

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

M420431499

FACILITY: Zeeland Farm Services, Inc.		SRN / ID: M4204
LOCATION: 2468 84th Ave, ZEELAND		DISTRICT: Grand Rapids
CITY: ZEELAND		COUNTY: OTTAWA
CONTACT: Bridgette Rillema, Environmental Manager		ACTIVITY DATE: 09/10/2015
STAFF: April Lazzaro	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Unannounced, scheduled inspection.		
RESOLVED COMPLAINTS:		

This was an unannounced, scheduled inspection. Staff arrived at the Zeeland Farm Services, Inc. facility and met with Bridgette Rillema, Environmental Manager and Cory Lopshire, Soybean and Refinery Plant manager.

The DEQ Environmental Inspections: Rights and Responsibilities brochure was presented and its contents were briefly discussed. An overview of AQD expectations for the inspection was relayed during the pre-inspection meeting. Ms. Rillema and Mr. Lopshire accompanied staff on a physical inspection of the facility.

FACILITY DESCRIPTION

Zeeland Farm Services, Inc. (ZFS) is located in Zeeland, Ottawa County, Michigan. The facility consists of three operations, an agricultural feed and grain operation, the soya plant which is a soybean oil extraction plant and a soybean oil refinery. The extraction process includes the handling and drying of the soybeans and meal, preparation of the beans into thin flakes and extraction of the oil from the flakes using hexane. The two products from the soya plant are soybean oil and meal, which is used as animal feed. In addition, the facility combusts landfill gas transported from a nearby landfill as fuel for the boilers for process steam and in two Caterpillar 3520 engines to produce electricity for on-site use and for sale to MISO. Additionally, the facility distributes biodiesel fuel but does not produce it. It is recommended that ZFS reevaluate the agricultural feed and grain operation periodically to determine whether or not it is considered part of the stationary source.

The stationary source is subject to Title 40 of the Code of Federal Regulations (CFR), Part 70, because emissions of volatile organic compounds (VOC) exceed 100 tons per year and in this case the individual hazardous air pollutant (HAP) emissions exceed 10 tons per year.

The stationary source is subject to the New Source Performance Standards for Grain Elevators promulgated in Title 40 of the Code of Federal Regulations, Part 60, Subparts A and DD. This includes EUDRYING, FGHANDLING and EUPREPEQUIPMENT.

EUBOILER and EUREFBOILER are subject to the New Source Performance Standards (NSPS) for Industrial-Commercial-Institutional Steam Generating Units promulgated in Title 40 of the Code of Federal Regulations, Part 60, Subparts A and Dc. They are also subject to the Maximum Achievable Control Technology (MACT) standards under the National Emission Standard for Hazardous Air Pollutants for Major Sources for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR Part 63 Subpart DDDDD. Subpart DDDDD was briefly discussed, and Ms. Rillema indicated that they are aware of the upcoming compliance date and all was in order.

Two additional boilers at the stationary source, EUNUKBOILER and EULF/NGBLR5, are subject to the Boiler MACT. As indicated above, ZFS is aware of the upcoming compliance date.

The extraction plant at the stationary source, FGEXTRACTION, is subject to the MACT Standards for Solvent Extraction for Vegetable Oil Production promulgated in Title 40 of the Code of Federal Regulations, Part 63, Subparts A and GGGG.

Two engines at the stationary source, EULF/NGENGINES, are subject to the Maximum Achievable Control Technology Standards for Reciprocating Internal Combustion Engines promulgated in Title 40 of the Code of Federal Regulations, Part 63, Subparts A and ZZZZ.

COMPLIANCE EVALUATION

SOURCE-WIDE CONDITIONS

This permit contains source wide conditions regarding opacity from vehicle traffic, requires both a Malfunction Abatement Plan (MAP) and Preventative Maintenance Plan (PMP) and PM10 and PM2.5 ambient monitoring programs.

Staff has reviewed non-certified visible emissions records from July 2015 and found them to be complete.

Currently the facility is operating under approved MAP and PMP which have been reevaluated and resubmitted based on the AQD recommendations during the last Full Compliance Evaluation (FCE).

ZFS has been conducting the required ambient air monitoring program since April 2013. Since replacement of the previously installed monitors, things appear to be going more smoothly with a higher level of data completeness. The facility has committed to continuing the monitoring program through December 2015 per the AQD requirement.

EUBOILER

The facility operates a 35 mmBtu/hr firetube boiler that is equipped to fire natural gas, distillate oil, landfill gas and/or soy oil. It is subject to NSPS Dc which requires daily recordkeeping of fuel use by type. ZFS has stated that they record fuel use daily. The facility has submitted the MACT DDDDD initial notification for this emission unit (EU) with an anticipated compliance date of January 31, 2016. ZFS has indicated they are aware of the upcoming compliance date. This boiler is permitted to burn distillate oil, however Ms. Rillema has reported that it has not burned any and therefore ZFS does not have a certification sheet. Daily fuel use records were requested and provided, which indicate the boiler operates on both natural gas and landfill gas routinely. (see attached records)

EUDRYING

This EU consists of a Cimbria grain dryer and exhaust fans. The facility has conducted stack tests for PM on all emission points in this EU in previous years. There was no identified emission limit exceedance identified in prior AQD reports. This EU has been added to the MAP/PMP as requested during the last FCE. It also appears as though this EU is subject to NSPS DD which also covers grain dryers. However, the dryer that is at the facility is a rack dryer with cyclones on each of the five horizontal exit points. The NSPS does not specifically address this type of dryer, and therefore the AQD implemented a 10% opacity limit. Also, the emission limit of the permit is 0.03 pounds/1,000 lbs of exhaust gases on a dry gas basis. This needs to be compared to the NSPS limit of 0.023 g/dscm. Based on a 2012 stack test, and consultation with DEQ TPU staff, actual emissions per stack of EUDRYING was 0.009 lb/1000 lb dry exhaust gas which converts to 0.0045 g/dscm and indicates compliance with the NSPS limit.

The material limit is 2,520 tons of soy beans per day and 225,000 tons per 12-month rolling time period. Daily and rolling average records were requested which were received and indicated that the highest daily bean processed was in March of 2015 at 1,775 tons of beans. The facility reports in bushels, not tons as required by the permit, so I had to convert. It would be preferred if the facility would report in the correct format. The highest 12-month rolling soybean throughput for the time period was July 2014-June 2015 at 152,838 tons. Daily non-certified visible emissions are being conducted and recorded. July 2015 records were requested, and provided. (attached) Zero visible emissions were observed. There are no observable changes to the horizontal stacks for the dryer, which was not in operation at the time of the inspection.

EUPREPEQUIPMENT

This EU includes all equipment used to prepare the bean for soybean oil extraction and has recently been modified through Permit to Install No. 62-15. A minor modification has been received for this PTI, however it has not been rolled into the ROP yet. The control device is a baghouse which is subject to Compliance Assurance Monitoring (CAM) as well as one designated cyclone for the Vertical Seed Conditioner (VSC). The facility has conducted stack tests for PM on all the baghouse in this EU in previous years and the PTI requires testing of the new cyclone. The facility has testing scheduled for the week of November 2, 2015. There was no identified emission limit exceedance identified in prior AQD reports. The baghouse appeared to be operating properly during the inspection, with a pressure drop of 1.15" H₂O. The facility has installed new monitoring equipment and audible alarm pursuant to Consent Order No. 19-2015, which was completed on May 21, 2015. As there have

been no reported alarm events, no Quality Improvement Plan pursuant to CAM will be required at this time. May 2015-July 2015 baghouse pressure drop records were requested and reviewed. (attached) The records indicate normal operating parameters. The EU baghouse was replaced with a unit that the company has stated is a like-for-like replacement. The baghouse itself is engineered differently, and Mr. Lopshire stated that the fan and stack were not replaced, just the baghouse. To clarify, there is no specific opacity limit for the EU baghouse stack other than the 20% limit as stated in Rule 301. The facility has chosen a 0% indicator value for purposes of Compliance Assurance Monitoring (CAM). The 10% opacity limit listed is for meal loading operations and should have a UAR of 40 CFR 60 Subparts A & DD, which was confirmed with the permit engineer. The new VSC cyclone stack, SVCONDITIONER, was not measured at the time of the inspection. Mr. Lopshire indicated that no VE's have been seen, and the stack is really utilized to remove excess moisture from the air stream.

FG-LF/NGENGINES

This EU consists of two Caterpillar 3520 engines that are currently equipped to burn natural gas or landfill gas, and has been modified through Permit to Install No. 94-04C. Records received indicate the engines have operated on 100% landfill gas for the past year. A minor modification has not yet been received for this PTI. This was discussed with Ms. Rillema who indicated it is in the works. During the inspection, Engine #1 was at 504 SCFM and 1532 kW. Engine #2 was at 536 SCFM and 1500 kW. ZFS staff stated this information is continuously monitored and recorded, and a daily report is generated with this information. ZFS has corrected the MAERS emissions calculations, and has paid the back fees required by the AQD.

The PTI has corrected the errors that were in the former version, by correcting the size of the engines and breaking each engine into its own emission unit. Therefore, this is now a flexible group and will be moved as such once the ROP has been modified. These engines are 4 stroke, lean burn engines with a maximum load rating of 2,424 bhp. A MAP/PMP was submitted for the engines as a stand alone document on September 14, 2015 and is currently considered acceptable. A stack test is required to be conducted in calendar year 2018.

EULF/NGBLR5

A new PTI has been issued to correctly permit the existing 6.27 mmBtu/hr boiler which is permitted to burn natural gas and/or landfill gas. A ROP modification application is needed for PTI No. 271-05B issued on June 15, 2015.

The facility must conduct stack testing on this unit while it is firing landfill gas, and this was clarified with Ms. Rillema during the inspection. This testing is planned for the week of November 2, 2015. Actual stack measurements have not been taken at this time.

EUNUKBOILER

A new PTI has been issued to correctly permit the existing 4.00 mmBtu/hr boiler that is permitted to only burn natural gas. A ROP modification application is needed for PTI No. 271-05B issued on June 15, 2015. An administrative correction is in the works for this emission unit, which is adding to the delay of the ROP modification paperwork. The permit requires stack testing which is not required on a 4.00 mmBtu/hr natural gas fired boiler. Also, the emission limit table incorrectly has landfill gas listed. This will also be corrected and a new version of the PTI will be sent to the company. Actual stack measurements have not been taken at this time.

EUREFBOILER

A new PTI was issued to correctly permit the existing 16.8 mmBtu/hr boiler which is permitted to burn natural gas and/or landfill gas. A ROP modification application is needed for PTI No. 271-05B issued on June 15, 2015. The facility must conduct stack testing on this unit while it is firing landfill gas, and this was clarified with Ms. Rillema during the inspection. This testing is planned for the week of November 2, 2015. Actual stack measurements have not been taken at this time.

FGHANDLING

This flexible group covers equipment used for off loading and storage of soybeans. There are three emission units, which are equipped with various cyclones, baghouse systems and oil spray applicators. None was in operation at the time of the inspection, which allowed staff to look at the oil spray application system and walk through where trucks unload over pit #2. This equipment is subject to NSPS DD for grain elevators. According to Ms. Rillema, all equipment at the facility has undergone PM stack testing. We discussed the opacity limits in the permit, which are based on the NSPS DD. 5% opacity at any individual truck unloading station, 0% opacity for

grain handling operations, 10% from any truck loading station, which is not the EUPREPBUILDING stack, it is for fugitive emissions (60.302(c)(1-4)) at each individual truck loading station as defined in NSPS DD.

It was also requested that ZFS clarify the MAP/PMP to correlate the names to the stack name in the permit. For example, the permit lists the stacks as 1. SVRECSTACK and 2. SVRECSTACK2. However, the MAP/PMP lists the names as EUHANDLING Pit #2 baghouse and EUHANDLING2 Pit #3 baghouse. The facility has stated they will keep the current language in the plan.

Material limits for soybeans is 10,500 tons per calendar day and 450,000 tons per year. Daily soybean records for October 2014 and July 2015 along with 12-month rolling records were requested and staff found that they indicate the highest daily receipt of soybeans was 6043.14 tons on November 3, 2014. AQD had to convert from bushels, and it is requested that ZFS convert the information. The highest 12-month rolling was through July of 2015 at 331,879 tons. It is recommended that ZFS provide the information in tons, not bushels.

Also requested were July and October 2014 non-certified VE observations and staff found that they indicate compliance. (attached)

FGEXTRACTION

A new PTI was issued to cover equipment modification and replacement for the EUDTDC portion of the flexible group. A minor modification has been received for this PTI, however it has not been rolled into the ROP yet. This FG covers equipment used to remove oil from soybeans and is subject to the Solvent Extraction for Vegetable Oil Production NESHAP Subpart GGGG. Control devices consist of four cyclones and an absorber system.

Emission limits consist of VOC, PM, PM10, PM2.5 based on stack test data which is required to be conducted every five years and within 180 days of initial startup of the DTDC. The last test was conducted in 2011 and 2012. Stack testing has been scheduled to be conducted the week of November 2, 2015.

Material limits for soybeans is 1,050 tons per calendar day and 383,250 tons per 12-month rolling time period. Daily soybean records for along with 12-month rolling records were requested and staff found that they indicate the highest daily amount of soybeans processed in the extraction plant was 1,029 tons in July of 2015. Prior to the DTDC replacement, the facility had not reached 1,000 tons of processing capability in recent years. The current 12-month rolling tons of soybeans processed through July 2015 was 298,597 tons. Extraction solvent (hexane) is limited to 0.150 gallons per ton of soybeans processed per 12-month rolling time period and 0.250 gallons per ton of soybeans processed on a 3-month rolling time period. Staff found that the highest 12-month rolling reported was 0.138 gallons per ton soybeans and the 3-month rolling reported was 0.152 gallons per ton in January 2015, prior to the replacement of the DTDC in May 2015. These values indicate compliance.

It appears that the facility is operating pursuant to the MAP and PMP, AQD recommended during the inspection that ZFS incorporate information on how they measure changes in the vacuum across the system. It is noted, that the MAP/PMP submitted includes the requested information on the "U" tube manometer. The desolventizer sparge deck temperature was 221°F, at the time of the inspection which indicates compliance with the permit. A review of other values recorded by the company also indicated values higher than the required temperature of 195°F. The LEL was not checked during the inspection as a hand held monitor is used to take readings- there is no digital readout. However, we did observe the clipboard of the reading taken earlier at 8:00 AM and a value of 39% LEL had been recorded. This is in the range of 0-50% as required by the permit. % LEL has been recorded as high as 49% as documented by ZFS and submitted. Recordkeeping was being adequately maintained to determine comparisons to the ROP limits. The stack height and diameter was not measured at the time of the inspection.

FGRULE290

The Rule 290 flex group contains the Refinery emission unit. Records of total monthly emissions for each pollutant was requested. The highest reported monthly emissions were 314 lbs of hexane, and zero for any other pollutants.

Consent Order 19-2015

The requirements of the Consent Order appear to be met at this time.

EVALUATION SUMMARY

During the closing meeting, staff provided ZFS with a copy of the recordkeeping request and discussed its contents. A couple changes to the request were agreed upon.

Based on the information obtained, and detailed above the facility was in compliance at the time of the inspection.

NAME 

DATE 10-12-15

SUPERVISOR PA13

