KVR), AQS ID# 06-073-1016, Google Earth coordinates of 32.845721° and -117.123985°. The approximate distance is about 1.3 kilometers northeast of the San Diego-Overland (KMA) station location (Figure B1). It will be logistically impossible to undertake parallel sampling, because the old station was demolished. The exact same criteria pollutant monitoring equipment from Tables B1-B4 will apply to the new location.

Appendix B Figure B1 Distance between KVR and KMA



Kearny Villa Road vs. Kearny Mesa Measured Parameters

Appendix B Table B5 compares what is planned to be measured at KVR vs what was measured at KMA.

Appendix B Table B5 Expected Measured Parameters at KMA vs. KVR

Parameter	Kearny Mesa (KMA) old site	Kearny Villa Rd. (KVR) new site	Comment
O_3	yes	yes	
NO_2	yes	yes	
$PM_{2.5}$ Manual	yes	yes	
$PM_{2.5}$ Manual-collocated	yes	yes	
PM_{10} Manual	yes	yes	
PM_{10} Manual-collocated	yes	NO	Not needed
PAMS-VOCs	yes	NO	No longer required at this location
PAMS-VOCs collocate	yes	NO	No longer required at this location
PAMS-Carbonyls	yes	NO	No longer required at this location
Internal temperature	yes	yes	
External temperature	yes	yes	
Wind speed	yes	yes	
Wind direction	yes	yes	
Barometric Pressure	yes	yes	
Solar Radiation	yes	yes	

Monitor Relocation Applicability

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

General Table A6 & A7 Information

- The Design Value (DV) Calculations are three years.
- The posted year in the columns are the last year of the data set, e.g. 2009-2011 for the DV
- The Design Value (DV) Calculations are three years.
- 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)) }
- 2017 NAAQS are used

Appendix B Table B6 Design Values and Averages for Pollutants (Kearny Mesa)

Pollutant	NAAQS	2007	2008	2009	2010	2011	Avg	Std Dev	Units	n	t	NAAQS (2017)
O_3	8-Hr DV	0.070	0.075	0.074	0.073	0.069	0.072	0.0026	ppm	5	2.132	0.070
NO_2	Annual Average	0.015	0.014	0.014	0.013	0.012	0.014	0.0011	ppm	5	2.132	0.100
	1-Hr DV	0.061	0.059	0.056	0.057	0.054	0.057	0.0027	ppm	5	2.132	0.053
$PM_{2.5}$ Manual	24-Hr DV	25	25	25	20	18	22.6	3.36	$\mu g/m^3$	5	2.132	35.0
	Annual Average DV	10.5	11.0	10.8	10.2	9.4	10.4	0.63	$\mu g/m^3$	5	2.132	12.0
PM_{10} Manual	24-Hr	65	41	50	33	47	47.2	11.88	$\mu g/m^3$	5	2.132	150.0

Appendix B Table B7 Eligibility for Relocation (Kearny Mesa)

Pollutant	NAAQS	80% NAAQS	(c)(1) Probability			(c)(2)	(c)(3) *	(c)(4) **	(c)(5) *	(c)(6) ***
O_3	8-Hr DV	0.056	0.075	ppm	NO	N/A	N/A	N/A	N/A	Yes
NO_2	Annual Average	0.080	0.015	ppm	Yes	Yes	N/A	N/A	N/A	Yes
	1-Hr DV	0.042	0.060	ppm	NO	Yes	N/A	N/A	N/A	Yes
$PM_{2.5}$ Manual	24-Hr DV	28.0	25.8	$\mu g/m^3$	Yes	N/A	N/A	No	N/A	Yes
	Annual Average DV	9.6	11.0	$\mu g/m^3$	NO	N/A	N/A	No	N/A	Yes
PM_{10} Manual	24-Hr	120.0	58.5	$\mu g/m^3$	Yes	Yes	N/A	N/A	N/A	Yes

*No absence of data; site is relocating as to be able to characterize the same pollutant profile.
**All samplers and monitors are sited properly, so as to be able to be compare to the NAAQS
*** District was evicted from this location; therefore, beyond the District's control
N/A= Not Applicable

APPENDIX C

San Diego APCD Formal Request for Permanent Decommissioning of the Del Mar (DMR) Monitoring Station

Request:
The San Diego Air Pollution Control District (District) is requesting the permanent decommissioning of the analyzers and support infrastructure from the Del Mar (DMR) site.

Reason(s):
The school grounds on which the station is located is expanding, reorganizing and remodeling the area. The DMR station does not figure into their remodeling plans and they cannot accommodate our needs.

Additional Information:
For DMR, the 2015 Network Assessment showed:

- a neutral removal bias, which indicates that ozone data for the San Diego Air Basin will not be influenced (neither positive nor negative) by the removal of this analyzer.
- a strong correlation between the Camp Pendleton (CMP) and Del Mar ozone analyzers with a white color (monitor pairs with low average relative difference white or light yellow color measure similar ozone concentrations).
- a high Pearson Correlation, r>0.8 (monitor pairs with high Pearson correlation values, e.g., r > 0.75) exhibit similar temporal concentrations.
- a low relative percent difference of 0.32.

Both the CMP and DMR monitors have registered exceedances, see Appendix C Table C1.

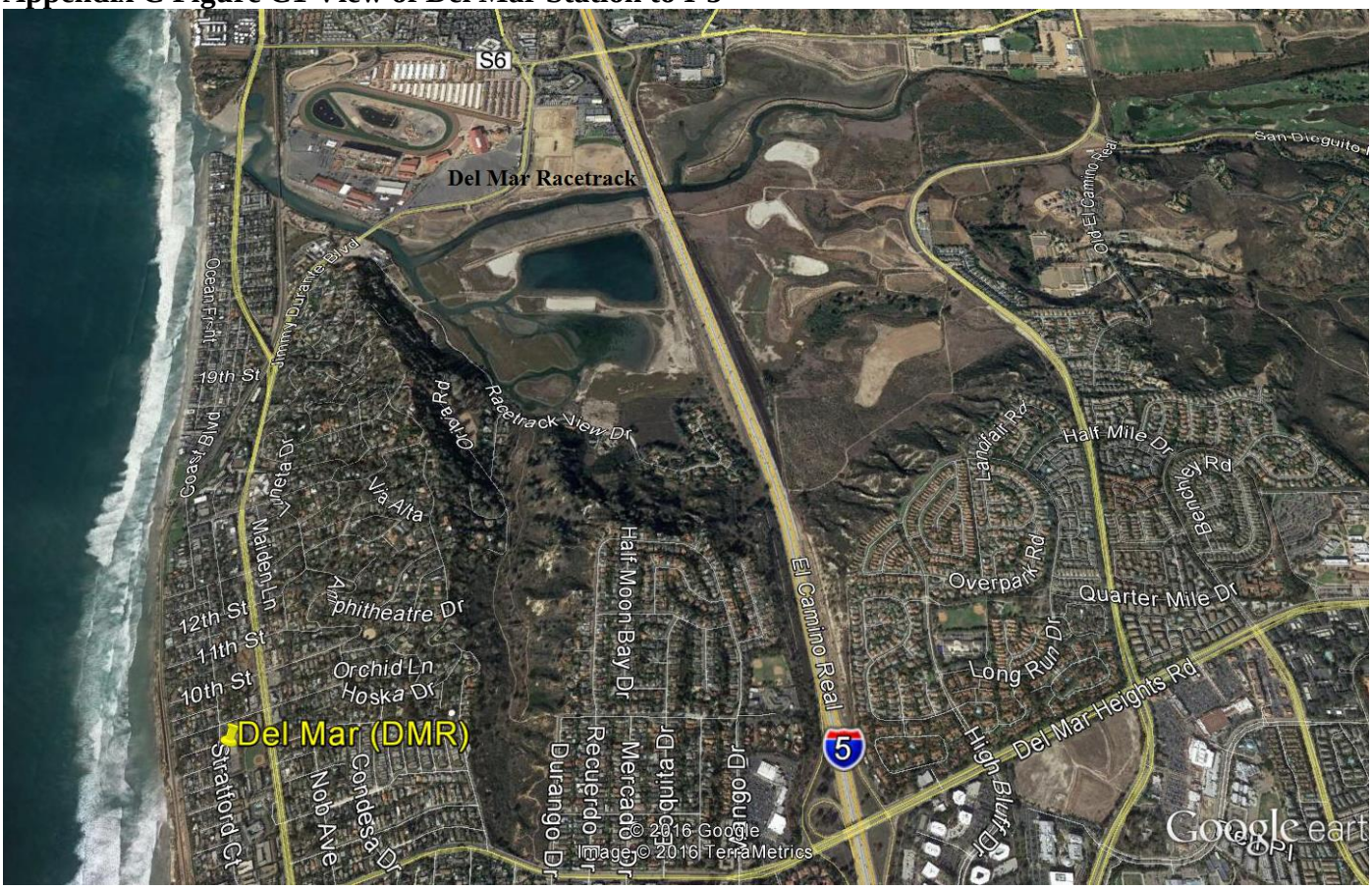
Appendix C Table C1 Number of Days Above the Standard

Year	(DMR) Dates Above the Standard	(DMR) Concentration	(CMP) Dates Above the Standard	(CMP) Concentration
2016	4/19	0.071	2/14 4/18 9/24 10/7	0.073 0.071 0.073 0.072
2015	9/20 10/9	0.074 0.078	2/5 9/20	0.073 0.076
2014	5/2 5/3* 5/15* 5/16	0.075 0.078 0.087 0.073	5/2 5/3* 5/15* 5/16 10/23	0.071 0.075 0.079 0.073 0.071
2013	None	N/A	None	N/A
2012	9/15 10/17	0.078 0.077	9/15	0.081

*Exceedances due to fires in the region. Exceptional event reports have been drafted but not submitted to EPA.

While the DMR ozone monitor has registered days above the National Standard within the last 5 years, so has the CMP monitor and often times on the same dates. As discussed in the preceding paragraph, the 2015 Network Assessment shows that the DMR and CMP monitors have a strong correlation and that there will be no bias if it is the DMR monitor/station is permanently decommissioned, as opposed to relocated. The District will not relocate this station, unless directed by the EPA to do otherwise. Note: land west of Interstate-5 in Del Mar and the surrounding communities north and south are some of the most expensive in San Diego County (see App. C Figure 1).

Appendix C Figure C1 View of Del Mar Station to I-5



Monitor/Station Relocation Requirements

- Monitors are eligible based on 40 CFR 58.14 (c)(1)-(5).
- Logistical problems beyond the District's control - 40 CFR 58.14(c)(6)

Tables C1-C2 list all the samplers and monitors at DMR with associated pertinent metadata.

Appendix C Table C2 Del Mar-Gaseous Pollutants

Pollutant	O_3
POC	1
Monitor designation	Other
Parameter code	44201
Basic monitoring objective	PI, NAAQS
Site type	Population Exposure
Monitor type	SLAMS
Network affiliation	N/A
Instrument manufacturer & model	Thermo 49i
Method code	047
FRM/FEM/ARM/Other	FEM
Spatial scale	Neighborhood Scale
Monitoring start date	7/2005
Current sampling frequency	Continuous
Required sampling frequency	Continuous
Sampling season	Year-round

Appendix C Table C3 Del Mar-Meteorological Equipment Designations

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
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Monitoring start date	7/2005	7/2005	7/2005	7/2005
Current sampling frequency	Continuous	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year-round	Year-round	Year-round	Year-round

Monitor Relocation Applicability

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

General Table A6 & A7 Information

- The Design Value (DV) Calculations are three years.
- The posted year in the columns are the last year of the data set, e.g. 2009-2011 for the DV
- The Design Value (DV) Calculations are three years.
- 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)) }
- 2017 NAAQS are used

Appendix C Table C4 Design Values and Averages for Pollutants (Del Mar)

Pollutant	NAAQS	2012	2013	2014	2015	2016	Avg	Std Dev	Units	n	t	NAAQS (2017)
O_3	8-Hr DV	0.063	0.062	0.064	0.066	0.067	0.064	0.0021	ppm	5	2.132	0.070

Appendix C Table C5 Eligibility for Permanent Decomissioning (Del Mar)

Pollutant	NAAQS	80% NAAQS	(c)(1) Probability			(c)(2)	(c)(3) *	(c)(4)	(c)(5) *	(c)(6) ***
O_3	8-Hr DV	0.056	0.066	ppm	NO	N/A	NO	N/A	NO	Yes

*No absence of data; nearby station will record the same concentrations.
*** District was evicted from this location; therefore, beyond the District's control
N/A= Not Applicable

APPENDIX D

San Diego APCD Formal Request to Decommission the Two (2) Ambient CO Monitors

Request:
The San Diego Air Pollution Control District (District) is requesting the decommissioning of two (2) CO monitors that are designated to measure ambient levels of air pollution. One CO monitor is located at the San Diego-Beardsley St. (DTN) station and the other is located at the Escondido (ESC) station. Please note: The DTN station has closed and the District is in the process of relocating the equipment to another site about 1.16 km northeast; the ESC station was temporarily closed to accommodate a remodeling of the grounds on which the station stood and the District is in the process of rebuilding the station at the original location, so currently, neither CO monitor is operating.

Reason(s):
The measured levels of carbon monoxide at these locations, as well as throughout the San Diego Air Basin (SDAB) are less than 50% of the NAAQS. Furthermore, 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 4.2.1 "Carbon Monoxide (CO) Design Criteria, the District is only required to operate the following CO analyzers (See table below, Appendix D Table D1: Carbon Monoxide Minimum Monitoring Requirements-Summary).

Appendix D Table D1 Carbon Monoxide Minimum Monitoring Requirements-Summary

CFR Programs Requirements for CO Monitors (name)	Minimum Number of CO Monitors Required (#)	Number of Active CO Monitors (#)	Number of Needed CO Monitors (#)
Near-road	1	1	None
NCore*=	1	1	None
PAMS*=	1	1	None
SIP*=	1	1	None

*The NCore CO monitor satisfies three requirements: 1. NCore Trace Level CO; 2. PAMS CO requirement; and, 2. State Implementation Plan for CO.

The two ambient CO monitors are not required and are legacy monitors. No monitoring regulation will be violated if they are decommissioned (CO sampling will not be undertaken when the new stations are made operational, unless directed by the EPA to do otherwise).

Monitor/Station Relocation Requirements

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

Monitor Decommission Applicability

An accounting of the last five (5) years of data for the monitors that are regulatory and can be compared to the NAAQS are in Tables D1a & D1b for ESC and Tables D2a & D2b for DTN.

Appendix D Table D1a ESC Design Values and Averages for Pollutants

Pollutant	NAAQS	2010	2011	2012	2013	2014	Avg	Std Dev	Units	n	t	NAAQS (2017)
CO	1-Hr	3.9	3.5	4.4	3.2	3.8	3.8	0.45	ppm	5	2.132	35.0
	8-Hr	2.5	2.3	3.8	2.6	3.1	2.9	0.60	ppm	5	2.132	9.0

Appendix D Table D2a ESC Eligibility for Relocation

Pollutant	NAAQS	80% NAAQS	(c)(1) Probability		
CO	1-Hr	28.0	4.2	ppm	yes
	8-Hr	7.2	3.4	ppm	yes

Note: ESC was not operational for a full year in 2015; therefore the last full year of record is 2014.

Appendix A Table D2a DTN Design Values and Averages for Pollutants

Pollutant	NAAQS	2011	2012	2013	2014	2015	Avg	Std Dev	Units	n	t	NAAQS (2017)
CO	1-Hr	2.8	2.6	3.0	2.7	2.6	2.7	0.17	ppm	5	2.132	35.0
	8-Hr	2.4	1.9	2.1	1.9	1.9	2.0	0.22	ppm	5	2.132	9.0

Appendix A Table D2b DTN Eligibility for Relocation

Pollutant	NAAQS	80% NAAQS	(c)(1) Probability		
CO	1-Hr	28.0	2.9	ppm	yes
	8-Hr	7.2	2.2	ppm	yes

Note: DTN was not operational for a full year in 2016; therefore the last full year of record is 2015.

APPENDIX E

EPA Approval to Decommission Pb-TSP NCore Sampling

(Note: This approval letter was part of larger package, so only the parts specifically pertaining to Pb-TSP NCore sampling are enclosed)

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

NOV 16 2016

Mr. Bill Brick
Chief, Monitoring and Technical Services
San Diego Air Pollution Control District
10124 Old Grove Road
San Diego, California 92131-1640

Dear Mr. Brick:

Thank you for your submission of the San Diego Air Pollution Control District (SDAPCD) *Annual Air Quality Monitoring Network Plan 2015* in July 2016. We have reviewed the submitted document based on the requirements set forth under 40 CFR 58. Based on the information provided in the plan, the U.S. Environmental Protection Agency (EPA) approves all portions of the network plan except those specifically identified below. With this plan approval we also formally approve the following system modifications: discontinuation of Pb at the El Cajon – Floyd Smith Drive NCore site (AQS ID: 06-073-1018). More information about this approval is in Enclosure D.

D. Approval of Discontinuation of Pb at NCore

EPA has also specifically reviewed your June 27, 2016 letter requesting approval to discontinue lead (Pb) monitoring at your El Cajon-Floyd Smith Drive NCore site. As part of this year's annual network plan review, EPA approves closure of the Pb monitor at the El Cajon – Floyd Smith Drive NCore site (AQS ID: 06-073-1018, POC 1).

SDAPCD began monitoring for Pb at El Cajon – Redwood (AQS ID: 06-073-0003) on February 19, 2012. The El Cajon – Redwood site was shut down on February 22, 2014 and relocated to the El Cajon – Floyd Smith Drive site on September 8, 2014. The relocation was approved on April 16, 2014. The highest three-month rolling average of Pb measured from February 2012 through the first quarter of 2016 was 0.01 $\mu g/m^3$. As stated in the preamble to the revised monitoring rule (81 FR 17259), EPA anticipated that waiver requests for shutdown of Pb monitoring at urban NCore sites would be received based on three years of data showing design values well below the 2008 Pb National Ambient Air Quality Standards (NAAQS).

Based on these data, EPA approves this shutdown based on a case-by-case approval per 40 CFR 58.14(c). Discontinuance does not compromise data collection needed for implementation of the Pb NAAQS, and the requirements of Appendix D will continue to be met after this monitor is closed as Pb monitoring is no longer required at urban NCore sites.

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:

- The District was evicted from our Downtown site; consequently, this station was permanently shutdown (see the Executive Summary for more information).
- The El Cajon Station-Floyd Smith Drive station was relocated back to its original location at Lexington Elementary School in late 2016 (see the Executive Summary for more information).

Figure 3.0 Ozone Network Map

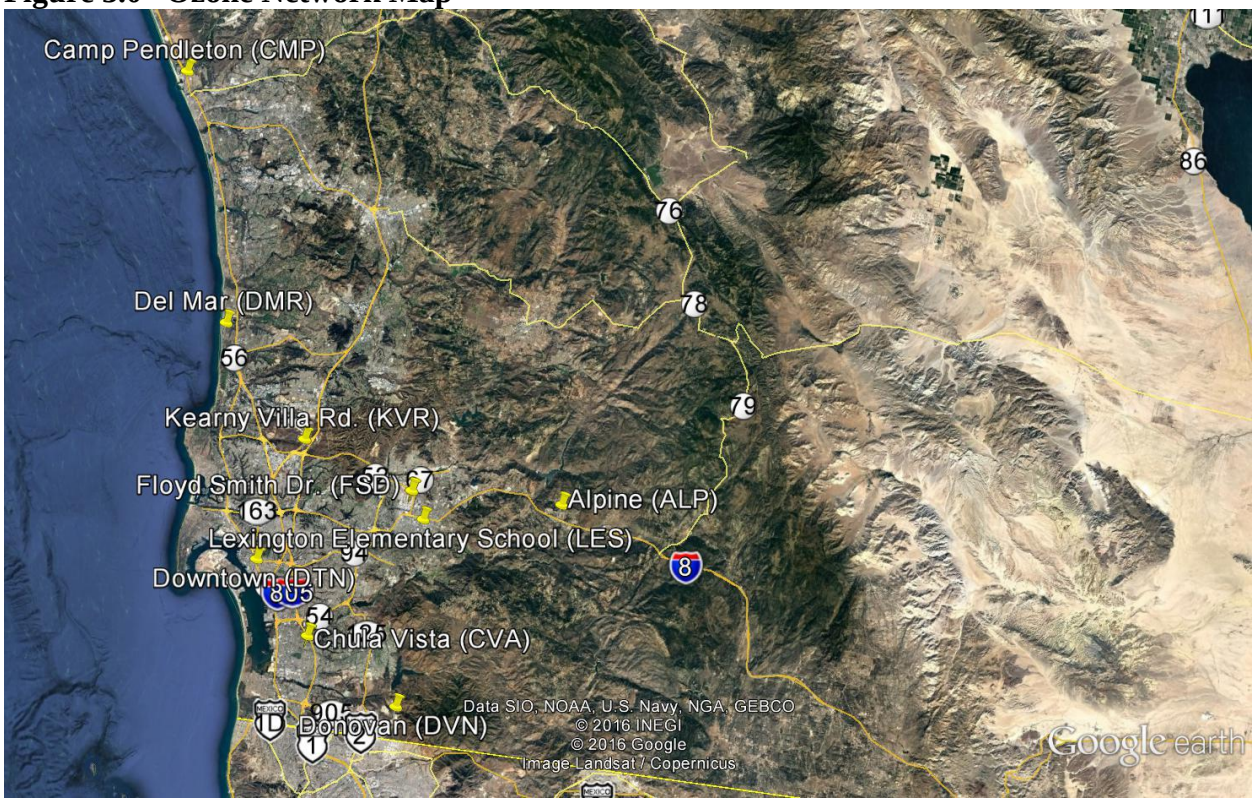


Table 3.0 Ozone State and Federal Standards for the Year

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	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	DMR	FSD[1]	LES[1]	KVR	DVN	DTN
	Name	Alpine	Camp Pendleton	Chula Vista	Del Mar	Floyd Smith Dr.	Floyd Smith Dr.	Kearny Villa Rd	Donovan	San Diego – Beardsley
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1001	06-073-1018	06-073-1022	06-073-1016	06-073-1014	06-073-1010
O_3	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Method	UV	UV	UV	UV	UV	UV	UV	UV	UV
	Affiliation	PAMS	PAMS	Not Applicable	Not Applicable	PAMS, NCore	PAMS, NCore	Not Applicable	Not Applicable	Not Applicable
	Spatial Scale	US	NS	NS	NS	NS	NS	NS	NS	NS
	Site Type	MXO	UPDB	PE	G/B	PE	PE	PE	PE	G/B
	Objective (Federal)	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS
	Equipment	Thermo 49i	Thermo 49i	Thermo 49i	Thermo 49	Thermo 49i	Thermo 49i	Thermo 49i	Thermo 49i	Thermo 49i

[1] The El Cajon Station-Floyd Smith Drive station was relocated to back to its original location at Lexington Elementary School in late 2016

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 3.2a & b 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 of this appendix.

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 3.2a Ozone Minimum Monitoring Requirements-Design Value Criteria (8-Hr), 2014-2016

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)
0.081	yes	NO	NO

Table 3.2b Ozone Minimum Monitoring Requirements-Ambient

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Minimum Number of Monitors (Sites) Required (#)	Number of Active Monitors (Sites) (#)	Number of Monitors (Sites) Needed (#)
San Diego	San Diego	3.3 million	2	8	None

[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 4.1 "Ozone (O_3) Design Criteria", subsection 4.1(a), list the requirements needed to fulfill the Ozone (O_3) Design Criteria.

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 design value (DV) 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, or CSA if multiple MSAs are involved, must be designed to record the maximum concentration for that particular metropolitan area.*

Table 3.3 Ozone Minimum Monitoring Requirements-Maximum Concentration Site Design Value, 2014-2016

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	0.081

Section 3.1.3 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 3.4 lists PAMS Ozone (O_3) Monitoring requirements.

> *5. Network Design for Photochemical Assessment Monitoring Stations (PAMS) and Enhanced Ozone Monitoring*[C]
> *(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;*

Table 3.4 Ozone Minimum Monitoring Requirements-PAMS

Minimum Number of O_3 Monitors Required for PAMS Sites (#)	Total Number of O_3 Monitors Active at PAMS Sites (#)	Total Number of O_3 Monitors Needed At PAMS Sites (#)	PAMS Sites/Locations (name)	PAMS Sites/Locations AQS ID (#)
3	3	None	Floyd Smith Dr. (FSD) Alpine (ALP) Camp Pendleton (CMP)	06-073-1018 06-073-1006 06-073-1008

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

[C] (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 (3) "Ozone Monitoring Requirements"

Section 3.1.4 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 3.5 lists the NCore O_3 requirements.

> *3. Design Criteria for NCore Sites*[D]
> *(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 3.5 Ozone Minimum Monitoring Requirements-NCore

Minimum Number of O_3 Monitors Required for NCore Sites (#)	Total Number of O_3 Monitors Active at NCore Sites (#)	Total Number of O_3 Monitors Needed at NCore Sites (#)	NCore Sites/Locations (name)	NCore Sites/Locations AQS ID (#)
1	1	None	Floyd Smith Dr. (FSD)	06-073-1018

Section 3.1.5 Ozone Minimum Monitoring Requirements-Summary

Table 3.6 summarizes all the O_3 minimum monitoring requirements from Sections 3.1.1-3.1.4.

Table 3.6 Ozone Minimum Monitoring Requirements-Summary

CFR Programs Requirements for O_3 Monitors (name)	Minimum Number of O_3 Monitors Required (#)	Number of Active O_3 Monitors (#)	Number of Needed O_3 Monitors (#)
CFR EPA Table D-2 only=	2	8	None
PAMS only=	3	3	None
NCore only=	1	1	None

[D] (2015) 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[E] and the sampling frequency must be in accordance with Federal Regulations[F]. All District O_3 monitors meets or exceeds all minimum monitoring requirements and sampling frequencies, as to be able to be compared to the NAAQS. Table 3.7 summarizes these requirements.

Table 3.7 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 years, ozone concentration levels have been decreasing. This section will illustrate the different metrics for comparison.

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

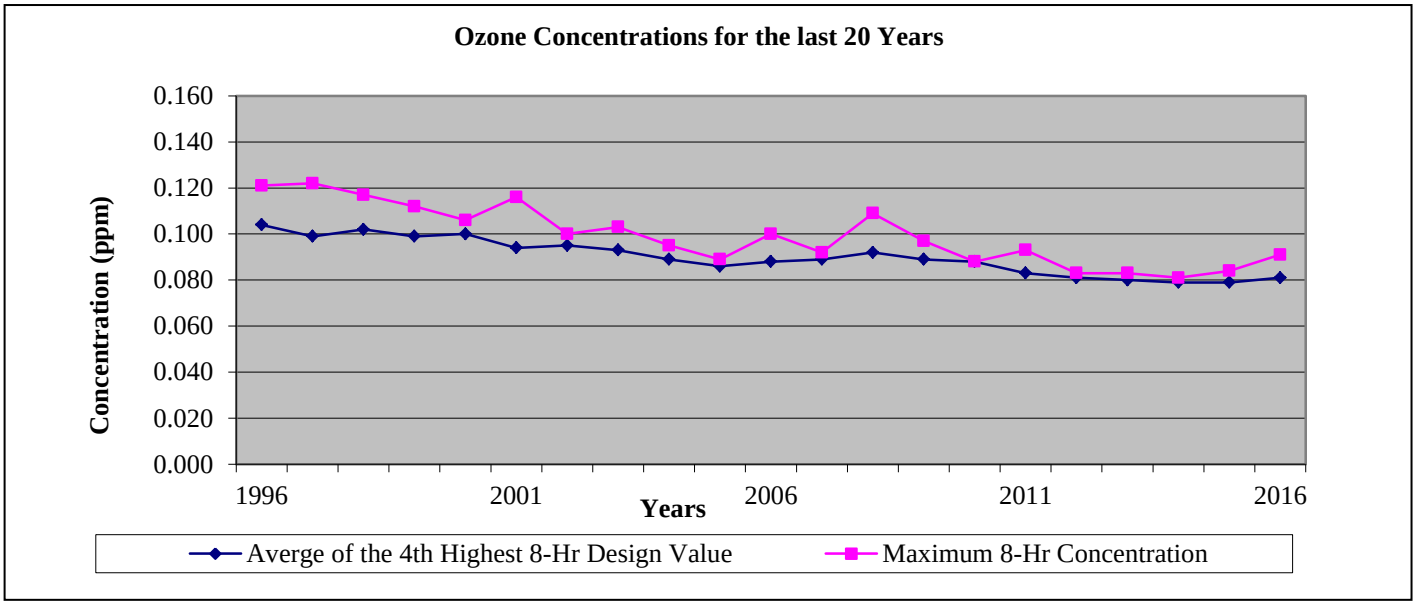
San Diego has realized a significant decrease in the 3-yr average of the exceedance days for ozone and has seen a sharp decrease in its 8-hour Design Value since 1990 (Table 3.8 and Figure 3.2). Note: the "Days Above the National 8-Hr Standard." row in Table 3.8 reflect the ozone standard for that year.

Table 3.8 Ozone Concentrations for San Diego-for the Last 20 Years, 1996-2016

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Average of the 4th Highest 8-Hr Design Value (ppm)	0.104	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
Maximum 8-Hr Concentration (ppm)	0.121	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
Days above the National 8-Hr Standard	64	43	58	44	46	43	31	38	23	24	38	27	35	24	14	10	10	7	12*	13	13

*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, 1996-2016



[E] (2015) 40 CFR Part 58, Appendix E, "Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring" and Table E-4.
[F] (2015) 40 CFR Part 58.12, Subpart B, "Operating Schedules".

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

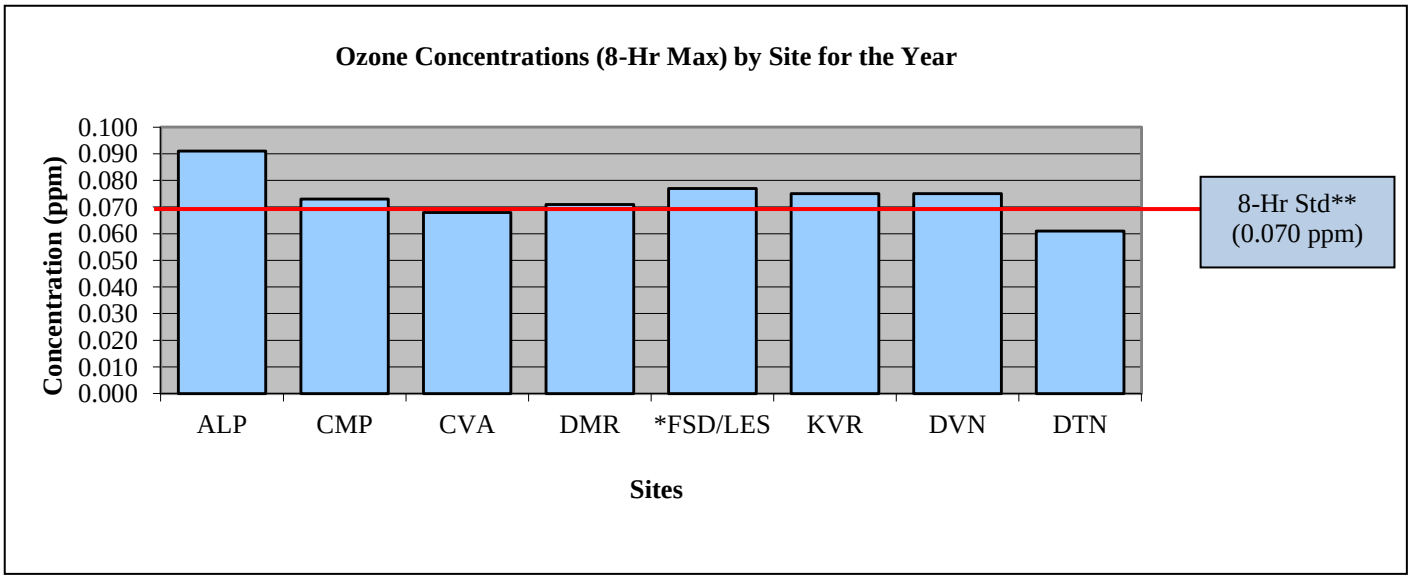
Table 3.9a lists the maximum ozone measurements for every ozone monitoring location and Figure 3.2a show the values graphically with respect to the National Standard for the year (Note: these are not Design Value concentrations, so the comparison to the standard is for informational use only).

Table 3.9a Ozone Concentrations for San Diego-by Site for the Year, 2016

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	0.091	13	0.044
2	Camp Pendleton	CMP	0.073	0	0.036
3	Chula Vista	CVA	0.068	0	0.029
4	Del Mar	DMR	0.071	0	0.033
5	*Floyd Smith Dr. & Lexington Elementary	FSD & LES	0.077	1	0.031
6	Kearny Villa Road	KVR	0.075	0	0.032
7	Donovan	DVN	0.075	0	0.034
8	San Diego-Beardsley	DTN	0.061	0	0.029

*FSD & LES were combined to for this calculation

Figure 3.2a Ozone Concentrations for San Diego-by Site for the Year Graph, 2016



*Insufficient data; not operational for a sufficient number of months in 2016 for a comparable annual average.

**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

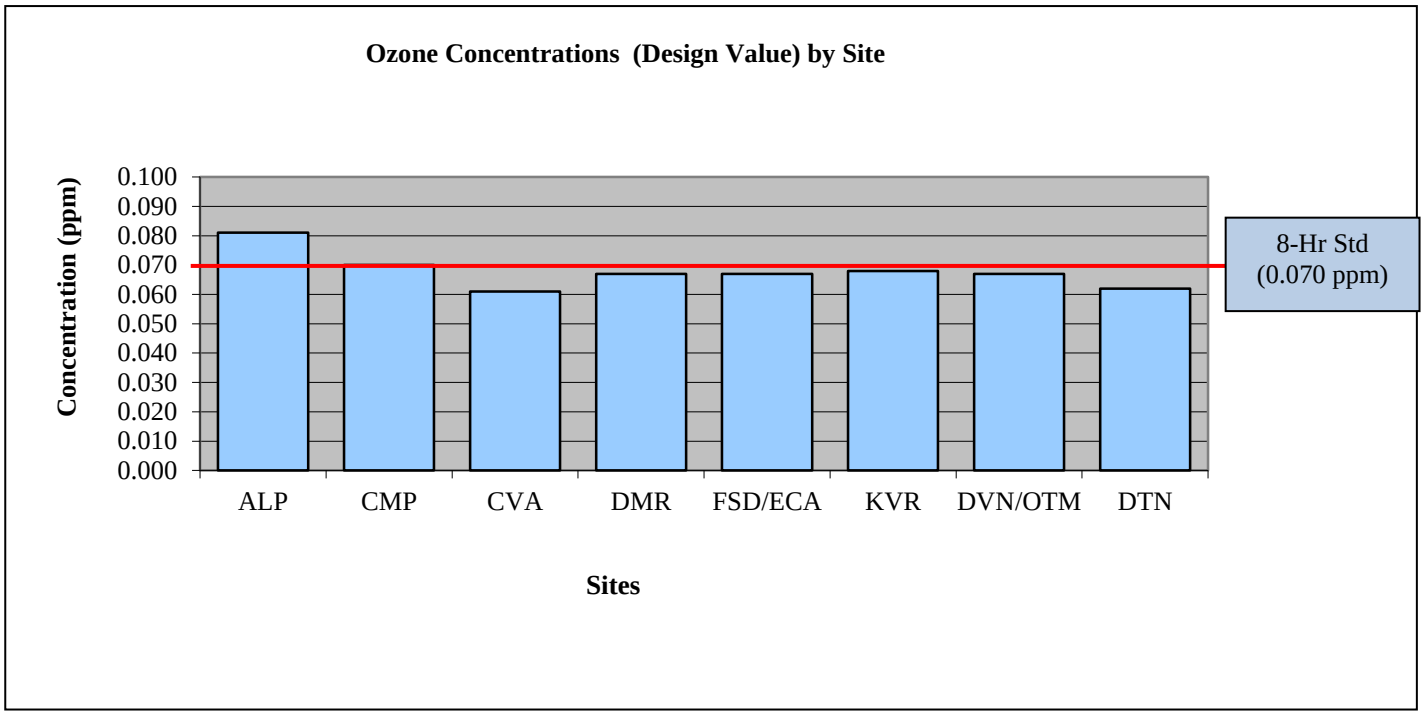
Table 3.9b lists the maximum ozone measurements for every ozone monitoring location and Figure 3.2b show the values graphically for the Design Value.

Table 3.9b Ozone Concentrations for San Diego-by Site for Design Value, 2014-2016

No. (#)	Site (name)	Site Abbreviation (name)	Design Value Maximum Concentration for 8-Hrs (ppm)	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)
1	Alpine	ALP	0.081	yes	NO
2	Camp Pendleton	CMP	0.070	yes	yes
3	Chula Vista	CVA	0.061	NO	yes
4	Del Mar	DMR	0.067	yes	yes
5	*Floyd Smith Dr. & Lexington Elementary	FSD & LES	0.067	yes	yes
6	Kearny Villa Road	KVR	0.068	yes	yes
7	Donovan & Otay Mesa	DVN & OTM	0.067	yes	yes
8	San Diego-Beardsley	DTN	0.062	NO	yes

*FSD & LES were combined to for this calculation

Figure 3.2b Ozone Concentrations for San Diego-by Site for Design Value Graph, 2014-2016



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:

- The District was evicted from our Downtown site; consequently, this station was permanently shutdown (see the Executive Summary for more information).
- 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 4.0 Nitrogen Dioxide & NOy Network Map

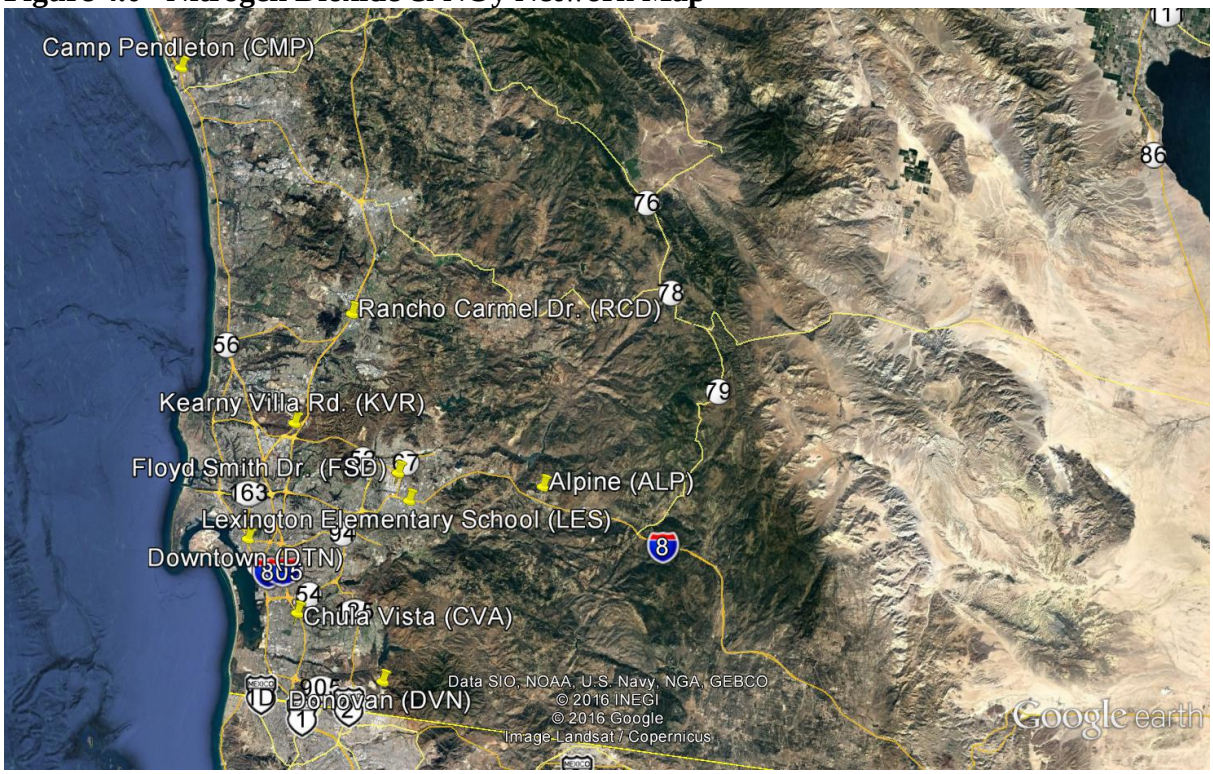


Table 4.0 Nitrogen Dioxide State and National Standards for the Year

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	FSD[1]	LES[1]	KVR	DVN	DTN	RCD
	Name	Alpine	Camp Pendleton	Chula Vista	Floyd Smith Dr.	Lexington Elementary School	Kearny Villa Rd	Donovan	San Diego – Beardsley	Rancho Carmel Dr.
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1018	06-073-1022	06-073-1016	06-073-1014	06-073-1010	06-073-1017
NO_2 & NOy	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Designation	PRI	PRI	PRI	PRI	PRI	PRI	PRI	PRI	PRI
	Method	CL	CL	CL	CL	CL	CL	CL	CL	CL
	Affiliation	PAMS	PAMS	Not Applicable	PAMS	PAMS	Not Applicable	SLAMS	Not Applicable	Not Applicable
	Spatial Scale	US	NS	NS	NS	NS	NS	NS	NS	MI
	Site Type	PE	UPBD	PE	PE	PE	PE	PE	PE	SO
	Objective (Federal)	PI, NAAQS	PI, NAAQS	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	Thermo 42i	Thermo 42i

[1] The El Cajon Station-Floyd Smith Drive station was relocated to back to its original location at Lexington Elementary School in late 2016

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

With EPA approval, NOy sampling is temporarily suspended until the District relocates back to the original NCore location.

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 (#)	Minimum 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 (#)	Total Number of NO_2 Near-road Monitors Required (#)	Active Number of NO_2 Near-road Monitors (#)	Number of Needed NO_2 Near-road Monitors (#)
San Diego	San Diego	3.3 million	1	Yes	1	2	1	1

[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 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 tried unsuccessfully to site the 2nd Near-road station at the following locations:

2015

1. I-5 at Manchester Ave.
   - ❖ not advisable by Caltrans, due to future highway expansion.
2. I-5 at Sweetwater Rd. at the Park & Ride
   - ❖ not enough space permitted by Caltrans, because it is a high use lot, so discontinued.
3. I-8 at Camino del Rio South
   - ❖ denied by the City, because it is the site of a future water treatment plant in 2020
4. I-8 at Murry Dr. Park & Ride (North lot)
   - ❖ denied by Caltrans, because it is a very small lot.
5. I-5 at Sicard St.
   - ❖ denied by the School Authorities due to school closure.
6. I-5 at Newton Ave.
   - ❖ denied by the City for a need for right-of-way on the dead-end street overlooking I-5.

2016

1. I-5 at S. 29th St. & Boston Ave. at Caltrans lot.
   - ❖ could not enter into a long-term lease with Caltrans nor secure the location from repurposement by Caltrans, so discontinued.
2. I-8 at Murry Dr. Park & Ride (South lot)
   - ❖ denied by Caltrans, because it is a very small lot.
3. I-8 at College Ave. (in San Diego State University parking lot off Canyon Crest Dr.).
   - ❖ denied by the School Authorities, due no benefit to the University.
4. I-5 at Newton Ave. (was re-visited by the City)
   - ❖ denied by the City for a need for right-of-way on the dead-end street overlooking I-5.
5. I-5 at Park Blvd.
   - ❖ Pending (temporarily suspended for the San Ysidro location): Caltrans power is needed.
6. I-805 at Logan Ave.
   - ❖ Pending (temporarily suspended for the San Ysidro location): Caltrans approval is needed to remove some obstructions.

2017

1. I-5 at Cottonwood Rd (see table 4.3)
   -in discussions with Caltrans and the City.
   -table 4.3 below, lists all the parameters according to the Near-road TAD.

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	This Network Plan
3	Anticipated start-up	Dec 2017
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 (Gravimetric), & PM2.5 (beta attenuation)
7	Sampling & analysis duration	NOx=24/7 (Year-long), PM2.5 (filter)=1:3 (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 & PM2.5 (filter) Public Information, Microscale for non-FEM PM2.5 (continuous)
10	CBSA	San Diego-Carlsbad-San Marcos
11	CBSA population & year	3.3 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 and 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, unless the winds are blowing from the northwest. When northeast winds are blowing, or a Santa Ana occurs, emissions from I-5 will not be measured at the monitor.
20	How is population exposure considered?	Residential community (see "Other" sections at the end of the table)
21	1st Near-road site?	Interstate-15 at Rancho Carmel Dr. is on a hill overlooking I-15. This site is 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 Interstate 5, will be a the southernmost point of the air basin, and will have a higher mix of cars compared to trucks.
22	Distance from the target road?	35 meters to on-ramp; 43 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?	If several tall bushes kept trimmed and possibly one tree removed.

The San Ysidro border crossing is the busiest border crossing/point-of-entry (POE) in the Western Hemisphere and one of the busiest in the world. Vehicles entering and exiting the United States 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 Monday-Friday 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 road segments 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 the time of day and week) in the multiple POE lanes. In reality, 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, thus adding to the car queue, but not crossing the border, whereby not being tabulated in the vehicle crossing summary report. All this equates to a higher potential traffic count.

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 most vulnerable members of society 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 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 releases 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 the busiest POE in the Western Hemisphere. 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 (#)	Active? (yes/no)
San Diego	San Diego	3.3 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…

Table 4.6 Nitrogen Dioxide Minimum Monitoring Requirements-Area-wide

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Minimum Number of Required Area-wide monitor	Number of Area-wide sites	Number of Area-wide Sites Needed	Area-wide Site (name)	Area-wide Site AQS ID (#)	Meet NAAQS? (yes/no)
San Diego	San Diego	3.3 million	1	1	None	Donovan	06-073-1014	yes

Section 4.1.3 Nitrogen Dioxide Minimum Monitoring Requirements-Regional Administrator

Nitrogen dioxide is a component of diesel emissions, which are deleterious to human health. The Downtown station is in an Environmental Justice area, which is considered a vulnerable population. 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 (#)	Minimum Number of Required Regional Administrator sites	Number of Required Regional Administrator sites	Number of Required Regional Administrator sites Needed	Regional Administrator Site (name)	Regional Administrator Site AQS ID (#)	Meet NAAQS? (yes/no)
San Diego	San Diego	3.3 million	1	1	None	San Diego-Beardsley	06-073-1010	yes

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

B (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 4.3 "Nitrogen Dioxide (NO_2) Design Criteria", subpart 4.3.3 "Requirement for Area-wide Monitoring"

C (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 4.3 "Nitrogen Dioxide (NO_2) Design Criteria", subpart 4.3.4 "Requirement for Regional Administrator Monitoring"

Section 4.1.4 Nitrogen Dioxide 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 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... 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

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

Table 4.8 Nitrogen Dioxide Minimum Monitoring Requirements-PAMS

PAMS Type 2 Sites/Locations (name)	PAMS Type 2 Sites/Locations AQS ID (#)	Minimum Number of NO_2 Monitors Required at PAMS Type 2 Sites (#)	Total Number of NO_2 Monitors Active at PAMS Type 2 Sites (#)	Total Number of NO_2 Monitors Needed at PAMS Type 2 Sites (#)
Floyd Smith Dr. (FSD)	06-073-1018	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

CFR Programs Requirements for NO_2 Monitors (name)	Minimum Number of NO_2 Monitors Required (#)	Number of Active NO_2 Monitors (#)	Number of Needed NO_2 Monitors (#)
Near-road=	2	1	1
Regional Administrator=	1	1	1*
Area-Wide=	1	1	None
PAMS only=	1	1	None

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

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"

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).

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. 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. 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

Minimum Number of NOy Monitors Required (#)	Number of Active NOy Monitors (#)	Number of Needed NOy Monitors (#)	NOy Monitor Location (name)	NOy Monitor Location AQS ID (#)
1	1 (Type II)*	None**	Floyd Smith Dr* (FSD)	06-073-1018

**The El Cajon site has been temporarily relocated at Floyd Smith Dr. (FSD) on Gillespie Field property.
The EPA granted the District a temporary waiver for the NOy requirement at FSD. Once the District relocates the station back to the original location, NOy monitoring will resume.

E (2015) 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"

F (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) "Total reactive nitrogen (NOy)"

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.*

Table 4.11 Reactive Oxides of Nitrogen Minimum Monitoring Requirements-NCore

MSA	County	Minimum Number of NCore NOy Monitors Required (#)	Number of Active NCore NOy Monitors (#)	Needed Number of NCore NOy Monitors (#)
San Diego	San Diego	1	0*	None*

*EPA granted a waiver to suspend NOy monitoring until the District relocates back to the original location

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

CFR Programs Requirements for NOy Monitors (name)	Minimum Number of NOy Monitors Required (#)	Number of Active NOy Monitors (#)	Number of Needed NOy Monitors (#)
NCore=	1	0*	None
PAMS=	1	0*	None

*Temporarily suspended until relocation back to the original site (The El Cajon NOy monitor will satisfy both the NCore and PAMS requirement).

G (2015) 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.

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 meets or exceeds 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 years, nitrogen dioxide concentration levels have been decreasing. This section will illustrate the different metrics for comparison.

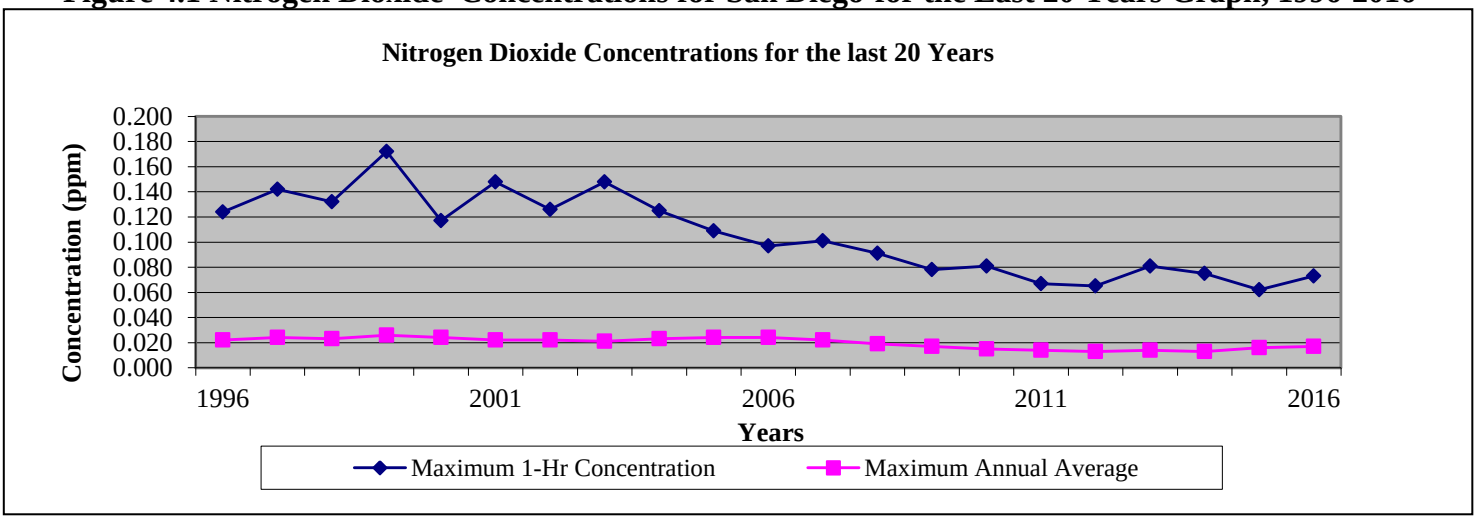
Section 4.4.1 Nitrogen Dioxide Concentrations for San Diego-for the Last 20 Years

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, 1996-2016

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Maximum 1-Hr Concentration (ppm)	0.124	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
Maximum Annual Average (ppm)	0.022	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
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, 1996-2016



[H] (2015) 40 CFR Part 58, Appendix E, "Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring" and Table E-4.
[I] (2015) 40 CFR Part 58.12, Subpart B, "Operating Schedules".

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

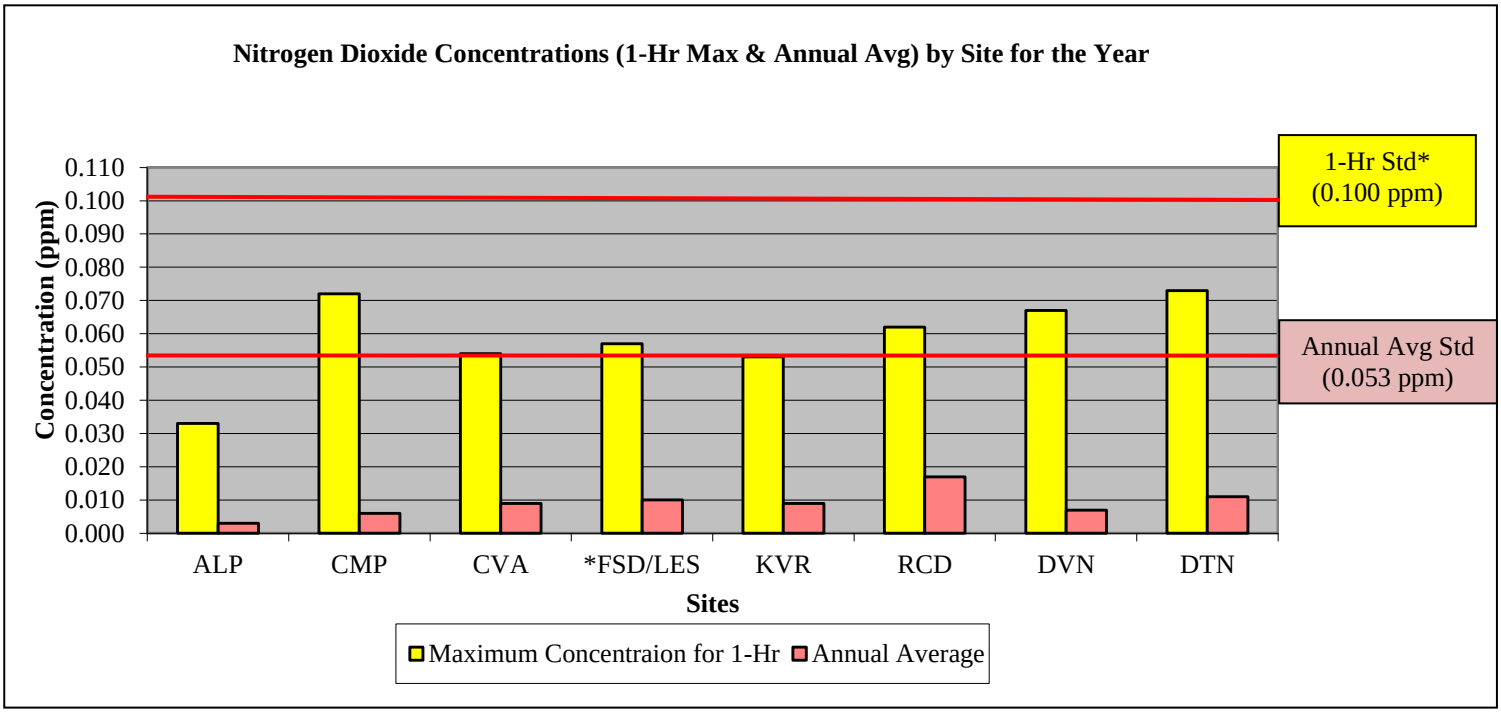
Table 4.15a lists the maximum nitrogen dioxide measurements and NOy-NO for each nitrogen dioxide monitoring location and NCore, respectively; figure 4.2a shows the values graphically with respect to the National Standard for the year (Note: these are not Design Value calculations, so the comparison to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

Table 4.15a Nitrogen Dioxide Concentrations for San Diego- by Site for the Year, 2016

No. (#)	Site (name)	Site Abbreviation	Maximum Concentration for 1-Hr (ppm)	Number of Days Above the National Standard (#)	Annual Average (ppm)
1	Alpine	ALP	0.033	0	0.003
2	Camp Pendleton	CMP	0.072	0	0.006
3	Chula Vista	CVA	0.054	0	0.009
4	Floyd Smith Dr. & Lexington Elementary	FSD & LES	0.057	0	0.010
5	Kearny Villa Rd	KVR	0.053	0	0.009
6	Rancho Carmel Dr.	RCD	0.062	0	0.017
7	Donovan	DVN	0.067	0	0.007
8	San Diego-Beardsley	DTN	0.073	0	0.011

*FSD & LES were combined to for this calculation

Figure 4.2a Nitrogen Dioxide Concentrations for San Diego-by Site for the Year Graph, 2016



**Note: the 1-Hr NAAQS is calculated using a Design Value, therefore the 1-Hr NAAQS 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

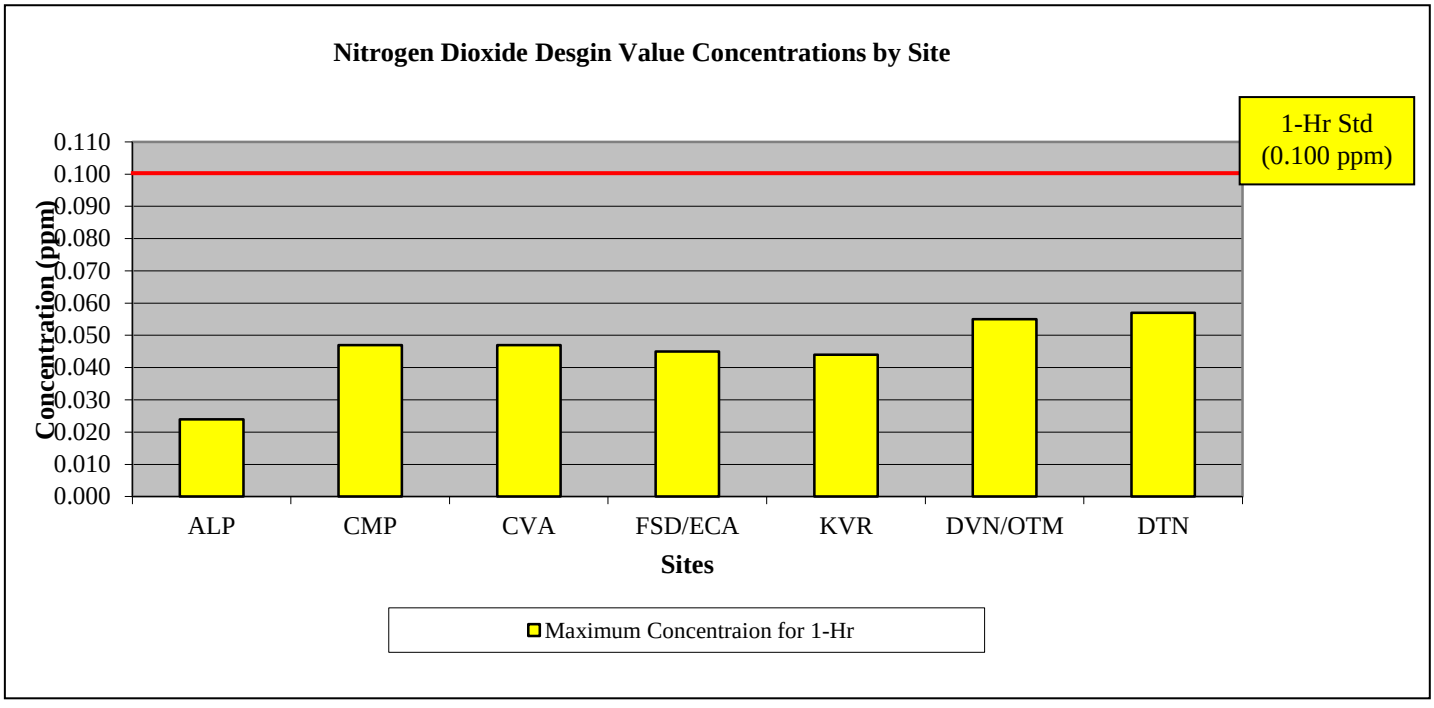
Table 4.16b lists the maximum nitrogen dioxide measurements and NOy-NO for each nitrogen dioxide monitoring location and NCore, respectively; figure 4.2b shows the values graphically with respect to the National Standard for the year.

Table 4.16b Nitrogen Dioxide Concentrations for San Diego-by for the Site Design Value, 2014-2016

No. (#)	Site (name)	Site Abbreviation	Design Value Maximum Concentration for 1-Hr (ppm)	Number of Days Above the National Standard (#)
1	Alpine	ALP	0.025	0
2	Camp Pendleton	CMP	0.047	0
3	Chula Vista	CVA	0.047	0
4	Floyd Smith Dr. & El Cajon	FSD & ECA	0.045	0
5	Kearny Villa Rd	KVR	0.044	0
6	Rancho Carmel Dr.*	RCD	*	0
7	Donovan & Otay Mesa	DVN & OTM	0.055	0
8	San Diego-Beardsley	DTN	0.057	0

*FSD & LES were combined to for this calculation and DVN & OTM were combined as well
**Not sampled for 3-yrs, so no Design Value could be calculated.

Figure 4.2b Nitrogen Dioxide Concentrations for San Diego-by Site for the Design Value Graph, 2014-2016



CHAPTER 5 CARBON MONOXIDE (CO)

Section 5.0.0 Carbon Monoxide Introduction

Carbon monoxide (CO) was sampled on continuous basis 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 El Cajon-NCore site. For NCore details, see section 10 – NCore for a complete list of all the requirements. Please note:

- The District was evicted from our Downtown site; consequently, this station was permanently shutdown (see the Executive Summary for more information).
- 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 5.0 Carbon Monoxide Network Map

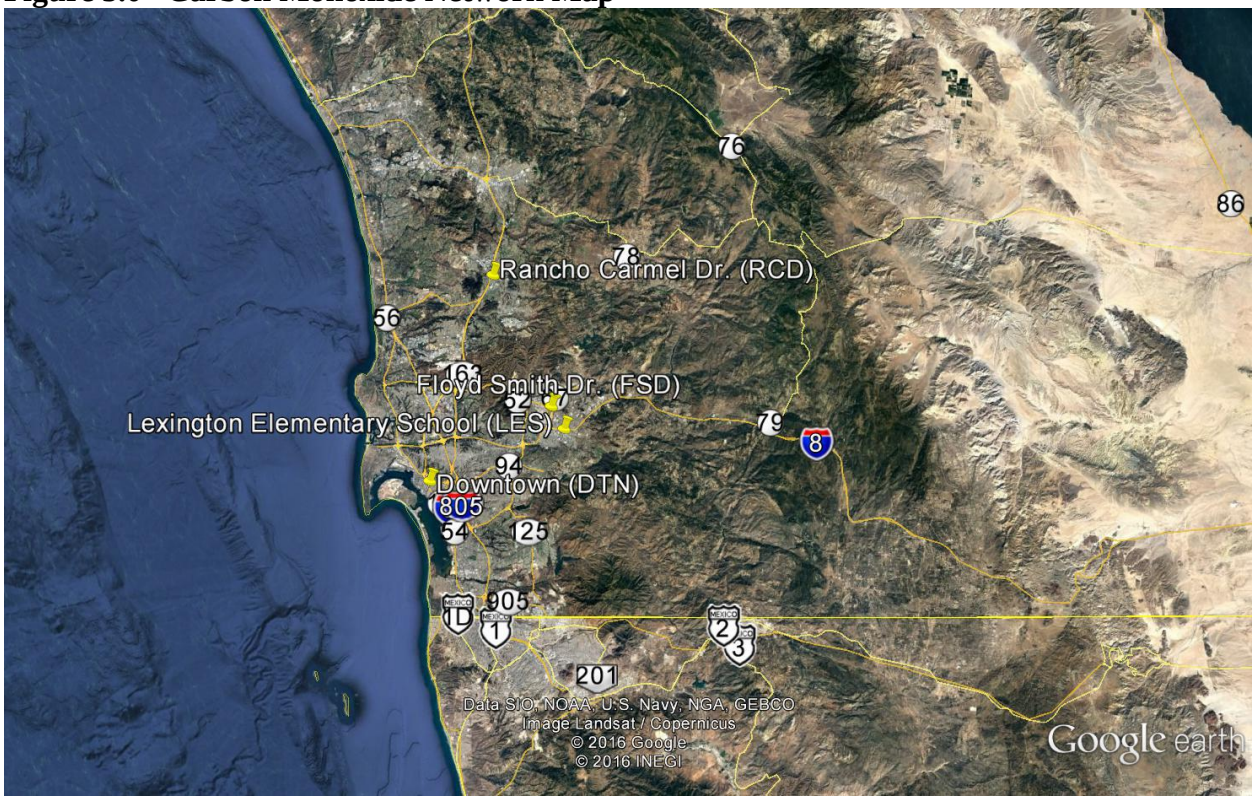


Table 5.0 Carbon Monoxide State and National Standards for the Year

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	FSD[1]	LES[1]	DTN	RCD
	Name	Floyd Smith Dr.	Lexington Elementary School	San Diego – Beardsley	Rancho Carmel Dr.
	AQS ID	06-073-1018	06-073-1022	06-073-1010	06-073-1017
CO	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS
CO	Method	IR	IR	IR	IR
CO	Affiliation	NCORE, PAMS	NCORE, PAMS	SIP	Not Applicable
CO	Spatial Scale	NS	NS	NS	MI
CO	Site Type	PE	PE	PE	SO
CO	Objective (Federal)	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS
CO	Equipment	Thermo 48i-TLE	Thermo 48i-TLE	Thermo 48i-TLE	Thermo 48i-TLE

[1] The El Cajon Station-Floyd Smith Drive station was relocated to back to its original location at Lexington Elementary School in late 2016

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. If a CBSA has more than one required near-road NO_2 monitor, only one CO monitor is required to be collocated with a near-road NO_2 monitor within that CBSA.

Table 5.2 Carbon Monoxide Minimum Monitoring Requirements-Near-road

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Are NO_2 Near-road Monitors Required (yes/no)	Are Collocated CO Monitors Required (yes/no)	Number of Collocated CO Monitors Required (#)	Number of Active CO Monitors Collocated (#)	Number of Needed CO Monitors (#)
San Diego	San Diego	3.3 million	Yes	Yes	1	1	None

Section 5.1.2 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 5.3 lists the NCore CO 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, 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 5.3 Carbon Monoxide Minimum Monitoring Requirements-NCore

Minimum Number of CO Monitors Required for NCore Sites (#)	Total Number of CO Monitors Active at NCore Sites (#)	Total Number of CO Monitors Needed at NCore Sites (#)	NCore Sites/Locations (name)	NCore Sites/Locations AQS ID (#)
1	1	None	Floyd Smith Dr. (FSD)	06-073-1018

[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 4.2.1 "Carbon Monoxide (CO) Design Criteria", subpart (a), "General Requirements".

[B] (2015) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore sites", subpart (b)

Section 5.1.3 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 NOx monitors. Table 4.6 lists the PAMS Carbon Monoxide (CO) Monitoring requirements for the SDAB.

> *5.Network Design for Photochemical Assessment Monitoring Stations (PAMS)*[C]
> *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. 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***
CO	*One site per area at a Type 2 site*	*Hourly during the ozone monitoring season*

Table 5.4 Carbon Monoxide Minimum Monitoring Requirements-PAMS

PAMS Type 2 Sites/Locations (name)	PAMS Type 2 Sites/Locations AQS ID (#)	Minimum Number of CO Monitors Required at PAMS Type 2 Sites (#)	Total Number of CO Monitors Active at PAMS Type 2 Sites (#)	Total Number of CO Monitors Needed At one PAMS Type 2 Site (#)
Floyd Smith Dr. (FSD)	06-073-1018	1	1	None

C (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"

Section 5.1.4 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 5.5 Summaries these requirements.

Table 5.5 Carbon Monoxide Minimum Monitoring Requirements-State (SIP)

Minimum Number of CO Monitors Required for the SIP (#)	Total Number of CO Monitors Active for the SIP (#)	Total Number of CO Monitors Needed for the SIP (#)	SIP Sites/Locations (name)	SIP Sites/Locations AQS ID (#)
1	1	None	Floyd Smith Dr. (FSD)	06-073-1018

Section 5.1.4 Carbon Monoxide Minimum Monitoring Requirements-Summary

Table 5.6 summarizes all the CO minimum monitoring requirements from Sections 5.2.1-5.2.4.

Table 5.6 Carbon Monoxide Minimum Monitoring Requirements-Summary

CFR Programs Requirements for CO Monitors (name)	Minimum Number of CO Monitors Required (#)	Number of Active CO Monitors (#)	Number of Needed CO Monitors (#)
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 meets or exceeds all minimum monitoring requirements and sampling frequencies, as to be able to be compared to the NAAQS. Table 5.7 summarizes these requirements.

Table 5.7 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.

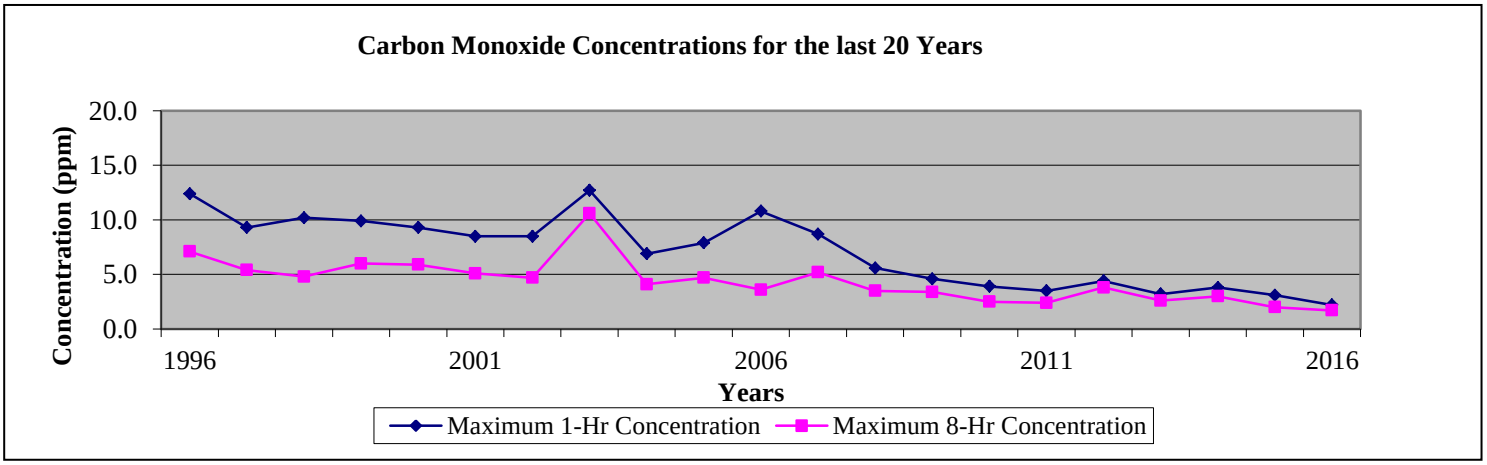
Section 5.3.1 Carbon Monoxide Concentrations for San Diego-for the Last 20 years

San Diego has realized a significant decrease over the years (Table 5.8) 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 5.8 reflect the carbon monoxide standards for that year.

Table 5.8 Carbon Monoxide Concentrations for San Diego-for the Last 20 Years, 1996-2016

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Maximum 1-Hr Concentration (ppm)	12.4	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
Maximum 8-Hr Concentration (ppm)	7.1	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
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 5.2 Carbon Monoxide Concentrations for San Diego-for the Last 20 Years Graph, 1996-2016



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

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

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

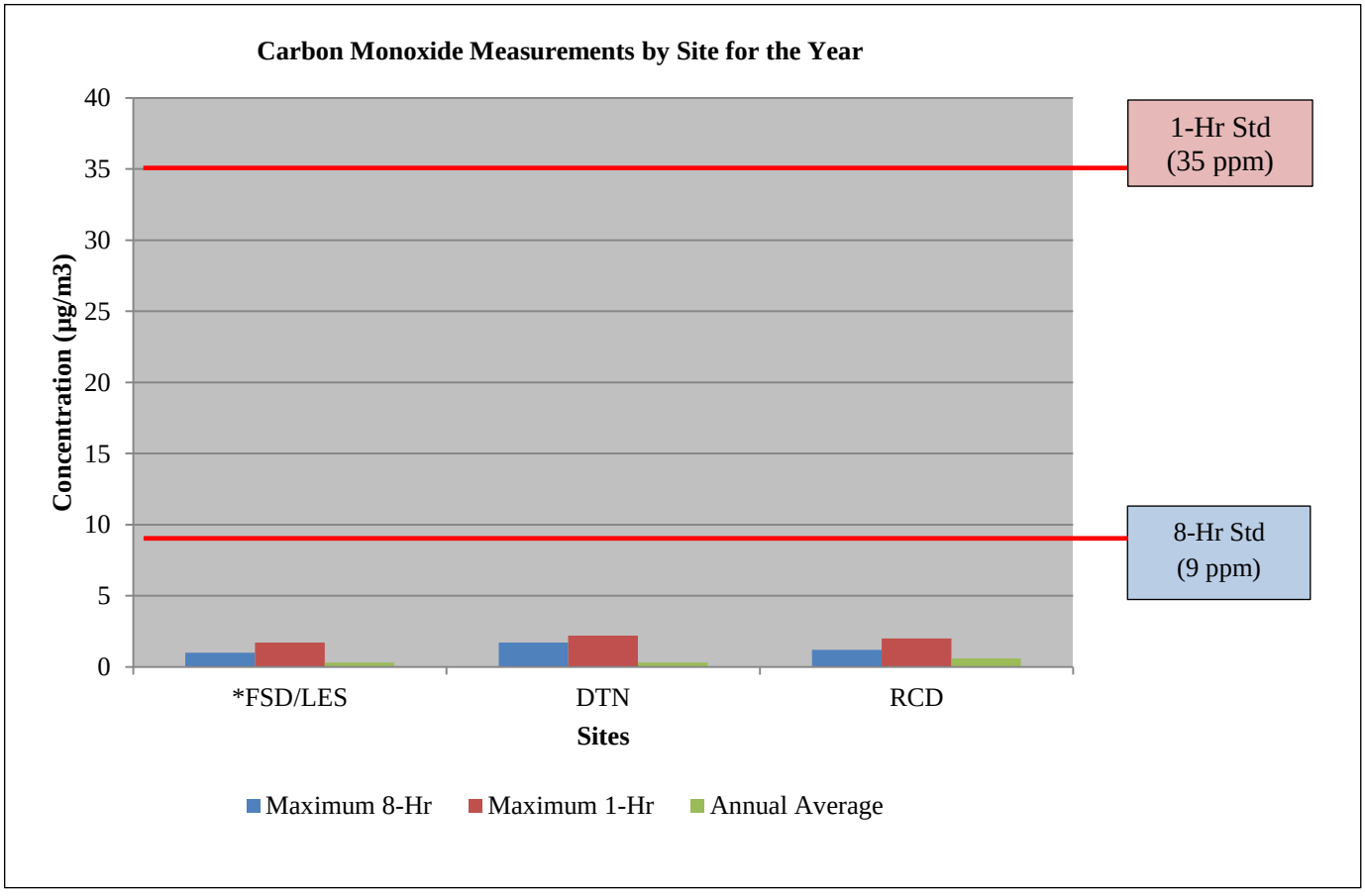
Table 5.4 lists the maximum carbon monoxide measurements for each carbon monoxide monitoring location and NCore; Figure 5.9 shows the values graphically with respect to the National Standard.

Table 5.9 Carbon Monoxide Concentrations for San Diego-by Site for the Year, 2016

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	*Floyd Smith Dr. & Lexington Elementary	FSD & LES	1.0	1.7	0	0.3
2	San Diego-Beardsley	DTN	1.7	2.2	0	0.3
3	Rancho Carmel Dr.	RCD	1.2	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, 2016



*FSD & LES were combined for this calculation

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 Floyd Smith Drive-NCore site. Tables 6.1 & 6.2 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

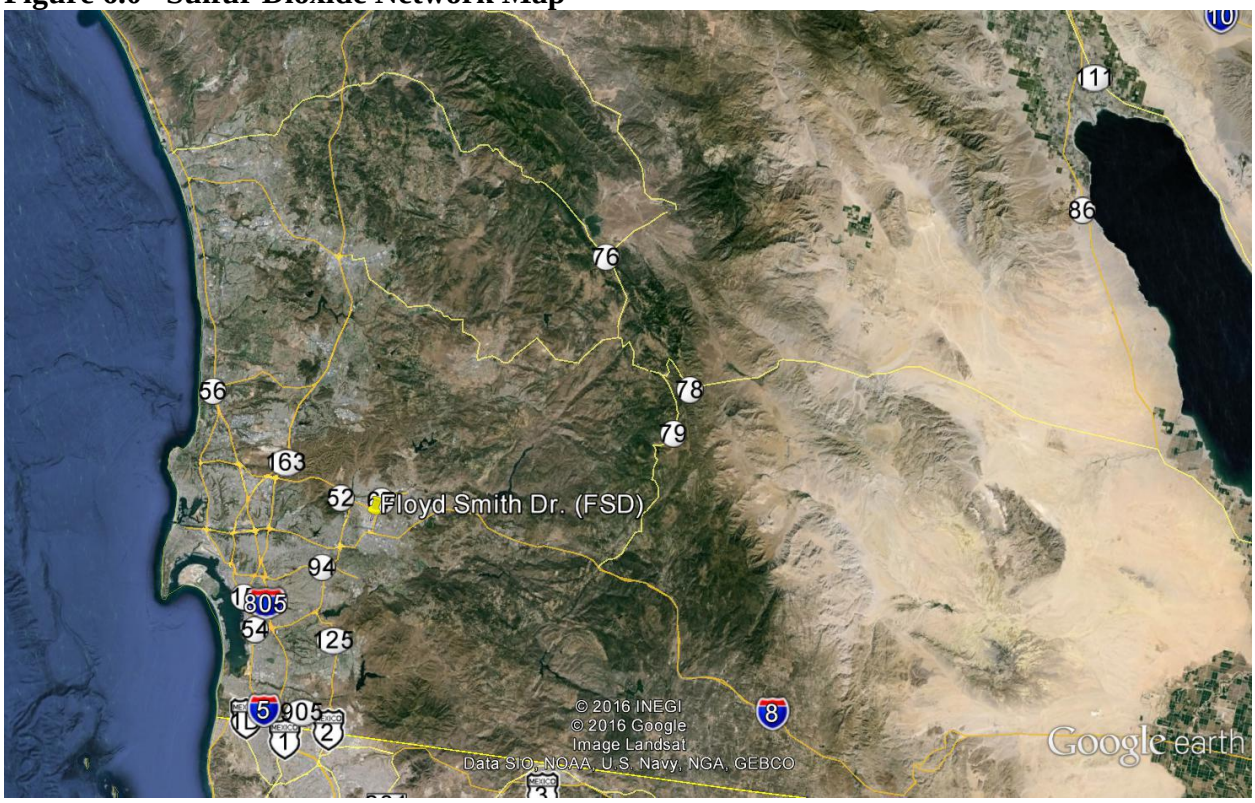


Table 6.0 Sulfur Dioxide State and National Standards for the Year

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	FSD[1]	LES[1]
	Name	Floyd Smith Dr.	Lexington Elementary School
	AQS ID	06-073-1018	06-073-1022
SO_2	Monitor Type	SLAMS	SLAMS
	Method	FL	FL
	Affiliation	NCore	NCore
	Spatial Scale	NS	NS
	Site Type	PE	PE
	Objective (Federal)	PI, NAAQS	PI, NAAQS
	Equipment	Thermo 43i-TLE	Thermo 43i-TLE

[1] The El Cajon Station-Floyd Smith Drive station was relocated to back to its original location at Lexington Elementary School in late 2016

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 SO2 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	3.3 million	1,266.27	0.00126627	4,179

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 (#)
4,179	Yes	0	0	None

[A] (2015) 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 6.2.1-6.2.2.

Table 6.4 Sulfur Dioxide Minimum Monitoring Requirements-Summary

CFR Programs Requirements for SO_2 Monitors (name)	Minimum 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] (2015) 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] (2015) 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 meets or exceeds 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.

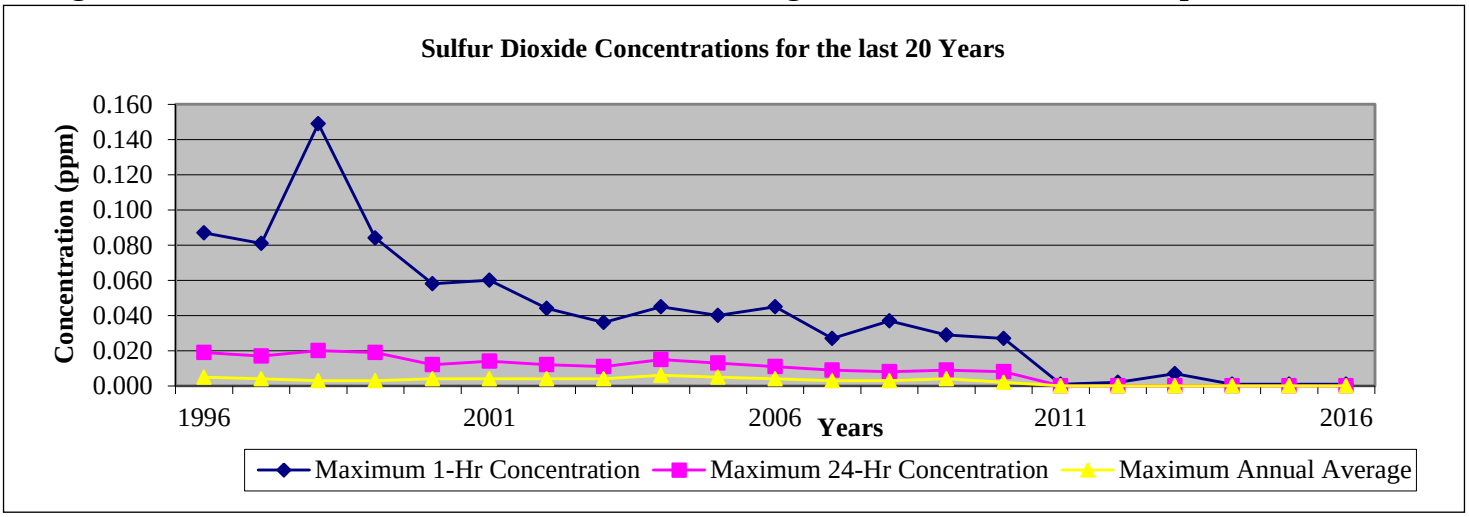
Section 6.3.1 Sulfur Dioxide Concentrations for San Diego-for the Last 20 Years

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 1996-2016

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Maximum 1-Hr Concentration (ppm)	0.087	.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
Maximum 24-Hrs Concentration (ppm)	0.019	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
Maximum Annual Average (ppm)	0.005	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
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, 1996-2016



[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

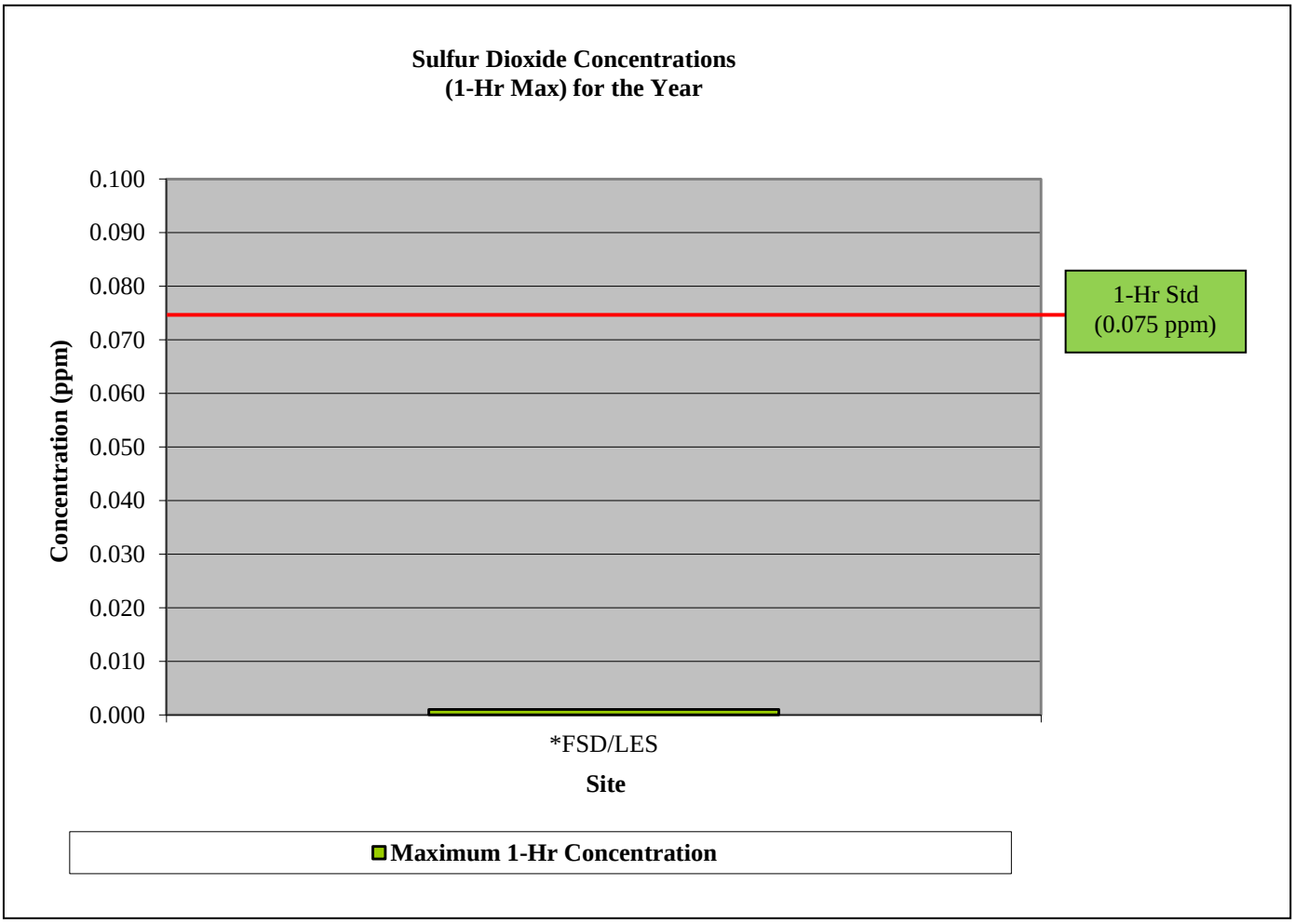
Table 6.4a lists the maximum sulfur dioxide measurements for the NCore monitoring location and Figure 6.7 shows the values graphically with respect to the National Standard.

Table 6.7 Sulfur Dioxide Concentrations for San Diego-by Site for the Design Value, 2014-2016

Site (site)	Site Abbreviation	Design Value Maximum Concentration 1-Hr (ppm)	Number of Days Above the National Standard (#)
*Floyd Smith Dr. & Lexington Elementary	FSD & LES	0.001	0

*FSD & LES were combined to for this calculation

Figure 6.2 Sulfur Dioxide Concentrations for San Diego-by Site for the Design Value Graph, 2014-2016



*FSD & LES were combined to for this calculation

CHAPTER 7 LEAD (PB)

Section 7.1.0 Lead Introduction

Lead (Pb) was sampled for at two locations in the SDAB (Figure 7.0 and Tables 7.1 & 7.2) and referenced to the lead standards of the year (Table 7.0). Ambient level lead was sampled at the El Cajon location as part of the NCore program. Source level lead was sampled at McClellan-Palomar airport. Please note:

- While, 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), the Pb-TSP remained at FSD.

Figure 7.0 Lead Map Network Map

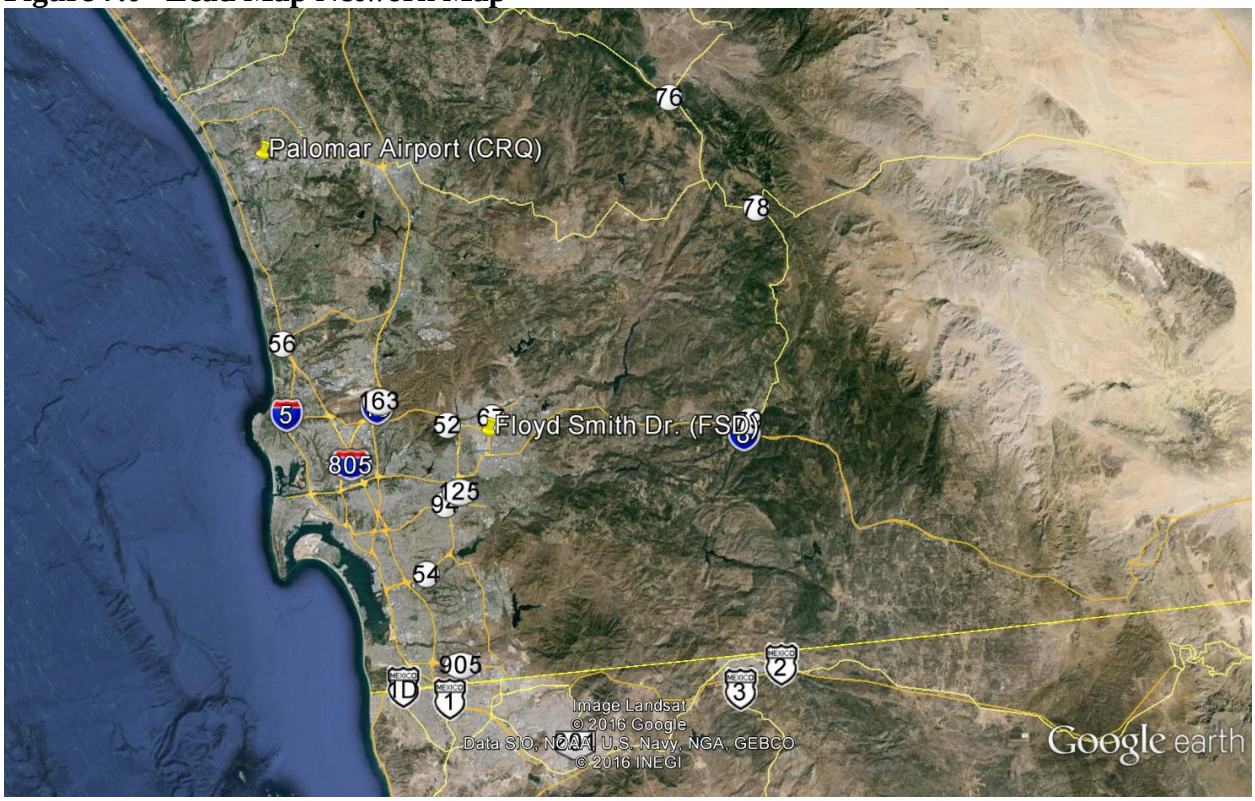


Table 7.0 Lead State and National Standards for the Year

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	FSD	CRQ	
	Name	Floyd Smith Dr.	Palomar Airport	
	AQS ID	06-073-1018	06-073-1023	
Lead	Monitor Type	SLAMS	SLAMS	SLAMS
	Designation	O	O	QAC
	Method	HV	HV	HV
	Affiliation	NCORE	Not Applicable	Not Applicable
	Spatial Scale	NS	MI	MI
	Site Type	PE	SO	QA
	Objective (Federal)	NAAQS	NAAQS	NAAQS
	Analysis	APCD	APCD	APCD
	Frequency	1:6	1:6	1:6
	Equipment	Tisch TE-5170BLVFC+	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)

The procedure to determine the minimum number of source (non-Airport) 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 2014 EPA NEI database. Table 7.2 lists these requirements.

> 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, … 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 …based on either the most recent National Emission Inventory…*

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

MSA (name)	County (name)	Any Non-Airport Pb Sources >0.5 TPY? (yes/no)	Largest Non-Airport Pb Source from 2014 NEI	Largest Non-Airport Pb Source Emissions (TPY)	Number of Non-Airport Sources Pb Monitors Required (#)	Number of Active Ambient Pb Monitors (#)	Number of Needed Ambient Pb Monitors (#)
San Diego	San Diego	No	Camp Pendleton	0.33	None	None	None

Section 7.1.2 Lead Minimum Monitoring Requirements-Airport (non-Source)

The procedure to determine the minimum number of Airport monitors required is based on any Airport source emitting more than or equal to 1.0 tons/year of Pb emissions. The airport(s) and their Pb emissions are from the 2014 EPA NEI database. Table 7.3 lists these requirements. If an airport emits less than 1.0 TPY of Pb emissions, sampling is not required, as part of this regulation .

> 4.5 *Lead (Pb) Design Criteria.*[A]
> *(a) State and, where appropriate, local agencies are required to conduct ambient air Pb monitoring … airport which emits 1.0 or more tons per year based on either the most recent National Emission Inventory or other scientifically justifiable methods and data (such as improved emissions factors or site-specific data) taking into account logistics and the potential for population*

Table 7.3 Lead Minimum Monitoring Requirements-Airport (non-Source)

MSA (name)	County (name)	Any Airport Pb Sources =>1.0 TPY? (yes/no)	Largest Airport Pb Source from 2014 NEI (TPY)	Largest Airport Pb Source Emissions (TPY)	Number of Non-Airport Sources Pb Monitors Required (#)	Number of Active Ambient Pb Monitors (#)	Number of Needed Ambient Pb Monitors (#)
San Diego	San Diego	No	Montgomery Field	0.59	None	None	None

[A] 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 7.1.2.1 Lead Minimum Monitoring Requirements-Airport (Special Study) Results

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 mandated to undergo temporary Pb sampling as part of a Pb-Airport study, 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. … Any monitor that exceeds 50 percent of the Pb NAAQS on a rolling 3-month average… shall become a required monitor under paragraph 4.5(c) of this Appendix, and shall continue to monitor for Pb unless a waiver is granted allowing it to stop operating as allowed by the provisions in paragraph 4.5(a)(ii) of this appendix.*

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 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 the EPA to discontinue all lead sampling at the airport.

McClellan-Palomar

The Airport study at 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 meet 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 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-NCore

The District is required to operate a Pb sampler as part of the NCore multipollutant monitoring program. This program was designed to measure pollutants at lower levels. Table 7.5 lists the NCore lead requirements.

> *3. Design Criteria for NCore Sites*[C]
> *(b) The NCore sites must measure, at a minimum... 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.*

Table 7.5 Lead Minimum Monitoring Requirements-NCore

Minimum Number of Pb samplers Required for NCore Sites (#)	Total Number of Pb Samplers Active at NCore Sites (#)	Total Number of Pb Samplers Needed at NCore Sites (#)	NCore Sites/Locations (name)	NCore Sites/Locations AQS ID (#)
1	1	None	Floyd Smith Dr. (FSD)	06-073-1018

Section 7.1.4 Lead Minimum Monitoring Requirements-Collocation

Table 7.6 summarizes the collocation requirements.

> *3. Measurement Quality Check Requirements*[D]
> *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.*
>
> *3.3.1.1 In determining the number of collocated sites required for PM_{10}, monitoring networks for lead (Pb) should be treated independently from networks for particulate matter (PM), even though the separate networks may share one or more common samplers. However, a single pair of samplers collocated at a common-sampler monitoring site that meets the requirements for both a collocated Pb site and a collocated PM site may serve as a collocated site for both networks.*

Table 7.6 Lead Minimum Monitoring Requirements-Collocation

Minimum Number of Samplers Required (#)	Number of Active Samplers (#)	Number of Samplers Needed for Collocation (#)	Number of Active Samplers Used for Collocation (#)	Number of Samplers Needed for Collocation (#)	Location of Collocated Site(s) (name)	Collocated Site AQS ID (#)
1	1	1 x (15%) = 1	1	None	Palomar (CRQ)	06-073-1023

[C] (2015) 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 A, Section 3, Measurement Quality Requirements, subpart 3.3.1.1

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 Samplers (name)	Minimum Number of Pb Samplers Required (#)	Number of Active Pb Samplers (#)	Number of Needed Pb Samplers (#)
Source (non-Airport)=	0	0	None
Source Airport=	0	0	None
Airport Study=	0	0*	None
Airport Study Exceedance=	1**	1	None
NCore=	1	1	None
Collocation	1	1	None

*Gillespie Field passed the minimum tolerance established by the EPA, so no further testing is required.

**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 meets or exceeds all minimum monitoring requirements and sampling frequencies, as to be able to be compared to the NAAQS. Tables 7.8 & 7.9 summarizes 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.*

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

What is the Minimum EPA Permitted Sampling Frequency? (#)	What is the Actual Sampling Frequency? (#)
1:6	1:6

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

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.

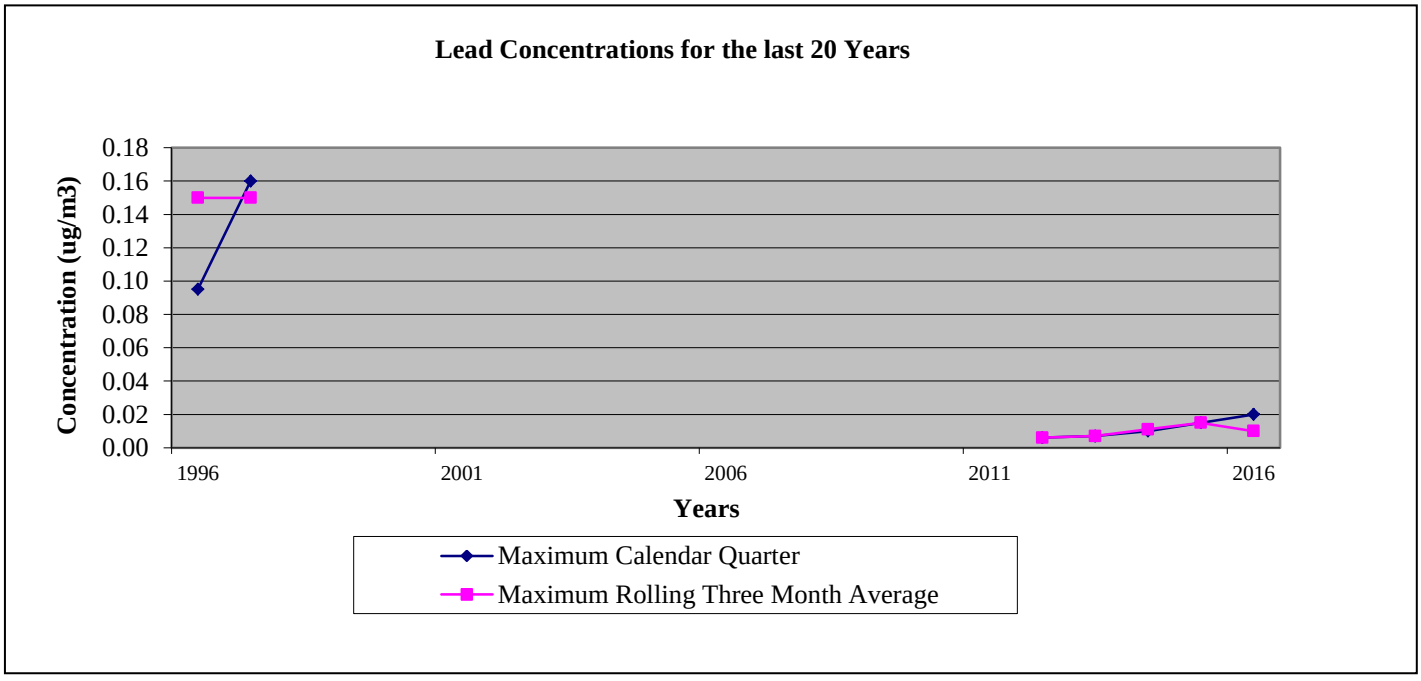
Section 7.3.1 Lead Concentrations for San Diego-for the Last 20 Years

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, 1996-2016

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Maximum Calendar Quarter ($\mu g/m^3$)	0.095	0.160	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.006	0.007	0.010	0.015	0.020
Maximum Rolling 3-Month Average ($\mu g/m^3$)	0.150	0.150	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.006	0.007	0.011	0.015	0.010
Days above the National Standard	0	0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0	0	0	0	0

Figure 7.1 Lead Concentrations for San Diego-for the Last 20 Years, 1996-2016



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

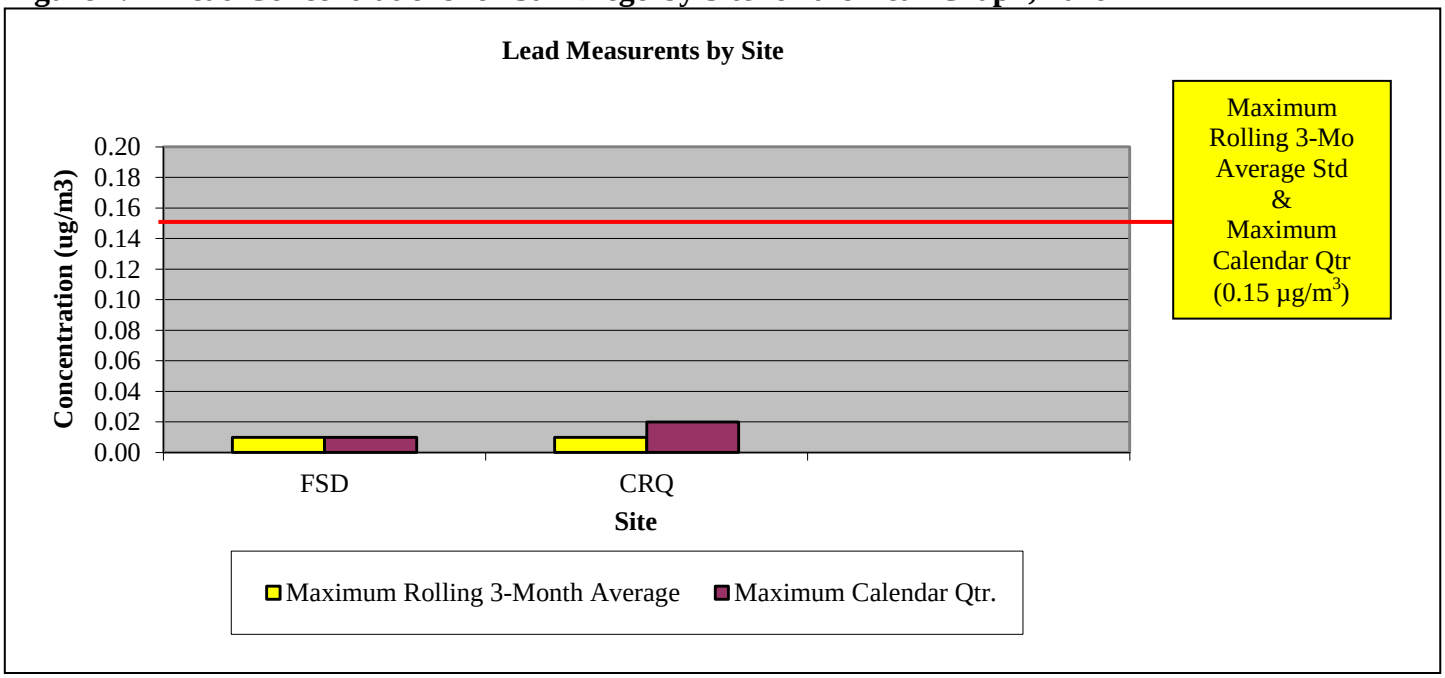
Table 7.11 lists the maximum lead measurements for each lead monitoring location; Figure 7.2 shows the values graphically with respect to the National Standard.

Table 7.11 Lead Concentrations for San Diego-by Site for the Year, 2016

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 (#)
1	Floyd Smith Dr. (NCore)	FSD (NCore)	0.01	0.01	0
2	*Palomar Airport	CRQ	0.01	0.02	0

*Source impact and microscale monitors.

Figure 7.2 Lead Concentrations for San Diego-by Site for the Year Graph, 2016



The measured concentrations at the NCore location have been consistently well below the NAAQS; therefore, the EPA has granted permission to the District to discontinue sampling (see Executive Summary for more information)

The measured concentrations at the Palomar Airport location have been consistently well below the NAAQS. If this pattern continues for three (3) contiguous years of operations, the District will petition the EPA to decommission Pb-TSP sampling at this location.

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 Tables 8.1 and 8.2. Please note:

- The District was evicted from our Downtown site; consequently, this station was permanently shutdown (see the Executive Summary for more information).
- The El Cajon Station-Floyd Smith Drive station was relocated back to its original location at Lexington Elementary School in late 2016 (see the Executive Summary for more information).
    - $PM_{2.5}$ FRM/sequential samplers are at KVR, DTN, and CVA.
    - $PM_{2.5}$ non-FEM/continuous samplers are at SAY, CMP, FSD, ALP, DVN and DTN.
    - $PM_{2.5}$-CSN samplers are at FSD.
    - $PM_{2.5}$-STN samplers are at FSD

Figure 8.0 $PM_{2.5}$ Network Map

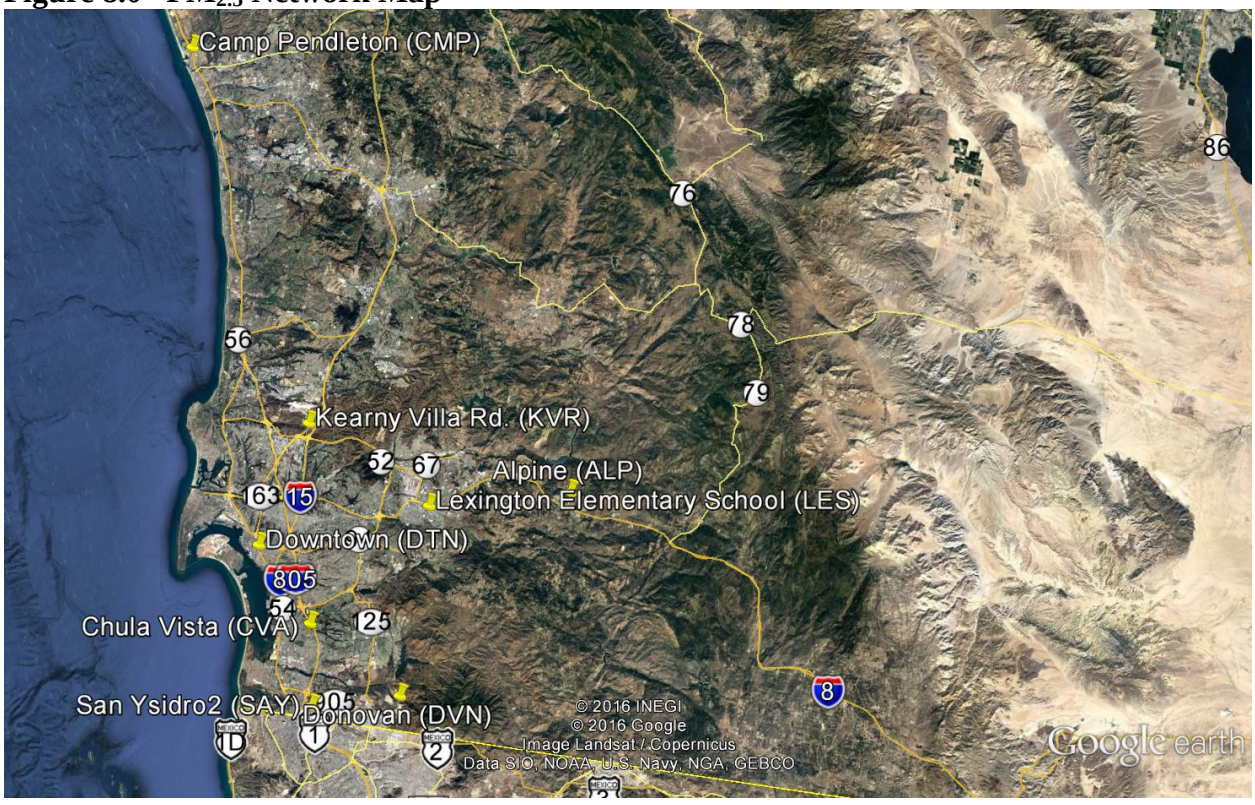


Table 8.0 $PM_{2.5}$ State and National Standards for the Year

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	FSD[1]		LES[1]		KVR		DTN		DVN	SAY
	Name	Alpine	Camp Pendleton	Chula Vista	Floyd Smith Dr.		Lexington Elementary School		Kearny Villa Rd		San Diego – Beardsley		Donovan	San Ysidro (2nd location)
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1018		06-073-1022		06-073-1016		06-073-1010		06-073-1014	06-073-1024
$PM_{2.5}$ (non-speciated)	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS		SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SPM
	Designation	O	O	PRI	PRI		PRI	O	PRI	QAC	O	PRI	O	O
	Method	CT (non-FEM)	CT (non-FEM)	SQ (FRM)	SQ (FRM)		SQ (FRM)	CT (non-FEM)	SQ (FRM)	SQ (FRM)	CT (non-FEM)	SQ (FRM)	CT (non-FEM)	CT (non-FEM)
	Affiliation	N/A	N/A	N/A	NCORE		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	NS	NS	NS	MI
	Site Type	PE	UPBD	PE	HC		PE	UPBD	PE	QA	HC	HC	PE	SO
	Objective (Federal)	PI, Research	PI, Research	NAAQS	NAAQS		NAAQS	PI, Research	NAAQS	NAAQS	PI, Research	NAAQS	PI, Research	PI, Research
	Analysis	APCD	APCD	APCD	APCD		APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD
	Frequency	7/24	7/24	1:3	1:3		1:3	7/24	1:3	1:12	7/24	1:1	7/24	7/24
	Equipment	Met One BAM	Met One BAM	Thermo 2025	Thermo 2025		Thermo 2025	Met One BAM	Thermo 2025	Thermo 2025	Met One BAM	Thermo 2025	Met One BAM	Met One BAM
$PM_{2.5}$ (speciated)	Monitor Type				SLAMS	SLAMS	SLAMS	SLAMS						
	Method				SP & SQ	SP & SQ	SP & SQ	SP & SQ						
	Affiliation				NCORE, CSN STN	NCORE, CSN STN	NCORE, CSN STN	NCORE, CSN STN						
	Spatial Scale				NS	NS	NS	NS						
	Site Type				PE	PE	PE	PE						
	Objective (Federal)				Research	Research	Research	Research						
	Analysis				EPA	EPA	EPA	EPA						
	Frequency				1:3	1:3	1:3	1:3						
	Equipment				URG-3000N	Met One SASS	URG-3000N	Met One SASS						

[1] The El Cajon Station-Floyd Smith Drive station was relocated to back to its original location at Lexington Elementary School in late 2016

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).
- NCore- the District could not operate a $PM_{2.5}$ continuous sampler, due to safety concerns.
- 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 8.1.1.1 $PM_{2.5}$ 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 alternate between Escondido, Floyd Smith Dr. (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 (#)	Minimum Number of $PM_{2.5}$ Manual Samplers Required (#)	Number of Active $PM_{2.5}$ Manual Samplers (#)	Number of $PM_{2.5}$ Manual Samplers Needed (#)
San Diego	San Diego	3.3 million	3	4	None

[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 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), 2014-2016

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	Downtown*	06-073-1010	NO	yes	yes
8.4	Floyd Smith Dr*	06-073-1018	NO	yes	yes
8.8	Chula Vista	06-073-0001	NO	yes	yes

Table 8.2c $PM_{2.5}$ Manual Minimum Monitoring Requirements-Design Criteria (24-Hr), 2014-2016

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	Downtown*	06-073-1010	NO	yes	yes
17	Floyd Smith Dr*	06-073-1018	NO	yes	yes
19	Chula Vista	06-073-0001	NO	yes	yes

*****Not operational for a full year

Section 8.1.1.2 $PM_{2.5}$ Manual Minimum Monitoring Requirements-State Implementation Plan (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 Implementation Plan (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	3.3 million	5	4*	1*

* The Escondido station (and $PM_{2.5}$ sampler) is temporarily closed, due to remodeling.

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

Section 8.1.1.3 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Collocation

In 1998, the District and the ARB gave criteria for choosing a site for collocation. Collocation guidance is from the CFR. Table 8.4 summarizes these requirements.

3. Measurement Quality Check Requirements[C]
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 8.4 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Collocation

Minimum Number of Samplers Required (#)	Number of Active Samplers (#)	Number of Samplers Needed for Collocation (#)	Number of Active Samplers Used 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 8.1.2 $PM_{2.5}$ 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, Floyd Smith Dr. (El Cajon), and Downtown monitoring locations. Tables 8.5 summarize these requirements.

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

Table 8.5 $PM_{2.5}$ 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 (#)
Downtown	06-073-1010		Downtown	06-073-1010

C (2015) 40 CFR Part 58, Appendix A, Section 3.2.3.1, Quality System Requirements, PM2.5, 3.2.3.1

D (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 4.7 "Fine Particulate Matter ($PM_{2.5}$) Design Criteria", subsection 4.7.1 General Requirements, (b) "Specific Design Criteria for PM2.5, (1)

Section 8.1.3 $PM_{2.5}$ 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 8.6 lists these requirements.

4.7 Fine Particulate Matter ($PM_{2.5}$) Design Criteria. [E]
4.7.1 General Requirements.
(b) Specific Design Criteria for $PM_{2.5}$.
(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 8.6 $PM_{2.5}$ 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	3.3 million	Yes	Yes	1	0	1

Section 8.1.4 $PM_{2.5}$ 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. For both the 24-Hr and annual average NAAQS, these locations routinely alternate between Escondido, Floyd Smith Dr. (El Cajon), and Downtown. Table 8.7 summarizes these requirements.

4.7 Fine Particulate Matter ($PM_{2.5}$) Design Criteria. [F]
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 8.7 $PM_{2.5}$ Manual Minimum Monitoring Requirements-Site of Poor Air Quality

Site of Poor Air Quality (name)	Site of Poor Air Quality AQS ID (#)
Floyd Smith Dr./ Lexington	06-073-1018/ 06-073-1022

[E] (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 4.7 "Fine Particulate Matter ($PM_{2.5}$) Design Criteria", subsection (b)(2)
[F] (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 4.7 "Fine Particulate Matter ($PM_{2.5}$) Design Criteria", subsection (b)(3)

Section 8.1.5 $PM_{2.5}$ 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} ($PM_{7-2.5}$) 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 8.8 lists the NCore PM_{10} 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.*
>
> *4.8 Coarse Particulate Matter ($PM_{10-2.5}$) Design Criteria.*[H]
> *4.8.1 General Monitoring Requirements.*
> *(a) The only required monitors for $PM_{10-2.5}$ are those required at NCore Stations.*

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

Minimum Number of $PM_{2.5}$ Samplers Required for NCore Sites (#)	Total Number of $PM_{2.5}$ Samplers Active at NCore Sites (#)	Total 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	Floyd Smith Dr. (FSD)	06-073-1018

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

Table 8.9 summarizes all the $PM_{2.5}$ manual minimum monitoring requirements from Sections 8.1.1-8.1.5.

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

CFR Programs Requirements for $PM_{2.5}$ Manual Samplers (name)	Minimum Number of $PM_{2.5}$ Manual Samplers Required (#)	Number of Active $PM_{2.5}$ Manual Samplers (#)	Number of Needed $PM_{2.5}$ Manual Samplers (#)
CFR EPA Table D-2 only=	3	5	None
California Particulate Matter Network=	5	5	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

G (2015) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore sites", subpart (b)
H (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 4.8 "Coarse Particulate Matter ($PM_{2.5}$) Design Criteria", subsection 4.8.1(a)

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 except for the following:

- At the NCore location (highlighted in red)

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. Tables 8.10a-b summarize 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, unless at least one of the required FRM/FEM/ARM monitors is itself a continuous FEM or ARM monitor in which case no collocation requirement applies. State and local air monitoring agencies must use methodologies and quality assurance/quality control (QA/QC) procedures approved by the EPA Regional Administrator for these required continuous analyzers.*

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

Minimum Number of $PM_{2.5}$ Manual Samplers Required (#)	Minimum Number of $PM_{2.5}$ Continuous Samplers= (½ Minimum Number of) Required $PM_{2.5}$ Manual Samplers Rounded Up (#)	Number of Active $PM_{2.5}$ Continuous Samplers (#)	Number of Needed $PM_{2.5}$ Continuous Samplers (#)
3	3 x (½) = 2	5	None

Table 8.10b $PM_{2.5}$ Continuous Minimum Monitoring Requirements-Collocation with $PM_{2.5}$ Manual Method Samplers

Minimum Number of $PM_{2.5}$ Continuous Samplers (Sites) Required to be Collocated with $PM_{2.5}$ Manual Samplers (Sites) (#)	Number of Active Sites $PM_{2.5}$ Continuous Samplers (Sites) Collocated with Active $PM_{2.5}$ Manual Samplers (Sites) (#)	Number of Needed $PM_{2.5}$ Continuous Sampler (Sites) Collocated with Active $PM_{2.5}$ Manual Samplers (Sites) (#)	Location(s) of $PM_{2.5}$ Continuous Samplers (Sites) Collocated with Active $PM_{2.5}$ Manual Samplers (Sites) (name)	AQS ID of $PM_{2.5}$ Continuous Samplers (Sites) Collocated with Active $PM_{2.5}$ Manual Samplers (Sites) (#)
1	1	None	SD-Beardsley	06-073-1010

[I] 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 8.2.2 $PM_{2.5}$ 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 8.11 lists the NCore $PM_{2.5}$ continuous requirements.

> *3. Design Criteria for NCore Sites*[J]
> *(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 8.11 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-NCore

Minimum Number of $PM_{2.5}$ Continuous Samplers Required for NCore Sites (#)	Total Number of $PM_{2.5}$ Continuous Samplers Active at NCore Sites (#)	Total Number of $PM_{2.5}$ Continuous Samplers Needed at NCore Sites (#)	NCore Sites/Locations (name)	NCore Sites/Locations AQS ID (#)
1	0	*1	Floyd Smith Dr. (FSD)	06-073-1018

*The FSD NCore location is temporary. The District could not install and operate a $PM_{2.5}$ continuous sampler safely, so this requirement is not met. When the District relocated back to the original location in late 2016, this requirement was met.

Section 8.2.3 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-Summary

Table 8.12 summarizes all the $PM_{2.5}$ continuous minimum monitoring requirements from Sections 8.2.1 - 8.2.3.

Table 8.12 $PM_{2.5}$ Continuous Minimum Monitoring Requirements-Summary

CFR Programs Requirements for $PM_{2.5}$ Continuous Samplers (name)	Minimum Number of $PM_{2.5}$ Continuous Samplers Required (#)	Number of Active $PM_{2.5}$ Continuous Samplers (#)	Number of Needed $PM_{2.5}$ Continuous Samplers (#)
Ambient=	2	5	None
$PM_{2.5}$ continuous collocated with $PM_{2.5}$ manual=	1	1	None
NCore=	1	0	1*

*The FSD NCore location is temporary. The District could not install and operate a $PM_{2.5}$ continuous sampler safely, so this requirement is not met. Once the NCore station relocates back to the original location, $PM_{2.5}$ continuous sampling will resume

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

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 8.13 lists these requirements.

> *4.7 Fine Particulate Matter ($PM_{2.5}$) Design Criteria.*[K]
> *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 8.13 $PM_{2.5}$ 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)
Floyd Smith Dr. Escondido	Floyd Smith Dr. Escondido	06-073-1018 06-073-1002	Yes No	None 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 8.14 lists these requirements.

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

Table 8.14 $PM_{2.5}$ 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	El Cajon	06-073-1018	Yes	None

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

Table 8.15 summarizes all the $PM_{2.5}$ speciation minimum monitoring requirements.

Table 8.15 $PM_{2.5}$ Speciation Minimum Monitoring Requirements-Summary

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

[K] 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.

[L] 40 CFR Part 58, Appendix 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[M] and the sampling frequency must be in accordance with Federal Regulations[N]. 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 8.16a summarizes these requirements.

Table 8.16a $PM_{2.5}$ 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	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 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 8.16b 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 8.16b $PM_{2.5}$ 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	µg/m^3 LC	105	1-Hr	1	Met One BAM 1020 w/VSCC	Beta Attenuation	733	7/24	Not Applicable

Section 8.4.2 $PM_{2.5}$ 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. Tables 8.16c summarizes the equipment requirements.

Table 8.16c $PM_{2.5}$ 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

[M] 40 CFR Part 58, Appendix E, "Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring" and Table E-4.
[N] 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 8.17-8.21 summarize these requirements.

> *58.12 Operating schedules*[O]
> *(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 8.17 $PM_{2.5}$ 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
Floyd Smith Dr.	06-073-1018	1:3	1:3

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

Table 8.18 $PM_{2.5}$ 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? (#)
Downtown Escondido	06-073-1010 06-073-1002	No No	No No	Yes Yes	1:3 1:3	1:1 1:3

Table 8.19a $PM_{2.5}$ Manual Operating Schedule-for 24-Hr Design Value Samplers, 2014-2016

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)
19.6	*San Diego-Beardsley	No	No	Yes

*The peak 24-Hr Design Value location routinely alternates between three $PM_{2.5}$ Manual sites, Escondido, Floyd Smith Dr. (El Cajon), and Downtown. Downtown is in an Environmental Justice location, so both the District and the EPA Regional 9 Authorities designated this site as the $PM_{2.5}$ Manual daily (1:1) location, rather than change the location almost yearly.

Table 8.19b $PM_{2.5}$ Manual Operating Schedule-ACTUAL for 24-Hr Design Value Samplers, 2014-2016

Downtown Site 24-Hr Design Value (µg/m^3)	Is the Downtown 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)
19.6	Yes	Downtown	19.6

Table 8.20 $PM_{2.5}$ 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? (#)
Floyd Smith Dr.	06-073-1018	1:3	1:3

Table 8.21 $PM_{2.5}$ 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? (#)
Floyd Smith Dr.	06-073-1018	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

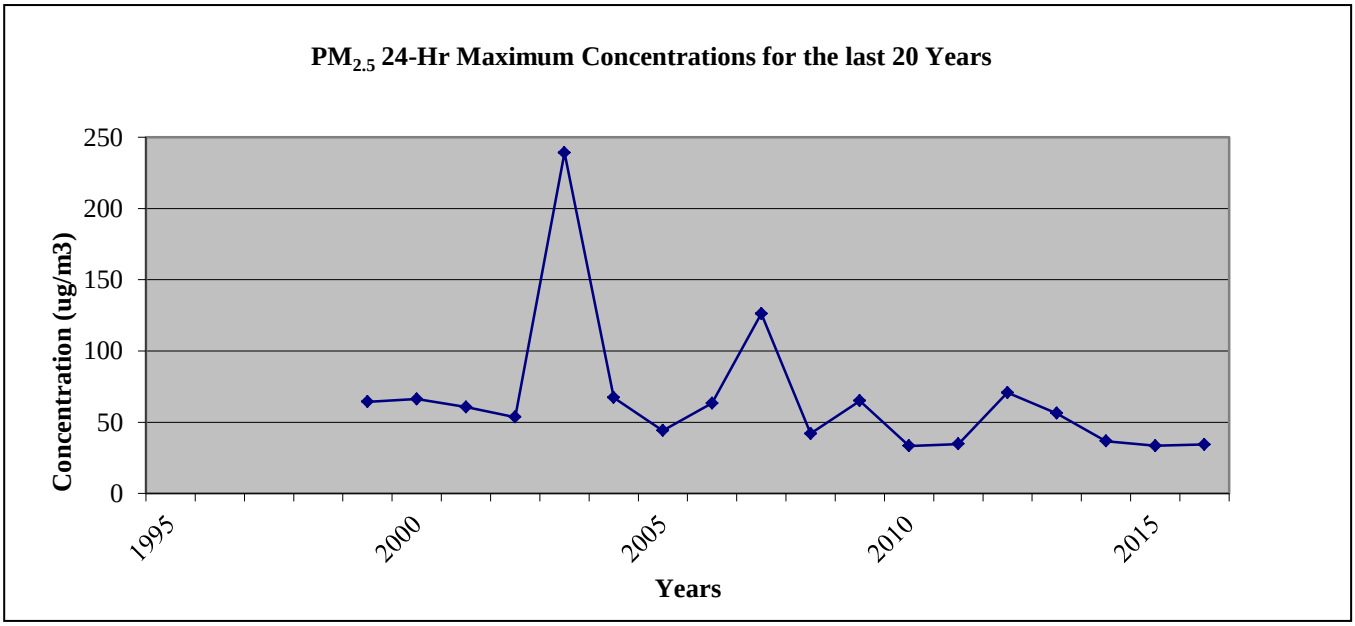
Annual average $PM_{2.5}$ FRM concentrations in the County have declined over the years, see Table 8.22. The high maximum 24-Hr concentrations measured in 2003 and 2007 were due to severe wildfires that occurred in Southern California. The 98th percentile of 24-Hr $PM_{2.5}$ concentrations showed substantial 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 8.22 reflects the $PM_{2.5}$ standard for that year. Figure 8.1 graphs the SDAB $PM_{2.5}$ trends over the years.

Table 8.22 $PM_{2.5}$ Manual Concentrations for San Diego-for the Last 20 Years (24-Hr), 1996-2016

Maximum 24-Hr Concentration (µg/m^3)	1996	1997	1998	1999	2000	2001	2002	2003 *	2004	2005	2006	2007 *	2008	2009	2010	2011	2012	2013	2014	2015	2016
	n/a	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
Days above the National Std	n/a	n/a	n/a	0	2	0	0	2	1	0	1	17	3	3	0	0	2	2	1	0	0

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, 1996-2016



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

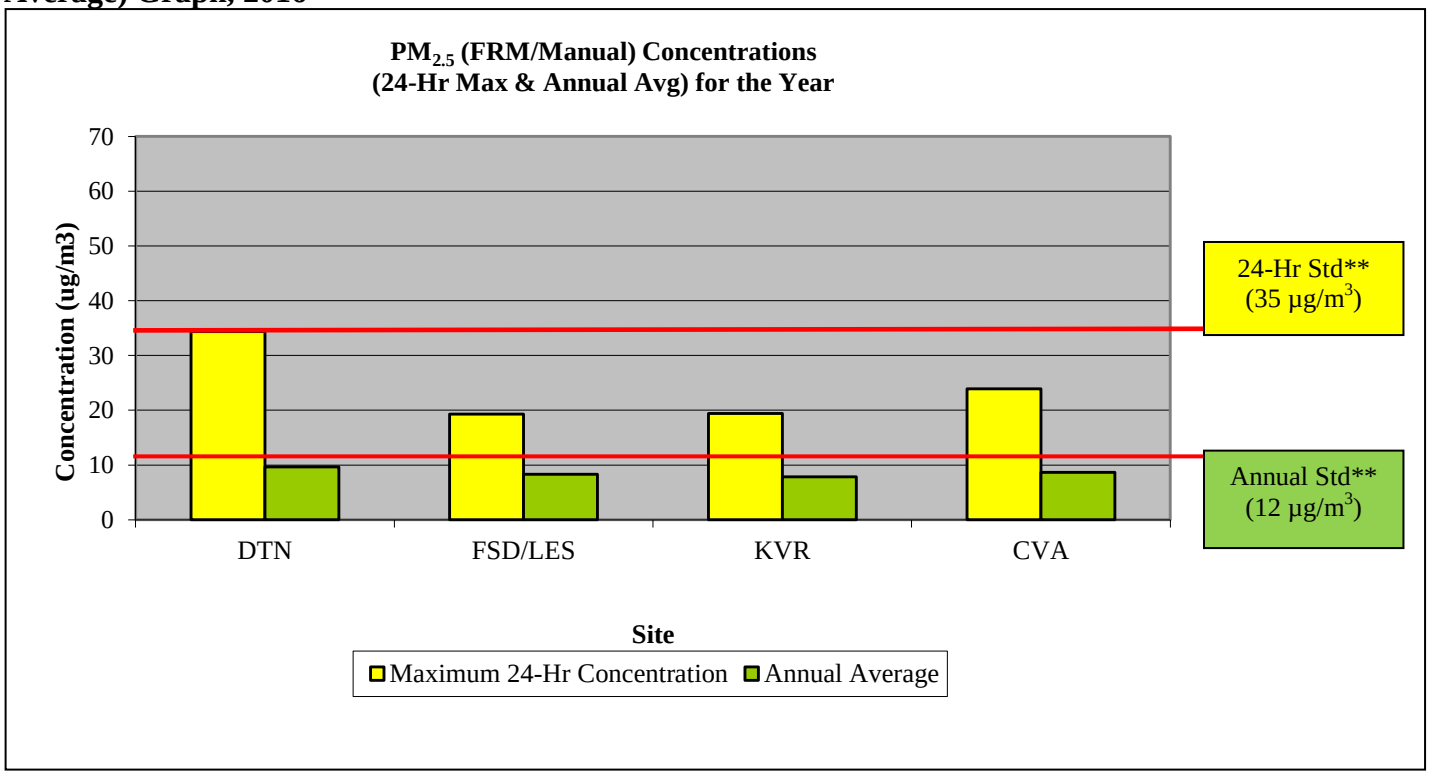
Table 8.23 lists the maximum $PM_{2.5}$ Manual measurements for each $PM_{2.5}$ Manual method monitoring locations in Table 8.23 and Figure 8.2 shows the values graphically with respect to the National Standard. Note the NAAQS is calculated as a Design Value and these measurements are for the calendar year; therefore, the comparison to the NAAQS is for informational purpose only.

Table 8.23 $PM_{2.5}$ Manual Concentrations for San Diego-by Site for the Year (24-Hr & Annual Average), 2016

	No (#)	Site (name)	Site Abbreviation	Maximum Concentration For 24-Hr (µg/m^3)	Annual Average (µg/m^3)	Number of Days Above the National Standard (#)
Manual Method	1	San Diego-Beardsley*	DTN	34.4	9.66	0
	2	Floyd Smith Dr & Lexington	FSD & LES	19.3	8.30	0
	3	Kearny Villa Rd	KVR	94.4	7.86	0
	4	Chula Vista	CVA	23.9	8.63	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, 2016



*Not sampled for an entire year

****** 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)

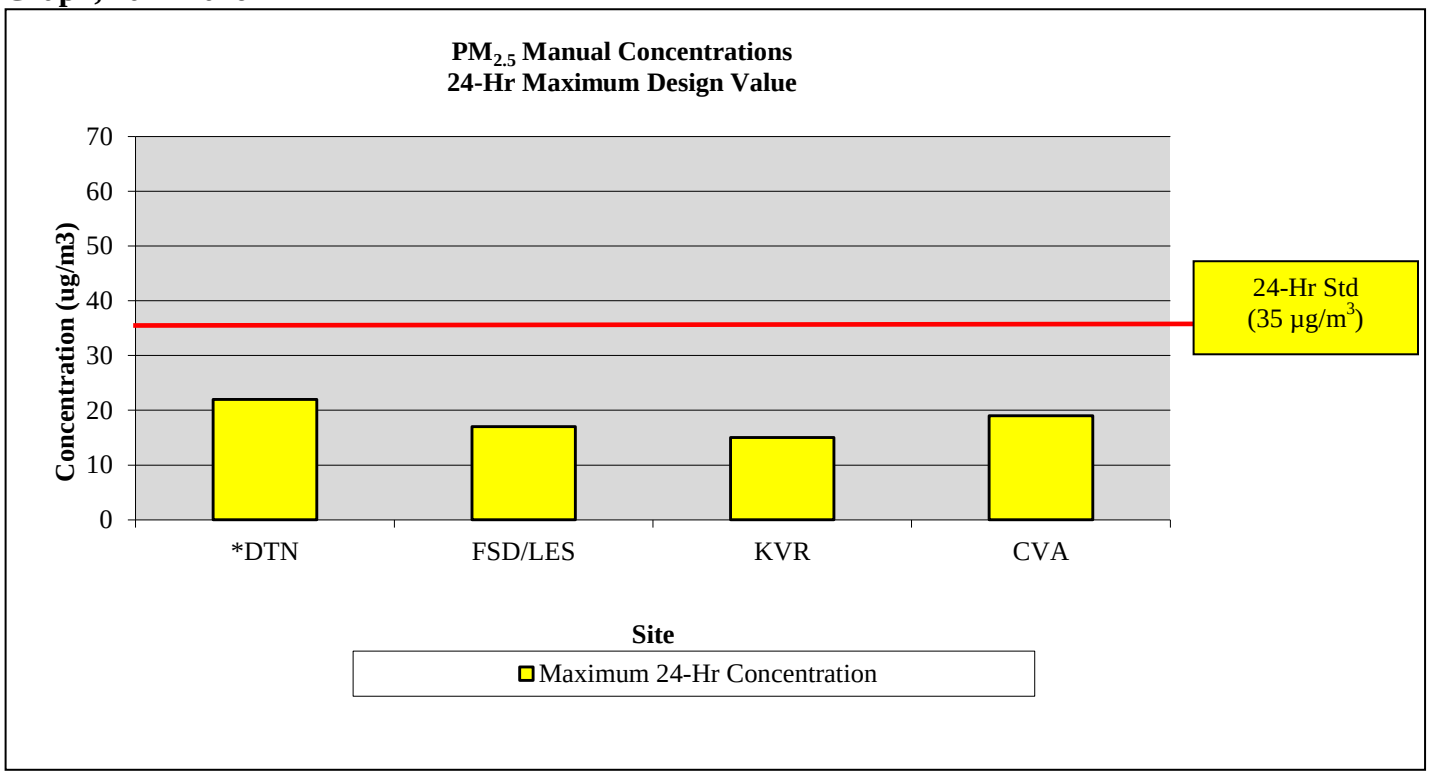
Table 8.24a lists the maximum $PM_{2.5}$ Manual 24-Hr measurements for each $PM_{2.5}$ Manual method monitoring location in Table 8.24a and Figure 8.3 shows the values graphically with respect to the National Standard.

Table 8.24a $PM_{2.5}$ Manual Concentrations for San Diego-by Site for the Design Value (24-Hr), 2014-2016

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	San Diego-Beardsley*	DTN	22	0	NO	yes	yes
	2	Floyd Smith Dr. & Lexington	FSD & LES	17	0	NO	yes	yes
	3	Kearny Villa Rd	KVR	15	0	NO	yes	yes
	4	Chula Vista	CVA	19	0	NO	yes	yes

*Not sampled for an entire year

Figure 8.3a $PM_{2.5}$ Manual Concentrations for San Diego-by Site for the Design Value (24-Hr) Graph, 2014-2016



*Not sampled for an entire year, so the Design Values are incomplete

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

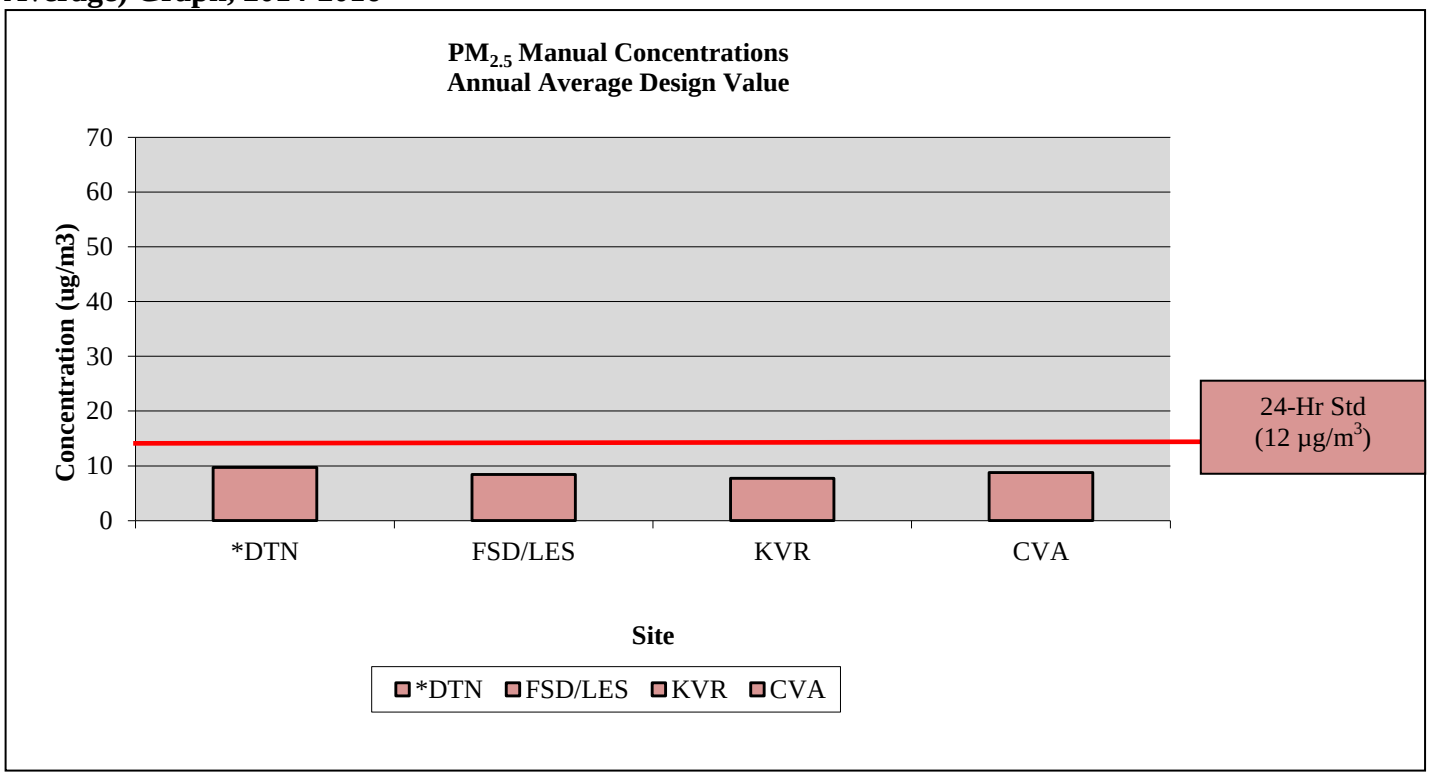
Table 8.24b lists the $PM_{2.5}$ Manual annual average Design Value measurements for each $PM_{2.5}$ Manual method monitoring location in Table 8.24b and Figure 8.3 shows the values graphically with respect to the National Standard.

Table 8.24b $PM_{2.5}$ Manual Concentrations for San Diego-by Site for the Design Value (Annual Average), 2014-2016

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	San Diego-Beardsley*	DTN	9.7	0	NO	yes	yes
	2	Floyd Smith Dr. & Lexington	FSD & LES	8.4	0	NO	yes	yes
	3	Kearny Villa Rd	KVR	7.7	0	NO	yes	yes
	4	Chula Vista	CVA	8.8	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, 2014-2016



*Not sampled for an entire year, so the Design Values are incomplete

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)

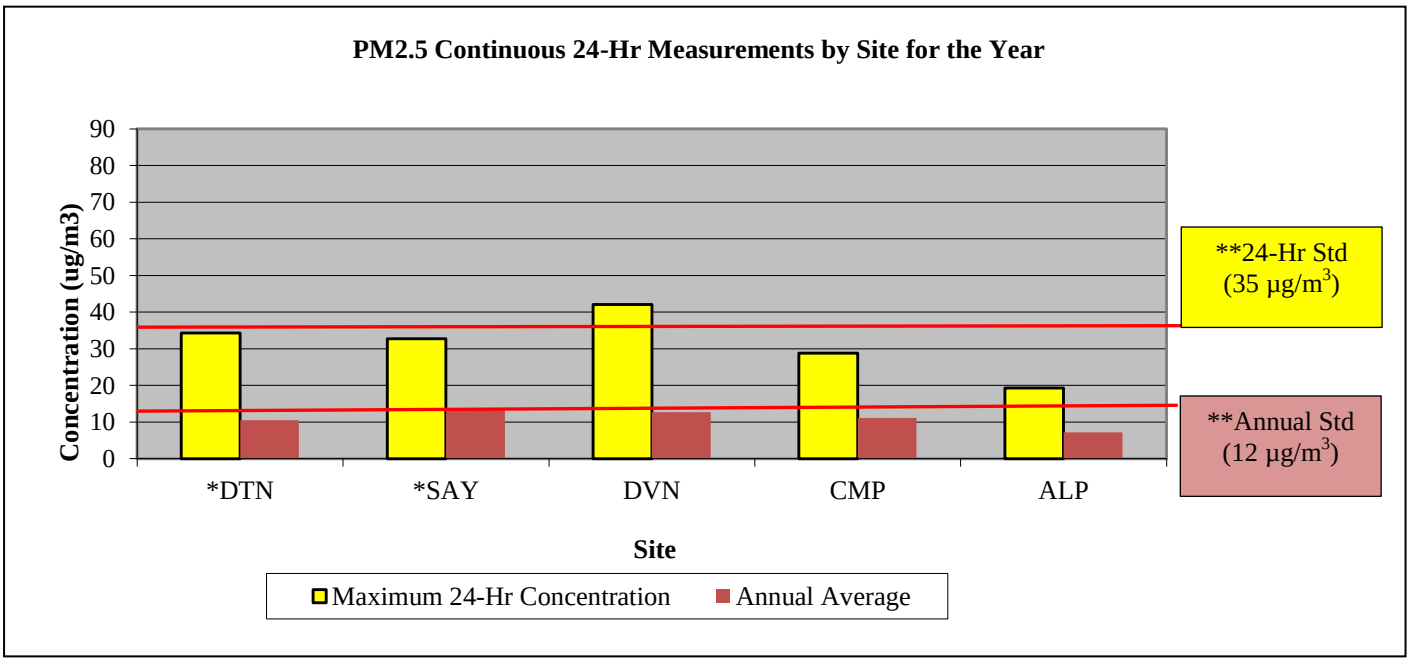
Table 8.25 lists the maximum $PM_{2.5}$ continuous 24-Hr measurements and Annual Average for each $PM_{2.5}$ continuous monitoring location and Figure 8.4 shows the values graphically. The measurements are not the Design Value (Yearly only).

Table 8.25 $PM_{2.5}$ Continuous Concentrations for San Diego-by Site for the Year (24-Hr & Annual Average), 2016

	No. (#)	Site (name)	Site Abbreviation	Maximum Concentration for 24-Hr (µg/m^3)	Annual Average (µg/m^3)
Continuous Method	1	SD-Beardsley*	DTN	34.3	10.5
	2	San Ysidro*	SAY	32.7	13.5
	3	Donovan	DVN	42.1	12.7
	4	Camp Pendleton	CMP	28.8	11.1
	5	Alpine	ALP	19.3	7.2

*Not sampled for an entire year

Figure 8.4 $PM_{2.5}$ Continuous Yearly 24-Hr & Annual Average Measurements by Site Graph, 2016



*Not sampled for an entire year

****** 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)

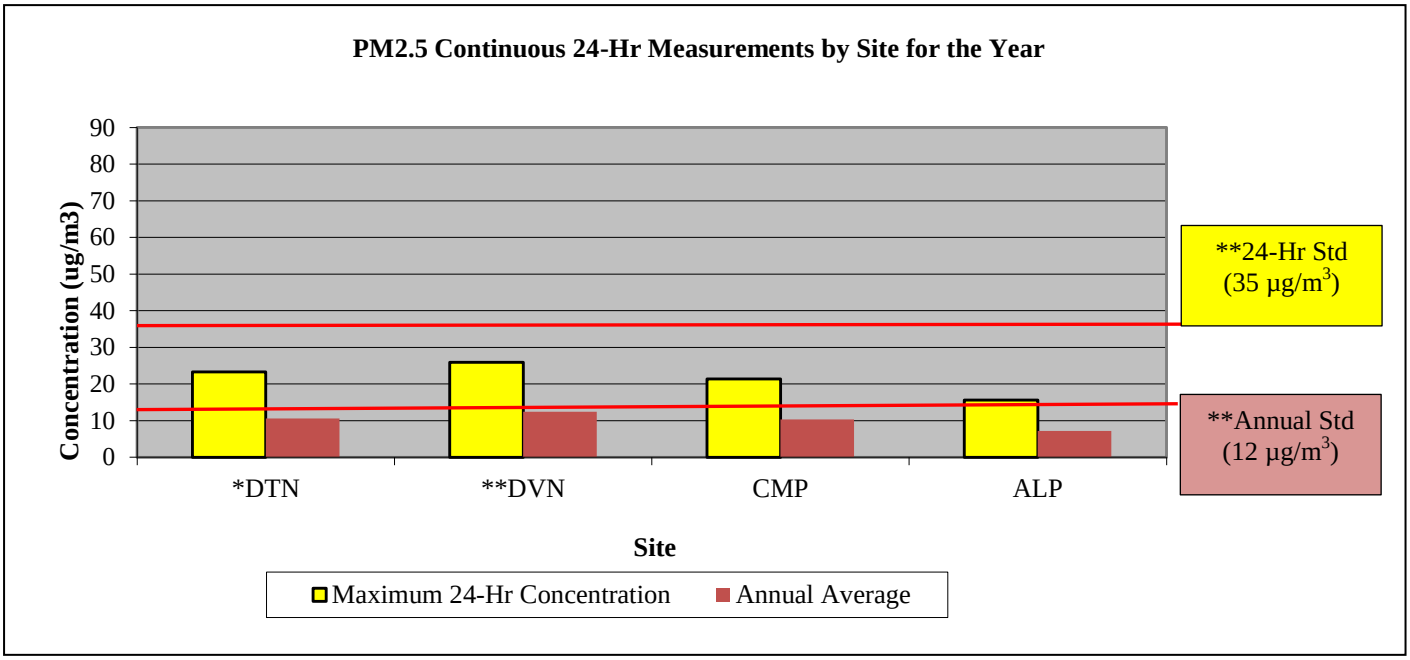
Table 8.26 lists the maximum $PM_{2.5}$ continuous 24-Hr measurements and Annual Average for each $PM_{2.5}$ continuous monitoring location and Figure 8.5 shows the values graphically. While the measurements are the Design Value, all $PM_{2.5}$ continuous samplers are not regulatory; therefore the values cannot be compared to the $PM_{2.5}$ standards and can only be used for trends analysis and public informational use.

Table 8.26 $PM_{2.5}$ Continuous Concentrations for San Diego-by Site for the Design Value (24-Hr & Annual Average), 2014-2016

	No. (#)	Site (name)	Site Abbreviation	Design Value Maximum Concentration for 24-Hr (µg/m^3)	Design Value Annual Average (µg/m^3)
Continuous Method	1	SD-Beardsley	DTN	23.3	10.6
	2	*San Ysidro	SAY	*	*
	3	**Donovan	DVN	25.9	12.4
	4	Camp Pendleton	CMP	21.4	10.3
	5	Alpine	ALP	15.6	7.2

* Not sampled for three years, so no DV can be calculated
** 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, 2014-2016



* Not sampled for three years, so no DV can be calculated
** Two year DV

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 Floyd Smith Dr. (FSD) location that is also part of the paired Lo-Vol samplers needed to calculate PMcoarse. Please Note:

- The District was evicted from our Downtown site; consequently, this station was permanently shutdown (see the Executive Summary for more information).
- The El Cajon Station-Floyd Smith Drive station was relocated back to its original location at Lexington Elementary School in late 2016 (see the Executive Summary for more information).

Figure 9.0 PM_{10} Overall Map

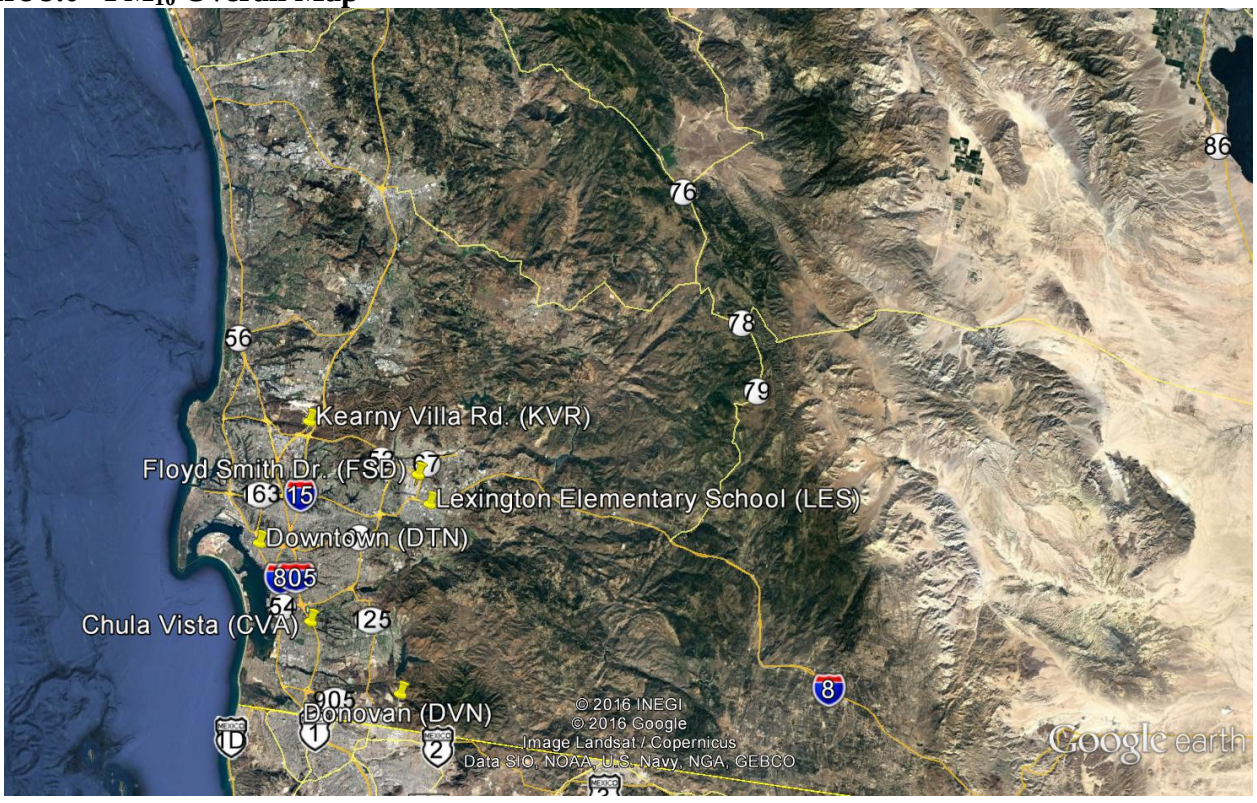


Table 9.0 PM_{10} State and National Standards for the Year

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	FSD[1]	LES[1]	KVR	DTN
	Name	Chula Vista		Donovan	Floyd Smith Dr.	Lexington Elementary School	Kearny Villa Rd	San Diego – Beardsley
	AQS ID	06-07- 0001		06-073-1014	06-073-1018	06-073-1022	06-073-1016	06-073-1010
PM_{10}	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Designation	O	QAC	O	O	O	O	O
	Method	SI	SI	SI	SI	SI	SI	SI
	Affiliation	Not Applicable	Not Applicable	Not Applicable	NCORE	NCORE	Not Applicable	Not Applicable
	Spatial Scale	NS	NS	NS	NS	NS	NS	NS
	Site Type	PE	PE	HC	PE	PE	PE	PE
	Objective (Federal)	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS	NAAQS
	Frequency	1:6	1:6	1:6	1:3	1:3	1:6	1:6
	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	Thermo 2025 w/o Very Sharp Cut Cyclone	Graseby Metal Works body w/ Sierra Anderson 1200 Head	Graseby Metal Works body w/ Sierra Anderson 1200 Head

[1] The El Cajon Station-Floyd Smith Drive station was relocated to back to its original location at Lexington Elementary School in late 2016

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 a 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 are 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 in any one locale.

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), 2015

Site of Expected Maximum Concentration (name)	Site of Expected Maximum Concentration AQS ID (#)	Maximum Concentration for 24-hrs ($\mu g/m^3$)	Does the 24-Hr Design Value 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	79	yes	NO	NO	yes

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

MSA (name)	County (name)	Population Estimated from 2010 Census (#)	Minimum Number of PM_{10} Samplers Required (#)	Active Number of PM_{10} Samplers (#)	Needed Number of PM_{10} Samplers (#)
San Diego	San Diego	3.3 million	2 - 4	5	None

[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 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, O_3, SO_2, CO, NO/NO_y, wind speed, wind direction, relative humidity, and ambient temperature.*

Table 9.3 PM_{10} Minimum Monitoring Requirements-NCore

NCore Sites/Locations (name)	NCore Sites/Locations AQS ID (#)	Minimum Number of PM_{10} Samplers Required for NCore Sites (#)	Total Number of PM_{10} Samplers Active at NCore Sites (#)	Total Number of PM_{10} Samplers Neededat NCore Sites (#)
Floyd Smith Dr. (FSD)	06-073-1018	1	1	None

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

Minimum Number of Samplers Required (#)	Number of Active Samplers (#)	Number of Samplers Needed for Collocation (#)	Number of Active Samplers Used for Collocation (#)	Number of Samplers Needed for Collocation (#)	Location of Collocated Site(s) (name)	Collocated Site AQS ID (#)
2 - 4	5	4* x (15%) = 1	1	None	Chula Vista (CVA)	06-073-0001

*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)	Minimum Number of PM_{10} samplers Required (#)	Number of Active PM_{10} samplers (#)	Number of Needed PM_{10} samplers (#)
CFR EPA Table D-2 only=	2 - 4	5	None
NCore only=	1	1	None
Collocation=	1	1	None

B (2015) 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore sites", subpart (b)
C (2015) 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 all required for PM10 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 meets or exceeds 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/oVSCC	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 meets or exceeds all minimum monitoring requirements for the sampling frequency and can be compared to the NAAQS. Tables 9.7 summarize 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.*

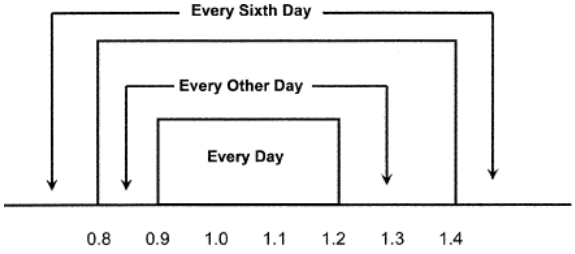


Figure 1 – Ratio to Standard

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

Site of Expected Maximum Concentration (name)	Site of Expected Maximum Concentration AQS ID (#)	Maximum Concentration for 24-hrs (µg/m^3)	Is the Ratio of the Maximum Concentration < 0.8 to the NAAQS (yes/no)	What is the Minimum EPA Permitted Sampling Frequency? (#)	What is the Actual Sampling Frequency? (#)
Donovan	06-073-1014	79	yes	1:6	1:6

[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 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.

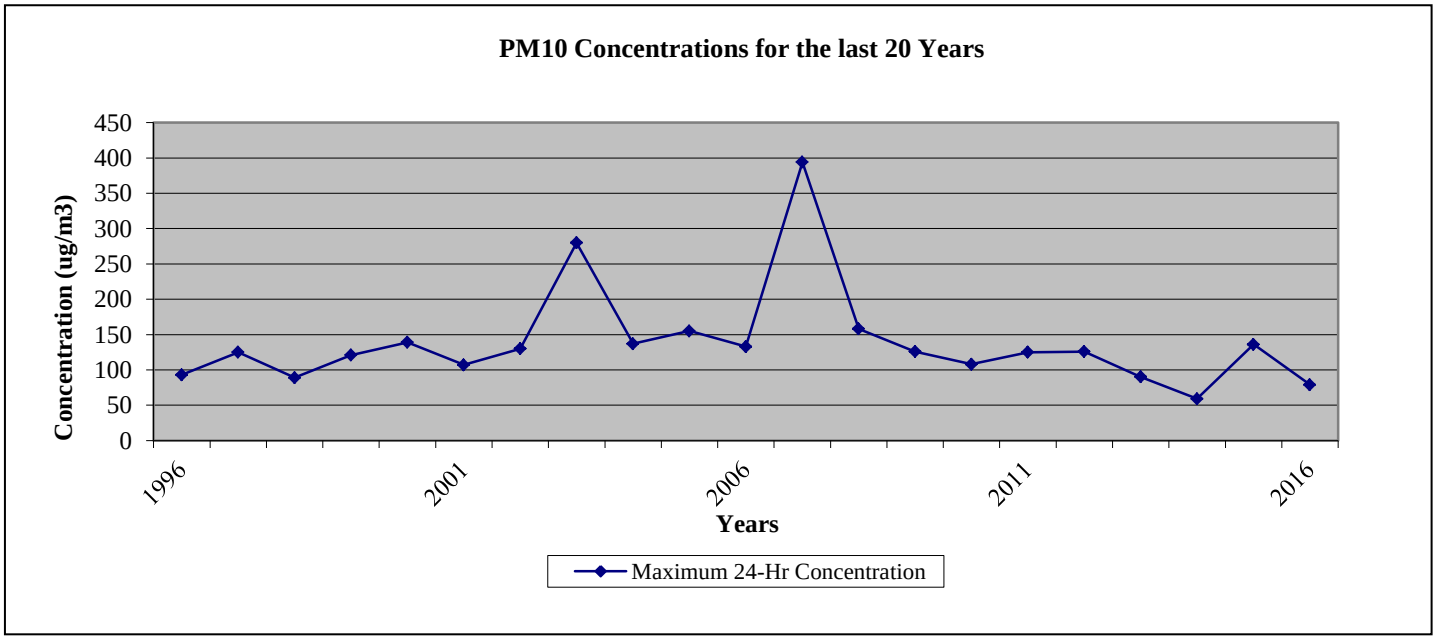
Section 9.3.1 PM_{10} Concentrations for San Diego-for the Last 20 Years

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 annual average exceeded the National 24-hr standard for those years. The firestorms are considered as exceptional events and they do not have a lasting impact in the SDAB. Even with the last two firestorms, the County still qualifies for attainment status. Note: the "Days Above the National 24-Hr Standard" row in Table 9.6 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, 1994-2016

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Maximum 24-Hr Concentration ($\mu g/m^3$)	93	125	89	121	139	107	130	280	137	155	133	394	158	126	108	125	126	90	29	136	79
Days above the National Standard	0	0	0	0	0	0	0	2	0	2	0	2	1	0	0	0	0	0	0	0	0

Figure 9.1 PM_{10} Concentrations for San Diego-for the Last 20 Years Graph, 1994-2016



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

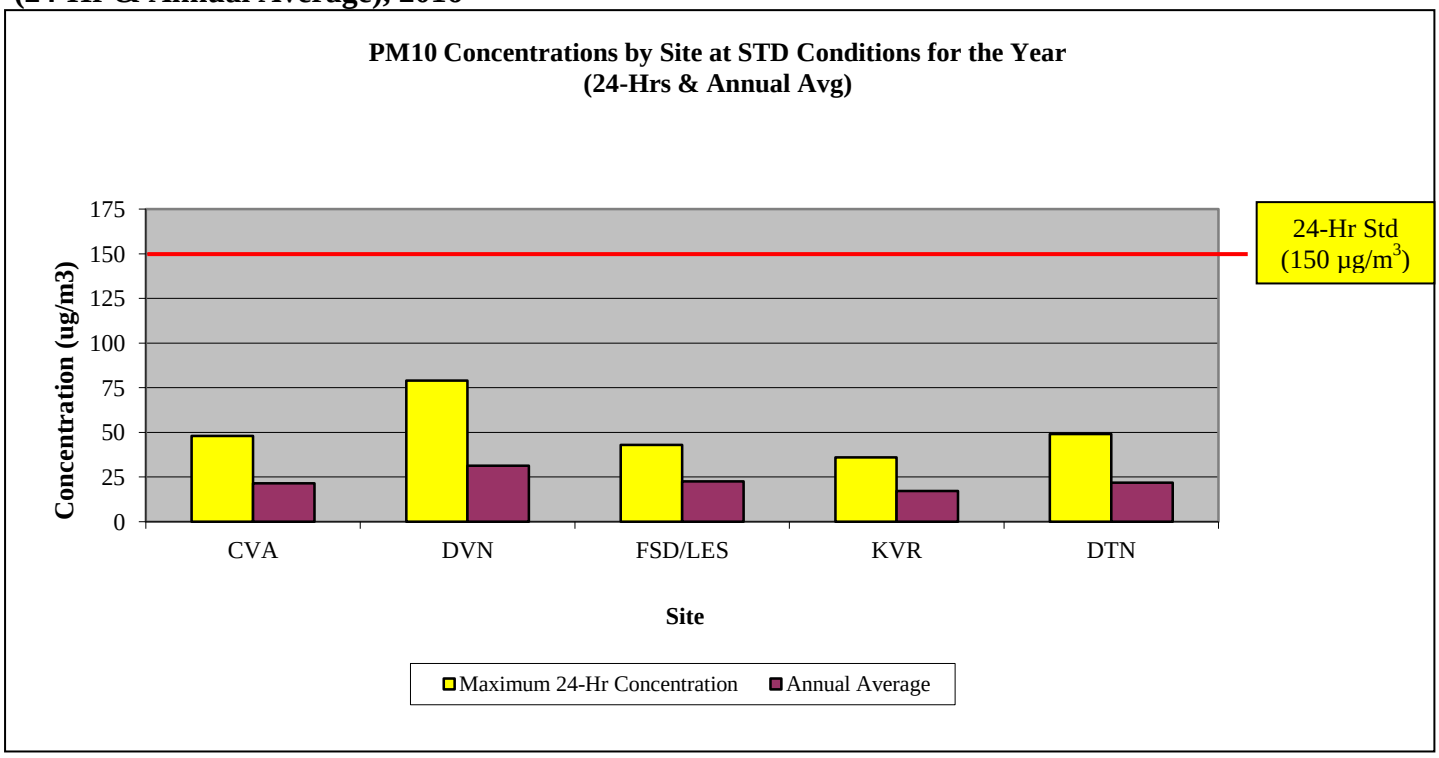
All data from the PM_{10} samplers are reported in STD conditions, as can be seen in Table 9.9 and Figure 9.2. The PM_{10} (Lo-Vol) sampler presents the data in LC and must be converted to STD conditions.

Table 9.9 PM_{10} Concentrations for San Diego-by Site at Standard Conditions (STD) for the Year (24-Hr & Annual Average), 2016

No. (#)	Site	Site Abbreviation	Maximum Concentration for 24-hrs ($\mu g/m^3$)	Annual Average ($\mu g/m^3$)	Number of Days Above the National Standard (#)
1	Chula Vista	CVA	48	21.5	0
2	Donovan	DVN	79	31.3	0
3	Floyd Smith Dr. (Lo-Vol) & Lexington	FSD & LES	43	22.6	0
4	Kearny Villa Road	KVR	36	17.1	0
5	San Diego-Beardsley*	DTN	49	21.9	0

*Insufficient data; not operational for a sufficient number of months in 2015 for a comparable annual average.

Figure 9.2 PM_{10} Concentrations for San Diego - by Site at Standard Conditions (STD) for the Year (24-Hr & Annual Average), 2016



*Insufficient data; not operational for a sufficient number of months in 2016 for a comparable annual average.

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

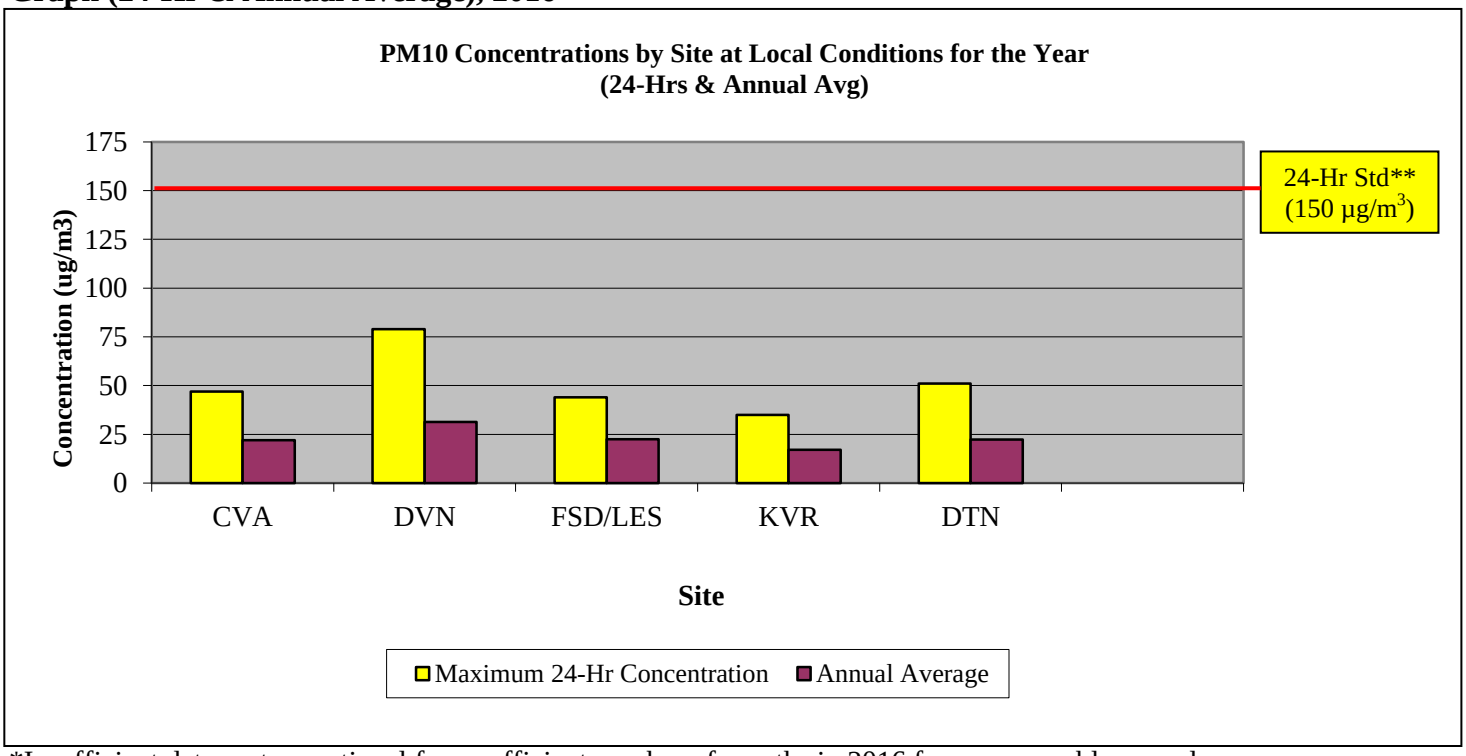
Table 9.8 and Figure 9.3 illustrate the data in Local Conditions (LC). Note the NAAQS is written for STD conditions; therefore the concentrations calculated to Local Conditions (LC) conditions are not comparable to the NAAQS.

Table 9.9 PM_{10} Concentrations for San Diego - by Site at Local Conditions (LC) for the Year (24-Hr & Annual Average), 2016

No. (#)	Site	Site Abbreviation	Maximum Concentration for 24-hrs (µg/m^3)	Annual Average (µg/m^3)
1	Chula Vista	CVA	47	21.9
2	Donovan	DVN	79	31.3
3	Floyd Smith Dr. (Lo-Vol)/ & Lexington	FSD & LES	44	22.4
4	Kearny Villa Rd.	KVR	35	17.1
5	San Diego-Beardsley*	DTN	51	22.3

*Insufficient data; not operational for a sufficient number of months in 2016 for a comparable annual average

Figure 9.3 PM_{10} Concentrations for San Diego - by Site at Local Conditions (LC) for the Year Graph (24-Hr & Annual Average), 2016



*Insufficient data; not operational for a sufficient number of months in 2016 for a comparable annual average.

**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.

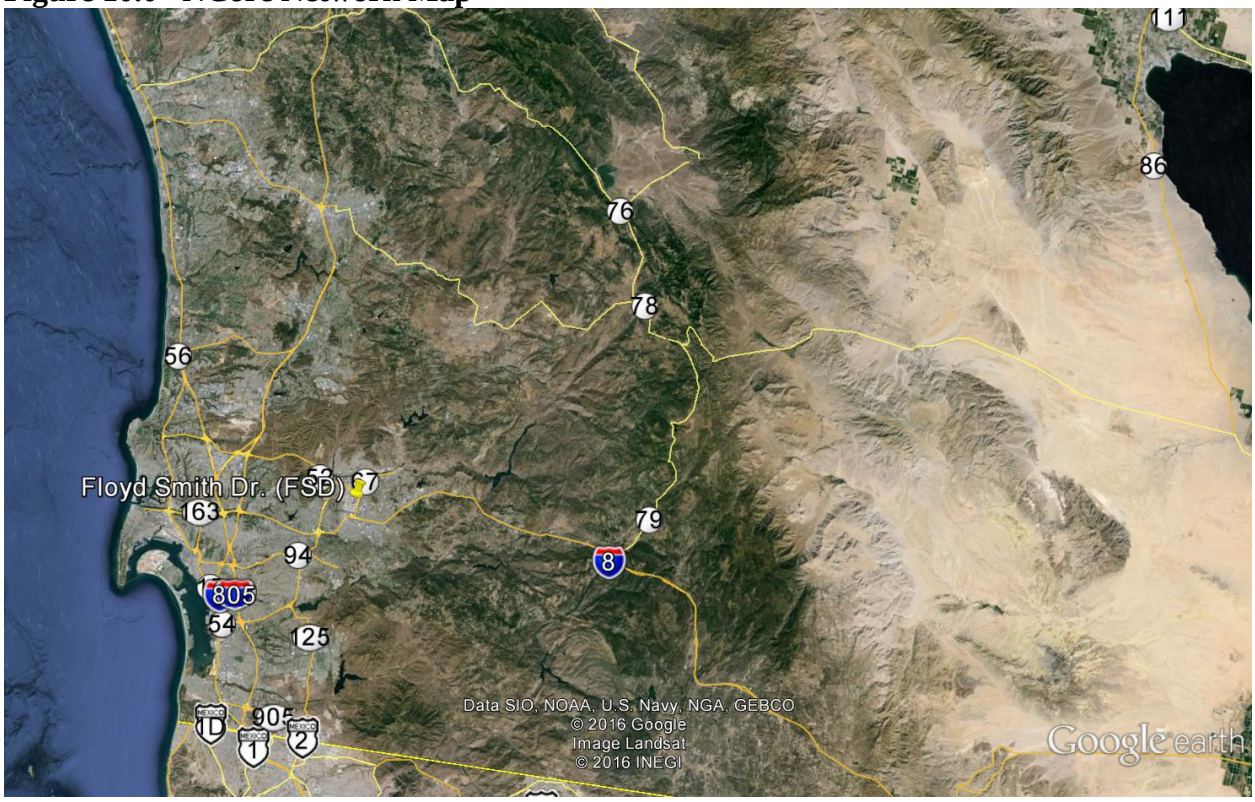
CHAPTER 10 NATIONAL CORE (NCORE)

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 station (Figure 10.0) as the NCore site for the SDAB, so additional instrumentation that includes, 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), NOy (Reactive Nitrogen Oxides), and Lead-TSP (Pb-TSP) . 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 10.0 NCore Network Map



Section 10.1.0 NCore Minimum Monitoring Requirements

The District is required to operate monitors as part of the NCore multipollutant monitoring program. This program was designed to measure pollutants at lower levels, low ppb-ppt range. Tables 10.1a-b summarize these requirements.

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

- NOy monitoring (highlighted in red)
- Meteorological monitoring (highlighted in red)
- $PM_{2.5}$ continuous monitoring (highlighted in red)

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, speciated $PM_{10-2.5}$, O_3, SO_2, CO, NO/NOy, 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}.

Table 10.1a NCore Minimum Monitoring Requirements

MSA	County	Population Estimated from 2010 Census (#)	Minimum Number of Sites Required (#)	Number of Active Sites (#)	Number of Sites Needed
San Diego	San Diego	3.3 million	1	1	None

Table 10.1b NCore Minimum Monitoring Requirements-Equipment

Parameters	O_3	NOy	CO-TLE	SO_2-TLE	Pb-TSP	$PM_{2.5}$-Manual	$PM_{2.5}$-Continuous	PMcoarse	Wind Speed/ Wind Direction/ External Temperature/ %Relative Humidity
Minimum Number of Monitors Required (#)	1	1	1	1	1	1	1	1	1 each= 1 set
Number of Active Monitors (#)	1	0*	1	1	1	1	0**	1	0*
Number of Monitors Needed (#)	None	None*	None	None	None	None	None**	None	None*

*The FSD NCore location is temporary. Because FAA approval would be needed to erect the NOy and meteorological sensor towers, the EPA waived these NCore requirements at the FSD location.

**The $PM_{2.5}$ continuous sampler could not be installed, maintained, calibrated, and audited safely at the FSD location. Once EPA was informed, this requirement was likewise suspended. Once the station relocates back to its original location, these parameters will resume.

A (2015) 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
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
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}	88101	µg/m^3 LC STD	105 001	24-Hr	7	Graseby Metal Works 2000H w/ Sierra Anderson 1200 Head	Gravimetric	127 217	1:3	RFPS-1298-127

Section 10.3.0 NCore Concentrations

The instrumentation needed for NCore designation are: PMcoarse (calculated values from paired PM_{10} & $PM_{2.5}$ Low Volume samplers); CO (trace level); SO_2 (trace level); NOy (total reactive Nitrogen Oxides); and, Pb-TSP (not operational until the 1st Qtr of 2012). Tables 10.3a-10.3e list the trend data.

Table 10.3a NCore Concentrations for PMcoarse

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

*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
Maximum 1-Hr. Concentration	1.8	2.3	1.9	2.0	1.4	1.7
Maximum 8-Hr. Concentration	1.3	1.9	1.2	1.8	1.1	1.3

Table 10.3c NCore Concentrations for SO_2-TLE

SULFUR DIOXIDE (ppm)	2011	2012	2013	2014	2015	2016
Maximum 1-Hr SO_2	0.001	0.002	0.007	0.001	0.001	0.001
Maximum 24-Hr SO_2	0.000	0.000	0.001	0.001	0.000	0.000
Annual Average SO_2	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
Maximum 1-Hr. Concentration	0.048	0.059	0.049	**	**	**
Annual Average	0.012	0.013	0.012	**	**	**

**The NOy sampler is not operational at the temporary NCore location; once we relocate back, NOy sampling will resume

Table 10.3d2 NCore Concentrations for NO_2

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

*Not sampled for an entire year, so no calculations

Table 10.3e NCore Concentrations for Pb

LEAD (µg/m^3)	2012	2013	2014	2015	2016
Annual Average	0.005	0.005	0.009	0.008	0.008
Maximum 3-Month Average	0.006	0.007	0.011	0.012	0.01

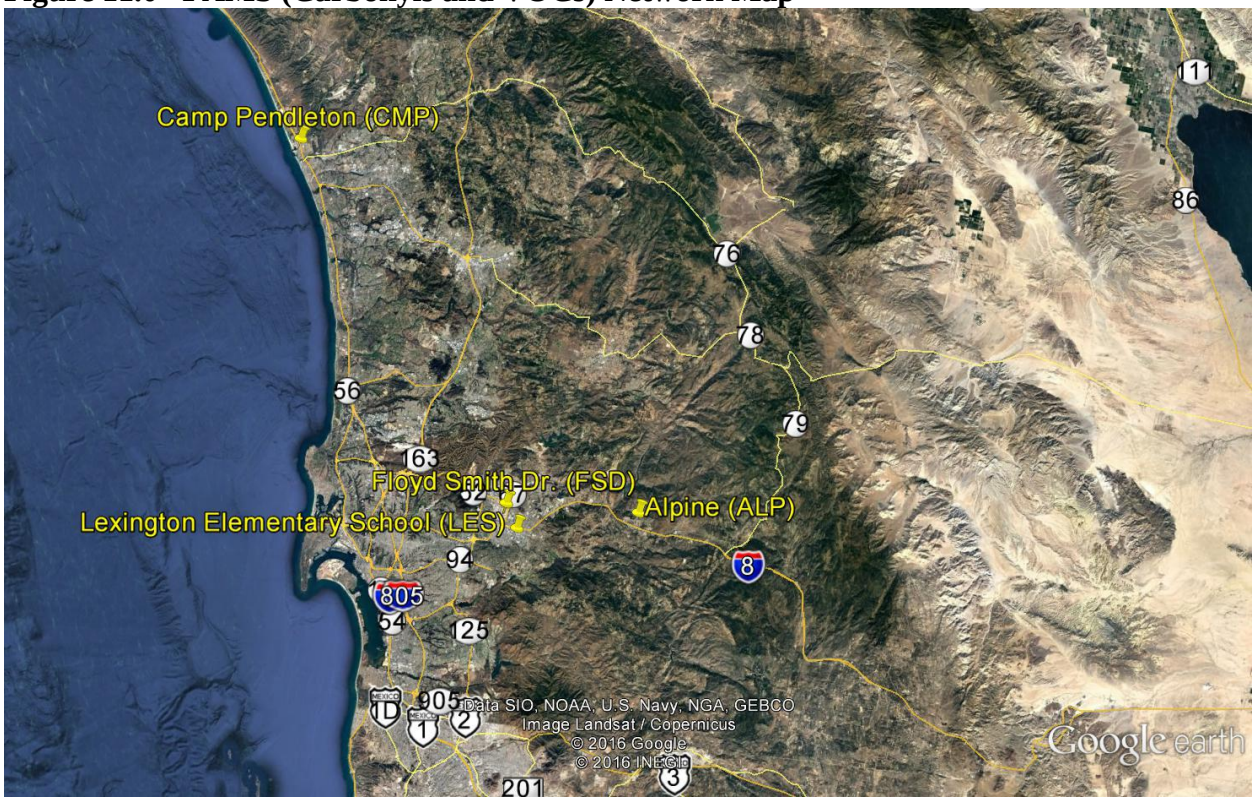
CHAPTER 11 PHOTOCHEMICAL ASSESSMENT MONITORING STATIONS (PAMS)

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:

- The El Cajon Station-Floyd Smith Drive station was relocated back to its original location at Lexington Elementary School in late 2016 (see the Executive Summary for more information).
- PAMS-VOCs at CMP, ALP and FSD
- PAMS-Carbonyls FSD

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 11.1b and 11.1c). The toxicity is gauged by risk factors instead of limits.

Table 11.0 PAMS Sampling Network

	Abbreviation	ALP	CMP		FSD[1]		LES[1]	
	Name	Alpine	Camp Pendleton		Floyd Smith Dr.		Lexington Elementary School	
	AQS ID	06-073-1006	06-073-1008		06-073-1018		06-073-1022	
PAMS	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
PAMS	Method	Canister	Canister	Canister	Canister	Cartridges	Canister	Cartridges
PAMS	Affiliation	PAMS (Type III)	PAMS (Type I)	PAMS (Type I)	PAMS (Type II)	PAMS (Type II)	PAMS (Type II)	PAMS (Type II)
PAMS	Spatial Scale	US	NS	NS	NS	NS	NS	NS
PAMS	Site Type	MXO	UPBD	QA	MXP	MXP	MXP	MXP
PAMS	Objective (Federal)	Research	Research	Research	Research	Research	Research	Research
PAMS	Analysis By	APCD	APCD	APCD	APCD	APCD	APCD	APCD
PAMS	Frequency	1:6	1:6	1:6	1:6	1:6	1:6	1:6
PAMS	Equipment	Xontech 910/912	Xontech 910/912	Xontech 910/912	Xontech 910/912	Xontech 925	Xontech 910/912	Xontech 925

[1] The El Cajon Station-Floyd Smith Drive station was relocated to back to its original location at Lexington Elementary School in late 2016

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. Tables 11.2-11.10 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 frequenyc*[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 allowed this until PAMS program is retooled (2017)

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*	Floyd Smith Dr.	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 (#)
Floyd Smith Dr.	Floyd Smith Dr.	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 Floyd Smith Dr.*	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.

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 (#)
Floyd Smith Dr.*	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 Floyd Smith Dr.	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 & 11.111 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 Floyd Smith Dr.	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

Section 11.1.6 PAMS Minimum Monitoring Requirements-Summary

Table 11.12 summarizes all the PAMS minimum monitoring requirements from tables 11.2-11.10.

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

*EPA approved

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

Section 11.3 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 11.12 for the summary of equipment used and tables 11.13-11.15 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

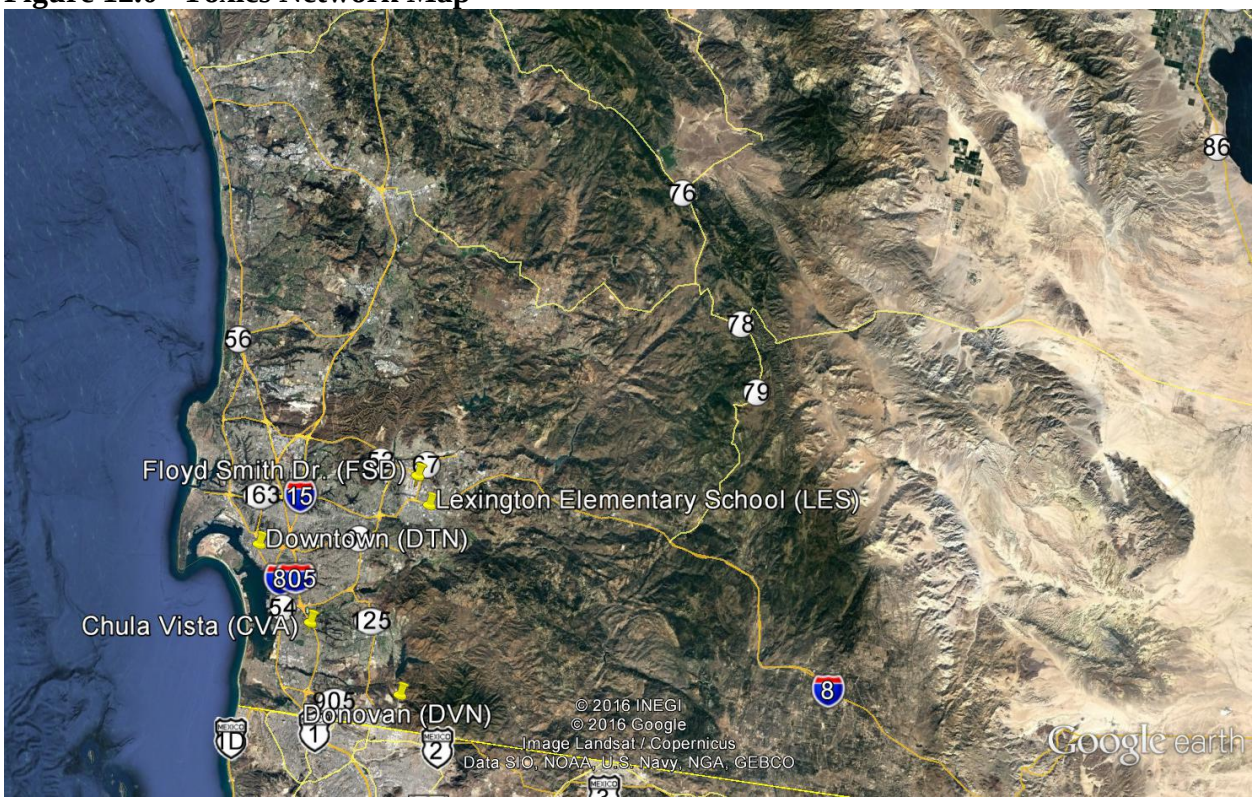
CHAPTER 12 TOXICS PROGRAM

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 yet, there are no NAAQS standards which to compare the data. Please note:

- The District was evicted from our Downtown site; consequently, this station was permanently shutdown (see the Executive Summary for more information).
- 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).
- Toxics-VOC at DTN, DVN, and ESC
- Toxics-Metals at DTN and DVN
- Toxics-Carbonyls at DTN
- CARB CA-TAC program (Toxics-Metals, VOC, and Carbonyls) at CVA & FSD/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.

Table 12.0 Toxics Sampling Network

	Abbreviation	CVA				FSD[1]				DTN		DVN	
	Name	Chula Vista				El Cajon/Floyd Smith Dr.				San Diego – Beardsley		Donovan	
	AQS ID	06-073-0001				06-073-1018				06-073-1010		06-073-1014	
Toxics	Pollutant	Toxics-VOCs	Toxics-Metals	Toxics-Cr^{+6}	Toxics-Aldehydes	Toxics-VOCs	Toxics-Metals	Toxics-Cr^{+6}	Toxics-Aldehydes	Toxics-VOCs	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	Not Applicable
	Method	Canister	Filter	Filter	Cartridges	Canister	Filter	Filter	Cartridges	Canister	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	Not Applicable
	Spatial Scale	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	SN
	Site Type	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE
	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 910A FSL	Xontech 924	Xontech 910A FSL	Xontech 924

[1] The El Cajon Station-Floyd Smith Drive station was relocated to back to its original location at Lexington Elementary School in late 2016

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 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 12.1a. The VOC analyzed compounds are in Table 12.1b. See ARB for parameter codes for their CA Toxic program.

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	none	XonTech 924	DNPH cartridge	1:12 (ARB)	HPLC	(See ARB)	(See ARB)
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 12.2 Toxics VOCs Parameters Codes

Compound	Parmeter	Compound	Parmeter	Compound	Parmeter
Dichlorodifluoromethane	43823	Bromoform	43806	Toluene	45202
Chloromethane	43801	Styrene	45220	1,2-Dibromoethane	43843
4-Methyl-2-pentanone (MIBK)	43560	2-Methoxy-2-methylpropane	43372	trans-1,3-Dichloropropene	43830
Vinyl Chloride	43860	o-Xylene	45204	Chlorobenzene	45801
1,3-Butadiene	43218	4-Ethyltoluene	45213	Ethylbenzene	45203
Bromomethane	43819	1,3,5-Trimethylbenzene	45207	m,p-Xylene	45109
Chloroethane	43812	1,2,4-Trimethylbenzene	45208	Tetrachloroethene	43817
Trichlorofluoromethane	43811	1,3-Dichlorobenzene	45806	1,1,2-Trichloroethane	43820
Acrolein	43505	1,4-Dichlorobenzene	45807	Benzene	45201
Acetone	43551	1,2-Dichlorobenzene	45805	1,1,1-Trichloroethane	43814
2-Methyl-1,3-butadiene	43243	1,2,4-Trichlorobenzene	45810	Carbon Tetrachloride	43804
1,1-Dichloroethene	43826	Hexachlorobutadiene	43844	cis-1,3-Dichloropropene	43831
Acrylonitrile	43704	Acetonitrile	43702	1,2-Dichloroethane	43815
Methylene Chloride	43802	Vinyl acetate	43447	Trichloroethene	43824
Trichlorotrifluoroethane	43207	n-Hexane	43231	cis-1,2-Dichloroethene	43839
trans-1,2-Dichloroethene	43838	Ethyl acetate	43209	Chloroform	43803
1,1,2,2-Tetrachloroethane	43818	Methyl methacrylate	43441	Naphthalene	45850
1,1-Dichloroethane	43813	Dichlorotetrafluoroethane	43208	1,2-Dichloropropane	43829
2-Butanone	43552	Benzyl chloride	45809		

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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

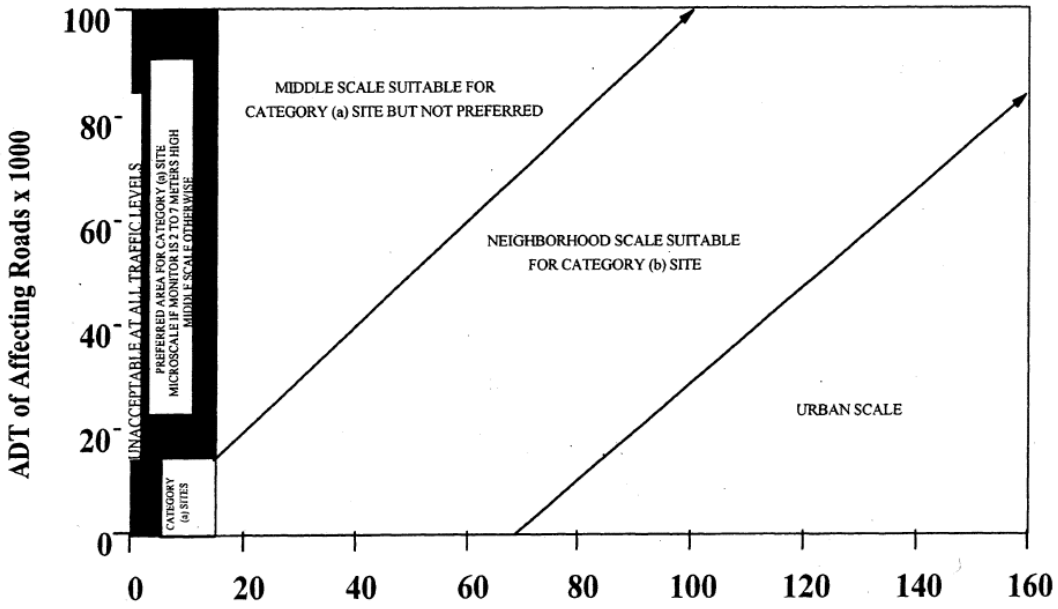


Figure E-1. Distance of PM samplers to nearest traffic lane (meters)

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-st 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:	None

Figure 1.1 Alpine – Picture of the Location of the Station

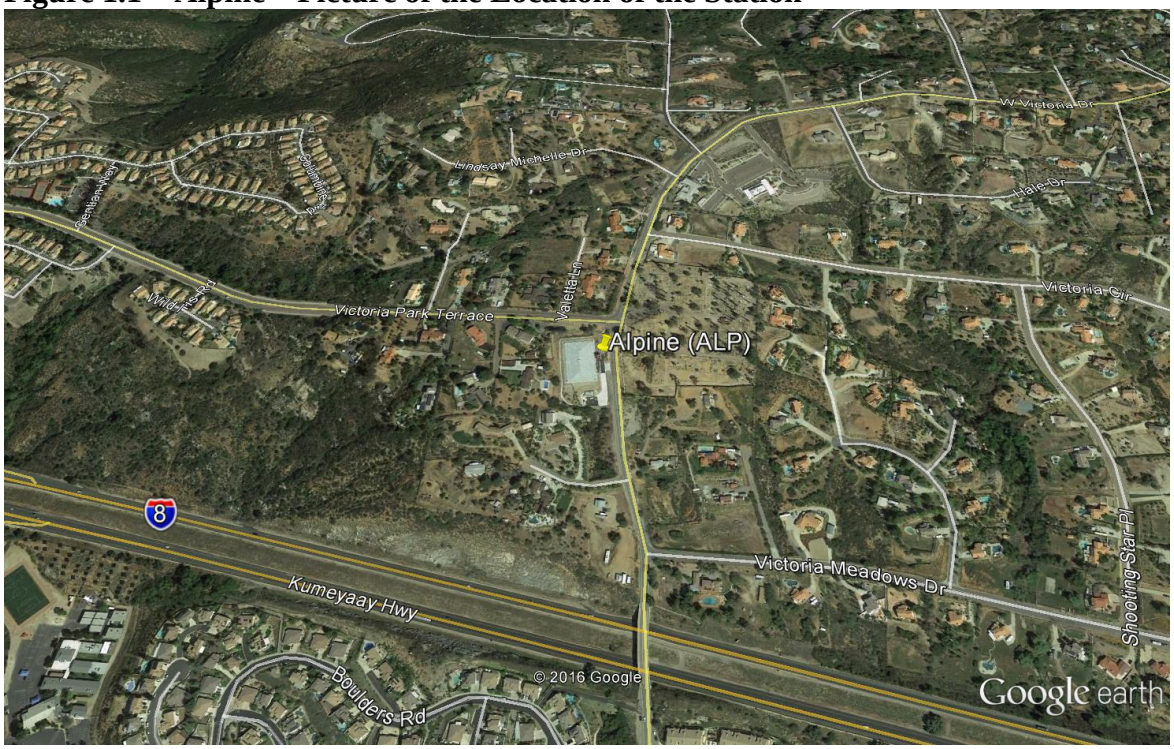


Table 1.2a Alpine - Gaseous Pollutants Monitor Designations + Other

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)	1:14	1:2	N/A	N/A
Annual Performance Evaluation date	12/2	12/13	12/13	N/A
NPAP (ARB) date	8/16	8/16	N/A	N/A

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	5/24 12/27
NPAP (ARB) date	8/16

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	12/15	12/15	12/15	12/15	12/15
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)	2.7									2.2			2.1						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

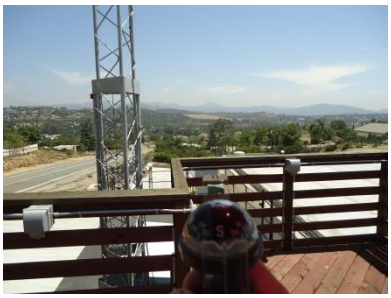
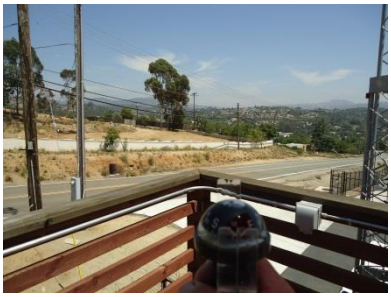
n/a= Not Applicable; N= None; †On the side of the station/trailer

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:	None

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	14.43 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)	1:2	1:2	N/A	N/A
Annual Performance Evaluation date	9/30	10/6	10/7	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	3/29 9/28
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	11/4	11/4	11/4	11/4
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 2016. Upon completion, a collocated $PM_{2.5}$ Manual sampler relocated from KVR and sited at CVA.

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

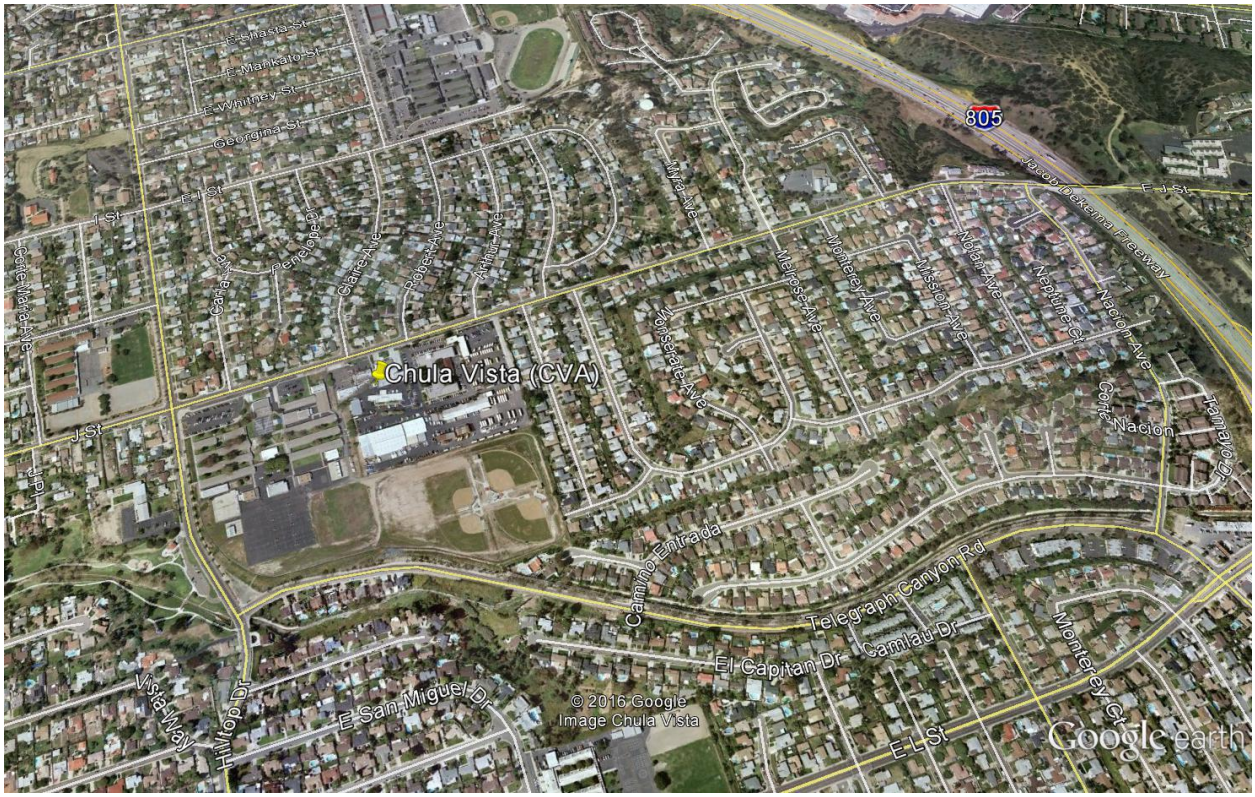


Table 3.2a Chula Vista - Gaseous Pollutants Monitor Designations + Other

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)	1:2	1:2	N/A	N/A
Annual Performance Evaluation date	4/28	5/25	5/4	N/A
NPAP (ARB) date	8/24	8/24	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	6/9 12/28	3/24 10/19	3/24 10/19
NPAP (ARB) date	8/24	8/24	8/24
PEP (EPA) date	10/2016	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	6/8	6/8	6/8	6/8
NPAP (ARB) date	N/A	*	*	*

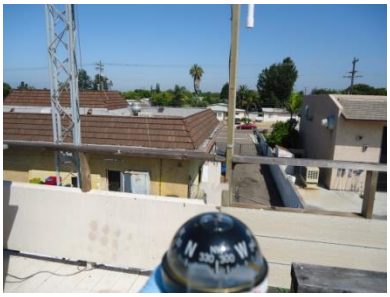
*ARB does not have the equipment to audit.

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)	3.0				1.6	1.6		2.1								2.0		2.2	N/A
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 Del Mar Station Description and Statement of Purpose

Table 4.1 General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Del Mar
Year Established:	10/14/1983
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:	There are bushes less than 10 m from the inlet or the probe, but the bushes are 2 m below the inlet and are trimmed regularly to maintain this height. The measured values at this location compare with the ones at CMP and the vegetation does not impact the quality of the data.

Figure 4.1 Del Mar – Picture of the Location of the Station

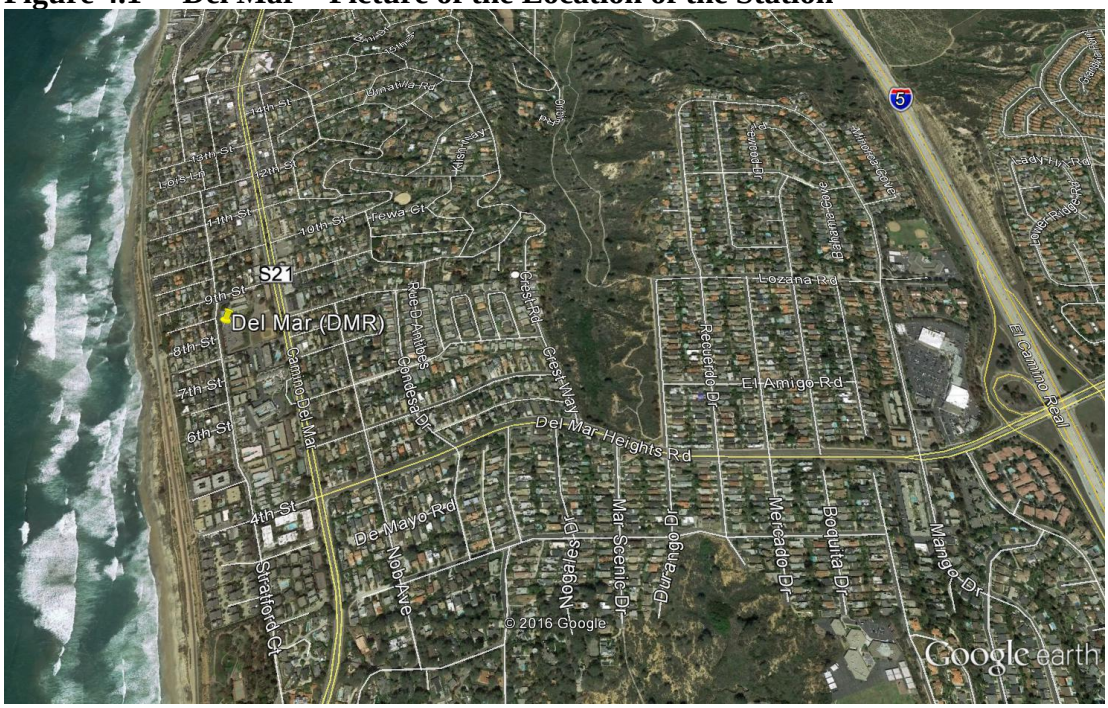


Table 4.2a Del Mar - Gaseous Pollutants Monitor Designations + Other

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	6/2	6/22	N/A
NPAP (ARB) date	8/25	N/A	N/A

Table 4.2b 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	10/18	10/18	10/18
NPAP (ARB) date	N/A	*	*

*ARB does not have the equipment to audit.

Table 4.3 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 4.2 Del Mar – Pictures (Directional) from the Ground*

*There is no deck from which to take pictures.

Appendix 5.0.0 Donovan Station Description and Statement of Purpose

Table 5.1 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:	None

Figure 5.1 Donovan – Picture of the Location

Table 5.2a 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)	1:2	1:2	N/A	N/A
Annual Performance Evaluation date	6/7	6/24	7/1	N/A
NPAP (ARB) date	*	*	N/A	N/A

*Not done this year

Table 5.2b Donovan - Particulate Pollutants Monitor Designations

Pollutant	$PM_{2.5}$ Continuous (non-FEM)	PM_{10} Manual (Hi-Vol)
POC	1	1
Monitor designation	Other	Other
Parameter code	88502 (LC)	85101 (LC) 81102 (STD)
Basic monitoring objective	Public Information, Research	NAAQS
Site type	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS
Network affiliation	N/A	N/A
Instrument manufacturer & model	Met One BAM 1020	GMW 2000H w/ SA 1200 Head
Method code	733	063
FRM/FEM/ARM/Other	Other (non-FEM)	FRM
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Population Exposure	Neighborhood Scale
Monitoring start date	1/21/2015	7/2014
Current sampling frequency	Continuous	1:6
Required sampling frequency	Continuous	1:6
Sampling season	Year-round	Year-round
Any PM Lo-Vol sampler w/in 1m	None	None
Any PM Hi-Vol sampler w/in 2m	None	None
Probe material for reactive gases	N/A	N/A
Residence time for reactive gases	N/A	N/A
Any changes within the next 18 months?	No	No
Suitable for comparison to the NAAQS?	No	No
Frequency of flow rate verification	Semi-monthly	monthly
Semi-Annual flow rate audits dates	6/29 12/28	9/16** 12/28
NPAP (ARB) date	*	*

*Not done this year

** The sampler was audited in successive quarters instead of alternating by accident.

Table 5.2c 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 5.2d 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	10/26	10/26	10/26	10/26
NPAP (ARB) date	N/A	*	*	*

*ARB does not have the equipment to audit.

Table 5.3 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)	2.2				1.6					2.2						1.8	1.8	1.9	n/a
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 5.2 Donovan – Pictures (Directional) from the Rooftop

Appendix 6.0.0 San Diego / Beardsley St. Station Description and Statement of Purpose

Table 6.1 General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	San Diego-Beardsley St.
Year Established:	7/14/2005
Site Address:	1110a Sigsbee St.
Site Name Abbreviation:	DTN
AQS Number:	06-073-1010
Latitude:	32.701492 ^{O}
Longitude:	-117.149663 ^{O}
Elevation above Sea Level:	8 m
General Location:	Trailer in the SW corner of the Perkins Elementary school parking lot
Ground Cover:	Asphalt
Distance to Road:	10.7 m north= Sigsbee St.
Traffic Count (2013 AADT):	Main St. at Sigsbee St.= 2,900
Site Description:	This site is centered in the heart of the Downtown/South Bay industrial zone, and captures emissions from Interstates 5, 805, 15 and Route 94, downtown San Diego, Lindbergh Field, North Island Naval Air Station, marine terminals, NASSCO shipyards, Continental Maritime shipyard, Southwest Marine, train yards, and harbor ship traffic.
Monitoring Objectives:	This site is in an Environmental Justice area. Forecasting of $PM_{2.5}$ levels for several monitoring sites (from Chula Vista to Kearny Mesa) is partially based upon the values collected at this site. This location is useful for capturing high NO_2 concentrations, and assessing ozone transport from the south (Baja, Mexico).
Planned Changes:	Due to a multi-year school redevelopment construction project, the District had to permanently relocate to Sherman Elementary School in Sherman Heights on 10/24/2016

Figure 6.1 Downtown – Picture of the Location of the Station

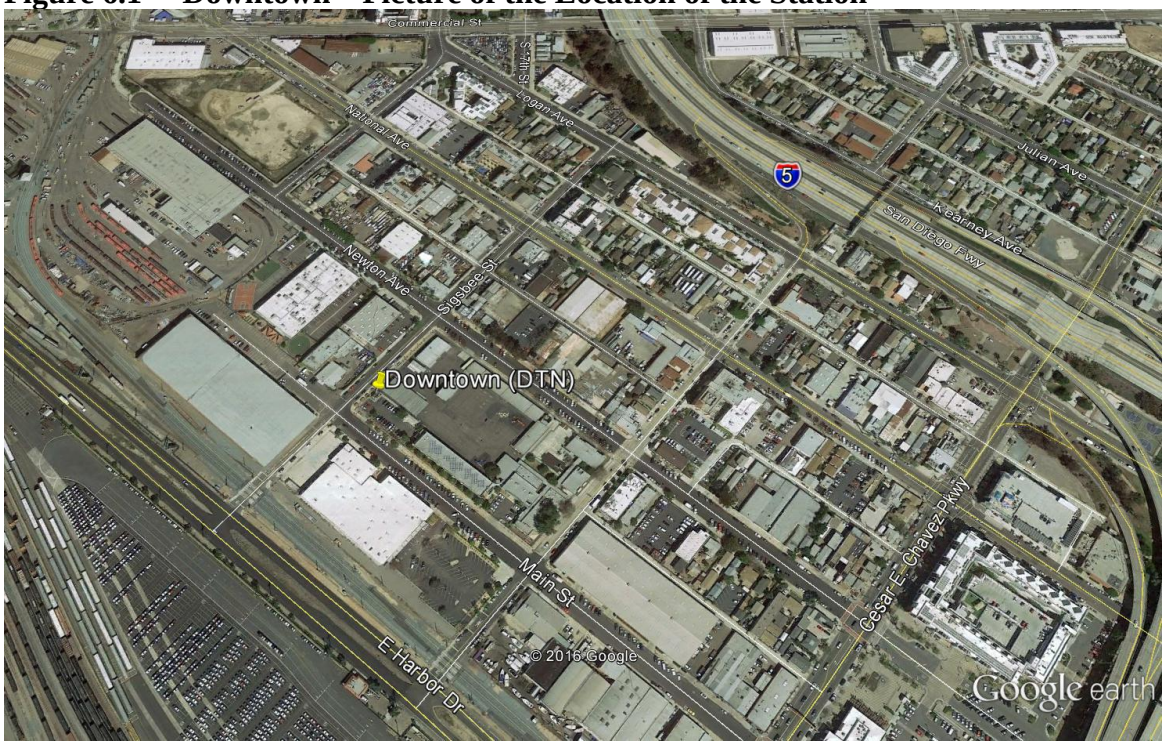


Table 6.2a Downtown - Gaseous Pollutants Monitor Designations + Other

Pollutant	O_3	NO_2	CO	Other Zero Air	Other Calibrator
POC	1	1	1	N/A	N/A
Monitor designation	Other	Primary	Other	N/A	N/A
Parameter code	44201	42602 (NO_2)	42101	N/A	N/A
Basic monitoring objective	Public Information, NAAQS	Public Information, NAAQS	Public Information, NAAQS	N/A	N/A
Site type	Population Exposure	Population Exposure	Population Exposure	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS	N/A	N/A
Network affiliation	N/A	N/A	N/A	N/A	N/A
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Thermo 48i	Teledyne-API 701H	Teledyne-API T700u
Method code	047	074	054	N/A	N/A
FRM/FEM/ARM/Other	FEM	FRM	FRM	N/A	N/A
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	N/A	N/A
Monitoring start date	7/2005	7/2005	7/2005	2014	2015
Monitoring end date	10/24/2016	10/24/2016	10/24/2016	10/24/2016	10/24/2016
Current sampling frequency	Continuous	Continuous	Continuous	N/A	N/A
Required sampling frequency	Continuous	Continuous	Continuous	N/A	N/A
Sampling season	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
Any PM Hi-Vol sampler w/in 2m	N/A	N/A	N/A	N/A	N/A
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	Borosilicate glass	N/A	N/A
Residence time for reactive gases	5.01 sec	5.01 sec	5.01 sec	N/A	N/A
Any changes within the next 18 months?	Yes	Yes	Yes	Yes	No
Suitable for comparison to the NAAQS?	Yes	Yes	Yes	N/A	N/A
Frequency of QC check (one-point)	1:2	1:2	1:2	N/A	N/A
Annual Performance Evaluation date	2/25	2/3	3/29	4/22	N/A
NPAP (ARB) Date	*	*	*	N/A	N/A

*Not done this year

Table 6.2b Downtown - Particulate Pollutants Monitor Designations

Pollutant	$PM_{2.5}$ Continuous	$PM_{2.5}$ Manual	PM_{10} Manual
POC	1	1	1
Monitor designation	Other	Primary	Other
Parameter code	88502 (LC)	88101 (LC)	85101 (LC) 81102 (STD)
Basic monitoring objective	Public Information, Research	NAAQS	NAAQS
Site type	Highest Concentration	Highest Concentration	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	N/A	N/A	N/A
Instrument manufacturer & model	Met One BAM 1020	Thermo 2025	GMW 2000H w/ SA 1200 Head
Method code	733	145	063
FRM/FEM/ARM/Other	Other (non-FFEM)	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	7/2005	7/2005	7/2005
Monitoring end date	9/30/2016	9/30/2016	9/30/2016
Current sampling frequency	Continuous	1:3	1:6
Required sampling frequency	Continuous	1:3	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?	Yes	Yes	Yes
Suitable for comparison to the NAAQS?	No	Yes	Yes
Frequency of flow rate verification	Semi-monthly	Monthly	Monthly
Semi-Annual flow rate audits dates	5/6 10/19	4/27 10/19	6/9 *
NPAP (ARB) Date	**	**	**
PEP (EPA) date	N/A	2/2016 6/2016	N/A

*Site closed in the 4th quarter, before audit

**Not done this year

Table 6.2c Downtown - Other Pollutants Monitor Designations

Pollutant	TOXIC-VOC	TOXIC-Metals	PAMS-Carbonyls (unofficial)
POC	1	1	1
Monitor designation	N/A	N/A	Other
Parameter code	See Toxics sec Table 13.b	Collected; not analyzed	See PAMS Table 12.2
Basic monitoring objective	Research	Research	Research
Site type	Population Exposure	Population Exposure	Population Exposure
Monitor type	Other (SDAPCD Network)	Other (SDAPCD Network)	Unofficial PAMS
Network affiliation	N/A	N/A	N/A
Instrument manufacturer & model	Xontech 910A (Fused Silica Lined)	Xontech 924	Xontech 924
Method code	210	Collected; not analyzed	202
FRM/FEM/ARM/Other	Other	Other	Other
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	1/2007	1/2005	7/2012
Monitoring end date	9/30/2016	9/30/2016	9/30/2016
Current sampling frequency	1:6	1:12	1:6
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?	Yes	Yes	Yes
Frequency of QC check (one-point)	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 6.2d Downtown - 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	7/2005	7/2005	7/2005	7/2005
Monitoring end date	10/24/2016	10/24/2016	10/24/2016	10/24/2016
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	6/3	6/3	6/3	6/3
NPAP (ARB) Date	N/A	*	*	*

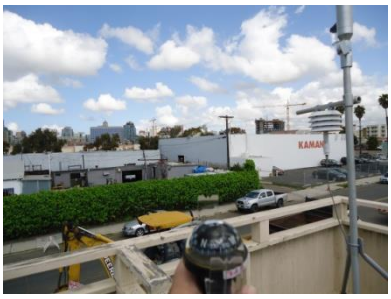
*ARB does not have the equipment to audit.

Table 6.3 Downtown - 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				2.7			1.7		3.3	1.8					3.9		3.0	n/a
NOy Inlet																			
Pb-TSP, PRI																			
Pb-TSP, QAC																			
PM_{10}, PRI	2.7				n/a			2.3		2.0	2.7					1.9		2.2	n/a
PM_{10}, QAC																			
PM_{10}, PRI																			
$PM_{2.5}$ FRM, PRI	1.7				2.3			n/a		2.0	3.1					4.3		4.0	n/a
$PM_{2.5}$ FRM, QAC																			
$PM_{2.5}$ non-FEM	3.3				2.0			2.0		n/a	4.4					4.2		4.5	n/a
$PM_{2.5}$ STN	1.8				2.7			3.1		4.4	n/a					3.1		1.7	n/a
$PM_{2.5}$ CSN																			
†PAMS-VOC																			
†PAMS-VOC QAC																			
†PAMS-Carbonyls																			
†Toxics-VOC	3.9				1.9			4.3		4.2	3.1					n/a		1.7	n/a
†Toxics-VOC, QAC																			
Toxics-Metals	3.0				2.2			4.0		4.5	1.7					1.2		n/a	n/a
Meteorology	n/a				n/a			n/a		n/a	n/a					n/a		n/a	n/a
Height from ground	6.0				5.1			5.7		5.7	5.5					6.0		5.7	10
Distance: from the road	10.7				10.7			10.7		10.7	10.7					10.7		10.7	10.7
from the supporting structure	N				N			N		N	N					N		N	N
from obstructions on roof (deck)	4				3			3		3	3					3		3	6
from obstructions not on roof	N				N			N		N	N					N		N	N
from the closest tree	21				21			21		21	21					21		21	21
from furnace/flue	N				N			N		N	N					N		N	N
Unrestricted air flow (degrees)	360				360			360		360	360					360		360	360

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

Figure 6.2 Downtown – Pictures (Directional) from the Rooftop



Appendix 7.0.0 McClellan-Palomar Airport Station Description and Statement of Purpose

Table 7.1 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:	AQS number changed to 06-073-1023 from 06-073-1020 to reflect the change in the site location from the run-up area to by the business park

Figure 7.1 Palomar Airport – Picture of the Location

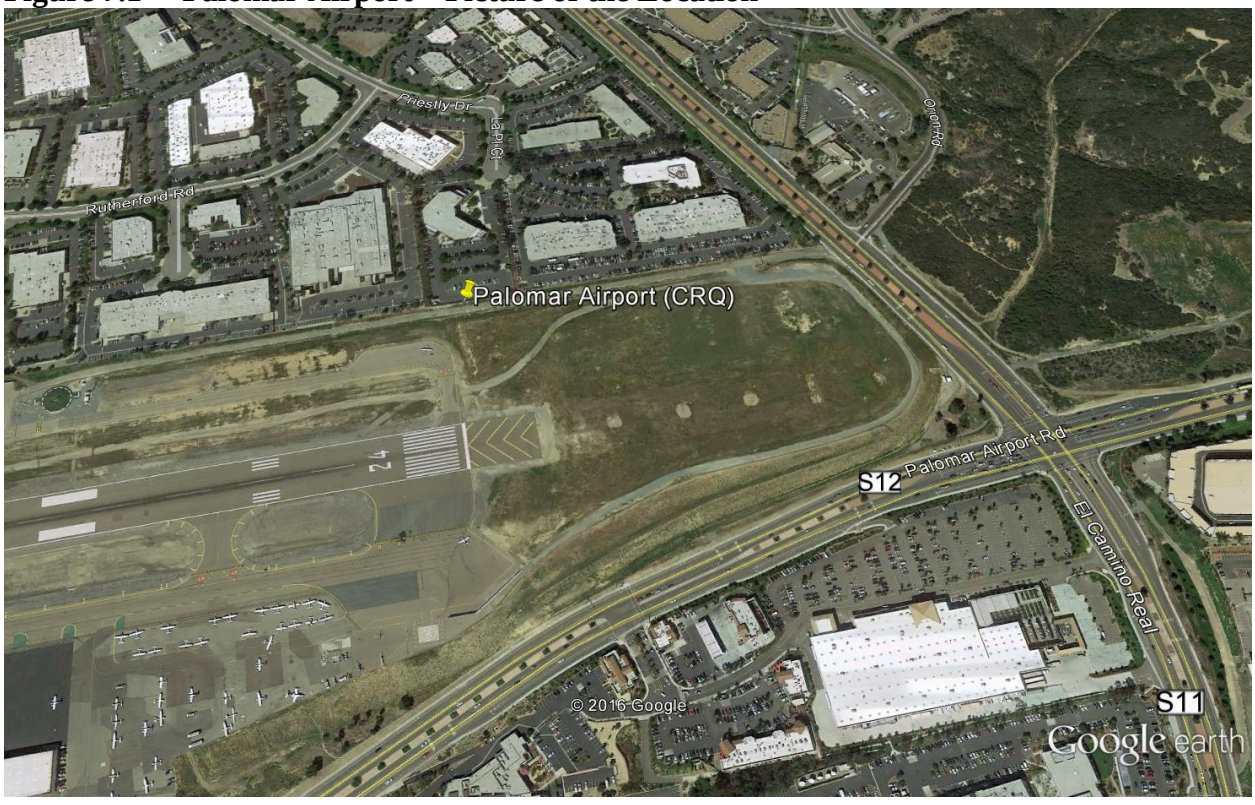


Table 7.2a Palomar Airport - Particulate Pollutants Monitor Designations

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	6/30 12/29	6/30 12/29
NPAP (ARB) date	*	*
PEP (EPA) date	*	*

*Not done this year

Table 7.3 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 (grating)			1.2	1.2															
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 7.1 Palomar Airport – Pictures (Directional) from the Ground*

*The sampler is situated at ground level

Appendix 8.0.0 Lexington Elementary School Station Description and Statement of Purpose

Table 8.1 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:	None

Figure 8.1 Floyd Smith Dr. – Picture of the Location

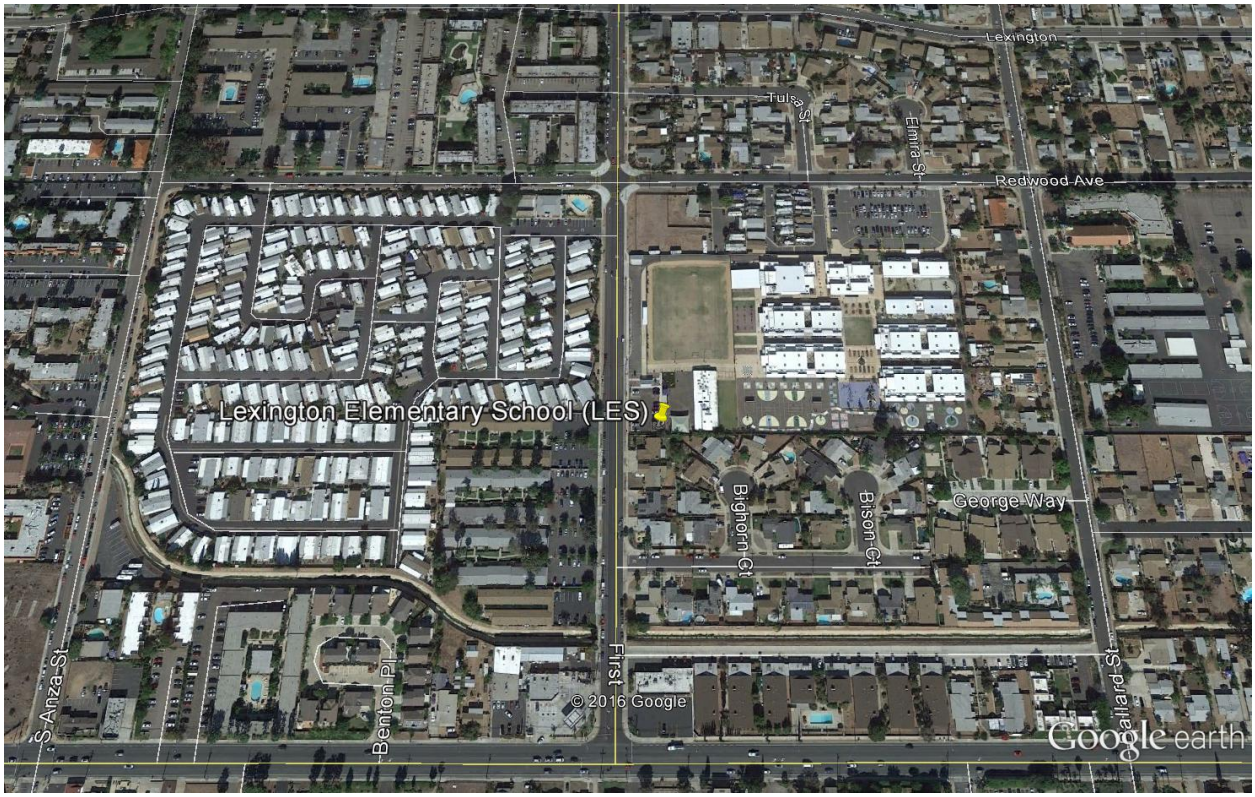


Table 8.2a Lexington Elementary School - Gaseous Pollutants Monitor Designations + Other

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)	1:2	1:2	1:2	1:2	1:2	N/A	N/A
Annual Performance Evaluation date	11/8	11/17	12/21	12/22	*	12/22	N/A
ARB (NPAP) date	**	**	**	**	*	N/A	N/A

*Not operational in 2016.

**Not operational long enough for these QA functions to be undertaken

Table 8.2b 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	12/29	12/30	12/30	12/29 *	12/29	12/27
ARB date	**	N/A	N/A	**	**	**
PEP (EPA) date	**	N/A	N/A	N/A	N/A	**

*Only operational in the 4th qtr, therefore not long enough for two audits.

**Not operational long enough for these QA functions to be undertaken

Table 8.2c Lexington Elementary School - Other Pollutants Monitor Designations

Pollutant	PAMS-VOC	PAMS-Carbonyls
POC	1 for 3-Hr samples 2 for 24-Hr samples	1 for 3-Hr samples 2 for 24-Hr samples
Monitor designation	Other	Other
Parameter code	See PAMS Table 12.2b	See PAMS Table 12.2c
Basic monitoring objective	Research	Research
Site type	Maximum Precursor Impact	Maximum Precursor Impact
Monitor type	SLAMS	SLAMS
Network affiliation	PAMS Type II	PAMS Type II
Instrument manufacturer & model	Xontech 910 & 912	Xontech 925
Method code	126	202
FRM/FEM/ARM/Other	Other	Other
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	7/2016	7/2016
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?	Yes	Yes
Suitable for comparison to the NAAQS?	N/A	N/A
Frequency of flow rate verification	N/A	N/A
Annual Performance Evaluation date	N/A	N/A
ARB date	N/A	N/A

Table 8.2d 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	**	**	**	**	**
NPAP (ARB) date	N/A	*	*	*	*

*ARB does not have the equipment to audit.

**Not operational long enough for these QA functions to be undertaken

Table 8.3 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)	2.7	10.0					2.2	2.2		2.0	2.0	2.1	1.9		2.0	2.0		1.6	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 8.2 Lexington Elementary School – Pictures (Directional) from the Rooftop

Appendix 9.0.0 Kearny Villa Road Station Description and Statement of Purpose

Table 9.1 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).
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 9.1 Kearny Villa Road – Picture of the Location

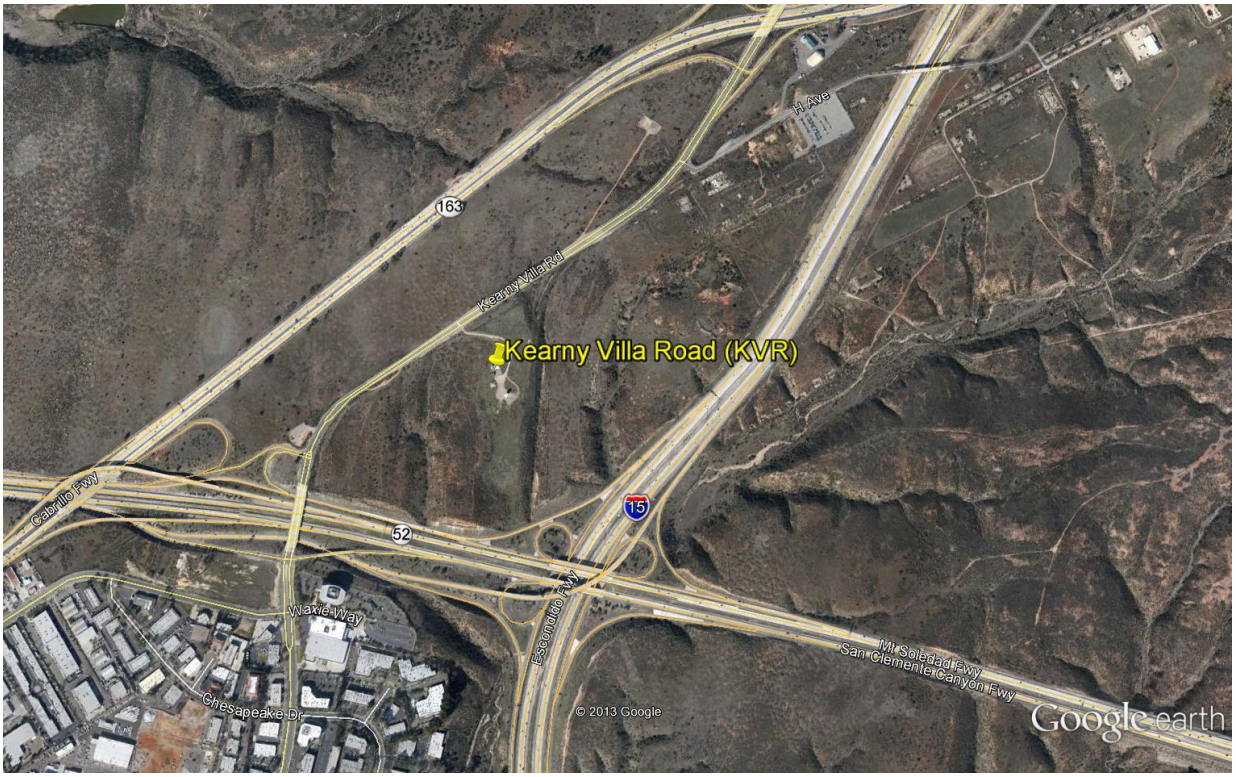


Table 9.2a Kearny Villa Road - Gaseous Pollutants Monitor Designations + Other

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)	1:2	1:2	N/A	N/A
Annual Performance Evaluation date	1/27	1/28	2/10	N/A
NPAP (ARB) date	8/17	8/17	N/A	N/A

Table 9.2b 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	2/26 9/29	2/26 9/29	2/23 10/14
NPAP (ARB) date	8/17	8/17	8/17
PEP (EPA) date	6/2016 10/2016	N/A	N/A

Table 9.2d1 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	2/24	2/24	2/24	2/24	2/24
NPAP (ARB) date	N/A	*	*	*	*

*ARB does not have the equipment to audit

Table 9.2d2 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	2/24	5/18	N/A
NPAP (ARB) date	*	*	N/A

**The Equipment is not operational and must be replaced

Table 9.3 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)	2.2				1.6			2.2	2.2										n/a
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 9.2 Kearny Villa Road – Pictures (Directional) from the Rooftop

Appendix 10.0.0 San Ysidro Station Description and Statement of Purpose

Table 10.1 General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	San Ysidro
Year Established:	6/6/2016
Site Address:	720 East San Ysidro Blvd.
Site Name Abbreviation:	SAY2
AQS Number:	06-073-1024
	32.542679°
Longitude:	-117.030749°
Elevation above Sea Level:	19 m
General Location:	Customs Parking lot
Ground Cover:	Paved
Distance to Road:	10 meters (Border Crossing lanes)
Traffic Count (2013 AADT):	AADT= 70, 000 (from border crossing)
Site Description:	In the Customs parking lot by the fence adjacent to traffic entering San Ysidro
Monitoring Objectives:	To quantify airborne particulates from the San Ysidro POE
Planned Changes:	Removed due to construction on 8/24/2016

Figure 10.1 San Ysidro – Picture of the Location

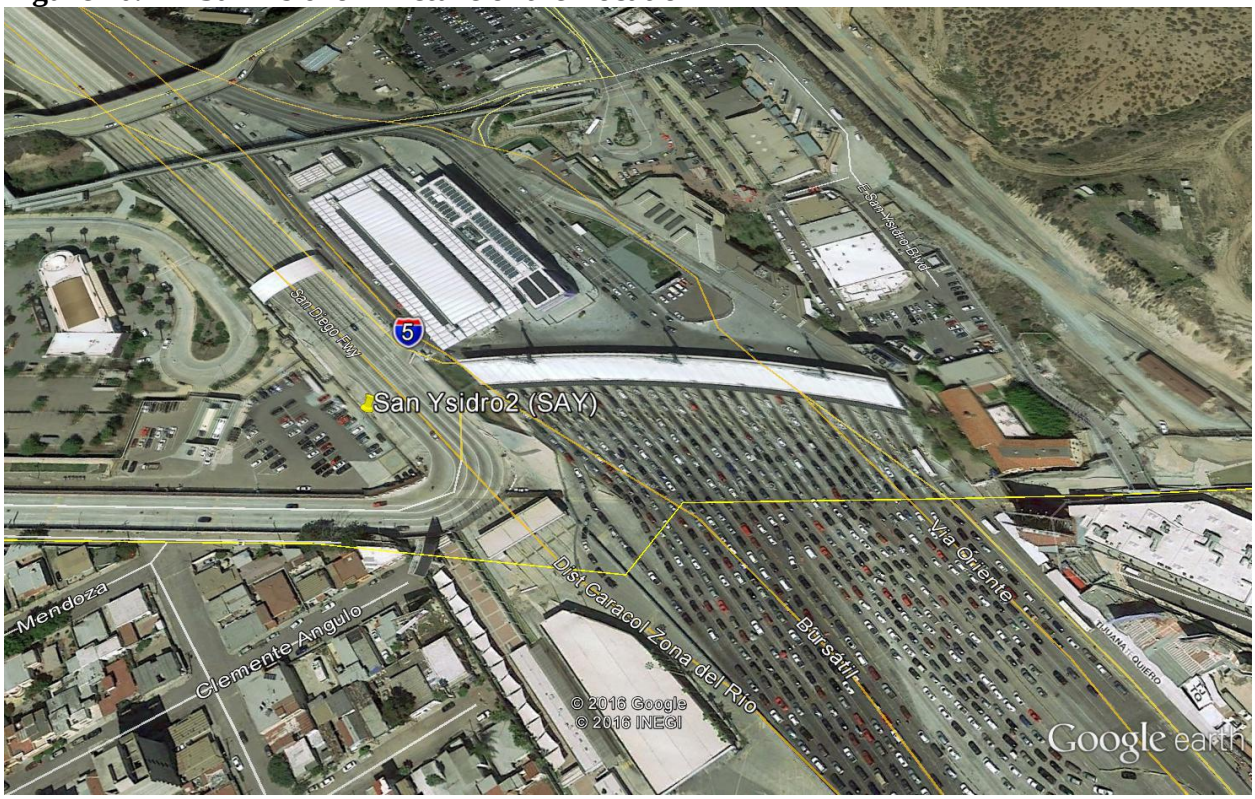


Table 10.2a San Ysidro – Particulate Pollutants Monitor Designations

Pollutant	**$PM_{2.5}$ Continuous (non-FEM)**
POC	1
Monitor designation	Other
Parameter code	88502 (LC)
Basic monitoring objective	Public Information, Research
Site type	Source Oriented
Monitor type	SPM
Network affiliation	Border Grant
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	Neighborhood Scale
Monitoring start date	6/6/2016
Monitoring end date	8/24/2016
Current sampling frequency	Continuous
Required sampling frequency	Continuous
Sampling season	Year-round
Probe height	3.1 meters
Distance from supporting structure	N/A
Distance from obstructions on roof	N/A
Distance from obstructions not on roof	N/A
Distance from trees	None
Distance to furnace or incinerator flue	N/A
Distance between collocated monitors	N/A
Unrestricted airflow	360^{O}
Probe material for reactive gases	N/A
Residence time for reactive gases	N/A
Any changes within the next 18 months?	Yes
Suitable for comparison to the NAAQS?	No
Frequency of flow rate verification	Semi-Monthly
Semi-Annual flow rate audits dates	*
NPAP (ARB) date	*

*Only operational for 2 months, therefore no audits were performed

Appendix 11.0.0 Floyd Smith Dr. Station Description and Statement of Purpose

Table 11.1 General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	El Cajon – Floyd Smith Dr.
Year Established:	7/2014
Site Address:	10537 Floyd Smith Drive
Site Name Abbreviation:	FSD
AQS Number:	06-073-1018
Latitude:	32.817907°
Longitude:	-116.968302°
Elevation above Sea Level:	119 m
General Location:	Trailer at the junction of Floyd Smith Dr. and W. Bradley Ave.
Ground Cover:	Packed dirt with some ground vegetation and mulch
Distance to Road:	14.9 m south= W. Bradley Ave.
Traffic Count (2013 AADT):	W. Bradley St. at N. Johnson Ave. (250 m East of the FSD)= 5,800. Floyd Smith Dr. is a circuit street to access the back area of some facilities on airport property. No traffic count is available for Floyd Smith Drive; estimated= 200
Site Description:	This station is a trailer on a lot at the junction of Floyd Smith Dr. and W. Bradley Ave., perpendicular to hangars to the northwest and an abandoned parking lot to the northeast. The gaseous monitors and samplers inlets are above the roof of the trailer. All particulate samplers are on the ground.
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:	The school grounds on which the station is located is to be remodeled, so the station has temporarily relocated to the Gillespie Field area. Once the remodeling is finished, the District will return to the same school, but located about 200 m west of the original location. This station relocated back to Lexington Elementary School in 6-7/2016.

Figure 11.1 Floyd Smith Dr. – Picture of the Location

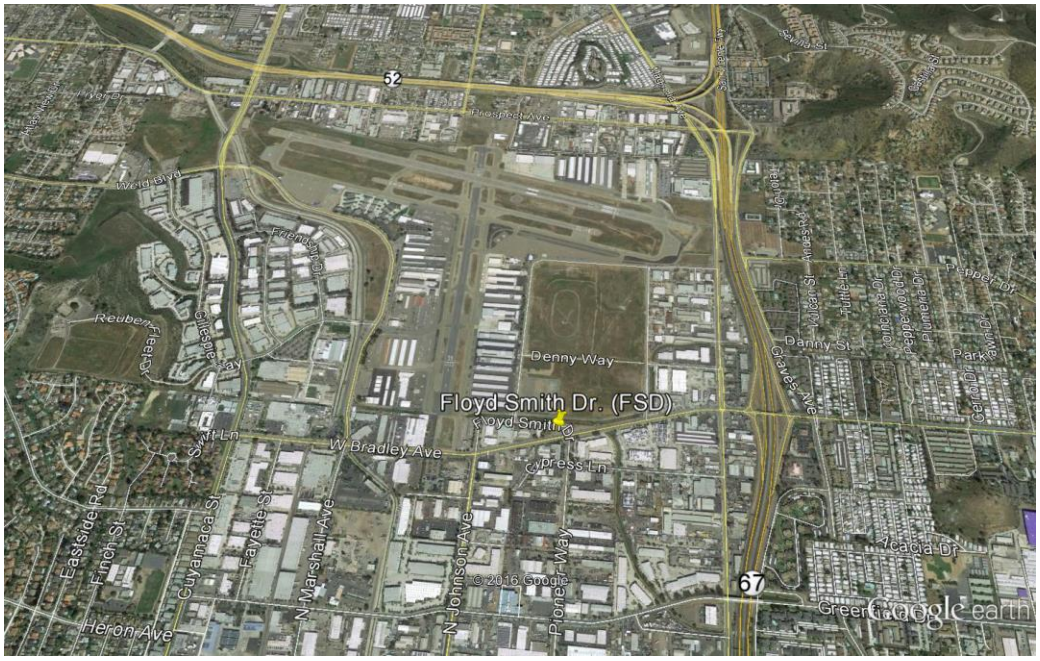


Table 11.2a Floyd Smith Dr. - Gaseous Pollutants Monitor Designations + Other

Pollutant	O_3	NO_2	CO-TLE	SO_2-TLE	Other Zero Air	Other Calibrator
POC	1	1	3	3	N/A	N/A
Monitor designation	Other	Primary	Not Applicable	Not Applicable	N/A	N/A
Parameter code	44201	42602 (NO_2)	42101	42401	N/A	N/A
Basic monitoring objective	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	N/A	N/A
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	N/A	N/A
Network affiliation	PAMS, NCore	PAMS	PAMS, NCore	NCore	N/A	N/A
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Thermo 48i-TLE	Thermo 43i-TLE	Teledyne-API 701H	Teledyne-API T700u
Method code	047	074	554	560	N/A	N/A
FRM/FEM/ARM/Other	FEM	FRM	FRM	FEM	N/A	N/A
Collecting agency	APCD	APCD	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	N/A	N/A
Monitoring start date	7/2014	7/2014	7/2014	7/2014	7/2014	2015
Monitoring end date	8/2016	8/2016	8/2016	8/2016	8/2016	8/2016
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	N/A	N/A
Required sampling frequency	Continuous	Continuous	Continuous	Continuous	N/A	N/A
Sampling season	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
Any PM Hi-Vol sampler w/in 2m	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	N/A	N/A
Residence time for reactive gases	9.13	9.13	9.13	9.13	N/A	N/A
Any changes within the next 18 months?	Yes	Yes	Yes	Yes	Yes	No
Suitable for comparison to the NAAQS?	Yes	Yes	Yes	Yes	N/A	N/A
Frequency of QC check (one-point)	1:2	1:2	1:2	1:2	N/A	N/A
Annual Performance Evaluation date	8/12	8/17	3/32, 7/26	7/26, 12/22	**	N/A
ARB (NPAP) date	***	***	***	***	N/A	N/A

*The equipment was only operational for half a year, so only one audit was conducted.

** The equipment was only operational for half a year, so no audit was conducted.

***Closed before ARB's audit cycle

Table 11.2b Floyd Smith Dr. - 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)	Pb-TSP Manual (Hi-Vol)
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)	14129
Basic monitoring objective	NAAQS	Research	Research	NAAQS	Research	NAAQS
Site type	Highest Concentration	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	NCore	NCore, CSN, STN	NCore, CSN, STN	NCore	NCore	NCore
Instrument manufacturer & model	Thermo 2025	Met One SASS	URG-3000N	Thermo 2025	Thermo 2025	Tisch TE-5170BLVFC+
Method code	145	See RTI	See RTI	127	176	192
FRM/FEM/ARM/Other	FRM	Other	Other	FRM	Other	FRM
Collecting agency	APCD	APCD	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	EPA	EPA	APCD	APCD	APCD
Reporting agency	APCD	EPA	EPA	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	7/2014	7/2014	7/2014	7/2014	7/2014	7/2014
Monitoring end date	5/2016	5/2016	5/2016	5/2016	5/2016	5/2016
Current sampling frequency	1:3	1:6	1:6	1:3	1:3	1:6
Required sampling frequency	1:3	1:6	1:6	1:3	1:3	1:6
Any PM Lo-Vol sampler w/in 1m	None	None	None	None	None	None
Any PM Hi-Vol sampler w/in 2m	None	None	None	None	None	None
Probe material for reactive gases	N/A	N/A	N/A	N/A	N/A	N/A
Residence time for reactive gases	N/A	N/A	N/A	N/A	N/A	N/A
Any changes within the next 18 months?	Yes	Yes	Yes	Yes	Yes	Yes
Suitable for comparison to the NAAQS?	Yes	No	No	Yes	No	No
Frequency of flow rate verification	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Semi-Annual flow rate audits dates	5/31	5/25	5/31	5/31	5/31	12/29**
ARB date	***	N/A	N/A	***	***	***
PEP (EPA) date	8/2016	N/A	N/A	N/A	N/A	8/2016

*The equipment was only operational for less than two quarters, so no audits were undertaken; only close-out calibrations.

**Only one audit was conducted.

*** Closed before ARB's audit cycle.

Table 11.2c Floyd Smith Dr. - Other Pollutants Monitor Designations

Pollutant	PAMS-VOC	PAMS-Carbonyls
POC	1 for 3-Hr samples 2 for 24-Hr samples	1 for 3-Hr samples 2 for 24-Hr samples
Monitor designation	Other	Other
Parameter code	See PAMS Table 12.2b	See PAMS Table 12.2c
Basic monitoring objective	Research	Research
Site type	Maximum Precursor Impact	Maximum Precursor Impact
Monitor type	SLAMS	SLAMS
Network affiliation	PAMS Type II	PAMS Type II
Instrument manufacturer & model	Xontech 910 & 912	Xontech 925
Method code	126	202
FRM/FEM/ARM/Other	Other	Other
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	7/2014	7/2014
Monitoring end date	6/2016	6/2016
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?	Yes	Yes
Suitable for comparison to the NAAQS?	N/A	N/A
Frequency of flow rate verification	N/A	N/A
Annual Performance Evaluation date	N/A	N/A
ARB date	N/A	N/A

Table 11.2d Floyd Smith Dr. - Meteorological Equipment Monitor Designations + Other

Pollutant	**Other Internal Temp**
POC	1
Monitor designation	N/A
Parameter code	62107
Basic monitoring objective	N/A
Site type	N/A
Monitor type	SLAMS
Network affiliation	NCore, PAMS
Instrument manufacturer & model	Qualimetrics
Method code	012
FRM/FEM/ARM/Other	Other
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Neighborhood scale
Monitoring start date	7/2014
Current sampling frequency	Continuous
Required sampling frequency	Continuous
Sampling season	Year-round
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?	Yes
Suitable for comparison to the NAAQS?	N/A
Frequency of flow rate verification	N/A
Annual flow rate audits dates	8/12
ARB date	N/A

Table 11.3 Floyd Smith Dr. - 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			n/a	n/a	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	n/a		18				n/a	1.1			1.1	1.1	n/a		n/a	5		5	
$PM_{2.5}$ FRM, PRI	n/a		18				1.1	n/a			1.1	1.1	n/a		n/a	5		5	
$PM_{2.5}$ FRM, QAC																			
$PM_{2.5}$ non-FEM																			
$PM_{2.5}$ STN	n/a		18				1.1	1.1			n/a	1.1	n/a		n/a	5		5	
$PM_{2.5}$ CSN	n/a		18				1.1	1.1			1.1	n/a	n/a		n/a	5		5	
†PAMS-VOC	n/a		11				n/a	n/a			n/a	n/a	n/a		n/a	n/a		n/a	
†PAMS-VOC QAC																			
†PAMS-Carbonyls	n/a		11				n/a	n/a			n/a	n/a	n/a		n/a	n/a		n/a	
Toxics-VOC	n/a		13				5	5			5	5	n/a		n/a	n/a		n/a	
Toxics-VOC, QAC																			
Toxics-Metals	n/a		13				5	5			5	5	n/a		n/a	1.1		n/a	
Meteorology																			
Height from ground	7.3		3.1				3.1	3.1			3.1	3.1	6		6	3.1		3.1	
Distance: from the road	15		11				11	11			11	11	15		15	11		11	
from the supporting structure (deck)	7.3		1.5				N	N			N	N	N		N	N		N	
from obstructions on roof	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	
from the closest tree	N		N				N	N			N	N	N		N	N		N	
Unrestricted air flow (degrees)	360		360				360	360			360	360	360		360	360		360	

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

Appendix 12.0.0 Rancho Carmel Drive Station Description and Statement of Purpose

Table 12.1 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 NO2 & CO contributions from I-15
Planned Changes:	None.

Figure 12.1 Rancho Carmel Drive - Picture of the Location of the Station

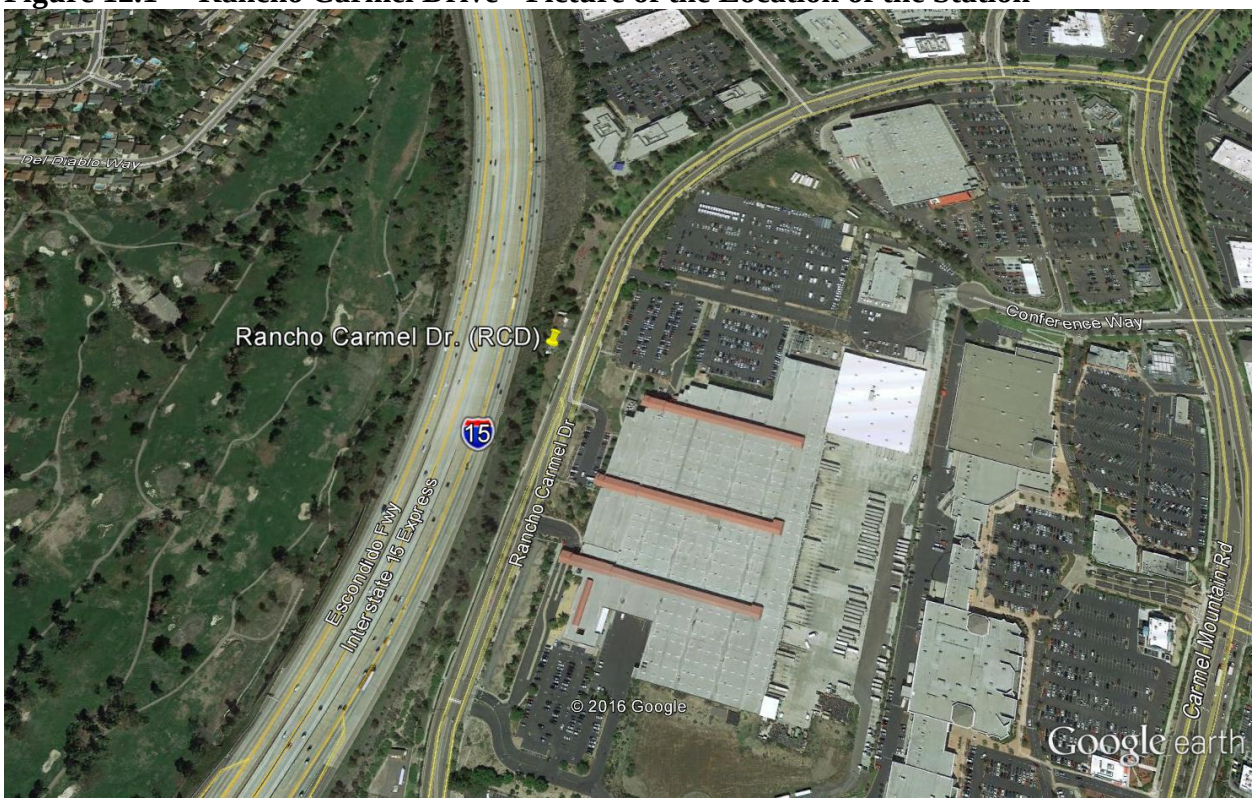


Table 12.2a Rancho Carmel Drive - Gaseous Pollutants Monitor Designations + Other

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)	1:2	1:2	N/A	N/A
Annual Performance Evaluation date	11/10	11/20	10/21	N/A
NPAP (ARB) Date	8/18	8/18	N/A	N/A

Table 12.3 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 12.2 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).