



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105

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BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

Mr. Eric Stevenson
Director of Technical Services
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

Dear Mr. Stevenson:

We have reviewed your analysis in support of the Napa ozone monitor (AQS ID 06-055-0003) designation as neighborhood scale (February 8, 2013 email). Based on the information you provided, and further analysis by EPA, described below, EPA is granting a waiver from the Appendix E "spacing from roadways" siting requirement for the ozone monitor at Napa, per 40 CFR 58 Appendix E, section 10.

The Napa ozone monitor is currently the only ozone monitor in the Napa Metropolitan Statistical Area (MSA). According to Bay Area Air Quality Management District's (BAAQMD's) 2011 Air Monitoring Network Report, it is 15 meters from Jefferson Street. Jefferson Street is currently listed as having 19,143 vehicles per day, roadway average annual daily traffic (AADT) (2007). The Napa monitor meets siting requirements to be considered a neighborhood scale¹ monitor, with the exception of spacing from roadways. Appendix E, section 6, Table E-1, specifies minimum separation distances from roadways, based on the concern that ozone levels measured at the monitor may experience scrubbing effects, i.e. ozone levels may be decreased as a result of reaction with pollutants emitted from the nearby roadway, notably NO. For an AADT of 19,143, the Napa monitor is located too close to Jefferson Street according to Table E-1.

As outlined in 40 CFR part 58 Appendix E, Section 10.1.1, EPA may grant a siting waiver for an existing site if the site can be demonstrated to be as representative of the monitoring area as it would be if the siting criteria were being met. Based on the information provided by BAAQMD, EPA calculated a conservative estimate of the potential for ozone scrubbing as a result of

¹ As defined in 40 CFR part 58 Appendix D, Section 4.1(c)(1): (1) *Neighborhood scale* — Measurements in this category represent conditions throughout some reasonably homogeneous urban sub-region, with dimensions of a few kilometers. Homogeneity refers to pollutant concentrations. Neighborhood scale data will provide valuable information for developing, testing, and revising concepts and models that describe urban/regional concentration patterns. These data will be useful to the understanding and definition of processes that take periods of hours to occur and hence involve considerable mixing and transport. Under stagnation conditions, a site located in the neighborhood scale may also experience peak concentration levels within a metropolitan area.

roadway emissions. We conclude that there is not enough potential for scrubbing to indicate that Napa would otherwise experience concentrations above the 8-hour ozone NAAQS.

For the four highest 8-hour ozone days in 2010, 2011, and 2012, supplied in BAAQMD's spreadsheet "max 8-hr ozone," we conservatively assumed that when winds were blowing from the road to the monitor² all of the NO₂ measured at the Napa station represented scavenging of ozone in a straight one-to-one relationship (i.e. each molecule of NO₂ was formed by the reaction of one molecule of ozone with one molecule of NO from the roadway). This approach would be conservative, since some of the monitored NO₂ was likely to be either from transport into the area or emitted directly from sources on the roadway. Adding the 1-hour NO₂ values to the 1-hour ozone values thus provides a conservative estimate of what the ozone levels would have been without any roadway impact. As a result of this calculation, the 2010-2012 design value (DV) changed by 2 ppb, increasing Napa's 2012 DV from 63 ppb to 65 ppb. The twelve days used in this calculation are the highest 8-hour ozone days for each of the three years and are here used as a representative set of days. While a different collection of days may show different influences from the roadway given different meteorological or traffic conditions, it is unlikely that the same analysis using a different combination of days would yield a design value over the 75 ppb 8-hour ozone NAAQS.³ Bay Area's wind roses also show that the predominant wind direction is from the south, and rarely blows from Jefferson Street to the monitor.

EPA concludes that the Napa ozone site accurately reflects a design value for the MSA that is below the 8-hour ozone NAAQS of 75 ppb, and that proximity to the roadway does not affect this representation of the MSA's ozone levels. With this Appendix E siting waiver approval, the Napa ozone site is found to be appropriately characterized as a neighborhood scale, SLAMS ozone monitor within the Napa MSA.

This waiver will need to be renewed with each annual network plan unless this site is reclassified as a smaller than neighborhood scale site. To renew the waiver, please include the most recent ozone design value for the Napa site in the annual network plan and state that BAAQMD is requesting a renewal of the Appendix E spacing from roadway siting waiver for the Napa ozone site, as originally granted in April 2013. Please also include this correspondence with your next annual network plan. EPA might not grant a renewal of the waiver should the design value come within 5 ppb of the standard (due to an increase of Napa's design value, or due to a revision of the ozone NAAQS), or should other situations arise that affect how the site is representing the MSA's ozone concentrations. The site may be judged to no longer be as representative of the monitoring area as it would be if the spacing from roadways siting criteria were being met.

² Winds blowing from the road to the monitor were defined as in BAAQMD's materials, i.e. 198 through 317 degrees.

³ EPA notes that numerical estimates of uncertainty of the impact on 8-hour ozone concentrations, and analysis of how variations in wind speed may affect ozone levels, were beyond the scope of this analysis. The analysis assumes that NO only affects the 8-hour ozone concentration for the ozone that is formed that same hour, and that it does not affect ozone concentrations outside of that hour through day-to-day carryover, transport or other mechanisms. EPA also performed the same calculation, but disregarding wind direction and simply adding each 1-hour NO₂ value to each corresponding 1-hour O₃ value for the four highest 8-hour ozone days in 2010, 2011, and 2012, with a resulting DV of 68 ppb, or a 5 ppb increase.

If you have any questions, please feel free to contact me at (415) 972-3851 or Gwen Yoshimura of my staff at (415)947-4134.

Sincerely,

A handwritten signature in black ink, appearing to read "Matt Lakin". The signature is fluid and cursive, with the first name "Matt" and last name "Lakin" clearly distinguishable.

Matthew Lakin, Manager
Air Quality Analysis Office
Air Division

cc: Glen Colwell, BAAQMD