



United States Department of the Interior



FISH AND WILDLIFE SERVICE
National Wildlife Refuge System
Branch of Air Quality
7333 W. Jefferson Ave., Suite 375
Lakewood, CO 80235-2017

IN REPLY REFER TO:

FWS/ANWS-AR-AQ

June 18, 2010

G. Vinson Hellwig, Chief
Air Quality Division
Michigan Department of Environmental Quality
P.O. Box 30260
Lansing, Michigan 48909

Dear Mr. Hellwig:

The Department of the Interior, U.S. Fish and Wildlife Service (FWS) and National Park Service (NPS), submitted comments pertaining to the Michigan Regional Haze Rule Draft State Implementation Plan (SIP) via two separate letters, dated July 10, 2008 and October 24, 2008. We have reviewed the most recent draft of the Regional Haze Rule SIP and are submitting additional comments for your consideration and placement into the public record. We thank the Michigan Department of Natural Resources and Environment (MDNRE) for the opportunity to provide comment during its continued development of Michigan's Regional Haze Plan. We commend MDNRE's continued efforts with development of its Regional Haze Rule, but we still have serious concerns with several SIP elements.

We understand the substantive changes to Michigan's draft Regional Haze Rule pertain to the section containing the Best Available Retrofit Technology (BART) analyses. Our detailed comments with respect to Michigan's BART determinations are enclosed. However, we would also like to re-emphasize some of our previous comments with respect to the remaining sections of the SIP and these comments are also enclosed. Note that while this review is meant in fulfillment of Michigan's requirements under Federal Regulations 40 CFR 51.308(i)(2), only the Environmental Protection Agency (EPA) can make a final determination regarding the SIP completeness and approvability.

Again, we appreciate the opportunity to provide comments to MDNRE on its Haze SIP. We hope that these efforts continue and that the goals of the Regional Haze Rule can be realized. We would like to work with you to resolve outstanding issues. Please do not hesitate to contact Tim Allen with FWS at (303) 914-3802 or Pat Brewer with NPS at (303) 969-2153.

Sincerely,

Sandra V. Silva
Chief, Branch of Air Quality
U.S. Fish and Wildlife Service

Sincerely,

Christine L. Shaver
Chief, Air Resources Division
National Park Service

Enclosure

**TAKE PRIDE
IN AMERICA**

cc:

Steven Chester, Director
Michigan Department of Environmental Quality
P.O. Box 30473
Lansing, Michigan 48909

Cindy Hodges
Air Quality Division
Michigan Department of Environmental Quality
P.O. Box 30260
Lansing, Michigan 48909

Cheryl Newton, Acting Director
Air and Radiation Division
U.S. EPA Region 5
Mail Code: A-18J
77 West Jackson Blvd.
Chicago, Illinois 60604-3507

Nita Fuller, Regional Chief
USFWS Midwest Region
1 Federal Drive
Ft. Snelling, Minnesota 55111-4056

Jon Kauffeld, Refuge Supervisor
USFWS Midwest Region
1 Federal Drive
Ft. Snelling, Minnesota 55111-4056

Mark Vaniman, Refuge Manager
Seney National Wildlife Refuge
1674 Refuge Entrance Rd.
Seney, Michigan 49883

Phyllis Green, Superintendent
Isle Royale National Park
800 East Lakeshore Drive
Houghton, Michigan 49931

Mike Ward, Superintendent
Voyageurs National Park
3131 Hwy 53
International Falls, Minnesota 56649-8904

**Comments of the US Fish & Wildlife Service and National Park Service
Regarding the Michigan Regional Haze State Plan
and Best Available Retrofit Technology determinations
June 18, 2010**

General Comments

As we previously commented, the Regional Haze Rule requires that reasonable progress goals be established to protect the 20% cleanest days (i.e., visibility on the cleanest days cannot degrade). The Michigan State Implementation Plan (SIP) assumes that reasonable progress goals are met, despite data showing that the cleanest days are in fact getting dirtier. (See Table 5.2b, Haze Results). Therefore, progress in meeting regional haze goals is not demonstrated in the plan as it is currently drafted.

There are several sections where we recommend more discussion. Specifically, more information regarding the modeling that was performed, the tools used, and a description of model performance establishing the level of confidence in the results, should be included in the SIP narrative. In addition, more information based upon the IMPROVE monitoring data which illustrates the importance of sulfate, nitrate, and organic carbon to visibility impairment, and how Michigan is using these data to define its emission control priorities, is also needed. We also would like more discussion regarding all emissions inventories, the inventory development methods, and the assumptions made with all iterations in inventory development.

Please include a discussion of Michigan's response to the MANE-VU "ask." Discussion should include specific areas of agreement, disagreement, and resolutions between the State and MANE-VU.

The State must evaluate particulate emissions from electric generating units (EGUs) subject to Best Available Retrofit Technology (BART). While BART guidance allows States to conclude that reductions of sulfates and nitrates regulated under the Clean Air Interstate Rule (CAIR) are better than BART, this does not include particulate emissions from these sources. Also, for the sources for which BART determinations were performed, the three yearly deciview improvements were averaged for comparisons of Pre- and Post- BART visibility improvements (See Table 9.3a, BART Controls and Comparison of Visibility-Impairing Pollutant Impacts on Class I Areas). We do not agree with averaging deciviews for comparison.

Best Available Retrofit Technology Determinations

Lafarge Cement Plant in Alpena, Michigan

We commend Lafarge for its proposed BART decisions. Lafarge proposed BART that is generally consistent with the control equipment already committed to under the Lafarge Global Settlement/Consent Decree – Alpena Facility (Consent Decree). Lafarge proposed that BART should consist of Selective Non-Catalytic Reduction (SNCR) for NO_x control at all five cement kilns, along with wet flue gas desulfurization (FGD) for SO₂ control for the two kilns in Kiln

Group 6. MDNRE included as BART Dry Absorption Additions (DAA) for SO₂ control for the three kilns in Kiln Group 5 as required by the Consent Decree. We note that low NO_x burners (LNB) are proposed for all five kilns, but this control equipment is not included in the definition of BART. MDNRE should consider the inclusion of LNB as BART and explain in the SIP the decision as to its inclusion or exclusion.

The Consent Decree requires a 12-month rolling average emission limit for NO_x of 4.89 lb NO_x/ton of clinker, with the provision that a 30-day rolling average emission limit will be developed at a later date. Retrofitted 30-day rolling average emission rates in the range of 2.0 lb NO_x/ton of clinker and lower can be attained by using SNCR/LNB on pre-calciner kilns. The 35% to 40% removal efficiency using SNCR and LNB on a long dry kiln might account for the higher emission limit, but more discussion and calculations should be provided to justify the higher emission limit as is indicated will be done in the SIP.

St. Marys Cement, Inc. -- Portland Cement Manufacturing Plant

St. Marys Cement, Inc. (SMC) operates a rotary lime short kiln with a pre-calciner that is subject to BART. For NO_x control SMC recently implemented an indirect firing system (i.e., low NO_x burners) for the kiln/pre-calciner, and for particulate matter (PM) control a baghouse was installed. SMC concluded that no additional emission controls constitute BART, citing excessive control costs (e.g., about \$9,000/Ton SO₂ and \$7,600/Ton NO_x).

SMC reports that the cement kiln currently operates SNCR during ozone season, but that there are serious scaling and plugging problems and that it operates at only 10% efficiency. This experience is contrary to other pre-calciner kilns using SNCR such as Ash Grove in Washington, Lehigh in Iowa, and many cement kilns in Sweden, Germany, Taiwan and other places. Efficiencies are variously reported at 85%, 80%, 47% and 25% - 50%. SMC should consider as one of the NO_x BART control alternatives an examination of its SNCR system seeking improvement in its operating efficiency. Also, higher control efficiency assumptions on a new SNCR system, along with more realistic cost functions as discussed below, may result in a feasible retrofitted installation.

The cost-effectiveness of a new retrofit SNCR system for year-round operation was considered by SMC and was determined to be \$7,568 per ton. This is extremely high when compared with other reported SNCR installations ranging from \$498 - \$713/ton (Lafarge, MI) to \$1,400 - \$2,300/ton (Ellis County Texas Study).¹ The very low 10% control efficiency assumption, a somewhat inflated capital cost, a 10-year, rather than 15-year, amortization factor, along with an excessive assumption for the cost of annual operation, all contribute to the unrealistically high cost per ton. This analysis should be recalculated with more reasonable and better documented assumptions. SMC claimed that the cold winter climate of Michigan made proper temperature control for SNCR difficult. SNCR has been successfully operated without significant efficiency impairment in many cold climates.

¹ "Assessment of NO_x Emissions Reduction Strategies for Cement Kilns – Ellis County, Texas Commission on Environmental Quality, July 14, 2006, pp. 1-5 to 1-10.

The Portland Cement Association² noted that a relatively inexpensive but effective NO_x control technique is a “high pressure air injection system” (also called a mixing air system) which can be installed on the kiln. Mixing air systems have shown significant emissions reduction up to 48% on the 13 kilns operating with this technology. This should have been considered among the BART NO_x control alternatives.

The proposed NO_x emission limit of 6.5 lb NO_x/ton of clinker is lenient compared to the 2.8 lb NO_x/ton of clinker emission limit for precalciner kilns as shown in Appendix F, page 2-5 and the Lehigh kiln in Iowa that is subject to 2.8 lb NO_x/ton of clinker.

The fifth BART factor, namely the visibility impact analysis of each BART alternative, was not presented, probably on the assumption that the high cost per ton dropped each alternative from consideration. After more reasonable costs are determined as discussed above, visibility impact analysis should be performed to assess the potential visibility improvement associated with each control alternative. Since the maximum impact of this facility on the Seney Wilderness Area is a relatively large 5.257 deciviews, this analysis becomes more important.

Regarding SO₂ control, wet FGD was considered with a cost-effectiveness estimate of \$9,258 per ton and was dismissed due to the high cost. A wet limestone forced oxidation (LSFO) scrubber system was not considered by SMC. These systems demonstrate high removal efficiencies (e.g., 81% - 90%). The Lafarge cement plant in Michigan has proposed the LSFO as BART at a reasonable cost (\$1,087/ton SO₂). The LSFO alternative should be considered and the costs should be examined.

Escanaba Paper Company's New Page Paper Company

Escanaba Paper Company (EPC) proposed that no additional controls could be justified as BART, based on lack of technical feasibility or cost-effectiveness. It was claimed that serious space limitations at Boiler No. 8 would require adding fans and a new stack to accommodate several of the BART alternatives. Adding these costs to each BART alternative caused all cost estimates to be excessive, except possibly low NO_x burners (LNB) at \$3,600 per ton of NO_x removed. MDNRE should confirm that lack of space is an issue at Boiler No. 8.

Regarding the cost-effectiveness of the LNB NO_x control alternative, the \$3,600 per ton cost could be reduced if a 15-year equipment life were used with a 7% interest rate, rather than 10 years at 10%. Thus, LNB would seem to show reasonable cost-effectiveness.

Pertaining to the fifth BART factor of visibility improvement of each BART alternative, page 26 of the SIP states, “visibility modeling does not indicate it will result in a significant visibility improvement (i.e., at least 0.5 deciviews).” Page 27 of the SIP under the heading Additional BART Analysis states, “. . . that no significant visibility improvement will result justifies eliminating these options.” This is an erroneous conclusion. Cost per deciview improvement remained reasonable at \$2.04 million per deciview (\$203,964 annual cost/0.1dv improvement).

² “Summary of Control Techniques for Nitrogen Oxide” by Zephyr Environmental Corporation for the Portland Cement Association, 2008, p. 2.

EPC stated in its letter dated February 5, 2010, “The visibility modeling demonstrated that the application of a control technology did not result in a meaningful improvement in visibility.” It is incorrect to dismiss a control strategy on the basis that the resulting improvement is not perceptible or significant. EPA states in the preamble to its BART Guidelines that:

“Even though the visibility improvement from an individual source may not be perceptible, it should still be considered in setting BART because the contribution to haze may be significant relative to other source contributions in the Class I areas. Thus, we disagree that the degree of impairment should be contingent upon perceptibility. Failing to consider less-than-perceptible contributions to visibility impairment would ignore the CAA’s intent to have BART requirements apply to sources that contribute to, as well as cause, such impairment.”³

The conclusion of this discussion is that the visibility cost-effectiveness of LNB for the No. 8 Boiler is not excessive.

Boiler No. 9, which primarily combusts bark, lacked technically feasible NO_x control alternatives, except for SNCR. The \$4,428,487 capital cost shown for SNCR is higher than other such boilers (e.g., Domtar and Androscoggin in Maine) and should be more closely documented. Also, the 10-year and 10% amortization factors should be 15 years and 7%, respectively. A reexamination of the cost-effectiveness should then be performed.

Regarding the recovery furnace, low-temperature oxidation was not considered as a NO_x control alternative. It has never been used on a recovery furnace, but it is commercially available and has been successfully applied to, and permitted for, industrial processes (e.g., Minnesota Steel PSD permit). It would be ideally suited to the relatively cool exhaust here. EPC should show why it is not applicable to its recovery furnace.

Smurfit-Stone Container Corporation

A permit or other enforceable document should be provided to Smurfit-Stone Container Corporation stating that all permit limitations for the facility are zero.

³ See 40 CFR Part 51, Appendix Y. The U.S. Environmental Protection Agency finalized its BART Guidelines on June 15, 2005, and published the preamble and final rule text in the Federal Register on July 6, 2005. The rulemaking action added Appendix Y to Part 51, titled “Guidelines for BART Determinations Under the Regional Haze Rule.” See Preamble, 70FR39129, middle column.