

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

M420440506

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: 06/08/2017
STAFF: Kaitlyn DeVries	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: The purpose of this inspection was to determine compliance with MI-ROP-M4204-2012b and other applicable air quality rules and regulations.		
RESOLVED COMPLAINTS:		

On Thursday June 8, 2017 AQD Staff Kaitlyn DeVries (KD) and Tyler Salamasick (TS) conducted an unannounced, 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-M4204-2012b and other applicable air quality rules and regulations.

Staff arrived at the facility at 9:30 and met with Ms. Bridgette Rillema, Environmental Manager, Mr. Brandon LaRosa, Environmental Engineer, and Mr. Brandon Love, EHS Manager. 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. 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. AQD will be requesting formal documentation from ZFS regarding their determination that Zeeland Farm Solutions, Zeeland Freight Services, and ZFS solutions are all separate stationary sources.

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). Additionally, all required notifications of compliance, Semi-annual, and annual reporting have been successfully completed by ZFS.

In addition to the above mentioned regulation, ZFS is currently under administrative consent order AQD No. 19-2015.

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 preventative maintenance plan (PMP) and a malfunction abatement plan (MAP), which will be further evaluated in other sections outlined below.

ZFS was required to conduct ambient air monitoring for PM₁₀ and PM_{2.5} with a minimum of two (2) years' worth of monitoring data being required. ZFS successfully completed their required ambient air monitoring as of December 31, 2015.

EUBOILER

This emission unit is an existing Johnston 35 MMBTU/Hr Dearation tank, compressor firetube boiler that has the capability to use natural gas, distillate oil, landfill gas, and soybean oil installed in 1996. This boiler is located in the boiler building next to the prep building.

Per Mr. La Rosa, ZFS has not burned distillate oil or soy bean oil in this boiler in the past few years, and primarily burns landfill gas. Sulfur content of the distillate oil is limited to a maximum of 0.5% by weight, instantaneously. 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 each engine ran per day. Records indicate landfill gas is primarily used. The stack dimensions, while not explicitly measured, appeared to be correct.

This unit is subject to both 40 CFR Part 60 Subpart Dc and 40 CFR Part 63 Subpart DDDDD – the NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters. The boiler most recently had a tune up, per MACT requirements, on September 15, 2016. Additionally, ZFS previously had the one-time energy assessment done on the unit.

EUDRYING

This emission unit is the Cimbria Super Cyclofan grain dryer with five (5) associated exhausts. Particulate matter (PM) emissions from each stack in EUDRYING are limited to 0.03 lbs/1,000 lbs of exhaust gases on a dry gas basis. PM₁₀ 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, most recently conducted in June 2012 verified the emissions were compliant with these limits. 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. Likewise, 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 November 11, 2016 at 62,832 bushel's or approximately 1,885 tons. As of May 2017, the 12-month rolling throughput for soybeans was 4,227,160 bushels, or 126,827.48 tons.

The stack dimensions were not explicitly measured during the inspection; however, the dimensions appeared to be correct.

EUPREPEQUIPMENT

This emission unit covers all of the equipment used to prepare the soybean for oil extraction. The various pieces of equipment including: scale, jet dryer, vertical seed conditioner (VSC), CCC aspirator, CCC cyclone, cracker, hullsoenator, 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 baghouse 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 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 PM₁₀, and 1.4 pph for PM_{2.5}. Testing was done in June, 2012 verifying compliance with these emission limits. At the time of the inspection, the VSC bin temperature was 142°F. 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, 5.5 pph for PM₁₀, and 4.44 pph for PM_{2.5}. The baghouse is equipped with a

magnehelic and had a pressure drop of 1.63" WC at the time of the inspection. The attached records indicate the baghouse typically operates between 1" and 3" WC. The records also indicate no opacity from the baghouse; KD did not note any opacity during the inspection either. Also, per Mr. LaRosa, all of the bags in the baghouse were replaced the week of April 17th, for routine maintenance. The stack dimensions were not measured during the inspection, but appeared to be correct.

The meal load out area has an opacity limit of 10% over a 6-minute averaging period. KD did note some opacity in excess of 10% during loadout; however, the opacity dissipated quickly. KD discussed this with ZFS staff, and the load out should be monitored more closely to prevent any further fugitive emissions. Ms. Rillema went on to explain that a planned project for this area will extend the load out area and fully enclose it to reduce some of the excess emissions.

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 0.56 lbs./hr for CO and 0.13 lb./MMBtu and 0.82 lb./hr, both for NO_x. All of these limits apply when burning both landfill gas and natural gas. Testing on this boiler was most recently done in November 2015. At the time of the inspection, the boiler was running on 100% landfill gas. 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. Due to the small size of this unit, the only provisions are for a one-time energy assessment and a tune up every five (5) years. Both of these requirements have been completed.

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. The stack was not measured during this inspection, but the dimensions appeared correct.

This boiler is subject to the boiler MACT, and has successfully completed the required one-time energy assessment and the required tune-ups.

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. At the time of the inspection, the boiler was running on 23% landfill gas, with the rest being natural gas. This boiler has emission limits of 0.13 lb./MMBTU and 2.18 lb./hr, both for NO_x, and 1.42 lb./hr for CO. All limits apply when burning natural gas and landfill gas, or a combination of both. Testing for this boiler was most recently conducted in November 2015. 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 June 2016 through May 2017, a monthly average of 6,900,000 SCF of landfill gas was combusted and a monthly average of 34,000 SCF of natural gas was combusted.

This boiler is also subject to the boiler MACT and NSPS Dc, and has completed the required one-time energy assessment and the required tune-ups.

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 not receiving any soybeans at the time of the inspection.

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, based 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 PM₁₀ and PM_{2.5} emission limits. The emission limits for PM₁₀ and PM_{2.5} for SVRECSTACK are 0.86 pph and 0.69 pph, respectively; the emission limits for SVRECSTACK2 for PM₁₀ and PM_{2.5} are 0.51 pph, and 0.41 pph. Ms. Rillema has indicated that all equipment has undergone PM testing.

The grain handling operations, including the loading and unloading have opacity limits of 0%, 10%, and 5%. Since no grain was being received at the time of the inspection, no opacity was noted. ZFS is required to conduct daily non-certified visual emissions observations, and per the attached records, no opacity was noted. The loading area where the trucks dump the soybeans has an enclosure in place. Since no beans were being unloaded, the oil application system was also not operating at the time of the inspection. 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 24, 2016 when 170,498 bushels or 5,115.45 tons was received. As of May, 2015, the 12-month rolling average was 10,401,065 bushels, or 312,063.16 tons of soybeans received. January 2017 had the highest 12-month rolling average over the past 12-months with an average of 11,573,906 bushels or 347,251.91 tons of soybeans received.

FGEXTRACTION

All equipment used to remove oil from soybeans is covered under this flexible group, FGEXTRACTION. The equipment covered by this flexible group 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 GGGGG, 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 PM₁₀, and 2.42 pph for PM_{2.5}, exist for the DTDC vent. Stack testing conducted in November 2015 confirmed the emission limits for this flexible group. As of May 2017, the 12-month rolling VOC emission from the main vent and the DTDC vent were 17.65 tpy and 1.42 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, December 21, 2016 had the highest daily throughput of soybeans at 1,049 tons, aside from the November 5, 2017 throughput of 1,066 tons, which occurred during the daylight savings time change. The average per hour production for a typical 24 hour day is 42.64 tons per hour (tph), which equates to 1,024 tons. It should be noted that the limit is per calendar day, not a typical 24 hour average, and ZFS should plan for this in the future. June 2016 had the highest 12-month rolling average at 337,356 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, the highest three-month and 12-month rolling gallons per ton of soybeans processed was in May, 2017 at 0.114 gal/ton and 0.135 gal/ton, respectively.

ZFS is complying with 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, including recording the volume fraction of HAP present at greater than 1% by volume and the gallons of extraction solvent in each shipment received. The facility has processed, as of May 2017, a 12-month rolling total of 331,971 tons of oilseed, and is calculating the compliance ratio in accordance with the NESHAP.

ZFS has implemented and maintained a MAP and PMP, and is operating according to 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 214°F, which is compliant with the minimum temperature of 195°F. 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. At the time of the inspection, the extraction plant was just coming back on-line and ZFS hadn't taken a reading yet that day. Subsequently, ZFS staff took an LEL reading which was 24%, and the mineral flow rate was 15 gallons per

minute (gpm). A review of the daily records indicate readings as high as 100% during April 22, 2017 and April 23, 2017. ZFS took corrective action in response to the high LEL readings by checking valves for leaks, adjusting the fans and the temperature range for the flaker hopper, and adjusting the mineral oil flow rate. Additionally two (2) holes were patched while the facility was shut down. The suspected causes were due to the mineral oil not getting the hexane stripped out and therefore not being able to absorb the hexane vapors due to saturation of the air and due to holes in the extractor leading condenser being open to far causing excess hexane to be carried to the MO system. ZFS estimates they were non-compliant for approximately 37 hours. Appropriate corrective action has been taken by the facility to get the LEL back into the normal range.

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. Both engines were in operation at the time of the inspection, and per Mr. La Rosa, they primarily burn landfill gas, and rarely burn natural gas. The energy from these engines are either used for running ZFS's operations or are sold to a utility company. These engines are also 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 lb./hr for NO_x, 22.44 lb./hr for CO, 4.02 lb./hr for VOC, 2.8 lb./hr for Formaldehyde, and 2.77 lb./hr for SO₂. All limits are applied to each individual engine. Testing for these engines is not required until calendar year 2018, thus no testing data is available. The facility has developed and implemented a malfunction abatement plan (MAP).

ZFS is tracking the quantity of natural gas and landfill as combusted in each engine on a monthly basis. In the past 12 months, Engine 1 combusted a maximum of 26,724,877 SCF of landfill gas in a month, and has not combusted any natural gas. Additionally, over the past year engine 2 combusted a maximum of 23,317,062 SCF of landfill gas in a month and a maximum of 2,773,008 SCF of Natural Gas in a month. The maximum heat content for the natural gas is 1,000 BTU/SCF and 524.3 BTU/SCF for Landfill gas. 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.

FGRULE290

The refinery plant relies on Rule 290. At the inspection, the refinery manager detailed the steps of the refinery process to AQD staff. 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 December 2016 at 906 lbs.

Miscellaneous

ZFS has one (1) 750 gallon anhydrous ammonia tank located near the extraction building. The anhydrous ammonia is used in that process. The tank is too large to be exempt from Rule 201 permitting, and thus requires a permit. KD discussed this tank with ZFS staff, and while the tank is actually owned by another company, ZFS is the operator of the tank and needs to obtain a permit. ZFS will be required to submit a permit application as soon as possible.

There is one (1) emergency generator located by the main office building, which per Ms. Rillema is owned by ZFS solutions. As previously mentioned, AQD is requesting formal documentation regarding their stationary source determination, as the sites are contiguous, and they share personnel. The generator is a Generac 70 kW EPA Certified natural gas only spark ignited internal combustion engine installed in 2015. This unit is subject to NSPS 40 CFR Part 60 Subpart JJJJ and to 40 CFR Part 63 Subpart ZZZZ via JJJJ. No initial notification is required for generators less than 100 HP, but AQD is delegated for this NSPS, and ZFS should maintain records, as appropriate, to show compliance.

Consent order AQD No. 19-2015

ZFS is complying with all provisions of the consent order.

Compliance Determination

Based on the observations made during the inspection and a subsequent review of the records, Zeeland Farm Services, Inc. is compliant with MI-ROP-M4204-2012b.

NAME Karlyn Davis

DATE 7/6/2017

SUPERVISOR 