

Technical Support Document for 2008 Ozone NAAQS Designations

California Area Designations for the 2008 Ozone National Ambient Air Quality Standards

Technical Analysis for Mariposa County, CA

Figure 1 is a map of the Mariposa County, CA nonattainment area. The map provides other relevant information including the locations and design values of air quality monitors, county names and boundaries, and indicates EPA's nonattainment designation. Also shown is the boundary of the existing area that is designated nonattainment for the 1997 ozone NAAQS.

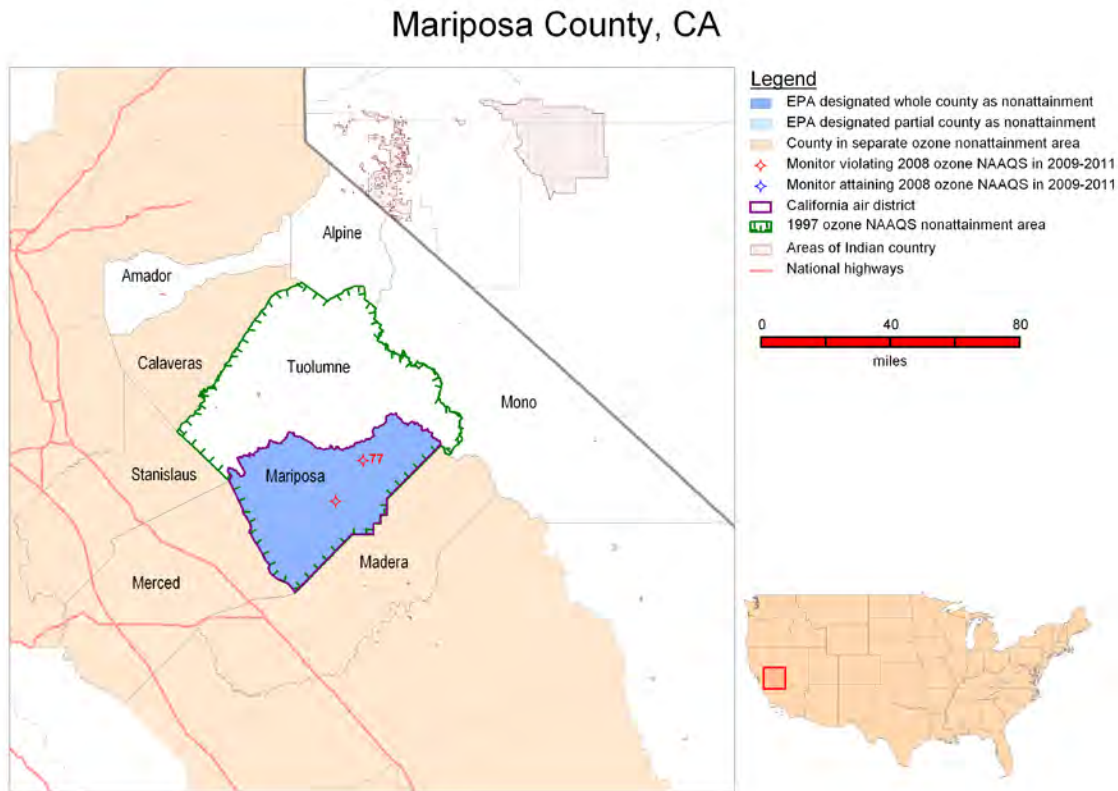


Figure 1

Note: The map shown in Figure 1 provides 8-hour ozone design values in parts per billion (ppb) based on data from the 2009-2011 period (i.e., the 2011 design value, or DV), which are the most recent years with fully-certified air quality data. For each particular area, Factor 1 and Appendix 3 describe the air quality data relevant for our nonattainment decisions.

The Southern Mountain Counties nonattainment area was designated nonattainment for the 1997 ozone NAAQS in 2004. Although these counties were designated as a separate nonattainment area for the 1997 ozone NAAQS, EPA believed, as we still believe, that the strongest contribution to the violations in the mountain counties comes from the San Joaquin Valley. However, for the 1997 ozone NAAQS, the state requested grouping Mariposa and Tuolumne counties as one nonattainment area, separate from

the San Joaquin Valley areas, citing existing inter-county coordination, similarities in pollution transport paths, and support from the other factors analyzed. EPA accepted the state’s recommendations and in 2004 designated Mariposa and Tuolumne counties as one multi-jurisdictional nonattainment area (Southern Mountain Counties).

In March 2009, California recommended that the Mariposa and Tuolumne counties be designated as a nonattainment area for the 2008 ozone NAAQS based on air quality data from 2006-2008. (Letter from James Goldstene, Executive Officer, California Air Resources Board, to Laura Yoshii, Acting Regional Administrator, U.S. EPA Region IX, dated March 11, 2009.) California provided an update to the original recommendation in October 2011 based on air quality data from 2008-2010 and preliminary 2009-2011 data and indicating to EPA that it intended to early-certify data for 2011 so that it could be used for the final designations. Based on preliminary 2011 air quality data, California revised its recommendation for the existing Southern Mountain Counties nonattainment area to include only Mariposa County and to exclude Tuolumne County. The 2009 and 2011 recommendations are based on data from Federal Equivalent Method (FEM) monitors sited and operated in accordance with 40 CFR Part 58 (Letter from Lynn Terry, Deputy Executive Officer, California Air Resources Board, to Deborah Jordan, Director, U.S. EPA Region IX Air Division, dated October 12, 2011).

In December 2011, EPA sent California a letter conveying our preliminary intention to designate Mariposa and Tuolumne counties as the Southern Mountain Counties nonattainment area for the 2008 ozone NAAQS and informing California that it would need to submit certified, quality-assured data to EPA by February 29, 2012 in order for EPA to consider 2011 data in our final decisions. The letter also conveyed that the state should further provide a multi-factor analysis justifying the exclusion of Tuolumne County from the designated nonattainment area for the 2008 ozone NAAQS if it continued to support that recommendation. (Letter from Jared Blumenfeld, Regional Administrator, U.S. EPA Region IX, to Edmund G. Brown, Jr., Governor of California, dated December 9, 2011.) EPA received certified, quality-assured 2011 data before February 29, 2012 for Mariposa and Tuolumne counties, as well as a multi-factor analysis justifying the exclusion of Tuolumne County from the designated nonattainment area for the 2008 ozone NAAQS. (Letter from James Goldstene, Executive Officer, California Air Resources Board, to Jared Blumenfeld, Regional Administrator, Region IX, U.S. EPA, dated February 23, 2012.) Because of the State’s timely submittal of the certified air quality data, we are basing our final designation decision on 2009-2011 data for these counties.

After considering the State’s recommendations and based on EPA's technical analysis described below, EPA is designating Mariposa County (identified in Table 1 below) as “nonattainment” for the 2008 ozone NAAQS as the Mariposa County nonattainment area and Tuolumne County as “unclassifiable/attainment”.

Table 1. State’s Recommended and EPA’s 2008 Ozone NAAQS Nonattainment Counties or Areas of Indian Country for Mariposa County.

Southern Mountain Counties	State or Tribe-Recommended Nonattainment Counties or Areas of Indian country	EPA’s Designated Nonattainment Counties or Areas of Indian Country
Mariposa County, CA	Mariposa County	Mariposa County
No areas of Indian country in the nonattainment area		

Factor Assessment

Factor 1: Air Quality Data

For this factor, we considered 8-hour ozone design values for air quality monitors in the existing Southern Mountain Counties nonattainment area, based on data from the most recent three-year period for which we had timely submitted certified air quality data. For Mariposa and Tuolumne counties, the state of California submitted certified air quality data for 2011 before February 29, 2012; thus, for purposes of the final designations, we are considering air quality data from the 2009-2011 period (i.e., the 2011 DV). A monitor's DV is the metric or statistic that indicates whether that monitor attains a specified air quality standard. The 2008 ozone NAAQS are met at a monitor when the annual fourth-highest daily maximum 8-hour average concentration, averaged over 3 years, is 0.075 parts per million (ppm) (75 parts per billion (ppb)) or less. A DV is only valid if minimum data completeness criteria are met. See 40 CFR part 50 Appendix P. Where several monitors are located in a county (or a designated nonattainment area or maintenance area), the DV for the county or area is determined by the monitor with the highest level.

[Note: Monitors that are eligible for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) that are sited in accordance with 40 CFR Part 58, Appendix D (Section 4.1) and operating with a federal reference method (FRM) or federal equivalent method (FEM) monitor that meets the requirements of 40 CFR part 58, Appendix A. All data from a special purpose monitor (SPM) using an FRM or FEM which has operated for more than 24 months is eligible for comparison to the NAAQS unless the monitoring agency demonstrates that the data came from a particular period during which the requirements of Appendix A (quality assurance requirements) or Appendix E (probe and monitoring path siting criteria) were not met.]

Certified, quality assured data are available in EPA's Air Quality System (AQS) for all areas through calendar year 2010. California's ozone season encompasses the entire year, but some ozone monitors in the existing Southern Mountain Counties nonattainment area have been approved to operate on a seasonal schedule per 40 CFR part 58, Appendix D, section 4.1(i). Preliminary, non-certified data from calendar year 2011 is available in AQS for most areas. States are required to certify and quality assure data by May 1st of the following year. California Air Resources Board (ARB) certified 2011 data by February 29, 2012 for Tuolumne and Mariposa counties. EPA's designation for this area is therefore based on 2009-2011 data. As shown in Table 2, air quality data from 2009-2011 data indicate that Tuolumne County is attaining the 2008 NAAQS (DV is 74 ppb) and Mariposa County is violating the 2008 ozone NAAQS (DV is 76 ppb). Tuolumne County's 2010 DV was 82 ppb and Mariposa County's 2010 DV was 80 ppb. Ozone monitors relevant for comparison to the NAAQS and information from additional data sources within the existing Southern Mountain Counties nonattainment area are shown in Appendix 1.

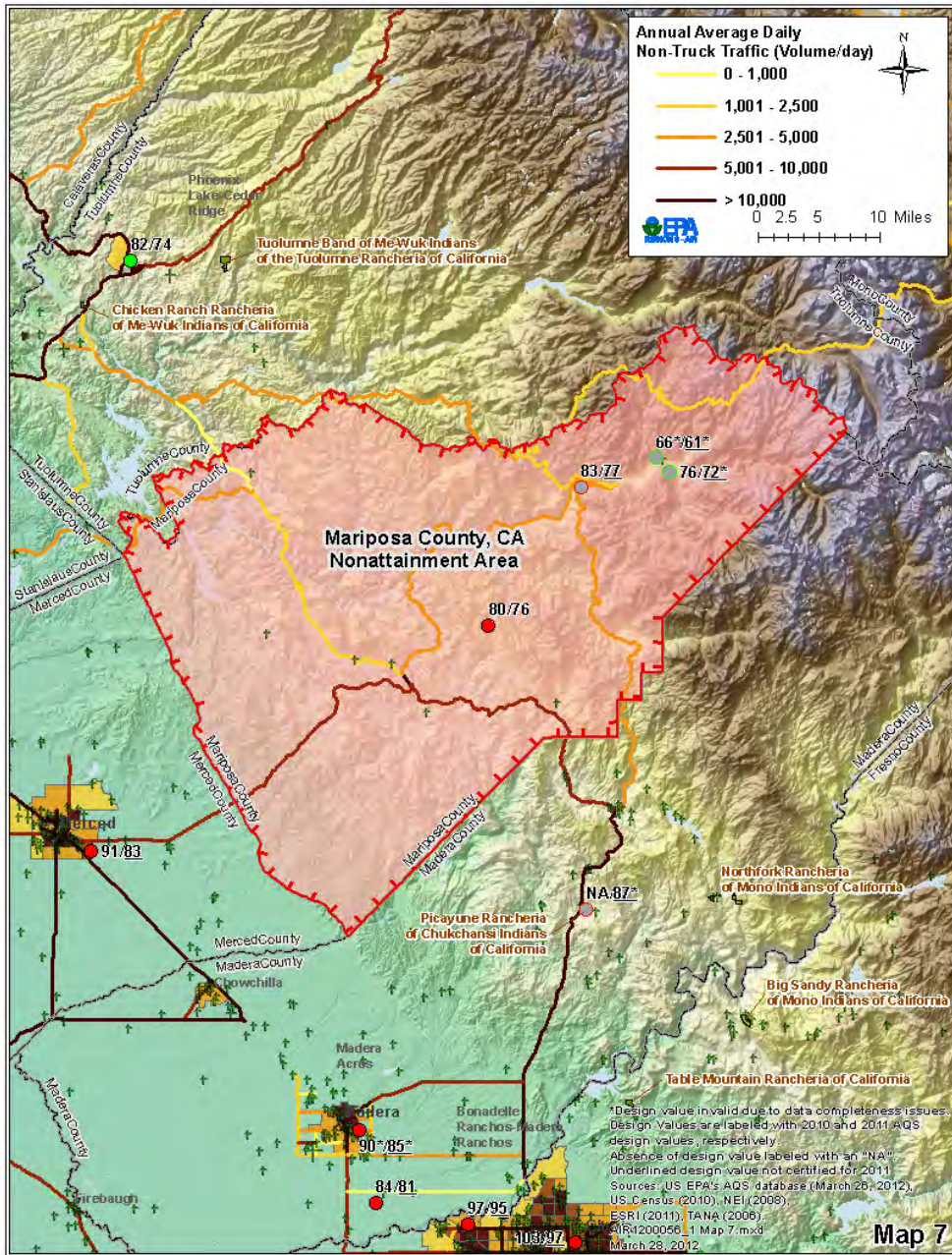
Table 2. Air Quality Data.

County	State Recommended Nonattainment?	2009-2011 Design Value (ppb)
Mariposa, CA	Yes	76
Tuolumne, CA	No	74

Maps contained in Appendix 1 show the geographic distribution of monitors. Maps 7 and 7b show monitor locations for Tuolumne and Mariposa counties. For each monitor, Appendix 1 lists the monitor, the 2008-2010 DV (certified and quality assured in AQS. These were the most recent data available at the time we notified the State of our intended designations) and the 2009-2011 DV (which has been certified and which we are relying on for our final designation decisions for this area). Absence of a DV is symbolized with an “x”. Design Values in grey typeface indicate secondary data sources.

Appendix 3 lists 2009-2011 DVs for Mariposa and Tuolumne counties. Monitors shown in bold are the DV monitors (i.e., the monitor with the highest DV) for each individual county. Monitors shown in red font are the DV monitor for the nonattainment area. Values with an asterisk do not meet data completeness, and therefore those DVs are not relevant for comparison to the NAAQS and are solely provided for informational purposes.

Based on 2009-2011 data, monitors in Mariposa County show that the area is violating the 2008 standard while the monitor in Tuolumne County is attaining. A county (or partial county) must also be designated nonattainment if it contributes to a violation in a nearby area. Each county without a violating monitor that is located near a county with a violating monitor has been evaluated based on the weight of evidence of the five factors to determine whether it contributes to the nearby violation. The sparse monitoring network in these two topographically-complex counties makes it difficult to determine solely from air quality data whether Tuolumne County is contributing to ozone levels in Mariposa County. EPA notes that portions of both counties are in the Sierra Nevada Mountain Range and ozone concentrations often increase with elevation. Therefore, the observed difference in ozone concentrations may be due in part to the fact that the monitor in Tuolumne County is at a vastly lower elevation than the two monitors with complete data in Mariposa County (571 meters versus 1,135 and 1,605 meters, respectively).



From Appendix 1, Map 7: For map legend describing monitors, emissions, traffic, population, and boundaries, see Appendix 1.

Factor 2: Emissions and Emissions-Related Data

EPA evaluated emissions of ozone precursors, nitrogen oxides (NO_x) and volatile organic compounds (VOC), and other emissions-related data that provide information on areas contributing to violating monitors.

Emissions data

EPA evaluated county-level emission data for NO_x and VOC derived from the 2008 National Emissions Inventory (NEI), version 1.5. This is the most recently available NEI. (See <http://www.epa.gov/ttn/chief/net/2008inventory.html>) Table 3 shows emissions of NO_x and VOC (given in tons per year) for violating and nearby counties that we considered for inclusion in the Mariposa County nonattainment area.

Table 3. Total 2008 NO_x and VOC Emissions.

County	State Recommended Nonattainment?	NO _x (tpy)	VOC (tpy)
Mariposa, CA	Yes	675	2,140
Tuolumne, CA	No	3,013	5,400
Areawide:		3,688	7,540

Both NO_x and VOC are precursors to formation of ozone in ambient air. Most of the stationary sources of ozone precursors in the existing 1997 8-hour ozone Southern Mountain Counties nonattainment area are located in Tuolumne County (see Map 7 in Appendix 1). Additionally, Tuolumne County contributes nearly 4.5 times more NO_x and 2.5 times more VOC emissions than Mariposa County. However, emissions of ozone precursors in the neighboring counties in the San Joaquin Valley bordering Tuolumne and Mariposa counties (Stanislaus, Merced, and Madera Counties) are significantly greater than emissions from Tuolumne and Mariposa Counties. In comparison, emissions of NO_x and VOC in Stanislaus County in 2008 were approximately 17,000 tpy of NO_x and more than 15,000 tpy of VOC; in Merced County emissions were approximately 18,000 tpy of NO_x and more than 10,000 tpy of VOC; and emissions in Madera County were more than 10,000 tpy of NO_x and 6,000 tpy of VOC.

Population density and degree of urbanization

EPA evaluated the population and vehicle use characteristics and trends of the area as indicators of the probable location and magnitude of non-point source emissions. These include ozone-creating emissions from on-road and off-road vehicles and engines, consumer products, residential fuel combustion, and consumer services. Areas of dense population or commercial development are an indicator of area source and mobile source NO_x and VOC emissions, which contribute to ozone formation. Rapid population growth or growth in vehicle miles traveled (VMT) (see below) in a county on the urban perimeter signifies increasing integration with the core urban area, and indicates that it may be appropriate to include the area associated with area source and mobile source emissions as part of the nonattainment area. Table 4 shows the population, population density, and population growth information for each county in the area.

Table 4. Population and Growth.

County	State Recommended Nonattainment?	2010 Population	2010 Population Density (1000 pop/sq mi)	Absolute change in population (2000-2010)	Population % change (2000-2010)
Mariposa, CA	Yes	18,251	0.01	1,107	+6%
Tuolumne, CA	No	55,365	0.02	714	+1%
Areawide:		73,616	0.02	1,821	+3%

Sources: U.S. Census Bureau population estimates for 2010 as of August 4, 2011 (http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_PL_GCTPL2.STO5&prodType=table)

Maps 7 and 7a in Appendices 1 and 2, respectively, show population for the area. Mariposa and Tuolumne counties are both sparsely populated, but the total 2010 population of Tuolumne County is three times larger than the population of Mariposa County. Both counties have very low population density. As shown in Map 7a in Appendix 2, Tuolumne County contains a population center in the western portion of the county, whereas Mariposa County contains no discrete population centers. For ozone, population is an indicator of ozone precursor emissions. During the period from 2000 to 2010, both counties showed population growth, however, absolute change and percent changes in population in Mariposa County was larger than Tuolumne County.

Traffic (VMT) data

EPA evaluated the total VMT for each county in the area. In combination with the population/population density data and the location of main transportation arteries (see above), this information helps identify the probable location of non-point source emissions. A county with high VMT is generally an integral part of an urban area and indicates the presence of motor vehicle emissions that may contribute to ozone formation and nonattainment in the area. Rapid population or VMT growth in a county on the urban perimeter signifies increasing integration with the core urban area, and indicates that the associated area source and mobile source emissions may be appropriate to include in the nonattainment area. Table 5 shows total 2008 VMT for counties within the area.

Table 5. Traffic (VMT) Data

County	State Recommended Nonattainment?	2008 VMT* (million miles)
Mariposa, CA	Yes	290
Tuolumne, CA	No	777
Areawide:		1,068

*MOBILE model VMTs are those inputs into the NEI version 1.5.

In 2008, VMT in Tuolumne County was nearly three times higher than in Mariposa County, but was approximately two to five times lower than VMT in the neighboring counties of Madera, Merced, and Stanislaus, located within the San Joaquin Valley nonattainment area. Maps 7 and 7b in Appendix 1 show annual average daily non-truck and truck traffic volumes. Highest truck traffic volume in the existing Southern Mountain Counties nonattainment area generally occurred in Tuolumne County, on roads linking the Tuolumne population center, in the western portion of the county, with Stanislaus County to the west and Calaveras County to the northwest. Heaviest non-truck traffic also occurs in Tuolumne County on the same roadways as the heavy truck traffic, but also occurs on the roadway that runs through Tuolumne County to the north-northeast. Relatively heavy non-truck traffic also occurs in the southern portion of Mariposa County, between Merced County to the west and Madera County to the southeast.

Factor 3: Meteorology (weather/transport patterns)

EPA evaluated available meteorological data to help determine how meteorological conditions, such as weather, transport patterns and stagnation, would affect the fate and transport of precursor emissions contributing to ozone formation.

Mariposa and Tuolumne counties are the southernmost counties in the “Mountain Counties Air Basin” as defined by ARB¹. Summers are generally fairly warm and dry, but there can be periods of quite cool weather. Depending on the meteorological station, in summer months, normal low temperatures range from 43 to 55 degrees Fahrenheit (6 to 13 degrees Celsius), and normal highs range from 62 to 94 degrees Fahrenheit (17 to 34 degrees Celsius). Winds are generally daytime upslope and nighttime downslope flows, caused by the differential heating or cooling of air near mountain ground surfaces relative to air at the same height over land at lower elevations. These flows generally follow the east-northeast and west-southwest orientation of the river valleys, described in Factor 4. This is generally consistent with the west-northwest to south-southwest flow in Mariposa and Tuolumne counties seen in the 30-year average direction frequencies computed by EPA, as shown in the “radar”-style wind rose diagram below (Figure 2). However, it should be noted that this diagram combines flows from multiple meteorological stations, from parts of the counties that do not have the same valley orientation.

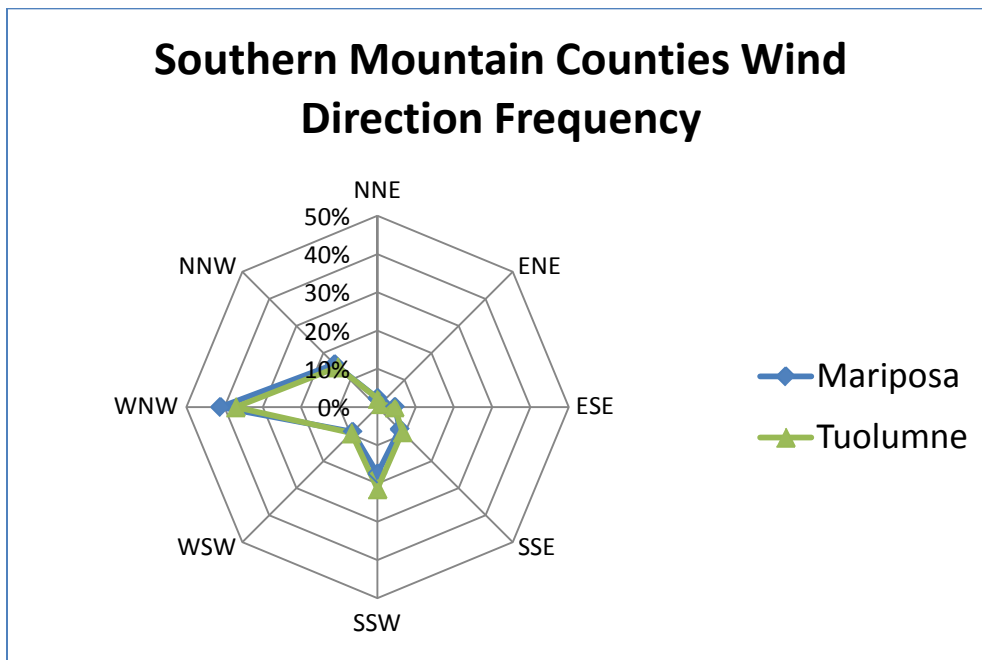


Figure 2

Neighboring San Joaquin Valley can have temperature inversions from 2,000 to 2,500 feet (600 to 750 meters) above the valley floor, or even as high as 5,000 feet (1,500 meters). Ozone produced in the San Joaquin Valley and trapped under this inversion can reach fairly high into the mountain counties, or be advected there by daytime upslope flows. Previous assessments of transport by ARB² have found a strong potential for ozone transport from the Sacramento and San Joaquin valleys up into the mountain counties. Nighttime drainage flows reverse this, so some of this pollution, in combination with pollution generated in the mountain counties themselves, could be transported back into the valley, with the potential for some carryover into subsequent days. EPA is designating both the Sacramento Metro area and San Joaquin Valley as their own nonattainment areas for the 2008 ozone NAAQS.

¹ <http://www.arb.ca.gov/ei/maps/statemap/abmap.htm>

² “Assessment of the Impacts of Transported Pollutants on Ozone Concentrations in California”. California Environmental Protection Agency, Air Resources Board, March 2001. <http://www.arb.ca.gov/aqd/transport/assessments/assessments.htm>

North-south flow between Tuolumne and Mariposa counties is possible as there are fewer barriers to this transport pattern due to the weaker topographic relief in the western portion of both counties. There is likely some transport of pollutants between the two counties, as well as transport from the Sacramento Metro and San Joaquin nonattainment areas. Additionally, EPA notes that 2011 was anomalously cool, potentially creating localized ozone patterns that are not representative of expected normal conditions or ongoing trends.

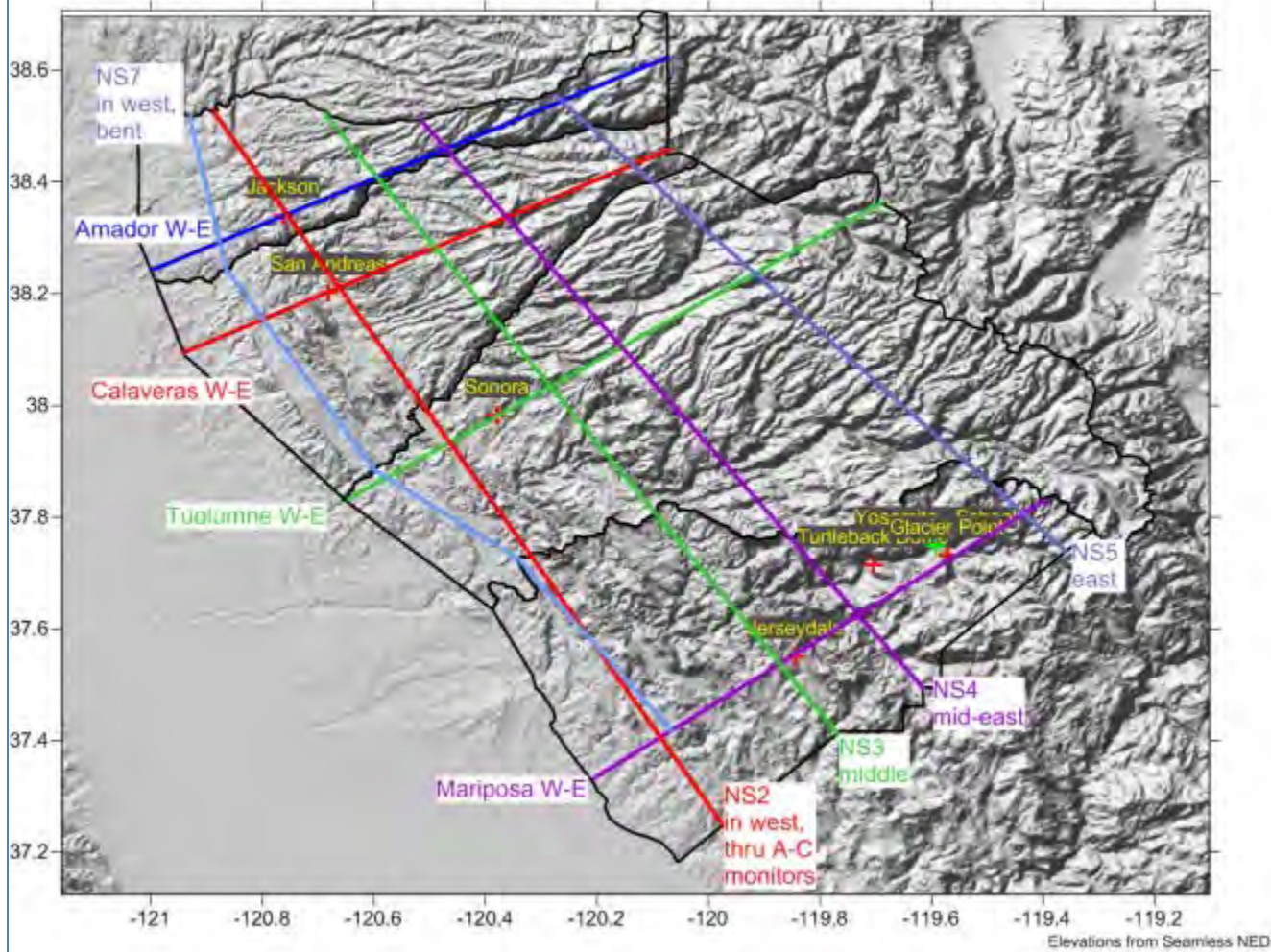
Factor 4: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis evaluates the physical features of the land that might affect the airshed and, therefore, the distribution of ozone over the area.

Mariposa and Tuolumne counties are the southernmost counties of the “Mountain Counties Air Basin” as defined by ARB. This is not a “basin” in the sense of a single watershed or an area that is more or less surrounded by high terrain. Rather, they are a group of rural and largely mountainous counties that are similar in their better air quality, more pronounced topography, and rural character as compared to the more polluted, flatter, and more populous areas to the west (i.e., the broad Sacramento and San Joaquin valleys of central California). Both counties are in the foothills and mountains of the Sierra Nevada mountain range. Elevations increase from about 200 feet (67 meters) above mean sea level (MSL) in the west to over 12,000 feet (3,500 meters) in the east. The counties are characterized by river valleys running roughly east-northeast to west-southwest, separated by mountains. The largest rivers are the Stanislaus River along the Tuolumne northern border, the Tuolumne River within Tuolumne County, and the Merced River, Bear Creek, and Mariposa Creek within Mariposa County. These rivers and their various forks and tributaries divide the counties into deep valleys. The strong relief of the terrain may be seen in Appendix 1, Map 7.

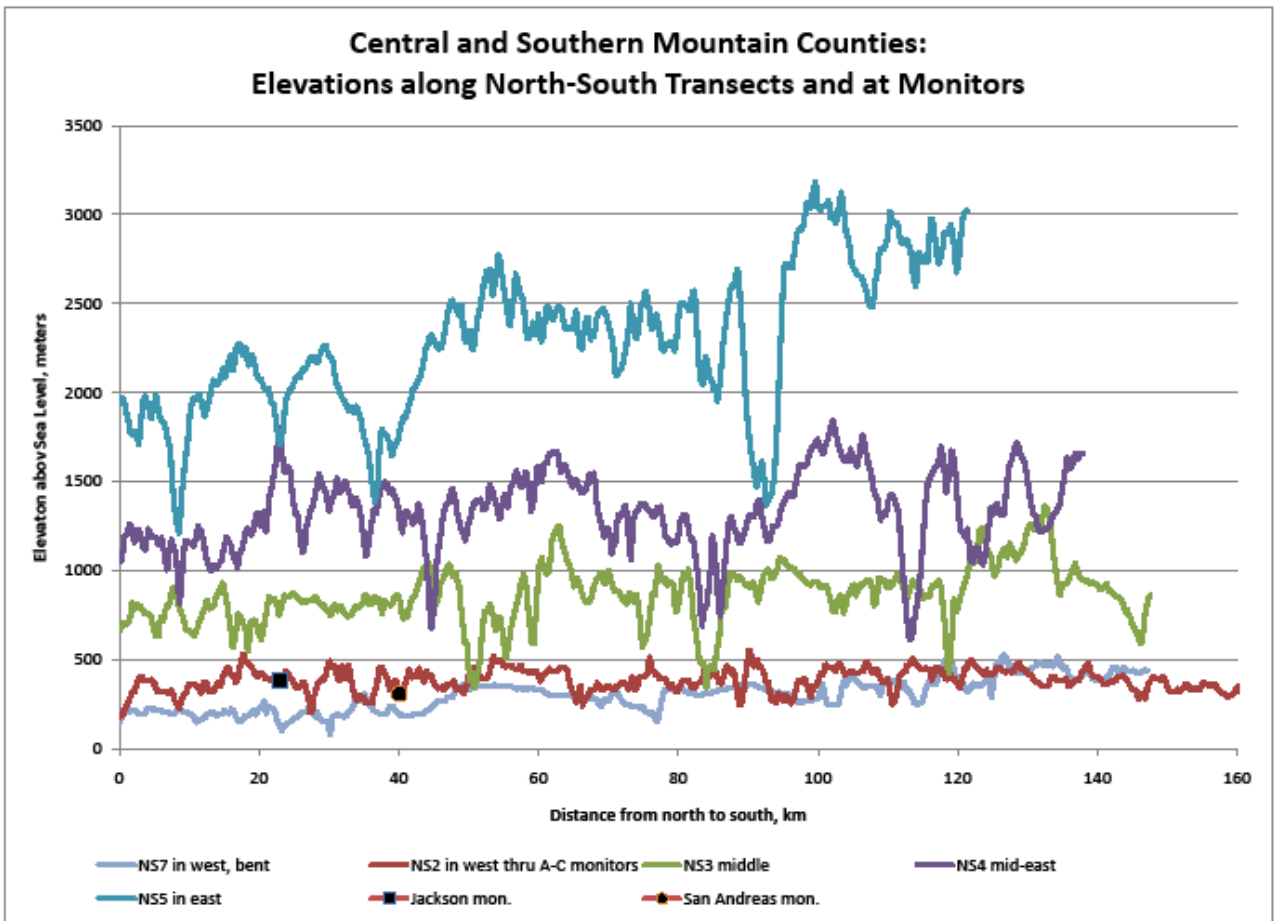
The eastern and western portions of the counties are different. The variation of elevation along a 20 kilometer (km) north-south transect is 500 meters (m) and more in the east, decreasing to about 100 - 200 m in the west. In the west, there are even some valleys with relatively low ridges oriented northwest-southeast, roughly perpendicular to the orientation of the valleys in the east. Thus, in the eastern portion, the mountains separating the valleys pose a strong barrier to south-north air flow, but in the western portion the topography is a much weaker barrier to the south-north transport of air, and thus to transport of pollution between the two counties (see Figures 3 - 5).

Central and Southern Mountain Counties North-South and West-East Transects and O3 Monitors

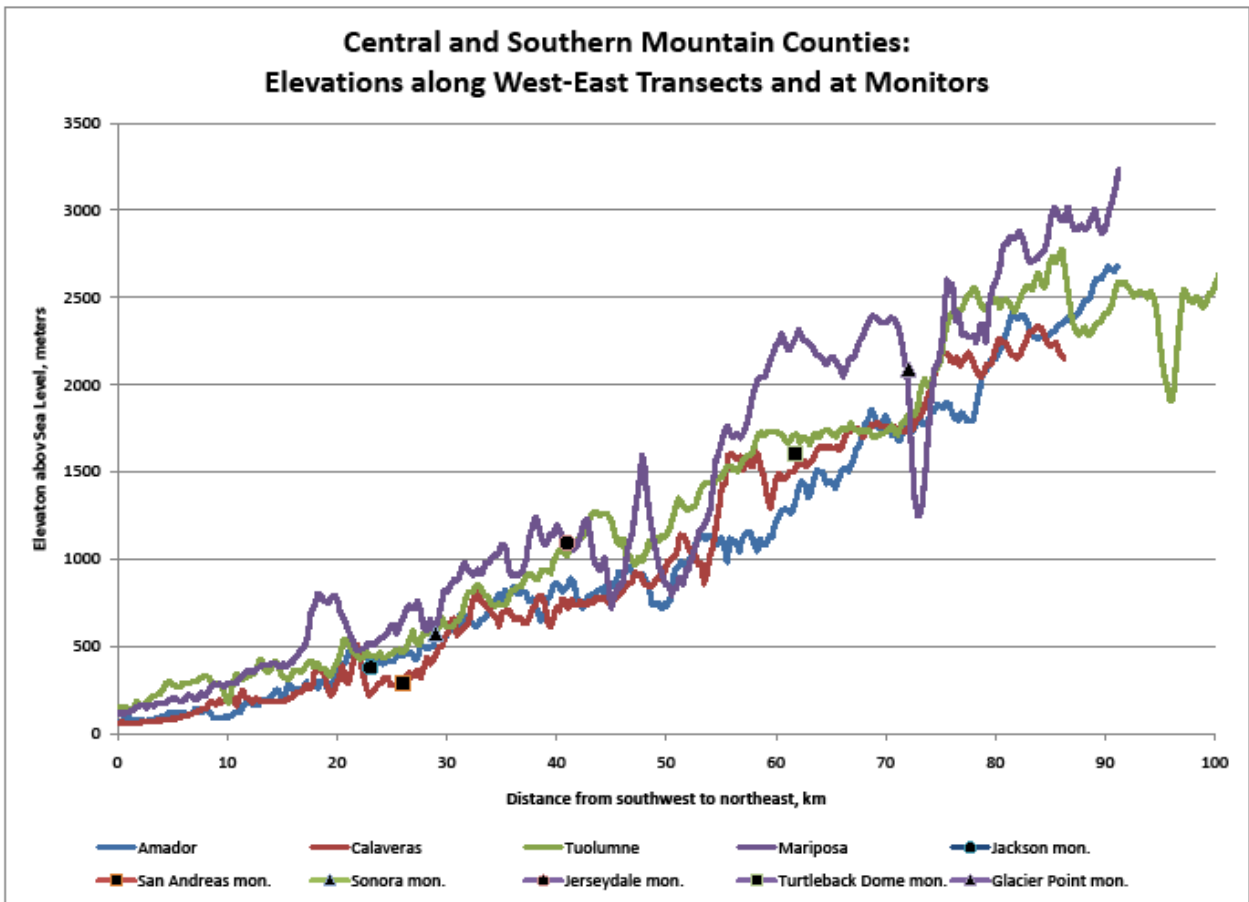


2011 DVs: Jackson-Clinton Road (Amador County): 71; San Andreas-Gold Strike Road (Calaveras County): 77; Sonora-Barretta Street (Tuolumne County): 74; Jerseydale (Mariposa County): 76; Yosemite National Park-Turtleback Dome (Mariposa County, CASTNET monitor): 77; Yosemite National Park-Glacier Point (Mariposa County, National Park Service monitor/non-regulatory): 72*. * = DV does not meet data completeness requirements.

Figure 3



*2011 DVs: Jackson-Clinton Road (Amador County): 71; San Andreas-Gold Strike Road (Calaveras County): 77.
Figure 4



* 2011 DVs: Jackson-Clinton Road (Amador County): 71; San Andreas-Gold Strike Road (Calaveras County): 77; Sonora-Barretta Street (Tuolumne County): 74*; Jerseydale (Mariposa County): 76; Yosemite National Park-Turtleback Dome (Mariposa County, CASTNET monitor): 77; Yosemite National Park-Glacier Point (Mariposa County, National Park Service monitor/non-regulatory): 72*. * = DV does not meet data completeness requirements.

Figure 5

Air flow in the west-east direction is relatively unimpeded along the river valleys, which extend well east into the interior of the counties. Eastward transport of pollutants from the more urbanized areas to the west is thus possible during conditions of upslope flow. Conversely, westward transport of locally generated pollution is possible.

Factor 5: Jurisdictional boundaries

For each potential nonattainment area, we considered existing jurisdictional boundaries to provide a clearly defined legal boundary and to help identify the areas appropriate for carrying out the air quality planning and enforcement functions for nonattainment areas. Examples of jurisdictional boundaries include existing/prior nonattainment area boundaries for ozone or other urban-scale pollutants, county lines, air district boundaries, township boundaries, areas covered by a metropolitan planning organization, state lines, areas of Indian country, and the urban growth boundary. Where existing

jurisdictional boundaries were not adequate or appropriate to describe the nonattainment area, other clearly defined and permanent landmarks or geographic coordinates were considered.

The Southern Mountain Counties nonattainment area has previously established boundaries associated with the 1997 8-hour ozone NAAQS. In December 2003, EPA indicated its intent to designate these counties, along with two other violating mountain counties (Amador and Calaveras), as part of the San Joaquin Valley nonattainment area. EPA believed, as we still believe, that the strongest contribution to the violations in the mountain counties comes from the San Joaquin Valley. However, for the 1997 8-hour ozone standard, the state requested grouping Mariposa and Tuolumne counties as one nonattainment area, citing existing inter-county coordination, similarities in pollution transport paths, and support from the other factors analyzed. EPA accepted the state's recommendations and in 2004 designated Mariposa and Tuolumne counties as one multi-jurisdictional nonattainment area (Southern Mountain Counties). In 2009, the state recommended the same nonattainment area for the 2008 ozone standard. Both counties had violating monitors at the time. Now that certified and quality-assured 2011 data indicate that Tuolumne County is attaining the 2008 ozone NAAQS based on its 2009-2011 DV, the state is requesting that we only designate Mariposa County as nonattainment. This recommendation follows the county and air district boundaries, but deviates from the existing Southern Mountain Counties nonattainment area boundary, by excluding Tuolumne County.

Tuolumne County represents the Phoenix Lake-Cedar Ridge micropolitan Core Based Statistical Area (CBSA)³. This CBSA is not part of a larger Combined Statistical Area (CSA). Mariposa County is not included as part of the Phoenix Lake-Cedar Ridge CBSA, nor is it defined as its own CBSA or CSA. The Mariposa County boundary is also the boundary for the jurisdiction of the Mariposa County Air Pollution Control District. Likewise, the Tuolumne County boundary is the jurisdictional boundary for the Tuolumne County Air Pollution Control District. ARB's February 23, 2012 letter includes an attachment providing the state's justification for excluding Tuolumne County from the nonattainment area under consideration. (See ARB's "Enclosure 1, Information to Support Area Designation Boundary Recommendations for the 2008 Federal 8-Hour Ozone Standard: Amador, Calaveras, Tuolumne, and Mariposa Counties.) The state's justification with respect to jurisdictional boundaries is that, although both Mariposa and Tuolumne counties are in the Mountain Counties Air Basin, as defined by the state, each county has its own air agency:

"Air quality in each county is managed at the local level through land use and development planning practices, and the local APCD [Air Pollution Control District] is responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and State air quality laws. With respect to nonattainment planning, it is most efficient to have the nonattainment boundary coincide with the jurisdictional boundary of the area(s) that experience or contribute to violations of the standard." (Enclosure 1, page E1-12)

Attainment in the Mariposa County nonattainment area will be affected by reductions in nearby nonattainment areas, including the San Joaquin Valley. The San Joaquin Valley APCD will be making emission reductions to achieve attainment with the 2008 ozone NAAQS in the valley. As part of

³ The Office of Management and Budget (OMB) defines metropolitan (metro) and micropolitan (micro) statistical areas based on census information. A metro statistical area contains a core urban area of 50,000 or more in population, and a micro statistical area contains an urban core of at least 10,000 but less than 50,000 in population. A Core Based Statistical Area (CBSA) is a collective term for both metro and micro areas. OMB may further define a combined statistical area (CSA) as an aggregate of adjacent metro or micro statistical areas that are linked by commuting ties.

nonattainment area planning throughout the state, ARB has and will continue to make reductions to mobile source and consumer product emissions. Air quality planning for Mariposa County will be performed by the Mariposa County APCD.

Conclusion

Based on the assessment of factors described above, EPA has concluded that Mariposa County should be included in the Mariposa County, CA nonattainment area because it is violating the 2008 ozone NAAQS.

The Clean Air Act requires EPA to designate any area as nonattainment if it violates a NAAQS or if it contributes to a violation in a nearby area. Certified air quality data (Factor 1) for 2009-2011 indicate that the monitor in Mariposa County violates the 2008 8-hour ozone standard. The monitor in Tuolumne County indicates that Tuolumne County is attaining the 2008 ozone standard based on 2011 data.

Emissions and emission-related data (Factor 2) show that although most of the stationary sources of ozone precursor emissions are located in Tuolumne County, VOC emissions from three neighboring counties (Madera, Merced, and Stanislaus counties) that are located upwind of Tuolumne and Mariposa counties in the San Joaquin Valley nonattainment area are nearly six times higher than VOC emissions from Tuolumne County, and NO_x emissions from the three upwind neighboring counties are fifteen times higher than NO_x emissions from Tuolumne County. Mariposa and Tuolumne counties are both sparsely populated. Highest truck and non-truck traffic volumes generally occur in Tuolumne County, and although VMT in this county is also nearly three times higher than VMT in Mariposa County, it is approximately two to five times lower than VMT compared to Madera, Merced, and Stanislaus counties. Total emissions of ozone precursors from Mariposa and Tuolumne counties are very small compared to ozone precursor emissions from the counties in the San Joaquin Valley nonattainment area.

Meteorology and weather or transport patterns (Factor 3) show that the dominant wind direction, from the west-northwest, is indicative of transport from the San Joaquin Valley nonattainment area, but there may be some transport of pollutants between Tuolumne and Mariposa counties. EPA notes that 2011 was anomalously cool, potentially creating localized ozone patterns that are not representative of expected normal conditions or ongoing trends.

Geography and topography (Factor 4) shows that Tuolumne and Mariposa counties contain complex terrain. As discussed in Factor 1, EPA notes that portions of both counties are in the Sierra Nevada Mountain Range and ozone concentrations often increase with elevation. Therefore, the observed difference in ozone concentrations may be due in part to the fact that the monitor in Tuolumne County is at a lower elevation than the two monitors with complete data in Mariposa County (571 meters versus 1,135 meters and 1,605 meters). Air flow in the west-east direction is relatively unimpeded along the river valleys, which extend well east into the interior of each county. Eastward transport of pollutants from the more urbanized areas to the west is thus possible during conditions of upslope flow. Conversely, westward transport of locally generated pollution is possible.

In considering jurisdictional boundaries (Factor 5), EPA notes that Mariposa and Tuolumne counties were designated as the Southern Mountain Counties nonattainment area for the 1997 ozone NAAQS in 2004. Now that certified and quality-assured 2011 data indicate that Tuolumne is attaining the NAAQS,

the state is requesting that we designate only Mariposa County as nonattainment and Tuolumne County as attainment. The state's multi-factor analysis highlights that Mariposa and Tuolumne counties are separate air pollution control districts with separate jurisdictional boards and authorities.

The Clean Air Act requires EPA to designate any area as nonattainment if it violates a NAAQS or contributes to a violation in a nearby area. The violating monitor is in Mariposa County. Our analysis of the Meteorology and Geography factors suggest that occasional transport of ozone and/or ozone precursors between Mariposa and Tuolumne counties is possible. However, EPA cannot conclusively determine that Tuolumne County contributes to nonattainment in Mariposa County. The relatively low ozone precursor emissions from both counties compared to the counties in the San Joaquin Valley nonattainment area, along with region's meteorology and geography suggests that the violations in Mariposa are attributable primarily to contributions from the broader valley area. Also, Mariposa County is a separate jurisdictional air pollution district. Therefore, EPA is concluding that it is appropriate to designate only Mariposa County, CA as nonattainment for the 2008 ozone NAAQS. The San Joaquin Valley is separately designated nonattainment.