

October 18, 2023

Nicholas Armstrong
Santa Fe Aggregates, Inc.
PO Box 15002
Sacramento, CA 95851

Re: Notice of Preliminary Decision – Emission Reduction Credits
Facility Number: N-1679
Project Number: N-1230164

Dear Mr. Armstrong:

Enclosed for your review and comment is the District's analysis of Santa Fe Aggregates, Inc.'s application for Emission Reduction Credits (ERCs) resulting from the shutdown of two asphaltic concrete storage silos, a truck loadout operation, and a hot mix asphalt batch plant, at 17300 Yosemite Blvd in Waterford, CA. The quantity of ERCs proposed for banking is 256 lb-NOx/yr, 118 lb-SOx/yr, 430 lb-PM10/yr, 1,211 lb-CO/yr, 886 lb-VOC/yr and 481 metric tons CO2e/yr.

The notice of preliminary decision for this project has been posted on the District's website (www.valleyair.org). After addressing all comments made during the 30-day public notice comment period, the District intends to issue the ERCs. Please submit your written comments on this project within the 30-day public comment period, as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Mungi Hong of Permit Services at (559) 230-5897.

Sincerely,



Brian Clements
Director of Permit Services

BC:mh

Enclosures

cc: Courtney Graham, CARB (w/ enclosure) via email
cc: Gerardo Rios, EPA (w/ enclosure) via email

Samir Sheikh
Executive Director/Air Pollution Control Officer

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San Joaquin Valley Air Pollution Control District

ERC Banking Application Review

Shutdown of Asphaltic Concrete Storage Silos, Truck Loadout Operation, and
Hot Mix Asphalt Batch Plant

Facility Name: Santa Fe Aggregates, Inc.

Date: October 17, 2023

Mailing Address: PO Box 15002
Sacramento, CA 95851

Engineer: Mungi Hong

Lead Engineer: Brian Clerico

Contact Person: Nicholas Armstrong

Telephone: (916) 484-3326

E-Mail: narmstrong@teichert.com

Application Received: January 31, 2023

Deemed Complete: April 14, 2023

Project Number: N-1230164

ERC Certificate Numbers: N-1630-1, '-2, '-3, '-4, '-5, and '-24

I. Proposal

Santa Fe Aggregates, Inc. has submitted an Emission Reduction Credits (ERCs) banking application for the shutdown of two asphaltic concrete storage silos and a truck loadout operation (permit unit '-7) and the shutdown of a hot mix asphalt batch plant (permit unit '-9).

The quantity of bankable emission reductions for the shutdown of permit units '-7 and '-9 is summarized in the table below:

Bankable Emission Reduction Credits					
Pollutant	1 st Quarter (lb)	2 nd Quarter (lb)	3 rd Quarter (lb)	4 th Quarter (lb)	Total (lb/yr)
NO _x	14	86	107	49	256
SO _x	7	40	49	22	118
PM ₁₀	22	125	187	96	430
PM _{2.5}	19	108	160	82	369
CO	69	404	507	231	1,211
VOC	48	274	379	185	886

The facility has also proposed to issue the Greenhouse Gas (GHG) ERC for Carbon Dioxide equivalent (CO₂e). The amount of bankable CO₂e emissions, shown in the table below, was calculated, according to the provisions of District Rules 2201 and 2301, as detailed in Section V of this document:

Bankable GHG Emissions	
Pollutant	Total (metric tons/year)
CO ₂ e	481

II. Applicable Rules

Rule 2201	New and Modified Stationary Source Review Rule (8/15/19) ¹
Rule 2301	Emission Reduction Credit Banking (8/15/19) ¹

III. Project Location

The emissions units are located at 17300 Yosemite Blvd in Waterford, CA.

IV. Method of Generating Reductions

The actual emission reductions (AERs) are generated by shutting down two asphaltic concrete storage silos, a truck loadout operation, and a hot mix asphalt batch plant, as authorized by PTOs N-1679-7-3 and '-9-3. The equipment description for each unit is as follows:

N-1679-7-3: TWO 175 TON ASPHALTIC CONCRETE STORAGE SILOS WITH A TRUCK LOADOUT OPERATION

N-1679-9-3: STANDARD STEEL HOT MIX ASPHALT BATCH PLANT INCLUDING FIVE AGGREGATE BINS, AGGREGATE DRIER WITH A GENCOR MODEL ULII-135 135 MMBTU/HR LOW NOX BURNER, SCREENS, PUGMILL, CONVEYORS, ALL VENTED TO A GENCOR MODEL 132 BAGHOUSE

V. Calculations

A. Assumptions

- The results of all Historical Actual Emission (HAE) and Actual Emission Reduction (AER) calculations are rounded to the nearest whole number.
- The burners associated with permit unit '-9 were solely fired on liquefied petroleum gas (LPG).
- Permit unit '-7 consisted of a silo filling operation and a truck loadout operation.
- Permit unit '-9 consisted of a dryer and an aggregate handling operation.
- GHG emissions will be rounded to the nearest metric ton/year.
- The CO_{2e} emission factor from the combustion of propane includes GHG emissions of CO₂, CH₄ and N₂O, where the total emission factor includes the sum of each of the compounds multiplied by their Global Warming Potential (GWP).
- Conversion: 1,000 kg = 1 metric ton

¹ Rules 2201 and 2301 was amended on 4/20/23. However, this application was deemed complete on 4/14/23; therefore, the 2019 version of Rules 2201 and 2301 is applicable.

B. Emission Factors

Permit unit '-7

Silo Filling

Pollutant	Emission Factor (lb/ton-asphaltic concrete produced)	Source
PM ₁₀	0.00059	PTO N-1679-7-3
CO	0.0012	PTO N-1679-7-3
VOC	0.012	PTO N-1679-7-3

Truck Loadout

Pollutant	Emission Factor (lb/ton-asphaltic concrete loaded)	Source
PM ₁₀	0.00052	PTO N-1679-7-3
CO	0.0014	PTO N-1679-7-3
VOC	0.0042	PTO N-1679-7-3

Permit unit '-9

Dryer

Pollutant	Emission Factor		Source
	ppmv @ 3% O ₂	lb/MMBtu	
NO _x	3.22	0.0368 ²	Source Test Result from 2019 (See Appendix C)
SO _x	-	0.017	PTO N-1679-9-3
CO	23.2	0.1615 ²	Source Test Result from 2019 (See Appendix C)
VOC	-	0.0516	PTO N-1679-9-3

The following emission factors are taken from 40 CFR 98 Subpart C Tables C-1 and C-2. These emission factors have been determined by the USEPA, through a public process, to be representative for LPG combustion in the U.S.

EF CO ₂	=	61.71 kg/MMBtu
EF CH ₄	=	0.003 kg/MMBtu
EF N ₂ O	=	0.0006 kg/MMBtu

CO₂e is found by multiplying the mass emissions of a GHG by its Global Warming Potentials (GWP). For combustion sources, GHG's include the following three "well-mixed" compounds: carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). The following GWPs are from District Rule 2301 *Emission Reduction Credit Banking*:

GWP CO ₂	=	1
GWP CH ₄	=	21
GWP N ₂ O	=	310

² See Appendix G for ppmv to lb/MMBtu conversion.

$$\begin{aligned}
 EF_{CO_2e} &= (61.71 \text{ kg/MMBtu} \times 1) + (0.003 \text{ kg/MMBtu} \times 21) + (0.0006 \text{ kg/MMBtu} \times 310) \\
 &= 61.71 \text{ kg/MMBtu} + 0.063 \text{ kg/MMBtu} + 0.186 \text{ kg/MMBtu} \\
 &= 61.959 \text{ kg-CO}_2\text{e/MMBtu} \times (1 \text{ metric ton} / 1,000 \text{ kg}) \\
 &= \mathbf{0.062 \text{ metric tons-CO}_2\text{e/MMBtu}}
 \end{aligned}$$

Dryer + Aggregate Handling Excluding Transfer Points

Pursuant to PTO N-1679-9-3, a combined PM₁₀ emission factor of 0.012 lb/ton pertains to emissions from the dryer and aggregate handling operation excluding transfer points.

Pollutant	Emission Factor (lb/ton-asphaltic concrete produced)	Source
PM ₁₀	0.012	PTO N-1679-9-3

Aggregate Handling (Transfer Points Only)

Pollutant	Emission Factor (lb/ton-asphaltic concrete loaded)	Source
PM ₁₀	0.000184	PTO N-1679-9-3

C. Baseline Period Determination and Data

In accordance with District Rule 2201, Section 3.9, the baseline period is a period of time equal to the following:

- The two consecutive years of operation immediately prior to the submission date of the Complete Application; or
- At least two consecutive years within the five years immediately prior to the submission date of the Complete Application if determined by the APCO as more representative of normal source operation; or
- A shorter period of at least one year if the emissions unit has not been in operation for two years and this represents the full operational history of the emissions unit, including any replacement units; or
- Zero years if an emissions unit has been in operation for less than one year (only for use when calculating Actual Emission Reduction)

Baseline Period Determination

The facility has provided asphaltic concrete production records from January 2018 through December 2021 and LPG fuel consumption records from July 2017 through December 2021. The facility has proposed to use the 1st qtr. of 2018 through 4th qtr. of 2019 data.

Nonetheless, in order to select the appropriate baseline period according to section 3.9 of Rule 2201, each consecutive 8-quarter (i.e. consecutive 24-month) period has been compared with the average of production from the entire period (i.e. normal source operation (NSO)), and the 8-quarter period that is closest to the NSO average has been determined to be the baseline period as seen below (see Appendix E³).

Baseline Period Data

Asphaltic Concrete Production

Year	Quarter 1 (ton)	Quarter 2 (ton)	Quarter 3 (ton)	Quarter 4 (ton)
2018	-	-	-	14,676.8
2019	3,729.2	16,605.1	28,631.1	1,438.3
2020	0.0	4,409.6	2,643.4	-
Average	1,864.6	10,507.4	15,637.3	8,057.6

Dryer LPG Fuel Usage⁴

Year	Quarter 1 (MMBtu)	Quarter 2 (MMBtu)	Quarter 3 (MMBtu)	Quarter 4 (MMBtu)
2018	-	-	-	2,588.6
2019	887.7	4,111.6	5,750.0	329.8
2020	0	1,101.2	720.2	-
Average	443.9	2,606.4	3,235.1	1,459.2

D. Historical Actual Emissions (HAE)

Pursuant to section 3.23 in District Rule 2201, Historical Actual Emission (HAEs) are emissions that actually occurred during the baseline period, after discounting for:

- Any emissions reductions required or encumbered by any laws, rules, regulations, agreements, orders, or permits; and
- Any emissions reductions attributed to a control measure noticed for workshop, or proposed or contained in a State Implementation Plan, and
- Any emission reductions proposed in the District air quality plan for attaining the annual reductions required by the California Clean Air Act, and
- Any Actual Emissions in excess of those required or encumbered by any laws, rules, regulations, orders, or permits. For units covered by a Specific Limiting Condition (SLC), the total overall HAE for all units covered by SLC must be discounted for any emissions in excess of that allowed by the SLC.

³ During the selected 8-quarter period, the facility also operated a permit-exempt oil heater using LPG. The LPG fuel consumption for the dryer during the selected 8-quarter period was used the HAE calculations.

⁴ The facility also operated a permit exempt, LPG-fired dryer during the baseline period. Annual reports includes LPG consumed by both the permitted dryer and permit exempt dryer; therefore, the LPG usage consumed by the permitted dryer in the table were provided by the applicant.

1. Applicable District Rules

The HAE must be discounted for any emissions reductions required or encumbered by any laws, rules, regulations, agreements, orders, or permits.

Permit unit '-7

There are no District prohibitory rules specifically applicable to the silo filling or truck loadout operation.

Additionally, there are no New Source Performance Standards (NSPS) or National Emission Standards for Hazardous Air Pollutants (NESHAPs) applicable to these operations.

Permit unit '-9

Rule 4309 Dryer, Dehydrators, and Ovens (12/15/05)

The dryer associated with permit unit '-9 is subject to the emission limit requirements of District Rule 4309. As shown in the tables below, the NO_x and CO emission factors used to calculate the dryer's HAE are compared to the rule limits.

Permit Unit	Source Test NO _x EF	Rule 4309 NO _x Limit
N-1679-9-3	3.22	4.3

Permit Unit	Source Test CO EF	Rule 4309 CO Limit
N-1679-9-3	23.2	42

As seen above, the emission factors used to calculate the HAE from the dryer meets the emission limits of this rule. No discounting is not required.

40 CFR 60, Subpart I – Standards of Performance for Hot Mix Asphalt Facilities

The affected facility to which the provisions of this subpart apply is each hot mix asphalt facility that commences construction or modification after June 11, 1973. For the purpose of this subpart, a hot mix asphalt facility is comprised only of any combination of the following: dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler, systems for mixing hot mix asphalt; and the loading, transfer, and storage systems associated with emission control systems.

Permit unit '-9 meets the definition of an affected facility specified in this subpart; therefore, this subpart applies.

40 CFR 60.92(a) states that on and after the date on which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall discharge or cause the discharge into the atmosphere from any affected facility any gases which:

- (1) Contain particulate matter in excess of 90 mg/dscm (0.04 gr/dscf).
- (2) Exhibit 20 percent opacity, or greater.

According to PTO '9-3, maximum PM emissions from the exhaust stack of the baghouse is limited to 0.04 grains/dscf; therefore, no discounting is required.

2. State Implementation Plan (SIP)

Pursuant to District Rule 2201, Section 3.23, the HAE must be discounted for any emissions reductions attributed to a control measure noticed for workshop, or proposed or contained in a State Implementation Plan.

There are no control measures noticed for workshop, or proposed or contained in a State Implementation Plan applicable the sources in this project. Therefore, the HAEs will be calculated in such a manner that they are fully surplus.

3. District Air Quality Plan

Pursuant to District Rule 2201, Section 3.23, the HAE must be discounted for any emissions reductions proposed in the District air quality plan for attaining the annual reductions required by the California Clean Air Act.

Currently there are no emissions reductions proposed in any District air quality plans for attaining the annual reductions required by the California Clean Air Act.

4. Excess Emissions

Pursuant to District Rule 2201, Section 3.23, the HAE must be discounted for any Actual Emissions in excess of those required or encumbered by any laws, rules, regulations, orders, or permits.

There are no emissions in excess of those required or encumbered by any laws, rules, regulations, orders, or permits.

5. HAE Summary

The HAE is calculated in Appendix B and summarized in the following table:

Historical Actual Emissions				
Pollutant	1 st Quarter (lb)	2 nd Quarter (lb)	3 rd Quarter (lb)	4 th Quarter (lb)
NO _x	16	96	119	54
SO _x	8	44	55	25
PM ₁₀	24	139	208	107
Portion of PM ₁₀ That is PM _{2.5}	21	120	178	91
CO	77	449	563	257
VOC	53	304	421	206

Historical Actual Emissions				
Pollutant	1 st Quarter (metric ton)	2 nd Quarter (metric ton)	3 rd Quarter (metric ton)	4 th Quarter (metric ton)
CO ₂ e	28	162	201	90

E. Actual Emissions Reductions (AER)

Per District Rule 2201, section 4.12, Actual Emissions Reductions (AER) shall be calculated, on a pollutant-by-pollutant basis, as follows:

$$\text{AER} = \text{HAE} - \text{PE2}$$

Where:

HAE = Historic Actual Emissions

PE2 = Post Project Potential to Emit

Since the units have been shut down, PE2 is equal to zero. Therefore, AER is equal to HAE.

F. Air Quality Improvement Deduction

Per District Rule 2201, section 4.12.1, prior to banking, AER shall be discounted by 10% for an Air Quality Improvement Deduction (AQID). Therefore, the AQID from this banking action is summarized in the following table:

Air Quality Improvement Deduction				
Pollutant	1 st Quarter (lb)	2 nd Quarter (lb)	3 rd Quarter (lb)	4 th Quarter (lb)
NO _x	2	10	12	5
SO _x	1	4	6	3
PM ₁₀	2	14	21	11
Portion of PM ₁₀ That is PM _{2.5}	2	12	18	9
CO	8	45	56	26
VOC	5	30	42	21

The AQID requirement is part of Rule 2201; therefore, it only applies to criteria pollutants that are governed by Rule 2201. Calculations for GHG emission reductions are detailed in section 4.5 of Rule 2301, which does not include a provision for an AQID. Therefore, no AQID is required for CO₂e.

G. Bankable Emissions Reductions

The bankable emissions reductions are determined by subtraction of the Air Quality Improvement Deduction from the Actual Emissions Reductions. The bankable ERCs from this banking action are summarized in the table below:

Bankable Emission Reduction Credits				
Pollutant	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
NO _x	14	86	107	49
SO _x	7	40	49	22
PM ₁₀	22	125	187	96
Portion of PM ₁₀ That is PM _{2.5}	19	108	160	82
CO	69	404	507	231
VOC	48	274	379	185

Bankable Emission Reduction Credits				
Pollutant	1st Quarter (metric ton)	2nd Quarter (metric ton)	3rd Quarter (metric ton)	4th Quarter (metric ton)
CO _{2e}	28	162	201	90

VI. Compliance

To comply with the definition of Actual Emissions Reductions (Rule 2201, Section 3.2.1), the reduction must be:

A. Real

The emissions reductions were generated by the shutdown of the asphaltic concrete storage silos, truck loadout operation, and hot mix asphalt batch plant. The real emissions were calculated from historic actual production and LPG usage data as well as recognized emission factors. The associated equipment has been removed from service and their permits subsequently have been surrendered to the District.

Therefore, the emission reductions are real.

B. Enforceable

The reductions are enforceable since the permits for the asphaltic concrete storage silos, truck loadout operation, and hot mix asphalt batch plant have been removed from service and surrendered to the District. Operating the equipment without permits would result in enforcement action being taken.

C. Quantifiable

The reductions are quantifiable since the reductions were calculated utilizing District-approved emission factors, and the baseline period actual production and LPG usage.

D. Permanent

The asphaltic concrete storage silos, truck loadout operation, and hot mix asphalt batch plant have been shut down and the PTOs have been surrendered. Operation of the equipment without a valid PTO is subject to enforcement action. Construction of equipment that would replace the equipment removed at this facility, regardless if constructed at the same or different location, must be authorized by the District after evaluation under all applicable rules, including District Rule 2201 (New and Modified Stationary Source Review Rule), under which any increase in emissions over the applicable threshold must be offset.

Additionally, the permitting database was queried to verify that the production is not being shifted elsewhere in the District and no permit applications were found to increase the asphaltic concrete production of other facilities owned or operated by Santa Fe Aggregates. Plus, any such new processing operation, or expansion at an existing processing operation, would need to be evaluated under District Rule 2201 and other applicable rules.

As to the possibility of the emissions from this shutdown being shifted to another asphaltic concrete plant of a different operator, California is likely experiencing less global demand in asphaltic concrete from the implementation of California Senate Bill 743 (Steinberg, 2013). SB 743 initiated an update to the CEQA Guidelines to change how lead agencies evaluate transportation impacts under CEQA. Starting on July 1, 2020, agencies analyzing the transportation impacts of new projects began using vehicle miles traveled (VMT) instead of level of service (LOS) as the principal environmental impact metric. Above de minimis levels, increases in VMT on a transportation project are deemed an adverse environmental impact requiring full mitigation. The intended consequence of this was fewer road capacity increasing projects, which is a source of demand for asphaltic concrete.

Therefore, the emission reductions are permanent within the boundaries of the District.

E. Surplus

Shutdown of the asphaltic concrete storage silos, truck loadout operation, and hot mix asphalt batch plant was not required by any law, rule, agreement, or regulation. As of the date this application was deemed complete, there are no known future rules or regulations that would have required any portion of these reductions. Therefore, the reductions are surplus.

F. Not used for the approval of an Authority to Construct or as Offsets

The ERCs generated by permanent shutdown of the asphaltic concrete storage silos, truck loadout operation, and hot mix asphalt batch plant were not used in the approval of an Authority to Construct or as offsets for any projects at the facility.

G. Timely Submittal

Pursuant to District Rule 2301, Section 4.2, in order to deem emissions reductions eligible for banking, an application for ERC has been filed no later than 180 days after the emissions reductions occurred.

Emissions from the surrendered permits permanently ceased on December 31, 2022 as this is the date the permits were surrendered. The emissions reduction banking application was received on January 31, 2023. Therefore, the application was received within 180 days of the date the reductions occurred. The ERC application was filed in a timely manner.

VII. Recommendation

Pending a successful public noticing period, issue Emission Reduction Credit Certificates for NO_x, SO_x, PM₁₀, CO, VOC, and CO_{2e} in the following amounts:

Emission Reduction Credits					
Pollutant	1 st Quarter (lb)	2 nd Quarter (lb)	3 rd Quarter (lb)	4 th Quarter (lb)	Total (lb/yr)
NO _x	14	86	107	49	256
SO _x	7	40	49	22	118
PM ₁₀	22	125	187	96	430
Portion of PM ₁₀ That is PM _{2.5}	19	108	160	82	369
CO	69	404	507	231	1,211
VOC	48	274	379	185	886

Emission Reduction Credits					
Pollutant	1 st Quarter (metric ton)	2 nd Quarter (metric ton)	3 rd Quarter (metric ton)	4 th Quarter (metric ton)	Total (metric ton/yr)
CO _{2e}	28	162	201	90	481

Appendices

- A: Surrendered PTOs
- B: Historical Actual Emissions Calculations
- C: Source Test Results
- D: Draft Emission Reduction Credit Certificates
- E: Baseline Period Determination
- F: Portion of PM₁₀ that is PM_{2.5} for Permit Unit '9
- G: ppmv to Btu Conversion

APPENDIX A

Surrendered PTOs

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: N-1679-7-3

EXPIRATION DATE: 06/30/2023

EQUIPMENT DESCRIPTION:

TWO 175 TON ASPHALTIC CONCRETE STORAGE SILOS WITH A TRUCK LOADOUT OPERATION

PERMIT UNIT REQUIREMENTS

1. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
3. All haul roads and other roadways traversed by mobile equipment and/or motor vehicles shall be adequately moistened with water at such a frequency as required to prevent visible emissions equal to or in excess of 20% opacity from such roads. [District Rule 2201]
4. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
5. The quantity of asphaltic concrete transferred into the storage silos shall not exceed 3,200 tons in any one day and 672,000 tons in any one calendar year. [District Rule 2201]
6. PM10 emissions from the filling of the storage silos shall not exceed 0.00059 pounds per ton of asphaltic concrete produced. [District Rule 2201]
7. CO emissions from the filling of the storage silos shall not exceed 0.0012 pounds per ton of asphaltic concrete produced. [District Rule 2201]
8. VOC emissions from the filling of the storage silos shall not exceed 0.012 pounds per ton of asphaltic concrete produced. [District Rule 2201]
9. The quantity of asphaltic concrete loaded into trucks shall not exceed 3,200 tons in any one day and 672,000 tons in any one calendar year. [District Rule 2201]
10. PM10 emissions from the truck loadout shall not exceed 0.00052 pounds per ton of asphaltic concrete loaded. [District Rule 2201]
11. CO emissions from the truck loadout shall not exceed 0.0014 pounds per ton of asphaltic concrete loaded. [District Rule 2201]
12. VOC emissions from the truck loadout shall not exceed 0.0042 pounds per ton of asphaltic concrete loaded. [District Rule 2201]
13. The permittee shall maintain daily and cumulative annual records of the following: 1) total quantity of asphaltic concrete transferred into the storage silos, in tons; and 2) total quantity of asphaltic concrete loaded into trucks, in tons. The cumulative annual records shall be updated at least once each month in which asphaltic concrete is produced. [District Rules 1070 & 2201]
14. All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rule 1070]

These terms and conditions are part of the Facility-wide Permit to Operate.

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: N-1679-9-3

EXPIRATION DATE: 06/30/2023

EQUIPMENT DESCRIPTION:

STANDARD STEEL HOT MIX ASPHALT BATCH PLANT INCLUDING FIVE AGGREGATE BINS, AGGREGATE DRIER WITH A GENCOR MODEL ULII-135 135 MMBTU/HR LOW NOX BURNER, SCREENS, PUGMILL, CONVEYORS, ALL VENTED TO A GENCOR MODEL 132 BAGHOUSE

PERMIT UNIT REQUIREMENTS

1. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
3. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
4. All haul roads and other roadways traversed by mobile equipment and/or motor vehicles shall be adequately moistened with water at such a frequency as required to prevent visible emissions equal to or in excess of 20% opacity from such roads. [District Rule 2201]
5. No cutback, slow cure, or emulsified asphaltic concrete products (as defined in District Rule 4641, Sections 3.2, 3.4, 3.10, and 5.1) shall be utilized or produced at this facility. [District Rule 4641]
6. Visible emissions from the baghouse serving the dryer, pug mill, screen, and associated conveyors shall not exceed 5% opacity for a period or periods aggregating more than three minutes in one hour. [District Rule 2201]
7. The baghouse shall be equipped with a pressure differential gauge to indicate the pressure drop across the bags. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201]
8. When in operation, the differential pressure of the baghouse shall not be less than 4 inches water column nor greater than 6 inches water column. [District Rule 2201]
9. The baghouse shall be maintained and operated according to manufacturer's specifications. [District Rule 2201]
10. Replacement bags numbering at least 10% of the total number of bags in the baghouse shall be maintained on the premises. [District Rule 2201]
11. Material removed from the baghouse shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201]
12. The baghouse cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201]
13. The unit shall only be fired on liquefied petroleum gas (LPG). [District Rule 2201]
14. A non-resettable, totalizing mass or volumetric fuel flow meter to measure the amount of LPG combusted in the unit shall be installed, utilized and maintained. [District Rules 2201 and 4309]
15. Emissions from this LPG-fired unit shall not exceed any of the following limits: 4.3 ppmvd NO_x @ 19% O₂ (referenced as NO₂) and 42 ppmvd CO @ 19% O₂, as measured at the baghouse outlet. [District Rules 2201 and 4309]

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

16. Emissions from this LPG-fired unit shall not exceed any of the following limits: 0.017 lb-SOx/MMBtu and 0.0516 lb-VOC/MMBtu, as measured at the baghouse outlet. [District Rule 2201]
17. PM10 emissions from the dryer, pug mill, screen, and associated conveyors shall not exceed 0.012 pounds per ton of asphaltic concrete produced, as measured at the baghouse outlet. [District Rule 2201]
18. PM10 emissions from the aggregate handling operation shall not exceed 0.000184 pounds per ton of asphaltic concrete produced. [District Rule 2201]
19. The quantity of asphaltic concrete produced shall not exceed 3,200 tons in any one day and 672,000 tons in any one calendar year. [District Rule 2201]
20. Heat input to the dryer burner shall not exceed 833 MMBtu in any one day and 166,666 MMBtu in any one calendar year. [District Rule 2201]
21. This unit is subject to the requirements of 40 CFR Part 60, Subpart I: Standards of Performance for Asphalt Concrete Plants. [District Rule 4001]
22. Compliance with the requirements of 40 CFR Part 60, Subpart I shall be verified by the test methods given in the Subpart. [District Rule 4001]
23. Particulate matter emissions from the exhaust stack of the baghouse shall not exceed 0.04 grains/dscf in concentration. [District Rule 4001]
24. The asphalt batch plant permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month in which asphalt is produced on at least five days or for at least 32 hours, whichever comes first (and in which a source test is not performed), using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 production days of restarting the unit unless monitoring has been performed within the last month. [District Rule 4309]
25. If either the NOx or CO concentrations corrected to 19% O2 (or no correction if measured above 19% O2), as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rule 4309]
26. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rule 4309]
27. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 19% O2 (or no correction if measured above 19% O2), (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rule 4309]
28. When the hot mix asphalt batch plant dryer operates for 50 days or more in a calendar year, source testing to measure NOx and CO emissions from the dryer shall be conducted at least once every 24 months from the last source test date. [District Rules 2201 and 4309]

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

29. When the hot mix asphalt batch plant dryer operates for less than 50 days in a calendar year, source testing to measure NOx and CO emissions from the dryer shall be conducted at least once every 36 months from the last source test date. [District Rules 2201 and 4309]
30. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]
31. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
32. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within 30 minutes after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4309. [District Rule 4309]
33. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 4309]
34. All test results for NOx and CO shall be reported in ppmv @ 19% O2 (or no correction if measured above 19% O2), corrected to dry stack conditions. [District Rule 4309]
35. NOx emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis. [District Rule 4309]
36. CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rule 4309]
37. Stack gas oxygen (O2) shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rule 4309]
38. The permittee shall maintain daily and cumulative annual records of the following: 1) quantity of asphalt produced, in tons; 2) quantity of LPG combusted, in gallons; and 3) heat input to the dryer, calculated using a higher heating value of 90.5 MMBtu per 1,000 gallons of LPG. Cumulative annual records shall be updated at least once each month in which asphaltic concrete is produced. [District Rules 1070, 2201, and 4309]
39. Differential operating pressure shall be monitored and recorded on each day that the baghouse operates. [District Rule 2201]
40. Records of all maintenance of the baghouse, including all change outs of filter media, shall be maintained. [District Rule 2201]
41. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070 and 4309]

These terms and conditions are part of the Facility-wide Permit to Operate.

APPENDIX B

Historical Actual Emissions Calculations

Permit unit '-7

Silo Filling

Historical actual emissions (HAE) for the silo filling can be calculated as follows:

PM₁₀, CO, and VOC

HAE = Emission Factor (lb/ton) x Production (ton/qtr)

Pollutant	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
PM ₁₀	1	6	9	5
Portion of PM ₁₀ That is PM _{2.5} ⁵	1	5	8	4
CO	2	13	19	10
VOC	22	126	188	97

Truck Loadout

HAE for the truck loadout can be calculated as follows:

PM₁₀, CO, and VOC

HAE = Emission Factor (lb/ton) x Production (ton/qtr)

Pollutant	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
PM ₁₀	1	5	8	4
Portion of PM ₁₀ That is PM _{2.5} ⁵	1	5	7	3
CO	3	15	22	11
VOC	8	44	66	34

⁵ Pursuant to the CARB speciation profiles (<https://ww2.arb.ca.gov/speciation-profiles-used-carb-modeling>), PM_{2.5}/PM₁₀ fraction for asphaltic concrete batch plants is 0.8325.

Permit unit '-9

HAE for the dryer for can be calculated as follows:

Dryer

NO_x, SO_x, PM₁₀, CO, and VOC

HAE = Emission Factor (lb/MMBtu) x LPG Fuel Usage (MMBtu/qtr)

Pollutant	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
NO _x	16	96	119	54
SO _x	8	44	55	25
PM ₁₀	3	20	25	11
Portion of PM ₁₀ That is PM _{2.5} ⁶	3	20	25	11
CO	72	421	522	236
VOC	23	134	167	75

CO₂e

HAE = Emission Factor (metric ton/MMBtu) x LPG Fuel Usage (MMBtu/qtr)

Pollutant	1st Quarter (metric ton)	2nd Quarter (metric ton)	3rd Quarter (metric ton)	4th Quarter (metric ton)
CO ₂ e	28	162	201	90

Aggregate Handling (Excluding Transfer Points)

HAE for the aggregate handling (excluding transfer points) can be calculated as follows:

PM₁₀

HAE = Emission Factor (lb/ton) x Production (ton/qtr)

Pollutant	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
PM ₁₀	19	106	163	86
Portion of PM ₁₀ That is PM _{2.5} ⁵	16	88	136	72

⁶ See Appendix F.

Dryer + Aggregate Handling Excluding Transfer Points

Total HAE PM₁₀ for the dryer and aggregate handling can be calculated as follows:

PM₁₀

$$\text{HAE} = \text{HAE}_{\text{Dryer}} + \text{HAE}_{\text{Aggregate Handling Excluding Transfer Points}}$$

Pollutant	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
PM ₁₀	22	126	188	97
Portion of PM ₁₀ That is PM _{2.5} ⁶	19	108	161	83

Aggregate Handling (Transfer Points Only)

HAE for the aggregate handling (transfer points only) can be calculated as follows:

PM₁₀

$$\text{HAE} = \text{Emission Factor (lb/ton)} \times \text{Production (ton/qtr)}$$

Pollutant	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
PM ₁₀	0	2	3	1
Portion of PM ₁₀ That is PM _{2.5} ⁵	0	2	2	1

APPENDIX C

Source Test Results

Source Test Results for Permit unit N-1679-9		
Source Test Data	Emission Factor (ppmv @ 19% O ₂)	
	NO _x	CO
7/22/2021	2.99	22.81
8/21/2019	3.22	23.2
9/25/2017	2.59	34.72
7/1/2013	2.75	6.5
8/9/2011	2.42	11.97
11/5/2009	2.15	7.61

APPENDIX D
Draft Emission Reduction Credit Certificates

San Joaquin Valley
Air Pollution Control District

Northern Regional Office • 4800 Enterprise Way • Modesto, CA 95356-8718

Emission Reduction Credit Certificate

N-1630-1

ISSUED TO: SANTA FE AGGREGATES, INC.

ISSUED DATE: <DRAFT>

LOCATION OF REDUCTION: 17300 YOSEMITE BLVD
WATERFORD, CA 95386

For VOC Reductions In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
48 lbs	274 lbs	379 lbs	185 lbs

Method Of Reduction

- ☐ Shutdown of Entire Stationary Source
☒ Shutdown of Emissions Units
☐ Other

Shutdown of two asphaltic concrete storage silos, a truck loadout operation, and a hot mix asphalt batch plant

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD.

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

San Joaquin Valley
Air Pollution Control District

Northern Regional Office • 4800 Enterprise Way • Modesto, CA 95356-8718

Emission Reduction Credit Certificate

N-1630-2

ISSUED TO: SANTA FE AGGREGATES, INC.

ISSUED DATE: <DRAFT>

LOCATION OF REDUCTION: 17300 YOSEMITE BLVD
WATERFORD, CA 95386

For NOx Reductions In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
14 lbs	86 lbs	107 lbs	49 lbs

Method Of Reduction

- ☐ Shutdown of Entire Stationary Source
☒ Shutdown of Emissions Units
☐ Other

Shutdown of two asphaltic concrete storage silos, a truck loadout operation, and a hot mix asphalt batch plant

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD.

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

San Joaquin Valley
Air Pollution Control District

Northern Regional Office • 4800 Enterprise Way • Modesto, CA 95356-8718

Emission Reduction Credit Certificate

N-1630-3

ISSUED TO: SANTA FE AGGREGATES, INC.

ISSUED DATE: <DRAFT>

LOCATION OF REDUCTION: 17300 YOSEMITE BLVD
WATERFORD, CA 95386

For CO Reductions In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
69 lbs	404 lbs	507 lbs	231 lbs

Method Of Reduction

- ☐ Shutdown of Entire Stationary Source
☒ Shutdown of Emissions Units
☐ Other

Shutdown of two asphaltic concrete storage silos, a truck loadout operation, and a hot mix asphalt batch plant

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD.

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

San Joaquin Valley
Air Pollution Control District

Northern Regional Office • 4800 Enterprise Way • Modesto, CA 95356-8718

Emission Reduction Credit Certificate

N-1630-4

ISSUED TO: SANTA FE AGGREGATES, INC.

ISSUED DATE: <DRAFT>

**LOCATION OF
REDUCTION:** 17300 YOSEMITE BLVD
WATERFORD, CA 95386

For PM10 Reductions In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
22 lbs	125 lbs	187 lbs	96 lbs

Portion of above PM10 Reductions that is PM2.5:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
86.4%	86.4%	85.6%	85.4%
19 lbs	108 lbs	160 lbs	82 lbs

Method Of Reduction

- ☐ Shutdown of Entire Stationary Source
☒ Shutdown of Emissions Units
☐ Other

Shutdown of two asphaltic concrete storage silos, a truck loadout operation, and a hot mix asphalt batch plant

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD.

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

San Joaquin Valley
Air Pollution Control District

Northern Regional Office • 4800 Enterprise Way • Modesto, CA 95356-8718

Emission Reduction Credit Certificate

N-1630-5

ISSUED TO: SANTA FE AGGREGATES, INC.

ISSUED DATE: <DRAFT>

LOCATION OF REDUCTION: 17300 YOSEMITE BLVD
WATERFORD, CA 95386

For SOx Reductions In The Amount Of:

Quarter 1	Quarter 2	Quarter 3	Quarter 4
7 lbs	40 lbs	49 lbs	22 lbs

Method Of Reduction

- ☐ Shutdown of Entire Stationary Source
☒ Shutdown of Emissions Units
☐ Other

Shutdown of two asphaltic concrete storage silos, a truck loadout operation, and a hot mix asphalt batch plant

Use of these credits outside the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) is not allowed without express written authorization by the SJVUAPCD.

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

San Joaquin Valley
Air Pollution Control District

Northern Regional Office • 4800 Enterprise Way • Modesto, CA 95356-8718

Emission Reduction Credit Certificate
N-1630-24

ISSUED TO: SANTA FE AGGREGATES, INC.

ISSUED DATE: <DRAFT>

**LOCATION OF
REDUCTION:** 17300 YOSEMITE BLVD
WATERFORD, CA 95386

For CO2E Reductions In The Amount Of:

481 metric tons / year

Method Of Reduction

- ☐ Shutdown of Entire Stationary Source
☒ Shutdown of Emissions Units
☐ Other

Shutdown of two asphaltic concrete storage silos, a truck loadout operation, and a hot mix asphalt batch plant

Emission Reduction Qualification Criteria

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

APPENDIX E

Baseline Period Determination

LPG Fuel Usage		
	Fuel Used (MMBtu/qtr)	8-Qtr Block Difference VS NSO
Q3 2017	7,087.5	
Q4 2017	2,679.6	
Q1 2018	2,755.4	
Q2 2018	6,196.2	
Q3 2018	3,483.2	
Q4 2018	4,605.3	
Q1 2019	917.6	
Q2 2019	4,516.5	1,111.94
Q3 2019	7,028.8	1,104.60
Q4 2019	1,798.7	994.49
Q1 2020	884.9	760.68
Q2 2020	3,469.5	419.84
Q3 2020	870.7	93.28
Q4 2020	922.6	-367.05
Q1 2021	0.0	-481.75
Q2 2021	3,543.5	-603.37
Q3 2021	869.1	-1,373.33
Q4 2021	898.8	-1,485.83
Normal Source Operation (NSO)	2,918.21	

Dryer LPG Fuel Usage		
	Fuel Used	
Q4 2018	2,588.60	MMBtu/hr
Q1 2019	887.7	MMBtu/hr
Q2 2019	4111.6	MMBtu/hr
Q3 2019	8750	MMBtu/hr
Q4 2019	329.8	MMBtu/hr
Q1 2020	0	MMBtu/hr
Q2 2020	1,101.20	MMBtu/hr
Q3 2020	720.2	MMBtu/hr

Production		
	Material Processed (ton/yr)	8-Qtr Block Difference VS NSO
Q1 2018	6,136.98	
Q2 2018	20,701.88	
Q3 2018	14,991.22	
Q4 2018	14,677	
Q1 2019	3,729	
Q2 2019	16,605	
Q3 2019	28,631	
Q4 2019	1,438	4,902.49
Q1 2020	0	4,135.37
Q2 2020	4,410	2,098.83
Q3 2020	2,643	555.35
Q4 2020	1,410.34	-1,102.96
Q1 2021	2,908.92	-1,205.49
Q2 2021	10,302.62	-1,993.30
Q3 2021	6,043.61	-4,816.73
Q4 2021	752.18	-4,902.49
Normal Source Operation (NSO)	8,461.32	

APPENDIX F
Portion of PM₁₀ that is PM_{2.5} for Permit unit '-9

Portion of PM₁₀ that is PM_{2.5}

For original ERC banking projects, in addition to quantifying actual PM₁₀ emission reductions, the District also quantifies actual PM_{2.5} emission reductions using a ratio of PM_{2.5} to PM₁₀, which varies depending on emission sources.

Pursuant to the CARB speciation profiles, the PM_{2.5}/PM₁₀ fraction for asphaltic concrete batch plants is 0.8325 whereas the PM_{2.5}/PM₁₀ fraction for gaseous material combustion is 1.

As seen above in Section V.B of this document, permit unit '-9 consists of a dryer and aggregate handling operation. Since PM₁₀ emissions from the dryer and aggregate handling excluding transfer points are controlled by and vented to a common baghouse (Gencor model 132), the dryer and aggregate handling excluding transfer points have a shared PM₁₀ emission factor of 0.012 lb per ton of asphaltic concrete produced. Total historic actual PM₁₀ emissions from the dryer and aggregate handling excluding transfer points are as follows:

HAE PM ₁₀ from Dryer and Aggregate Handling				
Pollutant	1 st Quarter (lb)	2 nd Quarter (lb)	3 rd Quarter (lb)	4 th Quarter (lb)
PM ₁₀	22	126	188	97

In order to split historic actual PM₁₀ emissions of the dryer from the total historic actual PM₁₀ emissions shown in the table above, a PM₁₀ emission factor of 0.7 lb/1,000 gal⁷ (equivalent to 0.0077 lb-PM₁₀/MMBtu⁸) from AP-42 Section 1.5 *Liquefied Petroleum Gas Combustion* has been used. Historic actual PM₁₀ emissions from the dryer are as follows:

HAE PM ₁₀ from Dryer				
Pollutant	1 st Quarter (lb)	2 nd Quarter (lb)	3 rd Quarter (lb)	4 th Quarter (lb)
PM ₁₀	3	20	25	11

By subtracting historic actual PM₁₀ emissions of the dryer from the total historic actual PM₁₀ emissions, historic actual PM₁₀ emissions from the aggregate handling excluding transfer points can be derived:

HAE PM ₁₀ from Aggregate Handling				
Pollutant	1 st Quarter (lb)	2 nd Quarter (lb)	3 rd Quarter (lb)	4 th Quarter (lb)
PM ₁₀	19	106	163	86

As discussed above, using a PM_{2.5}/PM₁₀ fraction of 1 for gaseous material combustions and a PM_{2.5}/PM₁₀ fraction of 0.8325 for asphaltic concrete batch plants, historic actual PM_{2.5} emissions for the dryer and for the aggregate handling excluding transfer points are as follows, respectively:

⁷ Assuming 100% of PM is PM₁₀.

⁸ Used a heat content value of 91.5 x 10⁶ Btu/10³ gallon for propane according to AP-42 Section 1.5.

HAE PM_{2.5} from Dryer				
Pollutant	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
PM _{2.5}	3	20	25	11

HAE PM_{2.5} from Aggregate Handling				
Pollutant	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
PM _{2.5}	16	88	136	72

Therefore, total historic actual PM_{2.5} emissions from the dryer and aggregate handling excluding transfer points are as follows:

HAE PM_{2.5} from Dryer and Aggregate Handling				
Pollutant	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
PM _{2.5}	19	108	161	83

APPENDIX G

ppmv to Btu Conversion

	SELECTION #
COAL (ANTHRACITE)	0
COAL (BITUMINOUS)	1
COAL (LIGNITE)	2
OIL (CRUDE, RESIDUAL, OR DISTILLAT	3
GAS (NATURAL)	4
GAS (PROPANE)	5
GAS (BUTANE)	6
WOOD	7
WOOD BARK	8
MUNICIPAL SOLID WASTE	9

STANDARD O2 CORRECTION FOR EXTERNAL COMBUSTION IS 3%	
Type of fuel (use table above)	5 GAS
O2 correction (i.e., 3%)	19 %
Enter concentrations	
NOx	3.22 ppmv
CO	23.2 ppmv
VOC (as methane)	0 ppmv

CALCULATED EQUIVALENT LB/MMBTU VALUES	
NOx	0.0368 LB/MMBTU
CO	0.1615 LB/MMBTU
VOC (as methane)	0.0000 LB/MMBTU

pV = R*T	
pressure (p)	1 atm
universal gas constant (R*)	0.7302 atm-scf/lbmole-oR
temperature (oF)	60 oF
calculated	
molar specific volume (V)	379.5 scf/lbmole
Molecular weights	
NOx	46 lb/lb-mole
CO	28 lb/lb-mole
VOC (as methane)	16 lb/lb-mole

F FACTORS FROM EPA METHOD 19		
COAL (ANTHRACITE)	10100 DSCF/MMBTU	COAL
COAL (BITUMINOUS)	9780 DSCF/MMBTU	COAL
COAL (LIGNITE)	9860 DSCF/MMBTU	COAL
OIL (CRUDE, RESIDUAL, OR DISTILLAT	9190 DSCF/MMBTU	OIL
GAS (NATURAL)	8710 DSCF/MMBTU	GAS
GAS (PROPANE)	8710 DSCF/MMBTU	GAS
GAS (BUTANE)	8710 DSCF/MMBTU	GAS
WOOD	9240 DSCF/MMBTU	WOOD
WOOD BARK	9600 DSCF/MMBTU	WOOD BARK
MUNICIPAL SOLID WASTE	9570 DSCF/MMBTU	SOLID WAST
F FACTOR USED IN CALCULATIONS	8710 DSCF/MMBTU	GAS