SOUTH DAKOTA'S

REGIONAL HAZE

STATE IMPLEMENTATION PLAN

RESPONSE TO COMMENTS

DURING FEDERAL LAND MANAGER REVIEW

South Dakota Department of Environment and Natural Resources

1.0 Introduction

In accordance with Title 40 of the Code of Federal Regulations (CFR), § 51.308(i)(2), the state must provide the Federal Land Manager with an opportunity for consultation, in person and at least 60 days prior to holding any public hearing on an implementation plan (or plan revisions) for regional haze. On January 15, 2010, DENR fulfilled this obligation and submitted South Dakota's draft Regional Haze Program to the following Federal Land Managers:

1. Tim Allen, U.S. Fish & Wildlife Service, Lakewood, Colorado;
2. Trent Wickman, USDA Forest Service, Great Lakes National Forests – Eastern Region;
3. John Bunyak, National Park Service, Air Resources Division, Lakewood, Colorado;
4. John Notar, National Park Service, Air Resources Division, Lakewood, Colorado;
5. Brian Kenner, National Park Service, Badlands National Park; and
6. Ken Hyde, National Park Service, Wind Cave National Park.

In addition, DENR took this opportunity to solicit comments from the following:

1. Laurel Dygowski, EPA Region VIII;
2. Amy Platt, EPA Region VIII;
3. Monica Morales, EPA Region VIII;
4. Catherine Nueschler and Anne Jackson, State of Minnesota;
5. Teresa Cooper and Asad Khan, State of Michigan;
6. Shelley Schneider and Katryna Schaf, State of Nebraska;
7. Dana Mount and Tom Bachman, State of North Dakota;
8. Curtis Taipale, State of Colorado;
9. Dave Klemp, State of Montana;
10. Tina Anderson, State of Wyoming;
11. Jim Strain, South Dakota Department of Agriculture;
12. Gene Nelson, GCC Dacotah, Rapid City, SD;
13. Tim Rogers, Black Hills Corporation, Rapid City, SD;
14. Danielle Weibers, Pete Lien and Sons, Rapid City, SD;
15. Clint Allen, Hills Materials Company, Rapid City, SD; and
16. Terry Graumann, Otter Tail Power Company, Big Stone I.

DENR requested comments by March 16, 2010. DENR received comments from the United States Department of Agriculture – Forest Service, United States Department of Interior – National Park Service, Otter Tail Power Company, and the United States Environmental Protection Agency (EPA) – Region 8. The comments may be reviewed in Appendix A.

This document contains DENR's responses to the comments received during the opportunity for consultation from the federal land managers, EPA and Otter Tail Power Company. A summary of the comments and DENR's responses follows.

2.0 Comments on Executive Summary

1. EPA states the BART emission limits, compliance schedule, monitoring, recordkeeping, and compliance determining methods for Big Stone I must be specified in the text of the Regional Haze State Implementation Plan or in a permit that is incorporated into the State Implementation Plan. EPA notes the public notice for the Regional Haze State Implementation Plan needs to include notification that an air quality permit to address BART requirements is incorporated as part of the State Implementation Plan.

   Response: DENR reviewed 40 CFR §308(1)(e) to determine the BART requirements that need to be included in the state implementation plan. In Section 6.1 and 6.2 of the state implementation plan, DENR describes the BART review that took place to determine which facilities were subject to BART (40 CFR §308(1)(e)(1)(i). Section 6.3 describes the case-by-case BART determination for Otter Tail Power Company's Big Stone I facility, which is the only facility in South Dakota subject to BART. DENR did not establish a technological or economic limitation for BART; therefore, 40 CFR §308(1)(e)(1)(iii) is not applicable.

   In accordance with 40 CFR §308(1)(e)(1)(iv), DENR identified Otter Tail Power Company must install BART as expeditiously as practicable, but no later than 5 years from EPA's approval of South Dakota's state implementation plan in Section 6.4. DENR will also add this language to ARSD 74:36:21:06.

   In accordance with 40 CFR §308(1)(e)(1)(v), DENR is required to include a requirement that each source subject to BART maintain the control equipment and establish procedures to ensure the equipment is properly operated and maintained. This requirement is summarized in Section 6.4. DENR included these requirements in ARSD 74:36:21:07. However, DENR did not identify the minimum requirements for the operation, maintenance, and monitoring requirements; therefore, DENR will include the minimum requirements in ARSD 74:36:21:07.

   DENR did not include a statement that met the requirements of 40 CFR §308(e)(5); therefore, DENR added a statement to Section 6.4 which specifies that Otter Tail Power Company is subject to the requirements of South Dakota's state implementation plan in the same manner as other sources once they have installed and are meeting the BART requirements.

   DENR is not planning on implementing an emission trading program or the Clean Air Interstate Rule (CAIR); therefore, 40 CFR §308(e)(2), (3), and (4) are not applicable. Otter Tail Power Company has not requested an exemption; therefore 40 CFR §308(e)(6) is not applicable.

   DENR did not find in 40 CFR §308(e) where it required the actual BART permit to be incorporated in the State Implementation Plan. DENR established the requirements of 40 CFR §308(e) in the written portion of the state implementation plan and in ARSD 74:36:21, which will be adopted in South Dakota's state implementation plan. In addition, DENR will

establish the permit limits for Otter Tail Power Company's BART eligible unit in ARSD 74:36:21:10. Therefore, DENR believes it has met the requirements for including the BART requirements in the state implementation plan.

2. EPA requested the timeline for removing the permit requirements related to Big Stone II from the existing permit.

   Response: Otter Tail Power Company's current Title V air quality permit includes requirements for Big Stone I and II. Because of the time and expense of revising a Title V air quality permit, DENR does not plan on removing the requirements for Big Stone II from the Title V air quality permit until either Otter Tail Power Company requests a revision or their Title V air quality permit is up for renewal. DENR anticipates revising Otter Tail Power Company permit to include the BART requirements once EPA approves DENR state implementation plan. If Big Stone II has not been removed by the time the BART requirements are incorporated in the Title V air quality permit, DENR will removed Big Stone II at that time.

3. EPA mentioned they did not receive the information in the last sentence of the Executive Summary which references Chapter 12.0 of the state implementation plan. Therefore, EPA was unable to review and comment on it.

   Response: Chapter 12.0 identifies the documents DENR referenced during the development of the state implementation plan. These documents are typically published by EPA and readily available to the public.

3.0 Baseline, Natural and Uniform Rate of Improvement

4. EPA mentioned it appears Appendix A will contain the IMPROVE data used to determine baseline visibility; but the data was not included in the draft document they received.

   Response: DENR did not include the IMPROVE data in the draft but the final document will contain the IMPROVE data.

5. Based on EPA's review of WRAP's Visibility Information Exchange Web System (VIEWS) and information from the United States Forest Service, EPA indicates there are errors in the baseline and natural background figures in Table 3-1, 3-5, and 3-7. EPA mentioned they were aware that the United States Forest Service raised concerns with these tables and requested the values be revised accordingly.

   Response: Since EPA did not specify what information in the tables was in error, DENR reviewed the data in each table. DENR based the baseline and natural background data on the IMPROVE data it gathered from the federal land managers IMPROVE website. DENR checked the data in Table 3-1 and determined it matches the IMPROVE data that will be included in Appendix A. DENR also reviewed the natural background data based on the new formula in Table 3-5 and did not find any errors based on the IMPROVE data in Appendix

A. DENR agreed to use the default values for natural background which resulted in values in Table 3-7 needing to be revised to match the values in Table 3-1 and 3-5. DENR made the appropriate changes.

As far as EPA's comment on the United States Forest Service raising concerns with DENR on the values in the tables. The only concern the United States Forest Service raised in their comment letter was on the use of the default natural conditions which will be addressed in Comment #6 of this document.

6. The National Park Service recommended DENR use EPA's default values for natural conditions available on the VIEWS website for this current state implementation plan and defer refinements to a later state implementation plan. In addition, the United States Forest Service recommended DENR use Western Regional Air Partnership/Technical Support System (WRAP/TSS) natural conditions values, which were derived from EPA's natural condition guidance. EPA indicated states must use EPA's default values for natural conditions in the current State Implementation Plan and any refinements deferred to future planning periods.

   Response: DENR reviewed 40 CFR § 51.308 and EPA's *Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule* and could not find were it required a state to use the default values for natural conditions in the initial state implementation plan for regional haze as stated by EPA. EPA's guidance does state the natural conditions estimates developed using the default approach is adequate to satisfy the requirements of the regional haze rule for the initial state implementation plan submittals. Therefore, DENR will use the default values in EPA's guidance for the initial state implementation plan and will reevaluate natural conditions in future reviews.

7. EPA stated the footnotes referring to Trijonis estimates for the Eastern United States do not need to be included in Table 3-6.

   Response: DENR agrees and made the appropriate change.

8. EPA stated a column must be added to Table 3-7 to highlight the deciview improvement required for both the best and worst days.

   Response: DENR agrees and made the appropriate change.

9. EPA recommend several changes to the Uniform Rate of Progress which are listed below:
   a. EPA stated Figure 3-11 was omitted in their draft document.

   Response: Figure 3-11 is an equation not a graph and was included in their draft document. Since listing an equation as a figure appears to be confusing, DENR will identify equations as "Equation" instead of a figure and renumber the figures appropriately.

b. EPA stated Table 3-8 needs to include the uniform rate of improvement of the 1st planning period (2018) for the most and least impaired days, rather than leave it to the reader to calculate from the annual numbers provided.

Response: Instead of listing the uniform rate of improvement for the 1st planning period in Table 3-8, DENR provided the uniform rate of improvement for the 1st planning period for the most impaired days in Figure 3-5(a) and (b). There is no uniform rate of improvement for the least impaired days. DENR is only required to ensure there is no degradation of the 20% least impaired days. DENR agrees that it should display to the reader how we calculated the improvement needed by 2018 and will add a paragraph before Figure 3-5 describing this calculation and direct the reader to Figure 3-5 to view the uniform rate of improvement needed by 2018 for each Class I area.

c. EPA was unable to determine the source of the 2018 numbers and thought it should be 14.89 deciviews for the Badlands and 13.94 deciviews for Wind Cave.

Response: DENR agrees and added a paragraph prior to Figure 3-5 describing how the uniform rate of improvement was calculated.

4.0 IMPROVE Data for Class I Areas

10. The National Park Service stated fires are an insignificant contributor to ammonium sulfate compared to fossil fuel combustion and recommended DENR delete the reference in Section 4.1 (fourth paragraph) and the last paragraph of Section 4.2.

Response: The National Park Service referenced Table 5-1 of the draft document for comparison of sulfur dioxide emissions from point versus forest fires. DENR agrees that point source emissions of sulfur dioxide are comparably greater than sulfur dioxide emissions from fires. However, in both cases mentioned by the National Park Service, DENR is identifying sources of ammonia sulfate emissions and not the activity that contributes the most. DENR does not recommend any changes.

11. The National Park Service and United States Forest Service recommended DENR expand its analysis of the contribution of wildfire to visibility impairment. The National Park Service requested the expansion because wildfires are a major contributor of organic carbon and elemental carbon. While the United States Forest Service noted that high organic carbon concentrations do not necessarily mean fire impacts, as noted in the draft Regional Haze State Implementation Plan. One method of expanding the analysis would be to look at aerosol contributions on individual days during the 2000-2004 baseline period to identify elevated organic and elemental carbon that could indicate fire impacts. A back trajectory analysis could then be conducted to assist in separating impacts from local agricultural, prescribed fires, or point sources that might be controllable. Another approach they suggested would be to compare the seasonality of prescribed fire with wildfire. For example, South Dakota could get prescribed fire activity information from the burners in the states and see if it matches measured high organic compound impact days.

Response: DENR agrees that wildfire and prescribed fires contribute to visibility impairment at both the Badlands and Wind Cave National Parks. This is apparent from the evaluation DENR conducted on the IMPROVE data for the base year and WRAPS' attribution analysis. As part of DENR's long term strategy, DENR will review the IMPROVE data for the base year and future years to determine which fires (e.g., size, type of combustibles, distance from the Class I area) contribute to visibility impairment in South Dakota's two Class I areas. DENR will use this information and compare to the best management practices that are being used across the nation and implement those practices that best fit the needs of South Dakota. DENR plans on implementing a Smoke Management Plan in calendar year 2013.

12. In the seventh paragraph of Section 4.2, the National Park Service disagrees with DENR's conclusion that local sources are not contributing to visibility impairment during the 20% least impaired days based on both National Parks having a good comparison of concentrations for each aerosol during the 20% least impaired days. The National Park Service recommends this statement be rephrased.

    Response: DENR based its conclusion that local sources were not impacting the 20% least impaired days because one would expect the concentrations during the 20% least impaired days to be different, not similar, because the Badlands National Park is prairie grasses, bare rock and sand and the Wind Cave National Park is prairie grasses and ponderosa pine forest. Impacts from regional influences would tend to create uniform concentrations throughout the area while local sources would impact one but not the other. However, DENR does agree 5-year averaging would also smooth this out. DENR will need to evaluate this further to determine if there are any impacts from local sources hidden by the 5-year average and/or if regional influence is the main reason for the elevated concentrations on the 20% least impaired days. DENR agrees to rephrase this paragraph in Section 4.2.

13. In the second paragraph of Section 4.3.3, the National Park Service indicated that visibility "impairment" appears to be declining rather than visibility declining.

    Response: DENR agrees and actually included visibility impairment in several other appropriate places in this section.

14. In addition to the visibility trends data presented in Figure 4-7 and 4-8, the National Park Service recommended looking at similar time series plots for the individual aerosol components to illustrate whether sulfates and nitrates (those components dominated by anthropogenic, controllable sources) are declining more than organic carbon mass (an indicator of fire). The National Park Service also recommended keeping the y axis scale in Figure 4-8 equivalent for a better comparison.

    Response: DENR displays a similar time series plot for the individual aerosols for each national park in Figures 4-5 and 4-6 using an extinction comparison. DENR mentions that it reviewed this data and could not observe any trends because the aerosol components fluctuated. DENR does agree that the y axis scale should be equivalent not only with all the charts in Figure 4-8 but also Figure 4-7 and adjusted the scale of the y axis to a maximum of

25 deciviews for each graph. After reviewing the revised charts, DENR adjusted its analysis for the Wind Cave National Park.

5.0 Source Apportionment

15. EPA states WRAP's emission inventory for this planning period is adequate but expects future reviews be updated to the most current emission inventory (e.g., include oil and gas emission estimates).

    Response: DENR agrees and already mentioned in Section 5.1.5 of the draft that future emission inventories should be expanded and improved.

16. EPA requested DENR elaborate on the "compliance initiative" related to volatile organic compound emissions from secondary oil and gas production in northwestern South Dakota. In particular, EPA asked what state mechanisms are in place to ensure these four thermal oxidizers are operating at a control efficiency of greater than 98%.

    Response: DENR agrees and expanded its discussion by adding the permit mechanism and the destruction efficiency requirement in Section 5.1.3.

17. EPA mentioned there is a large discrepancy between South Dakota's oil and gas volatile organic compound emissions and the WRAP TSS numbers which needs to be explained in greater detail. In addition, EPA wanted it explained if these numbers were used for modeling and reasonable progress purposes.

    Response: DENR believes the discrepancy between DENR and WRAP on this issue is explained sufficiently. WRAP did not use the 33,433 tons of volatile organic compound emissions from secondary oil and gas production in northwestern South Dakota in its 2002 modeling; but the reductions achieved are represented in the modeling for 2018 and reasonable progress purposes. DENR will add a paragraph at the end of Section 5.1.1 to explain EPA's second concern.

18. EPA has questions about the large difference in baseline sulfur dioxide emissions for area sources found in Table 5-1 (10,159 tons) and 5-2 (1,071 tons) and requested this be explained in further detail. In addition, EPA pointed out a typographical error on the footnotes for Table 5-4. The National Park Service also requested that this large difference be explained.

    Response: DENR agrees and added an explanation in the sixth paragraph of Section 5.1.1 and corrected the typographical error in the footnotes of Table 5-4.

19. EPA noted that emission inventories from other states that submitted their plans does not match what DENR has in Tables 5-6 and 5-7 and requested that we verify their emission inventory numbers.

Response: As discussed, DENR derived the emission inventory numbers from WRAP's website. It would be safe to state that if North Dakota used WRAP's emission inventory numbers they would not match up with South Dakota's since we are correcting the emission inventory in the state implementation plan just like DENR is assuming North Dakota is doing in their state implementation plan. DENR does not propose any changes; but plans on updating emission inventories from others states as already stated in Section 5.1.5.

20. EPA identified a typographical error in the last paragraph on page 54 and second paragraph on page 56 and stated the text is not consistent with the figures which show a slight change between 2002 and 2018 for both the least and most impaired days.

    Response: DENR agrees there is a typographical error where "most" was used and should have been "least" impaired days on both pages. However, the text is correct in stating the contributors from 2002 and 2018 for sulfate at each Class I area did not change. Essentially, DENR was comparing what areas the sulfate emissions were being generated from (e.g., Outside Domain, Canada) and not what type of sources were contributing. DENR corrected the typographical errors but made no other changes.

21. EPA requested the first paragraph, second to last sentence on page 58 should be clarified to read that "Natural fire related organic carbon mass generated in Montana contributes approximately 34% of the organic carbon mass in Badlands National Park."

    Response: DENR agrees and will make the appropriate change.

22. The National Park Service requested DENR separate out Big Stone I emissions in Table 5-2 to make it easier to compare data from Table 5-2 to Table 5-4, 6-1, and 6-3. The United States Forest Service also requested Big Stone I emissions be separated out to show how big of a part it is of South Dakota's point source emission inventory.

    Response: DENR agrees and identified the total emissions from Big Stone I, which are included in the "Point" source emissions for comparison purposes.

23. Based on the sulfur dioxide emissions for the four new point sources in Table 5-4 and all other point sources together projected to emit 2,458 tons of sulfur dioxide emissions in 2018 and area sources projected to emit 1,662 tons by 2018, the National Park Service believes these emissions should be assessed in determining if there are reasonable control measures. The National Park Service also mentioned the Prevention of Significant Deterioration permit application DENR received from Basin Electric for a natural gas fired combined cycle power generating facility in Brookings County, South Dakota.

    Response: DENR has already addressed the projected emissions from Big Stone I through a BART analysis which will reduce projected sulfur dioxide emissions from 3,425 to 2,212 tons per year; nitrogen oxide emissions from 15,323 to 2,457 tons per year; and particulate matter from 318 to 295 tons per year. On December 1, 2009, Otter Tail Power Company relinquished all rights and obligations granted through and by the PSD permit that was issued for Big Stone II. Therefore, the Big Stone II emissions in Table 5-4 will be eliminated.

The Hyperion Energy Center, which is a proposed combined oil refinery and electric power plant, and the Basin Electric's proposed natural gas fired combined cycle power generating facility went through a Prevention of Significant Deterioration permit review to ensure air emissions from each of these facilities would not cause or contribute to visibility impairment in a Class I area. DENR will include the air emissions from Basin Electric's proposed natural gas fired combined cycle power generating facility in the next 2018 evaluation.

Basin Electric's NextGen coal-fired electric power plant will also be required to go through a Prevention of Significant Deterioration permit review to ensure its air emissions would not cause or contribute to visibility impairment in a Class I area. Currently this permit application is on hold.

DENR's evaluation on if area sources of sulfur dioxide emissions should be assessed to determine if there are reasonable control measures was based on the attribution section of the draft Regional Haze State Implementation Plan. According to the attribution analysis, sulfur dioxide emissions from all sources in South Dakota are minimal and after Big Stone I installs the required controls under BART, sulfur dioxide emissions will be even further reduced.

24. Otter Tail Power Company requested it be clarified that even though Big Stone II emissions may be included in the 2018 emission projections, Big Stone II is no longer proceeding.

    Response: DENR agrees and will make the appropriate changes to the fourth paragraph of Section 5.1.3.

25. The National Park Service requested a clarification on the assumptions used for the WRAP regional modeling compared to those used in the Big Stone Unit 1 BART modeling. The National Park Service indicated that Table 5-2, 5-4, 6-1, and 6-3 do not appear consistent and requested DENR clarify what each table represents. The following summarizes the National Park Service's questions on the emission inventory comparison:

    a. Does Table 6-3 refer to potential emissions?

    Response: Table 6-3 represent the results of WRAP's modeling analysis of Big Stone Unit 1's visibility impact on Class I areas. The emissions represent the 24-hour average actual emission rate from the highest emitting day of the meteorological period modeled, not including periods of startup, shutdown or malfunctions and was based on WRAP's modeling protocol. The website location for the modeling protocol is included just before Table 6-3. To clarify this, DENR will describe how the emissions were determined.

    b. Table 6-3 WRAP BART modeling results based on 88% and 75% of all SD point source SO2 and NOx emissions in 2002. Is this correct?

    Response: Table 6-3 would not represent an apple to apple comparison for determining Big Stone Unit 1's sulfur dioxide and nitrogen oxide emissions compared to other sources in South Dakota. Table 5-2 would be a good comparison. Based on Table 5-2, Big Stone Unit

1's sulfur dioxide and nitrogen oxide emissions compared to point sources represents 80% and 70%, respectively.

c. Did DENR include assumptions or BART controls for Big Stone Unit 1 in the WRAP 2018PRP18b regional modeling?

Response: The emissions from Big Stone Unit 1 in Table 5-4 were used in WRAP's 2018PRP18b regional modeling analysis and based on Big Stone II being built and routing air emissions from Unit 1 through some of the control equipment associated with Big Stone II. The emissions from Unit 1 would pass through the wet scrubber but not the SCR associated with Big Stone II. The proposed BART emission limits were not used in WRAP's 2018PRP18b regional modeling analysis.

d. In Table 5-4, Big Stone Unit 1 is projected to emit 3,425 tons SO2 in 2018, 18% of the value in Table 6-1 or 28% of the value in Table 6-3. How does this relate to the 90% control efficiency listed for dry scrubbing in Table 6-6?

Response: Again, the emission rates for each Table are not comparable because they are based on different assumption.

e. In Table 5-4, Big Stone Unit 1 NOx emissions in 2018 (15,580 tons) appear to be the same as used as the baseline for the BART analysis reported in Table 6-3. Does this mean that WRAP regional modeling assumed SO_2 controls but not NOx controls for Big Stone Unit 1?

Response: As described earlier, the emissions from Big Stone Unit 1 in Table 5-4 were used in WRAP's 2018PRP18b regional modeling analysis and based on Big Stone II being built and routing air emissions from Unit 1 through some of the control equipment associated with Big Stone II. The emissions from Unit 1 would pass through the wet scrubber but not the SCR associated with Big Stone II.

6.0 Best Available Retrofit Technology (BART)

26. EPA identified a typographical error in the second sentence of the first paragraph dealing with Pete Lien and Sons' operations. EPA recommended the wording be "…not in operation prior to August 7, 1962…" instead of "in operation".

Response: DENR agrees and will make the appropriate change.

27. EPA agreed it was correct to include Pete Lien and Sons in the WRAP subject-to-BART modeling analysis. EPA noted Pete Lien and Sons' existing Title V air quality permit still includes the vertical kiln and there has not been a permit modification to address any such dismantling and closure. EPA recommends the permit be modified to reflect this change in status of the vertical kiln or the modeling needs to be re-run to correct the input errors and accurately determine whether Pete Lien and Sons is subject to BART.

Response: DENR disagrees with EPA that Pete Lien and Sons' Title V air quality permit should be revised to reflect the dismantling and closure of the vertical kiln or the modeling needs to be re-run. In permit condition 1.1, the footnote for Table 1-1 requires Pete Lien and Sons to shutdown and disassemble the vertical kiln before the initial startup of Unit #45, which is a newer kiln. Pete Lien and Sons notified DENR on March 13, 2009, that the vertical kiln was shutdown and dismantled. DENR does agree to clarify in the discussion in Section 6.1.2 that the permit requires them to shutdown and disassemble the vertical kiln and that has been completed. This discussion is included in the last paragraph of Section 6.1.2.

28. EPA stated the modeling inputs and outputs for Otter Tail Power Company's Big Stone I BART assessment need to be incorporated in the State Implementation Plan for documentation and public review.

    Response: In Section 6.2, this section states the modeling Otter Tail Power Company completed for Big Stone I's BART assessment will be available in Appendix D – Otter Tail Power Company's Visibility Impact Analysis. DENR did not include this when they sent out the review because EPA and the federal land managers had already received copies of the modeling analysis. The modeling inputs and outputs were included as part of the modeling analysis and will be available to the public in Appendix D.

29. In Section 6.3.2.4, page 83, footnote 3, EPA requested DENR explain how the 18,000 tons per year sulfur dioxide baseline figure was obtained and why it is different from the 19,863 tons per year identified in Table 6-1. On Table 6-10, page 88, EPA (15) identified a typographical error in footnote 3 and should be "nitrogen oxide" instead of "sulfur dioxide". EPA would like a further explanation on how DENR determined 18,000 tons per year of nitrogen oxide emissions for baseline instead of 17,179 tons per year from Table 6-1. In Section 6.3.4, second paragraph, page 89, EPA (16) requested that the 18,000 tons per year of sulfur dioxide and nitrogen oxide emissions for baseline determination should be explained further.

    Response: Table 6-1 displays what units at a facility are BART eligible sources and is based on the unit's potential to emit. In 40 CFR Part 51, Appendix Y – Guidelines for BART Determination Under the Regional Haze Rule, in the section titled "How should I determine visibility impacts in the BART determination" it notes that the model should use the 24-hour average actual emission rate from the highest emitting day of the meteorological period modeled (for the pre-control scenario). The 19,863 tons of sulfur dioxide per year identified in Table 6-1 was based on a heat input rating of 4,560 million Btus per hour, operating 8,760 hours per year, and the potential sulfur dioxide emission rate of approximately 1 pound per million Btus. The 18,000 tons of sulfur dioxide per year identified in the BART analysis is based on the highest average 24-hour average emission rate (4,832 pounds per hour) for calendar years 2001 through 2003 and operating 85% of the time or 7,746 hours per year.

    The 17,179 tons of nitrogen oxide per year identified in Table 6-1 is the unit's potential to emit and is based on a heat input rating of 4,560 million Btus per hour, operating 8,760 hours per year, and a nitrogen oxide emission rate of 0.86 pounds per million Btus. The 18,000 tons

of nitrogen oxide per year identified in the BART analysis is based on the highest average 24-hour average emission rate (4,855 pounds per hour) for calendar years 2001 through 2003 and operating 85% of the time or 7,746 hours per year.

Table 6-1 and the annual emission rate used in the BART analysis should not be compared to each other. Based on the BART guidelines, the baseline emissions should be the 18,000 tons per year for sulfur dioxide and nitrogen oxide. To clarify, DENR added "Potential to Emit" as a header to Table 6-1 and will add a paragraph to Section 6.3.2.4 and 6.3.3.4 to explain the annual emissions used in the BART analysis.

DENR agrees with the typographical error and will change it appropriately.

30. In Section 6.3.3.2, page 85-86, EPA had not completed a thorough review of this section on the "Technically Feasible Nitrogen Oxide Control Technologies" and may have additional comments during the public comment period.

    Response: Does not require a response.

31. On Table 6-9, page 87, footnote 5, EPA states the control efficiency of the selective catalytic reduction (SCR) and separated over-fire air (SOFA) system should be better than the 90% control efficiency of a SCR alone and believes the proposed limit should be lower than the proposed 0.1 pounds per million Btu limit. In Section 6.3.3.3, the National Park Service requested DENR state the control effectiveness and resulting emission rate that it believes to be appropriate for each control technology option. The National Park Service suggests a 30-day rolling average limit of 0.06 pounds of nitrogen oxide per million Btus. The National Park Service based its proposed nitrogen oxide emission limit on an Illinois permit for two cyclone boilers firing Powder River Basin subbituminous coal and equipped with over-fire air and selective catalytic reductions system at Dominion Energy's Kincaid Generating Station. Illinois required a nitrogen oxide emission limit of 0.07 pounds per million Btus on an annual based. In Section 6.3.5.3, the National Park Service believes the Kincaid cyclone boilers in Illinois have demonstrated the ability of a SCR to reduce nitrogen oxide emissions below the limit proposed by DENR and suggest a 30-day rolling average limit of 0.06 pounds per million Btus would be appropriate.

    Response: EPA appears to be basing the BART emission limit on an assumed control efficiency and an arbitrary emission rate from Otter Tail Power Company's Big Stone I facility. In considering what emission limit represents BART, one needs to consider the operation of the emission unit and the control device. DENR considers it inappropriate to take an arbitrary emission rate Otter Tail Power Company has actually emitted and multiply it by an arbitrary control efficiency to develop an emission limit.

    The control efficiency is variable as recognized by EPA's fact sheet (EPA-452/F-03-024) for fabric filters controlling particulate matter emissions. The fact sheet notes a fabric filter is a constant outlet device and not a constant collection efficiency device. This fact sheet also notes the collection efficiency of the fabric filter is constantly changing and average collection efficiencies are based on tests with a constant inlet pollutant loading. EPA also

recognized the variability in another fact sheet (EPA-452/F-03-032) for selective catalytic reduction systems controlling nitrogen oxide emissions. In this fact sheet, EPA states control efficiencies greater than 70 percent may be achieved with nitrogen oxide concentrations as low as 20 parts per million and that higher nitrogen oxide levels result in increased performance.

EPA acknowledges this concept in rule. In accordance with 40 CFR §60.482-10, a vapor recovery system shall be designed and operated to recover the volatile organic compound emissions vented to them with an efficiency of 95 percent or greater or to an exit concentration of 20 parts per million by volume, whichever is less stringent.

Depending on the document reviewed, the control efficiency of a selective catalytic reduction system varies from 35 to 90 percent. This range is based on EPA's fact sheet (EPA-452/F-03-032) for selective catalytic reduction systems and Babcock/Wilcox's webpage at http://www.babcock.com. EPA's fact sheet notes the efficiency is greater than 70 percent with nitrogen oxide concentrations as low as 20 parts per million. Using EPA's Method 19 to convert the concentration, 20 parts per million is equivalent to approximately 0.083 pounds per million Btus at 15% oxygen. This emission rate is at the range of the emission limits being discussed. Babcock/Wilcox webpage notes a selective catalytic reduction system should obtain a nitrogen oxide control efficiency in the range of 70 to 90 percent. None of the documents identify under what operating conditions these control efficiencies will occur (e.g., low, mid or high loads); the time period for demonstrating compliance (e.g., hourly or 30-day average emission rate); and/or the inlet pollutant loading rate.

To illustrate the problem of just multiplying an emission rate by a control efficiency, DENR reviewed Otter Tail Power Company's hourly nitrogen oxide emissions by obtaining data from EPA website - Clean Air Markets – Data and Maps. In calendar year 2006, 2007, and 2008, and not considering periods of startup and shutdown, the hourly nitrogen oxide emission rates ranged from approximately 0.46 to 1.324 pounds per million Btus. Using the 70 to 90 percent range, the controlled emission rates would range from 0.05 to 0.39 pounds per million Btus on an hourly basis.

DENR also reviewed Otter Tail Power Company's 30-day rolling average nitrogen oxide emission rate from the same data. In calendar year 2006, 2007, and 2008, and not considering days that Otter Tail Power Company was not in operation, the 30-day rolling average nitrogen oxide emission rate ranged from 0.66 to 0.84 pounds per million Btus. Using the 70 to 90 percent range, the controlled emission rates would range from 0.07 to 0.25 pounds per million Btus.

DENR reviewed EPA's Reasonable Achievable Control Technology, Best Available Control Technology, and Lowest Achievable Emission Rate Clearinghouse (RBLC) for permits issued after calendar year 2000 on the emission limits established for coal fired boilers using a selective catalytic reduction system. The RBLC notes that the best available control technology emission limits for new coal fired boilers using a selective catalytic reduction system were in the range from 0.05 to 0.1 pounds per million Btus. A new boiler is more capable of meeting these limits because the system can be designed into the construction of

the facility. An existing boiler does not have the advantage of maximizing and optimizing the operation of a control device compared to a new unit because the control device must be designed and constructed within the constraints of the existing operation and design. Therefore, DENR would not expect Otter Tail Power Company installing a new selective catalytic on an existing coal fired boiler to meet the lower range of the best available control technology emission limit.

DENR reviewed the operation of the Kincaid Generating Station in Illinois mentioned by the National Park Service. The Kincaid Generating Station is an existing coal fired boiler burning sub-bituminous coal and using a selective catalytic reduction system. Based on the Kincaid Generating Station's air quality permit, during May through September of each year, the facility must meet a nitrogen oxide emission limit of 0.25 pounds per million Btus. DENR reviewed Kincaid Generating Station's hourly nitrogen oxide emissions by obtaining data from EPA website - Clean Air Markets – Data and Maps for calendar year 2008. The 30-day nitrogen oxide rolling average for May through September ranged from 0.06 to 0.10 pounds per million Btus. For the other months (January, February, March, April, October, November, and December), Kincaid Generating Station's 30-day nitrogen oxide rolling average ranged from 0.60 to 0.83 pounds per million Btus.

Manufacturers will report a control efficiency range in its manuals or brochures; but in general and in DENR's experience, most manufacturers give emission rate guarantees in an outlet concentration and not as a control efficiency. Therefore, DENR does not believe citing a control efficiency is relevant in determining BART. DENR does not recommend any changes.

The presumptive emission limit established by EPA for a selective catalytic reduction system installed on a cyclone coal fired unit is 0.10 pounds per million Btus of fuel heat input (Federal Register Volume 70 Number 128 on page 39172). DENR reviewed Otter Tail Power Company's BART analysis and compared their results to other results we identify in the state implementation plan and verified the nitrogen oxide emission limit of 0.1 pounds per million Btu is BART. DENR does not recommend any changes.

32. In Section 6.3.3.4, page 87, EPA indicated they do not recommend relying on the CUECost model for estimating costs. EPA states the BART Guidelines requires cost estimates to be based on the OAQPS Control Cost Manual in order to maintain and improve consistency. The National Park Service stated Otter Tail Power Company should have used EPA's control Cost Manual as advised by the BART guidelines and by EPA Region 8 or at least provided its CUECost output data.

Response: DENR reviewed 40 CFR Part 51, Appendix Y – BART Guidelines to determine if the guideline actually requires that cost estimates be based on the OAQPS Control Cost Manuals as stated by EPA. One of the key words in the title indicates the OAQPS Control Cost Manual is not required and that word is "Guideline". In addition, in several locations in the guideline, it states, "In order to maintain and improve consistency, cost estimates should be based on the OAQPS Control Cost Manual, where possible." The words "should be" and

"where possible" do not require the use of the OAQPS Control Cost Manual. Therefore, DENR is not required to use the OAQPS Control Cost Manual.

The Sixth Edition of EPA's Air Pollution Control Cost Manual notes EPA has not developed a method for several of the identified controls. For example, cost estimates for controlling nitrogen oxide such as fuel switching, low NOx burners, steam/water injection, natural gas reburn and non-selective catalytic reduction are not available. The manual lists just two cost estimates for selective non-catalytic reduction and selective catalytic reduction to control nitrogen oxide emissions.

Otter Tail Power Company provided Burns and McDonald's December 7, 2009, letter which was in response to DENR's request for additional information. In this letter Burns and McDonald note the selective catalytic reduction and separated over-fire air system cost effectiveness using the CUEcost of $825 per ton of nitrogen oxide reduced was similar to the OAQPS Control Cost Manual of $900 per ton of nitrogen oxide reduced. Regardless of the manual used, DENR considered the submitted cost as a reasonable cost on a $ per ton basis.

DENR does not propose any changes.

33. On Table 6-12, page 89, footnote 2, EPA states the rounded modeling values in parentheses were used to compare the subject to BART threshold; but actually the unrounded modeled value must be used for determining whether a source exceeds the threshold.

Response: In accordance with 40 CFR Part 51, Appendix Y, a source that has an impact equal to or greater than 1.0 deciviews is considered to "cause" a visibility impairment and that establishing a threshold for what is considered to "contribute" to a visibility impairment should not be any higher than 0.5 deciviews. Appendix Y does not specify the rounding method (e.g., conventional, truncate); therefore DENR determined it should be conventional rounded to the tenth decimal since both deciview values are to the tenth value.

Rounding a numerical value means replacing it by another value that is approximately equal but as a shorter, simpler, or more explicit representation. Rounding is also done to indicate the accuracy of a computed number. In this case, the computer models results are to the thousandths and DENR is rounded the results to the nearest tenth for comparison to the standards. In addition, the rounding methodology implemented is one of the most common methods used. Just because the model gives the results out to three decimal points or to the thousandth does not mean that the threshold is required to be to the thousandth.

As noted in 40 CFR Part 51, Appendix Y, states remain free to use a threshold lower than 0.5 deciviews if they conclude that a Class I area justifies this approach. South Dakota identified it's contribute threshold as equal to or greater than 0.5 deciviews. This threshold means a visibility impact of 0.450 or greater is considered to contribute to visibility impairment.

Appendix Y does not specify the rounding method (e.g., conventional, truncate); therefore DENR determined it should be conventional rounded to the tenth decimal since both

deciview values are to the tenth value. The rounding convention proposed by South Dakota meets the requirements specified in the guideline. DENR does not recommend any changes.

34. EPA assumed compliance with DENR's proposed particulate matter BART limit for Big Stone I of 0.012 pounds per million Btu is based on a 30-day rolling average basis, as required. EPA requested we clarify in the state implementation plan.

Response: DENR reviewed 40 CFR §51.308 and 40 CFR Part 51, Appendix Y to determine if particulate emission limits are required to be based on a 30-day rolling average and found no federal requirement. In 40 CFR Part 51, Appendix Y, it states, "…you must establish enforceable emission limits that reflect the BART requirements and require compliance with a given period of time." In addition, it states, "Section 302(k) of the CAA requires emission limits such as BART to be met on a continuous basis." Section 302(k) of the CAA defines an emission limit as a requirement established by the state or the Administrator which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction, and any design, equipment, work practice or operational standard promulgated under this chapter. 40 CFR Part 51, Appendix Y further states, "In light of the above, the permit must … specify a reasonable averaging time consistent with established reference methods" and "… For EGUS, specify an averaging time of a 30-day rolling average…"

Otter Tail Power Company proposed to base its pounds per hour limit on a 30-day rolling average based on the following equations and methodology.

$$DailyRate = \frac{\sum_{n=1}^{k}(HeatInput)\times(EmissionRate)}{k}$$

Where:

- Daily Rate = the average pounds per hour emission rate per day;
- Heat Input = the hourly heat input recorded from the continuous emission monitor;
- Emission Rate = the pounds per million Btus emission rate as determined by the most recent performance test. The performance test is based on the average of three 1-hour runs; and
- k = the number of hours the boiler operated in the day.

$$30Day = \frac{\sum_{n=1}^{30}(DailyRate)}{30}$$

Where:

- 30 Day = the 30-day rolling average; and
- Daily Rate = the average pounds per hour emission rate per day.

DENR did not include the 30-day rolling average since theoretically, if the performance test demonstrates compliance with the pounds per hour limit and the pounds per million Btu limit, it will comply with the same limit on a 30-day rolling average. The pounds per hour limit is based on the maximum heat input to the boiler multiplied by the pounds per million Btu emission rate. As long as the performance test demonstrates compliance, the only theoretical way that the 30-day rolling average would exceed the limit is if Otter Tail Power Company operated above is maximum heat input of the boiler. If Otter Tail Power Company operates greater than is maximum heat input, Otter Tail Power Company would be in violation of its permit. Therefore, DENR did not believe it is worth the manpower to calculate a 30-day rolling average when compliance is determined by the performance test itself.

DENR also contends the citation EPA is referencing is for an emission limit where a continuous emission monitor is being used to demonstrate compliance such as for sulfur dioxide and nitrogen oxide. In the case of the particulate emission limit, compliance on a continuous basis will be based on an annual stack test and compliance assurance and periodic monitoring as required in the Title V air quality permit program. As noted in 40 CFR Part 51, Appendix Y, the particulate emission limit is consistent with the proposed reference method (e.g., performance test).

DENR does not recommend any changes.

35. EPA assumed compliance with DENR's proposed sulfur dioxide BART limit for Big Stone I of 0.09 pounds per million Btu is based on a 30-day rolling average basis, as required. EPA requested that we clarify in the state implementation plan.

    Response: In the last paragraph of Section 6.3.5.2, compliance with the proposed emission limit was stated as "should" be based on the continuous emission monitoring system and on a 30-day rolling average. DENR is clarifying this by stating it "shall" be based on the continuous emission monitoring system and on a 30-day rolling average. In this case, since a continuous emission monitoring system is being used to demonstrate compliance, the 30-day rolling average requirement is applicable.

36. EPA indicates there is no bright line regarding cost effectiveness and each determination must be made taking into account a full five factor BART analysis. EPA states it is reasonable to assume that SCR is generally cost-effective on large cyclone units.

    Response: No response required.

37. EPA requested DENR clarify that DENR's BART determination is SCR plus SOFA at 0.10 pounds per million Btus with compliance based on a 30-day rolling average.

    Response: DENR agrees and revised Section 6.3.5.3 appropriately.

38. EPA is requesting a justification for proposing a separate hourly startup/shutdown limit for particulate matter, sulfur dioxide, and nitrogen oxide in the state implementation plan as well

as whether the selected value represents BART. EPA asked in their comments if DENR evaluated potential impacts of the separate startup/shutdown limit on visibility in the Class I areas? EPA states the BART guideline contemplates pounds per million Btu limit that apply continuously with a 30-day rolling average period to accommodate potential short term fluctuations in the emission rate that may results during startup, shutdown, and other conditions.

Response: DENR explained in Section 6.3.1 and 6.3.5.1 why a baghouse was considered the top particulate matter control technology and determined what the particulate matter emission limit should be based on our recent Prevention of Significant Deterioration evaluation of Big Stone II. DENR explained in the Section 6.3.2 and 6.3.5.2 what the top sulfur dioxide control technology is and determined what the sulfur dioxide emission limit should be. DENR explained in the Section 6.3.3 and 6.3.5.3 what the top nitrogen oxide control technology is and determined what the nitrogen oxide emission limit should be. DENR is uncertain what additional information EPA is requesting since EPA did not provide any justification on why the selected value did not represent BART.

DENR disagrees that 40 CFR Part 51, Appendix Y requires compliance with the emission limit to be based on a 30-day rolling average if a continuous emission monitoring device is not used to demonstrate compliance. Otter Tail Power Company is using continuous emissions monitoring devices to demonstrate compliance on a 30-day rolling average for sulfur dioxide and nitrogen oxide. For particulate matter, DENR is requiring Otter Tail Power Company to demonstrate continuous compliance using annual stack tests and compliance assurance monitoring and periodic monitoring requirements in the Title V air quality permit. Fluctuations in the emission rate resulting during startup, shutdown, and other conditions will not be discovered from an annual stack test. These fluctuations will be observed based on the compliance assurance and/or periodic monitoring requirements in the Title V air quality permit.

In regards to how will days be accounted for that include some, but not all, hours of startup/shutdown. The calculation would be the same as the calculation used to determine the daily rate when the boiler operated some, but not all, hours during the day. The equations would look like the following:

$$DailyRate = \frac{\sum_{n=1}^{k} \left(EmissionRate\right)}{k}$$

Where:

- Daily Rate = the average pounds per million Btus emission rate per day;
- Emission Rate = the pounds per million Btus emission rate as determined by the continuous emission monitoring; and
- k = the number of hours the boiler operated in the day, excluding hours that contain startup and shutdown.

$$30Day = \frac{\sum_{n=1}^{30}(DailyRate)}{30}$$

Where:

- 30 Day = the 30-day rolling average; and
- Daily Rate = the average pounds per million Btus emission rate per day.

As defined in 40 CFR §51.301, *Best Available Retrofit Technology (BART)* means an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by an existing stationary facility. The emission limitation must be established on a case-by-case basis taking into consideration the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology. As noted in the definition, the units that represent BART are not defined. The emission limitation may be in pounds per hour, pounds per ton, pounds per million Btus, etc.

DENR established a pound per hour emission limit for particulate mater, sulfur dioxide, and nitrogen oxide to represent BART, which covers all normal operations including startup and shutdown. These hourly limits will be included in the permit because they were used in the visibility analysis to demonstrate Otter Tail Power Company was not causing visibility impairment in a Class I area.

When comparing control technology's and emission limits across or within industrial sectors a generalized emission rate is used. The generalized emission rate such as a pound per million Btus allows emission rates across boilers of varying sizes to be compared. A pounds per hour emission rate is difficult to compare from one boiler to the next if the heat input of the boilers are not identical. Whereas, the pound per hour emission rate is a case-by-case emission limit and is specific to an emission unit.

DENR does not recommend any changes.

39. In Section 6.4, page 99, EPA is concerned that without seeing the permit for a BART source, they will not be able to determine if this section of the State Implementation Plan adequately addresses requirements for enforceability, including appropriate averaging times, compliance verification procedures, recordkeeping and reporting requirements, and proper operation and maintenance procedures.

Response: DENR believes EPA's concerns are relieved by the fact the state implementation plan identifies what the emission limit will be and how they will demonstrate compliance; the proposed Administrative Rules of South Dakota (ARSD) section 74:36:21:10 requires the BART source to modify its permit to include BART limits and requirements; ARSD section 74:36:21:07 requires a BART source to establish written procedures to ensure the BART

control equipment is properly operated and maintained; ARSD section 74:36:21:08 requires the BART sources to conduct periodic monitoring, recordkeeping, and reporting as required in ARSD chapter 74:36:13 and section 74:36:05:16.01(9); and ARSD section 74:36:21:12 requires consultation with federal land managers. The periodic monitoring, recordkeeping and reporting section specified in these sections are from the Title V air quality program which EPA has already approved. All of these requirements will be in a proposed construction permit program that will be part of South Dakota's State Implementation Plan and DENR's approved Title V air quality program. Both of which requires public input and in the case of the Title V air quality program, EPA's concurrence.

In addition, Otter Tail Power Company is already required to meet the requirements under ARSD 74:3616:01 – Acid Rain Program. South Dakota's continuous emission monitoring requirements for the Acid Rain program are the same as EPA's (40 CFR Part 75). 40 CFR Part 75 specifies monitoring provisions, operation and maintenance requirements, missing data substitution procedures, recordkeeping and reporting requirements for the monitored data. These same requirements will be used to verify compliance with the BART sulfur dioxide and nitrogen oxide emission limits. South Dakota performance test requirements (ARSD 74:36:11) specifies the performance tests must be conducted in accordance with the applicable method specified in 40 CFR Part 60, Appendix A, Part 63, Appendix A and Part 51, Appendix M. The test methods specify the monitoring provisions to conduct a proper test. Therefore, these requirements will be used to verify compliance with the BART particulate matter emission limits.

DENR believes the BART requirements for Otter Tail Power Company are identified in the state implementation plan and will be incorporated in a permit issued by DENR that is federally enforceable. To ensure the requirements are federally enforceable, DENR added ARSD section 74:36:21:10, which specifies the particulate matter, sulfur dioxide, and nitrogen oxide BART emission rates for BART-eligible coal-fire power plants.

40. In Section 6.3.2.3, the National Park Service requested DENR state the control effectiveness and resulting emission rate that it believes to be appropriate for each control technology option. The National Park Service agreed with DENR's analysis, but suggests the baseline for annual sulfur dioxide emissions should reflect anticipated uncontrolled annual emissions which according to EPA's Clean Air Market database have averaged 0.66 pounds per million Btus over the 2000 through 2008 period.

Response: The National Park Service appears to be requesting DENR specify a control effectiveness of 90% for the dry scrubber and calculate an emission limit using that control effectiveness on an uncontrolled emission rate of 0.66 pounds per million Btus. In considering what emission limit represents BART, one needs to consider the operation of the emission unit and the control device. DENR considers it inappropriate to take an arbitrary emission rate Otter Tail Power Company has actually emitted and multiply it by an arbitrary control efficiency to develop an emission limit.

The control efficiency is variable as recognized by EPA's fact sheet (EPA-452/F-03-024) for fabric filters controlling particulate matter emissions. The fact sheet notes a fabric filter is a

constant outlet device and not a constant collection efficiency device. This fact sheet also notes the collection efficiency of the fabric filter is constantly changing and average collection efficiencies are based on tests with a constant inlet pollutant loading. EPA also recognized the variability in another fact sheet (EPA-452/F-03-034) for flue gas desulfurization (wet and dry) controlling sulfur dioxide emissions. In this fact sheet, EPA states control efficiencies range from 50 percent to 98 percent. EPA acknowledges this concept in rule. In accordance with 40 CFR §60.482-10, a vapor recovery system shall be designed and operated to recover the volatile organic compound emissions vented to them with an efficiency of 95 percent or greater or to an exit concentration of 20 parts per million by volume, whichever is less stringent.

Depending on the document reviewed, the control efficiency of a selective catalytic reduction system varies from 50 to 98 percent. This range is based on EPA's fact sheet (EPA-452/F-03-032) for flue gas desulfurization systems. This fact sheet does note that typically a dry scrubber has a reduction efficiency less than 80 percent but newer designs are capable of higher control efficiencies on the order of 90%. EPA's document does not identify under what operating conditions these control efficiencies will occur (e.g., low, mid or high loads); the time period for demonstrating compliance (e.g., hourly or 30-day average emission rate); and/or the inlet pollutant loading rate.

To illustrate the problem of just multiplying an emission rate by a control efficiency, DENR reviewed Otter Tail Power Company's hourly sulfur dioxide emissions by obtaining data from EPA website - Clean Air Markets – Data and Maps. In calendar year 2006, 2007, and 2008, and not considering periods of startup and shutdown, the hourly sulfur dioxide emission rates ranged from approximately 0.5 to 1.3 pounds per million Btus. Using an 80 to 90 percent range, the controlled emission rates would range from 0.05 to 0.26 pounds per million Btus on an hourly basis.

DENR also reviewed Otter Tail Power Company's 30-day rolling average nitrogen oxide emission rate from the same data. In calendar year 2006, 2007, and 2008, and not considering days that Otter Tail Power Company was not in operation, the 30-day rolling average nitrogen oxide emission rate ranged from 0.59 to 0.89 pounds per million Btus. Using an 80 to 90 percent range, the controlled emission rates would range from 0.06 to 0.18 pounds per million Btus.

DENR reviewed EPA's Reasonable Achievable Control Technology, Best Available Control Technology, and Lowest Achievable Emission Rate Clearinghouse (RBLC) for permits issued after calendar year 2000 on the emission limits established for coal fired boilers using a flue gas desulfurization system. The RBLC notes that the best available control technology emission limits for new coal fired boilers using a flue gas desulfurization system were in the range from 0.04 to 0.17 pounds per million Btus. A new boiler is more capable of meeting these limits because the system can be designed into the construction of the facility. An existing boiler does not have the advantage of maximizing and optimizing the operation of a control device compared to a new unit because the control device must be designed and constructed within the constraints of the existing operation and design. Therefore, DENR would not expect Otter Tail Power Company installing a flue gas desulfurization on an

existing coal fired boiler to meet the lower range of the best available control technology emission limit.

Manufacturers will report a control efficiency range in its manuals or brochures; but in general and in DENR's experience, most manufacturers give emission rate guarantees in an outlet concentration and not as a control efficiency. Therefore, DENR does not believe citing a control efficiency is relevant in determining BART. DENR does not recommend any changes.

DENR reviewed Otter Tail Power Company's BART analysis and compared their results to other results we identify in the state implementation plan and verified the sulfur dioxide emission limit of 0.09 pounds per million Btu is BART. DENR does not recommend any changes.

41. In Section 6.3.2.4, the National Park Service stated Otter Tail Power Company should have used EPA's control Cost Manual as advised by the BART guidelines and by EPA Region 8 or at least provided its CUECost output data.

    Response: DENR reviewed 40 CFR Part 51, Appendix Y – BART Guidelines to determine if the guideline actually requires that cost estimates be based on the OAQPS Control Cost Manuals as stated by the National Park Service and EPA. One of the key words in the title indicates the OAQPS Control Cost Manual is not required and that word is "Guideline". In addition, in several locations in the guideline, it states, "In order to maintain and improve consistency, cost estimates should be based on the OAQPS Control Cost Manual, where possible." The words "should be" and "where possible" do not require the use of the OAQPS Control Cost Manual. Therefore, DENR is not required to use the OAQPS Control Cost Manual.

    The Sixth Edition of EPA's Air Pollution Control Cost Manual notes EPA has not developed a method for several of the identified controls. For example, cost estimates for controlling sulfur dioxide such as wet and dry flue gas desulfurization systems are not available. The manual identifies this in the Table of Contents as a Planned Chapter.

    Even though the specific CUECost output file identified by the National Park Service was not provided, Otter Tail Power Company provided the CUECost input files and summarized the estimated costs from the CUECost output files in its BART analysis. Otter Tail Power Company identified the cost per ton as $1,492 per ton. Regardless of the manual used, DENR considered the submitted cost as a reasonable cost on a $ per ton basis.

    DENR does not propose any changes.

42. The National Park Service recommended DENR provide an additional table which illustrates the cumulative $/dv for the control options in Table 6-15.

    Response: Instead of adding an additional table, DENR added a row for the cumulative $/deciview for each option in Table 6-15.

43. Otter Tail Power Company requested the fourth sentence in Section 6.3.1.1 be revised as follows: "As such, the filterable particulate may be collected by placing a control device in the flue gas stream prior to the stack."

    Response: DENR agrees and made the appropriate changes.

44. Otter Tail Power Company requested footnote 4 for Table 6-9 be clarified to represent Best Available Control Technology for Basin's NextGen project is for a new pulverized-fired boiler equipped with a low-NOx burner combustion technology which produces lower levels of nitrogen oxide emissions entering the selective catalytic reduction than are achievable with an existing cyclone-fired boiler.

    Response: DENR agrees to clarify the BACT analysis is for a new pulverized-fired boiler equipped with a low-NOx burner combustion technology.

45. Otter Tail Power Company requested it be clarified that the number of significant digits Otter Tail Power Company reported for its deciview impacts included in Table 6-12 and 6-14 are consistent with WRAP modeling results presented in Table 6-3 and are also consistent with accepted industry practices.

    Response: DENR agrees to state the reporting of the visibility impact to three significant digits is consistent with how WRAP reported its modeling results in footnote 2 of Table 6-12 and the paragraph just before Table 6-14.

46. Otter Tail Power Company requested the last sentence of the second paragraph in Section 6.3.5.1 be revised to reference the annual performance test and the number of hours the boiler operated that day.

    Response: DENR agrees and will clarify the most recent annual performance test.

7.0 Reasonable Progress

47. EPA was unable to determine in Table 7-1 and Section 7.2.1 if 16.50 and 15.28 deciview for the Badlands and Wind Cave, respectively were DENR's reasonable progress goals and indicated the numbers do not match those shown in Figure 8-1. EPA requested clarification and documentation on how these numbers were derived. EPA also stated in accordance with 40 CFR §51.308(d)(2)(iv)(A), DENR is required in the state implementation plan to include the deciview difference between the baseline and natural conditions for the best and worst days for the first planning period (2018). EPA also stated in accordance with 40 CFR §51.308(d)(1)(ii), the state implementation plan must provide the number of years necessary to reach natural conditions when the reasonable progress goal is less than the uniform rate of progress.

Response: DENR clarified where the baseline, uniform progress and reasonable progress for 2018 were derived from by adding footnotes to Table 7-1. The baseline values were derived from Table 3-7. The uniform progress goals for 2018 were derived from Figure 3-5. The reasonable progress goals for 2018 were derived from WRAP's modeling.

DENR realized that Figure 8-1 is actually a table and re-labeled it as Table 8-1. Table 8-1 was derived from WRAP's reasonable progress analysis at the Badlands and Wind Cave National Parks using what was considered background and natural conditions at the time. DENR clarified where the baseline conditions and deciview values for baseline, natural conditions and uniform rate of progress were derived in the footnotes. The baseline conditions were derived from Table 4.3(b) and 4.4(b) for the Badlands and Wind Cave National Parks, respectively. The deciview values were derived from Table 3-7 for the baseline and natural conditions and Figure 3-5 for the uniform rate of progress.

40 CFR §51.308(d)(2)(iv)(A) states the following, "For the first implementation plan addressing the requirements of paragraphs (d) and (e) of this section, the number of deciviews by which baseline conditions exceed natural visibility conditions for the most impaired and least impaired days." DENR compared the baseline and natural visibility condition values but did not display the difference. Therefore, DENR changed Table 3-7 to include the difference.

DENR reviewed 40 CFR §51.308(d)(1)(ii) and agrees with EPA's interpretation. DENR explained its intentions in Section 10.3; but understands the explanation should be in more detail and revised this section to explain.

48. EPA stated the public must be provided a calculation of the number of years required to reach natural conditions if the Reasonable Progress Goal provides a slower rate of improvement than that needed to attain natural conditions by 2064 per 40 CFR §51.308(d)(1)(ii). The State Implementation Plan must include DENR's best estimate of number of years to reach natural condition with the Reasonable Progress Goals. The National Park Service stated that because modeled progress in improving visibility by 2018 is less than the uniform rate of progress necessary to achieve natural visibility by 2064, DENR needs to define when natural conditions are expected to be achieved given the reasonable progress goals by 2018.

    Response: DENR reviewed 40 CFR §51.308(d)(1)(ii) and agrees with EPA's interpretation. DENR explained its intentions in Section 10.3; but understands the explanation should be in more detail and revised this section to explain.

49. EPA indicated a four factor analysis must be conducted as part of the Reasonable Progress Goals as well as justifying a Reasonable Progress Goal that is less than the Uniform Rate of Progress. The National Park Service indicated DENR is missing the required four factor analysis of potential emissions controls. The Forest Service believes a four factor analysis is required but depending on Big Stone I's emission contribution, a simple analysis may be justified and requested DENR use the information and analysis provided by WRAP.

Response: To determine if a four factor analysis is warranted, DENR looked at the air pollutants being emitted from point sources that were not meeting the glide path for each National Park. Based on Figure 7-1(a), the air pollutant not meeting the glide path at the Badlands National Park is ammonia sulfate and organic carbon mass. Based on Figure 7-1(b), the air pollutant not meeting the glide path at the Wind Cave National Park is ammonia sulfate, organic carbon mass, and ammonia nitrate.

Next, DENR reviewed WRAP's attribution analysis to determine the major contributors of ammonia sulfate, organic carbon mass, and ammonia nitrate in South Dakota's two Class I areas. For the Badlands and Wind Cave National Parks, the major contributors of ammonia sulfate are from sources not in South Dakota. South Dakota's ammonia sulfate contribution for 2002 and 2018 is minimal at both national parks at approximately 0.04 micrograms per cubic meter. South Dakota's contribution represents 3% of the ammonia sulfate concentrations for 2018 at both national parks. Of the 3%, approximately 1.5% is generated from point sources and 1.5% is generated from mobile and other sources.

The major contributor of organic carbon mass in both National Parks is natural fires with point source contributions minimal. Organic carbon mass emissions from natural and prescribed fires will be evaluated in a smoke management plan which is part of DENR's long term strategy.

Ammonia nitrate was only a concern for the Wind Cave National Park since it was on the glide path at the Badlands National Park. At the Wind Cave National Park, the major contributors to ammonia nitrate are Canada followed by Wyoming, Outside the Domain, and South Dakota. South Dakota's ammonia nitrate contribution for 2002 and 2018 is approximately 0.135 and 0.105 micrograms per cubic meter, respectively. South Dakota's contribution represents 10% of the ammonia nitrate concentration for 2018 at the Wind Cave National Park. Of the 10%, approximately 4% is generated from point sources and 6% is generated from mobile and other sources.

DENR determined that a four factor analysis is not warranted at this time because of the minimal contribution point sources contribute to visibility impairment in South Dakota's Class I areas. DENR will re-evaluate this decision during periodic reviews of the Regional Haze State Implementation Plan. This will also give DENR time to determine if the implementation of each state's Regional Haze Program will bring ammonia sulfate, ammonia nitrates, and organic carbon mass emissions in line with the Uniform Rate of Progress.

50. The National Park Service indicated DENR should state explicitly that the reasonable progress goals for South Dakota's Class I areas are the same as the WRAP CMAQ modeling results for 2018 and DENR did not include any other emissions reductions beyond those modeled by WRAP in setting the reasonable progress goals.

Response: DENR disagrees since the BART determination for Otter Tail Power Company's Big Stone I facility is not included entirely in WRAP's modeling analysis of reasonable progress goals. In addition, DENR is proposing rules that will require new major sources and a modification to an existing major source that are not subject to New Source Review to

conduct a visibility impact analysis to ensure the proposal will not contribute to adverse impact on visibility in an mandatory Class I area. The later was not mentioned in the draft Regional Haze State Implementation Plan and will be included in Section 7.1.

8.0 Long Term Strategy

51. In accordance with 40 CFR §51.306(c), EPA states DENR must revise its plan to provide for a coordinated long term strategy for addressing both reasonably attributable and regional haze visibility impairment and future coordinated long term strategies must be submitted consistent with the schedule for periodic progress reports set forth in 40 CFR §51.308(g). Currently, the requirements in 40 CFR §51.306(c) are under a Federal Implementation Plan. EPA has not determined how to coordinate a reasonable attributable long-term strategy under a Federal Implementation Plan with a regional haze long-term strategy State Implementation Plan. EPA states the simplest approach would be for DENR to adopt a reasonable attributable program and asked if DENR was interested in this concept.

    Response: Because EPA has not determined how to coordinate a reasonable attributable long-term strategy under a Federal Implementation Plan with a regional haze long-term strategy State Implementation Plan does not mean DENR is required to adopt a reasonable attributable program. EPA, under the Federal Implementation Plan, must submit their long term strategy for addressing reasonably attributable visibility impairment in accordance with 40 CFR §51.306(c). Currently DENR is not interested in developing a reasonable attributable program to replace EPA's program; but will coordinate with EPA in developing a long term strategy that addresses both programs. DENR clarified this commitment in Section 11.2.

52. In Section 8.1, page 105, EPA states DENR must quantify South Dakota's impact to the Class I areas outside the state (similar to that noted in Table 6-4).

    Response: DENR is unsure of what EPA is requesting. In accordance with 40 CFR § 51.308(d)(3)(i), the long term strategy for each state that causes or contributes to impairment in a Class I area is required to demonstrate that it has included in its state implementation plan all measures necessary to obtain its share of the emission reductions needed to meet the progress goals for the Class I area. DENR determined that Otter Tail Power Company's Big Stone I facility is the only source in South Dakota that is reasonable anticipated to contribute to visibility impairment in Class I areas in other states. DENR discusses how the impacts will be addressed in Chapter 6.0. Table 6-4, which EPA referenced in their comment, quantifies Otter Tail Power Company's impact. DENR does not believe it needs to be repeated in Section 8.1. DENR does not recommend any changes.

53. In Section 8.3, page 106, EPA recommended DENR add the website addresses and/or references to where the technical analyses are located and how they will be maintained going forward. In addition, DENR should specify its commitment to continue compilation and analysis of the technical requirements for the Regional Haze State Implementation Plan regardless of future uncertainness in the WRAP's role.

Response: DENR is confident WRAP will remain a viable resource for states to use in their Regional Haze updates in the future. DENR will continue to support the WRAP along with the tools developed including the Technical Support System (TSS), Visibility Information Exchange Web System (VIEWS), Emissions Data Management System (EDMS), Fire Emissions Tracking System (FETS), etc. In the event that the WRAP should cease to exist, DENR will continue to monitor and model data for technical analyses to accomplish the goals of South Dakota's Regional Haze State Implementation Plan. DENR will include the technical analyses website at:

http://vista.cira.colostate.edu/TSS/Results/HazePlanning.aspx

54. EPA indicated there is currently a Federal Implementation Plan in place for the original visibility new source review requirements under 40 CFR §51.307, which incorporated by reference the requirements in 40 CFR §51.28 (see 40 CFR §51.2179(b)). EPA asked if DENR's intention was to use the proposed regional haze rules under Administrative Rules of South Dakota, Chapter 74:36:21 to replace the nonattainment new source review visibility analysis requirements. If so, EPA would provide input on such revision.

    Response: The Administrative Rules of South Dakota, Chapter 74:36:21 is being adopted to implement the Regional Haze Program. DENR does not anticipate adopting the original visibility program at this time.

55. In Section 8.5.5, page 109-110, in accordance with 40 CFR §51.308(d)(3)(v)(E), EPA states that in establishing DENR's long term strategy, DENR must consider smoke management techniques for agricultural and forestry management purposes including plans as currently exist with the state for these purposes. At least some preliminary steps, in coordination with the federal land managers, must be included along with citing to existing South Dakota burning provisions. The National Park Service would like to see a more complete discussion of local options to address emissions of organic carbon mass, elemental carbon, and course mass because the source apportionment analyses indicates organic carbon from natural fires is a major contributor on the 20% most impaired days. In addition, a more complete discussion of options to control smoke from unplanned wildland fires and the relative importance of prescribed burns and agricultural burns in the state. In Section 8.5.5, DENR states agricultural burning occurs in the eastern part of the state but the National Park Service states that does not preclude transport of smoke to the west on some days. The National Park Service acknowledges the emissions from prescribed burns in the national parks are contributing to visibility impairment and would like to participate in an effective smoke management plan. The United States Forest Service offered to assist DENR in developing the smoke management plan.

    Response: DENR agrees that in accordance with 40 CFR §51.308(d)(3)(v)(E), smoke management techniques for agricultural and forestry management purposes including plans as currently exist within the states for these purposes must be considered once DENR determines the impacts local burning practices have on the monitoring data being collected at the Badlands and Wind Cave National Parks. As noted in Section 8.5.5, we do not believe

agricultural burning has much of an impact at our Class I areas because of the distance, the size of the burns, and none of 20% most impaired days indicated issues from an eastern agricultural burn. But DENR does believe that forestry management including planned prescribed burning may have an impact based on the 20% most impaired days indicating a large fire impacting one or both Class I areas in South Dakota. DENR committed to developing and implementing a smoke management plan in the "Executive Summary" but did not make that clear in this section. DENR will clarify that in Section 8.5.5, that DENR will develop and implement a smoke management plan.

Over the past few years DENR has taken the initial steps in developing a smoke management plan by contacting those groups that DENR believes would need to be involved, including the South Dakota Department of Agriculture, National Park Service and U.S. Forest Service, among others. The response from these agencies has been positive and all have offered to assist in developing a smoke management plan for South Dakota. More recently, DENR has been in contact with the South Dakota Division of Wildland Fire Suppression, which maintains a prescribed fire database of fires throughout South Dakota and along our borders in neighboring states. DENR will use this database to track fires and compare the fire data (e.g., size of fire, material being burned, distance from the Class I areas, dates) to the IMPROVE data from our Class I areas to see what the impacts are to the visibility. DENR will also research the Best Management Practices for controlling prescribed fires.

Using this information will be the basis of our smoke management plan and the direction we go in development of the smoke management plan will depend on the outcome of the data analysis. To start with, the main focus of the smoke management plan will consist of the Black Hills region and the areas around the two Class I areas. DENR will work with the federal land managers, other state agencies, and local governments during the development and implementation of the smoke management plan.

DENR will discuss this in further detail in Section 8.5.5.

56. In Section 8.5.6, page 110-111, EPA recognized that DENR plans on establishing the Big Stone I BART limits and control measure requirements in either a construction permit or Title V permit. EPA states the BART requirements need to be incorporated in the State Implementation Plan and does not believe it appropriate for DENR to rely on the construction permit since it has not been approved in our State Implementation Plan yet.

Response: In accordance with 40 CFR §308(1)(e)(1)(v), DENR is required to include a requirement that BART-eligible sources maintain the control equipment and establish procedures to ensure the equipment is properly operated and maintained. DENR plans on adopting these requirements in ARSD Chapter 74:36:21 and submit these rules to EPA to be included in the Regional Haze State Implementation Plan. DENR also agreed to establish the permit limits for Otter Tail Power Company's BART eligible unit in ARSD 74:36:21:10, which will be included in the State Implementation Plan submitted to EPA. DENR will expand on this in Section 8.5.6.

57. The National Park Service believes South Dakota should commit in the Regional Haze State Implementation Plan to expand regulations requiring public and private construction and road projects to limit fugitive dust emissions as part of the long term strategy.

Response: A majority of the coarse particulate matter emissions are generated from wind blown dust (e.g., approximately 54% at the Badlands National Park and 33% at the Wind Cave National Park). Based on the coarse particulate matter contributions (see Table 5-7), the contribution of coarse particulate matter from fugitive emissions is approximately 8% and 5% at the Badlands and Wind Cave National Parks, respectively. Public and private road construction represents a portion of the fugitive emissions. Therefore, DENR disagrees; but will always re-evaluate this request during the periodic reviews.

9.0 Monitoring Strategy

58. EPA indicated there is currently a Federal Implementation Plan in place for the original visibility monitoring requirements under 40 CFR §51.305, which incorporated by reference the requirements in 40 CFR §51.26 (see 40 CFR §51.2179(b)). EPA asked if DENR's intention was to use the monitoring strategy outlined in Chapter 9.0 of South Dakota's Regional Haze Program to replace the current Federal Implementation Plan visibility monitoring requirements. If so, they would provide input on such revision.

Response: The monitoring strategy in Chapter 9.0 of South Dakota's Regional Haze Program is being implemented for South Dakota's Regional Haze Program. DENR does not anticipate adopting the original visibility monitoring program at this time.

10.0 Consultation Requirements

59. In Section 10.2, page 118-119, EPA requested that we identify the dates and outcomes of the discussions for each consultation. EPA asked if DENR planned to include tribal consultation on the public comment version of the State Implementation Plan.

Response: There is no tribal air quality program approved by EPA within South Dakota. Therefore, officially EPA represents South Dakota tribes on air quality matters. However, during the public notice phase of adopting the Regional Haze State Implementation Plan, tribes and tribal members will have an opportunity to provide input.

As noted previously, DENR has been a participant in WRAP since its inception and considers its involvement as fulfilling part of the requirements for consultation. Within WRAP, the Implementation Work Group (IWG) was formed to address states' issues regarding Regional Haze and conducted numerous face-to-face meetings and monthly calls. All western states, EPA, Tribes and Federal Land Mangers participated in the WRAP actives and were involved throughout the process. Beyond WRAP, South Dakota was involved with the Northern Class I Areas workgroup which had monthly conference calls and included Minnesota, Michigan, Iowa, along with other Midwestern states. In addition, South Dakota consulted with Minnesota directly starting in August of 2007 through emails and phone calls,

which continued through December of 2009 when Minnesota submitted its Regional Haze State Implementation Plan to EPA. DENR also consulted directly with the State of Nebraska over the past few years through email and phone calls, mostly in regards to impacts the Gerald Gentleman Power Plant has on visibility impairment in Class I areas in South Dakota and their plans to control emissions from the Gerald Gentlemen Power Plant.

In addition, DENR provided South Dakota's draft Regional Haze State Implementation Plan to all of the neighboring states and Michigan for comments on January 15, 2010. DENR did not receive any comments from these states.

60. In Section 11.2, page 121, EPA recommended that as part of continuing consultation required under 40 CFR §51.308(i)(4), we clarify item 7, regarding the monitoring strategy, to note that we will consult with EPA and the federal land managers on any revisions deemed necessary.

Response: Continuing consultation with the federal land managers is addressed in Section 10.1.2. In this section it specifies DENR is required to consult with the federal land managers during the 5-year progress reports. The submittal of the 5-year progress report is to EPA which ensures EPA's involvement. Therefore, DENR believes this is already addressed and does not recommend any changes.

11.0 Proposed ARSD 74:36:21 Rules

61. In ARSD 74:36:21:02, EPA recommended the following changes to the definitions:

a. The definition of a "BART-eligible source" must cite to an existing stationary facility as defined in ARSD 74:36:21:03.

Response: DENR identified in ARSD 74:36:21:02 that a "BART-eligible source" is an existing stationary facility. In ARSD 74:36:21:03, DENR defined an "existing stationary facility". This is similar to how EPA defined "BART-eligible source" and "existing stationary facility". The only difference, which DENR believes is EPA's concern, is DENR's definition for "BART-eligible source" does not state at the end of the definition, "as defined in this section". DENR believes this is already required when it states at the beginning of this section that "unless otherwise specified, the terms used in this article mean." The style and format of the proposed rule is reviewed by the South Dakota's Legislative Research Council and if they recommend changing it in this matter, DENR will oblige.

b. The definition of "visibility impairment" does not mirror the federal definition in 40 CFR §51.301 and must be revised accordingly.

Response: DENR tried to combined the term "visibility impairment" and "adverse impact on visibility" to make it clearer to the public and regulated entities what is visibility impairment. Since this is not acceptable by EPA, DENR revised the definition of "visibility impairment" to be consistent with 40 CFR §51.301 and added the phrase "adverse impact on

visibility" and defined it consistently with 40 CFR §51.301. By doing so, DENR went through the proposed rules and replaced "visibility impairment" with "adverse impact on visibility".

c. The definition of "contribute to visibility impairment" is not appropriate in the regional haze context and must be removed since there is no threshold for such a contribution.

Response: DENR revised the term "contribute to visibility impairment" to "contribute to adverse impact on visibility" based on EPA's earlier concern with the term "visibility impairment". "Contribute to adverse impact on visibility" is used in both the Prevention of Significant Deterioration and in the New Source Review programs to determine the visibility impacts on mandatory Class I federal areas. The five-tenths deciview threshold is identified in EPA's draft New Source Review Manual, the federal land managers draft FLAG document (page 34), and in EPA's BART guidelines. DENR believes it is appropriate as part of its long term strategy to ensure new sources and modifications to existing sources, not covered already by the Prevention of Significant Deterioration or New Source Review, should demonstrate they will not contribute to adverse impact on visibility. DENR reviewed 40 CFR §51.308 and did not see where this was prohibited. DENR does not recommend any changes.

d. The definition of "major source" must site to 40 CFR §51.166 and DENR must include the definition of "major modification" from 40 CFR §51.166 since the definition of major stationary source under the regional haze regulations includes major modifications.

Response: EPA is referencing a "major source" and "major modification" covered under the New Source Review Program, which is already addressed in ARSD 74:36:09 – Prevention of Significant Deterioration and 74:36:10 – New Source Review. Both of these programs are part of South Dakota's State Implementation Plan. The major sources addressed under ARSD 74:36:21 – Regional Haze Program are defined in ARSD 74:36:21:02(6), which identifies a major source as a source that meets the definition of a major source under the Title V air quality permit program for criteria pollutants. The definition does not include a major source under the New Source Review Program. The term "modification" is already defined in ARSD 74:36:01:10 – Modification Defined, and was not reiterated in ARSD 74:36:21. DENR does not recommend any changes.

62. In ARSD 74:36:21:04, EPA states this section must be revised to clarify the existing provisions of 74:36:09 are not replaced by this new section. EPA also asked what DENR's intention with this new provision.

Response: DENR believes it would be appropriate to clarify that Chapter 74:36:21 does not apply to major sources and major modifications under the New Source Review Program. To accomplish this, DENR added a sentence to ARSD 74:36:21:01 that states this chapter does not apply to a source applicable to the Prevention of Significant Deterioration Program or New Source Review Program.

63. In ARSD 74:36:21:07, EPA recommends to improve clarity, this section should include more detail, such as specifying the minimum criteria for an acceptable operation and maintenance plan and when the source specific operation and maintenance to meet such criteria shall be submitted for permitting authority approval.

    Response: DENR believes it would be appropriate to identify the minimum requirements for the operation and maintenance of controls and added the minimum requirements to ARSD 74:36:21:07. DENR disagrees the written plan needs to be submitted to DENR for approval since a BART source is required to be inspected at least once per year and submits periodic reports to DENR to ensure compliance with the permit requirements.

64. In ARSD 74:36:21:08, EPA is concerned this provision is not clear whether all of the sulfur dioxide and nitrogen dioxide emissions from the BART-eligible source will be routed to the main stack. The term "main stack" implies the presence of other stack(s) which is/are not equipped with continuing emission monitoring system(s) as is the "main stack". EPA recommended alternative language.

    Response: DENR agrees and will make the appropriate changes.

65. In ARSD 74:36:21:11, EPA stated that as required in the regional haze rule, federal land managers must be provided a 60-day consultation period prior to any public hearing on the regional haze state implementation plan. EPA argues that since a BART permit is an integral part of the regional haze state implementation plan, this 60-day consultation period must extend to the federal land managers BART permit review as well. EPA also argues that since any BART permit must be incorporated into the regional haze state implementation plan, the 30-day public notice for the state implementation plan needs to identify the inclusion of any BART permits.

    Response: South Dakota's draft Regional Haze State Implementation Plan was submitted to the federal land managers on January 15, 2010 and DENR plans on holding the public hearing in September 2010. Therefore, DENR provided the federal land managers more than 60-day consultation prior to the public hearing on the Regional Haze State Implementation Plan. In accordance with 40 CFR § 51.308(e)(1)(i), the draft Regional Haze State Implementation Plan contains a list of BART-eligible sources in Section 6.1. In accordance with 40 CFR § 51.308(e)(1)(ii), the draft Regional Haze State Implementation Plan contains the BART determination for each BART-eligible source in Section 6.2 and 6.3 and Appendix C, D, and E. In accordance with 40 CFR § 51.308(e)(1)(iv), each source subject to BART is required to install and operate BART no later than 5 years after approval of the Regional Haze State Implementation Plan as required in ARSD 74:36:21:06. In accordance with 40 CFR § 51.308(e)(1)(v), each source subject to BART must install the control equipment required by the BART determination and establish procedures to ensure such equipment is operated and maintained as discussed in Section 6.3 and 6.4 of the Regional Haze State Implementation Plan and in accordance with ARSD 74:36:21:07. In addition, DENR has already agreed to include the BART emission limits for Big Stone I in ARSD 74:36:21:10.

DENR believes the BART requirements are specified in South Dakota's draft Regional Haze State Implementation Plan and DENR provided the federal land managers more than a 60-day consultation period before the public hearing. DENR was unable to determine what federal regulation EPA is using to state the BART permit must be included in the state implementation plan. However, this is a mute point since DENR added the BART emissions limits for Big Stone I in ARSD 74:36:21:10.

12.0 General Comments

66. In Chapter 1.0, EPA requested DENR clarify the 1977 Clean Air Act Amendments and EPA's 1980 reasonable attributable visibility impairment regulations addressed visibility impairment caused or contributed to by one or a small group of sources.

    Response: DENR reviewed Section 169A of the Clean Air Act and agree major sources built and operated during a certain timeframe that "…may reasonably be anticipated to cause or contribute to visibility impairment…" are required to install Best Available Retrofit Technology. Therefore, DENR changed the language in the fourth paragraph of the "Introduction" to reflect the change.

    DENR reviewed 40 CFR Part 51, Subpart P which discusses EPA's 1980 rules on visibility protection and the language is similar to how DENR represented it. DENR does not recommend any changes.

67. EPA requested DENR revise the date of delegation of the Prevention of Significant Deterioration program from September 15, 1994 to July 6, 1994.

    Response: September 15, 1994 is the date of the federal register notice for the final rule and the effective date is July 6, 1994. DENR agrees and will make the appropriate change in the third paragraph of the "Introduction".

68. EPA indicated the "Date of Reconstruction" definition in Section 6.1 did not quite match the federal definition.

    Response: DENR reviewed the definition and agrees. Instead of stating, "…must occur between August 7, 1962 and August 7, 1977…" the definition will be revised to state "…must occur during the August 7, 1962 to August 7, 1977 time period…"

69. EPA indicated the last sentence of the definition for "Potential to Emit" in Section 6.1 contains a typographical error and should be "26" instead of "28".

    Response: DENR reviewed the definition and agrees. DENR will make the appropriate change.

70. EPA requested it be clarified in Sections 7.1 and 8.5.1 that although some of the cited Administrative Rules of South Dakota control emissions of pollutants that ultimately

contribute to visibility impairment, the rules were not written specifically to address visibility impairment.

Response: Section 7.1 identifies state and federal rules in place and those planned for the future that will help South Dakota achieve reasonable progress in protecting and improving visibility in our Class I areas. Section 8.5.1 references 40 CFR § 51.308(d)(3)(v)(A), which requires an assessment of emission reductions due to ongoing air pollution control programs. DENR provided an assessment of which existing state rules assist in reducing air emissions and help achieve reasonable progress. Since the EPA reviewer(s) did not reference a federal regulation which specifically requires EPA's requests, DENR believes these comments are a preference and not a requirement. DENR does not propose any changes.

71. In Section 8.5, page 107, EPA believes there is a typographical error and it should state "emissions reductions" instead of "emissions" in the last paragraph.

    Response: DENR agrees that it should be "emission reductions" and made the appropriate changes.

72. The National Park Service requested DENR add footnotes to the tables and graphs throughout the document to define the abbreviations used, especially for organic carbon mass, particulate organic aerosol, elemental carbon, and fine mass elemental carbon. The terms vary depending on the data source used and can be confusing to the reader.

    Response: DENR agrees and made the appropriate changes.

Appendix A

Comment Letters on South Dakota's

Draft Regional Haze Program

USDA United States Department of Agriculture | Forest Service | Superior National Forest
8901 Grand Ave. Place
Duluth, MN 55808-1122
Phone: (218) 626-4300
Fax: (218) 626-4398

File Code: 2580-2
Date: February 24, 2010

Rick Boddicker
Senior Environmental Scientist
SD DENR
523 East Capitol
Pierre, SD 57501

Dear Mr. Boddicker:

On January 15, 2010, the State of South Dakota submitted a draft implementation plan describing your proposal to improve air quality regional haze impacts at mandatory Class I areas across your region. We appreciate the opportunity to work closely with the State through the initial evaluation, development, and, now, subsequent review of this plan. Cooperative efforts such as these ensure that together we will continue to make progress toward the Clean Air Act's goal of natural visibility conditions at our Class I wilderness areas and parks.

This letter acknowledges that the U.S. Department of Agriculture Forest Service has received and conducted a substantive review of your proposed Regional Haze Rule implementation plan. Please note, however, that only the U.S. Environmental Protection Agency (EPA) can make a final determination about the document's completeness, and therefore, only the EPA has the ability to approve the document. Participation by the Forest Service in the State of South Dakota's administrative process does not waive any legal defenses or sovereignty rights it may have under the laws of the United States, including the Clean Air Act and its implementing regulations.

As outlined in a letter to South Dakota dated November 1, 2006, our review focused on eight basic content areas. The content areas reflect priorities for the Federal Land Manager agencies, and we have attached comments to this letter associated with these priorities. We look forward to your response required by 40 CFR 51.308(i)(3). For further information, please contact Eastern Region Air Resource Specialist Trent Wickman at (218) 626-4372 or Rocky Mountain Region Air Resource Specialist Jeff Sorkin at (406) 329-3672.

Again, we appreciate the opportunity to work closely with the State of South Dakota. The Forest Service compliments you on your hard work and dedication to significant improvement in our nation's air quality values and visibility.

Sincerely,

JAMES W. SANDERS
Forest Supervisor

cc: Charles E Sams, Jeff A Sorkin, Terry Svalberg, Amy Platt, Don Shepherd, Tim Allen

Technical Comments

1) In regards to your approach to estimating natural conditions, for consistency, we would prefer that South Dakota (SD) use the standard Western Regional Air Partnership/ Technical Support System (WRAP/TSS) natural conditions values unless there is a justification for your alternate values.

2) We want to be involved in the development of your smoke management plan (SMP). We will give a local Forest Service contact when requested.

3) We note that high organic carbon (OC) concentrations don't necessarily mean fire impacts, as noted in the draft SIP. Please provide more analysis on individual high OC days (for example use back trajectories) to see where the OC came from. Another approach that could be used would compare the seasonality of prescribed fire with wildfire. Using calendar quarters are not a fine enough temporal resolution for this task. For example SD could get prescribed fire activity info from the burners in the state and see if it matches measured high OC impact days.

4) We commend SD for selecting selective catalytic reduction as BART for Big Stone.

5) Please show how big a part of the state's point source emission inventory Big Stone is.

6) It is our view that the regional haze regulations require a four factor analysis. Depending on the answer to question 5) above, a simple analysis may be justified. Please make use of information and analyses provided by WRAP.

United States Department of the Interior
NATIONAL PARK SERVICE
Air Resources Division
P.O. Box 25287
Denver, CO 80225

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

February 25, 2010

N3615 (2350)

Mr. Brian Gustafson
Administrator, Air Quality Program
South Dakota Department of Environment and Natural Resources
523 E Capitol
Pierre, SD 57501

Dear Mr. Gustafson:

On January 15, 2010, we received South Dakota's draft regional haze implementation plan for review. We appreciate the opportunity to work closely with the State through the development and review of this plan. Cooperative efforts such as these ensure that, together, we will continue to make progress toward achieving natural visibility conditions at our National Parks and Wilderness Areas.

This letter acknowledges that the U.S. Department of the Interior, National Park Service (NPS), in consultation with the U.S. Fish and Wildlife Service, has received and conducted a substantive review of the South Dakota draft Regional Haze Rule implementation plan in fulfillment of your requirements under the federal regulations 40 CFR 51.308(i)(2). Please note, however, that only the U.S. Environmental Protection Agency (EPA) can make a final determination regarding the document's completeness and, therefore, ability to receive federal approval from EPA.

As outlined in a letter to each State dated August 1, 2006, our review focused on eight basic content areas. The content areas reflect priorities for the Federal Land Manager agencies, and we have enclosed comments associated with these priorities. Overall the draft implementation plan was well organized and addressed most of the key elements outlined in our letter. We are very pleased to see South Dakota's commitment to semi-dry flue gas desulfurization for sulfur dioxide (SO_2) controls and selective catalytic reduction for nitrogen oxide controls as best available retrofit technology for the Otter Tail Big Stone Unit 1 coal-fired power plant. However, we have two primary concerns with the draft plan: 1) the reasonable progress analyses should include a four factor analysis of potential controls on SO_2 emissions from point and areas sources, and 2) the long-term strategy should provide more discussion of activities to reduce smoke impacts from fires and to reduce fugitive dust from construction and road projects.

We look forward to your response, as per section 40 CFR 51.308(i)(3). For further information regarding our comments, please contact Pat Brewer of my staff, at (303) 969-2153.

Again, we appreciate the opportunity to work closely with the State of South Dakota and compliment you on your hard work and dedication to significant improvement in visibility in our Class I national parks and wilderness areas.

Sincerely,

John Burnyak

for Christine L. Shaver
Chief, Air Resources Division

Enclosure

Cc: Gail Fallon
Air Quality Planning Unit (8P-AR)
US EPA Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

National Park Service Comments
South Dakota Draft State Implementation Plan for Regional Haze
February 25, 2010

General Comments

South Dakota's draft State Implementation Plan (SIP) is well organized and addresses most of the key elements of a regional haze SIP as outlined in our August 2006 letter to the states. South Dakota has defined current and natural visibility conditions and has applied technical analyses provided by the Western Regional Air Partnership (WRAP) to describe emissions inventories, state and source sector contributions to haze at Class I areas, and visibility response to expected emissions controls by 2018. SD has proposed controls for the Otter Tail Big Stone electric generating plant under Best Available Retrofit Technology (BART). We are pleased to see these substantive reductions of sulfur dioxide (SO_2) and nitrogen oxide (NO_x) emissions. SD has defined reasonable progress goals and addressed a long-term strategy to improve visibility in SD Class I areas. We would like to see a more developed four factor analysis of emissions control options, but overall SD has demonstrated a commitment to protecting visibility in our national parks and wilderness areas.

Specific Comments

Please add footnotes to the tables and graphs throughout the document to define the abbreviations used, especially for organic carbon mass, particulate organic aerosol, elemental carbon, and fine mass elemental carbon. The terms vary depending on the data source used and can be confusing to the reader.

Chapter 3 Baseline, Natural and Uniform Rate of Improvement

As stated on page 12, EPA's guidance on determining natural conditions provides default assumptions for natural background visibility and allows states to refine estimates. For Class I areas in and near SD, the greatest uncertainty is related to the contributions of organic carbon and elemental carbon from natural wildland fires. SD's revisions to fine soil and coarse matter assumptions are based on 2000-2004 IMPROVE monitoring and effectively suggest that natural background should be lower than the default assumption. This revision would require even greater reductions in current anthropogenic sources of fine soil and coarse matter to achieve the revised natural background conditions. Given the large uncertainties, we recommend that SD retain EPA's default assumptions using natural background values available on the VIEWS website for this current SIP and defer refinements to a later SIP.

Chapter 4 IMPROVE Data for Class I Areas

Chapter 4 describes the IMPROVE data used as the current baseline visibility. Contributions of aerosol components to the 20% least and the 20% most impaired days are informative for developing priorities for emissions reductions. Page 21, second paragraph, and page 26, second paragraph, refer to combustion of organic mass in forest fires and grasslands as a source of

ammonium sulfate. Fires are actually an insignificant contribution to ammonium sulfate compared to fossil fuel combustion (see Table 5-1 SO_2 emissions by source sector), and we recommend that you delete the references to fires as a source of ammonium sulfate.

Wildland fires are major contributors to organic carbon and elemental carbon, and we recommend that you expand the analysis of the contribution of wildfire to visibility impairment at the SD Class I areas. Tables 4.1 and 4.2 indicate that for both Badlands and Wind Cave National Parks (NPs), on the 20% worst days, organic carbon mass (OCM) is greater than ammonium sulfate mass. In addition to the averages of the 20% least and 20% most impaired days and quarterly averages, if you look at the aerosol contributions on individual days during the 2000-2004 baseline period, you could identify frequency of elevated organic and elemental carbon that could indicate fire impacts. It is likely that OCM from fires dominates aerosol concentrations on some 20% worst days. Back trajectory analyses could assist in defining source areas for exceptional fire events such as referenced for July 2, 2008, and October 25, 2005, and could assist separating impacts from local agricultural or prescribed fires that might be controllable from major wildland fires. Considering aerosol composition on individual days will also assist in assessing the relative contributions from other sources (fossil fuel combustion, biogenic, etc).

On page 25, SD concludes, based on the similarity in aerosol composition between Badlands and Wind Cave NPs, that it is reasonable to assume that the contribution to visibility impairment on the 20% best days is not being impacted by local sources. It is likely that the neighboring parks are influenced by similar sources, but the data do not support the conclusion that local sources are not contributing. Please rephrase this statement.

On page 33, second paragraph should indicate that visibility <u>impairment</u> appears to be declining (rather than visibility declining).

The visibility trends data presented in Figures 4-7 and 4-8 are helpful. Looking at similar time series plots for the individual aerosol components would illustrate whether sulfate and nitrate, those components dominated by anthropogenic, controllable, sources, are declining more than OCM, an indicator of fire. Figure 4-8-a uses a narrow scale for the y axis (14 to 17 dv), different from the other plots in the series (0-25 dv). This compressed scale gives the impression of a much larger change in dv than if the full scale were presented. By looking at individual aerosol components, SD could better understand the contributions to this trend in total aerosol extinction.

Section 5.0 Source Apportionment

Section 5.1 discusses SD's emissions inventory, which relies on well documented WRAP analyses. In Tables 5-1 and 5-2, 2002 SO_2 emissions from SD area sources drop from 10,159 tons/yr to 1,071 tons/yr. WRAP documentation of differences between the WRAP 2002 Base 2002b and 2002d inventories includes revisions to SD area source categories. Please clarify the basis for the revised area source estimate. Were some SD area source categories reclassified as point sources?

It would be helpful to understand the contribution from Big Stone Unit 1 to 2002 total point source SO_2 and NO_x emissions. In Table 5-2, 2002d South Dakota Emissions Inventory, please list the SO_2 and NO_x emissions from Big Stone 1 separately from the other point sources. This will make it easier to compare data in Table 5-2 to Table 5-4, 2018 SD Emissions, Table 6.1, Emissions from BART-eligible sources, and Table 6-3 WRAP Modeling Results for Big Stone Unit 1.

The 2018 point source emissions in Table 5-4 include emissions from planned new facilities; two of these (Big Stone II and Basin Electric's NextGen) are now on hold. These two facilities represent 45% of total SO_2 point source emissions and 15% of total NO_x point source emissions in 2018. These facilities may become operational by 2018 so it is appropriate that WRAP modeling results accounted for new generation by 2018. Separate from this regional haze SIP, we received notice of a Draft Environmental Impact Statement for a proposed new 300 megawatt natural gas-fired, combined-cycle electric generating facility in eastern South Dakota. The emissions from this proposed new facility were not included in this SIP emissions discussion nor in the WRAP 2018 emissions projections.

In addition to the four electric generating units listed in Table 5-4, all other point sources together are projected to emit 2458 tons SO_2/year in 2018. Area sources are projected to contribute another 1662 tons/yr. In Section 7 under the reasonable progress analysis, these emissions should be assessed to determine if there are reasonable control measures.

Tables 5-6 and 5-7 are helpful in illustrating SD's emissions relative to neighboring states.

Section 5.2 discusses Source Apportionment Analyses. WRAP PSAT analyses (Figure 5-1) project that point sources dominate contributions to sulfate at the SD Class I areas. Neighboring states of WY and ND have a greater contribution to sulfate at the SD Class I areas on the 20% worst days than SD point sources. SD area sources are as important as SD point sources, suggesting that emissions controls for area sources could have measureable benefits at the Class I areas. WRAP Weighted Emissions Potential (WEP) analyses indicate that SD is the largest contributor to organic carbon, elemental carbon, and coarse mass at the SD Class I areas. Natural fires in SD dominate the organic carbon contributions. WRAP PSAT analyses indicate that SD's contribution to nitrate is intermediate between that for sulfate and organic carbon. These analyses support SD's focus on reducing anthropogenic SO_2 and NO_x emissions and also encourage managing fire, agriculture, and construction activities to minimize emissions.

Section 6: Best Available Retrofit Technology (BART)

The SD BART analysis is one of the best that we have reviewed to date; the discussion is thorough and informative. The National Park Service (NPS) is very pleased and commends SD for concluding that for Otter Tail Big Stone 1 power plant, the best available retrofit technologies are semi-dry flue gas desulfurization for SO_2 and selective catalytic reduction (SCR) for NO_x. There are still a few areas where we offer additional suggestions:

6.3.2.3 Sulfur Dioxide Control Effectiveness

SD evaluated the control effectiveness by comparing the effectiveness in Table 6.6.

NPS: SD should state the control effectiveness and resulting emission rate that it believes to be appropriate for each control technology option. For example, it appears that SD has concluded that a semi-dry scrubber can achieve 90% SO_2 control. We agree with SD's analysis, but suggest that the baseline for annual SO_2 emissions should reflect anticipated uncontrolled annual emissions which, according to EPA's Clean Air Market Database, have averaged 0.66 lb/mmBtu (range 0.63 - 0.70) over the 2000 – 2008 period.

6.3.2.4 Sulfur Dioxide Control Technology Impacts

SD: Otter Tail Power Company identified cost estimates for each of the control options. In addition, Otter Tail Power Company identified cost estimated for two different operating scenarios for each of the two control alternatives. Table 6-7 summarizes Otter Tail Power Company's estimated costs.

Otter Tail: Cost estimates for the wet and semi-dry (including SDA and fabric filter) SO_2 control technologies were completed utilizing the Coal Utility Environmental Cost (CUECost) computer model (Version 1.0). The model was run with 2008 designated as the cost basis year because equipment cost estimating in the model is based on the Chemical Engineering Cost Index and the composite 2008 index is the latest version available. Following completion of the estimating on a 2008 cost basis year, all costs were escalated to a 2009 basis year utilizing the inflation rates designated in Table 1.2-3.

NPS: Otter Tail should have used the EPA Control Cost Manual as advised by the BART Guidelines and by EPA Region 8. Otter Tail should at least have provided its CUECost output data.

6.3.3.3 Nitrogen Oxide Control Effectiveness

SD: Step 3 requires the evaluation of control effectiveness for each control technology. SD evaluated the control effectiveness by comparing the effectiveness in Table 6.9.

NPS: SD should state the control effectiveness and resulting emission rate that it believes to be appropriate for each control technology option. For example, it appears that SD has concluded that SOFA+SCR can achieve 88% NO_x control. However, if SOFA can reduce NO_x emissions to 0.50 lb/mmBtu, then it is reasonable to expect that addition of SCR would reduce NO_x emissions by another 90% or down to 0.05 lb/mmBtu on an annual average. For example, the Illinois EPA has proposed that the two cyclone boilers firing PRB coal at Dominion Energy's Kincaid Generating Station should achieve 0.07 lb/mmBtu on an annual basis with over-fire air (OFA) and SCR. (Please see 02/16/2010 email from Don Shepherd to Kyrik Rombough for Excel spreadsheet of NO_x performance at Kincaid.) To meet that limit, the Kincaid SCRs would reduce inlet NO_x emission by slightly over 89%. It should be feasible for Big Stone #1 to achieve a lower limit because of the superior initial NO_x reductions that can be achieved with SOFA versus the OFA at Kincaid. We suggest that, to allow for some operational flexibility, a 30-day rolling average limit of 0.06 lb/mmBtu would be appropriate for Big Stone #1 if equipped with current-technology SOFA+SCR.

6.3.3.4 Nitrogen Oxide Control Technology Impacts

SD: Otter Tail Power Company identified cost estimates for five control options. Table 6-10 summarizes Otter Tail Power Company's estimated costs.
NPS: Otter Tail has applied a generalized "unit cost factor" of $172/kW to estimate a Total Capital Investment (TCI) of $81.8 million for SOFA+SCR. Applying the recommended EPA Control Cost Manual results in a TCI of $44.3 million. Otter Tail has estimated O&M costs at $4.1 million versus our $2.4 million estimate from application of the Cost Manual methods. Otter Tail has estimated a Total Annual Cost of $13.2 million to achieve 0.10 lb/mmBtu with a cost-effectiveness of $825/ton. Our Cost manual approach estimates a Total Annual Cost of $6.8 million to achieve 0.05 lb/mmBtu on an annual basis with a cost-effectiveness of $493/ton.

6.3.5.2 Sulfur Dioxide BART Recommendation

SD: As noted in Table 6-16, "approximately 40 percent of the modeling, the top ranked control option generated a higher visibility impact than the second ranked control option. Whereas, approximately 60 percent of the modeling, the second ranked control option generated a higher visibility impact than the top ranked control option. Therefore, based on the visibility modeling there is no discernable difference between these two control options. As such, SD considers that the semi-dry flue gas desulfurization system is considered BART....SD considers the emission limit representing BART should be 505 pounds per hour, which would include periods of startup and shutdown and 0.09 pounds per million Btus, which would not include startup and shutdown. Compliance with these emission limits should be based on the continuous emission monitoring system and on a 30-day rolling average."
NPS: Based upon the data presented by Otter Tail and summarized by SD, we agree that the difference between wet and dry scrubbing is not sufficient to justify the additional costs and impacts of wet scrubbing.

6.3.5.3 Nitrogen Oxide BART Recommendation

SD proposes a BART emission limit for NO_x of 561 pounds per hour, "which would include periods of startup and shutdown and 0.10 pounds per million Btus, which would not include startup and shutdown periods. Compliance with the emission limits would be based on the continuous emission monitoring system and on a 30-day rolling average."
NPS: We believe that the Kincaid cyclone boilers in Illinois (described above) have demonstrated the ability of SCR to reduce NO_x emissions below the limit proposed by SD. We suggest that, to allow for some operational flexibility, a 30-day rolling average limit of 0.06 lb/mmBtu would be appropriate for Big Stone #1 if equipped with current-technology SOFA+SCR.

Please clarify emissions assumptions used for the WRAP regional modeling compared to those used in the Big Stone Unit 1 BART modeling. Emissions used in Tables 5-2, 5-4, 6-1, and 6-3 do not appear to be consistent, likely because they are based on different assumptions. Does Table 6-1 refer to potential emissions, not annual emissions? If so, please clarify. Table 6.1 lists Big Stone Unit 1 SO_2 emissions as 19,363 tons and NO_x emissions as 17,179 tons. Table 5-2

whether a few large sources dominate the SO_2 inventory and whether controls are cost effective for these sources. For example, switching to a fuel oil with lower sulfur content might reduce SO_2 emissions from point or areas sources at relatively low cost. SD should also discuss options to reduce anthropogenic emissions of organic carbon (including reference to later discussion of smoke management practices).

Section 8: Long-term strategy

SD has addressed the major elements of a long-term strategy. We would like to see more complete discussion of local options to address emissions of organic carbon mass, elemental carbon, and course mass. Because WRAP source apportionment analyses indicate that organic carbon from natural fires is a major contributor to impairment on the 20% most impaired days, SD needs to provide a more complete discussion of options to control smoke from unplanned wildland fires and the relative importance of prescribed burns and agricultural burning in the state. SD stated on page 110 that agricultural burning occurs in the eastern part of the state but that does not preclude transport of smoke to the west on some days. SD is encouraged to develop a smoke management plans for prescribed burns options. We appreciate that emissions from prescribed burns in the national parks are contributing to visibility impairment. We are available to assist the parks and SD in developing effective smoke management plans.

SD references an existing regulation that limits fugitive emissions from state facilities in Rapid City. As part of the long-term strategy SD should consider expanding regulations that require public and private construction and road projects to limit fugitive dust emissions.

SD could commit in this SIP to pursuing these activities as part of the long-term strategy.

Section 9: Monitoring Strategy

We commend SD for maintaining SO_2, NO_x, Ozone, $PM_{2.5}$, PM_{10}, and meteorological measurements next to the IMPROVE sites at Badlands and Wind Cave NPs. These data will assist SD in evaluating source contributions to air quality and visibility in these Class I areas.

Section 10: Consultation Requirements

The Federal Land Managers appreciate this opportunity to consult with SD. WRAP has facilitated coordination and consultation among the WRAP states. We encourage SD to discuss directly with the neighboring states the planned controls and the contributions from neighboring states to SD Class I areas.

We look forward to continuing to work with SD to protect visibility in our Class I areas.

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February 25, 2010

OTTER TAIL
POWER COMPANY

Mr. Rick Boddicker
Senior Environmental Scientist
South Dakota Department of Environment
and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

Dear Mr. Boddicker:

Subject: Comments Draft Proposed Regional Haze SIP

The following comments are offered by Otter Tail Power Company as operating agent for Big Stone Plant. Big Stone Plant is co-owned by NorthWestern Corporation d/b/a NorthWestern Energy, Montana-Dakota Utilities Co. A Division of MDU Resources Group, Inc., and Otter Tail Power Company a wholly owned subsidiary of Otter Tail Corporation.

Otter Tail Power Company generally concurs with the DENR draft proposed Regional Haze State Implementation Plan as distributed on January 15, 2010. Otter Tail supports the DENR's selection of the existing baghouse for particulate matter control and the semi-dry spray dryer for SO2 control as BART.

While we are disappointed with the proposed designation of an SCR as BART for NOx control, we do not have any criticism of the accuracy of the DENR's evaluation methodology. Nevertheless, Big Stone Plant co-owner's customers will incur approximately $13.2 million of levelized annual costs for the SCR capital cost and ongoing SCR operation and maintenance costs as compared to SOFA levelized annual costs of $0.65 million. Furthermore, the SCR installation under Control Option 8 will result in a projected visibility improvement at Boundary Waters of only 0.354 deciview as compared to SOFA installation under Control Option 5.

We support the DENR's selection of the proposed emission rates for inclusion in the construction permit and ultimately in the Title V Operating Permit. The emission rates reflect an appropriate balance between the need for plant operational flexibility during short-term periods of plant startup and shutdown, and the emission rates during extended periods of normal plant operation.

We note that the proposed ARSD 74:36:21:06 requires "The owner or operator of a BART-eligible source required to install BART must install, operate and demonstrate compliance with BART as expeditiously as practicable but no later than five years from EPA's approval of the state implementation plan for regional haze." If the proposal is adopted, Otter Tail will work with DENR to meet their installation timing requirement.

However, Otter Tail must balance the future cost impacts on its customers in meeting this requirement. We must be allowed adequate time for thoughtful project design and selection of control technology vendors. This will also be a major construction project that is expected to take approximately three years of actual on-site construction to complete at a cost that is expected to be more than double the cost of the original plant. The construction must be tailored to minimize plant outages. Finally, technology preoperational check-out and system tuning will also need to be completed prior to a demonstration of compliance with the requirements.

Otter Tail offers the following specific comments on DENR's proposed SIP.

Page 43 – Last sentence of first paragraph. Please clarify that even though Big Stone II emissions may be included in the 2018 emissions projections, Big Stone II is no longer proceeding.

Page 79 – Section 6.3.1.1 - Please correct the following sentence as noted. As such, the filterable particulate may be collected by placing a control device in the flue gas stream prior to the stack.

Page 87 – Please clarify that the NOx emission rates for the Basin NextGen project listed in Table 6-9 represent BACT for a new pulverized-fired boiler equipped with a low-NOx burner combustion technology which produces lower levels of NOx entering the SCR than are achievable with an existing cyclone-fired boiler. As noted on page 85, low-NOx burners are not a technically feasible option for a cyclone-fired boiler.

Page 89, 91, and 92 – Please clarify that the number of significant digits that Otter Tail reported for its deciview impacts that are included in Tables 6-12 and 6-14 are consistent with WRAP modeling results presented in Table 6-3 and are also consistent with accepted industry practice.

Page 95 – Section 6.3.5.1 - Please revise the last sentence of the second paragraph to read as follows: Each day, Otter Tail Power Company will multiply the emission rate, in pounds per million Btus as determined by ~~a~~ the annual performance test, by the heat input to the boiler, as determined by a continuous emission monitoring system, and dividing by the number of hours ~~they~~ the boiler operated that day.

Sincerely,

Terry Graumann
Manager, Environmental Services

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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MAR 17 2010
AIR QUALITY
PROGRAM

Ref: 8P-AR

MAR 12 2010

Brian Gustafson, Administrator
Air Quality Program
South Dakota Department of Environment and Natural Resources
523 East Capitol Avenue
Pierre, SD 57501-3182

RE: EPA Region 8 Comments on January 15, 2010 Draft Regional Haze SIP (FLM Consultation Version)

Dear Brian:

EPA has completed a preliminary review of South Dakota's January 15, 2010 draft Regional Haze State Implementation Plan (SIP), as received via email through your Federal Land Manager (FLM) consultation process. Our comments and questions are detailed in the Enclosure to this letter.

We understand that you intend to consider all comments received on this FLM consultation version of the Regional Haze SIP prior to preparing the documents for your public notice and comment process. The final draft of the SIP, which will include a summary of the FLMs' comments and your responses, will then undergo a broader public hearing process prior to adoption and submission to EPA. We emphasize that we will only reach a final conclusion regarding the adequacy of South Dakota's Regional Haze SIP when we act on the South Dakota Regional Haze SIP revision through our own public notice and comment rulemaking.

We want to acknowledge your efforts in developing this SIP and working with us to resolve concerns related to subject-to-BART modeling for Big Stone I. This effort has helped to narrow the issues significantly; however, important issues remain. Our comments are intended to assist you in revising the draft SIP before you begin your public hearing process. Please note that our most serious concerns are summarized at the beginning of the Enclosure.

As you are aware, South Dakota received a finding of failure to submit its Regional Haze SIP by the required deadline. As a result, a 2-year clock was initiated for EPA to fully approve a SIP or promulgate a Federal Implementation Plan by January 15, 2011. In order to meet this deadline, we continue to advise you to submit the South Dakota Regional Haze SIP in a timely manner. Please do not hesitate to contact me with any concerns related to this timeline.

ENCLOSURE

EPA Region 8 Preliminary Comments on the January 15, 2010 Draft Regional Haze SIP (FLM Consultation Version)

Summary of Major Concerns – (see detailed comments for more information):

- No justification for separate startup/shutdown limits for PM, SO_2, and NO_x. See comments #18-20 below.
- No details on how the BART emission limits will be made enforceable as a practical matter. See comments #1 and #21 below.
- No identification of the number of years to reach natural conditions as required when the Reasonable Progress Goal is less than the Uniform Rate of Progress. See comment #23 below.
- No 4-factor Reasonable Progress analysis. See comment #24 below.
- No smoke management plan even though fire is identified as a major contributor. See comment #31 below.

Detailed Comments:

1. Executive Summary, pp. viii-ix:
   (A) The BART emission limits, compliance schedules, monitoring, recordkeeping, and compliance determining methods for Big Stone I must be specified in the text of the Regional Haze SIP or in a permit that is incorporated into the SIP. You note that you intend to establish the appropriate averaging times, compliance verification procedures, and recordkeeping and reporting requirements in an air quality construction permit. Since this document is not included in this draft SIP, we would like to work with you to ensure that these requirements are adequately addressed in the SIP. Note that the public notice for the Regional Haze SIP needs to include notification that an air quality permit to address BART requirements is incorporated as part of the SIP. Additionally, with MDU Resources Group's November 2, 2009 announcement that Big Stone II will not be built, does SD DENR plan to amend and/or revoke the existing permit provisions in order to reflect the Company's announcement and the forthcoming BART determination, and what is the timeline for doing so?

   (B) The last sentence references a Chapter 12 that was not included in this draft FLM consultation version of the SIP; therefore, we were unable to review and comment on it.

2. Chapter 1, Introduction, p. 1:
   (A) Please clarify that the 1977 Clean Air Act Amendments and EPA's 1980 reasonable attributable visibility impairment regulations addressed visibility impairment that was caused *or contributed to* by one or a small group of sources.

   (B) Please revise the date for delegation of the Prevention of Significant Deterioration (PSD)

program to July 6, 1994. The September 15, 1994 date is simply when EPA provided notice that the delegation had been granted as of July 6, 1994.

3. Sections 3.1, Baseline Visibility Conditions, and 3.2, Natural Visibility Conditions, pp. 11-16:
(A) It appears that Appendix A will contain the IMPROVE data used to determine baseline visibility; however, Appendix A was not included with this draft FLM consultation version of the SIP.

(B) Based on our review of WRAP's Visibility Information Exchange Web System (VIEWS) and information from the USFS, it appears that there are some errors in the baseline and natural background figures provided in Tables 3-1, 3-5, and 3-7. We understand that the USFS has raised these concerns with you and requested the opportunity to discuss; therefore, we will look for these figures to be revised accordingly. Please note that EPA's default values for natural conditions must be used in the current SIP and any refinements deferred to future planning periods.

(C) Table 3-6 addresses the western natural conditions, but the footnotes refer to Trijonis estimates for both East and West. The Trijonis estimates for the East do not need to be included.

(D) A column must be added to Table 3-7 to highlight the deciview improvement required for both best and worst days.

4. Figure 3-11, Uniform Rate of Progress, p. 17: This figure has been omitted. Perhaps with its inclusion, our following comment would be addressed.

5. Table 3-8, Annual Uniform Rate of Improvement, p. 18: This table needs to include the uniform rate of improvement for the 1st planning period (2004-2018) for the most and the least impaired days, rather than leaving it to the reader to calculate from the annual numbers provided.

6. Figure 3-12, Uniform Rate of Improvement, pp. 18-19: For both Class I areas, we could not determine the source of the 2018 numbers. For Badlands, it appears that the 2018 uniform rate of progress should be 14.89 dV (based on the 14 year 1st planning period) instead of 15.04 dV, and for Wind Cave, 13.94 dV instead of 14.01 dV. In addition, once the baseline and natural background values are revised per our comment #3 above, these values will need to be recalculated.

7. Section 5.0, Source Apportionment, pp. 37-58:
(A) Section 5.1, Air Emission Inventory, pp. 37-38: In general, the WRAP inventories utilized are adequate for this planning period. However, there are some known shortcomings with the WRAP inventories, including the oil and gas emissions estimates. Please note that we would expect future reviews of the South Dakota Regional Haze SIP to rely on the most current, updated emissions inventory.

(B) Pages 39 & 43: Please elaborate on the "compliance initiative" related to VOC emissions from secondary oil and gas production in northwestern South Dakota. The draft document indicates that the initiative identified emissions that needed to be addressed, and it appears emission control devices were installed. What state mechanisms are in place to ensure these four thermal oxidizers are operating at greater than 98% control?

(C) Tables 5-1, 5-2, and 5-4, pp. 40-44: In Tables 5-1 and 5-2, the baseline VOC emissions from oil and gas are identified as 33,721 tons, while the 2018 projected VOC emissions from oil and gas are shown as 562 tons in Table 5-4. According to the WRAP Technical Support System (TSS), the corresponding baseline and projected VOC emissions from oil and gas are 288 tons and 562 tons, respectively. This large discrepancy between South Dakota's reported numbers and the WRAP TSS must be explained in greater detail in the SIP. In addition, please explain whether these emissions from secondary oil and gas production were used for modeling and reasonable progress purposes. We also note that Table 5-1 provides the baseline SO_2 emissions from area sources as 10,159 tons, while Table 5-2 lists 1,071 tons from the same source. This very substantial difference is consistent with values reported on the WRAP TSS; however, no explanation is provided. The SIP text must provide clarification. Finally, there appears to be a typographical error in the footnotes to Table 5-4 – two footnotes labeled "3."

(D) Tables 5-6 and 5-7, p. 46: We note some discrepancies compared with what was included in other state plans. In order to ensure consistency with other states' assumptions it would be prudent to verify their emission inventory numbers. For example, the North Dakota draft plan lists North Dakota NO_x emissions for 2018 at 171,566 tons, but the South Dakota draft plan lists North Dakota NO_x emissions at 187,032 tons for 2018.

(E) Last paragraph, p. 54, and second paragraph, p. 56: There may be typographical errors, but in any case the text is not consistent with the figures which show a slight change between 2002 and 2018 for both the least and most impaired days. Please clarify.

(F) First paragraph, 2nd to last sentence, p. 58: The text regarding Montana's organic carbon mass contribution must be clarified to read that, "Natural fire related organic carbon mass generated in Montana contributes approximately 34% of the organic carbon mass in Badlands National Park."

8. Section 6.1, BART-Eligible Sources, pp. 70-71:
(A) The definition of "Date of Reconstruction" does not quite match the Federal definition and must be revised. The Federal definition is for the date of operation, construction, or reconstruction and applies to sources that were not in operation before August 7, 1962 and in existence as of August 7, 1977 with any reconstruction occurring during the August 7, 1962 to August 7, 1977 time period.

(B) The last sentence of the definition for "Potential to Emit" contains a typographical error- should be *26* categories.

9. Section 6.1.2, Pete Lien, pp. 72-73:
(A) There appears to be a typographical error in the 2nd sentence of the first paragraph – should be worded as "*not* in operation prior to August 7, 1962..."

(B) Because there is a rotary kiln (Unit 4a) producing lime within the Pete Lien facility, Pete Lien is classified as a lime plant according to the definition in 40 CFR Part 60, Supart HH. The fact that the unit in question under BART is a vertical kiln does not exclude Pete Lien from the lime plant category, since it does have a rotary kiln producing lime within the plant. Therefore, it was the appropriate decision to include Pete Lien in the WRAP subject-to-BART modeling analysis. We were unaware that you had determined there were errors in the modeling inputs and a need for a re-run. You note that the vertical kiln was shutdown and dismantled in 2009 prior to completion of a modeling re-run. However, the November 12, 2008 Title V permit for Pete Lien still includes the vertical kiln, and there has not been a permit modification to address any such dismantling and closure. Either the permit needs to be modified to reflect this change in status of the vertical kiln, or the modeling needs to be re-run to correct the input errors and accurately determine whether Pete Lien is subject to BART.

10. Section 6.2, Otter Tail Power Company's Modeling Results, pp. 75-77: We note that the specific version of CALPUFF, coordinate grid points, wind field options, terrain, dispersion options, receptor coordinates, plume characteristics and other model parameters approved by the DENR were used for modeling. The DENR approved protocol (*i.e.*. the August 31, 2009 Revised Modeling Protocol for a BART Assessment of the Big Stone I Coal-Fired Power Plant) is acceptable to EPA; however, the modeling input and output files need to be incorporated into the SIP for documentation and public review.

11. Section 6.3.2.4, Sulfur Dioxide Control Technology Impacts, p. 83: Footnote number 3 indicates a baseline level of 18,000 tons of SO_2/year; however, according to Table 6-1 on p. 71, the baseline was 19,863 tons/year. This larger baseline figure results in an 81% emission reduction for the 3rd option, as opposed to 90% with the 18,000 tons/year figure. Please explain how the 18,000 tons/year SO_2 baseline figure was obtained.

12. Section 6.3.3.2, Technically Feasible Nitrogen Oxide Control Technologies, pp. 85-86: At this time, we have not completed a thorough review of your comments regarding commercial availability and technical feasibility of the various NO_x control technologies listed. Therefore, we may have additional comments on this section during the public comment period.

13. Table 6-9, p. 87: Footnote 5 references a 1999 EPA Technical Bulletin on NO_x controls as justification for the 35%-90% control efficiency range for the top three options. The large range in EPA's bulletin is due to inclusion of SCR, selective non-catalytic reduction (SNCR), and fuel reburning for wet-bottom boilers. It is well documented that SCR achieves the high end of the range. The EPA bulletin also lists a 30%-70% control efficiency for a group of temperature-reducing controls, including over-fire air. Therefore, the proposed BART

determination of SCR plus separated over-fire air (SOFA) should be better than the 90% control efficiency of SCR alone. It is not clear from the SIP text how the proposed emission limit was calculated; however, according to EPA's Acid Rain Database, Big Stone I NO_x emissions have averaged 0.77 lb/MMBtu over the last five years. Assuming a control efficiency greater than 90% should result in a limit lower than the proposed 0.1 lb/MMBtu.

14. Section 6.3.3.4, Nitrogen Oxide Control Technology Impacts, p. 87: We assume you are relying on Otter Tail's analysis of estimated costs, which relied on the CUECost model. While we are satisfied with the control technology conclusions of your NO_x BART determination (*i.e.*, SCR plus SOFA), in general we do not recommend relying on the CUECost model. According to the BART Guidelines, in order to maintain and improve consistency, cost estimates must be based on the OAQPS Control Cost Manual.

15. Table 6-10, p. 88: Footnote 3 contains typographical errors – should be nitrogen oxides. In addition, similar to comment #11 above, it is unclear how the baseline level of 18,000 tons/year was obtained. According to Table 6-1, p. 71, baseline NO_x emissions were 17,179 tons/year. The larger baseline figure results in an 89% emission reduction for the 1st option, as opposed to 93% with the 17,179 tons/year figure. As stated above in comment #13, a control efficiency greater than 90% is appropriate for the proposed SCR plus SOFA controls. Please explain how the 18,000 tons/year NO_x baseline figure was obtained.

16. Section 6.3.4, Visibility Impact Evaluations, 2nd paragraph, p. 89: Again, the text refers to Big Stone I baseline emissions of 18,000 tons SO_2 and 18,000 tons NO_x. Please explain how these numbers were obtained.

17. Table 6-12, p. 89: According to Footnote 2 of Table 6-12, the rounded modeling values shown in the parentheses were used to compare with the subject-to-BART threshold, but actually, the unrounded modeled value must be used for determining whether a source exceeds the threshold.

18. Section 6.3.5.1, Particulate Matter BART Recommendation, p. 95:
(A) We assume DENR's proposed particulate matter BART limit of 0.012 lb/MMBtu is on a 30-day rolling average basis, as required. Please clarify in the SIP.

(B) While we agree that a baghouse is the top particulate control technology, what is the justification for proposing a separate hourly startup/shutdown limit? The SIP must document the need for such a separate limit, as well as whether the selected value represents BART. Has DENR evaluated potential impacts of the separate startup/shutdown limit on visibility? The BART Guidelines contemplate pounds per million Btu limits that apply continuously, with a 30-day rolling average period to accommodate, among other things, potential short-term fluctuations in the emissions rate that may result during startup, shutdown, and other conditions. Presumably, your proposed 30-day rolling average limit already includes some margin of safety for operational variation. If you are able to justify the separate limits, we would work closely with you as you draft appropriate permit language to help ensure SIP approvability related to determining compliance with the normal 30-day rolling average limit

and the hourly startup/shutdown limit. For example, in calculating 30-day averages, how will days be accounted for that include some, but not all, hours of startup/shutdown?

19. Section 6.3.5.2, Sulfur Dioxide BART Recommendation, pp. 96-97:
(A) We assume DENR's proposed SO_2 BART limit of 0.09 lb/MMBtu is on a 30-day rolling average basis, as required. Please clarify in the SIP.

(B) As noted in comment #18 above, justification for proposing a separate lb/hour limit for periods of startup and shutdown must be provided. The SIP must document the need for such a separate limit, as well as whether the selected value represents BART. Has DENR evaluated potential impacts of the separate startup/shutdown limit on visibility? The BART Guidelines contemplate pounds per million Btu limits that apply continuously, with a 30-day rolling average period to accommodate, among other things, potential short-term fluctuations in the emissions rate that may result during startup, shutdown, and other conditions. Presumably, your proposed 30-day rolling average limit already includes some margin of safety for operational variation. If you are able to justify the separate limits, we would work closely with you as you draft appropriate permit language to help ensure SIP approvability related to determining compliance with the normal 30-day rolling average limit and the hourly startup/shutdown limit. For example, in calculating 30-day averages, how will days be accounted for that include some, but not all, hours of startup/shutdown?

20. Section 6.3.5.3, Nitrogen Oxide BART Recommendation, pp. 97-98:
(A) Regarding the term "threshold" in reference to $1500/ton for NO_x removal, EPA's position is that the NO_x presumptive limits were established based on the relatively low cost of less than $1500/ton for the majority of large EGUs. There is no bright line regarding cost effectiveness and each determination must be made taking into account a full five factor BART analysis. In addition, although Big Stone I has a capacity less than 750 MW, it is greater than 200 MW and operating without post-combustion controls. Per the BART Guidelines, it is reasonable to assume that SCR is generally cost-effective on large cyclone units. See 70 FR 39171, July 6, 2005.

(B) Please clarify that DENR's NO_x BART determination is SCR plus SOFA at 0.10 lb/MMBtu on a 30-day rolling average.

(C) As noted in comments #18-19 above, justification for proposing a separate lb/hour limit for periods of startup and shutdown must be provided. The SIP must document the need for such a separate limit, as well as whether the selected value represents BART. Has DENR evaluated potential impacts of the separate startup/shutdown limit on visibility? The BART Guidelines contemplate pounds per million Btu limits that apply continuously, with a 30-day rolling average period to accommodate, among other things, potential short-term fluctuations in the emissions rate that may result during startup, shutdown, and other conditions. Presumably, your proposed 30-day rolling average limit already includes some margin of safety for operational variation. If you are able to justify the separate limits, we would work closely with you as you draft appropriate permit language to help ensure SIP approvability related to determining compliance with the normal 30-day rolling average limit and the

hourly startup/shutdown limit. For example, in calculating 30-day averages, how will days be accounted for that include some, but not all, hours of startup/shutdown?

21. Section 6.4, BART Requirements, p. 99: According to your proposed revisions to the South Dakota Administrative Rules, Chapter 74:36:21:10, a permit modification will be required for your BART determination on Otter Tail's Big Stone I. Without seeing the details of such permit, it is difficult to determine whether this section of the SIP adequately addresses requirements for enforceability, including appropriate averaging times, compliance verification procedures, and recordkeeping and reporting requirements, and proper operation and maintenance procedures. As noted in comment #1 above, these requirements must be specified either in the text of the Regional Haze SIP or in a permit that is incorporated into the SIP.

22. Section 7.1, State and Federal Rules, pp. 100-101: Please clarify that although some of the cited Administrative Rules of South Dakota (ARD) control emissions of pollutants that ultimately contribute to visibility impairment, they were not written specifically to address visibility impairment.

23. Table 7-1 and Section 7.2.1, Breakdown of CMAQ Modeling Results, pp. 102-103: We were unable to determine if 16.50 dv for Badlands and 15.28 dv for Wind Cave are your Reasonable Progress Goals (RPG). These numbers don't quite match with those shown in Figure 8-1. Please clarify and document how the numbers were obtained. Also, the SIP must include the dv difference between the baseline and natural conditions for the best and worst days for the 1st planning period per 40 CFR 51.308(d)(2)(iv)(A). Finally, the SIP must provide the number of years necessary to reach natural conditions, as required by 40 CFR 51.308(d)(1)(ii) when the RPG is less than the uniform rate of progress (URP).

24. Section 7.2.2, Four Factor Analysis, p. 104: DENR's determination that a four-factor analysis is not warranted at this time is not acceptable. A four-factor analysis must be completed in establishing the RPGs for Class I areas impacted by South Dakota emissions, as well as in justifying a RPG that is less than URP. While we realize that the emissions reductions proposed under BART for Big Stone I will provide significant emissions reductions in South Dakota, remaining sources must be considered under Reasonable Progress. For example, are there any further reductions that could be obtained from GCC Dacotah, Ben French, or Pete Lien? What about potential impacts from the close proximity of Rapid City to Badlands? A simple Q/d analysis can provide a starting point. It may be reasonable for DENR to conclude, upon completion of an adequate four-factor analysis, that additional controls under Reasonable Progress are not warranted in this planning period. However, such a determination cannot be made without the analysis. Perhaps information from the WRAP's May 19, 2009 draft *Supplementary Information for Four-Factor Analyses for Selected Individual Facilities in South Dakota*, and WRAP's May 4, 2009 draft *Supplementary Information for Four Factor Analyses by WRAP States*, can be utilized to address some of the Reasonable Progress analysis requirements. If so, our August 12, 2009 comments on the draft WRAP reports must be taken into account.

25. Section 8.0, Long Term Strategy, pp. 104-105: According to 40 CFR 51.306(c), the State must revise its plan to provide for a coordinated long-term strategy for addressing both reasonably attributable and regional haze visibility impairment, and future coordinated long-term strategies must be submitted consistent with the schedule for periodic progress reports set forth in 40 CFR 51.308(g), *i.e.*, every 5 years. South Dakota never adopted a plan to address the requirements of 40 CFR 51.306 for a reasonably attributable visibility impairment long-term strategy; therefore, a Federal Implementation Plan (FIP) was promulgated to incorporate by reference the reasonably attributable visibility impairment long-term strategy requirements described in 40 CFR 52.29. See the federally-approved South Dakota Identification of Plan section at 40 CFR 52.2179(c). At this time, it is not clear from a national perspective how to coordinate a reasonably attributable long-term strategy FIP with a regional haze long-term strategy SIP. The simplest approach would be for you to develop your own reasonably attributable long-term strategy to replace the FIP. Is this approach something you would consider? We would be happy to work with you to develop appropriate language and believe it would not take too much additional work given the effort you have already put into the draft regional haze SIP.

26. Section 8.1, Class I Areas in Other States Impacted by South Dakota, p. 105: This section must quantify South Dakota's impact to the Class I areas outside the State (similar to that noted in Table 6-4).

27. Section 8.3, Technical Basis for Modeling, Monitoring and Emissions Information, p. 106: To assist the reader, please include website addresses and/or references to where these technical analyses are housed and how they will be maintained going forward. In addition, the text must address DENR's commitment to continued compilation and analysis of the technical requirements for the Regional Haze SIP, regardless of future uncertainty in the Western Regional Air Partnership's (WRAP's) role.

28. Section 8.5, Factors in Developing Long Term Strategy, p. 107: There appear to be typographical errors in the last paragraph – should be "emissions reductions."

29. Section 8.5.1, Emission Reductions from Ongoing Air Pollution Control Programs, pp. 107-108: As noted in comment #22 above, please clarify that although some of the cited Administrative Rules of South Dakota were not written specifically to address visibility impairment, they do control emissions of pollutants that may ultimately contribute to visibility impairment.

30. Section 8.5.2, Measures to Mitigate Impacts of Construction Activities, pp. 108-109: South Dakota never adopted a plan to address the original Visibility New Source Review (NSR) requirements of 40 CFR 51.307; therefore, a Federal Implementation Plan (FIP) was promulgated to incorporate by reference the Visibility NSR requirements described in 40 CFR 52.28. See the federally-approved South Dakota Identification of Plan section at 40 CFR 52.2179(b). Is it your intention to replace the nonattainment NSR visibility analysis requirements of 40 CFR 52.2179(b) with your proposed revisions to ARSD 74:36:21? If so, we would provide input for such a revision if requested.

31. Section 8.5.5, Smoke Management, pp. 109-110: Given that your source apportionment analysis identified organic carbon mass as one of the largest contributors on the most impaired days, it is difficult to understand why DENR has deferred consideration of smoke management techniques until 2013. In establishing its long-term strategy, the State must consider smoke management techniques for agricultural and forestry management purposes including plans as currently exist within the State for these purposes See 40 CFR 51.308(d)(3)(v)(E). At least some preliminary steps, in coordination with the FLMs, must be included, along with citing to any existing South Dakota burning provisions.

32. Section 8.5.6, Enforceable Emission Limits and Control Measures, pp. 110-111: We note your intention to establish the Big Stone I BART limits and control measure requirements in either a construction permit or the Title V permit. Note that any air quality permit used to address BART requirements will need to be incorporated into the SIP. The South Dakota draft construction permit program regulations are currently under review by our office. Until this has been approved into the SIP, it will not be appropriate to rely upon the program for your BART permits.

33. Section 9.0, Monitoring Strategy, p. 113-116: South Dakota never adopted a plan to address the original Visibility Monitoring requirements of 40 CFR 51.305; therefore, a FIP was promulgated to incorporate by reference the Visibility Monitoring requirements described in 40 CFR 52.26. See the federally-approved South Dakota Identification of Plan section at 40 CFR 52.2179(b). Is it your intention to replace the South Dakota Visibility Monitoring FIP requirements of 40 CFR 52.2179(b) with the DENR Monitoring Strategy as outlined in Section 9.0 of the Regional Haze SIP? If so, we would provide input for such a revision if requested.

34. Section 10.2, Consultation with Other States, pp. 118-119: For clarity, it would be helpful if in each instance of consultation, the text identified the dates and outcomes of the discussions. In addition, other than their involvement in WRAP, does DENR have a plan to include tribal consultation on the public comment version of the SIP?

35. Section 10.3, Public Input, p. 119: As noted in comment #23 above, the SIP must provide the public with a calculation of the number of years required to reach natural conditions if the RPG provides a slower rate of improvement than that needed to attain natural conditions by 2064 per 40 CFR 51.308(d)(1)(ii). We understand your concerns regarding assumptions for other states included in the WRAP analysis; however, this SIP must include your best estimate of number of years to reach natural conditions with the proposed RPGs.

36. Section 11.2, Report Every 5 Years, p. 121: As part of continuing consultation required under 40 CFR 51.308(i)(4), please clarify item 7, regarding the monitoring strategy, to note that you will consult with EPA and the FLMs on any revisions deemed necessary.

37. Appendices: We are unable to comment on any of the appendices since they were not included. Information in these appendices may have been necessary for a more thorough

review by EPA. If you are able to share the draft appendices prior to the official public comment period, it would be very helpful.

38. ARSD Chapter 74:36:21, Regional Haze Program:
(A) 74:36:21:02, Definitions: The definition of "BART-eligible source" must cite to an existing stationary facility as defined in 74:36:21:03. The definition of "visibility impairment" does not mirror the federal definition contained in 40 CFR 51.301 and must be revised accordingly. The definition of "contribute to visibility impairment" is not appropriate in the regional haze context and must be removed since there is no threshold for such a contribution. Finally, the definition of "major source" must cite to 40 CFR 51.166, and you must include the definition of "major modification" from 40 CFR 51.166, since the definition of major stationary source under the regional haze regulations includes major modifications.

(B) 74:36:21:04, Visibility Impact Analysis: This section must be revised to clarify that the existing provisions of 74:36:09, Prevention of Significant Deterioration, are not replaced by this new section 74:36:21:04. Given that you do have existing regulations, what is your intent with this new provision?

(C) 74:36:21:07, Operation and Maintenance of Controls: To improve clarity, this section should include more detail, such as specifying the minimum criteria for an acceptable operation and maintenance plan and when the source specific operation and maintenance plan to meet such criteria shall be submitted for permitting authority approval.

(D) 74:36:21:08, Monitoring, Recordkeeping and Reporting: As this provision is drafted, the term "main stack" is a concern because it is not clear whether all of the sulfur dioxide and nitrogen dioxide emissions from the BART-eligible source will be routed to the main stack. The term "main stack" implies the presence of other stack(s) which is/are not equipped with continuous emission monitoring system(s) as is the "main stack." The language in 74:36:21:08 (page 8, second sentence) should be revised to read, "All sulfur dioxide and nitrogen dioxide emissions from the BART eligible source shall be routed to the main stack of the BART-eligible source. Monitoring of sulfur dioxide and nitrogen dioxide emissions from the main stack shall be conducted using a continuous emission monitoring system which complies with continuous emission monitoring system requirements in 74:36:13."

(E) 74:36:21:11, Federal Land Manager Notification and Review: As required by the Regional Haze Rule, the Federal Land Managers must be provided a 60-day consultation period prior to any public hearing on the Regional Haze SIP. Since a BART permit is an integral part of the Regional Haze SIP, this 60-day consultation period must extend to FLM BART permit review as well. In addition, since any BART permit must be incorporated into the Regional Haze SIP, the 30-day public notice for the SIP needs to identify the inclusion of any BART permits.

SOUTH DAKOTA DEPARTMENT OF AGRICULTURE

DIVISION OF WILDLAND FIRE SUPPRESSION
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Web Address – www.state.sd.us/doa

February 23, 2010

South Dakota Department of Environment and Natural Resources
ATTN: Rick Boddicker, Senior Environmental Scientist
523 East Capitol
Pierre SD 57501

Dear Mr. Boddicker:

Thank you for the opportunity for the Division of Wildland Fire Suppression to comment on the proposed SIP and ARSD rules.

As you are well aware, the use of open fire to dispose of logging slash and biomass residues in the Black Hills Forest Fire Protection District by broadcast or pile burning is a very important management tool for this agency. In addition, this tool is very important for private landowners and the Black Hills National Forest in the management of forest health in a fire dependent ponderosa pine ecosystem. The use of broadcast burning for prescribed fire, as the SIP plan pointed out, is an important management tool for the National Park Service for ecosystem management of Wind Cave and the Badlands National Parks.

This division manages the wildfire activity in Custer State Park as mandated by South Dakota state law. One challenge facing this division and the Department of Game Fish and Parks is the fuel loading of hazardous fuels within Custer State Park, which is just north of Wind Cave National Park. An important tool in mitigating the risk of hazardous fuel loading in Custer State Park is that of slash pile burning. In addition, Custer State Park has identified a goal in their current resource management plan of treating 1324 acres per year by prescribed fire. Also this division issues approximately one thousand burning permits annually in the Custer County portion of the Black Hills Forest Fire Protection District. Some of these permits are adjacent to Wind Cave National Park.

Therefore, the Department of Agriculture strongly feels that the use of fire in a ponderosa pine ecosystem to maintain forest health is part and parcel a continuation of a natural process that existed in this area long before any anthropogenic influences on air quality were measured.

We also feel very strongly as an agency, that management practices by federal land managers to promote prairie dog habitat in and around the Conata Basin at the Badlands National Park and also at Wind Cave National Park leave bare soil that produces blowing dust in the areas of concern. Therefore, if smoke produced from wildfire and fire use activities are to be measured as background haze on days of poor visibility, then measurement techniques should be in place to quantify the amount of dust being produced from these prairie dog towns as a factor for poor visibility during the same measuring period.

This division looks forward to future collaboration with your agency in finding ways to meet air quality objectives that are needed for the nation's national parks, while at the same time, allowing land management agencies, private landowners, and this division, to use fire as an effective and proven tool in maintaining healthy forest and rangeland within our state.

Sincerely;

Joe Lowe

Joe Lowe
Division Director/State Wildland Fire Coordinator

CC: Bill Even; Secretary of Agriculture
Jon Farris, Deputy Secretary
Raymond Sowers, State Forestry