

**ANALYSIS AND PRELIMINARY DETERMINATION FOR THE CONSTRUCTION PERMIT
FOR THE PROPOSED MODIFICATION
TO RESUME USE OF A WHOLE GRAIN (CORN) DRYER**

**FOR
DIDION MILLING-CAMBRIA,
LOCATED AT
501 SOUTH WILLIAMS ST,
CAMBRIA, COLUMBIA COUNTY, WISCONSIN**

Construction Permit No.: 09-DCF-242
Facility ID No.: 111081520

This review was performed by the Wisconsin Department of Natural Resources, Bureau of Air Management in accordance with Chapter 285, Wis. Stats., and Chapters NR 400 to NR 499, Wis. Adm. Code.

Reviewed by: _____ Don C. Faith, III _____ Date: 5/20/2010

Peer review conducted by: _____ Steven D. Dunn _____ Date: 5/18/2010

Preliminary Determination Approved by:	Signature	Date
Regional Supervisor or Central Office Designee:	/s/ Andrew M. Stewart	5/20/2010
Stationary Source Modeling Team Leader:	/s/ Jeff Sims	5/20/2010
Compliance Engineer (reviewed/approved):	/s/ Mike Sloat	5/18/2010

cc: Michael R. Sloat - South Central Region Air Program, Reedsburg Area Office
Jane Morgan Memorial Library 109 W. Edgewater St.; PO Box 477; Cambria, WI 53923

INTRODUCTION

Stationary sources that are not specifically exempt from the requirement to obtain a construction permit under s. 285.60(5), Wis. Stats. or ch. NR 406, Wis. Adm. Code may not commence construction, reconstruction, replacement, relocation or modification unless a construction permit for the project has been issued by the Department of Natural Resource's (DNR's) Air Management Program. Owners or operators subject to the construction permit requirements must submit a construction and operation permit application to the DNR. The application is reviewed following the provisions set forth in ss. 285.60 to 285.67, Wis. Stats. The criteria for permit issuance vary depending on whether the source is major or minor and whether the source is or proposed to be located in an attainment or nonattainment area.

Subject sources are to be reviewed with respect to the equipment and facility description provided in the application and for the resulting impact upon the air quality. The review ensures compliance with all applicable rules and statutory requirements. The preliminary determination will show why the source(s) should be approved, conditionally approved, or disapproved. It will encompass emission calculations and an air quality analysis using US EPA models, if applicable. Emissions from volatile organic compound (VOC) sources and small sources whose emissions are known to be insignificant are normally not modeled. As a precautionary note, the emission estimates are based on US EPA emission factors (AP-42) or theoretical data and can vary from actual stack test data.

A final decision on the construction permit and significant operation permit revision will not be made until the public has had an opportunity to comment on the Department's analysis, preliminary determination and draft permit. The United States Environmental Protection Agency will be given the opportunity to comment on the operation permit revision of any Part-70 source. The conditions proposed in the draft permit may be revised in any final permit issued based on comments received or further evaluation by the Department.

GENERAL APPLICATION INFORMATION

Owner/Operator: Didion Milling-Cambria
501 S Williams St
Cambria, WI 53923-9109

Responsible Official: John Didion
CEO

Application Contact Person: Dan Ketter

Application Submitted By: Dan Ketter

Application submittal date: November 24, 2009

Additional Information Submitted: December 24, 2009; January 18, 2010; February 9, 2010; February 26, 2010; March 3, 2010; March 18, 2010; March 29, 2010; March 30, 2010; April 5, 2010; April 28, 2010; May 11, 2010

Date of Complete Application: May 20, 2010

PROJECT DESCRIPTION

The proposed project is for the resumption of operation of the whole grain dryer (P16 / S23) that was initially installed around 1999. This operation was shut down under the last construction permit (08-DCF-155), but due to a wet corn harvest, has resumed operation under a construction permit waiver issued by the Department. The emissions from the grain dryer were also determined to be substantially higher than originally identified, and these higher emissions have been identified as a portion of the application.

Due to the substantially higher quantified emissions from the dryer (~ 99 TPY), the aggregate emissions from the facility exceeded the Part 70 major source threshold (for PM₁₀) and will require review and future issuance of a Part 70 operation permit. However, there are potential issues associated with the initial construction and operation of the ethanol facility and associated operations such that the Title V permit cannot be proposed at this time.

SOURCE DESCRIPTION

Didion Milling (DM) has completed building and is operating a fuel grade ethanol production facility (Didion Ethanol) at a former 'greenfield' site adjacent / contiguous with their original existing grain storage / processing operation in Cambria, WI. The combined operations are considered a single facility under common ownership / control, though the existing grain processing operation is considered an existing PSD minor operation that has a 250 TPY PSD major source threshold. The ethanol facility is considered as a 'nested' chemical process plant that currently has a 100 TPY major source threshold, though the facility originally proposed limits on the entire combined operation of less than 100 TPY. Emission sources at the plant include grain processing / handling (storage, milling, etc.) primarily conducted within their existing operation, and ethanol plant operations consisting of fermentation, distillation, wet grain handling, spent grain drying, combustion, storage tanks, VOC and road fugitives at the new operations. Though physically located on the grain processing portion of the operation, there is a newly constructed whole grain milling process that is effectively considered as a portion of the ethanol plant. Grain from this new operation is moved by an enclosed conveyor to provide the milled grain that is used to produce ethanol. The ethanol plant has a permitted annual capacity of 50 million gallons of anhydrous (undenatured) ethanol (up to 52.5 million gallons of denatured ethanol). Using a typical conversion of 2.7 gallons / bushel of grain (some facilities note conversions above 2.8 gallons / bu), this translates to a maximum grain consumption rate of about 18.5 million bushels for the ethanol plant.

The existing (whole) grain dryer (P16) was originally thought to have an emissions potential on the order of 7 lbs/hr of PM and less than 2 lbs/hr of PM₁₀ based on PM data provided by the dryer manufacturer and emissions reported in the application based on the fraction of emissions that were expected to be PM₁₀. The grain dryer manufacturer has claimed that the grain dryer emissions of total PM were on the order of 0.0834 lbs / ton, though this is substantially lower than the published AP-42 factor of 0.22 lbs / T (excluding backhalf). Recent inquiries identified that the emission rate claimed by the grain dryer manufacturer was based on two 20 minute test runs from a 1972 test conducted in IL using an unknown test method (which is not expected to have included backhalf).

Due to ambient impacts from the dryer which limited the operation with its operation as a “volume source” (emissions exiting the perforated plates at the side of the dryer), the facility chose to have the option of enclosing the dryer under the permit 07-DCF-003. This also enabled the dryer to undergo compliance emission stack testing, which subsequently indicated that the emissions from the dryer were substantially higher than the rate noted in the earlier applications (based on the rate noted by the manufacturer).

As a result of the stack testing, the facility is now proposing that the (whole) grain dryer emissions (P16/S23) will have potential (allowable) emissions of 30 pounds per hour of total PM, and up to 20 lbs/hr of PM₁₀ through a stack that will be elevated to 167 ft. This translates to emission factors of ~ 0.36 lbs/T (ton) and 0.24 lbs/T for total PM and PM₁₀ (respectively) The stack test measured rates (based on ~84 TPH) averaged 0.25 lbs/T of total PM (~ 21 lbs/hr avg. including backhalf), and about 0.09 lbs PM₁₀ / T. The 30 lbs/hr PM and 20 lbs/hr PM₁₀ rates identified in the application appear to provide sufficient margins above the measured rates to constitute federally enforceable limitations.

Even without the restrictions on the grain throughput, the potential emissions from the grain dryer combined with the other grain processing operations and the ethanol plant do not appear to have exceeded the 250 TPY major source threshold that applied to this portion of the operation. The grain dryer will also be limited functionally since the bulk of the grain dryer operation is going to be during the harvest season in the late summer / fall.

The portions of the current permits that are being changed are flagged by use of grey shading and/or redline / strikeout for other changes.

The Department does not agree with the application assertion that “the facility will for the first time become a Part 70 major source.” Due to the prior operation of the grain dryer, the current operation of the grain dryer, and construction / operation of the ethanol plant sources; the facility potential to emit has already exceeded the 100 TPY major source threshold under Part 70, though the higher emissions from the dryer were not known until the dryer was enclosed and subsequently tested.

The facility has submitted an initial part 70 application submittal, but as an element of this review in preparing the Part 70 permit, the Department has determined that it appears that the emissions from the ethanol plant may have exceeded 100 TPY of VOC such that the facility may need to apply for a PSD construction permit for the original ethanol facility so that PSD BACT is applied to the ethanol plant, based on the federally-approved Wisconsin State Implementation Plan, and the rules that were in place when the facility commenced construction. Due to EPA’s policy of not considering a ‘nested’ PSD major source as triggering major source status for other operations at the facility (that have a higher overall PSD threshold), the requirement to apply PSD and BACT would only apply to the recently constructed ethanol plant portions of the facility if confirmed as applicable. The ~99 TPY proposed allowable emission increase from the existing grain dryer does not trigger PSD major source review for this grain drying operation since the potential emissions from the grain processing facility are less than the 250 TPY major source level, and the aggregate (combined facility emissions) are currently proposed to remain below the 250 TPY level.

The facility has asserted that the federal PSD requirements do not apply, since the emissions from the ethanol plant did not exceed the 100 TPY actual emissions level until after U.S. EPA and Wisconsin had revised their rules to redefine the PSD ‘chemical process plant’ source category as excluding fermentation

based ethanol plants. However, the facility as constructed and initially operated may not have met their original synthetic minor limitations that applied to enable the facility to be constructed without undergoing PSD review. Though Wisconsin has applied for a revision of their State Implementation Plan (SIP), this has not yet been approved by U.S. EPA, nor was this effective at the point where the facility exceeded the 100 TPY level for PSD applicability. This opinion is based in part upon language from the ethanol plant final rule preamble:

“For areas that revise their SIPs or title V programs to adopt these changes, the changes are not effective in such area until we approve the SIP revision or title V program as meeting all applicable requirements.” From the Federal Register, May 1, 2007, pg. 24075, Section VI. of the preamble.

Though this is continuing to be evaluated, due to the uncertainty as to whether the facility should have PSD / BACT to address the original synthetic minor source obligations, the Department is not going to be proposing or evaluating the Part 70 permit at this time.

The resumption of operation of the grain dryer is such that it is proposed to extend the term of the ambient monitoring based on issuance of 09-DCF-242. The fugitive dust requirements themselves were proposed to be revised by the facility (under I.W.). The facility provided the silt loading results from last November, which demonstrates compliance with the current silt loading value that is used to meet the fugitive dust emission limit.

Silt Load Test Results

Location	Date Tested	Actual g/m ²
West of Probe Station	11/11/2009	2.0
North of Ethanol Truck Loadout	11/11/2009	1.2
West of Probe Station	11/13/2009	2.5

The current ‘silt loading’ (sL) value is 3.0 g/m² and the facility is requesting a value of 6.0 g/m², noting that Minnesota has allowed other facilities values a default value of 10.0 g/m². Other Minnesota information indicates that the range of observed silt loading values at other Minnesota ethanol facilities was 0.7 to 2.9 g / m² for facilities that did not conduct daily cleaning and less than 1.0 g/m² for facilities that conducted daily cleaning. Didion Milling does considerably more grain handling than the ‘typical’ ethanol plant, by virtue of its corn milling operations (for human consumption).

The United Ethanol facility in Milton, near Janesville, has a compliance demonstration value of 1.2 g/m², and has consistently demonstrated compliance with this value for a year or more. Nationally 3.0 g/m² is a relatively high value identified that was applied to ethanol plants in discussions with other state agencies that had permitted ethanol plants, when fugitives are considered in determining the major source status of the facility. The United Wisconsin Grain Producers ethanol facility which is located within a few miles of the Didion facility, outside of Friesland also uses a value of 3.0 g/m². Some ethanol facilities in Wisconsin have used values of 0.6 g / m² which are believed to generally be the lowest that can be achieved at this type of facility (when a consistent daily cleaning regime is used by the facility), although other states have used values of 0.1 to 0.4 g / m² to reflect the silt loading at from ethanol facilities.

The facility has asserted that there will not be any increase in silt loading as a result of the resumption of operation of the grain dryer, but is requesting the higher sL value to provide an additional safety margin.

The silt loading measurement is used as a tool in a formula to calculate emissions from fugitive road dust, but it is also a measure that can be applied to quantify the effectiveness of measures to limit and control fugitive dust from a facility. A facility that routinely conducts good fugitive dust control measures to limit fugitive dust, should be able to achieve a value of $3.0 \text{ g} / \text{m}^2$, though some seasons (e.g. winter months) can be more difficult to conduct effective cleaning activities due to snow and ice on the roads, and not being able to apply water for cleaning.

The Department seeks to establish a value that is achievable with the application of regular (which can mean daily) cleaning and other practices to limit fugitive dust, but which is not so high as to allow the facility to disregard or reduce its fugitive dust control and as a result allow there to be excessive fugitive dust emissions coming from the facility. Although the testing is quarterly, the facility needs to routinely conduct cleaning activities to limit fugitive dust (not just immediately prior to testing).

The facility is asserting that their maximum volume of truck traffic should have been lower than was used in the prior calculation of fugitive emissions. The requested value of $6.0 \text{ g}/\text{m}^2$ would allow there to be a 60% increase in calculated fugitive emissions (at the same traffic volume, compared to $3.0 \text{ g} / \text{m}^2$). The current limitation of fugitive road dust is that it be limited to less than 35 TPY of total particulate matter, and 6.7 TPY of PM_{10} . This will increase to 48.4 TPY PM, and 9.45 TPY PM_{10} based on the revised traffic estimates. Not all of these fugitive emissions are directly attributable to the ethanol operations.

It is proposed to allow a higher silt loading factor to be used, so long as there is continued recordkeeping and calculations demonstrating that the aggregate calculated emissions (based on actual truck traffic) continue to remain below the fugitive road dust emission limits.

The synthetic minor limitations for the ethanol plant are in place to limit the potential emissions from the ethanol plant, and any associated increases to less than 100 TPY in aggregate. This was needed for the original facility to avoid PSD preconstruction review. This was originally accomplished by the facility by establishing a facility aggregate emission limit of <100 TPY over both the grain milling and ethanol plant operations. This 100 TPY total needs to include the increased grain throughput to accommodate the ethanol plant in determining the aggregate potential emissions from the ethanol plant project, and for the present (based on the federally-approved Wisconsin SIP), may not be allowed to exceed the original synthetic minor thresholds, without triggering source obligation for the ethanol plant.

For sources that experience increased utilization due to the addition of other operations, the emission potentials (of the sources that undergo increased utilization) are used for determining the emissions increase from the existing operation, versus the actual emissions at the time prior to the change. Where past actual emissions exceed any permit allowable emissions, the permit allowable emissions may only be used for accounting for the past actual emissions. Though many of the operations associated with the milling portion of the facility are not expected to have experienced increased emissions as a result of the ethanol plant, the emissions from the grain storage and grain receiving would also be expected to increase its emissions from the new ethanol facility (due to increased grain throughput), though it did not undergo any physical changes that would increase emissions from the operation. When initially constructed, portions of the facility grain milling operations also expected to have increased their operation to provide portions of the milled grain for the ethanol plant, this has largely been replaced by the dedicated grain milling operation for the ethanol plant (permitted under 08-DCF-155). A conveyor was also installed to

move milled grain to the ethanol production portion of the plant.

Though our impression was that the grain dryer would also experience increased utilization from the ethanol plant, the facility has asserted that the grain dryer is not used for grain intended for the ethanol plant and is asserting that grain moisture content is not relevant for grain used in the ethanol plant: The facility indicates that the grain dryer constitutes a unnecessary expenditure of energy for the grain used in the ethanol plant, and that the plant purchases grain that is limited to 18% moisture for use in the ethanol plant. The facility has indicated that the moisture content of the grain does not need to be reduced, since the grain used for ethanol is simply milled and mixed with water. Moisture levels has been noted by other sources as necessary to maintain the quality of the grain in storage. The Renew Energy (now Valero Renewables LLC) facility site has a large grain dryer that was constructed and operated at the facility to dry the wet harvest whole grain received there for use with ethanol, though this was installed without the necessary permits shortly after the ethanol plant commenced operation. The Valero facility has considerably more grain storage capacity such that grain is likely to be held for longer periods. Like the Didion grain dryer, this facility was granted a waiver to resume operation of the dryer to dry the wet grain being received during a ‘wet harvest.’ Another facility, United Ethanol, has noted that it does not have a whole grain dryer, but instead only purchases grain having a moisture content of not more than 15.5%, to insure that the grain does not deteriorate in storage. However, both of these facilities only conduct ethanol production, and all the grain is collected and used for ethanol (and animal feed byproducts), as opposed to Didion which also uses a portion of the received grain for the corn milling operation (human consumption / non-ethanol).

Based on the assertion that the grain dryer (P16) did not experience any increased utilization as a result of the ethanol plant construction, the facility is proposing that these whole grain dryer emissions should not be considered in evaluating the net emissions increase associated with the ethanol plant. It still appears to be necessary to include a requirement that received grain may not be dried for use in the ethanol plant (to assure that the grain dryer does not experience any increased future utilization). If this were not the case, and grain were dried for the ethanol plant (e.g. in the event of a wet harvest), it appears that the net emissions increase of particulate matter associated with the ethanol plant and the grain dryer (and related grain handling and fugitive emissions) would have exceeded the 100 TPY major source threshold that applies to an ethanol plant (based on the federally-approved Wisconsin SIP), and the ethanol plant would have been subject to PSD preconstruction review (for particulate matter).

It is proposed that since the dryer was an existing operation that is a portion of the plant that is not subject to PSD (by virtue of having total plant emissions of less than the 250 TPY major source threshold, and the milling plant not being a listed PSD source), that the changes to resume this grain drying operation are approvable, so long as the changes are prevented from triggering PSD major source review for the ethanol plant.

Description of New or Modified Units.

Emission Unit Information.

Boiler/furnace number [or process line, etc.]:	P16
Unit description:	GSI Grain Dryer (5000 Bu/hr unit operated at 3000 Bu/hr)
Control technology status:	Inherent

Emission Unit Information.

Maximum continuous rating (mmBTU/hr):	19.34
Date of construction or last modification:	Construction 1999; Last modified 2008.
Construction Permit Requirements:	Yes: A construction permit is required to allow permanent resumption of operation.

Stack Information.

Stack identification number:	S23
Exhausting unit(s):	P16
This stack has an actual exhaust point:	Yes
Discharge height above ground level (ft):	167 (application), 147 (currently)
Inside dimensions at outlet (ft):	7.94
Exhaust flow rate (normal) (ACFM):	178158
Exhaust flow rate (maximum) (ACFM):	
Exhaust gas temperature (normal) (°F):	92.2
Exhaust gas temperature (maximum) (°F):	
Exhaust gas discharge direction:	Up
Stack equipped with any obstruction:	No

Control Device Information.

Control Device identification number:	None
Exhausting emissions unit(s):	P16
Control device type [baghouse, ESP, etc.]:	None
Control device description:	
Manufacturer and model number:	
Date of construction:	NA

Fuels and Firing Conditions.

	Fuel name	Higher heating value	Max. sulphur content (wt%)	Max. ash content (wt%)	Excess combustion air (% O2)	Moisture content as fired (%)	Max. hourly consumption	Actual yearly consumption
Primary Fuel	Natural Gas	1050 BTU/cf	-	-		-	19.34 MMBTU/hr	

Stack Parameter Summary For Stacks Included in Permit 09-DCF-242 and 111081520-P01.

Stack ID	Circular or Rectangular	Discharge Direction	Exhaust Obstacle	Diameter or Width (if rect.)	Length (if rect.)	Height	Temp.	Normal Flow Rate	Emission Rate (PM)
		U, D, H	True/False	ft (m)	ft (m)	ft (m)	°F	ACFM	(lb/hr)
S01	*	U	F	1.6		51.25	amb	2200	0.122
S08	*	U	F	0.5		63	amb	1851	0.08
S10	*	U	F	3.0		106.9	89	17346	0.743
S11	*	U	F	3.0		106.9	90	12805	1.36
S14	*	U	F	1.0		140	89	3077	0.14

S15	*	U	F	1.25		32	289	1615	0.064
S16	*	U	F	1.0		32	289	1521	0.048
S17	*	U	F	1.67		115	amb	7230	0.458
S21	*	U	F	1.0		106.5	89	4071	0.174
S22	*	U	F	1.5		106.5	89	6422	0.275
S23	*	U	F	7.94 (8.0)		167	92	178158	20.0
S30	*	U	F	1.94 (2.0)		58	68	3943	0.55
S32	*	U	F	5.0		120	339	63856	3.0
S33	*	U	F	1.3		60	80	1873	0.292
S34	*	U	F	3.0		60	301	30641	1.03
S35	*	U	F	3.0		60	301	30641	1.03
S37 (A-H)	*	U	F	8.0		34	amb	149700	0.0235
S38	*	U	F	0.25(1.25)		35	1152	105.4	0.5
S39	*	U	F	1.5		135.5	89	11412	1.03
S40	*	U	F	3.0		135.5	89	35126	1.25
S46 (S30)	See S30								

* Circular or equivalent diameter

Insignificant Emissions Units.

- Boiler, Turbine, and HVAC System Maintenance.
- Convenience Space Heating (< 5 million BTU/hr Burning Gas, Liquid, or Wood).
- Convenience Water Heating.
- Demineralization and Oxygen Scavenging of Water for Boilers.
- Fire Control Equipment.
- Internal Combustion Engines Used for Warehousing and Material Transport.
- Janitorial Activities.
- Maintenance of Grounds, Equipment, and Buildings (lawn care, painting, etc.).
- Office Activities.
- Pollution Control Equipment Maintenance.
- Purging of Natural Gas Lines.
- Sanitary Sewer and Plumbing Venting.
- 11,000 gallon Sulfuric Acid Storage Tank.
- 10,129 gallon aqueous ammonia storage tank

CROSS MEDIA IMPACTS

No cross media impacts are anticipated from this project. Residual corn fragments and associated material collected from settling within the dryer enclosure is re-incorporated into the process.

EMISSION CALCULATIONS.

Possible VOC emissions from the grain dryer: At 3000 Bu/hr, it appears that the grain dryer may produce VOCs sufficient to subject the process to ch. NR 424, Wis. Adm. Code requirements. Each bushel of corn (~56 pounds at ~ 15% moisture) is expected to contain about 2 pounds of corn oil. The facility estimates that the actual VOC emissions from the process itself will be on the order of 1.3 lbs/hr from the process, but that there could also be considerable ‘ambient’ VOCs that would be emitted due to the large volumes of air (from inlet air containing 2 ppm VOCs). The facility has proposed an emission limit of 4.0 pounds per hour as the LACT limitation, since any emission tests would incorporate these ‘ambient VOCs.’ The AP-42 background document for grain elevators identifies grain dryers as a possible VOC

source.

An emission rate of 0.6 lbs/hr is sufficient to trigger the 15 lbs/day requirement to apply ch. NR 424, Wis. Adm. Code if operated for 24 hours per day. The grain dryer is considered a process line.

Subsequent discussions indicated that the grain throughput limit is representative of not more than 5700 hours / yr. (475 hours / mo., 12 mo. avg.).

WISCONSIN HAZARDOUS AIR POLLUTANT (NR 445) REVIEW

The facility has identified Acetaldehyde, Formaldehyde, Hexane and other hazardous air pollutants (HAP) contained within the exhausts from the proposed operations. The combustion emissions are all from the combustion of Group I, virgin fossil fuels, and thus these emissions are exempt from the emission limit / control provisions of ch. NR 445, Wis. Adm. Code. The fermentation process that produces ethanol, and the process that dries the spent grains also creates state and federal hazardous air pollutants. The emissions that are not from combustion or indoor fugitives, are all proposed to be less than the respective ch. NR 445 thresholds.

It is not expected that the resumption of operation of the (whole) grain dryer will have an impact on the facility wide state or federal hazardous air pollutant (HAP) emissions, since the only HAP emissions are very small quantities that are byproducts of natural gas combustion, and which are exempt from emission limit / control requirements under ch. NR 445, Wis. Adm. Code.

As a portion of the original modification application (under 08-DCF-155), the facility requested higher allowable rates of acetaldehyde from the fermentation process and the DDGS dryer / RTO. Though the facility withdrew the requests to increase the overall plant capacity and to not direct the emissions from the vent gas scrubber to the RTO, the requests to modify these hazardous air pollutant emission rates were not withdrawn (only changes in the criteria pollutant rates were clearly documented, and an updated hazardous air pollutant emissions summary was not provided). The proposed allowable rates from the fermentation scrubber (and other operations) are just below the rate at which a hazardous BACT for acetaldehyde would be required (7900 lbs/yr.). Since this has to account for acetaldehyde from the storage tanks, and other operations, it is proposed to keep the fermentation process at its current allowable of 0.75 lbs/hr (total of 0.90 for all sources emitting from a height range of 40 to 75 ft.). The proposed allowable acetaldehyde emissions from the DDGS dryer / vent gas scrubber and RTO is proposed to remain at 0.53 pounds per hour, as the September 27, 2008 submittal does not identify this as a change being requested for the RTO exhaust. These values are consistent with that identified from other facilities.

Test of these operations indicated that the grain dryer operation was in compliance with the original permitted level (0.33 lbs/hr from the RTO stack).

As the proposed emissions of the state air pollutant emissions are all below the respective ch. NR 445 thresholds, and the facility appears to remain a minor source for federal HAPs, no further review is required. This presumes that the facility continues to operate the control devices (e.g. scrubbers, oxidizer, etc.) noted within the permit application and which are required within the draft permit. Emissions of federal hazardous air pollutants need to remain below the respective major source thresholds (10 TPY for

Furfural	98-01-1	0.0014	0.00618	3.31	≥ 40 ft.; < 75 ft.	Lbs/hr	A
Furfural	98-01-1	0.00028	0.00123	12.7	≥ 75 ft.	Lbs/hr	A
Hexane	110-54-3	0.2	0.828	286	≥ 40 ft.; < 75 ft.	Lbs/hr	A
Hexane	110-54-3	0.2	0.828	1225175	≥ 75 ft.	Lbs/yr	A
Methanol	67-56-1		0.701	-			-
Toluene	108-88-3	0.02	0.088	306	≥ 75 ft.	Lbs/hr	A
Toluene	108-88-3	0.02	0.088	2450350	≥ 75 ft.	Lbs/yr	A

COMPLIANCE AND TECHNOLOGY REVIEW

The existing grain ‘column’ dryer, functions by feeding raw (field dried, but still relatively high moisture) whole kernel corn at the top of the dryer, and passing air heated by a gas fired burner and driven with blowers up through the column of grain, and the exhaust exiting from the perforated sides and top exhaust vent of the dryer. The dried grain is collected from the bottom of the column dryer, and transferred to a storage silo. The grain initial moisture can range from over 25% to above 15% moisture, but is lowered to 15% moisture (or less) through the drying process. Removing some of the moisture from the corn improves its ability to be stored for extended periods, since the activity of mold and other agents that would cause deterioration are significantly reduced when the corn is dried. The moisture content of the grain may also need to be controlled to provide the characteristics needed for the normal milling process (for the corn milling portion of the facility).

The dryer is identified as having perforations within the steel walls of less than 0.094 inches, such that the 0% opacity standard from the NSPS does not apply to this dryer, though it is still considered a source regulated under the NSPS. The dryer burner is identified as having a potential heat input of 19.34 MMBTU/hr.

The existing dryer is enclosed through the installation of a structural steel and sheet metal shell that extends beyond the circular ‘catwalks’ at the outside of the dryer, and transitions to a circular stack above the dryer. The facility only enclosed the portion of the dryer above the burners and blowers where air is exhausted from the dryer, and made provisions for collecting residual grain materials that settle out from the exhaust stream, while maintaining the ability to access the bottom of the dryer to maintain the burners and blowers.

The application is proposing a total PM allowable emission rate of 30 lbs/hr and a PM₁₀ rate of 20 lbs/hr. These emission rates comply with the process weight rate and exhaust mass based limitations under s. NR 415.05, Wis. Adm. Code. The aggregate (long term) emissions will also be limited through a limitation

on the mass of grain that may be processed.

The process weight rate limitation is based on the mass rate of material handled by a process to establish the emission limit, based on the formula(s) noted under s. NR 415.05(2), Wis. Adm. Code. The process is noted as having a dried corn mass rate of up to 84 tons per hour (based on the mass at 15% moisture corn). This translates to 168,000 pounds per hour of dried (15% moisture) corn, and the use of the formula $E = 17.31 P^{0.16}$ when the mass rate exceeds 60,000 pounds per hour. The actual mass of corn fed to the dryer process will generally be higher than this due to its initial moisture content and is what is used in the calculation. Assuming that the incoming mass of grain may contain 10% or more additional moisture, the evaluation will be conducted using 184,800 pounds per hour (92.4 TPH), or 35.7 lbs/hr. At the dried grain rate of 84 tons per hour, the limitation translates to 35.2 lbs/hr. Thus the proposed 30 lbs/hr limitation is less than what can be authorized under s. NR 415.05(2), Wis. Adm. Code, and is approvable under ch. NR 415, Wis. Adm. Code.

The particulate matter emission limitation may also not be greater than the rate allowed under s. NR 415.05(1), Wis. Adm. Code. In the case of this grain dryer, the applicable standard is viewed as 0.2 pounds per 1000 pounds of exhaust, under s. NR 415.05(1)(m), Wis. Adm. Code (for grinding, drying, mixing, conveying, sizing or blending). It is proposed that the more stringent 0.2 pounds per 1000 pounds of exhausts applies although there is a 0.4 pounds per 1000 pounds of exhaust under (n) for grain processing and handling, since this process is also a “drying” process.

The application identifies an exhaust mass rate of 708,156 pounds of air (exhaust) per hour, based on the stack test measured flow rate of 157,368 SCFM (standard cubic feet per minute), and an air density of 0.075 pounds per SCF (standard cubic feet). At 0.2 pounds per 1000 lbs of exhaust gas, this translates to a code maximum allowable rate of 141.6 pounds per hour. Thus the proposed 30 lbs/hr PM (and 20 lbs/hr PM₁₀) limitation is more stringent than the limitations under s. NR 415.05(1), Wis. Adm. Code as well.

The actual measured rates of particulate matter emissions are less than the proposed allowable emission rates. The measured rates (based on ~84 TPH) averaged 0.25 lbs/T of total PM, and about 0.09 lbs PM₁₀ / T, or about 21 lbs/hr of PM and 8 lbs/hr of PM₁₀ when specific PM₁₀ tests were conducted.

In addition to the particulate matter emissions, it is expected that a small portion of the corn oil will also be volatilized and emitted as VOC emissions. If these emissions have the potential to exceed 15 pounds per day, then the source is subject to the VOC limitations for a process line under s. NR 424.03(2), Wis. Adm. Code. This requires the application of 85% control, or if not technologically feasible under the standards normally applied under ch. NR 424, then the facility will need to apply the “Latest Available Control Techniques and operating practices” (LACT).

The facility has estimated that the potential VOC emission rate should be on the order of 4 pounds per hour or less. This is less than the observed backhalf (condensable) portion of the particulate matter which has been observed as being an average of nearly 10 pounds per hour, with an individual (hourly) value of up to 16 pounds per hour. However if emissions were of this order and were from volatilization of corn oils, it is expected that this would be observed as deposition of corn oil films on the inside walls of the grain dryer enclosure. The facility has noted that it has not observed any oil films when conducting maintenance and cleaning of the grain dryer enclosure except when they applied mineral oil to reduce emissions from the grain dryer operation. Thus the proposed VOC emission estimate is expected to be valid. Mineral oil, which is sometimes used to reduce emissions from grain handling, was not found to

reduce the particulate matter emissions from the dryer and is not identified as proposed in the application.

The application provided an 85% cost of control analysis (sometimes referred to as a 'LACT' analysis), which demonstrated that the cost of controlling the VOC emissions from the grain dryer are in excess of the levels which would be considered technologically under the standards normally applied under s. NR 424.03(2), Wis. Adm. Code. The following analysis examines both the costs associated with an emission rate of up to 1.3 lbs/hr of VOC, and a rate of 4.0 lbs / hr VOC, using the noted limitation on grain throughput and presuming that only 85% of the VOCs are collected and removed.

Though the applicant has identified lower volatility VOCs associated with corn oil in a review conducted in IL for collection of corn oil after the fermentation process, it is the Department's view is that most of these identified VOCs are VOCs produced by fermentation. The Didion (whole) grain drying process is being used to dry corn prior to any fermentation processes.

LACT Analysis

Traditional forms of VOC control include thermal oxidizers (including both recuperative and regenerative), catalytic oxidizers, condensers and carbon adsorption.

The potential for application of catalytic oxidation to Didion Milling, Inc. coating operations is severely limited. Catalytic oxidation is an inappropriate control for the grain dryer application because the catalyst bed, which relies on close contact of catalytically active surface area for reaction with the gas stream, can be easily compromised by particulate matter entrained in the air stream. The amount of the particulate matter in the air stream solicited for permitting is 30 pounds per hour and could quickly reduce the efficiency of the catalyst by masking the surface area, even if installed following a baghouse.

The potential for application of carbon adsorption technology to this operation is also severely limited. Carbon adsorption has difficulty controlling low volatility organics (materials with molecular weights greater than 130) such as corn oil as they are difficult to strip from the carbon during regeneration. Much of the VOC may be volatilized corn oil that would tend to condense and block continued use of a carbon adsorption bed.

Additionally, in dilute air-streams (exhaust streams with VOC concentrations less than 1,000 PPM) carbon adsorption cannot tolerate humidity levels greater than 50 percent, as this can lead to condensation of water which can also block the much of the activated carbon surface area. As the air-stream would be dilute, dehumidification would also be necessary. In order to lower the humidity within the exhaust stream to a level where it could be controlled, cooling would be required. This additional dehumidification step would add significantly to the cost of carbon adsorption control. Thus incorporating this control (carbon adsorption) to grain dryer operations appears to be technologically infeasible.

Application of VOC condensing technology is viewed as inappropriate because of the very small VOC concentration in the exhaust air stream and the large amount of energy required for cooling a large volume air stream from temperatures of 87°F to a temperature at which each of the VOCs would condense. For a stream comprised largely of corn oil, the energy requirements would be lower, but the viscosity of the corn oil and the presence of residual particulate matter within the exhaust stream would tend to adhere to and quickly block the condenser heat exchange surfaces. The application of a fabric filter baghouse prior to the application of the condenser (or other) add-on control alone would result in a VOC cost of control in excess of the levels normally considered feasible under ch. NR 424, Wis. Adm. Code, where the VOC emission rate is on the order of 4.0 lbs/hr.

However, the potential for the application of a more widely used control such as thermal oxidation is not as technologically limited. For this reason an examination of the cost associated with the application of both thermal recuperative oxidation control and thermal regenerative oxidation control was conducted. However, this oxidation technology is also susceptible to particulate matter fouling, and given the 30-pound per hour particulate matter emissions rate sought within this application, baghouse air stream conditioning to remove the particulate matter would be required. On the basis of the USEPA *Cost Control Manual* cost estimation guidance (with an increase in estimated cost of 1.285 to account for inflation since December 1999), preliminary cost-effectiveness of an add-on thermal recuperative oxidizer, at 70 percent heat recovery, was evaluated.

The result of this evaluation (using potential emissions) and assuming 85 % overall control as required by NR 424.03, Wisconsin Administrative Code, are contained in the following table.

The same result is achieved based on the potential application of thermal regenerative oxidation technology. On the basis of the USEPA *Cost Control Manual* cost estimation guidance (with an increase in estimated cost of 1.3 to account for inflation since December 1999), preliminary cost-effectiveness of an add-on thermal regenerative oxidizer, at 95 percent heat recovery, was evaluated. The result of this evaluation (using potential emissions) and assuming 85 % overall control as required by NR 424.03, Wisconsin Administrative Code, are contained in the following table. Details of the cost estimations are included in the application.

CONTROL TYPE	VOC Control ANNUAL COST	BAGHOUSE ANNUAL COST	TOTAL ANNUAL COST	TONS VOC (controlled)	COST/TON CONTROLLED
Recuperative TO	\$8,661,552	\$341,733	\$9,003,285	3.675	\$ 2,449,873
Regenerative TO	\$5,290,377	\$341,733	\$5,632,110	3.675	\$1,532,547
Other controls requiring a baghouse	(not established)	\$341,733	>\$341,733	3.675	>\$92,989
Recuperative TO	\$8,661,552	\$341,733	\$9,003,285	13.33	\$ 675,415
Regenerative TO	\$5,290,377	\$341,733	\$5,632,110	13.33	\$422,514
Other controls requiring a baghouse	(not established)	\$341,733	>\$341,733	13.33	>\$25,636

These estimated costs are well beyond the cost per ton normally considered as ‘technologically feasible’ by the Department under the standards normally applied under ch. NR 424, Wisconsin Administrative Code. The costs would be lower somewhat if the current natural gas cost is applied to the analysis rather than the projected cost used in the analysis, (\$0.00068 / scf vs. \$0.0105 / scf), but this will not change the determination as to whether the project is technologically feasible under ch. NR 424, Wis. Adm. Code.

Didion Milling, Inc proposed that LACT for the grain dryer operation should be a restriction limiting throughput to a monthly average of 1,425,000 bushels (39,900 tons) of grain dried per 12 consecutive month period and a VOC emission limit of 4.0 pounds per hour.

The Department is proposing that LACT should be use of temperature controls which limit excessive temperatures, an emission limitation of 4.0 lbs/hr of VOC emissions from the dryer process, and

establishing the throughput limitation in units of 39,900 tons of dried grain per month (12 month average), rather than bushels, since the actual measurements of grain are on a mass basis.

The facility has also requested a modification of the fugitive emissions and the silt loading factor (sL) that is used in the fugitive emission calculations, and which serves as an indicator of fugitive emissions and controls when measured. Although there is information indicating that fugitive emissions can be controlled to lower levels at some ethanol plants, this facility also conducts grain milling and operates a grain dryer, and is asserting that a higher sL is appropriate in light of what has been identified at other facilities (e.g. ethanol plants in Minnesota). The facility will continue to be required to conduct measurements of the sL at the same intervals as before. The Department is including the current fugitive dust plan as a ‘Part III’ of the permit and it will be available to the public for comment, since it is a portion of how the facility is expected to limit fugitive emissions.

AIR QUALITY REVIEW

A modeling analysis for Didion Ethanol was completed on March 1, 2010 by Gail Good. This analysis assessed the impact of the particulate matter and other emissions in support of a construction permit (09-DCF-242).

MODELING ANALYSIS

- ◆ The consultant supplied the emission parameters used in the analysis for this facility. The parameters were checked by Don Faith of the Wisconsin Department of Natural Resources. Building dimensions were determined with USEPA’s BPIPPRM using measurements taken on plot plans provided with the application. Please refer to the source parameter table.
- ◆ Five years (1998-2002) of preprocessed meteorological data was used in this analysis. The surface data was collected in Juneau and the upper air meteorological data originated in Green Bay.
- ◆ AERMOD was also used in the analysis. The model used regulatory default options. These allow for calm wind correction, buoyancy induced dispersion, and building downwash.
- ◆ The facility will be located in a PSD baseline county, so increment consumption was considered for this analysis. Using AEMS, it was determined that one other facility (Seneca Foods) has one stack near enough to Didion Ethanol’s proposed location to consider in the increment consumption analysis.
- ◆ Regional background concentrations were found to be as follows:

◆

BACKGROUND CONCENTRATIONS (Concentrations are in µg/m ³)		
Pollutant	Averaging Period	Concentration
TSP	24 hour	39.7
PM ₁₀	24 hour	29.4
	Annual	10.1
NO _x	Annual	8.0

CO	1 hour	950.5
	8 hour	904.7
SO ₂	3 hr	11.8
	24 hr	11.2
	Annual	5.4

- ◆ The receptors used in this analysis consisted of a rectangular grid extending around the facility. A grid of points was set up specifically to represent the fenceline, which is shown on plot plans submitted with the application. Approximately 1684 receptors were used to model this facility. Points within the fenceline were not considered. Terrain was considered in this analysis and was derived using NED data.

MODEL RESULTS

The results demonstrate that the ambient air quality standards for TSP and PM₁₀ will be attained and maintained assuming the emission rates and stack parameters listed in the attached source table.

Modeling Analysis Results (All Concentrations in µg/m ³)			
	TSP – 24 hr	PM ₁₀ – 24 hr	PM ₁₀ – Annual
Impact	32.5	28.8	5.8
Increment	-	30.0	17.0
% Increment Consumed	-	96.0	34.1
Background Concentration	39.7	29.4	10.1
Total Concentration	72.2	58.2	15.9
NAAQS	150.0	150.0	50.0
% NAAQS	48.1	38.8	31.8

Modeling Analysis Results (All Concentrations in µg/m ³)			
	SO ₂ – 3 hr	SO ₂ – 24 hr	SO ₂ – Annual
Impact	9.4	3.2	0.3
Increment	512.0	91.0	20.0
% Increment Consumed	1.8	3.5	1.5
Background Concentration	11.8	11.2	5.4
Total Concentration	21.2	14.4	5.7
NAAQS	1,300.0	365.0	80.0
% NAAQS	1.6	3.9	7.1

Modeling Analysis Results (All Concentrations in µg/m ³)			
	CO – 1 hr	CO – 8 hr	NO _x – Annual

Impact	580.2	307.3	10.7
Increment	-	-	25.0
% Increment Consumed	-	-	42.8
Background Concentration	950.5	904.7	8.0
Total Concentration	1530.7	1212.0	18.7
NAAQS	40000.0	10000.0	100.0
% NAAQS	3.8	12.1	18.7

CONCLUSION

The results of the modeling analysis demonstrate that the applicable air quality standards will be satisfied assuming the emissions rates and stack parameters listed in the source table. Note that the TSP rate for S23 (grain dryer) is 30.0 lb/hr and the PM10 rate is 20.0 lb/hr.

Didion Ethanol - Cambria Stack Parameters					
ID	LOCATION (M)	HEIGHT (M)	DIAMETER (M)	VELOCITY (M/S)	TEMP (K)
S37A	330267.2, 4822526.0	10.4	2.44	15.11	Ambient
S37B	330273.5, 4822526.0	10.4	2.44	15.11	Ambient
S37C	330279.0, 4822526.0	10.4	2.44	15.11	Ambient
S37D	330284.6, 4822526.0	10.4	2.44	15.11	Ambient
S37E	330290.1, 4822526.0	10.4	2.44	15.11	Ambient
S37F	330295.7, 4822526.0	10.4	2.44	15.11	Ambient
S37G	330301.2, 4822526.0	10.4	2.44	15.11	Ambient
S37H	330306.8, 4822526.0	10.4	2.44	15.11	Ambient
S01	330246.5, 4822779.0	15.62	0.49	5.51	Ambient
S08	330185.2, 4822780.3	19.20	0.15	48.15	Ambient
S10	330184.7, 4822763.9	32.6	0.91	12.59	305
S11	330183.6, 4822763.9	32.6	0.91	9.29	305.5
S14	330286.5, 4822747.2	42.7	0.32	18.06	305
S15	330194.1, 4822763.5	9.8	0.38	6.69	416.5
S16	330194.1, 4822762.0	9.8	0.31	9.84	416.5
S17	330274.6, 4822767.7	35.1	0.51	16.77	Ambient
S21	330185.3, 4822754.6	32.5	0.31	26.33	305
S22	330185.9, 4822754.6	32.5	0.46	18.48	305
S23	330270.9, 4822741.6	50.9	2.44	18.01	306.6
S32	330376.4, 4822590.7	36.6	1.52	16.52	443.7
S33	330410.0, 4822762.7	18.3	0.40	7.17	299.8
S34	330320.1, 4822581.4	18.3	0.91	22.23	422.2
S35	330320.1, 4822575.5	18.3	0.91	22.23	422.2
S36	330107.3, 4822660.8	7.6	0.51	39.94	739.0

S38	330473.2, 4822768.1	10.7	0.08	10.91	895.4
S39	330204.6, 4822726.7	41.3	0.46	32.41	305
S40	330193.0, 4822754.2	41.3	0.91	25.27	304.8
S45	329949.2, 4822854.9	9.8	0.61	0.10	449.8
S46	330329.2, 4822573.0	17.7	0.61	6.38	293.2

* The actual stack diameter for S38 is 1.25 feet. The value in the table was calculated using the USEPA calculation methods for flare stacks.

Didion Ethanol - Cambria Emission Rates				
ID	PM (LB/HR)	SO ₂ (LB/HR)	NO _x (LB/HR)	CO (LB/HR)
S37A	0.023	-	-	-
S37B	0.023	-	-	-
S37C	0.023	-	-	-
S37D	0.023	-	-	-
S37E	0.023	-	-	-
S37F	0.023	-	-	-
S37G	0.023	-	-	-
S37H	0.023	-	-	-
S01	0.122	-	-	-
S08	0.08	-	-	-
S10	0.743	-	-	-
S11	1.36	-	-	-
S14	0.14	-	-	-
S15	0.064	0.005	0.838	0.69
S16	0.048	0.004	0.628	0.52
S17	0.46	-	-	-
S21	0.174	-	-	-
S22	0.29	0.004	0.6	0.5
S23	30.0 / 20.0	0.01	1.93	1.62
S32	3.0	6.2	7.813	12.50
S33	0.292	-	-	-
S34	1.03	0.05	3.683	2.58
S35	1.03	0.05	3.683	2.58
S36	-	1.146	1.406	2.22
S38	0.5	0.004	2.0	5.12
S39	1.03	-	-	-
S40	1.25	-	-	-
S45	0.13	-	-	-
S46	0.55	-	-	-

EMISSIONS FROM NEW EQUIPMENT OR MODIFICATION

A. Stack Emissions

Stack S23 - Criteria Pollutants Emissions (Stack Height - 167 ft.).

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
Particulate Matter	30	85.6*
PM ₁₀	20	57.0*
Nitrogen Oxides	1.93	5.5
Volatile Organic Compounds	4.0	11.4
Carbon Monoxide	1.62	4.6
Sulfur Dioxide	0.01	0.03

* Annual limitation is based on a monthly average throughput of 39,900 tons per month of dried grain, and which is also expected to limit the hours of operation (to ~ 475 hours per month, 12 mo. avg.).

- Criteria Pollutants Emissions (fugitive road dust).

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
Particulate Matter		48.4*
PM ₁₀		9.45*

EMISSIONS AFTER INSTALLATION OF NEW EQUIPMENT OR MODIFICATION (associated with the modification)

Criteria Pollutants Emissions.

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
Particulate Matter		134*
PM ₁₀		66.45
Nitrogen Oxides	1.93	5.5
Volatile Organic Compounds	4.0	11.4
Carbon Monoxide	1.62	4.6
Sulfur Dioxide	0.01	0.03

* The allowable increase, based on the prior potentials is less than 99 TPY

TOTAL FACILITY EMISSIONS AFTER INSTALLATION OF NEW EQUIPMENT OR MODIFICATION

Criteria Pollutants Emissions.

Pollutant	Potential to Emit (PTE)	
	Pounds per hour	Tons per year
Particulate Matter		202.8
PM ₁₀		130.8
Nitrogen Oxides		95.4
Volatile Organic Compounds		63.1
Carbon Monoxide		92.4
Sulfur Dioxide		27.7

FACILITY AND PROJECT CLASSIFICATION

1. Existing Facility Status.

The existing grain processing and ethanol facility was last permitted as a synthetic minor non-Part 70

source and a PSD minor source. The allowable emissions from the facility were limited by the permit to less than 100 TPY of criteria pollutants. At the time of construction, the ethanol plant was considered within the ‘chemical plant’ PSD source category (effectively a ‘nested’ source with a 100 TPY major source threshold). The existing grain storage and processing facility (the original Didion Milling), is not considered as being within one of the PSD source categories, and has a PSD major source threshold of up to 250 TPY.

Due to the emissions from the facility being higher than anticipated, the true emissions potential are in excess of the Title V / Part 70 threshold, and the facility is considered a major source.

2. Project Status.

The resumption of operation of the grain dryer with the significantly higher emission rates makes the facility a Title V (Part 70) major source. The project constitutes a minor modification of a PSD minor source, as the facility has demonstrated that the emissions from the grain processing facility, (of which the grain dryer was a component), and the ethanol plant combined did not exceed the 250 TPY major source threshold. The grain dryer is noted as not being used as a portion of the ethanol plant operation.

3. Facility Status after Completion of the Project.

The facility will be considered a Title V (Part 70) major source, as the facility potential emissions will be in excess of 100 TPY of particulate matter emissions. Under the current U.S. EPA and Wisconsin rules, the grain processing facility appears to constitute a PSD minor source, since the aggregate potential emissions from the facility (including the ethanol plant) are less than 250 TPY. This project only addresses the grain dryer that is a portion of the grain processing operation.

4. Summary.

NSR Applicability	Existing Facility		Proposed Project		Facility After Project	
	Major	Minor	Major	Minor	Major	Minor
PSD		X		X		X (grain milling)
Non-Attainment		na		na		na
Federal HAP		X		X		X

Part 70 Applicability	Existing Facility			Facility After Project		
	Part 70	FESOP (Syn. Minor)	non-part 70	Part 70	FESOP (Syn. Minor)	non-part 70
Status	X (facility)	X (permit)		X		

ENVIRONMENTAL ANALYSIS

The proposed project is a Type III action under Chapter NR 150, Wis. Adm. Code, because there is a potential increase in hazardous emissions and the increased potential to emit of the project is less than 100 TPY for each criteria pollutant. The facility has proposed a throughput limitation of 39,900 tons of grain dried (based on mass at 15.5% moisture) per month (12 mo. average) to limit the total PM to less than 100 TPY.

A news release is required for this proposal and is included in the public comment notice. It is proposed that an environmental assessment not be completed.

RULE APPLICABILITY

The applicable particulate matter emission limit from s. NR 415.05, Wis. Adm. Code, is the limitation from s. NR 415.05(2), Wis. Adm. Code. This limitation is more restrictive than the limitation under s. NR 415.05(1)(m), Wis. Adm. Code that applies to processes conducting “grinding, drying, mixing, conveying, sizing or blending.”

The VOC emission limitations under s. NR 424.03(2), Wis. Adm. Code also applies to the grain dryer, as this is a process line that is anticipated to have VOC emissions in excess of 15 pounds per day. The 85% control analysis conducted demonstrates that the cost of control is in excess of the thresholds considered technologically feasible, and has been determined that LACT constitutes operation of the dryer using good operating practices to limit excessive temperatures, and limitations on the throughput of grain and emissions of VOC.

The emissions of fugitive dust (which may include large particulate matter, exceeding the material considered “total particulate matter”) from the operation are regulated under s. NR 415.04, Wis. Adm. Code.

NEW SOURCE PERFORMANCE STANDARDS (NSPS) APPLICABILITY

For proposed construction of a source:

1. Is the proposed source in a source category for which there is an existing or proposed NSPS?
 Yes No Not applicable. (If yes, identify the source category.)
2. Is the proposed source an affected facility?
 Yes No Not applicable. (Explain if necessary to clarify.)

For the proposed modification of an existing source:

1. Is the existing source, which is being modified, in a source category for which there is an existing or proposed NSPS?
 Yes No Not applicable. (If yes, identify the source category.) Grain Elevator NSPS (s. NR 440.47, Wis. Adm. Code based on 40 CFR Part 60, Subpart DD). This is for an existing grain dryer at an NSPS grain elevator which is resuming operation.
2. Is the existing source, which is being modified, an affected facility (prior to modification)?
 Yes No Not applicable. (Explain if necessary to clarify here and in the following items)

3. Does the proposed modification constitute a modification **under NSPS** to the existing source?
 Yes No Not applicable. The grain dryer has already been determined to be subject to NSPS.
4. Will the existing source be an affected facility after modification?
 Yes No Not applicable.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS) APPLICABILITY

Part 61 NESHAPS:

1. Will the proposed new or modified source emit a pollutant controlled under an existing or proposed NESHAPS?
 Yes No (if yes, identify the pollutant).
2. Is the proposed new or modified source subject to an existing or proposed NESHAPS?
 Yes No (if yes, identify NESHAPS).

Part 63 NESHAPS:

1. Will the proposed new or modified source emit a pollutant controlled under an existing Part 63 NESHAPS?
 Yes No (if yes, identify the pollutant). The grain dryer will emit small quantities of hazardous air pollutants which are byproducts of natural gas combustion.
2. Is the proposed new or modified source subject to an existing Part 63 NESHAPS?
 Yes No (if yes, identify NESHAPS). No. The facility emissions of federal hazardous air pollutants are limited to less than the major source thresholds of 10 TPY / 25 TPY.
3. Is the proposed project subject to s. 112(g) of the Clean Air Act?
 Yes No.

The section 112(g) rules only apply to case-by-case MACT standards that are developed for new construction or reconstruction of sources that (by themselves) constitutes a new major source of federal hazardous air pollutants (for source categories not covered under an existing Part 63 MACT standard).

CAM - COMPLIANCE ASSURANCE MONITORING.

The CAM plan is not incorporated as an element of the construction permit, since the proposed permit is only a construction permit. The CAM plan will be included as an element of the Title V operation permit.

CRITERIA FOR CONSTRUCTION PERMIT APPROVAL

Section 285.63, Wis. Stats., sets forth the specific language for permit approval criteria. The Department finds that:

1. The source will meet emission limitations.
2. The source will not cause nor exacerbate a violation of an air quality standard or ambient air increment.

3. The source is operating or seeks to operate under an emission reduction option. Not Applicable.
4. The source will not preclude the construction or operation of another source for which an air pollution control permit application has been received.

CRITERIA FOR OPERATION PERMIT APPROVAL

Since issuance of the construction permit will require revision of the facility's operation permit, the criteria for operation permit approval set forth in ss. 285.63 and 285.64, Wis. Stats. must be met. Revisions to the operation permit that require a construction permit shall meet the criteria for construction permit approval of s. 285.63, Wis. Stats., as outlined above.

The Department finds that:

1. The facility will meet applicable emission limits and other requirements.
2. The facility will not cause nor exacerbate a violation of an ambient air quality standard or ambient air increment.

PRELIMINARY DETERMINATIONS FOR CONSTRUCTION PERMIT NO. 09-DCF-242

The Wisconsin Department of Natural Resources has reviewed the construction permit application and other materials submitted by Didion Milling-Cambria and hereby makes a preliminary determination that this project, when constructed or modified and operated consistent with the application and subsequent information submitted, will be able to meet the emission limits and conditions included in the attached Draft Permit. Furthermore, the Department hereby makes a preliminary determination that a revised operation permit may be issued with the following Draft Applicable Limits and Draft Permit Conditions. A final decision regarding emission limits and conditions will be made after the Department has reviewed and evaluated all comments received during the public comment period. The proposed emission limits and other proposed conditions in the Draft Permit are written in the same form that they will appear in the construction permit and operation permit revision. These proposed conditions may be changed as a result of public comments or further evaluation by the Department. The United States Environmental Protection Agency will be given the opportunity to comment on the operation permit revision of any Part-70 source prior to the Department making a final decision on the operation permit revision.

PERMIT FEE CALCULATION

Basic Fees.

PSD or NAA minor modification of a Part 70 major source. [\$4,400]	\$4,400.00
Commence Construction Waiver Fee. [\$300]	\$300.00
Total Basic Fees	\$4,700.00

Additional Fees.

The permit application is for a PSD or NAA minor source or minor modification to a major PSD or NAA source whose projected air quality impact requires a detailed air quality modeling analysis. [\$700]	\$700.00
Hearing requested by the applicant	\$950
The application is for a source not reviewed under ch. NR 405 or 408, Wis. Adm. Code, where the applicant requested in writing and received the permit in 50 days or less (from when the application was considered complete). [\$2,650]	\$2,650.00
The permit application is for a source which requires an emission limit determination under s. NR 424.03(2)(c), Wis. Adm. Code. [\$400 per basic emissions unit, 1 basic emissions unit(s).]	\$400
The permit application required the review and analysis of 2 basic emissions unit(s). [\$400 per basic emission unit, 2 basic emissions unit(s) modified.]	\$800
Total Additional Fee	\$5,550.00
Total Fees (Total Basic Fees + Total Additional Fees)	\$10,200.00

Credit(s).

Commence Construction Waiver Fee. [\$300]	-\$300.00
The initial fee submitted with the application. [\$1,350]	-\$1,350.00
The source publishes the notice	-\$150
Total Credits	-\$1,800.00
TOTAL AMOUNT DUE (Total Fee + Total Credit)	\$8,400.00