



TECHNICAL SUPPORT DOCUMENT

**Air Discharge Permit 24-3642
Air Discharge Permit Application L-742**

Issued: April 11, 2024

Green Hill School

SWCAA ID - 481

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ABBREVIATIONS*List of Acronyms*

ADP	Air Discharge Permit	NOV	Notice of Violation/
AP-42	Compilation of Emission Factors, AP-42, 5th Edition, Volume 1, Stationary Point and Area Sources – published by EPA	PSD	Prevention of Significant Deterioration
ASIL	Acceptable Source Impact Level	RCW	Revised Code of Washington
BACT	Best available control technology	SCC	Source Classification Code
CAM	Compliance Assurance Monitoring	SDS	Safety Data Sheet
CAS#	Chemical Abstracts Service registry number	SQER	Small Quantity Emission Rate listed in WAC 173-460
CFR	Code of Federal Regulations	Standard	Standard conditions at a temperature of 68°F (20°C) and a pressure of 29.92 in Hg (760 mm Hg)
EPA	U.S. Environmental Protection Agency	SWCAA	Southwest Clean Air Agency
EU	Emission Unit	T-BACT	Best Available Control Technology for toxic air pollutants
mfr	Manufacturer	WAC	Washington Administrative Code

List of Units and Measures

acfm	Actual cubic foot per minute	MMBtu	Million British thermal unit
bhp	Brake horsepower	ppm	Parts per million
dscfm	Dry Standard cubic foot per minute	ppmv	Parts per million by volume
gpm	Gallon per minute	ppmvd	Parts per million by volume, dry
gr/dscf	Grain per dry standard cubic foot	ppmw	Parts per million by weight
hp	Horsepower	scfm	Standard cubic foot per minute
hp-hr	Horsepower-hour	tpy	Tons per year

List of Chemical Symbols, Formulas, and Pollutants

CO	Carbon monoxide	PM	Particulate Matter with an aerodynamic diameter 100 µm or less
CO ₂	Carbon dioxide	PM ₁₀	PM with an aerodynamic diameter 10 µm or less
CO _{2e}	Carbon dioxide equivalent	PM _{2.5}	PM with an aerodynamic diameter 2.5 µm or less
H ₂ S	Hydrogen sulfide	SO ₂	Sulfur dioxide
HAP	Hazardous air pollutant listed pursuant to Section 112 of the Federal Clean Air Act	SO _x	Sulfur oxides
NO ₂	Nitrogen dioxide	TAP	Toxic air pollutant pursuant to Chapter 173-460 WAC
NO _x	Nitrogen oxides	VOC	Volatile organic compound
O ₂	Oxygen		
O ₃	Ozone		

Terms not otherwise defined have the meaning assigned to them in the referenced regulations or the dictionary definition, as appropriate.

1. FACILITY IDENTIFICATION

Applicant Name: Green Hill School
 Applicant Address: 375 SW 11th Street, Chehalis, WA 98532

 Facility Name: Green Hill School
 Facility Address: 375 SW 11th Street, Chehalis, WA 98532

 SWCAA Identification: 481

 Contact Person: Allan Mount, Maintenance Specialist 4

 Primary Process: Corrections Institution
 SIC/NAICS Code: 9223 / Correctional Institutions
 92214 / Correctional Institutions

 Facility Classification: Natural Minor

2. FACILITY DESCRIPTION

Green Hill School (Green Hill) is a juvenile detention facility operated by the Washington State Department of Children, Youth & Families. Emission units are listed below.

3. CURRENT PERMITTING ACTION

This permitting action is in response to Air Discharge Permit application number L-742 (ADP Application L-742) dated January 19, 2024. Green Hill submitted ADP Application L-742 requesting approval of the following:

- Installation of replacement burner and combustion controls for Boiler #3.

The current permitting action provides approval for the replacement burner as proposed in ADP Application L-742. ADP 24-3642 will supersede ADP 01-2338 in its entirety.

4. PROCESS DESCRIPTION

- 4.a. Space Heating / Domestic Hot Water. Multiple package boilers are used to provide hot water to facility-wide systems for space heating and domestic use.
- 4.b. Emergency Power Generation. One diesel engine driven generator will be used to generate emergency electrical power at the facility.
- 4.c. Spray Coating. One spray coating booth and a mixing area are operated in support of automotive refinishing activities at the facility. A separate spray coating booth is operated in support of routine maintenance projects at the facility. Overspray from spray coating is captured within the booths and vented through dedicated exhaust stacks equipped with paint arrestor filters.

5. EQUIPMENT/ACTIVITY IDENTIFICATION

- 5.a. Boiler #1 (existing). This unit is a dual fuel package boiler used to supply hot water for space heating and domestic hot water.

Boiler Make / Model: Burnham Industrial / 3PW-150-50-GO-PF (WA State ID# 057-00W)
 Burner Make/Model: Power Flame / LNIC4-GO-30 (s/n 119992173)
 Rated Heat Input: 6.280 MMBtu/hr
 Emissions: 30 ppmv NO_x / 50 ppmv CO – corrected to 3% O₂ (gas)
 Fuel: Natural gas (primary), #2 diesel (back-up)
 Year of Manufacture: 2001
 NSPS/MACT: N/A
 Exhaust Stack: 16" diameter, vertical at 24' above grade.
 Location: 46°38'52.95"N 122°57'39.98"W

- 5.b. Boiler #2 (existing). This unit is a dual fuel package boiler used to supply hot water for space heating and domestic hot water.

Boiler Make / Model: Burnham Industrial / 3PW-400-50-GO-PF (WA State ID# 058-00W)
 Burner Make/Model: Power Flame / LINIV168-GO2AL (s/n 119900164)
 Rated Heat Input: 16.8 MMBtu/hr
 Emissions: 30 ppmv NO_x / 50 ppmv CO – corrected to 3% O₂ (gas)
 Fuel: Natural gas (primary), #2 diesel (back-up)
 Year of Manufacture: 2001
 NSPS/MACT: JJJJJ
 Exhaust Stack: 24" diameter vertical at 24' above grade.
 Location: 46°38'53.00"N 122°57'40.15"W

- 5.c. Boiler #3 (modified). This unit is a dual fuel package boiler used to supply hot water for space heating and domestic hot water.

Boiler Make / Model: Burnham Industrial / 3PW-400-50-GO-PF (WA State ID# 066-99W)
 Burner Make/Model: Power Flame / LNIV168-GO-2AL (s/n 109800125) Existing
 Industrial Combustion / NTDLG-168 Replacement
 Rated Heat Input: 16.8 MMBtu/hr
 Emissions: 30 ppmv NO_x / 50 ppmv CO – corrected to 3% O₂ Existing (gas)
 12 ppmv NO_x / 50 ppmv CO – corrected to 3% O₂ Replacement (gas)
 Fuel: Natural gas (primary), #2 diesel (back-up)
 Year of Manufacture: 2001 (boiler)
 NSPS/MACT: JJJJJ
 Exhaust Stack: 24" diameter vertical at 24' above grade.
 Location: 46°38'53.05"N 122°57'40.22"W

ADP Application L-742. Green Hill proposes to replace the existing Power Flame burner with a new Industrial Combustion burner of similar design and capacity. No other changes are proposed to the boiler or associated hot water system. The Industrial Combustion burner is a low emission design designed to achieve NO_x emissions of 9 ppmv or less @ 3% O₂. However, this is a retrofit project so performance may not meet design specifications. Performance data for the burner indicates NO_x emissions can be reliably maintained at 11 ppmv or less @ 3% O₂ as installed in Boiler #3. NO_x emissions subsequent to retrofit will be limited to 12 ppmv @ 3% O₂.

- 5.d. Diesel Engine - Emergency Generator (existing). This unit is a diesel engine driven emergency generator.

Make / Model: Caterpillar / 3512B TA (s/n 5JW00540)
 Power Rating: 2,172 bhp
 Fuel Consumption: 104 gal/hr (diesel)
 Model Year: 2001
 EPA Certification: Unknown
 NSPS/MACT Applicable: ZZZZ
 Generator Make / Model: Caterpillar / SR-4B
 Generator Power Rating: 1,500 kW
 Exhaust: 8" diameter, vertical at 17' above ground level
 Location: 46°38'53.03"N 122°57'41.01"W

- 5.e. Spray Booth – Auto Shop (existing). This unit is a down-draft spray coating booth located in the facility's vocational auto shop. Spray coating is performed with HVLP spray guns or equivalent.

Make / Model: JBI, Inc. / DD-24PSB-S
 Dimensions: 24' L x 14' W x 9' H
 Rated exhaust flow: 12,000 acfm
 Exhaust description: 34" diameter at 24' above ground level
 Location: 46°39'05.75"N 122°57'38.28"W

- 5.f. Paint Mix Room – Auto Shop (existing). This unit is a paint mixing room operated in support of the facility's vocational auto shop.

Make / Model: JBI, Inc. / PMR-89-S
 Dimensions: 9' L x 6' W x 8' H
 Rated exhaust flow: 635 acfm
 Exhaust description: 12" diameter at 24' above ground level
 Location: 46°39'05.78"N 122°57'38.22"W

- 5.g. Spray Booth – Maintenance (existing). This unit is a spray coating booth located in the facility's maintenance shop. Spray coating is performed with HVLP spray guns or equivalent.

Make / Model: JBI, Inc. / IDB-107
 Dimensions: 6' L x 10' W x 7' H
 Rated exhaust flow: 8,750 acfm
 Exhaust description: 27" diameter at 20' above ground level
 Location: 46°39'06.53"N 122°57'42.09"W

- 5.h. Heaters (existing).

<u>Location</u>	<u>Make / Model</u>	<u>Rated Heat Input</u>
Auto Shop	Co-Ray-Vac / CRV-B-10 (RAD-V1)	0.2 MMBtu/hr
Paint Booth	Reznor / ADF-1200 (MU-L1)	0.7 MMBtu/hr
Auto Shop Booth	Reznor / ADF-300 (MU-V1)	0.2 MMBtu/hr
Hot Water Heater	Rheem-Ruud / G100-400A	0.3999 MMBtu/hr
Greenhouse Heater	Rheem-Ruud / G100-400A	0.3999 MMBtu/hr

- 5.i. **Insignificant Emission Units.** The following pieces of facility equipment have been determined to have insignificant emissions, and are not registered as emission units:

Gasoline Storage/Dispensing. One 1,000 gallon capacity storage tank with fueling station. No vapor controls.

Woodworking Baghouses. Two dust collectors used to control/collect sawdust and wood shavings from equipment in the vocational and maintenance shops.

Make/Model: Circul-Aire / M-50 (DC-V1, DC-L1)
 Exhaust Rate: 4,000 acfm (each)
 Filter Area: 594 ft² (each)
 Filter Media: Cotton sateen
 Cleaning Mechanism: Mechanical shaker
 Exhaust: Vented internally in shop areas

- 5.j. **Equipment/Activity Summary.**

	Equipment/Activity	Control Equipment/Measure
1	Boiler #1 (Burnham – 6.28 MMBtu/hr)	Low NO _x Burner, Low Sulfur Fuel (Nat Gas)
2	Boiler #2 (Burnham – 16.8 MMBtu/hr)	Low NO _x Burner, Low Sulfur Fuel (Nat Gas)
3	Boiler #3 (Burnham – 16.8 MMBtu/hr)	Low NO _x Burner, Low Sulfur Fuel (Nat Gas)
4	Diesel Engine – Emergency Generator (Caterpillar – 2,172 hp)	Low sulfur diesel ($\leq 0.05\%$ by wt)
5	Spray Booth – Auto Shop (JBI – 12,000 acfm)	Process Enclosure with Particulate Filtration High Transfer Efficiency Spray Equipment
6	Paint Mixing Area – Auto Shop (JBI - 635 acfm)	N/A
7	Spray Booth – Maintenance (JBI – 8,750 acfm)	Process Enclosure with Particulate Filtration High Transfer Efficiency Spray Equipment
8	Heaters (Combined – 1.8998 MMBtu/hr)	Low Sulfur Fuel (Nat Gas)

6. EMISSIONS DETERMINATION

Emissions to the ambient atmosphere from facility operations, as proposed in ADP Application L-742, consist of nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), particulate matter (PM), sulfur dioxide (SO₂), toxic air pollutants (TAPs), and hazardous air pollutants (HAPs).

Unless otherwise specified by SWCAA, actual emissions must be determined using the specified input parameter listed for each emission unit and the following hierarchy of methodologies:

- Continuous emissions monitoring system (CEMS) data;
- Source emissions test data (EPA reference method). When source emissions test data conflicts with CEMS data for the time period of a source test, source test data must be used;
- Source emissions test data (other test method); and
- Emission factors or methodology provided in this TSD.

- 6.b. Boilers #2 and #3 – Natural Gas (existing). Potential emissions from boiler operation while firing natural gas are calculated based on a rated heat input of 16.8 MMBtu/hr, 8,760 hr/yr, and applicable emission factors. Boiler #2 emission factors for NO_x and CO correspond to 30 ppmv and 50 ppmv at 3% O₂, respectively. Boiler #3 emission factors for NO_x and CO correspond to 12 ppmv and 50 ppmv at 3% O₂, respectively. All other emission factors are taken from EPA AP-42 §1.4 "Natural Gas Combustion" (7/98). All PM is assumed to be PM_{2.5}. Annual emissions will be calculated based on actual fuel consumption in each boiler using the emission calculation hierarchy listed above.

Green Hill operates only one of these boilers at a time. Potential emission estimates are based on full time operation of Boiler #2 because it is the higher emitting unit.

Heat Input Rating =	16.800	MMBtu/hr			
Gas Heat Content =	1,020	Btu/scf			
Fuel Consumption =	147,168	MMBtu/yr			
	Emission Factor		Emissions		
Pollutant	(lb/MMBtu)	(lb/hr)	(lb/yr)	(tpy)	
NO _x	0.0364	0.61	5,357	2.68	30 ppmv NO _x
	0.0146	0.25			12 ppmv NO _x
CO	0.0369	0.62	5,430	2.72	
VOC	0.0054	0.09	794	0.40	
SO _x as SO ₂	0.0006	9.9E-03	87	0.043	
PM/PM ₁₀ /PM _{2.5}	0.0075	0.13	1,097	0.55	
Benzene	2.06E-06	3.5E-05	3.0E-01	1.5E-04	
Formaldehyde	7.35E-05	1.2E-03	1.1E+01	5.4E-03	
CO ₂ e	117.1	1967.2	17,233,078	8,617	

ADP Application L-742. Green Hill proposes to replace the existing Boiler #3 burner with a new burner of similar capacity. The new burner is a low emission design with lower NO_x emissions (<12 ppmv) than the existing burner (<30 ppmv). Due to the current operating scheme, potential emissions may not decrease as a result of the replacement because potential emissions from Boiler #2 will remain unchanged.

6.c. Boilers #2 and #3 – Diesel (existing). Combined potential emissions from boiler operation while firing #2 diesel are calculated based on a combined heat input of 23.08 MMBtu/hr, 200 hr/yr of diesel operation, 140,000 Btu/gal of #2 diesel, use of low sulfur diesel (<0.05% sulfur by weight), and emission factors from EPA AP-42 Section 1.3 "Fuel Oil Combustion" (9/98). All PM is assumed to be PM_{2.5}. Annual emissions will be calculated based on actual fuel consumption using the emission calculation hierarchy listed above.

Heat Input Rating =	23.08	MMBtu/hr		
Fuel heat value =	140,000	Btu/gal		
Fuel Consumption =	165.0	gal/hr		
Fuel Consumption =	33,000	gal/yr		
	EF		Emissions	
Pollutant	(lb/1000 gal)	(lb/hr)	(lb/yr)	(tpy)
NO _x	20.00	3.30	660	0.33
CO	5.00	0.83	165	0.083
VOC	0.34	0.06	11	0.0056
SO _x as SO ₂	7.10	1.17	234	0.12
PM/PM ₁₀ /PM _{2.5}	2.00	0.33	66	0.033
CO _{2e}	22,580	3,726	745,140	373

6.d. Diesel Engine – Emergency Generator (existing). Potential emissions from engine operation are calculated based on 100 hr/yr of operation at full rated load (2,172 hp), the use of low sulfur diesel (<0.05% sulfur by weight), and a maximum fuel rate of 104.0 gal/hr. Sulfur oxide emissions are estimated using mass balance methodology, assuming all fuel sulfur is converted to sulfur dioxide. All PM is assumed to be PM_{2.5}. Annual emissions will be calculated based on actual hours of operation using the emission calculation hierarchy listed above.

Hours of Operation =	100	hours			
Power Output =	2,172	horsepower			
Fuel Sulfur Content =	0.05	% by weight			
Fuel Consumption Rate =	104.0	gal/hr			
Fuel Heat Content =	0.138	MMBtu/gal (40 CFR 98)			
	EF	Emissions			
Pollutant	lb/hr	tpy	EF Source		
NO _x	54.30	2.72	Caterpillar		
CO	11.51	0.58	Caterpillar		
VOC	1.52	0.076	Caterpillar		
SO _x as SO ₂	0.750	0.038	Mass Balance		
PM/PM ₁₀ /PM _{2.5}	0.65	0.033	Caterpillar		
			CO _{2e}	CO _{2e}	
Greenhouse Gases	kg/MMBtu	GWP	lb/MMBtu	lb/gallon	tpy, CO_{2e}
CO ₂	73.96	1	163.05	22.501	117 40 CFR 98
CH ₄	0.003	25	0.165	0.023	0.1 40 CFR 98
N ₂ O	0.0006	298	0.394	0.054	0.3 40 CFR 98
Total GHG - CO _{2e}	73.9636		163.61	22.58	117

- 6.g. Emissions Summary/Facility-wide Potential to Emit. Facility-wide potential to emit as calculated in the sections above is summarized below.

<u>Pollutant</u>	<u>Potential Emissions (tpy)</u>	<u>Project Increase (tpy)</u>
NO _x	7.54	0.00
CO	5.07	0.00
VOC	1.67	0.00
SO ₂	0.22	0.00
Lead	0.0	0.00
PM	0.89	0.00
PM ₁₀	0.89	0.00
PM _{2.5}	0.89	0.00
TAP	1.24	0.00
HAP	0.70	0.00
CO ₂ e	12,929	0.00

<u>Pollutant</u>	<u>CAS Number</u>	<u>Category</u>	<u>Facility-wide Emissions</u>	<u>Project Increase</u>	<u>WAC 173-460 SQER</u>
			<u>lb/yr</u>	<u>lb/yr</u>	<u>lb/yr</u>
Acetone	67-64-1	TAP	783	0.0	43,748
Butyl Acetate	123-86-4	TAP	116	0.0	43,748
Butyl Alcohol	71-36-3	TAP	28	0.0	43,748
Ethanol	64-17-5	TAP	316	0.0	43,748
Ethyl Benzene	100-41-4	HAP/TAP	65	0.0	65
Methylcyclohexane	108-87-2	TAP	3.2	0.0	43,748
Methylene Chloride	75-09-2	HAP/TAP	187	0.0	192
Naphtha	8030-30-6	TAP	67	0.0	43,748
			<u>lb/24-hr</u>	<u>lb/24-hr</u>	<u>lb/24-hr</u>
2-Butoxyethanol	111-76-2	TAP	0.12	0.0	6.1
Methanol	67-56-1	HAP/TAP	0.75	0.0	1,500
Toluene	108-88-3	HAP/TAP	0.39	0.0	370
Xylene	1330-20-7	HAP/TAP	1.09	0.0	16
			<u>lb/1-hr</u>	<u>lb/1-hr</u>	<u>lb/1-hr</u>
Isopropanol	67-63-0	TAP	0.0046	0.0	5.9

7. REGULATIONS AND EMISSION STANDARDS

Regulations that have been used to evaluate the acceptability of the proposed facility and establish emission limits and control requirements include, but are not limited to, the regulations, codes, or requirements listed below.

- 7.a. 40 CFR 60 Subpart Dc "Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units" applies to any steam generating unit with a heat input greater than or equal to 10 million Btu/hr, but less than or equal to 100 million Btu/hr constructed, modified, or reconstructed after June 9, 1989. Boiler #1 is too small to be subject to this regulation. Boilers #2 and #3 are subject to this regulation.
- 7.b. 40 CFR 60.4200 et seq. (Subpart IIII) "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines" applies to each compression ignition (CI) internal combustion engine (ICE) that commences construction after July 11, 2005, and is manufactured after April 1, 2006, or that is modified or reconstructed after July 11, 2005. The diesel engine that powers the emergency generator is too old to be subject to this regulation.
- 7.c. 40 CFR 63 Subpart ZZZZ (63.6580 et seq.) "National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines" establishes national emission limitations and operating limitations for HAP emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. The diesel engine that powers the facility's emergency generator is classified as an existing stationary CI RICE at an area source of HAP.
- 7.d. 40 CFR 63 Subpart JJJJJ "National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources" establishes performance standards and requirements for industrial, commercial, and institutional boilers operating at an area source of hazardous air pollutants. The boilers at this facility are dual fueled units capable of firing #2 diesel and are subject to the regulation.
- 7.e. Revised Code of Washington (RCW) 70A.15.2040 empowers any activated air pollution control authority to prepare and develop a comprehensive plan or plans for the prevention, abatement, and control of air pollution within its jurisdiction. An air pollution control authority may issue such orders as may be necessary to effectuate the purposes of the Washington Clean Air Act and enforce the same by all appropriate administrative and judicial proceedings subject to the rights of appeal as provided in Chapter 62, Laws of 1970 ex. sess.
- 7.f. RCW 70A.15.2210 provides for the inclusion of conditions of operation as are reasonably necessary to assure the maintenance of compliance with the applicable ordinances, resolutions, rules, and regulations when issuing an Air Discharge Permit for installation and establishment of an air contaminant source.
- 7.g. Washington Administrative Code (WAC) 173-460 "Controls for New Sources of Toxic Air Pollutants" requires Best Available Control Technology for toxic air pollutants (T-BACT), identification and quantification of emissions of toxic air pollutants and demonstration of protection of human health and safety.
- 7.h. WAC 173-476 "Ambient Air Quality Standards" establishes ambient air quality standards for PM₁₀, PM_{2.5}, lead, sulfur dioxide, nitrogen dioxide, ozone, and carbon monoxide in the ambient air, which shall not be exceeded.
- 7.i. SWCAA 400-040 "General Standards for Maximum Emissions" requires all new and existing sources and emission units to meet certain performance standards with respect to Reasonably Available Control Technology (RACT), visible emissions, fallout, fugitive emissions, odors, emissions detrimental to persons or property, sulfur dioxide, concealment and masking, and fugitive dust.
- 7.j. SWCAA 400-050 "Emission Standards for Combustion and Incineration Units" requires that all provisions of SWCAA 400-040 be met, and that no person shall cause or permit the emission of particulate matter from any combustion or incineration unit in excess of 0.23 grams per dry cubic meter (0.1 grains per dry standard cubic foot) of exhaust gas at standard conditions.

- 7.k. SWCAA 400-060 "Emission Standards for General Process Units" prohibits particulate matter emissions from all new and existing process units in excess of 0.1 grains per dry standard cubic foot of exhaust gas.
- 7.l. SWCAA 400-070(13) " General Requirements for Certain Source Categories: Natural Gas-Fired Water Heaters."
- (a) Applicability. The requirements of this section apply to all natural gas-fired water heaters with a rated heat input less than 400,000 Btu/hr. For the purposes of this subsection, the term "water heater" means a closed vessel in which water is heated by combustion of gaseous fuel and is withdrawn for use external to the vessel at pressures not exceeding 160 psig, including the apparatus by which heat is generated and all controls and devices necessary to prevent water temperatures from exceeding 210°F.
 - (b) Requirements.
 - (i) On or after January 1, 2010, no person shall offer for sale, or install, a water heater that emits NO_x at levels in excess of 55 ppmv at 3% O₂, dry (0.067 lb per million Btu of heat input).
 - (ii) On or after January 1, 2013, no person shall offer for sale, or install, a water heater that emits NO_x at levels in excess of 20 ppmv at 3% O₂, dry (0.024 lb per million Btu of heat input).
- 7.m. SWCAA 400-109 "Air Discharge Permit Applications" requires that an Air Discharge Permit application be submitted for all new installations, modifications, changes, or alterations to process and emission control equipment consistent with the definition of "new source". Sources wishing to modify existing permit terms may submit an Air Discharge Permit application to request such changes. An Air Discharge Permit must be issued, or written confirmation of exempt status must be received, before beginning any actual construction, or implementing any other modification, change, or alteration of existing equipment, processes, or permits.
- 7.n. SWCAA 400-110 "New Source Review" requires that SWCAA issue an Air Discharge Permit in response to an Air Discharge Permit application prior to establishment of the new source, emission unit, or modification.
- 7.o. SWCAA 400-113 "Requirements for New Sources in Attainment or Nonclassifiable Areas" requires that no approval to construct or alter an air contaminant source shall be granted unless it is evidenced that:
- (1) The equipment or technology is designed and will be installed to operate without causing a violation of the applicable emission standards;
 - (2) Best Available Control Technology will be employed for all air contaminants to be emitted by the proposed equipment;
 - (3) The proposed equipment will not cause any ambient air quality standard to be exceeded; and
 - (4) If the proposed equipment or facility will emit any toxic air pollutant regulated under WAC 173-460, the proposed equipment and control measures will meet all the requirements of that Chapter.

8. RACT/BACT/BART/LAER/PSD/CAM DETERMINATIONS

The proposed equipment and control systems incorporate Best Available Control Technology (BACT) for the types and amounts of air contaminants emitted by the processes as described below:

New BACT Determinations

- 8.a. BACT Determination – Hot Water Boiler. The proposed use of low sulfur fuel (natural gas), annual emission monitoring, and low emission burner technology (≤ 12 ppmv - NO_x, ≤ 50 ppmv CO) has been determined to meet the requirements of BACT for new hot water boilers at this facility.

Previous BACT Determinations

- 8.b. BACT Determination – Hot Water Boilers (ADP 01-2338). The use of low-sulfur fuel, either natural gas or diesel fuel with a sulfur content of 0.05% by weight or less, and low NO_x burners, to limit emissions of NO_x to 30 ppmv dry or less (@3% O₂) and CO to 50 ppmv dry or less (@3% O₂) has been determined to meet the requirements of BACT for hot water boilers at this facility. BACT for the control of other pollutants is the proper use of combustion controls.

- 8.c. BACT Determination – Emergency Diesel Engine (ADP 01-2338). The use of modern engine design for diesel-fired internal combustion engines intended for use with emergency generators, diesel fuel with a sulfur content of 0.05% by weight or less, and limitation of engine operation to testing and actual power interruptions (approximately 100 hours/year) has been determined to meet the requirements of BACT for the diesel-powered emergency generator at this facility.
- 8.d. BACT Determination – Spray Coating (ADP 01-2338). The use of an enclosed spray booth with particulate control filters and vertical atmospheric dispersion of exhaust streams has been determined to meet the requirements of BACT and T-BACT for spray coating operations at this facility.

Other Determinations

- 8.e. Prevention of Significant Deterioration (PSD) Applicability Determination. The potential to emit of this facility is less than applicable PSD applicability thresholds. Likewise, this permitting action will not result in a potential increase in emissions equal to or greater than the PSD thresholds. Therefore, PSD review is not applicable to this action.
- 8.f. Compliance Assurance Monitoring (CAM) Applicability Determination. CAM is not applicable to any emission unit at this facility because it is not a major source and is not required to obtain a Part 70 permit.

9. AMBIENT IMPACT ANALYSIS

- 9.a. TAP Small Quantity Review. The new equipment and modifications proposed in ADP Application L-742 will not affect the type or quantity of TAP emissions from the facility. Previously approved BACT measures at the facility will limit emissions of Class A and B toxic air pollutants to below the applicable Small Quantity Emission Rates (SQER) or Acceptable Source Impact Level (ASILs) specified in WAC 173-460.

Conclusions

- 9.b. Burner replacement in Boiler #3, as proposed in ADP Application L-742, will not cause the ambient air quality requirements of Title 40 Code of Federal Regulations (CFR) Part 50 "National Primary and Secondary Ambient Air Quality Standards" to be violated.
- 9.c. Burner replacement in Boiler #3, as proposed in ADP Application L-742, will not cause the requirements of WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" or WAC 173-476 "Ambient Air Quality Standards" to be violated.
- 9.d. Burner replacement in Boiler #3, as proposed in ADP Application L-742, will not cause a violation of emission standards for sources as established under SWCAA General Regulations Sections 400-040 "General Standards for Maximum Emissions," 400-050 "Emission Standards for Combustion and Incineration Units," and 400-060 "Emission Standards for General Process Units."

10. DISCUSSION OF APPROVAL CONDITIONS

SWCAA has made a determination to issue ADP 24-3642 in response to ADP Application L-742. ADP 24-3642 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

- 10.a. Supersession of Previous Permits. ADP 24-3642 supersedes ADP 01-2338 in its entirety.

- 10.b. General Basis. Permit requirements for equipment affected by this permitting action incorporate the operating schemes proposed by the applicant in ADP Application L-742. Permit requirements established by this action are intended to implement BACT, minimize emissions, and assure compliance with applicable requirements on a continuous basis. Emission limits for approved equipment are based on the maximum potential emissions calculated in Section 6 of this Technical Support Document.
- 10.c. Monitoring and Recordkeeping Requirements. ADP 24-3642 establishes monitoring and recordkeeping requirements sufficient to document compliance with applicable emission limits, ensure proper operation of approved equipment and provide for compliance with generally applicable requirements. Specific monitoring requirements are established for coating consumption, boiler fuel consumption, engine operation, fuel sulfur content, and equipment maintenance.
- 10.d. Reporting Requirements. ADP 24-3642 establishes general reporting requirements for annual air emissions, upset conditions and excess emissions. Specific reporting requirements are established for coating consumption, boiler fuel consumption, and engine operation. Reports are to be submitted on an annual basis.
- 10.e. Hot Water Boilers (modified). Permit requirements for the boilers listed in this application incorporate expected operational performance and the operating schemes proposed by the permit applicant at the time of installation. All of the proposed boilers are low emission models. Emission concentrations of NO_x and CO have been limited to levels guaranteed by the manufacturer or demonstrated in practice. Visible emissions from the boilers are limited to 0% opacity consistent with proper operation. Periodic emission testing and annual emission monitoring have been established for the purposes of demonstrating compliance and assuring proper operation on an ongoing basis.
- 10.f. Spray Coating (existing). All spray coating activities are required to be performed inside enclosed spray booths. Visible emissions from the prep station and spray booth exhaust systems have been limited to zero percent opacity consistent with enclosed operation. The permittee is required to use high transfer efficiency spray equipment, such as HVLP or airless designs. Permit requirements require that SWCAA be notified prior to the use of new coating or finishing materials at the facility. This notification will allow SWCAA and the permittee to assess the potential adverse air quality impact of a process or material change. Changes that result in significant air quality impacts will require New Source Review prior to implementation.
- 10.g. Diesel Engine - Emergency Generator (existing). Permit requirements for the diesel engine reflect use of this unit as an emergency power source. BACT requirements for this unit include operational limitations (≤ 100 hr/yr testing and maintenance) and the use of low sulfur diesel ($\leq 0.05\%$ S by weight). A visible emission limit of 5% opacity has been established consistent with proper engine operation. Due to the technical limitations of the engine, the opacity limit does not apply during periods of start-up and shutdown. Annual operation is monitored with an integral hourmeter and reported to SWCAA by the source.
- 10.h. Requirements for Unmodified Emission Units. Permit requirements for existing emission units not affected by ADP Application L-742 have been carried forward from ADP 01-2338.

11. START-UP AND SHUTDOWN/ALTERNATIVE OPERATING SCENARIOS/POLLUTION PREVENTION

- 11.a. Start-up and Shutdown Provisions. Pursuant to SWCAA 400-081 "Start-up and Shutdown", technology-based emission standards and control technology determinations shall take into consideration the physical and operational ability of a source to comply with the applicable standards during start-up or shutdown. Where it is determined that a source is not capable of achieving continuous compliance with an emission standard during start-up or shutdown, SWCAA shall include appropriate emission limitations, operating parameters, or other criteria to regulate performance of the source during start-up or shutdown.

Emergency Generator. Visible emissions from diesel engine operation are limited to 5% opacity or less during normal operation. However, the engine is not capable of reliably limiting visible emissions to less than 5% opacity until the engine achieves normal operating temperature. Therefore, the 5% opacity limit does not apply to the generator exhaust during start-up periods.

- 11.b. Alternate Operating Scenarios. SWCAA conducted a review of alternate operating scenarios applicable to equipment affected by this permitting action. The permittee did not propose or identify any applicable alternate operating scenarios. Therefore, none were included in the permit requirements.
- 11.c. Pollution Prevention Measures. SWCAA conducted a review of possible pollution prevention measures for the facility. No pollution prevention measures were identified by either the permittee or SWCAA separate or in addition to those measures required under BACT considerations. Therefore, none were included in the permit requirements.

12. EMISSION MONITORING AND TESTING

- 12.a. Emission Testing – Hot Water Boilers. Emission testing of Boiler #1, Boiler #2, and Boiler #3 is required on a continuing 5-year cycle. All emission testing shall be conducted in accordance with ADP 24-3642, Appendix A.
- 12.b. Emission Monitoring – Hot Water Boilers. Emission monitoring of Boiler #3 is required on a continuing 12-month cycle. All emission monitoring shall be conducted in accordance with ADP 24-3642, Appendix B.

13. FACILITY HISTORY

- 13.a. Previous Permitting Actions. SWCAA has previously issued the following Permits for this facility:

<u>Permit Number</u>	<u>Application Number</u>	<u>Date</u>	<u>Purpose</u>
01-2338	L-432	2/21/2001	Installation of one new boiler and two replacement boilers.
69-1031LET1	L-4	10/30/1969	Installation of hot water boilers.

- 13.b. Compliance History. A search of records on file at SWCAA did not identify any outstanding compliance issues at this facility.

14. PUBLIC INVOLVEMENT OPPORTUNITY

- 14.a. Public Notice for ADP Application L-742. Public notice for ADP Application L-742 was published on the SWCAA internet website for a minimum of (15) days beginning on February 27, 2024.
- 14.b. Public/Applicant Comment for ADP Application L-742. SWCAA did not receive specific comments, a comment period request or any other inquiry from the public regarding this ADP application. Therefore, no public comment period was provided for this permitting action.
- 14.c. State Environmental Policy Act. This project is exempt from SEPA requirements pursuant to WAC 197-11-800(3) because it only involves repair and/or maintenance of existing structures, equipment, or facilities, and will not involve material expansions or changes in use. SWCAA issued a Determination of SEPA Exempt (SWCAA 24-018) concurrent with issuance of ADP 24-3642.