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**Technical Support Document**

**WISCONSIN  
Area Designations for the  
2010 SO<sub>2</sub> Primary National Ambient Air Quality Standard**

**Summary**

Pursuant to section 107(d) of the Clean Air Act, EPA must initially designate areas as either “nonattainment,” “attainment,” or “unclassifiable” for the 2010 one-hour sulfur dioxide (SO<sub>2</sub>) primary national ambient air quality standard (NAAQS). The Clean Air Act defines a nonattainment area as one that does not meet the NAAQS or that contributes to a violation in a nearby area.

Wisconsin submitted designation recommendations on May 26, 2011. On February 6, 2013, EPA sent a letter to Wisconsin describing the intended nonattainment designations. Wisconsin responded with further recommendations on April 8, 2013. Table 1 below lists Wisconsin’s recommendations and identifies the counties or portions of counties in Wisconsin that EPA is initially designating “nonattainment” based on monitored violations. EPA is not yet prepared to designate other areas in Wisconsin, and will address those areas in future final designation actions.

**Table 1. Nonattainment Area Designation for Wisconsin**

Area	Wisconsin’s Recommended Designation of Areas/ Counties	EPA’s Nonattainment Designation of Areas/Counties
<b>Rhineland, WI</b> Oneida County (partial) City of Rhineland and the Towns of Crescent, Newbold, Pine Lake and Pelican	May 26, 2011: Nonattainment April 8, 2013: Delay final nonattainment designation	Nonattainment

**Background**

On June 3, 2010, EPA revised the primary SO<sub>2</sub> NAAQS (75 FR 35520, published on June 22, 2010). EPA revised the primary SO<sub>2</sub> standard by establishing a new one-hour standard at a level of 75 parts per billion (ppb) which is met at an ambient air quality monitoring site when the three-year average of the 99<sup>th</sup> percentile of one-hour daily maximum concentrations does not exceed 75 ppb, as determined in accordance with Appendix T of 40 CFR part 50. (40 CFR 50.17(a)-(b).) EPA has determined that this is the level necessary to provide protection of public health with an adequate margin of safety, especially for children, the elderly and those with asthma. These groups are particularly susceptible to the health effects associated with breathing SO<sub>2</sub>. EPA is revoking the two prior primary standards of 140 ppb evaluated over 24 hours, and 30 ppb evaluated over an entire year because they will not add additional public health protection given a one-hour standard at 75 ppb. Accordingly, EPA is not designating areas in this process

on the basis of either of these two primary standards. Similarly, the secondary standard for SO<sub>2</sub> has not been revised, so EPA is not designating areas in this process on the basis of the secondary standard.

### **EPA's SO<sub>2</sub> Designation Approach**

Section 107(d) of the Clean Air Act provides that not later than one year after promulgation of a new or revised NAAQS, state Governors must submit their recommendations for designations and boundaries to EPA. For the 2010 SO<sub>2</sub> NAAQS, this deadline was June 3, 2011. Section 107(d) also requires EPA to provide notification to states no less than 120 days prior to promulgating an initial area designation that is a modification of a state's recommendation. If a state did not submit designation recommendations, EPA is promulgating the designations that it deems appropriate. If a state or tribal government disagreed with EPA's intended designations, it was given an opportunity to demonstrate why any proposed modification is inappropriate.

Designations guidance was issued by EPA through a March 24, 2011, memorandum from Stephen D. Page, Director, U.S. EPA, Office of Air Quality Planning and Standards, to Air Division Directors, U.S. EPA Regions I-X. This memorandum identifies factors EPA intends to evaluate in determining boundaries for areas designated nonattainment. These five factors include: 1) air quality data; 2) emissions and emissions-related data (location of sources and potential contribution to ambient SO<sub>2</sub> concentrations); 3) meteorology (weather/transport patterns); 4) geography/topography (mountain ranges or other air basin boundaries); and 5) jurisdictional boundaries (e.g., counties, air districts, pre-existing nonattainment areas, reservations, metropolitan planning organization), among any other information deemed to be relevant to establishing appropriate area designations and boundaries for the one-hour SO<sub>2</sub> NAAQS.

The March 24, 2011, guidance memo recommended that area boundaries default to the county boundary unless information provided by the state or tribe justifies a larger or smaller boundary than that of the county. EPA believes it is appropriate to evaluate each potential area on a case-by-case basis, and to recognize that area-specific analyses conducted by states, tribes and/or EPA may support a different boundary than a county boundary.

In this technical support document, EPA discusses its review and technical analysis of the recommendations regarding areas with monitored violations submitted by Wisconsin for designations for the one-hour SO<sub>2</sub> standard and any modifications from these recommendations.

#### ***Definition of important terms used in this document:***

1) **Designated nonattainment area** – an area which EPA has determined, based on a state recommendation and/or on the technical analysis included in this document, has violated the 2010 SO<sub>2</sub> NAAQS, based on the most recent three years of air quality monitoring data, or contributes to a violation in a nearby area.

- 2) **Recommended nonattainment area** – an area that a state or tribal government has recommended to EPA to be designated as nonattainment.
- 3) **Violating monitor** – an ambient air monitor meeting all methods, quality assurance and siting criteria and requirements whose valid design value exceeds 75 ppb, as described in Appendix T of 40 CFR part 50.
- 4) **2010 SO<sub>2</sub> NAAQS** – The NAAQS for SO<sub>2</sub> promulgated in 2010. This NAAQS is 75 ppb, based on the three-year average of the 99th percentile of the annual distribution of daily maximum one-hour average concentrations. See 40 CFR Part 50.17.
- 5) **Design Value** – a statistic computed according to the data handling procedures of the NAAQS (in 40 CFR 50 Appendix T) that, by comparison to the level of the NAAQS, indicates whether the area is violating the NAAQS.

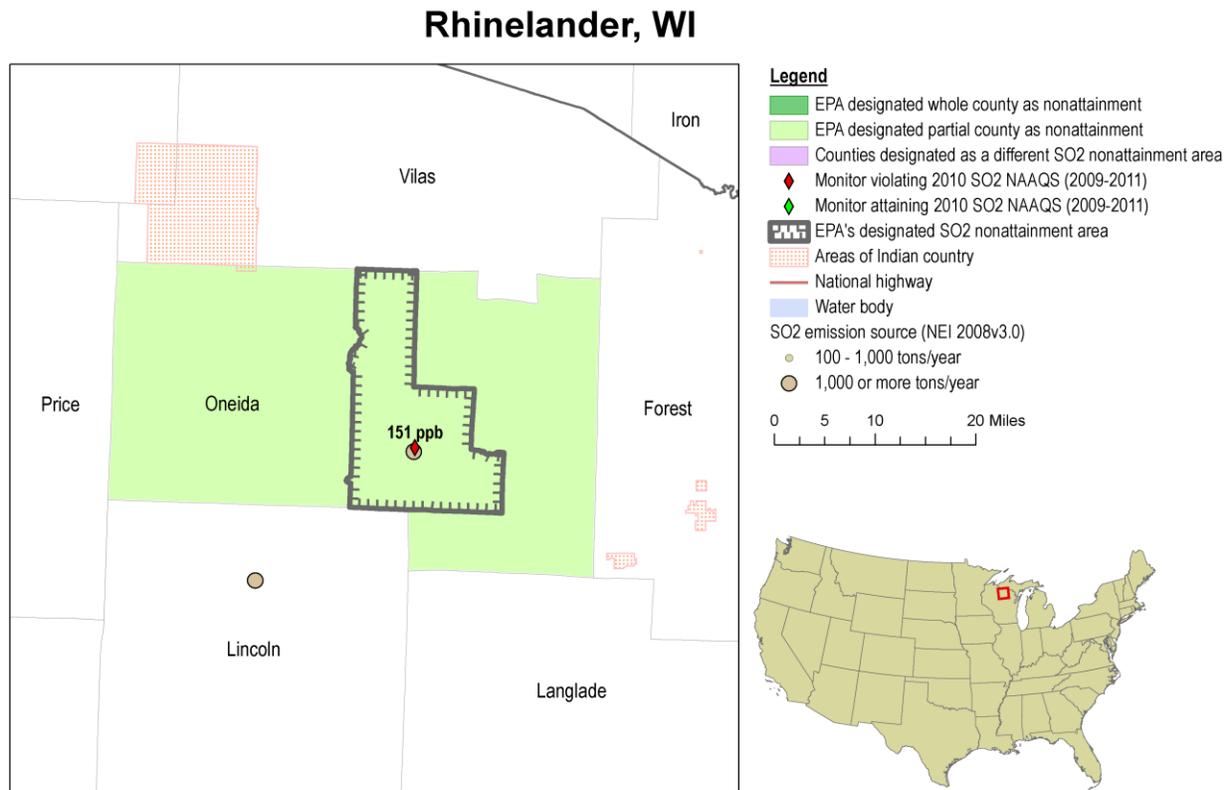
### **Technical analysis for the Rhinelander, WI Area**

#### **Introduction**

This technical analysis for the Rhinelander Area identifies Oneida County with a monitor that violates the 2010 SO<sub>2</sub> NAAQS, and evaluates nearby counties for contributions to SO<sub>2</sub> concentrations in the area. EPA has evaluated this county and nearby counties based on the evidence for the factors recommended in the March 24, 2011 EPA designations guidance.

Figure 1 is a map of the area showing the locations and design values of air quality monitors in the area, and the counties surrounding any violating air quality monitors.

**Figure 1. Map of sources and monitors in the Rhinelander, WI area and the Rhinelander nonattainment area**



On May 26, 2011, Wisconsin recommended that part of Oneida County containing the City of Rhinelander and the Towns of Crescent, Newbold, Pine Lake, and Pelican be designated as nonattainment for the 2010 SO<sub>2</sub> NAAQS. On February 6, 2013, EPA stated its intention to designate this portion of Oneida County as the Rhinelander, WI nonattainment area. Wisconsin responded in an April 8, 2013 letter that the main SO<sub>2</sub> source in Rhinelander had applied in January 2013 to install a natural gas boiler. Wisconsin's letter requested that EPA delay finalizing the nonattainment designation, stating its view that emission reductions at this source would lead to attainment of the 2010 SO<sub>2</sub> NAAQS.

EPA must base this action on the current air quality status and may not base its action on future anticipated changes in air quality status. Current emissions and monitoring data indicate that a portion of Oneida County should be designated nonattainment. An application to install equipment to address SO<sub>2</sub> emissions does not signify that Oneida County is currently attaining the 2010 SO<sub>2</sub> NAAQS. Therefore, based on EPA's technical analysis described below, EPA is initially designating the originally recommended Rhinelander area as nonattainment for the 2010 SO<sub>2</sub> NAAQS. This area is described in Table 1. Areas and sources that we are not yet prepared to conclude are contributing to the monitored violations or to other possible violations are not included in this initial nonattainment area, and will be addressed in a future final designations action.

## Detailed Assessment

### *Air Quality Data*

This factor considers the SO<sub>2</sub> air quality monitoring data, including the design values (in ppb) calculated for all air quality monitors in Oneida County in the Rhinelander area based on data for the 2009-2011 period. Wisconsin's May 26, 2011 designation recommendation was based on data indicating nonattainment at an SO<sub>2</sub> monitor located in Rhinelander, Oneida County. The SO<sub>2</sub> NAAQS design value representative of the Rhinelander area is shown in Table 2. The Oneida County monitor shows a violation of the 2010 SO<sub>2</sub> NAAQS for 2009-2011. Therefore, at least a portion of this county must be designated nonattainment.

**Table 2. Air Quality Data for Nonattainment Designations in Wisconsin**

County	State Recommended Nonattainment?	Monitor Air Quality System ID	Monitor Location	SO <sub>2</sub> Design Value, 2009-2011 (ppb)
Oneida	Yes	55-085-0996	Rhinelander Water Tower	151

### *Emissions and Emissions-Related Data*

Evidence of SO<sub>2</sub> emissions sources in the vicinity of a violating monitor is an important factor for determining whether a nearby area is contributing to a monitored violation. For this factor, EPA evaluated county level emission data for SO<sub>2</sub>. Table 3 shows total emissions of SO<sub>2</sub> (given in tons per year) for violating and potentially contributing counties in and around the Rhinelander area and sources emitting greater than 100 tons per year of SO<sub>2</sub>. The county that contains the Rhinelander nonattainment area for the 2010 SO<sub>2</sub> NAAQS is shown in **bold**. Wisconsin asserts that Wausau Paper Mills, LLC (Wausau Paper), is likely to be the primary cause of this NAAQS violation. This facility is less than one kilometer from the air quality monitor. There are very few other SO<sub>2</sub> sources in Oneida County. The nearest source over 100 tons per year is located 33 kilometers from the Rhinelander air quality monitor, in Lincoln County. It emits only slightly more SO<sub>2</sub> than Wausau Paper does, and its distance from the monitor suggests that it is less likely to be contributing to the monitored violation of the SO<sub>2</sub> NAAQS. EPA is not yet prepared to conclude that the emissions from the source in Lincoln County contribute to the monitored violation or to other possible violations, and will further address this source in a future final designation action.

**Table 3. SO<sub>2</sub> Emissions**

County	Facility Located in State-Recommended Nonattainment Area?	Facility Name – Total SO <sub>2</sub> Air Emissions [NEI08V3] (tons per year)	Facility Location/ Distance from Monitor (km)	Total County SO <sub>2</sub> Emissions (tons per year)
<b>Oneida County</b>	Yes	Wausau Paper Mills, LLC –3071	Rhinelander/ 0.7	3131
	Yes	Red Arrow Foods –8	Rhinelander/ 4.5	
Lincoln County	No	Packaging Corp. of America –4641	Tomahawk/ 33.	4689

**Emission Controls**

The emissions data provided in Table 3 represent emissions levels taking into account any control strategies implemented on stationary sources in the Rhinelander area up to and including 2008. EPA does not have any additional information on actual emissions reductions resulting from controls put into place after 2008. Wisconsin is currently working with Wausau Paper to reduce its SO<sub>2</sub> emissions, as described in its April 8, 2013 letter.

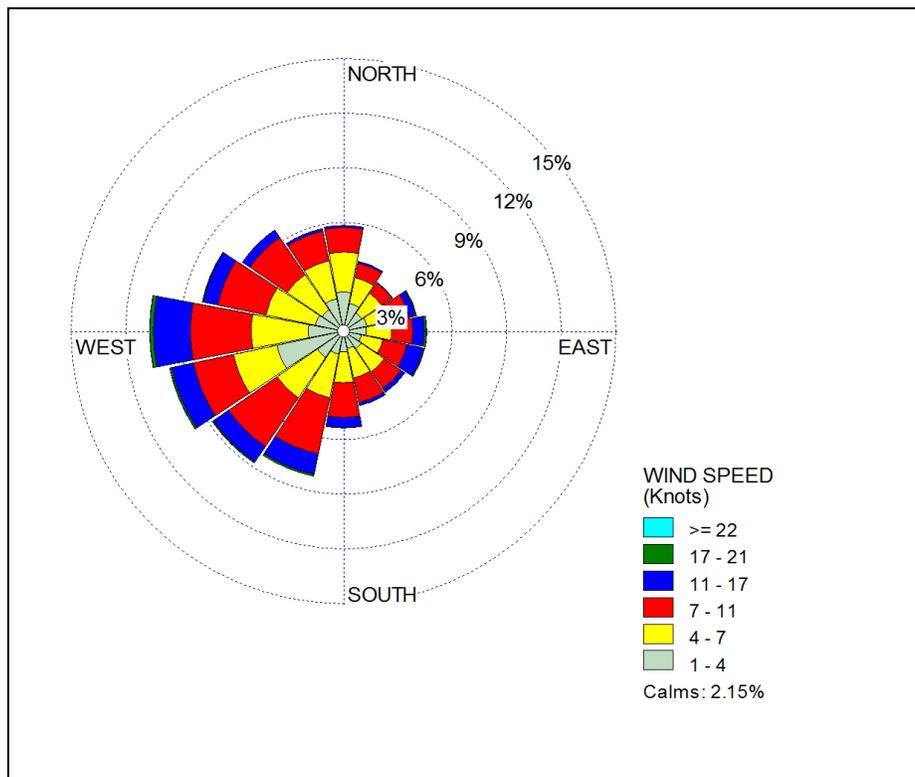
**Geography/Topography (mountain ranges or other air basin boundaries)**

Oneida County does not have any geographical or topographical barriers significantly limiting air pollution transport within its airshed. Therefore, this factor did not play a significant role in determining the nonattainment boundary.

**Meteorology (weather/transport patterns)**

Evidence of source-receptor relationships between specific emissions sources and high SO<sub>2</sub> values at violating monitors is another important factor in determining the appropriate contributing areas and the appropriate extent of the nonattainment boundary. Figure 2 shows the prevalent wind directions for the Rhinelander area.

**Figure 2: Wind Rose for Rhinelander, WI**



Source: WDNR Software: WRPLOT-Lakes Environmental Software

For this area, winds can come from any direction, but winds from the west and southwest are the most frequent. Given that the dominant SO<sub>2</sub> source is less than one kilometer from the air quality monitor, meteorology is not considered to be a significant factor in defining this nonattainment area.

### ***Jurisdictional boundaries***

Once the geographic area associated with the area violating the SO<sub>2</sub> standard and the nearby areas contributing to the violations are determined, we considered existing jurisdictional boundaries for the purpose of providing a clearly defined legal boundary for carrying out the air quality planning and enforcement functions of the area. Wisconsin did not have any nonattainment areas under the prior SO<sub>2</sub> NAAQS. The nonattainment area boundary recommended by Wisconsin is made up of a city and towns with contiguous boundaries, which contain the SO<sub>2</sub> source contributing to the monitored violations and the SO<sub>2</sub> ambient air quality monitor. EPA finds that city and town boundaries in Wisconsin provide a suitable administrative basis for formulating nonattainment area boundaries.

### **Tribal Recommendations**

On May 10, 2011, the Forest County Potawatomi Community (FCPC) submitted its SO<sub>2</sub> designation recommendations to EPA. The FCPC has jurisdiction over parcels of land in several Wisconsin counties, including Oneida County. The Oneida County land parcel that belongs to the FCPC is located about 16 miles (26 kilometers) east of Wausau Paper and is outside of the geographic boundaries of the Rhinelander nonattainment area that is addressed in this technical support document. Currently, there are no violations of the 2010 SO<sub>2</sub> NAAQS in FCPC land parcels. EPA is not yet prepared to designate these parcels and will address the FCPC lands in a future final designation action.

### **Conclusion**

The air quality monitor in Oneida County shows a violation of the 2010 SO<sub>2</sub> NAAQS, based on 2009-2011 air quality data. Source proximity suggests that Wausau Paper in Rhinelander, Wisconsin is likely the dominant contributor to SO<sub>2</sub> NAAQS violations at the Rhinelander SO<sub>2</sub> monitor. Although Wisconsin has stated that a recent permit application will lead to reduced SO<sub>2</sub> emissions, EPA believes that Oneida County is presently violating the SO<sub>2</sub> NAAQS. Therefore, EPA is designating the portion of Oneida County containing the City of Rhinelander and the Towns of Crescent, Newbold, Pine Lake, and Pelican, as the Rhinelander, WI nonattainment area for the 2010 SO<sub>2</sub> NAAQS, as originally recommended by Wisconsin in its May 26, 2011 letter. Based on the above factor analysis, EPA is not yet prepared to conclude that the emissions from sources located outside of this boundary contribute to the monitored violation or to other possible violations. In a subsequent round of designations, we will make final designation decisions for areas in Wisconsin that are not included in the nonattainment area designation addressed in this technical support document.