



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

OFFICE OF THE
REGIONAL ADMINISTRATOR

August 21, 2008

Clarence Atwell
Chairperson
Santa Rosa Rancheria
P.O. Box 8
Lemoore, CA 93245

Dear Chairperson Atwell:

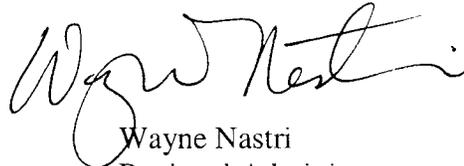
This letter provides information on the status of fine particle (PM_{2.5}) air pollution in the area where your reservation is located. PM_{2.5} pollution represents one of the most significant barriers to clean air facing us today. Health studies link these tiny particles – about 1/30th the diameter of a human hair – to serious human health problems including aggravated asthma, increased respiratory symptoms such as coughing and difficult or painful breathing, chronic bronchitis, decreased lung function, and even premature death in people with heart and lung disease. PM_{2.5} pollution can remain suspended in the air for long periods of time and create public health problems far away from emission sources. Reducing levels of PM_{2.5} pollution is an important part of our commitment to clean, healthy air.

Your reservation is located in an area that EPA is proposing to designate as nonattainment for the 2006 PM_{2.5} air quality standard. Consistent with section 107(d) (1) of the Clean Air Act, this letter is to inform you that EPA intends to designate your reservation as nonattainment for the 2006 PM_{2.5} health standard. We also intend to provide copies of this letter to Tribal Environmental Directors along with a copy of our supporting analysis for your reference. This analysis describes EPA's review of the air quality data, emissions data, and other related information for the area surrounding your reservation. If you would like to provide additional information about the PM_{2.5} status of your reservation or adjoining areas for our consideration, please send it to us by October 20, 2008.

EPA has taken steps to reduce fine particle pollution across the country, such as implementing the Clean Diesel Program, which has reduced emissions from highway, non-road and stationary diesel engines. In addition, implementation plans developed by the state to attain the 1997 PM_{2.5} standards will also help reduce unhealthy levels of fine particle pollution.

We intend to make final designation decisions for the 2006 24-hour PM_{2.5} standards by December 18, 2008. If you have any questions, please do not hesitate to have your staff contact Colleen McKaughan at 520-498-0118. We look forward to a continued dialogue with you as we work together to implement the PM_{2.5} standards.

Sincerely,



Wayne Natri
Regional Administrator

Enclosure

cc: Allen Berna, Environmental Director

Attachment 1

CALIFORNIA Area Designations For the 24-Hour Fine Particle National Ambient Air Quality Standard

The table below identifies the counties in California that EPA intends to designate as not attaining the 2006 24-hour fine particle (PM_{2.5}) standard.¹ A county will be designated as nonattainment if it has an air quality monitor that is violating the standard or if the county is determined to be contributing to the violation of the standard.

Area	California Recommended Nonattainment Counties	EPA's Intended Nonattainment Counties
Butte County	Butte County - Partial	Butte County
Imperial County	Imperial County - Partial	Imperial County
Sacramento County	Sacramento County	Sacramento County Yolo County Placer County – Partial El Dorado County – Partial Solano County - Partial
San Francisco Bay Area	Sonoma County – Partial Napa County Marin County San Francisco County Contra Costa County Alameda County Santa Clara County San Mateo County Solano County - Partial	Sonoma County – Partial Napa County Marin County San Francisco County Contra Costa County Alameda County Santa Clara County San Mateo County Solano County - Partial
San Joaquin Valley Air Basin	San Joaquin County Stanislaus County Merced County Madera County Fresno County Kings County Tulare County Kern County - Partial	San Joaquin County Stanislaus County Merced County Madera County Fresno County Kings County Tulare County Kern County - Partial
South Coast Air Basin	Los Angeles County – Partial San Bernardino County Partial Riverside County – Partial Orange County	Los Angeles County – Partial San Bernardino County Partial Riverside County – Partial Orange County
Yuba County Sutter County	Yuba County – Partial Sutter County - Partial	Yuba County Sutter County

EPA intends to designate the remaining counties in the state as attainment/unclassifiable.

¹ EPA designated nonattainment areas for the 1997 fine particle standards in 2005. In 2006, the 24-hour PM_{2.5} standard was revised from 65 micrograms per cubic meter (average of 98th percentile values for 3 consecutive years) to 35 micrograms per cubic meter; the level of the annual standard for PM_{2.5} remained unchanged at 15 micrograms per cubic meter (average of annual averages for 3 consecutive years).

EPA Technical Analysis for San Joaquin Valley Air Basin

Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those areas that contribute to violations. This technical analysis for the San Joaquin Valley Air Basin identifies the counties with monitors that violate the 24-hour PM_{2.5} standard and evaluates the counties that potentially contribute to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

Figure 1 is a map of the counties in the area and other relevant information such as the locations and design values of air quality monitors, the metropolitan area boundary, and counties recommended as nonattainment by the State.

San Joaquin Valley, CA

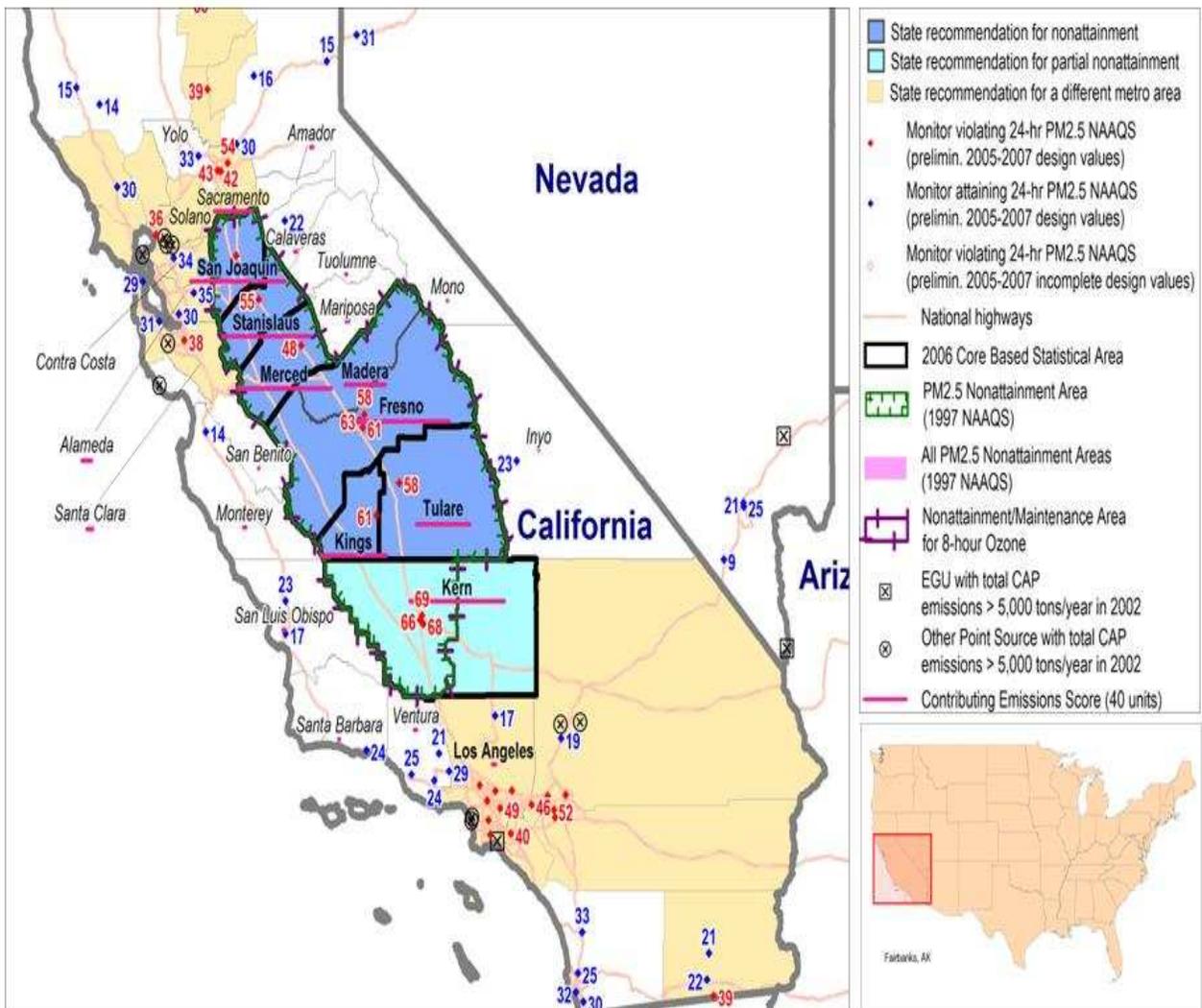


Figure 1

Counties labeled in bold reflect NAAs under 1997 NAAQS

For this area, EPA previously established PM_{2.5} nonattainment boundaries for the 1997 PM_{2.5} NAAQS that included 7 full counties and 1 partial county. The full counties are San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare. Kern is the only partial county. The San Joaquin Valley (SJV) is hemmed in by mountain ranges and is very flat. The mountains surrounding the SJV form a bowl trapping air pollutants in the SJV. All of the counties, with the exception of Kern, are fully included in the existing San Joaquin PM_{2.5} nonattainment area. Western Kern County is associated with developed areas (e.g., Bakersfield, CA) and is located within the flat valley area so it is included in the existing PM_{2.5} nonattainment area.

Eastern Kern County is separated from western Kern County by the Sierra Nevada and Tehachapi Mountain Ranges at elevations up to 7,500 feet. Eastern Kern County is a vast arid desert while the western portion of Kern County is part of the urbanized, agricultural, and industrial SJV. East Kern is located above the inversion layer which traps air pollutants in the SJV and thus, experiences different weather from the SJV. Consequently, eastern Kern County is not included as part of the SJV nonattainment area.

In a letter to EPA dated December 17, 2007, the California Air Resources Board (CARB) recommended that the same counties be designated as “nonattainment” for the 2006 24-hour PM_{2.5} standard based on air quality data from 2004-2006. These data are from Federal Reference Method (FRM) and Federal Equivalent Method (FEM) monitors located in the state.

Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations occur predominantly in the winter, and the average chemical composition of the highest days is typically characterized by high levels of nitrate (61%) followed by organic carbon (29%).

Based on EPA's 9-factor analysis described below, EPA believes that 8 counties in California, the same counties as previously designated for PM_{2.5}, should be designated nonattainment for the 24-hour PM_{2.5} air-quality standard as part of the San Joaquin Valley Air Basin nonattainment area, based upon currently available information. These counties are listed in the table below.

Area	State-Recommended Nonattainment Counties	EPA-Recommended Nonattainment Counties
San Joaquin Valley Air Basin	San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, Kern (P) counties	San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, Kern (P) counties

P = partial

The following is a summary of the 9-factor analysis for the San Joaquin Valley Air Basin.

Factor 1: Emissions data

For this factor, EPA evaluated county level emission data for the following PM_{2.5} components and precursor pollutants: “PM_{2.5} emissions total,” “PM_{2.5} emissions carbon,” “PM_{2.5} emissions other,” “SO₂,” “NO_x,” “VOCs,” and “NH₃.” “PM_{2.5} emissions total” represents direct emissions of PM_{2.5} and includes: “PM_{2.5} emissions carbon,” “PM_{2.5} emissions other”, primary sulfate (SO₄), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO₂ and NO_x, are part of “PM_{2.5} emissions total,” they are not shown in Table 1 as separate items). “PM_{2.5} emissions carbon” represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and “PM_{2.5} emissions other” represents other inorganic particles (crustal). Emissions of SO₂ and NO_x, which are precursors of the secondary PM_{2.5} components sulfate and nitrate, are also considered. VOCs (volatile organic compounds) and NH₃ (ammonia) are also potential PM_{2.5} precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

EPA also considered the Contributing Emissions Score (CES) for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive way for consideration of data for these factors. A summary of the CES is included in attachment 2, and a more detailed description can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

Table 1 shows emissions of PM_{2.5} and precursor pollutants components (given in tons per year) and the CES for violating and potentially contributing counties in the San Joaquin Valley Air Basin. Counties that are part of the San Joaquin Valley Air Basin nonattainment area for the 1997 PM_{2.5} NAAQS are shown in boldface. Counties are listed in descending order by CES.

Table 1. PM _{2.5} Related Emissions (tons per year) and Contributing Emissions Score									
County	State Recommended Non-attainment?	CES	PM _{2.5} emissions total	PM _{2.5} emissions carbon	PM _{2.5} emissions other	SO ₂	NO _x	VOCs	NH ₃
Fresno	Yes	100	8,491	4,523]	3,968	5,698	36,411	39,369	18,182
Kern	Yes (P)	100	6,437	3,184	3,251	3,428	61,191	39,039	9,881
Merced	Yes	100	1,926	823	1,104	998	13,427	11,285	10,251
San Joaquin	Yes	100	3,308	1,577	1,730	3,087	29,663	19,051	20,262
Stanislaus	Yes	92	2,260	1,069	1,191	2,125	19,006	17,251	15,580
Kings	Yes	70	1,268	457	811	600	6,772	6,678	7,102
Tulare	Yes	56	3,682	1,833	1,849	1,476	17,881	19,465	18,871
Madera	Yes	43	2,074	1,071	1,003	768	10,772	8,672	4,469

Data provided in Table 1 applies to entire Counties. In the case of Kern County, although the State recommended only part of the County, the data is given for the entire County. P = partial

Fresno, Kern, Merced and San Joaquin Counties had violating monitors which makes them candidates for a PM_{2.5} nonattainment designation. Stanislaus, Kings, Tulare and Madera Counties have relatively high CES values, even though the data for their PM_{2.5} emission components are lower than the other counties.

Based on emissions levels and CES values, all the Counties in the San Joaquin Valley Air Basin are candidates for a 24-hour PM_{2.5} nonattainment designation and, therefore, require further analysis.

Factor 2: Air quality data

This factor considers the 24-hour PM_{2.5} design values in micrograms per cubic meter (µg/m³) for air quality monitors in counties in the San Joaquin Valley Air Basin based on data for the 2005-2007 period. A monitor’s design value indicates whether that monitor attains a specified air quality standard. The 24-hour PM_{2.5} standards are met when the 3-year average of a monitor’s 98th percentile values are 35 µg/m³ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour PM_{2.5} design values for counties in the San Joaquin Valley are shown in Table 2.

Table 2. Air Quality Data			
County	State Recommended Nonattainment?	24-hr PM 2.5 Design Value 2004-06 (µg/m ³)	24-hr PM 2.5 Design Values 2005-07 (µg/m ³)
Fresno County	Yes	59	63
Kern County	Yes (P)	64	69
Merced County	Yes	45	48
San Joaquin County	Yes	41	45
Stanislaus County	Yes	51	55
Kings County	Yes	58	61
Tulare County	Yes	56	58
Madera County	Yes	No data available	No data available
Data provided in Table 1 applies to entire Counties. In the case of Kern County, although the State recommended only part of the County, the data is given for the entire County.			

P = partial

Fresno, Kern, Merced, San Joaquin, Stanislaus, Kings and Tulare Counties in California show a violation of the 24-hour PM_{2.5} standard. Therefore, these counties, which represent most of the counties in the San Joaquin Air Basin, are candidates for inclusion in the San Joaquin Valley Air Basin nonattainment area. There is no data for Madera County. These high design values argue for keeping all the counties in the San Joaquin Valley Air Basin within the nonattainment area.

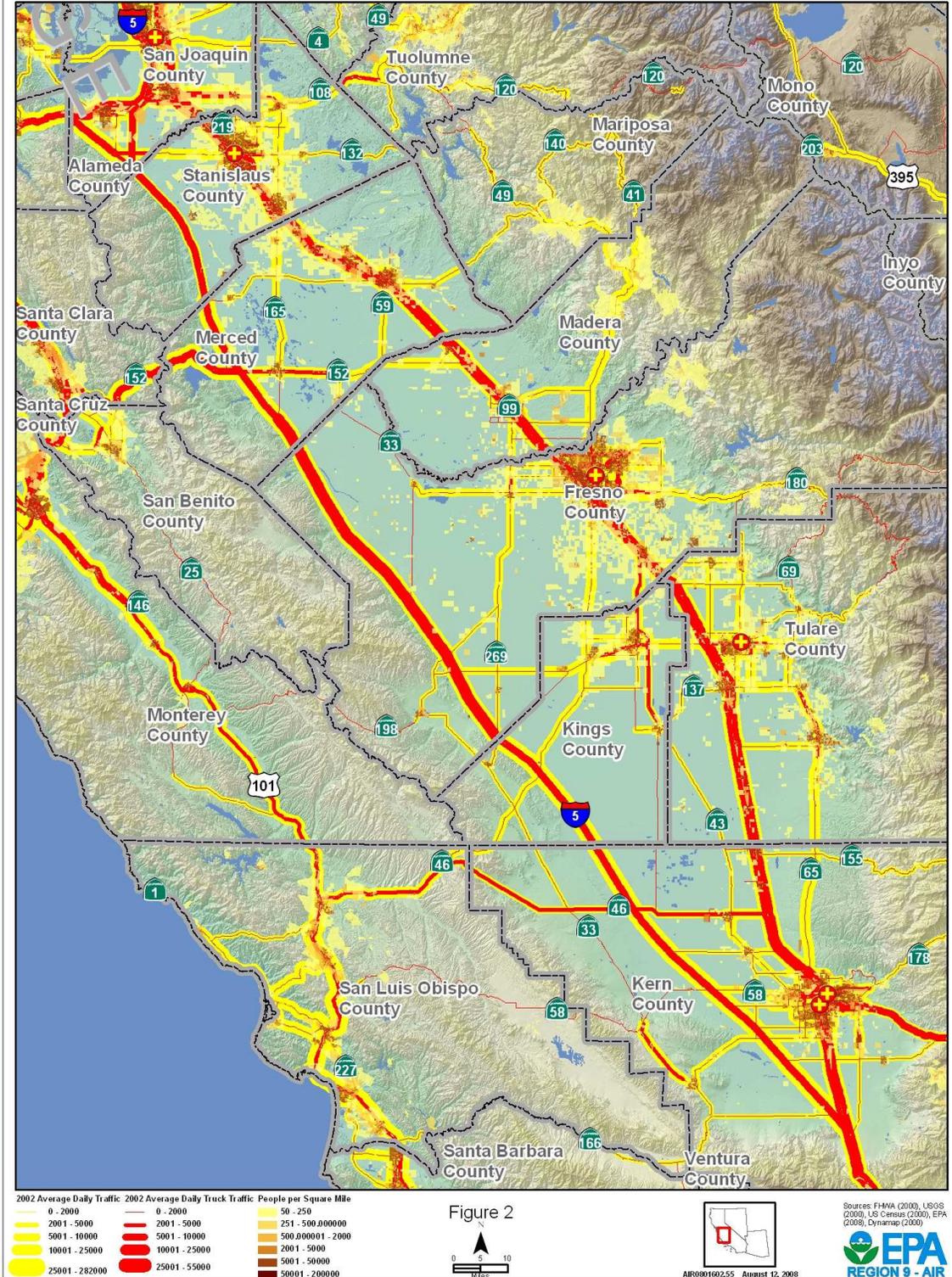
Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with a FRM or FEM monitor. All data from Special Purpose Monitors (SPM) using an FRM, FEM, or Alternative Reference Method (ARM) which has operated for more than 24 months is eligible for comparison to the

relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 24-hour PM_{2.5} NAAQS for designation purposes.

Factor 3: Population density and degree of urbanization (including commercial development)

Table 3 and Figure 2 shows the 2005 population for each county in the area being evaluated, as well as the population density for each county in that area. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 24-hour PM_{2.5} standards.

San Joaquin Valley Population Density, Truck and Commuting Traffic



County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
Fresno	Yes	878,089	146
Kern	Yes (P)	756,981	93
Merced	Yes	242,249	123
San Joaquin	Yes	664,796	466
Stanislaus	Yes	505,492	334
Kings	Yes	143,467	103
Tulare	Yes	411,131	85
Madera	Yes	142,530	66

P = partial

As shown in this table and the map in Figure 2, Fresno County has the largest population in the Basin, although it does not have the highest population density. San Joaquin has a high population density, along with dense population. Kern and Tulare Counties, while having a high population, have relatively small population densities. Since population density per square mile may relate to the size of the County, the population numbers shown does not rule out any of the counties as a candidate for a PM_{2.5} nonattainment status. Population growth has caused the San Joaquin Valley to rank with Los Angeles and Houston in most measures of air pollution.

Based on the combination of population and population density numbers above, all of the Counties in the San Joaquin Valley Air Basin should be included as candidates for the PM_{2.5} nonattainment designation.

Factor 4: Traffic and commuting patterns

This factor considers the number of commuters in each county who drive to another county within the San Joaquin Valley Air Basin, the percent of total commuters in each county who commute to other counties within the San Joaquin Valley Air Basin, as well as the total Vehicle Miles Traveled (VMT) for each county in thousands of miles (see Table 4). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

County	State Recommended Non-attainment?	2005 VMT (1000s mi)	Number Commuting to any violating counties	Percent Commuting to any violating counties
Fresno	Yes	8,038	284,230	96%
Kern	Yes (P)	8,929	225,500	98%
Merced	Yes	3,064	69,950	95%
San Joaquin	Yes	6,334	184,720	95%
Stanislaus	Yes	4,519	158,710	98%
Kings	Yes	2,069	40,800	98%
Tulare	Yes	4,221	129,360	99%
Madera	Yes	1,571	11,590	97%
P = partial				

The listing of Counties on Table 4 reflects a ranking based on the number of people commuting to other Counties. The data in Table 4 indicate that there is significant daily commuting among the Counties in the San Joaquin Valley Air Basin. In addition, there is significant daily truck traffic throughout the Basin.

Interstate 5 (I-5) and State Route 99 (SR 99) each run along the entire length of the San Joaquin Valley. I-5 runs in the western valley, bypassing major population centers (including Fresno, currently the largest U.S. city without an Interstate highway), while SR 99 runs through them.

SR 58 is a freeway in Bakersfield. Along most of its route until its terminus in Barstow, SR 58 is an extremely important and very heavily traveled route for truckers from the valley and the Bay Area to cross the Sierra Nevada and leave California (by way of I-15 or I-40) without having to climb Donner Pass or contend with the traffic congestion in Los Angeles.

Other important highways in the valley include SR 46 and SR 41, which respectively link the California Central Coast with Bakersfield and Fresno; SR 33, which runs south to north along the valley's western rim and provides a connection to Ventura and Santa Barbara over the Santa Ynez Mountains; and SR 152, an important commuter route linking Silicon Valley with its fast-growing exurbs such as Los Banos.

Given the significant amount of commuting within the San Joaquin Valley Air Basin, and the heavily traveled truck routes, all of the counties within the San Joaquin Valley Air Basin are candidates for a PM_{2.5} nonattainment status.

The 2005 VMT data used for Tables 4 and 5 of the 9-factor analysis has been derived using methodology similar to that described in “Documentation for the final 2002 Mobile National Emissions Inventory, Version 3, September 2007, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at:

atftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002_mobile_nei_version_3_report_092807.pdf. The 2005 VMT data were taken from documentation which is still draft, but which should be released in 2008.

Factor 5: Growth rates and patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled for 1996-2005 for counties in the San Joaquin Valley Air Basin, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and likely to be contributing to fine particle concentrations in the area.

Table 5 below shows population, population growth, VMT and VMT growth for counties that are included in the San Joaquin Valley Air Basin.

County	Population (2005)	Population Density 2005	Population % change (2000 - 2005)	2005 VMT (millions mi)	VMT % change 1996 to 2005
Fresno	878,089	146	9%	8,038	21%
Kern	756,981	93	14%	8,929	59%
Merced	242,249	123	14%	3,064	63%
San Joaquin	664,796	466	17%	6,334	35%
Stanislaus	505,492	334	12%	4,519	35%
Kings	143,467	103	10%	2,069	47%
Tulare	411,131	85	11%	4,211	38%
Madera	142,530	66	15%	1,571	42%

All of the counties had population increases during the years 2000 – 2005. In all cases, the percentage increase of VMT during the same period is significantly higher.

Given the growth in population and the significant increase in VMT, all of the counties are candidates for a PM_{2.5} nonattainment designation based on this factor.

Factor 6: Meteorology (weather/transport patterns)

The San Joaquin Valley has hot, dry summers and cool winters characterized by dense tule fog. The rainy season occurs from November through April. The San Joaquin Valley is hemmed in by mountains and rarely has strong winds to disperse smog or other pollutants.

For this factor, EPA considered data from National Weather Service instruments in the area. Wind direction and wind speed data for 2004-2006 were analyzed, with an emphasis on “high PM_{2.5} days” for each of two seasons (an October-April “cold” season and a May-September “warm” season). These high days are defined as days where any FRM or FEM air quality

monitors had 24-hour PM_{2.5} concentrations above 95% on a frequency distribution curve of PM_{2.5} 24-hour values, or where 24-hour values exceeded 35.1 µg/m³.

For each air quality monitoring site, EPA developed a “pollution rose” to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. The figures identify 24-hour PM_{2.5} values by color; days exceeding 35 µg/m³ are denoted with a red or black icon. A dot indicates the day occurred in the warm season; a triangle indicates the day occurred in the cool season. The center of the figure indicates the location of the air quality monitoring site, and the location of the icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

The pollution roses for Fresno County site 060190008 and Kern County, site 060290014, shown in Figures 3 and 4 indicate that elevated levels of particulate matter occur predominately during the cool season during time periods when the winds are light, and from the northwest or southeast. The additional pollutant roses for the San Joaquin Valley Air Basin, included in Attachment 3, show similar results. The meteorology for San Joaquin Valley supports the inclusion of all the counties in the PM_{2.5} nonattainment area.

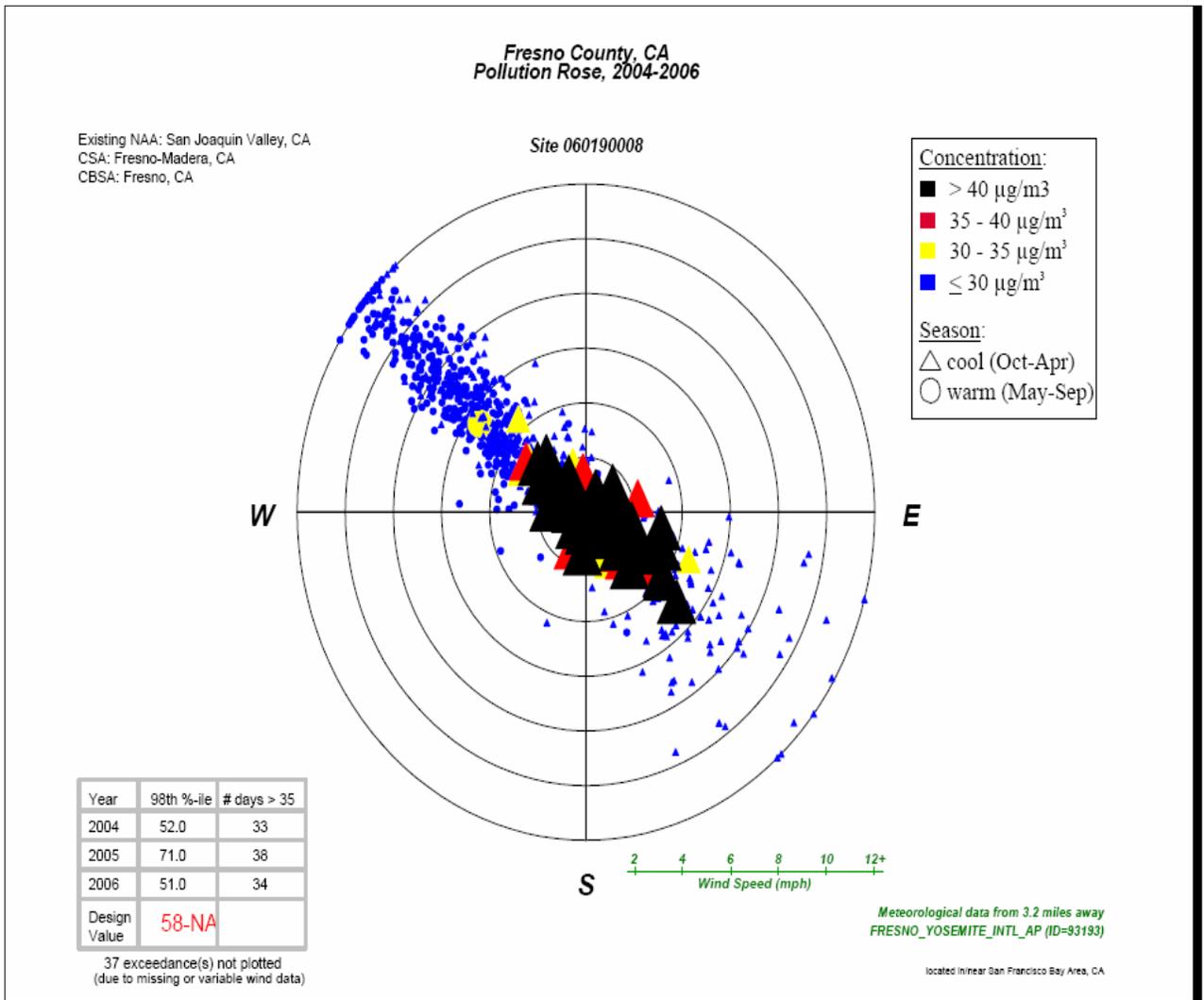
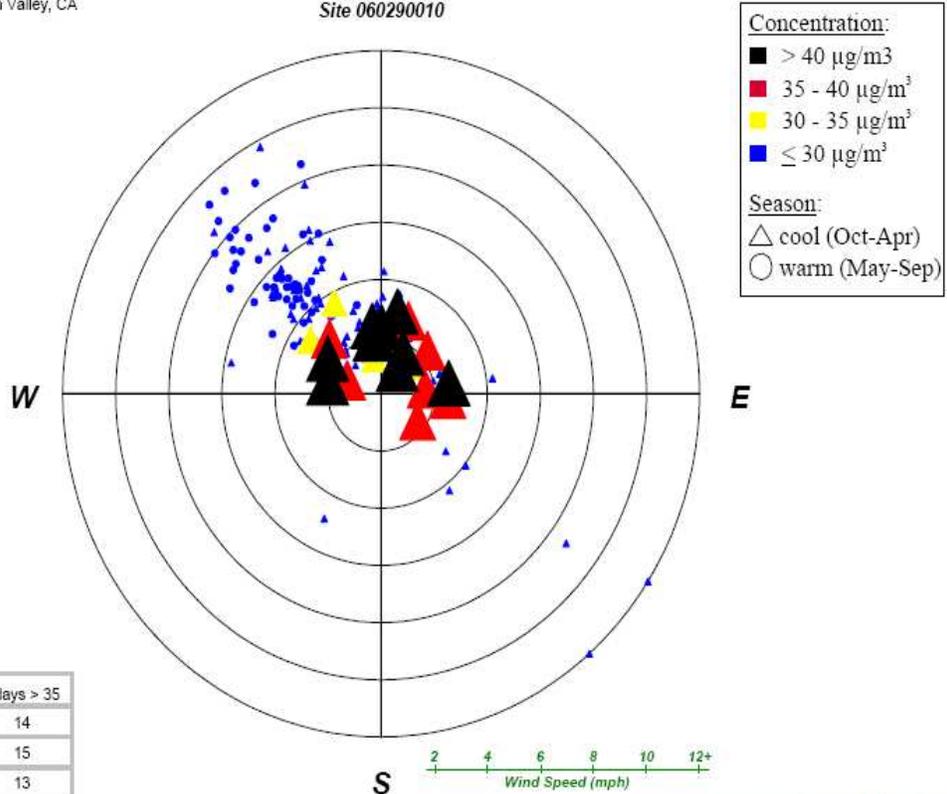


Figure 3

Kern County, CA
Pollution Rose, 2004-2006

Existing NAA: San Joaquin Valley, CA
CSA: none
CBSA: Bakersfield, CA

Site 060290010



Year	98th %-ile	# days > 35
2004	53.9	14
2005	74.9	15
2006	64.4	13
Design Value	64-NA	

26 exceedance(s) not plotted
(due to missing or variable wind data)

Meteorological data from 2.9 miles away
BAKERSFIELD_MEADOWS_FIELD (ID=23155)

located in near San Joaquin Valley, CA

Figure 4

The meteorology factor is also considered in each county's Contributing Emissions Score because the method for deriving this metric included an analysis of trajectories of air masses for high PM_{2.5} days.

Factor 7: Geography/topography (mountain ranges or other air basin boundaries)

The San Joaquin Valley extends from the Sacramento-San Joaquin Delta in the north to the Tehachapi Mountains in the south, and from the various California coastal ranges (from the Diablo in the north to the Santa Ynez in the south) in the west to the Sierra Nevada in the east (see Figure 2).

The San Joaquin Valley is hemmed in by mountains and rarely has strong winds to disperse smog and other pollutants. The San Joaquin Valley has long suffered from some of the United States' worst air pollution. This pollution, exacerbated by stagnant weather, comes

mainly from diesel-and gasoline-fueled vehicles and agricultural operations such as dairies and field-tilling.

Consideration of this factor supports the proposed nonattainment boundary for the San Joaquin Valley.

Factor 8: Jurisdictional boundaries (e.g., existing PM and ozone areas)

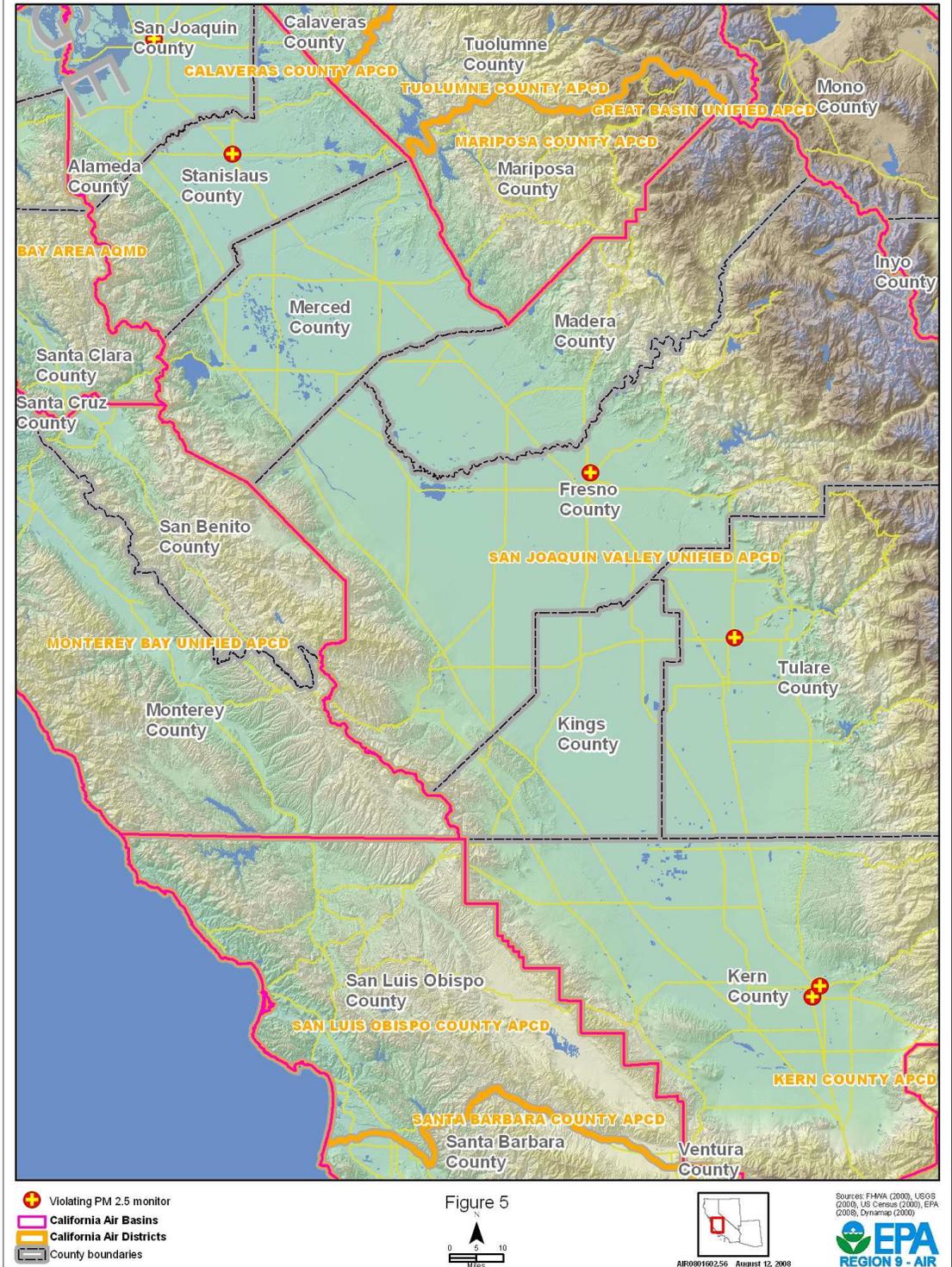
In evaluating the jurisdictional boundary factor, consideration should be given to existing boundaries and organizations that may facilitate air quality planning and the implementation of control measures to attain the standard. Areas designated as nonattainment (e.g., for $PM_{2.5}$ or 8-hour ozone standard) represent important boundaries for state air quality planning. See Figure 3.

The analysis of jurisdictional boundaries considered the planning and organizational structure of the San Joaquin Valley to determine if the implementation of controls in a potential nonattainment area can be carried out in a cohesive manner.

The major jurisdictional boundary in the San Joaquin Valley is the San Joaquin Air Pollution Control District which has jurisdiction over all of Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare, and the western portion of Kern counties. Counties with air-quality monitors that violate the 1997 $PM_{2.5}$ NAAQS include Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare.

Areas designated as 8-hour ozone nonattainment areas are also important boundaries for State air-quality planning. Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare, and the western portion of Kern Counties were included in the 8-hour ozone nonattainment area associated with the San Joaquin Valley Air Basin. These are the same counties that are being considered for a $PM_{2.5}$ nonattainment designation. A goal in designating $PM_{2.5}$ nonattainment areas is to achieve a degree of consistency with ozone nonattainment areas. Comparison of ozone areas with potential $PM_{2.5}$ nonattainment areas, therefore, gives added weight to the designation of Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare Counties and western Kern County as nonattainment for $PM_{2.5}$.

San Joaquin Valley - Air Basins and Air Districts



Factor 9: Level of control of emission sources

This factor considers emission controls currently implemented for major sources in the San Joaquin Valley Air Basin.

The emission estimates on Table 1 (under Factor 1) include any control strategies implemented by the state in the San Joaquin Valley Air Basin before 2005 that may influence emissions of any component of PM_{2.5} emissions (i.e., total carbon, SO₂, NO_x, and crustal PM_{2.5}).

There are five coal-fired EGUs in San Joaquin Valley but all of them are located within the proposed PM_{2.5} nonattainment boundaries and have existing controls which are accounted for in Table 1.

Attachment 2

Description of the Contributing Emissions Score

The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Using this methodology, scores were developed for each county in and around the relevant metro area. The county with the highest contribution potential was assigned a score of 100, and other county scores were adjusted in relation to the highest county. The CES represents the relative maximum influence that emissions in that county have on a violating county. The CES, which reflects consideration of multiple factors, should be considered in evaluating the weight of evidence supporting designation decisions for each area.

The CES for each county was derived by incorporating the following significant information and variables that impact PM_{2.5} transport:

- Major PM_{2.5} components: total carbon (organic carbon (OC) and elemental carbon (EC)), SO₂, NO_x, and inorganic particles (crystal).
- PM_{2.5} emissions for the highest (generally top 5%) PM_{2.5} emission days (herein called “high days”) for each of two seasons, cold (Oct-Apr) and warm (May-Sept)
- Meteorology on high days using the NOAA HYSPLIT model for determining trajectories of air masses for specified days
- The “urban increment” of a violating monitor, which is the urban PM_{2.5} concentration that is in addition to a regional background PM_{2.5} concentration, determined for each PM_{2.5} component
- Distance from each potentially contributing county to a violating county or counties

A more detailed description of the CES can be found at http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html#C.

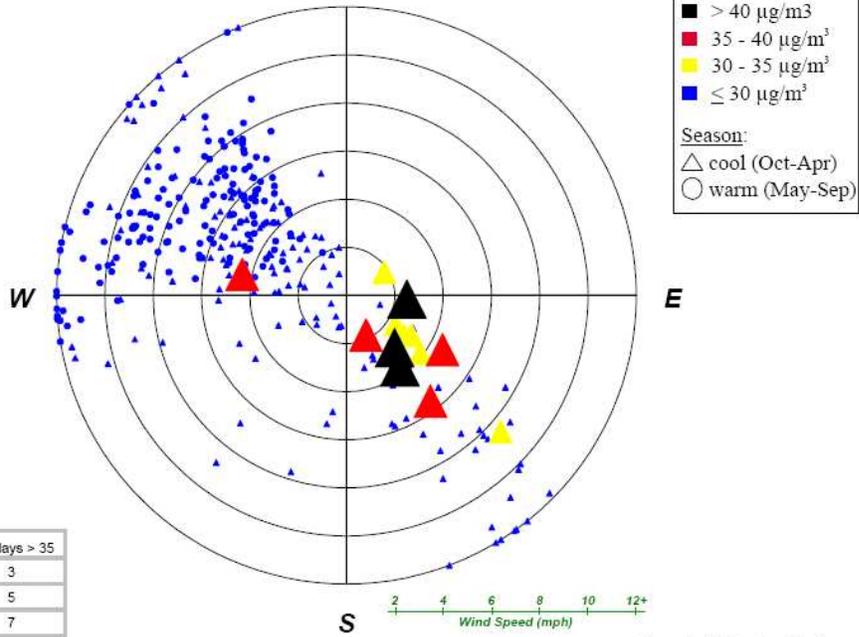
ATTACHMENT 3

POLLUTION ROSES FOR SAN JOAQUIN VALLEY AIR BASIN

San Joaquin County, CA
Pollution Rose, 2004-2006

Existing NAA: San Joaquin Valley, CA
CSA: none
CBSA: Stockton, CA

Site 060771002



Year	98th %-ile	# days > 35
2004	36.0	3
2005	44.0	5
2006	42.0	7
Design Value	41-NA	

8 exceedance(s) not plotted
(due to missing or variable wind data)

Meteorological data from 3.6 miles away
STOCKTON_METROPOLITAN_ARPT (ID=23237)

located in near Sacramento Metro, CA

Merced County, CA
Pollution Rose, 2004-2006

Existing NAA: San Joaquin Valley, CA
CSA: none
CBSA: Merced, CA

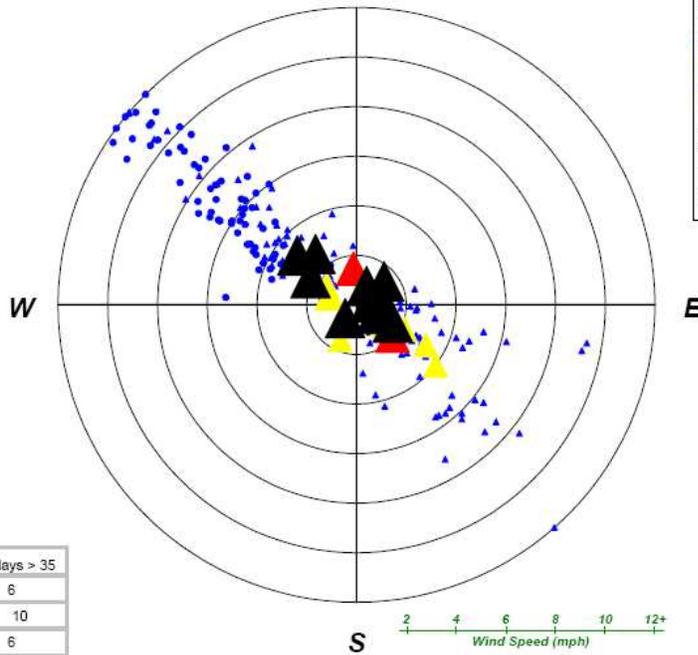
Site 060472510

Concentration:

- > 40 $\mu\text{g}/\text{m}^3$
- 35 - 40 $\mu\text{g}/\text{m}^3$
- 30 - 35 $\mu\text{g}/\text{m}^3$
- ≤ 30 $\mu\text{g}/\text{m}^3$

Season:

- △ cool (Oct-Apr)
- warm (May-Sep)



Year	98th %-ile	# days > 35
2004	43.0	6
2005	48.3	10
2006	43.8	6
Design Value	45-NA	

8 exceedance(s) not plotted
(due to missing or variable wind data)

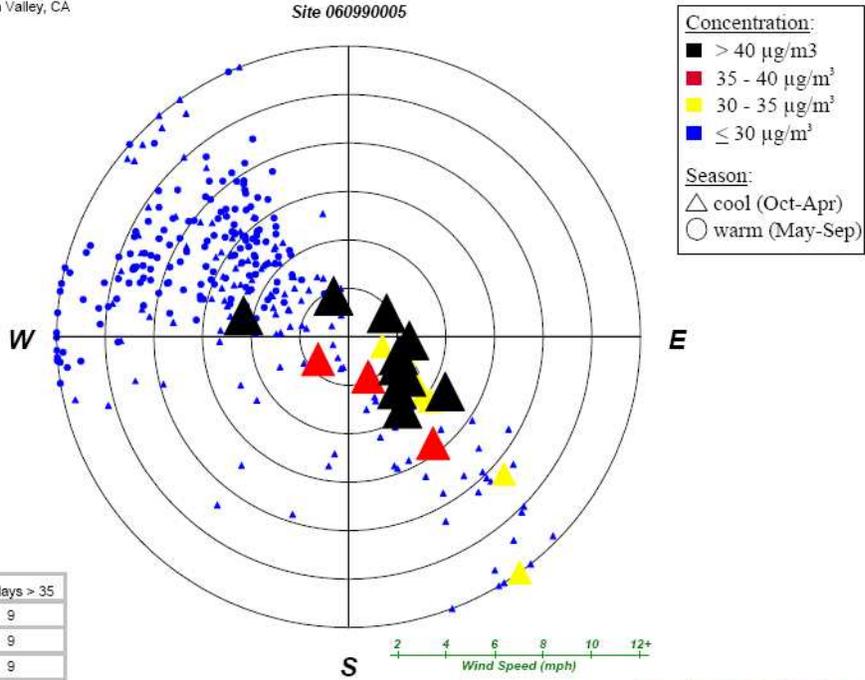
Meteorological data from 56.4 miles away
FRESNO_YOSEMITE_INTL_AP (ID=93193)

located in/near San Francisco Bay Area, CA

Stanislaus County, CA
Pollution Rose, 2004-2006

Existing NAA: San Joaquin Valley, CA
CSA: none
CBSA: Modesto, CA

Site 060990005



Year	98th %-ile	# days > 35
2004	45.0	9
2005	55.0	9
2006	52.0	9
Design Value	51-NA	

14 exceedance(s) not plotted
(due to missing or variable wind data)

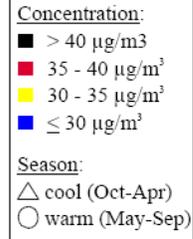
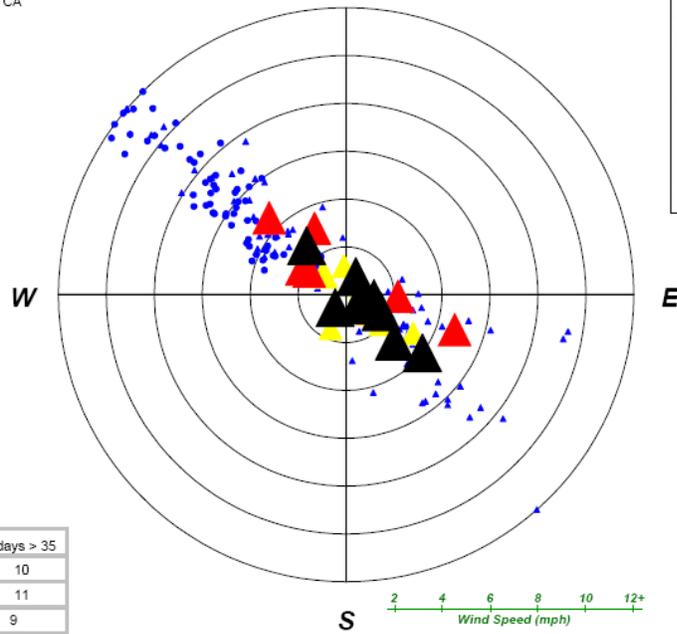
Meteorological data from 22.7 miles away
STOCKTON_METROPOLITAN_ARPT (ID=23237)

located in/near San Francisco Bay Area, CA

Kings County, CA
Pollution Rose, 2004-2006

Existing NAA: San Joaquin Valley, CA
CSA: none
CBSA: Hanford-Corcoran, CA

Site 060310004



Year	98th %-ile	# days > 35
2004	49.4	10
2005	74.5	11
2006	50.1	9
Design Value	58-NA	

12 exceedance(s) not plotted
(due to missing or variable wind data)

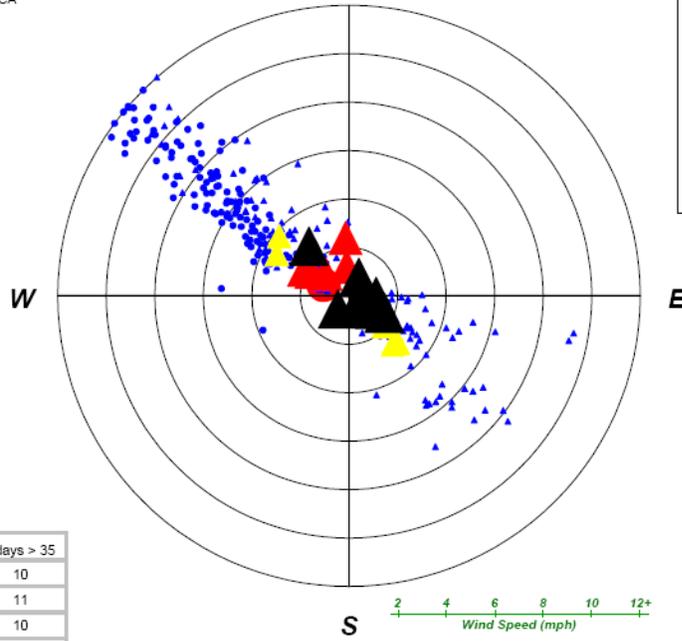
Meteorological data from 46.7 miles away
FRESNO_YOSEMITE_INTL_AP (ID=93193)

located in/linear San Joaquin Valley, CA

Tulare County, CA
Pollution Rose, 2004-2006

Existing NAA: San Joaquin Valley, CA
CSA: none
CBSA: Visalia-Porterville, CA

Site 061072002



Concentration:
 ■ > 40 $\mu\text{g}/\text{m}^3$
 ■ 35 - 40 $\mu\text{g}/\text{m}^3$
 ■ 30 - 35 $\mu\text{g}/\text{m}^3$
 ■ $\leq 30 \mu\text{g}/\text{m}^3$

Season:
 △ cool (Oct-Apr)
 ○ warm (May-Sep)

Year	98th %-ile	# days > 35
2004	54.0	10
2005	65.0	11
2006	50.0	10
Design Value	56-NA	

15 exceedance(s) not plotted
(due to missing or variable wind data)

Meteorological data from 38.2 miles away
FRESNO_YOSEMITE_INTL_AP (ID=93193)

located in/near San Joaquin Valley, CA

