State of California

California Environmental Protection Agency

AIR RESOURCES BOARD

Staff Report

Analysis of the Coachella Valley PM10 Redesignation Request and Maintenance Plan

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Background

The Coachella Valley is currently designated as a serious nonattainment area for the 24-hour national ambient air quality standard (NAAQS or standard) for particulate matter of 10 microns in diameter or smaller (PM10). The South Coast Air Quality Management District (District) adopted the first PM10 attainment plan for the Coachella Valley in 1990. The plan focused on fugitive dust as the primary control strategy for attaining the national 24-hour and the annual PM10 standards. The 2002 plan revision requested extension of the attainment date to 2006. This revision was approved by the United States Environmental Protection Agency (U.S. EPA). In various plan revisions, the District adopted increasingly stringent dust measures. Riverside County and nine cities also adopted and tightened local fugitive dust ordinances. The concerted adoption of District and local controls in the Coachella Valley resulted in this area attaining the 24-hour PM10 standard by the 2006 attainment date.

On January 8, 2010, the District adopted the PM10 Redesignation Request and Maintenance Plan for the Coachella Valley (Coachella Valley PM10 Maintenance Plan). The plan officially requests this area be redesignated to attainment for the PM10 standard and charts the course for continued maintenance of the standard.

Maintenance Plan Addresses Act Requirements

The Coachella Valley PM10 Maintenance Plan includes the following components:

- Attainment emission inventories for directly emitted PM10;
- Demonstration that PM10 attainment concentrations at federal reference monitoring stations will be maintained for ten years after redesignation;
- Commitment to ongoing monitoring network operation for continued verification of attainment; and
- Contingency provisions to address any future violations.

In addition, eight years after the area is redesignated as attainment, the District will submit a revised Coachella Valley PM10 Maintenance Plan providing for continued attainment for an additional ten years.

Staff Recommendation

Air Resources Board (ARB) staff concurs with the District's PM10 Redesignation Request and Maintenance Plan for the Coachella Valley. ARB staff recommends that the Board approve the District's Coachella Valley PM10 Maintenance Plan as a revision to the California State Implementation Plan for submittal to U.S. EPA. In addition, ARB staff recommends that the Board approve the District's request that the Coachella Valley be redesignated from nonattainment to attainment for the national PM10 standard.

I. BACKGROUND

The Coachella Valley portion of the Salton Sea Air Basin is designated as a serious nonattainment area for the 24-hour PM10 national ambient air quality standard (NAAQS or standard). The area is under the jurisdiction of the South Coast Air Quality Management District (District). In 1987, the U.S. EPA adopted the PM10 NAAQS consisting of a 24-hour PM10 standard of 150 micrograms per cubic meter ($\mu g/m^3$) and an annual standard of 50 $\mu g/m^3$. Effective December 18, 2006, U.S. EPA revoked the annual portion of the PM10 standard.

PM10 is a complex mixture of primary or directly emitted particles (dust and soot), and secondary particles or aerosol droplets formed in the atmosphere from precursor gases (NOx, SOx, VOC, and ammonia). PM10 includes the subsets of fine particles with a diameter of 2.5 microns or less (PM2.5) and of coarse particles with a diameter between 2.5 and 10 microns. Secondary particles are found mostly in the PM2.5 portion of PM10.

In the Coachella Valley, the coarse fraction contributes between 70 and 80 percent to ambient PM10 concentrations. Dust is the main component of the coarse fraction in this area. Emissions of particulate matter precursors from the neighboring South Coast Air Basin (SCAB) also contribute to the secondary portion of PM10 in the Coachella Valley.

The District adopted the first PM10 Plan for the Coachella Valley in 1990. This plan established a dust-focused control strategy for attaining the national 24-hour and annual PM10 standards. Control measures were adopted to address fugitive dust emissions from paved and unpaved roads, agricultural activities, construction and demolition activities, and open area wind erosion. The District subsequently adopted PM10 Plan revisions in 1994, 1996, 2002, and 2003. In addition, per these Plan revisions, Riverside County and nine cities adopted and tightened local fugitive dust ordinances. The concerted adoption of District and local control strategies resulted in the Coachella Valley attaining the PM10 standard by the 2006 attainment date.

On January 8, 2010, the District adopted the PM10 Redesignation Request and Maintenance Plan for the Coachella Valley. This plan officially requests this area be redesignated to attainment for the PM10 standard and charts the course for continued maintenance of the standard through 2030.

II. REDESIGNATION REQUIREMENTS

ARB staff reviewed the Coachella Valley PM10 Maintenance Plan within the context of the Clean Air Act (Act), which identifies the following requirements an area must meet to be redesignated to attainment:

A. The PM10 standard has been attained;
B. The District has an approved State Implementation Plan (SIP) and the State has met all applicable Act requirements for PM10 in the nonattainment area;
C. The improvement in PM10 air quality is due to permanent and enforceable emission reductions; and
D. U.S. EPA has approved a maintenance plan.

The Act also sets the general framework for maintenance plans[1]. Each PM10 maintenance plan must provide for continued maintenance of the PM10 standard for ten years after redesignation and includes the following components:

1. Attainment emission inventory;
2. Maintenance demonstration;
3. Commitment to continue the monitoring network operation;
4. Commitment for verification of continued attainment; and
5. Contingency plan to promptly correct any violation of the PM10 NAAQS that occurs after the area has been redesignated.

III. EVALUATION OF THE COACHELLA VALLEY PLAN

Based on review of the Coachella Valley PM10 Maintenance Plan and the District's supporting technical analysis, ARB staff concurs that the Plan meets the requirements. The following sections describe the major elements of the Plan and the redesignation request.

A. Coachella Valley Attains the 24-Hour PM10 Standard

PM10 concentrations are measured at two monitoring stations located in the Coachella Valley (Figure 1). At both sites, federal reference monitors (FRMs) collect PM10 samples on a 24-hour basis and real-time monitors collect samples on an hourly basis. Table 1 lists air quality data for the 2005-2007 three-year period for the FRMs demonstrating that the Coachella Valley meets the 24-hour PM10 standard. The 24-hour standard is met when the estimated number of exceedances measured over a three year period averages one or less per year.

[1] Calcagni, John, Memorandum, *Procedures for Processing Requests to Redesignate Areas to Attainment, Office of Air Quality Planning and Standards*, Research Triangle Park, North Carolina, September 4, 1992. http://www.epa.gov/ttn/oarpg/t5/memoranda/redesignmem090492.pdf

Figure 1. PM10 Monitoring Stations in the Coachella Valley portion of the Salton Sea Air Basin

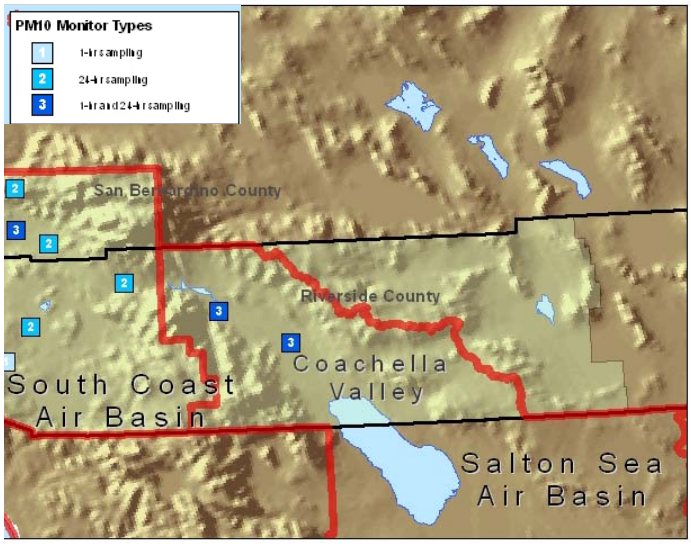

Table 1. Coachella Valley FRM PM10 Data from 2005 to 2007

Monitoring Station Name	Observed Maximum 24-hour Concentration[(a)] ($\mu g/m^3$)			Estimated 24-Hour Exceedance Days
	2005	2006	2007	2005-2007
Palm Springs	66	73	83	0
Indio	106	122	146	0

a. Data do not include PM10 concentrations caused by natural/exceptional events which are excluded from regulatory consideration.

On three days over the 2005 to 2007 period, the 24-hour standard was exceeded due to high wind conditions that suspended blowsand in protected environmental preserves and dispersed it throughout the Valley. These exceedances can be excluded under the federal rule for exceptional events since they are not reasonably preventable or controllable. Documentation for these events was submitted to U.S. EPA for concurrence as exceptional events.

B. U.S. EPA Approved the Coachella Valley PM10 SIP and the State Has Met Applicable Act Requirements

On April 18, 2003, U.S. EPA approved the 2002 Coachella Valley PM10 and granted an extension of the PM10 attainment date to December 31, 2006. On November 14, 2005, U.S. EPA approved the District's 2003 PM10 attainment plan strengthening control measures in the Coachella Valley. In addition, ARB and the District have met all of the

Act requirements applicable for a serious PM10 nonattainment area to be considered for redesignation.

C. Improvement in Coachella Valley's PM10 Air Quality is Due to Permanent and Enforceable Reductions in Emissions

Since the first Coachella Valley PM10 attainment plan was adopted in 1990, the District and ten local jurisdictions (Riverside County and nine cities) have adopted increasingly stringent dust control rules and local ordinances that were committed to in the original plan and the subsequent plan revisions. These measures have provided for continuous attainment of the 24-hour PM10 standard (excluding exceptional or natural events) in the region since 2003, despite regional growth.

Based on analyses of long-term meteorological variables, including rainfall and wind speeds, the District found that meteorological conditions during the 2005-2007 period were conducive to higher PM10 concentrations. Yet, excluding exceptional events, the Coachella Valley did not violate the 24-hour PM10 standard during this three-year period.

D. Maintenance Plan

The Coachella Valley PM10 Maintenance Plan includes the following components: attainment emission inventory; maintenance demonstration; commitment to continue monitoring network operation; commitment for verification of continued attainment; contingency plan; and transportation conformity budgets.

1. Attainment Emission Inventory

An emission inventory is a critical tool used to support evaluation, control, and mitigation of air pollution which is comprised of a systematic listing of the sources of air pollutants along with the amount of pollutants emitted from each source or category over a given period of time. Emission inventories are estimates of the air pollutant emissions released into the environment – they are not direct ambient concentration measurements. To determine the expected emissions in future years, emission inventories incorporate the effects of growth and existing regulations (baseline inventories). An attainment inventory identifies the level of emissions during the period when air quality data show attainment.

The Coachella Valley PM10 Maintenance Plan presents an updated 2006 attainment inventory of direct PM10 emissions split by source subcategory. Inventory updates include the latest point and area source emission information the District used in the 2007 Air Quality Management Plan (AQMP) to demonstrate attainment for the ozone standard in the Coachella Valley; ARB EMFAC 2007 mobile source emissions; and on-road and paved road dust emission estimates based on planning assumptions in the Southern Association of Governments (SCAG) 2007 Regional Transportation Plan (2007 RTP) plus adjustments for consistency with SCAG's final 2008 RTP. In addition

to the 2006 attainment year adjusted baseline PM10 emissions, the Coachella Valley PM10 Maintenance Plan lists PM10 emissions for 2002 and 2008, plus projected emissions for 2010 through 2012 (providing a bracket for the start of the maintenance period depending upon plan approval by U.S. EPA), 2014, 2020, and 2023 (bracketing the expected 10-year maintenance period), and 2030.

2. Maintenance Demonstration

In the 2003 PM10 attainment plan, the District used a combination of chemical mass balance (CMB) receptor modeling and the linear rollback technique to demonstrate attainment. CMB is a statistical model using information on the chemical composition of ambient air samples collected at monitoring sites and information on the composition of source emissions to apportion each source's contribution to the measured ambient sample. Data collected at the Palm Springs and Indio monitoring sites during the 1989 particulate matter monitoring field study served as input to the CMB modeling. Linear rollback assumes that future PM10 levels above background concentrations will decrease in proportion to projected emission reductions. In the linear rollback for each site, CMB source categories are matched to the appropriate emission inventory categories. For these analyses the District assumed the total amount of secondary particles in Coachella Valley was the result of transport from the SCAB. The District determined the amount of PM10 transported to the Coachella from the SCAB based on the regional photochemical modeling the District had previously conducted to demonstrate attainment for the PM2.5 and PM10 standards in the SCAB as part of the 2007 AQMP. Table 2 lists the 2010 through 2012, 2014, 2020, 2023, and 2030 projected maximum 24-hour PM10 values at Indio, which demonstrate continued attainment in the Coachella Valley.

Table 2. Projected Maintenance of 24-hour PM10 NAAQS in the Coachella Valley

Year	Projected Maximum 24-hour Concentration ($\mu g/m^3$)
2010	129.7
2011	129.1
2012	129.5
2014	129.8
2020	133.7
2023	136.0
2030	142.0

The Coachella Valley is projected to maintain attainment with the PM10 standards due to ARB, District, and other State and local control measures already in place. In addition, future emissions in PM10 precursors are projected to decrease even further as a result of the implementation of controls in the 2007 AQMP for PM2.5 and ozone in the SCAB.

3. PM10 Monitoring Network

The District commits to continue PM10 monitoring to verify sustained attainment of the PM10 standards. The existing PM10 monitoring network in the Coachella Valley includes co-located FRM and real-time PM10 monitors at Indio and Palm Springs (Figure 1). Federal regulations require daily sampling at the site reporting peak PM10 concentrations. The real-time PM10 monitors meet this daily monitoring requirement.

4. Verification of Continued Attainment

To verify continued attainment of the PM10 standards, the District commits to reevaluate the Coachella Valley PM10 Plan as part of the District's comprehensive Air Quality Management Plan (AQMP) revision currently scheduled for 2011. The District also commits to submit to U.S. EPA in 2018 the required revision to the PM10 Maintenance Plan demonstrating maintenance of the standard for the following ten year period. On a regular basis, the District will analyze PM10 data from FRM and continuous monitors and compare daily PM10 values to the level of the 24-hour standard. The District commits to annually review the effectiveness of the current District dust rules.

5. Contingency Plan

The Act requires the maintenance plan to include contingency provisions for prompt correction of any PM10 standard violation that might occur after the area has been redesignated to attainment. The maintenance plan is not required to contain fully adopted contingency measures that will go into effect without further state action as is required in attainment SIPs. Instead, for maintenance plans, the area must have a plan to ensure that contingency measures are adopted once they are triggered.

Implementation of the 2007 AQMP serves as an on-going contingency measure for maintaining the PM10 standard in the Coachella Valley. Emission reductions from control measures designed to attain the PM2.5 and ozone standards in the SCAB will reduce the levels of PM2.5 transported to Coachella Valley, effectively reducing the PM10 concentrations. If nonetheless the 24-hour PM10 standard is violated, and data evaluation shows the violation is not due to a natural or exceptional event, the District will evaluate further enhancements to key existing PM10 measures to achieve necessary emission reductions as expeditiously as possible.

6. Transportation Conformity Budgets

Under section 176(c) of the Act, transportation activities that receive federal funding or approval must be found to be fully consistent with the SIP. The federal transportation

conformity regulation[2] found in 40 CFR parts 51 and 93 requires SIPs to specify on-road motor vehicle emission budgets (budgets) that are consistent with attainment and maintenance of NAAQS. To receive federal funding, transportation agencies must demonstrate that emissions from regional transportation plans, programs, and projects do not exceed these "emission budgets."

The PM10 Maintenance Plan includes the transportation conformity emission budgets (budgets) for the Coachella Valley the District updated using ARB's latest on-road mobile source emission factor model EMFAC2007 and transportation activity data from SCAG's 2007 RTP, plus adjustments for consistency with SCAG's final 2008 RTP. The budgets U.S. EPA previously approved as part the 2003 Coachella Valley PM10 Plan were based on EMFAC 2002 and SCAG's 2001 RTP.

On-road motor vehicle emission budgets for transportation conformity were established for the years 2010, 2020, and 2030. The new PM10 emission budgets are shown in Table 3. The PM10 Maintenance Plan sets the budgets in three tiers: 1) from 2010 through 2019 at 13 tons per day (tpd); 2) from 2020 through 2029 at 16 tpd; and 3) for 2030 and following years at 20 tpd.

Table 3. Transportation Emission Budgets for PM10 in the Coachella Valley, (Annual average)

Emission Budget (tons per day)	**2010**	**2020**	**2030**
PM10	13	16	20

The emission budgets established in the Coachella Valley PM10 Maintenance Plan fulfill the requirements of the Act and U.S. EPA regulations to ensure that transportation activities support attainment of the PM10 standards.

IV. STAFF RECOMMENDATION

ARB staff has reviewed the PM10 Redesignation Request and Maintenance Plan for the Coachella Valley and consulted with the District staff during this review. ARB staff finds that the Coachella Valley PM10 Maintenance Plan meets all applicable Act requirements. ARB staff believes that implementation of this plan will continue to maintain PM10 levels below the national air quality standard in the Coachella Valley. Therefore, we recommend that the Board adopt the Coachella Valley PM10 Maintenance Plan as a revision to the California SIP for submittal to U.S. EPA. In addition, ARB staff recommends that the Board approve the District's requests that the the Coachella Valley be redesignated from nonattainment to attainment for the national PM10 standard.

[2] U.S. EPA maintains online information on its transportation conformity program, including access to relevant rulemakings, policy guidance, and reports at: http://www.epa.gov/otaq/stateresources/transconf/index.htm