

California Low Carbon Fuel Standard
Program

Method 2B Pathway Application for
Bonanza BioEnergy, LLC.

December 2010

General Information

Bonanza BioEnergy is a 55 million gallon capacity dry mill plant located in Garden City, Kansas. The plant's fuel is unique in that it is produced from both locally-sourced, non-irrigated sorghum and locally-sourced corn feedstocks grown using efficient, large scale production methods and processed in a dry-mill, natural gas-fired cogeneration plant. Implementation of advanced plant process controls also results in greater efficiency and less energy consumption per unit of output. Other unique attributes of the plant's value chain include distribution of wet distillers grain co-product locally and ethanol transport to California solely by rail. The following method 2B pathway application describes the elements that contribute to the fuel's significantly lower carbon intensity (CI) value. While Bonanza BioEnergy's fuel is produced from corn and sorghum that are combined at the beginning of the process and undifferentiated from that point forward, two individual CI values were calculated per CARB recommendation for accounting purposes. Each CI represents ethanol produced using either 100% corn or 100% sorghum. Bonanza BioEnergy's corn CI is 76.75 gCO₂e/MJ and sorghum CI is 73.39 gCO₂e/MJ. The 100% corn CI is 13.35 gCO₂e less than the most similar pathway currently listed in the CARB lookup table: Midwest; Dry Mill; Wet DGS, NG= 90.1 gCO₂e/MJ. The 100% sorghum CI is 10.97 gCO₂e less than the most similar pathway currently provided by CARB: Internal Priority Pathway Midwest; Dry Mill; Sorghum; Wet DGS, NG= 84.36 gCO₂e/MJ.

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Application for the Establishment of a New Fuel Pathway under the California Low Carbon Fuel Standard

Instructions

Use the form below to apply for a new or modified fuel pathway under the Method 2A and 2B provisions of the California Low Carbon Fuel Standard (LCFS). Submittal of this form initiates the formal pathway evaluation process. Because that process is subject to strict time constraints, prospective applicants should discuss their proposals with Air Resources Board (ARB) staff prior to submitting a completed application form. Staff will advise potential applicants on the documentation that must be submitted along with this form. A list of LCFS Method 2A/2B staff contacts appears in the final section of this document. Submission of an incomplete application packet will result in delays, which could in turn lead to denial. This application form is to be submitted as a cover sheet to the full Method 2A or 2B application packet. A general list of the types of supporting information that must be submitted with a 2A/2B application appears in Section IV, of the application form

The full method 2A/2B application process is described in detail in a document entitled *Establishing New Fuel Pathways under the California Low Carbon Fuels Standard*. This is available at:

<http://www.arb.ca.gov/fuels/lcfs/012010newguideline.pdf>

Lifecycle analysis reports included with Method 2A/2B application packets should be similar in format, content, and scope to those already approved under the LCFS. Examples of approved life cycle analyses can be found at

<http://www.arb.ca.gov/fuels/lcfs/workgroups/workgroups.htm#pathways>

Applicants may designate portions of their submittals as trade secrets. All information so designated will be treated in accordance with 17 CCR §§ 91000-91022 and the California Public Records Act. In deciding on what information to designate as secret, applicants must consider the public nature of the rulemaking process. New and modified pathways can be approved only if enough information is available publicly to justify that approval.

July 26, 2010

Method 2A and 2B Application Form

I. Application Submission Date:

II. Company Contact Information

a. Company Name: Bonanza BioEnergy, LLC

b. Mailing Address:

Address Line 1	2810 E US HWY 50
Address Line 2	PO Box 1178
City	Garden City
State/Province	KS
Zip/Postal Code	67846

c. Main Company Phone Number: Tom Willis, CEO
Office 620-626-2021

d. Secondary Company Phone Number: Tom Willis, CEO
Cell 620-655-8228

e. Fax number: 620-624-2919

f. Company Web Site URL: www.conestogaenergy.com

g. Primary Method 2A/2B Contact Person:

Name: Lauren Wittig

Position/Title: Senior Consultant

Affiliation/Firm: Camco

Email Address: lauren.wittig@camcoglobal.com

Office Phone Number: 303-847-4220

Mobile Phone Number: 303-437-6543

Fax Number: 303-410-6644

h. Consultant/Third Party Application Preparer:

Name: Garth Boyd

Position/Title: SVP Agriculture

Affiliation/Firm: Camco

Email Address: garth.boyd@camcoglobal.com

Mobile Phone Number: 910-284-1765

Fax Number: 303-410-6644

Consulting entity's web site URL: <http://na.camcoglobal.com>

- i. LCFS Reporting Tool Organization ID code (if known):
- j. U.S. Environmental Protection Agency (U.S. EPA) Company ID (if known):
70117
- k. U.S. EPA Facility ID (if known):

III. Pathway Information

- a. Pathway application type. Applicants are encouraged to discuss their pathway application types with ARB staff before proceeding. Please check one box only.

Method 2A: Sub-pathway Method 2B: New Pathway

- b. Brief description of proposed pathway. Please emphasize the important innovations and/or distinctive characteristics associated with the proposed pathway or sub-pathway.

The proposed sub-pathway is for ethanol made from locally-sourced, non irrigated milo and locally-sourced corn feedstocks grown using highly efficient, large scale production methods and processed in a Kansas dry-mill, natural gas-fired cogeneration plant. Implementation of advanced plant process controls also results in greater efficiency and less energy consumption per unit of output. Ethanol transport to California is unique due to the fact that the product is loaded into railcars at the plant due to a rail spur located on site. The wet distillers grain co-product is sold and transported to nearby feedlots. While Bonanza BioEnergy's fuel is produced from corn and sorghum that are combined at the beginning of the process and undifferentiated from that point forward, two individual CI values were calculated per CARB recommendation for accounting purposes. Each CI represents ethanol produced using either 100% corn or 100% sorghum. Bonanza BioEnergy's corn CI is 76.75 gCO_{2e}/MJ and sorghum CI is 73.39 gCO_{2e}/MJ. The 100% corn CI is 13.35 gCO_{2e} less respectively than the most similar pathway currently listed in the CARB lookup table: Midwest; Dry Mill; Wet DGS, NG= 90.1 gCO_{2e}/MJ. The 100% sorghum CI is 10.97 gCO_{2e} less respectively than the most similar pathway currently provided by CARB: Internal Priority Pathway Midwest; Dry Mill; Sorghum; Wet DGS, NG= 84.36 gCO_{2e}/MJ.

c. For Method 2A Applications only

1. Reference pathway (Existing fuel pathway to which the proposed new sub-pathway is most closely related). The carbon intensity of the reference pathway must be higher by at least 5 gCO₂e/MJ than the carbon intensity of the proposed pathway described in this application. Show all pathway information exactly as it appears in the LCFS Lookup Table:

Fuel:

Pathway Description:

Carbon Intensity Values (gCO₂e/MJ):

Direct Emissions:

Land Use or Other Indirect Effect:

Total:

2. Compositional differences (if any) between the fuel produced by the new sub-pathway and the reference pathway identified in item c, 1, above).

- | |
|--|
| <ol style="list-style-type: none">1. Scenario: feedstock (corn:sorghum vs. corn)2. Ethanol production: fuel usage3. Ethanol production: power usage4. Feedstock: transportation5. Co-product: transportation |
|--|

- d. Final carbon Intensity of the proposed pathway or sub-pathway:
100% corn CI 76.15 gCO₂e/MJ and 100% sorghum CI is 73.39 gCO₂e/MJ.
- e. Annual volume of fuel that would be produced using the proposed new sub-pathway (millions of gallons per year [MGY]).
55 MGY

1. This production volume is expected to be achieved within how many years from the start of production?
From the beginning of production.
 2. Does the applicant expect this volume be achieved by a single or by multiple facilities?
 A single facility Multiple facilities
 3. If the applicant expects this volume to be achieved by multiple facilities, would all facilities be owned by a single firm?
 Single firm Multiple firms
- f. Lower Heating Value of the fuel to be produced from new sub-pathway (megajoules per gallon):
19.3 MJ/gal
- g. The range of production volumes over which the proposed pathway carbon intensity value is valid. The values reported below must be supported in the documentation accompanying this application.

	Fuel Volume	Units (gallons; litres; joules,etc.)
Lower bound of production volume range	0	gal/yr
Upper bound of production volume range	55,000,000	gal/yr

- h. Please provide any information that may be helpful in determining the land use change impacts (if any) of the proposed pathway. Although it is ARB's responsibility to perform all land use change impact analyses, the applicant may provide any information that may be useful to the ARB in completing that analysis.

IV. Application Submittal Checklist. Listed below are the documents and files that may be submitted in support of a method 2A/2B application. Check the box to the left of each document or file type included in your submittal. After each submittal category is a check box labeled "includes trade secrets." Check that box if the submittal category contains any information the applicant considers to be a trade secret. In the actual submittal, the specific information falling into the trade secret category must be clearly marked. Additional information regarding the submission of trade secrets can be found in the Instructions above.

- Life cycle analysis report
 - Includes trade secrets*
- Engineering reports
 - Includes trade secrets*
- Equipment technical specifications
 - Includes trade secrets*
- Production process schematics, technical drawings flow diagrams, maps, or other graphical representations
 - Includes trade secrets*
- Technical papers or journal articles
 - Includes trade secrets*
- Emissions monitoring data or emissions modeling results
 - Includes trade secrets*

- Spreadsheets, data files, and similar files documenting the calculations behind the fuel life cycle analysis
 - Includes trade secrets*
- Other: In the space below, describe any additional submittals. Rationales for documents submitted or omitted may also be provided.
 - Includes trade secrets*

Additional documentation related to ethanol production plant operations includes:

Bills of lading for feedstock

ARB Method 2A and 2B Application Process Contacts

Name	Phone Number	E-mail Address
John Courtis	916-323-2661	icourtis@arb.ca.gov
Wes Ingram	916-327-2965	wingram@arb.ca.gov
Chan Pham	916-323-1069	cpham@arb.ca.gov
Kevin Cleary	916-323-1009	kcleary@arb.ca.gov
Alan Glabe	916-323-2416	aqlabe@arb.ca.gov

**Guide to Appendices
Method 2B Application Submittal Checklist
for Bonanza BioEnergy, LLC.**

Submitted by: Conestoga Energy Partners, LLC.
November 2010

Introduction

The following table provides a summary of all appendices included in the application. Each appendix correlates to one of the documents specified in Section IV of the application. Each document contains supporting data, which are also provided within the respective appendix.

Appendix	Document Type	Supporting Data
1	LCA Report	Industry sorghum farm production dataset
		Feedstock transport mode and distance data within KS
		Fuel off-take agreements from KS to CA
2	Production Process Schematics	Process flow diagrams of plants
3	Equipment Technical Specifications	Stationary combustion equipment lists
		CEM summary reports
		CHP (Plant fuel receipts and energy balance)
4	Emission Monitoring Data	Plant air quality operating permits
		Plant air quality construction modification permits
5	GREET Calculation Workbook (modified for sorghum and corn inputs)	Details carbon intensity calculations

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Includes trade secrets

Appendix 2 Production Process Schematics

Includes trade secrets

Appendix 3 Equipment Technical Specifications

Includes trade secrets

Appendix 4 Emissions Monitoring Data

Includes trade secrets

Appendix 5 GREET Calculations

Includes trade secrets

Appendix 1

Life Cycle Analysis Report

- 1.1 Bonanza LCA Report
- 1.2 Sorghum Farming
- 1.3 Corn and Sorghum Transport
- 1.4 Ethanol Transport

Confidential information has been removed from this section.

Detailed Life Cycle Analysis Report

Midwest ethanol produced using sorghum and corn in a natural gas fueled combined heat and power dry mill generating wet distillers grain co-products



Bonanza Plant

**December 2010
Version 2.0**

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Introduction

This document describes the energy and inputs necessary to produce dry mill ethanol in the 55,000,000 gallon capacity Bonanza BioEnergy, LLC plant located in Garden City, Kansas. The plant produces ethanol fuel from corn and sorghum feedstocks grown locally. The plant achieves a high degree of efficiency due to the use of power and heat from a cogeneration unit located within the plant as well as through enhanced levels of process controls. Wet distiller grains co-products are distributed regionally while the ethanol is transported to California blending terminals. Figure 1 provides an overview of the fuel pathway described in subsequent sections of this report. Unless otherwise stated, all calculations related to the corn portion of the feedstock are based on CARB default values in the *Detailed California-Modified GREET Pathway for Corn Ethanol, February 27, 2009, Version 2.1*. Default values are denoted in *italics*. Lists of documents supporting the unique values reported in this document are included in each section of the *Well-To-Tank Details* portion of the report. These documents are provided within Appendices 1-6 of the application package.

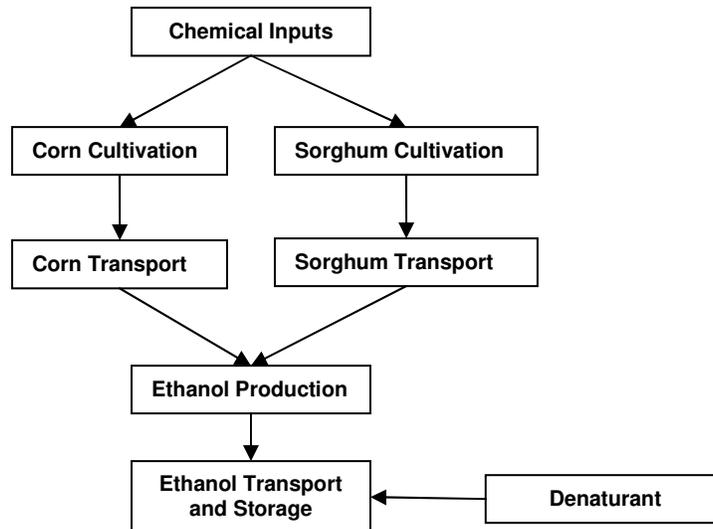


Figure 1 WTT Components for Ethanol Transported to California

Table A Summary of Carbon Intensity

Bonanza

	100% CORN	100% SORGHUM
CI (WTT) including indirect land use emissions (gCO ₂ e/MJ)	76.75	73.39

Table B Energy Use by Stage

Dry Milling - 100% Corn Bonanza			
	Feedstock growing and transport to plant	Ethanol production and transport to Refuelling station	CI (WTT) Corn growing + Ethanol production
gCO2e/mmBtu	26,794	21,689	48,483
gCO2e/MJ	25.4	20.6	46.0

Dry Milling - 100% Sorghum Bonanza			
	Feedstock growing and transport to plant	Ethanol production and transport to Refuelling station	CI (WTT) Corn growing + Ethanol production
gCO2e/mmBtu	21,394	23,544	44,938
gCO2e/MJ	20.3	22.3	42.6

Well-to-Tank Details

Corn and Sorghum Farming

This section details the energy and related GHG emissions associated with each distinct component of the fuel pathway illustrated in Figure 1. All calculations were performed in a version of the GREET model that was modified by CARB to accommodate for a blended feedstock. A copy of the GREET file is included in the full subpathway application package in Appendix 5.

Documents supporting the unique values provided in this section include:

- 2005-2009 Average sorghum farm production data from the National Sorghum Producers association (Appendix 1)

Table C Inputs for Feedstock Farming

Note that sorghum data is provided by the National Sorghum Producers Association (NSP). NSP's data set is representative of 2005-2009 sorghum farming practices in the Great Plains region including: Kansas, Nebraska, South Dakota, and North Dakota.

	Corn data	Sorghum data
	GREET default	NSP
<i>Fertiliser and lime application</i>		
N (g/bu)	420	390
P2O5 (g/bu)	149	102*
K2O (g/bu)	174	17*
CaCO ₃	1,202	0
<i>Herbicide/pesticide application</i>		
Herbicide (g/bu)	8.1	13.69
Pesticide (g/bu)	0.68	0.61

* U.S. EPA values used within the CARB Sorghum Ethanol pathway.

Corn and Sorghum Transport

Documents supporting the unique values provided in this section include:

- Trucking company transport logs from grain terminal to the plant. These logs provide unique distances and evidence of the 27 ton truck capacity used for calculations. (Appendix 1)

Table D Corn and Sorghum Transport

Default mileage values defined within GREET are used for the farm to stack distances for both corn and sorghum. Individual farmers were not surveyed to the magnitude due to the time and resources required to survey the magnitude necessary. Unique transport distances from the stack to plant were acquired from trucking company bills of lading. Capacity of haulage vehicle for both legs for both types of feedstock is 27 tons.

Feedstock	Transport Leg	Mileage (miles one-way)	Capacity (tons)
Corn	Farm to stack	10 (Default)	27
	Stack to plant	20	27
Sorghum	Farm to stack	10 (Default)	27
	Stack to plant	22	27

Ethanol Production

Conestoga plant operations realize increased efficiencies in production due to the utilization of cogeneration onsite as well as through enhanced process controls. All values provided are representative of 2009 operational activity.

Documents supporting the unique values provided in this section include:

- Process flow diagram of plant (Appendix 2)
- List of stationary combustion equipment within the plant (Appendix 3)
- Fuel and electricity receipts for plant compared with total energy generated to demonstrate the operation of the cogeneration unit. (Appendix 3)
- Continuous Emissions Monitoring (CEM) reports for Q4 2009, Q1 2010, and Q2 2010 (Appendix 3)
- Air quality operating and construction modification permits (Appendix 4)

Table E Ethanol Production Ratios

Plant	Production volume (gallons)	Feedstock				
		Corn (bu)	Sorghum (bu)	Total (gal/bu)	Share of corn	Share of sorghum
Bonanza						

Table F Ethanol Energy Use Ratios

Plant	Production volume (gallons)	Grid electricity			Natural gas			Total energy BTU/gallon	Electricity share
		Grid elec-MWh	Grid elec-MMBTU	Grid elec-BTU/gallon	Gas - MWh	Gas - MMBTU	Gas - BTU/gallon		
Bonanza									

Ethanol Transport and Distribution

Documents supporting the unique values provided in this section include:

- Off-take agreement between the plant and the buyer detailing delivery into California (Appendix 1)
- Transport leg details from Conestoga

Table G Ethanol Transport and Distribution (T&D)

Ethanol transport from Kansas to California occurs solely by rail due to the location of a rail spur directly at the plant gate.

Transport Leg	Transport Mode	Mileage (miles one-way)	Capacity (tons)
Plant to California	Rail	1,200	NA
Distribution	Truck	50 (Default)	25 (Default)

CO-PRODUCT CREDITS

Table H Corn/Sorghum Ethanol Co-Product Energy Credits

Production Type	Displaced Product	Energy Credit (Btu/gal)	Energy Credit (Btu/MMBtu)
Dry Mill	Feed corn	-6,230 (Default)	-81,617 (Default)

1.2 Sorghum Farming

Grain Sorghum Production Data

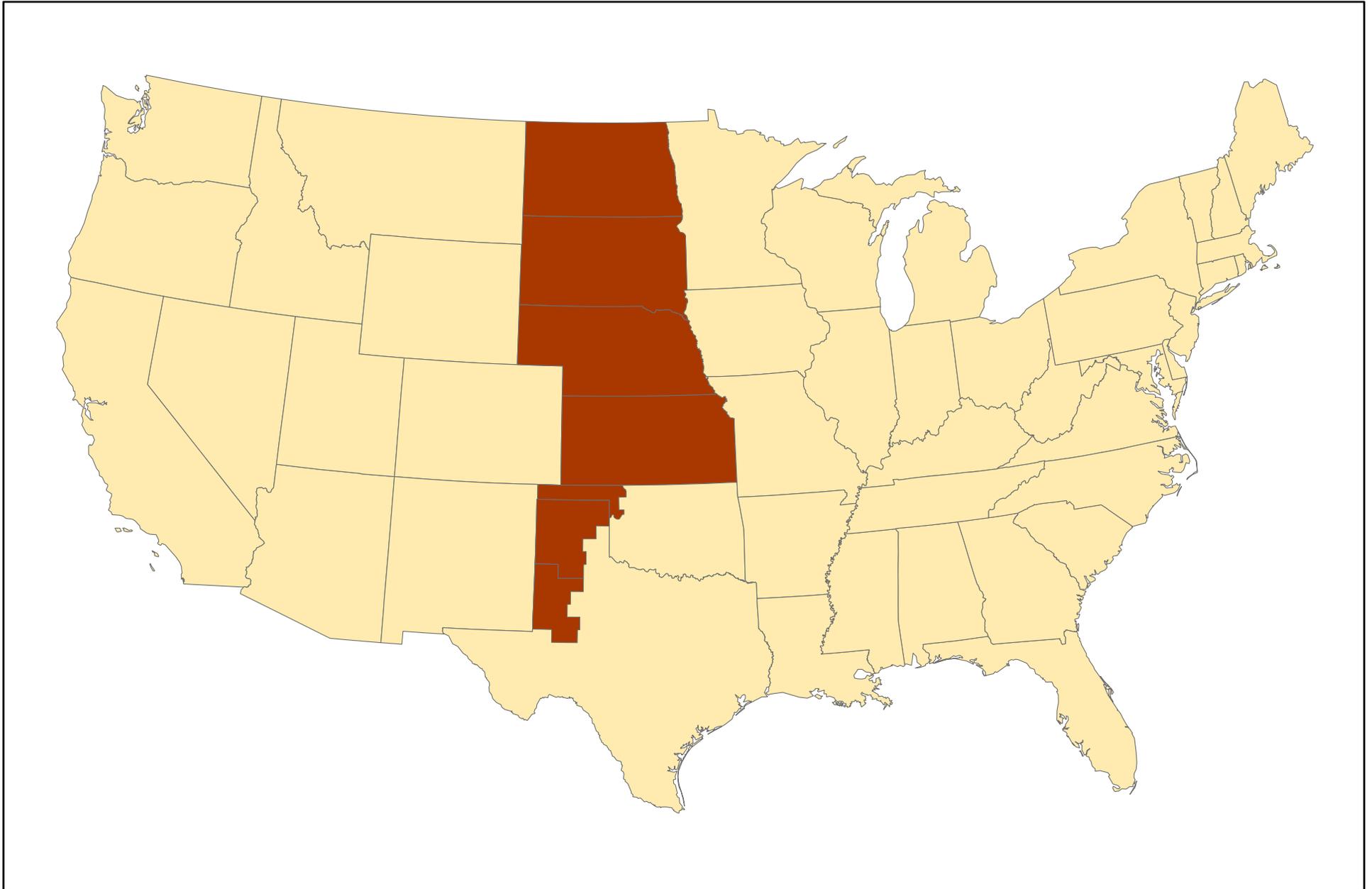
Region (1)	Great Plains
Irrigation Practice	Non-Irrigated
Regional Production by Irrigation Practice (2005-09) (2)	84%
Yield (bu/ac)	66.2753
Nitrogen (lbs/ac)	56.9840
Phosphorus (lbs/ac)	11.1450
Potassium (lbs/ac)	10.1186
Carbon Ag Fuel (tons CO ₂ /ac) (3)	0.0337
Carbon Drying (tons CO ₂ /ac)	0.0061
Carbon Pesticide (tons CO ₂ /ac)	0.0010
Carbon Irrigation (tons CO ₂ /ac)	0.0000
Nitrous Oxide Crop Residue (tons NO _x /ac)	0.0007
Nitrous Oxide Leaching (tons NO _x /ac)	0.0003
Nitrous Oxide Volatilization (tons NO _x /ac)	0.0000
Nitrous Oxide Residue Burning (tons NO _x /ac)	0.0000

(1) The Great Plains (GP) FASOM region includes Kansas, Nebraska, South Dakota, and North Dakota.

(2) Regional production by irrigation practice includes the FASOM Great Plains states as well as the NASS districts of the Oklahoma Panhandle (10), Texas North Plains (11) and Texas South Plains (12). These were included to account for the sorghum used in ethanol production. The other large area of sorghum production is South Texas and the Texas Coastal Bend. This sorghum is not currently used in ethanol production and is not expected to be in the future. The production data for the added NASS districts is not available separately in FASOM. However, these added NASS districts produce sorghum with similar yields and agronomic practices as Kansas (see attached map).

(3) The Ag Fuel number, compared to corn production in the GP region, is considerably higher than data from the ERS (Prairie Gateway region - blended irrigated and non-irrigated data) and Kansas Farm Management Association (KFMA) (non-irrigated sorghum and corn enterprise data).

Sorghum Production Regions - Great Plains (FASOM) with NASS Districts (OK-10, TX-11, and TX-12)



1.3 Corn and Sorghum Transport

Transport distances provided as separate Excel files.

Confidential information has been removed from this section.

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1.4 Ethanol Transport

Confidential information has been removed from this section.

Appendix 2

Production Process Schematics

2.1 Bonanza Plant Process Flow Diagram

2.1 Bonanza Plant Process Flow Diagram

Confidential information has been removed from this section.

Appendix 3

Equipment Technical Specifications

3.1 Bonanza Stationary Combustion List

3.2 Bonanza Input & Output Data

3.3 Bonanza Gas Bills

3.4 Bonanza Electricity Bills

3.1 Bonanza Stationary Combustion List

Confidential information has been removed from this section.

3.2 Bonanza Input & Output Data

Confidential information has been removed from this section.

1. General Site Information

Name of site:

Site Contact:

Data collection period:

Operational hours per year:

2. Feedstocks used

Feedstock	Total weight used over data collection period (short tons)
Corn	
Sorghum	
Other (please specify)	

3. Production volumes

Product	Output over data collection period
Ethanol	
WDGS	
Output C	
Output D	

4. Energy

4.1. Imported electricity

Origin of electricity	Consumption (MWh)
Imported from the grid	
Imported from 3rd party through private connection	

4.2 Imported heat/steam

	Steam imported over data collection period	Please specify the source of the heat/steam
Imported process heat/steam		
Imported process heat/steam		

4.3 CHP system

4.3.a. Fuel/Fuels used in CHP system

Type of fuel	Consumption over data collection period
Natural Gas	

4.3.b. CHP Outputs

Total electricity generated (MWh)	
Total steam produced (MWh)	
Electricity used on-site (MWh)	
Electricity exported (MWh)	
Steam used on-site (MWh)	
Steam exported (MWh)	

4.4. Fuel consumption in other boilers (excluding fuel used in the CHP system)

Type of fuel	Consumption over data collection period (units of volume or energy)
None	

5. Water consumption

Origin of water	Consumption over data collection period (gal or yd ³)
Treated water (from general water distribution network)	
Non-treated water (directly pumped from neighboring water course)	

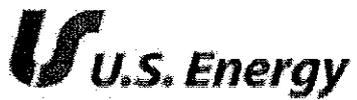
6. Effluent

Please indicate volume of effluent generated over the data collection period (gal or yd³)

Please indicate whether waste water treatment is aerobic or anaerobic digestion

3.3 Bonanza Gas Bills

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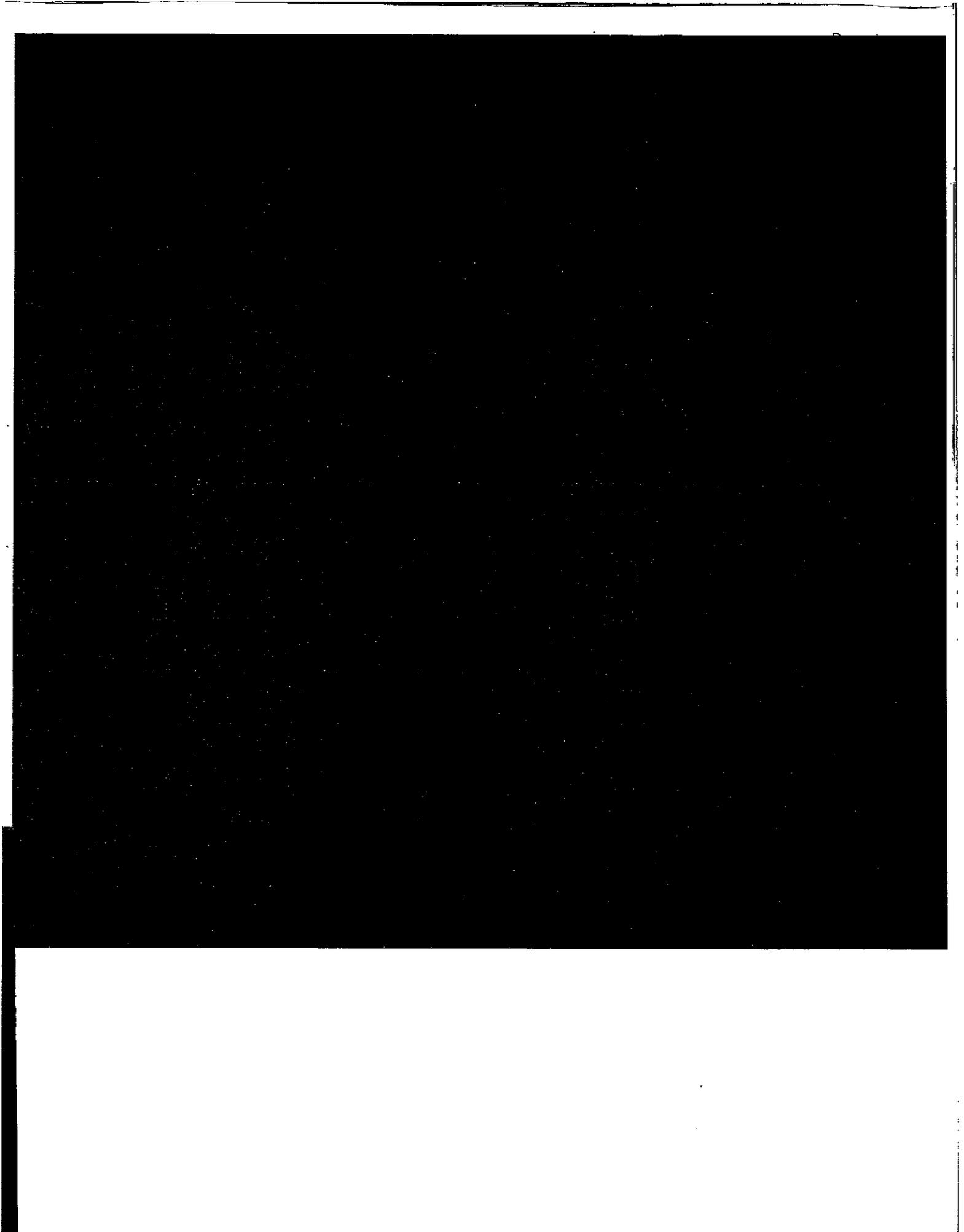
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Bonanza Bioenergy, LLC

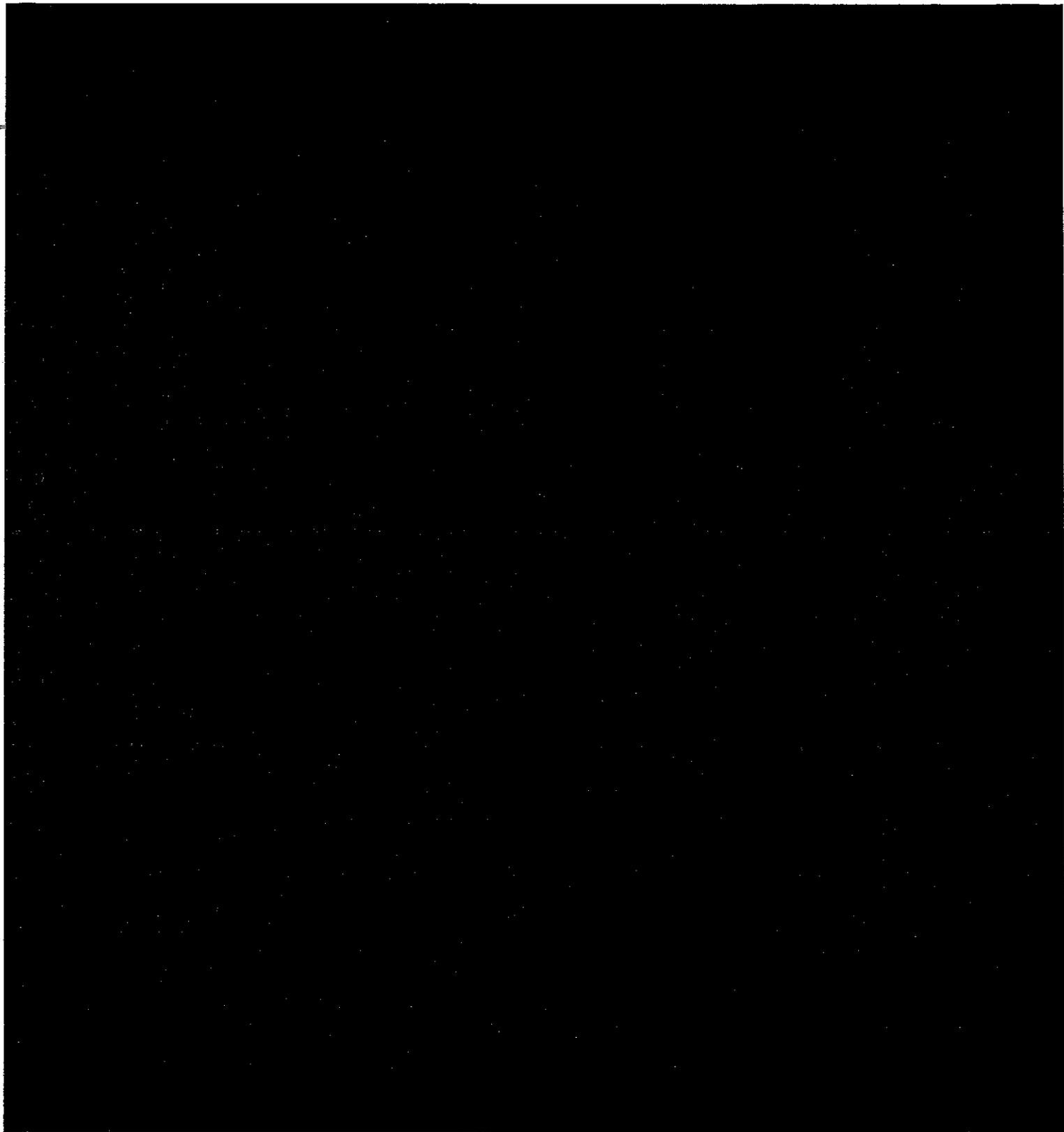


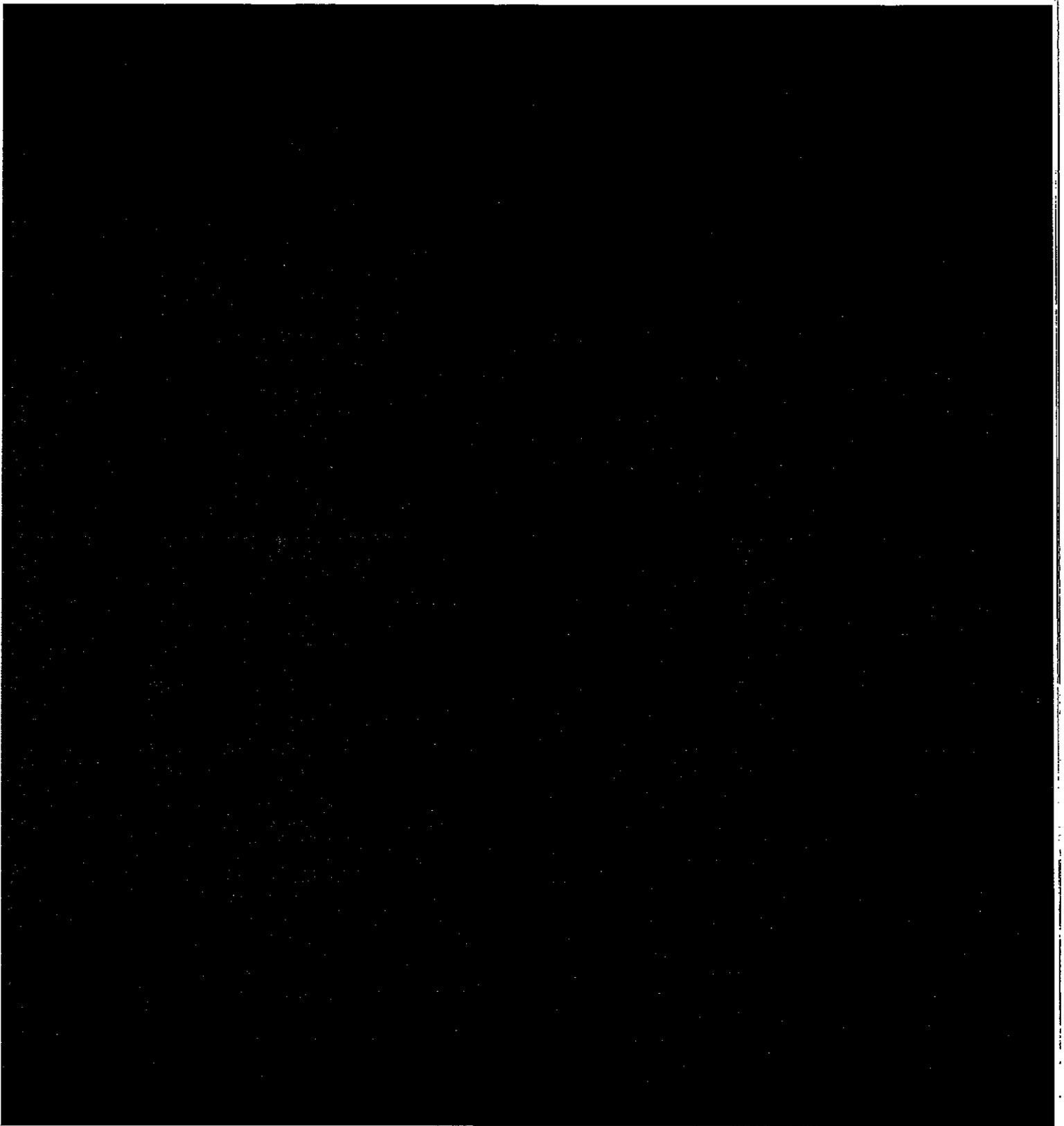
This electronic mail transmission may contain confidential information which shall not be disclosed by the recipient to any third party. If you are not the intended recipient of this communication, please delete it

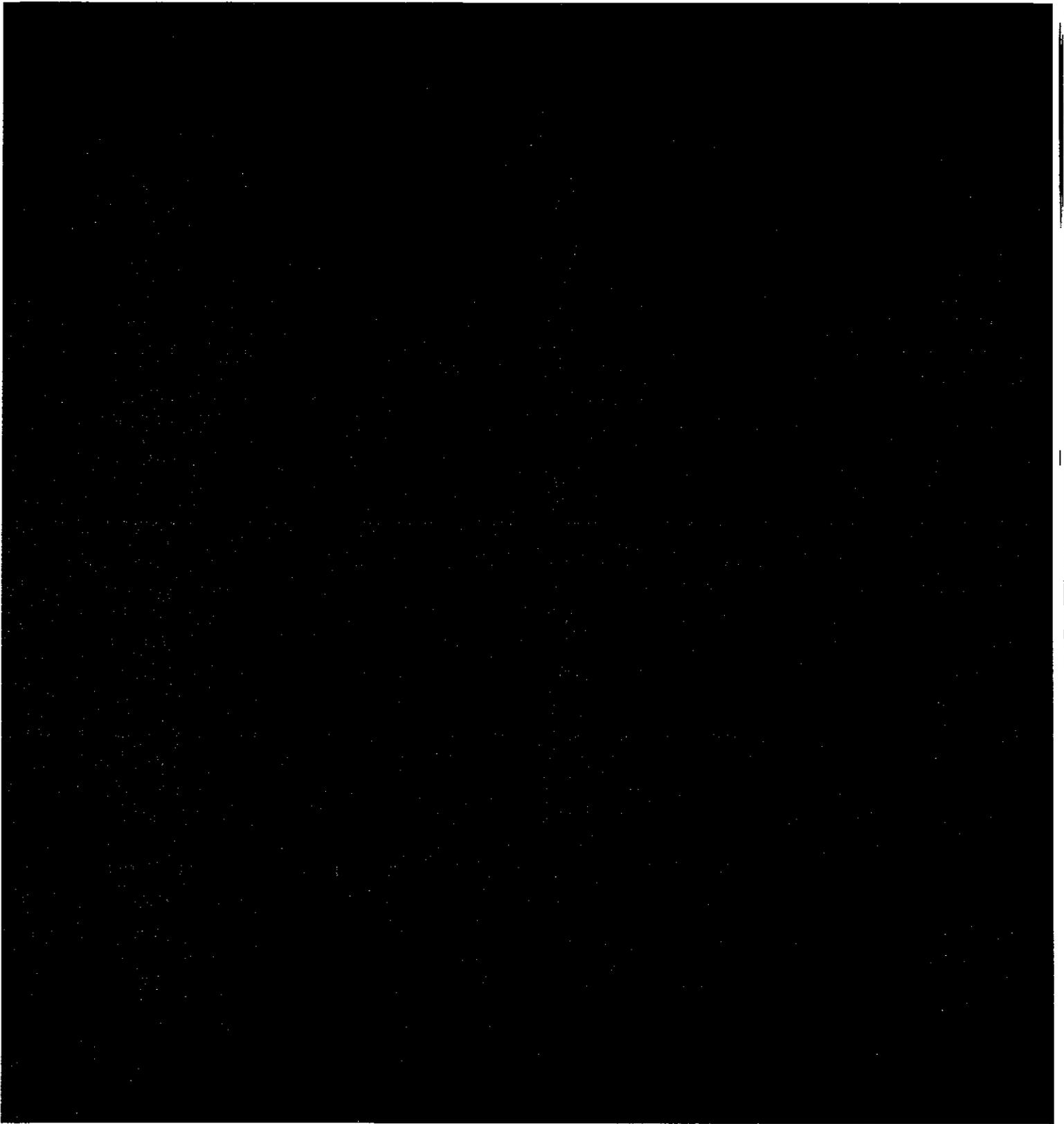
3.4 Bonanza Electricity Bills

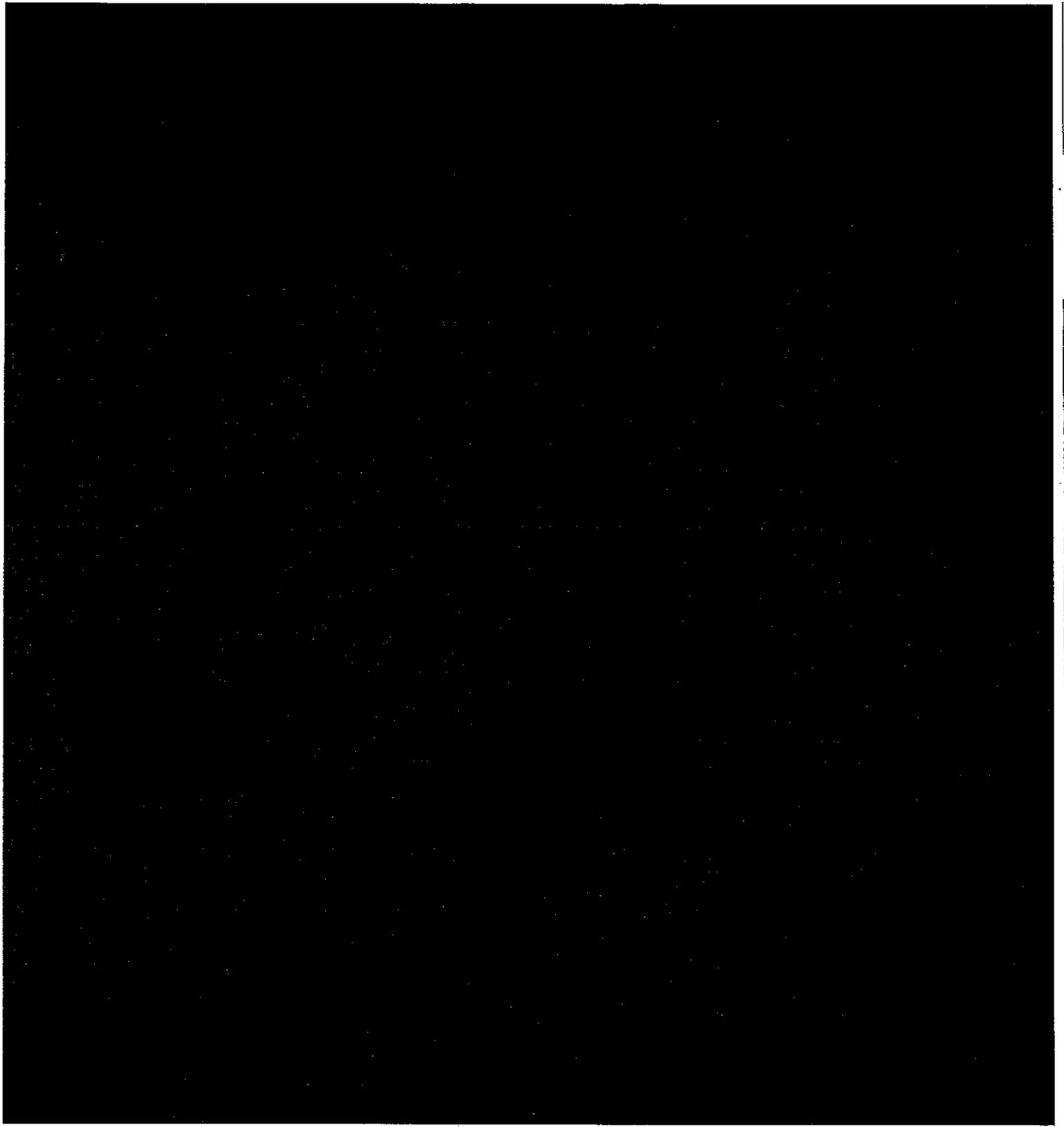
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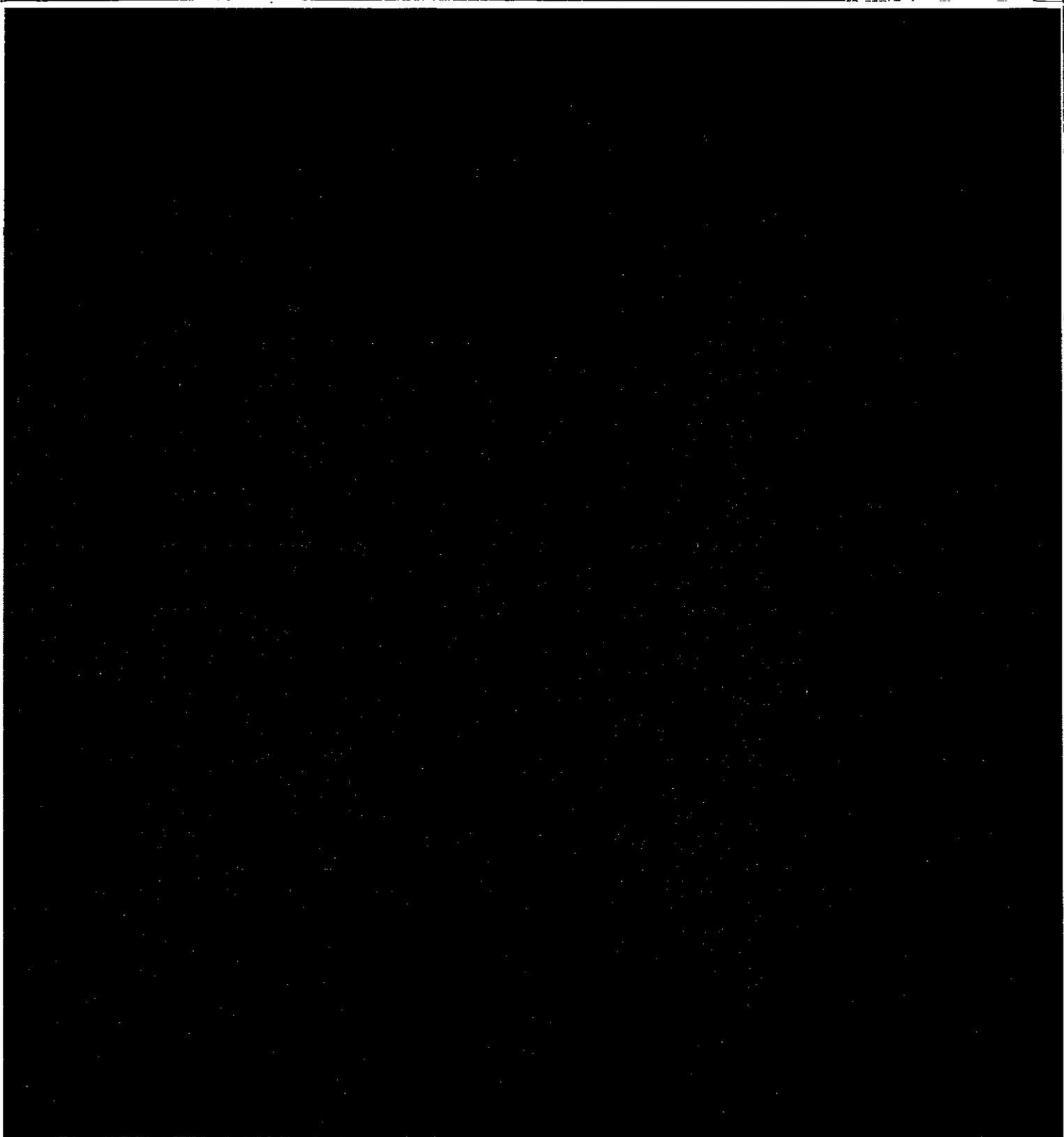


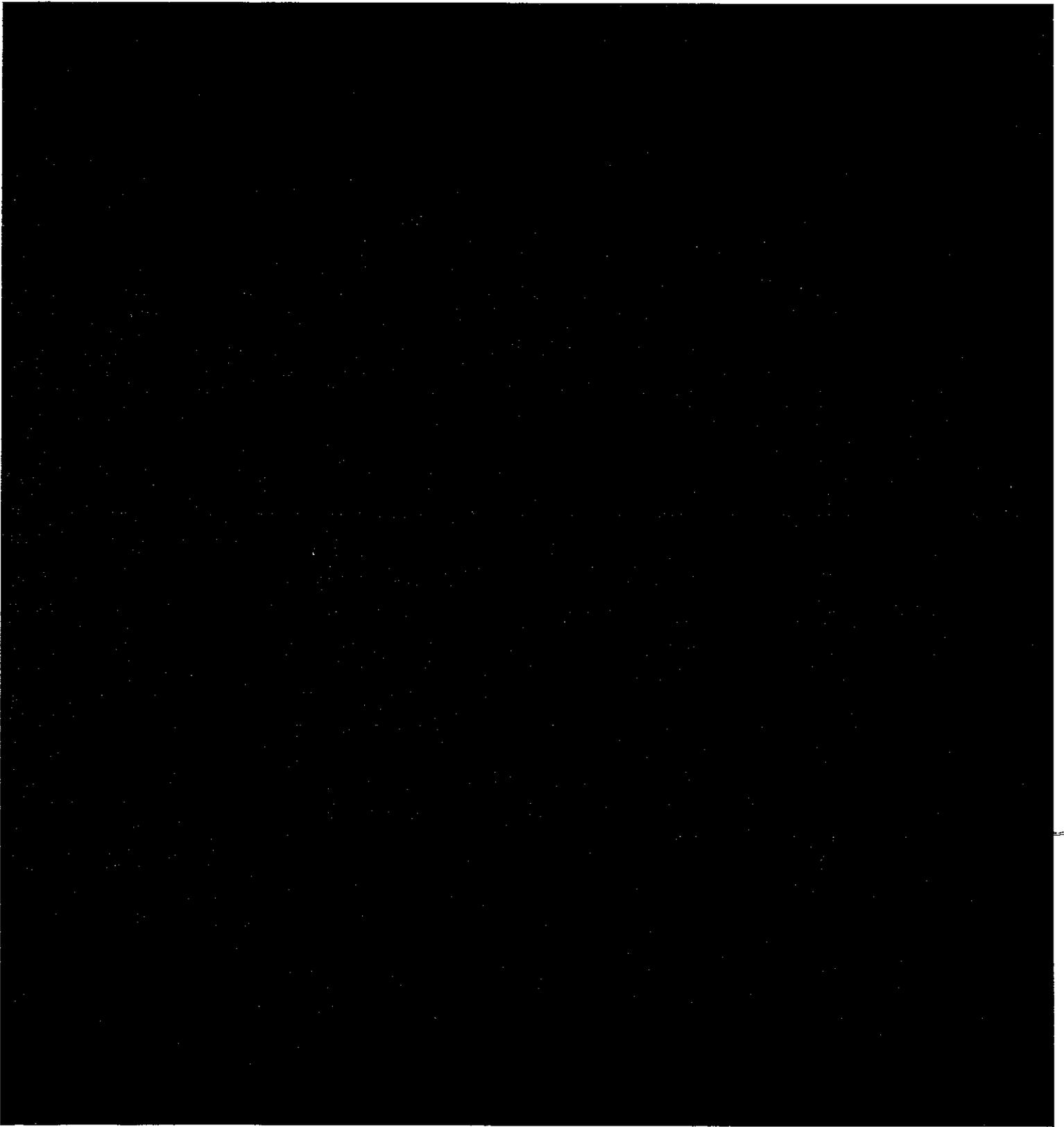












Appendix 4 Emissions Monitoring Data

4.1 Bonanza Operation Air Permit

4.2 Bonanza Construction Modification Air Permit

4.3 Bonanza CEMs Report

4.1 Bonanza Operation Air Permit

COPY



*Kathleen Sebelius, Governor
Roderick L. Bremby, Secretary*

DEPARTMENT OF HEALTH
AND ENVIRONMENT

www.kdheks.gov

Division of Environment

February 3, 2009

Source ID No. 0550116

Mr. Tom Willis
Conestoga Energy Partners, LLC- Bonanza BioEnergy, LLC Facility
300 North Lincoln, P.O. Box 1178
Liberal, KS 67905-1178

Re: Class II Air Operating Permit

Dear Mr. Willis:

Enclosed is the air quality Class II Operating Permit for the Bonanza BioEnergy, LLC Facility ethanol facility located in Garden City, Kansas.

Please review the enclosed permit carefully because it obligates the company to certain requirements.

In October 2007 KDHE began addressing green house gas (GHG) emissions in Kansas to protect the health and environment of Kansans. To accomplish this task, KDHE will engage industries and stakeholders to establish goals for reducing GHG emissions and strategies to achieve them. Therefore, in accordance with K.S.A. 65-3005(j), KDHE is seeking your cooperation to voluntarily implement strategies, including the development and use of innovative technologies, market-based principles and other private initiatives to reduce or prevent GHG emissions.

The Performance Test Protocol required by the enclosed permit should be directed to Mr. Russ Brichacek at our Topeka office. Also, contact Mr. Jeremy Duis at (785) 296-1542 to arrange the pre-performance test meeting at least thirty (30) days in advance of the date that testing is to be conducted. Mr. Brichacek may be reached at (785) 296-1544.

As provided for in K.S.A. 65-3008b(e), an owner or operator may request a hearing within 15 days after affirmations, modification or reversal of a permit decision pursuant to subsection (b) of K.S.A. 65-3008a. In the Request for Hearing, the owner or operator shall specify the provision of this act or rule and regulation allegedly violated, the facts constituting the alleged violation and secretary's intended action. Such request must be submitted to: Director, Office of Administrative Hearings, 1020 S. Kansas Avenue, Topeka, Kansas 66612-1327. Failure to submit a timely request shall result in a waiver of the right to hearing.

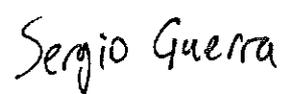
DIVISION OF ENVIRONMENT
Bureau of Air & Radiation
Air Permitting Section
CURTIS STATE OFFICE BUILDING, 1000 SW JACKSON ST., STE. 310, TOPEKA, KS 66612-1366
Voice 785-296-1570 Fax 785-291-3953
Bonanza BioEnergy Application Pg. 54

Page 2
Mr. Tom Willis
February 3, 2009

The source identification number listed above should be used in all communication with the department about the permitted facility.

If you have any questions, please direct any questions to me at (785) 296-0365.

Sincerely,



Sergio Guerra
Engineering Associate
Air Permitting Section

SG:saw
Enclosure
c: SWDO
c: Russ Brichacek, BAR Topeka
O-8066



Kathleen Sebelius, Governor
Roderick L. Bremby, Secretary

DEPARTMENT OF HEALTH
AND ENVIRONMENT

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Division of Environment

AIR EMISSION SOURCE CLASS II OPERATING PERMIT

Source ID No.: 0550116

Effective Date: February 3, 2009

Expiration Date: Valid until modified, revoked, or otherwise determined invalid

Source Name: Conestoga Energy Partners, LLC

NAICS: 325193; Ethyl Alcohol Manufacturing

SIC: 2869; Industrial Organic Chemicals Not Elsewhere Classified

Source Location: Bonanza BioEnergy, LLC Facility
2830 East US Highway 50
Garden City, Kansas

Mailing Address: 300 North Lincoln, P.O. Box 1178
Liberal, Kansas 67905-1178

Contact Person: Tom Willis, Chief Executive Officer
(620) 626-2021

This permit is issued pursuant to K.S.A. 65-3008 as amended.

DIVISION OF ENVIRONMENT
Bureau of Air & Radiation
Air Permitting Section

Description of Activity Subject to Air Pollution Control Regulations

On July 20, 2006 Conestoga Energy Partners, LLC (Conestoga) was issued a construction permit to build and operate the Bonanza BioEnergy, LLC facility (Bonanza) in Finney County. The Bonanza facility was originally permitted to a maximum yearly throughput of fifty-five (55) million gallons of denatured ethanol. On October 24, 2008 Conestoga was issued a modified permit to increase the denatured ethanol throughput to 73.5 million gallons per year. The modified permit also limited the production of distilled dried grains with solubles (DDGS) by limiting the drying operating time to 50% on an annual basis. Additionally, the modified permit updated the as-built equipment conditions. Thus, the installed 186 MMBtu/hr boiler was added to the permit replacing the two 62.5 MMBtu/hr boilers permitted under the original permit. This change also resulted in the addition of the 40 CFR Part 60, Subpart Db requirement to the permit.

The Kansas Department of Health and Environment (KDHE) has reviewed the air quality requirements associated with the Class II operating permit. The proposed activity is subject to the provisions of K.A.R. 28-19-540.

Permit Intent

The purpose of this permit is to limit the potential-to-emit to below major source thresholds in accordance with K.A.R. 28-19-540. For this facility, emissions of carbon monoxide (CO), oxides of nitrogen (NO_x), sulfur dioxide (SO₂), volatile organic compounds (VOC), particulate matter (PM/PM-10) and hazardous air pollutants (HAPs) were evaluated in determining the potential-to-emit. This permit includes restrictions that will limit the potential-to-emit of these pollutants to below major source thresholds.

To assist in demonstrating that the emission limitations imposed in this permit are not being exceeded, performance testing requirements are detailed in the permit. Attachment A (Performance Test Protocol) identifies the required elements of the performance test protocol.

Air Emission Estimates from the Facility

Table 1: Emissions (Tons per Year)

Pollutants Reviewed	Potential-to-Emit ¹ Post-permit	Estimated Operating ²
Carbon Monoxide (CO)	<100	99.6
Nitrogen Oxides (NO _x)	<100	99.2
Sulfur Dioxide (SO ₂)	<100	20.2
VOC	<100	98.6
PM	<100	99.4
PM-10	<100	52.9
Single HAP (Acetaldehyde)	<10	8.1
Combined HAPs	<25	15.0

Permit Limitation Requirements

For the duration of this permit:

1. The maximum amount of grain processed shall not exceed 25,925,926 bushels during each consecutive twelve (12) month period.
2. The maximum production rate of denatured fuel grade ethanol shall not exceed 73.5 million gallons during each consecutive twelve (12) month period.
3. The transfer rate of product grade ethanol through the truck/railcar loading terminal shall be no greater than 73.5 million gallons during any consecutive twelve (12) month period.
4. The distiller dried grains with solubles (DDGS) dryer shall have a maximum operating rate of 4380 hours during any consecutive twelve (12) month period.
5. In the event that it is determined by the department that any contract, or any other type of binding agreement between the ethanol plant and the grain elevator has caused the grain elevator to become a support facility for the ethanol plant, the ethanol plant and the grain elevator shall become one emission source; and together, as one emission source, they shall be subject to the applicable requirements of the PSD permitting program, as specified in K.A.R. 28-19-350.

¹ Potential-to-emit means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on a capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

² Estimated operating emissions are those emissions from a stationary source based on expected conditions and hours of operation.

6. Measured as specified in a performance test protocol approved by the department, emissions from the thermal oxidizer (i.e., dryer plus RTO), combined with the emissions from the boiler shall contain no greater than 90.7 tons of NO_x, 86.0 tons of CO, during each consecutive twelve (12) month period.
7. Measured as specified in a performance test protocol approved by the department, combined emissions from the thermal oxidizer (dryer plus RTO), boiler, Type II Cooling Cyclone , and CO₂ scrubber shall contain no greater than 63.0 tons of VOC and no greater than 8.5 tons of any single HAP and 10.63 tons of any combination of HAPs during each consecutive twelve (12) month period.
8. Measured as specified in a performance test protocol approved by the department, combined emissions from the thermal oxidizer (dryer off), boiler, Type II Cooling Cyclone , and CO₂ scrubber shall contain no greater than 56.5 tons of VOC and no greater than 8.5 tons of any single HAP and 10.07 tons of any combination of HAPs during each consecutive 12 month period.
9. Measured as specified in a performance test protocol approved by the department, the combined emissions of particulate matter (PM) and PM with an aerometric diameter equal to or less than ten (10) microns shall be less than 33.3 tons during each consecutive twelve (12) month period emitted from the following.
 - grain unloading baghouse
 - transfer leg/day bin/scalper baghouse
 - grain milling baghouse
 - DDGS loadout baghouse
 - the Type II cooling system baghouse
 - boiler
 - RTO (DDGS Dryer online)
10. The thermal oxidizer shall be equipped with a monitoring device to continuously measure and record the thermal oxidizer's combustion temperature. The combustion temperature shall be maintained at or above the temperature at which the oxidizer operated during a successful performance test. For the purposes of this permit condition, a successful performance test is a test, conducted in accordance with performance test requirements of this permit, during which all of the emissions limitations in this permit for the thermal oxidizer were met
11. All air pollution control equipment shall be properly installed, operated and maintained at all times whenever the emissions source that it is designated to control is operating. Maintenance shall be conducted according to the written air pollution control equipment maintenance plan that was developed and implemented for all equipment used to control PM, PM₁₀ and VOC and HAP emissions of the plant.

12. Maintenance shall be performed on all plant roads, as necessary, to ensure that the structural integrity of the paved roads is preserved.

Performance Testing Protocol

The owner or operator shall prepare and submit a performance testing protocol to the department at least thirty (30) days in advance of a performance test meeting required by this permit. The protocol shall be prepared in accordance with Attachment A to this permit.

Performance Test Meeting

The owner or operator shall arrange a performance test meeting with the department, either in person, or via a telephone conference call, at least thirty (30) days in advance of the date that the performance testing required by this permit is to be conducted. The purpose of the meeting shall be to outline and discuss the schedule and implementation plans for conducting the performance testing required by this permit. The department may elect to have an observer(s) on-site at the facility during any or all performance testing required by this permit.

Performance Test Requirements

1. Performance testing required by this permit shall be conducted annually. These tests must be completed no less than nine (9) and no greater than twelve (12) months apart. Upon successful completion of two (2) consecutive tests, the frequency of testing may be reduced to once during each three (3) year period thereafter, so long as each test is completed successfully. In the event that a performance test is not completed successfully, the frequency of testing shall return to once annually. Three (3) consecutive successful annual tests shall be demonstrated to reduce the frequency of testing to once during each three (3) year period.
2. For the purpose of the permit, a *successful performance test* means a test completed in accordance with a performance test protocol approved by the department, during which all of the emissions limitations required by this permit were met.
3. Performance testing shall be conducted in accordance with a performance test protocol approved by the department to verify compliance with the emission limitations, conditions and requirements of this permit.

Permit Recordkeeping Requirements

1. The owner or operator shall maintain at the stationary source records demonstrating that the operating limitations imposed have not been exceeded. All records shall be in units of the Permit Limitation Requirements and shall reflect totals for the most recent 12 month period.
 - a. For **Permit Limitation Requirements 1, 2, 3, and 4** which relate to operation processing and production rates, records shall be updated monthly, no later than the last day of the following calendar month [K.A.R 28-19-501(c)]. Each record required by this section shall be maintained on-site for a period of at least two (2) years from the date of the record
 - b. For **Permit Limitation Requirements 6 through 9** which relate to emission rates, performance test records shall be maintained to estimate actual air emissions for the source. Each record required by this section shall be maintained on-site for a period of at least two (2) years from the date of the record during the once annually frequency of testing period. If the testing period increases to a frequency of once each three (3) years, each record required by this section shall be maintained on-site for a period of at least six (6) years from the date of the record.

Permit Reporting Requirements

1. In accordance with K.A.R. 28-19-546(a), the owner or operator shall submit all operating or relevant information to estimate actual air emissions for the source for the preceding calendar year to KDHE. This information shall be submitted on forms provided or approved by KDHE. If forms and instructions have not been received 30 days prior to the date specified under K.A.R. 28-19-546(a), the owner or operator should contact KDHE.
2. If, at any time, the facility's actual operations exceed 85% of the operational limitations of this permit (i.e. 62.475 million gallons per year denatured ethanol), the owner or operator shall submit a report to KDHE within 45 days of the last day of the month following the conclusion of the calendar quarter [K.A.R 28-19-501(c)(1)].
3. If, at any time, the facility's actual operations exceed the operational limitations of this permit, the owner or operator shall:
 - a. notify KDHE in writing of any operational exceedance. This notification shall be mailed or delivered the first working day following discovery of the exceedance.

- b. submit to KDHE a compliance plan stating those actions being taken by the owner or operator to assure future compliance with the operational limitations. This plan shall be submitted within 60 days of discovering the exceedance. This plan will clearly state if an application for a Class II permit modification or if an application for a Class I operating permit will be submitted. Any such application will be filed within 180 days of discovering the exceedance.

Submitting any or all of these reports does not shield the owner or operator from enforcement action for exceeding the permit limitations or for other violations of the Kansas Air Quality Act or Regulations.

Permit Modification

1. The owner or operator must submit a complete application for modification of this permit if there is any increase of the potential-to-emit (PTE) for the pollutants limited in this permit or if there is an increase in PTE for any regulated pollutant above the major source threshold. This application for modification must be submitted within 180 days of the initial startup of the modification.
2. A construction permit or approval must be issued by KDHE prior to commencing any construction or modification of equipment or processes which results in potential emission increases equal to or greater than the thresholds specified in K.A.R. 28-19-300.

General Provisions

1. Upon presentation of credentials and other documents as may be required by law, representatives of KDHE (including authorized contractors of the KDHE) shall be allowed by the permittee to:
 - a. enter upon the premises where a regulated facility or activity is located or conducted or where records must be kept under conditions of this document;
 - b. have access to and copies of, at reasonable times, any records that must be kept under conditions of this document;
 - c. inspect at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this document; and
 - d. sample or monitor, at reasonable times, for the purposes of assuring compliance with this document or as otherwise authorized by the Secretary of the KDHE, any substances or parameters at any location.

2. The emission unit or stationary source which is the subject of this document shall be operated in compliance with all applicable requirements of the Kansas Air Quality Act and the Federal Clean Air Act, and all applicable regulations promulgated under the Kansas Air Quality Act and the Federal Clean Air Act.
3. This document is subject to periodic review and amending as deemed necessary to fulfill the intent and purpose of the Kansas Air Quality Statutes and the Kansas Air Quality Regulations.
4. This document does not relieve the permittee of the obligation to obtain other approvals, permits, licenses, or documents of sanction which may be required by other federal, state, or local government agencies.

Permit Engineer

Sergio Guerra

Sergio Guerra
Engineering Associate
Air Permitting Section

2-3-09

Date Signed

SG:saw
c: SWDO
O-8066

Addendum

Permit Addendum

The following equipment and operations were evaluated to calculate the potential-to-emit for the facility:

1. Grain Receiving, Storing & Processing Facilities:
 - (a) An unloading grain receiving pit and two (2) storage bins/silos each with a storage capacity of less than 150,000 bushels or 300,000 bushels total storage capacity.
 - (b) A mechanical conveyor (owned by the permittee) for transfer grain from the existing elevator to the two (2) grain storage bins/silos.
 - (c) One day storage bin with a storage capacity of 6,000 bushels.
 - (d) Three (3) hammermills.
 - (e) Equipment necessary for loading distiller's dried grains and solubles (DDGS) into trucks and railcars for shipment off-site.
2. One (1) Ethanol Manufacturing Plant: storage tanks, various pumps, piping and valves, fermentation process vessels, carbon dioxide scrubber, distillation units, molecular sieves, condensers, centrifuges, evaporators, package boiler, 1-DDGS dryer, methanator and product loadout.

Specific plant equipment:

- (a) Two (2) Tanks - 750,000 Gallons each for the purpose of storing product grade denatured ethanol. Each tank is to be equipped with an interior floating roof and double wiper seal system that meets the applicable requirements of 40 CFR Part 60, Subpart Kb.
- (b) One (1) Tank - 165,000 Gallons for the purpose of storing 200 proof (100%) ethanol. The tank is to be equipped with an interior floating roof and double wiper seal system that meets the applicable requirements of 40 CFR Part 60, Subpart Kb.
- (c) One (1) Tank - 165,000 Gallons for the purpose of storing 190 proof (95%) ethanol. The tank is to be equipped with an interior floating roof and double wiper seal system that meets the applicable requirements of 40 CFR Part 60, Subpart Kb.

Addendum

- (d) One (1) Tank - 165,000 Gallons for the purpose of storing denaturant (natural gasoline or unleaded). The tank is to be equipped with an interior floating roof and double wiper seal system that meets the applicable requirements of 40 CFR Part 60, Subpart Kb.
- (e) One (1) Tank – 2,200 Gallons for the purpose of storing low vapor pressure corrosion inhibitor (proprietary ingredients of low vapor pressure with less than 10% xylene).
- (f) Piping, Pumps and Valves: pumps, valves and flanges in light liquid service. All piping, pumps and valves in light liquid service are to be constructed, operated and maintained in accordance with the applicable requirements of 40 CFR Part 60, Subpart VV.
- (g) One (1) Dryer for the purpose of drying the wet distillers grain (WDGS). The dryer is to be designed for a maximum heat input rate of 45 MM Btu per hour. The annual operating time for the dryer shall be limited to 50% or 4,380 hours per year based on a 12 month rolling total.
- (h) One (1) Truck and (1) Railcar Loading Terminal for the purpose of transferring denatured ethanol to trucks and railcar for shipment offsite. Truck loading only will be equipped with a flare in order to reduce VOC emissions during truck loading. Rail cars are to be dedicated to ethanol service only.
- (i) One (1) Cooling Tower with a design water circulation rate of 1,500,000 gallons per hour. The cooling tower is to be constructed with up to 4 cells at approximately 375,000 gallons per hour per cell.
- (j) One (1) Biomethanator plant to include a flare. Exhaust emissions from the Biomethanator are to be directed to the dryer, boiler or RTO whenever any of these are operating and to the flare for treatment whenever none of these are operating.
- (k) Plant roads. All roads on plant property are to be paved.
- (l) One (1) 186.0 MMBTUH gas fired package boiler for producing steam for plant fermentation processes.
- (m) Grain receiving conveyor for delivering grain to the ethanol plant storage bins from the adjacent grain elevator.

Addendum

- (n) One unloading pit and two (2) Storage Bin (300,000 bushels capacity total). The unloading pit and bins are to be ventilated to a 15,000 cfm baghouse.
- (o) Three (3) Hammermills ventilated to a 17,550 cfm baghouse.
- (p) One (1) transfer leg conveyor for transferring grain from the grain silos to the day bin (6,000 bushel capacity) and scalper with emissions directed to a 2,000 cfm baghouse.
- (q) One (1) DDGS Type II Cooling Cyclone transport system (with integrated 32,000 cfm baghouse).
- (r) One (1) DDGS Loadout operation (truck/rail) with emissions directed to a 2,000 cfm baghouse.
- (s) One (1) Anhydrous Ammonia Storage Tank (18,000 gallon pressure vessel).

Air Pollution Control Equipment

All air pollution control equipment shall be properly installed, operated and maintained at all times whenever the emissions source that it is designated to control is operating.

- (a) One (1) Regenerative Thermal Oxidizer: The thermal oxidizer (TO) is to be fired with natural gas and designed for a maximum heat input rate of 18.0 MMBtu per hour. The exhaust emissions from the dryer, the process vent mixer, mixer, slurry tanks, centrate tank, yeast tank and the distillation and molecular sieve condensers are to be collected and directed to the thermal oxidizer whenever the ethanol plant is operating.
- (b) One (1) Fabric Filter Baghouse for the purpose of controlling particulate emissions from grain unloading at the loading pit and grain transfer. The unit is to be designed for a 15,000 cubic foot per minute flow rate while operating at ambient temperature.
- (c) One (1) Fabric Filter Baghouse for the purpose of controlling particulate emissions from operation of the hammermills. The unit is to be designed for a 17,550 cubic foot per minute flow rate while operating at ambient temperature.
- (d) One (1) Fabric Filter Baghouse for the purpose of controlling particulate emissions from the grain transfer leg, day bin, and scalper. The unit is to be designed for a 3,750 cfm flow rate while operating at ambient temperature.
- (e) One (1) flare for the purpose of controlling methane emissions from the biomethanator. Gas from the biomethanator shall be directed to the flare whenever the dryer, boiler or RTO are not operating.

Addendum

- (f) One (1) flare for the purpose of controlling VOC emissions from denatured ethanol truck loadout terminal.
- (g) One (1) Fermentation CO2 Scrubber (6,000 cfm) with sodium bisulfite injection capability for the purpose of removing VOCs from the carbon dioxide by-product stream from fermentation. The packed bed water scrubber shall be designed to control emissions of HAPs and VOCs from the CO2 stream.
- (h) One (1) Type II Cyclone (DISA CYCLOPAC 4Y7) Collector with fabric filter (baghouse) for the purpose of cooling and separating the dried distillers grain and solubles prior to storage and load-out areas. The cyclone shall be designed to operate at inlet and outlet gas flow rates of 28,000 cubic feet per minute at 85 degrees Fahrenheit at a pressure drop up to approximately 3.5 inches of water. The Type II Cyclone Collector shall have a baghouse in place for control of particulate matter emissions.
- (i) One (1) fabric filter (baghouse) for the purpose of collecting dust from the DDGS loadout. The baghouse is to be designed to operate at 3,750 cfm.

Attachment A

Performance Test Protocol

Conestoga Energy Partners, LLC
Garden City, Kansas

A detailed performance test protocol, describing all test equipment, procedures, and quality assurance (QA) measures is to be prepared. The protocol must describe the specific sample collection method(s), analytical method(s), facility operating conditions, and parameters to be measured/monitored during the each performance test required by this permit. The following outline identifies the required elements of the performance test protocol.

Project Description

The project description should provide a general description of the proposed project and the testing to be performed. Where appropriate, the following shall be included:

- a. Description of plant processes and control equipment, including flow diagrams.
- b. Proposed operation ranges (production rate(s) temperature(s), flow rate(s), etc.) for the major plant equipment/processes and air pollution control equipment during the stack test program. Performance testing shall be conducted while the plant/processes/air pollution control equipment is operating at conditions representative of how the plant is expected to be operated on an everyday basis, but no less than at 90% of the maximum design rate, unless approved otherwise by the department.
- c. List of operation and emission parameters to be measured during the test and typical operating ranges for these parameters.
- d. Proposed schedule for conducting the performance testing.

Project Organization and Responsibility

A table or chart that identifies the plant and stack testing personnel responsible for conducting the performance test, showing each person's responsibilities and the chain of command.

Quality Assurance Objectives for Measuring Data

Data quality objectives shall be determined and presented in the report submitted to the department for each measurement to ensure that the data collected is appropriate the intended use.

Attachment A

General Sampling Procedure

For each monitored parameter, a description of the sampling procedures to be used shall be provided. Officially approved EPA procedures and Reference Methods must be used where applicable. The general description shall include the following:

- a. Stack diagram showing test ports, their distances from upstream and downstream disturbances, the stack diameter, planned sampling equipment and monitoring locations.
- b. The proposed method for the determination of the presence and degree of cyclonic flow.
- c. The proposed number of sampling traverse points, sampling time at each point, and total sampling volume.
- d. A detailed description of all sampling, sample recovery, and analytical procedures. The entire procedure in the case of nonstandard procedures or modifications should be described with justifications and necessary data for backup. Options offered by the Reference Method should be selected and justified.
- e. Any special conditions for the preparation of the sampling equipment and containers to avoid sample contamination.
- f. Samples of forms to be used to record sample history, sampling conditions, and plant operating conditions.
- g. Methodology for measurement of plant and pollution control device operating conditions.
- h. If more than one sampling train is to be used, detailed description of the relevant sequencing and logistics.
- i. If Continuous Emission Monitors (CEMs) are to be used, detailed description of the operating and data logging procedures.

Attachment A

Specific Sampling Procedures

Test Methods¹

1. Performance testing for the **Regenerative Thermal Oxidizer** shall include the following tests:

Test Method	Parameter/Pollutant
USEPA Method 1:	Sampling Location and Cyclonic Flow Determination
USEPA Method 2:	Velocity and Volumetric Flow Rate
USEPA Method 3:	Stack Gas Molecular Weight
USEPA Method 4:	Stack Gas Moisture Content
USEPA Method 5:	Particulate Matter Emission Rate
USEPA Method 7:	NOx Emission Rate
USEPA Method 9:	Opacity
USEPA Method 10	Carbon Monoxide Emission Rate
USEPA Method 18	GC/FID analysis with on site testing required (acetaldehyde, acetic acid, acrolein, ethanol, formaldehyde, formic acid, lactic acid and methanol).
USEPA Method 25A	Determination of Total VOC Emissions
USEPA Method 202	Condensable Particulate Matter Emission Rate

2. Performance testing for **Hammermilling and Day Bin Baghouse:**

Test Method	Parameter/Pollutant
USEPA Method 1:	Sampling Location and Cyclonic Flow Determination
USEPA Method 2:	Determination of Stack Gas Velocity and Volumetric Flow Rate
USEPA Method 3:	Determination of Stack Gas Molecular Weight
USEPA Method 4:	Determination of Stack Gas Moisture Content
USEPA Method 5:	Determination of Particulate Matter Emission Rate

¹Because the sampling and analytical methods for VOC and HAPs are under constant development, the sampling and analysis for VOC and HAPs shall be conducted in accordance with EPA/KDHE approved methods applicable at the time that the testing occurs.

Attachment A

3. Performance testing for **Type II DDGS Cooling Cyclone/Baghouse:**

Test Method	Parameter/Pollutant
USEPA Method 1:	Sampling Location and Cyclonic Flow Determination
USEPA Method 2:	Determination of Stack Gas Velocity and Volumetric Flow Rate
USEPA Method 3:	Determination of Stack Gas Molecular Weight
USEPA Method 4:	Determination of Stack Gas Moisture Content
USEPA Method 5:	Determination of Particulate Matter Emission Rate
USEPA Method 18	GC/FID analysis with on site testing required (acetaldehyde, acetic acid, acrolein, ethanol, formaldehyde, formic acid, lactic acid and methanol).
USEPA Method 25A	Determination of Total VOC Emissions

4. Performance tests for **DDGS Loadout** baghouse exhaust:

Test Method	Parameter/Pollutant
USEPA Method 1:	Sampling Location and Cyclonic Flow Determination
USEPA Method 2:	Determination of Stack Gas Velocity and Volumetric Flow Rate
USEPA Method 3:	Determination of Stack Gas Molecular Weight
USEPA Method 4:	Determination of Stack Gas Moisture Content
USEPA Method 5:	Determination of Particulate Matter Emission Rate

5. Performance tests for the **Fermentation CO2 Scrubber:**

Test Method	Parameter/Pollutant
USEPA Method 18	GC/FID analysis with on site testing required (acetaldehyde, acetic acid, acrolein, ethanol, formaldehyde, formic acid, lactic acid and methanol).
USEPA Method 25A	Determination of Total VOC Emissions

Attachment A

6. Performance testing for the **Package Boiler** shall include the following tests:

Test Method	Parameter/Pollutant
USEPA Method 1:	Sampling Location and Cyclonic Flow Determination
USEPA Method 2:	Velocity and Volumetric Flow Rate
USEPA Method 3:	Stack Gas Molecular Weight
USEPA Method 4:	Stack Gas Moisture Content
USEPA Method 7E*:	30 Day NOx Emission Rate
USEPA Method 9:	Opacity
USEPA Method 10:	Carbon Monoxide Emission Rate
USEPA Method 18	GC/FID analysis with on site testing required (acetaldehyde, acetic acid, acrolein, ethanol, formaldehyde, formic acid, lactic acid and methanol).
USEPA Method 25A	Determination of Total VOC Emissions
40 CFR 60.46 Test Methods & Proc.	NOx emissions limit of 0.20 lbs/MMBtu (86 ng/J) per 40 CFR 60.44b(a).

Calibration procedures shall be identified and the information provided to KDHE for each measurement device, including coefficients, multipliers, by reference to a standard method or by providing a written description. The frequency planned for recalibration during the test shall be provided KDHE in addition to a list of all calibration standards, including their source and traceability. Equipment to be calibrated includes: dry gas meters, orifice meters, pitot-tubes, thermometers/thermocouples, nozzles, flow meters and may include various process parameter monitors.

*Make note that 40 CFR 60.44b(a) limits emissions of oxides of nitrogen (NO_x) for the gas fired package boiler to 0.20 lbs/MMBtu (86 ng/J).

4.2 Bonanza Construction Modification Air Permit



*Kathleen Sebelius, Governor
Roderick L. Bremby, Secretary*

DEPARTMENT OF HEALTH
AND ENVIRONMENT

www.kdheks.gov

Division of Environment

October 24, 2008

Source ID No. 0550116

Mr. Tom Willis
Chief Executive Officer
Conestoga Energy Partners, LLC
300 North Lincoln, P.O. Box 1178
Liberal, KS 67905-1178

Re: Air Construction Permit for Conestoga Energy Partners, LLC-
Bonanza BioEnergy LLC Facility

Dear Mr. Willis:

Enclosed is the air quality construction permit modification to increase the denatured ethanol throughput to 73.5 million gallons per day at the Bonanza BioEnergy LLC, Facility in Finney County, KS. The source identification number 0550116 should be used in all communication with KDHE about the permitted facility.

Please review the enclosed permit carefully because it obligates the company to certain requirements.

Any questions concerning the Performance Test Protocol required by the enclosed permit should be directed to Mr. Jeremy Duis at our Topeka office. Also, please contact Mr. Duis to arrange the pre-performance test meeting at least thirty (30) days in advance of the date that testing is to be conducted. Mr. Duis may be reached at (785) 296-1542.

In October 2007 KDHE began addressing green house gas (GHG) emissions in Kansas to protect the health and environment of Kansans. To accomplish this task, KDHE will engage industries and stakeholders to establish goals for reducing GHG emissions and strategies to achieve them. Therefore, in accordance with K.S.A. 65-3005(j), KDHE is seeking your cooperation to voluntarily implement strategies, including the development and use of innovative technologies, market-based principles and other private initiatives to reduce or prevent GHG emissions.

DIVISION OF ENVIRONMENT
Bureau of Air & Radiation
Air Permitting Section

CURTIS STATE OFFICE BUILDING, 1000 SW JACKSON ST., STE. 310, TOPEKA, KS 66612-1366

Voice 785-296-1570 Fax 785-291-3953

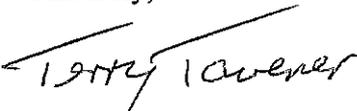
Bonanza BioEnergy Application Pg. 74

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Mr. Tom Willis
October 24, 2008

As provided for in K.S.A. 65-3008b(e), an owner or operator may request a hearing within 15 days after affirmations, modification or reversal of a permit decision pursuant to subsection (b) of K.S.A. 65-3008a. In the Request for Hearing, the owner or operator shall specify the provision of this act or rule and regulation allegedly violated, the facts constituting the alleged violation and secretary's intended action. Such request must be submitted to: Director, Office of Administrative Hearings, 1020 S. Kansas Avenue, Topeka, Kansas 66612-1327. Failure to submit a timely request shall result in a waiver of the right to hearing.

If you have any questions, please contact me at (785) 296-0365.

Sincerely,


for Sergio Guerra
Engineering Associate
Air Permitting Section

SG:csm
Enclosure
c: Southwest District Office
C-8062



Kathleen Sebelius, Governor
Roderick L. Bremby, Secretary

DEPARTMENT OF HEALTH
AND ENVIRONMENT

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Division of Environment

AIR EMISSION SOURCE CONSTRUCTION PERMIT

Source ID No. 0550116

Effective Date: July 20, 2006 (Modified on October 24, 2008)

Source Name: Conestoga Energy Partners, LLC

SIC Code: 2869; Industrial Organic Chemicals Not Elsewhere Classified

NAICS Code: 325193; Ethyl Alcohol Manufacturing

Source Location: Bonanza BioEnergy, LLC Facility
2830 East US Highway 50
Garden City, Kansas

Mailing Address: 300 North Lincoln, P.O. Box 1178
Liberal, Kansas 67905-1178

Contact Person: Tom Willis, Chief Executive Officer
(620) 626-2021

This permit is issued pursuant to K.S.A. 65-3008 as amended.

Summary of Modified Requirements, Conditions, Standards, or Limitations

Conestoga Energy Partners, LLC (Conestoga) proposes to increase the denatured ethanol throughput from 55.00 to 73.5 million gallons per year (MMGal/yr) at their Bonanza BioEnergy, LLC facility in Finney County. The facility also proposes to reduce distiller dried grains with solubles (DDGS) drying operating time to 50% on an annual basis. Conestoga also installed and is operating a 186 MMBtu/hr boiler instead of the two 62.5 MMBtu/hr boilers permitted in the original construction permit. The boiler in operation is subject to 40 CFR Part 60, Subpart Db – Industrial-Commercial-Institutional Steam Generating Units. This requirement has been added to the permit. As-built equipment conditions are also updated in this permit.

DIVISION OF ENVIRONMENT
Bureau of Air & Radiation
Air Permitting Section

CURTIS STATE OFFICE BUILDING, 1000 SW JACKSON ST., STE. 310, TOPEKA, KS 66612-1366

Voice 785-296-1570 Fax 785-291-3953
Bonanza BioEnergy Application Pg. 76

Description of Activity Subject to Air Pollution Control Regulations

Conestoga Energy Partners, LLC owns and operates a fuel grade ethanol (ethyl alcohol) manufacturing facility in Finney County that uses corn (and milo) as their primary raw material. The plant produces distiller's dried grains and solubles (DDGS) and wet cake for animal feed as a by-product of the alcohol manufacturing process. The ethanol plant is located on land adjacent to an existing grain elevator (Wind River Grain, LLC). The ethanol plant is free to purchase grain on the open market. Local farmers are free to supply grain either directly to the proposed ethanol plant, or to the existing grain elevator. The grain elevator is free to sell grain to the ethanol plant, or to any other customer(s) of choice. Operating under this scenario, the two facilities are considered to operate as independent entities for the purpose of applicability under the prevention of significant deterioration (PSD) air permitting program.

This permit contains federally enforceable conditions that limit the emission of PSD criteria air pollutants from the ethanol plant to below the major source threshold of 100 tons per year. This permit also provides for re-evaluation of the PSD applicability/support facility status of the grain elevator, in the event that contracts or other types of binding agreements cause the ethanol plant and grain elevator to become one emission source. The permit also requires use of control equipment that will limit the emission of hazardous air pollutants (HAP) to less than the HAP major source thresholds of ten (10) tons per year for a single HAP and twenty-five tons (25) per year for any combination of HAPs.

Emissions of particulate matter (PM), PM with an aerodynamic diameter less than or equal to ten microns (PM₁₀), oxides of nitrogen (NO_x), carbon monoxide (CO), oxides of sulfur (SO_x) and volatile organic compounds (VOCs) were evaluated by the department during the permit review process for the proposed facility. Construction of the proposed facility is subject to the provisions of K.A.R. 28-19-300 (construction permits and approvals; applicability) because the project's potential-to-emit (PTE) exceeds twenty-five (25) tons per year of PM, fifteen (15) tons per year of PM₁₀ and forty (40) tons per year of NO_x, and VOCs. Additionally, a new source performance standard (Subpart Db) is applicable.

Significant Applicable Air Regulations

The proposed project is subject to KDHE rules relating to air pollution control. The following significant air quality requirements were determined to be applicable to this source:

1. KAR 28-19-20. Particulate Matter Emission Limitations.
2. KAR 28-19-650(a)(3). Opacity Requirements.
3. KAR 28-19-31. Boiler Requirements.

4. KAR 28-19-720. New Source Performance Standards, by reference, the following:
 - a. 40 CFR Part 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid (VOL) Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984.
 - b. 40 CFR Part 60, Subpart VV - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry.
 - c. 40 CFR Part 60, Subpart Db – Industrial-Commercial-Institutional Steam Generating Units.

Air Emission Unit Technical Specifications

The following equipment, or equivalent, is approved:

1. Grain Receiving & Processing Facilities:
 - a. An unloading grain receiving pit and two (2) storage bins/silos each with a storage capacity of less than 150,000 bushels or 300,000 bushels total storage capacity.
 - b. A mechanical conveyor (owned by the permittee) for transfer grain from the existing elevator to the two (2) grain storage bins/silos.
 - c. One day storage bin with a storage capacity of 6,000 bushels.
 - d. Three (3) hammermills.
 - e. Equipment necessary for loading distiller's dried grains and solubles (DDGS) into trucks and railcars for shipment off-site.
2. One (1) Ethanol Manufacturing Plant: storage tanks, various pumps, piping and valves, fermentation process vessels, carbon dioxide scrubber, distillation units, molecular sieves, condensers, centrifuges, evaporators, package boiler, 1-DDGS dryer, methanator and product loadout.

Specific plant equipment:

- a. Two (2) Tanks - 750,000 Gallons each for the purpose of storing product grade denatured ethanol. Each tank is to be equipped with an interior floating roof and double wiper seal system that meets the applicable requirements of 40 CFR Part 60, Subpart Kb.
- b. One (1) Tank - 165,000 Gallons for the purpose of storing 200 proof (100%) ethanol. The tank is to be equipped with an interior floating roof and double wiper seal system that meets the applicable requirements of 40 CFR Part 60, Subpart Kb.
- c. One (1) Tank - 165,000 Gallons for the purpose of storing 190 proof (95%) ethanol. The tank is to be equipped with an interior floating roof and double wiper seal system that meets the applicable requirements of 40 CFR Part 60, Subpart Kb.
- d. One (1) Tank - 165,000 Gallons for the purpose of storing denaturant (natural gasoline or unleaded). The tank is to be equipped with an interior floating roof and double wiper seal system that meets the applicable requirements of 40 CFR Part 60, Subpart Kb.
- e. One (1) Tank - 2,200 Gallons for the purpose of storing low vapor pressure corrosion inhibitor (proprietary ingredients of low vapor pressure with less than 10% xylene).
- f. Piping, Pumps and Valves: pumps, valves and flanges in light liquid service. All piping, pumps and valves in light liquid service are to be constructed, operated and maintained in accordance with the applicable requirements of 40 CFR Part 60, Subpart VV.
- g. One (1) Dryer for the purpose of drying the wet distillers grain (WDGS). The dryer is to be designed for a maximum heat input rate of 45 MM Btu per hour. The annual operating time for the dryer shall be limited to 50% or 4,380 hours per year based on a 12 month rolling total.
- h. One (1) Truck and (1) Railcar Loading Terminal for the purpose of transferring denatured ethanol to trucks and railcar for shipment offsite. Truck loading only will be equipped with a flare in order to reduce VOC emissions during truck loading. Rail cars are to be dedicated to ethanol service only.

- i. One (1) Cooling Tower with a design water circulation rate of 1,500,000 gallons per hour. The cooling tower is to be constructed with up to 4 cells at approximately 375,000 gallons per hour per cell.
- j. One (1) Biomethanator plant to include a flare. Exhaust emissions from the Biomethanator are to be directed to the dryer, boiler or RTO whenever any of these are operating and to the flare for treatment whenever none of these are operating.
- k. Plant roads. All roads on plant property are to be paved.
- l. One (1) 186.0 MMBTUH gas fired package boiler for producing steam for plant fermentation processes.
- m. Grain receiving conveyor for delivering grain to the ethanol plant storage bins from the adjacent grain elevator.
- n. One unloading pit and two (2) Storage Bin (300,000 bushels capacity total). The unloading pit and bins are to be ventilated to a 15,000 cfm baghouse.
- o. Three (3) Hammermills ventilated to a 17,550 cfm baghouse.
- p. One (1) transfer leg conveyor for transferring grain from the grain silos to the day bin (6,000 bushel capacity) and scalper with emissions directed to a 2,000 cfm baghouse.
- q. One (1) DDGS Type II Cooling Cyclone transport system (with integrated 32,000 cfm baghouse).
- r. One (1) DDGS Loadout operation (truck/rail) with emissions directed to a 2,000 cfm baghouse.
- s. One (1) Anhydrous Ammonia Storage Tank (18,000 gallon pressure vessel).

Air Pollution Control Equipment

All air pollution control equipment shall be properly installed, operated and maintained at all times whenever the emissions source that it is designated to control is operating.

1. One (1) Regenerative Thermal Oxidizer: The thermal oxidizer (TO) is to be fired with natural gas and designed for a maximum heat input rate of 18.0 MMBtu per hour. The exhaust emissions from the dryer, the process vent mixer, mixer, slurry tanks, centrate tank, yeast tank and the distillation and molecular sieve condensers are to be collected and directed to the thermal oxidizer whenever the ethanol plant is operating.
2. One (1) Fabric Filter Baghouse for the purpose of controlling particulate emissions from grain unloading at the loading pit and grain transfer. The unit is to be designed for a 15,000 cubic foot per minute flow rate while operating at ambient temperature.
3. One (1) Fabric Filter Baghouse for the purpose of controlling particulate emissions from operation of the hammermills. The unit is to be designed for a 17,550 cubic foot per minute flow rate while operating at ambient temperature.
4. One (1) Fabric Filter Baghouse for the purpose of controlling particulate emissions from the grain transfer leg, day bin, and scalper. The unit is to be designed for a 3,750 cfm flow rate while operating at ambient temperature.
5. One (1) flare for the purpose of controlling methane emissions from the biomethanator. Gas from the biomethanator shall be directed to the flare whenever the dryer, boiler or RTO are not operating.
6. One (1) flare for the purpose of controlling VOC emissions from denatured ethanol truck loadout terminal.
7. One (1) Fermentation CO2 Scrubber (6,000 cfm) with sodium bisulfite injection capability for the purpose of removing VOCs from the carbon dioxide by-product stream from fermentation. The packed bed water scrubber shall be designed to control emissions of HAPs and VOCs from the CO2 stream.
8. One (1) Type II Cyclone (DISA CYCLOPAC 4Y7) Collector with fabric filter (baghouse) for the purpose of cooling and separating the dried distillers grain and solubles prior to storage and load-out areas. The cyclone shall be designed to operate at inlet and outlet gas flow rates of 28,000 cubic feet per minute at 85 degrees Fahrenheit at a pressure drop up to approximately 3.5 inches of water. The Type II Cyclone Collector shall have a baghouse in place for control of particulate matter emissions.
9. One (1) fabric filter (baghouse) for the purpose of collecting dust from the DDGS loadout. The baghouse is to be designed to operate at 3,750 cfm.

Air Emissions Estimates from the Proposed Activity

POLLUTANT	Emissions (Tons per year)		
	Potential-to-Emit ¹		Estimated Operating ²
	Pre-Permit	Post-Permit	
PM	>100	< 100	99.4
PM ₁₀	>100	< 100	52.9
NO _x	>100	< 100	99.2
CO	>100	< 100	99.6
SO _x	>100	< 100	20.2
VOC	>100	< 100	99.5
HAPs (combined)	>25	< 25	15.0
HAP (Acetaldehyde)	>10	< 10	8.1

Air Emission Limitations

1. K.A.R. 28-19-20 limits the quantity of particulate emissions from processing equipment in proportion to the rate at which materials are processed. This regulation applies to the grain unloading/DDGS loading system and the hammermills. Based upon information provided in the permit application, these emission units are expected to operate in compliance with K.A.R. 28-19-20.
2. K.A.R. 28-19-650(a)(3) limits opacity of visible emissions to 20% for all emission units, except for the flares that are used to control emissions from the methanators and the truck loadout terminal.

¹ Potential-to-emit means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, is treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

² Estimated operating emissions are those emissions from a stationary source based on proposed conditions and hours of operation.

3. The flares used to control emissions from the biomethanator and truck loadout terminal shall be designed and properly operated to emit no visible emissions in accordance with 40 CFR 60.18.
4. Measured as specified in a performance test protocol approved by the department, emissions from the thermal oxidizer (i.e., dryer plus RTO), combined with the emissions from the boiler shall contain no greater than 90.7 tons of NO_x, 86.0 tons of CO, during each consecutive twelve (12) month period.
5. Measured as specified in a performance test protocol approved by the department, combined emissions from the thermal oxidizer (dryer plus RTO), boiler, Type II Cooling Cyclone , and CO₂ scrubber shall contain no greater than 63.0 tons of VOC and no greater than 8.5 tons of any single HAP and 10.63 tons of any combination of HAPs during each consecutive twelve (12) month period.
6. Measured as specified in a performance test protocol approved by the department, combined emissions from the thermal oxidizer (dryer off), boiler, Type II Cooling Cyclone , and CO₂ scrubber shall contain no greater than 58.5 tons of VOC and no greater than 8.5 tons of any single HAP and 10.07 tons of any combination of HAPs during each consecutive 12 month period.
7. Measured as specified in a performance test protocol approved by the department, the combined emissions of particulate matter (PM) and PM with an aerometric diameter equal to or less than ten (10) microns shall be less than 33.3 tons during each consecutive twelve (12) month period emitted from the following.
 - grain unloading baghouse
 - transfer leg/day bin/scalper baghouse
 - grain milling baghouse,
 - DDGS loadout baghouse
 - the Type II cooling system baghouse
 - boiler
 - RTO (DDGS Dryer online)
8. 40 CFR 60.44b(a) limits emissions of oxides of nitrogen (NO_x) for the gas fired package boiler to 0.20 lbs/MMBtu (86 ng/J).

Permit Conditions

1. The maximum amount of grain processed shall not exceed 25,925,926 bushels during each consecutive twelve-month period.

2. The maximum production rate of denatured fuel grade ethanol shall not exceed 73.5 million gallons during each consecutive twelve month period.
3. In the event that it is determined by the department that any contract, or any other type of binding agreement between the ethanol plant and the grain elevator has caused the grain elevator to become a support facility for the ethanol plant, the ethanol plant and the grain elevator shall become one emission source; and together, as one emission source, they shall be subject to the applicable requirements of the PSD permitting program, as specified in K.A.R. 28-19-350.
4. All air pollution control equipment shall be properly installed, operated and maintained at all times whenever the emissions source that it is designated to control is operating.
5. The thermal oxidizer shall be equipped with a monitoring device to continuously measure and record the thermal oxidizer's combustion temperature. The combustion temperature shall be maintained at or above the minimum temperature at which the oxidizer operated during a successful RTO performance test conducted in accordance with this permit.
6. The dryer is to be designed for a maximum heat input rate of 45 MM Btu per hour and shall process no more 57,101 tons of DDGS during any consecutive twelve (12) month period.
7. A written air pollution control equipment maintenance plan shall be developed, implemented, and maintained for all air pollution control equipment and the plant roads within 180 days of startup of the plant.
8. All roads on plant property shall be paved. Maintenance shall be performed on all roads on plant property, as necessary, to ensure that the structural integrity of the paved roads is preserved and that fugitive emissions of PM and PM₁₀ from all roads on plant property is minimized.
9. The transfer rate of product grade ethanol through the truck/railcar loading terminal shall be no greater than 73,500,000 gallons during any consecutive twelve (12) month period.

NSPS Subpart Kb Tank Conditions

10. The permittee shall equip all floating roof tanks with a fixed roof in combination with an internal floating roof meeting the following specifications [40 CFR 60.112b(a)(1)]:
 - a. The internal floating roof shall rest or float on the liquid surface (but not necessarily in complete contact with it) inside a storage vessel that has a fixed roof. The internal floating roof shall be floating on the liquid surface at all times, except during initial fill and during those intervals when the storage vessel is

completely emptied and refilled. When the roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be accomplished as rapidly as possible [40 CFR 60.112b(a)(1)(i)].

- b. The internal floating roof shall be equipped with a seal meeting the requirements of 40 CFR 60.112b(a)(1)(ii) as a closure device between the wall of the storage vessel and the edge of the internal floating roof [40 CFR 60.112b(a)(1)(ii)].
- c. Each opening in a noncontact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents shall provide a projection below the liquid surface [40 CFR 60.112b(a)(1)(iii)].
- d. Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains shall be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when they are in use [40 CFR 60.112b(a)(1)(iv)].
- e. Automatic bleeder vents shall be equipped with a gasket and shall be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports [40 CFR 60.112b(a)(1)(v)].
- f. Rim space vents shall be equipped with a gasket and shall be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting [40 CFR 60.112b(a)(1)(vi)].
- g. Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least 90 percent of the opening [40 CFR 60.112b(a)(1)(vii)].
- h. Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover [40 CFR 60.112b(a)(1)(viii)].
- i. Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover [40 CFR 60.112b(a)(1)(ix)].

NSPS Subpart VV Conditions - Pumps in Light Liquid Service

- 11. Each pump in light liquid service shall be monitored monthly to detect leaks by the methods specified in 40 CFR 60.485(b), except as provided at 40 CFR 60.482-1(c) and paragraphs (d), (e), and (f) of 40 CFR 60.482-2.

12. Each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.
13. When an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
14. If there are indications of liquids dripping from the pump seal, a leak is detected.
15. When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided at 40 CFR 60.482-9.
16. A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

NSPS Subpart VV Conditions - Valves in Gas/Vapor Service and Valves in Light Liquid Service

17. Each valve in VOC service shall be monitored monthly to detect leaks by the test methods and procedures specified at 40 CFR 60.485(b).
18. When an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
19. Any valve for which a leak is not detected for 2 successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected.
20. If a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.
21. When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided at 40 CFR 60.482-9.
22. A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
23. First attempts at repair include, but are not limited to, the following best practices where practicable:
 - (a) Tightening of bonnet bolts;
 - (b) Replacement of bonnet bolts;
 - (c) Tightening of packing gland nuts;
 - (d) Injection of lubricant into lubricated packing.

NSPS Subpart Db Conditions –Industrial-Commercial-Institutional Steam Generating Units

24. The boiler shall meet the following emission limitations and conditions:
- (a) Perform a 30 day startup continuous NO_x emission monitoring test to show compliance with the 0.20 lbs/MMBtu limit.
[40 CFR 60.48(b)]
25. The continuous emission monitoring system (CEMS) shall measure and record the concentration of NO_x from the 186 MMBtu/hr natural gas fired boiler in order to demonstrate compliance with 40 CFR 60.44b [40 CFR 60.46b(c)].
- (a) The CEMS shall meet the design and performance specifications, pass the field tests, and meet the installations requirements and the data analysis and reporting requirements specified in the Performance Specification Number 2, 40 CFR Part 60, Appendix B.
 - (b) The permittee shall assure that the CEMS meets the applicable quality-assurance requirements specified in 40 CFR Part 60, Appendix F, Procedure 1. Relative accuracy exceedances, as specified in 40 CFR Part 60, Appendix F, § 5.2.3 and any CEMS downtime shall be reported to KDHE, and necessary corrective action shall be taken
 - (c) The monitoring data shall be reduced to eight-hour average concentrations at least once every day, using a minimum of four equally spaced data points from each one-hour period. The individual average concentrations shall be reduced to units of pounds per MM Btu at least once every week.
 - (d) All monitoring data and quality-assurance data shall be maintained by the source. The data from the CEMS may, at the discretion of the KDHE, be used to determine compliance with the conditions of this permit.
 - (e) The KDHE shall be notified at least 30 days prior to any required RATA in order to provide the opportunity to observe the testing.
 - (f) Quality-assured (or valid) data must be generated when the boiler is operating except during the performance of a daily zero and span check. The measurements missed due to startup, shutdown or malfunction, shall be estimated using engineering judgment and the methods used recorded. Options to increase system reliability to an acceptable value, including a redundant CEMS, may be required.

Performance Testing Protocol

The owner or operator shall prepare and submit a performance testing protocol to the department at least thirty (30) days in advance of a pre-performance test meeting required by this permit. The protocol shall be prepared in accordance with Attachment A to this permit.

Pre-Performance Test Meeting

The owner or operator shall arrange a pre-performance test meeting with the department, either in person, or via a telephone conference call, at least thirty (30) days in advance of the date that the performance testing required by this permit is to be conducted. The purpose of the meeting shall be to outline and discuss the schedule and implementation plans for conducting the performance testing required by this permit. The department may elect to have an observer(s) on-site at the facility during any or all performance testing required by this permit.

Performance Test Requirements

1. All performance testing, notifications, reporting of results and performance test compliance time-frames shall be conducted/deadlines met in accordance with the requirements of 40 CFR 60.8.
2. Performance testing required by this permit shall be conducted initially, as described herein; and then again once during each of the two (2) years following successful completion of the initial performance testing. These test must be completed no less than nine (9) and no greater than twelve(12) months apart. Upon successful completion of three (3) consecutive tests, the frequency of testing may be reduced to once during each three (3) year period thereafter, so long as each test is completed successfully. In the event that a performance test is not completed successfully, the frequency of testing shall return to once annually, until three (3) consecutive successful tests have again been demonstrated.
3. For the purpose of the permit, a *successful performance test* means a test completed in accordance with a performance test protocol approved by the department, during which all of the emissions limitations required by this permit were met.
4. Performance testing shall be conducted in accordance with a performance test protocol approved by the department to verify compliance with the emission limitations, conditions and requirements of this permit. If the facility does not operate the dryer in the 12-months prior to the date of the performance test, then the facility shall demonstrate

compliance with *Air Emission Limitation 6*, and *Air Emission Limitation 5* will not apply. Otherwise, if the facility operates the dryer anytime during the 12-months prior to the date of the performance test, then the facility shall demonstrate compliance with *Air Emission Limitations 5 and 6*.

5. Tanks: After installing a permanently fixed roof and internal floating roof on the IFR tanks, the facility shall [40 CFR 60.113b(a)]:
 - a. Visually inspect the internal floating roof and the primary seal prior to filling the storage vessel with any volatile organic liquid (VOL). If there are holes, tears, or other openings in the primary seal, secondary seal, or the seal fabric or defects in the internal floating roof, or both, the facility shall repair the items before filling the storage vessel [40 CFR 60.113b(a)(1)].
 - b. If the vessel is equipped with a liquid-mounted or mechanical shoe seal, the facility shall visually inspect the internal floating roof and the primary seal through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill. If the internal floating roof is not resting on the surface of the VOL inside the storage vessel, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric, the facility shall repair the items or empty and remove the storage vessel from service within 45 days. [40 CFR 60.113b(a)(2)]. If the vessel is equipped with a double-seal system, the facility shall comply with the requirements at 40 CFR 60.113b(a)(3).
 - c. Visually inspect the internal floating roof, the primary seal, gaskets, slotted membranes, and sleeve seals (if any) each time the storage vessel is emptied and degassed. If the internal floating roof has defects, the primary seal has holes, tears, or other openings in the seal or seal fabric, or the gaskets no longer close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10 percent open area, the facility shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the storage vessel with VOL. In no event shall inspections conducted in accordance with this paragraph occur at intervals greater than 10 years in the case of vessels conducting annual inspections as specified in Performance Testing and Compliance Item No. 4(b) [40 CFR 60.113b(a)(4)].

Record Keeping Requirements

1. The facility shall monitor and record the quantity of grain processed, fuel grade ethanol produced and DDGS produced as specified in Permit Conditions 1, 2 and 6 of this permit. Each record shall be updated monthly, no later than the last day of the month following the month to which the records relates. Each record shall be kept on-site at the facility for a minimum of two (2) years from the date of record.

2. The facility shall maintain a log showing the date of all routine, or any other maintenance, malfunction or repair of the VOC and PM/PM10 control equipment, the nature of the action taken on such date and any corrective action or preventive measures taken.
3. For *Air Emission Limitations 4-7* performance test records shall be maintained to ensure compliance with the emission limits included therein.

NSPS Subpart Kb Record Keeping – IFR Tanks

4. The facility shall keep readily accessible records showing the dimensions of the IFR Subpart Kb tanks listed and an analysis showing the capacity of each tank. These records must be kept for the life of the tanks [40 CFR 60.116b(b)].
5. In accordance with 40 CFR 60.7(b), the facility shall maintain records of the occurrence of any startup, shutdown, or malfunction in the operation of tanks.
6. The facility shall maintain a record of the VOL stored, the period of storage, and the maximum true vapor pressure of that VOL during the respective storage period. This record shall be kept on-site for at least 2 years [40 CFR 60.116b(a)].
7. The facility shall keep a record of each inspection performed as required by Performance Test Requirements 4(a), 4(b), and 4(c). Each record shall identify the storage vessel on which the inspection was performed and shall contain the date the vessel was inspected and the observed condition of each component of the control equipment (seals, internal floating roof, and fittings) [40 CFR 60.115b(a)(2)].

NSPS Subpart VV - All Piping Equipment (Valves and Pumps)

8. In accordance with 40 CFR 60.7(b), the facility shall maintain records of the occurrence of any startup, shutdown, or malfunction in the operation of all piping equipment.
9. When each leak is detected as specified, a weatherproof and readily visible identification (tag), marked with the equipment identification number, shall be attached to the leaking equipment. The identification on the pressure relief device may be removed after it has been repaired.
10. When each leak is detected as specified, the following information shall be recorded in a log and shall be kept for 2 years in a readily accessible location:
 - a. The instrument and operator identification numbers and the equipment identification number.

- b. The date the leak was detected and the dates of each attempt to repair the leak.
 - c. Repair methods applied in each attempt to repair the leak.
 - d. "Above 10,000 ppm" if the maximum instrument reading measured by the methods specified after each repair attempt is 10,000 ppm or greater.
 - e. "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.
 - f. The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.
 - g. The expected date of successful repair of the leak if a leak is not repaired within 15 days.
 - h. Dates of process unit shutdowns that occur while the equipment is unrepaired.
 - i. The date of successful repair of the leak.
- 11. The facility shall develop and maintain a list of identification numbers for equipment subject to 40 CFR Part 60 Subpart VV.
 - 12. The facility shall maintain a list of identification numbers for equipment that are designated for no detectable emissions as provided at 40 CFR 60.482-2(e), 40 CFR 60.482-3(i), and 40 CFR 60.482-7(f). The designation shall be signed by a facility representative.
 - 13. The facility shall maintain a list of equipment identification numbers for pressure relief devices.
 - 14. The facility shall maintain records of the dates of each compliance test as required, the background level measured during each compliance test and the maximum instrument reading measured at the equipment during each compliance test.
 - 15. The facility shall maintain a list of identification numbers for equipment in vacuum service.
 - 16. All records required to be kept by this permit shall be maintained on site at the facility for at least two (2) years from the date of record.

NSPS Subpart Db Conditions –Industrial-Commercial-Institutional Steam Generating Units

17. The facility shall maintain a record of the first NO_x 30 day performance test if KDHE does not subject the package boiler to continuous NO_x emission monitoring (CEMS) alternative [40 CFR 60.49b].
18. The facility shall maintain records in accordance with the proposed KDHE approved Operations Monitoring Plan for NO_x compliance [40 CFR 60.49b].

Reporting

NSPS Kb Reporting – IFR Tanks

1. The facility shall furnish KDHE reports of the following information [40 CFR 60.115b], and the facility shall keep copies of all reports on-site for at least two years from the date of the report.
 - a. Furnish the KDHE with a report that describes the as-built control equipment and certifies that the control equipment meets the applicable specifications. The report shall be appended to the notification required [40 CFR 60.115b(a)(1)].
 - b. If any of the conditions described in Performance Test Requirement Item No. 4(b) (preceding) are detected during the annual visual inspection required by Performance Test Requirement 4(b), a report shall be furnished to the KDHE within 30 days of the inspection. Each report shall identify the storage vessel, the nature of the defects, and the date the storage vessel was emptied or the nature of and date the repair was made (40 CFR 60.115b(a)(3)).

NSPS VV Reporting - All Piping Equipment

2. The facility shall submit semiannual reports to the KDHE beginning six months after the initial startup date.
3. The initial semiannual report to KDHE shall include the following information:
 - a. Process unit identification.
 - b. Number of valves subject to the requirements of 40 CFR Part 60 Subpart VV, Standards for valves in gas/vapor service in light liquid service, excluding those designated for no detectable emissions or under negative pressure.
 - c. Number of pumps subject to the requirements of 40 CFR Part 60 Subpart VV, Standards for pumps in light liquid service, excluding those designated for no detectable emissions.

4. The semiannual reports to KDHE shall include the following information, summarized from records required to be kept onsite (40 CFR 60.487(c)):
 - a. Process unit identification.
 - b. For each month during the semiannual reporting period:
 - i. Number of valves for which leaks were detected,
 - ii. Number of valves for which leaks were not repaired as required,
 - iii. Number of pumps for which leaks were detected,
 - iv. Number of pumps for which leaks were not repaired as required,
 - v. The facts that explain each delay of repair and, where appropriate, why a process unit shutdown was technically infeasible,
 - c. Dates of process unit shutdowns which occurred within the semiannual reporting period,
 - d. Revisions to items reported if changes have occurred since the initial report or subsequent revisions to the initial report.
5. The facility shall report the results of all performance tests to the KDHE, by reference, 40 CFR 60.8.

NSPS Subpart Db Conditions –Industrial-Commercial-Institutional Steam Generating Units

6. The facility shall report of the results of all performance tests to the KDHE, by reference, 40 CFR 60.8(a) within 30 days of receipt of any test data from performance test contractor.

Notification

1. Written notifications (40 CFR 60.7) of the following shall be submitted to KDHE:
 - a. for all tanks, piping equipment and the Boiler, the date construction commenced, postmarked no less than 30 days after such date;
 - b. for all tanks and piping, the actual date of initial startup of the project, postmarked within fifteen (15) days after such date; and

- c. for all tanks, the date when initial performance testing is to commence postmarked no less than 30 days prior to such date.

A NSPS notification form (or format, or a letter) may be used to submit the above required notifications.

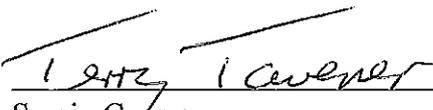
2. The facility [40 CFR 60.7(a)(4)] shall provide written notification for any physical or operational change which may increase the emission rate of any air pollutant to which a standard, or emission limitation (contained in this permit) applies. The notification must be postmarked 60 days, or as soon as practicable, before the change is commenced and shall include information described in the following:
 - a. the precise nature of the change;
 - b. the production capacity before and after the change; and
 - c. the expected completion date of the change.
3. The facility shall notify KDHE when construction of the plant is complete so that an evaluation may be conducted.

General Provisions

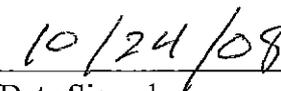
1. This document shall become void if the construction or modification has not commenced within 18 months of the effective date, or if the construction or modification is interrupted for a period of 18 months or longer.
2. A construction permit or approval must be issued by KDHE prior to commencing any construction or modification of equipment or processes other than activities provided for under this approval which results in potential-to-emit increases equal to or greater than the thresholds specified at K.A.R. 28-19-300.
3. Upon presentation of credentials and other documents as may be required by law, representatives of the KDHE (including authorized contractors of the KDHE) shall be allowed to:
 - a. enter upon the premises where a regulated facility or activity is located or conducted or where records must be kept under conditions of this document;
 - b. have access to and copy, at reasonable times, any records that must be kept under conditions of this document;

- c. inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this document; and
 - d. sample or monitor, at reasonable times, for the purposes of assuring compliance with this document or as otherwise authorized by the Secretary of the KDHE, any substances or parameters at any location.
4. The emission unit or stationary source which is the subject of this document shall be operated in compliance with all applicable requirements of the Kansas Air Quality Act and the federal Clean Air Act.
 5. This document is subject to periodic review and amendment as deemed necessary to fulfill the intent and purpose of the Kansas Air Quality Statutes and Regulations.
 6. This document does not relieve the owner/operator of the obligation to obtain other approvals, permits, licenses, or documents of sanction which may be required by other federal, state, or local agencies.
 7. Issuance of this document does not relieve the owner or operator of any requirement to obtain an air quality operating permit under any applicable provision of K.A.R. 28-19-500.

Permit Engineer

for 

Sergio Guerra
Engineering Associate
Air Permitting Section



Date Signed

SG:csm
C-8062

Attachment A

Performance Test Protocol

Conestoga Energy Partners, LLC
Garden City, Kansas

A detailed performance test protocol, describing all test equipment, procedures, and quality assurance (QA) measures is to be prepared. The protocol must describe the specific sample collection method(s), analytical method(s), facility operating conditions, and parameters to be measured/monitored during the each performance test required by this permit. The following outline identifies the required elements of the performance test protocol.

Project Description

The project description should provide a general description of the proposed project and the testing to be performed. Where appropriate, the following shall be included:

- a. Description of plant processes and control equipment, including flow diagrams.
- b. Proposed operation ranges (production rate(s) temperature(s), flow rate(s), etc.) for the major plant equipment/processes and air pollution control equipment during the stack test program. Performance testing shall be conducted while the plant/processes/air pollution control equipment is operating at conditions representative of how the plant is expected to be operated on an everyday basis, but no less than at 90% of the maximum design rate, unless approved otherwise by the department.
- c. List of operation and emission parameters to be measured during the test and typical operating ranges for these parameters.
- d. Proposed schedule for conducting the performance testing.

Project Organization and Responsibility

A table or chart that identifies the plant and stack testing personnel responsible for conducting the performance test, showing each person's responsibilities and the chain of command.

Quality Assurance Objectives for Measuring Data

Data quality objectives shall be determined and presented in the report submitted to the department for each measurement to ensure that the data collected is appropriate the intended use.

General Sampling Procedure

For each monitored parameter, a description of the sampling procedures to be used shall be provided. Officially approved EPA procedures and Reference Methods must be used where applicable. The general description shall include the following:

- a. Stack diagram showing test ports, their distances from upstream and downstream disturbances, the stack diameter, planned sampling equipment and monitoring locations.
- b. The proposed method for the determination of the presence and degree of cyclonic flow.
- c. The proposed number of sampling traverse points, sampling time at each point, and total sampling volume.
- d. A detailed description of all sampling, sample recovery, and analytical procedures. The entire procedure in the case of nonstandard procedures or modifications should be described with justifications and necessary data for backup. Options offered by the Reference Method should be selected and justified.
- e. Any special conditions for the preparation of the sampling equipment and containers to avoid sample contamination.
- f. Samples of forms to be used to record sample history, sampling conditions, and plant operating conditions.
- g. Methodology for measurement of plant and pollution control device operating conditions.
- h. If more than one sampling train is to be used, detailed description of the relevant sequencing and logistics.
- i. If Continuous Emission Monitors (CEMs) are to be used, detailed description of the operating and data logging procedures.

Specific Sampling Procedures

Test Methods¹

1. Performance testing for the **Regenerative Thermal Oxidizer** shall include the following tests:

Test Method	Parameter/Pollutant
USEPA Method 1:	Sampling Location and Cyclonic Flow Determination
USEPA Method 2:	Velocity and Volumetric Flow Rate
USEPA Method 3:	Stack Gas Molecular Weight
USEPA Method 4:	Stack Gas Moisture Content
USEPA Method 5:	Particulate Matter Emission Rate
USEPA Method 7:	NOx Emission Rate
USEPA Method 9:	Opacity
USEPA Method 10	Carbon Monoxide Emission Rate
USEPA Method 18	GC/FID analysis with on site testing required (acetaldehyde, acetic acid, acrolein, ethanol, formaldehyde, formic acid, lactic acid and methanol).
USEPA Method 25A	Determination of Total VOC Emissions
USEPA Method 202	Condensable Particulate Matter Emission Rate

2. Performance testing for **Hammermilling and Day Bin Baghouse:**

Test Method	Parameter/Pollutant
USEPA Method 1:	Sampling Location and Cyclonic Flow Determination
USEPA Method 2:	Determination of Stack Gas Velocity and Volumetric Flow Rate
USEPA Method 3:	Determination of Stack Gas Molecular Weight
USEPA Method 4:	Determination of Stack Gas Moisture Content
USEPA Method 5:	Determination of Particulate Matter Emission Rate

¹Because the sampling and analytical methods for VOC and HAPs are under constant development, the sampling and analysis for VOC and HAPs shall be conducted in accordance with EPA/KDHE approved methods applicable at the time that the testing occurs.

3. Performance testing for **Type II DDGS Cooling Cyclone/Baghouse:**

Test Method	Parameter/Pollutant
USEPA Method 1:	Sampling Location and Cyclonic Flow Determination
USEPA Method 2:	Determination of Stack Gas Velocity and Volumetric Flow Rate
USEPA Method 3:	Determination of Stack Gas Molecular Weight
USEPA Method 4:	Determination of Stack Gas Moisture Content
USEPA Method 5:	Determination of Particulate Matter Emission Rate
USEPA Method 18	GC/FID analysis with on site testing required (acetaldehyde, acetic acid, acrolein, ethanol, formaldehyde, formic acid, lactic acid and methanol).
USEPA Method 25A	Determination of Total VOC Emissions

4. Performance tests for **DDGS Loadout** baghouse exhaust:

Test Method	Parameter/Pollutant
USEPA Method 1:	Sampling Location and Cyclonic Flow Determination
USEPA Method 2:	Determination of Stack Gas Velocity and Volumetric Flow Rate
USEPA Method 3:	Determination of Stack Gas Molecular Weight
USEPA Method 4:	Determination of Stack Gas Moisture Content
USEPA Method 5:	Determination of Particulate Matter Emission Rate

5. Performance tests for the **Fermentation CO2 Scrubber:**

Test Method	Parameter/Pollutant
USEPA Method 18	GC/FID analysis with on site testing required (acetaldehyde, acetic acid, acrolein, ethanol, formaldehyde, formic acid, lactic acid and methanol).
USEPA Method 25A	Determination of Total VOC Emissions

6. Performance testing for the Package Boiler shall include the following tests:

Test Method	Parameter/Pollutant
USEPA Method 1:	Sampling Location and Cyclonic Flow Determination
USEPA Method 2:	Velocity and Volumetric Flow Rate
USEPA Method 3:	Stack Gas Molecular Weight
USEPA Method 4:	Stack Gas Moisture Content
USEPA Method 7E*:	30 Day NOx Emission Rate
USEPA Method 9:	Opacity
USEPA Method 10:	Carbon Monoxide Emission Rate
USEPA Method 18	GC/FID analysis with on site testing required (acetaldehyde, acetic acid, acrolein, ethanol, formaldehyde, formic acid, lactic acid and methanol).
USEPA Method 25A	Determination of Total VOC Emissions
40 CFR 60.46 Test Methods & Proc.	NOx emissions limit of 0.20 lbs/MMBtu (86 ng/J) per 40 CFR 60.44b(a).

Calibration procedures shall be identified and the information provided to KDHE for each measurement device, including coefficients, multipliers, by reference to a standard method or by providing a written description. The frequency planned for recalibration during the test shall be provided KDHE in addition to a list of all calibration standards, including their source and traceability. Equipment to be calibrated includes: dry gas meters, orifice meters, pitot-tubes, thermometers/thermocouples, nozzles, flow meters and may include various process parameter monitors.

*Make note that 40 CFR 60.44b(a) limits emissions of oxides of nitrogen (NO_x) for the gas fired package boiler to 0.20 lbs/MMBtu (86 ng/J).

4.3 Bonanza CEMs Report

Confidential information has been removed from this section.

Appendix 5

GREET Calculation Workbook

- 5.1 GREET File Populated With Bonanza BioEnergy Values
- 5.2 Bonanza List of User Defined Values Used in the GREET Model

5.1 GREET File Populated with Bonanza BioEnergy Values

*A copy of the GREET model populated with Bonanza BioEnergy values is available as a separate MS Excel file. File name is:

ca_greet1 8b_dec09_sorghum_carb_Bonanza v7_FEEDSTOCK_AND_ETHANOL_PRODUCTION_100%**CORN**

ca_greet1 8b_dec09_sorghum_carb_Bonanza v7_FEEDSTOCK_AND_ETHANOL_PRODUCTION_100%**SORGHUM**

5.2 Bonanza BioEnergy List of User Defined Values Used in the GREET Model

Feedstock: Either 100% corn or 100% sorghum

Electricity mix: User defined CMS breakdown

Sheet	Cell	Original value	New input value		Data category	Data point
			Bonanza			
Fuel_Prod_TS	C285		100%		Ethanol production	Share of feedstock (between dry and wet mill)
Fuel_Prod_TS	G285,h291		0% or 100%		Ethanol production	Share of corn or sorghum (of total production)
Fuel_Prod_TS	S271		0%		Ethanol production	Share of coal in processing energy
Fuel_Prod_TS	k271, L271, CU271, CV277				Ethanol production	Total processing energy
Fuel_Prod_TS	c271,d277,CY271,CZ277				Ethanol production	Ethanol yield (Corn/Sorghum)
Inputs	C247,E247				Ethanol production	Share of electricity in processing energy
Inputs	D235				Ethanol production	Ethanol yield (from Sorghum)
Fuel_Prod_TS	BH340,BH345		Default		Electricity generation mix	Share of Residual oil*
Fuel_Prod_TS	BI340,BI345		Default		Electricity generation mix	Share of Natural gas
Fuel_Prod_TS	BJ340,BJ345		Default		Electricity generation mix	Share of Coal**
Fuel_Prod_TS	BK340,BK345		Default		Electricity generation mix	Share of Nuclear
Fuel_Prod_TS	BL340,BL345		Default		Electricity generation mix	Share of Biomass
Fuel_Prod_TS	BM340,BM345		Default		Electricity generation mix	Share of Others (renewables)
Inputs	I191		390		Sorghum growing	Grams of Nitrogen
Inputs	I192		76		Sorghum growing	Grams of P2O5
Inputs	I193		69		Sorghum growing	Grams of K2O
Inputs	I194		0		Sorghum growing	Grams of CaCO ₃
Inputs	I197		13.69		Sorghum growing	Grams of Herbicide
Inputs	I198		1		Sorghum growing	Grams of Insecticide
Fuel_Prod_TS	DG257,DH263		390		Sorghum growing	Grams of Nitrogen
Fuel_Prod_TS	DK257,DM263		76		Sorghum growing	Grams of P2O5
Fuel_Prod_TS	DO257,DP263		69		Sorghum growing	Grams of K2O
Fuel_Prod_TS	DS257,DT263		0		Sorghum growing	Grams of CaCO ₃
Fuel_Prod_TS	DW257,DX264		13.69		Sorghum growing	Grams of Herbicide
Fuel_Prod_TS	EA257,EB263		1		Sorghum growing	Grams of Insecticide
Fuel_Prod_TS	DC257,DD263		15.160		Sorghum growing	Sorghum farming energy use
T&D Flowcharts	M1308				Feedstock transport	Proportion of feedstock transported by rail from stack to plant
T&D Flowcharts	M1313				Feedstock transport	Distance from Stack to Plant
T&D	AB7				Feedstock transport	HHDT payload (Plant to California)
T&D	AB8				Feedstock transport	HHDT payload (Stack to plant)
T&D Flowcharts	F1446				Fuel transport	Distance from Plant to Bulk terminal by HHDT
T&D Flowcharts	F1442				Fuel transport	Distance from Plant to Bulk terminal by rail
EtOH	AO197		Changed formula from $=(\text{SUM}(\text{CY166}:\text{DG166})/(\$E\$43*\text{Fuel_Specs!B\$21}))*10^6$ to $=((\text{SUM}(\text{CY166}:\text{DG166})/(\$E\$43*\text{Fuel_Specs!B\$21}))+(\text{DM166}/\text{Fuel_Specs!B21}))*10^6$			To include coproducts