



TECHNICAL SUPPORT DOCUMENT

**Air Discharge Permit ADP 24-3635
Air Discharge Permit Application L-737**

Issued: March 6, 2024

Musket Corporation

SWCAA ID - 2576

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

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ABBREVIATIONS

List of Acronyms

ADP	Air Discharge Permit	NSPS	New Source Performance Standard
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	SDS	Safety Data Sheet
CAM	Compliance Assurance Monitoring	SQER	Small Quantity Emission Rate listed in WAC 173-460
CAS#	Chemical Abstracts Service registry number	Standard	Standard conditions at a temperature of 68°F (20°C) and a pressure of 29.92 in Hg (760 mm Hg)
CFR	Code of Federal Regulations	SWCAA	Southwest Clean Air Agency
EPA	U.S. Environmental Protection Agency	T-BACT	Best Available Control Technology for toxic air pollutants
EU	Emission Unit	WAC	Washington Administrative Code
mfr	Manufacturer		

List of Units and Measures

acfm	Actual cubic foot per minute	ppmv	Parts per million by volume
dscfm	Dry Standard cubic foot per minute	ppmvd	Parts per million by volume, dry
gpm	Gallon per minute	ppmw	Parts per million by weight
gr/dscf	Grain per dry standard cubic foot	psig	Pounds per square inch, gauge
MMBtu	Million British thermal unit	scfm	Standard cubic foot per minute
MMcf	Million cubic feet	tpy	Tons per year
ppm	Parts per million		

List of Chemical Symbols, Formulas, and Pollutants

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

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: Musket Corporation
Applicant Address: 2929 Allen Parkway, Suite 4100, Houston, Texas 77019

Facility Name: Musket Corporation
Facility Address: 3712 Northpark Drive, Centralia, Washington 98531

SWCAA Identification: 2576

Contact Person: Kevin Solokowski, Environmental Manager
Legan Howard, Terminal Manager

Primary Process: DEF Production and Distribution
SIC/NAICS Code: 5169 / Chemical and Allied Products
424690 / Other Chemical and Allied Products

Facility Classification: Natural Minor

2. FACILITY DESCRIPTION

Musket Corporation (Musket) operates a diesel exhaust fluid (DEF) terminal. The facility produces DEF onsite from bulk materials. DEF is stored in tanks before being distributed to retail and bulk customers. The facility includes a water treatment system, clean water holding tanks, inline blending skid, finished product tanks, finished product packaging and bulk off-loading, urea railcar offload, and a diesel-fired process boiler.

3. CURRENT PERMITTING ACTION

This permitting action is in response to Air Discharge Permit application number L-737 (ADP Application L-737) dated October 19, 2023. Musket Corporation submitted ADP Application L-737 requesting approval of the following:

- Installation of a Sioux diesel fired process boiler. The boiler has already been installed and is in operation. This is a post installation permitting action.

The current permitting action provides approval for the proposed process boiler. This is the initial permitting action for this facility.

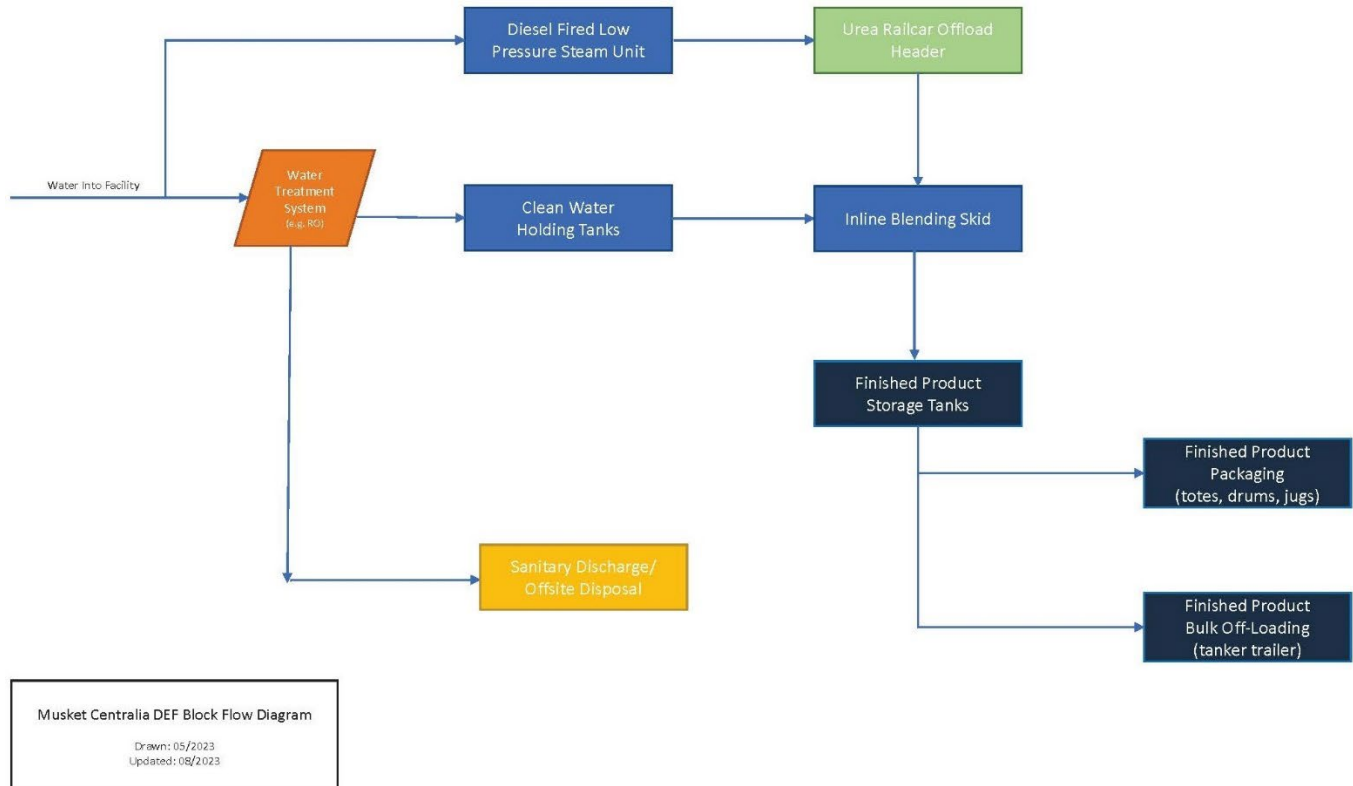
4. PROCESS DESCRIPTION

- 4.a. DEF Production. DEF is produced by mixing high concentration urea and deionized water. 50% urea solution is received in bulk by railcar. The urea solution is steam heated to keep solid urea from precipitating out of the solution (also known as “salting out”). The facility uses an inline blending skid to blend water with the 50% solution and create a 32.5% solution. Blended DEF is stored in tanks before being packaged in retail containers (totes, drums, and jugs) or loaded out by tank trailer in bulk. The facility includes a water treatment system, clean water holding tanks, inline blending skid, finished product tanks, finished product packaging and bulk off-loading, urea railcar offload, and a diesel-fired process boiler.

Urea has the potential to decompose and produce ammonia. One of the chemical pathways requires an enzyme called urease which is found in bacteria, fungi, algae, plants, and some invertebrates. This chemical pathway is not a concern for the DEF operation at the facility as urease would only enter the DEF solution through contamination. The second chemical pathway is thermal hydrolysis which occurs at high temperatures. Generally, the conversion

to ammonia occurs at temperatures over 160 °F and higher. The minimum operation temperature is 65 °F and the highest operating temperature occurs from the ambient temperature during summer. The highest recorded ambient temperature in Centralia is 107 °F, which is well below the thermal hydrolysis temperature of 160 °F. Therefore, ammonia emissions from the process are expected to be negligible.

- 4.b. Boiler – Process Steam. A single diesel fired boiler is used to provide process steam to facility operations. The process boiler produces steam, which is supplied to internal steam heating coils in the railcars to facilitate urea offloading operations during periods of cold weather.
- 4.c. Facility Process Flow Diagram.



5. EQUIPMENT/ACTIVITY IDENTIFICATION

- 5.a. Boiler – Sioux (new). This unit is used during periods of cold weather to supply steam to urea offloading operations.

Make / Model:	Sioux / SF-50D (s/n 1905036)
Heat Input Rating:	2.0 MMBtu/hr
Fuel:	Diesel
Emissions:	85 ppmv NO _x / 50 ppmv CO – corrected to 3% O ₂
Year of Manufacture:	2018
NSPS/MACT:	- / JJJJJ
Exhaust Stack:	12" diameter, discharging vertical at ~11' above ground level
Location:	46°44'15.09"N 123° 0'21.71"W

5.b. Equipment/Activity Summary.

ID No.	Equipment/Activity	Control Equipment/Measure
1	Boiler – Sioux SF-50D (2.0 MMBtu/hr)	Low Sulfur Diesel ($\leq 0.0015\%$ by wt)

6. EMISSIONS DETERMINATION

Emissions to the ambient atmosphere from the new boilers proposed in ADP Application L-737 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:

- (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. Boiler – Sioux (*new*). Potential emissions from boiler operation are calculated based on 8,760 hr/yr of operation, a rated heat input of 2.0 MMBtu/hr, a diesel heat content of 140,000 Btu/gal, the use of ultra-low sulfur diesel ($< 0.0015\%$ sulfur by weight), and applicable emission factors. Emission factors for NO_x and CO correspond to 85 ppmv and 50 ppmv at 3% O₂, respectively. The emission factor for SO₂ is derived from maximum fuel sulfur content using material balance methodology. All other emission factors are taken from EPA AP-42 Section 1.3 "Fuel Oil Combustion" (5/10).

Annual emissions will be calculated based on actual fuel consumption using the same methodology and/or emission factors developed from testing and approved by SWCAA.

Heat Input Rating =	2.0	MMBtu/hr		
Fuel heat value =	140,000	Btu/gal		
Fuel Consumption =	14.28	gal/hr		
Fuel Consumption =	125,143	gal/yr		
	EF		Emissions	
Pollutant	(lb/1000 gal)	(lb/hr)	(lb/yr)	(tpy)
NO _x	9.28	0.133	1,161	0.58
CO	5.46	0.078	683	0.34
VOC	0.34	0.005	43	0.021
SO _x as SO ₂	0.216	0.003	27	0.014
PM (total)	3.30	0.047	413	0.21
PM ₁₀	2.30	0.033	288	0.14
PM _{2.5}	1.55	0.022	194	0.10
CO ₂ e	22,580	322	2,825,729	1,413

- 6.b. 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	0.58	0.58
CO	0.34	0.34
VOC	0.021	0.021
SO ₂	0.014	0.014
Lead	0.00	0.00
PM	0.21	0.21
PM ₁₀	0.14	0.14
PM _{2.5}	0.10	0.10
TAP	0.00	0.00
HAP	0.00	0.00
CO ₂ e	1,413	1,413

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 Part 63 (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. This regulation is applicable to the Sioux SF-50D boiler.
- 7.b. 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.c. 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.d. 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.e. 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.f. 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.g. 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.h. 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.i. 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.j. 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.k. 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 – Sioux Boiler. The proposed use of annual emission tuning, ultra-low sulfur fuel oil, and proper combustion controls has been determined to meet the requirements of BACT for the types and quantities of air contaminants emitted by the process boiler at this facility.

Other Determinations

- 8.b. 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.c. 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

Conclusions

- 9.a. Operation of a diesel fired process boiler, as proposed in ADP Application L-737, 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.b. Operation of a diesel fired process boiler, as proposed in ADP Application L-737, 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.c. Operation of a diesel fired process boiler, as proposed in ADP Application L-737, 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 24-3635 in response to ADP Application L-737. ADP 24-3635 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

- 10.a. General Basis. Permit requirements for equipment affected by this permitting action incorporate the operating schemes proposed by the applicant in ADP Application L-737. 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.b. Monitoring and Recordkeeping Requirements. ADP 24-3635 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 fuel consumption and fuel sulfur content.
- 10.c. Reporting Requirements. ADP 24-3635 establishes general reporting requirements for annual air emissions, upset conditions and excess emissions. Specific reporting requirements are established for fuel consumption. Reports are to be submitted on an annual basis.
- 10.d. Sioux Boiler. Permit requirements for the Sioux boiler listed in this application incorporate expected operational performance and the operating schemes proposed by the permit applicant at the time of installation. Although the proposed boiler will typically operate only during periods of cold weather, annual hours of operation have not been restricted. Annual emission monitoring requirements have been established to assure proper operation on an ongoing basis.

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

- 12.a. Emission Monitoring – Sioux Boiler. Emission monitoring of the Sioux boiler is required annually. All emission monitoring is to be conducted in accordance with ADP 24-3635, Appendix A.

13. FACILITY HISTORY

- 13.a. Previous Permitting Actions. SWCAA has not previously issued any Permits for this 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-737. Public notice for ADP Application L-737 was published on the SWCAA internet website for a minimum of (15) days beginning on November 17, 2023.
- 14.b. Public/Applicant Comment for ADP Application L-737. 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 Musket Corporation in conjunction with ADP Application L-737. After reviewing the checklist, SWCAA has made a Determination of Non Significance (DNS 24-012) concurrent with issuance of ADP 24-3635.