

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

N599151745

FACILITY: Citizens Disposal, Inc.		SRN / ID: N5991
LOCATION: 2361 W. Grand Blanc Rd., GRAND BLANC		DISTRICT: Lansing
CITY: GRAND BLANC		COUNTY: GENESEE
CONTACT: Robb Moore, Environmental Manager		ACTIVITY DATE: 11/21/2019
STAFF: Julie Brunner	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MAJOR
SUBJECT: Performed a scheduled inspection to determine compliance with ROP No. MI-ROP-N5991-2016 and as part of an FCE. Ongoing violation of Rule 201 due to increase in sulfur content of the landfill gas.		
RESOLVED COMPLAINTS:		

On November 12 & 21, 2019, AQD staff conducted a scheduled inspection of Citizens Disposal, Inc. and Energy Developments LLC of Grand Blanc (former Granger Electric of Grand Blanc) as part of an FCE. The facility operates per the conditions of Renewable Operating Permit (ROP) No. MI-ROP-N5991-2016. The ROP has two sections. Section 1 covers processes owned and operated by Citizens Disposal, Inc (Citizens). This includes the landfill operations, two (2) landfill gas flares, and a shop. Section 2 covers seven (7) landfill gas-fired engines, and a landfill gas treatment system that is owned and operated by Energy Developments LLC of Grand Blanc (EDGB). The last inspection of the facility was in November of 2017.

Operations owned and operated by Citizens and EDGB comprises a single stationary source. The landfill is located in a mixed use area site surrounded by farm land, residential, industry, and the highway (I-23) on the west side of the source.

Contacts:

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Facility Description:

Citizens is classified as a Type II sanitary landfill, which is a Municipal Solid Waste (MSW) landfill. A "Municipal Solid Waste landfill" or a "Type II landfill" according to Act 451, Part 115, Solid Waste Management states: A landfill which receives household waste, incinerator ash or sewage sludge and which is not a land application unit, surface impoundment, injection well, or waste pile.

A MSW landfill also may receive other types of solid waste, such as commercial waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial waste. Such a landfill may be publicly or privately owned.

Natural biological processes occurring in landfills transform the waste's constituents producing leachate and landfill gas. Initially, decomposition is aerobic until the oxygen supply is exhausted. Anaerobic decomposition of buried refuse creates most of the landfill gas. Landfill gas consists mainly of methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), and nonmethane organic compounds (NMOC).

There are two sides to the landfill. An inactive (closed) landfill originally owned and operated by Waste Management (WM) dates back to the 1940s. The active landfill (Citizens Disposal) is owned and operated by Republic Services since 1989. The landfill has been constructed in 3 construction phases.

Phase 1 – Cell A (original cell constructed in the early 1990's)

Phase 2 – Cells A – F

Phase 3 – Cells A – D

A landfill gas collection system has been installed to collect the landfill gas for both sides. For the WM side, gas collection wells were installed in 1994. Not much gas is collected from the inactive landfill at about 300 cubic foot (cf) per year. For the active landfill, gas collection wells are installed as appropriate. The system utilizes gas mover equipment to rout the collected gas to the gas-to-electric plant.

Landfill gas produced from the landfill is used to fuel spark ignition (SI) reciprocating internal combustion engines (RICE) in the EDGB owned and operated gas-to-electric plant. Each engine turns a crankshaft that spins a rotor in an electromagnetic field creating an electric current used to generate electricity. The engines in the gas-to-electric plant are located in two buildings. (Plant 1 and Plant 2 for reference in this report.) Plant 1 was built in ~1993 and has bays for five engines. All bays are now filled in the Plant 1 building. The cat-in-the-box (CITB) that had been on-site since 2010 has been removed and a Caterpillar (CAT) 3516 has been installed in what was empty bay 5. The engines in Plant 1 are currently operated as exempt under Rule 285(2)(g). Plant 2 has bays for three engines and two CAT 3520C were permitted on PTI 331-08. These two engines were installed in August of 2012.

When the landfill gas is not routed to the engines, such as during engine maintenance, it is burned in one of two open flares. The open flares are used as back-up control devices to combust the landfill gas. One flare, Grof flare, is capable of combusting 600 cfm of gas and is located by Plant 1. The other flare, a 3,000 cfm Zink flare is located near the base of the landfill. Landfill gas can be directly routed to the Zink flare. For Grof flare operation, gas first goes to the gas-to-energy plant and they route excess gas to the Grof flare when they do not have the capacity in the engine plant. Although the Grof flare is operated by EDGB, Republic owns and maintains both flares. Both flares are covered under Section 1 of the ROP.

Prior to combustion in the engines, landfill gas is sent to a treatment system. The treatment system has been in place since 1995 according to the dates in the ROP. The treatment system consists of a strainer and knockout scrubber to remove water vapor from the gas. The gas then passes through a compressor and heat exchangers. Finally, particulate is removed from the gas when it passes through a 10 micron particle filter.

#### Regulatory Overview:

Citizens and EDGB are currently a major Prevention of Significant Deterioration (PSD) source due to the potential to emit of greater than 250 tons per year (tpy) of any regulated air contaminant. Actual emissions of CO at this facility are greater than 250 tpy. The facility is also major for hazardous air pollutants (HAPs) with the potential to emit in equal or greater quantities of 10 tpy of any single HAP and 25 tpy of aggregate HAPs. The potential to emit of greenhouse gases (GHGs) in carbon dioxide equivalents (CO<sub>2</sub>e) are greater than 100,000 tpy. CO<sub>2</sub>e is a calculation of the combined global warming potentials of six GHGs: CO<sub>2</sub>, CH<sub>4</sub>, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The facility is subject to the Title V - Renewable Operating Permit Program. An ROP renewal application needs to be submitted between May 16, 2020 and May 16, 2021.

The following federal regulations for air pollutants currently apply as discussed below:

40 CFR 60, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills - The provisions of this subpart apply to each municipal solid waste landfill that commenced construction, reconstruction or modification on or after May 30, 1991, and the landfill has a design capacity greater than or equal to 2.5 million megagrams (Mg) and 2.5 million cubic meters. The landfill gas collection and control system (GCCS) are subject to the requirements of Subpart WWW.

40 CFR 60, Subpart JJJJ, Standards of Performance for Spark Ignition Internal Combustion Engines (SI ICE) - The provisions of this subpart apply to SI ICE that commence construction (ordered) after June 12, 2006. Two of the engines, EUENGINE6 and EUENGINE7, are subject to Subpart JJJJ.

40 CFR 61, Subpart M, Standards of Performance for Asbestos – The facility occasionally receives asbestos containing material for proper disposal.

40 CFR 63, Subpart AAAA, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills - This subpart requires all subject landfills to meet the requirements of 40 CFR 60, Subpart Cc or WWW. This subpart also requires such landfills to meet the startup, shutdown, and malfunction (SSM) requirements of 40 CFR 63, Subpart A, General Provisions and provides that compliance with the operating conditions shall be demonstrated by parameter monitoring results that are within the specified ranges. It also includes additional reporting requirements.

40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) – This subpart establishes national emission limitations and operating limitations for HAPs emitted from stationary RICE located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with emission and operating limitations. The five (5) exempt engines (EUENGINE1 – EUENGINE5) and

EUENGINE6 and EUENGINE7 are affected sources subject to 40 CFR 63, Subpart ZZZZ. The engines, EUENGINE1 – EUENGINE4, are existing stationary RICE. EUENGINE5, EUENGINE6, and EUENGINE7 are new stationary RICE. The following is a list of emission units/flexible groups that are on ROP No. MI-ROP-N5991-2016:

Emission Unit ID	Emission Unit Description	Install/Modify Date	App. Req.
<b>SECTION 1</b>			
EULANDFILL (TREAT)	This emission unit represents the general Municipal Solid Waste (MSW) Landfill	12/13/95	40 CFR 60: Subparts WWW, 40 CFR 63: Subpart AAAA
EU ACTIVECOLL	Active landfill gas collection system at the landfill that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment	12/13/95	40 CFR 60: Subparts WWW, 40 CFR 63: Subpart AAAA
EU GROFFLARE	600 cfm open flare combustor without enclosure or shroud	4/1/00	40 CFR 60: Subparts WWW, 40 CFR 63: Subpart AAAA
EU ZINKFLARE	3,000 cfm open flare combustor without enclosure or shroud	2/3/09	40 CFR 60: Subparts WWW, 40 CFR 63: Subpart AAAA
EU ASBESTOS	Any active or inactive asbestos disposal site.	1/1/81	40 CFR 61: Subpart M
FGCOLDCLEANER (One located in the shop.)	Any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 281(2)(h) or Rule 285(2)(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.	?	Rule 281(2)(h)
FGRULE290 (no emission units operating under Rule 290 and this group should be removed at ROP renewal.)	Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 290.	NA	Rule 290
<b>SECTION 2</b>			
EUTREATSYS	Processing equipment that treats collected landfill gas for subsequent sale or use.	12/13/95	40 CFR 60: Subparts WWW, 40 CFR 63: Subpart AAAA
EUENGINE6 (GZJ551) Swapped since the last inspection.	CAT 3520 (2,233 hp) landfill gas-fired reciprocating engine, 1.6 MW, 14.67 MMBtu/hr	8/1/12	40 CFR 60: Subpart JJJJ, 40 CFR 63: Subpart ZZZZ

Emission Unit ID	Emission Unit Description	Install/Modify Date	App. Req.
EUENGINE7 (GZJ197) Swapped since the last inspection.	CAT 3520 (2,233 hp) landfill gas-fired reciprocating engine, 1.6 MW, 14.67 MMBtu/hr	8/1/12	40 CFR 60: Subpart JJJJ, 40 CFR 63: Subpart ZZZZ
<b>Exempt Engines</b>			
EUENGINE1 (3RC274)	Caterpillar 3516 landfill gas-fired reciprocating engine located in Plant 1.	07-27-1994	Rule 285(2)(g), 40 CFR 63: Subpart ZZZZ
EUENGINE2 (4EK124)	Caterpillar 3516 landfill gas-fired reciprocating engine in Plant 1.	07-27-1994	Rule 285(2)(g), 40 CFR 63: Subpart ZZZZ
EUENGINE3 (4EK468)	Caterpillar 3516 landfill gas-fired reciprocating engine in Plant 1.	07-27-1994	Rule 285(2)(g), 40 CFR 63: Subpart ZZZZ
EUENGINE4 (3R889) (4EK437) Swapped since the last inspection.	Caterpillar 3516 landfill gas-fired reciprocating engine in Plant 1.	04-01-2000	Rule 285(2)(g), 40 CFR 63: Subpart ZZZZ
EUENGINECITB(16) (REMOVED)	<del>Caterpillar 3516 landfill gas-fired reciprocating engine on a flatbed skid beside Plant 1.</del>	08-04-2010	<del>Rule 285(2)(g), 40 CFR 63: Subpart ZZZZ</del>
EUENGINE5 (3RC273) Replaced the CITB (16) and subject to the same requirements	Caterpillar 3516 landfill gas-fired reciprocating engine in Plant 1. (9.5 MMBtu per hour, 0.8 MW each, manf. Date- 1995)	01-31-2017	Rule 285(2)(g), 40 CFR 63: Subpart ZZZZ (Rule 215(3) – Off-Permit Change)

#### **Michigan Air Emissions Reporting System (MAERS):**

The facility reports to MAERS as an Major, Category I fee subject and will be classified as a Category B under the new fee structure.

#### **Inspection:**

On November 21st, I conducted an inspection of the Citizens Disposal landfill and on November 12th an inspection of the EDGB gas-to-electric plant while observing a stack test.

#### **Section 1 - Citizens Disposal, Inc (11-21-2019)**

Arrived: 9:10 AM

Departed: 11:05 PM

Weather: 42°F, wind S @ 13 MPH, UV Index 0 Low, rainy

No visible emissions (VEs) were observed from any of the facility operations. No landfill odors were identified surrounding the facility.

A drive around the operations of the landfill including the working face was done with Robb Moore. Approval was just received last month to start filling the new cell (Cell B). We drove by the inactive (closed) landfill owned by WM, the Citizens Disposal landfill, and the Grof Flare and Zink Flare which were not operating.

While driving around the circumference of the landfill, risers for the leachate collection system and the electric powered leachate pumps were noted. At the working face of the landfill, the odor was not too bad. Wind speed was light and offsite potential for odors was observed to be low. At night, the working face is covered with tarps. Approximately 200 to 300 trash trucks per day make their way to the working face of the landfill and the scales close at 4:00 PM. A lot of construction debris is taken in by the landfill operator. The landfill is producing about 2600 cfm of gas currently.

A program to monitor monthly cover integrity and implement cover repairs is required in EULANDFILL, Special Condition (SC) VI.1 and is in place. A copy of the NSPS Monthly Cover Integrity Inspection Surface, Monitoring Design Plan for January through October 2019 was obtained. It showed mainly no issues found with the exception of in June and July where soil erosion in the NE Bowl was noted which has been fixed.

Surface CH<sub>4</sub> concentration scans of the landfill are done quarterly as required by NSPS and MACT per the requirements in EULANDFILL. The NSPS limit for CH<sub>4</sub> is 500 part per million (ppm). An exceedance of NSPS limits could indicate the need to draw additional gas from the area for better capture and to prevent gas migration off-site. The company that is contracted to do the surface monitoring, well field monitoring, and flare operation and maintenance (O & M) is Monitoring Control and Compliance (MCC). The O & M provider was switched to MCC in February of 2019. The fourth quarter scan was completed October 29<sup>th</sup> and no hits above 500 ppm were identified according to Robb. The third quarter scan had one hit above 500 ppm and it was below 500 ppm on the 10-day rescan. The hit was located in an area just below the active face which at the time was at the top of the cell. Records are kept as required by EULANDFILL, SC VI.5 of the surface CH<sub>4</sub> monitoring.

MCC staff monitor each gas collection wellhead for temperature, pressure and oxygen (O<sub>2</sub>) levels monthly as required by NSPS and MACT per the requirements in EUACTIVECOLL. The NSPS requires that wellheads on collection systems operate at below required temperatures, pressure and oxygen (O<sub>2</sub>) levels. An exceedance of NSPS limits could indicate the need to draw additional gas from the area to prevent gas migration, the surface liner may have a leak allowing air infiltration, or in the case of rising temperatures, a possible fire. Requests for variances from operating parameters for specific wells can be made if tuning the wellheads does not address the exceedances in operating parameters. Wellfield Monitoring Data (12-months) from 12/11/18 to 11/18/19 was obtained and the information matches up with the requests for alternate timelines (variances).

A plot plan of the collection system (as required by EUACTIVECOLL, SC VI.5) was viewed and the areas where alternative timeline variance requests have been made were discussed. On a drive around the landfill, the seven (7) wells that had alternative timeline requests or decommissioned in 2019 were viewed. A number of alternative timeline variance requests have been made in the last couple of years as waste was being placed at the top of a cell that caused issues with the gas collection system. The wells viewed are summarized below:

HC09 – Decommissioned, no cap so can't be read and no connection to the GCCS.  
158A – New vacuum line, the vacuum line had become pinched when filling the cell.  
96C, 100C, 42E – Well redrills and new vacuum lines.  
18C, 23 – Oxygen issue and vacuum issue all corrected with construction

EUGROFFLARE handles excess gas from the landfill that the engine plants cannot take. The landfill is producing enough gas to be at the capacity of the plant and a couple hundred scfm of gas has to go to the flare when an engine is off-line for maintenance. EDGB operates the Grof flare and directs partially treated gas to it as needed when an engine is down for maintenance. The Grof flare has nitrogen tanks beside it which is the gas used to ignite the pilot light on the flare. It was not operating on the day of the inspection.

EUZINKFLARE is for backup if the gas-to-energy plant is down and the gas header from the landfill goes directly to it. It is run once a month to check operation at a minimum. The Zink flare is sized to handle the entire amount of gas that the landfill produces in the event the gas-to-energy plants are not operational for a period of time. The gas-to-energy plants have a gas header off of the main header that directs gas to it. On the day of the inspection, the Zink flare was scheduled to be tested. It had operated from 8:30 to 9:30 am, and no operational issues were identified.

A test protocol was received on 10/2/2018 for field NMOC testing of the nonproductive areas of the landfill in order to cease operation of the gas collection equipment and remove the GCCS from service. Tier 2 sampling was completed on 11/1/2018. The area was found to be at about 7% production. Areas to be excluded from collection and control need to contribute less than 1% of the total amount of NMOC emissions from the landfill. The area tested did not have gas production low enough to request closure and removal of the GCCS.

The facility accepts both friable and non-friable asbestos. Friable asbestos is buried as soon as possible. The location of the friable asbestos is plotted using GPS, and gas collection systems are not installed in areas where asbestos has been buried. Non-friable asbestos can be put into the working face of the landfill. Asbestos comes in with a manifest (waste shipment record) and the requirements of 40 CFR 61, Subpart M are followed.

The notification of excavation/disturbance as required by SC VII.6 is submitted for the year. The notice for the year was submitted on January 24, 2019. Quarterly, the locations of asbestos material is plotted on a map to show where it is located in the landfill. Copies of the 2<sup>nd</sup> and 3<sup>rd</sup> quarter asbestos locations maps are attached. This is part of the information that is required per SC VI.2. On 7/3/2019, AQD staff from the Asbestos Program inspected Citizens Disposal for compliance with the Asbestos NESHAP. They found compliance with the conditions of EUASBESTOS through viewing waste shipment records, the diagrams of the asbestos disposal areas that maintain the location, depth and quantities as required by SC VI.1 to 3. I also noted on the drive around the landfill, signs posted warning that asbestos had been disposed of in the landfill which are required by SC III.1.

There is a parts washer located in the shop. It is included as FGCOLDCLEANER in the ROP. The parts washer was closed when viewed. Safety-Kleen services the parts washer. Just about every 18-month the fluid is replaced. The Safety Data Sheet (obtained at the last inspection) for the solvent used shows the material is a petroleum distillate. The parts washer meets the requirements of Rule 281(2)(h).

There are some exempt Rule 282 heaters at the facility including one propane heater for the office and a Salamander portable heater in the shop. There are 2 – 1000 gallon, and 1 – 500 gallon diesel fuel tanks for equipment refueling on site. These are occasionally moved around the landfill operations for refueling of off-road vehicles. There are also 2 – 335 gallon hydraulic oil tanks in the shop that were identified. The oil tanks at the facility are exempt under Rule 284(2)(i).

There is a flexible group for Rule 290 subject emission units called FGRULE290. There are no emission units at the facility that are operating under Rule 290 and conditions will need to be removed with the next ROP renewal.

#### Section 2 – EDGB (11/12/2019)

Arrived: 9:35 am

Departed: 2:30 pm

Weather: 16°F, wind W @ 9 MPH, UV Index 1

No visible emissions (VEs) were observed from any of the facility exhaust stacks upon arrival. No odors were identified surrounding the facility, but a few whiffs of landfill gas odors during the stack test were noted. All engines were operating in the two plants at the time of the inspection.

The basic business agreement between the landfill and the gas plant is that Republic gets a percentage of the profit from the gas plant. The gas wells produce ~100 scfm to a low of 5-10 scfm each. Republic maintains the gas wells and has done a lot of construction this year that has increased gas flow. The gas is drawn to the engine plants using compressors.

All seven (7) engines run all the time plus excess gas is directed to the Grof flare when an engine is down for maintenance.

In the EDGB operated gas-to-electric plants, I meet with Mr. Tony Saintmarie and Mr. Tim Blake (new contract), both EDGB operations technicians for the plant. Also, at the facility for the stack test was the operations manager, Mike and a floating operations technician, Robert. EDGB has two (2) full-time personnel that are on-site 5 days per week from 8:00 am to 4:00 pm. One person is on-call 7 days per week and this switches from week to week.

Plant 1 has five (5) CAT 3516 engines numbered EUENGINE1 through EUENGINE5. (EUENGINE5 will be added to the ROP with renewal.) All were considered exempt per Rule 285(2)(g) but will be permitted as part of the action to resolve a violation due to the increase in the sulfur content of the landfill gas. EUENGINE6 and EUENGINE7, which were permitted on PTI 331-08, are installed and operating, but Plant 2 has room for three total engines. Installation of a third engine in Plant 2 will require a PTI, and possible PSD review of the project.

EUENGINE6 and EUENGINE7 are tested annually in order to demonstrate compliance with the emission limits for NO<sub>x</sub>, CO, and VOC per the requirements for 40 CFR 60, Subpart JJJJ and the ROP. Compliance with the emission limits for NO<sub>x</sub>, CO, and VOC (SCs I.1, 2, and 4) per the requirements for 40 CFR 60, Subpart JJJJ has been demonstrated annually.

EUENGINE6 and EUENGINE7 are currently exceeding the emission limit for SOx due to an increase in the sulfur (mainly H<sub>2</sub>S) content of the landfill gas which fuels the engines. The exceedance has been traced back to landfill gas sampling done in May of 2016, but discovered when testing for compliance with the emission limit for SOx was requested by AQD staff in October/November 2017. The testing of SOx did not occur during the November 2017 engine testing as it was identified via Drager tube sampling that the sulfur content had significantly increased and the emission limits had been exceeded. In December 2017, Energy Developments (EDL) staff had indicated that they were working on a PTI modification to address the issue. The application was not submitted before the next stack testing was required and performed. SOx was actually tested in November 2018 from EUENGINE6 and EUENGINE7, and was found to be exceeding the emission limits for SOx.

Weekly sampling of the sulfur content of the landfill gas is ongoing, and the results are being provided to the landfill operator and AQD. Sampling using Drager tubes is estimating between 800 ppm to 1000 ppm hydrogen sulfide (H<sub>2</sub>S) content in the gas.

During testing of EUENGINE6 on 11/12/2019 and at AQD request, EDGB staff pulled two (2) Drager tubes to measure H<sub>2</sub>S content of the landfill gas. They have been sampling from the gas header located in the Plant 2 engine room as the previous location in Plant 1 was identified as "bad". The first tube showed just under 1000 ppm of H<sub>2</sub>S in the landfill gas. The second tube measured right at 1000 ppm of H<sub>2</sub>S in the landfill gas. The H<sub>2</sub>S content has slowly been increasing again and is running between 800 ppm to 1000 ppm based on weekly sampling.

A current list of the engines and serial numbers at the facility was provided. Granger had maintained a fleet of engines for "like-kind" engine replacement for engine swapping, and EDL (the parent company of EDGB) has acquired all the assets. For "like-kind" engine replacement, all supporting documentation for this type of action should be maintained per the requirements in the PM/MAP for FGENGINES (SC III.2, SC VI.4), FG3615ENGINES (SC III.2, SC VI.2), and FGRICEMACT (SC III.4, SC VI.3). Engines are swapped out according to a PM guideline based on performance, engine operating hours, etc. and is dictated by the central office.

It appears that three (3) "like-kind" engine replacements have been performed for EUENGINE4, EUENGINE6, and EUENGINE7 since the last inspection on November 28, 2017. Requested documentation for the like-kind replacements was received and is attached. The Part 18 rules define the criteria for determining a like-kind replacement. The emission unit has to maintain the definition of existing and not reconstructed per Rule 1801 (r)(ii), and that the replacement is not a major modification and meets the requirements of routine maintenance, repair, and replacement (RMRR) per Rule 1801(aa).

Rule 1801(r)(ii) An existing emissions unit is any emissions unit that does not meet the definition of a new emissions unit. A replacement unit is an existing emissions unit and no creditable emission reductions shall be generated from shutting down the existing emissions unit that is replaced. A replacement unit shall meet all of the following criteria:

(A) The emissions unit is a reconstructed unit if the replacement of components of an existing facility is to such an extent that the fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility or the emissions unit completely takes the place of an existing emissions unit.

(B) The emissions unit is identical to or functionally equivalent to the replaced emissions unit.

(C) The replacement does not alter the basic design parameters of the process unit.

Rule 1801(aa) "Major modification" means any of the following:

(i) Physical change in or change in the method of operation of a major stationary source that would result in both of the following:

(A) A significant emissions increase of a regulated new source review pollutant.

(B) A significant net emissions increase of that pollutant from the major stationary source.

(ii) A significant emissions increase from any emissions units or net emissions increase at a major stationary source that is significant for volatile organic compounds or oxides of nitrogen shall be considered significant for ozone.

(iii) Physical change or change in the method of operation shall not include any of the following:

(A) Routine maintenance, repair, and replacement.

.....

(F) An increase in the hours of operation or in the production rate, unless the change would be prohibited under any federally enforceable permit condition which was established after January 6, 1975, under PSD regulations or R 336.1201(1)(a).

EUENGINE4 - This engine was swapped out for a major overhaul in June 2018. In the "Plant Maintenance Logs" on June 25, 2018, it is noted that #4 underwent a Major (plus aux pump and regulator housing) and the old engine (3RC889) was swapped for the new (4EK437). The engine removed from the site was a Caterpillar Model 3516 manufactured October 26, 1993. The replacement engine was an identical Caterpillar Model 3516 engine manufactured February 14, 1995. (The gas engine technical data sheet provided was for a Caterpillar® G3516 LE and dated 09-Apr-99.) The replacement engine is subject to the same requirements as the old under 40 CFR 63, Subpart ZZZZ and was demonstrated as not reconstructed. In order to be considered reconstructed, the fixed capital cost of the new components needs to exceed 50% of the fixed capital cost to construct a new source (in this case the engine). According to the documentation provided, the cost of the new engine components was below \$200,000 which is counted as the cost of the engine if it had been purchased from an outside vendor (engines are overhauled in-house at EDL). The estimated cost of a comparable new engine exceeds \$600,000. The capital cost of the replacement engine is ~30% of the cost of a new engine, and doesn't exceed 50% of the fixed capital cost of a new engine according to EDL.

EUENGINE6 - This engine was swapped out for a major overhaul in September 2019. The engine that was in engine bay 7 replaced it. In the "Plant Maintenance Logs" on September 22, 2019, it is noted that #6 was shut down for a major overhaul. The old engine (GAJ549) was swapped for the new (GZJ551) on September 24, 2019. The engine removed from the site was a Caterpillar Model 3520C manufactured November 22, 2011. The replacement engine was an identical Caterpillar Model 3520C engine manufactured November 28, 2011. (The gas engine technical data sheet provided was for a Caterpillar® G3520C and dated 17-Mar-05.) The replacement engine is subject to the same requirements as the old under 40 CFR 60, Subpart JJJJ and 40 CFR 63, Subpart ZZZZ, and was demonstrated as not reconstructed. In order to be considered reconstructed, the fixed capital cost of the new components needs to exceed 50% of the fixed capital cost to construct a new source (in this case the engine). According to the documentation provided, the cost of the new engine components was below \$400,000 which is counted as the cost of the engine if it had been purchased from an outside vendor (engines are overhauled in-house at EDL). The estimated cost of a comparable new engine exceeds \$900,000. The capital cost of the replacement engine is ~40% of the cost of a new engine, and doesn't exceed 50% of the fixed capital cost of a new engine according to EDL.

EUENGINE7 - This engine was swapped out for a major overhaul in March 2019. In the "Plant Maintenance Logs" on March 11, 2019, it is noted that #7 underwent a major overhaul and the old engine (GZJ551) was swapped for the new (GZJ197). The engine removed from the site was a Caterpillar Model 3520C manufactured November 28, 2011. The replacement engine was a Caterpillar Model 3520C engine manufactured September 1, 2005. (The gas engine technical data sheet provided was for a Caterpillar® G3520C and dated 17-Mar-05.) The replacement engine is subject to the same requirements as the old under 40 CFR 63, Subpart ZZZZ, but is not subject to 40 CFR 60, Subpart JJJJ because it has a manufacture date before January 1, 2008. Since the replacement engine is older and not subject to the NSPS, it is questionable whether this meets the requirements for "like-kind" replacement and may qualify as a "new" emission unit. The replacement engine was demonstrated as not reconstructed. In order to be considered reconstructed, the fixed capital cost of the new components needs to exceed 50% of the fixed capital cost to construct a new source (in this case the engine). According to the documentation provided, the cost of the new engine components was below \$400,000 which is counted as the cost of the engine if it had been purchased from an outside vendor (engines are overhauled in-house at EDL). The estimated cost of a comparable new engine exceeds \$900,000. The capital cost of the replacement engine is ~40% of the cost of a new engine, and doesn't exceed 50% of the fixed capital cost of a new engine according to EDL.

Since the engines were swapped out in a 2-year period, they could be considered one project. If the actual-to-projected-actual test is considered for applicability (Rule 1802(4)(c)), because the engines are supposed to be "like-kind" and are to be operated in the same manner as the engines replaced, a significant emissions increase is not expected with the exception of SO<sub>2</sub>. Because of the change in the quality of the gas (increase in total sulfur), the issue of increased SO<sub>2</sub> is in enforcement.

Since the last inspection, a Safety and Compliance Manual has been put together for the plants. It includes a copy of the ROP, the Startup, Shutdown, and Maintenance Plan (SSM) for EUTREATMENTSYS as required by SC XI.2 dated October 2018 which needs to be updated to include five (5) CAT 3615 engines in 2.2 Facility Description, and the Preventative Maintenance / Malfunction Abatement Plan (PM/MAP) dated December 11, 2018. The PM/MAP does need to be updated to include the engines numbered EUENGINE1 through



EUENGINE5 and to reference ROP No. MI-ROP-N5991-2016 (not the 2010 version) in Section 4.1. Some responsible personnel updates may also be needed. The PM/MAP does not appear to address EUTREATMENTSYS, which is required to have a PM/MAP per SC III.3. I did not request to see that PM/MAP with this inspection.

An electronic preventative maintenance (PM) program is in place. Work orders for the equipment are generated by the system. A copy of plant maintenance logs and downtime for June 2018, and January to October 2019 were supplied. The logs include the date, time, event description or reason, equipment number, equipment operating time in hours, and length of event. Events logged included electrical and mechanical work, plugs, oil and filter changes; generator replacement, belt replacements; majors, and cleaning and washing. In other words, routine maintenance and repairs were documented properly in compliance with EUTREATMENTSYS (SC VI.2), FG3615ENGINES (SC VI.2), FGENGINE (SC VI.4), and FGRICEMACT (SC VI.3). Notes on PM completed on EUTREATMENTSYS may be a little light on documentation. (PM on the chillers is done once a year and filters are changed annually or as needed when the pressure gauge indicates it is needed.)

A snap shot of the PLC computer screen with the engine operations on the day of the inspection was obtained (attached). All operating data is sent electronically to "headquarters" and AQS (consultant). The operating data includes kilowatt-hours (kW-hr), pressure, landfill gas flow to each plant, and production data. Daily Logs are kept of the data for equipment in Plants 1 and 2, and maintained on-site. Daily Logs for October 1-4, 11, 18, 25, 31, and November 1 & 8 (printed) were obtained. Compilation of the data is done at "headquarters" and this information was requested from Mr. Dan Zimmerman (EDGB Director of operations). Compliance with a number of monitoring/recordkeeping conditions in EUTREATMENTSYS, FG3615ENGINES, FGENGINE, and FGRICEMACT was demonstrated.

The following data from the digital display in the control room were recorded during the time of inspection:

ENGINE #1 = 682 kW

ENGINE #2 = 683 kW

ENGINE #3 = 676 kW

ENGINE #4 = 670 kW

ENGINE #5 = 786 kW

EUENGINE6 = ~1600 kW

EUENGINE7 = ~1600 kW

Methane content of the gas was 51.1% and oxygen content was 0.37% at 12:20 pm according to the plant monitor located in Plant 1.

#### Records Review:

Records not obtained during the inspection were emailed. The following records were requested and/or obtained during the inspection:

1. The Historical Wellfield Monitoring Data (12-months) from 12/11/18 to 11/18/19.
2. Gas flow records and flare operation for EUGROFFLARE (including information for Plants 1 and 2) for January 2018 to October 2019.
3. The 12-month rolling gas flow, heat input (MMBtu), and CO and SOx emissions data for EUZINKFLARE from November 2018 to October 2019.
4. The landfill gas usage and kilowatt output for the last 12-months (November 2018 to October 2019) for EUENGINE6 and EUENGINE7 (FGENGINES).

For EUZINKFLARE, the 12-month rolling landfill gas usage in October 2019 was 38.98 MMcf and the permit limit is 1,570 MMcf per 12-month rolling time period. CO emissions based on a 12-month rolling time period up to October 2019 were 3.56 tpy, and SOx emissions based on a 12-month rolling time period up to October 2019 were 3.83 tpy. The CO emission limit is 146 tpy and SOx emission limit is 48 tpy. EUZINKFLARE is estimated to be operated below permit limits in SCs I.1 and 2.

For FGENGINES, the 12-month rolling kW-hr output in October 2019 for EUENGINE6 was 12.3 MM kW-hr and for EUENGINE7 was 12.6 MM kW-hr. The output limit is 14 MM kW-hr/12-month rolling per engine in accordance with SC II.1. EUENGINE6 and EUENGINE7 are operating in compliance with SC II.1

All records obtained in the course of this compliance inspection are attached to the file copy of the report or saved electronically at S:\Air Quality Division\@District Facilities\N5991\Records\November 2019 inspection.

Annual and semi-annual certifications and deviation reports are being received. Deviations have been reported since the last inspection which include alternative timeline requests to some malfunctions of the flares due to empty nitrogen tanks. The non-compliance with the SO<sub>x</sub> emission limits for the engines is an ongoing deviation (violation).

Status of violation for the increase in total sulfur in the landfill gas:

On May 14, 2018, EDGB met with AQD enforcement and Lansing District staff regarding how to resolve the violation and to discuss a future consent order. Attempts have been made to submit an administratively and/or technically complete PTI application to resolve the violation. The last PTI application from EDGB was withdrawn on October 2, 2019.

On December 17, 2019, AQD sent a second notice of ongoing violations to EDGB. The sulfur concentration (based on weekly sampling) in the landfill gas indicates that the violations for EUENGINE1-7 at EDGB identified below remain ongoing.

EUENGINE1 – 5, Caterpillar 3516 landfill gas-fired RICE located in Plant 1: The information provided with the 2017 MAERS report demonstrate that actual emissions of SO<sub>2</sub> from the engines have increased. This violation was originally communicated to EDGB on March 4, 2019.

EUENGINE6 and EUENGINE7, two (2) Caterpillar G3520 landfill gas-fired RICE located in Plant 2: Sampling results and stack testing indicate emissions in excess of the emission limit for each engine. These violations were originally identified in letters dated March 28, 2018, and January 17, 2019.

Since the increase in total sulfur in the landfill gas is considered a change in the method of operation, this effects all equipment at the facility that burns landfill gas. The program for compliance includes a completed PTI application for the two (2) Caterpillar G3520 engines and the five (5) Caterpillar 3516 engines. Also, potential emissions of SO<sub>2</sub> from the project could be greater than 40 tons per year which exceeds the significant threshold and may trigger New Source Review (NSR) for a major modification.

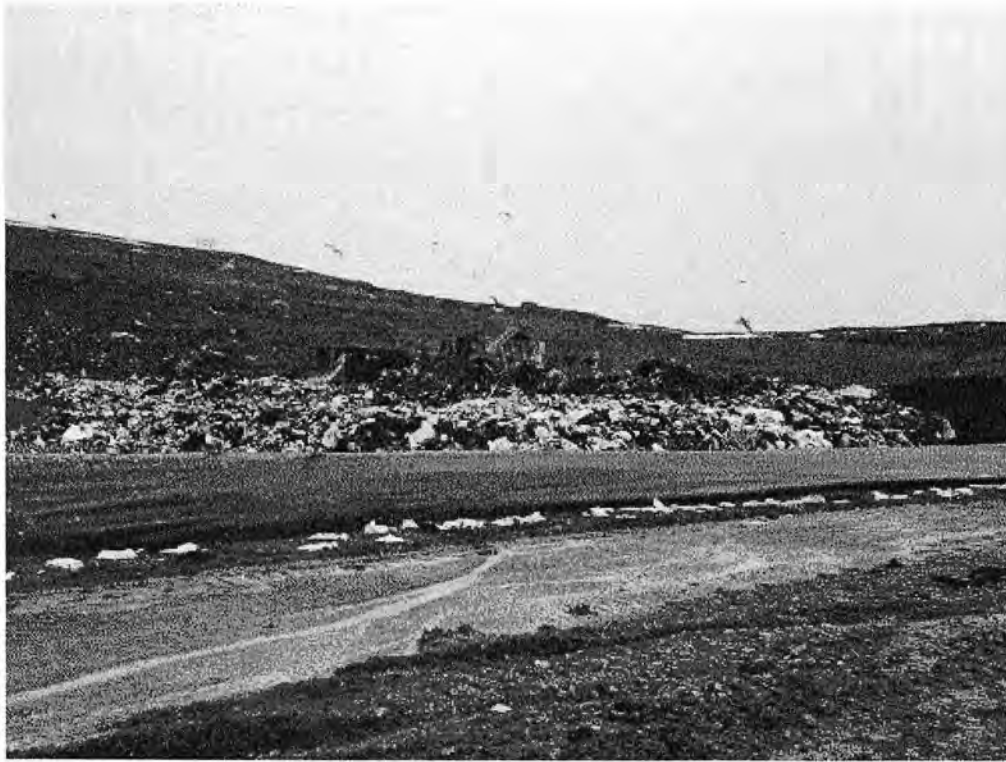
A violation for EUGROFFLARE, and EUZINKFLARE was sent to Citizens Disposal on February 13, 2019 due to the increase in the sulfur content of the landfill gas. The PTI application to resolve the violation will be coordinated with EDGB since the first attempt at a complete PTI application was voided on October 11, 2019.

A meeting with Citizens Disposal, EDGB, and AQD staff was held on October 10, 2019 to discuss recent permitting actions, issues, and options going forward. Both companies are working on their PTI applications.

**Summary:**

No instances of noncompliance with the conditions of ROP No. MI-ROP-N5991-2016 were identified with this scheduled inspection with the exception of the increase in total sulfur content of the gas causing non-compliance with the SO<sub>x</sub> emission limits for FGENGINES, and Rule 201 violations for EUENGINE1 through EUENGINE7, EUGROFFLARE, and EUZINKFLARE. EDGB is in escalated enforcement in order to resolve the violations.

Also, the "like-kind" replacement of EUENGINE7 is questionable. Follow-up on replacing this engine with an older engine not subject to 40 CFR 60, Subpart JJJJ will be pursued.



**Image 1(700)** : Working face in the new cell.

NAME \_\_\_\_\_

DATE \_\_\_\_\_

SUPERVISOR \_\_\_\_\_