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VIA EMAIL
AND U.S. MAIL

February 10, 2012

Mr. Terry O'Clair
Director, Division of Air Quality
North Dakota Department of Health
918 E. Divide Ave.
Bismarck, ND 58501-1947

RE: Coal Creek Station NOx BART Determination

Dear Mr. O'Clair:

This letter and enclosed document "*Coal Creek Station Units 1 and 2; Best Available Retrofit Technology Refined Analysis for NOx Emissions; November 2011; Updated February 10, 2012*" provide Great River Energy's (GRE) response to North Dakota Department of Health (NDDH) comments discussed on January 10, 2012, and provided in your letter dated January 19, 2012.

GRE recognizes there were a number of inadvertent errors and inconsistencies in the November 21 submittal. We have now reviewed the entire report, responded to all of NDDH's comments, and had an independent review conducted by a consultant not connected with our analysis.

Enclosed is an updated version of the BART refined analysis report ("Updated Report") initially submitted on November 21, 2011, now dated February 10, 2012. It is important to note that correction of the inadvertent errors and related revised analysis do not change the conclusions of the previous report – specifically, that the presumptive NOx limit of 0.17 lb/mmBtu is both cost effective and results in significant visibility improvements in North Dakota's Class I areas.

The updated report addresses all of NDDH's comments. In addition, we are providing a brief explanation, below, of our response to each of the items detailed in your January 19, 2012, letter to GRE.

Item 1. *The Department requests that GRE include a review of the last five years of operation in GRE's analysis of baseline emissions (or heat input). If changes to the facility affect the historic baseline (such as DryFining™), please include an explanation of any adjustment in your analysis. All tables should provide a consistent baseline emission rate (see Table A-2 versus Tables A-1, A-4, to A-10).*

As indicated in the January 19 letter, the BART Guidelines (40 CFR 51, Appendix Y) state "The baseline emissions rate should represent a realistic depiction of anticipated annual emissions for the source. In general, for the existing sources subject to BART, you will estimate the anticipated annual emissions based upon actual emissions from a baseline period." To accurately depict the anticipated annual emissions for the units at CCS, a new baseline must be established taking into consideration the DryFining™ technology and installed combustion controls in Unit 2 (LNC3+). The DryFining process is designed to remove moisture from the coal prior to introduction of the coal into the final stage of grinding and conveyance into the boiler. DryFining, having been funded under a DOE grant (DE-FC26-04NT41763), was required to conduct performance tests which demonstrated a heat input reduction of approximately 2 to 3 percent. By removing the moisture prior to introduction into the pulverizers, less primary air is required to "dry" and convey the coal through the pulverizers, making air available for staging (over-fire air NOx control) in other areas of the boiler. This drier coal will not require the same amount of heat input into the boiler because wet coal expends some of its heat input to vaporize the moisture in the coal. Thus a drier coal will not require that additional coal which is typically used to vaporize the moisture. DryFining is currently obtaining a moisture reduction in the coal of approximately eight percent. Further tuning is continuing so the units will meet a required reduction of 12% by 2016, which is needed to achieve the SO_2 BART limit through full scrubbing.

Item 2. *GRE's Report included a document ... which states "Based on a review of the recent load profile of CCS, historic information on marketable fly ash at CCS, and an estimate of the reliability of the SNCR and ASM systems, approximately 30% of the fly ash now sent to the sales silos is assumed to have ammonia concentrations which make it untreatable if an SNCR system is installed." The Eastlake Station also uses an ammonia slip mitigation (ASM) system and only 15% is untreatable. The Department understands that the Eastlake Station is able to blend ammoniated ash with ash that does not contain ammonia; an option that will not be available to the Coal Creek Station. In order for the Department to further evaluate the Report, please confirm and more fully explain this and any other differences between Coal Creek Station's operation and Eastlake Station's operation in order to evaluate GRE's 30% untreatable ash figure.*

It is not possible to determine exactly what percent of ash sales would be lost based on the installation of the SNCR and ammonia mitigation technologies at Coal Creek Station. There are no plants in the country with both of these technologies operating together on a lignite-fired unit. In fact, the vendor responsible for the ammonia mitigation technology will not guarantee the technology's performance at CCS.

As pointed out by NDDH, Coal Creek Station's situation is, indeed, different from that of Eastlake Station. Eastlake is the only plant in the U.S. that has operated with the discussed ammonia mitigation technology and it mixes its ammoniated ash with a non-ammoniated ash prior to sale, thus providing the ability to sell up to approximately 85% of its ash. There are additional differences between CCS operations and those of Eastlake as discussed in the Updated Report.

The 30% lost ash sales figure for Coal Creek Station reflects a reasonable and optimistic (i.e., conservative) outcome that can be justified based on our understanding of plant operations and the ash markets in which we compete for sales. We consider a 30% scenario to be a very optimistic view of the future that relies on the successful implementation of a technology that cannot currently be guaranteed by the vendor and has never been installed on lignite-fired units.

Item 3. *In Table 3.1, Cost Summary, the "Annualized Operating Cost" for Unit 1 SNCR + LNC3+ (30% lost ash sales) is listed at $6.81 million. However, Table A-1 lists $7.62 million for this scenario. Further, there are also inconsistent annualized operating costs in Table 3.1 versus Table A-1 for Unit 1 SNCR (30% lost ash sales) and Unit 2 SNCR (30% lost ash sales). Please address these inconsistencies.*

Table 3.1 has been updated to represent the same data presented in the appendices.

Item 4. *The "Pollution Control Cost" in Table 3.1 and Table A-1 for all three scenarios of Unit 1 SNCR + LNC3+ do not appear to be correct. Please evaluate these asserted costs and correct as may be necessary, including with respect to the asserted incremental costs.*

In the original table we had added the pollution control costs from Case 1 for Unit 1 (LNC3+) and the pollution control costs for Case 1 for Unit 2 (SNCR). Although seemingly correct we have changed this to be calculated from the Annualized Operating Cost (MM$/yr) and the Emission Reduction (T/yr). The Annualized Operating Cost has been derived from Unit 1 - Case 1 and Unit 2 - Case 1 in the table. The incremental cost was recalculated because Case 2 for Unit 1 is deemed an inferior control technology using the least cost envelope evaluation.

Item 5.a. *In Tables A-6 and A-9 of the Report, a project contingency of 42% and 41% are listed, respectively. However, it appears GRE actually used 15% (which is consistent with EPA's Control Cost Manual). The 42% and 41% should be revised. This is also an issue with other tables in GRE's Report. Please evaluate these considerations and address any errors or mislabeling.*

The project contingency percentage was mislabeled and has been corrected.

Item 5.b. *In Tables A-6 and A-9 of the Report, the cost for "SW Disposal" is not consistent with the cost separately listed in Table 2.3.2 and the Golder Report. Given the inconsistency, please verify which number is correct and revise the Report to reflect this correction.*

The data provided in the Golder Report was calculated on a specific set of operating parameters. The future actual emissions calculated for the BART analysis utilizes the Golder Report to determine the cost associated with the additional ash disposed (beyond current disposal amounts) due to the future installation of SNCR technology. GRE calculated the cost to dispose of additional ash – above and beyond what we are currently disposing (Table 2.3.2 Disposal Cost Summary: Incremental Increase in Disposal Cost Compared to Scenario A ($/ton)). This was done to capture the additional costs associated with the SNCR control technology installation.

Item 5.c. *In Tables A-6 and A-9 of the Report, the cost of "Lost Ash Sales" is inconsistent with Table 2.3.4 and the Golder Report. Given the inconsistency, please verify which number is correct and revise the Report to reflect this correction.*

The data provided in the Golder Report was calculated on a specific set of operating parameters. The future actual lost ash sales are calculated based on the future projected operating conditions defined for our baseline period. In reviewing the underlying calculations for the total dollars associated with lost ash sales we did find an error in the calculation which caused the value of lost ash sales to be approximately twice that of what it should have been. This has been corrected.

Item 6.a. *Provide a detailed explanation of Table 3.3.1, Visibility Improvement. Unit 1 has a baseline emission rate in Table 3.1 of 0.20 lb/10^6 Btu (annual average). Table 3.3.1 lists a 24-hr maximum emission rate of 0.20 lb/10^6 Btu. A 24-hr maximum emission rate should be larger than an annual average emission rate.*

Table 3.3.1 was confusing as presented in the original report. The original intent of the table was to illustrate that the incremental deciview improvement for each of the modeling runs was less than is perceptible to the human eye. We have modified the table to present this information in a more clear manner.

Item 6.b. *Provide a detailed explanation of Table 3.3.1, Visibility Improvement. The "Avg. Improvement" column indicates improvement for baseline conditions. Under the BART Guidelines, no improvement would be shown for baseline conditions.*

The original table was missing a notation that the baseline improvement values were illustrative to indicate improvements which have already occurred since the 2007 submittal. Table 3.3.1 has been modified to clearly represent the improvement in visibility.

Item 6.c. *Provide a detailed explanation of Table 3.3.1, Visibility Improvement. The amount of improvement should be based on three years of meteorological data. The results from all three years must be submitted. Please explain whether it represents a 98th percentile value or some other value.*

Table 3.3.1 has been modified to show each of the three years of visibility improvement derived from the visibility tables. These tables are included in a new Appendix D.

Item 7. *The Department ... suggests GRE closely review all tables and text for accuracy and consistency with the supporting documents.*

GRE has taken additional steps to review and verify data in the appendices, including an independent review by a consultant not connected with our analysis.

We submit the enclosed February 10, 2012, updated report which we believe addresses all of NDDH's comments and continues to support the conclusion that 0.17 lb/mmBtu is the appropriate NOx BART emissions limit for our Coal Creek Station Units 1 and 2.

If you have any questions, please contact me or Deb Nelson of my staff.

Sincerely,

Mary Jo Roth
Manager, Environmental Services

Enclosure

c: Tom Bachman, NDDH
Deb Nelson, GRE
Diane Stockdill, GRE