



# Department of Environmental Quality



To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

Dave Freudenthal, Governor

John Corra, Director

March 28, 2006

Mr. Jerry Menge  
Air Quality Program Coordinator  
Basin Electric Power Cooperative  
1717 East Interstate Avenue  
Bismarck, ND 58503

Re: Class I Area Modeling Analyses  
Permit Application No. AP-3546

Dear Mr. Menge:

The Division is currently reviewing the Class I area modeling analyses associated with the permit application for the proposed pulverized coal fired electrical generating facility to be known as Dry Fork Station, which is to be located approximately 7 miles north northeast of Gillette, in Campbell County, Wyoming. While a completeness determination on this application is still pending, the Division is providing comments at this time on three (3) technical issues that will need to be addressed as part of this application. Specifically, in addressing these technical issues, additional Class I area modeling analyses using the CALPUFF modeling system will be required.

**Modeling of Colstrip Units #3 and #4:**

The Class I area significance analysis for the proposed project indicated that the modeled impacts from the proposed coal-fired boiler were above the EPA proposed Class I Significant Impact levels (SILs) for sulfur dioxide (SO<sub>2</sub>) at the Northern Cheyenne Indian Reservation (NCIR) for the 3-hour and 24-hour averaging periods. As a result, a cumulative impact analysis for SO<sub>2</sub> at the NCIR was submitted as part of the permit application based on the increment consuming sources identified by the State of Montana Department of Environmental Quality, which included the Colstrip facility (Unit #3 and Unit #4), in Montana.

In reviewing the permit application, the Division noted that the Colstrip Unit #3 and Unit #4 boilers were modeled using a calculated 90<sup>th</sup> percentile of the 3-hour and 24-hour block averages, based on a two-year average (2003 and 2004) of actual SO<sub>2</sub> emissions from these two (2) units.

Based on information received from the State of Montana Department of Environmental Quality (MDEQ) regarding the modeling analyses conducted for Colstrip Unit #3 and Unit #4, these SO<sub>2</sub> sources were constructed after the Minor Source Baseline Date for the NCIR of March, 1979. Since the Class I SIL analysis demonstrated that a cumulative increment analysis was required to address short-term SO<sub>2</sub> increment consumption at NCIR, it is the Division's position that the allowable short-term emission rates are representative of short-term actual emission rates, as a practical means to quantify short-term emission rates in a dispersion modeling analysis. Therefore, the Division will require that Unit #3 and Unit #4 at the Colstrip facility are both modeled using the short-term permitted SO<sub>2</sub> emission rates for these sources.

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**Receptor Grid for NCIR:**

The Division originally provided a receptor grid for the NCIR Class I area, based on using a 4 kilometer (km) receptor resolution which was developed as part of a previous modeling analysis for the NCIR. In discussing with MDEQ, the current modeling analyses that have been conducted for the NCIR, the Division learned that a finer resolution receptor grid has been generated, which includes the boundary and interior area of the NCIR; this receptor grid resolution is approximately 1 km. This particular receptor grid for the NCIR was employed in the latest NCIR modeling analysis using AERMOD, which was reviewed by both the MDEQ and EPA Region VIII with respect to Class I SO<sub>2</sub> increment consumption at the NCIR. Therefore, the Division will require that Basin Electric utilize this same receptor grid for any further modeling analyses at the NCIR Class I area. An electronic copy of the receptor grid file, entitled, CHEYRECS.ROU which was generated by AERMAP, is attached to this letter.

**Quantification of Condensible Particulate Emissions from Boiler:**

During the Division's review of several recent modeling protocols for sources that have proposed coal-fired boilers, questions with regard to the quantification of condensible particulate emissions have arisen. The Division recognizes that there is a great deal of uncertainty in the quantification of condensible particulate emissions from coal-fired boilers, and in order to conduct a thorough technical review of this application, the Division will require Basin Electric to submit additional documentation which justifies the basis used to quantify condensible particulate emission rates from the boiler. Based on this additional documentation, if the calculated condensible particulate emission rates are revised from the emission rates originally submitted in the Dry Fork permit application, the Class I area modeling analyses will need to be revised and submitted to the Division.

If you have any questions, you may contact this office at (307) 777-7340.

Sincerely,



Bernard J. Dailey Sr.  
NSR Program Manager  
Air Quality Division

cc: Mike Warren, AQD Sheridan  
Chad Schlichtemeier, AQD Cheyenne  
File:AP-3546