

Technical Support Document for 2008 Ozone NAAQS Designations

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

Technical Analysis for Imperial County

Figure 1 is a map of the Imperial 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 for Imperial County. Also shown is the boundary of the existing area that is designated nonattainment for the 1997 ozone NAAQS.

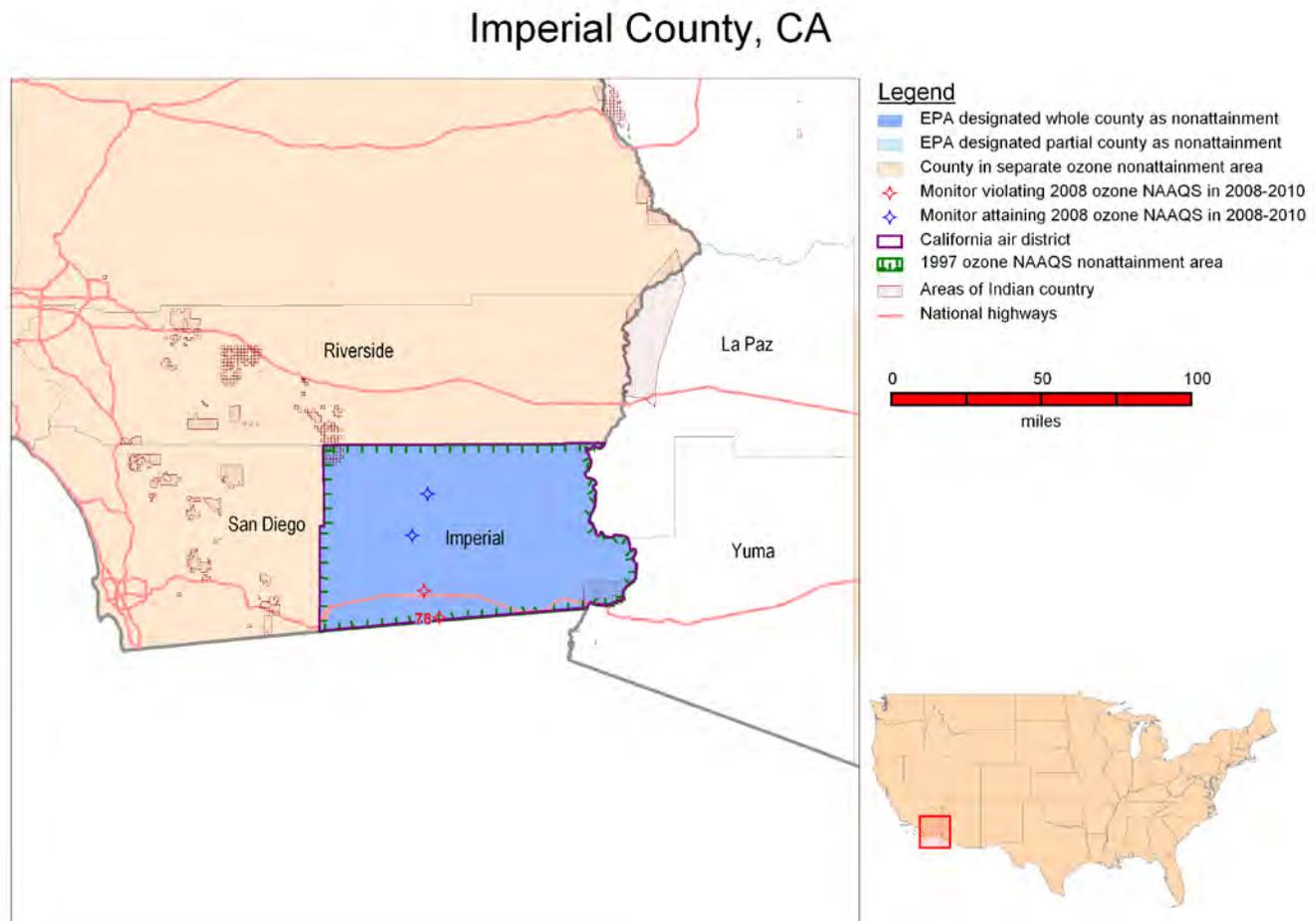


Figure 1

For purposes of the 1997 8-hour ozone NAAQS, this area was designated nonattainment. The boundary for the nonattainment area for the 1997 ozone NAAQS included the entirety of Imperial County. Several areas of Indian country of federally recognized tribes were included in the nonattainment area. These are the same tribes that are listed in Table 1, below.

In March 2009, California recommended that the same county be designated as “nonattainment” 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, but did not revise its recommendation for Imperial County. These 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).

After considering these recommendations and based on EPA's technical analysis described below, EPA is designating Imperial County in California and all the areas of Indian country in Imperial County (identified in Table 1 below) as “nonattainment” for the 2008 ozone NAAQS as part of the Imperial County multi-jurisdictional nonattainment area.

Table 1. State’s or Tribe’s Recommended and EPA’s 2008 ozone NAAQS Nonattainment Counties or Areas of Indian country for Imperial County.

Imperial County	State or Tribe-Recommended Nonattainment Counties or Areas of Indian country	EPA’s Nonattainment Counties or Areas of Indian country
Imperial County, CA	Imperial County	Imperial County
Quechan Tribe of the Fort Yuma Indian Reservation ¹	N/A	Quechan Tribe of the Fort Yuma Indian Reservation (p)
Torres Martinez Desert Cahuilla Indians ²	N/A	Torres Martinez Desert Cahuilla Indians

p = partial

N/A = Tribe did not submit recommendation.

¹ The Quechan Tribe of the Fort Yuma Indian Reservation (Quechan) has lands in both the Imperial County nonattainment area and Yuma County, Arizona. Non-contiguous lands of Quechan are being designated with the surrounding areas. This technical analysis addresses only those areas of Indian country within the Imperial County nonattainment area.

² The Torres Martinez Desert Cahuilla Indians (Torres Martinez) have lands in both the Imperial County nonattainment area and the Riverside County (Coachella Valley) nonattainment area. Non-contiguous lands of Torres Martinez are being designated with the surrounding areas. This technical analysis addresses only those areas of Indian country within the Imperial County 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 Imperial County nonattainment area, based on data from the 2008-2010 (i.e., the 2010 design value, or DV), which are the most recent years with fully-certified air quality data. 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.]

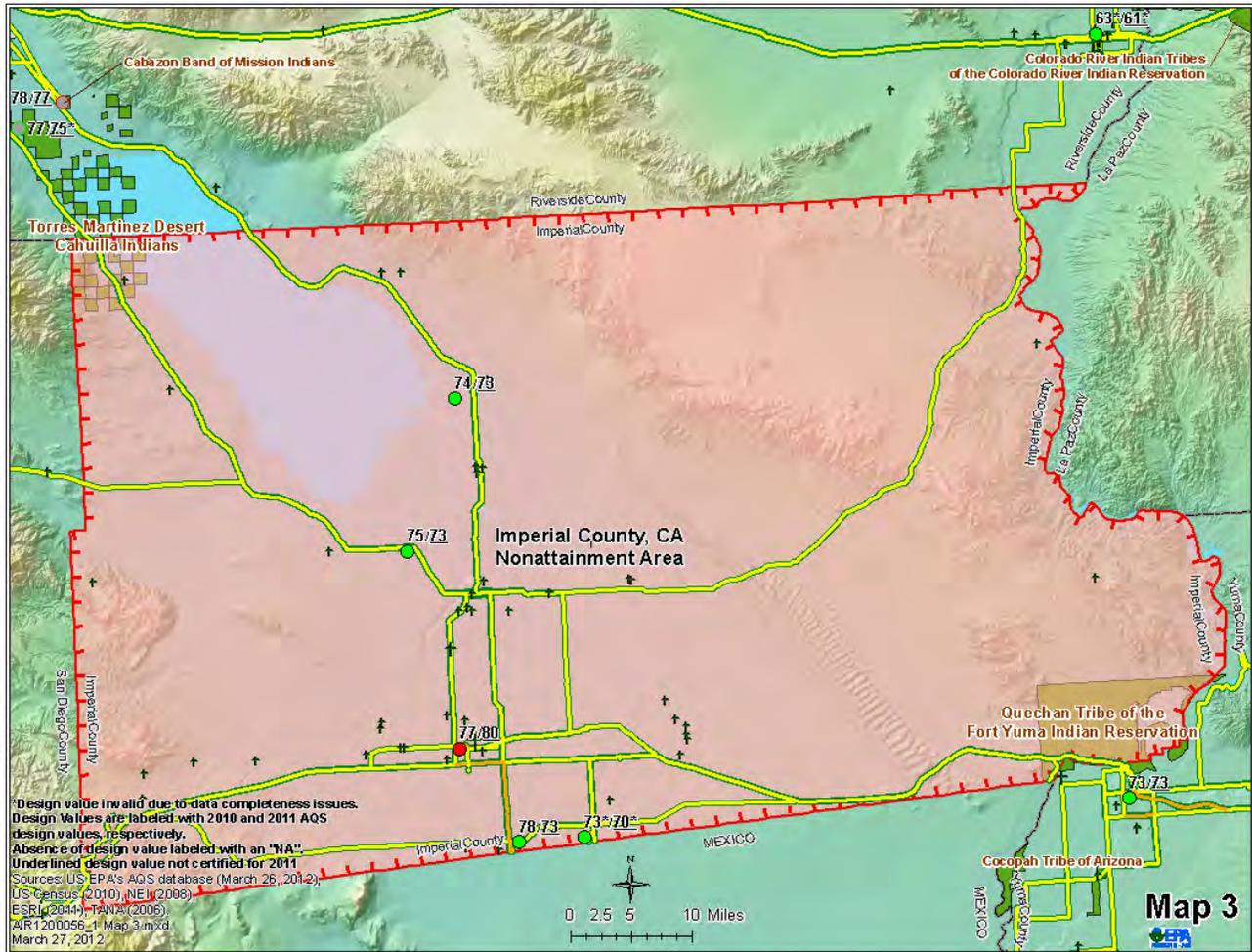
The existing Imperial County nonattainment area comprises Imperial County (see Map 3a in Appendix 2). The 2010 DV for the ozone NAAQS for Imperial County is shown in Table 2.

Table 2. Air Quality Data.

County	State Recommended Nonattainment?	2008-2010 Design Value (ppb)
Imperial, CA	Yes	78

Ozone monitors relevant for comparison to the NAAQS and information from additional data sources within the existing Imperial County nonattainment area are shown in Appendix 1, Map 3. California’s ozone season encompasses the entire year. Certified, quality assured data are available in EPA’s Air Quality System (AQS) for all areas through calendar year 2010. Map 3 in Appendix 1 includes preliminary 2011 DVs for the existing Imperial County nonattainment area for informational purposes only. For each monitor, Appendix 1 lists the monitor, the 2008-2010 DV (certified and quality assured in AQS) and the 2009-2011 DV (data that are not yet certified and quality assured in AQS are denoted with an underline). Absence of a DV is symbolized with an “x”.

Appendix 3 lists the DVs for monitors in the existing Imperial County nonattainment area. 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.



From Appendix 1, Map 3: For map legend describing monitors, emissions, traffic, population, and boundaries, see Appendix 1.

Monitors in Imperial County show a violation of the 2008 8-hour ozone standard based on 2008-2010 data. Therefore, this area is included in the Imperial County nonattainment area. 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.

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>) Emissions in a nearby area indicate the potential

for the area to contribute to observed violations. Table 3 shows emissions of NO_x and VOC (given in tons per year) for Imperial County.

Table 3. Total 2008 NO_x and VOC Emissions.

County	State Recommended Nonattainment?	NO _x (tpy)	VOC (tpy)
Imperial, CA	Yes	13,108	8,662
	Areawide:	13,108	8,662

Compared to neighboring counties, such as San Diego County to the west (greater than 50,000 tpy of NO_x and VOC) and Riverside County to the north (greater than 50,000 tpy NO_x and greater than 25,000 tpy VOC), Imperial County's emissions of ozone precursors are relatively low. As seen in Map 3 (Appendix 1), stationary sources in Imperial County are generally located along major roadways. EPA is designating upwind areas that also contribute to Imperial County monitored violations (for example, Los Angeles-South Coast Air Basin and Riverside County (Coachella Valley)) as separate nonattainment areas.

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 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 Imperial County.

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)
Imperial, CA	Yes	174,528	0.04	32,117	+23%
	Areawide:	174,528	0.04	32,117	+23%

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 3 and 3a in Appendices 1 and 2, respectively, show population in the area. Imperial County's population is experiencing high growth on a percentage basis. However, the population is still comparatively small and focused on three small urban centers in the south-central and central portions of the county, near the international border with Mexico (see Map 3a of Appendix 2). Most of the central portion of the county is a wide valley with farmland, and most of the county has very low population.

Traffic (VMT) data

EPA evaluated the commuting patterns of residents in the area, as well as the total VMT for each county. 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 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.

Table 5. Traffic (VMT) data.

County	State Recommended Nonattainment?	2008 VMT* (million miles)
Imperial, CA	Yes	2,021
	Areawide:	2,021

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

Imperial County contains very few roadways that experience heavy non-truck traffic (see Map 3 in Appendix 1).

Factor 3: Meteorology (weather/transport patterns)

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

The “Staff Report - Analysis of the Imperial County 2009 1997 8-Hour Ozone Modified Air Quality Management Plan”¹ by California Air Resources Board discusses the meteorological conditions in Imperial County in the Salton Sea Air Basin (SSAB).

“Imperial County is part of the Salton Sea Air Basin. Winters are mild and dry with daily average temperature ranges between 65 and 75°F, although daily high temperatures of up to 80°F are not uncommon. Summers are extremely hot with daily average temperature ranges between 104 and 115°F and daily high temperatures of up to 120°F. The County has an annual rainfall of approximately 3 inches, occurring mostly from late summer to midwinter.”

The South Coast Air Quality Management District’s “Final 2007 Air Quality Management Plan” also discusses transport to the Salton Sea Air Basin, including the Riverside County portion of the basin and the desert areas further inland:

“Ozone in the atmosphere of the Riverside county portion of SSAB is both directly transported from the Basin and formed principally from precursors emitted upwind. These precursors are emitted in greatest quantity in the coastal

¹ “STAFF REPORT Analysis of the Imperial County 2009 1997 8-Hour Ozone Modified Air Quality Management Plan and Reasonably Available Control Technology Plan” November 18, 2010, California Air Resources Board. http://www.arb.ca.gov/planning/sip/planarea/imperial/ozone_staffrep.pdf

and central Los Angeles county areas of the Basin. The Basin’s prevailing sea breeze causes polluted air to be transported inland. As the air is being transported inland, ozone is formed, with peak concentrations occurring in the inland valleys of the Basin in an area extending from eastern San Fernando Valley through the San Gabriel Valley into the Riverside-San Bernardino area and the adjacent mountains. As the air is transported still further inland into the desert areas, ozone concentrations decrease due to dilution.”²

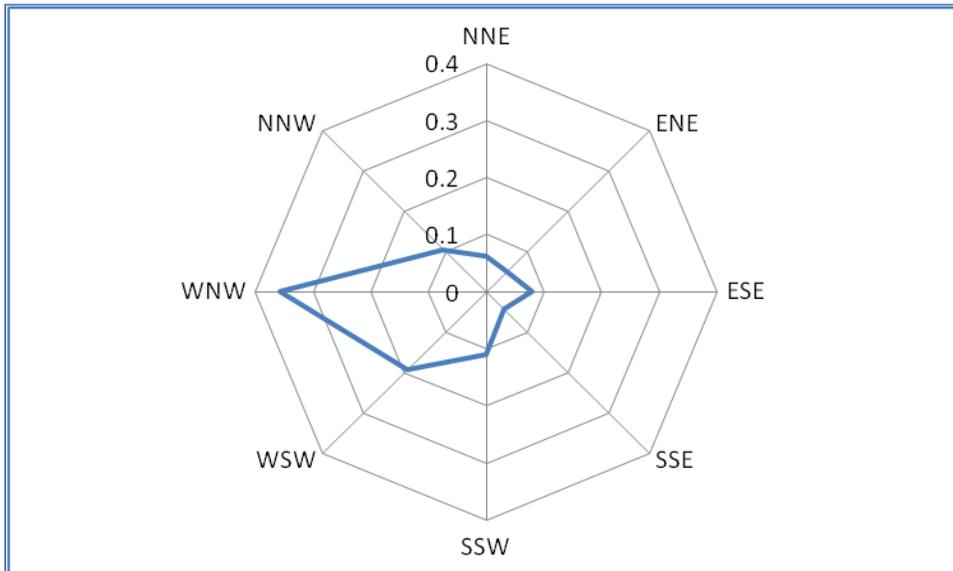


Figure 2: Imperial County – Summer Wind Frequency Distribution

The wind frequency distribution of wind direction data in the chart above is based on an average of 30 years of National Weather Service information for the months of June, July, and August (see Figure 2). The prevailing winds during the ozone season have a strong northwesterly component.

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.

The Imperial County area is shown in Appendix 1, Map 3a.

The “Staff Report - Analysis of the Imperial County 2009 1997 8-Hour Ozone Modified Air Quality Management Plan”³ states:

“Imperial County is part of the Salton Sea Air Basin. The Imperial County Ozone Nonattainment Area consists of the entire county, and is under the jurisdiction of the Imperial County Air Pollution Control District (District). Imperial County

² “Final 2007 Air Quality Management Plan”, Appendix II

³ “STAFF REPORT Analysis of the Imperial County 2009 1997 8-Hour Ozone Modified Air Quality Management Plan and Reasonably Available Control Technology Plan”, November 18, 2010, California Air Resources Board. http://www.arb.ca.gov/planning/sip/planarea/imperial/ozone_staffrep.pdf

covers 4,482 square miles of mostly arid lands in the southeastern corner of California.⁴ It is bordered by Mexico to the south, Arizona on the east, San Diego County on the west, and Riverside County on the north. Imperial County's elevation ranges from more than 2,800 feet on the mountain summits to the east to 230 feet below sea level in the Salton Sea.”

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 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.

Imperial County has previously established nonattainment boundaries associated with both the 1-hour and the 1997 8-hour ozone NAAQS. The state recommended the same boundary for the 2008 ozone NAAQS. The entire county falls under the air quality management jurisdiction of the Imperial County Air Pollution Control District. Transportation planning in the county is performed by the Imperial Valley Association of Governments, which has jurisdiction throughout the county. The entirety of Imperial County comprises the El Centro metropolitan statistical area (MSA). To the south, the county line is also the international U.S.-Mexico border.

The Imperial County area also includes areas of Indian country. As defined at 18 U.S.C. 1151, “Indian country” refers to: “(a) all land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation, (b) all dependent Indian communities within the borders of the United States whether within the original or subsequently acquired territory thereof, and whether within or without the limits of a state, and (c) all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.” EPA recognizes the sovereignty of tribal governments, and has attempted to take the desires of the tribes into account in establishing appropriate nonattainment area boundaries.

Torres Martinez Desert Cahuilla Indians (Torres Martinez) is a federally recognized tribe that has non-contiguous lands in both Imperial County and Riverside County. These portions of Indian country and the surrounding nonattainment areas are shown in Map 3a in Appendix 2. Due to the non-contiguous nature of these lands, the portions of Torres Martinez in Imperial County will be designated as part of the Imperial County nonattainment area.

The Quechan Tribe of the Fort Yuma Indian Reservation (Quechan) is a federally recognized tribe that has contiguous lands spanning Imperial County, California and Yuma County, Arizona. This portion of Indian country and the surrounding nonattainment areas is shown in Map 3a in Appendix 2. Because the

⁴ “STAFF REPORT Analysis of the Imperial County 2009 1997 8-Hour Ozone Modified Air Quality Management Plan and Reasonably Available Control Technology Plan”, November 18, 2010, California Air Resources Board. http://www.arb.ca.gov/planning/sip/planarea/imperial/ozone_staffrep.pdf

Tribe's area of Indian country crosses state boundaries, with the majority of the Tribe's land in Imperial County, the portions of Quechan in Imperial County will be designated as part of the Imperial County nonattainment area. The remainder of Quechan reservation land located in Yuma County, Arizona, is being designated as "unclassifiable/attainment" consistent with the surrounding area in Yuma County, Arizona.

Conclusion

Based on the assessment of factors described above, EPA is designating Imperial County, CA and all areas of Indian country located in Imperial County, nonattainment because the area violates 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. Air quality data (Factor 1) show that monitors in Imperial County show a violation of the 2008 8-hour ozone standard based on 2008-2010 data. Therefore, Factor 1 supports designating Imperial County as nonattainment.

EPA's review of emissions and emission related data (Factor 2), as well as meteorology and weather or transport patterns (Factor 3), geography and topography (Factor 4), and jurisdictional boundaries (Factor 5) support the nonattainment boundaries recommended by the state. EPA notes that these boundaries are consistent with the boundaries from the 1-hour and the existing 1997 8-hour ozone nonattainment area, therefore EPA's conclusion is to concur with the state's recommendation.

EPA's boundary for Imperial County also includes two different tribes. Where practically possible, current EPA policy discourages splitting contiguous areas of Indian country between two separate nonattainment areas. However, due to the non-contiguous nature of the Torres Martinez areas of Indian country (in Riverside and Imperial Counties) and because Quechan's areas of Indian country straddle two states (in Imperial County and Yuma County, Arizona), EPA is designating only the portions of Torres Martinez and Quechan located in Imperial County as part of the Imperial County, CA nonattainment area. The portion of Torres Martinez located in Riverside County is being designated nonattainment with the Riverside County (Coachella Valley), CA nonattainment area, and the Yuma County, Arizona portion of Quechan is being designated "unclassifiable/attainment," consistent with the surrounding area in Yuma County, Arizona.