Statement of Basis

Permit to Construct No. P-2017.0054
Project ID 62339

Packaging Corporation of America - Burley
Burley, Idaho

Facility ID 031-00019

Final

June 8, 2020
Joe Palmer
Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
Btu	British thermal units
CEMS	continuous emission monitoring systems
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
DEQ	Department of Environmental Quality
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GACT	Generally Available Control Technology
HAP	hazardous air pollutants
hr/yr	hours per consecutive 12 calendar month period
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
PC	permit condition
PCA	Packaging Corporation of America
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
PW	process weight rate
Rules	*Rules for the Control of Air Pollution in Idaho*
SF	square feet
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
TAP	toxic air pollutants
VOC	volatile organic compounds

FACILITY INFORMATION

Description

Packaging Corporation of America manufactures corrugated container products from paper stock.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

June 8, 2020	P-2017.0054, Permit modification, Permit status (A, but will become S upon issuance of this permit)
November 7, 2017	P-2017.0054, Permit revision for a name change, Permit status (S)
November 15, 2004	P-031-00019, Permit revision for a name change, Permit status (S)
January 16, 2003	P-031-00019, Permit modification for increased throughput, Permit status (S)
May 17, 2002	P-031-00019, Permit modification for new single facers, Permit status (S)
April 11, 2000	P-031-00019, Permit modification for flexographic printer, Permit status (S)
January 26, 1996	P-031-00019, Permit modification for starch silo, Permit status (S)
April 9, 1991	P-031-00019, Initial permit issued for boilers, Permit status (S)

Application Scope

This PTC is for a minor modification at an existing minor facility.

The applicant has proposed to:

- Replace the existing starch silo with a new Ultra Industries silo/baghouse.
- Replace the existing corrugator with a new Fosber corrugator.
- Replace the existing scrap cyclone with a new Ohio Blow Pipe cyclone.
- Replace the two existing 12.495 MMBtu/hr natural gas/diesel boilers with one new 29.4 MMBtu/hr natural gas-only Superior Boiler Works boiler.
- Add a new flexo-folder-gluer converting unit (Mitsubishi EVOL or equivalent unit).
- Increase corrugated paper production from 1.8 billion to 2.7 billion SF/year.

Application Chronology

November 12, 2019	DEQ received an application and an application fee.
Nov. 25 – Dec. 10, 2019	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
December 13, 2019	DEQ determined that the application was incomplete.
March 16, 2020	DEQ received supplemental information from the applicant.
April 14, 2020	DEQ determined that the application was complete.
May 22, 2020	DEQ made available the draft permit and statement of basis for peer and regional office review.
May 27, 2020	DEQ made available the draft permit and statement of basis for applicant review.
June 4, 2020	DEQ received the permit processing fee.

June 8, 2020 DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source ID No.	Sources	Control Equipment	Emission Point ID No.
1	Starch Silo: Manufacturer: Imperial Industries Model: I-99572 Manufacture Date: April 2020	Starch Silo Baghouse: Manufacturer: Ultra Industries, Inc. Model: BB-9-84-11G Number of bags: 9 Air to Cloth ratio: 3.42 to 1	Exit height: 6 ft Exit diameter: 6 in Exit flow rate: 440 acfm Exit temperature: Ambient
2	Corrugator: Manufacturer: Fosber Model: 110" Single Wall-1500 FPM Manufacture Date: 2020 Rating: 2,700,000,000 SF/year	Enclosed Building with Exhaust Vent	Exit height: 25 ft Exit diameter: 10.62 ft Exit flow rate: Varies Exit temperature: Building Ambient
3	Scrap Collection: Corrugator – scraps & dust Converting Machines – scraps & dust	Scrap Cyclone: Manufacturer: Ohio Blow Pipe Model: 72 OBP Manufacture Date: 2020	Exit height: 74 ft 2 in Exit diameter: 119 in Exit flow rate: 61,800 acfm Exit temperature: Ambient
4	Boiler: Manufacturer: Superior Boiler Works, Inc. Model: 7-5-3500-S250-IC-G Manufacture Date: 2020 Rating: 29.4 MMBTU/hr Fuel: Natural Gas	None	Exit height: 25 ft Exit diameter: 32 in Exit flow rate: Varies by load Exit temperature: 412 °F
5	Ink & Glue	None	Exit height: 25 ft Exit diameter: 10.62 ft Exit flow rate: Varies Exit temperature: Building Ambient

Emissions Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of Potential to Emit an emission inventory was developed for the Starch Silo, Corrugator, Scrap Collection, Boiler, and Ink & Glue operations at the facility (see Appendix A) associated with this proposed project. Emissions estimates of criteria pollutant, HAP PTE were based on emission factors from AP-42, operation of 8,760 hours per year, and process information specific to the facility for this proposed project.

Pre-Project Potential to Emit

Pre-project Potential to Emit is used to establish the change in emissions at a facility as a result of this project.

The following table presents the pre-project potential to emit for all criteria pollutants from the two boilers at the facility as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for the two boilers. The following table also presents the pre-project potential to emit for all criteria pollutants from all other units at the facility as determined by DEQ staff.

Table 2 PRE-PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM_{10}		$PM_{2.5}$		SO_2		NO_X		CO		VOC	
	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]
Starch Silo	0.077	2.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corrugator	0.075	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	3.15
Scrap Cyclone	0.945	4.14	0.167	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Two Boilers	0.883	1.12	0.883	1.12	12.3	4.03	7.42	11.1	1.90	3.93	0.0442	0.52
Ink & Glue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	1.40
Pre-Project Totals	**1.98**	**7.84**	**1.05**	**1.85**	**12.30**	**4.03**	**7.42**	**11.10**	**1.90**	**3.93**	**1.97**	**5.07**

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

The following table presents the post project Potential to Emit for criteria pollutants from all emissions units at the facility as determined by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 3 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM_{10}		$PM_{2.5}$		SO_2		NO_X		CO		VOC	
	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]	lb/hr[(a)]	T/yr[(b)]
Starch Silo	0.0754	0.27	0.0754	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corrugator	0.142	0.23	0.142	0.23	0.00	0.00	0.00	0.00	0.00	0.00	2.89	4.73
Scrap Cyclone	1.29	2.11	0.227	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
New Boiler	0.312	1.25	0.312	1.25	0.0176	0.07	0.315	1.26	1.06	4.26	0.147	0.59
Ink & Glue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.719	3.15
Post Project Totals	**1.82**	**3.86**	**0.76**	**2.12**	**0.02**	**0.07**	**0.32**	**1.26**	**1.06**	**4.26**	**3.76**	**8.47**

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 4 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM_{10}		$PM_{2.5}$		SO_2		NO_X		CO		VOC	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Pre-Project Potential to Emit	1.98	7.84	1.05	1.85	12.30	4.03	7.42	11.10	1.90	3.93	1.97	5.07
Post Project Potential to Emit	1.82	3.86	0.76	2.12	0.02	0.07	0.32	1.26	1.06	4.26	3.76	8.47
Changes in Potential to Emit	**-0.16**	**-3.98**	**-0.29**	**0.27**	**-12.28**	**-3.96**	**-7.10**	**-9.84**	**-0.84**	**0.33**	**1.79**	**3.40**

Non-Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of non-carcinogenic toxic air pollutants (TAP) is provided in the following table.

Pre- and post-project, as well as the change in, non-carcinogenic TAP emissions are presented in the following table:

Table 5 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR NON-CARCINOGENIC TOXIC AIR POLLUTANTS

Non-Carcinogenic Toxic Air Pollutants	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Naphthalene	9.63E-02	8.65E-06	-9.63E-02	3.33	No
Acrolein	6.37E-03	7.78E-05	-6.30E-03	0.017	No
Chlorobenzene	3.64E-05	0.00E-03	0.00E-03	23.3	No
Xylenes	2.91E-04	5.68E-04	0.00E-03	29	No
Ethyl Benzene	3.64E-05	1.99E-04	0.00E-03	29	No
Hexane	6.63E-04	1.33E-04	0.00E-03	12	No
Toluene	8.00E-04	7.64E-04	0.00E-03	25	No
Hydrogen Chloride	3.39E-02	0.00E-03	-3.39E-02	0.05	No
Total Chromium	1.09E-04	0.00E-03	0.00E-03	0.033	No
Monoethanolamine	5.8E-01	1.03E00	-5.80E-01	0.533	No
Copper	7.45E-04	0.00E-03	0.00E-03	0.067	No
Manganese	5.64E-04	0.00E-03	0.00E-03	0.333	No
Selenium	4.00E-04	0.00E-03	0.00E-03	0.013	No
Zinc	4.07E-03	0.00E-03	-4.10E-03	0.533	No

All changes in emissions rates for non-carcinogenic TAP were below EL (screening emissions level) as a result of this project. Therefore, modeling is not required for any non-carcinogenic TAP because none of the 24-hour average non-carcinogenic screening ELs identified in IDAPA 58.01.01.585 were exceeded.

Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of carcinogenic toxic air pollutants (TAP) is provided in the following table.

Table 2 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR CARCINOGENIC TOXIC AIR POLLUTANTS

Carcinogenic Toxic Air Pollutants	Pre-Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Post Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Change in Annual Average Emissions Rates for Units at the Facility (lb/hr)	Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Benzene	8.00E-04	1.67E-04	0.0	8.0E-04	No
Formaldehyde	6.37E-02	3.55E-04	-6.33E-02	5.1E-04	No
POM[(a)]	9.05E-03	1.15E-05	-9.00E-03	2.0E-06	No
Acetaldehyde	6.37E-02	8.94E-05	-6.36E-02	3.0E-03	No
1,3-Butadiene	2.69E-03	0.00E-03	0.0	2.4E-05	No
Arsenic	2.91E-04	0.00E-03	-0.0	1.5E-06	No
Cadmium	2.73E-04	0.00E-03	0.0	3.7E-06	No
Hexavalent Chromium	1.82E-05	0.00E-03	0.00E-03	5.6E-07	No
Nickel	7.09E-03	0.00E-03	-7.10E-02	2.7E-05	No

a) Polycyclic Organic Matter (POM) is considered as one TAP comprised of: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd)pyrene, benzo(a)pyrene. The total is compared to benzo(a)pyrene.

All changes in emissions rates for carcinogenic TAP were below EL (screening emissions level) as a result of this project. Therefore, modeling is not required for any carcinogenic TAP because none of the annual average carcinogenic screening ELs identified in IDAPA 58.01.01.586 were exceeded.

Post Project HAP Emissions

The following table presents the post project potential to emit for HAP pollutants from all emissions units at the facility as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 7 HAZARDOUS AIR POLLUTANTS EMISSIONS POTENTIAL TO EMIT SUMMARY

Hazardous Air Pollutants	PTE (lb/hr)	PTE (T/yr)
Benzene	1.67E-04	6.69E-04
Formaldehyde	3.55E-04	1.42E-03
Naphthalene	8.65E-06	3.46E-05
Acetaldehyde	8.94E-05	3.57E-04
Acrolein	7.78E-05	3.11E-04
1,3-Butadiene	0.00E-00	0.00
Chlorobenzene	0.00E-00	0.00
Xylenes	5.68E-04	2.27E-03
Ethyl Benzene	1.99E-04	7.96E-04
Hexane	1.33E-04	5.30E-04
Toluene	7.64E-04	3.06E-03
Lead	1.44E-05	5.76E-05
Totals	**0.0024**	**0.0067**

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix B, the estimated emission rates of PM_{10} and $PM_{2.5}$ from this project exceeded applicable screening emission levels (EL) and published DEQ modeling thresholds established in IDAPA 58.01.01.585-586 and in the State of Idaho Air Quality Modeling Guideline[1]. Refer to the Emissions Inventories section for additional information concerning the emission inventories.

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP). A summary of the Ambient Air Impact Analysis for TAP is provided in Appendix A.

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Cassia County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

[1] Criteria pollutant thresholds in Table 2, State of Idaho Guideline for Performing Air Quality Impact Analyses, Doc ID AQ-011, September 2013.

A = Use when any one HAP has permitted emissions > 10 T/yr or if the aggregate of all HAPS (Total HAPs) has permitted emissions > 25 T/yr.

SM80 = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits > 8 T/yr of a single HAP or ≥ 20 T/yr of Total HAPs.

SM = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits < 8 T/yr of a single HAP and/or < 20 T/yr of Total HAPs.

B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 10 and 25 T/yr HAP major source thresholds.

UNK = Class is unknown.

For All Other Pollutants:

A = Use when permitted emissions of a pollutant are > 100 T/yr.

SM80 = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are ≥ 80 T/yr.

SM = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are < 80 T/yr.

B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 100 T/yr major source threshold.

UNK = Class is unknown.

Table 8 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	7.83	3.86	**100**	B
PM_{10}	7.83	3.86	**100**	B
$PM_{2.5}$	4.42	2.12	**100**	B
SO_2	4.03	0.07	**100**	B
NO_X	11.06	1.26	**100**	B
CO	6.93	4.26	**100**	B
VOC	5.07	8.47	**100**	B
HAP (single)	0.00	0.00	**10**	B
Total HAPs	0.00	0.00	**25**	B

Permit to Construct (IDAPA 58.01.01.201) (IDAPA 58.01.01.201)

IDAPA 58.01.01.201..... Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the proposed new emissions sources. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401..... Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625..... Visible Emissions

The sources of PM emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 2.4 and 5.4.

Air Pollution Emergency Rule (IDAPA 58.01.01.550-562)

IDAPA 58.01.01.550-562..... Air Pollution Emergency Rule

The Starch Silo at this facility is subject to the State of Idaho Air Pollution Emergency Rule. This requirement is assured by Permit Conditions 2.7.

Particulate Matter – New Equipment Process Weight Limitations (IDAPA 58.01.01.701)

IDAPA 58.01.01.701..... Particulate Matter – New Equipment Process Weight Limitations

IDAPA 58.01.01.700 through 703 set PM emission limits for process equipment based on when the piece of equipment commenced operation and the piece of equipment's process weight (PW) in pounds per hour (lb/hr). IDAPA 58.01.01.701 and IDAPA 58.01.01.702 establish PM emission limits for equipment that commenced operation on or after October 1, 1979, and for equipment operating prior to October 1, 1979, respectively.

For equipment that commenced operation on or after October 1, 1979, the PM allowable emission rate (E) is based on one of the following equations:

- IDAPA 58.01.01.701.01.a: If PW is < 9,250 lb/hr; $E = 0.045 (PW)^{0.60}$
- IDAPA 58.01.01.701.01.b: If PW is ≥ 9,250 lb/hr; $E = 1.10 (PW)^{0.25}$

For equipment that commenced prior to October 1, 1979, the PM allowable emission rate is based on one of the following equations:

- IDAPA 58.01.01.702.01.a: If PW is < 17,000 lb/hr; $E = 0.045 (PW)^{0.60}$
- IDAPA 58.01.01.702.01.b: If PW is ≥ 17,000 lb/hr; $E = 1.12 (PW)^{0.27}$

For the new Corrugator emissions unit proposed to be installed as a result of this project with a proposed throughput of 50,176 lb/hr, E is calculated as follows:

E is calculated as:

- $E = 1.10 \times PW^{0.25} = 1.10 \times (50,176)^{0.25} = 16.46$ lb-PM/hr

As presented previously in the Emissions Inventories Section of this evaluation the post project PTE for this emissions unit is 0.142 lb-PM_{10}/hr. Assuming PM is 50% PM_{10} means that PM emissions will be 0.284 lb-PM/hr (0.142 lb-PM_{10}/hr ÷ 0.5 lb-PM_{10}/lb-PM). Therefore, compliance with this requirement has been demonstrated.

For the new Cyclone emissions unit proposed to be installed as a result of this project with a proposed throughput of 3,880 lb/hr, E is calculated as follows:

E is calculated as:

- $E = 0.045 \times PW^{0.60} = 0.045 \times (3,880)^{0.60} = 6.40$ lb-PM/hr

As presented previously in the Emissions Inventories Section of this evaluation the post project PTE for this emissions unit is 1.29 lb-PM_{10}/hr. Assuming PM is 50% PM_{10} means that PM emissions will be 2.58 lb-PM/hr (1.29 lb-PM_{10}/hr ÷ 0.5 lb-PM_{10}/lb-PM). Therefore, compliance with this requirement has been demonstrated.

For the new Starch Silo emissions unit proposed to be installed as a result of this project with a proposed throughput of 889 lb/hr, E is calculated as follows:

E is calculated as:

- $E = 0.045 \times PW^{0.60} = 0.045 \times (889)^{0.60} = 2.65$ lb-PM/hr

As presented previously in the Emissions Inventories Section of this evaluation the post project PTE for this emissions unit is 0.0754 lb-PM_{10}/hr. Assuming PM is 50% PM_{10} means that PM emissions will be 0.151 lb-PM/hr (0.0754 lb-PM_{10}/hr ÷ 0.5 lb-PM_{10}/lb-PM). Therefore, compliance with this requirement has been demonstrated.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301..... Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for (PM_{10}, SO_2, NO_X, CO, VOC) or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 ..... Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

Because the facility is installing a new natural gas boiler, the following is an NSPS applicability analysis for the proposed equipment:

- 40 CFR 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. DEQ is delegated this Subpart.

40 CFR 60, Subpart Dc ..... Standards of Performance for Small Industrial–Commercial–Institutional Steam Generating Units

The new boiler at this facility will only combust natural gas as fuel as required by Permit Condition 5.5. Therefore, the only Sections of this subpart that are applicable to the boiler at this facility are the Applicability and Delegation of Authority specified in § CFR 60.40c(a), the Recordkeeping requirements of § CFR 60.48c (g), (i), and (j), and the Reporting requirements of § CFR 60.48c(a), (a)(1), and (a)(3).

§ 60.40c ..... Applicability and Delegation of Authority

Section (a) specifies that except as provided in paragraphs (d), (e), (f), and (g) of this section, the affected facility to which this subpart applies is 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 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr)) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr).

Section (b) states that in delegating implementation and enforcement authority to a State under section 111(c) of the Clean Air Act, §60.48c(a)(4) shall be retained by the Administrator and not transferred to a State.

Section (c) states that steam generating units that meet the applicability requirements in paragraph (a) of this section are not subject to the sulfur dioxide (SO_2) or particulate matter (PM) emission limits, performance testing requirements, or monitoring requirements under this subpart (§§60.42c, 60.43c, 60.44c, 60.45c, 60.46c, or 60.47c) during periods of combustion research, as defined in §60.41c.

The Superior Boiler Works, Inc. natural gas-fired boiler is rated at between 10 MMBtu/hr and 100 MMBtu/hr and was constructed after June 9, 1989. Therefore, the natural gas fired boiler is subject to some of the requirements of this subpart.

§ 60.41c ..... Definitions

The definitions of this section apply to the four boilers at this facility.

§ 60.48c ..... Reporting and recordkeeping requirements

Section (a) requires that the owner or operator of each affected facility shall submit notification of the date of construction or reconstruction and actual startup, as provided by §60.7 of this part. This notification shall include:

PCA – Burley will submit notification of the date of construction and actual startup as provided by §60.7.

Section (1) requires the design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility.

Section (3) requires the annual capacity factor at which the owner or operator anticipates operating the affected facility base on all fuels fired and based on each individual fuel fired.

Section (g)(1) states that except as provided under paragraphs (g)(2) and (g)(3) of this section, the owner or operator of each affected facility shall record and maintain records of the amount of each fuel combusted during each operating day.

The proposed steam generating unit only combusts natural gas. Therefore, (g)(2) applies.

Section (2) states as an alternative to meeting the requirements of paragraph (g)(1) of this section, the owner or operator of an affected facility that combust only natural gas, wood, fuels using fuel certification in §60.48c(f) to demonstrate compliance with the SO_2 standard, fuels not subject to an emissions standard (excluding opacity), or a mixture of these fuels may elect to record and maintain records of the amount of each fuel combusted during each calendar month.

The affected facility only combusts natural gas. PCA-Burley will record and maintain records of the amount of fuel combusted during each calendar month.

Section (i) states 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.

Section (j) specifies the reporting period for the reports required under this subpart is each six-month period. All reports shall be submitted to the Administrator and shall be postmarked by the 30th day following the end of the reporting period.

The facility shall submit a notification of the date of construction and actual startup as provided above. The facility shall also record and maintain records of fuel combusted during each operating day for a period of two years following the date of record. The reports shall be submitted for a six month period.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

MACT/GACT Applicability (40 CFR 63)

The facility is not subject to any MACT standards in 40 CFR Part 63.

Permit Conditions Review

This section describes the permit conditions for this initial permit or only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

Existing Permit Scope Purpose 1.1

This is a revised permit to construct (PTC) to change the facility name from Boise Packaging & Newsprint, L.L.C. to Packaging Corporation of America - Burley.

Revised Permit Scope Purpose 1.1

This is a modified permit to construct (PTC) to replace a corrugator, remove two existing boilers, install a new natural gas-fired boiler, install an additional converting machine, replace a starch silo, replace the scrap cyclone that is associated with the corrugator and converting machines, install an additional flexo-folder-gluer unit, and an increase in production of 50%. Ink and glue usage was not in the Permit to Construct No. P-2017.0054, issued on November 7, 2017, and will be added to this permit.

Existing Permit Scope Purpose 1.3

The emission sources regulated by this permit are listed in the following table.

Table Error! No text of specified style in document. **Regulated Sources**

Permit Section	**Source Descriptions**	**Emission Controls**
2	Starch silo	Starch Silo Baghouse
3	Corrugator operations	Enclosed Building
4	Scrap collection	Cyclone
5	Two-12.495 MMBtu/hr Clayton Industrial Boilers	None

Revised Permit Scope Purpose 1.3

This PTC replaces Permit to Construct No. P-2017.0054, issued on November 7, 2017.

Revised Permit Regulated Sources

Table 1.1 lists all sources of regulated emissions in this permit.

Table Error! No text of specified style in document.**.3 Regulated Sources**

Permit Section	**Source**	**Control Equipment**
2	Starch Silo: Manufacturer: Imperial Industries Model: I-99572 Manufacture Date: April 2020	Starch Silo Baghouse: Manufacturer: Ultra Industries, Inc. Model: BB-9-84-11G Number of bags: 9 Air to Cloth ratio: 3.42 to 1
3	Corrugator: Manufacturer: Fosber Model: 110” Single Wall – 1500 FPM Manufacture Date: 2020 Rating: 2,700,000,000 SF/year	Enclosed Building with Exhaust Vent
4	Scrap Collection	Scrap Cyclone: Manufacturer: Ohio Blow Pipe Model: 72 OBP Manufacture Date: 2020
5	Boiler: Manufacturer: Superior Boiler Works, Inc. Model: 7-5-3500-S250-IC-G Manufacture Date: 2020 Rating: 29.4 MMBtu/hr Fuel: Natural Gas	None
6	Ink & Glue	None

The existing permit forgot to include the Ink & Glue as emission sources.

Existing Permit Condition 2.1

Starch is stored in starch silo

Revised Permit Condition 2.1

Starch for the corrugating process is stored in a silo outside the building. Dry starch from the Starch Silo is combined with water and conveyed to the corrugator to be applied as glue for the production of corrugated sheets. Particulate matter emissions from the Starch Silo are controlled by a baghouse that is internal to the Starch Silo.

Existing Permit Condition 2.2

Particulate Matter

Emissions of particulate matter with a mean aerodynamic diameter of 10 microns or less (PM10) shall not exceed 0.077 pounds per hour (lb/hr) averaged over a 24-hour time period, nor shall they exceed 2.25 tons per any consecutive 12-month period.

Revised Permit Condition 2.2

Table Error! No text of specified style in document.**.4 Starch Silo Description**

Emissions Units / Processes	Control Devices	Emission Points
Starch Silo	Starch Silo Baghouse	Starch Silo Baghouse Vent

The SOB template has been updated since the existing permit was issued.

Existing Permit Condition 2.3

Opacity Limit

Emissions from the starch silo baghouse stack or any other stack, vent, or functionally equivalent opening shall not exceed 20% opacity for a period or periods aggregating more than three minutes in any 60-minute period as required by IDAPA 58.0l.01.625. Opacity shall be determined by the procedures contained in IDAPA 58.01.01.625.

Revised Permit Condition 2.3

Emission Limits

The emissions from the Starch Silo Baghouse Vent shall not exceed any corresponding emissions rate limits listed in Table 2.2.

Table 2.5 Starch Silo Emission Limits[a]

Source Description	PM_{10}[b]	
	lb/hr [c]	T/yr [d]
Starch Silo	0.0754	0.27

a) In absence of any other credible evidence, compliance is ensured by complying with permit operating, monitoring, and record keeping requirements.
b) Particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers, including condensable particulate as defined in IDAPA 58.01.01.006.
c) Pounds per hour, as determined by a test method prescribed by IDAPA 58.01.01.157, EPA reference test method, continuous emission monitoring system (CEMS) data, or DEQ-approved alternative.
d) Tons per any consecutive 12-calendar month period

. **[DRAFT]**

The SOB template has been updated since the existing permit was issued.

Existing Permit Condition 2.4

The starch silo throughput shall not exceed 4,380 tons of starch per any consecutive 12-month period.

Revised Permit Condition 2.4

The condition has not changed but the SOB format has.

Emissions from the Starch Silo Baghouse Vent, or any other stack, vent, or functionally equivalent opening associated with the Starch Silo, shall not exceed 20% opacity for a period or periods aggregating more than three minutes in any 60-minute period as required by IDAPA 58.01.01.625. Opacity shall be determined by the procedures contained in IDAPA 58.01.01.625.

Existing Permit Condition 2.5

The pressure drop across the baghouse shall be maintained within manufacturer and Operation and Maintenance (O&M) manual specifications. Documentation of the operating pressure drop specifications shall remain on site at all times and shall be made available to DEQ representatives upon request.

Revised Permit Condition 2.5

Starch Silo throughput shall not exceed 6,570 tons of starch per any consecutive 12-month period.

Existing Permit Condition 2.6

The permittee shall comply with the Air Pollution Emergency Rules in IDAPA 58.01.01.550-562

Revised Permit Condition 2.6

The condition has not changed but the SOB format has.

The pressure drop across the baghouse shall be maintained within manufacturer and Operation and Maintenance (O&M) manual specifications. Documentation of the operating pressure drop specifications shall remain on site at all times and shall be made available to DEQ representatives upon request.

Existing Permit Condition 2.7

The permittee shall monitor and record the starch silo throughput once per month. The throughput shall be measured in units of tons. Each month, the permittee shall sum the previous consecutive 12 months throughput to demonstrate compliance with Permit Condition 2.4. A compilation of the most recent two years of records shall be kept on site and shall be made available to DEQ representatives upon request.

Revised Permit Condition 2.7

The condition has not changed but the SOB format has.

The permittee shall comply with the Air Pollution Emergency Rules in IDAPA 58.01.01.550-562.

Existing Permit Condition 2.8

The permittee shall install, calibrate, and operate in accordance with manufacturer specifications, pressure drop monitoring equipment to continuously measure the pressure differential across the baghouse. The permittee shall record the pressure drop across the baghouse once on a weekly basis. A compilation of the most recent two years of records shall be kept on site and shall be made available to DEQ representatives upon request.

Revised Permit Condition 2.8

The condition has been changed. All monitoring records and support information shall be retained for a period of at least five years from the date of the monitoring sample, measurement, report, or application as specified by IDAPA 58.01.01.211.

Each calendar month, the permittee shall monitor and record the throughput of the Starch Silo process for the previous month in tons per month. Starch Silo throughput shall be determined by summing the monthly throughput over the previous consecutive 12-month period to demonstrate compliance with the Starch Silo Process Throughput Limits permit condition. A compilation of the most recent two years of records shall be kept on site and shall be made available to DEQ representatives upon request.

Existing Permit Condition 2.9

The permittee shall maintain an O&M Manual for the starch silo baghouse describing the procedures that will be followed to comply with General Provision 2. The manual shall contain, at a minimum, manufacturer operating parameters, methods used to measure the pressure drop, and a maintenance schedule. This manual shall remain on site at all times and shall be made available to DEQ representatives upon request. Any changes to the O&M Manual shall be submitted to DEQ for review and comment within 15 days of the change and shall contain a certification by a responsible official.

Revised Permit Condition 2.9

The condition has been changed. All monitoring records and support information shall be retained for a period of at least five years from the date of the monitoring sample, measurement, report, or application as specified by IDAPA 58.01.01.211.

Revised Permit Condition 2.10

The condition has not changed but the SOB format has.

The permittee shall maintain an O&M Manual for the starch silo baghouse describing the procedures that will be followed to comply with General Provision 6.2. The manual shall contain, at a minimum, manufacturer operating parameters, methods used to measure the pressure drop, and a maintenance schedule. This manual shall remain on site at all times and shall be made available to DEQ representatives upon request. Any changes to the O&M Manual shall be submitted to DEQ for review and comment within 15 days of the change and shall contain a certification by a responsible official.

Revised Permit Condition 2.11

The title of the condition has been changed to Fugitive Emissions Inspection Records. The permittee shall conduct a monthly facility wide inspection of potential sources of fugitive emissions during daylight hours and under normal operating conditions to ensure that the methods used to reasonably control fugitive emissions are effective. If fugitive emissions are not being reasonably controlled, the permittee shall take corrective action as expeditiously as practicable. The permittee shall maintain records of the results of each fugitive emissions inspection. The records shall include, at a minimum, the date of each inspection and a description of the following: the permittee's assessment of the conditions existing at the time fugitive emissions were present (if observed), any corrective action taken in response to the fugitive emissions, and the date the corrective action was taken.

Existing Permit Condition 3.1

The primary purpose of the corrugator operations is to manufacture corrugated containers. The permittee has installed two new single facers as an upgrade to the wet end of the corrugator, increasing its production capacity to 1.8 billion square feet of container sheets per year.

Revised Permit Condition 3.1

The Corrugator combines three layers of kraft paper. Two outer sheets are glued with starch to the middle sheet to form one corrugated sheet. The Corrugator then trims the corrugated sheets to the correct size for the downstream converting machines to build boxes. The Corrugator will have a production of 2.7 billion square feet per year. Emissions from the Corrugator are emitted through the Building Exhaust Vent.

Existing Permit Condition 3.2

Control Device Description - An enclosed building controls PM10 emissions from the corrugator operations.

Revised Permit Condition 3.2

The SOB template format has been updated.

Table Error! No text of specified style in document.**.6 Corrugator Description**

Emissions Units / Processes	Control Devices	Emission Points
Corrugator	None	Corrugator Building Exhaust Vent

Existing Permit Condition 3.3

Emissions of PM10 from the corrugator operations shall not exceed 0.075 lb/hr averaged over a 24-hour time period.

Revised Permit Condition 3.3

The Corrugator Building Exhaust Vent Emissions of particulate matter with a mean aerodynamic diameter of 10 microns or less (PM10) shall not exceed 0.142 lb/hr averaged over a 24-hour time period.

Existing Permit Condition 3.4

The maximum annual throughput of container sheets shall not exceed 1.8 billion square feet per any consecutive 12-month period. The maximum daily throughput of container sheets shall not exceed 10.44 million square feet per day.

Revised Permit Condition 3.4

Corrugator throughput of container sheets shall not exceed 2.7 billion square feet per any consecutive 12-month period. The maximum daily throughput of container sheets shall not exceed 19.8 million square feet per day.

Existing Permit Condition 3.5

Daily and monthly, the permittee shall monitor and record the throughput of container sheets in units of square feet. Each month, the permittee shall sum the previous consecutive l2 months total throughput to demonstrate compliance with Permit Condition 3.4. A compilation of the most recent two years of records shall be kept on site and shall be made available to DEQ representatives upon request.

Revised Permit Condition 3.5

Each calendar month, the permittee shall monitor and record the throughput of the container sheets in the corrugator process for the previous month in square feet per month. Corrugator throughput shall be determined by summing the monthly throughput over the previous consecutive 12-month period to demonstrate compliance with the Corrugator Process Throughput Limits permit condition.

Existing Permit Condition 4.1

The scrap collection system is used to collect scrap from corrugator operations. Scrap is pneumatically collected from multiple locations and bailed.

Revised Permit Condition 4.1

Scrap paper wastes and dusty air from the Corrugator and Converting Machines will be collected and transported to the Scrap Cyclone through large air ducts.

Existing Permit Condition 4.2

Emissions of PM10 from the cyclone shall not exceed 0.945 lb/hr averaged over a 24-hour time period.

Revised Permit Condition 4.2

Table Error! No text of specified style in document.**.7 Scrap Collection Description**

Emissions Units / Processes	Control Devices	Emission Points
Corrugator – scraps and dust	Scrap Cyclone	Scrap Cyclone Stack
Converting Machines – scraps and dust	Scrap Cyclone	Scrap Cyclone Stack

Existing Permit Condition 4.3

The permittee shall utilize a cyclone to control particulate matter emissions from the pneumatic scrap collection system at all times the system is in operation.

Revised Permit Condition 4.3

The Scrap Cyclone Stack Emissions of particulate matter with a mean aerodynamic diameter of 10 microns or less (PM10) shall not exceed 1.29 lb/hr averaged over a 24-hour time period.

Revised Permit Condition 4.4

The condition has not changed but the SOB format has.

The permittee shall utilize a cyclone to control particulate matter emissions from the pneumatic scrap collection system at all times the system is in operation.

Revised Permit Condition 4.5

Scrap Collection production shall not exceed 13,558 tons per any consecutive 12-month period. The maximum daily Scrap Collection production shall not exceed 99.42 tons per day.

Revised Permit Condition 4.6

Each calendar month, the permittee shall monitor and record the production of the scrap collection production for the previous month in tons per month. Scrap collection production shall be determined by summing the monthly production over the previous consecutive 12-month period to demonstrate compliance with the Scrap Collection Process Production Limits permit condition.

Existing Permit Condition 5.1

Table 2 EMISSIONS LIMITS

Source Description	PM_{10}		NO_x
	lb/hr	T/yr	T/yr
Two-12.495 MMBtu/hr Clayton Industrial Boilers	0.883	1.12	11.1

Revised Permit Condition 5.1

The 29.40 MMBtu/hr natural gas-fired Boiler will supply steam to the Corrugator.

Existing Permit Condition 5.2

The fuel used in the boilers shall be natural gas or No. 2 diesel fuel only. The use of No. 2 diesel fuel shall not exceed 720 hours, per boiler, per any consecutive 12-month period.

Revised Permit Condition 5.2

Table Error! No text of specified style in document.**.8 Boiler Description**

Emissions Units / Processes	Control Devices	Emission Points
Boiler	None	Boiler Stack

Existing Permit Condition 5.3

Once per month, the permittee shall monitor and record the number of hours thot No. 2 diesel fuel is used in each boiler. Each month, the permittee shall sum the previous consecutive 12-months total hours No. 2 diesel fuel is used in each boiler to demonstrate compliance with Permit Condition 5.2. A compilation of the most recent two years of records shall be kept on site and shall be made available to DEQ representatives upon request.

Revised Permit Condition 5.3

The emissions from the boiler stack shall not exceed any corresponding emissions rate limits listed in Table 5.2.

Table 5.9 Boiler Emission Limits[a]

Source Description	PM_{10}[b]		SO_2		NO_X		CO		VOC	
	lb/hr[c]	T/yr[d]	lb/hr[c]	T/yr[d]	lb/hr[c]	T/yr[d]	lb/hr[c]	T/yr[d]	lb/hr[c]	T/yr[d]
Boiler	0.312	1.25	0.0176	0.07	0.315	1.26	1.06	4.26	0.147	0.59

a) In absence of any other credible evidence, compliance is ensured by complying with permit operating, monitoring, and record keeping requirements.
b) Particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers, including condensable particulate as defined in IDAPA 58.01.01.006.
c) Pounds per hour, as determined by a test method prescribed by IDAPA 58.01.01.157, EPA reference test method, continuous emission monitoring system (CEMS) data, or DEQ-approved alternative.
d) Tons per any consecutive 12-calendar month period.

Revised Permit Condition 5.4

The boiler shall not exceed 8,000 hours of operation per any consecutive 12-month period.

Revised Permit Condition 5.5

The boiler shall be fueled with natural gas exclusively.

Revised Permit Condition 5.6

In accordance with 40 CFR 60.48c(g)(1), the permittee shall record and maintain records of the amount of natural gas combusted during each operating day; or in accordance with 40 CFR 60.48c(g)(2), the permittee may elect to record and maintain records of the amount of fuel combusted during each calendar month; or in accordance with 40 CFR 60.48c(g)(3), the permittee may elect to record and maintain records of the total amount of the steam generating unit fuel delivered to that property during each calendar month.

Revised Permit Condition 5.7

In accordance with 40 CFR 60.48c(i), the permittee shall maintain all records required for a period of two years following the date of such record.

Revised Permit Condition 5.8

In accordance with 40 CFR 60.48c(a), the permittee shall submit notification of the date of construction or reconstruction and actual startup as provided in 40 CFR 60.7. This notification shall include:

- The design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility;
- The annual capacity factor at which the permittee anticipates operating the affected facility based on all fuels fired and based on each individual fuel fired.

Revised Permit Condition 6.1

This is a new permit condition that was not included in the existing permit. Ink is applied to the corrugated containers and glue holds the individual layers of kraft paper together to form the corrugated sheets.

Revised Permit Condition 6.2

Table 6.10 Ink & Glue Description

Emissions Units / Processes	Control Devices	Emission Points
Ink & Glue	None	Corrugator Building Exhaust Vent

Revised Permit Condition 6.3

The emissions from the Ink & Glue through the Corrugator Building Exhaust Vent shall not exceed any corresponding emissions rate limits listed in Table 6.2.

Appendix A. Table 6.11 Ink & Glue Emission Limits[(a)]

Source Description	VOC	
	lb/hr [(b)]	T/yr [(c)]
Ink & Glue	0.719	3.15

a) In absence of any other credible evidence, compliance is ensured by complying with permit operating, monitoring, and record keeping requirements.
b) Pounds per hour, as determined by a test method prescribed by IDAPA 58.01.01.157, EPA reference test method, continuous emission monitoring system (CEMS) data, or DEQ-approved alternative.
c) Tons per any consecutive 12-calendar month period.

Revised Permit Condition 6.4

Ink usage shall not exceed 258 tons per any consecutive 12-month period.

Revised Permit Condition 6.5

Glue usage shall not exceed 125 tons per any consecutive 12-month period.

Revised Permit Condition 6.6

pH Adjuster usage shall not exceed 2.7 tons per any consecutive 12-month period.

Revised Permit Condition 6.7

Each calendar month, the permittee shall monitor and record the usage of the Ink for the previous month in pounds per month. Ink usage shall be determined by summing the monthly usage over the previous consecutive 12-month period to demonstrate compliance with the Ink Process Usage Limits permit condition.

Revised Permit Condition 6.8

Each calendar month, the permittee shall monitor and record the usage of the Glue for the previous month in pounds per month. Glue usage shall be determined by summing the monthly usage over the previous consecutive 12-month period to demonstrate compliance with the Glue Process Usage Limits permit condition.

Revised Permit Condition 6.9
Each calendar month, the permittee shall monitor and record the usage of the pH Adjuster for the previous month in pounds per month. pH Adjuster usage shall be determined by summing the monthly usage over the previous consecutive 12-month period to demonstrate compliance with the pH Adjuster Process Usage Limits permit condition.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c or IDAPA 58.01.01.404.01.c. During this time, there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

APPENDIX A – EMISSIONS INVENTORIES

Table 3-1. Facility-wide Potential to Emit (tpy)

Emission Sources	CO	NO_X	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Lead	Total HAP
Starch Silo Baghouse	-	-	2.25	2.25	2.25	-	-	-	-
Scrap Cyclone	-	-	6.20	6.20	6.20	-	-	-	-
Corrugator	-	-	0.62	0.62	0.62	-	4.73	-	4.73 [a]
Boiler	2.79	1.57	1.12	1.12	1.12	0.09	0.54	7.32E-05	4.62
Ink and Glue Usage	-	-	-	-	-	-	3.15	-	-
TOTAL	2.79	1.57	10.20	10.20	10.20	0.09	8.41	7.32E-05	9.35

[a] Conservatively assumes 100% of VOC from the corrugator is organic HAP.

Table 3-2. Facility-wide Potential to Emit Increase (tpy)

Emission Sources	CO	NO_X	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Lead
Starch Silo Baghouse	-	-	0	0	0	-	-	-
Scrap Cyclone	-	-	2.06	2.06	2.06	-	-	-
Corrugator	-	-	0.29	0.29	0.29	-	1.58	-
Boiler	-1.14	-9.49	0.005	0.005	0.005	-3.94	0.01	2.80E-07
Ink and Glue Usage	-	-	-	-	-	-	1.75	-
TOTAL	-1.14	-9.49	2.36	2.36	2.36	-3.94	3.34	2.80E-07

Table 3-3. Facility-wide Potential to Emit Increase (HAPs/TAPs)

Pollutant	HAP?	Non-Carcinogenic TAP?	Carcinogenic TAP?	Potential Emissions Increase	
				lb/hr	tpy
Benzene	Yes	No	Yes	-5.84E-04	7.56E-05
Formaldehyde	Yes	No	Yes	-6.33E-02	-1.99E-02
PAHs	No	No	Yes	-9.04E-03	-2.91E-03
Naphthalene	Yes	Yes	No	-9.52E-04	-2.95E-04
Acetaldehyde	Yes	No	Yes	-6.36E-02	-2.05E-02
Acrolein	Yes	Yes	No	-6.36E-02	-2.05E-02
1,3-butadiene	Yes	No	Yes	-2.69E-03	-8.72E-04
Chlorobenzene	Yes	Yes	No	-3.64E-05	-1.18E-05
Xylenes	Yes	Yes	No	4.41E-04	1.04E-03
Ethyl Benzene	Yes	Yes	No	2.20E-04	3.86E-04
Hexane	Yes	Yes	No	-4.65E-04	5.94E-05
Toluene	Yes	Yes	No	1.84E-04	1.27E-03
Hydrogen chloride	Yes	Yes	No	-3.39E-02	-1.10E-02
Arsenic	Yes	No	Yes	-2.91E-04	-9.42E-05
Cadmium	Yes	No	Yes	-2.73E-04	-8.83E-05
Total Chromium	Yes	Yes	No	-1.09E-04	-3.53E-05
Hexavalent chromium	Yes	No	Yes	-1.82E-05	-5.89E-06
Copper	No	Yes	No	-7.45E-04	-2.41E-04
Manganese	Yes	Yes	No	-5.64E-04	-1.83E-04
Mercury	Yes	No	No	-3.64E-04	-1.18E-04
Nickel	Yes	No	Yes	-7.09E-04	-2.30E-04
Selenium	Yes	Yes	No	-4.00E-04	-1.30E-04
Zinc	No	Yes	No	-4.07E-03	-1.32E-03
Monoethanolamine	No	Yes	No	4.54E-01	2.52E+00

PCA – Burley will remain a minor source of criteria pollutants and HAPs/TAPs.

In addition, the proposed 900 hp (37.87 MMBtu/hr) Cleaver-Brooks natural gas-fired boiler at the facility will be subject to 40 CFR Part 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.

A review of applicable State and Federal Rules is provided in Sections 4.1 and 4.2 below.

4.1. STATE REGULATORY APPLICABILITY

A review of applicable requirements of the Rules for the Control of Air Pollution in Idaho is provided in Table 4-1. Each regulation is described in the sections following the table.

Table 4-1. State Regulatory Applicability

Section	Description	Regulatory Citation	Applicable?
4.1.1	Certification of Documents	IDAPA 58.01.01.123	Yes
4.1.2	Excess Emissions	IDAPA 58.01.01.130-136	Yes
4.1.3	Test Methods and Procedures	IDAPA 58.010.01.157	Yes
4.1.4	Procedures and Requirements for Permits To Construct	IDAPA 58.01.01.200-203	Yes
4.1.5	Permit Requirements For New Major Facilities Or Major Modifications In Nonattainment Areas	IDAPA 58.01.01.204	No
4.1.6	Permit Requirements For New Major Facilities Or Major Modifications In Attainment Or Unclassifiable Areas.	IDAPA 58.01.01.205	No
4.1.7	Demonstration of Preconstruction Compliance with Toxic Standards	IDAPA 58.01.01.210	Yes
4.1.8	Mercury Emission Standard for New or Modified Sources	IDAPA 58.01.01.215	Yes
4.1.9	Procedures And Requirements For Tier I Operating Permits.	IDAPA 58.01.01.300-399	No
4.1.10	Air Pollution Emergency Rule	IDAPA 58.01.01.550-562	Yes
4.1.11	Toxic Air Pollutants	IDAPA 58.01.01.585 and 586	Yes
4.1.12	New Source Performance Standards	IDAPA 58.01.01.590	Yes
4.1.13	National Emissions Standards for Hazardous Air Pollutants	IDAPA 58.01.01.591	No
4.1.14	Open Burning	IDAPA 58.01.01.600-617	Yes
4.1.15	Visible Emissions	IDAPA 58.01.01.625	Yes

Section	Description	Regulatory Citation	Applicable?
4.1.16	Rules for Control of Fugitive Dust	IDAPA 58.01.01.650-651	Yes
4.1.17	Fuel Burning Equipment – Particulate Matter	IDAPA 58.01.01.675-681	Yes
4.1.18	Particulate Matter – Process Weight Limitations	IDAPA 58.01.01.700-701	Yes
4.1.19	Rules For Sulfur Content Of Fuels	IDAPA 58.01.01.725	No
4.1.20	Odors	IDAPA 58.01.01.775-776	Yes

4.1.1. Certification of Documents

IDAPA 58.01.01.123 requires that all documents (including application forms for permits to construct, records, and monitoring reports) submitted to the Department shall contain a certification by a responsible official. PCA - Burley will comply with this requirement, and the appropriate certifications by a responsible official are being submitted with this application. The PCA Burley General Manager, Scott Stingley, has been delegated as the responsible official for the facility.

4.1.2. Excess Emissions

IDAPA 58.01.01.130-136 establishes procedures and requirements to be implemented in all excess emissions events. PCA - Burley will comply with the procedures and requirements outlined in Section 131-136 and submit the necessary information and reports to DEQ related to excess emissions due to startup, shutdown, scheduled maintenance, safety measures, upsets and breakdowns.

4.1.3. Test Methods and Procedures

IDAPA 58.01.01.157 establishes procedures and requirements for test methods and results. If a source test is required to be performed to satisfy a performance test requirement or a compliance test requirement imposed by state or federal regulation, rule, permit, order or consent decree, then the test methods and procedures shall be conducted in accordance with the requirements of Section 157.

4.1.4. Procedures and Requirements for Permits to Construct

IDAPA 58.01.01.200-203 establish uniform procedures and requirements for the issuance of PTCs. PCA – Burley will not commence construction of the new emission units at the existing facility without first obtaining a PTC from the Department which satisfies the requirements of Sections 200 through 228. The PTC application will be made using forms furnished by the Department, or by other means prescribed by the Department.

4.1.5. Permit Requirements for New Major Facilities Or Major Modifications In Nonattainment Areas

PCA - Burley is located in Cassia County. Cassia County is in attainment for all criteria pollutants, therefore the requirements of IDAPA 58.01.01.204 do not apply to PCA - Burley.

4.1.20. Odors

IDAPA 58.01.01.775-776 requires no emissions of odorous gases, liquids, or solids to the atmosphere in such quantities as to cause air pollution. PCA – Burley will comply with this requirement by keeping records of any odor complaints received and will take appropriate action for each complaint which has merit.

4.2. FEDERAL REGULATORY APPLICABILITY

A review of applicable Federal Rules is provided in Table 4-2. Included in **Appendix C** is the completed Applicability Form FRA.

Table 4-2. Federal Regulatory Applicability

Section	Description	Regulatory Citation	Applicable?
4.2.1	National Ambient Air Quality Standards (NAAQS)- (dispersion modeling)	40 CFR Part 50	Yes
4.2.2	New Source Review (NSR)	40 CFR Part 52	No
4.2.3	New Source Performance Standards (NSPS)	40 CFR Part 60	Yes
4.2.4	National Emissions Standards for Hazardous Air Pollutants (NESHAPs)	40 CFR Parts 61, 63	No
4.2.5	Risk Management Programs For Chemical Accidental Release Prevention	40 CFR Part 68	No
4.2.6	Title V Operating Permit	40 CFR Part 70	No
4.2.7	Acid Rain Requirements	40 CFR Parts 72–78	No
4.2.8	Mandatory Greenhouse Gas Reporting	40 CFR Part 98	No

4.2.1. National Ambient Air Quality Standards (NAAQS)

Primary NAAQS are identified in 40 CFR Part 50 and define levels of air quality, which the United States Environmental Protection Agency (USEPA) deems necessary to protect the public health. Secondary NAAQS define levels of air quality, which the USEPA judges necessary to protect public welfare from any known, or anticipated adverse effects of a pollutant. Examples of public welfare include protecting wildlife, buildings, national monuments, vegetation, visibility, and property values from degradation due to excessive emissions of criteria pollutants.

Cleaver-Brooks Boiler Expected Emission Data

Producing Steam Firing **Nat Gas**

BACKGROUND INFORMATION

Date	11/07/19	Boiler Model	CBEX Elite
Author	Taylor Goade	Altitude (feet)	4163
Customer	Packaging Corp. America	Operating Pressure (psig)	217.00
City & State	Burley, Idaho	Furnace Volume (cuft)	333.30
		Furnace Heat Release (btu/hr/cu ft)	109,075
		Heating Surface (sqft)	3218
		Nox System	9

Nat Gas		Firing Rate			
		25%	**50%**	**75%**	**100%**
Horsepower		225	450	675	900
Input , Btu/hr		9,471,000	18,818,000	28,297,000	37,871,000
CO	ppm	25	25	25	25
	lb/MMBtu	0.0187	0.0187	0.0187	0.0187
	lb/hr	0.18	0.35	0.53	0.71
	tpy	0.777	1.545	2.323	3.109
NOx	ppm	9	9	9	9
	lb/MMBtu	0.0105	0.0105	0.0105	0.0105
	lb/hr	0.10	0.20	0.30	0.40
	tpy	0.436	0.865	1.301	1.742
NO	ppm	7.7	7.7	7.7	7.7
	lb/MMBtu	0.009	0.009	0.009	0.009
	lb/hr	0.08	0.17	0.25	0.34
	tpy	0.35	0.69	1.04	1.39
NO_2	ppm	1.4	1.4	1.4	1.4
	lb/MMBtu	0.002	0.002	0.002	0.002
	lb/hr	0.01	0.03	0.04	0.06
	tpy	0.09	0.17	0.26	0.35
SOx	ppm	0.34	0.34	0.34	0.34
	lb/MMBtu	0.0006	0.0006	0.0006	0.0006
	lb/hr	0.0056	0.0111	0.0167	0.0223
	tpy	0.024	0.049	0.073	0.098
VOCs	ppm	8	8	8	8
(Non-Methane Only)	lb/MMBtu	0.0036	0.0036	0.0036	0.0036
	lb/hr	0.034	0.067	0.101	0.135
	tpy	0.148	0.294	0.441	0.591
VOCs does not include any background VOC emissions.					
PM10 (Filterable)	ppm	N/A	N/A	N/A	N/A
	lb/MMBtu	0.0019	0.0019	0.0019	0.0019
	lb/hr	0.018	0.035	0.053	0.071
	tpy	0.077	0.154	0.231	0.309
PM10 (Condensable)	lb/MMBtu	0.0056	0.0056	0.0056	0.0056
	lb/hr	0.053	0.105	0.158	0.212
	tpy	0.232	0.461	0.693	0.927
PM2.5 (Filterable)	lb/MMBtu	0.0019	0.0019	0.0019	0.0019
	lb/hr	0.018	0.035	0.053	0.071
	tpy	0.077	0.154	0.231	0.309
PM2.5 (Condensable)	lb/MMBtu	0.0056	0.0056	0.0056	0.0056
	lb/hr	0.053	0.105	0.158	0.212
	tpy	0.232	0.461	0.693	0.927
Exhaust Data					
Temperature, F		409	425	441	457
Flow	ACFM	3,898	7,601	11,638	15,853
	SCFM (70 Degrees Fah.)	2,087	3,996	6,008	8,041
	DSCFM	1,878	3,580	5,383	7,205
	lb/hr	9,392	17,981	27,038	36,185
Velocity	ft/sec	11.63	22.68	34.72	47.30
	ft/min	698	1,361	2,083	2,838

Notes:

1) All ppm levels are corrected to dry at 3% oxygen.
2) Emission data based on actual boiler efficiency.
3) % H2O , by volume in exhaust gas is **16.05** % O2, by volume **3.81**
4) Water vapor in exhaust gas is **99.39** lbs/MMBtu of fuel fired
5) CO2 produced is **116.31** lbs/MMBtu of fuel fired
6) Particulate is exclusive of any particulates in combustion air or other sources of residual particulates from material.
PM level indicated on this form is based on combustion air and fuel being clean and turndown up to 4:1.
7) Heat input is based on high heating value (HHV).
8.) Emission produced in tons per year (tpy) is based on 24 hours per day for 365 days = 8,760 hours per year
9.) Exhaust data is based on a clean and properly sealed boiler.
10.) Emission data is based on a burner turndown of 4 to 1.
11.) Maximum flame temperature is 2800 degrees fahrenheit.

14) Fuel High Heating Value = **1000** Btu/FT^3

Table 1. Inputs

	2017	2018	2017-2018 Average	Current Maximum Throughput[d]	Future Maximum Throughput
Corrugator Annual Production [a]	1,240,025,900 SF/yr	1,255,465,400 SF/yr	1,247,745,650 SF/yr	1,800,000,000 SF/yr	2,700,000,000 SF/yr
Downstream Annual Production [a,b]	1,184,461,900 SF/yr	1,209,060,700 SF/yr	1,196,761,300 SF/yr	N/A	2,700,000,000 SF/yr
Corrugator Maximum Daily Production	N/A	N/A	N/A	10,440,000 SF/day	19,800,000 SF/day
Downstream Maximum Daily Production	N/A	N/A	N/A	N/A	19,800,000 SF/day
Starch Silo Maximum Daily Throughput	N/A	N/A	N/A	N/A	
Corrugator Box Plant Hours of Operation	6,695 hr/yr	7,152 hr/yr	6,924 hr/yr	N/A	8,760 hr/yr
Downstream Box Plant Hours of Operation	25,374 hr/yr	24,959 hr/yr	25,167 hr/yr	N/A	35,040 hr/yr
Starch Silo Hours of Operation	N/A	N/A	N/A	N/A	8,760 hr/yr
Scrap Production Annual [c]	5,965 tons/yr	6,566 tons/yr	6,266 tons/yr	N/A	13,558 tons/yr
Boiler Annual Usage	6,672 hr/yr	7,152 hr/yr	6,912 hr/yr	N/A	8,760 hr/yr
#1 and #2 Boiler Capacity, each	12.50 MMBtu/hr	12.50 MMBtu/hr	12.50 MMBtu/hr	12.50 MMBtu/hr	NA
Total Boiler Capacity	24.99 MMBtu/hr	24.99 MMBtu/hr	24.99 MMBtu/hr	24.99 MMBtu/hr	37.87 MMBtu/hr
Ink Annual Usage	226,542 lbs	230,260 lbs/yr	228,401 lbs/yr	N/A	515,293 lbs/yr
Glue Annual Usage[e]	100,520 lbs	120,505 lbs/yr	110,513 lbs/yr	N/A	249,326 lbs/yr
ph Adjuster Annual Usage[e]	2,200 lbs	2,480 lbs/yr	2,340 lbs/yr	N/A	5,279 lbs/yr

[a] The plant potential is based on 100% of total corrugator capacity with average web width set to 110 inches.

[b] The downstream includes the MHI Evol 1, Evol II, future EVOL III, Bobst Mini Martin, and Sun 625 Rotary Die Cutter.

[c] The existing permit does not contain a permit limit for maximum annual scrap production.

[d] Permit limits are used where in place. Otherwise, maximum physical capacity is used or the value is tied to the corrugator limit.

[e] Ink, glue and pH adjuster emissions are fugitive emissions.

Table 2-1. Category I Exemption and PSD Applicability Summary

Pollutant		Project Emission Increase	10% of SER	Below Regulatory Concern?
PM_{10}	(tpy)	2.36	1.5	**NO**
$PM_{2.5}$	(tpy)	2.36	1.0	**NO**
SO_2	(tpy)	-3.94	4.0	**YES**
NO_x	(tpy)	-9.49	4.0	**YES**
CO	(tpy)	-1.14	10.0	**YES**
VOC	(tpy)	3.34	4.0	**YES**

Table 2-2. Modeling Applicability Summary

Pollutant		Project PTE Increase	Level I Modeling Threshold	Level II Modeling Threshold	Modeling Required[c]		Project PTE Increase	Level I Modeling Threshold	Level II Modeling Threshold	Modeling Required[c]
PM_{10}	(tpy)	2.36	N/A	N/A	N/A	(lb/hr)	0.43	0.22	2.60	Maybe
$PM_{2.5}$	(tpy)	2.36	0.4	4.1	Maybe	(lb/hr)	0.43	0.05	0.63	Maybe
SO_2	(tpy)	-3.94	1.2	14.0	NO	(lb/hr)	-12.23	0.21	2.50	NO
NO_x	(tpy)	-9.49	1.2	14.0	NO	(lb/hr)	-7.02	0.20	2.40	NO
CO	(tpy)	-1.14	N/A	N/A	N/A	(lb/hr)	-1.19	15.00	175.00	NO
VOC [a]	(tpy)	3.34	N/A	N/A	N/A	(lb/hr)	1.77	N/A	N/A	N/A
Toxics [b]										NO

a Modeling is not required for VOC emissions; however, an application for a Permit to Construct may still be required if calculated emissions are above thresholds.

b All toxic emissions at the Burley facility come from combustion emissions from the boiler and gluing and inking operations. The existing boiler combusts diesel fuel; the new boiler will combust natural gas, therefore emissions of all TAPs from the boiler will decrease. TAPs emissions from gluing and inking operations are fugitive emissions which do not need to be accounted in comparison emission levels according to IDEQ Toxic Air Pollutant Exemptions Checklist. However, the TAPS emissions from gluing and inking were calculated and compared to the IDAPA 58.01.01 Section 585/586 EL's; TAPS emissions increases associated with gluing and inking are below the applicable EL's.

c Emissions of PM10 and PM2.5 fall between the Level I and Level II modeling thresholds. For emissions between the Level I and II thresholds, a determination is made on a case-by-case basis, and therefore modeling may not be required. The hourly PM10 emissions are less than BRC (0.34 lb/hr threshold) but above the Level I modeling threshold (0.22 lb/hr threshold). In general, if emissions are less than BRC then modeling is not required even if above the Level I threshold. In addition, PM2.5 emissions are conservatively assumed to be equal to PM10 emissions. Therefore, the PM2.5 emissions are likely overestimated, and additional information regarding stack parameters and previous modeling can be provided to DEQ to support justification that modeling of PM2.5 should not be required.

Table 3. Annual Emission Increase Summary

Emission Points	Criteria Pollutants					
	PM_{10} (tpy)	**$PM_{2.5}$[c] (tpy)**	**SO_2 (tpy)**	**NO_x (tpy)**	**VOC (tpy)**	**CO (tpy)**
Starch Silo Baghouse	0.00E+00	0.00E+00	-	-	-	-
Scrap Cyclone Baghouse	2.06	2.06	-	-	-	-
Corrugator	0.29	0.29	-	-	1.58	-
Steam Production	0.00	0.00	-3.94	-9.49	0.01	-1.14
Ink and Glue Usage	-	-	-	-	1.75	-
Total Emissions Increase	**2.36**	**2.36**	**-3.94**	**-9.49**	**3.34**	**-1.14**
Significant Emission Rate (SER)[a]	15	10	40	40	40	100
10% of SER	1.5	1	4	4	4	10
Level I Modeling Threshold [a]		0.35	1.2	1.2		
Level II Modeling Threshold [a]		4.1	14	14		
Is Emission Increase Over SER?	NO	NO	NO	NO	NO	NO
Is Emission Increase Over 10% of SER? [b]	**YES**	**YES**	NO	NO	NO	NO
Is Emission Increase Over Level I?		**YES**	NO	NO		
Is Emission Increase Over Level II?		NO	NO	NO		

[a] SER and Level II tresholds can be found in State of Idaho Guideline for Performing Air Quality Impact Analyses revised in September 2013.

[b] The trigger for PTC permitting is 10 percent of the SER; that is, PTC permitting is triggered if the annual emission increase of a given criteria pollutant is above 10 percent of the SER for that pollutant (IDAPA 58.01.01.221.01).

[c] $PM_{2.5}$ emissions are conservatively assumed to be equal to PM_{10} emissions.

Table 4. Annual Emission Baseline Summary

Emission Points	Pollutants					
	PM_{10} (tpy)	$PM_{2.5}$[a] (tpy)	SO_2 (tpy)	NO_x (tpy)	VOC (tpy)	CO (tpy)
Starch Silo Baghouse	2.25	2.25	-	-	-	-
Scrap Cyclone Baghouse	4.14	4.14	-	-	-	-
Corrugator	0.33	0.33	-	-	3.15	-
Steam Production	1.12	1.12	4.03	11.1	0.52	3.93
Ink and Glue Usage	-	-	-	-	1.40	-
Total Emissions	7.83	7.83	4.03	11.06	5.07	3.93

[a] $PM_{2.5}$ emissions are conservatively assumed to be equal to PM_{10} emissions.

Table 5. Annual Emission Potentials Summary

Emission Points	Pollutants					
	PM_{10} (tpy)	$PM_{2.5}$[a] (tpy)	SO_2 (tpy)	NO_x (tpy)	VOC (tpy)	CO (tpy)
Starch Silo Baghouse	2.25	2.25	-	-	-	-
Scrap Cyclone Baghouse	6.20	6.20	-	-	-	-
Corrugator	0.62	0.62	-	-	4.73	-
Steam Production	1.12	1.12	0.09	1.6	0.54	2.79
Ink and Glue Usage	-	-	-	-	3.15	-
Total Emissions	10.20	10.20	0.09	1.57	8.41	2.79

[a] $PM_{2.5}$ emissions are conservatively assumed to be equal to PM_{10} emissions.

Table 6. Emission Increase Summary

Emission Points	Criteria Pollutants					
	PM_{10} (lb/hr)	**$PM_{2.5}$[c] (lb/hr)**	**SO_2 (lb/hr)**	**NO_x (lb/hr)**	**VOC (lb/hr)**	**CO (lb/hr)**
Starch Silo Baghouse	1.18E-01	1.18E-01	-	-	-	-
Scrap Cyclone Baghouse	8.47E-01	8.47E-01	-	-	-	-
Corrugator	6.72E-02	6.72E-02	-	-	1.37E+00	-
Steam Production	-5.99E-01	-5.99E-01	-1.22E+01	-7.02E+00	9.22E-02	-1.19E+00
Ink and Glue Usage	-	-	-	-	3.16E-01	-
Total Emissions Increase	**0.43**	**0.43**	**-1.22E+01**	**-7.02E+00**	**1.77E+00**	**-1.19E+00**
Significant Emission Rate (SER)[a]	3.4	2.3	9.1	9.1	9.1	22.81
10% of SER	0.34	0.23	0.91	0.91	0.91	2.281
Level I Modeling Threshold [a]	0.22	0.054	0.21	0.2		15
Level II Modeling Threshold [a]	2.6	0.63	2.5	2.4		175
Is Emission Increase Over SER?	NO	NO	NO	NO	NO	NO
Is Emission Increase Over 10% of SER? [b]	**YES**	**YES**	NO	NO	**YES**	NO
Is Emission Increase Over Level I?	**YES**	**YES**	NO	NO		NO
Is Emission Increase Over Level II?	NO	NO	NO	NO		NO

[a] SER and Level II tresholds can be found in State of Idaho Guideline for Performing Air Quality Impact Analyses revised in September 2013.

[b] The trigger for PTC permitting is 10 percent of the SER; that is, PTC permitting is triggered if the annual emission increase of a given criteria pollutant is above 10 percent of the SER for that pollutant (IDAPA 58.01.01.221.01).

[c] $PM_{2.5}$ emissions are conservatively assumed to be equal to PM_{10} emissions.

Table 7. Emission Baseline Summary

Emission Points	Criteria Pollutants					
	PM_{10} (lb/hr)	$PM_{2.5}$[a] (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	VOC (lb/hr)	CO (lb/hr)
Starch Silo Baghouse	7.70E-02	7.70E-02	-	-	-	-
Scrap Cyclone Baghouse	9.45E-01	9.45E-01	-	-	-	-
Corrugator	7.50E-02	7.50E-02	-	-	1.52E+00	-
Steam Production	8.83E-01	8.83E-01	1.23E+01	7.42E+00	4.42E-02	1.90E+00
Ink and Glue Usage	-	-	-	-	4.03E-01	-
Total Emissions	1.98E+00	1.98E+00	1.23E+01	7.42E+00	1.97E+00	1.90E+00

[a] $PM_{2.5}$ emissions are conservatively assumed to be equal to PM_{10} emissions.

Table 8. Emission Future Potentials Summary

Emission Points	Criteria Pollutants					
	PM_{10} (lb/hr)	$PM_{2.5}$[a] (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	VOC (lb/hr)	CO (lb/hr)
Starch Silo Baghouse	1.95E-01	1.95E-01	-	-	-	-
Scrap Cyclone Baghouse	1.79E+00	1.79E+00	-	-	-	-
Corrugator	1.42E-01	1.42E-01	-	-	2.89E+00	-
Steam Production	0.28	0.28	0.02	0.40	0.14	0.71
Ink and Glue Usage	-	-	-	-	7.19E-01	-
Total Emissions	2.41E+00	2.41E+00	2.27E-02	3.98E-01	3.74E+00	7.08E-01
Level I Modeling Threshold [a]	0.22	0.054	0.21	0.2	0	15
Level II Modeling Threshold [a]	2.6	0.63	2.5	2.4	0	175

[a] $PM_{2.5}$ emissions are conservatively assumed to be equal to PM_{10} emissions.

Table 9. Starch Silo Baghouse Emissions Calculations

Pollutant	Daily Permitted Emission Rate[a] (lb/hr)	Permitted Throughput[a] (tpy)	Annual Permitted Emissions[a,b] (tpy)	Short-Term Potential Emissions[c] (lb/hr)	Annual Potential Emissions[c] (tpy)	Emissions Increase (lb/hr)	Emissions Increase (tpy)
$PM_{10}/PM_{2.5}$[d]	0.077	6,570	2.25	0.195	2.25	1.18E-01	0.00E+00

[a] From IDEQ Permit No. P-2017.0054 issued November 7, 2017. Per the Statement of Basis, the particulate emissions limits were reduced for the starch silo because BCC used lower rates to demonstrate compliance with the NAAQS. These lower rates were based upon industrial hygiene sampling data to determine PM_{10} emissions from the building and an assumption that 50% of total PM is PM_{10} based upon cyclone source testing and AP-42 data. Hourly emissions limits are based on an averge hourly rate over a 24-hour time periods. Peak hour emissions: 0.015 gr/acf x 600 acfm x 60 min/hr x 1lb/7,000 gr = 0.077 lb/hr

[b] Permitted annual emissions are based on an hourly emission rate of 0.514 lb/hr as indicated in PTC No. 031-00019, issued 5/17/2002.
Annual emission limit = 0.514 lb/hr * 8,760 hr/yr * 2,000 lb/hr = 2.25 tpy

[c] PCA is requesting an increase in the lb/hr emission limit based on the % increase requested for the corrugator daily production and the emission statement for the new starch silo bin vent. An increase in the annual PM_{10} emission limit (in tpy) is not requested. The new starch silo maximum hourly emission rate is calculated as follows:
0.02 gr/acf x 1,138 acfm x 60 min/hr x 1lb/7,000 gr = 0.195 lb/hr.

[d] $PM_{2.5}$ emissions are conservatively assumed to be equal to PM_{10} emissions.

Table 10. Scrap Cyclone/Baghouse Emissions Calculations

Pollutant	Emission Factor[a] (lb/ton scrap)	Daily Permitted Emission Rate[b] (lb/hr)	Annual Permitted Emission Rate[c] (tpy)	Potential Emissions[d] (lb/hr)	Potential Emissions[d] (tpy)	Emissions Increase (lb/hr)	Emissions Increase (tpy)
$PM_{10}/PM_{2.5}$[e]	0.915	0.945	4.14	1.79	6.20	0.85	2.06

[a] *Particulate factors for Container Plant Cyclone Collection System, Boise Cascade Corrugated Container Operation*, Landau Associates, July 1995. PM emision factor of 1.83 is multiplied by 50% for the emission factor of PM_{10} (and assumed $PM_{2.5}$).

[b] From IDEQ Permit No. P-2017.0054 issued November 7, 2017. Per the Statement of Basis, the particulate emissions limits were reduced for the scrap cyclone because BCC used lower rates to demonstrate compliance with the NAAQS. These lower rates were based upon industrial hygiene sampling data to determine PM_{10} emissions from the building and an assumption that 50% of total PM is PM_{10} based upon cyclone source testing and AP-42 data. Hourly emissions limits are based on an averge hourly rate over a 24-hour time periods.

[c] Annual scrap annual emission rate throughput is not a permit limit; rather, it is the emission rate used in the 2002 permit application. The 4.14 tpy value is from Table 5.1 of Air Quality Permitting Technical Memorandum for PTC NO. 031-00019, 12/17/2002.

[d] PCA is requesting an increase in the lb/hr emission limit based on the % increase requested for the corrugator daily production. The annual emission increase is based on the projected increase in scrap production.

[e] $PM_{2.5}$ emissions are conservatively assumed to be equal to PM_{10} emissions.

Table 11. Corrugator Emission Calculations

Pollutant	Existing Emission Factor [a] lb/sf	Updated Emission Factor[b] lb/sf	Daily Permitted Emission Rate[c] (lb/hr)	Annual Permitted Emission Rate [c] (tpy)	Daily Potential Emissions[d] (lb/hr)	Annual Potential Emissions[d] (tpy)	Daily Emissions Increase (lb/hr)	Annual Emissions Increase (tpy)
$PM_{10}/PM_{2.5}$			0.075	0.33	0.14	0.62	0.0672	0.29
VOC	3.50E-06	3.50E-06	1.52	3.15	2.89	4.73	1.37	1.58

[a] The existing EF For VOC is 7.30E-06 lb/sf found in Particulate and Volatile Organic Compound Emission Factors for Container Plant Corrugator, Prepared for Boise Cascade Corrugated Container Operations, Landau Associates, Inc., October 1995. Information on existing VOC emission rate found in Appendix A of Air Quality Permitting Technical Memorandum, PTC NO. 031-00019, 5/10/2002. However, the updated emission factor is being used in place of the existing emission factor so that 'credit' is not taken for a decrease that didn't actually occur as there is no process change to the corrugator that would cause the VOC EF to decrease.

[b] From April 5, 2018 letter from Vipin Varma, NCASI to John Piotrowski, PCA regarding air emission testing of three stand-alone corrugators completed by NCASI. The emission factor shown is the maximum emission factor measured during the study for Non-Methane Total Gaseous Organic Carbon using EPA Method 25A.

[c] From IDEQ Permit No. P-2017.0054 issued November 7, 2017. Per the Statement of Basis, the particulate emissions limits were reduced for the building because BCC used lower rates to demonstrate compliance with the NAAQS. These lower rates were based upon industrial hygiene sampling data to determine PM_{10} emissions from the building and an assumption that 50% of total PM is PM_{10} based upon cyclone source testing and AP-42 data. Hourly emissions limits are based on an averge hourly rate over a 24-hour time periods.

[d] PCA is requesting an increase in the lb/hr emission limit based on the % increase requested for the corrugator daily production. The tpy emissions are based on the 8,760 hours of operation at the maximum hourly emission rate.

Table 12. Boiler Emission Emissions Summary

Pollutant	Existing Emissions[b] (lb/hr)	Existing Emissions[b,c] (tpy)	New Emissions[e] (lb/hr)	New Emissions[e] (tpy)	Emissions Increase (lb/hr)	Emissions Increase (tpy)	TAP EL lb/hr	Below EL? Yes/No
PM10/PM2.5	0.88	1.12	0.28	1.12	-0.599	0.00		
SO2	12.25	4.03	0.02	0.09	-12.227	-3.94		
NOx	7.42	11.06	0.40	1.57	-7.019	-9.49		
VOC	0.04	0.52	0.14	0.54	0.092	0.01		
CO	1.90	3.93	0.71	2.79	-1.192	-1.14		
Lead	2.25E-04	7.29E-05	1.86E-05	7.32E-05	-2.06E-04	2.80E-07		
Benzene	8.00E-04	7.73E-04	2.15E-04	8.49E-04	-5.84E-04	7.56E-05	8.00E-04	Yes
Formaldehyde	6.37E-02	2.17E-02	4.57E-04	1.80E-03	-6.33E-02	-1.99E-02	No Increase	N/A
PAH's	9.05E-03	2.97E-03	1.49E-05	5.85E-05	-9.04E-03	-2.91E-03	No Increase	N/A
Naphthalene	9.63E-04	3.39E-04	1.11E-05	4.39E-05	-9.52E-04	-2.95E-04	No Increase	N/A
Acetaldehyde	6.37E-02	2.09E-02	1.15E-04	4.54E-04	-6.36E-02	-2.05E-02	No Increase	N/A
Acrolein	6.37E-02	2.09E-02	1.00E-04	3.95E-04	-6.36E-02	-2.05E-02	No Increase	N/A
1,3-butadiene	2.69E-03	8.72E-04	0.00E+00	0.00E+00	-2.69E-03	-8.72E-04	No Increase	N/A
Chlorobenzene	3.64E-05	1.18E-05	0.00E+00	0.00E+00	-3.64E-05	-1.18E-05	No Increase	N/A
Xylenes	2.91E-04	1.84E-03	7.31E-04	2.88E-03	4.41E-04	1.04E-03	2.90E+01	Yes
Ethyl Benzene	3.64E-05	6.23E-04	2.56E-04	1.01E-03	2.20E-04	3.86E-04	2.90E+01	Yes
Hexane	6.36E-04	6.14E-04	1.71E-04	6.73E-04	-4.65E-04	5.94E-05	1.20E+01	Yes
Toluene	8.00E-04	2.61E-03	9.84E-04	3.88E-03	1.84E-04	1.27E-03	2.50E+01	Yes
Hydrogen chloride	3.39E-02	1.10E-02	0.00E+00	0.00E+00	-3.39E-02	-1.10E-02	No Increase	N/A
Arsenic	2.91E-04	9.42E-05	0.00E+00	0.00E+00	-2.91E-04	-9.42E-05	No Increase	N/A
Cadmium	2.73E-04	8.83E-05	0.00E+00	0.00E+00	-2.73E-04	-8.83E-05	No Increase	N/A
Total Chromium	1.09E-04	3.53E-05	0.00E+00	0.00E+00	-1.09E-04	-3.53E-05	No Increase	N/A
Hexavalent chromium	1.82E-05	5.89E-06	0.00E+00	0.00E+00	-1.82E-05	-5.89E-06	No Increase	N/A
Copper	7.45E-04	2.41E-04	0.00E+00	0.00E+00	-7.45E-04	-2.41E-04	No Increase	N/A
Manganese	5.64E-04	1.83E-04	0.00E+00	0.00E+00	-5.64E-04	-1.83E-04	No Increase	N/A
Mercury	3.64E-04	1.18E-04	0.00E+00	0.00E+00	-3.64E-04	-1.18E-04	No Increase	N/A
Nickel	7.09E-04	2.30E-04	0.00E+00	0.00E+00	-7.09E-04	-2.30E-04	No Increase	N/A
Selenium	4.00E-04	1.30E-04	0.00E+00	0.00E+00	-4.00E-04	-1.30E-04	No Increase	N/A
Zinc	4.07E-03	1.32E-03	0.00E+00	0.00E+00	-4.07E-03	-1.32E-03	No Increase	N/A

[a] Existing emission factors for criteria pollutants contained in Permit to Construct Technical Analysis P-950251 Boise Cascade, Burley, 1/19/1996, Appendix A - Table 2. TAPS/HAPS were not calculated in the original or existing permit. Emission factors for toxic air pollutants from diesel external combustion and natural gas fired boilers (10-100 MMBtu/hr) are provided in AB2588 Combustion Emission Factors as obtained from Ventura County Air Pollution Control District. (http://www.aqmd.gov/prdas/pdf/combem2001.pdf).

[b] The boilers are permitted to burn No. 2 diesel fuel up to 30 days per year, othewise natural gas. Permit limits for hourly and annual $PM_{10}/PM_{2.5}$ and Annual NO_X from IDEQ Permit No. P-2017.0054 issued November 7, 2017. Existing lb/hr emissions based on boilers buring No.2 diesel; existing annual emissions based on boilers burning No. 2 diesel 30 day per year and natural gas 335 days/year and based on 90% of maixum annual firing capacity.

[c] The annual $PM_{10}/PM_{2.5}$ permit limit listed in Permit No. P-2017.0054 issued November 7, 2017 is 1.12 tpy. However, using the calculation methodology described above, the annual emissions are 0.56 tpy.

[d] Criteria pollutant emission factors provided by Cleaver Brooks. Lead EF from AP-42 Chapter 1.4, Table 1.4-2. Emission factors for toxic air pollutants from natural gas fired boilers (10-100 MMBtu/hr) are provided in AB2588 Combustion Emission Factors as obtained from Ventura County Air Pollution Control District. (http://www.aqmd.gov/prdas/pdf/combem2001.pdf).

[e] Proposed lb/hr emissions based on boiler burning natural gas only; annual emissions based on boiler burning natural gas 8,760 hours/year and based on 90% of maixum annual firing capacity.

Table 13. Associated Emission Increase Summary - Ink and Glue Usage

Pollutant	Existing Emissions[a] (lb/hr)	Existing Emissions[a] (tpy)	Max Proposed Emissions[b] (lb/hr)	Max Proposed Emissions[b] (tpy)	Emissions Increase (lb/hr)	Emissions Increase (tpy)
Glue						
Total VOC	0.01	0.03	0.014	0.06	0.006	0.035
Ink						
Total VOC	0.40	1.37	0.71	3.09	0.310	1.720
Carbon Black	0.00	0.00	0.00	0.00	0.000	0.000
Monoethanolamine	0.58	2.01	1.03	4.53	0.454	2.522

[a] Existing emissions are calculated using the average glue and ink usage from 2017-2018 and the SDS for the glue and inks. The maximum VOC and HAP/TAP content for all products was used to conservatively estimate emissions.

[b] Proposed emissions are calculated using the maximum proposed glue and ink usage and the SDS for the glue and inks. The maximum VOC and HAP/TAP content for all products was used to conservatively estimate emissions.

Table 14. Ink and Glue Calculations

Product Name: Wisdom Adhesives R149CE-UV2B

Existing Usage (lb/yr): 110,513
Proposed Usage (lb/yr): 249,326
% VOC (% by wt): 0.05

Product Density: 9.174 lbs/gal
Specific Gravity: 1.1

Component	CAS No.	Max Wt. Fraction	Existing Emissions (lb/hr)	Proposed Emissions (lb/hr)	Existing Emissions (tpy)	Proposed Emissions (tpy)
VOC	---	0.0005	0.01	0.01	0.03	0.06

* SDS indicates there are no components classified as hazardous under the OSHA HazCom Standard

Product Name: ADV GCMI 52 Brown-VT (GC51800373)

Existing Usage (lb/yr): 2,093
Proposed Usage (lb/yr): 4,721

Product Density: 9.704 lbs/gal
Specific Gravity:

Component	CAS No.	Max Wt. Fraction	Existing Emissions (lb/hr)	Proposed Emissions (lb/hr)	Existing Emissions (tpy)	Proposed Emissions (tpy)
VOC	---	0.0104	0.003	0.01	0.01	0.02
Carbon Black	1333-86-4	0.05	0.015	0.03	0.05	0.12
Titanium Dioxide	13463-67-7	0.025	0.008	0.01	0.03	0.06

Product Name: ADV HS 74 Red ED X (91005771/PMSPP4QA0074/K507)

Existing Usage (lb/yr): 2,666
Proposed Usage (lb/yr): 6,015

Product Density: 9.885 lbs/gal
Specific Gravity:

Component	CAS No.	Max Wt. Fraction	Existing Emissions (lb/hr)	Proposed Emissions (lb/hr)	Existing Emissions (tpy)	Proposed Emissions (tpy)
VOC	---	0.0026	0.00	0.00	0.00	0.01
Titanium Dioxide	13463-67-7	0.025	0.01	0.02	0.03	0.08

Product Name: ADV UT 90 Black Ed X (PMJSPP9GA0090/K507)

Existing Usage (lb/yr): 63,020
Proposed Usage (lb/yr): 142,179
Product Density: 9.042 lbs/gal
Specific Gravity:

Component	CAS No.	Max Wt. Fraction	Existing Emissions (lb/hr)	Proposed Emissions (lb/hr)	Existing Emissions (tpy)	Proposed Emissions (tpy)
VOC	---	0.0096	0.09	0.16	0.30	0.68
Carbon Black	1333-86-4	0.20	1.82	3.25	6.30	14.22

Product Name: ADV UT 31 Blue ED X (91365559/PMXPP5GA0031/K507)

Existing Usage (lb/yr): 6,660
Proposed Usage (lb/yr): 15,026
Product Density: 10.703 lbs/gal
Specific Gravity:

Component	CAS No.	Max Wt. Fraction	Existing Emissions (lb/hr)	Proposed Emissions (lb/hr)	Existing Emissions (tpy)	Proposed Emissions (tpy)
VOC	---	0.0142	0.01	0.02	0.05	0.11
Titanium Dioxide	13463-67-7	0.050	0.05	0.09	0.17	0.38
Monoethanolamine	141-43-5	0.025	0.02	0.04	0.08	0.19

Product Name: ADV UT 39 Blue ED X (91370201/PMXPP5GA0039/K507)

Existing Usage (lb/yr): 12,216
Proposed Usage (lb/yr): 27,560
Product Density: 10.346 lbs/gal
Specific Gravity:

Component	CAS No.	Max Wt. Fraction	Existing Emissions (lb/hr)	Proposed Emissions (lb/hr)	Existing Emissions (tpy)	Proposed Emissions (tpy)
VOC	---	0.0125	0.02	0.04	0.08	0.17
Titanium Dioxide	13463-67-7	0.050	0.09	0.16	0.31	0.69
Monoethanolamine	141-43-5	0.025	0.04	0.08	0.15	0.34
C.I. Pigment Black 7	1333-86-4	0.010	0.02	0.03	0.06	0.14

Product Name: ADV UT 24 Green ED X (91366815/PMXPP7GA0024/K507)

Existing Usage (lb/yr): 4,793
Proposed Usage (lb/yr): 10,812

Product Density: 10.491 lbs/gal
Specific Gravity:

Component	CAS No.	Max Wt. Fraction	Existing Emissions (lb/hr)	Proposed Emissions (lb/hr)	Existing Emissions (tpy)	Proposed Emissions (tpy)
VOC	---	0.0126	0.01	0.02	0.03	0.07
Monoethanolamine	141-43-5	0.025	0.02	0.03	0.06	0.14
C.I. Pigment Black 7	1333-86-4	0.010	0.01	0.01	0.02	0.05

Product Name: ADV UT 523 Brown ED X (91418731/PMXPP8GA0523/K509)

Existing Usage (lb/yr): 11,345
Proposed Usage (lb/yr): 25,594

Product Density: 9.96 lbs/gal
Specific Gravity:

Component	CAS No.	Max Wt. Fraction	Existing Emissions (lb/hr)	Proposed Emissions (lb/hr)	Existing Emissions (tpy)	Proposed Emissions (tpy)
VOC	---	0.00116	0.00	0.00	0.01	0.01
Monoethanolamine	141-43-5	0.025	0.04	0.07	0.14	0.32
C.I. Pigment Black 7	1333-86-4	0.050	0.08	0.15	0.28	0.64

Product Name: Miscellaneous Ink (Worst-Case Mixture)*

Existing Usage (lb/yr): 125,609
Proposed Usage (lb/yr): 283,386

Product Density: 10.70 lbs/gal
Specific Gravity:

Component	CAS No.	Max Wt. Fraction	Existing Emissions (lb/hr)	Proposed Emissions (lb/hr)	Existing Emissions (tpy)	Proposed Emissions (tpy)
VOC	---	0.0142	0.26	0.46	0.89	2.01
Carbon Black	1333-86-4	0.200	3.63	6.47	12.56	28.34
Titanium Dioxide	13463-67-7	0.050	0.91	1.62	3.14	7.08
Monoethanolamine	141-43-5	0.025	0.45	0.81	1.57	3.54
C.I. Pigment Black 7	1333-86-4	0.050	0.91	1.62	3.14	7.08

* Miscellaneous ink accounts for the ink used that is not specifically listed above (top 7 inks), by basing throughput on total ink usage minus usage rates of specific inks and basing max weight fraction on the highest (worst-case) content of any ink listed above.

MSDS Chemical[a]	Total Existing Emissions (lb/hr)	Total Existing Emissions (tpy)	Total Proposed Emissions (lb/hr)	Total Proposed Emissions (tpy)	Emissions Increase (lb/hr)	Emissions Increase (tpy)	IDAPA 58.01.01 585/586 EL (lb/hr)
Ink							
VOC	0.4	1.4	0.7	3.09	0.31	1.72	---
Carbon Black[b]	0.0	0.0	0.0	0.0	0.00	0.00	0.23
Titanium Dioxide[b]	0.0	0.0	0.0	0.0	0.00	0.00	---
Monoethanolamine	0.6	2.0	1.0	4.5	0.45	2.52	0.533
C.I. Pigment Black 7[b]	0.0	0.0	0.0	0.0	0.00	0.00	---
Glue							
VOC	0.01	0.03	0.01	0.06	0.01	0.03	---

[a] No TAP/HAP are present in the Glue (Wisdom Adhesives R149CE-UV2B).

[b] Carbon Black and titanium dioxide are present in the ink as a solid. Since the ink is applied directly to the materials and not sprayed, it is expected that none of the solids will become airborne, and therefore the emissions are set to zero.

Table 15. Fuel Burning Equipment PM Emissions

PM Filterable Emission Rate[1]	0.071	lb/hr
PM Condensable Emisison Rate[1]	0.212	lb/hr
PM Total Emission Rate	0.283	lb/hr
Exhaust Flow Rate[1]	7,205	dsf/min
PM Emissions	0.00458	gr/scf

[1] PM emisison factors and exhaust flow rate obtained from the boiler emisison data sheet provided by the manufacturer.

Table 16. Process Weight Limitations

System Description	Process Weight (lb/hr)	PM Emission Rate (lb/hr)	Process Weight Limitations[1] (lb/hr)	In Compliance? (Y/N)
Corrugator	50176	0.14	16.46	Yes
Cyclone	3880	1.79	6.40	Yes
Starch Silo	889	0.20	2.65	Yes

[1] If PW < 9,250 lb/hr, $E = 0.045(PW)^{0.60}$

If PW ≥ 9,250 lb/hr, $E = 1.10(PW)^{0.25}$

Where E is the Allowable Emissions from Entire Source

Table 17. Boiler Exhaust Pipe Specifications

Flow Rate[1]	15,853	acfm
Velocity[1]	2,838	ft/min
Pipe Area	5.59	ft^2
Pipe Diameter	2.67	ft
Pipe Diameter	32.00	in

[1] Flow rate and velocity values obtained from emission data sheet provided by manufacturer

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

M E M O R A N D U M

DATE: May 22, 2020

TO: Joe Palmer, Permit Writer, Air Program

FROM: Pao Baylon, Modeling Review Analyst, Air Program

PROJECT: P-2017.0054 PROJ 62339, Permit for an Existing Corrugated Packaging Production Plant located in Burley, Idaho.

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs) as it relates to air quality impact analyses.

Contents

Acronyms, Units, and Chemical Nomenclature

AAC	Acceptable Ambient Concentration of a non-carcinogenic TAP
AACC	Acceptable Ambient Concentration of a Carcinogenic TAP
acfm	Actual cubic feet per minute
AERMAP	The terrain data preprocessor for AERMOD
AERMET	The meteorological data preprocessor for AERMOD
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
Appendix W	40 CFR 51, Appendix W – Guideline on Air Quality Models
ASOS	Automated Surface Observing System
BPIP	Building Profile Input Program
BRC	Below Regulatory Concern
CFR	Code of Federal Regulations
CMAQ	Community Multi-Scale Air Quality Modeling System
CO	Carbon Monoxide
DEQ	Idaho Department of Environmental Quality
DV	Design Values
EL	Emissions Screening Level of a TAP
EPA	United States Environmental Protection Agency
FFG	Flexo-folder-glue Unit
GEP	Good Engineering Practice
hr	Hours
Idaho Air Rules	Rules for the Control of Air Pollution in Idaho, located in the Idaho Administrative Procedures Act 58.01.01
ISCST3	Industrial Source Complex Short Term 3 dispersion model
K	Kelvin
lb/hr	Pounds per hour
m	Meters
m/sec	Meters per second
MMBtu	Million British Thermal Units
NAAQS	National Ambient Air Quality Standards
NED	National Elevation Dataset
NO	Nitrogen Oxide
NO_2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
NW AIRQUEST	Northwest International Air Quality Environmental Science and Technology Consortium
O_3	Ozone
Pb	Lead
PCA	Packaging Corporation of America (permittee)
PEMV	Pacific Ethanol Magic Valley (a co-contributing source to this project)
PM_{10}	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 10 micrometers
$PM_{2.5}$	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 2.5 micrometers

ppb	parts per billion
PRIME	Plume Rise Model Enhancement
PSD	Prevention of Significant Deterioration
PTC	Permit to Construct
PTE	Potential to Emit
scfm	Standard cubic feet per minute
SIL	Significant Impact Level
SO_2	Sulfur Dioxide
TAP	Toxic Air Pollutant
tpy	Tons per year
Trinity	Trinity Consultants (permittee's permitting and modeling consultant)
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compounds
^{o}F	Degrees Fahrenheit
$\mu g/m^3$	Micrograms per cubic meter of air

1.0 Summary

Packaging Corporation of America (PCA) submitted a Permit to Construct (PTC) application for its existing corrugated packaging production plant in Burley, Idaho. The facility currently operates under an Idaho Department of Environmental Quality (DEQ) PTC No. P-2017.0054, issued on November 7, 2017. The project involves the following modifications to the facility: (1) replace the existing corrugator in order to increase plant capacity by 50%; (2) replace two existing steam generators with one larger natural gas-fired boiler; (3) add one converting machine; (4) replace the starch silo; (5) replace the scrap cyclone associated with the corrugator and converting machines; and (6) install a new flexo-folder-glue (FFG) unit as a second phase of the project. The FFG will be installed within 24 months following installation of the new corrugator and new boiler. Project-specific air quality analyses involving atmospheric dispersion modeling of estimated emissions associated with the facility were submitted to DEQ to demonstrate that applicable emissions do not result in violation of a National Ambient Air Quality Standard (NAAQS) or Toxic Air Pollutant (TAP) increment as required by the Idaho Administrative Procedures Act 58.01.01.203.02 and 203.03 (Idaho Air Rules Section 203.02 and 203.03). This memorandum provides a summary of the applicability assessment for analyses and air impact analyses used to demonstrate compliance with applicable NAAQS and TAP increments, as required by Idaho Air Rules Section 203.02 and 203.03.

Trinity Consultants (Trinity), on behalf of PCA, prepared the PTC application and performed ambient air impact analyses for this project. DEQ review of submitted data and DEQ analyses summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that estimated emissions associated with operation of the facility will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not address/evaluate compliance with other rules or analyses not pertaining to the air impact analyses. Evaluation of emission estimates was the responsibility of the DEQ permit writer and is addressed in the main body of the DEQ Statement of Basis, and emission calculation methods were not evaluated in this modeling review memorandum.

Table 1 presents key assumptions and results to be considered in the development of the permit. Idaho Air Rules require air impact analyses be conducted in accordance with methods outlined in 40 CFR 51, Appendix W *Guideline on Air Quality Models* (Appendix W). Appendix W requires that air quality impacts be assessed using atmospheric dispersion models with emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

The submitted information and analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emission estimates was addressed by the DEQ permit writer); 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that estimated potential/allowable emissions are at a level defined as below regulatory concern (BRC) and do not require a NAAQS compliance demonstration; b) that predicted pollutant concentrations from emissions associated with the project as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or c) that predicted pollutant concentrations from emissions associated with the project, when appropriately combined with co-contributing sources and background concentrations, were below applicable NAAQS at ambient air locations where and when the project has a significant impact; 5) showed that TAP emission increases associated with the project will not result in increased ambient air impacts exceeding allowable TAP increments. This conclusion assumes that conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition. The DEQ permit writer should use Table 1 and other information presented in this memorandum to generate appropriate permit provisions/restrictions to assure emissions do not exceed applicable regulatory thresholds requiring

further analyses and to assure the requirements of Appendix W are met regarding emissions representative of design capacity or permit allowable rates.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES.

Criteria/Assumption/Result	Explanation/Consideration
General Emission Rates. Emission rates used in the air impact analyses, as listed in Table 5 of this memorandum, must represent maximum potential emissions as given by design capacity, inherently limited by the nature of the process or configuration of the facility, or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emission rates greater than those used in the air impact analyses.
Air Impact Analyses for Criteria Pollutant Emissions. Short-term and long-term facility-wide emissions of $PM_{2.5}$[a] and PM_{10}[b] are greater than DEQ Level I modeling thresholds. Therefore, these pollutants and all averaging times are subject to NAAQS Compliance Demonstration requirements.	Project-specific air impact analyses demonstrating compliance with NAAQS, as required by Idaho Air Rules Section 203.02, are required for pollutant increases above BRC thresholds, or for pollutants having an emissions increase that is greater than Level I modeling applicability thresholds (where the BRC exclusion cannot be used).
Air Impact Analyses for TAP Emissions. Allowable emission increases of TAPs are below screening emission levels (ELs). Therefore, air dispersion modeling is not required for TAPs.	A TAP increment compliance demonstration would be required for any TAPs with emissions above ELs.
Modeled Stack Heights. PCA's new emission sources were modeled using the following stack heights: New boiler: 7.6 m[c] (25.0 ft)[d] New cyclone: 22.6 m (74.2 ft) New silo vent: 1.8 m (6.0 ft) New corrugator: 7.6 m (25.0 ft) These stack heights were based on the proposed plant layout and must be verified upon final construction.	Modeled concentrations are dependent on modeled stack height. Lower stack heights typically result in higher modeled concentrations. Compliance has not been demonstrated for stack heights lower than the modeled stack heights.
Significant Impact Level Analysis. PCA has conservatively not taken credit for emission units being shutdown/replaced in the Significant Impact Level (SIL) analysis.	The SIL analysis for a new facility or proposed modification to a facility involves modeling estimated criteria air pollutant emissions from the facility or modification to determine the potential impacts to ambient air. Old units are typically modeled as negative emission rates while new units are modeled as positive emission rates in the SIL analysis. Not taking credit for decommissioned units is more conservative than a positive/negative approach.
Nearby Co-Contributing Sources in Cumulative NAAQS Impact Analysis. The Pacific Ethanol Magic Valley (PEMV) facility is located directly to the west of the PCA Burley facility and was considered as a co-contributing source in the cumulative NAAQS impact analysis. Receptors that are on PEMV's property were modeled but without the contribution from PEMV's emission sources.	A cumulative NAAQS impact analysis involves assessing ambient impacts from potential/allowable emissions resulting from the project and emissions from any nearby co-contributing sources, and then adding a DEQ-approved background concentration value to the modeled result. The impacts of PEMV are not adequately accounted for by the background concentrations. Therefore, it was modeled as a co-contributing source in PCA's cumulative NAAQS impact analysis.
Culpability Analysis for 24-hour $PM_{2.5}$. Results from the cumulative NAAQS impact analysis for 24-hour $PM_{2.5}$ suggest that NAAQS was exceeded at 37 receptors. A culpability analysis was performed to demonstrate that the PCA facility does not cause or contribute to the modeled exceedance. The maximum PCA contribution to a NAAQS exceedance is 1.078 $\mu g/m^3$, which is below the significance level of 1.2 $\mu g/m^3$ for 24-hour $PM_{2.5}$. Therefore, the PCA facility is not culpable for the 24-hour $PM_{2.5}$ NAAQS violation.	If the cumulative NAAQS impact analysis indicates a violation of the standard, the permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. If project-specific impacts are below the SIL, then the project does not have a significant contribution to the specific violations.

a. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
c. Meters.
d. Feet.

Summary of Submittals and Actions

May 22, 2019	Pre-application meeting held at DEQ State Office.
November 23, 2019	Regulatory start date.
December 13, 2019	Application deemed incomplete by DEQ.
December 19, 2019	PCA requested for 30-day extension to respond to DEQ's incompleteness letter.
January 16, 2020	Trinity, on behalf of PCA, submitted a modeling protocol to DEQ and requested for an expedited, two-week modeling protocol review.
January 31, 2020	DEQ sent a conditional modeling protocol approval to Trinity.
March 16, 2020	PCA submitted revised application.
March 17, 2020	Trinity submitted modeling files via e-mail upon DEQ's request.
March 19, 2020	Trinity submitted building downwash files via e-mail upon DEQ's request.
March 31, 2020	Trinity submitted updated emission inventory to DEQ.
April 6, 2020	Trinity submitted additional documentation for modeled stack parameters.
April 14, 2020	Application deemed complete by DEQ.

2.0 Background Information

This section provides background information applicable to the project and the site proposed for the facility. It also provides a brief description of the applicable air impact analyses requirements for the project.

2.1 Project Description

The PCA Burley facility manufactures corrugated packaging materials. Paper is fed through the corrugator where it is corrugated and glued to form container sheets. Starch and heat are used by the corrugators to form the container sheets. The corrugated sheets are then trimmed to size and forwarded to the converting process where the corrugated sheets are printed and/or glued on converting equipment per customer specifications.

PCA will replace the existing corrugator in order to increase plant capacity. The upgraded corrugator will increase the permitted corrugated production capacity by 50%. In addition, two steam generators at the facility will be replaced with one larger natural gas-fired boiler, one converting machine will be added, the starch silo will be replaced, and the scrap cyclone associated with the corrugator and converting machines will be replaced. In conjunction with this expansion and production increase project, a new flexo-folder-glue (FFG) unit will be installed as a second phase of the project, within 24 months following installation of the new corrugator and new boiler.

The PTC addresses all air pollutant-emitting activities associated with the facility.

2.2 Facility Location and Area Classification

The PCA facility is located in Burley, within Cassia County (Northing: 4,711,541 m; Easting: 269,005 m; UTM Zone 12). This area is designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$). The area is not classified as non-attainment for any criteria pollutants. Land use in the area includes agricultural, light industrial, and residential properties. Terrain surrounding the project site is relatively flat.

2.3 Air Impact Analyses Required for All Permits to Construct

Idaho Air Rules Sections 203.02 and 203.03:

> *No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:*
>
> ***02. NAAQS**. The stationary source or modification would not cause or significantly contribute to a violation of any ambient air quality standard.*
>
> ***03. Toxic Air Pollutants.** Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Atmospheric dispersion modeling, using computerized simulations, is used to demonstrate compliance with both NAAQS and TAPs. Idaho Air Rules Section 202.02 states:

> ***02. Estimates of Ambient Concentrations**. All estimates of ambient concentrations shall be based on the applicable air quality models, data bases, and other requirements specified in 40 CFR 51 Appendix W (Guideline on Air Quality Models).*

2.4 Significant Impact Level and Cumulative NAAQS Impact Analyses

If specific criteria pollutant emission increases associated with the proposed permitting project cannot qualify for a BRC exemption as per Idaho Air Rules Section 221, then the permit cannot be issued unless the application demonstrates that applicable emission increases will not cause or significantly contribute to a violation of NAAQS, as required by Idaho Air Rules Section 203.02.

The first phase of a NAAQS compliance demonstration is to evaluate whether the proposed facility/project could have a significant impact to ambient air. Section 3.1.1 of this memorandum describes the applicability evaluation of Idaho Air Rules Section 203.02. The Significant Impact Level (SIL) analysis for a new facility or proposed modification to a facility involves modeling estimated criteria air pollutant emissions from the facility or modification to determine the potential impacts to ambient air. Air impact analyses are required by Idaho Air Rules to be conducted in accordance with

methods outlined in Appendix W. Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

A facility or modification is considered to have a significant impact on air quality if maximum modeled impacts to ambient air exceed the established SIL listed in Idaho Air Rules Section 006 (referred to as a "significant contribution" in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b. Table 2 lists the applicable SILs.

Table 2. APPLICABLE REGULATORY LIMITS.

Pollutant	Averaging Period	Significant Impact Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Design Value Used[d]
PM_{10}[e]	24-hour	5.0	150[f]	Maximum 6th highest[g]
$PM_{2.5}$[h]	24-hour	1.2	35[i]	Mean of maximum 8th highest[j]
	Annual	0.2	12[k]	Mean of maximum 1st highest[l]
Carbon monoxide (CO)	1-hour	2,000	40,000[m]	Maximum 2nd highest[n]
	8-hour	500	10,000[m]	Maximum 2nd highest[n]
Sulfur Dioxide (SO_2)	1-hour	3 ppb[o] (7.8 $\mu g/m^3$)	75 ppb[p] (196 $\mu g/m^3$)	Mean of maximum 4th highest[q]
	3-hour	25	1,300[m]	Maximum 2nd highest[n]
	24-hour	5	365[m]	Maximum 2nd highest[n]
	Annual	1.0	80[r]	Maximum 1st highest[n]
Nitrogen Dioxide (NO_2)	1-hour	4 ppb (7.5 $\mu g/m^3$)	100 ppb[s] (188 $\mu g/m^3$)	Mean of maximum 8th highest[t]
	Annual	1.0	100[r]	Maximum 1st highest[n]
Lead (Pb)	3-month[u]	NA	0.15[r]	Maximum 1st highest[n]
	Quarterly	NA	1.5[r]	Maximum 1st highest[n]
Ozone (O_3)	8-hour	40 TPY VOC[v]	70 ppb[w]	Not typically modeled

a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
b. Micrograms per cubic meter.
c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
d. The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
f. Not to be exceeded more than once per year on average over 3 years.
g. Concentration at any modeled receptor when using five years of meteorological data.
h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
i. 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
j. 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
k. 3-year mean of annual concentration.
l. 5-year mean of annual averages at the modeled receptor.
m. Not to be exceeded more than once per year.
n. Concentration at any modeled receptor.
o. Interim SIL established by EPA policy memorandum.
p. 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
q. 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
r. Not to be exceeded in any calendar year.
s. 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
t. 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
u. 3-month rolling average.
v. An annual emissions rate of 40 ton/year of VOCs is considered significant for O_3.
w. Annual 4th highest daily maximum 8-hour concentration averaged over three years.

If modeled maximum pollutant impacts to ambient air from the emission sources associated with a new

facility or modification exceed the SILs, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts (typically the design values consistent with the form of the standard) from potential/allowable emissions resulting from the project and emissions from any nearby co-contributing sources (including existing emissions from the facility that are unrelated to the project), and then adding a DEQ-approved background concentration value to the modeled result that is appropriate for the criteria pollutant/averaging-period at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis for the modeling domain.

If the cumulative NAAQS impact analysis indicates an exceedance of NAAQS, a culpability analysis can determine if this exceedance is due to emissions from the proposed project. The permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. If project-specific impacts are below the SIL, then the project does not have a significant contribution to the specific violations.

Compliance with Idaho Air Rules Section 203.02 is generally demonstrated if: a) applicable specific criteria pollutant emission increases are at a level defined as BRC, using the criteria established by DEQ regulatory interpretation[1]; or b) all modeled impacts of the SIL analysis are below the applicable SIL or other level determined to be inconsequential to NAAQS compliance; or c) modeled design values of the cumulative NAAQS impact analysis (modeling all emissions from the facility and co-contributing sources, and adding a background concentration) are less than applicable NAAQS at receptors where impacts from the proposed facility/modification exceeded the SIL or other identified level of consequence; or d) if the cumulative NAAQS analysis showed NAAQS violations, the impact of proposed facility/modification to any modeled violation was inconsequential (typically assumed to be less than the established SIL) for that specific receptor and for the specific modeled time when the violation occurred.

2.5 Toxic Air Pollutant Analyses

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

> *Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.*

Permitting requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

> *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Per Section 210, if the total project-wide emission increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emission increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP. The DEQ permit writer evaluates the applicability of specific TAPs to the Section 210.20 exclusion.

3.0 Analytical Methods and Data

This section describes the methods and data used in the analyses to demonstrate compliance with applicable air quality impact requirements. The DEQ Statement of Basis provides a discussion of the methods and data used to estimate criteria and TAP emission rates.

3.1 Emission Source Data

Emissions of criteria pollutants and TAPs resulting from operation of the PCA Burley facility were estimated by Trinity for various applicable averaging periods. The calculation of potential emissions is the responsibility of the DEQ permit writer, and the representativeness and accuracy of emission estimates is not addressed in this modeling memorandum. DEQ air impact analysts are responsible for assuring that potential emission rates provided in the emission inventory are properly used in the model. The rates listed must represent the maximum allowable rate as averaged over the specified period.

Emission rates used in the impact modeling applicability analyses and any modeling analyses, as listed in this memorandum, should be reviewed by the DEQ permit writer and compared with those in the final emission inventory. All modeled criteria air pollutant and TAP emission rates must be equal to or greater than the facility's potential emissions calculated in the PTC emission inventory or proposed permit allowable emission rates.

3.1.1 Modeling Applicability and Modeled Criteria Pollutant Emission Rates

If project-specific emission increases for criteria pollutants would qualify for a BRC permit exemption as per Idaho Air Rules Section 221 if it were not for potential emissions of one or more pollutants exceeding the BRC threshold of 10 percent of emissions defined by Idaho Air Rules as significant, then a NAAQS compliance demonstration may not be required for those pollutants with emissions below BRC levels. DEQ's regulatory interpretation policy of exemption provisions of Idaho Air Rules is that: "A DEQ NAAQS compliance assertion will not be made by the DEQ modeling group for specific criteria pollutants having a project emissions increase below BRC levels, provided the proposed project would have qualified for a Category I Exemption for BRC emissions quantities except for the emissions of another criteria pollutant.[1]" The interpretation policy also states that the exemption criteria of uncontrolled potential to emit (PTE) not to exceed 100 ton/year (Idaho Air Rules Section 220.01.a.i) is not applicable when evaluating whether a NAAQS impact analyses is required. A permit will be issued limiting PTE below 100 ton/year, thereby negating the need to maintain calculated uncontrolled PTE under 100 ton/year. The BRC exemption cannot be used to exempt a project from a pollutant-specific NAAQS compliance demonstration in most cases where a PTC is required for the action regardless of

emission quantities, such as the modification of an existing emission or throughput limit.

A NAAQS compliance demonstration must be performed for pollutant increases that would not qualify for the BRC exemption from the requirement to demonstrate compliance with NAAQS.

Site-specific air impact modeling analyses may not be necessary for some pollutants, even where such emissions do not qualify for the BRC exemption. DEQ has developed modeling applicability thresholds, below which a site-specific modeling analysis is not required. DEQ generic air impact modeling analyses that were used to develop the modeling thresholds provide a conservative SIL analysis for projects with emissions below identified threshold levels. Project-specific modeling applicability thresholds are provided in the *Idaho Air Modeling Guideline*[2]. These thresholds were based on assuring an ambient impact of less than the established SIL for specific pollutants and averaging periods.

If total project-specific emission rate increases of a pollutant are below Level I Modeling Applicability Thresholds, then project-specific air impact analyses are not necessary for permitting. Use of Level II Modeling Applicability Thresholds is conditional, requiring DEQ approval. DEQ approval is based on dispersion-affecting characteristics of the emission sources such as stack height, stack gas exit velocity, stack gas temperature, distance from sources to ambient air, presence of elevated terrain, and potential exposure to sensitive public receptors.

Table 3 provides a comparison between facility-wide emissions and modeling applicability thresholds. All existing emission units are being replaced, hence the post-project PTE listed in Table 3 is equal to the project emission increase as shown in the SIL (Table 4) and cumulative NAAQS impact (Table 5) modeled emission rate tables below. The short-term and long-term PTE emissions are equal to the sum of the starch silo baghouse, scrap cyclone, corrugator, and steam production emissions.

Table 3. SITE-SPECIFIC CRITERIA POLLUTANT MODELING APPLICABILITY (POST-PROJECT PTE).

Pollutant	Averaging Period	Emissions	Level I Modeling Thresholds	Level II Modeling Thresholds[a]	Site-Specific Modeling Required?
PM_{10}[b]	24-hour	1.82 lb/hr[c]	0.22	2.6	Yes
$PM_{2.5}$[d]	24-hour	0.76 lb/hr	0.054	0.63	Yes
	Annual	2.12 tpy[e]	0.35	4.1	Yes
Carbon Monoxide (CO)	1-hour, 8-hour	1.06 lb/hr	15	175	No
Sulfur Dioxide (SO_2)	1-hour, 3-hour, 24-hour	0.02 lb/hr	0.21	2.5	No
	Annual	0.07 tpy	1.2	14	No
Nitrogen Oxides (NOx)	1-hour	0.31 lb/hr	0.20	2.4	No[f]
	Annual	1.26 tpy	1.2	14	No[f]

a. Level II Modeling Thresholds were not approved for use with this project.
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
c. Pounds per hour.
d. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
e. Tons per year.
f. Facility-wide emissions of NOx (1.26 ton/yr) are Below Regulatory Concern (BRC value for NOx = 4.0 ton/yr). Therefore, NOx modeling is not required.

As indicated in Table 3, modeling is required for 24-hour PM_{10} and 24-hour and annual $PM_{2.5}$ based on the Level I modeling thresholds. Although short-term and long-term emissions of NOx exceed Level I thresholds, facility-wide emissions of NOx (in tons per year) are BRC (i.e., below 10% of the significant emission rate for NOx) and a NO_2 NAAQS compliance demonstration was not required for permit

issuance. Therefore, NOx modeling is not required. The use of Level II modeling thresholds was not approved by DEQ for this project.

Tables 4 and 5 list criteria pollutant emission rates used in the SIL and Cumulative NAAQS Impact Analyses, respectively. PCA has conservatively not taken credit for emission units being shutdown/replaced in the SIL Analysis. Therefore, the modeled emission rates for the existing cyclone (source ID: ECYCLN), existing silo vent (ESILO), and existing boilers (EBOILER1, EBOILER2) were set to zero in the SIL Analysis (Table 4).

Table 4. MODELED EMISSION RATES FOR SIL ANALYSIS.

	Source ID	24-hr PM_{10} (lb/hr)[a]	24-hr $PM_{2.5}$ (lb/hr)	Annual $PM_{2.5}$ (tpy)[b]
PCA's Decommissioned Units[c]	ECYCLN	0	0	0
	ESILO	0	0	0
	EBOILER1	0	0	0
	EBOILER2	0	0	0
PCA's New Units	NEWBOIL	0.31	0.31	1.25
	NCYCLN	1.29	0.23	0.37
	NEWSILO	0.08	0.08	0.27
	NCRV1	0.14	0.14	0.23
Emission Total[d]		1.82	0.76	2.12

a. Pounds per hour.
b. Tons per year.
c. PCA has conservatively not taken credit for emission units being shutdown/replaced in the SIL analysis.
d. The modeled emission total matches the post-project PTE listed in Table 3 of this modeling memo.

Table 5. MODELED EMISSION RATES FOR CUMULATIVE NAAQS IMPACT ANALYSIS.

	Source ID	24-hr PM_{10} (lb/hr)[a]	24-hr $PM_{2.5}$ (lb/hr)	Annual $PM_{2.5}$ (tpy)[b]
PCA's Emission Sources	NEWBOIL	0.31	0.31	1.25
	NCYCLN	1.29	0.23	0.37
	NEWSILO	0.08	0.08	0.27
	NCRV1	0.14	0.14	0.23
PEMV's Emission Sources[c]	SV01	0.86	0.86	3.75
	SV02	0.43	0.43	1.88
	SV03	0.03	0.03	0.15
	SV04	0.03	0.03	0.15
	SV05	0.02	0.02	0.08
	SV06	0.39	0.39	1.69
	SV09	0.56	0.56	2.47
	SV10	0.56	0.56	2.47
	SV11	0.56	0.56	2.47
	COOL1	0.38	0.38	1.65
	COOL2	0.38	0.38	1.65
	SV12	0.05	0.05	0.20
	GRAIN1	0.16	0.16	0.72
	GRAIN2	0.16	0.16	0.72
	FS06A	0.06	0.06	0.26
	FS06B	0.06	0.06	0.26
	FS07A	0.06	0.06	0.26
	FS07B	0.06	0.06	0.26

a. Pounds per hour.
b. Tons per year.

[c] The Pacific Ethanol Magic Valley (PEMV) facility is located directly to the west of the PCA Burley facility and was considered as a co-contributing source in the cumulative NAAQS impact analysis. The emission rates listed in this table were obtained from the modeling files associated with DEQ's verification analysis for the PEMV facility, dated February 27, 2012 (DEQ Content Manager Record Number: 2012AAG518). These modeling files represent the most recent model set-up for PEMV. Although the modeling files for record number 2012AAG518 contain $PM_{2.5}$ and PM_{10} emission rates, only NO_2 was modeled in PEMV's PTC application in 2012. Therefore, the PEMV $PM_{2.5}$ and PM_{10} emission rates used by PCA in its cumulative NAAQS impact analysis may not have been thoroughly reviewed back in 2012. Refer to Section 3.3.9 of this modeling memo for more details.

Ozone (O_3) differs from other criteria pollutants in that it is not typically emitted directly into the atmosphere. O_3 is formed in the atmosphere through reactions of VOCs, NOx, and sunlight. Atmospheric dispersion models used in stationary source air permitting analyses cannot be used to estimate O_3 impacts resulting from VOC and NOx emissions from an industrial facility. O_3 concentrations resulting from area-wide emissions are predicted by using more complex airshed models such as the Community Multi-Scale Air Quality (CMAQ) modeling system. Use of the CMAQ model is very resource-intensive and DEQ asserts that performing a CMAQ analysis for a particular permit application is not typically a reasonable or necessary requirement for air quality permitting.

Addressing secondary formation of O_3 within the context of permitting a new stationary source has been somewhat addressed in EPA regulation and policy. As stated in a letter from Gina McCarthy of EPA to Robert Ukeiley, acting on behalf of the Sierra Club (letter from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency, to Robert Ukeiley, January 4, 2012):

> *. . . footnote 1 to sections 51.166(I)(5)(I) of the EPA's regulations says the following: "No de minimis air quality level is provided for ozone. However, any net emission increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data."*
>
> *The EPA believes it unlikely a source emitting below these levels would contribute to such a violation of the 8-hour ozone NAAQS, but consultation with an EPA Regional Office should still be conducted in accordance with section 5.2.1.c. of Appendix W when reviewing an application for sources with emissions of these ozone precursors below 100 TPY."*

DEQ determined it was not appropriate or necessary to require a quantitative source-specific O_3 impact analysis because allowable emission estimates of VOCs and NOx are below the 100 tons/year threshold.

3.1.2 TAPs Modeling Applicability

TAP emission regulations under Idaho Air Rules Section 210 are only applicable for new or modified sources constructed after July 1, 1995.

Facility-wide emission increases of all TAPs are below the applicable screening emission levels (ELs) of Idaho Air Rules Section 585 and 586. Therefore, TAPs modeling was not required for this project.

3.1.3 Emission Release Parameters

Table 6 lists the emission release parameters, including stack height, exhaust temperature, exhaust velocity, and stack diameter for PCA's new emission sources in metric units (English units are in parentheses). Emission point release parameters were based on information provided in the application. Justification for emission release parameters is summarized in the next section.

Table 6. POINT SOURCE EMISSION RELEASE PARAMETERS IN METRIC UNITS (ENGLISH UNITS IN PARENTHESES).								
Release Point	**Description**	**UTM[a] Coordinates**		**Stack Height in m (ft)[c]**	**Stack Exhaust Temp. in K (ºF)[d]**	**Stack Exhaust Velocity in m/sec (fps)[e]**	**Stack Diameter in m (ft)**	**Orient. Of Release[f]**
		Easting-X in m[b]	**Northing-Y in m**					
NEWBOIL	New Boiler	268,990.60	4,711,510.60	7.6 (25.0)	479.3 (403.0)	8.99 (29.49)	0.81 (2.67)	D
NCYCLN	New Cyclone	268,989.70	4,711,420.30	22.6 (74.2)	293.0 (67.7)	4.07 (13.36)	3.02 (9.91)	R
NEWSILO	New Silo	268,997.30	4,711,525.40	1.8 (6.0)	0 (Ambient)[g]	11.38 (37.35)	0.15 (0.50)	H
NCRV1	New Corrugator Vent	269,005.70	4,711,541.20	7.6 (25.0)	293.0 (67.7)	1.37 (4.51)	3.13 (10.26)	H

a. Universal Transverse Mercator.
b. m: meters.
c. ft: feet.
d. K: Kelvin; ºF: degrees Fahrenheit.
e. m/sec: meters per second; fps: feet per second.
f. D: default (vertical, uninterrupted release); R: raincap; H: horizontal.
g. The exhaust temperature for the new silo was set to 0 K. This triggers AERMOD to use the actual temperatures from the meteorological data input files.

3.1.4 Emission Release Parameter Justification

New Boiler

Model ID: NEWBOIL

The listed manufacturer for the new, natural gas-fired boiler (29.4 MMBtu/hr) is Superior Boiler Works. While emissions for the new boiler were calculated using 100% load, stack parameters were calculated using 75% load to be conservative.

Stack height was modeled at 25.0 feet (7.6 meters) based on the proposed plant layout. This value must be verified upon final construction.

A stack temperature of 403.0ºF (479.3 K) was used in the modeling analysis. This value was based on the manufacturer's specification sheets for 75% load. Using an exhaust temperature at 75% load is conservative (as opposed to using the temperature value at 100% load).

The standard flow rate at 75% load (5,955 standard cubic feet per minute [scfm]) was corrected to actual flow based on the exhaust temperature (also at 75% load). The calculated exhaust flow is 9,886 actual cubic feet per minute (acfm). The boiler stack was modeled with a diameter of 2.67 feet (0.81 meters). Therefore, the corresponding exit velocity is 8.99 meter/second.

$$NEWBOIL\ exit\ velocity = 9{,}886\frac{feet^3}{minute} \times \frac{4}{\pi(2.67\ feet)^2} \times \frac{1\ minute}{60\ seconds} \times \frac{1\ meter}{3.28\ feet} = 8.99\frac{meter}{second}$$

The boiler was modeled with vertical, uninterrupted release.

New boiler release parameters were appropriately documented and justified.

New Cyclone

Model ID: NCYCLN

The listed manufacturer for the new cyclone is Ohio Blow Pipe, Co. It was modeled with a stack height of 74.2 feet (22.6 meters) based on the proposed plant layout. This value must be verified upon final construction.

A stack temperature of 67.7ºF (293.0 K) was used in the modeling analysis to reflect building temperature.

The stack diameter (9.91 feet) and exhaust flow rate (61,800 acfm) were derived from the manufacturer specification sheet. Therefore, the exit velocity is 4.07 meter/second.

$$NCYCLN\ exit\ velocity = 61{,}800\frac{feet^3}{minute} \times \frac{4}{\pi(9.91\ feet)^2} \times \frac{1\ minute}{60\ seconds} \times \frac{1\ meter}{3.28\ feet} = 4.07\frac{meter}{second}$$

The new cyclone will be equipped with a raincap; therefore, the POINTCAP source option was used in AERMOD to represent the scrap cyclone.

Release parameters for the new cyclone were appropriately documented and justified.

New SILO

Model ID: NEWSILO

Particulate emissions from the starch silo are controlled by a baghouse. Stack parameters were based on the manufacturer design drawings.

The exhaust from the bin vent will exit horizontally through a six-inch (0.5 feet) diameter opening from the side of the enclosure. The opening will be constructed approximately 6 feet (1.8 meters) above the ground. Note that the 41.5-foot height indicated on the site layout drawing that was submitted with the application represents the total height of the starch silo. The baghouse/vent will be located near the base of the silo.

Modeled temperature was set to 0 K. This triggers AERMOD to use the actual temperatures from the meteorological data input files.

The exhaust flow rate of 440 acfm was based on the blower manufacturer information. Therefore, the modeled exit velocity is 11.38 meter/second.

$$NEWSILO\ exit\ velocity = 440\frac{feet^3}{minute} \times \frac{4}{\pi(0.50\ feet)^2} \times \frac{1\ minute}{60\ seconds} \times \frac{1\ meter}{3.28\ feet} = 11.38\frac{meter}{second}$$

The silo bin vent was represented in the model as a POINTHOR source.

Stack exhaust parameters for the new silo were adequately documented and justified.

New Corrugator

Model ID: NCRV1

Emissions from the new corrugator are emitted through a building vent as well as controlled by the scrap cyclone.

The new corrugator was modeled with a stack height of 25.0 feet (7.6 meters) based on the proposed plant layout. This value must be verified upon final construction.

A stack temperature of 67.7ºF (293.0 K) was used in the modeling analysis to reflect building temperature.

The corrugator vent will exhaust through a rectangular vent on the side of the building. The dimensions of the vent are approximately 192 inches (16 feet) wide by 62 inches (5.2 feet) tall. An equivalent diameter of 10.26 feet (3.13 meters) was used in the model. DEQ determined that this was appropriate.

The exhaust flow rate was provided to PCA's Corporate Engineering design personnel by the equipment vendor. The listed exhaust flow rate was 38,000 cubic meter per hour. This is equivalent to 22,336 acfm. Therefore, the corresponding exit velocity is 1.37 meter/second.

$$NCRV1\ exit\ velocity = 22{,}336\frac{feet^3}{minute} \times \frac{4}{\pi(10.26\ feet)^2} \times \frac{1\ minute}{60\ seconds} \times \frac{1\ meter}{3.28\ feet} = 1.37\frac{meter}{second}$$

The new corrugator was represented in the model using the POINTHOR source option.

Release parameters for the new corrugator were appropriately documented and justified.

3.2 Background Concentrations

Background concentrations are used if a cumulative NAAQS impact analysis is needed to demonstrate compliance with applicable NAAQS. Background design values (DV) for 24-hour PM_{10} and 24-hour and annual $PM_{2.5}$ were obtained from the Northwest International Air Quality Environmental Science and Technology Consortium (NW AIRQUEST; https://arcg.is/1jXmHH) using the project site coordinates. These background air pollutant levels are based on regional-scale air pollution modeling of pollutants in Washington, Oregon, and Idaho, with modeling results adjusted according to available monitoring data. Trinity selected four grid points surrounding the PCA Burley facility and calculated the average of these four points as the ambient background for each applicable pollutant and averaging time. These four values are very similar; therefore, taking the average is appropriate. The average values obtained from NW AIRQUEST are listed in Table 7.

Table 7. AMBIENT BACKGROUND CONCENTRATIONS AT THE PCA BURLEY FACILITY.

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a,b]
PM_{10}[c]	24-hr	76.53
$PM_{2.5}$[d]	24-hr	11.85
	Annual	5.37

a. Micrograms per cubic meter.
b. NW AIRQUEST ambient background lookup tool, mid 2014-mid 2017.

c. Particulate matter with an aerodynamic diameter of 10 microns or less.
d. Particulate matter with an aerodynamic diameter of 2.5 microns or less.

3.3 Impact Modeling Methodology

This section describes the modeling methods used by the applicant to demonstrate preconstruction compliance with applicable air quality standards.

3.3.1 General Overview of Impact Analyses

Trinity performed the project-specific air pollutant emission inventory and air impact analyses that were submitted with the application. The submitted information/analyses, in combination with results from DEQ's air impact analyses, demonstrate compliance with applicable air quality standards to DEQ's satisfaction, provided the facility is operated as described in the submitted application and in this memorandum.

Table 8 provides a brief description of parameters used in the modeling analyses.

Table 8. MODELING PARAMETERS.

Parameter	Description/Values	Documentation/Addition Description
General Facility Location	Burley, Idaho	The area is an attainment or unclassified area for all criteria pollutants.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 19191.
Meteorological Data	Burley surface data; Boise upper air data	See Section 3.3.4 of this memorandum for additional details of the meteorological data.
Terrain	Considered	1/3 arc second National Elevation Dataset (NED) was acquired from the USGS for the surrounding area. AERMAP version 18081 was used to process terrain elevation data for all buildings and receptors. See Section 3.3.5 for more details.
Building Downwash	Considered	Plume downwash was considered for the structures associated with the facility. BPIP-PRIME was used to evaluate building dimensions for consideration of downwash effects in AERMOD. See Section 3.3.6.
Receptor Grid	**SIL Analysis** The selection of receptors for use in the SIL analysis is as follows (see Section 3.3.10):	
	Grid 1	25-meter spacing along the ambient air boundary and from the property boundary out to 400 meters from the property boundary.
	Grid 2	50-meter spacing from 400 meters beyond the property boundary out to 800 meters from the property boundary.
	Grid 3	150-meter spacing from 800 meters beyond the property boundary out to 1,300 meters from the property boundary.
	Cumulative NAAQS Impact Analysis Only receptors that exceed SILs were used in the cumulative NAAQS impact analysis.	
	TAPs Analysis No TAPs were modeled for this project.	

3.3.2 Modeling Methodology

Project-specific modeling and other required impact analyses were generally conducted using data and methods described in the *Idaho Air Quality Modeling Guideline*[2].

3.3.3 Model Selection

Idaho Air Rules Section 202.02 requires that estimates of ambient concentrations be based on air quality models specified in Appendix W. The refined, steady-state, multiple-source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. AERMOD retains

the single straight-line trajectory of ISCST3, but it includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

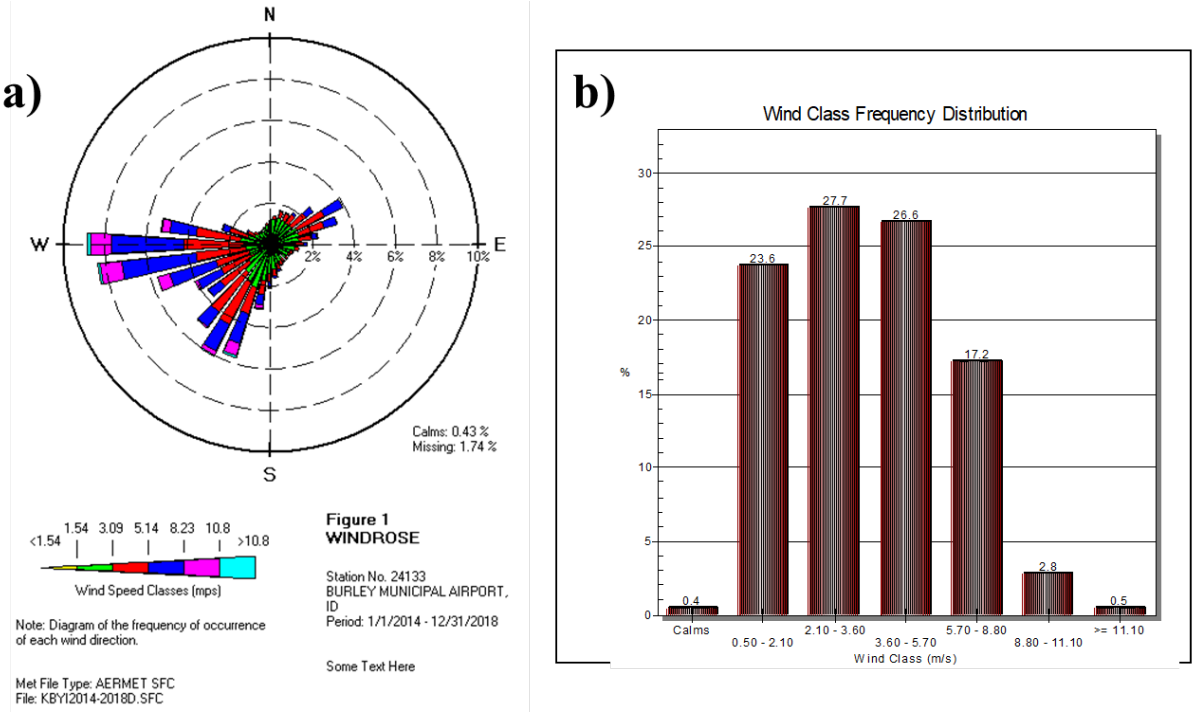
AERMOD version 19191 was used by Trinity for the modeling analyses to evaluate impacts of the facility. This version was the current version at the time the application was received by DEQ.

3.3.4 Meteorological Data

DEQ processed a meteorological dataset from Burley, Idaho (KBYI; station ID 725867-24133) covering the years 2014-2018. The upper air soundings required by AERMET were obtained from the Boise airport station (site ID 24131). Surface characteristics were determined by DEQ staff using AERSURFACE version 13016. DEQ modeling staff evaluated annual moisture conditions for the AERSURFACE runs based on thirty years of Burley airport precipitation data. Conditions were determined to be "wet" for 2014, 2016, and 2017, and "average" for 2015 and 2018. Average moisture content is defined as within a 30 percentile of the 30-year mean of 9.94 inches. Calms were relatively low, and less than 1 percent of the data were missing from the 5-year record.

Figure 1 shows a wind rose and wind speed histogram at Burley Airport. AERMINUTE version 15272 was used to process Automated Surface Observing Systems (ASOS) wind data for use in AERMET. AERMET version 19191 was used to process surface and upper air data and to generate a model-ready meteorological data input file. The "adjust u star" (ADJ_U*) option was applied in AERMET to enhance model performance during low wind speeds under stable conditions. DEQ provided meteorological data to Trinity, with and without the ADJ_U* option enabled. In the submitted modeling files, Trinity used the meteorological data with the ADJ_U* option enabled. DEQ determined that these data are adequately representative of the meteorology at the PCA Burley site for minor source permitting.

Figure 1. (a) WIND ROSE AND (b) WIND SPEED HISTOGRAM AT BURLEY AIRPORT IN IDAHO (2014-2018).

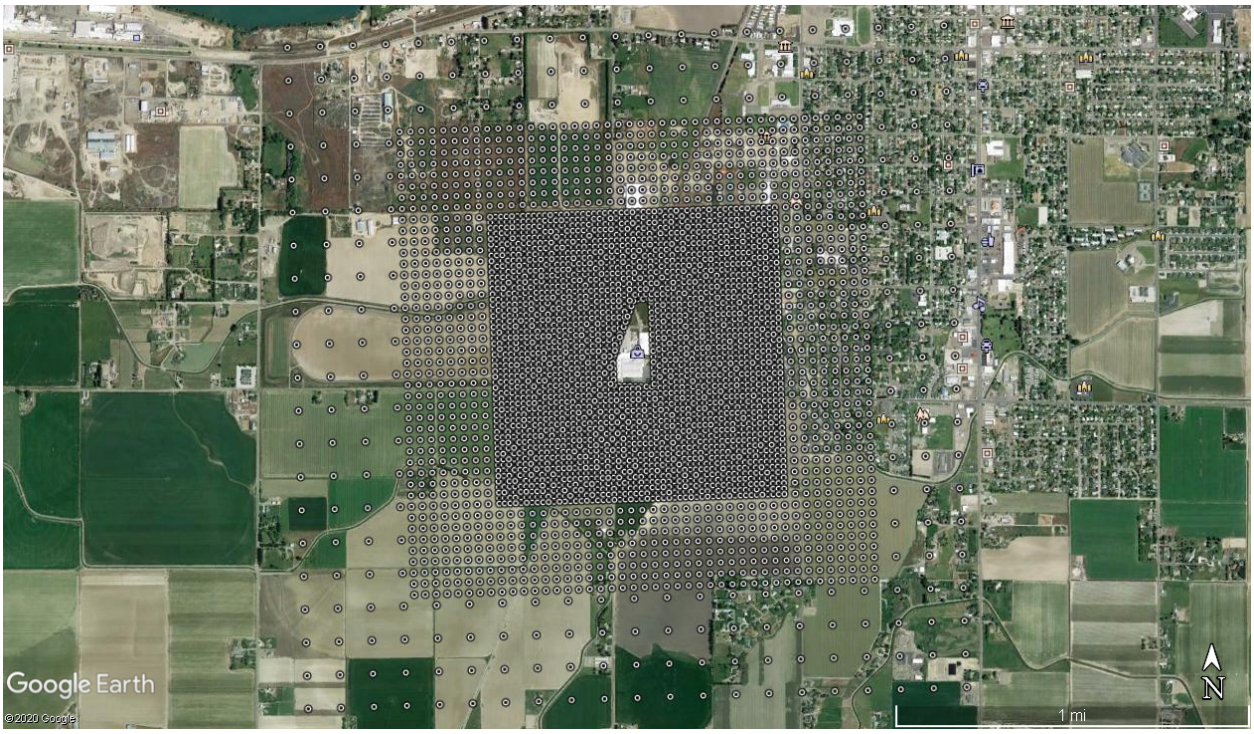


3.3.5 Effects of Terrain on Modeled Impacts

Submitted ambient air impact analyses used terrain data extracted from United States Geological Survey (USGS) National Elevation Dataset (NED) files.

The terrain preprocessor AERMAP version 18081 was used by Trinity to extract the elevations from the NED files and assign them to receptors in the modeling domain in a format usable by AERMOD. AERMAP also determined the hill-height scale for each receptor. The hill-height scale is an elevation value based on the surrounding terrain which has the greatest effect on that individual receptor. AERMOD uses those heights to evaluate whether the emission plume has sufficient energy to travel up and over the terrain or if the plume will travel around the terrain. Figure 2 depicts the full receptor grid used in the analyses, overlaid on a terrain image from Google Earth.

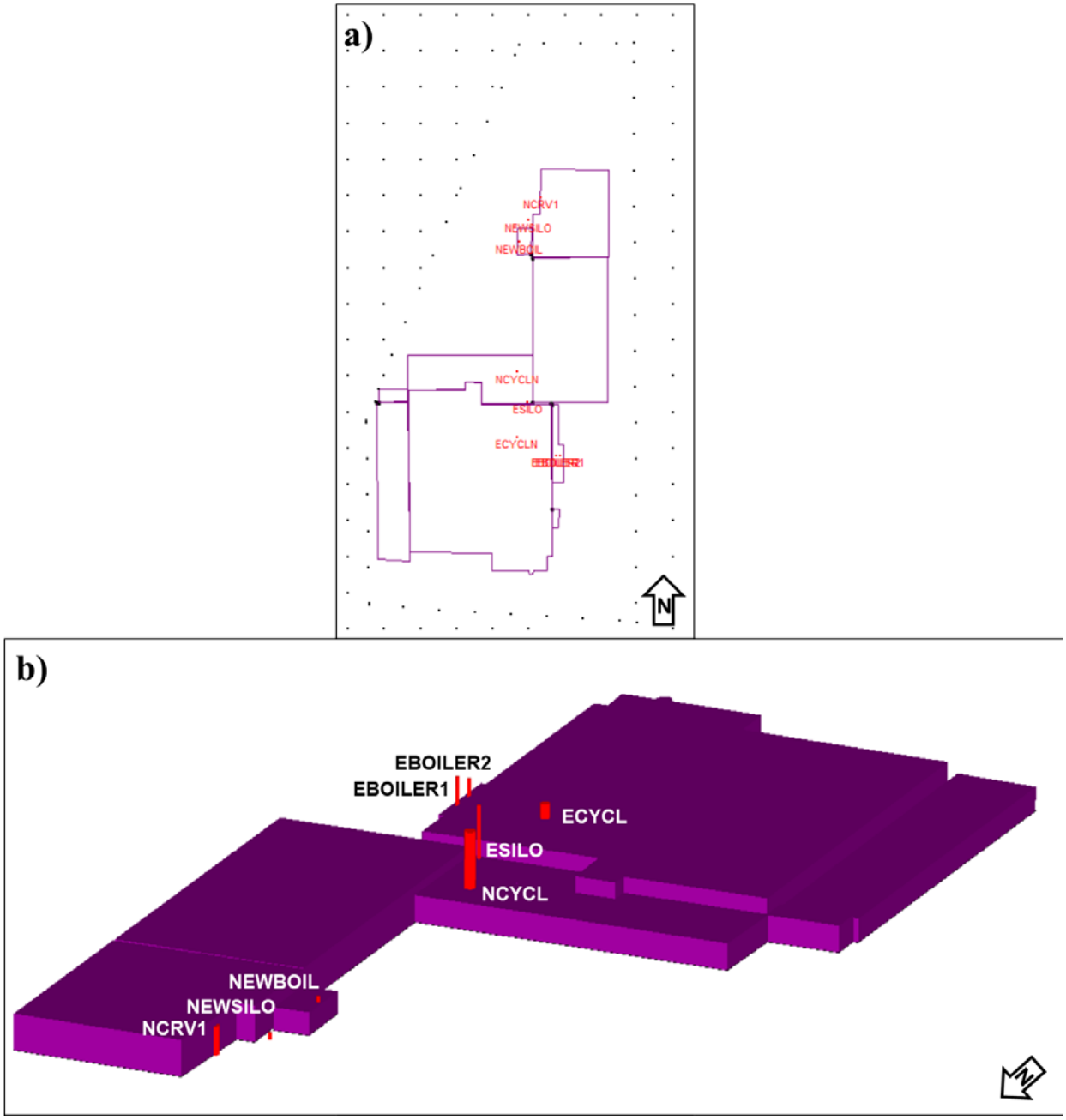
Figure 2. THE FULL RECEPTOR GRID CENTERED AT THE PCA FACILITY IN BURLEY, IDAHO.



3.3.6 Facility Layout and Downwash

Figure 3 shows the PCA facility's structures and emission sources in the modeling analyses. Red dots in Figure 3a represent point sources. Figure 3b depicts a three-dimensional view of the modeled buildings and point sources, as viewed from the northwest. Note that PCA Burley did not take credit for the negative emissions associated with the decommissioned units (ECYCLN, ESILO, EBOILER1, EBOILER2) in the SIL analysis.

Figure 3. (a) PCA BURLEY'S MODEL SETUP WITH POINT SOURCES LABELED, AND (b) THREE-DIMENSIONAL VIEW OF PCA'S MODEL SETUP AS VIEWED FROM THE NORTHWEST.



DEQ verified proper identification of the site location, equipment locations, and the ambient air boundary by comparing a graphical representation of the modeling input file to plot plans submitted in the application. Aerial photographs on Google Earth (available at https://www.google.com/earth) were also used to assure that horizontal coordinates were accurate as described in the application.

Potential downwash effects on emission plumes were accounted for in the model by using building

dimensions and locations (locations of building corners, base elevation, and building heights). Dimensions and orientation of proposed buildings were used as input to the Building Profile Input Program for the Plume Rise Model Enhancements downwash algorithm (BPIP-PRIME version 04274) to calculate direction-specific dimensions and Good Engineering Practice (GEP) stack height information for input to AERMOD.

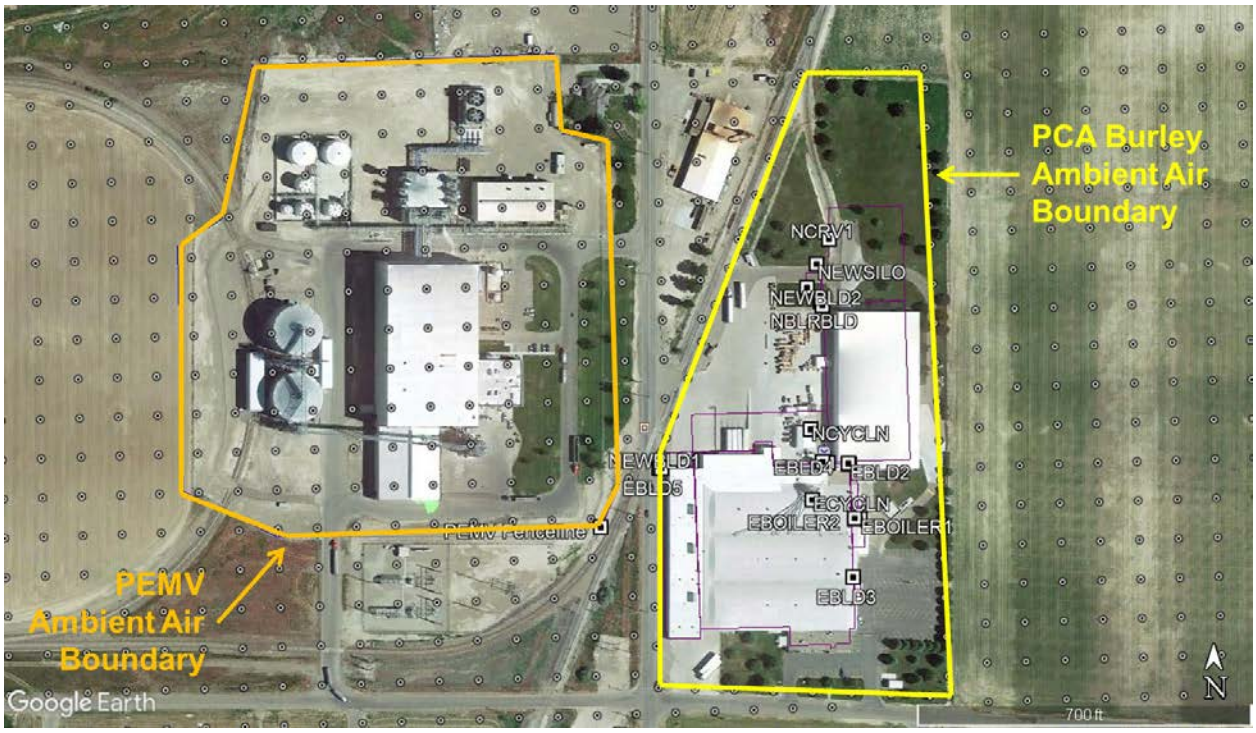
3.3.7 NOx Chemistry

Facility-wide NOx emissions are BRC. Therefore, NO_2 NAAQS compliance demonstrations were not required for permit issuance.

3.3.8 Ambient Air Boundary

Ambient air is defined in Section 006 of the Idaho Air Rules as "that portion of the atmosphere, external to buildings, to which the general public has access." The ambient air boundary for the PCA Burley facility is based on the property boundary, as shown below in Figure 4. The property boundary is partially fenced, and the facility property is posted as off limits and closed to the general public. The property boundary is consistent with the property boundary used in the 2002 modeling analysis. Figure 4 also shows the ambient air boundary for the nearby Pacific Ethanol Magic Valley (PEMV) facility. Receptors within the PEMV facility were modeled but without the contribution from PEMV's emission sources.

Figure 4. PACKAGING CORPORATION OF AMERICA BURLEY AMBIENT AIR BOUNDARY.



3.3.9 Nearby Co-Contributing Sources

The PEMV facility is located directly to the west of the PCA Burley facility (Figure 4). It was considered

as a co-contributing source in PCA's cumulative NAAQS impact analysis because impacts of PEMV are not adequately accounted for by the background concentrations described in Section 3.2 of this modeling memo. The impact of PEMV on receptors showing a significant impact from the sources subject to the permitting action was modeled by PCA. Note that receptors that are located within the PEMV fenceline were modeled but without the contribution from PEMV's emission sources.

Trinity obtained PEMV's modeling files and emission inventories using DEQ's Public Records Request. DEQ provided seven folders to Trinity and noted that modeling files from DEQ's verification analysis dated February 27, 2012 (DEQ Content Manager Record Number: 2012AAG518) must be used by Trinity to extract PEMV's northing/easting coordinates, point and volume source exhaust parameters, and building configurations, for PCA's cumulative NAAQS impact analysis. These modeling files represent the most recent model set-up for PEMV.

Although the modeling files for Record Number 2012AAG518 contain $PM_{2.5}$ and PM_{10} emission rates, only NO_2 was modeled by PEMV in its PTC application in 2012. Therefore, these $PM_{2.5}$ and PM_{10} emission rates may not have been comprehensively reviewed back in 2012. However, a modeling demonstration from 2009, where PEMV modeled 24-hour and annual PM_{10} and demonstrated NAAQS compliance, suggests that the modeled PM_{10} emission rates from 2009 and the PM_{10} emission rates listed in the modeling files from Record Number 2012AAG518 are the same. Therefore, the latter would be appropriate for use by PCA in a cumulative NAAQS impact analysis for PM_{10} (should the 24-hour PM_{10} SIL be exceeded). $PM_{2.5}$ emission rates were conservatively assumed to be equal to the PM_{10} emission rates; this was valid based on the 2014 Statement of Basis which indicates that $PM_{2.5}$ emission rates for PEMV are equal to the PM_{10} emission rates.

DEQ noted in an e-mail to Trinity dated February 7, 2020 that should $PM_{2.5}$ NAAQS compliance become complicated, DEQ may be able to refine the emission estimates. DEQ did not receive a request from Trinity/PCA to refine the $PM_{2.5}$ emissions from PEMV.

3.3.10 Receptor Network

DEQ determined that the receptor grid used in the submitted modeling analyses was adequate to resolve maximum modeled impacts.

Table 8 describes the receptor network used in the submitted modeling analyses. The full grid, along with the fenceline receptors, includes a total of 4,116 receptors (Figure 2). Receptors on PEMV's property were analyzed in the cumulative NAAQS impact analysis, but without inclusion of PEMV's emissions; however, PCA's modeled impacts plus background concentrations are below NAAQS at such receptors. The receptor grids used in the model provided good resolution of the maximum design concentrations for the project and provided extensive coverage. Only receptors that exceed SILs were used in the cumulative NAAQS impact analysis.

The receptor grid used in the submitted modeling analyses met the minimum recommendations specified in the *Idaho Air Quality Modeling Guideline*[2], and DEQ determined that the receptor network was effective in reasonably assuring compliance with applicable air quality standards at all ambient air locations.

3.3.11 Good Engineering Practice Stack Height

An allowable good engineering practice (GEP) stack height may be established using the following equation in accordance with Idaho Air Rules Section 512.03.b:

H = S + 1.5L, where:

H = good engineering practice stack height measured from the ground-level elevation at the base of the stack.

S = height of the nearby structure(s) measured from the ground-level elevation at the base of the stack.

L = lesser dimension, height or projected width, of the nearby structure.

All sources from the PCA Burley facility are below GEP stack height. Therefore, consideration of downwash caused by nearby buildings was required.

4.0 NAAQS and TAPs Impact Modeling Results

4.1 Results for NAAQS Analyses

4.1.1 Significant Impact Level Analysis

Table 9 provides results for the significant impact level (SIL) analysis. Note that PCA conservatively did not take credit for the negative emissions associated with the four decommissioned units. The SIL analysis shows that the maximum predicted impacts from the facility are above the SIL for 24-hour PM_{10} and 24-hour and annual $PM_{2.5}$. Therefore, a cumulative NAAQS impact analysis was performed for these pollutants.

Table 9. RESULTS FOR SIGNIFICANT IMPACT LEVEL ANALYSIS.

Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)[a]	Significant Impact Level ($\mu g/m^3$)	Impact Percentage of Significant Impact Level	Cumulative NAAQS Analysis Required?
PM_{10}[b]	24-hour	29.52	5.0	590.4%	Yes
$PM_{2.5}$[c]	24-hour	16.89	1.2	1,407.5%	Yes
	Annual	2.24	0.2	1,120.0%	Yes

a. Micrograms per cubic meter.
b. Particulate matter with an aerodynamic diameter of 10 microns or less.
c. Particulate matter with an aerodynamic diameter of 2.5 microns or less.

4.1.2 Cumulative NAAQS Impact Analysis

Table 10 provides results for the cumulative NAAQS impact analysis. For each modeled pollutant, the total impact was calculated by adding the design value (DV) of the impact to the ambient background value. The sum was then compared to the NAAQS.

Table 10. RESULTS FOR CUMULATIVE NAAQS IMPACT ANALYSIS.

Pollutant	Averaging Period	Modeled Design Value Concentration ($\mu g/m^3$)[a]	Background Concentration ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
PM_{10}[b]	24-hour	22.90	76.53	99.43	150	66.3%
$PM_{2.5}$[c]	24-hour	56.25	11.85	68.10[d]	35	194.6%

Table 10. RESULTS FOR CUMULATIVE NAAQS IMPACT ANALYSIS.						
	Annual	5.33	5.37	10.70	12	89.2%

a. Micrograms per cubic meter.
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
d. A total of 37 receptors exceed the 24-hour $PM_{2.5}$ NAAQS. These receptors were analyzed using the MAXDCONT option in AERMOD. All modeled violations were assessed to determine whether the project has a significant contribution. PCA's maximum contribution to a 24-hour $PM_{2.5}$ exceedance is 1.078 µg/m^3, which is less than the 24-hour $PM_{2.5}$ SIL (1.2 µg/m^3). Therefore, PCA is not culpable for any NAAQS violation. See section 4.1.3 of this modeling memo for more details.

Ambient impacts for the facility, when combined with approved ambient backgrounds, were below the NAAQS at all receptors for 24-hour PM_{10} and annual $PM_{2.5}$. However, total ambient impacts exceed the 24-hour $PM_{2.5}$ NAAQS at a small number of receptors to the southwest of the PEMV facility (Figure 5a). Therefore, a culpability analysis, described in the next section, was performed to determine if the PCA project is culpable for any of the 24-hour $PM_{2.5}$ NAAQS violations.

4.1.3 NAAQS Culpability Analyses

Because the cumulative NAAQS impact analysis indicates an exceedance of 24-hour $PM_{2.5}$ NAAQS, a culpability analysis was performed to determine if this exceedance was due to emissions from the PCA project. A permit may not be issued if a project has a significant contribution (exceeding the SIL) to the modeled violation. If project-specific impacts are below the SIL, then the project does not have a significant contribution to the specific violations and the permit may be issued.

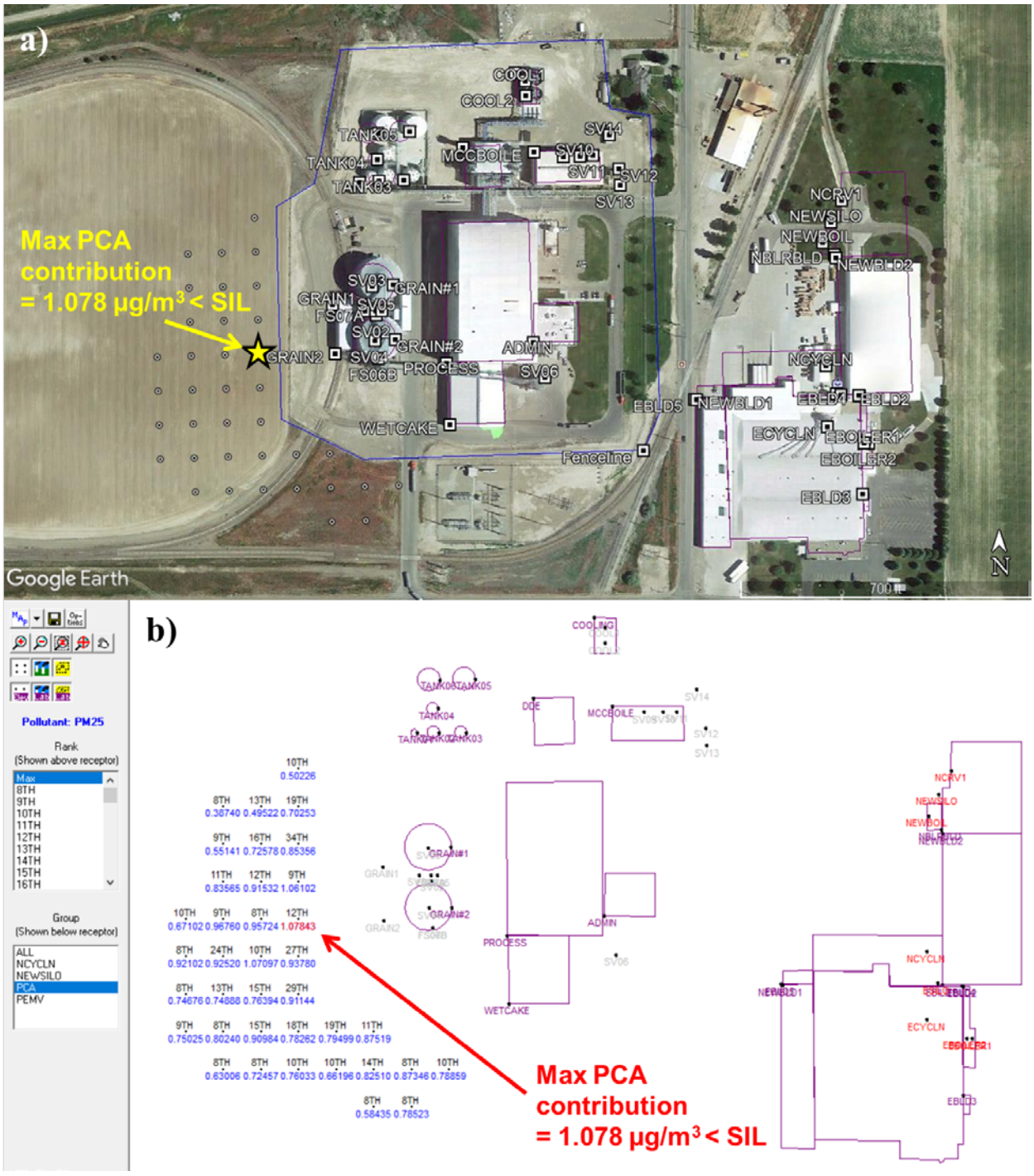
A culpability analysis was set up in AERMOD by using the MAXDCONT option. The upper rank was set to the design value (H8H for 24-hour $PM_{2.5}$). Lower rank was entered as a rank or as a threshold concentration equal to the NAAQS minus background. Source groups included the PCA facility, the PEMV facility (the nearby co-contributing source), and another source group for all emission sources (source group ALL: facility-wide PCA emission sources and PEMV emission sources). The output file from a MAXDCONT run displays impacts from each source group, matched temporally and spatially.

Figure 5a shows the location of the 37 receptors (white circles) that exceed the 24-hour $PM_{2.5}$ NAAQS. These receptors were examined in the culpability analysis. Note that these receptors are located to the southwest of the PEMV facility. Receptors that are located within the ambient air boundary of PEMV were modeled but without the contribution from PEMV's emission sources.

When using the MAXDCONT option in a culpability analysis, it is important that ***all*** modeled violations be assessed to determine whether the proposed project has a significant contribution to the NAAQS violation. This can be done by going through the MAXDCONT table and by analyzing ranked impacts (for example, the 8th high impact, 9th high impact, 10th high impact, etc.) to the point where the ranked impact shows no violations. This can also be done by using MAXDCONT Viewer. It was created to display the maximum contribution to each receptor that has an exceedance, so that the user does not need to spend time combing through the MAXDCONT table.

Figure 5b shows the output from MAXDCONT Viewer. It shows the maximum concentrations and ranks of the concentrations of source group PCA. The maximum PCA contribution to a NAAQS exceedance is 1.078 µg/m^3, which is below the significance level of 1.2 µg/m^3 for 24-hour $PM_{2.5}$. Because PCA's predicted impact is below the SIL for any receptor and averaging period showing a NAAQS violation in the source group ALL, the PCA facility is not culpable for the NAAQS violation. The PCA permit can be issued because the analysis demonstrates that the PCA facility will not cause or significantly contribute to a NAAQS violation.

Figure 5. (a) RECEPTORS THAT EXCEED 24-HOUR $PM_{2.5}$ NAAQS AND WERE ANALYZED IN THE CULPABILITY ANALYSIS, AND (b) OUTPUT FILE FROM MAXDCONT VIEWER.



The sole objective of the cumulative NAAQS impact analysis is to assure that the proposed facility or modification would not cause or significantly contribute to a violation of the NAAQS. Simplistic and

conservative methods/data that overstate emissions and/or impacts from emissions are often preferentially used, to the extent that compliance is demonstrated with such data/methods, to minimize permit application preparation time and agency review time. More refined complex methods/data are used when initial conservative methods fail to demonstrate compliance. Once NAAQS compliance is demonstrated for the proposed project, further refinement of the cumulative impact analysis is not performed, even though the analysis may suggest that a co-contributing source could cause a NAAQS violation. Assuring that NAAQS are generally maintained for the area is outside of the scope of the analysis.

Therefore, DEQ did not further refine the modeled impacts resulting from operations at the co-contributing PEMV facility. As discussed in Section 3.3.9 of this modeling memo, the $PM_{2.5}$ emission rates for PEMV that PCA used in its culpability analysis may not have been comprehensively reviewed back in 2012. Results of the cumulative impact analysis should not be considered as evidence that emissions from the PEMV facility will cause a violation of NAAQS.

4.2 Results for TAPs Impact Analyses

All TAPs emission increases were below TAPs screening emission levels in Idaho Air Rules Section 585 and 586. Therefore, no TAPs were modeled for this project.

5.0 Conclusions

The information submitted with the PTC application, combined with DEQ's air impact analyses, demonstrated to DEQ's satisfaction that emissions from the Packaging Corporation of America facility in Burley, ID will not cause or significantly contribute to a violation of any applicable ambient air quality standard or TAP increment.

References

1. *Policy on NAAQS Compliance Demonstration Requirements.* Idaho Department of Environmental Quality Policy Memorandum. July 11, 2014.

2. *State of Idaho Guideline for Performing Air Quality Impact Analyses*. Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf.

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on May 29, 2020:

Permit Comments:

Facility Comment: Condition 2.3 – PCA wants to bold the type "**0.0754**."

DEQ Response: Condition 2.3 - DEQ will not bold the type. The template must remain consistent.

Facility Comment: Condition 2.5 – PCA caught the typo of "6,750" should read "6,570."

DEQ Response: Condition 2.5 - DEQ will correct the typo to read 6,570.

Facility Comment: Condition 3.3 – PCA caught the typo "Starch Silo" should read "Corrugator."

DEQ Response: Condition 3.3 - DEQ will correct the typo to read Corrugator.

Facility Comment: Condition 3.3 – PCA caught the typo "T/hr" should read "T/yr."

DEQ Response: Condition 3.3 - DEQ will correct the typo to read T/yr.

Facility Comment: Condition 4.1 – PCA wants to add the words "paper wastes."

DEQ Response: Condition 4.1 - DEQ will add the words paper wastes.

Facility Comment: Condition 4.3 – PCA caught the typo "0.129" should read "1.29."

DEQ Response: Condition 4.3 - DEQ will correct the typo to read 1.29.

Facility Comment: Condition 4.3 – PCA caught the typo "T/hr" should read "T/yr."

DEQ Response: Condition 4.3 - DEQ will correct the typo to read T/yr.

Facility Comment: Condition 4.6 – PCA caught an extra page break between 4.6 and 5.1.

DEQ Response: Condition 4.6 - DEQ will remove the page break.

Facility Comment: Condition 5.4 – PCA caught an extra space between the condition and its date.

DEQ Response: Condition 5.4 - DEQ will remove the space.

Facility Comment: Condition 6.1 – PCA wants to add the words "Water-based."

DEQ Response: Condition 6.1 - DEQ will add the words Water-based.

Statement of Basis Comments:

Facility Comment: Application scope – PCA wants to remove "Add a new Mitsubishi EVOL converting machine."

DEQ Response: Application scope - DEQ will remove.

Facility Comment: Application scope – PCA wants to add the verbiage "Add a new flexo-folder-gluer converting unit (Mitsubishi EVOL or similar unit)."

DEQ Response: Application scope - DEQ will add the language, "Add a new flexo-folder-gluer converting unit (Mitsubishi EVOL or equivalent unit)."

Facility Comment: Table 2 – PCA pointed out the Ink & Glue row of emissions was inadvertently left out.

DEQ Response: Application scope - DEQ will add the Ink & Glue row numbers.

Facility Comment: Table 4 – PCA pointed out Table 4 would need to be updated with the correct numbers after Table 2 was modified.

DEQ Response: Table 4 - DEQ will update Table 4 with the correct numbers.

Facility Comment: Existing and Revised Permit Condtions – PCA pointed out typos where SOB was spelled as SOP.

DEQ Response: Existing and Revised Permit Condtions - DEQ will correct the typos so that they all read SOB.

Facility Comment: Revised Permit Condtion 4.1 – PCA wants “Scrap” replaced with “Scraps paper waste.”

DEQ Response: Revised Permit Condtion 4.1 - DEQ will replace “Scrap” with “Scrap paper wastes.”

APPENDIX D – PROCESSING FEE

PTC Processing Fee Calculation Worksheet

Instructions:
Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company:	**Packaging Corporation of America**
Address:	**1544 W 27th Street**
City:	**Burley**
State:	**Idaho**
Zip Code:	**83318**
Facility Contact:	**Thoren Miller**
Title:	**Environmental Manager**
AIRS No.:	**031-00019**

N	Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N
Y	Did this permit require engineering analysis? Y/N
N	Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	0.0	9.84	-9.8
SO_2	0.0	3.96	-4.0
CO	0.3	0	0.3
PM10	0.0	3.98	-4.0
VOC	4.8	0	4.8
Total:	5.13	17.78	**-12.7**
Fee Due	**$ 1,000.00**		

Comments: