

VENTURA COUNTY AIR POLLUTION CONTROL DISTRICT

PM_{2.5} MONITORING NETWORK PLAN

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**Ventura County Air Pollution Control District
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1.0 INTRODUCTION

In July 1997, the U.S. Environmental Protection Agency (USEPA) promulgated new National Ambient Air Quality Standards (NAAQS) for fine particulate matter (PM_{2.5}). A first step in addressing these new standards will be the deployment of a new monitoring network to characterize PM_{2.5} air quality and to determine compliance with the NAAQS.

The new PM_{2.5} federal regulations require that PM_{2.5} Monitoring Network Plans be developed and submitted to USEPA for approval. The California Air Resources Board (CARB) will be submitting the State Particulate Matter (PM) Monitoring Network Description to the USEPA, as required, by July 1, 1998. The CARB submittal will be a single document in summary format with separate sections included as appendices, one section for each of the designated Monitoring Planning Areas (MPAs) in California.

Ventura County is a designated MPA. The Ventura County Air Pollution Control District (VCAPCD) is responsible for the development of the PM_{2.5} Network Plan for Ventura County.

This document is the PM_{2.5} Monitoring Network Plan for Ventura County.

The following are statewide elements of the PM_{2.5} Monitoring Network Plan that are hereby included by reference:

- A description of the statewide Monitoring Planning Areas. The statewide summary will briefly describe the MPAs that have been defined for the State and summarize the justification for these MPAs;
- A schedule for implementing quality assurance aspects of the statewide monitoring plans;
- A summary of the existing particulate matter monitoring network in the State; and
- Justification for deferring the discussion of Community Monitoring Zones to a later date.

1.1 Physical Setting

Ventura County is located along the southern portion of the central California coast between Santa Barbara and Los Angeles Counties. Its diverse topography is characterized by mountain ranges to the north, two major river valleys (the Santa Clara, which trends east-west, and the Ventura, which trends roughly north-south), and the Oxnard Plain to the south and west.

The “north half” of the county is mountainous and sparsely populated. The “south half” includes the populated areas where the VCAPCD has an established ambient air monitoring network. The south half of the County includes the Oxnard Plain, with the cities of Oxnard and Ventura, as well

as four distinct inland valleys: the Simi Valley, the Conejo Valley (Thousand Oaks area), the Santa Clara River Valley, and the Ojai Valley.

Generally, steep hills border the inland valleys. Bluffs dominate the coastline north of the mouth of the Ventura River, while the coastline south of the Ventura River to Point Mugu is near sea level. The Santa Monica Mountains rise above the Oxnard Plain and continue east into Los Angeles County.

The south half of the County has ten incorporated cities, some unincorporated, populated areas, and includes urban and agricultural areas. Outside of the urban and agricultural areas, the countryside is dominated by sage brush, chaparral scrub, and oak forest plant communities typical of a Mediterranean climate. These generally cover the lower hillsides and southern exposures of higher slopes, while conifer forests typically occur in deep valleys and on the northern slopes of higher elevations.

The major population centers of the County reside in the Oxnard Plain vicinity as well as the river valleys, the Simi Valley and the Conejo Valley. Urban areas include Oxnard/Port Hueneme, Ventura, Ojai Valley, Camarillo, Moorpark, Thousand Oaks, and Simi Valley.

Agriculture is the dominant non-urban activity in the Oxnard Plain, along much of the river valleys, and on the neighboring hillsides.

1.2 Population Characteristics

The following table shows the most recent Ventura County population estimates from the Ventura County Planning Division of the Resource Management Agency.

**Ventura County Population
Growth/Nongrowth Area Totals
Estimated Population Ending December 31, 1997**

AREAS	ESTIMATED POPULATION
Camarillo, GA	63,146
Camarillo, NGA	5,431
Fillmore, GA	12,724
Fillmore, NGA	1,655
LAS Posas, NGA	3,431
Moorpark, GA	29,317
Moorpark, NGA	522
North Half, NGA	964
Oak Park, GA	12,358
Oak Park, NGA	6
Ojai, GA	24,287
Ojai, NGA	4,711
Oxnard, GA	156,355
Oxnard, NGA	6,109
Piru, GA	1,740
Piru, NGA	302
Port Hueneme, GA	21,071
Santa Paula, GA	25,834
Santa Paula, NGA	2,952
Simi Valley, GA	107,200
Simi Valley, NGA	1,902
Thousand Oaks, GA	119,321
Thousand Oaks, NGA	901
Ventura, GA	102,501
Ventura, NGA	1,761
Ahmanson Ranch, GA	331
COUNTY TOTAL	706,832

SOURCE: Ventura County RMA Planning, 2/98

1.3 Climate and Weather

The sun provides the energy to drive the winds by heating the surface of the earth and in turn the air above it. It is this heating that drives the weather in Ventura County most of the time. There are three major factors that influence Ventura County weather: 1) the differential heating of the land and ocean masses; 2) the large scale seasonal weather regimes; and 3) the local topography.

The first major influence is caused by the land and ocean surfaces being heated by the radiant energy from the sun. This in turn heats the air above the surface which causes thermal differences by the uneven heating of the different masses of the land terrain and the ocean. The air is heated by the sun's energy radiating from the surfaces of hills and valleys, which draws air from the ocean, creating the sea breeze, which is predominant in the daytime most of the year. The sea breeze is usually a moderately strong afternoon wind, coming from the West to the Southwest. The sea breeze usually peaks during the afternoon and decreases toward sunset as the intensity of the surface heating wanes later in the day. The hills and valleys begin to cool and the air above them also cools. During the night, this cooler air descends and flows like a slow river of air toward the ocean. The nighttime "drainage flow" winds are usually light. The next day, as the sun rises, the process begins again.

The second primary influence on Ventura County weather is the seasonal large scale weather patterns. Although these large scale weather patterns may vary in intensity and specific location, they influence the local weather in a fairly predictable manner from season to season, as further explained below.

Summer: During the summer months, a mound of high atmospheric pressure, called the Eastern Pacific High, lies over the Eastern part of the Pacific region and extends over Ventura County. The High provides a typical Northwest flow pattern over the Eastern Pacific, which is modified by the local sea breeze and terrain to become a Westerly and/or a Southwesterly late morning to afternoon wind.

A frequent occurrence with the dominant weather pattern during the summer, especially at the coast, are low clouds and fog during the night and morning hours. Solar heating of the interior valleys causes the erosion of the low clouds and fog back to the coast, and produces hazy afternoons. Drizzle frequently falls in the morning when the low clouds and fog are the thickest. The low clouds and fog are further enhanced on a larger scale as the deserts to the East heat up, drawing in the air from the Pacific Ocean. Additionally, Ventura County's low clouds and fog can sometimes be enhanced by the formation of the coastal eddy that occasionally forms in the "California high", as weather systems approach the Pacific Northwest. These coastal eddies maintain a circulation of low clouds and fog that can sometimes cover the Southern half of Ventura County for several days. Low clouds and fog are most prevalent from mid-May to mid-July, then decreases in intensity and duration from mid-July through mid-September. August and September are typically the hottest months with only occasional low clouds and fog during the early morning hours.

Fall: In September the local low clouds and fog become less frequent, if non-existent, giving way to warm/hot sunny days and warm nights. Beginning in late September, a seasonal change begins when the "Santa Ana Winds" begin to become established. The Santa Ana Winds are comprised of a strong, dry wind, coming from the desert. It is usually a wind from the East or Northeast,

accompanied by very low humidity. Santa Ana Winds are associated with the storm track moving Southward toward the region. Even though the weather fronts that move into this area are evidenced at only the mid and high altitudes, following these comes the beginning of the fall Santa Ana Wind season. Daytime high temperatures decrease during this season. Skies are usually clear from September to late October. From October to November the frequency of the Santa Ana Winds increases from one every tenth day to on every fourth day, on average.

The first local rain event for Ventura County usually occurs around the end of October. Although this is typically a mild event, it does indicate that the onset of winter is near. The first significant rainfall is usually in mid-November and November is typically wetter than December.

Winter: January and February are our wettest months, on average bringing two to three inches of rainfall per month in the Southern half of the County. The Northern half of the County is mountainous and receives four to six inches of rainfall during January and February, on average. Wet and cold weather systems move into the Ventura County region every three to six days. The transition between these weather systems usually involve the formation of the Great Basin High pressure area (over Idaho and Northern Nevada), causing strong Santa Ana Winds to blow from the Northeast at times. These wintertime Santa Ana Winds are strongest and most frequent in December and January. The Santa Ana Winds decrease in frequency from one every fourth day in December, to one every fifteenth day by the end of March.

Spring: The wet winter storms usually end by the fourth week of March. March and April are the windiest months. The cold Low pressure areas are more frequent in early spring, although the precipitation with these Lows drops off by the end of March. As the Eastern Pacific High begins to build and intensify, the frequency of the cold Lows decreases by mid-April. The Santa Ana Winds are at the end of their season as well, with the last Santa Ana Wind event usually occurring in mid-May.

The third major weather influence/enhancement in Ventura County is the topography. There is the Pacific Ocean to the West, deserts to the East, and the transverse mountain range to the North. In between are the local inland valleys and the coastal plain. The North half of the County has mountains that reach elevations up to 8,000 ft. and are oriented West to East. These mountains enhance the rainfall from winter weather systems and also increase and dry out the Santa Ana Winds systems which occur from late September to mid-May. The mountains also prevent the marine layer from intruding too far inland and help direct the coastal eddy that forms during the early summer months. Ventura County's coastal plain and valleys of the South half of the region serve to direct the air flow to and from the ocean. The inland valleys are oriented Southwest to Northeast. The nearby coastal hills help to contain the marine layer. The local hills heat up in the daytime, burning off the morning low clouds and fog, then draw the sea breeze inland as the air rises from the inland valleys and hillsides. During the nights, the land cools faster than the ocean mass, causing a land breeze where the air flows slowly down the hills into valleys towards the ocean.

In addition to the dominant climatic and topographic features of Ventura County, it is appropriate to mention general atmospheric conditions that can be conducive to the buildup of certain pollutant concentrations. These are inversion conditions and stagnation. Inversion conditions exist when the vertical profile of atmospheric temperature is increasing with altitude. The "base" of the inversion, or the position at which the temperature begins to increase with height, typically

is at the surface during the night, and will rise to some altitude, ranging from a few hundred feet to one or two thousand feet. During these inversion days, the base of the inversion will rise to a certain level, then stop. When this occurs, the inversion base intersects with the sides of the hills in the inland valleys, and a “box” is formed. This box effect creates a limited volume for the air under it to mix. Therefore, pollutants emitted during this period tend to stay within the box, and build up in concentration. When the inversion condition is accompanied by low winds, a general atmospheric stagnation can occur. These conditions are most prevalent during the summer, but can occur at other times of the year. When an inversion/stagnation condition occurs during the summer, high ozone levels occur in the inland valleys. When the condition occurs (albeit less frequently) in the winter, increased carbon monoxide levels can result. It is expected that these conditions may also be conducive to an increase in PM_{2.5} levels.

1.4 Dominant Economic Activities and Emission Sources Related to PM_{2.5}

The PM_{2.5} in California's air is the result of primary and secondary particulates. Primary particulate emissions are directly emitted from sources such as residential fireplaces, diesel trucks, forest burning, dust sources, and industrial processes. Secondary particulates form when gaseous or non-particulate substances react in the atmosphere with other substances to produce particulate matter.

The predominant sources of directly emitted PM_{2.5} vary regionally in California. In Southern California, inventory estimates show that approximately 25% of PM_{2.5} is from mobile sources. In the San Joaquin Valley, the mobile contribution is only 9% but geologic dust sources are more substantial PM_{2.5} contributors. In the San Francisco region, fireplaces are a major source of PM_{2.5}. In the Southeast Desert region, dust sources are dominant. Each region in the state has its own unique mix of PM_{2.5} source contributors.

Precursors to secondary PM_{2.5} formation in California include oxides of nitrogen (NO_x) from motor vehicles and other combustion sources, ammonia emissions, certain organic substances which form particulate matter, and additional emission sources. Secondary particulate levels are highly variable and are dependent on atmospheric conditions and precursor levels for formation. For example, in some regions at certain times of the year the secondary particles can comprise 50% or more of the total ambient measured PM_{2.5} concentrations. At other times, the secondary particulates are nearly negligible. Because secondary particles form through complex and variable atmospheric processes, it is not currently possible to produce accurate secondary particulate emission estimates as can now be done for the primary, directly emitted PM_{2.5}.

Major PM_{2.5} Sources

The following table shows the major Ventura County PM_{2.5} point sources.

Ventura County - Major PM_{2.5} Sources

Facility Name	FAC ID	UTM East	UTM North	TPY
Calmat Company	006	303.1	3794.1	4.7
SCE - Mandalay	013	292.7	3787.2	15.6
Proctor & Gamble	015	303.1	3787.0	34.9
Pacific Custom	036	312.8	3850.1	12.7
SCE - Ormond	065	300.5	3777.8	15.7
E.F. Oxnard	214	300.8	3786.0	5.4
U.S. Navy - NAWS	1207	267.0	3681.0	8.0
Ogden Power	1210	297.8	3789.0	5.7
O.L.S. Energy	1267	285.5	3805.8	6.0

1.5 PM_{2.5} Monitoring Requirements

For the purpose of PM_{2.5} Network Plan development, Ventura County has been determined to be a single Metropolitan Statistical Area (MSA) and a single Monitoring Planning Area (MPA). The MSA and the MPA are one and the same.

The federal regulation for PM_{2.5} Monitoring Network Plans (40CFR58) specifies the number of required “Community Oriented” (Core) PM_{2.5} monitoring sites, based on population and other criteria. The Core PM_{2.5} monitoring sites are to be part of the State and Local Air Monitoring Stations (SLAMS) network.

The regulation requires, for the Ventura County population (>500,000, <1,000,000), at least two (2) Core SLAMS for PM_{2.5}. Ventura County is also a designated Photochemical Assessment Monitoring Stations (PAMS) area. At least one (1) additional Core SLAMS for PM_{2.5} is required at a PAMS site if the MPA is also a PAMS area. The total number of required Core PM_{2.5} SLAMS for Ventura County is three (3). Additionally, Ventura County is proposing to include two (2) additional non-core SLAMS for PM_{2.5}, dependent upon EPA funding. The specific proposed PM_{2.5} monitoring sites are discussed later in this document.

2.0 PM_{2.5} MONITORING NETWORK ELEMENTS

Several types of PM_{2.5} monitors will be part of the PM_{2.5} monitoring network. This section summarizes the PM_{2.5} monitors: 1) planned for deployment in 1998 and 1999; and 2) existing particulate matter monitors at the proposed PM_{2.5} sites. For a summary of particulate matter monitoring in California outside of the PM_{2.5} monitoring network, please refer to the statewide summary.

2.1 PM_{2.5} Monitors Planned for Deployment

To satisfy monitoring objectives of the PM_{2.5} program, several types of PM monitors will be needed in California. Of these, two (2) types are proposed for Ventura County. The most important objective of the PM_{2.5} monitoring program is developing a data base for comparison to the annual-average and 24-hour-average PM_{2.5} NAAQS. Federal Reference Method (FRM) monitors will collect mass PM_{2.5} measurements to support area designations such as attainment or nonattainment. In addition to FRM monitors, speciation samplers will provide full chemical characterization of PM_{2.5} data. Table 2.1.1 below shows the PM_{2.5} monitoring network planned for deployment in 1998 and 1999 in Ventura County.

Table 2.1.1 Ventura County - PM_{2.5} Monitoring Network

Site Location	AIRS Site ID	PM _{2.5} FRM	PM _{2.5} Speciation	PM _{2.5} TEOM/BAM	Other PM _{2.5} Monitors
El Rio-Rio Mesa School #2	061113001	X	Y	---	---
Simi Valley-Cochran St.	061112002	X	Y	---	---
Thousand Oaks - Moorpark Rd.	061110007	X & XX	---	---	---
Ojai-Ojai Ave.	061111004	Y*	---	---	---
Piru-2 miles sw	061110004	Y*	---	---	---

Codes: X - PM_{2.5} monitor to be deployed in 1998

Y - PM_{2.5} monitor to be deployed in 1999

XX - Collocated PM_{2.5} monitor used for precision data to be deployed in 1998

*NOTE: For purposes of the 1998 official plan submittal to ARB the Piru site is the preferred site for 1999 implementation, if only one additional site is funded for Ventura County. Ojai is proposed for further consideration, as funding allows. Ref. discussion in Sec. 4.1 of this document.

2.2 Existing Particulate Matter Monitors

Table 2.2.1, below, summarizes the existing particulate matter monitors at proposed PM_{2.5} sites in Ventura County.

Table 2.2.1 Ventura County - Existing Particulate Matter Monitors at proposed PM_{2.5} Monitoring Sites

Site Location	AIRS Site ID	Dichot	PM ₁₀ SSI	PM ₁₀ TEOM/BAM	Other PM Monitors
El Rio-Rio Mesa School #2	061113001	---	X	---	---
Simi Valley-Cochran St.	061112002	---	X & XX	---	TSP
Thousand Oaks - Moorpark Rd.	061110007	---	X	---	---
Ojai-Ojai Ave.	061111004	---	X	---	---
Piru-2 miles sw	061110004	---	X	---	---

Codes: X - Existing Monitor
XX - Collocated particulate matter monitor used for precision data

2.3 PM_{2.5} Quality Assurance

Initially, Ventura County will adopt the CARB schedule. Please refer to the quality assurance section in statewide summary.

At a later time, yet to be determined, the District will develop revisions to its VCAPCD Air Monitoring Quality Assurance Manual to incorporate the PM_{2.5} monitoring program.

2.4 Laboratory Analysis

For the PM_{2.5} monitoring mass filter analysis, Ventura County proposes to weigh its own mass filters in the District laboratory. In additions, the VCAPCD has been approved by EPA and CARB to perform the filter weighing for several other California PM_{2.5} monitoring sites, and to receive funding for this work accordingly. The specific sites outside of Ventura County for which the District will perform mass filter weighing is yet to be determined.

Upgrading the VCAPCD laboratory PM filter weighing room to accommodate the PM_{2.5} monitoring program has started and is scheduled for completion by September, 1998.

PM_{2.5} samples from the speciation monitors will be analyzed through a network of central contract laboratories in the country. The names of the contract laboratories are yet to be determined.

3.0 PM_{2.5} MONITORING SITES TO BE DEPLOYED IN 1998

The VCAPCD proposes to deploy three (3) PM_{2.5} monitoring sites in 1998. This section defines why these sites were selected to monitor for PM_{2.5}. The selected sites along with important parameters that characterize each site are listed and discussed herein.

3.1 Monitor Siting

The selected site locations in Ventura County for deployment of PM_{2.5} monitors in 1998 are:

El Rio-Rio Mesa School #2
Simi Valley-Cochran Street
Thousand Oaks-Moorpark Road

Each of these sites are proposed as Core SLAMS, population oriented, neighborhood scale.

For population consideration, the El Rio station is located in a open area on flat terrain, with agriculture on three sides. It is very close (within a few kilometers) to the populated cities of Ventura, Oxnard and Camarillo. It is representative of the “inland coastal”, populated region of the Oxnard Plain. This is an existing SLAMS station and is also a PAMS Site Type #2

The Simi Valley and Thousand Oaks sites are located within populated cities, on high school campuses, in open areas, and on flat terrain. Both of these are existing SLAMS stations. Simi Valley is also a PAMS Site Type #3.

There are no area source emission “hot spots” or major point source emissions near enough to any of these sites to affect PM_{2.5} levels.

These sites are all PM₁₀ monitoring sites and have been for many years. There have been no exceedances of PM₁₀ NAAQS at these sites through 1996 (PM₁₀ data for 1997 is still under evaluation).

As for existing PM_{2.5} data, there has been no dichotomous PM_{2.5} sampling in Ventura County.

The only PM_{2.5} data collected to date in Ventura County is from a special study conducted by the District in 1996-97: ***Ventura County Fine Particulate Study-Monitoring Report; October, 1997; by D.K. Mikel, R.H. Baldwin & D.L. Tubbs*** (available upon request). The study was conducted using “saturation samplers” on loan from EPA. During the study, the PM_{2.5} samplers were collocated at the District’s PM₁₀ SLAMS stations. The special study used AIRMETRICS “Mini Vol” samplers. The “Mini Vol” is a portable, battery powered, inexpensive means of sampling for particulate matter. Obtained through EPA’s Saturation Monitor Repository, they have been used extensively for special studies where numerous samplers are to be deployed at once, or where it may be difficult to power or locate reference or equivalent samplers.

A summary of the special study PM_{2.5} data is presented in table 3.1.1 below.

Table 3.1.1 VCAPCD PM_{2.5} Special Study (1996-97)
(all values expressed as μg/m³)

Site	Max. PM _{2.5}	2 nd Max. PM _{2.5}	Average PM _{2.5}
Thousand Oaks	50	41	22.5
Simi Valley	30	29	14.2
El Rio	25	23	14.5
Piru	48	25	15.2
Ojai	35	26	12.6

Even though the monitoring method used in the special study was not a PM_{2.5} Federal Reference Method (FRM), the method has been shown in a side-by-side evaluation test to produce results that compare well with the FRM. (Ref. *Comparison of PM_{2.5} Saturation Samplers with Prototype PM_{2.5} Federal Reference Methods Samplers*; by R.J. Tropp, K. Jones, and G. Kuhn of TRC Environmental Corp., and N.J. Berg, Jr. of USEPA/OAQPS; 1997).

During the special study, the Thousand Oaks 24-hr PM_{2.5} mass data values were consistently higher than the data collected at other sites and the average was higher than the PM_{2.5} annual average NAAQS of 15.0 μg/m³. For this reason, the District proposes to designate Thousand Oaks as the high concentration site for the County, at least until official FRM sampling data is obtained that would suggest a change. Even though the special study was conducted for only a portion of the year, it is the best information presently available.

3.2 Site Description

Table 3.2.1 below provides a summary of the PM_{2.5} sites to be deployed in 1998.

Table 3.2.1 PM_{2.5} Monitoring Sites to be Deployed in 1998

Site Location	AIRS Site ID	Operating Agency	Spatial Scale	Monitoring Objective	Site Type	Measurement Method
El Rio-Rio Mesa School #2	061113001	VCAPCD	Neighborhood	R,P	C	Graseby Sequential FRM
Simi Valley-Cochran St.	061112002	VCAPCD	Neighborhood	R, P, T	C	Graseby Sequential FRM
Thousand Oaks-Moorpark Rd.	061110007	VCAPCD	Neighborhood	M*	C	Graseby Sequential FRM

Codes: Monitoring Objective
 R - To determine representative high concentration in a populated area
 M - To determine the highest concentration expected to occur in the network
 T - To determine the extent of regional pollutant transport
 P - PAMS site
 * Selected location for collocated PM_{2.5} monitoring

Site Type C - Core SLAMS

The PM_{2.5} data measured at all of these sites will be compared to both the annual-average and the 24-hour average PM_{2.5} NAAQS because each site meets the following conditions:

- a) population-oriented location; and
- b) representative of neighborhood scale.

4.0 PM_{2.5} MONITORING SITES TO BE DEPLOYED IN 1999

Dependent upon sufficient EPA funding, the District proposes to establish additional PM_{2.5} monitoring sites in 1999 that would operate FRM monitors. The PM_{2.5} data from these sites will help better define boundaries of the attainment/nonattainment area and to provide public health information. The District also plans to deploy PM_{2.5} chemical speciation monitors in 1999, given approval and sufficient funding.

4.1 Monitoring Sites Operating PM_{2.5} FRM Monitors

For purposes of the official submittal to ARB for the 1998 plan, one additional site for deployment in 1999 in Ventura County is proposed as core SLAMS at the existing SLAMS site at Piru, and is summarized in Table 4.1.1 below.

Table 4.1.1 PM_{2.5} Monitoring Site to be Deployed in 1999 (Official '98 ARB Plan Submittal)

Site Location	AIRS Site ID	Operation Agency	Spatial Scale	Monitoring Objective	Site Type	Measurement Method
Piru-2 miles sw	061110004	VCAPCD	Neighborhood	R, T	S	R & P Single Event

Codes: Monitoring Objective R - To determine representative high concentration in a populated area
T - To determine the extent of regional pollutant transport

Site Type S - core SLAMS

In addition, however, the District recognizes that the actual funding and specific details for the FY99 phase are not yet determined and that there will be a network plan revision in mid-99. Subject to further consideration in 1999, the District is also proposing to add another core-SLAMS at the existing Ojai SLAMS site, should the funding become available. This is shown in Table 4.1.2 below.

Table 4.1.2 Additional Proposed PM_{2.5} Monitoring Site to be Deployed in 1999 (Tentative, subject to further consideration)

Site Location	AIRS Site ID	Operating Agency	Spatial Scale	Monitoring Objective	Site Type	Measurement Method
Ojai-Ojai Ave.	061111004	VCAPCD	Neighborhood	R	S	R & P Single Event

Codes: Monitoring Objective R - To determine representative high concentration in a populated area.

Site Type S - core SLAMS

The VCAPCD proposes to seek EPA funding in 1999 for adding PM_{2.5} sites at the existing SLAMS stations at Ojai and Piru. This will give the network more complete geographical representation, provide data to better define the attainment/nonattainment boundary in the MPA, and provide valuable public health information for the affected populations in these areas.

Ojai and Piru are located in distinct inland valleys of Ventura County. Among the separate, populated areas of the County, the Ojai Valley area is the Northern boundary, and there are about 25,000 people in the area. The area around Piru represents the Northeast boundary of the MPA. Piru also represents the Santa Clara River Valley which includes the cities of Santa Paula and Fillmore, as well as the community of Piru. The total population of the valley is about 45,000.

Also, the Piru station is in a transport corridor to a highly populated portion of Los Angeles County (Santa Clarita), to the East.

Both of these stations are located in open areas on flat terrain and both are existing SLAMS stations.

There are no area source emission “hot spots” or major point source emissions near enough to these sites to affect PM_{2.5} levels.

These sites are PM₁₀ monitoring sites and have been for many years. There have been no exceedances of PM₁₀ NAAQS at these sites through 1996 (PM₁₀ data for 1997 is still under evaluation).

4.2 PM_{2.5} Chemical Speciation Sampling

Dependent upon sufficient funding in 1999, the VCAPCD proposes to add two (2) PM_{2.5} chemical speciation sampling sites at the existing SLAMS/PAMS stations at Simi Valley and El Rio, as shown in the table below.

Table 4.2.1 PM_{2.5} Chemical Speciation Monitoring

Site Location	AIRS Site ID	Operating Agency	Monitoring Method
El Rio-Rio Mesa School #2	061113001	VCAPCD	Speciation samplers - purchase method to be determined
Simi Valley-Cochran St.	061112002	VCAPCD	Speciation samplers - purchase method to be determined

While PM_{2.5} mass measurements will be used principally for PM_{2.5} NAAQS comparison purposes, chemically resolved PM_{2.5} data will be needed for purposes of source attribution analyses, evaluation of emission inventories and air quality models, and to support regional health assessments.

It is not currently known whether the PM_{2.5} measurements to be obtained at the Simi Valley and El Rio sites will exceed the NAAQS, or be the highest in the MPA. Even so, based on the District’s 1996-97 special study on PM_{2.5} (Ref. special study discussion in Section 3.0 of this document), it is possible that these sites could exceed the annual PM_{2.5} standard.

The Simi Valley and El Rio sites have been viewed as the two most important in the District’s ambient air monitoring network.

Simi Valley is the easternmost populated area of the County, is the maximum ozone site (PAMS Site Type #3), and is a current PM₁₀ speciation site. Simi Valley is also a receptor for a well known transport corridor from the South Coast Air Basin via the Santa Suzanna Pass.

El Rio is centrally located on the coastal plain, the westernmost populated area of the County. It is a PAMS Site Type #2 and a current PM₁₀ speciation site. Under certain conditions, the coastal plain region is a receptor for a well known transport corridor from the South Coast Air Basin.

The NAMS/SLAMS/PAMS data from the Simi Valley and El Rio sites are commonly used to represent the ambient conditions in, and the atmospheric interactions between, the County's two primary populated regions - inland valleys and coastal.

For the above reasons, the Simi Valley and El Rio sites will be ideal as PM_{2.5} speciation sampling sites in the Ventura County MPA.

4.3 Continuous PM_{2.5} Monitoring

No continuous PM_{2.5} monitoring is being proposed for the Ventura County MPA. The PM_{2.5} regulation does not require continuous monitoring in areas with less than one million population. The District believes that continuous PM_{2.5} monitoring could only be justified if there were higher population in the MPA, along with an expectation that there will be 24-hour PM_{2.5} measurements close to or exceeding the 24-hour PM_{2.5} NAAQS.

Based on the results of the PM_{2.5} monitoring special study conducted by the District in 1996-97 (Ref. special study discussion in Section 3.0 of this document), there is no expectation of obtaining 24-hour PM_{2.5} measurements approaching the 24-hour NAAQS.

Given the expectation that the annual PM_{2.5} NAAQS will be the "controlling standard" for the Ventura County MPA and that the current population is well below one million, the District does not propose to include continuous PM_{2.5} monitoring in the initial Ventura County PM_{2.5} Monitoring Network Plan.

5.0b SAMPLING FREQUENCY

The federal requirements call for everyday sampling for PM_{2.5} at certain Core SLAMS and one in three day sampling at all other PM_{2.5} sites. There is also a requirement for all PM₁₀ sites to sample on a one in three day schedule, at minimum. In order to collect sufficient data and at the same time conserve monitoring resources, the VCAPCD is proposing alternative sampling frequencies for PM_{2.5} and PM₁₀. The following sections discuss sampling frequencies for these, as well as for PM_{2.5} chemical speciation.

5.1 PM_{2.5} FRM Sampling Frequency

The table below presents the proposed PM_{2.5} FRM sampling frequencies for the Ventura County MPA.

Table 5.1.1 PM_{2.5} FRM Sampling Frequency

Site Location	AIRS Site ID	Sampling Frequency		
		Required	Proposed	
			Time Period	Frequency
El Rio- Rio Mesa School #2	061113001	1 in 3 day	all	1 in 3 day
Simi Valley- Cochran St.	061112002	everyday	all	1 in 3 day
Thousand Oaks - Moorpark Rd.	061110007	everyday	all	1 in 3 day
Ojai-Ojai Ave.	061111004	--	mid-1999 - on	1 in 6 day
Piru-2 mile sw	061110004	--	mid-1999 - on	1 in 6 day

For the initial Core SLAMS PM_{2.5} monitoring sites to be deployed in 1998 at El Rio, Simi Valley and Thousand Oaks, the VCAPCD proposes 1 in 3 day sampling. Everyday sampling is not justified, based on the best information available.

In the VCAPCD's PM_{2.5} monitoring 1996-97 special study (Ref. special study discussion in Section 3.0 of this document), there were no 24-hour single day samples approaching the level of the 24-hour PM_{2.5} NAAQS of 65 µg/m³. The highest value obtained was 50 µg/m³, which is less than eighty percent of the 24-hour standard. The second highest value was 41 µg/m³, which is only sixty-three percent of the 24-hour standard.

Considering the data from the special study, which is presently the best data available, the District believes that there is a strong likelihood that the "controlling standard" for PM_{2.5} in Ventura County will be the annual standard. We believe that less frequent than everyday sampling is appropriate at locations where the annual standard is the controlling standard and where the expected 24-hour values are far less than the 24-hour standard. If future FRM sampling for the official PM_{2.5} monitoring program yields different results, the Network Plan can be adjusted accordingly at a later time.

For the non-core SLAMS proposed at Ojai and Piru in mid-1999, a 1 in 6 day sampling schedule is adequate. The District believes that less frequent sampling at non-core SLAMS that are not required sites is appropriate. The proposed 1 in 6 day sampling at these sites will be adequate for the purposes of helping to define the Ventura County MPA attainment/nonattainment boundary

and to provide public health information for affected populations in these areas. If future FRM sampling for PM_{2.5} at these sites yields values that are approaching or exceeding NAAQS, the Network Plan can be adjusted accordingly at a later time.

5.2 PM_{2.5} Chemical Speciation Sampling Frequency

A nationwide chemical speciation network for PM_{2.5} is being proposed, consisting of 50 sites that will provide first order characterization of the metals, ions, and carbon constituents of PM_{2.5}. These sites will be part of the National Air Monitoring Stations (NAMS) network and will provide nationally consistent data for trends assessments, and will serve as a model for other chemical speciation efforts. An additional 250 PM_{2.5} speciation sites are planned nationwide, for a total of 300 sites in the initial PM_{2.5} chemical speciation network.

Based on discussions at the spring Standing Air Monitoring Work Group (SAMWG) meeting, (consisting of EPA and state and local air pollution control agency air monitoring technical staff), there was a consensus that the appropriate sampling frequency for the 50 NAMS sites should be one-in-six day sampling, at a minimum. The sampling frequency for the other 250 sites can be one-in-twelve days.

At this time, our preliminary proposal is that the VCAPCD's Simi Valley PM_{2.5} chemical speciation site be part of the NAMS network, with one-in-six day sampling. It is also proposed that the coastal region PM_{2.5} chemical speciation site at El Rio, will implement one-in-twelve day sampling.

These discussions are preliminary. The actual appropriate sampling frequencies for PM_{2.5} chemical speciation sites will be determined in the future.

5.3 PM₁₀ Sampling Frequency

The U.S. EPA's new minimum required sampling frequency for PM₁₀, as stated in the regulation, is one-in-three days, with a waiver possible, on a case-by-case basis, to be granted by the EPA regional office. The California Air Resources Board and the local air pollution control agencies in California are requesting that U.S. EPA Region IX grant a statewide waiver, allowing PM₁₀ sampling to continue at the current schedule of one-in-six days. This is applicable to Ventura County, where the 24-hour PM₁₀ measurements do not approach the 24-hour PM₁₀ NAAQS, and the annual standard is the controlling standard for PM₁₀.

Appendix A

Sampling Site Maps (see following pages)

- **Ventura County Proposed PM_{2.5} Monitoring Sites**
- **El Rio (Oxnard) SLAMS Site**
- **Simi Valley SLAMS Site**
- **Thousand Oaks SLAMS Site**
- **Ojai SLAMS Site**
- **Piru SLAMS Site**