TECHNICAL SUPPORT DOCUMENT

Air Discharge Permit ADP 24-3654
Air Discharge Permit Application L-744

Issued: August 7, 2024

Braun Northwest

SWCAA ID - 2162

Prepared By: Wess Safford
Air Quality Engineer
Southwest Clean Air Agency

TABLE OF CONTENTS

ABBREVIATIONS

List of Acronyms

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

List of Units and Measures

µg/m³	Micrograms per cubic meter
µm	Micrometer (10^{-6} meter)
acfm	Actual cubic foot per minute
dscfm	Dry Standard cubic foot per minute
gr/dscf	Grain per dry standard cubic foot
MMBtu	Million British thermal unit
ppm	Parts per million
ppmv	Parts per million by volume
ppmvd	Parts per million by volume, dry
ppmw	Parts per million by weight
tpy	Tons per year

List of Chemical Symbols, Formulas, and Pollutants

CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
HAP	Hazardous air pollutant listed pursuant to Section 112 of the Federal Clean Air Act
NO_x	Nitrogen oxides
O_2	Oxygen
O_3	Ozone
PM	Particulate Matter with an aerodynamic diameter 100 µm or less
PM_{10}	PM with an aerodynamic diameter 10 µm or less
$PM_{2.5}$	PM with an aerodynamic diameter 2.5 µm or less
SO_2	Sulfur dioxide
TAP	Toxic air pollutant pursuant to Chapter 173-460 WAC
VOC	Volatile organic compound

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:	Braun Northwest, Inc.
Applicant Address:	PO Box 1204, Chehalis, WA 98532
Facility Name:	Braun Northwest
Facility Address:	150 North Star Drive, Chehalis, WA 98532
SWCAA Identification:	2162
Contact Person:	Joshua Hutfles, Engineer
Primary Process:	Light Truck and Utility Vehicle Manufacturing
SIC/NAICS Code:	3711 / Motor Vehicles and Car Bodies 336112 / Light Truck and Utility Vehicle Manufacturing
Facility Classification:	Natural Minor

2. FACILITY DESCRIPTION

Braun Northwest (Braun) builds emergency vehicles such as ambulances, SWAT vehicles, and prison transports. Braun's facility in Chehalis, Washington operates multiple surface preparation stations and spray booths in support of vehicle coating operations.

3. CURRENT PERMITTING ACTION

This permitting action is in response to Air Discharge Permit application number L-744 (ADP Application L-744) dated May 28, 2024. Braun submitted ADP Application L-744 requesting approval of the following:

- Increase in approved material throughput to support annual production of 500 vehicles.

The current permitting action provides approval for the requested increase material throughput as proposed in ADP Application L-744. ADP 24-3654 will supersede ADP 13-3056 in its entirety.

4. PROCESS DESCRIPTION

4.a. Vehicle Preparation (*modified*). Surface preparation of truck bodies and/or parts is performed at prep stations equipped with powered ventilation and high efficiency particulate filters. Parts are cleaned, primarily through buffing and grinding, prior to further assembly steps. The prep stations are separated from surrounding work/storage areas with plastic curtains. There are a total of (6) preparation stations in operation.

ADP Application L-744. The facility's existing permit approves operation of (8) preparation stations. Braun has removed two of the units from service in the interim. There are (6) preparation stations currently in operation.

4.b. Spray Coating (*existing*). Spray coating of truck bodies and/or parts is performed onsite in one of (4) spray booths. Each booth is equipped with a booth heater and dedicated exhaust system. The (3) Spraybake spray booths control overspray emissions using process enclosure and a wet scrubber. The Garmat spray booth controls overspray emissions using process enclosure and high efficiency particulate filters. Spray coating is performed with HVLP spray guns or equivalent, which provide general transfer efficiencies of 65%-70%. Paint and thinner waste is reclaimed onsite by vacuum evaporation. Residual paint solids are stored in sealed drums prior to being shipped off site for disposal.

4.c. Welding (*existing*). Braun operates welding equipment in support of body part fabrication and assembly. Welding is performed in a dedicated welding area encompassed by a curtain and exhausted through the building roof. Welding operations are primarily conducted using 5356 (aluminum) and E70S (steel) weld wire.

5. EQUIPMENT/ACTIVITY IDENTIFICATION

5.a. Preparation Station #1 (*existing*). One ventilated work station used to clean parts prior to assembly. The work station is separated from surrounding work/storage areas with plastic curtains and equipped with powered ventilation and high efficiency particulate filters.

Make / Model:	Spraybake / EX-36
Exhaust Rate:	14,000 acfm – downdraft through the floor
Exhaust Filter:	14AG Premium Grade filter media (Superior Glass Fibers, Inc) or equivalent. Filter media is 2.5" thick with an arrestance efficiency of 96.5% by weight.
Exhaust Stack:	30"dia, vertical at ~35' above ground level, 6' above roof level
Location:	46-36' 48.55"N 122-54' 49.53"W

5.b. Preparation Station #2 (*existing*). One ventilated work station used to clean parts prior to assembly. The work station is separated from surrounding work/storage areas with plastic curtains and equipped with powered ventilation and high efficiency particulate filters.

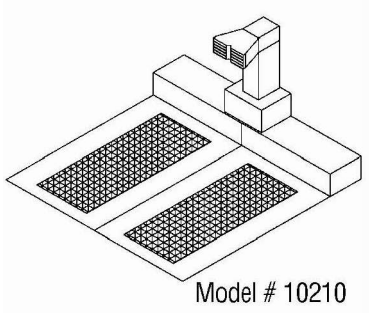
Make / Model:	Spraybake / EX-36
Exhaust Rate:	14,000 acfm – downdraft through the floor
Exhaust Filter:	14AG Premium Grade filter media (Superior Glass Fibers, Inc) or equivalent. Filter media is 2.5" thick with an arrestance efficiency of 96.5% by weight.
Exhaust Stack:	30"dia, vertical at ~35' above ground level, 6' above roof level
Location:	46-36' 48.46"N 122-54' 49.67"W

5.c. Preparation Station #3 (*existing*). One ventilated work station used to clean parts prior to assembly. The work station is separated from surrounding work/storage areas with plastic curtains and equipped with powered ventilation and high efficiency particulate filters.

Make / Model:	Spraybake / EX-36
Exhaust Rate:	14,000 acfm – downdraft through the floor
Exhaust Filter:	14AG Premium Grade filter media (Superior Glass Fibers, Inc) or equivalent. Filter media is 2.5" thick with an arrestance efficiency of 96.5% by weight.
Exhaust Stack:	30"dia, vertical at ~35' above ground level, 6' above roof level
Location:	46-36' 48.36"N 122-54' 49.79"W

5.d. Preparation Station #4 (*existing*). One ventilated work station used to clean parts prior to assembly. The work station is separated from surrounding work/storage areas with plastic curtains and equipped with powered ventilation and high efficiency particulate filters.

Make / Model:	Spraybake / EX-36
Exhaust Rate:	14,000 acfm – downdraft through the floor
Exhaust Filter:	14AG Premium Grade filter media (Superior Glass Fibers, Inc) or equivalent. Filter media is 2.5" thick with an arrestance efficiency of 96.5% by weight.
Exhaust Stack:	30"dia, vertical at ~35' above ground level, 6' above roof level
Location:	46-36' 48.31"N 122-54' 49.89"W



Sketch of Garmat Model 10210 Vehicle Preparation Station

5.e. Preparation Stations #5 (*existing*). One ventilated work station used to clean parts prior to assembly. The work station is separated from surrounding work/storage areas with plastic curtains and equipped with powered ventilation and particulate filters.

Make / Model:	Garmat model 10210 Vehicle Preparation Station
Exhaust Rate:	14,000 acfm
Fan:	Garmat model 520, 10 hp, 1,200 rpm
Filtration System:	~50% of dust captured by internally vented two-stage EuroVac dust collection system. Remainder of dust captured by externally vented downdraft system.
Filter Area:	175 ft^2
Filter Media:	"Multi denier" 3-stage tackified fiberbond filter or equivalent. Media is 2" thick with 90% estimated paint over-spray removal efficiency.
Exhaust Stack:	24" dia, vertical at ~23' above ground level, 6' above roof level.
Location:	46-36' 48.32"N 122-54' 49.31"W

5.f. Preparation Stations #6 (*existing*). One ventilated work station used to clean parts prior to assembly. The work station is separated from surrounding work/storage areas with plastic curtains and equipped with powered ventilation and particulate filters.

Make / Model:	Garmat model 10210 Vehicle Preparation Station
Exhaust Rate:	14,000 acfm
Fan:	Garmat model 520, 10 hp, 1,200 rpm
Filtration System:	~50% of dust captured by internally vented two-stage EuroVac dust collection system. Remainder of dust captured by externally vented downdraft system.
Filter Area:	175 ft^2
Filter Media:	"Multi denier" 3-stage tackified fiberbond filter or equivalent. Media is 2" thick with 90% estimated paint over-spray removal efficiency.
Exhaust Stack:	24" dia, vertical at ~23' above ground level, 6' above roof level.
Location:	46-36' 48.27"N 122-54' 49.39"W

5.g. *Preparation Stations #7 (removed).*

Make / Model:	*Garmat model 10210 Vehicle Preparation Station*
Exhaust Rate:	*14,000 acfm*
Fan:	*Garmat model 520, 10 hp, 1,200 rpm*
Filtration System:	*~50% of dust captured by internally vented two-stage EuroVac dust collection system. Remainder of dust captured by externally vented downdraft system.*
Filter Area:	*175 ft^2*
Filter Media:	*"Multi denier" 3-stage tackified fiberbond filter or equivalent. Media is 2" thick with 90% estimated paint over-spray removal efficiency.*
Stack Description:	*24" diameter discharging 6' above the building roof, ~23' above grade*

ADP Application L-744. This unit was removed from service in 2014.

5.h. *Preparation Stations #8 (removed).*

Make / Model:	*Garmat model 10210 Vehicle Preparation Station*
Exhaust Rate:	*14,000 acfm*
Fan:	*Garmat model 520, 10 hp, 1,200 rpm*
Filtration System:	*~50% of dust captured by internally vented two-stage EuroVac dust collection system. Remainder of dust captured by externally vented downdraft system.*
Filter Area:	*175 ft^2*
Filter Media:	*"Multi denier" 3-stage tackified fiberbond filter or equivalent. Media is 2" thick with 90% estimated paint over-spray removal efficiency.*
Stack Description:	*24" diameter discharging 6' above the building roof, ~23' above grade*

ADP Application L-744. This unit was removed from service in 2014.

5.i. Spray Coating Booth #1 (*existing*). This unit is used to spray coat truck bodies and/or vehicle parts. The booth is equipped with a booth heater. Overspray emissions are controlled with process enclosure and a wet scrubber.

Booth Make / Model:	Spraybake 1000 Series downdraft booth
Booth Dimensions:	30' long, 18' wide, 14' high
Booth Heater Make / Model:	(2) Power Flame model JR30A-10 burners (natural gas/propane)
Booth Heater Rating:	(2) heaters @ 1.0 MMBtu/hr each
Exhaust Rate (maximum):	20,000 acfm
Filtration System:	Enclosed water scrubber system with scrubber water recirculation loop operating at 8-13 psig. Manufacturer guarantees an overall particulate matter capture efficiency of 95%.
Exhaust Stack:	30" dia, vertical at ~39' above ground level, ~10' above roof level.
Location:	46-36' 48.26"N 122-54' 49.22"W

5.j. Spray Coating Booth #2 (*existing*). This unit is used to spray coat truck bodies and/or vehicle parts. The booth is equipped with a booth heater. Overspray emissions are controlled with process enclosure and a wet scrubber.

Booth Make / Model:	Spraybake 1000 Series downdraft booth
Booth Dimensions:	30' long, 18' wide, 14' high
Booth Heater Make / Model:	(2) Power Flame model JR30A-10 burners (natural gas/propane)
Booth Heater Rating:	(2) heaters @ 1.0 MMBtu/hr each
Exhaust Rate (maximum):	20,000 acfm
Filtration System:	Enclosed water scrubber system with scrubber water recirculation loop operating at 8-13 psig. Manufacturer guarantees an overall particulate matter capture efficiency of 95%.
Exhaust Stack:	30" dia, vertical at ~39' above ground level, ~10' above roof level.
Location:	46-36' 48.17"N 122-54' 49.35"W

5.k. Spray Coating Booth #3 (*existing*). This unit is used to spray coat truck bodies and/or vehicle parts. The booth is equipped with a booth heater. Overspray emissions are controlled with process enclosure and a wet scrubber.

Booth Make / Model:	Spraybake 1000 Series downdraft booth
Booth Dimensions:	30' long, 18' wide, 14' high
Booth Heater Make / Model:	(2) Power Flame model JR30A-10 burners (natural gas/propane)
Booth Heater Rating:	(2) heaters @ 1.0 MMBtu/hr each
Exhaust Rate (maximum):	20,000 acfm
Filtration System:	Enclosed water scrubber system with scrubber water recirculation loop operating at 8-13 psig. Manufacturer guarantees an overall particulate matter capture efficiency of 95%.
Exhaust Stack:	30" dia, vertical at ~39' above ground level, ~10' above roof level.
Location:	46-36' 48.11"N 122-54' 49.42"W

5.l. Spray Coating Booth #4 (*existing*). This unit is used to spray coat truck bodies and/or vehicle parts. The booth is equipped with a booth heater. Overspray emissions are controlled with process enclosure and high efficiency particulate filters.

Booth Make / Model:	Garmat model 99T46DS2
Booth Dimensions:	46' 10" long, 18' 8" wide, 18' 4" tall
Booth Heater Make / Model:	Midco model HMA-2
Booth Heater Rating:	2.5 MMBtu/hr, 600,000 Btu/lineal foot, 30:1 turndown
Exhaust Rate (maximum):	35,000 acfm
Filter Media:	Air Flow Technology, Inc. / 15 Grams Paint Arrestor filters with rated capture efficiency of 98.81%. Filter area is 44' by 8'.
Exhaust Stack:	36" dia, vertical at 32' above ground level, 6' above the building roof.
Location:	46-36' 48.05"N 122-54' 49.50"W

5.m. Paint Mixing Room (*existing*). This unit is a dedicated area used to store and mix coatings.

Room Make / Model:	Garmat model 99955C
Dimensions:	20' 4" long, 6' 4" wide, 10' 10" tall
Exhaust Rate:	1,429 cfm
Exhaust Fan Make / Model:	Dayton model 7F927, ½ hp
Exhaust Stack:	Vertical discharge through 12" diameter stack at 30' above ground level, 6' above building roof.
Location:	46-36' 48.77"N 122-54' 48.35"W

5.n. Welding Operations (*existing*). Welding activities consist primarily of gas metal arc welding (GMAW) of aluminum and steel components. The welding area is encompassed by a welding curtain and exhausted through the building roof with two stacks extending approximately 4' above the building roof, each using an 18" diameter fan.

Exhaust Stack: (2) 18" dia, vertical at 4' above roof level
Location: 46-36' 49.40"N 122-54' 50.93"W

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

Solvent Stills (Existing). Two Becca model HC 25000 solvent distillation systems. Solvent recovered by the still is reused in on-site coating operations. Paint solids are stored in vapor-tight drums prior to disposal. Air pollutant emissions from this unit are considered to be negligible due to limited operation and the inherently vapor-tight design of the still.

5.p. Equipment/Activity Summary.

ID No.	Equipment/Activity	Control Equipment/Measure
1	Preparation Station #1	Process Enclosure, Filter bank
2	Preparation Station #2	Process Enclosure, Filter bank
3	Preparation Station #3	Process Enclosure, Filter bank
4	Preparation Station #4	Process Enclosure, Filter bank
5	Preparation Station #5	Process Enclosure, Filter bank
6	Preparation Station #6	Process Enclosure, Filter bank
7	Spray Coating Booth #1	Process Enclosure, Wet scrubbing system
8	Spray Coating Booth #2	Process Enclosure, Wet scrubbing system
9	Spray Coating Booth #3	Process Enclosure, Wet scrubbing system
10	Spray Coating Booth #4	Process Enclosure, Filter bank
11	Paint Mixing Room	None
12	Welding	None

6. EMISSIONS DETERMINATION

Emissions to the ambient atmosphere from vehicle production operations, as proposed in ADP Application L-744, consist of nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), particulate matter (PM), sulfur dioxide (SO_2), 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:

(a) Continuous emissions monitoring system (CEMS) data;
(b) 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;
(c) Source emissions test data (other test method); and
(d) Emission factors or methodology provided in this TSD.

6.a. Preparation Stations #1-#4 (*existing*). Potential PM emissions from sanding, grinding, and buffing operations were calculated assuming annual production of 500 vehicles and (5) pounds of material removal from each vehicle. Stations #1-#4 have a primary filtration system with a filtration efficiency of 96.5%. Stations #5-#6 have a primary vacuum system that captures 50% of the material and a secondary filtration system with a filtration efficiency of 90%. All PM is assumed to be $PM_{2.5}$. Annual emissions will be calculated based on actual operation using the same methodology.

Equipment	Production (vehicles/yr)	Emission Factor (lb/vehicle)	Filter Efficiency (%)	$PM_{2.5}$ Emissions (lb/yr)
Preparation Stations #1-#4	500	5	96.5% primary	87.5
Preparation Stations #5-#6	500	5	50% primary 90.0% secondary	125.0
			Total:	212.5

ADP Application L-744. Braun does not propose to make any physical changes to the preparation stations, only an increase in vehicle throughput.

6.b. Spray Coating Booths #1-#3 – Heaters (*existing*). Spray booth heaters may be fired on either natural gas or propane. The emission quantities presented below represent full time operation on each of the fuels.

Potential emissions were calculated based 8,760 hr/yr of operation, a combined rated heat input of 6 MMBtu/hr, and applicable emission factors. Emission factors for carbon monoxide, nitrogen oxides, volatile organic compounds and particulate matter were provided by the burner manufacturer (Power Flame). The emission factor for sulfur dioxide from the combustion of propane was calculated from the maximum amount of sulfur allowed in commercial propane (254 ppmv). All other emission factors were taken from AP-42 Section 1.4 (7/98). Annual emissions will be calculated based on actual fuel use using the same methodology.

Natural Gas Pollutant	Emission Factor (lb/MMBtu)	Emission Factor ($lb/10^6$ scf)	Emission Factor Source	Emissions (lb/yr)
VOC	0.005	5.1	Power Flame	263
NO_X	0.095	96.9	Power Flame	4,993
CO	0.019	19.4	Power Flame	999
$PM/PM_{10}/PM_{2.5}$[1]	0.0048	4.9	Power Flame	252
SO_2	0.00059	0.6	AP-42 Sec 1.4 (7/98)	31
Benzene	$2.1*10^{-6}$	0.0021	AP-42 Sec 1.4 (7/98)	0.1
Formaldehyde	$7.4*10^{-5}$	0.075	AP-42 Sec 1.4 (7/98)	3.9

[1] All particulate matter is assumed to be less than 1 μm in diameter.

Propane Pollutant	Emission Factor (lb/MMBtu)	Emission Factor ($lb/10^3$ gal)	Emission Factor Source	Emissions (lb/yr)
VOC	0.005	0.46	Power Flame	263
NO_X	0.096	8.78	Power Flame	5,046
CO	0.019	1.74	Power Flame	999
$PM/PM_{10}/PM_{2.5}$[1]	0.0048	0.44	Power Flame	252
SO_2	0.017	1.57	Mass Balance	901

[1] All particulate matter is assumed to be less than 1 μm in diameter.

6.c. Spray Coating Booth #4 – Heater (*existing*). The spray booth heater may be fired on either natural gas or propane. The emission quantities presented below represent full time operation on each of the fuels.

Potential emissions were calculated based 8,760 hr/yr of operation, a rated heat input of 2.5 MMBtu/hr, and applicable emission factors. Emission factors for carbon monoxide and nitrogen oxides were provided by the burner manufacturer (Midco). The emission factor for sulfur dioxide from the combustion of propane was calculated from the maximum amount of sulfur allowed in commercial propane (254 ppmv). All other emission factors were taken from AP-42 Section 1.4 (7/98). Annual emissions will be calculated based on actual fuel use using the same methodology.

Natural Gas **Pollutant**	**Emission Factor (lb/MMBtu)**	**Emission Factor ($lb/10^6$ scf)**	**Emission Factor Source**	**Emissions (lb/yr)**
VOC	0.0054	5.5	AP-42 Sec 1.4 (7/98)	118
NO_X	0.050	51.1	Midco	1,098
CO	0.18	187	Midco	4,010
$PM/PM_{10}/PM_{2.5}$[1]	0.0075	7.6	AP-42 Sec 1.4 (7/98)	163
SO_2	0.00059	0.6	AP-42 Sec 1.4 (7/98)	13
Benzene	$2.1*10^{-6}$	0.0021	AP-42 Sec 1.4 (7/98)	0.045
Formaldehyde	$7.4*10^{-5}$	0.075	AP-42 Sec 1.4 (7/98)	1.6

[1] All particulate matter is assumed to be less than 1 μm in diameter.

Propane **Pollutant**	**Emission Factor (lb/MMBtu)**	**Emission Factor ($lb/10^3$ gal)**	**Emission Factor Source**	**Emissions (lb/yr)**
VOC	0.0054	0.49	AP-42 Sec 1.4 (7/98)	118
NO_X	0.050	4.6	Midco	1,098
CO	0.18	16.8	Midco	4,010
$PM/PM_{10}/PM_{2.5}$[1]	0.0075	0.68	AP-42 Sec 1.4 (7/98)	164
SO_2	0.017	1.57	Mass Balance	375

[1] All particulate matter is assumed to be less than 1 μm in diameter.

6.d. Spray Coating Operations (*modified*). Potential emissions from spray coating operations were calculated based on annual production of 500 vehicles, using material balance methodology and SDS information for each individual coating product. It was assumed that 100% of the volatile material from the coatings is emitted to the ambient air (with the exception of MDI). Particulate matter emission calculations assume a 70% transfer efficiency and 95% filtration efficiency. All PM is assumed to be $PM_{2.5}$. Annual emissions will be calculated based on actual material usage using the same methodology.

Pollutant	**Emissions (tpy)**
VOC	24.36
$PM/PM_{10}/PM_{2.5}$	0.57
TAP	9.70
HAP	9.27

ADP Application L-744. Braun does not propose to make any physical changes to spray coating operations or change the type of coatings in use. Braun only proposes to increase coating volume proportionate to increased vehicle production.

6.e. Welding Operations (*modified*). Potential emissions from aluminum welding were calculated based on approximate use of 18.5 pounds of 5356 welding wire per vehicle and maximum production of 500 vehicles per year. Emission factors for manganese and chromium were calculated by multiplying the amount of each compound in the welding wire (lb/lb wire) by a fume generation rate (0.01 lb/lb wire) and a fume correction factor (0.5464 lb/lb wire). 5% of chromium (II/III) emissions were assumed to be hexavalent chromium. Annual emissions will be calculated based on actual wire use using the same methodology.

Aluminum Welding - 5356 Wire					
Use Rate =	18.5	lb/vehicle			
Annual Usage =	9,250	lb/yr			
		EF	Emissions		
Pollutant	lb/lb wire	lb/lb wire	lb/yr	Emission Factor (EF) Source	
$PM/PM_{10}/PM_{2.5}$		0.010	92.5	SDAPCD EF-GMAW-5356	
Manganese	0.0015	8.196E-06	0.076	Largest % found in an MSDS * metal EF	
Chromium (II/III)	0.0007	3.825E-06	0.035	Largest % found in an MSDS * metal EF	
Chromium (VI)		1.912E-07	0.0018	5% conversion of chromium (II/III)	

Potential emissions from steel welding were calculated based on approximate use of 3.4 pounds of E70S-6 welding wire per vehicle and maximum production of 500 vehicles per year. Emission factors are taken from EPA AP-42, Table 12.19-1 (1/95) for GMAW E70S. Annual emissions will be calculated based on actual wire use using the same methodology.

Steel Welding - E70-S Wire				
Use Rate =	3.4	lb/vehicle		
Annual Usage =	1,700	lb/yr		
	EF	Emissions		
Pollutant	lb/lb wire	lb/yr	Emission Factor (EF) Source	
$PM/PM_{10}/PM_{2.5}$	0.0052	8.8		
Manganese	3.180E-04	0.54	EPA AP-42, Table 12.19-1 (1/95)	
Nickel	1.000E-06	0.0017	GMAW E70S	
Cobalt	1.000E-06	0.0017		
Chromium (II/III)	1.000E-06	0.0017		

ADP Application L-744. Braun does not propose to change the type of welding wire in use or the amount of wire used per vehicle. Braun only proposes to increase weld wire usage proportionate to increased vehicle production.

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

Pollutant	Potential Emissions (tpy)	Project Increase (tpy)
NO_X	3.07	0.00
CO	2.50	0.00
VOC	24.55	11.86
SO_2	0.64	0.00
Lead	--	--
PM	0.94	0.26
PM_{10}	0.68	0.26
$PM_{2.5}$	0.68	0.26
TAP	9.70	1.60
HAP	9.27	6.68

Pollutant	CAS Number	Category	Facility-wide Emissions	Project Increase	WAC 173-460 SQER
			lb/yr	lb/yr	lb/yr
Acetone	67-64-1	TAP	7,671	3,068	43,748
Antimony	7440-36-0	HAP/TAP	2.7	1.1	175
Benzene	71-43-2	HAP/TAP	0.15	0.0	20
Butane	106-97-8	TAP			43,748
n-Butyl Acetate	123-86-4	TAP	9,774	3,910	43,748
t-Butyl Acetate	***540-88-5***	***TAP***	***953***	***381***	***120***
n-Butyl Alcohol	71-36-3	TAP	1,217	487	43,748
Carbon Black	1333-86-4	HAP/TAP	2.0	0.79	1,750
Chromium (VI)	***18540-29-9***	***HAP/TAP***	***0.0018***	***0.00071***	***0.00065***
Dichlorotrifluoro-methylbenzene	328-84-7	TAP	0.14	0.056	175
Dipropylene Glycol Methyl Ether	34590-94-8	HAP/TAP	84	34	43,748
Ethyl Acetate	141-78-6	TAP	1.4	0.58	43,748
Ethylbenzene	***100-41-4***	***HAP/TAP***	***312***	***125***	***65***
Formaldehyde	50-00-0	HAP/TAP	5.5	0.0	20
Glycol Ethers	--	HAP/TAP	2,928	1,171	43,748
Isobutyl Acetate	110-19-0	TAP	40	16	43,748
Isobutyl Alcohol	78-83-1	TAP	10	4.1	43,748
Isopropyl Alcohol	67-63-0	TAP	122	49	43,748
Lead	7439-92-1	HAP/TAP	0.092	0.037	14
Methacrylic Acid	79-41-4	TAP	257	103	22,750
Methanol	67-56-1	HAP/TAP	4,335	1,734	43,748
Methyl Amyl Ketone	110-43-0	TAP	2,689	1,076	43,748
Methyl Ethyl Ketone	78-93-3	TAP	1,327	531	43,748

Pollutant	CAS Number	Category	Facility-wide Emissions	Project Increase	WAC 173-460 SQER
Methyl Isoamyl Ketone	110-12-3	TAP	5.3	2.1	43,748
Methyl Isobutyl Ketone	108-10-1	HAP/TAP	2,630	1,052	43,748
Methyl Propyl Ketone	107-87-9	TAP	1,743	697	43,748
Methylene Chloride	75-09-02	HAP/TAP	2.4	1.0	50
Molybate Orange	12656-85-8	HAP/TAP	0.034	0.013	14
Nickel	7440-02-0	HAP/TAP	0.0017	0.00068	0.62
Propionic Acid	79-09-4	TAP	59	23	17,500
Toluene	108-88-3	HAP/TAP	4,480	1,792	43,748
Trimethylbenzene	25551-13-7	TAP	14	5.5	43,748
			lb/24-hr	lb/24-hr	lb/24-hr
2-Butoxyethanol	111-76-2	TAP	0.027	0.011	6.1
Chlorine	7782-50-5	HAP/TAP	0.00013	0.000052	0.011
Chromium (II/III)	7440-47-3	HAP/TAP	0.00088	0.00036	0.37
Cobalt	7440-48-4	HAP/TAP	0.000022	0.000008	0.0074
Cumene	98-82-8	HAP/TAP	0.00005	0.00002	30
Hexane	110-54-3	HAP/TAP	0.0011	0.00044	52
Manganese	7439-96-5	HAP/TAP	0.0025	0.0010	0.022
Methyl Methacrylate	80-62-6	HAP/TAP	9.0	3.6	52
1,2,3-Trimethylbenzene	526-73-8	TAP	0.012	0.0050	4.4
1,2,4-Trimethylbenzene	95-63-6	TAP	0.024	0.0097	4.4
1,3,5-Trimethylbenzene	108-67-8	TAP	0.023	0.0092	4.4
Xylenes	1330-20-7	HAP/TAP	5.75	2.6	16
			lb/hr	lb/hr	lb/hr
Sodium Hydroxide	1310-73-2	TAP	0.0018	0.00073	0.015

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. Title 40 Code of Federal Regulations (CFR) Part 63 Subpart HHHHHH – "National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources" establishes standards and work practices for all area sources engaged in paint stripping operations using methylene chloride, autobody refinishing operations, or spray coating of metal or plastic parts with coatings that contain chromium, lead, manganese, nickel, or cadmium (target HAPs). This facility is an existing source subject to this regulation.

Motor vehicle spray coating sources may petition the Administrator for an exemption from this subpart if they can demonstrate to the satisfaction of the Administrator that they spray apply no coatings that contain the target HAPs (Cr, Pb, Mn, Ni, Cd). Petitions must include a description of the coatings applied and a certification that no coatings that contain the target HAPs are applied.

7.b. Title 40 CFR 63 Subpart XXXXXX "National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories" establishes standards and work practices for nine metal fabrication and finishing sources engaged in operations that use materials that contain or have the potential to emit chromium, lead, manganese, nickel, or cadmium. The Permittee's facility is an existing area source that does not fall into one of these categories and therefore is not subject to this regulation.

7.c. 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.d. 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.e. 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.f. WAC 173-476 "Ambient Air Quality Standards" establishes ambient air quality standards for PM_{10}, $PM_{2.5}$, lead, sulfur dioxide, nitrogen dioxide, ozone, and carbon monoxide in the ambient air, which shall not be exceeded.

7.g. 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.h. 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.i. 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.j. 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.k. 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.l. 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.

7.m. SWCAA 493-400 "Motor Vehicle Refinishing" establishes VOC content limits for motor vehicle refinishing coatings sold for use within, or commercially applied within the boundaries of the Vancouver Air Quality Maintenance Area (AQMA). This regulation is not applicable to this permitting action because the applicant's facility is not located within the Vancouver AQMA.

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 - Preparation Stations. The proposed use of high efficiency particulate matter filters and vertical atmospheric dispersion of exhaust streams has been determined to meet the requirements of BACT for preparation stations at this facility.

8.b. BACT Determination - Spray Coating. The proposed use of process enclosure (spray booth), high efficiency particulate matter filtration (fabric filtration and/or water scrubber), high transfer efficiency spray coating equipment, 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.

8.c. BACT Determination - Spray Booth Heaters. The proposed use of combustion equipment that fires a low sulfur fuel (propane or natural gas) and limits visible emissions to 0% opacity or less has been determined to meet the requirements of BACT for spray booth heaters at this facility.

8.d. BACT Determination – Welding. The proposed use of building enclosure and vertical dispersion has been determined to meet the requirements of BACT for welding operations at this facility.

Previous BACT Determinations

8.e. BACT Determination - Spray Coating Operations (*ADP 13-3056*). The use of complete enclosure (spray booth), with fabric filtration and/or a water scrubber for particulate matter control, high transfer efficiency spray coating equipment, and vertical atmospheric dispersion of exhaust streams has been determined to meet the requirements of BACT and T-BACT for this spray coating operation.

8.f. BACT Determination - Preparation Stations #1 - #4 (*ADP 13-3056*). The use of high efficiency particulate matter filters and vertical atmospheric dispersion of exhaust streams has been determined to meet the requirements of BACT for preparation stations at this facility.

8.g. BACT Determination - Preparation Stations #5 - #8 (*ADP 13-3056*). The use of a filtration system (expected to provide an average of 95% reduction in PM emissions) and vertical atmospheric dispersion of the exhaust meets the requirements of BACT for preparation stations at this facility.

8.h. BACT Determination - Spray Booth Heaters (*ADP 13-3056*). The use of combustion equipment that fires a low sulfur fuel (propane or natural gas) and limits visible emissions to 0% opacity or less has been determined to meet the requirements of BACT for spray booth heating at this facility.

Other Determinations

8.i. 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.j. 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 incremental increases in TAP emissions associated with this permitting action are quantified in Section 6 of this Technical Support Document. All incremental increases in individual TAP emissions are less than the applicable small quantity emission rate (SQER) identified in WAC 173-460 with the exception of the pollutants listed in Section 9.b. below.

9.b. TAP Ambient Impact Analysis. Facility emissions were modeled using the AERSCREEN dispersion model (ver 16216). The results of the model indicate that the project will not cause an incremental increase in ambient concentrations greater than the applicable acceptable source impact level (ASIL) identified in WAC 173-460.

Toxic Compound	CAS #	Incremental Ambient Impact ($\mu g/m^3$)	Acceptable Source Impact Level ($\mu g/m^3$)
t-Butyl Acetate	540-88-5	0.764 (annual)	0.77 (annual)
Chromium (VI)	18540-29-9	2.11E-06 (annual)	4.0E-06 (annual)
Ethylbenzene	100-41-4	0.25 (annual)	0.40 (annual)

Conclusions

9.c. Increased vehicle production, as proposed in ADP Application L-744, 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.d. Increased vehicle production, as proposed in ADP Application L-744, 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.e. Increased vehicle production, as proposed in ADP Application L-744, 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 24-3654 in response to ADP Application L-744. ADP 24-3654 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

10.a. Supersession of Previous Permits. ADP 24-3654 supersedes ADP 13-3056 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-744. 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 24-3654 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 and solvent consumption, booth heater fuel consumption, vehicle production, weld wire consumption, and filter/wet scrubber performance.

10.d. Reporting Requirements. ADP 24-3654 establishes general reporting requirements for annual air emissions, upset conditions and excess emissions. Specific reporting requirements are established for coating and solvent consumption, booth heater fuel consumption, vehicle production, and weld wire consumption. Reports are to be submitted on an annual basis.

10.e. Emission Limits. Facility-wide emission limits for welding, surface prep, and spray coating operations have been increased to correspond to annual production of 500 vehicles. Visible emissions from the preparation stations and spray booth exhaust vents continue to be limited to 0% opacity consistent with proper operation.

10.f. Operating Limits and Requirements. Existing operating requirements have been left unchanged. Pressure gages are required for monitoring pressure drop across filters in the preparation stations and the Garmat spray booth. The Spraybake paint booth scrubbers are designed to operate at a water pressure between 8 and 13 psig. This operating range has been included as an operating requirement to insure proper operation of these units.

Spray coating must be performed using HVLP or equivalent spray technology. The permittee must operate equipment as specified by the manufacturer and be able to demonstrate that the equipment is being operated properly.

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.

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.

The applicant did not identify any start-up and shutdown periods during which affected equipment is not capable of achieving continuous compliance with applicable technology determinations or approval conditions. To SWCAA's knowledge, this facility can comply with all applicable standards during startup and shutdown.

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

There are no formal emission monitoring or testing requirements for this facility.

13. FACILITY HISTORY

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

Permit Number	Application Number	Date	Purpose
13-3056	L-666	5-23-2013	Increase in VOC limit to accommodate production increase.
09-2894	L-637	9-29-2009	Modification of (4) existing internally vented vehicle/part preparation stations to exhaust outside of the process building. Emissions and permit conditions added to permit to address existing aluminum welding operations.
08-2811	L-624	8-6-2008	Approval of new Garmat paint spray booth (Spray Booth #4), and new paint mixing room
03-2457R1	L-591	5-31-2007	Approval of an increase in the volatile organic compound emission limit to accommodate an increase in production to 250 vehicles per year.
03-2457	L-513	3-19-2003	Approval to construct and operate an emergency vehicle manufacturing facility

13.b. Compliance History. A search of source 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-744. Public notice for ADP Application L-744 was published on the SWCAA internet website for a minimum of (15) days beginning on June 5, 2024.

14.b. Public/Applicant Comment for ADP Application L-744. 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. A complete SEPA checklist was submitted by Braun Northwest in conjunction with ADP Application L-744. After reviewing the checklist, SWCAA has made a Determination of Nonsignificance (DNS SWCAA 24-027) concurrent with issuance of ADP 24-3654.