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

P022226243

FACILITY: C&C Energy LLC		SRN / ID: P0222
LOCATION: 19401 15 MILE RD, MARSHALL		DISTRICT: Kalamazoo
CITY: MARSHALL		COUNTY: CALHOUN
CONTACT: Mike Cleeney , Plant Operator		ACTIVITY DATE: 05/27/2014
STAFF: Matthew Deskins	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Unannounced Scheduled Inspection		
RESOLVED COMPLAINTS:		

On June 27, 2014 AQD staff (Matt Deskins) went to conduct a scheduled unannounced inspection of the C&C Energy (formerly Gas Recovery Systems) facility located in Marshall, Calhoun County. C&C Energy is a landfill gas to energy facility that leases property from the C&C Expanded Sanitary Landfill and is a separate entity. C&C Energy currently has been permitted for and installed three Waukesha stationary spark ignited internal combustion engines and one Solar turbine. The processes involved at C&C Energy revolves around the disposal of municipal solid waste (household and industrial non-hazardous waste) at C&C Landfill. Over time, the waste will decompose within the landfill, which produces a gas primarily made up of methane and carbon dioxide that C&C Landfill sells to C&C Energy under a contract. The landfill gas also contains a small percentage of non-methane organic compounds, which can consist of various organic hazardous air pollutants (HAPs), greenhouse gases, and volatile organic compounds. The landfill gas is collected by an active collection system (under vacuum) through a network of wells and piping that is owned and operated by C&C Landfill, but is routed to the internal combustion engines and turbine owned and operated by C&C Energy. Once routed to the engines and/or turbine, the landfill gas is combusted and the energy created is transferred to generators. The generators produce electricity that is purchased by the utility company that services the area and is transmitted to their power lines for distribution. If for any reason both the engines and turbine are not in operation, the landfill gas is routed to an open flare owned by C&C Landfill for combustion. The opne flare may also be ran at times in conjuction with the engines and turbine to keep a certain amount of vacuum on the well field.

C&C Energy had historically been included as Section 2 of C&C Landfill's Renewable Operating Permit (ROP) but a request was made to the AQD and we agreed to allow them both to have separate ROPs upon the most recent ROP renewal cycle. However, the AQD still considers them to be one stationary source for permitting and regulatory purposes because at the present time, C&C Energy is totally dependent on the landfill gas supplied by C&C Landfill to run their engines and turbine. The SRN for C&C Landfill remains N2896 and C&C Energy was assigned the SRN P0222. The current ROP for C&C Energy is MI-ROP-P0222-2012a and it contains conditions pertaining to the landfill gas treatment system, internal combustion engines, turbine, and the emergency generator. Currently, the turbine is subject to 40 CFR Part 60 Subpart KKKK (NSPS for Stationary Combustion Turbines) and 40 CFR Part 63 Subpart YYYY (NESHAP for Stationary Combustion Turbines). The emergency generator is subject to 40 CFR Part 63 Subpart ZZZZ (NESHAP for Reciprocating Internal Combustion Engines (See NOTE below for further information on these regulations). The purpose of staff's inspection was to determine C&C Energy's compliance status with their ROP, the federal air regulations previously mentioned, and any other state and/or federal air regulation that may be applicable. Staff departed for the Kalamazoo District Office at approximately 9:30 a.m.

NOTE: When C&C Energy received the permit for their turbine in 2006, it allowed emissions of hydrochloric acid of 8.3 tons. When that is combined with the hydrochloric acid emission limit of 7.9 tons for their internal combustion engines permit that was issued in 1997, it totaled 16.2 tons, thus making them a major source of HAPs which in turn made them subject to 40 CFR Part 63 Subpart YYYY in regards to the turbine. This issue was discovered in 2011 while reviewing their ROP application and drafting the ROP renewal. C&C Energy could not opt-out of any past maximum achievable control technology standards because of the USEPA's "Once In Always In" policy. The AQD sent C&C Energy a violation notice regarding this and proceeded with enforcement proceedings because of the situation. C&C Energy ultimately agreed to enter into a consent order with the AQD (Consent Order No. 4-2012) which is in effect for 5 years. The consent order compliance program states that C&C Energy will comply with their ROP as well as 40 CFR Part 63 Subpart YYYY. Lastly, the emergency generator at the facility is subject to the Maximum Achievable Control Technology Standards for Reciprocating Internal

Combustion Engines promulgated in 40 CFR, Part 63, Subparts A and ZZZZ, and the internal combustion engines would be if any modification, reconstruction, or construction as defined in the General Provisions of 40 CFR Part 63, Subpart A, occurs at the facility. The internal combustion engines could also be Subject to 40 CFR Part 60 Subpart JJJJ should they be replaced by newer engines (the applicability of this regulation is dependent on the manufacturer date of the engine(s)).

AQD staff arrived at C&C Energy at approximately 10:40 a.m. Staff proceeded into the control room/office area of the plant and noticed Mike Clenney (Plant Operator) in the office along with another operator. Staff introduced them self to Mike and to the other operator who ended up being Kiel Clenney (Mike's son). Staff then signed in, gave Mike their business card and a copy of the DEQ "Environmental Inspection Brochure", and stated the purpose of the visit. Kiel then contacted the regional(?) manager to let them know staff was there for an inspection. Staff then sat down with Mike and Kiel and asked Mike some general questions about the facility. The following is a summary of that discussion followed by the various permit conditions and their compliance status with them. According to Mike, all the engine and turbine production data still gets recorded on the computer and is sent to headquarters where Suparna Chakladar (Vice President) keeps track of the records. Mike said that staff would need to get with her again on the emission calculations and that we should also send her the inspection report when it is finished. Staff then asked what equipment was currently running and Mike said that the turbine and all three engines were. He said that the landfill's open flare was currently running also and it can upset things at the plant because it automatically comes on if the vacuum on the wellfield gets below a certain level. Staff then asked if any of the equipment had been rebuilt or replaced. Mike said that Engine #1 had been taken out, re-built, and then re-installed in April of 2013, the turbine had been replaced in May of 2013, and Engine #2 had been replaced by another rebuilt engine in January of 2014. He said that Engine #3 might be replaced later this year and it probably won't be rebuilt. He said the turbine is an identical Solar unit and that all three engines are still identical Waukesha's. Staff then asked about the serial numbers on the equipment along with the manufacturer's date. Mike found the serial numbers but was unsure of the manufacturer's date. After checking both the engines and the turbines, staff along with Mike and Kiel could not locate a manufacturer's date. The serial numbers on the equipment are as follows:

Turbine: OHD13-C5096

Engine #1: 400217

Engine #2: 94058-1

Engine #3: 106227

Engine #2 is the main concern of staff's because of the possible applicability of the NSPS JJJJ since that engine was totally replaced. However, until a manufacturer's date is found, applicability cannot be determined. From an AQD permitting standpoint, they could replace the turbine and the engines under an exemption so it appears that isn't an issue. Engines #1 and #2 now also appear to be subject to the NESHAP ZZZZ because one engine was reconstructed and the other replaced. However, it appears that the only requirement for the engines (New and Reconstructed Stationary Engines >500 HP at a Major source of HAPS) under that regulation is to show that the combustion of landfill gas/digester gas is greater than or equal to 10% of their gross annual heat input. In this case, the facility only combusts landfill gas in the engines. Their annual MAERS submittal could suffice for this reporting requirement because it includes how much fuel (landfill gas) was combusted.

Staff had to follow up with Suparna on the previous issue(s) as well as get the various records. The following is a summary of that follow up along with the ROP's Special Conditions and the facilities compliance status with them.

NOTE: Upon following up with Suparna regarding the date of manufacture of the replacement engine (Engine #2) they could not provide that specific documentation. She did supply the serial numbers for all the engines and stated that Fortistar has not purchased any new engines after 2006 (See attached e-mail correspondence). Although staff believes this to be the case, they recommended that Fortistar keep some type of records showing the date of manufacture of the engines since that determines the potential applicability of the NSPS JJJJ. Staff will consider them to be in subject to that regulation unless further information proves otherwise.

Conditions of MI-ROP-P0222-2012a

EUTREATMENTSYS: Appears to be in COMPLIANCE

The treatment systems appear to be set-up as required to meet the NSPS WWW requirements which means it removes particulate matter, removes moisture, and compresses the landfill gas prior to combustion. It appears that they are operating the treatment systems anytime landfill gas is routed to the internal combustion engines and turbine. It also appears that C&C Energy personnel are keeping up to date records of engine and treatment system maintenance (They have a binder with all the information). They are submitting the SSM Reports and the ROP Certifications as required.

EU-EMERGEN#1: Appears to be in COMPLIANCE

The only conditions for the emergency generator are from the NESHAP ZZZZ (RICE MACT) and the only requirements for existing ones are as follows:

(1) If you own or operate an emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that was installed prior to June 12, 2006, you must operate the engine according to the conditions described in paragraphs (f)(2)(i) through (iii) of this section. If you do not operate the engine according to the requirements in paragraphs (f)(2)(i) through (iii) of this section, the engine will not be considered an emergency engine under this subpart and will need to meet all requirements for non-emergency engines.

(i) There is no time limit on the use of emergency stationary RICE in emergency situations.

(ii) You may operate your emergency stationary RICE for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by the manufacturer, the vendor, or the insurance company associated with the engine. Required testing of such units should be minimized, but there is no time limit on the use of emergency stationary RICE in emergency situations and for routine testing and maintenance.

(iii) You may operate your emergency stationary RICE for an additional 50 hours per year in non-emergency situations. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

According to Mike, the only time they've run the generator since it became subject to Subpart ZZZZ is for monthly operational checks. They have a form that is filled out every time they operate it.

EUTURBINE: Appears to be in COMPLIANCE

As mentioned earlier, the turbine was replaced in May of 2013 which could be done under the AQD Rule 336.1285(a)(vi) permit exemption. However, the turbine is subject to the NSPS 40 CFR Part 60 Subpart KKKK for the Standards of Performance for Stationary Combustion Turbines. The main components of this NSPS deal with NOx and Sox. Under the ROP and the NSPS, the facility is required to test VOC, CO, NOx, HCL, and SOx emissions from the turbine. NOx (since they don't have a CEMs) and SOx are tested annually to show compliance with the emission limits. The facility had originally failed the first several tests up until the EPA realized they erred when they didn't take into account the higher sulfur content of and lower btu ratings of some biofuels. The EPA amended the NSPS to allow turbines fired on biofuels to have SOx emission up to 0.15 lbs/mmbtu. The amendment took effect on May 19, 2009 and C&C Energy has since been in compliance with the limit. They plan to do this year's testing the first week of September. Also, the turbine is subject to 40 CFR Part 63 Subpart YYYY was explained previously. Staff had to get with Suparna for emission records regarding the turbine. The height and diameter of the stack appear to meet the permit requirements. The turbine was operating during staff's inspection and was consuming approximately 1070 scfm.

Follow-Up: Staff received the emissions data (Monthly Rolling Emission Totals) for the turbine from Suparna on July 8, 2014 and the following is what staff noted:

Total VOCs: 2.5 tons per year based on a 12-month rolling time period. Appears to be in COMPLIANCE. Staff reviewed the records and the highest emissions noted were 0.01 tons for the most recent 12-month rolling time period.

CO Limit: 89 tons per year based on a 12-month rolling time period. Appears to be in COMPLIANCE. Staff reviewed the records and the highest emissions noted were 1.13 tons for the most recent 12-month rolling time period.

NOx Limit: 26 tons per year based on a 12-month rolling time period. Appears to be in COMPLIANCE. Staff reviewed the records and the highest emissions noted were 13.58 tons for the most recent 12-month rolling time period.

NOx Limit: 96 ppm @ 15% O2 or 5.5 lbs per megawatt hour based on annual stack testing (in this case). Appears to be in COMPLIANCE. The most recent stack test data from September of 2013 indicates average emissions of 29.01 ppm @ 15% O2. The facility will be testing again the 1st week of September.

HCL Limit: 8.3 tons per year based on the initial stack test. Appears to be in COMPLIANCE. Staff reviewed the records and the highest emissions noted were 0.01 tons for the most recent 12-month rolling time period. The initial stack test data from 2007 indicates average emissions at 0.18 tons per year

SOx Limit: NSPS KKKK amended limit of 0.15 lbs per mmbtu based on annual stack testing (in this case). Appears to be in COMPLIANCE. The most recent stack test data from September of 2013 indicates average emissions at less than 0.007 lbs per mmbtu. The facility will be testing again the 1st week of September.

TURBINE COMPLIANCE WITH NESHAP YYYY:

Appears to be in COMPLIANCE. As mentioned previously, the facility agreed to enter into a consent order with the AQD regarding this regulation. The following lists the requirements of YYYY as they apply to turbines firing landfill gas as fuel. The semi-annual/annual ROP and Start-Up, Shutdown, and Malfunction (SSM) reports that are already submitted appear to contain the required information below except for the amount of landfill gas consumed for the reporting period (although that is reported in their annual MAERs Report). Also, we know the facility only combusts landfill gas at the present time. Lastly, the facility constantly monitors, records, and keeps record of fuel consumption.

(2) A stationary combustion turbine which burns landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, or a stationary combustion turbine where gasified municipal solid waste (MSW) is used to generate 10 percent or more of the gross heat input on an annual basis does not have to meet the requirements of this subpart except for:

(i) The initial notification requirements of §63.6145(d); and

(ii) Additional monitoring and reporting requirements as provided in § §63.6125(c) and 63.6150.

§ 63.6125 What are my monitor installation, operation, and maintenance requirements?

(c) If you are operating a stationary combustion turbine which fires landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, or a stationary combustion turbine where gasified MSW is used to generate 10 percent or more of the gross heat input on an annual basis, you must monitor and record your fuel usage daily with separate fuel meters to measure the volumetric flow rate of each fuel. In addition, you must operate your turbine in a manner which minimizes HAP emissions.

§ 63.6145 What notifications must I submit and when?

(a) You must submit all of the notifications in §§63.7(b) and (c), 63.8(e), 63.8(f)(4), and 63.9(b) and (h) that apply to you by the dates specified.

(c) As specified in §63.9(b), if you start up your new or reconstructed stationary combustion turbine on or after March 5, 2004, you must submit an Initial Notification not later than 120 calendar days after you become subject to this subpart.

§ 63.6150 What reports must I submit and when?

(c) If you are operating as a stationary combustion turbine which fires landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, or a stationary combustion turbine where gasified MSW is used to generate 10 percent or more of the gross heat input on an annual basis, you must submit an annual report according to Table 6 of this subpart by the date specified unless the Administrator has approved a different schedule, according to the information described in paragraphs (d)(1) through (5) of this section. You must report the data specified in (c)(1) through (c)(3) of this section.

(1) Fuel flow rate of each fuel and the heating values that were used in your calculations. You must also demonstrate that the percentage of heat input provided by landfill gas, digester gas, or gasified MSW is equivalent to 10 percent or more of the total fuel consumption on an annual basis.

(2) The operating limits provided in your federally enforceable permit, and any deviations from these limits.

(3) Any problems or errors suspected with the meters.

(d) Dates of submittal for the annual report are provided in (d)(1) through (d)(5) of this section.

(1) The first annual report must cover the period beginning on the compliance date specified in §63.6095 and ending on December 31.

(2) The first annual report must be postmarked or delivered no later than January 31.

(3) Each subsequent annual report must cover the annual reporting period from January 1 through December 31.

(4) Each subsequent annual report must be postmarked or delivered no later than January 31.

(5) For each stationary combustion turbine that is subject to permitting regulations pursuant to 40 CFR part 70 or 71, and if the permitting authority has established the date for submitting annual reports pursuant to 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), you may submit the first and subsequent compliance reports according to the dates the permitting authority has established instead of according to the dates in paragraphs (d)(1) through (4) of this section.

§ 63.6155 What records must I keep?

(b) If you are operating a stationary combustion turbine which fires landfill gas, digester gas or gasified MSW equivalent to 10 percent or more of the gross heat input on an annual basis, or if you are operating a lean premix gas-fired stationary combustion turbine or a diffusion flame gas-fired stationary combustion turbine as defined by this subpart, and you use any quantity of distillate oil to fire any new or existing stationary combustion turbine which is located at the same major source, you must keep the records of your daily fuel usage monitors.

FGICENGINES: Appears to be in COMPLIANCE

As mentioned earlier, staff was told that Engine #1 was taken out, rebuilt, and then reinstalled in April of 2013. Engine #2 was replaced by a different rebuilt engine in January of 2014 which could be done under the AQD Rule 336.1285(a)(vi) permit exemption. However, these two engines would now be subject to Subpart ZZZZ since they were modified, reconstructed, or constructed; but as mentioned previously, there isn't much in the way of requirements except that the combustion of landfill gas/digester gas is greater than or equal to 10% of their gross annual heat input. In this case, the facility only combusts landfill gas in the engines. Their annual MAERS submittal could suffice for this reporting requirement because it includes how much fuel (landfill gas) was combusted. The engines stack heights (minimum of 27 feet) and diameters (maximum of 14 inches) appear to be in compliance with the ROP requirements. All three engines were running during staff's inspection and they were consuming

approximately 300 scfm of landfill gas each. The horsepower output for each engine doesn't appear to exceed the 1478 Hp ROP limit. They seem to range between 1050 to 1200 Hp output. The facility is continuously recording landfill gas consumption for all internal combustion engines, the kilowatt output of each engine, and the hours of operation of each one as required. As mentioned earlier, staff was told they needed to get with Suparna for the NOx, CO, VOC, and HCL emission calculations for each individual engine based on the most recent stack test data. Also, as mentioned previously, none of the engines appear to have been manufactured after July 1, 2008 and would therefore not be subject to the NSPS JJJJ.

Follow-Up: Staff received the emissions data (Monthly Rolling Emission Totals) for the engines from Suparna on July 8, 2014 and the following is what staff noted:

NOx Limit: 2.93 # per hour, 1.07 tons per month, and 0.90 grams per horsepower hour per engine. Appears to be in COMPLIANCE. The facility met the grams per horsepower hour limit according to their last stack test at 0.25 and pounds per hour at 0.77. As for the tons per month, staff reviewed records for the most current 12 month rolling time period and the highest monthly emissions noted were 0.77 tons for engine #2 for several months in 2014.

CO Limit: 7.33 # per hour, 2.68 tons per month, and 2.30 grams per horsepower hour per engine. Appears to be in COMPLIANCE. The facility met the grams per horsepower hour limit according to their last stack test at 1.69 and pounds per hour at 5.23. As for the tons per month, staff reviewed records for the most current 12 month rolling time period and the highest monthly emissions noted were 1.82 tons for engine #1 in January of 2014.

VOC Limit: 0.81 # per hour, 0.30 tons per month, and 0.25 grams per horsepower hour per engine. Appears to be in COMPLIANCE. The facility met the grams per horsepower hour limit according to their last stack test at 0.06 and pounds per hour at 0.20. As for the tons per month, staff reviewed records for the most current 12 month rolling time period and the highest monthly emissions noted were 0.13 tons for engine #3 from October through December of 2013.

HCL Limit: 0.60 # per hour and 0.22 tons per month per engine. Appears to be in COMPLIANCE. The last performance test in September of 2013 indicated they met the pounds per hour limit and it was 0.04. As for the tons per month, staff reviewed the records for the most recent 12 month rolling time period and the highest monthly emissions noted were 0.01 tons for engine #1 and engine #3 for a number of the previous calendar months.

INSPECTION CONCLUSION: C&C Energy appears to be in COMPLIANCE with ROP No. MI-ROP-P0222-2012a and the other pertinent federal regulations cited in this inspection report at the present time.

NAME Matt Dahl DATE 8-5-14 SUPERVISOR Mary A Douglas 8/7/14