DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

M420462005

FACILITY: Zeeland Farm Services, Inc.		**SRN / ID:** M4204
LOCATION: 2468 84th Ave, ZEELAND		**DISTRICT:** Grand Rapids
CITY: ZEELAND		**COUNTY:** OTTAWA
CONTACT: Hannah O'Toole , EHS Manager		**ACTIVITY DATE:** 01/21/2022
STAFF: Kaitlyn DeVries	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: The purpose of this inspection was to determine compliance with MI-ROP-M4204-2018b and other applicable air quality rules and regulations.		
RESOLVED COMPLAINTS:		

On Friday January 21, 2022, Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) Staff Kaitlyn DeVries (KD) conducted an announced, scheduled inspection of Zeeland Farm Services, Inc. located at 2468 84th Street, Zeeland, Michigan. The purpose of this inspection was to determine compliance with MI-ROP-M4204-2018b and other applicable air quality rules and regulations.

Staff arrived at the facility at 9:00 and met with Ms. Hannah O'Toole, EHS Manager and Mr. Brandon LaRosa, Environmental Engineer, who accompanied KD on the inspection of the facility.

Prior to entering the facility, the perimeter was surveyed for any excess odors and opacity. None were noted.

Facility Description

Zeeland Farm Services, Inc. (ZFS) is a grain distribution and soybean processing facility. The facility receives in raw soybeans, and other grains, which are either stored for future sale or sent on for further processing. Soybeans are the only grain that is further processed. When further processed, the soybeans start by undergoing extraction. The first steps include drying, cracking, and flaking. Not all of the soybeans have to be dried, using the drying process, before they are processed. All "waste" from this process is captured and sold for other animal feed uses. Hexane is used in the extraction process, for which most of it is recovered during the extraction process. After extraction, the soybean oil can be sold as is, or is further refined. The grain elevator portion of ZFS has a capacity of 707,000 bushels.

The site where ZFS is located contains several other buildings. In addition to the Zeeland Farm Services buildings, there is a trucking building, owned by Zeeland Freight Services, and a general office building, owned by ZFS Solutions. It has been previously determined that the generator located at the ZFS Solutions office building is part of ZFS, but Zeeland Freight Solutions has been determined to be a separate entity.

Regulatory Analysis

ZFS is a Major source for Volatile Organic Compounds (VOC's), Particulate Matter (PM), Carbon Monoxide (CO), Nitrogen Oxides (NOx), and Hazardous Air Pollutants (HAP's) and is subject to the Title V program. Additionally, ZFS is subject to several Federal Regulations, of which many of the requirements are written into the ROP. ZFS is subject to the New Source Performance Standards (NSPS) 40 CFR Part 60 subparts Dc, for small industrial-commercial-institutional steam generating units, DD, for grain elevators, and JJJJ for stationary spark ignition combustion engines. ZFS is also

subject to the national emission standards for hazardous air pollutants (NESHAP) 40 CFR Part 63 Subparts GGGG, for solvent extraction for vegetable oil production, DDDDD, for industrial, commercial, and institutional boilers and process heaters, and ZZZZ for stationary reciprocating internal combustion engines (RICE). ZFS is also subject to the Compliance Assurance Monitoring (CAM) requirements promulgated under 40 CFR Part 64. Additionally, ZFS has successfully submitted all required compliance reporting.

ZFS was formerly under administrative consent order AQD No. 19-2015, however the Consent Order has been terminated and the requirements and references to the Consent Order have been removed from the ROP.

Compliance Evaluation

Source Wide Conditions

ZFS has a facility wide opacity limit of 5% from all on-site vehicle traffic. No opacity was observed from any traffic during the inspection, and no soybeans or soybean meal were observed outside of any buildings. ZFS has properly submitted a fugitive dust plan, preventative maintenance plan (PMP), and a malfunction abatement plan (MAP), which will be further evaluated in other sections outlined below, where appropriate.

The facility is required to conduct and record daily non-certified visible emissions observations of on-site vehicle traffic when traffic is present. Records indicate that ZFS is taking visible emission observations daily and is noting any visible emissions are present as well as documenting any precipitation to help with any fugitive dust. Additionally, the facility is following the outlined requirements of the fugitive dust plan.

EUBOILER

This emission unit is an existing Johnston 35 MMBTU/Hr. firetube boiler. The boiler has the capability to burn natural gas, distillate oil, landfill gas, and soy oil. This boiler is located in the boiler building next to the prep building.

This unit is subject to both 40 CFR Part 60 Subpart Dc the NSPS for Industrial-Commercial-Institutional Steam Generating Units and 40 CFR Part 63 Subpart DDDDD – the NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters. The requirements of Subpart DDDDD will be evaluated in FGBOILERS, below.

ZFS has not burned distillate oil or soybean oil in this boiler in the past few years, and primarily burns landfill gas and natural gas. The boiler was burning landfill gas at the time of the inspection.

If the boiler were to burn distillate oil, the sulfur content of the distillate oil is limited to a maximum of 0.5% by weight. However, since no distillate oil has been used, there is no sulfur content data available.

ZFS is properly tracking the daily usage of landfill gas and natural gas, and the hours the engine ran per day. The stack dimensions, while not explicitly measured, appeared to be correct.

EUDRYING

This emission unit is the Cimbria Super Cyclofan grain dryer with five (5) associated horizontal exhausts. Not all if the soybeans are dried, but rather only those that are not at the proper moisture level to undergo the further processing.

Particulate matter (PM) emissions from each stack in EUDRYRYING is limited to 0.03 lbs./1,000 lbs. of exhaust gases on a dry gas basis. PM_{10} and $PM_{2.5}$ are limited to 12.65 pounds per hour (pph) and 10.12 pph, respectively, for the total of the five (5) exhaust stacks combined. Stack testing was required to be conducted prior to December 31, 2018, and was conducted in October 2018. Testing will be required again within 5 years of the date of the last testing. The emissions results from the October 2018 test showed PM emissions of 0.03 pounds/1000 pounds of exhaust gas, 0.78 pph, for PM_{10}, and 0.65 pph for $PM_{2.5}$. Additionally, each stack has an opacity limit of 10% with daily non-certified visual emissions (VE) readings required. ZFS is conducting the daily readings, and records indicate no excess opacity. Similarly, no opacity was noted from any of the stacks during the inspection.

Soybean throughput is limited to 2,520 tons per day and 225,000 tpy, based on a 12-month rolling time period. Per the attached records, the highest daily throughput was on October 20, 2021, and November 15, 2021, at 69,120 bushel's or approximately 2,073 tons. As of December 2021, the 12-month rolling throughput for soybeans was 3,460,905 bushels, or 103,827 tons.

The stack dimensions were not explicitly measured during the inspection; however, the dimensions appeared to be correct. These stacks are horizontal vents.

EUPREPEQUIPMENT

This emission unit covers all of the equipment used to prepare the soybean for oil extraction. The various pieces of equipment include a scale, jet dryer, vertical seed conditioner (VSC), CCC aspirator, CCC cyclone, cracker, hulloosenator, jet dryer cyclone, split soy aspirator, secondary aspirator, four (4) flakers, hull screener, hull grinder, two (2) screeners, two (2) meal grinders, ball crusher, mixing screw conveyor, meal leg, four (4) loadout bins, two (2) loadout spouts, and a baghouse. The emission unit with a baghouse, which controls the PM emissions from all the equipment except for the VSC, is subject to 40 CFR Part 64 Compliance Assurance Monitoring (CAM). ZFS also has a Malfunction Abatement Plan (MAP) for both the baghouse and the VSC cyclone. The specifications of the MAP have been properly implemented. Per the records, no malfunctions have occurred.

The VSC Cyclone (VSC) has emission limits for PM. PM is limited to 0.05 lbs./1000 lbs. of exhaust gas on a dry gas basis and is also limited to 2.0 pph, for PM_{10}, and 1.4 pph for $PM_{2.5}$. Testing was required to be conducted prior to December 31, 2020, and testing was conducted in October 2020 resulting in emissions of 0.02 lb./1000 lb. exhaust gas for PM, and 0.54 pph for both PM_{10} and $PM_{2.5}$. No opacity was observed from the VSC during the inspection, and non-certified VE records indicate compliance. The stack dimensions were not measured during the inspection but appeared to be correct.

Similarly, testing was done on the baghouse ensuring compliance with particulate limits of 0.044 lbs. PM/1000 lbs. exhaust gas on a dry gas basis, 5.36 pph for PM_{10}, and 4.25 pph for $PM_{2.5}$. Testing

was required to be conducted prior to December 31, 2018, and testing was done October 16-18, 2018, and indicated compliance with the emission limits. The baghouse is equipped with a magnehelic and had a pressure drop of 4.5" WC at the time of the inspection. The attached records indicate the baghouse typically operates between 1" and 6" WC and readings are recorded at least the required two (2) times per day. The magnehelic is calibrated quarterly. The records also indicate no opacity from the baghouse; KD did not note any opacity during the inspection either. As previously mentioned, this emission unit is subject to the compliance assurance monitoring (CAM) requirements of 40 CFR Part 64. ZFS has properly reported pursuant to the CAM requirements and appears to be following their CAM plan.

The stack dimensions were not measured during the inspection but appeared to be correct.

EULF/NGBLR5

This is a 6.27 MMBTU/hr. boiler that can burn either natural gas or landfill gas. This boiler has emission limits of 0.53 pph for CO and 0.13 lb./MMBtu and 0.82 pph, both for NO_X. All of these limits apply when burning both landfill gas and natural gas. Testing was required to be conducted prior to December 31, 2020, and was conducted in October 2020. Testing indicated emissions of 0.01 pph for CO, and 0.03 lb./MMBTU and 0.19 pph for NOx. ZFS is properly tracking the landfill and the natural gas combusted in the unit, having burned only natural gas in December 2021 burning a total of 3,243,032 SCF. Landfill gas was most recently burned in November 2021, burning a total of 1,298,648 SCF.

The stack dimensions were not measured during this inspection, but the dimensions appeared to be correct.

This boiler is also subject to 40 CFR Part 63 Subpart DDDDD, the boiler MACT. The requirements for this regulation are found in FGBOILERS, below.

EUNUKBOILER

The EUNUKBOILER is a 4.00 MMBTU/hr. firetube natural gas boiler located in the refinery. This boiler is used to provide high pressure steam for the plant's deodorizing system. This boiler has emission limits of 0.13 lb./MMBTU and 0.52 lb./hr. for NO_X, and 0.336 lb./hr. for CO. ZFS is properly tracking the natural gas usage for the unit, having burned 1,187,204 SCF as of December 2021.

The stack was not measured during this inspection, but the dimensions appeared correct.
This boiler is also subject to 40 CFR Part 63 Subpart DDDDD, the boiler MACT. The requirements for this regulation are found in FGBOILERS, below.

EUREFBOILER

The refinery boiler is a 16.8 MMBTU/hr. firetube boiler that can either burn natural gas or landfill gas. This boiler can provide steam to the refinery plant or send it to the extraction plant. This emission unit is subject to the provisions of NSPS 40 CFR Part 60 Subpart Dc.
This boiler has emission limits of 0.13 lb./ MMBTU and 2.18 pph, both for NO_X, and 1.42 pph for CO. All limits apply when burning natural gas and landfill gas, or a combination of both. Testing for this boiler was required by December 31, 2020, and was conducted in October 2020. Testing was

conducted using landfill gas, as a worst-case scenario, and indicated emissions of 0.21 pph for CO, and 0.28 pph and 0.02 lb./MMBTU for NOx.

The stack parameters were not measured during the inspection, but the dimensions appeared correct.

The facility is properly tracking the amount of landfill gas and natural gas combusted in the boiler on a monthly basis. For the period of January 2021 through December 2021, December 2021 combusted the most natural gas at a total of 4,056,506 SCF and April 2021 combusted the most landfill gas at 16,670,945 SCF.

This boiler is also subject to the boiler MACT, 40 CFR Part 63 Subpart DDDDD, and has completed the required one-time energy assessment and the required tune-ups.

EUAMMONIA

This emission unit is for two (2) anhydrous ammonia tanks with a storage capacity not to exceed 1,000 gallons per tank. Per Mr. LaRosa, the ammonia tanks have been removed from the site, and ZFS has no intentions of having ammonia on site again. Mr. LaRosa continued, saying that ZFS has changed their way of processing thus no longer needing the ammonia, and Mr. LaRosa is working on a minor modification to remove the emission unit from the ROP. KD was able to confirm that the tanks were not on site, and this emission unit will not be evaluated further.

EUGENERATOR

This emission unit is for a 70-kW natural gas fired emergency engine installed in April 2016. This engine is subject to the provisions of 40 CFR Part 60 Subpart JJJJ and to 40 CFR Part 63 Subpart ZZZZ. Compliance with 40 CFR Part 63 Subpart ZZZZ is demonstrated via compliance with 40 CFR Part 60 Subpart JJJJ. This is an EPA Certified engine, thus meeting the emission limits of 387 g/hp-hr. for CO and 10 g/kW-hr for NOx +HC.

Records indicate that the unit most recently had service on February 2, 2021, with the hour meter reading 209.2 hours. Since this is an emergency engine, it was not in operation at the time of the inspection.

FGHANDLING

FGHANDLING is the flexible group for all equipment used for the off-loading of the soybeans. The flexible group includes equipment such as: receiving pits, storage bins, bean cleaners, the south receiving leg, the north reclaim leg, the wet let, the pit leg the cleaner leg, the receiving belts, bin fill conveyors, bin reclaim conveyors. Emissions from this flexible group are controlled by cyclones, baghouses, and oil spray applicators. The equipment in this flexible group is subject to the provisions of 40 CFR Part 60 Subpart DD for grain elevators. ZFS was receiving soybeans in pit 2 at the time of the inspection.

The grain handling operations, including loading, and unloading have opacity limits of 0%, 10%, and 5%. As previously mentioned, grain was being received at the time of the inspection with no opacity observed. ZFS is required to conduct daily non-certified visual emissions observations, and

per the attached records, they are properly doing so, and are demonstrating compliance with the opacity limits. The pit 2 loading area where the trucks dump the soybeans has an enclosure in place.

Each stack within this flexible group has a PM limit of 0.023 grams per dscm, and a limit of 0.019 pounds per 1,000 pounds of exhaust gases, calculated on a dry gas basis. Similarly, the two (2) stacks associated with this flexible group, which were not measured during the inspection but appeared correct, have PM_{10} and $PM_{2.5}$ emission limits. The emission limits for PM_{10} and $PM_{2.5}$ for EUHANDLING are 0.86 pph and 0.69 pph, respectively; the emission limits for EUHANDLING2 for PM_{10} and $PM_{2.5}$ are 0.51 pph, and 0.41 pph. Stack testing, most recently conducted in October 2018, indicated emissions for EUHANDLING1 as 0.001 g/dscm and 0.0001 lbs./1000 lbs. exhaust gas for PM and 0.41 pph for both PM_{10} and $PM_{2.5}$. EUHANDLING2 indicated PM emissions of 0.006 g/dscm and 0.0005 lbs./1000 pounds and 0.014 pph for both PM_{10} and $PM_{2.5}$.

ZFS is allowed to receive a maximum of 10,500 tons of soybeans per day, and 450,000 tons of soybeans per year, based on a 12-month rolling time period. ZFS is tracking the daily monthly, and 12-month rolling totals of soybeans received. Per the attached records, the highest daily load of soybeans received was on October 20, 2021, when 154,834 bushels or 4,645 tons was received. As of December 2021, the 12-month rolling average was 10,322,981 bushels, or 309,689.5 tons of soybeans received. January 2021 had the highest 12-month rolling average over the past 12-months with an average of 12,075,216 bushels or 362,256.5 tons of soybeans received.

FGEXTRACTION

All equipment used to remove oil from soybeans is covered under this flexible group, FGEXTRACTION. The equipment includes: the extractor, DTDC, spent flake conveyor, evaporators, oil stripper solvent system, plug screw aspiration, solvent dump tank, solvent storage tanks, MO stripper, MO Absorber, MO heater, MO cooler, MO heat exchanger, MO storage tanks, main gas vent, vacuum gauge, and fan motion alarm, and DTDC cyclones. All of the equipment and processes included in this flexible group are subject to 40 CFR Part 63 Subpart GGGG, the solvent extraction for vegetable oil production NESHAP.

This flexible group has emission limits from the main vent of 7.12 pph and 30.3 tpy, for VOC. Emission limits of 14.6 pph and 62.2 tpy, for VOC, 0.034 lb./1,000 lbs. of exhaust gases based on a dry gas basis for PM, 3.03 pph for PM_{10}, and 2.42 pph for $PM_{2.5}$, exist for the DTDC vent. Stack testing conducted in August 2018 indicated VOC emissions of 0.2 pph from the main vent. Testing for PM, PM_{10}, $PM_{2.5}$, and VOC from EUDTDC was required by December 31, 2020, and was conducted in October 2020. The emissions from testing indicated results of 0.009 lbs./1000 lb. exhaust gas for PM, 0.59 pph for both PM_{10} and $PM_{2.5}$, and 6.0 pph for VOC. As of December 2021, the 12-month rolling VOC emission from the main vent and the DTDC vent were 4.442 tpy and 23.106 tpy, respectively. There is also an opacity limit of 10% from the DTDC vent. No opacity was noted during the inspection, and the attached records of daily non-certified visual emissions observations corroborate this.

The extraction plant has a throughput limit of 1,050 tons of soybeans per day, and 383,250 tons per year. Based on the attached records, the highest daily throughput of soybeans at 1,050, right at the permit limit, but not exceeding the limit on November 14, 2021. As of December 2021, the 12-month rolling average was 344,092 tpy.

Similarly, solvent extraction is limited to 0.150 gallons per ton of soybeans processed, based on a 12 -month time period and to 0.250 gallons per ton of soybeans processed based on a three-month rolling time period. Per the attached records, as of December 2021, the three-month and the 12-month rolling averages were 0.092 gal/ton and 0.087 gal/ton. The highest three-month and 12-month rolling gallons per ton of soybeans processed was in July 2021 and January 2021 at 0.101 gal/ton and 0.094 gal/ton, respectively.

ZFS has implemented and maintains a MAP and PMP and is operating in accordance with those plans. The four (4) cyclones and the absorber system appeared to be properly operating, and all of the storage tanks associated with the extraction process are tied into the system. The desolventizer toast sparge deck temperature was operating at a temperature of 227°F, which is complaint with the minimum temperature of 195°F, at the time of the inspection. Records also indicate compliance with the minimum required temperature.

The main gas vent of the mineral oil system is required to have an LEL reading of 0-50%, with readings taking at least four (4) times per day. Records indicate the LEL has been reading between 8% and 46%, with the LEL being between 15% and 30% most of the time. The LEL was at 11% at the time of the inspection.

As previously mentioned, this flexible group is subject to the provisions of 40 CFR Part 63 Subpart GGGG The National Emission Standard for Hazardous Air Pollutants (NESHAP) for Solvent Extraction for Vegetable Oil Production. The facility has processed, as of December 2021, a 12-month rolling total of 343,720 tons of oilseed and is calculating the compliance ratio in accordance with the NESHAP. ZFS is tracking the weighted average volume fraction of HAPs, as required, indicating the 12-month rolling average as 0.613. ZFS is also recording, as required the solvent loss on a monthly and 12-month rolling basis. As of December 2021, the 12-month rolling solvent loss was 33,831 gallons. The weighted average volume fraction equates to a total HAP percentage at approximately 49%, which is being recorded, as required for HAP fractions greater than the 1% as per 40 CFR 63.2850 for existing sources and had varied throughout the year from as high as 67%.

Stack dimensions were not measured during this inspection.

FGLF/NGENGINES

This flexible group covers two (2) 2,300 BHP Caterpillar reciprocating internal combustion engines, that can burn either landfill or natural gas. Only one (1) of the engines was in operation at the time of the inspection, and it was running on landfill gas. The energy from these engines are either used for running ZFS's operations or are sold to a utility company. These engines are subject to the provisions of 40 CFR Part 63 Subpart ZZZZ for Reciprocating Internal Combustion Engines (RICE) and to the New Source Performance Standard (NSPS) 40 CFR Part 60 Subpart JJJJ for Stationary Spark Ignition Internal Combustion Engines. An initial notification was received for these units.

Emissions from these engines are limited to 4.56 pph for NOx, 22.44 pph for CO, 4.02 pph for VOC, 2.8 pph for Formaldehyde, and 2.77 pph for SO_2. All limits are applied to the engines individually. Testing was most recently done in August 2018 for both engines and indicated the following emission rates: Engine1: 2.35 pph for NOx, 10.78 pph, for CO, 0.61 pph for VOC, 1.7 pph for formaldehyde, and 1.58 pph for SO_2. Engine 2 had the following emissions: 2.19 pph for NOx, 12.38

pph, for CO, 1.51 pph for VOC, 2.1 pph for formaldehyde, and 1.52 pph for SO_2. The facility has developed and implemented a malfunction abatement plan (MAP) for these engines.

ZFS is tracking the quantity of natural gas and landfill as combusted in each engine on a monthly basis, and as previously mentioned, only one (1) engine was operating at the time of the inspection, and it was burning landfill gas. In the past 12-month period, Engine 1 combusted a maximum of 19,043,281 SCF of landfill gas in a month (January 2021) and combusted a combined total of 489,003 SCF of natural gas (December 2021). Additionally, over the past year Engine 2 combusted a maximum of 15,147,636 SCF of landfill gas in a month (December 2021) and a maximum of 1,140,310 SCF of Natural Gas in a month (December 2021). The maximum heat content for the natural gas is 1,000 BTU/SCF and 523.3 BTU/SCF for Landfill gas. The Landfill gas BTU content is derived from information from the landfill gas supplier, and averages around 500 BTU/SCF. ZFS is also tracking the hours per day that each engine operated.

AQD staff observed the stacks for the two (2) units and could observe the heat recovery stack; no actual measurements of the stacks were taken during the inspection.

FGBOILERS

This flexible group covers all of the boilers that are subject to the provisions of 40 CFR Part 63 Subpart DDDDD. The emission units covered include: EUBOILER, EULF/NGBLR5, EUNUKBOILER, and EUREFBOILER. All of these boilers either burn landfill gas, natural gas, or a combination of both. Each of the boilers have had their required tune-ups based upon the required tune-up schedule as required for each specific boiler. Additionally, each of the boilers have been following the required work practice standards. ZFS has elected to meet the requirements for the mercury specification via testing. Testing was conducted in 2016, and the results indicated a mercury content in the landfill gas of 0.22 µg/dscm, additional testing is not required at this time.

ZFS has also been properly submitting all required reporting, in accordance with 40 CFR part 63 Subpart DDDDD, including meeting the other fuel requirements.

FGRULE290

The refinery plant relies on Rule 290 as an exemption from Rule 201 permitting. The only pollutant that is reported for having any emissions from the refinery process is hexane. Per the attached records, the highest monthly emissions from the refinery were in June 2021 at 184 lbs.

ZFS also has a 157 HP Clarke Diesel Fire Pump that was installed in April 2019. This engine is Exempt from Rule 201 permitting under Rule 285(2)(g). This engine is also subject to the provisions of 40 CFR Part 60 Subpart IIII the Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. This engine is also subject to the provisions of 40 CFR Part 63 Subpart ZZZZ the NESHAP for Stationary Reciprocating Internal Combustion Engines. Compliance with 40 CFR Part 63 Subpart ZZZZ is demonstrated via compliance with 40 CFR Part 60 Subpart IIII. This is an EPA certified engine, thus meeting the requirements of Subpart IIII. Per Mr. LaRosa, ZFS is working on a modification to incorporate this engine into the ROP.

Compliance Determination

Based on the observations made during the inspection and a subsequent review of the records, it appears as if Zeeland Farm Services, Inc. is in compliance with MI-ROP-M4204-2018b.

NAME _____ DATE 3/1/2022 SUPERVISOR _____