



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

Mitchell E. Daniels Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
www.idem.IN.gov

TO: Interested Parties / Applicant

DATE: July 9, 2012

RE: Reith-Riley Construction / 141 - 31916 - 00027

FROM: Matthew Stuckey, Branch Chief
Permits Branch
Office of Air Quality

Notice of Decision – Approval

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 326 IAC 2, this approval was effective immediately upon submittal of the application.

If you wish to challenge this decision, IC 4-21.5-3-7 requires 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, Suite N 501E, Indianapolis, IN 46204, **within eighteen (18) calendar days from 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-AM.dot12/3/07



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July 9, 2012

Mr. John Bernscheit
Rieth-Riley Construction Co., Inc.
PO Box 477
Goshen, IN 46527

Re: 141-31916-00027
First Administrative Amendment
F141-22022-00027

Dear Mr. Bernscheit:

Rieth-Riley Construction Co., Inc. was issued a Federally Enforceable State Operating Permit (FESOP) Renewal No. F141-22022-00027 on June 30, 2006 for a stationary hot mix asphalt production facility located at 25200 State Road 23, South Bend.

On May 21, 2012, the Office of Air Quality (OAQ) received an application from the source relating to adding natural gas as a back-up fuel source for the two (2) hot oil heaters, identified as 14A and 14B, and the two (2) A. C. tank heaters. The change in potential to emit for this change is less than 2 tons for all criteria pollutants and 0.41 tons for total HAPs. This change in operation will be incorporated into the permit as an administrative amendment, since the potential emissions of regulated criteria pollutants and hazardous air pollutants are less than the ranges specified 326 IAC 2-8-11.1(d)(4) and 326 IAC 2-8-11.1(f)(1)(G), respectively. The entire source will continue to limit PM₁₀, PM_{2.5}, SO₂, NO_x, VOC and CO emissions to 100 tons per twelve (12) consecutive month period, rendering the requirements of 326 IAC 2-7 not applicable. Also, there is no change in the HAPs limits, this source will continue to limit HAPs emissions to less than ten (10) tons per year for any single HAP and less than twenty-five (25) tons per year of a combination of HAPs. The change in operation will not cause the source's potential to emit to be greater than the threshold levels specified in 326 IAC 2-2 or 326 IAC 2-3.

The table below summarizes the potential to emit of the entire source, prior to the proposed revision, after consideration of all enforceable limits established in the effective permits:

These emissions are based upon FESOP SPR No. 141-31513-00027 issued on June 27, 2012.

Process/ Emission Unit	Potential To Emit of the Entire Source Prior to the Administration Amendment (tons/year)									
	PM	PM10*	PM2.5	SO ₂ **	NO _x **	VOC	CO	GHGs as CO ₂ e**	Total HAPs	Worst Single HAP
Ducted Emissions										
Dryer Fuel Combustion (worst case)	12.0	10.96	10.96	99.0	99.0	7.18	54.11	95,328	11.37	9.90 HCl
Dryer/Mixer (Process)	160.76	73.02	89.51			16.0	65.0	16,626	5.33	1.55 Formaldehyde
Dryer/Mixer Slag Processing	0	0	0			0	0	0	0	0
Hot Oil Heater Fuel Combustion (worst case)	0.31	0.51	0.51			0.03	0.78	3,507	0.011	0.009 Formaldehyde
Worst Case Emissions	161.07	73.53	90.02	99.0	99.0	16.03	65.78	98,835	11.37	9.90 HCl
Fugitive Emissions										
Asphalt Load-Out, Silo Filling, On-Site Yard	0.55	0.55	0.55	0	0	8.57	1.44	0	0.14	0.04 Formaldehyde
Material Storage Piles	2.02	0.71	0.71	0	0	0	0	0	0	0
Material Processing and Handling	3.23	1.53	0.23	0	0	0	0	0	0	0
Material Crushing, Screening, and Conveying	15.87	5.80	5.80	0	0	0	0	0	0	0
Paved and Unpaved Roads (worst case)	66.26	16.89	1.69	0	0	0	0	0	0	0
Cold Mix Asphalt Production	0	0	0	0	0	51.28	0	0	13.38	4.62 xylene
Volatile Organic Liquid Storage Vessels	0	0	0	0	0	negl.	0	0	negl.	negl.
Total Fugitive Emissions	87.93	25.47	8.98	0	0	59.85	1.44	0	13.52	4.62 xylene
Total PTE of Entire Source	249.0	99.0	99.0	99.0	99.0	75.88	67.22	98,835	24.90	9.9 HCl
Title V Major Source Thresholds	NA	100	100	100	100	100	100	100,000	25	10
PSD Major Source Thresholds	250	250	250	250	250	250	250	NA	NA	NA
Emission Offset/ Nonattainment NSR Major Source Thresholds	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
negl. = negligible * Under the Part 70 Permit program (40 CFR 70), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), not particulate matter (PM), is considered as a "regulated air pollutant". ** The source will limit the combined SO ₂ and NO _x emissions from the dryer/mixer burner, slag processing (SO ₂ emissions only), and hot oil heater such that the SO ₂ and NO _x emissions do not exceed 99.0 tons per year, each. ***The 100,000 CO ₂ e threshold represents the Title V and PSD subject to regulation thresholds for GHGs in order to determine whether a source's emissions are a regulated NSR pollutant under Title V and PSD.										

The following table is used to determine the appropriate permit level under 326 IAC 2-8-10. This table reflects the PTE before controls of the proposed amendment. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Process/ Emission Unit	PTE of Proposed Revision (tons/year)									
	PM	PM10	PM2.5	SO ₂	NO _x	VOC	CO	GHGs as CO ₂ e	Total HAPs	Worst Single HAP
Hot Oil Heater Fuel Combustion (natural gas)	0.04	0.2	0.2	0.01	2.2	0.1	1.8	2,626	0.041	0.039 (Hexane)
Total PTE of Proposed Revision	0.04	0.2	0.2	0.01	2.2	0.1	1.8	2,626	0.041	0.039 (Hexane)

The combustion of natural gas in the hot oil heaters is not the worst-case fuel for emissions, except for total HAPs. The PTE for total HAPs emission changes from 0.011 (diesel fuel) to 0.041 (natural gas). The change in total HAPs remains less than 25 tons per year.

The table below summarizes the potential to emit of the entire source, with updated emissions shown as **bold** values and previous emissions shown as ~~values~~.

Process/ Emission Unit	Potential To Emit of the Entire Source to accommodate the Administative Amendment (tons/year)									
	PM	PM10*	PM2.5	SO ₂ **	NO _x **	VOC	CO	GHGs as CO ₂ e**	Total HAPs	Worst Single HAP
Ducted Emissions										
Dryer Fuel Combustion (worst case)	12.0	10.96	10.96	99.0	99.0	7.18	54.11	95,328	11.37	9.90 HCl
Dryer/Mixer (Process)	160.76	73.02	89.51			16.0	65.0	16,626	5.33	1.55 Formaldehyde
Dryer/Mixer Slag Processing	0	0	0			0	0	0	0	0
Hot Oil Heater Fuel Combustion (worst case)	0.31	0.51	0.51			0.03	0.78	3,507	0.011 0.041	0.009 Formaldehyde 0.039 (Hexane)
Worst Case Emissions	161.07	73.53	90.02	99.0	99.0	16.03	65.78	98,835	11.37 11.41	9.90 HCl
Fugitive Emissions										
Asphalt Load-Out, Silo Filling, On-Site Yard	0.55	0.55	0.55	0	0	8.57	1.44	0	0.14	0.04 Formaldehyde
Material Storage Piles	2.02	0.71	0.71	0	0	0	0	0	0	0
Material Processing and Handling	3.23	1.53	0.23	0	0	0	0	0	0	0
Material Crushing, Screening, and Conveying	15.87	5.80	5.80	0	0	0	0	0	0	0
Paved and Unpaved Roads (worst case)	66.26	16.89	1.69	0	0	0	0	0	0	0
Cold Mix Asphalt Production	0	0	0	0	0	51.28	0	0	13.38	4.62 xylene
Volatile Organic Liquid Storage Vessels	0	0	0	0	0	negl.	0	0	negl.	negl.
Total Fugitive Emissions	87.93	25.47	8.98	0	0	59.85	1.44	0	13.52	4.62 xylene
Total PTE of Entire Source	249.0	99.0	99.0	99.0	99.0	75.88	67.22	98,835	24.90 24.94	9.9 HCl
Title V Major Source Thresholds	NA	100	100	100	100	100	100	100,000	25	10
PSD Major Source Thresholds	250	250	250	250	250	250	250	NA	NA	NA
Emission Offset/ Nonattainment NSR Major Source Thresholds	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
negl. = negligible * Under the Part 70 Permit program (40 CFR 70), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), not particulate matter (PM), is considered as a "regulated air pollutant". ** The source will limit the combined SO ₂ and NO _x emissions from the dryer/mixer burner, slag processing (SO ₂ emissions only), and hot oil heater such that the SO ₂ and NO _x emissions do not exceed 99.0 tons per year, each. ***The 100,000 CO ₂ e threshold represents the Title V and PSD subject to regulation thresholds for GHGs in order to determine whether a source's emissions are a regulated NSR pollutant under Title V and PSD.										

Process/ Emission Unit	Potential To Emit of the Entire Source to accommodate the Administrative Amendment (tons/year)									
	PM	PM10*	PM2.5	SO ₂ **	NO _x **	VOC	CO	GHGs as CO ₂ e**	Total HAPs	Worst Single HAP
negl. = negligible * Under the Part 70 Permit program (40 CFR 70), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), not particulate matter (PM), is considered as a "regulated air pollutant". ** The source will limit the combined SO ₂ and NO _x emissions from the dryer/mixer burner, slag processing (SO ₂ emissions only), and hot oil heater such that the SO ₂ and NO _x emissions do not exceed 99.0 tons per year, each. ***The 100,000 CO ₂ e threshold represents the Title V and PSD subject to regulation thresholds for GHGs in order to determine whether a source's emissions are a regulated NSR pollutant under Title V and PSD.										

Pursuant to the provisions of 326 IAC 2-8-10, the permit is hereby administratively amended as follows with the deleted language as ~~strikeouts~~ and new language **bolded**:

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

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

- (a) ***
- (b) One (1) hot oil heater, identified as 14A, constructed in 1988, with a maximum heat input capacity of 2.0 MMBtu per hour, firing No. 2 fuel oil as primary fuel, using **natural gas**, butane gas and propane gas as backup fuels, and exhausting through Stack SV2.
- (c) One (1) hot oil heater, identified as 14B, approved for construction in 2009, with a maximum heat input capacity of two (2.0) MMBtu per hour, firing No. 2 fuel oil as primary fuel, using **natural gas**, butane gas and propane gas as backup fuels, and exhausting through Stack SV10.

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, as defined in 326 IAC 2-7-1(21):

- (a) Two (2) A.C. tank heaters, firing No. 2 fuel oil as primary fuel, firing **natural gas**, propane gas and butane gas as backup fuels, with a maximum heat input capacity of 0.48 million British thermal units per hour, each.

SECTION D.1 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-8-4(10)]: Hot Mix Asphalt

- (a) ***
- (b) One (1) hot oil heater, identified as 14A, constructed in 1988, with a maximum heat input capacity of 2.0 MMBtu per hour, firing No. 2 fuel oil as primary fuel, using **natural gas**, butane gas and propane gas as backup fuels, and exhausting through Stack SV2.
- (c) One (1) hot oil heater, identified as 14B, approved for construction in 2009, with a maximum heat input capacity of two (2.0) MMBtu per hour, firing No. 2 fuel oil as primary fuel, using **natural gas**, butane gas and propane gas as backup fuels, and exhausting through Stack SV10.

Insignificant Activities

- (a) Two (2) A.C. tank heaters, firing No. 2 fuel oil as primary fuel, firing **natural gas**, propane gas and butane gas as backup fuels, with a maximum heat input capacity of 0.48 million British thermal units per hour, each.

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

D.1.11 Asphalt, Fuel, and Slag Limitations

In order to comply with Condition D.1.4, the Permittee shall limit asphalt production, fuel usage in the dryer/mixer burner, hot oil heaters, A.C. tank heaters, and slag usage in the dryer/mixer burner according to the following formulas:

(a) ***

(b) ***

(c) ***

(d) Sulfur dioxide (SO₂) emissions shall be determined using the following equation:

$$S = \frac{[G(0.6) + O(0.071) + F(0.075) + P(0.00002) + B(0.00002) + U(0.147) + A(0.0014) + L(0.5413) + X(0.74)]}{2000}$$

Where:

S = tons of sulfur dioxide emissions for previous 12 consecutive month period;

G = million cubic feet of natural gas used in dryer/mixer **and heaters** in previous 12 months;

O = gallons of No. 2 fuel oil used in dryer/mixer and heaters in previous 12 months;

F = gallons of No. 4 fuel oil used in dryer/mixer in previous 12 months;

P = gallons of propane used in dryer/mixer and heaters in previous 12 months;

B = gallons of butane used in dryer/mixer and heaters in previous 12 months;

U = gallons of waste oil as defined by Condition D.1.12(c);

A = tons of electric arc furnace steel mill slag used in dryer/mixer in previous 12 months;

L = tons of blast furnace slag as defined by Condition D.1.12(a); and

X = tons of blast furnace slag as defined by Condition D.1.12(b).

Emission Factors:

Natural Gas (dryer/mixer/**heaters**) = 0.6 pounds per million cubic feet of natural gas;

No. 2 Fuel Oil (dryer/mixer/heaters) = 0.071 pounds per gallon of No. 2 fuel oil;

No. 4 Fuel Oil (dryer/mixer) = 0.075 pounds per gallon of No. 4 fuel oil;

Propane (dryer/mixer/heaters) = 0.00002 pounds per gallon of propane;

Butane (dryer/mixer/heaters) = 0.00002 pounds per gallon of butane;

Waste Oil (dryer/mixer) = 0.147 pounds per gallon of waste oil;

Electric Arc Furnace Steel Mill Slag = 0.0014 pounds per ton of electric arc furnace steel mill slag processed; and

Blast Furnace Slag = 0.5413 pounds per ton of blast furnace slag processed, with a 30 day calendar month average sulfur content less than or equal to 1.11 percent by weight or 0.74 pounds per ton of blast furnace slag processed, with a 30 day calendar month average sulfur content greater than 1.11 percent by weight but less than or equal to 1.5 percent by weight.

- (e) Nitrogen oxide (NOx) emissions shall be determined using the following equation:

$$N = \frac{[H(0.02) + G(190) + \mathbf{GH(100)} + O(0.024) + F(0.047) + P(0.013) + B(0.015) + U(0.019)]}{2000}$$

Where:

N = tons of nitrogen oxide emissions for previous 12 consecutive month period;
H = gallons of No. 2 fuel oil used in heaters in previous 12 months;
G = million cubic feet of natural gas used in dryer/mixer in previous 12 months;
GH = million cubic feet of natural gas used in heaters in previous 12 months;
O = gallons of No. 2 fuel oil used in dryer/mixer in previous 12 months;
F = gallons of No. 4 fuel oil used in dryer/mixer in previous 12 months;
P = gallons of propane used in dryer/mixer and heaters in previous 12 months;
B = gallons of butane used in dryer/mixer and heaters in previous 12 months; and
U = gallons of waste oil used in dryer/mixer in previous 12 months.

Emission Factors

No. 2 Fuel Oil (heaters) = 0.02 pounds per gallon of No. 2 fuel oil;
Natural Gas (dryer/mixer) = 190 pounds per million cubic feet of natural gas;
Natural Gas (heaters) = 100 pounds per million cubic feet of natural gas;
No. 2 Fuel Oil (dryer/mixer) = 0.024 pounds per gallon of No. 2 fuel oil;
No. 4 Fuel Oil (dryer/mixer) = 0.047 pounds per gallon of No. 4 fuel oil;
Propane (dryer/mixer/heaters) = 0.013 pounds per gallon of propane;
Butane (dryer/mixer/heaters) = 0.015 pounds per gallon of butane; and
Waste Oil (dryer/mixer) = 0.019 pounds per gallon of waste oil.

- (h) Hydrogen Chloride (HCl) emissions shall be determined using the following equation:

$$HCl = \frac{U(0.066)}{2000}$$

Where:

HCl = tons of hydrogen chloride emissions for previous 12 consecutive month period; and
U = gallons of waste oil as defined in Condition D.1.12(g).

Emission Factor:

Waste Oil = 0.066 pounds per gallon of waste oil.

Additional Changes

IDEM, OAQ has decided to make additional revisions to the permit as described below, with deleted language as ~~strikeouts~~ and new language **bolded**.

IDEM, OAQ, has decided to clarify Condition D.1.16 Parametric Monitoring.

D.1.16 Parametric Monitoring

The Permittee shall record the pressure drop across the baghouses used in conjunction with the dryer/mixer, at least once per day when dryer/mixer is in operation. ~~When for any one reading, the pressure drop across the baghouse 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.~~
When, for any one reading, the pressure drop across the baghouse is outside of the normal range, the Permittee shall take a reasonable response. The normal range for this

unit is a pressure drop between 2.0 and 8.0 inches of water, unless a different upper-bound or lower-bound value for this range is determined during the latest stack test.

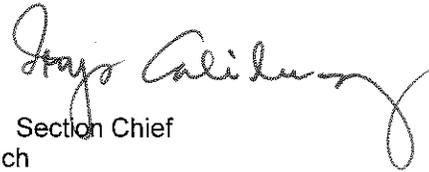
Section C – Response to Excursions and Exceedances contains the Permittee's obligation with regard to the reasonable response steps required by this condition. A pressure reading that is outside of the above mentioned range is not a deviation from this permit. Failure to take response steps shall be considered a deviation from this permit.

All other conditions of the permit shall remain unchanged and in effect. Attached please find the entire revised permit.

A copy of the permit is available on the Internet at: <http://www.in.gov/ai/appfiles/idem-caats/>. For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.idem.in.gov

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Bruce Farrar, of my staff, at 317-234-5401 or 1-800-451-6027, and ask for extension 4-5401.

Sincerely,



Iryn Calilung, Section Chief
Permits Branch
Office of Air Quality

Attachments: Updated Permit, Attachment A, Attachment B, Appendix A.1 and Appendix A.2

IC/BF

cc: File - St. Joseph County
St. Joseph County Health Department
U.S. EPA, Region V
Compliance and Enforcement Branch
Billing, Licensing and Training Section



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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Indianapolis, Indiana 46204
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**Federally Enforceable State Operating Permit
Renewal
OFFICE OF AIR QUALITY**

**Rieth-Riley Construction Co., Inc.
25200 State Road 23
South Bend, Indiana 46614**

(herein known as the Permittee) is hereby authorized to 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 2-8 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.: F141-22022-00027	
Original Issued by: Nisha Sizemore, Chief Permits Branch Office of Air Quality	Issuance Date: June 30, 2006 Expiration Date: June 30, 2016

First Significant Permit Revision No.: 141-27073-00027, issued on February 20, 2009.
Second Significant Permit Revision No.: F141-27607-00027, issued on September 24, 2012.
Third Significant Permit Revision No.: F141-31513-00027, issued on June 27, 2012.

First Administrative Amendment No.: F141-31916-00027	
Issued by:  Iryn Calilung, Section Chief Permits Branch Office of Air Quality	Issuance Date: July 9, 2012 Expiration Date: June 30, 2016

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- C.11 Compliance Monitoring [326 IAC 2-8-4(3)][326 IAC 2-8-5(a)(1)]
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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). The information describing the source contained in conditions A.1 through A.3 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)]

The Permittee owns and operates a stationary hot mix asphalt production source.

Source Address:	25200 State Road 23, South Bend, Indiana 46614
General Source Phone Number:	(574) 875-5183
SIC Code:	2951 (Asphalt Paving Mixtures and Blocks)
County Location:	St. Joseph
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 Not 1 of 28 Source Categories

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

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

- (a) One (1) aggregate rotary dryer and drum hot-mix unit (dryer/mixer), identified as DRUM, approved for construction in 2009, with a maximum capacity of four hundred fifty (450) tons of asphalt per hour, processing blast furnace slag, electric arc furnace steel mill slag, and certified asbestos-free factory second and/or post consumer waste shingles in the aggregate mix, equipped with one (1) dryer/mixer burner, having a maximum heat input capacity of one hundred fifty (150) MMBtu per hour, firing waste oil as primary fuel, using No. 2 fuel oil, No. 4 fuel oil, natural gas, propane gas, and butane gas as backup fuels, equipped with a ninety thousand (90,000) actual cubic feet per minute (acfm) baghouse for particulate control and exhausting through Stack SV1. No shingles are ground at this source.
- (b) One (1) hot oil heater, identified as 14A, constructed in 1988, with a maximum heat input capacity of 2.0 MMBtu per hour, firing No. 2 fuel oil as primary fuel, using natural gas, butane gas and propane gas as backup fuels, and exhausting through Stack SV2.
- (c) One (1) hot oil heater, identified as 14B, approved for construction in 2009, with a maximum heat input capacity of two (2.0) MMBtu per hour, firing No. 2 fuel oil as primary fuel, using natural gas, butane gas and propane gas as backup fuels, and exhausting through Stack SV10.
- (d) Two (2) tanks, identified as 13A and 13B, storing liquid asphalt, constructed in 1987, with a maximum capacity of 20,000 gallons each, and exhausting through Stacks SV5 and SV7.
- (e) One (1) tank, identified as 13C, storing liquid asphalt, constructed in 1965, with a maximum capacity 25,000 gallons, and exhausting through stack SV6.

- (f) One (1) tank for storing liquid asphalt, identified as 13D, approved for construction in 2008, with a maximum capacity of thirty thousand (30,000) gallons, and exhausting through Stack SV11.
- (g) One (1) tank, identified as 11, storing waste oil or No. 4 distillate oil, constructed in 1987, with a maximum capacity of 17,000 gallons, and exhausting through Stack SV8.
- (h) One (1) tank, identified as 12, storing No. 2 distillate oil, constructed in 1987, with a maximum capacity 25,000 gallons, and exhausting through stack SV9.
- (i) Cold-mix cutback asphalt production, constructed in 1988, with a maximum capacity of 372 tons of aggregate per hour.

Under 40 CFR 60, Subpart I, this is considered an affected facility.

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, as defined in 326 IAC 2-7-1(21):

- (a) Two (2) A.C. tank heaters, firing No. 2 fuel oil as primary fuel, firing natural gas, propane gas and butane gas as backup fuels, with a maximum heat input capacity of 0.48 million British thermal units per hour, each.
- (b) The following VOC and HAP storage containers: vessels storing lubricating oil, hydraulic oils, machining oils, and machining fluids.

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

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) to renew a Federally Enforceable State Operating Permit (FESOP).

SECTION B GENERAL CONDITIONS

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

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

-
- (a) This permit, F141-22022-00027, is issued for a fixed term of ten (10) 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, 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.3 Term of Conditions [326 IAC 2-1.1-9.5]

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.4 Enforceability [326 IAC 2-8-6] [IC 13-17-12]

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, the United States Environmental Protection Agency (U.S. EPA) and by citizens in accordance with the Clean Air Act.

B.5 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.6 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.7 Duty to Provide Information [326 IAC 2-8-4(5)(E)]

-
- (a) The Permittee shall furnish to IDEM, OAQ, within a reasonable time, any information that IDEM, OAQ 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. Upon request, the Permittee shall also furnish to IDEM, OAQ 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.8 Certification [326 IAC 2-8-3(d)][326 IAC 2-8-4(3)(C)(i)][326 IAC 2-8-5(1)]

- (a) A certification required by this permit meets the requirements of 326 IAC 2-8-5(a)(1) if:
- (1) it contains a certification by an "authorized individual", as defined by 326 IAC 2-1.1-1(1), and
 - (2) the certification states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
- (b) The Permittee may use the attached Certification Form, or its equivalent 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.9 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. All certifications shall cover the time period from January 1 to December 31 of the previous year, and shall be submitted no later than April 15 of each year to:

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

- (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 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 may require to determine the compliance status of the source.

The submittal by the Permittee does require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

B.10 Compliance Order Issuance [326 IAC 2-8-5(b)]

IDEM, OAQ 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.11 Preventive Maintenance Plan [326 IAC 1-6-3][326 IAC 2-8-4(9)]

(a) A Preventive Maintenance Plan meets the requirements of 326 IAC 1-6-3 if it includes, at a minimum:

- (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.

The Permittee shall implement the PMPs.

(b) If required by specific condition(s) in Section D of this permit where no PMP was previously required, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) no later than ninety (90) days after issuance of this permit or ninety (90) days after initial start-up, whichever is later, 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 and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

The PMP extension notification does not require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

The Permittee shall implement the PMPs.

(c) A copy of the PMPs shall be submitted to IDEM, OAQ upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ. IDEM, OAQ 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. The

PMPs and their submittal do not require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (d) 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.12 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, or Northern Regional Office 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 and Enforcement Branch), or
Telephone Number: 317-233-0178 (ask for Office of Air Quality, Compliance and Enforcement Branch)
Facsimile Number: 317-233-6865
Northern Regional Office phone: (574) 245-4870; fax: (574) 245-4877.

- (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 and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

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 a certification that meets the requirements of 326 IAC 2-8-5(a)(1) 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 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 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.

B.13 Prior Permits Superseded [326 IAC 2-1.1-9.5]

- (a) All terms and conditions of permits established prior to F141-22022-00027 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.14 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.15 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 a certification that meets the requirements of 326 IAC 2-8-5(a)(1) 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 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 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 at least thirty (30) days in advance of the date this permit is to be reopened, except that IDEM, OAQ may provide a shorter time period in the case of an emergency. [326 IAC 2-8-8(c)]

B.16 Permit Renewal [326 IAC 2-8-3(h)]

- (a) The application for renewal shall be submitted using the application form or forms prescribed by IDEM, OAQ 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 a certification that meets the requirements of 326 IAC 2-8-5(a)(1) 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
Permit Administration and Support Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

- (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 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 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, pursuant to 326 IAC 2-8-3(g), in writing by IDEM, OAQ any additional information identified as being needed to process the application.

B.17 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
Permit Administration and Support Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Any such application does require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) 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.18 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) and (c) 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
Permit Administration and Support Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

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)(1) through (c). 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 in the notices specified in 326 IAC 2-8-15(b)(1) and (c).

- (b) Emission Trades [326 IAC 2-8-15(b)]
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(b).
- (c) Alternative Operating Scenarios [326 IAC 2-8-15(c)]
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.19 Source Modification Requirement [326 IAC 2-8-11.1]

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

B.20 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]

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, 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.21 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
Permit Administration and Support Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Any such application does require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) 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.22 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 no later than 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 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.23 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) and greenhouse gases (GHGs), 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.
 - (4) The potential to emit greenhouse gases (GHGs) from the entire source shall be limited to less than one hundred thousand (100,000) tons of CO₂ equivalent emissions (CO₂e) per twelve (12) consecutive month period.
- (b) Pursuant to 326 IAC 2-2 (PSD), 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.
- (c) 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.
- (d) 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 5-1-1 (Applicability) and 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]

The Permittee shall not operate an incinerator except as provided in 326 IAC 4-2 or in this permit. The Permittee shall not operate a refuse incinerator or refuse burning equipment except as provided in 326 IAC 9-1-2 or in this permit.

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

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 Fugitive Particulate Matter Emission Limitations [326 IAC 6-5]

Pursuant to 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations), fugitive particulate matter emissions shall be controlled according to the attached plan as in Attachment A.

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

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

- (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
Compliance and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

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 that meets the requirements of 326 IAC 2-8-5(a)(1) 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 Licensed 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 Licensed 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]

- (a) For performance testing required by this permit, a test protocol, except as provided elsewhere in this permit, shall be submitted to:

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

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require a certification that meets the requirements of 326 IAC 2-8-5(a)(1) 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 a certification that meets the requirements of 326 IAC 2-8-5(a)(1) 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 not later than forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ 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]

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)]

Unless otherwise specified in this permit, for all monitoring requirements not already legally required, the Permittee shall be allowed up to ninety (90) days from the date of permit issuance or of initial start-up, whichever is later, to begin such monitoring. If due to circumstances beyond the Permittee's control, any monitoring equipment required by this permit cannot be installed and operated no later than ninety (90) days after permit issuance or the date of initial startup, whichever is later, 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 and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

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 a certification that meets the requirements of 326 IAC 2-8-5(a)(1) 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 Instrument Specifications [326 IAC 2-1.1-11] [326 IAC 2-8-4(3)][326 IAC 2-8-5(1)]

- (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.13 Emergency Reduction Plans [326 IAC 1-5-2] [326 IAC 1-5-3]

Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

- (a) The Permittee shall maintain the most recently submitted written emergency reduction plans (ERPs) consistent with safe operating procedures.
- (b) Upon direct notification by IDEM, OAQ that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate episode level. [326 IAC 1-5-3]

C.14 Risk Management Plan [326 IAC 2-8-4] [40 CFR 68]

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.15 Response to Excursions or Exceedances [326 IAC 2-8-4] [326 IAC 2-8-5]

Upon detecting an excursion where a response step is required by the D Section or an exceedance of a limitation in this permit:

- (a) The Permittee shall take reasonable response steps to 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 excess emissions.
- (b) The response shall include minimizing the period of any startup, shutdown or malfunction. The response may include, but is not limited to, the following:
 - (1) initial inspection and evaluation;
 - (2) recording that operations returned or are returning 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 normal or usual manner of operation.
- (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 record the reasonable response steps taken.

C.16 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 submit a description of its response actions to IDEM, OAQ, no later than seventy-five (75) days after the date of the test.
- (b) A retest to demonstrate compliance shall be performed no later than one hundred eighty (180) days after the date of the test. Should the Permittee demonstrate to IDEM, OAQ that retesting in one hundred eighty (180) 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 a certification that meets the requirements of 326 IAC 2-8-5(a)(1) 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.17 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. Support information includes the following:
 - (AA) All calibration and maintenance records.
 - (BB) All original strip chart recordings for continuous monitoring instrumentation.
 - (CC) Copies of all reports required by the FESOP.Records of required monitoring information include the following:
 - (AA) The date, place, as defined in this permit, and time of sampling or measurements.
 - (BB) The dates analyses were performed.
 - (CC) The company or entity that performed the analyses.
 - (DD) The analytical techniques or methods used.
 - (EE) The results of such analyses.
 - (FF) The operating conditions as existing at the time of sampling or measurement.

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 makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.

- (b) Unless otherwise specified in this permit, for all record keeping requirements not already legally required, the Permittee shall be allowed up to ninety (90) days from the date of permit issuance or the date of initial start-up, whichever is later, to begin such record keeping.

C.18 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. Proper notice submittal under Section B –Emergency Provisions satisfies the reporting requirements of this paragraph. Any deviation from permit requirements, the date(s) of each deviation, the cause of the deviation, and the response

steps taken must be reported except that 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. This report shall be submitted not later than thirty (30) days after the end of the reporting period. The Quarterly Deviation and Compliance Monitoring Report shall include a certification that meets the requirements of 326 IAC 2-8-5(a)(1) by an "authorized individual" as defined by 326 IAC 2-1.1-1(1). A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit.

- (b) The address for report submittal is:

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

- (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 on or before the date it is due.
- (d) 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.

Stratospheric Ozone Protection

C.19 Compliance with 40 CFR 82 and 326 IAC 22-1

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 applicable standards for recycling and emissions reduction.

SECTION D.1

FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-8-4(10)]: Hot Mix Asphalt

- (a) One (1) aggregate rotary dryer and drum hot-mix unit (dryer/mixer), identified as DRUM, approved for construction in 2009, with a maximum capacity of four hundred fifty (450) tons of asphalt per hour, processing blast furnace slag, electric arc furnace steel mill slag, and certified asbestos-free factory second and/or post consumer waste shingles in the aggregate mix, equipped with one (1) dryer/mixer burner, having a maximum heat input capacity of one hundred fifty (150) MMBtu per hour, firing waste oil as primary fuel, using No. 2 fuel oil, No. 4 fuel oil, natural gas, propane gas, and butane gas as backup fuels, equipped with a ninety thousand (90,000) actual cubic feet per minute (acfm) baghouse for particulate control and exhausting through Stack SV1. No shingles are ground at this source.
- (b) One (1) hot oil heater, identified as 14A, constructed in 1988, with a maximum heat input capacity of 2.0 MMBtu per hour, firing No. 2 fuel oil as primary fuel, using natural gas, butane gas and propane gas as backup fuels, and exhausting through Stack SV2.
- (c) One (1) hot oil heater, identified as 14B, approved for construction in 2009, with a maximum heat input capacity of two (2.0) MMBtu per hour, firing No. 2 fuel oil as primary fuel, using natural gas, butane gas and propane gas as backup fuels, and exhausting through Stack SV10.
- (d) Two (2) tanks, identified as 13A and 13B, storing liquid asphalt, constructed in 1987, with a maximum capacity of 20,000 gallons each, and exhausting through Stacks SV5 and SV7.
- (e) One (1) tank, identified as 13C, storing liquid asphalt, constructed in 1965, with a maximum capacity 25,000 gallons, and exhausting through stack SV6.
- (f) One (1) tank for storing liquid asphalt, identified as 13D, approved for construction in 2008, with a maximum capacity of thirty thousand (30,000) gallons, and exhausting through Stack SV11.
- (g) One (1) tank, identified as 11, storing waste oil or No. 4 distillate oil, constructed in 1987, with a maximum capacity of 17,000 gallons, and exhausting through Stack SV8.
- (h) One (1) tank, identified as 12, storing No. 2 distillate oil, constructed in 1987, with a maximum capacity 25,000 gallons, and exhausting through stack SV9.
- (i) Cold-mix cutback asphalt production, constructed in 1988, with a maximum capacity of 372 tons of aggregate per hour.

Under 40 CFR 60, Subpart I, this is considered an affected facility.

Insignificant Activities

- (a) Two (2) A.C. tank heaters, firing No. 2 fuel oil as primary fuel, firing natural gas, propane gas and butane gas as backup fuels, with a maximum heat input capacity of 0.48 million British thermal units per hour, each.

(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.1.1 Particulate Matter (PM) Limitation [326 IAC 2-2]

In order to render 326 IAC 2-2 not applicable, the Permittee shall comply with the following:

- (a) The asphalt production rate shall not exceed 1,000,000 tons per twelve (12) consecutive month period, with compliance determined at the end of each month.
- (b) PM emissions from the dryer/mixer shall not exceed 0.322 pounds of PM per ton of asphalt produced.

Compliance with these limits, combined with the limited potential to emit PM from all other emission units at this source, shall limit the source-wide total potential to emit PM to less than 250 tons per 12 consecutive month period and shall render 326 IAC 2-2 (PSD) not applicable.

D.1.2 FESOP Limitations [326 IAC 2-8-4] [326 IAC 2-2] [326 IAC 8-1-6]

Pursuant to 326 IAC 2-8-4, the Permittee shall comply with the following:

- (a) The asphalt production rate shall not exceed 1,000,000 tons per twelve (12) consecutive month period, with compliance determined at the end of each month.
- (b) PM10 emissions from the dryer/mixer shall not exceed 0.146 pounds of PM10 per ton of asphalt produced.
- (c) PM2.5 emissions from the dryer/mixer shall not exceed 0.179 pounds of PM2.5 per ton of asphalt produced.
- (d) CO emissions from the dryer/mixer shall not exceed 0.13 pounds of CO per ton of asphalt produced.
- (e) VOC emissions from the dryer/mixer shall not exceed 0.032 pounds of VOC per ton of asphalt produced.

Compliance with these limits, combined with the limited potential to emit PM10, PM2.5, CO, and VOC from all other emission units at this source, shall limit the source-wide total potential to emit of PM10, PM2.5, CO, and VOC to less than 100 tons per 12 consecutive month period, each, and shall render 326 IAC 2-7 (Part 70 Permit Program) and 326 IAC 2-2 (PSD) not applicable.

In addition, compliance with these limits shall limit the VOC emissions from the dryer/mixer to less than twenty-five (25) tons per twelve (12) consecutive month period and shall render 326 IAC 8-1-6 (VOC Rules: General Reduction Requirements for New Facilities) not applicable.

D.1.3 Particulate Matter (PM) [326 IAC 6.5-1-2]

Pursuant to 326 IAC 6.5-1-2 (Particulate Matter Limitations Except Lake County), particulate matter (PM) emissions from the dryer/mixer, hot oil heaters, and A.C. tank heaters shall not exceed 0.03 grain per dry standard cubic foot of exhaust air, each.

D.1.4 SO₂, NO_x, VOC, CO_{2e} and HAPs Limits [326 IAC 2-8-4] [326 IAC 2-2] [326 IAC 2-4.1]

Pursuant to 326 IAC 2-8-4, the Permittee shall comply with the following:

- (a) Sulfur Content and Waste Oil Specifications
 - (1) The 30 day calendar month average sulfur content of the blast furnace slag shall not exceed 1.5 percent by weight, with compliance determined at the end of each month.

- (2) SO2 emissions from blast furnace slag used in the dryer/mixer shall not exceed 0.5413 pounds of SO2 per ton of blast furnace slag processed, when the 30 day calendar month average sulfur content is less than or equal to 1.11 percent by weight.
 - (3) SO2 emissions from blast furnace slag used in the dryer/mixer shall not exceed 0.74 pounds of SO2 per ton of blast furnace slag processed, when the 30 day calendar month average sulfur content is greater than 1.11 percent by weight.
 - (4) The sulfur content of the electric arc furnace steel mill slag shall not exceed 0.66 percent by weight.
 - (5) SO2 emissions from the electric arc furnace steel mill slag used in the dryer/mixer shall not exceed 0.0014 pounds of SO2 per ton of electric arc furnace steel mill slag processed.
 - (6) The sulfur content of the No. 2 fuel oil shall not exceed 0.5 percent by weight.
 - (7) The sulfur content of the No. 4 fuel oil shall not exceed 0.5 percent by weight.
 - (8) The sulfur content of the waste oil shall not exceed 1.0 percent by weight.
 - (9) The chlorine content of the waste oil shall not exceed 0.4 percent by weight.
 - (10) HCl emissions from the dryer/mixer shall not exceed 0.0264 pounds of HCl per gallon of waste oil burned.
- (b) SO2 emissions from the dryer/mixer burner, hot oil heaters, A.C. tank heaters, and blast furnace and electric arc furnace steel mill slag processing shall not exceed 99.0 tons per twelve (12) consecutive month period, with compliance determined at the end of each month.
- (c) NOx emissions from the dryer/mixer burner, hot oil heaters, and A.C. tank heaters shall not exceed 99.0 tons per twelve (12) consecutive month period, with compliance determined at the end of each month.
- (d) VOC emissions from the sum of the binders shall not exceed 51.28 tons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (e) Liquid binder used in the production of cold mix asphalt shall be defined as follows:
- (1) Cut back asphalt rapid cure, containing a maximum of 25.3% by weight of VOC solvent in the liquid binder and 95% by weight of VOC solvent evaporating.
 - (2) Cut back asphalt medium cure, containing a maximum of 28.6% by weight of VOC solvent in the liquid binder and 70% by weight of VOC solvent evaporating.
 - (3) Cut back asphalt slow cure, containing a maximum of 20% by weight of VOC solvent in the liquid binder and 25% by weight of VOC solvent evaporating.
 - (4) Emulsified asphalt with solvent, containing a maximum of 15% by weight of VOC solvent in the liquid binder and 46.4% by weight of VOC solvent evaporating. The percent oil distillate in emulsified asphalt with solvent liquid, as determined by ASTM, must be 7% or less of the total emulsion by volume

- (5) Other asphalt with solvent binder, containing a maximum of 25.9% by weight of VOC solvent in the liquid binder and 2.5% by weight of VOC solvent evaporating. This definition applies to any other asphalt with solvent binder that does not have distillation data available as determined by ASTM Method D-402, Distillation of Cutback Asphalt Products.
- (6) Rieth-Riley other asphalt with solvent binder, cutback asphalt that has distillation data available as determined by ASTM Method D-402, Distillation of Cutback Asphalt Products.
- (f) HCl emissions from the dryer/mixer burner shall not exceed 9.9 tons per twelve (12) consecutive month period, with compliance determined at the end of each month.
- (g) The Permittee shall use only certified asbestos-free factory second and/or post consumer waste shingles as an additive in its aggregate mix.
- (h) CO2 equivalent emissions (CO2e) from the dryer/mixer shall not exceed 95,328 tons per twelve (12) consecutive month period, with compliance determined at the end of each month.

Compliance with these limits, combined with the limited potential to emit SO₂, NO_x, VOC, CO₂e and HAPs from all other emission units at this source, shall limit the source-wide total potential to emit of SO₂, NO_x, and VOC to less than 100 tons per 12 consecutive month period, each, GHGs to less than 100,000 tons of CO₂ equivalent emissions (CO₂e), any single HAP to less than 10 tons per 12 consecutive month period, and any combination of HAPs to less than 25 tons per 12 consecutive month period, and shall render 326 IAC 2-7 (Part 70 Permits), 326 IAC 2-2 (Prevention of Significant Deterioration (PSD), and 326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAPs)) not applicable.

D.1.5 Sulfur Dioxide (SO₂) [326 IAC 7-1.1-1] [326 IAC 7-2-1]

Pursuant to 326 IAC 7-1.1 (Sulfur Dioxide Emission Limitations), the Permittee shall comply with the following:

- (a) The sulfur dioxide (SO₂) emissions from the dryer/mixer burner shall not exceed 0.5 pounds per MMBtu when using distillate oil.
- (b) The sulfur dioxide (SO₂) emissions from the dryer/mixer burner shall not exceed 1.60 pounds per MMBtu heat input when using residual oil.
- (c) Pursuant to 326 IAC 7-2-1, compliance shall be demonstrated on a calendar month average.

D.1.6 Volatile Organic Compounds (VOC) [326 IAC 8-5-2]

Pursuant to 326 IAC 8-5-2, Volatile Organic Compound Rules for Asphalt Pavers, the cutback asphalt or asphalt emulsions produced by the source shall not contain more than seven percent (7%) oil distillate by volume of emulsion as determined by ASTM D244-80a "Emulsific Asphalts" ASTM part 15, 1981 ASTM 1916 Race St., Philadelphia, PA 19103, Library of Congress Card Catalog #40-10712, for any paving application except as used for the following purposes:

- (a) penetrating prime coating;
- (b) stockpile storage;
- (c) application during the months of November, December, January, February, and March.

D.1.7 Preventive Maintenance Plan [326 IAC 2-8-4(9)]

A Preventive Maintenance Plan is required for this facility and any control devices. Section B - Preventive Maintenance Plan contains the Permittee's obligation with regard to the preventive maintenance plan required by this condition.

Compliance Determination Requirements

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.1.1(b) and D.1.3, the Permittee shall perform PM testing of the dryer/mixer not later than five (5) years from the date of the most recent valid compliance demonstration. This testing shall be conducted utilizing methods approved by the Commissioner and 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 the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C – Performance Testing contains the Permittee's obligation with regard to the performance testing required by this condition.
- (b) In order to demonstrate compliance with Conditions D.1.2(b) and D.1.2(c), the Permittee shall perform PM10 and PM2.5 testing on the dryer/mixer no later than 180 days after promulgation of the new or revised condensable PM test method(s) referenced in the U.S. EPA's Final Rule for Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM2.5), signed on May 8th, 2008 or not later than five (5) years from the date of the most recent valid compliance demonstration, whichever is later. This testing shall be conducted utilizing methods as approved by the Commissioner. This test shall be repeated at least once every five (5) years from the date of the most recent valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C – Performance Testing contains the Permittee's obligation with regard to the performance testing required by this condition. PM10 and PM2.5 includes filterable and condensable PM.

D.1.9 Particulate Control

- (a) In order to comply with Conditions D.1.1, D.1.2, and D.1.3 the baghouse for particulate control shall be in operation and control emissions from the dryer/mixer at all times that the dryer/mixer is in operation.
- (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.1.10 Sulfur Dioxide (SO₂) Emissions and Sulfur Content

- (a) Pursuant to 326 IAC 2-8-4, compliance with Condition D.1.4(a)(1) shall be determined utilizing one of the following options:
- (1) Providing vendor analysis of blast furnace slag delivered, if accompanied by a vendor certification; or
 - (2) Analyzing a sample of the blast furnace slag delivery to determine the sulfur content of the slag, 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 determination of noncompliance pursuant to any of the methods specified in (1) or (2) above shall not be refuted by evidence of compliance pursuant to the other method.

- (b) Pursuant to 326 IAC 2-8-4, compliance with Condition D.1.4(a)(4) shall be determined utilizing one of the following options:
- (1) Providing vendor analysis of electric arc furnace steel mill slag delivered, if accompanied by a vendor certification; or
 - (2) Analyzing a sample of the electric arc furnace steel mill slag delivery to determine the sulfur content of the electric arc furnace steel mill slag, 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 determination of noncompliance pursuant to any of the methods specified in (1) or (2) shall not be refuted by evidence of compliance pursuant to the other method.

- (c) Pursuant to 326 IAC 3-7-4, compliance with Conditions D.1.4(a)(6), D.1.4(a)(7), D.1.4(a)(8), D.1.5(a), and D.1.5(b) shall be demonstrated utilizing one of the following options:
- (1) Providing vendor analysis of fuel delivered, if accompanied by a vendor certification; or
 - (2) Analyzing the oil sample to determine the sulfur content of the oil via the procedures in 40 CFR 60, Appendix A, Method 19.
 - (i) Oil samples may be collected from the fuel tank immediately after the fuel tank is filled and before any oil is combusted; and
 - (ii) If a partially empty fuel tank is refilled, a new sample and analysis would be required upon filling.
 - (3) Compliance may also be determined by conducting a stack test for sulfur dioxide emissions from the dryer/mixer, using 40 CFR 60, Appendix A, Method 6 in accordance with the procedures in 326 IAC 3-6.

A determination of noncompliance pursuant to any of the methods specified in (1), (2), or (3) above shall not be refuted by evidence of compliance pursuant to the other method.

D.1.11 Asphalt, Fuel, and Slag Limitations

In order to comply with Condition D.1.4, the Permittee shall limit asphalt production, fuel usage in the dryer/mixer burner, hot oil heaters, A.C. tank heaters, and slag usage in the dryer/mixer burner according to the following formulas:

- (a) When the 30 day calendar month average sulfur content is less than or equal to 1.11 percent by weight, the blast furnace slag usage shall be determined using the following equation:

$$L = \sum_{i=1}^m (J)$$

Where:

L = blast furnace slag usage in previous 12 consecutive months with an average sulfur content less than or equal to 1.11 percent by weight;
m = total number of months where the 30 day calendar month average sulfur content is less than or equal to 1.11 percent by weight;
i = each specific month where the 30 day calendar month average sulfur content is less than or equal to 1.11 percent by weight; and
J = actual tons of blast furnace slag used per month where the 30 day calendar month average sulfur content is less than or equal to 1.11 percent by weight.

- (b) When the 30 day calendar month average sulfur content is greater than 1.11 percent by weight but less than or equal to 1.5 percent by weight, the blast furnace slag usage shall be determined using the following equation:

$$X = \sum_{b=1}^a (K)$$

Where:

X = blast furnace slag usage in previous 12 consecutive months with an average sulfur content greater than 1.11 percent by weight;
a = total number of months where the 30 day calendar month average sulfur content is greater than 1.11 percent by weight;
b = each specific month where the 30 day calendar month average sulfur content is greater than 1.11 percent by weight; and
K = actual tons of blast furnace slag used per month where the 30 day calendar month average sulfur content is greater than 1.11 percent by weight but less than or equal to 1.5 percent by weight.

- (c) Waste oil usage with respect to the actual sulfur content shall be determined using the following equation:

$$U = \sum_{e=1}^d (W_A \times S_A)$$

Where:

U = waste oil usage in previous 12 consecutive months;
d = total number of waste oil deliveries;
e = each specific waste oil delivery;
W_A = actual gallons of waste oil used from each specific waste oil delivery; and
S_A = actual percent by weight sulfur content of waste oil for each specific waste oil delivery.

- (d) Sulfur dioxide (SO₂) emissions shall be determined using the following equation:

$$S = \frac{[G(0.6) + O(0.071) + F(0.075) + P(0.00002) + B(0.00002) + U(0.147) + A(0.0014) + L(0.5413) + X(0.74)]}{2000}$$

Where:

S = tons of sulfur dioxide emissions for previous 12 consecutive month period;
G = million cubic feet of natural gas used in dryer/mixer and heaters in previous 12 months;
O = gallons of No. 2 fuel oil used in dryer/mixer and heaters in previous 12 months;
F = gallons of No. 4 fuel oil used in dryer/mixer in previous 12 months;

P = gallons of propane used in dryer/mixer and heaters in previous 12 months;
B = gallons of butane used in dryer/mixer and heaters in previous 12 months;
U = gallons of waste oil as defined by Condition D.1.12(c);
A = tons of electric arc furnace steel mill slag used in dryer/mixer in previous 12 months;
L = tons of blast furnace slag as defined by Condition D.1.12(a); and
X = tons of blast furnace slag as defined by Condition D.1.12(b).

Natural Gas (dryer/mixer/heaters) = 0.6 pounds per million cubic feet of natural gas;
No. 2 Fuel Oil (dryer/mixer/heaters) = 0.071 pounds per gallon of No. 2 fuel oil;
No. 4 Fuel Oil (dryer/mixer) = 0.075 pounds per gallon of No. 4 fuel oil;
Propane (dryer/mixer/heaters) = 0.00002 pounds per gallon of propane;
Butane (dryer/mixer/heaters) = 0.00002 pounds per gallon of butane;
Waste Oil (dryer/mixer) = 0.147 pounds per gallon of waste oil;
Electric Arc Furnace Steel Mill Slag = 0.0014 pounds per ton of electric arc furnace steel mill slag processed; and
Blast Furnace Slag = 0.5413 pounds per ton of blast furnace slag processed, with a 30 day calendar month average sulfur content less than or equal to 1.11 percent by weight or 0.74 pounds per ton of blast furnace slag processed, with a 30 day calendar month average sulfur content greater than 1.11 percent by weight but less than or equal to 1.5 percent by weight.

(e) Nitrogen oxide (NO_x) emissions shall be determined using the following equation:

$$N = \frac{[H(0.02) + G(190) + GH(100) + O(0.024) + F(0.047) + P(0.013) + B(0.015) + U(0.019)]}{2000}$$

Where:

N = tons of nitrogen oxide emissions for previous 12 consecutive month period;
H = gallons of No. 2 fuel oil used in heaters in previous 12 months;
G = million cubic feet of natural gas used in dryer/mixer in previous 12 months;
GH = million cubic feet of natural gas used in heaters in previous 12 months;
O = gallons of No. 2 fuel oil used in dryer/mixer in previous 12 months;
F = gallons of No. 4 fuel oil used in dryer/mixer in previous 12 months;
P = gallons of propane used in dryer/mixer and heaters in previous 12 months;
B = gallons of butane used in dryer/mixer and heaters in previous 12 months; and
U = gallons of waste oil used in dryer/mixer in previous 12 months.

No. 2 Fuel Oil (heaters) = 0.02 pounds per gallon of No. 2 fuel oil;
Natural Gas (dryer/mixer) = 190 pounds per million cubic feet of natural gas;
Natural Gas (heaters) = 100 pounds per million cubic feet of natural gas;
No. 2 Fuel Oil (dryer/mixer) = 0.024 pounds per gallon of No. 2 fuel oil;
No. 4 Fuel Oil (dryer/mixer) = 0.047 pounds per gallon of No. 4 fuel oil;
Propane (dryer/mixer/heaters) = 0.013 pounds per gallon of propane;
Butane (dryer/mixer/heaters) = 0.015 pounds per gallon of butane; and
Waste Oil (dryer/mixer) = 0.019 pounds per gallon of waste oil.

(f) VOC emissions from cold mix asphalt production shall be determined using the following equation:

$$V_{cm} = \left(\frac{S}{AF} \right) + \sum_{i=1}^n [C \times (B \div 100) \times (D \div 100) \times (V \div 100)]$$

Where:

V_{cm} = tons of VOC emissions from cold mix asphalt production in previous 12 month consecutive period;
S = tons of VOC solvent used for each binder as defined in D.1.4(e)(1) through (5) in previous 12 months; and
AF = Adjustment factor for each type of liquid binder as defined in D.1.4(e)(1) through (5);
n = total number of binders used in the production of cold mix asphalt as defined in D.1.4(e)(6);
i = each binder used in the production of cold mix asphalt as defined in D.1.4(e)(6);
C = tons of cold mix asphalt produced using each binder as defined in D.1.4(e)(6) in previous 12 months;
B = Percent of binder used in cold mix asphalt for each binder as defined in D.1.4(e)(6);
D = Percent solvent in each binder as defined in D.1.4(e)(6); and
V = Percent of VOC from the solvent that evaporates when heated to 500°F for each binder as defined in D.1.4(e)(6). This shall be determined by using distillation data provided by the vendor or based on a distillation test performed by the source.

Adjustment Factors:

Cutback Asphalt Rapid Cure Adjustment Factor = 1.053;
Cutback Asphalt Medium Cure Adjustment Factor = 1.429;
Cutback Asphalt Slow Cure Adjustment Factor = 4.0;
Emulsified Asphalt with Liquid Binder Adjustment Factor = 2.155; and
Other Asphalt with Liquid Binder Adjustment Factor = 40.0

- (g) Waste oil usage with respect to the actual chlorine content shall be determined using the following equation:

$$U = \sum_{k=1}^n (W_A \times Cl_A)$$

Where:

U = waste oil usage in previous 12 consecutive months;
n = total number of waste oil deliveries;
k = each specific waste oil delivery;
 W_A = actual gallons of waste oil used from each specific waste oil delivery; and
 Cl_A = actual percent by weight chlorine content of waste oil for each specific waste oil delivery.

- (h) Hydrogen Chloride (HCl) emissions shall be determined using the following equation:

$$HCl = \frac{U(0.066)}{2000}$$

Where:

HCl = tons of hydrogen chloride emissions for previous 12 consecutive month period; and
U = gallons of waste oil as defined in Condition D.1.12(g).

Waste Oil = 0.066 pounds per gallon of waste oil.

- (i) Carbon Dioxide Equivalent (CO₂e) emissions calculation:

$$CO_2 = \frac{G(EG_{CO_2}) + O(EO_{CO_2}) + F(EF_{CO_2}) + P(EP_{CO_2}) + B(EB_{CO_2}) + W(EW_{CO_2})}{2,000 \text{ lbs/ton}}$$

$$\text{CH}_4 = \frac{\text{G}(\text{EG}_{\text{CH}_4}) + \text{O}(\text{EO}_{\text{CH}_4}) + \text{F}(\text{EF}_{\text{CH}_4}) + \text{P}(\text{EP}_{\text{CH}_4}) + \text{B}(\text{EB}_{\text{CH}_4}) + \text{W}(\text{EW}_{\text{CH}_4})}{2,000 \text{ lbs/ton}}$$

$$\text{N}_2\text{O} = \frac{\text{G}(\text{EG}_{\text{N}_2\text{O}}) + \text{O}(\text{EO}_{\text{N}_2\text{O}}) + \text{F}(\text{EF}_{\text{N}_2\text{O}}) + \text{P}(\text{EP}_{\text{N}_2\text{O}}) + \text{B}(\text{EB}_{\text{N}_2\text{O}}) + \text{W}(\text{EW}_{\text{N}_2\text{O}})}{2,000 \text{ lbs/ton}}$$

$$\text{CO}_2\text{e} = \sum[(\text{CO}_2 \times \text{CO}_2 \text{ GWP}) + (\text{CH}_4 \times \text{CH}_4 \text{ GWP}) + (\text{N}_2\text{O} \times \text{N}_2\text{O} \text{ GWP})]$$

Where:

CO₂ = tons of CO₂ emissions for previous 12 consecutive month period
CH₄ = tons of CH₄ emissions for previous 12 consecutive month period
N₂O = tons of N₂O emissions for previous 12 consecutive month period
CO₂e = tons of CO₂e equivalent emissions for previous 12 consecutive month period
G = million cubic feet of natural gas used in previous 12 months
O = gallons of No. 2 fuel oil used in previous 12 months
F = gallons of No. 4 fuel oil used in previous 12 months
P = gallons of propane used in previous 12 months
B = gallons of butane used in previous 12 months
W = gallons of used/waste oil used in previous 12 months

CO₂:

EG_{CO2} = 120,162 pounds per million cubic feet of natural gas
EO_{CO2} = 22,501 pounds per 1,000 gallons of No. 2 fuel oil
EF_{CO2} = 24,153 pounds per 1,000 gallons of No. 4 fuel oil
EP_{CO2} = 12,500 pounds per 1,000 gallons of propane
EB_{CO2} = 14,506 pounds per 1,000 gallons of butane
EW_{CO2} = 22,024 pounds per 1,000 gallons of used/waste oil

CH₄:

EG_{CH4} = 2.4 pounds per million cubic feet of natural gas
EO_{CH4} = 0.91 pounds per 1,000 gallons of No. 2 fuel oil
EF_{CH4} = 0.97 pounds per 1,000 gallons of No. 4 fuel oil
EP_{CH4} = 0.6 pounds per 1,000 gallons of propane
EB_{CH4} = 0.67 pounds per 1,000 gallons of butane
EW_{CH4} = 0.89 pounds per 1,000 gallons of used/waste oil

N₂O:

EG_{N2O} = 2.2 pounds per million cubic feet of natural gas
EO_{N2O} = 0.26 pounds per 1,000 gallons of No. 2 fuel oil
EF_{N2O} = 0.19 pounds per 1,000 gallons of No. 4 fuel oil
EP_{N2O} = 0.90 pounds per 1,000 gallons of propane
EB_{N2O} = 0.90 pounds per 1,000 gallons of butane
EW_{N2O} = 0.18 pounds per 1,000 gallons of used/waste oil

Global Warming Potentials (GWP)

Carbon dioxide (CO₂) = 1
Methane (CH₄) = 21
Nitrous oxide (N₂O) = 310

D.1.12 Cold Mix Asphalt Content

In order to comply with Condition D.1.4(e)(6), the Permittee shall demonstrate the percent of VOC from the solvent that evaporates in the binder when heated to 500°F for each binder used in the production of cold mix asphalt as defined in D.1.4(e)(6) as follows:

- (a) Providing distillation data as determined by ASTM Method D-402, Distillation of Cutback Asphalt Products for the binder, if accompanied by a vendor certification; or
- (b) Analyzing a sample of the binder to determine the percent of VOC from the solvent that evaporates in the binder when heated to 500°F, utilizing ASTM Method D-402, Distillation of Cutback Asphalt Products or other procedures approved by IDEM, OAQ.

A determination of noncompliance pursuant to any of the methods specified in (a) or (b) shall not be refuted by evidence of compliance pursuant to the other method.

D.1.13 Hydrogen Chloride (HCl) Emissions and Chlorine Content

In order to comply with Condition D.1.4(a)(9), the Permittee shall demonstrate that the chlorine content of the waste oil combusted in the dryer/mixer burner does not exceed forty hundredths of a percent (0.40%) by weight, by providing a vendor analysis of each fuel delivery accompanied by a vendor certification.

D.1.14 Asbestos Content

Pursuant to 326 IAC 2-8-4, compliance with Condition D.1.4(g) shall be determined utilizing one of the following options:

- (a) Providing shingle supplier certification that the factory second and/or post consumer waste shingles do not contain asbestos; or
- (b) Analyzing a sample of the factory second and/or post consumer waste shingles delivery to determine the asbestos content of the factory second shingles, 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 determination of noncompliance pursuant to any of the methods specified above shall not be refuted by evidence of compliance pursuant to the other method.

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

D.1.15 Visible Emissions Notations

- (a) Visible emission notations of the dryer/mixer stack (SV1) exhaust shall be performed at least once per day during normal daylight operations when exhausting to the atmosphere. 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. Section C- Response to Excursions and Exceedances contains the Permittee's obligation with regard to the reasonable response steps required by this condition. Failure to take response steps shall be considered a deviation from this permit.

D.1.16 Parametric Monitoring

The Permittee shall record the pressure drop across the baghouses used in conjunction with the dryer/mixer, at least once per day when dryer/mixer is in operation. When, for any one reading, the pressure drop across the baghouse is outside of the normal range, the Permittee shall take a reasonable response. The normal range for this unit is a pressure drop between 2.0 and 8.0 inches of water, unless a different upper-bound or lower-bound value for this range is determined during the latest stack test. Section C – Response to Excursions and Exceedances contains the Permittee's obligation with regard to the reasonable response steps required by this condition. A pressure reading that is outside of the above mentioned range is not a deviation from this permit. Failure to take response steps shall be considered a deviation from this permit.

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 or replaced at least once every six (6) months.

D.1.17 Broken or Failed Bag Detection

In the event that bag failure has been observed:

- (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 emission unit. 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 Requirements [326 IAC 2-8-4(3)]

D.1.18 Record Keeping Requirements

- (a) To document the compliance status with Conditions D.1.1(a) and D.1.2(a) the Permittee shall maintain monthly records of the amount of asphalt processed through the dryer/mixer.
- (b) To document the compliance status with Conditions D.1.4(a), D.1.4(b), D.1.4(c), D.1.4(f), D.1.4(g), and D.1.5, the Permittee shall maintain records in accordance with (1) through (10) below. Records maintained for (1) through (10) shall be taken monthly and shall be complete and sufficient to establish compliance with the limits established in Conditions D.1.4(a), D.1.4(b), D.1.4(c), D.1.4(f), D.1.4(g), and D.1.5.
 - (1) Calendar dates covered in the compliance determination period;
 - (2) Actual blast furnace and electric arc furnace steel mill slag usage, sulfur content and equivalent sulfur dioxide emission rates for all blast furnace and electric arc furnace steel mill slag used at the source since the last compliance determination period;

- (3) A certification, signed by the owner or operator, that the records of the blast furnace and electric arc furnace steel mill slag supplier certifications represent all of the blast furnace and electric arc furnace steel mill slag used during the period; and
 - (4) If the slag supplier certification is used to demonstrate compliance the following, as a minimum, shall be maintained:
 - (i) Blast furnace and electric arc furnace steel mill slag supplier certifications;
 - (ii) The name of the blast furnace and electric arc furnace steel mill slag supplier; and
 - (iii) A statement from the blast furnace and electric arc furnace steel mill slag supplier that certifies the sulfur content of the blast furnace and electric arc furnace steel mill slag.
 - (5) Actual fuel usage, sulfur content, heat content, and equivalent sulfur dioxide and nitrogen oxide emission rates for each fuel used at the source since the last compliance determination period;
 - (6) Actual waste oil usage, chlorine content, and equivalent hydrogen chloride emission rate for waste oil used at the source since the last compliance determination period;
 - (7) A certification, signed by the owner or operator, that the records of the fuel supplier certifications represent all of the fuel combusted during the period; and
 - (8) If the fuel supplier certification is used to demonstrate compliance the following, as a minimum, shall be maintained:
 - (i) Fuel supplier certifications;
 - (ii) The name of the fuel supplier; and
 - (iii) A statement from the fuel supplier that certifies the sulfur content of the No. 2 and No. 4 fuel oils, diesel fuel, and waste oil, and the chlorine content of waste oil.
 - (9) A certification, signed by the owner or operator, that the records of the shingle supplier certifications represent all of the shingles used; and
 - (10) If the shingle supplier certification is used to demonstrate compliance the following, as a minimum, shall be maintained:
 - (i) Shingle supplier certifications;
 - (ii) The name of the shingle supplier(s); and
 - (iii) A statement from the shingle supplier(s) that certifies the asbestos content of the shingles from their company.
- (c) To document the compliance status with Conditions D.1.4(d) and D.1.4(e)(1) through (5),

the Permittee shall maintain records in accordance with (1) through (4) below. Records maintained shall be taken monthly and shall be complete and sufficient to establish compliance with the VOC emission limits established in Conditions D.1.4(d) and D.1.4(e)(1) through (5).

- (1) Calendar dates covered in the compliance determination period;
- (2) Cutback asphalt binder usage in the production of cold mix asphalt since the last compliance determination period;
- (3) VOC solvent content by weight of the cutback asphalt binder used in the production of cold mix asphalt since the last compliance determination period; and
- (4) Amount of VOC solvent used in the production of cold mix asphalt, and the amount of VOC emitted since the last compliance determination period.

Records may include: delivery tickets, manufacturer's data, material safety data sheets (MSDS), and other documents necessary to verify the type and amount used. Test results of ASTM tests for asphalt cutback and asphalt emulsion may be used to document volatilization.

- (d) To document the compliance status with Conditions D.1.4(d) and D.1.4(e)(6), the Permittee shall maintain records in accordance with (1) through (6) below. Records maintained shall be taken monthly and shall be complete and sufficient to establish compliance with the VOC emission limits established in Condition D.1.4(d) and D.1.4(e)(6).

- (1) Calendar dates covered in the compliance determination period;
- (2) Mix temperature of cold mix asphalt produced since the last compliance determination period;
- (3) Amount of cold mix asphalt produced since the last compliance determination period;
- (4) Percent of cutback asphalt binder used in the production of cold mix asphalt since the last compliance determination period;
- (5) Percent of solvent in the cutback asphalt binder used in the production of cold mix asphalt since the last compliance determination period; and
- (6) Evaporation rate of the solvent in the cutback asphalt binder used in production of cold mix asphalt since the last compliance determination period and the amount of VOC emitted since the last compliance determination period.

Records may include: delivery tickets, manufacturer's data, material safety data sheets (MSDS), and other documents necessary to verify the type and amount used. Test results of ASTM tests for asphalt cutback and asphalt emulsion may be used to document volatilization.

- (e) To document the compliance status with Condition D.1.4(h), the Permittee shall maintain records in accordance with (1) through (10) below. Records maintained for (1) through (10) shall be taken monthly and shall be complete and sufficient to establish compliance with the CO₂e emission limits established in Condition D.1.4(i).

- (1) Calendar dates covered in the compliance determination period;
- (2) Actual fuel oil usage each month;
- (3) Actual natural gas usage each month;
- (6) Equivalent carbon dioxide equivalent (CO₂e) emission rates for each fuel used at the source per month;
- (7) A certification, signed by the owner or operator, that the records of the fuel supplier certifications represent all of the fuel combusted during the period; and

If the fuel supplier certification is used to demonstrate compliance, when burning alternate fuels and not determining compliance pursuant to 326 IAC 3-7-4, the following, as a minimum, shall be maintained:

- (8) Fuel supplier certifications;
 - (9) The name of the fuel supplier; and
 - (10) A statement from the fuel supplier that certifies the sulfur content of the fuel oil.
- (f) To document the compliance status with Condition D.1.14, the Permittee shall maintain records of visible emission notations of the dryer/mixer stack exhaust (SV1) at least once per day. 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 plant did not operate that day).
- (g) To document the compliance status with Condition D.1.15, the Permittee shall maintain a daily record of the pressure drop across the baghouse controlling the dryer/mixer. 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 dryer/mixer did not operate that day).
- (h) Section C - General Record Keeping Requirements contains the Permittee's obligations with regard to the records required by this condition.

D.1.19 Reporting Requirements

A quarterly summary of the information to document the compliance status with Conditions D.1.1(a), D.1.2(a), D.1.4(h) and D.1.4 shall be submitted not later than thirty (30) days after the end of the quarter being reported. Section C - General Reporting contains the Permittee's obligation with regard to the reporting required by this condition. The report submitted by the Permittee does require the certification that meet the requirements of 326 IAC 2-8-5(a)(1) by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

SECTION E.1 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description [326 IAC 2-8-4(10)]:

- (a) One (1) aggregate rotary dryer and drum hot-mix unit (dryer/mixer), identified as DRUM, approved for construction in 2009, with a maximum capacity of four hundred fifty (450) tons of asphalt per hour, processing blast furnace slag, electric arc furnace steel mill slag, and certified asbestos-free factory second and/or post consumer waste shingles in the aggregate mix, equipped with one (1) dryer/mixer burner, having a maximum heat input capacity of one hundred fifty (150) MMBtu per hour, firing waste oil as primary fuel, using No. 2 fuel oil, No. 4 fuel oil, natural gas, propane gas, and butane gas as backup fuels, equipped with a ninety thousand (90,000) actual cubic feet per minute (acfm) baghouse for particulate control and exhausting through Stack SV1. No shingles are ground at this source.

Under 40 CFR 60, subpart I, this is considered an affected facility.

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

New Source Performance Standards (NSPS) Requirements [326 IAC 2-8-4(1)]

E.1.1 General Provisions Relating to NSPS [326 IAC 12-1] [40 CFR 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 60, Subpart I.
- (b) Pursuant to 40 CFR 60.10, the Permittee shall submit all required notifications and reports to:

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

E.1.2 New Source Performance Standards (NSPS) for Hot Mix Asphalt Facilities [40 CFR Part 60, Subpart I] [326 IAC 12]

The Permittee shall comply with the following provisions of 40 CFR Part 60, Subpart I (included as Attachment B of this permit), which are incorporated by reference as 326 IAC 12, except as otherwise specified in 40 CFR Part 60, Subpart I:

- (a) 40 CFR 60.90
(b) 40 CFR 60.91
(c) 40 CFR 60.92
(d) 40 CFR 60.93

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE AND ENFORCEMENT BRANCH**

**FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)
CERTIFICATION**

Source Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, Indiana 46614
FESOP Permit No.: F141-22022-00027

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 AND ENFORCEMENT BRANCH
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251
Phone: (317) 233-0178
Fax: (317) 233-6865**

**FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)
EMERGENCY OCCURRENCE REPORT**

Source Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, Indiana 46614
FESOP Permit No.: F141-22022-00027

This form consists of 2 pages

Page 1 of 2

- | |
|--|
| <p><input type="checkbox"/> This is an emergency as defined in 326 IAC 2-7-1(12)</p> <ul style="list-style-type: none">• 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• 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 |
|--|

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 ₂ , VOC, NO _x , 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: _____

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE AND ENFORCEMENT BRANCH**

FESOP Quarterly Report

Source Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, Indiana 46614
FESOP Permit No.: F141-22022-00027
Facility: Dryer/Mixer
Parameter: Hot mix asphalt production
Limit: The asphalt production rate shall not exceed 1,000,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month.

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: _____

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF AIR QUALITY
 COMPLIANCE AND ENFORCEMENT BRANCH**

**FESOP Quarterly Report
 Page 1 of 3**

Source Name: Rieth-Riley Construction Co., Inc.
 Source Address: 25200 State Road 23, South Bend, Indiana 46614
 FESOP Permit No.: F141-22022-00027
 Facility: Dryer/mixer burner, hot oil heaters, A.C. tank heaters, and blast furnace and electric arc furnace steel mill slag processing
 Parameter: SO2 and NOx emissions
 Limit: SO2 emissions from the dryer/mixer burner, hot oil heaters, A.C. tank heaters, and blast furnace and EAF steel mill slag processing shall not exceed 99.0 tons per twelve (12) consecutive month period, with compliance determined at the end of each month; and NOx emissions from the dryer/mixer burner, hot oil heaters, and A.C. tank heaters shall not exceed 99.0 tons per twelve (12) consecutive month period, with compliance determined at the end of each month.

Sulfur dioxide (SO2) emissions shall be determined using the following equation:

$$S = \frac{[G(0.6) + O(0.071) + F(0.075) + P(0.00002) + B(0.00002) + U(0.147) + A(0.0014) + L(0.5413) + X(0.74)]}{2000}$$

<p><u>Where:</u> S = tons of sulfur dioxide emissions for previous 12 consecutive month period; G = million cubic feet of natural gas used in dryer/mixer in previous 12 months; O = gallons of No. 2 fuel oil used in dryer/mixer and heaters in previous 12 months; F = gallons of No. 4 fuel oil used in dryer/mixer in previous 12 months; P = gallons of propane used in dryer/mixer and heaters in previous 12 months; B = gallons of butane used in dryer/mixer and heaters in previous 12 months; U = gallons of waste oil as defined by Condition D.1.12(c); A = tons of EAF steel mill slag used in dryer/mixer in previous 12 months; L = tons of blast furnace slag as defined by Condition D.1.12(a); and X = tons of blast furnace slag as defined by Condition D.1.12(b).</p>	<p><u>Emission Factors:</u> Natural Gas (dryer/mixer) = 0.6 pounds per million cubic feet of natural gas; No. 2 Fuel Oil (dryer/mixer/heaters) = 0.071 pounds per gallon of No. 2 fuel oil; No. 4 Fuel Oil (dryer/mixer) = 0.075 pounds per gallon of No. 4 fuel oil; Propane (dryer/mixer/heaters) = 0.00002 pounds per gallon of propane; Butane (dryer/mixer/heaters) = 0.00002 pounds per gallon of butane; Waste Oil (dryer/mixer) = 0.147 pounds per gallon of waste oil; EAF steel mill Slag = 0.0014 pounds per ton of EAF steel mill slag processed; and Blast Furnace Slag = 0.5413 pounds per ton of blast furnace slag processed, with a 30 day calendar month average sulfur content less than or equal to 1.11 percent by weight or 0.74 pounds per ton of blast furnace slag processed, with a 30 day calendar month average sulfur content greater than 1.11 percent by weight but less than or equal to 1.5 percent by weight.</p>
--	---

Nitrogen oxide (NOx) emissions shall be determined using the following equation:

$$N = \frac{[H(0.02) + (G(190) + O(0.024) + F(0.047) + P(0.013) + (B(0.015) + U(0.019)))]}{2000}$$

<p><u>Where:</u> N = tons of nitrogen oxide emissions for previous 12 consecutive month period; H = gallons of No. 2 fuel oil used in heaters in previous 12 months; G = million cubic feet of natural gas used in dryer/mixer in previous 12 months; O = gallons of No. 2 fuel oil used in dryer/mixer in previous 12 months; F = gallons of No. 4 fuel oil used in dryer/mixer in previous 12 months; P = gallons of propane used in dryer/mixer and heaters in previous 12 months; B = gallons of butane used in dryer/mixer and heaters in previous 12 months; and U = gallons of waste oil used in dryer/mixer in previous 12 months.</p>	<p><u>Emission Factors</u> No. 2 Fuel Oil (heaters) = 0.02 pounds per gallon of No. 2 fuel oil; Natural Gas (dryer/mixer) = 190 pounds per million cubic feet of natural gas; No. 2 Fuel Oil (dryer/mixer) = 0.024 pounds per gallon of No. 2 fuel oil; No. 4 Fuel Oil (dryer/mixer) = 0.047 pounds per gallon of No. 4 fuel oil; Propane (dryer/mixer/heaters) = 0.013 pounds per gallon of propane; Butane (dryer/mixer/heaters) = 0.015 pounds per gallon of butane; and Waste Oil (dryer/mixer) = 0.019 pounds per gallon of waste oil.</p>
--	--

FESOP Fuel Usage, Slag Usage, and SO2 and NOx Emissions Quarterly Reporting Form

Quarter: _____ Year: _____

Month	Fuel Types (units)	Column 1	Column 2	Column 1 + Column 2	Total SO2 Emissions From All Fuels and Slag Used (tons per 12 month consecutive period)	Total NOx Emissions From All Fuels Used (tons per 12 month consecutive period)
		Usage This Month	Usage Previous 11 Months	Usage 12 Month Total		
Month 1	Natural gas (mmcf)					
	No. 2 fuel oil (heaters) (gallons)					
	No. 2 fuel oil (gallons)					
	No. 4 fuel oil (gallons)					
	Propane (gallons)					
	Butane (gallons)					
	Waste oil (gallons)					
	EAF steel mill Slag (tons)					
	Blast Furnace Slag with a sulfur content ≤ 1.11 (tons)					
	Blast Furnace Slag with a sulfur content > 1.11 but ≤ 1.5 (tons)					
Month 2	Natural gas (mmcf)					
	No. 2 fuel oil (heaters) (gallons)					
	No. 2 fuel oil (gallons)					
	No. 4 fuel oil (gallons)					
	Propane (gallons)					
	Butane (gallons)					
	Waste oil (gallons)					
	EAF steel mill Slag (tons)					
	Blast Furnace Slag with a sulfur content ≤ 1.11 (tons)					
	Blast Furnace Slag with a sulfur content > 1.11 but ≤ 1.5 (tons)					
Month 3	Natural gas (mmcf)					
	No. 2 fuel oil (heaters) (gallons)					
	No. 2 fuel oil (gallons)					
	No. 4 fuel oil (gallons)					
	Propane (gallons)					
	Butane (gallons)					
	Waste oil (gallons)					
	EAF steel mill Slag (tons)					
	Blast Furnace Slag with a sulfur content ≤ 1.11 (tons)					
	Blast Furnace Slag with a sulfur content > 1.11 but ≤ 1.5 (tons)					

FESOP Fuel Usage, Slag Usage, and SO2 and NOx Emissions Quarterly Reporting Form

No deviation occurred in this quarter.

Deviation/s occurred in this quarter.

Deviation has been reported on: _____

Submitted by: _____

Title / Position: _____

Signature: _____

Date: _____

Phone: _____

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF AIR QUALITY
 COMPLIANCE AND ENFORCEMENT BRANCH**

FESOP Quarterly Report

Source Name: Rieth-Riley Construction Co., Inc.
 Source Address: 25200 State Road 23, South Bend, Indiana 46614
 FESOP Permit No.: F141-22022-00027
 Facility: Dryer/mixer burner
 Parameter: HCl emissions
 Limit: HCl emissions from the dryer/mixer burner shall not exceed 9.9 tons per twelve (12) consecutive month period, with compliance determined at the end of each month. Hydrogen Chloride (HCl) emissions shall be determined using the following equation:

$$HCl = \frac{U(0.066)}{2000}$$

<p><u>Where:</u> HCl = tons of hydrogen chloride emissions for previous 12 consecutive month period; and U = gallons of waste oil as defined in Condition D.1.12(g).</p>	<p><u>Emission Factor:</u> Waste Oil = 0.066 pounds per gallon of waste oil.</p>
--	---

Quarter: _____ **Year:** _____

Month	Column 1	Column 2	Column 1 + Column 2	Total HCl Emissions From Waste Oil Used (tons per 12 month consecutive period)
	Usage This Month	Usage Previous 11 Months	Usage 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: _____

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE AND ENFORCEMENT BRANCH**

**FESOP Quarterly Report
Page 1 of 3**

Source Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, Indiana 46614
FESOP Permit No.: F141-22022-00027
Facility: Cold-mix asphalt production
Parameter: VOC emissions
Limit: VOC emissions from the sum of the binders shall not exceed 51.28 tons per twelve (12) consecutive month period with compliance determined at the end of each month. VOC emissions shall be determined using the following equation:

$$V_{cm} = \left(\frac{S}{AF} \right) + \sum_{i=1}^n [C \times (B \div 100) \times (D \div 100) \times (V \div 100)]$$

Where:

V_{cm} = tons of VOC emissions from cold mix asphalt production in previous 12 month consecutive period;
S = tons of VOC solvent used for each binder as defined in D.1.4(e)(1) through (5) in previous 12 months; and
AF = Adjustment factor for each type of liquid binder as defined in D.1.4(e)(1) through (5);
n = total number of binders used in the production of cold mix asphalt as defined in D.1.4(e)(6);
i = each binder used in the production of cold mix asphalt as defined in D.1.4(e)(6);
C = tons of cold mix asphalt produced using each binder as defined in D.1.4(e)(6) in previous 12 months;
B = Percent of binder used in cold mix asphalt for each binder as defined in D.1.4(e)(6);
D = Percent solvent in each binder as defined in D.1.4(e)(6); and
V = Percent of VOC from the solvent that evaporates when heated to 500°F for each binder as defined in D.1.4(e)(6). This shall be determined by using distillation data provided by the vendor or based on a distillation test performed by the source.

Adjustment Factors:

Cutback Asphalt Rapid Cure Adjustment Factor = 1.053;
Cutback Asphalt Medium Cure Adjustment Factor = 1.429;
Cutback Asphalt Slow Cure Adjustment Factor = 4.0;
Emulsified Asphalt with Liquid Binder Adjustment Factor = 2.155; and
Other Asphalt with Liquid Binder Adjustment Factor = 40.0

FESOP Cold Mix Asphalt Usage and VOC Emissions Quarterly Reporting Form

Quarter: _____ Year: _____

Month	Type of Liquid Binder	Solvent Usage This Month (tons)	Adjustment Factor	VOC Emissions From Each Binder This Month (tons)	VOC Emissions From Cold Mix This Month (tons)	VOC Emissions From Cold Mix Previous 11 Months (tons)	VOC Emissions From Cold Mix 12 Month Total (tons)
Month 1	Cut back asphalt rapid cure		1.053				
	Cut back asphalt medium cure		1.429				
	Cut back asphalt slow cure		4.0				
	Emulsified asphalt		2.155				
	Other asphalt		40.0				
Month 2	Cut back asphalt rapid cure		1.053				
	Cut back asphalt medium cure		1.429				
	Cut back asphalt slow cure		4.0				
	Emulsified asphalt		2.155				
	Other asphalt		40.0				
Month 3	Cut back asphalt rapid cure		1.053				
	Cut back asphalt medium cure		1.429				
	Cut back asphalt slow cure		4.0				
	Emulsified asphalt		2.155				
	Other asphalt		40.0				

FESOP Cold Mix Asphalt Usage and VOC Emissions Quarterly Reporting Form

Quarter: _____ Year: _____

Rieth-Riley other asphalt with solvent binder

Month	Name of Liquid Binder	Cold Mix Asphalt Produced Using Binder (tons)	Binder Usage This Month (tons)	Solvent Usage This Month (tons)	Evaporation Rate of Solvent When Heated to 500°F (%)	VOC Emissions From Each Binder This Month (tons)	VOC Emissions From Cold Mix This Month (tons)	VOC Emissions From Cold Mix Previous 11 Months (tons)	VOC Emissions From Cold Mix 12 Month Total (tons)
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: _____

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF AIR QUALITY
 COMPLIANCE AND ENFORCEMENT BRANCH**

Quarterly Report

Source Name: Rieth-Riley Construction Co., Inc.
 Source Address: 25200 State Road 23, South Bend, Indiana 46614
 FESOP No.: F141-22022-00027
 Facility: Dryer/mixer burner
 Parameter: CO₂e emissions
 Limit: The combined CO₂e emissions from shall not exceed 95,328 0 tons per twelve (12) consecutive month period, with compliance determined at the end of each month, using the equation found in Condition D.1.11(i).

QUARTER: _____ YEAR: _____

Month	Fuel Types (units)	Column 1	Column 2	Column 1 + Column 2	Total CO ₂ e Emissions From All Fuels Used (tons per 12 month consecutive period)
		Usage This Month	Usage Previous 11 Months	Usage 12 Month Total	
	Natural gas (MMcf)				
	No. 2 fuel oil (gallons)				
	No. 4 fuel oil (gallons)				
	propane (gallons)				
	butane (gallons)				
	used/waste oil gallons)				
	Natural gas (MMcf)				
	No. 2 fuel oil (gallons)				
	No. 4 fuel oil (gallons)				
	propane (gallons)				
	butane (gallons)				
	used/waste oil gallons)				
	Natural gas (MMcf)				
	No. 2 fuel oil (gallons)				
	No. 4 fuel oil (gallons)				
	propane (gallons)				
	butane (gallons)				
	used/waste oil gallons)				

- No deviation occurred in this quarter.
- Deviation/s occurred in this quarter.
 Deviation has been reported on: _____

Submitted by: _____

Title / Position: _____

Signature: _____

Date: _____

Phone: _____

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE AND ENFORCEMENT BRANCH
FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)
QUARTERLY DEVIATION AND COMPLIANCE MONITORING REPORT**

Source Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, Indiana 46614
FESOP Permit No.: F141-22022-00027

Months: _____ to _____ Year: _____

Page 1 of 2

<p>This report shall be submitted quarterly based on a calendar year. Any deviation from the requirements of this permit, 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	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Form Completed by: _____

Title / Position: _____

Date: _____

Phone: _____

Attachment A

**Federally Enforceable State Operating Permit
(FESOP) Renewal
Office of Air Quality**

**Rieth-Riley Construction Company, Inc.
25200 State Road 23
South Bend, Indiana**

**Hot-Mix Asphalt Plant
Fugitive Dust Control Plan**

F141-22022-00027

HOT MIX ASPHALT PLANT SITE FUGITIVE DUST CONTROL PLAN

1. Fugitive particular matter (dust) emissions from paved roads, unpaved roads, and parking lots shall be controlled on an as-needed basis by one or more of the following measures:
 - A. Paved roads and parking lots:
 - i. Cleaning by vacuum sweeping.
 - ii. Power brooming while wet either from rain or application of water.
 - B. Unpaved roads and parking lots:
 - i. Paving with asphalt.
 - ii. Treating with emulsified asphalt on an as-needed basis.
 - iii. Treating with water on an as-needed basis.
 - iv. Double chip and seal the road surface and maintained on an as-needed basis.
2. Fugitive particulate matter (dust) emissions from aggregate stockpiles shall be controlled by one or more of the following measures.
 - A. Maintain minimum size and number of stockpiles of aggregate.
 - B. Treating around the stockpile area with emulsified asphalt on an as-needed basis.
 - C. Treating around the stockpile area with water on an as-needed basis.
 - D. Treating the stockpiles with water on an as-needed basis.
3. Fugitive particulate matter (dust) emission from outdoor conveying of aggregates shall be controlled by the following measure:
 - A. Apply water at the feed and the intermediate points on an as-needed basis.
4. Fugitive particulate matter (dust) emissions resulting from the transferring of aggregates shall be controlled by one or more of the following measures:
 - A. Minimize the vehicular distance between the transfer points.
 - B. Enclose the transfer points.
 - C. Apply water on transfer points on an as-needed basis.
5. Fugitive particular matter (dust) emissions from the transportation of aggregate by truck, front end loader, etc., shall be controlled by one or more of the following measures:
 - A. Tarping the aggregate hauling vehicles.
 - B. Maintain vehicle bodies in a condition to prevent leakage.
 - C. Spray the aggregates with water.

- D. Maintain a 10-mph speed limit in the yard.
6. Fugitive particulate matter (dust) emissions from the loading and unloading of aggregates shall be controlled by one or more of the following measures:
- A. Reduce free fall distance to a minimum.
 - B. Reduce the rate of discharge of the aggregate.
 - C. Spray the aggregate with water on an as-needed basis.

“An as-needed basis” means the frequency or quantity of application necessary to minimize visible particulate matter emissions.

**Indiana Department of Environmental Management
Office of Air Quality**

Attachment B

Title 40: Protection of Environment

Subpart I—Standards of Performance for Hot Mix Asphalt Facilities

§ 60.90 Applicability and designation of affected facility.

- (a) The affected facility to which the provisions of this subpart apply is each hot mix asphalt facility. For the purpose of this subpart, a hot mix asphalt facility is comprised only of any combination of the following: dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler, systems for mixing hot mix asphalt; and the loading, transfer, and storage systems associated with emission control systems.
- (b) Any facility under paragraph (a) of this section that commences construction or modification after June 11, 1973, is subject to the requirements of this subpart.

[42 FR 37936, July 25, 1977, as amended at 51 FR 12325, Apr. 10, 1986]

§ 60.91 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.

- (a) *Hot mix asphalt facility* means any facility, as described in §60.90, used to manufacture hot mix asphalt by heating and drying aggregate and mixing with asphalt cements.

[51 FR 12325, Apr. 10, 1986]

§ 60.92 Standard for particulate matter.

- (a) On and after the date on which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall discharge or cause the discharge into the atmosphere from any affected facility any gases which:
 - (1) Contain particulate matter in excess of 90 mg/dscm (0.04 gr/dscf).
 - (2) Exhibit 20 percent opacity, or greater.

[39 FR 9314, Mar. 8, 1974, as amended at 40 FR 46259, Oct. 6, 1975]

§ 60.93 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 particulate matter standards in §60.92 as follows:

- (1) Method 5 shall be used to determine the particulate matter concentration. The sampling time and sample volume for each run shall be at least 60 minutes and 0.90 dscm (31.8 dscf).
- (2) Method 9 and the procedures in §60.11 shall be used to determine opacity.

[54 FR 6667, Feb. 14, 1989]

**Appendix A.1: Unlimited Emissions Calculations
Entire Source**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Asphalt Plant Maximum Capacity

Maximum Hourly Asphalt Production =	450	ton/hr										
Maximum Annual Asphalt Production =	3,942,000	ton/yr										
Maximum Annual Blast Furnace Slag Usage =	1,655,640	ton/yr						1.5	% sulfur			
Maximum Annual Steel Slag Usage =	1,655,640	ton/yr						0.66	% sulfur			
Maximum Dryer Fuel Input Rate =	150.0	MMBtu/hr										
Natural Gas Usage =	1,314	MMCF/yr										
No. 2 Fuel Oil Usage =	9,385,714	gal/yr, and						0.50	% sulfur			
No. 4 Fuel Oil Usage =	9,385,714	gal/yr, and						0.50	% sulfur			
Residual (No. 5 or No. 6) Fuel Oil Usage =	0	gal/yr, and						0.00	% sulfur			
Propane Usage =	14,360,656	gal/yr, and						0.20	gr/100 ft ³ sulfur			
Butane Usage =	12,882,353	gal/yr, and						0.22	gr/100 ft ³ sulfur			
Used/Waste Oil Usage =	9,385,714	gal/yr, and						1.00	% sulfur	0.50	% ash	
										0.40	% chlorine,	
											0.010	% lead
Unlimited PM Dryer/Mixer Emission Factor =	28.0	lb/ton of asphalt production										
Unlimited PM10 Dryer/Mixer Emission Factor =	6.5	lb/ton of asphalt production										
Unlimited PM2.5 Dryer/Mixer Emission Factor =	1.5	lb/ton of asphalt production										
Unlimited VOC Dryer/Mixer Emission Factor =	0.032	lb/ton of asphalt production										
Unlimited CO Dryer/Mixer Emission Factor =	0.13	lb/ton of asphalt production										
Unlimited Blast Furnace Slag SO2 Dryer/Mixer Emission Factor =	0.74	lb/ton of slag processed										
Unlimited Steel Slag SO2 Dryer/Mixer Emission Factor =	0.0014	lb/ton of slag processed										

Unlimited/Uncontrolled Emissions

Process Description	Unlimited/Uncontrolled Potential to Emit (tons/year)									
	Criteria Pollutants							Greenhouse Gas Pollutants	Hazardous Air Pollutants	
	PM	PM10	PM2.5	SO2	NOx	VOC	CO	CO2e	Total HAPs	Worst Case HAP
Ducted Emissions										
Dryer Fuel Combustion (worst case)	150.17	119.67	119.67	689.85	220.56	7.18	55.19	113,725	129.63	123.89 (hydrogen chloride)
Dryer/Mixer (Process)	55188.00	12811.50	2956.50	114.32	108.41	63.07	256.23	65,540	21.01	6.11 (formaldehyde)
Dryer/Mixer Slag Processing	0	0	0	612.59	0	0	0		0	0
Hot Oil Heater Fuel Combustion (worst case)	0.31	0.51	0.51	11.02	3.10	0.12	1.82	3,507	0.050	0.039 (formaldehyde)
Worst Case Emissions*	55188.31	12812.01	2957.01	1313.45	223.67	63.19	258.05	117,232	129.68	123.89 (hydrogen chloride)
Fugitive Emissions										
Asphalt Load-Out, Silo Filling, On-Site Yard	2.18	2.18	2.18	0	0	33.76	5.68		0.56	0.17 (formaldehyde)
Material Storage Piles	2.02	0.71	0.71	0	0	0	0		0	0
Material Processing and Handling	12.73	6.02	0.91	0	0	0	0		0	0
Material Crushing, Screening, and Conveying	62.54	22.84	22.84	0	0	0	0		0	0
Unpaved and Paved Roads (worst case)	261.16	66.56	6.66	0	0	0	0		0	0
Cold Mix Asphalt Production	0	0	0	0	0	47372.99	0		12356.63	4263.57 (xylenes)
Gasoline Fuel Transfer and Dispensing	0	0	0	0	0	0.00	0		0.00	0.00 (xylenes)
Volatile Organic Liquid Storage Vessels	0	0	0	0	0	negl	0		negl	0
Total Fugitive Emissions	340.64	98.32	33.30	0	0.00	47406.75	5.68		12357.19	4263.57 (xylenes)
Totals Unlimited/Uncontrolled PTE	55528.95	12910.33	2990.31	1313.45	223.67	47469.94	263.73		12486.87	4263.57 (xylenes)

negl = negligible

Worst Case Fuel Combustion is based on the fuel with the highest emissions for each specific pollutant.

*Worst Case Emissions (tons/yr) = Worst Case Emissions from Dryer Fuel Combustion and Dryer/Mixer + Worst Case Emissions from Dryer/Mixer Slag Processing + Worst Case Emissions from Hot Oil Heater Fuel Combustion
 Fuel component percentages provided by the source.

Appendix A.1: Unlimited Emissions Calculations
Dryer/Mixer Fuel Combustion with Maximum Capacity > 100 MMBtu/hr

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

The following calculations determine the unlimited/uncontrolled emissions created from the combustion of natural gas, fuel oil, propane, butane, or used/waste oil in the dryer/mixer at the source.

Maximum Capacity

Maximum Hourly Asphalt Production =	450	ton/hr
Maximum Annual Asphalt Production =	3,942,000	ton/yr
Maximum Fuel Input Rate =	150	MMBtu/hr
Natural Gas Usage =	1,314	MMCF/yr
No. 2 Fuel Oil Usage =	9,385,714	gal/yr, and
No. 4 Fuel Oil Usage =	9,385,714	gal/yr, and
Residual (No. 5 or No. 6) Fuel Oil Usage =	0	gal/yr, and
Propane Usage =	14,360,656	gal/yr, and
Butane Usage =	12,882,353	gal/yr, and
Used/Waste Oil Usage =	9,385,714	gal/yr, and
	0.50	% sulfur
	0.50	% sulfur
	0.00	% sulfur
	0.20	gr/100 ft3 sulfur
	0.22	gr/100 ft3 sulfur
	1.00	% sulfur
	0.50	% ash
	0.400	% chlorine
	0.010	% lead

Unlimited/Uncontrolled Emissions

Criteria Pollutant	Emission Factor (units)							Unlimited/Uncontrolled Potential to Emit (tons/yr)							Worse Case Fuel (tons/yr)
	Natural Gas (lb/MMCF)	No. 2 Fuel Oil (lb/kgal)	No. 4 Fuel Oil* (lb/kgal)	Residual (No. 5 or No. 6) Fuel Oil (lb/kgal)	Propane (lb/kgal)	Butane (lb/kgal)	Used/Waste Oil (lb/kgal)	Natural Gas (tons/yr)	No. 2 Fuel Oil (tons/yr)	No. 4 Fuel Oil (tons/yr)	Residual (No. 5 or No. 6) Fuel Oil (tons/yr)	Propane (tons/yr)	Butane (tons/yr)	Used/Waste Oil (tons/yr)	
PM	1.9	2.0	7.0	3.22	0.5	0.6	32.0	1.25	9.39	32.85	0.00	3.590	3.865	150.17	150.17
PM10/PM2.5	7.6	3.3	8.3	4.72	0.5	0.6	25.5	4.99	15.49	38.95	0.00	3.590	3.865	119.67	119.67
SO2	0.6	71.0	75.0	0.0	0.020	0.020	147.0	0.39	333.19	351.96	0.00	0.144	0.128	689.85	689.85
NOx	190	24.0	47.0	47.0	13.0	15.0	19.0	124.83	112.63	220.56	0.00	93.34	96.62	89.16	220.56
VOC	5.5	0.20	0.20	0.28	1.00	1.10	1.0	3.61	0.94	0.94	0.00	7.18	7.09	4.69	7.18
CO	84	5.0	5.0	5.0	7.5	8.4	5.0	55.188	23.46	23.46	0.00	53.85	54.11	23.46	55.19
Hazardous Air Pollutant															
HCl							26.4							123.89	123.89
Antimony			5.25E-03	5.25E-03			negl			2.46E-02	0.00E+00			negl	2.5E-02
Arsenic	2.0E-04	5.6E-04	1.32E-03	1.32E-03			1.1E-01	1.3E-04	2.63E-03	6.19E-03	0.00E+00			5.16E-01	5.2E-01
Beryllium	1.2E-05	4.2E-04	2.78E-05	2.78E-05			negl	7.9E-06	1.97E-03	1.30E-04	0.00E+00			negl	2.0E-03
Cadmium	1.1E-03	4.2E-04	3.98E-04	3.98E-04			9.3E-03	7.2E-04	1.97E-03	1.87E-03	0.00E+00			4.36E-02	4.4E-02
Chromium	1.4E-03	4.2E-04	8.45E-04	8.45E-04			2.0E-02	9.2E-04	1.97E-03	3.97E-03	0.00E+00			9.39E-02	9.4E-02
Cobalt	8.4E-05	6.02E-03	6.02E-03	6.02E-03			2.1E-04	5.5E-05		2.83E-02	0.00E+00			9.86E-04	2.8E-02
Lead	5.0E-04	1.3E-03	1.51E-03	1.51E-03			0.55	3.3E-04	5.91E-03	7.09E-03	0.00E+00			2.6E+00	2.58
Manganese	3.8E-04	8.4E-04	3.00E-03	3.00E-03			6.8E-02	2.5E-04	3.94E-03	1.41E-02	0.00E+00			3.19E-01	0.32
Mercury	2.6E-04	4.2E-04	1.13E-04	1.13E-04				1.7E-04	1.97E-03	5.30E-04	0.00E+00				2.0E-03
Nickel	2.1E-03	4.2E-04	8.45E-02	8.45E-02			1.1E-02	1.4E-03	1.97E-03	3.97E-01	0.00E+00			5.16E-02	0.397
Selenium	2.4E-05	2.1E-03	6.83E-04	6.83E-04			negl	1.6E-05	9.86E-03	3.21E-03	0.00E+00			negl	9.9E-03
1,1,1-Trichloroethane			2.36E-04	2.36E-04						1.11E-03	0.00E+00				1.1E-03
1,3-Butadiene															0.0E+00
Acetaldehyde															0.0E+00
Acrolein															0.0E+00
Benzene	2.1E-03		2.14E-04	2.14E-04				1.4E-03		1.00E-03	0.00E+00				1.4E-03
Bis(2-ethylhexyl)phthalate							2.2E-03							1.03E-02	1.0E-02
Dichlorobenzene	1.2E-03						8.0E-07	7.9E-04						3.75E-06	7.9E-04
Ethylbenzene			6.36E-05	6.36E-05						2.98E-04	0.00E+00				3.0E-04
Formaldehyde	7.5E-02	6.10E-02	3.30E-02	3.30E-02				4.9E-02	2.86E-01	1.55E-01	0.00E+00				0.286
Hexane	1.8E+00							1.18							1.183
Phenol							2.4E-03							1.13E-02	1.1E-02
Toluene	3.4E-03		6.20E-03	6.20E-03				2.2E-03		2.91E-02	0.00E+00				2.9E-02
Total PAH Haps	negl		1.13E-03	1.13E-03			3.9E-02	negl		5.30E-03	0.00E+00			1.83E-01	1.8E-01
Polycyclic Organic Matter		3.30E-03							1.55E-02						1.5E-02
Xylene			1.09E-04	1.09E-04						5.12E-04	0.00E+00				5.1E-04
Total HAPs								1.24	0.33	0.68	0.00	0	0	127.70	129.63

Methodology

Natural Gas Usage (MMCF/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 MMCF/1,000 MMBtu]
 Oil Usage (gal/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 gal/0.140 MMBtu]
 Propane Usage (gal/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 gal/0.0915 MMBtu]
 Butane Usage (gal/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 gal/0.102 MMBtu]
 Natural Gas: Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Maximum Natural Gas Usage (MMCF/yr)] * [Emission Factor (lb/MMCF)] * [ton/2000 lbs]
 All Other Fuels: Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Maximum Fuel Usage (gals/yr)] * [Emission Factor (lb/kgal)] * [kgal/1000 gal] * [ton/2000 lbs]
 Sources of AP-42 Emission Factors for fuel combustion:
 Natural Gas: AP-42 Chapter 1.4 (dated 7/98), Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4
 No. 2, No. 4, and No. 6 Fuel Oil: AP-42 Chapter 1.3 (dated 9/98), Tables 1.3-1, 1.3-2, 1.3-3, 1.3-4, 1.3-9, 1.3-10, and 1.3-11
 Propane and Butane: AP-42 Chapter 1.5 (dated 7/08), Tables 1.5-1 (assuming PM = PM10)
 Waste Oil: AP-42 Chapter 1.11 (dated 10/96), Tables 1.11-1, 1.11-2, 1.11-3, 1.11-4, and 1.11-5

Abbreviations

PM = Particulate Matter
 PM10 = Particulate Matter (<10 um)
 PM2.5 = Particulate Matter (< 2.5 um)
 SO2 = Sulfur Dioxide
 NOx = Nitrous Oxides
 VOC = Volatile Organic Compounds
 CO = Carbon Monoxide
 HAP = Hazardous Air Pollutant
 HCl = Hydrogen Chloride
 PAH = Polyaromatic Hydrocarbon

*Since there are no specific AP-42 HAP emission factors for combustion of No. 4 fuel oil, it was assumed that HAP emissions from combustion of No. 4 fuel oil were equal to combustion of residual or No. 6 fuel oil.

**Appendix A.1: Unlimited Emissions Calculation:
Greenhouse Gas (CO₂e) Emissions from the
Dryer/Mixer Fuel Combustion with Maximum Capacity ≥ 100 MMBtu/hr**

Company Name: **Rieth-Riley Construction Co., Inc.**
Source Address: **25200 State Road 23, South Bend, IN 46614**
Permit Number: **141-31916-00027**
Reviewer: **Bruce Farrar**

The following calculations determine the unlimited/uncontrolled emissions created from the combustion of natural gas, fuel oil, propane, butane, or used/waste oil in the dryer/mixer at the source.

Maximum Capacity

Maximum Hourly Asphalt Production =	450	ton/hr								
Maximum Annual Asphalt Production =	3,942,000	ton/yr								
Maximum Fuel Input Rate =	150	MMBtu/hr								
Natural Gas Usage =	1,314	MMCF/yr								
No. 2 Fuel Oil Usage =	9,385,714	gal/yr, and	0.50	% sulfur						
No. 4 Fuel Oil Usage =	9,385,714	gal/yr, and	0.50	% sulfur						
Refinery Blend, and Residual (No. 5 or No. 6) Fuel Oil Usage =	0	gal/yr, and	0.00	% sulfur						
Propane Usage =	14,360,656	gal/yr, and	0.20	gr/100 ft3 sulfur						
Butane Usage =	12,882,353	gal/yr, and	0.22	gr/100 ft3 sulfur						
Used/Waste Oil Usage =	9,385,714	gal/yr, and	1.00	% sulfur	0.50	% ash	0.400	% chlorine,	0.010	% lead

Unlimited/Uncontrolled Emissions

CO ₂ e Fraction	Emission Factor (units)							Greenhouse Warming Potentials (GWP)		
	Natural Gas (lb/MMCF)	No. 2 Fuel Oil (lb/kgal)	No. 4 Fuel Oil (lb/kgal)	Residual (No. 5 or No. 6) Fuel Oil (lb/kgal)	Propane (lb/kgal)	Butane (lb/kgal)	Used/Waste Oil (lb/kgal)	Name	Chemical Formula	Global warming potential
CO ₂	120,161.84	22,501.41	24,153.46	24,835.04	12,500.00	14,506.73	22,024.15	Carbon dioxide	CO ₂	1
CH ₄	2.49	0.91	0.97	1.00	0.60	0.67	0.89	Methane	CH ₄	21
N ₂ O	2.2	0.26	0.19	0.53	0.9	0.9	0.18	Nitrous oxide	N ₂ O	310

CO ₂ e Fraction	Unlimited/Uncontrolled Potential to Emit (tons/yr)						
	Natural Gas (tons/yr)	No. 2 Fuel Oil (tons/yr)	No. 4 Fuel Oil (tons/yr)	Residual (No. 5 or No. 6) Fuel Oil (tons/yr)	Propane (tons/yr)	Butane (tons/yr)	Used/ Waste Oil (tons/yr)
CO ₂	78,946.33	105,695.90	113,348.76	0.00	89,754.10	93,440.41	103,356.21
CH ₄	1.64	4.28	4.53	0.00	4.32	4.30	4.19
N ₂ O	1.45	1.22	0.91	0.00	6.46	5.80	0.84
Total	78,949.41	105,601.41	113,354.19	0.00	89,764.88	93,450.51	103,361.24
CO ₂ e Equivalent Emissions (tons/yr)	79,428.81	106,064.11	113,724.87	0.00	91,848.16	95,327.85	103,706.06

CO₂e for Worst Case Fuel* (tons/yr)
113,724.87

Methodology

Fuel Usage from TSD Appendix A.1, page 1 of 14.
 Natural Gas Usage (MMCF/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 MMCF/1,000 MMBtu]
 Fuel Oil Usage (gal/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 gal/0.140 MMBtu]
 Propane Usage (gal/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 gal/0.0915 MMBtu]
 Butane Usage (gal/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 gal/0.102 MMBtu]
 Greenhouse Warming Potentials (GWP) from Table A-1 of 40 CFR Part 98 Subpart A.

Abbreviations

PTE = Potential to Emit
 CO₂ = Carbon Dioxide
 CH₄ = Methane
 N₂O = Nitrogen Dioxide

Sources of Emission Factors for fuel combustion: (Note: To form a conservative estimate, the "worst case" emission factors have been used.)

- Natural Gas: Emission Factors for CO₂ and CH₄ from 40 CFR Part 98 Subpart C, Tables C-1 and 2, have been converted from kg/mmBtu to lb/MMCF. Emission Factor for N₂O from AP-42 Chapter 1.4 (dated 7/98), Table 1.4-2
- No. 2 Fuel Oil: Emission Factors for CO₂ and CH₄ from 40 CFR Part 98 Subpart C, Tables C-1 and 2, have been converted from kg/mmBtu to lb/kgal. Emission Factor for N₂O from AP-42 Chapter 1.3 (dated 9/98), Table 1.3-8
- No. 4 Fuel Oil: Emission Factors for CO₂ and CH₄ from 40 CFR Part 98 Subpart C, Tables C-1 and 2, have been converted from kg/mmBtu to lb/kgal. Emission Factor for N₂O from AP-42 Chapter 1.3 (dated 9/98), Table 1.3-8
- Residual (No. 5 or No. 6) Fuel Oil: Emission Factor for CO₂ from 40 CFR Part 98 Subpart C, Table C-1, has been converted from kg/mmBtu to lb/kgal. Emission Factors for CH₄ and N₂O from AP-42 Chapter 1.3 (dated 9/98), Table 1.3-8
- Propane: Emission Factor for CH₄ from 40 CFR Part 98 Subpart C, Tables C-1 and 2, has been converted from kg/mmBtu to lb/kgal. Emission Factors for CO₂ and N₂O from AP-42 Chapter 1.5 (dated 7/08), Table 1.5-1
- Butane: Emission Factors for CO₂ and CH₄ from 40 CFR Part 98 Subpart C, Tables C-1 and 2, have been converted from kg/mmBtu to lb/kgal. Emission Factor for N₂O from AP-42 Chapter 1.5 (dated 7/08), Table 1.5-1
- Waste Oil: Emission Factors for CO₂, CH₄, and N₂O from 40 CFR Part 98 Subpart C, Tables C-1 and 2, have been converted from kg/mmBtu to lb/kgal.

Emission Factor (EF) Conversions

Natural Gas: EF (lb/MMCF) = [EF (kg/MMBtu) * Conversion Factor (2.20462 lbs/kg) * Heating Value of Natural Gas (MMBtu/scf) * Conversion Factor (1,000,000 scf/MMCF)]
 Fuel Oils: EF (lb/kgal) = [EF (kg/MMBtu) * Conversion Factor (2.20462 lbs/kg) * Heating Value of the Fuel Oil (MMBtu/gal) * Conversion Factor (1000 gal/kgal)]

Natural Gas: Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Maximum Natural Gas Usage (MMCF/yr)] * [Emission Factor (lb/MMCF)] * [ton/2000 lbs]

All Other Fuels: Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Maximum Fuel Usage (gals/yr)] * [Emission Factor (lb/kgal)] * [kgal/1000 gal] * [ton/2000 lbs]

Unlimited Potential to Emit CO₂e (tons/yr) = Unlimited Potential to Emit CO₂ of "worst case" fuel (ton/yr) x CO₂ GWP (1) + Unlimited Potential to Emit CH₄ of "worst case" fuel (ton/yr) x CH₄ GWP (21) + Unlimited Potential to Emit N₂O of "worst case" fuel (ton/yr) x N₂O GWP (310).

**Appendix A.1: Unlimited Emissions Calculations
Dryer/Mixer**

**Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar**

The following calculations determine the unlimited/uncontrolled emissions from the aggregate drying/mixing

Maximum Hourly Asphalt Production = ton/hr
Maximum Annual Asphalt Production = ton/yr

Criteria Pollutant	Uncontrolled Emission Factors (lb/ton)			Unlimited/Uncontrolled Potential to Emit (tons/yr)			Worse Case PTE
	Drum-Mix Plant (dryer/mixer)			Drum-Mix Plant (dryer/mixer)			
	Natural Gas	No. 2 Fuel Oil	Waste Oil	Natural Gas	No. 2 Fuel Oil	Waste Oil	
PM*	28	28	28	55188	55188	55188	55188
PM10*	6.5	6.5	6.5	12811.5	12811.5	12811.5	12811.5
PM2.5*	1.5	1.5	1.5	2956.5	2956.5	2956.5	2957
SO2**	0.0034	0.011	0.058	6.7	21.7	114.3	114.3
NOx**	0.026	0.055	0.055	51.2	108.4	108.4	108.4
VOC**	0.032	0.032	0.032	63.1	63.1	63.1	63.1
CO***	0.13	0.13	0.13	256.2	256.2	256.2	256.2
Hazardous Air Pollutant							
HCl			2.10E-04			4.14E-01	0.41
Antimony	1.80E-07	1.80E-07	1.80E-07	3.55E-04	3.55E-04	3.55E-04	3.55E-04
Arsenic	5.60E-07	5.60E-07	5.60E-07	1.10E-03	1.10E-03	1.10E-03	1.10E-03
Beryllium	negl	negl	negl	negl	negl	negl	0.00E+00
Cadmium	4.10E-07	4.10E-07	4.10E-07	8.08E-04	8.08E-04	8.08E-04	8.08E-04
Chromium	5.50E-06	5.50E-06	5.50E-06	1.08E-02	1.08E-02	1.08E-02	1.08E-02
Cobalt	2.60E-08	2.60E-08	2.60E-08	5.12E-05	5.12E-05	5.12E-05	5.12E-05
Lead	6.20E-07	1.50E-05	1.50E-05	1.22E-03	2.96E-02	2.96E-02	2.96E-02
Manganese	7.70E-06	7.70E-06	7.70E-06	1.52E-02	1.52E-02	1.52E-02	1.52E-02
Mercury	2.40E-07	2.60E-06	2.60E-06	4.73E-04	5.12E-03	5.12E-03	5.12E-03
Nickel	6.30E-05	6.30E-05	6.30E-05	0.12	0.12	0.12	0.12
Selenium	3.50E-07	3.50E-07	3.50E-07	6.90E-04	6.90E-04	6.90E-04	6.90E-04
2,2,4 Trimethylpentane	4.00E-05	4.00E-05	4.00E-05	0.08	0.08	0.08	0.08
Acetaldehyde			1.30E-03			2.56	2.56
Acrolein			2.60E-05			5.12E-02	5.12E-02
Benzene	3.90E-04	3.90E-04	3.90E-04	0.77	0.77	0.77	0.77
Ethylbenzene	2.40E-04	2.40E-04	2.40E-04	0.47	0.47	0.47	0.47
Formaldehyde	3.10E-03	3.10E-03	3.10E-03	6.11	6.11	6.11	6.11
Hexane	9.20E-04	9.20E-04	9.20E-04	1.81	1.81	1.81	1.81
Methyl chloroform	4.80E-05	4.80E-05	4.80E-05	0.09	0.09	0.09	0.09
MEK			2.00E-05			0.04	0.04
Propionaldehyde			1.30E-04			0.26	0.26
Quinone			1.60E-04			0.32	0.32
Toluene	1.50E-04	2.90E-03	2.90E-03	0.30	5.72	5.72	5.72
Total PAH Haps	1.90E-04	8.80E-04	8.80E-04	0.37	1.73	1.73	1.73
Xylene	2.00E-04	2.00E-04	2.00E-04	0.39	0.39	0.39	0.39

Total HAPs 21.01

Worst Single HAP 6.11 (formaldehyde)

Methodology

Unlimited/Uncontrolled Potential to Emit (tons/yr) = (Maximum Annual Asphalt Production (tons/yr)) * (Emission Factor (lb/ton)) * (ton/2000 lbs)

Emission Factors from AP-42 Chapter 11.1 (dated 3/04), Tables 11.1-3, 11.1-7, 11.1-8, 11.1-10, and 11.1-12

Natural gas, No. 2 fuel oil, and waste oil represent the worst possible emissions scenario. AP-42 did not provide emission factors for any other fuels.

* PM, PM10, and PM2.5 AP-42 emission factors based on drum mix dryer fired with natural gas, propane, fuel oil, and waste oil. According to AP-42 fuel type does not significantly effect PM, PM10, and PM2.5 emissions.

** SO2, NOx, and VOC AP-42 emission factors are for natural gas, No. 2 fuel oil, and waste oil only.

*** CO AP-42 emission factor determined by combining data from drum mix dryer fired with natural gas, No. 6 fuel oil, and No. 2 fuel oil to develop single CO emission factor.

Abbreviations

VOC - Volatile Organic Compounds

HAP = Hazardous Air Pollutant

HCl = Hydrogen Chloride

PAH = Polyaromatic Hydrocarbon

SO2 = Sulfur Dioxide

**Appendix A.1: Unlimited Emissions Calculations
Greenhouse Gas (CO2e) Emissions from the
Drum-Mix Plant (Dryer/Mixer) Process Emissions**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

The following calculations determine the unlimited/uncontrolled emissions from the aggregate drying/mixing

Maximum Hourly Asphalt Production = 450 ton/hr
 Maximum Annual Asphalt Production = 3,942,000 ton/yr

Criteria Pollutant	Emission Factor (lb/ton) Drum-Mix Plant (dryer/mixer)			Greenhouse Gas Global Warming Potentials (GWP)	Unlimited/Uncontrolled Potential to Emit (tons/yr) Drum-Mix Plant (dryer/mixer)			CO2e for Worst Case Fuel (tons/yr)
	Natural Gas	No. 2 Fuel Oil	Waste Oil		Natural Gas	No. 2 Fuel Oil	Waste Oil	
	CO2	33	33		33	1	65,043.00	
CH4	0.0120	0.0120	0.0120	21	23.65	23.65	23.65	
N2O				310	0	0	0	
Total					65,066.65	65,066.65	65,066.65	
CO2e Equivalent Emissions (tons/yr)					65,539.69	65,539.69	65,539.69	

Methodology

Natural gas, No. 2 fuel oil, and waste oil represent the worst possible emissions scenario. AP-42 did not provide emission factors for any other fuels. Emission Factors from AP-42 Chapter 11.1 (dated 3/04), Tables 11.1-7 and 11.1-8

There are no emission factors for N2O available in either the 40 CFR 98, Subpart C or AP-42 Chapter 11.1. Therefore, it is assumed that there are no N2O emission anticipated from this process.

Unlimited/Uncontrolled Potential to Emit (tons/yr) = (Maximum Annual Asphalt Production (tons/yr)) * (Emission Factor (lb/ton)) * (ton/2000 lbs)

Unlimited Potential to Emit CO2e (tons/yr) = Unlimited Potential to Emit CO2 of "worst case" fuel (ton/yr) x CO2 GWP (1) + Unlimited Potential to Emit CH4 of "worst case" fuel (ton/yr) x CH4 GWP (21) + Unlimited Potential to Emit N2O of "worst case" fuel (ton/yr) x N2O GWP (310).

Abbreviations

CO2 = Carbon Dioxide

CH4 = Methane

N2O = Nitrogen Dioxide

PTE = Potential to Emit

**Appendix A.1: Unlimited Emissions Calculations
Dryer/Mixer Slag Processing**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

The following calculations determine the unlimited emissions from the processing of slag in the aggregate drying/mixing

Maximum Annual Blast Furnace Slag Usage ¹ =	1,655,640	ton/yr	1.5	% sulfur
Maximum Annual Steel Slag Usage ¹ =	1,655,640	ton/yr	0.66	% sulfur

Slag Type	SO2 Emission Factor (lb/ton) ^{2,3}	Unlimited Potential to Emit SO2 (tons/yr)
Blast Furnace Slag	0.74	612.59
Steel Slag	0.0014	1.16

Methodology

¹ The maximum annual slag usage was provided by the source.

² Testing results for Slag, obtained January 9, 2009 from similar operations at Rieth-Riley Construction Co., Inc. facility located in Valparaiso, IN (permit #127-27075-05241), produced an Emission Factor of 0.54 lb/ton from slag containing 1.10% sulfur content. The source has requested a safety factor of 0.20 lb/ton be added to the tested value for use at this location to allow for a sulfur content up to 1.5%.

³ Testing results for steel slag, obtained June 2009 from E & B Paving, Inc. facility located in Huntington, IN. The testing results showed a steel slag emission factor of 0.0007 lb/ton from slag containing 0.33% sulfur content.
 Unlimited Potential to Emit SO2 from Slag (tons/yr) = [(Maximum Annual Slag Usage (ton/yr)) * [Emission Factor (lb/ton)] * [ton/2000 lbs]

Abbreviations

SO2 = Sulfur Dioxide

Appendix A.1: Unlimited Emissions Calculations
Hot Oil Heater
Fuel Combustion with Maximum Capacity < 100 MMBtu/hr

Company Name: Rieth-Riley Construction Co., Inc.
Source Location: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Maximum Hot Oil Heater Fuel Input Rate =	4.96	MMBtu/hr		
Natural Gas Usage =	43	MMCF/yr		
No. 2 Fuel Oil Usage =	310.354	gal/yr,	0.50	% sulfur
Propane Usage =	3,976	gal/yr, and	0.20	gr/100 ft3 sulfur
Butane Usage =	443	gal/yr,	0.22	gr/100 ft3 sulfur

Unlimited/Uncontrolled Emissions

Criteria Pollutant	Emission Factor (units)				Unlimited/Uncontrolled Potential to Emit (tons/yr)				Worse Case Fuel (tons/yr)
	Hot Oil Heater				Hot Oil Heater				
	Natural Gas (lb/MMCF)	No. 2 Fuel Oil (lb/kgal)	Propane (lb/kgal)	Butane (lb/kgal)	Natural Gas (tons/yr)	No. 2 Fuel Oil (tons/yr)	Propane (tons/yr)	Butane (tons/yr)	
PM	1.9	2.0	0.5	0.6	0.041	0.310	9.94E-04	1.33E-04	0.31
PM10/PM2.5	7.6	3.3	0.5	0.6	0.165	0.512	9.94E-04	1.33E-04	0.51
SO2	0.6	71.0	0.02	0.02	0.013	11.018	3.98E-05	4.39E-06	11.02
NOx	100	20.0	13.0	15.0	2.172	3.104	2.58E-02	3.32E-03	3.10
VOC	5.5	0.20	1.00	1.10	0.119	0.031	1.99E-03	2.44E-04	0.12
CO	84	5.0	7.5	8.4	1.825	0.776	1.49E-02	1.86E-03	1.82
Hazardous Air Pollutant									
Arsenic	2.0E-04	5.6E-04			0.0	8.69E-05			8.7E-05
Beryllium	1.2E-05	4.2E-04			0.0	6.52E-05			6.5E-05
Cadmium	1.1E-03	4.2E-04			0.0	6.52E-05			6.5E-05
Chromium	1.4E-03	4.2E-04			0.0	6.52E-05			6.5E-05
Cobalt	8.4E-05				0.0				0.0
Lead	5.0E-04	1.3E-03			0.0	1.96E-04			2.0E-04
Manganese	3.8E-04	8.4E-04			0.0	1.30E-04			1.3E-04
Mercury	2.6E-04	4.2E-04			0.0	6.52E-05			6.5E-05
Nickel	2.1E-03	4.2E-04			0.0	6.52E-05			6.5E-05
Selenium	2.4E-05	2.1E-03			0.0	3.26E-04			3.3E-04
Benzene	2.1E-03				0.0				0.0
Dichlorobenzene	1.2E-03				0.0				0.0
Ethylbenzene									0.0
Formaldehyde	7.5E-02	6.10E-02			0.0	9.47E-03			9.5E-03
Hexane	1.8E+00				0.0				0.0
Phenol									0.0
Toluene	3.4E-03				0.0				0.0
Total PAH Haps	negl				negl				0.0
Polycyclic Organic Matter		3.30E-03				5.12E-04			5.1E-04
Total HAPs =					0.041	1.1E-02	0.0	0.0	0.050

Methodology

Equivalent Natural Gas Usage (MMCF/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 MMCF/1,000 MMBtu]
 Equivalent Oil Usage (gal/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 gal/0.140 MMBtu]
 Propane Usage (gal/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 gal/0.0915 MMBtu]
 Butane Usage (gal/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 gal/0.102 MMBtu]
 Natural Gas: Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Maximum Natural Gas Usage (MMCF/yr)] * [Emission Factor (lb/MMCF)] * [ton/2000 lbs]
 All Other Fuels: Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Maximum Fuel Usage (gals/yr)] * [Emission Factor (lb/kgal)] * [kgal/1000 gal] * [ton/2000 lbs]

Sources of AP-42 Emission Factors for fuel combustion:

- Natural Gas : AP-42 Chapter 1.4 (dated 7/98), Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4
- No. 2 Fuel Oil: AP-42 Chapter 1.3 (dated 9/98), Tables 1.3-1, 1.3-2, 1.3-3, 1.3-8, 1.3-9, 1.3-10, and 1.3-11
- Propane and Butane: AP-42 Chapter 1.5 (dated 7/08), Tables 1.5-1 (assuming PM = PM10)

Abbreviations

PM = Particulate Matter
 PM10 = Particulate Matter (<10 um)
 SO2 = Sulfur Dioxide
 NOx = Nitrous Oxides
 VOC = Volatile Organic Compounds
 CO = Carbon Monoxide
 HAP = Hazardous Air Pollutant
 HCl = Hydrogen Chloride
 PAH = Polyaromatic Hydrocarbon

**Appendix A.1: Unlimited Emissions Calculations
Greenhouse Gas (CO₂e) Emissions from
Hot Oil Heater Fuel Combustion with Maximum Capacity < 100 MMBtu/hr**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Maximum Hot Oil Heater Fuel Input Rate =	4.96	MMBtu/hr		
Natural Gas Usage =	43.45	MMCF/yr		
No. 2 Fuel Oil Usage =	310,354.29	gal/yr,	0.50	% sulfur
Propane Usage =	3,976	gal/yr, and	0.00	gr/100 ft3 sulfur
Butane Usage =	443	gal/yr,	0.20	gr/100 ft3 sulfur

Unlimited/Uncontrolled Emissions

Criteria Pollutant	Emission Factor (units)		Global Warming Potentials (GWP)	Potential to Emit (tons/yr)	
	Natural Gas (lb/MMCF)	No. 2 Fuel Oil (lb/kgal)		Natural Gas (tons/yr)	No. 2 Fuel Oil (tons/yr)
CO ₂	120,161.84	22,501.41	1	2,610.49	3,491.70
CH ₄	2.49	0.91	21	0.05	0.14
N ₂ O	2.2	0.26	310	0.05	0.04
				2,610.59	3,491.89

Worse Case CO₂e Emissions (tons/yr)
3,507

CO ₂ e Equivalent Emissions (tons/yr)	2,626.45	3,507.19
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Methodology

Global Warming Potentials (GWP) from Table A-1 of 40 CFR Part 98 Subpart A.

Equivalent Natural Gas Usage (MMCF/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 MMCF/1,000 MMBtu]

Equivalent Oil Usage (gal/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 gal/0.140 MMBtu]

Sources of Emission Factors for fuel combustion: (Note: To form a conservative estimate, the "worst case" emission factors have been used.)

Natural Gas: Emission Factors for CO₂ and CH₄ from 40 CFR Part 98 Subpart C, Tables C-1 and 2, have been converted from kg/mmBtu to lb/MMCF. Emission Factor for N₂O from AP-42 Chapter 1.4 (dated 5/10),
No. 2 Fuel Oil: Emission Factors for CO₂ and CH₄ from 40 CFR Part 98 Subpart C, Tables C-1 and 2, have been converted from kg/mmBtu to lb/kgal. Emission Factor for N₂O from AP-42 Chapter 1.3 (dated 5/10),

Emission Factor (EF) Conversions

Natural Gas: EF (lb/MMCF) = [EF (kg/MMBtu) * Conversion Factor (2.20462 lbs/kg) * Heating Value of Natural Gas (MMBtu/scf) * Conversion Factor (1,000,000 scf/MMCF)]

Fuel Oils: EF (lb/kgal) = [EF (kg/MMBtu) * Conversion Factor (2.20462 lbs/kg) * Heating Value of the Fuel Oil (MMBtu/gal) * Conversion Factor (1000 gal/kgal)]

Natural Gas: Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Maximum Natural Gas Usage (MMCF/yr)] * [Emission Factor (lb/MMCF)] * [ton/2000 lbs]

All Other Fuels: Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Maximum Fuel Usage (gals/yr)] * [Emission Factor (lb/kgal)] * [kgal/1000 gal] * [ton/2000 lbs]

Unlimited Potential to Emit CO₂e (tons/yr) = Unlimited Potential to Emit CO₂ of "worst case" fuel (ton/yr) x CO₂ GWP (1) + Unlimited Potential to Emit CH₄ of "worst case" fuel (ton/yr) x CH₄ GWP (21) + Unlimited Potential to Emit N₂O of "worst case" fuel (ton/yr) x N₂O GWP (310).

Abbreviations

CO₂ = Carbon Dioxide
CH₄ = Methane

N₂O = Nitrogen Dioxide
PTE = Potential to Emit

**Appendix A.1: Unlimited Emissions Calculations
Asphalt Load-Out, Silo Filling, and Yard Emissions**

**Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar**

The following calculations determine the unlimited/uncontrolled fugitive emissions from hot asphalt mix load-out, silo filling, and on-site yard for a drum mix hot mix asphalt plant

Asphalt Temperature, T =	325	F
Asphalt Volatility Factor, V =	-0.5	
Maximum Annual Asphalt Production =	3,942,000	tons/yr

Pollutant	Emission Factor (lb/ton asphalt)			Unlimited/Uncontrolled Potential to Emit (tons/yr)			
	Load-Out	Silo Filling	On-Site Yard	Load-Out	Silo Filling	On-Site Yard	Total
Total PM*	5.2E-04	5.9E-04	NA	1.03	1.15	NA	2.18
Organic PM	3.4E-04	2.5E-04	NA	0.67	0.500	NA	1.17
TOC	0.004	0.012	0.001	8.20	24.02	2.168	34.4
CO	0.001	0.001	3.5E-04	2.66	2.326	0.694	5.68

NA = Not Applicable (no AP-42 Emission Factor)

PM/HAPs	0.048	0.056	0	0.104
VOC/HAPs	0.121	0.305	0.032	0.459
non-VOC/HAPs	6.3E-04	6.5E-05	1.7E-04	8.6E-04
non-VOC/non-HAPs	0.59	0.34	0.16	1.09

Total VOCs	7.71	24.02	2.0	33.8
Total HAPs	0.17	0.36	0.032	0.56
		Worst Single HAP		0.175
				(formaldehyde)

Methodology

The asphalt temperature and volatility factor were provided by the source.

Unlimited/Uncontrolled Potential to Emit (tons/yr) = (Maximum Annual Asphalt Production (tons/yr)) * (Emission Factor (lb/ton)) * (ton/2000 lbs)

Emission Factors from AP-42 Chapter 11.1 (dated 3/04), Tables 11.1-14, 11.1-15, and 11.1-16

Plant Load-Out Emission Factor Equations (AP-42 Table 11.1-14)::

Total PM/PM10/PM2.5 Ef = 0.000181 + 0.00141(-V)e^{-(0.0251)(T+460)-20.43)}

Organic PM Ef = 0.00141(-V)e^{-(0.0251)(T+460)-20.43)}

TOC Ef = 0.0172(-V)e^{-(0.0251)(T+460)-20.43)}

CO Ef = 0.00558(-V)e^{-(0.0251)(T+460)-20.43)}

Silo Filling Emission Factor Equations (AP-42 Table 11.1-14):

PM/PM10 Ef = 0.000332 + 0.00105(-V)e^{-(0.0251)(T+460)-20.43)}

Organic PM Ef = 0.00105(-V)e^{-(0.0251)(T+460)-20.43)}

TOC Ef = 0.0504(-V)e^{-(0.0251)(T+460)-20.43)}

CO Ef = 0.00488(-V)e^{-(0.0251)(T+460)-20.43)}

On Site Yard CO emissions estimated by multiplying the TOC emissions by 0.32

*No emission factors available for PM10 or PM2.5, therefore IDEM assumes PM10 and PM2.5 are equivalent to Total PM.

Abbreviations

TOC = Total Organic Compounds

CO = Carbon Monoxide

PM = Particulate Matter

PM10 = Particulate Matter (<10 um)

PM2.5 = Particulate Matter (<2.5 um)

HAP = Hazardous Air Pollutant

VOC = Volatile Organic Compound

**Appendix A.1: Unlimited Emissions Calculations
Asphalt Load-Out, Silo Filling, and Yard Emissions (continued)**

Company Name: Rieth-Riley Construction Co., Inc.
 Source Address: 25200 State Road 23, South Bend, IN 46614
 Permit Number: 141-31916-00027
 Reviewer: Bruce Farrar

Organic Particulate-Based Compounds (Table 11.1-15)

Pollutant	CASRN	Category	HAP Type	Source	Speciation Profile		Unlimited/Uncontrolled Potential to Emit (tons/yr)			
					Load-out and Onsite Yard (% by weight of Total Organic PM)	Silo Filling and Asphalt Storage Tank (% by weight of Total Organic PM)	Load-out	Silo Filling	Onsite Yard	Total
PAH HAPs										
Acenaphthene	83-32-9	PM/HAP	POM	Organic PM	0.26%	0.47%	1.7E-03	2.4E-03	NA	4.1E-03
Acenaphthylene	208-96-8	PM/HAP	POM	Organic PM	0.028%	0.014%	1.9E-04	7.0E-05	NA	2.6E-04
Anthracene	120-12-7	PM/HAP	POM	Organic PM	0.07%	0.13%	4.7E-04	6.5E-04	NA	1.1E-03
Benzo(a)anthracene	56-55-3	PM/HAP	POM	Organic PM	0.019%	0.056%	1.3E-04	2.8E-04	NA	4.1E-04
Benzo(b)fluoranthene	205-99-2	PM/HAP	POM	Organic PM	0.0076%	0	5.1E-05	0	NA	5.1E-05
Benzo(k)fluoranthene	207-08-9	PM/HAP	POM	Organic PM	0.0022%	0	1.5E-05	0	NA	1.5E-05
Benzo(g,h,i)perylene	191-24-2	PM/HAP	POM	Organic PM	0.0019%	0	1.3E-05	0	NA	1.3E-05
Benzo(a)pyrene	50-32-8	PM/HAP	POM	Organic PM	0.0023%	0	1.5E-05	0	NA	1.5E-05
Benzo(e)pyrene	192-97-2	PM/HAP	POM	Organic PM	0.0078%	0.0095%	5.2E-05	4.8E-05	NA	1.0E-04
Chrysene	218-01-9	PM/HAP	POM	Organic PM	0.103%	0.21%	6.9E-04	1.1E-03	NA	1.7E-03
Dibenz(a,h)anthracene	53-70-3	PM/HAP	POM	Organic PM	0.00037%	0	2.5E-06	0	NA	2.5E-06
Fluoranthene	206-44-0	PM/HAP	POM	Organic PM	0.05%	0.15%	3.4E-04		NA	3.4E-04
Fluorene	86-73-7	PM/HAP	POM	Organic PM	0.77%	1.01%	5.2E-03	5.1E-03	NA	1.0E-02
Indeno(1,2,3-cd)pyrene	193-39-5	PM/HAP	POM	Organic PM	0.00047%	0	3.2E-06	0	NA	3.2E-06
2-Methylnaphthalene	91-57-6	PM/HAP	POM	Organic PM	2.38%	5.27%	1.6E-02	2.6E-02	NA	0.042
Naphthalene	91-20-3	PM/HAP	POM	Organic PM	1.25%	1.82%	8.4E-03	9.1E-03	NA	1.8E-02
Perylene	198-55-0	PM/HAP	POM	Organic PM	0.022%	0.03%	1.5E-04	1.5E-04	NA	3.0E-04
Phenanthrene	85-01-8	PM/HAP	POM	Organic PM	0.81%	1.80%	5.4E-03	9.0E-03	NA	1.4E-02
Pyrene	129-00-0	PM/HAP	POM	Organic PM	0.15%	0.44%	1.0E-03	2.2E-03	NA	3.2E-03
Total PAH HAPs							0.040	0.056	NA	0.096
Other semi-volatile HAPs										
Phenol		PM/HAP	---	Organic PM	1.18%	0	7.9E-03	0	0	7.9E-03

NA = Not Applicable (no AP-42 Emission Factor)

Methodology

Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Speciation Profile (%)] * [Organic PM (tons/yr)]
 Speciation Profiles from AP-42 Chapter 11.1 (dated 3/04), Tables 11.1-15 and 11.1-16

Abbreviations

PM = Particulate Matter
 HAP = Hazardous Air Pollutant
 POM = Polycyclic Organic Matter

**Appendix A.1: Unlimited Emissions Calculations
Asphalt Load-Out, Silo Filling, and Yard Emissions (continued)**

Organic Volatile-Based Compounds (Table 11.1-16)

Pollutant	CASRN	Category	HAP Type	Source	Speciation Profile		Unlimited/Uncontrolled Potential to Emit (tons/yr)			
					Load-out and Onsite Yard (% by weight of TOC)	Silo Filling and Asphalt Storage Tank (% by weight of TOC)	Load-out	Silo Filling	Onsite Yard	Total
VOC		VOC	---	TOC	94%	100%	7.71	24.02	2.04	33.76
non-VOC/non-HAPS										
Methane	74-82-8	non-VOC/non-HAP	---	TOC	6.50%	0.26%	5.3E-01	6.2E-02	1.4E-01	0.736
Acetone	67-64-1	non-VOC/non-HAP	---	TOC	0.046%	0.055%	3.8E-03	1.3E-02	1.0E-03	0.018
Ethylene	74-85-1	non-VOC/non-HAP	---	TOC	0.71%	1.10%	5.8E-02	2.6E-01	1.5E-02	0.338
Total non-VOC/non-HAPS					7.30%	1.40%	0.598	0.336	0.158	1.09
Volatile organic HAPs										
Benzene	71-43-2	VOC/HAP	---	TOC	0.052%	0.032%	4.3E-03	7.7E-03	1.1E-03	1.3E-02
Bromomethane	74-83-9	VOC/HAP	---	TOC	0.0096%	0.0049%	7.9E-04	1.2E-03	2.1E-04	2.2E-03
2-Butanone	78-93-3	VOC/HAP	---	TOC	0.049%	0.039%	4.0E-03	9.4E-03	1.1E-03	1.4E-02
Carbon Disulfide	75-15-0	VOC/HAP	---	TOC	0.013%	0.016%	1.1E-03	3.8E-03	2.8E-04	5.2E-03
Chloroethane	75-00-3	VOC/HAP	---	TOC	0.00021%	0.004%	1.7E-05	9.6E-04	4.6E-06	9.8E-04
Chloromethane	74-87-3	VOC/HAP	---	TOC	0.015%	0.023%	1.2E-03	5.5E-03	3.3E-04	7.1E-03
Cumene	92-82-8	VOC/HAP	---	TOC	0.11%	0	9.0E-03	0	2.4E-03	1.1E-02
Ethylbenzene	100-41-4	VOC/HAP	---	TOC	0.28%	0.038%	2.3E-02	9.1E-03	6.1E-03	0.038
Formaldehyde	50-00-0	VOC/HAP	---	TOC	0.088%	0.69%	7.2E-03	1.7E-01	1.9E-03	0.175
n-Hexane	100-54-3	VOC/HAP	---	TOC	0.15%	0.10%	1.2E-02	2.4E-02	3.3E-03	0.040
Isooctane	540-84-1	VOC/HAP	---	TOC	0.0018%	0.00031%	1.5E-04	7.4E-05	3.9E-05	2.6E-04
Methylene Chloride	75-09-2	non-VOC/HAP	---	TOC	0	0.00027%	0	6.5E-05	0	6.5E-05
MTBE	1634-04-4	VOC/HAP	---	TOC	0	0	0	0	0	0
Styrene	100-42-5	VOC/HAP	---	TOC	0.0073%	0.0054%	6.0E-04	1.3E-03	1.6E-04	2.1E-03
Tetrachloroethene	127-18-4	non-VOC/HAP	---	TOC	0.0077%	0	6.3E-04	0	1.7E-04	8.0E-04
Toluene	100-88-3	VOC/HAP	---	TOC	0.21%	0.062%	1.7E-02	1.5E-02	4.6E-03	0.037
1,1,1-Trichloroethane	71-55-6	VOC/HAP	---	TOC	0	0	0	0	0	0
Trichloroethene	79-01-6	VOC/HAP	---	TOC	0	0	0	0	0	0
Trichlorofluoromethane	75-69-4	VOC/HAP	---	TOC	0.0013%	0	1.1E-04	0	2.8E-05	1.3E-04
m-/p-Xylene	1330-20-7	VOC/HAP	---	TOC	0.41%	0.20%	3.4E-02	4.8E-02	8.9E-03	0.091
o-Xylene	95-47-6	VOC/HAP	---	TOC	0.08%	0.057%	6.6E-03	1.4E-02	1.7E-03	2.2E-02
Total volatile organic HAPs					1.50%	1.30%	0.123	0.312	0.033	0.468

Methodology

Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Speciation Profile (%)] * [TOC (tons/yr)]

Speciation Profiles from AP-42 Chapter 11.1 (dated 3/04), Tables 11.1-15 and 11.1-16

Abbreviations

TOC = Total Organic Compounds

HAP = Hazardous Air Pollutant

VOC = Volatile Organic Compound

MTBE = Methyl tert butyl ether

**Appendix A.1: Unlimited Emissions Calculations
Material Storage Piles**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

The following calculations determine the amount of emissions created by wind erosion of storage stockpiles, based on 8,760 hours of use and USEPA's AP-42 (Pre 1983 Edition), Section 11.2.3.

$E_f = 1.7 \cdot (s/1.5) \cdot (365-p) / 235 \cdot (f/15)$ <p>where E_f = emission factor (lb/acre/day) s = silt content (wt %) p = <input type="text" value="125"/> days of rain greater than or equal to 0.01 inches f = <input type="text" value="15"/> % of wind greater than or equal to 12 mph</p>

Material	Silt Content (wt %)*	Emission Factor (lb/acre/day)	Maximum Anticipated Pile Size (acres)**	PTE of PM (tons/yr)	PTE of PM10/PM2.5 (tons/yr)
Sand	2.6	3.01	0.58	0.317	0.111
Limestone	1.6	1.85	1.00	0.338	0.118
RAP	0.5	0.58	2.40	0.253	0.089
Gravel	1.6	1.85	0.78	0.264	0.093
Shingles	0.5	0.58	0.40	0.042	0.015
Slag	3.8	4.40	1.00	0.803	0.281
Totals				2.02	0.71

Methodology

PTE of PM (tons/yr) = (Emission Factor (lb/acre/day)) * (Maximum Pile Size (acres)) * (ton/2000 lbs) * (8760 hours/yr)

PTE of PM10/PM2.5 (tons/yr) = (Potential PM Emissions (tons/yr)) * 35%

*Silt content values obtained from AP-42 Table 13.2.4-1 (dated 1/95)

**Maximum anticipated pile size (acres) provided by the source.

RAP - recycled asphalt pavement

Abbreviations

PM = Particulate Matter

PM10 = Particulate Matter (<10 um)

PM2.5 = Particulate Matter (<2.5 um)

PM2.5 = PM10

PTE = Potential to Emit

Appendix A.1: Unlimited Emissions Calculations
Material Processing, Handling, Crushing, Screening, and Conveying

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Batch or Continuous Drop Operations (AP-42 Section 13.2.4)

To estimate potential fugitive dust emissions from processing and handling of raw materials (batch or continuous drop operations), AP-42 emission factors for Aggregate Handling, Section 13.2.4 (fifth edition, 1/95) are utilized.

$$E_f = k \cdot (0.0032) \cdot [(U/5)^{1.3} / (M/2)^{1.4}]$$

where: E_f = Emission factor (lb/ton)

k (PM) =	0.74	= particle size multiplier (0.74 assumed for aerodynamic diameter <=100 um)
k (PM10) =	0.35	= particle size multiplier (0.35 assumed for aerodynamic diameter <=10 um)
k (PM2.5) =	0.053	= particle size multiplier (0.053 assumed for aerodynamic diameter <=2.5 um)
U =	10.2	= worst case annual mean wind speed (Source: NOAA, 2006*)
M =	4.0	= material % moisture content of aggregate (Source: AP-42 Section 11.1.1.1)
Ef (PM) =	2.27E-03	lb PM/ton of material handled
Ef (PM10) =	1.07E-03	lb PM10/ton of material handled
Ef (PM2.5) =	1.62E-04	lb PM2.5/ton of material handled

Maximum Annual Asphalt Production =	3,942,000	tons/yr
Percent Asphalt Cement/Binder (weight %) =	5.0%	
Maximum Material Handling Throughput =	3,744,900	tons/yr

Type of Activity	Unlimited/Uncontrolled PTE of PM (tons/yr)	Unlimited/Uncontrolled PTE of PM10 (tons/yr)	Unlimited/Uncontrolled PTE of PM2.5 (tons/yr)
Truck unloading of materials into storage piles	4.24	2.01	0.30
Front-end loader dumping of materials into feeder bins	4.24	2.01	0.30
Conveyor dropping material into dryer/mixer or batch tower	4.24	2.01	0.30
Total (tons/yr)	12.73	6.02	0.91

Methodology

The percent asphalt cement/binder provided by the source.
Maximum Material Handling Throughput (tons/yr) = [Annual Asphalt Production Limitation (tons/yr)] * [1 - Percent Asphalt Cement/Binder (weight %)]
Unlimited Potential to Emit (tons/yr) = (Maximum Material Handling Throughput (tons/yr)) * (Emission Factor (lb/ton)) * (ton/2000 lbs)
Raw materials may include limestone, sand, recycled asphalt pavement (RAP), gravel, slag, and other additives
*Worst case annual mean wind speed (Indianapolis, IN) from "Comparative Climatic Data", National Climatic Data Center, NOAA, 2006

Material Screening and Conveying (AP-42 Section 11.19.2)

To estimate potential fugitive dust emissions from raw material crushing, screening, and conveying, AP-42 emission factors for Crushed Stone Processing Operations, Section 11.19.2 (dated 8/04) are utilized.

Operation	Uncontrolled Emission Factor for PM (lbs/ton)*	Uncontrolled Emission Factor for PM10 (lbs/ton)*	Unlimited/Uncontrolled PTE of PM (tons/yr)	Unlimited/Uncontrolled PTE of PM10/PM2.5 (tons/yr)**
Crushing	0.0054	0.0024	10.11	4.49
Screening	0.025	0.0087	46.81	16.29
Conveying	0.003	0.0011	5.62	2.06
Unlimited Potential to Emit (tons/yr) =			62.54	22.84

Methodology

Maximum Material Handling Throughput (tons/yr) = [Annual Asphalt Production Limitation (tons/yr)] * [1 - Percent Asphalt Cement/Binder (weight %)]
Unlimited Potential to Emit (tons/yr) = [Maximum Material Handling Throughput (tons/yr)] * [Emission Factor (lb/ton)] * [ton/2000 lbs]
Raw materials may include stone/gravel, slag, and recycled asphalt pavement (RAP)
Emission Factors from AP-42 Chapter 11.19.2 (dated 8/04), Table 11.19.2-2
*Uncontrolled emissions factors for PM/PM10 represent tertiary crushing of stone with moisture content ranging from 0.21 to 1.3 percent by weight (Table 11.19.2-2). The bulk moisture content of aggregate in the storage piles at a hot mix asphalt production plant typically stabilizes between 3 to 5 percent by weight (Source: AP-42 Section 11.1.1.1).
**Assumes PM10 = PM2.5

Abbreviations

PM = Particulate Matter
PM10 = Particulate Matter (<10 um)
PM2.5 = Particulate matter (< 2.5 um)
PTE = Potential to Emit

Appendix A.1: Unlimited Emissions Calculations
Unpaved Roads

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Unpaved Roads at Industrial Site

The following calculations determine the amount of emissions created by unpaved roads, based on 8,760 hours of use and AP-42, Ch 13.2.2 (12/2003).

Maximum Annual Asphalt Production	= 3,942,000	tons/yr
Percent Asphalt Cement/Binder (weight %)	= 5.0%	
Maximum Material Handling Throughput	= 3,744,900	tons/yr
Maximum Asphalt Cement/Binder Throughput	= 197,100	tons/yr
Maximum No. 2 Fuel Oil Usage	= 9,385,714	gallons/yr

Process	Vehicle Type	Maximum Weight of Vehicle (tons)	Maximum Weight of Load (tons)	Maximum Weight of Vehicle and Load (tons/trip)	Maximum trips per year (trip/yr)	Total Weight driven per year (ton/yr)	Maximum one-way distance (feet/trip)	Maximum one-way distance (mi/trip)	Maximum one-way miles (miles/yr)
Aggregate/RAP Truck Enter Full	Dump truck (16 CY)	17.0	22.4	39.4	1.7E+05	6.6E+06	560	0.106	17721.4
Aggregate/RAP Truck Leave Empty	Dump truck (16 CY)	17.0	0	17.0	1.7E+05	2.8E+06	560	0.106	17721.4
Asphalt Cement/Binder Truck Enter Full	Tanker truck (6000 gal)	12.0	36.0	48.0	5.5E+03	2.6E+05	560	0.106	580.4
Asphalt Cement/Binder Truck Leave Empty	Tanker truck (6000 gal)	12.0	0	12.0	5.5E+03	6.6E+04	560	0.106	580.4
Fuel Oil Truck Enter Full	Tanker truck (6000 gal)	12.0	32.0	44.0	9.9E+02	4.4E+04	560	0.106	105.1
Fuel Oil Truck Leave Empty	Tanker truck (6000 gal)	12.0	0	12.0	9.9E+02	1.2E+04	560	0.106	105.1
Aggregate/RAP/Shingle Loader Full	Front-end loader (3 CY)	15.0	4.2	19.2	8.9E+05	1.7E+07	560	0.106	94514.1
Aggregate/RAP/Shingle Loader Empty	Front-end loader (3 CY)	15.0	0	15.0	8.9E+05	1.3E+07	560	0.106	94514.1
Asphalt Concrete Truck Leave Full	Dump truck (16 CY)	17.0	24.0	41.0	1.6E+05	6.7E+06	560	0.106	17410.5
Asphalt Concrete Truck Enter Empty	Dump truck (16 CY)	17.0	0	17.0	1.6E+05	2.8E+06	560	0.106	17410.5
Total					2.5E+06	5.0E+07			2.6E+05

Average Vehicle Weight Per Trip =	20.3	tons/trip
Average Miles Per Trip =	0.106	miles/trip

Unmitigated Emission Factor, $E_f = k \cdot [(s/12)^a] \cdot [(W/3)^b]$ (Equation 1a from AP-42 13.2.2)

	PM	PM10	PM2.5	
where k =	4.9	1.5	0.15	lb/mi = particle size multiplier (AP-42 Table 13.2.2-2 for Industrial Roads)
s =	4.8	4.8	4.8	% = mean % silt content of unpaved roads (AP-42 Table 13.2.2-3 Sand/Gravel Processing Plant Road)
a =	0.7	0.9	0.9	= constant (AP-42 Table 13.2.2-2)
W =	20.3	20.3	20.3	tons = average vehicle weight (provided by source)
b =	0.45	0.45	0.45	= constant (AP-42 Table 13.2.2-2)

Taking natural mitigation due to precipitation into consideration, Mitigated Emission Factor, $E_{ext} = E \cdot [(365 - P)/365]$

Mitigated Emission Factor, $E_{ext} = E \cdot [(365 - P)/365]$	
where P =	125 days of rain greater than or equal to 0.01 inches (see Fig. 13.2.2-1)

	PM	PM10	PM2.5	
Unmitigated Emission Factor, $E_f =$	6.09	1.55	0.16	lb/mile
Mitigated Emission Factor, $E_{ext} =$	4.01	1.02	0.10	lb/mile
Dust Control Efficiency =	50%	50%	50%	(pursuant to control measures outlined in fugitive dust control plan)

Process	Vehicle Type	Unmitigated PTE of PM (tons/yr)	Unmitigated PTE of PM10 (tons/yr)	Unmitigated PTE of PM2.5 (tons/yr)	Mitigated PTE of PM (tons/yr)	Mitigated PTE of PM10 (tons/yr)	Mitigated PTE of PM2.5 (tons/yr)	Controlled PTE of PM (tons/yr)	Controlled PTE of PM10 (tons/yr)	Controlled PTE of PM2.5 (tons/yr)
Aggregate/RAP Truck Enter Full	Dump truck (16 CY)	54.01	13.76	1.38	35.51	9.05	0.91	17.76	4.53	0.45
Aggregate/RAP Truck Leave Empty	Dump truck (16 CY)	54.01	13.76	1.38	35.51	9.05	0.91	17.76	4.53	0.45
Asphalt Cement/Binder Truck Enter Full	Tanker truck (6000 gal)	1.769	0.451	0.05	1.163	0.296	0.03	0.581	0.148	0.01
Asphalt Cement/Binder Truck Leave Empty	Tanker truck (6000 gal)	1.769	0.451	0.05	1.163	0.296	0.03	0.581	0.148	0.01
Fuel Oil Truck Enter Full	Tanker truck (6000 gal)	0.320	0.082	0.01	0.211	0.054	0.01	0.105	0.027	0.00
Fuel Oil Truck Leave Empty	Tanker truck (6000 gal)	0.320	0.082	0.01	0.211	0.054	0.01	0.105	0.027	0.00
Aggregate/RAP Loader Full	Front-end loader (3 CY)	288.03	73.41	7.34	189.39	48.27	4.83	94.69	24.13	2.41
Aggregate/RAP Loader Empty	Front-end loader (3 CY)	288.03	73.41	7.34	189.39	48.27	4.83	94.69	24.13	2.41
Asphalt Concrete Truck Leave Full	Dump truck (16 CY)	53.06	13.52	1.35	34.89	8.89	0.89	17.44	4.45	0.44
Asphalt Concrete Truck Enter Empty	Dump truck (16 CY)	53.06	13.52	1.35	34.89	8.89	0.89	17.44	4.45	0.44
Totals		794.37	202.45	20.25	522.32	133.12	13.31	261.16	66.56	6.66

Methodology

- Maximum Material Handling Throughput = [Annual Asphalt Production Limitation (tons/yr)] * [1 - Percent Asphalt Cement/Binder (weight %)]
- Maximum Asphalt Cement/Binder Throughput = [Annual Asphalt Production Limitation (tons/yr)] * [Percent Asphalt Cement/Binder (weight %)]
- Maximum Weight of Vehicle and Load (tons/trip) = [Maximum Weight of Vehicle (tons/trip)] + [Maximum Weight of Load (tons/trip)]
- Maximum trips per year (trip/yr) = [Throughput (tons/yr)] / [Maximum Weight of Load (tons/trip)]
- Total Weight driven per year (ton/yr) = [Maximum Weight of Vehicle and Load (tons/trip)] * [Maximum trips per year (trip/yr)]
- Maximum one-way distance (mi/trip) = [Maximum one-way distance (feet/trip)] / [5280 ft/mile]
- Maximum one-way miles (miles/yr) = [Maximum trips per year (trip/yr)] * [Maximum one-way distance (mi/trip)]
- Average Vehicle Weight Per Trip (ton/trip) = SUM[Total Weight driven per year (ton/yr)] / SUM[Maximum trips per year (trip/yr)]
- Average Miles Per Trip (miles/trip) = SUM[Maximum one-way miles (miles/yr)] / SUM[Maximum trips per year (trip/yr)]
- Unmitigated PTE (tons/yr) = (Maximum one-way miles (miles/yr)) * (Unmitigated Emission Factor (lb/mile)) * (ton/2000 lbs)
- Mitigated PTE (tons/yr) = (Maximum one-way miles (miles/yr)) * (Mitigated Emission Factor (lb/mile)) * (ton/2000 lbs)
- Controlled PTE (tons/yr) = (Mitigated PTE (tons/yr)) * (1 - Dust Control Efficiency)

Abbreviations

- PM = Particulate Matter
- PM10 = Particulate Matter (<10 um)
- PM2.5 = Particulate Matter (<2.5 um)
- PM2.5 = PM10
- PTE = Potential to Emit

**Appendix A: Unlimited Emissions Calculations
Paved Roads**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Paved Roads at Industrial Site

The following calculations determine the amount of emissions created by paved roads, based on 8,760 hours of use and AP-42, Ch 13.2.1 (12/2003).

Maximum Annual Asphalt Production	3,942,000	tons/yr
Percent Asphalt Cement/Binder (weight %)	5.0%	
Maximum Material Handling Throughput	3,744,900	tons/yr
Maximum Asphalt Cement/Binder Throughput	197,100	tons/yr
Maximum No. 2 Fuel Oil Usage	9,385,714	gallons/yr

Process	Vehicle Type	Maximum Weight of Vehicle (tons)	Maximum Weight of Load (tons)	Maximum Weight of Vehicle and Load (tons/trip)	Maximum trips per year (trip/yr)	Total Weight driven per day (ton/yr)	Maximum one-way distance (feet/trip)	Maximum one-way distance (mi/trip)	Maximum one-way miles (miles/yr)
Aggregate/RAP Truck Enter Full	Dump truck (16 CY)	17.0	22.4	39.40	1.7E+05	6.6E+06	560	0.106	17721.4
Aggregate/RAP Truck Leave Empty	Dump truck (16 CY)	17.0	0	17.00	1.7E+05	2.8E+06	560	0.106	580.4
Asphalt Cement/Binder Truck Enter Full	Tanker truck (6000 gal)	12.0	36.0	48.00	5.5E+03	2.6E+05	560	0.106	580.4
Asphalt Cement/Binder Truck Leave Empty	Tanker truck (6000 gal)	12.0	0	12.00	5.5E+03	6.6E+04	560	0.106	105.1
Fuel Oil Truck Enter Full	Tanker truck (6000 gal)	12.0	32.0	44.00	9.9E+02	4.4E+04	560	0.106	105.1
Fuel Oil Truck Leave Empty	Tanker truck (6000 gal)	12.0	0	12.00	9.9E+02	1.2E+04	560	0.106	94514.1
Aggregate/RAP/Shingle Loader Full	Front-end loader (3 CY)	15.0	4.2	19.20	8.9E+05	1.7E+07	560	0.106	94514.1
Aggregate/RAP/Shingle Loader Empty	Front-end loader (3 CY)	15.0	0	15.00	8.9E+05	1.3E+07	560	0.106	17410.5
Asphalt Concrete Truck Leave Full	Dump truck (16 CY)	17.0	24.0	41.00	1.6E+05	6.7E+06	560	0.106	17410.5
Asphalt Concrete Truck Enter Empty	Dump truck (16 CY)	17.0	0	17.00	1.6E+05	2.8E+06	560	0.106	2.6E+05
Total					2.5E+06	5.0E+07			

Average Vehicle Weight Per Trip	20.3	tons/trip
Average Miles Per Trip	0.106	miles/trip

Unmitigated Emission Factor, $E_f = [k * (sL/2)^{0.65} * (W/3)^{1.5} - C]$ (Equation 1 from AP-42 13.2.1)

	PM	PM10	PM2.5
where k =	0.082	0.016	0.0024
W =	20.3	20.3	20.3
C =	0.00047	0.00047	0.00036
sL =	0.6	0.6	0.6

lb/mi = particle size multiplier (AP-42 Table 13.2.1-1)
 tons = average vehicle weight (provided by source)
 lb/mi = emission factor for vehicle exhaust, brake wear, and tire wear (AP-42 Table 13.2.1-2)
 g/m² = Ubiquitous Baseline Silt Loading Values of paved roads (Table 13.2.1-3 for summer months)

Taking natural mitigation due to precipitation into consideration, Mitigated Emission Factor, $E_{ext} = E * [1 - (p/4N)]$

Mitigated Emission Factor, $E_{ext} = E_f * [1 - (p/4N)]$	
where p =	125
N =	365

days of rain greater than or equal to 0.01 inches (see Fig. 13.2.1-2)
 days per year

	PM	PM10	PM2.5	lb/mile
Unmitigated Emission Factor, E_f	0.66	0.13	0.02	lb/mile
Mitigated Emission Factor, E_{ext}	0.60	0.12	0.02	lb/mile
Dust Control Efficiency	50%	50%	50%	(pursuant to control measures outlined in fugitive dust control plan)

Process	Vehicle Type	Unmitigated PTE of PM (tons/yr)	Unmitigated PTE of PM10 (tons/yr)	Unmitigated PTE of PM2.5 (tons/yr)	Mitigated PTE of PM (tons/yr)	Mitigated PTE of PM10 (tons/yr)	Mitigated PTE of PM2.5 (tons/yr)	Controlled PTE of PM (tons/yr)	Controlled PTE of PM10 (tons/yr)	Controlled PTE of PM2.5 (tons/yr)
Aggregate/RAP Truck Enter Full	Dump truck (16 CY)	5.83	1.13	0.17	5.33	1.04	0.15	2.66	0.52	0.08
Aggregate/RAP Truck Leave Empty	Dump truck (16 CY)	5.83	1.13	0.17	5.33	1.04	0.15	2.66	0.52	0.08
Asphalt Cement/Binder Truck Enter Full	Tanker truck (6000 gal)	0.191	0.037	5.5E-03	0.175	0.034	5.0E-03	0.087	1.7E-02	2.5E-03
Asphalt Cement/Binder Truck Leave Empty	Tanker truck (6000 gal)	0.191	0.037	5.5E-03	0.175	0.034	5.0E-03	0.087	1.7E-02	2.5E-03
Fuel Oil Truck Enter Full	Tanker truck (6000 gal)	3.5E-02	6.7E-03	9.9E-04	3.2E-02	6.1E-03	9.1E-04	1.6E-02	3.1E-03	4.5E-04
Fuel Oil Truck Leave Empty	Tanker truck (6000 gal)	3.5E-02	6.7E-03	9.9E-04	3.2E-02	6.1E-03	9.1E-04	1.6E-02	3.1E-03	4.5E-04
Aggregate/RAP Loader Full	Front-end loader (3 CY)	31.08	6.05	0.89	28.42	5.53	0.82	14.21	2.76	0.41
Aggregate/RAP Loader Empty	Front-end loader (3 CY)	31.08	6.05	0.89	28.42	5.53	0.82	14.21	2.76	0.41
Asphalt Concrete Truck Leave Full	Dump truck (16 CY)	5.73	1.11	0.16	5.24	1.02	0.15	2.62	0.51	0.08
Asphalt Concrete Truck Enter Empty	Dump truck (16 CY)	5.73	1.11	0.16	5.24	1.02	0.15	2.62	0.51	0.08
Totals		85.73	16.68	2.46	78.39	15.25	2.25	39.19	7.63	1.13

Methodology

Maximum Material Handling Throughput = [Annual Asphalt Production Limitation (tons/yr)] * [1 - Percent Asphalt Cement/Binder (weight %)]
 Maximum Asphalt Cement/Binder Throughput = [Annual Asphalt Production Limitation (tons/yr)] * [Percent Asphalt Cement/Binder (weight %)]
 Maximum Weight of Vehicle and Load (tons/trip) = [Maximum Weight of Vehicle (tons/trip)] + [Maximum Weight of Load (tons/trip)]
 Maximum trips per year (trip/yr) = [Throughput (tons/yr)] / [Maximum Weight of Load (tons/trip)]
 Total Weight driven per year (ton/yr) = [Maximum Weight of Vehicle and Load (tons/trip)] * [Maximum trips per year (trip/yr)]
 Maximum one-way distance (mi/trip) = [Maximum one-way distance (feet/trip)] / [5280 ft/mile]
 Maximum one-way miles (miles/yr) = [Maximum trips per year (trip/yr)] * [Maximum one-way distance (mi/trip)]
 Average Vehicle Weight Per Trip (ton/trip) = SUM[Total Weight driven per year (ton/yr)] / SUM[Maximum trips per year (trip/yr)]
 Average Miles Per Trip (miles/trip) = SUM[Maximum one-way miles (miles/yr)] / SUM[Maximum trips per year (trip/yr)]
 Unmitigated PTE (tons/yr) = (Maximum one-way miles (miles/yr)) * (Unmitigated Emission Factor (lb/mile)) * (ton/2000 lbs)
 Mitigated PTE (tons/yr) = (Maximum one-way miles (miles/yr)) * (Mitigated Emission Factor (lb/mile)) * (ton/2000 lbs)
 Controlled PTE (tons/yr) = (Mitigated PTE (tons/yr)) * (1 - Dust Control Efficiency)

Abbreviations

PM = Particulate Matter
 PM10 = Particulate Matter (<10 um)
 PM2.5 = Particulate Matter (<2.5 um)
 PM2.5 = PM10
 PTE = Potential to Emit

**Appendix A.1: Unlimited Emissions Calculations
Cold Mix Asphalt Production and Stockpiles**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

The following calculations determine the amount of VOC and HAP emissions created from volatilization of solvent used as diluent in the liquid binder for cold mix asphalt production

Maximum Annual Asphalt Production =	3,942,000	tons/yr
Percent Asphalt Cement/Binder (weight %) =	5.0%	
Maximum Asphalt Cement/Binder Throughput =	197,100	tons/yr

Volatile Organic Compounds

	Maximum weight % of VOC solvent in binder*	Weight % VOC solvent in binder that evaporates	Maximum VOC Solvent Usage (tons/yr)	PTE of VOC (tons/yr)
Cut back asphalt rapid cure (assuming gasoline or naphtha solvent)	25.3%	95.0%	49866.3	47373.0
Cut back asphalt medium cure (assuming kerosene solvent)	28.6%	70.0%	56370.6	39459.4
Cut back asphalt slow cure (assuming fuel oil solvent)	20.0%	25.0%	39420.0	9855.0
Emulsified asphalt with solvent (assuming water, emulsifying agent, and 15% fuel oil solvent)	15.0%	46.4%	29565.0	13718.2
Other asphalt with solvent binder	25.9%	2.5%	51048.9	1276.2
Worst Case PTE of VOC =				47373.0

Hazardous Air Pollutants

Worst Case Total HAP Content of VOC solvent (weight %)* =	26.08%
Worst Case Single HAP Content of VOC solvent (weight %)* =	9.0% Xylenes
PTE of Total HAPs (tons/yr) =	12356.63
PTE of Single HAP (tons/yr) =	4263.57 Xylenes

Hazardous Air Pollutant (HAP) Content (% by weight) For Various Petroleum Solvents*

Volatile Organic HAP	CAS#	Hazardous Air Pollutant (HAP) Content (% by weight)* For Various Petroleum Solvents				
		Gasoline	Kerosene	Diesel (#2) Fuel Oil	No. 2 Fuel Oil	No. 6 Fuel Oil
1,3-Butadiene	106-99-0	3.70E-5%				
2,2,4-Trimethylpentane	540-84-1	2.40%				
Acenaphthene	83-32-9		4.70E-5%		1.80E-4%	
Acenaphthylene	208-96-8		4.50E-5%		6.00E-5%	
Anthracene	120-12-7		1.20E-6%	5.80E-5%	2.80E-5%	5.00E-5%
Benzene	71-43-2	1.90%		2.90E-4%		
Benzo(a)anthracene	56-55-3			9.60E-7%	4.50E-7%	5.50E-4%
Benzo(a)pyrene	50-32-8			2.20E-6%	2.10E-7%	4.40E-5%
Benzo(g,h,i)perylene	191-24-2			1.20E-7%	5.70E-8%	
Biphenyl	92-52-4			6.30E-4%	7.20E-5%	
Chrysene	218-01-9			4.50E-7%	1.40E-6%	6.90E-4%
Ethylbenzene	100-41-4	1.70%		0.07%	3.40E-4%	
Fluoranthene	206-44-0		7.10E-6%	5.90E-5%	1.40E-5%	2.40E-4%
Fluorene	86-73-7		4.20E-5%	8.60E-4%	1.90E-4%	
Indeno(1,2,3-cd)pyrene	193-39-5			1.60E-7%		1.00E-4%
Methyl-tert-butylether	1634-04-4	0.33%				
Naphthalene	91-20-3	0.25%	0.31%	0.26%	0.22%	4.20E-5%
n-Hexane	110-54-3	2.40%				
Phenanthrene	85-01-8		8.60E-6%	8.80E-4%	7.90E-4%	2.10E-4%
Pyrene	129-00-0		2.40E-6%	4.60E-5%	2.90E-5%	2.30E-5%
Toluene	108-88-3	8.10%		0.18%	6.20E-4%	
Total Xylenes	1330-20-7	9.00%		0.50%	0.23%	
Total Organic HAPs		26.08%	0.33%	1.29%	0.68%	0.19%
Worst Single HAP		9.00%	0.31%	0.50%	0.23%	0.07%
		Xylenes	Naphthalene	Xylenes	Xylenes	Chrysene

Methodology

Maximum Asphalt Cement/Binder Throughput = [Annual Asphalt Production Limitation (tons/yr)] * [Percent Asphalt Cement/Binder (weight %)]
 Maximum VOC Solvent Usage (tons/yr) = [Maximum Asphalt Cement/Binder Throughput (tons/yr)] * [Maximum Weight % of VOC Solvent in Binder]
 PTE of VOC (tons/yr) = [Weight % VOC solvent in binder that evaporates] * [Maximum VOC Solvent Usage (tons/yr)]
 PTE of Total HAPs (tons/yr) = [Worst Case Total HAP Content of VOC solvent (weight %)] * [Worst Case Limited PTE of VOC (tons/yr)]
 PTE of Single HAP (tons/yr) = [Worst Case Single HAP Content of VOC solvent (weight %)] * [Worst Case Limited PTE of VOC (tons/yr)]
 *Source: Petroleum Liquids. Potter, T.L. and K.E. Simmons. 1998. Total Petroleum Hydrocarbon Criteria Working Group Series, Volume 2. Composition of Petroleum Mixtures. The Association for Environmental Health and Science. Available on the Internet at: <http://www.aehs.com/publications/catalog/contents/tp.htm>

Abbreviations

VOC = Volatile Organic Compounds
 PTE = Potential to Emit

**Appendix A.1: Unlimited Emissions Calculations
Gasoline Fuel Transfer and Dispensing Operation**

**Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar**

To calculate evaporative emissions from the gasoline dispensing fuel transfer and dispensing operation handling emission factors from AP-42 Table 5.2-7 were used. The total potential emission of VOC is as follows:

$$\begin{aligned} \text{Gasoline Throughput} &= \boxed{0} \text{ gallons/day} \\ &= \boxed{0.0} \text{ kgal/yr} \end{aligned}$$

Volatile Organic Compounds

Emission Source	Emission Factor (lb/kgal of throughput)	PTE of VOC (tons/yr)*
Filling storage tank (balanced submerged filling)	0.3	0.00
Tank breathing and emptying	1.0	0.00
Vehicle refueling (displaced losses - controlled)	1.1	0.00
Spillage	0.7	0.00
Total		0.00

Hazardous Air Pollutants

Worst Case Total HAP Content of VOC solvent (weight %)* =	26.08%
Worst Case Single HAP Content of VOC solvent (weight %)* =	9.0% Xylenes
Limited PTE of Total HAPs (tons/yr) =	0.00
Limited PTE of Single HAP (tons/yr) =	0.00 Xylenes

Methodology

The gasoline throughput was provided by the source.

Gasoline Throughput (kgal/yr) = [Gasoline Throughput (lbs/day)] * [365 days/yr] * [kgal/1000 gal]

PTE of VOC (tons/yr) = [Gasoline Throughput (kgal/yr)] * [Emission Factor (lb/kgal)] * [ton/2000 lb]

PTE of Total HAPs (tons/yr) = [Worst Case Total HAP Content of VOC solvent (weight %)] * [PTE of VOC (tons/yr)]

PTE of Single HAP (tons/yr) = [Worst Case Single HAP Content of VOC solvent (weight %)] * [PTE of VOC (tons/yr)]

*Source: Petroleum Liquids. Potter, T.L. and K.E. Simmons. 1998. Total Petroleum Hydrocarbon Criteria Working Group Series, Volume 2. Composition of Petroleum Mixtures. The Association for Environmental Health and Science. Available on the Internet at: <http://www.aehs.com/publications/catalog/contents/tp.htm>

Abbreviations

VOC = Volatile Organic Compounds

PTE = Potential to Emit

**Appendix A.2: Limited Emissions Summary
Entire Source**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Asphalt Plant Limitations

Maximum Hourly Asphalt Production =	450	ton/hr
Annual Asphalt Production Limitation =	1,000,000	ton/yr
Blast Furnace Slag Content Limitation =	1.50	% sulfur
Steel Slag Content Limitation =	0.66	% sulfur
No. 2 Fuel Oil Limitation =	0.50	% sulfur
No. 4 Fuel Oil Limitation =	0.50	% sulfur
Residual (No. 5 or No. 6) Fuel Oil Limitation =	0.00	% sulfur
Propane Limitation =	0.20	gr/100 ft3 sulfur
Butane Limitation =	0.22	gr/100 ft3 sulfur
Used/Waste Oil Limitation =	1.00	% sulfur
	0.50	% ash
	0.40	% chlorine,
	0.010	% lead
PM Dryer/Mixer Limitation =	0.322	lb/ton of asphalt production
PM10 Dryer/Mixer Limitation =	0.146	lb/ton of asphalt production
PM2.5 Dryer/Mixer Limitation =	0.179	lb/ton of asphalt production
CO Dryer/Mixer Limitation =	0.130	lb/ton of asphalt production
VOC Dryer/Mixer Limitation =	0.032	lb/ton of asphalt production
Blast Furnace Slag SO2 Dryer/Mixer Limitation =	0.740	lb/ton of slag processed
Steel Slag SO2 Dryer/Mixer Limitation =	0.0014	lb/ton of slag processed
Cold Mix Asphalt VOC Usage Limitation =	51.28	tons/yr
HCl Limitation =	26.4	lb/kgal

Limited/Controlled Emissions

Process Description	Limited/Controlled Potential Emissions (tons/year)									
	Criteria Pollutants						Greenhouse Gas	Hazardous Air Pollutants		
	PM	PM10	PM2.5	SO2 ²	NOx ²	VOC	CO	CO ₂ e	Total HAPs	Worst Case HAP
Ducted Emissions										
Dryer Fuel Combustion (worst case)	12.00	10.96	10.96	99.00	99.00	7.18	54.11	95.328	11.37	9.90 (hydrogen chloride)
Dryer/Mixer (Process) ¹	160.76	73.02	89.51			16.00	65.00	16,626	5.33	1.55 (formaldehyde)
Dryer/Mixer Slag Processing	0	0	0			0	0	0	0	0
Hot Oil Heater Fuel Combustion (worst case)	0.31	0.51	0.51			0.12	1.82	3,507	0.050	0.039 Hexane
Worst Case Emissions³	161.07	73.53	90.02	99.00	99.00	16.12	66.82	98,835	11.42	9.90 (hydrogen chloride)
Fugitive Emissions										
Asphalt Load-Out, Silo Filling, On-Site Yard	0.55	0.55	0.55	0	0	8.57	1.44	0	0.14	0.04 (formaldehyde)
Material Storage Piles	2.02	0.71	0.71	0	0	0	0	0	0	0
Material Processing and Handling	3.23	1.53	0.23	0	0	0	0	0	0	0
Material Crushing, Screening, and Conveying	15.87	5.80	5.80	0	0	0	0	0	0	0
Unpaved and Paved Roads (worst case)	66.26	16.89	1.69	0	0	0	0	0	0	0
Cold Mix Asphalt Production	0	0	0	0	0	51.28	0	0	13.38	4.62 (xylenes)
Gasoline Fuel Transfer and Dispensing	0	0	0	0	0	0.00	0	0	0.00	0.00 (xylenes)
Volatile Organic Liquid Storage Vessels	0	0	0	0	0	negl	0	0	negl	negl
Total Fugitive Emissions	87.93	25.47	8.98	0	0	59.85	1.44	0.00	13.52	4.62 (xylenes)
Totals Limited/Controlled Emissions	249.00	99.00	99.00	99.00	99.00	75.97	68.27	98,835	24.94	9.90 (xylenes)

negl = negligible

Worst Case Fuel Combustion is based on the fuel with the highest emissions for each specific pollutant.
Fuel component percentages provided by the source.

¹ Based on the unlimited and limited potential to emit, the dryer/mixer process represents the worst case emissions of PM, PM10, PM2.5, and CO. Therefore, the source has elected to limit PM, PM10, PM2.5, and CO emissions to less than Title V and PSD applicability by accepting an asphalt production limit and a lb/ton emission limit (see TSD for more detail).

² The source will limit the combined SO2 emissions from the dryer mixer burner, hot oil heaters, and slag processing and the combined NOx emissions from the dryer mixer burner and hot oil heaters such that the SO2 and NOx emissions do not exceed 99.0 tons per year, each. In addition, the source will limit the HCl emissions from the combustion of waste oil such that they do not exceed 9.9 tons per year. Compliance with these limits will be demonstrated using equations.

³ Worst Case PM, PM10, PM2.5, CO, and Total HAPs Emissions (tons/yr) = Worst Case Emissions from Dryer/Mixer + Hot Oil Heater.

Appendix A.2: Limited Emissions Summary
Dryer/Mixer Fuel Combustion with Maximum Capacity > 100 MMBtu/hr

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

The following calculations determine the limited emissions created from the combustion of natural gas, fuel oil, propane, butane, or used/waste oil in the dryer/mixer and all other fuel combustion sources at the source.

Production and Fuel Limitations

Maximum Hourly Asphalt Production	450	ton/hr
Annual Asphalt Production Limitation	1,000,000	ton/yr
Natural Gas Limitation	1,042.11	MMCF/yr
No. 2 Fuel Oil Limitation	2,788.732	gal/yr, and
No. 4 Fuel Oil Limitation	2,640.000	gal/yr, and
Residual (No. 5 or No. 6) Fuel Oil Limitation	0	gal/yr, and
Propane Usage ¹	14,360.656	gal/yr, and
Butane Usage ¹	12,882.353	gal/yr, and
Used/Waste Oil Usage ¹	750,000	gal/yr, and
	0.50	% sulfur
	0.50	% sulfur
	0.00	% sulfur
	0.20	gr/100 ft ³ sulfur
	0.22	gr/100 ft ³ sulfur
	1.00	% sulfur
	0.50	% ash
	0.400	% chlorine
	0.010	% lead

Limited Emissions

Criteria Pollutant	Emission Factor (units)								Limited Potential to Emit (tons/yr)							
	Natural Gas (lb/MMCF)	No. 2 Fuel Oil (lb/kgal)	No. 4 Fuel Oil* (lb/kgal)	Residual (No. 5 or No. 6) Fuel Oil (lb/kgal)	Propane (lb/kgal)	Butane (lb/kgal)	Used/Waste Oil (lb/kgal)	Natural Gas (tons/yr)	No. 2 Fuel Oil (tons/yr)	No. 4 Fuel Oil (tons/yr)	Residual (No. 5 or No. 6) Fuel Oil (tons/yr)	Propane (tons/yr)	Butane (tons/yr)	Used/Waste Oil (tons/yr)	Worse Case Fuel (tons/yr)	
PM ¹⁰	1.9	2	7	3.22	0.5	0.6	32	0.99	2.79	9.24	0.00	3.590	3.865	12.00	12.00	
PM10 ²	7.6	3.3	8.3	4.72	0.5	0.6	25.5	3.96	4.60	10.96	0.00	3.590	3.865	9.56	10.96	
SO ₂ ³	0.6	71.0	75.0	0.0	0.020	0.020	147.0	0.31	99.00	99.00	0.00	0.144	0.128	55.13	99.00	
NO _x ³	190	24.0	47.0	47.0	13.0	15.0	19.0	99.00	33.46	62.04	0.00	93.34	96.62	7.13	99.00	
VOC	5.5	0.20	0.20	0.28	1.00	1.10	1.0	2.87	0.28	0.26	0.00	7.18	7.09	0.38	7.18	
CO ²	84	5.0	5.0	5.0	7.5	8.4	5.0	43.77	6.97	6.60	0.00	53.85	54.11	1.88	54.11	
Hazardous Air Pollutant																
HCl ⁴							26.4							9.90	9.90	
Antimony			5.25E-03	5.25E-03			negl			6.93E-03	0.00E+00			negl	6.9E-03	
Arsenic	2.0E-04	5.6E-04	1.32E-03	1.32E-03			1.1E-01	1.0E-04	7.81E-04	1.74E-03	0.00E+00			4.13E-02	4.1E-02	
Beryllium	1.2E-05	4.2E-04	2.78E-05	2.78E-05			negl	6.3E-06	5.86E-04	3.67E-05	0.00E+00			negl	5.9E-04	
Cadmium	1.1E-03	4.2E-04	3.98E-04	3.98E-04			9.3E-03	5.7E-04	5.86E-04	5.25E-04	0.00E+00			3.49E-03	3.5E-03	
Chromium	1.4E-03	4.2E-04	8.45E-04	8.45E-04			2.0E-02	7.3E-04	5.86E-04	1.12E-03	0.00E+00			7.50E-03	7.5E-03	
Cobalt	8.4E-05		6.02E-03	6.02E-03			2.1E-04	4.4E-05	7.95E-03	0.00E+00				7.88E-05	7.9E-03	
Lead	5.0E-04	1.3E-03	1.51E-03	1.51E-03			0.55	2.6E-04	1.76E-03	1.99E-03	0.00E+00			2.1E-01	0.21	
Manganese	3.8E-04	8.4E-04	3.00E-03	3.00E-03			6.8E-02	2.0E-04	1.17E-03	3.96E-03	0.00E+00			2.55E-02	0.03	
Mercury	2.6E-04	4.2E-04	1.13E-04	1.13E-04			1.4E-04	5.86E-04	1.49E-04	0.00E+00				5.9E-04	5.9E-04	
Nickel	2.1E-03	4.2E-04	8.45E-02	8.45E-02			1.1E-02	1.1E-03	5.86E-04	1.12E-01	0.00E+00			4.13E-03	0.112	
Selenium	2.4E-05	2.1E-03	6.83E-04	6.83E-04			negl	1.3E-05	2.93E-03	9.02E-04	0.00E+00			negl	2.9E-03	
1,1,1-Trichloroethane			2.36E-04	2.36E-04						3.12E-04	0.00E+00				3.1E-04	
1,3-Butadiene															0.0E+00	
Acetaldehyde															0.0E+00	
Acrolein															0.0E+00	
Benzene	2.1E-03		2.14E-04	2.14E-04				1.1E-03		2.82E-04	0.00E+00				1.1E-03	
Bis(2-ethylhexyl)phthalate							2.2E-03							8.25E-04	8.3E-04	
Dichlorobenzene	1.2E-03						8.0E-07	6.3E-04						3.00E-07	6.3E-04	
Ethylbenzene			6.36E-05	6.36E-05						8.40E-05	0.00E+00				8.4E-05	
Formaldehyde	7.5E-02	6.10E-02	3.30E-02	3.30E-02				3.9E-02	8.51E-02	4.36E-02	0.00E+00				0.085	
Hexane	1.8E+00							0.94							0.938	
Phenol							2.4E-03							9.00E-04	9.0E-04	
Toluene	3.4E-03		6.20E-03	6.20E-03				1.8E-03		8.18E-03	0.00E+00				8.2E-03	
Total PAH Haps	negl		1.13E-03	1.13E-03			3.9E-02	negl		1.49E-03	0.00E+00			1.47E-02	1.5E-02	
Polycyclic Organic Matter		3.30E-03							4.60E-03						4.6E-03	
Xylene			1.09E-04	1.09E-04						1.44E-04	0.00E+00				1.4E-04	
Total HAPs								0.98	0.10	0.19	0.00	0	0	10.20	11.37	

Methodology

¹The propane and butane fuel usage rates were determined using the maximum fuel input rate for the dryer (see Appendix A.1 for more details).

²Based on the unlimited potential to emit, the dryer/mixer process (page 3 of Appendix A.1) represents the worst case emissions of PM, PM10, PM2.5, and CO. Therefore, the source has elected to limit PM, PM10, PM2.5, and CO emissions to less than Title V and PSD applicability by accepting an asphalt production limit and a lb/ton emission limit (see page 3 of Appendix A.2 for more detail).

³The source will limit the combined SO₂ emissions from the dryer mixer burner, hot oil heaters, and slag processing and the combined NO_x emissions from the dryer mixer burner and hot oil heaters such that the SO₂ and NO_x emissions do not exceed 99.0 tons per year, each. Compliance with these limits will be demonstrated using equations.

⁴Hydrogen Chloride emissions from waste oil combustion shall not exceed 9.90 tons per year. This would be equivalent to combusting 750,000 gallons of waste oil per year with a chlorine content of 0.4%. Compliance with this limit will be demonstrated using an equation.

Natural Gas: Limited Potential to Emit (tons/yr) = (Natural Gas Limitation (MMCF/yr)) * (Emission Factor (lb/MMCF)) * (ton/2000 lbs)
 All Other Fuels: Limited Potential to Emit (tons/yr) = (Fuel Limitation (gals/yr)) * (Emission Factor (lb/kgal)) * (kgal/1000 gal) * (ton/2000 lbs)
 Sources of AP-42 Emission Factors for fuel combustion:
 Natural Gas: AP-42 Chapter 1.4 (dated 7/98), Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4
 No. 2, No. 4, and No. 6 Fuel Oil: AP-42 Chapter 1.3 (dated 9/98), Tables 1.3-1, 1.3-2, 1.3-3, 1.3-8, 1.3-9, 1.3-10, and 1.3-11
 Propane and Butane: AP-42 Chapter 1.5 (dated 7/08), Tables 1.5-1 (assuming PM = PM10)
 Waste Oil: AP-42 Chapter 1.11 (dated 10/96), Tables 1.11-1, 1.11-2, 1.11-3, 1.11-4, and 1.11-5

*Since there are no specific AP-42 HAP emission factors for combustion of No. 4 fuel oil, it was assumed that HAP emissions from combustion of No. 4 fuel oil were equal to combustion of residual or No. 6 fuel oil.

Abbreviations
 PM = Particulate Matter
 PM10 = Particulate Matter (<10 um)
 SO₂ = Sulfur Dioxide
 NO_x = Nitrous Oxides
 VOC = Volatile Organic Compounds
 CO = Carbon Monoxide
 HAP = Hazardous Air Pollutant
 HCl = Hydrogen Chloride
 PAH = Polycyclic Aromatic Hydrocarbon

**Appendix A.2: Limited Emissions Summary
Greenhouse Gas (CO₂e) Emissions from the
Dryer/Mixer Fuel Combustion with Maximum Capacity ≥ 100 MMBtu/hr**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

The following calculations determine the limited emissions created from the combustion of natural gas, fuel oil, propane, butane, or used/waste oil in the dryer/mixer and all other fuel combustion sources at the source.

Production and Fuel Limitations

Maximum Hourly Asphalt Production =	450	ton/hr							
Annual Asphalt Production Limitation =	1,000,000	ton/yr							
Natural Gas Limitation =	1,042	MMCF/yr							
No. 2 Fuel Oil Limitation =	2,788,732	gal/yr, and		0.50	% sulfur				
No. 4 Fuel Oil Limitation =	2,640,000	gal/yr, and		0.50	% sulfur				
Residual (No. 5 or No. 6) Fuel Oil Limitation =	0	gal/yr, and		0.50	% sulfur				
Propane Limitation =	14,360,656	gal/yr, and		0.20	gr/100 ft ³ sulfur				
Butane Limitation =	12,882,353	gal/yr, and		0.22	gr/100 ft ³ sulfur				
Used/Waste Oil Limitation =	750,000	gal/yr, and		1.00	% sulfur	0.20	% ash	0.20	% chlorine,
								0.01	% lead

Limited Emissions

CO ₂ e Fraction	Emission Factor (units)							Global Warming Potentials (GWP)		
	Natural Gas (lb/MMCF)	No. 2 Fuel Oil (lb/kgal)	No. 4 Fuel Oil (lb/kgal)	Residual (No. 5 or No. 6) Fuel Oil (lb/kgal)	Propane (lb/kgal)	Butane (lb/kgal)	Used/Waste Oil (lb/kgal)	Name	Chemical Formula	Global warming potential
CO ₂	120,161.84	22,501.41	24,153.46	24,835.04	12,500.00	14,506.73	22,024.15	Carbon dioxide	CO ₂	1
CH ₄	2.49	0.91	0.97	1.00	0.60	0.67	0.89	Methane	CH ₄	21
N ₂ O	2.20	0.26	0.19	0.53	0.90	0.90	0.18	Nitrous oxide	N ₂ O	310

CO ₂ e Fraction	Limited Potential to Emit (tons/yr)						
	Natural Gas (tons/yr)	No. 2 Fuel Oil (tons/yr)	No. 4 Fuel Oil (tons/yr)	Residual (No. 5 or No. 6) Fuel Oil (tons/yr)	Propane (tons/yr)	Butane (tons/yr)	Used/Waste Oil (tons/yr)
CO ₂	62,610.64	31,375.21	31,892.57	0.00	89,754.10	93,440.41	8,259.06
CH ₄	1.30	1.27	1.27	0.00	4.32	4.30	0.33
N ₂ O	1.15	0.36	0.25	0.00	6.46	5.80	0.07
Total	62,613.09	31,376.84	31,884.10	0.00	89,764.88	93,450.51	8,259.46
CO ₂ e Equivalent Emissions (tons/yr)	62,993.29	31,514.32	31,988.37	0.00	91,848.16	95,327.85	8,287.01

CO₂e for Worst Case Fuel* (tons/yr)
95,328

Methodology

Fuel Limitations from TSD Appendix A.2, page 1 of 15.

Global Warming Potentials (GWP) from Table A-1 of 40 CFR Part 98 Subpart A.

Sources of Emission Factors for fuel combustion: (Note: To form a conservative estimate, the "worst case" emission factors have been used.)

Natural Gas: Emission Factors for CO₂ and CH₄ from 40 CFR Part 98 Subpart C, Tables C-1 and 2, have been converted from kg/mmBtu to lb/MMCF. Emission Factor for N₂O from AP-42 Chapter

1.4 (dated 7/98), Table 1.4-2

No. 2, No. 4, and Residual (No. 5 or No. 6) Fuel: Emission Factors for CO₂ and CH₄ from 40 CFR Part 98 Subpart C, Tables C-1 and 2, have been converted from kg/mmBtu to lb/kgal. Emission Factor for N₂O from AP-42 Chapter 1.3

Oil: (dated 5/10), Table 1.3-8

Propane and Butane: Emission Factors for CO₂ and CH₄ from 40 CFR Part 98 Subpart C, Tables C-1 and 2, have been converted from kg/mmBtu to lb/kgal. Emission Factor for N₂O from AP-42 Chapter 1.5

(dated 7/08), Table 1.5-1

Waste Oil: Emission Factors for CO₂, CH₄, and N₂O from 40 CFR Part 98 Subpart C, Tables C-1 and 2, have been converted from kg/mmBtu to lb/kgal.

Emission Factor (EF) Conversions

Natural Gas: EF (lb/MMCF) = [EF (kg/MMBtu) * Conversion Factor (2.20462 lbs/kg) * Heating Value of Natural Gas (MMBtu/scf) * Conversion Factor (1,000,000 scf/MMCF)]

Fuel Oils: EF (lb/kgal) = [EF (kg/MMBtu) * Conversion Factor (2.20462 lbs/kg) * Heating Value of the Fuel Oil (MMBtu/gal) * Conversion Factor (1000 gal/kgal)]

Natural Gas: Limited Potential to Emit (tons/yr) = (Natural Gas Limitation (MMCF/yr)) * (Emission Factor (lb/MMCF)) * (ton/2000 lbs)

All Other Fuels: Limited Potential to Emit (tons/yr) = (Fuel Limitation (gals/yr)) * (Emission Factor (lb/kgal)) * (kgal/1000 gal) * (ton/2000 lbs)

Limited CO₂e Emissions (tons/yr) = CO₂ Potential Emission of "worst case" fuel (ton/yr) x CO₂ GWP (1) + CH₄ Potential Emission of "worst case" fuel (ton/yr) x CH₄ GWP (21) + N₂O Potential Emission of "worst case" fuel (ton/yr) x N₂O GWP (310).

Abbreviations

CH₄ = Methane

CO₂ = Carbon Dioxide

N₂O = Nitrogen Dioxide

PTE = Potential to Emit

**Appendix A.2: Limited Emissions Summary
Dryer/Mixer**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

The following calculations determine the limited emissions from the aggregate drying/mixing

Maximum Hourly Asphalt Production =	450	ton/hr
Annual Asphalt Production Limitation =	1,000,000	ton/yr
PM Dryer/Mixer Limitation =	0.322	lb/ton of asphalt production
PM10 Dryer/Mixer Limitation =	0.146	lb/ton of asphalt production
PM2.5 Dryer/Mixer Limitation =	0.179	lb/ton of asphalt production
CO Dryer/Mixer Limitation =	0.130	lb/ton of asphalt production
VOC Dryer/Mixer Limitation =	0.032	lb/ton of asphalt production

Criteria Pollutant	Emission Factor or Limitation (lb/ton)			Limited/Controlled Potential to Emit (tons/yr)			Worse Case PTE
	Drum-Mix Plant (dryer/mixer, controlled by fabric filter)			Drum-Mix Plant (dryer/mixer, controlled by fabric filter)			
	Natural Gas	No. 2 Fuel Oil	Waste Oil	Natural Gas	No. 2 Fuel Oil	Waste Oil	
PM ¹	0.322	0.322	0.322	160.8	160.8	160.8	160.8
PM10 ¹	0.146	0.146	0.146	73.0	73.0	73.0	73.0
PM2.5 ¹	0.179	0.179	0.179	89.5	89.5	89.5	89.5
SO2 ^{2,4}	0.003	0.011	0.058	1.7	5.5	29.0	29.0
NOx ^{2,4}	0.026	0.055	0.055	13.0	27.5	27.5	27.5
VOC ²	0.032	0.032	0.032	16.0	16.0	16.0	16.0
CO ³	0.130	0.130	0.130	65.0	65.0	65.0	65.0
Hazardous Air Pollutant							
HCl			2.10E-04			0.11	0.11
Antimony	1.80E-07	1.80E-07	1.80E-07	9.00E-05	9.00E-05	9.00E-05	9.00E-05
Arsenic	5.60E-07	5.60E-07	5.60E-07	2.80E-04	2.80E-04	2.80E-04	2.80E-04
Beryllium	negl	negl	negl	negl	negl	negl	0.00E+00
Cadmium	4.10E-07	4.10E-07	4.10E-07	2.05E-04	2.05E-04	2.05E-04	2.05E-04
Chromium	5.50E-06	5.50E-06	5.50E-06	2.75E-03	2.75E-03	2.75E-03	2.75E-03
Cobalt	2.60E-08	2.60E-08	2.60E-08	1.30E-05	1.30E-05	1.30E-05	1.30E-05
Lead	6.20E-07	1.50E-05	1.50E-05	3.10E-04	7.50E-03	7.50E-03	7.50E-03
Manganese	7.70E-06	7.70E-06	7.70E-06	3.85E-03	3.85E-03	3.85E-03	3.85E-03
Mercury	2.40E-07	2.60E-06	2.60E-06	1.20E-04	1.30E-03	1.30E-03	1.30E-03
Nickel	6.30E-05	6.30E-05	6.30E-05	3.15E-02	3.15E-02	3.15E-02	3.15E-02
Selenium	3.50E-07	3.50E-07	3.50E-07	1.75E-04	1.75E-04	1.75E-04	1.75E-04
2,2,4 Trimethylpentane	4.00E-05	4.00E-05	4.00E-05	2.00E-02	2.00E-02	2.00E-02	2.00E-02
Acetaldehyde			1.30E-03			0.65	0.65
Acrolein			2.60E-05			1.30E-02	1.30E-02
Benzene	3.90E-04	3.90E-04	3.90E-04	0.20	0.20	0.20	0.20
Ethylbenzene	2.40E-04	2.40E-04	2.40E-04	0.12	0.12	0.12	0.12
Formaldehyde	3.10E-03	3.10E-03	3.10E-03	1.55	1.55	1.55	1.55
Hexane	9.20E-04	9.20E-04	9.20E-04	0.46	0.46	0.46	0.46
Methyl chloroform	4.80E-05	4.80E-05	4.80E-05	0.02	0.02	0.02	0.02
MEK			2.00E-05			0.01	0.01
Propionaldehyde			1.30E-04			0.07	0.07
Quinone			1.60E-04			0.08	0.08
Toluene	1.50E-04	2.90E-03	2.90E-03	0.08	1.45	1.45	1.45
Total PAH Haps	1.90E-04	8.80E-04	8.80E-04	0.10	0.44	0.44	0.44
Xylene	2.00E-04	2.00E-04	2.00E-04	0.10	0.10	0.10	0.10
Total HAPs						5.33	
Worst Single HAP						1.55	(formaldehyde)

Methodology

Limited/Controlled Potential to Emit (tons/yr) = (Annual Asphalt Production Limitation (tons/yr)) * (Emission Factor (lb/ton)) * (ton/2000 lbs)

Emission Factors from AP-42 Chapter 11.1 (dated 3/04), Tables 11.1-3, 11.1-4, 11.1-7, 11.1-8, 11.1-10, and 11.1-12

Natural gas, No. 2 fuel oil, and waste oil represent the worst possible emissions scenario. AP-42 did not provide emission factors for any other fuels.

¹PM, PM10, and PM2.5 AP-42 emission factors based on drum mix dryer fired with natural gas, propane, fuel oil, and waste oil. According to AP-42 fuel type does not significantly effect PM, PM10, and PM2.5 emissions.

²SO2, NOx, and VOC AP-42 emission factors are for natural gas, No. 2 fuel oil, and waste oil only.

³CO AP-42 emission factor determined by combining data from drum mix dryer fired with natural gas, No. 6 fuel oil, and No. 2 fuel oil to develop single CO emission factor.

⁴The source will limit the combined SO2 emissions from the dryer mixer burner, hot oil heaters, and slag processing and the combined NOx emissions from the dryer mixer burner and hot oil heaters such that the SO2 and NOx emissions do not exceed 99.0 tons per year, each. Compliance with these limits will be demonstrated using equations.

Abbreviations

VOC - Volatile Organic Compounds
HCl = Hydrogen Chloride
SO2 = Sulfur Dioxide

HAP = Hazardous Air Pollutant
PAH = Polyaromatic Hydrocarbon

**Appendix A.2: Limited Emissions Summary
Greenhouse Gas (CO2e) Emissions from the
Drum-Mix Plant (Dryer/Mixer) Process Emissions**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

The following calculations determine the limited emissions from the aggregate drying/mixing

Maximum Hourly Asphalt Production = 450 ton/hr
 Annual Asphalt Production Limitation = 1,000,000 ton/yr

Criteria Pollutant	Emission Factor (lb/ton) Drum-Mix Plant (dryer/mixer)			Global Warming Potentials (GWP)	Limited Potential to Emit (tons/yr) Drum-Mix Plant (dryer/mixer)			CO2e for Worst Case Fuel (tons/yr)
	Natural Gas	No. 2 Fuel Oil	Waste Oil		Natural Gas	No. 2 Fuel Oil	Waste Oil	
CO2	33	33	33	1	16,500.00	16,500.00	16,500.00	16,626
CH4	0.0120	0.0120	0.0120	21	6.00	6.00	6.00	
N2O				310	0	0	0	
Total					16,506.00	16,506.00	16,506.00	
CO2e Equivalent Emissions (tons/yr)					16,626.00	16,626.00	16,626.00	

Methodology

Emission Factors from AP-42 Chapter 11.1 (dated 3/04), Tables 11.1-7 and 11.1-8

There are no emission factors for N2O available in either the 40 CFR 98, Subpart C or AP-42 Chapter 11.1. Therefore, it is assumed that there are no N2O emission anticipated for this process.

Limited/Controlled Potential to Emit (tons/yr) = (Annual Asphalt Production Limitation (tons/yr)) * (Emission Factor (lb/ton)) * (ton/2000 lbs)

Natural gas, No. 2 fuel oil, and waste oil represent the worst possible emissions scenario. AP-42 did not provide emission factors for any other fuels.

Limited CO2e Emissions (tons/yr) = CO2 Potential Emission of "worst case" fuel (ton/yr) x CO2 GWP (1) + CH4 Potential Emission of "worst case" fuel (ton/yr) x CH4 GWP (21) + N2O Potential Emission of "worst case" fuel (ton/yr) x N2O GWP (310).

Abbreviations

CO2 = Carbon Dioxide

CH4 = Methane

N2O = Nitrogen Dioxide

PTE = Potential to Emit

**Appendix A.2: Limited Emissions Summary
Dryer/Mixer Slag Processing**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

The following calculations determine the limited emissions from the processing of slag in the aggregate drying/mixing

Blast Furnace Slag Usage Limitation¹ =

0.740

 ton/yr

1.50

 % sulfur
 Steel Slag Usage Limitation² =

0.0014

 ton/yr

0.66

 % sulfur

Slag Type	Emission Factor or Limitation (lb/ton)*	Limited Potential to Emit (tons/yr)
Blast Furnace Slag	0.740	see note ³
Steel Slag	0.0014	see note ³

Methodology

¹ Testing results for blast furnace slag, obtained January 9, 2009 from similar operations at Rieth-Riley Construction Co., Inc. facility located in Valparaiso, IN (permit #127-27075-05241), produced an Emission Factor of 0.54 lb/ton from blast furnace slag containing 1.10% sulfur content. The source has requested a safety factor of 0.20 lb/ton be added to the tested value for use at this location to allow for a sulfur content up to 1.5%.

² Testing results for steel slag, obtained June 2009 from E & B Paving, Inc. facility located in Huntington, IN. The testing results showed a steel slag emission factor of 0.0007 lb/ton from slag containing 0.33% sulfur content.

³ The source will limit the combined SO₂ emissions from the dryer mixer burner, hot oil heaters, and slag processing such that the SO₂ emissions do not exceed 99.0 tons per year. Compliance with this limit will be demonstrated using an equation.

Limited Potential to Emit SO₂ from Slag (tons/yr) = (Slag Usage Limitation (ton/yr)) * [Limited Emission Factor (lb/ton)] * [ton/2000 lbs]

Abbreviations

SO₂ = Sulfur Dioxide

Appendix A.2: Limited Emissions Summary
Hot Oil Heater
Fuel Combustion with Maximum Capacity < 100 MMBtu/hr

Company Name: Rieth-Riley Construction Co., Inc.
Source Location: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Maximum Hot Oil Heater Fuel Input Rate =	4.96	MMBtu/hr		
Natural Gas Usage =	43	MMCF/yr		
No. 2 Fuel Oil Usage =	310,354	gal/yr,	0.50	% sulfur
Propane Usage =	3,976	gal/yr, and	0.20	gr/100 ft3 sulfur
Butane Usage =	443	gal/yr,	0.22	gr/100 ft3 sulfur

Unlimited/Uncontrolled Emissions

Criteria Pollutant	Emission Factor (units)				Unlimited/Uncontrolled Potential to Emit (tons/yr)				Worse Case Fuel (tons/yr)
	Hot Oil Heater				Hot Oil Heater				
	Natural Gas (lb/MMCF)	No. 2 Fuel Oil (lb/kgal)	Propane lb/kgal	Butane lb/kgal	Natural Gas (tons/yr)	No. 2 Fuel Oil (tons/yr)	Propane (tons/yr)	Butane (tons/yr)	
PM	1.9	2.0	0.5	0.6	0.04	0.310	9.94E-04	1.33E-04	0.31
PM10/PM2.5	7.6	3.3	0.5	0.6	0.2	0.512	9.94E-04	1.33E-04	0.51
SO2*	0.6	71.0	0.02	0.02	0.01	11.018	3.98E-05	4.39E-06	11.02
NOx*	100	20.0	13.0	15.0	2.2	3.104	2.58E-02	3.32E-03	3.10
VOC	5.5	0.20	1.00	1.10	0.1	0.031	1.99E-03	2.44E-04	0.12
CO	84	5.0	7.5	8.4	1.8	0.776	1.49E-02	1.86E-03	1.82
Hazardous Air Pollutant									
Arsenic	2.0E-04	5.6E-04			4.34E-06	8.69E-05			8.7E-05
Beryllium	1.2E-05	4.2E-04			2.61E-07	6.52E-05			6.5E-05
Cadmium	1.1E-03	4.2E-04			2.39E-05	6.52E-05			6.5E-05
Chromium	1.4E-03	4.2E-04			3.04E-05	6.52E-05			6.5E-05
Cobalt	8.4E-05				1.82E-06				1.8E-06
Lead	5.0E-04	1.3E-03			1.09E-05	1.96E-04			2.0E-04
Manganese	3.8E-04	8.4E-04			8.26E-06	1.30E-04			1.3E-04
Mercury	2.6E-04	4.2E-04			5.65E-06	6.52E-05			6.5E-05
Nickel	2.1E-03	4.2E-04			4.56E-05	6.52E-05			6.5E-05
Selenium	2.4E-05	2.1E-03			5.21E-07	3.26E-04			3.3E-04
Benzene	2.1E-03				4.56E-05				0.0
Dichlorobenzene	1.2E-03				2.61E-05				0.0
Ethylbenzene									0.0
Formaldehyde	7.5E-02	6.10E-02			1.63E-03	9.47E-03			9.5E-03
Hexane	1.8E+00				3.91E-02				3.9E-02
Phenol									0.0E+00
Toluene	3.4E-03				7.39E-05				7.4E-05
Total PAH Haps	negl				negl				0.0E+00
Polycyclic Organic Matter		3.30E-03				5.12E-04			5.1E-04
Total HAPs =					0.041	0.011	0.0	0.0	0.050

Methodology

*The source will limit the combined SO2 emissions from the dryer mixer burner, hot oil heaters, and slag processing and the combined NOx emissions from the dryer mixer burner and hot oil heaters such that the SO2 and NOx emissions do not exceed 99.0 tons per year, each.

Equivalent Natural Gas Usage (MMCF/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 MMCF/1,000 MMBtu]

Equivalent Oil Usage (gal/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 gal/0.140 MMBtu]

Natural Gas: Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Maximum Natural Gas Usage (MMCF/yr)] * [Emission Factor (lb/MMCF)] * [ton/2000 lbs]

All Other Fuels: Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Maximum Fuel Usage (gals/yr)] * [Emission Factor (lb/kgal)] * [kgal/1000 gal] * [ton/2000 lbs]

Sources of AP-42 Emission Factors for fuel combustion:

Natural Gas : AP-42 Chapter 1.4 (dated 7/98), Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4

No. 2 Fuel Oil: AP-42 Chapter 1.3 (dated 9/98), Tables 1.3-1, 1.3-2, 1.3-3, 1.3-8, 1.3-9, 1.3-10, and 1.3-11

Abbreviations

PM = Particulate Matter	CO = Carbon Monoxide
PM10 = Particulate Matter (<10 um)	HAP = Hazardous Air Pollutant
SO2 = Sulfur Dioxide	HCl = Hydrogen Chloride
NOx = Nitrous Oxides	PAH = Polyaromatic Hydrocarbon
VOC = Volatile Organic Compounds	

Appendix A.2: Limited Emissions Summary
Greenhouse Gas (CO₂e) Emissions from
Hot Oil Heater Fuel Combustion with Maximum Capacity < 100 MMBtu/hr

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Maximum Hot Oil Heater Fuel Input Rate = 4.96 MMBtu/hr
 Natural Gas Usage = 43.45 MMCF/yr
 No. 2 Fuel Oil Usage = 310,354.29 gal/yr, 0.50 % sulfur

Unlimited/Uncontrolled Emissions

Criteria Pollutant	Emission Factor (units)		Global Warming Potentials (GWP)	Unlimited/Uncontrolled Potential to Emit (tons/yr)	
	Natural Gas (lb/MMCF)	No. 2 Fuel Oil (lb/kgal)		Natural Gas (tons/yr)	No. 2 Fuel Oil (tons/yr)
CO ₂	120,161.84	22,501.41	1	2,610.49	3,491.70
CH ₄	2.49	0.91	21	0.054	1.42E-01
N ₂ O	2.20	0.26	310	0.048	4.03E-02
			Total	2,610.59	3,491.89

Worse Case CO₂e Emissions (tons/yr)
3,507

CO ₂ e Equivalent Emissions (tons/yr)	2,626.45	3,507.19
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Methodology

Greenhouse Warming Potentials (GWP) from Table A-1 of 40 CFR Part 98 Subpart A.

Sources of Emission Factors for fuel combustion: (Note: To form a conservative estimate, the "worst case" emission factors have been used.)

Natural Gas : Emission Factors for CO₂ and CH₄ from 40 CFR Part 98 Subpart C, Tables C-1 and 2, have been converted from kg/mmBtu to lb/MMCF. Emission Factor for N₂O from AP-42 Chapter 1.4 (dated 7/98), Table 1.4-2

No. 2 Fuel Oil: Emission Factors for CO₂ and CH₄ from 40 CFR Part 98 Subpart C, Tables C-1 and 2, have been converted from kg/mmBtu to lb/kgal. Emission Factor for N₂O from AP-42 Chapter 1.3 (dated 5/10), Table 1.3-8

Emission Factor (EF) Conversions

Natural Gas: EF (lb/MMCF) = [EF (kg/MMBtu) * Conversion Factor (2.20462 lbs/kg) * Heating Value of Natural Gas (MMBtu/scf) * Conversion Factor (1,000,000 scf/MMCF)]

Fuel Oils: EF (lb/kgal) = [EF (kg/MMBtu) * Conversion Factor (2.20462 lbs/kg) * Heating Value of the Fuel Oil (MMBtu/gal) * Conversion Factor (1000 gal/kgal)]

Equivalent Natural Gas Usage (MMCF/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 MMCF/1,000 MMBtu]

Equivalent Oil Usage (gal/yr) = [Maximum Fuel Input Rate (MMBtu/hr)] * [8,760 hrs/yr] * [1 gal/0.140 MMBtu]

Natural Gas: Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Maximum Natural Gas Usage (MMCF/yr)] * [Emission Factor (lb/MMCF)] * [ton/2000 lbs]

All Other Fuels: Unlimited/Uncontrolled Potential to Emit (tons/yr) = [Maximum Fuel Usage (gals/yr)] * [Emission Factor (lb/kgal)] * [kgal/1000 gal] * [ton/2000 lbs]

Unlimited Potential to Emit CO₂e (tons/yr) = Unlimited Potential to Emit CO₂ of "worst case" fuel (ton/yr) x CO₂ GWP (1) + Unlimited Potential to Emit CH₄ of "worst case" fuel (ton/yr) x CH₄ GWP (21) + Unlimited Potential to Emit N₂O of "worst case" fuel (ton/yr) x N₂O GWP (310).

Abbreviations

CH₄ = Methane

N₂O = Nitrogen Dioxide

CO₂ = Carbon Dioxide

PTE = Potential to Emit

**Appendix A.2: Limited Emissions Summary
Asphalt Load-Out, Silo Filling, and Yard Emissions**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

The following calculations determine the limited fugitive emissions from hot asphalt mix load-out, silo filling, and on-site yard for a drum mix hot mix asphalt plant

Asphalt Temperature, T =	325	F
Asphalt Volatility Factor, V =	-0.5	
Annual Asphalt Production Limitation =	1,000,000	tons/yr

Pollutant	Emission Factor (lb/ton asphalt)			Limited Potential to Emit (tons/yr)			
	Load-Out	Silo Filling	On-Site Yard	Load-Out	Silo Filling	On-Site Yard	Total
Total PM*	5.2E-04	5.9E-04	NA	0.26	0.29	NA	0.55
Organic PM	3.4E-04	2.5E-04	NA	0.17	0.127	NA	0.30
TOC	0.004	0.012	0.001	2.08	6.09	0.550	8.7
CO	0.001	0.001	3.5E-04	0.67	0.590	0.176	1.44

NA = Not Applicable (no AP-42 Emission Factor)

PM/HAPs	0.012	0.014	0	0.027
VOC/HAPs	0.031	0.077	0.008	0.116
non-VOC/HAPs	1.6E-04	1.6E-05	4.2E-05	2.2E-04
non-VOC/non-HAPs	0.15	0.09	0.04	0.28

Total VOCs	1.95	6.09	0.5	8.6
Total HAPs	0.04	0.09	0.008	0.14
		Worst Single HAP		0.044
				(formaldehyde)

Methodology

The asphalt temperature and volatility factor were provided by the source.

Limited Potential to Emit (tons/yr) = (Annual Asphalt Production Limitation (tons/yr)) * (Emission Factor (lb/ton)) * (ton/2000 lbs)

Emission Factors from AP-42 Chapter 11.1 (dated 3/04), Tables 11.1-14, 11.1-15, and 11.1-16

Plant Load-Out Emission Factor Equations (AP-42 Table 11.1-14)::

Total PM/PM10 Ef = $0.000181 + 0.00141(-V)e^{((0.0251)(T+460)-20.43)}$

Organic PM Ef = $0.00141(-V)e^{((0.0251)(T+460)-20.43)}$

TOC Ef = $0.0172(-V)e^{((0.0251)(T+460)-20.43)}$

CO Ef = $0.00558(-V)e^{((0.0251)(T+460)-20.43)}$

Silo Filling Emission Factor Equations (AP-42 Table 11.1-14):

PM/PM10 Ef = $0.000332 + 0.00105(-V)e^{((0.0251)(T+460)-20.43)}$

Organic PM Ef = $0.00105(-V)e^{((0.0251)(T+460)-20.43)}$

TOC Ef = $0.0504(-V)e^{((0.0251)(T+460)-20.43)}$

CO Ef = $0.00488(-V)e^{((0.0251)(T+460)-20.43)}$

On Site Yard CO emissions estimated by multiplying the TOC emissions by 0.32

*No emission factors available for PM10 or PM2.5, therefore IDEM assumes PM10 and PM2.5 are equivalent to Total PM.

Abbreviations

TOC = Total Organic Compounds

CO = Carbon Monoxide

PM = Particulate

Matter

PM10 = Particulate Matter (<10 um)

PM2.5 = Particulate Matter (<2.5 um)

HAP = Hazardous Air Pollutant

VOC = Volatile Organic Compound

**Appendix A.2: Limited Emissions Summary
Asphalt Load-Out, Silo Filling, and Yard Emissions (continued)**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Organic Particulate-Based Compounds (Table 11.1-15)

Pollutant	CASRN	Category	HAP Type	Source	Speciation Profile		Limited Potential to Emit (tons/yr)			
					Load-out and Onsite Yard (% by weight of Total Organic PM)	Silo Filling and Asphalt Storage Tank (% by weight of Total Organic PM)	Load-out	Silo Filling	Onsite Yard	Total
PAH HAPs										
Acenaphthene	83-32-9	PM/HAP	POM	Organic PM	0.26%	0.47%	4.4E-04	6.0E-04	NA	1.0E-03
Acenaphthylene	208-96-8	PM/HAP	POM	Organic PM	0.028%	0.014%	4.8E-05	1.8E-05	NA	6.6E-05
Anthracene	120-12-7	PM/HAP	POM	Organic PM	0.07%	0.13%	1.2E-04	1.7E-04	NA	2.8E-04
Benzo(a)anthracene	56-55-3	PM/HAP	POM	Organic PM	0.019%	0.056%	3.2E-05	7.1E-05	NA	1.0E-04
Benzo(b)fluoranthene	205-99-2	PM/HAP	POM	Organic PM	0.0076%	0	1.3E-05	0	NA	1.3E-05
Benzo(k)fluoranthene	207-08-9	PM/HAP	POM	Organic PM	0.0022%	0	3.8E-06	0	NA	3.8E-06
Benzo(g,h,i)perylene	191-24-2	PM/HAP	POM	Organic PM	0.0019%	0	3.2E-06	0	NA	3.2E-06
Benzo(a)pyrene	50-32-8	PM/HAP	POM	Organic PM	0.0023%	0	3.9E-06	0	NA	3.9E-06
Benzo(e)pyrene	192-97-2	PM/HAP	POM	Organic PM	0.0078%	0.0095%	1.3E-05	1.2E-05	NA	2.5E-05
Chrysene	218-01-9	PM/HAP	POM	Organic PM	0.103%	0.21%	1.8E-04	2.7E-04	NA	4.4E-04
Dibenz(a,h)anthracene	53-70-3	PM/HAP	POM	Organic PM	0.00037%	0	6.3E-07	0	NA	6.3E-07
Fluoranthene	206-44-0	PM/HAP	POM	Organic PM	0.05%	0.15%	8.5E-05	1.9E-04	NA	2.8E-04
Fluorene	86-73-7	PM/HAP	POM	Organic PM	0.77%	1.01%	1.3E-03	1.3E-03	NA	2.6E-03
Indeno(1,2,3-cd)pyrene	193-39-5	PM/HAP	POM	Organic PM	0.00047%	0	8.0E-07	0	NA	8.0E-07
2-Methylnaphthalene	91-57-6	PM/HAP	POM	Organic PM	2.38%	5.27%	4.1E-03	6.7E-03	NA	0.011
Naphthalene	91-20-3	PM/HAP	POM	Organic PM	1.25%	1.82%	2.1E-03	2.3E-03	NA	4.4E-03
Perylene	198-55-0	PM/HAP	POM	Organic PM	0.022%	0.03%	3.8E-05	3.8E-05	NA	7.6E-05
Phenanthrene	85-01-8	PM/HAP	POM	Organic PM	0.81%	1.80%	1.4E-03	2.3E-03	NA	3.7E-03
Pyrene	129-00-0	PM/HAP	POM	Organic PM	0.15%	0.44%	2.6E-04	5.6E-04	NA	8.1E-04
Total PAH HAPs							0.010	0.014	NA	0.025
Other semi-volatile HAPs										
Phenol		PM/HAP	---	Organic PM	1.18%	0	2.0E-03	0	0	2.0E-03

NA = Not Applicable (no AP-42 Emission Factor)

Methodology

Limited Potential to Emit (tons/yr) = [Speciation Profile (%)] * [Organic PM (tons/yr)]
Speciation Profiles from AP-42 Chapter 11.1 (dated 3/04), Tables 11.1-15 and 11.1-16

Abbreviations

PM = Particulate Matter
HAP = Hazardous Air Pollutant
POM = Polycyclic Organic Matter

Appendix A.2: Limited Emissions Summary
Asphalt Load-Out, Silo Filling, and Yard Emissions (continued)
Limited Emissions

Organic Volatile-Based Compounds (Table 11.1-16)

Pollutant	CASRN	Category	HAP Type	Source	Speciation Profile		Limited Potential to Emit (tons/yr)			
					Load-out and Onsite Yard (% by weight of TOC)	Silo Filling and Asphalt Storage Tank (% by weight of TOC)	Load-out	Silo Filling	Onsite Yard	Total
VOC		VOC	---	TOC	94%	100%	1.95	6.09	0.52	8.57
non-VOC/non-HAPS										
Methane	74-82-8	non-VOC/non-HAP	---	TOC	6.50%	0.26%	1.4E-01	1.6E-02	3.6E-02	0.187
Acetone	67-64-1	non-VOC/non-HAP	---	TOC	0.046%	0.055%	9.6E-04	3.4E-03	2.5E-04	0.005
Ethylene	74-85-1	non-VOC/non-HAP	---	TOC	0.71%	1.10%	1.5E-02	6.7E-02	3.9E-03	0.086
Total non-VOC/non-HAPS					7.30%	1.40%	0.152	0.085	0.040	0.28
Volatile organic HAPs										
Benzene	71-43-2	VOC/HAP	---	TOC	0.052%	0.032%	1.1E-03	1.9E-03	2.9E-04	3.3E-03
Bromomethane	74-83-9	VOC/HAP	---	TOC	0.0096%	0.0049%	2.0E-04	3.0E-04	5.3E-05	5.5E-04
2-Butanone	78-93-3	VOC/HAP	---	TOC	0.049%	0.039%	1.0E-03	2.4E-03	2.7E-04	3.7E-03
Carbon Disulfide	75-15-0	VOC/HAP	---	TOC	0.013%	0.016%	2.7E-04	9.7E-04	7.2E-05	1.3E-03
Chloroethane	75-00-3	VOC/HAP	---	TOC	0.00021%	0.004%	4.4E-06	2.4E-04	1.2E-06	2.5E-04
Chloromethane	74-87-3	VOC/HAP	---	TOC	0.015%	0.023%	3.1E-04	1.4E-03	8.3E-05	1.8E-03
Cumene	92-82-8	VOC/HAP	---	TOC	0.11%	0	2.3E-03	0	6.1E-04	2.9E-03
Ethylbenzene	100-41-4	VOC/HAP	---	TOC	0.28%	0.038%	5.8E-03	2.3E-03	1.5E-03	0.010
Formaldehyde	50-00-0	VOC/HAP	---	TOC	0.088%	0.69%	1.8E-03	4.2E-02	4.8E-04	0.044
n-Hexane	100-54-3	VOC/HAP	---	TOC	0.15%	0.10%	3.1E-03	6.1E-03	8.3E-04	0.010
Isooctane	540-84-1	VOC/HAP	---	TOC	0.0018%	0.00031%	3.7E-05	1.9E-05	9.9E-06	6.6E-05
Methylene Chloride	75-09-2	non-VOC/HAP	---	TOC	0	0.00027%	0	1.6E-05	0	1.6E-05
MTBE	1634-04-4	VOC/HAP	---	TOC	0	0	0	0	0	0
Styrene	100-42-5	VOC/HAP	---	TOC	0.0073%	0.0054%	1.5E-04	3.3E-04	4.0E-05	5.2E-04
Tetrachloroethene	127-18-4	non-VOC/HAP	---	TOC	0.0077%	0	1.6E-04	0	4.2E-05	2.0E-04
Toluene	100-88-3	VOC/HAP	---	TOC	0.21%	0.062%	4.4E-03	3.8E-03	1.2E-03	0.009
1,1,1-Trichloroethane	71-55-6	VOC/HAP	---	TOC	0	0	0	0	0	0
Trichloroethene	79-01-6	VOC/HAP	---	TOC	0	0	0	0	0	0
Trichlorofluoromethane	75-69-4	VOC/HAP	---	TOC	0.0013%	0	2.7E-05	0	7.2E-06	3.4E-05
m/p-Xylene	1330-20-7	VOC/HAP	---	TOC	0.41%	0.20%	8.5E-03	1.2E-02	2.3E-03	0.023
o-Xylene	95-47-6	VOC/HAP	---	TOC	0.08%	0.057%	1.7E-03	3.5E-03	4.4E-04	5.6E-03
Total volatile organic HAPs					1.50%	1.30%	0.031	0.079	0.008	0.119

Methodology

Limited Potential to Emit (tons/yr) = [Speciation Profile (%)] * [TOC (tons/yr)]

Speciation Profiles from AP-42 Chapter 11.1 (dated 3/04), Tables 11.1-15 and 11.1-16

Abbreviations

TOC = Total Organic Compounds

HAP = Hazardous Air Pollutant

VOC = Volatile Organic Compound

MTBE = Methyl tert butyl ether

**Appendix A.2: Limited Emissions Summary
Material Storage Piles**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Note: Since the emissions from the storage piles are minimal, the limited emissions are equal to the unlimited emissions.

The following calculations determine the amount of emissions created by wind erosion of storage stockpiles, based on 8,760 hours of use and USEPA's AP-42 (Pre 1983 Edition), Section 11.2.3.

$E_f = 1.7 \cdot (s/1.5)^3 \cdot (365-p) / 235 \cdot (f/15)$ <p>where E_f = emission factor (lb/acre/day)</p> <p>s = silt content (wt %)</p> <p>p = 125 days of rain greater than or equal to 0.01 inches</p> <p>f = 15 % of wind greater than or equal to 12 mph</p>

Material	Silt Content (wt %)*	Emission Factor (lb/acre/day)	Maximum Anticipated Pile Size (acres)**	PTE of PM (tons/yr)	PTE of PM10/PM2.5 (tons/yr)
Sand	2.6	3.01	0.58	0.317	0.111
Limestone	1.6	1.85	1.00	0.338	0.118
RAP	0.5	0.58	2.40	0.253	0.089
Gravel	1.6	1.85	0.78	0.264	0.093
Shingles	0.5	0.58	0.40	0.042	0.015
Slag	3.8	4.40	1.00	0.803	0.281
Totals				2.02	0.71

Methodology

PTE of PM (tons/yr) = (Emission Factor (lb/acre/day)) * (Maximum Pile Size (acres)) * (ton/2000 lbs) * (8760 hours/yr)

PTE of PM10/PM2.5 (tons/yr) = (Potential PM Emissions (tons/yr)) * 35%

*Silt content values obtained from AP-42 Table 13.2.4-1 (dated 1/95)

**Maximum anticipated pile size (acres) provided by the source.

Abbreviations

PM = Particulate Matter

PM10 = Particulate Matter (<10 um)

PM2.5 = Particulate Matter (<2.5 um)

PM2.5 = PM10

PTE = Potential to Emit

Appendix A.2: Limited Emissions Summary
Material Processing, Handling, Crushing, Screening, and Conveying

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Batch or Continuous Drop Operations (AP-42 Section 13.2.4)

To estimate potential fugitive dust emissions from processing and handling of raw materials (batch or continuous drop operations), AP-42 emission factors for Aggregate Handling, Section 13.2.4 (fifth edition, 1/95) are utilized.

$$E_f = k \cdot (0.0032)^k \cdot (U/5)^{1.3} / (M/2)^{1.4}$$

where: E_f = Emission factor (lb/ton)

k (PM) =	0.74	= particle size multiplier (0.74 assumed for aerodynamic diameter <=100 um)
k (PM10) =	0.35	= particle size multiplier (0.35 assumed for aerodynamic diameter <=10 um)
k (PM2.5) =	0.053	= particle size multiplier (0.053 assumed for aerodynamic diameter <=2.5 um)
U =	10.2	= worst case annual mean wind speed (Source: NOAA, 2006*)
M =	4.0	= material % moisture content of aggregate (Source: AP-42 Section 11.1.1.1)
E_f (PM) =	2.27E-03	lb PM/ton of material handled
E_f (PM10) =	1.07E-03	lb PM10/ton of material handled
E_f (PM2.5) =	1.62E-04	lb PM2.5/ton of material handled

Annual Asphalt Production Limitation =	1,000,000	tons/yr
Percent Asphalt Cement/Binder (weight %) =	5.0%	
Maximum Material Handling Throughput =	950,000	tons/yr

Type of Activity	Limited PTE of PM (tons/yr)	Limited PTE of PM10 (tons/yr)	Limited PTE of PM2.5 (tons/yr)
Truck unloading of materials into storage piles	1.08	0.51	0.08
Front-end loader dumping of materials into feeder bins	1.08	0.51	0.08
Conveyor dropping material into dryer/mixer or batch tower	1.08	0.51	0.08
Total (tons/yr)	3.23	1.53	0.23

Methodology

The percent asphalt cement/binder provided by the source.
 Maximum Material Handling Throughput (tons/yr) = [Annual Asphalt Production Limitation (tons/yr)] * [1 - Percent Asphalt Cement/Binder (weight %)]
 Limited Potential to Emit (tons/yr) = (Maximum Material Handling Throughput (tons/yr)) * (Emission Factor (lb/ton)) * (ton/2000 lbs)
 Raw materials may include limestone, sand, recycled asphalt pavement (RAP), gravel, slag, and other additives
 *Worst case annual mean wind speed (Indianapolis, IN) from "Comparative Climatic Data", National Climatic Data Center, NOAA, 2006

Material Screening and Conveying (AP-42 Section 19.2.2)

To estimate potential fugitive dust emissions from raw material crushing, screening, and conveying, AP-42 emission factors for Crushed Stone Processing Operations, Section 19.2.2 (dated 8/04) are utilized.

Operation	Uncontrolled Emission Factor for PM (lbs/ton)*	Uncontrolled Emission Factor for PM10 (lbs/ton)*	Limited PTE of PM (tons/yr)	Limited PTE of PM10/PM2.5 (tons/yr)**
Crushing	0.0054	0.0024	2.57	1.14
Screening	0.025	0.0087	11.88	4.13
Conveying	0.003	0.0011	1.43	0.52
Limited Potential to Emit (tons/yr) =			15.87	5.80

Methodology

Maximum Material Handling Throughput (tons/yr) = [Annual Asphalt Production Limitation (tons/yr)] * [1 - Percent Asphalt Cement/Binder (weight %)]
 Limited Potential to Emit (tons/yr) = [Maximum Material Handling Throughput (tons/yr)] * [Emission Factor (lb/ton)] * [ton/2000 lbs]
 Raw materials may include stone/gravel, slag, and recycled asphalt pavement (RAP)
 Emission Factors from AP-42 Chapter 11.19.2 (dated 8/04), Table 11.19.2-2
 *Uncontrolled emissions factors for PM/PM10 represent tertiary crushing of stone with moisture content ranging from 0.21 to 1.3 percent by weight (Table 11.19.2-2). The bulk moisture content of aggregate in the storage piles at a hot mix asphalt production plant typically stabilizes between 3 to 5 percent by weight (Source: AP-42 Section 11.1.1.1).
 **Assumes PM10 = PM2.5

Abbreviations

PM = Particulate Matter
 PM10 = Particulate Matter (<10 um)
 PM2.5 = Particulate Matter (<2.5 um)
 PTE = Potential to Emit

**Appendix A.2: Limited Emissions Summary
Unpaved Roads**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Unpaved Roads at Industrial Site

The following calculations determine the amount of emissions created by unpaved roads, based on 8,760 hours of use and AP-42, Ch 13.2.2 (12/2003).

Annual Asphalt Production Limitation	1,000,000	tons/yr
Percent Asphalt Cement/Binder (weight %)	5.0%	
Maximum Material Handling Throughput	950,000	tons/yr
Maximum Asphalt Cement/Binder Throughput	50,000	tons/yr
No. 2 Fuel Oil Limitation	2,788,732	gallons/yr

Process	Vehicle Type	Maximum Weight of Vehicle (tons)	Maximum Weight of Load (tons)	Maximum Weight of Vehicle and Load (tons/trip)	Maximum trips per year (trip/yr)	Total Weight driven per year (ton/yr)	Maximum one-way distance (feet/trip)	Maximum one-way distance (mi/trip)	Maximum one-way miles (miles/yr)
Aggregate/RAP Truck Enter Full	Dump truck (16 CY)	17.0	22.4	39.4	4.2E+04	1.7E+06	560	0.106	4495.5
Aggregate/RAP Truck Leave Empty	Dump truck (16 CY)	17.0	0	17.0	4.2E+04	7.2E+05	560	0.106	147.2
Asphalt Cement/Binder Truck Enter Full	Tanker truck (6000 gal)	12.0	36.0	48.0	1.4E+03	6.7E+04	560	0.106	147.2
Asphalt Cement/Binder Truck Leave Empty	Tanker truck (6000 gal)	12.0	0	12.0	1.4E+03	1.7E+04	560	0.106	31.2
Fuel Oil Truck Enter Full	Tanker truck (6000 gal)	12.0	32.0	44.0	2.9E+02	1.3E+04	560	0.106	23976.2
Fuel Oil Truck Leave Empty	Tanker truck (6000 gal)	12.0	0	12.0	2.9E+02	3.5E+03	560	0.106	31.2
Aggregate/RAP/Shingle Loader Full	Front-end loader (3 CY)	15.0	4.2	19.2	2.3E+05	4.3E+06	560	0.106	23976.2
Aggregate/RAP/Shingle Loader Empty	Front-end loader (3 CY)	15.0	0	15.0	2.3E+05	3.4E+06	560	0.106	4416.7
Asphalt Concrete Truck Leave Full	Dump truck (16 CY)	17.0	24.0	41.0	4.2E+04	1.7E+06	560	0.106	4416.7
Asphalt Concrete Truck Enter Empty	Dump truck (16 CY)	17.0	0	17.0	4.2E+04	7.1E+05	560	0.106	6.6E+04
Total					6.2E+05	1.3E+07			

Average Vehicle Weight Per Trip = $\frac{20.3}{0.106}$ tons/trip
 Average Miles Per Trip = $\frac{560}{0.106}$ miles/trip

Unmitigated Emission Factor, $E_f = k \left[\frac{s}{(12)^a} \right] \left[\frac{W}{3} \right]^b$ (Equation 1a from AP-42 13.2.2)

	PM	PM10	PM2.5	
where k =	4.9	1.5	0.15	lb/mi = particle size multiplier (AP-42 Table 13.2.2-2 for Industrial Roads)
s =	4.8	4.8	4.8	% = mean % silt content of unpaved roads (AP-42 Table 13.2.2-3 Sand/Gravel Processing Plant Road)
a =	0.7	0.9	0.9	= constant (AP-42 Table 13.2.2-2)
W =	20.3	20.3	20.3	tons = average vehicle weight (provided by source)
b =	0.45	0.45	0.45	= constant (AP-42 Table 13.2.2-2)

Taking natural mitigation due to precipitation into consideration, Mitigated Emission Factor, $E_{ext} = E_f \left[\frac{365 - P}{365} \right]$

Mitigated Emission Factor, $E_{ext} = E_f \left[\frac{365 - P}{365} \right]$
 where P = $\frac{125}{365}$ days of rain greater than or equal to 0.01 inches (see Fig. 13.2.2-1)

	PM	PM10	PM2.5	
Unmitigated Emission Factor, E_f	6.10	1.55	0.16	lb/mile
Mitigated Emission Factor, E_{ext}	4.01	1.02	0.10	lb/mile
Dust Control Efficiency =	50%	50%	50%	(pursuant to control measures outlined in fugitive dust control plan)

Process	Vehicle Type	Unmitigated PTE of PM (tons/yr)	Unmitigated PTE of PM10 (tons/yr)	Unmitigated PTE of PM2.5 (tons/yr)	Mitigated PTE of PM (tons/yr)	Mitigated PTE of PM10 (tons/yr)	Mitigated PTE of PM2.5 (tons/yr)	Controlled PTE of PM (tons/yr)	Controlled PTE of PM10 (tons/yr)	Controlled PTE of PM2.5 (tons/yr)
Aggregate/RAP Truck Enter Full	Dump truck (16 CY)	13.70	3.49	0.35	9.01	2.30	0.23	4.50	1.15	0.11
Aggregate/RAP Truck Leave Empty	Dump truck (16 CY)	13.70	3.49	0.35	9.01	2.30	0.23	4.50	1.15	0.11
Asphalt Cement/Binder Truck Enter Full	Tanker truck (6000 gal)	0.449	0.114	0.01	0.295	0.075	7.5E-03	0.148	0.038	3.8E-03
Asphalt Cement/Binder Truck Leave Empty	Tanker truck (6000 gal)	0.449	0.114	0.01	0.295	0.075	7.5E-03	0.148	0.038	3.8E-03
Fuel Oil Truck Enter Full	Tanker truck (6000 gal)	0.095	0.024	2.4E-03	0.063	0.016	1.6E-03	0.031	0.008	8.0E-04
Fuel Oil Truck Leave Empty	Tanker truck (6000 gal)	0.095	0.024	2.4E-03	0.063	0.016	1.6E-03	0.031	0.008	8.0E-04
Aggregate/RAP/Shingle Loader Full	Front-end loader (3 CY)	73.07	18.62	1.86	48.05	12.24	1.22	24.02	6.12	0.61
Aggregate/RAP/Shingle Loader Empty	Front-end loader (3 CY)	73.07	18.62	1.86	48.05	12.24	1.22	24.02	6.12	0.61
Asphalt Concrete Truck Leave Full	Dump truck (16 CY)	13.46	3.43	0.34	8.85	2.26	0.23	4.43	1.13	0.11
Asphalt Concrete Truck Enter Empty	Dump truck (16 CY)	13.46	3.43	0.34	8.85	2.26	0.23	4.43	1.13	0.11
Totals		201.55	51.37	5.14	132.52	33.78	3.38	66.26	16.89	1.69

Methodology

Maximum Material Handling Throughput = [Annual Asphalt Production Limitation (tons/yr)] * [1 - Percent Asphalt Cement/Binder (weight %)]
 Maximum Asphalt Cement/Binder Throughput = [Annual Asphalt Production Limitation (tons/yr)] * [Percent Asphalt Cement/Binder (weight %)]
 Maximum Weight of Vehicle and Load (tons/trip) = [Maximum Weight of Vehicle (tons/trip)] + [Maximum Weight of Load (tons/trip)]
 Maximum trips per year (trip/yr) = [Throughput (tons/yr)] / [Maximum Weight of Load (tons/trip)]
 Total Weight driven per year (ton/yr) = [Maximum Weight of Vehicle and Load (tons/trip)] * [Maximum trips per year (trip/yr)]
 Maximum one-way distance (mi/trip) = [Maximum one-way distance (feet/trip)] / [5280 ft/mile]
 Maximum one-way miles (miles/yr) = [Maximum trips per year (trip/yr)] * [Maximum one-way distance (mi/trip)]
 Average Vehicle Weight Per Trip (ton/trip) = SUM[Total Weight driven per year (ton/yr)] / SUM[Maximum trips per year (trip/yr)]
 Average Miles Per Trip (miles/trip) = SUM[Maximum one-way miles (miles/yr)] / SUM[Maximum trips per year (trip/yr)]
 Unmitigated PTE (tons/yr) = (Maximum one-way miles (miles/yr)) * (Unmitigated Emission Factor (lb/mile)) * (ton/2000 lbs)
 Mitigated PTE (tons/yr) = (Maximum one-way miles (miles/yr)) * (Mitigated Emission Factor (lb/mile)) * (ton/2000 lbs)
 Controlled PTE (tons/yr) = (Mitigated PTE (tons/yr)) * (1 - Dust Control Efficiency)

Abbreviations

PM = Particulate Matter
 PM10 = Particulate Matter (<10 um)
 PM2.5 = Particulate Matter (<2.5 um)
 PM2.5 = PM10
 PTE = Potential to Emit

Appendix A.2: Limited Emissions Summary
Paved Roads
Limited Emissions

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Paved Roads at Industrial Site

The following calculations determine the amount of emissions created by paved roads, based on 8,760 hours of use and AP-42, Ch 13.2.1 (12/2003).

Annual Asphalt Production Limitation	1,000,000	tons/yr
Percent Asphalt Cement/Binder (weight %)	5.0%	
Maximum Material Handling Throughput	950,000	tons/yr
Maximum Asphalt Cement/Binder Throughput	50,000	tons/yr
No. 2 Fuel Oil Limitation	2,788,732	gallons/yr

Process	Vehicle Type	Maximum Weight of Vehicle (tons)	Maximum Weight of Load (tons)	Maximum Weight of Vehicle and Load (tons/trip)	Maximum trips per year (trip/yr)	Total Weight driven per day (ton/yr)	Maximum one-way distance (feet/trip)	Maximum one-way distance (mi/trip)	Maximum one-way miles (miles/yr)
Aggregate/RAP Truck Enter Full	Dump truck (16 CY)	17.0	22.4	39.40	4.2E+04	1.7E+06	560	0.106	4495.5
Aggregate/RAP Truck Leave Empty	Dump truck (16 CY)	17.0	0	17.00	4.2E+04	7.2E+05	560	0.106	4495.5
Asphalt Cement/Binder Truck Enter Full	Tanker truck (6000 gal)	12.0	36.0	48.00	1.4E+03	6.7E+04	560	0.106	147.2
Asphalt Cement/Binder Truck Leave Empty	Tanker truck (6000 gal)	12.0	0	12.00	1.4E+03	1.7E+04	560	0.106	147.2
Fuel Oil Truck Enter Full	Tanker truck (6000 gal)	12.0	32.0	44.00	2.9E+02	1.3E+04	560	0.106	31.2
Fuel Oil Truck Leave Empty	Tanker truck (6000 gal)	12.0	0	12.00	2.9E+02	3.5E+03	560	0.106	31.2
Aggregate/RAP/Shingle Loader Full	Front-end loader (3 CY)	15.0	4.2	19.20	2.3E+05	4.3E+06	560	0.106	23976.2
Aggregate/RAP/Shingle Loader Empty	Front-end loader (3 CY)	15.0	0	15.00	2.3E+05	3.4E+06	560	0.106	23976.2
Asphalt Concrete Truck Leave Full	Dump truck (16 CY)	17.0	24.0	41.00	4.2E+04	1.7E+06	560	0.106	4416.7
Asphalt Concrete Truck Enter Empty	Dump truck (16 CY)	17.0	0	17.00	4.2E+04	7.1E+05	560	0.106	4416.7
Total						6.2E+05	1.3E+07		6.6E+04

Average Vehicle Weight Per Trip = $\frac{20.3}{0.106}$ tons/trip
 Average Miles Per Trip = $\frac{20.3}{0.106}$ miles/trip

Unmitigated Emission Factor, $E_f = [k * (sL/2)^{0.65} * (W/3)^{1.5} * C]$ (Equation 1 from AP-42 13.2.1)

	PM	PM10	PM2.5	
where k =	0.082	0.016	0.0024	lb/mi = particle size multiplier (AP-42 Table 13.2.1-1)
W =	20.3	20.3	20.3	tons = average vehicle weight (provided by source)
C =	0.00047	0.00047	0.00038	lb/mi = emission factor for vehicle exhaust, brake wear, and tire wear (AP-42 Table 13.2.1-2)
sL =	0.6	0.6	0.6	g/m ² = Ubiquitous Baseline Silt Loading Values of paved roads (Table 13.2.1-3 for summer months)

Taking natural mitigation due to precipitation into consideration, Mitigated Emission Factor, $E_{ext} = E_f * [1 - (p/4N)]$

Mitigated Emission Factor, $E_{ext} = E_f * [1 - (p/4N)]$
 where p = $\frac{125}{365}$ days of rain greater than or equal to 0.01 inches (see Fig. 13.2.1-2)
 N = 365 days per year

	PM	PM10	PM2.5	
Unmitigated Emission Factor, E_f =	0.66	0.13	0.02	lb/mile
Mitigated Emission Factor, E_{ext} =	0.60	0.12	0.02	lb/mile
Dust Control Efficiency =	50%	50%	50%	(pursuant to control measures outlined in fugitive dust control plan)

Process	Vehicle Type	Unmitigated PTE of PM (tons/yr)	Unmitigated PTE of PM10 (tons/yr)	Unmitigated PTE of PM2.5 (tons/yr)	Mitigated PTE of PM (tons/yr)	Mitigated PTE of PM10 (tons/yr)	Mitigated PTE of PM2.5 (tons/yr)	Controlled PTE of PM (tons/yr)	Controlled PTE of PM10 (tons/yr)	Controlled PTE of PM2.5 (tons/yr)
Aggregate/RAP Truck Enter Full	Dump truck (16 CY)	1.48	0.29	0.04	1.35	0.26	0.04	0.68	0.13	0.02
Aggregate/RAP Truck Leave Empty	Dump truck (16 CY)	1.48	0.29	0.04	1.35	0.26	0.04	0.68	0.13	0.02
Asphalt Cement/Binder Truck Enter Full	Tanker truck (6000 gal)	0.048	0.009	1.4E-03	0.044	0.009	1.3E-03	0.022	4.3E-03	6.4E-04
Asphalt Cement/Binder Truck Leave Empty	Tanker truck (6000 gal)	0.048	0.009	1.4E-03	0.044	0.009	1.3E-03	0.022	4.3E-03	6.4E-04
Fuel Oil Truck Enter Full	Tanker truck (6000 gal)	1.0E-02	2.0E-03	3.0E-04	9.4E-03	1.8E-03	2.7E-04	4.7E-03	9.1E-04	1.3E-04
Fuel Oil Truck Leave Empty	Tanker truck (6000 gal)	1.0E-02	2.0E-03	3.0E-04	9.4E-03	1.8E-03	2.7E-04	4.7E-03	9.1E-04	1.3E-04
Aggregate/RAP/Shingle Loader Full	Front-end loader (3 CY)	7.89	1.53	0.23	7.21	1.40	0.21	3.61	0.70	0.10
Aggregate/RAP/Shingle Loader Empty	Front-end loader (3 CY)	7.89	1.53	0.23	7.21	1.40	0.21	3.61	0.70	0.10
Asphalt Concrete Truck Leave Full	Dump truck (16 CY)	1.45	0.28	0.04	1.33	0.26	0.04	0.66	0.13	0.02
Asphalt Concrete Truck Enter Empty	Dump truck (16 CY)	1.45	0.28	0.04	1.33	0.26	0.04	0.66	0.13	0.02
Totals		21.75	4.23	0.63	19.89	3.87	0.57	9.94	1.93	0.29

Methodology

Maximum Material Handling Throughput = [Annual Asphalt Production Limitation (tons/yr)] * [1 - Percent Asphalt Cement/Binder (weight %)]
 Maximum Asphalt Cement/Binder Throughput = [Annual Asphalt Production Limitation (tons/yr)] * [Percent Asphalt Cement/Binder (weight %)]
 Maximum Weight of Vehicle and Load (tons/trip) = [Maximum Weight of Vehicle (tons/trip)] + [Maximum Weight of Load (tons/trip)]
 Maximum trips per year (trip/yr) = [Throughput (tons/yr)] / [Maximum Weight of Load (tons/trip)]
 Total Weight driven per year (ton/yr) = [Maximum Weight of Vehicle and Load (tons/trip)] * [Maximum trips per year (trip/yr)]
 Maximum one-way distance (mi/trip) = [Maximum one-way distance (feet/trip)] / [5280 ft/mile]
 Maximum one-way miles (miles/yr) = [Maximum trips per year (trip/yr)] * [Maximum one-way distance (mi/trip)]
 Average Vehicle Weight Per Trip (ton/trip) = SUM[Total Weight driven per year (ton/yr)] / SUM[Maximum trips per year (trip/yr)]
 Average Miles Per Trip (miles/trip) = SUM[Maximum one-way miles (miles/yr)] / SUM[Maximum trips per year (trip/yr)]
 Unmitigated PTE (tons/yr) = (Maximum one-way miles (miles/yr)) * (Unmitigated Emission Factor (lb/mile)) * (ton/2000 lbs)
 Mitigated PTE (tons/yr) = (Maximum one-way miles (miles/yr)) * (Mitigated Emission Factor (lb/mile)) * (ton/2000 lbs)
 Controlled PTE (tons/yr) = (Mitigated PTE (tons/yr)) * (1 - Dust Control Efficiency)

Abbreviations

PM = Particulate Matter
 PM10 = Particulate Matter (<10 um)
 PM2.5 = Particulate Matter (<2.5 um)
 PM2.5 = PM10
 PTE = Potential to Emit

**Appendix A.2: Limited Emissions Summary
Cold Mix Asphalt Production and Stockpiles**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

The following calculations determine the amount of VOC and HAP emissions created from volatilization of solvent used as diluent in the liquid binder for cold mix asphalt production

Cold Mix Asphalt VOC Usage Limitation = tons/yr

Volatile Organic Compounds

	Maximum weight % of VOC solvent in binder	Weight % VOC solvent in binder that evaporates	VOC Solvent Usage Limitation (tons/yr)	Limited PTE of VOC (tons/yr)	Liquid Binder Adjustment Ratio
Cut back asphalt rapid cure (assuming gasoline or naphtha solvent)	25.3%	95.0%	54.0	51.3	1.053
Cut back asphalt medium cure (assuming kerosene solvent)	28.6%	70.0%	73.3	51.3	1.429
Cut back asphalt slow cure (assuming fuel oil solvent)	20.0%	25.0%	205.1	51.3	4.000
Emulsified asphalt with solvent (assuming water, emulsifying agent, and 15% fuel oil solvent)	15.0%	46.4%	110.5	51.3	2.155
Other asphalt with solvent binder	25.9%	2.5%	2051.3	51.3	40.0
Worst Case Limited PTE of VOC =				51.3	

Hazardous Air Pollutants

Worst Case Total HAP Content of VOC solvent (weight %) =	26.08%
Worst Case Single HAP Content of VOC solvent (weight %) =	9.0% Xylenes
Limited PTE of Total HAPs (tons/yr) =	13.38
Limited PTE of Single HAP (tons/yr) =	4.62 Xylenes

Hazardous Air Pollutant (HAP) Content (% by weight) For Various Petroleum Solvents*

Volatile Organic HAP	CAS#	Hazardous Air Pollutant (HAP) Content (% by weight)* For Various Petroleum Solvents				
		Gasoline	Kerosene	Diesel (#2) Fuel Oil	No. 2 Fuel Oil	No. 6 Fuel Oil
1,3-Butadiene	106-99-0	3.70E-5%				
2,2,4-Trimethylpentane	540-84-1	2.40%				
Acenaphthene	83-32-9		4.70E-5%		1.80E-4%	
Acenaphthylene	208-96-8		4.50E-5%		6.00E-5%	
Anthracene	120-12-7		1.20E-6%	5.80E-5%	2.80E-5%	5.00E-5%
Benzene	71-43-2	1.90%		2.90E-4%		
Benzo(a)anthracene	56-55-3			9.60E-7%	4.50E-7%	5.50E-4%
Benzo(a)pyrene	50-32-8			2.20E-6%	2.10E-7%	4.40E-5%
Benzo(g,h,i)perylene	191-24-2			1.20E-7%	5.70E-8%	
Biphenyl	92-52-4			6.30E-4%	7.20E-5%	
Chrysene	218-01-9			4.50E-7%	1.40E-6%	6.90E-4%
Ethylbenzene	100-41-4	1.70%		0.07%	3.40E-4%	
Fluoranthene	206-44-0		7.10E-6%	5.90E-5%	1.40E-5%	2.40E-4%
Fluorene	86-73-7		4.20E-5%	8.60E-4%	1.90E-4%	
Indeno(1,2,3-cd)pyrene	193-39-5			1.60E-7%		1.00E-4%
Methyl-tert-butylether	1634-04-4	0.33%				
Naphthalene	91-20-3	0.25%	0.31%	0.26%	0.22%	4.20E-5%
n-Hexane	110-54-3	2.40%				
Phenanthrene	85-01-8		8.60E-6%	8.80E-4%	7.90E-4%	2.10E-4%
Pyrene	129-00-0		2.40E-6%	4.60E-5%	2.90E-5%	2.30E-5%
Toluene	108-88-3	8.10%		0.18%	6.20E-4%	
Total Xylenes	1330-20-7	9.00%		0.50%	0.23%	
Total Organic HAPs		26.08%	0.33%	1.29%	0.68%	0.19%
Worst Single HAP		9.00%	0.31%	0.50%	0.23%	0.07%
		Xylenes	Naphthalene	Xylenes	Xylenes	Chrysene

Methodology

Limited PTE of VOC (tons/yr) = [Weight % VOC solvent in binder that evaporates] * [VOC Solvent Usage Limitation (tons/yr)]
 Limited PTE of Total HAPs (tons/yr) = [Worst Case Total HAP Content of VOC solvent (weight %)] * [Worst Case Limited PTE of VOC (tons/yr)]
 Limited PTE of Single HAP (tons/yr) = [Worst Case Single HAP Content of VOC solvent (weight %)] * [Worst Case Limited PTE of VOC (tons/yr)]
 *Source: Petroleum Liquids. Potter, T.L. and K.E. Simmons. 1998. Total Petroleum Hydrocarbon Criteria Working Group Series, Volume 2. Composition of Petroleum Mixtures. The Association for Environmental Health and Science. Available on the Internet at: <http://www.aehs.com/publications/catalog/contents/tp.htm>

Abbreviations

VOC = Volatile Organic Compounds
 PTE = Potential to Emit

**Appendix A.2: Limited Emissions Summary
Gasoline Fuel Transfer and Dispensing Operation**

Company Name: Rieth-Riley Construction Co., Inc.
Source Address: 25200 State Road 23, South Bend, IN 46614
Permit Number: 141-31916-00027
Reviewer: Bruce Farrar

Note: Since the emissions from the gasoline fuel transfer and dispensing operation are minimal, the limited emissions are equal to the unlimited emissions.

To calculate evaporative emissions from the gasoline dispensing fuel transfer and dispensing operation handling emission factors from AP-42 Table 5.2-7 were used. The total potential emission of VOC is as follows:

$$\begin{aligned} \text{Gasoline Throughput} &= 0 \text{ gallons/day} \\ &= 0.0 \text{ kgal/yr} \end{aligned}$$

Volatile Organic Compounds

Emission Source	Emission Factor (lb/kgal of throughput)	PTE of VOC (tons/yr)*
Filling storage tank (balanced submerged filling)	0.3	0.00
Tank breathing and emptying	1.0	0.00
Vehicle refueling (displaced losses - controlled)	1.1	0.00
Spillage	0.7	0.00
Total		0.00

Hazardous Air Pollutants

Worst Case Total HAP Content of VOC solvent (weight %)* =	26.08%	
Worst Case Single HAP Content of VOC solvent (weight %)* =	9.0%	Xylenes
Limited PTE of Total HAPs (tons/yr) =	0.00	
Limited PTE of Single HAP (tons/yr) =	0.00	Xylenes

Methodology

The gasoline throughput was provided by the source.

Gasoline Throughput (kgal/yr) = [Gasoline Throughput (lbs/day)] * [365 days/yr] * [kgal/1000 gal]

PTE of VOC (tons/yr) = [Gasoline Throughput (kgal/yr)] * [Emission Factor (lb/kgal)] * [ton/2000 lb]

PTE of Total HAPs (tons/yr) = [Worst Case Total HAP Content of VOC solvent (weight %)] * [PTE of VOC (tons/yr)]

PTE of Single HAP (tons/yr) = [Worst Case Single HAP Content of VOC solvent (weight %)] * [PTE of VOC (tons/yr)]

*Source: Petroleum Liquids. Potter, T.L. and K.E. Simmons. 1998. Total Petroleum Hydrocarbon Criteria Working Group Series, Volume 2.

Composition of Petroleum Mixtures. The Association for Environmental Health and Science. Available on the Internet at:

<http://www.aehs.com/publications/catalog/contents/tph.htm>

Abbreviations

VOC = Volatile Organic Compounds

PTE = Potential to Emit



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

Mitchell E. Daniels Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
www.idem.IN.gov

SENT VIA U.S. MAIL: CONFIRMED DELIVERY AND SIGNATURE REQUESTED

TO: John Berscheit
Reith-Riley Construction
PO Box 477
Goshen, IN 46527-0477

DATE: July 9, 2012

FROM: Matt Stuckey, Branch Chief
Permits Branch
Office of Air Quality

SUBJECT: Final Decision
FESOP - Administrative Amendment
141 - 31916 - 00027

Enclosed is the final decision and supporting materials for the air permit application referenced above. Please note that this packet contains the original, signed, permit documents.

The final decision is being sent to you because our records indicate that you are the contact person for this application. However, if you are not the appropriate person within your company to receive this document, please forward it to the correct person.

A copy of the final decision and supporting materials has also been sent via standard mail to:
OAQ Permits Branch Interested Parties List

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178, or toll-free at 1-800-451-6027 (ext. 3-0178), and ask to speak to the permit reviewer who prepared the permit. If you think you have received this document in error, please contact Joanne Smiddie-Brush of my staff at 1-800-451-6027 (ext 3-0185), or via e-mail at jbrush@idem.IN.gov.

Final Applicant Cover letter.dot 11/30/07

Mail Code 61-53

IDEM Staff	LPOGOST 7/9/2012 Rieth-Riley Construction Co., Inc. 141 - 31916 - 00027 /final)		AFFIX STAMP HERE IF USED AS CERTIFICATE OF MAILING	
Name and address of Sender		Indiana Department of Environmental Management Office of Air Quality – Permits Branch 100 N. Senate Indianapolis, IN 46204	Type of Mail: CERTIFICATE OF MAILING ONLY	

Line	Article Number	Name, Address, Street and Post Office Address	Postage	Handing Charges	Act. Value (If Registered)	Insured Value	Due Send if COD	R.R. Fee	S.D. Fee	S.H. Fee	Rest. Del. Fee	Remarks
1		John Berscheid Rieth-Riley Construction Co., Inc. PO Box 477 Goshen IN 46527-0477 (Source CAATS) Via confirmed delivery										
2		Henry & Helen Schultz 15278 Kerlin Dr Granger IN 46530 (Affected Party)										
3		Mr. Wayne Falda South Bend Tribune 255 W Colfax Ave South Bend IN 46626 (Affected Party)										
4		Mr. John Leader 3014 E Jefferson Square South Bend IN 46615 (Affected Party)										
5		Ralph & Wanda Williams 18011 Cleveland Rd South Bend IN 46637 (Affected Party)										
6		Mr. William Foose 51740 Juniper Rd South Bend IN 46637 (Affected Party)										
7		South Bend City Council / Mayors Office 227 W. Jefferson Blvd. South Bend IN 46601 (Local Official)										
8		St. Joseph County Board of Commissioners 227 West Jefferson Blvd, South Bend IN 46601 (Local Official)										
9		St. Joseph County Health Department 227 W Jefferson Blvd, Room 825 South Bend IN 46601-1870 (Health Department)										
10												
11												
12												
13												
14												
15												

Total number of pieces Listed by Sender	Total number of Pieces Received at Post Office	Postmaster, Per (Name of Receiving employee)	The full declaration of value is required on all domestic and international registered mail. The maximum indemnity payable for the reconstruction of nonnegotiable documents under Express Mail document reconstructing insurance is \$50,000 per piece subject to a limit of \$50, 000 per occurrence. The maximum indemnity payable on Express mil merchandise insurance is \$500. The maximum indemnity payable is \$25,000 for registered mail, sent with optional postal insurance. See Domestic Mail Manual R900, S913, and S921 for limitations of coverage on inured and COD mail. See International Mail Manual for limitations o coverage on international mail. Special handling charges apply only to Standard Mail (A) and Standard Mail (B) parcels.
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