



**San Joaquin Valley**  
AIR POLLUTION CONTROL DISTRICT



NOV 05 2015

Scott C. Malta  
County of Merced - Castle Airport  
1900 Airdrome Entry  
Atwater, CA 95301

**Re: Notice of Preliminary Decision - Authority to Construct**  
**Facility Number: N-3489**  
**Project Number: N-1152915**

Dear Mr. Malta:

Enclosed for your review and comment is the District's analysis of County of Merced - Castle Airport's application for an Authority to Construct for the permitting of an existing diesel-fired emergency engine powering a water well, at water well #12.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. After addressing all comments made during the 30-day public notice period, the District intends to issue the Authority to Construct. Please submit your written comments on this project within the 30-day public comment period, as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Fred Cruz of Permit Services at (209) 557-6456.

Sincerely,

Arnaud Marjollet  
Director of Permit Services

AM:fjc

Enclosures

cc: Mike Tollstrup, CARB (w/ enclosure) via email

Seyed Sadredin  
Executive Director/Air Pollution Control Officer

Northern Region  
4800 Enterprise Way  
Modesto, CA 95356-8718  
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)  
1990 E. Gettysburg Avenue  
Fresno, CA 93726-0244  
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region  
34946 Flyover Court  
Bakersfield, CA 93308-9725  
Tel: 661-392-5500 FAX: 661-392-5585

**San Joaquin Valley Air Pollution Control District**  
Authority to Construct Application Review  
Diesel-fired Emergency Standby IC Engine

Facility Name:	County of Merced – Castle Airport	Date:	October 26, 2015
Mailing Address:	1900 Airdrome Entry Atwater, CA 95301	Engineer:	Fred Cruz
Contact Person:	Mr. Scott C. Malta – Airport Manager	Lead Engineer:	Nick Peirce
Telephone:	(209) 385-7686 extension 4180		
Cell:	(209) 769-2262		
Email:	smalta@co.merced.ca.us		
Application No:	N-3489-33-0		
Project No:	N-1152915		
Complete:	October 13, 2015		

---

**I. Proposal:**

The County of Merced, Castle Airport, submitted an Authority to Construct application to permit an existing 290 bhp diesel-fired emergency standby internal combustion (IC) engine powering a water well pump. Per the applicant, this engine was installed in 1989.

**II. Applicable Rules:**

Rule 2201 New and Modified Stationary Source Review Rule (4/21/2011)  
Rule 2410 Prevention of Significant Deterioration (6/16/2011)  
Rule 2520 Federally Mandated Operating Permits (6/21/2001)  
Rule 4001 New Source Performance Standards (4/14/1999)  
Rule 4002 National Emission Standards for Hazardous Air Pollutants (5/20/2004)  
Rule 4101 Visible Emissions (2/17/2005)  
Rule 4102 Nuisance (12/17/1992)  
Rule 4201 Particulate Matter Concentration (12/17/1992)  
Rule 4701 Stationary Internal Combustion Engines – Phase 1 (8/21/2003)  
Rule 4702 Stationary Internal Combustion Engines – Phase 2 (8/18/2011)  
Rule 4801 Sulfur Compounds (12/17/1992)  
CH&SC 41700 Health Risk Assessment  
CH&SC 42301.6 School Notice  
Title 17 CCR, Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary  
Compression-Ignition (CI) Engines  
California Environmental Quality Act (CEQA)  
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)  
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387:  
CEQA Guidelines

**III. Project Location:**

The equipment is located at Castle Airport, water well #12, Atwater, CA. The District has verified that the equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project. See area map.

**IV. Process Description:**

The emergency standby engine powers an electrical generator. Other than emergency operation, the engine may be operated up to 20 hours per year for maintenance and testing purposes.

**V. Equipment Listing:**

N-3489-33-0: 290 BHP CATERPILLAR MODEL 3406B DIESEL-FIRED EMERGENCY ENGINE (TIER 0) POWERING A WATER WELL.

**VI. Emission Control Technology Evaluation:**

The engine is equipped with:

- Turbocharger
- Intercooler/aftercooler
- Injection timing retard (or equivalent per District Policy SSP-1805, dated 8/14/1996)
- Positive Crankcase Ventilation (PCV) or 90% efficient control device
- This engine is required to be, and is UL certified
- Catalytic particulate filter
- Very Low (0.0015%) sulfur diesel

Based on information provided by Holt of California, West Sacramento, this engine is not equipped with a turbocharger or aftercooler/intercooler.

The applicant will be required to use very low-sulfur diesel fuel (0.0015% by weight sulfur maximum) in this engine. Very low-sulfur diesel reduces SO<sub>x</sub> emissions by over 99% from the use of standard diesel fuel.

**VII. General Calculations:**

**A. Assumptions**

Operating schedule:	24 hours/day, 20 hours/year
Density of diesel fuel:	7.1 lb/gal
EPA F-factor for diesel fuel:	9,051 dscf/MMBtu (adjusted to 60 °F)
Diesel fuel heating value:	137,000 Btu/gal
BHP to Btu/hr conversion:	2542.5 Btu/hp-hr
Thermal efficiency of engine:	commonly 35%
Fuel rate (N-3489-33-0):	15.4 gals/hr

Fuel rate calculated as follows:

$$\text{Fuel rate} = \frac{(\text{BHP rating})(\text{BHP to Btu/hr conversion})}{(\text{Fuel heating value})(\text{Thermal efficiency of engine})}$$

$$\frac{(290 \text{ bhp})(2,542.5 \text{ Btu/hr})}{(137,000 \text{ Btus/hr})(0.35)} = 15.4 \text{ gals/hr}$$

**B. Emission Factors**

The engine manufacturer does not have any emissions data for this Caterpillar engine. The NO<sub>x</sub>, CO, and VOC emission factors listed below are from publication AP-42, Table 3.3.1 (10-96) A Compilation of Air Pollutant Emission Factors.

NO<sub>x</sub>      14.0 g/hp-hr  
 CO        3.03 g/hp-hr  
 VOC      1.12 g/hp-hr

SO<sub>x</sub> =      Mass balance - use 0.05%, sulfur by weight, for low-sulfur fuel  
 PM<sub>10</sub> =     Emission factor should be equal to or less than the value calculated  
                  in compliance with District Rule 4201

Pollutant	Emission Factor (g/bhp-hr)	Source
NO <sub>x</sub>	14.0	AP-42, Table 3.3.1
CO	3.03	AP-42, Table 3.3.1
VOC	1.12	AP-42, Table 3.3.1
PM <sub>10</sub>	0.42	District Policy
SO <sub>x</sub>	0.005	Calculated below

The applicant did not supply a PM<sub>10</sub> emission factor for this engine nor does the engine manufacturer have any PM emission data. In order to maintain compliance with District Rule 4201, the emission factor can be calculated using the following formula (project numbers 990876 & 1010695):

$$\text{g/bhp-hr} = \frac{(0.099 \text{ gr/dscf})(15.4 \text{ gal/hr})(0.137 \text{ MMBtu/gal})(9051 \text{ dscf/MMBtu})}{(15.432 \text{ gr/g})(290 \text{ bhp})}$$

PM<sub>10</sub>      0.42 g/hp-hr

The emission factor for SO<sub>x</sub> may be calculated based on the current CARB standard for diesel sulfur content, which is 15 ppm by weight.

$$\frac{0.000015 \text{ lb-S}}{\text{lb-fuel}} \times \frac{7.1 \text{ lb-fuel}}{\text{gallon}} \times \frac{2 \text{ lb-SO}_2}{1 \text{ lb-S}} \times \frac{1 \text{ gal}}{137,000 \text{ Btu}} \times \frac{1 \text{ bhp input}}{0.35 \text{ bhp out}} \times \frac{2,542.5 \text{ Btu}}{\text{bhp-hr}} \times \frac{453.6 \text{ g}}{\text{lb}} = 0.005 \frac{\text{g-SO}_x}{\text{bhp-hr}}$$

**C. Calculations:**

**1. Pre-Project Emissions (PE1)**

Since this is a new emissions unit, PE1 will equal zero for all pollutants.

**2. Post Project PE (PE2)**

The potential to emit emissions from this emergency IC engine is based on the maximum operating capacity of the engine for 24 hours per day. The following calculation for NO<sub>x</sub> emissions is representative of emission calculations for all pollutants. Annual emissions are based on 20 hours per year for non-emergency operation.

NO<sub>x</sub>: 14.0 g/hp-hr × 290 hp × lb/453.6 g  
 NO<sub>x</sub>: 8.95 lb/hr, 214.8 lb/day, 179 lb/yr  
 CO: 1.94 lb/hr, 46.5 lb/day, 39 lb/yr  
 VOC: 0.72 lb/hr, 17.2 lb/day, 14 lb/yr  
 PM<sub>10</sub>: 0.27 lb/hr, 6.4 lb/day, 5 lb/yr  
 SO<sub>x</sub>: 0.003 lb/hr, 0.1 lb/day, 0.1 lb/yr <sup>1</sup>

	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>x</sub>
<b>Daily PE</b>	214.8	46.5	17.2	6.4	0.1
<b>Annual PE</b>	179	39	14	5	0

**3. Pre-Project Stationary Source Potential to Emit (SSPE1):**

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid ATCs or PTOs at the Stationary Source and the quantity of Emission Reduction Credits (ERCs) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site. Since this is an existing facility, SSPE1 is calculated in Appendix B. Note, for Major Source purposes ERCs are not included in Major Source calculations.

<sup>1</sup> Per District Policy APR 1105, Use of Significant Figures, annual emissions less than 0.5 lb are set to zero.

<b>Pre-Project Stationary Source Potential to Emit (SSPE1) (lb/year)</b>					
Permit No.	NOx	CO	VOC	PM <sub>10</sub>	SOx
N-3489-13-0	74	16	6	2	0
N-3489-14-0	185	40	15	6	0
N-3489-15-0	216	48	17	6	0
N-3489-20-0	36	8	3	1	0
N-3489-24-0	210	45	17	6	0
N-3489-25-0	210	45	17	6	0
N-3489-26-0	210	45	17	6	0
N-3489-27-0	210	45	17	6	0
N-3489-28-0	0	0	3,450	10,113	0
N-3489-29-0	0	0	1,150	3,376	0
N-3489-31-0	219	22	11	3	5
N-3489-32-0	0	0	7,556	0	0
Total w/o ERCs	1,570	314	12,276	13,531	5
ERCs N-109-2	157,978	0	0	0	0
N-109-3	0	138,577	0	0	0
N-109-4	0	0	0	25,398	0
N-109-5	0	0	0	0	12,891
N-523-1	0	0	129,074	0	0
Total with ERCs	159,548	138,891	141,350	38,929	12,896
Major Source Threshold	20,000	200,000	20,000	140,000	140,000
Existing Major Source?	No	No	No	No	No

**4. Post Project Stationary Source Potential to Emit (SSPE2):**

Pursuant to Section 4.10 of District Rule 2201, the Post Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid ATCs or PTOs, except for emissions units proposed to be shut down as part of the Stationary Project, at the Stationary Source and the quantity of Emission Reduction Credits (ERCs) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

<b>Post Project Stationary Source Potential to Emit (SSPE2) (lb/year)</b>					
Permit No.	NOx	CO	VOC	PM <sub>10</sub>	SOx
N-3489-13-0	74	16	6	2	0
N-3489-14-0	185	40	15	6	0
N-3489-15-0	216	48	17	6	0
N-3489-20-0	36	8	3	1	0
N-3489-24-0	210	45	17	6	0
N-3489-25-0	210	45	17	6	0
N-3489-26-0	210	45	17	6	0
N-3489-27-0	210	45	17	6	0
N-3489-28-0	0	0	3,450	10,116	0
N-3489-29-0	0	0	1,150	3,376	0
N-3489-31-0	219	22	11	3	5
N-3489-32-0	0	0	7,556	0	0
<b>N-3489-33-0 (ATC)</b>	<b>179</b>	<b>39</b>	<b>15</b>	<b>5</b>	<b>0</b>
Total w/o ERCs	1,749	353	12,291	13,539	5
ERCs N-109-2	157,978	0	0	0	0
N-109-3	0	138,577	0	0	0
N-109-4	0	0	0	25,398	0
N-109-5	0	0	0	0	12,891
N-523-1	0	0	129,074	0	0
Total with ERCs	159,727	138,930	141,365	38,937	12,896
Major Source Threshold	20,000	200,000	20,000	140,000	140,000
Existing Major Source?	No	No	No	No	No

**5. Major Source Determination:**

Pursuant to Section 3.24 of District Rule 2201, a Major Source is a stationary source with post project emissions or a Post Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the following threshold values. However, Section 3.24.2 states, “for the purposes of determining major source status, the SSPE2 shall not include the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.” This facility does have ERCs which have been banked at the source; therefore, SSPE2 does have to be adjusted.

Major Source Determination					
Pollutant	SSPE1 (lb/yr)	SSPE2 (lb/yr)	Major Source Threshold (lb/yr)	Existing Major Source?	Becoming a Major Source?
NO <sub>x</sub>	1,570	1,749	20,000	No	No
SO <sub>x</sub>	5	5	140,000	No	No
PM <sub>10</sub>	13,531	13,539	140,000	No	No
CO	314	353	200,000	No	No
VOC	12,276	12,292	20,000	No	No

As seen in the table above, the facility is not an existing Major Source and also is not becoming a Major Source as a result of this project.

**Rule 2410 Major Source Determination:**

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). Therefore the following PSD Major Source thresholds are applicable.

PSD Major Source Determination (tons/year)							
	NO <sub>2</sub>	VOC	SO <sub>2</sub>	CO	PM	PM <sub>10</sub>	CO <sub>2e</sub> *
Estimated Facility PE before Project Increase	0.79	6.14	0.003	0.16	6.68	6.68	33.1
PSD Major Source Thresholds	100	100	100	100	100	100	100,000
PSD Major Source ? (Y/N)	N	N	N	N	N	N	N

\*See Appendix C for GHG Emission calculations.

As shown above, the facility is not an existing major source for PSD for any pollutant. Therefore the facility is not an existing major source for PSD.

**6. Baseline Emissions (BE):**

The equipment is considered as new emissions unit and the baseline emissions will equal zero for all pollutants.

**7. SB 288 Major Modification:**

The purpose of Major Modification calculations is to determine the following:

- A. If Best Available Control Technology (BACT) is triggered for a new or modified emission unit that results in a Major Modification (District Rule 2201, Section 4.1.3); and



B. If a public notification is triggered (District Rule 2201, Section 5.4.1).

Based on the pre and post-project stationary source potential to emit calculations (less onsite Emission Reduction Credit's) in this document, the facility is not a Major Source for any pollutant. Therefore, the proposed project cannot trigger a Major modification and no further calculations are required.

## **8. Federal Major Modification**

This facility is not a Major Source for any pollutant. Therefore, this project can not constitute a Federal Major Modification and no further discussion is required.

## **9. Quarterly Net Emissions Change (QNEC)**

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix D.

## **10. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination:**

Rule 2410 applies to pollutants for which the District is in attainment or for unclassified pollutants. The pollutants addressed in the PSD applicability determination are listed as follows:

- NO<sub>2</sub> (as a primary pollutant)
- SO<sub>2</sub> (as a primary pollutant)
- CO
- PM
- PM<sub>10</sub>
- Greenhouse gases (GHG): CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, HFCs, PFCs, and SF<sub>6</sub>

The first step of this PSD applicability evaluation consists of determining whether the facility is an existing PSD Major Source. This facility is not an existing PSD Major source (See Section VII.C.5 of this document).

In the case the facility is NOT an existing PSD Major Source, the second step of the PSD evaluation is to determine if the project, by itself, would be a PSD major source.

### **Potential to Emit of attainment/unclassified pollutant for New or Modified Emission Units vs PSD Significant Emission Increase Thresholds**

As a screening tool, the potential to emit from all new and modified units is compared to the PSD significant emission increase thresholds, and if total potential to emit from all new and modified units is below this threshold, no further analysis will be needed.

<b>PSD Major Source Determination: Potential to Emit (tons/yr)</b>						
	NO <sub>2</sub>	VOC	SO <sub>2</sub>	CO	PM	PM <sub>10</sub>
Total PE from New and Modified Units	0.09	0.007	0	0.020	0.003	0.003
PSD Major Source threshold	250	250	250	250	250	250
New PSD Major Source?	N	N	N	N	N	N

As demonstrated above, because the project has a total potential to emit from all new and modified emission units below the PSD significant emission increase thresholds, this project is not subject to the requirements of Rule 2410 due to a significant emission increase and no further discussion is required.

### VIII. COMPLIANCE

#### Rule 2201 New and Modified Stationary Source Review Rule

##### A. Best Available Control Technology (BACT):

##### 1. BACT Applicability:

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following\*:

- a) Any new emissions unit with a potential to emit exceeding 2.0 pounds per day,
- b) The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding 2.0 pounds per day,
- c) Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding 2.0 pounds per day, and/or
- d) Any new or modified emissions unit, in a stationary source project, which results in a Major Modification.

\*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

##### a. New emissions units – PE > 2.0 lb/day

This engine is considered as a new emissions unit and the daily emissions are compared to the BACT thresholds in the following table:

New Emissions Unit BACT Applicability				
Pollutant	Daily Emissions for unit -33-0 (lb/day)	BACT Threshold (lb/day)	SSPE2 (lb/yr)	BACT Triggered?
NO <sub>x</sub>	214.8	> 2.0	N/A	Yes
SO <sub>x</sub>	0.1	> 2.0	N/A	No
PM <sub>10</sub>	6.4	> 2.0	N/A	Yes
CO	46.5	> 2.0 and SSPE2 ≥ 200,000 lb/yr	13,539	No
VOC	17.2	> 2.0	N/A	Yes

BACT will be triggered for NO<sub>x</sub>, PM<sub>10</sub> and VOC emissions from the engine.

**b. Relocation of emissions units – PE > 2.0 lb/day**

This engine is not being relocated from one stationary source to another stationary source as a result of this project.

**c. Modification of emissions units – Adjusted Increase in Permitted Emissions (AIPE) > 2.0 lb/day**

This engine is not being modified. Therefore, BACT is not triggered for the modification of emissions units with an AIPE > 2.0 lb/day.

**d. Major Modification**

This project does not constitute a Major Modification. Therefore, BACT is not triggered for a Major Modification.

**2. BACT Guideline and BACT Analysis:**

At the time of installation this emergency engine would have been required to obtain a permit from the Merced County APCD, which required engines greater than 65 bhp to obtain permits. Based on the information available concerning the BACT requirements from the Merced County APCD, this engine would have met the BACT requirements at the time this emergency engine was installed in late 1989. Based on the guidance provided in District Policy FYI-98, the District's BACT analysis is limited to the types of controls that can be applied to this specific engine. Since add-on control technologies are not feasible for diesel-fired emergency IC engines and the proposed emergency engine met BACT at the time of installation in 1989, this engine is considered to meet the District's BACT requirements per FYI-98.

**B. Offsets:**

Since emergency standby IC engines are exempt from the offset requirements of Rule 2201, per Section 4.6.2, offsets are not required for this engine, and offset calculations are not required.

**C. Public Notification:**

**1. Applicability:**

Public noticing is required for:

- a. New Major Sources, which is a new facility that also becomes a Major Source,
- b. Major Modifications,
- c. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- d. Any project which results in the offset thresholds being surpassed, and/or
- e. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant,
- f. Title V Significant Modification.

**a. New Major Source**

A New Major Source is a new facility, which also becomes a major source. This is an existing facility and does not become a Major Source from this project. Public noticing is not required for this project for New Major Source purposes.

**b. Major Modification**

As demonstrated previously in Sections VII.C.7 and VII.C.8, this project does not constitute a Major Modification; therefore, public noticing for Major Modification purposes is not required.

**c. PE > 100 lb/day**

The Daily PE for this new emissions unit is compared to the daily PE Public Notice Thresholds in the following table:

PE > 100 lb/day Public Notice Thresholds			
Pollutant	Daily PE for unit -33-0 (lb/day)	Public Notice Threshold (lb/day)	Public Notice Triggered?
NO <sub>x</sub>	214.8	100	Yes
SO <sub>x</sub>	0.1	100	No
PM <sub>10</sub>	6.4	100	No
CO	46.5	100	No
VOC	17.2	100	No

As detailed in the preceding table, emissions do not exceed any threshold and public noticing is not required for this project.

**d. Offset Threshold**

The following table compares the SSPE1 and SSPE2 with the offset thresholds to determine if any offset thresholds have been surpassed.

Offset Threshold				
Pollutant	SSPE1 (lb/yr)	SSPE2 (lb/yr)	Offset Threshold (lb/yr)	Public Notice Required?
NO <sub>x</sub>	1,570	1,749	20,000	No
SO <sub>x</sub>	5	5	54,750	No
PM <sub>10</sub>	13,531	13,539	29,200	No
CO	314	353	200,000	No
VOC	12,276	12,291	20,000	No

As detailed in the preceding table, there are no offset thresholds surpassed with this project. Therefore, public noticing is not required for this project

**e. SSIPE > 20,000 lb/year**

Public notification is required for any permitting action that results in a Stationary Source Increase in Permitted Emissions (SSIPE) of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE is calculated as the Post Project Stationary Source Potential to Emit (SSPE2) minus the Pre-Project Stationary Source Potential to Emit (SSPE1), i.e.  $SSIPE = SSPE2 - SSPE1$ . The values for SSPE2 and SSPE1 are calculated according to Rule 2201, Sections 4.9 and 4.10, respectively. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table:

SSIPE Public Notice Threshold					
Pollutant	SSPE2 (lb/yr)	SSPE1 (lb/yr)	SSIPE (lb/yr)	SSIPE Threshold (lb/yr)	Public Notice Required?
NO <sub>x</sub>	1,749	1,570	179	20,000	No
SO <sub>x</sub>	5	5	0	20,000	No
PM <sub>10</sub>	13,539	13,531	8	20,000	No
CO	353	314	39	20,000	No
VOC	12,291	12,276	15	20,000	No

As detailed in the preceding table, there are no SSIPE thresholds surpassed with this project. Therefore, public noticing is not required for exceeding the SSIPE thresholds.

**f. Title V Significant Modification:**

This facility is not a Major Source and has not been issued a Title V permit. Therefore, public noticing for a Title V Significant Modification is not required.

**2. Public Notice Action**

As discussed above, this project will result in emissions, for any criteria pollutant, which would subject the project to the noticing requirements listed above. Therefore, public notice will be required for this project since NOx emissions exceed 100 lbs per day. .

**D. Daily Emissions Limits**

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Section 3.15 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.15.1 and 3.15.2, the DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT. For this emergency standby IC engine, the DELs are stated in the form of emission factors, the maximum engine horsepower rating, and the maximum operational time of 24 hours per day. Therefore, the following conditions will be listed on the ATC to ensure compliance:

- Emissions from this IC engine shall not exceed any of the following limits: 14.0 g-NOx/bhp-hr, 3.03 g-CO/bhp-hr, or 1.12 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]
- Emissions from this IC engine shall not exceed 0.42 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102]
- Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115]

**E. Compliance Assurance:**

**1. Source Testing**

Pursuant to District Policy APR 1705, source testing is not required for emergency standby IC engines to demonstrate compliance with Rule 2201.

**2. Monitoring**

Monitoring is not required to demonstrate compliance with Rule 2201.

**3. Recordkeeping**

Recordkeeping is required to demonstrate compliance with the offset, public notification, and daily emission limit requirements of Rule 2201. As required by District Rule 4702, *Stationary Internal Combustion Engines - Phase 2*, this IC engine is subject to recordkeeping requirements. Recordkeeping requirements, in accordance with District Rule 4702, will be discussed in Section VIII, *District Rule 4702*, of this evaluation.

**4. Reporting**

Reporting is not required to ensure compliance with Rule 2201.

**F. Ambient Air Quality Analysis (AAQA)**

An AAQA shall be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to **Appendix E** of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO<sub>x</sub>, CO, and SO<sub>x</sub>. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO<sub>x</sub>, CO, or SO<sub>x</sub>.

The proposed location is in a non-attainment area for the state's PM<sub>10</sub> as well as federal and state PM<sub>2.5</sub> thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM<sub>10</sub> and PM<sub>2.5</sub>.

**Rule 2520 Federally Mandated Operating Permits**

Since this facility's potential to emit does not exceed any major source thresholds of Rule 2201, this facility is not a major source, and Rule 2520 does not apply.

**Rule 4001 New Source Performance Standards (NSPS)**

**40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines**

Pursuant to § 60.4200 of Subpart IIII, this engine is subject to this federal regulation. However, the District has not been delegated authorization to enforce the requirements of this regulation. The applicant will be so notified in a permit condition.

## **Rule 4002 National Emission Standards for Hazardous Air Pollutants**

### **40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Emissions (RICE)**

Pursuant to § 63.6585 of Subpart ZZZZ, this engine is subject to this federal regulation. However, the District has not been delegated authorization to enforce the requirements of 40 CFR 63 Subpart ZZZZ for non-Part 70 sources (Major Sources). The applicant will be so notified in a permit condition.

### **Rule 4101 Visible Emissions**

Rule 4101 states that no air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. Therefore, the following condition will be listed on the ATC to ensure compliance:

- {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

### **Rule 4102 Nuisance**

Rule 4102 states that no air contaminant shall be released into the atmosphere which causes a public nuisance. Public nuisance conditions are not expected as a result of these operations provided the equipment is well maintained. Therefore, the following condition will be listed on the ATC to ensure compliance:

- {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

### **California Health & Safety Code 41700 (Health Risk Assessment)**

District Policy APR 1905 - Risk Management Policy for Permitting New and Modified Sources (dated 3/2/01) specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

Technical Services received a request on October 13, 2015, to perform a Risk Management Review (RMR) for a 290 bhp emergency diesel IC engine powering an electric generator. (See RMR Summary in Appendix E).



RMR Summary			
Categories	Diesel-Fired IC Engine (Unit 33-0)	Project Totals	Facility Totals
Prioritization Score	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>
Acute Hazard Index	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>
Chronic Hazard Index	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>
Maximum Individual Cancer Risk	8.48E-08	8.48E-08	1.46E-06
T-BACT Required?	No		
Special Permit Conditions?	Yes		

- 1 Prioritization for this unit was not conducted since it has been determined that all diesel-fired IC engines will result in a prioritization score greater than 1.0.
- 2 Acute and Chronic Hazard Indices were not calculated since there is no risk factor, or the risk factor is so low that the risk has been determined to be insignificant for this type of unit.

The cancer risk associated with the operation of the proposed diesel IC engine is less than 1.0 in a million. In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).

The following conditions will be listed on the ATC to ensure compliance with the RMR:

Unit # 33-0:

1. The PM10 emissions rate shall not exceed 0.42 g/hp-hr based on US EPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102; 13 CCR 2423 and 17 CCR 93115]
2. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
3. The engine shall be operated only for maintenance, testing, and required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 20 hours per year. [District Rules 2201, and 4702 and 17 CCR 93115]

**Rule 4201 Particulate Matter Concentration**

Rule 4201 limits particulate matter emissions from any single source operation to 0.1 gr/dscf, which, as calculated below, is equivalent to a PM<sub>10</sub> emission factor of 0.4 g-PM<sub>10</sub>/bhp-hr.

$$0.1 \frac{\text{grain-PM}}{\text{dscf}} \times \frac{\text{g}}{15.43 \text{ grain}} \times \frac{1 \text{ Btu}_{in}}{0.35 \text{ Btu}_{out}} \times \frac{9,051 \text{ dscf}}{10^6 \text{ Btu}} \times \frac{2,542.5 \text{ Btu}}{1 \text{ bhp-hr}} \times \frac{0.96 \text{ g-PM}_{10}}{1 \text{ g-PM}} = 0.4 \frac{\text{g-PM}_{10}}{\text{bhp-hr}}$$

The new engine has a PM<sub>10</sub> emission factor less than 0.4 g/bhp-hr. Therefore, compliance is expected and the following condition will be listed on the ATC:

- {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

**Rule 4701 Internal Combustion Engines – Phase 1**

District Rule 4701 is applicable to diesel-fired emergency standby or emergency IC engines. Rule 4702 is at least as stringent as this rule in all aspects; therefore, compliance with that rule will ensure compliance with Rule 4701.

**Rule 4702 Internal Combustion Engines – Phase 2**

The following table demonstrates how the proposed engine will comply with the requirements of District Rule 4702.

District Rule 4702 Requirements Emergency Standby IC Engines	Proposed Method of Compliance with District Rule 4702 Requirements
<p>Operation of emergency standby engines is limited to 100 hours or less per calendar year for non-emergency purposes, verified through the use of a non-resettable elapsed operating time meter.</p>	<p>The Air Toxic Control Measure for Stationary Compression Ignition Engines (Stationary ATCM) limits this engine maintenance and testing to 20 hours/year. Thus, compliance is expected.</p>
<p>Emergency standby engines cannot be used to reduce the demand for electrical power when normal electrical power line service has not failed, or to produce power for the electrical distribution system, or in conjunction with a voluntary utility demand reduction program or interruptible power contract.</p>	<p>The following conditions will be included on the permit:</p> <ul style="list-style-type: none"> <li>• {3807} An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rules 4701 and 4702]</li> <li>• {3808} This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rules 4701 and 4702]</li> </ul>
<p>The owner/operator must monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier.</p>	<p>The following condition will be included on the permit:</p> <ul style="list-style-type: none"> <li>• {3478} During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rules 4701 and 4702]</li> </ul>
<p>Records of the total hours of operation of the emergency standby engine, type of fuel used, purpose for operating the engine, all hours of non-emergency and emergency operation, and support documentation must be maintained. All records</p>	<p>The following conditions will be included on the permit:</p> <ul style="list-style-type: none"> <li>• {3496} The permittee shall maintain monthly records of emergency and non-emergency</li> </ul>

<p>shall be retained for a period of at least five years, shall be readily available, and be made available to the APCO upon request.</p>	<p>operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]</p> <ul style="list-style-type: none"> <li>• The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115]</li> <li>• {3475} All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 4701 and 4702 and 17 CCR 93115]</li> </ul>
---	---

**Rule 4801 Sulfur Compounds**

Rule 4801 requires that sulfur compound emissions (as SO<sub>2</sub>) shall not exceed 0.2% by volume. Using the ideal gas equation, the sulfur compound emissions are calculated as follows:

$$\text{Volume SO}_2 = (n \times R \times T) \div P$$

n = moles SO<sub>2</sub>  
 T (standard temperature) = 60 °F or 520 °R  
 R (universal gas constant) =  $\frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot \text{°R}}$

$$\frac{0.000015 \text{ lb} - \text{S}}{\text{lb} - \text{fuel}} \times \frac{7.1 \text{ lb}}{\text{gal}} \times \frac{64 \text{ lb} - \text{SO}_2}{32 \text{ lb} - \text{S}} \times \frac{1 \text{ MMBtu}}{9,051 \text{ scf}} \times \frac{1 \text{ gal}}{0.137 \text{ MMBtu}} \times \frac{\text{lb} - \text{mol}}{64 \text{ lb} - \text{SO}_2} \times \frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} - \text{mol} \cdot \text{°R}} \times \frac{520 \text{°R}}{14.7 \text{ psi}} \times 1,000,000 = 1.0 \text{ ppmv}$$

Since 1.0 ppmv is ≤ 2,000 ppmv, this engine is expected to comply with Rule 4801. Therefore, the following condition will be listed on the ATC to ensure compliance:

- Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801, and 17 CCR 93115]

**California Health & Safety Code 42301.6 (School Notice)**

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

**Title 17 California Code of Regulations (CCR), Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines**

The following table demonstrates how the proposed engine will comply with the requirements of Title 17 CCR Section 93115.

Title 17 CCR Section 93115 Requirements for In-use Emergency IC Engines Powering Electrical Generators	Proposed Method of Compliance with Title 17 CCR Section 93115 Requirements
Emergency engines must be fired on CARB diesel fuel, or an approved alternative diesel fuel.	The applicant has proposed the use of CARB certified diesel fuel. The proposed permit condition, requiring the use of CARB certified diesel fuel, was included earlier in this evaluation.
No owner or operator shall operate an in-use stationary emergency standby diesel-fueled CI engine (>50 bhp) that emits diesel PM at a rate greater than 0.40 g/bhp-hr for more than 20 hours per year for maintenance and testing purposes. This subsection does not limit engine operation for emergency use and for emission testing to show compliance with 93115.6(b)(3).	This emergency engine is not located at a health facility. The PM rate for this engine is 0.42 g/bhp-hr. Operation of this engine will be limited to 20 hours per year for maintenance and testing purposes.
The engine may not be operated more than 50 hours per year for maintenance and testing purposes.	The following condition will be included on the permit: <ul style="list-style-type: none"> <li>This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 30 hours per calendar year. [District Rule 4702 and 17 CCR 93115]</li> </ul>
In-use stationary emergency standby diesel-fueled CI engines (> 50 bhp) must meet the applicable requirements of Section 93115.6(b) Table 2.	The applicant has proposed the use of an engine with a PM10 emission factor of 0.42 g/bhp-hr. Based on this PM10 emission factor this engine will be limited to 20 hours per calendar year for testing and maintenance purposes.
Engines, with a PM10 emissions rate greater than 0.01 g/bhp-hr and located at schools, may not be operated for maintenance and testing whenever there is a school sponsored activity on the grounds. Additionally, engines located within 500 feet of school grounds may not be operated for maintenance and testing between 7:30 AM and 3:30 PM.	The District has verified that this engine is not located within 500' of a school.
An owner or operator shall maintain monthly records of the following: emergency use hours of operation; maintenance and testing hours of	Permit conditions enforcing these requirements were shown earlier in the evaluation.

operation; hours of operation for emission testing; initial start-up testing hours; hours of operation for all other uses; and the type of fuel used. All records shall be retained for a minimum of 36 months.	
---	--

### California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The San Joaquin Valley Unified Air Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001.

The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

Consistent with California Environmental Quality Act (CEQA) and CEQA Guidelines requirements, the San Joaquin Valley Air Pollution Control District (District) has adopted procedures and guidelines for implementing CEQA. The District's Environmental Review Guidelines (ERG) establishes procedures for avoiding unnecessary delay during the District's permitting process while ensuring that significant environmental impacts are thoroughly and consistently addressed. The ERG includes policies and procedures to be followed when processing permits for projects that are exempt under CEQA.

The State Legislature granted a number of exemptions from CEQA, including projects that require only ministerial approval. Based upon analysis of its own laws and consideration of CEQA provisions, the District has identified a limited number of District permitting activities considered to be ministerial approvals. As set forth in §4.2.1 of the ERG, projects permitted consistent with the District's Guidelines for Expedited Application Review (GEAR) are standard application reviews in which little or no discretion is used in issuing Authority to Construct (ATC) documents.

For the proposed project, the District performed an Engineering Evaluation (this document) and determined that the project will occur at an existing facility; involves negligible expansion of the existing use; and would not have a significant effect on the environment. The District further determined that the project qualifies for processing

under the procedures set forth in the District's Permit Services Procedures Manual in the Guidelines for Expedited Application Review (GEAR). Thus, as discussed above, issuance of such ATC(s) is ministerial approval for the District and is not subject to CEQA provisions.

**IX. Recommendations:**

Compliance with all applicable rules and regulations is expected. Issue Authority to Construct N-3489-33-0 subject to the permit conditions on the attached Authority to Construct in Appendix A.

**X. Billing Information:**

<b>Billing Schedule</b>			
<b>Permit Number</b>	<b>Fee Schedule</b>	<b>Fee Description</b>	<b>Fee Amount</b>
N-3489-33-0	3020-10-C	290 bhp IC engine	\$252

**Appendices**

- A. Authority to Construct permit N-3489-33-0
- B. Engine Emissions Data
- C. GHG Emission Calculations
- D. QNEC Calculations
- E. RMR Summary

## Appendix A

Authority to Construct permit N-3489-33-0

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

PERMIT NO: N-3489-33-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: CASTLE AIRPORT AVIATION & DEVELOP CENTER  
MAILING ADDRESS: COUNTY OF MERCED  
2507 HERITAGE DR  
ATWATER, CA 95301

LOCATION: CASTLE AIR FORCE BASE  
MERCED, CA

EQUIPMENT DESCRIPTION:  
290 BHP CATERPILLAR MODEL 3406B DIESEL-FIRED EMERGENCY ENGINE (TIER 0) POWERING A WATER WELL.

**CONDITIONS**

1. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
3. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
4. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
5. {4749} This engine shall be equipped with a non-resettable hour meter with a minimum display capability of 9,999 hours, unless the District determines that a non-resettable hour meter with a different minimum display capability is appropriate in consideration of the historical use of the engine and the owner or operator's compliance history. [District Rule 4702 and 17 CCR 93115]
6. {4258} Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801, and 17 CCR 93115]
7. Emissions from this IC engine shall not exceed any of the following limits: 14.0 g-NOx/bhp-hr, 3.03 g-CO/bhp-hr, or 1.12 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]
8. Emissions from this IC engine shall not exceed 0.42 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]

CONDITIONS CONTINUE ON NEXT PAGE

YOU **MUST** NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director, APCO

Arnaud Marjollet, Director of Permit Services

N-3489-33-0 Nov 3 2015 2:13PM - CRUZP - Joint Inspection NOT Required



9. {4261} This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702]
10. {3478} During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702]
11. {3807} An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702]
12. {3808} This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rule 4702]
13. {3496} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]
14. This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 20 hours per calendar year. [District Rules 2201 and 4702, and 17 CCR 93115]
15. {4263} The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115]
16. {3475} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

DRAFT

## Appendix B SSPE Calculations

This facility has many old permits that were initially issued to Castle Air Force Base by Merced County APCD. For the older emergency engines there are no emission factors listed on the permit and the original permitting documents could not be located. Based on the time when the permits were issued the applicable emission factors would have been from AP-42, Table 3.3.1. AP-42 emission factors will be used to calculate annual emissions.

**N-3489-13-0:** NO<sub>x</sub>: 14.0 g/hp-hr × 120 hp × lb/453.6 g × 20 hr/yr = 74 lb-NO<sub>x</sub>/yr  
CO: 3.03 g/hp-hr × 120 hp × lb/453.6 g × 20 hr/yr = 16 lb-CO/yr  
VOC: 1.12 g/hp-hr × 120 hp × lb/453.6 g × 20 hr/yr = 6 lb-VOC/yr  
PM<sub>10</sub>: 0.42 g/hp-hr × 120 hp × lb/453.6 g × 20 hr/yr = 2 lb-PM<sub>10</sub>/yr  
VOC: 0.005 g/hp-hr × 120 hp × lb/453.6 g × 20 hr/yr = 0 lb-SO<sub>x</sub>/yr

**N-3489-14-0:** NO<sub>x</sub>: 14.0 g/hp-hr × 300 hp × lb/453.6 g × 20 hr/yr = 185 lb-NO<sub>x</sub>/yr  
CO: 3.03 g/hp-hr × 300 hp × lb/453.6 g × 20 hr/yr = 40 lb-CO/yr  
VOC: 1.12 g/hp-hr × 300 hp × lb/453.6 g × 20 hr/yr = 15 lb-VOC/yr  
PM<sub>10</sub>: 0.42 g/hp-hr × 300 hp × lb/453.6 g × 20 hr/yr = 6 lb-PM<sub>10</sub>/yr  
VOC: 0.005 g/hp-hr × 300 hp × lb/453.6 g × 20 hr/yr = 0 lb-SO<sub>x</sub>/yr

**N-3489-15-0:** NO<sub>x</sub>: 14.0 g/hp-hr × 350 hp × lb/453.6 g × 20 hr/yr = 216 lb-NO<sub>x</sub>/yr  
CO: 3.03 g/hp-hr × 350 hp × lb/453.6 g × 20 hr/yr = 48 lb-CO/yr  
VOC: 1.12 g/hp-hr × 350 hp × lb/453.6 g × 20 hr/yr = 17 lb-VOC/yr  
PM<sub>10</sub>: 0.42 g/hp-hr × 350 hp × lb/453.6 g × 20 hr/yr = 6 lb-PM<sub>10</sub>/yr  
VOC: 0.005 g/hp-hr × 350 hp × lb/453.6 g × 20 hr/yr = 0 lb-SO<sub>x</sub>/yr

**N-3489-20-0:** NO<sub>x</sub>: 14.0 g/hp-hr × 58 hp × lb/453.6 g × 20 hr/yr = 36 lb-NO<sub>x</sub>/yr  
CO: 3.03 g/hp-hr × 58 hp × lb/453.6 g × 20 hr/yr = 8 lb-CO/yr  
VOC: 1.12 g/hp-hr × 58 hp × lb/453.6 g × 20 hr/yr = 3 lb-VOC/yr  
PM<sub>10</sub>: 0.42 g/hp-hr × 58 hp × lb/453.6 g × 20 hr/yr = 1 lb-PM<sub>10</sub>/yr  
VOC: 0.005 g/hp-hr × 58 hp × lb/453.6 g × 20 hr/yr = 0 lb-SO<sub>x</sub>/yr

**N-3489-24-0:** NO<sub>x</sub>: 14.0 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 210 lb-NO<sub>x</sub>/yr  
CO: 3.03 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 45 lb-CO/yr  
VOC: 1.12 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 17 lb-VOC/yr  
PM<sub>10</sub>: 0.42 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 6 lb-PM<sub>10</sub>/yr  
VOC: 0.005 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 0 lb-SO<sub>x</sub>/yr

**N-3489-25-0:** NO<sub>x</sub>: 14.0 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 210 lb-NO<sub>x</sub>/yr  
CO: 3.03 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 45 lb-CO/yr  
VOC: 1.12 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 17 lb-VOC/yr  
PM<sub>10</sub>: 0.42 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 6 lb-PM<sub>10</sub>/yr  
VOC: 0.005 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 0 lb-SO<sub>x</sub>/yr

**N-3489-26-0:** NO<sub>x</sub>: 14.0 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 210 lb-NO<sub>x</sub>/yr  
CO: 3.03 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 45 lb-CO/yr  
VOC: 1.12 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 17 lb-VOC/yr  
PM<sub>10</sub>: 0.42 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 6 lb-PM<sub>10</sub>/yr  
VOC: 0.005 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 0 lb-SO<sub>x</sub>/yr

**N-3489-27-0:** NO<sub>x</sub>: 14.0 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 210 lb-NO<sub>x</sub>/yr  
CO: 3.03 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 45 lb-CO/yr  
VOC: 1.12 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 17 lb-VOC/yr  
PM<sub>10</sub>: 0.42 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 6 lb-PM<sub>10</sub>/yr  
VOC: 0.005 g/hp-hr × 340 hp × lb/453.6 g × 100 hr/yr = 0 lb-SO<sub>x</sub>/yr

**N-3489-28-0:** Outdoor coating operation with only annual VOC emission limits  
Annual VOC limit: 3,450 lb-VOC/yr  
Daily VOC limit: 35.0 lb-VOC/day  
Daily PM<sub>10</sub> (solids) limit: 102.6 lb-PM<sub>10</sub>/day

$$3,450 \text{ lb-VOC/yr} \div 35.0 \text{ lb-VOC/day} = 98.6 \text{ days/yr}$$

$$98.6 \text{ days/yr} \times 102.6 \text{ lb-PM}_{10}/\text{day} = 10,116 \text{ lb-PM}_{10}/\text{yr}$$

**N-3489-29-0:** Outdoor coating operation with only annual VOC emission limits  
Annual VOC limit: 1,150 lb-VOC/yr  
Daily VOC limit: 35.0 lb-VOC/day  
Daily PM<sub>10</sub> (solids) limit: 102.6 lb-PM<sub>10</sub>/day

$$1,150 \text{ lb-VOC/yr} \div 35.0 \text{ lb-VOC/day} = 32.9 \text{ days/yr}$$

$$32.9 \text{ days/yr} \times 102.6 \text{ lb-PM}_{10}/\text{day} = 3,376 \text{ lb-PM}_{10}/\text{yr}$$

# APPENDIX C

## Greenhouse Gas Emission Calculations

Greenhouse Gas House Emission factors are based on CARB approved GHG emission factors.

**N-3489-13-0:** 120 bhp diesel-fired emergency engine powering an electrical generator

$$120 \text{ bhp} \times 20 \text{ hr/hr} \times 0.000187 \text{ metric ton-CO}_{2e}/\text{bhp-hr} = 0.45 \text{ metric ton-CO}_{2e}/\text{yr}$$

$$\begin{aligned} \text{GHG} &= (0.45 \text{ metric tons- CO}_{2e}/\text{yr} \times 2,205 \text{ lb/metric ton}) \div 2,000 \text{ lb/ton} \\ &= 0.50 \text{ ton- CO}_{2e}/\text{yr} \end{aligned}$$

**N-3489-14-0:** 300 bhp diesel-fired emergency engine powering an electrical generator

$$300 \text{ bhp} \times 20 \text{ hr/hr} \times 0.000187 \text{ metric ton-CO}_{2e}/\text{bhp-hr} = 1.12 \text{ metric ton-CO}_{2e}/\text{yr}$$

$$\begin{aligned} \text{GHG} &= (1.12 \text{ metric tons- CO}_{2e}/\text{yr} \times 2,205 \text{ lb/metric ton}) \div 2,000 \text{ lb/ton} \\ &= 1.23 \text{ ton- CO}_{2e}/\text{yr} \end{aligned}$$

**N-3489-15-0:** 350 bhp diesel-fired emergency engine powering an electrical generator

$$350 \text{ bhp} \times 20 \text{ hr/hr} \times 0.000187 \text{ metric ton-CO}_{2e}/\text{bhp-hr} = 1.31 \text{ metric ton-CO}_{2e}/\text{yr}$$

$$\begin{aligned} \text{GHG} &= (1.31 \text{ metric tons- CO}_{2e}/\text{yr} \times 2,205 \text{ lb/metric ton}) \div 2,000 \text{ lb/ton} \\ &= 1.44 \text{ ton- CO}_{2e}/\text{yr} \end{aligned}$$

**N-3489-20-0:** 58 bhp diesel-fired emergency engine powering an electrical generator

$$58 \text{ bhp} \times 20 \text{ hr/hr} \times 0.000187 \text{ metric ton-CO}_{2e}/\text{bhp-hr} = 0.22 \text{ metric ton-CO}_{2e}/\text{yr}$$

$$\begin{aligned} \text{GHG} &= (0.22 \text{ metric tons- CO}_{2e}/\text{yr} \times 2,205 \text{ lb/metric ton}) \div 2,000 \text{ lb/ton} \\ &= 0.24 \text{ ton- CO}_{2e}/\text{yr} \end{aligned}$$

**N-3489-24-0, N-3489-25-0, N-3489-26-0 & N-3489-27-0:**

Each of these permit units is for a 340 bhp diesel fired emergency engine powering a firewater pump. GHG emissions will be the same for each engine since each engine is limited to operate up to 100 hours per year

$$340 \text{ bhp} \times 100 \text{ hr/hr} \times 0.000187 \text{ metric ton-CO}_{2e}/\text{bhp-hr} = 6.36 \text{ metric ton-CO}_{2e}/\text{yr/engine}$$

$$\begin{aligned} \text{GHG} &= (6.36 \text{ metric tons- CO}_{2e}/\text{yr} \times 2,205 \text{ lb/metric ton}) \div 2,000 \text{ lb/ton} \\ &= 7.01 \text{ ton- CO}_{2e}/\text{yr/engine} \end{aligned}$$

**N-3489-31-0:** 163 bhp diesel-fired emergency engine powering an electrical generator

$$163 \text{ bhp} \times 50 \text{ hr/hr} \times 0.000187 \text{ metric ton-CO}_{2e}/\text{bhp-hr} = 1.52 \text{ metric ton-CO}_{2e}/\text{yr}$$

$$\begin{aligned} \text{GHG} &= (1.52 \text{ metric tons- CO}_{2e}/\text{yr} \times 2,205 \text{ lb/metric ton}) \div 2,000 \text{ lb/ton} \\ &= 1.68 \text{ ton- CO}_{2e}/\text{yr} \end{aligned}$$

Permit Unit	CO <sub>2e</sub> (tons/yr)
N-3489-13-0	0.50
N-3489-14-0	1.23
N-3489-15-0	1.44
N-3489-20-0	0.24
N-3489-24-0	7.01
N-3489-25-0	7.01
N-3489-26-0	7.01
N-3489-27-0	7.01
N-3489-31-0	1.68
Total:	33.13

# Appendix D

## QNEC Calculations

### Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

QNEC = PE2 - PE1, where:

- QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr
- PE2 = Post-Project Potential to Emit for each emissions unit, lb/qtr
- PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr

Using the emission calculations in this evaluation,  $PE2_{quarterly}$  and  $BE_{quarterly}$  can be calculated as follows:

This calculation is required for application emission profile purposes. It is assumed that each unit's annual emissions are evenly distributed throughout the year as follows:  $\Delta PE$  (lb/qtr) =  $PE$  (lb/yr)  $\div$  4 qtr/yr

N-3489-33-0:

- $\Delta PE_{NOx}$  = 179 lb-NOx/year - 0 lb-NOx/year = 179 lb/year
- $\Delta PE_{CO}$  = 39 lb-CO/year - 0 lb-CO/year = 39 lb/year
- $\Delta PE_{VOC}$  = 14 lb-VOC/year - 0 lb-VOC/year = 14 lb/year
- $\Delta PE_{PM10}$  = 5 lb-PM10/year - 0 lb-PM10/year = 5 lb/year
- $\Delta PE_{SOx}$  = 0 lb-SOx/year - 0 lb-SOx/year = 0 lb/year

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
<b>NOx</b>	44	45	45	45
<b>CO</b>	9	10	10	10
<b>VOC</b>	3	3	4	4
<b>PM<sub>10</sub></b>	1	1	1	2
<b>SOx</b>	0	0	0	0

# **Appendix E**

## RMR Summary

## San Joaquin Valley Air Pollution Control District Risk Management Review

To: Fred Cruz, AQE - Permit Services  
 From: Jessica Coria, AQS - Permit Services  
 Date: 10/14/2015  
 Facility Name: County of Merced-Castle Airport  
 Location: Well #12, Castle Airport, Atwater CA  
 Application No: N-3489-33-0  
 Project No: N-1152915

### A. RMR SUMMARY

RMR Summary			
Categories	Diesel-Fired IC Engine (Unit 33-0)	Project Totals	Facility Totals
Prioritization Score	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>
Acute Hazard Index	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>
Chronic Hazard Index	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>
Maximum Individual Cancer Risk	8.48E-08	8.48E-08	1.46E-06
T-BACT Required?	No		
Special Permit Conditions?	Yes		

- <sup>1</sup> Prioritization for this unit was not conducted since it has been determined that all diesel-fired IC engines will result in a prioritization score greater than 1.0.
- <sup>2</sup> Acute and Chronic Hazard Indices were not calculated since there is no risk factor, or the risk factor is so low that the risk has been determined to be insignificant for this type of unit.

### Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

#### Unit # 33-0

1. The PM10 emissions rate shall not exceed 0.42 g/bhp-hr based on US EPA certification using ISO 8178 test procedure. [District Rules 2201]
2. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
3. This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 20 hours per calendar year. [District Rule 4702 and 17 CCR 93115]



## B. RMR REPORT

### I. Project Description

Technical Services received a request on October 13, 2015, to perform an Ambient Air Quality Analysis and a Risk Management Review of an existing 290 bhp Caterpillar model 3406B diesel-fired emergency IC engine powering a water well pump.

### II. Analysis

Technical Services performed a screening level health risk assessment using the District developed DICE database.

The following parameters were used for the review:

Analysis Parameters Unit 33-0			
Source Type	Point	Location Type	Rural
BHP	290	PM <sub>10</sub> g/hp-hr	0.42
Closest Receptor (m)	503	Quad	4
Max Hours per Year	20	Type of Receptor	Residential

Technical Services performed modeling for criteria pollutants CO, NO<sub>x</sub>, SO<sub>x</sub> and PM<sub>10</sub>; as well as a RMR. The emission rates used for criteria pollutant modeling were 39 lb/yr CO, 179 lb/yr NO<sub>x</sub>, 0 lb/yr SO<sub>x</sub>, and 5 lb/yr PM<sub>10</sub>. The engineer supplied the maximum fuel rate for the IC engine used during the analysis.

The results from the Criteria Pollutant Modeling are as follows:

#### Criteria Pollutant Modeling Results\*

Diesel ICE	1 Hour	3 Hours	8 Hours.	24 Hours	Annual
CO	NA <sup>1</sup>	X	NA <sup>1</sup>	X	X
NO <sub>x</sub>	NA <sup>1</sup>	X	X	X	Pass
SO <sub>x</sub>	NA <sup>1</sup>	NA <sup>1</sup>	X	NA <sup>1</sup>	Pass
PM <sub>10</sub>	X	X	X	NA <sup>1</sup>	Pass <sup>2</sup>
PM <sub>2.5</sub>	X	X	X	NA <sup>1</sup>	Pass <sup>2</sup>

\*Results were taken from the attached PSD spreadsheet.

<sup>1</sup>The project is an intermittent source as defined in APR-1920. In accordance with APR-1920, compliance with short-term (i.e., 1-hour, 3-hour, 8-hour and 24-hour) standards is not required.

<sup>2</sup>The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

### **III. Conclusion**

The cancer risk associated with the operation of the proposed diesel IC engine is less than 1.0 in a million. In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT) for PM10.

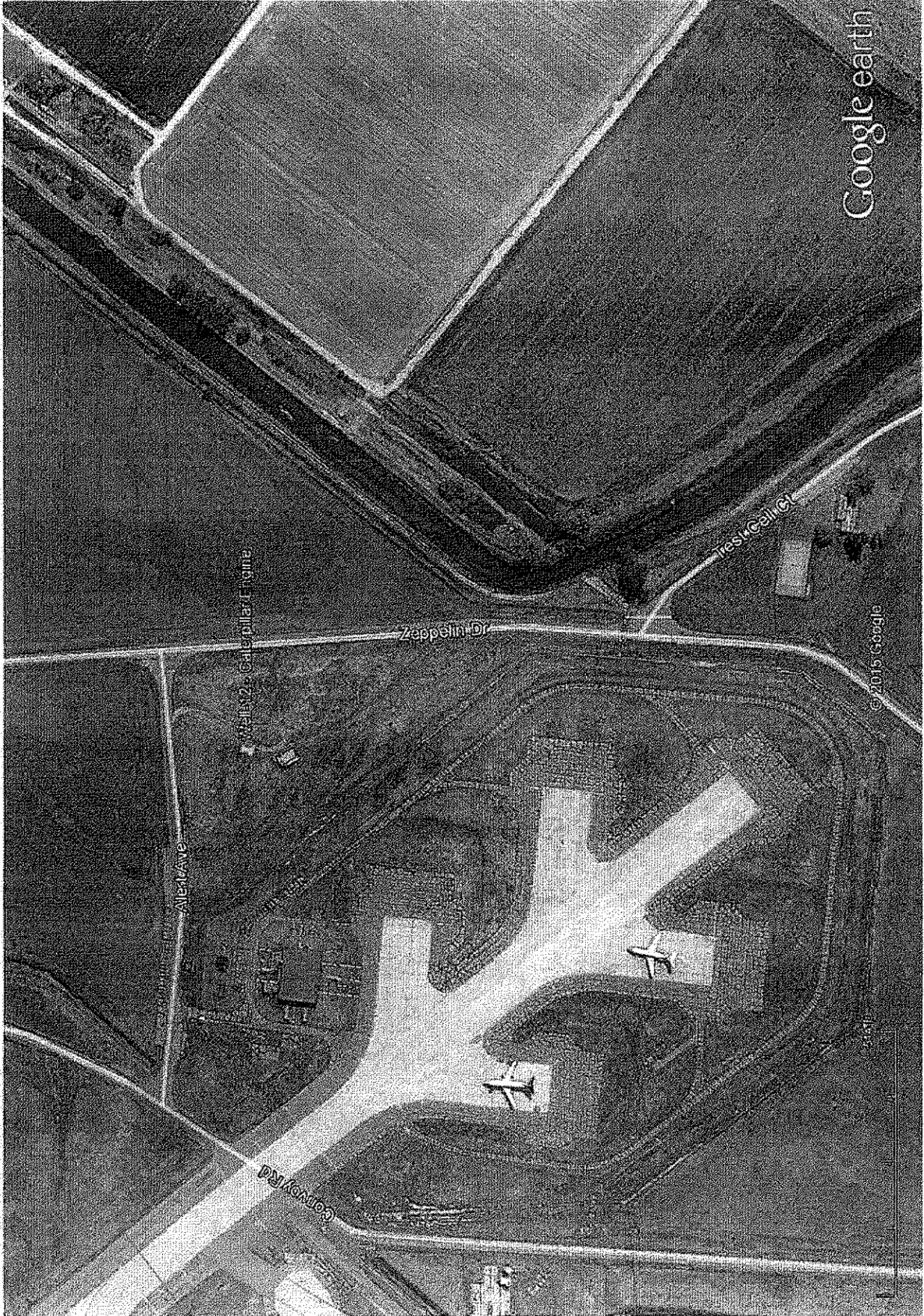
To ensure that human health risks will not exceed District allowable levels; the permit conditions listed on page 1 of this report must be included for this proposed unit .

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

#### **Attachments**

- A. AERMOD Non-Regulatory Option Checklist
- B. RMR request from the project engineer
- C. Additional information from the applicant/project engineer
- D. DICE Screening Risk
- E. Facility Summary
- F. AAQA Report



Allegra Ave

Waltz Gallagher Frame

Zeppelin Dr

Prescott Ct

Compton Rd

Google earth

© 2015 Google

Google earth

feet  
meters

1000

400

