APPENDIX E
Consultation –

Cooperating Agencies (E1), Endangered Species Act (E2), Cultural Resources (E3), Native American Tribes (E4)

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APPENDIX E1
Letters from Cooperating Agencies

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MINNESOTA DEPARTMENT OF COMMERCE

Energy Facility Permitting
85 7th Place East, Ste 500
Saint Paul, MN 55155-2198
Minnesota Department of Commerce

July 31, 2009

Richard Hargis
U.S. Department of Energy
National Energy Technology Laboratory
PO Box 10940
Pittsburgh, PA 15236-0940

RE: Release of the Final Environmental Impact Statement
Minnesota Department of Commerce Energy Facility Permitting Staff
PUC Docket No. E6472/GS-06-668

Dear Mr. Hargis,

I am in receipt of your request concerning the Minnesota Department of Commerce, Energy Facility Permitting staff's concurrence with the release of the FEIS for the Mesaba Energy Project (MPUC Docket No. E6472/GS-06-668)

The MDOC EFP staff concurs with the DOE decision to release the FEIS.

If you have any question or need further information, please do not hesitate to contact me.

As always, MDOC appreciates the assistance and cooperation of the DOE with these issues.

Thank you.

Sincerely,

William Cole Storm,
State Planning Director
Department of Commerce
Energy Planning & Advocacy
Routing & Siting Unit
85 7th Place East
Suite 500
St. Paul, MN 55101-2198

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MINNESOTA 55101-1638

REPLY TO
ATTENTION OF

JUN 2 2 2009

Operations
Regulatory (2005-5527-WAB)

Mr. Richard Hargis
NEPA Document Manager
U.S. department of Energy
National Energy Technical Laboratory
PO Box 10940
Pittsburgh, PA 15236

Dear Mr. Hargis;

This letter is in regards to our review of the Final Environmental Impact Statement (FEIS) for the Mesaba Energy Project. To date, we have reviewed and commented on two previous drafts of the EIS (February 23, 2007 and January 21, 2008). In addition, several separate teleconferences and meetings have occurred with the Department of Energy (DOE), Excelsior Energy (applicant) and other agencies to discuss parts of the EIS and/or unresolved issues regarding content of and the scope of the EIS.

As stated in our phone conversations with you in during the week of May 25, 2009, we do not object to the release of the FEIS for public review and comment. At such time that the applicant moves forward into any CWA Section 404 permit evaluation, the Corps will verify that the information and analyses contained in the FEIS is current and addresses any issues to date.

In July 2008, the St. Paul District and Corps Headquarters (HQ) staff, met with DOE National Energy Technology Laboratory (NETL) staff to discuss several issues related to NEPA and Section 404 of the CWA. Subsequent to that meeting, a memo dated August 6, 2008, was prepared on the status of Corps comments and action items for the DOE Mesaba Energy Draft Environmental impact Statement (DEIS). This memo reflects the status of Corps comments and action items for the DOE NETL Mesaba Energy DEIS.

1. Ultimately, it was recognized that the applicant purpose statement for CWA Section 404 is different from DOE's purpose statement. The Corps staff have worked closely with DOE and the applicant to develop Appendix F1. Appendix F1 is referenced in Chapter 1 of the FEIS under 1.4.3.
As stated in Appendix F1, the Project purpose and need is to:

a. Confirm the commercial viability of generating electrical power by means of a fuel-flexible integrated gasification combined cycle ("IGCC") technology in a utility-scale application; and
b. Help satisfy Minnesota's need for new and diverse sources of baseload electric power.

In our letter to Excelsior Energy dated December 13, 2006, the Corps indicated that information demonstrating the applicant's statement of projected power needs of the state over the next 10-15 years was necessary so we could perform a reasonable review of the project need in accordance our public interest review

.

The Mesaba project has received several economic and logistic incentives through state and federal processes. Although the Corps has stated that these incentives were not considered part of the project purpose and need for CWA purposes, they were factors used in limiting the search for practicable alternatives to the Taconite Tax Relief Area (TTRA). If the assumptions used in defining the search area change, we may be required to revisit this analysis.

Appendix F1 describes and documents the screening process used by Excelsior Energy to identify/select their preferred and alternate sites. Corps staff has worked with the applicant to include information on alternatives (e.g. Hibbing and Sites 16 & 17) that were previously dismissed by the applicant be disclosed in Appendix F1. This information, along with information presented in the FEIS and any additional analyses as required in a Section 404 permit evaluation will be used to determine the least environmentally damaging practicable alternatives (LEDPA). DOE and Corps HQ have agreed that the Corps would make a LEDPA determination based on wetland and aquatic resource impacts while taking into consideration impacts on other environmental resources (including visibility impacts). Therefore, please remove the statement on Page F2-36 that states "DOE anticipates that subsequent to the release of the FEIS that USACE would formally designate the LEDPA".

2. The Corps provided comments in 116-22 and 116-23 regarding Chapter 4.7 Wetland Impacts in the DEIS. In previous comments on the DEIS, the Corps requested clarification on the presentation of temporary/permanent and permanent/permanent wetland impacts. It appears that DOE has attempted to clarify this by presenting impacts as direct (fill and permanent conversion) and temporary. However, the Corps continues to maintain that the numerous references and tables on wetland impacts in the Chapter makes it difficult to understand the full magnitude of the impacts. In addition, a separate impact analysis presented with different tables is presented in Appendix F2. Upon a cursory cross-reference between the summary tables between Chapter 4.7 and Appendix F2, the following discrepancies are noted:

Chapter 4.7		
West Range	Direct 94.30 acres	Total Direct and Temp 113.62 acres
East Range	Direct 92.43 acres	Total Direct and Temp 143.43 acres
Appendix F2		
West Range	Direct 94.30 acres	Total Direct and Temp 104.16 acres
East Range	Direct 92.43 acres	Total Direct and Temp 117.98 acres

In addition, the discussion of the High Voltage Transmission Line (HVTL) corridor on the East Range site (the HVTL required to connect the plant site to the substation) is confusing when comparing Chapter 4.7 and Appendix F2. There appears to be two alternatives that could be used for this connection, the 38 line, or the 37/39 line. Page 4.7-27 states that the wetland impacts for the

two alternatives are comparable and the 37/39 line appears to be included in the applicant's preferred alternative. However, Table F2-28 page F2-66 indicates the 37/39 line alternative would have 59.62 acres of wetland impact through permanent conversion while Table F2-28 page F2-65 indicates that there would be no temporary or permanent conversion impacts for the 38 Line. This will need to be clarified in order for the Corps to utilize the information in determining the LEDPA.

3. Comment 116-05 and 116-27 relates to a previously unresolved issue in that the DEIS did not address a Phase 1 only alternative, which would demonstrate the technology and result in less wetland impact. The FEIS appears to include an analysis of Phase I only impacts for each of the sites.

4. Comment 116 relates to a previously unresolved issue regarding connected actions under NEPA. Specifically, the need for potential transmission upgrades beyond the point of interconnection for the West Range Site. Previous system impact studies for the West Range Site indicated that network upgrades that included a new 230 kv power line for Boswell to Riverton would be needed. The Corps had indicated that wetland and aquatic resource impact information would be needed for this required line in the determination of the LEDPA.

At the request of the applicant, an optional system impact study was completed that included a proposed new 230 kv power line from Grand Rapids to Bemidji, MN (Boswell to Wilton) and a steel manufacturing plant. The optional study concluded that the Boswell to Riverton line would not be required to connect the West Range site as an Energy Resource if the Grand Rapids to Bemidji and the steel plant were in service. However, these results appear to only apply to Phase I of the Mesaba Project. In the event that Excelsior Energy seeks a CWA 404 permit for both Phases of the Mesaba Project, additional information regarding the need for additional transmission upgrades would be required.

We thank you for the continued opportunities to comment on the EIS. We also remain interested in coordinating with you in our review of this proposal. If you have any questions, contact Ms. Kelly Urbanek in our Bemidji Field Office at (218) 444-6381. In any correspondence or inquiries, please refer to the Regulatory number shown above.

Sincerely,

Tamara E. Cameron
Chief, Regulatory Branch

Copy furnished:
Bill Storm, Minnesota Department of Commerce
Bob Cupit, Minnesota Public Utilities Commission

NATIONAL ENERGY TECHNOLOGY LABORATORY
Albany, OR • Morgantown, WV • Pittsburgh, PA

U.S. DEPARTMENT OF ENERGY

August 17, 2009

Ms. Tamara E. Cameron
Chief, Regulatory Branch
Department of the Army
St. Paul District, Corps of Engineers
190 Fifth Street East, Suite 401
St. Paul, Minnesota 55101-1638

RE: Operations, Regulatory (2005-5527-WAB)

Dear Ms. Cameron:

This is in response to your letter dated June 22, 2009, regarding the U.S. Army Corps of Engineers' review of the Preliminary Final Environmental Impact Statement (EIS) for the Mesaba Energy Project. Your letter accurately summarized the extent of coordination between the U.S. Army Corps of Engineers and the U.S. Department of Energy, which has spanned the duration of this project. We appreciate your participation as a cooperating Federal agency on this EIS.

The specific items listed in your letter and appropriate edits to the Final EIS to address these items have been discussed and coordinated with Ms. Kelly Urbanek of your Bemidji Field Office. A copy of your letter will be included in an Appendix of the Final EIS.

We look forward to your continued involvement and working with your agency as this project goes forward. Thank you.

Sincerely,

Richard A. Hargis, Jr.

Copy to:
Kelly Urbanek

626 Cochrans Mill Road, P.O. Box 10940, Pittsburgh, PA 15236
hargis@netl.doe.gov@netl.doe.gov • Voice (412) 386-6065 • Fax (412) 386-4604 • www.netl.doe.gov

USDA United States Department of Agriculture | Forest Service | Eastern Region | 626 E. Wisconsin Suite 800 Milwaukee, WI 53202

File Code: 2580-2
Date: July 31, 2009

Mr. Richard Hargis, Jr.
NEPA Document Manager
U.S. Department of Energy, NETL
P.O. Box 10940
Pittsburgh, PA 15236-0940

Dear Mr. Hargis:

Please find below our review of the combined federal/state Preliminary Final Environmental Impact Statement (PFEIS) for Excelsior Energy, Inc.'s (Excelsior), Mesabi Energy Project that we received on April 29, 2009. This review also includes the modeling results contained in the report we received on May 21, 2009, and associated modeling files we received the first week of June 2009.

The project is an integrated coal gasification combined cycle (IGCC) electric power generating station. The facility is proposed to be built in two phases; each phase would nominally generate 600 megawatts of electricity. The preferred location for the facility is the "west site" near the town of Taconite in Northeastern Minnesota. At this location, the facility would be 98 kilometers from the Boundary Waters Canoe Area Wilderness (BWCAW) and 188 kilometers from Rainbow Lake Wilderness (RLW). An alternative location is the "east site" near Hoyt Lakes that would place the facility considerably closer to the BWCAW, only about 40 kilometers away.

As a Federal Land Manager (FLM), the Forest Service has an affirmative responsibility to protect the air quality related values of the Class I wilderness areas it administers, as specified in the Federal Clean Air Act. We also have the specific role on this project as a cooperating agency in providing technical expertise in the review of air quality impacts.

As you know, an air emissions permit is also necessary for this project. It is through this process that our concerns are normally addressed, in cooperation with the permitting agencies - the Minnesota Pollution Control Agency (MPCA), the Environmental Protection Agency (EPA), and other FLMs such as the National Park Service. The air permit process for this project is ongoing. We will continue to work with our state and federal partners through the air permit process following this EIS. As a cooperating agency we are submitting these written comments regarding the PFEIS so they can be considered by the Department of Energy (DOE) as it drafts the mitigation section of the Record of Decision. We do not object to the release of the FEIS to the public as long as our concerns in this letter are also communicated to the public.

Our concerns with this project have not changed since our last comment letter sent to you on December 17, 2007. The first is that Excelsior is not proposing to include emission controls that can significantly reduce its emissions similar to those specified on other IGCC projects in the United States. The second is the modeled impacts to visibility in the BWCAW. In the current draft of the PFEIS on page 4.3-23 DOE states, "Based on the predicted impacts to visibility from

the West Range site, DOE would likely not require mitigation to protect visual resources in any of the Class I areas. However, DOE recognizes that the FLMs have the responsibility for determining whether a more refined analysis would be required or whether mitigation of these predicted impacts would be recommended. If mitigation is recommended by the FLMs, DOE would consider such mitigation as a condition of the Record of Decision."

We would like to make it clear that we feel the impacts modeled to visibility at EITHER site require mitigation. For the uncontrolled plant at the west site, the modeling shows 14 days in 3 years over a 10 percent change in visibility, which is over our concern threshold of 10 percent according to the current visibility analysis protocol. Even under the proposed new visibility analysis method the project is again over our concern threshold of 5 percent, with 54 days in 3 years over that value. The east site shows similar results even though pollution controls are implemented.

The best possible mitigation for any source is to reduce its own emissions. This mitigation method directly reduces impacts to the Class I area. If Excelsior installs the "enhanced" controls on its entire plant at the west site, it appears the visibility impacts would be below our concern thresholds. The DOE proposes installing these controls on the entire plant at the east site and we suggest they do the same for the west site.

Our remaining technical comments are enclosed. The Forest Service supports the development of new energy technologies that also demonstrate best available emission controls. We look forward to working with you to reduce the impacts from this project on our Wilderness areas.

If you have specific questions on these comments, please contact Trent Wickman at twickman@fs.fed.us or (218) 626-4372.

Sincerely,

/s/ Logan Lee (for)
KENT P. CONNAUGHTON
Regional Forester

Enclosure

cc: Trent Wickman, Jim Sanders, Jeanne Higgins, Don Shepherd, Andrea Stacy, Chris Holbeck, Jennifer Darrow, Carolina Schutt, Marshall Cole, Bill Storm

Technical Comments on the Excelsior Energy, Mesabi Energy Project

1. We would like to make clear that we did not review the Class I Increment modeling and associated emission inventories other than to note the results of the analysis. The MPCA and EPA have the lead in determining whether this analysis was done correctly. We would like to note that an identical analysis for another project in the same area of Minnesota has shown an exceedance of the Class I increment. We are particularly interested in how the MPCA and EPA resolve this discrepancy since the increment analysis for this project does not show an exceedance and the results of the two analysis should be very similar. An exceedance of the increment can affect the ability of the State to issue air permits for new and expanded sources.

2. The EPA Model Clearinghouse recently issued a memo dated May 15, 2009, that clearly states that the use of a 1km grid resolution in CALMET/CALPUFF is not adequately justified in the domain of interest (i.e., Minnesota); i.e., EPA is not convinced that the finer resolution modeling gives a better result. Therefore, there is little value in including in the final EIS the entire section titled "Supplemental Visibility Modeling Analysis" starting on page 4.3-25 which is based on 1km grid resolution modeling. We feel the section should be removed to reduce any potential confusion introduced by presenting an additional set of modeling results.

3. Please include a discussion of the air pollution controls and emission limits in permits for other IGCC plants for sulfur dioxide and nitrogen oxides in the United States and around the world and how those emission rates compare to the Excelsior project. The PFEIS focuses on comparing the plant to pulverized coal technology.

4. Please describe the best available control technology (BACT) analysis as it applies to the project, since the term BACT is used in the PFEIS, but never defined or described. Please remove the "BACT" and "beyond BACT" labels used for different combinations of pollution control equipment in the document (e.g., footnotes on Table 5.2.2-1). As noted in the PFEIS, the BACT decision has not been made by the permitting agency.

5. Section 3.3.3.3 and the visibility discussion starting on page 5.2-7 – please add discussion relating to the "Concept Plan for Addressing Major Point Sources in Northeastern Minnesota" (Northeastern Minnesota Plan) which is included in the Minnesota Regional Haze Plan. The Northeastern Minnesota Plan prescribes a 20 percent reduction from 2002 emission levels from both existing and new sources by 2012 and 30 percent by 2018. Please provide an analysis of how Excelsior's project will affect those goals.

6. Table 3.3-5 under the Acid Rain Program – "The program is inherently a mitigation tool in that the marketable allowances help limit the amount of SO_2 and NO_X that can be produced by any one facility; thereby mitigating regional effects." We feel the use of the term "mitigation" here is inappropriate and potentially confusing. The same term is used later to address Class I area impacts. We request that this sentence be removed.

7. Table 4.3-14 - please show the method 8 results versus 20 percent best natural background, not annual average. If method 8 is eventually prescribed as the new analysis

method for visibility, the Forest Service will ask that the analysis be done versus 20 percent best natural background in Minnesota.

8. Please remove this section on page 4.3-30 – "The Acid Rain Program was established as a system of marketable allowances to control emissions that contribute to the formation of acid rain. Although the FLMs do not consider the purchase of acid rain allowances by affected units to be mitigation of impacts, the program is inherently a mitigation tool in that the marketable allowances help limit the amount..." As stated above, the use of the term "mitigation" in this way is inappropriate and potentially confusing.

9. On Table 3.3-5 - under the Regional Haze Program (and in other places in the document) "On February 2008, Minnesota submitted to U.S. EPA a Draft Regional Haze SIP…" To our knowledge Minnesota has not submitted their plan to EPA yet. This section also should include discussion of the Northeastern Minnesota plan and specifically the 20 percent reduction and 30 percent emission reduction goals. Page 5.2-7 mentions the Northeastern Minnesota Plan, but does not address the main point of it; i.e., the 20 and 30 percent reduction goals and how Excelsior will affect these goals.

10. Under the Clean Air Mercury Rule and other sections where mercury is discussed the final EIS needs to discuss how Excelsior will comply with the State of Minnesota's guidelines for new and expanding air emission sources. These guidelines were developed so new facilities do not jeopardize the ability of the State to meets its goals under the statewide mercury TMDL. One of the goals is an overall decrease in emissions of 78 percent from 2005 levels by all sources. The final EIS should discuss how the project will affect both overall state and the utility-specific goals under the implementation plan for the TMDL.

11. Please remove the speculation as to the final form of federal power plant mercury regulations on page 4.3-31. "For new sources, the minimum standard is equivalent to the average level of control achieved by the top 12 percent of existing sources in that industry group. As described below, the Mesaba Energy Project would utilize the most stringent mercury controls available to solid fueled electric generating units and would therefore outperform any likely MACT standard." It is completely unknown how the final regulation will look. For example, EPA could subcategorize IGCCs which would make the previous speculation moot.

12. Page 5.2-13 – The PFEIS compares the additional mercury from Excelsior to the estimated existing concentrations. This type of analysis does not address the need, as outlined in Minnesota Mercury TMDL, to decrease ambient concentrations of mercury and thereby also emissions.

13. Page 4.3.1.2 - Please remove the following sentence, with which we do not agree - "However, because the Method 2 visibility methodology does not consider the effects of natural weather conditions, such as rain, snow, and fog, on background visibility, DOE understands that it is generally accepted by modeling experts that Method 2 is likely to overstate impacts, especially on days with poor natural background visibility." Also on page 4.3-22, as discussed above, please remove "Method 2 represents a conservative screening approach, which generally over-predicts actual visibility effects that would be

observed." Please remove similar language in other areas of the document such as the modifier "conservative" and other similar terms with method 2. While some aspects may be conservative others are not, for example using a 24-hour emission rate to represent phenomena that is seen instantaneously.

14. Page 4.3-17 – we would like to note that the IMPROVE monitors are not federal reference monitors for PM2.5 or PM10. This data can only be used qualitatively.

15. When presenting the visibility data in Table 4.3-14 we believe it is clearer to show the total number of days over 10 percent and days over 5 percent for the three years modeled; i.e., for the BWCAW 13 days over 10 percent for the proposed, 3 days over 10 percent for the enhanced.

16. For the west site Excelsior runs a modeling scenario with only half of the plant operating "enhanced controls" and no scenario with the entire plant controlled. Please describe how controlling only half the plant helps the Class I areas make reasonable progress toward the national visibility goal. To reach this goal, continuous reductions in emissions must be made by all sources over time. New sources must control their new emissions to the greatest extent possible or else they shift more of the burden of future emission reductions to existing sources.

17. Page 4.3-32 – we feel the statement concerning implications of not moving forward with the project is unsupported; i.e., "would jeopardize potential benefits anticipated from the commercial implementation of IGCC. These benefits include more cost effective CCS options, progress in reducing greenhouse gas emissions, and cost-effective reductions of emissions of criteria pollutants beyond levels required by regulatory caps in the utility sector. It should be noted that the implications of commercializing the E-Gas technology is that significant emissions reduction is expected to result in long-term improved visibility overall as IGCC power plants are substituted for conventional coal-fired power plant." Similar statements are made on pages 5.2-8 and 5.2-14.

    CCS (carbon capture and sequestration) will not be installed with this plant (see Page 5.1-2) so we do not understand how the first statement can be made. With regard to the criteria pollutants, feasible controls for those pollutants are not proposed to be implemented at the preferred west site. Existing power plants have a very long life time and as electrical demand continues to increase we see no evidence in the PFEIS that shows that IGCC will replace existing PC power plants and their associated emissions. Instead, the Mesaba project will be an additional source of visibility impairing emissions. The discussion in the PFEIS seems to assume future electrical demand will be provided by either coal-based IGCC or traditional pulverized coal power plants. Future electrical demand could also be provided by renewable energy or through demand management. Minnesota's setting is unique. Minnesota has a 25 percent renewable portfolio standard goal by 2025 and a ban on future coal-based power development. The Regional Haze Rule requires overall emissions to decrease over time for the states to reach their reasonable progress goals. Please describe how this project would not conflict with these goals.

18. The following statement on page 5.2-14 needs more discussion, "The Project's cumulative visibility impacts would be addressed as part of updating Minnesota's State Implementation Plan in compliance with the Federal Regional Haze Rule (RHR). Demonstration of this IGCC technology and widespread commercialization would contribute to the State's goal of reducing regional haze impacts in nearby Class I areas over the long term." Please explain how new emissions contribute to the goals in the Northeastern Minnesota Plan of a 20 percent reduction in emissions in 2012 and 30 percent in 2018. The PFEIS did not demonstrate that any existing coal-fired power plant in Minnesota would shut down because of this project.

19. We are troubled by the following statement, "The impacts of Mesaba Phases I and II on visibility in the Class I areas where visibility is an AQRV have been shown in Section 5.3 for the West Range site to be controllable and/or readily capable of being offset to where guidance proposed by FLAG2008 shows no modeled adverse impacts. Although visibility impacts due to operation of both sources at the East Range site are more pronounced and a much bigger challenge to mitigate than those at the West Range site, Section 5.3 identifies potential options for reducing modeled impacts below levels considered adverse. Also, as discussed in Section 4.3, more in-depth modeling meteorological analyses may be used to demonstrate impacts below such levels." The word "controllable" is ambiguous. If "controllable" means that emission controls can be installed that would alleviate the visibility impacts, then we agree. Since no detailed emission offset or other options for reducing modeled impacts were discussed in the PFEIS we feel it is premature to conclude that the impacts from the east site can be offset. It is completely unknown whether any of the options are even viable. Also, as we have stated in the past, FLAG 2000 is the current guidance document. The final form of the revision to FLAG is unknown so making decisions based on a proposed revision is clearly inappropriate. Any additional modeling done in the future would need to conform to protocols agreed to by the FLMs. We see no reason to believe that additional modeling would produce different results.

20. Section 4.1.4 of the modeling results report titled "Regional Haze Visibility Impacts Mitigation" included tables that attempt to evaluate the impact of an emission reduction project at the Laskin energy facility. We feel the values in the table may be inaccurate depending on how the modeling was done. To do such a comparison the visibility results for each model run need to be paired in space and time and then the subtraction done at each receptor.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

Ref: 8P-AR

MAY 20 2009

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

Dear Mr. Gustafson,

Please find enclosed EPA's comments on the proposed BART modeling protocol, as prepared by TRC Environmental Corporation for Otter Tail's Big Stone Unit I. These comments also include input from the Federal Land Managers (FLMs) and EPA's Office of Air Quality Planning and Standards (OAQPS). We apologize for the delay in providing you with these comments; however, some of the issues are of a national nature and required discussion and input from OAQPS staff and management as well as the other EPA regional offices and the FLMs. Region 8's inquiry to the OAQPS Model Clearinghouse and the Clearinghouse response and recommendations are enclosed for your use, and they will also be posted on EPA's modeling web site (Support Center for Regulatory Atmospheric Modeling - SCRAM).

Once you've had an opportunity to review the comments, my staff will be available for discussions with you, Otter Tail and the FLMs to complete an acceptable protocol. OAQPS will be available to participate, if desired. Let us know when you wish to schedule these discussions.

If you have any questions, please don't hesitate to call me at (303) 312-6434.

Sincerely,

Callie Videtich, Director
Air Program

Enclosures
cc: Tim Allen, USFWS
Bruce Polkowsky, NPS
Trent Wickman, USFS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

MAY 15 2009

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Model Clearinghouse Review of CALPUFF Modeling Protocol for BART

FROM: Tyler Fox, Leader
Air Quality Modeling Group (C439-01)

TO: Kevin Golden, Lead Regional Modeler
Air Permitting, Monitoring, and Modeling Unit (8P-A)

Carl Daly, Chief
Air Permitting, Monitoring, and Modeling Unit (8P-A)

INTRODUCTION

In response to your memorandum of February 24, 2009, the Model Clearinghouse has reviewed the proposed position and resolution of the issues presented in order to develop a suitable air quality analysis for visibility for the Otter Tail Power Big Stone Unit I located in Eastern South Dakota. The purpose of this analysis is to determine if this source is subject to Best Available Retrofit Technology (BART) requirements under EPA's Region Haze Program regulations.

Guidelines for determining how to identify sources "subject to BART" are provided in section III of EPA's *Guidelines for BART Determination Under the Regional Haze Rule*, which is located in Appendix Y to Part 51 of Title 40 of the Code of Federal Regulations. Section III.A.3.(Option 1) of Appendix Y, allows the use of CALPUFF model to predict the visibility impacts from a single source at a Class I area and states that CALPUFF is the best regulatory model currently available for this application. Furthermore, with respect to the use of CALPUFF for regulatory applications, footnote 8 in this section of Appendix Y references EPA's *Guideline on Air Quality Models (GAQM)*, published in Appendix W of Part 51. Section 6 of the *GAQM* includes recommendations regarding application of CALPUFF for visibility assessments and for long range transport (LRT) applications in general (nominally beyond about 50 kilometers), indicating that such applications "will require significant consultation with the appropriate reviewing authority (paragraph 3.0(b) [of Appendix W]) and the affected FLM(s) [Federal Land Managers]". Appendix Y also recommends developing a modeling protocol and following the guidance contained within the *Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts* (USEPA, 1998). The IWAQM Phase 2 summary report is also referenced by the *GAQM*. Thus, when CALPUFF is used in this context, it is our understanding that EPA Regional Offices have

encouraged following both the IWAQM Phase 2 report and the *GAQM* when conducting modeling for the BART program.

Recently the FLMs have made us aware that a number of the issues identified in the Region's memorandum regarding this BART application also exist for Prevention of Significant Deterioration (PSD) modeling conducted for assessing impacts in mandatory Class I areas. While Appendix Y and the *GAQM* both offer some flexibility in models and procedures for visibility assessments, deviations from the use of preferred models or modifications of preferred models under PSD is discussed in Section 3 of the *GAQM* and requires Regional Office approval in all cases. See also, 40 C.F.R. § 51.166(l)(2). Given the importance of the issues that the Region has identified and their similarity to issues identified by the FLMs in recent PSD applications, the Model Clearinghouse believes it appropriate to evaluate the protocol proposed by Otter Tail power for its scientific merit.

The Model Clearinghouse review has focused upon the primary issues identified in the Region's memorandum, but also identified several other issues that the Region may wish to consider in its ongoing negotiations. In summary,

1) We concur with Region 8's position that the use of a 1 km grid resolution in CALMET/CALPUFF is not adequately justified given the geographical characteristics of the domain of interest and the limitations of the modeling system.

2) We concur with Region 8's view based on EPA guidelines that "blending" National Weather Service (NWS) observations with prognostic model data is the most technically-sound approach to developing meteorological fields for application of the CALPUFF model when prognostic model data are incorporated. This approach should be used unless adequate documentation is provided demonstrating that an alternative approach has equal technical merit. Absent pertinent evaluations, we are unable to endorse use of the NOOBS =1 option recommended in the *Otter Tail Protocol* at this time

3) We defer the decision on the appropriateness of the proposed concentration post-processing procedures to the Regional Office and the FLMs.

In addition, we are proposing revisions to the IWAQM Phase 2 recommendations that are responsive to the issues and concerns raised in this memorandum. A more complete discussion is provided in the draft document *Reassessment of the Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report: Revisions to Phase 2 Recommendations* (USEPA, 2009) available for review on EPA's Support Center for Regulatory Atmospheric Modeling (SCRAM) website.

The remainder of this memorandum provides background on the Region 8 request and a more detailed explanation for each of the above recommendations.

BACKGROUND

EPA Region 8, in conjunction the US Fish and Wildlife Service, National Park Service, and the state of South Dakota, has worked to develop an adequate CALPUFF modeling protocol for the Best Available Retrofit Technology (BART) analysis for the Otter Tail Power Big Stone Unit I electrical generating unit in eastern South Dakota. Big Stone Unit I is a large uncontrolled coal-fired facility that is approximately 400 km from the nearest Class I areas in Minnesota and South Dakota.

The facility's consultant completed a CALPUFF modeling analysis in September 2008. This analysis was conducted in the absence of a protocol approved by the aforementioned parties. In this submittal, the Big Stone Unit I had an impact of 0.489 delta-deciview (d-dv) on the Boundary Waters (BOWA) Class I area. Other modeling of this facility produced vastly different results, raising concerns that the methods used in the September 2008 analysis may have resulted in the lower modeled impacts. For example, CAMx source apportionment modeling conducted in 2007 by EPA Region 7 on the Big Stone Unit I yielded a maximum change of 1.87 d-dv at BOWA, with ten days exceeding a 0.5 d-dv change.

In January 2009, the facility's consultant submitted the *Otter Tail Protocol* (TRC, 2009) to EPA Region 8 and the FLMs outlining proposed procedures for a revised CALPUFF analysis. The *Otter Tail Protocol* proposed specific changes to the Western Regional Air Partnership (WRAP) BART modeling protocol (WRAP, 2006) including grid resolution, radius of influence values for CALMET, and the CALMET NOOBS options that are not EPA-approved. Additionally, the *Otter Tail Protocol* proposed the use of alternative procedures for post-processing nitrate concentrations that are not consistent with the WRAP BART modeling procedures. Both EPA Region 8 and the FLMs objected to the proposed deviations, but subsequent negotiations with the facility have not yielded any changes to the proposed *Otter Tail Protocol.*

In February 2009 EPA Region 8 referred the *Otter Tail Protocol* to the EPA Model Clearinghouse for review of the Region's position on grid resolution, non-default CALMET options, and CALPUFF post-processing options. This Clearinghouse memorandum will address the specific deviations from the WRAP protocol identified by the Region's Modeling Clearinghouse request.

CALMET/CALPUFF GRID RESOLUTION

The *Otter Tail Protocol* called for the use of three separate CALMET/CALPUFF modeling domains covering mandatory Class I areas in South Dakota, North Dakota, and Minnesota, "[O]wing to the high spatial resolution and the large extent of the area of interest". Each of the proposed modeling domains utilize a horizontal grid resolution of 1 kilometer, deviating from the 4 km horizontal grid resolution recommended by the WRAP protocol. The *Otter Tail Protocol* specifically states that the

> "...complex terrain is best resolved with a 1 km grid. Additionally, the coastline of Lake Superior, close to Boundary Water Canoe Area WA, and of other smaller lakes on the trajectories to the various Class I areas, is also best resolved at 1km resolution."

An argument for the use of finer resolution CALMET wind fields should address two components. The first is that the prognostic meteorological data sets from NWP models lack sufficient resolution to capture meteorological features of interest which would be responsible for transport of airborne contaminants from the source to the Class I area(s) of interest. The second component of the argument is that the diagnostic wind model (DWM), CALMET, can enhance the NWP data used as the first-guess wind field (IPROG=14) sufficiently to adequately replicate the key meteorological features of interest.

Model Clearinghouse Recommendation on Grid Resolution

Based upon a review of the *Otter Tail Protocol* and relevant scientific literature, the Model Clearinghouse offers the following conclusions. First, the *Otter Tail Protocol* presents no scientific evidence to support the claim that 1 km CALMET resolution increases the objective accuracy of the final wind field, especially in areas of relatively modest topographic relief, such as for each of the three domains proposed. The preponderance of scientific literature is consistent in the conclusion that there is a limitation to the benefit of higher resolution gridded meteorological data, whether from NWP or DWM models, especially for areas of modest topographic relief. Higher resolution data does not necessarily improve model performance, but may in fact degrade model performance for some predicted meteorological parameters. Second, CALMET has limited ability to independently capture the full three-dimensional structure of complex flows. Without the benefit of high resolution NWP data or a high density of representative observational data, the ability of the DWM to accurately simulate these conditions is limited. Several studies have documented the inherent limitations of DWM diagnostic algorithms (e.g., Earth Tech, Inc. (2001), Scire (2008), and Scire (2009))

Therefore, we concur with the Region's position that the use of a 1 km grid resolution in CALMET/CALPUFF is not adequately justified given the geographical characteristics of the domain of interest and the limitations of the modeling system. Furthermore, as indicated in our Introduction, the *Otter Tail Protocol* links the limited geographic extent of the three proposed modeling domains to the use of high (1 km) spatial resolution, implying a trade-off in computational resources between grid resolution and spatial coverage. We do not feel that such a trade-off is justified, and are concerned that the proposed domains may not adequately simulate the potential for plume recirculation. Based on a review of the relevant scientific literature and a review of the CALMET capabilities, we also see no evidence to support the use of a 4 km grid resolution for CALMET/CALPUFF in this case, as recommended in the WRAP BART protocol. Note that the WRAP protocol addresses BART evaluations across a wide domain encompassing the most rugged terrain in the U. S., and this assessment regarding the applicability of 4 km grid resolution for the Otter Tail analysis is not intended to suggest that grid resolutions higher than the 36 km MM5 data are not justified for other areas within WRAP.

Based on our review of this issue and given the limitations of the CALMET DWM, our view is that the candidate NWP data used should appropriately characterize the key meteorological features that govern source-receptor relations for the specific application. We also see no clear basis for, or benefit from, extending the CALMET/CALPUFF grid resolution much beyond the resolution of the prognostic model used to specify the first-guess wind field. Since the Model

Clearinghouse recommendation is to maintain the original horizontal grid resolution of the NWP data in most situations, it would be inappropriate to apply CALMET with any diagnostic adjustments, unless a sufficiently dense and representative network of observed data are available, and the improved performance of the CALMET wind fields can be objectively demonstrated. When properly applied with adequately resolved NWP data, the CALMET first-guess field likely already reflects the relevant meteorological features of interest at that resolution.

The Model Clearinghouse recommendation strictly implies that the candidate NWP data used should appropriately characterize the key meteorological features that govern source-receptor relations for the specific application. This places a higher emphasis on ensuring that the candidate NWP dataset is at the appropriate horizontal grid resolution ***and*** that the dataset captures the key meteorological features for the specific application. Therefore, the recommendation for establishing the suitability of NWP dataset under Section 8.3(d) of the *GAQM* is a critical component for planning a successful LRT model application. In light of these concerns, the appropriateness and adequacy of the CALMET/CALPUFF grid resolution, as well as any prognostic model data used as input to CALMET, should be adequately justified based on the specific needs of the application, and measures should be taken to objectively assess the resulting meteorological fields, including both horizontal and vertical velocity fields, prior to their acceptance for use in CALPUFF. In accordance with Section 8.3(d) of the *GAQM*, we must emphasize that acceptance of a prognostic data set is contingent upon concurrence from the appropriate reviewing authority. Therefore, at a minimum, any protocol should include an evaluation of the performance of the candidate NWP dataset prior to acceptance by the reviewing authority. Model performance evaluation procedures should be based on appropriate and acceptable metrics and methods. Further, if the intent is to apply CALMET at resolutions much higher than the original NWP dataset, the suitability of the resultant datasets should also be examined through the appropriate statistical analysis.

A more complete discussion of this issue is provided in the draft document *Reassessment of the Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report: Revisions to Phase 2 Recommendations* (USEPA, 2009) available for review on EPA's Support Center for Regulatory Atmospheric Modeling (SCRAM) website. This draft report also provides a detailed discussion of model evaluation methods and procedures appropriate for these applications, including procedures for evaluation of diagnostic meteorological fields.

CALMET NON-DEFAULT SETTINGS

As background, when the CALPUFF modeling system was promulgated in April 2003 as the preferred model for LRT regulatory applications under the *GAQM*, the "hybrid" approach referred to in Section 8.3 of the *GAQM* (formerly Section 9.3 prior to 2005) called for both NWS surface and upper air data. Shortly after its promulgation, the EPA-approved version of the CALMET/CALPUFF modeling system included new options which eliminated the need for surface and upper air observations, relying totally upon prognostic data as the sole meteorological input into CALMET. This approach is most commonly referred to as the "NOOBS" approach, and is invoked by selecting the NOOBS = 1 or 2 option in CALMET. The *Otter Tail Protocol* specifically recommends the use of the NOOBS = 1 option of CALMET,

which uses NWP data in lieu of twice daily upper air soundings normally employed in the construction of CALMET wind fields, but incorporates surface observations. The NOOBS = 2 option uses no observed surface or upper air data, relying solely on the NWP data. The *Otter Tail Protocol* contends that using upper air observations directly into CALMET is likely to degrade the quality of the wind fields as compared to the use of gridded MM5 data, although no further rationale or objective evidence for this claim is offered.

As discussed in the IWAQM reassessment report (USEPA, 2009), there is a clear body of evidence to suggest that higher spatial and temporal frequency of NWP data used in LRT modeling generally results in better LRT model verification statistics. Therefore, in theory, the NOOBS approach in CALMET could offer the opportunity to take advantage of higher temporally and spatially resolved initial guess wind fields from NWP data than could otherwise be achieved through the exclusive use of twice-daily RAOB soundings. However, it is important to note that CALMET does not merely pass through the majority of the information from the NWP model to CALPUFF. Much of the original NWP data (e.g., planetary boundary layer (PBL) heights and scaling parameters) is recomputed within CALMET. Therefore, careful consideration must be given to how these re-diagnostic procedures are implemented within CALMET. As also noted in the IWAQM reassessment report (USEPA, 2009), CALMET does not fully utilize the 3-dimensional temperature fields when applying diagnostic adjustments to the wind fields under the regulatory default option, although the full temperature field is passed to CALPUFF (along with the vertical velocities) if the LCALGRD option is selected. Aside from the documented limitations of the modeling system to properly utilize the full benefits of current state-of-the-practice prognostic modeling capabilities, there are few, if any, objective evaluations of model performance on which to base acceptance of these NOOBS options.

Model Clearinghouse Recommendation for Non-default CALMET Settings

While the *Otter Tail Protocol* only proposes the use of the NOOBS=1 option of CALMET, our experiences from the assessment of the VISTA's version (USEPA, 2008) and the 2001 Philadelphia study (Anderson, 2006) suggest that careful consideration of the underlying science and its implementation must be taken when using the more advanced features of CALMET. A literature search conducted by the Model Clearinghouse on subsequent evaluations of the CALMET model used in both the traditional "hybrid" approach and the newer "NOOBS" approach yielded no significant information regarding the performance of the "NOOBS" approach as compared to the traditional "hybrid" approach, other than the references listed in Appendix A-4 of the description of the CALPUFF modeling system delineated in the *GAQM*. Given the documented limitations of the modeling system described above, and lacking any relevant evaluations of the NOOBS=1 approach, we would not be able to endorse its use at this time without a thorough inspection of its implementation and evaluation of model performance.

The Model Clearinghouse also concurs with Region 8's view based on existing EPA guidance that "blending" of NWP data with observations is the most technically-sound approach to developing meteorological fields for application of the CALPUFF model. This approach should be used absent information showing that an alternative approach has equal technical merit. Section 8.3.1.2(d) of the *GAQM* states that these mesoscale meteorological fields should be used in conjunction with available standard NWS or comparable meteorological observations within

and near the modeling domain. While the traditional method for this approach has been accomplished through the use of CALMET in its "hybrid" mode, Section 8.3.1.2(d) does not preclude the use of other methods to "blend" observational data into NWP data. It is EPA's view that the use of prognostic data from an NWP model using four-dimensional data assimilation (FDDA) is consistent with this recommendation for "blending". A more complete discussion of this issue is provided in the draft IWAQM reassessment report (USEPA, 2009), including proposed revisions to the IWAQM Phase 2 recommendations that are responsive to the issues and concerns raised in this memorandum. We also anticipate that new guidance and additional regulatory clarifications on the use of NWP and observational data in LRT modeling will be developed in the future as the modeling community expands its use of NWP data in dispersion modeling.

CONCENTRATION POST-PROCESSING ISSUES

The *Otter Tail Protocol* proposes the use of the Ammonia Limiting Method (ALM) which utilizes time-varying background values of sulfate, nitrate, and total ammonia. Monthly background averages are derived from 2002 CMAQ modeling results from the WRAP for each of the Class I areas under review. The *Otter Tail Protocol* contends that the full ALM approach is consistent with the MNITRATE=1 approach that the FLMs have previously accepted in Class I visibility analyses. Both Region 8 and the FLMs object to the use of the full ALM, and would prefer a constant ammonia background and the application of MNITRATE=1.

Under Section 6.2.1(e) of the *GAQM*, CALPUFF may be applied for haze attribution assessments when larger domains are involved than can normally be handled by the VISCREEN model. No specific guidelines exist within the *GAQM*, which covers the application of CALPUFF for the post-processing of chemical species. General guidance on the application of CALPUFF for such analyses can be found in the IWAQM Phase 2 report (USEPA, 1998) and Federal Land Managers FLAG 2000 guidance (NPS, 2000). According to Section 6.2.1(e) of the *GAQM*, specific procedures and analyses for CALPUFF should be determined in consultation with the appropriate reviewing authority and the affected FLMs. Since EPA Region 8 is the reviewing authority of record for this analysis, the Model Clearinghouse defers to the Region's judgment as to the best analytical procedures for post-processing of concentrations for visibility calculations.

ADDITIONAL OBSERVATIONS FOR CONSIDERATION

The Model Clearinghouse would also like to highlight several other observations that the Region should consider in its evaluation of the *Otter Tail Protocol* as it pertains to grid resolution. As noted above, the proposed use of a 1 km grid resolution in CALMET/CALPUFF is linked in the *Otter Tail Protocol* with the specification of three separate modeling domains of limited extent, ostensibly to balance the computational demands of the high resolution grid. The emission unit under review is located at the extreme eastern edge of the proposed modeling domains for both the southwestern and northwestern domains. Since during significant periods of the year the synoptic scale winds will flow zonally from west to east over the high plains of the north central United States, it is reasonable to expect that the emissions from the unit being modeled will rapidly flow off of the computational domain. If recirculation of the emissions is possible, the

proposed grid configuration creates the potential for artificial elimination of emissions from the computational domain. Therefore, we recommend that the Region consider expanding the domains both east and south to prevent the possibility of artificial elimination of emissions from the computational grid. Also, given our response to the issue regarding grid resolution, there does not appear to be any technical or practical issues that would necessitate the use of multiple domains for this application.

The stack parameter information listed in Table 2-1 of the *Otter Tail Protocol* appears inconsistent with stack data reported on the WRAP website and utilized in the 2007 CAMx PSAT analysis previously cited. Region 8 should verify that the information contained in the *Otter Tail Protocol* is correct.

SUMMARY

The Model Clearinghouse has reviewed the BART modeling protocol for the Otter Tail Power Big Stone Unit I in South Dakota and Region 8's positions regarding the proposed CALMET/CALPUFF grid resolution, non-default CALMET settings, and concentration post-processing options. Based upon our review of the supporting information contained within the *Otter Tail Protocol* and available literature regarding the use of NWP data in DWM's, the Model Clearinghouse concurs with Region 8's position on grid resolution and the use of non-default options. We defer the final issue regarding post-processing to the Region and the FLMs for appropriate resolution. If you have any further questions or comments, please contact me at (919) 541-5562.

cc: Roger Brode, C439-01
Richard Wayland, C304-02
Bill Harnett, C504-01
Raj Rao, C504-01
Tim Allen, USFWS
John Notar, NPS
John Vimont, NPS
Rick Graw, USFS
EPA Regional Modeling Contacts, Regions I-VII, IX-X

REFERENCES

Anderson, B.A., 2006: Use of Prognostic Meteorological Model Output in Air Quality Models: The Good, the Bad, and the Ugly. Presentation at the 2006 EPA Regional, State, and Local Modeler's Meeting, San Diego, CA, May 16-18, 2006. http://www.cleanairinfo.com/regionalstatelocalmodelingworkshop/old/2006/documents/RSL1PRESENTATION.pdf

Earth Tech, 2001: CALPUFF/MM5 Study Report: Final Report. Tech Rep. Earth Tech, Inc., Concord, MA 40 pp. www.dec.state.ak.us/air/ap/docs/finrep.pdf

NPS, 2000: Phase I Report of the Federal Land Managers' Air Quality Related Values Workgroup (FLAG). National Park Service, Air Resources Division; U.S. Forest Service, Air Quality Program; U.S. Fish and Wildlife Service, Air Quality Branch. http://www.nature.nps.gov/air/Pubs/pdf/flag/FlagFinal.pdf

Scire, J.S., 2008: Development, Maintenance and Evaluation of CALPUFF. Presentation at 9th Conference on Air Quality Modeling, Research Triangle Park, NC, October 9 -10, 2008. http://www.epa.gov/scram001/9thmodconf/scire_calpuff.pdf

_____, 2009: Modeling in a Complex Terrain Environment at High Latitudes. Presentation at the The Latest Developments in Air Modeling Specialty Conference of the Air & Waste Management Association, Toronto, Ontario, Canada, January 19-22, 2009. http://www.awma.org/proceedings/CDNairmodeling2009.html

TRC Environmental Corporation, 2009: Modeling Protocol for a BART Assessment of the Big Stone I Coal-Fired Power Plant, Big Stone City, South Dakota. Prepared for Otter Tail Power Company, Big Stone City, SD, 39 pp.

USEPA, 1998: Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts. Tech Rep., EPA-454/R-98-009, Research Triangle Park, NC, 160 pp. http://www.epa.gov/scram001/7thconf/calpuff/phase2.pdf

_____, 2008: Assessment of the "VISTA's Version of the CALPUFF Modeling System. Tech Rep., EPA-454/R-08-007, Research Triangle Park, NC, 32 pp. http://www.epa.gov/ttn/scram/reports/calpuff_vistas_assessment_report_final.pdf

_____, 2009: Reassessment of the Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report: Revisions to Phase 2 Recommendations (Draft). EPA-EPA-454/B-09-XXX, Research Triangle Park, NC, XX pp.

WRAP, 2006: CALMET/CALPUFF Protocol for BART Exemption Screening for Class I Areas in the Western United States. WRAP Air Quality Modeling Forum, Regional Modeling Center, 43 pp.

Appendix E

NATIONAL ENERGY TECHNOLOGY LABORATORY
Albany, OR • Morgantown, WV • Pittsburgh, PA

U.S. DEPARTMENT OF ENERGY

August 10, 2009

Mr. Kent P. Connaughton
Regional Forester
U.S. Department of Agriculture. Forest Service
626 E. Wisconsin, Suite 800
Milwaukee, WI 53202

Dear Mr. Connaughton:

This is in response to your letter dated July 31, 2009, regarding the Forest Service's review of the Preliminary Final Environmental Impact Statement (EIS) for the Mesaba Energy Project. The Department of Energy (DOE) values your agency's input as a cooperating agency for the EIS in providing technical expertise in the review of air quality impacts.

As I discussed with Trent Wickman, on August 7, 2009, there are important points of clarification regarding certain statements in your letter. As with all projects in the Clean Coal Power Initiative Program, the industrial participant (Excelsior Energy in this case) is responsible for satisfying all permitting requirements, including negotiation of Best Available Control Technology (BACT) requirements with the regulatory authority, the Minnesota Pollution Control Agency (MPCA). DOE understands that MPCA has deferred a decision on BACT for this project until later in the permitting process, sometime after completion of the Final EIS. The statement that "DOE proposes installing these controls..." when referring to Excelsior Energy's proposed level of control is incorrect. Further, the characterization of the controls proposed by Excelsior as representative of an "uncontrolled plant" is inaccurate.

The Department of Energy will give appropriate consideration to your technical comments in finalizing the EIS and in preparing DOE's Record of Decision (ROD). As stated in the Draft EIS which you reviewed earlier and in the Preliminary Final EIS, which is the subject of your current review, DOE would consider mitigation of air quality impacts, if necessary, beyond those required in the permitting process. It should however be noted that DOE's involvement is with Phase I only and therefore any mitigation specified in the ROD would be limited to the first of the two planned nominal 600 MWe Integrated Gasification Combined Cycle plants.

We will reference your letter in the text of the Final EIS and include a copy of your letter in the Appendix, as requested. We look forward to your continued involvement and working with your agency as this project goes forward.

Sincerely,

Richard A. Hargis, Jr.

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MINNESOTA DEPARTMENT OF COMMERCE

Energy Facility Permitting
85 7th Place East, Ste 500
Saint Paul, MN 55155-2198
Minnesota Department of Commerce

June 8, 2007

Richard Hargis
U.S. Department of Energy
National Energy Technology Laboratory
PO Box 10940
Pittsburgh, PA 15236-0940

RE: Release of the Draft Environmental Impact Statement
Minnesota Department of Commerce Energy Facility Permitting Staff
PUC Docket No. E6472/GS-06-668

Dear Mr. Hargis,

I am in receipt of your request concerning the Minnesota Department of Commerce, Energy Facility Permitting staff's concurrence with the release of the DEIS for the Mesaba Energy Project (MPUC Docket No. E6472/GS-06-668)

The MDOC EFP staff concurs with the DOE decision to release the DEIS.

If you have any question or need further information, please do not hesitate to contact me.

As always, MDOC appreciates the assistance and cooperation of the DOE with these issues.

Thank you.

Sincerely,

William Cole Storm,
State Planning Director
Department of Commerce
Energy Planning & Advocacy
Routing & Siting Unit
85 7th Place East
Suite 500
St. Paul, MN 55101-2198

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
ARMY CORPS OF ENGINEERS CENTRE
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REPLY TO
ATTENTION
Operations
Regulatory (2005-5527-WAB)

June 5, 2007

Mr. Richard Hargis
NEPA Document Manager
U.S. Department of Energy
National Energy Technical Laboratory
PO Box 10940
Pittsburgh, PA 15236

Dear Mr. Hargis:

On December 27, 2006, the St. Paul District Corps of Engineers (Corps) provided comments on a preliminary version of the draft Environmental Impact Statement (DEIS) for Excelsior Energy's IGCC power plant proposal. In that letter, we raised concerns that the DEIS did not adequately document the consideration of a range of alternatives as required under both NEPA and the Clean Water Act Section 404(b)(1) guidelines.

As requested by the Department of Energy (DOE), we have worked with Excelsior Energy to develop a purpose and need statement that is acceptable to the Corps. Excelsior Energy has also responded to our request and provided us with a narrative of the process and criteria they used to identify and analyze the practicability of various power plant sites. We have reviewed the project purpose and need and the alternatives analysis with Excelsior Energy on several occasions. We understand this information has been forwarded to DOE for inclusion in the DEIS. While we believe the latest version of this narrative describes the process and rationale used by Excelsior Energy to select their preferred alternative, we have not endorsed its conclusions and have some question as to whether Excelsior Energy's preferred alternative is the least damaging practicable alternative as required under the 404(b)(1) guidelines.

However, we believe the purpose and need statement is satisfactory for our purposes; and the alternatives analysis in the DEIS, as supplemented by Excelsior Energy's latest input, provides sufficient documentation for review and comment. Although we have not resolved all of our concerns with the analysis necessary for the CWA Section 404 review process, the Corps is in agreement with DOE's release of the draft EIS for public comment. If you have any questions contact Kelly Urbanek at 218-444-6381.

Sincerely,

Robert J. Whiting
Chief, Regulatory Branch

Copy furnished:
Minnesota Department of Commerce
Minnesota Public Utilities Commission

United States Department of Agriculture **Forest Service** **Superior National Forest**

8901 Grand Ave. Place
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File Code: 2580-3
Date: June 13, 2007

Mr. Richard Hargis
NEPA Document Manager, Office of Major
Demonstration Projects
National Energy Technology Laboratory, US
Department of Energy
3610 Collins Ferry Road
PO Box 880
Morgantown, WV 26507-0880

Dear Mr. Hargis:

Thank you for providing responses to our concerns. For the purposes of the EIS we feel you have addressed our concerns for most of the issues we raised. As you state, most of these issues will be resolved through the Federal Prevention of Significant Deterioration (PSD) air permitting process. We have a couple of responses to information we read in the document you sent that we'd like to share with you.

We do not agree with the following statement by the project proposer:

The MPCA has stated publicly that the reasonable progress improvements they have charted to date do not reflect such CAIR-related reductions. Further, the MPCA does not appear to have allowed for any benefit that would be derived from the CAIR-related provision requiring new EGUs (of which Mesaba One and Mesaba Two would be considered) to purchase sulfur dioxide allowances each year in an amount equal to the annual sulfur dioxide emissions that they release. Excelsior believes that the purchase of such allowances provides an unparalleled offset compared to new non-EGU sources that are not directly required to do so.

The modeling projections done to determine progress in 2018 for regional haze have always included the affect of CAIR as one of the programs that are "on-the-books." The timing and distribution of emission reductions under CAIR are unknown so a model (IPM) has been used to predict that information.

Purchasing of CAIR-related allowances in an amount equal to the emissions of the Excelsior facility would likely not offset the air quality impacts from the facility at the BWCAW. The location and timing of the emissions reductions that may eventually be caused by the purchase of the allowances by Excelsior on the open market are unknown. They may take place at sources hundreds of miles away from northern Minnesota, at some undetermined time in the future, while Excelsior will be emitting every year at a location near the BWCAW.

Lastly we would like to convey that in previous PSD projects we have not accepted the BART modeling approach used by Excelsior. We will need to discuss this issue (along with the

emission inventories used) further with Excelsior and the MPCA during the PSD permitting process.

If you have any questions, please contact Trent Wickman at (218) 626-4372.

Sincerely,

/s/ James W. Sanders
JAMES W. SANDERS
Forest Supervisor

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