

Final Technical Support Document

Arkansas Area Designations for the 2010 SO₂ Primary National Ambient Air Quality Standard

Summary

Pursuant to section 107(d) of the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA, or the Agency) must designate areas as either “unclassifiable,” “attainment,” or “nonattainment” for the 2010 1-hour sulfur dioxide (SO₂) primary national ambient air quality standard (NAAQS). Section 107(d) of the CAA defines a nonattainment area as one that does not meet the NAAQS or that contributes to a NAAQS violation in a nearby area, an attainment area as any area other than a nonattainment area that meets the NAAQS, and an unclassifiable area as any area that cannot be classified on the basis of available information as meeting or not meeting the NAAQS.

July 2, 2016, is the deadline established by the U.S. District Court for the Northern District of California for the EPA to designate certain areas. This deadline is the first of three deadlines established by the court for the EPA to complete area designations for the 2010 SO₂ NAAQS. This deadline applies to certain areas in Arkansas because two emission sources meet the conditions of the court’s order.

Arkansas submitted updated recommendations on September 11, 2015. Table 1 below lists Arkansas’s recommendations and identifies the county/counties in Arkansas that the EPA is designating in order to meet the July 2, 2016 court-ordered deadline. These final designations 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 – Arkansas’s Recommended and the EPA’s Final Designations

Area	State’s Recommended Area Definition	State’s Recommended Designation	EPA’s Final Area Definition	EPA’s Final Designation
Independence County, Arkansas	Independence County	Unclassifiable/Attainment	Same as State’s Recommendation (Independence County, AR)	Unclassifiable
Jefferson County, Arkansas	Jefferson County	Unclassifiable/Attainment	Same as State’s Recommendation (Jefferson County, AR)	Same as State’s Recommendation

Background

On June 3, 2010, the EPA revised the primary (health based) SO₂ NAAQS by establishing a new 1-hour standard at a level of 75 parts per billion (ppb) which is met an air quality monitoring site when the 3-year average of the 99th percentile of 1-hour daily maximum concentrations does not

exceed 75 ppb. This NAAQS was published in the *Federal Register* on June 22, 2010 (75 FR 35520), and is codified at 40 CFR 50.17. The EPA determined this is the level necessary to protect 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 SO₂. The two prior primary standards of 140 ppb evaluated over 24 hours, and 30 ppb evaluated over an entire year, codified at 40 CFR 50.4, remain applicable.¹ However, the EPA is not currently designating areas on the basis of either of these two primary standards. Similarly, the secondary standard for SO₂, set at 500 ppb evaluated over 3 hours, codified at 40 CFR 50.5, has not been revised, and the EPA is also not currently designating areas on the basis of the secondary standard.

General Approach and Schedule

Section 107(d) of the CAA requires that not later than 1 year after promulgation of a new or revised NAAQS, state governors must submit their recommendations for designations and boundaries to EPA. Section 107(d) also requires the 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 does not submit designation recommendations, the EPA may promulgate the designations that it deems appropriate without prior notification to the state, although it is our intention to provide such notification when possible. If a state or tribe disagrees with the EPA's intended designations, it is given an opportunity within the 120-day period to demonstrate why any proposed modification is inappropriate. The EPA is required to complete designations within 2 years after promulgation of a new or revised NAAQS, unless EPA determines that sufficient information is not available, in which case the deadline is extended to 3 years. The 3-year deadline for the revised SO₂ NAAQS was June 2, 2013.

On August 5, 2013, the EPA published a final rule establishing air quality designations for 29 areas in the United States for the 2010 SO₂ NAAQS, based on recorded air quality monitoring data from 2009 - 2011 showing violations of the NAAQS (78 FR 47191). In that rulemaking, the EPA committed to address, in separate future actions, the designations for all other areas for which the Agency was not yet prepared to issue designations.

Following the initial August 5, 2013, designations, three lawsuits were filed against the EPA in different U.S. District Courts, alleging the Agency had failed to perform a nondiscretionary duty under the CAA by not designating all portions of the country by the June 2, 2013 deadline. In an effort intended to resolve the litigation in one of those cases, plaintiffs Sierra Club and the Natural Resources Defense Council and the EPA filed a proposed consent decree with the U.S. District Court for the Northern District of California. On March 2, 2015, the court entered the consent decree and issued an enforceable order for the EPA to complete the area designations according to the court-ordered schedule.

¹ 40 CFR 50.4(e) provides that the two prior primary NAAQS will no longer apply to an area 1 year after its designation under the 2010 NAAQS, except that for areas designated nonattainment under the prior NAAQS as of August 22, 2010, and areas not meeting the requirements of a SIP Call under the prior NAAQS, the prior NAAQS will apply until that area submits and EPA approves a SIP providing for attainment of the 2010 NAAQS. No areas in Arkansas are subject to this clause.

According to the court-ordered schedule, the EPA must complete the remaining designations by three specific deadlines. By no later than July 2, 2016 (16 months from the court's order), the EPA must designate two groups of areas: (1) areas that have newly monitored violations of the 2010 SO₂ NAAQS and (2) areas that contain any stationary sources that had not been announced as of March 2, 2015, for retirement and that according to the EPA's Air Markets Database emitted in 2012 either (i) more than 16,000 tons of SO₂ or (ii) more than 2,600 tons of SO₂ with an annual average emission rate of at least 0.45 pounds of SO₂ per one million British thermal units (lbs SO₂/MmBTU). Specifically, a stationary source with a coal-fired unit that as of January 1, 2010, had a capacity of over 5 megawatts and otherwise meets the emissions criteria, is excluded from the July 2, 2016, deadline if it had announced through a company public announcement, public utilities commission filing, consent decree, public legal settlement, final state or federal permit filing, or other similar means of communication, by March 2, 2015, that it will cease burning coal at that unit.

The last two deadlines for completing remaining designations are December 31, 2017, and December 31, 2020. The EPA has separately promulgated requirements for state and other air agencies to provide additional monitoring or modeling information on a timetable consistent with these designation deadlines. We expect this information to become available in time to help inform these subsequent designations. These requirements were promulgated on August 21, 2015 (80 FR 51052), in a rule known as the SO₂ Data Requirements Rule (DRR), codified at 40 CFR part 51 subpart BB.

Updated designations guidance was issued by the EPA through a March 20, 2015 memorandum from Stephen D. Page, Director, U.S. EPA, Office of Air Quality Planning and Standards, to Air Division Directors, U.S. EPA Regions 1-10. This memorandum supersedes earlier designation guidance for the 2010 SO₂ NAAQS, issued on March 24, 2011, and it identifies factors that the EPA intends to evaluate in determining whether areas are in violation of the 2010 SO₂ NAAQS. The guidance also contains the factors the EPA intends to evaluate in determining the boundaries for all remaining areas in the country, consistent with the court's order and schedule. These factors include: 1) Air quality characterization via ambient monitoring or dispersion modeling results; 2) Emissions-related data; 3) Meteorology; 4) Geography and topography; and 5) Jurisdictional boundaries. This guidance was supplemented by two non-binding technical assistance documents intended to assist states and other interested parties in their efforts to characterize air quality through air dispersion modeling or ambient air quality monitoring for sources that emit SO₂. Notably, the EPA's documents titled, "SO₂ NAAQS Designations Modeling Technical Assistance Document" (Modeling TAD) and "SO₂ NAAQS Designations Source-Oriented Monitoring Technical Assistance Document" (Monitoring TAD), were available to states and other interested parties. Both of these TADs were most recently updated in February 2016.

Based on complete, quality assured and certified ambient air quality data collected between 2013 and 2015, no violations of the 2010 SO₂ NAAQS have been recorded at ambient air quality monitors in any undesignated part of Arkansas. However, there are 2 sources in the state meeting the emissions criteria of the consent decree for which the EPA must complete designations by July 2, 2016. In this final technical support document, the EPA discusses its review and technical

analysis of Arkansas's updated recommendations for the areas that we must designate. The EPA also discusses any intended and final modifications from the State's recommendation based on all available data before us.

The following are definitions of important terms used in this document:

- 1) 2010 SO₂ NAAQS – the primary NAAQS for SO₂ promulgated in 2010. This NAAQS is 75 ppb, based on the 3-year average of the 99th percentile of the annual distribution of daily maximum 1-hour average concentrations. See 40 CFR 50.17.
- 2) Attaining monitor – an ambient air monitor meeting all methods, quality assurance, and siting criteria and requirements whose valid design value is equal to or less than 75 ppb, based on data analysis conducted in accordance with Appendix T of 40 CFR part 50.
- 3) Design Value – a statistic computed according to the data handling procedures of the NAAQS (in 40 CFR part 50 Appendix T) that, by comparison to the level of the NAAQS, indicates whether the area is violating the NAAQS.
- 4) Designated nonattainment area – an area which the EPA has determined has violated the 2010 SO₂ NAAQS or contributed to a violation in a nearby area. A nonattainment designation reflects considerations of the state's recommendations and all of the information discussed in this document. The EPA's decision is based on all available information including the most recent 3 years of air quality monitoring data, available modeling analyses, and any other relevant information.
- 5) Designated unclassifiable area – an area for which the EPA cannot determine based on all available information whether or not it meets the 2010 SO₂ NAAQS.
- 6) Designated unclassifiable/attainment area – an area which the EPA has determined to have sufficient evidence to find either is attaining or is likely to be attaining the NAAQS. The EPA's decision is based on all available information including the most recent 3 years of air quality monitoring data, available modeling analyses, and any other relevant information.
- 7) Modeled violation – a violation based on air dispersion modeling.
- 8) Recommended attainment area – an area a state or tribe has recommended that the EPA designate as attainment.
- 9) Recommended nonattainment area – an area a state or tribe has recommended that the EPA designate as nonattainment.
- 10) Recommended unclassifiable area – an area a state or tribe has recommended that the EPA designate as unclassifiable.
- 11) Recommended unclassifiable/attainment area – an area a state or tribe has recommended that the EPA designate as unclassifiable/attainment.
- 12) Violating monitor – an ambient air monitor meeting all methods, quality assurance, and siting criteria and requirements whose valid design value exceeds 75 ppb, based on data analysis conducted in accordance with Appendix T of 40 CFR part 50.

Technical Analysis for Independence County, Arkansas

Introduction

The Independence County, Arkansas, area contains a stationary source that, according to the EPA's Air Markets Database, emitted in 2012 either more than 16,000 tons of SO₂ or more than 2,600 tons of SO₂ and had an annual average emission rate of at least 0.45 pounds of SO₂ per one million British thermal units (lbs SO₂/mmBTU). Specifically, in 2012, the Independence Steam Electric Station (Independence Station) emitted 32,974 tons of SO₂ and had an emissions rate of 0.59 lbs SO₂/mmBTU. As of March 2, 2015, this stationary source had not met the specific criteria for being "announced for retirement." Pursuant to the March 2, 2015, court-ordered schedule, the EPA must designate the area surrounding this facility by July 2, 2016.

In its September 11, 2015, submission, Arkansas recommended that the area surrounding the Independence Station, specifically the entirety of Independence County, be designated as unclassifiable/attainment based on an assessment and characterization of air quality from the facility and other nearby sources which may have a potential impact in the area of analysis where maximum concentrations of SO₂ are expected. This assessment and characterization was performed using air dispersion modeling software, i.e., AERMOD, analyzing actual emissions.

On February 11, 2016, the EPA notified Arkansas that we intended to designate the Independence County, Arkansas area as unclassifiable, based on our view that available information did not support a determination of whether the area was meeting or not meeting the 2010 SO₂ NAAQS. Additionally, we informed Arkansas that our intended boundaries for the unclassifiable area consisted of Independence County in its entirety. Our intended designation and associated boundaries were based on, among other things, the EPA's evaluation of the State's air dispersion modeling analysis, as well as the additional modeling analysis submitted by Sierra Club for the area surrounding Independence Station. The initial modeling provided by the State did not include emissions from sources near Independence Station, which may have an impact on air quality. Specifically, the State did not include emissions from Future Fuels. As discussed in our intended designation action, we cannot assume that impacts from this facility are captured fully in the temporally varying background concentration included in the State's modeling. The EPA also received additional modeling prior to our intended designation from Sierra Club that did include Future Fuels showing large impacts from that facility in Independence County, which supports the need for a more comprehensive emissions profile for the area to account for potential maximum impacts in Independence County. Sierra Club's modeling for the area around Independence Station asserting violations of the NAAQS, which included emissions from Future Fuels, was premised on several factors that are inconsistent with refinements provided for in the Modeling TAD. For example, Sierra Club did not include variable stack velocity and temperature for the Independence Station stacks. Additionally, the Sierra Club modeling characterized emissions from the Future Fuels facility utilized actual annualized emissions from the 2012 State Emissions Inventory. Lastly, while the State provided a response to Sierra Club's modeling, which we factored into our intended designation, the EPA has determined that the lack of a comprehensive emissions profile for the area—including emissions from Future Fuels—caused EPA in the intended designation to state that it could not sufficiently characterize the air quality in Independence County and therefore intended to designate the area as unclassifiable. The boundaries for this intended designation were the

jurisdictional boundaries of Independence County, which were based upon the State's recommendation and their submitted analysis and our concurrence on their reasoning.

Detailed rationale, analyses, and other information supporting our intended designation for this area can be found in the preliminary technical support document for Arkansas. This document along with all others related to this rulemaking can be found in Docket ID EPA-HQ-OAR-2014-0464.

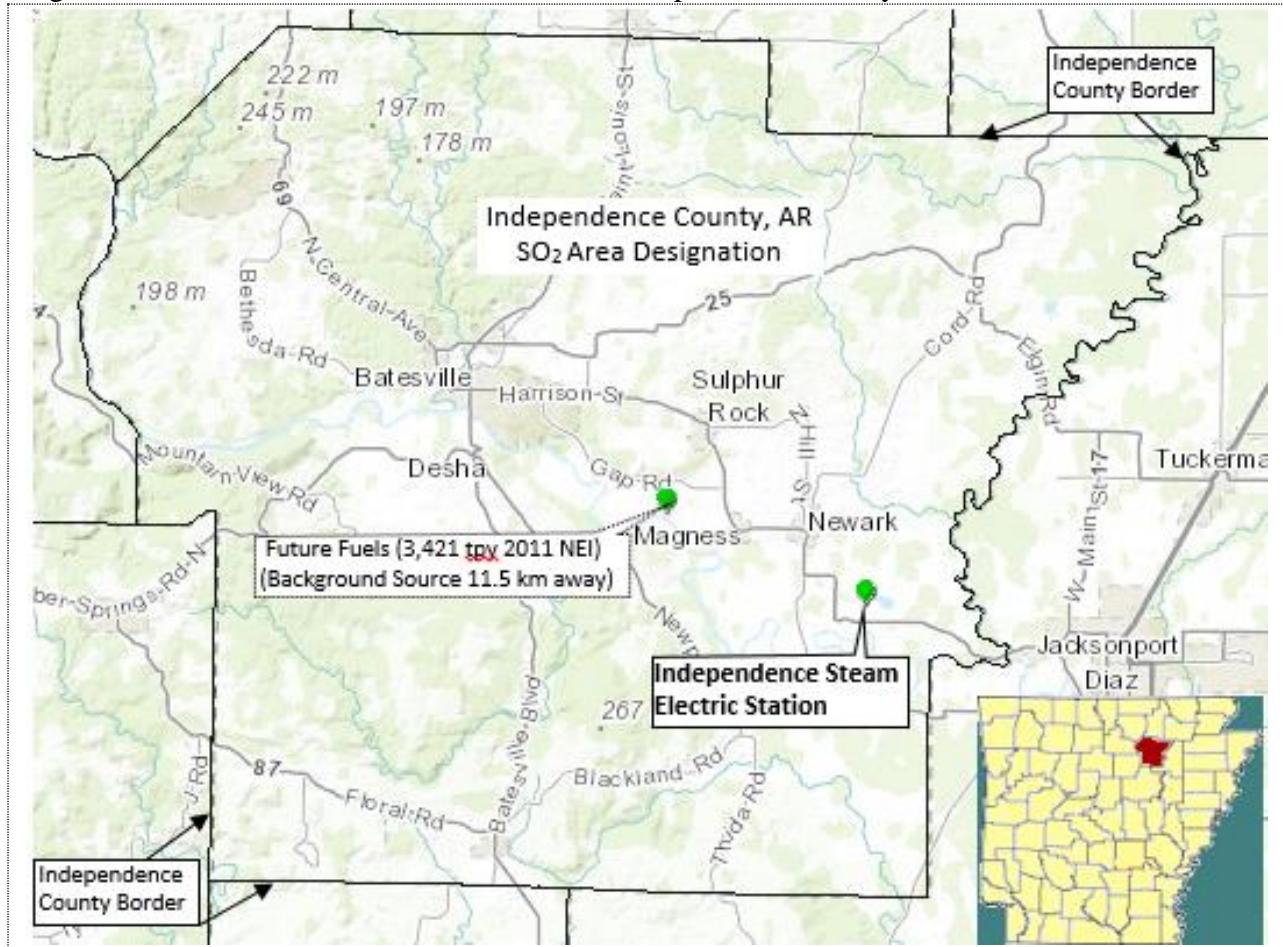
Assessment of New Information

In our February 11, 2016, notification to Arkansas regarding our intended unclassifiable designation for the Independence County, Arkansas area, the EPA requested that any additional information that the Agency should consider prior to finalizing the designation should be submitted by April 19, 2016. On March 1, 2016, the EPA also published a notice of availability and public comment period in the *Federal Register*, inviting the public to review and provide input on our intended designations by March 31, 2016 (81 FR 10563).

The EPA is explicitly incorporating and relying upon the analyses and information presented in the preliminary technical support document for the purposes of our final designation for this area, except to the extent that any new information submitted to the EPA or conclusions presented in this final technical support document and our response to comments document (RTC), available in the docket, supersede those found in the preliminary document.

As detailed further below, after carefully considering all available data and information, the EPA is designating the Independence County, Arkansas area as unclassifiable for the 2010 SO₂ NAAQS, because based on available information the area cannot be classified as meeting or not meeting the NAAQS. The boundaries for this unclassifiable area consist of Independence County in its entirety and are shown in the figure below. Also included in the figure are nearby emitters of SO₂ and Arkansas's recommended area.

Figure 1: The EPA's final unclassifiable area: Independence County, Arkansas



The EPA received substantive comments regarding our intended unclassifiable designation for the Independence County, Arkansas area. A comprehensive summary of these comments and our responses can be found in the RTC.

Jurisdictional Boundaries:

Existing jurisdictional boundaries are considered for the purpose of informing our final unclassifiable area, specifically with respect to clearly defined legal boundaries. The EPA did not receive any comments regarding the intended boundaries for this area.

The EPA believes that our final unclassifiable area, consisting of Independence County, Arkansas in its entirety, is comprised of clearly defined legal boundaries, and we find these boundaries to be a suitably clear basis for defining our final unclassifiable area.

Conclusion

After careful evaluation of the State's recommendation, all timely comments and information received during the state and public comment period, and additional relevant information as discussed in this document, the EPA finds that, based on available information, the EPA cannot determine whether the area around the Independence Station is meeting or not meeting the NAAQS, and is designating that area unclassifiable for the 2010 SO₂ NAAQS. Specifically, the area is comprised of Independence County, Arkansas, in its entirety.

The comments received from industry during the public comment period indicate that the Arkansas Department of Environmental Quality (ADEQ) is preparing additional modeling and supporting information to address the EPA's concerns that the modeling previously submitted by the State did not establish a comprehensive emissions impact profile for the Independence County, Arkansas, area's air quality. EPA has received a proposed modeling protocol from ADEQ describing the proposed approach for the additional modeling. However, the EPA has not received a complete modeling analysis with a comprehensive emissions profile at this time. Therefore, based on the information currently available, the EPA has determined that the area cannot be classified on the basis of available information as meeting or not meeting the NAAQS, and is finalizing our designation of Independence County as unclassifiable.

At this time, our final designations for the State only apply to this area and the others contained in this final technical support document. Consistent with the court-ordered schedule, the EPA will evaluate and designate all remaining undesignated areas in Arkansas by either December 31, 2017, or December 31, 2020.

Technical Analysis for Jefferson County, Arkansas

Introduction

The Jefferson County, Arkansas, area contains a stationary source that, according to the EPA's Air Markets Database, emitted in 2012 either more than 16,000 tons of SO₂ or more than 2,600 tons of SO₂ and had an annual average emission rate of at least 0.45 pounds of SO₂ per one million British thermal units (lbs SO₂/mmBTU). Specifically, in 2012, the White Bluff Steam Electric Station (White Bluff Station) emitted 31,687 tons of SO₂ and had an emissions rate of 0.59 lbs SO₂/mmBTU. As of March 2, 2015, this stationary source had not met the criteria for being "announced for retirement." Pursuant to the March 2, 2015, court-ordered schedule, the EPA must designate the area surrounding this facility by July 2, 2016.

In its September 11, 2015, submission, Arkansas recommended that the area surrounding White Bluff Station, specifically the entirety of Jefferson County, be designated as unclassifiable/attainment, attainment based on an assessment and characterization of air quality from the facility and other nearby sources which may have a potential impact in the area of analysis where maximum concentrations of SO₂ are expected. This assessment and characterization was performed using air dispersion modeling software, i.e., AERMOD, analyzing actual emissions.

On February 11, 2016, the EPA notified Arkansas that we intended to designate the Jefferson County, Arkansas area as unclassifiable/attainment, based on our view that the area was meeting the NAAQS. Additionally, we informed Arkansas that our intended boundaries for the unclassifiable/attainment area consisted of Jefferson County in its entirety. Our intended designation and associated boundaries were based on, among other things, our evaluation of the State's modeling that showed attainment concluded that the modeling generally followed EPA guidance, including the Modeling TAD.

Detailed rationale, analyses, and other information supporting our intended designation for this area can be found in the preliminary technical support document for Arkansas. This document along with all others related to this rulemaking can be found in Docket ID EPA-HQ-OAR-2014-0464.

Assessment of New Information

In our February 11, 2016, notification to Arkansas regarding our intended unclassifiable/attainment designation for the Jefferson County, Arkansas, area, the EPA requested that any additional information that the Agency should consider prior to finalizing the designation should be submitted by April 19, 2016. On March 1, 2016, the EPA also published a notice of availability and public comment period in the *Federal Register*, inviting the public to review and provide input on our intended designations by March 31, 2016 (81 FR 10563).

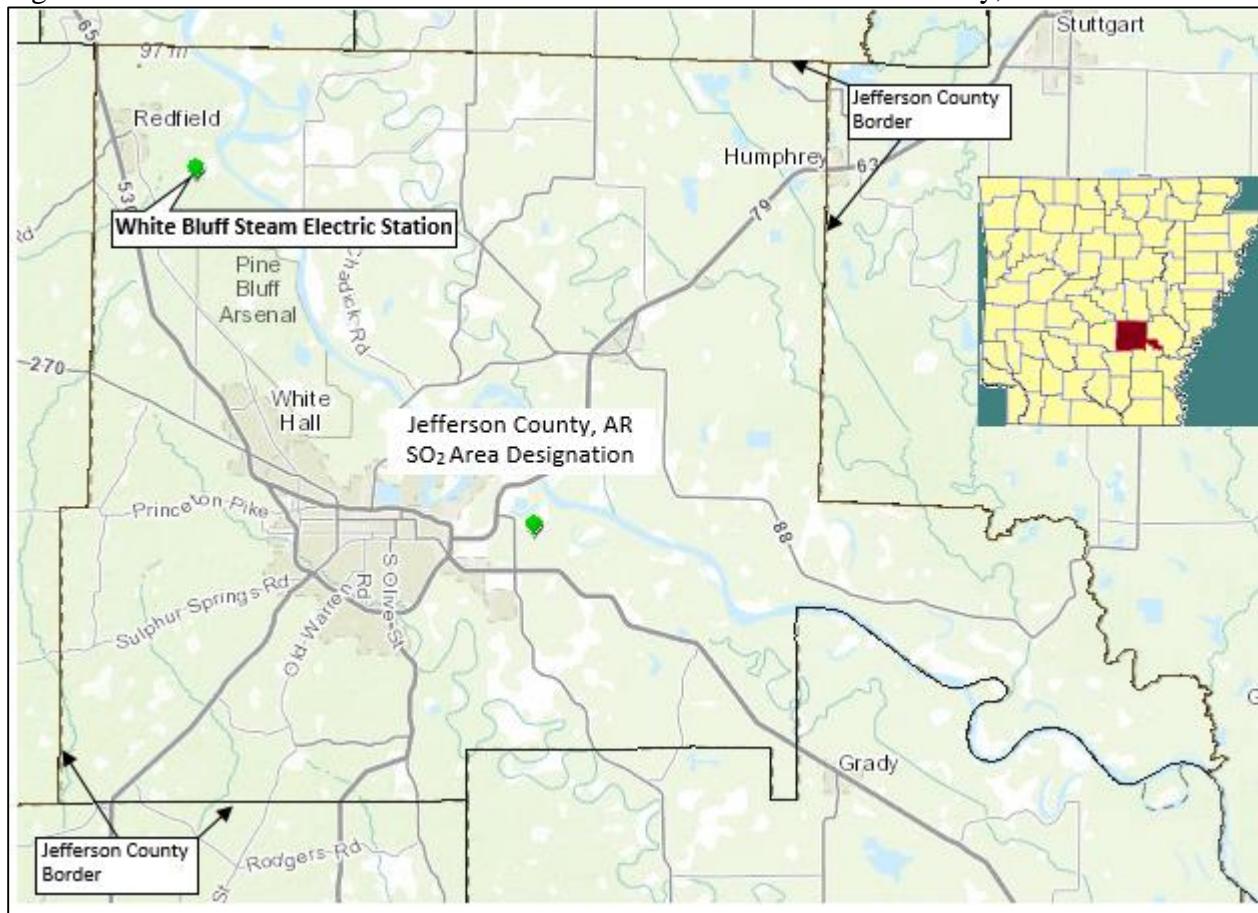
The EPA is explicitly incorporating and relying upon the analyses and information presented in the preliminary technical support document for the purposes of our final designation for this area, except to the extent that any new information submitted to the EPA or conclusions presented in this final technical support document, the comments received, and our response to comments document (RTC), available in the docket, supersede those found in the preliminary document.

Subsequent to our February 11, 2016, notification, the EPA received comments from industry supporting our intended designation for the area, and we did not receive any additional comments from the public or from Arkansas. A summary of the comments and our responses can be found in the RTC.

Conclusion

The EPA concludes that Jefferson County, Arkansas is meeting the 2010 primary SO₂ primary NAAQS. Therefore, EPA is designating Jefferson County, Arkansas, as unclassifiable/attainment for the SO₂ NAAQS. This is based on the information available to the EPA at this time, including the analyses performed for the purposes of the preliminary technical support document, and in the absence of any new information that would otherwise lead to a different conclusion regarding air quality in the area or any new information that would otherwise lead to a different conclusion regarding the area boundaries. The boundaries for this unclassifiable/attainment area consist of the entirety of Jefferson County, Arkansas and are shown in the figure below. Also included in the figure are nearby emitters of SO₂.

Figure 1: The EPA's Final Unclassifiable/Attainment Area: Jefferson County, Arkansas



At this time, our final designations for the State only apply to this area and the other contained in this final technical support document. Consistent with the court-ordered schedule, the EPA will evaluate and designate all remaining undesignated areas in Arkansas by either December 31, 2017, or December 31, 2020.