B·WISE CONSULTING

AI ID: 14596 272 Suncrest Drive, Greenwood, Indiana 46143
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May 13, 2024

Received by State of Indiana IDEM-OAQ via email May 13, 2024 MJ-2

Indiana Department of Environmental Management
Office of Air Quality
Permits Branch
100 N. Senate Avenue
MC 61-53 Room 1003
Indianapolis, IN 46204-2251

Re: Arcosa LW HPB, LLC
Source ID 109-00007

Dear Sir or Madam:

On behalf of Arcosa LW HPB, LLC (Arcosa), B-WISE Consulting LLC (B-WISE) is submitting the enclosed permit application to request the addition of a crusher. The new crusher should be identified as follows:

> "One (1) Crusher, identified as RSC1, constructed in 2024 with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control."

The required air permit forms, permit mark up, and potential emission calculations are attached.

Thank you for your assistance with this matter. Please contact me by telephone at 317-509-2762 or via e-mail at cwise@b-wiseconsulting.com if you have any questions.

Sincerely,
B-WISE Consulting LLC

Cheryl Wise

Cheryl Wise
Co-Founder | C.E.O.

Enclosure

Cc: Ralph Hulsizer, Arcosa via e-mail
Cristian Boar, Arcosa via e-mail
Dainae Prejean, Arcosa via e-mail

AIR PERMIT APPLICATION COVER SHEET

State Form 50639 (R4 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this cover sheet is to obtain the core information needed to process the air permit application. This cover sheet is required for all air permit applications submitted to IDEM, OAQ. Place this cover sheet on top of all subsequent forms and attachments that encompass your air permit application packet.
- Submit the completed air permit application packet, including all forms and attachments, to **IDEM Air Permits Administration** using the address in the upper right hand corner of this page.
- IDEM will send a bill to collect the filing fee and any other applicable fees.
- Detailed instructions for this form are available on the Air Permit Application Forms website.

FOR OFFICE USE ONLY

PERMIT NUMBER: 109-47840-00007

DATE APPLICATION WAS RECEIVED:

Received by State of Indiana IDEM-OAQ via email May 13, 2024 MJ-2

1. Tax ID Number:

PART A: Purpose of Application

Part A identifies the purpose of this air permit application. For the purposes of this form, the term "source" refers to the plant site as a whole and NOT to individual emissions units.

2. Source / Company Name: Arcosa LW HPB, LLC **3. Plant ID:** 109 — 00007

4. Billing Address: 6618 Tidewater Road

City: Mooresville **State:** IN **ZIP Code:** 46158 –

5. Permit Level: ☐ Exemption ☐ Registration ☐ SSOA ☐ MSOP ☐ FESOP ☒ TVOP ☐ PBR

6. Application Summary: *Check all that apply. Multiple permit numbers may be assigned as needed based on the choices selected below.*

☐ Initial Permit ☐ Renewal of Operating Permit ☐ Asphalt General Permit
☐ Review Request ☐ Revocation of Operating Permit ☐ Alternate Emission Factor Request
☐ Interim Approval ☐ Relocation of Portable Source ☐ Acid Deposition (Phase II)
☐ Site Closure ☐ Emission Reduction Credit Registry

☐ Transition (between permit levels) *From:* *To:*

☐ Administrative Amendment: ☐ *Company Name Change* ☐ *Change of Responsible Official*
☐ *Correction to Non-Technical Information* ☐ *Notice Only Change*
☐ *Other (specify):*

☒ Modification: ☒ *New Emission Unit or Control Device* ☐ *Modified Emission Unit or Control Device*
☐ *New Applicable Permit Requirement* ☐ *Change to Applicability of a Permit Requirement*
☐ *Prevention of Significant Deterioration* ☐ *Emission Offset* ☐ *MACT Preconstruction Review*
☐ *Minor Source Modification* ☐ *Significant Source Modification*
☐ *Minor Permit Modification* ☐ *Significant Permit Modification*
☐ *Other (specify):*

7. Is this an application for an initial construction and/or operating permit for a **"Greenfield" Source**? ☐ Yes ☒ No

8. Is this an application for construction of a new emissions unit at an **Existing Source**? ☐ Yes ☒ No

Continued on Next Page

PART B: Pre-Application Meeting

Part B specifies whether a meeting was held or is being requested to discuss the permit application.

9. Was a meeting held between the company and IDEM prior to submitting this application to discuss the details of the project?

☒ No ☐ Yes: *Date:*

10. Would you like to schedule a meeting with IDEM management and your permit writer to discuss the details of this project?

☒ No ☐ Yes: *Proposed Date for Meeting:*

PART C: Confidential Business Information

Part C identifies permit applications that require special care to ensure that confidential business information is kept separate from the public file.

Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in the Indiana Administrative Code (IAC). To ensure that your information remains confidential, refer to the IDEM, OAQ information regarding submittal of confidential business information. For more information on confidentiality for certain types of business information, please review IDEM's Nonrule Policy Document Air-031-NPD regarding Emission Data.

11. Is any of the information contained within this application being claimed as **Confidential Business Information**?

☒ No ☐ Yes

PART D: Certification Of Truth, Accuracy, and Completeness

Part D is the official certification that the information contained within the air permit application packet is truthful, accurate, and complete. Any air permit application packet that we receive without a signed certification will be deemed incomplete and may result in denial of the permit.

For a Part 70 Operating Permit (TVOP) or a Source Specific Operating Agreement (SSOA), a "responsible official" as defined in 326 IAC 2-7-1(34) must certify the air permit application. For all other applicants, this person is an "authorized Individual" as defined in 326 IAC 2-1.1-1(1).

☒ *I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate, and complete.*

Dainae Prejean	Environmental Manager
Name *(typed)*	Title
	13/05/24
Signature	Date

OAQ GENERAL SOURCE DATA APPLICATION
GSD-01: Basic Source Level Information

State Form 50640 (R5 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

Received by State of Indiana IDEM-OAQ
via email May 13, 2024 MJ-2

NOTES:

- The purpose of GSD-01 is to provide essential information about the entire source of air pollutant emissions. GSD-01 is a required form.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for public inspection.

109-47840-00007

PART A: Source / Company Location Information

1. Source / Company Name: Arcosa LW HPB, LLC
2. Plant ID: 109 – 00007

3. Location Address: 6618 North Tidewater Road

City: Mooresville | **State**: IN | **ZIP Code**: 46158 –

4. County Name: Morgan
5. Township Name: Clay

6. Geographic Coordinates:

Latitude: 39 31' 37" | **Longitude**: 86 22' 43.06"

7. Universal Transferal Mercadum Coordinates *(if known)*:

Zone: | **Horizontal**: | **Vertical**:

8. Adjacent States: Is the source located within 50 miles of an adjacent state?

☒ No ☐ Yes – *Indicate Adjacent State(s):* ☐ Illinois (IL) ☐ Michigan (MI) ☐ Ohio (OH) ☐ Kentucky (KY)

9. Attainment Area Designation: Is the source located within a non-attainment area for any of the criteria air pollutants?

☒ No ☐ Yes – *Indicate Nonattainment Pollutant(s):* ☐ CO ☐ Pb ☐ NO_x ☐ O_3 ☐ PM ☐ PM_{10} ☐ $PM_{2.5}$ ☐ SO_2

10. Portable / Stationary: Is this a portable or stationary source? ☐ Portable ☒ Stationary

PART B: Source Summary

11. Company Internet Address *(optional)*:

12. Company Name History: Has this source operated under any other name(s)?

☐ No ☒ Yes – *Provide information regarding past company names in Part I, Company Name History.*

13. Portable Source Location History: Will the location of the portable source be changing in the near future?

☒ Not Applicable ☐ No ☐ Yes – *Complete Part J, Portable Source Location History, and Part K, Request to Change Location of Portable Source.*

14. Existing Approvals: Have any exemptions, registrations, or permits been issued to this source?

☐ No ☒ Yes – *List these permits and their corresponding emissions units in Part M, Existing Approvals.*

15. Unpermitted Emissions Units: Does this source have any unpermitted emissions units?

☒ No ☐ Yes – *List all unpermitted emissions units in Part N, Unpermitted Emissions Units.*

16. New Source Review: Is this source proposing to construct or modify any emissions units?

☒ No ☐ Yes – *List all proposed new construction in Part O, New or Modified Emissions Units.*

17. Risk Management Plan: Has this source submitted a Risk Management Plan?

☒ Not Required ☐ No ☐ Yes → Date submitted: EPA Facility Identifier: – –

Continued on Next Page

PART C: Source Contact Information

IDEM will send the original, signed permit decision to the person identified in this section. This person MUST be an employee of the permitted source.

18. Name of Source Contact Person: Dainae Prejean

19. Title *(optional)*: Environmental Manager

20. Mailing Address: PO Box 190

City: Erwinville	**State**: LA	**ZIP Code**: 70729 –

21. Electronic Mail Address *(optional)*: dainae.prejean@arcosa.com

22. Telephone Number: (225) 627 – 4242	**23. Facsimile Number** *(optional)*: ( ) –

PART D: Authorized Individual/Responsible Official Information

IDEM will send a copy of the permit decision to the person indicated in this section, if the Authorized Individual or Responsible Official is different from the Source Contact specified in Part C.

24. Name of Authorized Individual or Responsible Official: Brian Dowden

25. Title: Vice President - Operations

26. Mailing Address: 12652 Hwy 190 West

City: Erwinville	**State**: LA	**ZIP Code**: 70757 –

27. Telephone Number: (225) 627 – 6242	**28. Facsimile Number** *(optional)*: ( ) –

29. Request to Change the Authorized Individual or Responsible Official: Is the source officially requesting to change the person designated as the Authorized Individual or Responsible Official in the official documents issued by IDEM, OAQ? *The permit may list the title of the Authorized Individual or Responsible Official in lieu of a specific name.*

☐ No ☒ Yes – ***Change Responsible Official to:*** Brian Dowden

PART E: Owner Information

30. Company Name of Owner: Arcosa LW HPB, LLC

31. Name of Owner Contact Person:

32. Mailing Address:

City:	**State**:	**ZIP Code**: –

33. Telephone Number: ( ) –	**34. Facsimile Number** *(optional)*: ( ) –

34. Operator: Does the "Owner" company also operate the source to which this application applies?

☐ No – *Proceed to Part F below.*	☒ Yes – *Enter "SAME AS OWNER" on line 35 and proceed to Part G below.*

PART F: Operator Information

35. Company Name of Operator: SAME AS OWNER

36. Name of Operator Contact Person:

37. Mailing Address:

City:	**State**:	**ZIP Code**: –

38. Telephone Number: ( ) –	**39. Facsimile Number** *(optional)*: ( ) –

Continued on Next Page

PART G: Agent Information

40. Company Name of Agent: B-WISE Consulting LLC

41. Type of Agent: ☒ Environmental Consultant ☐ Attorney ☐ Other (specify):

42. Name of Agent Contact Person: Cheryl Wise

43. Mailing Address: 272 Suncrest Drive

City: Greenwood	**State**: IN	**ZIP Code**: 46143 –

44. Electronic Mail Address *(optional)*: cwise@b-wiseconsulting.com

45. Telephone Number: (317) 509 – 2762	**46. Facsimile Number** *(optional)*: ( ) –

47. Request for Follow-up: Does the "Agent" wish to receive a copy of the preliminary findings during the public notice period (if applicable) and a copy of the final determination? ☐ No ☒ Yes

PART H: Local Library Information

48. Date application packet was filed with the local library: Within ten (10) days of permit application submission

49. Name of Library: Mooresville Public Library

50. Name of Librarian *(optional)*:

51. Mailing Address: 220 West Harrison Street

City: Mooresville	**State**: IN	**ZIP Code**: 46158 –

52. Internet Address *(optional)*:

53. Electronic Mail Address *(optional)*:

54. Telephone Number: (317) 831 – 7323	**55. Facsimile Number** *(optional)*: ( ) –

PART I: Company Name History *(if applicable)*

Complete this section only if the source has previously operated under a legal name that is different from the name listed above in Section A.

56. Legal Name of Company	**57. Dates of Use**
TRN LW HPB, LLC	2017 to
Hydraulic Press Brick Company	1954 to
	to
	to
	to
	to
	to
	to
	to
	to

58. Company Name Change Request: Is the source officially requesting to change the legal name that will be printed on all official documents issued by IDEM, OAQ?

☒ No ☐ Yes – ***Change Company Name to***:

Continued on Next Page

PART J: Portable Source Location History *(if applicable)*

Complete this section only if the source is portable and the location has changed since the previous permit was issued. The current location of the source should be listed in Section A.

59. Plant ID	60. Location of the Portable Source	61. Dates at this Location
–		to
–		to
–		to

PART L: Source Process Description

Complete this section to summarize the main processes at the source.

64. Process Description	65. Products	66. SIC Code	67. NAICS Code
Lightweight Expanded Shale Processing	Expanded Shale	3295	327992

PART M: Existing Approvals *(if applicable)*

Complete this section to summarize the approvals issued to the source since issuance of the main operating permit.

68. Permit ID	69. Emissions Unit IDs	70. Expiration Date
46609	Facility Wide - Renewal	2/21/2029
46380	Facility Wide - Significant Permit Modification	2/21/2024
44424	Facility Wide - Administrative Amendment	2/21/2024
44068	Facility Wide - Adminsitrative Amendment	2/21/2024
43754	Facility Wide - Significant Source Modification	2/21/2024

PART N: Unpermitted Emissions Units *(if applicable)*

Complete this section only if the source has emission units that are not listed in any permit issued by IDEM, OAQ.

71. Emissions Unit ID	72. Type of Emissions Unit	73. Actual Dates		
		Began Construction	Completed Construction	Began Operation

PART O: New or Modified Emissions Units *(if applicable)*

Complete this section only if the source is proposing to add new emission units or modify existing emission units.

74. Emissions Unit ID	75. NEW	76. MOD	77. Type of Emissions Unit	78. Estimated Dates		
				Begin Construction	Complete Construction	Begin Operation
RSC1	X		Crusher	5/10/2024	5/10/2024	5/10/2024

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.4 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-7-4(c)][326 IAC 2-7-5(14)][326 IAC 2-7-1(22)]

The Permittee owns and operates a stationary lightweight expanded shale processing plant.

Source Address:	6618 North Tidewater Road, Mooresville, Indiana 46158
General Source Phone Number	317-633-8556
SIC Code:	3295 (Minerals and Earths, Ground or Otherwise Treated)
County Location:	Morgan
Source Location Status:	Attainment for all criteria pollutants
Source Status:	Part 70 Operating Permit Program Major Source, under PSD Rules Major 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 2-7-4(c)(3)][326 IAC 2-7-5(14)]

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

(a) One (1) pre-kiln shale processing operation, identified as pre-kiln, constructed in 1954, with a maximum capacity of 200 tons of raw shale per hour, using wet suppression of fugitive dust as control, and exhausting outside the building, and consisting of the following equipment:

(1) One (1) primary crusher, identified as PK1, with a maximum capacity of 200 tons of raw shale per hour;

(2) One (1) secondary crusher, identified as PK2, with a maximum capacity of 100 tons of raw shale per hour;

(3) Six (6) conveyors, identified as PK3 through PK8, each with a maximum capacity of 200 tons of raw shale per hour;

(b) One (1) rotary kiln, identified as K4, constructed in 1962, with a maximum heat input of 100 million British Thermal Units (MMBtu) per hour burning natural gas or bituminous coal with a maximum capacity of 15 tons of raw shale per hour, using a Peabody wet scrubber as control, and exhausting to stack ST4;

(c) One (1) rotary kiln, identified as K5, constructed in 1968, with a maximum heat input of 100 MMBtu per hour burning natural gas or bituminous coal, with a maximum capacity of 30 tons of raw shale per hour, using a cloth baghouse as control, and exhausting to stack ST5;

(d) One (1) haydite crusher line, identified as HCR, constructed in 1962, with a maximum capacity of 100 tons of expanded shale per hour, using wet suppression of fugitive dust as control, exhausting outside the building, and consisting of the following equipment:

(1) one (1) primary haydite crusher, identified as HCR1, with a maximum capacity of 100 tons of expanded shale per hour

(2) Two (2) conveyors, identified as HCR2 and HCR3, with a maximum capacity of 100 tons each of expanded shale per hour.

(e) One (1) reciprocating grate clinker cooler, identified as CLNKCCCL, constructed in 1966, with a maximum capacity of 40 tons of expanded shale per hour, using a multiclone as control, and exhausting to stack ST2;

(f) One (1) sorbent injection system, identified as CE-K4, with maximum rated capacity of 4,000 pounds of sorbent per hour, constructed in 2016 to control SO2 emissions from the existing Kiln #4.

(g) One (1) sorbent injection system, identified as CE-K5 with maximum rated capacity of 4,000 pounds of sorbent per hour, constructed in 2016 to control SO2 emissions from the existing Kiln #5.

(h) Two (2) sorbent storage silos, #1 and #2, each with storage capacity of 120 tons, controlled by bin vent filters, constructed in 2016.

(i) One (1) portable screening plant approved in 2018 for construction consisting of the following:

(1) One (1) triple deck screen, identified as PS1 with a maximum capacity of 250 tons per hour

(2) Four (4) conveyors, identified as PS2 through PS5, each with a maximum capacity of 250 tons per hour.

(j) One (1) haydite screener, identified as HCR9, constructed in 2018 and modified in 2021, with a maximum capacity of 100 tons of expanded shale per hour, using wet suppression of fugitive dust as control, and exhausting outdoors.

[Under 40 CFR 60, Subpart OOO, the screener is considered an affected facility.]

(k) Three (3) shale aggregate storage silos, identified as Clinker Bin, Ax Bin, and B Bin, constructed prior to 2018, each with a maximum storage capacity of 120 tons, using wet suppression of fugitive dust as control, and exhausting outdoors.

[Under 40 CFR 60, Subpart OOO, the silos are considered affected facilities.]

(l) Screening Plant, consisting of the following:

(1) One (1) Radial Stacker Hopper, identified as RS1, constructed in 1962 with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control.

(2) One (1) Radial Stacker Hopper Conveyor, identified as RS2, constructed in 1962 with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control.

One (1) Crusher, identified as RSC1, constructed in 2024 with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control.

(3) One (1) Secondary Crusher, identified as HCR4, constructed in 1962 with a maximum capacity of 10 tons per hour using wet suppression of fugitive dust as control.

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(4) One (1) Pyrite Belt, identified as PB1, constructed in 1962 with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control.

(5) One (1) #2 Belt, identified as HCR5, constructed in 1962 with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control.

(6) One (1) Bottom Screen, identified as HCR6, constructed in 1962 with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control.

(7) One (1) #3 Belt, identified as HCR7, constructed in 1962 with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control.

(8) One (1) Oversize Belt, identified as OSM1, constructed in 1962 with a maximum capacity of 10 tons per hour using wet suppression of fugitive dust as control.

(9) One (1) Bucket Elevator identified as HCR8, constructed in 1962 with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control

(10) One (1) #1 Stockpile Belt, identified as HCR15, constructed in 1962 with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control.

(11) One (1) #2 Stockpile Belt, identified as HCR16, constructed in 1962 with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control.

(12) One (1) 3-regrind Chute, identified as HCR10, constructed in 2018 with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control

[Under 40 CFR 60, Subpart OOO, this emission unit is considered an affected facility.]

(13) HCR1 Feed Conveyor, identified as HCR17, constructed in 2018, with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control.

[Under 40 CFR 60, Subpart OOO, this emission unit is considered an affected facility.]

(14) One (1) Air Bin Chute to #1 Stockpile Belt, identified as HCR13, constructed in 2018with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control.

[Under 40 CFR 60, Subpart OOO, this emission unit is considered an affected facility.]

(15) One (1) Load Belt, identified as HCR14, constructed in 2018 with a maximum capacity of 100 tons per hour using wet suppression of fugitive dust as control.

[Under 40 CFR 60, Subpart OOO, this emission unit is considered an affected facility.]

A.3 Specifically Regulated Insignificant Activities
[326 IAC 2-7-1(21)][326 IAC 2-7-4(c)][326 IAC 2-7-5(14)]

This stationary source also includes the following insignificant activities which are specifically regulated, as defined in 326 IAC 2-7-1(21):

(a) Paved and unpaved roads and parking lots with public access; [326 IAC 6-4]

(b) Other activities or categories with emissions below insignificant thresholds: [326 IAC 6-4]

(1) One coal silo, identified as silo 6, with a maxium throughput of 280 tons per hour, using no control and exhausting indoors.

(2) One (1) coal unloading operation, with a maximum capacity of 280 tons of coal per hour, consisting of one (1) dump pit, one (1) hopper for coal unloading, and two (2) conveyors.

(3) One (1) covered silo, identified as silo 4, constructed in 1962, with a maximum storage capacity of 200 tons of raw shale and a maximum throughput of 15 tons of shale per hour.

(4) Three (3) hoppers, identified as PK9 through PK11, each with a maximum capacity of 100 tons of raw shale per hour.

(5) Two (2) crusher, identified as HCR11 and HCR12, each with a maximum capacity of 100 tons of expanded shale per hour.

(6) One (1) covered silo, identified as silo 3, approved in 2021 for construction, with a maximum storage capacity of 600 tons of raw shale and a maximum throughput of 30 tons of shale per hour, using no control, and exhausting outdoors.

[Under 40 CFR 60, Subpart OOO, this unit is considered an affected facility]

(c) One (1) wash plant screener, identified as WP, constructed prior to 2010, with a maximum capacity of 30 tons per hour, using wet suppression of fugitive dust as control, and exhausting outdoors.

(d) Two (2) coal grinding mills, identified as CGM493 and CGM372, constructed prior to 2018, with a maximum capacity of 16,800 pounds per hour (CGM493) and 6,200 pounds per hour (CGM372), using no control, and exhausting outdoors.

(e) One (1) diesel-fired emergency pony engine, identified as Emergency Engine, constructed prior to 1996, with a maximum rating of 26 HP, using no control, and exhausting indoors.

[Under 40 CFR 63, Subpart ZZZZ, the emergency engine is considered an affected facility.]

(f) Three (3) storage tanks, constructed prior to 2018, and consisting of the following:

(i) One (1) gasoline storage tank, with a storage capacity of 250 gallons.

(ii) One (1) diesel storage tank, with a storage capacity of 2,500 gallons.

(iii) One (1) portable diesel storage tank, with a storage capacity of 500 gallons.

(g) One (1) maintenance welding operation, constructed prior to 2018, with a maximum electrode consumption of 6.5 pounds per hour, using no control, and exhausting indoors.

(h) Six stockpiles, each with a maximum capacity of .75 acres, identified as follows:

(1) Stockpile Ax

(2) Back "B" Stockpile

(3) Stockpile L

(4) Stockpile C

(5) Front "B" Stockpile

(6) Stockpile Bx

(i) A gasoline fuel transfer and dispensing operation handling less than 10,000 gallons per day, such as filling tanks, locomotives, automobiles, and having a storage capacity less than or equal to 10,300 gallons.

[Under 40 CFR 63, Subpart CCCCCC, the gasoline fuel transfer and dispensing operation is considered an affected facility.]

A.4 Part 70 Permit Applicability [326 IAC 2-7-2]

This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

(a) It is a major source, as defined in 326 IAC 2-7-1(22);

(b) It is a source in a source category designated by the United States Environmental Protection Agency (U.S. EPA) under 40 CFR 70.3 (Part 70 - Applicability).

Appendix A: Emissions Calculations
Source Summary

Company Name: Arcosa LW HPB, LLC
Address City IN Zip: 6618 N Tidewater Road, Mooresville, Indiana 46158
Permit Number:
Reviewer:

Uncontrolled Potential to Emit, tons/year									
Emission Units	PM	PM_{10}	$PM_{2.5}$	SO_2	NOx	VOC	CO	Total HAP	Single HAP (HCl)
PRE-KILN PROCESSING									
Primary Crushing, PK1	4.73	2.10	2.10	-	-	-	-	-	-
Secondary Crushing, PK2	2.37	1.05	1.05	-	-	-	-	-	-
Conveyor Transfer, PK3-PK8	15.77	5.78	5.78	-	-	-	-	-	-
HAYDITE CRUSHER LINE, HCR									
Primary Crushing, HCR1	5.91	2.63	2.63	-	-	-	-	-	-
Conveyor Transfer, HCR2, HCR3	2.63	0.96	0.96	-	-	-	-	-	-
PORTABLE SCREENING									
Triple-deck Screening	27.38	9.53	9.53	-	-	-	-	-	-
Haydite Screener HCR9	10.95	3.81	3.81	-	-	-	-	-	-
WP Screener	3.29	1.14	1.14	-	-	-	-	-	-
4 Conveyors, PS2-PS5	13.14	4.82	4.82	-	-	-	-	-	-
ROTARY KILNS									
Rotary Kiln, K4	3857.53	1432.26	1432.26	385.01	124.83	51.25	38.76	21.54	21.54
Rotary Kiln, K5	7274.30	2673.99	2673.99	1726.60	249.66	102.49	77.53	21.54	21.54
Clinker Cooler, CLNKCOOL	52.56	21.02	21.02	-	-	-	-	-	-
SORBENT HANDLING									
Sorbent Silos #1 & #2	458.53	160.63	160.63	-	-	-	-	-	-
COAL HANDLING									
Coal Grinding Mill	1.01	0.30	0.30	-	-	-	-	-	-
Coal Unloading	0.60	0.21	0.03	-	-	-	-	-	-
Diesel-Fired Emergency Pony Engine	0.01	0.01	0.01	0.01	0.20	0.02	0.04	1.8E-04	-
Aggregate Silos	287.77	185.27	185.27	-	-	-	-	-	-
Covered Silos	1.36	0.65	0.65	-	-	-	-	-	-
Three (3) Storage Tanks [1]	-	-	-	-	-	1.00	-	-	-
Maintenance Welding	0.19	0.19	0.19	-	-	-	-	0.02	-
Screening Plant	28.16	10.31	10.31	-	-	-	-	-	-
PRODUCT HANDLING									
Stockpile	7.28	3.64	0.55	-	-	-	-	-	-
Unpaved Roads	29.62	7.89	0.79	-	-	-	-	-	-
Total Fugitive Emissions	36.89	11.53	1.34	-	-	-	-	-	-
Total (Excluding Fugitives)	12048.18	4516.68	4516.50	2111.62	374.69	154.75	116.33	43.10	43.08
Total (Including Fugitives)	12085.08	4528.21	4517.84	2111.62	374.69	154.75	116.33	43.10	43.08

Limited Potential to Emit, tons/year									
Emission Units	PM	PM_{10}	$PM_{2.5}$	SO_2 [2]	NOx	VOC	CO	Total HAP*	Single HAP* (HCl)
PRE-KILN PROCESSING									
Primary Crushing, PK1	4.73	2.10	2.10	-	-	-	-	-	-
Secondary Crushing, PK2	2.37	1.05	1.05	-	-	-	-	-	-
Conveyor Transfer, PK3-PK8	15.77	5.78	5.78	-	-	-	-	-	-
HAYDITE CRUSHER LINE, HCR									
Primary Crushing, HCR1	5.91	2.63	2.63	-	-	-	-	-	-
Conveyor Transfer, HCR2, HCR3	2.63	0.96	0.96	-	-	-	-	-	-
PORTABLE SCREENING									
Triple-deck Screening (PS1)	27.38	9.53	9.53	-	-	-	-	-	-
Shaker Screen, HCR9	0.96	0.32	0.02	-	-	-	-	-	-
WP Screener	3.29	1.14	1.14	-	-	-	-	-	-
4 Conveyors, PS2-PS5	13.14	4.82	4.82	-	-	-	-	-	-
ROTARY KILNS									
Rotary Kiln, K4	3857.53	1432.26	1432.26	385.01	124.83	51.25	38.76	21.54	21.54
Rotary Kiln, K5	7274.30	2673.99	2673.99	1726.60	249.66	102.49	77.53	21.54	21.54
Clinker Cooler, CLNKCOOL	52.56	21.02	21.02	-	-	-	-	-	-
SORBENT HANDLING									
Sorbent Silos #1 & #2	16.80	7.20	2.40	-	-	-	-	-	-
COAL HANDLING									
Coal Grinding Mill	1.01	0.30	0.30	-	-	-	-	-	-
Coal Unloading	0.60	0.21	0.03	-	-	-	-	-	-
Diesel-Fired Emergency Pony Engine	0.01	0.01	0.01	0.01	0.20	0.02	0.04	1.76E-04	-
Aggregate Silos	0.39	0.13	0.13	-	-	-	-	-	-
Covered Silos (Silo 4 and 5)	1.36	0.65	0.65	-	-	-	-	-	-
Three (3) Storage Tanks[1]	-	-	-	-	-	1.00	-	-	-
Maintenance Welding	0.19	0.19	0.19	-	-	-	-	0.02	-
Screening Plant	2.18	0.79	0.13	-	-	-	-	-	-
PRODUCT HANDLING									
Stockpile	7.28	3.64	0.55	-	-	-	-	-	-
Unpaved Roads	29.62	7.89	0.79	-	-	-	-	-	-
Total (Excluding Fugitives):	**11283.11**	**4165.10**	**4159.16**	**2111.62**	**374.69**	**154.75**	**116.33**	**43.10**	**43.08**
Total (Including Fugitives):	**11320.00**	**4176.63**	**4160.50**						

*There is no enforceable limit and condition for the controls to limit the HAPs to less than 10 tpy for single HAP and 25 tpy for total HAP.

[1] A conservative estimate of 1 ton of VOC per year is assumed for the three (3) storage tanks.

Changes in emissions of existing units is a result of updated emission factors and corrections to calculations in the 2019 modification.

Uncontrolled Potential to Emit, tons/year										
Emission Units	PM	PM_{10}	$PM_{2.5}$	SO_2	NOx	VOC	CO	Total HAP	Single HAP (HCl)	
Total (Including Fugitives)	12085.1	4528.2	4517.8	2111.6	374.7	154.8	116.3	43.1	43.1	With new crusher
Total (Including Fugitives)	12083.8	4527.7	4517.4	2111.6	374.7	154.8	116.3	43.1	43.1	* Prior to new crusher
Net Increase	1.3	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	

Limited Potential to Emit, tons/year										
Emission Units	PM	PM_{10}	$PM_{2.5}$	SO_2 [2]	NOx	VOC	CO	Total HAP*	Single HAP* (HCl)	
Total (Including Fugitives):	11320.0	4176.6	4160.5	2111.6	374.7	154.8	116.3	43.1	43.1	With new crusher
Total (Including Fugitives):	11319.9	4176.6	4160.5	2111.6	374.7	154.8	116.3	43.1	43.1	Prior to new crusher
Net Increase	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

* Please note emission from units PK9-PK11 and HCR11-HCR12 were not included in total uncontrolled PTE in previous permit.

Appendix A: Emissions Calculations
Updated Material Handling Summary

Company Name: Arcosa LW HPB, LLC
Address City IN Zip: 6618 N Tidewater Road, Mooresville, Indiana 46158
Permit Number: 0
Reviewer: 0

Emissions Before Controls

Unit ID		No. of Units	Maximum Capacity tons per hour	PM Emission Factor lbs per ton	PM10 Emission Factor lbs per ton	PM2.5 Emission Factor lbs per ton	PM Emissions tons per year	PM10 Emissions tons per year	PM2.5 Emissions tons per year	
PK1	Crushing (primary)	1	200	0.0054	0.0024	0.0024	4.73	2.10	2.10	
PK2	Crushing (secondary)	1	100	0.0054	0.0024	0.0024	2.37	1.05	1.05	
HCR1	Crushing (primary)	1	250	0.0054	0.0024	0.0024	5.91	2.63	2.63	
HCR9	Haydite Screener	1	100	0.025	0.0087	0.0087	10.95	3.81	3.81	
CLNKCOOL	Clinker Cooler[1]	1	40	0.30	0.12	0.12	52.56	21.02	21.02	
WP	Screener	1	30	0.025	0.0087	0.0087	3.29	1.14	1.14	
PK3-PK8	Conveyor Transfer	6	200	0.003	0.00110	0.00110	15.77	5.78	5.78	
HCR2-HCR3	Conveyor Transfer	2	100	0.003	0.00110	0.00110	2.63	0.96	0.96	
PS1	Screening	1	250	0.025	0.0087	0.00870	27.38	9.53	9.53	
PS2-PS5	Conveyor Transfer	4	250	0.003	0.00110	0.00110	13.14	4.82	4.82	
RS1	Radial Stacker Hopper	1	100	0.0030	0.0011	0.0011	1.31	0.48	0.48	
RS2	Radial Stacker Hopper Conveyor	1	100	0.0030	0.0011	0.0011	1.31	0.48	0.48	
RSC1	Crusher	1	100	0.0030	0.0011	0.0011	1.31	0.48	0.48	New
HCR17	HCR1 Feed Conveyor	1	100	0.0030	0.0011	0.0011	1.31	0.48	0.48	
HCR4	Secondary Crusher	1	100	0.0054	0.0024	0.0024	2.37	1.05	1.05	
PB1	Pyrite Belt	1	10	0.0030	0.0011	0.0011	0.13	0.05	0.05	
HCR5	#2 Belt	1	100	0.0030	0.0011	0.0011	1.31	0.48	0.48	
HCR6	Bottom Screen	1	100	0.0250	0.0087	0.0087	10.95	3.81	3.81	
HCR7	#3 Belt	1	100	0.0030	0.0011	0.0011	1.31	0.48	0.48	
OSM1	Oversize Belt	1	10	0.0030	0.0011	0.0011	0.13	0.05	0.05	
HCR8	Bucket Elevator	1	100	0.0030	0.0011	0.0011	1.31	0.48	0.48	
HCR10	B-Regrind Chute	1	10	0.0030	0.0011	0.0011	0.13	0.05	0.05	
HCR13	Ax Bin Chute to #1 Stockpile Belt	1	100	0.0030	0.0011	0.0011	1.31	0.48	0.48	
HCR14	Load Belt	1	100	0.0030	0.0011	0.0011	1.31	0.48	0.48	
HCR15	#1 Stockpile Belt	1	100	0.0030	0.0011	0.0011	1.31	0.48	0.48	
HCR16	#2 Stockpile Belt	1	100	0.0030	0.0011	0.0011	1.31	0.48	0.48	
PK9-PK11	Hoppers	3	100	0.0030	0.0011	0.0011	3.94	1.45	1.45	
HCR11-HCR12	Chutes	2	100	0.0030	0.0011	0.0011	2.63	0.96	0.96	
					Total Emissions Before Controls:		**173.45**	**65.56**	**65.56**	

Emissions After Controls

Unit ID		No. of Units	Maximum Capacity tons per hour	PM Emission Factor lbs per ton	PM10 Emission Factor lbs per ton	PM2.5 Emission Factor lbs per ton	PM Emissions tons per year	PM10 Emissions tons per year	PM2.5 Emissions tons per year	
PK1	Crushing (primary)	1	200	0.0012	0.00054	0.0001	1.05	0.47	0.09	
PK2	Crushing (secondary)	1	200	0.0012	0.00054	0.0001	1.05	0.47	0.09	
HCR1	Crushing (primary)	1	250	0.0012	0.00054	0.0001	1.31	0.59	0.11	
HCR9	Screening	1	100	0.0022	0.00074	0.00005	0.96	0.32	0.02	
CLNKCOOL	Clinker Cooler[1]	1	40	0.30	0.12	0.12	52.56	21.02	21.02	
WP	Screener	1	30	0.002	0.00074	0.00005	0.29	0.10	0.01	
PK3-PK8	Conveyor Transfer	6	200	0.00014	0.00005	0.00001	0.74	0.26	0.05	
HCR2-HCR3	Conveyor Transfer	2	250	0.00014	0.00005	0.00001	0.31	0.11	0.02	
PS1	Screening	1	250	0.0022	0.0007	0.00005	2.41	0.81	0.05	
PS2-PS5	Conveyor Transfer	4	250	0.00014	0.00005	0.00001	0.61	0.22	0.04	
RS1	Radial Stacker Hopper	1	100	0.00014	0.000046	0.000013	0.06	0.02	0.01	
RS2	Radial Stacker Hopper Conveyor	1	100	0.00014	0.000046	0.000013	0.06	0.02	0.01	
RSC1	Crusher	1	100	0.00014	0.000046	0.000013	0.06	0.02	0.01	New
HCR17	HCR1 Feed Conveyor	1	100	0.00014	0.000046	0.000013	0.06	0.02	0.01	
HCR4	Secondary Crusher	1	100	0.00120	0.000540	0.000100	0.53	0.24	0.04	
PB1	Pyrite Belt	1	10	0.00014	0.000046	0.000013	0.01	0.00	0.00	
HCR5	#2 Belt	1	100	0.00014	0.000046	0.000013	0.06	0.02	0.01	
HCR6	Bottom Screen	1	100	0.00220	0.000740	0.000050	0.96	0.32	0.02	
HCR7	#3 Belt	1	100	0.00014	0.000046	0.000013	0.06	0.02	0.01	
OSM1	Oversize Belt	1	10	0.00014	0.000046	0.000013	0.01	0.00	0.00	
HCR8	Bucket Elevator	1	100	0.00014	0.000046	0.000013	0.06	0.02	0.01	
HCR10	B-Regrind Chute	1	10	0.00014	0.000046	0.000013	0.01	0.00	0.00	
HCR13	Ax Bin Chute to #1 Stockpile Belt	1	100	0.00014	0.000046	0.000013	0.06	0.02	0.01	
HCR14	Load Belt	1	100	0.00014	0.000046	0.000013	0.06	0.02	0.01	
HCR15	#1 Stockpile Belt	1	100	0.00014	0.000046	0.000013	0.06	0.02	0.01	
HCR16	#2 Stockpile Belt	1	100	0.00014	0.000046	0.000013	0.06	0.02	0.01	
PK9-PK11	Hoppers	3	100	0.0030	0.0011	0.0011	3.94	1.45	1.45	
HCR11-HCR12	Chutes	2	100	0.0030	0.0011	0.0011	2.63	0.96	0.96	
					Total Emissions After Controls:		**70.05**	**27.58**	**24.05**	

Emission Factors for the crushing, screening and conveyor transfer are from AP-42 Ch. 11.19.2, Table 11.19.2-2

[1]Emission Factors for the Clinker Cooler are from AP-42 Ch. 11.20.2, Table 11.20-2

Appendix A: Emissions Calculations
Storage

Company Name: Arcosa LW HPB, LLC
Address City IN Zip: 6618 N Tidewater Road, Mooresville, Indiana 46158
Permit Number: 0
Reviewer: 0

Stockpile	Maximum Capacity (acres)
Ax Pile	0.75
Back 'B' Pile	0.75
L Pile	0.75
C Pile	0.75
Front 'B' Pile	0.75
Bx Pile	0.75
Total	**4.50**

PM/PM-10/PM-2.5 Emissions from Aggregate Stockpile Storage

Stockpile Area (acres)	4.50
Control Factor	1
Number of active days per year	365
Days w/ <0.01 of precipitation	245
PM inactive emissions (ton/yr)	0.00
PM10 inactive emissions (ton/yr)	0.00
PM2.5 inactive emissions (ton/yr)	0.00
PM active emissions (ton/yr)	7.28
PM10 active emissions (ton/yr)	3.64
PM2.5 active emissions (ton/yr)	0.55
Total PM emissions (ton/yr)	7.28
Total PM10 emissions (ton/yr)	3.64
Total PM2.5 emissions (ton/yr)	0.55

Emission Factors for the stockpiles have the following units: lb of pollutant per acre per day

The PM active and inactive emission factors are from "Cowherd, Jr., C. *Development Of Emission Factors For Fugitive Dust Sources* . EPA document Number. EPA-450/3-74-037. Research Triangle Park: U. S. Environmental Protection, 1974"

PM10 is estimated as 50% of PM based on the "k" factors listed in Aggregate Handling and Storage Piles AP-42 Ch. 13.2.4.

The PM2.5 factor is derived from a ratio listed in the Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors (Ch. 13.2) and "k" factors listed in Aggregate Handling and Storage Piles AP-42 Ch. 13.2.4.

Appendix A: Emissions Calculations
Sorbent Storage Silos

Company Name: **Arcosa LW HPB, LLC**
Address City IN Zip: **6618 N Tidewater Road, Mooresville, Indiana 46158**
Permit Number: **0**
Reviewer: **0**

Silo Capacity 120 tons each (two identical silos)
Silo Loading Rate 16.67 tons/hr

Limestone Unloading Into Silos PTE										
	PM Emission Factors (lb/ton)		PM10 Emission Factors (lb/ton)		Throughput	Unloading Time	Uncontrolled Emissions		Controlled Emissions	
Facility/ID	Uncontrolled	Controlled	Uncontrolled	Controlled	(t/hr)	hr/yr	PM (t/yr)	PM10/2.5 (t/yr)	PM (t/yr)	PM10/2.5 (t/yr)
Limestone Silo 1	3.14	0.0089	1.1	0.0049	16.67	8760	229.27	80.32	0.65	0.36
Limestone Silo 2	3.14	0.0089	1.1	0.0049	16.67	8760	229.27	80.32	0.65	0.36
TOTAL PTE							**458.53**	**160.63**	**1.30**	**0.72**
Limestone Silos (expected throughput of 9,183 t/yr)	3.14	0.0089	1.1	0.0049	16.67	551	14.42	5.05	0.04	0.02

Projected Annual Limestone Throughput:

Nov 2014 pilot testing required 2250 lb/hr to control SO2 emissions from shale at 21 t/hr
Pilot testing equates to 107 lb limestone per ton of shale fed
Average shale production over 2010-2014 = 167,498 t/yr for Kiln #5 and 3924 t/yr for Kiln #4
Total throughput = 171,422 tons per year, which would require 9,183 tons per year of limestone

Limestone unloading assumed comparable to cement unloading to storage silo (pneumatic), SCC 3-05-011-17
Emission factors are from AP-42, Table 11.12-2

Limited PTE - Limestone Unloading Into Silos							
Facility / ID	Throughput L	PM Emissions Limit		PM10 Emissions Limit		PM2.5 Emissions Limit	
	tons/year	lb/ton	ton/year	lb/ton	tons/yr	lb/ton	tons/year
Limestone Silo 1 Limestone Silo 2	24,000	1.40	16.80	0.60	7.20	0.20	2.4
		Limited PTE	16.8		7.2		2.4

Appendix A: Emissions Calculations
Aggregate Silos

Company Name: Arcosa LW HPB, LLC
Address City IN Zip: 6618 N Tidewater Road, Mooresville, Indiana 46158
Permit Number: 0
Reviewer: 0

Potential to Emit										
	PM Emission Factors (lb/ton)		PM10 Emission Factors (lb/ton)		Throughput	Unloading Time	Uncontrolled Emissions		Controlled Emissions	
Facility/ID	Uncontrolled	Controlled	Uncontrolled	Controlled	(ton/hr)	hr/yr	PM (ton/yr)	PM10/2.5 (ton/yr)	PM (ton/yr)	PM10/2.5 (ton/yr)
Aggregate AX Bin	0.73	9.9E-04	0.47	3.4E-04	30.00	8760	95.92	61.76	0.13	0.04
Aggregate B Bin	0.73	9.9E-04	0.47	3.4E-04	30.00	8760	95.92	61.76	0.13	0.04
Aggregate Clinker Bin	0.73	9.9E-04	0.47	3.4E-04	30.00	8760	95.92	61.76	0.13	0.04
						Total (tons/yr):	**287.77**	**185.27**	**0.39**	**0.13**

Aggregate loading assumed comparable to cement loading to storage silo (pneumatic), SCC 3-05-011-17
Cement unloading to elevated storage silo emission factors are from AP-42, Table 11.12-2

Appendix A: Emissions Calculations
Covered Silos

Company Name: Arcosa LW HPB, LLC
Address City IN Zip: 6618 N Tidewater Road, Mooresville, Indiana 46158
Permit Number: 0
Reviewer: 0

Potential to Emit							
Facility/ID	PM Emission Factors (lb/ton)	PM10/2.5 Emission Factors (lb/ton)	Throughput (ton/hr)	Emissions (lbs/hr)		Emissions (tons/yr)	
				PM	PM10/2.5	PM	PM10/2.5
Silo 4	0.0069	0.0033	15.00	0.10	0.05	0.45	0.22
Silo 5	0.0069	0.0033	30.00	0.21	0.10	0.91	0.43
					Total (tons/yr):	**1.36**	**0.65**

Notes
Emission factors are from AP-42, Table 11.12-2 for aggregate transfer

Bottleneck
Silos 4 and 5 feed directly into Kilns 4 and 5. The maximum throughput of Kiln 4 is 15 tons per hour and Kiln 5 is 30 tons per hour. Therefore, the kilns act as a bottleneck in this process because the throughput of the covered silos cannot exceed the maximum throughput of the kilns. The maximum throughputs permitted for both Silos 4 and 5 reflect the maximum throughputs for the two (2) kilns.

Appendix A: Emission Calculations
Kiln Process

Kiln #4

Company Name: Arcosa LW HPB, LLC
Address City IN Zip: 6618 N Tidewater Road, Mooresville, Indiana 46158
Permit Number: 0
Reviewer: 0

Maximum Capacity tons per hour	Maximum Throughput, tpy	SO2 Control Efficiency	Scrubber Control Efficiency
15.0	131400	50.00%	99.50%

	Pollutant						
	PM*	PM10*	direct PM2.5*	SO2	Nox**	VOC**	CO**
Emission Factor in lb/ton	58.7	21.8	21.8	5.9	1.9	0.78	0.59
Potential Emission in tons/yr	3857.53	1432.26	1432.26	385.01	124.83	51.25	38.76
Controlled Emissions in tons/yr	19.29	7.16	7.16	192.50	124.83	51.25	38.76

The particulate & SO2 emission factors are taken from the stack tests (December 16, 2016)
*PM emission factor is filterable PM only. PM10 emission factor is condensable and filterable PM10 combined.
PM2.5 emission factor is condensable and filterable PM2.5 combined.
**Emission Factors are taken from AP-42 Tables 11.20-4 & 11.20-5 (Lightweight Aggregate Manufacturing)

December 15, 2016 Stack Test Results using Coal as fuel:
Kiln 4
Pollutants tested : PM, SO2 and Opacity

Average Operating Rates:	14 tons of raw shale per hour
	1.2 tons coal per hour
	28.29 MMBtu/hr heat input
	200 lb/hr sorbent injection
Emission Rates:	PM Emission Rate = 4.11 lb/hr
	SO2 Emission Rate = 1.45 lb/MMBtu
	Opacity = 0%
SO2 Emission Factor:	(Emission Rate*28.29 MMBtu/hr/0.5)/Throughput
PM Emission Factor:	(Emission Rate/0.005)/Throughput

For Kiln 4, the ration of 0.97 lb. sorbent/lb SO2 removed was established.

Appendix A: Emission Calculations
Kiln Process

Kiln #5

Company Name: Arcosa LW HPB, LLC
Address City IN Zip: 6618 N Tidewater Road, Mooresville, Indiana 46158
Permit Number: 0
Reviewer: 0

Maximum Capacity tons per hour	Potential Throughput tons per year	Filter Control Efficiency	SO2 Control Efficiency
30.0	262800.00	99.98%	50.00%

	Pollutant						
	PM*	PM10*	direct PM2.5*	SO2	Nox**	VOC**	CO**
Emission Factor in lb/ton	55.36	20.35	20.35	13.14	1.90	0.78	0.59
Potential Emission in tons/yr	7274.30	2673.99	2673.99	1726.60	249.66	102.49	77.53
Controlled Emissions in tons/yr	1.45	0.53	0.535	863.30	249.66	102.49	77.53

The particulate and SO2 emission factors are taken from the stack tests
*PM emission factor is filterable PM only. PM10 emission factor is condensable and filterable PM10 combined.
PM2.5 emission factor is condensable and filterable PM2.5 combined.
**Emission Factors are taken from AP-42 Tables 11.20-4 & 11.20-5 (Lightweight Aggregate Manufacturing)

December 15, 2016 Stack Test Results using Coal as fuel:
Kiln 5
Pollutants tested : PM, SO2 and Opacity

Average Operating Rates:	28 tons of raw shale per hour
	2.0 tons coal per hour
	46.82 MMBtu/hr heat input
	300 lb/hr sorbent injection
Emission Rates:	PM Emission Rate = 0.31 lb/hr
	SO2 Emission Rate = 3.93 lb/MMBtu
	Opacity = 0%
SO2 Emission Factor:	(Emission Rate*46.82 MMBtu/hr/0.5)/Throughput
PM Emission Factor:	(Emission Rate/0.0002)/Throughput

For Kiln 5, the ration of 1.04 lb sorbent/lb SO2 was established.

Appendix A: Emission Calculations
Natural Gas Combustion Only for K4 & K5
MMBTU/HR >100
Utility Boiler

Company Name: Arcosa LW HPB, LLC
Address City IN Zip: 6618 N Tidewater Road, Mooresville, Indiana 46158
Permit Number: 0
Reviewer: 0

Heat Input Capacity MMBtu/hr	HHV mmBtu / mmscf	Potential Throughput MMCF/yr
100.0	1020	858.8

		SO2 Control Efficiency
Scrubber Control Efficiency	99.50%	
Filter Control Efficiency	99.98%	50.00%

	Pollutant						
	PM*	PM10*	direct PM2.5*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	7.6	0.6	280.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.82	3.26	3.26	0.26	120.24	2.36	36.07
Controlled Emissions in tons/yr.-K4	0.004	0.02	0.02	0.13	120.24	2.36	36.07
Controlled Emissions in tons/yr. - K5	0.0002	0.001	0.001	0.13	120.24	2.36	36.07

*PM emission factor is filterable PM only. PM10 emission factor is condensable and filterable PM10 combined.
PM2.5 emission factor is condensable and filterable PM2.5 combined.
**Emission Factors for NOx: Uncontrolled = 280 (pre-NSPS) or 190 (post-NSPS), Low NOx Burner = 140, Flue gas recirculation = 100 (See Table 1.4-1)

Methodology
All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu
Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-01-006-01, 1-01-006-04 (AP-42 Supplement D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Hazardous Air Pollutants (HAPs)

	HAPs - Organics					
	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene	
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03	
Potential Emission in tons/yr	9.02E-04	5.15E-04	3.22E-02	7.73E-01	1.46E-03	2.7E+00

	HAPs - Metals					
	Lead	Cadmium	Chromium	Manganese	Nickel	
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03	
Potential Emission in tons/yr	2.15E-04	4.72E-04	6.01E-04	1.63E-04	9.02E-04	2.35E-03
					Total HAPs	2.7E+00

Methodology is the same above.
The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix A: Emissions Calculations
Coal Combustion: Bituminous Coal for Boilers (Pulverized Dry Bottom)
K4 & K5

Company Name: Arcosa LW HPB, LLC
Address City IN Zip: 6618 N Tidewater Road, Mooresville, Indiana 46158
Permit Number: 0
Reviewer: 0

Heat Input Capacity MMBtu/hr		Heat Content of Coal Btu/lb of Coal	Potential Throughput of Coal tons/year
100	#4	12200	35901.63934
100	#5	12200	35901.63934

	Weight % Sulfur in Fuel		SO2 Control (Limestone Injection) Efficiency
S =	3.01	%	
A =	0.5	%	
Scrubber Control Efficiency	99.50%		
Filter Control Efficiency	99.98%		50.00%

	Pollutant						HAP
	PM*	PM10*	SO2	NOx	VOC	CO	HCL
Emission Factor in lb/ton	5.0 (10A)	1.15 (2.3A)	114.4 (38S)	11.0	0.05	0.05	1.2
Potential Emission in tons/yr #4	89.75409836	20.64344262	2053.2148	197.4590164	0.897540984	0.897541	21.54098
Potential Emission in tons/yr #5	89.75409836	20.64344262	2053.2148	197.4590164	0.897540984	0.897541	21.54098
Total Potential Emission in tons/yr	**179.51**	**41.29**	**4106.43**	**394.92**	**1.80**	**1.80**	**43.08**
Controlled Emission in tons/year #4	0.448770492	0.103217213	1026.6074	197.4590164	0.897540984	0.897541	0.107705
Controlled Emission in tons/year #5	0.01795082	0.004128689	1026.6074	197.4590164	0.897540984	0.897541	0.004308
Total Controlled Emission in tons/yr	**0.47**	**0.11**	**2053.21**	**394.92**	**1.80**	**1.80**	**0.11**
Equivalent Controlled Emissions in lb/mmBtu	0.001065574						

*PM10=PM2.5

Methodology

Emission Factors are from AP 42 (Update 9/98), Tables 1.1-4 and 1.1-3 (SCC 1-01-002-02/22, 1-02-002-02/22-06/2.
Potential Throughput (tons/year) = Heat Input Capacity (MMBtu/hr) x 10^6 Btu/MMBtu / Heat Content of Coal (Btu/lb) / 2,000 lb/ton x 8,760 hrs/yr.
Heat Content of theCoal is taken from the application.
Additional emission factors for commerical/institutional and electric generation boilers are available in AP-42, Chapter 1.1.
Emission (tons/yr) = Throughput tons per year x Emission Factor (lb/ton) / 2,000 lb/ton.
Emissions (lb/MMBtu) = 10^6 Btu/MMBtu / Heat Content of Coal (Btu/lb) / 2,000 lb/ton x Emission Factor (lb/ton).

Appendix A: Emission Calculations
Reciprocating Internal Combustion Engines - Diesel Fuel
Output Rating (<=600 HP)
Maximum Input Rate (<=4.2 MMBtu/hr)

Company Name: Arcosa LW HPB, LLC
Address City IN Zip: 6618 N Tidewater Road, Mooresville, Indiana 46158
Permit Number: 0
Reviewer: 0

Emissions calculated based on output rating (hp)

Output Horsepower Rating (hp)	26.0
Maximum Hours Operated per Year	500
Potential Throughput (hp-hr/yr)	13,000

	Pollutant						
	PM*	PM10*	direct PM2.5*	SO2	NOx	VOC	CO
Emission Factor in lb/hp-hr	0.0022	0.0022	0.0022	0.00205	0.0310	0.0025	0.00668
Potential Emission in tons/yr	0.01	0.01	0.01	0.01	0.20	0.02	0.04

*PM and PM2.5 emission factors are assumed to be equivalent to PM10 emission factors. No information was given regarding which method was used to determine the factor or the fraction of PM10 which is condensable.

Hazardous Air Pollutants (HAPs)

	Pollutant							
	Benzene	Toluene	Xylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Total PAH HAPs***
Emission Factor in lb/hp-hr****	6.53E-06	2.86E-06	2.00E-06	2.74E-07	8.26E-06	5.37E-06	6.48E-07	1.18E-06
Potential Emission in tons/yr	4.25E-05	1.86E-05	1.30E-05	1.78E-06	5.37E-05	3.49E-05	4.21E-06	7.64E-06

***PAH = Polyaromatic Hydrocarbon (PAHs are considered HAPs, since they are considered Polycyclic Organic Matter)
****Emission factors in lb/hp-hr were calculated using emission factors in lb/MMBtu and a brake specific fuel consumption of 7,000 Btu / hp-hr (AP-42 Table 3.3-1).

Potential Emission of Total HAPs (tons/yr)	**1.76E-04**

Methodology
Emission Factors are from AP 42 (Supplement B 10/96) Tables 3.3-1 and 3.3-2.
Potential Throughput (hp-hr/yr) = [Output Horsepower Rating (hp)] * [Maximum Hours Operated per Year]
Potential Emission (tons/yr) = [Potential Throughput (hp-hr/yr)] * [Emission Factor (lb/hp-hr)] / [2,000 lb/ton]

Green House Gas Emissions (GHG)

	Pollutant		
	CO2	CH4	N2O
Emission Factor in lb/hp-hr	1.15E+00	4.63E-05	9.26E-06
Potential Emission in tons/yr	7.48E+00	3.01E-04	6.02E-05

Summed Potential Emissions in tons/yr	**7.48E+00**
CO2e Total in tons/yr	**7.50E+00**

Methodology
CO2 Emission Factor is from AP42 (Supplement B 10/96), Tables 3.3-1.
CH4 and N2O Emission Factors are from 40 CFR 98 Subpart C Table C-2.
Global Warming Potentials (GWP) from Table A-1 of 40 CFR Part 98 Subpart A.
Potential Emission (tons/yr) = [Potential Throughput (hp-hr/yr)] * [Emission Factor (lb/hp-hr)] / [2,000 lb/ton]
CO2e (tons/yr) = CO2 Potential Emission ton/yr x CO2 GWP (1) + CH4 Potential Emission ton/yr x CH4 GWP (25) + N2O Potential Emission ton/yr x N2O GWP (298).

Appendix A: Emissions Calculations
Coal Unloading

Company Name:	**Arcosa LW HPB, LLC**
Address City IN Zip:	**5518 N Tidewater Road, Mooresville, Indiana 46158**
Permit Number:	**0**
Reviewer:	**0**

One (1) coal unloading operation, with a maximum capacity of 280 tons of coal per hour, consisting of one (1) dump pit, one (1) hopper for coal unloading, and two (2) conveyors. The maximum coal usage is 119,455 tons per year, or 13.64 tons per hour. Therefore, potential emissions for the coal operation were based on a maximum capacity of 119,455 tons of coal per year because of bottlenecking.

Potential emissions were calculated using AP-42, Section 13.2.4 for Aggregate Handling and Storage Piles based on the following formula:

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

Where E = emission factor, pound per ton (lb/ton)
k = particle size multiplier (dimensionless) This value is 1.0 for total particulate matter, 0.35 for particulate matter less than 10 and 0.053 for less than 2.5.
U = mean wind speed, miles per hour (mph), (assumed to be 10 mph)
M = material moisture content (%), (This value is assumed to be 4.5 based on typical moisture content data provided in Table 13.2.4-1 of AP-42)

Uncontrolled Potential to Emit:

PM	= = 1.0*(0.0032)* [(10/5)^1.3]/(4.5/2)^1.4] = 0.00253 lb/ton 0.00253*119,455*(transfer points)/2000 =	0.604	tons/yr
PM10	= = 0.35*(0.0032)* [(10/5)^1.3]/(4.5/2)^1.4] = 0.000886 lb/ton 0.000886*119,455*(transfer points)/2000 =	0.211	tons/yr
PM2.5	= = 0.053*(0.0032)* [(10/5)^1.3]/(4.5/2)^1.4] = 0.000134 lb/ton 0.000134*119,455*(transfer points)/2000	0.031	tons/yr

Appendix A: Emissions Calculations
Coal Grinding Mills

Company Name: Arcosa LW HPB, LLC
Address City IN Zip: 6618 N Tidewater Road, Mooresville, Indiana 46158
Permit Number: 0
Reviewer: 0

Coal Grinding Mill Potential Emissions								
Mill ID	Maximum Throughput (lb/hr)	Max Throughput (ton/hr)	PM EF (lb/ton)	PM10 EF (lb/ton)	PM Emissions (lb/hr)	PM10 Emissions (lb/hr)	PM Emission (ton/yr)	PM10 Emissions (ton/yr)
493	16800	8.4	0.02	0.006	0.17	0.05	0.74	0.22
372	6200	3.1	0.02	0.006	0.06	0.02	0.27	0.08
						Total (tons/yr):	1.01	0.30

Notes:
PM and PM10 Emission Factors from EPA's Airs Facility Subsystem SCC 3-05-010-10 Coal Crushing.
Assumed PM10=PM2.5.

Methodology:
PM Emissions (tons/yr) = Max Througput (ton/hr) x EF (lb/ton) x 8760 hours/yr x 1 ton/2000 lbs

Appendix A: Emissions Calculations
Welding and Thermal Cutting

Company Name: Arcosa LW HPB, LLC
Address City IN Zip: 6618 N Tidewater Road, Moorresville, Indiana 46158
Permit Number: 0
Reviewer: 0

PROCESS	Number of	Max. electrode	Max. electrode	Max. electrode	EMISSION FACTORS *				EMISSIONS				HAPS
	Stations	consumption per	consumption per	consumption per	(lb pollutant/lb electrode)				(lbs/hr)				(lbs/hr)
WELDING		station (lbs/hr)	station (lbs/day)	station (lbs/year)	PM = PM10	Mn	Ni	Cr	PM = PM10	Mn	Ni	Cr	
Metal Inert Gas (MIG)	1	6.00	144.00	52560.00	0.0055	0.0005	-	-	0.03	3.0E-03	-	-	3.0E-03
Stick	1	0.50	12.00	4380.00	0.0211	0.0009	-	-	0.01	4.5E-04	-	-	4.5E-04
						Total (tons/yr):			0.19	0.02	-	-	0.02

Methodology:

*Emission Factors are default values for carbon steel unless a specific electrode type is noted in the Process column.

**Emission Factor for plasma cutting from American Welding Society (AWS). Trials reported for wet cutting of 8 mm thick mild steel with 3.5 m/min cutting speed (at 0.2 g/min emitted). Therefore, the emission factor for plasma cutting is for 8 mm thick rather than 1 inch, and the maximum metal thickness is not used in calculting the emissions.

Using AWS average values: (0.25 g/min)/(3.6 m/min) x (0.0022 lb/g)/(39.37 in./m) x (1,000 in.) = 0.0039 lb/1,000 in. cut, 8 mm thick

Plasma cutting emissions, lb/hr: (# of stations)(max. cutting rate, in./min.)(60 min./hr.)(emission factor, lb. pollutant/1,000 in. cut, 8 mm thick)

Cutting emissions, lb/hr: (# of stations)(max. metal thickness, in.)(max. cutting rate, in./min.)(60 min./hr.)(emission factor, lb. pollutant/1,000 in. cut, 1" thick)

Welding emissions, lb/hr: (# of stations)(max. lbs of electrode used/hr/station)(emission factor, lb. pollutant/lb. of electrode used)

Emissions, lbs/day = emissions, lbs/hr x 24 hrs/day

Emissions, tons/yr = emissions, lb/hr x 8,760 hrs/year x 1 ton/2,000 lbs.

Appendix A: Emission Calculations
Fugitive Dust Emissions - Unpaved Roads

Company Name: Arcosa LWHPB, LLC
Source Address: 6618 N Tidewater Road, Mooresville, Indiana 46158
Permit Number: 109-46609-00007
Reviewer: Colleen Carey

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 (11/2006).

Vehicle Information (provided by source)

Type	Maximum number of vehicles	Number of one-way trips per day per vehicle	Maximum trips per day (trip/day)	Maximum Weight of Loaded Vehicle (tons/trip)	Total Weight driven per day (ton/day)	Maximum one-way distance (feet/trip)	Maximum one-way distance (mi/trip)	Maximum one-way miles (miles/day)	Maximum one-way miles (miles/yr)
Vehicle (entering plant) (one-way trip)	30.0	1.0	30.0	17.0	510.0	330	0.063	1.9	684.4
Vehicle (leaving plant) (one-way trip)	30.0	1.0	30.0	48.5	1455.0	330	0.063	1.9	684.4
740 Truck (Raw Shale) (one-way trip unloaded	24.0	1.0	24.0	36.2	868.8	660	0.125	3.0	1095.0
740 Truck (Raw Shale) (one-way trip loaded)	24.0	1.0	24.0	72.7	1744.8	660	0.125	3.0	1095.0
3500 Dumptruck (Finished Product) (one way l	40.0	1.0	40.0	239.0	9560.0	330	0.063	2.5	912.5
3500 Dumptruck (Finished Product) (one way l	40.0	1.0	40.0	281.5	11260.0	330	0.063	2.5	912.5
			Totals	**188.0**	**25398.6**			**14.8**	**5383.8**

Average Vehicle Weight Per Trip = 135.1 tons/trip
Average Miles Per Trip = 0.08 miles/trip

Unmitigated Emission Factor, Ef = k*[(s/12)^a]*[(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 =	6.0	6.0	6.0	% = mean % silt content of unpaved roads (AP-42 Table 13.2.2-1 Iron and Steel Production)
a =	0.7	0.9	0.9	= constant (AP-42 Table 13.2.2-2 for Industrial Roads)
W =	135.1	135.1	135.1	tons = average vehicle weight
b =	0.45	0.45	0.45	= constant (AP-42 Table 13.2.2-2 for Industrial Roads)

Taking natural mitigation due to precipitation into consideration, Mitigated Emission Factor, Eext = E * [(365 - P)/365] (Equation 2 from AP-42 13.2.2)
Mitigated Emission Factor, Eext = E * [(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, Ef =	16.73	4.46	0.45	lb/mile
Mitigated Emission Factor, Eext =	11.00	2.93	0.29	lb/mile

Process	Mitigated PTE of PM (Before Control) (tons/yr)	Mitigated PTE of PM10 (Before Control) (tons/yr)	Mitigated PTE of PM2.5 (Before Control) (tons/yr)
Vehicle (entering plant) (one-way trip)	3.76	1.00	0.10
Vehicle (leaving plant) (one-way trip)	3.76	1.00	0.10
740 Truck (Raw Shale) (one-way trip unloaded	6.02	1.61	0.16
740 Truck (Raw Shale) (one-way trip loaded)	6.02	1.61	0.16
3500 Dumptruck (Finished Product) (one way l	5.02	1.34	0.13
3500 Dumptruck (Finished Product) (one way l	5.02	1.34	0.13
Totals	**29.62**	**7.89**	**0.79**

Methodology
Total Weight driven per day (ton/day) = (Maximum Weight of Loaded Vehicle (tons/trip)) * (Maximum trips per day (trip/day))
Maximum one-way distance (mi/trip) = (Maximum one-way distance (feet/trip) / (5280 ft/mile)
Maximum one-way miles (miles/day) = (Maximum trips per year (trip/day)) * (Maximum one-way distance (mi/trip))
Average Vehicle Weight Per Trip (ton/trip) = SUM(Total Weight driven per day (ton/day)) / SUM(Maximum trips per day (trip/day))
Average Miles Per Trip (miles/trip) = SUM(Maximum one-way miles (miles/day)) / SUM(Maximum trips per year (trip/day))
Mitigated PTE (Before Control) (tons/yr) = (Maximum one-way miles (miles/yr)) * (Mitigated Emission Factor (lb/mile)) * (ton/2000 lbs)
Mitigated PTE (After Control) (tons/yr) = (Mitigated PTE (Before Control) (tons/yr)) * (1 - Dust Control Efficiency)

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

2024 Arcosa Brooklyn Crusher Application

Final Audit Report 2024-05-14

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