

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

N620755427

<b>FACILITY:</b> SMITHS CREEK LANDFILL		<b>SRN / ID:</b> N6207
<b>LOCATION:</b> 6779 SMITHS CREEK ROAD, SMITHS CREEK		<b>DISTRICT:</b> Warren
<b>CITY:</b> SMITHS CREEK		<b>COUNTY:</b> SAINT CLAIR
<b>CONTACT:</b> Matt Williams , Landfill Manager		<b>ACTIVITY DATE:</b> 02/11/2020
<b>STAFF:</b> Iranna Konanahalli	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> FY2020 ROP CMS scheduled inspection of Smiths Creek Landfill (Section 1 SCL) ("Landfill" or "Smiths Creek" or "SCL")		
<b>RESOLVED COMPLAINTS:</b>		

**Smiths Creek Landfill (SCL) (N6207 - P0262 has been subsumed into N6207)  
6779 Smiths Creek Road  
Smiths Creek (Kimball), Michigan 48074-3506**

**ROP: MI-ROP-N6207-2018 effective June 07, 2018, Expiring June 07, 2023. ROP  
Renewal Application Due Between December 7, 2021 and December 7, 2022.**

**ROP Application Nos. 201600183 for SCL and 20170078 for BWR to incorporate  
changes contained in PTI No. 163-09D.**

**Subject to NESAHAP / MACT Subpart AAAA (4A): 40 CFR, Part 63, Subpart AAAA—  
National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste  
Landfills, Page 2227 Federal Register / Vol. 68, No. 11 / Thursday, January 16, 2003 /  
Rules and Regulations / Final rule.** The final rule is applicable to both major and area  
sources and contains the same requirements as the Emission Guidelines and New Source  
Performance Standards (EG/NSPS). The final rule adds startup, shutdown, and malfunction  
(SSM) requirements, adds operating condition deviations for out-of-bounds monitoring  
parameters, requires timely control of bioreactor landfills, and changes the reporting  
frequency for one type of report. The final rule applies to area source landfills if they have a  
design capacity equal to or greater than 2.5 million Mg and 2.5 million cubic meters, and  
they have estimated uncontrolled emissions of 50 Mg/year NMOC or more or are operated  
as a bioreactor. The final rule does not apply to area source landfills (including bioreactors)  
with a design capacity less than 2.5 million Mg or 2.5 million cubic meters. A Michigan  
landfill is deemed to be MACT major source if it has an associated landfill-gas-to-energy  
plant (s) (SI RICE engines) due to formaldehyde emissions (> 10 tpy) from the lean-burn SI  
RICE engines. Also, the final rule requires compliance reporting every 6 months while the  
EG/NSPS requires annual reporting. Landfills that do not themselves emit major source  
levels of HAP but that are collocated (e.g. landfill-gas-electric-power lean-burn SI RICE  
engines) with major sources of HAP are also covered by the final rule.

**Emergency generator is subject to (73 FR 3591, January 18, 2008, 76 FR 37972 June  
28, 2011, 78 FR 6697 January 30, 2013): NSPS 4J, 40 CFR, Part 60, Subpart  
JJJJ—Standards of Performance for Stationary Spark Ignition Internal Combustion  
Engines (natural gas fired Spark Ignition). The provisions of NSPS 4J are applicable  
to owners and operators and manufacturers. Owners or operators of Emergency SI  
RICE are subject to this NSPS 4J if engine is manufactured after January 1, 2009,**

**emergency engines greater than 19 kW (25 HP) engine power. Generac: Installed on 3/22/15 (replacing old generator). Manufacture date is 09/12/2014. 22 kW - Natural Gas - 28 HP. Kohler: Installed June 2013. Manufacture date is 02/25/2013. 14 kW - Natural Gas - 18 HP. Hence, Kohler (14 Kw / 18 HP < 19 kW / 25 HP) unit is not subject to NSPS 4J emission limits.**

**Subject to: Major Source NESHAP / RICE MACT 4Z, 40 CFR Parts 60 and 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines; New Source Performance Standards for Stationary Internal Combustion Engines (ICE), Page 6674 Federal Register / Vol. 78, No. 20 / Wednesday, January 30, 2013 / Rules and Regulations / Final Rule. This final rule is effective on April 1, 2013.**

**Subject to NSPS 3X: 40 CFR Part 60, Subpart XXX—Standards of Performance for Municipal Solid Waste Landfills that Commenced Construction, Reconstruction, or Modification after July 17, 2014, Page 59332 Federal Register / Vol. 81, No. 167 / Monday, August 29, 2016 / Rules and Regulations / Final rule. Smiths Creek was last modified April 8, 2004 (after May 30, 1991 [NSPS 3W], but before July 17, 2014 [NSPS 3W]). With the commencement of construction in Cell 8 in May 2018, Smiths Creek became subject to the new standards, NSPS subpart XXX. On May 31, 2017, the EPA issued a 90-day stay on the 2016 NSPS and EG. Because this 90-stay expired on August 29, 2017, the 2016 rules are currently in effect. The revised Emission Guidelines will be implemented through revised state plans or a revised federal plan. Michigan is working on these Emission Guidelines Cc and Cf. NSPS 3X is effective on October 28, 2016.**

**Subject to NSPS 3W and Cc: 40 CFR Part 60, Subparts WWW and Cc (Emission Guidelines) Standards of Performance for New Stationary Sources and Guidelines for Control of Existing Sources: Municipal Solid Waste Landfills, Page 9905 Federal Register / Vol. 61, No. 49 / Tuesday, March 12, 1996 / Rules and Regulations / Final rule and guideline. The final rules (both the NSPS and EG) require affected and designated MSW landfills having design capacities below 2.5 million Mg or 2.5 million cubic meters to file a design capacity report (Smiths Creek = 9.7 million Mg). Affected and designated MSW landfills having design capacities greater than or equal to 2.5 million Mg or 2.5 million cubic meters are subject to the additional provisions of the standards or EG. Affected and designated landfills with NMOC emission rates of 50 Mg/yr or more are required to install a gas collection system and control device. Smiths Creek's active portion of landfill is equipped with a gas collection system and landfill gas thus collected is utilized for electric power generation using Caterpillar lean-burn SI RICE engines.**

**NSPS 3W & 3X: Because of NESAHAP / MACT Subpart AAAA (4A), in interim until MACT 4A is corrected, SCL is subject to both NSPS 3W & 3X. Landfills, such as SCL, that are subject to 40 CFR Part 60, Subpart XXX (New Source Performance Standards of Performance for Municipal Solid Waste Landfills) may choose to meet the requirements of 40 CFR Part 63, Subpart AAAA (the National Emission Standards for Hazardous Air Pollutants (NESHAP): Municipal Solid Waste Landfills) prior to the compliance date of September 27, 2021. These requirements**

**would replace 40 CFR Part 60, Subpart WWW requirements. For early opt-in SCL must submit Notification of Change (R215(3)), include the change as deviation in ROP Semi-annual Reports, submit an ROP Minor Modification application to request removal of 40 CFR Part 60, Subpart WWW Requirements and incorporate 40 CFR Part 63, Subpart AAAA requirements. Currently, SCL does not want to do all these things and instead it will follow both MACT 3W and MACT 3X.**

On February 11, 2020, I, conducted a level-2 **FY2020 ROP CMS scheduled inspection** of Smiths Creek Landfill (Section 1 SCL) ("Landfill" or "Smiths Creek" or "SCL") and Blue Water Renewables, LLC (Section 2 BWR) ("BWR" or "Blue Water" or "DTE"), located at 6779 Smiths Creek Road, Smiths Creek (Kimball), Michigan 48074-3506. The inspection was conducted to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources; Environmental Protection Act, 1994 PA 451; and Michigan Department of Environment Great Lakes and Energy, Air Quality Division (EGLE-AQD) administrative rules; and MI-ROP-N6207-2018.

During the inspection, Mr. Travis C. Heslop (Phone: 810-989-6918; Fax: 810-367-3062; Cell: NA; E-mail: tHeslop@StClairCounty.org), Ms. Erin Berish (Phone: 248-560-0725-Direct; Fax: 248-486-5050; Cell: 248-787-4069; E-mail: eBerish@ctiCompanies.com), CTI Senior Project Manager, via phone, Wendy Depp (Phone: 248.560.0737-Direct; Fax: 248-486-5050; Cell: 248.881.3460; E-mail: wDepp@ctiCompanies.com), via MS Team and phone, assisted me. CTI and Associates, Inc., 28001 Cabot Dr., Ste. 250, Novi, MI 48377 (800-CTI-TODAY) is a consulting company for Smiths Creek Landfill. CTI helps with permits, compliance, monitoring and recordkeeping. Smiths Creek has contracted out landfill engineering (Geo Tech, Civil, Structural), compliance, recordkeeping, permitting issues to CTI; except groundwater monitoring.

Mr. Mathew Williams (Phone: 810-989-6979; Fax: 810-367-3062; Cell: 248-459-3309; E-mail: mWilliams@StClairCounty.org), Landfill Resource Recovery Manager, was not present.

Also, with respect to two NSPS 4I engines, Mr. Daniel E. Morris (Phone: 734-389-5079; Cell: 810-434-4196; E-mail: Daniel.E.Morris@dteEnergy.com), assisted me.

Smiths Creek Landfill is located on Smiths Creek Road near the village of Smiths Creek, St. Clair County, Michigan. The landfill is owned and operated by the County of St. Clair. St. Clair County is currently designated by the U.S. Environmental Protection Agency (USEPA) as a non-attainment area with respect to the ozone (O<sub>3</sub>) standard. The landfill is subject to NSPS Subparts WWW (3W) & XXX (3X) and NESAHAP / MACT Subpart AAAA (4A) for Municipal Solid Waste Landfills. Smiths Creek Landfill is exempt from the New Source Review (NSR) permit system (Rule 336.1201) pursuant to Rule 336.1285(2)(aa). Hence, Smiths Creek does not have any Rule 201 permitted processes or process equipment.

Smiths Creek Landfill is a Type II Sanitary Landfill, owned and operated by St. Clair County. Blue Water Renewables (operated by DTE Biomass, SRN: P0262) owns an electric generating facility located at the landfill that utilizes the landfill gas (LFG: ≈ 58% methane) as fuel. Previously, an agreement was made between AQD management, St. Clair County, and Blue Water Renewables, which allowed the two entities to have separate

ROPs and SRNs; together these entities comprise one single stationary source as Blue Water Renewables is completely dependent on landfill gas supply from this landfill. ROP issued in 2018 combined two facilities into one (SRN P0262 [BWR Section 2] has been subsumed into N6207 [SCL Section 1 & BWR Section 2]).

The landfill opened in 1967. It has a design capacity of 27.3 million cubic yards (21.02 million Mg) based upon Initial Design Capacity Report dated August 1, 2018, from CTI, pursuant to 40 CFR 60.767(a)(2). Smiths Creek had a design capacity of 19.8 million megagrams when last modified in June 26, 2013. Since the landfill has a design capacity of greater than 2.5 million Mg and has estimated its Non-Methane Organic Compound (NMOC) emissions to be greater than 50 Mg per year, Smiths Creek is subject to the New Source Performance Standards for Municipal Solid Waste Landfills, 40 CFR Part 60 Subpart WWW (NSPS 3W), and the National Emission Standards for Hazardous Air Pollutants for Municipal Solid Waste Landfills, 40 CFR Part 63 Subpart AAAA (NESHAP / MACT 4A). While construction of Cell 4 commenced in May 2014 following RCRA permit issuance, since this was prior to the July 17, 2014 deadline imposed by the NSPS subpart XXX regulations, SCL continued to operate under NSPS subpart WWW (3W). With the commencement of construction in Cell 8 in May 2018, SCL became subject to the new standards, NSPS subpart XXX (3X). Because of MACT 4A, currently SCL is operating under both federal regulations: NSPS 3W & 3X. SCL does not intend to participate in the complex early opt-in.

The original 56-acre landfill was located on the north side of the property. This portion of the 56-acre landfill is closed and does not have synthetic liner and an active gas collection system. This portion is known as **inactive landfill**. Six (6) solar vent flares are present to burn emissions when landfill gas is released; most the times the flares are idle with practically continuous sparking (1 spark / 1.5 sec).

In the newer portion of the landfill (active and post 1989), municipal solid waste, construction debris, asbestos-containing wastes, and ash are deposited in one of the cells. Smith's Creek also operates a bioreactor as part of a Research Development and Design Project (RDDP). While original 8-acre RDDP was for Cell #4, second RDDP is for Cells #6 & #8. Bioreactor uses septic waste from the county upon gravity settling of solids; only liquid is added to the bioreactor.

Currently, Smiths Creek owns approximately 265 acres (160 acres permitted for solid waste), has 106 (March 11, 2019, NSPS Annual Report) landfill gas extraction wells, and is collecting LFG at flow rates of approximately 1000 scfm. Of the 112 total landfill gas extraction wells, twenty-three (23) have been permanently decommissioned in accordance with prior authorization from the MDEQ (GW-01, GW-03, GW-05, GW-09, GW-14, GW-16, GW-17, GW-18, GW-20, GW-21, GW-27, GW-31, GW-32, GW-33, GW-34R, GW-36, GW-37, GW-39, GW-42, GW-44, GW-46, GW-47, GW-49) and are no longer monitored monthly (September 14, 2020, NSPS Semi-Annual Report for Reporting Period January 2020 thru June 2020).

The collected LFG goes to the on-site blower building and can be routed to one of two flares or preferably to the Blue Water Renewable Engine Plant to generate electricity using two Caterpillar Engines (1.6 MW each).

A Startup, Shutdown, and Malfunction (SSM) Plan was prepared in January 2004 for SCL in accordance with 40 CFR Part 63, subparts A and AAAA. This SSM Plan is kept at SCL and is used during SSM events. A log of SSM events is kept with the Plan.

Smiths Creek Landfill is a Type II Sanitary Landfill, which accepts municipal solid waste (MSW) and inert wastes such as construction and demolition debris, foundry sand, ash and low-level contaminated soils. The facility also accepts asbestos waste (Part 61 Asbestos NESHAP). EGLE-AQD Asbestos group needs inspect this facility for asbestos disposal.

Sanitary Landfill Daily Cover (LDC: minimum 6-inch earthen material) or approved Sanitary Landfill Alternate Daily Cover (ADC) is very important for controlling odor, birds and animals and general nuisance (solid waste being blown off by wind). ADC must not be hazardous waste. ADC must be retained by Taylor # 200 screen and, due to fugitive dust emissions and groundwater contamination potential, must not contain contaminants over certain concentrations; e. g., Lead < 3,333 ppm, Arsenic < 5.8 ppm, Cadmium < 3.7 ppm, Chromium < 18 ppm, Tetrachloroethylene < 1.2 ppm, Benzene < 102 ppm, etc. Smiths Creek has an approval from EGLE for automotive industry headliner material as ADC.

Upon landfilling, MSW initially undergoes **aerobic microbial activity**, which produces predominately nitrogen gas and carbon dioxide. As oxygen levels decline, **anaerobic activity** starts and gas composition changes to a mixture of methane ( $\approx 50\%$ ) and carbon dioxide. Landfill gas (LFG) typically contains a small percentage of non-methane organic compounds (NMOC). The NMOC fraction consists of various organic hazardous air pollutants (HAP), greenhouse gases, and volatile organic compounds (VOC).

New Source Performance Standards (NSPS), Standards of Performance for Municipal Solid Waste Landfills, Emission Guidelines (EG), codified as 40 CFR 60 Subpart WWW, are applicable to MSW landfills, which have a construction, reconstruction or modification date after May 30, 1991. Subpart WWW requires subject facilities with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters, to submit an initial design capacity report and a NMOC emission rate report within 90 days after the effective date of the Federal Plan, which was approved January 7, 2000. Furthermore, subject facilities are required to submit a design plan and install an LFG collection and control system (if NMOC emissions are greater than or equal to 50 megagrams per year) that meet the provisions of 60.752 through 60.759 (Subpart WWW). A gas collection and control system is required to be installed 30 months after the NMOC emissions rate report is submitted to the regulatory agency which shows that the MSW Landfill produces 50 Megagrams or greater per year NMOC. Smiths Creek Landfill submitted information indicating that the NMOC emissions are greater than 50 megagrams per year. The facility did conduct Tier 2 testing verifying their NMOC emissions in accordance with the regulation,. Therefore, SCL was required to install the gas collection and control system by October 2002. However, the regulation does contain allowing for delayed installation of the gas collection and control system depending on the NMOC results of the test (Tier 3 testing). Smiths Creek had a design capacity of 7.01 million megagrams (greater than 2.5 million megagrams) when modified on April 8, 2004 (after May 30, 1991). Consequently, Smiths Creek has been subject to the standards of 40 CFR 60 Subpart WWW (NSPS 3W) and the provisions of R336.1210 (ROP).

While construction of Cell 4 commenced in May 2014 following permit issuance, since this was prior to the July 17, 2014 deadline imposed by the NSPS subpart XXX regulations, SCL continued to operate under NSPS subpart WWW. With the commencement of construction in Cell 8 in May 2018, SCL became subject to the new standards, NSPS 3X.

Pursuant to 40 CFR 60.767(a)(2), SCL submitted Initial Design Capacity Report dated August 1, 2018. Design Capacity means the maximum amount of solid waste a landfill can accept). The IDC report stated that 27,280,073 cubic yards or 27.3 million cubic yards is current design capacity of the landfill, site-specific density must be used convert the design capacity from volume to mass units such as megagrams (Mg). The provisions of NSPS 3X apply to each municipal solid waste landfill that commenced construction, reconstruction, or modification after July 17, 2014. Physical or operational changes made to an MSW landfill solely to comply with subparts Cc, Cf, or WWW are not considered construction, reconstruction, or modification. The requirements in NSPS 3W continue to apply to MSW landfills for which construction, reconstruction, or modification was commenced on or after May 30, 1991 and on or before July 17, 2014.

Smiths Creek operates a **septage bioreactor** at the site. The bioreactor was added in 2008 according to RDDP and additional cells were added according to 2013 RDDP. As of April 2018, septage has been introduced into Cells 2, 3, 4, 6, and 7. The bioreactor has increased methane gas production within the cells and accelerates the degradation of the waste. The addition of the bioreactor subjects the facility to the bioreactor regulations within the National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills, Subpart AAAA. The operation of the bioreactor must also comply with 63.1960 through 63.1985 of 40 CFR 63, Subpart AAAA since the facility was required to install a gas collection and control system per 60.752(b)(2) of NSPS Subpart WWW. 63.1955(d) requires a subjected source to extend the gas collection and control system into the new cell of the bioreactor prior to the addition of liquid waste. Thus, the schedule in 60.752(b)(2) (ii)(A)(2) does not apply to bioreactors (the 2/5 year rule). Smiths Creek submitted several different models to estimate the expectant gas generation rate after the addition of the bioreactor. Based on these models, Smiths Creek does not believe a higher capacity flare will have to be installed to accommodate the increased gas production at the site.

The landfill consists of nine (9) Emission Units (EU) and three (3) Flexible Groups (FG) as follows:

#### Emission Units (EU)

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-LANDFILL-SCL1	This emission unit represents the Municipal Solid Waste (MSW) Landfill.	12/31/1989	NA
EU-ALGCS-SCL1	This emission unit represents the active landfill gas collection system at the landfill. Gas moving equipment draws landfill gas from the wells and delivers it to an open flare. An open flare which combusts landfill gas at active landfill when not burned in SI RICE engines for electric power generation.	10/31/2002	FG-LGCS-SCL1

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-OPENFLARE-SCL1	The flare is a combustor without enclosure or shroud.	10/31/2002	FG-CONTROLS-SCL1
EU-VENTFLARE-SCL1	Consists of six self-igniting (solar powered) flares which combust gas vented from the passive landfill gas collection portion of the landfill. The flares are not enclosed or shrouded. The initial performance testing of the solar flares was performed on March 18, 2003; and, therefore, is not required by this table.	10/31/2002	FG-CONTROLS-SCL1
EU-BIOREACTOR-SCL1	Represents the portion of the landfill that is expected to be operated as a bioreactor.	08/03/2006	NA
EU-ASBESTOS-SCL1	Any active or inactive asbestos disposal site.	NA	NA
EU-GENERAC-28HP-NG (Generac)	NSPS 4J Emergency Generator. Installed on March 22, 2015 (replacing old generator). Manufacture date is September 12, 2014. 22KW - Natural Gas - 28 HP. Gen Model: 0065510. Serial #: 9169036. Engine Mfg.: OHVI Engines. Engine Model: OJ9333.	03/22/2015	FG-EMERGENS-SCL1
EU-KOHLER-18HP-NG (Kohler)	NSPS 4J Emergency Generator. Installed June 2016. Manufacture date is February 25, 2013. 14KW - Natural Gas - 18 HP. Gen Model: 14RESAL. Serial #: SGM324GJP.	06/2013	FG-EMERGENS-SCL1
EU-PLGCS-SCL1	This emission unit represents the <b>passive</b> landfill gas collection system at the landfill. This passive system consists of a series of perforated pipes buried in the waste, which delivers landfill gas to one of the six self-igniting (solar power) vent flares where it is combusted.	10/31/2002	FG-LGCS-SCL1

Flexible Groups (FG)

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG-LGCS-SCL1	The landfill gas collection systems (active and passive) operated at the landfill.	EU-ALGCS-SCL1 (Active) EU-PLGCS-SCL1 (Passive)
FG-CONTROLS-SCL1	The control equipment operated at the landfill (both active and passive). One (1) open flare (Active Landfill) and six (6) self-igniting solar flares (Passive Landfill)	EU-OPENFLARE-SCL1 EU-VENTFLARE-SCL1
FG-EMERGENS-SCL1	Emergency engines subject to 40 CFR Part 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. (Kohler) New/Reconstructed emergency engines greater than 0 HP but less than 500 130	EU-GENERAC-28HP-NG (Generac) EU-KOHLER-18HP-NG

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
	ordered on or after June 12, 2006, and manufactured after January 1, 2009	
	The emergency generators (2) have been replaced by new generators:	
	<ol style="list-style-type: none"> <li>1. Generac: Installed on 3/22/15 (replacing old generator). Manufacture date is 09/12/2014. 22KW - Natural Gas - 28 HP. Gen Model: 0065510. Serial #: 9169036. Engine Mfg.: OHVI Engines. Engine Model: OJ9333.</li> <li>2. Kohler: Installed June 2013. Manufacture date is 02/25/2013. 14KW - Natural Gas - 18 HP. Gen Model: 14RESAL. Serial #: SGM324GJP.</li> </ol>	

NSPS 3W & 3X: EULANDFILL, EUALGCS, EUOPENFLARE, and EUVENTFLARE at the stationary source are subject to the New Source Performance Standards for Municipal Solid Waste Landfills promulgated in 40 CFR, Part 60, Subparts A and WWW and XXX (commencement of construction in Cell 8 in May 2018).

NESHAP / MACT: 4A: EULANDFILL, EUALGCS, EUOPENFLARE, EUVENTFLARE, and EUBIOREACTOR at the stationary source are subject to the Maximum Achievable Control Technology Standards for Municipal Solid Waste Landfills promulgated in 40 CFR, Part 63, Subparts A and AAAA.

RICE MACT 4Z: EUEMERGENCYGEN1 and EUEMERGENCYGEN2 are subject to the Maximum Achievable Control Technology Standards for Municipal Solid Waste Landfills promulgated in 40 CFR, Part 63, Subparts A and ZZZZ.

### **FG-LGCS-SCL1 Landfill Gas Collection System**

Smiths Creek ROP has two emission units covering the landfill and gas collection system, EU-LANDFILL-SCL1 and EU-ALGCS-SCL1. Landfill gas generated by active portion of landfill is extracted using a vacuum system and moved using a blower. Please refer to December 21, 2017, 2017Q4 Surface Monitoring Report.

Surface emissions should not exceed 500 ppm methane (above background level) (MI-ROP-N6207-2018, EU-LANDFILL-SCL1, I.1). The above ground (5-10 cm) concentrations were monitored by walking with the monitoring instruments. However, exceedances have occurred during the fourth quarter of 2017: four locations were identified with measured methane concentrations exceeding 500 ppm above background (See Attachment 1 to 2017Q4 report). 2017Q4 surface monitoring was conducted in October 2017, using Foxboro Thermo TVA 100B flame ionization detector. The instrument was calibrated at 500 ppm methane.

Based upon July 14, 2020 Quarterly Report (2020Q2), surface monitoring report, Thermo Scientific TVA 2020 was used to perform surface emission monitoring. The report noted on 06/08/2020 2,834 ppm CH<sub>4</sub> (2020Q2-1) and 868 ppm CH<sub>4</sub>(2020Q2-2). 10-day and 30-day

rechecks were performed on June 17 and July 07, 2020, indicating substantially lower (<< 200 ppm) concentration (ROP limit: 500 ppm methane). Back gourd methane was << 1 ppm.

Landfill cover integrity checks are conducted on a monthly basis. Smiths Creek ensures that the LFG Collection System operates properly (55 °C, 5% O<sub>2</sub> & 20% N<sub>2</sub>) and takes corrective action when exceedances are detected (MI-ROP-N6207-2018, EU- EU-ALGCS-SCL1, III.1, 2, 3, 4). Refer to March 2, 2017, CY 2016 NSPS Annual Report.

Automatic shutdown of LGCS occurs if any equipment (e.g. blower) malfunctions (MI-ROP-N6207-2018, EU- EU-ALGCS-SCL1, III.1). No off-site migration of subsurface gas has occurred based upon the network monitoring (MI-ROP-N6207-2018, EU- EU-ALGCS-SCL1, III.1). All collected gas is vented to control systems: predominantly DTE Caterpillar engines or two flares when DTE engines are not available due to maintenance for example (MI-ROP-N6207-2018, EU- EU-ALGCS-SCL1, III.2). Asbestos coordinates are marked. Asbestos areas do not have wells but wells are installed along the perimeter.

According to the records, integrity checks of the landfill cover are conducted on a monthly basis. These records indicated where corrective actions are needed. All records are kept on-site and were made available during my inspection

Weekly flare inspections are performed. Monthly operations inspections including cover integrity (MI-ROP-N6207-2018, EU-LANDFILL-SCL1, VI.1: monthly cover integrity inspection) are performed.

1. In CY 2016, 214,581 MSW, 31,761; DEMO, 5,157 Septage, all tons per year, were accepted. In all, 284,269 tons per year waste to the landfill. 1,273,069 gallons per year liquid septage was added to the bioreactor.
2. In CY 2017, 266,884 MSW, 33,200 DEMO, 66,770 Special Waste and 5,117 Septage, all in tons per year, were accepted. In all, 371,971 tons per year waste to the landfill. 1,261,710 gallons per year liquid septage was added to the bioreactor.
3. In CY 2018, 5,341 tons of special waste (asbestos), 5,030 tons of Septage 37,936 tons of Special Waste, 46,051 tons of Demo Waste and 240,551 tons of MSW were accepted.
4. In CY 2019, 241 tons of special waste (asbestos), 7,796 tons of Septage 26,855 tons of Special Waste, 36,244 tons of Demo Waste and 221,877 tons of MSW were accepted.

### **Open Flares with shroud (EU-OPENFLARE-SCL1)**

The landfill is currently producing nearly 1000 scfm of LFG (800-920 scf). Each SI RICE (NSPS 4J) engine, operated by Blue Water Renewables, has the capacity of combusting 500 scfm of LFG.

Therefore, unless either of the RICE engines are malfunctioning or shut down for scheduled maintenance, all of the LFG produced by the landfill is combusted by the engines.

Smiths Creek does have two flares (2-in-1 open flares with one common shroud and one common burner system): a 10-inch diameter flare with a 2000 scfm capacity, a 3-inch diameter flare with a 30-200 scfm capacity. Both 10-inch and 3-inch gas pipes use the same flare, sparking system, pilot flame. When in operation, the landfill gas flow rates and temperature are recorded every 15 minutes as required by the ROP. Blue Water Renewables keeps electronic copies of the data for the flares; Smiths Creek still maintains the flow/temp data chart at the flares.

During the inspection, flares were working properly but flare fire was not occurring. Flare sparks when needed to light pilot lamp. When PLC detects gas flow, spark is initiated and pilot lamp is lighted. As stated before, there are two sources of LFG: 3 inches diameter and 10 inches diameter pipes.

Each flare is assisted by neither steam nor air. Thermocouple is present to measure temperature of the flare.

LFG flow rates to Flare 2 (0 scfm), Flare 1 (0 scfm) and engines (850-920 scf) are recorded. Engines LFG flow pressure (2.4 psi) is recorded. Landfill vacuum, flare temperature (1000-1300 °F), methane content ( $\approx$  59%) are also recorded.

On March 18, 2003, Derenzo and Associates, Inc. (Project No. 0301056, April 04, 2003) conducted stack sampling of open flares (MI-ROP-N6207-2012, EU-LANDFILL, IV.2: 98% NMOC destruction or 20 ppm by volume, dry basis as hexane at 3% oxygen). There were no visible emissions (VE) during 120-minute observation period (§60.18(c)). Average net heating value of LFG controlled by air assisted flare (Active Landfill) was determined to be 404 BTU per SCF (15.1 MJ per SCM), which satisfies net heating value criteria of 300 BTU per SCF (11.2 MJ per SCM) as specified in §60.18(c)(3).

### **Vent Flares (EU-VENTFLARE) – Inactive Landfill**

In addition to the two open flares (3-inch & 10-inch diameter vents using same sparking system and pilot burner, located on the same stack, enclosed by a shroud) for **active** landfill, Smiths Creek has six self-igniting solar flares on the **closed (inactive)** section of the landfill. Due to the age of the waste, no active gas collection system was required to be installed in this area. In lieu of an active gas collection system, Smiths Creek installed the solar powered flares; approved by the EPA on July 16, 2002. These flares serve as conduits to release gas pressure and are equipped with a spark plug which ignites the LFG in the combustion zone of the flare. A thermocouple and data logger monitors the operation of each flare.

Most of these flares run intermittently, or not at all; at the time of my inspection I did not observe any of the solar flares operating except one solar flare for a brief period. 0%

opacity at the flare during this brief period of operation with heat wave shadow on the ground nearby. The weekly solar flare inspections are maintained on-site and were made available to me at the time of my inspection; the logs appear to be properly completed on a weekly basis. The weekly inspections and data recorders are needed to show compliance with permit conditions.

Solar power charges 6-V batteries that produce sparks: 1 spark per 1.5 seconds. A separate 3.5-V batteries are present for data loggers, which are changed / replaced once per quarter. Weekly check is performed on all batteries and sparking systems. Data (e.g. temperature) is logged once every five minutes. Once a month, data is transferred to USB jump drive. CTI handles the data. The data is transferred to a MS Spreadsheet to enable analysis.

See March 14, 2018, Startup, Shutdown, Malfunction Semiannual Report (July-Dec 2017). The report identified missing data-logger information for Solar Flare 1 (8/4/2017 12:02pm – 9/7/2017 12:05pm) and Solar Flare 4 (10/4/2017 11:28am – 11/6/2017 8:58am). Mr. Heslop performed the required inspections and maintenance.

### **Bio-reactor (EU-BIOREACTOR-SCL1)**

The bioreactor is being operated as a Research Development and Design Project (27 million tons capacity RDDP). Beginning about 2008, leachate and septage (mostly septage, < 10% leachate) is being added to the waste to accelerate the degradation process and to increase the production of LFG. Initially the bioreactor was divided into two cells: Cell 3B for leachate recirculation and Cell 3A for septage addition. Two large bladder tanks are located near cell #3 and the material is gravity fed into a pump system located within the cells.

Recently, Smith's Creek was permitted by MDEQ-WMRPD / EGLE-MMD to expand the bio-reactor into co-mingled waste in cells #4, #6 and #7.

Based on the well data and moisture content provided, the Bio-reactor appears to be meeting the conditions established in the ROP.

At septage recirculating station, waste haulers swipe their card (like credit card) and pump septic waste contained in the truck. One rock trap is present. Grinder is present as well to prevent clogging. A flow meter is present for billing purposes (tipping fee: 5 cents per gallon of septic waste) The liquid is screened to remove large solid chunks. From two separate tanks (3,000-gallon each but joined together), two pumps pump liquid from the station to two PVC tanks. MDEQ approved removal of bio-filter for odor control. At the landfill, solids are separated by gravity settling in first PVC tank. Upon completion of gravity settling time, clarified liquid is decanted to second PVC tank. Decanted liquid from PVC Tank 2 is sent to a manifold. While, liquid is injected by gravity to Cells 3 & 4, liquid is injected by using pump to Cells 6 & 7. Smiths Creek is planning to inject septic liquid into Cell 8 that requires RCRA permit revision. Small pumping station is present.

All wells for landfill gas collection are horizontal in Bioreactor. Vertical wells may be installed in future. Horizontal wells are less expensive. Bioreactor produces gas for 15-20 years compared to about 50 years for ordinary landfills.

For leachate collection, some pumps are operated by windmills and others are operated pneumatically (compressed air). Due to low wind velocities when needed, one of windmills is replaced by solar pump. One portable solar pump is available for use wherever and whenever needed.

### **Asbestos (EU-ASBESTOS)**

Smiths Creek does accept asbestos containing waste. These activities are permitted in the ROP under EU-ASBESTOS-SCL1. When asbestos waste is accepted, the coordinates are recorded on the site map and when a well is needed, Smiths Creek avoids the area containing the asbestos waste. At this time, Smiths Creek is in compliance with the conditions listed in EU-ASBESTOS-SCL1.

Smiths Creek inspects asbestos bags for integrity. On July 20, 2017, I observed asbestos dumping. On July 9, 2018, asbestos dumping was not scheduled. All dumping occurs by scheduling. Clay is used to cover asbestos.

1. In CY 2016, 70,723 cubic yards of special waste (asbestos) was accepted.
2. In CY 2017, 66,770 cubic yards of special waste (asbestos) was accepted.
3. In CY 2018, 5,341 tons of special waste (asbestos), 5,030 tons of Septage 37,936 tons of Special Waste, 46,051 tons of Demo Waste and 240,551 tons of MSW were accepted.
4. In CY 2019, 241 tons of special waste (asbestos), 7,796 tons of Septage 26,855 tons of Special Waste, 36,244 tons of Demo Waste and 221,877 tons of MSW were accepted.

All asbestos is dumped in a dedicated area of a landfill cell. Although site coordinates are followed now, GPS coordinates will be soon followed according to NSPS 3X. 6-inch dirt (clay) cover is placed immediately after asbestos dumping. Smiths Creek checks for integrity of asbestos bags.

No drilling occurs at asbestos areas. However, landfill gas collection drills are placed along the perimeter.

Smiths Creek handles promptly any manifest discrepancies and reports to US EPA unresolved issues. No excavation of asbestos cell has occurred.

### **Generators (FG-EMERGENS)**

Two emergency generators are present:

1. Generac: Installed on 3/22/15 (replacing old generator). Manufacture date is 09/12/2014. 22KW - Natural Gas - 28 HP. Gen Model: 0065510. Serial #: 9169036. Engine Mfg.: OHVI Engines. Engine Model: OJ9333.
2. Kohler: Installed June 2013. Manufacture date is 02/25/2013. 14KW - Natural Gas - 18 HP. Gen Model: 14RESAL. Serial #: SGM324GJP.

Emergency generator are subject to (73 FR 3591, January 18, 2008, 76 FR 37972 June 28, 2011, 78 FR 6697 January 30, 2013): NSPS 4J, 40 CFR, Part 60, Subpart JJJJ—Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (natural gas fired Spark Ignition). The provisions of NSPS 4J are applicable to owners and operators and manufacturers. Generac: Installed on 3/22/15 (replacing old generator). Manufacture date is 09/12/2014. 22 kW - Natural Gas - 28 HP. Kohler: Installed June 2013. Manufacture date is 02/25/2013. 14 kW - Natural Gas - 18 HP. Owners or operators of Emergency SI RICE are subject to this NSPS 4J if engine is manufactured after January 1, 2009, emergency engines greater than 19 kW (25 HP) engine power.

During the previous inspection, I asked Smiths Creek to obtain US EPA emission certificate from the vendor for Generac. The requirements generally are US EPA certificate, change oil and filters (once per year).

US EPA issued, on December 12, 2013, to Generac Power Systems, Inc. Certificate Number EGNXB.9992ST-028 (Effective Date: 12/12/2013 & Expiration Date:12/31/2014; Fuel : Natural Gas (CNG/LNG); Emission Standards : CO ( g/kW-hr ) : 519 HC + NOx ( g/kW-hr ) : 13.4 NMHC + NOx ( g/kW-hr ) : 13.4; Emergency Use Only : Y) per 40 CFR, Part 60.

Maintenance records (oil and filter change, inspections) and hours of operation records are kept.

### **Conclusion**

Smiths Creek is in compliance with ROP. Two small (< 30 HP & 25 kW) SI RICE engines fired with NG are present for emergency power.

NAME *J. S. Marshall*

DATE December 9, 2020

SUPERVISOR *Joyce*