D R A F T

FACT SHEET FOR: CP25-034 **DATE: DRAFT**

DWEE ID: 75073

Name of Source: KAAPA Ethanol, L.L.C.

Source Classification: Class I at time of issuance
Area Source of Hazardous Air Pollutants (HAPs)

Regulatory changes may supersede information in this document. If the source should add or change equipment or change processes such that a NESHAP or NSPS subpart becomes an applicable requirement, it is the source's obligation to comply with that subpart and applicable requirements whether or not they are identified in the associated permitting action or Title 129. Also note that the NESHAP and NSPS subparts are subject to change. Detailed information related to NESHAP and NSPS subparts can be found on the DWEE Air Toxics Notebook and DWEE NSPS Notebook located on the DWEE website (http://dwee.ne.gov/). The DWEE website can also be used to find other permit related and facility specific information that is not identified in this fact sheet.

DESCRIPTION OF THE SOURCE OR ACTIVITY:

KAAPA Ethanol, L.L.C. (KAAPA) is an ethanol production facility that utilizes a corn dry milling process to produce approximately ninety-eight (98) million gallons per year (MMgal/yr) of denatured ethanol. Additionally, KAAPA has the capacity to produce up to 702,551 tons per year of wet distiller's grain with solubles, a by-product of the ethanol process that is sold as animal feed. KAAPA operates under Standard Industrial Classification (SIC) code 2869, Industrial Organic Chemicals, Not Elsewhere Classified, and under North American Industry Classification System (NAICS) code 325193, Ethyl Alcohol Manufacturing. KAAPA is located at the intersection of State Highways 44 and 6, approximately seven miles west of Minden.

PERMIT HISTORY:

Date Issued	Number	Status
10/22/2002	CP01-0082	Not active; superseded by CPM04-0011
02/12/2005	CPM04-0011	Not active; superseded by CP06-0031
4/24/20006	CP05-0028	Not active; superseded by CP06-0031
10/17/2007	CP06-0031	Not active; superseded by CP08-067
05/08/2008	CP08-018c	Not active; superseded by CP08-067
03/03/2011	CP08-067	Not active; superseded by CP14-049
01/09/2015	CP14-037	Not active; superseded by CP14-049
7/15/2015	CP14-049	Not active; superseded by CP18-063
12/11/2015	CP15-037	Not active; superseded by CP18-063
03/30/2016	CP16-005	Not active; superseded by CP18-063
05/03/2019	CP18-063	Not active; superseded by CP19-034
03/03/2020	CP19-034	Not active; superseded by CP20-009
09/18/2020	CP20-009	Active; Conditions I., II., III.(A), III.(B), III.(C), III.(G),and III.(H), superseded by CP25-034
TBD	CP25-034	Active

PERMIT ACTION:

On November 17, 2025, the Department received an air quality construction permit application, #25-034, from KAAPA Ethanol, L.L.C. (KAAPA) for a significant permit revision (SPR) to permit CP20-009. KAAPA is proposing to install a new 165 million gallon per year (MMgal/yr) anhydrous ethanol production train at the existing Minden facility.

KAAPA is proposing to expand grain receiving operations through the installation of two (2) additional Truck Dump Pits (EU1003 and EU1004), which are to be controlled by new Dump Pit Baghouses (CE1003 and CE1004). Grain is to be transferred by a new Grind Conveyor (EU2005), controlled by a Grind Conveyor Baghouse (CE2005), and processed through eight (8) additional Hammermills (Hammermills #5 through #12 (EU2006, EU2007, EU2008, EU2009, EU2010, EU2011, EU2012, and EU2013)), each controlled by a corresponding Hammermill Baghouse (CE2006, CE2007, CE2008, CE2009, CE2010, CE2011, CE2012, and CE2013).

KAAPA is proposing to increase fermentation capacity by converting the existing Beer Well to a Fermentation Tank (EU36) with the addition of an agitator, installing three (3) additional Fermentation Tanks (EU37, EU38, and EU39), and installing a new Beer Well (EU301). Emissions from the Fermentation Tanks (EU36, EU37, EU38, and EU39) and Beer Well (EU301) are to be controlled by the Pre-Condenser (CE3001) and CO_2 Scrubber (CE3000). The existing CO_2 Scrubber (CE3000) is to be replaced with a larger unit as part of this project.

KAAPA is further proposing to install additional distillation, dehydration, and coproduct handling equipment associated with the new production train, including Dryer #1 (EU8001), Dryer #2 (EU8002), Syrup Tank (EU8003), Whole Stillage Tank (EU8004), Yeast Tank (EU8005), 200P Condenser #2 (EU8006), Second Effect Evaporator #1 (EU8007), Second Effect Evaporator #2 (EU8008), Second Effect Condensate Tank (EU8009), Sieve Feed Superheater (EU8010), Molecular Sieves #7, #8, and #9 (EU8011, EU8012, and EU8013), Regeneration Condenser #3 (EU8014), Eductor Tank (EU8015), and 200P Flash Tank and 200P Cooler (EU8016). The existing Whole Stillage Tank is to be modified to store thin stillage, and the existing Liquefaction Tanks are to be modified to receive process water (evaporator condensate and rectifier bottoms) from the new distillation system prior to transfer to the existing cook water tank. Emissions from these process units will be routed to Regenerative Thermal Oxidizer #1 (CE8001) for control. KAAPA is also proposing to install a new DDGS Cooler (EU8017), controlled by a DDGS Cooler Baghouse (CE8002), and a new DDGS Loadout (EU8018), controlled by a DDGS Loadout Baghouse (CE8003). The existing Beer Degasser Tank will be decommissioned.

To support the expanded production train, KAAPA is proposing to install Boiler #4 (EU5004), Boiler #5 (EU5005), and Cooling Tower #3 (EU6003) to provide additional steam generation and cooling capacity.

KAAPA is also proposing to increase annual throughput for the following existing storage tanks: two (2) 750,000-gallon 200-Proof Ethanol Tanks (EU87 and EU88); one (1) 100,000-gallon 200-Proof Ethanol Tank (EU89); one (1) 100,000-gallon Natural Gasoline Tank (EU90); one (1) 100,000-gallon 190-Proof Ethanol Tank (EU91); two (2) 1,500,000-gallon 190-Proof Ethanol Tanks (EU92 and EU93); one (1) 2,300-gallon Corrosion Inhibitor Tank (EU907); and one (1) 1,000-gallon Diesel Tank (EU913). Ethanol Liquid Loadout to trucks and railcars (F-4000) and DDGS Loadout (EU8018) will increase product shipment capacity.

Anticipated emissions from processing units contributions to VOC, NOx, CO, and PM emissions due to fermentation, drying operations, combustion sources, and equipment leaks.

TYPE AND QUANTITY OF AIR CONTAMINANT EMISSIONS ANTICIPATED:

The emissions for this project, including fugitive emissions, are shown in the potential-to-emit (PTE) table below:

Regulated Pollutant	Pre-Project PTE [1] (ton/yr)	Post-Project PTE (ton/yr)	Project PTE (ton/yr)
Particulate Matter (PM)	163.81	239.83	76.02
PM smaller than or equal to 10 microns (PM_{10})	71.47	102.82	31.35
PM smaller than or equal to 2.5 microns ($PM_{2.5}$)	33.49	55.26	21.77
Sulfur Dioxide (SO_2)	0.74	4.38	3.64
Oxides of Nitrogen (NO_x)	110.18	148.02	37.84
Carbon Monoxide (CO)	53.78	118.41	64.63
Volatile Organic Compounds (VOC)	146.62	208.38	61.76
Hazardous Air Pollutants (HAPs)			
Highest Individual HAP:			
Acetaldehyde	8.02	1.89	-6.13
n-Hexane	9.15	3.97	-5.18
Total HAPs	20.06	9.71	-8.22

[1] Previous PTE obtained from cp075073f12

SUPPLEMENTAL INFORMATION:

Title 129, Chapter 2 – Ambient Air Quality Standards

This document provides the justification for waiving the cumulative modeling assessment for KAAPA Ethanol, (FID 75073) located in the town of Minden, in Kearney County Nebraska as a part of CP25-034. Kearney County is currently classified as in attainment for both $PM_{2.5}$ and PM_{10} under the National Ambient Air Quality Standards (NAAQS).

Based on a scientific and regulatory evaluation, it has been determined that a cumulative modeling assessment is not warranted in this instance. The rationale for this determination is supported by the considerations outlined below.

Pursuant to Title 129, Chapter 3, Section 002.02B, the Nebraska Department of Water, Energy, and Environment (DWEE) evaluates construction permit applications to determine whether emissions from a proposed source may interfere directly or indirectly with the attainment or maintenance of the NAAQS.

When sufficient information is available to make this determination, Title 129, Chapter 3, Section 002.02B does not require a refined air quality modeling analysis in every case. These provisions establish that air dispersion modeling is conducted at the discretion of the Department when needed to evaluate potential ambient impacts for sources not subject to major NSR regulations.

The proposed project is a minor stationary source and is not subject to major NSR review under Title 129, Chapter 4 or 40 CFR 52.21. Projected emissions of $PM_{2.5}$ and PM_{10} are below the applicability thresholds for major NSR review. The proposed source does not warrant a refined dispersion modeling demonstration under the circumstances of this permitting action.

Representative ambient monitoring data further support this conclusion. DWEE's Grand Island $PM_{2.5}$ monitoring site (Site ID 310790005), which is representative of regional background conditions for central Nebraska, reports a current three-year annual $PM_{2.5}$ design value of 6.6 $\mu g/m^3$ and a 24-hour design value of 20 $\mu g/m^3$.

The DWEE's PM_{10} monitor located in Douglas County (Site ID 310550019), which is conservatively representative of regional background conditions for KAAPA Ethanol CP25-034 project location, reports a current three-year 24-hour design value of 89 µg/m³.

These concentrations remain well below the applicable $PM_{2.5}$ NAAQS of 9.0 µg/m³ (annual) and 35 µg/m³ (24-hour) and PM_{10} NAAQS of 150 µg/m³(24-hour), indicating that existing ambient air quality maintains a substantial margin of compliance with the federal standards. The monitored data demonstrate that regional background $PM_{2.5}$ and PM_{10} concentrations are relatively low and that the airshed is operating well within the applicable NAAQS.

Given the source's minor NSR emission profile, the attainment status of the area, and the substantial margin between monitored ambient concentrations and the applicable $PM_{2.5}$ and PM_{10} NAAQS, the DWEE has determined that emissions from the proposed facility are not expected to cause or contribute to an exceedance of any $PM_{2.5}$ or PM_{10} standard. Therefore, refined air dispersion modeling is not necessary to demonstrate compliance with the NAAQS for this permitting action.

Title 129, Chapter 12 – New Source Performance Standards and Emission Limits for Existing Sources

Subpart A – General Provisions: This subpart, adopted by reference in Title 129, Chapter 12, Section 001.01, applies to those units subject to another NSPS subpart. KAAPA Minden is subject to Subpart A because Boiler #4 and Boiler #5 (EU5004 and EU5005) are subject to Subpart Dc, the 200-Proof Ethanol Tanks (EU87, EU88, and EU89) are subject to Subpart Kb, and VOC Service Equipment (EU-F9000) is subject to Subpart VVb.

Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units: This subpart, adopted by reference in Title 129, Chapter 12, Section 001.05, applies to steam generating units with a design rate greater than 10 MMBtu/hr but less than or equal to 100 MMBtu/hr, installed after June 9, 1989. A steam-generating unit is defined as any device which combusts any fuel to produce steam, heat water, or heat any heat transfer medium. This does not include process heaters, which are devices with the primary purpose of heating materials to initiate or promote a chemical reaction in which the heated material participates as a reactant or catalyst. A heat transfer medium is any material which is used to transfer heat from one point to another point.

Boiler #4 and Boiler #5 (EU9109 and EU9010) have a design heat input rate of 92 MMBtu/hr each and are therefore subject to Subpart Dc. Due to their size, the boilers at KAAPA Minden are not subject to related NSPS subparts such as Subparts D (heat input greater than 250 MMBtu/hr), Da (heat input greater than 250 MMBtu/hr), or Db (heat input greater than 100 MMBtu/hr).

KAAPA Minden must comply with all applicable NSPS subparts and requirements regardless of their inclusion in this permitting action or Title 129. These rules are subject to change. Additional and updated information on all NSPS is available on the DWEE NSPS Notebook, which can be located by visiting the DWEE website at http://dwee.ne.gov/, by first selecting the "Air" tab, then the "Air Grants, Planning and Outreach Program" dropdown menu tab, then the "New Source Performance Standards (NSPS) Program" dropdown menu tab, and then "New Source Performance Standards (NSPS) Program".

Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984: This subpart, adopted by reference in Title 129, Chapter 12, Section 001.19, applies to each storage vessel with a capacity greater than or equal to 75 cubic meters (19,813 gallons) that is used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after July 23, 1984 with certain exclusions based upon function, true vapor pressure of contents, design, or other regulatory requirements. Tanks from 75 up to 151 cubic meters (39,890 gallons) are not subject if the stored liquid has a

true vapor pressure less than 15 kilopascals (kPa). Tanks with a storage capacity of 151 cubic meters or more are not subject if the true vapor pressure is less than 3.5 kPa.

The 200-Proof Ethanol Tanks (EU87, EU88, and EU89) meet these criteria and are subject to Subpart Kb. Each tank is equipped with a fixed roof in combination with an internal floating roof, and the internal floating roof floats on the liquid surface except during periods of initial fill, when the vessel is completely emptied, or when the vessel is emptied and subsequently refilled.

Subpart VVb – Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, the Polymer Manufacturing Industry, and the Organic Liquids Distribution Industry: This subpart, adopted by reference in Title 129, Chapter 12, Section 001.52, applies to VOC service equipment (EU-F9000) associated with ethanol production. The regulated equipment includes light liquid valves, light liquid pumps, light liquid check valves, light liquid control valves, gas valves, connectors, agitators, pressure relief valves, and other VOC service components.

Title 129, Chapter 13 Hazardous Air Pollutants

This project will not change any NESHAP applicability at KAAPA Minden. For a full discussion of NESHAP applicability at KPA, see the fact sheet attachments accompanying previously issued construction permits.

KAAPA Minden must comply with all applicable NESHAP requirements regardless of their inclusion in this permitting action or Title 129. These rules are subject to change. Information regarding NESHAP is available on the DWEE Air Toxics Notebook, which can be located by visiting the DWEE website at https://dwee.nebraska.gov, by first selecting "Menu" at the top of the page, the "Air" dropdown menu tab, then the "Air Toxics Program" dropdown menu tab, and then "Air Toxics Notebook".

Title 129, Chapter 15, Section 001 - Particulate Emissions; Limitations and Standards

Particulate Emissions from Process Weight Rates (Section *001.01*)

Each of the permitted emission rate limitations applied in the proposed construction permit for Sustainable Beef ensures the process weight rate limitations specified in Chapter 15, Section 001.01 will not be exceeded in standard operating scenarios. Sustainable Beef is expected to be in compliance with the process weight rate limitations because the particulate emitting units will have implemented control devices and/or particulate mitigation requirements. The process weight rate limitations are included in the Fact Sheet Attachment.

Particulate Emissions from Combustion Sources (Section *001.02*)

All of the PM emission points subject to the Chapter 15, Section 001.02 limitations are in compliance with those limitations, as the PTE for each emission point is less than the limitations. Therefore, these PM limitations were not included in any Specific Condition of this permit.

Opacity Limitations from Emission Units (Section *001.04*)

Specific Condition I.(J) specifies that no person shall cause or allow emissions, from any source, which has an opacity equal to or greater than twenty percent (20%). Opacity must be determined using an EPA-approved method or recorded by a continuous opacity monitoring system which has been operated and maintained pursuant to 40 CFR Part 60 Appendix B except as provided for in Chapter 15, Sections 001.05 and 001.06 (Title 129, Chapter 15, Section 001.04). Therefore, while not specifically stated in Condition III., this requirement is still applicable to all emission units at the source.

REVISED SPECIFIC PERMIT CONDITIONS DISCUSSION:

Below is a mark-up that identifies all of the revisions to the original conditions. Additions are **bolded and underlined**, deletions are in ~~strikethrough~~, and DWEE comments are in *italics*.

References to the "Nebraska Department of Environmental Quality" or "Nebraska Department of Environment and Energy" have been revised to "Nebraska Department of Water, Energy, and Environment" and references to "NDEQ" or "DWEE" have been revised to "DWEE" to reflect the agency name change, effective July 01, 2025.

Nebraska Administrative Code - Title 129 was amended on September 28, 2022. As part of this permitting action, the DWEE is updating "I. Standard Conditions" and "II. General Construction Permit Conditions" to reflect updated Title 129 chapter citations. Additionally, as part of this permitting action, DWEE is also updating all citations in the applicable Specific Conditions to reflect updated Title 129 chapter citations. Previously issued construction permits with active conditions are still subject to the Title 129 requirements as effective at the time of permit issuance.

As part of this permitting action, every Specific Condition containing "Reporting and Recordkeeping Requirements" has included a preface to the sub-condition stating "The owner or operator shall maintain the following records:"

Condition III.(A) now reads:

III.(A) Specific Conditions for Grain Receiving, Grain Shipping, Handling, Storage, and Hammermilling

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table, and shall be controlled by the required control equipment as indicated:

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit ID# and Description
EP-1002	CE1002: Grain Receiving Baghouse #1	EU1 and EU3: Truck Dump Pits #1 and #2
		EU2 and EU4: Receiving Legs #1 and #2
		EU5 and EU6: Grain Storage Silos #1 and #2
		EU99: Scalping Bin
		EU900, EU901, EU929, EU 930, EU931, EU932 and EU933: Conveyors #1 through #7
EP-1003	**CE1003a: Grain Receiving Baghouse #2**	**EU1003: Truck Dump Pit #3**
EP-1004	**CE1004: Grain Receiving Baghouse #3**	**EU1004: Truck Dump Pit #4**
EP-2005	**CE2005: Grind Conveyor Baghouse**	**EU2005: Grind Conveyor**
EP-2000	CE2000: Grind Elevator Baghouse	EU922: Grind Bin
		EU97: Scalper #1
		EU98: Scalper #2
		EU923: Grind Conveyors
		EU924: Grind Elevator
		EU973: Grind Elevator
EP-2001	CE2001: Hammermill Baghouse #1	EU15: Hammermill #1
		EU977: Rotary Feeder #1
EP-2002	CE2002: Hammermill Baghouse #2	EU16: Hammermill #2

		EU978: Rotary Feeder #2
EP-2003	CE2003: Hammermill Baghouse #3	EU17: Hammermill #3
		EU979: Rotary Feeder #3
EP-2004	CE2004: Hammermill Baghouse #4	EU971: Hammermill #4
		EU980: Rotary Feeder #4
EP-2006	**CE2006: Hammermill Baghouse #5**	**EU2006: Hammermill #5**
		EU2006a: Rotary Feeder #5
EP-2007	**CE2007: Hammermill Baghouse #6**	**EU2007: Hammermill #6**
		EU2007a: Rotary Feeder #6
EP-2008	**CE2008: Hammermill Baghouse #7**	**EU2008: Hammermill #7**
		EU2008a: Rotary Feeder #7
EP-2009	**CE2009: Hammermill Baghouse #8**	**EU2009: Hammermill #8**
		EU2009a: Rotary Feeder #8
EP-2010	**CE2010: Hammermill Baghouse #9**	**EU2010: Hammermill #9**
		EU2010a: Rotary Feeder #9
EP-2011	**CE2011: Hammermill Baghouse #10**	**EU2011: Hammermill #10**
		EU2011a: Rotary Feeder #10
EP-2012	**CE2012: Hammermill Baghouse #11**	**EU2012: Hammermill #11**
		EU2012a: Rotary Feeder #11
EP-2013	**CE2013: Hammermill Baghouse #12**	**EU2013: Hammermill #12**
		EU2013a: Rotary Feeder #12
EP-1005a	-	EU12: Grain Storage Silo #3
EP-1005b	-	EU13: Grain Storage Silo #4
EP-1006	-	EU14: Grain Storage Piles
EP-1008	-	EU984: Grain Shipping Spout on Grain Silo #3 (EU12)
EP-TSHIP	-	EUTSHIP: Grain Truck Shipping; maximum capacity: the grain shipping spout fills one 900-bushel grain truck in 6 minutes (56 lb/bu is assumed for grain).
~~EP-1003~~	~~CE1003: Grain Receiving Baghouse #2~~	~~EU985: Truck Dump Pit #3~~
		~~EU987: Grain Conveying Equipment~~
EP-1009	-	EU988: Tipi-Style Grain Storage Structure #1
EP-1010	-	EU989: Tipi-Style Grain Storage Structure #2

(2) Emission Limitations and Testing Requirements:

(a) Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Standard Condition I.(M) and General Condition II.(G).

Emission Point ID#	Pollutant	Permitted Limit	Permitted Limit Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP-1002	PM/PM_{10}	1.80 lb/hr[2]	1-hour	Chapter ~~17~~ **3**	No

Emission Point ID#	Pollutant	Permitted Limit	Permitted Limit Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP-1003	**PM/PM_{10}**	**0.27 lb/hr[2]**	**1-hour**	**Chapter 3**	**Yes**
EP-1004	**PM/PM_{10}**	**0.27 lb/hr[2]**	**1-hour**	**Chapter 3**	**Yes**
EP-2005	**PM/PM_{10}**	**0.13 lb/hr[2]**	**1-hour**	**Chapter 3**	**Yes**
EP-2000	PM/PM_{10}	0.84 lb/hr[2]	1-hour	Chapter ~~17~~ **3**	No[1]
EP-2001	PM/PM_{10}	0.42 lb/hr[2]	1-hour	Chapter ~~17~~ **3**	No[1]
EP-2002	PM/PM_{10}	0.42 lb/hr[2]	1-hour	Chapter ~~17~~ **3**	
EP-2003	PM/PM_{10}	0.42 lb/hr[2]	1-hour	Chapter ~~17~~ **3**	
EP-2004	PM/PM_{10}	0.42 lb/hr[2]	1-hour	Chapter ~~17~~ **3**	
EP-2006	**PM/PM_{10}**	**0.103 lb/hr[2]**	**1-hour**	**Chapter 3**	**Yes**
EP-2007	**PM/PM_{10}**	**0.103 lb/hr[2]**	**1-hour**	**Chapter 3**	**Yes**
EP-2008	**PM/PM_{10}**	**0.103 lb/hr[2]**	**1-hour**	**Chapter 3**	**Yes**
EP-2009	**PM/PM_{10}**	**0.103 lb/hr[2]**	**1-hour**	**Chapter 3**	**Yes**
EP-2010	**PM/PM_{10}**	**0.103 lb/hr[2]**	**1-hour**	**Chapter 3**	**Yes**
EP-2011	**PM/PM_{10}**	**0.103 lb/hr[2]**	**1-hour**	**Chapter 3**	**Yes**
EP-2012	**PM/PM_{10}**	**0.103 lb/hr[2]**	**1-hour**	**Chapter 3**	**Yes**
EP-2013	**PM/PM_{10}**	**0.103 lb/hr[2]**	**1-hour**	**Chapter 3**	**Yes**
~~EP-1003~~	~~$PM_{10}/PM_{2.5}$~~	~~1.71 lb/hr[2]~~	~~1 hour~~	~~Chapter 17~~	~~Yes~~

[1] Initial testing requirements were successfully completed March 25, 2016

[2] Permitted limit is demonstrated with a minimum of three 1-hour test runs, time specified by federal rule, time in approved EPA Test Method, or an alternative time approved by ~~NWEE~~ **DWEE** and averaging the test runs results.

(b) Required performance testing on EP-2001 through EP-2004 shall be satisfied by testing only two **(2)** emissions points out of EP-2001 through EP-2004.

(3) Operational and Monitoring Requirements and Limitations:

(a) Operation and maintenance of each baghouse shall be in accordance with the following requirements: (Chapters ~~17~~ **3** and ~~20~~ **15**)

(i) Each Baghouse shall be operated and be controlling emissions at all times when the associated emission units are in operation.

(ii) Each Baghouse shall be equipped with an operational pressure differential indicator. Pressure differential indicator readings shall be recorded at least once each day that the associated baghouse is operating.

(iii) Baghouse filter bags are to be inspected and/or replaced as often as necessary to ensure proper operation or more frequently as indicated by pressure differential indicator readings or other indication of baghouse failure.

(iv) Observations at least once each day during daylight hours of each Baghouse operation shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications that corrective action is needed. If corrective action is required, it shall occur immediately.

~~(v) The owner or operator shall maintain an on-site inventory of spare bags of each type used to ensure rapid replacement in the event of baghouse failure.~~

(b) Grain receiving operations shall be located inside a building and all dump pits shall utilize choke-flow systems. (Chapters ~~17~~ **3** and ~~20~~ **15**)

(c) The facility shall not receive through EU-1**,** ~~and~~ EU-3**, EU1003, and EU1004** combined more than 9,442 tons of grain per day and ~~990,000~~ **1,641,379** tons of grain per any period of twelve (12) consecutive calendar months. Compliance shall be demonstrated by recording the total amount of grain received at the facility as specified in Condition III(A)(5)(e). (Chapter ~~17~~ **3**)

(d) The facility shall not exceed 140,000 tons of grain shipped per any period of twelve (12) consecutive calendar months through EU984, the grain shipping spout**.** (Chapters ~~17~~ **3** and ~~32~~ **15**)~~.~~

(i) The facility shall weigh each truck and record the weight, in tons, of each truck loaded with grain from the grain shipping spout EU984. (Chapters ~~17~~ **3**)

~~(e) The facility shall not exceed 347,200 tons of grain per any twelve (12) consecutive calendar month period solely for Truck Dump Pit #3 (EU985). (Chapter 17)~~

~~(i) The facility shall weigh each truck and record the weight, in tons, of each incoming truck that deposits grain into Truck Dump Pit #3 (EU985). (Chapter 17)~~

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The department has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(A)(1).

(5) Reporting and Recordkeeping Requirements:

The owner of operator shall maintain the following records:

(a) Records documenting the date, time, observations, and corrective actions taken for each day the associated baghouse is in operation.

(b) Filter replacement records including filter position, type, and date of filter installation.

(c) Records documenting the date, time, and pressure differential reading for each day the associated baghouse is in operation.

(d) Filter replacement records including the date the filter replacement occurred and the type of filter installed for each baghouse or particulate filter.

(e) Records documenting the total amount of grain received at Truck Dump Pit #1 (EU1)**,** ~~and~~ Truck Dump Pit #2 (EU3)**, Truck Dump Pit #3 (EU1003), and Truck Dump Pit #4**

(EU1004), combined, per day, each calendar month, and ~~each year~~ **any twelve (12) consecutive calendar months**.

(f) The source shall keep and maintain records documenting the weight, in tons, of each truck filled with grain through the Grain Shipping Spout (EU984).

(g) The source shall keep records of the total amount of grain shipped, in tons, at the Grain Shipping Spout (EU984) for each day, calendar month, and any twelve (12) consecutive calendar months.

~~(h) The source shall keep records of the total amount of grain received, in tons, at Truck Dump Pit #3 (EU985) for each day, calendar month, and for each period of twelve (12) consecutive calendar months.~~

This section was revised by adding Truck Dump Pit #3 (EU1003), Truck Dump Pit #4 (EU1004), the Grind Conveyor (EU2005), Hammermills #5 through #12 (EU2006–EU2013), the associated rotary feeders (EU2006a–EU2013a), and the associated baghouses (CE1003, CE1004, CE2005, and CE2006–CE2013) with their corresponding emission points (EP-1003, EP-1004, EP-2005, and EP-2006 through EP-2013). This section was also revised by removing Truck Dump Pit #3 (EU985), Grain Conveying Equipment (EU987), and the associated conditions, as these emission units were not installed. In addition, the total grain throughput limit for any consecutive 12-month period was increased from 990,000 tons to 1,641,379 tons.

Condition III.(B) now reads:

(III).(B) Specific Conditions for Fermentation and Distillation Operations

(1) Permitted Emission Points:

(a) The source is permitted to construct the emission points and associated emission units identified in the following table:

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit ID# and Description	Maximum Capacity	Permitted Fuel Type
EP-~~3000~~ **3001**	CE3001: Pre-condenser[1] CE3000: CO_2 Scrubber with chemical addition **OR** CE3000: CO_2 Scrubber with**out** chemical addition	EU31, EU32, EU33, EU34, EU35, ~~FERM06, FERM07~~ **EU36, EU37, EU38, EU39**: Fermentation Tanks #1, #2, #3, #4, #5, #6**,** ~~and~~ #7**, #8, and #9**	-	-
		~~EU36: Beer Well~~	-	-
		EU976: Degasser	-	-
		EU301: Beer Well	**-**	**-**
EP-3002	CE3002: Distillation	EU21:Mixer	-	-
		EU23 and EU24: Slurry tanks #1 and #2	-	-
		EU25: Flash Process Tank	-	-
		EU26: Cook Tube	-	-

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit ID# and Description	Maximum Capacity	Permitted Fuel Type
	Scrubber with chemical addition	EU30: Yeast Tank	-	-
		EU50: Beer Column	-	-
		EU51: Side Stripper	-	-
		EU52: Rectifier Column	-	-
		EU53a and EU53b: Molecular Sieves #1 and #2	-	-
		EU55: 190 Proof Condenser	-	-
		EU916: 200 Proof Condenser (Evaporator #4)	-	-
		EU909, EU910, EU911, EU912, EU974: Centrifuges #1 through #5	-	-
		EU983: Centrifuge #6	-	-
		EU913, EU914, EU915: Evaporators #1 through #3	-	-
		EU917, EU918, EU919, EU920: Evaporators #5 through #8	-	-
		EU981, EU982: Evaporators #9 and #10	-	-
		EU936: Acid Wash Tank (sulfuric acid)	-	-
EP-8001	**CE8001: RTO**	**EU302: Yeast Tank**	-	-
		EU8005: 200P Condenser	-	-
		EU8009: Sieve Feed Superheater	-	-
		EU8010, EU8011, EU8012: Sieve #7, #8, #9	-	-
		EU8013: Regen Condenser #3	-	-
		EU8014: Eductor Tank	-	-
		EU8015: 200P Flash Tank	-	-
		EU8016: 200P Cooler	-	-
EP-9107	-	EU27, EU28, EU29: Liquefaction Tanks #1 through #3	-	-

[1] CE3000 is permitted to operate with the Pre-condenser (CE3001) in series before CE3000 or without. Refer to Specific Condition III.(B)(3)(c) for CE3001 requirements.

(2) Emission Limitations and Testing Requirements:

(b) Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Standard Condition I.(M) and General Condition II.(G):

Emission Point ID#	Pollutant	Permitted Limit	Permitted Limit Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP-~~3000~~ **3001** and EP-3002	Acetaldehyde	1.82 lb/hr (combined)	1-hour	Chapter ~~17~~ **3**	Yes[2]
EP 3001 and EP-3002	**Acrolein**	**0.13 lb/hr (combined)**	**1-hour**	**Chapter 3**	**Yes[2]**
EP 3001 and EP-3002	**Formaldehyde**	**0.0037 lb/hr (combined)**	**1-hour**	**Chapter 3**	**Yes[2]**
EP 3001 and EP-3002	**Methanol**	**0.20 lb/hr (combined)**	**1-hour**	**Chapter 3**	**Yes[2]**
EP-~~3000~~ **3001** and EP-3002	VOC	~~25.00~~ **22.95** lb/hr [1] (combined)	1-hour	Chapter ~~17~~ **3**	Yes[2]

[1] Expressed as weight of VOC

[2] Annual performance testing shall be conducted in accordance with Conditions I.(M) and III.(B)(2)(b).

(b) Performance testing is required on each emission point once per year during the third quarter (July through September). Testing must occur on every emission point associated in a group limit for every testing period**.** (Chapter ~~34~~ **15**)~~.~~

(i) Performance testing on EP-~~3000~~ **3001** (and pre-condenser CE-3001) for Acetaldehyde**, Acrolein, Formaldehyde, Methanol** and VOC required by this condition shall be conducted concurrently with Acetaldehyde and VOC testing required for emission point, EP-3002**.** (Chapter ~~34~~ **15**)~~.~~

(ii) Two **(2)** performance testing scenarios shall be conducted in accordance with III.(B)(2)(b) for EP-~~3000~~ **3001** (and pre-condenser CE-3001) and EP-3002:

1. A performance test shall be conducted when EP-~~3000~~ **3001** (and pre-condenser CE-3001) and EP-3002 are operating concurrently.

2. A performance test shall be conducted when EP-~~3000~~ **3001** (without pre-condenser CE-3001) and EP-3002 are operating concurrently.

(iii) **During performance testing, all emissions generated in EU31 through EU39, EU301, EU976, EU21, EU23 through EU26, EU30, EU50 through EU52, EU53a, EU53b, EU55, EU909 through EU920, EU936, EU974, EU981, EU982, and EU983 shall be controlled by CE3001 and CE3002 and routed to atmosphere.**

(3) Operational and Monitoring Requirements and Limitations:

(a) VOC and HAP emissions from the fermentation and distillation process emission units and emission points identified in Condition III.(B)(1) shall be controlled as follows: EU31 through ~~EU36~~ **EU39**, ~~FERM06, FERM07,~~ **EU301** and EU976 shall be controlled by CE3000 (and pre-condenser CE3001; EU21, EU23 through EU26, EU30, EU50 through EU52, EU53a,

EU53b, EU55, EU909 through EU920, EU936, EU974, EU981, EU982, and EU983 shall be controlled by CE3002. (Chapter ~~17~~ **3**)

(i) The source may demonstrate through testing performed in accordance with Condition I.(M), or the use of a CEMS, that chemical addition is not necessary. Testing completed after May 5, 2007, and approved by the ~~NDEE~~ **DWEE**, may be used to demonstrate chemical addition is not necessary. (Chapter ~~17~~ **3**, Chapter ~~27~~ **13**, and Chapter ~~34~~ **15**)

(b) Operation and maintenance of each scrubber (CE3000 and CE3002) shall be in accordance with the following requirements: (Chapters ~~17~~ **3** and ~~27~~ **13**)

(i) The scrubber shall be operated and be controlling emissions at all times when the associated emission units are in operation.

(ii) The scrubber shall be properly designed, installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the scrubber shall be kept on site and readily available to ~~NDEE~~ **DWEE** representatives.

(iii) The scrubber shall be equipped with devices capable of monitoring the following operating parameters in the manner described below:

1. Scrubbing liquid flow rate shall be monitored, recorded continuously and averaged hourly;

2. Chemical addition flow rate shall be monitored, recorded continuously and averaged hourly if chemical addition is utilized;

3. Scrubber pressure differential shall be monitored, recorded continuously and averaged hourly; and,

4. Scrubber liquid temperature shall be monitored and recorded by direct measurement at least once each day.

(iv) If chemical addition is utilized the total monthly amount of chemical, in gallons, added to the scrubber shall be monitored and recorded by the source.

(v) Chemical draw down checks shall be performed upon request by ~~NDEE~~ **DWEE** personnel to verify that the flow meter is working correctly.

(vi) The scrubber operating parameters shall be maintained at the levels recorded during the most recent valid performance test conducted at the facility.

1. The scrubber water temperature, "shall be maintained at the levels recorded during the most recent valid performance test" shall mean at or below the tested level(s) under normal operating conditions.

2. The scrubbing liquid flow rate, flow rate of chemical additions, and concentration of the chemical injected into the scrubber shall be maintained at or above the levels recorded during testing. Chemical concentration, as documented by the supplier, shall be recorded upon use of the chemical.

(vii) Observations at least once each day during daylight hours of scrubber operation shall be conducted to determine whether there are leaks, noise, or other indications that corrective action is necessary. If corrective action is required, it shall occur immediately.

(viii) Flow meters for recording scrubbing liquid and chemical addition flow rates shall be maintained and calibrated according to manufacturer's instructions.

(c) Operation and maintenance of the pre-condenser (CE3001) shall be in accordance with the following requirements until the issuance of an operation permit (Chapter ~~17~~ **3**):

(i) The operation of pre-condenser (CE3001) is optional. CE3001 shall be properly designed, installed, operated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection, and maintenance for the pre-condenser shall be kept on site and readily available to ~~NDEE~~ **DWEE** representatives.

(ii) The pre-condenser (CE3001) shall be equipped with devices capable of monitoring the following operation parameters in the manner described below.

1. Liquid temperature shall be monitored, recorded continuously, and averaged hourly;

2. Overflow basin water level shall be monitored, recorded continuously, and averaged hourly;

3. Pressure differential shall be monitored, recorded continuously, and averaged hourly, and

4. Recirculated water ethanol concentration shall be measured and recorded once per calendar day sampling.

(iii) The pre-condenser (CE3001) operating parameters shall be maintained at the levels recorded during the most recent valid performance test conducted at the facility as described below.

1. The temperature of the pre-condenser fluid shall not exceed the tested average temperature by more than five degrees Fahrenheit.

2. The overflow basin water level shall be maintained at or above levels recorded during testing.

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The Department has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in III.(B)(1).

(5) Reporting and Recordkeeping Requirements:

The owner of operator shall maintain the following records:

(a) Records documenting the date, time, temperature and flow rate of scrubbing liquid, and the pressure differential reading for each day the associated scrubber is in operation.

(b) Records documenting the date, time, observations, and corrective actions taken for each day the associated scrubber is in operation.

(c) Records documenting the operating parameter data, listed under Condition III.(B)(3)(c)(ii), for the pre-condenser, including the date and time of the reading.

(d) The permittee shall provide written notice to the ~~NDEE~~ **DWEE** within 15 days that CE3001 begins operation.

(e) The permittee shall keep records of any yeast strains and/or enzyme changes, including the name or identifier of the strain/enzyme and date the change occurred.

(f) The permittee shall maintain records documenting the date, chemical name or identifier, amount of chemical used, chemical concentration, and chemical addition flow rate for the associated scrubber when chemical addition is used.

This section was revised by correcting the emission point designation from EP-3000 to EP-3001 within the permitted emission points table. The control equipment description for the fermentation process was also revised to read CE3001: Pre-Condenser and CE3000: CO2 Scrubber with chemical addition or CE3000: CO2 Scrubber without chemical addition. Fermentation Tanks FERM06 and FERM07 were removed from the permit, as they were not constructed. In addition, the Beer Well (EU36) was redesignated as Fermentation Tank #6, and three new fermentation tanks, Fermentation Tanks #7 through #9 (EU37–EU39), were added.

This section was further revised by adding new fermentation and distillation process equipment consisting of the Yeast Tank (EU302), 200P Condenser (EU8005), Sieve Feed Superheater (EU8009), Sieves #7 through #9 (EU8010–EU8012), Regen Condenser #3 (EU8013), Eductor Tank (EU8014), 200P Flash Tank (EU8015), and 200P Cooler (EU8016). Emissions from this equipment are controlled by the Regenerative Thermal Oxidizer (RTO) at EP-8001, with the applicable requirements provided in Condition III.(J), Specific Conditions for the RTO.

Additional revisions include the establishment of emission limits for acrolein, formaldehyde, and methanol from the fermentation process. The condition also prescribed testing conditions regarding emissions generated within the fermentation process to ensure performance testing is representative.

Condition III.(E) now reads:

(III).(E) Specific Conditions for Boilers

(1) Permitted Emission Points:

(a) The source is permitted to construct the emission points and associated emission units identified in the following table at the capacities and using the fuel types listed:

Emission Point ID#	Control Equipment ID# and Description	Emission Unit ID# and Description	Maximum Capacity	Permitted Fuel Type
EP-5001	-	EU74: Boiler #1	73.5 MMBtu/hr	Natural Gas or Biogas
EP-5002	-	EU75: Boiler #2	73.5 MMBtu/hr	Natural Gas or Biogas
EP-5003	-	EU76: Boiler #3	73.5 MMBtu/hr	Natural Gas or Biogas
EP-9109	**-**	**EU9109: Boiler #4**	**92 MMBtu/hr**	**Natural Gas**
EP-9110	**-**	**EU9110: Boiler #5**	**92 MMBtu/hr**	**Natural Gas**

(2) Emission Limitations and Testing Requirements:

(a) Boilers #1 (EU74) through #3 (EU76) **and Boiler #4 (EU9109) and Boiler #5 (EU9110)** are subject to the applicable emission limitations and opacity standards contained in NSPS, Subpart Dc**.**

(3) Operational and Monitoring Requirements and Limitations:

(a) Boilers #1 (EU74) through #3 (EU76) **and Boiler #4 (EU9109) and Boiler #5 (EU9110)** are subject to operational and monitoring requirements contained in NSPS, Subpart Dc.

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The following standards apply to EU74, EU75, **EU76, EU9109, and EU9110**:

Applicable Standard	Title	Rule Citation
NSPS, Subpart A	General Provisions	Chapter ~~18~~ **12**, Sec. 001.01 40 CFR 60.1
NSPS, Subpart Dc	Small Industrial, Commercial, Institutional Steam Generation Units	Chapter ~~18~~ **12**, Sec. ~~001.52~~ **001.05** 40 CFR 60.40c

(5) Reporting and Recordkeeping Requirements:

The owner of operator shall maintain the following records:

(a) Notifications and record keeping as required by 40 CFR 60.7

(b) Reporting and recordkeeping as required by 40 CFR 60.48c

This section was revised by adding Boiler #4 (EU9109) and Boiler #5 (EU9110) with their corresponding emission points (EP-9109 and EP-9110). Both boilers have a maximum heat input capacity of 92 MMBtu/hr and are permitted to combust natural gas.

Condition III.(G) now reads:

(III).(G) Specific Conditions for Cooling Tower

(1) ~~Description of~~ **Permitted** Emission Point:

(a) The source is permitted to construct the emission point and associated emission units identified in the following table with the number of cooling tower cells and at the circulation rate listed:

Emission Point ID#	Control Equipment ID# and Description	EU ID# and Description	Number of Cooling Tower Cells	Maximum Circulation Rate (gal/hr)
EP-6000	-	EU81: Cooling Tower #1	4	1,200,000 (total)
EP-6001	-	EU82: Cooling Tower #2	5	1,680,000 (total)
EP-6003	**-**	**EU83: Cooling Tower #3**	**4**	**1,680,000 (total)**

(2) Emission Limitations and Testing Requirements:

(a) The cooling towers identified in Condition III.(G)(1) are subject to the emissions limitations of Title 129, Chapter ~~20~~ **15**, Sections 001 and 004. Testing shall be conducted to ensure compliance with the TDS limitation established in Condition III.(G)(3)(b) below.

(3) Operational and Monitoring Requirements and Limitations:

(a) Drift loss from Cooling Tower #1 (EU81) shall be limited to 0.005 percent. Drift loss from Cooling Tower #2 (EU82) shall be limited to 0.001 percent. **Drift loss from Cooling Tower #3 (EU83) shall be limited to 0.0005 percent.** Verification of drift loss shall be by manufacturer's specification. Manufacturer's drift loss specification shall be kept on site and readily available to Department representatives, upon request, for the life of the unit. (Chapter ~~17~~ **3**)

(b) **Total Dissolved Solids (**TDS**)** concentration ~~of each~~ **of the** cooling water in **each of** the cooling tower**s** shall not exceed 2,000 ppm. A representative TDS sample shall be collected and tested from each cooling towers at a minimum of once per calendar month. The test method used to determine TDS concentration shall be in accordance with an EPA approved method and be documented. (Chapter ~~17~~ **3**)

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The Department has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in III.(G)(1).

(5) Reporting and Recordkeeping Requirements:

~~TDS concentration in cooling water for each tower for each sampling event and test method used.~~

The owner of operator shall maintain the following records:

(a) Records documenting the drift loss specification of EU81, EU82, and EU83.

(b) Records documenting the TDS sample readings and calculations demonstrating compliance with Condition III.(G)(3)(b).

This section was revised by adding Cooling Tower #3 (EU83) with the corresponding emission point (EP-6003). The cooling tower consists of four cells and increases the total permitted circulating water flow capacity to 1,680,000 gallons per hour with a maximum drift loss of 0.0005 percent.

Condition III.(H) now reads:

(III).(H) Specific Conditions for the Equipment Leaks (F9000)

(1) ~~Description of~~ **Permitted** Emission Points:

(a) Each valve, pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, flange, or other connector in VOC service and any device or system required by NSPS, Subpart VV ~~or~~**,** VVa **or VVb** (for emission units constructed after November 7, 2006) located throughout the ethanol plant.

(2) Emission Limitations and Testing Requirements:

(a) Emission limitations and testing requirements as established by 40 CFR 60 Subpart VV ~~and~~**,** 40 CFR 60 Subpart VVa **and 40 CFR 60 subpart VVb**.

(3) Operational and Monitoring Requirements and Limitations:

(a) Operational and Monitoring Requirements and Limitations as established by 40 CFR 60 Subpart VV ~~and~~**,** 40 CFR 60 subpart VVa **and 40 CFR 60 subpart VVb**.

(4) Applicable NSPS, NESHAP, and MACT Standards

Applicable Standard	**Title**	**Rule Citation**
NSPS, Subpart A	General Provisions	Chapter ~~18~~ **12**, Sec. 001.01 40 CFR 60.1
NSPS, Subpart VV	Equipment Leaks in the Synthetic Organic Chemicals Manufacturing Industry	Chapter ~~18~~ **12**, Sec. ~~001.50~~ **001.14** 40 CFR 60.480

NSPS, Subpart VVa	Equipment Leaks in the Synthetic Organic Chemicals Manufacturing Industry.	**Chapter 12, Sec. 001.51** 40 CFR 60.480a
NSPS, Subpart VVb	**Equipment Leaks in the Synthetic Organic Chemicals Manufacturing Industry.**	**40 CFR 60.480b**

(5) Reporting and Recordkeeping Requirements:

The permittee shall maintain the following records:

(a) Records identifying which emissions units are subject the requirements of NSPS subpart VV, **VVa and VVb**.

For emission units subject to NSPS subpart VV**, the permittee shall maintain the following records:**

(b) Notifications and record keeping as required by 40 CFR 60.7.

(c) Record keeping and reporting as required by 40 CFR 60.486 and 40 CFR 60.487.

(d) Records including the date in which leak detection testing occurred, which valves, pumps, seals, open-ended lines, flanges, connectors, etc. were tested, and name of the individual who conducted the testing.

(e) The owner or operator shall submit a semi-annual leak detection and repair report every six (6) calendar months to the Department. The initial semi-annual report shall be submitted beginning six (6) months after the initial startup date [60.487 (a)]. Subsequent reports for each six (6) calendar month reporting period shall be submitted within 45 days following June 30 and December 31 of each year. Each report must be certified by a responsible official and include the following items:

(i) Date and time testing occurred

(ii) Name of individual who conducted the testing; and

(iii) Additional information required to be reported to the Department in accordance with 40 CFR 60.480

For emission units subject to NSPS subpart VVa**, the permittee shall maintain the following records:**

(f) Notifications and recordkeeping as required by 40 CFR 60.7.

(g) Recordkeeping and reporting as required by 40 CFR 60.486a and 40 CFR 60.487a.

(h) Records indicating the date in which leak detection occurred, which valves, pumps, seals, open ended lines, flanges connectors, etc. were tested, and name of the individual who conducted the testing.

(i) The owner or operator shall submit a semi-annual leak detection and repair report every six (6) calendar months to the Department. The initial semi-annual report shall be submitted beginning six(6) months after the initial startup date [60.487a(a)]. Subsequent reports for each six (6) month reporting period shall be submitted within 45 days following June 30 and December 31 of each year. Each report must be certified by a responsible official and include the following items:

(i) Date and time testing occurred

(ii) Name of the individual who conducted the testing ; and

(iii) Additional information required to be reported to the department in accordance with 40CFR 60.480a.

For emission units subject to NSPS subpart VVb, the permittee shall maintain the following records:

(j) **Notifications and recordkeeping as required by 40 CFR 60.7.**

(k) **Recordkeeping and reporting as required by 40 CFR 60.486b and 40 CFR 60.487b.**

(l) **Records indicating the date in which leak detection occurred, which valves, pumps, seals, open-ended lines, flanges, connectors, etc. were tested, and name of the individual who conducted the testing.**

(m) **The owner or operator shall submit a semi-annual leak detection and repair report every six (6) calendar months to the Department. The initial semi-annual report shall be submitted beginning six (6) months after the initial startup date [60.487b(a)]. Subsequent reports for each six (6) month reporting period shall be submitted within 45 days following June 30 and December 31 of each year. Each report must be certified by a responsible official and include the following items:**

(i) **Date and time testing occurred**

(ii) **Name of the individual who conducted the testing ; and**

(iii) **Additional information required to be reported to the department in accordance with 40 CFR 60.480b.**

This section was revised by adding the applicability requirements for 40 CFR Part 60, Subpart VVb, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which construction, reconstruction, or modification commenced after November 7, 2006. Associated monitoring, recordkeeping, and reporting requirements were also added.

Condition III.(J) now reads:

(III).(J) Specific Conditions for RTO

(1) **Permitted Emission Points:**

(a) **The source is permitted to construct the emission points and associated emission units identified in the following table:**

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit ID# and Description	Maximum Capacity (MMBtu/hr)	Permitted Fuel Type
EP-8001	CE8001: Regenerative Thermal Oxidizer 1 (RTO1)	EU302: Yeast Tank	-	-
		EU8001a: Dryer #1	50.0	Natural Gas
		EU8001b: Dryer #2	50.0	Natural Gas
		EU8001c: RTO1	18.0	Natural Gas
		EU8003: Syrup Tank	-	-
		EU8004: Whole Stillage Tank	-	-

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit ID# and Description	Maximum Capacity (MMBtu/hr)	Permitted Fuel Type
		EU8005: 200P Condenser #2	-	-
		EU8006, EU8007: 2nd Effect Evaporator #1 and #2	-	-
		EU8008: 2nd Effect Condensate Tank	-	-
		EU8009 Sieve Feed Superheater	-	-
		EU8010, EU8011, EU8012: Molecular Sieve #7, #8, and #9	-	-
		EU8013: Regen Condenser #3	-	-
		EU8014: Eductor Tank	-	-
		EU8015: 200P Flash Tank	-	-
		EU8016: 200P Cooler	-	-

(2) Emission Limitations and Testing:

Pollutant emission rates from the emission point identified in Condition III.(J)(1) shall not exceed the permitted limits identified in the table below. Initial performance testing, if required, shall be conducted in accordance with Conditions I.(M) and II.(G).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required
EP-8001	PM	2.15 lb/hr	3-hour or test method average	Chapter 3 and Chapter 15 Section 001	Yes[1]
	PM10	2.15 lb/hr	3-hour or test method average	Chapter 3 and Chapter 15 Section 001	Yes[1]
	PM2.5	2.15 lb/hr	3-hour or test method average	Chapter 3 and Chapter 15 Section 001	Yes[1]

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required
	SO2	1.40 lb/hr	3-hour or test method average	Chapter 3	Yes
	NOx	11.80 lb/hr	3-hour or test method average	Chapter 3	Yes
	CO	4.45 lb/hr	3-hour or test method average	Chapter 3	Yes
	VOC	10.04 lb/hr	3-hour or test method average	Chapter 3	Yes
	Acetaldehyde	0.20 lb/hr	3-hour or test method average	Chapter 3	Yes
	Total HAPs	1.09 lb/hr	3-hour or test method average	Chapter 3	Yes
	Opacity	< 20%	6-Minute	Chapter 15 Section 001	Yes

[1] Compliance with the PM limitation demonstrates compliance with the Title 129, Chapter 15, Sections 001.01 and 001.02 PM limitations.

(3) Operational and Monitoring Requirements and Limitations:

(a) Emissions from the emission units and emission point identified in Condition III.(J)(1) shall be controlled by the pollution control equipment identified in Condition III.(J)(1). (Chapter 3)

(b) Operation and maintenance of RTO1 (CE8001) shall be in accordance with the following requirements: (Chapter 3)

(i) The RTO shall be operated and be controlling emissions at all times when the associated emission units are in operation.

(ii) The RTO shall be equipped with a thermocouple or equivalent device capable of continuously monitoring the combustion chamber temperature and shall be operated as follows:

1. The thermocouple or equivalent device shall be operated at all times the RTO is in operation.
2. The thermocouple or equivalent device shall continuously record the one-hour average combustion chamber temperature.

(iii) The one-hour average combustion chamber temperature shall be maintained at or above the temperature established during the most recent valid performance

test demonstrating compliance with the permitted emission limits whenever the RTO is controlling emissions.

(iv) RTO shall be properly installed, operated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection, and maintenance of the RTO shall be maintained on-site and made available to Department representatives upon request.

(v) Observations, at least once each operating day during daylight hours of the RTO and associated emission units, shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications that corrective action is necessary. If corrective action is required, it shall occur immediately

(c) Operation of Dryer #1 (EU8001a) and Dryer #2 (EU8001b) shall comply with the following requirements:

(i) When producing DDGS, EU8001a and EU8001b shall be operated simultaneously and in series.

(ii) Dryer #1 (EU8001a) and Dryer #2 (EU8001b) shall each be equipped with a hour meter or equivalent device capable of continuously monitoring the hours of operation of the units.

(iii) Dryer #1 (EU8001a) shall not operate for more than 4,380 hours during any 12 consecutive months.

(iv) Dryer #2 (EU8001b) shall not operate for more than 4,380 hours during any 12 consecutive months.

(4) Applicable NSPS, NESHAP, and MACT Requirements:

At this time, the Department has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission point or emission units listed in Condition III.(J)(1).

(5) Reporting and Recordkeeping Requirements:

The owner or operator shall maintain the following records:

(a) Records documenting the continuous monitoring of the combustion chamber temperature for the RTO for all times the associated emission units are in operation.

(b) Records documenting the one-hour average combustion chamber temperature operating parameter established during the most recent valid performance test demonstrating compliance with the permitted emission limits.

(c) Records documenting the date and time that routine observations were performed for each operating day the RTO is in operation, including a description of any atypical observations and corrective actions taken, if necessary.

(d) Records documenting when routine maintenance and preventive actions were performed on the RTO, including a description of the maintenance and/or preventive action performed.

(e) The owner or operator shall maintain records of the date and hours of operation for Dryer #1 (EU8001a) and Dryer #2 (EU8001b), including the total hours of operation for each emission unit during any 12 consecutive months.

(f) Records documenting any deviations from the operating requirements of this condition and the corrective actions taken.

This section was added to establish specific conditions for Regenerative Thermal Oxidizer 1 (RTO1). The conditions apply to RTO1 controlling emissions from the fermentation and distillation processes and the DDGS process, and include the applicable operating, monitoring, performance testing, recordkeeping, and reporting requirements.

Condition III.(K) now reads:

(III).(K) Specific Conditions for DDGS Process

(1) Permitted Emission Points:

(a) The source is permitted to construct the emission points and associated emission units identified in the following table:

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit ID# and Description	Maximum Capacity (MMBtu/hr)	Permitted Fuel Type
EP-8001	CE8001: Regenerative Thermal Oxidizer 1 (RTO1)	EU8001a: Dryer #1	50.0	Natural Gas
		EU8001b: Dryer #2	50.0	Natural Gas
		EU8001c: RTO1	18.0	Natural Gas
		EU8003: Syrup Tank	-	-
		EU8004: Whole Stillage Tank	-	-
		EU8006, EU8007: 2nd Effect Evaporator #1 and #2	-	-
		EU8008: 2nd Effect Condensate Tank	-	-
EP-8002	CE8002: DDGS Cooler Baghouse	EU8017: DDGS Cooler	-	-
EP-8003	CE8003: DDGS Loadout Baghouse	EU8018: DDGS Loadout	-	-

(2) Emission Limitations and Testing:

(a) Pollutant emission rates from the emission point identified in Condition III.(K)(1) shall not exceed the permitted limits identified in the table below. Initial performance testing, if required, shall be conducted in accordance with Conditions I.(M) and II.(G).

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required
EP-8002	PM/PM_{10}	0.24 lb/hr	1 hour	Chapter 3	Yes
EP-8003	PM/PM_{10}	0.24 lb/hr	1 hour	Chapter 3	Yes

(b) **Emissions from emission units identified in Condition III.(K)(1) that are routed to the RTO, Control Equipment CE8001, shall comply with the applicable requirements of Section III.(J), Specific Conditions for RTO (EP-8001).**

(3) **Operational and Monitoring Requirements and Limitations:**

(a) **The DDGS Cooler Baghouse (CE8002) and DDGS Loadout Baghouse (CE8003) shall be operated and controlling emissions at all times when the associated emission unit is in operation. (Chapter 3 and Chapter 15, Section 001)**

(b) **Each baghouse shall be properly installed, operated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection, and maintenance of each baghouse shall be maintained on-site and made available to Department representatives upon request. (Chapter 3)**

(c) **Each baghouse shall be equipped with a device capable of continuously monitoring the pressure differential across the baghouse. Pressure differential readings shall be recorded at least once each operating day that the associated baghouse is in operation. (Chapter 3)**

(d) **Filter bags shall be inspected and/or replaced in accordance with the manufacturer's operation and maintenance manual or equivalent, or more frequently as indicated by pressure differential readings or other indications of bag failure. (Chapter 3)**

(e) **Observations shall be conducted at least once each operating day during daylight hours to determine whether there are visible emissions, leaks, or other indications that corrective action is necessary. If corrective action is required, it shall occur immediately. (Chapter 3)**

(4) **Applicable NSPS, NESHAP, and MACT Requirements:**

At this time, the Department has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(K)(1).

(5) **Reporting and Recordkeeping Requirements:**

The permittee shall maintain the following records:

(a) **Records documenting pressure differential readings for each baghouse in accordance with Condition III.(K)(3)(c).**

(b) **Records documenting the date and time that routine observations were performed for each operating day the associated baghouse is in operation.**

(c) **Filter replacement records including the date the filter replacement occurred and the type of filter installed.**

(d) **Records documenting when routine maintenance and preventive actions were performed on each baghouse with a description of the maintenance and/or preventive action performed.**

This section was added to establish specific conditions for the DDGS process. The DDGS process includes Dryer #1 (EU8001a), Dryer #2 (EU8001b), RTO1 (EU8001c), the Syrup Tank (EU8003), Whole Stillage Tank (EU8004), 2nd Effect Evaporators #1 and #2 (EU8006 and EU8007), and the 2nd Effect Condensate Tank (EU8008), which are controlled by RTO 1 (CE8001) and vent through EP-8001. The equipment controlled by RTO1 is subject to the applicable RTO requirements contained in Condition III.(J). This section also includes the DDGS Cooler (EU8017), controlled by the DDGS Cooler Baghouse (CE8002) and venting through EP-8002, and the DDGS Loadout (EU8018), controlled by the DDGS Loadout Baghouse (CE8003) and venting through EP-8003.

Fact Sheet Attachment: Facility Process Information

KAAPA Ethanol, LLC.
Facility ID #75073

Process Data

Maximum Capacity (Anhydrous Ethanol Produced)[1]	262,910,000	gallon/year			
Grain to Ethanol Conversion Factor	2.7	gallons of Ethanol per bushel of corn			
Grain Density:	56	lb/bushel for Corn			
Maximum Permitted Grain Receiving Throughput[2]:	1,641,379	tpy	=	187.4	ton/hr
		tpy	=	58,620,679	bu/yr
DDGS produced by a Bushel of Grain[2]	17	lb DDGS/bushel of Corn			
100% WDGS Generated (65% Moisture)[2]	1,281,281	tpy			

Maximum Production/Throughputs

Product #1: Denatured Ethanol (97.5% Ethanol, 2.5% Denaturant)[1]	269,651,282	gallon/year
Product #2: WDGS[2]	1,281,281	tpy
Product #3: DDGS[2]	99,772	tpy
Raw Material #1: Grain[2]	1,641,379	tpy
Raw Material #2: Denaturant[2]	6,741,282	gallon/year
Raw Material: Grain spout #3[2]	140,000	tpy
Anhydrous Ethanol Produced[1]	262,910,000	gallon/year

Additional Information[3]

Maximum Grain Unloading by Truck	1260	ton/hr
Two (4) Truck Dump Pits		
Maximum New Concrete Silo Filling	630	ton/hr
Permanent Storage Capacity	1,953,436	bushel
Two (2) 228,614 bu each concrete silos		
Two (2) 748,104 bu concrete bin		
Total Storage Pile Capacity[3]	3,400,000	bushel
Maximum Scalper Capacity (per unit, three units)	84	ton/hr
Two (2) 3,000 bu/hr each		
Maximum Hammermill Capacity (per unit, Four units)	140	ton/hr
Four (4) 1,200 bu/hr each and One (1) 5,000 Milled Grain Leg		

[1] Facility estimate.

[2] Permitted limit.

[3] Maximum equipment capacities.

Fact Sheet Attachment: Facility Wide Emissions

KAPPA Ethanol, LLC
Facility ID #75073

Facility-wide Emissions as Limited by the Permit

Process or Unit	Pollutants (ton/year)									
	Particulate Matter (PM)	Particulate Matter (PM_{10})	Particulate Matter ($PM_{2.5}$)	Sulfur Oxides (SO_x)	Nitrogen Oxides (NO_x)	Carbon Monoxide (CO)	Volatile Organic Compounds (VOC)	Total Reduced Sulfur as H_2S	GHGs (CO_2e)	GHGs (mass)
Grain Receiving, Storage, and Milling	41.77	30.11	26.29	-	-	-	-	-	-	-
Storage Pile	1.53	1.34	0.05	-	-	-	-	-	-	-
Storage Tanks	-	-	-	-	-	-	4.91	-	-	-
Fermentation	-	-	-	-	-	-	11.05	-	50,683	50,683
Distillation Scrubber	-	-	-	-	-	-	20.71	-	-	-
Ethanol Liquid Loadout	-	-	-	-	-	-	4.32	-	-	-
Loadout Flare	0.03	0.10	0.10	0.01	10.10	48.64	0.08	-	16,417	16,342
WDGS Loadout	-	-	-	-	-	-	5.32	-	-	-
Cooling Tower 1 and 2	5.61	4.30	3.07	-	-	-	-	-	-	-
Cooling Tower 3	0.61	0.39	0.00	-	-	-	0.35	-	-	-
Emergency Fire Pump	0.02	0.02	0.02	0.02	0.29	0.06	0.02	-	-	-
DDGS Loadout	0.14	0.14	0.14	-	-	-	1.65	-	-	-
DDGS Cooler	0.52	0.52	0.52	-	-	-	8.72	-	-	-
RTO-Dryers	6.05	6.05	6.05	3.17	29.78	24.53	22.96		35,038	34,841
Boilers	13.20	13.20	13.20	95.41	1.04	43.92	9.55	-	-	-
Equipment Leaks	-	-	-	-	-	-	72.20	-	-	-
Haul Roads	116.75	23.70	5.49	-	-	-	-	-	-	-
Non-Process Combustion	0.01	0.06	0.06	4.59E-03	0.76	0.64	0.04	-	896	895
KAAPA Minden Total Emissions (including fugitives) [1]	239.83	102.82	55.26	4.38	148.02	118.41	208.38	-	193,575	193,321
KAAPA Minden Previous Emissions (including fugitives) [1]	163.81	71.47	33.49	0.74	110.18	53.78	146.62	-	13,574	13,516
KAAPA Minden Change in Emissions (including fugitives)	76.02	31.35	21.77	3.64	37.84	64.63	61.76	-	180,001	179,805
KAAPA Minden Change in Emissions (excluding fugitives)	23.39	20.69	19.45	3.64	37.84	64.63	36,77	-	180,001	179,805
KAAPA Minden Total Emissions (excluding fugitives)	121.55	77.78	49.72	4.38	148.02	118.41	136.18	-	103,034	102,761

[1] This calculation workbook was developed using cp075073f10 as the initial basis. PTE calculations from cp075073f11 and cp075073f12 will not be present in this workbook; for project specific PTE, please refer to the individual project information.. The total emissions is based off of cp075073f12 plus the PTE from this project.

Fact Sheet Attachment: Facility Wide Emissions

KAPPA Ethanol, LLC **Facility ID #75073**

Facility-Wide Emissions for CP25-034

Pollutant	Process Equipment															
	Fermentation	Distillation Scrubber	Ethanol Liquid Loadout	WDGS Loadout	Boilers	Emergency Fire Pump	DDGS Loadout	DDGS Cooler	RTO-Dryers	Tanks	Equipment Leaks	Non-Process Combustion	Uncontrolled individual HAP	Previous HAPs	Change in HAPs	Permitted Individual HAP[1]
	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
Individual HAPs																
Acetaldehyde	0.19	0.79	2.89E-05	0.07	-	5.10E-05	0.20	0.18	0.44	6.58E-04	0.01	-	1.89	8.02	-6.13	<10
Acrolein	0.12	9.76E-03	-	1.07E-02	-	6.15E-05	0.25	0.42	0.88	-	0.01	-	1.70	0.16	1.54	<10
Benzene	-	-	0.01	-	3.65E-03	6.20E-05	-	-	6.13E-04	4.98E-03	-	1.61E-05	1.98E-02	0.81	-0.79	<10
1,3-Butadiene	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	<10
Carbon Disulfide	-	-	8.35E-05	-	-	-	-	-	-	-	-	-	8.35E-05	-	8.35E-05	<10
Cumene	-	-	4.17E-04	-	-	-	-	-	-	-	-	-	4.17E-04	-	4.17E-04	<10
Dichlorobenzene	-	-	-	-	2.08E-03	-	-	-	3.50E-04	-	-	9.17E-06	2.44E-03	-	2.44E-03	<10
Ethyl Benzene	-	-	2.09E-04	-	-	-	-	-	-	-	-	-	2.09E-04	-	2.09E-04	<10
Formaldehyde	3.10E-03	5.18E-04	-	0.14	0.13	1.20E-04	0.10	0.09	0.28	-	7.22E-03	5.73E-04	0.75	0.10	0.65	<10
n-Hexane	-	-	0.21	-	3.13	-	-	-	0.53	0.10	-	0.01	3.97	9.15	-5.18	<10
Lead Compounds	-	-	-	-	8.69E-04	-	-	-	1.27E-04	-	-	3.82E-06	9.99E-04	5.43E-04	4.56E-04	<10
Methanol	0.19	6.53E-03	2.89E-05	0.03	-	-	0.55	0.11	0.33	7.36E-04	1.44E-02	-	1.23	0.70	0.53	<10
Naphthalene	-	-	-	-	1.06E-03	5.64E-06	-	-	1.78E-04	2.61E-06	-	4.66E-06	1.25E-03	-	1.25E-03	<10
Polycyclic Organic Matter	-	-	-	-	1.53E-04	-	-	-	2.58E-05	-	-	6.74E-07	1.80E-04	-	1.80E-04	<10
Toluene	-	-	0.02	-	5.91E-03	2.72E-05	-	-	9.93E-04	9.97E-03	-	2.60E-05	0.04	-	0.04	<10
Xylenes	-	-	2.09E-03	-	-	1.90E-05	-	-	-	2.61E-05	-		2.13E-03	-	2.13E-03	<10
Arsenic Compounds	-	-	-	-	3.47E-04	-	-	-	5.84E-05	-	-	1.53E-06	4.07E-04	-	4.07E-04	<10
Beryllium Compounds	-	-	-	-	-	-	-	-	3.50E-06	-	-	9.17E-08	3.60E-06	1.14E-05	-7.80E-06	<10
Cadmium Compounds	-	-	-	-	-	-	-	-	3.21E-04	-	-	8.41E-06	3.30E-04	1.04E-03	-7.10E-04	<10
Chromium Compounds	-	-	-	-	-	-	-	-	3.55E-04	-	-	1.07E-05	3.65E-04	-	3.65E-04	<10
Cobalt Compounds	-	-	-	-	-	-	-	-	2.13E-05	-	-	6.42E-07	2.19E-05	-	2.19E-05	<10
Manganese Compounds	-	-	-	-	-	-	-	-	9.63E-05	-	-	2.90E-06	9.92E-05	-	9.92E-05	<10
Mercury Compounds	-	-	-	-	-	-	-	-	6.59E-05	-	-	1.99E-06	6.79E-05	2.46E-04	-1.78E-04	<10
Nickel Compounds	-	-	-	-	-	-	-	-	5.32E-04	-	-	1.61E-05	5.48E-04	-	5.48E-04	<10
Selenium Compounds	-	-	-	-	-	-	-	-	6.08E-06	-	-	1.83E-07	6.26E-06	2.61E-05	-1.98E-05	<10
Total HAPs	0.60	0.81	0.24	0.25	3.27	3.46E-04	1.10	0.79	2.46	0.12	0.05	0.01	9.71	20.06	-10.35	<25

[1] The table calculates the PTE for each individual HAP, however the source has a sourcewide HAP limit that standardizes the limits on any single HAP and gives a limit on Total HAPs.

Fact Sheet Attachment: Grain Receiving, Handling, Storage, and Hammermilling
KAAPA Ethanol, LLC. Facility ID #75073
Emission Points: EP-1002, EP-2000-EP-2013, F-1002, EP-1004a, and EP-1004b

$PM/PM_{10}/PM_{2.5}$ Emissions from Grain Receiving, Handling and Hammermilling

Emission Point ID#	Control Equipment ID#	Emission Point Description	Installation Date	(A) Flow Rate	(B) Emission Factor (Grain Loading)	Total Controlled $PM/PM_{10}/PM_{2.5}$ Emissions[1]	
				dscf/min	grains/dscf	**Permit Limitations** (C) = (A)x(B)x60/7000 (lb/hr)	**Permitted Emissions** (D) = (C)x8760/2000 (tpy)
EP-1002	CE-1002	Grain Receiving Baghouse #1	2003	42,000	0.005	1.80	7.88
EP-1003	CE-1003	Grain Receiving Baghouse #2	2026	32,000	0.001	0.27	1.20
EP-1004	CE-1004	Grain Receiving Baghouse #3	2026	32,000	0.001	0.27	1.20
EP-2005	CE-2005	Grind Conveyor Baghouse	2026	15,000	0.001	0.13	0.56
EP-2000	CE-2000	Grind Elevator Baghouse [3]	2005	9,800	0.01	0.84	3.68
EP-2001	CE-2001	Hammermill Baghouse #1	2014	9,800	0.005	0.42	1.84
EP-2002	CE-2002	Hammermill Baghouse #2	2014	9,800	0.005	0.42	1.84
EP-2003	CE-2003	Hammermill Baghouse #3	2014	9,800	0.005	0.42	1.84
EP-2004	CE-2004	Hammermill Baghouse #4	2014	9,800	0.005	0.42	1.84
EP-2006	CE-2006	Hammermill Baghouse #5	2026	12,000	0.001	0.10	0.45
EP-2007	CE-2007	Hammermill Baghouse #6	2026	12,000	0.001	0.10	0.45
EP-2008	CE-2008	Hammermill Baghouse #7	2026	12,000	0.001	0.10	0.45
EP-2009	CE-2009	Hammermill Baghouse #8	2026	12,000	0.001	0.10	0.45
EP-2010	CE-2010	Hammermill Baghouse #9	2026	12,000	0.001	0.10	0.45
EP-2011	CE-2011	Hammermill Baghouse #10	2026	12,000	0.001	0.10	0.45
EP-2012	CE-2012	Hammermill Baghouse #11	2026	12,000	0.001	0.10	0.45
EP-2013	CE-2013	Hammermill Baghouse #12	2026	12,000	0.001	0.10	0.45

Conversion Factors: 7,000 grains per pound; 60 minutes per hour; 8,760 hours per year; 2,000 pounds per ton

[1] All PM from the baghouses is assumed to be $PM_{2.5}$. Controlled emissions are not accounted for project PTE as they are already permitted in CP08-067

[2] Increase in emissions is based on the difference between total controlled emissions as calculated in 1 and the total controlled emissions as permitted in CP08-067.

[3] The Hammermill Baghouse installed in 2005 (referred to as CE-2001 prior to this permit) is referred to as CE-2000, the Grind Elevator Baghouse, in this permit. KAAPA Ethanol intends to keep this existing baghouse to control particulate emissions front conveying milled grain.

Fact Sheet Attachment: Grain Receiving, Handling, Storage, and Hammermilling

KAAPA Ethanol, LLC. **Facility ID #75073**

$PM/PM_{10}/PM_{2.5}$ Emissions from Grain Storage and Uncaptured Emissions due to Receiving

Emission Point ID#	Emission Point Description	(A) Hourly Throughput (ton/hour)	(B) Annual Throughput (tpy)	(C) Percent Uncaptured [1]	Emission Factors[2] (lb/ton) (D) PM	PM Emissions (E)=(A)x(C)x(D) (lb/hr)	PM Emissions (F)=(B)x(C)x(D)/2000 (tpy)
F-1002	Grain Receiving Uncaptured	1,260	1,641,379	5%	0.035	2.21	1.44
1005a	Grain Storage Silo #3 Vent	630	410,345	100%	0.025	15.75	5.13
1005b	Grain Storage Silo #4 Vent	630	410,345	100%	0.025	15.75	5.13
1008	Grain Shipping Spout on Silo #3	-	140,000	100%	0.086	-	6.02

Emission Point ID#	Emission Point Description	Hourly Throughput (ton/hr)	Annual Throughput (tpy)	Percent Uncaptured [1]	Emission Factors[2] (lb/ton)	PM_{10} Emissions (lb/hr)	PM_{10} Emissions (tpy)
F-1002	Grain Receiving Uncaptured	1,260	1,641,379	5%	0.0078	0.4914	0.32
1005a	Grain Storage Silo #3 Vent	630	410,345	100%	0.0063	3.969	1.29
1005b	Grain Storage Silo #4 Vent	630	410,345	100%	0.0063	3.969	1.29
1008	Grain Shipping Spout on Silo #3		140,000	100%	0.029		2.03

Emission Point ID#	Emission Point Description	Hourly Throughput (ton/hour)	Annual Throughput (tpy)	Percent Uncaptured [1]	Emission Factors[2] (lb/ton)	$PM_{2.5}$ Emissions (lb/hr)	$PM_{2.5}$ Emissions (tpy)
F-1002	Grain Receiving Uncaptured	1,260	1,641,379	5%	0.0013	0.0819	0.05
1005a	Grain Storage Silo #3 Vent	630	410,345	100%	0.0011	0.693	0.23
1005b	Grain Storage Silo #4 Vent	630	410,345	100%	0.0011	0.693	0.23
1008	Grain Shipping Spout on Silo #3		140,000	100%	0.0049		0.34

[1] 5% Uncaptured are assumed since unloading operations will occur in an enclosure with choke flow. The receiving throughput is the increase due to this project in addition to safety factor 10% of the total receiving capacity.

[2] Emission Factors are from AP-42 Section 9.9.1 (5/2003)

Fact Sheet Attachment: Fermentation

KAAPA Ethanol, LLC.
Facility ID #75073
Emission Point EP-3001

Conversion Factors		
1 lb-mol =	379.0	ft^3 @ 60 F
Avg. Flow Rate Exiting Scrubber: [1]	15,080	dscfm
	904,800	dscf/hr

[1] Proposed fermentation scrubber flow rate of 15,080 dscfm was estimated from the preliminary design flow rate of 16,750 acfm using the average dscfm/acfm ratio (0.9) measured during the March 12, 2025 performance test of the existing fermentation scrubber (9,504 dscfm/10,556 acfm).

Emission Units Routed to Fermentation Scrubber

Emission Unit ID	Emission Source
EU31	Fermentation Tank #1
EU32	Fermentation Tank #2
EU33	Fermentation Tank #3
EU34	Fermentation Tank #4
EU35	Fermentation Tank #5
EU36	Fermentation Tank #6
EU37	Fermentation Tank #7
EU38	Fermentation Tank #8
EU39	Fermentation Tank #9
EU976	Degasser
EU301	Beer Well

Pollutant	Estimated Controlled Potential Emissions	Molecular Weight	Controlled Emission Rate [1]	Controlled Emission Rate [2]	Emissions After Pipeline	Permit Limitation [3]	Permitted Emissions [4]
	(ppmv,d)	(lb/lb-mol)	(lb/hr)	(tpy)	(tpy)	(lb/hr)	(tpy)
Volatile Organic Compounds (VOC) as VOC	-	-	22.95	100.53	10.05	22.95	10.05
Individual Hazardous Air Pollutants (HAP)							
Acetaldehyde	-	-	0.4326	1.89	0.19	N/A	<10
Acrolein	-	-	0.2723	1.19	0.12	N/A	<10
Formaldehyde	-	-	0.0071	0.03	3.10E-03	N/A	<10
Methanol	-	-	0.4384	1.92	0.19	N/A	<10
Total HAPs	-	-	1.1503	5.04	0.50	N/A	<25

[1] lb/hr emission rates are from worst care senario stack test results

[2] Emission Rate (lb/hr) x 8,760 (hr/yr) / 2,000 (lb/ton)

[3] Proposed VOC lb/hr emission limitation is based upon worst case senario stack test of CE3000 plus a 20% saftey factor for conservitivism

[4] VOC (lb/hr) x 8,760 (hr/yr) / 2,000 (lb/ton)

[5] Potential CO_2 emission calculations are provided below. CO_2 dscfm was obtained from September 15, 2021 stack test. 90% CO_2 used as a conservatively high CO_2 concentration.

CO_2 emission Claculation: (385 scf/lb-mole)

CO_2 (%)	dscfm	CO_2 dscfm	lb/lb-mole	lb-mole/scf	lb/min	CO_2 lb/hr	Hours	CO_2 tpy	After Pipeline
(A)	(B)	(C)= A x B / 100	(D)	(E)	(F) = C x D x E	(G) = F x 60	(H)	(I) = G x H / 2000	(J)=(I)x0.1
90	9,375	8438	44	0.0025974	1928.571429	115714	8,760	506829	50,683

Fact Sheet Attachment: Fermentation

KAAPA Ethanol, LLC.
Facility ID #75073
Emission Point EP-9107

Emission Units Routed to EP-9107

Emission Unit ID	Emission Source
EU-027	Liquefaction Tank #1
EU-028	Liquefaction Tank #2
EU-029	Liquefaction Tank #3

Pollutant	Estimated Controlled Potential Emissions	Molecular Weight	Emission Rate	Emission Rate[1][2]	Permit Limitation	Permitted Emissions
	(ppmv,d)	(lb/lb-mol)	(lb/hour)	(tpy)	(lb/hour)	(tpy)
Volatile Organic Compounds (VOC) as VOC	-	-	0.23	1.00	N/A	N/A
Individual Hazardous Air Pollutants (HAP)						
Acetaldehyde	-	-	N/A	N/A	N/A	<10
Acrolein	-	-	N/A	N/A	N/A	<10
Formaldehyde	-	-	N/A	N/A	N/A	<10
Methanol	-	-	N/A	N/A	N/A	<10
Total HAPs	-	-	0.02	0.10	N/A	<25

[1] 1.00 tpy of VOC and 0.10 tpy of total HAP to account for the removal of the liquefaction tanks from the fermentation control process. This has been supported by site specific performance testing in conducted in 2009. See the fact sheet of cp08-067 for additional details

[2] The permit limitations for the liquefactition tanks have been combined in the fermentation scrubber since permit cp08-067, for clarification they have been separated here, the additional ton/yr emission rates are still included in the total criteria VOC limit for fermentation and in the fermentation section in Total HAPs respecively.

Fact Sheet Attachment: Ethanol Liquid Loadout

KAAPA Ethanol, LLC., Facility ID #75073

Emission Point F-4000

Anhydrous Ethanol Loading Rate:	263	MMgal/yr
Denaturant Loading Rate:	6.74	MMgal/yr
Denatured Ethanol Loading Rate:	270	MMgal/yr

	Truck loadout	Rail loadout
Capture efficiency:	98.70%	98.70%
Control efficiency:	98.00%	98.00%
Overall control efficiency:	96.73%	96.73%

Material Physical Data	Gasoline (RVP 13)	Ethanol	Denaturant (RVP 10)
Molecular weight (M, lbs/lbs-mole)	62	46.07	66
Temperature (T, deg R)[1]	510	511.45	511.45
Vapor pressure (P, psia)	5.96	0.06	4.75
Liquid molecular weight (ML)	92	46	92
Density (D, lb/gal)	5.6	6.6	5.8
Liquid Mole Fraction (X)[2]	N/A	0.99	0.01

[1]Temperatures from TANKS 4.09d, average ambient temperature for Grand Island, NE

[2]Liquid Mole Fraction (X) was calculated as follows, where V = loading rate:

$$X = \frac{\left(\frac{D * V}{ML}\right)}{\left(\frac{D_{ethanol} * V_{ethanol}}{ML_{ethanol}}\right) + \left(\frac{D_{denaturant} * V_{denaturant}}{ML_{denaturant}}\right)}$$

Hazardous Air Pollutant Weight Fractions

Individual HAPs	Weight Fraction of VOC Emissions		
	Gasoline	Ethanol	Denaturant [1]
Acetaldehyde	N/A	2.00E-04	N/A
Benzene	2.50E-03	N/A	2.50E-03
Carbon Disulfide	2.00E-05	N/A	2.00E-05
Cumene	1.00E-04	N/A	1.00E-04
Ethyl benzene	5.00E-05	N/A	5.00E-05
Hexanes	0.05	N/A	0.05
Methanol	N/A	2.00E-04	N/A
Toluene	5.00E-03	N/A	5.00E-03
Xylene	5.00E-04	N/A	5.00E-04
Total HAP	0.06	4.00E-04	0.06

[1] Denaturant fractions are incorporated into the final denatured ethanol product assuming a blend of 97.5% ethanol and 2.5% denaturant.

Saturation Factors[1],[2],[3] (AP-42, Table 5.2-1)

$S_{normal\ dedicated,\ submerged\ loading}$	0.6	Saturation factor
$S_{clean\ cargo,\ submerged\ loading}$	0.5	Saturation factor

[1]Truck loadout is assumed to be non-dedicated trucks, which previous load was unleaded gasoline.
[2]The gasoline vapors are assumed to be displaced by the ethanol, for worst-case assumption.
[3]Rail loadout is assumed to be splash loading of clean cargo tanks.

Fact Sheet Attachment

Liquid Loadout
EP-17

VOC Emissions

Denatured Ethanol Emission Factor Calculations

	Truck Loadout Uncontrolled Emission Factor[1] (lb VOC/Mgal)	Railcar Loadout Uncontrolled Emission Factor[1] (lb VOC/Mgal)	Truck Loadout Controlled Emission Factor[1] (lb VOC/Mgal)	Railcar Loadout Controlled Emission Factor[1] (lb VOC/Mgal)
$EF_{gasoline}$	0.903	N/A	0.0296	N/A
$EF_{ethanol}$	0.033	0.03	1.07E-03	1.07E-03
$EF_{denaturant}$	0.043	0.043	1.39E-03	1.39E-03
EF_{VOC}	0.978	0.075	0.0320	2.47E-03

[1]VOC emission factor equation from AP-42, Section 5.2.2 - Loading Losses (1/1995)
EF = 12.46*S*P*M/T*(1-eff/100)*X = lbs/Mgal per component
$EF_{gasoline}$ emission factors assumes S =S_{normal} - $S_{clean\ cargo}$ and do not use the Liquid Mole Fraction (X) in the equations. This represents gasoline vapors present in the truck prior to the loading of denatured ethanol.

Total VOC Emission Calculations from Denatured Ethanol Loadout

Loadout Type/Material	(A) Denatured Ethanol Loaded Out (Mgal/year)	(B) Uncontrolled Emission Factor (lb VOC/Mgal)	(C)=(A)x(B)/2000 Total VOC Emissions (ton/yr)	(D) Capture Efficiency (%)	(E)=(C)*(D) Captured VOC Emissions (ton/yr)	(F)=(C)-(E) Uncaptured VOC Emissions (ton/yr)	(G) Control Efficiency (%)	(H)=(E)x[1-(G)] Captured and Controlled VOC Emissions (ton/yr)	(I)=(F)+(H) Total VOC Emissions
100% Loadout by Truck			**131.87**		**130.16**	**1.71**		**2.6031**	**4.32**
Truck Loadout									
Gasoline	269,651	0.903	121.72	98.70%	120.14	1.58	98.0%	2.4027	3.99
Ethanol		0.033	4.42	98.70%	4.36	0.06	98.0%	0.0872	0.14
Denaturant		0.043	5.74	98.70%	5.66	0.07	98.0%	0.1132	0.19
100% Loadout By Rail			**10.15**		10.02	**0.13**		**0.2004**	**0.33**
Rail Loadout									
Ethanol	269,651	0.033	4.42	98.70%	4.36	0.06	98.0%	0.0872	0.14
Denaturant		0.043	5.74	98.70%	5.66	0.07	98.0%	0.1132	0.19

Controlled Hazardous Air Pollutant Emissions assuming 100% Truck Loadout

Hazardous Air Pollutant	Truck Loadout			Maximum Controlled HAP Emissions
	Gasoline	Ethanol	Denaturant	
Acetaldehyde	N/A	2.89E-05	N/A	2.89E-05
Benzene	9.96E-03	N/A	4.70E-04	0.01
Carbon Disulfide	7.97E-05	N/A	3.76E-06	8.35E-05
Cumene	3.99E-04	N/A	1.88E-05	4.17E-04
Ethyl benzene	1.99E-04	N/A	9.39E-06	2.09E-04
Hexanes	0.20	N/A	9.39E-03	0.21
Methanol	N/A	2.89E-05	N/A	2.89E-05
Toluene	0.02	N/A	9.39E-04	0.02
Xylene	1.99E-03	N/A	9.39E-05	2.09E-03
			Total HAPs:	**0.2407**

Controlled Hazardous Air Pollutant Emissions assuming 100% Rail Loadout

Hazardous Air Pollutant	Rail Loadout		Maximum Controlled HAP Emissions (tons/year)
	Ethanol	Denaturant	
Acetaldehyde	2.89E-05	N/A	2.89E-05
Benzene	N/A	4.70E-04	4.70E-04
Carbon Disulfide	N/A	3.76E-06	3.76E-06
Cumene	N/A	1.88E-05	1.88E-05
Ethyl benzene	N/A	9.39E-06	9.39E-06
Hexanes	N/A	9.39E-03	9.39E-03
Methanol	2.89E-05	N/A	2.89E-05
Toluene	N/A	9.39E-04	9.39E-04
Xylene	N/A	9.39E-05	9.39E-05
		Total HAPs:	**1.10E-02**

Fact Sheet Attachment

Liquid Loadout
EP-17

Maximum Emissions from Denatured Ethanol Loadout

Pollutant	Ethanol Loadout Emissions (tons/year)
VOC	4.32
Individual HAPs	
Acetaldehyde	2.89E-05
Benzene	0.01
Carbon Disulfide	8.35E-05
Cumene	4.17E-04
Ethyl benzene	2.09E-04
Hexanes	0.21
Methanol	2.89E-05
Toluene	0.02
Xylene	2.09E-03
Total HAPs:	**0.2407**

Fact Sheet Attachment: RTO-Dryers

KAPPA Ethanol, LLC
Facility ID #75073

Potential to Emit from Combusting Natural Gas by External Combustion

Unit Description: Three (3) 73.5 MMBtu/hr rated Boilers

Total Heat Input Capacity	220.5	MMBtu/hr
Potential Natural Gas Throughput	0.2162	MMscf/hr
	1893.9	MMscf/yr

Pollutant	(A) Emission Factor[1] (lb/MMscf)	(B) = (A)x MMscf/hr Potential Emission Rate (lb/hr)	(C) = (B)x8760 Potential Emission Rate (lb/yr)	(D) = (C)/2000 Potential Emission Rate (tpy)
Particulate Matter (PM)	7.6	1.64	14,394	7.20
Particulate Matter (PM_{10})	7.6	1.64	14,394	7.20
Particulate Matter ($PM_{2.5}$)[2]	7.6	1.64	14,394	7.20
Nitrogen Oxides (NO_x)[3]	-	19.94	174,709	87.35
Sulfur Dioxide (SO_2)	0.6	0.13	1,136	0.57
Carbon Monoxide (CO)[3]	-	0.83	7,253	3.63
Volatile Organic Compounds (VOC)	5.5	1.19	10,417	5.21
Individual Hazardous Air Pollutants (HAP)				
Benzene	2.10E-03	4.54E-04	3.98	1.99E-03
Dichlorobenzene	1.20E-03	2.59E-04	2.27	1.14E-03
Formaldehyde	0.075	0.02	142	0.07
Hexane	1.8	0.39	3,409	1.70
Lead Compounds	5.00E-04	1.08E-04	0.95	4.73E-04
Naphthalene	6.10E-04	1.32E-04	1.16	5.78E-04
Polycyclic Organic Matter (POM)	8.82E-05	1.91E-05	0.17	8.35E-05
Toluene	3.40E-03	7.35E-04	6.44	3.22E-03
Arsenic Compounds (ASC)	2.00E-04	4.32E-05	0.38	1.89E-04
Beryllium Compounds (BEC)	1.20E-05	2.59E-06	0.02	1.14E-05
Cadmium Compounds (CDC)	1.10E-03	2.38E-04	2.08	1.04E-03
Chromium Compounds (CRC)	1.40E-03	3.03E-04	2.65	1.33E-03
Cobalt Compounds (COC)	8.40E-05	1.82E-05	0.16	7.95E-05
Manganese Compounds (MNC)	3.80E-04	8.22E-05	0.72	3.60E-04
Mercury Compounds (HGC)	2.60E-04	5.62E-05	0.49	2.46E-04
Nickel Compounds (NIC)	2.10E-03	4.54E-04	3.98	1.99E-03
Selenium Compounds (SEC)	2.40E-05	5.19E-06	0.05	2.27E-05
Total HAPs	-	0.41	3,577	1.79

[1] Emission Factors from AP-42 Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4 (7/98) unless otherwise specified

[2] Footnote c to table 1.4-2 of AP-42 indicates that all PM from internal combustion units is less than or equal to 1µm in diameter

[3] lb/hr emission rates are the average lb/hr emission rate tested in May 2004 of all three boilers.

Conversion Factor: 1 MMscf = 1020 MMBtu

Stack Tested Emission Rates from May 2004:

Boiler	NOx (lb/hr)	CO (lb/hr)
Boiler #1, EP-5001	5.31	0.23
Boler #2, EP-5002	5.54	0.15
Boiler #3, EP-5003	4.67	0.09
Total From All Three Boilers	15.52	0.47
Permit PTE[4]	19.94	0.83

[4] In order to cacluate the PTE from all three boilers the NDEQ assumed all boilers will emit at the maximum rate presented in the 2004 tests (highest rate of three 1-hr test runs) plus an additional 20%. The NDEQ consideres this to be a conservative estimate of potential NO_x and CO emissions.

Fact Sheet Attachment: RTO-Dryers

KAPPA Ethanol, LLC

Facility ID #75073

Unit Description: Two (2) 92 MMBtu/hr rated Boilers

Total Heat Input Capacity	184.0	MMBtu/hr
Potential Natural Gas Throughput	0.1804	MMscf/hr
	1580.3	MMscf/yr

Pollutant	(A) Emission Factor[1] (lb/MMscf)	(B) = (A)x MMscf/hr Potential Emission Rate (lb/hr)	(C) = (B)x8760 Potential Emission Rate (lb/yr)	(D) = (C)/2000 Potential Emission Rate (tpy)
Particulate Matter (PM)	7.6	1.37	12,010	6.01
Particulate Matter (PM_{10})	7.6	1.37	12,010	6.01
Particulate Matter ($PM_{2.5}$)[2]	7.6	1.37	12,010	6.01
Nitrogen Oxides (NO_x)[3]	10.2	1.84	16,119	8.06
Sulfur Dioxide (SO_2)	0.6	0.11	948	0.47
Carbon Monoxide (CO)[3]	51	9.20	80,596	40.30
Volatile Organic Compounds (VOC)	5.5	0.99	8,692	4.35
Carbon Dioxide (CO_2)	119,320	21,525	188,561,241	94,281
Nitrous Oxide (N_2O)	0.22	0.04	355	0.18
Methane(CH_4)	2.24	0.40	3,546	1.77
Individual Hazardous Air Pollutants (HAP)				
Benzene	2.10E-03	3.79E-04	3.32	1.66E-03
Dichlorobenzene	1.20E-03	2.16E-04	1.90	9.48E-04
Formaldehyde	0.075	1.35E-02	119	0.06
Hexane	1.8	3.25E-01	2,845	1.42
Lead Compounds	5.00E-04	9.02E-05	0.79	3.95E-04
Naphthalene	6.10E-04	1.10E-04	0.96	4.82E-04
Polycyclic Organic Matter (POM)	8.82E-05	1.59E-05	0.14	6.97E-05
Toluene	3.40E-03	6.13E-04	5.37	2.69E-03
Arsenic Compounds (ASC)	2.00E-04	3.61E-05	0.32	1.58E-04
Beryllium Compounds (BEC)	1.20E-05	2.16E-06	0.02	9.48E-06
Cadmium Compounds (CDC)	1.10E-03	1.98E-04	1.74	8.69E-04
Chromium Compounds (CRC)	1.40E-03	2.53E-04	2.21	1.11E-03
Cobalt Compounds (COC)	8.40E-05	1.52E-05	0.13	6.64E-05
Manganese Compounds (MNC)	3.80E-04	6.86E-05	0.60	3.00E-04
Mercury Compounds (HGC)	2.60E-04	4.69E-05	0.41	2.05E-04
Nickel Compounds (NIC)	2.10E-03	3.79E-04	3.32	1.66E-03
Selenium Compounds (SEC)	2.40E-05	4.33E-06	0.04	1.90E-05
Total HAPs	-	0.34	2,984	1.49

[1] Emission Factors from AP-42 Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4 (7/98) unless otherwise specified

[2] Footnote c to table 1.4-2 of AP-42 indicates that all PM from internal combustion units is less than or equal to 1µm in diameter

[3] lb/hr emission rates are manufacturer guearentees of 0.01lb/MMBtu NOx and 0.05lb/MMBtu CO.

Total Emissions from Boilers

Pollutant	Emission Rate (lb/hr)	Emission Rate (tpy)
Particulate Matter (PM)	3.01	13.20
Particulate Matter (PM_{10})	3.01	13.20
Particulate Matter ($PM_{2.5}$)[2]	3.01	13.20
Nitrogen Oxides (NO_x)[3]	21.78	95.41
Sulfur Dioxide (SO_2)	0.24	1.04
Carbon Monoxide (CO)[3]	10.03	43.92
Volatile Organic Compounds (VOC)	2.18	9.55
Carbon Dioxide (CO_2)	21,525	94,281
Nitrous Oxide (N_2O)	0.04	0.18
Methane(CH_4)	0.40	1.77
Individual Hazardous Air Pollutants (HAP)		
Benzene	8.33E-04	3.65E-03
Dichlorobenzene	4.76E-04	2.08E-03
Formaldehyde	2.97E-02	0.13
Hexane	0.71	3.13
Lead Compounds	1.98E-04	8.69E-04
Naphthalene	2.42E-04	1.06E-03
Polycyclic Organic Matter (POM)	3.50E-05	1.53E-04
Toluene	1.35E-03	5.91E-03
Arsenic Compounds (ASC)	7.93E-05	3.47E-04
Beryllium Compounds (BEC)	4.76E-06	2.08E-05
Cadmium Compounds (CDC)	4.36E-04	1.91E-03
Chromium Compounds (CRC)	5.55E-04	2.43E-03
Cobalt Compounds (COC)	3.33E-05	1.46E-04
Manganese Compounds (MNC)	1.51E-04	6.60E-04
Mercury Compounds (HGC)	1.03E-04	4.52E-04
Nickel Compounds (NIC)	8.33E-04	3.65E-03
Selenium Compounds (SEC)	9.52E-06	4.17E-05
Total HAPs	7.49E-01	3.28

Fact Sheet Attachment: RTO-Dryers

KAPPA Ethanol, LLC
Facility ID #75073
Dryers - Natural Gas Combustion and Process Emissions

Emission Units Routed to Distillation Scrubber

Emission Unit ID	Emission Source	Emission Unit ID	Emission Source	Emission Unit ID	Emission Source
EU302	Yeast Tank	EU8005	200P Condenser #2	EU8011	Molecular Sieve #8
EU8001a	Dryer #1	EU8006	2nd Effect Evaporator #1	EU8012	Molecular Sieve #9
EU8001b	Dryer #2	EU8007	2nd Effect Evaporator #2	EU8013	Regen Condeser #3
EU8001c	RTO1	EU8008	2nd Effect Condensate Tank	EU8014	Eductor Tank
EU8003	Syrup Tank	EU8009	Sieve Feed Superheater	EU8015	200P Flash Tank
EU8004	Whole Stillage Tank	EU8010	Molecular Sieve #7	EU8016	200P Cooler

Emissions from Dryers and RTO - fuel combustion.

Total design rate of dryers:	100	MMBtu/hr	(2 dryers, each 50 MMBtu/hr)
Operating hours of each dryer:	4,380	hr/yr	
Heat content of natural gas:	1,020	MMBtu/MMscf	
Design rate of RTO:	18	MMBtu/hr	
Total design rate:	118	MMBtu/hr	
Operating hours of RTO:	8,760	hr/yr	
Potential hourly throughput:	0.116	MMscf/hr	
Potential yearly throughput: [1]	584.00	MMscf/yr	

[1] The dryers run in series and both are needed to produce DDGS RTO runs with the dryers 4,380 hrs a year.

RTO-Dryers - Natural Gas Combustion Emissions

Pollutant	Emission Factor [1]	Potential Emissions	
	lb/MMBtu	lb/hr [3]	ton/yr [4]
NO_x [2]	0.1	11.80	29.78
Individual HAPs	lb/MMscf		
Benzene	2.10E-03	2.43E-04	6.13E-04
Dichlorbenzene	1.20E-03	1.39E-04	3.50E-04
Formaldehyde	0.08	8.68E-03	0.02
n-Hexane	1.80	0.21	0.53
Napthalene	6.10E-04	7.06E-05	1.78E-04
Polycyclic Organic Matter	8.82E-05	1.02E-05	2.58E-05
Toluene	3.40E-03	3.93E-04	9.93E-04
Arsenic Compounds	2.00E-04	2.31E-05	5.84E-05
Beryllium Compounds	1.20E-05	1.39E-06	3.50E-06
Cadmium Compounds	1.10E-03	1.27E-04	3.21E-04
Chromium Compounds	1.40E-03	1.62E-04	4.09E-04
Cobalt Compounds	8.40E-05	9.72E-06	2.45E-05
Lead Compounds	5.00E-04	5.78E-05	1.46E-04
Manganese Compounds	3.80E-04	4.40E-05	1.11E-04
Mercury Compounds	2.60E-04	3.01E-05	7.59E-05
Nickel Compounds	2.10E-03	2.43E-04	6.13E-04
Selenium Compounds	2.40E-05	2.78E-06	7.01E-06
Total HAPs		0.22	0.55
Greenhouse Gases	lb/MMBtu	lb/hr	ton/yr
CO_2	116.978	13,803	34,841
CH_4	2.20E-04	0.03	0.07
N_2O	2.20E-03	0.26	0.66
Total GHGs (mass basis)		13,804	34,841
Total GHGs (tons CO_2e/yr)		13,882	35,038

[1] HAP emission factors are from AP-42 (7/1998), Tables 1.4-1, 1.4-2, 1.4-3 and 1.4-4.
[2] NO_X emission rate (lb/hr) derived from stack test results at KAAPA Partners Aurora LLC, 2024–2025
[3] lb/hr values reflect periods when both dryers and the RTO were operating: two dryers at 50 MMBtu/hr each and the RTO at 18 MMBtu/hr
[4] ton/yr values assume the dryers operate 4,380 hr/yr and the RTO operates 8,760 hr/yr.

Natural Gas Combustion Emissions - RTO

Unit	Pollutant	Operation hr/yr	Natural Gas MMscf/yr	Natural Gas lb/MMscf [1]	PTE lb/hr	PTE tpy
RTO	PM/PM_{10}	8,760	154.59	7.6	0.13	0.59
	$PM_{2.5}$			7.6	0.13	0.59
	VOC			5.5	0.10	0.43
	SO_2			0.6	0.01	0.05
	CO			84	1.48	6.49

Natural Gas Combustion Emissions - Dryers

Unit	Pollutant	Operation hr/yr	Natural Gas MMscf/yr	Natural Gas lb/MMscf [1]	PTE lb/hr	PTE tpy
Dryer 1 & Dryer 2	PM/PM_{10}	4,380	429.41	7.6	0.27	1.63
	$PM_{2.5}$			7.6	0.27	1.63
	VOC			5.5	0.19	1.18
	SO_2			0.6	0.02	0.13
	CO			84	2.96	18.04

[1] Emission rates (lb/MMscf) derived from stack test results at KAAPA Partners Aurora LLC, 2024–2025

Fact Sheet Attachment: RTO-Dryers

KAPPA Ethanol, LLC
Facility ID #75073
Regenerative Thermal Oxidizer (RTO) Process Emissions

DDGS Produced:	99,772	ton/yr combined for all dryers
	22.78	ton/hr combined for all dryers

Potential Emissiosn $\left(\frac{\text{lb}}{\text{hr}}\right)$ = Hourly Production Rate $\left(\frac{\text{ton}}{\text{hr}}\right)$ * Emission Factor $\left(\frac{\text{lb}}{\text{ton}}\right)$
Potential Emissiosn $\left(\frac{\text{ton}}{\text{yr}}\right)$ = Annual Production Rate $\left(\frac{\text{ton}}{\text{yr}}\right)$ * Emission Factor $\left(\frac{\text{lb}}{\text{ton}}\right)$ * $\left(\frac{\text{ton}}{2{,}000\ \text{lb}}\right)$

Thermal Oxidizer and Dryer - Process Emissions		
Pollutant	**Potential Emissions**	
	lb/hr	**ton/yr**
PM [1]	1.75	3.83
PM_{10} [1]	1.75	3.83
$PM_{2.5}$ [1]	1.75	3.83
SO_2 [1]	1.37	2.99
VOC [1]	9.75	21.35
Individual HAPs		
Acetaldehyde	0.20	0.44
Acrolein	0.40	0.88
Formaldehyde	0.12	0.26
Methanol	0.15	0.33
Total HAPs	0.87	1.91

[1] Emission rates (lb/hr) derived from stack test results at KAAPA Partners Aurora LLC, 2024–2025

Total Stack Emissions (EP-8001)

Total emissions = Dryer/RTO combustion + RTO Process Emissions

Total Emissions from Stack (EP-8001)		
Pollutant	**Potential Emissions**	
	lb/hr	**ton/yr**
PM	2.15	6.05
PM_{10}	2.15	6.05
$PM_{2.5}$	2.15	6.05
SO_2	1.40	3.17
NO_x	11.80	29.78
CO	4.45	24.53
VOC	10.04	22.96
Individual HAPs		
Acetaldehyde	0.2000	0.44
Acrolein	0.40	0.88
Benzene	2.43E-04	6.13E-04
Dichlorbenzene	1.39E-04	3.50E-04
Formaldehyde	1.29E-01	0.28
n-Hexane	0.21	0.53
Methanol	0.15	0.33
Napthalene	7.06E-05	1.78E-04
Polycyclic Organic Matter	1.02E-05	2.58E-05
Toluene	3.93E-04	9.93E-04
Arsenic Compounds	2.31E-05	5.84E-05
Beryllium Compounds	1.39E-06	3.50E-06
Cadmium Compounds	1.27E-04	3.21E-04
Chromium Compounds	1.62E-04	3.55E-04
Cobalt Compounds	9.72E-06	2.13E-05
Lead Compounds	5.78E-05	1.27E-04
Manganese Compounds	4.40E-05	9.63E-05
Mercury Compounds	3.01E-05	6.59E-05
Nickel Compounds	2.43E-04	5.32E-04
Selenium Compounds	2.78E-06	6.08E-06
Total HAPs	1.09	2.46
Greenhouse Gases		
CO_2	13,803.39	34,840.69
CH_4	0.03	0.07
N_2O	0.26	0.66
Total GHGs (mass basis)	13,803.68	34,841.42
Total GHGs (ton CO_2e/yr)	13,881.56	35,038.01

Storage Tanks
KAAPA Ethanol, LLC.
Facility ID #75073
Liquid Throughputs

Anhydrous Ethanol Produced:	262,910,000	gal/yr
Denaturant Usage:	6,741,282	gal/yr
Denatured Ethanol Produced:	269,651,282	gal/yr

Storage Tanks VOC Emission Summary

Emission Point	Tank ID# and Product Stored		Tank Capacity	Throughput	Turnovers	VOC[1]	Amount of VOC from Ethanol[1]	Amount of VOC from Denaturant[1]	VOC[3]
			(gal)	(gal/yr)		(lb/yr)	(lb/yr)	(lb/yr)	(ton/mo)
EP-9001	EU-87	200-Proof Ethanol	750,000	82,875,000	110.50	593	593	-	0.02
EP-9002	EU-88	200-Proof Ethanol	750,000	82,875,000	110.50	593	593	-	0.02
EP-9003	EU-89	200-Proof Ethanol	100,000	165,750,000	1,658	1,726	1,726	-	0.07
EP-9004	EU-90	Natural Gasoline	100,000	4,250,000	42.50	3,988	-	3,988	0.17
EP-9005	EU-91	190-Proof Ethanol	100,000	165,750,000	1,658	1,726	1,726	-	0.07
EP-9006	EU-92	200-Proof Ethanol	1,500,000	165,750,000	110.50	970	970	-	0.02
EP-9007	EU-93	200-Proof Ethanol	1,500,000	165,750,000	110.50	970	970	-	0.02
EP-9008	TK94	Deisel Fuel	350	971	2.77	0.09	-	-	3.75E-06
EP-9100	TK907	Corrosion Inhibitor	2,000	8,000	4.00	9.51	-	-	3.96E-04
EP-9113	TK913	Diesel Fuel	1,000	24,000	24.00	0.52	-	-	2.17E-05

[1] VOC emissions calculated by using EPA's TANKS software

[2] Air emissions associated from each denatured ethanol storage tank are based upon assuming 100% annual volume thru one tank; then taking the highest emission rate

[3] VOC in tons/month = total VOC in lbs/yr / 2000 / 12

Storage Tanks

KAAPA Ethanol, LLC.

Facility ID #75073

Total VOC Emissions **9,823.22** **lb/yr**

4.91 **tpy**

Storage Tanks HAP Emission Summary

Material	Hazardous Air Pollutant	HAP Fraction	HAPs from Individual Tanks (lb/yr)						
			EP-9001	EP-9002	EP-9003	EP-9004	EP-9005	EP-9006	EP-9007
Anhydrous Ethanol	Acetaldehyde	2.00E-04	0.12	0.12	0.35	-	0.35	0.19	0.19
	Acrolein	2.00E-04	-	-	-	-	-	-	-
	Formeldehyde	1.00E-04	-	-	-	-	-	-	-
	Methanol	2.00E-04	0.12	0.12	0.35	-	0.35	0.19	0.19
Denaturant	Benzene	2.50E-03	-	-	-	9.97	-	-	-
	n-Hexane	0.05	-	-	-	199.38	-	-	-
	Toluene	5.00E-03	-	-	-	19.94	-	-	-

Material	Hazardous Air Pollutant	HAP Fraction	HAPs from Individual Tanks (lb/yr)		
			EP-9008	EP-9100	EP-9113
Diesel Fuel	Hexane	0.01	9.00E-04	-	5.21E-03
	Naphthalene	0.01	9.00E-04	-	5.21E-03
Corrosion Inhibitor	Ethyl Benzene	0.01	-	5.21E-03	-
	Methanol	0.30	-	0.16	-
	Xylenes	0.10	-	0.05	-

Storage Tanks

KAAPA Ethanol, LLC.

Facility ID #75073

Total HAPs from Storage Tanks

Hazardous Air Polutant	Total Individual HAPs	Total Individual HAPs	Total Limited Individual HAPs
	lb/yr	ton/yr	ton/yr
Acetaldehyde	1.32	6.58E-04	<10
Methanol	1.47	7.36E-04	<10
Benzene	9.97	4.98E-03	<10
n-Hexane	199.38	0.10	<10
Toluene	19.94	9.97E-03	<10
Xylenes	0.05	2.61E-05	<10
Naphthalene	5.21E-03	2.61E-06	<10
Total	232.14	0.12	<25

Fact Sheet Attachment: Cooling Tower #3

EP-6003: Cooling Towers

Potential to Emit Calculations for Emissions from the Cooling Towers

Circulation rate:	1,680,000	gal/hr
	14,716,800	Mgal/yr (based on 8,760 hr/yr)
Drift loss percent:	0.0005	%
Water density:	8.34	lb/gal
TDS concentration:	2,000	ppm single sample event
	2,000	ppm average annual rate
Biocide Use	70	gal/yr

Emission Factor Calculation for PM and PM_{10}

Emission factor equation from AP-42, Section 13.4-2 (01/1995)

$$\text{PM/PM}_{10}\text{ emission factor} = \left(\frac{ppmTDS}{1{,}000{,}000\,lbswater}\right)\left(\frac{8.34\,lbs}{gal}\,water\right)\left(\frac{1{,}000\,gal}{1\,Mgal}\right)\left(\frac{0.0005}{100}\,driftloss\right)$$

0.0000834 lbs/Mgal single sample event (highest hourly rate)

0.0000834 lbs/Mgal average annual rate

Hourly Emissions = (lb/Mgal single sample event)(hourly throughput gal/hr)(1 Mgal/1,000 gal)

Annual Emissions = (lb/Mgal average annual rate)(annual throughput Mgal/yr)/(2,000 lbs/ton)

Cooling Tower Emission Summary		
Pollutant	Hourly PTE (lb/hr)	Annual PTE (ton/yr)
PM	0.14	0.61
PM_{10}[1]	0.089	0.39
$PM_{2.5}$[2]	2.98E-04	1.31E-03
VOC[3]	0.08	0.35

[1] PM_{10} is 63.501% percent of the PM amount, percentage provided by facility

[2] $PM_{2.5}$ is 0.213% percent of the PM amount, percentage provided by facility

[3] Potential VOC emissions assume 10 lb/gal and 100% VOC content

Fact Sheet Attachment: DDGS Loadout
KAAPA Ethanol, LLC.
Facility ID #75073
DDGS Loadout Baghouse (EP-8003)

Maximum amount of DDGS produced:	99,772	tpy
Hours of operation:	4,380	hr/yr
	22.78	ton/hr

Pollutant	**(A) Emission Factor [1] (lb/ton DDGS)**	**Potential Emission Rate**	
		(B) = (A)x ton DDGS/hr (lb/hr)	**(C) = (B)x4380/2000 (tpy)**
Volatile Organic Compounds (VOC)	0.033	0.7517	1.6462
Individual Hazardous Air Pollutants (HAP)			
Acetaldehyde	4.00E-03	0.0911	0.1995
Acrolein	5.00E-03	0.1139	0.2494
Formaldehyde	2.00E-03	0.0456	0.0998
Methanol	1.10E-02	0.2506	0.5487
Total HAPs	-	0.5011	1.0975

[1] VOC and HAP emissions based on similar facility test data

Pollutant	**Airflow (scfm)**	**Grain loading (gr/dscf)**	**$PM/PM_{10}/PM_{2.5}$ Emission Rate (lb/hr)**	**$PM/PM_{10}/PM_{2.5}$ Emissions (tpy)**
$PM/PM_{10}/PM_{2.5}$	7,500	0.001	0.064	0.141

Fact Sheet Attachment: DDGS Cooler
KAAPA Ethanol, LLC.
Facility ID #75073

Flow Rate:	28,000	dscfm
Grain Loading Rate:	0.001	gr/dscf
Operation:	4,360	hr/yr

Pollutant	**Potential Emissions**	
	(lb/hr)	**(ton/yr)**
PM	0.24	0.52
PM_{10}	0.24	0.52
$PM_{2.5}$	0.24	0.52
Volatile Organic Compounds (VOC) [1]	4.00	8.72
Individual Hazardous Air Pollutants (HAP) [1]		
Acetaldehyde	0.08	0.18
Acrolein	0.19	0.42
Formaldehyde	0.04	0.09
Methanol	0.05	0.11
Total HAPs:	0.36	0.79

[1] VOC and HAP emissions are based on testing of total VOC and HAPs at similar facilities

Fact Sheet Attachment: Equipment Leaks

KAAPA Ethanol, LLC.
Facility ID #75073
Emission Point F-9000

Potential to Emit from leaking product via Equipment Leaks

Type of Component	(A) Number of Components	(B) Leaking Emission Factor (kg/hr/source)	VOC Uncontrolled Emissions[1]		(E) LDAR [2] (cont. eff.. %)	VOC Controlled Emissions	
			(C) = (A)x(B)x2.21 (lb/hr)	(D) = (C)x8760/2000 (tpy)		(F) = (C)x[1-(E)] (lb/hr)	(G) = (D)x[1-(E)] (tpy)
Light Liquid Valves	983	4.03E-03	8.75	38.35	84.00%	1.40	6.14
Light Liquid Pumps	47	0.02	2.07	9.05	69.00%	0.64	2.81
Light Liquid Check Valves	100	4.03E-03	0.89	3.90	84.00%	0.14	0.62
Light Liquid Control Valves	100	4.03E-03	0.89	3.90	84.00%	0.14	0.62
Gas Valves	132	1.83E-03	0.53	2.34	87.00%	0.07	0.30
Connectors	2,663	8.30E-04	4.88	21.40	0.00%	4.88	21.40
Agitator	10	0.16	3.54	15.49	0.00%	3.54	15.49
Pressure Relief Valves	59	0.10	13.56	59.40	87.00%	1.76	7.72
Other Components [3]	25	0.23	12.60	55.17	69.00%	3.91	17.10

[1] VOC Emissions are calculated from *Protocol for Leak Emission Estimates* , EPA-453/R-95-017, November 1995.

[2] LDAR Control Effectiveness values were obtained from Table 5-2 of the Protocol for Leak Emission Estimates, EPA-453/R-95-017, November 1995. "Monthly Monitoring 10,000 ppmv leak definition" value used.

[3] Other components are assumed to have an emission factor equivalent to Compressor Seals (highest emission factor among component types, 0.228 kg/hour-source).

Total VOC Emissions	16.48	lb/hr
	72.20	tpy

HAPS	Mass Fraction of HAP	HAP Emissions	
		lb/hr	tpy
Acetaldehyde	2.00E-04	3.30E-03	0.01
Acrolein	2.00E-04	3.30E-03	0.01
Formaldehyde	1.00E-04	1.65E-03	7.22E-03
Methanol	2.00E-04	3.30E-03	0.01
Total HAPs	-	0.01	0.05

Fact Sheet Attachment: Haul Road Emissions

KAPPA Ethanol, LLC
Facility ID #75073
Emission Points F-1000 and F-1001 as permitted and controlled in CP14-049

Paved roads {AP-42 Chapter 13.2.1 (1/11)}

Equation (2):

$$E = k \times (sL)^{0.91} \times (W)^{1.02} \times \left(1 - \frac{P}{4 \times 365}\right)$$

	k
PM	0.011
PM_{10}	0.0022
$PM_{2.5}$	0.00054

Unpaved roads {AP-42 Chapter 13.2.2 (11/06)}

Equation (1a): (Modified)

$$E = k \times \left(\frac{sC}{12}\right)^{a} \times \left(\frac{W}{3}\right)^{b} \times \left(\frac{365 - P}{365}\right) \times \left(\frac{S}{30}\right)^{d} \times (1 - CE)$$

	k	*a*	*b*	*d*
PM	4.9	0.7	0.45	0.3
PM_{10}	1.5	0.9	0.45	0.5
$PM_{2.5}$	0.15	0.9	0.45	0.5

Haul Road / Traffic Parameters

Activity / Road Description	Road Type / Silt Value		Roundtrip Length (ton)		Truck Weight (ton)			Ave. Speed (mph)	Unrestricted Maximum Throughput (unit/yr)	Ave. Truck Capacity (unit/truck)		Annual VMT
			empty	full	empty	full	Ave.					
Grain Delivery	P	3.00	4,890	4,220	15	40	26.6	10	1,743,917	25	ton	120,357
Grain to Pile	P	3.00	6,870	5,970	15	40	26.6	10	61,600	28	ton	5,350
Grain to Pile	U	10.00	1,800	1,800	15	40	27.5	10	61,600	28	ton	1,500
Grain from Pile	P	3.00	9,965	4,325	15	40	22.6	10	61,600	28	ton	5,954
Grain from Pile	U	10.00	1,800	1,800	15	40	27.5	10	61,600	28	ton	1,500
Denaturant	P	3.00	4,270	4,560	15	40	27.9	10	6,741,282	7,900	gal	1,427
Ethanol Loadout	P	3.00	4,560	4,270	15	40	27.1	10	269,651,282	7,900	gal	57,082
Biocide	P	3.00	4,600	4,350	15	40	27.2	10	210	5,000	gal	0
Corrosion Inhibitor	P	3.00	3,890	4,950	15	18.9	17.2	10	13,890	1,500	gal	16
Caustic Soda	P	3.00	3,890	4,950	15	41	29.6	10	4,683,001	5,000	gal	1,568
Sulfuric Acid	P	3.00	3,890	4,950	15	37.19	27.4	10	725,059	2,900	gal	419
Corn Oil	P	3.00	4,770	4,100	15	40	26.6	10	6,313,131	2,900	gal	3,657
WDGS	P	3.00	480	4,700	15	40	37.7	10	1,281,281	28	ton	44,893
Den/BlSt/Rec/Ship/GrShip	P	3	3890	4950	15	40	29.0	10	138,158	28	ton	8261.070887
											Total VMT:	251,984

Emission Calculations

	Emission Factors (lb/VMT)			Potential Emissions (tpy)		
	PM	PM_{10}	$PM_{2.5}$	PM	PM_{10}	$PM_{2.5}$
Grain Delivery	0.80	0.16	0.04	47.91	9.58	2.35
Grain to Pile	0.80	0.16	0.04	2.13	0.43	0.10
Grain to Pile	6.33	1.50	0.15	4.75	1.13	0.11
Grain from Pile	0.67	0.13	0.03	2.01	0.40	0.10
Grain from Pile	6.33	1.50	0.15	4.75	1.13	0.11
Denaturant	0.84	0.17	0.04	0.60	0.12	0.03
Ethanol Loadout	0.81	0.16	0.04	23.17	4.63	1.14
Biocide	0.81	0.16	0.04	2.90E-05	5.79E-06	1.42E-06
Corrosion Inhibitor	0.51	0.10	0.03	3.96E-03	7.91E-04	1.94E-04
Caustic Soda	0.89	0.18	0.04	0.70	0.14	0.03
Sulfuric Acid	0.82	0.16	0.04	0.17	0.03	0.01
Corn Oil	0.80	0.16	0.04	1.45	0.29	0.07
WDGS	1.14	0.23	0.06	25.51	5.10	1.25
Den/BlSt/Rec/Ship/GrShip	0.87	0.17	0.04	3.59	0.72	0.18
Total Annual Emissions:				**116.75**	**23.70**	**5.49**

Description of Constants/Variables

E: haul road emissions (lb/VMT)

k, d: dimensionless constants from AP-42 Chapter 13.2.1 (paved)

k, a, b, c, d: dimensionless constants from AP-42 Tables 13.2.1-1 & 13.2.2-2 (unpaved)

sL: silt loading (g/m^2) of paved road surface

sC: silt content (%) of unpaved road surface

W: average vehicle weight (tons)

P: days/yr with at least 0.01" of precipitation

P = 90 default = 90

S: mean vehicle speed on road (mph) default = 30, minimum =15

CE: unpaved road, dust control efficiency

CE = 0 % default = 0%

VMT: vehicle miles traveled

Fact Sheet Attachment: Solid Product Loadout

KAAPA Ethanol, LLC.

Facility ID #75073

Potential to Emit Calculations for Emissions from WDGS Loadout

Maximum amount of WDGS produced	1,281,281	tpy
	146.26	ton/hr

Pollutant	(A) Emission Factor [1] (lb/ton WDGS)	Potential Emission Rate		Potential Emissions [2]
		(B) = (A)x ton WDGS/hr (lb/hr)	(C) = (B)x8760/2000 (tpy)	(tpy)
Volatile Organic Compounds (VOC)	8.30E-03	1.21	5.32	5.32
Individual Hazardous Air Pollutants (HAP)				
Acetaldehyde	1.11E-04	0.0162	0.0711	<10
Acrolein	1.67E-05	2.44E-03	0.0107	<10
Formaldehyde	2.22E-04	0.0325	0.1422	<10
Methanol	4.44E-05	0.0065	0.0284	<10
Total HAPs	-	0.0576	0.2525	<25

[1] Emission Factors from DENCO stack test

[2] Individual and Total HAPs PTE are source-wide limited as proposed by CP14-049

DO NOT PRINT

Fact Sheet Attachment: Chapter 15 Limits

KAPPA Ethanol, LLC
Facility ID #75073

Title 129, Chapter 15, Section 001 **Process Weight Rate**

For process weight rates up to 60,000 lbs/hr: $E= 4.10\ p^{0.67}$

For process weight rates in excess of 60,000 lbs/hr: $E= 55.0\ p^{0.11}-40$

where E = rate of emissions in lbs/hr PM and p = process weight rate in tons/hr.

Process	P		E		Unit PM emission rate	
Grain Storage Pile (EP-1006)	23,653	lb/hr	21.46	lb/hr	0.02	lbs/hr
	11.83	ton/hr				
Grain Receiving Baghouses #1, #2, and #3 (EP-1002-EP-1004)	374,744	lb/hr	57.80	lb/hr	1.80	lb/hr
	187.37	ton/hr				
Grind Elevator Baghouse [3] (EP-2000)	374,744	lb/hr	57.80	lb/hr	0.84	lb/hr
	187.37	ton/hr				
Hammermill Baghouse #1-4 (EP-2001-2004)	27,169	lb/hr	23.55	lb/hr	0.42	lb/hr
	13.58	ton/hr				
Grind Conveyer Baghouse (EP-2005)	374,744	lb/hr	57.80	lb/hr	0.13	lb/hr
	187.37	ton/hr				
Hammermill Baghouse #5-12 (EP-2006-2013)	2,411	lb/hr	4.65	lb/hr	0.10	lb/hr
	1.21	ton/hr				
Grain Storage Silo Vent #3 (EP-1005a)	1,680,000	lb/hr	75.35	lb/hr	15.75	lb/hr
	840	ton/hr				
Grain Storage Silo Vent #4 (EP-1005b)	840,000	lb/hr	66.89	lb/hr	15.75	lb/hr
	420	ton/hr				
Fermentation and Distillation Scrubber	4,561	lb/hr	7.12	lb/hr	0.10	lb/hr
	2.28	ton/hr				
Cooling Tower #1 & #2 (EP-6000,EP-6001)	24,019,200	lb/hr	114.56	lb/hr	2.28	lb/hr
	12,010	ton/hr				
Cooling Tower #3 (EP-6000,EP-6001)	14,011,200	lb/hr	105.67	lb/hr	0.14	lb/hr
	7,006	ton/hr				

Fact Sheet Attachment: Chapter 15 Limits

KAPPA Ethanol, LLC
Facility ID #75073

Title 129, Chapter 15, Section 002 **PM Limitations for Combustion Sources**

Total Heat Input (MMBtu/hr)	Maximum Allowable Emissions of PM (lbs/MMBtu)
10 or less	0.6
Between 10 and 10,000	$1.026/I^{0.233}$ Where I = total heat input in MMBtu/hr.
10,000 or more	0.12

Process equipment	Maximum Capacity	Maximum Capacity	Allowable PM	Allowable PM	Unit PM emission rate
	hp	MMBtu/hr	(lb/MMBtu)	(lbs/hr)	(lb/hr)
Loadout Flare		29.3	0.47	13.68	2.94E-02
Boilers #1,#2,#3 (each)		73.5	0.38	27.71	0.55
Boilers #4,#5 (each)		92	0.36	32.91	0.69
RTO (CE-8001)		18	0.52	9.42	0.13
Dryers #1, #2(EU-8001, EU8002) (each)		50	0.41	20.62	0.14
Emergency Fire Pump	190	1.33	0.60	0.80	0.41

To convert hp to MMBtu/hr: hp*((7,000 Btu/hr)/hp)*(1 MMBtu/1,000,000 Btu)