

- 1 General Dust Collection Unit (E-55)
- 1 Trident Packaging Line (E-35)
- 1 Super Sack Handling System with Dust Collector (E-57)
- 1 Super Sack Handling Area with Central Vac System (E-58)
- 1 Trident Reclaim Area with Vac System (E-29)
- 1 Trident Packaging Area with Vac System (E-59)
- 2 Rubber Conveyance Systems with Dust Collectors (E-60, E-61)
- 1 Material Conveyance System with Dust Collector (E-63)
- 1 Bag Dump Station with Dust Collector (E-64)
- 1 Dentyne Packaging Line with Dust Collector (E-32)
- 1 Co-Generation System (E-43A and B)
- 1 Pulverizing Conveyance Line with Baghouse (E-65)
- 8 Raw Material Storage Tanks (E66-E73)
- 1 Sweetener Pellet Conveyance System (E-74)
- 1 Talc Feed Dump Station (E-75)
- 1 Granular Sweetener Feed System (E-76)
- 1 Citric Acid Feed System (E-77)
- 1 Salvage Feed System (E-78)
- 1 Primary Sweetener Vacuum System (E-79)
- 1 Secondary Sweetener Vacuum System (E-80)
- 1 Sweetener Material Recovery with Dust Collectors (E-82)
- 1 Burst Gum Packaging with Dust Collector (E-83)
- 1 Tri-Bubb Area Talc/Mantanol Blending with Dust Collector (E-84)
- 8 Gum Coating Pans with Dust Collector (E-22)
- 2 Polishing Pans and Solution Prep with Dust Collector (E-33)
- 1 Pellet Gum Tumbling, Solution Prep and Coating Pan with Dust Collectors (E-86 and E-87)
- 1 Bag Dump Station with Dust Collector (E-88)
- 1 Coating Pan with Dust Collector (E-89)
- 2 Generators (E-90, E-91)
- 1 Chiller (E-92)
- 2 Dumoulin Coating Pans Controlled by Dust Collectors (E-93 and E-95)
- 1 Pellet Tumbler Controlled by Dust Collector (E-94)
- 1 Gum-Tray Dump-Station Controlled by Dust Collector (E-96)

pursuant to the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

- 1a. This federally enforceable state operating permit is issued to limit the emissions of air pollutants from the source to less than major source thresholds (i.e., 100 tons/year for PM-10, 100 tons/year nitrogen oxides, and 100 tons/year carbon monoxide). As a result, the source is excluded from the requirements to obtain a Clean Air Act Permit Program (CAAPP) permit. The maximum emissions of this source, as limited by the conditions of this permit are described in Attachment A.
- b. Prior to issuance, a draft of this permit has undergone a public notice and comment period.
- c. This permit supersedes all operating permit(s) for this location.

- d. This permit contains the federally enforceable conditions from construction permit(s) 00100050 and 00020009. These conditions effectively limit the potential emissions of air pollutants from the source to less than major source thresholds (i.e., PM-10, NO_x and CO to less than 100 tons per year, etc.). As a result, the source is excluded from the requirements to obtain a Clean Air Act Permit Program (CAAPP) permit.
- 2. All permitted emission sources equipped with a pollution control device shall only be operated in conjunction with the operation of the associated air pollution control device(s).
- 3a. The total tons of finished product shall not exceed the following limits:

Stick Gums	73,900 tons/year
Non-Stick/Stick Gums	121,000 tons/year
Mints	<u>7,577 tons/year</u>
Total	202,477 tons/year

- b. Products included in each category are:

Stick Gums:

Burst Line
Dentyne
All Nostalgic Gums (e.g. Blackjack, Clove, Beamans)
Any new gums produced utilizing same technology resulting in emission rate equal to, or less than those presented in Special Condition 3c.

Non-Stick/Stick Gums:

Trident
Bubblicious
Freshen-Up
Any new gums produced utilizing same technology resulting in an emission rate equal to, or less than those presented in Special Condition 3c.

Mints:

Mini-Mint Line
Any new mint product utilizing same technology resulting in emission rate equal to, or less than those presented in Special Condition 3c.

- c. Emissions from production equipment shall not exceed the following limits:

<u>Item of Equipment</u>	<u>Process Rate (Lb/Hour)</u>	<u>Particulate Matter</u>	
		<u>(Lb/Hour)</u>	<u>(Ton/Year)</u>
Stick Gums	21,000	2.1	7.39
Non-Stick/Stick Gums	35,000	5.25	18.15
Mints	2,200	0.38	1.31

The actual annual aggregate emissions of particulate matter from permitted sources shall be less than 43.7 tons per year consistent with Plant Emission Summary Table presented as an attachment to this permit.

These limits are based on 8,760 hours per year. Compliance with annual limits shall be determined from a running total of 12 months of data.

- Aggregate Nitrogen Oxide (NO_x) emissions from the co-generation system, the boilers, and reciprocating engines shall not exceed 94 tons per 12 month running total. Aggregate emissions shall be calculated monthly using a 12 month running total to verify the 94 ton limit.

The monthly NO_x compliance calculation using a 12 month running total shall use the following:

$$\text{Total Ton, NO}_x = \text{Co-Gen Ton, NO}_x + \text{Boiler Ton, NO}_x + \text{Reciprocating Engine Ton, NO}_x$$

$$\text{Co - Gen Ton, NO}_x = \text{Therms} \times \frac{1.845 \times 10^{-5} \text{ Ton - NO}_x}{\text{Therm}}$$

This is based on the maximum rate of NO_x emission of 23.3 lbs/hr at 100% turbine loading, and natural gas usage at 100% turbine loading of 61,760 scfm.

$$\text{Boiler Ton, NO}_x = \text{Ton, NO}_x \text{ (Gas)} + \text{Ton, NO}_x \text{ (Oil)}$$

$$\text{Ton, NO}_x \text{ (Gas)} = \frac{\sum_{m=1}^{12} \left(\text{MMCF} * 100 \frac{\text{lb - NO}_x}{\text{MMCF}} \right)}{2000 \text{ lb / ton}}$$

$$\text{Ton, NO}_x \text{ (Oil)} = \frac{\sum_{m=1}^{12} \left(\text{MMCF} * 5.0 \frac{\text{lb - NO}_x}{\text{Hr}} \right)}{2000 \text{ lb / ton}}$$

Bm = Total Boiler Operating Hours in Month m, for all boilers when fuel oil fired.

$$\text{Reciprocating Engine Ton, NO}_x = \text{Ton, NO}_x \text{ (Generator E-90)} + \text{Ton, NO}_x \text{ (Generator E-91)} + \text{Ton, NO}_x \text{ (Chiller E-92)}$$

$$\text{Ton, NO}_x \text{ (Generator E - 90)} = \sum_{12}^{m=1} (1.66 \text{ lb / hr}) \times \text{Hours} / (2,000 \text{ lb / ton})$$

$$\text{Ton, NO}_x \text{ (Generator E - 91)} = \sum_{12}^{m=1} 7.96 \text{ lb / hr} \times \text{Hours} / (2,000 \text{ lb / ton})$$

$$\text{Ton, NO}_x \text{ (Chiller E - 92)} = \sum_{12}^{m=1} 11.79 \text{ lb / hr} \times \text{Hours} / (2,000 \text{ lb / ton})$$

5. Aggregate carbon monoxide emissions from the co-generation system, the boilers and reciprocating engines shall not exceed 89 tons (178,000 lbs) per 12 month running total. Aggregate emissions shall be calculated monthly using a 12 month running total to verify the 89 ton limit.

$$\text{CO} = \sum_{12}^{m=1} (H_{1m} * E_1) + \sum_{12}^{m=1} (H_{2m} * E_2) + \sum_{12}^{m=1} (B_m * E_3) + \sum_{12}^{m=1} (B_{mo} * E_e) +$$

$$\sum_{12}^{m=1} (R_m * E_5) + \sum_{12}^{m=1} (G_{1m} * E_6) + \sum_{12}^{m=1} (G_{2m} * E_7)$$

CO = CO emission in pounds for last 12 months

m = Month

H_{1m} = Co-Generation System Hours of operation in month m between 0% and 30% loading

H_{2m} = Co-Generation System Hours of operation in month m greater than 30% loading

E₁ = Co-Generation System 28.3 pounds CO emission per hour between 0% and 30% loading

E₂ = Co-Generation System 8.2 pounds CO emission per hour greater than 30% loading

E₃ = 84 pounds CO per mmcf natural gas used in boilers

E₄ = 1.25 pounds CO emission per hour per boiler for all firing rates of fuel oil

B_m = MMCF of natural gas used by all boilers in month m

B_{mo} = Sum of hours of fuel oil operation in month m for all boilers

- R_m = Hours/month for Chiller in month m
- E_5 = 1.29 lb/hour CO for Chiller
- G_{1m} = Hours/month for Generator E-90 in month m
- E_6 = 0.58 lb/hour CO for Generator E-90
- G_{2m} = Hours/month for Generator E-91 in month m
- E_7 = 2.77 lb/hour CO for Generator E-91

6. Aggregate particulate matter emissions from all emission units shall not exceed 43.7 tons (87,469 lbs) per 12 month running total. Aggregate particulate matter emissions shall be computed based on pounds of product produced plus co-generation system particulate emissions plus boiler particulate emissions plus reciprocating engines, and reconciled monthly utilizing a twelve month rolling average to verify compliance.

$$PM = P_E + C_E + B_E + G_1 + G_2 + R_E$$

- P_E = maximum calculated emissions from process
- C_E = Total Co-Gen Run Hours * 2.14 lb/hr
- B_E = $(H_{BO} * E_{BO}) + (H_B * E_B)$
- PM = Particulate Emissions in pounds for last 12 months.
- P_E = Particulate Emissions in pounds for last 12 months from Product Production.
- C_E = Particulate Emissions in pounds for last 12 months from Co-Generation System Operation.
- B_E = Particulate Emissions in pounds for last 12 months from Boiler Operation.
- H_{BO} = Sum of Hours of Fuel Oil Operation of all Boilers for last 12 months.
- E_{BO} = 0.5 pound particulate matter per hour of Boiler Operation when fuel oil is fired.
- H_B = 7.6 pounds particulate matter per MMCF natural gas
- E_B = MMCF fired for boilers in the last 12 months
- G_1 = 0.0035 lb/hr * Total Hours for Generator E-90
- G_2 = 0.0170 lb/hr * Total Hours for Generator E-91

$$R_E = 0.0445 \text{ lb/hr} * \text{Total Hours for Chiller E-92}$$

- 7a. The gas turbine is subject to a New Source Performance Standard (NSPS) for stationary gas turbines, 40 CFR 60, Subparts A and GG. The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement.
- b. The sulfur dioxide (SO₂) emissions from the gas turbine shall not exceed the applicable standards of the NSPS, 40 CFR 60.332 and 60.333 respectively.
- c. At all times, the Permittee shall also, to the extent practicable, maintain and operate the gas turbine, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions.
- 8a. Only natural gas shall be burned in the gas turbine.
- b. Emissions of nitrogen oxides from the gas turbine, shall not exceed 0.37 lb/mmBtu.
- 9a. Annual consumption of natural gas in million cubic feet (MMCF) for the gas turbine shall not exceed 450.4 MMCF.
- b. The co-generation system shall not operate at 30% or less of full load for more than 504 hours per year.
- c. Total emissions of particulate matter (PM), carbon monoxide (CO), nitrogen oxides (NO_x) and volatile organic material (VOM) from the gas turbine shall not exceed the following limits (as limited in Construction Permit 94060073):

<u>% of Full Load</u>	<u>CO Emissions</u>		<u>VOM Emissions</u>	
	<u>(Lb/Hr)</u>	<u>(TPY)</u>	<u>(Lb/Hr)</u>	<u>(TPY)</u>
30% and Less	28.30	7.14	5.70	1.44
Greater Than 30%	8.20	N/A	1.40	N/A
Annual Total		41.00		7.22

<u>PM Emissions</u>		<u>NO_x Emissions</u>	
<u>(Lb/Hr)</u>	<u>(Tons/Yr)</u>	<u>(Lb/Hr)</u>	<u>(Tons/Yr)</u>
2.14	9.37	24.00	85.54

The CO and NO_x emission limits for the gas turbine are based on performance testing. Other emission limits are based on the standard emission factors for firing natural gas and the annual consumption rate. Annual limits are based on continuous operation (8,760 hr/yr). These limits are necessary for PSD avoidance.

- d. Compliance with annual limits shall be determined from a running total of 12 months of data.
10. A custom schedule for monitoring sulfur content of the fuel is allowed in accordance with 40 CFR 60.334(b)(2). The Permittee shall record the sulfur contents of the fuel on at least a monthly basis. This may be based on the analysis by the fuel supplier. The Permittee shall receive any changes in the sulfur content from the suppliers, noting the date of any change.
- 11a. The Permittee shall fulfill applicable notification and recordkeeping requirements pursuant to 40 CFR 60.7, 60.334 and 60.335.
- b. The Permittee shall maintain records of the following items, and such other items as may be appropriate to allow the Illinois EPA to review compliance with the requirements in this permit.
 - i. Fuel type and quality (date(s) of change(s)).
 - ii. Co-Gen Fuel consumption (mcf/month).
 - iii. Monthly gas turbine operating hours (hr/mo) for each % load range.
 - iv. monthly boiler operating hours for fuel oil (hr/mo).
 - v. Boiler natural gas fuel consumption (mmcf/month).
 - vi. Finished Product (ton/month), as listed in Condition 3(a).
 - vii. VOM material usage and emissions (ton/month and ton/year).
 - c. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Illinois EPA and USEPA upon request. Any records retained in an electronic format (e.g., computer) shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Illinois EPA request for records during the course of a source inspection.
 - d. If there is an exceedance of the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the Illinois EPA's Compliance Section in Springfield, Illinois within 30 days after the exceedance. The report shall include the emissions released in accordance with the recordkeeping requirements, a copy of the relevant records, and a description of the exceedances or violation and efforts to reduce emissions and future occurrences.
12. This Permit is issued based on negligible emissions of particulate matter from the flavoring vault general exhaust (E-36). For this

purpose, emissions shall not exceed nominal emission rates of 0.1 lb/hour and 0.44 ton/year.

13. This Permit is issued based on negligible emissions of particulate matter from the sandblaster, the welding station, the grinding/sanding operation, the general dust collection system and the central housekeeping vacuum. For this purpose, emissions from each item shall not exceed nominal emission rates of 0.1 lb/hour and 0.44 ton/year.
14. This permit is issued based on negligible emissions of particulate matter from the wrapping machine with dust collector and HEPA filter. For this purpose emissions shall not exceed nominal emission rates of 0.001 lb/hour and 0.0044 ton/year.
15. This permit is issued based on negligible emissions of particulate matter from the sweetener pellet conveyance system (E-74), talc feed dump station (E-75), granular sweetener feed system (E-76), citric acid feed system (E-77), salvage feed system (E-78), primary sweetener vacuum system (E-79), and secondary sweetener vacuum system (E-80). For this purpose emissions from each emission source shall not exceed nominal emission rates of 0.001 lb/hour and 0.0044 ton/yr.
16. This permit is issued based on negligible emissions of particulate matter from the one sweetener material recovery with dust collectors. For this purpose emissions shall not exceed nominal emission rates of 0.0005 lb/hour and 0.0022 ton/year.
17. This permit is issued, based upon negligible emissions of particulate matter from the Tri Bubb Blending (E-84). for this purpose, emissions shall not exceed nominal emission rates of 0.002 lb/hr and 0.0088 ton/year.
18. This permit is issued based on negligible emissions of particulate matter from the bag dump station (E-88) with dust collector and HEPA filter. For this purpose emissions shall not exceed nominal emission rates of 0.003 lb/hour and 0.0013 ton/year.
19. This permit is issued based on negligible emissions of particulate matter from pellet gum tumbling, solution prep and coating pan (E-86 and E-87). For this purpose, emissions shall not exceed nominal emission rates of 0.0008 lb/hour and 0.0035 ton/year.
20. This permit is issued based on negligible emissions of particulate matter from coating pan #2 (E-89). For this purpose, emissions shall not exceed nominal emission rates of 0.0004 lb/hour and 0.002 ton/year.
21. Emissions and operation of the following equipment shall not exceed the following limits:

<u>Item of Equipment</u>	<u>VOM Usage</u>		<u>VOM Emissions</u>	
	<u>(Lb/Mo)</u>	<u>(Ton/Yr)</u>	<u>(Lb/Mo)</u>	<u>(Ton/Yr)</u>
Gum Coating Operations	2,537	15.22	2,537	15.22

These limits are based on material balance at 8,760 hours per year. Compliance with annual limits shall be determined from a running total of 12 months of data.

22. This permit is issued based on negligible emissions of volatile organic material from the 8 raw material storage tanks (E66-E73). For this purpose emissions from each emission source shall not exceed nominal emission rates of 0.1 lb/hour and 0.44 ton/yr.
23. This Permit is issued based on negligible emissions of volatile organic material from the 20,000 gallon #2 fuel oil storage tank. For this purpose, emissions shall not exceed nominal emission rates of 0.1 lb/hour and 0.44 ton/year.
- 24a. At the above location, the Permittee shall not keep, store, or utilize a residual fuel oil (Grades No. 4, 5 and 6).
 - b. Organic liquid by-products or waste materials shall not be used in these fuel combustion emission sources without written approval from the Illinois EPA.
 - c. The Illinois EPA shall be allowed to sample all fuels stored at the above location.
25. Two (2) copies of required reports and notifications concerning equipment operation or repairs, performance testing or a continuous monitoring system shall be sent to:

Illinois Environmental Protection Agency
 Division of Air Pollution Control
 Compliance Section (#40)
 P.O. Box 19276
 Springfield, Illinois 62794-9276

and one (1) copy shall be sent to the Illinois EPA's regional office at the following address unless otherwise indicated:

Illinois Environmental Protection Agency
 Division of Air Pollution Control
 5415 North University
 Peoria, Illinois 61614

26. The Permittee shall submit the following additional information with the Annual Emission Report, due May 1st of each year: If there have been no exceedances of the conditions set forth in this permit during the prior calendar year, the Annual Emission Report shall include a statement to that effect.

Page 11

Please note, this FESOP permit is revised to include equipment as described in Construction Permits 00100050 and 00020009.

If you have any questions on this permit, please call John Blazis at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:JPB:jar

Attachments

cc: Illinois EPA, FOS Region 2
Illinois EPA, Compliance Section
USEPA

Attachment A

Warner-Lambert Co, 201808ACJ
FESOP Permit, 72110048

PLANT EMISSION SUMMARY

1. Particulate Matter

Emission Unit	Annual Emission Calculation	Particulate Matter Emissions (lbs/yr)
Stick Gum	0.2 (lbs/ton of product) x 73,900 (tons/yr)	14,780.0
Non-Stick/Stick Gums	0.3 (lbs/ton of product) x 121,000 (tons/yr)	36,300.0
Mints	0.34 (lbs/ton of Product) x 7,577 (tons/yr)	2,629.2
Boilers	0.2 (lbs/hr) x 8,760 (hrs/yr) x 3 Boilers	5,256.0
E-11 Outdoor Silo	0.01 (lbs/hr) ⁽¹⁾ x 8760 (hrs/yr)	87.6
E-12 Outdoor Silo	0.01 (lbs/hr) ⁽¹⁾ x 8760 (hrs/yr)	87.6
E-30 Welding Station	0.1 (lbs/hr) ⁽¹⁾ x 8760 (hrs/yr)	876.0
E-36 Flavor Vault	0.1 (lbs/hr) ⁽¹⁾ x 8760 (hrs/yr)	876.0
E-55 Gen. Dust Coll.	0.2 (lbs/hr) ⁽¹⁾ x 8760 (hrs/yr)	1,752.0
E-39 Swing Arm	0.1 (lbs/hr) ⁽¹⁾ x 8760 (hrs/yr)	876.0
E-40 Sandblaster	0.1 (lbs/hr) ⁽¹⁾ x 8760 (hrs/yr)	876.0
E-48 R&S Cntrl Vac	0.1 (lbs/hr) ⁽¹⁾ x 8760 (hrs/yr)	876.0
E-58 S.S. Cntrl Vac	0.1 (lbs/hr) ⁽¹⁾ x 8760 (hrs/yr)	876.0
E-74, E-75, E-76, E-77, E-78, E-79, E-80	0.001 (lbs/hr) ⁽¹⁾ x 8760 (hrs/yr) x 7 Sources	61.3
E-82 Sweetener Material Recovery	0.0005 (lbs/hr) x 8760 (hrs/yr)	4.4
E-84 Tri-Bubb Blending	0.002 (lbs/hr) ⁽¹⁾ x 8760 (hrs/yr)	17.5
SUBTOTAL		68,723.2
Co-Gen	2.14 (lbs/hr) x 8,760 hrs	18,746.0
TOTAL		87,469.2
$\frac{\text{lbs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = \frac{\text{tons}}{\text{yr}}$		43.7 tons/yr

(1) Based on Illinois EPA accepted emission factor for negligible emissions.

Aggregate particulate matter emissions from all emission units shall not exceed 43.7 tons/yr. Aggregate particulate matter emissions shall be computed based on pounds of product produced plus co-generation system particulate emissions plus boiler particulate emissions plus reciprocating engines, and reconciled monthly utilizing a twelve month rolling average to verify compliance.

$$PM = P_E + C_E + B_E + G_1 + G_2 + R_E$$

- P_E = Maximum Calculated Emissions from Process
- C_E = Total Co-Gen Run Hours * 2.14 lb/hr
- B_E = $(H_{BO} * E_{BO}) + (H_B * E_B)$
- PM = Particulate Emissions in pounds for last 12 months.
- P_E = Particulate Emissions in pounds for last 12 months from Product Production.
- C_E = Particulate Emissions in pounds for last 12 months from Co-Generation System Operation.
- B_E = Particulate Emissions in pounds for last 12 months from Boiler Operation.
- H_{BO} = Sum of Hours of Fuel Oil Operation of all Boilers for last 12 months.
- E_{BO} = 0.5 pound particulate matter per hour of Boiler Operation when fuel oil is fired.
- H_B = 7.6 pounds particulate matter per MMCF natural gas.
- E_B = MMCF fired for boilers in the last 12 months.
- G_1 = 0.0035 lb/hr * Total Hours for Generator E-90
- G_2 = 0.0170 lb/hr * Total Hours for Generator E-91
- R_E = 0.0445 lb/hr * Total Hours for Chiller E-92

2. NO_x : Aggregate Nitrogen Oxide (NO_x) emissions from the co-generation system, the boilers and reciprocating engines shall not exceed 94 tons per 12 month running total. Aggregate emissions shall be calculated monthly using a 12 month running total to verify the 94 ton limit.

The monthly NO_x compliance calculation using a 12 month running total shall use the following:

Total Ton, NO_x = Co-Gen Ton, NO_x + Boiler Ton, NO_x + Reciprocating Engines Ton, NO_x

$$\text{Co - Gen Ton, } NO_x = \text{ Therms } x \frac{1.845 \times 10^{-5} \text{ Ton - } NO_x}{\text{Therm}}$$

This is based on the maximum rate of NO_x emission of 23.3 lbs/hr at 100% turbine loading, and natural gas usage at 100% turbine loading of 61,760 scfm.

$$\text{Boiler Ton, NO}_x = \text{Ton, NO}_x \text{ (Gas)} + \text{Ton, NO}_x \text{ (Oil)}$$

$$\text{Ton, NO}_x \text{ (Gas)} = \frac{\sum_{m=1}^{12} \left(\text{MMCF} * 100 \frac{\text{lb} - \text{NO}_x}{\text{MMCF}} \right)}{2000 \text{ lb / ton}}$$

$$\text{Ton, NO}_x \text{ (Oil)} = \frac{\sum_{m=1}^{12} \left(\text{MMCF} * 5.0 \frac{\text{lb} - \text{NO}_x}{\text{Hr}} \right)}{2000 \text{ lb / ton}}$$

B_m = Total Boiler Operating Hours in Month m, for all boilers when fuel oil fired.

$$\begin{aligned} \text{Reciprocating Engine Ton, NO}_x &= \text{Ton, NO}_x \text{ (Generator E-90)} \\ &+ \text{Ton, NO}_x \text{ (Generator E-91)} + \text{Ton, NO}_x \text{ (Chiller E-92)} \end{aligned}$$

$$\text{Ton, NO}_x \text{ (Generator E - 90)} = \sum_{12}^{m=1} (1.66 \text{ lb / hr}) \times \text{Hours} / (2,000 \text{ lb / ton})$$

$$\text{Ton, NO}_x \text{ (Generator E - 91)} = \sum_{12}^{m=1} 7.96 \text{ lb / hr} \times \text{Hours} / (2,000 \text{ lb / ton})$$

$$\text{Ton, NO}_x \text{ (Chiller E - 92)} = \sum_{12}^{m=1} 11.79 \text{ lb / hr} \times \text{Hours} / (2,000 \text{ lb / ton})$$

3. CO: Aggregate carbon monoxide emissions from the co-generation system, the boilers shall not exceed 89 tons (178,000 lbs) per 12 month running total. Aggregate emissions shall be calculated monthly using a 12 month running total to verify the 89 ton limit.

$$\begin{aligned} \text{CO} &= \sum_{12}^{m=1} (H_{1m} * E_1) + \sum_{12}^{m=1} (H_{2m} * E_2) + \sum_{12}^{m=1} (B_m * E_3) + \sum_{12}^{m=1} (B_{mo} * E_e) + \\ &\quad \sum_{12}^{m=1} (R_m * E_5) + \sum_{12}^{m=1} (G_{1m} * E_6) + \sum_{12}^{m=1} (G_{2m} * E_7) \end{aligned}$$

CO = CO emission in pounds for last 12 months

m = Month

H_{1m} = Co-Generation System Hours of operation in month m between 0% and 30% loading

H_{2m} = Co-Generation System Hours of operation in month m greater than 30% loading

- E₁ = Co-Generation System 28.3 pounds CO emission per hour between 0% and 30% loading
- E₂ = Co-Generation System 8.2 pounds CO emission per hour greater than 30% loading
- E₃ = 84 pounds CO per mcf natural gas used in boilers
- E₄ = 1.25 pounds CO emission per hour per boiler for all firing rates of fuel oil
- B_m = MMCF of natural gas used by all boilers in month m
- B_{mco} = Sum of hours of fuel oil operation in month m for all boilers
- R_m = Hours/month for Chiller in month m
- E₅ = 1.29 lb/hour CO for Chiller
- G_{1m} = Hours/month for Generator E-90 in month m
- E₆ = 0.58 lb/hour CO for Generator E-90
- G_{2m} = Hours/month for Generator E-91 in month m
- E₇ = 2.77 lb/hour CO for Generator E-91

4. VOM: Emissions and operation of the following equipment shall not exceed the following limits:

<u>Item of Equipment</u>	<u>VOM Usage</u>		<u>VOM Emissions</u>	
	<u>(Lb/Mo)</u>	<u>(Ton/Yr)</u>	<u>(Lb/Mo)</u>	<u>(Ton/Yr)</u>
Gum Coating Operations	2,537	15.22	2,537	15.22

These limits are based on material balance at 8,760 hours per year. Compliance with annual limits shall be determined from a running total of 12 months of data.