

# DRAFT ENGINEERING EVALUATION

Facility ID No. 22137  
Sonoma Academy High School  
2500 Farmers Lane, Santa Rosa, CA 95404  
Application No. 422795

## Background

Sonoma Academy High School is applying for an Authority to Construct/Permit to Operate for the following equipment:

**S-2 Emergency Standby Diesel Fire Pump**  
**Make: John Deere, Model: 4045HF280F, Model Year: 2016**  
**99 bhp, 0.70 MMBtu/hr**  
**Permit Condition Nos. 100072, 100073 and 100076**

The criteria pollutants are nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), precursor organic compounds (POC) from unburned diesel fuel, sulfur dioxide (SO<sub>2</sub>) and particulate matter (PM<sub>10</sub>). All of these pollutants are briefly discussed on the District's web site at [www.baaqmd.gov](http://www.baaqmd.gov).

S-2 meets the Environmental Protection Agency and California Air Resources Board (EPA/CARB) Tier 3 Off-road standard. The engine will burn commercially available California low sulfur diesel fuel. The sulfur content of the diesel fuel will not exceed 0.0015% by weight.

This evaluation report will discuss compliance of the proposed project with all applicable rules and regulations. Recent applications include the following:

| A #   | S # | BHP | Source Description                     | AC Issued | PO Issued |
|-------|-----|-----|----------------------------------------|-----------|-----------|
| 25769 | 1   | 158 | Emergency Standby Diesel Generator Set | 1/23/14   | 2/19/14   |

## Emissions

**Table 1. Annual and Daily Emissions from EPA/CARB Certified Data from S-2**

| Pollutant        | Emission Factor (g/bhp-hr) | Max Daily Emissions (lb/day) | Annual Emissions (lb/yr) | Annual Emissions (tons/yr) |
|------------------|----------------------------|------------------------------|--------------------------|----------------------------|
| NO <sub>x</sub>  | 3.06                       | 16.04                        | 22.74                    | 0.011                      |
| POC              | 0.19                       | 0.98                         | 1.38                     | 0.001                      |
| CO               | 0.45                       | 2.34                         | 3.32                     | 0.002                      |
| PM <sub>10</sub> | 0.17                       | 0.90                         | 1.27                     | 0.001                      |
| SO <sub>2</sub>  | N/A <sup>1</sup>           | 0.03                         | 0.04                     | 0.000                      |

Basis:

- Annual emissions: Reliability-related activity 34 hours for S-2
- Max daily emissions: 24-hour operation
- <sup>1</sup> SO<sub>2</sub> emission factor from AP-42 Table 3.4-1, SO<sub>2</sub> (15 ppm) = 1.01\*0.0015 lb SO<sub>2</sub>/MMBtu/hr

**Plant Cumulative Increase**

Table 2 summarizes the cumulative increase in criteria pollutant emissions that will result from this application.

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

| <b>Pollutant</b> | <b>Existing Emissions Post 4/5/91 (tons/yr)</b> | <b>Application Emissions (tons/yr)</b> | <b>Cumulative Emissions (tons/yr)</b> |
|------------------|-------------------------------------------------|----------------------------------------|---------------------------------------|
| NO <sub>x</sub>  | 0.022                                           | 0.011                                  | 0.033                                 |
| POC              | 0.001                                           | 0.001                                  | 0.002                                 |
| CO               | 0.008                                           | 0.002                                  | 0.010                                 |
| PM <sub>10</sub> | 0.001                                           | 0.001                                  | 0.002                                 |
| SO <sub>2</sub>  | 0.000                                           | 0.000                                  | 0.000                                 |

**Health Risk Assessment (HRA)**

HRA was required. The diesel particulate emissions from the project are greater than the toxic trigger level of 0.26 lb/year. All PM<sub>10</sub> emissions are considered diesel particulate emissions. The PM<sub>10</sub> emissions from this application are summarized in Table 1. There were no other related projects permitted in the last three years. The risk from A#:25769 falls outside this window and will not be added to this application to make the final risk determination for this facility.

| <b>Toxic Pollutant Emitted</b>         | <b>A #</b> | <b>S#</b> | <b>Emission Rate (lb/yr)</b> | <b>Risk Screening Trigger (lb/yr)</b> |
|----------------------------------------|------------|-----------|------------------------------|---------------------------------------|
| PM <sub>10</sub> (Diesel Particulate)  | 422795     | 2         | 1.27                         | 0.26                                  |
| <b>Total PM10 (Diesel Particulate)</b> |            |           | <b>1.27</b>                  | <b>0.26</b>                           |

The HRA results deem the project is in compliance with project risk requirements as recommended, limiting reliability-related activity hours by permit condition to 50 hours per year. In accordance with the District’s Regulation 2, Rule 5, this risk level is considered acceptable, as it has been determined that the sources in this project meet the current TBACT standards. See HRA report.

| <b>Receptor</b> | <b>Cancer Risk</b> | <b>Chronic Non-Cancer Hazard Index</b> |
|-----------------|--------------------|----------------------------------------|
| Resident        | 0.66 in a million  | 0.00018                                |
| Worker          | 0.15 in a million  | 0.00011                                |
| Student         | negligible         | negligible                             |

## **Best Available Control Technology (BACT)**

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>.

The current BAAQMD BACT/TBACT Workbook does not include any standards for stationary emergency standby direct-drive diesel fire pump engines. To be consistent with the current BACT standards for stationary emergency standby diesel engines which use the same limits as the ATCM emission limits for new stationary emergency standby diesel engines, the BACT standards for stationary emergency standby direct-drive diesel fire pump engines are assumed to be the current ATCM emission limits for new stationary emergency standby direct-drive diesel fire pump engines. Table 2 of the ATCM for Stationary Compression Ignition Engines provides emissions standards for stationary emergency standby direct-drive diesel fire pump engines.

S-2 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>  | 3.06 g/bhp-hr          | 3.33 g/bhp-hr           |

## **Offsets**

Since the facility permitted levels are below the offset triggers levels specified in Regulation 2-2, offsets are not required.

## **Statement of Compliance**

The owner/operator is expected to comply with all applicable requirements. Key requirements are listed below:

**Airborne Toxic Control Measure for Stationary Compression Ignition Engines**  
ATCM, 5/19/2011, section 93115, title 17, CA Code of Regulations

### **District Rules**

Regulation 6-1-303 (*Ringelmann No. 2 Limitation*)

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

Regulation 9-8 (*NO<sub>x</sub> and CO from Stationary Internal Combustion Engines*)

Section 9-8-110.5 – Limited exemption for emergency standby engines

Section 9-8-330 – Hours of operation for emergency standby engines

Section 9-8-502 – Recordkeeping

**California Environmental Quality Act (CEQA)**

This project is ministerial under the District Regulation 2-1-311 (Permit Handbook Chapter 2.3), and is therefore not subject to CEQA review.

**New Source Performance Standards (NSPS)**

40 CFR 60, Subpart IIII (*Stationary Compression Ignition Internal Combustion Engines*)

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

40 CFR 63, Subpart ZZZZ (*Stationary Reciprocating Internal Combustion Engines (RICE)*)

**Prevention of Significant Deterioration (PSD)**

This application is not part of a PSD project as defined in Regulation 2-2.

**School Notification (Regulation 2-1-412)**

Because this equipment will be located within 1,000 feet of Sonoma Academy High School, the project is subject to the public notification requirements of Regulation 2-1-412 due to the increase in emissions from the project. A public notice will be sent to all parents of students of the above mentioned school(s) and all residents within 1,000 feet of the facility. There will be a 30-day public comment period.

**Permit Conditions**

**Permit Condition #100072 for S-2**

1. The owner or operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, state or Federal emission limit, or for reliability-related activities (maintenance and other testing, but 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: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
2. 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: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

3. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's 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).  
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
  
4. At School and Near-School Operation: If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply: The owner or operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:
  - a. Whenever there is a school sponsored activity (if the engine is located on school grounds)
  - b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session.“School” or “School Grounds” means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). “School” or “School Grounds” includes any building or structure, playground, athletic field, or other areas of school property but does not include unimproved school property.  
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

**Permit Condition #100073 for S-2**

The owner/operator shall not exceed the following limits per year per engine for reliability-related activities:

- 34 Hours of Diesel fuel (Diesel fuel)  
[Basis: Cumulative Increase; Regulation 2-5; Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

**Permit Condition #100076 for S-2**

The owner/operator shall operate this emergency standby engine only when directly coupled to pump(s) exclusively used in water-based fire protection system(s).  
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

*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/Permit to Operate for the equipment listed below. However, the proposed source will be located within 1,000 feet of at least one school, which triggers the public notification requirements of District Regulation 2-1-412. After the comments are received 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/Permit to Operate for the following source:

**S-2    Emergency Standby Diesel Fire Pump**  
**Make: John Deere, Model: 4045HF280F, Model Year: 2016**  
**99 bhp, 0.70 MMBtu/hr**  
**Permit Condition Nos. 100072, 100073 and 100076**

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