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ENVIR. APPEALS BOARD

November 17, 2005

VIA HAND DELIVERY

Ms. Eurika Durr
Clerk of the Board
U.S. Environmental Protection Agency
Environmental Appeals Board
1341 G Street, NW, Suite 600
Washington DC, 20005

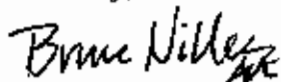
Re: Indeck-Elwood, LLC, PSD Appeal No. 03-04

Dear Ms. Durr:

Enclosed for filing with the Environmental Appeals Board in the above-captioned case, please find an original (1) and five (5) copies of the PETITIONERS' BRIEF RESPONDING TO BOARD'S JULY 21, 2005 ORDER AND IEPA'S SUPPLEMENTAL BRIEF.

Copies of this filing have been served on the parties and other persons listed on the attached service list. Thank you for your assistance.

Sincerely,



Bruce Nilles, Attorney
Sierra Club

Enc:

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BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

JULY 2, 2005
ENVIRONMENTAL APPEALS BOARD

IN THE MATTER OF:)
)
INDECK-ELWOOD LLC) PERMIT NUMBER: 197035AAJ
) APPEAL NUMBER: PSD 03-04

**PETITIONERS' BRIEF RESPONDING TO BOARD'S
JULY 21, 2005 ORDER AND IEPA'S SUPPLEMENTAL BRIEF**

On April 7, 2003 the Illinois Environmental Protection Agency (IEPA) issued a public notice soliciting public comment on a draft PSD permit for Indeck-Energy, LLC (Indeck) to construct a large coal-fired power plant in Will County, Illinois. The agency held a public hearing on the draft permit on May 22, 2003, closed the public comment period on June 28, 2003, and issued the final PSD permit on October 10, 2003.

Before IEPA issued the final PSD permit the U.S. Fish and Wildlife Service (FWS), the Illinois Department of Natural Resources, the U.S. Forest Service, and Petitioners all urged the IEPA and the U.S. Environmental Protection Agency (USEPA) to conduct a study to assess the impacts that Indeck's proposed air emissions may have on the adjacent Midewin National Tallgrass Prairie and several endangered species. Despite these multiple requests, neither IEPA nor USEPA conducted any analysis before issuing the final permit and authorizing the construction of a coal-fired power plant next to the Nation's first national prairie. IEPA justified its decision on the basis that "[n]o evidence has been supplied that indicates any effects, much less significant effects, would occur. In Illinois EPA's judgment, no such impacts should be anticipated as a result of the emissions of the proposed plant." *Responsiveness Summary for Public Questions and*

Comments on the Construction Permit Application for Indeck-Elwood LLC, October 2003, attached to *Amended Petition*, Ex. B, Comment #56.

Petitioners responded with the instant appeal and a companion lawsuit in the U.S. Court of Appeals for the Seventh Circuit. In both appeals Petitioners alleged, *inter alia*, that USEPA had violated its Endangered Species Act obligation to consult with the FWS and ensure the protection of at least two endangered plant species. USEPA subsequently backed-down and agreed to undertake consultation with the FWS. In response Petitioners withdrew their federal court challenge and the Board stayed its review of the Indeck permit pending completion of the consultation process.

The resulting informal consultation process was, according to FWS, “unusual in that the PSD permit had already been issued, and consequently, both agencies were asked to accelerate the consultation process.” Letter from John Rogner, FWS, to Pamela Blakely, USEPA Region 5, at 2, (June 9, 2005) attached to *USEPA’s June 16, 2005 Status Report*. Furthermore, the FWS noted that “[t]o exacerbate the issue, this was our first experience with evaluating the impacts to listed species from deposition of air pollutants.” *Id.* “Under ideal circumstances,” the FWS went on to explain, “the process would have been more deliberative, information exchange more complete, and options for ensuring that adverse effects are avoided may have been considered.” *Id.*

I. New Information Generated During Consultation Process

Despite this backdrop of less-than ideal circumstances, unusual time pressures, and first-of-its-kind analysis, the informal consultation process nevertheless generated significant new information, information contained in more than three hundred pages of technical reports, two computer discs full with new modeling run data, and many

additional pages of correspondence between the agencies and Indeck and its consultants. At least five significant findings emerged from the consultation process:

1) FWS concluded that four endangered species may be affected by Indeck's proposed emissions, including the leafy prairie clover (*Dalea foliosa*), the eastern prairie fringed orchid (*Platanthera leucophaea*), the Hine's emerald dragonfly (*Somatochlora hineana*), and the lakeside daisy (*Hymenoxys herbacea*). See *USEPA June 7, 2005 Letter*, attached to *USEPA's June 16, 2005 Status Report*. This is double the number of potentially affected endangered species that the FWS identified at the time IEPA issued the Indeck permit. See *Amended Petition*, 36-37.

2) Rain falling on the Midewin and the endangered species will be more acidic because of Indeck's proposed emissions. "[T]he projected worst case acid deposition would have a pH of 2.6, with a more likely pH of 3.1." *USEPA June 7, 2005 Letter* at 6, attached to *USEPA's June 16, 2005 Status Report*. Studies cited by USEPA concluded that "to see vegetation damage [sic] from long term exposure, a plant should be exposed to a pH of 3.0," and that damage has been documented with short-term exposure of pH levels between 2.0 and 2.5. *Id.*

3) "[L]evels of nitrogen that currently exist as background have been shown in the scientific literature to cause deleterious impacts to plant communities." Letter from John Rogner, FWS, to Pamela Blakely, USEPA Region 5, (June 9, 2005) at 2, attached to *USEPA's June 16, 2005 Status Report*. "Given that existing levels may already be harmful, even small increases [in nitrogen deposition] could have incremental adverse effects." *Id.* Indeck's proposed pollution "is anticipated to increase nitrogen deposition

by 1 percent.” *Id.* Of particular concern noted the FWS is the endangered leafy prairie clover which “is vulnerable to the effects of increased nitrogen deposition.” *Id.*

4) “The only notable exception to the conclusion that the effects on the [Hine’s emerald] dragonfly were expected to be insignificant was for hydrogen fluoride, which would exceed its benchmark in approximately 20 years assuming permitted levels of emissions.” *USEPA June 7, 2005 Letter* at 9-10, attached to *USEPA June 16, 2005 Status Report*.

5) USEPA and IEPA agree that the Indeck permit limits for sulfuric acid and hydrogen fluorides are incorrect. In response to a question about the appropriate emission rate that Indeck should use in its ESA modeling USEPA states: “[T]he permit retains the pre-control sulfuric acid mist (and hydrogen fluoride) emission rates. Only the HCl emission rate was changed in the permit. The HCl emission rate change was what the contractor used to derive the new sulfuric acid rate of 2.6 tpy rather than the 10.2 tpy which is in the permit. Generally the permitted rate should be used, but FWS is willing to accept the statement (in writing) that 2.6 tpy is what the company expects to maintain under the permit-required control.” Email from Mary Portonova, USEPA Region 5 (May 6, 2005), attached as Pet. Ex. 1.

Despite these five findings, USEPA did not undertake formal ESA consultation, a process that would have afforded the opportunity for USEPA to more thoroughly analyze the endangered species impacts and for the agency to consider possible mitigation measures. Potential mitigation measures could have included reducing the allowable emissions from Indeck and reducing pollution from other nearby sources.

On July 21, 2005 the Board lifted its stay and requested IEPA and Petitioners file briefs addressing three issues. On October 19, 2005 IEPA filed its response. The Board's three issues and IEPA's responses can be summarized as follows:

Board Issue 1: "Whether IEPA intends to take some additional action at this point to incorporate the ESA consultation materials into the record for Indeck's PSD Permit in order to address the ESA-related issue raised in the Petitioners' Amended Petition--if so, what action IEPA intends to take (for example, will such action include a period of notice and comment to provide the public with an opportunity to offer comments on the ESA-related materials); if not, on what legal basis has it been determined that no such action is required."

IEPA Response: No additional action will be taken.

Board Issue 2: "[W]hether it is appropriate to allow Petitioners to further amend the petition for review in light of the ESA consultation proceeding and resultant technical analyses"

IEPA Response: No.

Board Issue 3: "[A]ny other issue that the parties believe is essential to our determination of the appropriate procedural course for this case.

IEPA Response: No response.

In the following pages Petitioners address each of the Board's issues and respond to IEPA's Supplemental Brief. In short, much of the significant new information developed during the course of the ESA consultation process, including the five new findings listed above, is information that should have been provided as part of Indeck's original PSD application. This new information goes to the heart of at least two PSD

requirements: the soils and vegetation analysis required by 40 C.F.R. 52.21(o) and the obligation to consider environmental impacts as part of a BACT determination collateral impacts analysis.

The Board did not request briefing on the adequacy of the ESA consultation process. Petitioners have not offered its views on the adequacy of the ESA consultation process at this time for two reasons: a) the volume of material, particularly the reams of new modeling data, is too large to be critiqued in the time afforded Petitioners to file this brief; and b) the appropriate time and manner for such a critique is on remand as part of a public comment process for a new draft permit. Providing an opportunity for public comment and the IEPA to respond may be sufficient to avert the need for further review of these issues by the Board.

I. THE CLEAN AIR ACT

The Clean Air Act "requires meaningful public participation in the PSD permitting process." *In re Hadson Power 14-Buena Vista*, 4 E.A.D. 258, 272 (EAB 1992). Indeed, an express purpose of the PSD program is "to assure that any decision to permit increased air pollution in any area to which this section applies is made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decisionmaking process. 42 U.S.C. § 7470(5). The Act further requires a permitting agency to hold a public hearing to allow interested persons "to appear and submit written and oral presentations on the air quality impacts of such source, alternatives thereto, control technology requirements, and other appropriate considerations." 42 U.S.C. § 7475(a)(2). USEPA regulations specify that once a draft permit is prepared, a notice of that fact must be made

public, (40 CFR 124(a)(1)(ii)), and the public afforded at least 30 days to provide comments. The public notice must include “the location of the administrative record required by § 124.9, the times at which the record will be open for public inspection, and a statement that all data submitted by the applicant is available as part of the administrative record.” 40 C.F.R. § 124.10(d)(1)(vi).

The administrative record for a PSD permitting process must include all relevant information, including a complete PSD application. *See* 40 C.F.R. § 124.3(a)(1). As part of a PSD application “[t]he owner or operator of a proposed source ... shall submit all information necessary to perform any analysis or make any determination required under this section.” 40 C.F.R. § 52.21(n). The submitted information shall include “information necessary to determine that best available control technology would be applied,” (40 C.F.R. § 52.21(n)(1)(iii)), and “an analysis of the impairment to visibility, soils and vegetation that would occur as a result of the source ...” 40 C.F.R. § 52.21(o)(1). Once an application is complete, “the [agency] shall tentatively decide whether to prepare a draft permit ... or to deny the permit.” 40 C.F.R. § 124.6(a). If an agency decides to prepare a draft permit it “shall be based on the administrative record,” (40 C.F.R. § 124.9(a)), and the administrative record “shall consist of (1) [t]he application ... and any supporting data furnished by the applicant.” 40 C.F.R. § 124.9(b).

II. ARGUMENT

A. The Permit Should be Remanded, the Administrative Record Reopened to Add the ESA Consultation Documents, and the Public Afforded A Meaningful Public Comment Opportunity Before a New Final Permit Is Issued.

In 2003 when IEPA issued the draft Indeck permit and held a public hearing the administrative record lacked any information whatsoever about a) the Midewin and the

presence of four endangered species; b) acid mist, nitrogen and hydrogen fluoride deposition impacts on the Midewin and the endangered species; and c) USEPA and IEPA conclusions that the draft permit's proposed sulfuric acid and hydrogen fluoride emission limits were incorrect. Given IEPA's steadfast refusal to put this information into the administrative record the Indeck permit continues to suffer from three significant legal defects: a) Indeck's permit application was incomplete, b) the public was denied basic information about the proposed project, and c) Indeck's permit did not include lawful BACT limits for sulfuric acid and hydrogen fluoride.

i. Indeck's Permit Application Was Incomplete

Indeck's failure to include in its application information about the impacts of sulfuric acid, nitrogen and hydrogen fluoride deposition on the Midewin and four endangered species is a violation of the PSD regulations. A PSD permit application is required to include "all information necessary to perform any analysis or make any determination required under this section." 40 C.F.R. § 52.21(n). The necessary information includes a soils and vegetation impairment analysis. 40 C.F.R. § 52.21(o). IEPA could not make any determination about the impairment to the Midewin's soils and vegetation or the three endangered plant species at the time it issued either the draft or final permit because Indeck's application did not mention the Midewin, any endangered species, or consider the effects of pollution deposition. Rather, the obligatory soils and vegetation analysis was not conducted until two years after the permit was issued, and then as part of the ESA consultation process. This is a violation of 40 C.F.R. § 52.21(o)(1) because the soil and vegetation impairment analysis is required to be conducted prior to issuance of a PSD permit. IEPA also violated the PSD regulations by

issuing a draft permit (and a final permit) without first receiving from Indeck a complete PSD permit application that contained an analysis about how the power plant's emissions would affect the Midewin and the endangered species. 40 C.F.R. § 124.3(a)(1).

ii. The Public Was Denied Basic Information About the Proposed Project

The absence of information in the administrative record about the Midewin and four endangered species that may be impacted by Indeck's emissions foreclosed the ability of the public to meaningfully understand and participate in the permitting process. In fact, any person reading the administrative record at the time IEPA released the draft Indeck PSD permit for public comment would not have located a single mention of the Midewin National Tallgrass Prairie or the four endangered species subsequently considered as part of the ESA consultation process. *See IEPA Response to Amended Petition* at 19 ("Indeck's failure to specifically mention the Midewin ... was, if anything, an unintended oversight ... For its part, the Illinois EPA did not specifically refer to the Midewin in the proposed draft permit or project summary.").

IEPA had multiple opportunities to request more information from Indeck about the impact of pollution deposition on the Midewin after this issue was raised during the public comment process and before issuing the final permit. Indeed, the PSD regulations specifically provide that "[i]f any data, information or arguments submitted during the public comment period ... appear to raise substantial new questions regarding a permit, the [IEPA] may ... [p]repare a new draft permit ... [and] reopen or extend the comment period ... to give interested persons an opportunity to comment on the information or arguments submitted." 40 C.F.R. § 124.14(b). Instead of investigating comments it received about the Midewin and endangered species or extending the public comment

period, IEPA simply rejected the statements without further analysis. For example, following is an exchange from IEPA's responsiveness summary:

[Public Comment] The emissions of pollutants that are precursors to acid rain from the proposed plant and in close proximity to the Midewin Prairie are a serious concern, as they would pose a threat to sensitive habitat areas in the Midewin Prairie. Acid deposition can affect soil chemistry, with direct effects on sensitive habitats. Species listed as threatened, endangered or sensitive are present in some of the affected habitats at the Midewin.

[IEPA] Response: Acid rain is generally a "transport" phenomenon. That is, acid rain is caused by the combined impacts of many coal-fired power plants and emissions that may have traveled hundreds of miles. Accordingly, a localized contribution to acid rain should not be anticipated from the proposed plant.

IEPA Responsiveness Summary, Pet. Ex. B, Comment 53 (emphasis added). In response to another comment IEPA sought to put the burden of conducting a deposition analysis on the public:

[Comment] 56. The Illinois EPA has not adequately evaluated the effects of the proposed plant on soils, vegetation, or visibility due to the combined impacts from air emissions, water usage, waste water discharge, and noise. There is significant evidence to suggest that the total impacts from the plant, considering all media, would have a significant effect on soils, vegetation, and visibility.

[IEPA] Response: No evidence has been supplied that indicates that any effects, much less significant effects, would occur. In Illinois EPA's judgment, no such impacts should be anticipated as a result of the emissions of the proposed plant. The evaluation of the effects of the emissions on soils, vegetation, and visibility was included as part of the application.

IEPA Responsiveness Summary, Pet. Ex. B, Comment #56 (emphasis added). Based on the analysis conducted as part of the ESA consultation analysis, we now know the IEPA statements cited above were clearly erroneous: Indeck's emissions are anticipated to contribute to local acid rain effects and may affect the Midewin and four endangered

species. *See e.g.*, Letter from FWS to USEPA Region 5, (June 9, 2005) at 2, attached to *USEPA's June 16, 2005 Status Report*. ("Given that existing levels may already be harmful, even small increases could have incremental adverse effects" and Indeck "is anticipated to increase nitrogen deposition by 1 percent.").

iii. IEPA Unlawfully Issued the Draft and Final Permits

A PSD permit must include, at a minimum, BACT emission limits for each regulated pollutant. As part of Petitioners' review of the ESA consultation files it now appears that USEPA and IEPA concede that the Indeck permit limits for sulfuric acid and hydrogen fluoride are not BACT limits. This problem is discussed in a May 6, 2005 email authored by Mary Portanova of USEPA Region 5 and provided to Petitioners as part of an open records request. This email summarizes a conference call between USEPA, IEPA, FWS, and Indeck and explains why the Indeck permit limits for these two pollutants are erroneous:

The group discussed the FWS questions regarding the acid deposition portion of the Indeck evaluation. As you recall, their key concerns were: 1) the evaluation and the permit should reflect the same sulfuric acid mist emission rates, either directly or through requiring the control device.

....

Discussion: 1) Sulfuric acid mist emission rate: Illinois confirmed that the Indeck permit does specifically require the control which the evaluation was taking credit for. However, the permit retains the pre-control sulfuric acid mist (and hydrogen fluoride) emission rates. Only the HCl emission rate was changed in the permit. The HCl emission rate change was what the contractor used to derive the new sulfuric acid rate of 2.6 tpy rather than the 10.2 tpy which is in the permit. Generally the permitted rate should be used, but FWS is willing to accept the statement (in writing) that 2.6 tpy is what the company expects to maintain under the permit-required control. Indeck cited data from a very similar facility which achieved very good control values; they would expect similar results at this site.

Pet. Ex. 1 (emphasis added). Said another way, USEPA seems to be saying that the permit limits for these two pollutants were incorrectly based on emission rates assuming

no pollution controls and elsewhere in the permit pollution controls are required. If, as this email strongly suggests the permit limits for these two pollutants are incorrect, the permit must be remanded and IEPA ordered to redo the BACT determination to establish new sulfuric acid mist and hydrogen fluoride permit limits.¹

iv. IEPA's Rationale For Not Reopening the Administrative Record Is Clearly Erroneous

IEPA claims to harbor "grave reservations" about reopening the administrative record and affording the public an opportunity to review and comment on the volumes of material generated as part of the ESA consultation process. *IEPA Supp. Resp.* at 3. The agency states that it is concerned about a "lack of relevant standards for addressing ESA-related matters within the PSD program" and IEPA "is reluctant to blaze a trail outside of the established contours of the regulations" *Id.* Furthermore, IEPA "does not relish the thought of a case-by-case approach in addressing this unsettled area of the law." *Id.* Instead, IEPA would favor the Board declining review and not reopening the Indeck permit until USEPA issues new regulations or guidance addressing the integration of the ESA consultation process into the PSD program. *Id.* at 4.

Before responding to IEPA's ESA-related arguments, Petitioners note that IEPA's brief does not consider what must be the first question: Does the Clean Air Act impose a duty on IEPA to reopen the comment period based on the new information? As Petitioners demonstrate above—and independent of any ESA obligation—the Board can and should find that the CAA requires a new public comment period where there has been subsequent and relevant additional analysis, particularly when the new information conflicts with prior findings of the permitting agency. In this case, the new information

¹ On November 16, 2005 Petitioners' counsel, Bruce Nilles, notified IEPA counsel, Robb Layman, about this email. As of the close of business on November 17, 2005 IEPA had not responded.

specifically relates to violations of the PSD regulations; namely that the Indeck permit application was incomplete, the public was denied basic information about the potential impacts of the Indeck project, and the permit limits for sulfuric acid and hydrogen fluoride do not constitute BACT. And, the remedy for violating these familiar PSD requirements is an order remanding the permit and requiring compliance with PSD procedures.

Turning to IEPA's ESA-related arguments: First, IEPA is mistaken that there is a lack of regulatory guidelines for integrating the ESA into a PSD permit program. The ESA and the implementing FWS regulations detail how an agency proposing to issue a permit must undertake consultation, the respective roles of the action agency and FWS, and the steps involved in reaching a decision consistent with the ESA. *See* 16 U.S.C. § 1536; 50 C.F.R. § 402. There is also a large body of case law discussing the consultation process. While it may be true that prior to the Indeck proceeding IEPA and USEPA Region 5 had no firsthand experience applying the ESA to the PSD program, IEPA cannot seriously contend that there is a lack of relevant standards for applying the ESA to the issuance of a PSD permit. Moreover, Petitioners are not aware that USEPA has ever stated it is having difficulty implementing the ESA consistent with a PSD program.

Second, for the past four years USEPA Region 9 has been collaborating with the FWS and integrating the ESA consultation process into the PSD permitting program for the states covered by that region. *See e.g. Metcalf Energy Center*, PSD Appeal No.01-07 & 01-08 (EAB, Aug. 10, 2001). Furthermore, after USEPA Region 5 began the Indeck consultation in 2004 it has proceeded to consult with the FWS regarding four additional air permits, including two for facilities in Illinois. In 2004 USEPA Region 5 conducted

an ESA consultation for the Peabody Energy Prairie State Generating Project, another IEPA-issued PSD permit that is currently on appeal before this Board on matters unrelated to the ESA. On March 8, 2005 Stephen Rothblatt, USEPA Region 5 Air Director, wrote to the FWS requesting concurrence with its determination that a proposed minor source of air pollution in Vilas County, Wisconsin, is not likely to adversely impact any federally listed species. Attached as Pet. Ex. 2. On May 31, 2005 Pamela Blakely, USEPA Region 5, requested FWS concurrence with its determination that changing the operation of three diesel engines from backup to peaking status would not adversely affect any federally listed species. On July 21, 2005 USEPA Region 5 issued a draft Statement of Basis for that PSD permit including a summary of the ESA consultation process:

Section 7 of the Endangered Species Act of 1973, as amended, directs federal agencies to consult with the U.S. Fish and Wildlife Service (FWS) if a federal action or activity may adversely modify designated critical habitats. Examples of federal actions and activities include funding and permitting. There are two animal species in the vicinity of the proposed project that are federally listed as threatened or endangered. The EPA cannot issue a permit to construct if FWS decides to commence a consultation process to determine the adverse impact on the species and the steps the applicant would have to take to mitigate the damage. Permit issuance would have to wait until the consultation process was completed.

Attached as Pet. Ex. 2. On September 29, 2005 USEPA Region 5 requested the FWS's concurrence regarding another IEPA-issued PSD permit, this one for the ExxonMobil Joliet refinery. *See* Letter from Pamela Blakely, USEPA Region 5 to John Rogner, FWS. Attached as Pet. Ex. 2.² Petitioners' review of these four ESA consultation processes has failed to uncover any indication that USEPA is having difficulty integrating the ESA

² It is not clear why the IEPA brief did not mention these two other consultation processes given that IEPA was clearly involved. For example, the ExxonMobil letter was carbon copied to Laurel Kroack, IEPA Air Division Chief.

requirements into the PSD program. IEPA's bald allegations in its brief about the impossibility of integrating ESA requirements into its PSD program simply does not comport with the actual on-the-ground experience demonstrated by the two recent ESA consultations for the Peabody Energy and ExxonMobil PSD permits in Illinois. IEPA's request that the Board decline review of this matter should be swiftly rejected.³

B. If Indeck's Permit Is Not Remanded Petitioners Should Be Granted the Opportunity to Amend Their Petition.

IEPA urges the Board to not allow Petitioners to amend their petition. *IEPA Supp. Resp.* at 12-13. IEPA does admit that the timing for amending the petition "might not be considered unreasonable given that Region V only recently concluded its consultation." *Id.* at 13. However, IEPA goes on to make a half-hearted argument opposing petition amendment that simply refers the reader back to arguments in a previous section of the brief. *Id.*

If the Board does not remand the Indeck permit Petitioners request that they be provided, at a minimum, a short (30-day) timetable to amend their petition. Petitioners were required to raise "all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period." 40 C.F.R. § 124.13. The information generated as part of the ESA consultation process raises significant new issues and potential arguments as to the lawfulness of the Indeck PSD permit. Many of these issues and potential arguments were not "reasonable ascertainable" or "reasonably available" in 2003 during the public comment period.

³ Petitioners do not disagree with IEPA's complaint that USEPA Region 5 and Headquarters have been seemingly unable to offer their views about the ESA/PSD interface in this proceeding. *See IEPA Supplemental Br.* at 9. That said, Region 5's decision to conduct ESA consultations for at least four other air permits since initiating the Indeck consultation strongly suggests that the agency has determined that the ESA applies to the PSD program.

For example, in 2003 Petitioners could not reasonably have known that Indeck's nitrogen emissions will contribute to a serious nitrogen deposition problem already plaguing the Midwest. At a minimum, Petitioners should be afforded the chance to amend their petition to include issues and arguments that have emerged as a result of the ESA consultation process and that were not reasonably ascertainable in 2003.

C. There are Several Other Issues That the Board Should Consider In Determining the Appropriate Procedural Course for This Case.

i. Indeck's October 2003 PSD Permit Is Stale and Must be Remanded For a New BACT Determination

Indeck applied for its permit in March of 2002, and the permit was issued in October 2003. The BACT limits included in that permit were, as Petitioners have previously asserted, illegal and insufficient at the time they were issued by IEPA. *See Amended Petition*. At this juncture, they are also stale, and must be remanded on that basis alone, having been based on information that is now over 40 months old.

BACT is a technology-forcing and a dynamic, forward looking process. The statutory definition of BACT requires application of the combination of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques, that would achieve the "maximum degree of reduction of each pollutant subject to regulation." 42 U.S.C. § 7479(3). Moreover, BACT limits are to be based on "reasonably current pollution control standards, and on the basis of current information regarding the level of air pollution in the locality [of the] facility." *In re: New York Power Authority*, 1 E.A.D. 825, 1983 EPA App. LEXIS 6, * 4 (Dec. 6, 1983); *see also In re: West Suburban Recycling and Energy Center, L.P.*, 8 E.A.D. 192, 195 (EAB 1999).

To that end, a permittee must construct a permitted project within 18 months of receipt of final approval to construct.⁴ 40 C.F.R. § 52.21(r)(2). Furthermore, “[e]ach time a BACT determination is made, it takes into account new pollution control equipment and processes.” *West Suburban Recycling*, 1999 E.P.A. App. LEXIS at * 8. In this case, Indeck’s BACT application was submitted to IEPA in March 2002, and the BACT limits for NO_x and for SO₂ were issued in October 2003, and a full forty-four months and twenty-five months, respectively, have elapsed since those dates.

ii. The Indeck Permit Limits for NO_x Do Not Reflect BACT in November 2005 and Did Not Reflect BACT in 2003

In its March 2002 permit application, Indeck asserted that “[t]he NO_x emission levels achieved by SCR [selective catalytic reduction] on new PC [pulverized coal] boilers are equal to or higher than the proposed BACT emission rate for the project.” Indeck Permit Application at 5-7, attached to *Amended Petition* at Ex. I. That limit, 0.10 lbs of NO_x/mmBtu heat input, is well above the current rates reported by USEPA scientists in the September 2005 volume of the peer-reviewed *Journal of the Air & Waste Management Association*, for PC boilers employing SCR. Third quarter 2003 NO_x rates reported in the article for *existing* PC boilers with SCR ranged from 0.04 lbs NO_x per million BTUs heat input to 0.07 lbs NO_x per million BTUs. Ravi K. Srivastava & Robert E. Hall, U.S. EPA, *et al.*, “*Nitrogen Oxides Emission Control Options for Coal-Fired*

⁴ The Indeck permit was arguably never final, because of the intervening appeal. These regulations apply to final permits, but the concept underlying them is equally relevant where a long time period has elapsed between the application and the finalization of the permit. For example, the regulations allow an extension of the 18-month limit on validity, but only “upon a satisfactory showing that an extension is justified,” or for phases of phased approvals. 40 C.F.R. § 52.21(r)(2). Where as here, the BACT limits were deficient when the permit was granted, and a 44 month period has elapsed since the BACT review commenced, an extension beyond the 18 month period would clearly not be justified, were the Indeck permit final. Allowing the initial permit BACT determinations to stand at this juncture is no more justified in this case.

Electric Utility Boilers,” 55 J. Air & Waste Mgmt. Ass’n 1367, 1377 (Table 4) (September 2005).

Petitioners noted, in 2003, their concern that the Indeck permit NOx rate did not, even at that time, reflect BACT. *Amended Petition* at 9, 44-45. Petitioners demonstrated that the 0.10 lbs. per million BTUs NOx rate was too high, based on vendor guarantees of a 0.09 lbs. per million BTU rate, (*id.* at 45), for an almost identical CFB boiler. In addition, Indeck final permit Unit-Specific Condition 1.15 allows Indeck three years in which to finalize a NOx BACT determination, after the final permit is issued. In effect this provision defers an already insufficient BACT limit determination until many years *after* the permit is issued, instead of before permit issuance, as the law requires.

Amended Petition at 45.

iii. The Indeck Permit Limits for SO2 do not Reflect BACT

The SO2 permit limits also do not reflect BACT for this facility. They do not reflect BACT limits as would be issued at the present time, and they did not reflect BACT limits even at the time the permit was issued. The SO2 BACT analysis is based on the use of bituminous Illinois coal, and does not consider the benefits of low-sulfur coal, despite the fact that such coal is readily available and regularly burned in Illinois. Nor does the Indeck permit contain any restrictions on the sulfur content of the coal it may burn – there are no limits on the use of petcoke, a notoriously dirty fuel, for example. The Indeck SO2 BACT limit was unlawful on the date the permit was issued, because of on this flawed BACT analysis.

IEPA’s failure to require a careful consideration of low-sulfur coal in Indeck’s BACT analysis explains why the Indeck permit SO2 limits are significantly higher than

other coal-burning power plants – even compared with plants being permitted at the time the permit issued in 2003. Indeck’s limit of 0.15 lbs per million BTUs (30 days) was higher than the SO₂ limits for several similar plants permitted around the same time as Indeck. *See Amended Petition* at 21. Newer permits, issued in the intervening twenty-five months since the Indeck permit issued, have reflected even lower limits. For example the PSD permit issued to the Longview Power facility in West Virginia, pursuant to a July, 2004 consent decree, included an SO₂ limit of 0.095 lbs per million BTU (calendar year), with a cap of 2,417 tons per calendar year. Because Indeck’s SO₂ permit limit does not represent BACT this permit limit should be remanded, and a new BACT determination completed.

iv. IEPA Has Conceded Several Indeck Issues When It Issued the Prairie State Generating Station PSD Permit

On April 25, 2005 IEPA issued a revised final PSD permit to Peabody Energy for the construction of a coal-fired power plant known as the Prairie State Generating Station.⁵ That permit includes several provisions that support Petitioners’ arguments that Indeck’s permit is missing mandatory provisions. Following is a short summary of some of the provisions that are missing from the Indeck permit but included in the subsequently issued Prairie State permit, *i.e.* a strong indication that IEPA has effectively conceded these issues.

a. Condensable PM

The Indeck permit does not include a permit limit for the condensable portion of particulate matter. The only PM limit in the Indeck permit is for filterable PM. Indeck Permit, Table 1, note 3 (“These PM limits do not address condensable particulate

⁵ The permit is available at <http://www.epa.gov/region5/air/permits/ilonline.htm>.

matter.”). Petitioners have challenged the absence of a CPM limit as inconsistent with the Clean Air Act and EPA guidance. *Amended Petition* at 30. IEPA did include a CPM limit in the Prairie State permit. See Prairie State Permit, Condition 2.1.2.b.i.B (“This [PM10] limit shall apply as a 3-hour block average, with compliance determined by emission testing for PM (filterable and condensable) in accordance with Condition 2.1.8 and from equipment operation.”).

USEPA recently restated in a federal register notice its longstanding view that PSD permits for coal plants must include a CPM limit:

Response: EPA has indicated that condensable PM emissions need to be considered as part of the PSD permitting process. This position is articulated in the March 31, 1994 letter from EPA's Office of Air Quality Planning and Standards (OAQPS) to the State of Iowa. The letter says that when evaluating compliance tests for determining ambient PM10 levels in PSD permits, States are required to compute PM10 as the sum of in-stack and condensable PM10. This letter also requires that condensable PM10 emissions be included in the modeling analysis. ... EPA, Region 8 has recently commented to the State of Montana and Utah on PSD permits that did not include limits on condensable PM10 or incorporate these limits in the modeling analysis.

Approval and Promulgation of Air Quality Implementation Plans; CO; PM10 Designation of Areas for Air Quality Planning Purposes, Lamar, 70 Fed. Reg. 61,563, 61,564-65 (Oct. 25, 2005).

b. BACT Limit for Fluorides

Petitioners have challenged IEPA's failure to include a fluoride BACT limit in the Indeck permit. *Amended Petition* at 35. The Prairie State permit does include a permit limit for fluorides.⁶ See Prairie State permit, Condition 2.1.2.b.vii.

⁶ Petitioners do not concede that the Prairie State fluoride limit constitutes BACT. Rather, the purpose of this citation is to show that IEPA has established a fluoride limit which it asserts constitute BACT in another permit.

c. Startup & Shutdown

Petitioners have challenged IEPA including in the Indeck permit a provision that creates a blanket exemption from otherwise applicable limits during periods of startup and shutdown. *See Amended Petition*, 23-27. The Prairie State permit addresses a portion of this problem by including secondary BACT limits, measured in pounds/hour, that apply during periods of startup and shutdown.⁷ *See Prairie State Permit*, Condition 2.1.2, Note.

v. Indeck Has Made at Least One Material Change to its Project Design After Receiving its PSD Permit Without Obtaining a Permit Modification.

IEPA's Division of Water recently held a public hearing on a draft Indeck NPDES permit. This draft NPDES permit indicates that Indeck has made a significant change to its proposed coal plant.⁸ Petitioners understand that instead of using water from a nearby river for its non-contact cooling needs, as proposed in the original project design, Indeck now proposes to use treated sewage water from the Joliet wastewater treatment plant. Petitioners are not aware that IEPA has considered whether this is a major design change necessitating the need for a PSD permit modification. Should the switch from river water to wastewater change the amount of suspended solids in the cooling water source it will, of course, have an effect on the particulate matter emissions from the facility's cooling towers. In addition, treated sewage has a different chemical makeup from river water and consequently different air emissions. Should the Board not

⁷ Petitioners do not concede that these Prairie State secondary limits constitute BACT. Rather, the purpose of this citation is to show that IEPA has established secondary permit limits which it asserts constitutes BACT in another permit.

⁸ *See* IEPA Public Notice regarding draft NPDES permit for the Indeck facility, at 3, (April 28, 2005) available at <http://www.epa.state.il.us/public-notices/2005/indeck-clwggd/index.pdf> ("The facility will use waste water treatment plant effluent for cooling water make up.")

remand the Indeck permit Petitioners request the opportunity to amend their petition and include this issue.

III. CONCLUSION

For the foregoing reasons, Petitioners request that the Board remand the Indeck PSD permit and order IEPA to reissue a draft permit based on an updated BACT determination and a complete administrative record (including the ESA consultation records), and then afford the public an opportunity to review and comment on the complete administrative record before the agency reissues a new final permit.

Respectfully submitted this 17th day of November 2005,

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* Attorney for CARE/Lockport and American Lung Association of Metropolitan Chicago

BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

IN THE MATTER OF:) APPEAL NO.: PSD 03-04
INDECK-ELWOOD LLC) PERMIT NO.: 197035AAJ
_____)

CERTIFICATE OF SERVICE

On November 17, 2005, I served a copy of the attached document on the following parties via United States first class mail, postage pre-paid:

Bertram C. Frey, Acting Regional Counsel
Office of Regional Counsel
U.S. EPA, Region V
77 West Jackson Boulevard
Chicago, IL 60604-3507

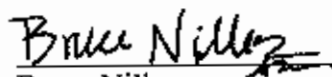
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James Schneider
Indeck-Elwood LLC
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Buffalo Grove, IL 60089


Bruce Nilles
On Behalf of Petitioners

**PETITIONERS' BRIEF RESPONDING TO BOARD'S
JULY 21, 2005 ORDER AND IEPA'S SUPPLEMENTAL BRIEF**

EXHIBIT 1



Mary
Portanova/R5/USEPA/US
05/08/2005 11:43 AM

To
Subject: Indeck call

The followup Indeck call was held at 10 on May 6. Attendees were John Rogner, Ed Karecki, Tim Allen, Karla Kramer (FWS), Jim Schneider (Indeck), Laurel Kroack, Chris Romaine and others (IEPA), Steve Zemba (Cambridge Env), and me.

The group discussed the FWS questions regarding the acid deposition portion of the Indeck evaluation. As you recall, their key concerns were:

- 1) the evaluation and the permit should reflect the same sulfuric acid mist emission rates, either directly or through requiring the control device.
- 2) the evaluation should provide more detail about the short-term impacts of the acid fog scenario
- 3) the evaluation should consider the total acid impact on local species, rather than evaluating each type of acid separately.

Discussion:

1) Sulfuric acid mist emission rate: Illinois confirmed that the Indeck permit does specifically require the control which the evaluation was taking credit for. However, the permit retains the pre-control sulfuric acid mist (and hydrogen fluoride) emission rates. Only the HCl emission rate was changed in the permit. The HCl emission rate change was what the contractor used to derive the new sulfuric acid rate of 2.6 tpy rather than 10.2 tpy which is in the permit. Generally the permitted rate should be used, but FWS is willing to accept the statement (in writing) that 2.6 tpy is what the company expects to maintain under the permit-required control. Indeck cited data from a very similar facility which achieved very good control values; they would expect similar results at this site.

2) Acid fog: The evaluation looked at acid impacts in a foggy scenario, a worst-case weather condition. FWS would like to see more detail in this discussion. The additions should describe the possibility of worst-case short term impacts from a very quick total conversion of SO₂ to sulfuric acid in a fog (which is known to occur). It could include data on the frequency of such fogs in the area. The contractor wasn't sure how much more specific data he could get on aqueous-phase sulfate conversion. He did note that to reach a pH level of concern, there would have to be ten times the sulfate acidity that they evaluated. They are not likely to reach that level. They don't expect great short-term variation in SO₂ emissions. FWS was satisfied with the contractor providing this kind of information in more detail in the evaluation.

3) Total acid impacts. The contractor explained that they had focused on sulfuric acid because the available literature (World Health Org) indicated that sulfuric acid was the most important for effects on plants. The group discussed the acid emissions which had gone into the calculations, and the total acid which would lead to a pH of concern. The contractor will add to the discussion, clarifying the acid totals which were evaluated. The contractor agreed to provide the annual average sulfuric acid concentrations for comparison with the 5-year averages the evaluation discussed.

The contractor will work on updating the evaluation memo starting on Monday. They will address the concerns we discussed and provide further details to ensure that both short term and long term acid impacts were adequately covered. No additional modeling is required, just clarifications of what has been done. FWS seemed to be satisfied with the results of this discussion, and we don't think this will greatly delay the EPA-FWS determination.

Memorandum

To: Participants in Indeck Conference Call of 5/6/05

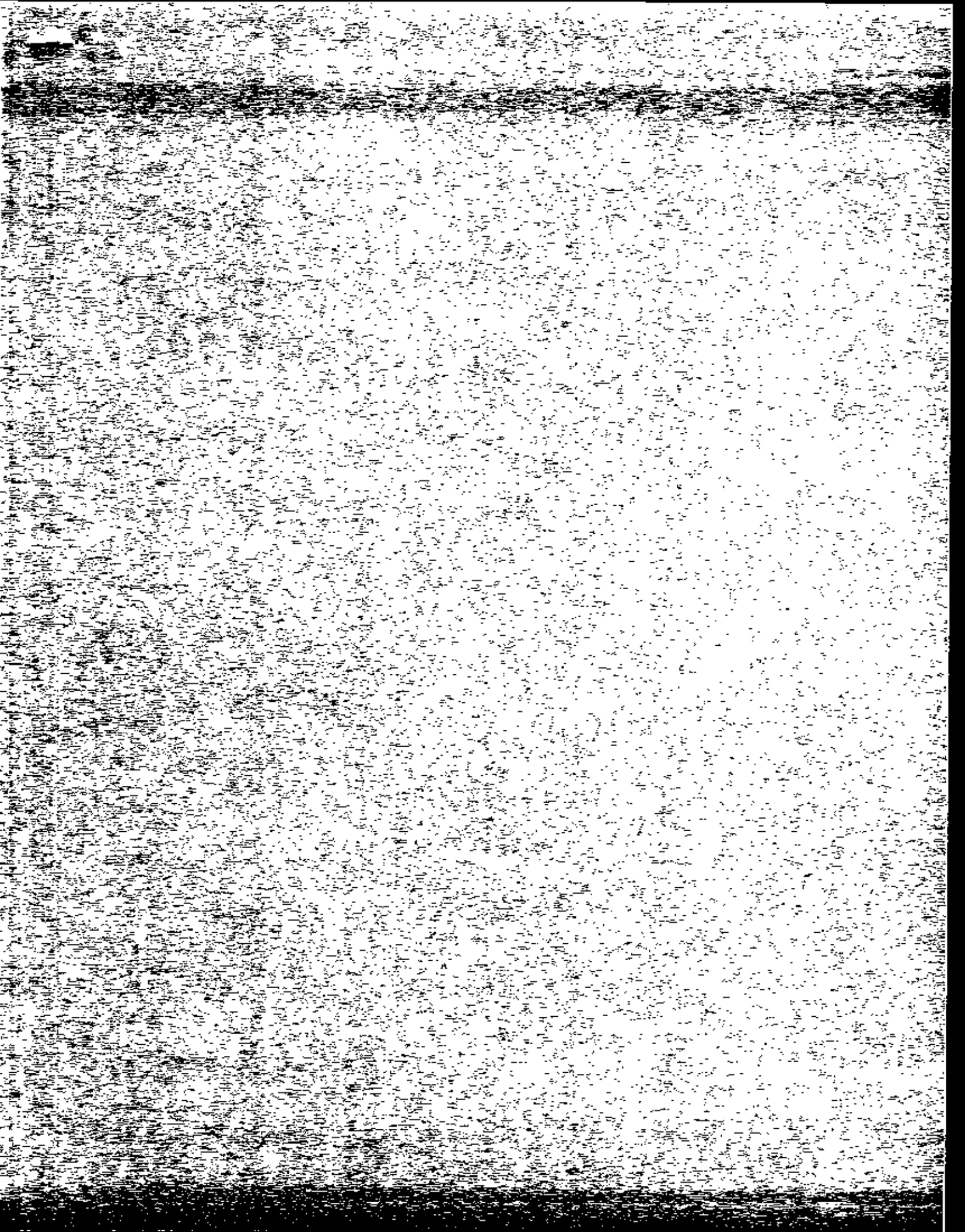
From: John Rogner

Subject: Action items from conference call

Participants:

USFWS – John Rogner, Karla Kramer, Ed Karecki, Tim Allen
IEPA – Laurel Kroack, Jeff Sprague, Don Sutton, Chris Romaine
USEPA – Mary Portunova
Indeck – Jim Schneider, Greg Wassilkowski
Cambridge Environmental – Steve Zemba

1. IEPA indicated that the finishing scrubber is required by the permit. This will be clarified for the record and considered in the final analysis of effects.
2. There was discussion of the reduction of sulfuric acid mist from 10.2 to 2.6 tons/yr based on the operation of the scrubber. Steve suggested that the 2.6 ton estimate is likely an overestimate, based on actual performance of other plants. Jim indicated he could provide published data of actual performance elsewhere. It should also be acknowledged in the assessment if the 2.6 ton estimate is the actual expectation based on the operation of the scrubber.
3. USFWS suggested that the analysis of acid mist deposition should consider all forms of acid deposition cumulatively instead of as individual components, and should consider the potential for aqueous phase conversion of sulfur dioxide to sulfuric acid under wet atmospheric conditions as a short-term, worst case scenario. Tim Allen also clarified that CALPUFF does not have an aqueous phase conversion component to it. Steve's opinion was that sulfur is the primary constituent requiring analysis. Moreover, there was acknowledgement of the tight schedule for completing the assessment that precluded extensive additional analysis. It was suggested that any additional response on this issue focus on a qualitative description of a worst case short term impact from acid deposition that considers the frequency and probability of acid deposition occurring that has a pH of 2.5 or below. It was also recommended, as an addition to the long-term (5-year) average peak sulfate concentrations already provided, that peak single year concentrations also be included in the analysis. Steve indicated this could be done.
4. There was a brief discussion of the particle size distribution calculations for cooling tower emissions. It was questioned why the Reisman and Frisbie methodology was used instead of procedures in the EPA AP-42 standard guidance. Jim said he could provide a response to this question but would need to consult with the author of that section of the report, who was not on the call.



**PETITIONERS' BRIEF RESPONDING TO BOARD'S
JULY 21, 2005 ORDER AND IEPA'S SUPPLEMENTAL BRIEF**

EXHIBIT 2

March 8, 2005

(AR-18J)

Janet M. Smith, Field Supervisor
Green Bay ES Field Office
U.S. Fish and Wildlife Service
2662 Scott Tower Drive
New Franken, Wisconsin 54229-9565

Dear Ms. Smith:

Pursuant to Section 7 of the Endangered Species Act (ESA), (16 U.S.C. §§ 1531 et seq.), the United States Environmental Protection Agency (USEPA), Region 5 has reviewed the biological information and analysis related to a Prevention of Significant Deterioration (PSD) permit for JM Products, Inc., to determine what impact there may be to any threatened or endangered species in the area around the proposed facility. The purpose of this letter is to seek concurrence from the U.S. Fish and Wildlife Service (FWS) on our determination that the proposed project is not likely to adversely affect any federally listed species in relation to the proposed air quality permit for JM Products.

Project Description

JM Products, Inc., proposes to build a facility within the exterior boundaries of the Lac du Flambeau Indian Reservation, Vilas County, Wisconsin, consisting of a sand-and-gravel pit, rock crusher, and hot-mix asphalt plant. The project will be on three parcels of land, all within a quarter-mile of each other, in an area that is currently compliant with all National Ambient Air Quality Standards. This type of project is fairly common in northern Wisconsin; other rock crushers and asphalt plants are located in this area of the State, and there is nothing to suggest any adverse effects on local species.

Parcel 1: This 10-acre plot is located in the NE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 19 T41N, R6E of the Reservation. It contains a borrow pit which is currently used to produce

pit run sand for various construction projects. Once the pit is cleared, it will serve as a staging area for a wood chipping operation. The wood chipping operation will involve chipping logs, tops, brush, and stumps for sale and use as hogging fuel for local power generators.

The Revised Environmental Assessment submitted by the applicant dated January 2004 states that approximately 5 acres of the parcel have been cleared, grubbed, and stripped of topsoil for later reclamation. It does not state whether further portions of the parcel will be cleared.

When the borrow pit is ready to accommodate the wood chipping operation, the applicant will have to obtain a PSD permit from USEPA before constructing the new facilities. Because the wood chipping operation will not be built for at least several years, the pending PSD permit does not contain requirements for Parcel 1.

Parcel 2: This is a 40-acre plot located in the NW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 30 T41N, R6E of the Reservation. It will contain a pit for the production of sand and gravel aggregates. Rock crushing equipment at the gravel pit, consisting of jaw and cone crushers and conveyers, will crush stone into different materials, such as gravel for road base and construction fill. The equipment will be powered by three onsite diesel-fired internal combustion engines.

Aggregate production and crushing processes will occur during the construction season of April/May through October/November. The permit application specifies a maximum throughput for crushed stone of 500 tons per hour, and a potential to produce up to 25,000 cubic yards of sand and gravel aggregates per year.

The gravel pit operation will involve clearing and grubbing a 5-8 acre area and stripping its topsoil for use as reclamation cover soil after the sand and gravel resources are mined. Once this 5-8 acre area is mined, another 5-8 acre area in Parcel 2 will be mined, and so on. The permit application does not specify how much of Parcel 2 will be mined, but that only one 5-8 acre area will be worked at a time.

The Revised Environmental Assessment specifies the construction of a 50-foot wide strip of conifer and hardwood trees and a topsoil berm at the perimeter of the developed area to provide visual and sound screening and to ensure that the pit is internally drained.

Parcel 2 will also contain a hot-mix asphalt plant of counter-flow drum mix configuration with a maximum throughput of 400 tons per hour, including the potential use of reclaimed asphalt pavement, and consisting of a drum mixer, asphalt cement heater, and silo.

Parcel 3: This 40-acre plot located in the SE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 19, T41N, R6E is adjacent to Parcel 2. It contains a large wetland, but no development of the parcel is planned. A 30-foot length within the parcel will be used as secondary (emergency) access to Parcel 2. There will be a 50-foot buffer between the project and the wetland.

Action Area

An action area of 3 km radius around the proposed facility was based on air quality modeling performed for the PSD permit and represents the significant impact area for criteria pollutants. More information on this modeling is provided in the ESA Effects Analysis section below.

List of Species

Four federally listed threatened or endangered (T&E) species were identified as possibly located within Vilas County in an August 7, 2003 letter from FWS. The species are the bald eagle (*Haliaeetus leucocephalus*), the gray wolf (*Canis lupus*), the Canada lynx (*Lynx canadensis*) and the Kirtland's warbler (*Dendroica kirtlandii*). FWS further indicated in the letter that there were neither federally listed T&E species nor critical habitat present at the project site. These facts were confirmed in a conference call with FWS on January 31, 2005. The following brief descriptions of the species are taken from facts sheets available on the FWS website, unless otherwise indicated.

Bald eagle: The bald eagle has been protected as a threatened species in Wisconsin since its listing under the ESA on February 14, 1978. Due to recovery efforts, the bald eagle population has risen to levels sufficient for

the FWS to propose delisting the bald eagle in July 1999. Bald eagles are large birds of prey that nest and forage along fish-bearing waters. They primarily consume fish, but will also feed on waterfowl and carrion. Bald eagles build large stick nests in conifer trees and occasionally deciduous trees or on cliffs. Nesting activity usually occurs in January and February with hatching occurring in April and May.

In our January 31, 2005, conference call, FWS noted the presence of a bald eagle nest located about 1 mile to the west of the project site boundary. In a February 14, 2005, conference call, FWS updated this information to note that there are actually two bald eagle nests, each located approximately 1/4 miles away from the project site.

Gray wolf: The gray wolf was listed as an endangered species in May 1974, after populations had been decimated by hunting and eradication programs. Wolf packs usually live within specific territories, ranging in size from 50 square miles to more than 1,000 square miles depending on prey availability and seasonal prey movements. Wolf populations are increasing in Wisconsin, likely linked to increasing white-tailed deer populations through the 1980s and early 1990s as well as other Recovery Plan conservation efforts. The Wisconsin/Michigan wolf populations have been above the Recovery Plan target level of 100 since 1994. FWS has indicated there are no known permanent wolf packs in the action area. However, given the large ranges, it is conceivable that individuals may be present in the area as transients, as animals move between packs.

Canada lynx: The Canada lynx was listed as a threatened species throughout the contiguous United States in March 2000, with the range of the lynx including Wisconsin. It is a forest-dwelling, medium-size cat of the northern latitudes. It primarily feeds on snowshoe hares, but will also eat small mammals and birds. In general, lynx and snowshoe hare habitats are moist boreal forests that receive deep snow and cold winters, and lynx populations may fluctuate with the snowshoe hare 10-year cycles. According to the FWS map of the range of the Canada lynx, the northernmost tip of Wisconsin may support occasional dispersers, as opposed to resident, breeding populations, due to habitat conditions. Current lynx populations are elevated, consistent with high snowshoe hare populations, although the likelihood of finding an individual within the

3 km action area would be relatively low but not impossible.

Kirtland's warbler: The Kirtland's warbler is a small blue-gray bird with a bright yellow breast that spends its winters in the Bahama Islands. It nests only in young jack pine forests growing on a special type of sandy soil found in ten Counties on Michigan's northern Lower Peninsula and four in the Upper Peninsula. In our February 14, 2005 conference call, FWS indicated singing males have been spotted at the far eastern edge of Vilas County, and in Douglass County, but the presence of these birds in Wisconsin has been unpredictable and sporadic.

Kirtland's warblers prefer to nest in forests that are 80 acres or larger, with numerous small grassy openings. They require jack pine trees of a certain age (6-20 years) and height (5 to 16 feet tall), and spaced to let sunlight through to the ground. The warblers build nests only on the ground among grass and other plants, protected by the lower branches. As the jack pines age, the lower branches die off due to lack of sunlight, causing the warblers to seek new nesting sites. Forest management, including managed fires and harvesting, along with controlling cowbird parasitism, are the primary recovery strategies.

ESA Effects Analysis

The existence of the gray wolf, Canada lynx and Kirtland's warbler in the action area is unclear. During the February 14 call, FWS indicated that, of the four noted species, the gray wolf is most likely to be present. While there are no known permanent wolf packs in the area, individuals may move between pack ranges. The Canada lynx is more difficult to predict because of its transient nature; FWS indicated that the likelihood of its presence at any particular location is low, though it tends to inhabit dense stands of young conifers. As for the Kirtland's warbler, the closest group of Jack pine trees that it has been known to inhabit is 50 miles away from the project site. To the extent individuals of these species may be present at a given time within the action area, they would be considered transient and able to move away from the site if the construction activity or operation noise was disturbing.

The bald eagle's possible presence is evidenced by the two nests identified by FWS located about 1¼ miles away from the project site. According to the Northern States Bald Eagle Recovery Plan (FWS, 1983), a two-zone management system around nest sites is suggested as a practical way to protect bald eagles and the habitats they require. The primary zone is the area directly surrounding an eagle nest, and the secondary zone is the area directly surrounding the primary zone. The recommended primary buffer zone is a minimum of 330 feet from the nest, to be extended up to ¼ - ½ mile where there is extremely sparse timber or other unique situations. Surrounding this, the recommended secondary buffer zone should extend an additional 330 feet from the edge of the primary zone, to be expanded up to ½ mile when nesting occurs in sparse stands of timber, treeless areas, or where activities would occur within view of the nest. The project area does not fit the extreme circumstances for the extended buffer zones, and the nest sites are located beyond even the worst-case scenario recommendation. Based on this information, we would conclude that the bald eagle would not likely be adversely affected by the construction/noise activity related to the project.

Air Quality Impacts

To assess the air quality impacts of the proposed project on individual animals that may be present in the action area, the following PSD modeling analysis is provided. USEPA conducted a Yahoo search of each of the listed species, using the species name and "air pollution" as the key words. No information related to these four species and air pollution impacts was found. Lacking information identifying species-specific effects associated with specific air pollutants, USEPA is relying upon the general protectiveness of the PSD thresholds and the relative size of emissions as compared to background levels in completing its analysis.

The JM Products, Inc., project is considered to be a minor source based on USEPA thresholds, however, because the project is being sited on Tribal lands, the permit must be issued by EPA under PSD regulations as there is no federal minor source permit program. Based on potential to emit, JM Products, Inc. would emit over 250 tons per year (tpy) of carbon monoxide (CO) and particulate matter (PM). However, the source is choosing to take limits on emissions

for all regulated pollutants to below major source thresholds, per the following table:

Process	Emissions (tons per year)						
	NO _x	CO	VOC	SO ₂	PM	PM ₁₀	HAPs
Rock Crushing	--	--	--	--	2.2	0.81	--
Hot Mix Asphalt	34.7	58.2	21.1	25.1	3.7	3.7	5.1
IC Engines	24.3	5.2	1.98	1.6	1.71	1.71	0.04
Fugitive Dust	--	--	--	--	11.9	5.2	--
TOTAL	58.9	63.4	23.1	26.7	19.5	11.4	5.1

JM Products, Inc. will meet these limits by accepting limits on hours of operations as well as addressing Best Available Control Technology (BACT) requirements. Air pollution controls that will be required in the permit include windscreens and erosion control, enclosures around materials transfer points, enclosed storage bins, a requirement to water down dust-causing operations and limit traffic on unpaved roads, a fabric filter on the asphalt plant and overall good combustion practices. USEPA has identified these as the appropriate BACT controls for this source.

Pursuant to PSD requirements, the source was required to conduct air quality modeling for PM and CO; no other pollutant levels met the threshold to require modeling. The PM and CO emissions from JM Products, Inc. were evaluated with the Industrial Source Complex Dispersion Model (ISC3). This model uses measured meteorological data to calculate the breathable concentrations of pollutants at varying distances from the source. The first step in the PSD modeling process is to evaluate the source's impact on the surrounding area. In the PSD program, USEPA has set a minimum ambient air concentration level for each criteria pollutant, called the Significant Impact Level (SIL). While SILs are specifically designed to project human health, we are using SILs as a surrogate lacking specific information related to these animal species. This comparison is likely most valid for the Canada lynx and gray wolf, which are large mammals.

If a facility's emissions for an individual pollutant are shown with modeling to be below the SIL, then the source's air quality impact is considered insignificant for that pollutant, and no further modeling is necessary to support

the approval of the PSD permit application. JM Products, Inc.'s CO impacts were found to be below the SIL for CO everywhere. The source's ambient air impacts from PM, however, exceeded the PM SIL, which is 1 microgram per cubic meter (ug/m³) on an annual average and 5 ug/m³ on a 24-hour average. At 3 kilometers from the source, the modeled concentrations of PM fell below the SIL. This 3-kilometer distance becomes the radius of JM Products, Inc.'s circular Significant Impact Area for PM.

The next step in the PSD modeling process is to evaluate whether the PSD increments are consumed. The PSD program allows pollutant concentrations to increase only up to the pollutant-specific PSD increments. For PM, these increments are 17 ug/m³ on an annual average and 30 ug/m³ on a 24-hour average. The increment modeling must include not only the PM emissions from the proposed source, but also the PM emissions from other new or modified sources located within or having an air quality effect in the Significant Impact Area. In JM Products, Inc.'s case, there were no additional sources to include. Modeling showed that JM Products, Inc.'s PM impacts were below the PM increments.

The final step in the PSD modeling process is to verify that the National Ambient Air Quality Standards (NAAQS) are protected. In some cases, even though the PSD increments are not exceeded within a proposed source's Significant Impact Area, the NAAQS could still be violated in the area. The NAAQS for PM are 50 ug/m³ on an annual average, and 150 ug/m³ on a 24-hour average. Modeling for the PM NAAQS includes the PM emissions from the proposed source and from all nearby PM sources, new or existing, which might have an air quality impact in the area. Background PM concentrations, obtained from local air quality monitors, are also added to the modeled totals, to account for distant PM sources which were not explicitly included in the modeling. The background concentrations for the JM Products, Inc., site were 9.2 ug/m³ on an annual average and 27.4 ug/m³ on a 24-hour average (Trout Lake, Vilas County). The modeling showed that that area's total breathable PM concentrations would be well below the PM NAAQS—less than forty percent of the NAAQS level. The modeled impacts of the proposed source were about equal to the monitored actual background PM concentrations. JM Products, Inc., meets the air quality modeling requirements necessary for approval of its PSD permit.

Conclusion/Determination

The Canada lynx, gray wolf and Kirtland's warbler, should they occur in the action area, would be transient individuals capable of moving away from the site should they be disturbed by the activities. In addition, the location of the known bald eagle nests is beyond the maximum primary and secondary buffer zones recommended for even extreme habitat conditions, based on the FWS Northern States Bald Eagle Recovery Plan. Therefore, the physical activities related to the construction and operation of the proposed project are not likely to adversely effect the listed species.

In addition, USEPA has provided data regarding the air quality modeling conducted as part of the PSD permit application. The permitted emissions levels for JM Products, Inc., will be consistent with a minor source, with limits below significance thresholds for each of the pollutants with the exception of NOx, which is slightly above the threshold value of 40 tpy.

Based on an Internet search and the information made available by FWS on the causes of the species decline and recovery plan strategies, there is no information suggesting sensitivities to air pollutants, and in fact both the gray wolf and bald eagle populations have increased in Wisconsin above the recovery plan targets. For the pollutants whose potential to emit was above the major source threshold (thus triggering air quality modeling), the results demonstrate that the impacts of this project would be insignificant, discountable or not measurable against the background levels.

Considering this analysis in its entirety, USEPA concludes that the proposed construction and operation of this facility may affect, but is not likely to adversely affect, any of the T&E species. USEPA respectfully requests FWS concurrence on this determination.

Sincerely yours,

/s/

Stephen Rothblatt, Director
Air and Radiation Division

cc: Larry Wawronowicz, Deputy Administrator of Natural
Resources, Lac du Flambeau Band of Lake Superior
Chippewa Indians

May 31, 2005

{AR-185}

Dan Stinnett, Field Supervisor
Twin Cities Field Office
U.S. Fish and Wildlife Service
4101 American Blvd. East
Bloomington, Minnesota 55425-1665

Dear Mr. Stinnett:

Pursuant to Section 7 of the Endangered Species Act (ESA), (16 U.S.C. §§ 1531 et seq.), the United States Environmental Protection Agency (USEPA), Region 5 has reviewed the biological information and analysis related to a Prevention of Significant Deterioration (PSD) permit for Grand Casino Resort and Hotel in Mille Lacs County (Grand Casino Mille Lacs), to determine what impact there may be to any threatened or endangered species in the area around the proposed facility. The purpose of this letter is to seek concurrence from the U.S. Fish and Wildlife Service (FWS) on our determination that the proposed project is not likely to adversely affect any federally listed species in relation to the proposed air quality permit for Grand Casino Mille Lacs.

Project Description

Grand Casino Mille Lacs proposes to operate a peak electricity generation facility within the exterior boundaries of the Mille Lacs Band of Ojibwe Indian Reservation, Mille Lacs County, Minnesota. This facility currently consists of three diesel-fired internal combustion engines which are only used to generate emergency power. This PSD permit will change the method of operation and allow the three engines to be put on the peaking program offered by the local utility as well as to provide emergency power. The project is located at 777 Grand Avenue, Highway 169, Onamia, Mille Lacs County, Minnesota, 56359. This site is near the southwestern shore of Mille Lacs Lake off of Highway 169 approximately 13.5 kilometers north-northwest of the town of Onamia,

Minnesota. The Universal Transverse Mercator (UTM) east and north coordinates of the facility are 441,393 and 5,114,148 meters, respectively. The project is located in an area that is currently compliant with all National Ambient Air Quality Standards, and there is nothing to suggest any adverse effects on local species.

The permit application specifies a maximum diesel fuel flow rate of 382.2 gallons per hour throughput for all three engines resulting in 5.4 megawatts of electricity generation per year. The three engines will be limited to 300 hours per year and a maximum allowable 28.02 tons of NOx emissions per year.

Action Area

An action area of 850 meter radius around the proposed facility was based on air quality modeling performed for the PSD permit and represents the significant impact area for criteria pollutants. More information on this modeling is provided in the ESA Effects Analysis section below.

List of Species

Two federally listed threatened or endangered (T&E) species were identified as possibly located within Mille Lacs County in an April 13, 2004 e-mail from Nick Rowse of FWS. The species are the bald eagle (*Haliaeetus leucocephalus*) and the gray wolf (*Canis lupus*). The following brief descriptions of the species are taken from facts sheets available on the FWS website, unless otherwise indicated.

Bald eagle: The bald eagle has been protected as a threatened species in Minnesota since its listing under the ESA. Bald eagles are large birds of prey that nest and forage along fish-bearing waters. They primarily consume fish, but will also feed on waterfowl and carrion. Bald eagles build large stick nests in conifer trees and occasionally deciduous trees or on cliffs. Nesting activity usually occurs in January and February with hatching occurring in April and May.

In an April 13, 2005 e-mail, Nick Rowse of FWS noted the presence of two active bald eagle nests located near the facility. In an April 15, 2005 e-mail, Kevin Woizeschke of the Minnesota Department of Natural Resources (DNR) noted

that a recent survey found that one of the nests is 0.53 miles southwest of the facility, while the other nest is 0.87 miles northwest of the facility.

Gray wolf Wolf packs usually live within specific territories, ranging in size from 50 square miles to more than 1,000 square miles depending on prey availability and seasonal prey movements.

ESA Effects Analysis

The existence of the gray wolf in the action area is unclear. To the extent individuals of this species may be present at a given time within the action area, they would be considered transient and able to move away from the site if the construction activity or operation noise was disturbing.

The bald eagle's possible presence is evidenced by the two nests identified by Minnesota DNR located about 0.53 miles (2,800 feet) and also 0.87 miles (4,600 feet) away from the project site. According to the Northern States Bald Eagle Recovery Plan (FWS, 1983), a two-zone management system around nest sites is suggested as a practical way to protect bald eagles and the habitats they require. The primary zone is the area directly surrounding an eagle nest, and the secondary zone is the area directly surrounding the primary zone. The recommended primary buffer zone is a minimum of 330 feet from the nest, to be extended up to $\frac{1}{4}$ - $\frac{1}{2}$ mile where there is extremely sparse timber or other unique situations. Surrounding this, the recommended secondary buffer zone should extend an additional 330 feet from the edge of the primary zone, to be expanded up to $\frac{1}{2}$ mile when nesting occurs in sparse stands of timber, treeless areas, or where activities would occur within view of the nest.

Seeing that the source is beyond the 660 foot secondary buffer zone for both nests, and that an April 15, 2005, e-mail from Kevin Woizeschke of the Minnesota DNR stated that since each of the two nests are more than $\frac{1}{4}$ mile from the source, and buffered by forest, that the operation of the engines falls within the recommended guidelines and should have little or no impact on the nesting bald eagles, we would conclude that the bald eagle would not likely be

adversely affected by the construction/noise activity related to the project.

Air Quality Impacts

To assess the air quality impacts of the proposed project on the individual species that may be present in the action area, the following PSD modeling analysis is provided. USEPA conducted a Yahoo search of each of the listed species, using the species name and "air pollution" as the key words. No information related to these two species and air pollution impacts was found. Lacking information identifying species-specific effects associated with specific air pollutants, USEPA is relying upon the general protectiveness of the PSD thresholds and the relative size of emissions as compared to background levels in completing its analysis.

The Grand Casino Mille Lacs project is considered to be a minor source based on USEPA thresholds, however, because the project is being sited on Tribal lands, the permit must be issued by EPA under PSD regulations as there is no federal minor source permit program. Based on potential to emit, Grand Casino Mille Lacs would emit over 250 tons per year (tpy) of nitrogen oxides (NO_x). NO_x includes both nitrogen oxide (NO) and nitrogen dioxide (NO₂). However, the source is choosing to take limits on emissions for all regulated pollutants to below major source thresholds, per the following table:

Emissions (tons per year)						
NO _x	CO	VOC	SO ₂	PM	PM ₁₀	HAPs
28.02	3.24	0.50	0.40	0.29	0.24	0.01

Grand Casino Mille Lacs will meet these limits by accepting limits on hours of operations as well as addressing Best Available Control Technology (BACT) requirements. Air pollution controls that will be required in the permit include turbocharged engines with aftercoolers, fuel injection timing retard, and electronic controls for lean burn combustion. USEPA has identified these as the appropriate BACT controls for this source.

Pursuant to PSD requirements, the source was required to conduct air quality modeling for nitrogen dioxide (NO₂); no

other pollutant levels met the threshold to require modeling. The NOx emissions from Grand Casino Mille Lacs were evaluated with the Industrial Source Complex Short-Term Model (ISC-PRIME). This model uses measured meteorological data to calculate the breathable concentrations of pollutants at varying distances from the source. The first step in the PSD modeling process is to evaluate the source's impact on the surrounding area. In the PSD program, USEPA has set a minimum ambient air concentration level for each criteria pollutant, called the Significant Impact Level (SIL). While SILs are specifically designed to protect human health, we are using SILs as a surrogate, lacking specific information related to these animal species. This comparison is likely most valid for the gray wolf which is a large mammal.

If a facility's emissions for an individual pollutant are shown with modeling to be below the SIL, then the source's air quality impact is considered insignificant for that pollutant, and no further modeling is necessary to support the approval of the PSD permit application. Grand Casino Mille Lacs NOx ambient air impacts from NOx exceeded the NO₂ SIL, which is 1 ug/m³ on an annual average. At 850 meters from the source, the modeled concentrations of NOx fell below the SIL. This 850 meter distance becomes the radius of Grand Casino Mille Lacs' circular Significant Impact Area for NOx.

The next step in the PSD modeling process is to evaluate whether the PSD increments are consumed. The PSD program allows pollutant concentrations to increase only up to the pollutant-specific PSD increments. For NO₂, this increment is 25 ug/m³ on an annual average. The increment modeling must include not only the NOx emissions from the proposed source, but also the NOx emissions from other new or modified sources located within or having an air quality effect in the Significant Impact Area. In Grand Casino Mille Lacs' case, there were no additional sources to include. Modeling showed that Grand Casino Mille Lacs' NOx impacts (9.41 ug/m³) were below the NO₂ increments (25 ug/m³).

The final step in the PSD modeling process is to verify that the National Ambient Air Quality Standards (NAAQS) are protected. In some cases, even though the PSD increments are not exceeded within a proposed source's Significant Impact Area, the NAAQS could still be violated in the area.

The NAAQS for NO₂ is 100 ug/m³ on an annual average. Modeling for the NO₂ NAAQS includes the NOx emissions from the proposed source and from all nearby NOx sources, new or existing, which might have an air quality impact in the area. Background NO₂ concentrations, obtained from local air quality monitors, are also added to the modeled totals, to account for distant NOx sources which were not explicitly included in the modeling. The background concentration for the Grand Casino Mille Lacs site was 17 ug/m³ on an annual average. The modeling showed that the area's total breathable NO₂ concentrations (26.41 ug/m³) would be well below the NO₂ NAAQS—less than thirty percent of the NAAQS level. Grand Casino Mille Lacs meets the air quality modeling requirements necessary for approval of its PSD permit.

Conclusion/Determination

The gray wolf, should it occur in the action area, would be transient individuals capable of moving away from the site should they be disturbed by the activities. In addition, the location of the known bald eagle nests is beyond the maximum primary and secondary buffer zones recommended for even extreme habitat conditions, based on the FWS Northern States Bald Eagle Recovery Plan. Therefore, the physical activities related to the construction and operation of the proposed project are not likely to adversely effect the listed species.

In addition, USEPA has provided data regarding the air quality modeling conducted as part of the PSD permit application. The permitted emissions levels for Grand Casino Mille Lacs, will be consistent with a minor source, with limits below significance thresholds for each of the pollutants.

Based on an Internet search and the information made available by FWS on the causes of the species decline and recovery plan strategies, there is no information suggesting sensitivities to air pollutants. For the pollutants whose potential to emit was above the major source threshold (thus triggering air quality modeling), the results demonstrate that the impacts of this project would be insignificant, discountable or not measurable against the background levels. Considering this analysis in its entirety, USEPA concludes that the proposed

construction and operation of this facility may affect, but is not likely to adversely affect, any of the T&E species. USEPA respectfully requests FWS concurrence on this determination.

Sincerely yours,

/s/

Pamela Blakley, Chief
Air Permits Section

cc: Curt Kaik, Commissioner of Natural Resources, Mille
Lacs Band of Ojibwe Indians

STATEMENT OF BASIS
Prevention of Significant Deterioration
Proposed Permit No.: PSD-ML-R50007-05-01

This document serves as the statement of basis, as required by Title 40 of the Code of Federal Regulations (40 CFR) part 124, for a Prevention of Significant Deterioration (PSD) air pollution construction permit. This document sets forth the legal and factual basis for permit conditions, with references to applicable statutory and regulatory provisions, including provisions under the federal PSD regulations, 40 CFR 52.21. This statement of basis document is for all interested parties of the permit.

1.0 GENERAL INFORMATION

(A). Applicant and Stationary Source Information

Permitting Authority:	United States Environmental Protection Agency Region 5 (AR-18J) 77 West Jackson Boulevard Chicago, Illinois 60604
Owner/Operator Name and Address:	Mille Lacs Band Corporate Commission dba/Grand Casino Mille Lacs 777 Grand Avenue Highway 169 Onamia, Mille Lacs County, Minnesota 56359
SIC Code:	7011, Hotels and motels
Facility Location	Grand Casino Mille Lacs 777 Grand Avenue Highway 169 Onamia, Mille Lacs County, Minnesota 56359 Mille Lacs Band of Ojibwe Indian Reservation
Responsible Official:	Curt Kalk Commissioner of Natural Resources 43408 Oodena Dr., Onamia, MN 56359 Phone: 800-709-6445, ext. 7439 Fax: 320-532-7514

Facility Contact:	Phillip Kairis Vice President Energy Alternatives, Inc. Phone: (651)341-2244 Fax: (651)460-6717
Tribal Environmental Contact:	Charles Lippert Air Quality Technician 43408 Oodena Dr., Onamia, MN 56349 Phone: (320) 532-4704 Fax: (320) 532-7505

(B). Background and Facility Description

The Mille Lacs Band Corporate Commission, dba/Grand Casino Mille Lacs, submitted a Prevention of Significant Deterioration (PSD) permit application to EPA on October 20, 2004, proposing to change the method of operation of three existing internal combustion engines at the Grand Casino Resort and Hotel located on the Mille Lacs Indian Reservation in Mille Lacs County, Minnesota. These engines had been used as back-up generators. This permit will allow the three engines to be put on the peaking program of the local utility, as well as to continue to provide emergency power for the Permittee. The engines will combust low-sulfur diesel fuel and will drive three generators to produce electricity. Electricity generated at the facility will not be sold for distribution. The facility is located approximately 13.5 kilometers (km) north-northwest of the town of Onamia, Minnesota.

In 2001, EPA received notice from Grand Casino Mille Lacs requesting an exemption from PSD and Title V air permitting requirements because their generators were being used only on an emergency basis. In support of the request, the Permittee cited a September 6, 1995 EPA memo, "Calculating Potential to Emit (PTE) for Emergency Generators." This memo says that a generator whose sole function is to provide back-up power may use the default of 500 hours when calculating PTE.

The shaft power of each of the larger two engines will each drive a 2,000 kilowatt generator to produce electricity, while the smaller engine will drive a 1,400 kilowatt generator. The electricity produced will be used for peak load management and backup power for Grand Casino Mille Lacs. The total electric generation capacity of the three engines will be 5.4 megawatts.

This project is major for PSD permitting because the potential to emit nitrogen oxide (NO_x) emissions from the engine generator project is above 250 tons per year (tpy).

The two larger engines will each be Caterpillar Model 3516B turbocharged engines. The Caterpillar 3516B engines each have 16 cylinders. Each engine operates at a rated speed of 1800 revolutions per minute and produces shaft power of 2,885 brake horsepower. Each engine will burn approximately 139.7 gallons per hour of low sulfur (0.05%) diesel fuel when operated at maximum capacity. The smaller engine is a Caterpillar Model 3512B, which has 12 cylinders, and operates at a rated speed of 1,800 revolutions per minute and produces shaft power of 2,059 brake horsepower while burning approximately 102.8 gallons per hour of low sulfur (0.05%) diesel fuel when operated at maximum capacity.

(C). Area Classification

Grand Casino Mille Lacs is located on land that is held in trust for the Mille Lacs Band of Ojibwe Indians. The EPA is responsible for issuing and enforcing any air quality permits for this source until such time as the Tribe or State has EPA approval to do so.

Mille Lacs County, and all Indian Country within, is designated attainment for all criteria pollutants. There are no PSD Class I areas within 100 kilometers of the Grand Casino Mille Lacs site.

(D). Enforcement Issues

The EPA is not aware of any pending enforcement issues at this facility.

(E). Pollution Control Equipment

Emission control for the engines consists of the engines being turbocharged with aftercoolers, using fuel injection timing retard, using electronic controls for lean burn combustion, and burning low-sulfur diesel fuel.

**(F) . Emission Unit Summary from Grand Casino Mille Lacs
Application to EPA**

Emission Unit	EU 001	EU 002	EU 003
Unit Type:	Engine/ Generator	Engine/ Generator	Engine/ Generator
Manufacturer/ Model:	Caterpillar Model 3516B (Dry Manifold)	Caterpillar Model 3516B (Dry Manifold)	Caterpillar Model 3512B
Power Rating:	2,000 kW	2,000 kW	1,400 kW
Exhaust Height:	16 feet	16 feet	16 feet
Exhaust Diameter:	16 feet	16 feet	14 feet
Exhaust Flow:	16,040 acfm	16,040 acfm	11,696 acfm
Exhaust Temperature:	958° F	958° F	912° F
Fuel Type:	low sulfur (0.05%) diesel fuel only	low sulfur (0.05%) diesel fuel only	low sulfur (0.05%) diesel fuel only
Fuel Consumption Rate @ max. capacity:	139.7 gallons per hour	139.7 gallons per hour	102.8 gallons per hour
Shaft Power:	2,885 brake horsepower	2,885 brake horsepower	2,059 brake horsepower
Rated Speed:	1,800 revolutions per minute	1,800 revolutions per minute	1,800 revolutions per minute

(G) . Potential Emissions

To determine PSD applicability, the applicant must submit PTE calculations representing the proposed project's worst-case emission scenario. Those emission units whose PTE for any regulated pollutant meets or exceeds the major source threshold are subject to PSD review. Because Grand Casino Mille Lacs is not one of the listed 28 source categories in 40 C.F.R. Part 52.21(b) (1), and because Grand Casino Mille Lacs is located in an attainment area, the major source threshold for any New Source

Review (NSR) regulated pollutant is 250 tons per year. The PTE is based on 8760 operating hours per year.

The PTE of PM-10 was calculated using information on the fraction of PM-10 compared to total particulate matter in Table 3.4-2 of AP-42, 5th Edition, for Large Uncontrolled Stationary Diesel Engines. Equation for PM-10 PTE: $(0.0573 \text{ lb of PM-10/MMBtu}) / (0.0697 \text{ lb of PM/MMBtu}) * (0.64 \text{ lb of Total PM/hr})$. The sulfur dioxide PTE was based on the rated fuel flow rates of each engine and a sulfur content of 0.05% by weight. Equation for sulfur dioxide PTE for EU01: $139.7 \text{ gal/hr} * 7 \text{ lb/gal} * 0.05/100 * 1 \text{ lbmol S}/32 \text{ lbs} * 1 \text{ lbmol SO}_2/\text{lb mol S} * 64 \text{ lb SO}_2/\text{lbmol SO}_2 = 0.978 \text{ lb/hour of SO}_2$. The emission rates for NOx, VOC, CO, and PM are from stack test results. Emission rates for Hazardous Air Pollutants (HAPs) were calculated using emission factors from tables 3.4-3 and 3.4-4 of AP-42, 5th Edition, for Large Uncontrolled Stationary Diesel Engines.

Emission Factors for HAPs

Pollutant	Benzene	Toluene	Xylene	Formaldehyde	Acetaldehyde	Acrolein	Napthalene
Emission Factor (lb/MMBtu)	7.76E-04	2.82E-04	1.93E-04	7.89E-04	2.52E-04	7.88E-04	1.30E-04

Potential to Emit Summary

Emission Rate	VOC	NOx	CO	PM	PM10	SO2	Total HAP's
PTE (Hourly Emissions):	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
EU 001	0.90	68.16	5.21	0.64	0.05	0.98	0.03
EU 002	0.90	68.16	5.21	0.64	0.05	0.98	0.03
EU 003	1.53	50.49	11.15	0.68	0.56	0.72	0.02
PTE (Annual Emissions):	tpy	tpy	tpy	tpy	tpy	tpy	tpy
EU 001	3.94	298.54	22.82	2.80	2.30	4.28	0.12
EU 002	3.94	298.54	22.82	2.80	2.30	4.28	0.12
EU 003	6.70	221.15	48.84	2.98	2.45	3.15	0.09

2.0 APPLICABLE REGULATIONS AND DETERMINATIONS

(A). New Source Review (NSR)

1. Applicability

The potential emissions of NO_x at Grand Casino Mille Lacs are greater than 250 tpy. Mille Lacs county, and all Indian Country within (Mille Lacs Band of Ojibwe Indian Reservation), is designated attainment for all criteria pollutants. Therefore, Grand Casino Mille Lacs is a major source and, as such, is subject to the PSD provisions [40 CFR 52.21(b)(1)(i)(b)].

2. Best Available Control Technology (BACT) Analysis

The BACT analysis is an analysis of the pollution control technology available to any new stationary source that can be used to achieve emissions reductions. It is a "top-down" process in which all available control technologies are ranked from highest to lowest in order of effectively reducing air emissions. In the "top-down" process, the PSD applicant first examines the most stringent, or "top" control alternative. That alternative is established as BACT unless the applicant demonstrates, and the permitting authority in its informed judgment agrees, that technical considerations, or energy, environmental, or economic impacts justify a conclusion that the most stringent technology is not feasible in that case. If the most stringent technology is eliminated in this fashion, then the next most stringent alternative is considered, and so on. The BACT analysis is done on a case-by-case basis. The EPA provides guidance on conducting BACT analyses in the NSR Workshop Manual (DRAFT, October 1990).

i. Identification of NO_x Control Technologies

The Permittee used the U.S.EPA RACT/BACT/LAER Clearinghouse (RBLC) to help identify available control technologies. The Permittee provided the

following as control options with potential to control NOx emissions from diesel-fired internal combustion engines:

- Engine Gas Recirculation (EGR)
- Fuel Specification (Low Nitrogen Fuel)
- Intake Air Cooling
- Non-Selective Catalytic Reduction (NSCR)
- Non-Thermal Plasma Reactors
- Pre-Chamber Combustion Ignition (also described as Clean Burn Combustion or Pre-Stratified Charge)
- Rich Burn Combustion
- Selective Catalytic Reduction (SCR)
- Water/Steam Injection
- New Caterpillar Emissions Strategy engine
- Modification of the existing engines
- Electronic Fuel Injection Timing Retard
- Turbocharger with Aftercooler
- A combination of one or more of the above Control Techniques
- No Controls

ii. Review of NOx Control Technologies

Technical infeasibility can include technical difficulties that would preclude successful use of a control option for the emissions unit under review. It can be demonstrated through physical, chemical, and engineering principles. Two key concepts in determining whether a control technology is feasible are whether it is commercially available and whether it can be reasonably installed and operated on the emissions unit under review.

Engine gas recirculation (EGR), low nitrogen fuel, intake air cooling, non-selective catalytic reduction, non-thermal plasma reactors, pre-chamber combustion ignition, rich burn combustion, and steam/water injection were eliminated based on technical infeasibility.

Below are the reasons provided by the Permittee for the technical infeasibility for the eight control techniques listed above:

- EGR: EGR would result in increased fouling of the air intake systems, combustion chamber deposits and engine wear rates due to the chemical and physical properties of the exhaust gas. In addition, this control technique is not commercially available from manufacturers of stationary internal combustion engines.
- Low Nitrogen Fuel: The Permittee has not been able to find a supplier of this type of fuel, and states that low nitrogen fuel for diesel-fired internal combustion engines is not available for purchase through commercial channels.
- Intake Air Cooling: The engines at Grand Casino Mille Lacs utilize turbochargers with aftercoolers instead of intake air cooling because they result in lower NOx emissions. It is not possible to have both a turbocharged engine and intake air cooling.
- NSCR: NSCR would not be effective for exhaust gas from reciprocating internal combustion engines (which have exhaust temperatures of approximately 900 degrees Fahrenheit) because the NSCR reaction is effective only within a relatively narrow range of temperatures; typically 1600 to 1800 degrees Fahrenheit. Reheating the exhaust gas to the temperatures at which NSCR is effective would require additional fuel combustion and would generate additional emissions.
- Non-Thermal Plasma Reactors: This control technology is not yet commercially available.
- Pre-Chamber Combustion Ignition: This type of ignition is currently installed only on gas-fired internal combustion engines and is not available for use with diesel-fired engines.
- Rich Burn Combustion: Rich burn combustion is difficult to achieve for diesel-fired internal combustion engines because the ratio of liquid fuel to air is so high. The engines with lowest NOx emissions available from engine vendors utilize lean burn combustion.
- Water/Steam Injection: This control technique is not available from manufacturers of internal combustion diesel-fired engines. The injection of water or steam would quench the flame and promote engine misfiring rather than reduce NOx emissions.

The Permittee determined that the following control techniques are technically feasible for diesel-fired stationary internal combustion engines:

- SCR Technology with new, inherently lower-emitting engines (Caterpillar Emissions Strategy Engines);
- SCR Technology with the existing engines (Caterpillar Low BSFC Engines);
- New, inherently lower-emitting engines (Caterpillar Emissions Strategy);
- Modification of the existing engine to achieve emissions equivalent to a Caterpillar Emissions Strategy Engine; and
- Use of existing engines (Caterpillar Low BSFC Engines)

Summary of Top-Down BACT Analysis
 Control of NOx Emissions from Diesel-Fired Internal Combustion Engines

Control Alternatives for emission units EU 001 and EU 002

Control Alternatives	Range of Control (%)	Control Level for BACT (%)	Range of NOx Emissions (g/hp-hr)	Emissions for BACT (g/hp-hr)	Emissions (lb/hr)	Emissions (tpy)	Emissions Reduction (tpy)	Scale
SCR with New Engine Emissions Strategy	75-90	80%	0.84-2.09	1.67	10.63	1.60	8.63	MFR
SCR with Existing Engine (Low BSFC)	75-90	80%	1.04-2.68	2.14	13.61	2.04	8.18	MFR
New 7000 kW Emissions Strategy engine, with new enclosure	-	22%	8.36	8.36	53.17	7.98	2.25	MFR
Modified 2000 kW engine with new enclosure	-	22%	8.36	8.36	53.17	7.98	2.25	MFR
Existing 2000 kW Engine with existing level of Fuel Injection Timing Retard, T/C and A/C (Baseline - Low BSFC)	-	-	10.72	10.72	68.16	10.22	0.00	MFR

Control Alternatives for EU 003

Control Alternatives	Range of Control (%)	Control Level for BACT (%)	Range of NOx Emissions (g/hp-hr)	Emissions for BACT (g/hp-hr)	Emissions (lb/hr)	Emissions (tpy) ^(a)	Emissions Reduction (tpy)	Basis
SCR with New Engine Emissions Strategy	75-90	80%	1.11-2.77	2.21	9.88	1.48	6.09	MFR
SCR with Existing Engine (Low BSFC)	75-90	80%	1.11-2.78	2.22	10.09	1.51	6.06	MFR
New 2000 kW Engine and Strategy engine, with new enclosure	-	1%	11.06	11.06	49.47	7.42	0.15	MFR
Modified 2000 kW engine with new enclosure	-	1%	11.06	11.06	49.47	7.42	0.15	MFR
Existing 2000 kW Engine w/ existing level of Fuel Injection Timing Retard, T/C and A/C (Baseline - Low BSFC)	-	-	11.12	11.12	50.49	7.57	0.00	MFR

(a) Potential annual emissions are calculated with federally enforceable limit of 300 hours/year.

MFR = manufacturer's data

Note: All control alternatives are assumed to use lean burn combustion.

Units of grams NOx per brake horsepower-hour were chosen to consistently represent NOx emissions from each control option. Manufacturers' data provided the basis for ranges of control. The level of control for BACT is the percent reduction compared to the baseline emission rate.

Based upon economic impacts, the Permittee eliminated SCR, the installation of Caterpillar Emission Strategy engines, and the modifications to the existing engines as possibilities for BACT. For an SCR and the new Caterpillar Emissions Strategy engines, a new enclosure and other adjustments to the existing mechanical and electrical systems would need to be completed. Where the existing engines would be modified, a larger enclosure would be needed to accommodate

the larger radiators as well as the installation of new software. The Permittee stated that the annualized cost in dollars per ton of NOx removed is \$16,573 to install and use SCR; \$75,149 to install and use the new Caterpillar Emissions Strategy engines; and \$32,945 to modify and then operate the modified Low BSFC engines.

The existing engines have emission reduction and control inherent to their design: fuel injection timing retard, turbo chargers with aftercoolers, and lean burn combustion. Additionally, by taking a 300-hour limit on hours of operation, emissions are kept well below 50% of the PTE. For this reason, the existing engines are determined to be BACT.

iii. BACT Limit

A time-based BACT limit (e.g., lb/hr) is necessary to make sure that a source emitting at its BACT emission concentration limit does not emit more pollutant than assumed in the ambient analysis applicable at time of permit issuance. The lb/hr BACT emission rates were derived from July 30, 2001 emission test data.

BACT Emissions Limitation	Basis
EU001: 68.16 lb/hr, and 10.72 g/bhp-hr. EU002: 68.16 lb/hr, and 10.72 g/bhp-hr. EU003: 50.49 lb/hr, and 11.12 g/bhp-hr.	BACT 40 CFR § 52.21
EU001: 10.22 tpy EU002: 10.22 tpy EU003: 7.57 tpy	BACT 40 CFR § 52.21

3. PSD Operational Restrictions

The source is limited to operating the three diesel-fired engines for a maximum of 300 hours per year.

4. Air Quality Analysis

The PSD review requires an applicant to conduct an air quality analysis of the ambient air impacts associated with the construction and operation of the proposed new source. The main purpose of an air quality analysis is to demonstrate that new emissions emitted from the proposed major stationary source, in conjunction with other applicable emissions from existing sources in the area, will not cause or contribute to a violation of any applicable National Ambient Air Quality Standards (NAAQS) or PSD increment.

The applicant is required to conduct an air quality analysis for NO_x . Generally, the analysis involves (1) an assessment of existing air quality, which may include ambient monitoring data and air quality dispersion modeling results, and (2) predictions, using dispersion modeling, of ambient concentrations that will result from the proposed project and future growth associated with the project.

The dispersion modeling analysis usually involves two phases: (1) a preliminary analysis, and (2) a full impact analysis. The preliminary analysis models only the significant increase in potential emissions of a pollutant from the proposed source, and the results of this analysis determine whether a PSD applicant must perform a full impact analysis. A full impact analysis involves estimating background pollutant concentrations resulting from existing sources and growth associated with the proposed source.

The Industrial Source Complex Short-Term Model (ISC-PRIME) was used to conduct the air quality analysis for the Grand Casino Mille Lacs site to assess potential NO_2 air quality impacts from the emission units. Since the applicant plans to operate each of the emission units at no more than 300 hours per year, and this operational condition will be enforceable under the PSD permit, this operational condition was included in the air quality analysis. The modeling results showed impact concentrations above the annual significance level of $1 \mu\text{g}/\text{m}^3$ at 300 hours per year of operation; therefore, a full impact analysis was required. The full impact analysis included comparing the NO_2 concentrations predicted from the ISC-PRIME model to both the NO_2 NAAQS and the NO_2 PSD Class II increment.

This comparison showed full compliance with both the NO₂ NAAQS and the allowable NO₂ PSD Class II increment.

5. Additional Impact Analysis

For the additional impact analysis, as required by 40 CFR 52.21(o), the applicant must examine growth in the area due to the project, analyze the impacts of emissions from the project on the ambient air quality and the soils and vegetation in the area, and analyze any visibility impairment due to the project. Since the ambient impacts from the proposed project exceed the NO_x significant impact level out to only 850 meters from the proposed source, and are far below the NAAQS, there should be no harmful effects to water, vegetation, and soils, and visibility.

6. Class I Area Impact Analysis

For sources that have the potential to impact PSD Class I areas, additional analyses need to be conducted to demonstrate compliance with PSD Class I area increments, as well as any impacts on Air Quality Related Values (AQRV) associated with the PSD Class I area such as, visibility, water quality, flora and fauna.

The Grand Casino Mille Lacs site is located approximately 189 km west of Rainbow Lakes Wilderness Area (RLWA) in northwestern Wisconsin. The Federal Land Manager for the RLWA, the US Forest Service (USFS), was contacted on March 30, 2004. The USFS indicated that additional air modeling would not be required due to the proposed project having only negligible effects on the AQRVs at the RLWA. This was not a requirement because the RLWA is more than 100 km away from the Grand Casino Mille Lacs site, but the USFS was still contacted.

3.0 OPERATING REQUIREMENTS

- A. Use a turbocharger and aftercooler at all times during operation of EU 001, 002, and 003.
- B. Maintain the aftercooler return water temperature for each engine at less than or equal to 225 degrees Fahrenheit.

- C. Operate EU 001, 002, and 003, at all times using lean burn combustion conditions for each engine.
- D. At all times operate EU 001, 002, and 003 at Retard Engine Timing which involves delaying the injection of fuel in the engine for each engine.
- E. Set the flash files #205-6998 and #205-6942, which electronically control each engine, for retard engine timing. Contact the EPA before modifying any parameters pertaining to retard engine timing for any of the engines.
- F. Conduct performance testing on EU 001, 002, and 003 to ascertain compliance with the NO_x emission rates and limits in this section in accordance with the requirements set forth in Section 2(B) of the permit. Determine the NO_x emission rate, expressed as NO₂, using exhaust properties determined by both Method 7E and exhaust gas measurements as set out in Section 2(B)(2) of the permit.
- G. Certify that electronic controls are set for low emission strategy.

4.0 TESTING REQUIREMENTS

The permit requires the Permittee to conduct a stack or performance test every five calendar years, with the first test required to be conducted five years following the initial compliance test. The Permittee shall use a portable emissions analyzer to measure NO_x emissions annually during years in which a periodic stack or performance test is not required. The portable emissions analyzer must be set up and used according to the testing methods and principles in the Portable Electrochemical Analyzer Procedure (attachment 1 of the permit).

This method is applicable to the determination of nitrogen oxides (NO and NO₂), carbon monoxide (CO) and oxygen (O₂) concentrations in controlled and uncontrolled emissions from combustion sources using fuels such as natural gas, propane, butane, and fuel oils. This method is designed to provide a reasonable assurance of compliance using periodic monitoring or testing. The aftercooler temperature of each engine is to be continuously monitored so that it does not exceed 225 degrees Fahrenheit.

5.0 RECORDKEEPING AND REPORTING REQUIREMENTS

Records are to be kept of the monthly NO_x emissions and the operating hours for each engine based on a twelve month

rolling sum. Records are to be maintained of the Flash files #205-6998 and #205-6942 which establishes the retard engine timing parameters. The permit requires Grand Casino Mille Lacs to maintain records of all measurements and other data required in the permit for a period of least five years after the effective date of the permit. The permit also requires Grand Casino Mille Lacs to submit reports to the EPA, including an annual compliance certification to certify compliance with the emissions limitations and other applicable terms of the permit.

6.0 ENDANGERED SPECIES ACT

Section 7 of the Endangered Species Act of 1973, as amended, directs federal agencies to consult with the U.S. Fish and Wildlife Service (FWS) if a federal action or activity may affect federally listed threatened or endangered species or adversely modify designated critical habitats. Examples of federal actions and activities include funding and permitting.

There are two animal species in the vicinity of the proposed project that are federally listed as threatened or endangered. The EPA cannot issue a permit to construct if FWS decides to commence a consultation process to determine the adverse impact on the species and the steps the applicant would have to take to mitigate the damage. Permit issuance would have to wait until the consultation process was completed.

In a April 13, 2005 e-mail to EPA, FWS listed two threatened/endangered species that are near the project site:

Common Name	Scientific Name	Classification	Habitat
Bald eagle	<u>Haliaeetus leucocephalus</u>	Threatened	Breeding
Gray Wolf	<u>Canis lupus</u>	Endangered	Northern and central forested areas

In a June 16, 2005 letter to EPA, FWS concurred that the proposed project may affect, but is not likely to adversely affect, any of the threatened or endangered species.

September 29, 2005

(AR-18J)

John Rogner
Field Supervisor
United States Fish and Wildlife Service
Chicago Ecological Services Field Office
1250 South Grove Avenue, Suite 103
Barrington, Illinois 60010

Dear Mr. Rogner:

Pursuant to Section 7 of the Endangered Species Act (ESA), (87 Stat. 884, as amended; 16 U.S. C. 1531 et seq.), the United States Environmental Protection Agency (USEPA) has reviewed the biological information and analysis related to a Prevention of Significant Deterioration (PSD) permit for ExxonMobil Oil Corporation – Joliet Refinery (ExxonMobil) to determine what impact there may be to any threatened or endangered species in the area around the proposed facility. The purpose of this letter is to seek concurrence from the United States Fish and Wildlife Service (USFWS) on our determination that the proposed project is not likely to adversely affect any federally listed species in relation to the proposed air quality permit for this facility.

The parties utilized the informal consultation process as specified in the “Endangered Species Consultation Handbook, procedures for conducting consultation and conference activities under Section 7 of the Endangered Species Act, (March 1998 final).” by the USFWS and National Marine Fisheries Service. The USEPA prepared this biological assessment following the guidance provided in the ESA consultation handbook, as well as the recommended content suggested in the ESA regulations found in 50 CFR Part 402.12(f). Additionally, USFWS provided USEPA a July 7, 2005 document titled, “Recommended Scope of Analysis for ExxonMobil Refinery Modification for Endangered Species Evaluation,” describing the general topics of need, species of concern, effects analysis, and literature search, needed in the biological assessment. This document was revised on July 21, 2005. As part of developing the biological assessment, ExxonMobil prepared the August 3, 2005 document “Endangered Species Impacts Assessment ExxonMobil Oil Corporation – Joliet Refinery Unit Reliability – Efficiency Improvement Projects.” ExxonMobil also provided supplemental information documents on September 1, September 12, and September 20, 2005.

Project Description

ExxonMobil is located on a 1,300-acre tract of land in unincorporated Will County, Illinois. The facility is a fully-integrated petroleum refinery which began operations in 1972. Will County is designated as an attainment area with all National Ambient Air Quality Standards except for ozone and particulate matter less than 2.5 micrometers in diameter. The area is designated as a moderate non-attainment area for ozone under the 8-hour standard.

The planned project will increase the efficiency and reliability of existing units at the refinery. The proposed modifications do not result in any new emission points or result in increased capacity at the facility. The planned modifications will allow for an increase in the annual fuels production at the refinery by improving efficiency of equipment, reducing planned downtime of equipment, and alleviating seasonal constraints that can be encountered during ambient temperature extremes. The design rates of the existing equipment will not change; therefore, the maximum hourly and daily emission rates will remain at or below the historically demonstrated maximum hourly and daily emission rates. All existing permit limits will remain in effect. Because the modifications will not result in an increase in short term emission levels, only the chronic impacts of the project were evaluated.

The project will increase annual emission rates of carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO₂), particulate matter/particulate matter less than 10 micrometers in diameter (PM/PM₁₀), volatile organic compounds (VOC), and several hazardous air pollutants (HAPs). The project emissions were calculated using the traditional applicability approach under the PSD program which compares past actual emissions to the potential to emit assuming operation at maximum capacity 8760 hours per year. The maximum potential increase in criteria pollutant emissions resulting from the planned project are as follows:

CO	233.99 tons per year
NOx	796.61 tons per year
SO ₂	2519.53 tons per year
PM/PM ₁₀	109.05/105.68 tons per year
VOC	5.42 tons per year

The project will potentially increase emissions of 36 HAPs with the most significant increases occurring in carbonyl sulfide, hydrogen chloride, nickel, phosphorus, toluene and xylene.

Action Area

The ExxonMobil facility is located near the Indeck Elwood Energy Center (Indeck). USEPA and USFWS concluded the ESA consultation process for Indeck in June of 2005. Because the ExxonMobil facility is very close geographically to the Indeck site and because the stack heights are much shorter than those in the Indeck evaluation, the

boundary of the assessment area for ExxonMobil was defined as the geographic area where the listed species and their respective habitats were already identified by the Indeck assessment.

List of Species

As specified in the USFWS recommended scope of analysis, the impacts of the project on the following species were addressed:

Leafy Prairie Clover (*Dalea foliosa*) -- The Leafy Prairie Clover is an endangered species which occurs on refinery property and at the nearby Midewin National Tallgrass Prairie. Other populations exist to the north along the Des Plaines River Valley.

Eastern Prairie Fringed Orchid (*Platanthera leucophaea*) -- The Eastern Prairie Fringed Orchid is an endangered species which occurs on land owned by the Illinois Department of Natural Resources at Grant Creek.

Lakeside Daisy (*Hymenoxys herbacea*) -- The Lakeside Daisy is a threatened species. An introduced population occurs at Lockport Prairie.

Hine's Emerald Dragonfly (*Somatochlora hineana*) -- The Hine's emerald dragonfly is an endangered species. Several populations occur along the Des Plaines River Valley.

Summary of Analysis

On June 15, 2005, representatives for USEPA, USFWS, the Illinois Environmental Protection Agency (IEPA), and ExxonMobil met to discuss the consultation process under ESA and the planned project at ExxonMobil. At this meeting, the parties chose to initiate the informal consultation process, and USFWS agreed to provide a document outlining the scope of analysis necessary. The USFWS provided this information in the July 7, 2005, document, "Recommended Scope of Analysis for ExxonMobil Refinery Modification for Endangered Species Evaluation." This document was later revised on July 21, 2005, to reflect comments received. To assist USEPA with its evaluation, ExxonMobil provided an August 3, 2005, report titled, "Endangered Species Impacts Assessment ExxonMobil Oil Corporation - Joliet Refinery Unit Reliability - Efficiency Improvement Projects." ExxonMobil provided three additional supplemental reports on September 1, 12, and 20, 2005. These documents provided the necessary information for USEPA's analysis.

The scoping document provided by USFWS indicated that the modeling for this analysis should follow the general guidance provided in Chapter 3 of USEPA's SLERA protocol for assessing chemical fate and transport, the modeling should show air concentrations and deposition rates for appropriate pollutants, and that the total impacts should be evaluated looking at the combined effects of the vapor phase, particle phase and particle-bound phase of pollutants. The document also indicated that ISCST3 was an acceptable

model for the analysis. Due to the proximity of ExxonMobil to Indeck, USFWS agreed that the same background information used for Indeck was appropriate for ExxonMobil.

Air Dispersion and Deposition Modeling

Criteria Pollutants

ExxonMobil performed air dispersion modeling using ISCST3 for CO, NO_x, SO₂, and PM₁₀. ExxonMobil modeled a worst-case scenario using the maximum permitted emission rates and continuous operation at maximum capacity. Deposition modeling using ISCST3 was performed for nitrogen, PM₁₀, and sulfur.

As a comparison, ExxonMobil also performed modeling for nitrogen deposition using CALPUFF. After discussion with USFWS on September, 23, 2005, USEPA has chosen to evaluate the project using the ISCST3 results. ISCST3 is the model that would be used for the required ambient concentration modeling under the PSD program for this facility, as it is located in a Class II area. CALPUFF is generally recommended for long range transport (> 50 km) and complex wind situations. The PSD regulations do not require deposition modeling, thus, there is no USEPA recommended model for deposition under the program. Both models are capable of evaluating deposition. The approach to nitrogen chemistry in the ISCST3 model is more conservative, and is likely to produce worst-case results. Therefore, USEPA has chosen to use the more conservative ISCST3 nitrogen deposition results in evaluating the effects of the proposed project.

HAPs

In the September 1, 2005, supplement, ExxonMobil provided modeled HAP concentrations for 30 of the HAPs which will potentially increase as a result of the project. The modeled concentrations were compared to the minimum detection limits for each pollutant provided in two USEPA documents, the July 2004 "National Monitoring Strategy - Air Toxics Component, Final Draft," and EPA Document 454/R-01-007 "USEPA Quality Assurance Guidance Document." For the few instances where a detection limit was not reported, the detection limit for a similar compound was used. All 30 HAPs were below the minimum detection limit established in USEPA guidance. The highest concentration relative to detection limits was for zinc, which was modeled at 0.3% of the detection limit. No further analysis was performed for these pollutants.

The results of modeling performed for the remaining six HAPs (carbonyl sulfide, hydrogen chloride, toluene, xylene, nickel, and phosphorus) were provided in ExxonMobil's August 3, 2005, report. ExxonMobil used ISCST3 to perform dispersion modeling for carbonyl sulfide, hydrogen chloride, toluene and xylene. For purposes of evaluating the accumulation of metal HAPs in near-surface soil, the soil mixing model discussed in section 3.2.3 of ExxonMobil's August 3, 2005, report was used.

Background Levels

As indicated in the USFWS scoping document, the same background information used in the Indeck assessment was used for the ExxonMobil assessment. The monitor locations used were Cicero, IL for CO; Braidwood, IL for NOx; Joliet, IL for PM₁₀ and SO₂; Schiller Park and Northbrook, IL for HAPs; and Bondville, IL for nitrogen and sulfur deposition.

Acid Fog

USFWS provided an analysis of acid fog via e-mail on September 28, 2005. The conclusion reached by USFWS was that the occurrence of an injurious acid fog event was unlikely given the meteorological and geographical conditions that exist in the action area.

Ozone

USEPA provided an analysis of the potential impact on ozone levels to USFWS via e-mail on September 8, 2005. Due to the small increases in VOC emissions resulting from the project and the lack of a reliable means to model ozone changes from such an increase, USEPA has concluded that the project will have no measurable effect on the threatened and endangered species with respect to ozone.

ESA Effects Analysis

In conducting the biological evaluation for the proposed project, toxicity benchmarks for the pollutants of concern were taken from sources commonly accepted and used by USEPA and other regulatory authorities. Where such established benchmarks were not available, Cambridge Environmental searched relevant literature to identify toxicological data which could appropriately be used to derive screening-level benchmarks for the T&E species at the site considered by this effects analysis. In a teleconference between USEPA and USFWS on September 15, 2005, USFWS indicated that they intended to adjust selected benchmarks to include a level of conservativeness and re-evaluate the project impacts. We have not received this supplement information from USFWS; therefore, the following analysis is based on the benchmarks identified in the original literature search.

Hine's Emerald Dragonfly

The chronic effects analysis for the Hine's emerald dragonfly focuses on the aquatic larval stage, where the dragonfly spends 96% to 99% of its life. No direct chronic effect from airborne pollutants is expected. Based on USEPA's SLERA protocol and additional information provided through toxicological profiles published by the United States Department of Health and Human Services, the pollutants most likely to effect the Hine's emerald dragonfly are nitrogen, hydrogen chloride, nickel, and phosphorus.

In section 3.2.3 of its August 3, 2005, report, ExxonMobil provides a description of an aquatic model developed by its consultant Cambridge Environmental. The model predicts steady-state concentrations of pollutants in surface water that are compared directly to benchmark concentrations. The model likely overpredicts actual concentration in surface water for many pollutants because it assumes that all pollutants deposited remain within the water column.

Cambridge Environmental on behalf of ExxonMobil conducted the literature survey for the identification of relevant environmental benchmarks. Their report is contained in Attachment C of ExxonMobil's August 3, 2005, report. The benchmarks selected were 40,000 µg/l for nitrogen, 230 µg/l for hydrogen chloride, 25 µg/l for nickel, and 5 µg/l for phosphorus. Pollutant concentrations were modeled at eight locations, with the highest concentrations occurring at the Lockport Prairie sites. The modeled concentrations for these sites are 13 µg/l for nitrogen, 0.76 µg/l for hydrogen chloride, 0.11 µg/l for nickel, and 0.17 µg/l for phosphorus. The worst-case modeled impacts on surface water concentrations of all pollutants of concern were insignificant in comparison to the benchmarks.

The Hine's emerald dragonfly larvae principally reside in sediments; therefore, potential increases in pollutant concentrations in sediments are more directly relevant than increases in surface water concentrations to adverse effects on the dragonfly. ExxonMobil provides additional information concerning the sediment impacts for the Hine's emerald dragonfly in its September 1, 2005, supplemental report. Attachment A of this report provides an analysis performed by Cambridge Environmental. Nickel is the only chemical likely to deposit to watersheds and accumulate in sediments; however, depending on its chemical speciation, it is possible phosphorus could deposit. A screening level of 22.7 mg/kg was selected for nickel based on USEPA ecological screening levels for the Resource Conservation and Recovery Act program (www.epa.gov/reg5rcra/ca/ESL.pdf). For phosphorus, a value of 600mg/kg, established by Ontario as a Low Sediment Screening Benchmark, was selected. The refinery would have to operate over 21,000 years to reach the nickel sediment screening criterion and more than 390,000 years to reach the screening criterion for phosphorus.

Based on the best available information, USEPA it is not likely that we would be able to detect or measure any negative response to this exposure as a result of project emissions. Therefore, we conclude that the proposed project at ExxonMobil is not likely to adversely affect the Hine's emerald dragonfly.

Leafy Prairie Clover, Eastern Prairie Fringed Orchid, and Lakeside Daisy

The pollutants of concern for these species include CO, NO_x, SO₂, PM₁₀, carbonyl sulfide, hydrogen chloride, nickel, phosphorus, toluene and xylene. All ten pollutants were evaluated with respect to direct phytotoxicity through an analysis of modeled impacts to ambient air concentrations at each receptor location. Deposition to soil was also considered for nitrogen, sulfur, PM₁₀, chloride, nickel, and phosphorus. Cambridge

Environmental conducted a literature survey for the identification of appropriate environmental benchmarks for each pollutant.

Currently achievable method detection limits (MDLs) for ambient air monitors were compiled from IEPA and USEPA sources for six pollutants. MDLs were not available for carbonyl sulfide, hydrogen chloride and phosphorus, and modeling for SO₂ was not included in the August 3, 2005, report. For the six pollutants for which an MDL was identified, the highest ambient concentration at the receptor locations was below the MDL. Thus, ambient air monitoring systems are not capable of measuring any effect of the project on ambient concentrations of these pollutants at any of the receptor locations. For all nine pollutants the highest modeled concentration was compared to the background value for each pollutant. The highest modeled concentration from any receptor location is less than 1.1% of background and are within the year to year variability of background. Therefore, we conclude that because the project impacts on ambient concentrations of CO, NO_x, PM₁₀, nickel, toluene, and xylene are immeasurable or indistinguishable from current background levels, these pollutants are not likely to adversely affect the species with respect to direct phytotoxicity. The results of modeling performed by ExxonMobil for SO₂ are included in its September 12, 2005, supplementary information report. In evaluating SO₂ ambient impacts, a toxicity value of 19µg/m³ identified in the Indeck biological evaluation was used. At all receptor locations the modeled impacts from the proposed project and Indeck were added to the background concentration. The combined concentrations were less than the toxicity value for SO₂ at all receptor locations; therefore, we conclude that increases in SO₂ are not likely to cause an adverse affect on the species with respect to direct phytotoxicity.

Additional analysis was conducted with respect to indirect phytotoxicity through deposition of air pollutants to soil. Chemicals for which appreciable soil deposition occurs are either accumulative or non-accumulative in nature. Of the ten pollutants evaluated for ExxonMobil, nickel is the only pollutant for which chemical-specific fate and transport indicates accumulation in soil. For the analysis, a soil mixing model described in section 3.2.3 of the August 3, 2005, report was used. The results of this model indicate that observed effects from nickel at a level of 44 mg/kg would occur after 45 thousand to 365 thousand years of operation.

Deposition modeling was performed to evaluate the non-accumulative soil deposition for nitrogen (from NO_x), chloride (from hydrogen chloride), sulfur (from SO₂), and phosphorus (from diphosphorus pentoxide). Modeling results for sulfur were provided in the September 12, 2005, supplemental report, and the results for all other pollutants were provided in the August 3, 2005, report. Additional information with respect to nitrogen deposition was provided in ExxonMobil's September 20, 2005, supplemental information report. For chloride and phosphorus, the highest modeled deposition rates would result in less than a 1% increase over background deposition rates.

The deposition modeling for sulfur does show some large increases in deposition rate for 3 receptor locations over the background and Indeck deposition rates; however, these values represent worst-case values. Due to its limitations, the ISCST3 model

Interstate Rule (CAIR) which calls for NO_x and SO₂ reductions from 2003 baseline levels for the eastern United States. CAIR will require a 70,018 ton reduction in NO_x emissions in Illinois from the baseline of 146,248 tons by 2009. The statewide NO_x budget in 2015 will be 63,525. While these levels are for the entire State of Illinois, we would still expect a substantial reduction in background at the receptor locations. Based on these factors, we conclude that the increases in nitrogen deposition from the proposed project will not likely adversely affect the threatened and endangered species.

Finally, PM₁₀ deposition on plant leaves was considered. Through a literature survey conducted by Cambridge Environmental, a benchmark of 10 g/m²/yr was selected. The highest modeled deposition rate for PM₁₀ was 0.15 g/m²/yr. USEPA concludes that PM₁₀ deposition is not likely to adversely affect the threatened and endangered species.

ESA Determination

After review of the likely effects of the proposed project, it would appear that the only potential issue of concern is nitrogen deposition. This is greatly due to the high level of the background deposition rate. However, after consideration of the expected reduction in background levels which will occur as a result of CAIR, the conservative model used to predict project impacts, the emission offset requirements of the New Source Review program, and the likely operation of the refinery, USEPA believes that the likely impact from nitrogen deposition is considerably less than predicted.

Considering this analysis in its entirety, USEPA concludes that the proposed construction and operation of this facility may affect, but is not likely to adversely affect, any of the threatened and endangered species. USEPA respectfully requests USFWS concurrence on this determination.

Sincerely yours,

/S/

Pamela Blakley, Chief
Air Permits Section

cc: Jennifer Szymanski
United States Fish and Wildlife Service

Laurel Kroack
Illinois Environmental Protection Agency