San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

2007 PM10 Maintenance Plan and Request for Redesignation

September 20, 2007

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1. Introduction

On June 19, 2003, the Governing Board of the San Joaquin Valley Unified Air Pollution Control District (District) adopted the *2003 PM10 Plan*, which presents the District's strategy for attaining the National Ambient Air Quality Standards (NAAQS) for particulate matter with a diameter of 10 microns or less (PM10) in the San Joaquin Valley Nonattainment Area (Valley) by December 31, 2010 (SJVAPCD 2003)[1]. The California Air Resources Board (ARB) approved this plan on June 26, 2003 and transmitted it to the U.S. Environmental Protection Agency (EPA) for approval.

On December 18, 2003, the District adopted amendments to the *2003 PM10 Plan*, and ARB subsequently transmitted these amendments to EPA. On May 26, 2004, EPA approved the *2003 PM10 Plan* as amended. The District, ARB, and local governments began implementing measures in the *2003 PM10 Plan* to improve PM10 air quality, which resulted in a decline in PM10 air pollution in the Valley.

On February 16, 2006, the District fulfilled a commitment in the *2003 PM10 Plan* by adopting the *2006 PM10 Plan* (SJVAPCD 2006), which reexamines the overall Valley PM10 control strategy with updated emissions information, air quality data, and air quality modeling to determine if adjustments were needed to the strategy. The *2006 PM10 Plan* reaffirmed the *2003 PM10 Plan* control strategy and noted that updated information indicated that the Valley was on track to attain the PM10 NAAQS before the 2010 deadline.

On April 24, 2006 the District transmitted to ARB a Request for Determination of PM10 Attainment for the San Joaquin Valley (Sadredin 2006), which supplied detailed technical information and monitoring data showing that the Valley had attained the PM10 NAAQS. ARB concurred with this request and transmitted it to EPA on May 8, 2006. Table 1 summarizes key data showing that all Valley PM10 monitors attained the PM10 NAAQS for the 2003-2005 period; subsequent data for calendar year 2006 continue to show attainment, as verified by EPA in a *Federal Register* notice signed on August 15, 2007 (EPA 2007) (see Section 8.3 for more information).

On October 30, 2006, EPA issued a Final Rule determining that the Valley had attained the NAAQS for PM10 [71 *FR* 63642][2]. EPA noted in its Final Rule that "This action does not constitute a redesignation to attainment" under Section 107(d)(3) of the federal Clean Air Act because other federal Clean Air Act requirements for redesignation have not yet been met.

[1] PM10 is both a primary air pollutant that is directly emitted as well as a secondary air pollutant formed in the atmosphere via chemical reaction between precursors. For the Valley, the principal precursor is oxides of nitrogen. See SJVAPCD (2003) and SJVAPCD (2006) for more details on PM10 formation.
[2] On August 15, 2007, EPA signed a *Federal Register* notice affirming PM10 attainment for the SJ Valley based on consideration of 2006 monitoring data.

Table 1 SJV PM10 Data, 2003-2005

Monitoring Station	Expected 24-hr Exceedance Days[a]	Three-Year Annual Average (µg/m³) [a]
Bakersfield-California Ave	0.0	43
Bakersfield-Golden State	0.0	46
Clovis-Villa	0.0	34
Corcoran-Patterson	0.0	43
Fresno-Drummond	0.0	41
Fresno-First Street	0.0	33
Hanford-Irwin	0.0	44
Merced-2334 M Street	0.0	29
Modesto-I Street	0.0	22
Oildale-Manor	0.0	41
Stockton-Hazelton	0.0	28
Stockton-Wagner/Holt	0.0	22
Turlock-Minaret	0.0	30
Visalia-Church St.	0.0	43

[a]A station is considered in attainment if the three-year annual average PM10 concentration is less than or equal to 50 ug/m^3 and the expected 24-hour exceedance days is less than or equal to 1.0.

Section 107(d)(3) of the federal Clean Air Act states that a nonattainment area can be redesignated to attainment if it meets the following criteria (Calcagni 1992):

1. EPA has determined that the NAAQS have been attained.
2. EPA has fully approved the applicable implementation plan under section 110(k) of the federal CAA.
3. EPA has determined that the improvement in air quality is due to permanent and enforceable emission reductions.
4. The state has met all applicable requirements for the area under Section 110 and Part D.
5. EPA has fully approved a maintenance plan, including a contingency plan, for the area under Section 175(A) of the federal CAA.

The Valley has met Criteria 1, 2 and 4 above. The District, ARB, and the Valley's local Metropolitan Planning Organizations (MPOs) have developed this *2007 PM10 Maintenance Plan and Request for Redesignation* to fulfill Criteria 3 and 5 above so that EPA can proceed with completing the redesignation process for PM10 for the Valley. Section 8 of this plan provides more detail on how the Valley meets the above criteria.

The principal components of a maintenance plan, as relevant to the Valley, are as follows (Calcagni 1992):

- Attainment emissions inventory
    - Identify the level of emissions sufficient to attain the NAAQS
    - Present emission data for the time period with ambient air monitoring data showing attainment
- Maintenance Demonstration
    - Use modeling to show that future mix of sources and emission rates will not cause a violation of the NAAQS for 10 years after EPA redesignation
    - Project emissions for the ten-year period following redesignation

    - Show that emission rate projections are based on permanent, enforceable reductions
- Monitoring Network
    - Demonstrate that state will continue to monitor after redesignation to verify attainment
    - Discuss provisions for continued operation of air quality monitors that will verify attainment
- Verification of Continued Attainment
    - Ensure that the state has the legal authority to implement and enforce all measures needed to attain and maintain the NAAQS, including the acquisition of ambient and source emission data
    - Show how continued maintenance of the standard will be tracked
- Contingency Plan
    - Verify implementation of emission control measures in the fully approved implementation plan
    - Identify indicators and provisions to promptly correct any violation occurring after redesignation

The maintenance plan constitutes a State Implementation Plan (SIP) revision. EPA has 18 months to act on the maintenance plan and request for redesignation. For the purposes of the Valley's *2007 PM10 Maintenance Plan and Request for Redesignation*, the District is assuming that EPA's action on the redesignation request would be complete sometime in 2009; since the maintenance plan must provide for continued attainment 10 years after designation, the District selected 2020 as the target maintenance year. As noted in EPA guidance (Calcagni 1992), a maintenance plan SIP revision is due to EPA eight years after the approval of the original redesignation to attainment, and must provide for attainment for an additional 10 years. This means that the District would need to submit another maintenance plan in 2017 that would provide for continued attainment through 2030.

Even though EPA has revoked the annual PM10 standard effective December 18, 2006 (71 FR 61144), this *2007 Maintenance Plan and Request for Redesignation* addresses both of the annual and 24-hr PM10 standards, since both standards were included in the *Amended 2003 PM10 Plan*[3] that EPA approved into the SIP.

2. Attainment Emission Inventory

An emissions inventory is a tabulation of pollutant emissions into the atmosphere. The District uses comprehensive emission inventories to develop control strategies, determine the effectiveness of permitting and control programs, provide input into ambient dispersion models, fulfill reasonable further progress requirements, and screen sources for compliance investigations. Emissions inventory data are also used as indicators for trends in air pollution.

EPA requires maintenance plans to present the emission inventories for the time period used to define attainment for a particular area (Calcagni 1992). For the Valley, this

[3] As amended on December 18, 2003

period is 2003—2005 for the original attainment determination, followed by 2004—2006 for supplemental analyses discussed in EPA's determination of attainment. Because 2005 is the third of three years used for the original attainment finding, the emission inventory for 2005 will be used as the attainment inventory. Inspection of Appendix A shows that the annual NOx emissions for 2005 is about 618 tons per day (tpd), and the annual PM10 emission inventory is about 285 tpd. Even though other pollutants are involved in forming secondary PM10 (e.g., sulfur oxides and volatile organic compounds), the District's PM10 attainment strategy focused on reducing emissions of directly emitted PM10 and oxides of nitrogen (NOx). Appendix A presents a full listing of emissions relevant to PM10 (annual and winter averages) for the years 2000, 2005, 2010, and 2020.

It is important to note that the NOx and PM10 inventories will be reduced substantially in the future due to post-2006 controls stemming from more recent attainment plans. For example, the District's *2007 Ozone Plan* will reduce the NOx emissions inventory to about 220 tpd by the year 2020, from reductions in the baseline inventory plus new District and ARB reductions stemming from the *2007 Ozone Plan* (SJVAPCD 2007a). Similarly, the *2008 PM2.5 Plan* now under development will reduce emissions of directly emitted PM2.5[4], which in turn will lower the PM10 emission inventory as well.

3. Maintenance Demonstration

Modeling analysis is used to evaluate air quality measurements that violate the air quality standards by utilizing statistical methods and computer modeling to understand the effects of meteorology and emissions sources on observed PM10 events. Based on the results of this analysis, a baseline connection between emissions and air quality is established for each site that violates one of the air quality standards. The baseline relationship is used with projection of the emissions for future years to show whether existing and proposed emissions reductions are sufficient to maintain compliance with the PM10 NAAQS. Control measures and commitments can then be evaluated to determine if they provide enough additional emission reduction to maintain compliance with NAAQS in future years.

The *2006 PM10 Plan* (SJVAPCD 2006) provided an update to the *Amended 2003 PM10 Plan* modeling analysis. The modeling protocol submitted and accepted as a part of the *Amended 2003 PM10 Plan* remains effective for the *2006 PM10 Plan* as well as for this *2007 PM10 Maintenance Plan and Request for Redesignation.* The only revision in approach for the *2006 PM10 Plan* was the use of additional, newer models for analysis of the nitrate chemistry from the California Regional Particulate Air Quality Study (CRPAQS—see the *2006 PM10 Plan* [SJVAPCD 2006] for more information). The *2007 PM10 Maintenance Plan and Request for Redesignation* follows revised EPA guidance by using model results in a relative sense, rather than as an absolute prediction of future particulate concentration. Model projections are made for the year 2005 and 2020 and the resulting model prediction of the rate of change is applied to the observed current data to verify continued compliance with the standard through the year

[4] PM2.5 refers to particulate matter with a diameter of 2.5 microns or less. As such, it is a component of PM10. Similar to PM10, PM2.5 is emitted directly as a primary air pollutant and is also formed in the atmosphere as a secondary air pollutant due to chemical reactions occurring in the atmosphere among precursors.

2020. The current data utilized for this projection is the 2005 annual average data and the appropriate episode data for fall and winter episodes from review of 2004, 2005 and 2006 air quality data.

Analysis of PM10 concentrations uses emissions inventories, ambient data, meteorological analysis, chemical mass balance (CMB, which is used to identify and apportion sources of PM), and aerosol modeling. This plan also uses rollback (proportional reduction) methods to estimate the expected reduction in pollutant concentration in proportion to emissions reductions. The rollback approach has been strengthened by the incorporation of results of aerosol modeling and spatial analysis of emissions.

As required by federal guidance, air quality modeling analyses are performed to demonstrate that a proposed control strategy provides for attainment and maintenance of the PM10 NAAQS. SIP submittals must include a description of how the modeling analysis was conducted by providing information on what models are used and why they were selected; model version and configuration information; assumptions involved in model application; discussion of model input data including meteorological data and ambient monitoring data; and description of model output data. The Protocol contains the required elements and can be found in Appendix K to the *Amended 2003 PM10 Plan*, identified as the "San Joaquin Valley Air Pollution Control District State Implementation Plan PM10 Modeling Protocol." In accordance with federal guidance, the Protocol was submitted to EPA for review during development of the modeling analysis.

3.1 Approach

Modeling for the *2007 PM10 Maintenance Plan* is required to demonstrate that projected emission inventory changes will not cause any site in the Valley to fail the NAAQS compliance tests. Evaluation of future emissions growth and control up to the year 2020 were evaluated for the *2007 PM10 Maintenance Plan and Request for Redesignation* [5].

The District and ARB maintain annual emission inventories of permitted emissions and estimations of mobile source, area source and naturally occurring emissions. For modeling analysis, adjustments were made to prepare seasonal modeling inventories consistent with the conditions applicable at the time of year that a high PM10 concentration was observed. The emission inventories for modeling were also prepared

[5] To provide a conservative projection of continued attainment, this modeling exercise used all District-based emissions inventory changes, including those from the adoption of rules and regulations, that occurred through May 2005. The projected net decrease in NOx and VOC emissions given in Table B-1 of the *2007 Ozone Plan*, as well as reductions from rules adopted by the District since the April 2007 adoption of the *2007 Ozone Plan*, were not used in the maintenance demonstration. These rules will continue to be implemented and enforced regardless of the Valley's PM10 attainment status (See Section 8.3). Similarly, to provide a conservative projection of continued attainment, the maintenance demonstration excluded emissions reductions from commitments to develop future rules as outlined in the District-adopted, ARB-approved *2007 Ozone Plan* (SJVAPCD 2007). These are binding commitments that will be implemented regardless of the Valley's PM10 attainment status. All emissions reductions not used in the maintenance modeling represent excess reductions available for consideration as part of the District's contingency plan for PM10 maintenance (see Section 6).

to address the appropriate spatial scale with an understanding of the appropriate area identified as influencing the ambient concentration at the monitor. Emissions were grouped for CMB analysis and rollback projection as required by the technical constraints of these techniques.

While several techniques are available to model the direct emission of particulates, secondary formation of particles and dispersion, it is important to select a methodology that is appropriate for the San Joaquin Valley and considers and compensates for the strengths and weaknesses of available approaches. Based upon availability of emission estimates, meteorology, and air quality data in the SJVAB, the use of receptor CMB modeling is used with the support and enhancement of regional aerosol modeling to evaluate secondary formation ratios, with profile selection for CMB modeling enhanced by assessment of local temporal and spatial emission distribution. The 2007 PM10 Maintenance Plan updates these evaluations and projects future changes through the year 2020.

3.2 Modeling Approach Components

Receptor modeling using the chemical mass balance model (version CMB 8) was conducted for the *Amended 2003 PM10 Plan* for annual and episode conditions at sites that did not comply with the federal PM10 air quality standards. This method uses chemical analysis of collected air monitoring samples and information about the chemical composition of contributing sources to evaluate the link between observed conditions and emission sources.

Many sources have components in common. For example, the PM10 emitted by the tires of a vehicle on a road is almost identical to windblown emissions from the adjacent land. Analysis of samples is used to establish the typical components found in the emissions of a source. This source signature is referred to as a speciation profile. The various signatures are used in modeling to identify the contributing sources to observed events, to the extent which the signatures can support reliable identification. To improve the accuracy of the receptor analysis, airflow back trajectories and analysis of the physical location of emissions (gridded inventory) were used to identify appropriate source signatures for analysis of contributing sources.

To establish attainment at sites noncompliant with the NAAQS, CMB receptor model analysis results were used with a modified linear rollback approach to calculate the cumulative effect of predicted emission trends and control measure reductions. In the rollback projection, ambient pollutant concentrations are linked to CMB receptor analysis of source contributions utilizing the most accurate source identifications available.

The quality of the rollback projection was enhanced to incorporate additional available information. Analysis of airflow back trajectories was combined with analysis of the physical location of emissions (gridded inventory) to quantify the contributing sources and influence of reductions as accurately as is possible with current information. The nonlinear secondary particle formation atmospheric processes are not accounted for in standard rollback methods; therefore, the method was improved by incorporating an adjustment for the secondary nitrate formation rates determined by regional modeling of a SJVAB particulate episode.

Regional modeling of secondary particulates was conducted by ARB. Results improve understanding and provide useful secondary particle formation rates and precursor ratios, particularly for nitrate particulates. Results are used in conjunction with receptor modeling to predict effects on secondary precursors due to emission trends and adopted and proposed control measure reductions.

3.3 Maintenance Demonstration Methodology and Procedure

Observed exceedances are evaluated by mass balance analysis and related to the emissions inventory for the year when the exceedance occurred. Portions of PM10 samples may originate from emissions sources that are not included in the District's emission inventories, such as emissions transported from areas outside the SJVAB. However, these emissions are indistinguishable from local emissions, so portions must be estimated based on evaluations of current technical literature. Because local control programs do not reduce natural emissions and emissions from outside the local region, these emissions are excluded from emission reduction calculations and added back to the resulting future year projection unchanged.

The future year predicted concentration is the sum of the projected, regulated local contribution plus the estimate of emissions that are not under the District's regulatory authority. Attainment is demonstrated if the concentrations predicted by rollback modeling predict continued attainment of both the 24-hour and annual average PM10 standards through the year 2020.

3.4 Secondary Particle Formation Rates

Regional modeling is used to evaluate the relationship of gaseous precursors to fine particle formation to address the inherent limitation of CMB modeling to consider atmospheric chemistry. All modeling approaches have advantages that recommend their use and limitations that call for supporting analysis. CMB receptor modeling provides the most comprehensive positive features for analysis but is not designed to evaluate nonlinear chemistry as is possible with a regional photochemical model. The regional grid based photochemical models do not handle the dynamics of large particle deposition and air stagnation events as well as receptor analysis.

Regional modeling was used to determine the particle formation relationships specific to the SJVAB using a version of the Urban Airshed Model modified to assess nitrate particle formation (UAM 8-Aero) for the *Amended 2003 PM10 Plan*. Evaluation and modeling of extensive data collected for a typical winter episode from the IMS 95 project, an early element of the CRPAQS research program, was used to establish precursor and particle formation ratios for secondary particulates. This analysis confirmed that the formation of nitrates associated with NOx emissions has a nonlinear response in the SJVAB.

The *2006 PM10 Plan* (SJVAPCD 2006) used more recent projects of the CRPAQS research program and newer modeling methods to reevaluate the particle formation processes. Modeling with newer models and CRPAQS data is used to augment the determination of representative particle formation ratios. The Community Multiscale Air Quality (CMAQ) Model (version 4.4), with California specific modifications, was used to model the portion of PM10 formed in the atmosphere (secondary PM10), and to evaluate the response of particle formation to emission reductions. Using meteorology data from MM5 and the CCOS version 2.12 gridded emissions inventory, the photochemical model predicts expected secondary PM10 concentrations over the domain for the CRPAQS winter 2000-2001episode.

The rollback projection of future year annual average and 24-hour average episode response to emission precursor reductions uses results of the CMB modeling combined with conversion factors for precursor formation of secondary particulate matter developed from the regional modeling to account for nonlinear formation rates of secondary particulates.

3.5 Maintenance Projection Results

From the CMB receptor modeling identification of emissions source contributions by chemical species, future source contributions have been estimated from baseline and projected inventories with rollback techniques to evaluate the effects of trends and proposed emissions reductions in future years. Tables 2 and 3 present the results.

Rollback calculations for each monitoring site determine future compliance with federal NAAQS for PM10 by calculating the effect of emission reductions predicted for the major source categories as defined in the CMB receptor modeling. The predicted PM10 concentration may also be achieved by different reductions of precursor and PM10 emissions as long as the total particulate reduction is equivalent. Maintenance is demonstrated for each site that is projected to have future concentrations at or below the federal NAAQS through the year 2020. Because of the inherent uncertainties associated with air quality models, revised EPA guidance recommends using the model predictions in a relative sense rather than as absolute predictions. Therefore, the percent of change predicted by the model for emissions changes from 2005 through 2020 is applied to the observed values for current data to predict an approximate future value at each site.

Table 2 Maintenance Demonstration for the 24-hour PM10 Standard

Site Name	Observed Episode Value	Model Projected Percent of Change from 2005 to 2020		2020 Projected Value
Bakersfield, California Ave.	**153**	16.1%	reduction	128
Bakersfield-Golden #2	**154**	12.8%	reduction	134
Clovis	**97**	17.2%	reduction	80
Corcoran, Patterson Ave.	**136**	8.9%	reduction	124
Corcoran, Patterson Ave. **fall** episode	137	2.1%	reduction	134
Fresno-Drummond	**132**	13.8%	reduction	114
Fresno-First	**117**	17.4%	reduction	97
Hanford, Irwin St	**142**	15.6%	reduction	120
Hanford, Irwin St. **fall** episode	124	2.1%	reduction	121
Merced	**69**	-	reduction	-
Modesto, 14th Street	**96**	17.7%	reduction	79
Oildale, 3311 Manor St	**No data**	17.1%	reduction	128
Stockton Hazelton	**79**	-	reduction	-
Stockton WHS	**62**	-	reduction	-
Turlock, 900 Minaret Street	**83**	-	reduction	-
Visalia, Church St.	**145**	15.6%	reduction	122
Peak Valleywide winter episode during the last three years was December 7, 2006. Oildale had no data for this event and is assumed to be consistent with Bakersfield based on prior historical data. Peak fall episodes were October 26, 2006 for Corcoran and November 7, 2006 for Hanford. Based on CMB similarity, the Hanford fall episode assumes correlation to Corcoran fall analysis and the Visalia winter episode assumes correlation to Hanford winter analysis. Values below 90 $\mu g/m^3$ at new sites are well below the standard and do not require analysis.				

Table 3 Maintenance Demonstration for the Annual PM10 Standard

Site Name	Observed 2005 Annual Value	Model Projected Percent of Change from 2005 to 2020		2020 Projected Value
Fresno County, Fresno, Drummond	38.7	9.7%	reduction	34.9
Kern County, Bakersfield, Golden State Highway	43.2	7.6%	reduction	39.9
Kings County, Hanford, Irwin St.	40.3	9.1%	reduction	36.7
Tulare County, Visalia, Church Street	44.3	9.2%	reduction	40.2
Prior PM10 SIP modeling has not included annual projection for Merced, Stanislaus and San Joaquin Counties because these counties have annual values well below the standard. Annual values for these counties are below 35 $\mu g/m^3$ and will experience similar reductions.				

4. Monitoring Network

The District operates a network of PM monitors for use in air quality planning and to meet federal requirements. Federal regulations require PM10 monitoring networks to meet four basic objectives:

- Monitoring the highest concentration of a pollutant
- Monitoring representative concentrations in areas of high population density
- Monitoring the impact of major pollutant sources
- Monitoring pollutant background concentrations

Fifteen PM10 and PM2.5 monitoring sites are located throughout the Valley. The District currently operates five PM2.5 and nine PM10 sites, and ARB operates six sites. The District plans to reevaluate the frequency of both PM 10 and PM 2.5 monitoring as part of the 5-year network assessment that is due in July 2010. In the meantime, the District will continue to operate real-time PM 10 federal equivalent method monitors at the peak sites, Corcoran and Bakersfield-Golden State. Table 4 provides a summary of the PM10 monitoring sites in the Valley. As part of the approval of the *Amended* 2003 PM10 Plan, EPA approved the Valley's PM10 monitoring network (69 *FR* 30006) and reaffirmed this approval with the determination of attainment (71 *FR* 63642). In its approval of the *Amended 2003 PM10 Plan*, EPA noted, "the network meets all applicable statutory and regulatory requirements and is adequate to support the technical evaluation of the PM10 nonattainment problem…" (69 *FR* 30033). On October 30, 2006, as part of its Final Rule determining the Valley to be in attainment of the PM10 NAAQS, EPA noted that updated information on the Valley's monitoring system performance, including the results of state and federal audits, lead to the conclusion that "the data produced by the PM10 SLAMS[6] network operating in the SJV is adequate for EPA to base our finding of attainment" (71 *FR* 63650). The District commits to continue PM10 monitoring to verify continued attainment of the PM10 NAAQS. Data recorded by the network of air quality monitors operated in the San Joaquin Valley Air Basin is used for attainment tests. A map showing locations of San Joaquin Valley monitoring stations is provided in Figure 1.

The District's plans for continued operation of its air quality monitoring network are presented in the *Ambient Monitoring Network Plan* prepared and submitted to EPA in June 2007 (SJVAPCD 2007b). Chapter 3 of this *Ambient Monitoring Network Plan* addresses PM monitoring. EPA's Final Rule providing revisions to ambient air quality regulations (71 *FR* 61236) required development and submittal of this plan, which is posted on the District's web site (www.valleyair.org).

[6] State and Local Air Monitoring Station

Figure 1 San Joaquin Valley Air Basin monitoring stations

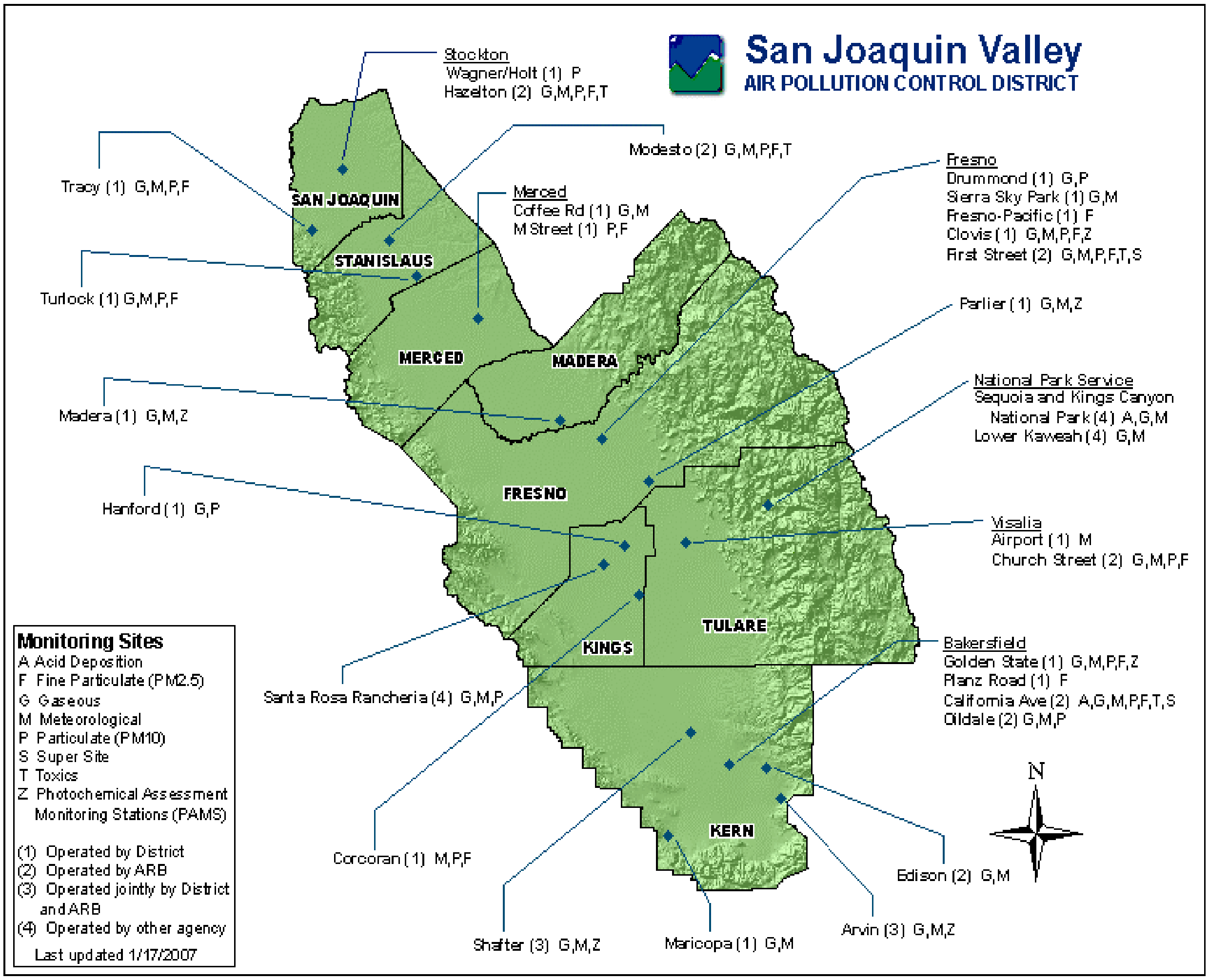


TABLE 4 PM10 Monitoring Stations in the San Joaquin Valley APCD

Site Name	AIRS Site Code	Plan Section Location	Sampling Interval/Frequency	Scale	Monitoring Objective	Type	Agency
Bakersfield-California	06 029 0014	A.3	24 Hour/6-day	Middle	Representative Conc.	SLAMS	CARB
Bakersfield-Golden St	06 029 0010	A.4	24 Hour/6-day 1 Hour/Continuous TEOM	Neighborhood	High Concentration	SLAMS	SJVAPCD
Clovis-Villa	06 019 5001	A.6	24 Hour/6-day	Neighborhood	Representative Conc.	NAMS	SJVAPCD
Corcoran-Patterson	06 031 0004	A.7	24 Hour/6-day 1 Hour/Continuous TEOM	Neighborhood	High Concentration	SLAMS	SJVAPCD
Fresno-Drummond	06 019 0007	A.9	24 Hour/6-day	Neighborhood	Representative Conc.	NAMS	SJVAPCD
Fresno-First Street	06 019 0008	A.10	24 Hour/6-day 1 Hour/Continuous BAM	Neighborhood	High Concentration	NAMS	CARB
Hanford-Irwin	06 031 1004	A.13	24 Hour/6-day	Neighborhood	Representative Conc.	SLAMS	SJVAPCD
Merced-2334 M Street	06 047 2510	A.20	24 Hour/6-day	Neighborhood	Representative Conc.	SLAMS	SJVAPCD
Modesto-14th Street	06 099 0005	A.21	24 Hour/6-day	Neighborhood	Representative Conc.	SLAMS	CARB
Oildale-Manor	06 029 0232	A.22	24 Hour/6-day	Middle	Source Impact	SLAMS	CARB
Stockton-Hazelton	06 077 1002	A.27	24 Hour/6-day	Neighborhood	High Concentration	NAMS	CARB
Stockton-Wagner/Holt	06 077 3010	A. 28	24 Hour/6-day	Neighborhood	Representative Conc.	NAMS	SJVAPCD
Tracy Airport	06 077 3005	A. 29	1 Hour/Continuous TEOM	Urban	Representative Conc.	SLAMS	SJVAPCD
Turlock-Minaret	06 099 0006	A. 30	24 Hour/6-day	Neighborhood	Representative Conc.	SLAMS	SJVAPCD
Visalia-Church	06 107 2002	A. 32	24 Hour/6-day	Neighborhood	Representative Conc.	SLAMS	CARB

5. Verification of Continued Attainment

The District is a duly constituted unified district as provided in California Health and Safety Code (CHSC) sections 40150 to 40161, and as such has regulatory authority under these and other sections of the CHSC to issue permits, collect fees, impose penalties, develop rules, regulations and plans, and collect air monitoring and emissions data. This authority continues after redesignation to attainment.

The District proposes to verify continued attainment of the PM10 NAAQS as part of its Annual Report process developed for and committed to by the District Governing Board for the *2007 Ozone Plan* (SJVAPCD 2007a). As stated in Chapter 5 of the *2007 Ozone Plan* (SJVAPCD 2007a), the District will complete annual reports to show progress in fulfilling its ozone and particulate matter (PM) plan commitments. These reports will be made publicly available and will be presented to the Governing Board in April (to allow time for PM data compilation) of each year, beginning in 2008. The reports will include:

- A summary of progress made over the most recent calendar year in meeting the schedules for developing, adopting, and implementing the air pollution control measures in the District's attainment plans[7].
- A table summarizing the proposed and actual dates for adoption and implementation of each measure.
- Air quality data from the year, showing progress towards attaining and continued maintenance of (as appropriate) the national ambient air quality standards.
- A report of incentive funding, including the amount of funds awarded and the estimated reductions from grant-funded projects. Major elements of this part of the report would include the following:
    - Sources of funding
    - Expenditures
    - Types of projects funded
    - Actual versus predicted emissions reductions
    - Enforcement activities
        - Number and type of inspections conducted on grantees
        - Number of all grantees for whom there is evidence of non-compliance
        - List of enforcement actions taken by the District and the resultant penalties and remedies.
    - Description of the permanency of the funding sources and ideas for amending the program in the event of reduced funding.
- A comparison of predicted versus current "best estimates" of emissions reductions for each measure and a short explanation of any shortfalls or surplus as well as a plan for rectifying shortfalls.
- Status of State of California control measures (from ARB and DPR)

[7] Required by California Health and Safety Code Section 40924. The most recently approved conformity timely implementation documentation will be used to provide updates on local government control measures through 2010.

These reports will be above and beyond any similar reports required by the federal Clean Air Act or the California Clean Air Act.

6. Contingency Plan

For maintenance plans, Section 175(d) of the federal Clean Air Act requires contingency provisions to assure prompt correction of any post-redesignation NAAQS violations. As elaborated in EPA guidance on redesignation requests (Calcagni 1992), a maintenance plan does not need fully adopted contingency measures that will go into effect without further action by the State. Instead, maintenance plan contingencies should include:

- Specific triggers that will be used to determine when the contingency measures need to be implemented. Possible triggers are an emissions inventory “action levels” or NAAQS violations (monitored or modeled).
- A specific time limit for State action
- A schedule and procedure for adoption and implementation
- Measures to be adopted

The EPA guidance also specifies that EPA will review maintenance plan contingencies on a case-by-case basis (Calcagni 1992).

The District is selecting an action level equivalent to the level of the 24-hr PM10 NAAQS: 155 $\mu g/m^3$. An area’s attainment status is determined by an attainment calculation, not by a single 24-hour average above the standard. Also, the District had no exceedances between 2003 and 2006. As such, setting the action level at the operational level of the NAAQS should be sufficiently preemptive. The District may also consider qualitative factors to supplement this trigger, such as a succession of values just below but near the level of the standard.

Should the action level be reached, the District will evaluate the event and take appropriate action within 18 months of the event date, which includes sufficient time for sample weighing and processing. The following major steps are envisioned for the contingency plan process:

1. First, the District will examine the event and determine if it needs to be classified as a natural or exceptional event in accordance with EPA’s final rulemaking (72 *FR* 13560). If the data qualify for flagging under this rule, the District would proceed with preparing and submitting the necessary documentation for a natural/exceptional event, and would not consider the monitored level as a trigger for the maintenance plan contingency plan.

2. If the event does not qualify as a natural or exceptional event, the District would then analyze the event to determine its possible causes. It would examine emission reductions from adopted rules or rule commitments in adopted and approved plans to see if emission reductions not used in demonstrating maintenance would cover the violation.

3. If reductions from Step 2 above are insufficient, the District would proceed with identifying control measures from any feasibility studies (e.g., from the *2007 Ozone Plan* [SJVAPCD 2007]) completed to date that recommend future

controls, and would prioritize development of the measures most relevant to reducing PM10 levels.

Control measure commitments in other air quality plans provide opportunities for PM10 contingency measures. Please refer to the District's air quality plans (such as the adopted *2007 Ozone Plan* and the *2008 PM2.5 Plan*, which is currently in progress) for more information on the District's ongoing emissions reductions strategies. The maintenance projection presented in the previous section did not incorporate emission reduction benefits from any future emission reductions in the *2007 Ozone Plan* or the *2008 PM2.5 Plan*.

For maintenance plan contingencies, EPA also requires that states have implemented all measures contained in the original Part D attainment demonstration plan before EPA formally redesignates an area. The District has adopted all of its control measure commitments from the *Amended 2003 PM10 Plan* (Appendix B). Control measures adopted by ARB achieve the 10 tpd of NOx and 0.5 tpd of direct PM10 emission reduction commitment as specified in the *Amended 2003 PM10 Plan*. Any emission reductions stemming from local government best available control measures were not used in demonstrating attainment in the *Amended 2003 PM10 Plan*; however, local governments are on schedule to implement measures as outlined in the *Amended 2003 PM10 Plan*. Collectively, local governments adopted a broad range of commitments to implement control measures through 2010. Any emission reductions stemming from local government best available control measures were not used in demonstrating attainment in the Amended 2003 PM10 Plan; however, local governments are on schedule to implement measures through 2010 as outlined in the Amended 2003 PM10 Plan

7. Transportation Conformity Budgets

In accordance with the 1990 Clean Air Act Amendments, conformity requirements are intended to ensure that transportation activities do not result in air quality degradation. Section 176 of the CAA Amendments requires that transportation plans, programs, and projects conform to applicable air quality plans before being approved by a MPO.

Section 176(c) provides the framework for ensuring that Federal actions conform to air quality plans under section 110. Conformity to an implementation plan means that proposed activities must not (1) cause or contribute to any new violation of any standard in any area, (2) increase the frequency or severity of any existing violation of any standard in any area, or (3) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area. For nonattainment areas' demonstration of Reasonable Further Progress (RFP) and attainment, as well as for continued maintenance of NAAQS already attained, EPA requires that the SIP revision specify the motor vehicle emissions on which the demonstrations are based. The plans and programs produced by the transportation planning process are required to conform to the budget levels in the respective plans.

EPA transportation conformity regulations establish criteria involving the comparison of projected transportation plan emissions with the motor vehicle emissions specified in the applicable air quality plans. The regulations define the term "motor vehicle emissions budget" as meaning "the portion of the total allowable emissions defined in a revision of the applicable implementation plan (or in an implementation plan revision endorsed by the Governor or his or her designee) for a certain date for the purpose of meeting reasonable further progress milestones or attainment or maintenance demonstrations, for any criteria pollutant or its precursors, allocated by the applicable implementation plan to highway and transit vehicles."[8]

For PM10 in the Valley, EPA has approved on-road motor vehicle subarea emission budgets for PM10 and NOx for each County, as well as a trading mechanism, as part of the Amended *2003 PM10 Plan* into the SIP (69 *FR* 30005). Budgets were established for 2005, 2008, and 2010 based on average annual daily emissions. These budgets were calculated with a federally-approved ARB emissions model called EMFAC 2002. In addition, the motor vehicle emissions budget for PM10 includes regional reentrained dust from travel on paved roads, travel on unpaved roads, and road construction. These budgets represent the current benchmark for PM transportation conformity determinations in the Valley. On February 16, 2006, the District adopted the *2006 PM10 Plan*. The *2006 PM10 Plan* updates the motor vehicle emissions budgets for the SJV by sub-area for 2008 and 2010 PM10 and NOx. However, this Plan has not been officially submitted to EPA at this time.

California's release of a new on-road motor vehicle emissions model in 2007 (EMFAC 2007) triggered a Federal Highway Administration requirement that transportation project air quality analyses begun after August 1, 2007 must use the new EMFAC 2007 for the model. ARB's development of EMFAC 2007 included a number of changes to the Valley's on-road motor vehicle emissions inventory to improve the accuracy and representativeness of the inventory. One major change was a dramatic increase in NOx emissions for the Valley from on-road motor vehicles. Thus, any transportation project air quality analyses begun after August 1, 2007 would not be able to demonstrate conformity with the existing approved budgets that were derived with EMFAC 2002. This situation could ultimately result in a lockdown of transportation projects Valley-wide due to a failure for new projects to demonstrate conformity

Consequently, this *2007 PM10 Maintenance Plan and Request for Redesignation* establishes attainment year subarea by County emissions budgets for 2005 to replace the approved budgets (for 2005, 2008, and 2010) established with EMFAC 2002. The year 2005 was selected because it is the third of three attainment years on which EPA's original attainment determination is based. In addition, a transportation conformity budget must be established for the maintenance year of interest, which in this case is the year 2020 (see Section 1). The latest transportation planning assumptions must also be included to conform to federal requirements. Thus, in accordance with the conformity rule, described in more detail below, new subarea County motor vehicle emissions budgets are being established for 2005 for the *2003 PM10 Plan* as amended and for 2020 for the *2007 PM10 Maintenance Plan and Request for Redesignation*.

[8] Federal transportation conformity regulations are found in 40 CFR Part 51, subpart T – Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Developed, Funded or Approved Under Title 23 U.S.C. of the Federal Transit Laws. Part 93, subpart A of this chapter was revised by the EPA in the August 15, 1997 Federal Register.

These are based on the average annual daily emissions that are applicable for both the annual and 24-hour PM10 standards.

For conformity purposes, the motor vehicle emissions budget for PM10 includes regional reentrained dust from travel on paved roads, vehicular exhaust, travel on unpaved roads, and road construction. Section 93.122(d)(2) of 40 CFR Part 51, subpart T requires that PM10 from construction-related fugitive dust be included in the regional PM10 emissions analysis if it is identified as a contributor to the nonattainment problem in a PM10 implementation plan.

Section 93.102(b)(2)(iii) of 40 CFR Part 51, subpart T identifies Volatile Organic Compounds (VOC) and NOx as the two PM10 precursor pollutants that must also have a motor vehicle emissions budget if deemed significant. The air quality modeling (in both the Amended 2003 Plan and this Maintenance Plan) indicates that VOC is not a significant precursor to secondary PM10 formation in the San Joaquin Valley Air Basin. Accordingly, motor vehicle emissions budgets for NOx are being established and include vehicular exhaust only. Table 5 provides a sample budget calculation. The calculation methodology for the other years and counties is identical. Budgets for all District counties for 2005 are provided in Table 6 and for 2020 in Table 7. It is important to note that the conformity rule does not require sulfur oxides or ammonia to be addressed.

Section 93.124(e) of the federal conformity rule indicates that nonattainment areas with more than one MPO may establish motor vehicle emission budgets for each MPO in the implementation plan. As a result, County-level emission budgets are provided in this plan. The budgets are derived starting with projections from ARB's EMFAC 2007 on-road mobile source emission factor model. The emission budgets are based on the latest MPO VMT data and speed distributions (see Draft 2007 Conformity Analyses). The EMFAC 2007 model runs include the updated VMT through adjustments to vehicle population per the EPA approved ARB Recommended Methods for use of EMFAC2002 to Develop Motor Vehicle Emissions Budgets and Assess Conformity (note that ARB has indicated the methods will remain unchanged with the transition to EMFAC 2007). Updated speed distributions are input directly.

The budgets are adjusted to account for any baseline emission reductions not included in the model and any emissions that the model does not project (e.g., road dust). For the exhaust component, both 2005 and 2020 include by County reductions for the ARB existing control measures Reflash, Idling, and Moyer. For the fugitive dust component, both 2005 and 2020 include reductions for the District existing control measures Rules 8061 and 8021 by County.

According to EPA, the emissions budget applies as a ceiling on emissions in the year for which it is defined and for all subsequent years until either another year for which a different budget is defined or until a SIP revision modifies the budget. The emissions budgets provided in Table 6 are replacements to those found in the federally approved Amended *2003 PM10 Plan* and are applicable for both the annual and 24-hour PM10 standards. Appendix D provides more detailed calculations.

Table 5 Example County Emission Budget Calculation for 2005

(tons per average annual day)

	PM10	NOx
Baseline EMFAC2007	3.10	70.72
Existing ARB Reductions	0.01	2.40
Reentrained road dust (paved) [a]	9.38	--
Reentrained road dust (unpaved) [a]	0.65	--
Road Construction Dust [b]	0.73	--
Conformity Emission Budgets [c]	**13.9**	**68.4**

[a] Includes Rule 8061
[b] Includes Rule 8021
[c] Rounded up to the nearest tenth

Table 6 Revised Motor Vehicle Emissions Budgets for Attainment Year

(tons per average annual day)

County	2005	
	PM10	NOx
Fresno	13.9	68.4
Kern [a]	12.8	102.2
Kings	3.2	19.3
Madera	3.7	16.0
Merced	6.6	45.6
San Joaquin	9.4	49.1
Stanislaus	5.8	34.3
Tulare	7.4	29.0

[a] Kern County subarea includes only the portion of Kern County within the San Joaquin Valley Air Basin

Table 7 shows the maintenance plan transportation conformity emissions budgets for the maintenance of attainment; the same general type of calculation illustrated in Table 5 was used to develop Table 7.

Table 7 Motor Vehicle Emissions Budgets for Maintenance of PM10 NAAQS

(tons per average annual day)

County	2020	
	PM10	NOx
Fresno	16.1	23.2
Kern [a]	14.7	39.5
Kings	3.6	6.8
Madera	4.7	6.5
Merced	6.5	13.9
San Joaquin	10.6	16.7
Stanislaus	6.7	10.7
Tulare	9.3	10.1

[a] Kern County subarea includes only the portion of Kern County within the San Joaquin Valley Air Basin

Section 93.124 of the federal conformity rule, in particular 93.124I, allows for the SIP to establish trading mechanisms between budgets for pollutants or precursors, or among budgets allocated to mobile and other sources. The Amended *2003 PM10 Plan* included a trading mechanism, which was approved by EPA effective June 25, 2004, to be used after 2010. This SIP allows trading from the motor vehicle emissions budget for the PM10 precursor NOx to the motor vehicle emissions budget for primary PM10 using a 1.5 to 1 ratio.

The trading mechanism remains unchanged in this plan; however, as part of this plan, the District and ARB are requesting that EPA approve the mechanism for use after 2005. The trading mechanism will allow the agencies responsible for demonstrating transportation conformity in the San Joaquin Valley to supplement the 2005 budget for PM10 with a portion of the 2005 budget for NOx, and use these adjusted motor vehicle emissions budgets for PM10 and NOx to demonstrate transportation conformity with the PM10 SIP for analysis years after 2005.

To ensure that the trading mechanism does not impact the ability to meet the NOx budget, the NOx emission reductions available to supplement the PM10 budget shall only be those remaining after the NOx budget has been met. Finally, reductions from the State's motor vehicle control program shall be calculated using ARB-approved factors and methodologies.

Each agency responsible for demonstrating transportation conformity shall clearly document the calculations used in the trading, along with any additional reductions of NOx or PM10 emissions in the conformity analysis. The federally approved Amended *2003 PM10 Plan* included commitments from the Directors of the San Joaquin Valley Metropolitan Planning Organizations to conduct feasibility analyses as part of each new Regional Transportation Plan (RTP), excluding revisions (i.e., amendments). The analysis will identify and evaluate potential control measures that could be included in the Regional Transportation Plans. Any additional PM10 or NOx reductions achieved in the RTPs shall be credited in the transportation conformity demonstration. Reductions achieved after 2006 shall be credited prior to implementing the trading mechanism. Those commitments remain unchanged for this plan.

8. Request for Redesignation

The District requests that EPA redesignate the San Joaquin Valley Nonattainment Area to attainment status for the PM10 National Ambient Air Quality Standards. The Valley has met all of the redesignation criteria outlined in Section 107(d)(3)(E) of the federal Clean Air Act, as outlined below in Table 8:

Table 8 Summary of Valley Compliance with Section 107(d)(3)(E) Criteria for Redesignation to Attainment for PM10 NAAQS

Criterion	Valley Compliance
Attainment of the PM10 NAAQS	EPA found the Valley to be in attainment of the PM10 NAAQS (Final Rule @ 71 *FR* 63642)
State Implementation Plan (SIP) Approval under Section 110(k)	EPA approved the Valley's *2003 PM 10 Plan* (Final Rule @ 69 *FR* 30006); see especially 69 *FR* 30035
Permanent and Enforceable Improvement in Air Quality	Information in this *2007 PM10 Maintenance Plan and Request for Redesignation* (Section 8.3) demonstrates that the Valley's improvement in PM10 air quality was due to permanent and enforceable emission reductions achieved through District and ARB rules and regulations that will remain in effect after designation to attainment. Emissions decreased and air quality improved in spite of substantial growth in population and vehicle miles traveled.
Section 110 and Part D Requirements	The State of California and the District have met Section 110 and Part D requirements.
Fully Approved Maintenance Plan	In accordance with EPA Guidance (Calcagni, 1992) the *2007 PM10 Maintenance Plan* is submitted with this request for redesignation

8.1 Attainment of the PM10 NAAQS

In July 2006, EPA published a Proposed Rule determining that the Valley had attained the PM10 NAAQS (71 *FR* 40952). After a notice and comment period, EPA published in October 2006 a Final Rule determining that the Valley had attained the PM10 NAAQS (71 *FR* 63642). The Final Rule references then-recent PM10 monitoring data showing possible PM10 exceedances but noted that the exceedances were likely due to natural events. EPA went on to state that it would withdraw its finding of attainment if further review of the monitoring data for these exceedances showed that they were **not** caused by natural events. On December 29, 2006, Earthjustice on behalf of Sierra Club, Latino Issues Forum, Medical Advocates for Healthy Air, et al., (Earthjustice 2006) filed with EPA a petition for reconsideration of the final rule alleging that EPA improperly ignored exceedances that were not subject to public review and comment, and on March 27, 2007 Earthjustice filed a petition to withdraw the final rule alleging that several exceedances do not qualify as natural or exceptional events and thus the attainment determination must be withdrawn (Earthjustice 2007). The District prepared extensive documentation showing that the exceedances were due to natural events, and submitted this documentation to ARB to review. After concurring with these analyses, ARB transmitted them to EPA for review. On August 15, 2007, EPA signed a *Federal Register* notice (proposed rule) affirming PM10 attainment for the Valley after due consideration of 2006 PM10 monitoring data.

8.2 SIP Approval

On May 26, 2004 EPA approved all provisions of the District's *Amended 2003 PM10 Plan* (as amended in December 2003) (69 *FR* 30006) except for the contingency measures. (EPA published a correction on September 3, 2004 [69 *FR* 53835] that dealt mainly with adding text to codify EPA's approval of local government best available control measures as elements of the SIP.) On October 30, 2006, EPA determined the Valley had attained the PM10 standard and suspended the contingency measure requirement under the Clean Data Policy (71 *FR* 63642). Thus, all applicable requirements have been approved under 110(k) for the purposes of redesignation in accordance with Section 107(d)(3)(E).

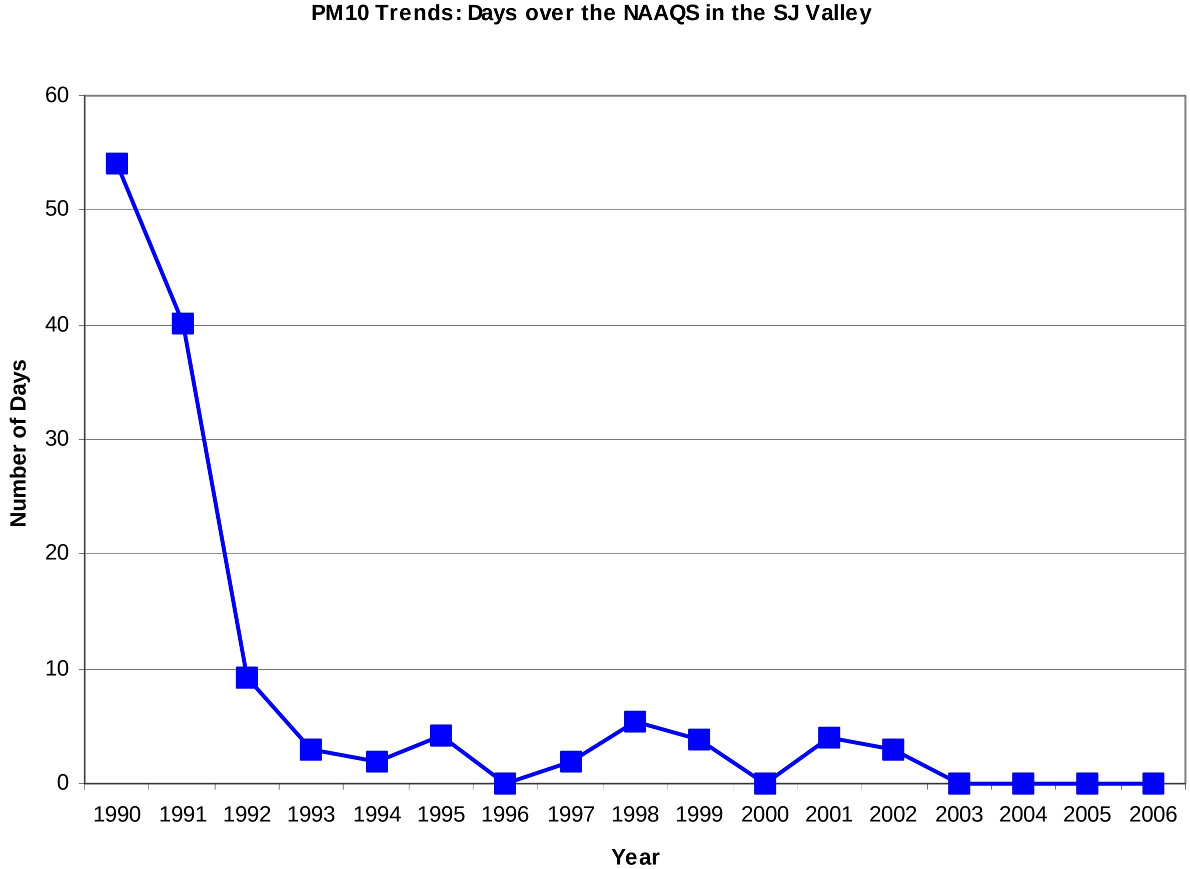
8.3 Permanent and Enforceable Improvement in Air Quality

EPA maintenance plan requirements note that "the state must be able to reasonably attribute the improvement in air quality to emission reductions which are permanent and enforceable." (Calcagni 1992). EPA further notes that attainment resulting from temporary emission reductions (such as a shutdown or economic downturn) or from "unusually favorable meteorology" would not qualify as resulting from permanent and enforceable emission reductions.

Figure 2 shows the long-term (1990-2006) trend in PM10 air quality for the Valley. The monitoring data indicates that PM10 air quality has improved significantly since 1990. For the period of 1990-1992, 19 out of 23 sites were nonattainment, and for the time period of 1998-2000, six out of 15 sites were nonattainment. The estimated numbers of exceedance days in the SJVAB have also decreased: 33.0 days for 1990-1992, 5.9 for 1998-2000, and 2.9 days for 2002-2004. More air quality trend data can be found at <http://www.arb.ca.gov/aqd/aqdpage.htm>.

The PM10 air quality in the Valley has greatly improved over the past two decades as air quality plans and regulations have been adopted and implemented. In the late 1980s it was not uncommon to have 50 or more estimated annual exceedances of the 24-hour PM10 standard, peak measurements well above 250 micrograms per cubic meter ($\mu g/m^3$), and annual averages of 80 $\mu g/m^3$. In contrast, as shown in Table 5, the San Joaquin Valley has not had a single 24-hour PM10 violation since 2003, and the maximum annual average is now only 46 $\mu g/m^3$. A monitoring site is considered to be in attainment if the three-year annual average PM10 concentration is less than or equal to 50 ug/m^3 and the estimated number of 24-hour exceedance days is less than or equal to 1.0. Table 9 shows that all of the SJVAB monitoring sites met the PM10 national ambient air quality standards (NAAQS) during calendar years 2003, 2004, and 2005.

Figure 2 PM10 Trends



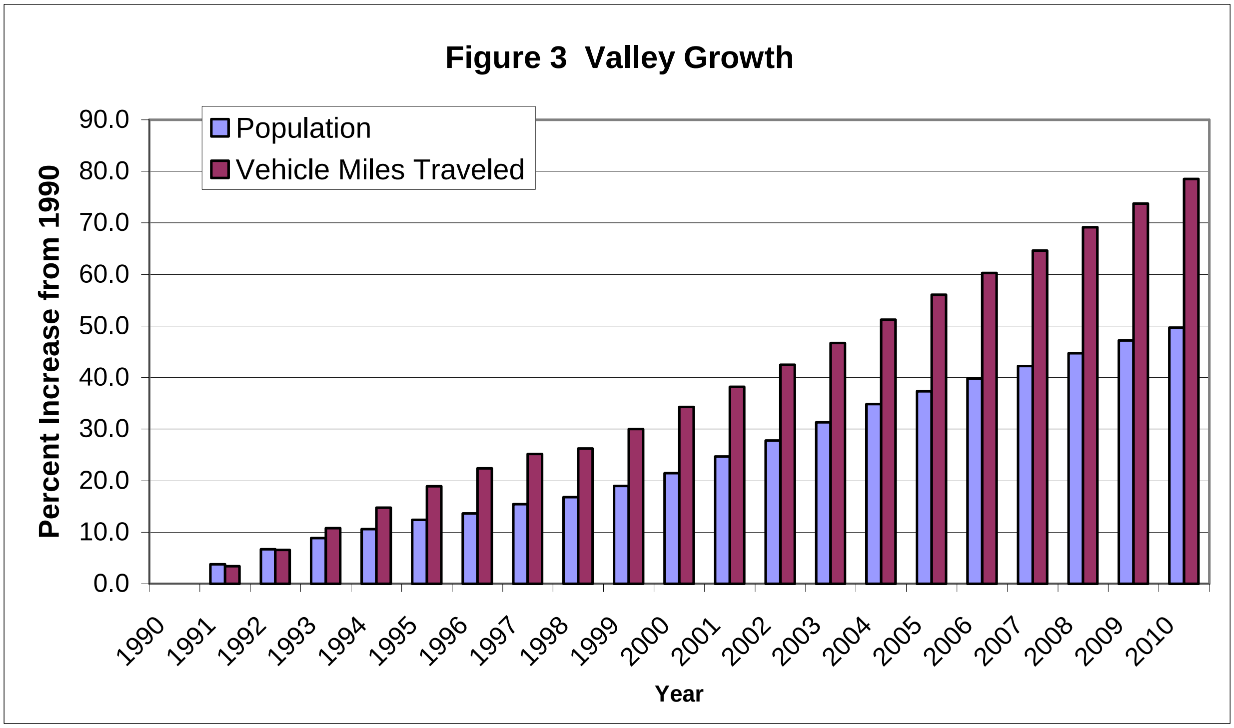
Regarding whether or not the trends were due to shutdowns or economic downturns, federal and state data clearly support the fact that the Valley has experienced rapid economic growth during the period of PM10 air quality improvement. Figures 3 and 4 illustrate trends in population and vehicle mile traveled growth, thus implying that activity levels in emissions sources for mobile and area (and some stationary) sources has also increased during this time. Between 1990 and 2010, NOx emissions have decreased by about 36% and direct PM10 has decreased by about 15%, while population has increased by about 50% and VMT has increased by about 79%.[9] The District surveyed its compliance and permit databases and did not identify any major, sector-wide shutdowns that would produce appreciable reductions in emissions relevant to PM10 in the Valley. At most, the District identified reductions of about 2 tons per day of PM10 from shutdowns of specific facilities during the attainment period of interest. Thus any downturn in emissions of PM10 and its precursors, and resulting improvement in air quality, are not due to economic downturns or shutdowns. Inclusion of 2006 monitoring data supports the findings for 2003-2005, as noted by EPA.

[9] ARB Population and Vehicle Trends Report, http://www.arb.ca.gov/app/emsinv/trends/ems_trends.php

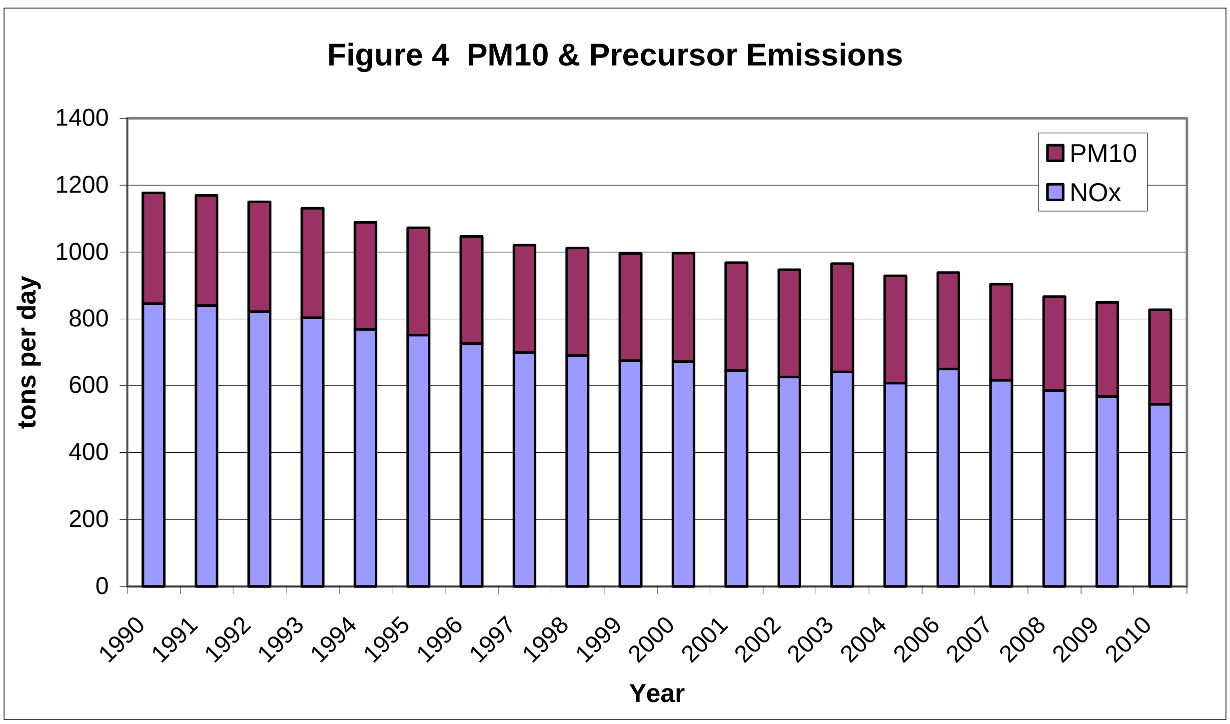
Table 9 Summary of 2003-2005 PM10 Attainment Statistics
(based on filter-based monitoring)

Monitoring Station	Observed Three-Year 24-Hour Maximum (µg/m³)	Attainment Tests		Attainment Status [c]
		Estimated 24-Hour Exceedance Days [b]	Three-Year Annual Average (µg/m³) [a]	
Bakersfield-California Ave	110	0.0	43	Yes
Bakersfield-Golden State	136	0.0	46	Yes
Clovis-Villa	87	0.0	34	Yes
Corcoran-Patterson [d]	150	0.0 [d]	4443	Yes
Fresno-Drummond	102	0.0	41	Yes
Fresno-First Street	106	0.0	33	Yes
Hanford-Irwin	140	0.0	44	Yes
Merced-2334 M Street	74	0.0	29	Yes
Modesto-14th Street	93	0.0	22	Yes
Oildale-Manor	107	0.0	41	Yes
Stockton-Hazelton	88	0.0	28	Yes
Stockton-Wagner/Holt	68	0.0	22	Yes
Turlock-Minaret	87	0.0	30	Yes
Visalia-Church Street	101	0.0	43	Yes

[a] Average the 4 quarterly averages for each of three years, then average those three values.
[b] Since PM samples are measured once every six days (or once every three days in Corcoran), the ratio of the number of measured exceedances to the number of samples in the quarter is applied to the total number of days in the quarter to yield a number of expected exceedance days for that quarter. The sum of the four quarters yields an annual total, and then 3 years of totals are averaged.
[c] A station is considered in attainment if the three-year annual average PM10 concentration is less than or equal to 50 ug/m^3 and the expected 24-hour exceedance days is less than or equal to 1.0.
[d] September 3, 2004 was declared an approved NEAP event by the EPA. The value has been flagged and excluded from these calculations. Corcoran would still be in attainment of the PM10 NAAQS even if the value were included.



* Based on data from ARB Population and Vehicle Trends Report, http://www.arb.ca.gov/app/emsinv/trends/ems_trends.php



* Based on data from ARB's PM2.5SIP inventory, Ref#994

The Valley's meteorology is well known as being conducive to high air pollution levels.[10] Thus prevailing weather patterns tend to be unfavorable and encourage high air pollution levels. Weather patterns that are favorable and help lower pollution levels tend to be the exception rather than the rule.

To address the question of favorable meteorology, District staff analyzed trends in Valley meteorological parameters over the past several decades to determine if the meteorology experienced during the 2003-2006 time frame was unusually favorable for lower ambient PM10 levels in the atmosphere. Results of District analyses of trends in temperature, rainfall, wind speed and atmospheric stability show no conclusive evidence of being unusually favorable (Appendix C). The persistent, long-term downward trend in ambient PM10 levels spanning two decades means that a variety of meteorological conditions, favorable and unfavorable, have been experienced over this time, but that PM10 levels continued to improve over this time. Any favorable meteorology that did occur during the attainment period was well within the scope of previous favorable meteorology. As noted in the District's adopted *2006 PM10 Plan*, "although complex meteorological phenomena and emissions activities make it challenging to determine the extent of PM10 air quality improvements that are highlighted by favorable weather, longer-term analysis and modeling covering similar weather regimes indicate that recurring air quality improvements are the result of regulatory actions to reduce emissions." (SJVAPCD 2006).

To reduce emissions of PM10 and its precursors, and to achieve the resulting reduced ambient concentrations of PM10, the District has adopted eight PM10 plans and amendments since 1991. A key outcome from these plans and amendments has been the adoption and implementation of many rules and regulations directed at reducing emissions of PM10 and its precursors. Many of the over 500 new rules and amendments adopted by the District since 1992 are concerned with reducing emissions of PM10 or its precursors. Rules and regulations adopted by the District are binding on all counties within the District [California Health and Safety Code, Section 40600(b)], and remain permanently in place unless repealed by specific District Governing Board actions that have been duly noticed to the public. Appendix B summarizes the status of District commitments in the *Amended 2003 PM10 Plan* to adopt and implement rules and regulations to attain the PM10 NAAQS. As is shown in Appendix B, the District has adopted all measures from the *Amended 2003 PM10 Plan*, and has sent them to ARB for review and transmittal to EPA. Furthermore, EPA has taken final action to approve many of the measures into the SIP (Appendix B), thus making them federally enforceable. As noted by the courts (e.g., *Union Electric Co. v. EPA*, 515 F.2d 206, 211 [8th Cir. 1975] and *U.S. v. Ford Motor Co*., 814 F.2d 1099, 1103 [6th Cir. 1987]), once EPA approves something into a SIP, the requirements have the force and effect of federal law and can only be invalidated by federal appellate courts. For these reasons, the District considers the reductions from its PM10 rules and regulations to be permanent and enforceable.

[10] See, for example, the *San Joaquin Valley Air Quality Study: Policy-Relevant Findings*, published by the San Joaquin Valley Air Quality Stud Committee, California Air Resources Board, Sacramento, California (November 1996), page 4:"The Valley's geography and prevailing weather patterns rival the pollution-forming potential of the Los Angeles basin." Also, the December 15, 2002 Fresno Bee Special Report entitled "Last Gasp" quotes atmospheric scientist John Carroll as saying, "The L.A. Basin is pretty well-ventilated compared to the Valley (page 2)."

The District's controls on PM10 and PM10 precursors are some of the most effective in the state of California. The California Health and Safety Code (Section 39614) requires all air districts, regardless of PM attainment status, to adopt an implementation schedule of locally selected control measures from an ARB-developed list of existing PM, NOx (oxides of nitrogen), and VOC (volatile organic compounds) controls. The District developed and submitted such a schedule by the July 31, 2005 deadline. In conducting the analysis of control measures, District staff noted that over one third of ARB's list of 103 control measures cited District rules or programs as the most stringent measures in the state. Of the remaining measures, many of the District's rules or programs covering the same source categories have similar limits or programs as the rules cited by ARB (SJVAPCD 2005). In other cases, the measures proposed by ARB are control measure commitments of the District's *Amended 2003 PM10 Plan* or the District's *Extreme Ozone Attainment Demonstration Plan*. Collectively, this indicates that the District's rules and programs for PM10 and its precursors are the most effective in the state. The emissions inventories for 1990 and 2005 shown in Table 10 illustrate the improvement that has been made in spite of the population growth that the Valley has experienced.

Table 10 Annual Average Emissions Inventories, in tons per day for the SJVAB for 1990 and 2005

	1990	2005	Improvement
SOx	99	28	72
PM10	331	285	46
NOx	846	617	228
ROG	619	383	236
Total Improvement			**582 tons per day**

Source: PM 2.5 SIP (v1.00_RF994)

8.4 Section 110 and Part D Requirements

The California Air Resources Board and the District have met all PM10 SIP requirements for the purposes of redesignation under Section 110 of the federal Clean Air Act. In addition, EPA has approved the *Amended 2003 PM10 Plan* as meeting Section 110 requirements and as meeting applicable requirements under Part D of Title I of the federal Clean Air Act. No outstanding PM10 SIP submittals exist for the District or ARB.

8.5 Fully Approved Maintenance Plan

In accordance with EPA guidance (Calcagni 1992) the District is submitting this request for redesignation as part of the *2007 PM10 Maintenance Plan and Request for Redesignation*. EPA approval of the *2007 PM10 Maintenance Plan and Request for Redesignation* would then allow EPA to proceed with redesignation of the Valley as attainment for the PM10 standards.

9. References

Calcagni, John (1992), Memorandum, *Procedures for Processing Requests to Redesignate Areas to Attainment*, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, September 4, 1992.

Earthjustice (2006), *Petition for Reconsideration*, in the Matter of Approval and Promulgation of Implementation Plans; Designation of Areas for Air Quality Planning Purposes; State of California; PM-10; Determination of Attainment for the San Joaquin Valley Nonattainment Area; Determination Regarding Applicability of Certain Clean Air Act Requirements, EPA Docket Number EPA-R09-OAR-2006-0583, Oakland, California, December 29, 2006.

Earthjustice (2007), *Petition to Withdraw PM-10 Attainment Determination for the San Joaquin Valley and to Reinstate Certain Clean Air Act Requirements, Re: Final Rule, 71 Fed. Reg. 63642 (Oct. 30, 2006))*, Oakland, California, March 21, 2007.

EPA (2007) *Approval and Promulgation of Implementation Plans; Designation of Areas for Air Quality Planning Purposes; State of California; PM10; Affirmation of Determination of Attainment for the San Joaquin Valley Nonattainment area, Proposed Rule,* August 15, 2007 (to be published in the *Federal Register* in August 2007).

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SJVAPCD (2003), *2003 PM10 Plan* as amended, San Joaquin Valley Unified Air Pollution Control District, Fresno, California, June 19, 2003 and December 18, 2003, www.valleyair.org.

SJVAPCD (2005), *Final Staff Report for SB 656 Particulate Matter (PM) Control Measure Implementation Schedule*, San Joaquin Valley Unified Air Pollution Control District, Fresno, California, June 16, 2005, www.valleyair.org

SJVAPCD (2006), *2006 PM10 Plan*, San Joaquin Valley Unified Air Pollution Control District, Fresno, California, February 16, 2006, www.valleyair.org

SJVAPCD (2007a), *2007 Ozone Plan*, San Joaquin Valley Unified Air Pollution Control District, Fresno, California, April 30, 2007, www.valleyair.org

SJVAPCD (2007b), *Ambient Air Monitoring Network Plan*, San Joaquin Valley Unified Air Pollution Control District, Fresno, California, June 29, 2007.

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Appendix A. Emissions Inventory

This Appendix contains the following emissions inventory tables:

- NOx Inventories, Annual and Winter
- Direct PM10 Inventories, Annual and Winter
- VOC Inventories, Annual and Winter
- SOx Inventories, Annual and Winter

These tables include average tons per day for 2000, 2006, 2010, and 2020. This inventory is based on the emissions inventory prepared for the *2008 PM2.5 Plan* (PM25SIP, Ref#994), base year 2002, and contains reductions for control measures adopted by the District through May 2005.

NOx (tpd)								
SUMMARY CATEGORY NAME	**ANNUAL**				**WINTER**			
	2000	**2005**	**2010**	**2020**	**2000**	**2005**	**2010**	**2020**
STATIONARY SOURCES								
FUEL COMBUSTION								
ELECTRIC UTILITIES	2.9	3.3	3.1	3.4	2.6	3.2	3.1	3.4
COGENERATION	9.9	10.0	7.3	8.2	9.9	10.0	7.3	8.2
OIL AND GAS PRODUCTION (COMBUSTION)	33.8	11.2	10.0	9.7	33.8	11.2	10.0	9.7
PETROLEUM REFINING (COMBUSTION)	1.5	0.2	0.1	0.1	1.5	0.2	0.1	0.1
MANUFACTURING AND INDUSTRIAL	33.6	32.2	34.6	39.9	28.6	26.7	28.6	32.9
FOOD AND AGRICULTURAL PROCESSING	21.3	18.0	15.4	10.3	14.0	12.0	10.2	6.8
SERVICE AND COMMERCIAL	9.5	7.7	7.9	8.1	12.6	11.1	11.3	11.6
OTHER (FUEL COMBUSTION)	1.9	1.4	1.2	0.9	1.7	1.3	1.1	0.8
* TOTAL FUEL COMBUSTION	114.4	84.1	79.6	80.6	104.7	75.6	71.6	73.5
WASTE DISPOSAL								
SEWAGE TREATMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LANDFILLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INCINERATORS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOIL REMEDIATION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (WASTE DISPOSAL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL WASTE DISPOSAL	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1
CLEANING AND SURFACE COATINGS								
LAUNDERING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEGREASING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COATINGS AND RELATED PROCESS SOLVENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PRINTING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ADHESIVES AND SEALANTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (CLEANING AND SURFACE COATINGS)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SUMMARY CATEGORY NAME	NOx (tpd) ANNUAL				WINTER			
	2000	2005	2010	2020	2000	2005	2010	2020
* TOTAL CLEANING AND SURFACE COATINGS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM PRODUCTION AND MARKETING								
OIL AND GAS PRODUCTION	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1
PETROLEUM REFINING	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2
PETROLEUM MARKETING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL PETROLEUM PRODUCTION AND MARKETING	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.4
INDUSTRIAL PROCESSES								
CHEMICAL	0.2	0.3	0.3	0.4	0.2	0.3	0.3	0.4
FOOD AND AGRICULTURE	9.8	9.2	9.0	8.8	9.4	9.2	9.0	8.8
MINERAL PROCESSES	2.4	2.3	2.5	3.0	2.3	2.3	2.5	3.0
METAL PROCESSES	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1
WOOD AND PAPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GLASS AND RELATED PRODUCTS	8.7	9.4	8.4	10.1	8.9	9.4	8.4	10.1
OTHER (INDUSTRIAL PROCESSES)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
* TOTAL INDUSTRIAL PROCESSES	21.4	21.5	20.5	22.6	21.1	21.4	20.5	22.5
** TOTAL STATIONARY SOURCES	136.1	106.0	100.6	103.7	126.1	97.4	92.5	96.5
AREA-WIDE SOURCES								
SOLVENT EVAPORATION								
CONSUMER PRODUCTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PESTICIDES/FERTILIZERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ASPHALT PAVING / ROOFING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL SOLVENT EVAPORATION	0.0	0.0	0.0		0.0	0.0	0.0	0.0
MISCELLANEOUS PROCESSES								
RESIDENTIAL FUEL COMBUSTION	6.7	6.3	6.0	5.7	10.1	9.6	9.0	8.4
FARMING OPERATIONS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONSTRUCTION AND DEMOLITION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UNPAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FUGITIVE WINDBLOWN DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MANAGED BURNING AND DISPOSAL	12.1	11.9	11.7	11.3	15.9	15.7	15.3	14.7
COOKING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (MISCELLANEOUS PROCESSES)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL MISCELLANEOUS PROCESSES	18.9	18.3	17.7	17.1	26.1	25.3	24.3	23.2
** TOTAL AREA-WIDE SOURCES	18.9	18.3	17.7	17.1	26.1	25.3	24.3	23.2
MOBILE SOURCES								
ON-ROAD MOTOR VEHICLES								

SUMMARY CATEGORY NAME	NOx (tpd) ANNUAL				WINTER			
	2000	2005	2010	2020	2000	2005	2010	2020
LIGHT DUTY PASSENGER (LDA)	40.6	22.4	14.8	5.8	43.9	24.2	15.9	6.3
LIGHT DUTY TRUCKS - 1 (LDT1)	18.2	10.0	6.7	2.7	19.7	10.8	7.2	2.9
LIGHT DUTY TRUCKS - 2 (LDT2)	29.8	19.8	13.8	6.5	32.4	21.4	14.9	7.1
MEDIUM DUTY TRUCKS (MDV)	15.7	13.4	9.5	4.8	17.1	14.5	10.2	5.2
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	5.3	4.7	4.0	3.8	5.7	5.0	4.2	3.9
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	1.3	1.0	1.0	0.9	1.3	1.1	1.0	0.9
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	2.8	2.2	1.7	0.9	3.1	2.3	1.8	0.9
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	3.0	2.5	1.9	1.5	3.2	2.7	2.1	1.6
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.3	5.4	3.4	1.9	0.3	5.6	3.5	2.0
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	2.4	3.3	2.7	1.4	2.4	3.4	2.8	1.4
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	19.6	21.5	17.0	7.1	20.3	22.2	17.5	7.3
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	192.8	223.8	212.7	95.4	198.8	230.6	218.8	97.2
MOTORCYCLES (MCY)	0.4	1.4	1.5	1.6	0.5	1.6	1.6	1.8
HEAVY DUTY DIESEL URBAN BUSES (UB)	2.0	2.2	2.3	2.5	2.0	2.3	2.4	2.5
HEAVY DUTY GAS URBAN BUSES (UB)	0.2	0.3	0.3	0.4	0.2	0.3	0.3	0.4
SCHOOL BUSES (SB)	2.1	2.4	2.5	2.3	2.1	2.5	2.6	2.3
OTHER BUSES (OB)	0.7	1.1	1.0	0.5	0.7	1.1	1.0	0.6
MOTOR HOMES (MH)	1.5	1.1	1.0		1.6	1.2	1.0	0.6
* TOTAL ON-ROAD MOTOR VEHICLES	338.8	338.7	297.6	140.4	355.4	352.8	308.9	144.9
OTHER MOBILE SOURCES								
AIRCRAFT	2.5	3.0	4.3	5.2	2.5	3.0	4.3	5.2
TRAINS	30.5	23.6	20.0	21.5	30.5	23.6	20.0	21.5
SHIPS AND COMMERCIAL BOATS	1.2	1.2	1.3	1.6	1.2	1.2	1.3	1.5
RECREATIONAL BOATS	2.2	3.2	3.5	3.6	0.9	1.3	1.4	1.4
OFF-ROAD RECREATIONAL VEHICLES	0.1	0.2	0.2	0.3	0.1	0.2	0.2	0.3
OFF-ROAD EQUIPMENT	78.8	70.8	58.0	32.4	79.2	71.2	58.3	32.6
FARM EQUIPMENT	63.6	52.5	41.7	19.2	49.7	41.1	32.6	15.0
FUEL STORAGE AND HANDLING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL OTHER MOBILE SOURCES	178.8	154.5	129.1	83.8	164.1	141.6	118.2	77.7
** TOTAL MOBILE SOURCES	517.6	493.2	426.7	224.2	519.5	494.4	427.1	222.6
GRAND TOTAL FOR SAN JOAQUIN VALLEY	672.6	617.5	545.0	345.0	671.7	617.1	543.9	342.2

Directly Emitted PM10 (tpd)								
SUMMARY CATEGORY NAME	ANNUAL				WINTER			
	2000	2005	2010	2020	2000	2005	2010	2020
STATIONARY SOURCES								
FUEL COMBUSTION								
ELECTRIC UTILITIES	0.3	0.6	0.6	0.7	0.3	0.6	0.6	0.6
COGENERATION	0.6	1.2	1.3	1.4	0.6	1.2	1.3	1.4
OIL AND GAS PRODUCTION (COMBUSTION)	1.6	1.1	1.0	1.1	1.6	1.1	1.0	1.1
PETROLEUM REFINING (COMBUSTION)	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0
MANUFACTURING AND INDUSTRIAL	0.7	0.8	0.9	1.0	0.6	0.7	0.8	0.9
FOOD AND AGRICULTURAL PROCESSING	1.4	1.4	1.3	1.0	1.0	1.1	0.9	0.7
SERVICE AND COMMERCIAL	0.6	0.7	0.7	0.7	0.8	0.9	0.9	1.0
OTHER (FUEL COMBUSTION)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
* TOTAL FUEL COMBUSTION	5.6	5.9	5.9	5.9	5.3	5.6	5.7	5.8
WASTE DISPOSAL								
SEWAGE TREATMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LANDFILLS	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
INCINERATORS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOIL REMEDIATION	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1
OTHER (WASTE DISPOSAL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL WASTE DISPOSAL	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1
CLEANING AND SURFACE COATINGS								
LAUNDERING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEGREASING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COATINGS AND RELATED PROCESS SOLVENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PRINTING	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
ADHESIVES AND SEALANTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (CLEANING AND SURFACE COATINGS)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL CLEANING AND SURFACE COATINGS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PETROLEUM PRODUCTION AND MARKETING								
OIL AND GAS PRODUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM REFINING	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
PETROLEUM MARKETING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL PETROLEUM PRODUCTION AND MARKETING	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1
INDUSTRIAL PROCESSES								
CHEMICAL	2.4	2.3	2.7	3.3	2.3	2.3	2.7	3.3
FOOD AND AGRICULTURE	12.1	9.7	9.3	9.6	12.4	10.0	9.4	9.8

Directly Emitted PM10 (tpd)								
SUMMARY CATEGORY NAME	ANNUAL				WINTER			
	2000	2005	2010	2020	2000	2005	2010	2020
MINERAL PROCESSES	4.3	3.5	3.8	4.4	4.0	3.4	3.7	4.2
METAL PROCESSES	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
WOOD AND PAPER	0.5	0.5	0.6	1.1	0.5	0.5	0.6	1.1
GLASS AND RELATED PRODUCTS	1.1	1.1	1.2	1.4	1.1	1.1	1.2	1.4
OTHER (INDUSTRIAL PROCESSES)	0.8	0.1	0.2	0.2	0.8	0.1	0.2	0.2
* TOTAL INDUSTRIAL PROCESSES	21.4	17.4	17.9	20.2	21.3	17.6	17.9	20.2
** TOTAL STATIONARY SOURCES	27.2	23.5	24.0	26.4	26.8	23.4	23.8	26.3
AREA-WIDE SOURCES								
SOLVENT EVAPORATION								
CONSUMER PRODUCTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PESTICIDES/FERTILIZERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ASPHALT PAVING / ROOFING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL SOLVENT EVAPORATION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MISCELLANEOUS PROCESSES								
RESIDENTIAL FUEL COMBUSTION	11.8	11.3	9.7	9.0	22.8	21.8	18.6	17.3
FARMING OPERATIONS	84.3	61.5	61.7	62.7	64.6	51.0	51.4	52.8
CONSTRUCTION AND DEMOLITION	11.6	10.9	11.9	11.8	10.6	10.0	10.9	10.8
PAVED ROAD DUST	41.7	44.6	46.8	58.4	39.3	42.1	44.2	55.1
UNPAVED ROAD DUST	46.7	42.3	41.5	43.1	35.3	31.6	31.0	32.0
FUGITIVE WINDBLOWN DUST	50.8	42.2	41.1	39.9	32.5	26.5	25.8	25.1
FIRES	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
MANAGED BURNING AND DISPOSAL	21.5	21.2	20.9	20.1	24.5	24.0	23.5	22.4
COOKING	1.9	2.1	2.2	2.6	1.9	2.1	2.2	2.6
OTHER (MISCELLANEOUS PROCESSES)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL MISCELLANEOUS PROCESSES	270.6	236.3	236.1	247.8	231.8	209.2	207.9	218.4
** TOTAL AREA-WIDE SOURCES	270.6	236.3	236.1	247.8	231.8	209.2	207.9	218.4
MOBILE SOURCES								
ON-ROAD MOTOR VEHICLES								
LIGHT DUTY PASSENGER (LDA)	1.3	1.4	1.5	1.9	1.3	1.4	1.5	1.9
LIGHT DUTY TRUCKS - 1 (LDT1)	0.4	0.4	0.5	0.6	0.4	0.4	0.5	0.6
LIGHT DUTY TRUCKS - 2 (LDT2)	0.7	1.0	1.1	1.4	0.7	1.0	1.1	1.4
MEDIUM DUTY TRUCKS (MDV)	0.3	0.5	0.6	0.8	0.3	0.5	0.6	0.8
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0

Directly Emitted PM10 (tpd)								
SUMMARY CATEGORY NAME	**ANNUAL**				**WINTER**			
	2000	**2005**	**2010**	**2020**	**2000**	**2005**	**2010**	**2020**
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	0.6	0.7	0.6	0.5	0.6	0.7	0.6	0.5
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	11.8	10.3	8.9	4.2	11.8	10.4	8.9	4.3
MOTORCYCLES (MCY)	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0
HEAVY DUTY DIESEL URBAN BUSES (UB)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEAVY DUTY GAS URBAN BUSES (UB)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCHOOL BUSES (SB)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
OTHER BUSES (OB)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MOTOR HOMES (MH)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL ON-ROAD MOTOR VEHICLES	15.5	14.9	13.7	9.8	15.6	14.9	13.7	9.8
OTHER MOBILE SOURCES								
AIRCRAFT	1.1	1.4	1.5	1.8	1.1	1.4	1.5	1.7
TRAINS	0.6	0.7	0.6	0.6	0.6	0.7	0.6	0.6
SHIPS AND COMMERCIAL BOATS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
RECREATIONAL BOATS	0.6	0.6	0.8	1.4	0.2	0.2	0.3	0.5
OFF-ROAD RECREATIONAL VEHICLES	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
OFF-ROAD EQUIPMENT	4.4	3.9	3.1	1.4	4.4	3.9	3.1	1.4
FARM EQUIPMENT	3.9	3.2	2.5	1.0	3.0	2.5	2.0	0.7
FUEL STORAGE AND HANDLING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL OTHER MOBILE SOURCES	10.8	9.9	8.7	6.3	9.5	8.8	7.6	5.2
** TOTAL MOBILE SOURCES	26.3	24.8	22.3	16.1	25.1	23.8	21.3	15.0
GRAND TOTAL FOR SAN JOAQUIN VALLEY	324.0	284.6	282.4	290.3	283.6	256.4	253.0	259.7

VOC (tpd)								
SUMMARY CATEGORY NAME	**ANNUAL**				**WINTER**			
	2000	**2005**	**2010**	**2020**	**2000**	**2005**	**2010**	**2020**
STATIONARY SOURCES								
FUEL COMBUSTION								
ELECTRIC UTILITIES	0.2	0.5	0.5	0.6	0.2	0.4	0.5	0.5
COGENERATION	0.3	0.4	0.4	0.5	0.3	0.4	0.4	0.5
OIL AND GAS PRODUCTION (COMBUSTION)	2.1	3.3	3.2	3.3	2.1	3.3	3.2	3.3
PETROLEUM REFINING (COMBUSTION)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MANUFACTURING AND INDUSTRIAL	0.3	0.3	0.4	0.4	0.2	0.3	0.3	0.4
FOOD AND AGRICULTURAL PROCESSING	2.3	2.3	2.3	2.2	2.1	2.1	2.1	2.0
SERVICE AND COMMERCIAL	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5
OTHER (FUEL COMBUSTION)	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
* TOTAL FUEL COMBUSTION	5.6	7.4	7.4	7.5	5.5	7.2	7.2	7.3
WASTE DISPOSAL								
SEWAGE TREATMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LANDFILLS	1.4	1.6	1.7	2.0	1.4	1.6	1.7	2.0
INCINERATORS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOIL REMEDIATION	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
OTHER (WASTE DISPOSAL)	0.5	0.5	0.6	0.7	0.5	0.5	0.6	0.7
* TOTAL WASTE DISPOSAL	2.0	2.2	2.4	2.8	2.0	2.2	2.4	2.8
CLEANING AND SURFACE COATINGS								
LAUNDERING	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DEGREASING	11.1	1.5	1.5	1.6	11.0	1.5	1.5	1.6
COATINGS AND RELATED PROCESS SOLVENTS	8.2	7.6	8.6	10.5	8.1	7.6	8.5	10.4
PRINTING	1.5	1.7	1.8	2.2	1.5	1.7	1.8	2.2
ADHESIVES AND SEALANTS	0.7	3.2	3.5	4.1	0.7	3.2	3.5	4.1
OTHER (CLEANING AND SURFACE COATINGS)	2.8	3.4	4.0	5.0	2.8	3.4	4.0	5.0
* TOTAL CLEANING AND SURFACE COATINGS	24.3	17.4	19.4	23.4	24.2	17.3	19.3	23.3
PETROLEUM PRODUCTION AND MARKETING								
OIL AND GAS PRODUCTION	33.2	27.9	26.8	24.0	33.1	27.9	26.8	24.0
PETROLEUM REFINING	1.7	0.7	0.7	0.7	1.7	0.7	0.7	0.7
PETROLEUM MARKETING	7.3	7.5	8.2	9.5	7.3	7.5	8.2	9.5
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0
* TOTAL PETROLEUM PRODUCTION AND MARKETING	42.4	36.1	35.7	34.2	42.3	36.1	35.6	34.1
INDUSTRIAL PROCESSES								
CHEMICAL	2.5	2.4	2.6	3.1	2.5	2.3	2.6	3.1
FOOD AND AGRICULTURE	11.0	11.4	11.8	12.8	9.8	10.0	10.4	11.3
MINERAL PROCESSES	0.4	0.4	0.4	0.5	0.3	0.3	0.4	0.5

VOC (tpd)								
SUMMARY CATEGORY NAME	ANNUAL				WINTER			
	2000	2005	2010	2020	2000	2005	2010	2020
METAL PROCESSES	0.2	0.4	0.4	0.4	0.2	0.3	0.3	0.3
WOOD AND PAPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GLASS AND RELATED PRODUCTS	0.1	0.4	0.4	0.5	0.1	0.4	0.4	0.5
OTHER (INDUSTRIAL PROCESSES)	0.1	0.2	0.2	0.3	0.1	0.2	0.2	0.3
* TOTAL INDUSTRIAL PROCESSES	14.3	15.0	15.8	17.6	12.9	13.5	14.3	16.0
** TOTAL STATIONARY SOURCES	88.5	78.2	80.6	85.5	87.0	76.4	78.8	83.5
AREA-WIDE SOURCES								
SOLVENT EVAPORATION								
CONSUMER PRODUCTS	24.7	23.5	24.6	29.6	24.7	23.5	24.6	29.6
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	11.3	9.4	9.8	10.8	9.3	7.7	8.1	8.9
PESTICIDES/FERTILIZERS	25.2	23.5	22.4	21.6	26.9	25.1	24.0	23.1
ASPHALT PAVING / ROOFING	2.2	2.3	2.4	2.4	1.6	1.7	1.8	1.8
* TOTAL SOLVENT EVAPORATION	63.4	58.7	59.2	64.5	62.4	58.1	58.4	63.4
MISCELLANEOUS PROCESSES								
RESIDENTIAL FUEL COMBUSTION	6.3	5.9	4.9	4.4	12.2	11.4	9.4	8.4
FARMING OPERATIONS	59.8	65.4	71.0	85.9	59.8	65.4	71.0	85.9
CONSTRUCTION AND DEMOLITION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UNPAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FUGITIVE WINDBLOWN DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRES	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MANAGED BURNING AND DISPOSAL	16.6	16.3	16.0	15.5	19.4	19.0	18.6	17.8
COOKING	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.5
OTHER (MISCELLANEOUS PROCESSES)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL MISCELLANEOUS PROCESSES	83.2	88.2	92.5	106.4	91.9	96.4	99.6	112.7
** TOTAL AREA-WIDE SOURCES	146.7	146.9	151.8	170.9	154.3	154.4	158.0	176.1
MOBILE SOURCES								
ON-ROAD MOTOR VEHICLES								
LIGHT DUTY PASSENGER (LDA)	47.0	27.2	17.7	7.9	49.7	28.6	18.4	8.0
LIGHT DUTY TRUCKS - 1 (LDT1)	18.2	10.5	7.0	3.4	19.5	11.2	7.5	3.7
LIGHT DUTY TRUCKS - 2 (LDT2)	19.7	14.0	11.1	7.1	20.9	14.9	11.9	7.5
MEDIUM DUTY TRUCKS (MDV)	9.6	7.9	6.3	4.5	10.2	8.4	6.7	4.7
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	6.9	5.4	3.2	2.3	7.5	5.8	3.4	2.5
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	1.7	1.3	0.9	0.5	1.9	1.4	1.0	0.5
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	5.2	3.3	2.2	0.6	5.9	3.7	2.4	0.6
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	2.0	1.4	0.9	0.3	2.2	1.5	0.9	0.4
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.0	0.2	0.2	0.1	0.0	0.2	0.2	0.1

SUMMARY CATEGORY NAME	VOC (tpd)							
	ANNUAL				WINTER			
	2000	2005	2010	2020	2000	2005	2010	2020
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	0.4	0.5	0.5	0.4	0.4	0.5	0.5	0.4
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	15.8	16.1	15.7	8.5	16.0	16.2	15.8	8.5
MOTORCYCLES (MCY)	2.6	5.8	5.1	5.0	2.8	6.0	5.2	5.1
HEAVY DUTY DIESEL URBAN BUSES (UB)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HEAVY DUTY GAS URBAN BUSES (UB)	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2
SCHOOL BUSES (SB)	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2
OTHER BUSES (OB)	0.4	0.3	0.2	0.1	0.4	0.3	0.2	0.1
MOTOR HOMES (MH)	0.6	0.3	0.2	0.1	0.6	0.4	0.2	0.1
* TOTAL ON-ROAD MOTOR VEHICLES	130.9	94.8	71.5	41.3	138.5	99.7	74.8	42.8
OTHER MOBILE SOURCES								
AIRCRAFT	5.8	6.7	6.5	7.2	5.8	6.7	6.5	7.2
TRAINS	1.6	1.6	1.5	1.6	1.6	1.6	1.5	1.6
SHIPS AND COMMERCIAL BOATS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
RECREATIONAL BOATS	14.9	13.2	11.9	11.0	7.7	7.7	7.4	7.8
OFF-ROAD RECREATIONAL VEHICLES	5.3	6.9	7.9	10.4	5.7	7.4	8.4	10.4
OFF-ROAD EQUIPMENT	22.0	19.8	15.4	10.6	22.1	19.8	15.5	10.5
FARM EQUIPMENT	13.0	10.8	8.3	3.5	10.7	9.0	6.9	2.9
FUEL STORAGE AND HANDLING	4.7	3.5	2.1	1.4	4.5	3.4	1.9	1.2
* TOTAL OTHER MOBILE SOURCES	67.3	62.7	53.6	45.7	58.1	55.8	48.2	41.7
** TOTAL MOBILE SOURCES	198.2	157.5	125.2	87.0	196.6	155.4	123.0	84.5
GRAND TOTAL FOR SAN JOAQUIN VALLEY	433.4	382.6	357.5	343.3	437.9	386.3	359.8	344.1

SOx (tpd)								
SUMMARY CATEGORY NAME	ANNUAL				WINTER			
	2000	2005	2010	2020	2000	2005	2010	2020
STATIONARY SOURCES								
FUEL COMBUSTION								
ELECTRIC UTILITIES	1.5	0.9	0.9	1.1	1.2	0.8	0.9	1.1
COGENERATION	0.6	0.7	0.8	0.8	0.6	0.7	0.8	0.8
OIL AND GAS PRODUCTION (COMBUSTION)	7.1	2.3	2.2	2.4	7.1	2.3	2.2	2.4
PETROLEUM REFINING (COMBUSTION)	1.8	0.1	0.1	0.1	1.8	0.1	0.1	0.1
MANUFACTURING AND INDUSTRIAL	6.0	6.8	7.3	8.3	6.0	6.8	7.3	8.3
FOOD AND AGRICULTURAL PROCESSING	2.4	2.0	2.0	2.0	1.8	1.6	1.5	1.5
SERVICE AND COMMERCIAL	1.0	0.9	0.9	0.9	1.0	0.9	0.9	0.9
OTHER (FUEL COMBUSTION)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL FUEL COMBUSTION	20.5	13.8	14.2	15.6	19.5	13.2	13.7	15.1
WASTE DISPOSAL								
SEWAGE TREATMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LANDFILLS	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1
INCINERATORS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOIL REMEDIATION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (WASTE DISPOSAL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL WASTE DISPOSAL	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1
CLEANING AND SURFACE COATINGS								
LAUNDERING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEGREASING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COATINGS AND RELATED PROCESS SOLVENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PRINTING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ADHESIVES AND SEALANTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (CLEANING AND SURFACE COATINGS)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL CLEANING AND SURFACE COATINGS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM PRODUCTION AND MARKETING								
OIL AND GAS PRODUCTION	0.1	0.2	0.2	0.3	0.1	0.2	0.2	0.3
PETROLEUM REFINING	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
PETROLEUM MARKETING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL PETROLEUM PRODUCTION AND MARKETING	0.4	0.5	0.6	0.6	0.4	0.5	0.6	0.6
INDUSTRIAL PROCESSES								
CHEMICAL	0.4	0.9	1.0	1.2	0.3	0.9	1.0	1.2
FOOD AND AGRICULTURE	2.2	0.7	0.7	0.7	1.9	0.7	0.7	0.7
MINERAL PROCESSES	1.9	1.5	1.7	2.0	1.6	1.5	1.6	1.9

SOx (tpd)								
SUMMARY CATEGORY NAME	**ANNUAL**				**WINTER**			
	2000	**2005**	**2010**	**2020**	**2000**	**2005**	**2010**	**2020**
METAL PROCESSES	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
WOOD AND PAPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GLASS AND RELATED PRODUCTS	4.4	3.8	4.2	5.0	4.5	3.8	4.2	5.0
OTHER (INDUSTRIAL PROCESSES)	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
* TOTAL INDUSTRIAL PROCESSES	9.0	7.1	7.7	9.1	8.4	6.9	7.5	8.8
** TOTAL STATIONARY SOURCES	29.8	21.5	22.6	25.4	28.3	20.8	21.9	24.6
AREA-WIDE SOURCES								
SOLVENT EVAPORATION								
CONSUMER PRODUCTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PESTICIDES/FERTILIZERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ASPHALT PAVING / ROOFING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL SOLVENT EVAPORATION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MISCELLANEOUS PROCESSES								
RESIDENTIAL FUEL COMBUSTION	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5
FARMING OPERATIONS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONSTRUCTION AND DEMOLITION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UNPAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FUGITIVE WINDBLOWN DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MANAGED BURNING AND DISPOSAL	0.9	0.8	0.8	0.8	0.6	0.5	0.5	0.5
COOKING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (MISCELLANEOUS PROCESSES)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL MISCELLANEOUS PROCESSES	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.0
** TOTAL AREA-WIDE SOURCES	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.0
MOBILE SOURCES								
ON-ROAD MOTOR VEHICLES								
LIGHT DUTY PASSENGER (LDA)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
LIGHT DUTY TRUCKS - 1 (LDT1)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
LIGHT DUTY TRUCKS - 2 (LDT2)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MEDIUM DUTY TRUCKS (MDV)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SOx (tpd)								
SUMMARY CATEGORY NAME	**ANNUAL**				**WINTER**			
	2000	**2005**	**2010**	**2020**	**2000**	**2005**	**2010**	**2020**
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	0.2	0.2	0.0	0.0	0.2	0.2	0.0	0.0
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	1.5	1.8	0.2	0.3	1.5	1.7	0.2	0.3
MOTORCYCLES (MCY)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEAVY DUTY DIESEL URBAN BUSES (UB)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEAVY DUTY GAS URBAN BUSES (UB)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCHOOL BUSES (SB)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER BUSES (OB)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MOTOR HOMES (MH)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL ON-ROAD MOTOR VEHICLES	2.2	2.6	0.7	0.9	2.2	2.5	0.7	0.9
OTHER MOBILE SOURCES								
AIRCRAFT	0.8	0.4	0.5	0.6	0.8	0.4	0.5	0.5
TRAINS	0.9	0.7	0.1	0.0	0.9	0.7	0.1	0.0
SHIPS AND COMMERCIAL BOATS	0.2	0.3	0.4	0.8	0.2	0.3	0.4	0.8
RECREATIONAL BOATS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFF-ROAD RECREATIONAL VEHICLES	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1
OFF-ROAD EQUIPMENT	0.5	0.5	0.0	0.1	0.5	0.5	0.0	0.1
FARM EQUIPMENT	0.4	0.4	0.0	0.0	0.3	0.3	0.0	0.0
FUEL STORAGE AND HANDLING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL OTHER MOBILE SOURCES	2.9	2.4	1.1	1.5	2.8	2.3	1.1	1.5
** TOTAL MOBILE SOURCES	5.1	5.0	1.8	2.4	5.0	4.9	1.8	2.4
GRAND TOTAL FOR SAN JOAQUIN VALLEY	36.1	27.6	25.6	28.9	34.4	26.7	24.7	28.1

Appendix B. Summary of District Measures from the *Amended 2003 PM10 Plan*

Since forming in 1992, the San Joaquin Valley Air Pollution Control District (District) has adopted about 500 rules and rule amendments. The District was the nation's first to adopt a progressive Indirect Source Review (ISR) program, which reduces emissions from new indirect sources Valley-wide, such as commercial, industrial, and residential developments. The District was the first in the state to regulate emissions from on-field agricultural operations, through the Conservation Management Practices (CMP) rule. The District was also the first major air district in the state to regulate the use of residential fireplaces. The Senate Bill (SB) 656 Report, prepared and adopted to meet state law requirements in 2006, evaluated all of the District's particulate matter and precursor control measures as compared to a list of potential measures developed by ARB based on measures state-wide. This report confirmed that the District's PM10 and precursor strategy control measures are benchmarks for other air districts in California. The PM10 and precursor control measures adopted and amended by the District are summarized below.

The *Amended 2003 PM10 Plan* included an analysis of Best Available Control Measures (BACM) and Best Available Control Technologies (BACT). All of the control measure commitments in the *Amended 2003 PM10 Plan* have been adopted. The District requires most new and modified stationary sources that increase emissions in amounts in excess of emission offset thresholds to obtain emission reduction credits (ERCs) to offset the growth in emissions, as specified in District Rule 2201 (New and Modified Stationary Source Review Rule). The District expects to continue operating this program as has been outlined in previous air quality plans.

The District also operates a successful emissions reductions incentive program and conducts a comprehensive public outreach program. The effectiveness of the District's groundbreaking control strategy and programs is validated by improvements in the Valley's air quality. Due to the importance of PM10 maintenance and the challenges presented by 8-hour ozone and PM2.5, the District will not relax any adopted control measures. In fact, control measure commitments in the District's ozone plans (such as the *2007 Ozone Plan*) include measures to reduce NOx; these measures will also reduce secondary PM10 levels.

Since PM2.5 is a subset within PM10, strategies to reduce PM2.5 will also reduce PM10. As such, new control strategies developed for 8-hour ozone and PM2.5 plans are expected to continually benefit PM10 air quality as well.

Amended ***2003 PM10 Plan*** **Commitments**						
Rule #	**Rule Title**	**PM 10 Plan ID**	**Adoption Amendment Date**	**SIP Submittal Date**	**EPA Action**	**Federal Register #**
4204	Cotton Gins	B	2/17/2005	3/24/2005	Under EPA Review	
4307	Boilers, Steam Generators, and Process Heaters 2.0 to 5.0 mmBTU	H	4/20/2006	4/25/2006	Under EPA Review	
4308	Boilers, Steam Generators, and Process Heaters 0.075 to 2.0 mmBtu	I	10/20/2005	11/14/2005	Under EPA Review	
4550	Conservation Management Practices	A	8/19/2004	8/25/2004	Approved	Volume 71, No. 30, 2/14/2006
4692	Wineries	J	12/15/2005	12/28/2005	Under EPA Review	
4401	Steam Enhanced Crude Oil Production Well Vents	K	12/14/2006	1/10/2007	Under EPA Review	
4309	Dryers, Dehydrators, and Ovens	C	12/15/2005	12/30/2005	Under EPA Review	
4352	Solid Fuel Fired Boilers, Steam Generators, and Process Heaters	G	5/18/2006	6/12/2006	Under EPA Review	
4354	Glass Melting Furnaces	E	8/17/2006	8/28/2006	Under EPA Review	
4702	Internal Combustion Engines Phase 2	M	6/16/2005	7/6/2005	Under EPA Review	
4905	Natural Gas Fired, Fan-type, Residential Central Furnaces	L	10/20/2005	11/10/2005	Under EPA Review	
<u>Reg VIII</u>						
8011	General Requirements	D	8/19/2004	9/8/2004	Approved	Volume 71, No. 17, 2/17/2006
8021	Construction, Demo, Excavation		8/19/2004		Approved	Volume 71, No. 17, 2/17/2006
8031	Bulk Materials		8/19/2004		Approved	Volume 71, No. 17, 2/17/2006
8041	Carryout and Trackout		8/19/2004		Approved	Volume 71, No. 17, 2/17/2006

8051	Open Areas	D	8/19/2004	9/16/2006	Approved	Volume 71, No. 17, 2/17/2006
8061	Paved and Unpaved Roads		8/19/2004		Approved	Volume 71, No. 17, 2/17/2006
8071	Unpaved Vehicle/Equip Traffic Areas		9/16/2004		Approved	Volume 71, No. 17, 2/17/2006
8081	Agricultural Sources		9/16/2004		Approved	Volume 71, No. 17, 2/17/2006
9510	Indirect Source Review	F	12/15/2005	7/6/2006	Under EPA Review	
Rules Developed During the Development of the PM10 Plan						
Rule #	**Title**	**Pollutant**	**Adoption Date**	**SIP Submittal Date**	**EPA Action**	**Federal Register #**
4103	Open Burning Phase I Phase II Phase II	VOC, NOx	9/16/2004 5/19/2005 5/17/2007	9/24/2004 6/9/2005 5/29/2007	Approved	Volume 70, No. 78, 4/25/2005
4305	Boilers, Steam Generators, and Process Heaters	NOx	8/21/2003	9/23/2003	Approved	Volume 69, No. 96, 5/18/2004
4409	Components Serving Light Crude Oil or Gases at Production Facilities	VOC	4/20/2005	4/28/2005	Under EPA Review	
4451 & 4452	Components at Petroleum Refineries					
4570	Confined Animal Feeding Operations	VOC	6/15/2006	6/30/2006		
4604	Can and Coil Coating Operations	VOC	1/15/2004	1/29/2004	Approved	Volume 70, No. 96, 5/19/2005
9310	School Bus Fleets	NOx	9/21/2006	10/19/2006		

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Appendix C. Analysis of Meteorology Affecting PM10 Levels

C.1 Introduction

Meteorology can have a significant influence on PM10 concentrations. District staff has conducted a detailed analysis of meteorological parameters that can influence PM10 by reviewing data from six stations in the center of the San Joaquin Valley Air Basin. Based on this analysis, the District believes that the recent attainment of the PM10 standard cannot be attributed to “unusually favorable” meteorological conditions. EPA guidance for redesignating areas as attainment (Calcagni 1992) requires documentation that air quality improvements leading to attainment were not due economic downturns, shutdowns, or unusually favorable meteorological conditions. See Section 8 for more discussion. This appendix presents a summary of wind speed, precipitation, temperature, and atmospheric stability analyses that support the finding that improving PM10 air quality in the Valley in recent years was not caused by “unusually favorable” meteorological conditions.

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- Wind Speed: High winds can entrain soil and cause blowing dust events, leading to high PM10 concentrations. Stagnant conditions can lead to a buildup of emissions near the emission source area, producing a gradual increase in pollutant concentrations. The longer the stagnant period lasts, the higher the particulate concentrations can rise. An increase in winds causes an end to the stagnant conditions and can transport the polluted air mass down wind, resulting in a lowering of particulate concentrations in the emission source area.
- Precipitation: Moisture content of soils is a very significant factor in a blowing dust event, which can produce high concentrations of PM10. A significant precipitation event can wet the soils and inhibit dust entrainment in strong winds. Soils that have lower than normal moisture content during the driest time of the year would be more easily entrained by strong winds. Precipitation varies considerably in the District. Some parts of the west side of the valley report only a few inches annual precipitation. Some parts of the Sierra Nevada report over a 100 inches annual precipitation. The west side of the valley has the lowest annual precipitation in the San Joaquin Valley, and the undisturbed soils, on the average, are drier than other parts of the valley. The 'west side of the valley' is well known as a source location of blowing dust events.
- Temperature: High temperatures can dry soils, which make them more easily entrained during periods of high winds. The valley, which is famously hot in the summer, experiences an average of 36 days over 100°F.
- Stability: In an unstable atmosphere, pollution emitted at the surface is easily dispersed, which results in good surface air quality. In a stable atmosphere, a temperature inversion may be present that acts like a lid on the atmosphere. The inversion helps keep the emissions near the surface, which causes a gradual buildup of air pollution. Measurements of the strength of the temperature inversion help characterize the potential for air pollution events. This type of analysis has been used to understand PM10 levels in the SJ Valley (Smith and Lehrman 1996) and to forecast PM10 levels in central California (Shipp 1995).

C.2 Long Term Weather Trends

To answer the question, "Did unusually favorable meteorological conditions cause low PM10 pollution concentrations during 2003 through 2006," District staff analyzed several key meteorological parameters to attempt to discern a pattern of unusually favorable meteorological conditions. This section presents a summary of historical weather trends in the San Joaquin Valley. It is a sampling of a larger number of long term meteorological analyses conducted by the District, which are available upon request. Summarizing from the analyses:

- In Fresno, precipitation totals increased over the period from 1878 to 2006. The 2003-2006 period received 12% more rainfall than the long-term average.
- March, May, July and August 2003 to 2005 Hanford temperatures were consistently warmer than the 1900 to 2005 average.
- Very little inter-annual variation was observed in Parlier average annual wind speed for 2003 to 2006.

Precipitation

Figure C-1 presents Fresno, CA annual precipitation data for 1878 to 2006 obtained from the National Weather Service website (weather.gov). The best-fit linear trend line indicates that the annual precipitation at Fresno has been increasing since 1878. The average precipitation for the period 1878 to 2006 was 10.13 inches. The average precipitation for the period 2003 to 2006 was 11.34 inches. Annual precipitation totals for 2003 to 2006 are presented in Table C-1.

Figure C-1. Fresno, CA annual precipitation for 1878 to 2006.

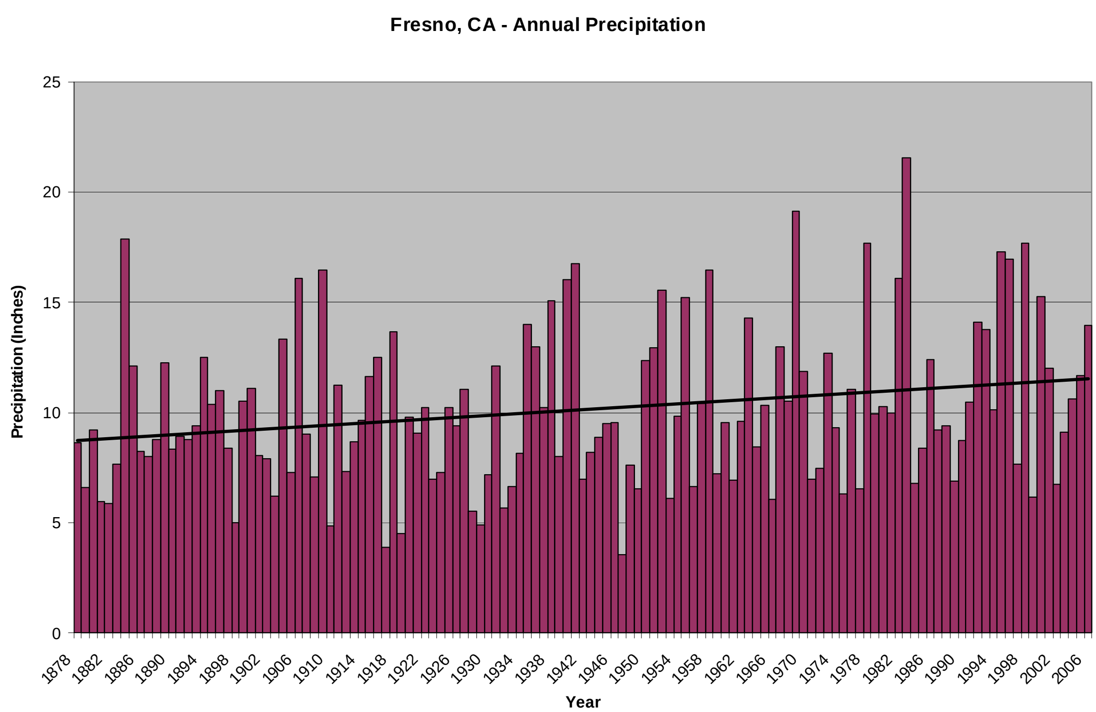


Table C-1. Fresno, CA precipitation in inches.

Year	Average for 1878 to 2006	2003	2004	2005	2006
Precipitation (inches)	10.13	9.11	10.63	11.68	13.94

The 2003-2006 period had two wet years and two dry years, considering the 128 year precipitation record. The 2003-2004 "water year" (July 1 through June 30) was dry (98th wettest year on record) as was the 2006-2007 water year (122nd wettest year on record). The 2004–2005 and 2005-2006 water years were wet, 12th and 17th wettest on record, respectively.

Temperature

Figure C-2 and C-3 are plots of Hanford, CA January and July averaged temperature data for 1899 to 2006. Similar plots were generated for all months and are available upon request. The Hanford, CA monthly temperature trends are listed in Table C-2. March, May, July and August 2003 to 2005 temperatures were consistently warmer than the 1900 to 2005 average.

Table C-2. Hanford, CA temperature data for the period 1900 to 2006 (degrees C).

Month	Temperature Trend 1900 to 2005	Average Monthly Temp. 1900 to 2005	Average Monthly Temp. 2003	Average Monthly Temp. 2004	Average Monthly Temp. 2005	Average Monthly Temp. 2006
January	Decrease	7.3	9.4	7.3	7.7	7.7
February	Slight decrease	10.2	10.2	9.5	11.6	9.9
March	Increase	12.7	14.2	16.4	13.6	9.4
April	Increase	16.0	14.6	17.8	14.6	NA
May	Increase	19.9	20.4	20.8	20.3	NA
June	Slight decrease	23.8	25.2	24.4	22.2	NA
July	Slight decrease	26.7	28.9	27.1	28.6	NA
August	Slight increase	25.7	26.6	26.1	27.1	NA
September	Increase	22.7	25.3	23.1	21.4	NA
October	Increase	17.6	20.3	17.1	17.2	NA
November	Slight decrease	11.4	10.3	10.0	12.3	NA
December	Decrease	7.4	9	6.5	9.1	NA

NA-Not Available

Figure C-2. Hanford, CA Mean January temperatures for 1899 to 2006.

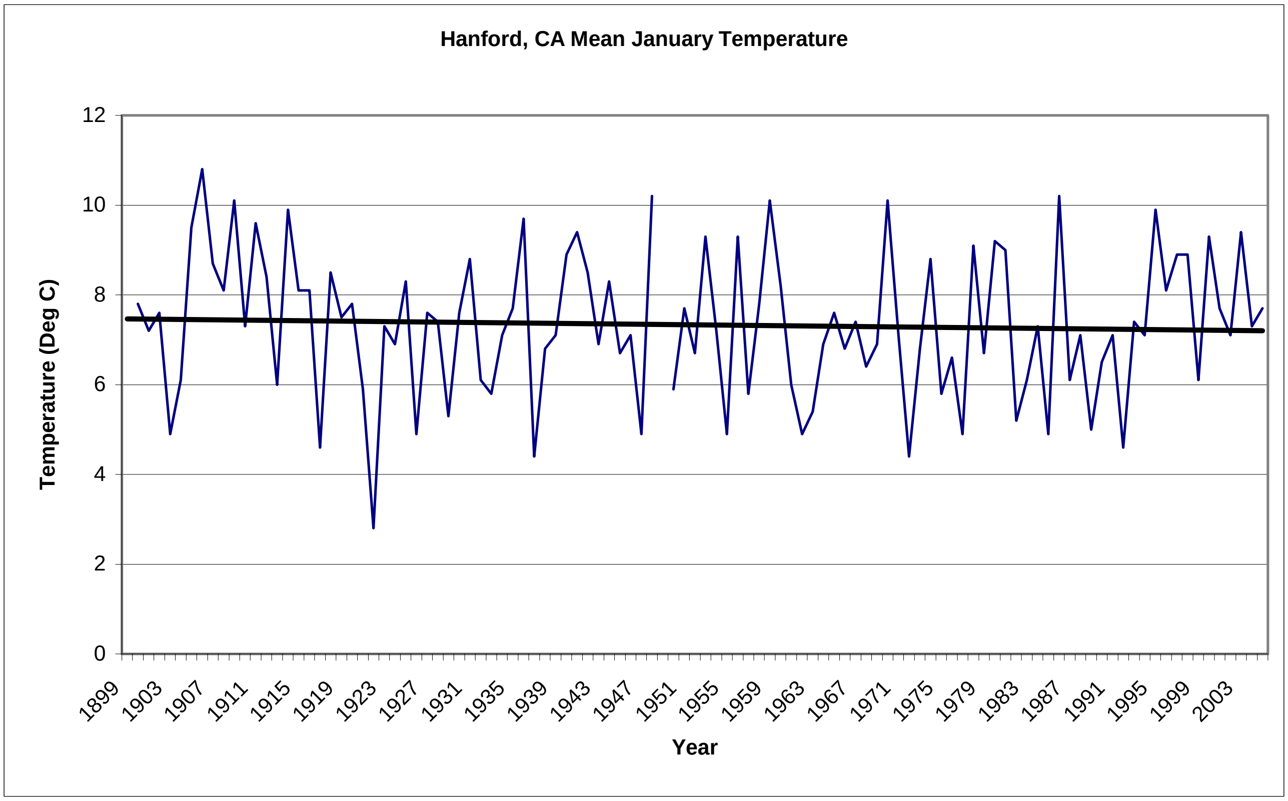
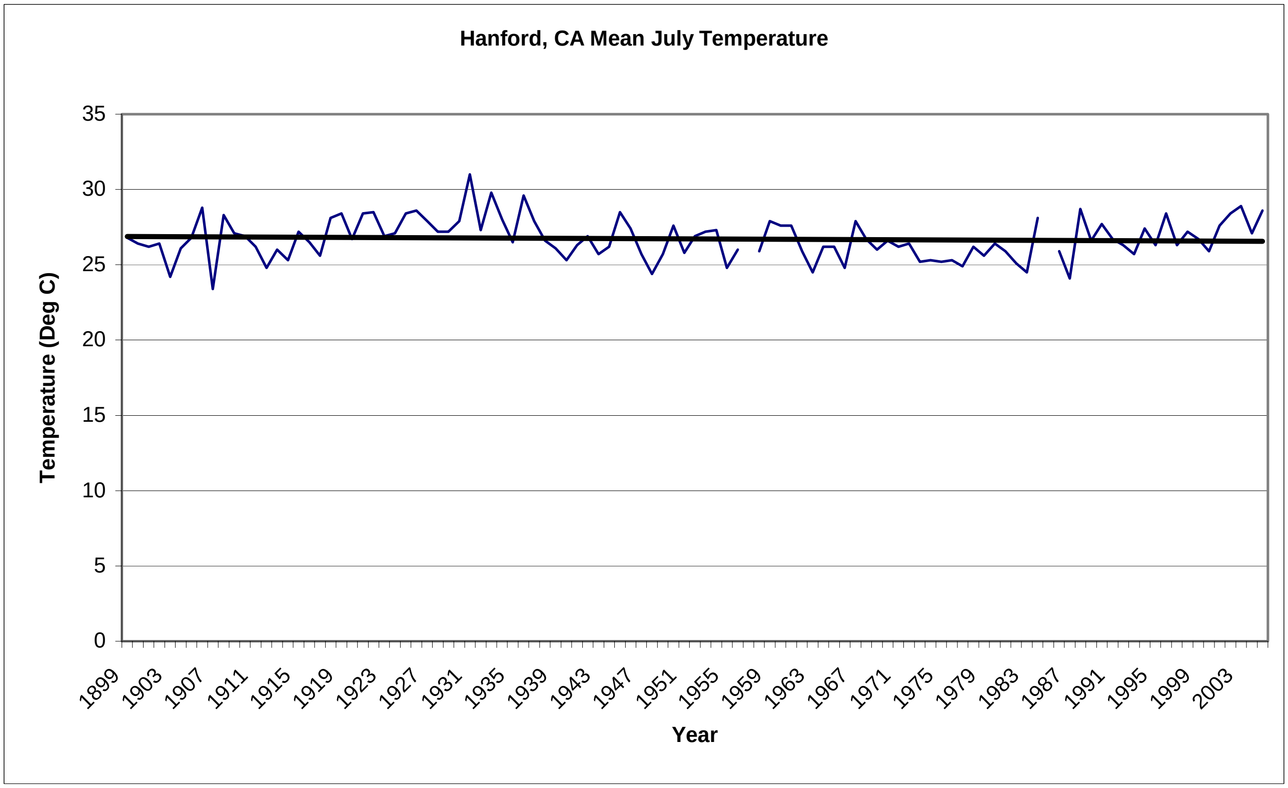


Figure C-3. Hanford, CA Mean July temperatures for 1899 to 2005.



Wind Speed

Parlier, CA wind data was chosen for examination because the record was complete for 1984 to 2006. As shown in Table C-3, inter-annual variation in wind speed was very small.

Table C-3. Parlier, CA average wind speed for the period 1984 to 2006 (mph).

Average Wind Speed 1984 to 2006	Average Wind Speed 2003	Average Wind Speed 2004	Average Wind Speed 2005	Average Wind Speed 2006
3.72	3.63	3.75	3.73	3.65

Atmospheric Stability

The 850 MB stability parameter is calculated by taking the 12 Z (4:00 Pacific Local Time) 850 MB temperature at Oakland and subtracting the minimum temperature at Fresno (T850 MB (Oakland) – TMIN (Fresno)). The 850 MB level is approximately 5,000 feet in the atmosphere. This parameter was utilized due to its strong correlation with PM10 pollution measurements, with an R squared of 0.8061. (Figure C-4)

Figure C-4: Correlation of the 850 MB Stability Parameter to PM10 Concentrations (1990 to 2006).

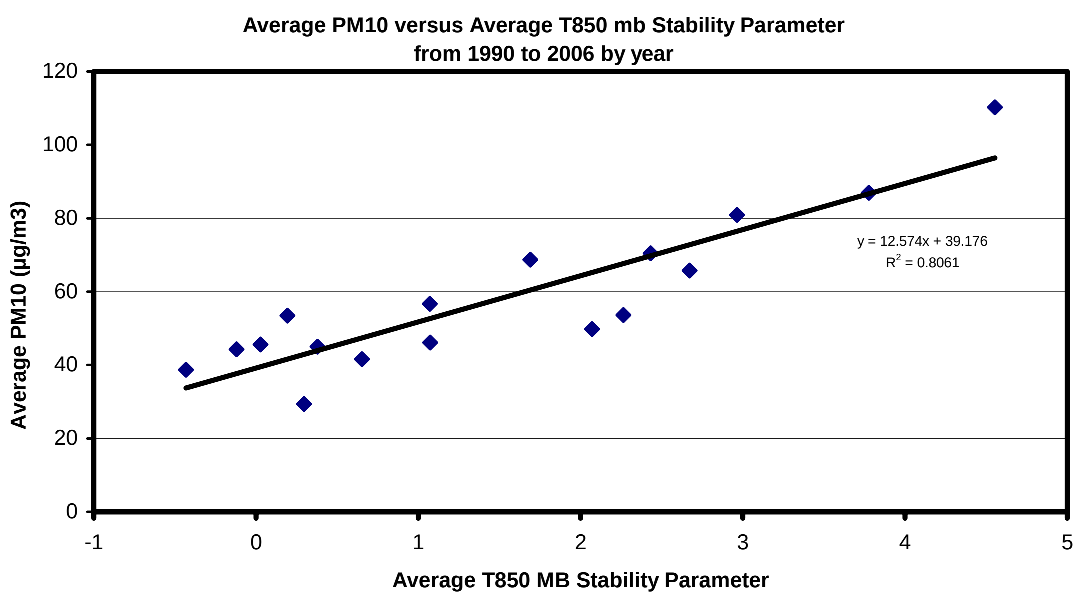


Figure C-4 shows that higher PM10 concentrations generally correspond to greater atmospheric stability. When the 850 MB stability parameter is positive (to the right of the y-axis), an inversion is present trapping pollutants within the boundary layer. When the 850 MB stability parameter is negative, atmospheric mixing is adequate allowing for pollutants to disperse. This relationship is one indicator on how the meteorology influences the air quality in the San Joaquin Valley.

Figure C-5: Relationship between Stability Parameter and PM2.5 at Fresno

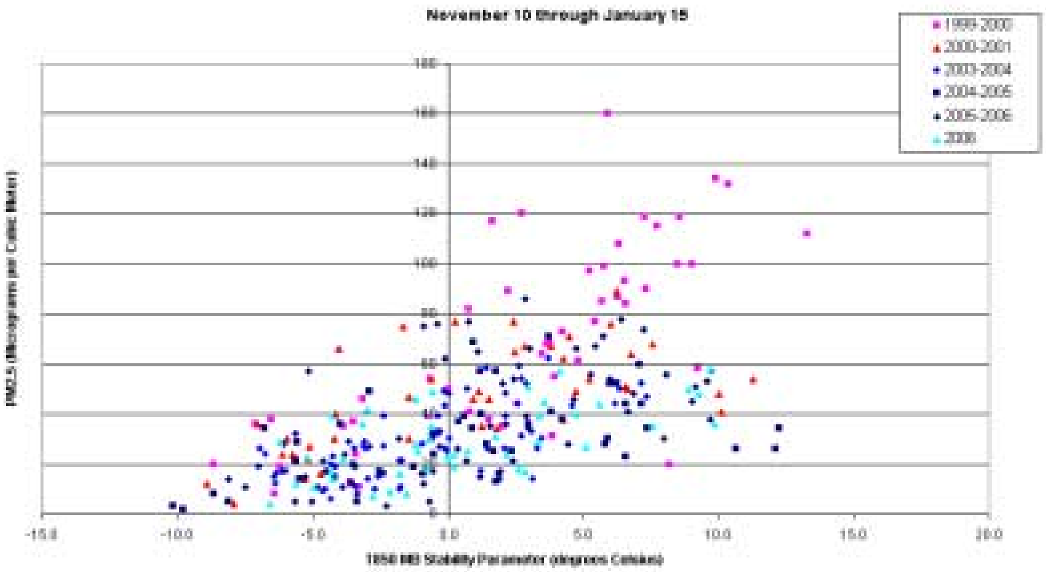


Figure C-5 is a scatter plot of the 850 MB Stability Parameter versus PM2.5 measurement at Fresno-1st. The plot shows that in 1999 through 2001, high stability days resulted in high PM2.5 measurements. High stability days are defined as when the 850 MB stability parameter is greater than 0. Since 2003, high stability days have not caused high PM2.5 measurements.

This illustrates that emission reductions may have played a role. On days when stability has been high (2003 through 2006), PM2.5 levels have not reached the same levels they would have in the past (1999 through 2001).

Figure C-6: October 01 through January 31 Average 850 MB Temperature

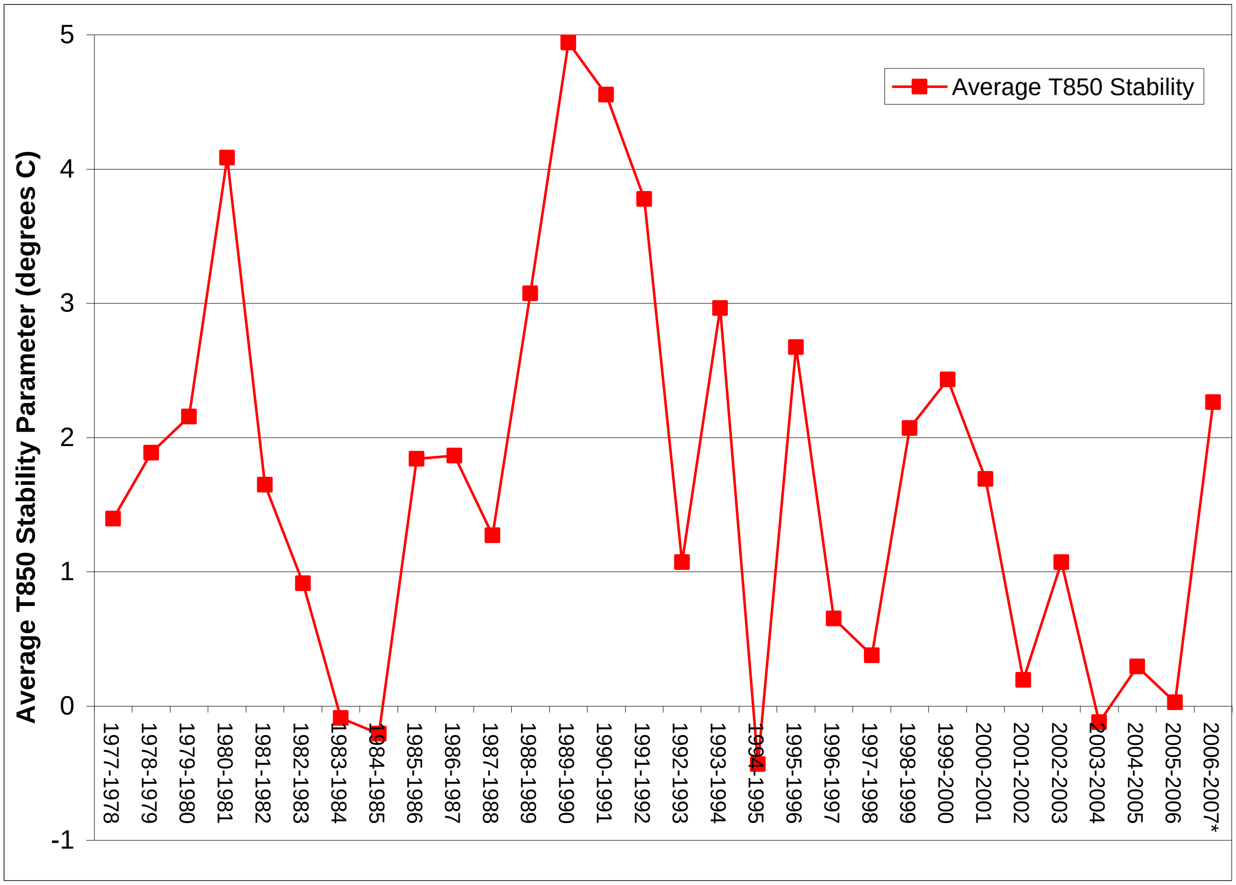


Figure C-6 illustrates the average 850 MB temperature stability parameter from October 1 through January 31 by year since 1977. Figure C-5 indicates that stability parameters varied more year-to-year during the earlier years of the period than during the more recent years. The average of the stability parameters from 1977 through early 2006 is 1.7°C whereas the average for 2003 through early 2006 is 0.6°C. This indicates that during the more recent period, the stability parameter was somewhat low, showing a potential for better dispersion conditions.

C.3 SUMMARY

As shown above, analysis of the key meteorological parameters does not show a conclusive pattern that "unusually favorable" meteorology was the cause of low ambient PM10 levels that led to the Valley's attainment of the PM10 standard.

- Interannual variation in Parlier's wind speed was very low, so this parameter does not appear to have effected PM10 concentrations.
- Fresno's average precipitation for the period 1878 to 2006 was 10.13 inches. The average precipitation for the period 2003 to 2006 was 11.34 inches. Soils that have lower than normal moisture content during the driest time of the year would

be more easily entrained by strong winds. Since the 2003 to 2006 was wetter than normal, this indicator could have the effect of decreasing the potential for blowing dust events that can lead to high PM10 levels.

- March, May, July and August 2003 to 2005 temperatures at Hanford, CA were consistently warmer than the 1900 to 2005 average, which may lead to greater drying of the soils. This indicator could have the effect of increasing the potential for blowing dust events that can lead to high PM10 levels.
- The average of the stability parameters from 1977 through early 2006 is 1.7°C. The average for 2003 through early 2006 is 0.6°C, indicating a potential for better dispersion conditions during 2003 to 2006.

For meteorological parameters to show a conclusive pattern of “unusually favorable” meteorology, the indicators would need to show a very consistent pattern of indicators that would support lower PM10 concentrations. The indicators reviewed by the District do not show a consistent pattern of favorable meteorology that is statistically significant.

C.4 References

Calcagni, John (1992), Memorandum, *Procedures for Processing Requests to Redesignate Areas to Attainment*, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, September 4, 1992.

California Department of Water Resources, *California Irrigation Management Information System (CIMIS),* http://wwwcimis.water.ca.gov/cimis/welcome.jsp

National Oceanic and Atmospheric Administration (NOAA): Weather data, http://www.weather.gov

Shipp, Evan M., “Meteorological Characteristics and Forecasting of High PM10 Days Applicable to Declaring “Ban” and “Burn” Days for Residential Wood Combustion in Northern San Luis Obispo County,” Prepared by Shipp Air Quality Consulting for the San Luis Obispo County Air Pollution Control District, August 21, 1995.

Smith, T.B. and D.E. Lehrman, “SARMAP II Design, Analysis of the San Joaquin Valley Meteorological Environment During High PM10 Loading,” Final Report, Prepared by Technical and Business Systems, Inc., June 21, 1996.

Appendix D. Detailed Conformity Calculations

San Joaquin Valley MVEB Estimates
(tons per annual day)
ARB calculated with updated transportation data
* Budget is established by rounding emissions total to the next highest tenth.

2005 Motor Vehicle Emissions Budgets

County	Fresno		Kern		Kings		Madera		Merced		San Joaquin		Stanislaus		Tulare	
	PM10	**NOx**	**PM10**	**NOx**	**PM10**	**NOx**	**PM10**	**NOx**	**PM10**	**NOx**	**PM10**	**NOx**	**PM10**	**NOx**	**PM10**	**NOx**
Baseline EMFAC2007	3.10	70.72	4.76	106.87	0.89	20.13	0.75	16.50	2.26	47.25	2.23	50.56	1.49	35.21	1.19	29.72
HDI, PFR, Moyer, AB1493, Reflash	0.01	2.40	0.02	4.71	0.00	0.91	0.00	0.52	0.01	1.74	0.01	1.47	0.01	1.00	0.00	0.81
Paved Road Dust:	9.38		7.30		1.78		2.23		2.74		6.44		3.88		5.21	
Freeway																
Arterial																
Collector																
Local																
Rural																
Unpaved Road Dust	0.65		0.42		0.45		0.55		1.38		0.12		0.29		0.82	
Road Construction Dust	0.73		0.20		0.07		0.11		0.11		0.51		0.11		0.17	
Total	13.87	68.32	12.70	102.16	3.19	19.22	3.64	15.98	6.50	45.51	9.31	49.09	5.78	34.21	7.39	28.91
Budget*	**13.9**	**68.4**	**12.8**	**102.2**	**3.2**	**19.3**	**3.7**	**16.0**	**6.6**	**45.6**	**9.4**	**49.1**	**5.8**	**34.3**	**7.4**	**29.0**

2020 Motor Vehicle Emissions Budgets

County	Fresno		Kern		Kings		Madera		Merced		San Joaquin		Stanislaus		Tulare	
	PM10	**NOx**	**PM10**	**NOx**	**PM10**	**NOx**	**PM10**	**NOx**	**PM10**	**NOx**	**PM10**	**NOx**	**PM10**	**NOx**	**PM10**	**NOx**
Baseline EMFAC2007	1.92	25.85	2.69	44.92	0.45	7.79	0.54	7.26	1.06	15.72	1.47	18.31	0.89	11.70	0.82	11.02
ARB Reflash, Idling, Moyer	0.02	2.73	0.02	5.45	0.00	1.07	0.00	0.78	0.01	1.92	0.02	1.71	0.01	1.09	0.01	1.00
Paved Road Dust:	12.59		10.70		2.46		3.43		3.95		8.40		5.15		7.39	
Freeway																
Arterial																
Collector																
Local																
Rural																
Unpaved Road Dust	0.60		0.34		0.42		0.51		1.27		0.11		0.27		0.76	
Road Construction Dust	0.87		0.89		0.19		0.12		0.16		0.55		0.28		0.31	
Total	16.00	23.12	14.64	39.47	3.52	6.72	4.60	6.48	6.45	13.80	10.55	16.60	6.60	10.61	9.29	10.02
Budget*	**16.1**	**23.2**	**14.7**	**39.5**	**3.6**	**6.8**	**4.7**	**6.5**	**6.5**	**13.9**	**10.6**	**16.7**	**6.7**	**10.7**	**9.3**	**10.1**

Appendix E. SOx Emission Reduction Credits

The District's *2006 PM10 Plan* demonstrates that the stationary source inventory for SOx in the San Joaquin Valley has been reduced to a level that makes further control measures ineffectual and unnecessary with respect to attainment of the PM10 NAAQS. The 2006 plan demonstrated attainment, and this maintenance plan demonstrates continued attainment through 2020, without additional SOx controls proposed for stationary sources.

However, the District's New and Modified Stationary Source Review Rule, Rule 2201, allows the use of SOx emissions reductions for the purposes of offsetting (mitigating) permitted PM10 emissions increases. While this so-called "SOx-for-PM10 interpollutant trading" creates no inherent conflict with our PM10 attainment plans, the federal Environmental Protection Agency has asked that we provide a description and quantification of the maximum potential impact of this type of ERC-use on our efforts to maintain the PM10 NAAQS through 2020.

Of concern is the potential impact on our attainment status if the SOx reductions are used as offsets for PM10 emissions increases from stationary sources, as allowed by Rule 2201. This analysis will conservatively assume that SOx emission reduction credits used as offsets will provide no true mitigation of PM10 increases. In fact, the most conservative approach is to assume that all forecast SOx and PM10 increases are "offset" using SOx emissions reductions, but not take any credit in the plan for mitigating the increases (i.e., we will not count the use of these reductions as decreases in the growth in emissions), and to cap the allowed use of SOx emission reduction credits at that level. Since we have demonstrated with this plan that this amount of emissions growth does not interfere with the maintenance of the PM10 NAAQS, and this analysis will cap the allowed use of SOx reductions within this growth, there can be no impact on maintenance of the standard.

In this analysis, we will also conservatively assume a trading ratio of 1-to-1 (one pound of SOx reduction allowing one pound of PM10 or SOx increase). Appropriate SOx-to-PM10 ratios in recent trades have been demonstrated to range from 1-to-1 to 1.9-to-1, so assuming 1-to-1 for our calculation purposes will have the consequence of maximizing the possible use of SOx credits to offset PM10 increases. To assure the conservative nature of this assumption, we will commit to requiring a SOx-for-PM10 trading ratio of at least 1-to-1 for such trades in the future.[11]

As one further conservative assumption, we will not consider distance ratios when calculating the amount of SOx credits being consumed. Distance ratios from 1.2-to-1 or 1.5-to-1 are generally required for NSR offsetting with offsite reductions in the San Joaquin Valley, but for the purposes of this demonstration, it is more conservative to assume that all reductions are supplied at a 1-to-1 ratio.

[11] Proposed interpollutant trading ratios will still be required to be scientifically justified with an air quality analysis, as required by Rule 2201, Section 4.13.3, but the minimum ratio allowed will be 1-to-1, regardless of any future proposed air quality analysis showing that a lower than 1-to-1 ratio would be sufficient.

From CARB's PM SIP Planning Inventory (v1.00_RF994), growth in PM-10 and SOx emissions is forecast as follows:

Inventory Year	**2005**	**2010**	**2015**	**2020**
SOx Emissions (tpd)	21.5	22.6	24.1	25.4
Forecast growth in SOx	-	1.1	2.6	3.9
PM10 Emissions (tpd)	23.5	24.8	26.1	27.7
Forecast growth in PM10	-	1.3	2.6	4.2
Total Growth (SOx+PM10, tpd)	**-**	**2.4**	**5.2**	**8.1**

This total growth in SOx and PM10 emissions then becomes a cap on the amount of SOx offsets allowed to be used in our NSR offsetting program. In other words, during the life of the plan, through 2020, no more than 8.1 tons per day of SOx offsets will be allowed to be used.[12]

As an interim check of the proposed cap, we have reviewed the quantity of SOx offsets withdrawn under NSR permitting requirements during the period January 2005 through June 2007, a period of 2.5 years. A total of 0.32 tons per day of SOx credits have been committed or withdrawn for Authority to Construct permits issued during this period. Since this period is 50% of the 2005-2010 period shown above, we compare the total SOx credits used to 50% of that period's anticipated SOx ERC-use, or 1.2 tons per day (0.5 x projected growth of 2.4 tpd). This comparison demonstrates that the SOx ERC use-to-date, 0.32 tpd, is well short of the prorated anticipated ERC-use of 1.2 tpd.

So, because we have capped the use of SOx emissions reduction credits at levels within the growth in emissions of SOx or PM10 that are forecast in this maintenance plan, without taking credit for any mitigation due to the use of these credits, and this maintenance plan forecasts attainment at these growth rates, we have assured that the use of SOx credits can not interfere with our ability to maintain attainment with the PM10 NAAQS.[13]

[12] This new cap replaces the now-obsolete SOx ERC-use cap of the 2006 plan.

[13] Note that setting SOx ERC-use cap at the level of SOx and PM-10 emissions growth is a matter of convenience – we are not suggesting that the use of ERCs has any impact on ARB's projections of growth in emissions during the period of this plan. Rather, ARB has projected a certain level of emissions growth, which we have then used in our maintenance demonstration, and then we have shown that using ERCs has no impact on our ability to maintain compliance with the NAAQS because we have taken no plan-level credit for mitigations supplied by those ERCs.

Appendix F. Modeling Analysis

Episodic and annual modeling analysis for 2020 is shown on the following pages. Modeling analysis for 2005 is not included, but it is available on request.

The following tables show adjustments made to ARB's PM2.5SIP inventory, Ref#994 to account for changes not reflected in the emission inventory.

Table F-1 ARB Adjustments to Winter Emission Inventory Baseline

Description	NOx			PM10			ROG			SOx		
	2005	2010	2020	2005	2010	2020	2005	2010	2020	2005	2010	2020
Reflash	-11.18	-9.96	-1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Public Fleet	0.00	-0.05	-0.02	0.00	-0.05	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Idling	-2.02	-10.73	-13.99	-0.05	-0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AB 1493	0.00	0.00	-0.02	0.00	0.00	-0.07	0.00	0.00	-0.02	0.00	0.00	0.00
Moyer	-1.09	-0.90	0.00	-0.06	-0.05	0.00	0.00	-0.09	0.00	0.00	0.00	0.00
Off-road	-0.15	-2.24	-1.35	-0.01	-0.18	-0.17	0.00	-0.07	-0.30	0.00	0.00	0.00
Ships	0.00	-0.03	-0.06	0.00	-0.04	-0.07	0.00	0.00	0.00	0.00	-0.34	-0.63
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.03	-1.24	0.00	0.00	0.00

Table F-2 ARB Adjustments to Annual Emission Inventory Baseline

Description	NOx			PM10			ROG			SOx		
	2005	2010	2020	2005	2010	2020	2005	2010	2020	2005	2010	2020
Reflash	-11.18	-9.96	-1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Public Fleet	0.00	-0.05	-0.02	0.00	-0.05	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Idling	-2.02	-10.73	-13.99	-0.05	-0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AB 1493	0.00	0.00	-0.02	0.00	0.00	-0.07	0.00	0.00	-0.02	0.00	0.00	0.00
Moyer	-1.09	-0.90	0.00	-0.06	-0.05	0.00	0.00	-0.09	0.00	0.00	0.00	0.00
Off-road	-0.15	-2.24	-1.35	-0.01	-0.14	-0.16	0.00	-0.07	-0.30	0.00	0.00	0.00
Ships	0.00	-0.03	-0.06	0.00	-0.04	-0.07	0.00	0.00	0.00	0.00	-0.34	-0.63
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00