



Southwest Clean Air Agency

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February 18, 2016

Mark Northington
Maintenance Manager
Evergreen School District No. 114
PO Box 8910
Vancouver, WA 98668-8910

Subject: Notification of Emergency Generator Engine Installation – Crestline Elementary (SUN-110)

Dear Mr. Northington:

The Southwest Clean Air Agency (SWCAA) received your Small Unit Notification (SUN) on February 9, 2016 for installation and operation of an emergency generator engine at the Crestline Elementary School at 13003 SE 7th Street, Vancouver, WA. For administrative and tracking purposes SWCAA has assigned tracking number SUN-110 to this notification. This notification was filed in accordance with SWCAA 400-072 and applies to the installation of one emergency generator engine. The unit was identified as:

- (1) 49 bhp diesel-fired John Deere model 4024TF281 diesel engine to drive a 30 kW Kohler generator set. The engine is EPA certified.

SWCAA has completed a review of your notification and the associated support information and has determined that the notification meets the requirements of SWCAA 400-072(2). Once installed, affected equipment must maintain compliance with the requirements of SWCAA 400-072(4)(c) "**Emergency service internal combustion engines**". A copy of the relevant SWCAA 400-072 section is attached for your information.

Be advised that emission units installed pursuant to SWCAA 400-072 are subject to source registration, fees, and periodic inspection. Fees for this equipment will be invoiced consistent with SWCAA 400-100 or SWCAA 400-103, as appropriate.

If you need further assistance or have any questions regarding these matters, please contact me at (360) 574-3058 extension 130.

Sincerely,

Paul T. Mairose
Chief Engineer



SWCAA 400-072 Emission Standards for Selected Small Source Categories

[Statutory Authority: Chapter 70.94.141 RCW. Original adoption 09-21-056 filed 10/15/09, effective 11/15/09.]

(4) Source categories.

(c) Emergency service internal combustion engines.

- (i) **Applicability.** The provisions of this section apply to emergency service internal combustion engines with a rating of less than 1,000 horsepower (e.g., emergency generators, fire pumps, sewer lift stations, etc.).
- (ii) **Emission limits and standards.**
 - (A) Visible emissions from diesel fired engine exhaust stacks shall not exceed ten percent opacity for more than 3 minutes in any one hour period as determined in accordance with SWCAA Method 9 (See SWCAA 400, Appendix A). This limitation shall not apply during periods of cold start-up.
- (iii) **General requirements.**
 - (A) Liquid fueled engines shall only be fired on #2 diesel or biodiesel. Fuel sulfur content of liquid fuels shall not exceed 0.0015% by weight (15 ppmw). A fuel certification from the fuel supplier may be used to demonstrate compliance with this requirement.
 - (B) Gaseous fueled engines shall only be fired on natural gas or propane.
 - (C) Each compression ignition engine shall be EPA Tier certified and manufactured no earlier than January 1, 2008.
 - (D) Engine operation shall be limited to maintenance checks, readiness testing, and actual emergency use.
 - (E) Engine operation for maintenance checks and readiness testing shall not exceed 100 hours per year. Total engine operation shall not exceed 200 hours per year.
 - (F) Each engine shall be equipped with a nonresettable hourmeter for the purpose of documenting hours of operation.
 - (G) Engine exhaust shall be discharged vertically. Any device that obstructs or prevents vertical discharge is prohibited.
- (iv) **Monitoring and recordkeeping requirements.** The information listed below shall be recorded at the specified intervals, and maintained in a readily accessible form for a minimum of 3 years. With the exception of data logged by a computerized data acquisition system, each required record shall include the date and the name of the person making the record entry.
 - (A) Total hours of operation for each engine shall be recorded annually;
 - (B) Fuel sulfur certifications shall be recorded for each shipment of liquid fuel;
 - (C) Maintenance activities shall be recorded for each occurrence consistent with the provisions of 40 CFR 60.4214;
 - (D) Upset conditions that cause excess emissions shall be recorded for each occurrence; and
 - (E) All air quality related complaints received by the permittee and the results of any subsequent investigation or corrective action shall be recorded for each occurrence.
- (v) **Testing requirements.** None.

- (vi) **Reporting requirements.**
- (A) All air quality related complaints received by the owner or operator shall be reported to SWCAA within three calendar days of receipt.
 - (B) The owner or operator of an affected emergency engine shall report the following information to the Agency no later than March 15th for the preceding calendar year:
 - (I) Hours of engine operation; and
 - (II) Air emissions of criteria air pollutants, VOCs, and toxic air pollutants (TAPs).

**Summary Information (by SWCAA) for SUN-110
Evergreen School District 114
Crestline Elementary Emergency Generator Engine**

A 30 kW diesel-fired emergency generator set has been installed to provide backup electricity to the school in the event of a power outage. The following equipment details were available:

Location:	Crestline Elementary 13003 SE 7 th Street, Vancouver, WA 98683 ~ 45° 36.933'N, 122° 32.391'W
Engine Make / Model:	John Deere / 4024TF281
Engine Serial Number:	PE4024R129801
Fuel:	Diesel
Fuel Consumption:	2.8 gallons per hour at full standby load
Horsepower Rating:	49 bhp at full standby load
Installation Date:	September 2014
Engine Built (Date):	July 5, 2013
Engine Certification:	EPA Interim Tier 4 (based on model number)
Generator Set Make / Model:	Kohler / 30REOZJC
Generator Set Output:	30 kW
Stack Description:	Not provided
Applicable Federal Regulations:	40 CFR 60 Subpart IIII 40 CFR 63 Subpart ZZZZ

Crestline Emergency Generator Engine. Potential annual emissions from the combustion of ultra-low sulfur diesel (<0.0015% sulfur by weight) were calculated with the assumption that the equipment will operate at full load for up to 200 hours per year.

Crestline Emergency Generator Engine						
Hours of Operation =		200 hours				
Power Output =		49 horsepower				
Diesel Density =		7.206 pounds per gallon				
Fuel Sulfur Content =		0.0015 % by weight				
Fuel Consumption Rate =		2.8 gal/hr				
Fuel Heat Content =		0.138 MMBtu/gal (for use with GHG factors from 40 CFR 98)				
Pollutant	Emission Factor g/(kW-hr)	Emissions lb/hr	Emissions tpy	Emission Factor Source		
NO _x	5.95	0.48	0.048	EPA Certification Test Spreadsheet		
CO	2.7	0.22	0.0218	EPA Certification Test Spreadsheet		
VOC	0.64	0.052	0.0052	EPA Certification Test Spreadsheet		
SO _x as SO ₂		0.0006	0.0001	Mass Balance		
PM	0.29	0.023	0.0023	EPA Certification Test Spreadsheet		
PM ₁₀	0.29	0.023	0.0023	EPA Certification Test Spreadsheet		
PM _{2.5}	0.29	0.023	0.0023	EPA Certification Test Spreadsheet		
Greenhouse Gases	kg/MMBtu	GWP	CO ₂ e lb/MMBtu	CO ₂ e lb/gallon	tpy, CO ₂ e	Emission Factor Source
CO ₂	73.96	1	163.05	23	6	40 CFR 98
CH ₄	0.003	25	0.165	0.023	0.01	40 CFR 98
N ₂ O	0.0006	298	0.394	0.054	0.02	40 CFR 98
Total GHG - CO ₂ e	74.0		163.6	23	6	