Facility Name:	Ventasso Energy Storage, LLC,
Equipment Type:	34H – Emergency Diesel Engine
Application #:	APCD2024-APP-008491
ID#:	APCD2024-SITE-04675
Equipment/Facility Address:	203 North Johson Avenue, El Cajon, CA 92020
Facility Contact:	Evelyn Mokin, 619-209-0284 evelyn.mokin@rwe.com
Applicant Contact:	Patrick Tam, (714) 893-7900 tam@proehs.com
Permit Engineer:	Expired certificate X Hawzhin Muhamed Hawzhin Muhamed Assistant APC Engineer Signed by: E089831
Senior Engineer Signature:	X Joseph Herzig Senior Air Pollution Control Engineer

1.0 Background

1.1 Type of Application: New installation of a 463 bhp emergency diesel engine driving a 400-kW generator

1.2 Permit History: This is the initial application for this equipment.

1.3 Facility Description: This is a battery energy storage facility. This facility has no other permits with SDAPCD at other sites. No other applications are open at this site.

1.4 Other Background Info: No hearing board actions, permit denials, legal settlements, open NOV, or nuisance complaints. This site is not a Title V facility.

2.0 Process Description

2.1 Equipment Description.

Emergency Diesel Engine:
Manufacturer: John Deere
S/N: TBD
Model: 6090HFG86A
Model Year: 2023
Engine Family: PJDXL09.0114
Tier: 3
Horsepower (maximum rated): 463 BHP
Driving a 300-kW emergency-use standby generator.
6-inch diameter, vertical exhaust with Flapper, 10.42 feet above ground.

2.2 Process Description.

This is a diesel-powered generator to be used in situations of emergency and for limited operations for maintenance and testing purposes.

2.3 Emissions Controls.

This is a Tier 3 certified diesel engine. It is not equipped with any aftermarket controls.

2.4 Attachments.

Generator specification sheets

3.0 Emissions

3.1 Emissions estimate summary. Estimated emissions from the process are shown below.

Table 1: Estimated PTE for criteria pollutants

Compound	Emission Factor	Hourly Emissions	Daily Emissions	Annual Emissions	
	g/bhp-hr	lbs/hr	lbs/day	tons/year	lbs/yr
NOx	2.83	2.89	69.45	0.07	144.68
CO	0.67	0.69	16.45	0.02	34.27
NMHC	0.03	0.03	0.82	0.0009	1.71
PM	0.08	0.08	2.01	0.0021	4.188
SOx	NA	0.00470	0.11269	0.00012	0.23477

3.2 Estimated Emissions Assumptions.

- Table 1 evaluates the emission unit assuming full load operations, 24 hours per day and total of 50 hours per year.
- Manufacturer-provided emissions were EPA certified emission factors.
- Standard toxics emission factors for diesel engines (see method E15).
- 15 ppmw sulfur fuel
- Expected actual emissions same as PTE.

- Other standard assumptions as stated in calculation sheets.

3.3 Emissions Calculations.

Calculations were performed using the attached spreadsheets using standard calculation methods.

3.4 Attachments.

Emission Calculations.

4.0 Applicable Rules

4.1 District Prohibitory Rules

Emergency diesel engines at non-major sources are subject to the following District prohibitory rules: 50, 51, 53, 62 and 69.4.1. The proposed engine is expected to comply with all applicable requirements as shown in the table on the following page with standard permit conditions for this equipment type.

Table 3: Prohibitory Rule Discussion				
Applicable Section	**Requirement**	**Engine Complies?**	**Explanation**	**Condition**
Rule 50	Visible Emissions not to exceed 20% opacity or Ringlemann 1 for more than 3 minutes in a 60 minute period	Yes	Compliance with this requirement is achieved through the use of an EPA certified engine, and permit conditions will specify this requirement.	C28413
Rule 51	Cannot cause or contribute to a public nuisance	Yes	Due to the intermittent operation of an emergency engine that meets all emission requirements, it is anticipated that this will not cause a public nuisance. Permit conditions will prohibit this engine from causing a public nuisance.	C28414
Rule 53	Emissions of sulfur compounds calculated as SO2 on a dry basis shall not exceed 0.05 % by volume on a dry basis.	Yes	Permit conditions will require use of CARB diesel fuel (15 ppm Sulfur by weight), which will ensure compliance with this requirement.	C28412
Rule 62	Sulfur content of liquid fuel shall not exceed 0.5 % sulfur by weight.	Yes	Permit conditions will require use of CARB diesel fuel (15 ppm Sulfur by weight), which will ensure compliance with this requirement.	C28412
Rule 69.4.1				
69.4.1(d)(1)(ii)(E)	Emission standards for NOx and CO emissions. For a new or replacement certified diesel engine, NOx emissions shall not exceed: 3.5 g/bhp-hr if 50≤bhp<100; 3.0 g/bhp-hr if 100≤bhp<175; 3.0 g/bhp-hr if 175≤bhp<750; 4.8 g/bhp-hr if bhp≥750. For a new or replacement certified diesel engine, CO emissions shall not exceed: 3.7 g/bhp-hr if	Yes	Use of an EPA certified tier 3 engine (tier 2 for engines with a rated power in excess of 750 bhp) ensures that NOx emissions comply with this requirement.	NA

	50≤bhp<100; 3.7 g/bhp-hr if 100≤bhp<175; 2.6 g/bhp-hr if 175≤bhp<750; 2.6 g/bhp-hr if bhp≥750.			
69.4.1(d)(2)	Engines operated on diesel fuel shall use only California Diesel Fuel.	Yes	Permit conditions will require use of CARB diesel fuel (15 ppm Sulfur by weight), which will ensure compliance with this requirement.	C28412
69.4.1(e)(3)	All engines must be equipped with a non-resettable totalizing fuel or hour meter which shall be replaced in accordance with subsection (g)(7) of this rule.	Yes	Permit conditions will require installation of a non-resettable hour meter and specify the requirements for replacement.	C28419
69.4.1(f)(2)	The owner or operator must conduct specific maintenance on the engine and control equipment, including oil change/analysis, and checking hoses and belts. Maintenance is required according to engine/control equipment manufacturer's instructions or other written procedure, at least once each calendar year.	Yes	Annual maintenance of engine according to written procedure will be required by permit conditions.	C43433
69.4.1(g)(1)	Specifies engine information that must be maintained on-site.	Yes	Manufacturer and model number, brake horsepower rating, combustion method and fuel type are contained in the permit application. Documentation of CARB diesel fuel certification and manual of recommended maintenance will be specified in permit conditions.	C45251
69.4.1(g)(2)	Requires keeping an operating log containing dates and times and purpose of each period of engine operation, cumulative operation of engine for each calendar year and maintenance records including	Yes	Compliance with this provision is expected and this requirement is specified in permit conditions.	C45252

	dates maintenance is performed. Engines within 500 feet of schools must record the time of day when the engine is operated for testing and maintenance. Specific records for internal, external, and partial external power outages is required.			
69.4.1(g)(6)	Requires records of the dates and times when fuel is being combusted and cumulative operating time if claiming a commissioning exemption.	NA	The applicant has not claimed a commissioning period is needed.	NA
69.4.1(g)(7)	Requires notification to APCD within 10 calendar days of replacing an hour meter.	Yes	Compliance with this provision is expected and this requirement is specified in permit conditions.	C28419
69.4.1(g)(9)	Requires specified records to be maintained on-site for at least three years and made available to the District upon request.	Yes	Compliance with this provision is expected and this requirement is specified in permit conditions.	C43432
69.4.1(i)(1)	Requires periodic source testing to confirm compliance with applicable emission standards.	NA	This subsection does not apply to certified emergency engines.	NA

4.2 New Source Review (NSR) Rule 20.1-20.4

This application is subject to District NSR rules. This site is considered a non-major stationary source, for each pollutant, as shown in the following table, and is therefore subject to District Rule 20.2. Calculation of emissions and determination of applicable requirements is performed in accordance with District Rule(s) 20.1 through 20.3.

Table 4: Classification of Major/PSD Source and Modification New Source Review (NSR) Requirements

	NOx	VOC	PM-10	PM-2.5	SOx	CO	Lead
Major Source Threshold (ton/year)	*50*	*50*	*100*	*100*	*100*	*100*	*100*
Major Source? (yes/no)	***No***	***No***	***No***	***No***	***No***	***No***	***No***
Major Modification Threshold (ton/year)	*25*	*25*	*15*	*10*	*40*	*100*	*0.6*
Major Modification at a Major Source?	***No***	***No***	***No***	***No***	***No***	***No***	***No***
Contemporaneous Calculations Performed?	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Federal Major Stationary Source Threshold (ton/year) (Severe non-attainment status)	25	25	100	100	100	100	100
Federal Major Stationary Source?	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Federal Major Modification Threshold (ton/year) (Severe non-attainment status)	*25*	*25*	*15*	*10*	*40*	*100*	*0.6*
Federal Major Modification?	***No***	***No***	***No***	***No***	***No***	***No***	***No***
Contemporaneous Net Calculations Performed	***No***	***No***	***No***	***No***	***No***	***No***	***No***
PSD Threshold (ton/year)	*250*	*250*	*250*	*--*	*250*	*250*	*--*
PSD Modification Threshold (ton/year)	*40*	*40*	*15*	*--*	*40*	*100*	*0.6*
PSD New or Modification?	**No**	**No**	**No**	**No**	**No**		**No**

District Rule 20.2 contains requirements for Best Available Control Technology (BACT), Air Quality Impact Assessment (AQIA), Prevention of Significant Deterioration (PSD) and public notification. No requirements of this rule apply as shown in the table on the following page.

Table 5: New Source Review Discussion				
Rule/Requirement	**Requirement**	**Applicability**	**Discussion**	**Condition**
Applicability	Rule 20.2 applies to non-major sources	Yes	This is not a major source, so Rule 20.2 applies.	NA
Type of application	New	Yes	NA	NA
Exemptions	No exemptions apply to this equipment	NA	NA	NA
20.2(d)(1) – BACT				
BACT - NOx	Installation of BACT is required if emissions of NOx exceed 10 lbs/day	**Triggered**, see discussion below	The potential to emit for this pollutant is 69.45 lbs/day, which exceed this trigger level, so BACT is required.	NA
BACT - VOC	Installation of BACT is required if emissions of VOC exceed 10 lbs/day	Not Triggered, no permit limit	The potential to emit for this pollutant does not exceed this trigger level, so BACT is not required.	NA
BACT - PM-10	Installation of BACT is required if emissions of PM-10 exceed 10 lbs/day	Not Triggered, no permit limit	The potential to emit for this pollutant does not exceed this trigger level, so BACT is not required.	NA
BACT - SOx	Installation of BACT is required if emissions of SOx exceed 10 lbs/day	Not Triggered, no permit limit	The potential to emit for this pollutant does not exceed this trigger level, so BACT is not required.	NA
20.2(d)(2) – AQIA				
AQIA - NOx	Required for project emission increases in excess of 25 lbs/hr, 250 lbs/day or 40 ton/yr of NOx calculated as NO2	Not Triggered	The increase in emissions of this air contaminant from this project does not exceed any of these levels, so no AQIA is required.	NA
AQIA - PM-10	Required for project emission increases in excess of 100 lbs/day or 15 ton/yr of PM-10	Not Triggered	The increase in emissions of this air contaminant from this project does not exceed any of these levels, so no AQIA is required.	NA
AQIA - SOx	Required for project emission increases in excess of 25 lbs/hr, 250 lbs/day or 40 ton/yr	Not Triggered	The increase in emissions of this air contaminant from this project does not exceed any of these levels, so no AQIA is required.	NA

	of SOx calculated as SO2			
AQIA - CO	Required for project emission increases in excess of 100 lbs/hr, 550 lbs/day or 1000 ton/yr of CO	Not Triggered	The increase in emissions of this air contaminant from this project does not exceed any of these levels, so no AQIA is required.	NA
20.2(d)(3) - PSD	Applicable to source that may have a significant impact on a class I area	NA	This is not a PSD source and emissions are not expected to impact a class I area	NA
20.2(d)(4) - Public Notice	Requires 30 day public notice if an AQIA was required or if increase in VOC emissions from the project exceed 250 lbs/day or 40 ton/year	NA	AQIA was not required and VOC emission increase from this project does not exceed these levels.	NA

20.2(d)(1) – BACT

The PTE for NOx is **69.45** *lbs/day based on 24 hours of non-emergency operation, which is greater than the 10 lbs/day threshold for BACT. Alternatives that were considered include natural gas and propane engines, Tier 4F engines including SCR and DPF, and installing an add-on DOC to control VOC. Gas-fueled engines are not feasible as backup power for operations that must occur if natural gas lines are damaged in the event of an emergency like an earthquake. An engine of this size would also likely require SCR for NOx emissions control and DOC for VOC emissions control, methods which are not cost effective as described below. The cost-effectiveness evaluation did not take into account the likely short periods of operation of this engine for maintenance. In many maintenance situations, the engine is operated at low loads and for approximately 30 minutes, some of which the SCR catalyst has not reached appropriate temperature for effectively controlling emissions.*

NOx Analysis:

A tier 4 engine is the lowest emitting BACT option. Cost-effectiveness has previously been evaluated under applications APCD2021-APP-006831, and APCD2021-APP-006981, comparing incremental costs of a tier 2 vs. 4 engine, the results of which are summarized below. Note that this analysis is conservative and does not take into account the likely short periods of operation of this engine for maintenance as noted above which would lower the level of emission reductions achieved.

Project	*Engine Size (bhp)*	*Capital Cost Tier 2*	*Capital Cost Tier 4*	*Annual Cost Tier 2*	*Annual Cost Tier 4*	*Annual Incremental Cost*	*Annual Emission Reduction (lb/yr)*	***Cost Effectiveness***
6831	*2346*	*$329,050*	*$603,826*	*$127,026*	*$200,228*	*$73,202*	*1,112*	***$65.82***
6981	*2937*	*$810,000*	*$1,200,000*	*$131,824*	*$195,294*	*$63,471*	*1,322*	***$48.03***

This analysis shows that a Tier 4F engine, the lowest-emitting category of diesel engines, is not cost-effective. The analysis is based on the assumption that the engine allowed to run up to 50 hours per year for maintenance and testing, the maximum NOx emissions were calculated using the emission standards for a tier 2 and tier 4 engine. Capital costs were provided by the permit applicants which were annualized and added to expected maintenance and operating costs to determine an overall annual cost. While the previous analysis was conducted for larger engines, it is still representative for this application too because the equipment is very similar aside from engine size, and NOx emissions and costs are expected to scale roughly linearly with engine size. Additionally, the cost for an add-on SCR to a tier 2 engine is expected to have a similar cost to the incremental cost of a tier 4 engine, so this analysis also demonstrates that use of an SCR would not be cost effective, in addition to being technologically infeasible because it would not function during most periods of testing and maintenance.

A tier 3 certified engine is the next lowest emitting option and therefore satisfies BACT requirements for NOx.

20.2(d)(2) – AQIA

No AQIA limits were triggered by this engine, therefore no AQIA is required for this project.

4.3 Toxic New Source Review – Rule 1200

District Rule 1200 applies to any application that is part of a project which results in an emission increase of toxic air contaminants. The rule limits the increase in acute and chronic health hazard index (HHI) to no more than one from the project and limits the increase in cancer risk from the project to no more than one in one million if the engine is not equipped with Toxics BACT (T-BACT) or no more than ten in one million if the project meets T-BACT requirements. The following table contains an in-depth review of Rule 1200 requirements. If a refined HRA was required, the HRA report is attached.

Table 6a: Rule 1200 Applicable Requirements and Discussion

Question	Answer	Discussion
Does the application result in an increase in toxic emissions?	Yes	The application does result in an increase in toxic emissions of specific trace heavy metals and organics (as shown in emission calculations section). See HRA for detail.
Do any special exemptions apply to this equipment?	No	No exemptions apply to this equipment
Are there any other applications that are part of the project?	No	NA
What type of HRA was used?	Refined	HRA performed by the District's Toxics Group.
Is the Project Equipped with T-BACT?	No	The engine is not equipped with a DPF which is typically considered T-BACT for the equipment type.
Cancer Risk increase (per one million)	<1	Meets standard of one.
Chronic HHI	<1	Meets standard of one.
Acute HHI	<1	Meets standard of one.
Passes Rule 1200?	Yes	Maintenance and testing (non-emergency operation) must be limited by permit conditions to 50 hours per calendar year.

A refined health risk assessment was performed for the proposed engine which evaluated the estimated risk level at the point of maximum impact. Estimated worker risk does not exceed the residential risk. Therefore, only residential risk is evaluated in Table 6.

Based on this analysis, the proposed engine complies with all applicable requirements of District Rule 1200.

4.4 AB3205

Requirements in the California Health and Safety Code in sections 42301.6 through 42301.9 (a.k.a. "AB3205 requirements") specify that prior to issuing an authority to construct for sources located within 1000 feet of a K-12 school, a 30-day public notification process must be conducted.

This project is located within 1000 feet of (Literacy First Charter School liberty Academy), so public notice is required for this section. A copy of the public notice is attached to the file and when the notice is issued, this evaluation and relevant attachments will be made available on the District's website for review. If any comments are received, they will be reviewed, considered and responded to prior to taking action on the permit including revising any requirements as necessary in response to comments received.

4.5 State and Federal Regulations.

This engine is subject to both the State Air Toxic Control Measure for Stationary Engines (Stationary ATCM) and federal EPA issued National Emission Standards for Hazardous Air Pollutants (NESHAPs) and New Source Performance Standards (NSPS).

Applicable requirements of the Stationary ATCM include purchasing an engine certified to EPA standards and meeting specified emission standards of the rule, installing an hour meter, conducting maintenance according to a written plan, restrictions on operating the engine for purposes other than emergency use and limited (50 hours/year) use for maintenance and testing, and maintaining records to substantiate compliance with these requirements. This engine is expected to comply with all these requirements as described in the detailed analysis shown in the table following the discussion of NESHAP/NSPS requirements.

The NESHAP (subpart ZZZZ) requires that all new emergency engines comply with the rule by complying with the NSPS (subpart IIII). Applicable requirements of the NSPS include purchasing a certified engine, operating it as directed by the manufacturer, and maintaining records to substantiate compliance. These requirements closely mirror the ATCM requirements, except that the NSPS is somewhat less stringent in regards to allowable PM emission rate and contains some allowance for other types of operation not allowed by the ATCM. This means the more stringent ATCM requirements apply. A detailed analysis of NESHAP and NSPS requirements is shown in the following table.

Table 7a: State and Federal Requirement Discussion – Stationary ATCM				
Applicable Section	**Requirement**	**Engine Complies/Expected to Comply?**	**Explanation**	**Condition**
Stationary ATCM				
93115.3	There are no exemptions that apply to this engine	NA	This engine is not one of the engines exempted from any applicable requirements	NA
93115.4	Definitions. Permit conditions ensure that the engine only operates in a manner allowed for engines designated as "Emergency Standby"	Yes	Permit conditions require that the engine operate only as an emergency engine	C40239
93115.5	Requires the use of CARB diesel as fuel.	Yes	Permit conditions will require use of CARB diesel fuel (15 ppm Sulfur by weight), which will ensure compliance with this requirement.	C28412
93115.6(a)(1)	Prohibits non-emergency operation of an emergency engine between 7:30 AM and 3:30 PM during school days if within 500 feet of school and during all school sponsored activities if located on school grounds. This rule does not apply if the engine emits no more than 0.01g/bhp-hr of diesel PM.	Yes	Permit conditions specify this requirement.	C28415
93115.6(a)(2)	Allows for engine to be started 30 minutes prior to rotating outage	Yes	Permit conditions specify this requirement.	C28560
93115.6(a)(3)(A)(1)(b)	Requires that all engines used for emergency purposes be certified to at least tier 3 standards (tier 2	Yes	Use of an EPA certified tier 3 engine (tier 2 for engines with a rated power in excess of 750 bhp) with PM emission	NA

	for engines with a rated power in excess of 750 bhp) and have Disel PM emissions less than 0.15 g/bhp-hr		below this level satisfies this requirement.	
93115.6(a)(3)(A)(1)(c)	Restricts maintenance and testing operation to no more than 50 hours per calendar year	Yes	Permit conditions specify this requirement.	C28643
93115.6(c)	Does not allow emergency standby engines to operate as part of "demand response programs" unless additional requirements are met	Yes	Permit conditions specify this requirement.	C40907
93115.10(a)-(b)	Requires that specified information is submitted to the District as part of application package	Yes	The submitted application contained all of the required contact/location information, engine data, and emission information	NA
93115.10(d)	Requires installation of a non-resettable hour meter and for engines with DPFs, a backpressure monitor that alerts the operator when the backpressure limit of the engine is approached	Yes	Permit conditions require the installation and use of a non-resettable hour meter.	C28419
93115.10(f)	Specifies that the owner or operator must keep records and prepare a monthly summary of hours of operation and purpose (emergency, maintenance and testing, emission testing, start-up testing, other, demand response) of each period of operation	Yes	Permit conditions require that these records be kept and the summary updated monthly	C45252
93115.10(f)	Requires records of CARB diesel fuel certification	Yes	Permit conditions require that documentation of the CARB diesel certification for all fuel used be maintained	C43434

93115.10(f)	States that records must be kept on-site for at least 24 months and off-site for an additional 12 months (total 36 months)	Yes	Compliance with this provision is expected and this requirement is specified in permit conditions.	C43432
93115.13(a)	Allows the use of certification data or other emission test data to demonstrate compliance with emission limits	Yes	The manufacturer's engine rating specific emission data plus DPF emission reduction guarantee were used to determine compliance and for emission calculations	NA
93115.13(f)	For engines equipped with DPFs, allows the use of an engine certified to a PM-10 emission level of no more than 0.15 g/bhp-hr and a verified DPF in lieu of source testing (or other alternative means as listed)	Yes	Engine is not equipped with a DPF.	NA

Table 7b: State and Federal Requirement Discussion

Applicable Section	Requirement	Engine Complies/Expected to Comply?	Explanation	Condition
NESHAP ZZZZ				
40 CFR 63.6590(b)-(c)	Requires that new emergency engines comply with the NESHAP by complying with the applicable NSPS	Yes	See NSPS section below.	NA
NSPS IIII				
40 CFR 60.4205	Requires that engines meet emission limits equivalent to tier 3 levels (tier 2 for engines 750 bhp or higher)	Yes	Use of an EPA certified tier 3 engine (tier 2 for engines with a rated power in excess of 750 bhp) satisfies this requirement.	NA
40 CFR 60.4207	Sets maximum fuel sulfur limits for fuel equivalent to CARB diesel requirements	Yes	Permit conditions will require use of CARB diesel fuel (15 ppm Sulfur by	C28412

			weight), which will ensure compliance with this requirement.	
40 CFR 60.4209	Requires installation of a non-resettable hour meter	Yes	Permit conditions require the installation and use of a non-resettable hour meter.	C28419
40 CFR 60.4211(a)	Requires that the engine be operated according to manufacturer's emission related instructions and that no changes are made to emission related settings unless allowed by manufacturer	Yes	Permit conditions specify this requirement.	C43433
40 CFR 60.4211(c)	Requires that the engine be certified under EPA regulations	Yes	Use of an EPA certified tier 3 engine (tier 2 for engines with a rated power in excess of 750 bhp).	NA
40 CFR 60.4211(e)	Restricts operation of emergency engines for non-emergency purposes	Yes	Compliance ensured by permit conditions for ATCM limiting operation for maintenance and testing to no more than 50 hours per calendar year and restricting non-emergency operation for only those uses allowed by the permit (maintenance and testing). ATCM requirements more stringent than NSPS.	C40239, C40907, C28643
40 CFR 60.4214(b)	Requires records of operation to show that engine is operated as an emergency engine	Yes	Compliance is expected and specified in permit conditions.	C45252
40 CFR 60.4214(c)	For engines with DPFs, requires records of corrective actions taken when the high backpressure limit is approached	NA	Engine is not equipped with a DPF.	NA
40 CFR 60.7(f)	Requires that all records be maintained for at least 2 years	Yes	Compliance with this provision is expected and this requirement is specified in permit conditions.	C43432

4.6 Title V.

This is not a Title V facility therefore this requirement does not apply.

5.0 Recommendations

This equipment is expected to comply with all rules and regulations, and therefore it is recommended, pending completion of the AB3205 noticing and comment process, that an authority to construct be issued with the following conditions.

6.0 Recommended Conditions

Standard BEC APCD2020-CON-001647 is recommended with 50 hour/year limit for non-emergency/maintenance and testing use.

Rule 1200 Health Risk Assessment

Facility Name:	Ventasso Energy Storage, LLC
Facility ID:	APCD2024-SITE-04675
Application:	APCD2024-APP-008491
Project Engineer:	Hawzhin Muhamed
Modeler:	Bill Reeve
Toxics Risk Analyst:	Andrew Bernabe
Date Completed by Toxics:	12/18/2024
HRA Tools Used:	Lakes-AERMOD (Version 23132)/HARP (v22118)

The following estimated risks are valid only for the input data provided by the Project Engineer.

Estimated worker risk does not exceed the residential risk. Therefore, only residential risk is presented in the following results.

Estimated Risk Levels:

Maximum Individual Cancer Risk (Resident)	0.37 in one million
Chronic Noncancer Health Hazard Index (Resident)	= 9.96E-05
8-Hour Noncancer Health Hazard Index (Worker)	= NA*
Acute Health Hazard Index (**PMI)	= 9.50E-02

*8-Hour Non-Cancer Health Hazard Index is only applicable when calculating worker risk
**Point of Maximum Impact

The proposed application is for a stationary diesel emergency engine. The ARB Air Toxics Control Measure (ATCM) limits non-emergency operations to 50 hours per year.

Input Data Provided by Project Engineer:

Type of Source: Emergency Diesel IC Engine.
Controls Description: None.

Worst-Case TAC Emissions Increase:

Toxic Air Contaminant	Hourly Emission Rate (lb/hr)	Annual Emission Rate (lb/yr)
DIESEL PARTICULATE	n/a	4.18E+00
ACETALDEHYDE	1.74E-02	8.69E-01
ACROLEIN	7.53E-04	3.76E-02
ARSENIC COMPOUNDS	3.55E-05	1.78E-03
BENZENE	4.14E-03	2.07E-01
BUTADIENE, 1,3-	4.82E-03	2.41E-01
CADMIUM AND COMPOUNDS	3.33E-05	1.67E-03
CHLOROBENZENE	4.44E-06	2.22E-04
CHROMIUM (HEXAVALENT)	2.22E-06	1.11E-04
COPPER AND COMPOUNDS	9.10E-05	4.55E-03
ETHYL BENZENE	2.42E-04	1.21E-02
FORMALDEHYDE	3.83E-02	1.92E+00
HEXANE-N	5.97E-04	2.99E-02
HYDROCHLORIC ACID	4.14E-03	2.07E-01
LEAD & COMPOUNDS	1.84E-04	9.21E-03
MANGANESE AND COMPOUNDS	6.88E-05	3.44E-03
MERCURY AND COMPOUNDS	4.44E-05	2.22E-03
NAPHTHALENE	4.37E-04	2.19E-02
NICKEL AND NICKEL COMPOUNDS	8.66E-05	4.33E-03
POLYCYCLIC AROM. HC (PAH) [Treat as B(a)P for HRA]	8.04E-04	4.02E-02
PROPYLENE	1.04E-02	5.18E-01
SELENIUM AND COMPOUNDS	4.88E-05	2.44E-03
TOLUENE	2.34E-03	1.17E-01
XYLENES	9.41E-04	4.71E-02

Source: Acute TACs – Ventura County, 5/17/01.

Diesel particulate exhaust is a surrogate for all toxic air contaminant annual emissions from diesel-fueled engines when determining the potential cancer risk and noncancer chronic hazard index. Speciated toxic air contaminant hourly emissions are used when determining the potential noncancer acute hazard index.

Process Data:

Operation Parameter	Value
Diesel particulate emission factor (g/hp-hr)	0.0821
Engine horsepower (bhp)	463
Fuel Consumption (gal/hr)	22.2
Annual hours of operation	50

Release Parameters:

Exhaust Flow Rate, cfm:	2246
Exhaust Temperature, °F:	927
Stack Height above ground, ft:	10.42
Stack Diameter, ft:	0.5

Discussion

The HRA was conducted in accordance with EPA and OEHHA guidance and District standard procedures. A point source was modeled with refined air dispersion modeling using EPA's AERMOD model, AERMET (Version 22112) processed LES 2019/2021 sigma theta updated meteorology data, AERMAP terrain processing, and rural dispersion coefficients. Building downwash effects were calculated using the EPA BPIP-Prime model. The receptor grid was sufficiently dense to identify maximum impacts.

These risk results are based on the risk scenario calculations and health data at the time of the review, and should not be scaled with revised emissions rates without consulting with the Toxics Section.

Cancer Risk

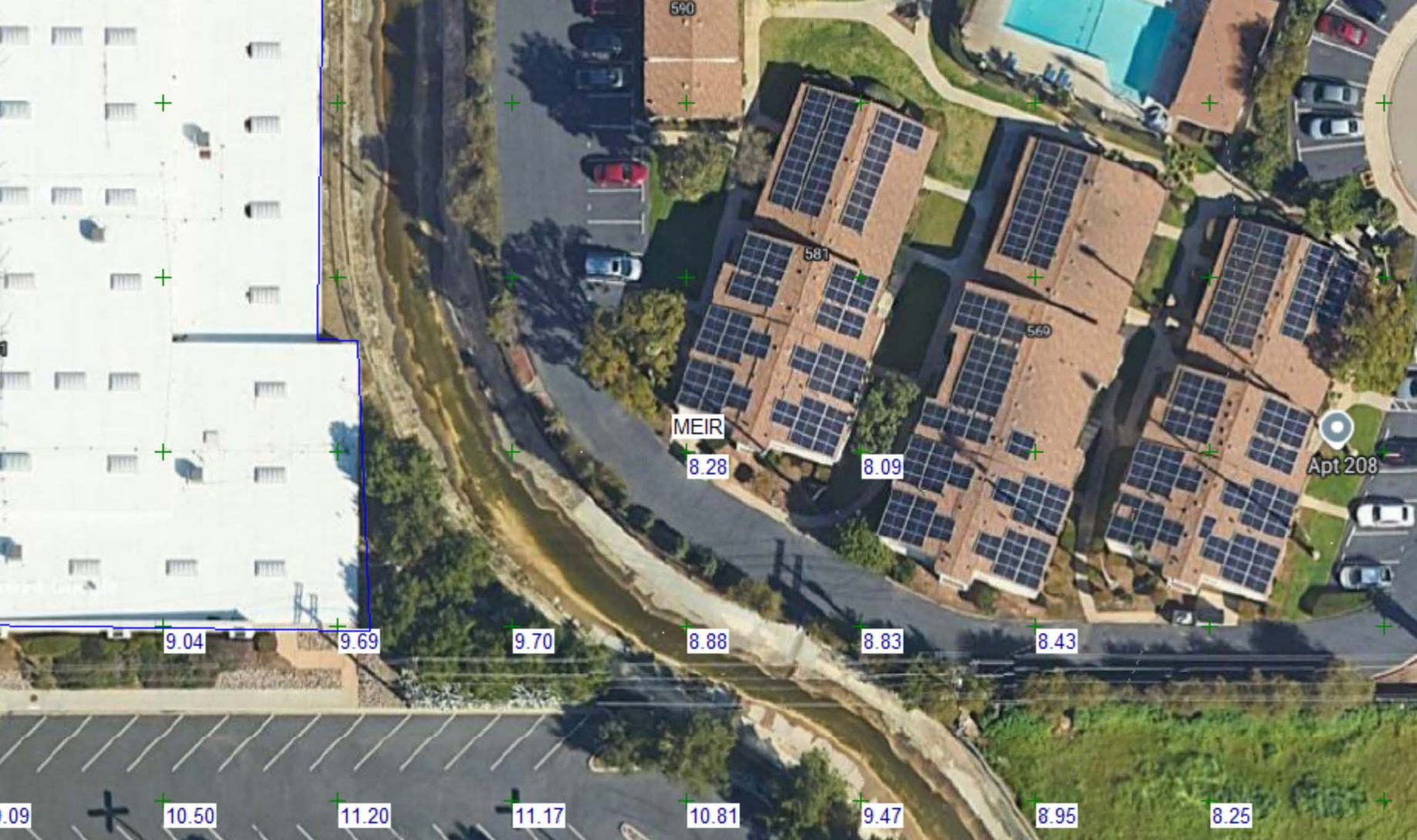
INDEX	GRP1	GRP2	POLID	POLABBRE	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK
1	Engine		9901	DieselExhP	0.000498	3.71E-07	30YrCance	*	3.71E-07

Chronic Risk

INDEX	GRP1	GRP2	POLID	POLABBRE	CONC	SCENARIO	RESP
1	Engine		9901	DieselExhP	0.000498	NonCancei	9.96E-05
							9.96E-05

Acute

INDEX	GRP1	GRP2	POLID	POLABBRE	CONC	SCENARIO	EYE
1	Engine		9901	DieselExhP	0	NonCancei	0.00E+00
2	Engine		75070	Acetaldehy	1.59	NonCancei	3.38E-03
3	Engine		107028	Acrolein	0.0689	NonCancei	2.76E-02
4	Engine		7440382	Arsenic	0.00325	NonCancei	0.00E+00
5	Engine		71432	Benzene	0.378	NonCancei	0.00E+00
6	Engine		106990	1,3-Butadi	0.441	NonCancei	0.00E+00
7	Engine		7440439	Cadmium	0.00305	NonCancei	0.00E+00
8	Engine		108907	Chloroben	0.000406	NonCancei	0.00E+00
9	Engine		18540299	Cr(VI)	0.000203	NonCancei	0.00E+00
10	Engine		7440508	Copper	0.00833	NonCancei	0.00E+00
11	Engine		100414	Ethyl Benz	0.0221	NonCancei	0.00E+00
12	Engine		50000	Formaldeh	3.51	NonCancei	6.38E-02
13	Engine		110543	Hexane	0.0546	NonCancei	0.00E+00
14	Engine		7647010	HCl	0.378	NonCancei	1.80E-04
15	Engine		7439921	Lead	0.0169	NonCancei	0.00E+00
16	Engine		7439965	Manganes	0.0063	NonCancei	0.00E+00
17	Engine		7439976	Mercury	0.00406	NonCancei	0.00E+00
18	Engine		91203	Naphthale	0.04	NonCancei	0.00E+00
19	Engine		7440020	Nickel	0.00792	NonCancei	0.00E+00
20	Engine		1151	PAHs-w/o	0.0735	NonCancei	0.00E+00
21	Engine		115071	Propylene	0.949	NonCancei	0.00E+00
22	Engine		7782492	Selenium	0.00447	NonCancei	0.00E+00
23	Engine		108883	Toluene	0.214	NonCancei	4.28E-05
24	Engine		7664417	NH3	0	NonCancei	0.00E+00
25	Engine		1330207	Xylenes	0.0861	NonCancei	3.91E-06
							9.50E-02


590
581
569
MEIR
8.28
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11.20
11.17
10.81
9.47
8.95
8.25


143.35
337.71
511.50
PMI
726.22
311.70
709.25
714.70
489.47
518.81
424.94
Bath Fitter

FACILITY NAME: Ventasso Energy Storage, LLC

Fuel Consumption (gal/hr):	22.20
Diesel Particulate Emission Factor (g/hp-hr):	0.08206
Brake Horsepower (hp):	463
Annual Hours of Operation (hrs):	50
FACILITY ID:	APCD2024-SITE-04675
APPLICATION NO.:	APCD2024-APP-008491
ENGINEER:	**Hawzhin Muhamed**

RISK ANALYST ONLY

DISPERSION MODELING DATA

Annual Receptor Type:	Resident
ANNUAL DISPERSION FACTOR (µg/m3)/(g/s):	**8.3**
Distance (m):	
Hourly Receptor Type:	PMI
HOURLY DISPERSION FACTOR (µg/m3)/(g/s):	**726.2**
Distance (m):	

CHEMICAL NAME	Emission Factor lb/1000 gal	Acute Emission Rate lb/hr	Annual Emission Rate lb/yr	Acute Emissions Rate g/s	Annual Emission Rate g/s	Hourly GLC µg/m³	Annual GLC µg/m³
DIESEL PARTICULATE			4.18E+00		6.02E-05		4.98E-04
ACETALDEHYDE	7.83E-01	1.74E-02	8.69E-01	2.19E-03		1.59E+00	
ACROLEIN*	3.39E-02	7.53E-04	3.76E-02	9.48E-05		6.89E-02	
ARSENIC COMPOUNDS	1.60E-03	3.55E-05	1.78E-03	4.48E-06		3.25E-03	
BENZENE	1.86E-01	4.14E-03	2.07E-01	5.21E-04		3.78E-01	
BUTADIENE, 1,3-	2.17E-01	4.82E-03	2.41E-01	6.07E-04		0.44081	
CADMIUM AND COMPOUNDS	1.50E-03	3.33E-05	1.67E-03	4.20E-06		3.05E-03	
CHLOROBENZENE	2.00E-04	4.44E-06	2.22E-04	5.59E-07		4.06E-04	
CHROMIUM (HEXAVALENT)	1.00E-04	2.22E-06	1.11E-04	2.80E-07		2.03E-04	
COPPER AND COMPOUNDS	4.10E-03	9.10E-05	4.55E-03	1.15E-05		8.33E-03	
ETHYL BENZENE	1.09E-02	2.42E-04	1.21E-02	3.05E-05		2.21E-02	
FORMALDEHYDE	1.73E+00	3.83E-02	1.92E+00	4.83E-03		3.51E+00	
HEXANE-N	2.69E-02	5.97E-04	2.99E-02	7.52E-05		5.46E-02	
HYDROCHLORIC ACID	1.86E-01	4.14E-03	2.07E-01	5.21E-04		3.78E-01	
LEAD & COMPOUNDS	8.30E-03	1.84E-04	9.21E-03	2.32E-05		1.69E-02	
MANGANESE AND COMPOUNDS	3.10E-03	6.88E-05	3.44E-03	8.67E-06		6.30E-03	
MERCURY AND COMPOUNDS (INORGANIC)	2.00E-03	4.44E-05	2.22E-03	5.59E-06		4.06E-03	
NAPHTHALENE	1.97E-02	4.37E-04	2.19E-02	5.51E-05		4.00E-02	
NICKEL AND NICKEL COMPOUNDS	3.90E-03	8.66E-05	4.33E-03	1.09E-05		7.92E-03	
POLYCYCLIC AROM. HC (PAH) [Treat as B(a)P for	3.62E-02	8.04E-04	4.02E-02	1.01E-04		7.35E-02	
PROPYLENE	4.67E-01	1.04E-02	5.18E-01	1.31E-03		9.49E-01	
SELENIUM AND COMPOUNDS	2.20E-03	4.88E-05	2.44E-03	6.15E-06		4.47E-03	
TOLUENE	1.05E-01	2.34E-03	1.17E-01	2.95E-04		2.14E-01	
AMMONIA (only if SCR)	N/A						
XYLENES	4.24E-02	9.41E-04	4.71E-02	1.19E-04		8.61E-02	

Facility Name:	Ventasso Energy Storage, LLC		
Application Number:	APCD2024-APP-008491		
Site ID Number:	APCD2024-SITE-04675		
Equipment Address:	203 North Johson Avenue		
	El Cajon CA 92020		
Contact Name:	Patrick Tam	Evelyn Mokin	
Contact Title:	Director		
Contact Affiliation:	Ventasso Energy Storage, LLC		
Contact Number:	714- 893-7900	619-209-0284	
Contact E-Mail:	tam@proehs.com	evelyn.mokin@rwe.com	
Project Engineer:	Hawzhin Muhamed		
Make:	John Deere		
Model:	6090HFG86A		
S/N:			
Fuel Type:	Diesel		
BHP Rating:	463		
Model Year:	2023		
Tier Level:	3		
Engine Family Number:	PJDXL09.0114		
Device Driven:	300 kW		
NOx, g/BHP-hr:	2.83	3.80	g/kW-hr
CO, g/BHP-hr:	0.67	0.90	g/kW-hr
NMHC, g/BHP-hr:	0.03	0.05	g/kW-hr
PM10, g/BHP-hr:	0.08	0.11	g/kW-hr
NH3 Slip from SCR (yes/no)	no	0	ppm (default 10 ppm i
Fuel Usage, gal/hr:	22.2		
Operating Schedule, hrs/day:	24		
Operating Schedule, hrs/yr:	50		
Exhaust Flow Rate, cfm:	2246		
Exhaust Temperature, °F:	927		
Stack Height above ground, ft:	10.42		
Stack Diameter, ft:	0.5		
Nearest School, ft:	450		
Residential Receptor, m:	147.83	485	ft
Occupational Receptor, m:	47.24	155	ft
Acute Receptor, m:	47.24	155	ft
Vertical Exhaust? (yes/no):	yes		
Flapper Valve? (flapper/raincap):	Flapper		
Plot Plan? (yes/no):	yes		
Flow Obstructions:	no		

203 North Johson Avenue, El Cajon CA 92020

NOx, g/BHP-hr: + NMHC, g/BHP-hr: 2.87

ENGINE INFORMATION

Model:	John Deere, 6090HFG86A	Bore:	118.4mm (4.66 in.)
Nameplate BHP @ 1800 RPM:	463	Stroke:	136mm (5.35 in.)
Type:	4-Cycle, 6 Cylinder, Inline	Displacement:	9.0 L (548 cu. in.)
Aspiration:	Turbocharged, Charge Air-Cooled		
Compression Ratio	16.0:1	EPA Family:	PJDXL09.0114
		EPA Certificate:	PJDXL09.0114-011

f applicable)

Table 1

PERFORMANCE DATA:	1/4 Standby	1/2 Standby	3/4 Standby	Full Standby
Engine bkW @ Stated Load	86	173	259	345
Fuel Consumption (g/kWh)	247	240	215	205
Exhaust Gas Flow (m^3/min)				64
Exhaust Temperature (°C)				497

EXHAUST EMISSION DATA:	Table 2 EPA D2 Cycle 5-mode weighted
HC (Total Unburned Hydrocarbons)	0.05
NOx (Oxides of Nitrogen as NO2)	3.80
CO (Carbon Monoxide)	0.9
PM (Particulate Matter)	0.11

Values are in g/kWh unless otherwise not

Literacy First Charter School liberty Academy 450 ft

ted

San Diego Air Pollution Control District
Supplemental Application Information
Rule 1200 Toxics Evaluation

(ALL REQUESTED INFORMATION IS IMPORTANT - PLEASE FILL BLUE CELLS)

Facility Name: Ventasso Energy Storage, LLC
Equipment Location: 203 North Johson Avenue El Cajon CA 92020

Project Description: Emergency Diesel Engine
Control Equipment: None
Operating Schedule: Hours per Day: 24 Weeks per Year: 50
Days per Week: 7 Days per Year: 50

RELEASE POINT DATA

How are the emissions from this project released into the outdoor air? (Check all that apply)

Point Source	Non-Point Source		
☑ Exhaust Stack	☐ Passive Ventilation	☐ Released through windows and/or roll-up doors	☐ Fugitive Emissions

Point Source

Parameter	Point Source #1	Point Source #2	Point Source #3
Height of release above ground (ft)	10.4		
Stack Diameter (or length x width) (ft)	0.50		
Exhaust Gas Temperature (°F)[1]	927		
Exhaust Gas Flow (ACFM)	2246		
Direction of Flow[2]	vertical		
Flow Obstruction[3]	no		
Distance to Nearest Property Line (+/- 10ft)	155.00		

[1] Use "70 °F" or "Ambient" if unknown
[2] if "other" describe:
[3] if "other" describe:

AERIAL MAP AND FACILITY PLOT PLAN must be attached and labeled with **Release Point(s) and Building(s)**
(includes facility and neighboring buildings within 5x the release height of a point source(s)).

Parameter	Building A	Building B	Building C
Point Source(s)			
Point Source Location			
Building Length (ft) (optional)			
Building Width (ft) (optional)			
Building Height above ground (ft)			

San Diego APCD Use Only

Additional Rule 1200 Submittal Information

Submittal Date:		Site ID:	APCD2024-SITE-04675
Project Engineer:	Hawzhin Muhamed	Appl. Number(s):	APCD2024-APP-008491
Fees Collected:		PTO No. (if existing):	

*** MODELOPTs: RegDFAULT CONC ELEV URBAN SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
LOCATION STCK1 POINT 502742.150 3628799.090 128.860
** Source Parameters **
SRCPARAM STCK1 1.0 3.170 770.372 58.1089683165449 0.1524

** Model Options Selected:
* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses URBAN Dispersion Algorithm for the SBL for 1 Source(s),
for Total of 1 Urban Area(s):
Urban Population = 102991.0 ; Urban Roughness Length = 1.000 m
* Urban Roughness Length of 1.0 Meter Used.
* TEMP_Sub - Meteorological data includes TEMP substitutions
* NOTURBST - Meteorological data Ignore turbulence - stable hours
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: OTHER

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates PERIOD Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 17931 Receptor(s)

```
               with:      1 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with a total of     0 line(s)
                and:      0 SWPOINT source(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  22112

 **Output Options Selected:
          Model Outputs Tables of PERIOD Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   141.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                              ;  Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      5.5 MB of RAM.

 **Input Runstream File:          aermod.inp
 **Output Print File:             aermod.out

 **Detailed Error/Message File:   8491_Ventasso.err
 **File for Summary of Results:   8491_Ventasso.sum
 *** AERMOD - VERSION 23132  ***   *** D:\Modeling Projects\8491_Ventasso\8491_Ventasso.isc                ***        12/10/24
 *** AERMET - VERSION  22112 ***   ***                                                                    ***       12:22:06
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  SigA Data

                    *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                  (1=YES; 0=NO)

          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

    NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


              *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                  (METERS/SEC)

                         1.54,   3.09,   5.14,   8.23,  10.80,
```



```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  SigA Data

                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   C:\Users\breeve\OneDrive - County of San Diego\Meteorology Documents\AERMET File   Met Version:  22112
  Profile file:   C:\Users\breeve\OneDrive - County of San Diego\Meteorology Documents\AERMET File
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    53143                  Upper air station no.:     3190
                Name: UNKNOWN                                   Name: UNKNOWN
                Year:   2019                                    Year:   2019

First 24 hours of scalar data
```

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
19	01	01	1	01	-1.2	0.036	-9.000	-9.000	-999.	17.	3.4	0.03	1.10	1.00	1.07	109.	10.0	279.8	10.0
19	01	01	1	02	-0.4	0.018	-9.000	-9.000	-999.	6.	1.5	0.03	1.10	1.00	0.54	221.	10.0	278.4	10.0
19	01	01	1	03	-0.4	0.020	-9.000	-9.000	-999.	7.	1.7	0.03	1.10	1.00	0.58	120.	10.0	277.3	10.0
19	01	01	1	04	-0.9	0.029	-9.000	-9.000	-999.	12.	2.3	0.03	1.10	1.00	0.85	74.	10.0	276.5	10.0
19	01	01	1	05	-0.6	0.024	-9.000	-9.000	-999.	9.	2.0	0.03	1.10	1.00	0.72	108.	10.0	276.0	10.0
19	01	01	1	06	-1.1	0.032	-9.000	-9.000	-999.	14.	2.6	0.03	1.10	1.00	0.94	44.	10.0	275.4	10.0
19	01	01	1	07	-0.7	0.024	-9.000	-9.000	-999.	9.	2.0	0.03	1.10	1.00	0.72	288.	10.0	275.5	10.0
19	01	01	1	08	-0.5	0.024	-9.000	-9.000	-999.	9.	2.5	0.03	1.10	0.49	0.72	231.	10.0	276.0	10.0
19	01	01	1	09	33.8	-9.000	-9.000	-9.000	154.	-999.	-99999.0	0.03	1.10	0.30	0.00	0.	10.0	279.9	10.0
19	01	01	1	10	85.0	0.120	0.857	0.005	265.	100.	-1.8	0.03	1.10	0.23	1.16	332.	10.0	283.3	10.0
19	01	01	1	11	119.9	0.189	1.381	0.005	785.	197.	-5.0	0.03	1.10	0.21	2.10	320.	10.0	285.3	10.0
19	01	01	1	12	136.4	0.238	1.521	0.005	922.	278.	-8.8	0.03	1.10	0.20	2.82	18.	10.0	286.5	10.0
19	01	01	1	13	133.6	0.307	1.572	0.005	1039.	409.	-19.4	0.03	1.10	0.20	3.93	12.	10.0	286.8	10.0
19	01	01	1	14	112.1	0.313	1.524	0.005	1127.	419.	-24.3	0.03	1.10	0.21	4.07	26.	10.0	286.8	10.0
19	01	01	1	15	72.7	0.324	1.339	0.005	1180.	443.	-41.9	0.03	1.10	0.24	4.38	62.	10.0	286.8	10.0
19	01	01	1	16	18.5	0.316	0.851	0.005	1191.	426.	-152.4	0.03	1.10	0.33	4.51	44.	10.0	285.8	10.0
19	01	01	1	17	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	1.10	0.61	4.02	71.	10.0	284.5	10.0
19	01	01	1	18	-21.6	0.194	-9.000	-9.000	-999.	205.	30.1	0.03	1.10	1.00	3.67	76.	10.0	283.2	10.0
19	01	01	1	19	-8.3	0.088	-9.000	-9.000	-999.	69.	7.2	0.03	1.10	1.00	2.59	53.	10.0	282.6	10.0
19	01	01	1	20	-4.6	0.065	-9.000	-9.000	-999.	40.	5.3	0.03	1.10	1.00	1.92	93.	10.0	280.8	10.0
19	01	01	1	21	-2.7	0.050	-9.000	-9.000	-999.	27.	4.1	0.03	1.10	1.00	1.48	85.	10.0	278.6	10.0
19	01	01	1	22	-1.2	0.033	-9.000	-9.000	-999.	14.	2.7	0.03	1.10	1.00	0.98	82.	10.0	277.5	10.0
19	01	01	1	23	-4.0	0.061	-9.000	-9.000	-999.	36.	4.9	0.03	1.10	1.00	1.79	85.	10.0	276.5	10.0
19	01	01	1	24	-5.3	0.070	-9.000	-9.000	-999.	44.	5.7	0.03	1.10	1.00	2.06	100.	10.0	276.4	10.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
19	01	01	01	10.0	1	109.	1.07	279.9	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN SigA Data

*** THE SUMMARY OF MAXIMUM PERIOD (26304 HRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	13.75514 AT (502806.19, 3628829.69, 128.46, 128.46, 0.00)	DC		
	2ND HIGHEST VALUE IS	13.65040 AT (502796.74, 3628829.73, 128.44, 128.44, 0.00)	DC		
	3RD HIGHEST VALUE IS	13.43521 AT (502815.65, 3628829.65, 128.48, 128.48, 0.00)	DC		
	4TH HIGHEST VALUE IS	12.98880 AT (502808.50, 3628836.50, 128.30, 128.30, 0.00)	DC		
	5TH HIGHEST VALUE IS	12.97428 AT (502787.28, 3628829.77, 128.46, 128.46, 0.00)	DC		
	6TH HIGHEST VALUE IS	12.85776 AT (502825.10, 3628829.61, 128.49, 128.49, 0.00)	DC		
	7TH HIGHEST VALUE IS	12.53270 AT (502793.50, 3628836.50, 128.22, 128.22, 0.00)	DC		
	8TH HIGHEST VALUE IS	12.52426 AT (502823.50, 3628836.50, 128.40, 128.40, 0.00)	DC		
	9TH HIGHEST VALUE IS	12.16578 AT (502834.56, 3628829.56, 128.52, 128.52, 0.00)	DC		
	10TH HIGHEST VALUE IS	11.62606 AT (502838.50, 3628836.50, 128.53, 128.53, 0.00)	DC		

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV URBAN SigA Data

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	726.22136	ON 20121603: AT (502721.34, 3628762.86, 129.11, 129.11, 0.00)	DC		

```
 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION 23132  ***   *** D:\Modeling Projects\8491_Ventasso\8491_Ventasso.isc                 ***       12/10/24
 *** AERMET - VERSION  22112 ***   ***                                                                    ***      12:22:06
                                                                                                                  PAGE   6

 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  SigA Data

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of           0 Fatal Error Message(s)
 A Total of          11 Warning Message(s)
 A Total of       14954 Informational Message(s)

 A Total of       26304 Hours Were Processed

 A Total of        4177 Calm Hours Identified

 A Total of        1067 Missing Hours Identified (  4.06 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 SO W320      38        PPARM: Input Parameter May Be Out-of-Range for Parameter            VS
 MX W403     102       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
 MX W403       1       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
 MX W403       2       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
 MX W403       3       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
 MX W403       4       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
 MX W403       5       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
 MX W403       6       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
```

```
MX W403       7       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
MX W403       8       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
MX W403       9       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
```

HARP2 - HRACalc (dated 22118) 12/18/2024 2:25:43 PM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: All
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 30

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 14
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: False
Beef: False

Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: ON

****
SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Warm

****
TIER 2 SETTINGS
Tier2 not used.

****

Calculating cancer risk
Cancer risk saved to: C:\Users\abernabe\Desktop\8491 Ventasso\Risk\MEIRCancerRisk.csv
Calculating chronic risk
Chronic risk saved to: C:\Users\abernabe\Desktop\8491 Ventasso\Risk\MEIRNCChronicRisk.csv
Calculating acute risk
Acute risk saved to: C:\Users\abernabe\Desktop\8491 Ventasso\Risk\MEIRNCAcuteRisk.csv
HRA ran successfully

Figure 2: Facility Plot Plan