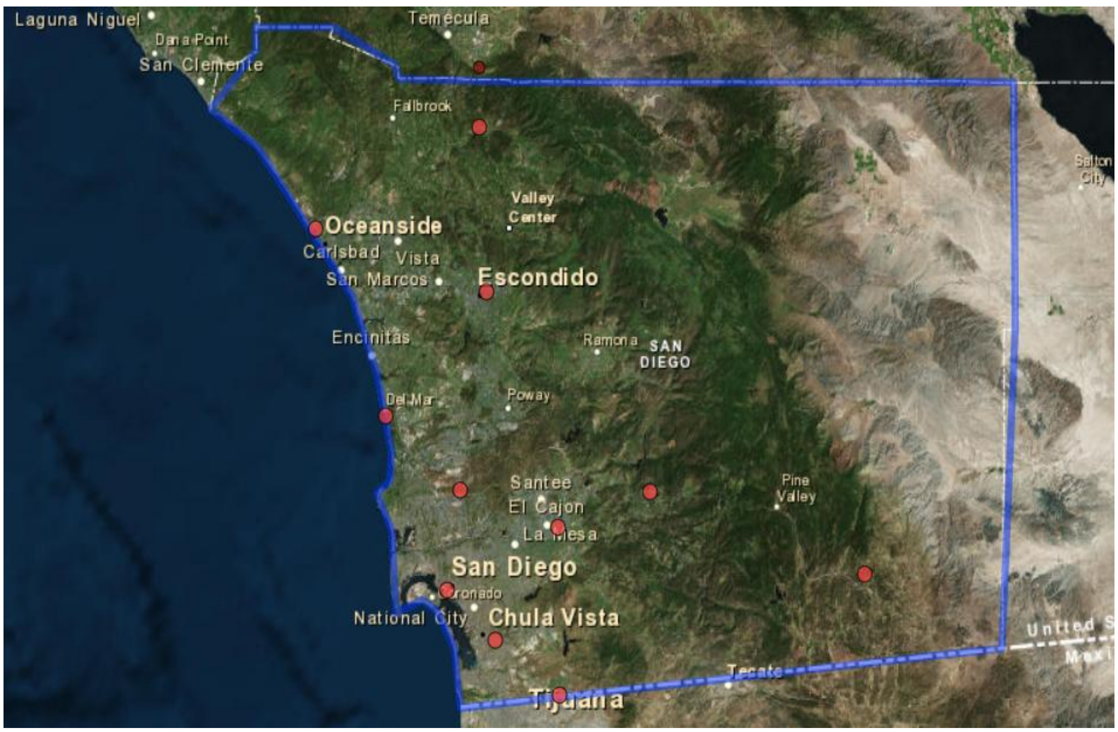
SAN DIEGO AIR POLLUTION CONTROL DISTRICT
ANNUAL AIR QUALITY MONITORING
NETWORK PLAN
2014



Prepared by:

The Staff of the Monitoring and Technical Services Division
of the
San Diego Air Pollution Control District

July 1, 2015

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

(left intentionally blank)

Table of Contents

LIST OF TABLES

LIST OF FIGURES

APPENDICIES

ACRONYMS

Symbols & Numbers
>- Greater than
<- Less than
≥- Greater than or equal to
≤- Less than or equal to
%- percent
µg/m^3- micrograms per cubic meter
7/24- Monitor that operates 24 hours a day, 7 days a week

A
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 (aka continuous)- A sampler that operates on a 7/24 schedule

B
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

CAA- Clean Air Act
CARB- California Air Resources Board
CASAC- Clean Air Science Advisory Committee
CASTNET- Clean Air Status and Trends Network
CA TAC- 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 (aka automated)- 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) (aka 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 (16.7 LPM) instrument that operates 7 / 24.
CVA- Chula Vista monitoring location

D

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

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

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
G/B- General/Background site type
GC/FID- Gas Chromatography with a flam ionization detector
GC/MS- Gas Chromatography followed by mass spectroscopy

H
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
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
KMA- San Diego/Overland (aka Kearny Mesa) monitoring location
KVR- Kearny Villa Road monitoring location

L
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
Manual (aka 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
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.
MOU- Memorandum of Understanding
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
NAAQS- National Ambient Qir Quality Standard
NACAA- National Association of Clean Air Agencies
NAFTA- North American Trade Agreement
NAMS- National Air Monitoring Station
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
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
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
PMcoarse- (aka 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
$PM_{2.5}$- 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.
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
%RH- Relative humidity

Q
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

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

SDAB- San Diego Air Basin
SEE- Gillespie Field monitoring location
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

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 (aka Air Toxics)- A 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

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

VOC- Volatile Organic Compounds

W

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

Yr- Year

Z

ZAG- Zero Air Generator

Introduction

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 monitor 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.

This document details the current monitoring network in the San Diego Air Basin (SDAB) for the criteria pollutants: ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), lead (Pb) and particulate matter (PM_{10} & $PM_{2.5}$). In addition to criteria pollutant monitoring, there are several additional monitoring programs the District must detail: National Core (NCore), Speciation Trends Network (STN), Chemical Speciation Network (CSN), Photochemical Assessment Monitoring Stations (PAMS), Toxics, Special Purpose Monitoring (SPM), and State and Local Air Monitoring Sites (SLAMS). Some programs have additional, non-mandated speciation and are identified as Supplemental Speciation. Specific site information includes location information, site type, objectives, spatial scale, sampling schedule, equipment used, sampling method used, and monitor objective. It includes a review of actions taken during the previous year and plans for the next year.

Purpose, Scope, and Organization of Report

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

This report describes the network of ambient air quality monitors within the 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 by July 1, of each year.

As required by the CFR, this report includes monitors which are federal reference methods (FRM) or federal equivalent methods (FEM). 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, FEM, and ARM 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 $PM_{2.5}$ speciation monitoring.

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 with any comments to be submitted to the EPA. Notice of availability of the report was posted on the District's website (www.sdpacd.org), published, and posted in local media, at least 30 days prior to EPA submission. Comments submitted regarding the content of this report after the public inspection period, will be forwarded to EPA Region IX headquarters. Additionally, hardcopies of this report are available for review at District headquarters.

Please submit any comments in writing prior to June 30, to David Shina, Senior Chemist, Ambient Air Quality Section, dshina@sdapcd.org, 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.

District Contact Information

For information regarding this report, and questions related to laboratory operations, the collected ambient air quality data, or quality oversight of the monitoring program contact:

- David Shina, Senior Chemist, Ambient Air Quality Section, dshina@sdapcd.org, (858) 586-2768.

For information about daily field operations, contact:

- David Craig, Supervisor of Technicians, Technicians section, dcraig@sdapcd.org, (858) 586-2785.

For information about the collection of 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.

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 ambient air quality network, are available from a variety of sources. Much of this information is available on the web. 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, Acid Rain, and Stratospheric Ozone.

A broad, general overview of ambient air quality data in a question and answer format can be found at the following California Air Resources Board (CARB) web page: http://www.arb.ca.gov/aqd/aqfaq/. This web page includes links to various sites, both technical and non-technical.

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.

Volume II of the CARB 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 and regional maps showing the locations of the monitoring sites. To review the data from this report, as well as other data in general, go to http://www.arb.ca.gov/aqd/netrpt/netrpt.htm. The CARB's Planning and Technical Support Division (PTSD) maintains this information.

Summaries of the official air quality data from sites around the State can be found at: http://www.arb.ca.gov/adam/welcome.html. For summaries of data monitored recently, up to the last few months, go to: http://www.arb.ca.gov/aqd/aqinfo.htm. These last two sources of information are maintained by the PTSD, as is the following, more general web page that lists links to other aspects of the ambient air quality data program: http://www.arb.ca.gov/aqd/aqdpage.htm.

Web pages summarizing the National Ambient Air Quality Standards and the California Ambient Air Quality Standards at the EPA's and CARB's websites, respectively, are also available.

Near real-time ambient data, as well as historical data is available on the District's website (http://www.sdapcd.org/). Other helpful websites to visit are: http://airnow.gov/, and at http://www.epa.gov/ttn/airs/airsaqs/detaildata/downloadaqsdata.htm.

(left intentionally blank)

Chapter 1 Summary of the Minimum Monitoring Requirements

Section 1.0.0 Summary of the 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 to show compliance with 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 has different requirements for determining the minimum number of monitors needed for a Metropolitan Statistical Area (MSA) and the requirements can change yearly. The MSA is based upon the total population within the District. Some Districts are comprised of multiple air basins. 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. Also, some pollutants have additional monitoring requirements associated with them, e.g. $PM_{2.5}$ monitoring has requirements for continuous and sequential monitors.

Each section in this report that discusses the criteria pollutants lists the current Network Design Criteria for ambient air quality monitoring. For all pollutants the District is required to ensure that sufficient monitoring exists in the County, according to 40 CFR 58, Appendix D "Network Design Criteria for Ambient Air Quality Monitoring". 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 1.1.0 Summary of the Collocated Monitors Minimum Requirements

The U.S. EPA regulations specify the minimum number of collocated monitors for a pollutant or program. Table 1.0 summarizes these totals.

Table 1.0 Summary of Collocated Minimum Monitoring Requirements

Pollutant or Program		Minimum Number of Required Monitors/Locations	Number of Active Monitors/Locations	Number of Needed Monitors/Locations
Collocation	$PM_{2.5}$ FRM w/ $PM_{2.5}$ FRM	1	1	None
	$PM_{2.5}$ FRM w/ $PM_{2.5}$ Continuous	1	3	None
	$PM_{2.5}$ STN w/ $PM_{2.5}$ CSN	2	2	None
	PM_{10} (Hi-Vol) w/ PM_{10} (Hi-Vol)	1	1	None
	Pb-TSP (Hi-Vol) w/ Pb-TSP (Hi-Vol) for the Airport program	1	1	None

Section 1.2.0 Summary of All Monitoring Requirements for the San Diego Air Basin

The U.S. EPA regulations specify the minimum number of monitors that State and Local agencies must deploy. Table 1.1 summarizes these totals.

Table 1.1 Summary of Monitor Requirements

Pollutant or Program			Minimum Number of Required Monitors	Number of Active Monitors	Number of Needed Monitors
Ambient Level Monitors	O_3	O_3-ambient	2	9	None
		O_3-Design Value location	1	1	None
	NO_2	NO_2-ambient	None specified	8	None
		NO_2-near road	2	0	2
		NO_2-area wide	1	1	None
		NO_2-Regional Administrator	1	1	None
	CO	CO-ambient	None specified	2	None
		CO for NO_2 near-road	1	0	1
	SO_2	SO_2-ambient	0	0	None
	Pb	Pb-ambient	0	0	None
	$PM_{2.5}$	$PM_{2.5}$ FRM	3	5	None
		$PM_{2.5}$ FRM- Site of Expected Maximum Annual Concentration	1	1	None
		$PM_{2.5}$ FRM- Site of Expected Maximum 24-Hr Concentration	1	1	None
		$PM_{2.5}$ FRM- Site of Expected Poor Air Quality	1	1	None
		$PM_{2.5}$ FRM- Design Value Location	1	1	None
		$PM_{2.5}$ FRM-Daily	0	1	None
		$PM_{2.5}$ FRM for NO_2 near-road	1	0	1
		$PM_{2.5}$ Continuous	2	6	None
		$PM_{2.5}$ CSN	2	2	None
		$PM_{2.5}$ STN	2	2	None
	PM_{10}	PM_{10}-ambient	2 - 4	6	None
		PM_{10}- Site of Expected Maximum Annual Concentration	1	1	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	1	None
		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	1	None
		PMcoarse	1	1	None
		$PM_{2.5}$ STN	1	1	None
		$PM_{2.5}$ CSN	1	1	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	1	None
		Wind Speed/Wind Direction External Temperature/Internal Temperature Relative Humidity	3 sets	3sets	None

Section 1.3.0 State and National Standards for the Year

The limits set by the EPA are a minimum that all states must meet for National Ambient Monitoring Stations (NAMS) and State and Local Air Monitoring Stations (SLAMS), but each state is permitted to set stricter standards. The governing board for air pollution regulations in the state of California is the California Air Resources Board (CARB). The CARB often sets stricter air standards and, as such, all California counties, with some exceptions, are bound to adhere to these intrastate regulations. Table 1.2 lists the State and National Standards.

Table 1.2 State and National Standards for the Criteria Pollutants 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)	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)		0.075 ppm (147 µg/m^3)		
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		—		
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	
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)		—	—	
Nitrogen Dioxide (NO_2)[9]	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	
Sulfur Dioxide (SO_2)[10]	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)[10]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[10]	—	
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		
Visibility Reducing Particles[13]	8 Hour	See footnote 13	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[11]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page ...

For more information please call ARB-PIO at (916) 322-2990 California Air Resources Board (6/4/13)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.

8. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

9. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

10. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

11. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

12. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

13. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Chapter 2 Overview of the Air Quality Monitoring Network

Section 2.0.0 The Air Quality Network, 2014

In 2014, the District operated 10 monitoring sites that collected criteria pollutant data (Figure 2.0); one of the sites also has a radar wind profiler. This special meteorological site is used to assist with pollutant forecasting, data analysis and characterization of pollutant transport throughout the air basin. 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 those 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 are 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 information regarding location.

Table 2.0 List of Network Sites

Station Name	Station Abbreviation	Address	Latitude/ Longitude	AQS ID
Alpine	ALP	2495A W. Victoria Dr.	32.842324° -116.767885°	06-073-1006
Camp Pendleton	CMP	21441 W. B St.	33.217063° -117.396169°	06-073-1008
Chula Vista	CVA	80 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
**El Cajon	ECA	1155 Redwood Ave.	32.791210° -116.942104°	06-073-0003
Escondido	ESC	600 E. Valley Pkwy.	33.127730° -117.075379°	06-073-1002
Otay Mesa	OTM	1100B Paseo International	32.552199° -116.937764°	06-073-2007
San Diego-Beardsley St.	DTN	1110A Beardsley St.	32.701492° -117.149663°	06-073-1010
Kearny Villa Rd.	KVR	Kearny Villa Rd.	32.845722° -117.123983°	06-073-1016
McClellan-Palomar Airport	CRQ	2192 Palomar Airport Rd.	33.130846° -117.272668°	06-073-1020
El Cajon-Floyd Smith Drive	FSD	10537 Floyd Smith Dr.	32.817907° -116.968302°	06-073-1018
***Rancho Carmel Dr.	RCD	11403 Rancho Carmel Drive.	32.985442° -117.082180°	06-073-1017

*Otay Mesa station was permanently relocated to the Donovan State Prison property.

**El Cajon station was temporarily relocated to Floyd Smith Drive.

***Ranch Carmel Drive station was in-place, but not operational for 2014.

Figure 2.0 San Diego APCD Air Quality Monitoring Network

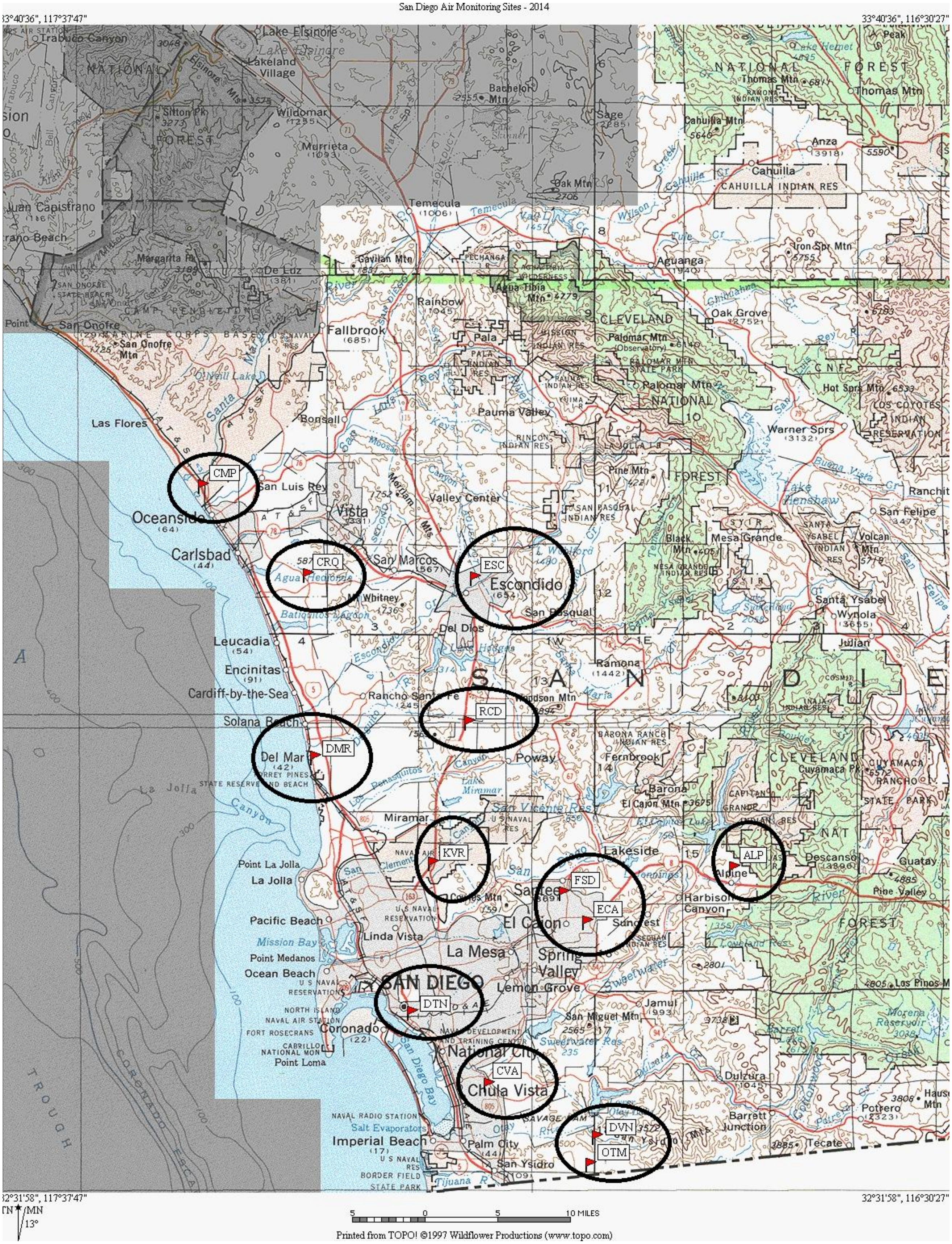


Table 2.1 Air Monitoring Sites with Associated Monitors/Samplers[1]

		ALP	CMP	CVA	DMR	DVN/OTM[2]	FSD/ECA[3]	ESC	KVR	CRQ	DTN	RCD[6]
		Alpine	Camp Pendleton	Chula Vista	Del Mar	Donovan/ Otay Mesa	Floyd Smith/ El Cajon	Escondido	Kearny Villa Rd.	Palomar	Beardsley St.	Rancho Carmel Dr.
AMBIENT	O_3	✓	✓	✓	✓	✓	✓	✓	✓		✓	
	NO_2	✓	✓	✓		✓	✓	✓	✓		✓	✓
	CO							✓			✓	✓
NCORE	NOy-TLE						4✓					
	CO-TLE						✓					
	SO_2-TLE						✓					
LEAD	(NCore) (Hi-Vol)						✓					
	(Airports) (Hi-Vol)									✓		
PM10	(NCore) (Lo-Vol)						✓					
	(Ambient) (Hi-Vol)			✓		✓		✓	✓		✓	
PM2.5	(non-FEM) (Continuous)	✓	✓			✓	✓				✓	
	(FRM) (Sequential)			✓			✓	✓	✓		✓	
STN	Channel 1 (Metals)						✓	✓				
	Channel 2 (Inorganic Ions)						✓	✓				
	Channel 3 (Wood Smoke)							✓				
CSN	(Carbon)						✓	✓				
SU	Channel 4 (Carbon)						✓	✓			✓	
PAMS	(VOCs)[5]	✓	✓				✓					
	(Carbonyls)						✓					
UN	Channels 2 & 3 (Carbonyls)										✓	
TOXICS CA-TAC (CARB)	(VOCs)			✓			✓					
	(Total Metals)			✓			✓					
	(Cr^{+6})			✓			✓					
	(Aldehydes)			✓			✓					
SU (APCD)	(VOCs)					✓		✓			✓	
	Channel 1 (Total Metals)					✓					✓	
METEROLOGICAL PARAMETERS + Others	Wind Speed./ Wind Dir.	✓	✓	✓	✓	✓	✓	✓	✓			✓
	External Temperature	✓	✓	✓		✓	✓	✓	✓		✓	✓
	% Relative Humidity	✓					✓		✓			✓
	Internal Temperature	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
	Barometric Pressure								✓			
	Solar Radiation								✓			
*Radar Wind Profiler/ Radio Acoustic Sounding									✓	✓		

- Yellowed areas indicate a collocation of samplers to satisfy Federal QA requirements. Collocated $PM_{2.5}$ FRM monitors and PM_{10} monitors have a sampling frequency of 1:12 and 1:6, respectively. The collocated $PM_{2.5}$ FEM and PAMS-VOCs monitors have the same sampling frequency as their respective main monitors.
- Blued areas indicate duplicate channels and have the same sampling frequency as the main channel.
- All sample times are set to Pacific Standard Time.
- The District operates, calibrates, and audits all instruments listed in Table 1.1, 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 1.1 as EPA or CARB.
- SU stands for Supplemental Speciation.
- CA TAC stands for the California Toxics Air Contaminant Monitoring network.

[1] 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.

[2] The Otay Mesa (OTM) station relocated to the Donovan State Prison (DVN) area and sampling began in September.

[3] The El Cajon (ECA) station relocated to the Gillespie Field (FSD) area and sampling began in July.

[4] The District has a waiver to temporarily suspend NOy sampling until the relocation back to the original NCore location on Redwood Ave.

[5] These samplers collect year round on a 1:6 sampling schedule. 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 have a 3-hour sampling duration. The 3-hour samples are collected on a set time , start time (st) and end time (et) schedule and it is as follows:

st 0200 – 0500 et; st 0500 – 0800 et; st 1200 – 1500 et; st 1600 – 1900 et

[6] This station was in place, but not operational in 2014.

*The Radar Wind Profiler is now no longer operational.

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
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

APCD AIR POLLUTION CONTROL DISTRICT COUNTY OF SAN DIEGO

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	ECA/FSD[1]		ESC	KVR	OTM/DVN[2]	DTN	RCD[3]
	Name	Alpine	Camp Pendleton	Chula Vista	Del Mar	El Cajon/ Floyd Smith Dr.		Escondido	Kearny Villa Rd	Otay Mesa/ Donovan	San Diego – Beardsley	Rancho Carmel Dr.
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1001	06-073-0003 06-073-1018		06-073-1002	06-073-1016	06-07- 2007/ 06-073-1014	06-073-1010	06-073-1017
O_3	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS		SLAMS	SLAMS	SLAMS	SLAMS	
O_3	Method	UV	UV	UV	UV	UV		UV	UV	UV	UV	
O_3	Affiliation	PAMS	PAMS	Not Applicable	Not Applicable	PAMS, NCore		Not Applicable	PAMS	Not Applicable	Not Applicable	
O_3	Spatial Scale	US	NS	NS	NS	NS		NS	NS	NS	NS	
O_3	Site Type	MXO	UPDB	PE	G/B	PE		PE	PE	PE	G/B	
O_3	Objective (Federal)	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS		PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	
O_3	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
NO_2 & NOy	Designation	PRI	PRI	PRI		PRI	N/A	PRI	PRI	PRI	PRI	PRI
NO_2 & NOy	Method	CL	CL	CL		CL	CL	CL	CL	CL	CL	CL
NO_2 & NOy	Affiliation	PAMS	PAMS	Not Applicable		PAMS	PAMS, NCORE	Not Applicable	PAMS	SLAMS	Not Applicable	Not Applicable
NO_2 & NOy	Spatial Scale	US	NS	NS		NS	NS	NS	NS	NS	NS	NS
NO_2 & NOy	Site Type	PE	UPBD	PE		PE	PE	PE	PE	PE	PE	PE
NO_2 & NOy	Objective (Federal)	PI, NAAQS	PI, NAAQS	PI, NAAQS		PI, NAAQS	Research	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS
NO_2 & NOy	Equipment	Thermo 42i	Thermo 42i	Thermo 42i		Thermo 42i	Thermo 42i-NOy	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i
CO	Monitor Type					SLAMS		SLAMS			SLAMS	SLAMS
CO	Method					IR		IR			IR	IR
CO	Affiliation					NCORE, PAMS		*			Not Applicable	Not Applicable
CO	Spatial Scale					NS		NS			NS	NS
CO	Site Type					PE		PE			PE	PE
CO	Objective (Federal)					PI, NAAQS		PI, NAAQS			PI, NAAQS	PI, NAAQS
CO	Equipment					Thermo 48i-TLE		Thermo 48i			Thermo 48i	Thermo 48i
SO_2	Monitor Type					SLAMS						
SO_2	Method					FL						
SO_2	Affiliation					NCore						
SO_2	Spatial Scale					NS						
SO_2	Site Type					PE						
SO_2	Objective (Federal)					PI, NAAQS						
SO_2	Equipment					Thermo 43i-TLE						

[1] ECA station temporarily relocated to the FSD area (NOy is temporarily waived at FSD)
[2] OTM station relocated to the DVN area
[3] RCD was sited in 2014, but not operational
*APCD designated State Maintenance monitor

Section 2.0.2 Overview of the Particulate Pollutants (Pb-TSP, $PM_{2.5}$, PM_{10}) Monitoring Network

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

Table 2.3 Lead Sampling Network

	Abbreviation	ECA/FSD[1]	CRQ	
	Name	El Cajon/ Floyd Smith Dr.	Palomar Airport	
	Address	1155 Redwood Ave/ 10537 Floyd Smith Dr	2192 Palomar Airport Rd	
	Latitude Longitude	32.791210° -116.942104°/ 32.817907° -116.968302°	33.130846° -117.272668°	
	AQS ID	06-073-0003/ 06-073-1018	06-073-1002	
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+

Yellow denotes collocation of equipment of the same make and model as the primary.

[1] ECA station temporarily relocated to the FSD area

Section 2.0.2 Overview of the Particulate Pollutants (Pb-TSP, $PM_{2.5}$, PM_{10}) 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/ECA[1]		ESC		KVR		DTN		DVN
	Name	Alpine	Camp Pendleton	Chula Vista	El Cajon/ Floyd Smith Dr.		Escondido		Kearny Villa Rd		San Diego – Beardsley		Donovan
	Address	2495A W. Victoria Dr.	21441 W. B St	80 E. J St	1155 Redwood Ave/ 10537 Floyd Smith Dr		600 E. Valley Pkwy		Kearny Villa Rd		1110A Beardsley St.		480 Alta Rd.
	Latitude Longitude	32.842324° -116.767885°	33.217063° -117.396169°	32.631175° -117.059115°	32.791210° -116.942104°/ 32.817907° -116.968302°		33.127730° -117.075379°		32.845722° -117.123983°		32.701492° -117.149663°		32.578267° -116.921359°
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-0003/ 06-073-1018		06-073-1002		06-073-1016		06-073-1010		06-073-1014
$PM_{2.5}$ (non-speciated)	Monitor Type	SPM	SPM	SLAMS	*SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SPM
	Designation	O	O	PRI	O	PRI	O	PRI	PRI	QAC	O	PRI	O
	Method	CT	CT	SQ	CT	SQ	CT	SQ	SQ	SQ	CT	SQ	CT
	Affiliation	N/A	N/A	N/A	NCORE	NCORE	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	NS
	Site Type	PE	UPBD	PE	PE	PE	PE	PE	PE	QA	PE	PE	PE
	Objective (Federal)	PI, Research	PI, Research	NAAQS	PI, Research	NAAQS	PI, Research	NAAQS	NAAQS	NAAQS	PI, Research	NAAQS	PI, Research
	Analysis	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD
	Frequency	7/24	7/24	1:3	7/24	1:3	7/24	1:3	1:3	1:12	7/24	1:1	7/24
	Equipment	Met One BAM	Met One BAM	Thermo 2025	Met One BAM	Thermo 2025	Met One BAM	Thermo 2025	Thermo 2025	Thermo 2025	Met One BAM	Thermo 2025	Met One BAM
$PM_{2.5}$ (speciated)	Monitor Type				SLAMS	SLAMS	N/A	SLAMS	SLAMS	N/A	N/A		
	Method				SP & SQ	SP & SQ	SP & SQ	SP & SQ	SP & SQ	SP & SQ	SP & SQ		
	Affiliation				NCORE, CSN STN[2]	NCORE, CSN STN[2]	CSN SU SDAPCD Network	CSN STN	CSN STN	CSN SU SDAPCD Network	CSN SU SDAPCD Network		
	Spatial Scale				NS	NS	NS	NS	NS	NS	NS		
	Site Type				PE	PE	PE	PE	PE	PE	PE		
	Objective (Federal)				Research	Research	Research	Research	Research	Research	Research		
	Analysis				EPA	EPA	APCD	EPA	CARB	APCD	APCD		
	Frequency				1:3	1:3	1:6	1:3	1:6	1:6	1:6		
	Equipment				URG-3000N	Met One SASS	Met One SASS	URG-3000N	Met One SASS	Met One SASS	Met One SASS		

Yellow denotes collocation of equipment of the same make and model as the primary
[1] ECA station temporarily relocated to the FSD area
[2] EPA redesignated the CSN STN samplers as SU for the FSD location
*Not Operational at FSD
N/A= Not Applicable

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

Table 2.5 PM_{10} Sampling Network

	Abbreviation	CVA		DVN	FSD/ECA[1]	ESC	KVR	DTN
	Name	Chula Vista		Donovan	El Cajon/ Floyd Smith Dr.	Escondido	Kearny Villa Rd	San Diego – Beardsley
	Address	80 E. J St		480 Alta Rd	1155 Redwood Ave/ 10537 Floyd Smith Dr	600 E. Valley Pkwy	Kearny Villa Rd	1110A Beardsley St.
	Latitude Longitude	32.631175° -117.059115°		32.578267° -116.921359°	32.791210° -116.942104°/ 32.817907° -116.968302°	33.127730° -117.075379°	32.845722° -117.123983°	32.701492° -117.149663°
	AQS ID	06-07- 0001		06-073-1014	06-073-0003/ 06-073-1018	06-073-1002	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	Not Applicable	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	1:6	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	Graseby Metal Works body w/ Sierra Anderson 1200 Head

Yellow denotes collocation of equipment of the same make and model as the primary

[1] ECA station temporarily relocated to the FSD area

Section 2.0.3 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[1]	CMP		FSD/ECA[2]		DTN	KVR[3]
	Name	Alpine	Camp Pendleton		El Cajon/ Floyd Smith Dr.		San Diego – Beardsley	Kearny Villa Rd
	Address	2495A W. Victoria Dr.	21441 W. B St		1155 Redwood Ave/ 10537 Floyd Smith Dr		1110A Beardsley St.	Kearny Villa Rd
	Latitude Longitude	32.842324° -116.767885°	33.217063° -117.396169°		32.791210° -116.942104°/ 32.817907° -116.968302°		32.701492° -117.149663°	32.845722° -117.123983°
	AQS ID	06-073-1006	06-073-1008		06-073-0003/ 06-073-1018		06-073-1010	06-073-1016
PAMS	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	UNPAMS	SLAMS
	Method	Canister	Canister	Canister	Canister	Cartridges	Cartridges	Cartridges
	Affiliation	PAMS (Type III)	PAMS (Type I)	PAMS (Type I)	PAMS (Type II)	PAMS (Type II)	UNPAMS	PAMS (Type II)
	Spatial Scale	US	NS	NS	NS	NS	NS	NS
	Site Type	MXO	UPBD	QA	MXP	MXP	MXP	MXP
	Objective (Federal)	Research	Research	Research	Research	Research	Research	Research
	Analysis By	APCD	APCD	APCD	APCD	APCD	APCD	APCD
	Frequency	1:6	1:6	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	Xontech 924	Xontech 925

[1] This site is temporarily located across the street from the original location; it is projected to relocate back in 2015.

[2] ECA station temporarily relocated to the FSD area

[3] The station is still classified as a PAMS-Carbonyl location, but due to irreparable failure of the carbonyl collection sampler, the APCD was directed by the EPA to put the sampling on hiatus until the EPA can redesign the PAMS network.

Section 2.0.4 Overview of the TOXICS Monitoring Network

Table 2.7 is a summary of the toxics monitoring network.

Table 2.7 Toxics Program Monitoring Network

	Abbreviation	CVA				FSD/ECA[1]				ESC	DTN		OTM/DVN[2]	
	Name	Chula Vista				El Cajon/ Floyd Smith Dr.				Escondido	San Diego – Beardsley		Otay Mesa/ Donovan	
	Address	80 E. J St.				1155 Redwood Ave/ 10537 Floyd Smith Dr				600 E. Valley Pkwy	1110A Beardsley St.		1100B Paseo Intl./ 480 Alta Rd.	
	Latitude Longitude	32.952106° -117.264086°				32.791210° -116.942104°/ 32.817907° -116.968302°				33.127730° -117.075379°	32.701492° -117.149663°		32.552199° -116.937764°/ 32.578267° -116.921359°	
	AQS ID	06-073-0001				06-073-0003/ 06-073-1018				06-073-1002	06-073-1010		06-07- 2007/ 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-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	Not Applicable
	Method	Canister	Filter	Filter	Cartridges	Canister	Filter	Filter	Cartridges	Canister	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	Not Applicable
	Spatial Scale	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	MI	MI
	Site Type	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	SO	SO
	Objective (Federal)	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
	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
	Equipment	Xontech 910/912	Xontech 924	Xontech 924	Xontech 924	Xontech 910/912	Xontech 924	Xontech 924	Xontech 924	Xontech 910A FSL	Xontech 910A FSL	Xontech 924	Xontech 910A FSL	Xontech 924

[1] ECA station temporarily relocated to the FSD area
[2] OTM station relocated to the DVN area

Section 2.1.0 San Diego Air Basin

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 2.1.1 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 2.1.2 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. In general, 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 2.1.3 Population

The population of San Diego County has been increasing by about 1.5% per year. For this year, the population of San Diego was estimated at 3.2 million people (extrapolated from the 2010 Census).

Section 2.1.4 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.

Network Design Types

1. Highest expected concentrations in the network area.
2. A determination of the typical concentrations in areas of high population density.
3. Impact of significant sources or source categories.
4. General background concentration levels.
5. Extent of regional pollutant transport among populated areas.
6. Impacts on visibility, vegetation damage, or other welfare-based impacts.

Network Design Spatial Scales

1. Microscale: 1 - 100 meters.
2. Middle: 100 - 500 meters.
3. Neighborhood: 500 meters - 4.0 kilometers
4. Urban: 4 - 50 kilometers.
5. Regional: 50 - 100 kilometers.

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 2.2.0 Air Monitoring Network Design

This section will give a brief description of the locations of our air pollution monitoring sites and any historical sites.

Section 2.2.1 History of the Air Monitoring Network

Over the years, several studies have been performed by District personnel in locations throughout the SDAB to ascertain the viability of the network with regards to the criteria pollutants. The results of those studies and the decisions based on them are how the Network has evolved over the years to its current state of coverage. Also, some stations relocate within a community or city due to tenancy issues, such as redevelopment, expiration of the lease, etc.

The community of Alpine in the foothills to the east of San Diego traditionally records the highest ozone readings in the network due to its location downwind of the populated areas of the County and the topography. In 1989, the District performed an ozone study 20 miles east of the Alpine station, at a Caltrans maintenance facility off State Route 80 in the town of Descanso. The values recorded at the Descanso location were the same as recorded at the Alpine location, but with a 1 to 2 hour time lag, depending upon weather conditions. Since the values at the Descanso location would not add any substantial information to the network, the District discontinued the study.

The District also performed an ozone study in the community of Ramona. The city of Ramona is about 20 miles northwest of Alpine and 15 miles east-southeast of Escondido. It is also mid-elevation between the Escondido and Alpine locations. The values recorded in the Ramona study were essentially the average of the values between Alpine and Escondido. Since the values at the Ramona location could be interpolated between the Alpine and Escondido monitors, the Ramona location was discontinued and no further monitoring was taken.

Studies were done to see if the District needed to increase monitoring within the network. Studies were performed in Chollas Heights (5 miles northeast of the Downtown location & 10 miles southwest of the El Cajon location) and the northern area of downtown San Diego (2.5 miles north of the current Downtown station location). Both showed equivalent numbers to the Downtown San Diego (south) monitor, so the studies were discontinued and no further monitoring was performed.

Lastly, a study was performed to determine if the District needed to expand the network along the southwest quadrant of the air basin. An ozone monitor was placed in the community of Imperial Beach, about 15 miles southwest of the old Downtown San Diego monitor. The numbers collected there directly coincided with the values collected at the old Downtown San Diego monitor location, so the study was discontinued and no further monitoring was performed.

Section 2.2.2 Current Air Monitoring Network

This section will give a brief description of the locations of our air pollution monitoring sites.

Alpine (ALP)

Alpine is an unincorporated community in the eastern foothills, elevation approximately 1,800 ft. above mean sea level (MSL), of San Diego County with a population of about 14,000 people and covers an area of approximately 27 square miles.

Camp Pendleton (CMP)
Camp Pendleton is a military base in the north of the city of Oceanside of San Diego County with a population of about 15,000 people and covers an area of approximately 200 square miles.

Chula Vista (CVA)
Chula Vista is the second largest city in San Diego County. It spans from the Pacific coast into the east County and is located midway between downtown San Diego and the United States-Mexico border crossing. It has a population of about 250,000 people and covers an area of approximately 50 square miles.

Del Mar (DMR)
Del Mar is a city in the mid-north coastal region of San Diego County located about midway between Camp Pendleton and San Diego-Beardsley St. It has a population of about 4,000 people and covers an area of approximately 2 square miles.

El Cajon (ECA)/Floyd Smith Drive (FSD)
El Cajon is a city in the eastern region of San Diego County located almost midway between all the middle county locations: Alpine, San Diego-Kearny Villa Rd. San Diego-Beardsley St., and Chula Vista. It has a population of about 100,000 people and covers an area of approximately 14 square miles.

Escondido (ESC)
Escondido is a city located in the north-eastern region of the populated portion of the County. It is located about 21 miles between Camp Pendleton and El Cajon. It has a population of about 140,000 people and covers an area of approximately about 37 square miles.

Donovan (DVN)
Donovan is located on the R. J. Donovan State Prison grounds in the middle part of the Otay Mesa area. Otay Mesa is a community located in the farthest south region of San Diego County. It has a population of about 26,000 people and covers an area approximately 14 square miles.

San Diego - Beardsley St. (DTN)
The Beardsley St. site is located just in the San Diego Bay area south of downtown San Diego. It is located in the coastal region of the County. It has a population of approximately 11,000 people. This area has been designated as an Environmental Justice area.

San Diego – Kearny Villa Road (KVR)
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 by CARB as KVR. Both are located on the southeast section of Miramar Marine Corp Air Station (MCAS). The base covers approximately 36 square miles.

McClellan-Palomar Airport (CRQ)
Palomar airport is located in the community of Carlsbad, California. Carlsbad is a community of about 100,000 people located between Interstate 15 and Interstate 5, south of State Route 78.

Rancho Carmel Drive (RCD)
This is the location of the 1st Near-road monitoring station and is sited within 50 meters of Interstate 15 North and is the most trafficked area in the County. It is in the community of Poway which houses about 48,000 people.

Section 2.3.0 Recent Planned and Unplanned Changes to the Network

The EPA Region IX governing authority approved 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 the CARB, when applicable). Before decommissioning any SLAMS monitor, the District will follow the procedure listed in 40 CFR Part 58.14, "System Modifications". Additionally, 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 of the monitor or the station, if possible. If a station is to relocate, parallel sampling between the current location and the new location 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 weather damage, natural events, changes to property ownership, 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 (and CARB authorities, when applicable), and identified in the subsequent Annual Network Plan.

Section 2.3.1 Station Relocations, Additions, Closures, and Changes

The section discusses all the station changes in the network.

Otay Mesa Station Permanent Relocation to Donovan State Prison (new location), 2014

The North American Free Trade Agreement (NAFTA) greatly increased the heavy truck traffic at the Otay Mesa border crossing. This forced the re-designation of the Otay Mesa station instruments from Neighborhood Scale to MicroScale and Impact levels. To measure concentrations representative of the air mass in the south San Diego region, the District was granted permission by the EPA to relocate the Otay Mesa border station and relocate 3.3 kilometers northeast off the entrance road to the Donovan State Prison grounds; start-up was in the 4th quarter of 2014.

El Cajon-Floyd Smith Drive Relocation back to El Cajon-original Location, 2014/2015

The school grounds on which the station was located are currently being remodeled. The District was forced to temporarily relocate the station to a vacant area on Gillespie Field property (see Overview of the Network Appendix Item A for the EPA approval letter). Additionally, the District was granted a waiver from sampling for NOy. Sampling start-up was July 2014. No rooftop equipment could be sited for safety concerns, therefore continuous $PM_{2.5}$ sampling could not be installed. Once construction is completed at the original location, the District will move back (possibly the 4th quarter of 2015).

Gillespie Field Pb-TSP Decommissioned, 2014

No exceedances or measured concentrations equal to or greater than 50% of the NAAQS were recorded at Gillespie Field, therefore continuous sampling will not be required. The EPA granted approval to terminate sampling (see Overview of the Network Appendix Item B for the EPA approval letter).

Palomar Airport Pb-TSP Sampling Change from Temporary to Continuous, 2014

The concentrations measured at Palomar Airport have triggered requirements to change the status of the sampler from temporary to continuous. Per EPA Approval (see Overview of the

Network Appendix C for the EPA approval letter) the sampling location has been changed to the most representative location for future airborne lead monitoring and protection of the public health. This is along the perimeter fence in the northeast corner of the airport property. Start-up was in the 4th quarter of 2014.

NO_2-Near-road Station at Rancho Carmel Drive Proposed Location (first required site), 2014
The first NO_2 near-road location is off of Rancho Carmel Drive (RCD) about 3.7 miles north of Poway Rd. The EPA has worked with the District to establish this site. Initially, this site will house NOx and CO instrumentation only. See Nitrogen Dioxide/NO_2 Near-road Section for more detail. Official EPA approval for this site was granted (see Overview of the Network Appendix Item D for the EPA approval letter). It was completely operational by April 30, 2015.

Alpine Temporary Station Relocate back to Original Alpine Location, 2015
In 2011, the Alpine station moved across the street temporarily, while the area in which the station was located underwent renovations by the landowner. The station is scheduled to relocated back to the original location in the 2nd quarter of 2015

NO_2-Near-road Station (second required site), 2015
The second NO_2 near-road location is proposed to be along the Barrio Logan/Logan Heights area on the east side of Interstate 5 (see the NO_2 section for more information).

Chula Vista Station, 2015
The wood deck will be replaced. The samplers on the deck will either have to be temporarily relocated elsewhere in the network or their operations will have to be temporarily suspended. The samplers on the deck are as follows: PM_{10} (primary and collocated), $PM_{2.5}$ FRM, CARB VOCs, CARB Metals, and CARB Aldehydes.

San Ysidro $PM_{2.5}$ Station , 2015
The District was asked by the EPA to locate a $PM_{2.5}$ sampler as close to the San Ysidro border crossing as possible. In the 1st quarter of 2015, the District located, sited, and deployed a $PM_{2.5}$ monitor on the rooftop of a 3-story building (this building is scheduled for demolition in 12-18 months) overlooking the San Ysidro border crossing (about 19 meters from the closest lane to the Point-of-Entry (POE) to the United State)s. The sampler is also about 16 meters above the POE. After two years, the District will evaluate the data, the state of the ambient air quality network, and determine if this monitor should become permanent in the San Ysidro area. Initially, this sampler will be designated as a Special Purpose Monitor (SPM). At the time of the writing of this report, the spatial scale is still under discussion with EPA.

The data from the non-FEM BAM is posted on the District's website and AirNow in real-time, but it is not uploaded to the EPA's AQS database until a data analyst has reviewed the data. During the data review process, the data analyst may qualify or nullify some data. The minimum acceptable parameters for nullification and qualification of data are in the EPA QA Manual Appendix D, $PM_{2.5}$ Continuous. All operations, QA/QC functions, and data analyses for SAY will follow District methodologies and practices, SOPs and data analysis tools. Once the BAM data has been reviewed, the validated data will be officially uploaded into the EPA's AQS database. Please note: the data from the non-FEM BAM is non-regulatory and cannot be used for comparison to the Federal $PM_{2.5}$ Standard. Its primary intent is for public information and research purposes.

Section 2.3.2 Monitor/Sampler Relocations, Additions, Closures, and Changes

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

$PM_{2.5}$

Kearny Villa Rd. FRM $PM_{2.5}$ Collocated Sampler Relocation to Chula Vista Station, 2015

Per EPA's recommendation, the District will relocate the FRM $PM_{2.5}$ collocated sampler from the Kearny Villa Rd. station to the Chula Vista station (an area of higher $PM_{2.5}$ concentrations), once the new deck has been installed (4^{th} quarter 2015).

Non-FEM continuous $PM_{2.5}$ samplers, 2014/2015

Per EPA approval, all FEM continuous $PM_{2.5}$ samplers were converted to non-FEM samplers.

Donovan Station $PM_{2.5}$ Addition, 2014/2015

The addition of a non-FEM continuous $PM_{2.5}$ sampler will help trend cross-border pollution, measure influences from Imperial Valley, aid in burn/no burn decisions, track diurnal patterns, and quantify combustion particulates from East County fires. Initially, this sampler will be designated as a Special Purpose Monitor (SPM). After two years, the District will evaluate the data, the state of the ambient air quality network, and determine if this monitor should become permanent.

Escondido Station $PM_{2.5}$ Addition, 2014

Per EPA's recommendation, the District decommissioned the collocated non-FEM continuous $PM_{2.5}$ sampler. Collocation is not required with regards to the total number of samplers the District operates; so no formal EPA approval was required.

TOXICS

Donovan Station, Addition, 2015

The District added a collocated Toxics-VOC sampler to the Donovan location for quality assurance purposes and it will be classified as QAC.

PAMS

Donovan Station, Addition, 2015

In order to trend formaldehyde concentrations for the Otay Mesa border crossing area, the District will add a PAMS-Carbonyl sampler to the new Donovan station, if funding can be obtained.

Escondido Station, Addition, 2015

In order to trend formaldehyde concentrations for the North County, the District will add a PAMS-Carbonyl sampler to the new Donovan station, if funding can be obtained.

CO Monitors, Addition, 2014/2015

The Thermo 48i monitors will be replaced with Thermo 48i-TLE monitors.

Nightly Station QC Functions, Addition, 2014/2015

All stations will be changed from manual Level I QC functions to be automated for all criteria gaseous pollutants.

Upper Atmosphere Radar Wind Profiler

Inoperable and unrepairable; must be replaced.

Section 2.4.0 District Actions Regarding EPA's Review of the 2013 ANP (major findings)

This section lists the EPA concerns regarding the 2013 ANP. For ease of EPA reference, they are numbered according to EPA's list.

#3a. Documentation for the relocation of the old Overland air monitoring station to the current Kearny Villa Road location is needed before EPA approval.

- Still pending (until the current spate of station relocations and start-ups are finished).

#3b. The selection of a Phase II Near-road air monitoring station.

- At the time of the writing of the 2013 ANP, no viable 2nd near-road location was established. A second near-road location has been confirmed (see the NO_2 Chapter for more details).

#3c. Relocation of the Del Mar air monitoring station supporting documentation.

- The District has no plans to relocate this station. We stated we would research the feasibility of relocating this station; therefore no documentation is needed at this time.

#3d. Relocation of the Escondido air monitoring station.

- At the time of the writing of this report, the County plans to retain this property, therefore the District does not have to relocate this station.

#7. A plan for establishing a near-road $PM_{2.5}$ monitor at the 2nd Near-road site (that has not been EPA approved nor established).

- At the time of the writing of the 2013 ANP, no viable 2nd Near-road location was established. A second near-road location has been confirmed (see the NO_2 Chapter for more details).

#8. A plan for establishing a near-road CO monitor at the 2nd Near-road site (that has not been EPA approved nor established).

- The CO monitor was to be located in at the 2nd Near-road site in an EJ area. At the time of the writing of the 2013 ANP, no viable 2nd near-road location was established.
- Per EPA's request, the CO monitor was sited at the 1st Near-road location, RCD, and made operational in 2015.

#9. Proposed 2nd Near-road location in the 2013 ANP was denied by the landowners after the 2013 ANP was published, therefore no viable 2nd Near-road candidate site was established.

- Repeat of finding #3b. Please refer to it.

#10. District is required to monitor for lead via a Pb-TSP sampler at Palomar Airport and it was not operational in 2013.

- Start-up was in the 4th quarter 2014.

#51. Minimum monitoring requirement for 1st Near-road NO_2 site not operational.

- Start-up was in the 2nd quarter 2015.

#69a. Minimum distance to the road from the inlet conflicts within the site description template.

- This has been corrected; see each site's site description matrix in the appendices.

#69b. Site description template did not specify the metric.
#75a. Minimum distance to influences from the inlet did specify the metric.
#75b. Minimum distance to off-roof obstructions from the inlet did specify the metric or height.

- These have been corrected; see each site's site description matrix in the appendices.

OVERVIEW APPENDIX Item A

Figure 2.1 below is a copy of the correspondence from the EPA granting permission to relocate the El Cajon station to Gillespie Field and the sampling parameters contained therein.

Figure 2.1 Copy EPA Approval for Relocation of the El Cajon/NCore Station (continued)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

April 16, 2014

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. Mahmood Hossain
Chief, Air Pollution Control
San Diego Air Pollution Control District
10124 Old Grove Road
San Diego, CA 92131

Dear Mr. Hossain:

This letter transmits our approval of the San Diego Air Pollution Control District's request to temporarily move the agencies NCore and PAMS Type II monitoring stations from the El Cajon site (AQS site ID: 06-073-0003), to a new location at 32° 49' 04.72" N and 116° 58'05.28" W, as required by the Ambient Air Monitoring Regulations. According to these rules (see 40 CFR 58.11(c)), NCore and PAMS network design and changes must be approved by the Environmental Protection Agency's (EPA) Administrator. This authority has been delegated to the Director of the Air Quality Assessment Division in EPA's Office of Air Quality Planning and Standards.

In considering your request to temporarily move the NCore and PAMS Type II station, we worked with EPA Region 9 on a review of your request, including the rationale why the existing station cannot be operated and assessed the proposed temporary location and characteristics of the area to be monitored. After careful consideration of your request to temporarily move the NCore and PAMS Type II monitoring stations, we are pleased to approve the temporary site location as part of the NCore and PAMS networks.

We also considered your request to not operate the NOy monitor at the temporary location. In your letter you identified that the NOy and NOx measurements at the El Cajon site are comparable and that the NOy-NO levels are also comparable to the NO_2 levels. We do understand that the measurements are very comparable and that given the temporary nature of the situation, it does not make sense to reestablish the tower configured with the external converter for NOy. However, we do want to point out that the availability of NOy data is very important for data users, and this value will increase for those agencies that collocate their NOy analyzer with a direct measurement of NO_2. Therefore, while we are approving the use of the NOx analyzer in lieu of NOy at the temporary location, we fully expect your agency to restart NOy at such time as you are able to reestablish monitoring at the El Cajon site.

Internet Address (URL) • http://www.epa.gov
Recycled/Recyclable • Printed with Vegetable Oil Based Inks on Recycled Paper (Minimum 25% Postconsumer)

Figure 2.1 Copy EPA Approval for Relocation of the El Cajon/NCore Station (concluded)

Thank you for your program's efforts in working through the issues of having to move the NCore and PAMS station measurements and establishing the temporary site for these monitoring programs. For any technical questions on NCore, you may contact Tim Hanley at hanley.tim@epa.gov and 919-541-4417. For technical questions on PAMS, you may contact Kevin Cavender at cavender.kevin@epa.gov and 919-541-2364.

Sincerely,

Richard A. Wayland

Richard A. Wayland
Director
Air Quality Assessment Division

cc: Meredith Kurpius, EPA Region 9

OVERVIEW APPENDIX Item B

Figure 2.2 below is a copy of the correspondence from the EPA granting permission to decommission the sampling at Gillespie Field for the Airport Lead Project.

Figure 2.2 Copy EPA Approvals for Termination of the Lead Sampler at Gillespie Field

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

MAY 13 2014

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

Dear Mr. Hossain:

On February 19, 2014, EPA received an email from San Diego County Air Pollution Control District (SDCAPCD) providing information on lead monitoring conducted at Gillespie Field Airport (lead monitor: AQS ID 06-073-1021). The email concludes that the levels of airborne lead sampled are lower than the threshold for continued monitoring and adequately represent the average lead level at the sampling location, and requests EPA's concurrence on this conclusion for the airborne lead study at Gillespie Field.

EPA finds that the monitoring conducted between March 2012 and September 2013 at Gillespie Field Airport satisfies the monitoring required under 40 CFR 58, Appendix D §4.5(a)(iii) and that there were no exceedances of 50 percent of the Pb NAAQS on a rolling three-month average. Per 40 CFR 58, Appendix D §4.5(a)(iii), this monitor is therefore not a required monitor. Furthermore, in light of the low ambient concentrations recorded, EPA does not believe shut down of this monitor will compromise data collection needed for implementation of the NAAQS. Accordingly, and considering that airport Pb monitors are specifically required to operate for only a year (unless the monitoring data exceed 50% of the NAAQS), EPA is approving shutdown of this SLAMS monitor as well as the collocated Pb monitor at the site pursuant to 40 CFR 58.14(c). However, approval of this shutdown is conditioned upon SDCAPCD establishing a collocated Pb monitor at Palomar Airport.

If you have any questions regarding this letter, please feel free to contact me at (415) 947-4534 or Gwen Yoshimura at (415) 947-4134.

Sincerely,

Meredith Kurpius, Manager
Air Quality Analysis Office

cc: Robert Kard, APCD
David Shina, APCD
Gayle Sweigert, California Air Resources Board

Printed on Recycled Paper

OVERVIEW APPENDIX Item C

Figure 2.3 below is a copy of the correspondence from the EPA Region IX Authority granting permission to relocate the sampling location at McClellan-Palomar Airport (CRQ).

Figure 2.3 Copy EPA Approval for Pb-TSP Sampler Relocation at Palomar Airport (continued)

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

DEC 0 9 2013

Mr. David N. Shina
Senior Air Pollution Chemist
Ambient Air Quality Network
Monitoring & Technical Services Division
San Diego Air Pollution Control District
10124 Old Grove Road
San Diego, California 92131

Dear Mr. Shina:

This letter provides EPA's approval of San Diego County Air Pollution Control District's (San Diego APCD's) proposed permanent State/Local Air Monitoring Station (SLAMS) at McClellan-Palomar Airport.

Per 40 CFR part 58, Appendix D 4.5(a)(iii), the McClellan-Palomar Airport lead monitors shall be sited to measure the maximum lead concentration in ambient air, taking into account logistics and the potential for population exposure. San Diego APCD's October 10, 2013 Lead Gradient Study at McClellan-Palomar Airport found that lead concentrations are highest close to the primary run-up area. Given the logistical infeasibility of getting AC power to the location of maximum impact representative of ambient air, and the prohibitive cost and lack of reliability of alternate power sources as noted in your September 17, 2013 letter, other locations further from the run-up that can accommodate a permanent monitor must be considered. Of the ten sites monitored during the Lead Gradient Study, the next-highest average values were recorded near the helipad south of the run-up area, and north of the run-up area near the north airport boundary fence. On July 9, 2013, San Diego APCD emailed its evaluation of the feasibility of siting a monitor near the helipad. Taking into consideration that the average values recorded at the helipad site and the north airport boundary fence site during the Lead Gradient Study were comparable, and that there are logistical challenges regarding power, access, and safety considerations at the helipad site that do not exist for the north airport boundary fence site, EPA approves the north airport boundary site described in your September 17, 2013 letter as meeting the requirements of 40 CFR 58 and associate appendices.

EPA notes that data collected at McClellan-Palomar Airport AQS ID: 06-073-1020 were collected in accordance with EPA rules and regulations and are therefore applicable for consideration during future actions. This monitor was closed and lease renewal was not pursued given the unreliability of the only power source available at the site (a propane generator), which resulted in data loss. As stated in your September 17, 2013 letter, it is not possible to pull AC power to this location, and the generator proved unreliable and costly. While monitoring at this specific location is no longer possible, the monitoring data collected during 2012 and 2013 is relevant for use and review during future actions. EPA approves this closure of a lead airport monitor, pursuant to 40 CFR 58.14(c). Based on the installation of a lead monitor at the north airport boundary site, EPA concludes that discontinuance does not compromise data collection needed for implementation of the lead NAAQS and that Appendix D lead monitoring requirements will continue to be met.

Printed on Recycled Paper

Figure 2.3 Copy EPA Approval for Pb-TSP Sampler Relocation at Palomar Airport (concluded)

Please include this correspondence and reflect the shutdown and the installation, respectively, of these monitors in your next Annual Monitoring Network Plan. Should you have any questions, please contact me at (415) 947-4534 or Gwen Yoshimura of my staff at (415) 947-4134.

Sincerely,

Meredith Kurpius, Manager
Air Quality Analysis Office

cc: Gayle Sweigert, California Air Resources Board

OVERVIEW APPENDIX Item D

Figure 2.4 below is a copy of the correspondence from the EPA Region IX Authority approval of the Rancho Carmel Drive Near-road location.

Figure 2.4 Copy EPA Approval for Rancho Carmel Drive Near-road Location (continued)

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

OCT 29 2014

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

Dear Mr. Hossain:

Thank you for your submission of the San Diego Air Pollution Control District's (APCD's) 2013 Air Network Plan in July 2014. 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: your Phase 1 proposed near-road NO_2 site (at Rancho Carmel Drive), relocation of the Alpine site back to its original location, and conversion of your $PM_{2.5}$ FEM samplers at Alpine and Camp Pendleton to non-FEM. More information about these approvals is in Enclosures C and D.

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

The third enclosure (*C. Annual Monitoring Network Plan Checklist*) is the checklist EPA used to review your plan for overall items that are required to be included in the annual network plan along with our assessment of whether the plan submitted by your agency addresses those requirements. The fourth enclosure (*D. Region 9 Near-road Plan Review Checklist*) is the checklist EPA used to review those elements of your annual monitoring network plan that deal specifically with near-road NO_2 monitoring.

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

Printed on Recycled Paper

Figure 2.5 Copy EPA Approval for Rancho Carmel Drive Near-road Location (concluded)

discussion) in next year's annual monitoring network plan. If you have any questions regarding this letter or the enclosed comments, please feel free to contact me at (415) 947-4534 or Elfego Felix at (415) 947-4141.

Sincerely,

Meredith Kurpius, Manager
Air Quality Analysis Office

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 Table 3.1) and referenced to the ozone standard of the year (Table 3.0). The sampling equipment are listed in Tables 3.1 & 3.2. Please note:

- The Otay Mesa (OTM) station was permanently relocated to the Donovan State Prison area. This station is called Donovan (DVN).
- The El Cajon station was temporarily relocated to the Gillespie Field area off of Floyd Smith Drive. This station is called Floyd Smith Drive (FSD).

Figure 3.0 Ozone Network Map

Table 3.0 Ozone State and Federal Standards for the Year

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards		National Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		

Table 3.1 Ozone Sampling Network

	Abbreviation	ALP	CMP	CVA	DMR	ECA/FSD[1]	ESC	KVR	OTM/DVN[2]	DTN
	Name	Alpine	Camp Pendleton	Chula Vista	Del Mar	El Cajon/ Floyd Smith Dr.	Escondido	Kearny Villa Rd	Otay Mesa/ Donovan	San Diego – Beardsley
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1001	06-073-0003 06-073-1018	06-073-1002	06-073-1016	06-07- 2007/ 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	Not Applicable	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

[1] ECA station temporarily relocated to the FSD area (NOy is temporarily waived at FSD)

[2] OTM station relocated to the DVN area

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 3.0.1 Ozone – Sampling Frequency, Equipment Used, and Suitability for Comparison to the NAAQS

Requirements for the sampling frequency of SLAMS monitors for pollutants are in 40 CFR Part 58-“Ambient Air Quality Surveillance”, Part 58.12 “Operating Schedules” and “Operating Schedules for PAMS Stations”, Subpart G-Federal Monitoring, Appendix D-“Network Design Criteria for Ambient Air Quality Monitoring”, Section 5.3, Table D–6 “Minimum Required PAMS Monitoring Locations and Frequencies”. Table 3.2 summarizes these requirements. All District O_3 samplers exceeds or meets all minimum monitoring requirements and are sited as to be able to be compared to the 8-Hr NAAQS.

Table 3.2 Ozone 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 3.1.0 Ozone – Trends in the SDAB

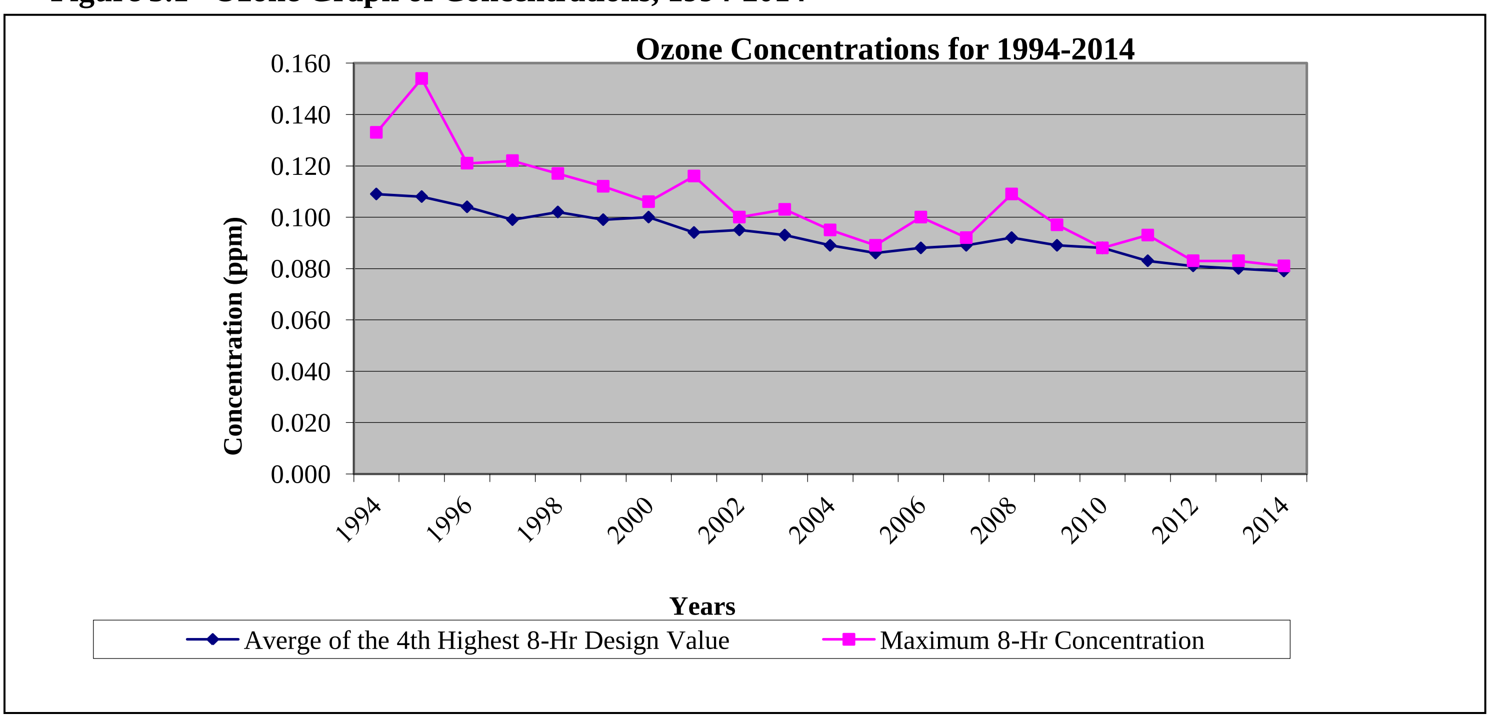
Over the years, the SDAB has seen a decrease in ozone levels (Table 3.4 and Figure 3.2). Over the last several years, San Diego realized a significant decrease in the 3-yr average of the exceedance days for ozone and has seen a sharp decrease in its 8-hour Design Value since 1990. Note: the “Days Above the National 8-Hr Standard.” row in Table 3.3 reflect the ozone standard for that year.

Table 3.3 Ozone Summary of Concentrations for 1994-2014

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Average of the 4th Highest 8-Hr Design Value (ppm)	0.109	0.108	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
Maximum 8-Hr Concentration (ppm)	0.133	0.154	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
Days above the National 8-Hr Standard (#)	90	94	64	43	58	44	46	43	31	38	23	24	38	27	35	24	14	10	10	7	12*

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

Figure 3.1 Ozone Graph of Concentrations, 1994-2014



Section 3.1.1 Ozone Measurements by Site, Year

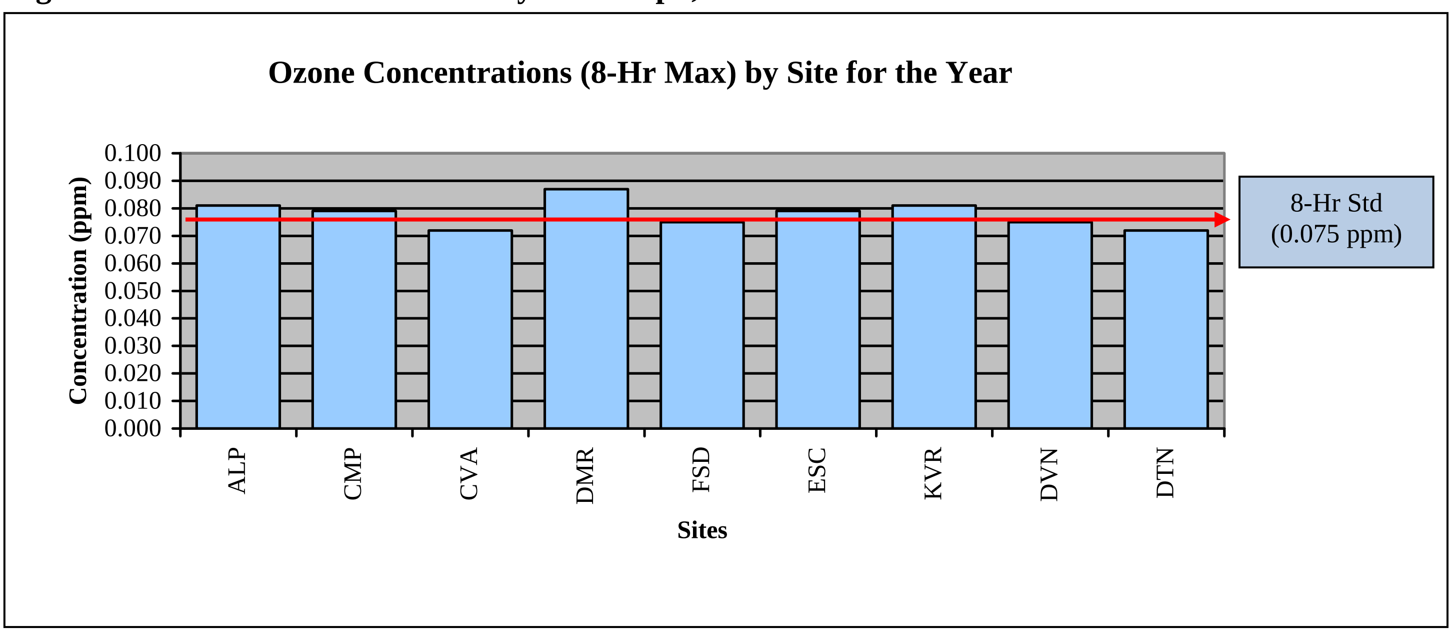
The CFR requires that for O_3 data to be used in regulatory determinations of compliance with the O_3 NAAQS the O_3 samplers must be sited according to Federal Regulations. Table 3.4a lists the maximum ozone measurements for every ozone monitoring location and Figure 3.2a show the values graphically with respect to the National Standard for the year.

Table 3.4a Ozone Measurements by Site, 2014

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	0.081	10	0.044
2	Camp Pendleton*	CMP	0.079	1	0.031
3	Chula Vista	CVA	0.072	0	0.026
4	Del Mar*	DMR	0.087	2	0.034
5a	El Cajon	ECA	**	**	**
5b	Floyd Smith Dr.	FSD	0.075	0	**
6	Escondido	ESC	0.079	5	0.030
7	Kearny Villa Road	KVR	0.081	1	0.032
8a	Otay Mesa	OTM	0.054	0	**
8b	Donovan	DVN	0.075	0	**
9	San Diego-Beardsley	DTN	0.072	0	0.030

*Includes data impacted by local fires. These days have been coded as Exceptional Events in the AQS.
**Not sampled for an entire year, so no average was calculated.

Figure 3.2a Ozone Concentrations by Site Graph, 2014



Section 3.1.2 Ozone Measurements by Site, Design Values

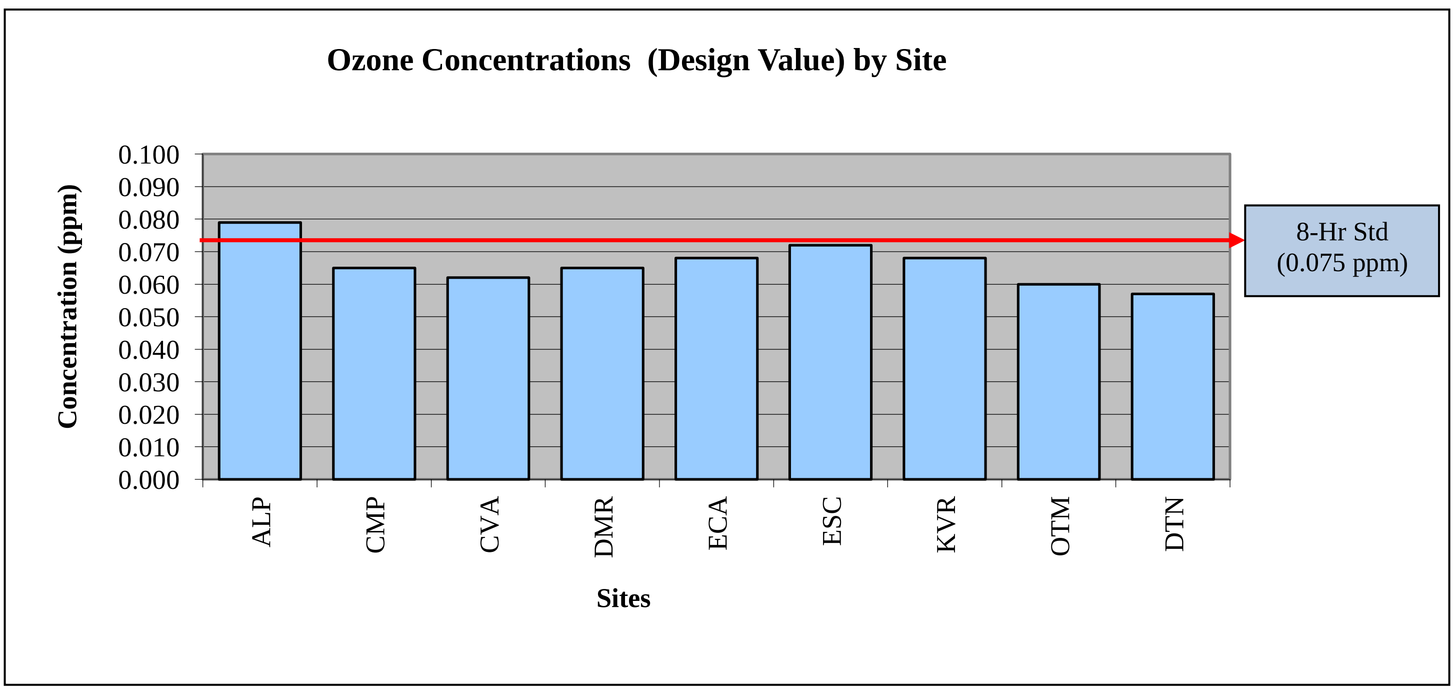
Table 3.4b lists the maximum ozone measurements for every ozone monitoring location and Figure 3.2b show the values graphically for the Design Value.

Table 3.4b Ozone Measurements by Site, Design Value 2012-2014

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	0.079	Yes	No
2	Camp Pendleton	CMP	0.065	Yes	Yes
3	Chula Vista	CVA	0.062	No	Yes
4	Del Mar	DMR	0.065	Yes	Yes
5a	El Cajon	ECA	0.068	Yes	Yes
5b	Floyd Smith Dr.	FSD	*	*	*
6	Escondido	ESC	0.072	Yes	Yes
7	Kearny Villa Road	KVR	0.068	Yes	Yes
8a	Otay Mesa	OTM	0.060	No	Yes
8b	Donovan	DVN	*	*	*
9	San Diego-Beardsley	DTN	0.057	No	Yes

*Not sampled for 3-yrs, so no Design Value was calculated.

Figure 3.2b Ozone Measurements by Site Graph, Design Value



Section 3.2.0 Ozone – Federal Design Criteria Requirements

Federal requirements for the number of ozone monitors are in 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". Note: only the passages applicable to the SDAB have been cited. The pertinent sections in Table D-2 that apply to the SDAB have been highlighted.

4.1 Ozone (O3) Design Criteria. (a) State, and where appropriate, local agencies must operate O3sites 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 O3NAAQS. Specific SLAMS O3site minimum requirements are included in Table D–2 of this appendix. The NCore sites are expected to complement the O3data collection that takes place at single- pollutant SLAMS sites, and both types of sites can be used to meet the network minimum requirements. The total number of O3sites needed to support the basic monitoring objectives of public data reporting, air quality mapping, compliance, and understanding O3-related atmospheric processes will include more sites than these minimum numbers required in Table D–2 of this appendix. The EPA Regional Administrator and the responsible State or local air monitoring agency must work together to design and/or maintain the most appropriate O3network to service the variety of data needs in an area

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

MSA population[1,2]	*Most recent 3-year design value concentrations ≥85% of any O_3 NAAQS*[3]	*Most recent 3-year design value concentrations <85% of any O_3 NAAQS*[3,4]
>10 million	*4*	*2*
4 – 10 million	*3*	*1*
350,000 - < 4 million	*2*	*1*
50,000 - < 350,000[5]	*1*	*0*

[1] Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).
[2] Population based on latest available census figures.
[3] The ozone (O3) National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.
[4] These minimum monitoring requirements apply in the absence of a design value.
[5] Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

(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. More than one maximum concentration site may be necessary in some areas. Table D–2 of this appendix does not account for the full breadth of additional factors that would be considered in designing a complete O_3 monitoring program for an area. Some of these additional factors include geographic size, population density, complexity of terrain and meteorology, adjacent O3 monitoring programs, air pollution transport from neighboring areas, and measured air quality in comparison to all forms of the O3 NAAQS (i.e., 8-hour and 1-hour forms). Networks must be designed to account for all of these area characteristics. Network designs must be re-examined in periodic network assessments. Deviations from the above O3 requirements are allowed if approved by the EPA Regional Administrator.

Section 3.2.1 Ozone –Design Value Criteria

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. The 8-Hour Design Value is based on the monitor that records the highest values (Table 3.5a), using EPA *Table D-2*; Tables 3.5a and 3.5b list these requirements for the SDAB.

Table 3.5a Ozone 8-hour Design Value 2012-2014

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)
0.079	Yes	No	No

Using EPA *Table D-2*

Table 3.5b Ozone Minimum Number of Monitors (Sites) Needed for 2014

MSA (name)	County (name)	Population from 2010 Census (#)	Minimum Number of Monitors (Sites) Required (#)	Number of Active Monitors (Sites) (#)	Number of Monitors (Sites) Needed (#)
San Diego	San Diego	3.2 million	2	9	None

Section 3.2.2 Ozone –Maximum Concentration

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(b), list the requirements needed to fulfill the Maximum Concentration Site, which is based on the monitor that records the maximum concentration values (Table 3.5c).

Table 3.5c Ozone Maximum Concentration Site, 2012-2014

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

Section 3.3.0 Ozone – Quality Control (QC) Practices

Requirements for Quality Control of criteria pollutants are in 40 CFR Part 50 and Part 58. Each criteria pollutant has a specific section. See Table 3.6 for the specific references and equipment.

The District utilizes an ozone laboratory level II standard that is sent to the CARB laboratory annually for certification. The field level III ozone transfer standards are certified quarterly against the ozone laboratory level II standard.

Table 3.6 Ozone QC Measures

		Quality Control Measures		
		Calibration	Zero/Span	Precision Checks (QC)
Frequency		Every monitor 1/year and 25% monitors/quarter (QA Handbook Vol. II, App. D, Ozone, Calibration)	Every other night	Manual= Every 2 Weeks Automated= Every other night
Personnel		Manually	Automated	Manually= performed by randomly selected personnel
Reference		40 CFR Part 50, App. D & TAD EPA-600/4-79-057	Zero Drift (24-Hrs): ≤ ±0.003 ppm Zero Drift (14-day): ≤ ±0.005 ppm Span Drift (14-day): ≤ ±7.0%	40 CFR Part 58, App. A, Section 3.2.1 & Table A–2
Equipment Used	Calibrator	Level I Dynamic Dilution Instrumentation used for calibrations & precision checks only	Level II Dynamic Dilution Instrumentation specific to that station	Manual=Level I Automated= Level II Dynamic Dilution Instrumentation used for calibrations & precision checks only
Equipment Used	Transfer Std	Level III O_3 transfer standard used for calibrations & precision checks only	Calibrator for trends use only	Manual= Level III O_3 transfer standard used for calibrations & precision checks only Automated= Calibrator for trends use only
Equipment Used	Diluent	Zero Air Generator (ZAG) used for calibrations & precision checks only	ZAG specific to that station	Manual= ZAG used for calibrations & precision checks only Automated= ZAG specific to that station
Certifications	Calibrator	Level I= 2/yr	Calibrator= 2/yr	Level I= 2/yr
Certifications	Transfer Std	Level III= 4/yr	None	Level III= 4/yr
Certifications	Diluent	ZAG= Annually	ZAG= Annually	ZAG= Annually

Section 3.4.0 Ozone – Quality Assurance (QA) Practices

Requirements for Quality Assurance of criteria pollutants are in the 40 CFR Part 58. Each criteria pollutant has a specific section. See Table 3.7 for the specific references and equipment. All audits are scheduled to occur during calendar quarters, about 6 months after the calibration.

The District utilizes an ozone laboratory standard that is sent to the CARB laboratory annually for certification. Field ozone transfer standards are certified quarterly with the laboratory transfer standard.

Table 3.7 Ozone QA Measures

		Quality Assurance Measures	
		Internal Local Audits (District)	External State Audits (CARB)
Frequency		Every monitor ≥1/year and 25% monitors/quarter	75% of the monitors/year randomly selected
Reference		40 CFR Part 58 App. A, Section 3.2.2	n/a
Equipment Used	Calibrator	Level I Dynamic Dilution Instrumentation used for audits only	External Dynamic Dilution Instrumentation
Equipment Used	Transfer Std	Level III O_3 transfer standard used for audits only	External O_3 transfer standard
Equipment Used	Diluent	Zero Air Generator (ZAG) used for audits only	External ZAG
Certifications	Calibrator	Level I= 2/yr	See CARB
Certifications	Transfer Std	Level III= 4/yr	See CARB
Certifications	Diluent	ZAG= Annually	See CARB

Chapter 4 Nitrogen Dioxide (NO_2) and NOy

Section 4.0.0 Nitrogen Dioxide (NO_2) and NOy 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. Reactive oxides of nitrogen (NO_y) are sampled at the El Cajon location for the National Core (NCore) and Photochemical Assessment Monitoring Stations (PAMS) programs. There is no state or national standard for this pollutant. Please see section 11 – NCore for a detailed description of NOy. Please note:

- The Otay Mesa (OTM) station was permanently relocated to the Donovan State Prison area. This station is called Donovan (DVN).
- The El Cajon station was temporarily relocated to the Gillespie Field area off of Floyd Smith Drive. This station is called Floyd Smith Drive (FSD).

Figure 4.0 Nitrogen Dioxide Network Map

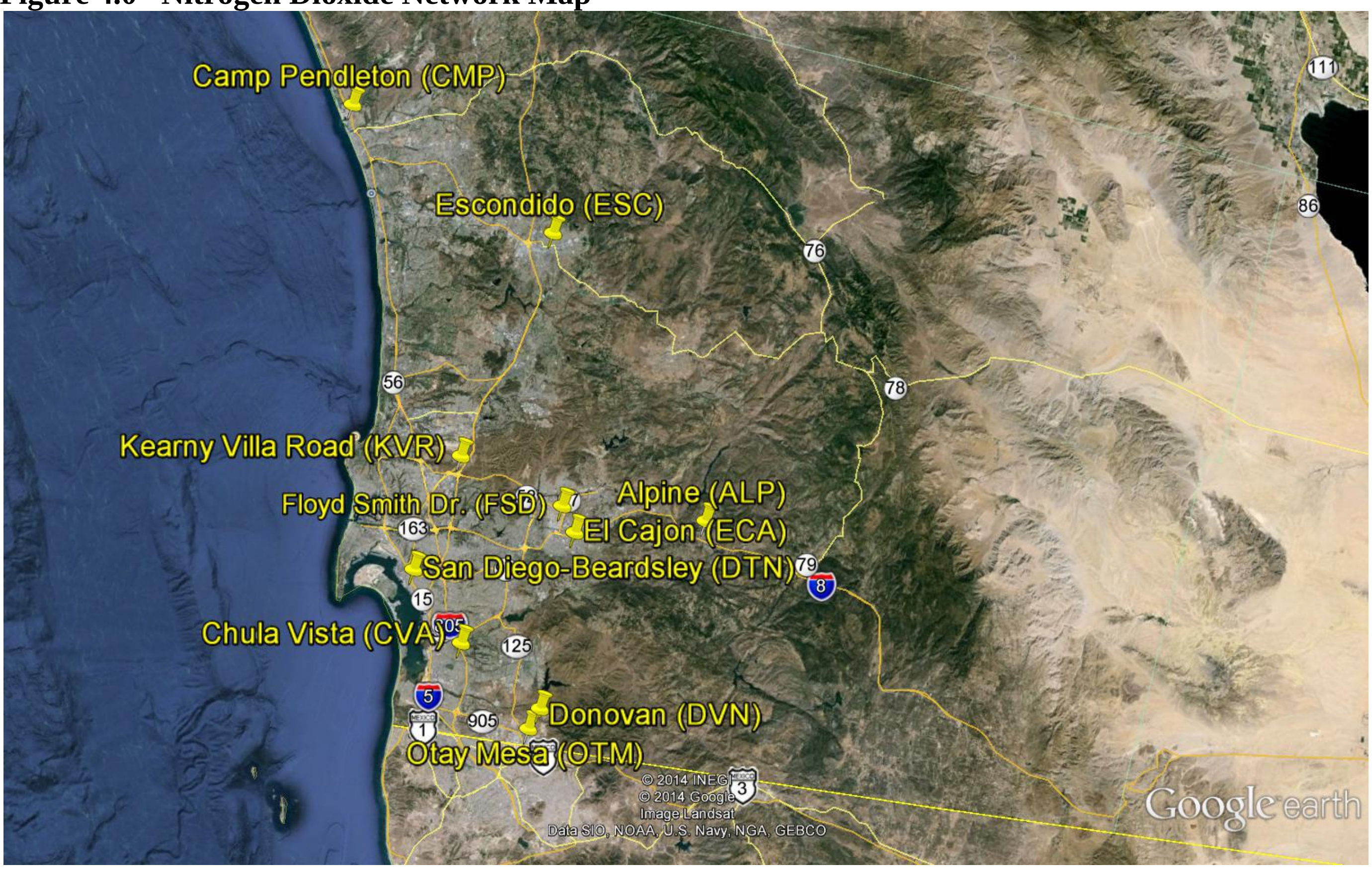


Table 4.0 Nitrogen Dioxide State and National Standards for the Year

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	

Table 4.1 Nitrogen Dioxide and NOy-NO Sampling Network

	Abbreviation	ALP	CMP	CVA	ECA/FSD[1]		ESC	KVR	OTM/DVN[2]	DTN	RCD[3]
	Name	Alpine	Camp Pendleton	Chula Vista	El Cajon/ Floyd Smith Dr.		Escondido	Kearny Villa Rd	Otay Mesa/ Donovan	San Diego – Beardsley	Rancho Carmel Dr.
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-0003 06-073-1018		06-073-1002	06-073-1016	06-07- 2007/ 06-073-1014	06-073-1010	06-073-1017
NO_2 & NOy	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
	Designation	PRI	PRI	PRI	PRI	N/A	PRI	PRI	PRI	PRI	PRI
	Method	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL
	Affiliation	PAMS	PAMS	Not Applicable	PAMS	PAMS, NCORE	Not Applicable	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	Research	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS	PI, NAAQS
	Equipment	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i-NOy	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i

[1] ECA station temporarily relocated to the FSD area (NOy is temporarily waived at FSD)

[2] OTM station relocated to the DVN area

[3] RCD was sited in 2014, but not operational

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

<u>Section 4.0.1 Nitrogen Dioxide - Sampling Frequency, Equipment Used, and Suitability for Comparison to the NAAQS</u>

Requirements for the sampling frequency of SLAMS monitors, including NCore for pollutants are 40 CFR Part 58, section 58.12 “Operating Schedules” and “Operating Schedules and for PAMS Stations”, Subpart G- Federal Monitoring, Appendix D-“Network Design Criteria for Ambient Air Quality Monitoring”, Section 5.3, Table D–6 “Minimum Required PAMS Monitoring Locations and Frequencies”. The actual sampling frequency and equipment are shown in Table 4.2. All District NO_2 samplers exceeds or meets all minimum monitoring requirements and are sited as to be able to be compared to the 1-Hr & Annual NAAQS.

Table 4.2 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

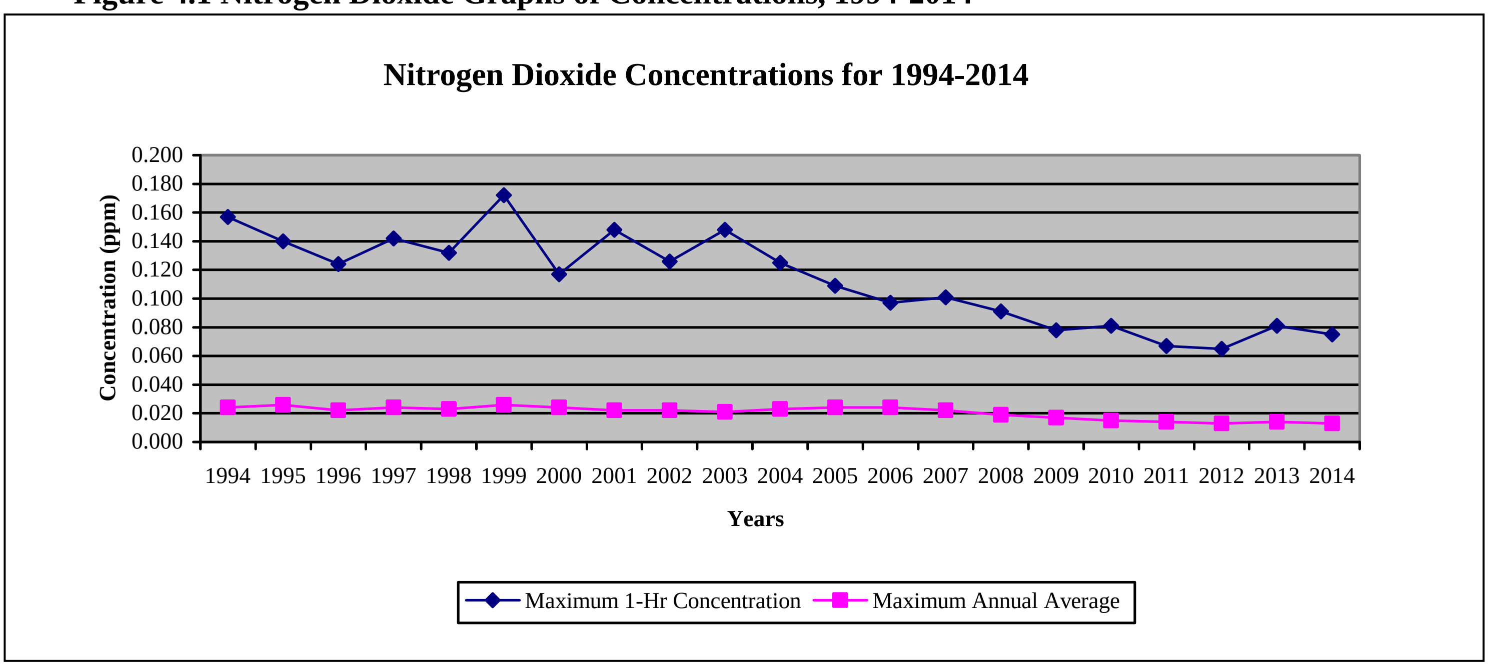
<u>Section 4.1.0 Nitrogen Dioxide – Trends in the SDAB</u>

As seen in Figure 4.1, emissions of NO_2 have decreased steadily over the years in the SDAB (Table 4.3). As with the state and the nation, the general downward trend is a result of improved emission control technology on mobile sources and NO_2 emissions should continue to decrease. Note: the “Days Above the National 1-Hr Standard.” row reflect the nitrogen dioxide standard for that year.

Table 4.3 Nitrogen Dioxide Summary of Concentrations for 1994-2014

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Maximum 1-Hr Concentration (ppm)	0.157	0.140	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
Maximum Annual Average (ppm)	0.024	0.026	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
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 Graphs of Concentrations, 1994-2014



Section 4.1.1 Nitrogen Dioxide Measurements by Site, Year

The CFR requires that for NO_2 data to be used in regulatory determinations of compliance with the NO_2 NAAQS the NOx samplers must be sited according to Federal Regulations. All District NOx samplers are sited as to be able to be compared to the NAAQS for NO_2.

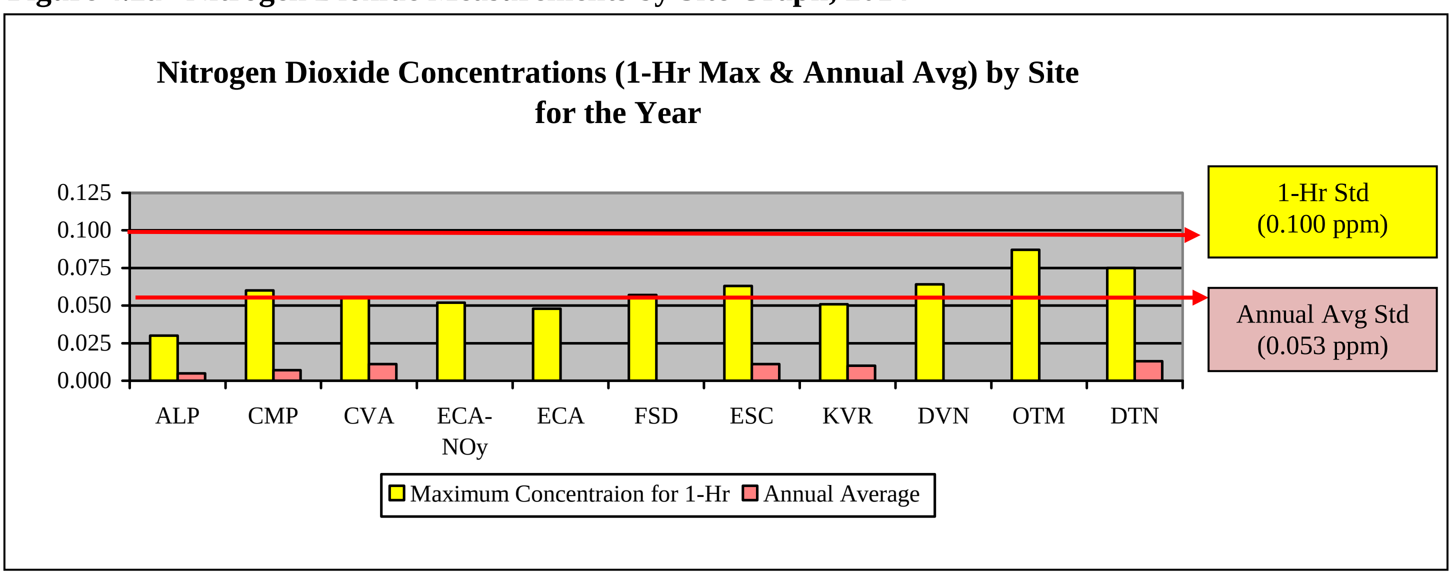
Table 4.4a lists the maximum nitrogen dioxide measurements and NOy-NO for each nitrogen dioxide monitoring location and NCore, respectively; figure 4.2a shows the values graphically with respect to the National Standard for the year.

Table 4.4a Nitrogen Dioxide Measurements by Site, 2014

No. (#)	Site (name)	Site Abbreviation	Maximum Concentration for 1-Hr (ppm)	Number of Days Above the National Standard (#)	Annual Average (ppm)
1	Alpine	ALP	0.030	0	0.005
2	Camp Pendleton	CMP	0.060	0	0.007
3	Chula Vista	CVA	0.055	0	0.011
4	El Cajon (NOy-NO≅ NO_2)*	ECA-NOy	0.052	*	**
5a	El Cajon	ECA	0.048	0	**
5b	Floyd Smith Dr.	FSD	0.057	0	**
6	Escondido	ESC	0.063	0	0.011
7	Kearny Villa Rd	KVR	0.051	0	0.010
8a	Otay Mesa	OTM	0.087	0	**
8b	Donovan	DVN	0.064	0	**
9	San Diego-Beardsley	DTN	0.075	0	0.013

*The NOy monitor does not have FRM designation, so it cannot be compared to the NAAQS.
**Not sampled for an entire year, so no average was calculated

Figure 4.2a Nitrogen Dioxide Measurements by Site Graph, 2014



Section 4.1.2 Nitrogen Dioxide Measurements by Site, Design Value

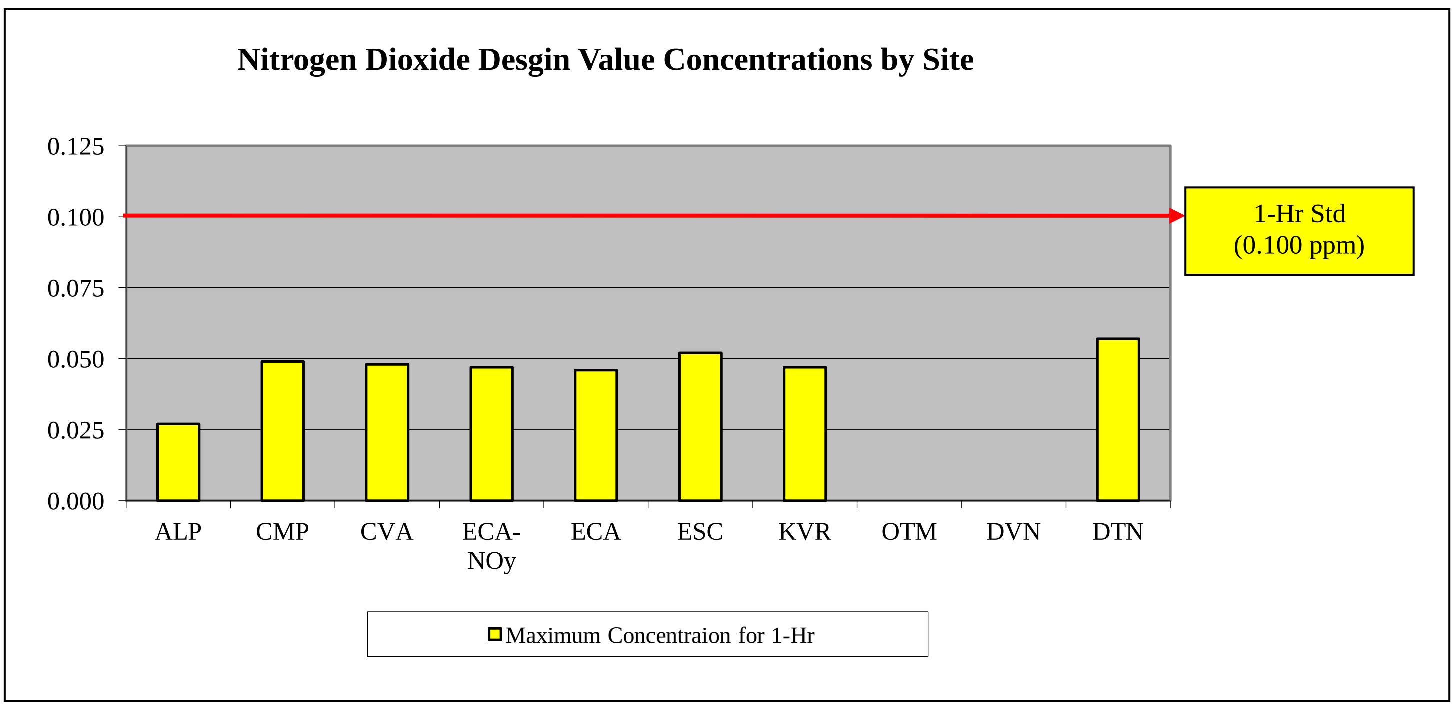
Table 4.4b lists the maximum nitrogen dioxide measurements and NOy-NO for each nitrogen dioxide monitoring location and NCore, respectively; figure 4.2b show the values graphically for the Design Value.

Table 4.4b Nitrogen Dioxide Measurements by Site, Design Value 2012-2014

No. (#)	Site (name)	Site Abbreviation	Design Value Maximum Concentration for 1-Hr (ppm)
1	Alpine	ALP	0.027
2	Camp Pendleton	CMP	0.049
3	Chula Vista	CVA	0.048
4	El Cajon (NOy-NO≅ NO_2)*	ECA-NOy	0.047
5a	El Cajon	ECA	0.046
5b	Floyd Smith Dr.	FSD	*
6	Escondido	ESC	0.052
7	Kearny Villa Rd	KVR	0.047
8a	Otay Mesa	OTM	*
8b	Donovan	DVN	*
9	San Diego-Beardsley	DTN	0.057

*Not sampled for 3-yrs, so no Design Value was calculated.

Figure 4.2b Nitrogen Dioxide Measurements by Site Graph, Design Value 2012-2014



Section 4.2.0 Nitrogen Dioxide & NOy Federal Design Criteria Requirements

Federal requirements for the number of nitrogen dioxide monitors are 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 4.3 “Nitrogen Dioxide (NO_2) Design Criteria”. Note: only the passages applicable to the SDAB have been cited.

4.3 Nitrogen Dioxide (NO2) Design Criteria

4.3.1 General Requirements

(a) State and, where appropriate, local agencies must operate a minimum number of required NO2 monitoring sites as described below.

4.3.2 Requirement for Near-road NO2 Monitors

(a) Within the NO2 network, there must be one microscale near-road NO2monitoring 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 NO2 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 NO2 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 NO2 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 NO2 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 NO2 monitoring 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.

(b) Measurements at required near-road NO2 monitor sites utilizing chemiluminescence FRMs must include at a minimum: NO, NO2, and NOX.

4.3.3 Requirement for Area-wide NO2 Monitoring

(a) Within the NO2network, 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 NO2concentrations representing the neighborhood or larger spatial scales. PAMS sites collecting NO2 data that are situated in an area of expected high NO2concentrations at the neighborhood or larger spatial scale may be used to satisfy this minimum monitoring requirement when the NO2 monitor is operated year round. Emission inventories and meteorological analysis should be used to identify the appropriate locations within a CBSA for locating required area-wide NO2 monitoring stations. CBSA populations shall be based on the latest available census figures.

4.3.4 Regional Administrator Required Monitoring

(a) The Regional Administrators, in collaboration with States, must require a minimum of forty additional NO2 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. The Regional Administrators, working with States, may also consider additional factors described in paragraph (b) below to require monitors beyond the minimum network requirement.

(b) The Regional Administrators may require monitors to be sited inside or outside of CBSAs in which:

(i) The required near-road monitors do not represent all locations of expected maximum hourly NO2 concentrations in an area and NO2 concentrations may be approaching or exceeding the NAAQS in that area;

(ii) Areas that are not required to have a monitor in accordance with the monitoring requirements and NO2 concentrations may be approaching or exceeding the NAAQS; or

(iii) The minimum monitoring requirements for area-wide monitors are not sufficient to meet monitoring objectives.

(c) The Regional Administrator and the responsible State or local air monitoring agency should work together to design and/or maintain the most appropriate NO2 network to address the data needs for an area, and include all monitors under this provision in the annual monitoring network plan.

4.3.5 NO2 Monitoring Spatial Scales

(a) The most important spatial scale for near-road NO2monitoring stations to effectively characterize the maximum expected hourly NO2 concentration due to mobile source emissions on major roadways is the microscale. The most important spatial scales for other monitoring stations characterizing maximum expected hourly NO2 concentrations are the microscale and middle scale. The most important spatial scale for area-wide monitoring of high NO2 concentrations is the neighborhood scale.

4.3.6 NOy Monitoring

(a) NO/NOy measurements are included within the NCore multi-pollutant site requirements and the PAMS program. These NO/NOy measurements will produce conservative estimates for NO2 that can be used to ensure tracking continued compliance with the NO2 NAAQS. NO/NOy monitors are used at these sites because it is important to collect data on total reactive nitrogen species for understanding O3photochemistry.

The NCore/NOy requirements for the number of reactive oxides of nitrogen (NOy) monitors for the NCore pollutants are also in 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore Sites", subsection (b). Note: only the passages applicable to the SDAB have been cited.

3. Design Criteria for NCore Sites

(b) The NCore sites must measure, at a minimum, PM2.5 particle mass using continuous and integrated/filter-based samplers, speciated PM2.5, PM10-2.5 particle mass, speciated PM10-2.5, O3, SO2, 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-PM10. 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 NOy is required in support of a number of monitoring objectives, available commercial instruments may indicate little difference in their measurement of NOy compared to the conventional measurement of NOX, particularly in areas with relatively fresh sources of nitrogen emissions. Therefore, in areas with negligible expected difference between NOy and NOX measured concentrations, the Administrator may allow for waivers that permit NOX monitoring to be substituted for the required NOy monitoring at applicable NCore sites.

Federal requirements for the number of NOy monitors for the PAMS program are 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 5 "Network Design for Photochemical Assessment Monitoring Stations (PAMS)", subsection 5.3. Note: only the passages applicable to the SDAB have been cited.

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 NOy 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.

Section 4.2.1 Nitrogen Dioxide – Near-road Number of NO_2 Monitors

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", subsections 4.3.2 and 4.3.2(a)(1) list the requirements needed to fulfill the NO_2 near-road criteria. Table 4.5a list the minimum number of Near-road monitors required for the SDAB.

Table 4.5a Minimum Number of Near-Road Monitors Required

MSA (name)	County (name)	Population from 2010 Census (#)	Minimum Number of Monitors Required (#)	Are Additional Monitors Required (yes/no)	Minimum Number of Additional Monitors Required (#)	Total Number of Monitors Required (#)	Total Number of Active Monitors (#)	Total Number of Monitors Needed (#)
San Diego	San Diego	3.2 million	1	Yes	1	2	0	2*

*One for 2015 and second monitor/site for 2015/16

Section 4.2.1.1 Nitrogen Dioxide – Near-road NO_2 Monitor Location (first site)

The first NO_2 near-road location is off of Rancho Carmel Drive (RCD) about 3.7 miles north of Poway Rd. and NOx and meteorological parameters are measured there. This site has received EPA approval.

Section 4.2.1.2 Nitrogen Dioxide – Near-road NO_2 Monitor Location (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, etc. or by different route, interstate, or freeway designation.

The EPA's primary recommendation for a second site is to attempt to have the second site with as many of the aforementioned characteristics different from the first site, without sacrificing the objective of measuring relative peak NO_2 concentrations. The District's attempts to establish a second Near-road NO_2 monitor site at two different locations were unsuccessful (see 2013 ANP).

The District has two possible locations in the Logan Heights area (within a quarter mile of each other). The District will pursue location #1 first. If we cannot site an air quality monitoring station there, we will then pursue locating a station at the second choice. While the traffic count is lower for both of these sites than other possible non-Barrio areas, both locations are in an Environmental Justice area, (within a mile) downwind of an ambient air monitoring station (DTN), which has a Regional NOx monitor. The measured concentrations from the DTN station can be subtracted from this location to get a clearer pollution profile from the contribution from the road segment. Also, the second site would be across from the shipyards, which operate diesel engines, so these emissions can also be measured. This site has received preliminary approval from the EPA.

The first proposed location for the 2nd Near-road site is in Logan Heights off of Kearney Ave. and Sicard St. in the Marcy School playground (see Table 4.5b1 for the Near-road matrix for Sicard St.).

The second proposed location for the second Near-road site is in Logan Heights off of Newton Ave. (see Table 4.5b2 for the Near-road matrix for Newton Ave.).

Benefits of Marcy Ave:

- The station would be located in a school, thus informing the parents of the children what air pollution the children are breathing.
- The off ramps for SR-75 (Coronado Bridge) and Cesar Chavez Parkway run parallel to Interstate 5.
- In the morning commute hours, these off-ramps are bumper-to-bumper for Downtown and Coronado business traffic, respectively.
- Straight section of the freeway, therefore less impact from wind direction.
- More of a bedroom community, so the monitors at this location will have a larger population influence to long-term residents.

Table 4.5b1 Near-road Matrix for 2nd Near-road Site off of Sicard St. (first choice)

No.	Condition	Answer
1	Submitted for public comment	No
2	Anticipated start-up	Jan. 1, 2016
3	AQS #	06-073-1022
4	Address and coordinates	Kearney Ave. & Sicard St. & Marcy Ave. (abbreviated as MCA) 32.697710°, -117.136649°
5	Sampling & analysis method	NOx, Chemiluminescence $PM_{2.5}$, Gravimetric
6	Sampling & analysis method	24/7, Year-long
7	Any plans to remove or move the monitor within the 18 months?	No
8	Monitoring objective & spatial scale	Data, NAAQS, MicroScale
9	CBSA	San Diego County
10	CBSA population & year	3.2 million people from 2010 U.S. Census
11	Maximum AADT counts & year	Estimation from 2012 Caltrans report: 160,000 cars (actual) & 6,400 trucks (estimate); FE= 217,600 (estimated) (ranked about 45-50th in the County)
12	Correct number of required NOx (NO_2) monitors?	Two based on population
13	Are all road segments ranked?	Yes
14	How is Fleet Equivalency (FE) calculated?	FE AADT= (AADT-HDC) + (HDm x HDc) HDc= High Density county (trucks) HDm= High Density multiplier (10)
15	How is roadway design considered?	The location is downwind of the I-5-SR-75 interchange. 28th St is a feeder to the Port of San Diego. No downwind bridges or tunnels, or surrounding mass transit points to bias the data.

16	How is congestion considered?	At the time of the writing of this report, there are no LOS congestion ratings for I-5 in San Diego. It is estimated to be E/D
17	How is terrain considered?	The station elevation will be about 9 meters higher than the freeway. The probe height will be 2-7 meters higher.
18	How is meteorology considered?	The winds at this location are predominantly from the west and WNW, which would generally occur during the day. Winds are rarely greater than 6 m/s. The second most common wind direction is from the SSW, which would occur most often when a coastal eddy forms or ahead of an approaching storm system. At night, there are commonly weak drainage winds from the NE that develop that range from near calm to less than 2 m/s. So, the flow at this location is primarily onshore except later at night where it can turn weakly offshore. It is typical of a coastal location in Southern California.
19	How is population exposure considered?	This location is a mixture of business and residential. It is located in an Environmental Justice (EJ) area. This EJ area has one of the higher asthma rates in the County and local representatives are requesting a NO2 Near-road site in this community. Our Downtown-San Diego (DTN) air pollution monitoring station is located about 0.8 miles northeast/upwind of the proposed NO2 Near-road site at Marcy School. The concentrations recorded at the DTN site can be subtracted from the measured concentrations at the Marcy School site to get a more accurate of the air pollution contribution from the freeway. Additional funding will be pursued so that CO, Black Carbon, Toxics-VOCs, Carbonyls, and Toxic-Metals can be measured at this location.
20	1st NO2 Near-road site	The first Near-road site is along I-15, along the most trafficked area in the County. It is located along a large business zone.
21	Distance from the target road?	38-48 meters, depending on probe placement the road segment used. This section of I-5 has a two lane on-ramp for SR 75 and Cesar Chavez Pkwy.

		The distance from the proposed inlet location from the edge of: On Ramp= 36 meters I-5= 46 meters
22	Will vertical inlet be between 2 - 7 meters?	Yes
23	Will the probe distance from supporting structures be at least 1 meter away vertically or horizontally?	Yes
24	Will the air flow between the probe and the outside nearest edge of the target road segment be unobstructed?	Yes

Benefits of Newton Ave:

- Only the Interstate 5 lanes are parallel to the station; therefore, in non-rush hour times, no "dilution" from less travelled off-ramp lanes.
- Closer to Harbor Ave. (a downwind North-South feeder road that has a high traffic count).

Table 4.5b2 Near-road Matrix for 2nd Near-road Site off of Newton Ave. (second choice)

No.	Condition	Answer
1	Submitted for public comment	In this Annual Network Plan
2	Anticipated start-up	December 1, 2015
3	AQS #	06-073-1019
4	Address and coordinates	Newton Ave. & 29th Street, National City (abbreviated as NTA) 32°41'41.77"N, 117° 7'54.50"W
5	Sampling & analysis method	NOx, Chemiluminescence
6	Sampling & analysis method	24/7, Year-long
7	Any plans to remove or move the monitor within the 18 months?	No
8	Monitoring objective & spatial scale	Data, NAAQS, MicroScale
9	CBSA	San Diego County
10	CBSA population & year	3.2 million people from 2010 U.S. Census
11	Maximum AADT counts & year	Estimation from 2012 Caltrans report: 158,000 cars (actual) & 7,600 trucks (estimate); FE= 226,400 (estimated) (ranked about 45-50th in the County)
12	Correct number of required NOx (NO_2) monitors?	Two based on population
13	Are all road segments ranked?	Yes
14	How is Fleet Equivalency (FE) calculated?	FE AADT= (AADT-HDC) + (HDm x HDc) HDc= High Density county (trucks) HDm= High Density multiplier (10)
15	How is roadway design considered?	The location is downwind of the I-15/I-5 interchange; 28th St is a feeder to the Port of San Diego. No downwind bridges or tunnels, or surrounding mass transit points to bias the data.

16	How is congestion considered?	At the time of the writing of this report, there are no LOS congestion ratings for I-5 in San Diego. It is estimated to be E/D
17	How is terrain considered?	Station will be about 9 m higher than the freeway
18	How is meteorology considered?	The winds at this location are predominantly from the west and WNW, which would generally occur during the day. Winds are rarely greater than 6 m/s. The second most common wind direction is from the SSW, which would occur most often when a coastal eddy forms or ahead of an approaching storm system. At night, there are commonly weak drainage winds from the NE that develop that range from near calm to less than 2 m/s. So, the flow at this location is primarily onshore except later at night where it can turn weakly offshore. It is typical of a coastal location in Southern California.
19	How is population exposure considered?	This location is a mixture of business and residential. It is located in an Environmental Justice (EJ) area. This EJ area has one of the higher asthma rates in the County and local representatives are requesting a NO2 Near-road site in this community. Our Downtown-San Diego (DTN) air pollution monitoring station is located about 1.1 miles northwest/upwind of the proposed NO2 Near-road site at Newton Ave. The concentrations recorded at the DTN site can be subtracted from the measured concentrations at the Newton Ave. site to get a more accurate profile of the air pollution contribution from the freeway. Additional funding will be pursued so that Black Carbon, Toxics-VOCs and Toxic-Carbonyls can be measured at this location.
20	1st NO2 Near-road site	The first Near-road site is along I-15, along the most trafficked area in the County.
21	Distance from the target road?	32-42 meters, depending on probe placement.
22	Will vertical inlet be between 2 - 7 meters?	Yes
23	Will the probe distance from supporting structures be at least 1 meter away vertically or horizontally?	Yes
24	Will the air flow between the probe and the outside nearest edge of the target road segment be unobstructed?	Yes

Section 4.2.2 Nitrogen Dioxide – Area-wide NO_2 Monitors

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", subsection 4.3.3 list the requirements needed to fulfill the Area-wide NO_2 monitoring criteria. Additionally, the Area-wide monitor cannot also be the Regional Administrator monitor. Table 4.6 lists these requirements.

Table 4.6 NO_2 Area-Wide Monitor, 2014

MSA (name)	County (name)	Population from 2010 Census (#)	Area-wide Site (name)	Area-wide Site AQS ID (#)	Meet NAAQS? (yes/no)
San Diego	San Diego	3.2 million	Escondido (ESC)	06-073-1002	Yes

Section 4.2.3 Nitrogen Dioxide – Regional Administrator Required NO_2 Monitors

40 CFR Part 58-"Ambient Air Quality Surveillance", 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", subsection 4.3.4 lists the requirements needed to fulfill the Regional Administrator NO_2 monitoring (RA-40) criteria . Additionally, the Area-wide monitor cannot also be the Regional Administrator monitor. Table 4.7 lists these requirements.

Table 4.7 Regional Administrator Designated NO_2 Monitor, 2014

MSA (name)	County (name)	Population from 2010 Census (#)	Regional Administrator Site (name)	Regional Administrator Site AQS ID (#)	Meet NAAQS? (yes/no)
San Diego	San Diego	3.2 million	San Diego-Beardsley (DTN)	06-073-1010	Yes

Section 4.2.4 NOy-NCore Monitoring

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", subsection 4.3.6 lists the requirements needed to fulfill the trace level (NCore) NO_y monitoring criteria. These requirements are reiterated in the 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore Sites", subsection (b). Table 4.8a lists these requirements. Please see the NCore section for additional details.

Table 4.8a Design Criteria for the Minimum Number of NCore NOy Monitors Required

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

*Inactive at temporary location at FSD.

Section 4.2.5 NOy-PAMS Monitoring

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 5 "Network Design for Photochemical Assessment Monitoring Stations (PAMS)", subsection 5.3. Table 4.8b lists these requirements.

Table 4.8b Design Criteria for the Minimum Number of PAMS NOy Monitors Required

Minimum Number of NOy Monitors Required Either at a Type I or Type III Site (#)	Number of Active Type I or Type III Site (#)	Number of Active NOy Monitors at a Type I or Type III Site (#)	Number of NOy Monitors Needed (#)	NOy Monitor Location (name)	NOy Monitor Location AQS ID (#)
1	2	1*	None	El Cajon* (ECA)	06-073-0003

* In 2011, the District was granted a waiver by the EPA Region IX Authority, to designate the El Cajon location, instead of the Alpine location, as to satisfying this requirement.

4.3.0 Nitrogen Dioxide – Quality Control (QC) Practices

Requirements for Quality Control of the criteria pollutants are in 40 CFR Part 50 and Part 58 and the QA Handbook, Vol. II. Each criteria pollutant has a specific section. See Table 4.9 for the specific references and equipment.

Table 4.9 Nitrogen Dioxide QC Measures

		Quality Control Measures		
		Calibration	Zero/Span	Precision Checks (QC)
Frequency		Every monitor 1/year and 25% monitors/quarter (QA Handbook Vol. II, App. D, NO_2 Calibration; *NOy= 4/yr*	Every other night *NOy Zero= every 2 days* *NOy Span= every 4 days*	Manual= Every 2 Weeks Automated= Every other night *NOy = every 4 days*
Personnel		Manually	Automated	Manually= performed by randomly selected personnel.
Reference		40 CFR Part 50, App. F, TAD EPA-E600/4-75-003, & QA Document 2.3 EAP-600/4-77-027a.	Zero Drift (24-Hrs): ≤ ±0.003 ppm Zero Drift (14-day): ≤ ±0.005 ppm Span Drift (14-day): ≤ ±10.0%	40 CFR Part 58, App. A, Section 3.2.1 & Table A–2
Equipment Used	Calibrator	Level I Dynamic Dilution Instrumentation used for calibrations & precision checks only	Level II Dynamic Dilution Instrumentation specific to that station	Manual=Level I Automated= Level II Dynamic Dilution Instrumentation used for calibrations & precision checks only
Equipment Used	Gas	40 CFR Part 58 App. A, Section 2.6.1 (EPA Protocol I, ±1%)	Ambient= Blend of gases (±5%) *NOy = EPA Protocol I (±1%)*	40 CFR Part 58 App. A, Section 2.6.1 (EPA Protocol I, ±1%)
Equipment Used	Diluent	Zero Air Generator (ZAG) used for calibrations & precision checks only	ZAG specific to that station	Manual= ZAG used for calibrations & precision checks only Automated= ZAG specific to that station
Certifications	Calibrator	Level I= 2/yr *NOy* = 4/yr	Calibrator= 2/yr *NOy* = 4/yr	Level I= 2/yr *NOy* = 4/yr
Certifications	Diluent	ZAG= Annually	ZAG= Annually	ZAG= Annually

4.4.0 Nitrogen Dioxide – Quality Assurance (QA)

The requirements for the Quality Assurance of criteria pollutants are in 40 CFR Part 58. Each criteria pollutant has a specific section. See Table 4.10 for the specific references and equipment. All ambient audits are scheduled to occur during calendar quarters about 6 months after the calibration.

Table 4.10 Nitrogen Dioxide QA Measures

		Quality Assurance Measures	
		Internal Local Audits (District)	External State Audits (CARB)
Frequency		Every monitor ≥1/year and 25% monitors/quarter *NCore*=4/yr	75% of the monitors/year randomly selected
Reference		40 CFR Part 58 App. A, Section 3.2.2	n/a
Equipment Used	Calibrator	Level I Dynamic Dilution Instrumentation used for audits only	External Dynamic Dilution Instrumentation
Equipment Used	Gas	40 CFR Part 58 App. A, Section 2.6.1 (EPA Protocol I, ±1%)	External O_3 transfer standard
Equipment Used	Diluent	Zero Air Generator (ZAG) used for audits only	External ZAG
Certifications	Calibrator	Level I= 2/yr	See CARB
Certifications	Diluent	ZAG= Annually	See CARB

Chapter 5 Carbon Monoxide (CO)

Section 5.0.0 Carbon Monoxide Introduction

Carbon monoxide (CO) was sampled on a continuous basis at three locations in the SDAB (Figure 5.0) 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 El Cajon station was temporarily relocated to the Gillespie Field area off of Floyd Smith Drive. This station is called Floyd Smith Drive (FSD).

Figure 5.0 Carbon Monoxide Network Map

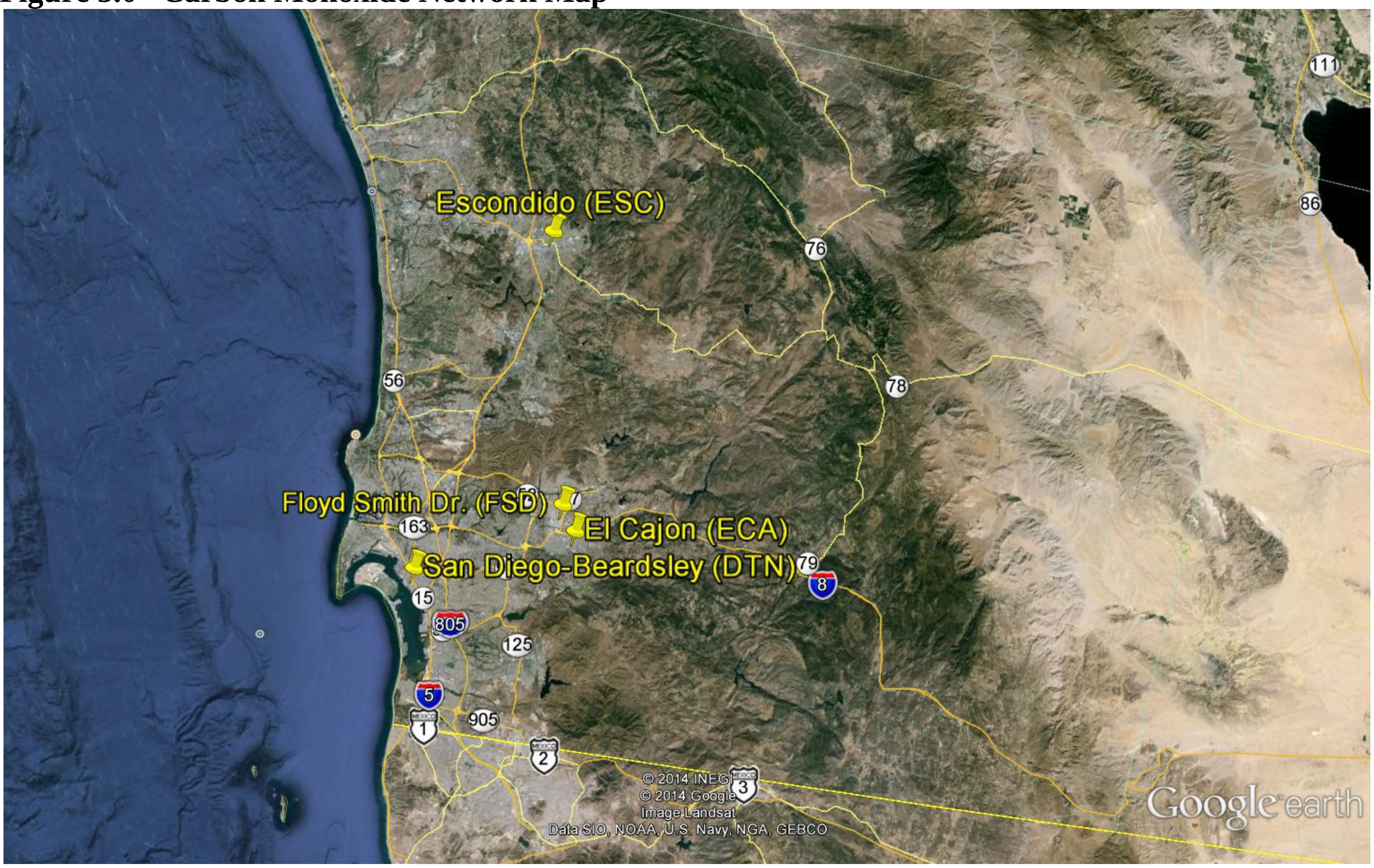


Table 5.0 Carbon Monoxide State and National Standards for the Year

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	ECA/FSD[1]	ESC	DTN	RCD[2]
	Name	El Cajon/ Floyd Smith Dr.	Escondido	San Diego – Beardsley	Rancho Carmel Dr.
	AQS ID	06-073-0003 06-073-1018	06-073-1002	06-073-1010	06-073-1017
CO	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS
	Method	IR	IR	IR	IR
	Affiliation	NCORE, PAMS	*	Not Applicable	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

[1] ECA station temporarily relocated to the FSD area (NOy is temporarily waived at FSD)
[2] RCD was sited in 2014, but not operational
*APCD designated State Maintenance monitor

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 5.0.1 Sampling Frequency, Equipment Used, and Suitability for Comparison to the NAAQS

Federal requirements for the sampling frequency of SLAMS monitors, including NCore, for pollutants are in 40 CFR Part 58-"Ambient Air Quality Surveillance", section 58.12-"Operating Schedules". All District CO samplers are sited as to be able to be compared to the 1-Hr & 8-Hr NAAQS.

Table 5.2 Carbon Monoxide 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

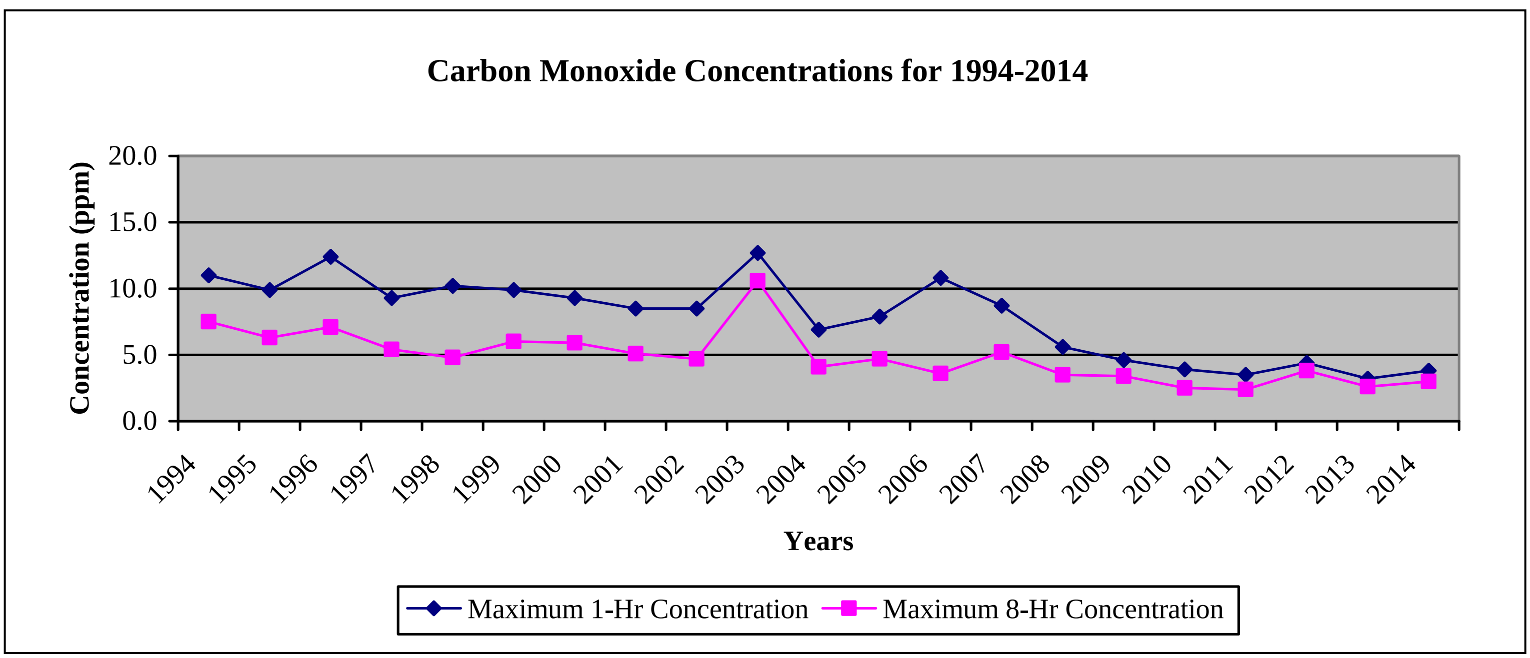
Section 5.1.0 Carbon Monoxide – Trends in the SDAB

The peak 8-Hr indicator for carbon monoxide has steadily decreased over the years (Table 5.3) and is shown graphically in Figure 5.2. In 2003, the wildfires in the County caused the SDAB to exceed the standards for CO, but these exceedances are considered an exceptional event and do not have a lasting impact in the air basin. Exceptional events are still tallied in the accounting for attainment status. 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 5.3 reflect the carbon monoxide standards for that year.

Table 5.3 Carbon Monoxide Summary of Concentrations for the 1994-2014

Maximum 1-Hr Concentration (ppm)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	11.0	9.9	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
Maximum 8-Hr Concentration (ppm)	7.5	6.3	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
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 Graph of Concentrations, 1994-2014



Section 5.1.1 Carbon Monoxide - Measurements by Site, Year

The CFR requires that for CO data to be used in regulatory determinations of compliance with the CO NAAQS the CO samplers must be sited according to Federal Regulations.

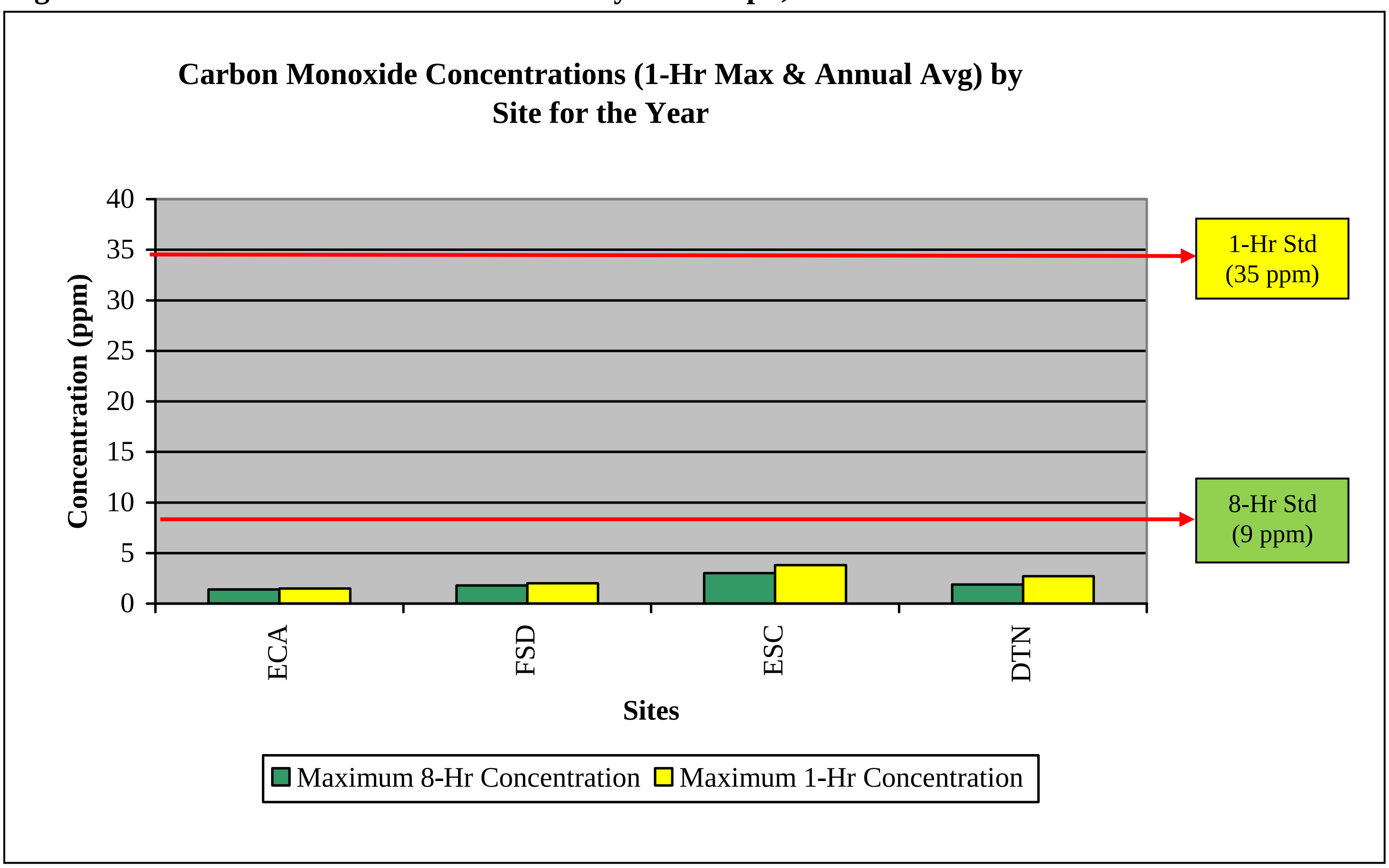
Table 5.4 lists the maximum carbon monoxide measurements for each carbon monoxide monitoring location and NCore; Figure 5.2 shows the values graphically with respect to the National Standard.

Table 5.4 Carbon Monoxide Measurements by Site, 2013

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)
1a	El Cajon (NCore)	ECA	1.4	1.5	0	*
1b	FSD (NCore)	FSD	1.8	2.0	0	*
2	Escondido	ESC	3.0	3.8	0	0.4
3	San Diego-Beardsley	DTN	1.9	2.7	0	0.4

*Not sampled for an entire year, so no average was calculated.

Figure 5.2 Carbon Monoxide Measurements by Site Graph, 2014



Section 5.2.0 Carbon Monoxide – Federal Design Criteria Requirements

Federal requirements for the number of carbon monoxide monitors are in 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 4, "Pollutant-Specific Design Criteria for SLAMS Sites", part 4.2 "Carbon Monoxide (CO) Design Criteria". Note: only the passages applicable to the SDAB have been cited.

4.2.1General Requirements. (a) Except as provided in subsection (b), one CO monitor is required to operate collocated with one required near-road NO2 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 NO2 monitor, only one CO monitor is required to be collocated with a near-road NO2 monitor within that CBSA.

(b) If a state provides quantitative evidence demonstrating that peak ambient CO concentrations would occur in a near-road location which meets microscale siting criteria in Appendix E of this part but is not a near-road NO2 monitoring site, then the EPA Regional Administrator may approve a request by a state to use such an alternate near-road location for a CO monitor in place of collocating a monitor at near-road NO2 monitoring site.

4.2.2Regional Administrator Required Monitoring. (a) The Regional Administrators, in collaboration with states, may require additional CO monitors above the minimum number of monitors required in 4.2.1 of this part, where the minimum monitoring requirements are not sufficient to meet monitoring objectives. The Regional Administrator may require, at his/her discretion, additional monitors in situations where data or other information suggest that CO concentrations may be approaching or exceeding the NAAQS. Such situations include, but are not limited to, (1) characterizing impacts on ground-level concentrations due to stationary CO sources, (2) characterizing CO concentrations in downtown areas or urban street canyons, and (3) characterizing CO concentrations in areas that are subject to high ground level CO concentrations particularly due to or enhanced by topographical and meteorological impacts. The Regional Administrator and the responsible State or local air monitoring agency shall work together to design and maintain the most appropriate CO network to address the data needs for an area, and include all monitors under this provision in the annual monitoring network plan.

Requirements for the number of trace level CO monitors for the NCore pollutants are in the 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore Sites", subsection (b) is as follows.

3. Design Criteria for NCore Sites
(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 $Pb\text{-}PM_{10}$.

Section 5.2.1 Carbon Monoxide Design Criteria for Near-road Requirements

40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 4, "Pollutant-Specific Design Criteria for SLAMS Sites", part 4.2 "Carbon Monoxide (CO) Design Criteria", subsection 4.2.1 list the requirements needed to fulfill Design Criteria for CO monitoring. Table 5.5 lists these requirements.

Table 5.5 Carbon Monoxide Minimum Number of Near-road Monitors Required

MSA (name)	County (name)	Population from 2010 Census (#)	Minimum Number of NO_2 Monitors Required (#)	Are Collocated CO Monitors Required (yes/no)	Minimum Number of Collocated CO Monitors Required (#)	Total Number of CO Monitors Required (#)	Total Number of Active CO Monitors (#)	Total Number of CO Monitors Needed (#)
San Diego	San Diego	3.2 million	2	Yes	1	1	0	1*

*In place at RCD, but not operational in 2014

Section 5.2.2 Carbon Monoxide –CO Trace Level Monitoring for NCore

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), lists the requirements needed to fulfill Design Criteria for CO trace level monitoring. Table 5.6 lists these requirements.

Table 5.6 Carbon Monoxide Design Criteria for NCore Requirements

MSA (name)	County (name)	Minimum Number of NCore CO-TLE Monitors Required (#)	Number of Active NCore CO-TLE Monitors (#)	Number of NCore CO-TLE Monitors Needed (#)	Meet NAAQS? (yes/no)
San Diego	San Diego	1	1	None	Yes

Section 5.3.0 Carbon Monoxide – Quality Control (QC) Practices

Requirements for the Quality Control of criteria pollutants are in 40 CFR Part 50 and Part 58 and the QA Handbook, Vol. II. Each criteria pollutant has a specific section. See Table 5.7 for the specific references and equipment.

Table 5.7 Carbon Monoxide QC Measures

	Quality Control Measures		
	Calibration	Zero/Span	Precision Checks (QC)
Frequency	Every monitor 1/year and 25% monitors/quarter (QA Handbook Vol. II, CO Calibration; *NCore= 4/yr*	Ambient= Nightly; *NCore Zero= every 2 days* *NCore Span= every 4 days*	Every 2 Weeks + Zero Check; *NCore= every 4 days*
Personnel	Manually	Automated	Manually performed by randomly selected personnel; *NCore= Automated*
Reference	40 CFR Part 50, App. C & QA Handbook, Volume II	No greater than Zero drift ≤ ± 0.5% FS Span drift ≤ ± 10%	40 CFR Part 58, App. A, Section 3.2.1 & Table A–2
Equipment Used (Calibrator)	With Level I Dynamic Dilution Instrumentation used for calibrations & precision checks only; *NCore= Level I specific to that station*	Level II Zero/Spans with a Dynamic Dilution Instrumentation specific to that station; *NCore= Level I specific to that station*	With Level I Dynamic Dilution Instrumentation used for calibrations & precision checks only; *NCore= Level I specific to that station*
Gas Used	40 CFR Part 58 App. A, Section 2.6.1 (EPA Protocol I, ±1%)	Ambient= Blend of gases (±5%); *NCore= EPA Protocol I (±1%)*	40 CFR Part 58 App. A, Section 2.6.1 (EPA Protocol I, ±1%)
Diluent Used (Zero Air Generator)	Zero Air generator used for calibrations & precision checks only; *NCore= specific to that station and used for calibrations, precision checks, and zero/spans*	Zero Air generator specific to that station; *NCore= specific to that station and used for calibrations, precision checks, and zero/spans*	Zero Air generator used for calibrations & precision checks only; *NCore= specific to that station and used for calibrations, precision checks, and zero/spans*
Certifications	Ambient Calibrator (Level I)= 2/yr *Calibrator-NCore (Level I)= 4/yr*	Ambient Calibrator (Level II)= n/a *Calibrator-NCore (Level I)= 4/yr*	Ambient Calibrator (Level I)= 2/yr *Calibrator-NCore (Level I)= 4/yr*

Section 5.4.0 Carbon Monoxide – Quality Assurance (QA) Practices

Requirements for Quality Assurance of criteria pollutants are in 40 CFR Part 58. Each criteria pollutant has a specific section. See Table 5.8 for the specific references and equipment. All ambient audits are scheduled to occur about 6 months after the calibration.

Table 5.8 Carbon Monoxide QA Measures

	Quality Assurance Measures	
	Internal Local Audits (District)	External State Audits (ARB)
Frequency	Every monitor 1/year and 25% monitors/quarter; *NCore=4/yr*	75% of the monitors/year randomly selected
Reference	40 CFR Part 58 App. A, Section 3.2.2	n/a
Equipment used (Calibrator)	With Level I Dynamic Dilution Instrumentation used for audits only	With external Dynamic Dilution Instrumentation
Gas Used	40 CFR Part 58 App. A, Section 2.6.1 (EPA Protocol I, ±1%)	See ARB
Diluent Used	Zero Air Generator used for audits only	External Zero Air Generator
Certifications	Calibrator (Level I)= 2/yr Zero Air Generator=1/yr	See ARB

Chapter 6 Sulfur Dioxide (SO_2)

Section 6.0.0 Sulfur Dioxide – Introduction

Only trace level sulfur dioxide is sampled for in the SDAB at one location (Figure 6.0) and is referenced to the sulfur dioxide standards of the year (Table 6.0). Trace-level SO_2 was sampled at the El Cajon-NCore site. Tables 6.1 & 6.2 lists the equipment. See section 11 – NCore for detailed requirements. Please note:

- The El Cajon station was temporarily relocated to the Gillespie Field area off of Floyd Smith Drive. This station is called Floyd Smith Drive (FSD).

Figure 6.0 Sulfur Dioxide Network Map

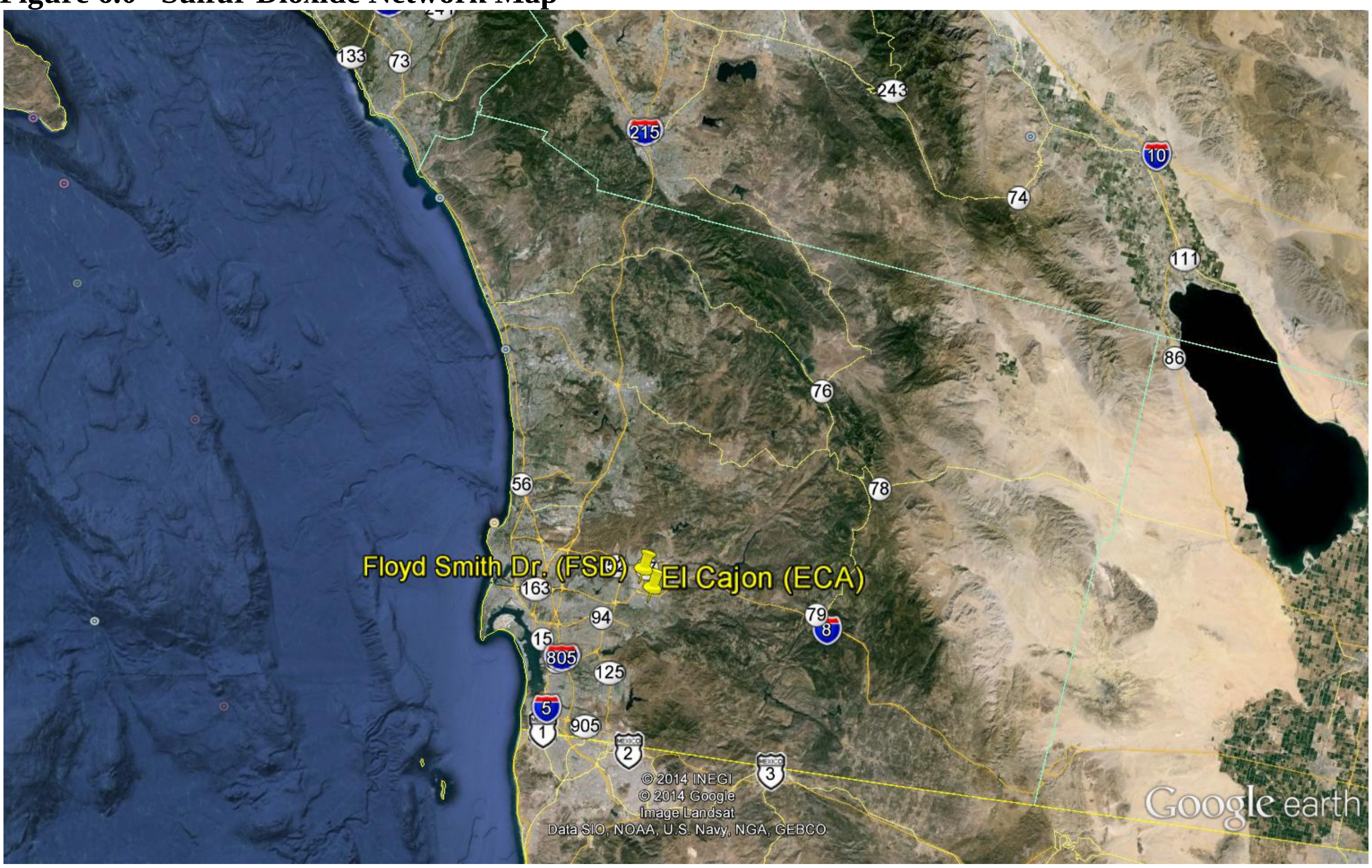


Table 6.0 Sulfur Dioxide State and National Standards for the Year

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	ECA/FSD[1]
	Name	El Cajon/ Floyd Smith Dr.
	AQS ID	06-073-0003 06-073-1018
SO_2	Monitor Type	SLAMS
	Method	FL
	Affiliation	NCore
	Spatial Scale	NS
	Site Type	PE
	Objective (Federal)	PI, NAAQS
	Equipment	Thermo 43i-TLE

[1] ECA station temporarily relocated to the FSD area (NOy is temporarily waived at FSD)

2

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 6.0.1 Sulfur Dioxide – Sampling Frequency, Equipment Used, and Suitability for Comparison to the NAAQS

Requirements for the SLAMS monitors, including NCore, for pollutants are in the 40 CFR Part 58, section 58.12-"Operating Schedules". Table 6.2 lists the equipment and sampling frequency. All District SO_2 samplers exceeds or meets all minimum monitoring requirements and are sited as to be able to be compared to the 1-Hr & 8-Hr and Annual NAAQS.

Table 6.2 Sulfur Dioxide 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

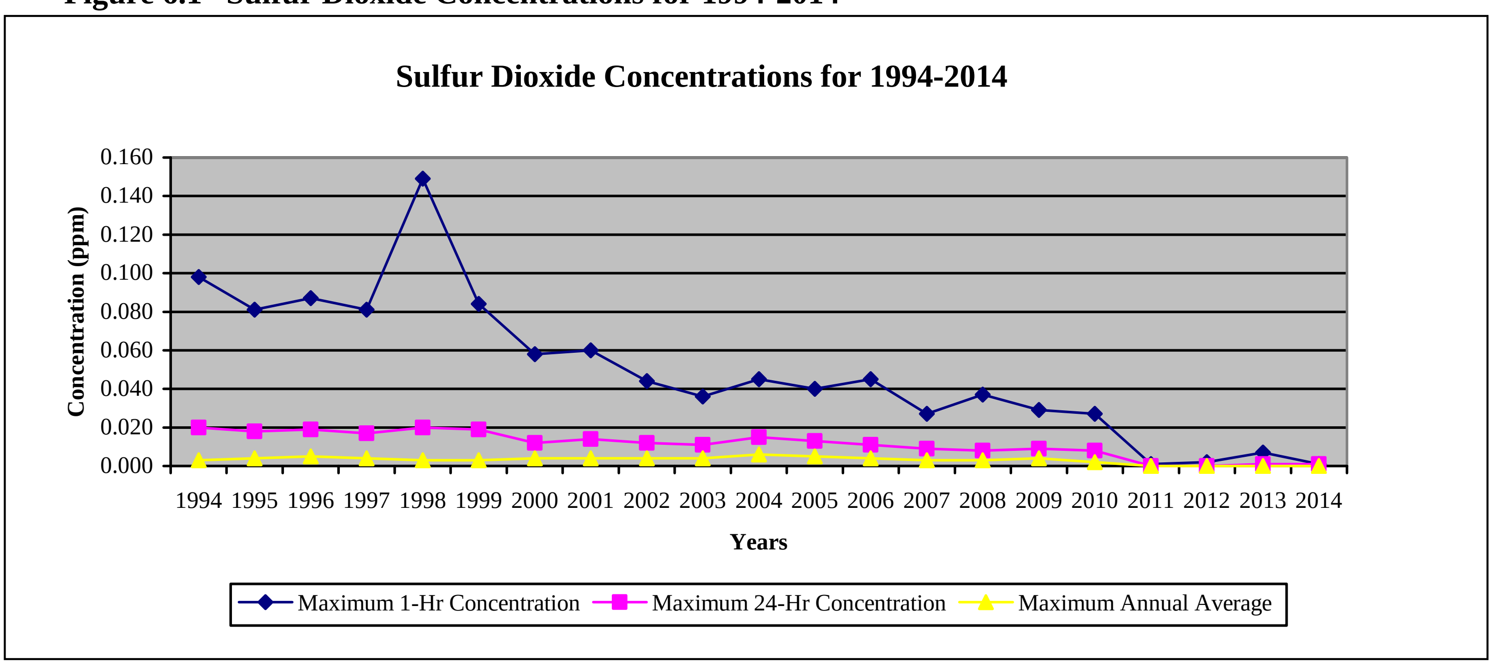
Section 6.1.0 Sulfur Dioxide Trends in the SDAB

Emissions of SOx declined tremendously in California over the last 20 years. A major constituent of SOx is sulfur dioxide (SO_2). SO_2 emissions from stationary sources and from land-based on- and off-road gasoline and diesel-fueled engines and vehicles decreased 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 6.3 reflects the SO_2 standards for that year and are shown graphically in Figure 6.1.

Table 6.3 Sulfur Dioxide Summary of Concentrations for 1994-2014

Maximum 1-Hr Concentration (ppm)	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	0.098	0.081	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
Maximum 24-Hrs Concentration (ppm)	0.020	0.018	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	0.001	0.001
Maximum Annual Average (ppm)	0.003	0.004	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
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 1994-2014



Section 6.1.1 Sulfur Dioxide Measurements by Site, Yearly

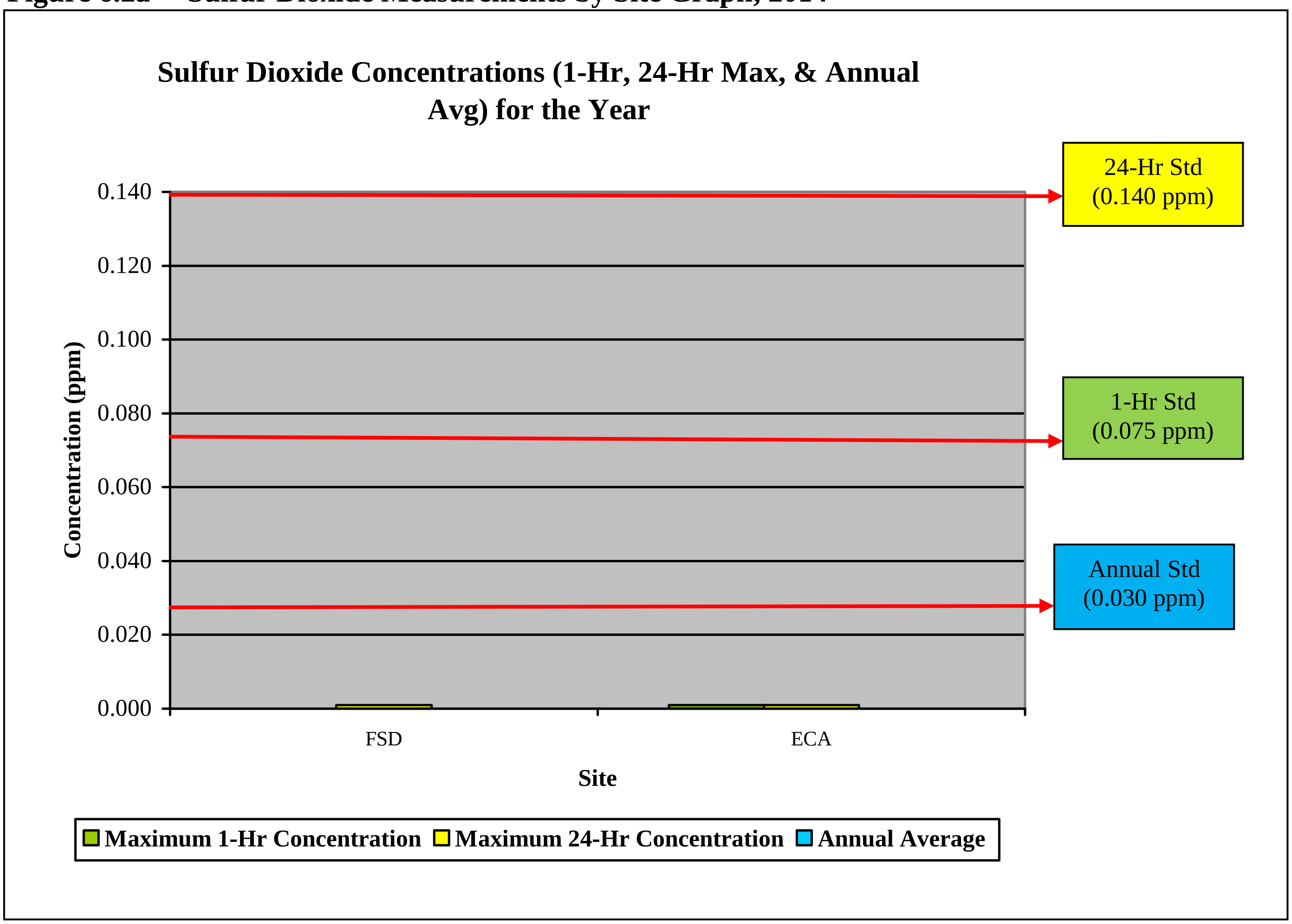
Table 6.4a lists the maximum sulfur dioxide measurements for the NCore monitoring location and Figure 6.2a shows the values graphically with respect to the National Standard. Please note: The values for the Maximum 24-Hr Concentration and Annual Average are too low to graph.

Table 6.4a Sulfur Dioxide Measurements by Site, 2014

Site (site)	Site Abbreviation	Maximum Concentration 24-Hrs (ppm)	Maximum Concentration 1-Hr (ppm)	Number of Days Above the National Standard (#)	Annual Average (ppm)
El Cajon	ECA	0.000	0.001	0	*
Floyd Smith Dr.	FSD	0.001	0.001	0	*

*Not sampled for an entire year, so no average was calculated.

Figure 6.2a Sulfur Dioxide Measurements by Site Graph, 2014



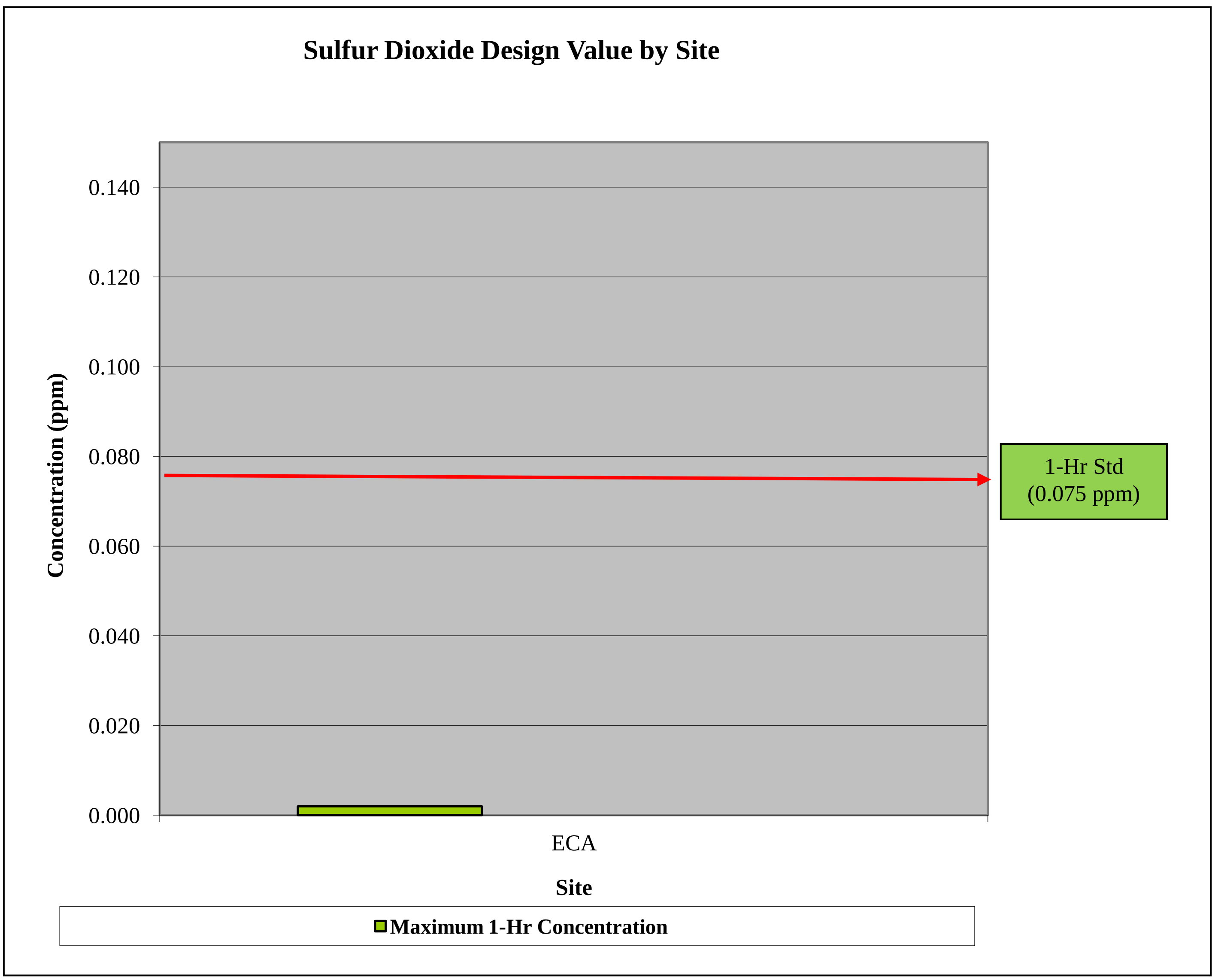
Section 6.1.2 Sulfur Dioxide Measurements by Site, Design Value

Table 6.4b lists the maximum sulfur dioxide measurements for the NCore monitoring location and Figure 6.2b shows the values graphically with respect to the Design Value.

Table 6.4b Sulfur Dioxide Measurements by Site, Design Value 2012-2014

Site (site)	Site Abbreviation	Design Value Maximum Concentration 1-Hrs (ppm)
El Cajon& Floyd Smith Dr	ECA/FSD	0.002

Figure 6.2b Sulfur Dioxide Measurements by Site Graph, Design Value



Section 6.3.0 Sulfur Dioxide Federal Design Criteria Requirements

Federal requirements for the number of sulfur dioxide monitors are in 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 4, "Pollutant-Specific Design Criteria for SLAMS Sites", part 4.4 "Sulfur Dioxide (SO_2) Design Criteria". Note: only the passages applicable to the SDAB have been cited.

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 SO2 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 SO2 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 SO2 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 SO2 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 SO2 monitor is required within that CBSA.

(1) The SO2 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. SO2 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.

4.4.5 NCore Monitoring. (a) SO2 measurements are included within the NCore multipollutant site requirements as described in paragraph (3)(b) of this appendix. NCore-based SO2 measurements are primarily used to characterize SO2 trends and assist in understanding SO2 transport across representative areas in urban or rural locations and are also used for comparison with the SO2 NAAQS. SO2 monitors at NCore sites that exist in CBSAs with minimum monitoring requirements per section 4.4.2 above shall be allowed to count towards those minimum monitoring requirements.

Requirements for the number of sulfur dioxide monitors for the NCore pollutants are in 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) is as follows.

3. Design Criteria for NCore Sites
(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.

Section 6.3.1 Sulfur Dioxide Design Criteria PWEI

40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 4, "Pollutant-Specific Design Criteria for SLAMS Sites", part 4.4 "Sulfur Dioxide (SO_2) Design Criteria", subsection 4.4.2, lists the requirements needed to fulfill the sulfur dioxide Design Criteria. Tables 6.5a-6.5c list these requirements.

According to the latest National Emissions Inventory (NEI) EPA Sector Database for 2011, the SDAB is listed as having SO_2 emissions of 1,099.9504 Tons/yr (TPY). The population of San Diego County is estimated to be 3.2 million persons (MP).

Using the Population Weighted Emissions Index (PWEI) equation, from paragraph 4.4.2 in section 6.5.0:
{ (3,200,000 million persons) x (1,100 tons/year of SO_2) } / (1,000,000) = 2,909 MP-TPY

Table 6.5a Sulfur Dioxide Inventory for the SDAB, 2014

MSA (name)	County (name)	Population from 2010 Census (#)	Total SO_2 Emissions From NEI (TPY)	Calculated PWEI (MP-TPY)
San Diego	San Diego	3.2 million	1,100	2,909

Table 6.5b Sulfur Dioxide Design Criteria for Minimum Number of Ambient Level (non-NCore) Monitors Needed

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 (#)
2,909	Yes	0	0	None

Section 6.3.2 Sulfur Dioxide Design Criteria for Trace Level Monitoring for NCore

CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore Sites", subsection (b), lists the requirements needed to fulfill Design Criteria for SO_2 trace level monitoring.

Table 6.5c Sulfur Dioxide Design Criteria for the Minimum Number of Trace Level (NCore) Monitors Needed

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

Section 6.4.0 Sulfur Dioxide – Quality Control (QC) Practices

Requirements for Quality Control of criteria pollutants are in 40 CFR Part 50 and Part 58 and the QA Handbook, Vol. II. Each criteria pollutant has a specific section. See Table 6.6 for the specific references and equipment.

Table 6.6 Sulfur Dioxide QC Measures

	Quality Control Measures		
	Calibration	Zero/Span	Precision Checks
Frequency	Every monitor 1/year and 25% monitors/quarter (QA Handbook Vol. II, App. D, SO_2 Calibration); *NCore= 4/yr*	Ambient= Nightly; *NCore Zero= every 2 days* *NCore Span= every 4 days*	Every 2 Weeks + Zero Check; *NCore= Every 4 days*
Personnel	Manually	Automated	Manually performed by randomly selected personnel; NCore= automated
Reference	40 CFR Part 50, App. A-1 & QA Handbook, Volume II	No greater than Zero drift ≤ ± 0.5% FS Span drift ≤ ± 10%	40 CFR Part 58, App. A, Section 3.2.1 & Table A–2
[redacted]			
Equipment used (Calibrator)	With Level I Dynamic Dilution Instrumentation used for calibrations & precision checks only; *NCore= Level I specific to that station*	Level II Zero/Spans with a Dynamic Dilution Instrumentation specific to that station; *NCore= Level I specific to that station*	With Level I Dynamic Dilution Instrumentation used for calibrations & precision checks only; *NCore= Level I specific to that station*
Gas Used	40 CFR Part 58 App. A, Section 2.6.1 (EPA Protocol I, ±1%)	Ambient= Blend of gases (±5%); *NCore= Protocol I (±1%)*	40 CFR Part 58 App. A, Section 2.6.1 (EPA Protocol I, ±1%)
Diluent Used	Zero Air Generator used for calibrations & precision checks only; *NCore= specific to that station and used for calibrations, precision checks & zero/spans*	Zero Air Generator specific to that station; *NCore= specific to that station and used for calibrations, precision checks & zero/spans*	Zero Air Generator used for calibrations & precision checks only; *NCore= specific to that station and used for calibrations, precision checks & zero/spans*
Certifications	Ambient Calibrator (Level I)= 2/yr *Calibrator NCore (Level I)= 4/yr*	Ambient Calibrator (Level II)= n/a *Calibrator NCore (Level I)= 4/yr*	Ambient Calibrator (Level I)= 2/yr *Calibrator NCore (Level I)= 4/yr*

Section 6.5.0 Sulfur Dioxide – Quality Assurance (QA) Practices

Requirements for Quality Assurance of criteria pollutants are in 40 CFR Part 58. Each criteria pollutant has a specific section. See Table 6.7 for the specific references and equipment. All ambient audits are scheduled to occur during calendar quarters, about 6 months after the calibration.

Table 6.7 Sulfur Dioxide QA Measures

	Quality Assurance Measures	
	Internal Local Audits (District)	External State Audits (ARB)
Frequency	Every monitor 1/year and 25% monitors/quarter; *NCore= 4/yr*	75% of the monitors/year randomly selected
Reference	40 CFR Part 58 App. A, Section 3.2.2	n/a
Equipment Used (Calibrator)	With Level I Dynamic Dilution Instrumentation used for audits only	With external Dynamic Dilution Instrumentation
Gas Used	40 CFR Part 58 App. A, Section 2.6.1 (EPA Protocol I, ±1%)	See ARB
Diluent Used	Zero Air Generator used for audits only	External Zero Air Generator
Certifications	Calibrator (Level I)= 2/yr Zero Air Generator=1/yr	See ARB

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:

- The El Cajon station was temporarily relocated to the Gillespie Field area off of Floyd Smith Drive. This station is called Floyd Smith Drive (FSD).

Figure 7.0 Lead Map Network Map

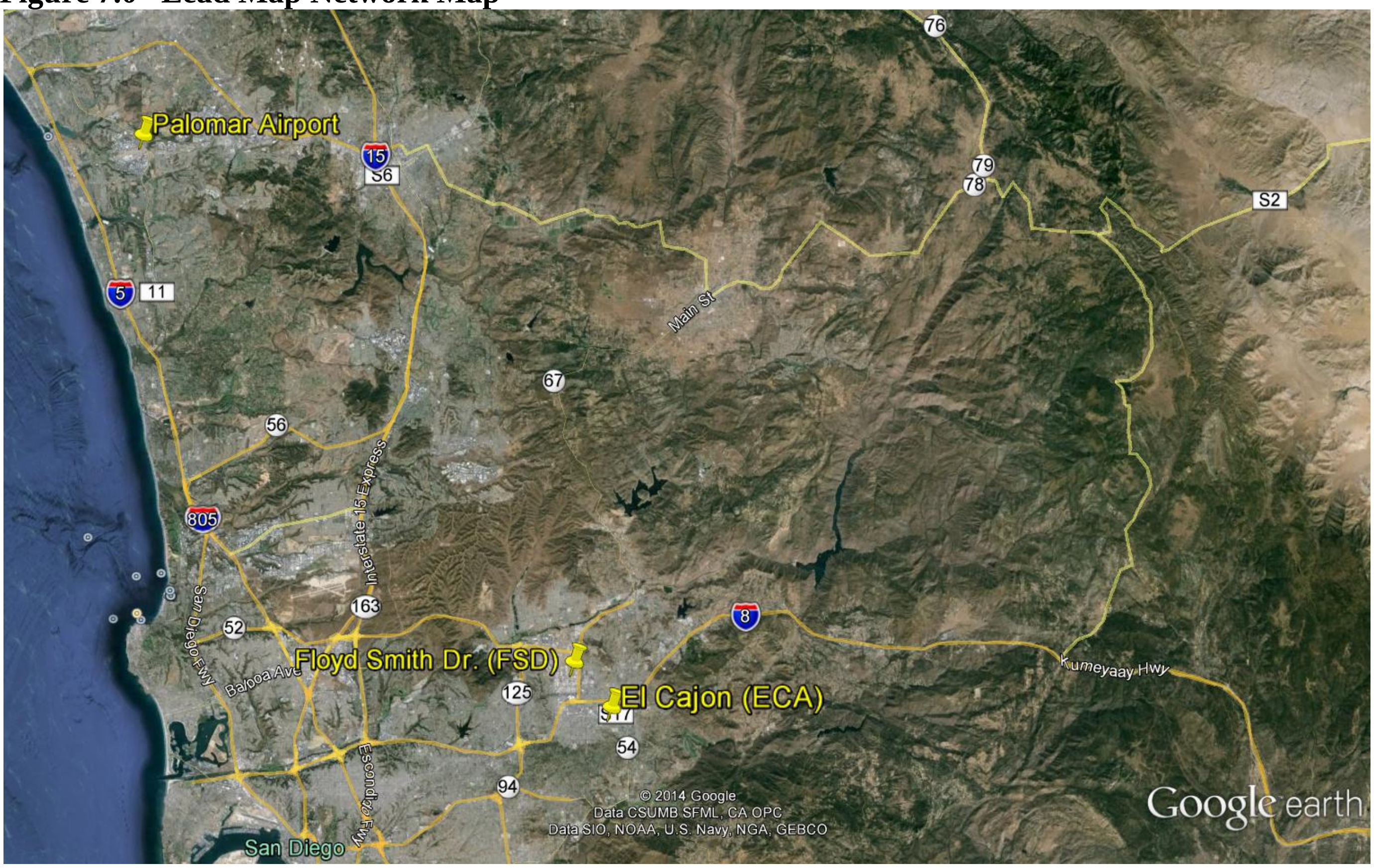


Table 7.0 Lead State and National Standards for the Year

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	ECA/FSD[1]	CRQ	
	Name	El Cajon/ Floyd Smith Dr.	Palomar Airport	
	Address	1155 Redwood Ave/ 10537 Floyd Smith Dr	2192 Palomar Airport Rd	
	Latitude Longitude	32.791210° -116.942104°/ 32.817907° -116.968302°	33.130846° -117.272668°	
	AQS ID	06-073-0003/ 06-073-1018	06-073-1002	
Lead	Monitor Type	SLAMS	SLAMS	SLAMS
Lead	Designation	O	O	QAC
Lead	Method	HV	HV	HV
Lead	Affiliation	NCORE	Not Applicable	Not Applicable
Lead	Spatial Scale	NS	MI	MI
Lead	Site Type	PE	SO	QA
Lead	Objective (Federal)	NAAQS	NAAQS	NAAQS
Lead	Analysis	APCD	APCD	APCD
Lead	Frequency	1:6	1:6	1:6
Lead	Equipment	Tisch TE-5170BLVFC+	Tisch TE-5170BLVFC+	Tisch TE-5170BLVFC+

Yellow denotes collocation of equipment of the same make and model as the primary.
[1] ECA station temporarily relocated to the FSD area

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 7.0.1 Lead - Sampling Frequency & Equipment and Suitability for Comparison to the NAAQS

The requirement for the sampling frequency of monitors for pollutants are in 40 CFR Part 58, Subpart B "Monitoring Network", Section 58.12-Operating schedules. The sampling frequency for the Lead-TSP monitors are one-day-in-six (1:6) and is listed in Table 7.2. All District TSP-Pb samplers exceeds or meets all minimum monitoring requirements and are sited as to be able to be compared to the 3-month calendar and rolling 3-month average NAAQS.

Table 7.2 Lead Sampling Equipment

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

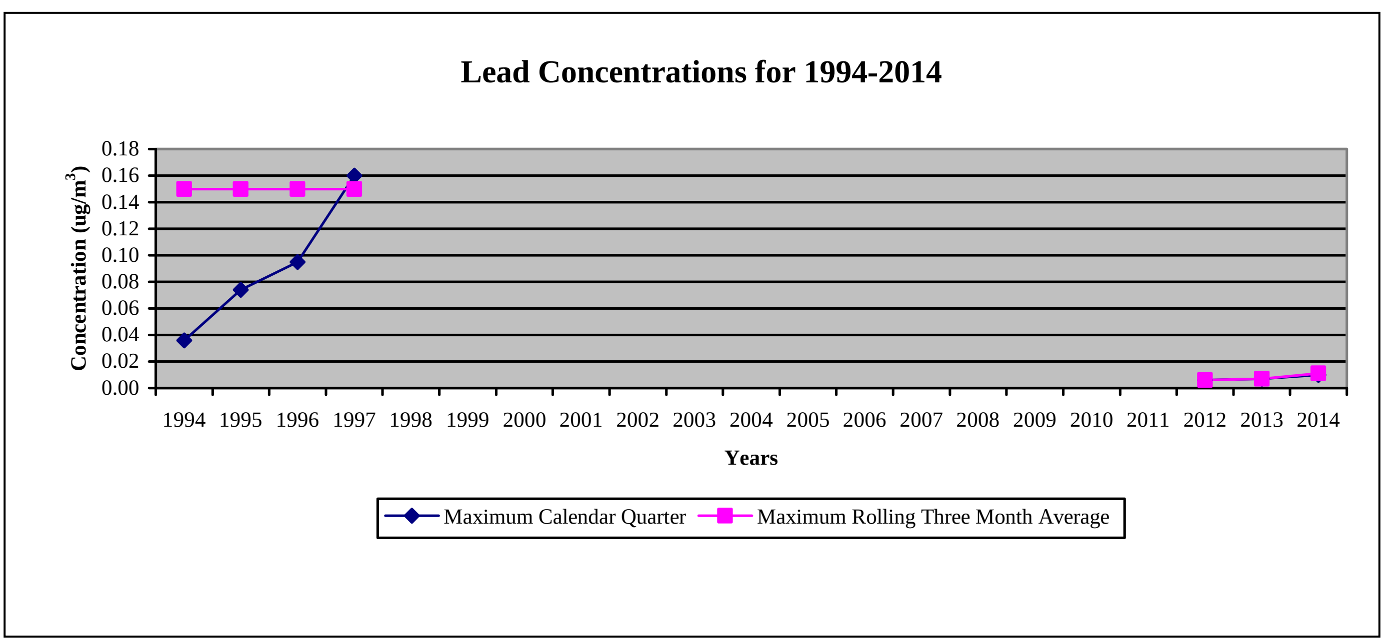
Section 7.1.0 Lead – Trends in the SDAB

The rapid decrease in lead emissions (Table 7.4) over the last 20 plus years can be attributed primarily to phasing out the lead in gasoline by the EPA and the CARB. This phase-out began during the 1970s, and subsequent regulations have eliminated all lead from the gasoline now sold in California for automotive vehicles. Note: the "Days Above National Standard" row in Table 7.3 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 El Cajon (NCore) location, which is categorized as neighborhood scale and representative concentrations. The airports were part of a special study, categorized as source impact and microscale, and are not considered representative concentrations.

Table 7.3 Lead Summary of Concentrations for 1994-2014

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Maximum Calendar Quarter ($\mu g/m^3$)	0.036	0.074	0.095	0.160	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.006	0.007	0.010
Maximum Rolling 3-Month Average ($\mu g/m^3$)	0.150	0.150	0.150	0.150	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.006	0.007	0.011
Days above the National Standard (#)	0	0	0	0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0	0	0

Figure 7.1 Lead Concentrations for 1994-2014



Section 7.1.1 Lead - Measurements by Site

The CFR requires that for Pb data to be used in regulatory determinations of compliance with the Pb NAAQS, the Pb samplers must be sited according to Federal Regulations.

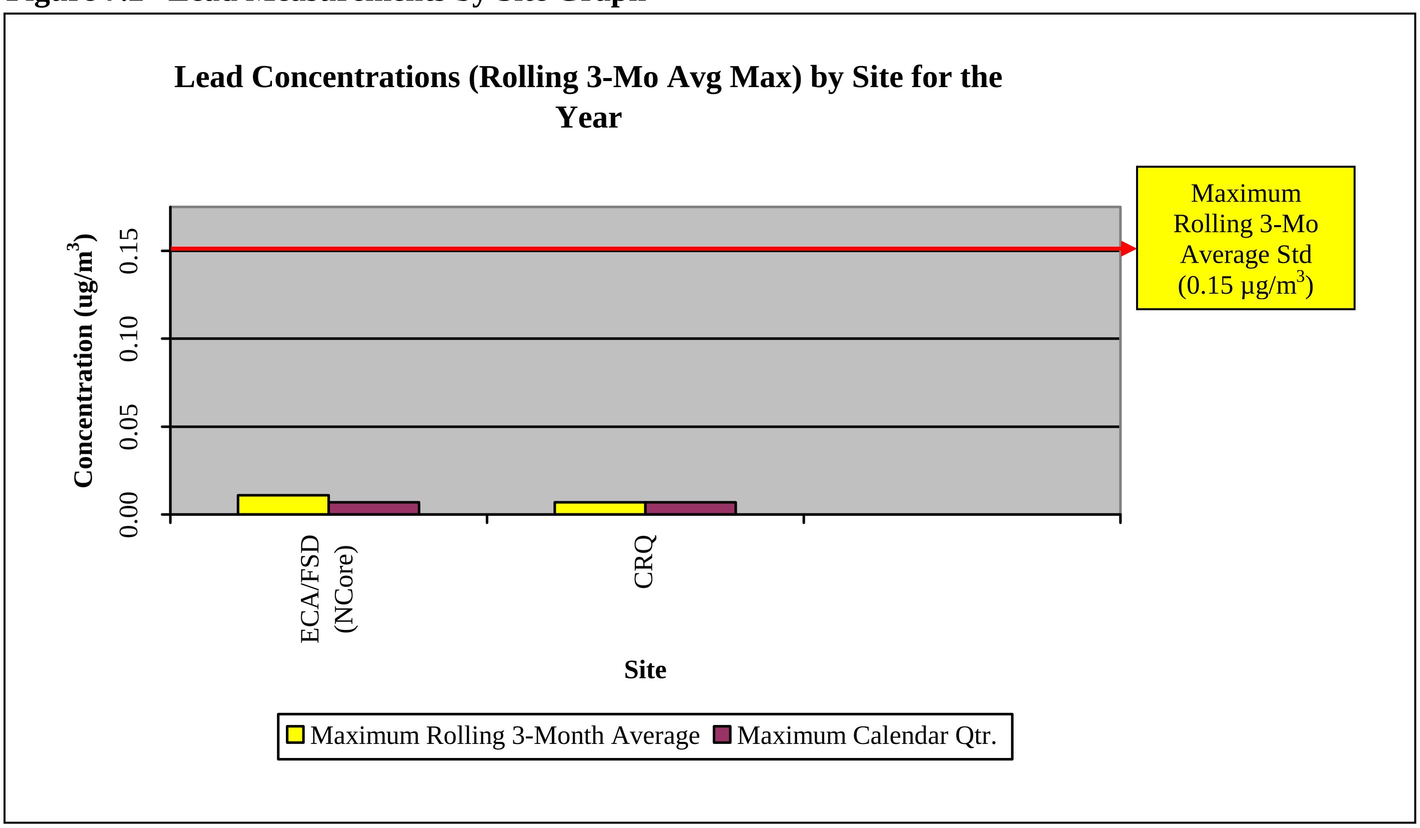
Table 7.4 lists the maximum lead measurements for each lead monitoring location; Figure 7.2 show the values graphically with respect to the National Standard.

Table 7.4 Lead Measurements by Site, 2014

No. (#)	Site (name)	Site Abbreviation	Maximum Rolling 3-Month Average (µg/m^3)	Maximum Calendar Quarter (µg/m^3)	Number of Days Above the NAAQS (#)
1	El Cajon/ Floyd Smith Dr. (NCore)	ECA/FSD (NCore)	0.011	0.010	0
2	*Palomar Airport	CRQ	0.007	0.007	0

Yellow denotes collocation of equipment of the same make and model as the primary
*Source impact and microscale monitors.

Figure 7.2 Lead Measurements by Site Graph



<u>Section 7.2.0 Lead Federal Design Criteria Requirements</u>
Federal requirements for 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". Note: only the passages applicable to the SDAB have been cited.

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

(i) One monitor may be used to meet the requirement in paragraph 4.5(a) for all sources involved when the location of the maximum Pb concentration due to one Pb source is expected to also be impacted by Pb emissions from a nearby source (or multiple sources). This monitor must be sited, taking into account logistics and the potential for population exposure, where the Pb concentration from all sources combined is expected to be at its maximum.

(ii) The Regional Administrator may waive the requirement in paragraph 4.5(a) for monitoring near Pb sources if the State or, where appropriate, local agency can demonstrate the Pb source will not contribute to a maximum Pb concentration in ambient air in excess of 50 percent of the NAAQS (based on historical monitoring data, modeling, or other means). The waiver must be renewed once every 5 years as part of the network assessment required under § 58.10(d).

(iii) State and, where appropriate, local agencies are required to conduct ambient air Pb monitoring near each of the airports listed in Table D-3A for a period of 12 consecutive months commencing no later than December 27, 2011. Monitors shall be sited to measure the maximum Pb concentration in ambient air, taking into account logistics and the potential for population exposure, and shall use an approved Pb-TSP Federal Reference Method or Federal Equivalent Method. Any monitor that exceeds 50 percent of the Pb NAAQS on a rolling 3-month average (as determined according to 40 CFR part 50, Appendix R) shall become a required monitor under paragraph 4.5(c) of this Appendix, and shall continue to monitor for Pb unless a waiver is granted allowing it to stop operating as allowed by the provisions in paragraph 4.5(a)(ii) of this appendix. Data collected shall be submitted to the Air Quality System database according to the requirements of 40 CFR part 58.16.

Table D–3A Airports to Be Monitored for Lead

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

(b) State and, where appropriate, local agencies are required to conduct non-source-oriented Pb monitoring at each NCore site required under paragraph 3 of this appendix in a CBSA with a population of 500,000 or more.

(c) The EPA Regional Administrator may require additional monitoring beyond the minimum monitoring requirements contained in paragraphs 4.5(a) and 4.5(b) where the likelihood of Pb air quality violations is significant or where the emissions density, topography, or population

locations are complex and varied. EPA Regional Administrators may require additional monitoring at locations including, but not limited to, those near existing additional industrial sources of Pb, recently closed industrial sources of Pb, airports where piston-engine aircraft emit Pb, and other sources of re-entrained Pb dust.

(d) The most important spatial scales for source-oriented sites to effectively characterize the emissions from point sources are microscale and middle scale. The most important spatial scale for non-source-oriented sites to characterize typical lead concentrations in urban areas is the neighborhood scale. Monitor siting should be conducted in accordance with 4.5(a)(i) with respect to source-oriented sites.

Requirements for the number of lead monitors for the NCore pollutants are in the 40 CFR Part 58, Appendix D, “Network Design Criteria for Ambient Air Quality Monitoring”, Section 3, “Design Criteria for NCore Sites”, subsection (b) is as follows.

3. Design Criteria for NCore Sites
(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}.

<u>Section 7.2.1 Non-Airport Lead Design Criteria</u>
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 4.5, list the requirements needed to fulfill the non-airport Pb source Design Criteria (Table 7.6)

Table 7.6 Lead Design Criteria for the Minimum Number of Ambient Monitors Needed Based on the NEI Database (non-Airport)

MSA (name)	County (name)	Any Non-Airport Pb Sources >0.5 TPY? (yes/no)	Minimum Number of Ambient Monitors Required	Number of Active Ambient Monitors (#)	Number of Ambient Monitors Needed (#)	Meet NAAQS? (yes/no)
San Diego	San Diego	No	None	None	None	Not Applicable

Section 7.2.2 Airport Lead Design Criteria

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 4.5(a)(iii), list the requirements needed to fulfill the airport Pb source Design Criteria. The Airport testing was conducted in 2012 and concluded in 2013. Table 7.7a lists these requirements.

Table 7.7a Lead Design Criteria for the Minimum Number of Airport Monitors Needed based on the 40 CFR Part 58

Minimum Number of Airport Monitors Required (#)	Number of Active Airport Monitors Tested (#)	Number of Airport Monitors Needed (#)	Airport Testing Concluded (yes/no)
2	2	None	*Yes

*In 2012, the District was required to monitor for airborne lead particulates at Gillespie Field and McClellan-Palomar Airport. The sampling at Gillespie Field has officially concluded and no additional sampling is required. McClellan-Palomar Airport did not pass the minimum tolerances established by the EPA, which required the District to sample for lead until such time as the measured concentrations are below the Federal standard (see 2012 Annual Network Plan for greater discussion). Table 7.7b shows the maximum sampled concentrations at McClellan-Palomar Airport.

Table 7.7b Lead Design Criteria Summaries for the Airport Monitors

Source Sites (name)	Maximum 3-Month Average (µg/m^3)	Meet NAAQS? (yes/no)
Palomar Airport	0.007	Yes

Additionally, if any airport exceeds 1.0 TPY for lead emissions, permanent sampling is required. According to the last National Emissions Inventory (NEI) inventory/2014, the SDAB has no airport Pb sources that will trigger any additional Pb-TSP monitoring (Table 7.7c).

Table 7.7c Lead Design Criteria for the Minimum Number of Monitors Needed based on the NEI Database

MSA (name)	County (name)	Any Airport Pb Sources >1.0 TPY? (yes/no)	Minimum Number of Ambient Monitors Required	Number of Active Ambient Monitors (#)	Number of Ambient Monitors Needed (#)	Meet NAAQS? (yes/no)
San Diego	San Diego	No	None	None	None	Not Applicable

Section 7.2.3 NCore Lead Design Criteria

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 4.5(c), list the requirements needed to fulfill the NCore Pb source Design Criteria (Table 7.8a).

The Pb-NCore monitor is to satisfy Federal requirements for the sampling of airborne lead particulate at NCore locations. The sampler is designated as Population Exposure, Neighborhood scale, and Representative concentrations of the area served.

Table 7.8a Lead Design Criteria for the Minimum Number of NCore Monitors Needed

MSA (name)	County (name)	Population from 2010 Census (#)	Minimum Number of NCore Pb Monitors Required (#)	Number of Active NCore Pb Monitors (#)	Number of NCore Pb Monitors Needed (#)	NCore Site (name)	NCore Site AQS ID Number (#)
San Diego	San Diego	3.2 million	1	1	None	El Cajon (ECA)	06-073-0003

The Pb-NCore monitor is to satisfy Federal requirements for the sampling of airborne lead particulate at NCore locations. The sampler is designated as Population Exposure, Neighborhood scale, and Representative concentrations of the area served. Table 7.8b lists the Maximum NCore concentrations for the year.

Table 7.8b Lead Design Criteria Emission Summaries for the NCore Monitor

Source Sites (name)	Maximum 3-Month Average ($\mu g/m^3$)	Meet NAAQS 2014? (yes/no)
El Cajon (ECA) Floyd Smith Dr. (FSD)	0.011	Yes

Section 7.3.0 Lead – Quality Control (QC) Practices

Requirements for the Quality Control of the criteria pollutants are in 40 CFR Part 50 and Part 58. Each criteria pollutant has a specific section. See Table 7.9a and 7.9b for the specific references and equipment. The District utilizes a TSP transfer standard that is certified annually by the CARB laboratory. This transfer standard is used to calibrate the Hi-Vol TSP samplers in the network.

Table 7.9a Lead QC Measures for the Field

	Quality Control Measures (Field)	
	Calibration	Flow Rate Verification
Frequency	2/yr	Once per month
Personnel	By personnel who do not perform the audits	By site operator who does not perform calibrations or audits
Reference (Field)	40 CFR Part 50, App. G, Method 2.2, Section 2.6, & QA Handbook, Volume II	40 CFR Part 58, App. A, Section 2.6
Equipment Used (Calibrator)	With Variable Flow Rate instrumentation, thermocouple, manometer, and barometric pressure sensor used for calibrations only	With Variable Flow Rate instrumentation, thermocouple, manometer, and barometric pressure sensor used for verifications only
Certifications	Field Equipment = 1/yr	Field Equipment = 1/yr

Table 7.9b Lead QC Measures for the Laboratory

Quality Control Measures (Laboratory)		
Equipment	Reference	Frequency
Reagents	40 CFR Part 50, App. G; EPA Method EQL-0710-192	All reagents
Filters	40 CFR Part 50, App. B, Section 8.2; 40 CFR Part 50, App. G, Section 6.1	All filters

Section 7.4.0 Lead – Quality Assurance (QA) Practices

Requirements for Quality Assurance of criteria pollutants are in the 40 CFR Part 58. Each criteria pollutant has a specific section. See Table 7.10a and 7.10b for the specific references and equipment.

Table 7.10a Lead QA Measures for the Field

	Quality Assurance Measures (Field)			
	Internal Local (District) Audits	Collocation	External State (ARB) Audits	External Federal (PEP) Audits
Frequency	2/yr	Same frequency and time as the primary sampler	1/yr	1/yr
Personnel	With personnel who do not perform the calibrations	With personnel who do not perform the calibrations	Manually performed by randomly selected personnel	Manually performed by randomly selected personnel
Reference (Field)	40 CFR Part 58 App. A, Section 3.2.4	NCore= Assigned by EPA Airports= Max Site	n/a	40 CFR Part 58 App. A, Section 3.3.4.4
Equipment Used (Field)	With Flow Transfer Standard and Thermocouple used for audits only	Same equipment as the primary sampler	See ARB	See EPA
Certifications	Field Equipment = 1/yr	Field Equipment = 1/yr	See ARB	See EPA

Table 7.10b Lead QA Measures for the Laboratory

Quality Assurance Measures (Laboratory)		
Equipment	Reference	Frequency
Lead Strip Analysis	40 CFR Part 58 App. A, Section 3.3.4.2	3 strips per quarter; 2 concentration ranges
Lead Strip Analysis-additional	Internal	1/batch analysis

Section 7.4.1 Lead Quality Assurance (QA) Collocation Requirements

Table 7.10c lists the collocation requirements for non-NCore lead sampling

Airports

Table 7.10c Lead Quality Assurance Collocation Requirements for the Airports

Main Monitor			Collocated Monitor		
Minimum Number of Monitors Required (#)	Number of Active Monitors (#)	Monitors Needed (#)	Number of Monitors Needed for Collocation (#)	Number of Active Monitors for Collocation (#)	Monitors Needed (#)
1	1	None	1	1	None

NCore

The NCore Pb-TSP sampler is part of the national NCore program and the collocation of samplers are aligned according to EPA Regional placement. The SDAB is not a collocation designee, as decided by the EPA Regional Authorities; therefore, collocation for Pb-NCore is not required for the lead NCore sampler in San Diego.

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 Tables 8.1 & 8.2) 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 El Cajon station was temporarily relocated to the Gillespie Field area off of Floyd Smith Drive, this station is called Floyd Smith Drive (FSD).
- $PM_{2.5}$ FRM/sequential samplers are at ESC, KVR, FSD/ECA, DTN, and CVA.
- $PM_{2.5}$ non-FEM/continuous samplers are at CMP, ESC, FSD/ECA, ALP, DVN and DTN.
- $PM_{2.5}$-CSN samplers are at ESC and FSD/ECA.
- $PM_{2.5}$-STN samplers are at ESC and FSD/ECA.
- $PM_{2.5}$-Supplemental Speciation is at ESC, FSD/ECA, and DTN.

Figure 8.0 $PM_{2.5}$ Network Map

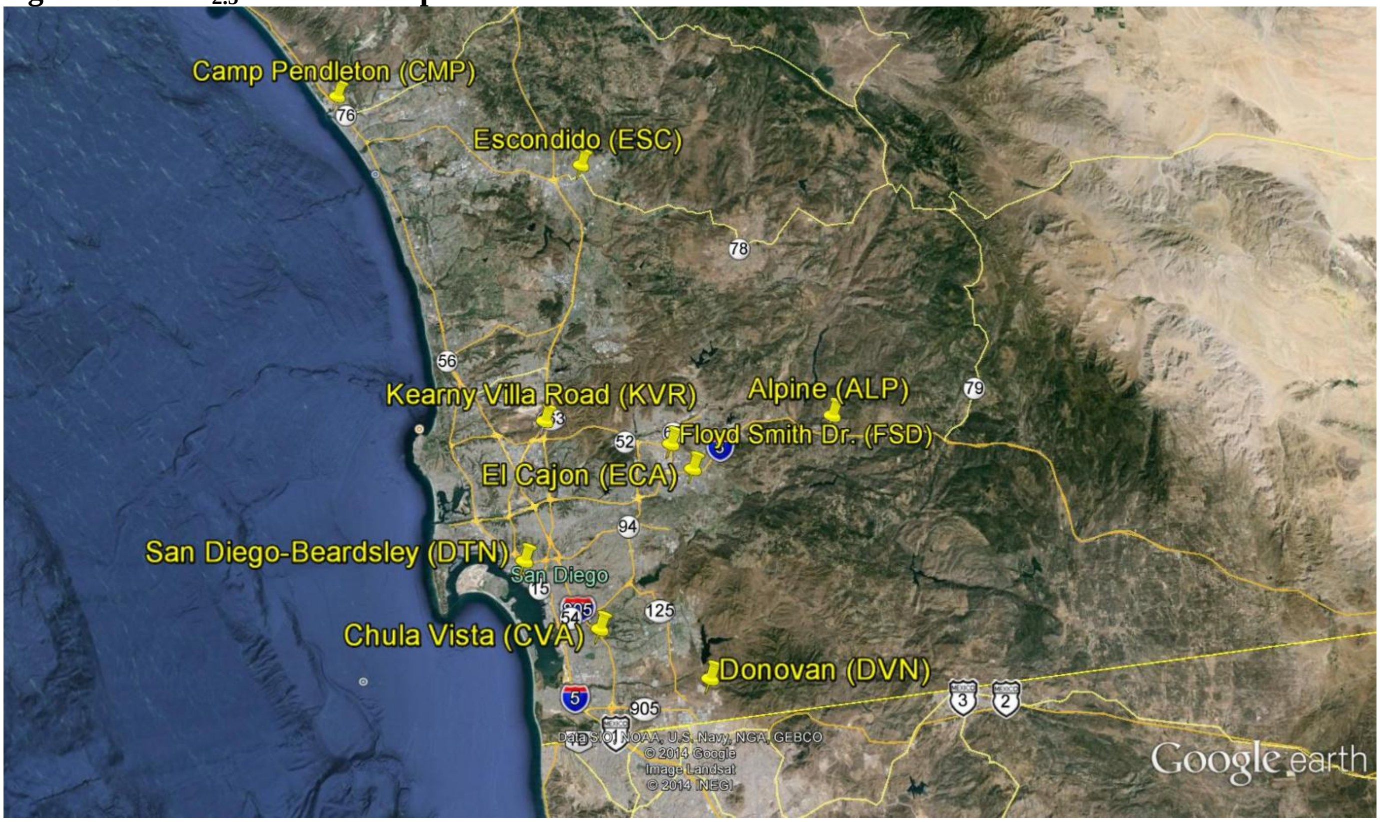


Table 8.0 $PM_{2.5}$ State and National Standards for the Year

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/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12.0 µg/m³	15 µg/m³	

Table 8.1 $PM_{2.5}$ Sampling Network

	Abbreviation	ALP	CMP	CVA	FSD/ECA[1]		ESC		KVR		DTN		DVN
	Name	Alpine	Camp Pendleton	Chula Vista	El Cajon/ Floyd Smith Dr.		Escondido		Kearny Villa Rd		San Diego – Beardsley		Donovan
	Address	2495A W. Victoria Dr.	21441 W. B St	80 E. J St	1155 Redwood Ave/ 10537 Floyd Smith Dr		600 E. Valley Pkwy		Kearny Villa Rd		1110A Beardsley St.		480 Alta Rd.
	Latitude Longitude	32.842324° -116.767885°	33.217063° -117.396169°	32.631175° -117.059115°	32.791210° -116.942104°/ 32.817907° -116.968302°		33.127730° -117.075379°		32.845722° -117.123983°		32.701492° -117.149663°		32.578267° -116.921359°
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-0003/ 06-073-1018		06-073-1002		06-073-1016		06-073-1010		06-073-1014
$PM_{2.5}$ (non-speciated)	Monitor Type	SPM	SPM	SLAMS	*SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	SPM
	Designation	O	O	PRI	O	PRI	O	PRI	PRI	QAC	O	PRI	O
	Method	CT	CT	SQ	CT	SQ	CT	SQ	SQ	SQ	CT	SQ	CT
	Affiliation	N/A	N/A	N/A	NCORE	NCORE	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	NS
	Site Type	PE	UPBD	PE	PE	PE	PE	PE	PE	QA	PE	PE	PE
	Objective (Federal)	PI, Research	PI, Research	NAAQS	PI, Research	NAAQS	PI, Research	NAAQS	NAAQS	NAAQS	PI, Research	NAAQS	PI, Research
	Analysis	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD	APCD
	Frequency	7/24	7/24	1:3	7/24	1:3	7/24	1:3	1:3	1:12	7/24	1:1	7/24
	Equipment	Met One BAM	Met One BAM	Thermo 2025	Met One BAM	Thermo 2025	Met One BAM	Thermo 2025	Thermo 2025	Thermo 2025	Met One BAM	Thermo 2025	Met One BAM
$PM_{2.5}$ (speciated)	Monitor Type				SLAMS	SLAMS	N/A	SLAMS	SLAMS	N/A	N/A		
	Method				SP & SQ	SP & SQ	SP & SQ	SP & SQ	SP & SQ	SP & SQ	SP & SQ		
	Affiliation				NCORE, CSN STN[2]	NCORE, CSN STN[2]	CSN SU SDAPCD Network	CSN STN	CSN STN	CSN SU SDAPCD Network	CSN SU SDAPCD Network		
	Spatial Scale				NS	NS	NS	NS	NS	NS	NS		
	Site Type				PE	PE	PE	PE	PE	PE	PE		
	Objective (Federal)				Research	Research	Research	Research	Research	Research	Research		
	Analysis				EPA	EPA	APCD	EPA	CARB	APCD	APCD		
	Frequency				1:3	1:3	1:6	1:3	1:6	1:6	1:6		
	Equipment				URG-3000N	Met One SASS	Met One SASS	URG-3000N	Met One SASS	Met One SASS	Met One SASS		

Yellow denotes collocation of equipment of the same make and model as the primary

[1] ECA station temporarily relocated to the FSD area

[2] EPA redesignated the CSN STN samplers as SU for the FSD location

*Not Operational at FSD

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 8.0.1 $PM_{2.5}$ – Sampling Design, Primary Samplers

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. Several factors were accounted for, such as temperature, humidity, precipitation, wind speed, wind direction, and elevation. 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. The 1998 "California Particulate Matter Monitoring Network Description" describes the particulate matter monitoring strategy involved in the implementation of the program. The network design was submitted to the U.S. EPA Region IX governing authority and approved accordingly.

Section 8.0.2 $PM_{2.5}$ – Sampling Design, Collocated Samplers

In 1998, the SDAPCD and the ARB gave criteria for choosing a site for collocation. The collocated $PM_{2.5}$ site must follow the following criteria, in order of importance:

1. Sites with high or estimated high $PM_{2.5}$ concentrations, based on PM_{10} data should be considered a viable collocation site.

2. The collocation monitoring site must have enough platform space to maintain 1-4 meter spacing between the primary and the collocated sampler.

Section 8.0.3 $PM_{2.5}$ – Sampling Design, Overall

The EPA Region IX 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.

Any official decommissioning of any monitor or monitoring location will be proposed in a letter with accompanying documentation to the EPA and the ARB, when applicable. If a station is to relocate, parallel sampling between the current location and the new location will be undertaken, when possible.

Section 8.0.4 $PM_{2.5}$ – Sampling Frequency, Equipment Used, and Suitability for Comparison to the NAAQS

Requirements for the sampling frequency of monitors for pollutants are in the 40 CFR Part 58, section 58.12 "Operating Schedules". The sampling frequencies for the samplers are provided in Table 8.2a. Table 8.2b lists the parameter codes for the District's CSN-Supplemental Speciation equipment. The sequential sampler, FRM, requires a sample deposition media (filter); runs every 1, 3, or 6-days for a duration of 24 hrs. Except for the non-FEM BAM, the filters are manually loaded, collected and programmed to run weekly.

The CFR requires that for $PM_{2.5}$ 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. All District $PM_{2.5}$ FRM samplers exceed or meet all minimum monitoring requirements and are sited as to be able to be compared to the 24-hr and annual NAAQS.

Table 8.2a $PM_{2.5}$ Sampling Equipment

Parameter		Code	Unit	Code	Duration	Code	Equipment	Method	Code	Frequency	Method ID
Particulate Matter ≤ 2.5 µm (non-speciated)	$PM_{2.5}$	88502	µg/m^3 LC	105	1-Hr	1	Met One BAM 1020 w/VSCC	Beta Attenuation	733	7/24	Not Applicable
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	1:1 or 1:3	EQPM-0202-145 or RFPS-0498-118
Particulate Matter ≤ 2.5 µm (speciated)	$PM_{2.5}$ CSN & SU	See ARB or EPA	See ARB or EPA	See ARB or EPA	24-Hr	7	URG-3000N	See ARB or EPA	See ARB or EPA	1:3 or 1:6	Not Applicable
Particulate Matter ≤ 2.5 µm (speciated)	$PM_{2.5}$ STN	See ARB or EPA	See ARB or EPA	See ARB or EPA	24-Hr	7	Met One SASS	See ARB or EPA	See ARB or EPA	1:3 or 1:6	Not Applicable

Table 8.2b $PM_{2.5}$ Sampling Carbon-Speciated Table of the Parameters for the internal SDAPCD Network (Supplemental Speciation)

Parameter	OC $PM_{2.5}$ Lc Tor	EC $PM_{2.5}$ Lc Tor	OC1 $PM_{2.5}$ Lc	OC2 $PM_{2.5}$ Lc	OC3 $PM_{2.5}$ Lc	OC4 $PM_{2.5}$ Lc	OP $PM_{2.5}$ Lc Tor	EC1 $PM_{2.5}$ Lc	EC2 $PM_{2.5}$ Lc	EC3 $PM_{2.5}$ Lc
Parameter	88320	88321	88324	88325	88326	88327	88328	88329	88330	88331
Method Code	815	815	814	814	814	814	814	814	814	814

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

Section 8.1.0 $PM_{2.5}$ Trends in the SDAB

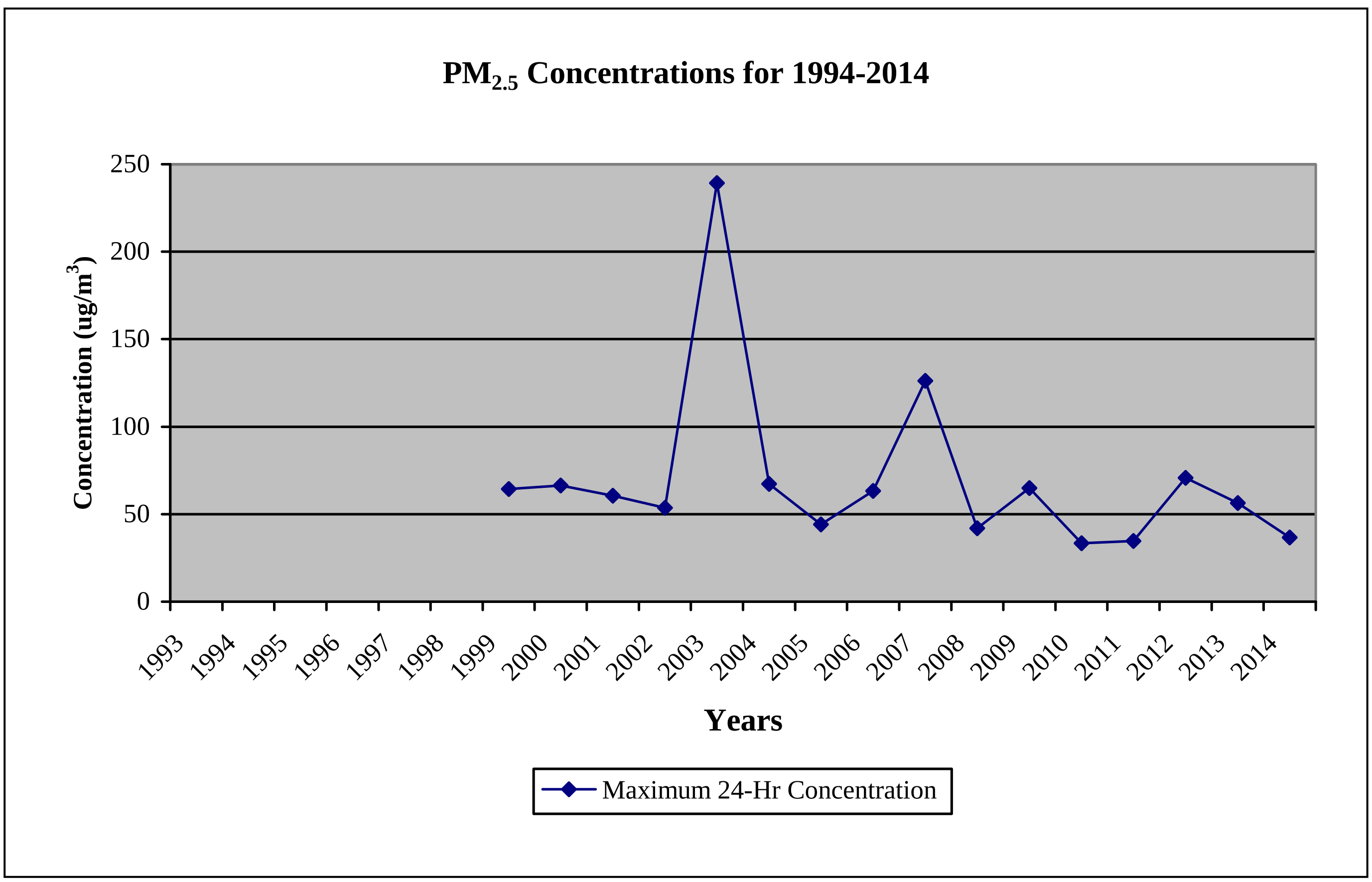
Annual average $PM_{2.5}$ FRM concentrations in the San Diego Air Basin have declined over the past decade, see Table 8.3. The State annual average concentrations also decreased within this period. The high maximum 24-Hr concentrations measured in 2003 and 2007 were due to severe wildfires that occurred 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 8.3 reflects the $PM_{2.5}$ standard for that year. Figure 8.1 graphs the SDAB $PM_{2.5}$ trends over the years.

Table 8.3 $PM_{2.5}$ FRM Summary of Concentrations for 1994-2014

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Maximum 24-Hr Concentration (µg/m^3)	*	*	*	*	*	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
Days above the National Std (#)	*	*	*	*	*	0	2	0	0	2	1	0	1	17	3	3	0	0	2	2	1

* The $PM_{2.5}$ standard was written in 1997 and the program was implemented in 1999

Figure 8.1 $PM_{2.5}$ Concentrations for 1994-2014



Section 8.1.1.1 $PM_{2.5}$ FRM/Manual Annual Measurements by Site, Year

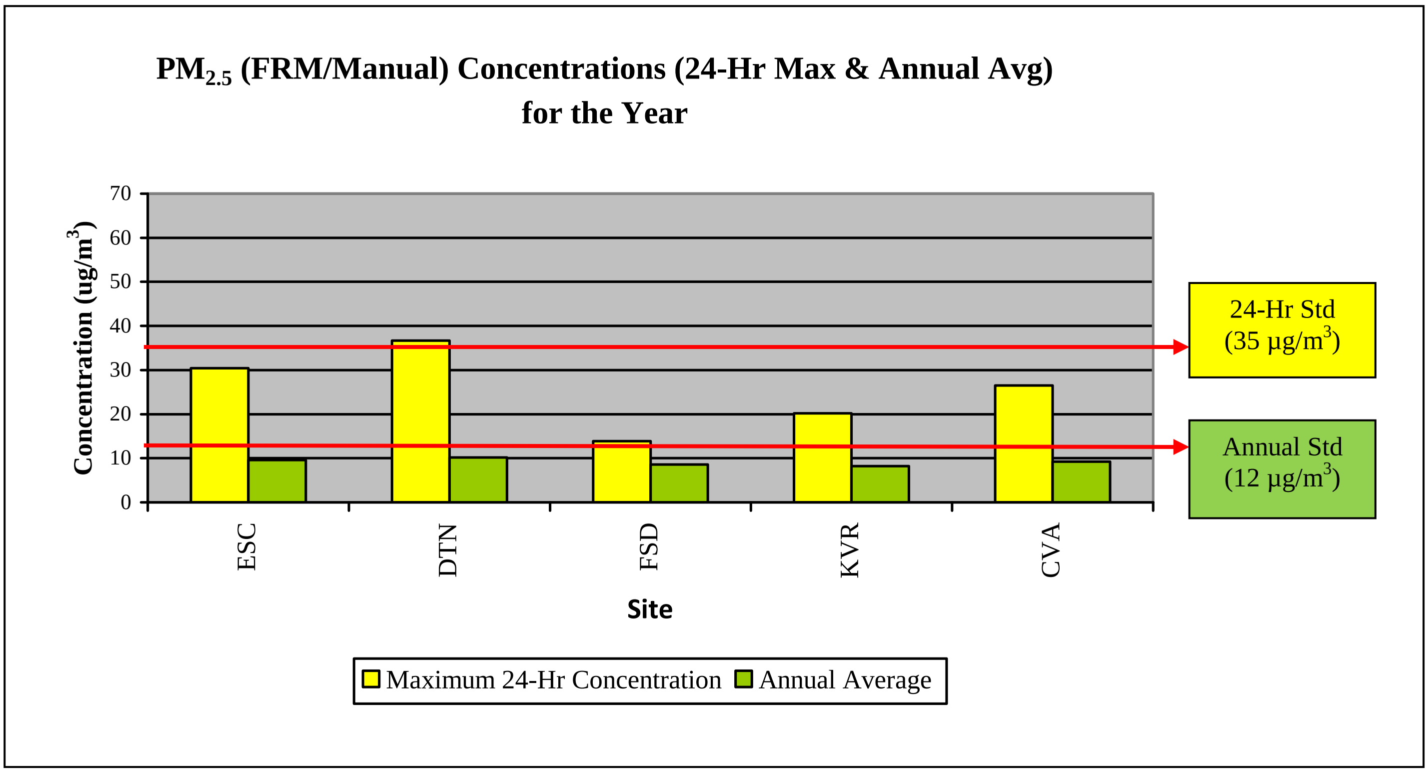
Table 8.4 lists the maximum $PM_{2.5}$ FRM measurements for each $PM_{2.5}$ FRM monitoring location and Figure 8.2 shows the values graphically with respect to the National Standard.

Table 8.4 $PM_{2.5}$ FRM/Manual Measurements by Site, 2014

Method	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 (#)
Sequential (Manual) Method	1	Escondido	ESC	30.4	9.6	0
	2	San Diego-Beardsley	DTN	36.7	10.2	1
	3a	El Cajon	ECA	*	*	*
	3b	Floyd Smith Dr	FSD	13.9	8.6	0
	4	Kearny Villa Rd	KVR	20.2	8.2	0
	5	Chula Vista	CVA	26.5	9.2	0

Yellow denotes collocation of equipment of the same make and model as the primary
*Insufficient data; not operational long enough

Figure 8.2 $PM_{2.5}$ FRM/Manual Measurements by Site Graph, 2014



Section 8.1.1.2 $PM_{2.5}$ FRM/Manual Design Value Measurements by Site, Design Value

Tables 8.5a and 8.5b list the maximum $PM_{2.5}$ FRM Design Value measurements for each $PM_{2.5}$ FRM monitoring location with respect to the National Standard for the annual average and maximum 24-Hr concentration.

Table 8.5a $PM_{2.5}$ FRM/Manual Design Value Measurements by Site (24-hrs), 2012-2014

Sequential (Manual) Method	No. (#)	Site (name)	Site Abbreviation	Design Value Concentration for 24-Hrs (µg/m^3)	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 Annual Design Value Meet the NAAQS? (yes/no)
	1	Escondido	ESC	21.9	No	Yes	Yes
	2	SD-Beardsley	DTN	22.8	No	Yes	Yes
	3a	El Cajon	ECA	*	*	*	*
	3b	Floyd Smith Dr.	FSD	*	*	*	*
	4	Kearny Villa Rd.	KVR	17.3	No	Yes	Yes
	5	Chula Vista	CVA	20.2	No	Yes	Yes

Yellow denotes collocation of equipment of the same make and model as the primary
*Insufficient data; not operational long enough

Table 8.5b $PM_{2.5}$ FRM/Manual Design Value Measurements by Site (Annual Average) 2012-2014

Sequential (Manual) Method	No. (#)	Site (name)	Site Abbreviation	Annual Design Value Concentration (µg/m^3)	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)
	1	Escondido	ESC	10.3	Yes	No	Yes
	2	SD-Beardsley	DTN	10.5	Yes	No	Yes
	3a	El Cajon	ECA	*	*	*	*
	3b	Floyd Smith Dr.	FSD	*	*	*	*
	4	Kearny Villa Rd.	KVR	8.5	Yes	No	Yes
	5	Chula Vista	CVA	9.6	Yes	No	Yes

Yellow denotes collocation of equipment of the same make and model as the primary
*Insufficient data; not operational long enough

Section 8.1.2.1 $PM_{2.5}$ non-FEM/Continuous Annual Measurements by Site, Year

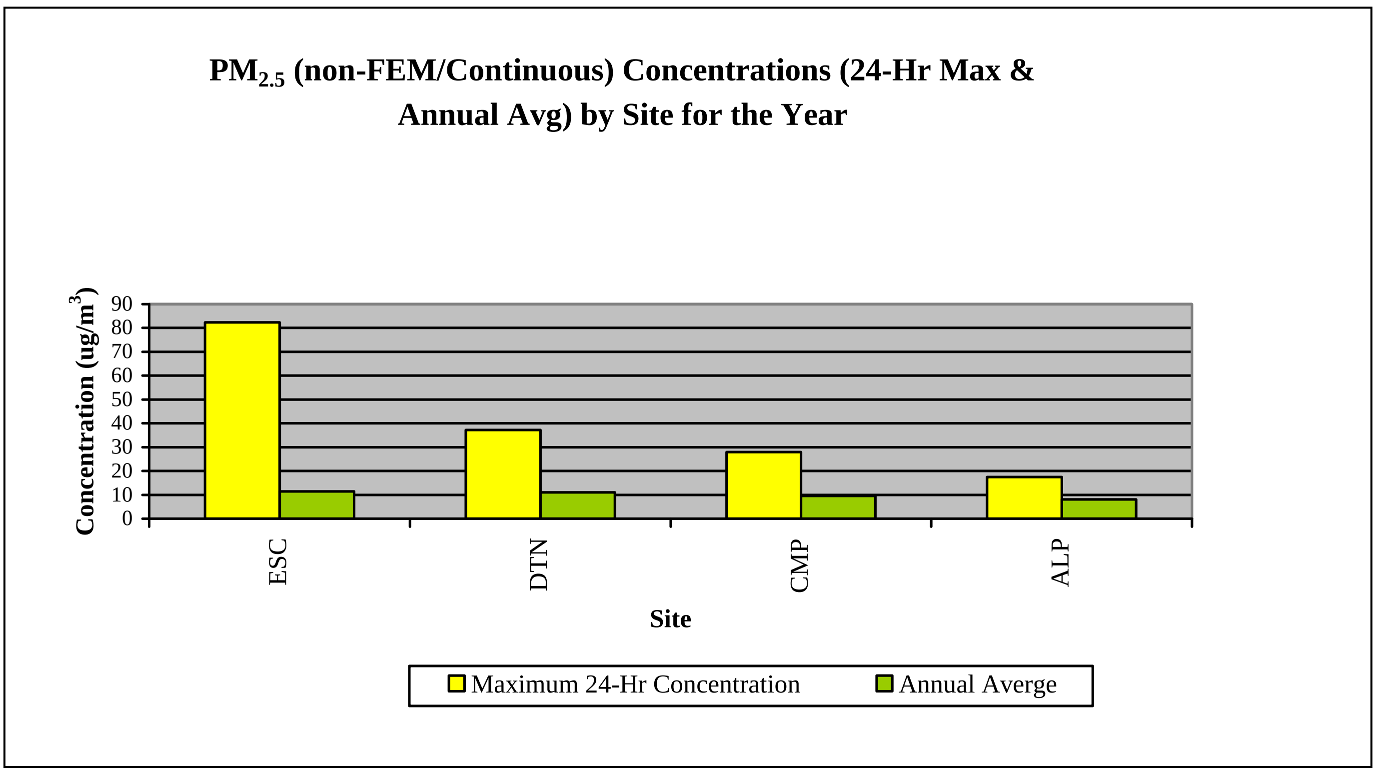
Table 8.6 lists the maximum $PM_{2.5}$ non-FEM measurements for each $PM_{2.5}$ continuous monitoring location and Figure 8.3 shows the values graphically. The $PM_{2.5}$ continuous sampler is not a regulatory monitor; therefore the values cannot be compared to the $PM_{2.5}$ standards and can only be used for trends analysis and public informational use.

Table 8.6 $PM_{2.5}$ non-FEM/Continuous Measurements by Site (24-Hr & Annual Average) , 2014

	No. (#)	Site (name)	Site Abbreviation	Maximum Concentration For 24-Hr (µg/m^3)	Annual Average (µg/m^3)
Continuous (Automated) Method	1	Escondido	ESC	82.3	11.4
	2	SD-Beardsley	DTN	37.2	11.0
	3a	El Cajon	ECA	*	*
	3b	Floyd Smith Dr.	FSD	*	*
	4	Donovan	DVN	*	*
	5	Camp Pendleton	CMP	28.0	9.6
	6	Alpine	ALP	17.4	8.1

Yellow denotes collocation of equipment of the same make and model as the primary
*Insufficient data; not operational long enough

Figure 8.3 $PM_{2.5}$ non-FEM/Continuous Measurements by Site Graph, 2014



Section 8.1.2.2 $PM_{2.5}$ non-FEM/Continuous Design Value Measurements by Site, Design Value

Tables 8.7a and 8.7b list the maximum $PM_{2.5}$ non-FEM Design Value measurements for each $PM_{2.5}$ continuous monitoring location. The $PM_{2.5}$ continuous sampler is not a regulatory monitor; therefore the values cannot be compared to the standards.

Table 8.7a $PM_{2.5}$ non-FEM/Continuous Design Value Measurements by Site (24-hrs), 2014

Method	No. (#)	Site (name)	Site Abbreviation	Design Value Concentration for 24-Hrs (µg/m³)
Continuous (Automated) Method	1	Escondido	ESC	24.7
	2	SD-Beardsley	DTN	24.0
	3a	El Cajon	ECA	*
	3b	Floyd Smith Dr.	FSD	*
	4	Donovan	DVN	*
	5	Camp Pendleton	CMP	19.8
	6	Alpine	ALP	18.3

*Insufficient data; not operational long enough

Table 8.7b $PM_{2.5}$ non-FEM/Continuous Design Value Measurements by Site (Annual Avg), 2014

Method	No. (#)	Site (name)	Site Abbreviation	Annual Design Value Concentration (µg/m³)
Continuous (Automated) Method	1	Escondido	ESC	12.6
	2	SD-Beardsley	DTN	12.3
	3a	El Cajon	ECA	*
	3b	Floyd Smith Dr.	FSD	*
	4	Donovan	DVN	*
	5	Camp Pendleton	CMP	9.7
	6	Alpine	ALP	8.9

*Insufficient data; not operational long enough

Section 8.2.0 $PM_{2.5}$ Federal Design Criteria Requirements

Federal requirements for the number of monitors for $PM_{2.5}$ are 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 4.7 "Fine Particulate Matter ($PM_{2.5}$) Design Criteria" and 4.8 "Coarse Particulate Matter (PM10−2.5) Design Criteria". Note: only the passages applicable to the SDAB have been cited. The pertinent sections of Table D-5 that apply to the SDAB have been highlighted.

4.7 Fine Particulate Matter (PM2.5) Design Criteria.
4.7.1 General Requirements.

(a) State, and where applicable local, agencies must operate the minimum number of required PM2.5 SLAMS sites listed in Table D-5 of this appendix. The NCore sites are expected to complement the PM2.5 data collection that takes place at non-NCore SLAMS sites, and both types of sites can be used to meet the minimum PM2.5 network requirements. Deviations from these PM2.5 monitoring requirements must be approved by the EPA Regional Administrator.

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

MSA population[1,2]	*Most recent 3-year design value ≥85% of any $PM_{2.5}$ NAAQS[3]*	*Most recent 3-year design value <85% of any $PM_{2.5}$ NAAQS[3,4]*
>1,000,000	*3*	*2*
500,000–1,000,000	*2*	*1*
50,000–<500,000[5]	*1*	*0*

[1]Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).
[2]Population based on latest available census figures.
[3]The $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.
[4]These minimum monitoring requirements apply in the absence of a design value.
[5]Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

(b) Specific Design Criteria for PM 2.5. The required monitoring stations or sites must be sited to represent area-wide air quality. These sites can include sites collocated at PAMS. These monitoring stations will typically be at neighborhood or urban-scale; however, micro-or middle-scale PM 2.5 monitoring sites that represent many such locations throughout a metropolitan area are considered to represent area-wide air quality.

(1) At least one monitoring station is to be sited at neighborhood or larger scale in an area of expected maximum concentration.
(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 NO2 station required in section 4.3.2(a) of this appendix.
(3) For areas with additional required SLAMS, a monitoring station is to be sited in an area of poor air quality.
(4) Additional technical guidance for siting PM 2.5 monitors is provided in references 6 and 7of this appendix.

(c) The most important spatial scale to effectively characterize the emissions of particulate matter from both mobile and stationary sources is the neighborhood scale for PM 2.5. For purposes of establishing monitoring sites to represent large homogenous areas other than the above scales of

representativeness and to characterize regional transport, urban or regional scale sites would also be needed. Most PM 2.5 monitoring in urban areas should be representative of a neighborhood scale.

4.7.2 Requirement for Continuous PM2.5 Monitoring. The State, or where appropriate, local agencies must operate continuous PM2.5 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.

4.7.3 Requirement for PM2.5 Background and Transport Sites. Each State shall install and operate at least one PM2.5 site to monitor for regional background and at least one PM2.5 site to monitor regional transport. These monitoring sites may be at community-oriented sites and this requirement may be satisfied by a corresponding monitor in an area having similar air quality in another State. State and local air monitoring agencies must use methodologies and QA/QC procedures approved by the EPA Regional Administrator for these sites. Methods used at these sites may include non-federal reference method samplers such as IMPROVE or continuous PM2.5 monitors.

4.7.4 PM2.5 Chemical Speciation Site Requirements. Each State shall continue to conduct chemical speciation monitoring and analyses at sites designated to be part of the PM2.5 Speciation Trends Network (STN). The selection and modification of these STN sites must be approved by the Administrator. The PM2.5 chemical speciation urban trends sites shall include analysis for elements, selected anions and cations, and carbon. Samples must be collected using the monitoring methods and the sampling schedules approved by the Administrator. Chemical speciation is encouraged at additional sites where the chemically resolved data would be useful in developing State implementation plans and supporting atmospheric or health effects related studies.

4.7.5 Special Network Considerations Required When Using PM2.5 Spatial Averaging Approaches. (a) The PM2.5 NAAQS, specified in 40 CFR part 50, provides State and local air monitoring agencies with an option for spatially averaging PM2.5 air quality data. More specifically, two or more community-oriented (i.e., sites in populated areas) PM2.5 monitors may be averaged for comparison with the annual PM2.5 NAAQS. This averaging approach is directly related to epidemiological studies used as the basis for the PM2.5 annual NAAQS. Spatial averaging does not apply to comparisons with the daily PM2.5 NAAQS.

4.8 Coarse Particulate Matter (PM10−2.5) Design Criteria.
4.8.1General Monitoring Requirements.
(a) The only required monitors for PM10−2.5 are those required at NCore Stations.

Section 8.2.1 $PM_{2.5}$ FRM/Manual Design Criteria

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 list the requirements needed to fulfill the $PM_{2.5}$ Design Criteria for sequential/FRM (manual) samplers, using *Table D-5* from section 8.4.0. Tables 8.8a-8.8c list these requirements.

Table 8.8a $PM_{2.5}$ FRM/Manual Annual Design Value, 2012-2014

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)
10.5	San Diego-Beardsley	06-073-1010	Yes	No	Yes

Table 8.8b $PM_{2.5}$ FRM/Manual 24-Hr Design Value, 2012-2014

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)
22.8	San Diego-Beardsley	06-073-1010	No	Yes	Yes

Using *Table D-5* from section 8.4.0

Table 8.8c Design Criteria Minimum Number of $PM_{2.5}$ FRM/Manual Monitors/Sites Required

MSA (name)	County (name)	Population from 2010 Census (#)	Minimum Number of FRM/Manual Monitors Required (#)	Number of Active Monitors (#)	Number of Monitors Needed (#)	Number of Active Primary Monitors (#)
San Diego	San Diego	3.2 million	3	5	None	5

Section 8.2.2 $PM_{2.5}$ (FRM/Manual) Design Criteria for the Site of Expected Maximum Concentration

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(1) list the requirements needed to fulfill the $PM_{2.5}$ Design Criteria for the population oriented area of expected maximum concentration for a $PM_{2.5}$ sequential/FRM (manual or sequential) sampler. Tables 8.9a and 8.9b list this requirement.

Table 8.9a Design Criteria Site of Expected Maximum Annual Concentration (FRM/Sequential)

Site of Expected Maximum Concentration for Annual NAAQS (name)	Site of Expected Maximum Concentration for Annual NAAQS AQS ID (#)
San Diego-Beardsley	06-073-1010

Table 8.9b Design Criteria Site of Expected Maximum 24-Hr Concentration (FRM/Sequential)

Site of Expected Maximum Concentration for 24-Hr NAAQS (name)	Site of Expected Maximum Concentration for 24-Hr NAAQS AQS ID (#)
Escondido	06-073-1002

Section 8.2.3 $PM_{2.5}$ (FRM/Manual) Design Criteria for the Site of Expected Poor Air Quality

40 CFR Part 58-"Ambient Air Quality Surveillance", 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(2) list the requirements needed to fulfill the $PM_{2.5}$ Design Criteria for the location of a station located in an area of poor air quality. Table 8.10 lists this requirement.

Table 8.10 Design Criteria Site of Poor Air Quality (FRM/Sequenital)

Site of Poor Air Quality (name)	Site of Poor Air Quality AQS ID (#)
Escondido	06-073-1002

Section 8.2.4.1 $PM_{2.5}$ (FRM/Manual) Operating Schedule

40 CFR Part 58.12, "Operating Schedules", states the following:

> *(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.*

All $PM_{2.5}$ (FRM/Manual) samplers operate, at the least, on a 1-in-3 (1:3) day schedule. The sampler at the site of the expected maximum concentration operates on a 1:1 schedule.

Section 8.2.4.2 $PM_{2.5}$ (FRM/Manual) Operating Schedule for Areas Close to Violating the NAAQS

40 CFR Part 58.12, "Operating Schedules", states the following:

> *(iii) Required SLAMS stations whose measurements determine the 24-hour design value for their area and whose data are within plus or minus 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.*

Table 8.11 summarizes the requirements from sections 8.4.4.0 and 8.4.4.1.

Table 8.11 $PM_{2.5}$ non-FEM/Continuous or FRM Daily 24-Hr Design Value, 2012-2014

24-Hr Design Value ($\mu g/m^3$)	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)
24.7	Escondido	No	No	No

Section 8.2.5 $PM_{2.5}$ Design Criteria for Near-road Requirements

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), list the requirements needed to fulfill $PM_{2.5}$ Design Criteria for the NO_2 Near-road program. *Please Note: The District plans to install the $PM_{2.5}$ FRM monitor at the second Near-road location. Table 8.12 list this requirement.

Table 8.12 Design Criteria Minimum Number of $PM_{2.5}$ Near-road Monitors Required

MSA (name)	County (name)	Population from 2010 Census (#)	Minimum Number of NO_2 Near-road Monitors Required (#)	Are Collocated $PM_{2.5}$ Monitors Required (yes/no)	Minimum Number of Collocated $PM_{2.5}$ Monitors Required (#)	Total Number of $PM_{2.5}$ Monitors Required (#)	Total Number of Active $PM_{2.5}$ Monitors (#)	Total Number of $PM_{2.5}$ Monitors Needed (#)
San Diego	San Diego	3.2 million	2	Yes	1	1	0	1

Section 8.2.6 $PM_{2.5}$ Continuous Network Design Criteria

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 list the requirements needed to fulfill the $PM_{2.5}$ Design Criteria for the minimum number of continuous/non-FEM samplers (see Tables 8.13a & 8.13b).

Table 8.13a Design Criteria Minimum Number of $PM_{2.5}$ non-FEM/Continuous Monitors Required

Minimum Number of Required FRM/Manual Samplers Required (#)	Minimum Number of Required Continuous Samplers= (½ Minimum Number of) Required FRM/Manual Samplers Rounded Up (#)	Number of Active Continuous Samplers (#)	Number of Continuous Samplers Needed (#)
3	3 x (½) = 2	6	None

Table 8.13b Design Criteria for the Minimum Number of $PM_{2.5}$ non-FEM/Continuous Monitors Required to be Collocated with $PM_{2.5}$ FRM/Manual Samplers

Minimum Number of Continuous Samplers (Sites) Required to be Collocated with FRM/Manual Samplers (Sites) (#)	Number of Active Sites that have Continuous Samplers Collocated with FRM/Manual Samplers (Sites) (#)	Number of Continuous Sampler Sites that must be Collocated with FRM/Manual Samplers (Sites) Needed (#)	Location(s) of Continuous Samplers (Sites) Collocated with FRM/Manual Samplers (Sites) (name)	Location(s) of Continuous Samplers (Sites) Collocated with FRM/Manual Samplers (Sites) AQS ID (#)
1	3	None	El Cajon Escondido SD-Beardsley	06-073-0003 06-073-1002 06-073-1010

Section 8.2.7 $PM_{2.5}$ Speciation Network Design Criteria

There are two requirements for the STN & CSN network. The first is to maintain the current speciation network as designed by the governing authorities, as stated in 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.

The second requirement is that STN & CSN samplers must be sited at all NCore locations; see 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore Sites", subsection (b). Table 8.14a is a summary for the two previously state requirements. Table 8.14b list these sites

Table 8.14a Design Criteria for $PM_{2.5}$ Speciation Monitors (STN & CSN)

Number of STN Samplers (Sites) (#)	Number of CSN Samplers (Sites) (#)	Location of CSN & STN Monitors (Sites) (name)	*Location of CSN & STN Monitors (Sites) AQS ID (#)	Comments
2	2	El Cajon (ECA)	06-073-0003	NCore site requirement
		Escondido (ESC)	06-073-1002	Previously existing network site

The District also operates its own Carbon-speciated program by collecting samples via an unused SASS channel at the Escondido, El Cajon, and San Diego-Beardsley locations. Table 8.6c2 lists these sites.

Table 8.14b District Internal $PM_{2.5}$ CSN Sampler Locations

Location of Supplemental CSN Monitors (Sites) (name)	Location of Supplemental CSN Monitors (Sites) AQS ID (#)
El Cajon (ECA)	06-073-0003
Escondido (ESC)	06-073-1002
SD-Beardsley (DTN)	06-073-1010

Section 8.3.0 $PM_{2.5}$ Quality Control (QC) Practices

The requirements for Quality Control of the criteria pollutants are in 40 CFR Part 50 and Part 58. Each criteria pollutant has a specific section. See Table 8.15a and Table 8.15b for the specific references and equipment. Note: the $PM_{2.5}$ and PM_{10} (Lo-Vol) samplers are calibrated every quarter (three times the required frequency).

Table 8.15a $PM_{2.5}$ QC Measures for the Field

	Quality Control Measures (Field)	
	Calibration	Flow Rate Verification
Frequency	Every site twice a year	FRM= Every four weeks non-FEM= Every two weeks
Personnel	By personnel who do not perform the audits	By site operator who does not perform audits or calibrations.
Reference	40 CFR Part 50, App. L, Section 9.2	40 CFR Part 58, App. A, Sections 3.2.3 & Table A–2
Equipment Used (Calibrator)	With Variable Flow Rate instrumentation, thermocouple, and barometric pressure sensor used for calibrations only	With Variable Flow Rate instrumentation, thermocouple, and barometric pressure sensor used for verifications only
Certifications	Flow = 1/yr Temp = Every 2 yrs	Flow = 1/yr Temp = Every 2 yrs

Table 8.15b $PM_{2.5}$ QC Measures for the Laboratory

Quality Control Measures (Laboratory)		
Equipment	Reference	Frequency
Filter Conditioning Environment	40 CFR Part 50, Appendix L, Sections 8.0 & 10.0	All filters
Filters	Quality Assurance Guidance Document 2.12, Section 7.7	All filters
Filter Weighing	40 CFR Part 50, Appendix L, Section 10.10; Quality Assurance Guidance Document 2.12, Sections 7.9, 7.10, 7.11	Within 30 days of collection
Working Mass standards	Quality Assurance Guidance Document 2.12, Sections 7.9 & 7.11	Every Weighing Session

In addition to processing the $PM_{2.5}$ sequential filters for the District's seven PM sequential samplers (one is for the PM_{10} Lo-Vol sampler at the El Cajon NCore location), the District processes $PM_{2.5}$ filters for five additional $PM_{2.5}$ sequential filter samplers from Kern and Imperial County. Note: all official decisions regarding the $PM_{2.5}$ data from Kern and Imperial County are made by the designated authority from CARB.

Section 8.4.0 $PM_{2.5}$ Quality Assurance (QA) Practices

The requirements for the Quality Assurance of the criteria pollutants are in the 40 CFR Part 58. Each criteria pollutant has a specific section. See Table 8.16a and 8.16b for the specific references and equipment. Note: All the PM (Lo-Vol) samplers are audited every quarter, so all audits will reflect the previous calibration earlier in the quarter.

Table 8.16a $PM_{2.5}$ QA Measures for the Field

	Quality Assurance Measures (Field)			
	Internal Local (District) Audits	Collocation	External State (ARB) Audits	External Federal (PEP) Audits
Frequency	Every site twice a year	Same frequency and time as the primary sampler	75% of the monitors/yr randomly selected personnel	Audits ≤ 5sites/yr
Personnel	With personnel who do not perform the calibrations	n/a	Manually performed by randomly selected personnel	Manually performed by randomly selected personnel
Reference (Field)	40 CFR Part 58 App. A, Section 3.2.4	40 CFR Part 58 App. A, Section 3.2.5.1 (a)	40 CFR Part 58 App. A, Section 3.2.4	40 CFR Part 58 App. A, Section 3.2.7
Equipment Used (Field)	With Flow Transfer Standard and Thermocouple used for audits only	Same equipment as the primary sampler	See ARB	See EPA
Certifications	Flow = 1/yr Temp = Every 2 yrs	Flow = 1/yr Temp = Every 2 yrs	See ARB	See EPA

Table 8.16b $PM_{2.5}$ QA Measures for the Laboratory

Quality Assurance Measures (Laboratory)		
Equipment	Reference	Frequency
Working Mass standards	Quality Assurance Guidance Document 2.12 Sections 3.3, 4.3.7 & 7.3	Yearly
Temperature & Relative Humidity	Quality Assurance Guidance Document 2.12 Section 3.3, 4.3.7, & 7.6	Quarterly
Balance	Quality Assurance Guidance Document 2.12 Section 3.3, 4.3.6, & 7.2	Yearly
Working Mass standards vs. primary standards	Quality Assurance Guidance Document 2.12 Sections 3.3, 4.3 & 7.3	Quarterly
Primary standards	Quality Assurance Guidance Document 2.12 Section 3.3, 4.3 & 7.3	Yearly

The District also submits $PM_{2.5}$ audit data for Imperial County. All official decisions regarding the data are made by the designated authority from CARB.

Section 8.4.1 $PM_{2.5}$ Quality Assurance (QA) Collocation Requirements, FRM

According 40 CFR Part 58, Appendix A, Section 3.2.5.1 – 3.2.5.2, Quality Assurance Requirements for SLAMS, SPMs and PSD Air Monitoring, 15 percent of the required monitors (values of 0.5 and greater rounded up) must be collocated. Tables 8.16c reflect these requirements.

Table 8.16c $PM_{2.5}$ QA Measures – FRM/Manual Collocation

		Collocated Monitors				
Minimum Number of Monitors Required (#)	Number of Active Monitors (#)	Number of Monitors Needed for Collocation = 15% x Number of Required FRM Sequential Samplers Rounded Up (#)	Number of Active Monitors Used for Collocation (#)	Number of Monitors Needed for Collocation (#)	*Location of Collocated Site(s) (name)	Collocated Site AQS ID (#)
3	5	5 x (15%) = 1	1	None	Kearny Villa Rd (KVR)	06-073-1016

*The $PM_{2.5}$ FRM collocated monitor at Kearny Villa Road (KVR) will be relocated to Chula Vista after the wood structure that houses the instrumentation is rebuilt.

Per EPA's recommendation, the District was asked to relocate the FRM $PM_{2.5}$ collocation site to one that is more in accordance with 40 CFR Part 58 Appendix A, Section 3.2.5.1; a site that is within 80-120% of either the Annual or 24-Hr NAAQS. The FRM $PM_{2.5}$ samplers at the Escondido, San Diego-Beardsley St., El Cajon, and Chula Vista locations routinely measure 65-75% of the NAAQS; therefore this condition cannot be met.

According to 40 CFR Part 58 Appendix A, Section 3.2.5.2, if no site meets this requirement listed above, then FRM $PM_{2.5}$ collocation is to be sited to one where the annual mean concentrations (or 24-hour NAAQS) is among the highest 25 percent for all sites in the network, according to part 3.3.5.2. With the exception of the Kearny Villa Rd site, the remaining FRM $PM_{2.5}$ samplers routinely measure about the same concentrations, depending on the year. The best station to relocate the FRM $PM_{2.5}$ collocation site is to the Chula Vista site, because no equipment needs to be decommissioned to accommodate the additional sampler and this location routinely measures concentrations within 65% of the NAAQS.

Section 8.4.2 $PM_{2.5}$ Quality Assurance (QA) Collocation Requirements, non-FEM Samplers

According to 40 CFR Part 58 Appendix A, Section 3.2.5.2 (b), Table A-3, if the number of required non-FEM monitors < 10 (The District has 5), then there is no $PM_{2.5}$ Continuous sampler collocation requirement. No $PM_{2.5}$ Continuous sampler collocation is required in the San Diego $PM_{2.5}$ Continuous network.

Section 8.5.0 $PM_{2.5}$ Summary of Samplers

Table 8.17a summarizes all the minimum required $PM_{2.5}$ speciated and non-speciated samplers required in the SDAB. Table 8.17b summarizes all the minimum required $PM_{2.5}$ speciated and non-speciated collocated samplers required in the SDAB.

Table 8.17a Summary of All the non-Collocated $PM_{2.5}$ Sampler Requirements

	Minimum Number of Samplers Required	Number of Active Samplers	Minimum Number of Samplers Needed
FRM Sequential (not Near-road)	3	3	0
FRM Sequential (Near-road)	1	0	1
Continuous	2	6	0
STN	2	2	0
CSN	2	2	0

Table 8.17b Summary of All the Collocated $PM_{2.5}$ Sampler Requirements

	Minimum Number of Paired Samplers Required	Number of Active Sampler Pairs	Minimum Number of Paired Samplers Needed
FRM Sequential – FRM Sequential	1	1	0
STN - CSN	2	2	0
Sequential – Continuous	1	1	0

Section 8.6.0 $PM_{2.5}$ non-FEM/Continuous Samplers Unsuitability for use in Attainment Status

The EPA Regional Authorities granted the District approval to reclassify the $PM_{2.5}$ continuous data to non-Regulatory (Figure 8.4) for those sites that had collocated $PM_{2.5}$ FRM samplers . Please refer to Figure 8.4 for a copy of the approval.

Figure 8.4 Copy EPA Region IX Approval to Waive Some $PM_{2.5}$ FEM Data (continued)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901
JUN 17 2014

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

Dear Mr. Hossain:

In your previous monitoring annual network plan, San Diego County Air Pollution Control District (SDCAPCD) requested EPA's approval to consider the 2010-2012 $PM_{2.5}$ data from your continuous FEM monitors at the following sites as not eligible for comparison to the NAAQS: El Cajon (AQS ID 06-073-0003), San Diego-Downtown (AQS ID 06-073-1010), Escondido (AQS ID 06-073-1002), Alpine (AQS ID 06-073-0006) and Camp Pendleton (AQS ID 06-073-1008). Your most recent monitoring annual network plan updates this request to include 2013 data from the same monitors. This letter is in response to your requests and approves the monitors listed below for the specified dates as not eligible for comparison to the NAAQS (i.e., provides a waiver for NAAQS comparability).

According to 40 CFR 58.11(e), in order to be considered not eligible for comparison to the NAAQS, continuous FEM $PM_{2.5}$ data must be shown to not meet the criteria in 40 CFR 53 Table C-4. These criteria describe the maximum allowable multiplicative and additive bias between a filter-based FRM $PM_{2.5}$ monitor and a Class III continuous FEM $PM_{2.5}$ monitor operating at the same site. EPA based its evaluation on the criteria in 40 CFR 53 as described by our memo dated April 20, 2013 and its attached document titled "Instructions and Template for Requesting that data from $PM_{2.5}$ Continuous FEMs are not compared to the NAAQS."[1]

We reviewed your request for 2010-2012 data, and well as your updated request for 2011-2013 data. After reviewing the information in your requests, we have determined that the following monitors do not meet the bias criteria in 53 and are approved as not eligible for comparison to the NAAQS for the noted time periods:

[1] This memo and tools used for comparing FRM and continuous FEM data are found at EPA's website: http://www.epa.gov/ttnamti1/contmont.html

Figure 8.4 Copy EPA Region IX Approval to Waive Some $PM_{2.5}$ FEM Data (continued)

Site Name	AQS ID-Parameter Code-POC	Begin Date	End Date
El Cajon	06-073-0003-88101-3	3/4/2011	12/31/2013
Escondido	06-073-1002-88101-4	04/08/2010	12/31/2013
Escondido	06-073-1002-88101-3	1/1/2010	12/31/2012
San Diego-Downtown	06-073-1010-88101-3	11/1/2011	12/31/2013

One of the continuous FEM PM2.5 monitors at Escondido, POC 3, does meet the criteria for bias for the data in 2011-2013, and therefore the 2013 data are considered comparable to the NAAQS. Likewise, since there is variability in the comparability between the filter-based and continuous monitors throughout your network, we cannot approve a waiver from NAAQS comparability for the monitors at Alpine and Camp Pendleton without collocated filter-based FRM data as the basis for such a request. However, since Alpine and Camp Pendleton started operating in July 2012 and November 2011, respectively, they have not collected enough data to calculate a design value that is valid for comparison to the NAAQS at this time.

Your request stated that you consider the continuous $PM_{2.5}$ data of sufficient quality to report to the AQI, and will be submitting the data to AIRNow, so you may now re-load the data from the monitors and dates in the table above to AQS under the parameter code 88502.

If you have any questions regarding this letter or the enclosure, please feel free to contact me at (415) 947-4534, or Kate Hoag of my staff at (415) 972-3970.

Sincerely,

Meredith Kurpius, Manager
Air Quality Analysis Office

Enclosure:
A. EPA Evaluation of the Request for Exclusion of $PM_{2.5}$ Continuous FEM Data

cc: David Shina, SDCAPCD
Sylvia Vanderspek, CARB

Figure 8.4 Copy EPA Region IX Approval to Waive Some $PM_{2.5}$ FEM Data (continued)

A. EPA Evaluation of the Request for Exclusion of $PM_{2.5}$ Continuous FEM Data[1]

2010-2012

Site Name / City	Site ID	Cont POC	Method Description	$PM_{2.5}$ Cont. Analysis Begin Date	$PM_{2.5}$ Cont Analysis End Date	Continuous/ FRM Sampler pairs per season	Slope (m)	Intercept (y)	Meets bias requirement	Correlation (r)
Sites with $PM_{2.5}$ continuous FEMs that are collocated with FRMs:										
El Cajon	06-073-0003	2	MetOne BAM 1020 (170)	3/1/2011	12/31/2012	Winter = 31 Spring = 56 Summer = 61 Fall = 62 Total = 210	1.10	2.35	No	0.92
San Diego-Beardsley	06-073-1010	2	MetOne BAM 1020 (170)	11/1/2011	12/31/2012	Winter = 88 Spring = 89 Summer = 81 Fall = 116 Total = 374	1.08	1.47	No	0.93
Escondido	06-073-1002	3	MetOne BAM 1020 (170)	1/1/2010	12/31/2012	Winter = 79 Spring = 84 Summer = 82 Fall = 88 Total = 333	1.10	0.80	No	0.94
Escondido	06-073-1002	4	MetOne BAM 1020 (170)	4/8/2010	12/31/2012	Winter = 60 Spring = 76 Summer = 72 Fall = 86 Total = 294	1.15	1.77	No	0.90
Sites with $PM_{2.5}$ continuous FEMs that are not collocated with FRMs:										
Alpine	06-073-0006	1	MetOne BAM 1020 (170)	7/1/2012	12/31/2012					
Camp Pendleton	06-073-1008	3	MetOne BAM 1020 (170)	11/9/11	12/21/2012					

[1] Data from 2010-2013 evaluated here was generated on May 12, 2014 using the EPA $PM_{2.5}$ continuous monitor comparability assessment tool found at the website: http://www.epa.gov/airquality/airdata/ad_rep_frmvfem.html. A technical note describing the tool is located at http://www.epa.gov/ttnamti1/files/ambient/pm25/comparabilityassessmenttool.pdf.

Figure 8.4 Copy EPA Region IX Approval to Waive Some $PM_{2.5}$ FEM Data (concluded)

2011-2013

Site Name / City	Site ID	Cont POC	Method Description	$PM_{2.5}$ Cont. Begin Date	$PM_{2.5}$ Cont End Date	Continuous/ FRM Sampler pairs per season	Slope (m)	Intercept (y)	Meets bias requirement	Correlation (r)
Sites with $PM_{2.5}$ continuous FEMs that are collocated with FRMs:										
El Cajon	06-073-0003	2	MetOne BAM 1020 (170)	3/1/2011	12/31/2013	Winter = 63 Spring = 86 Summer = 93 Fall = 88 Total = 330	1.13	1.98	No	0.90
San Diego-Beardsley	06-073-1010	2	MetOne BAM 1020 (170)	11/1/2011	12/31/2013	Winter = 122 Spring = 146 Summer = 155 Fall = 199 Total = 622	1.08	1.16	No	0.93
Escondido	06-073-1002	3	MetOne BAM 1020 (170)	1/1/2011	12/31/2013	Winter = 84 Spring = 89 Summer = 80 Fall = 87 Total = 340	1.10	0.35	Yes	0.96
Escondido	06-073-1002	4	MetOne BAM 1020 (170)	1/1/2011	12/31/2013	Winter = 84 Spring = 92 Summer = 81 Fall = 84 Total = 341	1.14	1.91	No	0.92
Sites with $PM_{2.5}$ continuous FEMs that are not collocated with FRMs:										
Alpine	06-073-0006	1	MetOne BAM 1020 (170)	7/1/2012	12/31/2013					
Camp Pendleton	06-073-1008	3	MetOne BAM 1020 (170)	11/9/11	12/31/2013					

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 Tables 9.1 and 9.2. There is a PM_{10} (Lo-Vol) sampler at the El Cajon location that is also part of the paired Lo-Vol samplers needed to calculate PMcoarse.
Please Note:

- The Otay Mesa (OTM) station was permanently relocated to the Donovan State Prison area. This station is called Donovan (DVN).
- The El Cajon station was temporarily relocated to the Gillespie Field area off of Floyd Smith Drive. This station is called Floyd Smith Drive (FSD).

Figure 9.0 PM_{10} Overall Map

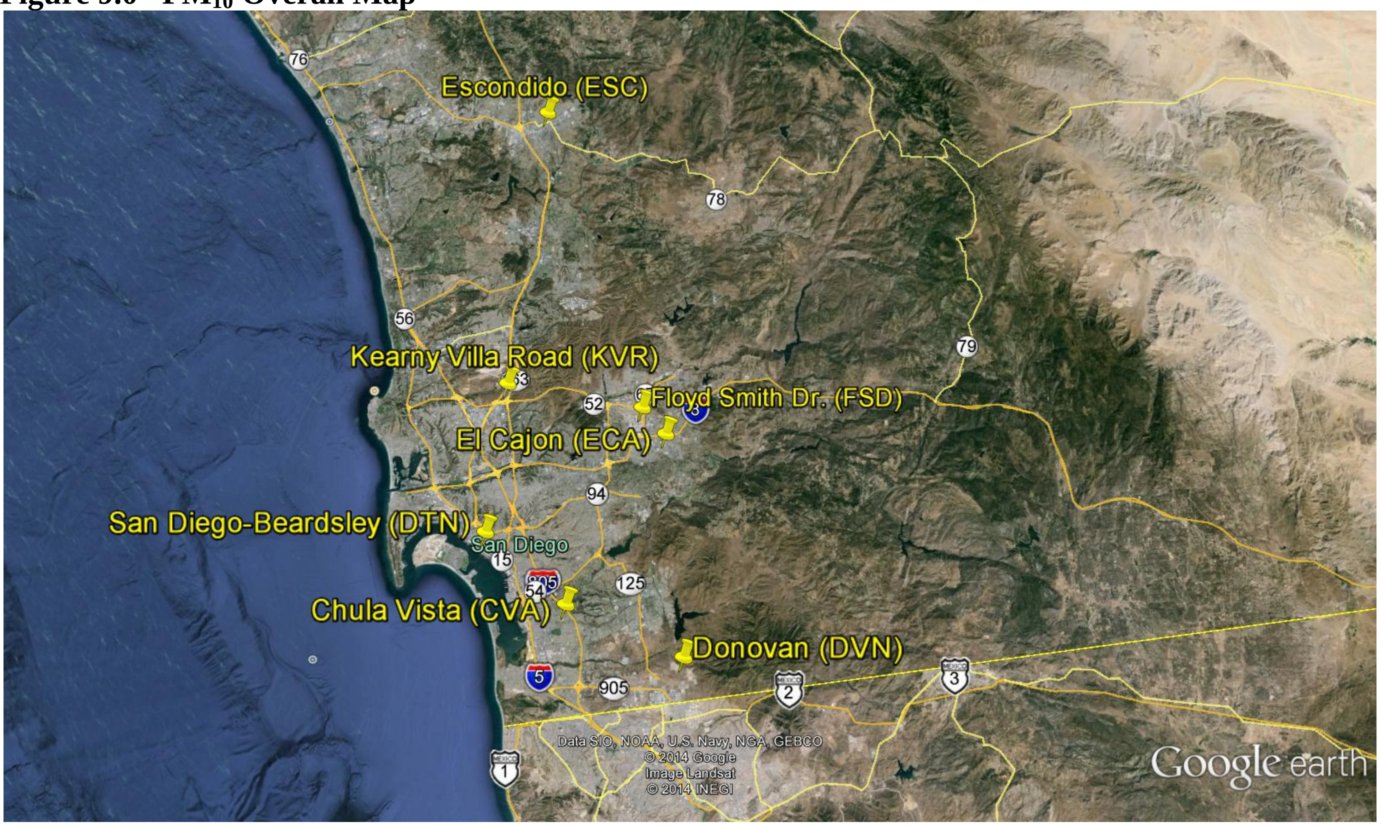


Table 9.0 PM_{10} State and National Standards for the Year

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/ECA[1]	ESC	KVR	DTN
	Name	Chula Vista		Donovan	El Cajon/ Floyd Smith Dr.	Escondido	Kearny Villa Rd	San Diego – Beardsley
	Address	80 E. J St		480 Alta Rd	1155 Redwood Ave/ 10537 Floyd Smith Dr	600 E. Valley Pkwy	Kearny Villa Rd	1110A Beardsley St.
	Latitude Longitude	32.631175° -117.059115°		32.578267° -116.921359°	32.791210° -116.942104°/ 32.817907° -116.968302°	33.127730° -117.075379°	32.845722° -117.123983°	32.701492° -117.149663°
	AQS ID	06-07- 0001		06-073-1014	06-073-0003/ 06-073-1018	06-073-1002	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	Not Applicable	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	1:6	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	Graseby Metal Works body w/ Sierra Anderson 1200 Head

Yellow denotes collocation of equipment of the same make and model as the primary
[1] ECA station temporarily relocated to the FSD area

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 9.0.1 PM_{10} - Sampling Frequency, Equipment Used, and Suitability for Comparison to the NAAQS

Requirements for the sampling frequency of monitors for pollutants are in the 40 CFR Part 58, Section 58.12 “Operating Schedule”. All District PM_{10} samplers exceed or meet all minimum monitoring requirements and are sited as to be able to be compared to the NAAQS. Table 9.2 lists the frequency.

> 1:1, 1:3, 1:6= Samplers that run every day (1), every three days (3), or every six (6) days, respectively, for a duration of 24-hours using a sample deposition media (filter). The filters are manually loaded, collected, and programmed to run sequentially on a weekly basis.

Table 9.2 PM_{10} Sampling Equipment

	Parameter		Code	Unit	Code	Duration	Code	Equipment	Method	Code	Frequency	Method ID
Ambient	Particulate Matter ≤ 10 µm (Hi-Vol)	PM_{10}	85101 81102	$\mu g/m^3$ 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	$\mu g/m^3$ 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 9.1.0 PM_{10} Trends in the SDAB

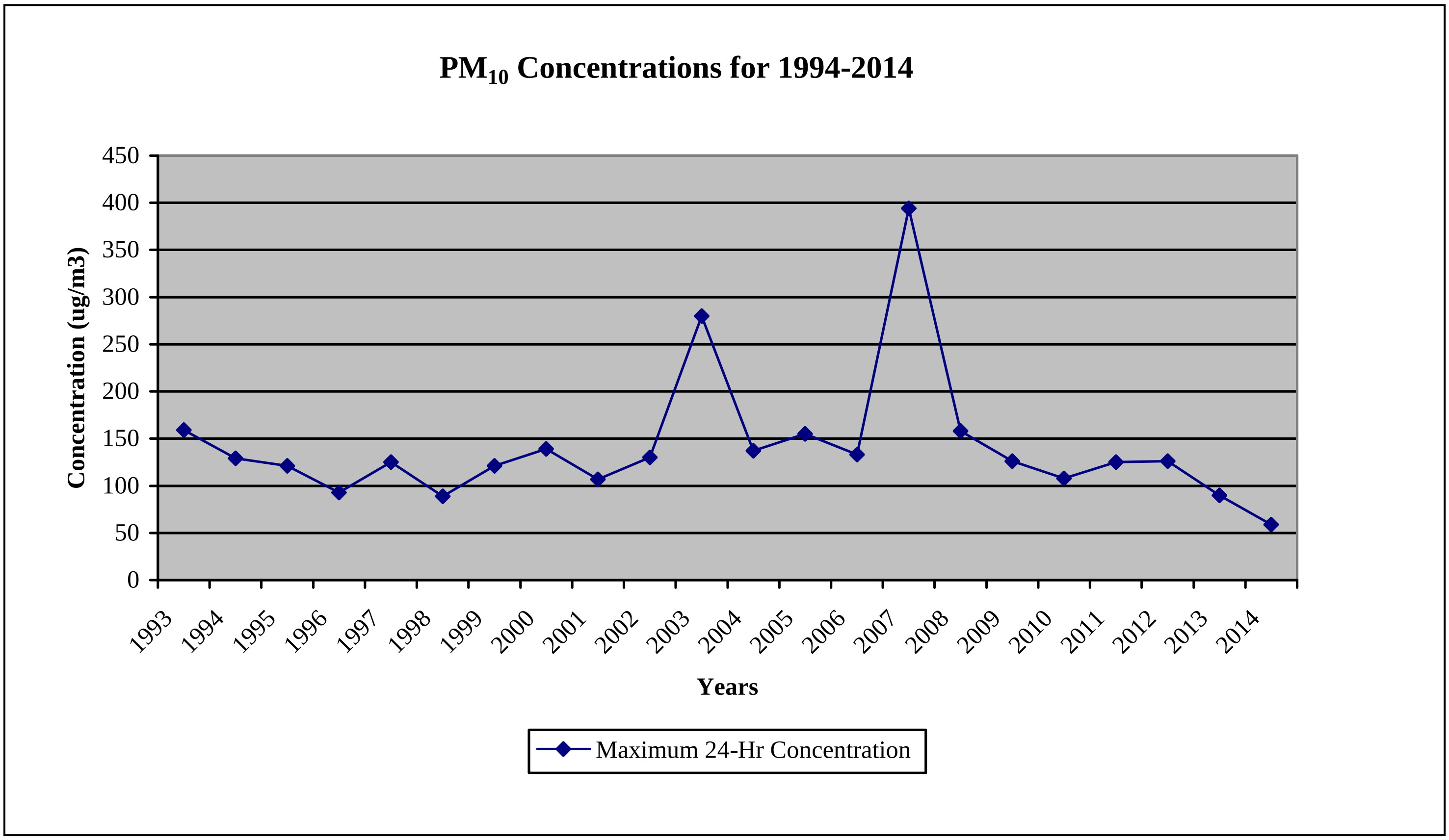
PM_{10} concentrations do not correlate well to growth in population or vehicle usage, and high PM_{10} concentrations do not always occur in high population areas. Emissions from stationary sources and motor vehicles form secondary particles that contribute to PM_{10} in many areas. Over this period, 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. Exceptional events are tallied in the accounting for attainment/non-attainment status. Even with the last two firestorms, the County still qualifies for attainment status.

There is a substantial amount of variability from year-to-year in the 24-hour statistics. This variability is a reflection of meteorology, the sporadic nature of events such as wildfires, and changes in monitoring locations. Note: the “Days Above the National 24-Hr Standard” row in Table 9.3 and Figure 9.1 reflect the PM_{10} standard for that year.

Table 9.3 PM_{10} Summary of Concentrations for the Last 20 Years at STP

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Maximum 24-Hr Concentration (µg/m^3)	129	121	93	125	89	121	139	107	130	280	137	155	133	394	158	126	108	125	126	90	29
Days above the National Standard (#)	0	0	0	0	0	0	0	0	0	2	0	2	0	2	1	0	0	0	0	0	0

Figure 9.1 PM_{10} Summary of Concentrations for 1994-2014



Section 9.1.1 PM_{10} Measurements at STD Conditions

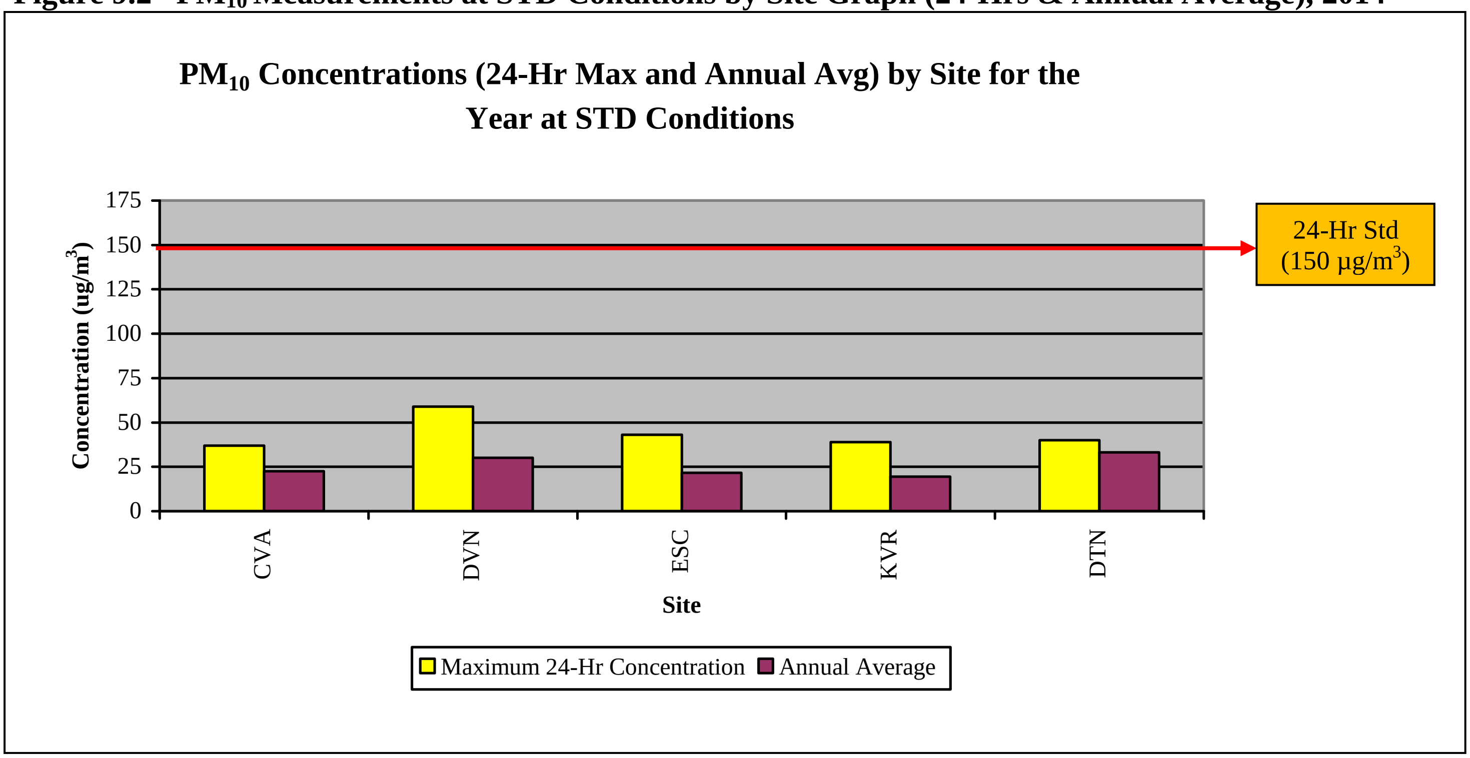
All data from the PM_{10} samplers are reported in STD conditions, as can be seen in Table 9.4 and Figure 9.2. The PM_{10} (Lo-Vol) sampler presents the data in LC and must be converted to STD conditions.

Table 9.4 PM_{10} Measurements at STD Conditions by Site (24-Hr & Annual Average), 2014

No. (#)	Site	Site Abbreviation	Maximum Concentration for 24-hrs (µg/m^3)	Annual Average (µg/m^3)	Number of Days Above the National Standard (#)
1	Chula Vista	CVA	37	22.5	0
2	Donovan	DVN	59	30.1	0
3a	El Cajon (Lo-Vol)	ECA	*	*	*
3b	Floyd Smith Dr. (Lo-Vol)	FSD	*	*	*
4	Escondido	ESC	43	21.6	0
5	Kearny Villa Road	KVR	39	19.4	0
6	San Diego-Beardsley	DTN	40	23.1	0

Yellow denotes collocation of equipment of the same make and model as the primary
*Insufficient data; not operational long enough

Figure 9.2 PM_{10} Measurements at STD Conditions by Site Graph (24-Hrs & Annual Average), 2014



Section 9.1.2 PM_{10} Measurements at Local Conditions by Site

Table 9.5 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.

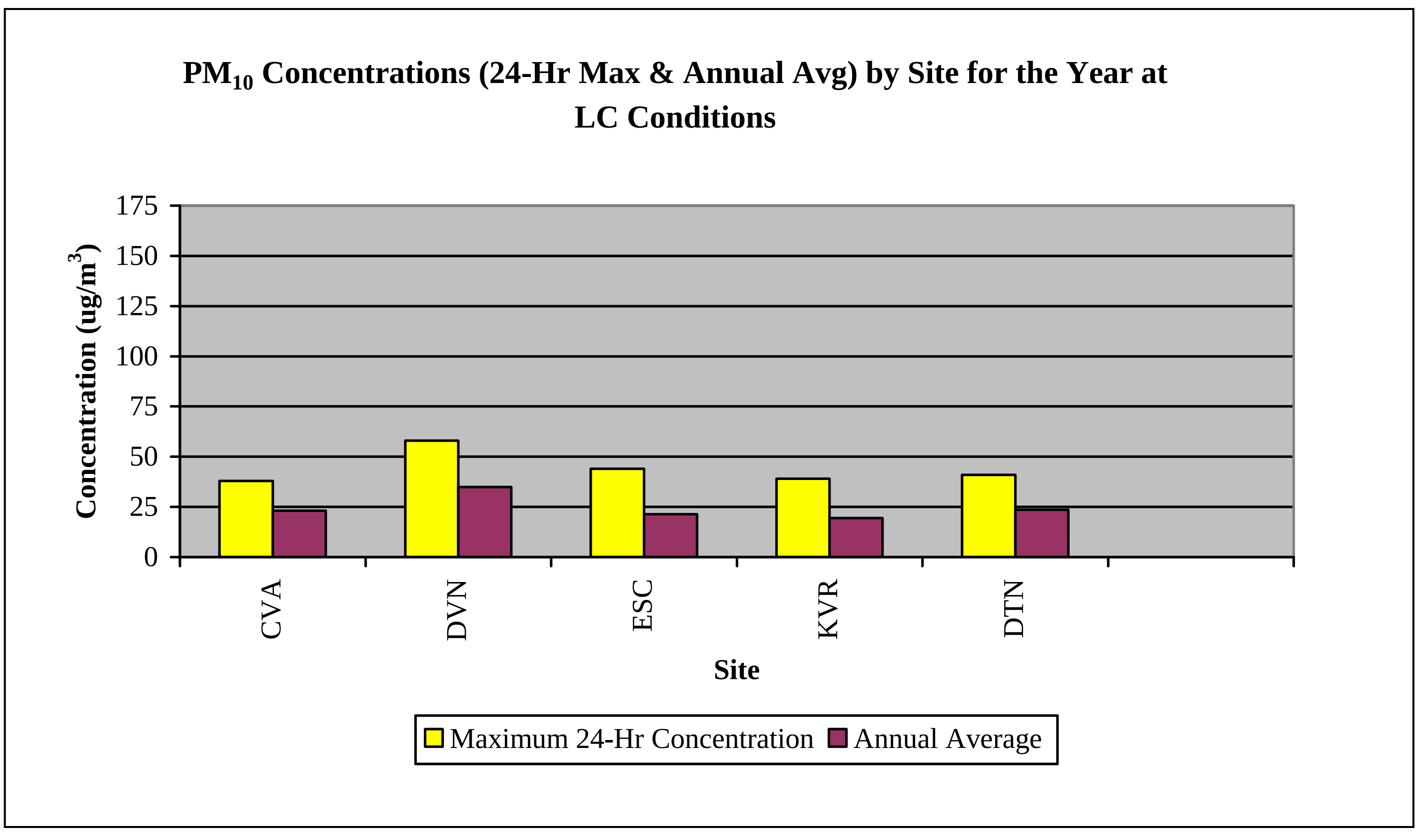
Table 9.5 PM_{10} Measurements at LC by Site (24-Hrs & Annual Average), 2014

No. (#)	Site	Site Abbreviation	Maximum Concentration for 24-hrs (µg/m³)	Annual Average (µg/m³)
1	Chula Vista	CVA	38	23.1
2	Kearny Villa Road	KVR	39	19.5
3a	El Cajon (Lo-Vol)	ECA	*	*
3b	Floyd Smith Dr. (Lo-Vol)	FSD	*	*
4	Donovan	DVN	58	34.9
5	Escondido	ESC	44	21.3
6	San Diego-Beardsley	DTN	41	23.6

Yellow denotes collocation of equipment of the same make and model as the primary
* DVN was calculated in LC for most of 2014.

Figure 9.3 PM_{10} Measurements at LC by Site Graph (24-Hrs & Annual Average), 2014

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



Section 9.2.0 PM_{10} Federal Design Criteria Requirements

Federal requirements for the number of monitors for PM_{10} are 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 4.6 "Particulate Matter (PM_{10}) Design Criteria". Note: only the passages applicable to the SDAB have been cited. The pertinent section in Table D-4 that applies to the SDAB have been highlighted.

4.6 Particulate Matter (PM10) Design Criteria.>(a) Table D-4 indicates the approximate number of permanent stations required in MSAs to characterize national and regional PM10 air quality trends and geographical patterns. The number of PM10 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. Modifications from these PM10 monitoring requirements must be approved by the Regional Administrator.

Table D–4 of Appendix D to Part 58—PM_{10} Minimum Monitoring Requirements (Approximate Number of Stations Per MSA)[1]

Population Category	High Concentration[2]	Medium Concentration[3]	Low Concentration[4,5]
>1,000,000	6-10	4-8	2-4
500,000–1,000,000	4-8	2-4	1-2
250,000–<100,000	3-4	1-2	0-1
100,000–<250,000	1-2	0-1	0

[1]Selection of urban areas and actual numbers of stations per area will be jointly determined by EPA and the State agency.
[2]High concentration areas are those for which ambient PM_{10} data show ambient concentrations exceeding the PM_{10} NAAQS by 20 percent or more.
[3]Medium concentration areas are those for which ambient PM_{10} data show ambient concentrations exceeding 80 percent of the PM_{10} NAAQS.
[4]Low concentration areas are those for which ambient PM_{10} data show ambient concentrations less than 80 percent of the PM_{10} NAAQS.
[5]These minimum monitoring requirements apply in the absence of a design value.

Section 9.2.1 PM_{10} Design Criteria

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”, subsection 4.6 list the requirements needed to fulfill the PM_{10} Design Criteria for sequential samplers, using *Table D-4* ; Tables 9.5a-9.5c list these requirements.

Table 9.5a PM_{10} Design Value (24-Hr), 2014

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)	Does the 24-Hr Design Value meet the NAAQS? (yes/no)
No	No	Yes	Yes

Table 9.5b PM_{10} Design Criteria for the Minimum Number of Samplers Required

MSA (name)	County (name)	2014 Population from 2010 Census (#)	Minimum Number of Sequential Samplers Required (#)	Number of Active Sequential Samplers (#)	Number of Sequential Samplers Needed (#)
San Diego	San Diego	3.2 million	2 – 4 (Low Concentration)	6*	None

The El Cajon (ECA) sampler is a Lo-Vol.

Table 9.5c Design Criteria for the PM_{10} Site of Expected Maximum Concentration

Site of Expected Maximum Concentration (name)	Site of Expected Maximum Concentration AQS ID (#)
Donovan	06-073-1014

Section 9.3.0 PM_{10} Quality Control Practices

The requirements for Quality Control of the criteria pollutants are in 40 CFR Part 50 and Part 58. Each criteria pollutant has a specific section. See Tables 9.6a and 9.6b for the Hi-Vol specific references and equipment. See Table 9.7a and Table 9.7b for the Lo-Vol specific references and equipment.

Section 9.3.1 PM_{10} (Hi-Vol) Quality Control Practices

The District utilizes a PM_{10} transfer standard that is certified annually by the CARB laboratory. This transfer standard is used to calibrate the Hi-Vol PM_{10} samplers in the network. Note: all PM_{10} (Hi-Vol) samplers are calibrated bi-annually (twice the minimum frequency); audits are performed in the intervening quarters.

Table 9.6a PM_{10} (Hi-Vol) QC Measures

	Quality Control Measures (Field)	
	Calibration	Flow Rate Verification
Frequency	Every site twice a year and 50% per quarter*	Every 4 Weeks
Personnel	By personnel who do not perform the audits	By site operator who does not perform calibrations or audits
Reference (Field)	40 CFR Part 50, App. J & QA Handbook, Volume II	40 CFR Part 58, App. A, Sections 3.2.3 & 3.3.2
Equipment Used (Calibrator)	With Variable Flow Rate instrumentation, thermocouple, manometer, and barometric pressure sensor used for calibrations only	With Variable Flow Rate instrumentation, thermocouple, manometer, and barometric pressure sensor used for verifications only
Certifications	Flow = 1/yr Temp = Every 2 yrs	Flow = 1/yr Temp = Every 2 yrs

*Twice the minimum frequency

Table 9.6b PM_{10} (Hi-Vol) QC Measures for the Laboratory

Quality Control Measures (Laboratory)		
Equipment	Reference	Frequency
Filter Conditioning Environment	40 CFR Part 50, Appendix G, sections 7.4 & 9.3	All filters
Filters	Quality Assurance Guidance Document 2.11, Section 4.2	All filters
Filter Weighing	Quality Assurance Guidance Document 2.11, Section 4.5	Within 30 days

Section 9.3.2 PM_{10} (Lo-Vol) Quality Control Practices

The District utilizes a PM_{10} transfer standard that is certified annually by the manufacturer. This transfer standard is used to calibrate the Lo-Vol PM_{10} sampler in the network. Note: the PM_{10} (Lo-Vol) sampler is calibrated every quarter (three times the minimum frequency).

Table 9.7a PM_{10} (Lo-Vol) QC Measures

	Quality Control Measures (Field)	
	Calibration	Flow Rate Verification
Frequency	Every site four times a year	FRM= Every four weeks
Personnel	By personnel who do not perform the audits	By site operator who does not perform audits or calibrations.
Reference	40 CFR Part 50, App. L, Section 9.2	40 CFR Part 58, App. A, Sections 3.2.3 & Table A–2
Equipment Used (Calibrator)	With Variable Flow Rate instrumentation, thermocouple, and barometric pressure sensor used for calibrations only	With Variable Flow Rate instrumentation, thermocouple, and barometric pressure sensor used for verifications only
Certifications	Flow = 1/yr Temp = Every 2 yrs	Flow = 1/yr Temp = Every 2 yrs

Table 9.7b PM_{10} (Lo-Vol) QC Measures for the Laboratory

Quality Control Measures (Laboratory)		
Equipment	Reference	Frequency
Filter Conditioning Environment	40 CFR Part 50, Appendix L, Sections 8.0 & 10.0	All filters
Filters	Quality Assurance Guidance Document 2.12, Section 7.7	All filters
Filter Weighing	40 CFR Part 50, Appendix L, Section 10.10; Quality Assurance Guidance Document 2.12, Sections 7.9, 7.10, & 7.11	Within 30 days of collection
Working Mass standards	Quality Assurance Guidance Document 2.12, Sections 7.9 &7.11	Every weighing session

Section 9.4.0 PM_{10} Quality Assurance (QA) Practices

The requirements for the Quality Assurance of the criteria pollutants are in the 40 CFR Part 58. Each criteria pollutant has a specific section. See Tables 9.8a and 9.8b (Hi-Vol) and 9.9a (Lo-Vol) and 9.9b (Lo-Vol) samplers for specific references and equipment.

Section 9.4.1 PM_{10} (Hi-Vol) Quality Assurance (QA)

The District utilizes a PM_{10} transfer standard that is certified annually by the CARB laboratory. This transfer standard is used to audit the Hi-Vol PM_{10} samplers in the network. Note, all PM_{10} (Hi-Vol) samplers are calibrated bi-annually (twice the minimum frequency); audits are performed in the intervening months. This means audits reflect the previous quarter's calibration only and not the last audit 6 months earlier.

Table 9.8a PM_{10} (Hi-Vol) QA Measures for the Field

	Quality Assurance Measures (Field)		
	Internal Local (District) Audits	Collocation	External State (ARB) Audits
Frequency	Every site 2/year= 50% sites/quarter	Same frequency and time as the primary sampler	75% of the monitors/year randomly selected
Personnel	With personnel who do not perform the calibrations	n/a	Manually performed by randomly selected personnel
Reference (Field)	40 CFR Part 58 App. A, Section 3.2.4	40 CFR Part 58 App. A, Section 3.3.1	n/a
Equipment Used (Field)	With a Flow Transfer Standard, Voltmeter, Manometer, and Thermocouple used for audits only	Same equipment as the primary sampler	With a Flow Transfer Standard, Voltmeter, Manometer, and Thermocouple
Certifications	Flow = 1/yr Temp = Every 2 yrs	Flow = 1/yr Temp = Every 2 yrs	See ARB
Equipment Used (Filter Media)	Quality Assurance Guidance Document 2.12 Sections 7 & 9	Quality Assurance Guidance Document 2.12 Sections 7 & 9	n/a
Certifications	n/a	n/a	n/a

Table 9.8b PM$_{10}$ (Hi-Vol) QA Measures for the Laboratory

Quality Assurance Measures (Laboratory)		
Equipment	Reference	Frequency
Temperature & Relative Humidity	n/a	Quarterly
Balance	Quality Assurance Guidance Document 2.11 (Table 7-1)	Yearly
Primary Standards	Quality Assurance Guidance Document 2.11 Section 9	Yearly

Section 9.4.2 PM$_{10}$ (Lo-Vol) Quality Assurance (QA)

The District utilizes a PM$_{10}$ transfer standard that is certified annually by the manufacturer. This transfer standard is used to audit the Lo-Vol PM$_{10}$ samplers in the network

Table 9.9a PM$_{10}$ (Lo-Vol) QA Measures for the Field

	Quality Assurance Measures (Field)			
	Internal Local (District) Audits	Collocation	External State (ARB) Audits	External Federal (PEP) Audits
Frequency	Every site 4/yr	Same frequency and time as the primary sampler	75% of the monitors/yr randomly selected personnel	Audits ≤ 5sites/yr
Personnel	With personnel who do not perform the calibrations	n/a	Manually performed by randomly selected personnel	Manually performed by randomly selected personnel
Reference (Field)	40 CFR Part 58 App. A, Section 3.2.4	40 CFR Part 58 App. A, Section 3.2.5.1 (a)	40 CFR Part 58 App. A, Section 3.2.4	40 CFR Part 58 App. A, Section 3.2.7
[redacted]				
Equipment Used (Field)	With Flow Transfer Standard and Thermocouple used for audits only	Same equipment as the primary sampler	See ARB	See EPA
Certifications	Flow = 1/yr Temp = Every 2 yrs	Flow = 1/yr Temp = Every 2 yrs	See ARB	See EPA

Table 9.9b PM_{10} (Lo-Vol) QA Measures for the Laboratory

Quality Assurance Measures (Laboratory)		
Equipment	Reference	Frequency
Working Mass standards	Quality Assurance Guidance Document 2.12 Sections 3.3, 4.3.7 & 7.3	Yearly
Temperature & Relative Humidity	Quality Assurance Guidance Document 2.12 Section 3.3, 4.3.7, & 7.6	Quarterly
Balance	Quality Assurance Guidance Document 2.12 Section 3.3, 4.3.6, & 7.2	Yearly
Working Mass standards vs. primary standards	Quality Assurance Guidance Document 2.12 Sections 3.3, 4.3 & 7.3	Quarterly
Primary standards	Quality Assurance Guidance Document 2.12 Section 3.3, 4.3 & 7.3	Yearly

Section 9.4.3 PM_{10} Quality Assurance (QA) Collocation Requirements, Hi-Vol

According to 40 CFR Part 58, Appendix A, Section 3.2.5.1, 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, as shown in Table 9.10.

Table 9.10 PM_{10} (Hi-Vol) QA- Collocation

			Collocated Monitors				
Minimum Number of Monitors Required (#)	Number of Active Monitors (#)	Number of Active Monitors Designated as Primary Monitors (#)	Number of Monitors Needed for Collocation = 15% x Number of Active Primary FRM Sequential Samplers Rounded Up (#)	Number of Active Monitors Used for Collocation (#)	Number of Monitors Needed for Collocation (#)	Location of Collocated Site(s) (name)	Collocated Site AQS ID (#)
2 - 4	6	6*	5 x (15%) = 1	1	None	Chula Vista (CVA)	06-073-0001

* The PM_{10} sampler at El Cajon is a Lo-Vol sampler with a different method code than the Hi-Vol samplers; therefore, it is not included in the total for collocation.

Section 9.4.4 PM_{10} (Lo-Vol) Quality Assurance (QA) Collocation, Lo-Vol

The District has only 1 (one) PM_{10} (Lo-Vol) sampler and it is for the NCore PMcoarse requirement. Collocation is not required.

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, PMcoarse (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) were added to that station. Table 10.1 has a listing of the equipment. Please note:

- The El Cajon station was temporarily relocated to the Gillespie Field area off of Floyd Smith Drive, this station is called Floyd Smith Drive (FSD).

The criteria gaseous pollutants for trace, ambient, and total levels, are referenced to ambient standards from the NAAQS Standards of that year (Table 10.0).

Figure 10.0 NCore Network Map

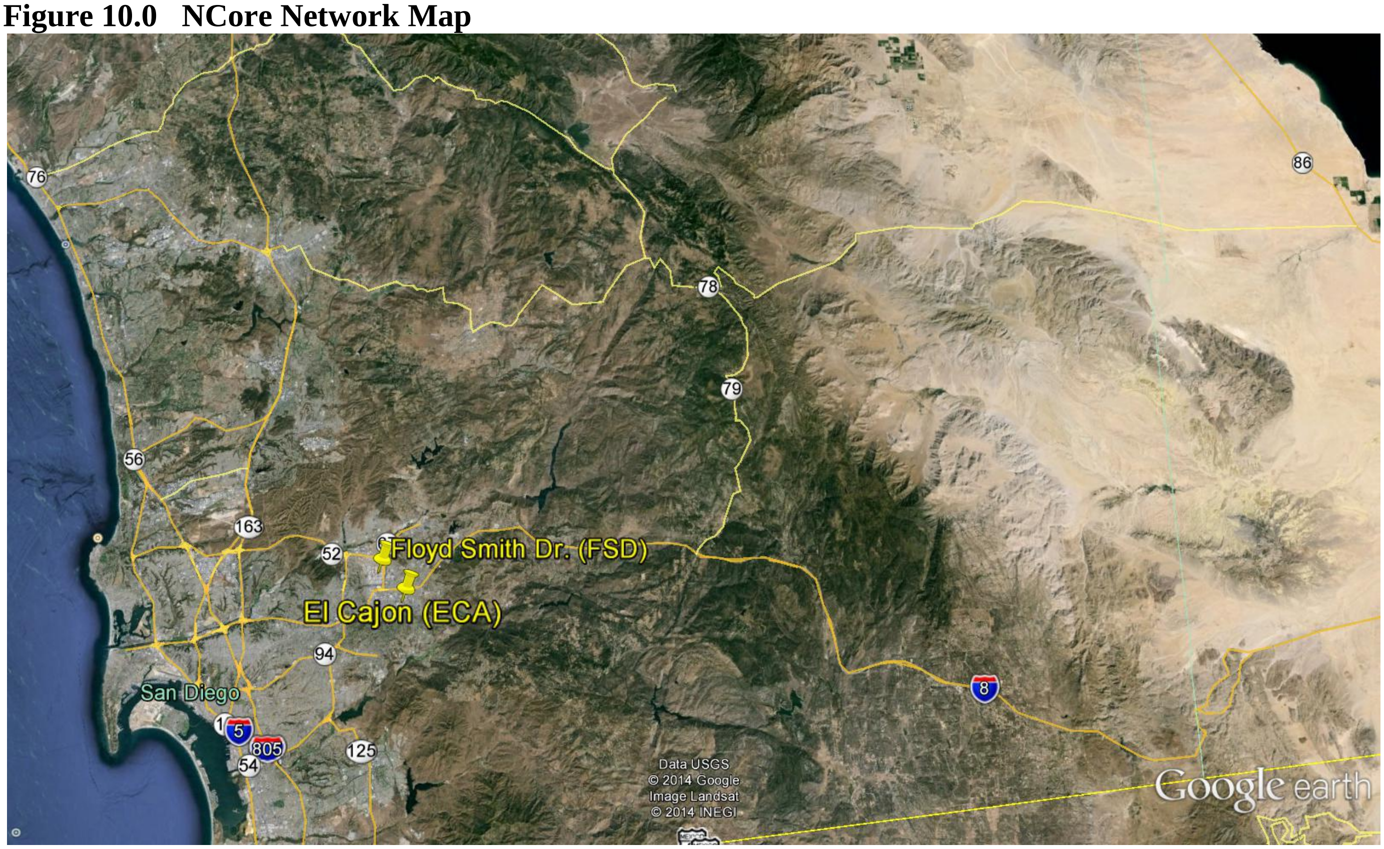


Table 10.0 NCore Pollutants State and National Standards for the Year

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards		National Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone (O_3)	1 Hour	0.09 ppm (180 μg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 μg/m^3)		0.075 ppm (147 μg/m^3)		
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		—		
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	
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)		—	—	
Nitrogen Dioxide (NO_2)[9]	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	
Sulfur Dioxide (SO_2)[10]	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)	—	
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 10.1 NCore Sampling Network

Parameter	Type	Monitor Type	Affiliation	Sampling Method	Spatial Scale	Site Type	Objective (Federal)	Analysis By	Sampling Frequency	Equipment
O_3	(Ambient) (Continuous)	SLAMS	PAMS, NCore	UV	NS	PE	Data, NAAQS	APCD	7/24	Thermo 49i
NOy-TLE	(NCore) (Continuous)	SLAMS	NCore	CL	NS	PE	Data	APCD	7/24	Thermo 42i-NOy
CO-TLE	(NCore) (Continuous)	SLAMS	NCore	IR	NS	PE	Data, NAAQS	APCD	7/24	Thermo 48i-TLE
SO_2-TLE	(NCore) (Continuous)	SLAMS	NCore	FL	NS	PE	Data, NAAQS	APCD	7/24	Thermo 43i-TLE
Pb	(NCore) (Hi-Vol)	SLAMS	NCore	HV	NS	PE	Data, NAAQS	APCD	1:6	Tisch TE-5170BLVFC+
PM_{10}	(NCore) (Lo-Vol)	SLAMS	NCore	SQ	NS	PE	Data, NAAQS	APCD	1:3	Thermo 2025 w/o VSCC
$PM_{2.5}$	(FEM) (Continuous)	SLAMS	NCore	SI	NS	PE	Data, NAAQS	APCD	7/24	Met One BAM
	(FRM) (Sequential)	SLAMS	NCore	CT	NS	PE	Data, NAAQS	APCD	1:3	Thermo 2025 w/ VSCC
*PM_{coarse}	(FRM) (Paired samplers)	SLAMS	NCore	SQ	NS	PE	Data	APCD	1:3	Thermo 2025 (PM_{10})- Thermo 2025 ($PM_{2.5}$)
CSN	$PM_{2.5}$-Carbon (Simultaneous)	SLAMS	NCore, CSN	SQ	NS	PE	Research	EPA	1:6	University Research Glassware 3000N
STN	(Metals) (Simultaneous)	SLAMS	NCore, STN	SP	NS	PE	Research	EPA	1:6	Xontech 924
	(Inorganic Ions) (Simultaneous)	SLAMS	NCore, STN	SP	NS	PE	Research	EPA	1:6	Xontech 924
	Internal Temperature	SLAMS	NCore	SP	NS	PE	Data	APCD	7/24	Qualimetrics
Meteorological Parameters	External Temperature	SLAMS,	NCore, PAMS	N/A	NS	N/A	Data	APCD	7/24	Rotronics
	Relative Humidity	SLAMS	NCore, PAMS	N/A	NS	N/A	Data	APCD	7/24	Rotronics
	Wind Speed/ Wind Direction	SLAMS	NCore, PAMS	N/A	NS	N/A	Data	APCD	7/24	Qualimetrics

*PM_{coarse} is calculated via the subtraction of $PM_{2.5}$ (Lo-Vol) from PM_{10} (Lo-Vol).

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 10.0.1 NCore – Sampling Frequency, Equipment Used, and 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 Sampling 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
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
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)	$PM_{2.5}$	88502	µg/m^3 LC	105	1-Hr	1	Met One BAM 1020 w/VSCC	Beta Attenuation	773 n	7/24	EQPM-0308-170
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 10.1.0 NCore Trends in the SDAB

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 PMcoarse Concentrations

*PMcoarse ($\mu g/m^3$)	2011	2012	2013	2014
Max. 24-Hr. Concentration	30.7	29.0	29.6	21.8
98th Percentile of 24-Hr Concentration	24.8	26.0	25.7	21.8
Average of the Quarterly Means	13.2	13.1	13.9	13.8

*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 CO-TLE Concentrations

CARBON MONOXIDE (ppm)	2011	2012	2013	2014
Maximum 1-Hr. Concentration	1.8	2.3	1.9	2.0
Maximum 8-Hr. Concentration	1.3	1.9	1.2	1.8

FSD only

Table 10.3c NCore SO_2-TLE Concentrations

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

FSD only

Table 10.3d1 NCore NOy-NO Concentrations

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

*Note: NOy monitor does not have FRM or FEM designation and cannot be compared to any NAAQS.
**Insufficient samples

Table 10.3d2 NO_2 Concentrations from the collocated NOx Monitor

*NO_2 (ppm)	2011	2012	2013	2014
Maximum 1-Hr. Concentration	0.049	0.059	0.051	**
Annual Average	0.012	0012	0.012	**

*Note: For a NO_2 vs. NOy-NO comparison, see Appendix A
**Insufficient samples

Table 10.3e NCore Pb Concentrations

LEAD ($\mu g/m^3$)	2012	2013	2014
Annual Average	0.005	0.005	0.009
Maximum 3-Month Average	0.006	0.007	0.011

FSD and ECA combined for 2014

Section 10.2.0 NCore Federal Design Criteria Requirements

Requirements for the number of NCore monitors are in the CFR annual update on July 1 of every year. The 2011 edition of 40 CFR Part 58, Appendix D, "Network Design Criteria for Ambient Air Quality Monitoring", Section 3, "Design Criteria for NCore Sites", subsection (b). Note: only the passages applicable to the SDAB have been cited.

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

Section 10.2.1 NCore Design Criteria

NCore Design criteria requirements are based upon EPA designations and are population-based. San Diego meets those requirements. The NCore program requirements are in the 40 CFR Part 58, Subpart G-Federal Monitoring, Appendix D, Section 3-Design Criteria for NCore sites. Tables 10.4 and 10.5 summarize the NCore Design Criteria specifically for the SDAB.

Table 10.4 NCore Design Value Minimum Number of Sites Required

MSA	County	Population from 2010 Census (#)	Minimum Number of Sites Required (#)	Number of Active Sites (#)	Number of Sites Needed
San Diego	San Diego	3.2 million	1	1	None

Table 10.5 NCore Design Value for the Types of Monitors Required

Parameters	O_3	NOy	CO-TLE	SO_2-TLE	Pb-TSP	$PM_{2.5}$-FRM	$PM_{2.5}$-FEM	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	1	1	1	1	1	1	1	1 each= 1 set
Number of Monitors Needed (#)	None	None	None	None	None	None	None	None	None

Section 10.3.0 NCore Quality Control (QC)

Requirements for Quality Control of the monitors are in 40 CFR Parts 50 and 58 and the NCore Technical Assistance Document (TAD). Table 10.6 has the specific references and equipment.

Table 10.6 NCore QC Measures

Quality Control Measures					
Pollutant/Program		**Calibration**	**Flow Rate Verification**		
Pb-TSP		See Pb, Section 8.6	See Pb, Section 8.6		
PM (Lo-Vol)$_{10,\ 2.5,\ coarse}$		See $PM_{2.5}$, Section 9.6	See $PM_{2.5}$, Section 9.6		
Surface Meteorology		Sent to Manufacturer	Not Applicable		
Pollutant/Program		**Calibration**	**Zero/Span**	**Precision Checks**	**Method Detection Limits**
Ozone*		See O_3, Section 4.6	See O_3, Section 4.6	See O_3, Section 4.6	Not Applicable
Carbon Monoxide (CO-TLE)	Frequency	Every quarter	Zero= Every 2 days Span= Every 4 days	Every 4 days	Annually, or if the instrument underwent major repairs
	Personnel	Manually by personnel who do not perform any QA functions	Automated	Automated	Manually by personnel who do not perform any QA functions
	Reference	See NCore TAD, Sections 2.6.1 & 2.72	See NCore TAD, Section 2.7.3	See NCore TAD, Section 2.7.4	See NCore TAD, Section 2.3.1.6
Sulfur Dioxide (SO_2-TLE)	Frequency	Every quarter	Zero= Every 2 days Span= Every 4 days	Every 4 days	Annually, or if the instrument underwent major repairs
	Personnel	Manually by personnel who do not perform any QA functions	Automated	Automated	Manually by personnel who do not perform any QA functions
	Reference	See NCore TAD, Sections 3.6.1 & 2.72	See NCore TAD, Section 3.7.3	See NCore TAD, Section 3.7.4	See NCore TAD, Section 3.3.1.6
Reactive Oxides of Nitrogen (NOy)	Frequency	Every quarter	Zero= Every 2 days Span= Every 4 days	Every 4 days	Annually, or if the instrument underwent major repairs
	Personnel	Manually by personnel who do not perform any QA functions	Automated	Automated	Manually by personnel who do not perform any QA functions
	Reference	See NCore TAD, Sections 4.6.1 & 2.72	See NCore TAD, Section 347.3	See NCore TAD, Section 4.7.4	See NCore TAD, Section 4.3.1.6
Equipment used for		**Calibrations**	**Zero/Span**	**Precision Checks**	**Method Detection Limits**
Equipment used-automated (Calibrator)		With Level 1 dynamic dilution instrumentation used for calibrations, precision checks, zeroes, and spans only, specific to that station	With Level 1 dynamic dilution instrumentation used for calibrations, precision checks, zeroes, and spans only, specific to that station	With Level 1 dynamic dilution instrumentation used for calibrations, precision checks, zeroes, and spans only, specific to that station	With Level 1 dynamic dilution instrumentation used for calibrations, precision checks, zeroes, and spans only, specific to that station
Diluent used (Zero Air Generator)		With a zero air generator specific to that station.	With a zero air generator specific to that station.	With a zero air generator specific to that station.	With a zero air generator specific to that station.
Certifications		Calibrator= Quarterly; O_3 Transfer standard= Semi-annually	Calibrator= Quarterly; O_3 Transfer standard= Annually	Calibrator= Quarterly; O_3 Transfer standard= Annually	Calibrator= Quarterly; O_3 Transfer standard= Annually

*Ozone is calibrated and precision checked with a Level I Dynamic Dilution Instrumentation that is external to the station. That equipment is recertified semi-annually.

Section 10.4.0 NCore Quality Assurance (QA) Practices

Requirements for Quality Assurance of the NCore pollutants are in 40 CFR Part 58. Each criteria pollutant has a specific section. See Table 10.7 for the specific references and equipment.

Table 10.7 NCore QA Measures

Quality Assurance Measures					
Pollutant/Program		**Internal (Local/APCD)**	**External (State/CARB)**	**External (Federal/EPA/Contractor)**	**Collocation**
Pb-TSP		See Pb, Section 8.7	See Pb, Section 8.7	See Pb, Section 8.7	See Pb, Section 8.7
PM (Lo-Vol)$_{10, 2.5, coarse}$		See $PM_{2.5}$, Section 9.7	See $PM_{2.5}$, Section 9.7	See $PM_{2.5}$, Section 9.7	See $PM_{2.5}$, Section 9.7
Surface Meteorology		Quality Assurance Handbook for Air, Volume IV: Meteorological Measurement V2.0, Pollution Measurement Systems	See CARB	See EPA	Not Applicable
Ozone		See O_3, Section 4.7	See O_3, Section 4.7	See O_3, Section 4.7	Not Applicable
Carbon Monoxide (CO-TLE)	Frequency	Every quarter	Not Applicable	Not Applicable	Not Applicable
	Personnel	Manually by personnel who do not perform any QC functions	Not Applicable	Manually performed by randomly selected personnel	Not Applicable
	Reference	40 CFR Part 58, App. A	Not Applicable	NCore TAD 5.4.1	Not Applicable
Sulfur Dioxide (SO_2-TLE)	Frequency	Every quarter	Not Applicable	Not Applicable	Not Applicable
	Personnel	Manually by personnel who do not perform any QC functions	Not Applicable	Manually performed by randomly selected personnel	Not Applicable
	Reference	40 CFR Part 58, App. A	Not Applicable	NCore TAD 5.4.1	Not Applicable
Reactive Oxides of Nitrogen (NOy)	Frequency	Every quarter	Not Applicable	Not Applicable	Not Applicable
	Personnel	Manually by personnel who do not perform any QC functions	Not Applicable	Manually performed by randomly selected personnel	Not Applicable
	Reference	40 CFR Part 58, App. A	Not Applicable	NCore TAD 5.4.1	Not Applicable
Equipment used for		**Internal (Local/APCD)**	**External (State/CARB)**	**External (Federal/EPA/Contractor)**	**Collocation**
Equipment used-automated (Calibrator)		With Level 1 dynamic dilution instrumentation used for audits only	See CARB	See EPA	Not Applicable
Diluent used (Zero Air Generator)		With a zero air generator used for audits only	See CARB	See EPA	Not Applicable
Certifications		Calibrator= Quarterly; O_3 Transfer standard= Semi-annually; Zero Air Generator=1/yr	See CARB	See EPA	Not Applicable

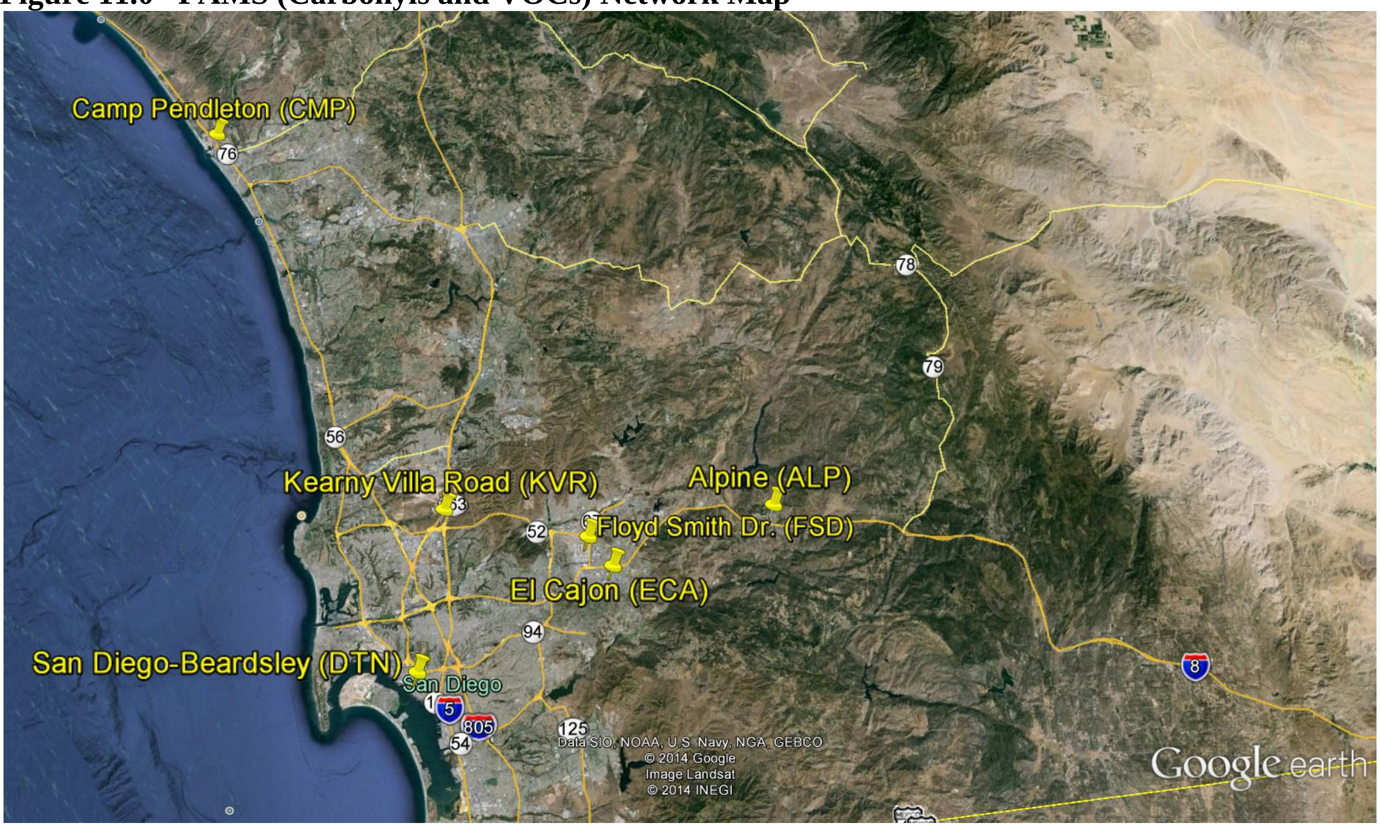
Chapter 11 Photochemical Assessment Monitoring Stations (PAMS)

Section 11.0.0 PAMS Introduction

PAMS and PAMS-related sampling was conducted at four sites (see Figure 11.0). KVR, is a PAMS-Carbonyl site, but due to irreparable failure of the sampler in late 2011, sampling was halted. 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 was temporarily relocated to the Gillespie Field area off of Floyd Smith Drive, this station is called Floyd Smith Drive (FSD).
- PAMS-VOCs at CMP, ALP and ECA
- PAMS-Carbonyls at KVR and ECA
- Unofficial PAMS-Carbonyls at DTN

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[1]	CMP		FSD/ECA[2]		DTN	KVR[3]
	Name	Alpine	Camp Pendleton		El Cajon/ Floyd Smith Dr.		San Diego – Beardsley	Kearny Villa Rd
	Address	2495A W. Victoria Dr.	21441 W. B St		1155 Redwood Ave/ 10537 Floyd Smith Dr		1110A Beardsley St.	Kearny Villa Rd
	Latitude Longitude	32.842324° -116.767885°	33.217063° -117.396169°		32.791210° -116.942104°/ 32.817907° -116.968302°		32.701492° -117.149663°	32.845722° -117.123983°
	AQS ID	06-073-1006	06-073-1008		06-073-0003/ 06-073-1018		06-073-1010	06-073-1016
PAMS	Monitor Type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS	UNPAMS	SLAMS
	Method	Canister	Canister	Canister	Canister	Cartridges	Cartridges	Cartridges
	Affiliation	PAMS (Type III)	PAMS (Type I)	PAMS (Type I)	PAMS (Type II)	PAMS (Type II)	UNPAMS	PAMS (Type II)
	Spatial Scale	US	NS	NS	NS	NS	NS	NS
	Site Type	MXO	UPBD	QA	MXP	MXP	MXP	MXP
	Objective (Federal)	Research	Research	Research	Research	Research	Research	Research
	Analysis By	APCD	APCD	APCD	APCD	APCD	APCD	APCD
	Frequency	1:6	1:6	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	Xontech 924	Xontech 925

[1]This site is temporarily located across the street from the original location; it is projected to relocate back in 2015.

[2] ECA station temporarily relocated to the FSD area

[3] The station is still classified as a PAMS-Carbonyl location, but due to irreparable failure of the carbonyl collection sampler, the APCD was directed by the EPA to put the sampling on hiatus until the EPA can redesign the PAMS network.

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 11.0.1 PAMS Sampling Frequency & Equipment Used

Requirements for the sampling frequency of monitors for pollutants are in the 40 CFR Part 58, Subpart G-Federal Monitoring, Appendix D –"Network Design Criteria for Ambient Air Quality Monitoring", Section 5 "Network Design for Photochemical Assessment Monitoring Stations (PAMS)", *Table D–6* "Minimum Required PAMS Monitoring Locations and Frequencies".

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.

Table 11.1a 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 11.2b	126
Carbonyl Compounds	n/a	Xontech 925	DNPH cartridges	1:6	HPLC	Table 11.2c	202
Carbonyl Compounds	n/a	Xontech 924	DNPH cartridges	1:6	HPLC	Table 11.2c	202

Table 11.1b 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 11.1c PAMS Carbonyls

Compound	Parameter
Formaldehyde	43502
Acetaldehyde	43503
Acetone	43551

Section 11.1.0 PAMS Federal Design Criteria Requirements

Federal requirements for the number of monitors for PAMS are 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 5 "Network Design for Photochemical Assessment Monitoring Stations (PAMS)". Note: only the passages applicable to the SDAB have been cited.

5. Network Design for Photochemical Assessment Monitoring Stations (PAMS)
The PAMS program provides more comprehensive data on O3 air pollution in areas classified as serious, severe, or extreme nonattainment for O3 than would otherwise be achieved through the NCore and SLAMS sites. More specifically, the PAMS program includes measurements for O3, oxides of nitrogen, VOC, and meteorology.

5.1 PAMS Monitoring Objectives.
PAMS design criteria are site specific. Concurrent measurements of O3, 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 O3 precursor source areas and predominant wind directions associated with high O3 events. Specific monitoring objectives are associated with each location. The overall design should enable characterization of precursor emission sources within the area, transport of O3 and its precursors, and the photochemical processes related to O3 nonattainment. Specific objectives that must be addressed include assessing ambient trends in O3, oxides of nitrogen, VOC species, and determining spatial and diurnal variability of O3, 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.

- *(a) Type 1 sites are established to characterize upwind background and transported O3 and its precursor concentrations entering the area and will identify those areas which are subjected to transport.*
- *(b) Type 2 sites are established 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.*
- *(c) Type 3 sites are intended to monitor maximum O3 concentrations occurring downwind from the area of maximum precursor emissions.*
- *(d) Type 4 sites are established to characterize the downwind transported O3 and its precursor concentrations exiting the area and will identify those areas which are potentially contributing to overwhelming transport in other areas.*

5.2 Monitoring Period. 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.

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 NOy 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

No	Measurement	Where required	Sampling frequency[1] (all daily except for upper air meteorology)
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.[3]
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.

[1] Daily or with an approved alternative plan.
[2] Speciated VOC is defined in the "Technical Assistance Document for Sampling and Analysis of Ozone Precursors", EPA/600-R-98/161, September 1998.
[3] Approved ozone monitoring season as stipulated in Table D-3 of this appendix.

5.4 Transition Period. A transition period is allowed for phasing in the operation of newly required PAMS programs (due generally to reclassification of an area into serious, severe, or extreme nonattainment for ozone). Following the date of redesignation or reclassification of any existing O3 nonattainment area to serious, severe, or extreme, or the designation of a new area and classification to serious, severe, or extreme O3 nonattainment, a State is allowed 1 year to develop plans for its PAMS implementation strategy. Subsequently, a minimum of one Type 2 site must be operating by the first month of the following approved PAMS season. Operation of the remaining site(s) must, at a minimum, be phased in at the rate of one site per year during subsequent years as outlined in the approved PAMS network description provided by the State.

Section 11.1.1 PAMS Design Criteria

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 "Network Design for Photochemical Assessment Monitoring Stations (PAMS)", subsection 5.1 list the general requirements and definitions needed to fulfill the PAMS Design Criteria. The exact minimum requirements are listed in *Table D-6*; Tables 11.2a-11.2l list these requirements.

Table 11.2a Design Criteria for the Minimum Number of PAMS VOC Sites Required (Item #1 from *Table D-6*/"Where required")

Minimum Number of Sites Required (#)	Number of Active Sites (#)	Number of Sites Needed (#)
2	2	None

Table 11.2b Design Criteria for the Minimum Number of PAMS VOC Type II Sites Required (Item #1 from *Table D-6*/"Where required")

Minimum Number of Type II Sites Required (#)	Number of Active Type II Sites (#)	Number of Type II Sites Needed (#)	Type II Site (Name)	Type II Site AQS ID (#)
1	1	None	El Cajon (ECA)	06-073-0003

Table 11.2c Design Criteria for the Minimum Number of PAMS VOC non-Type II sites Required

Minimum Number of non-Type II Sites Required (#)	Number of Active non-Type II Sites (#)	Number of Non-Type II Sites Needed (#)	non-Type II Sites (Name)	Site Designation	Type II Site AQS ID (#)
1	2	None	Alpine (ALP)	Type III	06-073-1006
			Camp Pendleton (CMP)	Type I	06-073-1008

Table 11.2d Design Criteria for the Minimum Number of PAMS VOC Minimum Sampling Frequency during PAMS Season (Item #1 from *Table D-6*/"Sampling frequency")

Is There a Continuous Total NMHC analyzer? (yes/no)	How many 3-Hr Samples* (#)	Time of Day? (#)
No	4	2-morning samples 2-afternoon samples

*The District monitors for PAMS VOCs under the California Alternative PAMS Sampling Plan.

Table 11.2e Design Criteria for the Minimum Number of PAMS Carbonyls Sites Required (Item #2 from *Table D-6*/"Where required")

Minimum Number of Type II sites Required (#)	Number of Active Type II Sites (#)	Number of Sites Needed (#)	Minimum Number of Carbonyl Sampling Required (#)	Number of Active Carbonyl Sampling Sites (#)	Number of Carbonyl Sampling Sites Needed (#)		Number of Unofficial Carbonyl Sampling Sites (#)
1	1*	None	1	2*	None		1

Table 11.2f PAMS Carbonyls Design Criteria Actual (Item #2 from *Table D-6*/"Where required")

Location of Type II Carbonyl Sampling Locations (Name)	Location of Type II Carbonyl Sampling Locations AQS ID (#)		Location of Unofficial Carbonyl Sampling Location (Name)	Location of Unofficial Carbonyl Sampling Location AQS ID (#)
El Cajon (ECA) Kearny Villa Rd* (KVR)	06-073-0003 06-073-1016		San Diego-Beardsley (DTN)	06-073-1010

Table 11.2g Design Criteria for the Minimum Number of PAMS NOx Monitors Required (Item #3 from *Table D-6*/"Where required")

Minimum Number of NOx Monitors Required= Number of Type II Sites (#)	Number of Active Type II Sites with NOx Monitors* (#)	Number of NOx Monitors Needed (#)	Location of Type II Sites with NOx Monitors (name)	Location of Type II Sites with NOx Monitors AQS ID (#)
2	2	None	El Cajon (ECA) Kearny Villa Rd (KVR)	06-073-0003 06-073-1016

*The carbonyl sampler experienced a catastrophic, irreparable failure at the San Diego-Kearny Villa Rd. site. In 2011, the EPA Region IX Authority instructed the District to suspend replacing the sampler until the PAMS program is re-engineered.

Table 11.2h Design Criteria for the Minimum Number of PAMS NOy Monitors Required (Item #4 from *Table D-6*/"Where required")

Minimum Number of NOy Monitors Required Either at a Type I or Type III Site (#)	Number of Active Type I or Type III Site (#)	Number of Active NOy Monitors at a Type I or Type III Site (#)	Number of NOy Monitors Needed (#)	NOy Monitor Location (name)	NOy Monitor Location AQS ID (#)
1	2	1*	None	El Cajon* (ECA)	06-073-0003

*The District measures for NOy at the NCore location, a PAMS Type II 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.

Table 11.2i Design Criteria for the Minimum Number of PAMS CO Monitors Required (Item #5 from *Table D-6*/"Where required")

Minimum Number of CO Monitors Required at a Type II Site (#)	Number of Active Type II Sites* (#)	Number of Active CO Monitors at a Type II Site (#)	Number of CO Monitors Needed (#)	CO Monitor Location (name)	CO Monitor Location AQS ID (#)
1	1	1	None	El Cajon (ECA)	06-073-0003

Table 11.2j Design Criteria for the Minimum Number of PAMS O_3 Monitors Required (Item #6 from *Table D-6*/"Where required")

Minimum Number of O_3 Monitors Required= Total Number of PAMS Sites (#)	Number of Active PAMS Sites with O_3 Monitors (#)	Number of O_3 Monitors Needed (#)	PAMS Sites Locations (name)	PAMS Sites AQS ID (#)
5	5	None	El Cajon (ECA)	06-073-0003
			Alpine (ALP)	06-073-1006
			Camp Pendleton (CMP)	06-073-1008
			Kearny Villa Rd. (KVR)	06-073-1016
			Downtown (unofficial) (DTN)	06-073-1010

Table 11.2k Design Criteria for the Minimum Number of PAMS Surface Meteorology Sensors Required (Item #7 from *Table D-6*/"Where required")

Minimum Number of Surface Meteorology Sites Required= Number of PAMS Sites (#)	Number of Active PAMS Sites with Surface Meteorology (#)	Number of Surface Meteorology Sites Needed (#)	Surface Meteorology Sites Locations (name)	Surface Meteorology Sites AQS ID (#)
5	5	None	El Cajon (ECA)	06-073-0003
			Alpine (ALP)	06-073-1006
			Camp Pendleton (CPD)	06-073-1008
			Kearny Villa Rd. (KVR)	06-073-1016
			Downtown (unofficial) (DTN)	06-073-1010

Table 11.2l Design Criteria for the Minimum Number of PAMS Upper Air Meteorology Sensors Required (Item #8 from *Table D-6*/"Where required")

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)	Upper Air Meteorology Site Location AQS ID (#)
1	1	None	*Kearny Villa Road	06-073-1016

*No longer operational

11.2.0 PAMS – Quality Control (QC) Practices

There are no references in the 40 CFR regarding Quality Control for the PAMS program.

Requirements for Quality Control for the PAMS-Carbonyl program are in the Technical Assistance Document (TAD), TO-11A "Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC) [Active Sampling Methodology]" and the SDAPCD Standard Operating Procedure (SOP). The Quality Control measures taken to ensure the quality of the data are too voluminous to print here. Please refer to the San Diego Air Pollution Control District's Standard Operating Procedure for the necessary documentation.

Requirements for Quality Control for the PAMS-VOC program are in the Technical Assistance Document, TO-14A "Determination of Volatile Organic Compounds (VOCs) In Ambient Air Using Specially Prepared Canisters with Subsequent Analysis by Gas Chromatography", and the SDAPCD Standard Operating Procedure. The Quality Control measures taken to ensure the quality of the data are too voluminous to print here. Please refer to the San Diego Air Pollution Control District's Standard Operating Procedure for the necessary documentation.

11.3.0 PAMS – Quality Assurance (QA) Practices

There are no references in the 40 CFR regarding Quality Assurance for the PAMS program.

Requirements for the Quality Assurance for the PAMS-Carbonyl program are in the Technical Assistance Document, TO-11A "Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC) [Active Sampling Methodology]" and the SDAPCD Standard Operating Procedure (SOP). The Quality Assurance measures taken to ensure the quality of the data are too voluminous to print here. Please refer to the San Diego Air Pollution Control District's Standard Operating Procedure for the necessary documentation.

Requirements for Quality Assurance for the PAMS-VOC program are in the Technical Assistance Document, TO-14A "Determination of Volatile Organic Compounds (VOCs) In Ambient Air Using Specially Prepared Canisters with Subsequent Analysis by Gas Chromatography", and the SDAPCD Standard Operating Procedure. The Quality Assurance measures taken to ensure the quality of the data are too voluminous to print here. Please refer to the San Diego Air Pollution Control District's Standard Operating Procedure for the necessary documentation

The PAMS-Carbonyl and the PAMS-VOC teams participate in the EPA Region IX's annual Performance Evaluation program. When offered, the PAMS-Carbonyl and PAMS-VOC team participate in the statewide and nationwide comparison study offered by the CARB and EPA-Headquarters, respectively.

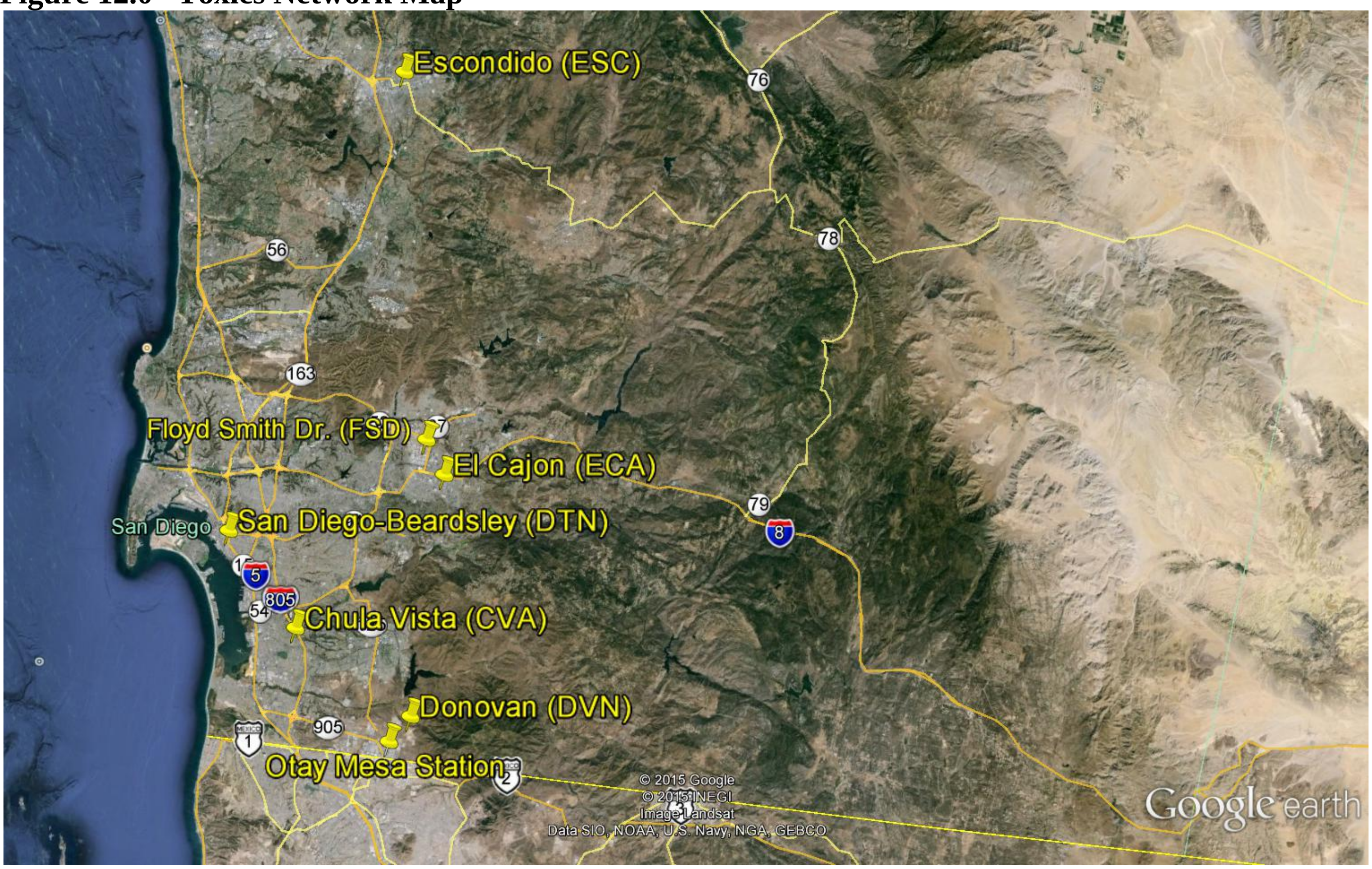
Chapter 12 Toxics Program

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 El Cajon station was temporarily relocated to the Gillespie Field area off of Floyd Smith Drive, this station is called Floyd Smith Drive (FSD).
- Toxics-VOC at OTM, DTN, and ESC
- Toxics-Metals at DTN and OTM
- Toxics-Metals, VOC, and Carbonyls (CARB CA-TAC program) at ECA & FSD (only) and CVA

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/ECA[1]				ESC	DTN		OTM/DVN[2]	
	Name	Chula Vista				El Cajon/ Floyd Smith Dr.				Escondido	San Diego – Beardsley		Otay Mesa/ Donovan	
	Address	80 E. J St.				1155 Redwood Ave/ 10537 Floyd Smith Dr				600 E. Valley Pkwy	1110A Beardsley St.		1100B Paseo Intl./ 480 Alta Rd.	
	Latitude Longitude	32.952106° -117.264086°				32.791210° -116.942104°/ 32.817907° -116.968302°				33.127730° -117.075379°	32.701492° -117.149663°		32.552199° -116.937764°/ 32.578267° -116.921359°	
	AQS ID	06-073-0001				06-073-0003/ 06-073-1018				06-073-1002	06-073-1010		06-07- 2007/ 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-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	Not Applicable
	Method	Canister	Filter	Filter	Cartridges	Canister	Filter	Filter	Cartridges	Canister	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	Not Applicable
	Spatial Scale	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	MI	MI
	Site Type	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	PE	SO	SO
	Objective (Federal)	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
	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
	Equipment	Xontech 910/912	Xontech 924	Xontech 924	Xontech 924	Xontech 910/912	Xontech 924	Xontech 924	Xontech 924	Xontech 910A FSL	Xontech 910A FSL	Xontech 924	Xontech 910A FSL	Xontech 924

[1] ECA station temporarily relocated to the FSD area
[2] OTM station relocated to the DVN area

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 12.0.1 Toxics Sampling Frequency & Equipment Used

Requirements for the sampling frequency of monitors for pollutants in the Toxics program are set by the EPA. 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 12.1a Toxics Equipment

Pollutant	Abbrev-iation	Collection Equipment	Collection Method	Collection Frequency	Analytical Method	Parameter Code	Method Code
Volatile Organic Compounds	VOC's	Xonteck 910A-FSL (SDAPCD) Xonteck 910/912 (ARB)	Fused Silica Lined Canister (SDAPCD) Summa Canister (ARB)	1:6 (SDAPCD) 1:12 (ARB)	GC-MS	Table 13.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 12.1b 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		

Section 12.1.0 Toxics Design Criteria Requirements

There are no design criteria for the Toxics program. The monitor placement is decided by the governing air basin authority, the District, according to expected Hazardous Air Pollutant (HAP) levels.

Section 12.2.0 Toxics Quality Control (QC) Practices

There are no references to 40 CFR regarding Quality Control for the Toxics program.

The guidance documentation for the Quality Control for the Toxics-Aldehydes program is in the National Air Toxics Trends Sites (NATTS) Technical Assistance Document, TO-11A "Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC) [Active Sampling Methodology]" and the ARB Standard Operating Procedure. The Quality Control measures taken to ensure the quality of the data are too voluminous to print here. Please refer to the CARB's Standard Operating Procedure for the necessary documentation.

The guidance documentation for the Quality Control for the Toxics-VOC program are in the NATTS Technical Assistance Document (TAD), TO-15 "Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)", and the SDAPCD Standard Operating Procedure. The Quality Control measures taken to ensure the quality of the data are too voluminous to print here. Please refer to the San Diego Air Pollution Control District's Standard Operating Procedure for the necessary documentation.

The guidance documentation for the Quality Control for the Toxics-Metals program are in the NATTS Technical Assistance Document (TAD), IO-3.5 "Determination of Metals in Ambient Particulate Matter Using Inductively Coupled Plasma/Mass Spectrometry (ICP/MS)" and the ARB's Standard Operating Procedure. The Quality Control measures taken to ensure the quality of the data are too voluminous to print here. Please refer to the ARB's Standard Operating Procedure for the necessary documentation.

Section 12.3.0 Toxics Quality Assurance (QA) Practices

There are no references to 40 CFR regarding Quality Assurance for the Toxics program.

The guidance documentation for the Quality Assurance for the Toxics-Aldehyde program are in the NATTS Technical Assistance Document, TO-11A "Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC) [Active Sampling Methodology]" and the ARB's Standard Operating Procedure. The Quality Assurance measures taken to ensure the quality of the data are too voluminous to print here. Please refer to the ARB's Standard Operating Procedure for the necessary documentation.

The guidance documentation for the Quality Assurance for the Toxics-VOC program are in the NATTS Technical Assistance Document (TAD), TO-15 "Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)", and the SDAPCD Standard Operating Procedure. The Quality Assurance measures taken to ensure the quality of the data are too voluminous to print here. Please refer to the San Diego Air Pollution Control District's Standard Operating Procedure for the necessary documentation.

The guidance documentation requirements for the Quality Assurance for the Toxics-Metals program are in the NATTS Technical Assistance Document, IO-3.5 "Determination of Metals in Ambient Particulate Matter Using Inductively Coupled Plasma/Mass Spectrometry (ICP/MS)" and the CARBs' Standard Operating Procedure. The Quality Assurance measures taken to ensure the quality of the data are too voluminous to print here. Please refer to the CARB's Standard Operating Procedure for the necessary documentation.

Section 13 Quality Assurance

Section 13.0.0 Quality Assurance – Introduction

Each pollutant program must satisfy the requirements of 40 CFR Part 58, Appendices A, C, and E. All audits are performed with equipment and gases that are used only for audits. Table 13.0 lists the calibration/certification schedule for the District.

Table 13.0 Quality Assurance Equipment Certification Matrix

Monitor/Sample for	Is Audited	With a(n)	It is Certified	With a(n)	It is Certified/Calibrated	By
O_3 Ambient	Annually	Teledyne API 400/400A	Quarterly	Teledyne API 401 or Teledyne API T703	Annually	CARB
	Annually	Teledyne API 700EU	Semi-Annually	Bios ML-800 series	Annually	The manufacturer
NO_2 Ambient	Annually	Protocol I Gas	2 or 3 years depending on the concentration of the CRM	By the manufacturer	Not Applicable	Not Applicable
	Annually	Teledyne API 700EU	Semi-Annually	Bios ML-800 series	Annually	The manufacturer
CO Ambient	Annually	Protocol I Gas	8 years	By the manufacturer	Not Applicable	Not Applicable
	Annually	Teledyne API 700EU	Semi-Annually	Bios ML-800 series	Annually	The manufacturer
SO_2 Ambient	Annually	Protocol I Gas	4 years	By the manufacturer	Not Applicable	Not Applicable
	Annually	Teledyne API 700EU	Semi-Annually	Bios ML-800 series	Annually	The manufacturer
NOy TLE	Quarterly	Protocol I Gas	2 or 3 years depending on the concentration of the CRM	By the manufacturer	Not Applicable	Not Applicable
	Quarterly	Teledyne API 700EU	Quarterly	Bios ML-800 series	Annually	The manufacturer
CO TLE	Quarterly	Protocol I Gas	8 years	By the manufacturer	Not Applicable	Not Applicable
	Quarterly	Teledyne API 700EU	Quarterly	Bios ML-800 series	Annually	The manufacturer
SO_2 TLE	Quarterly	Protocol I Gas	4 years	By the manufacturer	Not Applicable	Not Applicable
	Quarterly	Teledyne API 700EU	Quarterly	Bios ML-800 series	Annually	The manufacturer
PM_{10} (Hi-Vol)	Semi-Annually	GMW Variable Orifice	Annually	CARB laboratory standard	Annually	CARB
	Semi-Annually	Fluke 87V Voltmeter	Annually	By the manufacturer	Annually	Not Applicable
	Semi-Annually	Merriam Electronic Manometer	Annually	Laboratory external to the District	Annually	Not Applicable
	Semi-Annually	Fischer Thermocouple	Replace every 2 years	Not Applicable	Not Applicable	Not Applicable
PM_{10} (Lo-Vol)	Quarterly	BGI TetraCal Orifice	Annually	By the manufacturer	Annually	Not Applicable
	Quarterly	Fischer Thermocouple	Replace every 2 years	Not Applicable	Not Applicable	Not Applicable
Pb-TSP (Hi-Vol)	Semi-Annually	GMW Orifice	Annually	CARB laboratory standard	Annually	CARB
	Semi-Annually	Fisher Thermocouple	Replace every 2 years	Not Applicable	Not Applicable	Not Applicable
$PM_{2.5}$ (Lo-Vol)	Quarterly	BGI TetraCal Orifice	Annually	By the manufacturer	Annually	Not Applicable
	Quarterly	Fisher Thermocouple	Replace every 2 years	Not Applicable	Not Applicable	Not Applicable
PAMS-Carbonyls	Annually	BIOS-220 series	Annually	By the manufacturer	Annually	Not Applicable
TOXICS-Metals	Annually	BIOS 220 series	Annually	By the manufacturer	Annually	Not Applicable
Zero Air Generator	Annually	Teledyne API 701H Zero Air Generator (Audit)	Annually	By the District laboratory	Annually	Not Applicable
$PM_{2.5}$ Gravimetric Analysis Room	Quarterly	Visala	Annually	By the manufacturer	Annually	Not Applicable
	Quarterly	Visala	Annually	By the manufacturer	Annually	Not Applicable

Section 13.1.0 Quality Assurance – Programs

There are several audit programs external to the District in which we participate.

Section 13.1.1 Quality Assurance – Local (SDAPCD)

The District performs our own audits on all the criteria pollutant instrumentation. They are conducted by personnel who do not calibrate any of the monitors and with equipment that is not used for any QC function.

Section 13.1.2 Quality Assurance – State

The CARB QA section annually audits about 75% of the criteria pollutant monitors in the SDAB. As part of the annual audit, the CARB QA team conducts siting evaluations. These include physical measurements and observations of each station. They are: probe height above ground level, meteorological sensors above ground level, distance from trees, type of ground cover, residence time, obstructions to air flow, distance to local sources, topography, predominant wind direction, probe inlet material, etc. All CARB audits are performed by CARB personnel or their designee. They are scheduled by CARB personnel, but coordinated with District personnel.

Section 13.1.3 Quality Assurance – Federal

The $PM_{2.5}$ program participates in the EPA Performance Evaluation Program (PEP) program in which about five sites are audited per year. All PEP audits are performed by EPA personnel or their designee. They are scheduled by EPA personnel and are unannounced to the District until the day of or the day before the test.

The Toxics-VOCs program participates in State, Regional, and Federal Performance Evaluation (PE) programs, when offered.

The PAMS-VOCs and PAMS-Carbonyls programs participate in State, Regional, and Federal Performance Evaluation (PE) programs, when offered.

The Lead program participates in State, Regional, and Federal Performance Evaluation (PE) programs, when offered.

Every three (3) years the EPA conducts a Technical Systems Audit (TSA) of the District's air quality monitoring network and procedures. The audit examines all aspects of the District's analytical laboratory and field monitoring operations.

Section 13.2.0 Quality Assurance – Collocation

Please see each of the pollutants' section for a more detailed description of the collocation practices that are used. A summary of all the collocation requirements are included in Table 13.1.

Table 13.1 Summary of Collocated Monitors

Pollutant or Program		Minimum Number of Required Monitors/Locations	Number of Active Monitors/Locations	Number of Needed Monitors/Locations
Collocation	$PM_{2.5}$ FRM w/ $PM_{2.5}$ FRM	1	1	None
	$PM_{2.5}$ FRM w/ $PM_{2.5}$ Continuous	1	3	None
	$PM_{2.5}$ STN w/ $PM_{2.5}$ CSN	2	2	None
	PM_{10} (Hi-Vol) w/ PM_{10} (Hi-Vol)	1	1	None
	Pb-TSP (Hi-Vol) w/ Pb-TSP (Hi-Vol) for the Airport program	1	1	None

Section 13.3.0 Quality Assurance – Summaries

See Tables 13.3a, 13.3b, 13.4, or the site descriptions in the appendices for a summary of the audits performed in the SDAB.

Section 13.3.1 Quality Assurance – General Summary of QA Duties by the Federal/State/Local Agencies

Particulate

- 100% of all the $PM_{2.5}$ samplers are audited quarterly by the District's audit team.
- The Pb-TSP NCore sampler is audited semi-annually by the District's audit team.
- The Pb-TSP Airport samplers are audited quarterly by the District's audit team
- ~75% of all the FRM $PM_{2.5}$, FEM $PM_{2.5}$, FRM PM_{10}, Pb-TSP (NCore) samplers are audited by the CARB annually
- ~75% of the FRM $PM_{2.5}$ samplers are audited by the EPA annually

Gaseous

- 100% of all gaseous monitors are audited annually by the District's audit team.
- 25% of each ambient level gaseous pollutant monitors are audited quarterly by the District's audit team.
- 100% of the trace level NCore pollutant monitors are audited quarterly by the District's audit team.
- ~75% of all the gaseous monitors are audited by the CARB annually

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

Section 13.3.2 Quality Assurance –Summary of Flow Audits for the Year

Tables 13.2a-13.4 summarize all the internal and external audits performed in the SDAB.

Table 13.2a Summary of Particulate Flow Audits (Hi-Vol)

Station	Abbreviation	CVA		DVN	ECA	FSD	ESC	KVR	CRQ		DTN
Station	Name	Chula Vista		Otay Mesa-Donovan	El Cajon	Floyd Smith Dr.	Escondido	Kearny Villa Rd	McClellan-Palomar		San Diego – Beardsley
Station	AQS ID	06- 073-0001		06-073-1014	06-073-0003	06-073-1018	06-073-1002	06-073-1016	06-073-1020		06-073-1010
PM_{10}	Flow Audit (APCD)	3/21, 8/28	3/24, 8/28	6/27, 12/29	N/A	N/A	4/30, 12/22	3/19, 9/10	N/A		4/30, 12/28
PM_{10}	Flow Audit (CARB)	8/14	8/14	NTY	N/A	N/A	8/20	8/19	N/A		8/13
PM_{10}	Equipment	Graseby Metal Works w/ Sierra Anderson 1200 Head	Graseby Metal Works w/ Sierra Anderson 1200 Head	Graseby Metal Works w/ Sierra Anderson 1200 Head	N/A	9/10, 12/29	Graseby Metal Works w/ Sierra Anderson 1200 Head	Graseby Metal Works w/ Sierra Anderson 1200 Head	N/A		Graseby Metal Works w/ Sierra Anderson 1200 Head
Pb-TSP	Flow Audit (APCD)	N/A		N/A	*	12/29	N/A	N/A	**	**	N/A
Pb-TSP	Flow Audit (CARB)	N/A		N/A	*	NTY	N/A	N/A	***	**	N/A
Pb-TSP	Audit (EPA)	N/A		N/A	*	NTY	N/A	N/A	**	**	N/A
Pb-TSP	Equipment	N/A		N/A	Tisch TE-5170 BLVFC+	Tisch TE-5170 BLVFC+	N/A	N/A	Tisch TE-5170 BLVFC+	Tisch TE-5170 BLVFC+	N/A

Yellow denotes collocation of equipment of the same make and model as the primary; collocated monitors are audited in the same timeframe as the primary.
*Not operational for a full year, so no audit was performed.
** CRQ was not operational until the 4th Qtr, so no audits were performed
NTY= Not done this year (CARB rotates the stations audited every year)
N/A= Not Applicable

Method (Sampling/Analysis)
HV= High volume
SI= High volume, size selective inlet

Table 13.2b Summary of Particulate Flow Audits (Lo-Vol)

Station	Abbreviation	ALP	CMP	CVA	ECA	FSD	ESC	KVR		DTN	DVN
	Name	Alpine	Camp Pendleton	Chula Vista	El Cajon	Floyd Smith Dr.	Escondido	Kearny Villa Rd		San Diego – Beardsley	Donovan
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-0003	06-073-1018	06-073-1002	06-073-1016		06-073-1010	06-073-1014
SASS $PM_{2.5}$	Audit (APCD)	N/A	N/A	N/A	*	9/24, 12/29	3/28, 6/30, 8/28, 12/19	N/A		3/26, 6/30, 9/24, 12/28	N/A
	Audit (CARB)	N/A	N/A	N/A	*	NTY	NTY	N/A		8/13	N/A
	Equipment	N/A	N/A	N/A	Met One SASS	Met One SASS	Met One SASS	N/A		Met One SASS	N/A
URG $PM_{2.5}$	Audit (APCD)	N/A	N/A	N/A	*	9/24, 12/29	3/28, 6/30, 8/28, 12/19	N/A		N/A	N/A
	Audit (CARB)	N/A	N/A	N/A	*	NTY	None	N/A		N/A	N/A
	Equipment	N/A	N/A	N/A	University Research Glassware 3000N	University Research Glassware 3000N	University Research Glassware 3000N	N/A		N/A	N/A
FRM $PM_{2.5}$	Flow Audit (APCD)	N/A	N/A	3/25, 6/27 8/28, 12/29	*	9/10, 12/29	3/28, 6/30	3/26, 6/27, 9/10, 12/26	3/26, 6/27, 9/10, 12/26	3/20, 6/27, 9/24, 12/28	N/A
	Flow Audit (CARB)	N/A	N/A	8/14	*	*	8/20	8/19	8/19	8/13	N/A
	Audit (EPA)	N/A	N/A	11/4	*	*	8/17	5/20	5/20	3/6	N/A
	Equipment	N/A	N/A	Thermo Model 2025 FRM Sequential Air Sampler w/ Very Sharp Cut Cyclone	Thermo Model 2025 FRM Sequential Air Sampler w/ Very Sharp Cut Cyclone	Thermo Model 2025 FRM Sequential Air Sampler w/ Very Sharp Cut Cyclone	Thermo Model 2025 FRM Sequential Air Sampler w/ Very Sharp Cut Cyclone	Thermo Model 2025 FRM Sequential Air Sampler w/ Very Sharp Cut Cyclone	Thermo Model 2025 FRM Sequential Air Sampler w/ Very Sharp Cut Cyclone	N/A	N/A
non-FEM $PM_{2.5}$	Audit (APCD)	3/21, 5/14, 9/15	3/27, 6/19, 12/28	N/A	*	**	3/27, 6/19, 12/26	N/A		3/20, 6/22, 12/28	*
	Audit (CARB)	8/12	N/A	N/A	*	**	8/20	N/A		8/13	*
	Equipment	Met One Non-FEM BAM 1020	Met One Non-FEM BAM 1020	N/A	Met One Non-FEM BAM 1020	Met One Non-FEM BAM 1020	Met One Non-FEM BAM 1020	N/A		Met One Non-FEM BAM 1020	Met One Non-FEM BAM 1020
$PM_{(OTHER)}$	Audit (APCD)	N/A	N/A	N/A	*	9/10, 12/29	N/A	N/A		N/A	N/A
	Audit (CARB)	N/A	N/A	N/A	*	*	N/A	N/A		N/A	N/A
	Type	N/A	N/A	N/A	PM_{10} (Lo-Vol)	PM_{10} (Lo-Vol)	N/A	N/A		N/A	N/A
	Equipment	N/A	N/A	N/A	Thermo Model 2025 FRM $PM_{2.5}$Sequential Air Sampler w/o Very Sharp Cut Cyclone	Thermo Model 2025 FRM $PM_{2.5}$Sequential Air Sampler w/o Very Sharp Cut Cyclone	N/A	N/A		N/A	N/A

Yellow denotes collocation of equipment of the same make and model as the primary; collocated monitors are audited in the same timeframe as the primary.
*Not operational for a full year, so no audit was performed.
** Not operational
NTY= Not done this year (CARB & EPA rotates the stations audited every year)
N/A= Not Applicable

Table 13.3 Summary of Gaseous Audits

Station	Abbreviation	ALP	CMP	CVA	DMR	ECA	FSD	ESC	KVR	OTM	DVN	DTN
Station	Name	Alpine	Camp Pendleton	Chula Vista	Del Mar	El Cajon	Floyd Smith Dr.	Escondido	Kearny Villa Rd.	Otay Mesa	Donovan	San Diego - Beardsley
Station	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1001	06-073-0003	06-073-1018	06-073-1002	06-073-1016	06-073-2007	06-073-1014	06-073-1010
O_3	Audits (APCD)	11/28	8/27	2/4, 5/16	5/23	*	9/16, 12/8	8/27, 11/13	11/30	5/27	*	2/12
O_3	Audits (CARB)	8/12	NTY	8/14	NTY	*	*	8/20	8/19	8/21	*	8/13
O_3	Equipment	Thermo 49i	Thermo 49i	Thermo 49i	Thermo 49	Thermo 49i	Thermo 49i	Thermo 49i	Thermo 49i	Thermo 49i	Thermo 49i	Thermo 49I
NO_2	Audits (APCD)	11/19	8/28	1/19, 5/26	N/A	*	9/18, 12/3	8/26, 11/14	11/31	5/28	*	2/24, 6/13
NO_2	Audits (CARB)	8/12	NTY	8/14	N/A	*	*	8/20	8/19	8/21	*	8/13
NO_2	Equipment	Thermo 42i	Thermo 42i	Thermo 42i	N/A	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42i	Thermo 42	Thermo 42i	Thermo 42i
CO	Audits (APCD)	N/A	N/A	N/A	N/A	*	12/10	8/26, 12/5	N/A	N/A	N/A	2/12, 6/10
CO	Audits (CARB)	N/A	N/A	N/A	N/A	*	*	8/20	N/A	N/A	N/A	8/13
CO	Equipment	N/A	N/A	N/A	N/A	Thermo 48i-TLE	Thermo 48i-TLE	Thermo 48i	N/A	N/A	N/A	Thermo 48i
NOy	Audits (APCD)	N/A	N/A	N/A	N/A	2/11	N/A	N/A	N/A	N/A	N/A	N/A
NOy	Audits (CARB)	N/A	N/A	N/A	N/A	*	*	N/A	N/A	N/A	N/A	N/A
NOy	Equipment	N/A	N/A	N/A	N/A	Thermo 42i-NOy	N/A	N/A	N/A	N/A	N/A	N/A
SO_2	Audits (APCD)	N/A	N/A	N/A	N/A	2/6	12/8	N/A	N/A	N/A	N/A	N/A
SO_2	Audits (CARB)	N/A	N/A	N/A	N/A	*	*	N/A	N/A	N/A	N/A	N/A
SO_2	Equipment	N/A	N/A	N/A	N/A	Thermo 43i-TLE	Thermo 43i-TLE	N/A	N/A	N/A	N/A	N/A
ZAG	Audits (APCD)	12/1	9/5	2/4	Not Applicable	*	9/19	12/12	11/30	5/29	*	3/12
ZAG	Equipment	Teledyne 701H	Teledyne 701H	Teledyne 701H	Zero Air Cylinder	Teledyne 701H	Teledyne 701H	Teledyne 701H	Teledyne 701H	Teledyne 701H	Teledyne 701H	Teledyne 701H

NTY= Not done this year (CARB rotates the stations audited every year)
*Not operational for a full year, so no audit was performed.
N/A= Not Applicable

Table 13.4 Summary of Meteorology Audits[1]

Station	Abbreviation	ALP	CMP	CVA	DMR	ECA	FSD	ESC	KVR	OTM	DVN	DTN
	Name	Alpine	Camp Pendleton	Chula Vista	Del Mar	El Cajon	Floyd Smith Dr.	Escondido	Kearny Villa Rd.	Otay Mesa	Donovan	San Diego - Beardsley
	AQS ID	06-073-1006	06-073-1008	06-073-0001	06-073-1001	06-073-0003	06-073-1018	06-073-1002	06-073-1016	06-073-2007	06-073-1014	06-073-1010
Meteorology	Wind Speed	✓	✓	✓	✓	U	U	✓	U	✓	✓	✓
	Wind Direction	✓	✓	✓	✓	U	U	✓	U	✓	✓	✓
	External Temperature	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Relative Humidity	✓				✓	✓					
	Barometric Pressure								3/5			
	Solar Radiation								3/5			
	Radar Wind Profiler								*			
	Audits (APCD)	12/30	9/25	5/21	6/28	**	9/23	12/30	3/5	5/21	**	3/5
	Audits (CARB)	NEC	NEC	NEC	NEC	NEC	NEC	NEC	NEC	NEC	NEC	NEC

✓= Equipment that was audited

*=Now longer operational

**Not operational for a year

NEC= The CARB does not have the equipment to perform an audit

U= Unable to audit, due to safety concerns

[1]All monitors operate on a continuous (7/24) basis
N/A= Not Applicable

Section 13.4.0 Quality Assurance –Summary of AQS Designations

Tables 13.5a-13.5c summarize all the AQS designations for the equipment of the network.

Table 13.5a Summary of AQS Designations for the Gaseous Equipment

Parameters Sites	POC	Parameter	Parameter Description	Standard Unit	Method	Duration	Duration Description	Reported Unit	Reported Unit Description	Analysis Description	Instrument
Alpine 06-073-1006	1	44201	O_3	007	047	1	1-Hr	007	ppm	Ultraviolet absorption	Thermo 49 series
	1	42603 42602 42601	NOx NO_2 NO	007	074	1	1-Hr	007	ppm	Chemiluminescence	Thermo 42 series
Camp Pendleton 06-073-1008	1	44201	O_3	007	047	1	1-Hr	007	ppm	Ultraviolet absorption	Thermo 49 series
	1	42603 42602 42601	NOx NO_2 NO	007	074	1	1-Hr	007	ppm	Chemiluminescence	Thermo 42 series
Chula Vista 06-073-0001	1	44201	O_3	007	047	1	1-Hr	007	ppm	Ultraviolet absorption	Thermo 49 series
	1	42603 42602 42601	NOx NO_2 NO	007	074	1	1-Hr	007	ppm	Chemiluminescence	Thermo 42 series
Del Mar 06-073-1001	1	44201	O_3	007	047	1	1-Hr	007	ppm	Ultraviolet absorption	Thermo 49 series
El Cajon 06-073-0003 Floyd Smith Dr. 06-073-1018	1	44201	O_3	007	047	1	1-Hr	007	ppm	Ultraviolet absorption	Thermo 49 series
	1	42603 42602 42601	NOx NO_2 NO	007	074	1	1-Hr	007	ppm	Chemiluminescence	Thermo 42 series
	1	42101	CO-TLE	007	554	1	1-Hr	008	ppb	Gas filter correlation	Thermo 48i-TLE
	1	42401	SO_2-TLE	007	560	1	1-Hr 5-Min	008	ppb	Fluorescence	Thermo 43i-TLE
	1 1 3	42600 42612 42601	NOy NOy-NO NO-TLE	007	574	1	1-Hr	008	ppb	Chemiluminescence	Thermo 42i-NOy
Escondido 06-073-1002	1	44201	O_3	007	047	1	1-Hr	007	ppm	Ultraviolet absorption	Thermo 49 series
	1	42603 42602 42601	NOx NO_2 NO	007	074	1	1-Hr	007	ppm	Chemiluminescence	Thermo 42 series
	1	42101	CO	007	054	1	1-Hr	007	ppm	Nondispersive infrared	Thermo 48 series
Kearny Villa Rd. 06-073-1016	1	44201	O_3	007	047	1	1-Hr	007	ppm	Ultraviolet absorption	Thermo 49 series
	1	42603 42602 42601	NOx NO_2 NO	007	074	1	1-Hr	007	ppm	Chemiluminescence	Thermo 42 series
Donovan 06-073-1014	1	44201	O_3	007	047	1	1-Hr	007	ppm	Ultraviolet absorption	Thermo 49 series
	1	42603 42602 42601	NOx NO_2 NO	007	074	1	1-Hr	007	ppm	Chemiluminescence	Thermo 42 series
Downtown 06-073-1010	1	44201	O_3	007	047	1	1-Hr	007	ppm	Ultraviolet absorption	Thermo 49 series
	1	42603 42602 42601	NOx NO_2 NO	007	074	1	1-Hr	007	ppm	Chemiluminescence	Thermo 42 series
	1	42101	CO	007	054	1	1-Hr	007	ppm	Nondispersive infrared	Thermo 48 series

Table 13.5b Summary of AQS Designations for the Particulate Equipment (non-speciated)

Parameters / Sites	POC	Parameter	Parameter Description	Standard Unit	Method	Duration	Duration Description	Reported Unit	Reported Unit Description	Collection& Instrument Description
Alpine 06-073-1006	1	88502	$PM_{2.5}$-LC	105	733	1	1-Hr	105	$\mu g/m^3$ (LC)	Met One non-FEM BAM-1020 $PM_{2.5}$ Mass Monitor w/ Very Sharp Cut Cyclone
Camp Pendleton 06-073-1008	1	88502	$PM_{2.5}$-LC	105	733	1	1-Hr	105	$\mu g/m^3$ (LC)	Met One non-FEM BAM-1020 $PM_{2.5}$ Mass Monitor w/ Very Sharp Cut Cyclone
Chula Vista 06-073-0001	1	88101	$PM_{2.5}$-LC	105	145	7	24-Hrs	105	$\mu g/m^3$ (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ Very Sharp Cut Cyclone
	1 2 (PRI)	85101 81102	PM_{10}-LC PM_{10}-STD	105 001	063 063	7	24-Hrs	105 001	$\mu g/m^3$ (LC) $\mu g/m^3$ (STD)	Hi-Vol Graseby Metal Works w/ Sierra Anderson 1200 Head
	2 3 (CO)	85101 81102	PM_{10}-LC PM_{10}-STD	105 001	063 063	7	24-Hrs	105 001	$\mu g/m^3$ (LC) $\mu g/m^3$ (STD)	Hi-Vol Graseby Metal Works w/ Sierra Anderson 1200 Head
El Cajon 06-073-0003 Floyd Smith Dr. 06-073-1018	1	88101	$PM_{2.5}$-LC	105	145	7	24-Hrs	105	$\mu g/m^3$ (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ Very Sharp Cut Cyclone
	2 3	85101 81102	PM_{10}-LC PM_{10}-STD	105 001	127 127	7	24-Hrs	105 001	$\mu g/m^3$ (LC) $\mu g/m^3$ (STD)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ Very Sharp Cut Cyclone
	1	86101	PM_{10}-LC - $PM_{2.5}$-LC	105	176	7	24-Hrs	105	$\mu g/m^3$ (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ Very Sharp Cut Cyclone
	1	88502	$PM_{2.5}$-LC	105	773	1	1-Hr	105	$\mu g/m^3$ (LC)	Met One non-FEM BAM-1020 $PM_{2.5}$ Mass Monitor w/ Very Sharp Cut Cyclone
	1	14129	Pb (TSP)-LC	105	192	7	24-Hrs	105	$\mu g/m^3$ (LC)	Hi-Vol; Pb-TSP-SPECTRA
Escondido 06-073-1002	1	88101	$PM_{2.5}$-LC	105	145	7	24-Hrs	105	$\mu g/m^3$ (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ Very Sharp Cut Cyclone
	1	88502	$PM_{2.5}$-LC	105	773	1	1-Hr	105	$\mu g/m^3$ (LC)	Met One non-FEM BAM-1020 $PM_{2.5}$ Mass Monitor w/ Very Sharp Cut Cyclone
	1 1	85101 81102	PM_{10}-LC PM_{10}-STD	105 001	063 063	7	24-Hrs	105 001	$\mu g/m^3$ (LC) $\mu g/m^3$ (STD)	Hi-Vol Graseby Metal Works w/ Sierra Anderson 1200 Head
Kearny Villa Rd. 06-073-1016	1 (PRI)	88101	$PM_{2.5}$-LC	105	145	7	24-Hrs	105	$\mu g/m^3$ (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ Very Sharp Cut Cyclone
	2 (CO)	88101	$PM_{2.5}$-LC	105	145	7	24-Hrs	105	$\mu g/m^3$ (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ Very Sharp Cut Cyclone
	1 1	85101 81102	PM_{10}-LC PM_{10}-STD	105 001	063 063	7	24-Hrs	105 001	$\mu g/m^3$ (LC) $\mu g/m^3$ (STD)	Hi-Vol Graseby Metal Works w/ Sierra Anderson 1200 Head
Donovan 06-073-1014	1	81102	PM_{10}-STD	001	063	7	24-Hrs	001	$\mu g/m^3$ (STD)	Hi-Vol Graseby Metal Works w/ Sierra Anderson 1200 Head
	1	88502	$PM_{2.5}$-LC	105	733	1	1-Hr	105	$\mu g/m^3$ (LC)	Met One non-FEM BAM-1020 $PM_{2.5}$ Mass Monitor w/ Very Sharp Cut Cyclone
Downtown 06-073-1010	1	88101	$PM_{2.5}$-LC	105	145	7	24-Hrs	105	$\mu g/m^3$ (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ Very Sharp Cut Cyclone
	2	88101	$PM_{2.5}$-LC	105	170	1	1-Hr	105	$\mu g/m^3$ (LC)	Met One non-FEM BAM-1020 $PM_{2.5}$ Mass Monitor w/ Very Sharp Cut Cyclone
	1 1	85101 81102	PM_{10}-LC PM_{10}-STD	105 001	063 063	7	24-Hrs	105 001	$\mu g/m^3$ (LC) $\mu g/m^3$ (STD)	Hi-Vol Graseby Metal Works w/ Sierra Anderson 1200 Head
McClellan-Palomar Airport 06-073-1020	1 (PRI)	14129	Pb-TSP-LC	105	192	7	24-Hrs	105	$\mu g/m^3$ (LC)	Hi-Vol; Pb-TSP-SPECTRA
	2 (CO)	14129	Pb-TSP-LC	105	192	7	24-Hrs	105	$\mu g/m^3$ (LC)	Hi-Vol; Pb-TSP-SPECTRA

Glossary of Terms

Hi-Vol	High Volume
LC	Local conditions
Lo-Vol	Low Volume
STD	Standard conditions

Table 13.5c Summary of AQS Audit Designations for the Equipment of the Network

Parameters / Sites	POC	Parameter	Parameter Description	Method	Reported Unit	Reported Unit Description	Collection& Instrument Description
All Sites w/ Gaseous Pollutants Monitors	1	44201	O_3	047	007	ppm	Thermo 49 series
	1	42602	NO_2	074	007	ppm	Thermo 42 series
	1	42101	CO	054	007	ppm	Thermo 48 series
	1	42101	CO-TLE	554	008	ppb	Thermo 48i-TLE
	1	42401	SO_2-TLE	560	008	ppb	Thermo 43i-TLE
	3	42612	NOy-NO	574	008	ppb	Thermo 42i-NOy
Alpine 06-073-1006	1	88502	$PM_{2.5}$-LC	733	118	L/min (LC)	Met One BAM-1020 non-FEM $PM_{2.5}$ Mass Monitor w/ Very Sharp Cut Cyclone
Camp Pendleton 06-073-1008	1	88502	$PM_{2.5}$-LC	733	118	L/min (LC)	Met One BAM-1020 non-FEM $PM_{2.5}$ Mass Monitor w/ Very Sharp Cut Cyclone
Chula Vista 06-073-0001	1	88101	$PM_{2.5}$-LC	145	118	L/min (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ Very Sharp Cut Cyclone
	2 (PRI)	81102	PM_{10}-STD	063	072	ft^3/min (STD)	Hi-Vol Graseby Metal Works w/ Sierra Anderson 1200 Head
	3 (CO)	81102	PM_{10}-STD	063	072	ft^3/min (STD)	Hi-Vol Graseby Metal Works w/ Sierra Anderson 1200 Head
El Cajon 06-073-0003	1	88101	$PM_{2.5}$-LC	145	118	L/min (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ Very Sharp Cut Cyclone
	2	85101	PM_{10}-LC	127	118	L/min (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/o Very Sharp Cut Cyclone
Floyd Smith Dr. 06-073-1018	1	86101 Level 1 86101 Level 2	PM_{10}-LC - $PM_{2.5}$-LC	176	118	L/min (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler Paired
	1	88502	$PM_{2.5}$-LC	733	118	L/min (LC)	Met One BAM-1020 non-FEM $PM_{2.5}$ Mass Monitor w/ Very Sharp Cut Cyclone
	1	14129	Pb (TSP)-LC	192	126	ft^3/min (LC)	Hi-Vol Pb-TSP
Escondido 06-073-1002	1	88101	$PM_{2.5}$-LC	145	118	L/min (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ Very Sharp Cut Cyclone
	1	88502	$PM_{2.5}$-LC	733	118	L/min (LC)	Met One BAM-1020 non-FEM $PM_{2.5}$ Mass Monitor w/ Very Sharp Cut Cyclone
	1	81102	PM_{10}-STD	063	072	ft^3/min (STD)	Hi-Vol Graseby Metal Works w/ Sierra Anderson 1200 Head
Kearny Villa Rd. 06-073-1016	1 (PRI)	88101	$PM_{2.5}$-LC	145	118	L/min (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ Very Sharp Cut Cyclone
	2 (CO)	88101	$PM_{2.5}$-LC	145	118	L/min (LC)	Thermo Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ Very Sharp Cut Cyclone
	1	81102	PM_{10}-STD	063	072	ft^3/min (STD)	Hi-Vol Graseby Metal Works w/ Sierra Anderson 1200 Head
Donovan 06-073-1014	1	81102	PM_{10}-STD	063	072	ft^3/min (STD)	Hi-Vol Graseby Metal Works w/ Sierra Anderson 1200 Head
	1	88502	$PM_{2.5}$-LC	733	118	L/min (LC)	Met One BAM-1020 non-FEM $PM_{2.5}$ Mass Monitor w/ Very Sharp Cut Cyclone
Downtown 06-073-1010	1	88101	$PM_{2.5}$-LC	145	118	L/min (LC)	R&P Model 2025 FRM $PM_{2.5}$ Sequential Air Sampler w/ VSCC
	1	88502	$PM_{2.5}$-LC	733	118	L/min (LC)	Met One BAM-1020 FEM $PM_{2.5}$ Mass Monitor w/ VSCC
	1	81102	PM_{10}-STD	063	072	ft^3/min (STD)	HI-VOL GMW w/ SA 1200 Head
McClellan-Palomar Airport 06-073-1020	1 (PRI)	14129	Pb-TSP-LC	192	126	ft^3/min (LC)	Hi-Vol Pb-TSP
	2 (CO)	14129	Pb-TSP-LC	192	126	ft^3/min (LC)	Hi-Vol Pb-TSP

Glossary of Terms

Hi-Vol	High Volume
LC	Local conditions
Lo-Vol	Low Volume
STD	Standard conditions

Section 13.5.0 Summary of the Analytical Methods Used in the Laboratory and Field

Table 13.6 summaries the methods used for the various programs of the Network.

Table 13.6 Summary of the Methods of the Network

Pollutant/Program		Sampler	Reference	Collection Method	Analytical Method	Reference
Ozone	O_3	Thermo 49 series	40 CFR Part 50, App. D	Continuous sampling	Ultraviolet	EQOA-0880-047
Nitrogen dioxide	NO_2	Thermo 42 series	40 CFR Part 50, App. F	Continuous sampling	Chemiluminescence	RFNA-1289-074
Reactive oxides of Nitrogen	NOy-TLE	Thermo 42- NOy	NCore TAD	Continuous sampling	Chemiluminescence	No Applicable, see NCore TAD, APCD SOP
Carbon monoxide	CO	Thermo 48 series	40 CFR Part 50, App. C	Continuous sampling	Nondispersive infrared	RFCA-0981-054
Carbon monoxide-(Trace Level)	CO-TLE	Thermo 48i-TLE	40 CFR Part 50, App. C	Continuous sampling	Nondispersive infrared	RFCA-0981-054
Sulfur dioxide-(Trace Level)	SO_2-TLE	Thermo 43i-TLE	40 CFR Part 50, App. A-1	Continuous sampling	Fluorescence	EQSA-0276-009
Lead	Pb-TSP	Tisch TE-5710BLVFC+	40 CFR Part 50, App. G	High Volume, 8x10 Glass, filter, 24-hr	Inductively coupled plasma, Mass Spectrometer (ICP/MS)	No Reference method for the sampler
Particulate Matter 10 micrometers	PM_{10} (Hi-Vol)	Graseby Metal Works 2000H with a Sierra Anderson 1200 Head	40 CFR Part 50 App. J	High Volume, 8x10 Quartz filter, 24-hr	Gravimetric	RFPS-1287-063
	PM_{10} (Lo-Vol)	Thermo 2025 without Very Sharp Cut Cyclone (VSCC)	40 CFR Part 50 App. L	Low Volume, 47 mm Teflon filter, 24-hr	Gravimetric	RFPS-1298-127
Particulate Matter 2.5 micrometers	$PM_{2.5}$ (Sequential)	Thermo 2025 with VSCC or R&P with VSCC	40 CFR Part 50 App. L	Low Volume, 47 mm Teflon filter, 24-hr	Gravimetric	Not a reference method
	$PM_{2.5}$ (Continuous)	Met One non-FEM BAM 1020	40 CFR Part 50 App. L	Low Volume, continuous Glass filter	Beta Attenuation	EQPM-0308-170
Particulate Matter coarse	$PM_{10-2.5}$	Paired samplers	40 CFR Part 50 App. O	Low Volume, 47 mm Teflon filter, 24-hr	Gravimetric	RFPS-0509-176
Particulate Matter 2.5 micrometers, Speciated (non-Carbon)	STN	Met One Sass or SuperSASS	See RTI or CARB	Low Volume, 47 mm Nylon, Teflon, or Quartz, filter, 24-hr	See RTI or CARB	Not Applicable, see RTI or CARB
Particulate Matter 2.5 micrometers, Speciated (Carbon)	CSN	University Research Glassware 3000-N	See RTI or CARB	Low Volume, 25 mm Quartz filter, 24-hr	See RTI or CARB	Not Applicable, see RTI or CARB
	CSN, Supplemental Speciation	Met One SASS or SuperSASS	Not Applicable	Low Volume, 47 mm Quartz filter, 24-hr	Thermal optical carbon analyzer	Not Applicable, see APCD SOP
PAMS VOCs	PAMS	Xontech 910/912	Manufacturer's Manual & SOP	6 Liter Stainless steel canister, 24-hr	Gas Chromatography, Mass spectroscopy (GC-FID)	Not Applicable, see TO-14A, APCD SOP
PAMS Carbonyls	PAMS	Xontech 925	Manufacturer's Manual & SOP	DNPH cartridges, 24-hr	High Pressure Liquid Chromatography (HPLC)	Not Applicable, see TO-11A, APCD SOP
	PAMS Unofficial	Xontech 924	Manufacturer's Manual & SOP	DNPH cartridges, 24-hr	High Pressure Liquid Chromatography (HPLC)	Not Applicable, see TO-11A, APCD SOP
Toxics VOCs	Toxics	Xontech 910	See CARB	6 Liter Stainless steel canister, 24-hr	See CARB	Not Applicable, see CARB
	Toxics, Supplemental Speciation	Xontech 910A fused silica lined	Manufacturer's Manual & SOP	6 Liter Fused silica lined stainless steel canister, 24-hr	Gas Chromatography, Mass spectroscopy (GC/MS)	Not Applicable, see TO-15, APCD SOP
Toxics Cr^{+6}	Toxics	Xontech 924	See CARB	Low Volume, 37 mm Cellulose filter, 24-hr	See CARB	Not Applicable, see CARB
Toxics Metals	Toxics	Xontech 924	See CARB	Low Volume, 47 mm Teflon filter, 24-hr	See CARB	Not Applicable, see CARB
	Toxics Supplemental Speciation	Xontech 924	Manufacturer's Manual & SOP	Low Volume, 47 mm Teflon filter, 24-hr	Inductively coupled plasma, Mass Spectrometer (ICP/MS)	Not Applicable, see IO-3.5, APCD SOP

Chapter 14 Data Submittal

Section 14.1.0 Data Submittal Introduction

The District ensures the quality of the data collected at its monitoring sites through analysis of Quality Assurance data submitted to the EPA's ambient air quality database, the Air Quality System (AQS). The data analyses are conducted in accordance with the 40 CFR Part 58, Appendix A, Table A-2. Each year the District certifies the data that have been submitted to AQS (called a Certification Letter). This Certification Letter confirms that the data complies with all 40 CFR Part 58 guidelines and regulations pertaining to data quality assurance and data completeness. The Certification Letter must include a summary report of the Quality Assurance data for each monitor. All Toxics, PAMS, and Supplemental Speciation data are also included.

The collected and measured data must meet minimum quality assurance and quality control guidelines for it to be considered valid and eligible for certification. 40 CFR Part 58, Appendix A, Table A-2 summarizes the data assessment criteria required for SLAMS monitors. The APCD meets or exceeds these minimum requirements listed in Tables 14.0 and 14.1.

Table 14.0 Minimum Data Assessment Requirements for the Gaseous Pollutants

Pollutant	Method	Assessment Method	Coverage	Minimum Frequency	Actual Frequency	Parameters Reported
O_3	1 point QC	Range: 0.01 – 0.1 ppm	Each analyzer	1:14	1:14	Source concentration & measured concentration of the target analyzer indicated by the target sampler display
NO_2	1 point QC	Range: 0.01 – 0.1 ppm	Each analyzer	1:14	1:14	Source concentration & measured concentration of the target analyzer indicated by the target sampler display
CO	1 point QC	Range: 1 – 10 ppm	Each analyzer	1:14	1:14	Source concentration & measured concentration of the target analyzer indicated by the target sampler display
NOy	1 point QC	Range: 20 - 40 ppb	Each analyzer	1:14	1:4	Source concentration & measured concentration of the target analyzer indicated by the target sampler display
CO-TLE	1 point QC	Range: 250 - 500 ppb	Each analyzer	1:14	1:4	Source concentration & measured concentration of the target analyzer indicated by the target sampler display
SO_2-TLE	1 point QC	Range: 5 - 10 ppb	Each analyzer	1:14	1:4	Source concentration & measured concentration of the target analyzer indicated by the target sampler display
O_3	Audit	See 40 CFR Part 58, Appendix A, Section 3.2.2 for levels; Use an independent standard	Each analyzer	Annually	Annually	Source concentration & measured concentration of the target analyzer indicated by the target sampler display
NO_2	Audit	See 40 CFR Part 58, Appendix A, Section 3.2.2 for levels; Use an independent standard	Each analyzer	Annually	Annually	Source concentration & measured concentration of the target analyzer indicated by the target sampler display
CO	Audit	See 40 CFR Part 58, Appendix A, Section 3.2.2 for levels; Use an independent standard	Each analyzer	Annually	Annually	Source concentration & measured concentration of the target analyzer indicated by the target sampler display
NOy	Audit	See 40 CFR Part 58, Appendix A, Section 3.2.2 for levels; Use an independent standard	Each analyzer	Quarterly	Quarterly	Source concentration & measured concentration of the target analyzer indicated by the target sampler display
CO-TLE	Audit	See 40 CFR Part 58, Appendix A, Section 3.2.2 for levels; Use an independent standard	Each analyzer	Quarterly	Quarterly	Source concentration & measured concentration of the target analyzer indicated by the target sampler display
SO_2-TLE	Audit	See 40 CFR Part 58, Appendix A, Section 3.2.2 for levels; Use an independent standard	Each analyzer	Quarterly	Quarterly	Source concentration & measured concentration of the target analyzer indicated by the target sampler display

Table 14.1 Minimum Data Assessment Requirements for the Particulate Pollutants

Pollutant	Method	Assessment Method	Coverage	Minimum Frequency	Actual Frequency	Parameters Reported
$PM_{2.5}$ FRM	Flow Check-QC	Check of sampler flow rate using a QC standard	Each analyzer	Monthly	Monthly	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
$PM_{2.5}$ non-FEM	Flow Check-QC	Check of sampler flow rate using a QC standard	Each analyzer	Monthly	Bi-weekly	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
PM_{10} (Hi-Vol) FRM	Flow Check-QC	Check of sampler flow rate using a QC standard	Each analyzer	Monthly	Monthly	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
PM_{10} (Lo-Vol) FRM	Flow Check-QC	Check of sampler flow rate using a QC standard	Each analyzer	Monthly	Monthly	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
PM_{coarse} FRM	Flow Check-QC	Check of sampler flow rate using a QC standard	Each analyzer	Monthly	Monthly	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
TSP	Flow Check-QC	Check of sampler flow rate using a QC standard	Each analyzer	Monthly	Monthly	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
$PM_{2.5}$ speciated	Flow Check-QC	Check of sampler flow rate using a QC standard	Each analyzer	Not Applicable	Monthly	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
$PM_{2.5}$ FRM	Performance Evaluation	Check of sampler flow rate using an independent standard	Each analyzer	Bi-annually	Bi-annually	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
$PM_{2.5}$ non-FEM	Performance Evaluation	Check of sampler flow rate using an independent standard	Each analyzer	Bi-annually	Bi-annually	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
PM_{10} (Hi-Vol) FRM	Performance Evaluation	Check of sampler flow rate using an independent standard	Each analyzer	Bi-annually	Bi-annually	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
PM_{10} (Hi-Vol) FRM	Performance Evaluation	Check of sampler flow rate using an independent standard	Each analyzer	Bi-annually	Bi-annually	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
PM_{coarse} FRM	Performance Evaluation	Check of sampler flow rate using an independent standard	Each analyzer	Bi-annually	Bi-annually	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
TSP	Performance Evaluation	Check of sampler flow rate using an independent standard	Each analyzer	Bi-annually	Bi-annually	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
$PM_{2.5}$ speciated	Performance Evaluation	Check of sampler flow rate using an independent standard	Each analyzer	Not Applicable	Bi-annually	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
$PM_{2.5}$ FRM	Collocation	Collocated samplers	15% of the total number of primary samplers	1:12	1:6	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
PM_{10} (Hi-Vol) FRM	Collocation	Collocated samplers	15% of the total number of primary samplers	1:12	1:6	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display
TSP	Collocation	Collocated samplers	15% of the total number of primary samplers	1:12	1:6	Source flow rate and measured flow rate of the target sampler indicated by the target sampler display

Section 14.1.0 Data Submittal Requirements

Table 14.2 summarizes all the data that must be uploaded into the AQS and/or is required for the annual Data Certification letter. The check marks (✓) denote that function was completed. Not all QA/QC functions performed by District personnel on the instruments are required for Data Certification nor are all the QA/QC functions performed by District personnel required for Data Certification. If the data from that function requires uploading into AQS, it is noted in the submittal frequency column. The data submitted to AQS and listed in this table are applicable to the Data Certification Letter for the calendar year of this report.

Table 14.2 Data Submittal to AQS

Parameter	Data Submittal	AQS Submittal Frequency	QA (Collocation) P&A	AQS Submittal Frequency	QA (Field) P&A	AQS Submittal Frequency	QA (Lab) Audits	AQS Submittal Frequency	QC (One-pt) Checks	AQS Submittal Frequency	QC (Calib)	AQS Submittal Frequency
O_3	✓	Quarterly	N/A	N/A	✓	Annually	N/A	N/A	✓	Quarterly	✓	NR
NO_2	✓	Quarterly	N/A	N/A	✓	Annually	N/A	N/A	✓	Quarterly	✓	NR
CO	✓	Quarterly	N/A	N/A	✓	Annually	N/A	N/A	✓	Quarterly	✓	NR
NOy, NCore	✓	Quarterly	N/A	N/A	✓	Quarterly	N/A	N/A	✓	Quarterly	✓	NR
CO, NCore	✓	Quarterly	N/A	N/A	✓	Quarterly	N/A	N/A	✓	Quarterly	✓	NR
SO_2, NCore	✓	Quarterly	N/A	N/A	✓	Quarterly	N/A	N/A	✓	Quarterly	✓	NR
PM Gravimetric Laboratory	N/A	N/A	N/A	N/A	N/A	N/A	✓	N/A	N/A	N/A	N/A	N/A
Pb-TSP, NCore	✓	Quarterly	N/A	N/A	✓	Quarterly	✓	N/A	✓	NR	✓	NR
Pb-TSP, Airport	✓	Quarterly	✓	Quarterly	✓	Quarterly	✓	N/A	✓	NR	✓	NR
PM_{10} (Hi-Vol)	✓	Quarterly	✓	Quarterly	✓	Quarterly	✓	N/A	✓	NR	✓	NR
PM_{10} (Lo-Vol)	✓	Quarterly	N/A	N/A	✓	Quarterly	✓	N/A	✓	NR	✓	NR
$PM_{10-2.5}$	✓	Quarterly	N/A	N/A	✓	Quarterly	✓	N/A	✓	NR	✓	NR
$PM_{2.5}$-FRM (Lo-Vol)	✓	Quarterly	✓	Quarterly	✓	Quarterly	✓	N/A	✓	NR	✓	NR
$PM_{2.5}$-non-FEM (Lo-Vol)	✓	Quarterly	N/A	N/A	✓	Quarterly	✓	N/A	✓	NR	✓	NR
$PM_{2.5}$-STN (Lo-Vol)	See ARB and RTI	See ARB and RTI	N/A	N/A	✓	NR	See ARB and RTI	N/A	✓	NR	✓	NR
$PM_{2.5}$-CSN (Lo-Vol)	See ARB and RTI	See ARB and RTI	N/A	N/A	✓	NR	See ARB and RTI	N/A	✓	NR	✓	NR
$PM_{2.5}$-Carbon, SU (Lo-Vol)	✓	Annually	N/A	N/A	✓	NR	✓	N/A	✓	NR	✓	NR
PAMS-Carbonyls	✓	Annually	N/A	N/A	N/A	N/A	✓	N/A	✓	NR	✓	NR
PAMS-Carbonyls, SU	✓	Annually	N/A	N/A	N/A	N/A	✓	N/A	✓	NR	✓	NR
PAMS-VOCs	✓	Annually	✓	Yearly	N/A	N/A	✓	N/A	✓	NR	AS	NR
TOXICS-VOCs, SU	✓	Annually	N/A	N/A	N/A	N/A	✓	N/A	✓	NR	AS	NR

DATA CERTIFICATION LETTER	On May 1, 2014 the Data Certification letter was signed, encompassing the following monitors for all sites: CO, SO_2, NO_2, O_3, Pb, NOy, PMcoarse, PM_{10}, all $PM_{2.5}$ monitors for the San Diego APCD. Also, the PAMS-VOCs and PAMS-Carbonyls for calendar year 2014 and the OC/EC data for calendar year 2013 were certified.

AS= As Needed
N/A= Not Applicable
NR= Not Required; there is no requirement to submit data from this function to AQS.

Section 14.2.0 Data Completeness Report

Each year, the District is issued a report totaling the data collected for the criteria pollutant and NOy monitors. Table 14.3 summarizes this report using % for the time indicated.

Table 14.3 Data %Completeness Report for the Year

		ALP	CMP	CVA	DMR	ECA	FSD	ESC	OTM	DVN	DTN	KVR	CRQ
	Type	Alpine	Camp Pendleton	Chula Vista	Del Mar	El Cajon	Floyd Smith Drive	Escondido	Otay Mesa	Donovan	San Diego-Beardsley	Kearny Villa Rd	Palomar Airport
O_3	(Ambient) (Continuous)	90%	89%	92%	95%	91%	83%	88%	95%	88%	88%	89%	
NO_2	(Ambient) (Continuous)	89%	87%	91%		89%	83%	84%	83%	88%	86%	84%	
CO	(Ambient) (Continuous)							87%			87%		
NOy-TLE	(NCore) (Continuous)					81%	n/a						
CO-TLE	(NCore) (Continuous)					84%	82%						
SO_2-TLE	(NCore) (Continuous)					84%	83%						
Pb	(Hi-Vol, Primary)					80%	95%						100%
	(Hi-Vol, Collocated)												100%
PM_{10}	(NCore) (Lo-Vol)					95%	95%						
	(Ambient) (Hi-Vol, Primary)			95%				98%		90%	100%	98%	
	(Ambient) (Hi-Vol, Collocated)			97%									
$PM_{2.5}$	(non-FEM) (Automated)	98%	98%			90%	n/a	93%			96%		
	(FRM) (Manual)			97%		95%	95%	99%			96%	95%	
	(FRM) (Manual, Collocated)											97%	
PM_c	(FRM) (Paired samplers)					100%	95%						

(left intentionally blank)

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

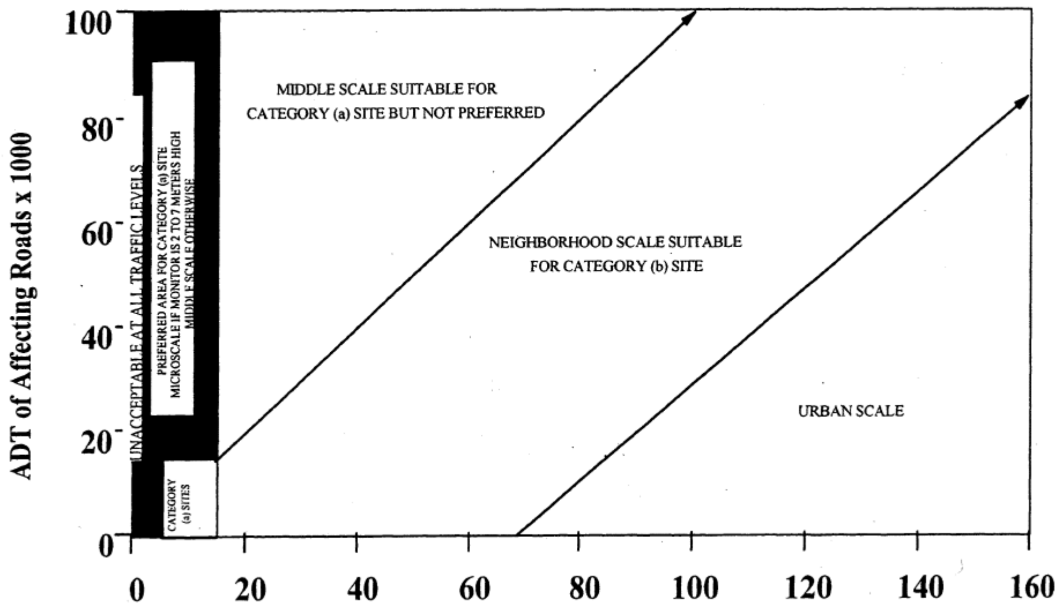


Figure E-1. Distance of PM samplers to nearest traffic lane (meters)

Section 1.0.0 Alpine Station (temporary) Station Description and Statement of Purpose

Table 1.1a General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Alpine (temporary)
Year Established:	8/18/2010
Site Address:	2495A W. Victoria Dr.
Site Name Abbreviation:	ALP (t)
AQS Number:	06-073-1006
Latitude:	32.842324 ^{O}
Longitude:	116.767885 ^{O}
Elevation above Sea Level:	630 m
General Location:	Trailer in the SW corner of the Alpine cemetery
Ground Cover:	Packed dirt
Distance to Road:	20 m west= W. Victoria Drive
Traffic Count (2010 AADT):	No traffic count is available for the closest cross street, W. Victoria Dr. estimated= 500 Alpine Blvd. at W. Victoria Dr.(south/slightly upwind 760 m) = 2,200
Site Description:	The current/temporary Alpine location was located to the Alpine cemetery on 08/18/2010, about 33 meters E of its original location. The original location was adjacent to the Padre reservoir and pump station. When the equipment and land underwent renovation and reconfiguration, we had to relocate the sampling station across the street. 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 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:	Will be decommissioned/relocated in the 2nd qtr 2015 to its original location across the street.

Table 1.1b Alpine - Monitor and Equipment Summary

Parameter	Method	Schedule	Status
O_3	Ambient	7/24	R
NO_2	Ambient, PRI	7/24	R
CO	Ambient		
NOy	Trace level		
CO	Trace Level		
SO_2	Trace Level		
Pb-TSP	Hi-Vol, PRI		
Pb-TSP	Hi-Vol QAC		
PM_{10}	Hi-Vol, PRI		
PM_{10}	Hi-Vol, QAC		
PM_{10}	Lo-Vol, PRI		
$PM_{2.5}$	FRM, PRI		
$PM_{2.5}$	FRM, QAC		
$PM_{10-2.5}$	FRM, paired samplers		
$PM_{2.5}$	non-FEM	7/24	R
$PM_{2.5}$	STN		
$PM_{2.5}$	CSN		
$PM_{2.5}$	CSN, SU		
PAMS	VOC	1:6	R
PAMS	VOC ,QAC		
PAMS	Carbonyls		
PAMS	Carbonyls, Unofficial		
Toxics	VOC		
Toxics	Total Metals		
Toxics	Cr (VI)		
Toxics	Aldehydes		
Toxics	VOC, SU		
Toxics	VOC , SU, QAC		
Toxics	Total Metals, SU		
Toxics	Cr (VI), SU		
MET	Internal Temperature	7/24	R
MET	Wind Speed	7/24	R
MET	Wind Direction	7/24	R
MET	External Temperature	7/24	R
MET	% Relative Humidity	7/24	R
MET	Barometric Pressure		
MET	Solar Radiation		

A= Add or Recently Added, D= In Development, R= Relocating, T= Terminate or Recently Terminated, X= Existing

Table 1.1c Alpine - Monitor Designation Summary

Pollutant	Monitor Designation	Monitor Type	Network Affiliation	Spatial Scale	Monitoring Objective	Site Type
O_3	O	SLAMS	PAMS	US	PI, NAAQS	MXO
NO_2	PRI	SLAMS	PAMS	US	PI, NAAQS	PE
$PM_{2.5}$ non-FEM Continuous	O	SPM	Not Applicable	US	PI, Research	PE
PAMS-VOC	O	SLAMS	PAMS Type III	US	Research	MXO
Internal Temperature	Not Applicable	SLAMS	PAMS	US	Not Applicable	Not Applicable
Wind Speed	Not Applicable	SLAMS	PAMS	US	Not Applicable	Not Applicable
Wind Direction	Not Applicable	SLAMS	PAMS	US	Not Applicable	Not Applicable
External Temperature	Not Applicable	SLAMS	PAMS	US	Not Applicable	Not Applicable
% Relative Humidity	Not Applicable	SLAMS	PAMS	US	Not Applicable	Not Applicable

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

Table 1.2a Alpine - Gaseous Pollutants (Ambient Level) Monitor Designations + Other

Pollutant	O_3	NO_2	Other Zero Air
POC	1	1	Not Applicable
Monitor designation	Other	Primary	Not Applicable
Parameter code	44201	42602 (NO_2)	Not Applicable
Basic monitoring objective	PI, NAAQS	PI, NAAQS	Not Applicable
Site type	Maximum ozone concentrations	Population Exposure	Not Applicable
Monitor type	SLAMS	SLAMS	Not Applicable
Network affiliation	PAMS	PAMS	Not Applicable
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Teledyne-API 701H
Method code	047	074	Not Applicable
Sampling method	UV absorption	Chemiluminescence	Not Applicable
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Urban Scale	Urban Scale	Not Applicable
Monitoring start date	8/18/2010	8/18/2010	8/18/2010
Current sampling frequency	Continuous	Continuous	Not Applicable
Required sampling frequency	Continuous	Continuous	Not Applicable
Sampling season	Year round	Year round	Not Applicable
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	Not Applicable
Residence time for reactive gases	4.15 sec	4.15 sec	Not Applicable
Any changes within the next 18 months?	Yes	Yes	Yes
Frequency of QC check (one-point)	1:14	1:14	Not Applicable
APCD Audit	11/28	11/19	12/1
ARB Audit	8/12	8/12	Not Applicable

Table 1.2b Alpine - Particulate Pollutants ($PM_{2.5}$) Monitor Designations

Pollutant	**$PM_{2.5}$ non-FEM Continuous**
POC	1
Monitor designation	Other
Parameter code	88502 (LC)
Basic monitoring objective	PI, Research
Site type	Population Exposure
Monitor type	SPM
Network Affiliation	Not Applicable
Instrument manufacturer & model	Met One BAM 1020
Method code	733
Sampling method	16.7 LPM, Lo-Vol, continuous, size selective inlet
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Urban Scale
Monitoring start date	8/18/2010
Current sampling frequency	Continuous
Required sampling frequency	Continuous
Sampling season	Year round
Probe material for reactive gases	Not Applicable
Residence time for reactive gases	Not Applicable
Any changes within the next 18 months?	Yes
Suitable for comparison to annual $PM_{2.5}$?	No
Frequency of QC check (flow rate verification)	1:14
APCD Audit	3/21, 5/14, 9/15
ARB Audit	8/12

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
Sampling method	Evacuated Canisters
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Urban Scale
Monitoring start date	8/18/2010
Current sampling frequency	1:6
Required sampling frequency	1:6
Sampling season	3-Hr (Jul-Oct) 24-Hr (Nov-Jun)
Probe material for reactive gases	Not Applicable
Residence time for reactive gases	Not Applicable
Any changes within the next 18 months?	Yes

Table 1.2d Alpine - Meteorology Equipment Designations + Other

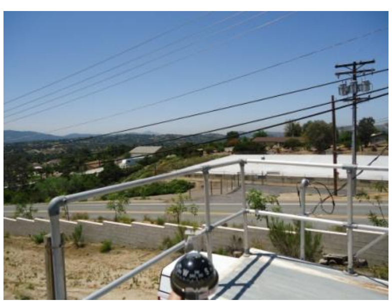
Parameter	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp	Meteorological Rel. Humidity
POC	1	1	1	1	1
Monitor designation	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Parameter code	62107	61101	61104	62101	62201
Basic monitoring objective	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Site type	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
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
Sampling method	RTD	Cup anemometer	Potentiometer	RTD	Capacitor sensor
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	08/18/2010	08/18/2010	08/18/2010	08/18/2010	08/18/2010
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
Distance from supporting structure	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions not on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from the trees	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Sensor height	Not Applicable	7.2 m	7.2 m	5.7 m	5.7 m
Unrestricted air flow	Not Applicable	360°	360°	360°	360°
Any changes within the next 18 months?	Yes	Yes	Yes	Yes	Yes
APCD Audit	Not Applicable	12/30	12/30	12/30	12/30
ARB Audit	Not Applicable	None	None	None	None

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)
Gas Inlet	n/a									4.0			1.3					
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)	4.0									n/a			3.6					
$PM_{2.5}$ STN (6.7 lpm)																		
$PM_{2.5}$ CSN (22.0 lpm)																		
†PAMS-VOC (50 ccpm)	1.3									3.6			n/a					
†PAMS-VOC QAC (50 ccpm)																		
†PAMS-Carbonyls (1.5 lpm)																		
†Toxics-VOC (50 ccpm)																		
†Toxics-VOC, QAC (50 ccpm)																		
Toxics-Metals (12 lpm)																		
Height from ground	6.0									5.0			4.9					
Distance: from the road	20									20			20					
from the supporting structure	2.4									2.5			1.5					
from obstructions on roof	N									N			N					
from obstructions not on roof	N									N			N					
from the closest tree	13									13			13					
from furnace/flue	N									N			N					
Unrestricted air flow (degrees)	360									360			360					

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

Figure 1.1 Alpine – Pictures (Directional) from the Rooftop



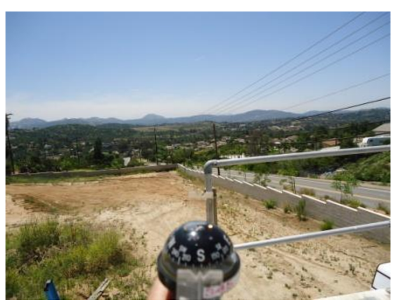
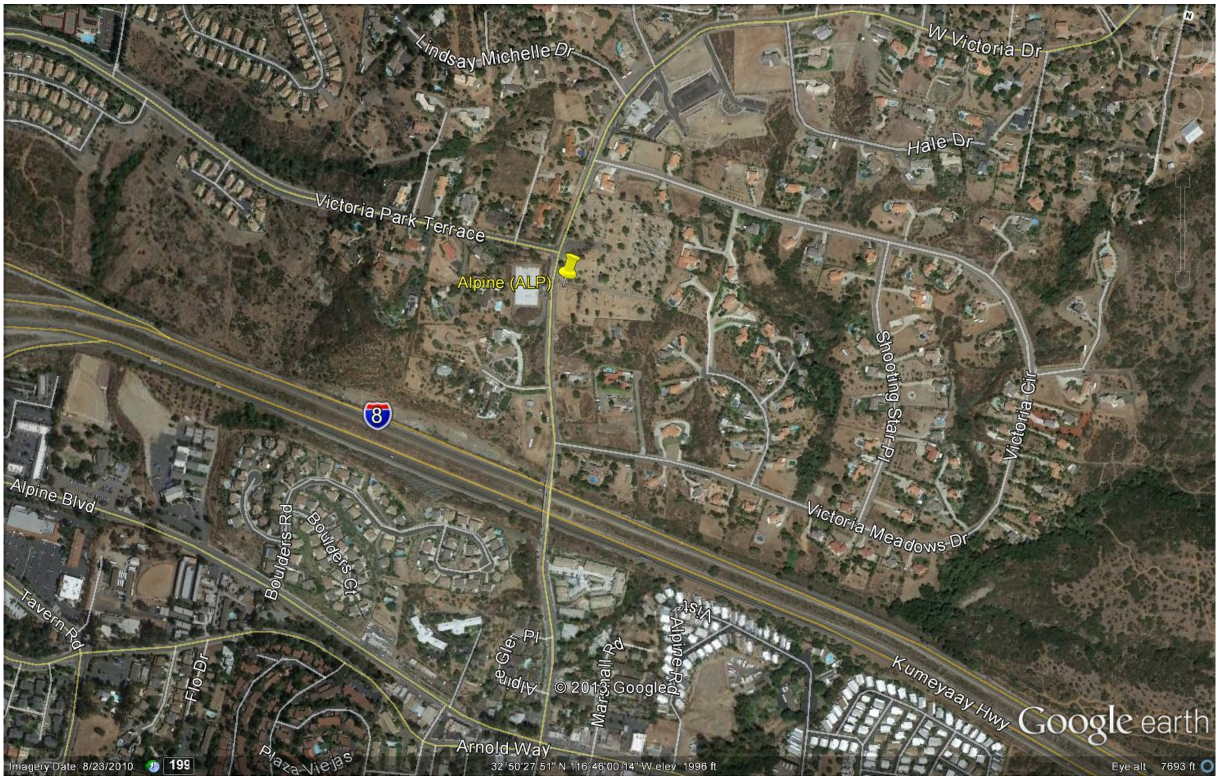


Figure 1.2 Alpine – Pictures of the Location of the Station

Long View



Medium View

Section 2.0.0 Camp Pendleton Station Description and Statement of Purpose

Table 2.1a 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 (2010 AADT):	No traffic count is available for base traffic; B St. estimated= 500 Interstate 5 (east/downwind 440 m)= 160,000
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 an earlier siting in Oceanside about 7.6 km south east 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

Table 2.1b Camp Pendleton – Monitor and Equipment Summary

Parameter	Type	Schedule	Status
O_3	Ambient	7/24	X
NO_2	Ambient, PRI	7/24	X
CO	Ambient		
NOy	Trace level		
CO	Trace Level		
SO_2	Trace Level		
Pb-TSP	Hi-Vol, PRI		
Pb-TSP	Hi-Vol QAC		
PM_{10}	Hi-Vol, PRI		
PM_{10}	Hi-Vol, QAC		
PM_{10}	Lo-Vol, PRI		
$PM_{2.5}$	FRM, PRI		
$PM_{2.5}$	FRM, QAC		
$PM_{10-2.5}$	FRM, paired samplers		
$PM_{2.5}$	non-FEM	7/24	X
$PM_{2.5}$	STN		
$PM_{2.5}$	CSN		
$PM_{2.5}$	CSN, SU		
PAMS	VOC	1:6	X
PAMS	VOC ,QAC	1:6	X
PAMS	Carbonyls		
PAMS	Carbonyls, Unofficial		
Toxics	VOC		
Toxics	Total Metals		
Toxics	Cr (VI)		
Toxics	Aldehydes		
Toxics	VOC, SU		
Toxics	VOC, SU, QAC		
Toxics	Total Metals, SU		
Toxics	Cr (VI), SU		
Meteorology	Internal Temperature	7/24	X
Meteorology	Wind Speed	7/24	X
Meteorology	Wind Direction	7/24	X
Meteorology	External Temperature	7/24	X
Meteorology	% Relative Humidity	7/24	
Meteorology	Barometric Pressure		
Meteorology	Solar Radiation		

A= Add or Recently Added, D= In Development, R= Relocating, T= Terminate or Recently Terminated, X= Existing

Table 2.1d Camp Pendleton - Monitor Designation Summary

Pollutant	Monitor Designation	Monitor Type	Network Affiliation	Spatial Scale	Monitoring Objective	Site Type
O_3	O	SLAMS	PAMS	NS	PI, NAAQS	UPBD
NO_2	PRI	SLAMS	PAMS	NS	PI, NAAQS	UPBD
$PM_{2.5}$ non-FEM Continuous	O	SPM	Not Applicable	US	PI, Research	UPBD
PAMS-VOC	O	SLAMS	PAMS Type I	NS	Research	UPBD
PAMS-VOC collocated	QAC	O	PAMS Type I	NS	Research	QA
Internal Temperature	Not Applicable	SLAMS	PAMS	NS	Not Applicable	Not Applicable
Wind Speed	Not Applicable	SLAMS	PAMS	NS	Not Applicable	Not Applicable
Wind Direction	Not Applicable	SLAMS	PAMS	NS	Not Applicable	Not Applicable
External Temperature	Not Applicable	SLAMS	PAMS	NS	Not Applicable	Not Applicable

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

Table 2.2a Camp Pendleton - Gaseous Pollutants (Ambient Level) Monitor Designations + Other

Pollutant	O_3	NO_2	Other Zero Air
POC	1	1	Not Applicable
Monitor designation	Other	Primary	Not Applicable
Parameter code	44201	42602 (NO_2)	Not Applicable
Basic monitoring objective	PI, NAAQS	PI, NAAQS	Not Applicable
Site type	Upwind Background	Upwind Background	Not Applicable
Monitor type	SLAMS	SLAMS	Not Applicable
Network affiliation	PAMS	PAMS	Not Applicable
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Teledyne-API 701H
Method code	047	074	Not Applicable
Sampling method	UV absorption	Chemiluminescence	Not Applicable
FRM/FEM/ARM/Other	FRM	FRM	Not Applicable
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Not Applicable
Monitoring start date	1997	1997	1997
Current sampling frequency	Continuous	Continuous	Not Applicable
Required sampling frequency	Continuous	Continuous	Not Applicable
Sampling season	Year round	Year round	Not Applicable
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	Not Applicable
Residence time for reactive gases	7.0 sec	7.0 sec	Not Applicable
Any changes within the next 18 months?	No	No	No
Frequency of QC check (one-point)	1:14	1:14	Not Applicable
APCD Audit	8/27	8/28	9/5
ARB Audit	None	None	Not Applicable

Table 2.2b Camp Pendleton - Particulate Pollutants ($PM_{2.5}$) Monitor Designations

Pollutant	**$PM_{2.5}$ non-FEM Continuous**
POC	1
Monitor designation	Other
Parameter code	88502 (LC)
Basic monitoring objective	PI, Research
Site type	Upwind Background
Monitor type	SPM
Network affiliation	Not Applicable
Instrument manufacturer & model	Met One BAM 1020
Method code	733
Sampling method	16.7 LPM, Lo-Vol, continuous, size selective inlet
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Urban Scale
Monitoring start date	10/24/05
Current sampling frequency	Continuous
Required sampling frequency	Continuous
Sampling season	Year round
Probe material for reactive gases	Not Applicable
Residence time for reactive gases	Not Applicable
Any changes within the next 18 months?	No
Frequency of QC check (flow rate verification)	1:14
APCD Audit	3/27, 6/19, 12/28
ARB Audit	None

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	Other	Quality Assurance
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	Other
Network affiliation	PAMS Type I	Not Applicable
Instrument manufacturer & model	Xontech 910 & 912	Xontech 910 & 912
Method code	126	126
Sampling method	50 ccpm, Stainless Steel Evacuated Canisters	50 ccpm, Stainless Steel Evacuated Canisters
FRM/FEM/ARM/Other	Not Applicable	Not Applicable
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
Calculated sampling frequency	1:6	1:6
Sampling season	3-Hr (Jul-Oct) 24-Hr (Nov-Jun)	3-Hr (Jul-Oct) 24-Hr (Nov-Jun)
Probe material for reactive gases	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable
Will there be changes within the next 18 months?	Yes	Yes

Table 2.2d Camp Pendleton - Meteorological Equipment Designations + Other

Parameter	**Other Internal Temp**	**Meteorological Wind Speed**	**Meteorological Wind Direction**	**Meteorological External Temp**
POC for monitor	1	1	1	1
Monitor designation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Parameter code	62107	61101	61104	62101
Basic monitoring objective	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Site type	Not Applicable	Not Applicable	Not Applicable	Not Applicable
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
Sampling method	RTD	Cup anemometer	Potentiometer	RTD
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
Distance from supporting structure	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions not on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from the trees	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Sampling season	Year round	Year round	Year round	Year round
Sensor height	Not Applicable	10 m	10 m	5 m
Unrestricted air flow	Not Applicable	360°	360°	360°
Any changes within the next 18 months?	No	No	No	No
APCD Audit	Not Applicable	9/25	9/25	9/25
ARB Audit	Not Applicable	None	None	None

Table 2.3 Camp Pendleton - Distance the Equipment are from Influences

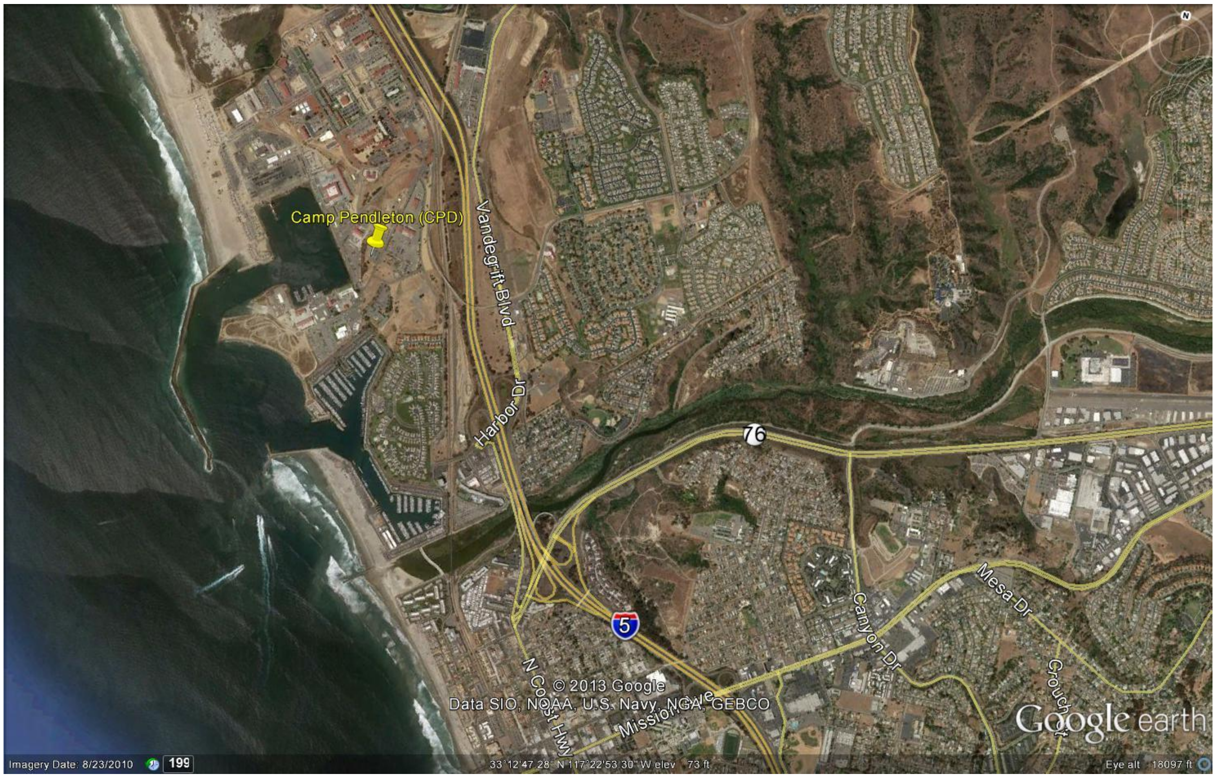
(meters)	Gas Inlet	NOy Inlet	Pb-TSP, PRI (44.5 cfm)	Pb-TSP , QAC (44.5 cfm)	PM_{10}, PRI (40 cfm)	PM_{10}, QAC (40 cfm)	PM_{10} PRI (16.7 lpm)	$PM_{2.5}$ FRM, PRI (16.7 lpm)	$PM_{2.5}$ FRM, QAC (16.7 lpm)	$PM_{2.5}$ non-FEM (16.7 lpm)	$PM_{2.5}$ STN (6.7 lpm)	$PM_{2.5}$ CSN (22.0 lpm)	†PAMS-VOC (50 ccpm)	†PAMS-VOC, QAC (50 ccpm)	††PAMS-Carbonyls (1.5 lpm)	†Toxics-VOC (50 ccpm)	†Toxics-VOC, QAC (50 ccpm)	Toxics-Metals (12 lpm)
Gas Inlet	n/a									1.8			1.9	1.3				
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)	1.8									n/a			3.6	2.9				
$PM_{2.5}$ STN (6.7 lpm)																		
$PM_{2.5}$ CSN (22.0 lpm)																		
†PAMS-VOC (50 ccpm)	1.9									3.6			n/a	0.6				
†PAMS-VOC QAC (50 ccpm)	1.3									2.9			0.6	n/a				
†PAMS-Carbonyls (1.5 lpm)																		
†Toxics-VOC (50 ccpm)																		
†Toxics-VOC, QAC (50 ccpm)																		
Toxics-Metals (12 lpm)																		
Height from ground	5.9									6.0			5.7	5.6				
Distance: from the road	41									41			41	41				
from the supporting structure	5.6									3.9			7.2	6.5				
from obstructions on roof	N									N			N	N				
from obstructions not on roof	N									N			N	N				
from the closest tree	N									N			N	N				
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

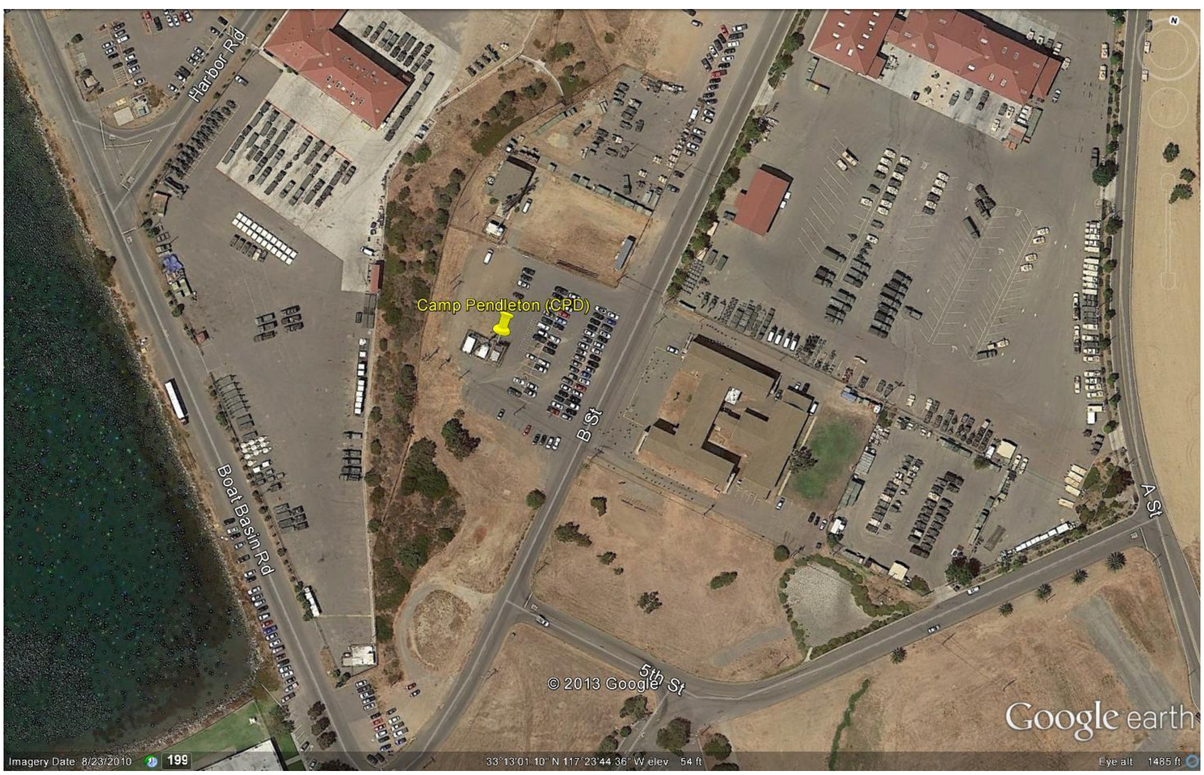
Figure 2.1 Camp Pendleton – Pictures (Directional) from the Rooftop

Figure 2.2 Camp Pendleton – Pictures of the Location of the Station

Long View



Medium View



Section 3.0.0 Chula Vista Station Description and Statement of Purpose

Table 3.1a General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Chula Vista
Year Established:	01/20/1972
Site Address:	80 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 (2010 AADT):	Hilltop Dr. at E. J St.= 9,100
Site Description:	This station is a trailer located on the western corner of the Chula Vista Elementary School District Administration property, immediately south of Chula Vista Fire Station No. 2.
Monitoring Objectives:	Helps track trends for an area that has a high rate of asthma.
Planned Changes:	A new wood deck will replace the old one in 2015. Upon completion, a collocated $PM_{2.5}$ FRM sampler relocated from KVR and sited at CVA.

Table 3.1b Chula Vista – Monitor Designation Summary

Frequency	Type	Parameter	Status
7/24	Ambient	O_3	X
7/24	Ambient, PRI	NO_2	X
	Ambient	CO	
	Trace level	NOy	
	Trace Level	CO	
	Trace Level	SO_2	
	Hi-Vol, PRI	Pb-TSP	
	Hi-Vol QAC	Pb-TSP	
1:6	Hi-Vol, PRI	PM_{10}	X
1:6	Hi-Vol, QAC	PM_{10}	X
	Lo-Vol, PRI	PM_{10}	
1:3	FRM, PRI	$PM_{2.5}$	X
	FRM, QAC	$PM_{2.5}$	D
	FRM, paired samplers	$PM_{10-2.5}$	
	non-FEM	$PM_{2.5}$	
	STN	$PM_{2.5}$	
	CSN	$PM_{2.5}$	
	CSN, SU	$PM_{2.5}$	
	VOC	PAMS	
	VOC ,QAC	PAMS	
	Carbonyls	PAMS	
	Carbonyls, Unofficial	PAMS	
1:12	VOC	Toxics	X
1:12	Total Metals	Toxics	X
1:12	Cr (VI)	Toxics	X
1:12	Aldehydes	Toxics	X
	VOC, SU	Toxics	
	VOC , SU, QAC	Toxics	
	Total Metals, SU	Toxics	
	Cr (VI), SU	Toxics	
7/24	Internal Temperature	Meteorology	X
7/24	Wind Speed	Meteorology	X
7/24	Wind Direction	Meteorology	X
7/24	External Temperature	Meteorology	X
7/24	% Relative Humidity	Meteorology	
	Barometric Pressure	Meteorology	
	Solar Radiation	Meteorology	

A= Add or Recently Added, D= In Development, R= Relocating, T= Terminate or Recently Terminated, X= Existing

Table 3.1c Chula Vista - Monitor Designation Summary

Pollutant	Monitor Designation	Monitor Type	Network Affiliation	Spatial Scale	Monitoring Objective	Site Type
O_3	O	SLAMS	Not Applicable	NS	PI, NAAQS	PE
NO_2	PRI	SLAMS	Not Applicable	NS	PI, NAAQS	PE
PM_{10} (Hi-Vol) primary	O	SLAMS	Not Applicable	NS	NAAQS	PE
PM_{10} (Hi-Vol) collocated	QAC	SLAMS	Not Applicable	NS	NAAQS	QA
$PM_{2.5}$ FRM Sequential	PRI	SLAMS	Not Applicable	NS	NAAQS	PE
Toxics-VOC	Not Applicable	CATAC	Not Applicable	NS	Research	PE
Toxics-Total Metals	Not Applicable	CATAC	Not Applicable	NS	Research	PE
Toxics-Cr (VI)	Not Applicable	CATAC	Not Applicable	NS	Research	PE
Toxics-Aldehydes	Not Applicable	CATAC	Not Applicable	NS	Research	PE
Internal Temperature	Not Applicable	SLAMS	Not Applicable	NS	Not Applicable	Not Applicable
Wind Speed	Not Applicable	SLAMS	Not Applicable	NS	Not Applicable	Not Applicable
Wind Direction	Not Applicable	SLAMS	Not Applicable	NS	Not Applicable	Not Applicable
External Temperature	Not Applicable	SLAMS	Not Applicable	NS	Not Applicable	Not Applicable

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

Table 3.2a Chula Vista - Gaseous Pollutants (Ambient Level) Monitor Designations + Other

Pollutant	O_3	NO_2	Other Zero Air
POC	1	1	Not Applicable
Monitor designation	Other	Primary	Not Applicable
Parameter code	44201	42602 (NO_2)	Not Applicable
Basic monitoring objective	PI, NAAQS	PI, NAAQS	Not Applicable
Site type	Population Exposure	Population Exposure	Not Applicable
Monitor type	SLAMS	SLAMS	Not Applicable
Network affiliation	Not Applicable	Not Applicable	Not Applicable
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Teledyne-API 701H
Method code	047	074	Not Applicable
Sampling method	UV absorption	Chemiluminescence	Not Applicable
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Not Applicable
Monitoring start date	1974	1974	1997
Current sampling frequency	Continuous	Continuous	Not Applicable
Required sampling frequency	Continuous	Continuous	Not Applicable
Sampling season	Year round	Year round	Not Applicable
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	Not Applicable
Residence time for reactive gases	4.77 sec	4.77 sec	Not Applicable
Any changes within the next 18 months?	Yes	Yes	Yes
Frequency of QC check (one-point)	1:14	1:14	Not Applicable
APCD Audit	2/4, 5/16	1/19, 5/26	2/4
ARB Audit	8/14	8/14	None

Table 3.2b1 Chula Vista - Particulate Pollutants ($PM_{2.5}$) – Monitor Designations

Pollutant	**$PM_{2.5}$ FRM Sequential**
POC	1
Monitor designation	Primary
Parameter code	88101 (LC)
Basic monitoring objective	NAAQS
Site type	Population Exposure
Monitor type	SLAMS
Network affiliation	Not Applicable
Instrument manufacturer & model	Thermo 2025
Method code	145 Local Conditions
Sampling method	16.7 LPM, Lo-Vol, sequential, size selective inlet
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Neighborhood Scale
Monitoring start date	1999
Current sampling frequency	1:3
Required sampling frequency	1:6
Sampling season	Year round
Probe material for reactive gases	Not Applicable
Residence time for reactive gases	Not Applicable
Any changes within the next 18 months?	Yes
Frequency of QC check (flow rate verification)	1:30
APCD Audit	3/25, 6/27, 8/2/, 12/29
ARB Audit	8/14
EPA Audit	11/4

Table 3.2b2 Chula Vista - Particulate Pollutants (non-$PM_{2.5}$) Monitor Designations

Pollutant	**PM_{10} Hi-Vol Sequential**	**PM_{10} Hi-Vol Sequential (collocated)**
POC	1 (LC) 2 (STD)	2 (LC) 3 (STD)
Monitor designation	Primary	Quality Assurance
Parameter code	85101 (LC) 81102 (STD)	85101 (LC) 81102 (STD)
Basic monitoring objective	NAAQS	NAAQS
Site type	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS
Network affiliation	Not Applicable	Not Applicable
Instrument manufacturer & model	GMW 2000H w/ SA 1200 Head	GMW 2000H w/ SA 1200 Head
Method code	063	063
Sampling method	40 cfm, Hi-Vol, sequential, size selective inlet	40 cfm, Hi-Vol, sequential, size selective inlet
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	1986	10/6/2012
Current sampling frequency	1:6	1:6
Required sampling frequency	1:6	1:6
Sampling season	Year round	Year round
Probe material for reactive gases	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable
Any changes within the next 18 months?	No	No
Frequency of QC check (flow rate verification)	1:30	1:30
APCD Audit	3/21, 8/28	3/24, 8/28
ARB Audit	8/14	8/14

Table 3.2c Chula Vista - Other Pollutants Monitor Designations

Pollutant	**Toxics-VOC**	**Toxics-Metals Cr(VI)**	**Toxics-Cr(VI)**	**Toxics-Aldehyde**
POC	See CARB	See CARB	See CARB	See CARB
Monitor designation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Parameter code	See CARB	See CARB	See CARB	See CARB
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	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Instrument manufacturer & model	Xontech 910	Xontech 924	Xontech 924	Xontech 924
Method code	See CARB	See CARB	See CARB	See CARB
Sampling method	50 ccpm, Stainless Steel Evacuated Canisters	12 LPM, Filter	12 LPM, Filter	1.5 LPM, DNPH Cartridge
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	CARB	CARB	CARB	CARB
Reporting agency	CARB	CARB	CARB	CARB
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	1:12	1:12	1:12	1:12
Sampling season	Year round	Year round	Year round	Year round
Probe material for reactive gases	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Any changes within the next 18 months?	See CARB	See CARB	See CARB	See CARB

Table 3.2d Chula Vista - Meteorological Equipment Designations + Other

Parameter	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp
POC	1	1	1	1
Monitor designation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Parameter code	62107	61103	61104	62101
Basic monitoring objective	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Site type	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Instrument manufacturer & model	Qualimetrics	Qualimetrics	Qualimetrics	Rotronics
Method code	012	020	020	040
Sampling method	RTD	Cup anemometer	Potentiometer	RTD
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Start date	1972	1972	1972	1998
Current sampling frequency	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year round	Year round	Year round	Year round
Distance from supporting structure	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions not on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from the trees	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Sensor height	Not Applicable	10 m	10 m	5.4 m
Unrestricted airflow	Not Applicable	360^o	360^o	360^o
Any changes within the next 18 months?	Yes	Yes	Yes	Yes
APCD Audit	Not Applicable	5/21	5/21	5/21
ARB Audit	Not Applicable	None	None	None
EPA Audit	None	None	None	None

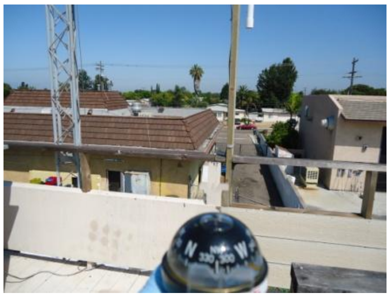
AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

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 (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)
Gas Inlet	n/a				5.4	3.0		3.7								1.5		3.1
NOy Inlet																		
Pb-TSP, PRI (44.5 cfm)																		
Pb-TSP, QAC (44.5 cfm)																		
PM_{10}, PRI (40 cfm)	5.4				n/a	2.2		2.4								5.9		3.8
PM_{10}, QAC (40 cfm)	3.0				2.2	n/a		2.1								3.7		2.2
PM_{10}, PRI (16.7 lpm)																		
$PM_{2.5}$ FRM, PRI (16.7 lpm)	3.7				2.4	2.1		n/a								3.8		1.8
$PM_{2.5}$ 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)	1.5				5.9	3.7		3.8								n/a		1..6
†Toxics-VOC, QAC (50 ccpm)																		
Toxics-Metals (12 lpm)	3.1				3.8	2.2		1.8								1.6		n/a
Height from ground	6.0				5.0	5.0		5.6								5.4		5.6
Distance: from the road	51				51	51		51								51		51
from the supporting structure	N				N	N		N								N		N
from obstructions on roof	N				N	N		N								N		N
from obstructions not on roof	N				N	N		N								N		N
from the closest tree	N				N	N		N								N		N
from furnace/flue	N				N	N		N								N		N
Unrestricted air flow (degrees)	360				360	360		360								360		360

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

Figure 3.1 Chula Vista – Pictures (Directional) form the Rooftop



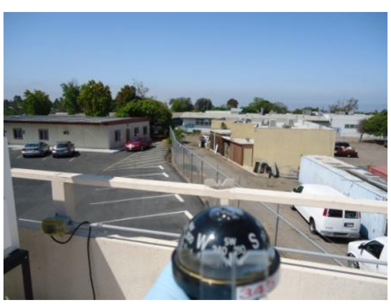
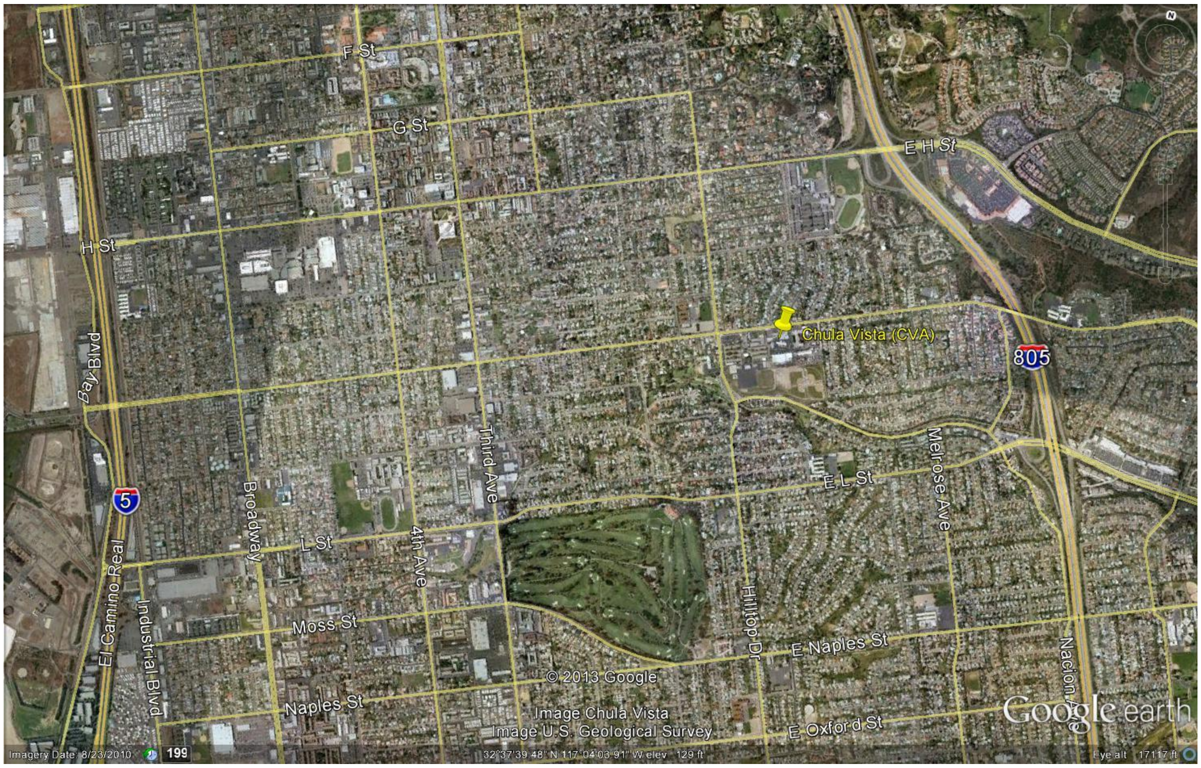
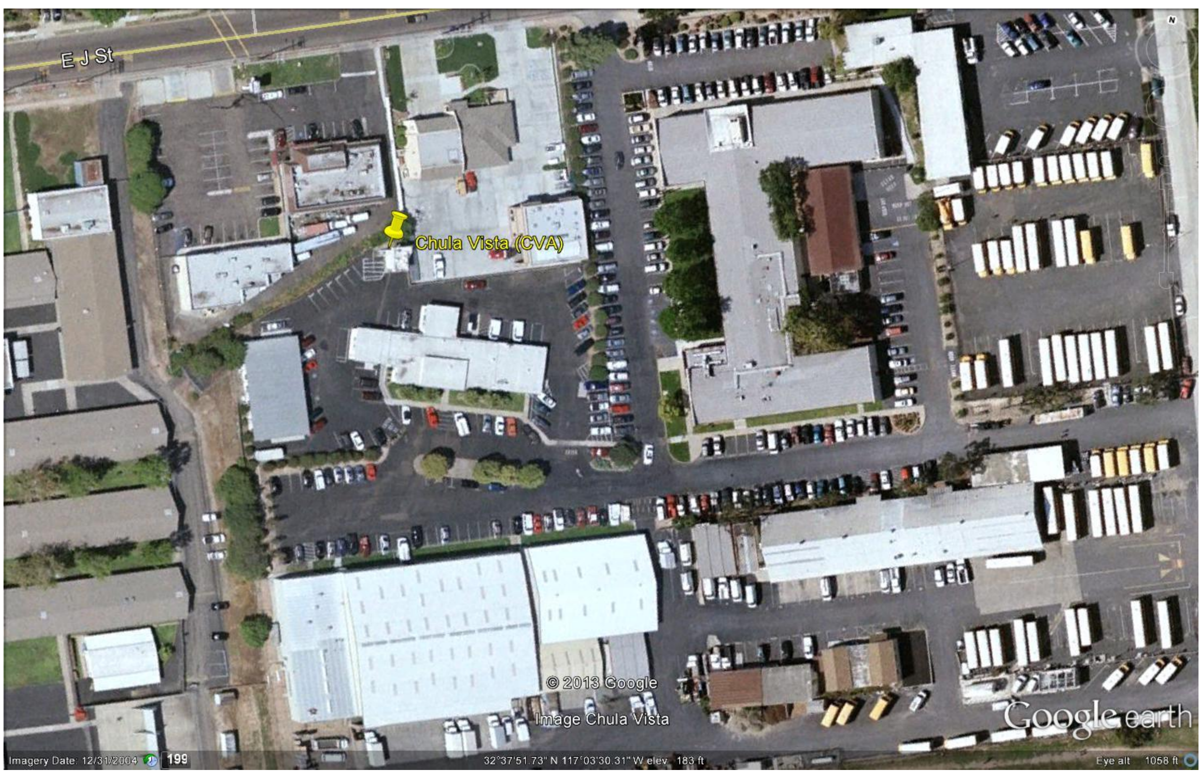


Figure 3.2 Chula Vista – Pictures of the Location of the Station

Long View



Medium View



Section 4.0.0 Del Mar Station Description and Statement of Purpose

Table 4.1a 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 (2010 AADT):	No traffic count is available for the Stratford Ct, nor the closest cross street, 9th St.; the estimated AADT= 3,000 Del Mar Heights Rd. at Camino Del Mar (SE/downwind 512 m)= 16,200
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:	Please note, there are bushes less than the EPA limit of 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.

Table 4.1b Del Mar - Monitor and Equipment Summary

O_3	NO_2	CO	NOy	CO	SO_2	Pb-TSP	Pb-TSP	PM_{10}	PM_{10}	PM_{10}	$PM_{2.5}$	$PM_{2.5}$	$PM_{10-2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	PAMS	PAMS	PAMS	PAMS	Toxics	Toxics	Toxics	Toxics	Toxics	Toxics	Toxics	Toxics	Meteorology	Meteorology	Meteorology	Meteorology	Meteorology	Meteorology	Meteorology
Ambient	Ambient, PRI	Ambient	Trace level	Trace Level	Trace Level	Hi-Vol, PRI	Hi-Vol QAC	Hi-Vol, PRI	Hi-Vol, QAC	Lo-Vol, PRI	FRM, PRI	FRM, QAC	FRM, paired samplers	non-FEM	STN	CSN	CSN, SU	VOC	VOC ,QAC	Carbonyls	Carbonyls, Unofficial	VOC	Total Metals	Cr (VI)	Aldehydes	VOC, SU	VOC , SU, QAC	Total Metals, SU	Cr (VI), SU	Internal Temperature	Wind Speed	Wind Direction	External Temperature	% Relative Humidity	Barometric Pressure	Solar Radiation
7/24																														7/24	7/24	7/24				
X																														X	X	X				

A= Add or Recently Added, D= In Development, R= Relocating, T= Terminate or Recently Terminated, X= Existing

Table 4.1c Del Mar - Monitor Site Designations Summary

Pollutant	Monitor Designation	Monitor Type	Network Affiliation	Spatial Scale	Monitoring Objective	Site Type
O_3	O	SLAMS	Not Applicable	Neighborhood	PI, NAAQS	G/B
Internal Temperature	Not Applicable	SLAMS	Not Applicable	Neighborhood	Not Applicable	Not Applicable
Wind Speed	Not Applicable	SLAMS	Not Applicable	Neighborhood	Not Applicable	Not Applicable
Wind Direction	Not Applicable	SLAMS	Not Applicable	Neighborhood	Not Applicable	Not Applicable

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

Table 4.2a Del Mar - Gaseous Pollutants (Ambient Level) Monitor Designations

Pollutant	O_3
POC	1
Monitor designation	Other
Parameter code	44201
Basic monitoring objective	PI, NAAQS
Site type	General/Background
Monitor type	SLAMS
Network affiliation	Not Applicable
Instrument manufacturer & model	Thermo 49 series
Method code	047
Sampling method	UV absorption
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Neighborhood Scale
Monitoring start date	10/1983
Current sampling frequency	Continuous
Required sampling frequency	Continuous
Sampling season	Year round
Probe material for reactive gases	Teflon
Residence time for reactive gases	2.7 sec
Any changes within the next 18 months?	No
Frequency of QC check (one-point)	1:14
APCD Audit	5/23
ARB Audit	None

Table 4.2b Del Mar - Meteorology Equipment Designations + Other

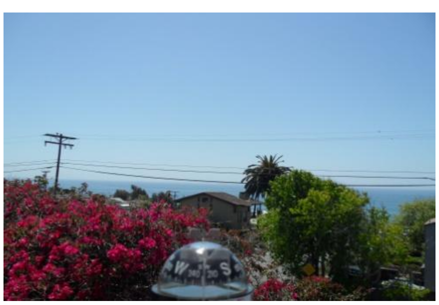
Parameter	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction
POC	1	1	1
Monitor designation	Not Applicable	Not Applicable	Not Applicable
Parameter code	62107	61101	61104
Basic monitoring objective	Not Applicable	Not Applicable	Not Applicable
Site type	Not Applicable	Not Applicable	Not Applicable
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	Not Applicable	Not Applicable	Not Applicable
Instrument manufacturer & model	Qualimetrics	Qualimetrics	Qualimetrics
Method code	012	020	020
Sampling method	RTD	Cup anemometer	Potentiometer
Collecting agency	APCD	APCD	APCD
Analytical agency	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
Operation schedule	Continuous	Continuous	Continuous
Distance from supporting structure	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions on the roof	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions not on the roof	Not Applicable	Not Applicable	Not Applicable
Distance from the trees	Not Applicable	Not Applicable	Not Applicable
Sensor height	Not Applicable	10 m	10 m
Unrestricted airflow	Not Applicable	360^o	360^o
Any changes within the next 18 months?	No	No	No
APCD Audit	Not Applicable	6/28	6/28
ARB Audit	Not Applicable	None	None

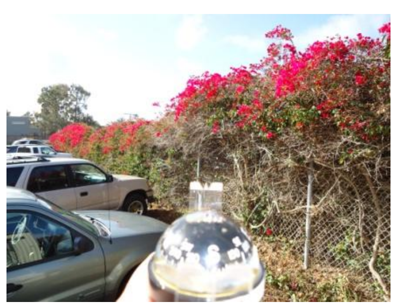
Table 4.3 Del Mar - Distance the Equipment are from Influences

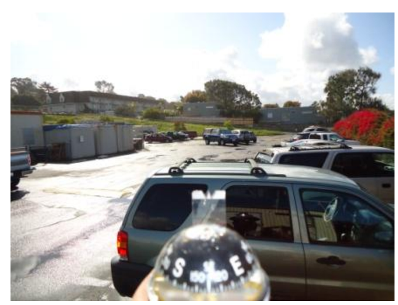
(metric)	Gas Inlet	NOy Inlet	Pb-TSP, PRI (44.5 cfm)	Pb-TSP , QAC (44.5 cfm)	PM_{10}, PRI (40 cfm)	PM_{10}, QAC (40 cfm)	PM_{10} PRI (16.7 lpm)	$PM_{2.5}$ FRM, PRI (16.7 lpm)	$PM_{2.5}$ FRM, QAC (16.7 lpm)	$PM_{2.5}$ non-FEM (16.7 lpm)	$PM_{2.5}$ STN (6.7 lpm)	$PM_{2.5}$ CSN (22.0 lpm)	†PAMS-VOC (50 ccpm)	†PAMS-VOC, QAC (50 ccpm)	†PAMS-Carbonyls (1.5 lpm)	†Toxics-VOC (50 ccpm)	†Toxics-VOC, QAC (50 ccpm)	Toxics-Metals (12 lpm)
Gas Inlet	n/a																	
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)																		
Height from ground	4.2																	
Distance: from the road	12.2																	
from the supporting structure	n/a																	
from obstructions on roof	n/a																	
from obstructions not on roof	N																	
from the closest tree	19.7																	
from furnace/flue	N																	
Unrestricted air flow (degrees)	360																	

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

Figures 4.1 Del Mar – Pictures (Directional) from the Ground*



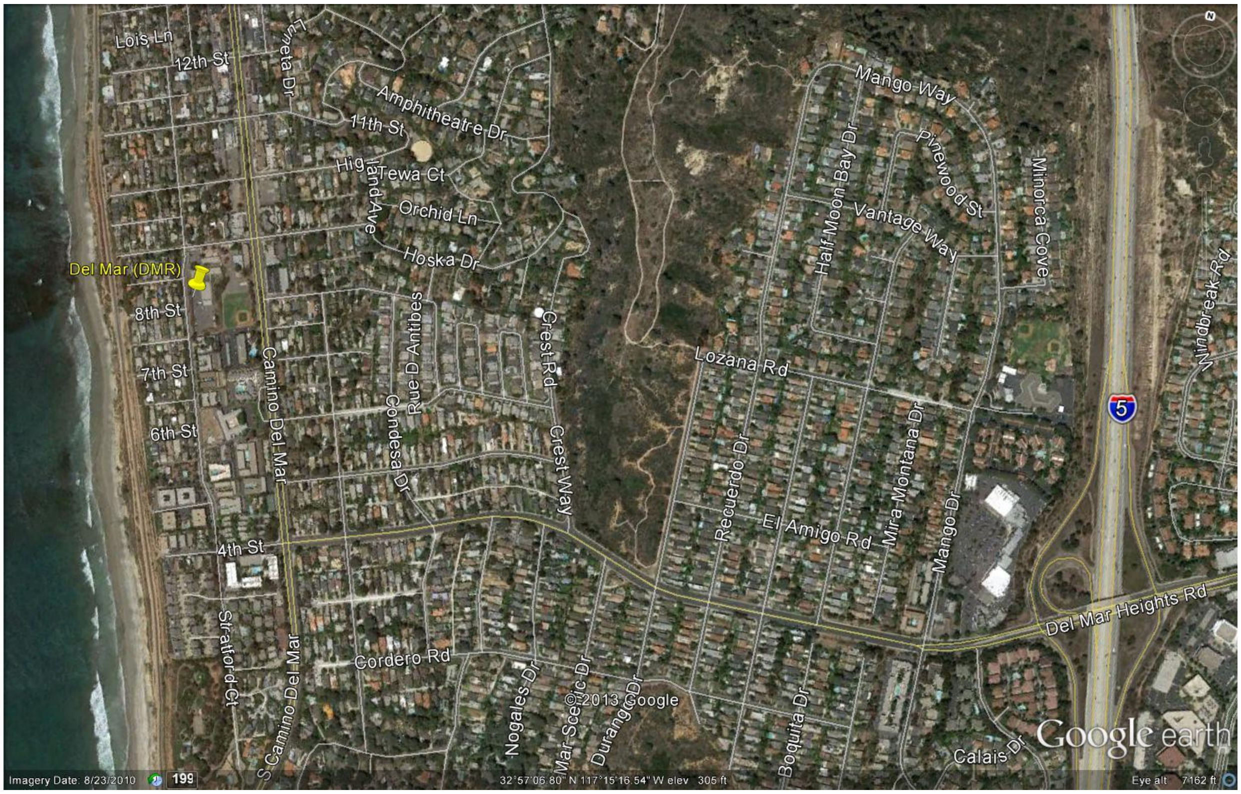




***There is no deck from which to take pictures.**

Figure 4.2 Del Mar – Pictures of the Location of the Station

Long View



Medium View

Section 5.0.0 Donovan Station Description and Statement of Purpose

Table 5.1a General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Donovan
Year Established:	1/2005 (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 (2010 AADT):	No traffic count is available for Donovan Prison Rd.; AADT estimated= 300 Otay Mesa Rd. at Alta Rd. southwest/downwind 2,100 m = 5,900
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

Table 5.1b Donovan – Monitor and Equipment Summary

Parameter	Method	Frequency	Status
O_3	Ambient	7/24	X
NO_2	Ambient, PRI	7/24	X
CO	Ambient		
NOy	Trace level		
CO	Trace Level		
SO_2	Trace Level		
Pb-TSP	Hi-Vol, PRI		
Pb-TSP	Hi-Vol QAC		
PM_{10}	Hi-Vol, PRI	1:6	X
PM_{10}	Hi-Vol, QAC	1:6	
PM_{10}	Lo-Vol, PRI		
$PM_{2.5}$	FRM, PRI		
$PM_{2.5}$	FRM, QAC		
$PM_{10-2.5}$	FRM, paired samplers		
$PM_{2.5}$	non-FEM	7/24	X
$PM_{2.5}$	STN		
$PM_{2.5}$	CSN		
$PM_{2.5}$	CSN, SU		
PAMS	VOC		
PAMS	VOC ,QAC		
PAMS	Carbonyls		
PAMS	Carbonyls, Unofficial		D
Toxics	VOC		
Toxics	Total Metals		
Toxics	Cr (VI)		
Toxics	Aldehydes		
Toxics	VOC, SU	1:6	X
Toxics	VOC , SU, QAC	1:6	X
Toxics	Total Metals, SU	1:6	X
Toxics	Cr (VI), SU	1:6	D
Meteorology	Internal Temperature	7/24	X
Meteorology	Wind Speed	7/24	X
Meteorology	Wind Direction	7/24	X
Meteorology	External Temperature	7/24	X
Meteorology	% Relative Humidity	7/24	
Meteorology	Barometric Pressure		
Meteorology	Solar Radiation		

A= Add or Recently Added, D= In Development, R= Relocating, T= Terminate or Recently Terminated, X= Existing

Table 5.1c Donovan – Monitor Designation Summary

Pollutant	Monitor Designation	Monitor Type	Network Affiliation	Spatial Scale	Monitoring Objective	Site Type
O_3	O	SLAMS	Not Applicable	Neighborhood	PI, NAAQS	Population Exposure
NO_2	PRI	SLAMS	Not Applicable	Neighborhood	PI, NAAQS	Population Exposure
$PM_{2.5}$ non-FEM Continuous	O	SPM	Not Applicable	Neighborhood	PI, Research	Population Exposure
PM_{10} (Hi-Vol)	O	SLAMS	Not Applicable	Neighborhood	NAAQS	Highest Concentrations
Toxics-VOC	Not Applicable	Not Applicable	SDAPCD Network	Neighborhood	Research	Population Exposure
Toxics-VOC	QAC	Not Applicable	SDAPCD Network	Neighborhood	Research	Population Exposure
Toxics-Total Metals	Not Applicable	Not Applicable	SDAPCD Network	Neighborhood	Research	Population Exposure
Toxics-Cr (VI)	Not Applicable	Not Applicable	SDAPCD Network	Neighborhood	Research	Population Exposure
Internal Temperature	Not Applicable	SLAMS	SLAMS	Neighborhood	Not Applicable	Population Exposure
Wind Speed	Not Applicable	SLAMS	SLAMS	Neighborhood	Not Applicable	Population Exposure
Wind Direction	Not Applicable	SLAMS	SLAMS	Neighborhood	Not Applicable	Population Exposure
External Temperature	Not Applicable	SLAMS	SLAMS	Neighborhood	Not Applicable	Population Exposure

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

Table 5.2a Donovan - Gaseous Pollutants (Ambient Level) Monitor Designations

Pollutant	O_3	NO_2	Other Zero Air
POC	1	1	Not Applicable
Monitor designation	Other	Primary	Not Applicable
Parameter code	44201	42602 (NO_2)	Not Applicable
Basic monitoring objective	PI, NAAQS	PI, NAAQS	Not Applicable
Site type	Population Exposure	Population Exposure	Not Applicable
Monitor type	SLAMS	SLAMS	Not Applicable
Network affiliation	Not Applicable	Not Applicable	Not Applicable
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Teledyne-API 701
Method code	047	074	Not Applicable
Sampling method	UV absorption	Chemiluminescence	Not Applicable
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Not Applicable
Monitoring start date	7/2014	7/2014	7/2014
Current sampling frequency	Continuous	Continuous	Not Applicable
Calculated sampling frequency	Continuous	Continuous	Not Applicable
Sampling season	Year round	Year round	Not Applicable
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	Not Applicable
Residence time for reactive gases	5.48 sec	5.48 sec	Not Applicable
Any changes within the next 18 months?	Yes	Yes	Yes
Frequency of QC check (one-point)	1:14	1:14	Not Applicable
APCD Audit	*	*	*
ARB Audit	*	*	None

*Not operational for a year, therefore no audits

Table 5.2b1 Donovan - Particulate Pollutants ($PM_{2.5}$) Monitor Designations

Pollutant	**$PM_{2.5}$ non-FEM Continuous**
POC	1
Monitor Designation	Other
Parameter code	88502 (LC)
Basic monitoring objective	PI, Research
Site type	Population Exposure
Monitor type	SPM
Network affiliation	Not Applicable
Instrument manufacturer & model	Met One BAM 1020
Method code	733
Sampling method	16.7 LPM, Lo-Vol, continuous, size selective inlet
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Population Exposure
Monitoring start date	7/2014
Current sampling frequency	Continuous
Required sampling frequency	Continuous
Sampling season	Year round
Probe material for reactive gases	Not Applicable
Residence time for reactive gases	Not Applicable
Any changes within the next 18 months?	No
Frequency of QC check (flow rate verification)	1:14
APCD Audit	*
ARB Audit	*

*Not operational for a year, therefore no audits

Table 5.2b2 Donovan - Particulate Pollutants (non-$PM_{2.5}$) Monitor Designations

Pollutant	PM_{10} Hi-Vol Sequential
POC	1
Monitor designation	Other
Parameter code	85101 (LC) 81102 (STD)
Basic monitoring objective	NAAQS
Site type	Population Exposure
Monitor type	SLAMS
Network affiliation	Not Applicable
Instrument manufacturer & model	GMW 2000H w/ SA 1200 Head
Method code	063
Sampling method	40 cfm, Hi-Vol, sequential, size selective inlet
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Neighborhood Scale
Monitoring start date	7/2014
Current sampling frequency	1:6
Required sampling frequency	1:6
Sampling season	Year round
Probe material for reactive gases	Not Applicable
Residence time for reactive gases	Not Applicable
Any changes within the next 18 months?	None
Frequency of QC check (flow rate verification)	1:30
APCD Audit	*
ARB Audit	*

*Not operational for a year, therefore no audits

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

Table 5.2c Donovan - Other Pollutants Monitor Designations

Pollutant	**TOXICS-VOC**	**TOXICS-VOC**	**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	Not Applicable	Not Applicable	Not Applicable
Network affiliation	SDAPCD Network	SDAPCD Network	SDAPCD Network
Instrument manufacturer & model	Xontech 910A (Fused Silica Lined)	Xontech 910A (Fused Silica Lined)	Xontech 924
Method code	210	210	Collected; Not analyzed
Sampling method	50 ccpm, Stainless Steel Evacuated Canisters (Fused Silica Lined)	50 ccpm, Stainless Steel Evacuated Canisters (Fused Silica Lined)	12 LPM, Filter
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	1:6	1:6	1:12
Required sampling frequency	1:6	1:6	1:12
Sampling season	Year round	Year round	Year round
Probe material for reactive gases	Not Applicable	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable	Not Applicable
Any changes within the next 18 months?	Yes	Yes	Yes

Table 5.2d Donovan - Meteorological Equipment Monitor Designations + Other

Parameter	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp
POC	1	1	1	1
Monitor designation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Parameter code	62107	61101	61104	62101
Basic monitoring objective	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Site type	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Instrument manufacturer & model	Qualimetrics	Qualimetrics	Qualimetrics	Rotronics
Method code	012	050	020	040
Sampling method	RTD	Cup anemometer	Potentiometer	RTD
Analytical agency	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Start date	7/2014	7/2014	7/2014	7/2014
Current sampling frequency	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year round	Year round	Year round	Year round
Distance from supporting structure	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions not on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from trees	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Unrestricted airflow	n/a	360°	360°	360°
Sensor height	1.7 m	Not Applicable	Not Applicable	Not Applicable
Any changes within the next 18 months?	Yes	Yes	Yes	Yes
APCD Audit	Not Applicable	*	*	*
ARB Audit	Not Applicable	None	None	None

*Not operational for a year, therefore no audits

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 (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)
Gas Inlet	n/a				4.5					2.1						3.9	4.9	3.3
NOy Inlet																		
Pb-TSP, PRI (44.5 cfm)																		
Pb-TSP, QAC (44.5 cfm)																		
PM_{10}, PRI (40 cfm)	4.5				n/a					5.6						6.4	7.4	2.8
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)	2.1				5.6					n/a						2.9	3.9	3.8
$PM_{2.5}$ 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)	3.9				6.4					2.9						n/a	1.0	3.3
†Toxics-VOC, QAC (50 ccpm)	4.9				7.4					3.9						1.0	n/a	4.3
Toxics-Metals (12 lpm)	3.3				2.8					3.8						3.3	4.3	n/a
Height from ground	6.6				6.0					6.7						6.4	6.4	6.5
Distance: from the road	26				26					26						26	26	26
from the supporting structure	N				N					N						N	N	N
from obstructions on roof	N				N					N						N	N	N
from obstructions not on roof	N				N					N						N	N	N
from the closest tree	N				N					N						N	N	N
from furnace/flue	N				N					N						N	N	N
Unrestricted air flow (degrees)	360				360					360						360	360	360

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

Figure 5.1 Donovan – Pictures (Directional) from the Rooftop

Figure 5.2 Donovan – Pictures of the Location

Long View

Donovan

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

Table 6.1a 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 (2010 AADT):	Main St. at Sigsbee St.= 3,000
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:	None

Table 6.1b Downtown – Monitor and Equipment Summary

7/24	7/24	7/24							1:6		1:1			7/24				1:6									1:6		1:12	7/24	7/24	7/24	7/24	7/24		
Ambient	Ambient, PRI	Ambient	Trace level	Trace Level	Trace Level	Hi-Vol, PRI	Hi-Vol QAC	Hi-Vol, PRI	Hi-Vol, QAC	Lo-Vol, PRI	FRM, PRI	FRM, QAC	FRM, paired samplers	non-FEM	STN	CSN	CSN, SU	VOC	VOC ,QAC	Carbonyls	Carbonyls, Unofficial	VOC	Total Metals	Cr (VI)	Aldehydes	VOC, SU	VOC , SU, QAC	Total Metals, SU	Cr (VI), SU	Internal Temperature	Wind Speed	Wind Direction	External Temperature	% Relative Humidity	Barometric Pressure	Solar Radiation
O_3	NO_2	CO	NOy	CO	SO_2	Pb-TSP	Pb-TSP	PM_{10}	PM_{10}	PM_{10}	$PM_{2.5}$	$PM_{2.5}$	$PM_{10-2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	PAMS	PAMS	PAMS	PAMS	Toxics	Toxics	Toxics	Toxics	Toxics	Toxics	Toxics	Toxics	Meteorology	Meteorology	Meteorology	Meteorology	Meteorology	Meteorology	Meteorology
X	X	X						X			X			X				X			X	X					X	D	D	X	X	X	X			

A= Add or Recently Added, D= In Development, R= Relocating, T= Terminate or Recently Terminated, X= Existing

Table 6.1c Downtown – Monitor and Equipment Summary

Pollutant	Monitor Designation	Monitor Type	Network Affiliation	Spatial Scale	Monitoring Objective	Site Type
O_3	O	SLAMS	Not Applicable	NS	PI, NAAQS	PE
NO_2	PRI	SLAMS	Not Applicable	NS	PI, NAAQS	PE
CO	O	SLAMS	Not Applicable	NS	PI, NAAQS	PE
PM_{10} (Hi-Vol) Sequential	O	SLAMS	Not Applicable	NS	NAAQS	PE
$PM_{2.5}$ FRM Sequential	PRI	SLAMS	Not Applicable	NS	NAAQS	PE
$PM_{2.5}$ non-FEM Continuous	O	SLAMS	Not Applicable	NS	PI, Research	PE
$PM_{2.5}$ Sequential	O	Not Applicable	CSN SU SDAPCD Network	NS	Research	PE
PAM-Carbonyls	O	Not Applicable	UNPAMS	NS	Research	PE
Toxics-VOC	Not Applicable	Not Applicable	SDAPCD Network	NS	Research	PE
Toxics-Total Metals	Not Applicable	Not Applicable	SDAPCD Network	NS	Research	PE
Toxics-Cr (VI)	Not Applicable	Not Applicable	SDAPCD Network	NS	Research	PE
Internal Temperature	Not Applicable	SLAMS	Not Applicable	NS	Data	Not Applicable
Wind Speed	Not Applicable	SLAMS	Not Applicable	NS	Data	Not Applicable
Wind Direction	Not Applicable	SLAMS	Not Applicable	NS	Data	Not Applicable
External Temperature	Not Applicable	SLAMS	Not Applicable	NS	Data	Not Applicable
% Relative Humidity	Not Applicable	SLAMS	Not Applicable	NS	Data	Not Applicable

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

Table 6.2a Downtown - Gaseous Pollutants (Ambient Level) Monitor Designations + Other

Pollutant	O_3	NO_2	CO	Other Zero Air
POC	1	1	1	Not Applicable
Monitor designation	Other	Primary	Other	Not Applicable
Parameter code	44201	42602 (NO_2)	42101	Not Applicable
Basic monitoring objective	PI, NAAQS	PI, NAAQS	PI, NAAQS	Not Applicable
Site type	Population Exposure	Population Exposure	Population Exposure	Not Applicable
Monitor type	SLAMS	SLAMS	SLAMS	Not Applicable
Network affiliation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Thermo 48i	Teledyne-API 701H
Method code	047	074	054	Not Applicable
Sampling method	UV absorption	Chemiluminescence	Nondispersive Infrared	Not Applicable
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Not Applicable
Monitoring start date	7/2005	7/2005	7/2005	7/2005
Current sampling frequency	Continuous	Continuous	Continuous	Not Applicable
Required sampling frequency	Continuous	Continuous	Continuous	Not Applicable
Sampling season	Year round	Year round	Year round	Not Applicable
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	Borosilicate glass	Not Applicable
Residence time for reactive gases	5.01 sec	5.01 sec	5.01 sec	Not Applicable
Any changes within the next 18 months?	No	No	No	No
Frequency of QC check (one-point)	1:14	1:14	1:14	Not Applicable
APCD Audit	2/12	2/24, 6/13	2/12, 6/10	3/12
ARB Audit	8/13	8/13	8/13	None

Table 6.2b1 Downtown - Particulate Pollutants ($PM_{2.5}$) Monitor Designations

Pollutant	**$PM_{2.5}$ non-FEM Continuous**	**$PM_{2.5}$ FRM Sequential**	**$PM_{2.5}$ CSN, SU Sequential**
POC	1	1	1
Monitor Designation	Other	Primary	Not Applicable
Parameter code	88502 (LC)	88101 (LC)	See $PM_{2.5}$ Table 9.3b
Basic monitoring objective	PI, Research	NAAQS	Research
Site type	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	Supplemental Speciation
Network affiliation	Not Applicable	Not Applicable	CSN SU SDAPCD Network
Instrument manufacturer & model	Met One BAM 1020	Thermo 2025	Met One SASS
Method code	733	145	See $PM_{2.5}$ Table 9.3b
Sampling method	16.7 LPM, Lo-Vol, continuous, size selective inlet	16.7 LPM, Lo-Vol, sequential, size selective inlet	6.7 LPM, Lo-Vol, sequential, size selective inlet
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 non-FEM	7/2005	8/10/2008
Current sampling frequency	Continuous	1:3	1:6
Required sampling frequency	Continuous	1:6	Not Applicable
Sampling season	Year round	Year round	Year round
Probe material for reactive gases	Not Applicable	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable	Not Applicable
Any changes within the next 18 months?	No	No	No
Frequency of QC check (flow rate verification)	1:14	1:30	1:30
APCD Audit	3/20, 6/22, 12/28	3/20, 6/27, 9/24, 12/28	3/26, 6/30, 9/24, 12/28
ARB Audit	8/13	8/13	None
EPA Audit	Not Applicable	3/6	Not Applicable

Table 6.2b2 Downtown - Particulate Pollutants (non-$PM_{2.5}$) Monitor Designations

Pollutant	**PM_{10} Hi-Vol Sequential**
POC	1
Monitor designation	Other
Parameter code	85101 (LC) 81102 (STD)
Basic monitoring objective	NAAQS
Site type	Population Exposure
Monitor type	SLAMS
Network affiliation	Not Applicable
Instrument manufacturer & model	GMW 2000H w/ SA 1200 Head
Method code	063
Sampling method	40 cfm, Hi-Vol, sequential, size selective inlet
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Neighborhood Scale
Monitoring start date	7/2005
Current sampling frequency	1:6
Required sampling frequency	1:6
Sampling season	Year round
Probe material for reactive gases	Not Applicable
Residence time for reactive gases	Not Applicable
Any changes within the next 18 months?	None
Frequency of QC check (flow rate verification)	1:30
APCD Audit	4/30, 12/28
ARB Audit	8/13

Table 6.2c Downtown - Other Pollutants Monitor Designations

Pollutant	**TOXIC-VOC**	**TOXIC-Metals**	**PAMS-Carbonyls (unofficial)**
POC	1	1	1
Monitor designation	Not Applicable	Not Applicable	Other
Parameter code	See Toxics sec Table 13.b	Collected; not analyzed	Collected; not analyzed
Basic monitoring objective	Research	Research	Research
Site type	Population Exposure	Population Exposure	Population Exposure
Monitor type	Not Applicable	Not Applicable	Not Applicable
Network affiliation	SDAPCD Network	SDAPCD Network	Unofficial PAMS
Instrument manufacturer & model	Xontech 910A (Fused Silica Lined)	Xontech 924	Xontech 924
Method code	210	Collected; not analyzed	202
Sampling method	50 ccpm, Stainless Steel Evacuated Canisters (Fused Silica Lined)	12 LPM, Filter	150 ccpm, DNPH Cartridge
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
Current sampling frequency	1:6	1:12	1:6
Required sampling frequency	1:6	1:12	1:6
Sampling season	Year round	Year round	Year round
Probe material for reactive gases	Not Applicable	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable	Not Applicable
Will there be changes within the next 18 months?	No	No	No

Table 6.2d Downtown - Meteorological Equipment Designations + Other

Parameter	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp
POC	1	1	1	1
Monitor designation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Parameter code	62107	61101	61104	62101
Basic monitoring objective	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Site type	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Instrument manufacturer & model	Qualimetrics	Qualimetrics	Qualimetrics	Rotronics
Method code	012	050	020	040
Sampling method	RTD	Cup anemometer	Potentiometer	RTD
Collecting agency	APCD	APCD	APCD	APCD
Analytical agency	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
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
Distance from supporting structure	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions not on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from the trees	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Sensor height	Not Applicable	10 m	10 m	5.5 m
Unrestricted airflow	Not Applicable	360^{o}	360^{o}	360^{o}
Any changes within the next 18 months?	No	No	No	No
APCD Audit	Not Applicable	3/5	3/5	3/5
ARB Audit	Not Applicable	None	None	None

Table 6.3 Downtown - Distance the Equipment are from Influences

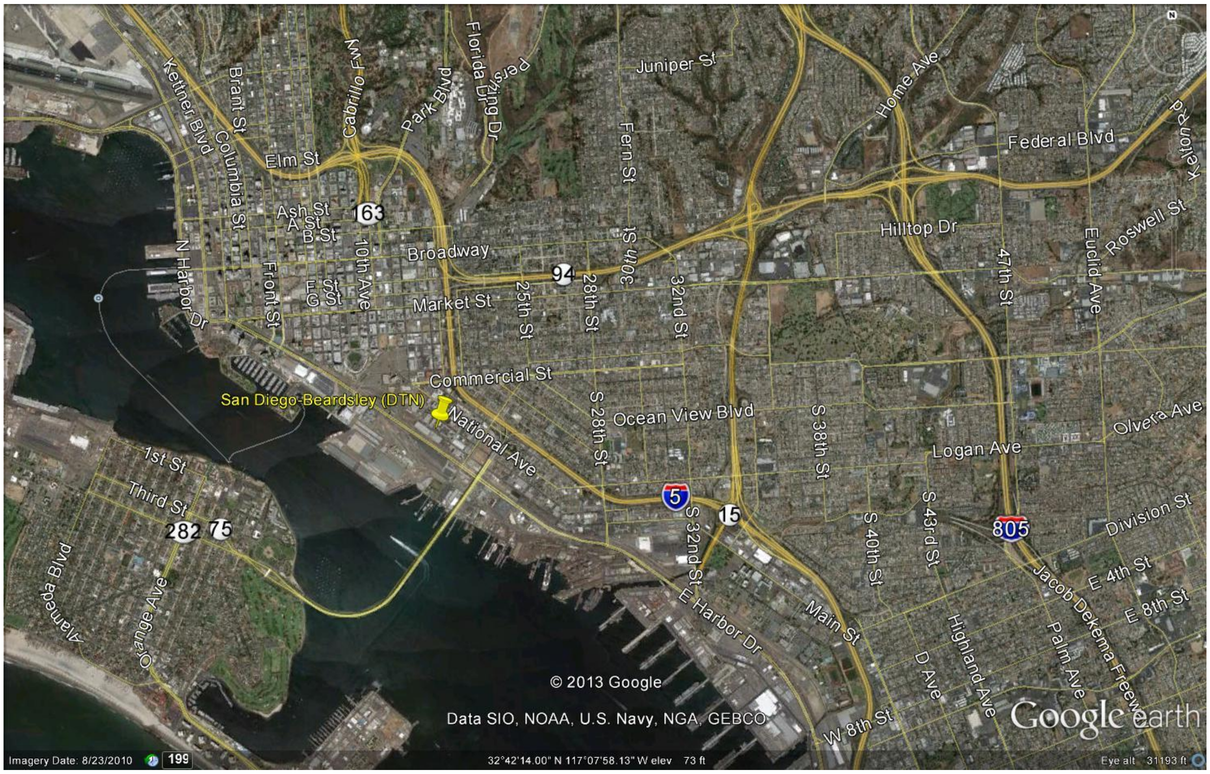
(meters)	Gas Inlet	NOy Inlet	Pb-TSP, PRI (44.5 cfm)	Pb-TSP , QAC (44.5 cfm)	PM_{10}, PRI (40 cfm)	PM_{10}, QAC (40 cfm)	PM_{10} PRI (16.7 lpm)	$PM_{2.5}$ FRM, PRI (16.7 lpm)	$PM_{2.5}$ FRM, QAC (16.7 lpm)	$PM_{2.5}$ non-FEM (16.7 lpm)	$PM_{2.5}$ STN (6.7 lpm)	$PM_{2.5}$ CSN (22.0 lpm)	†PAMS-VOC (50 ccpm)	†PAMS-VOC, QAC (50 ccpm)	†PAMS-Carbonyls (1.5 lpm)	†Toxics-VOC (50 ccpm)	†Toxics-VOC, QAC (50 ccpm)	Toxics-Metals (12 lpm)
Gas Inlet	n/a				2.7			1.7		3.3	1.8					3.9		3.0
NOy Inlet																		
Pb-TSP, PRI (44.5 cfm)																		
Pb-TSP, QAC (44.5 cfm)																		
PM_{10}, PRI (40 cfm)	2.7				n/a			2.3		2.0	2.7					1.9		2.2
PM_{10}, QAC (40 cfm)																		
PM_{10}, PRI (16.7 lpm)																		
$PM_{2.5}$ FRM, PRI (16.7 lpm)	1.7				2.3			n/a		2.0	3.1					4.3		4.0
$PM_{2.5}$ FRM, QAC (16.7 lpm)																		
$PM_{2.5}$ non-FEM (16.7 lpm)	3.3				2.0			2.0		n/a	4.4					4.2		4.5
$PM_{2.5}$ STN (6.7 lpm)	1.8				2.7			3.1		4.4	n/a					3.1		1.7
$PM_{2.5}$ CSN (22.0 lpm)																		
†PAMS-VOC (50 ccpm)																		
†PAMS-VOC QAC (50 ccpm)																		
†PAMS-Carbonyls (1.5 lpm)																		
†Toxics-VOC (50 ccpm)	3.9				1.9			4.3		4.2	3.1					n/a		1.7
†Toxics-VOC, QAC (50 ccpm)																		
Toxics-Metals (12 lpm)	3.0				2.2			4.0		4.5	1.7					1.2		n/a
Height from ground	6.0				5.1			5.7		5.7	5.5					6.0		5.7
Distance: from the road	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
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	21				21			21		21	21					21		21
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

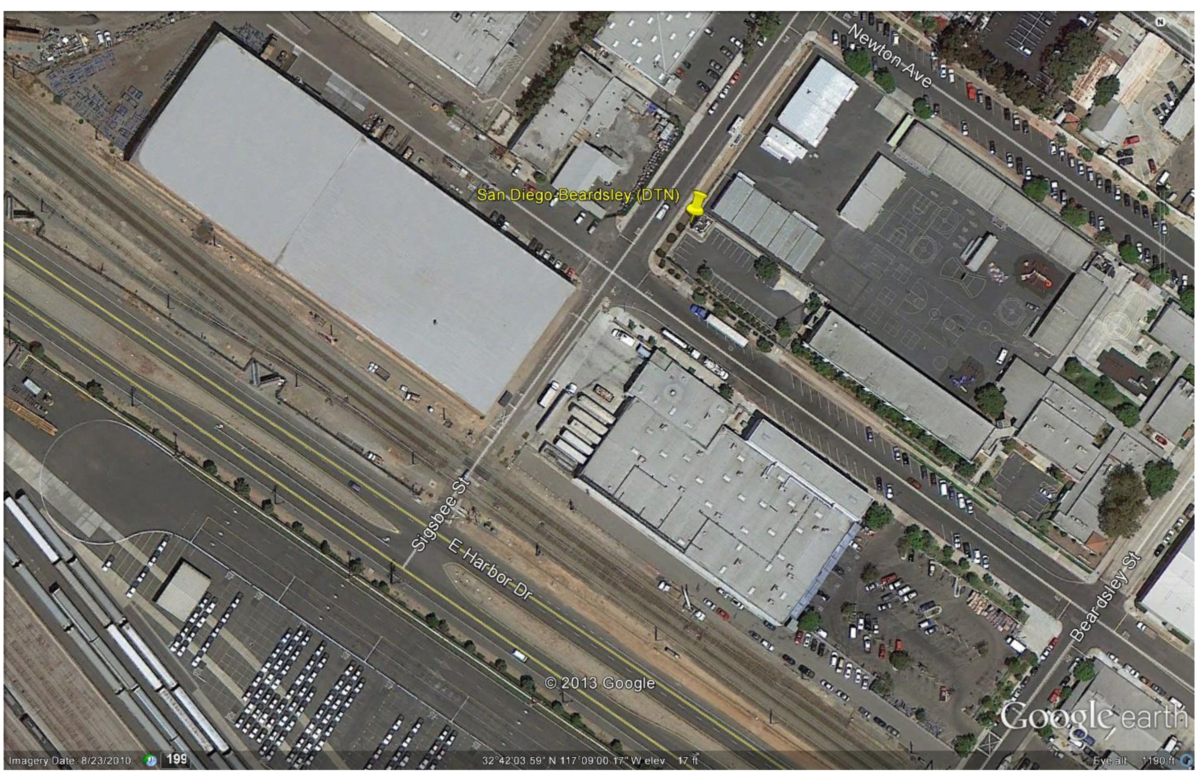
Figure 6.1 Downtown – Pictures (Directional) from the Rooftop

Figure 6.2 Downtown – Pictures of the Location of the Station

Long View



Medium View



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

Table 7.1a General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	McClellan-Palomar (Palomar)
Year Established:	3/2012
Site Address:	2192 Palomar Airport Rd.
Site Name Abbreviation:	CRQ
AQS Number:	06-073-1020
Latitude:	33.1380846 ^{O}
Longitude:	-117.272668 ^{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 (2010 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 AADT was used. Additionally, the measurements from the road used El Camino Real.
Monitoring Objectives:	To quantify airborne lead particulates from the combustion of aviation gasoline.
Planned Changes:	None

Table 7.1b Palomar Airport – Monitor and Equipment Summary

O_3	Ambient		
NO_2	Ambient, PRI		
CO	Ambient		
NOy	Trace level		
CO	Trace Level		
SO_2	Trace Level		
Pb-TSP	Hi-Vol, PRI	1:6	X
Pb-TSP	Hi-Vol QAC		X
PM_{10}	Hi-Vol, PRI		
PM_{10}	Hi-Vol, QAC		
PM_{10}	Lo-Vol, PRI		
$PM_{2.5}$	FRM, PRI		
$PM_{2.5}$	FRM, QAC		
$PM_{10-2.5}$	FRM, paired samplers		
$PM_{2.5}$	non-FEM		
$PM_{2.5}$	STN		
$PM_{2.5}$	CSN		
$PM_{2.5}$	CSN, SU		
PAMS	VOC		
PAMS	VOC ,QAC		
PAMS	Carbonyls		
PAMS	Carbonyls, Unofficial		
Toxics	VOC		
Toxics	Total Metals		
Toxics	Cr (VI)		
Toxics	Aldehydes		
Toxics	VOC, SU		
Toxics	VOC , SU, QAC		
Toxics	Total Metals, SU		
Toxics	Cr (VI), SU		
Meteorology	Internal Temperature		
Meteorology	Wind Speed		
Meteorology	Wind Direction		
Meteorology	External Temperature		
Meteorology	% Relative Humidity		
Meteorology	Barometric Pressure		
Meteorology	Solar Radiation		

A= Add or Recently Added, D= In Development, R= Relocating, T= Terminate or Recently Terminated, X= Existing

Table 7.1c Palomar Airport – Monitor Designation Summary

Pollutant	Monitor Designation	Monitor Type	Network Affiliation	Spatial Scale	Monitoring Objective	Site Type
Pb	O	SLAMS	Not Applicable	Micro	NAAQS	SO
Pb	QAC	SLAMS	Not Applicable	Micro	NAAQS	SO

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

Table 7.2a Palomar Airport - Particulate Pollutants (non-$PM_{2.5}$) Monitor Designations

Pollutant	**Pb-TSP Hi-Vol Sequential (primary)**	**Pb-TSP Hi-Vol Sequential (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	Not Applicable	Not Applicable
Instrument manufacturer & model	Tisch TE-5170BLVFC+	Tisch TE-5170BLVFC+
Method code	192	192
Sampling method	40 cfm, Hi-Vol, sequential	40 cfm, Hi-Vol, sequential
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Micro Scale	Micro Scale
Monitoring start date	3/10/2012	3/10/2012
Current sampling frequency	1:6	1:6
Calculated sampling frequency	1:6	1:6
Sampling season	Year round	Year round
Probe material for reactive gases	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable
Any changes within the next 18 months?	Yes	Yes
Frequency of QC check (flow rate verification)	1:30	1:30
APCD Audit	*	*
ARB Audit	*	*
EPA Audit	None	None

*Not operational for a year, therefore no audits

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)
Gas Inlet																		
NOy Inlet																		
Pb-TSP, PRI (44.5 cfm)			n/a	3.0														
Pb-TSP, QAC (44.5 cfm)			3.0	n/a														
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)																		
Height from ground			2.5	2.5														
Distance: from the road			380	380														
from the supporting structure			N	N														
from obstructions on roof			N	N														
from obstructions not on roof			N	N														
from the closest tree			31	31														
from furnace/flue			N	N														
Unrestricted air flow (degrees)			360	360														

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

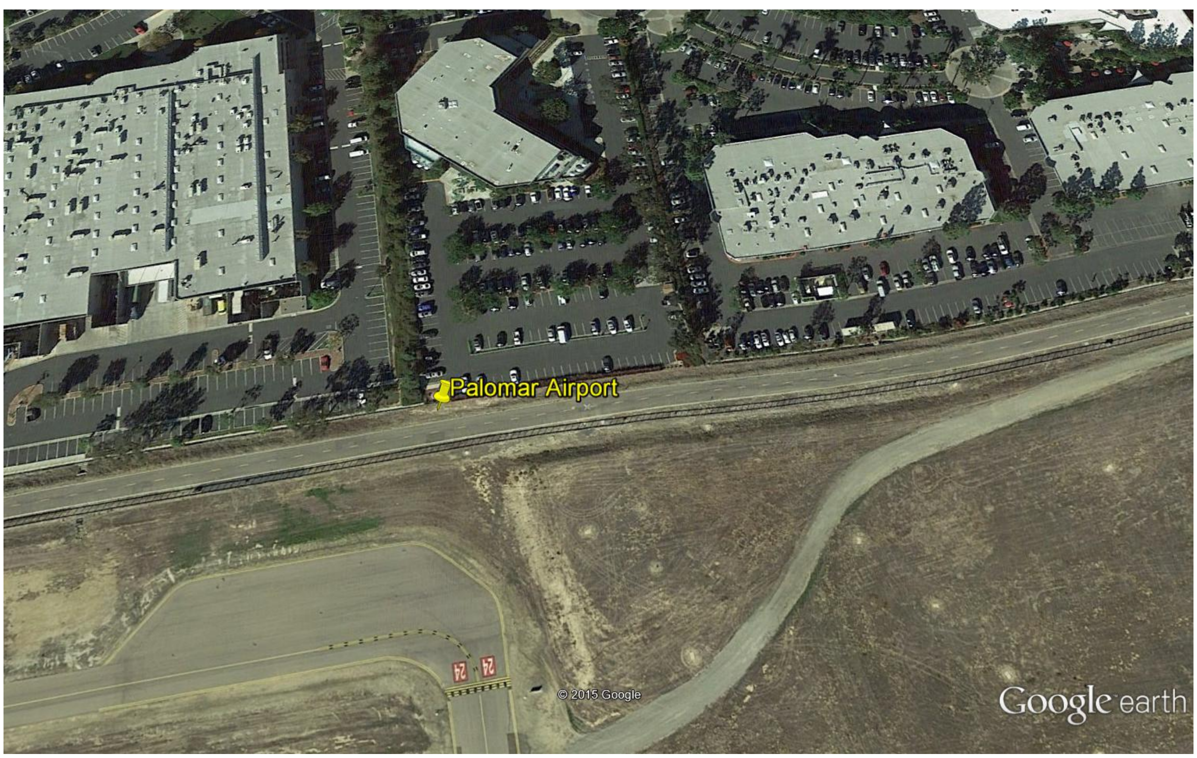
Figure 7.1 Palomar Airport – Pictures (Directional) from the Ground*

*The sampler is situated at ground level

Figure 7.2 Palomar Airport – Pictures of the Location

Long View

Medium View



Section 8.0.0 Escondido Station Description and Statement of Purpose

Table 8.1a General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Escondido
Year Established:	5/1972
Site Address:	600 E. Valley Parkway
Site Name Abbreviation:	ESC
AQS Number:	06-073-1002
Latitude:	33.127730 ^{O}
Longitude:	-117 .075379 ^{O}
Elevation above Sea Level:	200 m
General Location:	Trailer in the SE corner of the County Heath Complex
Ground Cover:	Asphalt
Distance to Road:	85 m northeast= Fig St.
Traffic Count (2010 AADT):	E. Valley Parkway at Fig St. = 2,500
Site Description:	Escondido is a city located in the north-eastern region of the populated portion of the County. It is located about 21 miles between Camp Pendleton and El Cajon. It has a population of about 140,000 people and covers an area of about 37 square miles. The station is across the street from Pomerado hospital.
Monitoring Objectives:	The Escondido site represents a major population center located in the inland North County along the Interstate 15/Highway 78 section of the County. It is impacted from the transportation corridor from the communities along these two highways. This location is like the El Cajon site and can be classified as a PAMS II location; it provides valuable data concerning the fate of coastal emissions, which react in sunlight to form ozone as they are carried eastward with the prevailing winds. This site is extremely important for burn/no-burn decisions.
Planned Changes:	None

Table 8.1b Escondido – Monitor and Equipment Summary

Parameter	Type	Frequency	Status
O_3	Ambient	7/24	X
NO_2	Ambient, PRI	7/24	X
CO	Ambient		X
NOy	Trace level		
CO	Trace Level		
SO_2	Trace Level		
Pb-TSP	Hi-Vol, PRI		
Pb-TSP	Hi-Vol QAC		
PM_{10}	Hi-Vol, PRI	1:6	X
PM_{10}	Hi-Vol, QAC		
PM_{10}	Lo-Vol, PRI		
$PM_{2.5}$	FRM, PRI	1:3	X
$PM_{2.5}$	FRM, QAC		
$PM_{10-2.5}$	FRM, paired samplers		
$PM_{2.5}$	non-FEM	7/24	X
$PM_{2.5}$	STN	1:6	X
$PM_{2.5}$	CSN	1:6	X
$PM_{2.5}$	CSN, SU	1:6	X
PAMS	VOCs		
PAMS	VOCs ,QAC		
PAMS	Carbonyls		
PAMS	Carbonyls, Unofficial		
Toxics	VOCs		
Toxics	Total Metals		
Toxics	Cr (VI)		
Toxics	Aldehydes		
Toxics	VOCs, SU	1:6	X
Toxics	VOCs , SU, QAC		
Toxics	Total Metals, SU		
Toxics	Cr (VI), SU		
Meteorology	Internal Temperature	7/24	X
Meteorology	Wind Speed	7/24	X
Meteorology	Wind Direction	7/24	X
Meteorology	External Temperature	7/24	X
Meteorology	% Relative Humidity		
Meteorology	Barometric Pressure		
Meteorology	Solar Radiation		

A= Add or Recently Added, D= In Development, R= Relocating, T= Terminate or Recently Terminated, X= Existing

Table 8.1c Escondido – Monitor Designation Summary

Pollutant	Monitor Designation	Monitor Type	Network Affiliation	Spatial Scale	Monitoring Objective	Site Type
O_3	O	SLAMS	Not Applicable	NS	PI, NAAQS	PE
NO_2	PRI	SLAMS	Not Applicable	NS	PI, NAAQS	PE
CO	O	SLAMS	Not Applicable	NS	PI, NAAQS	PE
PM_{10} (Hi-Vol) Sequential	O	SLAMS	Not Applicable	NS	NAAQS	PE
$PM_{2.5}$ FRM Sequential	PRI	SLAMS	Not Applicable	NS	NAAQS	PE
$PM_{2.5}$ non-FEM Continuous	O	SLAMS	Not Applicable	NS	PI, Research	PE
$PM_{2.5}$ Sequential	O	SLAMS	CSN STN	NS	Research	PE
$PM_{2.5}$ Sequential	O	SLAMS	CSN STN	NS	Research	PE
$PM_{2.5}$ Sequential	O	Not Applicable	SU CSN SDAPCD Network	NS	Research	PE
Toxics-VOC	Not Applicable	Not Applicable	SDAPCD Network	NS	Research	PE
Internal Temperature	Not Applicable	SLAMS	Not Applicable	NS	Not Applicable	Not Applicable
Wind Speed	Not Applicable	SLAMS	Not Applicable	NS	Not Applicable	Not Applicable
Wind Direction	Not Applicable	SLAMS	Not Applicable	NS	Not Applicable	Not Applicable
External Temperature	Not Applicable	SLAMS	Not Applicable	NS	Not Applicable	Not Applicable
% Relative Humidity	Not Applicable	SLAMS	Not Applicable	NS	Not Applicable	Not Applicable

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

Table 8.2a Escondido - Gaseous Pollutants (Ambient Level) Monitor Designations + Other

Pollutant	O_3	NO_2	CO	Other Zero Air
POC	1	1	1	Not Applicable
Monitor designation	Other	Primary	Other	Not Applicable
Parameter code	44201	42602 (NO_2)	42101	Not Applicable
Basic monitoring objective	PI, NAAQS	PI, NAAQS	PI, NAAQS	Not Applicable
Site type	Population Exposure	Population Exposure	Population Exposure	Not Applicable
Monitor type	SLAMS	SLAMS	SLAMS	Not Applicable
Network affiliation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Thermo 48i	Teledyne-API 701
Method code	047	074	054	Not Applicable
Sampling method	UV absorption	Chemiluminescence	Nondispersive Infrared	Not Applicable
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Not Applicable
Monitoring start date	11/21/1973	6/1/1974	10/29/1979	1997
Current sampling frequency	Continuous	Continuous	Continuous	Not Applicable
Required sampling frequency	Continuous	Continuous	Continuous	Not Applicable
Sampling season	Year round	Year round	Year round	Not Applicable
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	Borosilicate glass	Not Applicable
Residence time for reactive gases	4.76 sec	4.76 sec	4.76 sec	Not Applicable
Any changes within the next 18 months?	No	No	No	No
Frequency of QC check (one-point)	1:/14	1:14	1:14	Not Applicable
APCD Audit	8/27, 11/13	8/26, 11/14	8/26, 12/5	12/12
ARB Audit	8/20	8/20	8/20	None

Table 8.2b1 Escondido - Particulate Pollutants ($PM_{2.5}$) Monitor Designations

Pollutant	**$PM_{2.5}$ non-FEM Continuous**	**$PM_{2.5}$ FRM Sequential**	**$PM_{2.5}$ STN Sequential**	**$PM_{2.5}$ CSN Sequential**	**$PM_{2.5}$ CSN, SU Sequential**
POC	1	1	1	1	1
Monitor designation	O	PRI	Not Applicable	Not Applicable	Not Applicable
Parameter code	88502 (LC)	88101 (LC)	See CARB	See CARB	See $PM_{2.5}$ Table 9.3b
Basic monitoring objective	PI, Research	NAAQS	Research	Research	Research
Site type	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	Not Applicable
Network affiliation	Not Applicable	Not Applicable	CSN STN	CSN STN	CSN SU SDAPCD Network
Instrument manufacturer & model	Met One BAM 1020	Thermo 2025	Met One SASS	Met One SASS	Met One SASS
Method code	733	145	See CARB	See CARB	See $PM_{2.5}$ Table 9.3b
Sampling method	16.7 LPM, Lo-Vol, continuous, size selective inlet	16.7 LPM, Lo-Vol, continuous, size selective inlet	6.7 LPM, Lo-Vol, continuous, size selective inlet	22.0 LPM, Lo-Vol, sequential, size selective inlet	6.7 LPM, Lo-Vol, continuous, size selective inlet
Collecting agency	APCD	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	CARB	CARB	APCD
Reporting agency	APCD	APCD	CARB	CARB	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	2/22/05	1/1/1999	7/20/2007	5/3/2007	2/24/2008
Current sampling frequency	Continuous	1:3	1:6	1:6	1:6
Required sampling frequency	Continuous	1:6	Not Applicable	Not Applicable	Not Applicable
Sampling season	Year round	Year round	Year round	Year round	Year round
Probe material for reactive gases	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Any changes within the next 18 months?	No	No	No	No	No
Frequency of QC check (flow rate verification)	1:14	1:30	1:30	1:30	1:30
APCD Audit	3/27, 6/19, 12/26	3/28, 6/30	3/28, 6/30, 8/28, 12/19	3/28, 6/30, 8/28, 12/19	3/28, 6/30, 8/28, 12/19
ARB Audit	8/20	8/20	None	None	None
EPA Audit	Not Applicable	8/17	Not Applicable	Not Applicable	Not Applicable

Table 8.2b2 Escondido - Particulate Pollutants (non-$PM_{2.5}$) Monitor Designations

Pollutant	**PM_{10} Hi-Vol Sequential**
POC	1
Monitor designation	PRI
Parameter code	85101 (LC) 81102 (STD)
Basic monitoring objective	NAAQS
Site type	Population Exposure
Monitor type	SLAMS
Network Affiliation	Not Applicable
Instrument manufacturer & model	GMW 2000H w/ SA 1200 Head
Method code	063
Sampling method	40 cfm, Hi-Vol, sequential, size selective inlet
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Neighborhood
Monitoring start date	9/4/1991
Current sampling frequency	1:6
Required sampling frequency	1:6
Sampling season	Year round
Probe material for reactive gases	Not Applicable
Residence time for reactive gases	Not Applicable
Any changes within the next 18 months?	No
Frequency of QC check (flow rate verification)	1:30
APCD Audit	4/30, 12/22
ARB Audit	8/20

Table 8.2c Escondido - Other Pollutants Monitor Designations

Pollutant	**TOXIC-VOC**
POC	1
Monitor Designation	Not Applicable
Parameter code	See Toxics sec Table 13.2b
Basic monitoring objective	Research
Site type	Population Exposure
Monitor type	Not Applicable
Network Affiliation	SDAPCD Network
Instrument manufacturer & model	Xontech 910A (Fused Silica Lined)
Method code	210
Sampling method	50 ccpm, Stainless Steel Evacuated Canisters (Fused Silica Lined)
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Neighborhood Scale
Monitoring start date	1/2007
Current sampling frequency	1:6
Required sampling frequency	1:6
Sampling season	Year round
Probe material for reactive gases	Not Applicable
Residence time for reactive gases	Not Applicable
Any changes within the next 18 months?	No

Table 8.2d Escondido - Meteorological Equipment Designations + Other

Parameter	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp
POC	1	1	1	1
Monitor designation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Parameter code	62107	61101	61104	62101
Basic monitoring objective	Data	Data	Data	Data
Site type	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Instrument manufacturer & model	Qualimetrics	Qualimetrics	Qualimetrics	Rotronics
Method code	012	050	020	040
Sampling method	RTD	Cup anemometer	Potentiometer	RTD
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Start date	6/1/1974	6/1/1974	6/1/1974	2/20/1975
Current sampling frequency	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year round	Year round	Year round	Year round
Distance from supporting structure	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions not on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from trees	24.4 m	24.4 m	24.4 m	24.4 m
Unrestricted airflow	Not Applicable	360°	360°	360°
Probe height	Not Applicable	10 m	10 m	5.0 m
Any changes within the next 18 months?	No	No	No	No
APCD Audit	Not Applicable	U	U	12/30
ARB Audit	Not Applicable	U	U	None

U= Unable to audit, due to safety concerns

Table 8.3 Escondido - 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)
Gas Inlet	n/a				2.9			2.5		2.5	3.5	3.9				3.7		
NOy Inlet																		
Pb-TSP, PRI (44.5 cfm)																		
Pb-TSP, QAC (44.5 cfm)																		
PM$_{10}$, PRI (40 cfm)	2.9				n/a			3.9		3.2	6.0	5.0				3.4		
PM$_{10}$, QAC (40 cfm)																		
PM$_{10}$, PRI (16.7 lpm)																		
PM$_{2.5}$ FRM, PRI (16.7 lpm)	2.5				3.9			n/a		1.1	3.2	1.5				2.4		
PM$_{2.5}$ FRM, QAC (16.7 lpm)																		
PM$_{2.5}$ non-FEM (16.7 lpm)	2.5				3.1			1.1		n/a	4.2	2.5				1.5		
PM$_{2.5}$ STN (6.7 lpm)	3.5				6.0			3.2		4.2	n/a	1.7				5.7		
PM$_{2.5}$ CSN (22.0 lpm)	3.9				5.0			1.5		2.5	1.7	n/a				3.8		
†PAMS-VOC (50 ccpm)																		
†PAMS-VOC, QAC (50 ccpm)																		
†PAMS-Carbonyls (1.5 lpm)																		
†Toxics-VOC (50 ccpm)	3.7				3.4			2.4		1.5	5.7	3.8				n/a		
†Toxics-VOC, QAC (50 ccpm)																		
Toxics-Metals (12 lpm)																		
Height from ground	6.2				5.6			6.1		6.2	5.9	6.1				5.7		
Distance: from the road	85				85			85		85	85	85				85		
from the supporting structure	N				N			N		N	N	N				N		
from obstructions on roof	N				N			N		N	N	N				N		
from obstructions not on roof	N				N			N		N	N	N				N		
from the closest tree	15.2				15.2			15.2		15.2	15.2	15.2				15.2		
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 8.1 Escondido - Pictures (Directional) from the Rooftop

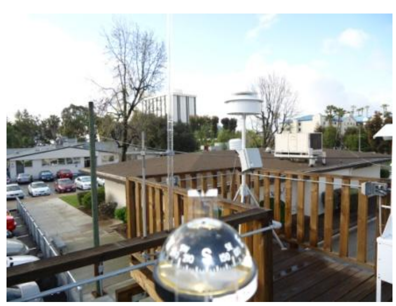
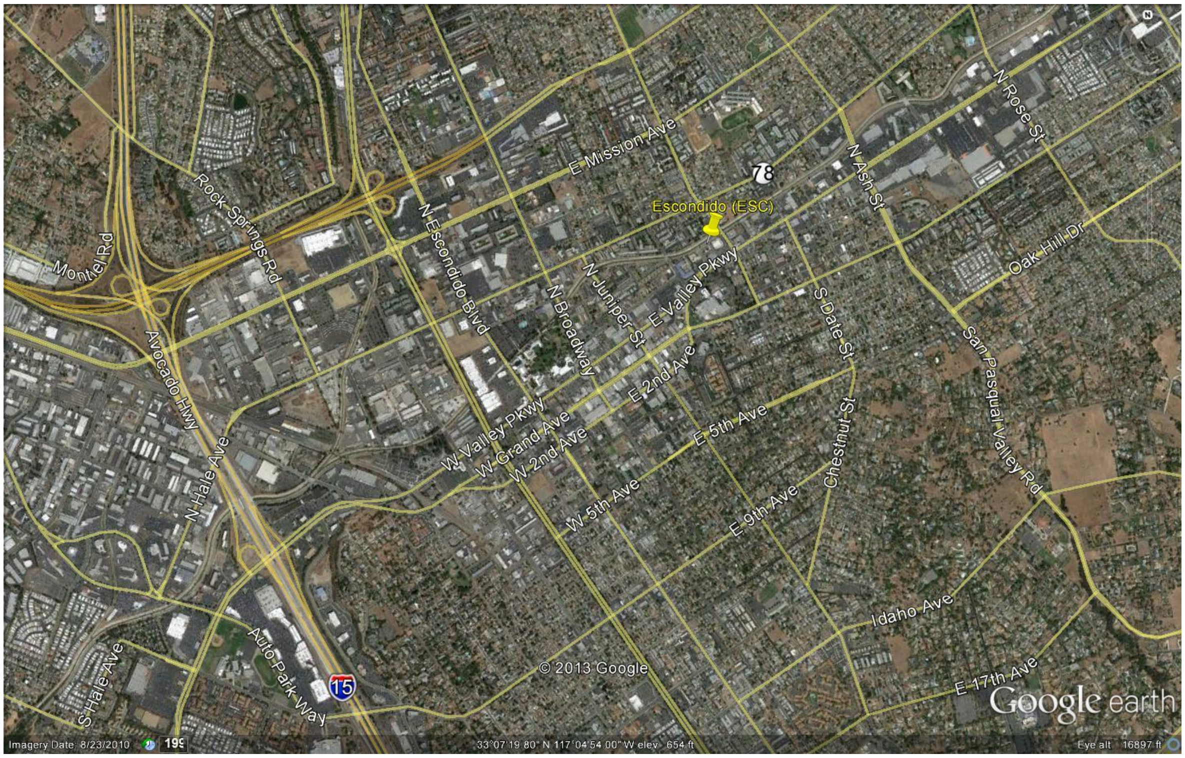
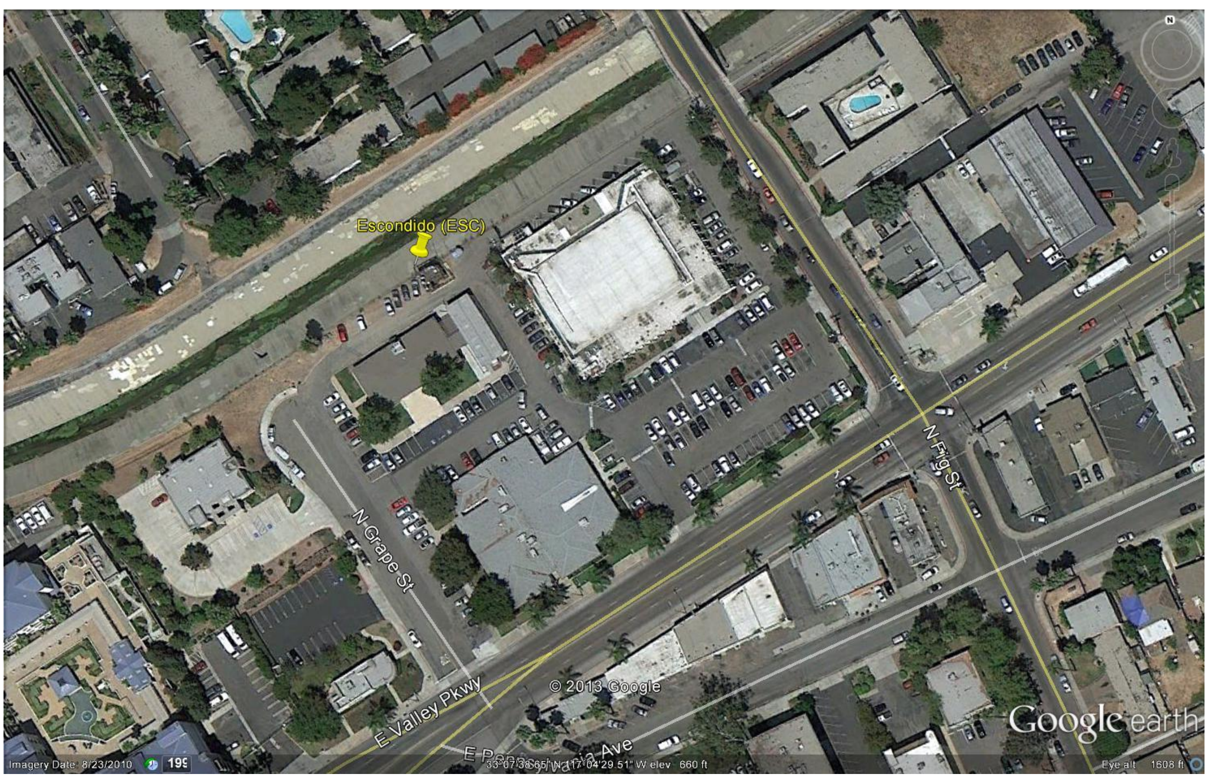


Figure 8.2 Escondido – Pictures of the Location

Long View



Medium View



Section 9.0.0 Kearny Villa Road Station Description and Statement of Purpose

Table 9.1a General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Kearny Villa Rd.
Year Established:	11/5/2010
Site Address:	None
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 (2010 AADT):	Kearny Villa Rd. at Ruffin Rd = 11,000
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 $PM_{2.5}$ FRM program; once the wood deck at CVA is repaired, the QAC sampler will be relocated there.
Planned Changes:	None

Table 9.1b Kearny Villa Road – Monitor and Equipment Summary

7/24	7/24								1:6		1:3	1:12																		7/24	7/24	7/24	7/24	7/24	7/24	7/24
Ambient	Ambient, PRI	Ambient	Trace level	Trace Level	Trace Level	Hi-Vol, PRI	Hi-Vol QAC	Hi-Vol, PRI	Hi-Vol, QAC	Lo-Vol, PRI	FRM, PRI	FRM, QAC	FRM, paired samplers	non-FEM	STN	CSN	CSN, SU	VOC	VOC ,QAC	Carbonyls	Carbonyls, Unofficial	VOC	Total Metals	Cr (VI)	Aldehydes	VOC, SU	VOC , SU, QAC	Total Metals, SU	Cr (VI), SU	Internal Temperature	Wind Speed	Wind Direction	External Temperature	% Relative Humidity	Barometric Pressure	Solar Radiation
O_3	NO_2	CO	NOy	CO	SO_2	Pb-TSP	Pb-TSP	PM_{10}	PM_{10}	PM_{10}	$PM_{2.5}$	$PM_{2.5}$	$PM_{10-2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	PAMS	PAMS	PAMS	PAMS	Toxics	Toxics	Toxics	Toxics	Toxics	Toxics	Toxics	Toxics	Meteorology	Meteorology	Meteorology	Meteorology	Meteorology	Meteorology	Meteorology
X	X							X			X	X																		X	X	X	X	X	X	X

A= Add or Recently Added, D= In Development, R= Relocating, T= Terminate or Recently Terminated, X= Existing

Table 9.1c Kearny Villa Road – Monitor Designation Summary

Pollutant	Monitor Designation	Monitor Type	Network Affiliation	Spatial Scale	Monitoring Objective	Site Type
O_3	O	SLAMS	PAMS	NS	PI, NAAQS	PE
NO_2	PRI	SLAMS	PAMS	NS	PI, NAAQS	PE
PM_{10} (Hi-Vol)	O	SLAMS	Not Applicable	NS	PI, NAAQS	PE
$PM_{2.5}$ FRM Sequential	PRI	SLAMS	Not Applicable	NS	NAAQS	PE
$PM_{2.5}$ FRM Sequential	QAC	SLAMS	Not Applicable	NS	NAAQS	QA
PAMS-Carbonyls	O	SLAMS	PAMS Type II	NS	Research	MXP
Internal Temperature	Not Applicable	SLAMS	Not Applicable	NS	Not Applicable	Not Applicable
Wind Speed	Not Applicable	SLAMS	Not Applicable	NS	Not Applicable	Not Applicable
Wind Direction	Not Applicable	SLAMS	Not Applicable	NS	Not Applicable	Not Applicable
External Temperature	Not Applicable	SLAMS	Not Applicable	NS	Not Applicable	Not Applicable
% Relative Humidity	Not Applicable	PAMS	Not Applicable	NS	Not Applicable	Not Applicable
Barometric Pressure	Not Applicable	PAMS	Not Applicable	NS	Not Applicable	Not Applicable
Solar Radiation	Not Applicable	Other	Other	NS	Not Applicable	Not Applicable
Wind Profiler	Not Applicable	SLAMS	PAMS	Regional	Not Applicable	Not Applicable

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

Table 9.2a Kearny Villa Road - Gaseous Pollutants (Ambient Level) Monitor Designations

Pollutant	O_3	NO_2	Other Zero Air
POC	1	1	Not Applicable
Monitor designation	Not Applicable	PRI	Not Applicable
Parameter code	44201	42602 (NO_2)	Not Applicable
Basic monitoring objective	PI, NAAQS	PI, NAAQS	Not Applicable
Site type	Population Exposure	Population Exposure	Not Applicable
Monitor type	SLAMS	SLAMS	Not Applicable
Network affiliation	PAMS	PAMS	Not Applicable
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Teledyne-API 701H
Method code	047	074	Not Applicable
Sampling method	UV absorption	Chemiluminescence	Not Applicable
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Not Applicable
Monitoring start date	11/5/2010	1/1/2012	1/1/2012
Current sampling frequency	Continuous	Continuous	Not Applicable
Required sampling frequency	Continuous	Continuous	Not Applicable
Sampling season	Year round	Year round	Not Applicable
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	Not Applicable
Residence time for reactive gases	5.04	5.04	Not Applicable
Any changes within the next 18 months?	No	No	No
Frequency of QC check (one-point)	1:14	1:14	Not Applicable
APCD Audit	11/30	11/31	11/30
ARB Audit	8/19	8/19	None

Table 9.2b1 Kearny Villa Road - Particulate Pollutants ($PM_{2.5}$) Monitor Designations

Pollutant	**$PM_{2.5}$ FRM Sequential**	**$PM_{2.5}$ FRM Sequential (collocated)**
POC	1	2
Monitor designation	PRI	QAC
Parameter code	88101 (LC)	88101 (LC)
Basic monitoring objective	PI, NAAQS	NAAQS
Site type	Population Exposure	QA
Monitor type	SLAMS	SLAMS
Network affiliation	Not Applicable	Not Applicable
Instrument manufacturer & model	Thermo 2025	Thermo 2025
Method code	145	145
Sampling method	16.7 LPM, Lo-Vol, sequential, size selective inlet	16.7 LPM, Lo-Vol, sequential, size selective inlet
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	2/21/2012	2/21/2012
Current sampling frequency	1:3	1:12
Required sampling frequency	1:6	1:12
Sampling season	Year round	Year round
Probe material for reactive gases	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable
Any changes within the next 18 months?	No	No
Frequency of QC check (flow rate verification)	1:30	1:30
APCD Audit	3/26, 6/27, 9/10, 12/26	3/26, 6/27, 9/10, 12/26
ARB Audit	8/19	8/19
EPA Audit	5/20	5/20

Table 9.2b2 Kearny Villa Road - Particulate Pollutants (non-$PM_{2.5}$) Monitor Designations

Pollutant	**PM_{10} Hi-Vol Sequential**
POC	1
Monitor designation	PRI
Parameter code	85101 (LC) 81102 (STD)
Basic monitoring objective	NAAQS
Site type	Population Exposure
Monitor type	SLAMS
Network affiliation	Not Applicable
Instrument manufacturer & model	GMW 2000H w/ SA 1200 Head
Method code	063
Sampling method	40 cfm, Hi-Vol, sequential, size selective inlet
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Neighborhood Scale
Monitoring start date	2/1/2012
Current sampling frequency	1:6
Calculated sampling frequency	1:6
Sampling season	Year round
Probe material for reactive gases	Not Applicable
Residence time for reactive gases	Not Applicable
Any changes within the next 18 months?	No
Frequency of QC check (flow rate verification)	1:30
APCD Audit	3/19, 9/10
ARB Audit	8/19

Table 9.2c Kearny Villa Road - Other Pollutants Monitor Designations

Pollutant	***PAMS-Carbonyls**
POC	1 for 3-Hr samples 2 for 24-Hr samples
Monitor designation	Not Applicable
Parameter code	See PAMS Table 12.2b
Basic monitoring objective	Research
Site type	Population Exposure
Monitor type	SLAMS
Network affiliation	PAMS Type II
Instrument manufacturer & model	Xontech 925
Method code	202
Sampling method	DNPH Cartridges
Collecting agency	APCD
Analytical laboratory	APCD
Reporting agency	APCD
Spatial scale	Neighborhood Scale
Monitoring start date	*
Current sampling frequency	1:6
Required sampling frequency	1:6
Sampling season	3-Hr (Jul-Oct) 24-Hr (Nov-Jun)
Probe material for reactive gases	Not Applicable
Residence time for reactive gases	Not Applicable
Any changes within the next 18 months?	No

*While at the original PAMS Type II location in Kearny Mesa (San Diego-Overland), the instrument used to collect PAMS-carbonyl samples experienced catastrophic irreparable failure in the 4th quarter, 2011. The District was instructed by the EPA to cease PAMS-carbonyl sampling at this location until the EPA reengineers the PAMS program; therefore, PAMS-carbonyl monitoring was never undertaken at the Kearny Villa Road location.

Table 9.2d1 Kearny Villa Road - Meteorological Equipment Designations + Other

Parameter	**Other Internal Temp**	**Meteorological Wind Speed**	**Meteorological Wind Direction**	**Meteorological External Temp**	**Meteorological Rel. Humidity**
POC	1	1	1	1	1
Monitor designation	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Parameter code	62107	61101	61104	62101	62201
Basic monitoring objective	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Site type	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
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
Sampling method	RTD	Cup anemometer	Potentiometer	RTD	Capacitor sensor
Collecting agency	APCD	APCD	APCD	APCD	APCD
Analytical agency	APCD	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Start date	2/1/2012	1/1/2012	1/1/2012	1/1/2012	1/1/2012
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
Distance from supporting structure	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions not on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from trees	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Unrestricted airflow	Not Applicable	360°	360°	360°	360°
Sensor height	Not Applicable	10 m	10 m	5.5 m	5.5 m
Any changes within the next 18 months?	No	No	No	No	No
APCD Audit	Not Applicable	3/5	3/5	3/5	3/5
ARB Audit	Not Applicable	None	None	None	None

Table 9.2d2 Kearny Villa Road - Meteorological Equipment (Additional) Designations

Parameter	**Barometric Pressure**	**Solar Radiation**	**Upper-air wind & temperature**
POC	1	1	Not Applicable
Monitor designation	Not Applicable	Not Applicable	Not Applicable
Parameter code	64101	63301	Not Applicable
Basic monitoring objective	Not Applicable	Not Applicable	Not Applicable
Site type	Not Applicable	Not Applicable	Not Applicable
Monitor type	SLAMS	Not Applicable	SLAMS
Network Affiliation	PAMS	Not Applicable	PAMS
Instrument manufacturer & model	Rotronics	Eppley	Radian LAP 3000
Method code	014	011	Not Applicable
Sampling method	Transducer	Differential Thermopile	Radio Acoustic Sounding System (RASS)
FRM/FEM/Other	Not Applicable	Not Applicable	Not Applicable
Colleting agency	APCD	APCD	APCD
Analytical agency	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Start date	2/1/2012	2/1/2012	1999
Current sampling frequency	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous
Sampling season	Year round	Year round	Year round
Distance from supporting structure	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions on the roof	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions not on the roof	Not Applicable	Not Applicable	Not Applicable
Distance from trees	Not Applicable	Not Applicable	Not Applicable
Unrestricted airflow	Not Applicable	Not Applicable	Not Applicable
Sensor height	3 m	4.9 m	3 m
Any changes within the next 18 months?	No	No	No
APCD Audit	3/5	3/5	*
ARB Audit	None	None	None

*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 (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)
Gas Inlet	n/a				4.2	2.0		2.8	2.4						2.6			
NOy Inlet																		
Pb-TSP, PRI (44.5 cfm)																		
Pb-TSP, QAC (44.5 cfm)																		
PM_{10}, PRI (40 cfm)	4.2				n/a	2.1		3.3	2.1						5.5			
PM_{10}, QAC (40 cfm)	2.0				2.1	n/a		2.1	2.9						2.9			
PM_{10}, PRI (16.7 lpm)																		
$PM_{2.5}$ FRM, PRI (16.7 lpm)	2.8				3.3	2.1		n/a	2.1						3.5			
$PM_{2.5}$ 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)	2.6				5.5	2.9		3.5	2.1						n/a			
†Toxics-VOC (50 ccpm)																		
†Toxics-VOC, QAC (50 ccpm)																		
Toxics-Metals (12 lpm)																		
Height from ground	7.3				5.6	5.6		6.1	6.1						5.3			
Distance: from the road	180				180	180		180	180						180			
from the supporting structure	N				N	N		N	N						N			
from obstructions on roof	N				N	N		N	N						N			
from obstructions not on roof	N				N	N		N	N						N			
from the closest tree	N				N	N		N	N						N			
from furnace/flue	N				N	N		N	N						N			
Unrestricted air flow (degrees)	360				360	360		360	360						360			

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

Figure 9.1 Kearny Villa Road – Pictures (Directional) from the Rooftop

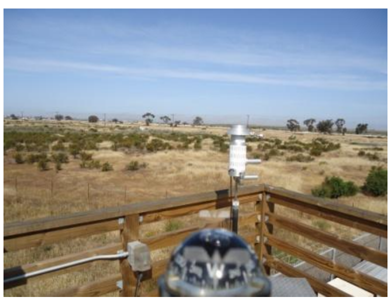
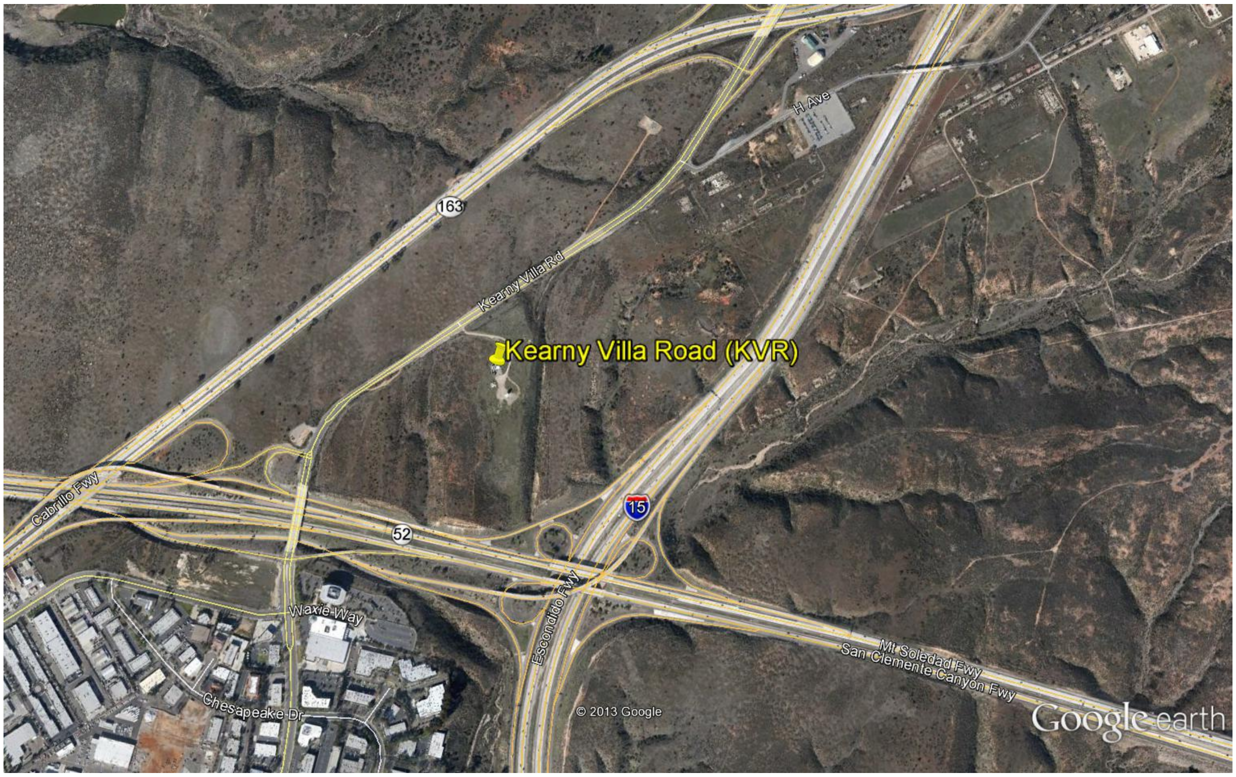


Figure 9.2 Kearny Villa Road – Pictures of the Location

Long View



Medium View

Figure 9.3 Kearny Villa Road - Pictures of the Radar Wind Profiler Picture

Miramar RWP/RASS

Section 10.0.0 El Cajon – Floyd Smith Dr. Station Description and Statement of Purpose

Table 10.1a General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	El Cajon
Year Established:	9/3/1981
Site Address:	1155 Redwood Ave.
Site Name Abbreviation:	ECA
AQS Number:	06-073-0003
Latitude:	32.791210°
Longitude:	-116.942104°
Elevation above Sea Level:	144 m
General Location:	Trailer in the W corner of the Lexington Elementary School grounds
Ground Cover:	Packed dirt
Distance to Road:	7.8 m north= Redwood Ave.
Traffic Count (AADT):	No traffic count is available for the closest cross street, Redwood Ave. estimated= 2,000 Main St. at 1st St. northwest/downwind 237 m = 22,800
Site Description:	This station is a trailer immediately off of Redwood Avenue, within the northeastern portion of the Lexington Elementary School schoolyard.
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 (at the junction of W. Bradley Ave. & Floyd Smith Dr.). Once the remodeling is finished, the District will return to the same school, but located about 200 m west of the original location.

Table 10.1b El Cajon – Monitor and Equipment Summary

Category	Parameter	Frequency	Status
O_3	Ambient	7/24	T
NO_2	Ambient	7/24	T
CO	Ambient		
NOy	Trace Level	7/24	T
CO	Trace Level	7/24	T
SO_2	Trace Level	7/24	T
Pb-TSP	Hi-Vol	1:6	T
Pb-TSP	Hi-Vol, collocated		
PM_{10}	Hi-Vol		
PM_{10}	Hi-Vol, collocated		
PM_{10}	Lo-Vol	1:3	T
$PM_{2.5}$	FRM	1:3	T
$PM_{2.5}$	FRM, collocated		
$PM_{10-2.5}$	FRM, paired samplers		
$PM_{2.5}$	FEM	7/24	T
$PM_{2.5}$	FEM, collocated		
$PM_{2.5}$	STN	1:3	T
$PM_{2.5}$	CSN	1:3	T
$PM_{2.5}$	CSN, SU	1:6	T
PAMS	VOC	1:6	T
PAMS	VOC , collocated		
PAMS	Carbonyls	1:6	T
PAMS	Carbonyls, Unofficial		
Toxics	VOC	1:12	T
Toxics	Total Metals	1:12	T
Toxics	Cr (VI)	1:12	T
Toxics	Aldehydes	1:12	T
Toxics	VOC, SU		
Toxics	VOC ,collocated, SU		
Toxics	Total Metals, SU		
Toxics	Cr (VI), SU		
Meteorology	Internal Temperature	7/24	T
Meteorology	Wind Speed	7/24	T
Meteorology	Wind Direction	7/24	T
Meteorology	External Temperature	7/24	T
Meteorology	% Relative Humidity	7/24	T
Meteorology	Barometric Pressure		
Meteorology	Solar Radiation		

A= Add or Recently Added, D= In Development, R= Relocating, T= Terminate or Recently Terminated, X= Existing

Table 10.1c El Cajon - Monitor Designations Summary

Pollutant	Monitor Designation	Monitor Type	Network Affiliation	Spatial Scale	Monitoring Objective	Site Type
O_3	O	SLAMS	PAMS, NCore,	NS	PI, NAAQS	PE
NO_2	PRI	SLAMS	PAMS, NCore,	NS	PI, NAAQS	PE
NOy	O	SLAMS	PAMS, NCore	NS	PI, Research	PE
CO-TLE	O	SLAMS	NCore	NS	PI, NAAQS	PE
SO_2-TLE	O	SLAMS	NCore	NS	PI, NAAQS	PE
Pb-TSP	O	SLAMS	NCore	NS	NAAQS	PE
PM_{10} Lo-Vol Sequential	O	SLAMS	NCore	NS	NAAQS	PE
$PM_{2.5}$ FRM Sequential	PRI	SLAMS	NCore	NS	NAAQS	PE
$PM_{2.5}$ non-FEM Continuous	O	SLAMS	NCore	NS	PI, Research	PE
$PM_{2.5}$	O	SLAMS	NCore, CSN STN	NS	Research	PE
$PM_{2.5}$	O	SLAMS	NCore, CSN STN	NS	Research	PE
$PM_{2.5}$	O	Not Applicable	CSN SU SDAPCD Network	NS	Research	PE
PAMS-VOCs	O	SLAMS	PAMS Type II	NS	Research	MXP
PAMS-Carbonyls	O	SLAMS	PAMS Type II	NS	Research	MXP
Internal Temperature	Not Applicable	SLAMS	NCore, PAMS	NS	Data	Not Applicable

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

Table 10.2a1 El Cajon - Gaseous Pollutants (Ambient Level) Monitor Designations

Pollutant	O_3	NO_2	Other Zero Air
POC	1	1	Not Applicable
Monitor designation	Other	Primary	Not Applicable
Parameter code	44201	42602 (NO_2)	Not Applicable
Basic monitoring objective	PI, NAAQS	PI, NAAQS	Not Applicable
Site type	Population Exposure	Population Exposure	Not Applicable
Monitor type	SLAMS	SLAMS	Not Applicable
Network affiliation	PAMS, NCore	PAMS	Not Applicable
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Teledyne-API 701H
Method code	047	074	Not Applicable
Sampling method	UV absorption	Chemiluminescence	Not Applicable
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Not Applicable
Monitoring start date	9/1981	9/1981	12/2010
Current sampling frequency	Continuous	Continuous	Not Applicable
Required sampling frequency	Continuous	Continuous	Not Applicable
Sampling season	Year round	Year round	Not Applicable
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	Not Applicable
Residence time for reactive gases	6.62 sec	6.62 sec	Not Applicable
Any changes within the next 18 months?	Yes	Yes	Yes
Frequency of QC check (one-point)	1:14	1:4	Not Applicable
APCD Audit	*	*	*
ARB Audit	*	*	None

*Not operational for a year; therefore no audits

Table 10.2a2 El Cajon - Gaseous Pollutants (Trace Level) Monitor Designations

Pollutant	**CO-TLE**	**SO_2-TLE**	**NOy**
POC	3	3	3
Monitor designation	O	O	O
Parameter code	42101	42401	42601
Basic monitoring objective	PI, NAAQS	PI, NAAQS	PI, Research
Site type	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	NCore	NCore	NCore, PAMS
Instrument manufacturer & model	Thermo 48i-TLE	Thermo 43i-TLE	Thermo 42i-NOy
Method code	554	560	574
Sampling method	Nondispersive Infrared	Fluorescence (Pulsed)	Chemiluminescence
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	12/2010	12/2010	12/2010
Current sampling frequency	Continuous	Continuous	Continuous
Required sampling frequency	Continuous	Continuous	Continuous
Sampling season	Year round	Year round	Year round
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	Borosilicate glass
Residence time for reactive gases	6.62 sec	6.62 sec	6.62 sec
Any changes within the next 18 months?	Yes	Yes	Yes
Frequency of QC check (one-point)	1:4	1:4	1:4
APCD Audit	*	*	*
ARB Audit	*	*	*

*Not operational for a year; therefore no audits

Table 10.2b1 El Cajon - Particulate Pollutants ($PM_{2.5}$) Monitor Designations

Pollutant	**$PM_{2.5}$ FRM Sequential**	**$PM_{2.5}$ STN Sequential**	**$PM_{2.5}$ CSN Sequential**	**$PM_{2.5}$ CSN, SU Sequential**	**$PM_{2.5}$ FRM Continuous**
POC	1	1	1	1	1
Monitor designation	PRI	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Parameter code	88101 (LC)	See RTI	See RTI	See $PM_{2.5}$ Table 9.3b	88502 (LC)
Basic monitoring objective	NAAQS	Research	Research	Research	Research
Site type	Population Exposure	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	Not Applicable	SLAMS
Network affiliation	NCore	NCore, CSN STN	NCore, CSN STN	CSN SU SDAPCD Network	NCore, PAMS
Instrument manufacturer & model	Thermo 2025	Met One SASS	URG-3000N	Met One SASS	Met One BAM
Method code	145	See RTI	See RTI	See PM2.5 Table 9.3b	733
Sampling method	16.7 LPM, Lo-Vol, sequential, size selective inlet	6.7 LPM, Lo-Vol, sequential, size selective inlet	22.0 LPM, Lo-Vol, sequential, size selective inlet	6.7 LPM, Lo-Vol, sequential, size selective inlet	16.7 LPM, Lo-Vol, sequential, size selective inlet
Collecting agency	APCD	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	EPA	EPA	APCD	APCD
Reporting agency	APCD	EPA	EPA	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	1/1/1999	5/2002	5/3/2007	2/24/2008	2/22/05
Current sampling frequency	1:3	1:3	1:3	1:6	Continuous
Required sampling frequency	1:3	Not Applicable	Not Applicable	Not Applicable	Continuous
Sampling season	Year round	Year round	Year round	Year round	Year round
Probe material for reactive gases	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Any changes within the next 18 months?	Yes	Yes	Yes	Yes	Yes
Frequency of QC check (flow rate verification)	1:30	1:30	1:30	1:30	1:14
APCD Audit	*	*	*	*	*
ARB Audit	*	*	*	*	*
EPA Audit	None	None	None	None	None

*Not operational for a year; therefore no audits

Table 10.2b2 El Cajon - Particulate Pollutants (non-$PM_{2.5}$) Monitor Designations

Pollutant	**PM_{10} Lo-Vol Sequential**	**PM_{coarse} Lo-Vol Sequential (paired samplers)**	**Pb-TSP Hi-Vol Sequential**
POC	2 (LC) 3 (STD)	1	1
Monitor designation	PRI	Other	Other
Parameter code	85101 (LC) 81102 (STD)	86101 (LC)	14129
Basic monitoring objective	NAAQS	Research	NAAQS
Site type	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	NCore	NCore	NCore
Instrument manufacturer & model	Thermo 2025	Thermo 2025	Tisch TE-5170BLVFC+
Method code	127	176	192
Sampling method	16.7 LPM, Lo-Vol, sequential, size selective inlet w/o VSCC	16.7 LPM, Paired Samplers; $PM_{10} – PM_{2.5}$ (Lo-Vol)	44 cfm, Hi-Vol, sequential
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	6/2010	6/2010	12/2011
Current sampling frequency	1:3	1:3	1:6
Required sampling frequency	1:3	1:3	1:6
Sampling season	Year round	Year round	Year round
Probe material for reactive gases	Not Applicable	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable	Not Applicable
Any changes within the next 18 months?	Yes	Yes	Yes
Frequency of QC check (flow rate verification)	1:30	1:30	1:30
APCD Audit	*	Not Applicable	*
ARB Audit	*	Not Applicable	*
EPA Audit	Not Applicable	Not Applicable	*

*Not operational for a year; therefore no audits

Table 10.2c El Cajon - 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	O	O
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
Sampling method	50 ccpm, Stainless Steel Evacuated Canisters	1.5 LPM, DNPH Cartridges
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	1994	7/1/1/1993
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)
Probe material for reactive gases	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable
Any changes within the next 18 months?	Yes	Yes

Table 10.2d El Cajon. - Meteorological Equipment Monitor Designations + Other

Parameter	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp	Meteorological Rel. Humidity
POC	1	1	1	1	1
Monitor designation	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Parameter code	62107	61101	61104	62101	62201
Basic monitoring objective	Data	Data	Data	Data	Data
Site type	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	NCore, PAMS	NCore, PAMS	NCore, PAMS	NCore, PAMS	NCore, PAMS
Instrument manufacturer & model	Qualimetrics	Qualimetrics	Qualimetrics	Rotronics	Rotronics
Method code	012	050	020	040	012
Sampling method	RTD	Cup anemometer	Potentiometer	RTD	Capacitor sensor
FRM/FEM/Other	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Collecting agency	APCD	APCD	APCD	APCD	APCD
Analytical agency	APCD	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood scale	Neighborhood scale	Neighborhood scale	Neighborhood scale	Neighborhood scale
Start date	8/27/1981	8/20/1981	8/20/1981	8/27/1981	8/27/1981
Current sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Sampling season	Year round	Year round	Year round	Year round	Year round
Distance from supporting structure	Not Applicable n/a	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions not on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from trees	W 12.2 m; N 16.6 m	W 12.2 m; N 16.6 m	W 12.2 m; N 16.6 m	W 12.2 m; N 16.6 m	W 12.2 m; N 16.6 m
Sensor height	n/a	10 m	10 m	5.3 m	5.3 m
Unrestricted airflow	n/a	360^o	360^o	360^o	360^o
Any changes within the next 18 months?	Yes	Yes	Yes	Yes	Yes
APCD Audit	Not Applicable	U	U	8/29	*
ARB Audit	Not Applicable	None	None	None	None

U= Unable to audit, due to safety concerns

*Not operational for a year; therefore no audits

Table 10.3 El Cajon - Distance the Equipment are from Influences

(meters)	Gas Inlet	NOy Inlet	Pb-TSP pri (44.5 cfm)	Pb-TSP coll (44.5 cfm)	PM_{10} pri (40 cfm)	PM_{10} coll (44 cfm)	PM_{10} pri (16.7 lpm)	$PM_{2.5}$ FRM pri (16.7 lpm)	$PM_{2.5}$ FRM coll (16.7 lpm)	$PM_{2.5}$ FEM pri (16.7 lpm)	$PM_{2.5}$ FEM coll (16.7 lpm)	$PM_{2.5}$ STN (6.7 lpm)	$PM_{2.5}$ CSN (22.0 lpm)	†PAMS-VOC pri (50 ccpm)	†PAMS-VOC coll (50 ccpm)	†PAMS-Carbonyls (1.5 lpm)	†Toxics-VOC pri (50 ccpm)	†Toxics-VOC coll (50 ccpm)	Toxics-Metals (12 lpm)
Gas Inlet	n/a	4.9	3.9				3.6	4.1		2.9		2.9	2.0	1.8		2.0	1.5		1.6
NOy Inlet	4.9	n/a	8.6				4.1	4.4		5.3		6.5	5.1	5.3		5.6	5.2		5.1
Pb-TSP pri (44.5 cfm)	3.9	8.6	n/a				6.0	5.9		4.1		2.3	4.3	4.3		4.0	4.0		2.3
Pb-TSP coll (44.5 cfm)																			
PM_{10} pri (40 cfm)																			
PM_{10} coll (44 cfm)																			
PM_{10} pri (16.7 lpm)	3.6	4.1	6.0				n/a	1.3		2.3		3.9	2.0	2.7		2.4	2.8		3.9
$PM_{2.5}$ FRM main (16.7 lpm)	4.1	4.4	5.9				1.3	n/a		1.8		3.5	2.8	3.5		3.4	3.7		4.6
$PM_{2.5}$ FRM coll (16.7 lpm)																			
$PM_{2.5}$ FEM main (16.7 lpm)	2.9	5.3	4.1				2.3	1.8		n/a		1.7	1.9	2.7		2.9	2.6		2.9
$PM_{2.5}$ FEM coll (16.7 lpm)																			
$PM_{2.5}$ STN (6.7 lpm)	3.0	6.5	2.3				3.9	3.5		1.7		n/a	2.7	3.1		3.4	2.8		2.3
$PM_{2.5}$ CSN (22.0 lpm)	2.0	5.1	4.3				2.0	2.8		1.9		2.7	n/a	1.0		0.9	0.9		2.2
†PAMS-VOC pri (50 ccpm)	1.8	5.3	4.3				2.7	3.5		2.7		3.1	1.0	n/a		0.5	0.3		1.7
†PAMS-VOC coll (50 ccpm)																			
†PAMS-Carbonyls (1.5 lpm)	2.1	5.6	4.0				2.4	3.4		2.9		3.4	0.9	0.5		n/a	0.1		2.0
†Toxics-VOC pri (50 ccpm)	1.5	5.2	4.0				2.8	3.7		2.6		2.8	0.9	0.3		0.8	n/a		1.6
†Toxics-VOs coll (50 ccpm)																			
Toxics-Metals (12 lpm)	1.6	5.11	2.3				3.9	4.6		2.9		2.3	2.2	1.7		2.0	1.5		n/a
Height from ground	7.3	10.0	5.0				6.1	6.1		5.9		5.8	5.9	6.0		6.1	6.1		5.9
Distance from the road	7.8	7.8	7.8				7.8	7.8		7.8		7.8	7.8	7.8		7.8	7.8		7.8
from supporting structure	N	N	N				N	N		N		N	N	N		N	N		N
from obstructions on roof	N	N	N				N	N		N		N	N	N		N	N		N
from obstructions not on roof	N	N	N				N	N		N		N	N	N		N	N		N
From tree	15.5	15.5	15.5				15.5	15.5		15.5		15.5	15.5	15.5		15.5	15.5		15.5
From furnace/flue	N	N	N				N	N		N		N	N	N		N	N		N
Unrestricted air flow	360	360	360				360	360		360		360	360	360		360	360		360

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

Figure 10.1 El Cajon – Pictures (Directional) from the Rooftop

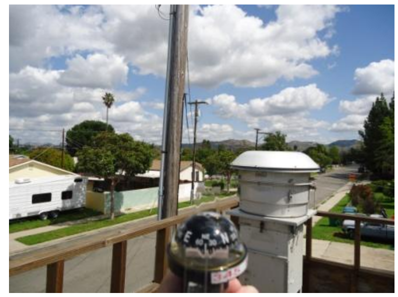
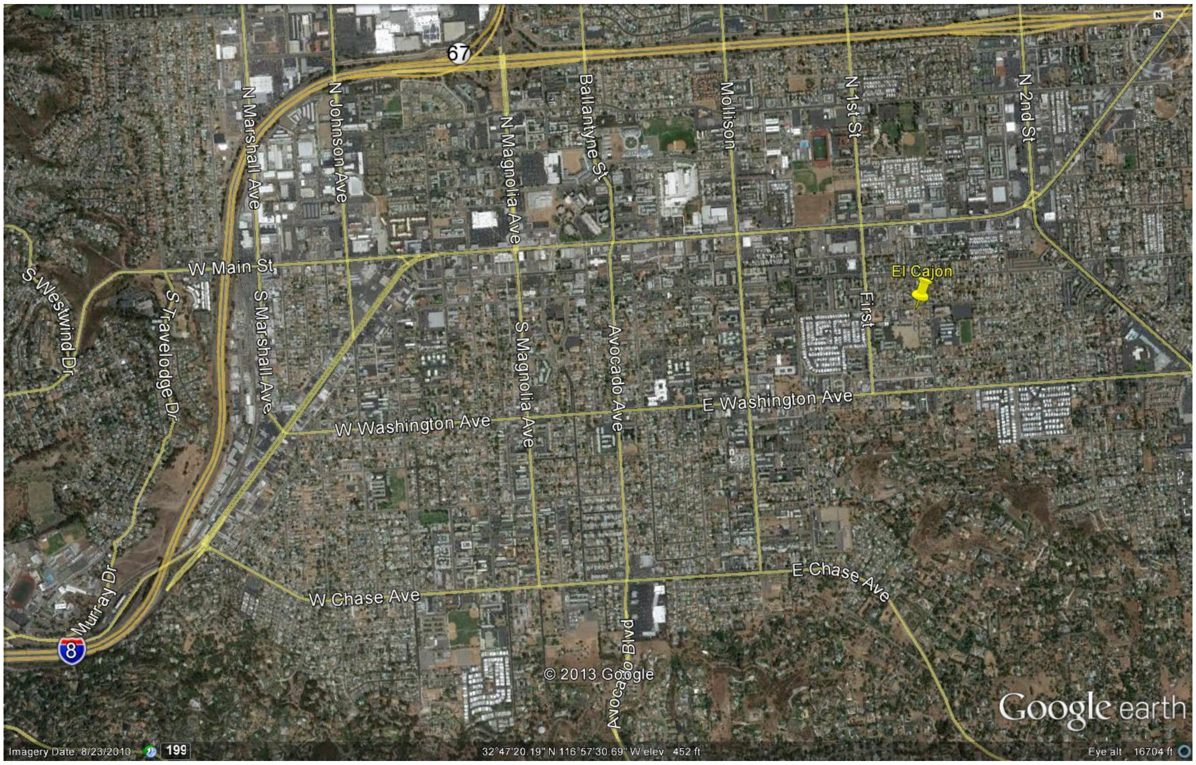


Figure 10.2 El Cajon – Pictures of the Location of the Station

Long View



Medium View

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

Table 11.1a 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 (2010 AADT):	W. Bradley St. at N. Johnson Ave. (250 m East of the FSD)= 5,300. 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 is 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. The particulate samplers are on the ground. The high volume sampler is on the west side of the trailer. The low volume samplers are on the east side of the trailer.
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 (at the junction of W. Bradley Ave. & Floyd Smith Dr.). Once the remodeling is finished, the District will return to the same school, but located about 200 m west of the original location.

Table 11.1b Floyd Smith Dr. – Monitor and Equipment Summary

O_3	Ambient	7/24	R
NO_2	Ambient, PRI	7/24	R
CO	Ambient		
NOy	Trace level		
CO	Trace Level	7/24	R
SO_2	Trace Level	7/24	R
Pb-TSP	Hi-Vol, PRI	1:6	R
Pb-TSP	Hi-Vol QAC		
PM_{10}	Hi-Vol, PRI		
PM_{10}	Hi-Vol, QAC		
PM_{10}	Lo-Vol, PRI	1:3	R
$PM_{2.5}$	FRM, PRI	1:3	R
$PM_{2.5}$	FRM, QAC		
$PM_{10-2.5}$	FRM, paired samplers		
$PM_{2.5}$	non-FEM		
$PM_{2.5}$	STN	1:3	R
$PM_{2.5}$	CSN	1:3	R
$PM_{2.5}$	CSN, SU	1:6	R
PAMS	VOCs	1:6	R
PAMS	VOCs ,QAC		
PAMS	Carbonyls	1:6	R
PAMS	Carbonyls, Unofficial		
Toxics	VOCs		
Toxics	Total Metals		
Toxics	Cr (VI)		
Toxics	Aldehydes		
Toxics	VOCs, SU		
Toxics	VOCs , SU, QAC		
Toxics	Total Metals, SU		
Toxics	Cr (VI), SU		
Meteorology	Internal Temperature	7/24	R
Meteorology	Wind Speed		
Meteorology	Wind Direction		
Meteorology	External Temperature		
Meteorology	% Relative Humidity		
Meteorology	Barometric Pressure		
Meteorology	Solar Radiation		

A= Add or Recently Added, D= In Development, R= Relocating, T= Terminate or Recently Terminated, X= Existing

Table 11.1c Floyd Smith Dr. - Monitor Designations Summary

Pollutant	Monitor Designation	Monitor Type	Network Affiliation	Spatial Scale	Monitoring Objective	Site Type
O_3	O	SLAMS	PAMS, NCore,	NS	PI, NAAQS	PE
NO_2	PRI	SLAMS	PAMS, NCore,	NS	PI, NAAQS	PE
CO-TLE	O	SLAMS	NCore	NS	PI, NAAQS	PE
SO_2-TLE	O	SLAMS	NCore	NS	NAAQS	PE
Pb-TSP	O	SLAMS	NCore	NS	NAAQS	PE
PM_{10} Lo-Vol Sequential	O	SLAMS	NCore	NS	NAAQS	PE
$PM_{2.5}$ FRM Sequential	PRI	SLAMS	NCore	NS	NAAQS	PE
$PM_{2.5}$	O	SLAMS	NCore, CSN STN	NS	Research	PE
$PM_{2.5}$	O	SLAMS	NCore, CSN STN	NS	Research	PE
$PM_{2.5}$	O	Not Applicable	CSN SU	NS	Research	PE
PAMS-VOC	O	SLAMS	PAMS Type II	NS	Research	MXP
PAMS-Carbonyls	O	SLAMS	PAMS Type II	NS	Research	MXP
Internal Temperature	Not Applicable	SLAMS	NCore, PAMS	NS	Data	Not Applicable

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

Table 11.2a1 Floyd Smith Dr. - Gaseous Pollutants (Ambient Level) Monitor Designations

Pollutant	**O_3**	**NO_2**	**Other Zero Air**
POC	1	1	Not Applicable
Monitor designation	Other	Primary	Not Applicable
Parameter code	44201	42602 (NO_2)	Not Applicable
Basic monitoring objective	PI, NAAQS	PI, NAAQS	Not Applicable
Site type	Population Exposure	Population Exposure	Not Applicable
Monitor type	SLAMS	SLAMS	Not Applicable
Network affiliation	PAMS, NCore	PAMS	Not Applicable
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Teledyne-API 701H
Method code	047	074	Not Applicable
Sampling method	UV absorption	Chemiluminescence	Not Applicable
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Not Applicable
Monitoring start date	7/2014	7/2014	7/2014
Current sampling frequency	Continuous	Continuous	Not Applicable
Required sampling frequency	Continuous	Continuous	Not Applicable
Sampling season	Year round	Year round	Not Applicable
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	Not Applicable
Residence time for reactive gases	9.13 sec	9.13 sec	Not Applicable
Any changes within the next 18 months?	Yes	Yes	Yes
Frequency of QC check (one-point)	1:14	1:4	Not Applicable
APCD Audit	9/16, 12/28	9/18, 12/3	9/19
ARB Audit	None	None	None

Table 11.2a2 Floyd Smith Dr. - Gaseous Pollutants (Trace Level) Monitor Designations

Pollutant	**CO-TLE**	**SO_2-TLE**
POC	3	3
Monitor designation	Not Applicable	Not Applicable
Parameter code	42101	42401
Basic monitoring objective	PI, NAAQS	PI, NAAQS
Site type	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS
Network affiliation	NCore	NCore
Instrument manufacturer & model	Thermo 48i-TLE	Thermo 43i-TLE
Method code	554	560
Sampling method	Nondispersive Infrared	Fluorescence (Pulsed)
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
Current sampling frequency	Continuous	Continuous
Required sampling frequency	Continuous	Continuous
Sampling season	Year round	Year round
Probe material for reactive gases	Borosilicate glass	Borosilicate glass
Residence time for reactive gases	9.13 sec	9.13 sec
Any changes within the next 18 months?	Yes	Yes
Frequency of QC check (one-point)	1:4	1:4
APCD Audit	12/10	12/8
ARB Audit	None	None

Table 11.2b1 Floyd Smith Dr. - Particulate Pollutants ($PM_{2.5}$) Monitor Designations

Pollutant	**$PM_{2.5}$ FRM Sequential**	**$PM_{2.5}$ STN Sequential**	**$PM_{2.5}$ CSN Sequential**	**$PM_{2.5}$ CSN, SU Sequential**
POC	1	1	1	1
Monitor Designation	Primary	Other	Other	Not Applicable
Parameter code	88101 (LC)	See RTI	See RTI	See $PM_{2.5}$ Table 9.3b
Basic monitoring objective	PI, NAAQS	Research	Research	Research
Site type	Population Exposure	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS	Not Applicable
Network Affiliation	NCore	NCore, CSN STN	NCore, CSN STN	CSN SU
Instrument manufacturer & model	Thermo 2025	Met One SASS	URG-3000N	Met One SASS
Method code	145	See RTI	See RTI	See PM2.5 Table 9.3b
Sampling method	16.7 LPM, Lo-Vol, sequential, size selective inlet	6.7 LPM, Lo-Vol, sequential, size selective inlet	22.0 LPM, Lo-Vol, sequential, size selective inlet	6.7 LPM, Lo-Vol, sequential, size selective inlet
Collecting agency	APCD	APCD	APCD	APCD
Analytical laboratory	APCD	EPA	EPA	APCD
Reporting agency	APCD	EPA	EPA	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	7/2014	7/2014	7/2014	7/2014
Current sampling frequency	1:3	1:3	1:3	1:6
Required sampling frequency	1:3	Not Applicable	Not Applicable	Not Applicable
Sampling season	Year round	Year round	Year round	Year round
Probe material for reactive gases	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Any changes within the next 18 months?	Yes	Yes	Yes	Yes
Frequency of QC check (flow rate verification)	1:30	1:30	1:30	1:30
APCD Audit	9/10, 12/29	9/24, 12/29	9/24, 12/29	9/24, 12/29
ARB Audit	None	None	None	None
EPA Audit	None	Not Applicable	Not Applicable	Not Applicable

Table 11.2b2 Floyd Smith Dr. - Particulate Pollutants (non-$PM_{2.5}$) Monitor Designations

Pollutant	**PM_{10} Lo-Vol Sequential**	**PM_{coarse} Sequential (paired samplers)**	**Pb-TSP Hi-Vol Sequential**
POC	2 (LC) 3 (STD)	1	1
Monitor designation	Other	Other	Other
Parameter code	85101 (LC) 81102 (STD)	86101 (LC)	14129
Basic monitoring objective	NAAQS	Research	NAAQS
Site type	Population Exposure	Population Exposure	Population Exposure
Monitor type	SLAMS	SLAMS	SLAMS
Network affiliation	NCore	NCore	NCore
Instrument manufacturer & model	Thermo 2025	Thermo 2025	Tisch TE-5170BLVFC+
Method code	127	176	192
Sampling method	16.7 LPM, Lo-Vol, sequential, size selective inlet w/o VSCC	16.7 LPM, Paired Samplers; $PM_{10} – PM_{2.5}$ (Lo-Vol)	44 cfm, Hi-Vol, sequential
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	1:3	1:3	1:6
Required sampling frequency	1:3	1:3	1:6
Sampling season	Year round	Year round	Year round
Probe material for reactive gases	Not Applicable	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable	Not Applicable
Any changes within the next 18 months?	Yes	Yes	Yes
Frequency of QC check (flow rate verification)	1:30	1:30	1:30
APCD Audit	9/10, 12/29	Not Applicable	12/29
ARB Audit	None	Not Applicable	None
EPA Audit	Not Applicable	Not Applicable	None

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
Sampling method	50 ccpm, Stainless Steel Evacuated Canisters	1.5 LPM, DNPH Cartridges
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
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)
Probe material for reactive gases	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable
Any changes within the next 18 months?	Yes	Yes

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

Parameter	**Other Internal Temp**
POC	1
Monitor designation	Not Applicable
Parameter code	62107
Basic monitoring objective	Not Applicable
Site type	Not Applicable
Monitor type	SLAMS
Network affiliation	NCore, PAMS
Instrument manufacturer & model	Qualimetrics
Method code	012
Sampling method	RTD
Collecting agency	APCD
Analytical agency	APCD
Reporting agency	APCD
Spatial scale	Neighborhood scale
Start date	7/2014
Current sampling frequency	Continuous
Required sampling frequency	Continuous
Sampling season	Year round
Distance from supporting structure	Not Applicable
Distance from obstructions on the roof	Not Applicable
Distance from obstructions not on the roof	Not Applicable
Distance from trees	Not Applicable
Sensor height	n/a
Unrestricted airflow	n/a
Any changes within the next 18 months?	Yes
APCD Audit	Not Applicable
ARB Audit	Not Applicable

U= Unable to audit, due to safety concerns

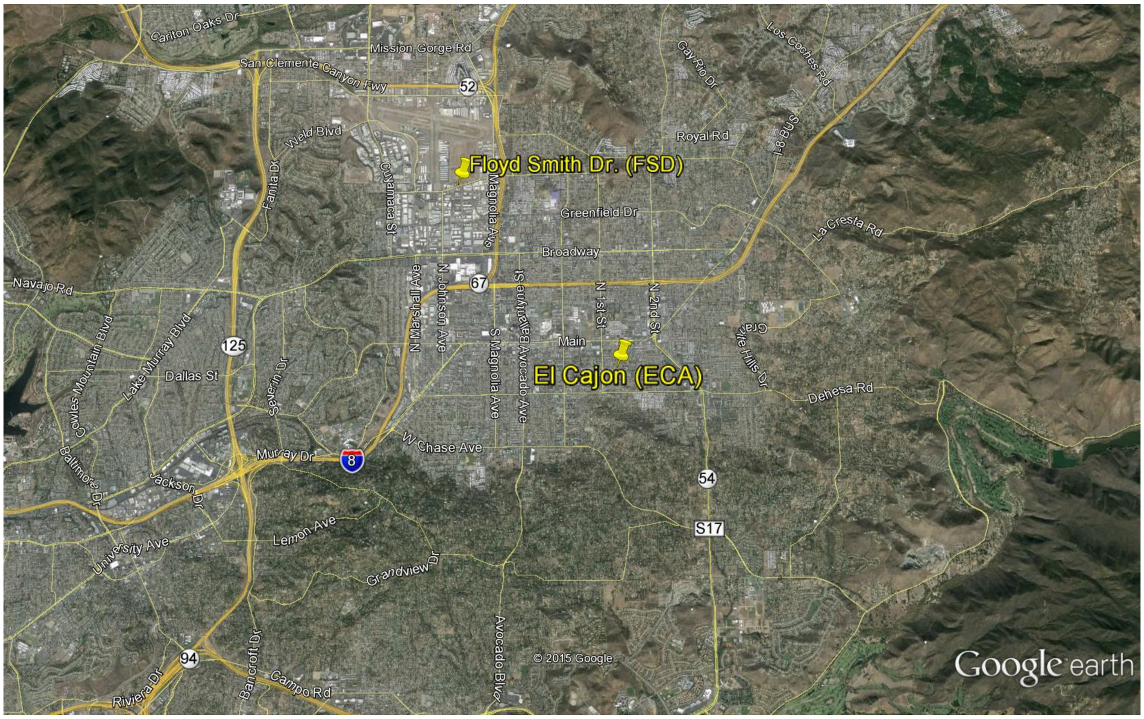
Table 11.3 Floyd Smith Dr. - Distance the Equipment are from Influences

(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)
Gas Inlet	n/a		3.9				3.6	4.1		2.9	2.9	2.0	1.8		2.0	1.5		1.6
NOy Inlet																		
Pb-TSP, PRI (44.5 cfm)	3.9		n/a				6.0	5.9		4.1	2.3	4.3	4.3		4.0	4.0		2.3
Pb-TSP, QAC (44.5 cfm)																		
PM_{10}, PRI (40 cfm)																		
PM_{10}, QAC (40 cfm)																		
PM_{10}, PRI (16.7 lpm)	3.6		6.0				n/a	1.3		2.3	3.9	2.0	2.7		2.4	2.8		3.9
$PM_{2.5}$ FRM, PRI (16.7 lpm)	4.1		5.9				1.3	n/a		1.8	3.5	2.8	3.5		3.4	3.7		4.6
$PM_{2.5}$ FRM, QAC (16.7 lpm)																		
$PM_{2.5}$ non-FEM (16.7 lpm)	2.9		4.1				2.3	1.8		n/a	1.7	1.9	2.7		2.9	2.6		2.9
$PM_{2.5}$ STN (6.7 lpm)	3.0		2.3				3.9	3.5		1.7	n/a	2.7	3.1		3.4	2.8		2.3
$PM_{2.5}$ CSN (22.0 lpm)	2.0		4.3				2.0	2.8		1.9	2.7	n/a	1.0		0.9	0.9		2.2
†PAMS-VOC (50 ccpm)	1.8		4.3				2.7	3.5		2.7	3.1	1.0	n/a		0.5	0.3		1.7
†PAMS-VOC QAC (50 ccpm)																		
†PAMS-Carbonyls (1.5 lpm)	2.1		4.0				2.4	3.4		2.9	3.4	0.9	0.5		n/a	0.1		2.0
†Toxics-VOC (50 ccpm)	1.5		4.0				2.8	3.7		2.6	2.8	0.9	0.3		0.8	n/a		1.6
†Toxics-VOC, QAC (50 ccpm)																		
Toxics-Metals (12 lpm)	1.6		2.3				3.9	4.6		2.9	2.3	2.2	1.7		2.0	1.5		n/a
Height from ground	7.3		5.0				6.1	6.1		5.9	5.8	5.9	6.0		6.1	6.1		5.9
Distance: from the road (Floyd)	14.7		14.7				14.7	14.7		14.7	14.7	14.7	14.7		14.7	14.7		14.7
Distance: from the road (Bradley)	14.9		14.9				14.9	14.9		14.9	14.9	14.9	14.9		14.9	14.9		14.9
from the supporting structure	N		N				N	N		N	N	N	N		N	N		N
from obstructions on roof	N		N				N	N		N	N	N	N		N	N		N
from obstructions not on roof	N		N				N	N		N	N	N	N		N	N		N
from the closest tree	N		N				N	N		N	N	N	N		N	N		N
Unrestricted air flow (degrees)	360		360				360	360		360	360	360	360		360	360		360

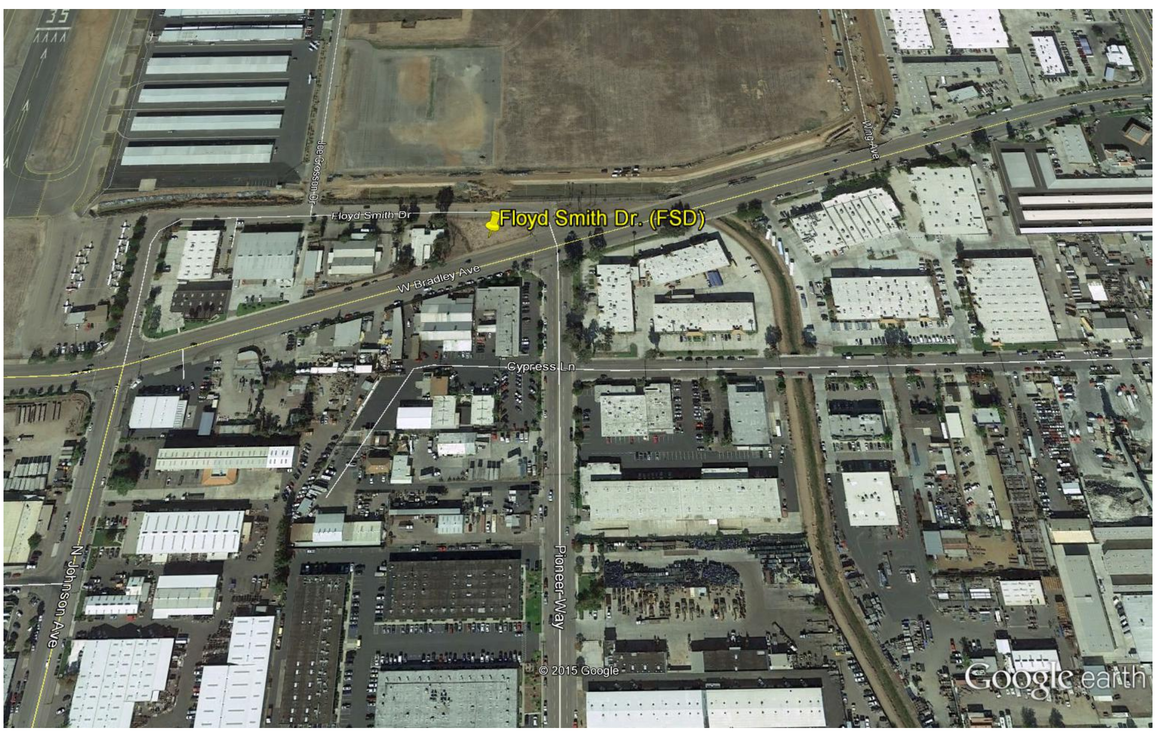
n/a= Not Applicable; N= None; †On the side of the station/trailer

Figure 11.1 Floyd Smith Dr. - Pictures (Directional) from the Rooftop
(NO ROOFTOP FROM WHICH TO TAKE PICTURES)

Figure 11.2 Floyd Smith Dr. – Pictures of the Location of the Station
Long View



Medium View



Section 12.0.0 Otay Mesa Station Description and Statement of Purpose

Table 12.1a General Site Information

County:	San Diego
Representative Area:	San Diego MSA
Site Name:	Otay Mesa
Year Established:	2/1/1990
Site Address:	1100B Paseo International
Site Name Abbreviation:	OTM
AQS Number:	06-073-2007
Latitude:	32.552199 ^{O}
Longitude:	-116.937764 ^{O}
Elevation above Sea Level:	160 m
General Location:	Trailer in the middle of the U.S. Customs parking lot
Ground Cover:	Asphalt
Distance to Road:	23 m east= Roll Dr.
Traffic Count (2010 AADT):	No traffic count is available for the closest cross street, Roll Dr. estimated= 900 Via de Amistad at Paseo de las Americas (176 m northeast) = 2,100
Site Description:	Otay Mesa is a community located in the farthest south region of San Diego County. It has a population of about 26,000 people and covers an area about 14 square miles.
Monitoring Objectives:	When this site was established in 1990, the original intent was to measure representative concentrations of all collected pollutants for the southern section of the County, as well as to capture any northbound pollutant transport.
Planned Changes:	The Otay Mesa border crossing is the second largest commercial truck border crossing along the US-Mexico border. The monitors are now considered source impacted and not representative of the region. Relocation to Donovan was undertaken in the 4th Qtr.

Table 12.1b Otay Mesa – Monitor and Equipment Summary

Frequency	Monitor	Parameter	Status
7/24	Ambient	O_3	T
7/24	Ambient, PRI	NO_2	T
	Ambient	CO	
	Trace level	NOy	
	Trace Level	CO	
	Trace Level	SO_2	
	Hi-Vol, PRI	Pb-TSP	
	Hi-Vol QAC	Pb-TSP	
1:6	Hi-Vol, PRI	PM_{10}	
1:6	Hi-Vol, QAC	PM_{10}	
	Lo-Vol, PRI	PM_{10}	
	FRM, PRI	$PM_{2.5}$	
	FRM, QAC	$PM_{2.5}$	
	FRM, paired samplers	$PM_{10-2.5}$	
	non-FEM	$PM_{2.5}$	
	STN	$PM_{2.5}$	
	CSN	$PM_{2.5}$	
	CSN, SU	$PM_{2.5}$	
	VOCs	PAMS	
	VOCs, QAC	PAMS	
	Carbonyls	PAMS	
	Carbonyls, Unofficial	PAMS	
	VOCs	TOXICS	
	Total Metals	TOXICS	
	Cr (VI)	TOXICS	
	Aldehydes	TOXICS	
1:6	VOCs, SU	TOXICS	T
1:6	VOCs, SU, QAC	TOXICS	T
1:6	Total Metals, SU	TOXICS	T
1:6	Cr (VI), SU	TOXICS	T
7/24	Internal Temperature	Meteorology	T
7/24	Wind Speed	Meteorology	T
7/24	Wind Direction	Meteorology	T
7/24	External Temperature	Meteorology	T
7/24	% Relative Humidity	Meteorology	
	Barometric Pressure	Meteorology	
	Solar Radiation	Meteorology	

A= Add or Recently Added, D= In Development, R= Relocating, T= Terminate or Recently Terminated, X= Existing

Table 12.1c Otay Mesa – Monitor Designation Summary

Pollutant	Monitor Designation	Monitor Type	Network Affiliation	Spatial Scale	Monitoring Objective	Site Type
O_3	O	SLAMS	Not Applicable	Neighborhood	PI, NAAQS	Population Exposure
NO_2	PRI	SLAMS	Not Applicable	Neighborhood	PI, NAAQS	Population Exposure
Toxics-VOC	Not Applicable	Not Applicable	SDAPCD Network	Neighborhood	Research	Population Exposure
Toxic-Total Metals	Not Applicable	Not Applicable	SDAPCD Network	Neighborhood	Research	Population Exposure
Toxic-Cr (VI)	Not Applicable	Not Applicable	SDAPCD Network	Neighborhood	Research	Population Exposure
Internal Temperature	Not Applicable	SLAMS	SLAMS	Neighborhood	Not Applicable	Population Exposure
Wind Speed	Not Applicable	SLAMS	SLAMS	Neighborhood	Not Applicable	Population Exposure
Wind Direction	Not Applicable	SLAMS	SLAMS	Neighborhood	Not Applicable	Population Exposure
External Temperature	Not Applicable	SLAMS	SLAMS	Neighborhood	Not Applicable	Population Exposure

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

Table 12.2a Otay Mesa - Gaseous Pollutants (Ambient Level) Monitor Designations

Pollutant	O_3	NO_2	Other Zero Air
POC	1	1	Not Applicable
Monitor designation	O	PRI	Not Applicable
Parameter code	44201	42602 (NO_2)	Not Applicable
Basic monitoring objective	PI, NAAQS	PI, NAAQS	Not Applicable
Site type	Population Exposure	Population Exposure	Not Applicable
Monitor type	SLAMS	SLAMS	Not Applicable
Network affiliation	Not Applicable	Not Applicable	Not Applicable
Instrument manufacturer & model	Thermo 49i	Thermo 42i	Teledyne-API 701
Method code	047	074	Not Applicable
Sampling method	UV absorption	Chemiluminescence	Not Applicable
Collecting agency	APCD	APCD	APCD
Analytical laboratory	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Not Applicable
Monitoring start date	2/28/90	2/28/90	1997
Current sampling frequency	Continuous	Continuous	Not Applicable
Calculated sampling frequency	Continuous	Continuous	Not Applicable
Sampling season	Year round	Year round	Not Applicable
Probe material for reactive gases	Borosilicate glass	Borosilicate glass	Not Applicable
Residence time for reactive gases	5.48 sec	5.48 sec	Not Applicable
Any changes within the next 18 months?	Yes	Yes	Yes
Frequency of QC check (one-point)	1:14	1:14	Not Applicable
APCD Audit	5/27	5/28	5/29
ARB Audit	8/21	8/21	None

Table 12.2b Otay Mesa - Other Pollutants Monitor Designations

Pollutant	**TOXIC-VOC**	**TOXIC-Metals**
POC	1	1
Monitor designation	Not Applicable	Not Applicable
Parameter code	See Toxics sec Table	Collected; Not analyzed
Basic monitoring objective	Research	Research
Site type	Population Exposure	Population Exposure
Monitor type	Not Applicable	Not Applicable
Network affiliation	SDAPCD Network	SDAPCD Network
Instrument manufacturer & model	Xontech 910A (Fused Silica Lined)	Xontech 924
Method code	210	Collected; Not analyzed
Sampling method	50 ccpm, Stainless Steel Evacuated Canisters (Fused Silica Lined)	12 LPM, Filter
Collecting agency	APCD	APCD
Analytical laboratory	APCD	APCD
Reporting agency	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale
Monitoring start date	2/2007	1994
Current sampling frequency	1:6	1:12
Required sampling frequency	1:6	1:12
Sampling season	Year round	Year round
Probe material for reactive gases	Not Applicable	Not Applicable
Residence time for reactive gases	Not Applicable	Not Applicable
Any changes within the next 18 months?	Yes	Yes

Table 12.2c Otay Mesa - Meteorological Equipment Monitor Designations + Other

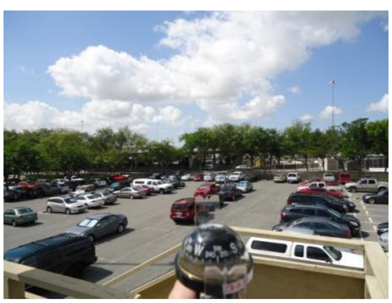
Parameter	Other Internal Temp	Meteorological Wind Speed	Meteorological Wind Direction	Meteorological External Temp
POC	1	1	1	1
Monitor designation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Parameter code	62107	61101	61104	62101
Basic monitoring objective	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Site type	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Monitor type	SLAMS	SLAMS	SLAMS	SLAMS
Network affiliation	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Instrument manufacturer & model	Qualimetrics	Qualimetrics	Qualimetrics	Rotronics
Method code	012	050	020	040
Sampling method	RTD	Cup anemometer	Potentiometer	RTD
Analytical agency	APCD	APCD	APCD	APCD
Reporting agency	APCD	APCD	APCD	APCD
Spatial scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale	Neighborhood Scale
Start date	7/2014	7/2014	7/2014	7/2014
Current sampling frequency	Continuous	Continuous	Continuous	Continuous
Calculated sampling frequency	Continuous	Continuous	Continuous	Continuous
Sampling season	Year round	Year round	Year round	Year round
Distance from supporting structure	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from obstructions not on the roof	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Distance from trees	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Unrestricted airflow	n/a	360°	360°	360°
Sensor height	1.7 m	Not Applicable	Not Applicable	Not Applicable
Any changes within the next 18 months?	Yes	Yes	Yes	Yes
APCD Audit	Not Applicable	5/21	5/21	5/21
ARB Audit	Not Applicable	None	None	None

Table 12.3 Otay Mesa - Distance the Equipment are from Influences (meters)

(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)
Gas Inlet	n/a															2.9	4.4	
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)	2.9															n/a	3.6	
†Toxics-VOC, QAC (50 ccpm)																		
Toxics-Metals (12 lpm)	4.4															3.63	n/a	
Height from ground	6.8															6.0	5.9	
Distance from the road	23															23	23	
from supporting structure	N															N	N	
from obstructions on roof	N															N	N	
from obstructions not on roof	73															73	73	
from tree east	17.3															17.3	17.3	
from furnace/flue	N															N	N	
Unrestricted air flow (degrees)	360															360	360	

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

Figure 12.1 Otay Mesa – Pictures (Directional) from the Rooftop



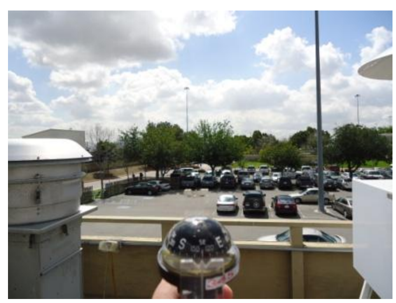


Figure 12.2 Otay Mesa – Pictures of the Location

Long View

Medium View