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Commissioner

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TO: Interested Parties / Applicant  
DATE: August 16, 2007  
RE: Emerald Renewable Energy LLC / 167-24127-00141  
FROM: Nisha Sizemore  
Chief, Permits Branch  
Office of Air Quality

### Notice of Decision: Approval - Effective Immediately

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 13-15-5-3, this permit is effective immediately, unless a petition for stay of effectiveness is filed and granted according to IC 13-15-6-3, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3 and IC 13-15-6-1 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Room 1049, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

- (1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
- (2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
- (3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

- (1) the name and address of the person making the request;
- (2) the interest of the person making the request;
- (3) identification of any persons represented by the person making the request;
- (4) the reasons, with particularity, for the request;
- (5) the issues, with particularity, proposed for considerations at any hearing; and
- (6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures  
FNPER.dot 03/23/06



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# NEW SOURCE CONSTRUCTION AND FEDERALLY ENFORCEABLE STATE OPERATING PERMIT OFFICE OF AIR QUALITY AND VIGO COUNTY AIR POLLUTION CONTROL

**Emerald Renewable Energy, LLC  
Section 5 of Township 10 North, Range 9 West  
Terre Haute, Indiana 47802**

(herein known as the Permittee) is hereby authorized to construct and operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

**The Permittee must comply with all conditions of this permit. Noncompliance with any provisions of this permit is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. An emergency does constitute an affirmative defense in an enforcement action provided the Permittee complies with the applicable requirements set forth in Section B, Emergency Provisions.**

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-7 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

Indiana statutes from IC 13 and rules from 326 IAC, quoted in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard, except for the requirement to obtain a FESOP under 326 IAC 2-8.

Operation Permit No.: F167-24127-00141	
Issued by/Original Signed By: Nisha Sizemore, Chief Permits Branch Office of Air Quality	Issuance Date: August 16, 2007  Expiration Date: August 16, 2012

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**Effective Date of the Permit**

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**Effective Date of the Permit**

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## SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) and Vigo County Air Pollution Control (VCAPC). The information describing the source contained in conditions A.1 through A.4 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

### A.1 General Information [326 IAC 2-8-3(b)]

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The Permittee owns and operates a stationary ethanol production plant.

Source Address:	Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 47802
Mailing Address:	15407 McGinty Road, Wayzata, MN
General Source Phone Number:	(952) 742-4991
SIC Code:	2869
County Location:	Vigo
Source Location Status:	Attainment for all criteria pollutants
Source Status:	Federally Enforceable State Operating Permit Program Minor Source, under PSD and Emission Offset Rules Minor Source, Section 112 of the Clean Air Act Ethanol plant is not 1 of 28 listed source categories; boilers are considered 1 of 28 listed source categories, nested within the ethanol plant

### A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-8-3(c)(3)]

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This stationary source consists of the following emission units and pollution control devices:

- (a) One (1) grain receiving area, approved for construction in 2007, with particulate emissions controlled by a baghouse, identified as CE001, and exhausting through stack SV001, consisting of the following:
- (1) Two (2) truck receiving areas, identified as EU001 and EU002, each with a maximum capacity of 280 tons of corn per hour, consisting of one (1) truck unloading conveyor, identified as EU004, with a maximum capacity of 560 tons of corn per hour.
  - (2) One (1) railcar receiving area, identified as EU003, with a maximum capacity of 1120 tons of corn per hour, consisting of one (1) rail unloading conveyor, identified as EU005, with a maximum capacity of 1120 tons of corn per hour.
  - (3) One (1) storage bin fill conveyor, identified as EU006, with a maximum capacity of 1120 tons of corn per hour.
  - (4) One (1) elevator to surge weigh hopper, identified as EU007, with a maximum capacity of 1120 tons of corn per hour.
  - (5) One (1) surge weigh hopper, identified as EU008, with a maximum capacity of 1120 tons of corn per hour.
  - (6) One (1) elevator to fill conveyor, identified as EU009, with a maximum capacity of 1120 tons of corn per hour.
  - (7) One (1) storage bin fill conveyor, identified as EU010, with a maximum capacity of 1680 tons of corn per hour.

- (8) Two (2) corn storage silos, identified as EU011 and EU012, each with a maximum storage capacity of 16,800 tons of corn.
  - (9) One (1) storage bin reclaim conveyor, identified as EU013, with a maximum capacity of 280 tons of corn per hour.
  - (10) One (1) elevator leg to mill surge bin, identified as EU014, with a maximum capacity of 280 tons of corn per hour.
- (b) One (1) internal handling system, approved for construction in 2007, with particulate emissions controlled by a baghouse, identified as CE002, and exhausting through stack SV002, consisting of the following:
- (1) One (1) mill surge bin, identified as EU015, with a maximum capacity of 280 tons of corn per hour.
  - (2) One (1) transfer conveyor to milling, identified as EU016, with a maximum capacity of 280 tons of corn per hour.
  - (3) One (1) corn scalper, identified as EU017, with a maximum capacity of 280 tons of corn per hour.
  - (4) One (1) hammermill feed conveyor, identified as EU018, with a maximum capacity of 280 tons of corn per hour.
  - (5) One (1) elevator leg to corn slurry blender, identified as EU023, with a maximum capacity of 168 tons of corn per hour.
- (c) Four (4) hammermills, identified as EU019, EU020, EU021, and EU022, approved for construction in 2007, each with a maximum throughput rate of 42 tons of corn per hour, controlled by baghouses CE003, CE004, CE005, and CE006, respectively, and exhausting through a combined stack SV003.
- (d) One (1) ground corn transfer conveyor, identified as EU035, approved for construction in 2007, with a maximum capacity of 0.16 tons of corn per hour, controlled by baghouse CE007, exhausting to stack SV004.
- (e) One (1) DDGS reclaim operation, approved for construction in 2007, with a maximum throughput rate of 150 tons of corn per hour, controlled by baghouse CE010, exhausting to stack SV007, consisting of the following:
- (1) One (1) DDGS elevator leg to conveyor, identified as EU049.
  - (2) One (1) DDGS conveyor to surge bin, identified as EU050.
  - (3) One (1) DDGS surge bin, identified as EU051.
  - (4) One (1) DDGS conveyor to elevator leg, identified as EU052.
  - (5) One (1) DDGS elevator leg to loadout conveyors, identified as EU053.
- (f) One (1) DDGS loading system, approved for construction in 2007, with a maximum throughput rate of 150 tons of corn per hour, consisting of the following:
- (1) One (1) DDGS truck loadout, identified as EU054, controlled by baghouses CE011 and CE012, exhausting to stack SV008.
  - (2) One (1) DDGS rail loadout, identified as EU055, controlled by baghouses CE013 and CE014, exhausting to stack SV009.

- (g) One DDGS cooling system, approved for construction in 2007, with a maximum throughput rate of 371,250 tons per year, consisting of the following:
- (1) One (1) fluidized bed DDGS cooler, identified as EU047, controlled by a baghouse, identified as CE008, and exhausting through stack SV005, and one of either two (2) thermal oxidizers, identified as CE015 and CE016, exhausting through stack SV010.
  - (2) One (1) fluidized bed DDGS cooler, identified as EU048, controlled by a baghouse, identified as CE009, and exhausting through stack SV006, and one of either two (2) thermal oxidizers, identified as CE015 and CE016, exhausting through stack SV010.

Note: A portion of the exhaust from the baghouses CE008 and CE009 exhaust to one of two (2) thermal oxidizers, identified as CE015 and CE016 to provide combustion air.

- (h) One (1) fermentation process, approved for construction in 2007, with emissions controlled by a wet scrubber, identified as CE020, and one of either two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010, and consisting of the following:
- (1) Two (2) slurry tanks, identified as EU024 and EU025.
  - (2) Two (2) yeast tanks, identified as EU026a and EU026b.
  - (3) Seven (7) fermenters, identified as EU027, EU028, EU029, EU030, EU031, EU032, and EU033.
  - (4) One (1) beer well, identified as EU034.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

- (i) One (1) distillation process, approved for construction in 2007, with emissions controlled by either one of two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010, and consisting of the following:
- (1) One (1) degasser, identified as EU036.
  - (2) One (1) rectifier condenser, as part of the beer, stripper and rectifier column train, identified as EU037.
  - (3) One (1) molecular sieve unit, identified as EU038.
  - (4) One (1) centrifuge system, identified as EU041.
  - (5) One (1) centrate tank, identified as EU042.
  - (6) One (1) evaporation system, identified as EU043.
  - (7) Two (2) centrifuges, approved for construction in 2007.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

- (j) Two (2) DDGS drying systems, approved for construction in 2007, each with a maximum throughput rate of 25 tons of DDGS per hour, consisting of the following:
  - (1) One (1) natural gas fired DDGS dryer, identified as EU045, with a maximum heat input rate of 92 MMBtu/hr, with emissions venting through either one of two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010.
  - (2) One (1) natural gas fired DDGS dryer, identified as EU046, with a maximum heat input rate of 92 MMBtu/hr, with emissions venting through either one of two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010.
- (k) Two (2) natural gas fired boilers, identified as EU056 and EU057, approved for construction in 2007, each with a maximum heat input rate of 150 MMBtu/hr, with emissions exhausting to stack SV011.

Under 40 CFR 60, Subpart Db, the boilers are considered to be new steam generating units.

- (l) One (1) ethanol loadout system, approved for construction in 2007, consisting of the following:
  - (1) One (1) ethanol loading rack for trucks, identified as EU039, with a maximum throughput rate of 72,000 gallons per hour, with emissions venting to a flare identified as CE017, with a maximum heat input capacity of 6.8 MMBtu/hr, exhausting through stack SV012. The flare has a continuous pilot with a heat input capacity of 0.1 MMBtu/hr.
  - (2) One (1) ethanol loading rack for railcars, identified as EU040, with a maximum throughput rate of 120,000 gallons per hour, with emissions venting to a flare identified as CE018, with a maximum heat input capacity of 6.8 MMBtu/hr, exhausting through stack SV013. The flare has a continuous pilot with a heat input capacity of 0.1 MMBtu/hr.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

### A.3 Insignificant Activities [326 IAC 2-7-1(21)][326 IAC 2-8-3(c)(3)(I)]

This stationary source also includes the following insignificant activities:

- (a) One (1) anaerobic treatment module, identified as EU044, approved for construction in 2007, controlled by a flare, identified as CE019, with a maximum rate of combustion during full operation of 4.62 MMBtu/hr, exhausting to stack SV014. The flare has a continuous 0.1 MMBtu/hr pilot. [326 IAC 2-8-4]
- (b) One (1) emergency firewater pump, identified as EU058, approved for construction in 2007, with a maximum power output rate of 202 horsepower, and exhausting to stack SV015.

Under 40 CFR 60, Subpart IIII, the diesel fire pump EU058 is considered a new certified National Fire Protection Association (NFPA) fire pump.
- (c) Paved roads and parking lots with public access. [326 IAC 6-4]
- (d) Noncontact cooling water system, with mechanical draft cooling tower (identified as EU059) that is not regulated under a NESHAP.

- (e) Replacement or repair of bags in baghouses and filters in other air filtration equipment.
- (f) Blowdown for any of the following: sight glass, boiler, compressors, pumps, and cooling tower.
- (g) Space heaters and process heaters, using natural gas-fired combustion sources with heat input equal to or less than ten (10) million Btu per hour;
- (h) Equipment powered by internal combustion engines of capacity equal to or less than 500,000 Btu/hour, except where total capacity of equipment operated by one stationary source exceeds 2,000,000 Btu/hour.
- (i) Other emission units, not regulated by a NESHAP, with PM<sub>10</sub>, NO<sub>x</sub>, and SO<sub>2</sub> emissions less than five (5) pounds per hour or twenty-five (25) pounds per day, CO emissions less than twenty-five (25) pounds per day, VOC emissions less than three (3) pounds per hour or fifteen (15) pounds per day, lead emissions less than six-tenths (0.6) tons per year or three and twenty-nine hundredths (3.29) pounds per day, and emitting greater than one (1) pound per day but less than five (5) pounds per day or one (1) ton per year of a single HAP, or emitting greater than one (1) pound per day but less than twelve and five tenths (12.5) pounds per day or two and five tenths (2.5) ton per year of any combination of HAPs:
  - (1) One (1) tank for 190-proof ethanol, identified as T001, approved for construction in 2007, with a maximum capacity of 300,000 gallons. [40 CFR 60, Subpart Kb]
  - (2) One (1) tank for 200-proof ethanol, identified as T002, approved for construction in 2007, with a maximum capacity of 300,000 gallons of 200-proof ethanol. [40 CFR 60, Subpart Kb]
  - (3) One (1) gasoline tank, identified as T003, approved for construction in 2007, storing petroleum material with a vapor pressure equivalent to or less than the vapor pressure of 13 RVP gasoline, with a maximum capacity of 152,000 gallons. [326 IAC 8-4-3] [40 CFR 60, Subpart Kb]
  - (4) Two (2) denatured storage tanks, identified as T004 and T005, approved for construction in 2007, each with a maximum capacity of 1,500,000 gallons. [40 CFR 60, Subpart Kb]
  - (5) Two (2) liquefaction tanks, identified as T006 and T007, approved for construction in 2007, each with a maximum capacity of 109,000 gallons.
  - (6) One (1) cook water tank, identified as T011, approved for construction in 2007, with a maximum capacity of 264,000 gallons.
  - (7) One (1) thin stillage tank, identified as T008, approved for construction in 2007, with a maximum capacity of 264,000 gallons.
  - (8) One (1) whole stillage tank, identified as T009, approved for construction in 2007, with a maximum capacity of 264,000 gallons.
  - (9) One (1) syrup tank, identified as T010, approved for construction in 2007, with a maximum capacity of 360,000 gallons.
  - (10) One (1) process condensate tank, identified as TK-1012, approved for construction in 2007, with a maximum capacity of 264,000 gallons.

Under 40 CFR 60, Subpart Kb, storage tanks T001 through T005 are considered to be new volatile organic liquid storage tanks.

A.4 FESOP Applicability [326 IAC 2-8-2]

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This stationary source, otherwise required to have a Part 70 permit as described in 326 IAC 2-7-2(a), has applied to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) for a Federally Enforceable State Operating Permit (FESOP).

## **SECTION B GENERAL CONDITIONS**

### **B.1 Definitions [326 IAC 2-8-1]**

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Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, the applicable definitions found in the statutes or regulations (IC 13-11, 326 IAC 1-2 and 326 IAC 2-7) shall prevail.

### **B.2 Revocation of Permits [326 IAC 2-1.1-9(5)]**

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Pursuant to 326 IAC 2-1.1-9(5)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

### **B.3 Affidavit of Construction [326 IAC 2-5.1-3(h)] [326 IAC 2-5.1-4][326 IAC 2-8]**

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This document shall also become the approval to operate pursuant to 326 IAC 2-5.1-4 and [326 IAC 2-8] when prior to the start of operation, the following requirements are met:

- (a) The attached Affidavit of Construction shall be submitted to the Office of Air Quality (OAQ), verifying that the emission units were constructed as proposed in the application or the permit. The emission units covered in this permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM if constructed as proposed.
- (b) If actual construction of the emission units differs from the construction proposed in the application, the source may not begin operation until the permit has been revised pursuant to 326 IAC 2 and an Operation Permit Validation Letter is issued.
- (c) The Permittee shall attach the Operation Permit Validation Letter received from the Office of Air Quality (OAQ) to this permit.

### **B.4 Permit Term [326 IAC 2-8-4(2)][326 IAC 2-1.1-9.5][IC 13-15-3-6(a)]**

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- (a) This permit, F167-24127-00141, is issued for a fixed term of five (5) years from the issuance date of this permit, as determined in accordance with IC 4-21.5-3-5(f) and IC 13-15-5-3. Subsequent revisions, modifications, or amendments of this permit do not affect the expiration date of this permit.
- (b) If IDEM, OAQ and VCAPC, upon receiving a timely and complete renewal permit application, fails to issue or deny the permit renewal prior to the expiration date of this permit, this existing permit shall not expire and all terms and conditions shall continue in effect, until the renewal permit has been issued or denied.

### **B.5 Term of Conditions [326 IAC 2-1.1-9.5]**

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Notwithstanding the permit term of a permit to construct, a permit to operate, or a permit modification, any condition established in a permit issued pursuant to a permitting program approved in the state implementation plan shall remain in effect until:

- (a) the condition is modified in a subsequent permit action pursuant to Title I of the Clean Air Act; or
- (b) the emission unit to which the condition pertains permanently ceases operation.

### **B.6 Enforceability [326 IAC 2-8-6]**

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- (a) Unless otherwise stated, all terms and conditions in this permit, including any provisions designed to limit the source's potential to emit, are enforceable by IDEM and VCAPC, the United States Environmental Protection Agency (U.S. EPA) and by citizens in accordance with the Clean Air Act.

- (b) Unless otherwise stated, all terms and conditions in this permit that are local requirements, including any provisions designed to limit the source's potential to emit, are enforceable by VCAPC.

B.7 Severability [326 IAC 2-8-4(4)]

The provisions of this permit are severable; a determination that any portion of this permit is invalid shall not affect the validity of the remainder of the permit.

B.8 Property Rights or Exclusive Privilege [326 IAC 2-8-4(5)(D)]

This permit does not convey any property rights of any sort or any exclusive privilege.

B.9 Duty to Provide Information [326 IAC 2-8-4(5)(E)]

- (a) The Permittee shall furnish to IDEM, OAQ and VCAPC, within a reasonable time, any information that IDEM, OAQ and VCAPC may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The submittal by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1). Upon request, the Permittee shall also furnish to IDEM, OAQ and VCAPC copies of records required to be kept by this permit.
- (b) For information furnished by the Permittee to IDEM, OAQ, the Permittee may include a claim of confidentiality in accordance with 326 IAC 17.1. When furnishing copies of requested records directly to U. S. EPA, the Permittee may assert a claim of confidentiality in accordance with 40 CFR 2, Subpart B.

B.10 Certification [326 IAC 2-8-3(d)][326 IAC 2-8-4(3)(C)(i)][326 IAC 2-8-5(1)]

- (a) Where specifically designated by this permit or required by an applicable requirement, any application form, report, or compliance certification submitted shall contain certification by an "authorized individual" of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
- (b) One (1) certification shall be included, using the attached Certification Form, with each submittal requiring certification. One (1) certification may cover multiple forms in one (1) submittal.
- (c) An "authorized individual" is defined at 326 IAC 2-1.1-1(1).

B.11 Annual Compliance Certification [326 IAC 2-8-5(a)(1)]

- (a) The Permittee shall annually submit a compliance certification report which addresses the status of the source's compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. The initial certification shall cover the time period from the date of final permit issuance through December 31 of the same year. All subsequent certifications shall cover the time period from January 1 to December 31 of the previous year, and shall be submitted no later than July 1 of each year to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

and

Vigo County Air Pollution Control  
103 South Third Street

Terre Haute, Indiana 47807

- (b) The annual compliance certification report required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ and VCAPC, on or before the date it is due.
- (c) The annual compliance certification report shall include the following:
  - (1) The appropriate identification of each term or condition of this permit that is the basis of the certification;
  - (2) The compliance status;
  - (3) Whether compliance was continuous or intermittent;
  - (4) The methods used for determining the compliance status of the source, currently and over the reporting period consistent with 326 IAC 2-8-4(3); and
  - (5) Such other facts, as specified in Sections D of this permit, as IDEM, OAQ and VCAPC may require to determine the compliance status of the source.

The submittal by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

B.12 Compliance Order Issuance [326 IAC 2-8-5(b)]

IDEM, OAQ and VCAPC may issue a compliance order to this Permittee upon discovery that this permit is in nonconformance with an applicable requirement. The order may require immediate compliance or contain a schedule for expeditious compliance with the applicable requirement.

B.13 Preventive Maintenance Plan [326 IAC 1-6-3][326 IAC 2-8-4(9)][326 IAC 2-8-5(a)(1)]

- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) within ninety (90) days after issuance of this permit, including the following information on each facility:
  - (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;
  - (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and
  - (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

If, due to circumstances beyond the Permittee's control, the PMPs cannot be prepared and maintained within the above time frame, the Permittee may extend the date an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

and

Vigo County Air Pollution Control  
103 South Third Street

Terre Haute, Indiana 47807

The PMP extension notification does not require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) A copy of the PMPs shall be submitted to IDEM, OAQ and VCAPC upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ and VCAPC. IDEM, OAQ and VCAPC may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or is the primary contributor to an exceedance of any limitation on emissions or potential to emit. The PMPs do not require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (c) To the extent the Permittee is required by 40 CFR Part 60/63 to have an Operation Maintenance, and Monitoring (OMM) Plan for a unit, such Plan is deemed to satisfy the PMP requirements of 326 IAC 1-6-3 for that unit.

B.14 Emergency Provisions [326 IAC 2-8-12]

- (a) An emergency, as defined in 326 IAC 2-7-1(12), is not an affirmative defense for an action brought for noncompliance with a federal or state health-based emission limitation except as provided in 326 IAC 2-8-12.
- (b) An emergency, as defined in 326 IAC 2-7-1(12), constitutes an affirmative defense to an action brought for noncompliance with a health-based or technology-based emission limitation if the affirmative defense of an emergency is demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that describe the following:
  - (1) An emergency occurred and the Permittee can, to the extent possible, identify the causes of the emergency;
  - (2) The permitted facility was at the time being properly operated;
  - (3) During the period of an emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit;
  - (4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ, and VCAPC within four (4) daytime business hours after the beginning of the emergency, or after the emergency was discovered or reasonably should have been discovered;

Telephone Number: 1-800-451-6027 (ask for Office of Air Quality, Compliance Section), or

Telephone Number: 317-233-0178 (ask for Compliance Section)

Facsimile Number: 317-233-6865

Vigo County Air Pollution Control phone: (812) 462-3433; fax: (812) 462-3447

- (5) For each emergency lasting one (1) hour or more, the Permittee submitted the attached Emergency Occurrence Report Form or its equivalent, either by mail or facsimile to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

and

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, Indiana 47807

within two (2) working days of the time when emission limitations were exceeded due to the emergency.

The notice fulfills the requirement of 326 IAC 2-8-4(3)(C)(ii) and must contain the following:

- (A) A description of the emergency;
- (B) Any steps taken to mitigate the emissions; and
- (C) Corrective actions taken.

The notification which shall be submitted by the Permittee does not require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (6) The Permittee immediately took all reasonable steps to correct the emergency.
- (c) In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.
- (d) This emergency provision supersedes 326 IAC 1-6 (Malfunctions). This permit condition is in addition to any emergency or upset provision contained in any applicable requirement.
- (e) The Permittee seeking to establish the occurrence of an emergency shall make records available upon request to ensure that failure to implement a PMP did not cause or contribute to an exceedance of any limitations on emissions. However, IDEM, OAQ and VCAPC may require that the Preventive Maintenance Plans required under 326 IAC 2-8-3(c)(6) be revised in response to an emergency.
- (f) Failure to notify IDEM, OAQ and VCAPC by telephone or facsimile of an emergency lasting more than one (1) hour in accordance with (b)(4) and (5) of this condition shall constitute a violation of 326 IAC 2-8 and any other applicable rules.
- (g) Operations may continue during an emergency only if the following conditions are met:
  - (1) If the emergency situation causes a deviation from a technology-based limit, the Permittee may continue to operate the affected emitting facilities during the emergency provided the Permittee immediately takes all reasonable steps to correct the emergency and minimize emissions.
  - (2) If an emergency situation causes a deviation from a health-based limit, the Permittee may not continue to operate the affected emissions facilities unless:
    - (A) The Permittee immediately takes all reasonable steps to correct the emergency situation and to minimize emissions; and
    - (B) Continued operation of the facilities is necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw material of substantial economic value.

Any operations shall continue no longer than the minimum time required to prevent the situations identified in (g)(2)(B) of this condition.

- (h) The Permittee shall include all emergencies in the Quarterly Deviation and Compliance Monitoring Report.

B.15 Prior Permits Superseded [326 IAC 2-1.1-9.5]

- (a) All terms and conditions of permits established prior to F167-24127-00141 and issued pursuant to permitting programs approved into the state implementation plan have been either:
- (1) incorporated as originally stated,
  - (2) revised, or
  - (3) deleted.
- (b) All previous registrations and permits are superseded by this permit.

B.16 Termination of Right to Operate [326 IAC 2-8-9][326 IAC 2-8-3(h)]

The Permittee's right to operate this source terminates with the expiration of this permit unless a timely and complete renewal application is submitted at least nine (9) months prior to the date of expiration of the source's existing permit, consistent with 326 IAC 2-8-3(h) and 326 IAC 2-8-9.

B.17 Deviations from Permit Requirements and Conditions [326 IAC 2-8-4(3)(C)(ii)]

- (a) Deviations from any permit requirements (for emergencies see Section B - Emergency Provisions), the probable cause of such deviations, and any response steps or preventive measures taken shall be reported to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

and

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, Indiana 47807

using the attached Quarterly Deviation and Compliance Monitoring Report, or its equivalent. A deviation required to be reported pursuant to an applicable requirement that exists independent of this permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report.

The Quarterly Deviation and Compliance Monitoring Report does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit.

B.18 Permit Modification, Reopening, Revocation and Reissuance, or Termination [326 IAC 2-8-4(5)(C)][326 IAC 2-8-7(a)][326 IAC 2-8-8]

- (a) This permit may be modified, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a Federally Enforceable State Operating Permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any condition of this permit. [326 IAC 2-8-4(5)(C)] The notification by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) This permit shall be reopened and revised under any of the circumstances listed in IC 13-15-7-2 or if IDEM, OAQ and VCAPC determines any of the following:
  - (1) That this permit contains a material mistake.
  - (2) That inaccurate statements were made in establishing the emissions standards or other terms or conditions.
  - (3) That this permit must be revised or revoked to assure compliance with an applicable requirement. [326 IAC 2-8-8(a)]
- (c) Proceedings by IDEM, OAQ and VCAPC to reopen and revise this permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. Such reopening and revision shall be made as expeditiously as practicable. [326 IAC 2-8-8(b)]
- (d) The reopening and revision of this permit, under 326 IAC 2-8-8(a), shall not be initiated before notice of such intent is provided to the Permittee by IDEM, OAQ and VCAPC at least thirty (30) days in advance of the date this permit is to be reopened, except that IDEM, OAQ and VCAPC may provide a shorter time period in the case of an emergency. [326 IAC 2-8-8(c)]

**B.19 Permit Renewal [326 IAC 2-8-3(h)]**

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- (a) The application for renewal shall be submitted using the application form or forms prescribed by IDEM, OAQ and VCAPC and shall include the information specified in 326 IAC 2-8-3. Such information shall be included in the application for each emission unit at this source, except those emission units included on the trivial or insignificant activities list contained in 326 IAC 2-7-1(21) and 326 IAC 2-7-1(40). The renewal application does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

Request for renewal shall be submitted to:

Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

and

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, Indiana 47807

- (b) A timely renewal application is one that is:
  - (1) Submitted at least nine (9) months prior to the date of the expiration of this permit; and
  - (2) If the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ and VCAPC on or before the date it is due.
- (c) If the Permittee submits a timely and complete application for renewal of this permit, the source's failure to have a permit is not a violation of 326 IAC 2-8 until IDEM, OAQ and VCAPC takes final action on the renewal application, except that this protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to

submit by the deadline specified in writing by IDEM, OAQ and VCAPC any additional information identified as being needed to process the application.

B.20 Permit Amendment or Revision [326 IAC 2-8-10][326 IAC 2-8-11.1]

(a) Permit amendments and revisions are governed by the requirements of 326 IAC 2-8-10 or 326 IAC 2-8-11.1 whenever the Permittee seeks to amend or modify this permit.

(b) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

and

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, Indiana 47807

Any such application shall be certified by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

(c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-8-10(b)(3)]

B.21 Operational Flexibility [326 IAC 2-8-15][326 IAC 2-8-11.1]

(a) The Permittee may make any change or changes at the source that are described in 326 IAC 2-8-15(b) through (d) without a prior permit revision, if each of the following conditions is met:

- (1) The changes are not modifications under any provision of Title I of the Clean Air Act;
- (2) Any approval required by 326 IAC 2-8-11.1 has been obtained;
- (3) The changes do not result in emissions which exceed the limitations provided in this permit (whether expressed herein as a rate of emissions or in terms of total emissions);
- (4) The Permittee notifies the:

Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

and

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, Indiana 47807

and

United States Environmental Protection Agency, Region V  
Air and Radiation Division, Regulation Development Branch - Indiana (AR-18J)  
77 West Jackson Boulevard  
Chicago, Illinois 60604-3590

in advance of the change by written notification at least ten (10) days in advance of the proposed change. The Permittee shall attach every such notice to the Permittee's copy of this permit; and

- (5) The Permittee maintains records on-site, on a rolling five (5) year basis, which document all such changes and emission trades that are subject to 326 IAC 2-8-15(b) through (d). The Permittee shall make such records available, upon reasonable request, for public review.

Such records shall consist of all information required to be submitted to IDEM, OAQ and VCAPC in the notices specified in 326 IAC 2-8-15(b)(2), (c)(1), and (d).

- (b) **Emission Trades [326 IAC 2-8-15(c)]**  
The Permittee may trade emissions increases and decreases at the source, where the applicable SIP provides for such emission trades without requiring a permit revision, subject to the constraints of Section (a) of this condition and those in 326 IAC 2-8-15(c).
- (c) **Alternative Operating Scenarios [326 IAC 2-8-15(d)]**  
The Permittee may make changes at the source within the range of alternative operating scenarios that are described in the terms and conditions of this permit in accordance with 326 IAC 2-8-4(7). No prior notification of IDEM, OAQ, or U.S. EPA is required.
- (d) Backup fuel switches specifically addressed in, and limited under, Section D of this permit shall not be considered alternative operating scenarios. Therefore, the notification requirements of part (a) of this condition do not apply.

**B.22 Source Modification Requirement [326 IAC 2-8-11.1]**

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A modification, construction, or reconstruction is governed by the requirements of 326 IAC 2 and 326 IAC 2-8-11.1.

**B.23 Inspection and Entry [326 IAC 2-8-5(a)(2)][IC 13-14-2-2][IC 13-17-3-2][IC 13-30-3-1]**

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Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee's right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, U.S. EPA, and VCAPC or an authorized representative to perform the following:

- (a) Enter upon the Permittee's premises where a FESOP source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- (b) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- (c) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;
- (d) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and

- (e) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

B.24 Transfer of Ownership or Operational Control [326 IAC 2-8-10]

- (a) The Permittee must comply with the requirements of 326 IAC 2-8-10 whenever the Permittee seeks to change the ownership or operational control of the source and no other change in the permit is necessary.
- (b) Any application requesting a change in the ownership or operational control of the source shall contain a written agreement containing a specific date for transfer of permit responsibility, coverage and liability between the current and new Permittee. The application shall be submitted to:

Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

and

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, Indiana 47807

The application which shall be submitted by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-8-10(b)(3)]

B.25 Annual Fee Payment [326 IAC 2-7-19] [326 IAC 2-8-4(6)] [326 IAC 2-8-16][326 IAC 2-1.1-7]

- (a) The Permittee shall pay annual fees to IDEM, OAQ and VCAPC within thirty (30) calendar days of receipt of a billing. Pursuant to 326 IAC 2-7-19(b), if the Permittee does not receive a bill from IDEM, OAQ and VCAPC the applicable fee is due April 1 of each year.
- (b) Failure to pay may result in administrative enforcement action or revocation of this permit.
- (c) The Permittee may call the following telephone numbers: 1-800-451-6027 or 317-233-4230 (ask for OAQ, Billing, Licensing, and Training Section), to determine the appropriate permit fee.

B.26 Credible Evidence [326 IAC 2-8-4(3)][326 IAC 2-8-5][62 FR 8314] [326 IAC 1-1-6]

For the purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of any condition of this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether the Permittee would have been in compliance with the condition of this permit if the appropriate performance or compliance test or procedure had been performed.

## SECTION C SOURCE OPERATION CONDITIONS

Entire Source

### Emission Limitations and Standards [326 IAC 2-8-4(1)]

#### C.1 Overall Source Limit [326 IAC 2-8]

The purpose of this permit is to limit this source's potential to emit to less than major source levels for the purpose of Section 502(a) of the Clean Air Act.

- (a) Pursuant to 326 IAC 2-8:
- (1) The potential to emit any regulated pollutant, except particulate matter (PM), from the entire source shall be limited to less than one-hundred (100) tons per twelve (12) consecutive month period.
  - (2) The potential to emit any individual hazardous air pollutant (HAP) from the entire source shall be limited to less than ten (10) tons per twelve (12) consecutive month period; and
  - (3) The potential to emit any combination of HAPs from the entire source shall be limited to less than twenty-five (25) tons per twelve (12) consecutive month period.
- (b) The potential to emit particulate matter (PM) from the entire source shall be limited to less than two hundred fifty (250) tons per twelve (12) consecutive month period. This limitation shall make the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)) not applicable.
- (c) The potential to emit particulate matter (PM) from the boilers shall be limited to less than one hundred (100) tons per twelve (12) consecutive month period. This limitation shall make the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)) not applicable.
- (d) This condition shall include all emission points at this source including those that are insignificant as defined in 326 IAC 2-7-1(21). The source shall be allowed to add insignificant activities not already listed in this permit, provided that the source's potential to emit does not exceed the above specified limits.
- (e) Section D of this permit contains independently enforceable provisions to satisfy this requirement.

#### C.2 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

#### C.3 Open Burning [326 IAC 4-1] [IC 13-17-9]

The Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6. The previous sentence notwithstanding, the Permittee may

open burn in accordance with an open burning approval issued by the Commissioner under 326 IAC 4-1-4.1.

C.4 Incineration [326 IAC 4-2] [326 IAC 9-1-2]

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The Permittee shall not operate an incinerator or incinerate any waste or refuse except as provided in 326 IAC 4-2 and 326 IAC 9-1-2.

C.5 Fugitive Dust Emissions [326 IAC 6-4]

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The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions).

C.6 Stack Height [326 IAC 1-7]

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The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted.

C.7 Fugitive Particulate Matter Emission Limitations [326 IAC 6 5]

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Pursuant to 326 IAC 6 5 (Fugitive Particulate Matter Emission Limitations), fugitive particulate matter emissions shall be controlled according to the plan submitted on July 27, 2007. The plan is included as Attachment A.

C.8 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18] [40 CFR 61, Subpart M]

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- (a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.
- (b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:
  - (1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or
  - (2) If there is a change in the following:
    - (A) Asbestos removal or demolition start date;
    - (B) Removal or demolition contractor; or
    - (C) Waste disposal site.
- (c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).
- (d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3).

All required notifications shall be submitted to:

Indiana Department of Environmental Management  
Asbestos Section, Office of Air Quality  
100 North Senate Avenue  
MC 61-52 IGCN 1003

Indianapolis, Indiana 46204-2251

and

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, Indiana 47807

The notice shall include a signed certification from the owner or operator that the information provided in this notification is correct and that only Indiana licensed workers and project supervisors will be used to implement the asbestos removal project. The notifications do not require a certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (e) **Procedures for Asbestos Emission Control**  
The Permittee shall comply with the applicable emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). Per 326 IAC 14-10-1, emission control requirements are applicable for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.
- (f) **Demolition and Renovation**  
The Permittee shall thoroughly inspect the affected facility or part of the facility where the demolition or renovation will occur for the presence of asbestos pursuant to 40 CFR 61.145(a).
- (g) **Indiana Accredited Asbestos Inspector**  
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Accredited Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos.

### **Testing Requirements [326 IAC 2-8-4(3)]**

#### **C.9 Performance Testing [326 IAC 3-6]**

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- (a) Compliance testing on new emissions units shall be conducted within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up, if specified in Section D of this approval. All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

and

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, Indiana 47807

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) The Permittee shall notify IDEM, OAQ of the actual test date at least fourteen (14) days prior to the actual test date. The notification submitted by the Permittee does not require certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ and VCAPC not later than forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ and VCAPC if the Permittee submits to IDEM, OAQ, a reasonable written explanation not later than five (5) days prior to the end of the initial forty-five (45) day period.

### **Compliance Requirements [326 IAC 2-1.1-11]**

#### **C.10 Compliance Requirements [326 IAC 2-1.1-11]**

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The commissioner may require stack testing, monitoring, or reporting at any time to assure compliance with all applicable requirements by issuing an order under 326 IAC 2-1.1-11. Any monitoring or testing shall be performed in accordance with 326 IAC 3 or other methods approved by the commissioner or the U. S. EPA.

### **Compliance Monitoring Requirements [326 IAC 2-8-4][326 IAC 2-8-5(a)(1)]**

#### **C.11 Compliance Monitoring [326 IAC 2-8-4(3)][326 IAC 2-8-5(a)(1)]**

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Unless otherwise specified in this permit, all monitoring and record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance. If required by Section D, the Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment. If due to circumstances beyond its control, that equipment cannot be installed and operated within ninety (90) days, the Permittee may extend the compliance schedule related to the equipment for an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

and

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, Indiana 47807

in writing, prior to the end of the initial ninety (90) day compliance schedule, with full justification of the reasons for the inability to meet this date.

The notification which shall be submitted by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

Unless otherwise specified in the approval for the new emission unit(s), compliance monitoring for new emission units or emission units added through a permit revision shall be implemented when operation begins.

#### **C.12 Maintenance of Continuous Emission Monitoring Equipment [326 IAC 2-7-5(3)(A)(iii)]**

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- (a) The Permittee shall install, calibrate, maintain, and operate all necessary continuous emission monitoring systems (CEMS) and related equipment.
- (b) In the event that a breakdown of a continuous emission monitoring system occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem.

- (c) Whenever a continuous emission monitor other than an opacity monitor is malfunctioning or will be down for calibration, maintenance, or repairs for a period of four (4) hours or more, a calibrated backup CEMS shall be brought online within four (4) hours of shutdown of the primary CEMS, and shall be operated until such time as the primary CEMS is back in operation.
- (d) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a continuous emission monitoring system pursuant to

**C.13 Monitoring Methods [326 IAC 3] [40 CFR 60] [40 CFR 63]**

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Any monitoring or testing required by Section D of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, 40 CFR 60 Appendix B, 40 CFR 63, or other approved methods as specified in this permit.

**C.14 Instrument Specifications [326 IAC 2-1.1-11] [326 IAC 2-8-4(3)][326 IAC 2-8-5(1)]**

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- (a) When required by any condition of this permit, an analog instrument used to measure a parameter related to the operation of an air pollution control device shall have a scale such that the expected maximum reading for the normal range shall be no less than twenty percent (20%) of full scale.
- (b) The Permittee may request that the IDEM, OAQ approve the use of an instrument that does not meet the above specifications provided the Permittee can demonstrate that an alternative instrument specification will adequately ensure compliance with permit conditions requiring the measurement of the parameters.

**Corrective Actions and Response Steps [326 IAC 2-8-4][326 IAC 2-8-5(a)(1)]**

**C.15 Risk Management Plan [326 IAC 2-8-4] [40 CFR 68]**

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If a regulated substance, as defined in 40 CFR 68, is present at a source in more than a threshold quantity, the Permittee must comply with the applicable requirements of 40 CFR 68.

**C.16 Response to Excursions or Exceedances [326 IAC 2-8-4] [326 IAC 2-8-5]**

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- (a) Upon detecting an excursion or exceedance, the Permittee shall restore operation of the emissions unit (including any control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.
- (b) The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Corrective actions may include, but are not limited to, the following:
  - (1) initial inspection and evaluation;
  - (2) recording that operations returned to normal without operator action (such as through response by a computerized distribution control system); or
  - (3) any necessary follow-up actions to return operation to within the indicator range, designated condition, or below the applicable emission limitation or standard, as applicable.
- (c) A determination of whether the Permittee has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include, but is not limited to, the following:
  - (1) monitoring results;

- (2) review of operation and maintenance procedures and records; and/or
- (3) inspection of the control device, associated capture system, and the process.
- (d) Failure to take reasonable response steps shall be considered a deviation from the permit.
- (e) The Permittee shall maintain the following records:
  - (1) monitoring data;
  - (2) monitor performance data, if applicable; and
  - (3) corrective actions taken.

**C.17 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-8-4][326 IAC 2-8-5]**

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.
- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one hundred twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline.
- (c) IDEM, OAQ reserves the authority to take any actions allowed under law in response to noncompliant stack tests.

The response action documents submitted pursuant to this condition do require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

**Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)]**

**C.18 General Record Keeping Requirements [326 IAC 2-8-4(3)] [326 IAC 2-8-5]**

- (a) Records of all required monitoring data, reports and support information required by this permit shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be physically present or electronically accessible at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner or VCAPC makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner or VCAPC within a reasonable time.
- (b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

**C.19 General Reporting Requirements [326 IAC 2-8-4(3)(C)] [326 IAC 2-1.1-11]**

- (a) The Permittee shall submit the attached Quarterly Deviation and Compliance Monitoring Report or its equivalent. Any deviation from permit requirements, the date(s) of each deviation, the cause of the deviation, and the response steps taken must be reported. This report shall be submitted within thirty (30) days of the end of the reporting period. The Quarterly Deviation and Compliance Monitoring Report shall include the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (b) The report required in (a) of this condition and reports required by conditions in Section D of this permit shall be submitted to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

and

Vigo County Air Pollution Control  
103 South Third Street  
Terre Haute, Indiana 47807

- (c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ and VCAPC on or before the date it is due.
- (d) Unless otherwise specified in this permit, all reports required in Section D of this permit shall be submitted within thirty (30) days of the end of the reporting period. All reports do require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (e) The first report shall cover the period commencing on the date of issuance of this permit and ending on the last day of the reporting period. Reporting periods are based on calendar years, unless otherwise specified in this permit. For the purpose of this permit "calendar year" means the twelve (12) month period from January 1 to December 31 inclusive.
- (f) The Permittee shall make the information required to be documented and maintained in accordance with (c) in Section C- General Record Keeping Requirements available for review upon a request for inspection by IDEM, OAQ and VCAPC. The general public may request this information from the IDEM, OAQ and VCAPC under 326 IAC 17.1.

### **Stratospheric Ozone Protection**

#### **C.20 Compliance with 40 CFR 82 and 326 IAC 22-1**

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Pursuant to 40 CFR 82 (Protection of Stratospheric Ozone), Subpart F, except as provided for motor vehicle air conditioners in Subpart B, the Permittee shall comply with the standards for recycling and emissions reduction:

- (a) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 40 CFR 82.156.
- (b) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 40 CFR 82.158.
- (c) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 40 CFR 82.161.

## SECTION D.1 FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-8-4(10)] :

- (a) One (1) grain receiving area, approved for construction in 2007, with particulate emissions controlled by a baghouse, identified as CE001, and exhausting through stack SV001, consisting of the following:
- (1) Two (2) truck receiving areas, identified as EU001 and EU002, each with a maximum capacity of 280 tons of corn per hour, consisting of one (1) truck unloading conveyor, identified as EU004, with a maximum capacity of 560 tons of corn per hour.
  - (2) One (1) railcar receiving area, identified as EU003, with a maximum capacity of 1120 tons of corn per hour, consisting of one (1) rail unloading conveyor, identified as EU005, with a maximum capacity of 1120 tons of corn per hour.
  - (3) One (1) storage bin fill conveyor, identified as EU006, with a maximum capacity of 1120 tons of corn per hour.
  - (4) One (1) elevator to surge weigh hopper, identified as EU007, with a maximum capacity of 1120 tons of corn per hour.
  - (5) One (1) surge weigh hopper, identified as EU008, with a maximum capacity of 1120 tons of corn per hour.
  - (6) One (1) elevator to fill conveyor, identified as EU009, with a maximum capacity of 1120 tons of corn per hour.
  - (7) One (1) storage bin fill conveyor, identified as EU010, with a maximum capacity of 1680 tons of corn per hour.
  - (8) Two (2) corn storage silos, identified as EU011 and EU012, each with a maximum storage capacity of 16,800 tons of corn.
  - (9) One (1) storage bin reclaim conveyor, identified as EU013, with a maximum capacity of 280 tons of corn per hour.
  - (10) One (1) elevator leg to mill surge bin, identified as EU014, with a maximum capacity of 280 tons of corn per hour.
- (b) One (1) internal handling system, approved for construction in 2007, with particulate emissions controlled by a baghouse, identified as CE002, and exhausting through stack SV002, consisting of the following:
- (1) One (1) mill surge bin, identified as EU015, with a maximum capacity of 280 tons of corn per hour.
  - (2) One (1) transfer conveyor to milling, identified as EU016, with a maximum capacity of 280 tons of corn per hour.
  - (3) One (1) corn scalper, identified as EU017, with a maximum capacity of 280 tons of corn per hour.
  - (4) One (1) hammermill feed conveyor, identified as EU018, with a maximum capacity of 280 tons of corn per hour.
  - (5) One (1) elevator leg to corn slurry blender, identified as EU023, with a maximum capacity of 168 tons of corn per hour.

- (c) Four (4) hammermills, identified as EU019, EU020, EU021, and EU022, approved for construction in 2007, each with a maximum throughput rate of 42 tons of corn per hour, controlled by baghouses CE003, CE004, CE005, and CE006, respectively, and exhausting through a combined stack SV003.
- (d) One (1) ground corn transfer conveyor, identified as EU035, approved for construction in 2007, with a maximum capacity of 0.16 tons of corn per hour, controlled by baghouse CE007, exhausting to stack SV004.
- (e) One (1) DDGS reclaim operation, approved for construction in 2007, with a maximum throughput rate of 150 tons of corn per hour, controlled by baghouse CE010, exhausting to stack SV007, consisting of the following:
  - (1) One (1) DDGS elevator leg to conveyor, identified as EU049.
  - (2) One (1) DDGS conveyor to surge bin, identified as EU050.
  - (3) One (1) DDGS surge bin, identified as EU051.
  - (4) One (1) DDGS conveyor to elevator leg, identified as EU052.
  - (5) One (1) DDGS elevator leg to loadout conveyors, identified as EU053.
- (f) One (1) DDGS loading system, approved for construction in 2007, with a maximum throughput rate of 150 tons of corn per hour, consisting of the following:
  - (1) One (1) DDGS truck loadout, identified as EU054, controlled by baghouses CE011 and CE012, exhausting to stack SV008.
  - (2) One (1) DDGS rail loadout, identified as EU055, controlled by baghouses CE013 and CE014, exhausting to stack SV009.

**Insignificant Activity:**

- (c) Paved roads and parking lots with public access. [326 IAC 6-4]

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2 AND 326 IAC 2-8-11.1, WITH CONDITIONS LISTED BELOW.

***Construction Conditions***

**General Construction Conditions**

D.1.1 Permit No Defense

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This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated there under, as well as other applicable local, state, and federal requirements.

**Effective Date of the Permit**

D.1.2 Effective Date of the Permit [IC13-15-5-3]

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Pursuant to IC 13-15-5-3, this section of this permit becomes effective upon its issuance.

**D.1.3 Modification to Construction Conditions [326 IAC 2]**

All requirements of these construction conditions shall remain in effect unless modified in a manner consistent with procedures established for revisions pursuant to 326 IAC 2.

***Operation Conditions***

**Emission Limitations and Standards [326 IAC 2-8-4(1)]**

**D.1.4 PM and PM10 Emissions [326 IAC 2-2] [326 IAC 2-8-4]**

Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following emission limits for the grain receiving and DDGS handling operations:

The PM and PM10 emissions from the following units shall not exceed the emission limits listed in the table below.

Unit ID	Unit Description	Baghouse ID	PM/PM10 Emission Limit (lbs/hr)
EU001, EU002, EU003, EU004, EU005, EU006, EU007, EU008, EU009, EU010, EU011, EU012, EU013, EU014	Grain Receiving Area	CE001	1.54
EU015, EU016, EU017, EU018, EU023	Internal Handling System	CE002	0.17
EU019	Hammermill #1	CE003	0.25
EU020	Hammermill #2	CE004	0.25
EU021	Hammermill #3	CE005	0.25
EU022	Hammermill #4	CE006	0.25
EU035	Ground Corn Transfer Conveyor	CE007	0.02
EU049, EU050, EU051, EU052, EU053	DDGS Reclaim Operation	CE010	0.17
EU054	DDGS Truck Loadout	CE011 and CE012	0.12
EU055	DDGS Rail Loadout	CE013 and CE014	0.12

Combined with the PM10 emissions from other emission units, the PM10 emissions from the entire source are limited to less than 100 tons/yr. Combined with the PM emissions from other emission units, the PM emissions from the entire source are limited to less than 250 tons/yr. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program) and 326 IAC 2-2 (PSD) are not applicable.

**D.1.5 Particulate Emission Limitations [326 IAC 6-3-2]**

Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), particulate emissions from each of following operations shall not exceed the pound per hour limits listed in the table below:

Unit ID	Unit Description	Max. Throughput Rate (tons/hr)	Particulate Emission Limit (lbs/hr)
EU001, EU002, EU003, EU004, EU005, EU006, EU007, EU008, EU009, EU010, EU011, EU012, EU013, EU014	Grain Receiving Area	1,680	84.5

Unit ID	Unit Description	Max. Throughput Rate (tons/hr)	Particulate Emission Limit (lbs/hr)
EU015, EU016, EU017, EU018, EU023	Internal Handling System	280	62.2
EU019	Hammermill #1	42	56.6
EU020	Hammermill #2	42	56.6
EU021	Hammermill #3	42	56.6
EU022	Hammermill #4	42	56.6
EU035	Ground Corn Transfer Conveyor	0.16	1.3
EU049, EU050, EU051, EU052, EU053	DDGS Reclaim Operation	150	63.0
EU054	DDGS Truck Loadout	150	63.0
EU055	DDGS Rail Loadout	150	63.0

The pounds per hour limitations were calculated using the following equations:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and } P = \text{process weight rate in tons per hour}$$

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 55.0 P^{0.11} - 40 \quad \text{where } E = \text{rate of emission in pounds per hour; and } P = \text{process weight rate in tons per hour}$$

Pursuant to 326 IAC 6-3-2(e)(3), when the process weight exceeds 200 tons per hour, the maximum allowable emission may exceed the emission limits shown in the table above, provided the concentration of particulate matter in the gas discharged to the atmosphere is less than 0.10 pounds per 1,000 pounds of gases.

**D.1.6 Preventive Maintenance Plan [326 IAC 2-8-4(9)]**

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and their control devices.

**Compliance Determination Requirements**

**D.1.7 Particulate Control**

- (a) In order to comply with Conditions D.1.4(a) and D.1.5, each of the following emission units shall be controlled by the associated baghouse, as listed in the table below, when these units are in operation:

Unit ID	Unit Description	Baghouse ID
EU001, EU002, EU003, EU004, EU005, EU006, EU007, EU008, EU009, EU010, EU011, EU012, EU013, EU014	Grain Receiving Area	CE001
EU015, EU016, EU017, EU018, EU023	Internal Handling System	CE002
EU019	Hammermill #1	CE003

Unit ID	Unit Description	Baghouse ID
EU020	Hammermill #2	CE004
EU021	Hammermill #3	CE005
EU022	Hammermill #4	CE006
EU035	Ground Corn Transfer Conveyor	CE007
EU049, EU050, EU051, EU052, EU053	DDGS Reclaim Operation	CE010
EU054	DDGS Truck Loadout	CE011 and CE012
EU055	DDGS Rail Loadout	CE012 and CE014

- (b) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

**D.1.8 Testing Requirements [326 IAC 2-8-5(a)(1), (4)] [326 IAC 2-1.1-11]**

- (a) In order to demonstrate compliance with Conditions D.1.4(a) and D.1.5, the Permittee shall perform PM and PM10 testing for baghouses CE001, CE002, CE007, CE010, CE011, CE012, CE013, and CE014 within 60 days after achieving the maximum capacity, but not later than 180 days after initial startup, utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing. PM10 includes filterable and condensible PM10.
- (b) The Permittee shall perform PM and PM10 testing for one of the hammermill baghouses (CE003, CE004, CE005, and CE006), within 60 days after achieving the maximum capacity, but not later than 180 days after initial startup, utilizing methods as approved by the Commissioner. These tests shall be repeated on a different baghouse at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing. PM10 includes filterable and condensible PM10.

**Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]**

**D.1.9 Visible Emissions Notations**

- (a) Visible emission notations of the baghouse stack exhausts (stacks SV001, SV002, SV003, SV004, SV007, SV008, SV009) shall be performed once per day during normal daylight operations. A trained employee or a trained contractor shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee or contractor is a person who has worked or trained at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.

- (e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

#### D.1.10 Parametric Monitoring

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- (a) The Permittee shall record the pressure drop across the baghouses used in conjunction with the grain receiving operations (EU001 through EU014), the internal handling system (EU015 through EU018, and EU023), the hammermills (EU019 through EU022), the ground corn transfer conveyor (EU035), the DDGS reclaim operation (EU049 through EU053), and the DDGS loadout operations (EU054 and EU055), at least once per day when these units are in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 1.0 to 6.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.
- (b) The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ and shall be calibrated at least once every six (6) months.

#### D.1.11 Broken or Failed Bag Detection

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- (a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).
- (b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

### **Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]**

#### D.1.12 Record Keeping Requirements

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- (a) To document compliance with Condition D.1.9, the Permittee shall maintain records of daily visible emission notations of the baghouse stack exhausts. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day).
- (b) To document compliance with Condition D.1.10, the Permittee shall maintain daily records of pressure drop for baghouses during normal operation. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of a pressure drop reading (e.g. the process did not operate that day).
- (c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

**SECTION D.2 FACILITY OPERATION CONDITIONS – Fermentation and Distillation Processes, Dryer and Cooling System, and Ethanol Loadout Racks**

**Facility Description [326 IAC 2-8-4(10)]:**

(g) One DDGS cooling system, approved for construction in 2007, with a maximum throughput rate of 371,250 tons per year, consisting of the following:

- (1) One (1) fluidized bed DDGS cooler, identified as EU047, controlled by a baghouse, identified as CE008, and exhausting through stack SV005, and one of either two (2) thermal oxidizers, identified as CE015 and CE016, exhausting through stack SV010.
- (2) One (1) fluidized bed DDGS cooler, identified as EU048, controlled by a baghouse, identified as CE009, and exhausting through stack SV006, and one of either two (2) thermal oxidizers, identified as CE015 and CE016, exhausting through stack SV010.

Note: A portion of the exhaust from the baghouses CE008 and CE009 exhaust to one of two (2) thermal oxidizers, identified as CE015 and CE016 to provide combustion air.

(h) One (1) fermentation process, approved for construction in 2007, with emissions controlled by a wet scrubber, identified as CE020, and one of either two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010, and consisting of the following:

- (1) Two (2) slurry tanks, identified as EU024 and EU025.
- (2) Two (2) yeast tanks, identified as EU026a and EU026b.
- (3) Seven (7) fermenters, identified as EU027, EU028, EU029, EU030, EU031, EU032, and EU033.
- (4) One (1) beer well, identified as EU034.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

(i) One (1) distillation process, approved for construction in 2007, with emissions controlled by either one of two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010, and consisting of the following:

- (1) One (1) degasser, identified as EU036.
- (2) One (1) rectifier condenser, as part of the beer, stripper and rectifier column train, identified as EU037.
- (3) One (1) molecular sieve unit, identified as EU038.
- (4) One (1) centrifuge system, identified as EU041.
- (5) One (1) centrate tank, identified as EU042.
- (6) One (1) evaporation system, identified as EU043.
- (7) Two (2) centrifuges, approved for construction in 2007.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

- (j) Two (2) DDGS drying systems, approved for construction in 2007, each with a maximum throughput rate of 25 tons of DDGS per hour, consisting of the following:
- (1) One (1) natural gas fired DDGS dryer, identified as EU045, with a maximum heat input rate of 92 MMBtu/hr, with emissions venting through either one of two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010.
  - (2) One (1) natural gas fired DDGS dryer, identified as EU046, with a maximum heat input rate of 92 MMBtu/hr, with emissions venting through either one of two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

**THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2-1 AND 326 IAC 2-8-11.1, WITH CONDITIONS LISTED BELOW.**

***Construction Conditions***

**General Construction Conditions**

**D.2.1 Permit No Defense**

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This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated there under, as well as other applicable local, state, and federal requirements.

**Effective Date of the Permit**

**D.2.2 Effective Date of the Permit [IC13-15-5-3]**

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Pursuant to IC 13-15-5-3, this section of this permit becomes effective upon its issuance.

**D.2.3 Modification to Construction Conditions [326 IAC 2]**

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All requirements of these construction conditions shall remain in effect unless modified in a manner consistent with procedures established for revisions pursuant to 326 IAC 2.

***Operation Conditions***

**Emission Limitations and Standards [326 IAC 2-8-4(1)]**

**D.2.4 FESOP Limits [326 IAC 2-2] [326 IAC 2-8-4] [326 IAC 2-4.1]**

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Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable:

- (a) The Permittee shall comply with the following emission limits for the baghouses CE008 and CE009, which are used to control emissions from the DDGS Coolers (EU047 and EU048):
  - (1) PM/PM10 emissions from each stack (SV005 and SV006) shall not exceed 0.36 lbs/hr.
  - (2) The combined VOC emissions from stacks SV005 and SV006 shall not exceed 2.16 lbs/hr.

- (b) The Permittee shall comply with the following requirements for the fermentation scrubber (CE020):
  - (1) The scrubber (CE020) shall not vent to the atmosphere more than 350 hours per twelve (12) consecutive month period with compliance determined at the end of each month.
  - (2) VOC emissions shall not exceed 15.8 lbs/hr.
  - (3) Acetaldehyde emissions shall not exceed 3.99 lbs/hr.
  - (4) Acrolein emissions shall not exceed 0.12 lbs/hr.
  - (5) Total HAP emissions shall not exceed 4.38 lbs/hr.
  
- (c) The Permittee shall comply with the following emission limits for the thermal oxidizers (CE015 and CE016), which are used to control the emissions from the fermentation scrubber (CE020), distillation process, and the dryer and cooling system:
  - (1) PM/PM10 emissions shall not exceed 10.17 lbs/hr from stack SV010.
  - (2) VOC emissions shall not exceed 10.6 lbs/hr from stack SV010.
  - (3) CO emissions shall not exceed 11.0 lbs/hr from stack SV010.
  - (4) NOx emissions shall not exceed 9.7 lbs/hr from stack SV010.
  - (5) Acrolein emissions shall not exceed 1.51 lbs/hr from stack SV010.
  - (6) Acetaldehyde emissions shall not exceed 0.59 lbs/hr from stack SV010.
  - (7) Total HAP emissions shall not exceed 3.61 lbs/hr from stack SV010.

Combined with the PM/PM10, VOC, CO, and NOx emissions from other units, the PM/PM10, VOC, CO, NOx emissions from the entire source are each limited to less than 100 tons/yr. Combined with the HAP emissions from other units, the HAP emissions from the entire source are limited to less than 10 tons/yr for a single HAP and less than 25 tons/yr for total HAPs. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program), 326 IAC 2-2 (PSD), and 326 IAC 2-4.1 (MACT) are not applicable.

#### D.2.5 VOC Emissions [326 IAC 8-5-6]

Pursuant to 326 IAC 8-5-6 (Fuel Grade Ethanol Production at Dry Mills), the Permittee shall comply with the following:

- (a) The VOC emissions from the fermentation process shall be controlled by scrubber CE020, or by the combination of wet scrubber CE020 followed by one of two (2) thermal oxidizers, identified as CE015 and CE016.
- (b) The VOC emissions from the distillation process and DDGS Dryers shall be collected and controlled by one of two (2) thermal oxidizers, identified as CE015 and CE016.
- (c) The overall efficiency for the scrubber CE020 (including the capture efficiency and destruction efficiency) shall be at least 98%, or the VOC outlet concentration shall not exceed 20 ppmv.
- (d) The overall efficiency for each of the thermal oxidizers, identified as CE015 and CE016 (including the capture efficiency and destruction efficiency) shall be at least 98%, or the VOC outlet concentration shall not exceed 10 ppmv.

**D.2.6 Particulate Emission Limitations [326 IAC 6-3-2]**

Pursuant to 326 IAC 6-3-2, particulate emissions from each of the following operations shall not exceed the pound per hour limits listed in the table below:

Unit ID	Unit Description	Max. Throughput Rate (tons/hr)	Particulate Emission Limit (lbs/hr)
EU045	DDGS Dryer	25	31.7
EU046	DDGS Dryer	25	31.7
EU047	DDGS Cooler #1	25	31.7
EU048	DDGS Cooler #2	25	31.7

The pounds per hour limitations were calculated using the following equation:

Interpolation of the data for the process weight rate in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 55.0 P^{0.11} - 40 \quad \text{where } E = \text{rate of emission in pounds per hour; and} \\ P = \text{process weight rate in tons per hour}$$

**D.2.7 Preventive Maintenance Plan [326 IAC 2-8-4(9)]**

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and any control devices.

**Compliance Determination Requirements**

**D.2.8 VOC and HAP Control**

(a) In order to comply with Conditions D.2.4 and D.2.5:

- (1) The scrubber CE020 shall be in operation, and control emissions from the fermentation process at all times that the fermentation process is in operation.
- (2) The thermal oxidizers CE015 and CE016 shall be in operation and control emissions from the distillation process, DDGS dryers (EU045 and EU046), and the DDGS coolers (EU047 and EU048) at all times that these units are in operation.

(b) In order to comply with Conditions D.2.4(a)(1) and D.2.6:

- (1) The baghouses CE008 and CE009 shall be in operation and control emissions from the DDGS coolers (EU047 and EU048) at all times that these units are in operation.
- (2) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

**D.2.9 Testing Requirements [326 IAC 2-8-5(a)(1), (4)] [326 IAC 2-1.1-11] [326 IAC 2-2] [326 IAC 8-5-6(d)]**

(a) In order to demonstrate compliance with Conditions D.2.4 and D.2.5:

- (1) The Permittee shall perform VOC, Acetaldehyde, and Acrolein testing for the scrubber (CE020) within 60 days after achieving maximum capacity, but not later than 180 days after initial startup, utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years

from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing.

- (2) The Permittee shall perform PM, PM10, VOC, NOx, CO, Acetaldehyde, and Acrolein testing for the thermal oxidizers common stack (SV010) within 60 days after achieving maximum capacity, but not later than 180 days after initial startup, utilizing methods as approved by the Commissioner. PM10 includes filterable and condensable PM10. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing.
- (b) In order to demonstrate compliance with Conditions D.2.4(a)(1) and D.2.6, the Permittee shall perform PM, PM10, and VOC testing for one of the DDGS cooler stacks (SV005 and SV006) within 60 days after achieving the maximum capacity, but not later than 180 days after initial startup, utilizing methods as approved by the Commissioner. These tests shall be repeated on a different baghouse at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing. PM10 includes filterable and condensable PM10.

### **Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]**

#### **D.2.10 Visible Emissions Notations**

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- (a) Visible emission notations of the scrubber CE020 stack, thermal oxidizers common stack (SV010), and the baghouse stacks (SV005 and SV006) shall be performed once per day during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

#### **D.2.11 Thermal Oxidizer Temperature [326 IAC 8-5-6]**

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- (a) A continuous monitoring system shall be calibrated, maintained, and operated on each of the thermal oxidizers (CE015 and CE016) for measuring operating temperature. For the purpose of this condition, continuous means no less than once per minute. The output of this system shall be recorded as 3-hour average. From the date of startup until the approved stack test results are available, the Permittee shall operate the thermal oxidizers at or above the 3-hour average temperature of 1,400°F.
- (b) The Permittee shall determine the 3-hour average temperature from the most recent valid stack test that demonstrates compliance with limits in Conditions D.2.4 and D.2.5, as approved by IDEM.
- (c) On and after the date the approved stack test results are available, the Permittee shall operate the thermal oxidizers at or above the 3-hour average temperature as observed during the compliant stack test.

#### D.2.12 Parametric Monitoring [326 IAC 8-5-6]

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- (a) The Permittee shall determine the appropriate duct pressure or fan amperage from the most recent valid stack test that demonstrates compliance with limits in Conditions D.2.4 and D.2.5, as approved by IDEM.
- (b) The duct pressure or fan amperage shall be observed at least once per day when the thermal oxidizer is in operation. On and after the date the approved stack test results are available, the duct pressure or fan amperage shall be maintained within the normal range as established in the most recent compliant stack test.

#### D.2.13 Scrubber Pressure Drop and Flow Rate [326 IAC 8-5-6]

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The Permittee shall monitor and record the pressure drop and the flow rate of the scrubber CE020 at least once per day when the fermentation process is in operation. When for any one reading, the pressure drop across the scrubber is outside the normal range of 2.0 and 8.0 inches of water, or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. When for any one reading, the flow rate of the scrubber is less than the normal minimum of 35 gallons per minute, or a minimum established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range or a flow rate that is below the above mentioned minimum is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

The instruments used for determining the pressure drop and flow rate shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

#### D.2.14 Scrubber Detection

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In the event that a scrubber malfunction has been observed:

Failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions). Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

#### D.2.15 Baghouse Parametric Monitoring

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- (a) The Permittee shall record the pressure drop across each baghouse used in conjunction with the DDGS coolers (EU047 and EU048) at least once per day when this unit is in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 1.0 to 6.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.
- (b) The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ and shall be calibrated at least once every six (6) months.

#### D.2.16 Broken or Failed Bag Detection

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- (a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

- (b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

### **Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]**

#### D.2.17 Record Keeping Requirements

- (a) To document compliance with Condition D.2.4(b)(1), the Permittee shall maintain monthly records of the amount of hours the scrubber (CE020) is vented to the atmosphere.
- (b) To document compliance with Condition D.2.10, the Permittee shall maintain records of once per day visible emission notations of the stacks SV005, SV006, and SV010. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day).
- (c) To document compliance with Condition D.2.11, the Permittee shall maintain continuous temperature records for each of the thermal oxidizers and the 3-hour average temperature used to demonstrate compliance during the most recent compliant stack test.
- (d) To document compliance with Condition D.2.12, the Permittee shall maintain daily records of the duct pressure or fan amperage for each of the thermal oxidizers (CE015 and CE016). The Permittee shall include in its daily record when a duct pressure or fan amperage reading is not taken and the reason for the lack of a duct pressure or fan amperage reading (e.g. the process did not operate that day).
- (e) To document compliance with Condition D.2.13, the Permittee shall maintain daily records of pressure drop and flow rate for the scrubbers CE020 during normal operation. The Permittee shall include in its daily record when a pressure drop or flow rate reading is not taken and the reason for the lack of a pressure drop or flow rate reading (e.g. the process did not operate that day).
- (f) To document compliance with Condition D.2.15, the Permittee shall maintain daily records of pressure drop for the baghouses during normal operation. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of a pressure drop reading (e.g. the process did not operate that day).
- (g) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

#### D.2.18 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.2.4(b)(1) shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

## SECTION D.3 FACILITY OPERATION CONDITIONS – Boilers

### Facility Description [326 IAC 2-8-4(10)] :

- (k) Two (2) natural gas fired boilers, identified as EU056 and EU057, approved for construction in 2007, each with a maximum heat input rate of 150 MMBtu/hr, with emissions exhausting to stack SV011.

Under 40 CFR 60, Subpart Db, the boilers are considered to be new steam generating units.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2-1 AND 326 IAC 2-8-11.1, WITH CONDITIONS LISTED BELOW.

### **Construction Conditions**

#### **General Construction Conditions**

##### D.3.1 Permit No Defense

This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated there under, as well as other applicable local, state, and federal requirements.

#### **Effective Date of the Permit**

##### D.3.2 Effective Date of the Permit [IC13-15-5-3]

Pursuant to IC 13-15-5-3, this section of this permit becomes effective upon its issuance.

##### D.3.3 Modification to Construction Conditions [326 IAC 2]

All requirements of these construction conditions shall remain in effect unless modified in a manner consistent with procedures established for revisions pursuant to 326 IAC 2.

### **Operation Conditions**

#### **Emission Limitations and Standards [326 IAC 2-8-4(1)]**

##### D.3.4 FESOP Limits [326 IAC 2-2] [326 IAC 2-8-4]

Pursuant to 326 IAC 2-8-4, and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following requirements for the boilers (EU056 and EU057):

- (a) The boilers shall only burn natural gas.
- (b) The input of natural gas to the boilers shall be limited to 2,576 MMCF per twelve (12) consecutive month period, with compliance determined at the end of each month.
- (c) NO<sub>x</sub> emissions shall not exceed 40.8 pounds per MMCF.
- (d) CO emissions shall not exceed 35.7 pounds per MMCF.

Combined with the PM, PM<sub>10</sub>, NO<sub>x</sub> and CO emissions from other units, the PM, PM<sub>10</sub>, NO<sub>x</sub> and CO emissions from the entire source are limited to less than one hundred (100) tons per year. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program) and 326 IAC 2-2 (PSD) are not applicable.

**D.3.5 Particulate Emissions [326 IAC 6-2-4]**

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Pursuant to 326 IAC 6-2-4 (Particulate Emission Limitations for Sources of Indirect Heating: Emission Limitations for facilities specified in 326 IAC 6-2-1(d)), the PM emissions from the boilers shall each not exceed 0.247 pounds per million Btu heat input (lb/MMBtu). This limitation was calculated using the following equation:

$$P_t = \frac{1.09}{Q^{0.26}} \quad \text{where } Q = \text{total source heat input capacity (MMBtu/hr)}$$

For these units,  $Q = 300$  MMBtu/hr.

**D.3.6 Preventive Maintenance Plan [326 IAC 2-8-4(9)]**

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A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and their control devices.

**Compliance Determination Requirements**

**D.3.7 Continuous Emissions Monitoring [326 IAC 3-5] [326 IAC 12] [40 CFR 60, Subpart Db] [326 IAC 2-2] [326 IAC 2-8-4]**

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Pursuant to 326 IAC 3-5 (Continuous Monitoring of Emissions) and 40 CFR 60.48b (Emission Monitoring for Particulate Matter and Nitrogen Oxides) and in order to demonstrate compliance with Condition D.3.4, a continuous monitoring system, which meets the performance specifications of 326 IAC 3-5-2, shall be calibrated, maintained, and operated for each boiler EU056, and EU057 for measuring NO<sub>x</sub>.

**D.3.8 NO<sub>x</sub> Monitoring System Downtime [326 IAC 2-2] [326 IAC 2-8-4] [326 IAC 12] [40 CFR 60, Subpart Db]**

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In instances of NO<sub>x</sub> continuous emission monitoring system (CEMS) downtime, the Permittee shall obtain NO<sub>x</sub> emissions data according to the requirements of 40 CFR 60.48b(f).

**D.3.9 Testing Requirements [326 IAC 2-8-5(a)(1), (4)] [326 IAC 2-1.1-11]**

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In order to demonstrate compliance with Condition D.3.4, the Permittee shall perform NO<sub>x</sub> and CO testing for one of the boilers (EU056 and EU057) within sixty (60) days after achieving the maximum capacity, but not later than one hundred eighty (180) days after initial startup, utilizing methods as approved by the Commissioner. These tests shall be repeated on a different boiler at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing.

**Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)] [326 IAC 2-8-16]**

**D.3.10 Record Keeping Requirements**

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- (a) To document compliance with Condition D.3.4, the Permittee shall maintain daily records of:
  - (1) the amount of natural gas combusted in the boilers; and
  - (2) all NO<sub>x</sub> continuous emissions monitoring data, pursuant to 326 IAC 3-5-6.
- (b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

#### D.3.11 Reporting Requirements

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A quarterly summary of the information to document compliance with Condition D.3.4 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

## SECTION D.4 FACILITY OPERATION CONDITIONS – Ethanol Loading Racks

### Facility Description [326 IAC 2-8-4(10)]:

- (I) One (1) ethanol loadout system, approved for construction in 2007, consisting of the following:
- (1) One (1) ethanol loading rack for trucks, identified as EU039, with a maximum throughput rate of 72,000 gallons per hour, with emissions venting to a flare identified as CE017, with a maximum heat input capacity of 6.8 MMBtu/hr, exhausting through stack SV012. The flare has a continuous pilot with a heat input capacity of 0.1 MMBtu/hr.
  - (2) One (1) ethanol loading rack for railcars, identified as EU040, with a maximum throughput rate of 120,000 gallons per hour, with emissions venting to a flare identified as CE018, with a maximum heat input capacity of 6.8 MMBtu/hr, exhausting through stack SV013. The flare has a continuous pilot with a heat input capacity of 0.1 MMBtu/hr.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2-1 AND 326 IAC 2-8-11.1, WITH CONDITIONS LISTED BELOW.

### ***Construction Conditions***

#### **General Construction Conditions**

##### D.4.1 Permit No Defense

This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

#### **Effective Date of the Permit**

##### D.4.2 Effective Date of the Permit [IC13-15-5-3]

Pursuant to IC 13-15-5-3, this section of this permit becomes effective upon its issuance.

##### D.4.3 Modification to Construction Conditions [326 IAC 2]

All requirements of these construction conditions shall remain in effect unless modified in a manner consistent with procedures established for revisions pursuant to 326 IAC 2.

### ***Operation Conditions***

#### **Emission Limitations and Standards [326 IAC 2-8-4(1)]**

##### D.4.4 FESOP Limits [326 IAC 2-2] [326 IAC 2-8-4]

Pursuant to 326 IAC 2-8-4 (FESOP), and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following emission limits for the ethanol loading racks:

- (a) The denatured ethanol load-out rate shall not exceed 115,500,000 gallons per twelve (12) consecutive month period with compliance determined at the end of each month.

- (b) The Permittee shall use a smokeless flare CE017 to control the emissions from the loading rack when loading denatured ethanol to trucks.
- (c) The Permittee shall use a smokeless flare CE018 to control the emissions from the loading rack when loading denatured ethanol to railcars.
- (d) The operating hours for the flares CE017 and CE018 shall each not exceed 963 hours per twelve (12) consecutive month period with compliance determined at the end of each month.
- (e) CO emissions from flares CE017 and CE018 shall each not exceed 2.52 lbs/hr.
- (f) NOx emissions from flares CE017 and CE018 shall each not exceed 0.46 lbs/hr.
- (g) VOC emissions from flares CE017 and CE018 shall not exceed 0.11 lb/kgal.
- (h) The ethanol loading rack system (EU039 and EU040) shall utilize submerged loading methods.
- (i) The railcars and trucks shall not use vapor balance services during ethanol loading.

Combined with the VOC, CO, NOx and HAP emissions from other units, the VOC, CO, and NOx emissions from the entire source are each limited to less than 100 tons/yr and the HAP emissions from the entire source are limited to less than 10 tons/yr for a single HAP and less than 25 tons/yr for total HAPs. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program) and 326 IAC 2-2 (PSD) are not applicable.

#### D.4.5 VOC Emissions [326 IAC 8-5-6]

Pursuant to 326 IAC 8-5-6 (Fuel Grade Ethanol Production at Dry Mills), the Permittee shall comply with the following:

- (a) The VOC emissions from the ethanol truck loading rack (EU039) shall be collected and controlled by enclosed flare CE017.
- (b) The VOC emissions from the ethanol rail loading rack (EU040) shall be collected and controlled by enclosed flare CE018.
- (c) The overall control efficiency for each of the enclosed flares CE007 and CE008 (including the capture efficiency and destruction efficiency) shall be at least 98%.

#### D.4.6 Preventive Maintenance Plan [326 IAC 2-8-4(9)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and the control device.

### **Compliance Determination Requirements**

#### D.4.7 VOC Control

In order to comply with Conditions D.4.4 and D.4.5:

- (a) The enclosed flare CE017 shall be in operation and control emissions from the ethanol truck loading rack (EU039) at all times when the ethanol truck loading rack (EU039) is in operation.
- (b) The enclosed flare CE018 shall be in operation and control emissions from the ethanol rail loading rack (EU040) at all times when the ethanol rail loading rack (EU040) is in operation.

**D.4.8 Testing Requirements [326 IAC 2-8-5(a)(1), (4)] [326 IAC 2-1.1-11] [326 IAC 2-2] [326 IAC 8-5-6(d)]**

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In order to demonstrate compliance with Conditions D.4.4 and D.4.5, the Permittee shall perform VOC (including emission rate, destruction efficiency, and capture efficiency) testing for enclosed flares CE017 and CE018, within 60 days after achieving the maximum capacity, but not later than 180 days after initial startup, utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing.

**Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]**

**D.4.9 Flare Pilot Flame [326 IAC 8-5-6]**

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In order to comply with Conditions D.4.4 and D.4.5, the Permittee shall monitor the presence of a flare pilot flame for each flare (CE017 and CE018) using a thermocouple or any other equivalent device to detect the presence of a flame when the ethanol loading racks (EU039 and EU040) are in operation.

**Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]**

**D.4.10 Record Keeping Requirements**

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- (a) To document compliance with Condition D.4.4(a), the Permittee shall maintain monthly records of the total combined amount of denatured ethanol loaded out from the loading racks (EU039 and EU040).
- (b) To document compliance with Condition D.4.4(d), the Permittee shall maintain monthly records of the operating hours for each flare (CE017 and CE018).
- (c) To document compliance with Condition D.4.9, the Permittee shall maintain records of temperature or other parameters sufficient to demonstrate the presence of a pilot flame when the ethanol loading racks (EU039 and EU040) are in operation.
- (d) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

**D.4.11 Reporting Requirements**

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A quarterly summary of the information to document compliance with Condition D.4.4(a) and D.4.4(d) shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

## SECTION D.5 FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-8-4(10)]:

#### Insignificant Activities

- (a) One (1) anaerobic treatment module, identified as EU044, approved for construction in 2007, controlled by a flare, identified as CE019, with a maximum rate of combustion during full operation of 4.62 MMBtu/hr, exhausting to stack SV014. The flare has a continuous 0.1 MMBtu/hr pilot. [326 IAC 2-8-4]
- (b) One (1) emergency firewater pump, identified as EU058, approved for construction in 2007, with a maximum power output rate of 202 horsepower, and exhausting to stack SV015.

Under 40 CFR 60, Subpart IIII, the diesel fire pump EU058 is considered a new certified National Fire Protection Association (NFPA) fire pump.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### Emission Limitations and Standards [326 IAC 2-8-4(1)]

#### D.5.1 FESOP Limits [326 IAC 2-2] [326 IAC 2-8-4] [326 IAC 2-4.1]

Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following:

- (a) The operating hours for the biomethanator flare (CE019) shall not exceed 876 hours per twelve (12) consecutive month period with compliance determined at the end of each month.
- (b) The operating hours for the diesel fire pump (EU058) shall not exceed 300 hours per twelve (12) consecutive month period with compliance determined at the end of each month.

Combined with the emission limits from other emission units, the emissions of each regulated pollutant from the entire source are each limited to less than 100 tons/yr. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program), and 326 IAC 2-2 (PSD) are not applicable.

### Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]

#### D.5.2 Record Keeping Requirements

- (a) To document compliance with Condition D.5.1(a), the Permittee shall maintain monthly records of the operating hours for the biomethanator flare (CE019).
- (b) To document compliance with Condition D.5.1(b), the Permittee shall maintain monthly records of the operating hours for the diesel fire pump (EU058).
- (c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

#### D.5.3 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.5.1(a) and D.5.1(b) shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

## SECTION D.6 FACILITY OPERATION CONDITIONS – Storage Tanks

### Facility Description [326 IAC 2-8-4(10)]:

#### Insignificant Activities

- (i) Other emission units, not regulated by a NESHAP, with PM<sub>10</sub>, NO<sub>x</sub>, and SO<sub>2</sub> emissions less than five (5) pounds per hour or twenty-five (25) pounds per day, CO emissions less than twenty-five (25) pounds per day, VOC emissions less than three (3) pounds per hour or fifteen (15) pounds per day, lead emissions less than six-tenths (0.6) tons per year or three and twenty-nine hundredths (3.29) pounds per day, and emitting greater than one (1) pound per day but less than five (5) pounds per day or one (1) ton per year of a single HAP, or emitting greater than one (1) pound per day but less than twelve and five tenths (12.5) pounds per day or two and five tenths (2.5) ton per year of any combination of HAPs:
- (1) One (1) tank for 190-proof ethanol, identified as T001, approved for construction in 2007, with a maximum capacity of 300,000 gallons. [40 CFR 60, Subpart Kb]
  - (2) One (1) tank for 200-proof ethanol, identified as T002, approved for construction in 2007, with a maximum capacity of 300,000 gallons of 200-proof ethanol. [40 CFR 60, Subpart Kb]
  - (3) One (1) gasoline tank, identified as T003, approved for construction in 2007, storing petroleum material with a vapor pressure equivalent to or less than the vapor pressure of 13 RVP gasoline, with a maximum capacity of 152,000 gallons. [326 IAC 8-4-3] [40 CFR 60, Subpart Kb]
  - (4) Two (2) denatured storage tanks, identified as T004 and T005, approved for construction in 2007, each with a maximum capacity of 1,500,000 gallons. [40 CFR 60, Subpart Kb]

Under 40 CFR 60, Subpart Kb, storage tanks T001 through T005 are considered to be new volatile organic liquid storage tanks.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### Emission Limitations and Standards [326 IAC 2-8-4(1)]

#### D.6.1 Volatile Organic Compounds (VOC) [326 IAC 8-4-3]

- (a) Pursuant to 326 IAC 8-4-3(b)(1)(B), storage tank T003 shall be maintained such that there are no visible holes, tears, or other openings in the seal or any seal fabric or materials.
- (b) Pursuant to 326 IAC 8-4-3(b)(1)(C), all openings, except stub drains, shall be equipped with covers, lids, or seals such that:
  - (1) The cover, lid or seal shall be in the closed position at all times except when in actual use;
  - (2) Automatic bleeder vents shall be closed at all times except when the roof is floated off or landed on the roof leg supports;
  - (3) Rim vents, if provided, shall be set to open when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.
- (c) Pursuant to 326 IAC 8-4-3(d) (Petroleum Liquid Storage Facilities), the Permittee shall maintain the following records for a period of two (2) years for tank T003:

- (1) The types of volatile petroleum liquid stored;
- (2) The maximum true vapor pressure of the liquids as stored; and
- (3) The results of the inspections performed on the storage vessels.

The above records shall be made available to the IDEM, OAQ upon written request.

**D.6.2 Preventive Maintenance Plan [326 IAC 2-8-4(9)]**

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A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and any control devices.

**Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]**

**D.6.3 Record Keeping Requirements**

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- (a) To document compliance with Condition D.6.1, the Permittee shall maintain the following records for tank T003:
  - (1) The types of volatile petroleum liquid stored;
  - (2) The maximum true vapor pressure of the liquids as stored; and
  - (3) The results of the inspections performed on the storage vessels.
- (b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

## SECTION E.1 FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-8-4(10)]:

(h) One (1) fermentation process, approved for construction in 2007, with emissions controlled by a wet scrubber, identified as CE020, and one of either two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010, and consisting of the following:

- (1) Two (2) slurry tanks, identified as EU024 and EU025.
- (2) One (1) yeast slurry tank, identified as EU026.
- (3) Seven (7) fermenters, identified as EU027, EU028, EU029, EU030, EU031, EU032, and EU033.
- (4) One (1) beer well, identified as EU034.
- (5) Two (2) liquefaction tanks, identified as T006 and T007, approved for construction in 2007, each with a maximum capacity of 109,000 gallons.
- (6) One (1) cook water tank, identified as T011, approved for construction in 2007, with a maximum capacity of 264,000 gallons.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

(i) One (1) distillation process, approved for construction in 2007, with emissions controlled by one of either two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010, and consisting of the following:

- (1) One (1) degasser, identified as EU036.
- (2) One (1) rectifier condenser, as part of the beer, stripper and rectifier column train, identified as EU037.
- (3) One (1) molecular sieve unit, identified as EU038.
- (4) One (1) centrifuge system, identified as EU041.
- (5) One (1) centrate tank, identified as EU042.
- (6) One (1) evaporation system, identified as EU043.
- (7) One (1) thin stillage tank, identified as T008, approved for construction in 2007, with a maximum capacity of 264,000 gallons.
- (8) One (1) whole stillage tank, identified as T009, approved for construction in 2007, with a maximum capacity of 264,000 gallons.
- (9) One (1) syrup tank, identified as T010, approved for construction in 2007, with a maximum capacity of 360,000 gallons.
- (10) One (1) process condensate tank, identified as TK-1012, approved for construction in 2007, with a maximum capacity of 264,000 gallons.
- (11) Two (2) centrifuges, approved for construction in 2007.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

- (l) One (1) ethanol loadout system, approved for construction in 2007, consisting of the following:
- (1) One (1) ethanol loading rack for trucks, identified as EU039, with a maximum throughput rate of 72,000 gallons per hour, with emissions venting to a flare identified as CE017, with a maximum heat input capacity of 6.8 MMBtu/hr, exhausting through stack SV012. The flare has a continuous pilot with a heat input capacity of 0.1 MMBtu/hr.
  - (2) One (1) ethanol loading rack for railcars, identified as EU040, with a maximum throughput rate of 120,000 gallons per hour, with emissions venting to a flare identified as CE018, with a maximum heat input capacity of 6.8 MMBtu/hr, exhausting through stack SV013. The flare has a continuous pilot with a heat input capacity of 0.1 MMBtu/hr.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### **New Source Performance Standards (NSPS) Requirements [326 IAC 2-7-5(1)]**

#### **E.1.1 General Provisions Relating to New Source Performance Standards [326 IAC 12-1] [40 CFR Part 60, Subpart A]**

- (a) Pursuant to 40 CFR 60.1, the Permittee shall comply with the provisions of 40 CFR Part 60 Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1, except as otherwise specified in 40 CFR Part 60, Subpart VV.
- (b) Pursuant to 40 CFR 60.19, the Permittee shall submit all required notifications and reports to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue,  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

#### **E.1.2 Standard of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry [40 CFR Part 60, Subpart VV] [326 IAC 12]**

Pursuant to 40 CFR Part 60, Subpart VV, the Permittee shall comply with the provisions of Standard of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, which are incorporated by reference as 326 IAC 12, as follows:

### **Subpart VV—Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry**

#### **§ 60.480 Applicability and designation of affected facility.**

(a)(1) The provisions of this subpart apply to affected facilities in the synthetic organic chemicals manufacturing industry.

(2) The group of all equipment (defined in §60.481) within a process unit is an affected facility.

(b) Any affected facility under paragraph (a) of this section that commences construction or modification after January 5, 1981, shall be subject to the requirements of this subpart.

(c) Addition or replacement of equipment for the purpose of process improvement which is accomplished without a capital expenditure shall not by itself be considered a modification under this subpart.

(d)(1) If an owner or operator applies for one or more of the exemptions in this paragraph, then the owner or operator shall maintain records as required in §60.486(i).

(2) Any affected facility that has the design capacity to produce less than 1,000 Mg/yr (1,102 ton/yr) is exempt from §60.482.

(3) If an affected facility produces heavy liquid chemicals only from heavy liquid feed or raw materials, then it is exempt from §60.482.

(4) Any affected facility that produces beverage alcohol is exempt from §60.482.

(5) Any affected facility that has no equipment in VOC service is exempt from §60.482.

(e) *Alternative means of compliance*—(1) *Option to comply with part 65*. Owners or operators may choose to comply with the provisions of 40 CFR part 65, subpart F, to satisfy the requirements of §§60.482 through 60.487 for an affected facility. When choosing to comply with 40 CFR part 65, subpart F, the requirements of §60.485(d), (e), and (f), and §60.486(i) and (j) still apply. Other provisions applying to an owner or operator who chooses to comply with 40 CFR part 65 are provided in 40 CFR 65.1.

(2) *Part 60, subpart A*. Owners or operators who choose to comply with 40 CFR part 65, subpart F must also comply with §§60.1, 60.2, 60.5, 60.6, 60.7(a)(1) and (4), 60.14, 60.15, and 60.16 for that equipment. All sections and paragraphs of subpart A of this part that are not mentioned in this paragraph (e)(2) do not apply to owners or operators of equipment subject to this subpart complying with 40 CFR part 65, subpart F, except that provisions required to be met prior to implementing 40 CFR part 65 still apply. Owners and operators who choose to comply with 40 CFR part 65, subpart F, must comply with 40 CFR part 65, subpart A.

[48 FR 48335, Oct. 18, 1983, as amended at 49 FR 22607, May 30, 1984; 65 FR 61762, Oct. 17, 2000; 65 FR 78276, Dec. 14, 2000]

**§ 60.481 Definitions.**

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act or in subpart A of part 60, and the following terms shall have the specific meanings given them.

*Capital expenditure* means, in addition to the definition in 40 CFR 60.2, an expenditure for a physical or operational change to an existing facility that:

(a) Exceeds P, the product of the facility's replacement cost, R, and an adjusted annual asset guideline repair allowance, A, as reflected by the following equation:  $P = R \times A$ , where

(1) The adjusted annual asset guideline repair allowance, A, is the product of the percent of the replacement cost, Y, and the applicable basic annual asset guideline repair allowance, B, divided by 100 as reflected by the following equation:

$$A = Y \times (B \div 100);$$

(2) The percent Y is determined from the following equation:  $Y = 1.0 - 0.575 \log X$ , where X is 1982 minus the year of construction; and

(3) The applicable basic annual asset guideline repair allowance, B, is selected from the following table consistent with the applicable subpart:

Table for Determining Applicable for B

Subpart applicable to facility	Value of B to be used in equation
VV.....	12.5
DDD.....	12.5
GGG.....	7.0
KKK.....	4.5

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*Closed vent system* means a system that is not open to the atmosphere and that is composed of hard-piping, ductwork, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device or back to a process.

*Connector* means flanged, screwed, welded, or other joined fittings used to connect two pipe lines or a pipe line and a piece of process equipment.

*Control device* means an enclosed combustion device, vapor recovery system, or flare.

*Distance piece* means an open or enclosed casing through which the piston rod travels, separating the compressor cylinder from the crankcase.

*Double block and bleed system* means two block valves connected in series with a bleed valve or line that can vent the line between the two block valves.

*Duct work* means a conveyance system such as those commonly used for heating and ventilation systems. It is often made of sheet metal and often has sections connected by screws or crimping. Hard-piping is not ductwork.

*Equipment* means each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, and flange or other connector in VOC service and any devices or systems required by this subpart.

*First attempt at repair* means to take rapid action for the purpose of stopping or reducing leakage of organic material to atmosphere using best practices.

*Fuel gas* means gases that are combusted to derive useful work or heat.

*Fuel gas system* means the offsite and onsite piping and flow and pressure control system that gathers gaseous stream(s) generated by onsite operations, may blend them with other sources of gas, and transports the gaseous stream for use as fuel gas in combustion devices or in-process combustion equipment, such as furnaces and gas turbines, either singly or in combination.

*Hard-piping* means pipe or tubing that is manufactured and properly installed using good engineering judgement and standards such as ASME B31.3, Process Piping (available from the American Society of Mechanical Engineers, PO Box 2900, Fairfield, NJ 07007-2900).

*In gas/vapor service* means that the piece of equipment contains process fluid that is in the gaseous state at operating conditions.

*In heavy liquid service* means that the piece of equipment is not in gas/vapor service or in light liquid service.

*In light liquid service* means that the piece of equipment contains a liquid that meets the conditions specified in §60.485(e).

*In-situ sampling systems* means nonextractive samplers or in-line samplers.

*In vacuum service* means that equipment is operating at an internal pressure which is at least 5 kilopascals (kPa)(0.7 psia) below ambient pressure.

*In VOC service* means that the piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight. (The provisions of §60.485(d) specify how to determine that a piece of equipment is not in VOC service.)

*Liquids dripping* means any visible leakage from the seal including spraying, misting, clouding, and ice formation.

*Open-ended valve or line* means any valve, except safety relief valves, having one side of the valve seat in contact with process fluid and one side open to the atmosphere, either directly or through open piping.

*Pressure release* means the emission of materials resulting from system pressure being greater than set pressure of the pressure relief device.

*Process improvement* means routine changes made for safety and occupational health requirements, for energy savings, for better utility, for ease of maintenance and operation, for correction of design deficiencies, for bottleneck removal, for changing product requirements, or for environmental control.

*Process unit* means components assembled to produce, as intermediate or final products, one or more of the chemicals listed in §60.489 of this part. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product.

*Process unit shutdown* means a work practice or operational procedure that stops production from a process unit or part of a process unit. An unscheduled work practice or operational procedure that stops production from a process unit or part of a process unit for less than 24 hours is not a process unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping production are not process unit shutdowns.

*Quarter* means a 3-month period; the first quarter concludes on the last day of the last full month during the 180 days following initial startup.

*Repaired* means that equipment is adjusted, or otherwise altered, in order to eliminate a leak as indicated by one of the following: an instrument reading of 10,000 ppm or greater, indication of liquids dripping, or indication by a sensor that a seal or barrier fluid system has failed.

*Replacement cost* means the capital needed to purchase all the depreciable components in a facility.

*Sampling connection system* means an assembly of equipment within a process unit used during periods of representative operation to take samples of the process fluid. Equipment used to take nonroutine grab samples is not considered a sampling connection system.

*Sensor* means a device that measures a physical quantity or the change in a physical quantity such as temperature, pressure, flow rate, pH, or liquid level.

*Synthetic organic chemicals manufacturing industry* means the industry that produces, as intermediates or final products, one or more of the chemicals listed in §60.489.

*Volatile organic compounds* or VOC means, for the purposes of this subpart, any reactive organic compounds as defined in §60.2 Definitions.

[48 FR 48335, Oct. 18, 1983, as amended at 49 FR 22607, May 30, 1984; 49 FR 26738, June 29, 1984; 60 FR 43258, Aug. 18, 1995; 65 FR 61762, Oct. 17, 2000; 65 FR 78276, Dec. 14, 2000]

#### **§ 60.482-1 Standards: General.**

(a) Each owner or operator subject to the provisions of this subpart shall demonstrate compliance with the requirements of §§60.482–1 through 60.482–10 or §60.480(e) for all equipment within 180 days of initial startup.

(b) Compliance with §§60.482–1 to 60.482–10 will be determined by review of records and reports, review of performance test results, and inspection using the methods and procedures specified in §60.485.

(c)(1) An owner or operator may request a determination of equivalence of a means of emission limitation to the requirements of §§60.482–2, 60.482–3, 60.482–5, 60.482–6, 60.482–7, 60.482–8, and 60.482–10 as provided in §60.484.

(2) If the Administrator makes a determination that a means of emission limitation is at least equivalent to the requirements of §§60.482–2, 60.482–3, 60.482–5, 60.482–6, 60.482–7, 60.482–8, or 60.482–10, an owner or operator shall comply with the requirements of that determination.

(d) Equipment that is in vacuum service is excluded from the requirements of §§60.482–2 to 60.482–10 if it is identified as required in §60.486(e)(5).

[48 FR 48335, Oct. 18, 1983, as amended at 49 FR 22608, May 30, 1984; 65 FR 78276, Dec. 14, 2000]

**§ 60.482-2 Standards: Pumps in light liquid service.**

(a)(1) Each pump in light liquid service shall be monitored monthly to detect leaks by the methods specified in §60.485(b), except as provided in §60.482–1(c) and paragraphs (d), (e), and (f) of this section.

(2) Each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.

(b)(1) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(2) If there are indications of liquids dripping from the pump seal, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482–9.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of paragraph (a), *Provided* the following requirements are met:

(1) Each dual mechanical seal system is—

(i) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure; or

(ii) Equipment with a barrier fluid degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of §60.482–10; or

(iii) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.

(2) The barrier fluid system is in heavy liquid service or is not in VOC service.

(3) Each barrier fluid system is equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.

(4) Each pump is checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals.

(5)(i) Each sensor as described in paragraph (d)(3) is checked daily or is equipped with an audible alarm, and

(ii) The owner or operator determines, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(6)(i) If there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in paragraph (d)(5)(ii), a leak is detected.

(ii) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482–9.

(iii) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(e) Any pump that is designated, as described in §60.486(e)(1) and (2), for no detectable emission, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a), (c), and (d) of this section if the pump:

(1) Has no externally actuated shaft penetrating the pump housing,

(2) Is demonstrated to be operating with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in §60.485(c), and

(3) Is tested for compliance with paragraph (e)(2) of this section initially upon designation, annually, and at other times requested by the Administrator.

(f) If any pump is equipped with a closed vent system capable of capturing and transporting any leakage from the seal or seals to a process or to a fuel gas system or to a control device that complies with the requirements of §60.482–10, it is exempt from paragraphs (a) through (e) of this section.

(g) Any pump that is designated, as described in §60.486(f)(1), as an unsafe-to-monitor pump is exempt from the monitoring and inspection requirements of paragraphs (a) and (d)(4) through (6) of this section if:

(1) The owner or operator of the pump demonstrates that the pump is unsafe-to-monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (a) of this section; and

(2) The owner or operator of the pump has a written plan that requires monitoring of the pump as frequently as practicable during safe-to-monitor times but not more frequently than the periodic monitoring schedule otherwise applicable, and repair of the equipment according to the procedures in paragraph (c) of this section if a leak is detected.

(h) Any pump that is located within the boundary of an unmanned plant site is exempt from the weekly visual inspection requirement of paragraphs (a)(2) and (d)(4) of this section, and the daily requirements of paragraph (d)(5) of this section, provided that each pump is visually inspected as often as practicable and at least monthly.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 61762, Oct. 17, 2000; 65 FR 78276, Dec. 14, 2000]

### **§ 60.482-3 Standards: Compressors.**

(a) Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of VOC to the atmosphere, except as provided in §60.482–1(c) and paragraph (h) and (i) of this section.

(b) Each compressor seal system as required in paragraph (a) shall be:

(1) Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or

(2) Equipped with a barrier fluid system degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of §60.482–10; or

(3) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.

(c) The barrier fluid system shall be in heavy liquid service or shall not be in VOC service.

(d) Each barrier fluid system as described in paragraph (a) shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.

(e)(1) Each sensor as required in paragraph (d) shall be checked daily or shall be equipped with an audible alarm.

(2) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(f) If the sensor indicates failure of the seal system, the barrier system, or both based on the criterion determined under paragraph (e)(2), a leak is detected.

(g)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482–9.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(h) A compressor is exempt from the requirements of paragraphs (a) and (b) of this section, if it is equipped with a closed vent system to capture and transport leakage from the compressor drive shaft

back to a process or fuel gas system or to a control device that complies with the requirements of §60.482–10, except as provided in paragraph (i) of this section.

(i) Any compressor that is designated, as described in §60.486(e) (1) and (2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a)–(h) if the compressor:

(1) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the methods specified in §60.485(c); and

(2) Is tested for compliance with paragraph (i)(1) of this section initially upon designation, annually, and at other times requested by the Administrator.

(j) Any existing reciprocating compressor in a process unit which becomes an affected facility under provisions of §60.14 or §60.15 is exempt from §60.482(a), (b), (c), (d), (e), and (h), provided the owner or operator demonstrates that recasting the distance piece or replacing the compressor are the only options available to bring the compressor into compliance with the provisions of paragraphs (a) through (e) and (h) of this section.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 61762, Oct. 17, 2000; 65 FR 78277, Dec. 14, 2000]

**§ 60.482-4 Standards: Pressure relief devices in gas/vapor service.**

(a) Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as determined by the methods specified in §60.485(c).

(b)(1) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable, but no later than 5 calendar days after the pressure release, except as provided in §60.482–9.

(2) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the conditions of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, by the methods specified in §60.485(c).

(c) Any pressure relief device that is routed to a process or fuel gas system or equipped with a closed vent system capable of capturing and transporting leakage through the pressure relief device to a control device as described in §60.482–10 is exempted from the requirements of paragraphs (a) and (b) of this section.

(d)(1) Any pressure relief device that is equipped with a rupture disk upstream of the pressure relief device is exempt from the requirements of paragraphs (a) and (b) of this section, provided the owner or operator complies with the requirements in paragraph (d)(2) of this section.

(2) After each pressure release, a new rupture disk shall be installed upstream of the pressure relief device as soon as practicable, but no later than 5 calendar days after each pressure release, except as provided in §60.482–9.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 61762, Oct. 17, 2000; 65 FR 78277, Dec. 14, 2000]

**§ 60.482-5 Standards: Sampling connection systems.**

(a) Each sampling connection system shall be equipped with a closed-purged, closed-loop, or closed-vent system, except as provided in §60.482–1(c). Gases displaced during filling of the sample container are not required to be collected or captured.

(b) Each closed-purge, closed-loop, or closed-vent system as required in paragraph (a) of this section shall comply with the requirements specified in paragraphs (b)(1) through (4) of this section:

(1) Return the purged process fluid directly to the process line; or

(2) Collect and recycle the purged process fluid to a process; or

(3) Be designed and operated to capture and transport all the purged process fluid to a control device that complies with the requirements of §60.482–10; or

(4) Collect, store, and transport the purged process fluid to any of the following systems or facilities:

(i) A waste management unit as defined in 40 CFR 63.111, if the waste management unit is subject to, and operated in compliance with the provisions of 40 CFR part 63, subpart G, applicable to Group 1 wastewater streams;

(ii) A treatment, storage, or disposal facility subject to regulation under 40 CFR part 262, 264, 265, or 266; or

(iii) A facility permitted, licensed, or registered by a State to manage municipal or industrial solid waste, if the process fluids are not hazardous waste as defined in 40 CFR part 261.

(c) In situ sampling systems and sampling systems without purges are exempt from the requirements of paragraphs (a) and (b) of this section.

[60 FR 43258, Aug. 18, 1995, as amended at 65 FR 61762, Oct. 17, 2000; 65 FR 78277, Dec. 14, 2000]

**§ 60.482-6 Standards: Open-ended valves or lines.**

(a)(1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve, except as provided in §60.482–1(c).

(2) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.

(b) Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.

(c) When a double block-and-bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with paragraph (a) at all other times.

(d) Open-ended valves or lines in an emergency shutdown system which are designed to open automatically in the event of a process upset are exempt from the requirements of paragraphs (a), (b) and (c) of this section.

(e) Open-ended valves or lines containing materials which would autocatalytically polymerize or would present an explosion, serious overpressure, or other safety hazard if capped or equipped with a double block and bleed system as specified in paragraphs (a) through (c) of this section are exempt from the requirements of paragraphs (a) through (c) of this section.

[48 FR 48335, Oct. 18, 1983, as amended at 49 FR 22607, May 30, 1984; 65 FR 78277, Dec. 14, 2000]

**§ 60.482-7 Standards: Valves in gas/vapor service and in light liquid service.**

(a) Each valve shall be monitored monthly to detect leaks by the methods specified in §60.485(b) and shall comply with paragraphs (b) through (e), except as provided in paragraphs (f), (g), and (h), §60.483–1, 2, and §60.482–1(c).

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) Any valve for which a leak is not detected for 2 successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected.

(2) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.

(d)(1) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in §60.482–9.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(e) First attempts at repair include, but are not limited to, the following best practices where practicable:

(1) Tightening of bonnet bolts;

(2) Replacement of bonnet bolts;

(3) Tightening of packing gland nuts;

(4) Injection of lubricant into lubricated packing.

(f) Any valve that is designated, as described in §60.486(e)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraph (a) if the valve:

(1) Has no external actuating mechanism in contact with the process fluid,

(2) Is operated with emissions less than 500 ppm above background as determined by the method specified in §60.485(c), and

(3) Is tested for compliance with paragraph (f)(2) of this section initially upon designation, annually, and at other times requested by the Administrator.

(g) Any valve that is designated, as described in §60.486(f)(1), as an unsafe-to-monitor valve is exempt from the requirements of paragraph (a) if:

(1) The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (a), and

(2) The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.

(h) Any valve that is designated, as described in §60.486(f)(2), as a difficult-to-monitor valve is exempt from the requirements of paragraph (a) if:

(1) The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface.

(2) The process unit within which the valve is located either becomes an affected facility through §60.14 or §60.15 or the owner or operator designates less than 3.0 percent of the total number of valves as difficult-to-monitor, and

(3) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

[48 FR 48335, Oct. 18, 1983, as amended at 49 FR 22608, May 30, 1984; 65 FR 61762, Oct. 17, 2000]

**§ 60.482-8 Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors.**

(a) If evidence of a potential leak is found by visual, audible, olfactory, or any other detection method at pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors, the owner or operator shall follow either one of the following procedures:

(1) The owner or operator shall monitor the equipment within 5 days by the method specified in §60.485(b) and shall comply with the requirements of paragraphs (b) through (d) of this section.

(2) The owner or operator shall eliminate the visual, audible, olfactory, or other indication of a potential leak.

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482-9.

(2) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(d) First attempts at repair include, but are not limited to, the best practices described under §60.482–7(e).

[48 CFR 48335, Oct. 18, 1983, as amended at 65 FR 78277, Dec. 14, 2000]

**§ 60.482-9 Standards: Delay of repair.**

(a) Delay of repair of equipment for which leaks have been detected will be allowed if repair within 15 days is technically infeasible without a process unit shutdown. Repair of this equipment shall occur before the end of the next process unit shutdown.

(b) Delay of repair of equipment will be allowed for equipment which is isolated from the process and which does not remain in VOC service.

(c) Delay of repair for valves will be allowed if:

(1) The owner or operator demonstrates that emissions of purged material resulting from immediate repair are greater than the fugitive emissions likely to result from delay of repair, and

(2) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with §60.482–10.

(d) Delay of repair for pumps will be allowed if:

(1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system, and

(2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.

(e) Delay of repair beyond a process unit shutdown will be allowed for a valve, if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 78277, Dec. 14, 2000]

**§ 60.482-10 Standards: Closed vent systems and control devices.**

(a) Owners or operators of closed vent systems and control devices used to comply with provisions of this subpart shall comply with the provisions of this section.

(b) Vapor recovery systems (for example, condensers and absorbers) shall be designed and operated to recover the VOC emissions vented to them with an efficiency of 95 percent or greater, or to an exit concentration of 20 parts per million by volume, whichever is less stringent.

(c) Enclosed combustion devices shall be designed and operated to reduce the VOC emissions vented to them with an efficiency of 95 percent or greater, or to an exit concentration of 20 parts per million by volume, on a dry basis, corrected to 3 percent oxygen, whichever is less stringent or to provide a minimum residence time of 0.75 seconds at a minimum temperature of 816 °C.

(d) Flares used to comply with this subpart shall comply with the requirements of §60.18.

(e) Owners or operators of control devices used to comply with the provisions of this subpart shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs.

(f) Except as provided in paragraphs (i) through (k) of this section, each closed vent system shall be inspected according to the procedures and schedule specified in paragraphs (f)(1) and (f)(2) of this section.

(1) If the vapor collection system or closed vent system is constructed of hard-piping, the owner or operator shall comply with the requirements specified in paragraphs (f)(1)(i) and (f)(1)(ii) of this section:

(i) Conduct an initial inspection according to the procedures in §60.485(b); and

(ii) Conduct annual visual inspections for visible, audible, or olfactory indications of leaks.

(2) If the vapor collection system or closed vent system is constructed of ductwork, the owner or operator shall:

(i) Conduct an initial inspection according to the procedures in §60.485(b); and

(ii) Conduct annual inspections according to the procedures in §60.485(b).

(g) Leaks, as indicated by an instrument reading greater than 500 parts per million by volume above background or by visual inspections, shall be repaired as soon as practicable except as provided in paragraph (h) of this section.

(1) A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.

(2) Repair shall be completed no later than 15 calendar days after the leak is detected.

(h) Delay of repair of a closed vent system for which leaks have been detected is allowed if the repair is technically infeasible without a process unit shutdown or if the owner or operator determines that emissions resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. Repair of such equipment shall be complete by the end of the next process unit shutdown.

(i) If a vapor collection system or closed vent system is operated under a vacuum, it is exempt from the inspection requirements of paragraphs (f)(1)(i) and (f)(2) of this section.

(j) Any parts of the closed vent system that are designated, as described in paragraph (l)(1) of this section, as unsafe to inspect are exempt from the inspection requirements of paragraphs (f)(1)(i) and (f)(2) of this section if they comply with the requirements specified in paragraphs (j)(1) and (j)(2) of this section:

(1) The owner or operator determines that the equipment is unsafe to inspect because inspecting personnel would be exposed to an imminent or potential danger as a consequence of complying with paragraphs (f)(1)(i) or (f)(2) of this section; and

(2) The owner or operator has a written plan that requires inspection of the equipment as frequently as practicable during safe-to-inspect times.

(k) Any parts of the closed vent system that are designated, as described in paragraph (l)(2) of this section, as difficult to inspect are exempt from the inspection requirements of paragraphs (f)(1)(i) and (f)(2) of this section if they comply with the requirements specified in paragraphs (k)(1) through (k)(3) of this section:

(1) The owner or operator determines that the equipment cannot be inspected without elevating the inspecting personnel more than 2 meters above a support surface; and

(2) The process unit within which the closed vent system is located becomes an affected facility through §§60.14 or 60.15, or the owner or operator designates less than 3.0 percent of the total number of closed vent system equipment as difficult to inspect; and

(3) The owner or operator has a written plan that requires inspection of the equipment at least once every 5 years. A closed vent system is exempt from inspection if it is operated under a vacuum.

(l) The owner or operator shall record the information specified in paragraphs (l) (1) through (l) (5) of this section.

(1) Identification of all parts of the closed vent system that are designated as unsafe to inspect, an explanation of why the equipment is unsafe to inspect, and the plan for inspecting the equipment.

(2) Identification of all parts of the closed vent system that are designated as difficult to inspect, an explanation of why the equipment is difficult to inspect, and the plan for inspecting the equipment.

(3) For each inspection during which a leak is detected, a record of the information specified in §60.486(c).

(4) For each inspection conducted in accordance with §60.485(b) during which no leaks are detected, a record that the inspection was performed, the date of the inspection, and a statement that no leaks were detected.

(5) For each visual inspection conducted in accordance with paragraph (f)(1)(ii) of this section during which no leaks are detected, a record that the inspection was performed, the date of the inspection, and a statement that no leaks were detected.

(m) Closed vent systems and control devices used to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

[48 FR 48335, Oct. 18, 1983, as amended at 51 FR 2702, Jan. 21, 1986; 60 FR 43258, Aug. 18, 1995; 61 FR 29878, June 12, 1996; 65 FR 78277, Dec. 14, 2000]

**§ 60.483-1 Alternative standards for valves—allowable percentage of valves leaking.**

(a) An owner or operator may elect to comply with an allowable percentage of valves leaking of equal to or less than 2.0 percent.

(b) The following requirements shall be met if an owner or operator wishes to comply with an allowable percentage of valves leaking:

(1) An owner or operator must notify the Administrator that the owner or operator has elected to comply with the allowable percentage of valves leaking before implementing this alternative standard, as specified in §60.487(d).

(2) A performance test as specified in paragraph (c) of this section shall be conducted initially upon designation, annually, and at other times requested by the Administrator.

(3) If a valve leak is detected, it shall be repaired in accordance with §60.482–7(d) and (e).

(c) Performance tests shall be conducted in the following manner:

(1) All valves in gas/vapor and light liquid service within the affected facility shall be monitored within 1 week by the methods specified in §60.485(b).

(2) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(3) The leak percentage shall be determined by dividing the number of valves for which leaks are detected by the number of valves in gas/vapor and light liquid service within the affected facility.

(d) Owners and operators who elect to comply with this alternative standard shall not have an affected facility with a leak percentage greater than 2.0 percent.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 61762, Oct. 17, 2000; 65 FR 78278, Dec. 14, 2000]

**§ 60.483-2 Alternative standards for valves—skip period leak detection and repair.**

(a)(1) An owner or operator may elect to comply with one of the alternative work practices specified in paragraphs (b)(2) and (3) of this section.

(2) An owner or operator must notify the Administrator before implementing one of the alternative work practices, as specified in §60.487(d).

(b)(1) An owner or operator shall comply initially with the requirements for valves in gas/vapor service and valves in light liquid service, as described in §60.482–7.

(2) After 2 consecutive quarterly leak detection periods with the percent of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 1 of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

(3) After 5 consecutive quarterly leak detection periods with the percent of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 3 of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

(4) If the percent of valves leaking is greater than 2.0, the owner or operator shall comply with the requirements as described in §60.482–7 but can again elect to use this section.

(5) The percent of valves leaking shall be determined by dividing the sum of valves found leaking during current monitoring and valves for which repair has been delayed by the total number of valves subject to the requirements of this section.

(6) An owner or operator must keep a record of the percent of valves found leaking during each leak detection period.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 61762, Oct. 17, 2000; 65 FR 78278, Dec. 14, 2000]

#### **§ 60.485 Test methods and procedures.**

(a) In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b).

(b) The owner or operator shall determine compliance with the standards in §§60.482, 60.483, and 60.484 as follows:

(1) Method 21 shall be used to determine the presence of leaking sources. The instrument shall be calibrated before use each day of its use by the procedures specified in Method 21. The following calibration gases shall be used:

(i) Zero air (less than 10 ppm of hydrocarbon in air); and

(ii) A mixture of methane or n-hexane and air at a concentration of about, but less than, 10,000 ppm methane or n-hexane.

(c) The owner or operator shall determine compliance with the no detectable emission standards in §§60.482–2(e), 60.482–3(i), 60.482–4, 60.482–7(f), and 60.482–10(e) as follows:

(1) The requirements of paragraph (b) shall apply.

(2) Method 21 shall be used to determine the background level. All potential leak interfaces shall be traversed as close to the interface as possible. The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.

(d) The owner or operator shall test each piece of equipment unless he demonstrates that a process unit is not in VOC service, i.e., that the VOC content would never be reasonably expected to exceed 10 percent by weight. For purposes of this demonstration, the following methods and procedures shall be used:

(1) Procedures that conform to the general methods in ASTM E260–73, 91, or 96, E168–67, 77, or 92, E169–63, 77, or 93 (incorporated by reference—see §60.17) shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment.

(2) Organic compounds that are considered by the Administrator to have negligible photochemical reactivity may be excluded from the total quantity of organic compounds in determining the VOC content of the process fluid.

(3) Engineering judgment may be used to estimate the VOC content, if a piece of equipment had not been shown previously to be in service. If the Administrator disagrees with the judgment, paragraphs (d) (1) and (2) of this section shall be used to resolve the disagreement.

(e) The owner or operator shall demonstrate that an equipment is in light liquid service by showing that all the following conditions apply:

(1) The vapor pressure of one or more of the components is greater than 0.3 kPa at 20 °C (1.2 in. H<sub>2</sub>O at 68 °F). Standard reference texts or ASTM D2879–83, 96, or 97 (incorporated by reference—see §60.17) shall be used to determine the vapor pressures.

(2) The total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20 °C (1.2 in. H<sub>2</sub>O at 68 °F) is equal to or greater than 20 percent by weight.

(3) The fluid is a liquid at operating conditions.

(f) Samples used in conjunction with paragraphs (d), (e), and (g) of this section shall be representative of the process fluid that is contained in or contacts the equipment or the gas being combusted in the flare.

(g) The owner or operator shall determine compliance with the standards of flares as follows:

(1) Method 22 shall be used to determine visible emissions.

(2) A thermocouple or any other equivalent device shall be used to monitor the presence of a pilot flame in the flare.

(3) The maximum permitted velocity for air assisted flares shall be computed using the following equation:

$$V_{\max} = K_1 + K_2 H_T$$

Where:

$V_{\max}$  = Maximum permitted velocity, m/sec (ft/sec)

$H_T$  = Net heating value of the gas being combusted, MJ/scm (Btu/scf).

$K_1$  = 8.706 m/sec (metric units)

= 28.56 ft/sec (English units)

$K_2$  = 0.7084 m<sup>4</sup>/(MJ-sec) (metric units)

= 0.087 ft<sup>4</sup>/(Btu-sec) (English units)

(4) The net heating value (HT) of the gas being combusted in a flare shall be computed using the following equation:

$$H_T = K \sum_{i=1}^n C_i H_i$$

Where:

$K$  = Conversion constant,  $1.740 \times 10^7$  (g-mole)(MJ)/ (ppm-scm-kcal) (metric units)

=  $4.674 \times 10^8$  [(g-mole)(Btu)/(ppm-scf-kcal)] (English units)

$C_i$  = Concentration of sample component "i," ppm

$H_i$  = net heat of combustion of sample component "i" at 25 °C and 760 mm Hg (77 °F and 14.7 psi), kcal/g-mole

(5) Method 18 and ASTM D2504–67, 77, or 88 (Reapproved 1993) (incorporated by reference—see §60.17) shall be used to determine the concentration of sample component "i."

(6) ASTM D2382–76 or 88 or D4809–95 (incorporated by reference—see §60.17) shall be used to determine the net heat of combustion of component "i" if published values are not available or cannot be calculated.

(7) Method 2, 2A, 2C, or 2D, as appropriate, shall be used to determine the actual exit velocity of a flare. If needed, the unobstructed (free) cross-sectional area of the flare tip shall be used.

[54 FR 6678, Feb. 14, 1989, as amended at 54 FR 27016, June 27, 1989; 65 FR 61763, Oct. 17, 2000]

#### **§ 60.486 Recordkeeping requirements.**

(a)(1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section.

(2) An owner or operator of more than one affected facility subject to the provisions of this subpart may comply with the recordkeeping requirements for these facilities in one recordkeeping system if the system identifies each record by each facility.

(b) When each leak is detected as specified in §§60.482–2, 60.482–3, 60.482–7, 60.482–8, and 60.483–2, the following requirements apply:

(1) A weatherproof and readily visible identification, marked with the equipment identification number, shall be attached to the leaking equipment.

(2) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in §60.482–7(c) and no leak has been detected during those 2 months.

(3) The identification on equipment except on a valve, may be removed after it has been repaired.

(c) When each leak is detected as specified in §§60.482–2, 60.482–3, 60.482–7, 60.482–8, and 60.483–2, the following information shall be recorded in a log and shall be kept for 2 years in a readily accessible location:

(1) The instrument and operator identification numbers and the equipment identification number.

(2) The date the leak was detected and the dates of each attempt to repair the leak.

(3) Repair methods applied in each attempt to repair the leak.

(4) “Above 10,000” if the maximum instrument reading measured by the methods specified in §60.485(a) after each repair attempt is equal to or greater than 10,000 ppm.

(5) “Repair delayed” and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

(6) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.

(7) The expected date of successful repair of the leak if a leak is not repaired within 15 days.

(8) Dates of process unit shutdowns that occur while the equipment is unrepaired.

(9) The date of successful repair of the leak.

(d) The following information pertaining to the design requirements for closed vent systems and control devices described in §60.482–10 shall be recorded and kept in a readily accessible location:

(1) Detailed schematics, design specifications, and piping and instrumentation diagrams.

(2) The dates and descriptions of any changes in the design specifications.

(3) A description of the parameter or parameters monitored, as required in §60.482–10(e), to ensure that control devices are operated and maintained in conformance with their design and an explanation of why that parameter (or parameters) was selected for the monitoring.

(4) Periods when the closed vent systems and control devices required in §§60.482–2, 60.482–3, 60.482–4, and 60.482–5 are not operated as designed, including periods when a flare pilot light does not have a flame.

(5) Dates of startups and shutdowns of the closed vent systems and control devices required in §§60.482–2, 60.482–3, 60.482–4, and 60.482–5.

(e) The following information pertaining to all equipment subject to the requirements in §§60.482–1 to 60.482–10 shall be recorded in a log that is kept in a readily accessible location:

(1) A list of identification numbers for equipment subject to the requirements of this subpart.

(2)(i) A list of identification numbers for equipment that are designated for no detectable emissions under the provisions of §§60.482–2(e), 60.482–3(i) and 60.482–7(f).

(ii) The designation of equipment as subject to the requirements of §60.482–2(e), §60.482–3(i), or §60.482–7(f) shall be signed by the owner or operator.

(3) A list of equipment identification numbers for pressure relief devices required to comply with §60.482–4.

(4)(i) The dates of each compliance test as required in §§60.482–2(e), 60.482–3(i), 60.482–4, and 60.482–7(f).

(ii) The background level measured during each compliance test.

(iii) The maximum instrument reading measured at the equipment during each compliance test.

(5) A list of identification numbers for equipment in vacuum service.

(f) The following information pertaining to all valves subject to the requirements of §60.482–7(g) and (h) and to all pumps subject to the requirements of §60.482–2(g) shall be recorded in a log that is kept in a readily accessible location:

(1) A list of identification numbers for valves and pumps that are designated as unsafe-to-monitor, an explanation for each valve or pump stating why the valve or pump is unsafe-to-monitor, and the plan for monitoring each valve or pump.

(2) A list of identification numbers for valves that are designated as difficult-to-monitor, an explanation for each valve stating why the valve is difficult-to-monitor, and the schedule for monitoring each valve.

(g) The following information shall be recorded for valves complying with §60.483–2:

(1) A schedule of monitoring.

(2) The percent of valves found leaking during each monitoring period.

(h) The following information shall be recorded in a log that is kept in a readily accessible location:

(1) Design criterion required in §§60.482–2(d)(5) and 60.482–3(e)(2) and explanation of the design criterion; and

(2) Any changes to this criterion and the reasons for the changes.

(i) The following information shall be recorded in a log that is kept in a readily accessible location for use in determining exemptions as provided in §60.480(d):

(1) An analysis demonstrating the design capacity of the affected facility,

(2) A statement listing the feed or raw materials and products from the affected facilities and an analysis demonstrating whether these chemicals are heavy liquids or beverage alcohol, and

(3) An analysis demonstrating that equipment is not in VOC service.

(j) Information and data used to demonstrate that a piece of equipment is not in VOC service shall be recorded in a log that is kept in a readily accessible location.

(k) The provisions of §60.7 (b) and (d) do not apply to affected facilities subject to this subpart.

[48 FR 48335, Oct. 18, 1983, as amended at 65 FR 61763, Oct. 17, 2000; 65 FR 78278, Dec. 14, 2000]

### **§ 60.487 Reporting requirements.**

(a) Each owner or operator subject to the provisions of this subpart shall submit semiannual reports to the Administrator beginning six months after the initial startup date.

(b) The initial semiannual report to the Administrator shall include the following information:

(1) Process unit identification.

(2) Number of valves subject to the requirements of §60.482–7, excluding those valves designated for no detectable emissions under the provisions of §60.482–7(f).

(3) Number of pumps subject to the requirements of §60.482–2, excluding those pumps designated for no detectable emissions under the provisions of §60.482–2(e) and those pumps complying with §60.482–2(f).

(4) Number of compressors subject to the requirements of §60.482–3, excluding those compressors designated for no detectable emissions under the provisions of §60.482–3(i) and those compressors complying with §60.482–3(h).

(c) All semiannual reports to the Administrator shall include the following information, summarized from the information in §60.486:

(1) Process unit identification.

(2) For each month during the semiannual reporting period,

(i) Number of valves for which leaks were detected as described in §60.482(7)(b) or §60.483–2,

(ii) Number of valves for which leaks were not repaired as required in §60.482–7(d)(1),

(iii) Number of pumps for which leaks were detected as described in §60.482–2(b) and (d)(6)(i),

(iv) Number of pumps for which leaks were not repaired as required in §60.482–2(c)(1) and (d)(6)(ii),

(v) Number of compressors for which leaks were detected as described in §60.482–3(f),

(vi) Number of compressors for which leaks were not repaired as required in §60.482–3(g)(1), and

(vii) The facts that explain each delay of repair and, where appropriate, why a process unit shutdown was technically infeasible.

(3) Dates of process unit shutdowns which occurred within the semiannual reporting period.

(4) Revisions to items reported according to paragraph (b) if changes have occurred since the initial report or subsequent revisions to the initial report.

(d) An owner or operator electing to comply with the provisions of §§60.483–1 or 60.483–2 shall notify the Administrator of the alternative standard selected 90 days before implementing either of the provisions.

(e) An owner or operator shall report the results of all performance tests in accordance with §60.8 of the General Provisions. The provisions of §60.8(d) do not apply to affected facilities subject to the provisions of this subpart except that an owner or operator must notify the Administrator of the schedule for the initial performance tests at least 30 days before the initial performance tests.

(f) The requirements of paragraphs (a) through (c) of this section remain in force until and unless EPA, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such State. In that event, affected sources within the State will be relieved of the obligation to comply with the requirements of paragraphs (a) through (c) of this section, provided that they comply with the requirements established by the State.

[48 FR 48335, Oct. 18, 1983, as amended at 49 FR 22608, May 30, 1984; 65 FR 61763, Oct. 17, 2000]

## SECTION E.2 FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-8-4(10)]:

- (k) Two (2) natural gas fired boilers, identified as EU056 and EU057, approved for construction in 2007, each with a maximum heat input rate of 150 MMBtu/hr, with emissions exhausting to stack SV011.

Under 40 CFR 60, Subpart Db, the boilers are considered to be new steam generating units.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### New Source Performance Standards (NSPS) Requirements [326 IAC 2-7-5(1)]

#### E.2.1 General Provisions Relating to New Source Performance Standards [326 IAC 12-1] [40 CFR Part 60, Subpart A]

- (a) Pursuant to 40 CFR 60.1, the Permittee shall comply with the provisions of 40 CFR Part 60 Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1 for boilers EU056, and EU057, except as otherwise specified in 40 CFR Part 60, Subpart Db.
- (b) Pursuant to 40 CFR 60.19, the Permittee shall submit all required notifications and reports to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue,  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

#### E.2.2 Standard of Performance for Industrial-Commercial-Institutional Steam Generating Units Requirements [40 CFR Part 60, Subpart Db] [326 IAC 12]

Pursuant to 40 CFR Part 60, Subpart Db, the Permittee shall comply with the provisions of Standard of Performance for Industrial-Commercial-Institutional Steam Generating Units, which are incorporated by reference as 326 IAC 12, for boilers EU056, and EU057 as follows:

### Subpart Db—Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

#### § 60.40b Applicability and delegation of authority.

(a) The affected facility to which this subpart applies is each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr)).

(b) Any affected facility meeting the applicability requirements under paragraph (a) of this section and commencing construction, modification, or reconstruction after June 19, 1984, but on or before June 19, 1986, is subject to the following standards:

(1) Coal-fired affected facilities having a heat input capacity between 29 and 73 MW (100 and 250 MMBtu/hr), inclusive, are subject to the particulate matter (PM) and nitrogen oxides (NO<sub>x</sub>) standards under this subpart.

(2) Coal-fired affected facilities having a heat input capacity greater than 73 MW (250 MMBtu/hr) and meeting the applicability requirements under subpart D (Standards of performance for fossil-fuel-fired steam generators; §60.40) are subject to the PM and NO<sub>x</sub> standards under this subpart and to the sulfur dioxide (SO<sub>2</sub>) standards under subpart D (§60.43).

(3) Oil-fired affected facilities having a heat input capacity between 29 and 73 MW (100 and 250 MMBtu/hr), inclusive, are subject to the NO<sub>x</sub> standards under this subpart.

(4) Oil-fired affected facilities having a heat input capacity greater than 73 MW (250 MMBtu/hr) and meeting the applicability requirements under subpart D (Standards of performance for fossil-fuel-fired steam generators; §60.40) are also subject to the NO<sub>x</sub> standards under this subpart and the PM and SO<sub>2</sub> standards under subpart D (§60.42 and §60.43).

(c) Affected facilities that also meet the applicability requirements under subpart J (Standards of performance for petroleum refineries; §60.104) are subject to the PM and NO<sub>x</sub> standards under this subpart and the SO<sub>2</sub> standards under subpart J (§60.104).

(d) Affected facilities that also meet the applicability requirements under subpart E (Standards of performance for incinerators; §60.50) are subject to the NO<sub>x</sub> and PM standards under this subpart.

(e) Steam generating units meeting the applicability requirements under subpart Da (Standards of performance for electric utility steam generating units; §60.40Da) are not subject to this subpart.

(f) Any change to an existing steam generating unit for the sole purpose of combusting gases containing total reduced sulfur (TRS) as defined under §60.281 is not considered a modification under §60.14 and the steam generating unit is not subject to this subpart.

(g) In delegating implementation and enforcement authority to a State under section 111(c) of the Clean Air Act, the following authorities shall be retained by the Administrator and not transferred to a State.

(1) Section 60.44b(f).

(2) Section 60.44b(g).

(3) Section 60.49b(a)(4).

(h) Any affected facility that meets the applicability requirements and is subject to subpart Ea, subpart Eb, or subpart AAAA of this part is not covered by this subpart.

(i) Heat recovery steam generators that are associated with combined cycle gas turbines and that meet the applicability requirements of subpart GG or KKKK of this part are not subject to this subpart. This subpart will continue to apply to all other heat recovery steam generators that are capable of combusting more than 29 MW (100 MMBtu/hr) heat input of fossil fuel. If the heat recovery steam generator is subject to this subpart, only emissions resulting from combustion of fuels in the steam generating unit are subject to this subpart. (The gas turbine emissions are subject to subpart GG or KKKK, as applicable, of this part.)

(j) Any affected facility meeting the applicability requirements under paragraph (a) of this section and commencing construction, modification, or reconstruction after June 19, 1986 is not subject to subpart D (Standards of Performance for Fossil-Fuel-Fired Steam Generators, §60.40).

(k) Any affected facility that meets the applicability requirements and is subject to an EPA approved State or Federal section 111(d)/129 plan implementing subpart Cb or subpart BBBB of this part is not covered by this subpart.

#### **§ 60.41b Definitions.**

As used in this subpart, all terms not defined herein shall have the meaning given them in the Clean Air Act and in subpart A of this part.

*Annual capacity factor* means the ratio between the actual heat input to a steam generating unit from the fuels listed in §60.42b(a), §60.43b(a), or §60.44b(a), as applicable, during a calendar year and the potential heat input to the steam generating unit had it been operated for 8,760 hours during a calendar year at the maximum steady state design heat input capacity. In the case of steam generating units that are rented or leased, the actual heat input shall be determined based on the combined heat input from all operations of the affected facility in a calendar year.

*Byproduct/waste* means any liquid or gaseous substance produced at chemical manufacturing plants, petroleum refineries, or pulp and paper mills (except natural gas, distillate oil, or residual oil) and combusted in a steam generating unit for heat recovery or for disposal. Gaseous substances with carbon dioxide (CO<sub>2</sub>) levels greater than 50 percent or carbon monoxide levels greater than 10 percent are not byproduct/waste for the purpose of this subpart.

*Chemical manufacturing plants* mean industrial plants that are classified by the Department of Commerce under Standard Industrial Classification (SIC) Code 28.

*Coal* means all solid fuels classified as anthracite, bituminous, subbituminous, or lignite by the American Society of Testing and Materials in ASTM D388 (incorporated by reference, see §60.17), coal refuse, and petroleum coke. Coal-derived synthetic fuels, including but not limited to solvent refined coal, gasified coal, coal-oil mixtures, coke oven gas, and coal-water mixtures, are also included in this definition for the purposes of this subpart.

*Coal refuse* means any byproduct of coal mining or coal cleaning operations with an ash content greater than 50 percent, by weight, and a heating value less than 13,900 kJ/kg (6,000 Btu/lb) on a dry basis.

*Cogeneration*, also known as combined heat and power, means a facility that simultaneously produces both electric (or mechanical) and useful thermal energy from the same primary energy source.

*Coke oven gas* means the volatile constituents generated in the gaseous exhaust during the carbonization of bituminous coal to form coke.

*Combined cycle system* means a system in which a separate source, such as a gas turbine, internal combustion engine, kiln, etc., provides exhaust gas to a steam generating unit.

*Conventional technology* means wet flue gas desulfurization (FGD) technology, dry FGD technology, atmospheric fluidized bed combustion technology, and oil hydrodesulfurization technology.

*Distillate oil* means fuel oils that contain 0.05 weight percent nitrogen or less and comply with the specifications for fuel oil numbers 1 and 2, as defined by the American Society of Testing and Materials in ASTM D396 (incorporated by reference, see §60.17).

*Dry flue gas desulfurization technology* means a SO<sub>2</sub> control system that is located downstream of the steam generating unit and removes sulfur oxides from the combustion gases of the steam generating unit by contacting the combustion gases with an alkaline reagent and water, whether introduced separately or as a premixed slurry or solution and forming a dry powder material. This definition includes devices where the dry powder material is subsequently converted to another form. Alkaline slurries or solutions used in dry flue gas desulfurization technology include but are not limited to lime and sodium.

*Duct burner* means a device that combusts fuel and that is placed in the exhaust duct from another source, such as a stationary gas turbine, internal combustion engine, kiln, etc., to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit.

*Emerging technology* means any SO<sub>2</sub> control system that is not defined as a conventional technology under this section, and for which the owner or operator of the facility has applied to the Administrator and received approval to operate as an emerging technology under §60.49b(a)(4).

*Federally enforceable* means all limitations and conditions that are enforceable by the Administrator, including the requirements of 40 CFR parts 60 and 61, requirements within any applicable State Implementation Plan, and any permit requirements established under 40 CFR 52.21 or under 40 CFR 51.18 and 51.24.

*Fluidized bed combustion technology* means combustion of fuel in a bed or series of beds (including but not limited to bubbling bed units and circulating bed units) of limestone aggregate (or other sorbent materials) in which these materials are forced upward by the flow of combustion air and the gaseous products of combustion.

*Fuel pretreatment* means a process that removes a portion of the sulfur in a fuel before combustion of the fuel in a steam generating unit.

*Full capacity* means operation of the steam generating unit at 90 percent or more of the maximum steady-state design heat input capacity.

*Gaseous fuel* means any fuel that is present as a gas at ISO conditions.

*Gross output* means the gross useful work performed by the steam generated. For units generating only electricity, the gross useful work performed is the gross electrical output from the turbine/generator set. For cogeneration units, the gross useful work performed is the gross electrical or mechanical output plus 75 percent of the useful thermal output measured relative to ISO conditions that is not used to generate additional electrical or mechanical output (i.e., steam delivered to an industrial process).

*Heat input* means heat derived from combustion of fuel in a steam generating unit and does not include the heat derived from preheated combustion air, recirculated flue gases, or exhaust gases from other sources, such as gas turbines, internal combustion engines, kilns, etc.

*Heat release rate* means the steam generating unit design heat input capacity (in MW or Btu/hr) divided by the furnace volume (in cubic meters or cubic feet); the furnace volume is that volume bounded by the front furnace wall where the burner is located, the furnace side waterwall, and extending to the level just below or in front of the first row of convection pass tubes.

*Heat transfer medium* means any material that is used to transfer heat from one point to another point.

*High heat release rate* means a heat release rate greater than 730,000 J/sec-m<sup>3</sup> (70,000 Btu/hr-ft<sup>3</sup>).

*ISO Conditions* means a temperature of 288 Kelvin, a relative humidity of 60 percent, and a pressure of 101.3 kilopascals.

*Lignite* means a type of coal classified as lignite A or lignite B by the American Society of Testing and Materials in ASTM D388 (incorporated by reference, see §60.17).

*Low heat release rate* means a heat release rate of 730,000 J/sec-m<sup>3</sup> (70,000 Btu/hr-ft<sup>3</sup>) or less.

*Mass-feed stoker steam generating unit* means a steam generating unit where solid fuel is introduced directly into a retort or is fed directly onto a grate where it is combusted.

*Maximum heat input capacity* means the ability of a steam generating unit to combust a stated maximum amount of fuel on a steady state basis, as determined by the physical design and characteristics of the steam generating unit.

*Municipal-type solid waste* means refuse, more than 50 percent of which is waste consisting of a mixture of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustible materials, and noncombustible materials such as glass and rock.

*Natural gas* means: (1) A naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in geologic formations beneath the earth's surface, of which the principal constituent is methane; or (2) liquefied petroleum gas, as defined by the American Society for Testing and Materials in ASTM D1835 (incorporated by reference, see §60.17).

*Noncontinental area* means the State of Hawaii, the Virgin Islands, Guam, American Samoa, the Commonwealth of Puerto Rico, or the Northern Mariana Islands.

*Oil* means crude oil or petroleum or a liquid fuel derived from crude oil or petroleum, including distillate and residual oil.

*Petroleum refinery* means industrial plants as classified by the Department of Commerce under Standard Industrial Classification (SIC) Code 29.

*Potential sulfur dioxide emission rate* means the theoretical SO<sub>2</sub> emissions (nanograms per joule (ng/J) or lb/MMBtu heat input) that would result from combusting fuel in an uncleaned state and without using emission control systems.

*Process heater* means a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst.

*Pulp and paper mills* means industrial plants that are classified by the Department of Commerce under North American Industry Classification System (NAICS) Code 322 or Standard Industrial Classification (SIC) Code 26.

*Pulverized coal-fired steam generating unit* means a steam generating unit in which pulverized coal is introduced into an air stream that carries the coal to the combustion chamber of the steam generating unit where it is fired in suspension. This includes both conventional pulverized coal-fired and micropulverized coal-fired steam generating units. Residual oil means crude oil, fuel oil numbers 1 and 2 that have a nitrogen content greater than 0.05 weight percent, and all fuel oil numbers 4, 5 and 6, as defined by the American Society of Testing and Materials in ASTM D396 (incorporated by reference, see §60.17).

*Spreader stoker steam generating unit* means a steam generating unit in which solid fuel is introduced to the combustion zone by a mechanism that throws the fuel onto a grate from above. Combustion takes place both in suspension and on the grate.

*Steam generating unit* means a device that combusts any fuel or byproduct/waste and produces steam or heats water or any other heat transfer medium. This term includes any municipal-type solid waste incinerator with a heat recovery steam generating unit or any steam generating unit that combusts fuel and is part of a cogeneration system or a combined cycle system. This term does not include process heaters as they are defined in this subpart.

*Steam generating unit operating day* means a 24-hour period between 12:00 midnight and the following midnight during which any fuel is combusted at any time in the steam generating unit. It is not necessary for fuel to be combusted continuously for the entire 24-hour period.

*Very low sulfur oil* means for units constructed, reconstructed, or modified on or before February 28, 2005, an oil that contains no more than 0.5 weight percent sulfur or that, when combusted without SO<sub>2</sub> emission control, has a SO<sub>2</sub> emission rate equal to or less than 215 ng/J (0.5 lb/MMBtu) heat input. For units constructed, reconstructed, or modified after February 28, 2005, *very low sulfur oil* means an oil that contains no more than 0.3 weight percent sulfur or that, when combusted without SO<sub>2</sub> emission control, has a SO<sub>2</sub> emission rate equal to or less than 140 ng/J (0.32 lb/MMBtu) heat input.

*Wet flue gas desulfurization technology* means a SO<sub>2</sub> control system that is located downstream of the steam generating unit and removes sulfur oxides from the combustion gases of the steam generating unit by contacting the combustion gas with an alkaline slurry or solution and forming a liquid material. This definition applies to devices where the aqueous liquid material product of this contact is subsequently converted to other forms. Alkaline reagents used in wet flue gas desulfurization technology include, but are not limited to, lime, limestone, and sodium.

*Wet scrubber system* means any emission control device that mixes an aqueous stream or slurry with the exhaust gases from a steam generating unit to control emissions of PM or SO<sub>2</sub>.

*Wood* means wood, wood residue, bark, or any derivative fuel or residue thereof, in any form, including, but not limited to, sawdust, sanderdust, wood chips, scraps, slabs, millings, shavings, and processed pellets made from wood or other forest residues.

#### **§ 60.44b Standard for nitrogen oxides (NO<sub>x</sub>).**

(a) Except as provided under paragraphs (k) and (l) of this section, on and after the date on which the initial performance test is completed or is required to be completed under §60.8, whichever date comes first, no owner or operator of an affected facility that is subject to the provisions of this section and that combusts only coal, oil, or natural gas shall cause to be discharged into the atmosphere from that affected facility any gases that contain NO<sub>x</sub> (expressed as NO<sub>2</sub>) in excess of the following emission limits:

Fuel/steam generating unit type	Nitrogen oxide emission limits (expressed as NO <sub>2</sub> ) heat input	
	ng/J	lb/MMBTu
(1) Natural gas and distillate oil, except (4):		
(i) Low heat release rate	43	0.10
(ii) High heat release rate	86	0.20
(2) Residual oil:		
(i) Low heat release rate	130	0.30
(ii) High heat release rate	170	0.40
(3) Coal:		
(i) Mass-feed stoker	210	0.50
(ii) Spreader stoker and fluidized bed combustion	260	0.60
(iii) Pulverized coal	300	0.70
(iv) Lignite, except (v)	260	0.60
(v) Lignite mined in North Dakota, South Dakota, or Montana and combusted in a slag tap furnace	340	0.80
(vi) Coal-derived synthetic fuels	210	0.50
(4) Duct burner used in a combined cycle system:		
(i) Natural gas and distillate oil	86	0.20
(ii) Residual oil	170	0.40

(e) Except as provided under paragraph (l) of this section, on and after the date on which the initial performance test is completed or is required to be completed under §60.8, whichever date comes first, no owner or operator of an affected facility that simultaneously combusts coal, oil, or natural gas with byproduct/waste shall cause to be discharged into the atmosphere any gases that contain NO<sub>x</sub> in excess of the emission limit determined by the following formula unless the affected facility has an annual capacity factor for coal, oil, and natural gas of 10 percent (0.10) or less and is subject to a federally enforceable requirement that limits operation of the affected facility to an annual capacity factor of 10 percent (0.10) or less:

$$E_n = \frac{(EL_g H_g) + (EL_o H_o) + (EL_c H_c)}{(H_g + H_o + H_c)}$$

Where:

E<sub>n</sub>= NO<sub>x</sub> emission limit (expressed as NO<sub>2</sub>), ng/J (lb/MMBTu);

EL<sub>go</sub>= Appropriate emission limit from paragraph (a)(1) for combustion of natural gas or distillate oil, ng/J (lb/MMBTu);

H<sub>go</sub>= Heat input from combustion of natural gas, distillate oil and gaseous byproduct/waste, J (MMBTu);

EL<sub>ro</sub>= Appropriate emission limit from paragraph (a)(2) for combustion of residual oil and/or byproduct/waste, ng/J (lb/MMBTu);

$H_{ro}$  = Heat input from combustion of residual oil, J (MMBtu);

$EL_c$  = Appropriate emission limit from paragraph (a)(3) for combustion of coal, ng/J (lb/MMBtu); and

$H_c$  = Heat input from combustion of coal, J (MMBtu).

(h) For purposes of paragraph (i) of this section, the  $NO_x$  standards under this section apply at all times including periods of startup, shutdown, or malfunction.

(i) Except as provided under paragraph (j) of this section, compliance with the emission limits under this section is determined on a 30-day rolling average basis.

**§ 60.46b Compliance and performance test methods and procedures for particulate matter and nitrogen oxides.**

(a) The PM emission standards and opacity limits under §60.43b apply at all times except during periods of startup, shutdown, or malfunction. The  $NO_x$  emission standards under §60.44b apply at all times.

(c) Compliance with the  $NO_x$  emission standards under §60.44b shall be determined through performance testing under paragraph (e) or (f), or under paragraphs (g) and (h) of this section, as applicable.

(e) To determine compliance with the emission limits for  $NO_x$  required under §60.44b, the owner or operator of an affected facility shall conduct the performance test as required under §60.8 using the continuous system for monitoring  $NO_x$  under §60.48(b).

(1) For the initial compliance test,  $NO_x$  from the steam generating unit are monitored for 30 successive steam generating unit operating days and the 30-day average emission rate is used to determine compliance with the  $NO_x$  emission standards under §60.44b. The 30-day average emission rate is calculated as the average of all hourly emissions data recorded by the monitoring system during the 30-day test period.

**§ 60.48b Emission monitoring for particulate matter and nitrogen oxides.**

(b) Except as provided under paragraphs (g), (h), and (i) of this section, the owner or operator of an affected facility subject to a  $NO_x$  standard under §60.44b shall comply with either paragraphs (b)(1) or (b)(2) of this section.

(1) Install, calibrate, maintain, and operate CEMS for measuring  $NO_x$  and  $O_2$  (or  $CO_2$ ) emissions discharged to the atmosphere, and shall record the output of the system; or

(c) The CEMS required under paragraph (b) of this section shall be operated and data recorded during all periods of operation of the affected facility except for CEMS breakdowns and repairs. Data is recorded during calibration checks, and zero and span adjustments.

(d) The 1-hour average  $NO_x$  emission rates measured by the continuous  $NO_x$  monitor required by paragraph (b) of this section and required under §60.13(h) shall be expressed in ng/J or lb/MMBtu heat input and shall be used to calculate the average emission rates under §60.44b. The 1-hour averages shall be calculated using the data points required under §60.13(h)(2).

(e) The procedures under §60.13 shall be followed for installation, evaluation, and operation of the continuous monitoring systems.

(2) For affected facilities combusting coal, oil, or natural gas, the span value for  $NO_x$  is determined using one of the following procedures:

(i) Except as provided under paragraph (e)(2)(ii) of this section,  $NO_x$  span values shall be determined as follows:

Fuel	Span values for NO <sub>x</sub> (ppm)
Natural gas	500.
Oil	500.
Coal	1,000.
Mixtures	500 (x + y) + 1,000z.

Where:

x = Fraction of total heat input derived from natural gas;

y = Fraction of total heat input derived from oil; and

z = Fraction of total heat input derived from coal.

(f) When NO<sub>x</sub> emission data are not obtained because of CEMS breakdowns, repairs, calibration checks and zero and span adjustments, emission data will be obtained by using standby monitoring systems, Method 7 of appendix A of this part, Method 7A of appendix A of this part, or other approved reference methods to provide emission data for a minimum of 75 percent of the operating hours in each steam generating unit operating day, in at least 22 out of 30 successive steam generating unit operating days.

(g) The owner or operator of an affected facility that has a heat input capacity of 73 MW (250 MMBtu/hr) or less, and that has an annual capacity factor for residual oil having a nitrogen content of 0.30 weight percent or less, natural gas, distillate oil, or any mixture of these fuels, greater than 10 percent (0.10) shall:

(1) Comply with the provisions of paragraphs (b), (c), (d), (e)(2), (e)(3), and (f) of this section; or

(2) Monitor steam generating unit operating conditions and predict NO<sub>x</sub> emission rates as specified in a plan submitted pursuant to §60.49b(c).

**§ 60.49b Reporting and recordkeeping requirements.**

(a) The owner or operator of each affected facility shall submit notification of the date of initial startup, as provided by §60.7. This notification shall include:

(1) The design heat input capacity of the affected facility and identification of the fuels to be combusted in the affected facility;

(2) If applicable, a copy of any federally enforceable requirement that limits the annual capacity factor for any fuel or mixture of fuels under §§60.42b(d)(1), 60.43b(a)(2), (a)(3)(iii), (c)(2)(ii), (d)(2)(iii), 60.44b(c), (d), (e), (i), (j), (k), 60.45b(d), (g), 60.46b(h), or 60.48b(i);

(3) The annual capacity factor at which the owner or operator anticipates operating the facility based on all fuels fired and based on each individual fuel fired; and

(b) The owner or operator of each affected facility subject to the SO<sub>2</sub>, PM, and/or NO<sub>x</sub> emission limits under §§60.42b, 60.43b, and 60.44b shall submit to the Administrator the performance test data from the initial performance test and the performance evaluation of the CEMS using the applicable performance specifications in appendix B of this part. The owner or operator of each affected facility described in §60.44b(j) or §60.44b(k) shall submit to the Administrator the maximum heat input capacity data from the demonstration of the maximum heat input capacity of the affected facility.

(c) The owner or operator of each affected facility subject to the NO<sub>x</sub> standard of §60.44b who seeks to demonstrate compliance with those standards through the monitoring of steam generating unit operating conditions under the provisions of §60.48b(g)(2) shall submit to the Administrator for approval a plan that identifies the operating conditions to be monitored under §60.48b(g)(2) and the records to be maintained

under §60.49b(j). This plan shall be submitted to the Administrator for approval within 360 days of the initial startup of the affected facility. If the plan is approved, the owner or operator shall maintain records of predicted nitrogen oxide emission rates and the monitored operating conditions, including steam generating unit load, identified in the plan. The plan shall:

(1) Identify the specific operating conditions to be monitored and the relationship between these operating conditions and NO<sub>x</sub> emission rates ( *i.e.* , ng/J or lbs/MMBtu heat input). Steam generating unit operating conditions include, but are not limited to, the degree of staged combustion ( *i.e.* , the ratio of primary air to secondary and/or tertiary air) and the level of excess air ( *i.e.* , flue gas O<sub>2</sub> level);

(2) Include the data and information that the owner or operator used to identify the relationship between NO<sub>x</sub> emission rates and these operating conditions; and

(3) Identify how these operating conditions, including steam generating unit load, will be monitored under §60.48b(g) on an hourly basis by the owner or operator during the period of operation of the affected facility; the quality assurance procedures or practices that will be employed to ensure that the data generated by monitoring these operating conditions will be representative and accurate; and the type and format of the records of these operating conditions, including steam generating unit load, that will be maintained by the owner or operator under §60.49b(j).

(d) The owner or operator of an affected facility shall record and maintain records of the amounts of each fuel combusted during each day and calculate the annual capacity factor individually for coal, distillate oil, residual oil, natural gas, wood, and municipal-type solid waste for the reporting period. The annual capacity factor is determined on a 12-month rolling average basis with a new annual capacity factor calculated at the end of each calendar month.

(g) Except as provided under paragraph (p) of this section, the owner or operator of an affected facility subject to the NO<sub>x</sub> standards under §60.44b shall maintain records of the following information for each steam generating unit operating day:

(1) Calendar date;

(2) The average hourly NO<sub>x</sub> emission rates (expressed as NO<sub>2</sub>) (ng/J or lb/MMBtu heat input) measured or predicted;

(3) The 30-day average NO<sub>x</sub> emission rates (ng/J or lb/MMBtu heat input) calculated at the end of each steam generating unit operating day from the measured or predicted hourly nitrogen oxide emission rates for the preceding 30 steam generating unit operating days;

(4) Identification of the steam generating unit operating days when the calculated 30-day average NO<sub>x</sub> emission rates are in excess of the NO<sub>x</sub> emissions standards under §60.44b, with the reasons for such excess emissions as well as a description of corrective actions taken;

(5) Identification of the steam generating unit operating days for which pollutant data have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken;

(6) Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data;

(7) Identification of "F" factor used for calculations, method of determination, and type of fuel combusted;

(8) Identification of the times when the pollutant concentration exceeded full span of the CEMS;

(9) Description of any modifications to the CEMS that could affect the ability of the CEMS to comply with Performance Specification 2 or 3; and

(10) Results of daily CEMS drift tests and quarterly accuracy assessments as required under appendix F, Procedure 1 of this part.

(i) The owner or operator of any affected facility subject to the continuous monitoring requirements for  $\text{NO}_x$  under §60.48(b) shall submit reports containing the information recorded under paragraph (g) of this section.

(v) The owner or operator of an affected facility may submit electronic quarterly reports for  $\text{SO}_2$  and/or  $\text{NO}_x$  and/or opacity in lieu of submitting the written reports required under paragraphs (h), (i), (j), (k) or (l) of this section. The format of each quarterly electronic report shall be coordinated with the permitting authority. The electronic report(s) shall be submitted no later than 30 days after the end of the calendar quarter and shall be accompanied by a certification statement from the owner or operator, indicating whether compliance with the applicable emission standards and minimum data requirements of this subpart was achieved during the reporting period. Before submitting reports in the electronic format, the owner or operator shall coordinate with the permitting authority to obtain their agreement to submit reports in this alternative format.

(w) The reporting period for the reports required under this subpart is each 6 month period. All reports shall be submitted to the Administrator and shall be postmarked by the 30th day following the end of the reporting period.

## SECTION E.3 FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-8-4(10)]:

- (i) Other emission units, not regulated by a NESHAP, with PM<sub>10</sub>, NO<sub>x</sub>, and SO<sub>2</sub> emissions less than five (5) pounds per hour or twenty-five (25) pounds per day, CO emissions less than twenty-five (25) pounds per day, VOC emissions less than three (3) pounds per hour or fifteen (15) pounds per day, lead emissions less than six-tenths (0.6) tons per year or three and twenty-nine hundredths (3.29) pounds per day, and emitting greater than one (1) pound per day but less than five (5) pounds per day or one (1) ton per year of a single HAP, or emitting greater than one (1) pound per day but less than twelve and five tenths (12.5) pounds per day or two and five tenths (2.5) ton per year of any combination of HAPs:
- (1) One (1) tank for 190-proof ethanol, identified as T001, approved for construction in 2007, with a maximum capacity of 300,000 gallons. [40 CFR 60, Subpart Kb]
  - (2) One (1) tank for 200-proof ethanol, identified as T002, approved for construction in 2007, with a maximum capacity of 300,000 gallons of 200-proof ethanol. [40 CFR 60, Subpart Kb]
  - (3) One (1) gasoline tank, identified as T003, approved for construction in 2007, storing petroleum material with a vapor pressure equivalent to or less than the vapor pressure of 13 RVP gasoline, with a maximum capacity of 152,000 gallons. [326 IAC 8-4-3] [40 CFR 60, Subpart Kb]
  - (4) Two (2) denatured storage tanks, identified as T004 and T005, approved for construction in 2007, each with a maximum capacity of 1,500,000 gallons. [40 CFR 60, Subpart Kb]

Under 40 CFR 60, Subpart Kb, storage tanks T001 through T005 are considered to be new volatile organic liquid storage tanks.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### New Source Performance Standards (NSPS) Requirements [326 IAC 2-7-5(1)]

#### E.3.1 General Provisions Relating to New Source Performance Standards [326 IAC 12-1] [40 CFR Part 60, Subpart A]

(a) Pursuant to 40 CFR 60.1, the Permittee shall comply with the provisions of 40 CFR Part 60 Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1 for tanks T001, T002, T003, T004, and T005, except as otherwise specified in 40 CFR Part 60, Subpart Kb.

(b) Pursuant to 40 CFR 60.19, the Permittee shall submit all required notifications and reports to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue,  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

E.3.2 Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) [40 CFR Part 60, Subpart Kb] [326 IAC 12]

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Pursuant to 40 CFR Part 60, Subpart Kb, the Permittee shall comply with the provisions of Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels), which are incorporated by reference as 326 IAC 12, for tanks T001, T002, T003, T004, and T005 as follows:

**Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels)**

**§ 60.110b Applicability and designation of affected facility.**

(a) Except as provided in paragraph (b) of this section, the affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 75 cubic meters ( $m^3$ ) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984.

(b) This subpart does not apply to storage vessels with a capacity greater than or equal to 151  $m^3$  storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75  $m^3$  but less than 151  $m^3$  storing a liquid with a maximum true vapor pressure less than 15.0 kPa.

(c) [Reserved]

(d) This subpart does not apply to the following:

(1) Vessels at coke oven by-product plants.

(2) Pressure vessels designed to operate in excess of 204.9 kPa and without emissions to the atmosphere.

(3) Vessels permanently attached to mobile vehicles such as trucks, railcars, barges, or ships.

(4) Vessels with a design capacity less than or equal to 1,589.874  $m^3$  used for petroleum or condensate stored, processed, or treated prior to custody transfer.

(5) Vessels located at bulk gasoline plants.

(6) Storage vessels located at gasoline service stations.

(7) Vessels used to store beverage alcohol.

(8) Vessels subject to subpart GGGG of 40 CFR part 63.

(e) *Alternative means of compliance*—(1) *Option to comply with part 65.* Owners or operators may choose to comply with 40 CFR part 65, subpart C, to satisfy the requirements of §§60.112b through 60.117b for storage vessels that are subject to this subpart that meet the specifications in paragraphs (e)(1)(i) and (ii) of this section. When choosing to comply with 40 CFR part 65, subpart C, the monitoring requirements of §60.116b(c), (e), (f)(1), and (g) still apply. Other provisions applying to owners or operators who choose to comply with 40 CFR part 65 are provided in 40 CFR 65.1.

(i) A storage vessel with a design capacity greater than or equal to 151  $m^3$  containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 5.2 kPa; or

(ii) A storage vessel with a design capacity greater than 75  $m^3$  but less than 151  $m^3$  containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 27.6 kPa.

(2) *Part 60, subpart A.* Owners or operators who choose to comply with 40 CFR part 65, subpart C, must also comply with §§60.1, 60.2, 60.5, 60.6, 60.7(a)(1) and (4), 60.14, 60.15, and 60.16 for those storage vessels. All sections and paragraphs of subpart A of this part that are not mentioned in this paragraph (e)(2) do not apply to owners or operators of storage vessels complying with 40 CFR part 65, subpart C, except that provisions required to be met prior to implementing 40 CFR part 65 still apply. Owners and operators who choose to comply with 40 CFR part 65, subpart C, must comply with 40 CFR part 65, subpart A.

(3) *Internal floating roof report.* If an owner or operator installs an internal floating roof and, at initial startup, chooses to comply with 40 CFR part 65, subpart C, a report shall be furnished to the Administrator stating that the control equipment meets the specifications of 40 CFR 65.43. This report shall be an attachment to the notification required by 40 CFR 65.5(b).

(4) *External floating roof report.* If an owner or operator installs an external floating roof and, at initial startup, chooses to comply with 40 CFR part 65, subpart C, a report shall be furnished to the Administrator stating that the control equipment meets the specifications of 40 CFR 65.44. This report shall be an attachment to the notification required by 40 CFR 65.5(b).

[52 FR 11429, Apr. 8, 1987, as amended at 54 FR 32973, Aug. 11, 1989; 65 FR 78275, Dec. 14, 2000; 68 FR 59332, Oct. 15, 2003]

#### **§ 60.111b Definitions.**

Terms used in this subpart are defined in the Act, in subpart A of this part, or in this subpart as follows:

*Bulk gasoline plant* means any gasoline distribution facility that has a gasoline throughput less than or equal to 75,700 liters per day. Gasoline throughput shall be the maximum calculated design throughput as may be limited by compliance with an enforceable condition under Federal requirement or Federal, State or local law, and discoverable by the Administrator and any other person.

*Condensate* means hydrocarbon liquid separated from natural gas that condenses due to changes in the temperature or pressure, or both, and remains liquid at standard conditions.

*Custody transfer* means the transfer of produced petroleum and/or condensate, after processing and/or treatment in the producing operations, from storage vessels or automatic transfer facilities to pipelines or any other forms of transportation.

*Fill* means the introduction of VOL into a storage vessel but not necessarily to complete capacity.

*Gasoline service station* means any site where gasoline is dispensed to motor vehicle fuel tanks from stationary storage tanks.

*Maximum true vapor pressure* means the equilibrium partial pressure exerted by the volatile organic compounds (as defined in 40 CFR 51.100) in the stored VOL at the temperature equal to the highest calendar-month average of the VOL storage temperature for VOL's stored above or below the ambient temperature or at the local maximum monthly average temperature as reported by the National Weather Service for VOL's stored at the ambient temperature, as determined:

- (1) In accordance with methods described in American Petroleum Institute Bulletin 2517, Evaporation Loss From External Floating Roof Tanks, (incorporated by reference—see §60.17); or
- (2) As obtained from standard reference texts; or
- (3) As determined by ASTM D2879–83, 96, or 97 (incorporated by reference—see §60.17);
- (4) Any other method approved by the Administrator.

*Petroleum* means the crude oil removed from the earth and the oils derived from tar sands, shale, and coal.

*Petroleum liquids* means petroleum, condensate, and any finished or intermediate products manufactured in a petroleum refinery.

*Process tank* means a tank that is used within a process (including a solvent or raw material recovery process) to collect material discharged from a feedstock storage vessel or equipment within the process before the material is transferred to other equipment within the process, to a product or by-product storage vessel, or to a vessel used to store recovered solvent or raw material. In many process tanks, unit operations such as reactions and blending are conducted. Other process tanks, such as surge control vessels and bottoms receivers, however, may not involve unit operations.

*Reid vapor pressure* means the absolute vapor pressure of volatile crude oil and volatile nonviscous petroleum liquids except liquified petroleum gases, as determined by ASTM D323–82 or 94 (incorporated by reference—see §60.17).

*Storage vessel* means each tank, reservoir, or container used for the storage of volatile organic liquids but does not include:

- (1) Frames, housing, auxiliary supports, or other components that are not directly involved in the containment of liquids or vapors;
- (2) Subsurface caverns or porous rock reservoirs; or
- (3) Process tanks.

*Volatile organic liquid (VOL)* means any organic liquid which can emit volatile organic compounds (as defined in 40 CFR 51.100) into the atmosphere.

*Waste* means any liquid resulting from industrial, commercial, mining or agricultural operations, or from community activities that is discarded or is being accumulated, stored, or physically, chemically, or biologically treated prior to being discarded or recycled.

[52 FR 11429, Apr. 8, 1987, as amended at 54 FR 32973, Aug. 11, 1989; 65 FR 61756, Oct. 17, 2000; 68 FR 59333, Oct. 15, 2003]

#### **§ 60.112b Standard for volatile organic compounds (VOC).**

(a) The owner or operator of each storage vessel either with a design capacity greater than or equal to 151 m<sup>3</sup> containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 5.2 kPa but less than 76.6 kPa or with a design capacity greater than or equal to 75 m<sup>3</sup> but less than 151 m<sup>3</sup> containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 27.6 kPa but less than 76.6 kPa, shall equip each storage vessel with one of the following:

(1) A fixed roof in combination with an internal floating roof meeting the following specifications:

(i) The internal floating roof shall rest or float on the liquid surface (but not necessarily in complete contact with it) inside a storage vessel that has a fixed roof. The internal floating roof shall be floating on the liquid surface at all times, except during initial fill and during those intervals when the storage vessel is completely emptied or subsequently emptied and refilled. When the roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be accomplished as rapidly as possible.

(ii) Each internal floating roof shall be equipped with one of the following closure devices between the wall of the storage vessel and the edge of the internal floating roof:

(A) A foam- or liquid-filled seal mounted in contact with the liquid (liquid-mounted seal). A liquid-mounted seal means a foam- or liquid-filled seal mounted in contact with the liquid between the wall of the storage vessel and the floating roof continuously around the circumference of the tank.

(B) Two seals mounted one above the other so that each forms a continuous closure that completely covers the space between the wall of the storage vessel and the edge of the internal floating roof. The lower seal may be vapor-mounted, but both must be continuous.

(C) A mechanical shoe seal. A mechanical shoe seal is a metal sheet held vertically against the wall of the storage vessel by springs or weighted levers and is connected by braces to the floating roof. A flexible coated fabric (envelope) spans the annular space between the metal sheet and the floating roof.

(iii) Each opening in a noncontact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents is to provide a projection below the liquid surface.

(iv) Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains is to be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when they are in use.

(v) Automatic bleeder vents shall be equipped with a gasket and are to be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.

(vi) Rim space vents shall be equipped with a gasket and are to be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting.

(vii) Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least 90 percent of the opening.

(viii) Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover.

(ix) Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.

#### **§ 60.113b Testing and procedures.**

The owner or operator of each storage vessel as specified in §60.112b(a) shall meet the requirements of paragraph (a), (b), or (c) of this section. The applicable paragraph for a particular storage vessel depends on the control equipment installed to meet the requirements of §60.112b.

(a) After installing the control equipment required to meet §60.112b(a)(1) (permanently affixed roof and internal floating roof), each owner or operator shall:

(1) Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service), prior to filling the storage vessel with VOL. If there are holes, tears, or other openings in the primary seal, the secondary seal, or the seal fabric or defects in the internal floating roof, or both, the owner or operator shall repair the items before filling the storage vessel.

(2) For Vessels equipped with a liquid-mounted or mechanical shoe primary seal, visually inspect the internal floating roof and the primary seal or the secondary seal (if one is in service) through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill. If the internal floating roof is not resting on the surface of the VOL inside the storage vessel, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric, the owner or operator shall repair the items or empty and remove the storage vessel from service within 45 days. If a failure that is detected during inspections required in this paragraph cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, a 30-day extension may be requested from the Administrator in the inspection report required in §60.115b(a)(3). Such a request for an extension must document that alternate storage capacity is unavailable and specify a schedule of actions the company will take that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible.

(3) For vessels equipped with a double-seal system as specified in §60.112b(a)(1)(ii)(B):

(i) Visually inspect the vessel as specified in paragraph (a)(4) of this section at least every 5 years; or

(ii) Visually inspect the vessel as specified in paragraph (a)(2) of this section.

(4) Visually inspect the internal floating roof, the primary seal, the secondary seal (if one is in service), gaskets, slotted membranes and sleeve seals (if any) each time the storage vessel is emptied and degassed. If the internal floating roof has defects, the primary seal has holes, tears, or other openings in the seal or the seal fabric, or the secondary seal has holes, tears, or other openings in the seal or the seal fabric, or the gaskets no longer close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10 percent open area, the owner or operator shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the storage vessel with VOL. In no event shall inspections conducted in accordance with this provision occur at intervals greater than 10 years in the case of vessels conducting the annual visual inspection as specified in paragraphs (a)(2) and (a)(3)(ii) of this section and at intervals no greater than 5 years in the case of vessels specified in paragraph (a)(3)(i) of this section.

(5) Notify the Administrator in writing at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required by paragraphs (a)(1) and (a)(4) of this section to afford the Administrator the opportunity to have an observer present. If the inspection required by paragraph (a)(4) of this section is not planned and the owner or operator could not have known about the inspection 30 days in advance or refilling the tank, the owner or operator shall notify the Administrator at least 7 days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, this notification

including the written documentation may be made in writing and sent by express mail so that it is received by the Administrator at least 7 days prior to the refilling.

**§ 60.115b Reporting and recordkeeping requirements.**

The owner or operator of each storage vessel as specified in §60.112b(a) shall keep records and furnish reports as required by paragraphs (a), (b), or (c) of this section depending upon the control equipment installed to meet the requirements of §60.112b. The owner or operator shall keep copies of all reports and records required by this section, except for the record required by (c)(1), for at least 2 years. The record required by (c)(1) will be kept for the life of the control equipment.

(a) After installing control equipment in accordance with §60.112b(a)(1) (fixed roof and internal floating roof), the owner or operator shall meet the following requirements.

(1) Furnish the Administrator with a report that describes the control equipment and certifies that the control equipment meets the specifications of §60.112b(a)(1) and §60.113b(a)(1). This report shall be an attachment to the notification required by §60.7(a)(3).

(2) Keep a record of each inspection performed as required by §60.113b (a)(1), (a)(2), (a)(3), and (a)(4). Each record shall identify the storage vessel on which the inspection was performed and shall contain the date the vessel was inspected and the observed condition of each component of the control equipment (seals, internal floating roof, and fittings).

(3) If any of the conditions described in §60.113b(a)(2) are detected during the annual visual inspection required by §60.113b(a)(2), a report shall be furnished to the Administrator within 30 days of the inspection. Each report shall identify the storage vessel, the nature of the defects, and the date the storage vessel was emptied or the nature of and date the repair was made.

(4) After each inspection required by §60.113b(a)(3) that finds holes or tears in the seal or seal fabric, or defects in the internal floating roof, or other control equipment defects listed in §60.113b(a)(3)(ii), a report shall be furnished to the Administrator within 30 days of the inspection. The report shall identify the storage vessel and the reason it did not meet the specifications of §61.112b(a)(1) or §60.113b(a)(3) and list each repair made.

**§ 60.116b Monitoring of operations.**

(a) The owner or operator shall keep copies of all records required by this section, except for the record required by paragraph (b) of this section, for at least 2 years. The record required by paragraph (b) of this section will be kept for the life of the source.

(b) The owner or operator of each storage vessel as specified in §60.110b(a) shall keep readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel.

(c) Except as provided in paragraphs (f) and (g) of this section, the owner or operator of each storage vessel either with a design capacity greater than or equal to  $151 \text{ m}^3$  storing a liquid with a maximum true vapor pressure greater than or equal to 3.5 kPa or with a design capacity greater than or equal to  $75 \text{ m}^3$  but less than  $151 \text{ m}^3$  storing a liquid with a maximum true vapor pressure greater than or equal to 15.0 kPa shall maintain a record of the VOL stored, the period of storage, and the maximum true vapor pressure of that VOL during the respective storage period.

(d) Except as provided in paragraph (g) of this section, the owner or operator of each storage vessel either with a design capacity greater than or equal to  $151 \text{ m}^3$  storing a liquid with a maximum true vapor pressure that is normally less than 5.2 kPa or with a design capacity greater than or equal to  $75 \text{ m}^3$  but less than  $151 \text{ m}^3$  storing a liquid with a maximum true vapor pressure that is normally less than 27.6 kPa shall notify the Administrator within 30 days when the maximum true vapor pressure of the liquid exceeds the respective maximum true vapor vapor pressure values for each volume range.

(e) Available data on the storage temperature may be used to determine the maximum true vapor pressure as determined below.

(1) For vessels operated above or below ambient temperatures, the maximum true vapor pressure is calculated based upon the highest expected calendar-month average of the storage temperature. For

vessels operated at ambient temperatures, the maximum true vapor pressure is calculated based upon the maximum local monthly average ambient temperature as reported by the National Weather Service.

(2) For crude oil or refined petroleum products the vapor pressure may be obtained by the following:

(i) Available data on the Reid vapor pressure and the maximum expected storage temperature based on the highest expected calendar-month average temperature of the stored product may be used to determine the maximum true vapor pressure from nomographs contained in API Bulletin 2517 (incorporated by reference—see §60.17), unless the Administrator specifically requests that the liquid be sampled, the actual storage temperature determined, and the Reid vapor pressure determined from the sample(s).

(ii) The true vapor pressure of each type of crude oil with a Reid vapor pressure less than 13.8 kPa or with physical properties that preclude determination by the recommended method is to be determined from available data and recorded if the estimated maximum true vapor pressure is greater than 3.5 kPa.

(3) For other liquids, the vapor pressure:

(i) May be obtained from standard reference texts, or

(ii) Determined by ASTM D2879–83, 96, or 97 (incorporated by reference—see §60.17); or

(iii) Measured by an appropriate method approved by the Administrator; or

(iv) Calculated by an appropriate method approved by the Administrator.

[52 FR 11429, Apr. 8, 1987, as amended at 65 FR 61756, Oct. 17, 2000; 65 FR 78276, Dec. 14, 2000; 68 FR 59333, Oct. 15, 2003]

**§ 60.117b Delegation of authority.**

(a) In delegating implementation and enforcement authority to a State under section 111(c) of the Act, the authorities contained in paragraph (b) of this section shall be retained by the Administrator and not transferred to a State.

(b) Authorities which will not be delegated to States: §§60.111b(f)(4), 60.114b, 60.116b(e)(3)(iii), 60.116b(e)(3)(iv), and 60.116b(f)(2)(iii).

[52 FR 11429, Apr. 8, 1987, as amended at 52 FR 22780, June 16, 1987]

## SECTION E.4 FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-8-4(10)]:

- (b) One (1) emergency firewater pump, identified as EU058, approved for construction in 2007, with a maximum power output rate of 202 horsepower, and exhausting to stack SV015.

Under 40 CFR 60, Subpart IIII, the diesel fire pump EU058 is considered a new certified National Fire Protection Association (NFPA) fire pump.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### New Source Performance Standards (NSPS) Requirements [326 IAC 2-7-5(1)]

#### E.4.1 General Provisions Relating to New Source Performance Standards [326 IAC 12-1] [40 CFR Part 60, Subpart A]

- (a) Pursuant to 40 CFR 60.1, the Permittee shall comply with the provisions of 40 CFR Part 60 Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1 for diesel fire pump EU058, except as otherwise specified in 40 CFR Part 60, Subpart IIII.

- (b) Pursuant to 40 CFR 60.19, the Permittee shall submit all required notifications and reports to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue,  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

#### E.4.2 Standards of Performance for Stationary Compression Ignition Internal Combustion Engines [40 CFR Part 60, Subpart IIII] [326 IAC 12]

Pursuant to 40 CFR Part 60, Subpart IIII, the Permittee shall comply with the provisions of Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, which are incorporated by reference as 326 IAC 12, for diesel fire pump EU058 as follows:

#### Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

**Source:** 71 FR 39172, July 11, 2006, unless otherwise noted.

#### § 60.4200 Am I subject to this subpart?

(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (3) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

(2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005 where the stationary CI ICE are:

(i) Manufactured after April 1, 2006 and are not fire pump engines, or

(ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

(3) Owners and operators of stationary CI ICE that modify or reconstruct their stationary CI ICE after July 11, 2005.

(b) The provisions of this subpart are not applicable to stationary CI ICE being tested at a stationary CI ICE test cell/stand.

## **Emission Standards for Owners and Operators**

### **§ 60.4205 What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?**

(c) Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants.

### **§ 60.4206 How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?**

Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§60.4204 and 60.4205 according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

## **Fuel Requirements for Owners and Operators**

### **§ 60.4207 What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?**

(b) Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

(c) Owners and operators of pre-2011 model year stationary CI ICE subject to this subpart may petition the Administrator for approval to use remaining non-compliant fuel that does not meet the fuel requirements of paragraphs (a) and (b) of this section beyond the dates required for the purpose of using up existing fuel inventories. If approved, the petition will be valid for a period of up to 6 months. If additional time is needed, the owner or operator is required to submit a new petition to the Administrator.

## **Other Requirements for Owners and Operators**

### **§ 60.4208 What is the deadline for importing or installing stationary CI ICE produced in the previous model year?**

(a) After December 31, 2008, owners and operators may not install stationary CI ICE (excluding fire pump engines) that do not meet the applicable requirements for 2007 model year engines.

(b) After December 31, 2009, owners and operators may not install stationary CI ICE with a maximum engine power of less than 19 KW (25 HP) (excluding fire pump engines) that do not meet the applicable requirements for 2008 model year engines.

(c) After December 31, 2014, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 19 KW (25 HP) and less than 56 KW (75 HP) that do not meet the applicable requirements for 2013 model year non-emergency engines.

(d) After December 31, 2013, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 56 KW (75 HP) and less than 130 KW (175 HP) that do not meet the applicable requirements for 2012 model year non-emergency engines.

(e) After December 31, 2012, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 130 KW (175 HP), including those above 560 KW (750 HP), that do not meet the applicable requirements for 2011 model year non-emergency engines.

(f) After December 31, 2016, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 560 KW (750 HP) that do not meet the applicable requirements for 2015 model year non-emergency engines.

(g) In addition to the requirements specified in §§60.4201, 60.4202, 60.4204, and 60.4205, it is prohibited to import stationary CI ICE with a displacement of less than 30 liters per cylinder that do not meet the applicable requirements specified in paragraphs (a) through (f) of this section after the dates specified in paragraphs (a) through (f) of this section.

(h) The requirements of this section do not apply to owners or operators of stationary CI ICE that have been modified, reconstructed, and do not apply to engines that were removed from one existing location and reinstalled at a new location.

**§ 60.4209 What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?**

If you are an owner or operator, you must meet the monitoring requirements of this section. In addition, you must also meet the monitoring requirements specified in §60.4211.

(a) If you are an owner or operator of an emergency stationary CI internal combustion engine, you must install a non-resettable hour meter prior to startup of the engine.

**Compliance Requirements**

**§ 60.4211 What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?**

(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. You must also meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

(b) If you are an owner or operator of a pre-2007 model year stationary CI internal combustion engine and must comply with the emission standards specified in §§60.4204(a) or 60.4205(a), or if you are an owner or operator of a CI fire pump engine that is manufactured prior to the model years in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) through (5) of this section.

(1) Purchasing an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.

(2) Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

(3) Keeping records of engine manufacturer data indicating compliance with the standards.

(4) Keeping records of control device vendor data indicating compliance with the standards.

(5) Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

(e) Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. Anyone may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. For owners and operators of emergency engines meeting standards under §60.4205 but not §60.4204, any operation other than emergency operation, and maintenance and testing as permitted in this section, is prohibited.

## Testing Requirements for Owners and Operators

### § 60.4212 What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of less than 30 liters per cylinder?

Owners and operators of stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests pursuant to this subpart must do so according to paragraphs (a) through (d) of this section.

(a) The performance test must be conducted according to the in-use testing procedures in 40 CFR part 1039, subpart F.

(b) Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR part 1039 must not exceed the not-to-exceed (NTE) standards for the same model year and maximum engine power as required in 40 CFR 1039.101(e) and 40 CFR 1039.102(g)(1), except as specified in 40 CFR 1039.104(d). This requirement starts when NTE requirements take effect for nonroad diesel engines under 40 CFR part 1039.

(c) Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR 89.112 or 40 CFR 94.8, as applicable, must not exceed the NTE numerical requirements, rounded to the same number of decimal places as the applicable standard in 40 CFR 89.112 or 40 CFR 94.8, as applicable, determined from the following equation:

$$\text{NTE requirement for each pollutant} = (1.25) \times (\text{STD}) \quad (\text{Eq. 1})$$

Where:

STD = The standard specified for that pollutant in 40 CFR 89.112 or 40 CFR 94.8, as applicable.

Alternatively, stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR 89.112 or 40 CFR 94.8 may follow the testing procedures specified in §60.4213 of this subpart, as appropriate.

(d) Exhaust emissions from stationary CI ICE that are complying with the emission standards for pre-2007 model year engines in §60.4204(a), §60.4205(a), or §60.4205(c) must not exceed the NTE numerical requirements, rounded to the same number of decimal places as the applicable standard in §60.4204(a), §60.4205(a), or §60.4205(c), determined from the equation in paragraph (c) of this section.

Where:

STD = The standard specified for that pollutant in §60.4204(a), §60.4205(a), or §60.4205(c).

Alternatively, stationary CI ICE that are complying with the emission standards for pre-2007 model year engines in §60.4204(a), §60.4205(a), or §60.4205(c) may follow the testing procedures specified in §60.4213, as appropriate.

## Notification, Reports, and Records for Owners and Operators

### § 60.4214 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?

(b) If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.

## General Provisions

### § 60.4218 What parts of the General Provisions apply to me?

Table 8 to this subpart shows which parts of the General Provisions in §§60.1 through 60.19 apply to you.

## Definitions

### § 60.4219 What definitions apply to this subpart?

As used in this subpart, all terms not defined herein shall have the meaning given them in the CAA and in subpart A of this part.

*Combustion turbine* means all equipment, including but not limited to the turbine, the fuel, air, lubrication and exhaust gas systems, control systems (except emissions control equipment), and any ancillary components and sub-components comprising any simple cycle combustion turbine, any regenerative/recuperative cycle combustion turbine, the combustion turbine portion of any cogeneration cycle combustion system, or the combustion turbine portion of any combined cycle steam/electric generating system.

*Compression ignition* means relating to a type of stationary internal combustion engine that is not a spark ignition engine.

*Diesel fuel* means any liquid obtained from the distillation of petroleum with a boiling point of approximately 150 to 360 degrees Celsius. One commonly used form is number 2 distillate oil.

*Diesel particulate filter* means an emission control technology that reduces PM emissions by trapping the particles in a flow filter substrate and periodically removes the collected particles by either physical action or by oxidizing (burning off) the particles in a process called regeneration.

*Emergency stationary internal combustion engine* means any stationary internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc. Stationary CI ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines.

*Engine manufacturer* means the manufacturer of the engine. See the definition of “manufacturer” in this section.

*Fire pump engine* means an emergency stationary internal combustion engine certified to NFPA requirements that is used to provide power to pump water for fire suppression or protection.

*Manufacturer* has the meaning given in section 216(1) of the Act. In general, this term includes any person who manufactures a stationary engine for sale in the United States or otherwise introduces a new stationary engine into commerce in the United States. This includes importers who import stationary engines for sale or resale.

*Maximum engine power* means maximum engine power as defined in 40 CFR 1039.801.

*Model year* means either:

- (1) The calendar year in which the engine was originally produced, or
- (2) The annual new model production period of the engine manufacturer if it is different than the calendar year. This must include January 1 of the calendar year for which the model year is named. It may not begin before January 2 of the previous calendar year and it must end by December 31 of the named calendar year. For an engine that is converted to a stationary engine after being placed into service as a nonroad or other non-stationary engine, model year means the calendar year or new model production period in which the engine was originally produced.

*Other internal combustion engine* means any internal combustion engine, except combustion turbines, which is not a reciprocating internal combustion engine or rotary internal combustion engine.

*Reciprocating internal combustion engine* means any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work.

*Rotary internal combustion engine* means any internal combustion engine which uses rotary motion to convert heat energy into mechanical work.

*Spark ignition* means relating to a gasoline, natural gas, or liquefied petroleum gas fueled engine or any other type of engine with a spark plug (or other sparking device) and with operating characteristics significantly similar to the theoretical Otto combustion cycle. Spark ignition engines usually use a throttle to regulate intake air flow to control power during normal operation. Dual-fuel engines in which a liquid fuel (typically diesel fuel) is used for CI and gaseous fuel (typically natural gas) is used as the primary fuel at an annual average ratio of less than 2 parts diesel fuel to 100 parts total fuel on an energy equivalent basis are spark ignition engines.

*Stationary internal combustion engine* means any internal combustion engine, except combustion turbines, that converts heat energy into mechanical work and is not mobile. Stationary ICE differ from mobile ICE in that a stationary internal combustion engine is not a nonroad engine as defined at 40 CFR 1068.30 (excluding paragraph (2)(ii) of that definition), and is not used to propel a motor vehicle or a vehicle used solely for competition. Stationary ICE include reciprocating ICE, rotary ICE, and other ICE, except combustion turbines.

*Subpart* means 40 CFR part 60, subpart IIII.

*Useful life* means the period during which the engine is designed to properly function in terms of reliability and fuel consumption, without being remanufactured, specified as a number of hours of operation or calendar years, whichever comes first. The values for useful life for stationary CI ICE with a displacement of less than 10 liters per cylinder are given in 40 CFR 1039.101(g). The values for useful life for stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder are given in 40 CFR 94.9(a).

**Tables to Subpart IIII of Part 60**

**Table 1 to Subpart IIII of Part 60. Emission Standards for Stationary Pre-2007 Model Year Engines With a Displacement of <10 Liters per Cylinder and 2007-2010 Model Year Engines >2,237 KW (3,000 HP) and With a Displacement of <10 Liters per Cylinder [As stated in §§ 60.4201(b), 60.4202(b), 60.4204(a), and 60.4205(a), you must comply with the following emission standards]**

Maximum engine power	Emission standards for stationary pre-2007 model year engines with a displacement of <10 liters per cylinder and 2007-2010 model year engines >2,237 KW (3,000 HP) and with a displacement of <10 liters per cylinder in g/KW-hr (g/HP-hr)				
	NMHC + NOX	HC	NOX	CO	PM
KW<8 (HP<11).....	10.5 (7.8)	.....	.....	8.0 (6.0)	1.0 (0.75)
8[le]KW<19 (11[le]HP<25).....	9.5 (7.1)	.....	.....	6.6 (4.9)	0.80 (0.60)
19[le]KW<37 (25[le]HP<50).....	9.5 (7.1)	.....	.....	5.5 (4.1)	0.80 (0.60)
37[le]KW<56 (50[le]HP<75).....	.....	9.2 (6.9)	.....	.....	.....
56[le]KW<75 (75[le]HP<100).....	.....	9.2 (6.9)	.....	.....	.....
75[le]KW<130 (100[le]HP<175).....	.....	9.2 (6.9)	.....	.....	.....
130[le]KW<225 (175[le]HP<300).....	1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)	.....
225[le]KW<450 (300[le]HP<600).....	1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)	.....
450[le]KW[le]560 (600[le]HP[le]750).....	.....	1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)
KW>560 (HP>750).....	1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)	.....

**Table 5 to Subpart IIII of Part 60. Labeling and Recordkeeping Requirements for New Stationary Emergency Engines [You must comply with the labeling requirements in § 60.4210(f) and the recordkeeping requirements in § 60.4214(b) for new emergency stationary CI ICE beginning in the following model years:]**

Engine power	Starting model year
19[le]KW<56 (25[le]HP<75).....	2013
56[le]KW<130 (75[le]HP<175).....	2012
KW>=130 (HP>=175).....	2011

**Table 8 to Subpart IIII of Part 60. Applicability of General Provisions to Subpart IIII**  
**[As stated in § 60.4218, you must comply with the following applicable General Provisions:]**

General Provisions citation	Subject of citation	Applies to subpart	Explanation
§ 60.1.....	General applicability of the General Provisions.	Yes.....	
§ 60.2.....	Definitions.....	Yes.....	Additional terms defined in § 60.4219.
§ 60.3.....	Units and abbreviations...	Yes.....	
§ 60.4.....	Address.....	Yes.....	
§ 60.5.....	Determination of construction or modification.	Yes.....	
§ 60.6.....	Review of plans.....	Yes.....	
§ 60.7.....	Notification and Recordkeeping.	Yes.....	Except that § 60.7 only applies as specified in § 60.4214(a).
§ 60.8.....	Performance tests.....	Yes.....	Except that § 60.8 only applies to stationary CI ICE with a displacement of (>=30 liters per cylinder and engines that are not certified.
§ 60.9.....	Availability of information.	Yes.....	
§ 60.10.....	State Authority.....	Yes.....	
§ 60.11.....	Compliance with standards and maintenance requirements.	No.....	Requirements are specified in subpart IIII.
§ 60.12.....	Circumvention.....	Yes.....	
§ 60.13.....	Monitoring requirements...	Yes.....	Except that § 60.13 only applies to stationary CI ICE with a displacement of (>=30 liters per cylinder.
§ 60.14.....	Modification.....	Yes.....	
§ 60.15.....	Reconstruction.....	Yes.....	
§ 60.16.....	Priority list.....	Yes.....	
§ 60.17.....	Incorporations by reference.	Yes.....	
§ 60.18.....	General control device requirements.	No.....	
§ 60.19.....	General notification and reporting requirements.	Yes.....	

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
and VCAPC**

**FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)  
CERTIFICATION**

Source Name: Emerald Renewable Energy, LLC  
Source Address: Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 47802  
Mailing Address: 15407 McGinty Road, Wayzata, MN  
FESOP Permit No.: F167-24127-00141

**This certification shall be included when submitting monitoring, testing reports/results or other documents as required by this permit.**

Please check what document is being certified:

- Annual Compliance Certification Letter
- Test Result (specify)\_\_\_\_\_
- Report (specify)\_\_\_\_\_
- Notification (specify)\_\_\_\_\_
- Affidavit (specify)\_\_\_\_\_
- Other (specify)\_\_\_\_\_

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Signature:

Printed Name:

Title/Position:

Date:

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE BRANCH  
100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251  
Phone: 317-233-0178  
Fax: 317-233-6865**

**and VCAPC**

**FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)  
EMERGENCY OCCURRENCE REPORT**

Source Name: Emerald Renewable Energy, LLC  
Source Address: Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 47802  
Mailing Address: 15407 McGinty Road, Wayzata, MN  
FESOP Permit No.: F167-24127-00141

**This form consists of 2 pages**

**Page 1 of 2**

- |   |
|---|
| <input type="checkbox"/> This is an emergency as defined in 326 IAC 2-7-1(12) <ul style="list-style-type: none"><li>• The Permittee must notify the Office of Air Quality (OAQ), within four (4) business hours (1-800-451-6027 or 317-233-0178, ask for Compliance Section); and</li><li>• The Permittee must submit notice in writing or by facsimile within two (2) working days (Facsimile Number: 317-233-6865), and follow the other requirements of 326 IAC 2-7-16</li></ul> |
|---|

If any of the following are not applicable, mark N/A

Facility/Equipment/Operation:
Control Equipment:
Permit Condition or Operation Limitation in Permit:
Description of the Emergency:
Describe the cause of the Emergency:

If any of the following are not applicable, mark N/A

**Page 2 of 2**

Date/Time Emergency started:
Date/Time Emergency was corrected:
Was the facility being properly operated at the time of the emergency?    Y    N Describe:
Type of Pollutants Emitted: TSP, PM-10, SO <sub>2</sub> , VOC, NO <sub>x</sub> , CO, Pb, other:
Estimated amount of pollutant(s) emitted during emergency:
Describe the steps taken to mitigate the problem:
Describe the corrective actions/response steps taken:
Describe the measures taken to minimize emissions:
If applicable, describe the reasons why continued operation of the facilities are necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value:

Form Completed by: \_\_\_\_\_

Title / Position: \_\_\_\_\_

Date: \_\_\_\_\_

Phone: \_\_\_\_\_

A certification is not required for this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF AIR QUALITY  
 COMPLIANCE DATA SECTION  
 and VCAPC**

**FESOP Quarterly Report**

Source Name: Emerald Renewable Energy, LLC  
 Source Address: Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 47802  
 Mailing Address: 15407 McGinty Road, Wayzata, MN  
 FESOP Permit No.: F167-24127-00141  
 Facility: CE020  
 Parameter: Hours vented to atmosphere  
 Limit: shall not exceed 500 hours per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- No deviation occurred in this quarter.
- Deviation/s occurred in this quarter.  
 Deviation has been reported on: \_\_\_\_\_

Submitted by: \_\_\_\_\_  
 Title / Position: \_\_\_\_\_  
 Signature: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION  
and VCAPC**

**FESOP Quarterly Report**

Source Name: Emerald Renewable Energy, LLC  
Source Address: Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 47802  
Mailing Address: 15407 McGinty Road, Wayzata, MN  
FESOP Permit No.: F167-24127-00141  
Facility: Boilers (EU056 and EU057)  
Parameter: Input of Natural Gas  
Limit: shall not exceed 2,576 MMCF per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- No deviation occurred in this quarter.
- Deviation/s occurred in this quarter.  
Deviation has been reported on: \_\_\_\_\_

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION  
and VCAPC**

**FESOP Quarterly Report**

Source Name: Emerald Renewable Energy, LLC  
Source Address: Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 47802  
Mailing Address: 15407 McGinty Road, Wayzata, MN  
FESOP Permit No.: F167-24127-00141  
Facility: Ethanol Loading Racks  
Parameter: Denatured Ethanol Loadout  
Limit: Less than 115.5 MMgal per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- No deviation occurred in this quarter.
- Deviation/s occurred in this quarter.  
Deviation has been reported on: \_\_\_\_\_

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION  
and VCAPC**

**FESOP Quarterly Report**

Source Name: Emerald Renewable Energy, LLC  
Source Address: Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 47802  
Mailing Address: 15407 McGinty Road, Wayzata, MN  
FESOP Permit No.: F167-24127-00141  
Facility: Diesel Fire Pump EU059  
Parameter: Operating Hours  
Limit: Less than 300 hours per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- No deviation occurred in this quarter.
- Deviation/s occurred in this quarter.  
Deviation has been reported on: \_\_\_\_\_

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION  
and VCAPC**

**FESOP Quarterly Report**

Source Name: Emerald Renewable Energy, LLC  
Source Address: Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 47802  
Mailing Address: 15407 McGinty Road, Wayzata, MN  
FESOP Permit No.: F167-24127-00141  
Facility: Flare CE017  
Parameter: Operating Hours  
Limit: Less than 963 hours per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- No deviation occurred in this quarter.
- Deviation/s occurred in this quarter.  
Deviation has been reported on: \_\_\_\_\_

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION  
and VCAPC**

**FESOP Quarterly Report**

Source Name: Emerald Renewable Energy, LLC  
Source Address: Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 47802  
Mailing Address: 15407 McGinty Road, Wayzata, MN  
FESOP Permit No.: F167-24127-00141  
Facility: Flare CE018  
Parameter: Operating Hours  
Limit: Less than 963 hours per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- No deviation occurred in this quarter.
- Deviation/s occurred in this quarter.  
Deviation has been reported on: \_\_\_\_\_

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION  
and VCAPC**

**FESOP Quarterly Report**

Source Name: Emerald Renewable Energy, LLC  
Source Address: Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 47802  
Mailing Address: 15407 McGinty Road, Wayzata, MN  
FESOP Permit No.: F167-24127-00141  
Facility: Flare CE019  
Parameter: Operating Hours  
Limit: Less than 876 hours per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- No deviation occurred in this quarter.
- Deviation/s occurred in this quarter.  
Deviation has been reported on: \_\_\_\_\_

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION  
and VCAPC**

**FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)  
QUARTERLY DEVIATION AND COMPLIANCE MONITORING REPORT**

Source Name: Emerald Renewable Energy, LLC  
Source Address: Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 47802  
Mailing Address: 15407 McGinty Road, Wayzata, MN  
FESOP Permit No.: F167-24127-00141

Months: \_\_\_\_\_ to \_\_\_\_\_ Year: \_\_\_\_\_

Page 1 of 2

<p>This report shall be submitted quarterly based on a calendar year. Any deviation from the requirements, the date(s) of each deviation, the probable cause of the deviation, and the response steps taken must be reported. A deviation required to be reported pursuant to an applicable requirement that exists independent of the permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report. Additional pages may be attached if necessary. If no deviations occurred, please specify in the box marked "No deviations occurred this reporting period".</p>	
<input type="checkbox"/> NO DEVIATIONS OCCURRED THIS REPORTING PERIOD.	
<input type="checkbox"/> THE FOLLOWING DEVIATIONS OCCURRED THIS REPORTING PERIOD	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	

<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	

Form Completed by: \_\_\_\_\_

Title / Position: \_\_\_\_\_

Date: \_\_\_\_\_

Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

Mail to: Permit Administration & Development Section  
Office of Air Quality  
100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251

Emerald Renewable Energy, LLC  
Section 5 of Township 10 North, Range 9 West  
Terre Haute, Indiana 47802

Affidavit of Construction

I, \_\_\_\_\_, being duly sworn upon my oath, depose and say:  
(Name of the Authorized Representative)

1. I live in \_\_\_\_\_ County, Indiana and being of sound mind and over twenty-one (21) years of age, I am competent to give this affidavit.
2. I hold the position of \_\_\_\_\_ for \_\_\_\_\_.  
(Title) (Company Name)
3. By virtue of my position with \_\_\_\_\_, I have personal  
(Company Name)  
knowledge of the representations contained in this affidavit and am authorized to make  
these representations on behalf of \_\_\_\_\_.  
(Company Name)
4. I hereby certify that Emerald Renewable Energy, LLC located Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 47802, completed construction of the an ethanol production plant on \_\_\_\_\_ in conformity with the requirements and intent of the construction permit application received by the Office of Air Quality on December 28, 2006, and as permitted pursuant to New Source Construction Permit and Federally Enforceable State Operating Permit No. F167-24127-00141, Plant ID No. 167-00141 issued on \_\_\_\_\_.

Further Affiant said not.

I affirm under penalties of perjury that the representations contained in this affidavit are true, to the best of my information and belief.

Signature \_\_\_\_\_

Date \_\_\_\_\_

STATE OF INDIANA)  
)SS

COUNTY OF \_\_\_\_\_ )

Subscribed and sworn to me, a notary public in and for \_\_\_\_\_ County and State of  
Indiana on this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_.

My Commission expires:

Signature \_\_\_\_\_

\_\_\_\_\_  
Name (typed or printed)

# **Attachment A Fugitive Dust Control Plan**

## **Emerald Renewable Energy, LLC Section 5 of Township 10 North, Range 9 West Terre Haute, Indiana 47802**

### **Overview**

Emerald Renewable Energy – Terre Haute, LLC. (Emerald) is proposing to construct a new 115,500,000 million gallons per year fuel ethanol production facility just to the southwest of the Terre Haute, Indiana city limits. Pursuant to Title 326 of the Indiana Administrative Code (IAC), Article 6, Rule 5, this fugitive Dust Control Plan has been prepared to identify all potential particulate matter (PM) fugitive emission sources and to summarize proposed control measures for each source. This fugitive dust control plan is a supplement to the Air Quality Construction Permit application that was originally submitted for this facility.

### **Emission Sources**

There will be three main potential generators of PM fugitive emissions associated with the operation of the Emerald Renewable Energy facility. Emitting activities to be addressed include:

- Unloading and handling grain
- Handling and loading of dried distillers grain and solubles (DDGS)
- Vehicular traffic on paved plant roads

Vehicle traffic on paved roads will consist of hopper-bottom and straight-bottom trucks throughout the year. It also may include straight/dump trucks and farm tractor/wagon combinations, expected primarily during the fall corn harvest season. The amount of corn received and DDGS produced was identified in the original permit application. There will not be any outdoor corn storage.

All other operations at the plant that could produce fugitive PM emissions are totally enclosed and controlled by state-of-the-art air emission control equipment to reduce PM emissions. The site diagram that included potential fugitive PM emitters was included in Figure 1 of the original permit application.

### **Emission Controls**

Grain unloading at the plant will be conducted within an enclosure. PM emissions from the receiving pits are controlled with a high efficiency fabric filter (baghouse) system.

Handling and loading of DDGS at the plant will be performed inside building enclosures. DDGS loading spout PM emissions are further controlled with retractable spouts using high efficiency fabric filtration.

Paved road vehicular emissions will be controlled by limiting vehicle speeds along the plant roads to 10 miles per hour. Roadways will be cleaned as needed with a mechanical or vacuum sweeper.

### **Implementation Schedule**

This fugitive dust control plan will be implemented upon the completion of facility construction. The plan will be kept onsite and updated as necessary to prevent fugitive PM emissions from the operation of the Emerald Renewable Energy – Terre Haute plant.

**Indiana Department of Environmental Management  
Office of Air Quality**

**Addendum to the Technical Support Document  
For a New Construction Federally Enforceable State Operating Permit (FESOP)**

**Source Background and Description**

Source Name:	Emerald Renewable Energy, LLC
Source Location:	Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 47802
County:	Vigo
SIC Code:	2869
Operation Permit No.:	F167-24127-00141
Permit Reviewer:	ERG/JR

On June 7, 2007, the Office of Air Quality (OAQ) had a notice published in the Tribune Star of Terre Haute, Indiana stating that Emerald Renewable Energy, LLC (Emerald Renewable) had applied for a Federally Enforceable State Operating Permit (FESOP) to operate an ethanol manufacturing facility with control. The notice also stated that OAQ proposed to issue a permit for this operation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

A comment on the draft permit was submitted by Laura Mitchell. Changes made as a result of these comments are shown throughout this addendum. New language is in **bold** while deleted language is in ~~strikeout~~. The Table of Contents has been updated as necessary.

**Comment 1:**

The zip code "46001" used in this permit belongs to Madison County, Indiana and not the Terre Haute area.

**Response to Comment 1:**

IDEM, OAQ agrees that the zip code "46001" does not reflect the correct location of this ethanol plant; therefore, the zip code has been revised to correct this error throughout the permit, including all of the reporting forms and cover pages.

Emerald Renewable Energy, LLC  
Section 5 of Township 10 North, Range 9 West  
Terre Haute, Indiana ~~46001~~**47802**

Upon further review, IDEM has decided to make the following revisions to the permit (bolded language has been added, the language with a line through it has been deleted):

1. Effective July 2, 2007, U.S. EPA has revised the definition of a "major stationary source" under 40 CFR Parts 51 and 52 PSD and Nonattainment New Source Review, and the definition of a "major source" under 40 CFR parts 70 and 71 (State and Federal Operating Permits). U.S. EPA has reinterpreted the component term "chemical process plants" within the statutory definition of

“major emitting facility” in section 169(1) of the CAA to exclude wet and dry corn milling facilities that produce ethanol for fuel, or produce ethanol through a natural fermentation process that involves the use of such things as corn, sugar beets, sugar cane or cellulosic biomass as a feedstock regardless of whether the ethanol is produced for human consumption, fuel, or for an industrial purpose. Therefore, ethanol plants are no longer required to count fugitive emissions for purposes of determining whether a source is a major source under the PSD, nonattainment NSR, or Title V programs unless there is an applicable New Source Performance Standard that was in effect on August 7, 1980 for the ethanol plant, or the ethanol plant has a “nested” source category. Although the primary source does not fall under one of the 28 listed source categories and fugitive emissions are not counted towards PSD applicability for the primary source; the fugitive emission exclusion is not extended to the boilers located at Emerald Renewable because they are considered a “nested” source category. According to U.S. EPA Region V guidance memo addressed to Indiana Department of Environmental Management (dated March 6, 2003), since the combined heat input capacity of the two (2) boilers located at Emerald Renewable is greater than 250 MMBtu/hr, the boilers fall under one of the 28 listed source categories and are considered “nested” within a non-listed source. Therefore, fugitive emissions from the boilers located at Emerald Renewable are counted for purposes of determining whether this source is a major source under the PSD, nonattainment, or Title V programs.

The calculations have been revised such that the potential to emit does not reflect fugitive emissions from grain and DDGS handling, paved and unpaved roads, and equipment leaks (see Appendix A - TSD Addendum). Therefore, the permit conditions limiting the amount of grain received by straight trucks and hopper trucks, and the amount of DDGS produced have been removed. The condition requiring the Permittee to use periodic sweeping to control PM and PM10 emissions from the paved roads is also no longer necessary and has been removed from the permit.

The following table summarizes the total potential to emit, reflecting all limits, of the significant emission units after control and upon startup of the ethanol production plant. The source remains a minor source under PSD rules and section 112 of the clean air act. The potential to emit of the criteria pollutants from the entire source is still limited to less than the Title V major source thresholds. Therefore, the requirements of 326 IAC 2-7 are not applicable to this source.

Process/Emission Unit	Potential To Emit (tons/year)						
	PM	PM10	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	HAPs
Grain Receiving Area, Internal Handling System, Hammermills, and Ground Corn Transfer Conveyor	11.9	11.9					
DDGS Handling and Loadout	1.83	1.83					
DDGS Coolers	3.15	3.15		9.46			1.10
Fermentation				2.77			0.77
RTO Stack	44.5	44.5	55.0	47.7	48.3	42.6	15.8
Boilers	2.45	9.79	0.77	7.09	46.0	52.6	2.43
Ethanol Loadout and Flare				6.41	2.42	0.45	0.37
Biomethanator Flare				0.11	0.75	0.14	
Cooling Tower	2.52	2.52					
Emergency Fire Pump (Insignificant)	0.01	0.01	0.06	0.02	0.02	0.42	Negligible

Process/Emission Unit	Potential To Emit (tons/year)						
	PM	PM10	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	HAPs
Storage Tanks (Insignificant)				2.53			
Wet Cake Storage*							
Insignificant Combustion	0.03	0.14	0.01	0.10	0.71	1.68	0.03
Other Insignificant Activities	1.00	1.00		1.00			
<b>Total Emissions</b>	<b>67.4</b>	<b>74.9</b>	<b>55.9</b>	<b>77.2</b>	<b>98.2</b>	<b>97.8</b>	<b>20.5</b>

Note: The portions of the table left blank indicate that the pollutant is not emitted by the emission unit.

\* This plant is capable of producing both DDGS and WDGS. The emissions from DDGS production is the worst case scenario. Therefore, the PTE of wet cake storage is not included in the PTE for the entire source.

The following changes have been made to the permit:

**A.1 General Information [326 IAC 2-8-3(b)]**

The Permittee owns and operates a stationary ethanol production plant.

Source Address: Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana ~~46001~~ **47802**  
 Mailing Address: 15407 McGinty Road, Wayzata, MN  
 General Source Phone Number: (952) 742-4991  
 SIC Code: 2869  
 County Location: Vigo  
 Source Location Status: Attainment for all criteria pollutants  
 Source Status: Federally Enforceable State Operating Permit Program  
 Minor Source, under PSD and Emission Offset Rules  
 Minor Source, Section 112 of the Clean Air Act  
~~1 of 28 Source Categories~~ **Ethanol plant is not 1 of 28 listed source categories; boilers are considered 1 of 28 listed source categories, nested within the ethanol plant**

**C.1 Overall Source Limit [326 IAC 2-8]**

The purpose of this permit is to limit this source's potential to emit to less than major source levels for the purpose of Section 502(a) of the Clean Air Act.

...

- (b) The potential to emit particulate matter (PM) from the entire source shall be limited to less than ~~one hundred (100)~~ **two hundred fifty (250)** tons per twelve (12) consecutive month period. This limitation shall make the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)) not applicable.
- (c) **The potential to emit particulate matter (PM) from the boilers shall be limited to less than one hundred (100) tons per twelve (12) consecutive month period. This limitation shall make the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)) not applicable.**
- (ed) This condition shall include all emission points at this source including those that are insignificant as defined in 326 IAC 2-7-1(21). The source shall be allowed to add insignificant activities not already listed in this permit, provided that the source's potential to emit does not exceed the above specified limits.
- (de) Section D of this permit contains independently enforceable provisions to satisfy this requirement.

**D.1.4 PM and PM10 Emissions [326 IAC 2-2] [326 IAC 2-8-4]**

Pursuant to 326 IAC 2-8-4 (FESOP) and in order to render the requirements of 326 IAC 2-2 (PSD) not applicable, the Permittee shall comply with the following emission limits for the grain receiving and DDGS handling operations:

- (a) — The PM and PM10 emissions from the following units shall not exceed the emission limits listed in the table below.

Unit ID	Unit Description	Baghouse ID	PM/PM10 Emission Limit (lbs/hr)
EU001, EU002, EU003, EU004, EU005, EU006, EU007, EU008, EU009, EU010, EU011, EU012, EU013, EU014	Grain Receiving Area	CE001	1.54
EU015, EU016, EU017, EU018, EU023	Internal Handling System	CE002	0.17
EU019	Hammermill #1	CE003	0.25
EU020	Hammermill #2	CE004	0.25
EU021	Hammermill #3	CE005	0.25
EU022	Hammermill #4	CE006	0.25
EU035	Ground Corn Transfer Conveyor	CE007	0.02
EU049, EU050, EU051, EU052, EU053	DDGS Reclaim Operation	CE010	0.17
EU054	DDGS Truck Loadout	CE011 and CE012	0.12
EU055	DDGS Rail Loadout	CE013 and CE014	0.12

- (b) — ~~The total grain received by straight trucks shall not exceed 250,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month.~~
- (c) — ~~The total grain received by hopper trucks shall not exceed 905,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month.~~
- (d) — ~~The total DDGS produced shall not exceed 371,250 tons per twelve (12) consecutive month period with compliance determined at the end of each month.~~
- (e) — ~~The Permittee shall use periodic sweeping to control PM and PM10 emissions from the paved roads. The sweeping shall be applied in a manner and at a frequency sufficient to ensure compliance with 326 IAC 2-2 and 326 IAC 2-8.~~

Combined with the PM/PM10 emissions from other emission units, the PM/PM10 emissions from the entire source are limited to less than 100 tons/yr. **Combined with the PM emissions from other emission units, the PM emissions from the entire source are limited to less than 250 tons/yr.** Therefore, the requirements of 326 IAC 2-7 (Part 70 Program) and 326 IAC 2-2 (PSD) are not applicable.

#### D.1.12 Record Keeping Requirements

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- ~~(a) To document compliance with Condition D.1.4(b), the Permittee shall maintain monthly records of the amount of grain received by straight truck at this plant.~~
- ~~(b) To document compliance with Condition D.1.4(c), the Permittee shall maintain monthly records of the amount of grain received by hopper truck at this plant.~~
- ~~(c) To document compliance with Condition D.1.4(d), the Permittee shall maintain monthly records of the amount of DDGS produced.~~
- ~~(d) To document compliance with Condition D.1.4(e), the Permittee shall maintain records of the dates and times that sweeping is performed on the paved roads.~~
- (ea)** To document compliance with Condition D.1.9, the Permittee shall maintain records of daily visible emission notations of the baghouse stack exhausts. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day).
- (fb)** To document compliance with Condition D.1.10, the Permittee shall maintain daily records of pressure drop for baghouses during normal operation. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of a pressure drop reading (e.g. the process did not operate that day).
- (gc)** All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

#### D.1.13 Reporting Requirements

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~~A quarterly summary of the information to document compliance with Conditions D.1.4(b), D.1.4(c), and D.1.4(d) shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).~~

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION**

**FESOP Quarterly Report**

Source Name: Emerald Renewable Energy, LLC  
Source Address: Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 46001  
Mailing Address: 15407 McGinty Road, Wayzata, MN  
FESOP Permit No.: F167-24127-00141  
Facility: Grain Receiving and Handling  
Parameter: The amount of corn received  
Limit: Less than 1,155,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

~~No deviation occurred in this quarter.~~

~~Deviation/s occurred in this quarter.~~

~~Deviation has been reported on: \_\_\_\_\_~~

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

~~Attach a signed certification to complete this report.~~

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF AIR QUALITY  
 COMPLIANCE DATA SECTION**

**FESOP Quarterly Report**

Source Name: \_\_\_\_\_ Emerald Renewable Energy, LLC \_\_\_\_\_  
 Source Address: \_\_\_\_\_ Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 46001 \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_ 15407 McGinty Road, Wayzata, MN \_\_\_\_\_  
 FESOP Permit No.: \_\_\_\_\_ F167-24127-00141 \_\_\_\_\_  
 Facility: \_\_\_\_\_ Grain Receiving (Straight Trucks) \_\_\_\_\_  
 Parameter: \_\_\_\_\_ The amount of corn received by straight trucks \_\_\_\_\_  
 Limit: \_\_\_\_\_ shall not exceed 250,000 tons per twelve (12) consecutive month period with  
 compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

\_\_\_\_\_  No deviation occurred in this quarter.  
 \_\_\_\_\_  Deviation/s occurred in this quarter.  
 \_\_\_\_\_ Deviation has been reported on: \_\_\_\_\_

Submitted by: \_\_\_\_\_  
 Title / Position: \_\_\_\_\_  
 Signature: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Phone: \_\_\_\_\_

\_\_\_\_\_ Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION**

**FESOP Quarterly Report**

Source Name: \_\_\_\_\_ Emerald Renewable Energy, LLC \_\_\_\_\_  
Source Address: \_\_\_\_\_ Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 46001 \_\_\_\_\_  
Mailing Address: \_\_\_\_\_ 15407 McGinty Road, Wayzata, MN \_\_\_\_\_  
FESOP Permit No.: \_\_\_\_\_ F167-24127-00141 \_\_\_\_\_  
Facility: \_\_\_\_\_ Grain Receiving (Hopper Trucks) \_\_\_\_\_  
Parameter: \_\_\_\_\_ The amount of corn received by hopper trucks \_\_\_\_\_  
Limit: \_\_\_\_\_ shall not exceed 905,000 tons per twelve (12) consecutive month period with  
compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

\_\_\_\_\_  No deviation occurred in this quarter.  
\_\_\_\_\_  Deviation/s occurred in this quarter.  
\_\_\_\_\_ Deviation has been reported on: \_\_\_\_\_

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

\_\_\_\_\_ Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF AIR QUALITY  
 COMPLIANCE DATA SECTION**

**FESOP Quarterly Report**

Source Name: \_\_\_\_\_ Emerald Renewable Energy, LLC \_\_\_\_\_  
 Source Address: \_\_\_\_\_ Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 46001 \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_ 15407 McGinty Road, Wayzata, MN \_\_\_\_\_  
 FESOP Permit No.: \_\_\_\_\_ F167-24127-00141 \_\_\_\_\_  
 Facility: \_\_\_\_\_ DDGS dryers (EU045 and EU046) \_\_\_\_\_  
 Parameter: \_\_\_\_\_ The amount of DDGS Produced \_\_\_\_\_  
 Limit: \_\_\_\_\_ Less than 371,250 tons per twelve (12) consecutive month period with  
 compliance determined at the end of each month.

QUARTER: \_\_\_\_\_ YEAR: \_\_\_\_\_

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

\_\_\_\_\_  No deviation occurred in this quarter.  
 \_\_\_\_\_  Deviation/s occurred in this quarter.  
 \_\_\_\_\_ Deviation has been reported on: \_\_\_\_\_

Submitted by: \_\_\_\_\_  
 Title / Position: \_\_\_\_\_  
 Signature: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Phone: \_\_\_\_\_

\_\_\_\_\_ Attach a signed certification to complete this report.

2. In order to clarify recordkeeping requirements specific to parametric monitoring, Condition D.2.17(c) was revised. Temperature readings should be taken on a continuous basis.

#### D.2.17 Record Keeping Requirements

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- (c) To document compliance with Condition D.2.11, the Permittee shall maintain continuous temperature records for each of the thermal oxidizers and the 3-hour average temperature used to demonstrate compliance during the most recent compliant stack test. ~~The Permittee shall include in its daily record when a temperature reading is not taken and the reason for the lack of a temperature reading (e.g. the process did not operate that day).~~

...

3. In order to clarify that the thermal oxidizer stack (SV010) always vents outside the building, Condition D.2.10(a) was revised.

#### D.2.10 Visible Emissions Notations

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- (a) Visible emission notations of the scrubber CE020 stack, thermal oxidizers common stack (SV010), and the baghouse stacks (SV005 and SV006) shall be performed once per day during normal daylight operations ~~when exhausting to the atmosphere~~. A trained employee shall record whether emissions are normal or abnormal.
4. The Quarterly Reporting Forms were updated to include Vigo County Air Pollution Control Agency in the heading. The source is required to submit the forms to IDEM and the local agency.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION  
and VCAPC**

FESOP Quarterly Report

5. The proposed ethanol plant has potential fugitive particulate emissions, as defined in 326 IAC 6-5-2, greater than 25 tons per year. Therefore, the requirements of 326 IAC 6-5 are applicable. A fugitive dust plan was submitted on July 28, 2007. The following changes have been made to the permit.

#### **C.7 Fugitive Particulate Matter Emission Limitations [326 IAC 6-5]**

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**Pursuant to 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations), fugitive particulate matter emissions shall be controlled according to the plan submitted on July 27, 2007. The plan is included as Attachment A.**

#### **C.78 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18] [40 CFR 61, Subpart M]**

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#### **C.89 Performance Testing [326 IAC 3-6]**

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#### **C.910 Compliance Requirements [326 IAC 2-1.1-11]**

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#### **C.4011 Compliance Monitoring [326 IAC 2-8-4(3)][326 IAC 2-8-5(a)(1)]**

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C.4412 Maintenance of Continuous Emission Monitoring Equipment [326 IAC 2-7-5(3)(A)(iii)]

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C.4213 Monitoring Methods [326 IAC 3] [40 CFR 60] [40 CFR 63]

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...

C.4314 Instrument Specifications [326 IAC 2-1.1-11] [326 IAC 2-8-4(3)][326 IAC 2-8-5(1)]

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C.4415 Risk Management Plan [326 IAC 2-8-4] [40 CFR 68]

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C.4516 Response to Excursions or Exceedances [326 IAC 2-8-4] [326 IAC 2-8-5]

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C.4617 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-8-4][326 IAC 2-8-5]

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C.4718 General Record Keeping Requirements [326 IAC 2-8-4(3)] [326 IAC 2-8-5]

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C.4819 General Reporting Requirements [326 IAC 2-8-4(3)(C)] [326 IAC 2-1.1-11]

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C.4920 Compliance with 40 CFR 82 and 326 IAC 22-1

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## **Attachment A Fugitive Dust Control Plan**

### **Emerald Renewable Energy, LLC Section 5 of Township 10 North, Range 9 West Terre Haute, Indiana 47802**

#### **Overview**

**Emerald Renewable Energy – Terre Haute, LLC. (Emerald) is proposing to construct a new 115,500,000 million gallons per year fuel ethanol production facility just to the southwest of the Terre Haute, Indiana city limits. Pursuant to Title 326 of the Indiana Administrative Code (IAC), Article 6, Rule 5, this fugitive Dust Control Plan has been prepared to identify all potential particulate matter (PM) fugitive emission sources and to summarize proposed control measures for each source. This fugitive dust control plan is a supplement to the Air Quality Construction Permit application that was originally submitted for this facility.**

#### **Emission Sources**

**There will be three main potential generators of PM fugitive emissions associated with the operation of the Emerald Renewable Energy facility. Emitting activities to be addressed include:**

- **Unloading and handling grain**
- **Handling and loading of dried distillers grain and solubles (DDGS)**
- **Vehicular traffic on paved plant roads**

**Vehicle traffic on paved roads will consist of hopper-bottom and straight-bottom trucks throughout the year. It also may include straight/dump trucks and farm tractor/wagon combinations, expected primarily during the fall corn harvest season. The amount of corn received and DDGS produced was identified in the original permit application. There will not be any outdoor corn storage.**

**All other operations at the plant that could produce fugitive PM emissions are totally enclosed and controlled by state-of-the-art air emission control equipment to reduce PM emissions. The site diagram that included potential fugitive PM emitters was included in Figure 1 of the original permit application.**

### **Emission Controls**

**Grain unloading at the plant will be conducted within an enclosure. PM emissions from the receiving pits are controlled with a high efficiency fabric filter (baghouse) system.**

**Handling and loading of DDGS at the plant will be performed inside building enclosures. DDGS loading spout PM emissions are further controlled with retractable spouts using high efficiency fabric filtration.**

**Paved road vehicular emissions will be controlled by limiting vehicle speeds along the plant roads to 10 miles per hour. Roadways will be cleaned as needed with a mechanical or vacuum sweeper.**

### **Implementation Schedule**

**This fugitive dust control plan will be implemented upon the completion of facility construction. The plan will be kept onsite and updated as necessary to prevent fugitive PM emissions from the operation of the Emerald Renewable Energy – Terre Haute plant.**

6. 40 CFR 60, Subpart Db was revised on June 13, 2007. However, pursuant to 326 IAC 1-1-3, the version of the rule referenced by 326 IAC 12 was the version in existence on June 9, 2006, which had been most recently amended on June 13, 2007. Therefore, the June 13, 2007 amendments to the federal rule are not approved into the 326 IAC 12, and boilers EU056 and EU057 at this source are subject to both versions of the rule. However, all of the requirements of the 326 IAC 12 rule that are applicable to this source are the same as the requirements in the most recent revision to 40 CFR 60, Subpart Db. Therefore, in order to provide the most recent verbiage and formatting of the rule, Section E.2 of the permit is being revised to reflect the June 13, 2007 version of 40 CFR 60, Subpart Db. The following changes have been made to the permit:

## **SECTION E.2 FACILITY OPERATION CONDITIONS**

...

~~§ 60.40b—Applicability and delegation of authority.~~

~~(a) The affected facility to which this subpart applies is each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 MW (100 million Btu/hour).~~

~~(b) Any affected facility meeting the applicability requirements under paragraph (a) of this section and commencing construction, modification, or reconstruction after June 19, 1984, but on or before June 19, 1986, is subject to the following standards:~~

~~(1) Coal-fired affected facilities having a heat input capacity between 29 and 73 MW (100 and 250 million Btu/hour), inclusive, are subject to the particulate matter and nitrogen oxides standards under this subpart.~~

~~(2) Coal-fired affected facilities having a heat input capacity greater than 73 MW (250 million Btu/hour) and meeting the applicability requirements under subpart D (Standards of performance for fossil-fuel-fired~~

~~steam generators; §60.40) are subject to the particulate matter and nitrogen oxides standards under this subpart and to the sulfur dioxide standards under subpart D (§60.43).~~

~~(3) Oil-fired affected facilities having a heat input capacity between 29 and 73 MW (100 and 250 million Btu/hour), inclusive, are subject to the nitrogen oxides standards under this subpart.~~

~~(4) Oil-fired affected facilities having a heat input capacity greater than 73 MW (250 million Btu/hour) and meeting the applicability requirements under subpart D (Standards of performance for fossil fuel-fired steam generators; §60.40) are also subject to the nitrogen oxides standards under this subpart and the particulate matter and sulfur dioxide standards under subpart D (§60.42 and §60.43).~~

~~(c) Affected facilities which also meet the applicability requirements under subpart J (Standards of performance for petroleum refineries; §60.104) are subject to the particulate matter and nitrogen oxides standards under this subpart and the sulfur dioxide standards under subpart J (§60.104).~~

~~(d) Affected facilities which also meet the applicability requirements under subpart E (Standards of performance for incinerators; §60.50) are subject to the nitrogen oxides and particulate matter standards under this subpart.~~

~~(e) Steam-generating units meeting the applicability requirements under subpart Da (Standards of performance for electric utility steam-generating units; §60.40Da) are not subject to this subpart.~~

~~(f) Any change to an existing steam-generating unit for the sole purpose of combusting gases containing TRS as defined under §60.281 is not considered a modification under §60.14 and the steam-generating unit is not subject to this subpart.~~

~~(g) In delegating implementation and enforcement authority to a State under section 111(c) of the Act, the following authorities shall be retained by the Administrator and not transferred to a State.~~

~~(1) Section 60.44b(f).~~

~~(2) Section 60.44b(g).~~

~~(3) Section 60.49b(a)(4).~~

~~(h) Affected facilities which meet the applicability requirements under subpart Eb (Standards of performance for municipal waste combustors; §60.50b) are not subject to this subpart.~~

~~(i) Heat recovery steam generators that are associated with combined cycle gas turbines and that meet the applicability requirements of subpart KKKK of this part are not subject to this subpart. This subpart will continue to apply to all other heat recovery steam generators that are capable of combusting more than 29 MW (100 MMBtu/h) heat input of fossil fuel. If the heat recovery steam generator is subject to this subpart, only emissions resulting from combustion of fuels in the steam-generating unit are subject to this subpart. (The gas turbine emissions are subject to subpart GG or KKKK, as applicable, of this part.)~~

~~(j) Any affected facility meeting the applicability requirements under paragraph (a) of this section and commencing construction, modification, or reconstruction after June 19, 1986 is not subject to Subpart D (Standards of Performance for Fossil Fuel-Fired Steam Generators, §60.40).~~

~~(k) Any facility covered by subpart Eb or subpart AAAA of this part is not covered by this subpart.~~

~~(l) Any facility covered by an EPA approved State or Federal section 111(d)/129 plan implementing subpart Cb or subpart BBBB of this part is not covered by this subpart.~~

~~[52 FR 47842, Dec. 16, 1987, as amended at 63 FR 49454, Sept. 16, 1998; 65 FR 61752, Oct. 17, 2000; 71 FR 9881, Feb. 27, 2006; 71 FR 33400, June 9, 2006]~~

#### ~~§ 60.41b—Definitions.~~

~~As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in subpart A of this part.~~

~~*Annual capacity factor* means the ratio between the actual heat input to a steam-generating unit from the fuels listed in §60.42b(a), §60.43b(a), or §60.44b(a), as applicable, during a calendar year and the potential heat input to the steam-generating unit had it been operated for 8,760 hours during a calendar~~

year at the maximum steady-state design heat input capacity. In the case of steam-generating units that are rented or leased, the actual heat input shall be determined based on the combined heat input from all operations of the affected facility in a calendar year.

*Byproduct/waste* means any liquid or gaseous substance produced at chemical manufacturing plants, petroleum refineries, or pulp and paper mills (except natural gas, distillate oil, or residual oil) and combusted in a steam-generating unit for heat recovery or for disposal. Gaseous substances with carbon dioxide levels greater than 50 percent or carbon monoxide levels greater than 10 percent are not byproduct/waste for the purpose of this subpart.

*Chemical manufacturing plants* means industrial plants which are classified by the Department of Commerce under Standard Industrial Classification (SIC) Code 28.

*Coal* means all solid fuels classified as anthracite, bituminous, subbituminous, or lignite by the American Society of Testing and Materials in ASTM D388-77, 90, 91, 95, or 98a, Standard Specification for Classification of Coals by Rank (IBR—see §60.17), coal refuse, and petroleum coke. Coal-derived synthetic fuels, including but not limited to solvent refined coal, gasified coal, coal-oil mixtures, and coal-water mixtures, are also included in this definition for the purposes of this subpart.

*Coal refuse* means any byproduct of coal mining or coal cleaning operations with an ash content greater than 50 percent, by weight, and a heating value less than 13,900 kJ/kg (6,000 Btu/lb) on a dry basis.

*Cogeneration*, also known as combined heat and power, means a facility that simultaneously produces both electric (or mechanical) and useful thermal energy from the same primary energy source.

*Combined cycle system* means a system in which a separate source, such as a gas turbine, internal combustion engine, kiln, etc., provides exhaust gas to a heat recovery steam-generating unit.

*Conventional technology* means wet flue gas desulfurization (FGD) technology, dry FGD technology, atmospheric fluidized bed combustion technology, and oil hydrodesulfurization technology.

*Distillate oil* means fuel oils that contain 0.05 weight percent nitrogen or less and comply with the specifications for fuel oil numbers 1 and 2, as defined by the American Society of Testing and Materials in ASTM D396-78, 89, 90, 92, 96, or 98, Standard Specifications for Fuel Oils (incorporated by reference—see §60.17).

*Dry flue gas desulfurization technology* means a sulfur dioxide control system that is located downstream of the steam-generating unit and removes sulfur oxides from the combustion gases of the steam-generating unit by contacting the combustion gases with an alkaline slurry or solution and forming a dry powder material. This definition includes devices where the dry powder material is subsequently converted to another form. Alkaline slurries or solutions used in dry flue gas desulfurization technology include but are not limited to lime and sodium.

*Duct burner* means a device that combusts fuel and that is placed in the exhaust duct from another source, such as a stationary gas turbine, internal combustion engine, kiln, etc., to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a heat recovery steam-generating unit.

*Emerging technology* means any sulfur dioxide control system that is not defined as a conventional technology under this section, and for which the owner or operator of the facility has applied to the Administrator and received approval to operate as an emerging technology under §60.49b(a)(4).

*Federally enforceable* means all limitations and conditions that are enforceable by the Administrator, including the requirements of 40 CFR parts 60 and 61, requirements within any applicable State Implementation Plan, and any permit requirements established under 40 CFR 52.21 or under 40 CFR 51.18 and 40 CFR 51.24.

*Fluidized bed combustion technology* means combustion of fuel in a bed or series of beds (including but not limited to bubbling bed units and circulating bed units) of limestone aggregate (or other sorbent materials) in which these materials are forced upward by the flow of combustion air and the gaseous products of combustion.

*Fuel pretreatment* means a process that removes a portion of the sulfur in a fuel before combustion of the fuel in a steam generating unit.

*Full capacity* means operation of the steam generating unit at 90 percent or more of the maximum steady-state design heat input capacity.

*Heat input* means heat derived from combustion of fuel in a steam generating unit and does not include the heat input from preheated combustion air, recirculated flue gases, or exhaust gases from other sources, such as gas turbines, internal combustion engines, kilns, etc.

*Heat release rate* means the steam generating unit design heat input capacity (in MW or Btu/hour) divided by the furnace volume (in cubic meters or cubic feet); the furnace volume is that volume bounded by the front furnace wall where the burner is located, the furnace side waterwall, and extending to the level just below or in front of the first row of convection pass tubes.

*Heat transfer medium* means any material that is used to transfer heat from one point to another point.

*High heat release rate* means a heat release rate greater than  $730,000 \text{ J/sec m}^3$  ( $70,000 \text{ Btu/hour ft}^3$ ).

*Lignite* means a type of coal classified as lignite A or lignite B by the American Society of Testing and Materials in ASTM D388-77, 90, 91, 95, or 98a, Standard Specification for Classification of Coals by Rank (IBR—see §60.17).

*Low heat release rate* means a heat release rate of  $730,000 \text{ J/sec m}^3$  ( $70,000 \text{ Btu/hour ft}^3$ ) or less.

*Mass-feed stoker steam generating unit* means a steam generating unit where solid fuel is introduced directly into a retort or is fed directly onto a grate where it is combusted.

*Maximum heat input capacity* means the ability of a steam generating unit to combust a stated maximum amount of fuel on a steady state basis, as determined by the physical design and characteristics of the steam generating unit.

*Municipal-type solid waste* means refuse, more than 50 percent of which is waste consisting of a mixture of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustible materials, and noncombustible materials such as glass and rock.

*Natural gas* means (1) a naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in geologic formations beneath the earth's surface, of which the principal constituent is methane; or (2) liquid petroleum gas, as defined by the American Society for Testing and Materials in ASTM D1835-82, 86, 87, 91, or 97, "Standard Specification for Liquid Petroleum Gases" (IBR—see §60.17).

*Noncontinental area* means the State of Hawaii, the Virgin Islands, Guam, American Samoa, the Commonwealth of Puerto Rico, or the Northern Mariana Islands.

*Oil* means crude oil or petroleum or a liquid fuel derived from crude oil or petroleum, including distillate and residual oil.

*Petroleum refinery* means industrial plants as classified by the Department of Commerce under Standard Industrial Classification (SIC) Code 29.

*Potential sulfur dioxide emission rate* means the theoretical sulfur dioxide emissions (ng/J, lb/million Btu heat input) that would result from combusting fuel in an uncleaned state and without using emission control systems.

*Process heater* means a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst.

*Pulp and paper mills* means industrial plants which are classified by the Department of Commerce under North American Industry Classification System (NAICS) Code 322 or Standard Industrial Classification (SIC) Code 26.

*Pulverized coal-fired steam generating unit* means a steam generating unit in which pulverized coal is introduced into an air stream that carries the coal to the combustion chamber of the steam generating unit where it is fired in suspension. This includes both conventional pulverized coal-fired and micropulverized coal-fired steam generating units.

*Residual oil* means crude oil, fuel oil numbers 1 and 2 that have a nitrogen content greater than 0.05 weight percent, and all fuel oil numbers 4, 5 and 6, as defined by the American Society of Testing and Materials in ASTM D396-78, Standard Specifications for Fuel Oils (IBR—see §60.17).

*Spreader stoker steam generating unit* means a steam generating unit in which solid fuel is introduced to the combustion zone by a mechanism that throws the fuel onto a grate from above. Combustion takes place both in suspension and on the grate.

*Steam generating unit* means a device that combusts any fuel or byproduct/waste to produce steam or to heat water or any other heat transfer medium. This term includes any municipal-type solid waste incinerator with a heat recovery steam generating unit or any steam generating unit that combusts fuel and is part of a cogeneration system or a combined cycle system. This term does not include process heaters as they are defined in this subpart.

*Steam generating unit operating day* means a 24-hour period between 12:00 midnight and the following midnight during which any fuel is combusted at any time in the steam generating unit. It is not necessary for fuel to be combusted continuously for the entire 24-hour period.

*Very low sulfur oil* for units constructed, reconstructed, or modified on or before February 28, 2005, means an oil that contains no more than 0.5 weight percent sulfur or that, when combusted without sulfur dioxide emission control, has a sulfur dioxide emission rate equal to or less than 215 ng/J (0.5 lb/MMBtu) heat input. For units constructed, reconstructed, or modified after February 28, 2005, *very low sulfur oil* means an oil that contains no more than 0.3 weight percent sulfur or that, when combusted without sulfur dioxide emission control, has a sulfur dioxide emission rate equal to or less than 140 ng/J (0.32 lb/MMBtu) heat input.

*Wet flue gas desulfurization technology* means a sulfur dioxide control system that is located downstream of the steam generating unit and removes sulfur oxides from the combustion gases of the steam generating unit by contacting the combustion gas with an alkaline slurry or solution and forming a liquid material. This definition applies to devices where the aqueous liquid material product of this contact is subsequently converted to other forms. Alkaline reagents used in wet flue gas desulfurization technology include, but are not limited to, lime, limestone, and sodium.

*Wet scrubber system* means any emission control device that mixes an aqueous stream or slurry with the exhaust gases from a steam generating unit to control emissions of particulate matter or sulfur dioxide.

*Wood* means wood, wood residue, bark, or any derivative fuel or residue thereof, in any form, including, but not limited to, sawdust, sanderdust, wood chips, scraps, slabs, millings, shavings, and processed pellets made from wood or other forest residues.

[52 FR 47842, Dec. 16, 1987, as amended at 54 FR 51819, Dec. 18, 1989; 65 FR 61752, Oct. 17, 2000; 66 FR 49834, Oct. 1, 2001; 71 FR 9881, Feb. 27, 2006]

§ 60.44b—Standard for nitrogen oxides.

(a) Except as provided under paragraphs (k) and (l) of this section, on and after the date on which the initial performance test is completed or is required to be completed under §60.8 of this part, whichever date comes first, no owner or operator of an affected facility that is subject to the provisions of this section and that combusts only coal, oil, or natural gas shall cause to be discharged into the atmosphere from that affected facility any gases that contain nitrogen oxides (expressed as NO<sub>2</sub>) in excess of the following emission limits:

Fuel/Steam generating unit type	Nitrogen oxide emission limits ng/J (lb/million Btu) (expressed as NO <sub>2</sub> ) heat input
---------------------------------	---

(1) Natural gas and distillate oil, except (4):

(i) Low heat release rate..... 43 (0.10)

<del>(ii) High heat release rate.....</del>	<del>86 (0.20)</del>
<del>(2) Residual oil:</del>	
<del>(i) Low heat release rate.....</del>	<del>130 (0.30)</del>
<del>(ii) High heat release rate.....</del>	<del>170 (0.40)</del>
<del>(3) Coal:</del>	
<del>(i) Mass feed stoker.....</del>	<del>210 (0.50)</del>
<del>(ii) Spreader stoker and fluidized bed combustion.....</del>	<del>260 (0.60)</del>
<del>(iii) Pulverized coal.....</del>	<del>300 (0.70)</del>
<del>(iv) Lignite, except (v).....</del>	<del>260 (0.60)</del>
<del>(v) Lignite mined in North Dakota, South Dakota, or Montana and combusted in a slag tap furnace.....</del>	<del>340 (0.80)</del>
<del>(vi) Coal derived synthetic fuels.....</del>	<del>210 (0.50)</del>
<del>(4) Duct burner used in a combined cycle system:</del>	
<del>(i) Natural gas and distillate oil.....</del>	<del>86 (0.20)</del>
<del>(ii) Residual oil.....</del>	<del>170 (0.40)</del>

~~(e) Except as provided under paragraph (l) of this section, on and after the date on which the initial performance test is completed or is required to be completed under §60.8 of this part, whichever date comes first, no owner or operator of an affected facility that simultaneously combusts coal, oil, or natural gas with byproduct/waste shall cause to be discharged into the atmosphere any gases that contain nitrogen oxides in excess of the emission limit determined by the following formula unless the affected facility has an annual capacity factor for coal, oil, and natural gas of 10 percent (0.10) or less and is subject to a federally enforceable requirement that limits operation of the affected facility to an annual capacity factor of 10 percent (0.10) or less:~~

$$E_n = [(EL_{go} - H_{go}) + (EL_{ro} - H_{ro}) + (EL_e - H_e)] / (H_{go} + H_{ro} + H_e)$$

where:

~~$E_n$  is the nitrogen oxides emission limit (expressed as NO<sub>2</sub>), ng/J (lb/million Btu)~~

~~$EL_{go}$  is the appropriate emission limit from paragraph (a)(1) for combustion of natural gas or distillate oil, ng/J (lb/million Btu).~~

~~$H_{go}$  is the heat input from combustion of natural gas, distillate oil and gaseous byproduct/waste, ng/J (lb/million Btu).~~

~~$EL_{ro}$  is the appropriate emission limit from paragraph (a)(2) for combustion of residual oil, ng/J (lb/million Btu)~~

~~$H_{ro}$  is the heat input from combustion of residual oil and/or liquid byproduct/waste.~~

~~$EL_e$  is the appropriate emission limit from paragraph (a)(3) for combustion of coal, and~~

~~$H_e$  is the heat input from combustion of coal.~~

~~(h) For purposes of paragraph (i) of this section, the nitrogen oxide standards under this section apply at all times including periods of startup, shutdown, or malfunction.~~

~~(i) Except as provided under paragraph (j) of this section, compliance with the emission limits under this section is determined on a 30-day rolling average basis.~~

~~§ 60.46b Compliance and performance test methods and procedures for particulate matter and nitrogen oxides.~~

~~(a) The particulate matter emission standards and opacity limits under §60.43b apply at all times except during periods of startup, shutdown, or malfunction, and as specified in paragraphs (i) and (j) of this section. The nitrogen oxides emission standards under §60.44b apply at all times.~~

~~(c) Compliance with the nitrogen oxides emission standards under §60.44b shall be determined through performance testing under paragraph (e) or (f), or under paragraphs (g) and (h) of this section, as applicable.~~

~~(e) To determine compliance with the emission limits for nitrogen oxides required under §60.44b, the owner or operator of an affected facility shall conduct the performance test as required under §60.8 using the continuous system for monitoring nitrogen oxides under §60.48(b).~~

(1) For the initial compliance test, nitrogen oxides from the steam-generating unit are monitored for 30 successive steam-generating unit operating days and the 30-day average emission rate is used to determine compliance with the nitrogen oxides emission standards under §60.44b. The 30-day average emission rate is calculated as the average of all hourly emissions data recorded by the monitoring system during the 30-day test period.

~~§ 60.48b—Emission monitoring for particulate matter and nitrogen oxides.~~

~~(b) Except as provided under paragraphs (g), (h), and (i) of this section, the owner or operator of an affected facility subject to a nitrogen oxides standard under §60.44b shall comply with either paragraphs (b)(1) or (b)(2) of this section.~~

~~(1) Install, calibrate, maintain, and operate a continuous monitoring system, and record the output of the system, for measuring nitrogen oxides emissions discharged to the atmosphere; or~~

~~(c) The continuous monitoring systems required under paragraph (b) of this section shall be operated and data recorded during all periods of operation of the affected facility except for continuous monitoring system breakdowns and repairs. Data is recorded during calibration checks, and zero and span adjustments.~~

~~(d) The 1-hour average nitrogen oxides emission rates measured by the continuous nitrogen oxides monitor required by paragraph (b) of this section and required under §60.13(h) shall be expressed in ng/J or lb/MMBtu heat input and shall be used to calculate the average emission rates under §60.44b. The 1-hour averages shall be calculated using the data points required under §60.13(h)(2).~~

~~(e) The procedures under §60.13 shall be followed for installation, evaluation, and operation of the continuous monitoring systems.~~

~~(2) For affected facilities combusting coal, oil, or natural gas, the span value for nitrogen oxides is determined as follows:~~

Fuel	Span values for nitrogen oxides (PPM)
Natural gas.....	500
Oil.....	500
Coal.....	1,000
Mixtures.....	$500(x+y) + 1,000z$

where:

x is the fraction of total heat input derived from natural gas,

y is the fraction of total heat input derived from oil, and

z is the fraction of total heat input derived from coal.

~~(f) When nitrogen oxides emission data are not obtained because of continuous monitoring system breakdowns, repairs, calibration checks and zero and span adjustments, emission data will be obtained by using standby monitoring systems, Method 7, Method 7A, or other approved reference methods to provide emission data for a minimum of 75 percent of the operating hours in each steam-generating unit operating day, in at least 22 out of 30 successive steam-generating unit operating days.~~

~~(g) The owner or operator of an affected facility that has a heat input capacity of 73 MW (250 million Btu/hour) or less, and which has an annual capacity factor for residual oil having a nitrogen content of 0.30 weight percent or less, natural gas, distillate oil, or any mixture of these fuels, greater than 10 percent (0.10) shall:~~

~~(1) Comply with the provisions of paragraphs (b), (c), (d), (e)(2), (e)(3), and (f) of this section, or~~

~~(2) Monitor steam-generating unit operating conditions and predict nitrogen oxides emission rates as specified in a plan submitted pursuant to §60.49b(c).~~

[52 FR 47842, Dec. 16, 1987, as amended at 54 FR 51825, Dec. 18, 1989; 63 FR 49455, Sept. 16, 1998; 66 FR 18553, Apr. 10, 2001; 71 FR 9884, Feb. 27, 2006]

~~§ 60.49b Reporting and recordkeeping requirements.~~

~~(a) The owner or operator of each affected facility shall submit notification of the date of initial startup, as provided by §60.7. This notification shall include:~~

~~(1) The design heat input capacity of the affected facility and identification of the fuels to be combusted in the affected facility;~~

~~(3) The annual capacity factor at which the owner or operator anticipates operating the facility based on all fuels fired and based on each individual fuel fired, and,~~

~~(b) The owner or operator of each affected facility subject to the sulfur dioxide, particulate matter, and/or nitrogen oxides emission limits under §§60.42b, 60.43b, and 60.44b shall submit to the Administrator the performance test data from the initial performance test and the performance evaluation of the CEMS using the applicable performance specifications in appendix B. The owner or operator of each affected facility described in §60.44b(j) or §60.44b(k) shall submit to the Administrator the maximum heat input capacity data from the demonstration of the maximum heat input capacity of the affected facility.~~

~~(c) The owner or operator of each affected facility subject to the nitrogen oxides standard of §60.44b who seeks to demonstrate compliance with those standards through the monitoring of steam generating unit operating conditions under the provisions of §60.48b(g)(2) shall submit to the Administrator for approval a plan that identifies the operating conditions to be monitored under §60.48b(g)(2) and the records to be maintained under §60.49b(j). This plan shall be submitted to the Administrator for approval within 360 days of the initial startup of the affected facility. The plan shall:~~

~~(1) Identify the specific operating conditions to be monitored and the relationship between these operating conditions and nitrogen oxides emission rates (i.e., ng/J or lbs/million Btu heat input). Steam generating unit operating conditions include, but are not limited to, the degree of staged combustion (i.e., the ratio of primary air to secondary and/or tertiary air) and the level of excess air (i.e., flue gas oxygen level);~~

~~(2) Include the data and information that the owner or operator used to identify the relationship between nitrogen oxides emission rates and these operating conditions;~~

~~(3) Identify how these operating conditions, including steam generating unit load, will be monitored under §60.48b(g) on an hourly basis by the owner or operator during the period of operation of the affected facility; the quality assurance procedures or practices that will be employed to ensure that the data generated by monitoring these operating conditions will be representative and accurate; and the type and format of the records of these operating conditions, including steam generating unit load, that will be maintained by the owner or operator under §60.49b(j).~~

~~If the plan is approved, the owner or operator shall maintain records of predicted nitrogen oxide emission rates and the monitored operating conditions, including steam generating unit load, identified in the plan.~~

~~(d) The owner or operator of an affected facility shall record and maintain records of the amounts of each fuel combusted during each day and calculate the annual capacity factor individually for coal, distillate oil, residual oil, natural gas, wood, and municipal-type solid waste for the reporting period. The annual capacity factor is determined on a 12-month rolling average basis with a new annual capacity factor calculated at the end of each calendar month.~~

~~(g) Except as provided under paragraph (p) of this section, the owner or operator of an affected facility subject to the nitrogen oxides standards under §60.44b shall maintain records of the following information for each steam generating unit operating day:~~

~~(1) Calendar date.~~

~~(2) The average hourly nitrogen oxides emission rates (expressed as NO<sub>2</sub>) (ng/J or lb/million Btu heat input) measured or predicted.~~

~~(3) The 30-day average nitrogen oxides emission rates (ng/J or lb/million Btu heat input) calculated at the end of each steam generating unit operating day from the measured or predicted hourly nitrogen oxide emission rates for the preceding 30 steam generating unit operating days.~~

~~(4) Identification of the steam generating unit operating days when the calculated 30-day average nitrogen oxides emission rates are in excess of the nitrogen oxides emissions standards under §60.44b, with the reasons for such excess emissions as well as a description of corrective actions taken.~~

~~(5) Identification of the steam generating unit operating days for which pollutant data have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken.~~

~~(6) Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data.~~

~~(7) Identification of "F" factor used for calculations, method of determination, and type of fuel combusted.~~

~~(8) Identification of the times when the pollutant concentration exceeded full span of the continuous monitoring system.~~

~~(9) Description of any modifications to the continuous monitoring system that could affect the ability of the continuous monitoring system to comply with Performance Specification 2 or 3.~~

~~(10) Results of daily CEMS drift tests and quarterly accuracy assessments as required under appendix F, Procedure 1.~~

~~(i) The owner or operator of any affected facility subject to the continuous monitoring requirements for nitrogen oxides under §60.48(b) shall submit reports containing the information recorded under paragraph (g) of this section.~~

~~(v) The owner or operator of an affected facility may submit electronic quarterly reports for SO<sub>2</sub> and/or NO<sub>x</sub> and/or opacity in lieu of submitting the written reports required under paragraphs (h), (i), (j), (k) or (l) of this section. The format of each quarterly electronic report shall be coordinated with the permitting authority. The electronic report(s) shall be submitted no later than 30 days after the end of the calendar quarter and shall be accompanied by a certification statement from the owner or operator, indicating whether compliance with the applicable emission standards and minimum data requirements of this subpart was achieved during the reporting period. Before submitting reports in the electronic format, the owner or operator shall coordinate with the permitting authority to obtain their agreement to submit reports in this alternative format.~~

~~(w) The reporting period for the reports required under this subpart is each 6 month period. All reports shall be submitted to the Administrator and shall be postmarked by the 30th day following the end of the reporting period.~~

~~[52 FR 47842, Dec. 16, 1987, as amended at 54 FR 51820, 51825, Dec. 18, 1989; 60 FR 28062, May 30, 1995; 61 FR 14031, Mar. 29, 1996; 62 FR 52641, Oct. 8, 1997; 63 FR 49455, Sept. 16, 1998; 64 FR 7464, Feb. 12, 1999; 65 FR 13243, Mar. 13, 2000; 69 FR 40773, July 7, 2004]~~

#### **§ 60.40b Applicability and delegation of authority.**

**(a) The affected facility to which this subpart applies is each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr)).**

**(b) Any affected facility meeting the applicability requirements under paragraph (a) of this section and commencing construction, modification, or reconstruction after June 19, 1984, but on or before June 19, 1986, is subject to the following standards:**

**(1) Coal-fired affected facilities having a heat input capacity between 29 and 73 MW (100 and 250 MMBtu/hr), inclusive, are subject to the particulate matter (PM) and nitrogen oxides (NO<sub>x</sub>) standards under this subpart.**

**(2) Coal-fired affected facilities having a heat input capacity greater than 73 MW (250 MMBtu/hr) and meeting the applicability requirements under subpart D (Standards of performance for fossil-fuel-fired steam generators; §60.40) are subject to the PM and NO<sub>x</sub> standards under this subpart and to the sulfur dioxide (SO<sub>2</sub>) standards under subpart D (§60.43).**

**(3) Oil-fired affected facilities having a heat input capacity between 29 and 73 MW (100 and 250 MMBtu/hr), inclusive, are subject to the NO<sub>x</sub> standards under this subpart.**

**(4) Oil-fired affected facilities having a heat input capacity greater than 73 MW (250 MMBtu/hr) and meeting the applicability requirements under subpart D (Standards of performance for fossil-fuel-fired steam generators; §60.40) are also subject to the NO<sub>x</sub> standards under this subpart and the PM and SO<sub>2</sub> standards under subpart D (§60.42 and §60.43).**

**(c) Affected facilities that also meet the applicability requirements under subpart J (Standards of performance for petroleum refineries; §60.104) are subject to the PM and NO<sub>x</sub> standards under this subpart and the SO<sub>2</sub> standards under subpart J (§60.104).**

**(d) Affected facilities that also meet the applicability requirements under subpart E (Standards of performance for incinerators; §60.50) are subject to the NO<sub>x</sub> and PM standards under this subpart.**

**(e) Steam generating units meeting the applicability requirements under subpart Da (Standards of performance for electric utility steam generating units; §60.40Da) are not subject to this subpart.**

**(f) Any change to an existing steam generating unit for the sole purpose of combusting gases containing total reduced sulfur (TRS) as defined under §60.281 is not considered a modification under §60.14 and the steam generating unit is not subject to this subpart.**

**(g) In delegating implementation and enforcement authority to a State under section 111(c) of the Clean Air Act, the following authorities shall be retained by the Administrator and not transferred to a State.**

**(1) Section 60.44b(f).**

**(2) Section 60.44b(g).**

**(3) Section 60.49b(a)(4).**

**(h) Any affected facility that meets the applicability requirements and is subject to subpart Ea, subpart Eb, or subpart AAAA of this part is not covered by this subpart.**

**(i) Heat recovery steam generators that are associated with combined cycle gas turbines and that meet the applicability requirements of subpart GG or KKKK of this part are not subject to this subpart. This subpart will continue to apply to all other heat recovery steam generators that are capable of combusting more than 29 MW (100 MMBtu/hr) heat input of fossil fuel. If the heat recovery steam generator is subject to this subpart, only emissions resulting from combustion of fuels in the steam generating unit are subject to this subpart. (The gas turbine emissions are subject to subpart GG or KKKK, as applicable, of this part.)**

**(j) Any affected facility meeting the applicability requirements under paragraph (a) of this section and commencing construction, modification, or reconstruction after June 19, 1986 is not subject to subpart D (Standards of Performance for Fossil-Fuel-Fired Steam Generators, §60.40).**

**(k) Any affected facility that meets the applicability requirements and is subject to an EPA approved State or Federal section 111(d)/129 plan implementing subpart Cb or subpart BBBB of this part is not covered by this subpart.**

#### **§ 60.41b Definitions.**

**As used in this subpart, all terms not defined herein shall have the meaning given them in the Clean Air Act and in subpart A of this part.**

***Annual capacity factor* means the ratio between the actual heat input to a steam generating unit from the fuels listed in §60.42b(a), §60.43b(a), or §60.44b(a), as applicable, during a calendar year and the potential heat input to the steam generating unit had it been operated for 8,760 hours during a calendar year at the maximum steady state design heat input capacity. In the case of**

steam generating units that are rented or leased, the actual heat input shall be determined based on the combined heat input from all operations of the affected facility in a calendar year.

**Byproduct/waste** means any liquid or gaseous substance produced at chemical manufacturing plants, petroleum refineries, or pulp and paper mills (except natural gas, distillate oil, or residual oil) and combusted in a steam generating unit for heat recovery or for disposal. Gaseous substances with carbon dioxide (CO<sub>2</sub>) levels greater than 50 percent or carbon monoxide levels greater than 10 percent are not byproduct/waste for the purpose of this subpart.

**Chemical manufacturing plants** mean industrial plants that are classified by the Department of Commerce under Standard Industrial Classification (SIC) Code 28.

**Coal** means all solid fuels classified as anthracite, bituminous, subbituminous, or lignite by the American Society of Testing and Materials in ASTM D388 (incorporated by reference, see §60.17), coal refuse, and petroleum coke. Coal-derived synthetic fuels, including but not limited to solvent refined coal, gasified coal, coal-oil mixtures, coke oven gas, and coal-water mixtures, are also included in this definition for the purposes of this subpart.

**Coal refuse** means any byproduct of coal mining or coal cleaning operations with an ash content greater than 50 percent, by weight, and a heating value less than 13,900 kJ/kg (6,000 Btu/lb) on a dry basis.

**Cogeneration**, also known as combined heat and power, means a facility that simultaneously produces both electric (or mechanical) and useful thermal energy from the same primary energy source.

**Coke oven gas** means the volatile constituents generated in the gaseous exhaust during the carbonization of bituminous coal to form coke.

**Combined cycle system** means a system in which a separate source, such as a gas turbine, internal combustion engine, kiln, etc., provides exhaust gas to a steam generating unit.

**Conventional technology** means wet flue gas desulfurization (FGD) technology, dry FGD technology, atmospheric fluidized bed combustion technology, and oil hydrodesulfurization technology.

**Distillate oil** means fuel oils that contain 0.05 weight percent nitrogen or less and comply with the specifications for fuel oil numbers 1 and 2, as defined by the American Society of Testing and Materials in ASTM D396 (incorporated by reference, see §60.17).

**Dry flue gas desulfurization technology** means a SO<sub>2</sub> control system that is located downstream of the steam generating unit and removes sulfur oxides from the combustion gases of the steam generating unit by contacting the combustion gases with an alkaline reagent and water, whether introduced separately or as a premixed slurry or solution and forming a dry powder material. This definition includes devices where the dry powder material is subsequently converted to another form. Alkaline slurries or solutions used in dry flue gas desulfurization technology include but are not limited to lime and sodium.

**Duct burner** means a device that combusts fuel and that is placed in the exhaust duct from another source, such as a stationary gas turbine, internal combustion engine, kiln, etc., to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit.

**Emerging technology** means any SO<sub>2</sub> control system that is not defined as a conventional technology under this section, and for which the owner or operator of the facility has applied to the Administrator and received approval to operate as an emerging technology under §60.49b(a)(4).

**Federally enforceable** means all limitations and conditions that are enforceable by the Administrator, including the requirements of 40 CFR parts 60 and 61, requirements within any

applicable State Implementation Plan, and any permit requirements established under 40 CFR 52.21 or under 40 CFR 51.18 and 51.24.

**Fluidized bed combustion technology** means combustion of fuel in a bed or series of beds (including but not limited to bubbling bed units and circulating bed units) of limestone aggregate (or other sorbent materials) in which these materials are forced upward by the flow of combustion air and the gaseous products of combustion.

**Fuel pretreatment** means a process that removes a portion of the sulfur in a fuel before combustion of the fuel in a steam generating unit.

**Full capacity** means operation of the steam generating unit at 90 percent or more of the maximum steady-state design heat input capacity.

**Gaseous fuel** means any fuel that is present as a gas at ISO conditions.

**Gross output** means the gross useful work performed by the steam generated. For units generating only electricity, the gross useful work performed is the gross electrical output from the turbine/generator set. For cogeneration units, the gross useful work performed is the gross electrical or mechanical output plus 75 percent of the useful thermal output measured relative to ISO conditions that is not used to generate additional electrical or mechanical output (i.e., steam delivered to an industrial process).

**Heat input** means heat derived from combustion of fuel in a steam generating unit and does not include the heat derived from preheated combustion air, recirculated flue gases, or exhaust gases from other sources, such as gas turbines, internal combustion engines, kilns, etc.

**Heat release rate** means the steam generating unit design heat input capacity (in MW or Btu/hr) divided by the furnace volume (in cubic meters or cubic feet); the furnace volume is that volume bounded by the front furnace wall where the burner is located, the furnace side waterwall, and extending to the level just below or in front of the first row of convection pass tubes.

**Heat transfer medium** means any material that is used to transfer heat from one point to another point.

**High heat release rate** means a heat release rate greater than  $730,000 \text{ J/sec-m}^3$  ( $70,000 \text{ Btu/hr-ft}^3$ ).

**ISO Conditions** means a temperature of 288 Kelvin, a relative humidity of 60 percent, and a pressure of 101.3 kilopascals.

**Lignite** means a type of coal classified as lignite A or lignite B by the American Society of Testing and Materials in ASTM D388 (incorporated by reference, see §60.17).

**Low heat release rate** means a heat release rate of  $730,000 \text{ J/sec-m}^3$  ( $70,000 \text{ Btu/hr-ft}^3$ ) or less.

**Mass-feed stoker steam generating unit** means a steam generating unit where solid fuel is introduced directly into a retort or is fed directly onto a grate where it is combusted.

**Maximum heat input capacity** means the ability of a steam generating unit to combust a stated maximum amount of fuel on a steady state basis, as determined by the physical design and characteristics of the steam generating unit.

**Municipal-type solid waste** means refuse, more than 50 percent of which is waste consisting of a mixture of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustible materials, and noncombustible materials such as glass and rock.

**Natural gas** means: (1) A naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in geologic formations beneath the earth's surface, of which the principal constituent is methane; or (2) liquefied petroleum gas, as defined by the American Society for Testing and Materials in ASTM D1835 (incorporated by reference, see §60.17).

***Noncontinental area*** means the State of Hawaii, the Virgin Islands, Guam, American Samoa, the Commonwealth of Puerto Rico, or the Northern Mariana Islands.

***Oil*** means crude oil or petroleum or a liquid fuel derived from crude oil or petroleum, including distillate and residual oil.

***Petroleum refinery*** means industrial plants as classified by the Department of Commerce under Standard Industrial Classification (SIC) Code 29.

***Potential sulfur dioxide emission rate*** means the theoretical SO<sub>2</sub> emissions (nanograms per joule (ng/J) or lb/MMBtu heat input) that would result from combusting fuel in an uncleaned state and without using emission control systems.

***Process heater*** means a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst.

***Pulp and paper mills*** means industrial plants that are classified by the Department of Commerce under North American Industry Classification System (NAICS) Code 322 or Standard Industrial Classification (SIC) Code 26.

***Pulverized coal-fired steam generating unit*** means a steam generating unit in which pulverized coal is introduced into an air stream that carries the coal to the combustion chamber of the steam generating unit where it is fired in suspension. This includes both conventional pulverized coal-fired and micropulverized coal-fired steam generating units. Residual oil means crude oil, fuel oil numbers 1 and 2 that have a nitrogen content greater than 0.05 weight percent, and all fuel oil numbers 4, 5 and 6, as defined by the American Society of Testing and Materials in ASTM D396 (incorporated by reference, see §60.17).

***Spreader stoker steam generating unit*** means a steam generating unit in which solid fuel is introduced to the combustion zone by a mechanism that throws the fuel onto a grate from above. Combustion takes place both in suspension and on the grate.

***Steam generating unit*** means a device that combusts any fuel or byproduct/waste and produces steam or heats water or any other heat transfer medium. This term includes any municipal-type solid waste incinerator with a heat recovery steam generating unit or any steam generating unit that combusts fuel and is part of a cogeneration system or a combined cycle system. This term does not include process heaters as they are defined in this subpart.

***Steam generating unit operating day*** means a 24-hour period between 12:00 midnight and the following midnight during which any fuel is combusted at any time in the steam generating unit. It is not necessary for fuel to be combusted continuously for the entire 24-hour period.

***Very low sulfur oil*** means for units constructed, reconstructed, or modified on or before February 28, 2005, an oil that contains no more than 0.5 weight percent sulfur or that, when combusted without SO<sub>2</sub> emission control, has a SO<sub>2</sub> emission rate equal to or less than 215 ng/J (0.5 lb/MMBtu) heat input. For units constructed, reconstructed, or modified after February 28, 2005, ***very low sulfur oil*** means an oil that contains no more than 0.3 weight percent sulfur or that, when combusted without SO<sub>2</sub> emission control, has a SO<sub>2</sub> emission rate equal to or less than 140 ng/J (0.32 lb/MMBtu) heat input.

***Wet flue gas desulfurization technology*** means a SO<sub>2</sub> control system that is located downstream of the steam generating unit and removes sulfur oxides from the combustion gases of the steam generating unit by contacting the combustion gas with an alkaline slurry or solution and forming a liquid material. This definition applies to devices where the aqueous liquid material product of this contact is subsequently converted to other forms. Alkaline reagents used in wet flue gas desulfurization technology include, but are not limited to, lime, limestone, and sodium.

***Wet scrubber system*** means any emission control device that mixes an aqueous stream or slurry with the exhaust gases from a steam generating unit to control emissions of PM or SO<sub>2</sub>.

**Wood** means wood, wood residue, bark, or any derivative fuel or residue thereof, in any form, including, but not limited to, sawdust, sanderdust, wood chips, scraps, slabs, millings, shavings, and processed pellets made from wood or other forest residues.

**§ 60.44b Standard for nitrogen oxides (NOX).**

(a) Except as provided under paragraphs (k) and (l) of this section, on and after the date on which the initial performance test is completed or is required to be completed under §60.8, whichever date comes first, no owner or operator of an affected facility that is subject to the provisions of this section and that combusts only coal, oil, or natural gas shall cause to be discharged into the atmosphere from that affected facility any gases that contain NO<sub>x</sub>(expressed as NO<sub>2</sub>) in excess of the following emission limits:

Fuel/steam generating unit type	Nitrogen oxide emission limits (expressed as NO <sub>2</sub> ) heat input	
	ng/J	lb/MMBTu
<b>(1) Natural gas and distillate oil, except (4):</b>		
(i) Low heat release rate	43	0.10
(ii) High heat release rate	86	0.20
<b>(2) Residual oil:</b>		
(i) Low heat release rate	130	0.30
(ii) High heat release rate	170	0.40
<b>(3) Coal:</b>		
(i) Mass-feed stoker	210	0.50
(ii) Spreader stoker and fluidized bed combustion	260	0.60
(iii) Pulverized coal	300	0.70
(iv) Lignite, except (v)	260	0.60
(v) Lignite mined in North Dakota, South Dakota, or Montana and combusted in a slag tap furnace	340	0.80
(vi) Coal-derived synthetic fuels	210	0.50
<b>(4) Duct burner used in a combined cycle system:</b>		
(i) Natural gas and distillate oil	86	0.20
(ii) Residual oil	170	0.40

(e) Except as provided under paragraph (l) of this section, on and after the date on which the initial performance test is completed or is required to be completed under §60.8, whichever date comes first, no owner or operator of an affected facility that simultaneously combusts coal, oil, or natural gas with byproduct/waste shall cause to be discharged into the atmosphere any gases that contain NO<sub>x</sub> in excess of the emission limit determined by the following formula unless the affected facility has an annual capacity factor for coal, oil, and natural gas of 10 percent (0.10) or less and is subject to a federally enforceable requirement that limits operation of the affected facility to an annual capacity factor of 10 percent (0.10) or less:

$$E_x = \frac{(EL_{\phi} H_{\phi}) + (EL_w H_w) + (EL_c H_c)}{(H_{\phi} + H_w + H_c)}$$

**Where:**

**$E_n$** =  $\text{NO}_x$  emission limit (expressed as  $\text{NO}_2$ ), ng/J (lb/MMBtu);

**$EL_{go}$** = Appropriate emission limit from paragraph (a)(1) for combustion of natural gas or distillate oil, ng/J (lb/MMBtu);

**$H_{go}$** = Heat input from combustion of natural gas, distillate oil and gaseous byproduct/waste, J (MMBtu);

**$EL_{ro}$** = Appropriate emission limit from paragraph (a)(2) for combustion of residual oil and/or byproduct/waste, ng/J (lb/MMBtu);

**$H_{ro}$** = Heat input from combustion of residual oil, J (MMBtu);

**$EL_c$** = Appropriate emission limit from paragraph (a)(3) for combustion of coal, ng/J (lb/MMBtu);  
and

**$H_c$** = Heat input from combustion of coal, J (MMBtu).

(h) For purposes of paragraph (i) of this section, the  $\text{NO}_x$  standards under this section apply at all times including periods of startup, shutdown, or malfunction.

(i) Except as provided under paragraph (j) of this section, compliance with the emission limits under this section is determined on a 30-day rolling average basis.

**§ 60.46b** Compliance and performance test methods and procedures for particulate matter and nitrogen oxides.

(a) The PM emission standards and opacity limits under §60.43b apply at all times except during periods of startup, shutdown, or malfunction. The  $\text{NO}_x$  emission standards under §60.44b apply at all times.

(c) Compliance with the  $\text{NO}_x$  emission standards under §60.44b shall be determined through performance testing under paragraph (e) or (f), or under paragraphs (g) and (h) of this section, as applicable.

(e) To determine compliance with the emission limits for  $\text{NO}_x$  required under §60.44b, the owner or operator of an affected facility shall conduct the performance test as required under §60.8 using the continuous system for monitoring  $\text{NO}_x$  under §60.48(b).

(1) For the initial compliance test,  $\text{NO}_x$  from the steam generating unit are monitored for 30 successive steam generating unit operating days and the 30-day average emission rate is used to determine compliance with the  $\text{NO}_x$  emission standards under §60.44b. The 30-day average emission rate is calculated as the average of all hourly emissions data recorded by the monitoring system during the 30-day test period.

**§ 60.48b** Emission monitoring for particulate matter and nitrogen oxides.

(b) Except as provided under paragraphs (g), (h), and (i) of this section, the owner or operator of an affected facility subject to a  $\text{NO}_x$  standard under §60.44b shall comply with either paragraphs (b)(1) or (b)(2) of this section.

(1) Install, calibrate, maintain, and operate CEMS for measuring  $\text{NO}_x$  and  $\text{O}_2$ (or  $\text{CO}_2$ ) emissions discharged to the atmosphere, and shall record the output of the system; or

(c) The CEMS required under paragraph (b) of this section shall be operated and data recorded during all periods of operation of the affected facility except for CEMS breakdowns and repairs. Data is recorded during calibration checks, and zero and span adjustments.

(d) The 1-hour average NO<sub>x</sub> emission rates measured by the continuous NO<sub>x</sub> monitor required by paragraph (b) of this section and required under §60.13(h) shall be expressed in ng/J or lb/MMBtu heat input and shall be used to calculate the average emission rates under §60.44b. The 1-hour averages shall be calculated using the data points required under §60.13(h)(2).

(e) The procedures under §60.13 shall be followed for installation, evaluation, and operation of the continuous monitoring systems.

(2) For affected facilities combusting coal, oil, or natural gas, the span value for NO<sub>x</sub> is determined using one of the following procedures:

(i) Except as provided under paragraph (e)(2)(ii) of this section, NO<sub>x</sub> span values shall be determined as follows:

Fuel	Span values for NO <sub>x</sub> (ppm)
Natural gas	500.
Oil	500.
Coal	1,000.
Mixtures	500 (x + y) + 1,000z.

Where:

x = Fraction of total heat input derived from natural gas;

y = Fraction of total heat input derived from oil; and

z = Fraction of total heat input derived from coal.

(f) When NO<sub>x</sub> emission data are not obtained because of CEMS breakdowns, repairs, calibration checks and zero and span adjustments, emission data will be obtained by using standby monitoring systems, Method 7 of appendix A of this part, Method 7A of appendix A of this part, or other approved reference methods to provide emission data for a minimum of 75 percent of the operating hours in each steam generating unit operating day, in at least 22 out of 30 successive steam generating unit operating days.

(g) The owner or operator of an affected facility that has a heat input capacity of 73 MW (250 MMBtu/hr) or less, and that has an annual capacity factor for residual oil having a nitrogen content of 0.30 weight percent or less, natural gas, distillate oil, or any mixture of these fuels, greater than 10 percent (0.10) shall:

(1) Comply with the provisions of paragraphs (b), (c), (d), (e)(2), (e)(3), and (f) of this section; or

(2) Monitor steam generating unit operating conditions and predict NO<sub>x</sub> emission rates as specified in a plan submitted pursuant to §60.49b(c).

§ 60.49b Reporting and recordkeeping requirements.

(a) The owner or operator of each affected facility shall submit notification of the date of initial startup, as provided by §60.7. This notification shall include:

(1) The design heat input capacity of the affected facility and identification of the fuels to be combusted in the affected facility;

(2) If applicable, a copy of any federally enforceable requirement that limits the annual capacity factor for any fuel or mixture of fuels under §§60.42b(d)(1), 60.43b(a)(2), (a)(3)(iii), (c)(2)(ii), (d)(2)(iii), 60.44b(c), (d), (e), (i), (j), (k), 60.45b(d), (g), 60.46b(h), or 60.48b(i);

**(3) The annual capacity factor at which the owner or operator anticipates operating the facility based on all fuels fired and based on each individual fuel fired; and**

**(b) The owner or operator of each affected facility subject to the SO<sub>2</sub>, PM, and/or NO<sub>x</sub> emission limits under §§60.42b, 60.43b, and 60.44b shall submit to the Administrator the performance test data from the initial performance test and the performance evaluation of the CEMS using the applicable performance specifications in appendix B of this part. The owner or operator of each affected facility described in §60.44b(j) or §60.44b(k) shall submit to the Administrator the maximum heat input capacity data from the demonstration of the maximum heat input capacity of the affected facility.**

**(c) The owner or operator of each affected facility subject to the NO<sub>x</sub> standard of §60.44b who seeks to demonstrate compliance with those standards through the monitoring of steam generating unit operating conditions under the provisions of §60.48b(g)(2) shall submit to the Administrator for approval a plan that identifies the operating conditions to be monitored under §60.48b(g)(2) and the records to be maintained under §60.49b(j). This plan shall be submitted to the Administrator for approval within 360 days of the initial startup of the affected facility. If the plan is approved, the owner or operator shall maintain records of predicted nitrogen oxide emission rates and the monitored operating conditions, including steam generating unit load, identified in the plan. The plan shall:**

**(1) Identify the specific operating conditions to be monitored and the relationship between these operating conditions and NO<sub>x</sub> emission rates ( *i.e.* , ng/J or lbs/MMBtu heat input). Steam generating unit operating conditions include, but are not limited to, the degree of staged combustion ( *i.e.* , the ratio of primary air to secondary and/or tertiary air) and the level of excess air ( *i.e.* , flue gas O<sub>2</sub>level);**

**(2) Include the data and information that the owner or operator used to identify the relationship between NO<sub>x</sub> emission rates and these operating conditions; and**

**(3) Identify how these operating conditions, including steam generating unit load, will be monitored under §60.48b(g) on an hourly basis by the owner or operator during the period of operation of the affected facility; the quality assurance procedures or practices that will be employed to ensure that the data generated by monitoring these operating conditions will be representative and accurate; and the type and format of the records of these operating conditions, including steam generating unit load, that will be maintained by the owner or operator under §60.49b(j).**

**(d) The owner or operator of an affected facility shall record and maintain records of the amounts of each fuel combusted during each day and calculate the annual capacity factor individually for coal, distillate oil, residual oil, natural gas, wood, and municipal-type solid waste for the reporting period. The annual capacity factor is determined on a 12-month rolling average basis with a new annual capacity factor calculated at the end of each calendar month.**

**(g) Except as provided under paragraph (p) of this section, the owner or operator of an affected facility subject to the NO<sub>x</sub> standards under §60.44b shall maintain records of the following information for each steam generating unit operating day:**

**(1) Calendar date;**

**(2) The average hourly NO<sub>x</sub> emission rates (expressed as NO<sub>2</sub>) (ng/J or lb/MMBtu heat input) measured or predicted;**

**(3) The 30-day average NO<sub>x</sub> emission rates (ng/J or lb/MMBtu heat input) calculated at the end of each steam generating unit operating day from the measured or predicted hourly nitrogen oxide emission rates for the preceding 30 steam generating unit operating days;**

**(4) Identification of the steam generating unit operating days when the calculated 30-day average NO<sub>x</sub> emission rates are in excess of the NO<sub>x</sub> emissions standards under §60.44b, with the reasons for such excess emissions as well as a description of corrective actions taken;**

**(5) Identification of the steam generating unit operating days for which pollutant data have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken;**

**(6) Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data;**

**(7) Identification of "F" factor used for calculations, method of determination, and type of fuel combusted;**

**(8) Identification of the times when the pollutant concentration exceeded full span of the CEMS;**

**(9) Description of any modifications to the CEMS that could affect the ability of the CEMS to comply with Performance Specification 2 or 3; and**

**(10) Results of daily CEMS drift tests and quarterly accuracy assessments as required under appendix F, Procedure 1 of this part.**

**(i) The owner or operator of any affected facility subject to the continuous monitoring requirements for NO<sub>x</sub> under §60.48(b) shall submit reports containing the information recorded under paragraph (g) of this section.**

**(v) The owner or operator of an affected facility may submit electronic quarterly reports for SO<sub>2</sub> and/or NO<sub>x</sub> and/or opacity in lieu of submitting the written reports required under paragraphs (h), (i), (j), (k) or (l) of this section. The format of each quarterly electronic report shall be coordinated with the permitting authority. The electronic report(s) shall be submitted no later than 30 days after the end of the calendar quarter and shall be accompanied by a certification statement from the owner or operator, indicating whether compliance with the applicable emission standards and minimum data requirements of this subpart was achieved during the reporting period. Before submitting reports in the electronic format, the owner or operator shall coordinate with the permitting authority to obtain their agreement to submit reports in this alternative format.**

**(w) The reporting period for the reports required under this subpart is each 6 month period. All reports shall be submitted to the Administrator and shall be postmarked by the 30th day following the end of the reporting period.**

7. In order to clarify the appropriate federal rule reference applicable to the boilers (EU056 and EU057), the facility description was revised as follows:

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-8-3(c)(3)]

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...

- (k) Two (2) natural gas fired boilers, identified as EU056 and EU057, approved for construction in 2007, each with a maximum heat input rate of 150 MMBtu/hr, with emissions exhausting to stack SV011.

Under 40 CFR 60, Subpart Db, the boilers are considered to be new steam generating units.

...

### SECTION D.3 FACILITY OPERATION CONDITIONS – Boilers

Facility Description [326 IAC 2-8-4(10)] :

- (k) Two (2) natural gas fired boilers, identified as EU056 and EU057, approved for construction in 2007, each with a maximum heat input rate of 150 MMBtu/hr, with emissions exhausting to stack SV011.

Under 40 CFR **60**, Subpart Db, the boilers are considered to be new steam generating units.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### SECTION E.2 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-8-4(10)]:

- (k) Two (2) natural gas fired boilers, identified as EU056 and EU057, approved for construction in 2007, each with a maximum heat input rate of 150 MMBtu/hr, with emissions exhausting to stack SV011.

Under 40 CFR **60**, Subpart Db, the boilers are considered to be new steam generating units.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

**Appendix A: Emission Calculations  
PM and PM10 Emissions  
From the Grain Receiving and Handling Operations**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

**Potential to Emit PM/PM10 - Captured Emissions:**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/scf)	Maximum Air Flow Rate (acfm)	PTE of PM/PM10 after Control (lb/hr) *	PTE of PM/PM10 after Control (ton/yr) *	Control Efficiency (%)	PTE of PM/PM10 before Control (ton/yr) *
CE001	Grain Receiving Area	Baghouse	0.004	45,000	1.54	6.76	99%	676
CE002	Internal Handling System	Baghouse	0.004	5,000	0.17	0.75	99%	75
CE003	Hammermill	Baghouse	0.004	7,200	0.25	1.08	99%	108
CE004	Hammermill	Baghouse	0.004	7,200	0.25	1.08	99%	108
CE005	Hammermill	Baghouse	0.004	7,200	0.25	1.08	99%	108
CE006	Hammermill	Baghouse	0.004	7,200	0.25	1.08	99%	108
CE007	Ground Corn Transfer Conveyor	Baghouse	0.004	500	0.02	0.08	99%	8
Total						11.9		1,191

\* Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lb/hr) = Outlet Grain Loading (gr/scf) x Max. Air Flow Rate (acfm) x 60 min/hr x 1/7000 lb/gr

PTE of PM/PM10 after Control (ton/yr) = Outlet Grain Loading (gr/scf) x Max. Air Flow Rate (acfm) x 60 min/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lb

PTE of PM/PM10 before Control (ton/yr) = PTE of PM/PM10 after Control (ton/yr) / (1-Control Efficiency)

**Appendix A: Emission Calculations  
PM and PM10 Emissions  
From the DDGS Handling and Loading Operations**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

**Potential to Emit PM/PM10 - Captured Emissions:**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/scf)	Maximum Air Flow Rate (acfm)	PTE of PM/PM10 after Control (lb/hr)	PTE of PM/PM10 after Control (ton/yr)	Control Efficiency (%)	PTE of PM/PM10 before Control (ton/yr)
CE010	DDGS Reclaim	Baghouse	0.004	5,000	0.17	0.75	99%	75.1
CE011	DDGS Loading - Truck	Baghouse	0.004	3,600	0.12	0.54	99%	54.1
CE012	DDGS Loading - Rail	Baghouse	0.004	3,600	0.12	0.54	99%	54.1
Total					0.42	1.83		183.21

Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lb/hr) = Grain Loading (gr/scf) x Max. Air Flow Rate (acfm) x 60 min/hr x 1/7000 lb/gr

PTE of PM/PM10 after Control (ton/yr) = Grain Loading (gr/scf) x Max. Air Flow Rate (acfm) x 60 min/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lb

PTE of PM/PM10 before Control (ton/yr) = PTE of PM/PM10 after Control (ton/yr) / (1-Control Efficiency)

**Appendix A: Emission Calculations  
PM/PM10 and VOC Emissions  
From the DDGS Coolers**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

**1. Potential to Emit PM/PM10**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/scf)	Maximum Air Flow Rate (acfm)	PTE of PM/PM10 after Control (lb/hr) *	PTE of PM/PM10 after Control (ton/yr) *	Control Efficiency (%)	PTE of PM/PM10 before Control (ton/yr) *
CE008	DDGS Cooler A	Baghouse	0.004	10,500	0.36	1.58	99%	158
CE009	DDGS Cooler B	Baghouse	0.004	10,500	0.36	1.58	99%	158
<b>Total</b>					<b>0.72</b>	<b>3.15</b>		<b>315</b>

\* Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lb/hr) = Grain Loading (gr/scf) x Max. Air Flow Rate (acfm) x 60 mins/hr x 1/7000 lb/gr  
 PTE of PM/PM10 after Control (ton/yr) = Grain Loading (gr/scf) x Max. Air Flow Rate (acfm) x 60 min/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lb  
 PTE of PM/PM10 before Control (ton/yr) = PTE of PM/PM10 after Control (ton/yr) / (1-Control Efficiency)

**2. Potential to Emit VOC**

VOC Emission Factor = 2.16 (lb/hr) (Source-provided, based on engineering estimate and DDGS throughput.)

PTE of VOC (ton/yr) = 2.16 (lb/hr) x 8760 (hr/yr) x 1 (ton/2000 lb) = **9.46 (tons/yr)**

**3. Potential to Emit HAPs**

Emission Rate after Control (lb/hr) *	HAP				Total
	Acetaldehyde	Methanol	Formaldehyde	Acrolein	
0.06	0.12	0.03	0.04	0.25	
<b>PTE after Control (ton/yr)</b>	<b>0.26</b>	<b>0.53</b>	<b>0.13</b>	<b>0.18</b>	<b>1.10</b>

\* HAP emission rates were provided by the source based on engineering estimates from a similar facility.  
 Note: 65% of cooler exhaust is sent to dryer for combustion air, 35% of cooler exhaust is vented to atmosphere.

**Methodology**

PTE after Control (ton/yr) = Emission Rate after Control (lb/hr) x 8760 hr/yr x 1 ton/2000 lb

**Appendix A: Emission Calculations**  
**HAP Emissions from Natural Gas Combustion**  
**From Two (2) 92 MMBtu/hr DDGS Dryers and Two (2) 18 MMBtu/hr RTOs**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

**1. Process Description:** There are two DDGS dryers that exhaust to two RTOs. Each dryer has a capacity of 92 MMBtu/hr, and each RTO has a capacity of 17 MMBtu/hr, all burning natural gas. The dryers will exhaust to the RTOs at all times when the dryers are operated.

**2. HAP Emissions from Dryers:**

Heat Input Capacity  
(MMBtu/hr)

184
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HAP Pollutant	Emission Factor* (lb/MMscf)	PTE Emissions (Uncontrolled)		PTE Emissions (Controlled)	
		(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
Benzene	2.10E-03	3.86E-04	1.69E-03	1.16E-05	5.08E-05
Formaldehyde	7.50E-02	1.38E-02	6.04E-02	4.14E-04	1.81E-03
Hexane	1.80E+00	3.31E-01	1.45E+00	9.94E-03	4.35E-02
Naphthalene	6.10E-04	1.12E-04	4.92E-04	3.37E-06	1.47E-05
Toluene	3.40E-03	6.26E-04	2.74E-03	1.88E-05	8.22E-05
Arsenic	2.00E-04	3.68E-05	1.61E-04	1.10E-06	4.84E-06
Beryllium	1.20E-05	2.21E-06	9.67E-06	6.62E-08	2.90E-07
Cadmium	1.10E-03	2.02E-04	8.87E-04	6.07E-06	2.66E-05
Chromium	1.40E-03	2.58E-04	1.13E-03	7.73E-06	3.38E-05
Cobalt	8.40E-05	1.55E-05	6.77E-05	4.64E-07	2.03E-06
Lead	5.00E-04	9.20E-05	4.03E-04	2.76E-06	1.21E-05
Manganese	3.80E-04	6.99E-05	3.06E-04	2.10E-06	9.19E-06
Mercury	2.60E-04	4.78E-05	2.10E-04	1.44E-06	6.29E-06
Nickel	2.10E-03	3.86E-04	1.69E-03	1.16E-05	5.08E-05
Selenium	2.50E-05	4.60E-06	2.01E-05	1.38E-07	6.04E-07
Total		0.35	1.52	0.01	0.05

\* Emission factors from AP-42, Chapter 1.4, Tables 1.4-3 and 1.4-4 (07/98).

**Methodology**

PTE (Uncontrolled) (ton/yr) = 184 (MMBtu/hr) x 8,760 (hr/yr) x Emission Factor (lb/MMscf) x 1 MMCF/1,000 MMBtu x 1 ton/2000 lb  
PTE (Controlled) (ton/yr) = 184 (MMBtu/hr) x 8,760 (hr/yr) x Emission Factor (lb/MMscf) x 1 MMCF/1,000 MMBtu x 1 ton/2000 lb x (1 - 97%)

**Appendix A: Emission Calculations**  
**HAP Emissions from Natural Gas Combustion**  
**From Two (2) 92 MMBtu/hr DDGS Dryers and Two (2) 18 MMBtu/hr RTOs**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

**3. HAP Emissions from RTOs:**

Heat Input Capacity  
(MMBtu/hr)

36
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HAP Pollutant	Emission Factor* (lb/MMscf)	PTE Emissions	
		(lb/hr)	(ton/yr)
Benzene	2.10E-03	3.86E-04	1.69E-03
Formaldehyde	7.50E-02	1.38E-02	6.04E-02
Hexane	1.80E+00	3.31E-01	1.45E+00
Naphthalene	6.10E-04	1.12E-04	4.92E-04
Toluene	3.40E-03	6.26E-04	2.74E-03
Arsenic	2.00E-04	3.68E-05	1.61E-04
Beryllium	1.20E-05	2.21E-06	9.67E-06
Cadmium	1.10E-03	2.02E-04	8.87E-04
Chromium	1.40E-03	2.58E-04	1.13E-03
Cobalt	8.40E-05	1.55E-05	6.77E-05
Lead	5.00E-04	9.20E-05	4.03E-04
Manganese	3.80E-04	6.99E-05	3.06E-04
Mercury	2.60E-04	4.78E-05	2.10E-04
Nickel	2.10E-03	3.86E-04	1.69E-03
Selenium	2.50E-05	4.60E-06	2.01E-05
Total		0.35	1.52

\* Emission factors from AP-42, Chapter 1.4, Tables 1.4-3 and 1.4-4 (07/98).

**Methodology**

PTE (ton/yr) = 36 (MMBtu/hr) x 8,760 (hr/yr) x Emission Factor (lb/MMscf) x 1 MMCF/1,000 MMBtu x 1 ton/2000 lb

**4. Total HAPs from Dryers and RTOs:**

HAP Pollutant	CAS	PTE	
		(lb/hr)	(ton/yr)
Benzene	71-43-2	3.98E-04	1.74E-03
Formaldehyde	50-00-0	1.42E-02	6.23E-02
Hexane	110-54-3	3.41E-01	1.49E+00
Naphthalene	91-20-3	1.16E-04	5.06E-04
Toluene	108-88-3	6.44E-04	2.82E-03
Arsenic	7440-38-2	3.79E-05	1.66E-04
Beryllium	7440-41-7	2.27E-06	9.96E-06
Cadmium	7440-43-7	2.08E-04	9.13E-04
Chromium	7440-47-3	2.65E-04	1.16E-03
Cobalt	7440-48-4	1.59E-05	6.97E-05
Lead	NA	9.48E-05	4.15E-04
Manganese	7439-96-5	7.20E-05	3.15E-04
Mercury	7439-97-6	4.93E-05	2.16E-04
Nickel	7440-02-0	3.98E-04	1.74E-03
Selenium	7782-49-2	4.74E-06	2.08E-05
Total		0.36	1.57

**Methodology**

PTE (ton/yr) = Potential Emissions (Controlled) from Dryers (ton/yr) + Potential Emissions from RTO (ton/yr)

**Appendix A: Emission Calculations  
RTO Stack (2 DDGS Dryers, 2 RTOs, Fermentation Scrubber)**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

**1. Process Description:**

The RTO's (CE015 and CE016) control emissions from the dryers and the fermentation/distillation scrubber and exhaust to one stack (Stack S010).

**2. Combustion and Process Emissions from two (2) 92 MMBtu/hr dryers and two (2) 18 MMBtu/hr RTOs:**

Pollutant	Emission Rate before Control (lbs/hr)	*Control Efficiency (%)	Emission Rate after Control (lbs/hr)	PTE after Control (tons/yr)	PTE before Control (tons/yr)
PM/PM10	102	90%	10.17	44.5	445.4
VOCs	545.0	98%	10.9	47.7	2387.1
CO	110.2	90%	11.0	48.3	482.7
SO2	12.6	0%	12.6	55.0	55.0
NOx	9.7	0%	9.7	42.6	42.6

*Process HAPs\*\**

Emission Unit	Pollutant	Emission Rate after Control (lbs/hr)	PTE after Control (tons/yr)
RTO's CE015 and CE016 (Stack S010)	Acetaldehyde	0.591	2.59
	Acrolein	1.507	6.60
	Formaldehyde	0.184	0.81
	Methanol	0.975	4.27
<b>Total HAPs</b>		<b>3.26</b>	<b>14.27</b>

\* The control efficiencies and emission rates for the dryer/RTO systems were provided by the source and based on engineering estimates and stack test results at similar facilities.

\*\* The HAP emissions are based on similar facility stack tests. Combustion HAPs are calculated on page 5.

Note: The Permittee will perform stack testing to demonstrate compliance with the emission rates presented above.

**Methodology**

PTE after Control (tons/yr) = Emission Rate after Control (lbs/hr) x 8760 hr/yr x 1 ton/2000 lbs

PTE before Control (tons/yr) = Emission Rate before Control (lbs/hr) x 8760 hr/yr x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
VOC and HAP Emissions  
From the Fermentation Process Scrubber**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

**1. Case A: Potential to Emit (PTE) of VOC and HAP from the CO<sub>2</sub> scrubber with secondary control using RTO:**

Note: The VOC and HAP emissions for Case A are included in the RTO stack emission calculations on page 6.

**2. Case B: Potential to Emit (PTE) of VOC and HAP from the CO<sub>2</sub> scrubber vented to atmosphere:**

Hours of Operation (hr/yr):

Pollutant	Emission Rate After Control (lb/hr)*	PTE After Control (ton/yr)	Control Efficiency (%)**	PTE Before Control (ton/yr)
VOC	15.8	2.77	98%	138.43
HAP				
Acetaldehyde	3.99	0.70	50%	1.40
Methanol	0.21	0.04	50%	0.07
Formaldehyde	0.06	0.01	50%	0.0
Acrolein	0.12	0.02	50%	0.04
Total HAPs	4.38	0.77		1.53

\* VOC and HAP emission factors provided by the source and are based on tests performed at similar facilities and include a safety factor. The Permittee will perform stack testing of the CO<sub>2</sub> Scrubber stack.

\*\* Control efficiency information is based on the information from other similar plants.

**Methodology**

PTE After Control (ton/yr) = Emission Rate After Control (lb/hr) x Hours of Operation (hr/yr) x 1 ton/2000 lb  
PTE Before Control (ton/yr) = PTE After Control (ton/yr) / (1 - Control Efficiency)

**Appendix A: Emission Calculations  
Criteria and HAP Emissions  
From Two (2) 150 MMBtu/hr Boilers (EU056 and EU057)**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

Heat Input Capacity (MMBtu/hr)	Potential Throughput (MMBtu/yr)	Potential Throughput (MMcf/yr)
300	2,628,000	2,576

Emission Factor (lb/MMBtu)	Pollutant					
	PM *	PM10 *	SO <sub>2</sub>	NOx **	VOC	CO**
Potential to Emit (ton/yr)	0.00186	0.00745	0.00059	0.04	0.0054	0.035
	2.45	9.79	0.77	52.6	7.09	46.0

\* PM emission factor is filterable PM only. PM10 emission factor is condensable and filterable PM10 combined.  
\*\* Emission Factor for NOx and CO from manufacturer guarantee. Permit requires verification through stack testing.

Emission Factor (lb/MMBtu)	HAPs - Organics				
	Hexane	Formaldehyde	Toluene	Benzene	Dichlorobenzene
Potential to Emit (ton/yr)	1.8E-03	7.4E-05	3.3E-06	2.1E-06	1.2E-06
	2.32E+00	9.66E-02	4.38E-03	2.71E-03	1.55E-03

Emission Factor (lb/MMBtu)	HAPs - Metals				
	Nickel	Chromium	Cadmium	Manganese	Mercury
Potential to Emit (ton/yr)	2.1E-06	1.4E-06	1.1E-06	3.7E-07	2.5E-07
	2.71E-03	1.80E-03	1.42E-03	4.90E-04	3.35E-04

The five highest organic and metal HAPs emission factors are provided above.  
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

**Methodology**

Emission Factors from AP-42, Chapter 1.4, Tables 1.4-2, 1.4-3, and 1.4-4, unless otherwise noted.  
All Emission Factors are based on normal firing.  
MMBtu = 1000000 Btu  
MMcf = 1000000 cubic feet

Potential Throughput (MMBtu/yr) = Heat Input Capacity (MMBtu/hr) x 8760 hr/yr  
Potential Throughput (MMcf/yr) = Heat Input Capacity (MMBtu/hr) x 8760 hr/yr x 1 MMcf/1020 MMBtu  
Potential to Emit (ton/yr) = Throughput (MMBtu/yr) x Emission Factor (lb/MMBtu)/2000 lb/ton

**Appendix A: Emission Calculations  
VOC and HAP Emissions from Ethanol Loading Racks**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

**1. Emission Factors: AP-42**

Denatured ethanol will be shipped by either truck loading rack or railcar loading rack. Railcars will be dedicated fleets, but the trucks may be used to carry gasoline prior to filling with ethanol. Both railcars and trucks will be filled by submerged loading process. Truck and rail loadout operations will be controlled by the VRS flares, which each have a control efficiency of 98% for VOC and HAPs.

According to AP-42, Chapter 5.2 - Transportation and Marketing of Petroleum Liquids (01/95), the VOC emission factors for the truck and rail loading racks can be estimated from the following equation:

$$L = 12.46 \times (SPM)/T$$

where:

- L = loading loss (lb/kgal)
- S = a saturation factor (see AP-42, Table 5.2-1)
- P = true vapor pressure of the liquid loaded (psia)
- M = molecular weight of vapors
- T = temperature of the bulk liquid loaded (°R)

Previous Stored Liquid	*S	P (psia)	M (lb/lbmol)	T (°R)	L (lb/kgal)
Gasoline (normal)	1.0	4.6285	92	512	10.36
Gasoline (clean cargo)	0.5	4.6285	92	512	5.18
Denatured Ethanol (normal)	0.6	0.6425	47.25	512	0.44
Denatured Ethanol (clean cargo)	0.5	0.6425	47.25	512	0.37

Therefore, the emission factor for loading denatured ethanol to trucks which stored gasoline previously = L (gasoline, normal) - L (gasoline, clean cargo) + L (denatured ethanol, clean cargo) = **5.55 (lb/kgal)**

**2. Potential to Emit VOC Before Control:**

(1) Assume all ethanol loaded out via truck:  
 Loading rate for trucks: 72 kgal/hr  
 PTE of VOC before Control (ton/yr) = 72 kgal/hr x 5.55 lb/kgal x 1 ton/2000 lb x 8760 hr/yr = **1,750.5 ton/yr**

(2) Assume all ethanol loaded out via rail:  
 Loading rate for rail: 120 kgal/hr  
 PTE of VOC before Control (ton/yr) = 120 kgal/hr x 0.44 lb/kgal x 1 ton/2000 lb = **233.0 ton/yr**

**3. Limited Potential to Emit:**

Annual Production Limit: 115,500 kgal/yr (total)  
 Flare Control Efficiency: 98%

(1) Assume all ethanol loaded out via truck:  
 PTE of VOC from truck loading (ton/yr) = 5.55 lb/kgal x 115,500 kgal/yr x (1-98%) x 1 ton/2000 lb = **6.41 ton/yr**

(2) Assume all denatured ethanol is loaded to railcars (controlled by flare):  
 PTE of VOC (ton/yr) = 0.44 lb/kgal x 115,500 kgal/yr x (1-98%) x 1 ton/2000 lb = **0.31 ton/yr**

**Worst case scenario is when loading 115.5 MMgal/yr denatured ethanol to trucks = 6.41 ton/yr**

**4. Potential to Emit HAPs:**

HAP emissions are mainly from the unloading process for trucks, which may have been used to ship gasoline previously.

HAP	HAP Fraction*	PTE of HAP before Control (ton/yr)	PTE of HAP after Control (ton/yr)
Benzene	2.50E-03	4.38	1.60E-02
Carbon Disulfide	2.00E-05	0.04	1.28E-04
Cumene	1.00E-04	0.18	6.41E-04
Ethyl benzene	5.00E-05	0.09	3.21E-04
n-Hexane	5.00E-02	87.5	3.21E-01
Toluene	5.00E-03	8.75	3.21E-02
Xylene	5.00E-04	0.88	3.21E-03
<b>Total</b>	<b>0.06</b>	<b>101.8</b>	<b>0.37</b>

\* This is the HAP fraction for gasoline vapors.

**Methodology**

PTE of HAP before Control (ton/yr) = PTE of VOC before Control (ton/yr) x HAP Fraction  
 Limited PTE of HAP after Control (ton/yr) = Limited PTE of VOC by Trucks (ton/yr) x HAP Fraction

**Appendix A: Emission Calculations  
Combustion Emissions  
From Two (2) 6.8 MMBtu/hr VRS Loadout Flares**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

Heat Input Capacity  
(MMBtu/hr)

Operating Hours  
(hr/yr)

13.6

963

Emission Factor (lb/MMBtu)	Pollutant					
	PM *	PM10 *	SO <sub>2</sub> *	NOx **	VOC ***	CO **
Emission Factor (lb/MMBtu)	-	-	-	0.068		0.37
Limited Potential to Emit (ton/yr) ***	-	-	-	0.45		2.42

\* PM and PM10 emission factors are negligible due to the smokeless design. SO<sub>2</sub> emission factor is negligible due to minimal H<sub>2</sub>S levels.

\*\* Emission factors for NOx and CO from AP-42, Table 13.5-1.

\*\*\* VOC emission calculations can be found in page 9 of this appendix.

**Methodology**

Limited PTE of NOx and CO (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x Operating Hours (hr/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
Combustion Emissions  
From Biomethanator Flare (ATM Flare)**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

Heat Input Capacity  
(MMBtu/hr)

Operating Hours\*  
(hr/yr)

4.62

876

Emission Factor (lb/MMBtu)	Pollutant					
	PM **	PM10 **	SO <sub>2</sub> **	NO <sub>x</sub> ***	VOC *** =(0.14)*(0.37)	CO ***
Limited Potential to Emit (ton/yr) ****	-	-	-	0.14	0.11	0.75

\* Waste gas sent to DDGS dryers 90% of the year (7884 hr/yr).

\*\* PM and PM10 emission factors are negligible due to the smokeless design. SO<sub>2</sub> emission factor is negligible due to minimal H<sub>2</sub>S levels.

\*\*\* Emission factors for VOC, NO<sub>x</sub> and CO from AP-42, Table 13.5-1. VOC emission factor is 37% of total hydrocarbon emission factor.

**Methodology**

Limited PTE (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x Operating Hours (hr/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
PM/PM10 Emissions  
From the Cooling Tower**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

**1. Process Description:**

Type of Cooling Tower:	Induced Draft
Circulation Flow Rate:	46000 gal/min
Total Drift:	0.001% of the circulating flow
Total Dissolved Solids:	2500 ppm
Density:	8.330 lb/gal

Note: The information above was provided by the cooling tower manufacturer.

**2. Potential to Emit PM/PM10:**

Assume all the dissolved solids become PM10 emissions and assume PM emissions are equal to PM10 emissions.

PTE of PM/PM10 (lb/hr) = 46,000 gal/min x 60 min/hr x 0.001% x 8.33 lb/gal x 2,500 ppm x 1/1,000,000 ppm = **0.57 lb/hr**

PTE of PM/PM10 (ton/yr) = 0.57 lb/hr x 8760 hr/yr x 1 ton/2000 lb = **2.52 ton/yr**

**Appendix A: Emission Calculations  
Criteria Pollutant Emissions  
From the Fire Water Pump**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

Power Output  
(HP)

Operation Limit  
(hr/yr)

202

300

	Criteria Pollutants					
	PM **	PM10 **	SO <sub>2</sub>	NO <sub>x</sub>	VOC ***	CO
Emission Factor (lb/HP-hr) *	2.87E-04	2.87E-04	2.05E-03	1.38E-02	6.61E-04	8.16E-04
Potential to Emit (ton/yr)	0.01	0.01	0.06	0.42	0.02	0.02

\* Emission factors are from manufacturer data, except for SO<sub>2</sub>, which is from AP-42, Chapter 3.3, Table 3.3-1, SCC 2-02-001-02, 2-03-001-01 (AP-42 Supplement B, 10/96).

\*\* Assume PM10 emissions are equal to PM emissions.

\*\*\* Assume TOC (total organic compounds) emissions are equal to VOC emissions.

**Methodology**

Potential to Emit (ton/yr) = Power Output (HP) x Emission Factor (lb/HP-hr) x Operation Limit (hr/yr) x 1 ton/2000 lb

**Appendix A: Emission Calculations  
Combustion Emissions  
Insignificant Combustion Activities**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

Description of Insignificant Combustion Activities:

Eight (8) natural gas fired unit heaters @ 500,000 Btu/hr each for space heating.

Maximum Heat Input MMBtu/hr	Potential Throughput MMCF/yr
4.0	35.7

	Pollutant					
	PM	PM10	SO2	NO <sub>x</sub>	VOC	CO
Emission Factor*	1.9	7.6	0.6	94.0	5.5	40.0
Units	lb/MMCF	lb/MMCF	lb/MMCF	lb/MMCF	lb/MMCF	lb/MMCF
Potential Emission in tons/yr	3.40E-02	1.36E-01	1.07E-02	1.68E+00	9.83E-02	7.15E-01

\* Emission factors from Fifth Edition AP-42, Section 1.4, "Natural Gas Combustion", 7/98.

**Methodology**

Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu  
 Potential Emission in tons/yr = Potential Throughput (MMCF/yr) x Emission Factor (lb/MMCF) \* 1 ton/2000lbs

See next page for HAPs emissions calculations.

**Appendix A: Emission Calculations  
HAP Combustion Emissions  
Insignificant Combustion Activities**

**Company Name: VeraSun Reynolds, LLC  
Address: East of US Hwy 421, Reynolds, IN 47980  
FESOP: 181-24072-00046  
Reviewer: ERG/JR  
Date: July 13, 2007**

Potential Throughput  
MMCF/yr

35.7
------

HAPs - Organics

Emission Factor in lb/MMCF	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
Potential Emission in tons/yr	3.75E-05	2.14E-05	1.34E-03	3.22E-02	6.08E-05

HAPs - Metals

Emission Factor in lb/MMCF	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
Potential Emission in tons/yr	8.94E-06	1.97E-05	2.50E-05	6.79E-06	3.75E-05

Emission Factors from AP-42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (AP-42 Supplement D 3/98)

The five highest organic and metal HAPs emission factors are provided above.

Additional HAPs emission factors are available in AP-42, Chapter 1.4.

**Methodology**

All Emission factors are based on normal firing.

Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu

Potential Emission in tons/yr = Potential Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Limited Potential Emission in tons/yr = Limited Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

**Appendix A: Emission Calculations**  
**Fugitive Emissions (To Determine 326 IAC 6-5 Applicability)**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

**Fugitive PM/PM10 Emission Summary**

	PM	PM10
Grain Unloading - Hopper Truck	3.2	0.7
Grain Unloading - Straight Truck	4.5	1.5
DDGS Handling (Reclaim)	3.2	1.1
Paved Roads	26.8	5.2
Unpaved Roads	0.13	0.04
<b>TOTAL</b>	<b>37.7</b>	<b>8.5</b>

**Potential to Emit PM/PM10 - Grain and DDGS Handling Fugitive Emissions:**

Unit ID	Unit Description	Annual Throughput Limit (ton/yr)	Uncontrolled PM Emission Factor (lb/ton) *	Uncontrolled PM10 Emission Factor (lb/ton) *	Baghouse ID	Capture Efficiency (%) **	Fugitive PM Emissions (ton/yr)	Fugitive PM10 Emissions (ton/yr)
NA	Grain Unloading - Hopper Truck	905,000	0.035	0.0078	CE001	80%	3.17	0.71
NA	Grain Unloading - Straight Truck	250,000	0.180	0.0590	CE001	80%	4.50	1.48
EU054, EU055	DDGS Handling (Reclaim)	371,250	0.0860	0.0290	N/A	80%	3.19	1.08
<b>Total</b>		<b>1,155,000</b>					<b>10.86</b>	<b>3.26</b>

\* Emission factors are from AP-42, Chapter 9.9.1 - Grain Elevators, Table 9.9.1-1 SCC 3-02-005-51, 3-02-005-52 (04/03).

\*\* There is an aspirated system with partial enclosure at the grain unloading areas; the source states that the system will get 80% capture efficiency. There are no fugitive emissions from the grain bins because the emissions from these units are 100% captured.

**Methodology**

Fugitive PM/PM10 Emissions (ton/yr) = Annual Throughput Limit (ton/yr) x Uncontrolled Emission Factor (lb/ton) x (1-Capture Efficiency%) x 1 ton/2000 lb

**Potential to Emit PM/PM10 - Paved Roads Fugitive Emissions:**

According to AP-42, Chapter 13.2.1 - Paved Roads (12/03), the PM/PM10 emission factors for paved roads can be estimated from the following equation:

$$E = (k \times (sL/2)^a \times (w/3)^b - C) \times (1 - p/(4 \times 365))$$

where:

- E = emission factor (lb/vehicle mile traveled)
- sL (non-Winter) = road surface silt loading (g/m<sup>2</sup>) = 0.6 (g/m<sup>2</sup>) (AP-42, Table 13.2.1-3)
- sL (Winter) = sL (non-Winter) x 4 (g/m<sup>2</sup>) = 2.4 (g/m<sup>2</sup>) (AP-42, Table 13.2.1-3)
- w = mean vehicle weight (tons) = 27.5 tons
- k = empirical constant = 0.082 for PM and 0.016 for PM10
- a = empirical constant = 0.65
- b = empirical constant = 1.5
- C = emission factor for exhaust, brake and tire wear = 0.00047 for PM and PM10
- p = number of days per year with 0.01 inches precipitation = 117

PM Emission Factor (non-Winter) =  $(0.082 \times (0.6/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 117/(4 \times 365)) = 0.96$  lbs/mile  
 PM10 Emission Factor (non-Winter) =  $(0.016 \times (0.6/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 117/(4 \times 365)) = 0.19$  lbs/mile

PM Emission Factor (Winter) =  $(0.082 \times (2.4/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 117/(4 \times 365)) = 2.36$  lbs/mile  
 PM10 Emission Factor (Winter) =  $(0.016 \times (2.4/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 117/(4 \times 365)) = 0.46$  lbs/mile

PM Emission Factor (Average Annual) = ((PM Emission Factor (non-Winter) x 9) + (PM Emission Factor (Winter) x 3))/12 = 1.31 lbs/mile  
 PM10 Emission Factor (Average Annual) = ((PM10 Emission Factor (non-Winter) x 9) + (PM10 Emission Factor (Winter) x 3))/12 = 0.25 lbs/mile

Vehicle Type	Ave Weight of Vehicles* (tons)	Trip Number* (trips/yr)	Round Trip Distance* (miles/trip)	Vehicle Mile Traveled (VMT) (miles/yr)	Traffic Component (%)	Component Vehicle Weight (tons)	PTE of PM (tons/yr)	PTE of PM10 (tons/yr)
DDGS	27.5	7,425	0.66	4,901	12.0%	3.29	3.2	0.62
WDGS	27.5	0	0.66	0	0.0%	0.00	0.0	0.00
Ethanol	27.5	7,700	0.66	5,082	12.4%	3.41	3.3	0.65
Denaturant	27.5	733	0.66	484	1.2%	0.32	0.3	0.06
Grain	27.5	46,200	0.66	30,492	74.4%	20.47	19.9	3.87
<b>Total</b>				<b>40,958</b>	<b>100%</b>	<b>27.5</b>	<b>26.8</b>	<b>5.20</b>

\* This information is provided by the source.

**Methodology**

Vehicle Mile Traveled (miles/yr) = Trip Number (trips/yr) x Round Trip Distance (mile/trip)

Traffic Component (%) = VMT / Total VMT

Component Vehicle Weight = Ave. Weight of Vehicles (tons) x Traffic Component (%)

PTE of PM/PM10 before Control (tons/yr) = VMT (miles/yr) x PM/PM10 Emission Factors (Average Annual) x 1 ton/2000 lbs

**Potential to Emit PM/PM10 - UnPaved Roads Fugitive Emissions:**

According to AP-42, Section 13.2.2 Unpaved Roads, November 2006, the PM/PM10 emission factors for unpaved roads can be estimated from the following equation:

$$\text{lbs/VMT Equation: } E = k (s/12)^a (W/3)^b \times (365-P)/365$$

Where:

- Particle size multiplier k = 4.9 dimensionless (PM-30 or TSP) / 1.5 dimensionless PM-10
- surface material silt content (%) s = 8.5 Table 13.2.2-1
- mean vehicle weight W = 5.00 tons
- Equation constants a = 0.7 PM-30 or TSP Table 13.2.2-2 / 0.9 PM-10 Table 13.2.2-2
- b = 0.45 PM-30 or TSP Table 13.2.2-2 / 0.45 PM-10 Table 13.2.2-2
- P = 117

PM Emission Factor =  $(4.9) \times (8.5/12)^{0.7} \times (5/3)^{0.45} \times (365-117)/365 = 3.29$  lbs/mile  
 PM10 Emission Factor =  $(1.5) \times (8.5/12)^{0.9} \times (5/3)^{0.45} \times (365-117)/365 = 0.94$  lbs/mile

**5. Potential to Emit (PTE) of PM/PM10 from unpaved Roads:**

Emission Area	Number of Trucks (Truck/yr)	Miles Traveled per Truck (miles/Truck)	Unpaved Total VMT	Total Vehicle Emissions (lb/yr)	Total Vehicle Emissions (tpy)
Maintenance Roads (PM)	156	0.50	78	257	0.13
Maintenance Roads (PM10)	156	0.50	78	73	0.04

**Methodology**

Total Vehicle Emissions (tons/yr) = Unpaved Total VMT (miles/yr) x PM/PM10 Emission Factors x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
Potential to Emit Summary**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** July 13, 2007

**Limited Potential To Emit after Control**

Emission Units	PM (ton/yr)	PM10 (ton/yr)	SO <sub>2</sub> (ton/yr)	VOC (ton/yr)	CO (ton/yr)	NOx (ton/yr)	Total HAPs (ton/yr)
Grain Receiving Area, Internal Handling System, Hammermills, and Ground Corn Transfer Conveyor	11.9	11.9	-	-	-	-	-
DDGS Handling and Loading	1.83	1.83	-	-	-	-	-
DDGS Coolers	3.15	3.15	-	9.46	-	-	1.10
Fermentation Scrubber	-	-	-	2.77	-	-	0.77
RTO Stack	44.5	44.5	55.0	47.7	48.3	42.6	15.8
Boilers	2.45	9.79	0.77	7.09	46.0	52.6	2.43
Ethanol Loadout and VRS Flare	-	-	-	6.41	2.42	0.45	0.37
ATM Flare (Biomethanator)	-	-	-	0.11	0.75	0.14	-
Cooling Tower	2.52	2.52	-	-	-	-	-
Emergency Fire Pump	0.01	0.01	0.06	0.02	0.02	0.42	-
Storage Tanks**	-	-	-	2.53	-	-	-
Insignificant Combustion	0.03	0.14	0.01	0.10	0.71	1.68	0.03
Other Insignificant Activities	1.00	1.00	-	1.00	-	-	-
<b>TOTAL</b>	<b>67.4</b>	<b>74.9</b>	<b>55.9</b>	<b>77.2</b>	<b>98.2</b>	<b>97.8</b>	<b>20.5</b>

Note: Emissions from the storage tanks were calculated by the Permittee using EPA TANKS software (version 4.09d).

# Indiana Department of Environmental Management Office of Air Quality and Vigo County Air Pollution Control

## Technical Support Document (TSD) for a New Source Construction and a Federally Enforceable State Operating Permit (FESOP)

### Source Background and Description

Source Name: Emerald Renewable Energy, LLC  
Source Location: Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana  
46001  
County: Vigo  
SIC Code: 2869  
Operation Permit No.: F167-24127-00141  
Permit Reviewer: ERG/JR

The Office of Air Quality (OAQ) has reviewed a FESOP application from Emerald Renewable Energy, LLC relating to the construction and operation of an ethanol production plant.

### History

Emerald Renewable Energy, LLC submitted an application on December 28, 2006 to IDEM, OAQ applying for a Federally Enforceable State Operating Permit to construct and operate a new ethanol production plant at Section 5 of Township 10 North, Range 9 West, Terre Haute, Indiana 46001. This is the first air permit approval for this source.

### Permitted Emission Units and Pollution Control Equipment

There are no permitted emission units at this source during this review process.

### Unpermitted Emission Units and Pollution Control Equipment

There are no unpermitted emission units operating at this source during this review process.

### New Emission Units and Pollution Control Equipment

The application includes information relating to the operation of the following equipment pursuant to 326 IAC 2-8-4(11):

- (a) One (1) grain receiving area, approved for construction in 2007, with particulate emissions controlled by a baghouse, identified as CE001, and exhausting through stack SV001, consisting of the following:
  - (1) Two (2) truck receiving areas, identified as EU001 and EU002, each with a maximum capacity of 280 tons of corn per hour, consisting of one (1) truck unloading conveyor, identified as EU004, with a maximum capacity of 560 tons of corn per hour.
  - (2) One (1) railcar receiving area, identified as EU003, with a maximum capacity of 1120 tons of corn per hour, consisting of one (1) rail unloading conveyor, identified as EU005, with a maximum capacity of 1120 tons of corn per hour.
  - (3) One (1) storage bin fill conveyor, identified as EU006, with a maximum capacity of 1120 tons of corn per hour.
  - (4) One (1) elevator to surge weigh hopper, identified as EU007, with a maximum capacity of 1120 tons of corn per hour.

- (5) One (1) surge weigh hopper, identified as EU008, with a maximum capacity of 1120 tons of corn per hour.
  - (6) One (1) elevator to fill conveyor, identified as EU009, with a maximum capacity of 1120 tons of corn per hour.
  - (7) One (1) storage bin fill conveyor, identified as EU010, with a maximum capacity of 1680 tons of corn per hour.
  - (8) Two (2) corn storage silos, identified as EU011 and EU012, each with a maximum storage capacity of 16,800 tons of corn.
  - (9) One (1) storage bin reclaim conveyor, identified as EU013, with a maximum capacity of 280 tons of corn per hour.
  - (10) One (1) elevator leg to mill surge bin, identified as EU014, with a maximum capacity of 280 tons of corn per hour.
- (b) One (1) internal handling system, approved for construction in 2007, with particulate emissions controlled by a baghouse, identified as CE002, and exhausting through stack SV002, consisting of the following:
- (1) One (1) mill surge bin, identified as EU015, with a maximum capacity of 280 tons of corn per hour.
  - (2) One (1) transfer conveyor to milling, identified as EU016, with a maximum capacity of 280 tons of corn per hour.
  - (3) One (1) corn scalper, identified as EU017, with a maximum capacity of 280 tons of corn per hour.
  - (4) One (1) hammermill feed conveyor, identified as EU018, with a maximum capacity of 280 tons of corn per hour.
  - (5) One (1) elevator leg to corn slurry blender, identified as EU023, with a maximum capacity of 168 tons of corn per hour.
- (c) Four (4) hammermills, identified as EU019, EU020, EU021, and EU022, approved for construction in 2007, each with a maximum throughput rate of 42 tons of corn per hour, controlled by baghouses CE003, CE004, CE005, and CE006, respectively, and exhausting through a combined stack SV003.
- (d) One (1) ground corn transfer conveyor, identified as EU035, approved for construction in 2007, with a maximum capacity of 0.16 tons of corn per hour, controlled by baghouse CE007, exhausting to stack SV004.
- (e) One (1) DDGS reclaim operation, approved for construction in 2007, with a maximum throughput rate of 150 tons of corn per hour, controlled by baghouse CE010, exhausting to stack SV007, consisting of the following:
- (1) One (1) DDGS elevator leg to conveyor, identified as EU049.
  - (2) One (1) DDGS conveyor to surge bin, identified as EU050.
  - (3) One (1) DDGS surge bin, identified as EU051.
  - (4) One (1) DDGS conveyor to elevator leg, identified as EU052.
  - (5) One (1) DDGS elevator leg to loadout conveyors, identified as EU053.

- (f) One (1) DDGS loading system, approved for construction in 2007, with a maximum throughput rate of 150 tons of corn per hour, consisting of the following:
  - (1) One (1) DDGS truck loadout, identified as EU054, controlled by baghouses CE011 and CE012, exhausting to stack SV008.
  - (2) One (1) DDGS rail loadout, identified as EU055, controlled by baghouses CE013 and CE014, exhausting to stack SV009.
- (g) One DDGS cooling system, approved for construction in 2007, with a maximum throughput rate of 371,250 tons per year, consisting of the following:
  - (1) One (1) fluidized bed DDGS cooler, identified as EU047, controlled by a baghouse, identified as CE008, and exhausting through stack SV005, and one of either two (2) thermal oxidizers, identified as CE015 and CE016, exhausting through stack SV010.
  - (2) One (1) fluidized bed DDGS cooler, identified as EU048, controlled by a baghouse, identified as CE009, and exhausting through stack SV006, and one of either two (2) thermal oxidizers, identified as CE015 and CE016, exhausting through stack SV010.

Note: A portion of the exhaust from the baghouses CE008 and CE009 exhaust to one of two (2) thermal oxidizers, identified as CE015 and CE016 to provide combustion air.

- (h) One (1) fermentation process, approved for construction in 2007, with emissions controlled by a wet scrubber, identified as CE020, and one of either two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010, and consisting of the following:
  - (1) Two (2) slurry tanks, identified as EU024 and EU025.
  - (2) Two (2) yeast tanks, identified as EU026a and EU026b.
  - (3) Seven (7) fermenters, identified as EU027, EU028, EU029, EU030, EU031, EU032, and EU033.
  - (4) One (1) beer well, identified as EU034.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

- (i) One (1) distillation process, approved for construction in 2007, with emissions controlled by either one of two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010, and consisting of the following:
  - (1) One (1) degasser, identified as EU036.
  - (2) One (1) rectifier condenser, as part of the beer, stripper and rectifier column train, identified as EU037.
  - (3) One (1) molecular sieve unit, identified as EU038.
  - (4) One (1) centrifuge system, identified as EU041.
  - (5) One (1) centrate tank, identified as EU042.
  - (6) One (1) evaporation system, identified as EU043.

- (7) Two (2) centrifuges, approved for construction in 2007.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

- (j) Two (2) DDGS drying systems, approved for construction in 2007, each with a maximum throughput rate of 25 tons of DDGS per hour, consisting of the following:
- (1) One (1) natural gas fired DDGS dryer, identified as EU045, with a maximum heat input rate of 92 MMBtu/hr, with emissions venting through either one of two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010.
  - (2) One (1) natural gas fired DDGS dryer, identified as EU046, with a maximum heat input rate of 92 MMBtu/hr, with emissions venting through either one of two (2) thermal oxidizers identified as CE015 and CE016, each with a maximum heat input capacity of 18 MMBtu/hr, exhausting through stack SV010.
- (k) Two (2) natural gas fired boilers, identified as EU056 and EU057, approved for construction in 2007, each with a maximum heat input rate of 150 MMBtu/hr, with emissions exhausting to stack SV011.

Under 40 CFR, Subpart Db, the boilers are considered to be new steam generating units.

- (l) One (1) ethanol loadout system, approved for construction in 2007, consisting of the following:
- (1) One (1) ethanol loading rack for trucks, identified as EU039, with a maximum throughput rate of 72,000 gallons per hour, with emissions venting to a flare identified as CE017, with a maximum heat input capacity of 6.8 MMBtu/hr, exhausting through stack SV012. The flare has a continuous pilot with a heat input capacity of 0.1 MMBtu/hr.
  - (2) One (1) ethanol loading rack for railcars, identified as EU040, with a maximum throughput rate of 120,000 gallons per hour, with emissions venting to a flare identified as CE018, with a maximum heat input capacity of 6.8 MMBtu/hr, exhausting through stack SV013. The flare has a continuous pilot with a heat input capacity of 0.1 MMBtu/hr.

Under NSPS, Subpart VV, the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines, and valves of this process are considered to be affected facilities.

### Insignificant Activities

The source also consists of the following insignificant activities, as defined in 326 IAC 2-7-1(21):

- (a) One (1) anaerobic treatment module, identified as EU044, approved for construction in 2007, controlled by a flare, identified as CE019, with a maximum rate of combustion during full operation of 4.62 MMBtu/hr, exhausting to stack SV014. The flare has a continuous 0.1 MMBtu/hr pilot. [326 IAC 2-8-4]
- (b) One (1) emergency firewater pump, identified as EU058, approved for construction in 2007, with a maximum power output rate of 202 horsepower, and exhausting to stack SV015.

Under 40 CFR 60, Subpart IIII, the diesel fire pump EU058 is considered a new certified National Fire Protection Association (NFPA) fire pump.

- (c) Paved roads and parking lots with public access. [326 IAC 6-4]
- (d) Noncontact cooling water system, with mechanical draft cooling tower (identified as EU059) that is not regulated under a NESHAP.
- (e) Replacement or repair of bags in baghouses and filters in other air filtration equipment.
- (f) Blowdown for any of the following: sight glass, boiler, compressors, pumps, and cooling tower.
- (g) Space heaters and process heaters, using natural gas-fired combustion sources with heat input equal to or less than ten (10) million Btu per hour;
- (h) Equipment powered by internal combustion engines of capacity equal to or less than 500,000 Btu/hour, except where total capacity of equipment operated by one stationary source exceeds 2,000,000 Btu/hour.
- (i) Other emission units, not regulated by a NESHAP, with PM<sub>10</sub>, NO<sub>x</sub>, and SO<sub>2</sub> emissions less than five (5) pounds per hour or twenty-five (25) pounds per day, CO emissions less than twenty-five (25) pounds per day, VOC emissions less than three (3) pounds per hour or fifteen (15) pounds per day, lead emissions less than six-tenths (0.6) tons per year or three and twenty-nine hundredths (3.29) pounds per day, and emitting greater than one (1) pound per day but less than five (5) pounds per day or one (1) ton per year of a single HAP, or emitting greater than one (1) pound per day but less than twelve and five tenths (12.5) pounds per day or two and five tenths (2.5) ton per year of any combination of HAPs:
  - (1) One (1) tank for 190-proof ethanol, identified as T001, approved for construction in 2007, with a maximum capacity of 300,000 gallons. [40 CFR 60, Subpart Kb]
  - (2) One (1) tank for 200-proof ethanol, identified as T002, approved for construction in 2007, with a maximum capacity of 300,000 gallons of 200-proof ethanol. [40 CFR 60, Subpart Kb]
  - (3) One (1) gasoline tank, identified as T003, approved for construction in 2007, storing petroleum material with a vapor pressure equivalent to or less than the vapor pressure of 13 RVP gasoline, with a maximum capacity of 152,000 gallons. [326 IAC 8-4-3] [40 CFR 60, Subpart Kb]
  - (4) Two (2) denatured storage tanks, identified as T004 and T005, approved for construction in 2007, each with a maximum capacity of 1,500,000 gallons. [40 CFR 60, Subpart Kb]

Under 40 CFR 60, Subpart Kb, storage tanks T001 through T005 are considered to be new volatile organic liquid storage tanks.

### Existing Approvals

No air approvals have been issued to this source.

### Enforcement Issue

There are no enforcement actions pending.

### Recommendation

The staff recommends to the Commissioner that the FESOP be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant on January 18, 2007, February 26, 2007, and March 12, 2007.

A FESOP application for the purposes of this review was received on December 28, 2006.

### Emission Calculations

See Appendix A of this document for detailed emission calculations (pages 1 through 18). The PTE for the storage tanks is 2.53 tons per year (tons/yr) of VOC, which was calculated using EPA TANKS 4.0.9d software.

### Potential to Emit

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U.S. EPA, the department, or the appropriate local air pollution control agency.”

Pollutant	Potential to Emit (tons/yr)
PM	Greater than 100
PM10	Greater than 100
SO <sub>2</sub>	Less than 100
VOC	Greater than 100
CO	Greater than 100
NO <sub>x</sub>	Greater than 100

HAPs	Potential to Emit (tons/yr)
Acetaldehyde	Greater than 10
Acrolein	Greater than 10
Formaldehyde	Greater than 10
Methanol	Greater than 10
All Other HAPs	Less than 10
Total HAPs	Greater than 25

- (a) The potential to emit (as defined in 326 IAC 2-7-1(29)) of PM10, VOC, CO, and NOx are equal to or greater than 100 tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-7. The source will be issued a FESOP because the source will limit its emissions below the Title V levels.
- (b) The potential to emit (as defined in 326 IAC 2-7-1(29)) of any single HAP is greater than ten (10) tons per year and the potential to emit (as defined in 326 IAC 2-7-1(29)) of a combination of HAPs is greater than twenty-five (25) tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-7. The source will be issued a FESOP because the source will limit its HAP emissions below the Title V levels.
- (c) Fugitive Emissions  
Since this type of operation is in one of the twenty-eight (28) listed source categories under 326 IAC 2-2, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are counted toward determination of PSD applicability.

### Potential to Emit After Issuance

The table below summarizes the potential to emit, reflecting all limits of the emission units. Any control equipment is considered enforceable only after issuance of this FESOP and only to the extent that the effect of the control equipment is made practically enforceable in the permit.

Process/Emission Unit	Potential To Emit (tons/year)						
	PM	PM10	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	HAPs
Grain Receiving Area, Internal Handling System, Hammermills, and Ground Corn Transfer Conveyor	11.9	11.9					
Grain Receiving - Fugitive	7.67	2.18					
DDGS Handling and Loadout	1.83	1.83					
DDGS Loadout - Fugitive	3.19	1.08					
DDGS Coolers	3.15	3.15		9.46			1.10
Fermentation				2.77			0.77
RTO Stack	44.5	44.5	55.0	47.7	48.3	42.6	15.8
Boilers	2.45	9.79	0.77	7.09	46.0	52.6	2.43
Ethanol Loadout and Flare				6.41	2.42	0.45	0.37
Biomethanator Flare				0.11	0.75	0.14	
Cooling Tower	2.52	2.52					
Diesel Fire Pump (Insignificant)	0.01	0.01	0.06	0.02	0.02	0.42	Negligible
Paved and Unpaved Roads (Fugitive)	13.51	2.64					
Equipment Leaks (Insignificant)				22.6			1.31
Storage Tanks (Insignificant)				2.53			
Wet Cake Storage*							
Insignificant Combustion	0.03	0.14	0.01	0.10	0.71	1.68	0.03
Other Insignificant Activities	1.00	1.00		1.00			
<b>Total Emissions</b>	<b>91.8</b>	<b>80.8</b>	<b>55.9</b>	<b>99.79</b>	<b>98.2</b>	<b>97.8</b>	<b>21.8</b>

Note: The portions of the table left blank indicate that the pollutant is not emitted by the emission unit.

\* This plant is capable of producing both DDGS and WDGS. The emissions from DDGS production is the worst case scenario. Therefore, the PTE of wet cake storage is not included in the PTE for the entire source.

### County Attainment Status

The source is located in Vigo County.

Pollutant	Status
PM	Attainment
PM10	Attainment
PM2.5	Attainment
SO <sub>2</sub>	Attainment
NO <sub>2</sub>	Attainment
8-hour Ozone	Attainment
CO	Attainment
Lead	Attainment

- (a) Vigo County has been classified as unclassifiable or attainment for PM2.5. U.S. EPA has not yet established the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 for PM 2.5 emissions. Therefore, until the U.S.EPA adopts specific provisions for PSD review for PM2.5 emissions, it has directed states to regulate PM10 emissions as surrogate for PM2.5 emissions. See the State Rule Applicability – Entire Source section.
- (b) Vigo County has been classified as attainment or unclassifiable in Indiana for all remaining pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability – Entire Source section.

**Source Status**

New Source PSD and Emission Offset Definition (emissions after controls, based on 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/yr)
PM	91.8
PM10	80.8
SO <sub>2</sub>	55.9
VOC	99.79
CO	98.2
NO <sub>x</sub>	97.8
Single HAP	Less than 10
Combination HAPs	Less than 25

This new source is not a PSD major stationary source because no regulated pollutant is emitted at a rate of one hundred (100) tons per year or greater, and it is in one of the twenty-eight (28) listed source categories.

**Federal Rule Applicability**

- (a) This source does not have a grain elevator with a permanent storage capacity greater than 2.5 million bushels. Therefore, the requirements of the New Source Performance Standards for Grain Elevators (326 IAC 12, 40 CFR 60.300-304, Subpart DD) are not included in this permit.
- (b) The two 150 MMBtu/hr natural gas fired boilers, identified as EU056 and EU057, are used to produce steam and each of them has a maximum heat input capacity greater than 100 MMBtu/hr and will be constructed after June 19, 1984. Therefore, they are both subject to the New Source Performance Standards for Industrial-Commercial-Institutional Steam Generating Units (326 IAC 12, 40 CFR 60.40b-49b, Subpart Db).

Nonapplicable portions of the NSPS will not be included in the permit. The proposed boilers, identified as EU056 and EU057, are subject to the following portions of 40 CFR 60, Subpart Db.

- (1) 40 CFR 60.40b

- (2) 40 CFR 60.41b
- (3) 40 CFR 60.44b(a), (e), (h) and (i)
- (4) 40 CFR 60.46b(a)
- (5) 40 CFR 60.46b(c)
- (6) 40 CFR 60.46b(e)(1)
- (7) 40 CFR 60.48b(b)
- (8) 40 CFR 60.48b(b)(1)
- (9) 40 CFR 60.48b(c)
- (10) 40 CFR 60.48b(d)
- (11) 40 CFR 60.48b(e)(2)
- (12) 40 CFR 60.48b(f)
- (13) 40 CFR 60.48b(g)
- (14) 40 CFR 60.49(a)(1) and (3)
- (15) 40 CFR 60.49b(b)
- (16) 40 CFR 60.49b(c)
- (17) 40 CFR 60.49b(d)
- (18) 40 CFR 60.49b(g)(1-10)
- (19) 40 CFR 60.49b(i)
- (20) 40 CFR 60.49b(v)
- (21) 40 CFR 60.49b(w)

The provisions of 40 CFR 60, Subpart A – General Provisions, which are incorporated as 326 IAC 12-1, apply to the boilers (EU056 and EU057), except when otherwise specified in 40 CFR 60, Subpart Db.

- (c) Tanks T001 through T005 have capacities greater than 75 cubic meters (19,813 gallons) and will be used to store volatile organic liquids. Therefore, these tanks are subject to the New Source Performance Standards for Volatile Organic Liquid Storage Vessels for which Construction, Reconstruction, or Modification Commenced after July 23, 1984 (326 IAC 12, 40 CFR 60.110b - 117b, Subpart Kb).

Nonapplicable portions of the NSPS will not be included in the permit. The proposed storage tanks (T001 through T005) are subject to the following portions of 40 CFR 60, Subpart Kb.

- (1) 40 CFR 60.110b
- (2) 40 CFR 60.111b
- (3) 40 CFR 60.112b(a)(1)
- (4) 40 CFR 60.113b(a)
- (5) 40 CFR 60.115b(a)
- (6) 40 CFR 60.116b(a-e)
- (7) 40 CFR 60.117b

The provisions of 40 CFR 60, Subpart A – General Provisions, which are incorporated as 326 IAC 12-1, apply to the storage tanks T001 through T005, except when otherwise specified in 40 CFR 60, Subpart Kb.

- (d) Ethanol is one of the chemicals listed in 40 CFR 60.489. Therefore, this ethanol production plant is subject to the requirements of New Source Performance Standards for Volatile Organic Liquid Storage Vessels for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry (326 IAC 12, 40 CFR 60.480 - 489, Subpart VV).

Nonapplicable portions of the NSPS will not be included in the permit. The proposed ethanol production plant is subject to the following portions of 40 CFR 60, Subpart VV.

- (1) 40 CFR 60.480
- (2) 40 CFR 60.481
- (3) 40 CFR 60.482-1
- (4) 40 CFR 60.482-2

- (5) 40 CFR 60.482-3
- (6) 40 CFR 60.482-4
- (7) 40 CFR 60.482-5
- (8) 40 CFR 60.482-6
- (9) 40 CFR 60.482-7
- (10) 40 CFR 60.482-8
- (11) 40 CFR 60.482-9
- (12) 40 CFR 60.482-10
- (13) 40 CFR 60.483-1
- (14) 40 CFR 60.483-2
- (15) 40 CFR 60.485
- (16) 40 CFR 60.486
- (17) 40 CFR 60.487

The provisions of 40 CFR 60, Subpart A – General Provisions, which are incorporated as 326 IAC 12-1, apply to this source, except when otherwise specified in 40 CFR 60, Subpart VV.

- (e) The diesel fire pump, identified as EU058, will commence construction after July 11, 2005 and was manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006. Therefore, the fire pump, identified as EU058, is subject to the New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines (326 IAC 12, 40 CFR 60.4200 - 4209, Subpart IIII).

Nonapplicable portions of the NSPS will not be included in the permit. The proposed fire pump (EU058) is subject to the following portions of 40 CFR 60, Subpart IIII

- (1) 40 CFR 60.4200(a)(2)
- (2) 40 CFR 60.4200(a)(3)
- (3) 40 CFR 60.4200(b)
- (4) 40 CFR 60.4205(c)
- (5) 40 CFR 60.4206
- (6) 40 CFR 60.4207(b)
- (7) 40 CFR 60.4207(c)
- (8) 40 CFR 60.4208
- (9) 40 CFR 60.4209(a)
- (10) 40 CFR 60.4211(a)
- (11) 40 CFR 60.4211(b)
- (12) 40 CFR 60.4211(e)
- (13) 40 CFR 60.4212
- (14) 40 CFR 60.4214(b)
- (15) 40 CFR 60.4218
- (16) 40 CFR 60.4219
- (17) Tables 1, 5, and 8

The provisions of 40 CFR 60, Subpart A – General Provisions, which are incorporated as 326 IAC 12-1, apply to this source, except when otherwise specified in 40 CFR 60, Subpart IIII.

- (f) Ethanol is one of the chemicals listed in 40 CFR 60.667. However, according to the EPA memorandum from Mr. George T. Czerniak dated December 6, 2002, the manufacture of ethanol using a fermentation process (biological synthesis) was excluded from the scope of NSPS, Subpart NNN. Therefore, the distillation unit at this new ethanol production plant is not subject to the requirements of New Source Performance Standards for Volatile Organic Liquid Storage Vessels VOC Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations (326 IAC 12, 40 CFR 60.660 - 667, Subpart NNN).
- (g) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14 and 20, and 40 CFR Part 61 and 63) included in this permit.

- (h) This source will limit HAP emissions from the entire source to less than 10 tons/yr for a single HAP and less than 25 tons/yr for total HAPs. Therefore, the requirements of National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (40 CFR 63, Subpart ZZZZ) are not included in this permit.
- (i) The requirements of 40 CFR Part 63, Subpart F (National Emission Standards for Organic Hazardous Air Pollutants From Synthetic Organic Chemical Manufacturing Industry), 40 CFR Part 63, Subpart G (National Emission Standards for Organic Hazardous Air Pollutants from Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater), and 40 CFR Part 63, Subpart H (National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks), are not included in this permit because (1) this source has accepted limits that make it a minor source of hazardous air pollutants; (2) the source does not manufacture as a primary product any of the chemicals listed in Table 1 of 40 CFR 63, Subpart F, Tetrahydro-benzaldehyde, or Crotonaldehyde; and (3) the source does not use as a reactant, manufacture as a product or co-product any of the chemicals listed in Table 2 of 40 CFR 63, Subpart F.
- (j) The requirements of 40 CFR 63, Subpart I – National Emission Standards for Organic Hazardous Air Pollutants for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks are not included in this permit. The source does not operate any of the processes specified in 40 CFR 63.190(b).
- (k) This source has accepted limits that make it a minor source of hazardous air pollutants. Therefore, the requirements for the NESHAP for Industrial Process Cooling Towers (40 CFR 63, Subpart Q) are not included in this permit.
- (l) This source has accepted limits that make it a minor source of hazardous air pollutants. Therefore, the requirements of the NESHAP for Organic Liquids Distribution (non-gasoline) (40 CFR 63, Subpart EEEE) are not included in this permit.
- (m) This source has accepted limits that make it a minor source of hazardous air pollutants. Therefore, the requirements of the NESHAP for Miscellaneous Organic Chemical Manufacturing (40 CFR 63, Subpart FFFF) are not included in this permit.
- (n) This source has accepted limits that make it a minor source of hazardous air pollutants. Therefore, the requirements of the NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters (40 CFR 63, Subpart DDDDD) are not included in this permit.

**State Rule Applicability – Entire Source**

**326 IAC 2-2 (Prevention of Significant Deterioration (PSD))**

The source will be approved for construction in 2007. The source is in one of the twenty-eight (28) source categories as defined in 326 IAC 2-2-1 and the potential to emit PM, PM10, VOC, CO, and NOx from the entire source before control is greater than one hundred (100) tons/yr.

In order to make the requirement of 326 IAC 2-2 (PSD) not applicable, the source shall comply with the following emission limitations:

- (a) The PM and PM10 emissions from the following units shall not exceed the emission limits listed in the table below.

Unit ID	Unit Description	Baghouse ID	PM/PM10 Emission Limit (lbs/hr)
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Unit ID	Unit Description	Baghouse ID	PM/PM10 Emission Limit (lbs/hr)
EU001, EU002, EU003, EU004, EU005, EU006, EU007, EU008, EU009, EU010, EU011, EU012, EU013, EU014	Grain Receiving Area	CE001	1.54
EU015, EU016, EU017, EU018, EU023	Internal Handling System	CE002	0.17
EU019	Hammermill #1	CE003	0.25
EU020	Hammermill #2	CE004	0.25
EU021	Hammermill #3	CE005	0.25
EU022	Hammermill #4	CE006	0.25
EU035	Ground Corn Transfer Conveyor	CE007	0.02
EU049, EU050, EU051, EU052, EU053	DDGS Reclaim Operation	CE010	0.17
EU054	DDGS Truck Loadout	CE011 and CE012	0.12
EU055	DDGS Rail Loadout	CE013 and CE014	0.12

This is equivalent to 13.7 tons/yr of PM. The source will use baghouses to ensure compliance with these limits. With baghouse control, the source is capable of complying with these limits.

- (b) The total grain received by straight trucks shall not exceed 250,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (c) The total grain received by hopper trucks shall not exceed 905,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (d) The total DDGS produced shall not exceed 371,250 tons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (e) The PM emissions from each of the DDGS cooler stacks (SV005 and SV006) shall not exceed 0.36 lbs/hr. This is equivalent to 3.15 tons/yr of PM emissions.
- (f) The combined PM emissions from the thermal oxidizers, which are used to control emissions from the distillation operations, the fermentation scrubber, and dryers, shall not exceed 10.17 lbs/hr. This is equivalent to 44.5 tons/yr of PM emissions.
- (g) The Permittee shall use periodic sweeping to control PM emissions from the paved roads. The sweeping shall be performed in a manner and at a frequency sufficient to ensure compliance with 326 IAC 2-2.

Combined with the PM emissions from the cooling tower, fire pump, grain receiving/loadout fugitives, unpaved roads, and other insignificant activities at this source, the PM emissions from the entire source are limited to less than one hundred (100) tons/yr.

The source also accepted limits on the throughput and on the emission rates of PM10, VOC, CO, and NOx, which limit emissions of all regulated pollutants from the entire source to less than one hundred (100) tons/yr (see the discussion of 326 IAC 2-8-4 below). Therefore, the requirements of 326 IAC 2-2 are not applicable.

326 IAC 2-4.1 (New Sources of Hazardous Air Pollutants)

The source has accepted FESOP limits on the HAP emissions from the entire source, which limits the emissions from the source to less ten (10) tons/yr for a single HAP and less than

twenty-five (25) tons/yr for any combination of HAPs (see the discussion of 326 IAC 2-8-4 below). Therefore, the requirements of 326 IAC 2-4.1 are not applicable.

326 IAC 2-8-4 (FESOP)

The potential to emit PM10, VOC, CO, and NOx, before controls, for the entire source is greater than one hundred (100) tons/yr. In addition, the potential to emit HAP before control from this source is greater than ten (10) tons/yr for a single HAP (Acetaldehyde) and greater than twenty-five (25) tons/yr for total HAPs. Pursuant to 326 IAC 2-8-4 (FESOP), the source shall comply with the following:

- (a) The PM and PM10 emissions from the following units shall not exceed the emission limits listed in the table below.

Unit ID	Unit Description	Baghouse ID	PM/PM10 Emission Limit (lbs/hr)
EU001, EU002, EU003, EU004, EU005, EU006, EU007, EU008, EU009, EU010, EU011, EU012, EU013, EU014	Grain Receiving Area	CE001	1.54
EU015, EU016, EU017, EU018, EU023	Internal Handling System	CE002	0.17
EU019	Hammermill #1	CE003	0.25
EU020	Hammermill #2	CE004	0.25
EU021	Hammermill #3	CE005	0.25
EU022	Hammermill #4	CE006	0.25
EU035	Ground Corn Transfer Conveyor	CE007	0.02
EU049, EU050, EU051, EU052, EU053	DDGS Reclaim Operation	CE010	0.17
EU054	DDGS Truck Loadout	CE011 and CE012	0.12
EU055	DDGS Rail Loadout	CE013 and CE014	0.12

- (b) The total grain received by straight trucks shall not exceed 250,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (c) The total grain received by hopper trucks shall not exceed 905,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (d) The total DDGS produced shall not exceed 371,250 tons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (e) The Permittee shall use periodic sweeping to control PM and PM10 emissions from the paved roads. The sweeping shall be applied in a manner and at a frequency sufficient to ensure compliance with 326 IAC 2-2 and 326 IAC 2-8.
- (f) The Permittee shall comply with the following requirements for the DDGS Coolers (EU047 and EU048):
  - (1) The PM10 emissions from each stack (SV005 and SV006) shall not exceed 0.36 lbs/hr. This is equivalent to 3.15 tons/yr of PM10.
  - (2) The combined VOC emissions from stacks SV005 and SV006 shall not exceed 2.16 lbs/hr. This is equivalent to 9.46 tons/yr of VOC.

- (g) The Permittee shall comply with the following requirements for the fermentation scrubber (CE020):
  - (1) The scrubber (CE020) shall not vent to the atmosphere more than 350 hours per twelve (12) consecutive month period with compliance determined at the end of each month.
  - (2) VOC emissions shall not exceed 15.8 lbs/hr. This is equivalent to 2.77 tons/yr of VOC.
  - (3) Acetaldehyde emissions shall not exceed 3.99 lbs/hr. This is equivalent to 0.70 tons/yr of Acetaldehyde.
  - (4) Acrolein emissions shall not exceed 0.12 lbs/hr. This is equivalent to 0.02 tons/yr of Acrolein.
  - (5) Total HAP emissions shall not exceed 4.38 lbs/hr. This is equivalent to 0.77 tons/yr of HAP.
  
- (h) The Permittee shall comply with the following requirements for the thermal oxidizers (CE008 and CE009), which are used to control emissions from the distillation operations, the fermentation scrubber, and the dryers, shall not exceed the following:
  - (1) PM/PM10 emissions shall not exceed 10.17 lbs/hr from stack SV010. This is equivalent to 44.5 tons/yr of PM.
  - (2) VOC emissions shall not exceed 10.9 lbs/hr from stack SV010. This is equivalent to 47.7 tons/yr of VOC.
  - (3) CO emissions shall not exceed 11.0 lbs/hr from stack SV010. This is equivalent to 48.3 tons/yr of CO.
  - (4) NOx emissions shall not exceed 9.7 lbs/hr from stack SV010. This is equivalent to 42.6 tons/yr of NOx.
  - (5) Total HAP emissions shall not exceed 3.61 lbs/hr from stack SV010. This is equivalent to 15.8 tons/yr. Acrolein emissions shall not exceed 1.51 lbs/hr from stack SV010, which is equivalent to 6.60 tons/yr. Acetaldehyde emissions shall not exceed 0.59 lbs/hr from stack SV010, which is equivalent to 2.59 tons/yr.
  
- (i) The Permittee shall comply with the following requirements for the boilers (EU056 and EU057):
  - (1) The boilers shall only burn natural gas.
  - (2) The input of natural gas to the boilers shall be limited to 2,576 MMCF per twelve (12) consecutive month period, with compliance determined at the end of each month.
  - (3) NOx emissions shall not exceed 40.8 pounds per MMCF.
  - (4) CO emissions shall not exceed 35.7 pounds per MMCF.
  
- (j) The Permittee shall comply with the following requirements for the ethanol loading rack system (EU039 and EU040):
  - (1) The denatured ethanol load-out rate shall not exceed 115,500,000 gallons per twelve (12) consecutive month period with compliance determined at the end of each month.

- (2) The Permittee shall use a smokeless flare CE017 to control the emissions from the loading rack when loading denatured ethanol to trucks.
  - (3) The Permittee shall use a smokeless flare CE018 to control the emissions from the loading rack when loading denatured ethanol to railcars.
  - (4) The operating hours for the flares CE017 and CE018 shall each not exceed 963 hours per twelve (12) consecutive month period with compliance determined at the end of each month.
  - (5) CO emissions from flares CE017 and CE018 shall each not exceed 2.52 lbs/hr.
  - (6) NOx emissions from flares CE017 and CE018 shall each not exceed 0.46 lbs/hr.
  - (7) VOC emissions from flares CE017 and CE018 shall not exceed 0.11 lb/kgal.
  - (8) The ethanol loading rack system (EU039 and EU040) shall utilize submerged loading methods.
  - (9) The railcars and trucks shall not use vapor balance services during ethanol loading.
- (k) The operating hours for the diesel fire pump (EU058) shall not exceed 300 hours per twelve (12) consecutive month period with compliance determined at the end of each month.
- (l) The operating hours for the ATM flare (CE019) shall not exceed 876 hours per twelve (12) consecutive month period with compliance determined at the end of each month.

Combined with the PM10, VOC, CO, NOx, and HAP emission units, the emissions from the entire source are limited to less than one hundred (100) tons/yr for PM10, VOC, CO and NOx, and less than ten (10) tons/yr for a single HAP and less than twenty-five (25) tons/yr total HAPs. Therefore, the requirements of 326 IAC 2-7 (Part 70 Program), and 326 IAC 2-2 (PSD) are not applicable.

#### 326 IAC 2-6 (Emission Reporting)

This source is located in Vigo County, is not required to operate under a Part 70 permit, and emits less than 5 tons per year of lead. Therefore, pursuant to 326 IAC 2-6-1(b), the source is only subject to additional information requests as provided in 326 IAC 2-6-5.

#### 326 IAC 5-1 (Opacity Limitations)

This source is located in Vigo County; however it is not located in the area as described in 326 IAC 5-1-1(c)(8). Therefore, pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity for sources shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

#### 326 IAC 6-4 (Fugitive Dust Emissions)

Pursuant to 326 IAC 6-4, the source shall not generate fugitive dust to the extent that some portion of the material escapes beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located.

**326 IAC 6-5 (Fugitive Particulate Emissions Limitations)**

Pursuant to 326 IAC 6-5-1(a)(2)(F), the source is not located within a 0.5 km radius of State University Parking Lot No. 23 in Terre Haute. Furthermore, the potential fugitive particulate emissions, as defined in 326 IAC 6-5-2, from the source are less than 25 tons/yr. Therefore, the requirements of 326 IAC 6-5 are not applicable.

**State Rule Applicability – Boilers**

**326 IAC 6-2-4 (PM Emissions for Sources of Indirect Heating)**

Pursuant to 326 IAC 6-2-4(a), indirect heating facilities constructed after September 12, 1983, shall be limited by the following equation:

$$Pt = \frac{1.09}{Q^{0.26}}$$

Where Pt = emission rate limit (lbs/MMBtu)  
 Q = total source heat input capacity (MMBtu/hr)

The total source heat input capacity is 150 x 2 = 300 MMBtu/hr. Therefore, the PM emission limit for each of the boilers (EU056 and EU057) is:

$$Pt = \frac{1.09}{300^{0.26}} = 0.247 \text{ lbs/MMBtu.}$$

A PM emission limit of 0.247 lbs/MMBtu is equivalent to 37.1 lbs/hr (0.247 lbs/MMBtu x 150 MMBtu/hr = 37.1 lbs/hr) of PM emissions from each of the boilers (EU056 and EU057). According to the emission calculations in Appendix A, the total PM emissions from each of the boilers (EU056 and EU057) is 0.56 lbs/hr. Therefore, these units are capable of complying with the PM requirements in 326 IAC 6-2-4.

**State Rule Applicability - Grain Receiving and Handling, and DDGS Loadout Operations**

**326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)**

Pursuant to 326 IAC 6-3-2, particulate emissions from each of the following operations shall not exceed the pound per hour limit listed in the table below:

Unit ID	Unit Description	Max. Throughput Rate (tons/hr)	Particulate Emission Limit (lbs/hr)
EU001, EU002, EU003, EU004, EU005, EU006, EU007, EU008, EU009, EU010, EU011, EU012, EU013, EU014	Grain Receiving Area	1,680	84.5
EU015, EU016, EU017, EU018, EU023	Internal Handling System	280	62.2
EU019	Hammermill #1	42	56.6
EU020	Hammermill #2	42	56.6
EU021	Hammermill #3	42	56.6
EU022	Hammermill #4	42	56.6
EU035	Ground Corn Transfer Conveyor	0.16	1.3
EU049, EU050, EU051, EU052, EU053	DDGS Reclaim Operation	150	63.0
EU054	DDGS Truck Loadout	150	63.0
EU055	DDGS Rail Loadout	150	63.0

The pounds per hour limitations were calculated using the following equations:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 55.0 P^{0.11} - 40 \quad \text{where } E = \text{rate of emission in pounds per hour; and} \\ P = \text{process weight rate in tons per hour}$$

Pursuant to 326 IAC 6-3-2(e)(3), when the process weight exceeds 200 tons per hour, the maximum allowable emission may exceed the emission limits shown in the table above, provided the concentration of particulate matter in the gas discharged to the atmosphere is less than 0.10 pounds per 1,000 pounds of gases.

According to the emission calculations (see Appendix A), the potential to emit PM after control from these grain receiving operations (EU001 through EU014), the internal handling system (EU015 through EU018, and EU023), the hammermills (EU019 through EU022), the ground corn transfer conveyor (EU035), the DDGS reclaim operation (EU049 through EU053), and the DDGS loadout operations (EU054 and EU055), is less than the emission limits above. Therefore, these operations can comply with 326 IAC 6-3-2 using the baghouses.

**State Rule Applicability – Fermentation Process, Distillation Process, DDGS Drying and Cooling Process, and Ethanol Loading Rack**

326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)

Pursuant to 326 IAC 6-3-2, particulate emissions from each of the DDGS dryers (EU045 and EU046) and DDGS coolers (EU047 and EU048) shall not exceed the pound per hour limits listed in the table below:

Unit ID	Unit Description	Max. Throughput Rate (tons/hr)	Particulate Emission Limit (lbs/hr)
EU045	DDGS Dryer	25	31.7
EU046	DDGS Dryer	25	31.7
EU047	DDGS Cooler #1	25	31.7
EU048	DDGS Cooler #2	25	31.7

The pounds per hour limitations were calculated using the following equations:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

The use of the thermal oxidizers (CE015 and CE016) and the DDGS Cooler baghouses (CE008 and CE009) is necessary to comply with the emission limits above.

326 IAC 8-1-6 (General Reduction Requirements for VOC Emissions)

The fermentation process, distillation process, DDGS dryers, and ethanol load-out operation located at this source are subject to the requirements in 326 IAC 8-5-6. Therefore, these operations are not subject to the requirements of 326 IAC 8-1-6 (BACT).

### 326 IAC 8-5-6 (Fuel Grade Ethanol Production at Dry Mills)

The proposed ethanol production plant will be constructed after April 1, 2007, will use dry mill operations, and have combined potential VOC emissions from the fermentation process, distillation process, DDGS dryers, and ethanol load-out operation greater than 25 tons per year. Therefore, the fermentation process, distillation process, DDGS dryers, and ethanol load-out operation at this source are subject to the requirements in 326 IAC 8-5-6 (Fuel Grade Ethanol Production at Dry Mills) and shall comply with the following:

- (a) Pursuant to 326 IAC 8-5-6(c), the Permittee has chosen to control the VOC emissions from the fermentation process with a wet scrubber or by combination of wet scrubber followed by a thermal oxidizer, the distillation process and DDGS dryers by a thermal oxidizer, and the ethanol load-out operation by an enclosed flare. Therefore, the following conditions apply:
  - (1) The VOC emissions from the fermentation process shall be controlled by scrubber CE020, or by combination of wet scrubber CE020 followed by one of either two (2) thermal oxidizers, identified as CE015 and CE016.
  - (2) The VOC emissions from the distillation process and DDGS Dryers shall be collected and controlled by one of either two (2) thermal oxidizers, identified as CE015 and CE016.
  - (3) The overall efficiency for the scrubber CE020 (including the capture efficiency and destruction efficiency) shall be at least 98%, or the VOC outlet concentration shall not exceed 20 ppmv.
  - (4) The overall efficiency for each of the thermal oxidizers, identified as CE015 and CE016 (including the capture efficiency and destruction efficiency) shall be at least 98%, or the VOC outlet concentration shall not exceed 10 ppmv.
  - (5) The VOC emissions from the ethanol truck loading rack (EU039) shall be collected and controlled by enclosed flare CE017.
  - (6) The VOC emissions from the ethanol rail loading rack (EU040) shall be collected and controlled by enclosed flare CE018.
  - (7) The overall control efficiency for each of the enclosed flares CE017 and CE018 (including the capture efficiency and destruction efficiency) shall be at least 98%.
- (b) Pursuant to 326 IAC 8-5-6(d), the Permittee shall determine initial compliance with the control efficiency requirements within sixty (60) days after achieving maximum production levels but no later than one hundred and eighty (180) days after startup.
- (c) Pursuant to 326 IAC 8-5-6(e), the Permittee shall ensure and verify initial and continuing compliance with the control efficiency requirements by doing the following:
  - (1) The Permittee shall meet the following requirements for the scrubber CE020:
    - (A) The pressure drop across the scrubber must be within the normal range established during the latest stack test. The pressure drop of the scrubber must be monitored at least once per day when the associated emission unit is in operation to ensure that the pressure drop across the scrubber is within the normal range established during the latest stack test.
    - (B) The scrubber flow rate must be greater than the minimum flow rate for the scrubber during normal operation. The scrubber flow rate must be monitored at least once per day when the associated emission unit is in operation to ensure that the flow rate of the scrubber is greater than the minimum flow rate established during the latest stack test.

- (C) Maintain daily records of pressure drop and flow rate for the scrubber during normal operation.
- (2) The Permittee shall meet the following requirements for the two (2) recuperative thermal oxidizers, identified as CE015 and CE016:
  - (A) The three (3) hour average operating temperature of the oxidizer, as measured by a continuous temperature monitor, must be greater than or equal to the minimum operating temperature established during the most recent compliance demonstration.
  - (B) Maintain continuous temperature records for the thermal oxidizer and the three (3) hour average operating temperature used to demonstrate compliance during the most recent compliant stack test.
  - (C) The three (3) hour average duct pressure or fan amperage, as measured by a continuous parameter monitoring system, must be within the normal range established during the most recent compliance demonstration.
  - (D) Maintain daily records of the duct pressure or fan amperage for the thermal oxidizer.
- (3) The Permittee shall meet the following requirements for the enclosed flares CE017 and CE018:
  - (A) Maintain a flare pilot flame when the associated emission unit is in operation and continuously monitor the presence of a flare pilot flame using a thermocouple or any other equivalent device to detect the presence of a flame when the associated emission unit is in operation.
  - (B) Maintain records of temperature or other parameters sufficient to demonstrate the presence of a pilot flame when the loading rack is in operation.

**State Rule Applicability - Cooling Tower (Insignificant Activity)**

326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)

Pursuant to 326 IAC 6-3-1(b)(11), particulate emissions from the noncontact cooling tower systems are exempt from the requirements of 326 IAC 6-3.

**State Rule Applicability – Storage Tanks T001 through T005 (Insignificant Activities)**

326 8-4-3 (Petroleum Liquid Storage Facilities)

The denaturant storage tank (T003) has a maximum capacity greater than 39,000 gallons and will be used to store gasoline which has a vapor pressure greater than 1.52 psi. Therefore, tank T003 is subject to the requirements of 326 IAC 8-4-3. Tank T003 will be equipped with an internal floating roof.

- (a) Pursuant to 326 IAC 8-4-3(b)(1)(B), storage tank T003 shall be maintained such that there are no visible holes, tears, or other openings in the seal or any seal fabric or materials.
- (b) Pursuant to 326 IAC 8-4-3(b)(1)(C), all openings, except stub drains, shall be equipped with covers, lids, or seals such that:
  - (1) The cover, lid or seal shall be in the closed position at all times except when in actual use;

- (2) Automatic bleeder vents shall be closed at all times except when the roof is floated off or landed on the roof leg supports;
  - (3) Rim vents, if provided, shall be set to open when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.
- (c) Pursuant to 326 IAC 8-4-3(d), the Permittee shall maintain the following records for a period of two (2) years for tank T003:
- (1) The types of volatile petroleum liquid stored;
  - (2) The maximum true vapor pressure of the liquids as stored; and
  - (3) The results of the inspections performed on the storage vessels.

The above records shall be made available to the IDEM, OAQ upon written request. Tanks T001, T002, T004, and T005 will not be used to store petroleum. Therefore, these tanks are not subject to requirements of 326 IAC 8-4-3.

#### 326 IAC 8-9 (Volatile Organic Liquid Storage Vessels)

The source is not located in Clark, Floyd, Lake, or Porter County. Therefore, the requirements of 326 IAC 8-9-1 are not applicable to the tanks at this source.

#### Testing Requirements

In order to demonstrate compliance with the FESOP and PSD minor limits, 40 CFR 60, Subpart Db, and 326 IAC 8-5-6, the Permittee shall perform the following tests within 60 days after achieving the maximum capacity but not later than 180 days after initial startup of the ethanol production plant:

- (a) PM and PM10 tests for baghouses CE001, CE002, CE007, CE010, CE011, and CE012, and one of the four baghouses CE003, CE004, CE005, and CE006 which are used to control the particulate emissions from the with the grain receiving operations (EU001 through EU014), the internal handling system (EU015 through EU018, and EU023), the hammermills (EU019 through EU022), the ground corn transfer conveyor (EU035), the DDGS reclaim operation (EU049 through EU053), and the DDGS loadout operations (EU054 and EU055).
- (b) VOC and Acetaldehyde tests for the fermentation scrubber (CE020). The fermentation scrubber (CE020) is used to control the emissions from the fermentation operations.
- (c) PM, PM10, VOC, NOx, CO, Acetaldehyde, and Acrolein tests for the thermal oxidizer system stack (SV010). The thermal oxidizer system (CE015 and CE016) is used to control part of the emissions from the fermentation scrubber and the DDGS coolers (EU047 and EU048), and all emissions from the distillation process and DDGS dryers (EU045 and EU046).
- (d) PM, PM10, and VOC tests for one of the DDGS cooler stacks (SV005 and SV006). The baghouses CE008 and CE009 are used to control part of the emissions from the DDGS coolers (EU047 and EU048).
- (e) NOx and CO emissions from for one of the boilers (EU056 and EU057).
- (f) VOC emissions from the enclosed flare CE017, which is used to control the emissions from the ethanol truck loading rack.
- (g) VOC emissions from the enclosed flare CE018, which is used to control the emissions from the ethanol rail loading rack.

These tests shall be repeated at least once every five (5) years from the date of the last valid compliance demonstration.

## Compliance Requirements

Permits issued under 326 IAC 2-8 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-8-4. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also in Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

The compliance monitoring requirements applicable to this source are as follows:

1. The grain receiving operations (EU001 through EU014), the internal handling system (EU015 through EU018, and EU023), the hammermills (EU019 through EU022), the ground corn transfer conveyor (EU035), the DDGS reclaim operation (EU049 through EU053), and the DDGS loadout operations (EU054 and EU055) have applicable compliance monitoring conditions as specified below. These units are controlled by baghouses CE001, CE002, CE003, CE004, CE005, CE006, CE007, CE010, CE011, CE012, CE013, and CE014.

### Visible Emissions Notations

- (a) Visible emission notations of the baghouse stack exhausts (stacks SV001, SV002, SV003, SV004, SV007, SV008, SV009) shall be performed once per day during normal daylight operations. A trained employee or a trained contractor shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee or contractor is a person who has worked or trained at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

### Parametric Monitoring

- (a) The Permittee shall record the pressure drop across the baghouses used in conjunction with the grain receiving operations (EU001 through EU014), the internal handling system (EU015 through EU018, and EU023), the hammermills

(EU019 through EU022), the ground corn transfer conveyor (EU035), the DDGS reclaim operation (EU049 through EU053), and the DDGS loadout operations (EU054 and EU055), at least once per day when these units are in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 1.0 to 6.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

- (b) The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ and shall be calibrated at least once every six (6) months.
- (c) In the event that bag failure has been observed:
  - (1) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).
  - (2) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

These monitoring conditions are necessary because the baghouses controlling the grain receiving operations (EU001 through EU014), the internal handling system (EU015 through EU018, and EU023), the hammermills (EU019 through EU022), the ground corn transfer conveyor (EU035), the DDGS reclaim operation (EU049 through EU053), and the DDGS loadout operations (EU054 and EU055) must operate properly to ensure compliance with 326 IAC 2-2 (PSD), 326 IAC 2-8 (FESOP), and 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes).

- 2. The fermentation scrubber (CE020) is used to control the emissions from the fermentation operations. The thermal oxidizer system (CE015 and CE016) is used to control part of the emissions from the fermentation scrubber and the DDGS coolers (EU047 and EU048), and all emissions from the distillation process and DDGS dryers (EU045 and EU046). These processes have applicable compliance monitoring conditions as specified below:

Visible Emissions Notations

- (a) Visible emission notations of the stack exhaust from the scrubber CE020 stack, thermal oxidizers common stack (SV010), and the baghouse stacks (SV005 and SV006) shall be performed once per day during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.

- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

#### Parametric Monitoring

- (a) The Permittee shall monitor and record the pressure drop and the flow rate of the scrubber CE020 at least once per day when the fermentation and/or the distillation process is in operation. When for any one reading, the pressure drop across the scrubber is outside the normal range of 2.0 and 8.0 inches of water, or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. When for any one reading, the flow rate of the scrubber is less than the normal minimum of 35 gallons per minute, or a minimum established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range or a flow rate that is below the above mentioned minimum is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.
- (b) The instruments used for determining the pressure drop and flow rate shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.
- (c) In the event that a scrubber malfunction has been observed:  
  
Failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions). Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.
- (d) A continuous monitoring system shall be calibrated, maintained, and operated on the thermal oxidizers (CE015 and CE016) for measuring operating temperature. For the purpose of this condition, continuous means no less than once per minute. The output of this system shall be recorded as a 3-hour average. From the date of issuance of this permit until the approved stack test results are available, the Permittee shall operate the thermal oxidizers at or above the 3-hour average temperature of 1,400°F.

- (e) The Permittee shall determine the 3-hour average temperature from the most recent valid stack test that demonstrates compliance with limits in this permit, as approved by IDEM.
- (f) On and after the date the approved stack test results are available, the Permittee shall operate the thermal oxidizers at or above the 3-hour average temperature as observed during the compliant stack test.
- (g) The Permittee shall determine fan amperage or duct pressure from the most recent valid stack test that demonstrates compliance with limits in this permit, as approved by IDEM, OAQ.
- (h) The duct pressure or fan amperage shall be observed at least once per day when the thermal oxidizer is in operation. On and after the date the approved stack test results are available, the duct pressure or fan amperage shall be maintained within the normal range as established in most recent compliant stack test.
- (i) The Permittee shall record the pressure drop across each baghouse used in conjunction with the DDGS coolers (EU047 and EU048) at least once per day when this unit is in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 1.0 to 6.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.
- (j) The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ and shall be calibrated at least once every six (6) months.
- (k) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).
- (l) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

These monitoring conditions are necessary because scrubber CE020 must operate properly at all times the fermentation process is in operation, the thermal oxidizers CE015 and CE016 must operate properly at all times the distillation process, DDGS dryers (EU045 and EU046), and the DDGS coolers (EU047 and EU048) are in operation to ensure compliance with 326 IAC 2-2 (PSD), 326 IAC 2-8-4 (FESOP), 326 IAC 8-5-6 (Fuel Grade Ethanol Production at Dry Mills), and 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes). The baghouses (CE008 and CE009) must operate properly at all times the DDGS coolers (EU047 and EU048) are in operation to ensure compliance with 326 IAC 2-2 (PSD), 326 IAC 2-8-4 (FESOP), and 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes).

4. The ethanol truck loading rack (EU039), which is controlled by enclosed flare CE017 has applicable compliance monitoring conditions as specified below:

The presence of a flare flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

These monitoring conditions are necessary because flare CE017 must operate properly at all times that the ethanol loading rack (EU039) is in operation to ensure compliance with 326 IAC 2-2 (PSD), 326 IAC 2-8-4 (FESOP), and 326 IAC 8-5-6 (Fuel Grade Ethanol Production at Dry Mills).

5. The ethanol rail loading rack (EU040), which is controlled by enclosed flare CE018 has applicable compliance monitoring conditions as specified below:

The presence of a flare flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

These monitoring conditions are necessary because flare CE018 must operate properly at all times that the ethanol loading rack (EU040) is in operation to ensure compliance with 326 IAC 2-2 (PSD), 326 IAC 2-8-4 (FESOP), and 326 IAC 8-5-6 (Fuel Grade Ethanol Production at Dry Mills).

## **Conclusion**

The construction and operation of this ethanol production plant shall be subject to the conditions of the FESOP F167-24127-00141.

**Appendix A: Emission Calculations  
PM and PM10 Emissions  
From the Grain Receiving and Handling Operations**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 01/17/2007

**1. Potential to Emit PM/PM10 - Captured Emissions:**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/scf)	Maximum Air Flow Rate (acfm)	PTE of PM/PM10 after Control (lb/hr) *	PTE of PM/PM10 after Control (ton/yr) *	Control Efficiency (%)	PTE of PM/PM10 before Control (ton/yr) *
CE001	Grain Receiving Area	Baghouse	0.004	45,000	1.54	6.76	99%	676
CE002	Internal Handling System	Baghouse	0.004	5,000	0.17	0.75	99%	75
CE003	Hammermill	Baghouse	0.004	7,200	0.25	1.08	99%	108
CE004	Hammermill	Baghouse	0.004	7,200	0.25	1.08	99%	108
CE005	Hammermill	Baghouse	0.004	7,200	0.25	1.08	99%	108
CE006	Hammermill	Baghouse	0.004	7,200	0.25	1.08	99%	108
CE007	Ground Corn Transfer Conveyor	Baghouse	0.004	500	0.02	0.08	99%	8
Total						11.9		1,191

\* Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lb/hr) = Outlet Grain Loading (gr/scf) x Max. Air Flow Rate (acfm) x 60 min/hr x 1/7000 lb/gr

PTE of PM/PM10 after Control (ton/yr) = Outlet Grain Loading (gr/scf) x Max. Air Flow Rate (acfm) x 60 min/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lb

PTE of PM/PM10 before Control (ton/yr) = PTE of PM/PM10 after Control (ton/yr) / (1-Control Efficiency)

**2. Potential to Emit PM/PM10 - Fugitive Emissions:**

Unit ID	Unit Description	Annual Throughput Limit (ton/yr)	Uncontrolled PM Emission Factor (lb/ton) *	Uncontrolled PM10 Emission Factor (lb/ton) *	Baghouse ID	Capture Efficiency (%) **	Fugitive PM Emissions (ton/yr)	Fugitive PM10 Emissions (ton/yr)
NA	Grain Unloading - Hopper Truck	905,000	0.035	0.0078	CE001	80%	3.17	0.71
NA	Grain Unloading - Straight Truck	250,000	0.180	0.0590	CE001	80%	4.50	1.48
Total		1,155,000					7.67	2.18

\* Emission factors are from AP-42, Chapter 9.9.1 - Grain Elevators, Table 9.9.1-1 SCC 3-02-005-51, 3-02-005-52 (04/03).

\*\* There is an aspirated system with partial enclosure at the grain unloading areas; the source states that the system will get 80% capture efficiency. There are no fugitive emissions from the grain bins because the emissions from these units are 100% captured.

**Methodology**

Fugitive PM/PM10 Emissions (ton/yr) = Annual Throughput Limit (ton/yr) x Uncontrolled Emission Factor (lb/ton) x (1-Capture Efficiency%) x 1 ton/2000 lb

**Appendix A: Emission Calculations**  
**PM and PM10 Emissions**  
**From the DDGS Handling and Loading Operations**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 01/17/2007

**1. Potential to Emit PM/PM10 - Captured Emissions:**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/scf)	Maximum Air Flow Rate (acfm)	PTE of PM/PM10 after Control (lb/hr)	PTE of PM/PM10 after Control (ton/yr)	Control Efficiency (%)	PTE of PM/PM10 before Control (ton/yr)
CE010	DDGS Reclaim	Baghouse	0.004	5,000	0.17	0.75	99%	75.1
CE011	DDGS Loading - Truck	Baghouse	0.004	3,600	0.12	0.54	99%	54.1
CE012	DDGS Loading - Rail	Baghouse	0.004	3,600	0.12	0.54	99%	54.1
Total					0.42	1.83		183.21

Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lb/hr) = Grain Loading (gr/scf) x Max. Air Flow Rate (acfm) x 60 min/hr x 1/7000 lb/gr

PTE of PM/PM10 after Control (ton/yr) = Grain Loading (gr/scf) x Max. Air Flow Rate (acfm) x 60 min/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lb

PTE of PM/PM10 before Control (ton/yr) = PTE of PM/PM10 after Control (ton/yr) / (1-Control Efficiency)

**2. Potential to Emit PM/PM10 - Fugitive Emissions:**

Unit ID	Unit Description	Annual Throughput Limit (ton/yr)	Uncontrolled PM Emission Factor (lb/ton)	Uncontrolled PM10 Emission Factor (lb/ton)	Capture Efficiency (%)	Fugitive PM Emissions (ton/yr)	Fugitive PM10 Emissions (ton/yr)
EU054, EU055	DDGS Handling (Reclaim)	371,250	0.0860	0.0290	80%	3.19	1.08

Note: Emission factors are from AP-42, Chapter 9.9.1 - Grain Elevators, Table 9.9.1-2 (03/03)

**Methodology**

Fugitive PM/PM10 (ton/yr) = Annual Throughput Limit (ton/yr) x Uncontrolled PM Emission Factor (lb/ton) x (1-Capture Efficiency) x 1 ton/2000 lb

**Appendix A: Emission Calculations  
PM/PM10 and VOC Emissions  
From the DDGS Coolers**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 01/17/2007

**1. Potential to Emit PM/PM10**

Baghouse ID	Process Description	Control Device	Outlet Grain Loading (gr/scf)	Maximum Air Flow Rate (acfm)	PTE of PM/PM10 after Control (lb/hr) *	PTE of PM/PM10 after Control (ton/yr) *	Control Efficiency (%)	PTE of PM/PM10 before Control (ton/yr) *
CE008	DDGS Cooler A	Baghouse	0.004	10,500	0.36	1.58	99%	158
CE009	DDGS Cooler B	Baghouse	0.004	10,500	0.36	1.58	99%	158
Total					0.72	3.15		315

\* Assume all PM emissions equal PM10 emissions.

**Methodology**

PTE of PM/PM10 after Control (lb/hr) = Grain Loading (gr/scf) x Max. Air Flow Rate (acfm) x 60 mins/hr x 1/7000 lb/gr  
 PTE of PM/PM10 after Control (ton/yr) = Grain Loading (gr/scf) x Max. Air Flow Rate (acfm) x 60 min/hr x 1/7000 lb/gr x 8760 hr/yr x 1 ton/2000 lb  
 PTE of PM/PM10 before Control (ton/yr) = PTE of PM/PM10 after Control (ton/yr) / (1-Control Efficiency)

**2. Potential to Emit VOC**

VOC Emission Factor = 2.16 (lb/hr) (Source-provided, based on engineering estimate and DDGS throughput.)

PTE of VOC (ton/yr) = 2.16 (lb/hr) x 8760 (hr/yr) x 1 (ton/2000 lb) = **9.46 (tons/yr)**

**3. Potential to Emit HAPs**

Emission Rate after Control (lb/hr) *	HAP				Total
	Acetaldehyde	Methanol	Formaldehyde	Acrolein	
0.06	0.12	0.03	0.04	0.25	
<b>PTE after Control (ton/yr)</b>	<b>0.26</b>	<b>0.53</b>	<b>0.13</b>	<b>0.18</b>	<b>1.10</b>

\* HAP emission rates were provided by the source based on engineering estimates from a similar facility.  
 Note: 65% of cooler exhaust is sent to dryer for combustion air, 35% of cooler exhaust is vented to atmosphere.

**Methodology**

PTE after Control (ton/yr) = Emission Rate after Control (lb/hr) x 8760 hr/yr x 1 ton/2000 lb

**Appendix A: Emission Calculations**  
**HAP Emissions from Natural Gas Combustion**  
**From Two (2) 92 MMBtu/hr DDGS Dryers and Two (2) 18 MMBtu/hr RTOs**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 01/17/2007

**1. Process Description:** There are two DDGS dryers that exhaust to two RTOs. Each dryer has a capacity of 92 MMBtu/hr, and each RTO has a capacity of 18 MMBtu/hr, all burning natural gas. The dryers will exhaust to the RTOs at all times when the dryers are operated.

**2. HAP Emissions from Dryers:**

Heat Input Capacity  
(MMBtu/hr)

184
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HAP Pollutant	Emission Factor* (lb/MMscf)	PTE Emissions (Uncontrolled)		PTE Emissions (Controlled)	
		(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
Benzene	2.10E-03	3.86E-04	1.69E-03	1.16E-05	5.08E-05
Formaldehyde	7.50E-02	1.38E-02	6.04E-02	4.14E-04	1.81E-03
Hexane	1.80E+00	3.31E-01	1.45E+00	9.94E-03	4.35E-02
Naphthalene	6.10E-04	1.12E-04	4.92E-04	3.37E-06	1.47E-05
Toluene	3.40E-03	6.26E-04	2.74E-03	1.88E-05	8.22E-05
Arsenic	2.00E-04	3.68E-05	1.61E-04	1.10E-06	4.84E-06
Beryllium	1.20E-05	2.21E-06	9.67E-06	6.62E-08	2.90E-07
Cadmium	1.10E-03	2.02E-04	8.87E-04	6.07E-06	2.66E-05
Chromium	1.40E-03	2.58E-04	1.13E-03	7.73E-06	3.38E-05
Cobalt	8.40E-05	1.55E-05	6.77E-05	4.64E-07	2.03E-06
Lead	5.00E-04	9.20E-05	4.03E-04	2.76E-06	1.21E-05
Manganese	3.80E-04	6.99E-05	3.06E-04	2.10E-06	9.19E-06
Mercury	2.60E-04	4.78E-05	2.10E-04	1.44E-06	6.29E-06
Nickel	2.10E-03	3.86E-04	1.69E-03	1.16E-05	5.08E-05
Selenium	2.50E-05	4.60E-06	2.01E-05	1.38E-07	6.04E-07
Total		0.35	1.52	0.01	0.05

\* Emission factors from AP-42, Chapter 1.4, Tables 1.4-3 and 1.4-4 (07/98).

**Methodology**

PTE (Uncontrolled) (ton/yr) = 184 (MMBtu/hr) x 8,760 (hr/yr) x Emission Factor (lb/MMscf) x 1 MMCF/1,000 MMBtu x 1 ton/2000 lb  
PTE (Controlled) (ton/yr) = 184 (MMBtu/hr) x 8,760 (hr/yr) x Emission Factor (lb/MMscf) x 1 MMCF/1,000 MMBtu x 1 ton/2000 lb x (1 - 97%)

**Appendix A: Emission Calculations**  
**HAP Emissions from Natural Gas Combustion**  
**From Two (2) 92 MMBtu/hr DDGS Dryers and Two (2) 18 MMBtu/hr RTOs**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 01/16/2007

**3. HAP Emissions from RTOs:**

Heat Input Capacity  
(MMBtu/hr)

36
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HAP Pollutant	Emission Factor* (lb/MMscf)	PTE Emissions	
		(lb/hr)	(ton/yr)
Benzene	2.10E-03	3.86E-04	1.69E-03
Formaldehyde	7.50E-02	1.38E-02	6.04E-02
Hexane	1.80E+00	3.31E-01	1.45E+00
Naphthalene	6.10E-04	1.12E-04	4.92E-04
Toluene	3.40E-03	6.26E-04	2.74E-03
Arsenic	2.00E-04	3.68E-05	1.61E-04
Beryllium	1.20E-05	2.21E-06	9.67E-06
Cadmium	1.10E-03	2.02E-04	8.87E-04
Chromium	1.40E-03	2.58E-04	1.13E-03
Cobalt	8.40E-05	1.55E-05	6.77E-05
Lead	5.00E-04	9.20E-05	4.03E-04
Manganese	3.80E-04	6.99E-05	3.06E-04
Mercury	2.60E-04	4.78E-05	2.10E-04
Nickel	2.10E-03	3.86E-04	1.69E-03
Selenium	2.50E-05	4.60E-06	2.01E-05
Total		0.35	1.52

\* Emission factors from AP-42, Chapter 1.4, Tables 1.4-3 and 1.4-4 (07/98).

**Methodology**

PTE (ton/yr) = 36 (MMBtu/hr) x 8,760 (hr/yr) x Emission Factor (lb/MMscf) x 1 MMCF/1,000 MMBtu x 1 ton/2000 lb

**4. Total HAPs from Dryers and RTOs:**

HAP Pollutant	CAS	PTE	
		(lb/hr)	(ton/yr)
Benzene	71-43-2	3.98E-04	1.74E-03
Formaldehyde	50-00-0	1.42E-02	6.23E-02
Hexane	110-54-3	3.41E-01	1.49E+00
Naphthalene	91-20-3	1.16E-04	5.06E-04
Toluene	108-88-3	6.44E-04	2.82E-03
Arsenic	7440-38-2	3.79E-05	1.66E-04
Beryllium	7440-41-7	2.27E-06	9.96E-06
Cadmium	7440-43-7	2.08E-04	9.13E-04
Chromium	7440-47-3	2.65E-04	1.16E-03
Cobalt	7440-48-4	1.59E-05	6.97E-05
Lead	NA	9.48E-05	4.15E-04
Manganese	7439-96-5	7.20E-05	3.15E-04
Mercury	7439-97-6	4.93E-05	2.16E-04
Nickel	7440-02-0	3.98E-04	1.74E-03
Selenium	7782-49-2	4.74E-06	2.08E-05
Total		0.36	1.57

**Methodology**

PTE (ton/yr) = Potential Emissions (Controlled) from Dryers (ton/yr) + Potential Emissions from RTO (ton/yr)

**Appendix A: Emission Calculations  
RTO Stack (2 DDGS Dryers, 2 RTOs, Fermentation Scrubber)**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 05/29/2007

**1. Process Description:**

The RTO's (CE015 and CE016) control emissions from the dryers and the fermentation/distillation scrubber and exhaust to one stack (Stack S010).

**2. Combustion and Process Emissions from two (2) 92 MMBtu/hr dryers and two (2) 18 MMBtu/hr RTOs:**

Pollutant	Emission Rate before Control (lbs/hr)	*Control Efficiency (%)	Emission Rate after Control (lbs/hr)	PTE after Control (tons/yr)	PTE before Control (tons/yr)
PM/PM10	102	90%	10.17	44.5	445.4
VOCs	545.0	98%	10.9	47.7	2387.1
CO	110.2	90%	11.0	48.3	482.7
SO2	12.6	0%	12.6	55.0	55.0
NOx	9.7	0%	9.7	42.6	42.6

*Process HAPs\*\**

Emission Unit	Pollutant	Emission Rate after Control (lbs/hr)	PTE after Control (tons/yr)
RTO's CE015 and CE016 (Stack S010)	Acetaldehyde	0.591	2.59
	Acrolein	1.507	6.60
	Formaldehyde	0.184	0.81
	Methanol	0.975	4.27
<b>Total HAPs</b>		<b>3.26</b>	<b>14.27</b>

\* The control efficiencies and emission rates for the dryer/RTO systems were provided by the source and based on engineering estimates and stack test results at similar facilities.

\*\* The HAP emissions are based on similar facility stack tests. Combustion HAPs are calculated on page 5.

Note: The Permittee will perform stack testing to demonstrate compliance with the emission rates presented above.

**Methodology**

PTE after Control (tons/yr) = Emission Rate after Control (lbs/hr) x 8760 hr/yr x 1 ton/2000 lbs

PTE before Control (tons/yr) = Emission Rate before Control (lbs/hr) x 8760 hr/yr x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
VOC and HAP Emissions  
From the Fermentation Process Scrubber**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 05/29/2007

**1. Case A: Potential to Emit (PTE) of VOC and HAP from the CO<sub>2</sub> scrubber with secondary control using RTO:**

Note: The VOC and HAP emissions for Case A are included in the RTO stack emission calculations on page 6.

**2. Case B: Potential to Emit (PTE) of VOC and HAP from the CO<sub>2</sub> scrubber vented to atmosphere:**

Hours of Operation (hr/yr):

Pollutant	Emission Rate After Control (lb/hr)*	PTE After Control (ton/yr)	Control Efficiency (%)**	PTE Before Control (ton/yr)
VOC	15.8	2.77	98%	138.43
HAP				
Acetaldehyde	3.99	0.70	50%	1.40
Methanol	0.21	0.04	50%	0.07
Formaldehyde	0.06	0.01	50%	0.02
Acrolein	0.12	0.02	50%	0.04
Total HAPs	4.38	0.77		1.53

\* VOC and HAP emission factors provided by the source and are based on tests performed at similar facilities and include a safety factor. The Permittee will perform stack testing of the CO<sub>2</sub> Scrubber stack.

\*\* Control efficiency information is based on the information from other similar plants.

**Methodology**

PTE After Control (ton/yr) = Emission Rate After Control (lb/hr) x Hours of Operation (hr/yr) x 1 ton/2000 lb  
PTE Before Control (ton/yr) = PTE After Control (ton/yr) / (1 - Control Efficiency)

**Appendix A: Emission Calculations  
Criteria and HAP Emissions  
From Two (2) 150 MMBtu/hr Boilers (EU056 and EU057)**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 01/17/2007

Heat Input Capacity (MMBtu/hr)	Potential Throughput (MMBtu/yr)	Potential Throughput (MMcf/yr)
300	2,628,000	2,576

Emission Factor (lb/MMBtu)	Pollutant					
	PM *	PM10 *	SO <sub>2</sub>	NOx **	VOC	CO**
Potential to Emit (ton/yr)	0.00186	0.00745	0.00059	0.04	0.0054	0.035
	2.45	9.79	0.77	52.6	7.09	46.0

\* PM emission factor is filterable PM only. PM10 emission factor is condensable and filterable PM10 combined.  
\*\* Emission Factor for NOx and CO from manufacturer guarantee. Permit requires verification through stack testing.

Emission Factor (lb/MMBtu)	HAPs - Organics				
	Hexane	Formaldehyde	Toluene	Benzene	Dichlorobenzene
Potential to Emit (ton/yr)	1.8E-03	7.4E-05	3.3E-06	2.1E-06	1.2E-06
	2.32E+00	9.66E-02	4.38E-03	2.71E-03	1.55E-03

Emission Factor (lb/MMBtu)	HAPs - Metals				
	Nickel	Chromium	Cadmium	Manganese	Mercury
Potential to Emit (ton/yr)	2.1E-06	1.4E-06	1.1E-06	3.7E-07	2.5E-07
	2.71E-03	1.80E-03	1.42E-03	4.90E-04	3.35E-04

The five highest organic and metal HAPs emission factors are provided above.  
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

**Methodology**

Emission Factors from AP-42, Chapter 1.4, Tables 1.4-2, 1.4-3, and 1.4-4, unless otherwise noted.  
All Emission Factors are based on normal firing.  
MMBtu = 1000000 Btu  
MMcf = 1000000 cubic feet

Potential Throughput (MMBtu/yr) = Heat Input Capacity (MMBtu/hr) x 8760 hr/yr  
Potential Throughput (MMcf/yr) = Heat Input Capacity (MMBtu/hr) x 8760 hr/yr x 1 MMcf/1020 MMBtu  
Potential to Emit (ton/yr) = Throughput (MMBtu/yr) x Emission Factor (lb/MMBtu)/2000 lb/ton

**Appendix A: Emission Calculations  
VOC and HAP Emissions from Ethanol Loading Racks**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 01/17/2007

**1. Emission Factors: AP-42**

Denatured ethanol will be shipped by either truck loading rack or railcar loading rack. Railcars will be dedicated fleets, but the trucks may be used to carry gasoline prior to filling with ethanol. Both railcars and trucks will be filled by submerged loading process. Truck and rail loadout operations will be controlled by the VRS flares, which each have a control efficiency of 98% for VOC and HAPs.

According to AP-42, Chapter 5.2 - Transportation and Marketing of Petroleum Liquids (01/95), the VOC emission factors for the truck and rail loading racks can be estimated from the following equation:

$$L = 12.46 \times (SPM)/T$$

where:

- L = loading loss (lb/kgal)
- S = a saturation factor (see AP-42, Table 5.2-1)
- P = true vapor pressure of the liquid loaded (psia)
- M = molecular weight of vapors
- T = temperature of the bulk liquid loaded (°R)

Previous Stored Liquid	*S	P (psia)	M (lb/lbmol)	T (°R)	L (lb/kgal)
Gasoline (normal)	1.0	4.6285	92	512	10.36
Gasoline (clean cargo)	0.5	4.6285	92	512	5.18
Denatured Ethanol (normal)	0.6	0.6425	47.25	512	0.44
Denatured Ethanol (clean cargo)	0.5	0.6425	47.25	512	0.37

Therefore, the emission factor for loading denatured ethanol to trucks which stored gasoline previously = L (gasoline, normal) - L (gasoline, clean cargo) + L (denatured ethanol, clean cargo) = **5.55 (lb/kgal)**

**2. Potential to Emit VOC Before Control:**

(1) Assume all ethanol loaded out via truck:  
 Loading rate for trucks: 72 kgal/hr  
 PTE of VOC before Control (ton/yr) = 72 kgal/hr x 5.55 lb/kgal x 1 ton/2000 lb x 8760 hr/yr = **1,750.5 ton/yr**

(2) Assume all ethanol loaded out via rail:  
 Loading rate for rail: 120 kgal/hr  
 PTE of VOC before Control (ton/yr) = 120 kgal/hr x 0.44 lb/kgal x 1 ton/2000 lb = **233.0 ton/yr**

**3. Limited Potential to Emit:**

Annual Production Limit: 115,500 kgal/yr (total)  
 Flare Control Efficiency: 98%

(1) Assume all ethanol loaded out via truck:  
 PTE of VOC from truck loading (ton/yr) = 5.55 lb/kgal x 115,500 kgal/yr x (1-98%) x 1 ton/2000 lb = **6.41 ton/yr**

(2) Assume all denatured ethanol is loaded to railcars (controlled by flare):  
 PTE of VOC (ton/yr) = 0.44 lb/kgal x 115,500 kgal/yr x (1-98%) x 1 ton/2000 lb = **0.31 ton/yr**

**Worst case scenario is when loading 115.5 MMgal/yr denatured ethanol to trucks = 6.41 ton/yr**

**4. Potential to Emit HAPs:**

HAP emissions are mainly from the unloading process for trucks, which may have been used to ship gasoline previously.

HAP	HAP Fraction*	PTE of HAP before Control (ton/yr)	PTE of HAP after Control (ton/yr)
Benzene	2.50E-03	4.38	1.60E-02
Carbon Disulfide	2.00E-05	0.04	1.28E-04
Cumene	1.00E-04	0.18	6.41E-04
Ethyl benzene	5.00E-05	0.09	3.21E-04
n-Hexane	5.00E-02	87.5	3.21E-01
Toluene	5.00E-03	8.75	3.21E-02
Xylene	5.00E-04	0.88	3.21E-03
<b>Total</b>	<b>0.06</b>	<b>101.8</b>	<b>0.37</b>

\* This is the HAP fraction for gasoline vapors.

**Methodology**

PTE of HAP before Control (ton/yr) = PTE of VOC before Control (ton/yr) x HAP Fraction  
 Limited PTE of HAP after Control (ton/yr) = Limited PTE of VOC by Trucks (ton/yr) x HAP Fraction

**Appendix A: Emission Calculations  
Combustion Emissions  
From Two (2) 6.8 MMBtu/hr VRS Loadout Flares**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 01/17/2007

Heat Input Capacity  
(MMBtu/hr)

Operating Hours  
(hr/yr)

13.6

963

Emission Factor (lb/MMBtu)	Pollutant					
	PM *	PM10 *	SO <sub>2</sub> *	NOx **	VOC ***	CO **
Emission Factor (lb/MMBtu)	-	-	-	0.068		0.37
Limited Potential to Emit (ton/yr) ***	-	-	-	0.45		2.42

\* PM and PM10 emission factors are negligible due to the smokeless design. SO<sub>2</sub> emission factor is negligible due to minimal H<sub>2</sub>S levels.

\*\* Emission factors for NOx and CO from AP-42, Table 13.5-1.

\*\*\* VOC emission calculations can be found in page 9 of this appendix.

**Methodology**

Limited PTE of NOx and CO (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x Operating Hours (hr/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
Combustion Emissions  
From Biomethanator Flare (ATM Flare)**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 01/17/2007

Heat Input Capacity  
(MMBtu/hr)

Operating Hours\*  
(hr/yr)

4.62

876

Emission Factor (lb/MMBtu)	Pollutant					
	PM **	PM10 **	SO <sub>2</sub> **	NO <sub>x</sub> ***	VOC *** =(0.14)*(0.37)	CO ***
Emission Factor (lb/MMBtu)	-	-	-	0.068	0.052	0.37
Limited Potential to Emit (ton/yr) ****	-	-	-	0.14	0.11	0.75

\* Waste gas sent to DDGS dryers 90% of the year (7884 hr/yr).

\*\* PM and PM10 emission factors are negligible due to the smokeless design. SO<sub>2</sub> emission factor is negligible due to minimal H<sub>2</sub>S levels.

\*\*\* Emission factors for VOC, NO<sub>x</sub> and CO from AP-42, Table 13.5-1. VOC emission factor is 37% of total hydrocarbon emission factor.

**Methodology**

Limited PTE (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lbs/MMBtu) x Operating Hours (hr/yr) x 1 ton/2000 lbs

**Appendix A: Emission Calculations**  
**PM/PM10 Emissions**  
**From the Cooling Tower**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 01/17/2007

**1. Process Description:**

Type of Cooling Tower:	Induced Draft
Circulation Flow Rate:	46000 gal/min
Total Drift:	0.001% of the circulating flow
Total Dissolved Solids:	2500 ppm
Density:	8.330 lb/gal

Note: The information above was provided by the cooling tower manufacturer.

**2. Potential to Emit PM/PM10:**

Assume all the dissolved solids become PM10 emissions and assume PM emissions are equal to PM10 emissions.

$$\text{PTE of PM/PM10 (lb/hr)} = 46,000 \text{ gal/min} \times 60 \text{ min/hr} \times 0.001\% \times 8.33 \text{ lb/gal} \times 2,500 \text{ ppm} \times 1/1,000,000 \text{ ppm} = \quad \mathbf{0.57 \text{ lb/hr}}$$

$$\text{PTE of PM/PM10 (ton/yr)} = 0.57 \text{ lb/hr} \times 8760 \text{ hr/yr} \times 1 \text{ ton}/2000 \text{ lb} = \quad \mathbf{2.52 \text{ ton/yr}}$$

**Appendix A: Emission Calculations  
Criteria Pollutant Emissions  
From the Fire Water Pump**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 01/17/2007

Power Output  
(HP)

Operation Limit  
(hr/yr)

202

300

	Criteria Pollutants					
	PM **	PM10 **	SO <sub>2</sub>	NO <sub>x</sub>	VOC ***	CO
Emission Factor (lb/HP-hr) *	2.87E-04	2.87E-04	2.05E-03	1.38E-02	6.61E-04	8.16E-04
Potential to Emit (ton/yr)	0.01	0.01	0.06	0.42	0.02	0.02

\* Emission factors are from manufacturer data, except for SO<sub>2</sub>, which is from AP-42, Chapter 3.3, Table 3.3-1, SCC 2-02-001-02, 2-03-001-01 (AP-42 Supplement B, 10/96).

\*\* Assume PM10 emissions are equal to PM emissions.

\*\*\* Assume TOC (total organic compounds) emissions are equal to VOC emissions.

**Methodology**

Potential to Emit (ton/yr) = Power Output (HP) x Emission Factor (lb/HP-hr) x Operation Limit (hr/yr) x 1 ton/2000 lb

**Appendix A: Emission Calculations  
Fugitive Emissions From Roads**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 01/17/2007

**1. Emission Factors: AP-42**

According to AP-42, Chapter 13.2.1 - Paved Roads (12/03), the PM/PM10 emission factors for paved roads can be estimated from the following equation:

$$E = (k \times (sL/2)^a \times (w/3)^b - C) \times (1 - p/(4 \times 365))$$

where:

E = emission factor (lb/vehicle mile traveled)  
 sL (non-Winter) = road surface silt loading (g/m<sup>2</sup>) = 0.6 (g/m<sup>2</sup>) (AP-42, Table 13.2.1-3)  
 sL (Winter) = sL (non-Winter) x 4 (g/m<sup>2</sup>) = 2.4 (g/m<sup>2</sup>) (AP-42, Table 13.2.1-3)  
 w = mean vehicle weight (tons) = 27.5 tons  
 k = empirical constant = 0.082 for PM and 0.016 for PM10  
 a = empirical constant = 0.65  
 b = empirical constant = 1.5  
 C = emission factor for exhaust, brake and tire wear = 0.00047 for PM and PM10  
 p = number of days per year with 0.01 inches precipitation = 117

PM Emission Factor (non-Winter) =  $(0.082 \times (0.6/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 120/1460) = 0.96$  lbs/mile  
 PM10 Emission Factor (non-Winter) =  $(0.016 \times (0.6/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 120/1460) = 0.19$  lbs/mile

PM Emission Factor (Winter) =  $(0.082 \times (2.4/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 120/1460) = 2.36$  lbs/mile  
 PM10 Emission Factor (Winter) =  $(0.016 \times (2.4/2)^{0.65} \times (27.5/3)^{1.5} - 0.00047) \times (1 - 120/1460) = 0.46$  lbs/mile

PM Emission Factor (Average Annual) = ((PM Emission Factor (non-Winter) x 9) + (PM Emission Factor (Winter) x 3))/12 = 1.31 lbs/mile  
 PM10 Emission Factor (Average Annual) = ((PM10 Emission Factor (non-Winter) x 9) + (PM10 Emission Factor (Winter) x 3))/12 = 0.25 lbs/mile

**2. Potential to Emit (PTE) of PM/PM10 from Paved Roads:**

Vehicle Type	Ave Weight of Vehicles* (tons)	Trip Number* (trips/yr)	Round Trip Distance* (mile/trip)	Vehicle Mile Traveled (VMT) (miles/yr)	Traffic Component (%)	Component Vehicle Weight (tons)	PTE of PM (tons/yr)	PTE of PM10 (tons/yr)
DDGS	27.5	7,425	0.66	4,901	12.0%	3.29	3.2	0.62
WDGS	27.5	0	0.66	0	0.0%	0.00	0.0	0.00
Ethanol	27.5	7,700	0.66	5,082	12.4%	3.41	3.3	0.65
Denaturant	27.5	733	0.66	484	1.2%	0.32	0.3	0.06
Grain	27.5	46,200	0.66	30,492	74.4%	20.47	19.9	3.87
<b>Total</b>				<b>40,958</b>	<b>100%</b>	<b>27.5</b>	<b>26.8</b>	<b>5.20</b>

\* This information is provided by the source.

**Methodology**

Vehicle Mile Traveled (miles/yr) = Trip Number (trips/yr) x Round Trip Distance (mile/trip)  
 Traffic Component (%) = VMT / Total VMT  
 Component Vehicle Weight = Ave. Weight of Vehicles (tons) x Traffic Component (%)  
 PTE of PM/PM10 before Control (tons/yr) = VMT (miles/yr) x PM/PM10 Emission Factors (Average Annual) x 1 ton/2000 lbs

**3. Potential to Emit (PTE) of PM/PM10 after Control from Paved Roads:**

The source will use periodic sweeping to control the fugitive dust emissions. The control efficiency from sweeping is assumed to be 50%.

PTE of PM after Control = 26.8 tons/yr x (1-50%) = 13.4 tons/yr  
 PTE of PM10 after Control = 5.20 tons/yr x (1-50%) = 2.60 tons/yr

**4. Unpaved Road Emission Factors: AP-42**

According to AP-42, Section 13.2.2 Unpaved Roads, November 2006, the PM/PM10 emission factors for unpaved roads can be estimated from the following equation:

$$\text{lbs/VMT Equation: } E = k (s/12)^a (W/3)^b \times (365-P)/365$$

Where:

Particle size multiplier k = 4.9 dimensionless (PM-30 or TSP) = 1.5 dimensionless PM-10  
 surface material silt content (%) s = 8.5 Table 13.2.2-1  
 mean vehicle weight W = 5.00 tons  
 Equation constants a = 0.7 PM-30 or TSP Table 13.2.2-2 = 0.9 PM-10 Table 13.2.2-2  
 b = 0.45 PM-30 or TSP Table 13.2.2-2 = 0.45 PM-10 Table 13.2.2-2  
 P = 117

PM Emission Factor =  $(4.9) \times (8.5/12)^{0.7} \times (5/3)^{0.45} \times (365-117)/365 = 3.29$  lbs/mile  
 PM10 Emission Factor =  $(1.5) \times (8.5/12)^{0.9} \times (5/3)^{0.45} \times (365-117)/365 = 0.94$  lbs/mile

**5. Potential to Emit (PTE) of PM/PM10 from unpaved Roads:**

Emission Area	Number of Trucks (Truck/yr)	Miles Traveled per Truck (miles/Truck)	Unpaved Total VMT	Total Vehicle Emissions (lb/yr)	Total Vehicle Emissions (tpy)
Maintenance Roads (PM)	156	0.50	78	257	0.13
Maintenance Roads (PM10)	156	0.50	78	73	0.04

**Methodology**

Total Vehicle Emissions (tons/yr) = Unpaved Total VMT (miles/yr) x PM/PM10 Emission Factors x 1 ton/2000 lbs

**Appendix A: Emission Calculations  
Fugitive VOC and HAP Emissions  
From Equipment Leaks**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 01/17/2007

**1. Fugitive VOC Emissions:**

Equipment Component Source	Product	Component Count *	Emission Factor (lb/comp-hr) **	Subpart VV Control Effectiveness (%) ***	Fugitive VOC Emissions (ton/yr)
Valves	Gas/Vapor	33	0.013134	87%	0.25
Valves	Light Liquid	246	0.008866	84%	1.53
Pumps	Light Liquid	14	0.04378	69%	0.83
Pressure-Relief Valves	Gas/Vapor	8	0.2288	0%	8.02
Sampling Connections	All	13	0.033	0%	1.88
Open-Ended Lines	All	40	0.00374	100%	0.00
Connectors	All	571	0.004026	0%	10.07
<b>Total</b>					<b>22.57</b>

\* Component count estimated by the source.

\*\* Emission factors are from Protocol for Equipment leak Emission Estimates, EPA-453/R-95-017.

\*\*\* Control Effectiveness is from Protocol for Equipment leak Emission Estimates, EPA-453/R-95-017, Table 5-2.

Note: Rupture discs are not installed ahead of the pressure-relief valves; therefore, no control was assumed.

Closed loop sampling is not employed, therefore, no control was assumed for sampling connections.

**Methodology**

Fugitive VOC Emissions (ton/yr) = Component Count x Emission Factor (lb/hr) x (1-Control Effectiveness) x 8760 hr/yr x 1 ton/2000 lb

**2. Fugitive HAP Emissions:**

HAP	HAP Fraction *	Fugitive HAP Emissions (ton/yr)
Acetaldehyde	2.00E-04	4.51E-03
Methanol	2.00E-04	4.51E-03
Benzene	2.50E-03	5.64E-02
Carbon Disulfide	2.00E-05	4.51E-04
Cumene	1.00E-04	2.26E-03
Ethylbenzene	5.00E-05	1.13E-03
n-Hexane	5.00E-02	1.13E+00
Toluene	5.00E-03	1.13E-01
Xylenes	5.00E-04	1.13E-02
<b>Total</b>		<b>1.31</b>

\* The HAP fractions for Acetaldehyde, Methanol, Formaldehyde, and Acrolein were derived from similar plant stack testing and the remaining HAP fractions are for gasoline vapors.

**Methodology**

Fugitive HAP Emissions (ton/yr) = Fugitive VOC Emissions (ton/yr) x HAP Fraction

**Appendix A: Emission Calculations  
Combustion Emissions  
Insignificant Combustion Activities**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** March 15, 2007

Description of Insignificant Combustion Activities:

Eight (8) natural gas fired unit heaters @ 500,000 Btu/hr each for space heating.

Maximum Heat Input MMBtu/hr	Potential Throughput MMCF/yr
4.0	35.7

	Pollutant					
	PM	PM10	SO2	NO <sub>x</sub>	VOC	CO
Emission Factor* Units	1.9 lb/MMCF	7.6 lb/MMCF	0.6 lb/MMCF	94.0 lb/MMCF	5.5 lb/MMCF	40.0 lb/MMCF
Potential Emission in tons/yr	3.40E-02	1.36E-01	1.07E-02	1.68E+00	9.83E-02	7.15E-01

\* Emission factors from Fifth Edition AP-42, Section 1.4, "Natural Gas Combustion", 7/98.

**Methodology**

Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu  
 Potential Emission in tons/yr = Potential Throughput (MMCF/yr) x Emission Factor (lb/MMCF) \* 1 ton/2000lbs

See next page for HAPs emissions calculations.

**Appendix A: Emission Calculations  
HAP Combustion Emissions  
Insignificant Combustion Activities**

**Company Name: VeraSun Reynolds, LLC  
Address: East of US Hwy 421, Reynolds, IN 47980  
FESOP: 181-24072-00046  
Reviewer: ERG/JR  
Date: February 2, 2007**

Potential Throughput  
MMCF/yr

35.7

HAPs - Organics

Emission Factor in lb/MMCF	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
Potential Emission in tons/yr	3.75E-05	2.14E-05	1.34E-03	3.22E-02	6.08E-05

HAPs - Metals

Emission Factor in lb/MMCF	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
Potential Emission in tons/yr	8.94E-06	1.97E-05	2.50E-05	6.79E-06	3.75E-05

Emission Factors from AP-42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (AP-42 Supplement D 3/98)

The five highest organic and metal HAPs emission factors are provided above.

Additional HAPs emission factors are available in AP-42, Chapter 1.4.

**Methodology**

All Emission factors are based on normal firing.

Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu

Potential Emission in tons/yr = Potential Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Limited Potential Emission in tons/yr = Limited Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

**Appendix A: Emission Calculations  
Potential to Emit Summary**

**Company Name:** Emerald Renewable Energy, LLC  
**Address:** Terre Haute, Indiana 46001  
**FESOP:** 167-24127-00141  
**Reviewer:** ERG/JR  
**Date:** 05/29/2007

**Limited Potential To Emit after Control**

Emission Units	PM (ton/yr)	PM10 (ton/yr)	SO <sub>2</sub> (ton/yr)	VOC (ton/yr)	CO (ton/yr)	NOx (ton/yr)	Total HAPs (ton/yr)
Grain Receiving Area, Internal Handling System, Hammermills, and Ground Corn Transfer Conveyor	11.9	11.9	-	-	-	-	-
Grain Handling - Fugitive	7.67	2.18	-	-	-	-	-
DDGS Handling and Loading	1.83	1.83	-	-	-	-	-
DDGS Loading - Fugitive	3.19	1.08	-	-	-	-	-
DDGS Coolers	3.15	3.15	-	9.46	-	-	1.10
Fermentation Scrubber	-	-	-	2.77	-	-	0.77
RTOs	44.5	44.5	55.0	47.7	48.3	42.6	15.8
Boilers	2.45	9.79	0.77	7.09	46.0	52.6	2.43
Ethanol Loadout and VRS Flare	-	-	-	6.41	2.42	0.45	0.37
ATM Flare (Biomethanator)	-	-	-	0.11	0.75	0.14	-
Cooling Tower	2.52	2.52	-	-	-	-	-
Emergency Fire Pump	0.01	0.01	0.06	0.02	0.02	0.42	-
Paved and Unpaved Roads - Fugitive	13.51	2.64	-	-	-	-	-
Leaks	-	-	-	22.6	-	-	1.31
Storage Tanks**	-	-	-	2.53	-	-	-
Insignificant Combustion	0.03	0.14	0.01	0.10	0.71	1.68	0.03
Other Insignificant Activities	1.00	1.00	-	1.00	-	-	-
<b>TOTAL</b>	<b>91.8</b>	<b>80.8</b>	<b>55.9</b>	<b>99.79</b>	<b>98.2</b>	<b>97.8</b>	<b>21.8</b>

Note: Emissions from the storage tanks were calculated by the Permittee using EPA TANKS software (version 4.09d).