

217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

Tate & Lyle Decatur  
Attn: John Dent, Environmental Engineer  
2200 East Eldorado Street  
Decatur, Illinois 62525

Application No.: 11050020

I.D. No.: 115015ABX

Applicant's Designation:

Date Received: May 13, 2011

Subject: Fifth Feed Dryer

Date Issued: Draft 8-30-2011

Location: 2200 East Eldorado Street, Decatur, Macon County

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a fifth feed dryer as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Introduction

This permit authorizes construction a fifth steam tube dryer in the feed house. The new dryer would operate along with the four existing steam tube dryers in the feed house to dry feed material that is a byproduct of the wet corn mill at the source. The project would enable all of the feed material produced by the wet corn mill to routinely be dried, so that none of this material must be landfilled. The project would also enable the Permittee to conduct extended maintenance outages of the existing feed dryers.

The new dryer would be designed for "second pass" drying of partially dried material from the first pass dryers and steep water from the wet corn mill. The emissions of the new dryer will normally be controlled by the existing water scrubber and waste heat evaporator for Dryers 3 and 4 and a new regenerative thermal oxidizer (oxidizer or RTO). As an alternative to the oxidizer, as necessary for routine maintenance of the oxidizer, the new dryer may be controlled by ducting emissions to the existing Gluten Meal Dryer System for up to 864 hours per year.

The dried feed produced by the new dryer would be handled by existing equipment including the existing rotary air/water cooler, pelletizers, and rail loadout system, which would handle more material. Even though more feed will be produced, with additional steam used in the new dryer, the Permittee does not expect accompanying increases in the emissions of the boilers. This is because there will be a compensating reduction in the amount of steam used for generation of electricity.

Overall, the project will result in a substantial decrease in the emissions of volatile organic material (VOM) from the source. This is because the emissions of Feed Dryers 3 and 4 will also be controlled by the new oxidizer, rather than venting to the Gluten Dryer System. This will greatly reduce VOM emissions of these "second pass" dryers, since all exhaust from these units will go to the oxidizer with significantly better control of VOM than with the Gluten Dryer System. In addition, with Dryers 3 and 4 controlled by this new oxidizer, more of the exhaust from the "first pass" dryers, Feed Dryers 1 and 2, and the Feed Cooler will be ducted to the furnace in the Gluten Dryer System, which should also enhance control of VOM emissions for these dryers. However, this permit does not rely upon a decrease in emissions from this change. (See Attachment 2 for a summary of the emissions of this project and Attachment 3 for an accounting of the enforceable net decrease in VOM emissions that will occur.)

## 2. List of Emission Units and Pollution Control Equipment

Emission Unit(s)	Designation	Description	Emission Control Equipment	
New Feed Dryer (No. 5)	154-10	Rotary Steam Tube Dryer: Second Pass Drying of Feed	Scrubber (existing) & Thermal Oxidizer (new)*	
Two Existing Feed Dryers (No. 3 and 4)	154-03 & 04	Rotary Steam Tube Dryers: Second Pass Drying of Feed		
Two Existing Feed Dryers (No. 1 and 2)	154-01 & 02	Rotary Steam Tube Dryers: First Pass Drying of Feed	Caustic Scrubber	Gluten Meal Dryer Furnace (existing)**
Feed Cooler	154-05	Rotary Cooler	Water Scrubber	
Gluten Meal Dryer System	14-01	Natural Gas Direct Fired Rotary Flash Dryer for Gluten Meal	Caustic Scrubber	
Ancillary Feed House Operations	154-06	Hammermill Collection Conveyor	Scrubber	
	153-03, 04, 05 & 06	Pellet Coolers	Cyclones	
	153-01	Feed Sifter System	Baghouse	
	75-23	Pellet Loadout	Baghouse	

\* At times, rather than go to the thermal oxidizer, the exhaust from these emission units may go to the Gluten Meal Dryer System.

\*\* At times, rather than go to the furnace of the Gluten Meal Dryer System as combustion air, some or all of the exhaust from these emission units may go directly to the Gluten Meal Dryer itself as dryer air or to an existing bypass stack.

3. Applicability Provisions and Applicable Emission Standards

a. For the purpose of this permit:

- i. The "affected new feed dryer" is new Feed Dryer 5, as described in Conditions 1 and 2 above.
- ii. The "affected existing feed dryers" are Feed Dryers 1, 2, 3 and 4, as described in Conditions 1 and 2 above.
- iii. The "affected gluten dryer" is the existing Gluten Meal Dryer System, as described in Conditions 1 and 2 above.
- iv. The "affected units" are the affected dryers and other emission units in the feed house, as described in Conditions 1 and 2.

- b. i. The affected new feed dryer shall comply with applicable emission standards for feed dryers, as identified in Condition 7.2.3 of the CAAPP Permit for the source, Permit 96020099, including 35 IAC 212.123, 212.321, 214.301 and 215.301.
- ii. In particular, for purposes of 35 IAC 212.321, the affected new feed dryer and affected Dryers 3 and 4 shall be considered similar emission units and comply with a single limit established in accordance with 35 IAC 212.321(c).

4. Non-Applicability Provisions

- a. This permit is issued based on this project not being a major project for purposes of the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21. For other regulated PSD pollutants other than VOM, this is because the project will not result in significant increases in emissions (See Attachment 2.) For VOM, this is because the project will be accompanied by a net change in VOM emissions that is not significant. (See Attachment 3).
- b. i. This permit is issued based on the affected new feed dryer not being a major source of hazardous air pollutants when considered by itself, so that a case-by-case determination of Maximum Achievable Control Technology (MACT) is not needed for this dryer pursuant to Section 112(g) of the Clean Air Act.
- ii. Emissions of individual HAPs from the affected new feed dryer shall not exceed 2.0 pounds/hour and 9.0 tons/year and total emissions of HAPs shall not exceed 5.1 pounds/hour and 22.5 tons/year.

5. Operational and Production Limits and Work Practices

- a. The amount of dried feed processed by the feed house shall not exceed 40,000 tons/month and 411,370 tons/year. Compliance with this annual limit and other annual limits set by this permit shall be determined from a running total of 12 months of data.
- b. i. The only fuel fired in the oxidizer shall be natural gas.

- ii. The rated heat input of the oxidizer shall not exceed 10 million Btu/hr.
- c. i. A. Except as provided below, the emissions of affected Dryers 3, 4 and 5 shall be controlled by a scrubber and an oxidizer.
  - B. As an alternative to the oxidizer, the exhaust from affected Dryers 3, 4 and 5 may be sent to the affected gluten dryer up to 864 hours per 12-month rolling period. For this purpose, any hour in which exhaust from any of these dryers is sent to this system shall be counted against this limitation.

Note: This requirement, which addresses the new oxidizer for affected Dryers 3, 4 and 5, will replace current requirements for affected Dryers 3 and 4, as set forth in Condition 7.2.6(h) of the CAAPP Permit for the source. In particular, when the affected new feed dryer begins operation, Dryers 3 and 4 must normally be vented to the oxidizer rather than to the affected gluten dryer.

- ii. When emissions of the affected new feed dryer are being controlled by the oxidizer, the operating parameters of the oxidizer, as monitored in accordance with Condition 8, shall be maintained at levels that are consistent with the levels during emission testing in which compliance with applicable emissions limits has been demonstrated in accordance with Condition 7, except in conjunction with proposed change(s) to the levels of those operating parameters and additional emission testing.
- iii. A. The exhaust of affected Dryers 3, 4 and 5 shall only be sent to the affected gluten dryer when maintenance or repair of the oxidizer is being performed and the transition periods associated with such activity.
  - B. The affected gluten dryer shall be designed and operated so that when the exhaust of affected Dryers 3, 4 or 5 is sent to the affected gluten dryer, the exhaust goes to the dryer furnace until the capacity of the furnace is reached.
- d. i. The affected emission units, including associated control equipment, shall be maintained and operated in accordance with good air pollution control practice to minimize emissions.
  - ii. The Permittee shall carry out normal maintenance and repair of the oxidizer in accordance with a written maintenance program, which program may incorporate the manufacturer's recommended practices for maintenance and repair of the oxidizer.
- e. The operational requirements of this condition and the emission limits in Condition 6 shall take effect when wet feed material is first dried in the affected new feed dryer.

6. Emission Limits

- a. i. Emissions of the affected new feed dryer shall not exceed the following limits. For this purpose, emission limits set for PM/PM10/PM2.5 are applicable to the total of filterable and condensable particulate.

PM/PM <sub>10</sub> /PM <sub>2.5</sub>		SO <sub>2</sub>		NO <sub>x</sub> *		CO*	
Lb/Hr	Ton/Yr	Lb/Hr	Ton/Yr	Lb/Hr	Ton/Yr	Lb/Hr	Ton/Yr
0.77	3.36	2.72	11.9	1.00	4.38	2.00	8.76

\* Emissions are attributable to combustion of fuel in the oxidizer.

Mode of Operation	VOM	
	Lb/Hr	Ton/Yr
Normal (Control by oxidizer)	4.24	18.6
Alternative (Control by Gluten Meal Dryer)	84.8	36.7
Total	--	53.4*

\* Total is based on operation in the alternative mode for 864 hours per year and operation in the normal mode for the remainder of the year.

- ii. Beginning 180 days after initial startup of the affected new feed dryer, VOM emissions of existing Feed Dryers 3 and 4 shall not exceed the following limits:

Mode of Operation	Lb/Hr	Ton/Yr
Normal (Control by oxidizer)	8.48	37.2
Alternative (Control by Gluten Meal Dryer)	170.0	73.3
Total	--	107.0*

\* Total is based on operation in the alternative mode for 864 hours per year and operation in the normal mode for the remainder of the year.

- iii. A. When the emissions from the affected feed dryers are controlled by the oxidizer, compliance with the above hourly limits for the affected new dryer (and the VOM limit for the existing dryers) shall be determined from the total emissions of the dryers, based on the fraction of the material input to or the exhaust from the dryer(s) and the total material input to or exhaust from these dryers.
- B. In addition, when operating in the alternative mode, with the exhausts from the affected feed dryers sent to the affected gluten dryer system, compliance with the above hourly limits shall be determined as follows.
  - I. For emissions of PM/PM<sub>10</sub>/PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> and CO, from the emissions in the ductwork upstream of the gluten dryer, without credit for any further control of emissions by this dryer and its control system.
  - II. For emissions of VOM, from the emissions in the ductwork upstream of the gluten dryer with credit for at most 85 percent control of VOM in the emissions stream directed to the gluten dryer furnace, without any further credit for control of VOM emissions by the furnace of the gluten dryer or its control system until a protocol addressing additional control by the

gluten dryer system and apportionment of VOM emissions at the gluten dryer stack between the gluten dryer and the feed dryers is prepared by the Permittee and approved by the Illinois EPA. This protocol shall be supported by an accompanying analysis that considers the results of past and/or proposed testing for VOM emissions of the feed and gluten dryers under different operational configurations.

- C. For purposes other than determining compliance with the above limits, emissions shall be determined in accordance with good engineering practice, which shall not be bound by the above provisions.
- b. This permit is issued based on minimal emissions of methane from the affected new feed dryer. For this purpose, emissions of methane from this dryer shall not exceed 2,000 tons of carbon dioxide equivalents (CO<sub>2</sub>e) per year.
- c. This permit does not alter existing emission limits and operational requirements for affected Feed Dryers 1 and 2 and the feed cooler.

Note: In particular, Condition 7.2.6(h) of the CAAPP Permit for the source, Permit 96020099, provides that the emissions of affected Feed Dryers 1 and 2 and the feed cooler must normally be controlled by being sent to the affected gluten dryer system and may only bypass this system, with the exhaust from the scrubber going directly to the atmosphere, for up to 864 hours in any 12-month period.

7. Emission Testing Requirements

- a. i. Within 180 days of initial startup of the affected new feed dryer, the Permittee shall have measurements conducted for the emissions of different units as specified below, provided, however, that measurements for filterable PM<sub>10</sub> and PM<sub>2.5</sub> will not be required if the flue gas conditions in the stack or ductwork are not suitable for such measurements:

Emission Unit(s) - Mode	Pollutants
New dryer system (Dryers 3,4 and 5) - Oxidizer	VOM, PM/PM <sub>10</sub> /PM <sub>2.5</sub> (filterable), PM (condensable), CO, HAP (acetaldehyde)
New dryer system - "Uncontrolled" in ductwork before the gluten dryer system	VOM, PM/PM <sub>10</sub> /PM <sub>2.5</sub> (filterable), PM (condensable), CO, HAP (acetaldehyde)
New dryer system and Gluten Dryer System - Gluten dryer stack	VOM, PM/PM <sub>10</sub> /PM <sub>2.5</sub> (filterable), PM (condensable), CO, HAP (acetaldehyde)
Feed Dryers 1 & 2 and Cooler - Bypass	PM/PM <sub>10</sub> /PM <sub>2.5</sub> (filterable), PM (condensable) VOM
Pellet Coolers (1 out of 4)	VOM, PM/PM <sub>10</sub> /PM <sub>2.5</sub> (filterable), PM (condensable)

- ii. In addition to the emission testing required above, the Permittee shall perform emission tests as requested by the Illinois EPA for an emission unit within 45 days of a written request by the

Illinois EPA or such later date agreed to by the Illinois EPA.

- b. The following USEPA **methods** and procedures shall be used for testing of emissions unless another method is approved by the Illinois EPA.

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM/PM10/PM2.5 (filterable)	Method 5 or 201A <sup>a, b</sup>
PM (condensable)	Method 202 <sup>b</sup>
Carbon Monoxide	Method 10
Volatile Organic Material	Other Test Method 11 and Method 18
Sulfur Dioxide	Method 6 or 6C
Acetaldehyde	Method 320

Notes:

- a. If measurements for filterable PM by Method 5 and condensable particulate by Method 202 show compliance with the applicable limits for PM<sub>10</sub> and PM<sub>2.5</sub>, measurements for filterable PM<sub>10</sub> and PM<sub>2.5</sub> need not be conducted.
- b. For the pellet cooler if the average stack gas temperature is less than 250 °F, testing for PM emissions may be conducted at actual stack gas temperature without heating of the probe or filter holders.
- c. The Permittee shall submit a written test plan to the Compliance Section of the Division of Air Pollution Control for review at least 45 days prior to the scheduled date of testing. This plan shall describe the specific procedures for testing, including as a minimum:
- i. The person(s) who will be performing sampling and analysis and their experience with similar tests.
  - ii. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions and any changes in the means or manner by which the operating parameters for the emission unit and any control equipment will be determined.
  - iii. The specific determinations of emissions and operation that is intended to be made, including sampling and monitoring locations.
  - iv. The test method(s) that will be used, with the specific analysis method, if the method can be used with different analysis methods.
- e. The Permittee shall notify the Illinois EPA prior to these tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the

Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

- f. The Permittee shall submit copies of the Final Reports for these tests to the Illinois EPA within 14 days after the test results are compiled and finalized but no later than 45 days after completion of sampling. The Final Report shall include as a minimum:
  - i. A summary of results
  - ii. General information
  - iii. Operating data for the unit(s) and associated control devices during testing, including data both for parameters for which operation will be restricted based upon the value of operating parameters during testing and for parameters that are needed to more fully describe operating conditions during testing.
  - iv. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule
  - v. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration
- g. The Permittee shall retain copies of emission test reports for at least three years after the date that an emission test is superseded by a more recent test.

#### 8. Monitoring Requirements

- a. The Permittee shall install, operate and maintain a continuous operational monitor(s) on the oxidizer for affected Dryers 3, 4 and 5 for temperature in the combustion chamber.
- b. The Permittee shall install, operate and maintain instrumentation to indicate flow of exhaust from affected Dryer 3, 4 or 5 to the affected gluten dryer.

Note: This permit does not affect requirements for operational monitoring for existing air pollution control equipment for the affected units, as established in Section 7.1 of CAAPP Permit 96020099.

#### 9. Recordkeeping Requirements

- a. The Permittee shall keep a file for the oxidizer that contains the following information:
  - i. The design heat input of the burners in the oxidizer, with supporting documentation.
  - ii. A copy of the manufacturer's guarantee's for CO and NO<sub>x</sub> emissions of the oxidizer.
  - iii. A copy of the manufacturer's recommended operating and maintenance procedures for the oxidizer.

- b. The Permit shall keep records for the amount of wet feed processed by the feed house (tons/month and tons/year).
- c. i. The Permittee shall keep an operating log or other records for the affected units, including associated control equipment, that includes the following information:
  - A. Information that generally confirms proper operation of the affected units as related to control of emissions.
  - B. Detailed information for periods when the exhaust from affected Dryer 3, 4 and/or 5 is sent to the affected gluten dryer, including date, duration, reason, and, if the reason is other than routine inspection or preventative maintenance, detailed discussion and explanation of the reason why the exhaust of the dryer(s) could not be sent to the oxidizer.
  - C. Detailed information for upsets in the operation of affected units, including date and duration, description, affect on emissions and corrective actions taken.
- ii. A. Records of the operating hours of affected Dryers 3, 4 and/or 5.
  - B. Records of the number of hours that the exhaust from affected Dryer 3, 4 and/or 5 is not sent to the oxidizer (bypass to the affected gluten dryer).
- d. The Permittee shall keep a log or other records for inspection, maintenance, and repair activities for the affected units, including associated control equipment, that shall as a minimum include:
  - i. Date and description of each activity.
  - ii. Detailed description of an activity that is not routine inspection or preventative maintenance.
- e. The Permittee shall maintain the following records related to emissions of the affected units:
  - i. A file containing the following information, with supporting documentation, which file shall be updated as necessary to be kept current:
    - A. The maximum hourly emission rates of the affected new feed dryer for PM/PM<sub>10</sub>/PM<sub>2.5</sub>, SO<sub>2</sub>, VOM, NO<sub>x</sub>, CO and HAP (acetaldehyde) when operating normally at its maximum capacity, when emissions are controlled by the oxidizer and when emissions are controlled by the affected gluten dryer.
    - B. The maximum hourly VOM emission rate of affected Dryers 3, 4 and 5, when operating normally at their combined maximum capacity, when emissions are controlled by the oxidizer and when emissions are controlled by the affected gluten dryer.

- C. The hourly emission rates or emission factors that the Permittee uses to determine emissions of affected units, as follow:

- Feed Dryer 5: PM/PM<sub>10</sub>/PM<sub>2.5</sub>, VOM, SO<sub>2</sub>, NO<sub>x</sub>, and CO
- Feed Dryers 3 and 4: PM/PM<sub>10</sub>/PM<sub>2.5</sub> and VOM
- Gluten Dryer: PM/PM<sub>10</sub>/PM<sub>2.5</sub> and VOM
- Feed Dryers 1 and 2 and Feed Cooler: PM/PM<sub>10</sub>/PM<sub>2.5</sub> and VOM
- Other affected units: PM/PM<sub>10</sub>/PM<sub>2.5</sub>

- ii. The records of actual emissions of affected units (tons/month and tons/year), as follows, with supporting calculations:
  - A. Records of PM/PM<sub>10</sub>/PM<sub>2.5</sub>, SO<sub>2</sub>, VOM, NO<sub>x</sub>, and CO from the affected new feed dryer.
  - B. Records of VOM emissions from Feed Dryers 3 and 4.
  - C. Records of VOM emissions from Feed Dryers 1 and 2 and the Feed Cooler.
  - D. Records of emissions of PM/PM<sub>10</sub>/PM<sub>2.5</sub> and SO<sub>2</sub> from affected units other than the affected new feed dryer, in accordance with 40 CFR 52.21(r)(6).

10. Reporting Requirements

- a. The Permittee shall promptly notify the Illinois EPA of deviations from requirements of this permit as follows. These notifications shall include a description of the deviation, the probable cause of the deviation, the corrective actions taken, and any actions taken to prevent future occurrences:
  - i. If there is a deviation from an annual emission limit, notification within 30 days.
  - ii. Other deviations, notification in a quarterly report.
- b. The Permittee shall fulfill applicable reporting requirements of the PSD rules, 40 CFR 52.21(r)(6).

11. Authorization to Operate

The Permittee may operate the affected new feed dryer and affected existing feed dryers pursuant to this construction permit until the CAAPP permit for the source is revised or renewed to address this project.

If you have any questions on this, please call Kevin Hecht at 217/782-2113.

Edwin C. Bakowski, P.E.

Date Signed: \_\_\_\_\_

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Manager, Permit Section  
Division of Air Pollution Control

ECB:KTH:jws

cc: Region 2

## ATTACHMENT 1

Table 1.1: Projected Changes in PM/PM<sub>10</sub>/PM<sub>2.5</sub> Emissions for Existing Emission Units (tons/year)  
(comparing baseline actual emissions and future projected actual emissions)

Emission Unit(s)	PM/PM <sub>10</sub> /PM <sub>2.5</sub> Emissions			
	Baseline	Future		Change
		Lb/Hr	T/Yr	
Feed Dryers 1 and 2	3.55	0.89	3.89	0.34
Feed Dryers 3 and 4	2.16	0.78	3.04	0.88
Gluten Meal Dryer	7.39	1.56	6.84	(-0.55)*
Feed Cooler	1.61	0.46	2.01	0.40
Hammermill Collector Conveyor	2.50	0.69	3.01	0.51
Pellet Cooler 1	5.90	1.55	6.61	0.71
Pellet Cooler 2	6.25	1.55	6.61	0.36
Pellet Cooler 3	6.33	1.55	6.61	0.28
Pellet Cooler 4	6.30	1.55	6.61	0.31
Feed Sifter System	0.86	0.20	0.86	0.0
Pellet Loadout	1.88	0.43	1.88	0.0
Totals	44.73	--	47.97	3.79

\* Projected decreases in emissions are not considered in the changes in emissions.

Table 1.2: Projected Changes in Emissions of Other Pollutants for Existing Emission Units (tons/year)

Emission Unit(s)	Pollutants Other Than PM/PM <sub>10</sub> /PM <sub>2.5</sub>											
	SO <sub>2</sub>			VOM			NO <sub>x</sub>			CO		
	Baseline	Future	Change	Baseline	Future	Change **	Baseline	Future	Change	Baseline	Future	Change
Feed Dryers 1 and 2	28.0	29.9	1.90	84.9	75.3	(-9.6)	--	--	--	--	--	--
Feed Dryers 3 and 4	5.68	11.8	6.12	348.0	107.0	(-241.0)	--	--	--	--	--	--
Gluten Meal Dryer	21.5	22.8	1.28	148.0	169.9	21.9	17.1	17.1	0	57.7	57.7	0
Feed Cooler	2.12	2.42	0.30	25.4	22.6	(-2.9)	--	--	--	--	--	--
Totals	56.3	67.0	9.6	606	375	21.9	--	17.1	0	--	57.7	0

\* Emissions attributable to combustion of fuel in the oxidizer.

\*\* Decreases are assumed to be zero for calculation purposes.

ATTACHMENT 2Table 2: Changes in Emissions for the Proposed Project (tons/year)

Aspect of Project	PM/PM <sub>10</sub> /PM <sub>2.5</sub>	SO <sub>2</sub>	VOM	NO <sub>x</sub>	CO
New Emission Units (Dryer 5)	3.36	11.9	53.4	4.38	8.76
Modified Emission Units	3.79	9.6	21.9	-	-
Totals	7.15	21.5	75.3	4.38	8.76
Significant for PSD?	No	No	Yes	No	No

## ATTACHMENT 3:

Evaluation of the Net Change in VOM Emissions (Tons/Year)Table 3.1: Project VOM Emissions

Emission Units/Operation	Emissions
Feed Dryer 5	53.4
Existing Feed Handling Operations	21.9
Boilers (increased steam usage)	-
Total	75.3

Table 3.2: Contemporaneous VOM Emissions Decreases  
Equipment with Improved Control

Emissions Units	Emissions Decrease
Dryers 3 and 4 with Oxidizer	241.0
Dryers 1 & 2 and Cooler to Gluten Dryer Furnace	(9.59) *
Permanent Shutdown of Xanthan Gum Process**	18.6
Total	259.6

\* This permit does not rely on a decrease in VOM emissions from Dryers 1 & 2.

\*\* The Xanthan Gum Process (Construction Permit 03070016) was shutdown in June 2009.

Table 3.3: Contemporaneous VOM Emissions Increases  
Contemporaneous Period of May 2006 to May 2011

Emission Unit(s)	Construction Permit No.	Emissions Increase
Gluten Vacuum Filters	07040040	--
Replacement Boilers 3 and 4	07050046	11.6
Starch Dry Thin 2	08020013	--
Temporary Boilers	08040060	2.20
Temporary Boilers	09110042	2.20
Farnesene Fermentation	10120017	5.25

Total	21.3
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Table 3.4: Overall Net Change in VOM Emissions

	Emissions
Project Emissions	75.3
Contemporaneous Emission Decreases	-259.6
Contemporaneous Emission Increases	21.3
Net Change	-162.0*

\* The actual annual decrease in VOM emissions should be larger than 162.0 tons. This is because the this evaluation is based on the maximum increases in emissions and minimum decreases in emissions and does not consider any decrease in VOM emissions from improved control of VOM emissions from affected Feed Dryers 1 and 2 and the Feed Cooler.