NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: XXXXX XX, 202X

Region: Mooresville Regional Office
County: Cabarrus
NC Facility ID: 1300051
Inspector's Name: Seth Hall
Date of Last Inspection: 03/15/2023
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): S & D Coffee, Inc.

Facility Address:
S & D Coffee, Inc.
300 Concord Parkway South
Concord, NC 28027

SIC: 2095 / Roasted Coffee
NAICS: 31192 / Coffee and Tea Manufacturing

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0503, .0515, .0516, .0521, .0524, .0614, .1806; 02Q .0317, .0504
NSPS: Subpart JJJJ
NESHAP: Subparts ZZZZ, and DDDDD
PSD: No
PSD Avoidance: No
NC Toxics: 02D .1100, 02Q .0711
112(r): No
Other: No

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Kevin Pressley VP of Manufacturing (704) 787-3469 300 Concord Parkway South Concord, NC 28027	Kevin Pressley VP of Manufacturing (704) 787-3469 300 Concord Parkway South Concord, NC 28027	Kevin Pressley VP of Manufacturing (704) 787-3469 300 Concord Parkway South Concord, NC 28027

Application Data

Application Number: 1300051.20C, 1300051.21B
Date Received: 09/22/2020, 07/26/2021
Application Type: Renewal
Application Schedule: TV-Renewal

Existing Permit Data
Existing Permit Number: 05029/T22
Existing Permit Issue Date: 04/12/2022
Existing Permit Expiration Date: 03/31/2026

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2023	0.0200	5.00	45.03	12.72	9.34	13.39	8.54 [Acetaldehyde]
2022	0.0400	5.24	47.51	13.34	9.82	14.13	9.02 [Acetaldehyde]
2021	0.0300	4.87	52.82	13.95	10.29	15.07	9.40 [Acetaldehyde]
2020	0.0300	5.17	55.74	13.45	9.45	14.88	8.95 [Acetaldehyde]
2019	0.0400	7.36	76.77	19.09	12.94	21.09	12.99 [Acetaldehyde]

Review Engineer: Emily Supple

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 05029/T23
Permit Issue Date: XXXXXX XX, 202X
Permit Expiration Date: XXXXX XX, 20XX

1. Purpose of Application

S & D Coffee, Inc. (S & D), located in Concord, Cabarrus County, North Carolina, roasts green coffee beans for commercial sale at two facilities in Concord referred to as the Main facility and the West Winds facility. This permit renewal application is for the Main Facility (1300051). The West Winds facility previously held a separate air permit issued by the Mooresville Regional Office (Permit No. 10359R03) which was rescinded on October 21, 2024.

S & D currently holds Title V Permit No. 05029T22 with an expiration date of March 31, 2026, or renewal of Permit No. 05029T20 has been issued or denied.

Application No. 1300051.20C

This permit application is for a permit renewal. The renewal application (1300051.20C) was received on September 22, 2020, which was at least six months prior to the original permit expiration date of Permit No. 05029T20 of March 31, 2021. Because the renewal application was submitted within six months of the expiration of Permit No. 05029T20, the existing permit will remain in effect until this application is processed.

Application No. 1300051.21B

In addition, S & D has submitted a Part 2 Significant Modification application (1300051.21B) on July 26, 2021 for the installation of a whole bean transfer system (ID No. ES-WBGCTS) with a bagfilter (ID No. CD-WBGCTS-BF). The Part 1 application (1300051.18A) for the above modification was received on July 12, 2018. Permit No. 05029T18 was issued on October 9, 2018.

As per IBEAM Reports Module, the facility submitted a notification that the project was completed and operation commenced on February 11, 2021, so the application is submitted in accordance with 02Q .0504 which requires submittal of the Part 2 application within 12 months of commencement of operation.

2. Facility Description

From the T21 review:

S & D, located in Concord, Cabarrus County, North Carolina, processes green coffee beans into roasted coffee products, including whole and ground beans. The coffee roasting process consists of cleaning, roasting, cooling, grinding, flavoring, and packaging operations. Bags of green coffee beans are dumped into a hopper and screened to remove debris. The green coffee beans are then transferred mechanically to storage hoppers. From the hoppers, the green coffee beans are fed into the roaster. The roaster operates between 650 and 1,000 degrees Fahrenheit (°F) and the beans are roasted for any time between 3 to 30 minutes, depending on customer specifications.

At the end of the roasting cycle, water sprays are used to quench the beans. The beans are then cooled and ran through a destoning cyclone. The destoners mechanically convey the beans to storage bins where the beans are stabilized and dried. The stabilization process is called equilibration. These bins are referred to as degas and age bins. After the equilibration, the roasted beans are pneumatically sent to whole bean packaging or to grinders, additional degas bins, and then packaging. Some roasted beans may also be sent to a flavoring station prior to packaging. The facility also mixes and packages tea leaves.

Existing primary operations include six natural gas-fired coffee bean roasters, each controlled by either a catalytic or thermal oxidizer, six cooling and destoning systems controlled by simple cyclones, and green bean and tea handling operations controlled by bagfilters. The facility operates the roasting process 24 hours per day, five to six days a week, and the packaging department operates 16 to 20 hours per day, six days per week, 52 weeks per year.

3. History/Background/Application Chronology

History/Background

February 1, 2008	Application No. 1300051.08A received on February 1, 2008. Payment was received the same day. The purpose of this application was for minor modification to install a new coffee bean roaster (ID No. ES-R6).
May 1, 2008	Permit No. 05029T12 issued pursuant to Application No. 1300051.08A. The purpose of this permitting action was for minor modification to install a new coffee bean roaster (ID No. ES-R6).
April 11, 2016	Permit No. 05029T16 issued pursuant to Application No. 1300051.15A. The purpose of this permitting action was to renew Permit No. 05029T15. The expiration date was set to March 31, 2021.
March 13, 2017	Application No. 1300051.17A received on March 13, 2017. Payment was received on March 15, 2017. This application served as the first step of a two-step significant modification for the removal of Roaster No. 2 (ID No. ES-R2) and installation of the new Roaster No. 2 (ID No. ES-R2-New), two new chaff handling systems (ID Nos. ES-CHS1 and ES-CHS2), and new ground coffee bean conveying and packaging line (ID No. IS-401/402).
July 5, 2017	Permit No. 05029T17 issued pursuant to Application No. 1300051.17A. The purpose of this permitting action was the first step of a two-step significant modification for the removal of Roaster No. 2 (ID No. ES-R2) and installation of the new Roaster No. 2 (ID No. ES-R2-New), two new chaff handling systems (ID Nos. ES-CHS1 and ES-CHS2), and new ground coffee bean conveying and packaging line (ID No. IS-401/402).
July 12, 2018	Application No. 1300051.18A received on July 12, 2018. Payment was received on the same day. This application served as the first step of a two-step significant modification for the installation of the whole bean transfer system (ID No. ES-WBGCTS).
October 9, 2018	Permit No. 05029T18 issued pursuant to Application No. 1300051.18A. The purpose of this permitting action was the first step of a two-step significant modification for the installation of the whole bean transfer system (ID No. ES-WBGCTS).
January 15, 2019	Application No. 1300051.19A received on January 15, 2019. Payment was received in full on January 30, 2019. This application served as the second step of the two-step significant modification initiated by Application No. 1300051.17A.
July 18, 2019	Permit No. 05029T19 issued pursuant to Application No. 1300051.19A. The purpose of this permitting action was the second step of a two-step significant modification for the first step significant modification initiated by Application No. 1300051.17A.
November 26, 2019	Application No. 1300051.20A received on November 26, 2019. Payment was received on the same day. The purpose of this application was for significant modification to install a new dust collector (ID No. CD-5CBG-DC), install a new coffee bean flavoring booth (ID No. ES-CBFB), and install a new tea leaf flavoring station (ID No. IS-TLFS).
March 9, 2020	Application No. 1300051.20B received on March 9, 2020. Payment was received on the same day. The purpose of this application was for ownership

	change to the current facility owners, Westrock Coffee Holdings, Inc. The name of the facility did not change.
May 4, 2020	Permit No. 05029T20 issued pursuant to Application Nos. 1300051.20A and 1300051.20B. The purpose of this permitting action was for significant modification and ownership change.
January 21, 2021	Application No. 1300051.21A received on January 21, 2021. Payment was received the same day. The purpose of this application was for minor modification to install an additional coffee bean grinder (ID No. ES-CBG) and to use the control device (ID NO. CD-WBTS) to control emissions from three ground coffee bins.
February 11, 2021	The installation of the whole bean and ground coffee transfer system (ID No. ES-WBGCTS) was completed.
April 15, 2021	Permit No. 05029T21 issued pursuant to Application No. 1300051.21A. The purpose of this permitting action was for minor modification to install an additional coffee bean grinder (ID No. ES-CBG) and to use the control device (ID NO. CD-WBTS) to control emissions from three ground coffee bins.
December 28, 2021	Application No. 1300051.22A received on December 28, 2021. Payment was received the same day. The purpose of this application was for minor modification to add the existing receiving cyclone (ID No. CD-R2-New-RVC) associated with the new Roaster No. 2 to the permit.
April 12, 2022	Permit No. 05029T22 issued pursuant to Application No. 1300051.22A. The purpose of this permitting action was for minor modification to add the existing receiving cyclone (ID No. CD-R2-New-RVC) associated with the new Roaster No. 2 to the permit.

Application Chronology

September 22, 2020	Application No. 1300051.20C was received for renewal of Permit No. 05029T20. The acknowledgement letter was sent on October 1, 2020.
October 26, 2020	Discussions held with S & D regarding 112(g) applicability for two previous permit modifications (Application Nos. 1300051.08A and 1300051.17A).
November 18, 2020	Addendum to permit renewal application (Application No. 1300051.20C) received addressing applicability of 112(g) for Roasters No. 2 and No. 6 (ID Nos. ES-R2-New and ES-R6).
July 26, 2021	Application No. 1300051.21B was received. Payment was received on August 3, 2021. The acknowledgement letter was sent on August 6, 2021. This application served as the second step of a two-step significant modification for the first step significant modification with Application No. 1300051.18A.
February 20, 2024	Additional information request sent to facility regarding emissions factors and performance testing on oxidizers.
July 24, 2024	Follow-up additional information request sent to facility regarding emissions factors and performance testing on oxidizers.
July 25, 2024	Information received from Jason Fossi of GEL Engineering.

August 30, 2024	Permit Applicability Determination Request No. 4165 received for relocation of insignificant natural gas-fired roaster (ID No. IS-SR2).
September 9-11, 2024	Additional information request sent to facility for Permit Applicability Determination Request No. 4165.
September 12, 2024	Information received from Jason Fossi of GEL Engineering indicating that the insignificant natural gas-fired roaster (ID No. IS-SR2) is already listed on the permit. No permitting action is required for this source.
December 13, 2024	Draft permit and review sent to applicant, regional office, and SSCB. No comments were received from the regional office or SSCB.
January 19, 2025	Comments were received from Jason Fossi, facility consultant, and are discussed in Section 12 below.
February 3, 2025	Draft permit revised based on facility comments and sent back to facility for additional comments.
February 7, 2025	Additional comments received from Jason Fossi, facility consultant, and are discussed in Section 12 below.
February 11, 2025	DAQ provided responses to facility comments received February 7, 2025 and requested additional information.
February 13, 2025	Requested information received from facility.
XXXXXX XX, 2024	Draft permit and review sent to public notice/EPA review. Comments?
XXXXXXX XX, 2024	Permit No. 05029T23 issued.

4. Permit Modification/Emission Changes and TVEE Discussion

Application No. 1300051.20C

With this renewal, permit language will be revised to be consistent with the most current permit shell, and permit conditions will be updated as necessary to reflect the most current rules/language.

No emission changes are expected with the permit renewal.

Application No. 1300051.21B

With this Part 2 application, no emission changes or permit revisions are required.

Permit Applicability Determination Request No. 4165

On August 30, 2024, DAQ received a request for a permit applicability determination for the relocation of an insignificant natural gas-fired coffee bean roaster (ID No. IS-SR2) to the S & D Coffee facility from the West Winds S & D Coffee facility (Fac. ID No. 1300170).

This source (ID No. IS-SR2) was previously listed as an insignificant source in the West Winds Facility's Permit No. 10359R03 (rescinded October 21, 2024) and is described as a natural gas-fired roaster (0.0185 pounds per million Btu maximum heat input) associated with research and development operations.

Upon review of the current Air Permit No. 05029T22, the coffee bean roaster (ID No. IS-SR2) is already in the permit as an insignificant activity.

No further action is required, and no changes will be made to the permit.

Permit Changes

Table 4.1 below lists the changes to the current permit following this renewal and Part 2 modification.

Table 4.1: Table of Changes

Page No.	Section	Description of Changes
Cover and throughout	--	• Updated all dates and permit revision numbers. • Updated to current shell language and formatting.
4-5	1	• Revised various control device ID numbers for coffee bean roasters.
10-13	2.1 A.5	• Added 02Q .0317 for 112(g) Avoidance
26	2.1 F.4	• Added NSPS Subpart Dc requirements for the boiler (ID No. ES-BLR1).
32-36	2.2 A.2	• Updated 02Q .0317 (RACT Avoidance) to include temperature monitoring, periodic testing, and VOC emissions calculations requirements.
36	2.2 A.3	• Added 02Q .0317 for PSD Avoidance for emissions of VOC
-	-	• Removed 02Q .0504 for Application No. 1300051.18A.
39-46	General Conditions	• Updated to latest version of DAQ shell version 8.0, 07/10/2024.

Title V Equipment Editor (TVEE)

TVEE was updated with this application. TVEE was reviewed and approved by Connie Horne on XXXXXX XX, 2024.

5. Regulatory Review

S & D is currently subject to the following regulations:

- 15A NCAC 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers
- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes
- 15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources
- 15A NCAC 02D .0521, Control of Visible Emissions
- 15A NCAC 02D .0524, New Source Performance Standards (40 CFR 60 Subpart JJJJ)
- 15A NCAC 02D .0614, Compliance Assurance Monitoring
- 15A NCAC 02D .1100, Control of Toxic Air Pollutants
- 15A NCAC 02D .1111, Maximum Achievable Control Technology (40 CFR 63 Subpart ZZZZ)
- 15A NCAC 02D .1111, Maximum Achievable Control Technology (40 CFR 63 Subpart DDDDD)
- 15A NCAC 02D .1806, Control and Prohibition of Odorous Emissions
- 15A NCAC 02Q .0317, Avoidance of 02D .0530 (PSD, VOC)
- 15A NCAC 02Q .0317, Avoidance of 02D .0902 (RACT, VOC)
- 15A NCAC 02Q .0317, Avoidance of 112(g)
- 15A NCAC 02Q .0504, Option for Obtaining Construction and Operation Permit
- 15A NCAC 02Q .0711, Emission Rates Requiring a Permit

a. 15A NCAC 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers

The natural gas-fired boiler (ID No. ES-BLR1) is subject to this rule. The allowable PM emission limit for the boiler is calculated by the following equation:

$$E = 1.090 * Q^{-0.2594}$$

Where:

E = allowable emission limit for PM in pounds per million Btu, and
Q = maximum heat input rate in million Btu per hour.

Using the maximum heat input rate of the natural gas-fired boiler, 10.5 million Btu per hour, the allowable PM emission limit for this boiler is 0.60 pounds per million Btu.

The emission factor for firing natural gas in a boiler is 0.0005 pounds per million Btu as provided in DAQ's "Natural Gas Combustion Emissions Calculator, Revision N" (1/05/2017).

No monitoring, recordkeeping, or reporting is required to demonstrate compliance with this regulation because potential emissions of particulate matter for this source are expected to be much less than the allowable emission rate as specified above. Furthermore, per DAQ policy, monitoring/recordkeeping/reporting shall not be required for particulate matter emissions from burning cleaner fuels, such as natural gas.

No changes to this permit condition are required as part of this renewal.

b. 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes

This rule applies to stacks, vents, or outlets emitting particulates from industrial processes with no other applicable standards. The allowable emission rate is in terms of pounds per hour and is calculated using the following equation:

For process rates up to 30 tons per hour:

$$E = 4.10(P)^{0.67}$$

For process rates greater than 30 tons per hour:

$$E = 55.0(P)^{0.11} - 40$$

Where: E = Allowable emission rate in pounds per hour
P = Process weight in tons per hour

The following emission sources are subject to regulation under 02D .0515:

- Coffee bean roasting operations including six (6) roasters (ID Nos. ES-R1, ES-R2-New, ES-R3, ES-R4, ES-R5, and ES-R6) and associated cooling and destoning systems (ID Nos. ES-R1C, ES-R2C-New, ES-R3C, ES-R5C, and ES-R6C);
- Green bean handling systems (ID Nos. ES-BH1 and ES-BH2);
- Tea leaf mixing and packaging system (ID No. ES-TMP);
- Coffee bean grinding and ground coffee conveying/packaging system (ID No. ES-CBG/CP);
- New side green bean handling equipment (ID No. ES-NSGBH);
- Chaff handling systems (ID Nos. ES-CHS1 and ES-CHS2);
- Whole bean and ground coffee transfer system (ID No. ES-WBGCTS);
- Coffee bean grinders (ID No. ES-CBG) and Coffee bean flavoring booth (ID No. ES-CBFB).

Coffee bean roasting operations including six (6) roasters (ID Nos. ES-R1, ES-R2-New, ES-R3, ES-R4, ES-R5, and ES-R6) and associated cooling and destoning systems (ID Nos.ES-R1C, ES-R2C-New, ES-R3C, ES-R5C, and ES-R6C)

Table 5.1 below shows the allowable particulate emission rate, as calculated by the equation above, in comparison to the potential particulate emission rate for each roaster. The potential particulate emission rate for each roaster is calculated using the maximum process rate for each roaster and emission factors from AP-42 Section 9.13.2 for Coffee Roasting.

Table 5.1: Coffee Roasters: Allowable Emission Rate vs. Potential Emission Rate

Emission Source ID	Maximum Process Rate (ton/hr)	Emission Factor* (lb/ton)	Allowable PM Emission Rate# (lb/hr)	Potential PM Emission Rate** (lb/hr)	In Compliance?
ES-R1	2.20	0.192	6.95	0.60	Yes
ES-R1C		0.084			
ES-R2-New	3.30	0.192	9.12	0.91	Yes
ES-R2C-New		0.084			
ES-R3	4.40	0.192	11.06	1.21	Yes
ES-R3C		0.084			
ES-R4***	0.2025	0.192	1.41	0.04	Yes
ES-R5	4.40	0.192	11.06	1.21	Yes
ES-R5C		0.084			
ES-R6	3.425	0.192	9.35	0.95	Yes
ES-R6C		0.084			

*Emission factors come from AP-42 Section 9.13.2. The emission factors for the cooling and destoning systems (ID Nos. ES-R1C, ES-R2C-New, ES-R3C, ES-R5C, and ES-R6C) were calculated by multiplying the emission factor for "continuous cooler with cyclone" by 3 for each cyclone in the system (0.028 lb/ton, per cyclone x 3 cyclones per system = 0.084 lb/ton, per system).
**The potential PM emission rate is the combined total emission rate of each roaster with the associated cooling and destoning system.
***There is no associated cooling and destoning system with Roaster 4 (ID No. ES-R4).
#Allowable PM emission rates calculated using $E = 4.10(P)^{0.67}$ for process rates less than 30 tons per hour.

Table 5.1 above shows that the potential emission rate of each roaster is in compliance with the associated allowable emission rate.

Currently, the permit requires S & D to maintain production records, which specify the types of materials and finishes processed, such that 'P', process weight in tons per hour, may be calculated and make these records available for inspection upon request.

With this renewal, this condition will be updated to require annual inspections of each cyclone system and monthly inspections of each system ductwork. The results of each inspection shall be recorded and maintained onsite in a logbook and made available for inspection upon request. The Permittee shall submit a summary report of the monitoring and recordkeeping activities on a semiannual basis.

Green bean handling systems (ID Nos. ES-BH2 and ES-BH2)

Table 5.2 below shows the allowable particulate emission rate, as calculated by the equation above, in comparison to the potential particulate emission rate for each green bean handling system. The potential particulate emission rate for each green bean handling system is calculated using the maximum process rate for each system and emission factors from AP-42 Section 9.13.2 for Coffee Roasting.

Table 5.2: Green Bean Handling: Allowable Emission Rate vs. Potential Emission Rate

Emission Source ID	Allowable PM Emission Rate# (lb/hr)	Maximum Process Rate (ton/hr)	Emission Factor (lb/ton)	Potential PM Emission Rate (lb/hr)	In Compliance?

ES-BH1	13.16	5.70	0.059	0.34	Yes
ES-BH2	33.31	22.8	0.059	1.35	Yes

[#]Allowable PM emission rates calculated using $E = 4.10(P)^{0.67}$ for process rates less than 30 tons per hour

Table 5.2 above shows that the potential emission rate of each roaster is in compliance with the associated allowable emission rate.

Particulate emissions from the green bean handling systems are controlled by a settling box (ID No. BH1-SB) and several bagfilters (ID Nos. BH1-BF, CD-BF-1, and CD-BF-2). Currently, the permit requires S & D to conduct monthly visual inspections of each system ductwork and material collection unit for leaks as well as an annual internal inspection of each bagfilter's structural integrity. The results of each inspection shall be recorded and maintained onsite in a logbook and made available for inspection upon request. The Permittee shall submit a summary report of the monitoring and recordkeeping activities on a semiannual basis.

No changes to these requirements are necessary with this permit renewal.

Remaining Sources

Table 5.3 below shows the potential particulate emission rates for each of the following sources:

- Tea leaf mixing and packaging system (ID No. ES-TMP)
- Coffee bean grinding and ground coffee conveying/packaging system (ID No. ES-CBG/CP)
- New side green bean handling equipment (ID No. ES-NSGBH)
- Chaff handling systems (ID Nos. ES-CHS1 and ES-CHS2)
- Whole bean and ground coffee transfer system (ID No. ES-WBGCTS)
- Coffee bean grinders (ID No. ES-CBG) and coffee bean flavoring booth (ID No. ES-CBFB)

Table 5.3: Potential Particulate Emissions Calculations

Emission Source ID	Bagfilter Exhaust* (ft^3/min)	Bagfilter Outlet Dust Concentraton* (grains/ft^3)	Potential PM Emission Rate** (lb/hr)
ES-TMP	3,500	0.005	0.15
ES-CBG/CP	2,555	0.005	0.11
ES-NSGBH	2,400	0.005	0.10
ES-CHS1	1,370	0.005	0.059
ES-CHS2	1,505	0.005	0.065
ES-WBGCTS	2,600	0.005	0.11
ES-CBG/ES-CBFB	12,000	0.005	0.51

*Bagfilter exhaust rates and outlet dust concentrations are taken from the CY2022 emissions inventory.
**The potential particulate emission rate of each emission source is determined using the following calculation:
[PM Emission Rate = (bagfilter exhaust rate, ft^3/min) x (bagfilter outlet dust concentration, grains/ft^3) x (1 lb/7,000 grains) x (60 min/hr)]. Bagfilter exhaust rates and outlet dust concentrations are design specifications of each bagfilter.
To determine the allowable particulate emission rate for each emission source, the equation above for process rates less than 30 tons per hour ($E = 4.10(P)^{0.67}$) will be utilized in conjunction with the maximum process rate of each emission source. Table 5.4 below shows the allowable particulate emission rate, as calculated by the equation above, in comparison to the potential particulate emission rate as shown in Table 5.3 above.

Table 5.4: Remaining Sources: Allowable Emission Rate vs. Potential Emission Rate

Emission Source ID	Maximum Process Rate* (ton/hr)	Allowable PM Emission Rate (lb/hr)	Potential PM Emission Rate (lb/hr)	In Compliance?
ES-TMP	0.28	1.75	0.15	Yes
ES-CBG/CP	14.0	24.0	0.11	Yes
ES-NSGBH	4.50	11.2	0.10	Yes
ES-CHS1	0.20	1.39	0.059	Yes
ES-CHS2	0.21	1.44	0.065	Yes
ES-WBGCTS	14.0	24.0	0.11	Yes
ES-CBG/ES-CBFB	18.75	29.2	0.51	Yes

*Maximum process rates are taken from the application.

Table 5.4 above shows that the potential emission rate of each source is in compliance with the associated allowable emission rate.

The permit currently requires monthly visual inspections of each system ductwork as well as annual internal inspections of the bagfilters' (ID No. CD-TMP, CD-CBG/CP, CD-NSGBH, CD-CHS1-BF, CD-CHS2-BF, CD-WBGCTS, and CD-CBG-BF) structural integrity. Records of each inspection shall be maintained onsite in a logbook and made available for inspection upon request.

The coffee bean flavoring booth (ID No. ES-CBFB) must maintain onsite production records such that the process rates "P" in tons per hour may be derived. These records shall be made available for inspection upon request.

The Permittee shall submit a summary report of the above required monitoring and recordkeeping activities on a semiannual basis.

No changes to these requirements are necessary with this permit renewal.

c. 15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources

This rule requires that emissions of sulfur dioxide from any source of combustion, including air pollution control devices, discharged from any vent, stack, chimney, or flare shall not exceed 2.3 pounds of sulfur dioxide per million Btu heat input.

A source subject to an emission standard for sulfur dioxide in Rules 02D .0524, .0527, .1110, .1111, .1206, or .1210 shall meet the standard in that particular rule instead of the emission standard under 02D .0516. No combustion sources at S & D are subject to a sulfur dioxide standard under any of those rules, so the combustion sources at S & D are subject to the sulfur dioxide emission standard under 02D .0516.

The following combustion sources are subject to regulation under 02D .0516:

- Coffee bean roasting operations including six (6) natural gas-fired roasters (ID Nos. ES-R1, ES-R2-New, ES-R3, ES-R4, ES-R5, and ES-R6), each with a natural gas-fired thermal or catalytic oxidizer (ID Nos. ES-R1-TO, CD-R2-New-CO, ES-R3-CO, ES-R4-TO, CD-R5-CO, and CD-R6-CO);
- Natural gas-fired emergency generator (ID No. ES-EG); and
- Natural gas-fired boiler (ID No. ES-BLR1).

All sources listed above are exclusively natural gas fired. As per AP-42 Section 1.4, Natural Gas Combustion, the sulfur dioxide emission factor for natural gas combustion is 0.6 lb/10^6 scf. Using a standard natural gas heating value of 1,020 Btu/scf, this emission factor can be converted to a value of 0.0006 pounds per million Btu heat input which is much lower than the allowable emission rate of 2.3 pounds per million Btu heat input.

Due to the inherently low sulfur content of natural gas, no monitoring, recordkeeping, or reporting is required to demonstrate compliance with 02D .0516.

No changes to the current permit requirements are necessary with this permit renewal.

d. 15A NCAC 02D .0521, Control of Visible Emissions

For sources manufactured after July 1, 1971, visible emissions shall not be more than 20 percent opacity when averaged over a six-minute period. However, except for sources required to install COMs, six-minute averaging periods may exceed 20 percent opacity if:

(1) No six-minute period exceeds 87 percent opacity;
(2) No more than one six-minute period exceeds 20 percent opacity in any hour; and
(3) No more than four six-minute periods exceed 20 percent opacity in any 24-hour period.

A source subject to an emission standard for visible emissions in Rules 02D .0506, .0508, .0524, .1110, .1111, .1206, or .1210 of 15A NCAC shall meet the standard in that particular rule instead of the standard contained in 02D .0521. No sources at S & D are subject to a visible emissions standard under any of those rules, so the emission sources at S & D are subject to the visible emissions standard under 02D .0521.

All sources at S & D are subject to the 20% opacity standard under 02D .0521, including:

- Coffee bean roasting operations including six (6) roasters (ID Nos. ES-R1, ES-R2-New, ES-R3, ES-R4, ES-R5, and ES-R6) and associated cooling and destoning systems (ID Nos. ES-R1C, ES-R2C-New, ES-R3C, ES-R5C, and ES-R6C);
- Green bean handling systems (ID Nos. ES-BH1 and ES-BH2);
- Tea leaf mixing and packaging system (ID No. ES-TMP);
- Coffee bean grinding and ground coffee conveying/packaging system (ID No. ES-CBG/CP);
- New side green bean handling equipment (ID No. ES-NSGBH);
- Natural gas-fired emergency engine (ID No. ES-EG);
- Natural gas-fired boiler (ID No. ES-BLR1);
- Chaff handling systems (ID Nos. ES-CHS1 and ES-CHS2);
- Whole bean and ground coffee transfer system (ID No. ES-WBGCTS);
- Coffee bean grinders (ID No. ES-CBG) and Coffee bean flavoring booth (ID No. ES-CBFB).

For the natural gas-fired emergency engine and boiler, no monitoring, recordkeeping, or reporting is required to demonstrate compliance with this regulation because visible emissions from firing of natural gas in these sources are expected to be negligible or nonexistent.

For all other sources, S & D shall conduct monthly visible emissions observations for any visible emissions above normal. Appropriate action must be taken to correct any above-normal emissions as soon as practicable. Records of the observations must be maintained onsite in a logbook available for inspection upon request. The Permittee shall submit a summary report of the monitoring and recordkeeping activities on a semiannual basis.

No changes to these requirements are necessary with this permit renewal.

e. 15A NCAC 02D .0524, New Source Performance Standards (40 CFR 60 Subpart JJJJ)

See Section 6 below for a discussion on NSPS applicability.

f. 15A NCAC 02D .0614, Compliance Assurance Monitoring

See Section 6 below for a discussion on CAM applicability.

g. 15A NCAC 02D .1100, Control of Toxic Air Pollutants

See Section 7 below for a discussion on toxics applicability.

h. 15A NCAC 02D .1111, Maximum Achievable Control Technology (40 CFR 63 Subpart ZZZZ)

See Section 6 below for a discussion on MACT applicability.

i. 15A NCAC 02D .1111, Maximum Achievable Control Technology (40 CFR 63 Subpart DDDDD)

See Section 6 below for a discussion on MACT applicability.

j. 15A NCAC 02D .1806, Control and Prohibition of Odorous Emissions

This requirement is state-enforceable only. This rule requires that the facility shall not be operated without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from causing or contributing to objectionable odors beyond the facility's boundary.

This rule is applicable facility wide. No monitoring, recordkeeping, or reporting is required.

No changes to these requirements are necessary with this permit renewal.

k. 15A NCAC 02Q .0317, Avoidance of 02D .0530 (PSD, VOC)

Cabarrus County was designated as a moderate nonattainment area for the 1997 8-hour ozone standard on April 30, 2004 prior to being re-designated into attainment with this standard by EPA on December 2, 2013.

The requirements in 15A NCAC 02D .0531 "Sources in Nonattainment Areas" applies to new major stationary sources and major modifications to existing major stationary sources, if the airshed is in non-attainment for any criteria pollutant (PM_{10}, $PM_{2.5}$, NO_2, SO_2, ozone, and lead). Then, as per 02D .0531(e), "if any county or part of a county to which this Rule applies is later designated in 40 CFR 81.334 as attainment, all sources [i.e., major stationary sources and major modifications] in that county subject to this Rule before the redesignation date shall continue to comply with this Rule".

In 2006, with the T10 permit revision, S & D obtained their first time Title V air permit. However, the facility has retained a 100 ton per year emission limit for VOC to avoid applicability of RACT per 02D .0902 as Cabarrus County was previously in moderate nonattainment for the 1997 8-hour ozone NAAQS. The RACT avoidance limitation also served as a nonattainment NSR (NA NSR) avoidance limitation by limiting emissions of VOC to less than 100 tons per year, so S & D was never determined to be a major stationary source under NA NSR. Thus, per 15A NCAC 02D .0531(e), as referenced above, the requirements of NA NSR do not apply to S & D because S & D was never a major stationary source under NA NSR program and the facility airshed (Cabarrus County) currently is in attainment per 02D .0531 and 40 CR 81.334.

Thus, for Cabarrus County (and for the entire State of NC), PSD (Prevention of Significant Deterioration) permitting program applies to new major stationary sources and major modifications (to existing major stationary source) for all criteria pollutants including ozone.

S & D is not one of the 28 listed source categories for which a source emitting more than 100 tons per year (tpy) of any regulated NSR pollutant is considered a major stationary source under PSD rules. Thus, the PSD applicability limit for S & D is 250 tons per year of any regulated NSR pollutant.

S & D is currently a PSD minor source based upon facility-wide actual emissions of all regulated NSR pollutants below the applicable PSD major source threshold (250 tons/yr). However, this facility has the potential to emit VOC of 3,237 tons per year, as shown in Table 8.1 in Section 8 below.

With this permit renewal, a facility-wide PSD avoidance limit of 250 tons per year will be added to the permit to make the facility minor under PSD with no additional monitoring, recordkeeping, or reporting requirements. Using the Title V's streamlining clause, the agency will use the same monitoring/record keeping/reporting requirements under the VOC RACT avoidance, as discussed below, for this PSD avoidance limitation.

l. 15A NCAC 02Q .0317, Avoidance of 02D .0902 (RACT, VOC)

Cabarrus County was designated as a moderate nonattainment area for the 1997 8-hour ozone standard on April 30, 2004 prior to being re-designated into attainment with this standard by EPA in December of 2013. Per 40 CFR 51.1105(a)(2), "an area designated nonattainment for the 2008 ozone NAAQS that was redesignated to attainment for the 1997 ozone NAAQS prior to April 6, 2015, the SIP, including the maintenance plan, is considered to satisfy the applicable requirements of 40 CFR 51.1100(o) for the revoked NAAQS. The measures in the SIP and maintenance plan shall continue to be implemented in accordance with the terms in the SIP."

On December 9, 2021, North Carolina DAQ submitted a Limited Maintenance Plan (LMP) for the North Carolina portion of the Charlotte-Gastonia-Rock Hill 1997 8-hour ozone NAAQS maintenance area consistent with EPA guidance. This LMP covers the remainder of the 20-year maintenance period for the 1997 8-hour ozone NAAQS in the Metrolina area, which runs from January 3, 2024 through January 2, 2034. This LMP will continue to remain in effect at the end of the 20-year maintenance period. However, the DAQ may revise its SIP, including this LMP, during and after the 20-year period, subject to a CAA Section 110(l) demonstration.

As per the December 9, 2021 submittal of the LMP, "sources in maintenance areas are prohibited from reducing the effectiveness or removing emission controls (antibacksliding) unless such a change is first approved by EPA as a revision to the North Carolina SIP that is consistent with Section 110(l) of the CAA."

15A NCAC 02D .0902 applies to facilities with the potential to emit 100 tons or more per year of VOC and that are located in any of the moderate nonattainment areas for the 1997 8-hour ambient air quality standard for ozone as designated in 40 CFR 81.334 prior to January 2, 2014, including Cabarrus County. Facilities meeting these criteria are subject to reasonably available control technology (RACT) requirements under this section and shall comply with the requirements of 02D .0909 through 02D .0951 and 02D .0958.

Thus, S & D would be subject to the requirements of RACT under this rule, but the facility has opted to avoid these requirements via 02Q .0317. Specifically, S & D is subject to a VOC emissions limit under 02Q .0317 of less than 100 tons per year from all sources.

The facility complies with this emission limit by operating and maintaining the thermal and catalytic oxidizers on the six coffee bean roasters and by tracking the usage of VOC-containing materials on a monthly basis. Currently, the permit contains no requirements for periodic performance testing of the coffee bean roasters, nor does the permit contain operating limits for the catalytic and thermal oxidizers. With this permit renewal, these requirements will be added to the permit. Operating limits will be determined during performance testing. The performance testing shall be completed within 180 days of issuance of Permit No. 05029T23. Then, the roasters will be required to conduct periodic re-testing every 5 years.

Emissions factors for VOC shall be determined during the performance testing and shall be used to determine the VOC emissions each month. Until the results of the performance testing have been obtained, the VOC emissions calculations may continue to be made using the emissions factors listed in Table 5.5

below. S & D shall submit a permit application with the results of the initial performance testing to revise the oxidizer efficiencies and emissions factors to use in the VOC emissions calculations.

Operating limits for chamber temperature of the thermal oxidizers and firebox temperature of the catalytic oxidizers shall be determined during performance testing and incorporated into the permit as performance test results are approved. Recently, Roaster 2 underwent performance testing in 2018 and an average catalytic oxidizer chamber temperature of 881.9 degrees Fahrenheit was determined.

VOC emissions shall be calculated on a monthly basis. Consecutive 12-month rolling VOC emissions shall be calculated by summing the monthly emissions of all VOC emitting sources. VOC emissions VOC emissions, in tons, shall be determined by the following equations and emission factors:

$$E_{VOC\_Total} = \sum E_{VOC\_Roasters} + \sum E_{VOC\_Misc}$$

Where:

E_{VOC_Total} = the total facility-wide tons of VOC emissions per month (tons/month) of all VOC emission sources, controlled and uncontrolled, including insignificant activities

$E_{VOC\_Roasters}$ = the total VOC emissions (tons/month) of all coffee bean roasters, controlled and uncontrolled

$E_{VOCMisc}$ = the total VOC emissions (tons/month) from miscellaneous VOC emission sources (e.g., ID No. ES-CBFB), including insignificant activities and natural gas combustion (e.g., ID No. IS-TLFS, ES-EG, ES-BLR1, ES-R1, ES-R2-New, ES-R3, ES-R4, ES-R5, and ES-R6)

For Coffee Bean Flavoring Booth (ID No. ES-CBFB) and Tea Leaf Flavoring Stations (ID No. IS-TLFS), calculations of monthly VOC emissions shall be made at the end of each month. VOC emissions shall be determined by multiplying the total amount of each type of VOC-containing material consumed during the month by the VOC content of the material (e.g., vendor safety data sheets) as presented with the calculation methodologies provided in the permit application (Application No. 1300051.20A).

VOC emissions from natural gas combustion shall be calculated by multiplying the natural gas usage by an appropriate natural gas combustion emission factor. VOC emissions from the emergency generator shall by calculated by multiplying the NSPS Subpart JJJJ emission factor in Table 5.5 below and the hp-hours of the generator.

Monthly VOC emissions, in tons, for the coffee bean roasters (ID Nos. ES-R1, ES-R2-New, ES-R3, ES-R4, ES-R5 and ES-R6) and associated control devices (ID Nos. ES-R1-TO and ES-R4-TO; ES-R2-New-CO, ES-R3-CO, CD-R5-CO, and CD-R6-CO) shall be determined by the following equations and DAQ approved emission factors until the required performance testing is approved:

$$E_{VOC\_Roasters} = \sum E_{VOC\_Oxidizers} + \sum E_{VOC\_Bypass}$$

$E_{VOC\_Oxidizers}$ = {[controlled pounds (lb) VOC per ton coffee roasted (ton)] x [tons coffee roasted per hour (hr)] x (hours per month oxidizer is deemed “in operation”)} x (1 ton / 2000 lb)

$$E_{VOC\_Oxidizers} = [(Xc \times t_{Oxidizer}) \times 1/2000]$$

E_{VOC_Bypass} = {[(uncontrolled lb VOC/ton coffee roasted) x (tons coffee roasted/hr)] x (hrs/month oxidizer is not operated or is deemed “not in operation”)} x (1 ton / 2000 lb)

$$E_{VOC\_Bypass} = [(Xuc \times t_{Bypass}) \times 1/2000]$$

Where:

$E_{VOC\_Roasters}$ = the total VOC emissions (tons/month) of all coffee bean roasters, controlled and uncontrolled

$E_{VOC\_Oxidiers}$ = tons of VOC emissions per month (tons/month) from roasters controlled by oxidizers (i.e., thermal and catalytic oxidizers)

Xc = controlled lb VOC/hr on a monthly basis

$t_{Oxidizer}$ = hours/month when oxidizer is not bypassed and oxidizer temperature is greater than or equal to the hourly block average temperature specified in Section 2.2 B.1.h.

$E_{VOCBypass}$ = tons of VOC emissions per month from each roaster bypassing the control device, calculated on a per source basis using emission factors (lb/ton) as specified below times the hours each bypass occurred

Xuc = uncontrolled lb VOC/hr on a monthly basis assuming 94.5% VOC control efficiency (CE) based on March 2017 application, $[Xc / (1 - CE_{Oxidizer})]$

t_{Bypass} = hrs/month when oxidizer is bypassed or hourly periods when the oxidizer temperature is less than the hourly block average temperature specified in Section 2.2 B.1.h. including hourly periods of start-up, shutdown, and malfunction

Table 5.5: VOC Emission Factors

Emission Source(s) (ID No(s).)	Emission Factor	Control Device	Basis
Coffee bean roaster No. 1 **(ID No. ES-R1)**	1.69 lb/ton coffee roasted	Thermal oxidizer **(ID No. ES-R1-TO)**	March 2001 and March 2002 stack tests per review for issued permit 05029R09 (Application No. 1300051.04A)
Coffee bean roaster No. 2 **(ID No. ES-R2-New)**	0.0905 lb/ton coffee roasted	Catalytic oxidizer **(ID No. CD-R2-CO)**	Approval Memorandum dated January 22, 2019; DAQ Tracking No. 2018-190ST
Coffee bean roaster No. 3 **(ID No. ES-R3)**	2.66 lb/ton coffee roasted	Catalytic oxidizer **(ID No. ES-R3-CO)**	March 2001 and March 2002 stack tests per review for issued permit 05029R09 (Application No. 1300051.04A)
Coffee bean roaster No. 4 **(ID No. ES-R4)**	1.69 lb/ton coffee roasted	Thermal oxidizer **(ID No. ES-R4-TO)**	
Coffee bean roaster No. 5 **(ID No. ES-R5)**	2.66 lb/ton coffee roasted	Catalytic oxidizer **(ID No. CD-R5-CO)**	
Coffee bean roaster No. 6 **(ID No. ES-R6)**	2.66 lb/ton coffee roasted	Catalytic oxidizer **(ID No. CD-R6-CO)**	
Miscellaneous Sources:			
Coffee bean flavoring booth **(ES-CBFB)**	Varies based on material	N/A	Review for issued permit 05029T20 (Application No. 1300051.20A)
Tea leaf flavoring stations **(ID No. IS-TLFS)**	Varies based on material	N/A	Review for issued permit 05029T20 (Application No. 1300051.20A)
Emergency Generator **(ID No. ES-EG)**	1.0 g/hp-hr	N/A	40 CFR Part 60, Subpart JJJJ

Emission Source(s) (ID No(s).)	Emission Factor	Control Device	Basis
Natural Gas Usage Boiler **(ID No. ES-BLR1)** Coffee bean roaster No. 1 **(ID No. ES-R1)** natural gas usage Coffee bean roaster No. 2 **(ID No. ES-R2-New)** natural gas usage Coffee bean roaster No. 3 **(ID No. ES-R3)** natural gas usage Coffee bean roaster No. 4 **(ID No. ES-R4)** natural gas usage Coffee bean roaster No. 5 **(ID No. ES-R5)** natural gas usage Coffee bean roaster No. 6 **(ID No. ES-R6)** natural gas usage	Natural Gas Combustion VOC Emission Factor	N/A	AP-42 Section 1.4 or site specific emission factor

When the oxidizers are not in operation or are operated at temperatures below the temperature determined during performance testing or if the temperatures are not monitored, the oxidizers shall be deemed "not in operation" and the VOC emissions shall be determined using the uncontrolled emissions rates specified above.

The Permittee shall conduct monthly visual inspections of the structural integrity of the oxidizers and an annual internal inspection of each oxidizer. Records shall be kept of all inspections and maintenance conducted as well as records of monthly VOC emissions and all documentation necessary to calculate the VOC emissions. A semiannual report is required which shall contain a summary of all monitoring/recordkeeping requirements, the inspection and maintenance conducted on the oxidizers, the monthly and total VOC emissions for each 12-month period over the previous 17-month period, the monthly hours of operation of the oxidizers for the previous 17-month period, and any deviations from the requirements of this permit condition.

Compliance will be determined during the next compliance inspection.

m. 15A NCAC 02Q .0317, Avoidance of 112(g) (15A NCAC 02D .1112)

Section 112(g) of the Clean Air Act applies to the construction or reconstruction of major sources of hazardous air pollutants unless (1) the major source has been regulated or exempted from regulation pursuant to 15A NCAC 02D .1109 or .1111; or (2) the owner or operator of the major source has received all necessary air quality permits for the construction or reconstruction project before July 1, 1998. Per 02D .1112, to "construct a major source" means to install a production unit that in and of itself has the potential to emit 10 tons per year or greater of any individual HAP or 25 tons per year or greater of any combination of HAPs. S & D has the potential to emit HAPs at major source thresholds, but no MACT standard has been promulgated for coffee bean roasting operations.

Table 5.6 below shows the timeline of events for S & D pertaining to the applicability of 112(g):

Table 5.6: Permitting Timeline

Date	Permit No.	Description
June 21, 2002	05029R07	This is the earliest version of the permit available for review in IBEAM/Laserfiche. Administrative amendment – S&D was Synthetic Minor and permitted to operate four (4) coffee bean roasting operations (ID Nos. ES-R1 through ES-R4). Coffee roasters ES-R1 & R4 are controlled by a thermal oxidizer and ES-R2 & R3 are controlled by a catalytic oxidizer. Per review, the facility has the potential to have PM-10 and VOC emissions over 100 tons/yr and HAP emissions greater than 10 tons/yr individually. In addition, to ensure individual HAP and VOC emissions do not exceed the limitations above, the total pounds of coffee beans processed shall be less than 86,500,000 pounds per consecutive 12-month period.
October 19, 2004	05029R09	Air Permit Modification – S&D was Synthetic Minor and requested addition of a coffee bean roasting line (coffee roaster 5) and an additional green bean handling system similar to the systems already in place. Upon permit issuance they were permitted to operate five (5) coffee bean roasting operations (ID Nos. ES-R1 through ES-R5) and two bean handling systems (ID Nos. ES-BH1 and ES-BH2). Emission summary for added/modified equipment potentials (before and after controls) emission rate (tpy) of acetaldehyde was 8.87. Coffee roasters ES-R1 & R4 are controlled by a thermal oxidizer and ES-R2, R3 & R5 are controlled by a catalytic oxidizer.
April 24, 2006	05029T10	Initial TV Permit was issued. S & D became Title V by requesting removal of their 10/25 tpy HAP limits and total pounds of coffee beans processed of less than 86,500,000 pounds per consecutive 12-month period limit. They were permitted to operate 5 coffee bean roasting operations (ID Nos. ES-R1 through ES-R5) and 2 bean handling systems (ID Nos. ES-BH1 and ES-BH2). Per review, the facility is Title V for expected acetaldehyde emissions of 11.8 TPY, which is greater than the 10 tpy threshold for any one HAP. The facility's < 100 tpy VOC emission limit remained to avoid RACT.
May 1, 2008	05029T12	Minor modification – S&D was Title V (major for HAPS) and requested addition of a coffee bean roasting line (ID No. ES-R6). Modification to add the sixth coffee roaster. Uncontrolled potential emissions of acetaldehyde for Roaster No. 6 of 138.3 tpy. Review indicated that "112g applicability will be explored upon renewal or next significant modification."
January 3, 2011	05029T13	Renewal – Review indicated that "The facility is not subject to any MACTs."
July 5, 2017	05029T17	TV Sign 501(c)(2) Part I – S&D requested the following: -Removal of permitted coffee bean roaster, Roaster No. 2, Cooling and Destoning System, Catalytic Oxidizer, Receiving Cyclone, Cooling Cyclone, and Destoning Cyclone -Installation of a new Roaster No. 2 as a replacement, Cooling and Destoning System, Catalytic Oxidizer, Cooling Cyclone, and Destoning Cyclone -Installation of two new chaff handling systems (ES-CHS1 and ES-CH2) -Installation of Ground coffee bean conveying and packaging line 401/402 (IS-401/402) Coffee Bean Roaster (ES-R2-New) – Uncontrolled Potential Emissions for Acetaldehyde (VOC/HAP/TAP) of 80.77 tpy & Controlled Potential Emissions for Acetaldehyde of 4.44 tpy Review indicated that "This facility is a major source for HAPs emissions." There was only a discussion of 4Z and 5D.

Date	Permit No.	Description
July 18, 2019	05029T19	TV Sign 501(b)(2) Part II review indicated that "This application is submitted as a second step (Part II) of two-step significant modification. The facility received Permit No. 05029T17 on July 5, 2017, which authorized construction of a new Roaster No. 2 as a replacement, Cooling and Destoning System, Catalytic Oxidizer, Cooling Cyclone, and Destoning Cyclone; two new chaff handling systems (ID Nos. ES-CHS1 and ES-CH2); and Ground coffee bean conveying and packaging line 401/402 (IS-401/402). …This facility is a major source for HAPs emissions and is subject to the National Emission Standards for Hazardous Air Pollutants, 40 CFR 63, Subpart ZZZZ and Subpart DDDDD. However, this permit modification does not affect this status."

It can be seen in Table 5.6 above that S & D first became a major source under the Title V permitting program in 2006 with the issuance of the T10 permit revision. No new sources were constructed with this permitting action, so 112(g) did not apply at this time.

In 2008, S & D installed a new coffee bean roaster (ID No. ES-R6) with uncontrolled potential emissions of acetaldehyde (a HAP) of 138.3 tons per year. 112(g) applicability was not addressed at the time of this permitting action. Per 02D .1112(a) and (c)(4)(B), 112(g) should have been addressed for the new coffee bean roaster (ID No. ES-R6) but was inadvertently left out of the permit and review.

In 2017, S & D replaced the existing No. 2 roaster with a new coffee bean roaster (ID No. ES-R2-New) with uncontrolled potential emissions of acetaldehyde of 80.77 tons per year. 112(g) applicability was not addressed at the time of this permitting action. Per 02D .1112(a) and (c)(4)(B), 112(g) should have been addressed for the new coffee bean roaster (ID No. ES-R6) but was inadvertently left out of the permit and review.

S & D has been subject to and complying with 02Q .0317, Avoidance of 02D .0902 (RACT), which limits the facility-wide VOC emissions to less than 100 tons per year. Although this condition is written to control emissions of VOC, this condition also indirectly controls for emissions of HAPs from the Nos. 2 and 6 roasters since the HAPs emitted from these roasting operations (i.e. acetaldehyde, acetic acid, formaldehyde) are all also VOCs. The 02Q .0317 condition requires that the VOC emissions from the roasters are controlled by catalytic or thermal oxidizers, as applicable. Table 5.7 below shows the actual emissions of HAPs as reported in recent years' emissions inventories. For each inventory year, acetaldehyde was the largest individual HAP emitted from the facility.

Table 5.7: HAP Emissions Summary

S&D Coffee, Inc. (Facility ID No. 1300051) - Emissions Inventory Summary				
Year	Highest Emitted HAP, Acetaldehyde, emissions			Total HAP
	Facility-wide (tpy)	Largest Roaster (tpy)	ID No.	tpy
2023	8.54	3.68	ES-R5	13.39
2022	9.02	4.05	ES-R5	14.13
2021	9.40	3.53	ES-R5	15.07
2020	8.95	4.05	ES-R5	14.88
2019	12.99	5.55	ES-R5	21.09
2018	12.27	4.66	ES-R5	20.13
2017	13.00	5.08	ES-R3	21.49
2016	12.10	4.32	ES-R3	20.19

2015	12.34	4.56	ES-R3	20.57
2014	13.03	4.75	ES-R5	21.74
2013	12.41	4.53	ES-R3	20.58
2012	13.07	4.58	ES-R3	21.37
2011	10.95	4.85	ES-R5	17.90
2010	11.16	4.71	ES-R5	17.99
2009	10.12	4.08	ES-R5	16.32
2008	10.30	4.86	ES-R5	16.91
2007	9.79	4.33	ES-R5	15.96
2006	8.95	4.02	ES-R3	14.63

As is seen in Table 5.7, the highest emitting roaster for each year has individual HAP emissions below 10 tons per year, and facility-wide total HAP emissions for each year are below 25 tons per year. Thus, no roaster has, in and of itself, emitted HAPs above the major source thresholds. So, although there was no 112(g) or HAP major avoidance condition listed in the permit, the roasters in question (ID Nos. ES-R2-New and ES-R6) have remained minor sources of HAP emissions. A 112(g)-avoidance condition will be added to the permit with this permit renewal to ensure that HAP emissions remain minor from the two roasters (ID Nos. ES-R2-New and ES-R6).

S & D may comply with the 112(g) avoidance by complying with the monitoring/recordkeeping/reporting requirements of the 02D .0902 avoidance condition described in Section 5.k above. Additionally, S & D will be limited to less than 10 tons per year of any individual HAP and less than 25 tons per year of any combination of HAPs from each of the two roasters. Performance testing will be required to determine the HAP mass emission rates for the roasters. All emission calculations required by the 02D .0902 avoidance condition, shown in Section 5.k above, will be required for total HAPs and highest individual HAP using approved HAP emission factors. The following HAP emission factors in Table 5.8 below will be used until the HAP performance testing has been conducted and approved.

Table 5.8: HAP Emissions Factors for Roasters 2 and 6

Source ID No.	HAP Emissions Factors[1,2] (lb/ton coffee roasted)				
	Acetaldehyde	Acetic Acid	Acrolein	Formaldehyde	n-Hexane
ES-R2-New	4.61E-01	5.22E-03	1.14E-04	1.13E-03	6.56E-03
ES-R6	4.61E-01	4.74E-01	5.42E-03	2.40E-01	6.56E-03

[1] Emissions factors for HAPs come from 2001 Trigon Engineering stack test reports completed on Roaster No. 1 with a thermal oxidizer and Roaster No. 2 (old) with a catalytic oxidizer.

[2] Emissions factors for acetic acid, acrolein, and formaldehyde for Roaster No. 2 (new) come from a November 2001 GEL Engineering stack test conducted on a similar roaster at the S & D Coffee West Winds facility (1300170).

Compliance with this condition shall be determined during performance testing and compliance inspections.

n. 15A NCAC 02Q .0504, Option for Obtaining Construction and Operation Permit

This rule requires that, for completion of the two-step significant modification process, the permittee shall file an amended application following the procedures of 15A NCAC 02Q .0500 within one year from the date of beginning operation of the modified sources. Additionally, the permittee shall notify the Regional Office in writing of the date of beginning operation of the modified sources postmarked no later than 30 days after such date.

This condition was added to the permit during the two-step significant modification process initiated by Application No. 1300051.18A for the installation of the whole bean and ground coffee transfer system (ID No. ES-WBGCTS).

S & D submitted the notification of initial startup of the whole bean and ground coffee transfer system (ID No. ES-WBGCTS) to the Mooresville Regional Office on February 25, 2021. The notification indicated that start-up of the whole bean and ground coffee transfer system (ID No. ES-WBGCTS) occurred on February 11, 2021 which is within 30 days of the submittal of the notification.

Permit Application No. 1300051.21B, the "Part 2" significant modification application, was submitted on July 26, 2021 which is within one year from the date of beginning operation of the modified sources.

S & D has satisfied the requirements of this regulation. Therefore, this permit condition will be removed with the issuance of the permit renewal.

o. 15A NCAC 02Q .0711, Emission Rates Requiring a Permit

See Section 7 below for a discussion on toxics applicability.

6. NSPS, NESHAP, PSD, 112(r), and CAM Applicability

a. NSPS

S & D is currently subject to the following regulations under 40 CFR Part 60 (NSPS):

- NSPS Subpart JJJJ
- NSPS Subpart Dc

NSPS Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

The 10.5 million Btu per hour (MMBtu/hr) natural gas-fired boiler (ID No. ES-BLR1) is subject to NSPS Subpart Dc.

The requirements of NSPS Subpart Dc for the 10.5 MMBtu/hr natural gas-fired boiler are outlined as follows:

§60.40c(a) – This subpart applies to each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 100 MMBtu/hr or less, but greater than or equal to 10 MMBtu/hr. Application No. 1300051.20C indicates that this boiler (ID No. ES-BLR1) was constructed after June 8, 1989 and is therefore subject to NSPS Subpart Dc.

§60.41c – "Steam generating unit" is a device that combusts any fuel and produces steam or heats water or heats any transfer medium.

§60.48c(a) – The owner or operator of each affected facility shall submit notification of the date of construction or reconstruction and actual startup according to the requirements of §60.48c(a)(1) through (4).

§60.48c(g)(2) – As an alternative to meeting the requirements of §60.48c(g)(1), the owner or operator of an affected facility that combusts only natural gas may elect to record and maintain records of the amount of each fuel combusted during each calendar month.

§60.48c(i) – All records required under this section shall be maintained by the owner or operator of the affected facility for a period of two years following the date of such record.

The application indicates that this boiler is subject to the requirements of NSPS Subpart Dc, but this condition is not currently listed in the permit. NSPS Subpart Dc will be added to the permit during this permit renewal. Compliance will be determined during the next inspection.

NSPS Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

The 130-kW natural gas-fired emergency engine (ID No. ES-EG) is subject to NSPS Subpart JJJJ.

The requirements of NSPS Subpart JJJJ for a 130 kilowatt, natural gas-fired engine are outlined as follows:

§60.4230(a)(4)(iv) – The engine is an NSPS Subpart JJJJ affected source under 60.423(a)(4)(iv) as a stationary spark ignition (SI) internal combustion engine (ICE) manufactured on or after January 1, 2009 with a maximum engine power greater than 19 kilowatts.

§60.4233(e) – Owners and operators of SI ICE with a maximum engine power greater than or equal to 75 kilowatts (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 of Subpart JJJJ.

§60.4234 – Owners and operators of stationary SI ICE must operate and maintain stationary SI ICE that achieve the emission standards as required in §60.4233 over the entire life of the engine.

§60.4237(b) – Owners and operators of an emergency SI ICE that is greater than or equal to 130 HP (97 kW) and less than 500 HP (373 kW), was built on or after January 1, 2011, and does not meet the standards applicable to non-emergency engines, must install a non-resettable hour meter upon startup of the emergency engine.

§60.4243(b) – Owners and operators of a stationary SI ICE that must comply with the emission standards specified in §60.4233(d) or (e) must demonstrate compliance according to one of the methods specified in paragraphs (1) and (2):

(1) Purchasing an engine certified according to procedures specified in this subpart, for the same model year and demonstrating compliance according to one of the methods specified in §60.4243(a) [see §60.4243(a)(1) below].
(2) Purchasing a non-certified engine and demonstrating compliance with the emission standards specified in §60.4233(d) or (e) and according to the requirements specified in §60.4244, as applicable, and according to §60.4243(b)(2)(i) and (ii).

§60.4243(a)(1) – If the certified SI ICE is operated and maintained according to the manufacturer's emission-related written instructions, records of conducted maintenance must be kept demonstrating compliance. No performance testing is required. The applicable requirements in 40 CFR Part 1068 Subparts A through D must be met. If the engine's settings are adjusted according to and consistent with the manufacturer's instructions, the SI ICE will not be considered out of compliance.

§60.4243(d) – Owners and operators of emergency stationary SI ICE must operate the emergency engine according to the requirements in paragraphs (1) through (3). In order for the engine to be considered an emergency stationary ICE under this subpart, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (1) through (3) is prohibited. If the engine is not operated according to the requirements in paragraphs (1) through (3), the engine will not be considered an emergency engine and must meet all requirements for non-emergency engines.

(1) There is no time limit on the use of emergency stationary ICE in emergency situations.

(2) The emergency engine may be operated for the purpose specified in the following paragraph (i) for a maximum of 100 hours per calendar year. Any operation for non-emergency

situations as allowed by paragraph (3) counts as part of the 100 hours per calendar year allowed by this paragraph (2).

(i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.

(3) Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing provided in paragraph (2) above. Except as provided in paragraph 60.4243(d)(3)(i) of this subpart, the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

§60.4243(e) – Owners and operators of stationary SI natural gas-fired engines may operate the engines using propane for a maximum of 100 hours per year as an alternative fuel solely during emergency operations but must keep records of such use. If propane is used for more than 100 hours per year in an engine that is not certified to the emission standards when using propane, the owners and operators are required to conduct a performance test to demonstrate compliance with the emission standards of §60.4233.

§60.4245(a) – Owners and operators of all stationary SI ICE must keep records of the information in paragraphs (1) through (4):

(1) All notifications submitted to comply with this subpart and all documentation supporting any notification.

(2) Maintenance conducted on the engine.

(3) If the stationary SI ICE is certified, documentation from the manufacturer that the engine is certified to meet the emission standards and information as required in 40 CFR Parts 1048, 1054, and 1060 as applicable.

(4) If the stationary SI ICE is not a certified engine or is a certified engine operating in a non-certified manner and subject to §60.4243(a)(2), documentation that the engine meets the emission standards.

§60.4245(b) – For all stationary SI emergency ICE greater than or equal to 130 HP (97 kW) and less than 500 HP (373 kW) manufactured on or after July 1, 2011 that do not meet the standards applicable to non-emergency engines, the owner or operator must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation.

§60.4245(e) – The owner or operator of an emergency stationary SI ICE with a maximum engine power more than 100 HP (74 kW) that operates for the purpose specified in §60.4243(d)(3)(i) must submit an annual report according to the requirements specified in §60.4245(e).

§60.4246(a) – Table 3 of 40 CFR 60 Subpart JJJJ shows which parts of the General Provisions in §60.1 through §60.19 apply.

According to the most recent inspection conducted on March 15, 2023 by Seth Hall of MRO, the engine (ID No. ES-EG) is EPA certified with a non-resettable hour meter and operates less than 100 hours per year. Records are kept of maintenance activities conducted on the engine. The facility appears to be in compliance with this regulation.

No changes to the requirements of this permit condition are necessary with this permit renewal.

b. NESHAP

S & D is a major source of HAP emissions and is currently subject to the following regulations under 40 CFR Part 63 (NESHAP/MACT):

- NESHAP Subpart ZZZZ
- NESHAP Subpart DDDDD

NESHAP Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The 130-kW natural gas-fired emergency engine (ID No. ES-EG) is subject to NESHAP Subpart ZZZZ.

S & D complies with the requirements of NESHAP Subpart ZZZZ by complying with NSPS Subpart JJJJ as provided by 63.6590(c)(6) as a new or reconstructed emergency or limited use stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions.

No changes to the requirements of this permit condition are necessary with this permit renewal.

NESHAP Subpart DDDDD – National Emissions Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

The 10.5 million Btu per hour (MMBtu/hr) natural gas-fired boiler (ID No. ES-BLR1) is subject to MACT Subpart DDDDD.

The requirements under Subpart DDDDD for the boiler are outline as follows:

§63.7485 – An industrial, commercial, or institutional boiler or process heater that is located at, or is part of, a major source of HAP is subject to this subpart.

§63.7490(a)(1) – This subpart applies to the boiler (ID No. ES-BLR1) as an existing affected source as described in paragraph (1):

> (1) The affected source of this subpart is the collection at a major source of all existing industrial, commercial, and institutional boilers and process heaters within a subcategory;

§63.7499(l) – The boiler (ID No. ES-BLR1) belongs to the subcategory of "units designed to burn gas 1 fuels", where "units designed to burn gas 1 fuels", as defined in §63.7575, includes any boiler or process heater that burns only natural gas, refinery gas, and/or other gas 1 fuels. Gaseous fuel boilers and process heaters that burn liquid fuel for periodic testing of liquid fuel, maintenance, operator training, not to exceed a combined total of 48 hours during any calendar year, are included in this definition. Gaseous fuel boilers and process heaters that burn liquid fuel during periods of gas curtailment or gas supply interruptions of any duration are also included in this definition.

§63.7500(a)(1)(v) – The owner and operator of an existing boiler or process heater must comply with either the emission limits in Table 2 to this subpart or the emission limits in Table 15 to this subpart until compliance with the emission limits in Table 2 is required (October 6, 2025). Neither Table 2 nor Table 15

provide emission limits for “units designed to burn gas 1 fuels”. Thus, no emission limits under this subpart apply.

§63.7500(a)(2) – The owner and operator must meet each operating limit in Table 4 to this subpart that applies to the boiler or process heater. Table 4 does not provide any operating limits for “units designed to burn gas 1 fuels”. Thus, no operating limits under this subpart apply.

§63.7500(a)(3) – At all times, the boiler must be operated and maintained in a manner consistent with safety and good air pollution control practices for minimizing emissions.

§63.7500(f) – These standards apply at all times the affected unit is operating, except during periods of startup and shutdown during which time items 5 and 6 of Table 3 must be complied with.

§63.7510(e) – For existing affected sources, the initial tune-up must be completed following the procedures in §63.7540(a)(10)(i) through (vi) by January 31, 2016. The initial tune-up was completed on January 26, 2016. The one-time energy assessment specified in Table 3 of this subpart shall be completed no later than January 31, 2016. The energy assessment must include the following :

a. A visual inspection of the boiler or process heater system;
b. An evaluation of operating characteristics of the boiler or process heater systems, specifications of energy using systems, operating and maintenance procedures, and unusual operating constraints;
c. An inventory of major energy use systems consuming energy from affected boilers and process heaters and which are under the control of the boiler/process heater owner/operator;
d. A review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage;
e. A review of the facility’s energy management program and provide recommendations for improvements consistent with the definition of energy management program, if identified;
f. A list of cost-effective energy conservation measures that are within the facility’s control;
g. A list of the energy savings potential of the energy conservation measures identified;
h. A comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping those investments.

The one-time energy assessment was completed on January 29, 2016.

§63.7515(d) – If a tune-up work practice standard applies, for this boiler (ID No. ES-BLR1), an annual tune-up must be conducted no more than 13 months after the previous tune-up. The most recent tune-up was conducted on December 6, 2023, as per the inspection report dated June 3, 2024 by Seth Hall of MRO.

§63.7515(g) – For affected sources that have not operated since the previous tune-up and more than one year has passed since the previous tune-up, a subsequent tune-up shall be conducted following the procedure in §63.7540(a)(10)(i) through (vi) and by the schedule described in §63.7540(a)(13) for units that are not operating at the time of their scheduled tune-up.

§63.7530(e) – The Notification of Compliance Status must include a signed certification that either the energy assessment was completed according to Table 3 of this subpart, and that the assessment is an accurate depiction of the facility at the time of the assessment, or that the maximum number of on-site technical hours specified in the definition of energy assessment applicable to the facility has been expended.

§63.7530(f) – The Notification of Compliance Status must be submitted containing the results of the initial compliance demonstration according to the requirements of §63.7545(e).

§63.7540(a)(10) – If the boiler or process heater has a heat input capacity of 10 million Btu per hour or greater, an annual tune-up of the boiler or process heater must be conducted to demonstrate continuous compliance with the following provisions:

(i) As applicable, inspect the burner, and clean or replace any components of the burner as necessary.
(ii) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available.
(iii) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly.
(iv) Optimize total emissions of carbon monoxide. This optimization should be consistent with the manufacturer's specifications, if available, and with any NOx requirements to which the unit is subject.
(v) Measure the concentration in the effluent stream of carbon monoxide in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made.
(vi) Maintain on-site and submit, if requested, a report containing the following information:

(A) The concentration of carbon monoxide in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater.
(B) A description of any corrective action taken as a part of the tune-up.
(C) The type and amount of fuel used over the 12 months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel used by each unit. \

The most recent tune-up was conducted on December 6, 2023, as per the inspection report dated June 3, 2024 by Seth Hall of MRO.

§63.7540(a)(13) – If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.

§63.7540(b) – Each instance in which a unit did not meet each emission limit and operation limit that applies shall be reported according to the requirements of §63.7550. These instances are deviations from the emission limits or operating limits in this subpart.

§63.7540(d) – For startup and shutdown, the work practice standards according to items 5 and 6 of Table 3 of this subpart shall be met.

§63.7545 – Notifications:

(a) All notifications required by §63.7(b) and (c), §63.8(e), (f)(4), and (6), and §63.9(b) through (h) that apply must be submitted by the dates specified.

(b) An Initial Notification must be submitted no later than 120 days after the source becomes subject to this subpart.

(c) If a new or reconstructed affected source starts up on or after January 31, 2013, an Initial Notification must be submitted no later than 15 days after the actual date of startup of the affected source. For a new or reconstructed affected source that has reclassified to major source status, an Initial Notification shall be submitted not later than 120 days after the source becomes subject to this subpart.

(e) A Notification of Compliance Status shall be submitted within 60 days following the completion of the initial compliance demonstration according to the procedures specified in §63.7545(e)(1) through (8). The Notification of Compliance Status was submitted on March 10, 2016.

§63.7550 – Reporting:

(a) Each report required by Table 9 of this subpart shall be submitted as applicable.

(b) A semiannual compliance report shall be submitted according to the requirements given by §63.7550(b)(1) through (5) and §63.7550(c) as applicable.

(d) Each deviation from an emission limit or operating limit in this subpart that occurs at a boiler that does not use a continuous monitoring system (CMS) to comply shall be reported in the compliance report according to the requirements given in §63.7550(d)(1) through (3).

(h) All required reports shall be submitted according to the procedures given in §63.7550(h)(1) through (3), including:

(3) All required reports shall be submitted electronically to the EPA via the CEDRI through the EPA's CDX.

§63.7555(a) – Records must be kept according to paragraphs (1) and (2):

(1) A copy of each notification and report that is submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report.

(2) Records of performance tests, fuel analyses, or other compliance demonstrations and performance evaluations.

§63.7560(a) – Records must be in a form suitable and readily available for expeditious review according to §63.10(b)(1).

§63.7560(b) – Records must be kept for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

§63.7560(c) – Each record must be kept onsite, or must be accessible from onsite, for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record. Records can be kept offsite for the remaining 3 years.

Compliance with 02D .1111 is expected.

With this permit renewal, the listed requirements for the initial tune-up, one-time energy assessment, and Notification of Compliance Status submittal will be removed from the permit since these requirements have been satisfied.

No further changes to this permit condition are required as part of this permit renewal.

c. PSD

Cabarrus County was designated as a moderate nonattainment area for the 1997 8-hour ozone standard. All counties in NC were re-designated as attainment effective August 27, 2015. [Ref: Federal Register /Vol. 80, No. 144 /Tuesday, July 28, 2015 /Rules and Regulations.]

This facility is currently minor for PSD because VOC emissions are less than 250 tons per year, and S & D is not one of the 28 listed source categories for which the PSD limit is 100 tons per year.

Cabarrus County's minor source baseline dates for PM_{10}, SO_2, and NOx have been triggered. This renewal does not result in emissions changes for any of these pollutants. Moreover, for the second step application (Application No. 1300051.21B), refer to the emission change discussion in the attached permit review (See Attachment 1 below).

d. 112(r)

This facility is not subject to the requirements of the Chemical Accident Release Prevention Program, Section 112(r) of the Clean Air Act requirements.

e. CAM

40 CFR Part 64 is applicable to any pollutant-specific emission unit, if the following three conditions are met:

- the unit is subject to any (non-exempt: e.g. pre-November 15, 1990, Section 111 or Section 112 standard) emission limitation or standard for the applicable regulated pollutant.
- the unit uses any control device to achieve compliance with any such emission limitation or standard.
- the unit's pre-control potential emission rate exceeds either 100 tpy (for criteria pollutants) or 10/25 tpy (for HAPs).

Tea Leaf Mixing and Packaging Operation (ID No. ES-TMP)

CAM requirements were added to the permit during the T16 review due to the use of an updated particulate matter emission factor. However, with this renewal application, the emission factor for the tea leaf mixing and packaging operation indicates that the potential uncontrolled PM10 and PM2.5 emissions from this source (ID No. ES-TMP) are less than 100 tons per year. Thus, CAM requirements do not apply and will be removed from this source with this permitting action.

7. Facility Wide Air Toxics

15A NCAC 02D .1100 applies to the six coffee roasters (ID Nos. ES-R1, ES-R2-New, ES-R3, ES-R4, ES-R5, and ES-R6). The most recent modeling was conducted in 2008 because of the addition of a new coffee roaster (ID No. ES-R6). The modeling was reviewed by Jerry Freeman, Meteorologist, Air Quality Analysis Branch (AQAB), and indicated compliance with the NC Acceptable Ambient Levels (AALs) on a source-by-source basis. The maximum impacts occurred within 300 meters from the facility property lines and reached the following percentages of the AAL for formaldehyde, acetic acid, acetaldehyde, and acrolein, respectively: 31%, 2%, <1%, and 1%. Table 7.1 is taken from the modeling review and shows the modeled emission rates for each pollutant during the 2008 modeling analysis.

Table 7.1: Modeled Emission Rates for 2008 Modeling Analysis

Source ID	Stack Height (m)	Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)	FORMALD (lb/hr)	ACETIC (lb/hr)	ACETALDE (lb/hr)	ACROLEIN (lb/hr)
R1	21.8	801	17.77	0.508	0.62	0.28	0.13	0.018
R2	18.9	716	19.87	0.457	0.868	1.75	1.71	0.02
R3	19	716	11.92	0.457	1.04	2.09	2.03	0.024
R4	17.5	801	5.64	0.508	0.057	0.026	0.012	0.00162
R5	18.9	716	19.87	0.457	1.04	2.09	2.03	0.02
R6	19.812	710.93	18.288	0.4572	0.81	1.62	1.58	0.019

No increases in TAP emissions are expected with this permit renewal. No testing, monitoring, or recordkeeping is required to ensure compliance with the modeled emission rates given in Table 7.2 below because, according to the T12 and T17 permit reviews, the facility has conducted a toxics modeling demonstration at the maximum emission rate for each source for formaldehyde, acetic acid, acetaldehyde, and acrolein. For n-hexane and phenol, the facility has demonstrated compliance with each applicable TPER at the maximum emission rate for each source.

To determine compliance with the TAP limits shown in Table 7.1 above, the TAP emission rates from the most recent emissions inventory (CY2022) are compared to the TAP limits, as shown in Table 7.2. All actual TAP emission rates are below the respective modeled emission rates.

Table 7.2: Modeled Emission Rates vs. Actual TAP Emission Rates

Source ID	Formaldehyde		Acetic Acid		Acetaldehyde		Acrolein	
	Actual Emissions (lb/hr)	Emission Limit (lb/hr)	Actual Emissions (lb/hr)	Emission Limit (lb/hr)	Actual Emissions (lb/hr)	Emission Limit (lb/hr)	Actual Emissions (lb/hr)	Emission Limit (lb/hr)
ES-R1	0.45	0.62	0.21	0.28	0.095	0.13	0.013	0.018
ES-R2-New	0.004	0.868	0.018	1.75	1.60	1.71	0.0004	0.02
ES-R3	0.79	1.04	1.59	2.09	1.54	2.03	0.018	0.024
ES-R4	0.03	0.057	0.015	0.026	0.0075	0.012	0.001	0.00162
ES-R5	0.72	1.04	1.45	2.09	1.41	2.03	0.017	0.02
ES-R6	0.20	0.81	0.39	1.62	0.38	1.58	0.0045	0.019

S & D has several combustion sources, including the roasters (ID Nos. ES-R1, ES-R2-New, ES-R3, ES-R4, ES-R5, and ES-R6), thermal and catalytic oxidizers (ID Nos. ES-R1-TO, CD-R2-New-CO, ES-R3-CO, ES-R4-TO, CD-R5-CO, and CD-R6-CO), the natural gas-fired boiler (ID No. ES-BLR1), and the natural gas-fired emergency generator (ID No. ES-EG) that emit formaldehyde, acetaldehyde, and acrolein in low amounts. It is unclear from the permit review and modeling analysis conducted in 2008 whether the combustion emissions from these sources are captured in the modeled emission rates. During the 2008 modeling analysis, it was determined that acetic acid, acetaldehyde, and acrolein are all emitted at potential emission rates well below the respective AALs (2%, <1%, and 1%, respectively). Therefore, the low levels of emissions of acetic acid, acetaldehyde, and acrolein from the combustion sources are not expected to have an impact that would affect facility compliance with the AALs for those pollutants. For formaldehyde, the combined total emission rate from all combustion sources reported in the CY2022 emission inventory was 0.002 pounds per hour which translates to a value of approximately 0.013% of the AAL for formaldehyde, which is a negligible contribution to the facility's maximum impact (30% of the AAL). Therefore, the facility appears to be in compliance with 02D .1100.

S & D emits several TAPs at levels below the applicable TPER so is therefore subject to 15A NCAC 02Q .0711. Currently, the permit only lists phenol and hexane. Due to review of previous years' emissions inventories, ammonia will be added to the list of 02Q .0711 pollutants. Table 7.3 below shows the pollutants subject to 02Q .0711 with the respective TPER limit.

Table 7.3: 02Q .0711 Pollutants and TPER Limits

Pollutant (CAS Number)	TPERs Limitations				Actual Emission Rate[1]
	Carcinogens (lb/yr)	Chronic Toxicants (lb/day)	Acute Systemic Toxicants (lb/hr)	Acute Irritants (lb/hr)	
Ammonia (7664-41-7)				0.68	0.036 lb/hr
n-Hexane (110-54-3)		23			1.10 lb/day
Phenol (108-95-2)			0.24		N/A

[1] Emission rates taken from the CY2023 emissions inventory, assuming 8,760 hours per year and 365 days per year of operation.

The emission rates of all TAPs above are expected to be below the applicable TPER as indicated by the CY2022 emissions inventory. Therefore, the facility appears to be in compliance with 02Q .0711.

8. Facility Emissions Review

The facility-wide potential emissions do not change under this TV permit renewal. Actual emissions for criteria pollutants and HAPs for the years 2018 through 2022 are provided in the header of this permit review. Tables 8.1 and 8.2 below show the facility-wide potential uncontrolled emissions and potential controlled emissions as reported in the permit renewal application (Application No. 1300051.20C). Detailed source-by-source emissions can be found in the permit renewal application.

Table 8.1: Facility-Wide Potential Uncontrolled Emissions

	PM/PM10/PM2.5	CO	NOx	SO2	VOC	Pb	Acetaldehyde	Acetic Acid	Acrolein	Formaldehyde	Hexane
Total (tpy):	1,140	47.3	24.2	0.14	3,237	1.20E-04	570	535	7.50	312	11.5

Table 8.2: Facility-Wide Potential Controlled Emissions

	PM/PM10/PM2.5	CO	NOx	SO2	VOC	Pb	Acetaldehyde	Acetic Acid	Acrolein	Formaldehyde	Hexane
Total (tpy):	32.4	47.3	24.2	0.14	181.4	1.20E-04	32	26.8	0.38	15.6	0.63

9. Compliance Status

DAQ has reviewed the compliance status of S & D. During the most recent inspection, conducted on May 21, 2024 by Seth Hall of MRO, the facility appeared to be in compliance with all applicable requirements.

The most recent Notice of Violation occurred on March 14, 2016 due to a late Annual Compliance Certification. The violation was resolved on March 14, 2016 with the receipt of the late report.

The facility's Annual Compliance Certification was received on March 1, 2024 and indicated compliance with all applicable requirements in 2023.

10. Public Notice/EPA and Affected State(s) Review

Pursuant to 15A NCAC 2Q .0521, a notice of the DRAFT Title V Permit shall be made. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 2Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA.

Public Notice of the DRAFT Title V Permit ran from XXXXX XX, 2024 to XXXXX XX, 2024.

EPA's 45-day review period ran concurrent with the 30-day Public Notice, from XXXXXX XX, 2024 to XXXXX XX, 2024.

11. Other Regulatory Considerations

- Professional Engineer (PE) Seal Requirement – 15A NCAC 02Q .0112, Applications Requiring Professional Engineer Seal

  This regulation requires that a professional engineer (PE) licensed to practice in NC is required to seal the technical portions of air permit application for new and modified sources that involve design, determination

of applicability and appropriateness, or determination and interpretation of performance of air pollution capture and control systems.

A PE Seal is not required for this permit renewal application or for the part 2 significant modification application.

- Zoning Requirement – 15A NCAC 02Q .0305(a)(1)(B) and .0304(b)(1)

  Pursuant to 15A NCAC 02Q .0507(d), a zoning consistency determination is required if expanding or adding new sources in accordance with G.S. 143-215.108(f) that bears the date of receipt entered by the clerk of the local government; or consists of a letter from the local government indicating that all zoning or subdivision ordinances are met by the facility. Per DAQ policy memorandum dated July 31, 2000, to prevent unnecessary delays in the review process, all applications received by DAQ, except for renewals without modifications, name/ownership changes, administrative changes, initial Title V applications without modifications, etc. will be required to include a zoning consistency determination.

  A zoning consistency determination is not required for this permit renewal application or for the part 2 significant modification application.

- Affirmative Defense Provisions - Removal

  EPA has promulgated a rule (88 FR 47029, July 21, 2023), with an effective date of August 21, 2023, removing the emergency affirmative defense provisions in operating permits programs, codified in both 40 CFR 70.6(g) and 71.6(g). EPA has concluded that these provisions are inconsistent with the EPA's current interpretation of the enforcement structure of the CAA, in light of prior court decisions. Moreover, per EPA, the removal of these provisions is also consistent with other recent EPA actions involving affirmative defenses and will harmonize the EPA's treatment of affirmative defenses across different CAA programs. As a consequence of this EPA action to remove these provisions from 40 CFR 70.6(g), it will be necessary for states and local agencies that have adopted similar affirmative defense provisions in their Part 70 operating permit programs to revise their Part 70 programs (regulations) to remove these provisions. In addition, individual operating permits that contain Title V affirmative defenses based on 40 CFR 70.6(g) or similar state regulations will need to be revised.

  Regarding NCDAQ, it has not adopted these discretionary affirmative defense provisions in its Title V regulations (15A NCAC 02Q .0500). Instead, DAQ has chosen to include them directly in individual Title V permits as General Condition (GC) J.

  Per EPA, DAQ is required to promptly remove such impermissible provisions, as stated above, from individual Title V permits, after August 21, 2023, through normal course of permit issuance.

  General Condition J will be removed with this permitting action.

- An application fee of $1,002 was required and received for the part 2 significant modification application.

- The pink sheets indicate that appropriate numbers of applications were received with the initial submittals for each application on September 22, 2020 and July 26, 2021.

12. Conclusions, Comments, and Recommendations

This engineer has one recommendation resulting from this permit renewal:

- Emissions from the combustion of natural gas, including all HAPs and TAPs, need to be included in the required emissions inventory submittal each year if emissions of any regulated pollutant are above the de minimus reporting value.

The draft permit was sent to the applicant for review on December 13, 2024. Comments were received from Jason Fossi of GEL Engineering on January 19, 2025. A summary of received comments and DAQ responses is shown in the following discussion.

Comment 1: This comment indicated that the tea leaf mixing and packaging (ID No. ES-TMP) should not be subject to CAM requirements as the uncontrolled particulate matter emissions of this source are less than 100 tons per year.

DAQ Response: Agree with comment. Uncontrolled potential PM from tea leaf mixing and packaging (ID No. ES-TMP) is only 17.34 tons per year of PM10 or PM2.5 as included in Application No. 1300051.20C. CAM does not apply to sources with uncontrolled potential emissions less than 100 tons per year of PM10 or PM2.5. Thus, CAM requirements will be removed from this source during this permit renewal.

Comment 2: This comment requested that the testing requirement for Condition Nos. 2.1 A.5.d and 2.1 A.5.e not include a requirement for outlet testing because the facility is not subject to a specific required control efficiency.

DAQ Response: Because Condition No. 2.1 A.5.i requires that the coffee bean roasters (ID Nos. ES-R2-New and ES-R6) shall be controlled at all times by the catalytic oxidizer control devices (ID Nos. CD-R2-New-CO and CD-R6-CO), and because the facility is not subject to a specific control efficiency requirement, DAQ will revise the testing requirements in Condition Nos. 2.1 A.5.d and 2.1 A.5.e to require only outlet testing.

Comment 3: This comment requested that retesting not be included in Condition No. 2.1 A.5.e because parametric monitoring and maintenance are required pursuant to Condition Nos. 2.1 A.5.j, k, o, and p.

DAQ Response: DAQ will require periodic retesting of the catalytic and thermal oxidizers to reverify or reestablish the operating parameters that are required to be monitored pursuant to Condition No. 2.1 A.5.j and k. No changes will be made to the draft permit.

Comment 4: This comment requested that HAP emissions from natural gas combustion not be required to be included in the emissions calculations of Condition No. 2.1 A.5.m.

DAQ Response: Based on information received on February 13, 2025, the HAP emissions from natural gas combustion are exhausted from the same stack as the process emissions, so the HAP emissions from natural gas combustion are captured in the stack test results and resulting emissions factors. Thus, no additional HAP emissions need to be included for natural gas combustion, and the HAP emissions from natural gas combustion will be removed from the emissions calculations of Condition No. 2.1 A.5.m.

Comment 5: This comment is effectively the same as Comment 1 above to remove CAM requirements from the tea leaf mixing and packaging operation.

DAQ Response: Agree with comment. Uncontrolled potential PM10 and PM2.5 from tea leaf mixing and packaging (ID No. ES-TMP) is only 17.34 tons per year as included in Application No. 1300051.20C. CAM does not apply to sources with uncontrolled potential emissions of PM10 or PM2.5 less than 100 tons per year. Thus, CAM requirements will be removed from this source during this permit renewal.

Comment 6: This comment stated that the proposed testing requirements of Condition No. 2.2 A.2 are excessive and requested that only certain roasters be tested as representative of the other roasters. This comment also further requested that only outlet testing be required.

DAQ Response: For the outlet testing comment: because Condition No. 2.2 A.2.i requires that all coffee bean roasters shall be controlled at all times by the catalytic or thermal oxidizer control devices, and because the facility is not subject to a specific control efficiency requirement, DAQ will revise the testing requirement in Condition Nos. 2.2 A.2.d and 2.2 A.2.e to require only outlet testing. For the suggestion to allow testing of only certain roasters as representative of the other roasters: DAQ agrees with the comment. Because the Roaster No. 1 (ID No. ES-R1) has a thermal oxidizer and not a catalytic oxidizer, the Permittee shall conduct initial and

periodic testing of Roaster No. 1. Roaster No. 4, which also has a thermal oxidizer, does not need to be tested due to the low before-control PTE, so the testing requirement for this roaster will be removed. Roaster No. 2 and Roaster No. 6 have comparable maximum process rates and both have catalytic oxidizers for control, so either Roaster No. 2 or Roaster No. 6 can be tested as representative of the other roaster for the testing requirements of both Condition No. 2.2 A.2 and 2.1 A.5. Roaster No. 3 and Roaster No. 5 have the same maximum process rate and both have catalytic oxidizers for control, so either Roaster No. 3 or Roaster No. 5 can be tested as representative of the other roaster for the testing requirements of Condition No. 2.2 A.2. If the Permittee chooses to test one roaster as representative of another roaster, then the next periodic testing shall be conducted on the roaster not tested during the previous testing. The draft permit will be updated with these changes.

Comment 7: This comment states that Roaster No. 3 and Roaster No. 5 are identical, and one roaster can be tested as representative of the other roaster. Then, the other roaster could be tested in 60 months. The comment also gives testing results from 2014 and 2018 for Roaster No. 2. The comment also states that Roaster No. 4 has an insignificant contribution to facility-wide emissions and provides the emissions of the roaster for calendar years 2021, 2022, and 2023.

DAQ Response: Agree with comment. Roaster No. 3 or Roaster No. 5 may be tested as representative of the other roaster for Condition No. 2.2 A.2. Roaster No. 4 does not require testing based on the low emission rate. The permit will be updated with these changes.

Comment 8: With regards to Table 2.2 A.2.m-1 of Condition No. 2.2 A.2, this comment states that the controlled VOC emissions factor contained in AP-42, Section 9.13.2 for coffee roasting is only 0.047 pounds per ton of coffee roasted.

DAQ Response: The AP-42 emission factor for uncontrolled VOC from coffee roasting is only 0.047 pounds per ton of coffee roasted. However, DAQ would rather use site-specific emissions factors for calculation of VOC emissions because site-specific emissions factors are preferable to AP-42 in terms of accuracy. No changes will be made to the draft permit.

The draft permit was sent to the applicant for an additional review period on February 3, 2025. Comments were received from Jason Fossi of GEL Engineering on February 7, 2025. A summary of received comments and DAQ responses is shown in the following discussion.

Comment 1: This comment requests to reduce the reporting frequency under 02D .1100 for toxic air pollutants.

DAQ Response: According to the T12 permit review, the most recent toxics dispersion modeling was conducted at potential emission rates, so there is no associated monitoring or recordkeeping. Therefore, the toxics reporting condition will be removed.

Comment 2: This comment requests removal of the reference to destruction efficiency testing.

DAQ Response: Agree with comment. This language will be removed as it was previously agreed upon to remove the requirement for inlet testing.

Comment 3: This comment requests that HAP emissions from natural gas combustion not be required to be included in the emissions calculations of Condition No. 2.1 A.5.m because stack testing data was used to estimate HAP emissions from the outlet, so the contribution from natural gas combustion should already be accounted for from this data.

DAQ Response: DAQ requested additional information regarding this comment on February 11, 2025 to determine if the exhaust from natural gas combustion (both from the oxidizer and roaster) vents through the same stack as the roaster outlet such that HAP emissions from the combustion of natural gas would be captured during stack testing and thus be included in the resulting HAP emissions factors. On February 13, 2025, Jason Fossi of GEL Engineering confirmed that there is only one exhaust from roasters and oxidizers. Therefore, process and combustion emissions all vent through a common stack. Given this information, DAQ agrees with

the comment and will remove the requirement to include a separate calculation for HAP emissions from natural gas combustion in the emissions calculations of Condition No. 2.1 A.5.m.

Comment 4: This comment requests removal of the reference to destruction efficiency testing.

DAQ Response: Agree with comment. This language will be removed as it was previously agreed upon to remove the requirement for inlet testing.

Comment 5: This comment requests removal of the 3-hour block average temperature monitoring requirement for Roaster No. 4.

DAQ Response: DAQ requested that the facility recommend an alternative monitoring parameter for this roaster on February 11, 2025 to replace the temperature monitoring requirements. On February 13, 2025, Jason Fossi of GEL Engineering responded with a recommendation to provide production data for this roaster in lieu of temperature monitoring. Permit Condition No. 2.2 A.5.n already contains a requirement for the facility to keep records of production data for each roaster in order to calculate VOC emissions on a monthly basis. Instead, DAQ proposes that no temperature monitoring be required for Roaster No. 4, but the facility shall not assume a control efficiency for this roaster in the emissions calculations required by Permit Condition No. 2.2 A.5.m or in the emissions calculations required for the annual emissions inventory for periods when the temperature of the thermal oxidizer **(ID No. CD-R4-TO)** is not monitored or recorded according to the procedures specified in Permit Condition Nos. 2.2 A.5.j and 2.2 A.5.k.

The permit renewal application for S & D Coffee, Inc. located in Concord, Cabarrus County, North Carolina has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. This engineer recommends the issuance of Air Permit No. 05029T23 after completion of public participation and EPA's review period.

Attachment 1: 05029T18 Permit Review

NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: October 9, 2018

Region: Mooresville Regional Office
County: Cabarrus
NC Facility ID: 1300051
Inspector's Name: Melinda Wolanin
Date of Last Inspection: 12/05/2017
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): S&D Coffee, Inc.

Facility Address:
S&D Coffee, Inc.
300 Concord Parkway South
Concord, NC 28027

SIC: 2095 / Roasted Coffee
NAICS: 31192 / Coffee and Tea Manufacturing

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0515, 02D .0521
NSPS:
NESHAP:
PSD:
PSD Avoidance:
NC Toxics:
112(r):
Other:

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Sal DiGiovanni Engineering Manager (704) 782-3121 300 Concord Parkway South Concord, NC 28027	Scott Seebold VP of Operations (704) 782-3121 300 Concord Parkway South Concord, NC 28027	Sal DiGiovanni Engineering Manager (704) 782-3121 300 Concord Parkway South Concord, NC 28027

Application Data

Application Number: 1300051.18A
Date Received: 07/12/2018
Application Type: Modification
Application Schedule: TV-Sign-501(b)(2) Part I

Existing Permit Data
Existing Permit Number: 05029/T17
Existing Permit Issue Date: 07/05/2017
Existing Permit Expiration Date: 03/31/2021

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2017	0.0400	6.70	82.33	18.49	12.23	21.49	13.00 [Acetaldehyde]
2016	0.0400	6.51	77.59	17.49	11.68	20.19	12.10 [Acetaldehyde]
2015	0.0600	9.52	78.87	5.66	11.95	20.57	12.34 [Acetaldehyde]
2014	0.0600	9.63	83.42	5.65	12.43	21.74	13.03 [Acetaldehyde]
2013	0.0400	6.32	78.92	3.09	11.20	20.58	12.41 [Acetaldehyde]

Review Engineer: Urva Patel **Review Engineer's Signature:** **Date:** 10/09/2018	**Comments / Recommendations:** **Issue** 05029/T18 **Permit Issue Date:** 10/09/2018 **Permit Expiration Date:** 03/31/2021

1. Purpose of Application:

Currently, S & D Coffee, Inc. (S&D) holds Title V Permit No. 05029T16 with an expiration date of March 31, 2021. The TV-Sign-501(b)(2) Part I modification permit application (**Application No. 1300051.18A**) was received on July 12, 2018. The facility requests following:

- Installation of whole bean transfer system with bagfilter.
- Installation of a chaff handling and pelletizing system including a vacuum blower with an in-line air filtration system.
- Installation of a spent grounds coffee handling and drying system including material handling cyclone and natural gas-fired dryer (4.0 MMBtu/hr).
- Installation of a dried coffee grounds pelletizing system.

2. Facility Description:

S&D Coffee, Inc., (S&D) is a processor of green coffee beans into roasted coffee products, including whole and ground beans, located in Concord, Cabarrus County, North Carolina. The coffee roasting process consists of cleaning, roasting, cooling, and packaging operations. The facility also mixes and packages tea leaves. Existing operations include six natural gas-fired coffee bean roasters each controlled by either a catalytic or thermal oxidizer, six cooling and de-stoning systems controlled by simple cyclones, and green bean and tea handling operations controlled by bagfilters. The facility operates the roasting process twenty-four hours per day, five to six days a week, and the packaging department operates sixteen to twenty hours per day, six days per week, fifty-two weeks per year.

3. History / Background / Application Chronology:

Permit History Since Last Permit Renewal

July 5, 2017	Title V Air Permit No. 05029T17 issued. This modification includes installation of new roaster no. 2, cooling and destoning system, catalytic oxidizer, cooling cyclone, destoning cyclone, two new chaff handling systems, ground coffee bean conveying and packaging line 401/402.
April 11, 2016	Title V Air Permit No. 05029T16 issued as a renewal of the Title V Air Permit.

Application Chronology

July 12, 2018	Received application for TV-Sign-501(b)(2) Part I modification permit.
July 17, 2018	Sent acknowledgement letter indicating that the application for TV-Sign-501(b)(2) Part I modification permit was complete.

4. Summary of Changes to the Existing Permit (Permit No. 05029T17):

Page No.	Section	Description of Changes
Cover Letter	N/A	• Update cover letter for application number, permit numbers, dates, fee class, PSD increment statement and Chief name.
Permit Cover	N/A	• Insert new issuance, complete application date and application number.
3	Insignificant Activities list	• Added a chaff handling and pelletizing system (**ID No. IS-CHPS**), a spent grounds coffee handling and drying system (**ID No. IS-SGCHD**), and a dried coffee grounds pelletizing system (**ID No. IS-DCGPS**)

Page No.	Section	Description of Changes
4, 19	2.1 G	• Added a whole bean transfer system (**ID No. ES-WBTS**) with bagfilter (**ID No. CD-WBTS**)
24	Section 3	• Updated general conditions from version 5.2 to current shell version 5.3 (08/21/2018)

5. Compliance Status:

DAQ has reviewed the compliance status of this facility. During the most recent inspection conducted on December 5, 2017, Melinda Wolanin of the of the Mooresville Regional Office indicated that the facility appeared to be in compliance with all applicable requirements.

Five-year Compliance History:

- On March 11, 2016, the Mooresville Regional Office of Air Quality (DAQ) sent the facility a letter serving as a Notice of Violation (NOV) for failure to submit Title V Annual Compliance Certification Requirements within the required timeframe under Air Permit No. 05029T15. Title V ACC was due on by March 1, 2016. It received on March 8, 2016. The violation has been resolved.
- The facility was inspected on December 7, 2016 and appeared to be in compliance with all applicable air quality regulations.

6. New/Modified Equipment/Changes in Emissions:

This project is TV-Sign-501(b)(2) Part I modification as per 15A NCAC 02Q .0516(c). It includes the installation of a whole bean transfer system (**ID No. ES-WBTS**) with bagfilter (**ID No. CD-WBTS**), a chaff handling and pelletizing system (**ID No. IS-CHPS**), a spent grounds coffee handling and drying system (**ID No. IS-SGCHD**), and a dried coffee grounds pelletizing system (**ID No. IS-DCGPS**).

The following modifications are being made to the permit:

- Installation of whole bean transfer system (**ID No. ES-WBTS**) with bagfilter (**ID No. CD-WBTS**): maximum production rate – 14 tons per hour.
  - Whole roasted coffee beans are transferred pneumatically via enclosed duct work from aged bin scales to whole bean coffee bins prior to being sent to the grinders. Each existing and new whole bean storage bin will include a material handling cyclone to assist with moving the beans from the bin scales to the storage bins. Exhaust of the displaced air from the bean handling activities will be directed to a bagfilter that will discharge to the atmosphere.
  - S&D currently operates three (3) whole bins and is proposing to add nine (9).
  - The bagfilter (**ID No. CD-WBTS**) will have a fan with a maximum air flow rating of 2,600 cubic feet per minute (cfm).
  - Emission of each particulate matter speciation (PM, PM_{10}, and $PM_{2.5}$) are assumed to be equal and are collectively referred to as PM.
  - Annual emissions are based on 8,760 hours per year.

Whole bean transfer system (**ES-WBTS**)	Uncontrolled Potential Emissions, tons/yr	Controlled Potential Emissions, tons/yr
PM	19.62	0.49
SO_2	-	-
NOx	-	-
Lead	-	-
CO_2	-	-
VOC	-	-
Acetaldehyde	-	-

Acetic Acid	-	-
Acrolein	-	-
Formaldehyde	-	-
Hexane	-	-

- Installation of a chaff handling and pelletizing system (**ID No. IS-CHPS**)
  - Design Capacity: 0.35 tons/hr
  - Collection Efficiency: 99.9%
  - This system will handle chaff generated from the existing roasters and briquetters.
  - The chaff material will be pneumatically conveyed via an enclosed vacuum blower system that will include an in-line receiving filter to separate the chaff from the air flow. The in-line filter is considered integral to the process and is not an emission control device. The receiving filter will convey the material to a chaff pelletizing system that creates the pelletized final product. Pellets are cooled via air flow in one of two pellet coolers. Air flow from the pellet cooler will exhaust to atmosphere. The exhaust to atmosphere will occur from the vacuum blower and the pellet cooler fans.
  - Vacuum blower: max air flow rate of 197 cfm; cooler fan: air flow rate of 4,450 cfm.

Chaff Handling and Pelletizing System (**IS-CHPS)**	Uncontrolled Potential Emissions, tons/yr	Controlled Potential Emissions, tons/yr
PM	3.07	3.07
PM_{10}	-	-
$PM_{2.5}$	-	-
SO_2	-	-
NOx	-	-
CO	-	-
VOC	-	-
Total HAPs	-	-

This process is determined to be an insignificant activity due to amount of emissions of the source under 15A NCAC 02Q .0503(8). An insignificant activity means any activity

"...whose emissions potential emission of particulate, sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide before air pollution control devices, i.e., potential uncontrolled emissions, are each no more than five tons per year and whose potential emissions of hazardous air pollutants before air pollution control devices, are each below 1000 pounds per year."

Uncontrolled emissions from the proposed emission source are estimated to be less than 5 tons per year as shown in the table above. The chaff handling and pelletizing system (**ID No. IS-CHPS**) meets the criteria for insignificant activities under 15A NCAC 02Q .0503(8). No permit is required for installation and operation of the equipment.

- Installation of a spent grounds coffee handling and drying system (**ID No. IS-SGCHD**) including a cyclone and natural gas-fired dryer with maximum heat input of 4.0 MMBtu/hr.
  - Design Capacity of system: 1.00 tons/hr
  - The proposed spent grounds coffee cyclone is considered a volunteer emission control device.

  <u>Spent grounds coffee material handling equipment/cyclone</u>:
  - Spent coffee grounds from the existing liquid process will be dried using a natural gas-fired dryer. Exhaust for the dryer will pass through a cyclone. The dried coffee will be used to make pellets at the main facility.

Spent grounds coffee handling cyclone	Uncontrolled Potential Emissions, tons/yr	Controlled Potential Emissions, tons/yr
PM	2.45	2.45
PM_{10}	-	-

$PM_{2.5}$	-	-
SO_2	-	-
NOx	-	-
CO	-	-
VOC	-	-
Total HAPs	-	-

Spent grounds coffee dryer:

- This facility proposes to operate a natural gas-fired dryer with a maximum heat input rating of 4.00 MMBtu/hr. The dryer will provide heat to remove moisture from spent grounds coffee.
- The potential emissions associated with the dryer are included in the table below. The potential emissions were calculated using the NC DEQ emissions spreadsheet for natural gas combustion.

Spent grounds coffee dryer – 4.0 MMBtu/hr	Uncontrolled Potential Emissions, tons/yr	Controlled Potential Emissions, tons/yr
PM	0.13	0.13
PM_{10}	0.13	0.13
$PM_{2.5}$	0.13	0.13
SO_2	1.03E-02	1.03E-02
NOx	1.72	1.72
CO	1.44	1.44
VOC	9.45E-02	9.45E-02
Total HAPs	6.46E+01	6.46E+01
GHG, short ton	2050	2050

This source is determined to be an insignificant activity due to amount of emissions of the source under 15A NCAC 02Q .0503(8). An insignificant activity means any activity

"...whose emissions potential emission of particulate, sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide before air pollution control devices, i.e., potential uncontrolled emissions, are each no more than five tons per year and whose potential emissions of hazardous air pollutants before air pollution control devices, are each below 1000 pounds per year."

Uncontrolled emissions from the proposed emission source are estimated to be less than 1,000 pounds per year and criteria pollutants emissions are estimated to be less than five tons per year and as shown in the table above. The spent grounds coffee handling and drying system (**ID No. IS-SGCHD**) meets the criteria for insignificant activities under 15A NCAC 02Q .0503(8). No permit is required for installation and operation of the equipment.

- Installation of a dried coffee grounds pelletizing system (**ID No. IS-DCGPS**)
  - Design Capacity: 0.35 tons/hr

Based on process knowledge of S&D production engineering staff and the equipment vendors, no measurable loss of coffee grounds is anticipated from this process. Furthermore, the equipment vendor is not recommending any emission control equipment (cyclone or bagfilter) for this proposed process. Therefore, it is assumed only negligible emissions of particulate matter may occur.

Based on the above assumptions, potential uncontrolled emissions are estimated to be less than five tons per year. Therefore, the ground coffee pelletizing system qualifies as an insignificant activity by size or production rate as allowed by 15A NCAC 02Q .0503(8).

7. Regulatory Review

A. The proposed equipment to be added are subject to the following regulations:

1. Applicable Regulatory Requirements:

- 15A NCAC 02D .0515: Particulates from Miscellaneous Industrial Processes
  The allowable emission rates for PM from any stack, vent, or outlet, resulting from any industrial process for which no other emission control standards are applicable, shall not exceed the level calculated with the equation:
  For process weight rates less than or equal to 30 tph,
  $E = 4.10*P^{0.67}$ where, E = allowable emissions (lb/hr)
  P = process weight rate (tph)

Process	Process weight rate, tons/hr	Estimated hourly Controlled PM Emission rate, lb/hr	Allowable hourly PM Emission rate, lb/hr
Whole Bean Transfer System (**ID No. ES-WBTS**) with Bagfilter (**ID No. CD-WBTS**)	14.0	0.11	24.0
Spent Grounds Coffee Handling and Drying (**ID No. IS-SGCHD**)	1.00	0.56	4.10
Chaff Handling and Pelletizing System (**ID No. IS-CHPS**)	0.35	0.70	2.03

The facility is required to maintain production record which specify process rate, the types of materials and finishes processed and shall make these records available to a DAQ authorized representative upon request. Therefore, the compliance is expected.

- 15A NCAC 02D .0516: Sulfur Dioxide Emissions from Combustion Sources
  This regulation applies to Spent Grounds Coffee Handling and Dryer.

Process	Heat Input Rate, MMBtu/hr	Estimated hourly SO2 Emission Rate, lb/MMBtu	Allowable hourly SO2 Emission Rate, lb/MMBtu
Spent Grounds Coffee Handling and Drying (**ID No. IS-SGCHD**)	4.0	5.88E-04	2.3

No monitoring, recordkeeping or reporting is required when firing natural gas/biomass or wood in the combustion sources. These fuels are inherently low enough in sulfur, compliance with this standard is expected.

- 15A NCAC 02D .0521: Control of Visible Emissions
  As per 15A NCAC 02D .0521(d), for sources manufactured after July 1, 1971, the visible emissions from the facility shall not be more than 20% when averaged over a six-minute period. However, six-minute averaging periods may exceed 20% not more than once in any hour and not more than four times in any 24-hour period. In no event, shall the six-minute average exceed 87% opacity.

- 15A NCAC 02D .1806: Control and Prohibition of Odorous Emissions
  This regulation is applicable to Whole Bean Transfer System (**ID No. ES-WBTS**) with Bagfilter (**ID No. CD-WBTS**). Because, this rule shall apply to all operations that may produce odorous emissions that can cause or contribute to objectionable odors beyond the facility's boundaries as per 15A NCAC 02D 1806(c). Therefore, compliance is expected.

8. NSPS, NESHAP/MACT, NSR/PSD, 112(r), CAM

NSPS

The facility is subject to New Source Performance Standards (NSPS), 40 CFR 60, Subpart JJJJ. However, this permit modification does not change this status.

NESHAP/MACT

This facility is a major source for HAPs emissions and is subject to the National Emission Standards for Hazardous Air Pollutants, 40 CFR 63, Subpart ZZZZ and Subpart DDDDD. However, this permit modification does not affect this status.

NSR/PSD

Cabarrus County was designated as a moderate nonattainment area for the 1997 8-hour ozone standard. All counties in NC were re-designated as attainment effective August 27, 2015. [Ref: Federal Register /Vol. 80, No. 144 /Tuesday, July 28, 2015 /Rules and Regulations.] The facility is minor for PSD because it has accepted an avoidance condition pursuant to 15A NCAC 02Q .0317 for 15A NCAC 02D .0902, to limit VOC emissions to less than 100 tons per year. Cabarrus county' s minor source baseline for PM10 and SO_2 has been triggered.

Since the modification result in an increase in potential emissions of PM, therefore increment tracking will be required.

Potential PM emission from ES-WBTS = 19.62 tons/year
*An increase of PM = 19.62*2000/8760 = 4.48 lb/hr*

The estimated increase in PM emissions are expected to be 4.48 pounds per hour.

112(r)

This facility is **NOT** subject to the requirements of the Chemical Accident Release Prevention Program, Section 112(r) of the Clean Air Act requirements because if does not store any applicable chemicals above the applicability thresholds. This permit modification does not change this status.

RACT

Cabarrus County was in moderate nonattainment for the 1997 8-hour ozone standard. S&D has accepted an avoidance condition limiting VOCs to less than 100 tons per year to avoid applicability to RACT. All counties in NC were re-designated as attainment effective August 27, 2015. [Ref: Federal Register /Vol. 80, No. 144 /Tuesday, July 28, 2015 /Rules and Regulations.] The facility must keep the VOC avoidance condition in the permit, because the limitation was used to bring the area back into attainment. This permit modification does not change this status.

Compliance Assurance Monitoring (CAM)

The compliance assurance monitoring (CAM) rule requires the facility to conduct monitoring to provide a reasonable assurance of compliance with applicable requirements under this act. Monitoring focuses on emission units that rely on pollution control device to achieve compliance with applicable standards. Per 40 CFR 64.5 (and 15A NCAC 02D .0614(e)), an analysis for CAM applicability is required to be submitted with a permit application for large pollution-specific emissions units (PSEU). A large PSEU is one that has a post-control potential to emit of more than major source levels. The Whole Bean Transfer System (**ID No. ES-WBTS**) with bagfilter (**ID No. CD-WBTS**) is not considered a large PSEU and therefore a CAM analysis is NOT required as a part of this permit application.

9. Facility-Wide Air Toxics:

The current permit includes modeled emission rates based on previous approved modeling demonstrations. The most recent modeling was conducted in 2008 because of the addition of a new coffee roaster, ES-R6. The modeling was reviewed by Tom Anderson indicated the modeling demonstrated compliance with the acceptable ambient levels (AALs) on a source-by-source basis. This application does not trigger an air toxics review or request any changes of emission limits. No further air toxics evaluation is required at this time.

10. Facility Emission Review:

Facility-wide potential emissions prior to modification and after modification were provided in the permit application and shown below.

Pollutants	Facility-Wide Potential Emissions prior to Modification (tpy)		Facility-Wide Potential Emissions after Modification (tpy)	
	Uncontrolled	**Controlled**	**Uncontrolled**	**Controlled**
PM/PM10/PM2.5	74,660	27.82	74,679	28.30
CO	44.65	44.65	44.65	44.65
NO_x	24.25	24.25	24.25	24.25
SO_2	0.14	0.14	0.14	0.14
VOC	3,213	160.6	3,213	160.6
acetaldehyde	586.9	29.75	586.9	29.75
Acetic Acid	535.5	26.78	535.5	26.78
Acrolein	7.51	0.38	7.51	0.38
Formaldehyde	312.3	15.62	312.3	15.62
Hexane	11.75	0.59	11.75	0.59

Please see actual emissions for 2011 through 2015 are reported in the header of this permit review.

11. Public Notice/EPA and Affected State(s) Review

Public notice is not required at this time. This permit action is for the first step of a two-step process as per 15A NCAC 02Q .0501(b)(2).

12. Other Regulatory Considerations:

- Application fee is required with this application.
- The application was sealed by a Professional Engineer.
- A zoning consistency determination is required for this permit application.
- A 30-day public notice and 45-day EPA review is NOT required for this permit applications.

13. Recommendations/Conclusion:

DAQ recommends the issuance of Air Permit No. 05029T18 to S&D Coffee, Inc.