

**Engineering Evaluation  
Ross Valley Sanitary District  
2000 Larkspur Landing Cir, Larkspur, CA 94939-4939  
Plant No. 25179 (Site No. E5179)  
Application No. 31643**

**Project Description: New Portable Emergency Diesel Engine-Generator Set**

**BACKGROUND**

Ross Valley Sanitary District has applied to obtain an Authority to Construct (A/C) and/or Permit to Operate (P/O) for the following equipment:

- S-1    Portable Emergency Diesel Engine-Generator Set  
Make: John Deere; Model: 4045HFG04; Model Year: 2022  
Family: NJDXL04.5315; Horsepower: 133 BHp; Fuel Rate: 5.8 gph  
Heat Input: 0.79 MMBtu/hr**

The portable emergency diesel engine-generator set (engine) will operate throughout the Ross Valley Sanitary District at 17 different locations. However, the engine will be stored and tested for maintenance and reliability at 2000 Larkspur Landing Cir, Larkspur, CA 94939-4939. The engine will operate for emergency-use. The engine will operate unrestricted during emergency-use events. Annual maintenance and testing hours will be limited to 50 hours per year. The criteria pollutants associated with the engines are precursor organic compounds (POC), nitrogen oxides (NO<sub>x</sub>), particulate matter 10 and 2.5 microns in size (PM), sulfur dioxide (SO<sub>2</sub>), and carbon monoxide (CO).

The engine meets the Environmental Protection Agency (EPA) Tier 4 final emission standards for engine-generator sets with an engine power rating greater than or equal to 100 hp and less than 175 hp. The engines will burn commercially available California Air Resources Board (CARB) low sulfur diesel fuel. The sulfur content of the diesel shall not exceed 0.0015% by weight. The operation of the engines should not pose any health threat to the surrounding community or the public at large.

Portable engines are non-road engines as defined by 40 CFR 89.2. Section 209(e) of the Federal Clean Air Act and Appendix A to Subpart A of 40 CFR 89 do not allow states "or political subdivisions" to impose emission control on non-road engines. The exception is standards and other requirements imposed by the State of California necessary to achieve attainment of air pollution standards. The regulatory analysis for this application will take this into account.

**EMISSIONS CALCULATIONS**

The applicant submitted supporting documents, which include engine manufacturer specifications and engine emissions data. Using the submitted information, the emission rate for each pollutant was determined. The following tables provide the potential to emit (PTE) and cumulative increase for each engine. The annual PTE is based on an assumed 100 hours for emergency events, plus allowable hours for maintenance and testing. The cumulative increase is based on allowable hours for maintenance and testing.

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**Table 1. Annual and Daily Emissions from EPA/CARB Certified Data from S-1**

Pollutant	Emission Factor (g/hp-hr)	Daily Emission Rate (lb/day)	Annual Emission Rate (lb/yr)	Annual Emission Rate (ton/yr)
NO <sub>x</sub>	0.11	0.77	1.61	0.001
POC	0.01	0.07	0.15	0.000
CO	0.07	0.49	1.03	0.001
PM <sub>10/2.5</sub> <sup>1</sup>	0.01	0.07	0.15	0.000
SO <sub>2</sub>	NA <sup>2</sup>	0.04	0.08	0.000

Basis:

- Annual emissions: Reliability-related activity 50 hours for S-1
- Max daily emissions: 24-hour operation
- Emissions from Carryover EPA Engine Family FJDXL04.5305 for S-1
- <sup>1</sup> Conservative Assumption: All PM emissions are PM<sub>2.5</sub>
- <sup>2</sup> SO<sub>2</sub> emission factor from AP-42 Table 3.4-1, SO<sub>2</sub> (15 ppm) = 0.00809\*0.0015 lb SO<sub>2</sub>/bhp-hr
- Fuel consumption: 5.8 gph / Heat Input: 0.79 MMBtu/hr

**PLANT CUMULATIVE INCREASE**

Table 2 summarizes the cumulative increase in criteria pollutant emissions that will result from this application. For the PTE, the maximum annual operation will only include reliability-related activities as defined in Regulation 9-8-232.

**Table 2. Plant Cumulative Emissions Increase, Post 4/5/91**

Pollutant	Existing Emissions Post 4/5/91 (tons/yr)	Application Emissions (tons/yr)	Cumulative Emissions (tons/yr)
NO <sub>x</sub>	0.000	0.001	0.001
POC	0.000	0.000	0.000
CO	0.000	0.001	0.001
PM <sub>10</sub> /PM <sub>2.5</sub>	0.000	0.000	0.000
SO <sub>2</sub>	0.000	0.000	0.000

**TOXIC RISK SCREENING ANALYSIS**

Pursuant to Regulation 2-5-110, a project shall not be subject to this rule if, for each toxic air contaminant (TAC), the total project emissions are below the acute and chronic trigger levels listed in Table 2-5-1 of this regulation. At a maximum rate of 0.15 lbs/year, the diesel particulate emissions from the project are less than the toxic trigger level of 0.26 lb/year. All PM<sub>10</sub> emissions are considered diesel particulate emissions. There were no other related projects permitted in the last five years. A Health Risk Assessment is not required.

**BEST AVAILABLE CONTROL TECHNOLOGY**

In accordance with Regulation 2-2-301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NO<sub>x</sub>, CO, SO<sub>2</sub>, or PM<sub>10</sub>.

BACT for this source is presented in the current BAAQMD BACT/TBACT Workbook for IC Engine – Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump, 50-1000 bhp, Document #96.1.3, Revision 8, dated 12/22/2020.

For NO<sub>x</sub>, CO, POC and PM<sub>10</sub>, BACT(2) is the CARB ATCM standard for the respective pollutant at the applicable horsepower rating. For SO<sub>2</sub>, BACT(2) is using fuel with sulfur content not to exceed 0.0015%, or 15 ppm. The more restrictive BACT(1) standards are not applicable to this engine because it will be limited to operation as an emergency standby engine. S-1 satisfies the current BACT(2) standards for the following pollutants which exceed 10 lb/day in Table 1:

<b>Pollutant</b>	<b>Emission Factor</b>	<b>BACT(2) Standard</b>
NO <sub>x</sub> *	0.11 g/bhp-hr	2.85 g/bhp-hr
CO	0.07 g/bhp-hr	3.70 g/bhp-hr

\* The standard is expressed as 3.0 g/bhp of NMHC+NO<sub>x</sub>. NO<sub>x</sub> is estimated to be 95% of the combined standard (3.0\*0.95 = 2.85 g/bhp-hr)

**OFFSETS**

Offset must be provided for any new or modified source at a facility that will have the potential to emit more than 10 tons per year of NO<sub>x</sub> or POC, as specified in Regulation 2-2-302; 100 tons per year or more of PM<sub>2.5</sub>, PM<sub>10</sub> or sulfur dioxide, as specified in Regulation 2-2- 303.

**Table 3. Potential to Emit for FID 25179**

<b>Pollutant</b>	<b>Existing Annual Emissions (TPY)</b>	<b>Application Annual Emissions* (TPY)</b>	<b>Facility Annual Emissions (TPY) *</b>	<b>Offset Requirement (TPY)</b>	<b>Offset Required</b>
NO <sub>x</sub>	0.000	0.002	0.002	>10	N
POC	0.000	0.000	0.000	>10	N
CO	0.000	0.002	0.002	-	N
PM <sub>10</sub> /PM <sub>2.5</sub> <sup>1</sup>	0.000	0.000	0.000	≥100	N
SO <sub>2</sub>	0.000	0.000	0.000	≥100	N

\*Annual emissions: Reliability-related activity of 50 hours and emergency operation of 100 hours for S-1.

Since the facility’s potential to emit is below the offsets trigger levels specified in Regulation 2-2, offsets are not required.

**STATEMENT OF COMPLIANCE**

**New Source Performance Standards (NSPS)**

The following New Source Performance Standards (NSPS) may apply to the engines.

*40 Code of Federal Regulation, Part 60, Subpart IIII*

The requirements of this subpart do not apply since the engines are not stationary.

**National Emissions Standards for Hazardous Air Pollutants (NESHAP)**

The following National Emission Standards for Hazardous Air Pollutants (NESHAP) may apply to the engines.

*40 Code of Federal Regulation, Part 63, Subpart ZZZZ*

The requirements of this subpart do not apply since the engines are not stationary.

**California Air Resources Board (CARB) Airborne Toxic Control Measure (ATCM) for Diesel Particulate Matter from Portable Engines.**

Pursuant to §93116.1, engines with a maximum power rating equal to or greater than 50 hp are subject to this regulation. S-1 is rated at 133 hp and subject to the requirements of this regulation. Furthermore, the facility's fleet of portable engine do not exceed a total maximum power rating of 750 hp. Pursuant to §93116.2(a)(17), the fleet is defined as a small fleet.

Portable diesel-fueled emergency-use engines are excluded from the fleet requirements of this regulation pursuant to §93116.3(c)(3)(B). Since S-1 is a portable diesel-fueled emergency-use engine, is excluded from the fleet requirements of this regulation. S-1 is expected to meet the requirements of this regulation.

**Regulation 2-1**

*Regulation 2-1-413* establishes operating requirements and emission limitations for multiple locations operating permits. The following are the details of compliance with Regulation 2-1-413:

- 2-1-413.1 Each engine will comply with this section because each engine cannot emit more than 10 tons per year of POC, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, CO, and non-precursor organic compounds (NPOC) as designed. Therefore, no limitation will be added to the permit conditions.
- 2-1-413.2 the engine will comply with the provisions of Regulation 2, Rule 5, New Source Review for Toxic Air Contaminants. HRA was not required.
- 2-1-413.3 The engine will comply with this section because it will be prohibited from operating within 1000 feet of a school without distributing a Public Notice as stated in Regulation 2-1-412.
- 2-1-413.4 The engine is not expected to cause a public nuisance.
- 2-1-413.5 The engine is exempt from CEQA because they are ministerial per Chapter 2.3.3 of the District's Permit Handbook.

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- 2-1-413.6 The engine will comply with this section because it will not be used at a synthetic minor facility.
- 2-1-413.7 The source will comply with this section because they will be used as portable sources. Testing, however, will occur at 2000 Larkspur Landing Cir, Larkspur, CA 94939-4939.

**Regulation 6-1**

*Regulation 6-1-303, Ringelmann No. 2 Limitation*

**Regulation 9-1**

*Regulation 9-1-301 Limitations on Ground Level Concentrations of SO<sub>2</sub>*

**Regulation 9-8**

S-1 is intended to operate at multiple unspecific sites and does not meet the definition of a stationary internal combustion engine pursuant to Regulation 9-8-204, therefore Regulation 9-8 does not apply to S-1.

**California Environmental Quality Act and Regulation 2-1**

Pursuant to Regulation 2-1-311, an application for a proposed new or modified source will be classified as ministerial and will accordingly be exempt from the California Environmental Quality Act (CEQA) requirement of Regulation 2-1-310 if the District's engineering evaluation and basis for approval or denial of the permit application for the project is limited to the criteria set forth in Regulation 2-1-428 and to the specific procedures, fixed standards, and objective measurements set forth in the District's Permit Handbook and BACT/TBACT Workbook. This project is ministerial under the District Regulation 2-1-311 (Permit Handbook Chapter 2.3) and is therefore not subject to CEQA review.

**California Health & Safety Code §42301.6 and Regulation 2-1-412**

Pursuant to California Health & Safety Code §42301.6(a), and Air District Regulation 2-1-412 prior to approving an application for a permit to construct or modification of a source, which is located within 1,000 feet from the outer boundary of a school site, or within an Overburdened Community and triggering a refined Health Risk Assessment, the District shall prepare a public notice as detailed in §42301.6.

§42301.9(a) defines a "school" as any public or private school used for the purposes of the education of more than 12 children in kindergarten or any grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in private homes.

The source will be operated at 18 different locations, four of those locations are within 1000 ft from the K-12 schools listed below:

Hall Middle School, 230 Doherty Dr, Larkspur, CA 94939

Tamiscal High School, 305 Doherty Dr, Larkspur, CA 94939

Redwood High School, 395 Doherty Dr, Larkspur, CA 94939

Therefore, a Public Notice is required.

**PERMIT CONDITIONS**

**Permit Condition #27274**

1. The owner/operator shall operate at all times the portable equipment in conformance with the eligibility requirements set forth in BAAQMD Regulation 2-1-413 for equipment at multiple locations within the District. [Basis: Regulation 2-1-413]
2. The owner/operator shall not exceed 50 hours per year per engine for reliability-related activities. [Basis: Cumulative Increase and 17 CCR §93116.2(a)(15)]
3. The owner/operator shall operate only for the following purposes:
  - a. To mitigate emergency conditions;
  - b. For emission testing to demonstrate compliance with a District, State, or Federal emission limit; or,
  - c. For reliability-related activities (maintenance and other testing, excluding emission testing).

Operating while mitigating emergency conditions or while emission testing to show compliance with District, State, or Federal emission limits is not limited. [Basis: Cumulative Increase, 17 CCR §93116.2(a)(15), and Regulation 2-1-320]

4. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained. [Basis: 17 CCR §93116.4(b)(2)(A)]
5. The owner/operator shall maintain the following monthly records in a District-approved log for at least five years from the date of entry. Log entries shall be retained on-site at a central location, and made immediately available to the District staff upon request.
  - a. Hours of operation for reliability-related activities (maintenance and testing);
  - b. Hours of operation for emission testing to show compliance with emission limits;
  - c. Hours of operation (emergency);
  - d. For each emergency, the nature of the emergency condition;
  - e. Fuel usage for each engine(s); and,
  - f. Location and total hours of operation at each off-site location.[Basis: Basis: 17 CCR §93116.4]

6. The engine(s) shall not be operated within 1,000 feet of the outer boundary of any K-12 school site, unless the applicable notice requirements of Health and Safety Code Section 42301.6 have been met. [Basis: Regulation 2-1-413.3]

***End of Conditions***

**RECOMMENDATION**

The District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue an Authority to Construct for the equipment listed below. However, the proposed source will be located within 1,000 feet of a K-12 school while operating at four of the potential locations, which triggers the public notification requirements of Regulation 2-1-412. After the comments are received from the public and reviewed, the District will make a final determination on the permit.

I recommend that the District initiate a public notice and consider any comments received prior to taking any final action on issuance of an Authority to Construct and/or a Permit to Operate for the following equipment:

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Prepared by: Isis Virrueta, AQE I  
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