NORTHERN NEVADA
Public Health
Air Quality

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STATIONARY SOURCE TECHNICAL SUPPORT DOCUMENT
(STATEMENT of BASIS)

APPLICATION FOR:
Permit to Operate: Source Reclassification to Synthetic Minor

SUBMITTED BY:
University of Nevada, Reno – Main Campus

PERMIT NUMBER:
AAIR16-0943

LOCATION:
1664 N. Virginia Street, M/S0328, Reno, NV 89557

SIC code: 8221, "Colleges, Universities, and Professional Schools"
NAICS code: 611310, "Colleges, Universities, And Professional Schools"

1/14/2025

EXECUTIVE SUMMARY

This TSD establishes the methodology related to the terms and conditions of its Synthetic Minor Source Permit to Construct (PTC)/Permit to Operate (PTO) issued pursuant to DBOH Regulation 030. The TSD shall not serve as the operating authority.

University of Nevada, Reno – Main Campus is a university, operating at 1664 N. Virginia Street, M/S0328 in Washoe County. The source operates gasoline dispensing equipment, dual fuel boilers, natural gas fired equipment, emergency engines, laboratory equipment, and surface coating equipment. As a university, the source is classified under SIC code 8221, "Colleges, Universities, and Professional Schools" and NAICS code 611310, "Colleges, Universities, and Professional Schools".

University of Nevada, Reno – Main Campus will consist of one (1) 500-gallon underground gasoline storage tank and associated equipment, one (1) 500-gallon aboveground gasoline storage tank and associated equipment, three (3) dual fuel boilers, fifty-nine (59) natural gas fired boilers, nine (9) natural gas fired humidifiers, fifty-seven (57) emergency engines, various laboratory equipment, and one (1) surface coating spray booth.

The gasoline dispensing facilities are subject to the federal requirements of 40 CFR Part 63, Subpart CCCCCC. Three (3) of the boilers are subject to the federal requirements of 40 CFR Part 60, Subpart Dc. Thirty (30) emergency engines are subject to 40 CFR Part 63, Subpart ZZZZ and twenty-seven (27) emergency engines are subject to both 40 CFR Part 63, Subpart ZZZZ and 40 CFR Part 60, Subpart IIII.

University of Nevada, Reno – Main Campus will be classified as a Synthetic Minor Source of NOx and CO. It is not a categorical source as defined in DBOH Regulations 030 nor belongs to a stationary source category, which, as of August 7, 1980, is being regulated under Section 111 or Section 112 of the Clean Air Act. Therefore, fugitive emissions are not included in source status determination.

Permitting thresholds and the facility-wide potential-to-emit (PTE) summary is provided below in Table 1. In addition, the permit will be issued, based on the PTO permit application that was submitted on June 20, 2024.

Table 1: Permitting Thresholds (tons per year)

Pollutant	Major Source Threshold (PSD)	Major Source Threshold (Part 70)	Minor Source Threshold	Source PTE (uncontrolled)	Allowable Emissions[1]
PM10	250	100	5	11.36	20
PM2.5	250	100	5	11.26	20
SOx	250	100	5	0.75	10
NOx	250	100	5	193.05	79
CO		100	5	132.71	75
VOC		100	5	19.54	25
total HAP		10/25[2]	N/A	3.82	3.82
Pb			0.3	1.69E-04	1.69E-04
H2S			5	0.00	0.00
TRS			5	0.00	0.00

[1] This reflects the Facility-Wide Emissions Cap proposed by the facility. Facility will have HAP Allowable Emissions of > 1 tpy.
[2] 10 for one individual HAP, 25 for total combined HAPs

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ACRONYMS AND ABBREVIATIONS

(These terms may be seen in the technical support document)

AQMD	Northern Nevada Public Health Air Quality Management Division
bhp	brake horsepower
CARB	California Air Resources Board
CE	control efficiency
CF	control factor
CFR	Code of Federal Regulations
CO	carbon monoxide
DBOH Regulations	Washoe County District Board of Health Regulations Governing Air Quality Management
DOM	date of manufacture
EF	emission factor
EI	emission increase
EPA	U.S. Environmental Protection Agency
EU	emission unit
g/kW-hr	grams per kilowatt-hour
gr/dscf	grains per dry standard cubic foot
GDO	gasoline dispensing operation
gpm	gallons per minute
HAP	hazardous air pollutant
H_2S	hydrogen sulfide
HHV	high heating value
HVLP	high volume, low pressure
kW	kilowatt
mg/dscm	milligrams per dry standard cubic meter
MMBtu	British thermal units (in millions)
NAICS	North American Industry Classification System
NO_x	nitrogen oxide
Pb	lead
$PM_{2.5}$	particulate matter less than 2.5 microns in aerodynamic diameter
PM_{10}	particulate matter less than 10 microns in aerodynamic diameter
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTE	potential to emit
RACT	reasonably available control technology
RICE	reciprocating internal combustion engine
SCC	Source Classification Codes
scf	standard cubic feet
SIC	Standard Industrial Classification
SO_2	sulfur dioxide
TSD	Technical Support Document
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
VAEL	Voluntarily Accepted Emission Limit
VMT	vehicle miles traveled
VOC	volatile organic compound

I. SOURCE INFORMATION

A. General

Preparer:	Candace Brown
Action Received:	June 20, 2024
TSD Date:	1/14/2025
Company:	University of Nevada, Reno – Main Campus
Responsible Official:	Cheston Carpenter, EH&S Executive Director
Consultant:	N/A
Permit Number:	AAIR16-0943
Facility Name:	University of Nevada, Reno – Main Campus
Facility Address:	1664 N. Virginia Street, M/S0328, Reno, NV 89557

B. Facility Description

University of Nevada, Reno – Main Campus is a university located in Hydrographic Area 87. This source category falls under Standard Industry Classification (SIC) code 8221, "Colleges, Universities, and Professional Schools" and North American Industrial Classification System (NAICS) 611310, "Colleges, Universities, and Professional Schools". This is a Synthetic Minor of regulated air pollutants. This source consists of one (1) 500-gallon underground gasoline storage tank and associated equipment, one (1) 500-gallon aboveground gasoline storage tank and associated equipment, three (3) dual fuel boilers, fifty-nine (59) natural gas fired boilers, nine (9) natural gas fired humidifiers, fifty-seven (57) emergency engines, various laboratory equipment, and one (1) surface coating spray booth. The source has taken a facility-wide voluntarily accepted emission limit through operational limitations to avoid becoming a Title V source. This source is subject to the federal requirements of 40 CFR 63 Subpart CCCCCC, 40 CFR 60 Subpart Dc, 40 CFR 63 Subpart ZZZZ, and 40 CFR 60 Subpart IIII.

C. Permitting History

1. The last permit was issued on January 1, 2025.
2. An application was received on June 20, 2024.
3. The draft permit and TSD were sent for peer review on February 4, 2025, and final supervisor review on March 10, 2025.
4. This permitting action is to incorporate the gasoline dispensing equipment, fuel burning equipment, emergency engines, laboratory equipment, and surface coating equipment associated with ancillary facilities that are adjacent to the main facility into one Permit to Operate. Historically, this equipment has been permitted separately. This action reclassifies this source as a Synthetic Minor Source of regulated air pollutants and establishes a federally enforceable facility-wide emissions limit of 20 tpy PM10, 20 tpy PM2.5, 10 tpy SO_2, 79 tpy NO_x, 75 tpy CO, 25 tpy VOC, and 3.82 tpy combined HAP's through a voluntarily accepted emission limit. Permit to Operate AAIR16-0947, AAIR16-0948, AAIR16-0945, AAIR16-0946, and AAIR16-0944 will be merged with this permit and will be closed upon issuance of the Permit to Operate.

D. Permitting Action

This source is an existing source defined in DBOH Regulation 030 that is submitting this application to reclassify the source and undergo an initial DBOH 030 permit evaluation. This permitting action is to incorporate the gasoline dispensing equipment, fuel burning equipment, emergency engines, laboratory equipment, and surface coating equipment associated with ancillary facilities that are adjacent to the main facility into one Permit to Operate.

University of Nevada, Reno – Main Campus will be reclassified as a Synthetic Minor Source of regulated air pollutants. The source has taken a VAEL of 20 tpy PM10, 20 tpy PM2.5, 10 tpy SO_2, 79 tpy NO_x, 75 tpy CO, 25 tpy VOC to avoid major source permitting thresholds.

The source is subject to the federal requirements of 40 CFR 63 Subpart CCCCCC, 40 CFR 60 Subpart Dc, 40 CFR 63 Subpart ZZZZ, and 40 CFR 60 Subpart IIII.

A list of all emissions units can be found in Attachment A.

E. Operating Scenario

EU's A.001-A.002: There will not be specific limits specified in the permit as the facility has elected to accept a facility-wide emissions cap of 25 tpy of VOC.

EU's B.001-B.002: There will not be specific limits specified in the permit as the facility has elected to accept a facility-wide emissions cap of 25 tpy of VOC.

EU C01.001: C01.001 shall not exceed 15 MMBtu in any one-hour period, combusting a maximum of 14,706 standard cubic feet of natural gas per one-hour period.

EU C02.001: C02.001 shall not exceed 15 MMBtu in any one-hour period, combusting a maximum of 109 gallons of diesel fuel per one-hour period.

EU D01.001-D01.002: D01.001 through D01.002, each, shall not exceed 30 MMBtu in any one-hour period, combusting a maximum of 29,412 standard cubic feet of natural gas per one-hour period.

EU D02.001-D02.002: D02.001 through D02.002, each, shall not exceed 30 MMBtu in any one-hour period, combusting a maximum of 218 gallons of diesel fuel per one-hour period.

EU's E.001-E.044: The ancillary fuel burning equipment has a maximum cumulative permitted heat input rating of 163.76 MMBtu/hr. These units will be permitted to combust natural gas only.

EU's F.001-F.002: Each emergency engine fires diesel fuel. The engines are not subject to operational limitations during emergencies; however, non-emergency operation shall be limited to 100 hours per year.

EU's G.001-G.013: Each emergency engine fires diesel fuel. The engines are not subject to operational limitations during emergencies; however, non-emergency operation shall be limited to 100 hours per year.

System H: There will not be specific limits specified in the permit as the facility has elected to accept a facility-wide emissions cap of 25 tpy of VOC.

IA.001-IA.023: The ancillary fuel burning equipment classified as insignificant activities has a maximum cumulative permitted heat input rating of 15.47 MMBut/hr. There will not be specified operational requirements listed in the permit; however, monitoring and recordkeeping will be required to demonstrate compliance with the facility-wide emissions cap.

IA.024-IA.064: Each emergency engine fire diesel fuel. The engines are not subject to operational limitations during emergencies; however, non-emergency operation shall be limited to 100 hours per year. There will not be specified operational requirements listed in the permit; however, monitoring and recordkeeping will be required to demonstrate compliance with the facility-wide emissions cap.

IA.065: The emergency engine fires gasoline fuel. The engine is not subject to operational limitations during emergencies; however, non-emergency operation shall be limited to 100 hours per year. There will not be specified operational requirements listed in the permit; however, monitoring and recordkeeping will be required to demonstrate compliance with the facility-wide emissions cap.

IA.066-IA.068: Each emergency engine fires natural gas fuel. The engines are not subject to operational limitations during emergencies; however, non-emergency operation shall be limited to 100 hours per year. There will not be specified operational requirements listed in the permit; however, monitoring and recordkeeping will be required to demonstrate compliance with the facility-wide emissions cap.

IA.069: There will not be specified operational requirements listed in the permit; however, monitoring and recordkeeping will be required to demonstrate compliance with the facility-wide emissions cap.

II. EMISSIONS INFORMATION

A. Total Source Potential to Emit and Source Applicability

DBOH Regulation 030 permitting applicability is determined by calculating the emissions for all proposed emission units using 8,760 hours of operation (except for emergency engines, F.001-F.002 and G.001- G.013, IA.025-IA.066 which use 500 hours) and emission factors provided by the manufacturer, source test results, EPA AP-42, etc.

Total source emissions are demonstrated in Table 2 below. A detailed summary of the emissions calculations associated with each system can be found in Attachments B – L.

Emissions units and activities which are classified as insignificant or exempt per DBOH 030.020 B, will be subject to monitoring and recordkeeping requirements to demonstrate compliance with the facility-wide VAEL, because these emissions units are considered in the determination of a major source (DBOH 030.020 B.2.d).

IA.001 – IA.024 were classified as exempt as they are considered, *"air conditioning equipment or fuel-burning equipment used for human comfort and/or safety of properties that do not have applicable requirements under Title VI of the Clean Air Act and individually has a rating that is less than 1,000,000 Btu's per hour"*. (DBOH 030.020.B.2.d.(4))

IA.025 – IA.066 were classified as exempt as they are either, *"emergency compression ignition engine that is stationary and has an output rating that is less than six hundred (600) horsepower" or "emergency spark ignition engine that is stationary and has an output rating that is less than one thousand eight hundred (1,800) horsepower"*. (DBOH 030.020.B.2.d.(1) and (2))

IA.067 was classified as exempt as the spray booth is only used for maintenance and upkeep activities that *"are not included as part of a manufacturing process, [and] are not related to the source's primary business activity"*. (DBOH 030.020.B.2.d.(9))

Table 2: Source Applicability Emissions (tons per year)

Pollutant	Major Source Threshold (PSD)	Major Source Threshold (Part 70)	Minor Source Threshold	Source PTE (uncontrolled)	Allowable Emissions[3]
PM10	250	100	5	11.36	20
PM2.5	250	100	5	11.26	20
SOx	250	100	5	0.75	10
NOx	250	100	5	193.05	79
CO		100	5	132.71	75
VOC		100	5	19.54	25
total HAP		10/25[4]	N/A	3.82	3.82
Pb			0.3	1.69E-04	0.00
H2S			5	0.00	0.00
TRS			5	0.00	0.00

DBOH Regulation 030.200 states a source with a PTE for any regulated pollutant equal to or greater than the threshold of 5 tons per year shown in Table 2, will be applicable to the permitting requirements of 030.

This source exceeds the applicability limit for PM10, PM2.5, NO_x, CO, and VOC and is required to obtain an air quality permit as shown in Table 2. HAP is a regulated air pollutant. The AQMD

[3] This reflects the Facility-Wide Emissions Cap proposed by the facility. Facility will have HAP Allowable Emissions of > 1 tpy, but no specific HAP emissions limit.
[4] 10 for one individual HAP, 25 for total combined HAPs

has determined that the calculated or estimated combined HAP emissions from this source exceed one (1) ton per year. Any NESHAP (or MACT) requirements applicable to the source will be included in the permit.

B. Emission Units and PTE

The source PTE sorted by system is shown below in Table 3.

Table 3: Emissions Unit PTE by System (tons/year)

System	PM10	PM2.5	SOx	NOx	CO	VOC	Pb	total HAP
A	–	–	–	–	–	0.20	–	0.01
B	–	–	–	–	–	0.66	–	0.03
C01	0.46	0.46	0.04	6.07	5.10	0.33	–	0.11
C02	0.03	0.01	0.01	0.55	0.14	0.01	3.38E-05	0.001
D01	1.85	1.85	0.15	24.29	20.41	1.34	–	0.46
D02	0.11	0.03	0.02	2.18	0.55	0.02	1.35E-04	0.01
E	5.34	5.34	0.42	70.32	59.07	3.87	–	1.29
F	0.20	0.20	0.004	6.47	2.25	0.24	–	0.004
G	1.31	1.31	0.05	48.87	22.37	2.32	–	0.05
H	–	–	–	–	–	6.82	–	1.63
IA	2.07	2.07	0.06	34.30	22.84	3.73	–	0.23

The source has accepted voluntarily accepted federally enforceable facility-wide emissions limit of 20 tpy PM10, 20 tpy PM2.5, 10 tpy SO_2, 79 tpy NO_x, 75 tpy CO, 25 tpy VOC, and 3.82 tpy combined HAP's.

C. Emissions Increase

The emissions increase from this permitting action is the result of incorporating the gasoline dispensing equipment, fuel burning equipment, emergency engines, surface coating equipment, and laboratory equipment associated with ancillary facilities that are adjacent to the main facility into one Permit to Operate. No new emissions units were added, nor were any emissions units removed. The permitting action emissions are demonstrated below in Table 4.

Table 4: Permitting Action Emissions (tons per year)

Pollutant	Emissions Increase Due to Modified Emission Units	Emissions Decrease Due to Removed Units	Permitting Action Source PTE (uncontrolled)	Minor Source Significance Threshold
PM10	-	-	11.36	15
PM2.5	-	-	11.26	10
SOx	-	-	0.75	40
NOx	-	-	193.05	20
CO	-	-	132.71	100
VOC	-	-	19.54	20
total HAP	-	-	3.82	N/A
Pb	-	-	1.69E-04	0.6
H2S	-	-	-	5
TRS	-	-	-	5

D. Operational Limits

The emergency engines shall be limited to operate no more than 100 hours per year for testing and maintenance purposes, including nonemergency limitations. On May 1, 2015, the U.S. Court of Appeals for the D.C. Circuit issued a decision to vacate provisions in 40 CFR Part 60 Subpart IIII and 40 CFR Part 63 Subpart ZZZZ that allowed emergency engines to operate for demand response and when there is a deviation of voltage or frequency. Therefore, AQMD is prohibiting sources from operating emergency generators for those activities, which is consistent with the court decision and EPA's implementation memo dated April 15, 2016. In order to utilize the generator to operate for demand response or when there is a deviation of voltage or frequency, the source must request that the engine be treated as a nonemergency engine. (EU F.001-F.030, G.001-G.027)

All emissions units shall be limited in their use so as not to exceed the 20 tpy PM10, 20 tpy PM2.5, 10 tpy SO2, 79 tpy NOx, 75 tpy CO, or 25 tpy VOC limit.

E. Control Technology/Best Systems of Control Analysis

The emissions associated with this permitting action are not the result of a modification as defined in DBOH 030.010; therefore, the source is not required to perform a BSC Analysis.

F. Emissions Limits/Allowable Emissions

The source shall ensure that this facility, subject to a Synthetic Minor Operating Permit, emits no more than the following quantities of emissions in any twelve (12) month rolling period: (DBOH 010.090 E.2.c)

1. 20 tons of PM10
2. 20 tons of PM2.5
3. 10 tons of sulfur dioxide

4. 79 tons of nitrous oxides
5. 75 tons of carbon monoxide
6. 25 tons of volatile organic compounds
7. 3.82 tons of combined HAP's

The source shall comply with the emissions standards in 40 CFR 89.112 and 40 CFR 89.113 for nonroad CI engines for the same model year and maximum engine power. The emission standards are provided in Table 5 below.

Table 5: Emission Standards for Emergency Diesel Engine (g/bhp-hr) [5]

Power	Tier	Year	CO	HC	NMHC+ NOx[6]	NOx	PM
kW < 8 (hp < 11)	Tier 1	2000	6.0	-	7.8	-	0.75
	Tier 2	2005	6.0	-	5.6	-	0.6
8 ≤ kW < 19 (11 ≤ hp < 25)	Tier 1	2000	4.9	-	7.1	-	0.6
	Tier 2	2005	4.9	-	5.6	-	0.6
19 ≤ kW < 37 (25 ≤ hp < 50)	Tier 1	1999	4.1	-	7.1	-	0.6
	Tier 2	2004	4.1	-	5.6	-	0.45
37 ≤ kW < 75 (50 ≤ hp < 100)	Tier 1	1998	-	-	-	6.9	-
	Tier 2	2004	3.7	-	5.6	-	0.3
	Tier 3	2008	3.7	-	3.5	-	0.3
75 ≤ kW < 130 (100 ≤ hp < 175)	Tier 1	1997	-	-	-	6.9	-
	Tier 2	2003	3.7	-	4.9	-	0.22
	Tier 3	2007	3.7	-	3.0	-	0.22
130 ≤ kW < 225 (175 ≤ hp < 300)	Tier 1	1996	8.5	1.0	-	6.9	0.4
	Tier 2	2003	2.6	-	4.9	-	0.15
	Tier 3	2006	2.6	-	3.0	-	0.15
225 ≤ kW < 450 (300 ≤ hp < 600)	Tier 1	1996	8.5	1.0	-	6.9	0.4
	Tier 2	2001	2.6	-	4.8	-	0.15
	Tier 3	2006	2.6	-	3.0	-	0.15
450 ≤ kW < 560	Tier 1	1996	8.5	1.0	-	6.9	0.4

[5] Applicable to all emergency engines excluding F.001, IA.026 – IA.038, and IA.062 – IA.066
[6] Assume a breakdown of 5% and 95%, respectively, based upon internally adopted Bay Area AQMD Policy.

(600 ≤ hp < 750)	Tier 2	2001	2.6	-	4.8	-	0.15
	Tier 3	2006	2.6	-	3.0	-	0.15
kW ≥ 560 (hp ≥ 750)	Tier 1	2000	8.5	1.0	-	6.9	0.4
	Tier 2	2006	2.6	-	4.8	-	0.15

Pursuant to 40 CFR PART 60 Subpart Dc, the boilers (applicable to EU: C02.001 and D02.001-D02.002) are prohibited from discharging to the atmosphere, gases that contain SO_2 in excess of 215 ng/J (0.50 lb/MMBtu) heat input from oil (§ 60.42c(e)(2)).

The SO_2 emission limit is determined according to the following formula:

$$E_S = \frac{(K_a H_a + K_b H_b + K_c H_c)}{(H_a + H_b + H_c)}$$

Where,
E_s = SO_2 emission limit (lb/MMBtu heat input)
K_a = 1.2 lb/MMBtu
K_b = 0.60 lb/MMBtu
K_c = 0.50 lb/MMBtu
H_a = heat input from combustion of coal (MMBtu), except an affected facility subject to paragraph (b)(2) § 60.42c
H_b = heat input from the combustion of coal (MMBtu), subject to paragraph (b)(2) of § 60.42c
H_c = heat input from combustion of oil (MMBtu)
The above formula can be further reduced to:

$$E_S = \frac{(K_c H_c)}{(H_c)} = \frac{0.50 lb}{MMBtu}$$

The owner or operator shall not allow the discharge of gases that exhibit greater than 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity is also prohibited (applicable to EU: D02.001-D02.002).

The owner or operator shall be limited to only combust oil that contains no more than 0.50 weight percent sulfur and fuels not subject to a PM standard under 60.43c, and is not using a post-combustion technology to reduce PM or SO_2, and is therefore not subject to the PM standard in 40 CFR 60.43c (40 CFR 60.43c(e)(4)) (applicable to EU: D02.001-D02.002).

G. Increment

Figure 1 below shows the PSD triggered areas in Washoe County.

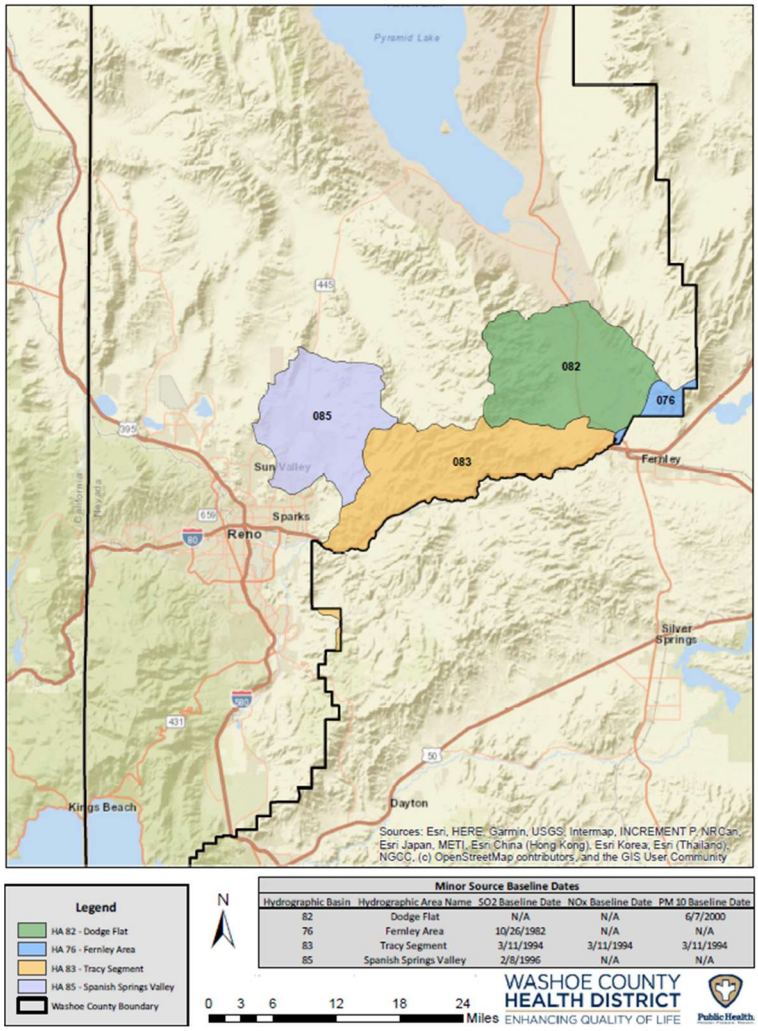

Figure 1: Washoe County PSD Triggered Areas

This source does not exist in HA 76, HA 82, HA 83, nor HA 85 and will not be subject to increment consumption tracking.

H. Performance Testing

The gasoline dispensing facility associated with System B is subject to the following vapor recovery compliance testing at least once every three (3) year period to demonstrate compliance with California Air Resources Board (CARB) Executive Order VR-401 and DBOH Regulations 040.080. (DBOH 040.080, CARB Executive Order VR-401)

- Determination of Static Pressure of Vapor Recovery Systems of Dispensing Facilities with Above-Ground Storage Tanks (CARB Test Method TP-201.3B)
- Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves (CARB Test Method TP.201.1E)

The dual fuel boilers (EU C02.001, D02.001-D02.002) will be subject to initial performance testing within one hundred eighty (180) days after issuance of the Permit to Operate to demonstrate

compliance with the sulfur dioxide (SO_2) and opacity standards identified in 40 CFR Part 60 Subpart Dc.

To demonstrate compliance with the SO_2 standard, the performance test shall consist of certification from the fuel supplier, as described below, as applicable. (40 CFR 60.44c(h), 40 CFR 60.42c(h)(1)):

(1) The name of the fuel oil or diesel fuel supplier;
(2) The date of delivery;
(3) Sulfur content of the oil;
(4) The fuel oil type and the ASTM method used to determine the type (see the definition of distillate oil in 40 CFR 60.41c for appropriate ASTM methods);
(5) The weight percent sulfur of the fuel oil or diesel fuel as determined using ASTM test method D-4294 or D-5453 or other method approved in advance by the Department;
(6) The date and time the sample was taken;
(7) The name, address, and telephone number of the laboratory that analyzed the sample; and
(8) The type of test or test method performed.

To demonstrate compliance with the opacity standard, the initial performance test shall be conducted using the procedures in EPA Reference Method 9 of 40 CFR Part 60 Appendix A-4.

Subsequent performance testing shall be conducted as described in the Permit to Operate or as requested by the Control Officer.

III. REGULATORY REVIEW

A. Local Regulatory Requirements

This source is subject to the permitting requirements of DBOH Regulations 030 and 010.090 for Synthetic Minor Sources.

Pursuant to DBOH 030.020 B, EU IA.001-IA.067 are insignificant emissions units; however, because these units are considered in the determination of a major source (DBOH 030.020 B.2.d), these units shall include monitoring and recordkeeping requirements. All emissions units, including insignificant emissions units, are subject to the facility-wide emissions limit.

The gasoline dispensing facilities (GDF) at this source are subject to DBOH Regulations 040.080. The GDF associated with System A is equipped with OPW Phase I coaxial vapor recovery (pre-EVR), and no Phase II vapor recovery. Should this GDF undergo a major modification as defined in DBOH 040.080 B, the source shall be required to install Phase I EVR pursuant to DBOH 040.080 C.3.a. The GDF associated with System B is equipped with OPW Phase I EVR and no Phase II vapor recovery. Existing GDF shall be exempt from the requirements to install Phase II vapor recovery, provided that the facility is equipped with Phase I EVR (DBOH 040.080 C.3.a)

B. Federally Applicable Regulations

The gasoline dispensing facilities (GDF) at this source are subject to 40 CFR Part 63 Subpart CCCCCC. Pursuant to § 63.11111(h), if an area source has two or more GDF at separate locations within the area source, each GDF shall be treated as a separate affected source. Both GDF have a historical monthly throughput of less than 10,000 gallons of gasoline, and therefore must comply with the requirements in §§ 63.11115, 63.11116(a), 63.11125(d), and 63.11126(b).

The engines at this source are subject to 40 CFR 60 Subpart IIII and/or 40 CFR 63 Subpart ZZZZ and so must meet the fuel requirements referenced therein from 40 CFR Subpart I, § 80.510(b) for nonroad diesel fuel. The source must purchase diesel fuel that meets the per-gallon standard of 15 ppm maximum sulfur content, a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent. As all refiners and importers of non-road diesel fuel are also subject to these federal standards pursuant to 40 CFR § 80.510, it is reasonable to assume the operators of the engines have very little opportunity, if any, to acquire fuel that violates these standards. Therefore, the Permittee is not being required by the operating permit to monitor or keep records of the sulfur content, cetane index, or aromatic content of the diesel fuel used in their engines (applicable to all engines, excluding F.026-F.030).

The emergency engines (EU: F.001-F.002) are existing institutional stationary RICE, located at an area source of HAP emissions and operated according to the definition of an emergency stationary RICE under 40 CFR § 63.6675. The emergency engines shall be limited to the operating provisions specified in § 63.6640(f)(1) through (f)(4). Therefore, the emergency engines do not need to meet all the requirements of non-emergency engines as specified by 40 CFR 63, Subpart ZZZZ.

The engines at this source that are subject to 40 CFR 60 Subpart IIII and 40 CFR 63 Subpart ZZZZ will meet the requirements of Subpart ZZZZ by meeting the requirements of Subpart IIII (EU: G.001-G.013). The emergency engines (EU: G.001-G.013) are existing stationary ICE, located at an area source and operated according to the definition of an emergency stationary ICE under 40 CFR 60.4219. The emergency engines shall be limited to the operating provisions specified in 40 CFR 60.4211(f), Subpart IIII.

The (3) boilers (EU: C01.001, C02.001, D01.001-D01.002, D02.001-D02.002) were constructed after June 9, 1989, have heat input capacities of less than 100 MMBtu/hr but greater than 10 MMBtu/hr, and have the capability to combust both natural gas and diesel fuel, and are therefore subject to the federal requirements of 40 CFR Part 60, Subpart Dc. All (3) boilers are subject to the SO_2 standard in § 60.42c(e).

(2) boilers (EU: D01.001-D01.002, D02.001-D02.002) are subject to the opacity standard in § 60.43c(c). These boilers are not subject to the PM standard in § 60.43c because they were constructed after February 28, 2005, will be limited to only combusting oil that contains no more than 0.50 weight percent sulfur with other fuels not subject to a PM standard under 60.43c, and are not using a post-combustion technology to reduce PM or SO_2 emissions (§ 60.43c(e)(4)).

(1) boiler (EU: C01.001, C02.001) is not subject to the PM or opacity standard in § 60.43c because it has less than 30 MMBtu/hr heat input capacity.

The (3) boilers (EU: C01.001, C02.001, D01.001-D01.002, D02.001-D02.002) are not subject to 40 CFR PART 63 Subpart JJJJJJ because they are gas-fired boilers as defined in § 63.11237, *any boiler that burns gaseous fuels not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, or for periodic testing, maintenance, or operator training on liquid fuel. Periodic testing, maintenance, or operator training on liquid fuel shall not exceed a combined total of 48 hours during any calendar year.*

IV. COMPLIANCE

A. Compliance Certification

Monitoring, recordkeeping, and reporting requirements will all be included for specified limitations in the permit.

The permittee shall follow the schedule for the report submittal to AQMD outlined in Table 6.

Table 6: Reporting Schedule

Required Report	Applicable Period	Due Date[7]
Annual Compliance Certification	Once per Calendar Year	March 31 of each year
Annual Emissions Report	Once per Calendar Year	March 31 of each year
Notification of Malfunctions, Startup, Shutdowns, or Deviations with Excess Emissions	As required	Within 24 hours of owner or operator learning of the event
Report of Malfunctions, Startup, Shutdowns, or Deviations with Excess Emissions	As required	Within 72 hours of notification
Deviation Report without Excess Emissions	As required	Along with annual reports
Vapor Recovery Testing Results (System B)	At Least Once Every Three-Year Period	Within 30 days of the end of the test

B. Summary of Monitoring for Compliance

The permittee shall follow the compliance monitoring requirements outlined in Table 7.

[7] If the due date falls on a Saturday, Sunday, or Federal or Nevada holiday, then the submittal is due on the next regularly scheduled business day.

Table 7: Compliance Monitoring Summary

EU	Process Description	Monitored Pollutants	Applicable Subsection Title	Requirements	Compliance Monitoring
A.001	Gasoline Dispensing Equipment	VOC	40 CFR 63 Subpart CCCCCC	Gasoline throughput recordkeeping and reporting.	Recordkeeping of monthly gasoline throughput required for federal standard applicability.
B.001	Gasoline Dispensing Equipment	VOC	40 CFR 63 Subpart CCCCCC	Gasoline throughput recordkeeping and reporting.	Recordkeeping of monthly gasoline throughput required for federal standard applicability.
C01.001 D01.001 – D01.002	Natural Gas Combustion – Boiler	CO, NO_x	Synthetic Minor permit limit	Facility-wide emission limits. Fuel consumption recordkeeping and reporting.	Recordkeeping of fuel consumption required for compliance demonstration.
C02.001 D02.001 – D02.002	Diesel Fuel Combustion – Boiler	SO_2, CO, NO_x	40 CFR 60 Subpart Dc, Synthetic Minor permit limit	Facility-wide emission limits. Fuel consumption recordkeeping and reporting.	Recordkeeping of fuel consumption required for compliance demonstration. SO_2 will be monitored through sulfur content in the fuels.

D02.001-D02.002	Diesel Fuel Combustion - Boilers	Opacity	40 CFR 60 Subpart Dc	20% opacity limit (6-minute average).	Method 9 test within 12 months of the most recent Method 9 test if no visible emissions observed, or within 45 calendar days of next day that fuel with an opacity standard is combusted, whichever is later. Method 9 test within 6 months of the most recent Method 9 test if visible emissions were observed and the maximum 6-minute average was less than or equal to 5%, or within 45 calendar days of next day that fuel with an opacity standard is combusted, whichever is later.

					Method 9 test within 3 months of the most recent Method 9 test if visible emissions were observed and the maximum 6-minute average was greater than 5% but less than or equal to 10%, or within 45 calendar days of next day that fuel with an opacity standard is combusted, whichever is later. Within 45 calendar days of the most recent Method 9 test if visible emissions were observed and the maximum 6-minute average was greater than 10%.
E.001-E.044	Natural Gas Combustion	CO, NOx	Synthetic Minor permit limit	Facility-wide emission limits. Fuel consumption recordkeeping and reporting.	Recordkeeping of fuel consumption required for compliance demonstration.

F.001-F.002	Emergency Power Generation	CO, NOx	40 CFR 63 Subpart ZZZZ, Synthetic Minor permit limit	Facility-wide emission limits. Emissions limitations based on hours of operation for testing and maintenance.	Recordkeeping of hours of operation and fuel consumption. Calculated based on manufacturer's data, Tier 1, 2, or 4 Nonroad Diesel Emission Standards, or AP-42 and fuel use.
G.001-G.013	Emergency Power Generation	CO, NOx	40 CFR 60 Subpart IIII, Synthetic Minor permit limit	Facility-wide emission limits. Emissions limitations based on hours of operation for testing and maintenance. Sulfur in diesel fuel is limited to 15 ppm.	Recordkeeping of hours of operation and fuel consumption. Calculated based on manufacturer's data, Tier 2 or 3 Nonroad Diesel Emission Standards, or AP-42 and fuel use.
IA.001-IA.023	Natural Gas Combustion	CO, NOx	Synthetic Minor permit limit	Facility-wide emission limits. Fuel consumption recordkeeping and reporting.	Recordkeeping of fuel consumption required for compliance demonstration.

IA.025-IA.065	Emergency Power Generation	CO, NOx	40 CFR 63 Subpart ZZZZ, 40 CFR 60 Subpart IIII, Synthetic Minor permit limit	Facility-wide emission limits. Emissions limitations based on hours of operation for testing and maintenance.	Recordkeeping of hours of operation and fuel consumption. Calculated based on manufacturer's data, Tier 1, 2, 3, or 4 Nonroad Diesel Emission Standards, or AP-42 and fuel use.

V. NAAQS ANALYSIS

The NNPH AQMD does not require modeling for stationary sources to demonstrate NAAQS compliance, and therefore, no modeling was required for this source. Area monitoring throughout Washoe County is used to demonstrate compliance with the NAAQS. Table 8 below summarizes Washoe County's current design values in comparison to the NAAQS.

Table 8: Design Values and Attainment Status (as of December 31, 2023)

NAAQS			Designations	
Pollutant (Averaging Time)	Level	Design Value	Unclassifiable/ Attainment, or Maintenance	Non-Attainment (classification)
O_3 (8-hour)	0.070 ppm	0.069 ppm	All HA's	---
$PM_{2.5}$ (24-hour)	35 µg/m^3	59 µg/m^3	All HA's	---
$PM_{2.5}$ (Annual)	12.0 µg/m^3	9.7 µg/m^3	All HA's	---
PM_{10} (24-hour)	150 µg/m^3	4.3 Expected Exceedances	All HA's[1]	---
CO (1-hour)	35 ppm	2.6 ppm	All HA's	---
CO (8-hour)	9 ppm	1.8 ppm	All HA's[2]	---
NO_2 (1-hour)	100 ppb	48 ppb	All HA's	---
NO_2 (Annual Mean)	53 ppb	11 ppb	All HA's	---

SO_2 (1-hour)	75 ppb	3 ppb	All HA's	---
Pb (Rolling 3-month average)	0.15 µg/m^3	n/a	All HA's	---

[1] Maintenance Area for PM_{10} (1st 10-year maintenance plan expires January 6, 2026) **80 FR 76232**

[2] Maintenance Area for CO (2nd 10 year maintenance plan expires October 31, 2026) **81 FR 59490**

VI. PUBLIC PARTICIPATION

A Notice of Proposed Action, application, TSD, and draft PTO will be posted to the AQMD's website for a thirty (30) day public notice period.

VII. RECOMMENDED ACTION

The AQMD recommends issuing a Synthetic Minor Source Permit to Operate to University of Nevada, Reno – Main Campus for the emissions units listed in Attachment A.

4/15/2025
Date

Candace Brown
Environmental Engineer II
Air Quality Management Division
Northern Nevada Public Health

4/15/2025
Date

Genine Rosa, MS
Senior Air Quality Specialist
Air Quality Management Division
Northern Nevada Public Health

VIII. ATTACHMENTS

A. Attachment 1: List of Emissions Units

A list of all emissions units is shown below.

System A – Gasoline Dispensing Equipment (40 CFR PART 63, Subpart CCCCCC)	
EU ID	**Equipment Description**
A.001	500-Gallon Containment Solutions Aboveground Gasoline Storage Tank
A.002	Gasoline Nozzle
CT.001	OPW Phase I Coaxial Vapor Recovery (CARB Executive Order G-70-47)

System B – Gasoline Dispensing Equipment (40 CFR PART 63, Subpart CCCCCC)	
EU ID	**Equipment Description**
B.001	500-Gallon Containment Solutions Aboveground Gasoline Storage Tank
B.002	Gasoline Nozzle
CT.001	OPW Phase I Enhanced Vapor Recovery (CARB Executive Order VR-401)

System C01 – Boiler – Natural Gas Fuel Combustion (40 CFR PART 60, Subpart Dc)				
EU ID	**Make**	**Model Number**	**Serial Number**	**Heat Input**
C01.001	Cleaver Brooks	CB-DW-34-400	SP-4192	15.00 MMBtu

System C02 – Boiler – Diesel Fuel Combustion (40 CFR PART 60, Subpart Dc)				
EU ID	**Make**	**Model Number**	**Serial Number**	**Heat Input**
C02.001	Cleaver Brooks	CB-DW-34-400	SP-4192	15.00 MMBtu

System D01 – Boilers – Natural Gas Fuel Combustion (40 CFR PART 60, Subpart Dc)				
EU ID	**Make**	**Model Number**	**Serial Number**	**Heat Input**
D01.001	Cleaver Brooks	DW-60	F-4716	30.00 MMBtu
D01.002	Cleaver Brooks	DW-60-400	CP-4354	30.00 MMBtu

System D02 – Boilers – Diesel Fuel Combustion (40 CFR PART 60, Subpart Dc)				
EU ID	**Make**	**Model Number**	**Serial Number**	**Heat Input**
D02.001	Cleaver Brooks	DW-60	F-4716	30.00 MMBtu
D02.002	Cleaver Brooks	DW-60-400	CP-4354	30.00 MMBtu

System E – Natural Gas Fuel Combustion				
EU ID	**Make**	**Model Number**	**Serial Number**	**Heat Input**
E.001	Lochinvar Boiler	FBN5001	21367559	4.999 MMBtu
E.002	Lochinvar Boiler	FBN5001	21367560	4.999 MMBtu
E.003	Lochinvar Boiler	FBN5001	21366922	4.999 MMBtu
E.004	Lochinvar Boiler	FBN5001	21366923	4.999 MMBtu
E.005	Lochinvar Boiler	FBN5001	21368065	4.999 MMBtu
E.006	Lochinvar Boiler	FBN5001	21366579	4.999 MMBtu
E.007	Lochinvar Boiler	AQH1500NPM	2111123485838	1.50 MMBtu
E.008	Peerless Boiler	170-9	179-5008	1.36 MMBtu
E.009	Lochinvar Boiler	FBN2500	1721106195734	2.50 MMBtu
E.010	Lochinvar Boiler	FBN2500	1721106195735	2.50 MMBtu
E.011	Lochinvar Boiler	FBN2500	1720106106563	2.50 MMBtu
E.012	Fulton Boiler	VMP150	108544	5.978 MMBtu
E.013	Fulton Boiler	VMP150	108554	5.978 MMBtu
E.014	Fulton Boiler	VMP150	108582	5.978 MMBtu
E.015	Fulton Boiler	VMP150	108569	5.978 MMBtu
E.016	Fulton Boiler	VMP150	108559	5.978 MMBtu
E.017	Laars Boiler	RHCH2000NACF2EXX	A08206066	1.999 MMBtu
E.018	Hydrotherm Boiler	KN16	KN-16-M12NB-8972	1.60 MMBtu
E.019	Hydrotherm Boiler	KN16	KN-16-M12NB-8976	1.60 MMBtu
E.020	Kewanee Boiler	L3W125GO	R4262	4.184 MMBtu
E.021	Lochinvar Boiler	CFN1261PM	H06H00189670	1.26 MMBtu
E.022	Weil McLain Boiler	1688	Unknown	5.124 MMBtu
E.023	Cleaver Brooks Boiler	CFM	02309-1-1	1.969 MMBtu

E.024	Kewanee Boiler	L3W-60-G0	R4422	2.511 MMBtu
E.025	Kewanee Boiler	L3W-200-G0	R4424	8.37 MMBtu
E.026	Kewanee Boiler	L3W-200-G0	4423	8.37 MMBtu
E.027	Cleaver Brooks Boiler	FLX	BT-5879	9.167 MMBtu
E.028	Cleaver Brooks Boiler	FLX	BT-5878	9.167 MMBtu
E.029	Fulton Boiler	ICW30	PV580KK/114403	1.256 MMBtu
E.030	Fulton Boiler	VMP50	93568	2.10 MMBtu
E.031	Fulton Boiler	VMP50	93570	2.10 MMBtu
E.032	Superior Boiler	100LS	4374	4.18 MMBtu
E.033	Bryan Boiler	Ab300wfdglx	98563	3.00 MMBtu
E.034	Bryan Boiler	Ab300wfdglx	98564	3.00 MMBtu
E.035	Fulton Boiler	ICW30	PV388KK/114028	1.256 MMBtu
E.036	Lochinvar Boiler	Fbn3000	l14h00268808	3.00 MMBtu
E.037	Lochinvar Boiler	Fbn3000	l14h00268423	3.00 MMBtu
E.038	Lochinvar Boiler	Fbn1500	l14h00268408	1.50 MMBtu
E.039	Laars Boiler	RHSH2400NACF2FXX	A10223045	2.40 MMBtu
E.040	Laars Boiler	RHCH2400NACF2FXX	A10223046	2.40 MMBtu
E.041	Laars Boiler	RHCH2400NACF2FXX	A10223047	2.40 MMBtu
E.042	Bryan Boiler	Ab250wfdg	96295	2.50 MMBtu
E.043	Bryan Boiler	Ab250wfdg	96298	2.50 MMBtu
E.044	Reco Elite Boiler	R32-1992-FG	R32-1992-FG	1.60 MMBtu

System F – Emergency Power Generation (40 CFR PART 63, Subpart ZZZZ)			
EU ID	**Equipment Description**	**Model Number**	**Serial Number**
F.001	Engine: 703 hp Detroit Diesel (mfg. 1985)	81237305	12VF001932
	Generator: 440 kW International Electric	0424HEJ-002	DF-14889
F.002	Engine: 896 hp Cat (mfg. 2000)	3412	3FZ01520
	Generator: 550 kW Cat	3412	AFE00072

System G – Emergency Power Generation (40 CFR PART 60, Subpart IIII)			
EU ID	**Equipment Description**	**Model Number**	**Serial Number**
G.001	Engine: 2206 hp Cat (mfg. 2009)	3512C	EBG00683
	Generator: 1500 kW Cat	SR4B-GD	G4W00827
G.002	Engine: 2206 hp Cat (mfg. 2009)	3512C	EBG00682
	Generator: 1500 kW Cat	SR4B-GD	G4W008280
G.003	Engine: 896 hp Detroit Diesel (mfg. 2010)	S1600	16701001231
	Generator: 600 kW MTU	DS00600DSRAH1483	319899-1-1-0410
G.004	Engine: 1220 hp Cummins (mfg. 2010)	QSK23-G7	321721
	Generator: 600 kW Cummins	DQCA-5379301	J100165193
G.005	Engine: 1675 hp Cummins (mfg. 2007)	QSKTA50-G3	33167362
	Generator: 1250 kW Cummins	DQGAA-5773153	C070032093A
G.006	Engine: 750 hp Cummins (mfg. 2004)	QSX15-G9NR2	79082687
	Generator: 500 kW MagnaMax	572RSL4027	WA555123-1106
G.007	Engine: 1502 hp Cat (mfg. 2008)	C32	SYC04373
	Generator: 1000 kW Cat	SR4B-GD	G5C03135
G.008	Engine: 900 hp Cat (mfg. 2007)	C18	EST00450
	Generator: 600 kW Cat	LC7	G7A01766
G.009	Engine: 804 hp Cummins (mfg. 2015)	QSX15-G9	79828057
	Generator: 600 kW Cummins	DFEJ1505153	D150820581
G.010	Engine: 804 hp Detroit Diesel (mfg. 2011)	12V1600G805	16701002377
	Generator: 600 kW MTU	DS00600D6SRAH1484	337099-1-1-0911
G.011	Engine: 923 hp Cat (mfg. 2017)	C18	FST01765
	Generator: 600 kW Cat	600	G7A06054
G.012	Engine: 4218 hp Cat (mfg. 2019)	3516C	CAT3516CHLY500230
	Generator: 2000 kW Cat	3516C	G2D00219
G.013	Engine: 625 hp Cat (mfg. 2020)	C18	FST02413
	Generator: 550 kW Cat	550	07A06978

System H – Laboratory Chemical Use	
EU ID	**Equipment Description**
N/A	Chemical use associated with university laboratories

System IA – Insignificant Activities (Natural Gas Fuel Combustion)				
EU ID	**Make**	**Model Number**	**Serial Number**	**Heat Input**
IA.001	Cleaver Brooks Boiler	MTF200250060HW	MB735	0.735 MMBtu
IA.002	RBI Boiler	MB750	011260898	0.75 MMBtu
IA.003	Camus	DMNH-0391-MSI-HLS	041826332	0.399 MMBtu
IA.004	Lochinvar Boiler	FBN1001	2219129465798	0.999 MMBtu
IA.005	Lochinvar Boiler	FBN1001	2219129465795	0.999 MMBtu
IA.006	State Industries Boiler	TPG400-600000	0910R000067	0.60 MMBtu
IA.007	State Industries Boiler	TPG-300	0825R000029	0.30 MMBtu
IA.008	Dri-Steem Humidifier	GTS04-600	1166670-01-01	0.54 MMBtu
IA.009	Dri-Steem Humidifier	GTS04-600	1166670-01-02	0.54 MMBtu
IA.010	Dri-Steem Humidifier	GTS04-700	1166670-02-02	0.63 MMBtu
IA.011	Dri-Steem Humidifier	GTS04-700	1166670-02-01	0.63 MMBtu
IA.012	Dri-Steem Humidifier	GTS04-700	1166670-03-02	0.63 MMBtu
IA.013	Dri-Steem Humidifier	GTS04-700	1166670-03-01	0.63 MMBtu
IA.014	Dri-Steem Humidifier	GTS04-700	1166670-02-03	0.63 MMBtu
IA.015	Camus Boiler	DMNH-0211-MSI-HL	101827477	0.199 MMBtu
IA.016	Cleaver Brooks Boiler	WTW-7A-1000	G-05624-M3	0.84 MMBtu
IA.017	Ajax Boiler	WRFG-525	67901	0.525 MMBtu
IA.018	Lochinvar Boiler	RJA200	119247719	0.70 MMBtu
IA.019	Lochinvar Boiler	KBN400	C13H10228423	0.40 MMBtu
IA.020	Dri-Steem Humidifier	GTS04-700	1185564-01-01	0.70 MMBtu
IA.021	Dri-Steem Humidifier	GTS04-700	1185564-02-01	0.70 MMBtu
IA.022	Lochinvar Boiler	KBN701	J13H10271139	0.70 MMBtu
IA.023	Lochinvar Boiler	KBN701	l13H10269673	0.70 MMBtu
IA.024	Lochinvar Boiler	MFNH-1400-2H0	2336135524933	0.999 MMBtu

System IA – Insignificant Activities (Emergency Power Generation)			
EU ID	**Equipment Description**	**Model Number**	**Serial Number**
IA.025	Engine: 368.6 hp Volvo (mfg. 2004)	TAD1031GE	2100329130
	Generator: 275 kW MQ Power	43PSL6210	WA-543675
IA.026	Engine: 280 hp Detroit Diesel (mfg. 1981)	1063-7305	6A0422940
	Generator: 150 kW Lima Energy Products	3170-0812	BA19997DE
IA.027	Engine: 40.2 hp Ford (mfg. 1973)	240GF6005-A	03899 B-1-HA
	Generator: 30 kW Ford	6CTA6362	274759723
IA.028	Engine: 135 hp Cummins (mfg. 1996)	6BT5.9G-1	45440882
	Generator: 80 kW DMT Corporation	DMT-80C	96-203773-1
IA.029	Engine: 207 hp Cummins (mfg. 1991)	6CT8.3-G	44657681
	Generator: 125 kW DMT	DMT-125CA2	9.1184-1
IA.030	Engine: 241.3 hp Cummins (mfg. 1978)	NT855G	53480
	Generator: 180 kW Onan	180.oDFE-16R/19766L	H780350643
IA.031	Engine: 201.1 hp Cummins (mfg. 1991)	6CTA8.3G	44668582
	Generator: 150 kW DMT	DMT-150CB1	91224-1
IA.032	Engine: 71 hp John Deere (mfg. 1982)	4039DF001	T04039D4259334039DF001
	Generator: 25 kW Kohler	20R0ZJ81	338943
IA.033	Engine: 8 hp Onan (mfg. 1987)	6.0DJB-18R/29419AC	D870890745
	Generator: 6 kW Onan	6.0DJB-18R/29419AC	AD131656SMC
IA.034	Engine: 207 hp Cummins (mfg. 1988)	6CT8.3	44245528
	Generator: 150 kW LaMarche	A18J-3-12V-A1	Unknown
IA.035	Engine: 152 hp Perkins England (mfg. 1999)	1797/1500	U691590F
	Generator: 75 kW Olympian	D100P1	E4683A/001
IA.036	Engine: 60.3 hp Allis-Chalmers (mfg. 1979)	3500MKII	3D.61579
	Generator: 75 kW Onan	75.ODYC-15R	D790408745
IA.037	Engine: 31.5 hp Isuzu (mfg. 2004)	AA-4LE2	8971711260
	Generator: 14 kW Whisperwatt	DF-027012	7107721
IA.038	Engine: 210 hp John Deere (mfg. 2008)	6068HF120	PE6068H616465
	Fire Pump: Clarke	Unknown	Unknown

IA.039	Engine: 490 hp Detroit (mfg. 1998)	80637416	06VF220467
	Generator: 300 kW Detroit Diesel	300DS	601539
IA.040	Engine: 350 hp International (mfg. 1999)	GA350	WJ3890N1177911
	Generator: 230 kW Olympian	D230P1	E3427AI001
IA.041	Engine: 490 hp Detroit Diesel (mfg. 2003)	6063MK35	06R0725446
	Generator: 275 kW Detroit Diesel	275DSE	0757406
IA.042	Engine: 144 hp John Deere (mfg. 2005)	6068TF150	PE6068T44698
	Generator: 105 kW Katolight	SED105FRJ4	108033-0305
IA.043	Engine: 140.8 hp John Deere (mfg. 2005)	6068TF150	PE6068T460131
	Generator: 105 kW Katolight	SED105FPJ4	114137-0805
IA.044	Engine: 98 hp John Deere (mfg. 2004)	4045FTF150	PE4045T480271
	Generator: 75 kW Katolight	SED75FRJ4	112451-0605
IA.045	Engine: 89.5 hp Isuzu (mfg. 2004)	4JJ1X	198943
	Generator: 36 kW Hoketsu	SDG65S	1476A60187
IA.046	Engine: 55.3 hp Isuzu (mfg. 2007)	BB-43GIT	7402112
	Generator: 36 kW MQ Power	DB-050112	679749
IA.047	Engine: 48.2 hp John Deere (mfg. 2006)	4024TF270	PE4024T078417
	Generator: 30 kW Katolight	SED30FRJ4T2	123783-0306
IA.048	Engine: 427 hp John Deere (mfg. 2006)	6125HF070	RG6125H056431
	Generator: 375 kW Katolight	SED300FPJ4	130036-0806
IA.049	Engine: 335 hp IVECO (mfg. 2007)	F2CE9685	WA-561116-0907
	Generator: 275 kW MQ Power	MQP250IV	Unknown
IA.050	Engine: 352 hp Cummins (mfg. 2006)	6CTAA8.365	21726190
	Generator: 230 kW Cummins	DGFS-5778289	J060985497
IA.051	Engine: 200 hp Cummins (mfg. 2013)	SB7-G5	73604491
	Generator: 125 kW Cummins	DSGAB-1340965	K130592082
IA.052	Engine: 469 hp MTU (mfg. 2013)	8V1600G70S	16501001801
	Generator: 350 kW MagnaPlus	433PSL7516	MX-194192-0413
IA.053	Engine: 280 hp Cat (mfg. 2016)	C7.1	E5500171
	Generator: 175 kW Cat	D175-4	G5A08465

IA.054	Engine: 325 hp Cummins (mfg. 2018)	QSB7-G5	74310606
	Generator: 240 kW Cummins	DSGAE-1849113	E180357900
IA.055	Engine: 464 hp Cummins (mfg. 2015)	DQDAA-1505152	D150819815
	Generator: 352 kW Cummins	DQDAA-1505152	73823652
IA.056	Engine: 85.8 hp Cat (mfg. 2019)	C4.4	E3L6114B
	Generator: 40 kW Cat	D40-2LC	LSB02567
IA.057	Engine: 350 hp John Deere (mfg. 2008)	6090HF485V,W,X,Y	337099-1-1-0911
	Generator: 225 kW Stamford	1/14	M08A223907-02
IA.058	Engine: 167.6 hp Cummins (mfg. 2012)	QSB7-G5NR3	73407328
	Generator: 125 kW Cummins	DSGAB-1206225	F120347842
IA.059	Engine: 422 hp John Deere (mfg. 2021)	6090HF484	RG6090L146141
	Generator: 250 kW Marathon	MTU 6R0150 DS250	95090503172
IA.060	Engine: 11.7 hp Kubota (mfg. 2014)	D1005-BG-EF02	1EJ3487
	Generator: 7 kW Athlon	AG164T16	AG13101466
IA.061	Engine: 227 hp Isuzu (mfg. 2019)	BQ-6HK1X	D18401000011
	Generator: 180 kW Isuzu	SSG-3180SI	D18401000011
IA.062	Engine: 20 hp Continental (unknown mfg.)	F162	240653
	Generator: 15 kW Onan	15HQ-4XR-2100G	120C652240
IA.063	Engine: 100 hp Ford (mfg. 1990)	LSG-8751-6003-C	12747T-07-12L
	Generator: 75 kW Onan	100ENBA	J930522419
IA.064	Engine: 100 hp Ford (mfg. 1993)	LSG-8751-6005-A	03723 B-27-RK
	Generator: 100 kW Onan	75ENT L38667C	I900347132
IA.065	Engine: 80 hp Cummins (mfg. 2008)	WSG-1068	A080142389
	Generator: 83 kW Stamford	M07L22373602	S223736-02
IA.066	Engine: 100 hp Cummins (mfg. 1990)	G743	25169658
	Generator: 100 kW MagnaPlus	3285A-1261A	AD 13656 SMG

System IA – Insignificant Activities (Surface Coating – Facility-Wide Maintenance Use)	
EU ID	**Equipment Description**
IA.067	Binks Spray Booth (Model Number: Unknown)

B. Attachment 2: Emissions Inventory

Emissions Inventory		**FIN:**		**Date** Wednesday, November 20, 2024	
Compan University of Nevada, Reno		**Permit Number** AAIR16-0943		**Application Type** Synthetic Minor Source Permit Modification	
Facility: University of Nevada, Reno - Main Campus		**Facility UTM Coordinates**	39.541 -119.815		
Address: 1664 N. Virginia Street, M/S0328					

System #	System Name	PM10		PM2.5		SO2		NOx		CO		VOC		Pb		HAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
A	Gasoline Dispensing Facility	-	-	-	-	-	-	-	-	-	-	0.05	0.20	-	-	2.36E-03	0.01
B	Gasoline Dispensing Facility	-	-	-	-	-	-	-	-	-	-	0.15	0.66	-	-	7.79E-03	0.03
C01	Boiler - Natural Gas Fuel Combustion (40 CFR PART 60 Subpart Dc)	0.11	0.46	0.11	0.46	0.01	0.04	1.47	6.07	1.24	5.10	0.08	0.33	-	-	0.03	0.11
C02	Boiler - Diesel Fuel Combustion (40 CFR PART 60 Subpart Dc)	0.11	0.03	0.03	0.01	0.02	0.01	2.18	0.55	0.55	0.14	0.02	0.01	1.35E-04	3.38E-05	0.01	0.001
D01	Boilers - Natural Gas Fuel Combustion (40 CFR PART 60 Subpart Dc)	0.45	1.85	0.45	1.85	0.04	0.15	5.88	24.29	4.94	20.41	0.32	1.34	-	-	0.11	0.46
D02	Boilers - Diesel Fuel Combustion (40 CFR PART 60 Subpart Dc)	0.44	0.11	0.11	0.03	0.09	0.02	8.73	2.18	2.18	0.55	0.09	0.02	5.40E-04	1.35E-04	0.02	0.01
E	Miscellaneous Natural Gas Fuel Combustion	1.22	5.34	1.22	5.34	0.10	0.42	16.05	70.32	13.49	59.07	0.88	3.87	-	-	0.29	1.29
F	Emergency Power Generation (40 CFR PART 63 Subpart ZZZZ)	0.79	0.20	0.79	0.20	0.02	0.004	25.88	6.47	9.00	2.25	0.97	0.24	-	-	0.02	0.004
G	Emergency Power Generation (40 CFR PART 60 Subpart IIII)	5.22	1.31	5.22	1.31	0.20	0.05	195.47	48.87	89.46	22.37	9.30	2.32	-	-	0.21	0.05
H	Laboratory Chemical Use	-	-	-	-	-	-	-	-	-	-	1.56	6.82	-	-	0.37	1.63
IA	Insignificant Activities	6.37	2.07	6.37	2.07	0.11	0.06	112.14	34.30	70.29	22.84	13.21	3.73	-	-	0.33	0.23
Facility Wide PTE		14.70	11.36	14.29	11.26	0.58	0.75	367.81	193.05	191.15	132.71	26.63	19.54	6.75E-04	1.69E-04	1.40	3.82
Facility Wide Allowable Emissions Rate		-	20	-	20	-	10	-	79	-	75	-	25	6.75E-04	1.69E-04	-	3.82
Change		-	-	-	-	-	-	-	-	-	-	-	-			-	-

C. Attachment 3: System A Potential to Emit

The following equation was derived from values published by EPA, CARB, and San Diego Air Pollution Control District (SDAPCD). Annual emissions are assumed to be proportional to annual throughputs. Historical annual emissions reporting data was reviewed, and the source has never exceeded 10,000 gallons/month. The source will be subject to the emission limitations and management practices of 40 CFR 63.11116 (facilities with a monthly throughput of less than 10,000 gallons of gasoline). An annual throughput of 120,000 gallons of gasoline per year was applied (10,000 gal/month X 12 months/yr), as the facility is expected to dispense less than 10,000 gallons of gasoline per month. This system has no Phase II controls and Phase I pre-EVR coaxial vapor recovery.

$$E_a = U_a \times E_{Ft} \times C_i$$

Where,
E_a = Annual emissions of gasoline vapor (lb/yr)
U_a= Annual gasoline throughput (kgal/yr) = 120,000
E_{ft}= Combined emission factor (lb/kgal) = Phase II refueling (2.18), Phase I loading/bulk transfer losses (0.38), pressure driven/breathing losses (0.092), Phase II spillage (0.61), & 2013 hose permeation value (0.062)
C_i= Concentration of VOC in the gasoline vapor (lb/lb) = 1

The Phase II refueling EF for Non-ORVR and ORVR vehicles was based upon CARB's 2015 ORVR saturation rate of 0.78 for CA (ratio of non-ORVR to ORVR vehicles)

$$Uncontrolled\ Phase\ II\ Refueuling\ EF\ \left(\frac{lb}{Kgal}\right) = \left(1 - 0.78 \times \frac{8.4\ lb}{kgal}\right) + \left(0.78 \times \frac{0.42\ lb}{kgal}\right) = 2.18\ lb/Kgal$$

Table 9: System A – Emission Factors

Category	Uncontrolled lb/Kgal	Pre-EVR lb/Kgal	EVR lb/Kgal
Phase II Fueling (Refueling)			
Non-ORVR Vehicles	8.4	2.4	0.42
ORVR Vehicles	0.42	0.12	0.021
Phase I Bulk Transfer Losses (Loading)	7.7	0.38	0.15
Pressure Driven Losses (Breathing)	0.76	0.092	0.024
Spillage	0.61	0.42	0.24
Hose Permeation	0.062	0.062	0.062

Source: Emission Factors from CARB's Revised Emission Factors for Gasoline Marketing Operations at California Gasoline Dispensing Facilities, December 23, 2013.

HAP emissions were estimated as a percentage of VOC emissions, and based upon values presented in Volume III Chapter 11 – Gasoline Marketing (Stage I and Stage II)

Table 10: System A – HAP Emission Factors

Pollutant	% of VOC Emissions
Trimethyl Pentane	0.80%
Benzene	0.90%
Ethylbenzene	0.10%
Hexane	1.60%
Toluene	1.30%
Xylene	0.50%

D. Attachment 4: System B Potential to Emit

The following equation was derived from values published by EPA, CARB, and San Diego Air Pollution Control District (SDAPCD). Annual emissions are assumed to be proportional to annual throughputs. Historical annual emissions reporting data was reviewed, and the source has never exceeded 10,000 gallons/month. The source will be subject to the emission limitations and management practices of 40 CFR 63.11116 (facilities with a monthly throughput of less than 10,000 gallons of gasoline). An annual throughput of 120,000 gallons of gasoline per year was applied (10,000 gal/month X 12 months/yr), as the facility is expected to dispense less than 10,000 gallons of gasoline per month. This system has Phase I EVR controls and no Phase II controls.

$$E_a = (U_a \times E_{Ft} + ((\frac{T_c}{2}) \times \frac{365\ days}{year} \times E_{Fsl})) \times C_i$$

Where,
E_a = Annual emissions of gasoline vapor (lb/yr)
U_a= Annual gasoline throughput (kgal/yr) = 120,000
E_{ft}= Combined emission factor (lb/kgal) = Phase II refueling (8.4), loading (0.15), spillage (0.61), and hose permeation (0.062) = 9.2
T_c= Tank capacity (kgal) = 0.5
E_{fsl}= Emission factor for pressure driven losses (lb/kgal) = 2.26
C_i= Concentration of VOC in the gasoline vapor (lb/lb) = 1

Table 11: System B – Emission Factors

Category	Phase I EVR lb/Kgal	Phase II Pre-EVR lb/Kgal	Phase II EVR lb/Kgal
Phase II Fueling (Refueling)	8.4	0.63	0.38
Phase I Bulk Transfer Losses (Loading)	0.15	0.15	0.15
Pressure Driven Losses (Breathing)	0.57	0.57	0.57
Spillage	0.61	0.42	0.24
Hose Permeation	0.062	0.062	0.062

Source: Emission Factors from CARB's CP-206, Certification Procedures for Vapor Recovery Systems at Gasoline Dispensing Facilities Using Aboveground Storage Tanks, Amended July 25, 2019

HAP emissions were estimated as a percentage of VOC emissions, and based upon values presented in Volume III Chapter 11 – Gasoline Marketing (Stage I and Stage II)

Table 12: System B – HAP Emission Factors

Pollutant	% of VOC Emissions
Trimethyl Pentane	0.80%
Benzene	0.90%
Ethylbenzene	0.10%
Hexane	1.60%
Toluene	1.30%
Xylene	0.50%

E. Attachment 5: System C01 Potential to Emit

Emission were estimated using the maximum heating input (MMBtu/hr) of the EU and AP-42 Chapter 1.4, Table 1.4-1, 1.4-2, and 1.4-3, and 8,260 (8,760 – 500) hours per year. This boiler has the capability to combust both natural gas and diesel fuel. Diesel fuel is combusted as a back-up, emergency fuel and emissions associated with diesel fuel combustion were calculated at 500 hours per year.

Table 13: System C01 – Emission Factors[8]

Pollutant	Emission Factor ($lb/10^6$ scf)	Reference
PM10	7.6	AP-42 1.4, Table 1.4-2
PM2.5	7.6	AP-42 1.4, Table 1.4-2
SO2	0.6	AP-42 1.4, Table 1.4-2
NOx	100	AP-42 1.4, Table 1.4-1
CO	84	AP-42 1.4, Table 1.4-2
VOC	5.5	AP-42 1.4, Table 1.4-1
Total HAP	1.88	AP-42 1.4, Table 1.4-3

[8] Applicable to EU C01.001

F. Attachment 6: System C02 Potential to Emit

Emissions were estimated using the diesel fuel consumption of the EU and AP-42 Chapter 1.3, Table 1.3-1, 1.3-6, 1.3-9 and 1.3-10, and 500 hours per year.

To determine the SO_2 emission factor, a sulfur content of 0.0015% by weight was used. As all refiners and importers of non-road diesel fuel are also subject to these federal standards pursuant to 40 CFR § 80.510, it is reasonable to assume the operators of the boilers have very little opportunity, if any, to acquire fuel that violates these standards.

$$SO_2\ EF\ (\frac{lb}{gal}) = \frac{142\ lb}{10^3 gal} * 0.0015 \div 10^3$$

To convert the trace elements emission factors (including lead), a conversion of 137,381 Btu/gallon of diesel fuel was used as proposed by US Energy Information Administration.

$$EF\ (\frac{lb}{gal}) = \frac{EF\ lb}{10^{12} Btu} \times \frac{137{,}381\ Btu}{gal\ diesel} \div 10^{12}$$

The same conversion of 137,381 Btu/gallon of diesel fuel was used to determine the diesel fuel consumption of the EU.

$$\frac{gal\ diesel}{hour} = boiler\ heat\ input \frac{MMBtu}{hr} \div \frac{137{,}381\ Btu}{gal\ diesel} \times 10^{12}$$

Table 14: System C02 – Emission Factors[9]

Pollutant	Emission Factor (lb/gal)	Reference
PM10	0.001	AP-42 1.3, Table 1.3-6
PM2.5	0.00025	AP-42 1.3, Table 1.3-6
SO2	0.00021	AP-42 1.3, Table 1.3-1 (Distillate Oil Fired < 100mmBtu/hr)
NOx	0.02	AP-42 1.3, Table 1.3-1 (Distillate Oil Fired < 100mmBtu/hr)
CO	0.005	AP-42 1.3, Table 1.3-1 (Distillate Oil Fired < 100mmBtu/hr)
VOC	0.002	AP-42 1.3, Table 1.3-3 (Industrial Boiler, Distillate Oil)
Pb	1.24E-06	AP-42 1.3, Table 1.3-10
Total HAP	4.64E-05	AP-42 1.3, Table 1.3-9 & 1.3-10 (Assume = to Residual Oil)

[9] Applicable to EU C02.001

G. Attachment 7: System D01 Potential to Emit

Emission were estimated using the maximum heating input (MMBtu/hr) of the EU's and AP-42 Chapter 1.4, Table 1.4-1, 1.4-2, and 1.4-3, and 8,260 (8,760 – 500) hours per year. These boilers have the capability to combust both natural gas and diesel fuel. Diesel fuel is combusted as a back-up, emergency fuel and emissions associated with diesel fuel combustion were calculated at 500 hours per year.

Table 15: System D01 – Emission Factors[10]

Pollutant	Emission Factor ($lb/10^6$ scf)	Reference
PM10	7.6	AP-42 1.4, Table 1.4-2
PM2.5	7.6	AP-42 1.4, Table 1.4-2
SO2	0.6	AP-42 1.4, Table 1.4-2
NOx	100	AP-42 1.4, Table 1.4-1
CO	84	AP-42 1.4, Table 1.4-2
VOC	5.5	AP-42 1.4, Table 1.4-1
Total HAP	1.88	AP-42 1.4, Table 1.4-3

[10] Applicable to EU D01.001-D01.002

H. Attachment 8: System D02 Potential to Emit

Emissions were estimated using the diesel fuel consumption of the EU's and AP-42 Chapter 1.3, Table 1.3-1, 1.3-6, 1.3-9 and 1.3-10, and 500 hours per year.

To determine the SO_2 emission factor, a sulfur content of 0.0015% by weight was used. As all refiners and importers of non-road diesel fuel are also subject to these federal standards pursuant to 40 CFR § 80.510, it is reasonable to assume the operators of the boilers have very little opportunity, if any, to acquire fuel that violates these standards.

$$SO_2\ EF\ (\frac{lb}{gal}) = \frac{142\ lb}{10^3 gal} * 0.0015 \div 10^3$$

To convert the trace elements emission factors (including lead), a conversion of 137,381 Btu/gallon of diesel fuel was used as proposed by US Energy Information Administration.

$$EF\ (\frac{lb}{gal}) = \frac{EF\ lb}{10^{12} Btu} \times \frac{137{,}381\ Btu}{gal\ diesel} \div 10^{12}$$

The same conversion of 137,381 Btu/gallon of diesel fuel was used to determine the diesel fuel consumption of the EU's.

$$\frac{gal\ diesel}{hour} = boiler\ heat\ input \frac{MMBtu}{hr} \div \frac{137{,}381\ Btu}{gal\ diesel} \times 10^{12}$$

Table 16: System C02 – Emission Factors[11]

Pollutant	Emission Factor (lb/gal)	Reference
PM10	0.001	AP-42 1.3, Table 1.3-6
PM2.5	0.00025	AP-42 1.3, Table 1.3-6
SO2	0.00021	AP-42 1.3, Table 1.3-1 (Distillate Oil Fired < 100mmBtu/hr)
NOx	0.02	AP-42 1.3, Table 1.3-1 (Distillate Oil Fired < 100mmBtu/hr)
CO	0.005	AP-42 1.3, Table 1.3-1 (Distillate Oil Fired < 100mmBtu/hr)
VOC	0.002	AP-42 1.3, Table 1.3-3 (Industrial Boiler, Distillate Oil)
Pb	1.24E-06	AP-42 1.3, Table 1.3-10
Total HAP	4.64E-05	AP-42 1.3, Table 1.3-9 & 1.3-10 (Assume = to Residual Oil)

[11] Applicable to EU D02.001-D02.002

I. Attachment 9: System E Potential to Emit

Emissions for E.001 through E.044, each, were estimated using the maximum heating input (MMBtu/hr) of each EU and AP-42 Chapter 1.4, Table 1.4-1, 1.4-2, and 1.4-3, and 8,760 hours per year.

Table 17: System E – Emission Factors

Pollutant	Emission Factor ($lb/10^6$ scf)	Reference
PM10	7.6	AP-42 1.4, Table 1.4-2
PM2.5	7.6	AP-42 1.4, Table 1.4-2
SO2	0.6	AP-42 1.4, Table 1.4-2
NOx	100	AP-42 1.4, Table 1.4-1
CO	84	AP-42 1.4, Table 1.4-2
VOC	5.5	AP-42 1.4, Table 1.4-1
Total HAP	1.88	AP-42 1.4, Table 1.4-3

J. Attachment 10: System F Potential to Emit

F.001:

Emissions for PM10, PM2.5, NOx, CO, VOC, and total HAP's were estimated using the hp rating of each EU, diesel fuel consumptions rates, AP-42 Chapter 3.4, Table 3.4-1 and Table 3.4-3, and 500 hours per year.

Table 18: System F – Emission Factors

Pollutant	Emission Factor (lb/hp-hr)	Reference
PM10	0.0007	AP-42 3.4, Table 3.4-1
PM2.5	0.0007	Assume PM2.5 = PM10
NOx	0.024	AP-42 3.4, Table 3.4-1
CO	5.5E-03	AP-42 3.4, Table 3.4-1
VOC	7.05E-04	AP-42 3.4, Table 3.4-1
Total HAP	2.19E-04 (lb/gal)[12]	AP-42 3.4, Table 3.4-3

F.002:

Emissions for PM10, PM2.5, NOx, CO, and VOC were estimated using the hp rating of each EU, diesel fuel consumption rates, and Tier 2 Nonroad Diesel Emission Standards. Emissions for total HAP's were estimated using AP-42 Chapter 3.4 Table 3.4-3. 500 hours per year was used.

Table 19: System F – Emission Factors

Pollutant	Emission Factor (g/hp-hr)[13]	Reference
PM10	0.15	Tier 2 Diesel Emission Standards
PM2.5	0.15	Tier 2 Diesel Emission Standards
NOx	4.56	Tier 2 Diesel Emission Standards
CO	2.6	Tier 2 Diesel Emission Standards
VOC	0.24	Tier 2 Diesel Emission Standards
Total HAP	2.19E-04 (lb/gal)[14]	AP-42 3.4, Table 3.4-3

[12] To convert the emission factor from lb/MMBtu to lb/gal, an average distillate heating value of 139 MMBtu/1000 gallons was used.
[13] NMHC + NOx = 4.8 g/hp-hr. Per internally adopted Bay Area AQMD policy, assume a breakdown of 5% and 95%
[14] To convert the emission factor from lb/MMBtu to lb/gal, an average distillate heating value of 139 MMBtu/1000 gallons was used.

SO_2 emissions for F.001-F.002 were estimated using diesel fuel consumption and the following equation:

$$SO_2EF\ (\frac{lb}{gal\ diesel}) = P(diesel) \times S(diesel) \times \left(\frac{2lb\ SO_2}{1\ lb\ S}\right)$$

Where,
P(diesel) = density of diesel in lbs/gal = 6.943
S(diesel) = sulfur content of diesel fuel in parts per million by weight (ppmw) = 0.000015

Diesel fuel consumption rates were estimated using the following equation:

$$\frac{gal\ diesel}{hr} = (\frac{7{,}000\ Btu}{hp - hr}) \times (\frac{gal\ diesel}{138{,}700\ Btu}) \times (\frac{engine\ hp}{1})$$

AP-42 3.3 Table 3.3-1 proposes to convert from lb/MMBtu to lb/hp-hr, use an average brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr.

Bureau of Transportation Statistics proposes a fuel conversion rate of 138,700 Btu/gal diesel.

K. Attachment 11: System G Potential to Emit

G.001-G.002:

Emissions for PM10, PM2.5, NOx, CO, and VOC were estimated using the hp rating of the EU, diesel fuel consumption rates, and manufacturer specifications provided by the source. Emissions for total HAP's were estimated using AP-42 Chapter 3.4 Table 3.4-3. 500 hours per year was used.

Table 20: System G – Emission Factors

Pollutant	Emission Factor (g/hp-hr)	Reference
PM10	0.05	Manufacturer Specifications
PM2.5	0.05	Manufacturer Specifications
NOx	5.54	Manufacturer Specifications
CO	0.76	Manufacturer Specifications
VOC	0.19	Manufacturer Specifications
Total HAP	2.19E-04 (lb/gal)[15]	AP-42 3.4, Table 3.4-3

G.003-G.012:

Emissions for PM10, PM2.5, NOx, CO, and VOC were estimated using the hp rating of the EU, diesel fuel consumption rates, and Tier 2 Nonroad Diesel Emission Standards. Emissions for total HAP's were estimated using AP-42 Chapter 3.4 Table 3.4-3. 500 hours per year was used.

Table 21: System G – Emission Factors

Pollutant	Emission Factor (g/hp-hr)[16]	Reference
PM10	0.15	Tier 2 Diesel Emission Standards
PM2.5	0.15	Tier 2 Diesel Emission Standards
NOx	4.56	Tier 2 Diesel Emission Standards
CO	2.6	Tier 2 Diesel Emission Standards
VOC	0.24	Tier 2 Diesel Emission Standards
Total HAP	2.19E-04 (lb/gal)[17]	AP-42 3.4, Table 3.4-3

[15] To convert the emission factor from lb/MMBtu to lb/gal, an average distillate heating value of 139 MMBtu/1000 gallons was used.
[16] NMHC + NOx = 4.8 g/hp-hr. Per internally adopted Bay Area AQMD policy, assume a breakdown of 5% and 95%, respectively
[17] To convert the emission factor from lb/MMBtu to lb/gal, an average distillate heating value of 139 MMBtu/1000 gallons was used.

G.013:

Emissions for PM10, PM2.5, NOx, CO, and VOC were estimated using the hp rating of the EU, diesel fuel consumption rates, and Tier 3 Nonroad Diesel Emission Standards. Emissions for total HAP's were estimated using AP-42 Chapter 3.3 Table 3.3-2. 500 hours per year was used.

Table 22: System G – Emission Factors

Pollutant	Emission Factor (g/hp-hr)[18]	Reference
PM10	0.15	Tier 3 Diesel Emission Standards
PM2.5	0.15	Tier 3 Diesel Emission Standards
NOx	2.85	Tier 3 Diesel Emission Standards
CO	2.6	Tier 3 Diesel Emission Standards
VOC	0.15	Tier 3 Diesel Emission Standards
Total HAP	2.19E-04 (lb/gal)[19]	AP-42 3.4, Table 3.4-3

SO_2 emissions for G.001-G.013 were estimated using diesel fuel consumption and the following equation:

$$SO_2 EF \left(\frac{lb}{gal\ diesel}\right) = P(diesel) \times S(diesel) \times \left(\frac{2lb\ SO_2}{1\ lb\ S}\right)$$

Where,
P(diesel) = density of diesel in lbs/gal = 6.943
S(diesel) = sulfur content of diesel fuel in parts per million by weight (ppmw) = 0.000015

Diesel fuel consumption rates were estimated using the following equation:

$$\frac{gal\ diesel}{hr} = \left(\frac{7{,}000\ Btu}{hp - hr}\right) \times \left(\frac{gal\ diesel}{138{,}700\ Btu}\right) \times \left(\frac{engine\ hp}{1}\right)$$

AP-42 3.3 Table 3.3-1 proposes to convert from lb/MMBtu to lb/hp-hr, use an average brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr.

Bureau of Transportation Statistics proposes a fuel conversion rate of 138,700 Btu/gal diesel.

[18] NMHC + NOx = 3.0 g/hp-hr. Per internally adopted Bay Area AQMD policy, assume a breakdown of 5% and 95%, respectively

[19] To convert the emission factor from lb/MMBtu to lb/gal, an average distillate heating value of 139 MMBtu/1000 gallons was used.

L. Attachment 12: System H Potential to Emit

The source identified twelve (12) chemicals that represent 95% of reported emissions averaged over a six (6) year period. The source then developed a VOC and HAP emission factor by inventorying the quantity of chemicals received as compared to the quantity of chemicals sent off site for disposal. Emissions were estimated by reviewing historical annual emissions reporting data and identifying the highest reported quantities for each chemical and multiplying the quantities by the VOC emission factor.

Table 23: System H – Emission Factors

Chemical	VOC Emission Factor (wt. %)	HAP Emission Factor (wt. %)
Acetonitrile	0.372	0.372
Chloroform	0.463	0.463
Dichloromethane	0.555	-
Ethanol	0.773	-
Ethyl Acetate	0.618	-
Ethyl Ether	0.633	-
Hexanes	0.495	0.495
Isopropanol	0.696	-
Methanol	0.715	0.715
Toluene	0.365	0.365
Xylene	0.287	0.287

M. Attachment 13: System IA Potential to Emit

IA.001-IA.024:
Emissions were estimated using the maximum heating input (MMBtu/hr) of each EU and AP-42 Chapter 1.4, Table 1.4-1, 1.4-2, and 1.4-3, and 8,760 hours per year.

Table 24: System IA – Emission Factors

Pollutant	Emission Factor ($lb/10^6$ scf)	Reference
PM10	7.6	AP-42 1.4, Table 1.4-2
PM2.5	7.6	AP-42 1.4, Table 1.4-2
SO2	0.6	AP-42 1.4, Table 1.4-2
NOx	100	AP-42 1.4, Table 1.4-1
CO	84	AP-42 1.4, Table 1.4-2
VOC	5.5	AP-42 1.4, Table 1.4-1
Total HAP	1.88	AP-42 1.4, Table 1.4-3

IA.025:
Emissions for PM10, PM2.5, NOx, CO, and VOC were estimated using the hp rating of the EU, diesel fuel consumption rates, and manufacturer specifications provided by the source. Emissions for total HAP's were estimated using AP-42 Chapter 3.3 Table 3.3-2. 500 hours per year was used.

Table 25: System IA – Emission Factors

Pollutant	Emission Factor (g/hp-hr)	Reference
PM10	0.09	Manufacturer Specifications
PM2.5	0.09	Manufacturer Specifications
NOx	4.18	Manufacturer Specifications
CO	1.34	Manufacturer Specifications
VOC	0.22	Manufacturer Specifications
Total HAP	5.38E-04 (lb/gal)	AP-42 3.3, Table 3.3-2

IA.026-IA.038:
Emissions for PM10, PM2.5, NOx, CO, VOC, and total HAP's were estimated using AP-42 Chapter 3.3 Table 3.3-1 and 3.3-2, and 500 hours per year.

Table 26: System IA – Emission Factors

Pollutant	Emission Factor (lb/hp-hr)	Reference
PM10	0.0022	AP-42 3.3, Table 3.3-1
PM2.5	0.0022	AP-42 3.3, Table 3.3-1
NOx	0.031	AP-42 3.3, Table 3.3-1
CO	6.68E-03	AP-42 3.3, Table 3.3-1
VOC	2.51E-03	AP-42 3.3, Table 3.3-1
Total HAP	5.38E-04 (lb/gal)	AP-42 3.3, Table 3.3-2

IA.039-IA.040:
Emissions for PM10, PM2.5, NOx, CO, and VOC were estimated using the hp rating of each EU, diesel fuel consumption rates, and Tier 1 Nonroad Diesel Emission Standards. Emissions for total HAP's were estimated using AP-42 Chapter 3.3 Table 3.3-2. 500 hours per year was used.

Table 27: System IA – Emission Factors

Pollutant	Emission Factor (g/hp-hr)	Reference
PM10	0.40	Tier 1 Diesel Emission Standards
PM2.5	0.40	Tier 1 Diesel Emission Standards
NOx	6.90	Tier 1 Diesel Emission Standards
CO	8.50	Tier 1 Diesel Emission Standards
VOC	1.00	Tier 1 Diesel Emission Standards
Total HAP	5.38E-04 (lb/gal)	AP-42 3.3, Table 3.3-2

IA.041-IA.047:
Emissions for PM10, PM2.5, NOx, CO, and VOC were estimated using the hp rating of each EU, diesel fuel consumption rates, and Tier 2 Nonroad Diesel Emission Standards. Emissions for total HAP's were estimated using AP-42 Chapter 3.3 Table 3.3-2. 500 hours per year was used.

Table 28: System IA – Emission Factors

Pollutant	Emission Factor (g/hp-hr)[20]	Reference
PM10	0.15	Tier 2 Diesel Emission Standards
PM2.5	0.15	Tier 2 Diesel Emission Standards
NOx	4.56	Tier 2 Diesel Emission Standards
CO	2.6	Tier 2 Diesel Emission Standards
VOC	0.24	Tier 2 Diesel Emission Standards
Total HAP	5.38E-04 (lb/gal)	AP-42 3.3, Table 3.3-2

IA.048-IA.059:
Emissions for PM10, PM2.5, NOx, CO, and VOC were estimated using the hp rating of each EU, diesel fuel consumption rates, and Tier 3 Nonroad Diesel Emission Standards. Emissions for total HAP's were estimated using AP-42 Chapter 3.3 Table 3.3-2. 500 hours per year was used.

Table 29: System IA – Emission Factors

Pollutant	Emission Factor (g/hp-hr)[21]	Reference
PM10	0.15	Tier 3 Diesel Emission Standards
PM2.5	0.15	Tier 3 Diesel Emission Standards
NOx	2.85	Tier 3 Diesel Emission Standards
CO	2.6	Tier 3 Diesel Emission Standards
VOC	0.15	Tier 3 Diesel Emission Standards
Total HAP	5.38E-04 (lb/gal)	AP-42 3.3, Table 3.3-2

IA.060:
Emissions for PM10, PM2.5, NOx, CO, and VOC were estimated using the hp rating of the EU, diesel fuel consumption rates, and Tier 4 Nonroad Diesel Emission Standards. Emissions for total HAP's were estimated using AP-42 Chapter 3.3 Table 3.3-2. 500 hours per year was used.

[20] NMHC + NOx = 4.8 g/hp-hr. Per internally adopted Bay Area AQMD policy, assume a breakdown of 5% and 95%, respectively
[21] NMHC + NOx = 3.0 g/hp-hr. Per internally adopted Bay Area AQMD policy, assume a breakdown of 5% and 95%, respectively

Table 30: System IA – Emission Factors

Pollutant	Emission Factor (g/hp-hr)[22]	Reference
PM10	0.30	Tier 4 Diesel Emission Standards
PM2.5	0.30	Tier 4 Diesel Emission Standards
NOx	5.32	Tier 4 Diesel Emission Standards
CO	4.90	Tier 4 Diesel Emission Standards
VOC	0.28	Tier 4 Diesel Emission Standards
Total HAP	5.38E-04 (lb/gal)	AP-42 3.3, Table 3.3-2

IA.061:
Emissions for PM10, PM2.5, NOx, CO, and VOC were estimated using the hp rating of the EU, diesel fuel consumption rates, and Tier 4 Nonroad Diesel Emission Standards. Emissions for total HAP's were estimated using AP-42 Chapter 3.3 Table 3.3-2. 500 hours per year was used.

Table 31: System IA – Emission Factors

Pollutant	Emission Factor (g/hp-hr)	Reference
PM10	0.015	Tier 4 Diesel Emission Standards
PM2.5	0.015	Tier 4 Diesel Emission Standards
NOx	0.30	Tier 4 Diesel Emission Standards
CO	2.60	Tier 4 Diesel Emission Standards
VOC	0.14	Tier 4 Diesel Emission Standards
Total HAP	5.38E-04 (lb/gal)	AP-42 3.3, Table 3.3-2

SO_2 emissions for IA.025-IA.061 were estimated using diesel fuel consumption and the following equation:

$$SO_2 EF\ \left(\frac{lb}{gal\ diesel}\right) = P(diesel) \times S(diesel) \times \left(\frac{2lb\ SO_2}{1\ lb\ S}\right)$$

Where,
P(diesel) = density of diesel in lbs/gal = 6.943
S(diesel) = sulfur content of diesel fuel in parts per million by weight (ppmw) = 0.000015

Diesel fuel consumption rates for IA.025-IA.061 were estimated using the following equation:

[22] NMHC + NOx = 5.6 g/hp-hr. Per internally adopted Bay Area AQMD policy, assume a breakdown of 5% and 95%, respectively

$$\frac{gal\ diesel}{hr} = (\frac{7{,}000\ Btu}{hp - hr}) \times (\frac{gal\ diesel}{138{,}700\ Btu}) \times (\frac{engine\ hp}{1})$$

AP-42 3.3 Table 3.3-1 proposes to convert from lb/MMBtu to lb/hp-hr, use an average brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr.

Bureau of Transportation Statistics proposes a fuel conversion rate of 138,700 Btu/gal diesel.

IA.062:
Emissions for PM10, PM2.5, SO_2, NOx, CO, VOC, and total HAP's were estimated using AP-42 Chapter 3.3 Table 3.3-1 and 3.3-2. 500 hours per year was used.

Table 32: System IA – Emission Factors

Pollutant	Emission Factor (lb/hp-hr)	Reference
PM10	7.21E-04	AP-42 3.3, Table 3.3-1
PM2.5	7.21E-04	AP-42 3.3, Table 3.3-1
SO_2	5.91E-04	AP-42 3.3, Table 3.3-1
NOx	0.011	AP-42 3.3, Table 3.3-1
CO	6.96E-03	AP-42 3.3, Table 3.3-1
VOC	2.16E-02	AP-42 3.3, Table 3.3-1
Total HAP	5.38E-04 (lb/gal)[23]	AP-42 3.3, Table 3.3-2

The gasoline fuel consumption rate for IA.062 was estimated using the following equation:

$$\frac{gal\ gasoline}{hr} = (\frac{7{,}000\ Btu}{hp - hr}) \times (\frac{gal\ diesel}{125{,}000\ Btu}) \times (\frac{engine\ hp}{1})$$

AP-42 3.3 Table 3.3-1 proposes to convert from lb/MMBtu to lb/hp-hr, use an average brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr.

Bureau of Transportation Statistics proposes a fuel conversion rate of 125,000 Btu/gal gasoline.

IA.063-IA.066:
Emissions for PM10, PM2.5, SO2, NOx, CO, VOC, and total HAP's were estimated using the hp rating of each EU, natural gas heat input, AP-42 Chapter 3.2 Table 3.2-3, and 500 hours per year. Neither the facility nor the AQMD has record of the heat input for these engines (MMBtu/hr). AP-42 3.4 Table 3.4-1 footnote e proposes to use an average brake-specific fuel consumption (BSFC) of 7,000 Btu/hp-hr to directly convert power output to fuel heat input.

[23] To convert the emission factor from lb/MMBtu to lb/gal, an average distillate heating value of 139 MMBtu/1000 gallons was used.

$$\frac{MMBtu}{hr} = \frac{engine\ hp}{1} \times \frac{7{,}000Btu}{hp-hr} \times \frac{1\ MMBtu}{10^6 Btu}$$

Table 33: System IA – Emission Factors

Pollutant	Emission Factor (lb/MMBtu)	Reference
PM10	9.50E-03	AP-42 3.2, Table 3.2-3
PM2.5	9.50E-03	AP-42 3.2, Table 3.2-3
SO2	5.88E-04	AP-42 3.2, Table 3.2-3
NOx	2.21	AP-42 3.2, Table 3.2-3
CO	3.72	AP-42 3.2, Table 3.2-3
VOC	2.96E-02	AP-42 3.2, Table 3.2-3
Total HAP	2.82E-02	AP-42 3.2, Table 3.2-3

IA.067:

The source specified a maximum material throughput for all VOC and HAP containing products which was then multiplied by the VOC and HAP content of each material (lb/gal). A spray booth exhaust filter efficiency of 98% was applied as a control (Required exhaust filter efficiency identified in 40 CFR Part 63 Subpart HHHHHH), as the facility didn't provide exhaust filter efficiency manufacturers documentation. PM10 emissions were estimated by multiplying the material throughput by the solids content of each material (lb/gal), then multiplying that by a control efficiency of 65% (average transfer efficiency of HVLP spray gun), then by a control efficiency of 98% (Required exhaust filter efficiency identified in 40 CFR Part 63 Subpart HHHHHH). PM2.5 was assumed equal to PM10.

Table 34: System IA – Emission Factors

Product Number	Product Name	VOC Content (lb/gal)	HAP Content (lb/gal)	Solids Content (lb/gal)
115.G01	Premium Lacquer Thinner	5.41	1.65	0.00
T77T36	Precat Catalyzed Lacquer	5.09	0.00	2.18
B54TZ404	Pitt Tech Durathan Enamel	2.61	0.22	6.55
B31W4453	Promar 400 Latex Enamel	0.28	0.28	3.13
Unknown	Xylene Thinner	7.30	7.30	0.00