

Technical Support Document:

Chapter 15

Final Round 3 Area Designations for the 2010 1-Hour SO₂ Primary National Ambient Air Quality Standard for Kentucky

1. Summary

Pursuant to section 107(d) of the Clean Air Act (CAA), the U.S. Environmental Protection Agency (the EPA, we, or us) must designate areas as either “nonattainment,” “attainment,” or “unclassifiable” for the 2010 1-hour sulfur dioxide (SO₂) primary national ambient air quality standard (NAAQS) (2010 SO₂ NAAQS). Our Notice of Availability (NOA)¹ and Technical Support Document² for our intended designations for this round of designations which we are required to complete by December 31, 2017, provided background on the relevant CAA definitions and the history of the designations for this NAAQS. Chapter 1 of this TSD for the final designations explains the definitions we are applying in the final designations. The TSD for the intended Round 3 area designations also described Kentucky’s recommended designations, assessed the available relevant monitoring, modeling, and any other information, and provided our intended designations.

On January 6, 2017, Kentucky requested that all areas of the Commonwealth be designated attainment for the 2010 SO₂ NAAQS. For Kentucky, there have been no changes in Kentucky’s recommended designations since we communicated our intended designations for areas in Kentucky. However, the EPA did receive new information that affects our final designation for an area in Kentucky. This TSD does not repeat information contained in the TSD for our intended designations, except as needed to explain our assessment of the newer information and to make clear the final action we are taking and its basis, but that information is incorporated as part of our final designations. For areas of Kentucky not explicitly addressed in this chapter, we are finalizing the designations described in our 120-day letters and the TSD for the intended Round 3 area designations. All the final designations are listed in Table 1 below.

In response to our 120-day letter to Kentucky, the Kentucky Department of Air Quality commented³ on the EPA’s intended designation of unclassifiable for a portion of Henderson County. The Commonwealth’s comments centered on an analysis of Sierra Club’s modeling of Alcoa in Warrick County, Indiana. The EPA has since received new modeling from Indiana which shows no violations of the 2010 SO₂ standard in Warrick County in the vicinity of Alcoa or in the portion of Henderson County that the EPA had intended to designate as unclassifiable. The EPA also received new modeling of the Alcoa area from the Sierra Club. Chapter 13 (addressing Indiana) of this TSD for our final designations reviews all the new modeling analyses and relevant information for Warrick County.

¹ EPA Responses to Certain State Designation Recommendations for the 2010 Sulfur Dioxide Primary National Ambient Air Quality Standard: Notification of Availability and Public Comment Period, September 5, 2017 (82 FR 41903)

² Intended Round 3 Area Designations for the 2010 1-Hour SO₂ Primary National Ambient Air Quality Standard Technical Support Document, August 2017. <https://www.epa.gov/sulfur-dioxide-designations/initial-technical-support-documents-area-designations-round-3>

³ Letter dated October 23, 2017, from Kentucky to EPA Region 4 in response to the EPA’s 120-day letter for Kentucky. *See* Docket ID: EPA-HQ-OAR-2017-0003-0539

For the areas in Kentucky that are part of the Round 3 designations process, Table 1 identifies the EPA’s final designations and the counties or portions of counties to which they apply. It also lists Kentucky’s current recommendations, which have not been modified since our 120-day letters were sent. The EPA’s final designations for these areas are based on an assessment and characterization of air quality through ambient air quality data, air dispersion modeling, other evidence and supporting information, or a combination of the above.

Table 1. Summary of the EPA’s Final Designations and the Designation Recommendations by Kentucky

Area/County	Kentucky’s Recommended Area Definition	Kentucky’s Recommended Designation	The EPA’s Intended Designation	The EPA’s Final Area Definition	The EPA’s Final Designation⁴
Boone County Area	Boone County	Attainment	Unclassifiable/Attainment	Same as Commonwealth’s Recommendation	Attainment/Unclassifiable
Carroll County Area	Carroll County	Attainment	Unclassifiable/Attainment	Same as Commonwealth’s Recommendation	Attainment/Unclassifiable
Daviess County Area	Daviess County	Attainment	Unclassifiable/Attainment	Same as Commonwealth’s Recommendation	Attainment/Unclassifiable
Hancock County Area	Hancock County	Attainment	Unclassifiable/Attainment	Same as Commonwealth’s Recommendation	Attainment/Unclassifiable
Henderson County Area	Henderson County	Attainment	Unclassifiable	Henderson County (partial)	Attainment/Unclassifiable

⁴ Refer to Chapter 1 of Technical Support Document: Final Round 3 Area Designations for the 2010 1-Hour SO₂ Primary National Ambient Air Quality Standard for definitions of the designation categories and the terminology change from Unclassifiable/Attainment to Attainment/Unclassifiable.

Mason County Area	Mason County	Attainment	Unclassifiable/Attainment	Same as Commonwealth's Recommendation	Attainment/Unclassifiable
McCracken County Area	McCracken County	Attainment	Unclassifiable/Attainment	Same as Commonwealth's Recommendation	Attainment/Unclassifiable
Muhlenberg County Area	Muhlenberg County	Attainment	Unclassifiable/Attainment	Same as Commonwealth's Recommendation	Attainment/Unclassifiable
Trimble County Area	Trimble County	Attainment	Unclassifiable/Attainment	Same as Commonwealth's Recommendation	Attainment/Unclassifiable
Rest of the State*	Rest of the State	Attainment	Unclassifiable/Attainment	Rest of the State not previously designated. Same as Commonwealth's Recommendation	Attainment/Unclassifiable

*Except for areas that are associated with sources for which Kentucky elected to install and began timely operation of a new SO₂ monitoring network meeting the EPA specifications referenced in the EPA's SO₂ DRR (*see* Table 2), the EPA is designating the remaining undesignated counties (or portions of counties) in Kentucky as "attainment/unclassifiable." These areas that we are designating as attainment/unclassifiable (those to which this row of this table is applicable) are identified more specifically in Section 12 of Chapter 15 (addressing Kentucky) of the TSD for our intended designations.

Areas for which Kentucky elected to install and began timely operation of a new, approved SO₂ monitoring network are listed in Table 2. The EPA is required to designate these areas, pursuant to a court ordered schedule, by December 31, 2020. Table 2 also lists the SO₂ emissions sources around which each new, approved monitoring network has been established.

Table 2. Undesignated Areas Which the EPA Is Not Addressing in this Round of Designations (and Associated Source or Sources)

Area	Source(s)
Henderson (p) and Webster Counties	Century Aluminum Sebree, LLC, Big Rivers Electric Corporation's (BREC's) Robert A. Reid Station/Henderson Municipal Power and Light (HMP&L) Station 2, and BREC's Green Station Landfill

2. Technical Analysis of New Information for the Henderson County Area

2.1. Introduction

In its 120-day letters, the EPA expressed intent not only to designate portions of Warrick County, Indiana, as nonattainment but also to designate portions of Henderson County, Kentucky, as unclassifiable, in both cases based on evidence from the 2016 Sierra Club modeling that these areas are or may be violating the standard, respectively. However, the EPA considers Indiana's modeling to provide better characterization of air quality in nearby portions of Henderson County, Kentucky as well as in modeled portions of Warrick County than the 2016 Sierra Club modeling. Indiana's modeling shows that this area, as well as the modeled area in Warrick County, is attaining the standard. Therefore, the EPA finds that available information does not indicate that Warrick County is contributing to NAAQS violations in the nearby portions of Henderson County, Kentucky.

The EPA evaluated three separate modeling analyses for the Warrick County, Indiana and Henderson County, Kentucky areas including from the State of Indiana and two analyses from the Sierra Club (2016 and 2017) characterizing SO₂ concentrations for the Alcoa Power Plant and Alcoa Smelting operations facilities.⁵ After careful review of all analyses, the EPA observed that all three analyses may be considered to have been conducted reasonably in accordance with the Modeling TAD but finds that the Indiana analysis is the most reliable to characterize air quality in the vicinity of the two Alcoa facilities, for the reasons explained in Chapter 13 (addressing Indiana). The Indiana analysis shows modeled attainment of the SO₂ NAAQS in Warrick County, Indiana, and no modeled violations in the northern portion of Henderson County. For more detailed information on the EPA's review of these modeling analyses and rationale for our final designations, please refer to Chapter 13 (addressing Indiana) of this TSD for our final designations.

2.2. Summary of Information Reviewed in the TSD for the Intended Round 3 Area Designations Regarding the Henderson County Area

The following Table 3 identifies all the modeling assessments evaluated for the 120-day letters and discussed in the TSD for the Intended Round 3 Area Designations. Additional details can be found in the TSD for the Intended Round 3 Area Designations, Chapter 13 specific to Indiana and Chapter 15 specific to Kentucky. Chapter 15 (addressing Kentucky) of the TSD for our intended designations primarily referenced Chapter 13 (addressing Indiana) that fully evaluated the modeling assessment available for the area and was the basis for the intended designation of unclassifiable for a portion of Henderson County, Kentucky.

⁵ On October 23, 2017, the Kentucky Energy and Environment Cabinet submitted comments on EPA's 120-day intended designations on Sierra Club's 2016 A.B. Brown modeling analysis which included estimated SO₂ concentrations from the two Alcoa facilities in Warrick County, IN. Please refer to the EPA's Response to Comment document associated with this action in the docket for these final designations (EPA-HQ-OAR-2017-0003).

Table 3 –Modeling Assessment Evaluated in the TSD for the Intended Designation for the Warrick County and Henderson County Area

Organization Submitting Assessment	Date of the Assessment	Identifier used in the TSD for the Intended Round 3 Area Designations, Chapter 13	Distinguishing or Otherwise Key Features
Sierra Club	March 31, 2016	2016 Sierra Club Modeling	1 km receptor grid in Warrick County

The State of Indiana did not provide modeling for the EPA’s review prior to the 120-day letter. However, the Sierra Club had provided modeling during the review of Round 2 designations, commenting on the designation for the area in Posey County, Indiana, near the A.B. Brown facility but identifying violations near Alcoa in Warrick County, Indiana. A full review of that modeling is available in the TSD for the intended Indiana designations (Chapter 13, Section 10). This modeling was the primary basis for the EPA’s intended nonattainment designation for portions of Warrick County and the intended unclassifiable designation for a portion of Henderson County, Kentucky.

2.3. Air Quality Monitoring Data for the Henderson County Area

This factor considers the SO₂ air quality monitoring data in the Henderson County area. Our TSD for the intended area designations considered available data through 2016 for one monitoring site. Additionally, the EPA acknowledges the monitoring information the Commonwealth submitted on October 23, 2017, regarding this Baskett SO₂ monitor and recognizes that this air quality data aligns with the EPA’s factor analysis for the monitor in the TSD for our intended designations indicating the monitor has historic and current attaining SO₂ monitoring data. However, we do not have certified data for any additional complete calendar years at any site and we have no new relevant monitoring information of any other type, so no revision of our prior analysis of available monitoring data is warranted.

2.4. Emissions and Emissions-Related Data, Meteorology, Geography, and Topography for the Henderson County Area

These factors have been incorporated into the air quality modeling efforts and results discussed in the Indiana Chapter to the TSD for our final designations. The EPA gave consideration to these factors by considering whether they were properly incorporated and by considering the air quality concentrations predicted by the modeling.

2.5. Jurisdictional Boundaries in the Henderson County Area

Existing jurisdictional boundaries are considered for the purpose of informing the EPA’s designation action for the Henderson County area. Our goal is to base designations on clearly defined legal boundaries, and to have these boundaries align with existing administrative boundaries when reasonable.

In its submission, Kentucky recommended that specific census block groups within Henderson County be designated as attainment with the remainder of the county to be designated in Round 4 by December

31, 2020. County and census block group boundaries in Kentucky are well established and well known, so that these boundaries provide a good basis for defining the area being designated.

2.6. The EPA's Assessment of the Available Information for the Henderson County Area

After careful evaluation of the Commonwealth's recommendation and supporting information, as well as all available relevant information, the EPA is designating the area as attainment/unclassifiable for the 2010 SO₂ NAAQS. Specifically, the boundary is comprised of the portion of Henderson County contained within census block groups 211010207013, 211010207014, 211010207024, and 211010208004. There are no other portions of the County that have a separate area of analysis for Round 3, and the remainder of Henderson County will be characterized in the EPA's Round 4 of designations by December 31, 2020.

As detailed in Chapter 13 of the TSD for our final designations addressing Indiana, the EPA finds the modeling submitted by Indiana to be the most reliable characterization of current air quality and that it demonstrates the 1-hour SO₂ NAAQS is currently being attained in the Henderson County area.

The EPA finds that this attainment/unclassifiable area, as described in this section, has clearly defined legal boundaries, and we find these boundaries to be a suitable basis for defining an attainment/unclassifiable area.

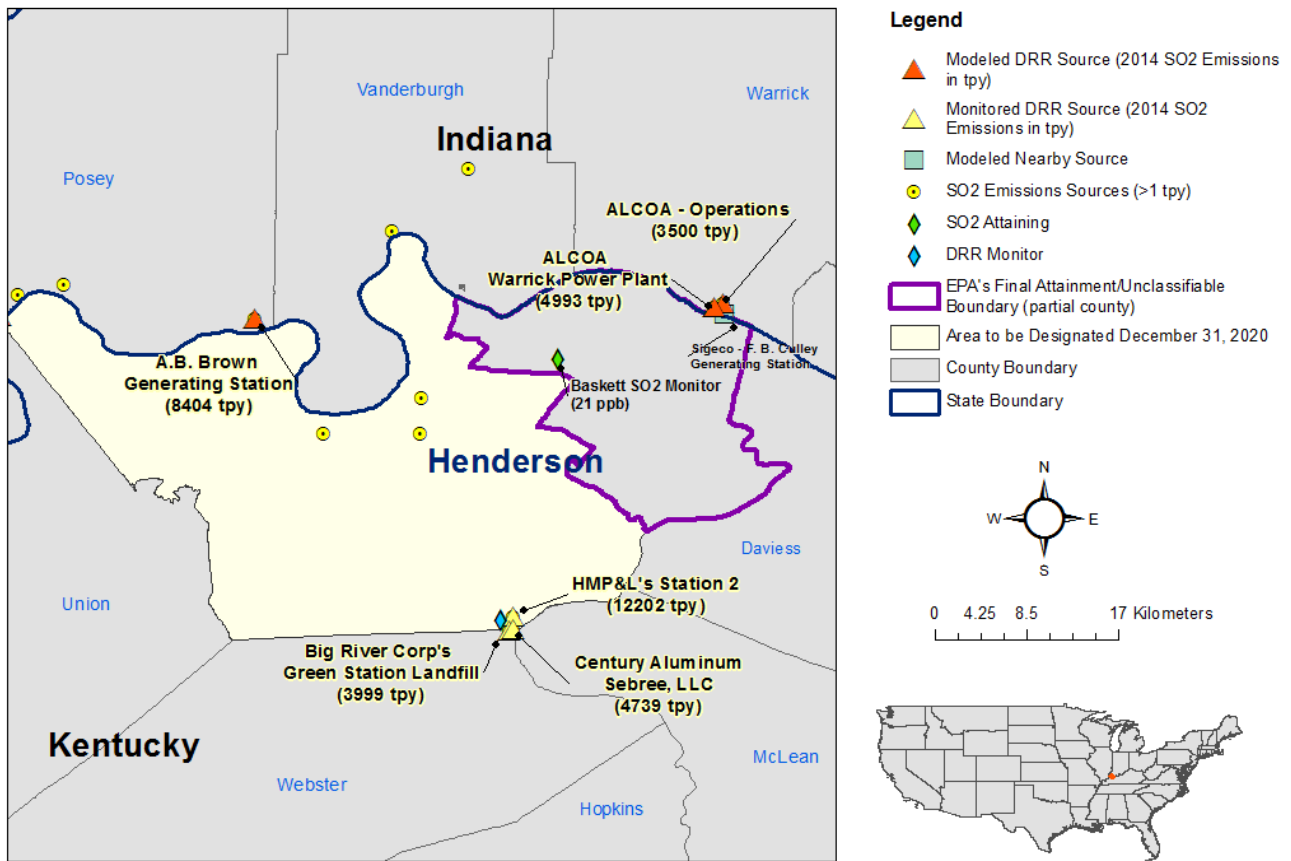
2.7. Summary of Our Final Designation for the Henderson County Area

After careful evaluation of the Commonwealth's recommendation and supporting information, as well as all available relevant information, the EPA is designating a portion of Henderson County as attainment/unclassifiable because it is an area that was not required to be characterized under 40 CFR 51.1203(c) or (d) for which available information does not indicate that the area violates the NAAQS or contributes to ambient air quality in a nearby area that does not meet the NAAQS. Based on the review of new modeling analyses for the Alcoa facilities in Warrick County, Indiana, the EPA is revising its intended unclassifiable designation for the portion of Henderson County (contained within census block groups 211010207013, 211010207014, 211010207024, and 211010208004) to attainment/unclassifiable (See Figure 1).

The EPA's final attainment/unclassifiable designation for the portion of Henderson County, Kentucky, encompassed by the 2016 Census blocks is consistent with the Commonwealth's recommendation. There are no other portions of the County that have a separate area of analysis for Round 3, and the remainder of Henderson County will be characterized in the EPA's Round 4 of designations by December 31, 2020.

Figure 1 shows the boundary of this final designated area.

Figure 1. Boundary of the Final Partial Henderson County Attainment/Unclassifiable Area



At this time, our final designations for Kentucky only apply to this area and the other areas presented in this technical support document. The EPA intends in a separate action to evaluate and designate all remaining undesignated areas in Kentucky by December 31, 2020.