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September 25, 2017

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U.S. Environmental Protection Agency – Region 5
77 West Jackson Boulevard
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Subject: Supplemental Information for the Reconsideration Request for Sheboygan County 2008 Ozone Nonattainment Area Boundaries

Dear Mr. Aburano:

The Wisconsin Department of Natural Resources (WDNR) is submitting this letter providing additional information in support of the department's 2013 request that the U.S. Environmental Protection Agency (EPA) reconsider the nonattainment area boundaries for Sheboygan County for the 2008 ozone National Ambient Air Quality Standard (NAAQS). This submittal updates the original request with new analyses available as a result of additional monitor data collection. High ozone concentrations at Sheboygan's lakeshore monitor are due almost entirely to transported pollutants. There is therefore no demonstrable benefit to be gained by further controlling emissions from the county. No part of Sheboygan County should be designated nonattainment for the 2008 ozone NAAQS. If EPA will not rescind the nonattainment designation entirely, WDNR urges EPA to, at a minimum, approve this request and adjust Sheboygan County's nonattainment area boundaries relative to the 2008 ozone NAAQS.

On June 27, 2013, WDNR asked EPA to reconsider the nonattainment area boundaries for Sheboygan County for the 2008 ozone NAAQS.[1] On January 22, 2014, DNR submitted supplemental information to EPA in response to data requests.[2] These documents (collectively referred to as the "boundary correction request") noted that only a narrow strip of land adjacent to Lake Michigan experiences ozone levels above the level of the 2008 ozone NAAQS, while the majority of the county experiences ozone levels below the level of the 2008 ozone NAAQS. The boundary correction request relied upon projections of monitoring data from three monitors that operated from 1999 through 2003, as well as other technical information.[3] The nonattainment area boundary recommended in the boundary correction request was located several miles inland from, and roughly parallel to, the Lake Michigan shoreline.[4]

Since submission of the original boundary correction request, WDNR has accumulated substantial additional information for consideration in Sheboygan County. Most importantly, data from the Sheboygan Haven monitor shows that ozone concentrations inland from the lakeshore are consistently well below the level of

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[1] Letter from WDNR Secretary Cathy Stepp to EPA Regional Administrator Susan Hedman, dated June 27, 2013.
[2] WDNR Response to EPA Data Requests – Correction of the Sheboygan County Ozone Nonattainment Area Boundary, submitted January 22, 2014 via email from WDNR Air Program Director Bart Sponseller to EPA Region V.
[3] The boundary correction request also included support from photochemical modeling, concentration differences between a new inland monitor and the lakeshore monitor in Kenosha County, HYSPLIT back-trajectory modeling and wind direction analysis for high-ozone days, and analysis of the location of ozone precursor emissions, population and projected population growth within the county.
[4] Supra, note 2.

the 2008 ozone NAAQS. In addition, new photochemical modeling confirms that ozone concentrations drop off sharply further from the Lake Michigan shoreline in Sheboygan County. The modeling also demonstrates that Sheboygan County would not be able to reduce ozone concentrations at the lakeshore monitor solely by reducing emissions within the county. This information is described in greater detail below.

EPA must fully address the impacts of ozone transport on Sheboygan County. Until EPA has done so, it should designate Sheboygan County as attainment for the 2008 ozone NAAQS to avoid penalizing Sheboygan residents and businesses for circumstances beyond their control. If EPA will not do this, it should at a minimum adjust Sheboygan County's 2008 ozone NAAQS nonattainment area boundary to ensure that the nonattainment area is no larger than the technical analysis dictates. It should base such nonattainment area boundaries on the distance from the Lake Michigan shoreline, as discussed in WDNR's supplemental submittal on 2015 ozone designations.[5] EPA has no legal obligation to use jurisdictional boundaries to define nonattainment area boundaries and should instead use a technically supported approach.[6]

New information about the spatial extent of high ozone concentrations in Sheboygan County

Ozone monitoring data from the Sheboygan Haven monitor, located just 3.2 miles from Lake Michigan, clearly demonstrates that ozone design values above the level of the 2008 ozone NAAQS do not extend this far inland into Sheboygan. WDNR began operating this monitor in 2014 and now has three years of certified data from this monitor. Since 2014, the fourth-high daily maximum ozone concentrations at the Haven monitor have consistently been below the level of the 2008 ozone NAAQS (75 ppb), with annual values ranging from 67 ppb to 74 ppb (see table below). The 2014-2016 design value at the Haven monitor is 69 ppb; this is 6 ppb lower than the 2008 ozone NAAQS and 10 ppb lower than the design value at the county's lakeshore Kohler Andrae monitor.[7]

Site ID	Site	Miles inland	Fourth-high daily maximum 8-hour average ozone (ppb)			Design value (ppb)
			2014	2015	2016	2014-2016
551170006	Kohler Andrae	0	72	81	85	79
551170009	Sheboygan Haven	3.2	68	67	74	69

Recent WDNR analyses of ozone data further confirm that elevated ozone concentrations are limited to a very narrow area along the lakeshore. This includes:

- Analysis of ozone data from all lakeshore monitors demonstrating that ozone design values drop off steeply as distance from the lakeshore increases. This analysis is presented in Section 6.3 of WDNR's supplemental submittal regarding 2015 ozone NAAQS designations.[8] The analysis suggests that 2014-2016 ozone design values in Sheboygan County are 70 ppb around 2.9 miles inland from the lakeshore. These design values presumably are below the level of the 2008 ozone NAAQS (75 ppb) even closer to the lakeshore.

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[5] Supplemental Information for 2015 Ozone National Ambient Air Quality Standard (NAAQS) Area Designations, submitted to EPA on April 20, 2017.

[6] Such an approach would be similar to EPA's approach to several counties in California, which EPA designated based on drainage area (El Dorado and Placer Counties) and elevation (Tehama County), https://www3.epa.gov/airquality/greenbook/hbp.html#Ozone_8-hr.2008.Tuscan_Buttes.

[7] Preliminary ozone concentrations for 2017 are consistent with these values, although the ozone season is not yet complete and the data has not yet been quality assured or certified. The fourth-high daily maximum average ozone concentrations for 2017 (as of September 18, 2017) are 68 ppb for Sheboygan Haven and 75 ppb for Kohler Andrae. The preliminary design values for 2015-2017 are 69 ppb for Haven and 80 ppb for Kohler Andrae.

[8] Supra note 5.

- Analysis of hourly concentration data showing that ozone concentrations are almost always lower at the inland monitor than at the lakeshore monitor in Sheboygan County and that these concentration differences are greatest when lakeshore ozone concentrations are highest. This analysis is explained in detail in Section 4.2 of WDNR's supplemental submittal regarding nonattainment area designations for the 2015 ozone NAAQS.[9]
- New modeling by the Lake Michigan Air Directors Consortium (LADCO) that provides further confirmation that elevated ozone design values are confined to a narrow stretch of land near the lakeshore. This analysis is shown in Figure 4.1 of the supplemental submittal regarding 2015 ozone designations and supports the older modeling submitted as part of the boundary correction request.[10]

When considered with the certified data from the Haven monitor, this information strongly supports a correction to the nonattainment area boundary to ensure that the area does not encompass all of Sheboygan County.

New evidence that Sheboygan emissions do not contribute to the county's ozone problem

EPA has historically designated whole-county areas around violating monitors based on the premise that nearby sources of ozone precursors contribute to locally monitored ozone concentrations. New photochemical modeling by LADCO, however, demonstrates that the elimination of all anthropogenic emissions in Sheboygan County would not decrease the design value at the violating Kohler Andrae monitor. This modeling is described in Section 5.6 of the attainment plan for Sheboygan County submitted by WDNR to EPA.[11] These results clearly demonstrate that including all of Sheboygan County in the nonattainment area, and thus requiring the county to further reduce its emissions, would not decrease ozone concentrations at the Kohler Andrae monitor.

In addition, a number of recent analyses confirm the overwhelming role of transport of ozone and ozone precursors on ozone concentrations at Sheboygan's Kohler Andrae monitor. These analyses include pollution roses, HYSPLIT back-trajectories and source apportionment modeling. This work is described in Section 5.4 of the Sheboygan attainment plan[12] and Section 5.1 of the supplemental submittal on 2015 ozone designations.[13] These analyses confirm earlier work showing that out-of-state emissions effectively overwhelm contributions from Sheboygan County and the rest of Wisconsin and significantly limit the state's ability to reduce high ozone concentrations within the county.

Based on the certified data from the Sheboygan Haven monitor, along with the extensive new technical information and modeling described above and the data previously provided to EPA on this issue, it is important that EPA consider a designation of attainment for Sheboygan County. If EPA is unable to consider such a designation for the entire county, they must adjust the 2008 ozone nonattainment area boundary in Sheboygan County to include the smallest area possible to avoid penalizing the county for a problem it cannot control.

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[9] Id.
[10] Id.
[11] Attainment Plan for the Sheboygan County, Wisconsin 2008 8-Hour Ozone Nonattainment Area, submitted concurrently to EPA on this date under separate cover.
[12] Id.
[13] Supra note 5.

I am available to discuss the information contained in this letter further if needed. Please contact me at Gail.Good@wisconsin.gov or 608-264-8537 if there are any questions regarding this submittal.

Sincerely,

Gail E. Good

Gail Good
Director
Air Management Program

cc:
Pat Stevens (EM/8)
Bart Sponseller (EM/7)
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