20.11.41.22 NMAC
"AUTHORITY-TO-CONSTRUCT"
AIR QUALITY PERMIT APPLICATION

Albuquerque, New Mexico

PREPARED FOR
VITAL CONSULTING GROUP, LLC

JANUARY 2021

Prepared by

Montrose Air Quality Services, LLC

MONTROSE
AIR QUALITY SERVICES

Introduction

Vital Consulting Group, LLC (VCG) is applying for a 20.11.41.22 NMAC, to operate a portable concrete batch plant within the county of Bernalillo, state of New Mexico. The permit will allow completion of reconstruction of Taxiway E, Phase B in a timely manner. Completion of this project affects the efficient landing and taxiing of commercial, military, and private aircraft. The equipment that is contained within this permit application is identical to the equipment (engine will be the same) that was approved under Permit 3380-EP issued April 17, 2019. Because of the public safety and welfare impacts associated with pushing the concrete batch plant schedule into the summer months, and the fact that the operation and location of the plant will be identical to the what was approved under Permit 3380-EP issued April 17, 2019, VCG is requesting that the permit application be ruled complete ASAP and the public notice process by the city begin.

The proposed new plant is rated by the manufacturer at 270 cubic yards per hour. The VCG's Airport Concrete Batch Plant is a portable plant manufactured by RexCon, Model Mobile 12 SE and include four (4) aggregate feeders and transfer conveyors, 4-bin aggregate feeder, weight batcher with delivery conveyor, cement silo/guppy, fly ash silo/guppy, 12-yard truck loading area, cement/fly ash batcher, central baghouse, two (2) guppies, a 500 kW diesel-fired generator to power the plant, concrete additive, and control trailer. The location of the plant will be within the Albuquerque International Sunport boundaries in Albuquerque, NM. The facility site is located within Section 3, Township 9N, and Range 3E, which is the same location of the equipment operated under Permit 3380-EP.

VCG has retained Montrose Air Quality Services (Montrose) to assist with the permit application. The plant is identified as VCG's Concrete Batch Plant (CBP) #2 and will be located near the southern Albuquerque International Sunport boundaries. At the initial location, the plant will be producing concrete as part of rebuilding work for Sunport Taxiway E, Phase B. Since this is a temporary location, the home base for storage of the equipment will be VCG offices.

VCG will limit the hourly and annual CBP production to 270 cubic yards per hour and 500,000 cubic yards per year. CBP operations will be recorded by the plant's data management system to show compliance with hourly and annual throughput limits. Particulate emissions will be controlled by baghouse for silo/guppy loading and unloading, cement/fly ash weigh batcher loading and unloading, and truck loading. No malfunction for any baghouse is anticipated, but if a malfunction occurs the unit will be shutdown until repairs are completed and any excess

emissions emitted during the malfunction will be notified to the department per 20.11.90 NMAC. Material handling fugitive emissions will be controlled by the application of water, as needed.

A process flow diagram can be seen in Figure A-1. The CBP site location and layout can be seen in Figures A-2 and A-3. A facility location topographical map can be seen in Attachment D.

The preliminary operational plan defining the measures to be taken to mitigate source emissions during malfunction, startup, or shutdown are as follows:

STARTUP AND SHUTDOWN PROCEDURES

Water Truck

Startup
Check water supply, inspect nozzles and open all associated valves before startup.

Shutdown
Inspect nozzles and close all associated valves after shutdown.

Baghouse

Startup
Visual inspection of: product lines, vent lines and all fittings, including dust shroud, baghouse blower before startup.

Shutdown
Check that all pressurized systems are off.

OPERATIONS PLAN

Water Truck Operation

A water truck to be operated, as needed, at plant site disturbed areas, storage piles, and haul truck traffic areas to prevent excess visible emissions. These activities include; unpaved haul roads, storage piles and active disturbed areas. Water spray application rate will be determined based on the occurrence of visible dust and may vary depending on existing road conditions, traffic, wind, temperature, and precipitation.

Baghouse Operation

The baghouse will be operated at all times when pertinent equipment is operating. A visual inspection of the baghouse exit during operation will be done once per day to make sure no excess visible emissions occur to verify the baghouse is operating correctly.

MAINTENANCE PLAN

Water Truck Maintenance

A safety check and equipment check will be conducted daily. Normal vehicle maintenance will be performed regularly or as needed.

Processing Plant Water Spray Dust Suppression Maintenance

Visual inspections will be made monthly to verify proper functioning of equipment. When emissions are suspected to approach compliance values, equipment will be checked for problems.

If you have any questions regarding this permit application please call Paul Wade of Montrose Air Quality Services at (505) 830-9680 x 6 or Vince Martinez of Vital Consulting Group LLC at (505) 369-0623.

The contents of this application packet include:

20.11.41 NMAC Permit Checklist
20.11.41 NMAC Permit Fee Review
20.11.41 NMAC Permit Application Forms
Attachment A: Figure A-1: Facility Site Plot Plan
Figure A-2: Facility Site Layout
Figure A-3: Facility Process Flow Diagram
Attachment B: Emission Calculations
Attachment C: Emission Calculations Background Data
Attachment D: Figure E-1: 7.5 Minute USGS Topographic Map
Attachment E: Facility Description
Attachment F: Regulatory Applicability Determinations
Attachment G: Dispersion Modeling Summary and Report
Attachment H: Public Notice Documentation

City of Albuquerque

Environmental Health Department
Air Quality Program

Permit Application Checklist

Any person seeking a permit under 20.11.41 NMAC, Authority-to-Construct Permits, shall do so by filing a written application with the Department. Prior to ruling a submitted application complete each application submitted shall contain the required items listed below. **This checklist must be returned with the application.**

Applications that are ruled incomplete because of missing information will delay any determination or the issuance of the permit. The Department reserves the right to request additional relevant information prior to ruling the application complete in accordance with 20.11.41 NMAC.

All applicants shall:

1. ☐ Fill out and submit the *Pre-permit Application Meeting Request* form
   a. ☐ Attach a copy to this application

2. **X** Attend the pre-permit application meeting
   a. ☐ Attach a copy of the completed *Pre-permit Application Meeting Checklist* to this application

3. **X** Provide public notice to the appropriate parties
   a. ☐ Attach a copy of the completed *Notice of Intent to Construct* form to this form
      i. Neighborhood Association(s):_____
      _____
      ii. Coalition(s): _____
   b. ☐ Attach a copy of the completed *Public Sign Notice Guideline* form

4. Fill out and submit the *Permit Application*. All applications shall:

   A. X be made on a form provided by the Department. Additional text, tables, calculations or clarifying information may also be attached to the form.

   B. X at the time of application, include documentary proof that all applicable permit application review fees have been paid as required by 20 NMAC 11.02. Please refer to the attached permit application worksheet.

   C. X contain the applicant's name, address, and the names and addresses of all other owners or operators of the emission sources.

   D. X contain the name, address, and phone number of a person to contact regarding questions about the facility.

E. X indicate the date the application was completed and submitted

F. X contain the company name, which identifies this particular site.

G. X contain a written description of the facility and/or modification including all operations affecting air emissions.

H. X contain the maximum and standard operating schedules for the source after completion of construction or modification in terms of hours per day, days per week, and weeks per year.

I. X provide sufficient information to describe the quantities and nature of any regulated air contaminant (including any amount of a hazardous air pollutant) that the source will emit during:

- Normal operation
- Maximum operation
- Abnormal emissions from malfunction, start-up and shutdown

J. X include anticipated operational needs to allow for reasonable operational scenarios to avoid delays from needing additional permitting in the future.

K. X contain a map, such as a 7.5-minute USGS topographic quadrangle, showing the exact location of the source; and include physical address of the proposed source.

L. X contain an aerial photograph showing the proposed location of each process equipment unit involved in the proposed construction, modification, relocation, or technical revision of the source except for federal agencies or departments involved in national defense or national security as confirmed and agreed to by the department in writing.

M. X contain the UTM zone and UTM coordinates.

N. X include the four digit Standard Industrialized Code (SIC) and the North American Industrial Classification System (NAICS).

O. X contain the types and **potential emission rate** amounts of any regulated air contaminants the new source or modification will emit. Complete appropriate sections of the application; attachments can be used to supplement the application, but not replace it.

P. X contain the types and **controlled** amounts of any regulated air contaminants the new source or modification will emit. Complete appropriate sections of the application; attachments can be used to supplement the application, but not replace it.

Q. X contain the basis or source for each emission rate (include the manufacturer's specification sheets, AP-42 Section sheets, test data, or other data when used as the source).

R. X contain all calculations used to estimate **potential emission rate** and **controlled** emissions.

S. X contain the basis for the estimated control efficiencies and sufficient engineering data for verification of the control equipment operation, including if necessary, design drawings, test reports, and factors which affect the normal operation (e.g. limits to normal operation).

T. X contain fuel data for each existing and/or proposed piece of fuel burning equipment.

U. X contain the anticipated maximum production capacity of the entire facility and the requested production capacity after construction and/or modification.

V. X contain the stack and exhaust gas parameters for all existing and proposed emission stacks.

W. X provide an ambient impact analysis using a atmospheric dispersion model approved by the US Environmental Protection Agency (EPA), and the Department to demonstrate compliance with the ambient air quality standards for the City of Albuquerque and Bernalillo County (See 20.11.01 NMAC). If you are modifying an existing source, the modeling must include the emissions of the entire source to demonstrate the impact the new or modified source(s) will have on existing plant emissions.

X. X contain a preliminary operational plan defining the measures to be taken to mitigate source emissions during malfunction, startup, or shutdown.

Y. X contain a process flow sheet, including a material balance, of all components of the facility that would be involved in routine operations. Indicate all emission points, including fugitive points.

Z. X contain a full description, including all calculations and the basis for all control efficiencies presented, of the equipment to be used for air pollution control. This shall include a process flow sheet or, if the Department so requires, layout and assembly drawings, design plans, test reports and factors which affect the normal equipment operation, including control and/or process equipment operating limitations.

AA. ☐ contain description of the equipment or methods proposed by the applicant to be used for emission measurement.

BB. X be signed under oath or affirmation by a corporate officer, authorized to bind the company into legal agreements, certifying to the best of his or her knowledge the truth of all information submitted.

City of Albuquerque

Environmental Health Department
Air Quality Program

Permit Application Review Fee Instructions

All source registration, authority-to-construct, and operating permit applications for stationary or portable sources shall be charged an application review fee according to the fee schedule in 20.11.2 NMAC. These filing fees are required for both new construction, reconstruction, and permit modifications applications. Qualified small businesses as defined in 20.11.2 NMAC may be eligible to pay one-half of the application review fees and 100% of all applicable federal program review fees.

Please fill out the permit application review fee checklist and submit with a check or money order payable to the "City of Albuquerque Fund 242" and either:

1. be delivered in person to the Albuquerque Environmental Health Department, 3rd floor, Suite 3023 or Suite 3027, Albuquerque-Bernalillo County Government Center, south building, One Civic Plaza NW, Albuquerque, NM or,

2. mailed to Attn: Air Quality Program, Albuquerque Environmental Health Department, P.O. Box 1293, Albuquerque, NM 87103.

The department will provide a receipt of payment to the applicant. The person delivering or filing a submittal shall attach a copy of the receipt of payment to the submittal as proof of payment Application review fees shall not be refunded without the written approval of the manager. If a refund is requested, a reasonable professional service fee to cover the costs of staff time involved in processing such requests shall be assessed. Please refer to 20.11.2 NMAC (effective January 10, 2011) for more detail concerning the "Fees" regulation as this checklist does not relieve the applicant from any applicable requirement of the regulation.

City of Albuquerque

Environmental Health Department
Air Quality Program

Permit Application Review Fee Checklist Effective January 1 - December 31, 2021

Please completely fill out the information in each section. Incompleteness of this checklist may result in the Albuquerque Environmental Health Department not accepting the application review fees. If you should have any questions concerning this checklist, please call 768-1972.

I. COMPANY INFORMATION:

Company Name	Vital Consulting Group, LLC		
Company Address	5200 Oakland Ave. STE D, Albuquerque, NM 87113		
Facility Name	Vital Consulting Group, LLC Concrete Batch Plant		
Facility Address	Albuquerque International Sunport Airport		
Contact Person	Vince Martinez		
Contact Person Phone Number	(505) 369-0623		
Are these application review fees for an existing permitted source located within the City of Albuquerque or Bernalillo County?		**Yes**	**No**
If yes, what is the permit number associated with this modification?		**Permit #**	
Is this application review fee for a Qualified Small Business as defined in 20.11.2 NMAC? (See Definition of Qualified Small Business on Page 4)		**Yes**	**No**

II. STATIONARY SOURCE APPLICATION REVIEW FEES:

If the application is for a new stationary source facility, please check all that apply. If this application is for a modification to an existing permit please see Section III.

Check All That Apply	Stationary Sources	Review Fee	Program Element
	Air Quality Notifications		
	AQN New Application	$581.00	2801
	AQN Technical Amendment	$318.00	2802
	AQN Transfer of a Prior Authorization	$318.00	2803
X	*Not Applicable*	*See Sections Below*	
	Stationary Source Review Fees (Not Based on Proposed Allowable Emission Rate)		
	Source Registration required by 20.11.40 NMAC	$ 592.00	2401
	A Stationary Source that requires a permit pursuant to 20.11.41 NMAC or other board regulations and are not subject to the below proposed allowable emission rates	$ 1,185.00	2301
X	*Not Applicable*	*See Sections Below*	
	Stationary Source Review Fees (Based on the Proposed Allowable Emission Rate for the single highest fee pollutant)		
	Proposed Allowable Emission Rate Equal to or greater than 1 tpy and less than 5 tpy	$ 889.00	2302
X	Proposed Allowable Emission Rate Equal to or greater than 5 tpy and less than 25 tpy	$1,777.00	2303
	Proposed Allowable Emission Rate Equal to or greater than 25 tpy and less than 50 tpy	$3,554.00	2304
	Proposed Allowable Emission Rate Equal to or greater than 50 tpy and less than 75 tpy	$5,331.00	2305
	Proposed Allowable Emission Rate Equal to or greater than 75 tpy and less than 100 tpy	$7,108.00	2306
	Proposed Allowable Emission Rate Equal to or greater than 100 tpy	$8,885.00	2307
	Not Applicable	*See Section Above*	

Federal Program Review Fees (In addition to the Stationary Source Application Review Fees above)			
	40 CFR 60 - "New Source Performance Standards" (NSPS)	$1,185.00	2308
	40 CFR 61 - "Emission Standards for Hazardous Air Pollutants (NESHAPs)	$1,185.00	2309
	40 CFR 63 - (NESHAPs) Promulgated Standards	$1,185.00	2310
	40 CFR 63 - (NESHAPs) Case-by-Case MACT Review	$11,847.00	2311
	20.11.61 NMAC, Prevention of Significant Deterioration (PSD) Permit	$5,924.00	2312
	20.11.60 NMAC, Non-Attainment Area Permit	$5,924.00	2313
X	*Not Applicable*	*Not Applicable*	

III. MODIFICATION TO EXISTING PERMIT APPLICATION REVIEW FEES:

If the permit application is for a modification to an existing permit, please check all that apply. If this application is for a new stationary source facility, please see Section II.

Check All That Apply	Modifications	Review Fee	Program Element
Modification Application Review Fees (Not Based on Proposed Allowable Emission Rate)			
	Proposed modification to an existing stationary source that requires a permit pursuant to 20.11.41 NMAC or other board regulations and are not subject to the below proposed allowable emission rates	$ 1,185.00	2321
X	*Not Applicable*	*See Sections Below*	
Modification Application Review Fees (Based on the Proposed Allowable Emission Rate for the single highest fee pollutant)			
	Proposed Allowable Emission Rate Equal to or greater than 1 tpy and less than 5 tpy	$889.00	2322
	Proposed Allowable Emission Rate Equal to or greater than 5 tpy and less than 25 tpy	$1,777.00	2323
	Proposed Allowable Emission Rate Equal to or greater than 25 tpy and less than 50 tpy	$3,554.00	2324
	Proposed Allowable Emission Rate Equal to or greater than 50 tpy and less than 75 tpy	$5,331.00	2325
	Proposed Allowable Emission Rate Equal to or greater than 75 tpy and less than 100 tpy	$7,108.00	2326
	Proposed Allowable Emission Rate Equal to or greater than 100 tpy	$8,885.00	2327
X	*Not Applicable*	*See Section Above*	
Major Modifications Review Fees (In addition to the Modification Application Review Fees above)			
	20.11.60 NMAC, Permitting in Non-Attainment Areas	$5,924.00	2333
	20.11.61 NMAC, Prevention of Significant Deterioration	$5,924.00	2334
X	*Not Applicable*	*Not Applicable*	
Federal Program Review Fees (This section applies only if a Federal Program Review is triggered by the proposed modification) (These fees are in addition to the Modification and Major Modification Application Review Fees above)			
	40 CFR 60 - "New Source Performance Standards" (NSPS)	$1,185.00	2328
	40 CFR 61 - "Emission Standards for Hazardous Air Pollutants (NESHAPs)	$1,185.00	2329
	40 CFR 63 - (NESHAPs) Promulgated Standards	$1,185.00	2330
	40 CFR 63 - (NESHAPs) Case-by-Case MACT Review	$11,847.00	2331
	20.11.61 NMAC, Prevention of Significant Deterioration (PSD) Permit	$5,924.00	2332
	20.11.60 NMAC, Non-Attainment Area Permit	$5,924.00	2333
X	*Not Applicable*	*Not Applicable*	

IV. ADMINISTRATIVE AND TECHNICAL REVISION APPLICATION REVIEW FEES:

If the permit application is for an administrative or technical revision of an existing permit issued pursuant to 20.11.41 NMAC, please check one that applies.

Check One	Revision Type	Review Fee	Program Element
	Administrative Revisions	$ 250.00	2340
	Technical Revisions	$ 500.00	2341
X	*Not Applicable*	*See Sections II, III or V*	

V. PORTABLE STATIONARY SOURCE RELOCATION FEES:

If the permit application is for a portable stationary source relocation of an existing permit, please check one that applies.

Check One	Portable Stationary Source Relocation Type	Review Fee	Program Element
	No New Air Dispersion Modeling Required	$ 500.00	2501
	New Air Dispersion Modeling Required	$ 750.00	2502
X	*Not Applicable*	*See Sections II, III or V*	

VI. Please submit a check or money order in the amount shown for the total application review fee.

Section Totals	Review Fee Amount
Section II Total	$1,777
Section III Total	$0
Section IV Total	$0
Section V Total	$0
Total Application Review Fee	**$1,777**

I, the undersigned, a responsible official of the applicant company, certify that to the best of my knowledge, the information stated on this checklist, give a true and complete representation of the permit application review fees which are being submitted. I also understand that an incorrect submittal of permit application reviews may cause an incompleteness determination of the submitted permit application and that the balance of the appropriate permit application review fees shall be paid in full prior to further processing of the application.

Signed this 15th **day of** January **20** 21

Vince Martinez — **Print Name**

President — **Print Title**

Signature

Definition of Qualified Small Business as defined in 20.11.2 NMAC:
"Qualified small business" means a business that meets all of the following requirements:

(1) a business that has 100 or fewer employees;
(2) a small business concern as defined by the federal Small Business Act;
(3) a source that emits less than 50 tons per year of any individual regulated air pollutant, or less than 75 tons per year of all regulated air pollutants combined; and
(4) a source that is not a major source or major stationary source.

Note: Beginning January 1, 2011, and every January 1 thereafter, an increase based on the consumer price index shall be added to the application review fees. The application review fees established in Subsection A through D of 20.11.2.18 NMAC shall be adjusted by an amount equal to the increase in the consumer price index for the immediately-preceding year. Application review fee adjustments equal to or greater than fifty cents ($0.50) shall be rounded up to the next highest whole dollar. Application review fee adjustments totaling less than fifty cents ($0.50) shall be rounded down to the next lowest whole dollar. The department shall post the application review fees on the city of Albuquerque environmental health department air quality program website.

City of Albuquerque – Environmental Health Department
Air Quality Program
Please mail this application to **P.O. Box 1293, Albuquerque, NM 87103**
or hand deliver between 8:00 am – 5:00 pm Monday-Friday to:
3rd Floor, Suite 3023 – One Civic Plaza NW, Albuquerque, NM 87102
(505) 768-1972 aqd@cabq.gov

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Submittal Date: January 18, 2021

Corporate Information ☐ **Check here and leave this section blank if information is exactly the same as Facility Information below.**

Company Name: **Vital Consulting Group, LLC**			
Mailing Address: **PO Box 94778**	City: **Albuquerque**	State: **NM**	Zip: **87199**
Company Phone: **(505) 908-8015**	Company Contact: **Vince Martinez**		
Company Contact Title: **President**	Phone: **(505) 369-0623**	E-mail: **vincent.martinez@vitalgrp.net**	

Stationary Source (Facility) Information: **Provide a plot plan (legal description/drawing of the facility property) with overlay sketch of facility processes, location of emission points, pollutant type, and distances to property boundaries.**

Facility Name: **Vital Consulting Group, LLC Concrete Batch Plant #2**			
Facility Physical Address: **Albuquerque International Sunport Airport**	City: **Albuquerque**	State: **NM**	Zip: **87106**
Facility Mailing Address (if different): **None**	City:	State:	Zip:
Facility Contact: **Vince Martinez**	Title: **President**		
Phone: **(505) 369-0623**	E-mail: **vincent.martinez@vitalgrp.net**		
Authorized Representative Name[1]: **Vince Martinez**	Authorized Representative Title: **President**		

Billing Information ☒ **Check here if same contact and mailing address as corporate** ☐ **Check here if same as facility**

Billing Company Name:			
Mailing Address:	City:	State:	Zip:
Billing Contact:	Title:		
Phone:	E-mail:		

Preparer/Consultant(s) Information ☐ **Check here and leave section blank if no Consultant used or Preparer is same as Facility Contact.**

Name: **Paul Wade**	Title: **Principal**		
Mailing Address: **3500 Comanche Rd NE, Ste G**	City: **Albuquerque**	State: **NM**	Zip: **87107**
Phone: **(505) 830-9680 x6**	Email: **pwade@montrose-env.com**		

1. See 20.11.41.13.E.(13) NMAC.

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

General Operation Information (if any question does not pertain to your facility, type N/A on the line or in the box)

Permitting action being requested (please refer to the definitions in 20.11.40 NMAC or 20.11.41 NMAC):			
☒ New Permit	☐ Permit Modification Current Permit #:	☐ Technical Permit Revision Current Permit #:	☐ Administrative Permit Revision Current Permit #:
UTM Coordinates or Latitude – Longitude of Facility: **352550E; 3877500N, Zone 13, NAD83**			
Facility Type (description of your facility operations): **Concrete Batch Plant**			
Standard Industrial Classification (SIC Code #): **3273**		North American Industry Classification System (NAICS Code #): **327320**	
Is this facility currently operating in Bernalillo County? **No**		If **YES**, list date of original construction: If **NO**, list date of planned startup: **2/2021**	
Is the facility permanent? **No**		If **NO**, list dates for requested temporary operation: From **2/2021** Through **7/2021**	
Is the application for a physical or operational change, expansion, or reconstruction (altering process, or adding, or replacing process or control equipment, etc.) to an existing facility? **Yes**			
Provide a description of the requested changes:			
Is the facility operation: ☐ Continuous ☐ Intermittent ☒ Batch			
Estimated percent of production/operation:	Jan-Mar: **25**	Apr-Jun: **25**	Jul-Sep: **25**	Oct-Dec: **25**
Requested operating times of facility:	**24** hours/day	**7** days/week	**4.3** weeks/month	**12** months/year
Will there be special or seasonal operating times other than shown above? This includes monthly- or seasonally-varying hours. **No**				
If **YES**, please explain:				
List raw materials processed: **Aggregate, Sand, Cement, Fly Ash, Water, Additives**				
List saleable item(s) produced: **Concrete**				

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Regulated Emission Sources Table

(Generator-Crusher-Screen-Conveyor-Boiler-Mixer-Spray Guns-Saws-Sander-Oven-Dryer-Furnace-Incinerator-Haul Road-Storage Pile, etc.)
Match the Units listed on this Table to the same numbered line if also listed on Emissions Tables & Stack Table.

Unit Number and Description[1]		Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date[2]	Process Rate or Capacity (Hp, kW, Btu, ft³, lbs, tons, yd³, etc.)[3]	Fuel Type
1	Feeder (4)	RexCon	12 SE CM	TBD	2021	TBD	N/A	405 tph/750,000 tpy	
2	Feed Conveyor (4)					TBD	N/A	405 tph/750,000 tpy	
3	Aggregate Bin					TBD	N/A	405 tph/750,000 tpy	
4	Aggregate Weigh Batcher and Conveyor					TBD	N/A	405 tph/750,000 tpy	
5	Truck Loading					TBD	N/A	270 cyph/500,000 cu yards/year	
6	Cement Silo with Guppy					TBD	N/A	Cement 66.015 tph/122,250 tpy	
7	Fly Ash Silo with Guppy					TBD	N/A	Fly Ash 17.82 tph/33,000 tpy	
8	Cement/Fly Ash Batcher					TBD	N/A	83.835 tph/155,250 tpy	
9	Concrete Batch Plant Engine	CAT	C15		Oct 2013	TBD	N/A	779 HP	Ultra-Low Sulfur Diesel
10	Aggregate Storage Piles	N/A	N/A	N/A	N/A	TBD	N/A	405 tph/750,000 tpy	
11	Haul Road	N/A	N/A	N/A	N/A	TBD	N/A	77,965 truck/year	
								/	
								/	

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.
2. Have changes been made to the unit that impact emissions or that trigger modification as defined in 20.11.41.7.U NMAC?
3. Basis for Equipment Process Rate or Capacity (Manufacturer's data, Field observation/test, etc.) **Manufacturer's Data**
   Submit information for each unit as an attachment.

Emissions Control Equipment Table

Control Equipment Units listed on this Table should either match up to the same Unit number as listed on the Regulated Emission Sources, Controlled Emissions and Stack Parameters Tables (if the control equipment is integrated with the emission unit) or should have a distinct Control Equipment Unit Number and that number should then also be listed on the Stack Parameters Table.

Control Equipment Unit Number and Description		Controlling Emissions for Unit Number(s)	Manufacturer	Model # | Serial #	Date Installed	Controlled Pollutant(s)	% Control Efficiency[1]	Method Used to Estimate Efficiency	Rated Process Rate or Capacity or Flow
2b	**Additional Moisture Content**	**2**	**RexCon**	**TBD | TBD**	**TBD**	**PM10, PM2.5**	**95.8%**	**Controlled/Uncontrolled Emission Factors**	**405 tph**
4b	**Additional Moisture Content**	**4**	**RexCon**	**TBD | TBD**	**TBD**	**PM10, PM2.5**	**95.8%**	**Controlled/Uncontrolled Emission Factors**	**405 tph**
5b	**Baghouse**	**5,6,7,8**	**RexCon**	**CP-2100 | TBD**	**TBD**	**PM10, PM2.5**	**98.9%**	**Controlled/Uncontrolled Emission Rate**	**11,500 ACFM**
11b	**Haul Road**	**11**	**N/A**	**N/A | N/A**	**TBD**	**PM10, PM2.5**	**90%**	**Surfactant or Millings/Watering**	**42 truck/day**
				|					
				|					
				|					
				|					
				|					
				|					

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Control Equipment % Efficiency (Manufacturers data, Field Observation/Test, AP-42, etc.). **2b, 4b – AP-42 Emission Factors; 5b – Calculated Emission Rates; 11b – NMED Default % Control Efficiency**
   Submit information for each unit as an attachment.

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Exempted Sources and Exempted Activities Table

See 20.11.41 for exemptions.

Unit Number and Description		Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date[1]	Process Rate or Capacity (Hp, kW, Btu, ft^3, lbs, tons, yd^3, etc.)[2]	Fuel Type
								/	
								/	
								/	
								/	
								/	
								/	
								/	
								/	
								/	
								/	
								/	
								/	
								/	
								/	
								/	

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Have changes been made to the unit that impact emissions, that trigger modification as defined in 20.11.41.7.U NMAC, or that change the status from exempt to non-exempt?
2. Basis for Equipment Process Rate or Capacity (Manufacturer's data, Field observation/test, etc.) _____
   Submit information for each unit as an attachment.

Uncontrolled Emissions Table

(Process potential under physical/operational limitations during a 24 hr/day and 365 day/year = 8760 hrs)

Regulated Emission Units listed on this Table should match up to the same numbered line and Unit as listed on the Regulated Emissions and Controlled Tables. List total HAP values per Emission Unit if overall HAP total for the facility is ≥ 1 ton/yr.

Unit Number*	Nitrogen Oxides (NO_X)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO_2)		Particulate Matter ≤ 10 Microns (PM_{10})		Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)		Hazardous Air Pollutants (HAPs)		Method(s) used for Determination of Emissions (AP-42, Material Balance, Field Tests, etc.)
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	
1									0.61	2.67	0.092	0.40			AP-42 13.2.4
2									0.45	1.95	0.067	0.30			AP-42 11.19.2 Table 11.19.2-2 "Conveyor Transfer Point"
3									0.61	2.67	0.092	0.40			AP-42 13.2.4
4									0.45	1.95	0.067	0.30			AP-42 11.19.2 Table 11.19.2-2 "Conveyor Transfer Point"
5									26.0	114	4.67	20.5			AP-42 Section 11.12 "Concrete Batching" Table 11.12-2 "Uncontrolled Truck Loading"
6									31.0	136	6.14	26.9			AP-42 Section 11.12 "Concrete Batching" Table 11.12-2 "Cement Unloading to Elevated Storage Silo"
7									19.6	86	3.88	17.0			AP-42 Section 11.12 "Concrete Batching" Table 11.12-2 "Cement Supplement Unloading to Elevated Storage Silo"
8									13.1	57	2.59	11.3			AP-42 Section 11.12 "Concrete Batching" Table 11.12-2 "Uncontrolled Mixer Loading"
9	5.27	23.1	0.94	4.12	0.060	0.26	0.0075	0.033	0.09	0.39	0.09	0.39	0.030	0.13	Manufacturer's Data
10									0.80	3.50	0.12	0.53			AP-42 13.2.4
11									4.84	17.7	0.48	1.77			AP-42 13.2 Unpaved Road (12/03)

Unit Number*	Nitrogen Oxides (NO_X)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO_2)		Particulate Matter ≤ 10 Microns (PM_{10})		Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)		Hazardous Air Pollutants (HAPs)		Method(s) used for Determination of Emissions (AP-42, Material Balance, Field Tests, etc.)
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	
Totals of Uncontrolled Emissions	**5.27**	**23.1**	**0.94**	**4.12**	**0.060**	**0.26**	**0.0075**	**0.033**	**97.5**	**424**	**18.3**	**79.8**	**0.030**	**0.13**	

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

*A permit is required and this application along with the additional checklist information requested on the Permit Application checklist must be provided if:

(1) any one of these process units or combination of units, has an uncontrolled emission rate greater than or equal to (≥) 10 lbs/hr or 25 tons/yr for any of the above pollutants, excluding HAPs, based on 8,760 hrs of operation; or

(2) any one of these process units or combination of units, has an uncontrolled emission rate ≥ 2 tons/yr for any single HAP or ≥ 5 tons/yr for any combination of HAPs based on 8,760 hours of operation; or

(3) any one of the process units or combination of units is subject to an Air Board or federal emission limit or standard.

* If all of these process units, individually and in combination, have an uncontrolled emission rate less than (<) 10 lbs/hr or 25 tons/yr for all of the above pollutants (based on 8,760 hrs of operation), but > 1 ton/yr for any of the above pollutants, then a source registration is required. A Registration is required, at minimum, for any amount of HAP emissions. Please complete the remainder of this form.

Controlled Emissions Table

(Based on current operations with emission controls OR requested operations with emission controls)

Regulated Emission Units listed on this Table should match up to the same numbered line and Unit as listed on the Regulated Emissions and Uncontrolled Tables. List total HAP values per Emission Unit if overall HAP total for the facility is ≥ 1 ton/yr.

Unit Number	Nitrogen Oxides (NO_x)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO_2)		Particulate Matter ≤ 10 Microns (PM_{10})		Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)		Hazardous Air Pollutants (HAPs)		Control Method	% Efficiency[1]
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr		
1a,b,c,d									0.61	0.56	0.092	0.085			**None**	**0**
2a,b,c,d									0.019	0.017	0.0053	0.0049			**Moisture Content**	**95.8**
3									0.61	0.56	0.092	0.085			**None**	**0**
4									0.019	0.017	0.0053	0.0049			**Moisture Content**	**95.8**
5,6,7,8									0.99	2.46	0.99	2.46			**Baghouse**	**98.9**
9	5.27	13.2	0.94	2.35	0.060	0.15	0.0075	0.019	0.09	0.23	0.09	0.23	0.030	0.074	**None**	**0**
10									0.80	0.74	0.12	0.11			**None**	**0**
11									0.48	0.37	0.048	0.037			**Surfactants/Millings/Water**	**90**
Totals of Controlled Emissions	**5.27**	**13.2**	**0.94**	**2.35**	**0.060**	**0.15**	**0.0075**	**0.019**	**3.61**	**4.98**	**1.44**	**3.04**	**0.030**	**0.074**		

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Control Equipment % Efficiency (Manufacturers data, Field Observation/Test, AP-42, etc.). **2, 4 – AP-42 Emission Factors; 5,6,7,8 – Calculated Emission Rates; 11 – NMED Default % Control Efficiency**
   Submit information for each unit as an attachment.

Hazardous Air Pollutants (HAPs) Emissions Table

Report the Potential Emission Rate for each HAP from each source on the Regulated Emission Sources Table that emits a given HAP. Report individual HAPs with ≥ 1 ton/yr total emissions for the facility on this table. Otherwise, report total HAP emissions for each source that emits HAPs and report individual HAPs in the accompanying application package in association with emission calculations. If this application is for a Registration solely due to HAP emissions, report the largest HAP emissions on this table and the rest, if any, in the accompanying application package.

Unit Number	Total HAPs															
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
9	**0.030**	**0.074**														
Totals of HAPs for all units:	**0.030**	**0.074**														

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

Copy and paste the HAPs table here if need to list more individual HAPs.

Purchased Hazardous Air Pollutant Table*

Product Categories (Coatings, Solvents, Thinners, etc.)	Hazardous Air Pollutant (HAP), or Volatile Hazardous Air Pollutant (VHAP) Primary To The Representative As Purchased Product	Chemical Abstract Service Number (CAS) of HAP or VHAP from Representative As Purchased Product	HAP or VHAP Concentration of Representative As Purchased Product (pounds/gallon, or %)	Concentration Determination (CPDS, MSDS, etc.)[1]	Total Product Purchases For Category	(-)	Quantity of Product Recovered & Disposed For Category	(=)	Total Product Usage For Category
1.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
2.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
3.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
4.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
5.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
6.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
7.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
8.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
9.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
.					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr
TOTALS					lbs/yr gal/yr	(-)	lbs/yr gal/yr	(=)	lbs/yr gal/yr

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Submit, as an attachment, information on one (1) product from each Category listed above which best represents the average of all the products purchased in that Category.

***NOTE: A Registration is required, at minimum, for any amount of HAP or VHAP emission.**
Emissions from purchased HAP usage should be accounted for on previous tables as appropriate.
A permit may be required for these emissions if the source meets the requirements of 20.11.41.

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Material and Fuel Storage Table

(Tanks, barrels, silos, stockpiles, etc.)

Storage Equipment		Product Stored	Capacity (bbls, tons, gals, acres, etc.)	Above or Below Ground	Construction (Welded, riveted) & Color	Installation Date	Loading Rate[1]	Offloading Rate[1]	True Vapor Pressure	Control Equipment	Seal Type	% Eff.[2]
1	Aggregate Piles	Aggregate	1 Acre	Above	N/A	TBD	25 tons/truck	256.2 tph	N/A	None	N/A	N/A
2	Washed Sand	Washed Sand	1 Acre	Above	N/A	TBD	25 tons/truck	148.5 tph	N/A	None	N/A	N/A
3	Cement Silo/Guppy	Cement	100 tons	Above	N/A	TBD	25 tons/truck	66 tph	N/A	Dust Collector	N/A	>99.9
4	Fly Ash Silo/Guppy	Fly Ash	100 tons	Above	N/A	TBD	25 tons/truck	17.8 tph	N/A	Dust Collector	N/A	>99.9

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Loading/Offloading Rate (Manufacturer's data, Field Observation/Test, etc.). Field Observation – 1, 2
   Submit information for each unit as an attachment.
2. Basis for Control Equipment % Efficiency (Manufacturer's data, Field Observation/Test, AP-42, etc.). Controlled/Uncontrolled Emission Rate – 3, 4
   Submit information for each unit as an attachment.

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Stack Parameters Table

If any equipment from the Regulated Emission Sources Table is also listed in this Stack Table, use the same numbered line for the emission unit on both tables to show the association between the Process Equipment and its stack.

Unit Number and Description		Pollutant (CO, NOx, PM10, etc.)	UTM Easting (m)	UTM Northing (m)	Stack Height (ft)	Stack Exit Temp. (°F)	Stack Velocity (fps)	Stack Flow Rate	Stack Inside Diameter (ft)	Stack Type
5b	Central Baghouse	PM10, PM2.5	352577.2	3877490	8	70	45	11,500	2.329	Horizontal
9	Concrete Batch Plant Engine	PM10, PM2.5, CO, NOx, VOC, SO2	352576.2	3877483	12	911.7	151.5	3,175	0.67	Vertical
										Select
										Select
										Select

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign t add a row. Repeat as needed.

I, the undersigned, an authorized representative of the applicant company, certify that to the best of my knowledge, the information stated on this application, together with associated drawings, specifications, and other data, give a true and complete representation of the existing, modified existing, or planned new stationary source with respect to air pollution sources and control equipment. I also understand that any significant omissions, errors, or misrepresentations in these data will be cause for revocation of part or all of the resulting registration or permit.

Signed this 15th day of January, 20 21

Vincent E. Martinez
Print Name

Managing Member
Print Title

Signature

Attachment A
Facility Plot Plan

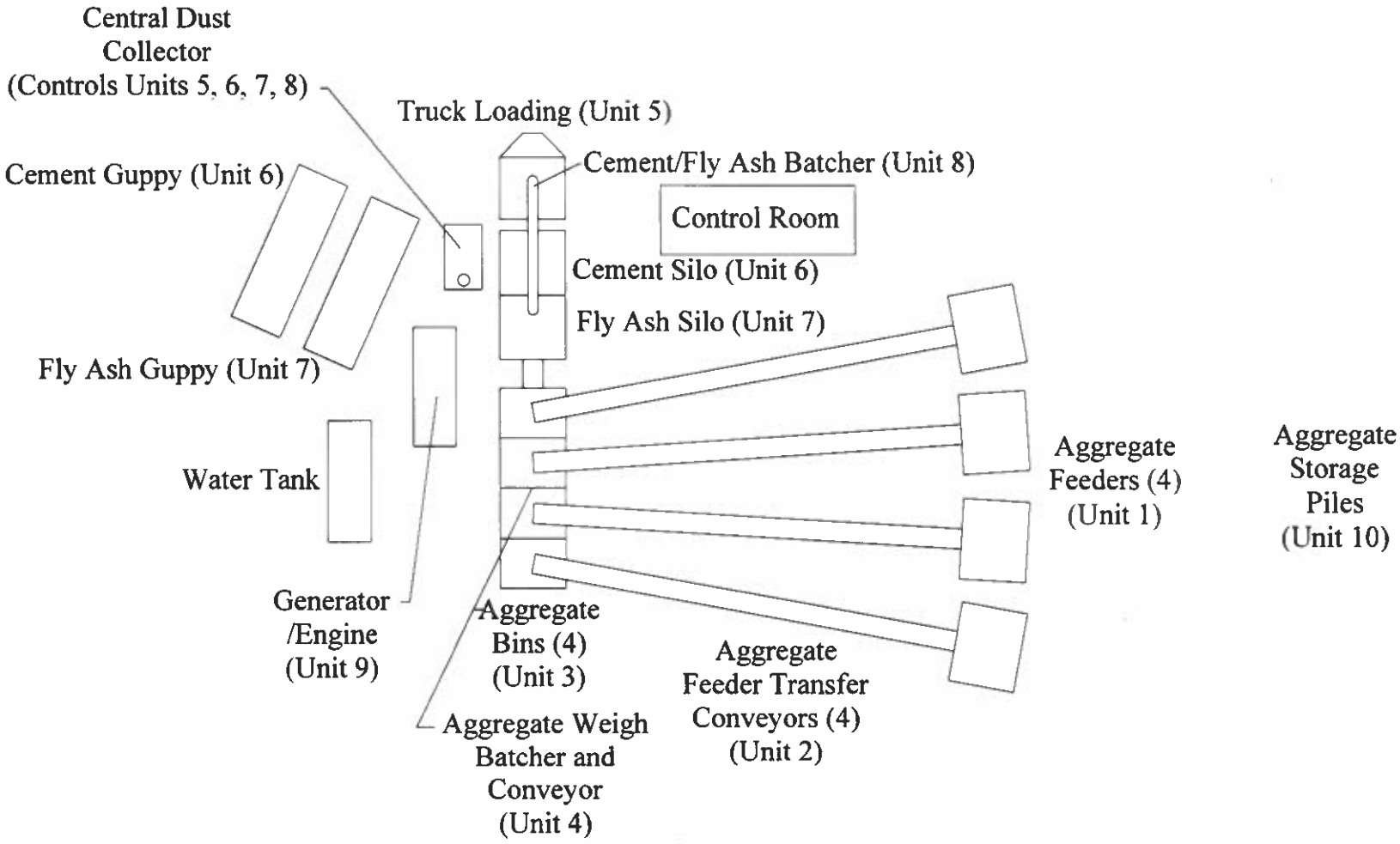


Figure A-1: VCG's Airport Concrete Batch Plant Process Flow

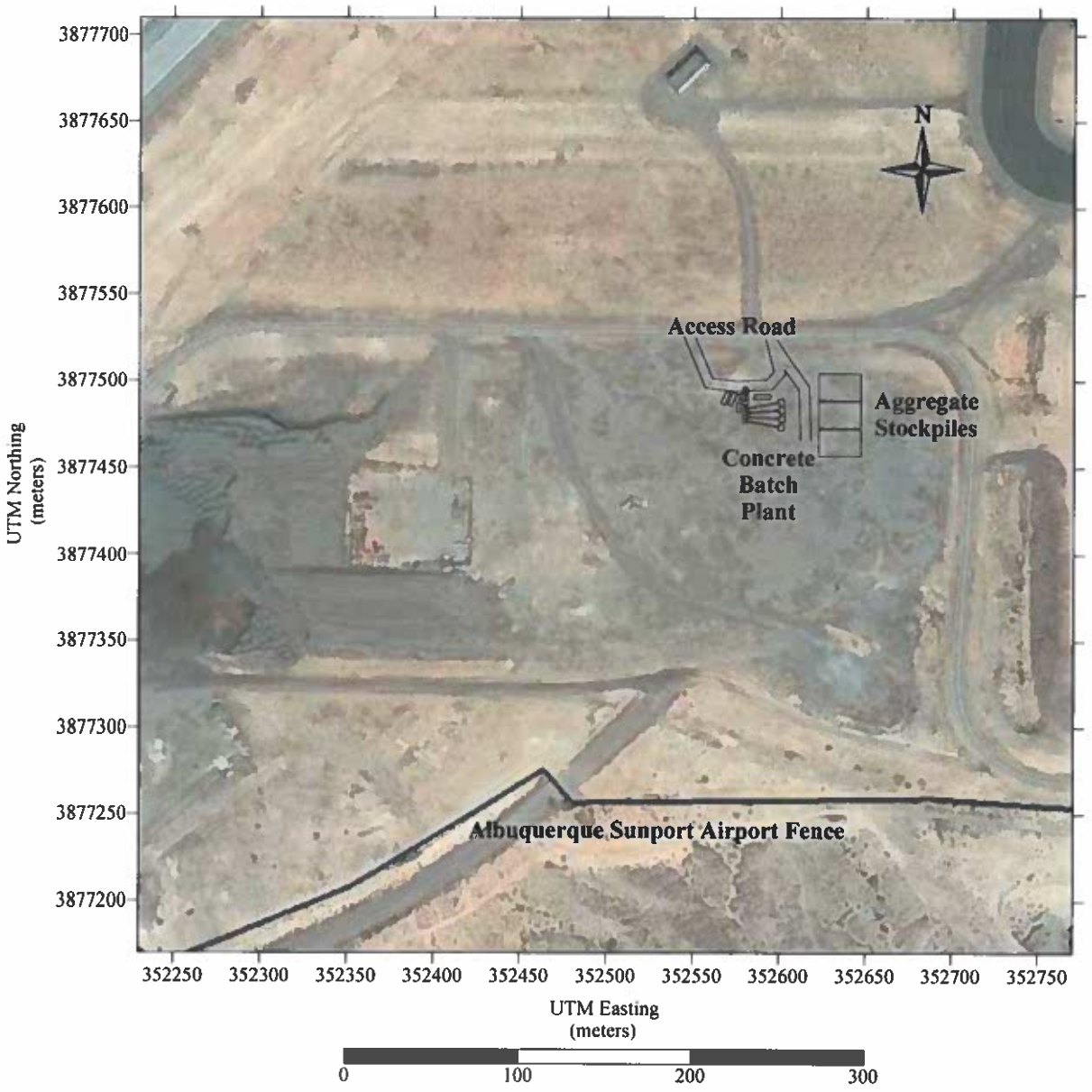


Figure A-2: VCG's Airport Concrete Batch Plant Site Layout

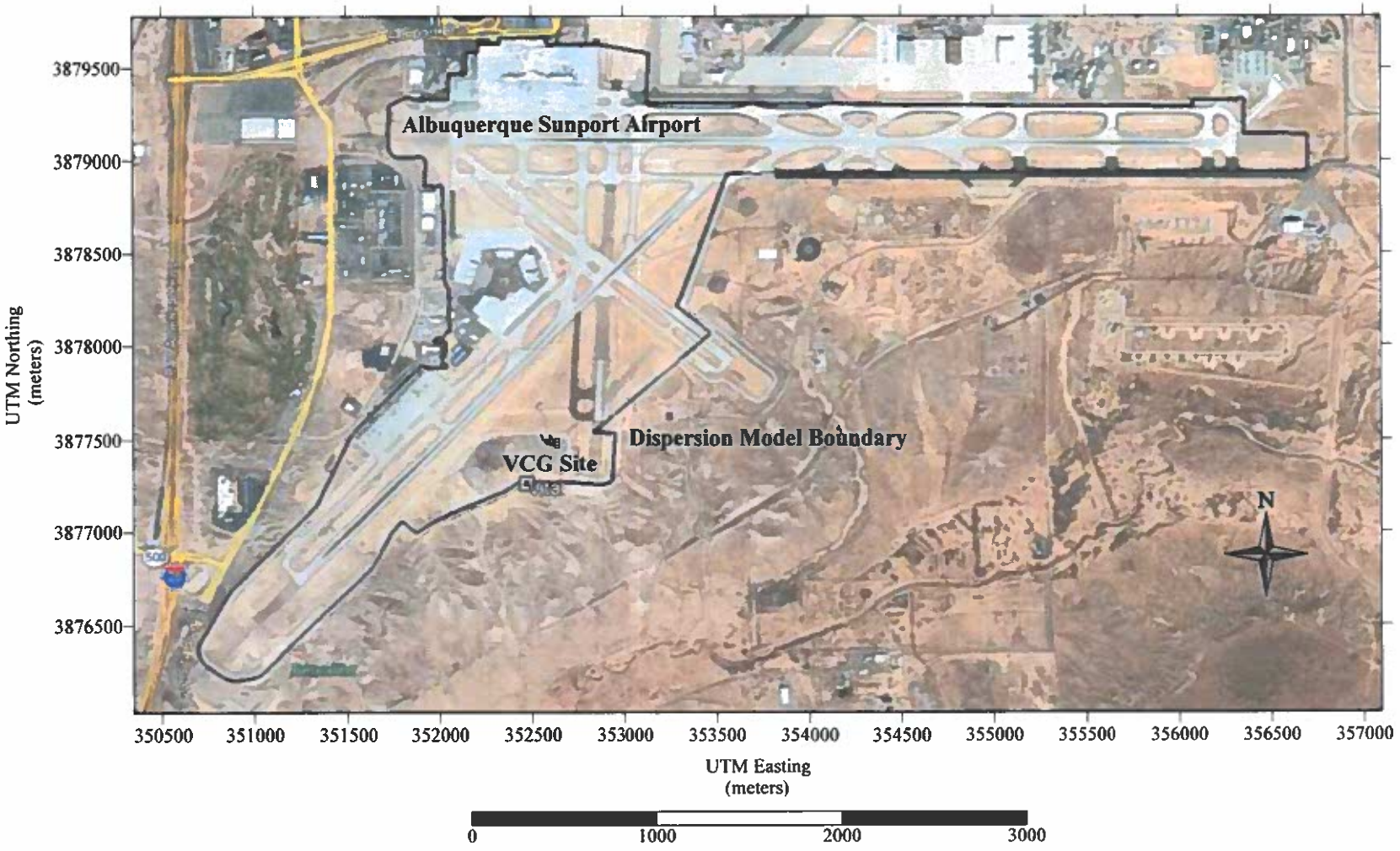


Figure A-3: VCG's Airport Concrete Batch Plant Site Location

Attachment B
Emissions Calculations

1.0 Pre-Control Particulate Emission Rates

1.1 Estimates for Pre-Control Material Handling ($PM_{2.5}$, PM_{10} and PM)

Typical composition of one cubic yard of concrete produced at the Airport Concrete Batch Plant will be:

Concrete Design Mix for One Cubic Yard

Materials	Weight Per Cubic Yard (in lbs)	Weights Per 270 Cubic Yards (in ton)
Cement	489	66.0
Fly Ash	132	17.8
Water	260	35.1
Coarse Aggregate(gravel)	1900	256.5
Fine Aggregate (sand)	1100	148.5
Total	3881	523.9

Hourly raw material throughputs used in material handling emission equations are based on the tons per hour throughput.

Aggregate/Sand = 405 tons/hour
Cement = 66.02 tons/hour
Fly Ash = 17.82 tons/hour

To estimate material handling pre-control particulate emission rates for aggregate handling operations (loading storage piles, loading feed hopper, aggregate bin loading), an emission equation was obtained from EPA's Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, Fifth Edition, Section 13.2.4 (1/1995), where the k is a constant (PM = 0.74, PM10 = 0.35, PM2.5 = 0.053), wind speed is the Albuquerque 1996 – 2006 wind speed of 8.5 mph, and a moisture content for the aggregate of 1.77% and sand of 4.17% (AP-42 Section 11.12, Table 11.12-2, Footnote b). The normalized moisture content for sand and aggregate is 2.65%. To estimate pre-control particulate emissions rates for aggregate handling transfer points (unloading of the feeder, unloading the aggregate weigh batcher), emission factors were obtained from AP-42 Section 11.19.2, Table 11.19.2-2, "Conveyor Transfer Point". Uncontrolled PM2.5 emission rate is based on the PM2.5/PM10 k factor of 0.053/0.35 found in AP-42 Section 13.2.4 and PM10 emission factor of 0.0110 lbs/ton. To estimate pre-control particulate emission rates for silo loading, cement/fly ash batcher loading operations, and concrete mixer truck loading, emission equations

were obtained from EPA's Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, Fifth Edition, Section 11.12 (06/06), Table 11.12-2. $PM_{2.5}$ emission factors for truck loading emissions were determined using the ratio of the uncontrolled $PM_{2.5}/PM_{10}$ *k* factors in AP-42 Section 11.12, Table 11.12-3 (0.05/0.278 or 0.17986) and the PM_{10} truck loading emission factor in AP-42 Section 11.12, Table 11.12-2. $PM_{2.5}$ emission factors for cement/fly ash batcher emissions were determined using the ratio of $PM_{2.5}/PM_{10}$ *k* factors in AP-42 Section 11.12, Table 11.12-4 (0.38/1.92 or 0.19792) and the PM_{10} central mixer emission factor in AP-42 Section 11.12, Table 11.12-2. $PM_{2.5}$ emission factors for silo dust collector were determined using the ratio of $PM_{2.5}/PM_{10}$ *k* factors in AP-42 Section 11.12, Table 11.12-4 (0.38/1.92 or 0.19792) and the PM_{10} central mixer emission factor in AP-42 Section 11.12, Table 11.12-2. Maximum rated material throughput is 270 cubic yards per hour. Annual uncontrolled emissions in tons per year (tpy) were calculated assuming operation for 8760 hours per year.

EPA's AP-42, Section 13.2-4 (01/95)

Aggregate Handling Emission Equation

E (lbs/ton) = k x 0.0032 x $(U/5)^{1.3}$ / $(M/2)^{1.4}$

E_{PM} (lbs/ton) = 0.74 x 0.0032 x $(8.5/5)^{1.3}$ / $(1.77/2)^{1.4}$

E_{PM10} (lbs/ton) = 0.35 x 0.0032 x $(8.5/5)^{1.3}$ / $(1.77/2)^{1.4}$

$E_{PM2.5}$ (lbs/ton) = 0.0.053 x 0.0032 x $(8.5/5)^{1.3}$ / $(1.77/2)^{1.4}$

E_{PM} = 0.00560 lbs/ton; E_{PM10} = 0.00265 lbs/ton; $E_{PM2.5}$ = 0.00040 lbs/ton

Sand Handling Emission Equation

E (lbs/ton) = k x 0.0032 x $(U/5)^{1.3}$ / $(M/2)^{1.4}$

E_{PM} (lbs/ton) = 0.74 x 0.0032 x $(8.5/5)^{1.3}$ / $(4.17/2)^{1.4}$

E_{PM10} (lbs/ton) = 0.35 x 0.0032 x $(8.5/5)^{1.3}$ / $(4.17/2)^{1.4}$

$E_{PM2.5}$ (lbs/ton) = 0.0.053 x 0.0032 x $(8.5/5)^{1.3}$ / $(4.17/2)^{1.4}$

E_{PM} = 0.00169 lbs/ton; E_{PM10} = 0.00080 lbs/ton; $E_{PM2.5}$ = 0.00012 lbs/ton

Aggregate/Sand Handling Emission Equation

E (lbs/ton) = k x 0.0032 x $(U/5)^{1.3}$ / $(M/2)^{1.4}$

E_{PM} (lbs/ton) = 0.74 x 0.0032 x $(8.5/5)^{1.3}$ / $(2.65/2)^{1.4}$

E_{PM10} (lbs/ton) = 0.35 x 0.0032 x $(8.5/5)^{1.3}$ / $(2.65/2)^{1.4}$

$E_{PM2.5}$ (lbs/ton) = 0.0.053 x 0.0032 x $(8.5/5)^{1.3}$ / $(2.65/2)^{1.4}$

E_{PM} = 0.00318 lbs/ton; E_{PM10} = 0.00151 lbs/ton; $E_{PM2.5}$ = 0.00023 lbs/ton

EPA's AP-42, Section 11.19.2-2 (08/04)

Conveyor Transfer Emission Factor

E_{PM} = 0.0030 lbs/ton; E_{PM10} = 0.00110 lbs/ton; $E_{PM2.5}$ = 0.000167 lbs/ton

EPA's AP-42, Section 11.12 (06/06), Table 11.12-2

Cement Silo Loading Emission Factor

E_{PM} = 0.73 lbs/ton; E_{PM10} = 0.47 lbs/ton; $E_{PM2.5}$ = 0.093 lbs/ton

Fly Ash Silo Loading Emission Factor

E_{PM} = 3.14 lbs/ton; E_{PM10} = 1.10 lbs/ton; $E_{PM2.5}$ = 0.218 lbs/ton

Cement/Fly Ash Batcher Loading Emission Factor

E_{PM} = 0.572 lbs/ton; E_{PM10} = 0.156 lbs/ton; $E_{PM2.5}$ = 0.0309 lbs/ton

Concrete Truck Loading Emission Factor

E_{PM} = 1.118 lbs/ton; E_{PM10} = 0.31 lbs/ton; $E_{PM2.5}$ = 0.0558 lbs/ton

Emission Factors:

Process Unit	PM2.5 Emission Factor (lbs/ton)	PM10 Emission Factor (lbs/ton)	PM Emission Factor (lbs/ton)
Aggregate Material Handling	0.00040	0.00265	0.00560
Sand Material Handling	0.00012	0.00080	0.00169
Aggregate/Sand Material Handling	0.00023	0.00151	0.00318
Aggregate Transfer Points	0.000167	0.00110	0.0030
Cement Loading	0.093	0.47	0.73
Fly Ash Loading	0.218	1.10	3.14
Cement/Fly Ash Batcher	0.0309	0.156	0.572
Truck Loading	0.0558	0.31	1.118

The following equations were used to calculate the hourly emission rate for each process unit:

Emission Rate (lbs/hour) = Process Rate (tons/hour) * Emission Factor (lbs/ton)

The following equations was used to calculate the annual emission rate for each process unit:

$$\text{Emission Rate (tons/year)} = \frac{\text{Emission Rate (lbs/hour)} * \text{Operating Hour (hrs/year)}}{\text{2000 lbs/ton}}$$

Table B-1: Pre-Controlled Material Handling Particulate Emissions (PER)

Process Unit #	Process Unit Description	Process Rate (tph)	PM Emission Rate (lbs/hr)	PM Emission Rate (tons/yr)	PM_{10} Emission Rate (lbs/hr)	PM_{10} Emission Rate (tons/yr)	$PM_{2.5}$ Emission Rate (lbs/hr)	$PM_{2.5}$ Emission Rate (tons/yr)
1a	Aggregate/Sand Feeder Loading	101.25 (2)	0.32	1.41	0.15	0.67	0.023	0.10
1b	Aggregate/Sand Feeder Loading	101.25 (2)	0.32	1.41	0.15	0.67	0.023	0.10
1c	Aggregate/Sand Feeder Loading	101.25 (2)	0.32	1.41	0.15	0.67	0.023	0.10
1d	Aggregate/Sand Feeder Loading	101.25 (2)	0.32	1.41	0.15	0.67	0.023	0.10
2a	Transfer Conveyor	101.25 (2)	0.30	1.33	0.11	0.49	0.017	0.074
2b	Transfer Conveyor	101.25 (2)	0.30	1.33	0.11	0.49	0.017	0.074
2c	Transfer Conveyor	101.25 (2)	0.30	1.33	0.11	0.49	0.017	0.074
2d	Transfer Conveyor	101.25 (2)	0.30	1.33	0.11	0.49	0.017	0.074
3	4-Bin Aggregate Feeder	405(2)	1.29	5.65	0.61	2.67	0.092	0.40
4	Aggregate Batcher and Conveyor	405(2)	1.22	5.32	0.45	1.95	0.067	0.30
5	Truck Loading	83.84(1)	93.7	411	26.0	114	4.67	20.5
6	Cement Loading	66.015	48.2	211	31.0	136	6.14	26.9
7	Fly Ash Loading	17.82	56.0	245	19.6	86	3.88	17.0
8	Cement/Fly Ash Batcher	83.84(1)	48.0	210	13.1	57	2.59	11.3
10	Aggregate/Sand Pile Loading	405(2)	1.69	7.39	0.80	3.50	0.12	0.53
		TOTALS	**253**	**1106**	**92.6**	**406**	**17.7**	**77.6**

(1) Combined Cement and Fly Ash hourly usage.
(2) Combined Aggregate and Sand hourly usage.

1.2 Haul Truck Travel

Haul truck travel emissions were estimated using AP-42, Section 13.2.2 (ver.11/06) "Unpaved Roads" emission equation. The haul road around the plant will be unpaved but controlled with millings and watering. Haul trucks will be used to deliver cement, fly ash, aggregate material, and transport concrete product. Table B-2 summarizes the emission rate for each haul truck category.

$$E = k * (s/12)^a * (W/3)^b * [(365 - p)/365] * VMT$$

Where k = constant PM = 4.9
PM10 = 1.5
PM2.5 = 0.15
s = % silt content (Table 13.2.2-1, "Sand and Gravel" 4.8%)
W = mean vehicle weight (27.5 tons per truck)
W = mean concrete truck weight (25 tons)
p = number of days with at least 0.01 in of precip. (Figure 13.2.2-1= 60 days)
(used only for annual emission calculations)
a = Constant PM = 0.7
PM10 = 0.9
PM2.5 = 0.9
b = Constant PM = 0.45
PM10 = 0.45
PM2.5 = 0.45
VMT = Aggregate Vehicle Miles Traveled
(roundtrip = 0.07938 miles)
VMT = Cement, Fly Ash, Concrete Vehicle Miles Traveled
(roundtrip = 0.05733 miles)

Cement Trucks = 2.6 trucks/hr
Fly Ash Trucks = 0.7 trucks/hr
Aggregate Trucks = 16.2 trucks/hr
Concrete Trucks = 22.5 trucks/hr

Delivery Trucks Lbs/VMT = 6.99251 lbs/hr PM; 1.78213 lbs/hr PM10; 0.178213 lbs/hr PM2.5
Concrete Trucks Lbs/VMT = 6.69895 lbs/hr PM; 1.70732 lbs/hr PM10; 0.170732 lbs/hr PM2.5

	PM Uncontrolled			
Max. Truck Emissions Road	18.98	lbs/hr	69.46	tons/yr
	PM10 Uncontrolled			
	4.84	lbs/hr	17.70	tons/yr
	PM2.5 Uncontrolled			
	0.48	lbs/hr	1.77	tons/yr

2.0 Estimates for Controlled Material Handling Air Pollutants ($PM_{2.5}$, PM_{10}, and PM) (PTE)

To estimate material handling control particulate emission rates for aggregate handling operations (loading storage piles, loading feed hopper, aggregate bin loading), an emission equation was obtained from EPA's Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, Fifth Edition, Section 13.2.4 (1/1995), where the k is a constant (PM = 0.74, PM10 = 0.35, PM2.5 = 0.053), wind speed is the Albuquerque 1996 – 2006 wind speed of 8.5 mph, and a moisture content for the aggregate of 1.77% and sand of 4.17% (AP-42 Section 11.12, Table 11.12-2, Footnote b). The normalized moisture content for sand and aggregate is 2.65%. To estimate control particulate emissions rates for aggregate handling transfer points (unloading of the feeder, unloading the aggregate weigh batcher), emission factors were obtained from AP-42 Section 11.19.2, Table 11.19.2-2, "Conveyor Transfer Point Controlled". Additional reductions for annual emissions are found in limiting annual production.

A control efficiency of 90% (Water/Millings) will be used for unpaved truck traffic fugitive dust particulate emissions. Additional reductions for annual emissions are found in limiting annual haul truck traffic.

Maximum rated material throughput is 270 cubic yards per hour. Annual emissions in tons per year (tpy) were calculated assuming operation of 500,000 cubic yards per year.

EPA's AP-42, Section 13.2-4 (01/95)

Aggregate Handling Emission Equation

E (lbs/ton) = k x 0.0032 x $(U/5)^{1.3}$ / $(M/2)^{1.4}$

E_{PM} (lbs/ton) = 0.74 x 0.0032 x $(8.5/5)^{1.3}$ / $(1.77/2)^{1.4}$

E_{PM10} (lbs/ton) = 0.35 x 0.0032 x $(8.5/5)^{1.3}$ / $(1.77/2)^{1.4}$

$E_{PM2.5}$ (lbs/ton) = 0.0.053 x 0.0032 x $(8.5/5)^{1.3}$ / $(1.77/2)^{1.4}$

E_{PM} = 0.00560 lbs/ton; E_{PM10} = 0.00265 lbs/ton; $E_{PM2.5}$ = 0.00040 lbs/ton

Sand Handling Emission Equation

E (lbs/ton) = k x 0.0032 x $(U/5)^{1.3}$ / $(M/2)^{1.4}$

E_{PM} (lbs/ton) = 0.74 x 0.0032 x $(8.5/5)^{1.3}$ / $(4.17/2)^{1.4}$

E_{PM10} (lbs/ton) = 0.35 x 0.0032 x $(8.5/5)^{1.3}$ / $(4.17/2)^{1.4}$

$E_{PM2.5}$ (lbs/ton) = 0.0.053 x 0.0032 x $(8.5/5)^{1.3}$ / $(4.17/2)^{1.4}$

E_{PM} = 0.00169 lbs/ton; E_{PM10} = 0.00080 lbs/ton; $E_{PM2.5}$ = 0.00012 lbs/ton

Aggregate/Sand Handling Emission Equation

E (lbs/ton) = k x 0.0032 x $(U/5)^{1.3}$ / $(M/2)^{1.4}$

E_{PM} (lbs/ton) = 0.74 x 0.0032 x $(8.5/5)^{1.3}$ / $(2.5/2)^{1.4}$

E_{PM10} (lbs/ton) = 0.35 x 0.0032 x $(8.5/5)^{1.3}$ / $(2.5/2)^{1.4}$

$E_{PM2.5}$ (lbs/ton) = 0.0.053 x 0.0032 x $(8.5/5)^{1.3}$ / $(2.5/2)^{1.4}$

E_{PM} = 0.00345 lbs/ton; E_{PM10} = 0.00163 lbs/ton; $E_{PM2.5}$ = 0.00025 lbs/ton

EPA's AP-42, Section 11.19.2-2 (08/04)

Conveyor Transfer Controlled Emission Factor

E_{PM} = 0.00014 lbs/ton; E_{PM10} = 0.000046 lbs/ton; $E_{PM2.5}$ = 0.000013 lbs/ton

Controlled Emission Factors:

Process Unit	PM2.5 Emission Factor (lbs/ton)	PM10 Emission Factor (lbs/ton)	PM Emission Factor (lbs/ton)
Aggregate Material Handling	0.00040	0.00265	0.00560
Sand Material Handling	0.00012	0.00080	0.00169
Aggregate/Sand Material Handling	0.00025	0.00163	0.00345
Aggregate Transfer Points	0.000013	0.000046	0.00014

The following equation was used to calculate the hourly emission rate for each material handling emission unit:

Emission Rate (lbs/hour) = Process Rate (tons/hour) * Controlled Emission Factor (lbs/ton)

The following equation was used to calculate the hourly emission rate for each process unit:

$$\text{Emission Rate (tons/year)} = \frac{\text{Controlled Emission Factor (lbs/ton)} * \text{Process Rate (tons/year)}}{\text{2000 lbs/ton}}$$

Table B-2: Controlled Material Handling Particulate Emission Rates

Process Unit #	Process Unit Description	Process Rate (tph)	PM Emission Rate (lbs/hr)	PM Emission Rate (tons/yr)	PM_{10} Emission Rate (lbs/hr)	PM_{10} Emission Rate (tons/yr)	$PM_{2.5}$ Emission Rate (lbs/hr)	$PM_{2.5}$ Emission Rate (tons/yr)
1a	Aggregate/Sand Feeder Loading	101.25 tph 187,500 tpy	0.32	0.30	0.15	0.14	0.023	0.021
1b	Aggregate/Sand Feeder Loading	101.25 tph 187,500 tpy	0.32	0.30	0.15	0.14	0.023	0.021
1c	Aggregate/Sand Feeder Loading	101.25 tph 187,500 tpy	0.32	0.30	0.15	0.14	0.023	0.021
1d	Aggregate/Sand Feeder Loading	101.25 tph 187,500 tpy	0.32	0.30	0.15	0.14	0.023	0.021
2a	Transfer Conveyor	101.25 tph 187,500 tpy	0.014	0.013	0.0047	0.004	0.0013	0.0012
2b	Transfer Conveyor	101.25 tph 187,500 tpy	0.014	0.013	0.0047	0.004	0.0013	0.0012
2c	Transfer Conveyor	101.25 tph 187,500 tpy	0.014	0.013	0.0047	0.004	0.0013	0.0012
2d	Transfer Conveyor	101.25 tph 187,500 tpy	0.014	0.013	0.0047	0.004	0.0013	0.0012
3	4-Bin Aggregate Feeder	405 tph 750,000 tpy	1.29	1.19	0.61	0.56	0.092	0.085
4	Aggregate Batcher and Conveyor	405 tph 750,000 tpy	0.057	0.053	0.019	0.017	0.0053	0.0049
10	Aggregate Pile Loading	405 tph 750,000 tpy	1.90	1.47	0.48	0.37	0.048	0.037
		TOTALS	**4.38**	**4.05**	**2.05**	**1.90**	**0.32**	**0.29**

Table B-3: Controlled Vehicle Fugitive Dust Emission Rates

Process Unit Number	Process Unit Description	PM Emission Rate (lbs/hr)	PM Emission Rate (tons/yr)	PM_{10} Emission Rate (lbs/hr)	PM_{10} Emission Rate (tons/yr)	$PM_{2.5}$ Emission Rate (lbs/hr)	$PM_{2.5}$ Emission Rate (tons/yr)
11	Haul Traffic	1.90	1.47	0.48	0.37	0.048	0.037

Controlled Emissions from Dust Collectors

Particulate emissions are controlled by a dust collector for the truck loading, cement/fly ash batcher, and cement/fly ash silo. Manufacturer's specifications list a controlled grain loading rate of 0.01 grains/cubic foot from the dust collector exhaust. Using the following equation pounds per hour number were calculated. PTE emission rates are based on limiting annual operating hours to 5000 hours per year.

0.01 grains/ft^3 * flowrate ft^3/min * 1 lb/7000 grains * 60 min/hr =
PM (PM=PM10=PM2.5)

Table B-4: Controlled Particulate Emission Rates from Dust Collectors

Emission Unit Number	Process Unit Description	Flowrate (ACFM)	PM Emission Rate (lbs/hr)	PM Emission Rate (tons/yr)
5, 6, 7, 8	Truck Loading, Cement Silo/Guppy, Fly Ash Silo/Guppy, Cement/Fly Ash Batcher Dust Collector	11500	0.99	2.49

3.0 Estimates for Engine Emissions (NO_X, CO, SO_2, VOC and PM)

A Caterpillar Model C15 diesel-fired generator/engine will power the concrete batch plant. The Caterpillar generator/engine is rated at 500 kW (779 HP) and is a Tier 3 engine. SO_2 emissions for the Caterpillar engine is based on the sulfur content of fuel burned (15 PPM) and the fuel usage (based on 35.7 gal/hr and 7.0 lbs/gal). PER emission rates are based on operating 8760 hours per year and PTE emission rates are based on limiting annual operating hours to 5000 hours per year.

Manufacturer Certified Emission Rates:

Pollutant	Emission Rate (Lbs/Hr)
NOx	5.27
Carbon Monoxides	0.94
VOC	0.060
Particulate	0.09

The following equation was used to calculate the annual emission rate for each heater pollutant:

$$\text{Emission Rate (tons/year)} = \frac{\text{Emission Rate (lbs/hour)} * \text{Operating Hour (hrs/year)}}{\text{2000 lbs/ton}}$$

The following equation calculates the emission rate for sulfur dioxide (SO_2).

Emission Rate (lbs/hr) = Fuel (gal/hr) * Density lbs/gal * % Sulfur Content * Factor

$$\text{Emission Rate (lbs/hr)} = \frac{35.7 \text{ gallons}}{\text{hr}} \left| \frac{7.0 \text{ lbs}}{\text{gallon}} \right| \frac{0.000015 \text{ lbs Sulfur}}{\text{lbs of fuel}} \left| \frac{2 \text{ lbs } SO_2}{1 \text{ lb Sulfur}} \right.$$

Emission Rate (lbs/hr) = 0.0075 lbs/hr

Table B-5: Pre-Controlled Combustion Emission Rates - 779 HP

Emission Unit Number	Pollutant	Emission Rate (lbs/hr)	Emission Rate (tons/yr)
9	NO_X	5.27	23.1
	CO	0.94	4.12
	SO_2	0.0075	0.033
	VOC	0.060	0.26
	PM	0.09	0.39

Table B-6: Controlled Combustion Emission Rates - 779 HP

Emission Unit Number	Pollutant	Emission Rate (lbs/hr)	Emission Rate (tons/yr)
9	NO_X	5.27	13.2
	CO	0.94	2.35
	SO_2	0.0075	0.019
	VOC	0.060	0.15
	PM	0.09	0.23

Table B-7: PTE Emission Totals

ID #	Source Description	NOx		CO		SO2		VOC		PM		PM10		PM2.5	
		lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
1a	Feeder1									0.32	1.41	0.15	0.67	0.023	0.10
1b	Feeder2									0.32	1.41	0.15	0.67	0.023	0.10
1c	Feeder3									0.32	1.41	0.15	0.67	0.023	0.10
1d	Feeder4									0.32	1.41	0.15	0.67	0.023	0.10
2a	Conveyor1									0.30	1.33	0.11	0.49	0.017	0.074
2b	Conveyor2									0.30	1.33	0.11	0.49	0.017	0.074
2c	Conveyor3									0.30	1.33	0.11	0.49	0.017	0.074
2d	Conveyor4									0.30	1.33	0.11	0.49	0.017	0.074
3	Aggregate Bin									1.29	5.65	0.61	2.67	0.092	0.40
4	Aggregate Weigh Batcher and Conveyor									1.22	5.32	0.45	1.95	0.067	0.30
5	Truck Loading									93.7	411	26.0	114	4.67	20.5
6	Cement Silo with Guppy									48.2	211	31.0	136	6.14	26.9
7	Fly Ash Silo with Guppy									56.0	245	19.6	86	3.88	17.0
8	Cement/Fly Ash Batcher									48.0	210	13.1	57	2.59	11.3
9	Concrete Batch Plant Engine	5.27	23.1	0.94	4.12	0.0075	0.033	0.060	0.26	0.09	0.39	0.09	0.39	0.09	0.39
10	Storage Piles									1.69	7.39	0.80	3.50	0.12	0.53
11	Haul Road									19.0	69.5	4.8	17.7	0.48	1.8
	Total	**5.27**	**23.1**	**0.94**	**4.12**	**0.0075**	**0.033**	**0.060**	**0.26**	**272**	**1176**	**97.5**	**424**	**18.3**	**79.8**

Table B-8 PER Emission Totals

ID #	Source Description	NOx		CO		SO2		VOC		PM		PM10		PM2.5	
		lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
1a	Feeder1									0.32	0.30	0.15	0.14	0.023	0.021
1b	Feeder2									0.32	0.30	0.15	0.14	0.023	0.021
1c	Feeder3									0.32	0.30	0.15	0.14	0.023	0.021
1d	Feeder4									0.32	0.30	0.15	0.14	0.023	0.021
2a	Conveyor1									0.014	0.013	0.0047	0.004	0.0013	0.0012
2b	Conveyor2									0.014	0.013	0.0047	0.004	0.0013	0.0012
2c	Conveyor3									0.014	0.013	0.0047	0.004	0.0013	0.0012
2d	Conveyor4									0.014	0.013	0.0047	0.004	0.0013	0.0012
3	Aggregate Bin									1.29	1.19	0.61	0.56	0.092	0.085
4	Aggregate Weigh Batcher and Conveyor									0.057	0.053	0.019	0.017	0.0053	0.0049
5, 6, 7, 8	Central Dust Collector									0.99	2.46	0.99	2.46	0.99	2.46
9	Concrete Batch Plant Engine	5.27	13.2	0.94	2.35	0.0075	0.019	0.060	0.15	0.09	0.23	0.09	0.23	0.09	0.23
10	Storage Piles									1.69	1.56	0.80	0.74	0.12	0.11
11	Haul Road									1.90	1.47	0.48	0.37	0.048	0.037
	Total	**5.27**	**13.2**	**0.94**	**2.35**	**0.0075**	**0.019**	**0.060**	**0.15**	**7.35**	**8.21**	**3.61**	**4.98**	**1.44**	**3.04**

Estimates for Federal HAPs Air Pollutants

The concrete batch plant engine (Unit 9) are sources of HAPs as it appears in Section 112 (b) of the 1990 CAAA. Emissions of HAPs were determined for Unit 9 engine using AP-42 Section 3.3 and Section 1.3.

The following tables summarize the HAPs emission rates from the concrete batch plant engine (Unit 9). Total combined HAPs emissions from Aggregate Plants is 0.017 pounds per hour and 0.0024 tons per year.

Table B-9: HAPs Emission Rates from the Concrete Batch Plant Engine (9)

Horsepower Rating:	779	horsepower	
Fuel Usage:	35.7	gallons/hr	
MMBtu/hr:	4.5696	Btu	(based on 128000 Btu/gallon)
Btu x 10^-12/hr:	4.5696E-06	Btu x10^-12	(based on 128000 Btu/gallon)
Yearly Operating Hours:	5000	hours per year	

Type of Fuel: Diesel
Emission Factors AP-42 Section 3.3 and Section 1.3

Non-PAH HAPS	CAS#		Emission Factor (lbs/mmBtu)	Emission Rate (lbs/hr)	Emission Rate (ton/yr)
Acetalehyde	75-07-0		7.67E-04	0.003505	0.008762
Acrolein	107-02-8		9.25E-05	0.000423	0.001057
Benzene	71-43-2		9.33E-04	0.004263	0.010659
1,3-Butadiene	106-99-0		3.91E-05	0.000179	0.000447
Formaldehyde	50-00-0		1.18E-03	0.005392	0.013480
Propylene	115-07-1		2.58E-03	0.011790	0.029474
Toluene	108-88-3		4.09E-04	0.001869	0.004672
Xylene	1330-20-7		2.85E-04	0.001302	0.003256
		Total Non-PAH HAPS	6.29E-03	0.028723	0.071807

PAH HAPS	CAS#		Emission Factor (lbs/mmBtu)	Emission Rate (lbs/hr)	Emission Rate (ton/yr)
Acenaphthene	83-32-9		1.42E-06	0.000006	0.000016
Acenaphthylene	208-96-8		5.06E-06	0.000023	0.000058
Anthracene	120-12-7		1.87E-06	0.000009	0.000021
Benzo(a)anthracene	56-55-3		1.68E-06	0.000008	0.000019
Benzo(a)pyrene	50-32-8		1.88E-07	0.000001	0.000002
Benzo(b)fluoranthene	205-99-2		9.91E-08	0.000000	0.000001
Benzo(a)pyrene	192-97-2		1.55E-07	0.000001	0.000002
Benzo(g,h,I)perylene	191-24-2		4.89E-07	0.000002	0.000006
Benzo(k)fluoranthene	207-08-9		1.55E-07	0.000001	0.000002
Dibenz(a,h)anthracene			5.83E-07	0.000003	0.000007
Chrysene	218-01-9		3.53E-07	0.000002	0.000004
Fluoranthene	206-44-0		7.61E-06	0.000035	0.000087
Fluorene	86-73-7		2.92E-05	0.000133	0.000334
Indeno(1,2,3-cd)pyrene	193-39-5		3.75E-07	0.000002	0.000004
Naphthalene	91-20-3		8.48E-05	0.000388	0.000969
Phenanthrene	85-01-8		2.94E-05	0.000134	0.000336
Pyrene	129-00-0		4.78E-06	0.000022	0.000055
		Total PAH HAPS	1.68E-04	0.000769	0.001922

HAPS Metals		Emission Factor (lbs/Btu^12)	Emission Rate (lbs/hr)	Emission Rate (ton/yr)
Arsenic		4	0.000018	0.000046
Beryllium		3	0.000014	0.000034
Cadmium		3	0.000014	0.000034
Chromium		3	0.000014	0.000034
Lead		9	0.000041	0.000103
Manganese		6	0.000027	0.000069
Mercury		3	0.000014	0.000034
Nickel		3	0.000014	0.000034
Selenium		15	0.000069	0.000171
	Total Metals HAPS	49	0.000224	0.000560
	Total HAPS		**0.0297**	**0.0743**

Attachment C
Emissions Calculations Background

11.12 Concrete Batching

11.12.1 Process Description [1-5]

Concrete is composed essentially of water, cement, sand (fine aggregate) and coarse aggregate. Coarse aggregate may consist of gravel, crushed stone or iron blast furnace slag. Some specialty aggregate products could be either heavyweight aggregate (of barite, magnetite, limonite, ilmenite, iron or steel) or lightweight aggregate (with sintered clay, shale, slate, diatomaceous shale, perlite, vermiculite, slag pumice, cinders, or sintered fly ash). Supplementary cementitious materials, also called mineral admixtures or pozzolan minerals may be added to make the concrete mixtures more economical, reduce permeability, increase strength, or influence other concrete properties. Typical examples are natural pozzolans, fly ash, ground granulated blast-furnace slag, and silica fume, which can be used individually with portland or blended cement or in different combinations. Chemical admixtures are usually liquid ingredients that are added to concrete to entrain air, reduce the water required to reach a required slump, retard or accelerate the setting rate, to make the concrete more flowable or other more specialized functions.

Approximately 75 percent of the U.S. concrete manufactured is produced at plants that store, convey, measure and discharge these constituents into trucks for transport to a job site. At most of these plants, sand, aggregate, cement and water are all gravity fed from the weight hopper into the mixer trucks. The concrete is mixed on the way to the site where the concrete is to be poured. At some of these plants, the concrete may also be manufactured in a central mix drum and transferred to a transport truck. Most of the remaining concrete manufactured are products cast in a factory setting. Precast products range from concrete bricks and paving stones to bridge girders, structural components, and panels for cladding. Concrete masonry, another type of manufactured concrete, may be best known for its conventional 8 x 8 x 16-inch block. In a few cases concrete is dry batched or prepared at a building construction site. Figure 11.12-1 is a generalized process diagram for concrete batching.

The raw materials can be delivered to a plant by rail, truck or barge. The cement is transferred to elevated storage silos pneumatically or by bucket elevator. The sand and coarse aggregate are transferred to elevated bins by front end loader, clam shell crane, belt conveyor, or bucket elevator. From these elevated bins, the constituents are fed by gravity or screw conveyor to weigh hoppers, which combine the proper amounts of each material.

11.12.2 Emissions and Controls [6-8]

Particulate matter, consisting primarily of cement and pozzolan dust but including some aggregate and sand dust emissions, is the primary pollutant of concern. In addition, there are emissions of metals that are associated with this particulate matter. All but one of the emission points are fugitive in nature. The only point sources are the transfer of cement and pozzolan material to silos, and these are usually vented to a fabric filter or "sock". Fugitive sources include the transfer of sand and aggregate, truck loading, mixer loading, vehicle traffic, and wind erosion from sand and aggregate storage piles. The amount of fugitive emissions generated during the transfer of sand and aggregate depends primarily on the surface moisture content of these materials. The extent of fugitive emission control varies widely from plant to plant. Particulate emission factors for concrete batching are give in Tables 11.12-1 and 11.12-2.

TABLE 11.12-2 (ENGLISH UNITS)
EMISSION FACTORS FOR CONCRETE BATCHING [a]

Source (SCC)	Uncontrolled				Controlled			
	Total PM	Emission Factor Rating	Total PM_{10}	Emission Factor Rating	Total PM	Emission Factor Rating	Total PM_{10}	Emission Factor Rating
Aggregate transfer [b] (3-05-011-04,-21,23)	0.0069	D	0.0033	D	ND		ND	
Sand transfer [b] (3-05-011-05,22,24)	0.0021	D	0.00099	D	ND		ND	
Cement unloading to elevated storage silo (pneumatic)[c] (3-05-011-07)	0.73	E	0.47	E	0.00099	D	0.00034	D
Cement supplement unloading to elevated storage silo (pneumatic)[d] (3-05-011-17)	3.14	E	1.10	E	0.0089	D	0.0049	E
Weigh hopper loading [e] (3-05-011-08)	0.0048	D	0.0028	D	ND		ND	
Mixer loading (central mix)[f] (3-05-011-09)	0.572 or Eqn. 11.12-1	B	0.156 or Eqn. 11.12-1	B	0.0184 or Eqn. 11.12-1	B	0.0055 or Eqn. 11.12-1	B
Truck loading (truck mix)[g] (3-05-011-10)	1.118	B	0.310	B	0.098 or Eqn. 11.12-1	B	0.0263 or Eqn. 11.12-1	B
Vehicle traffic (paved roads)	See AP-42 Section 13.2.1, Paved Roads							
Vehicle traffic (unpaved roads)	See AP-42 Section 13.2.2, Unpaved Roads							
Wind erosion from aggregate and sand storage piles	See AP-42 Section 13.2.5, Industrial Wind Erosion							

ND = No data

[a] All emission factors are in lb of pollutant per ton of material loaded unless noted otherwise. Loaded material includes course aggregate, sand, cement, cement supplement and the surface moisture associated with these materials. The average material composition of concrete batches presented in references 9 and 10 was 1865 lbs course aggregate, 1428 lbs sand, 491 lbs cement and 73 lbs cement supplement. Approximately 20 gallons of water was added to this solid material to produce 4024 lbs (one cubic yard) of concrete.

[b] Reference 9 and 10. Emission factors are based upon an equation from AP-42, section 13.2.4 Aggregate Handling And Storage Piles, equation 1 with k_{PM-10} =.35, k_{PM} = .74, U = 10mph, $M_{aggregate}$ =1.77%, and M_{sand} = 4.17%. These moisture contents of the materials ($M_{aggregate}$ and M_{sand}) are the averages of the values obtained from Reference 9 and Reference 10.

[c] The uncontrolled PM & PM-10 emission factors were developed from Reference 9. The controlled emission factor for PM was developed from References 9, 10, 11, and 12. The controlled emission factor for PM-10 was developed from References 9 and 10.

[d] The controlled PM emission factor was developed from Reference 10 and Reference 12, whereas the controlled PM-10 emission factor was developed from only Reference 10.

[e] Emission factors were developed by using the Aggregate and Sand Transfer Emission Factors in conjunction with the ratio of aggregate and sand used in an average yard^3 of concrete. The unit for these emission factors is lb of pollutant per ton of aggregate and sand.

[f] References 9, 10, and 14. The emission factor units are lb of pollutant per ton of cement and cement supplement. The general factor is the arithmetic mean of all test data.

[g] Reference 9, 10, and 14. The emission factor units are lb of pollutant per ton of cement and cement supplement. The general factor is the arithmetic mean of all test data.

The particulate matter emissions from truck mix and central mix loading operations are calculated in accordance with the values in Tables 11.12-1 or 11.12-2 or by Equation 11.12-1[14] when site specific data are available.

$$E = k\,(0.0032)\left[\frac{U^a}{M^b}\right] + c \qquad \text{Equation 11.12-1}$$

E	=	Emission factor in lbs./ton of cement and cement supplement
k	=	Particle size multiplier (dimensionless)
U	=	Wind speed at the material drop point, miles per hour (mph)
M	=	Minimum moisture (% by weight) of cement and cement supplement
a, b	=	Exponents
c	=	Constant

The parameters for Equation 11.12-1 are summarized in Tables 11.12-3 and 11.12-4.

Table 11.12-3. Equation Parameters for Truck Mix Operations

Condition	Parameter Category	k	a	b	c
Controlled[1]	Total PM	0.8	1.75	0.3	0.013
	PM_{10}	0.32	1.75	0.3	0.0052
	$PM_{10-2.5}$	0.288	1.75	0.3	0.00468
	$PM_{2.5}$	0.048	1.75	0.3	0.00078
Uncontrolled[1]	Total PM	0.995			
	PM_{10}	0.278			
	$PM_{10-2.5}$	0.228			
	$PM_{2.5}$	0.050			

Table 11.12-4. Equation Parameters for Central Mix Operations

Condition	Parameter Category	k	a	b	c
Controlled[1]	Total PM	0.19	0.95	0.9	0.0010
	PM_{10}	0.13	0.45	0.9	0.0010
	$PM_{10-2.5}$	0.12	0.45	0.9	0.0009
	$PM_{2.5}$	0.03	0.45	0.9	0.0002
Uncontrolled[1]	Total PM	5.90	0.6	1.3	0.120
	PM_{10}	1.92	0.4	1.3	0.040
	$PM_{10-2.5}$	1.71	0.4	1.3	0.036
	$PM_{2.5}$	0.38	0.4	1.3	0

1. Emission factors expressed in lbs/tons of cement and cement supplement

To convert from units of lbs/ton to units of kilograms per mega gram, the emissions calculated by Equation 11.12-1 should be divided by 2.0.

Particulate emission factors per yard of concrete for an average batch formulation at a typical facility are given in Tables 11.12-5 and 11.12-6. For truck mix loading and central mix loading, the

13.2.2 Unpaved Roads

13.2.2.1 General

When a vehicle travels an unpaved road, the force of the wheels on the road surface causes pulverization of surface material. Particles are lifted and dropped from the rolling wheels, and the road surface is exposed to strong air currents in turbulent shear with the surface. The turbulent wake behind the vehicle continues to act on the road surface after the vehicle has passed.

The particulate emission factors presented in the previous draft version of this section of AP-42, dated October 2001, implicitly included the emissions from vehicles in the form of exhaust, brake wear, and tire wear as well as resuspended road surface material[25]. EPA included these sources in the emission factor equation for unpaved public roads (equation 1b in this section) since the field testing data used to develop the equation included both the direct emissions from vehicles and emissions from resuspension of road dust.

This version of the unpaved public road emission factor equation only estimates particulate emissions from resuspended road surface material [23, 26]. The particulate emissions from vehicle exhaust, brake wear, and tire wear are now estimated separately using EPA's MOBILE6.2 [24]. This approach eliminates the possibility of double counting emissions. Double counting results when employing the previous version of the emission factor equation in this section and MOBILE6.2 to estimate particulate emissions from vehicle traffic on unpaved public roads. It also incorporates the decrease in exhaust emissions that has occurred since the unpaved public road emission factor equation was developed. The previous version of the unpaved public road emission factor equation includes estimates of emissions from exhaust, brake wear, and tire wear based on emission rates for vehicles in the 1980 calendar year fleet. The amount of PM released from vehicle exhaust has decreased since 1980 due to lower new vehicle emission standards and changes in fuel characteristics.

13.2.2.2 Emissions Calculation And Correction Parameters[1-6]

The quantity of dust emissions from a given segment of unpaved road varies linearly with the volume of traffic. Field investigations also have shown that emissions depend on source parameters that characterize the condition of a particular road and the associated vehicle traffic. Characterization of these source parameters allow for "correction" of emission estimates to specific road and traffic conditions present on public and industrial roadways.

Dust emissions from unpaved roads have been found to vary directly with the fraction of silt (particles smaller than 75 micrometers [μm] in diameter) in the road surface materials.[1] The silt fraction is determined by measuring the proportion of loose dry surface dust that passes a 200-mesh screen, using the ASTM-C-136 method. A summary of this method is contained in Appendix C of AP-42. Table 13.2.2-1 summarizes measured silt values for industrial unpaved roads. Table 13.2.2-2 summarizes measured silt values for public unpaved roads. It should be noted that the ranges of silt content vary over two orders of magnitude. Therefore, the use of data from this table can potentially introduce considerable error. Use of this data is strongly discouraged when it is feasible to obtain locally gathered data.

Since the silt content of a rural dirt road will vary with geographic location, it should be measured for use in projecting emissions. As a conservative approximation, the silt content of the parent soil in the area can be used. Tests, however, show that road silt content is normally lower than in the surrounding parent soil, because the fines are continually removed by the vehicle traffic, leaving a higher percentage of coarse particles.

Other variables are important in addition to the silt content of the road surface material. For example, at industrial sites, where haul trucks and other heavy equipment are common, emissions are highly correlated with vehicle weight. On the other hand, there is far less variability in the weights of cars and pickup trucks that commonly travel publicly accessible unpaved roads throughout the United States. For those roads, the moisture content of the road surface material may be more dominant in determining differences in emission levels between, for example a hot, desert environment and a cool, moist location.

The PM-10 and TSP emission factors presented below are the outcomes from stepwise linear regressions of field emission test results of vehicles traveling over unpaved surfaces. Due to a limited amount of information available for PM-2.5, the expression for that particle size range has been scaled against the result for PM-10. Consequently, the quality rating for the PM-2.5 factor is lower than that for the PM-10 expression.

Table 13.2.2-1. TYPICAL SILT CONTENT VALUES OF SURFACE MATERIAL ON INDUSTRIAL UNPAVED ROADS[a]

Industry	Road Use Or Surface Material	Plant Sites	No. Of Samples	Silt Content (%)	
				Range	Mean
Copper smelting	Plant road	1	3	16 - 19	17
Iron and steel production	Plant road	19	135	0.2 - 19	6.0
Sand and gravel processing	Plant road	1	3	4.1 - 6.0	4.8
	Material storage area	1	1	-	7.1
Stone quarrying and processing	Plant road	2	10	2.4 - 16	10
	Haul road to/from pit	4	20	5.0-15	8.3
Taconite mining and processing	Service road	1	8	2.4 - 7.1	4.3
	Haul road to/from pit	1	12	3.9 - 9.7	5.8
Western surface coal mining	Haul road to/from pit	3	21	2.8 - 18	8.4
	Plant road	2	2	4.9 - 5.3	5.1
	Scraper route	3	10	7.2 - 25	17
	Haul road (freshly graded)	2	5	18 - 29	24
Construction sites	Scraper routes	7	20	0.56-23	8.5
Lumber sawmills	Log yards	2	2	4.8-12	8.4
Municipal solid waste landfills	Disposal routes	4	20	2.2 - 21	6.4

[a]References 1,5-15.

The following empirical expressions may be used to estimate the quantity in pounds (lb) of size-specific particulate emissions from an unpaved road, per vehicle mile traveled (VMT):

For vehicles traveling on unpaved surfaces at industrial sites, emissions are estimated from the following equation:

$$E = k\,(s/12)^a (W/3)^b \qquad (1a)$$

and, for vehicles traveling on publicly accessible roads, dominated by light duty vehicles, emissions may be estimated from the following:

$$E = \frac{k\,(s/12)^a (S/30)^d}{(M/0.5)^c} - C \qquad (1b)$$

where k, a, b, c and d are empirical constants (Reference 6) given below and

E = size-specific emission factor (lb/VMT)
s = surface material silt content (%)
W = mean vehicle weight (tons)
M = surface material moisture content (%)
S = mean vehicle speed (mph)
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.

The source characteristics s, W and M are referred to as correction parameters for adjusting the emission estimates to local conditions. The metric conversion from lb/VMT to grams (g) per vehicle kilometer traveled (VKT) is as follows:

1 lb/VMT = 281.9 g/VKT

The constants for Equations 1a and 1b based on the stated aerodynamic particle sizes are shown in Tables 13.2.2-2 and 13.2.2-4. The PM-2.5 particle size multipliers (k-factors) are taken from Reference 27.

Table 13.2.2-2. CONSTANTS FOR EQUATIONS 1a AND 1b

Constant	Industrial Roads (Equation 1a)			Public Roads (Equation 1b)		
	PM-2.5	PM-10	PM-30*	PM-2.5	PM-10	PM-30*
k (lb/VMT)	0.15	1.5	4.9	0.18	1.8	6.0
a	0.9	0.9	0.7	1	1	1
b	0.45	0.45	0.45	-	-	-
c	-	-	-	0.2	0.2	0.3
d	-	-	-	0.5	0.5	0.3
Quality Rating	B	B	B	B	B	B

*Assumed equivalent to total suspended particulate matter (TSP)
"-" = not used in the emission factor equation

Table 13.2.2-2 also contains the quality ratings for the various size-specific versions of Equation 1a and 1b. The equation retains the assigned quality rating, if applied within the ranges of source conditions, shown in Table 13.2.2-3, that were tested in developing the equation:

Table 13.2.2-3. RANGE OF SOURCE CONDITIONS USED IN DEVELOPING EQUATION 1a AND 1b

Emission Factor	Surface Silt Content, %	Mean Vehicle Weight		Mean Vehicle Speed		Mean No. of Wheels	Surface Moisture Content, %
		Mg	ton	km/hr	mph		
Industrial Roads (Equation 1a)	1.8-25.2	1.8-260	2-290	8-69	5-43	4-17[a]	0.03-13
Public Roads (Equation 1b)	1.8-35	1.4-2.7	1.5-3	16-88	10-55	4-4.8	0.03-13

[a] See discussion in text.

As noted earlier, the models presented as Equations 1a and 1b were developed from tests of traffic on unpaved surfaces. Unpaved roads have a hard, generally nonporous surface that usually dries quickly after a rainfall or watering, because of traffic-enhanced natural evaporation. (Factors influencing how fast a road dries are discussed in Section 13.2.2.3, below.) The quality ratings given above pertain to the mid-range of the measured source conditions for the equation. A higher mean vehicle weight and a higher than normal traffic rate may be justified when performing a worst-case analysis of emissions from unpaved roads.

The emission factors for the exhaust, brake wear and tire wear of a 1980's vehicle fleet (C) was obtained from EPA's MOBILE6.2 model [23]. The emission factor also varies with aerodynamic size range

13.2.4 Aggregate Handling And Storage Piles

13.2.4.1 General

Inherent in operations that use minerals in aggregate form is the maintenance of outdoor storage piles. Storage piles are usually left uncovered, partially because of the need for frequent material transfer into or out of storage.

Dust emissions occur at several points in the storage cycle, such as material loading onto the pile, disturbances by strong wind currents, and loadout from the pile. The movement of trucks and loading equipment in the storage pile area is also a substantial source of dust.

13.2.4.2 Emissions And Correction Parameters

The quantity of dust emissions from aggregate storage operations varies with the volume of aggregate passing through the storage cycle. Emissions also depend on 3 parameters of the condition of a particular storage pile: age of the pile, moisture content, and proportion of aggregate fines.

When freshly processed aggregate is loaded onto a storage pile, the potential for dust emissions is at a maximum. Fines are easily disaggregated and released to the atmosphere upon exposure to air currents, either from aggregate transfer itself or from high winds. As the aggregate pile weathers, however, potential for dust emissions is greatly reduced. Moisture causes aggregation and cementation of fines to the surfaces of larger particles. Any significant rainfall soaks the interior of the pile, and then the drying process is very slow.

Silt (particles equal to or less than 75 micrometers [μm] in diameter) content is determined by measuring the portion of dry aggregate material that passes through a 200-mesh screen, using ASTM-C-136 method.[1] Table 13.2.4-1 summarizes measured silt and moisture values for industrial aggregate materials.

The quantity of particulate emissions generated by either type of drop operation, per kilogram (kg) (ton) of material transferred, may be estimated, with a rating of A, using the following empirical expression:[1]

$$E = k(0.0016) \frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (kg/megagram [Mg])}$$

$$E = k(0.0032) \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (pound [lb]/ton)}$$

where:

E = emission factor
k = particle size multiplier (dimensionless)
U = mean wind speed, meters per second (m/s) (miles per hour [mph])
M = material moisture content (%)

The particle size multiplier in the equation, k, varies with aerodynamic particle size range, as follows:

Aerodynamic Particle Size Multiplier (k) For Equation 1				
< 30 μm	< 15 μm	< 10 μm	< 5 μm	< 2.5 μm
0.74	0.48	0.35	0.20	0.053[a]

[a] Multiplier for < 2.5 μm taken from Reference 14.

The equation retains the assigned quality rating if applied within the ranges of source conditions that were tested in developing the equation, as follows. Note that silt content is included, even though silt content does not appear as a correction parameter in the equation. While it is reasonable to expect that silt content and emission factors are interrelated, no significant correlation between the 2 was found during the derivation of the equation, probably because most tests with high silt contents were conducted under lower winds, and vice versa. It is recommended that estimates from the equation be reduced 1 quality rating level if the silt content used in a particular application falls outside the range given:

Ranges Of Source Conditions For Equation 1			
Silt Content (%)	Moisture Content (%)	Wind Speed	
		m/s	mph
0.44 - 19	0.25 - 4.8	0.6 - 6.7	1.3 - 15

To retain the quality rating of the equation when it is applied to a specific facility, reliable correction parameters must be determined for specific sources of interest. The field and laboratory procedures for aggregate sampling are given in Reference 3. In the event that site-specific values for

11.19.2 Crushed Stone Processing and Pulverized Mineral Processing

11.19.2.1 Process Description [24, 25]

Crushed Stone Processing

Major rock types processed by the crushed stone industry include limestone, granite, dolomite, traprock, sandstone, quartz, and quartzite. Minor types include calcareous marl, marble, shell, and slate. Major mineral types processed by the pulverized minerals industry, a subset of the crushed stone processing industry, include calcium carbonate, talc, and barite. Industry classifications vary considerably and, in many cases, do not reflect actual geological definitions.

Rock and crushed stone products generally are loosened by drilling and blasting and then are loaded by power shovel or front-end loader into large haul trucks that transport the material to the processing operations. Techniques used for extraction vary with the nature and location of the deposit. Processing operations may include crushing, screening, size classification, material handling and storage operations. All of these processes can be significant sources of PM and PM-10 emissions if uncontrolled.

Quarried stone normally is delivered to the processing plant by truck and is dumped into a bin. A feeder is used as illustrated in Figure 11.19.2-1. The feeder or screens separate large boulders from finer rocks that do not require primary crushing, thus reducing the load to the primary crusher. Jaw, impactor, or gyratory crushers are usually used for initial reduction. The crusher product, normally 7.5 to 30 centimeters (3 to 12 inches) in diameter, and the grizzly throughs (undersize material) are discharged onto a belt conveyor and usually are conveyed to a surge pile for temporary storage or are sold as coarse aggregates.

The stone from the surge pile is conveyed to a vibrating inclined screen called the scalping screen. This unit separates oversized rock from the smaller stone. The undersized material from the scalping screen is considered to be a product stream and is transported to a storage pile and sold as base material. The stone that is too large to pass through the top deck of the scalping screen is processed in the secondary crusher. Cone crushers are commonly used for secondary crushing (although impact crushers are sometimes used), which typically reduces material to about 2.5 to 10 centimeters (1 to 4 inches). The material (throughs) from the second level of the screen bypasses the secondary crusher because it is sufficiently small for the last crushing step. The output from the secondary crusher and the throughs from the secondary screen are transported by conveyor to the tertiary circuit, which includes a sizing screen and a tertiary crusher.

Tertiary crushing is usually performed using cone crushers or other types of impactor crushers. Oversize material from the top deck of the sizing screen is fed to the tertiary crusher. The tertiary crusher output, which is typically about 0.50 to 2.5 centimeters (3/16th to 1 inch), is returned to the sizing screen. Various product streams with different size gradations are separated in the screening operation. The products are conveyed or trucked directly to finished product bins, to open area stock piles, or to other processing systems such as washing, air separators, and screens and classifiers (for the production of manufactured sand).

Some stone crushing plants produce manufactured sand. This is a small-sized rock product with a maximum size of 0.50 centimeters (3/16 th inch). Crushed stone from the tertiary sizing screen is sized in a vibrating inclined screen (fines screen) with relatively small mesh sizes.

Oversized material is processed in a cone crusher or a hammermill (fines crusher) adjusted to produce small diameter material. The output is returned to the fines screen for resizing.

In certain cases, stone washing is required to meet particulate end product specifications or demands.

Pulverized Mineral Processing

Pulverized minerals are produced at specialized processing plants. These plants supply mineral products ranging from sizes of approximately 1 micrometer to more than 75 micrometers aerodynamic diameter. Pharmaceutical, paint, plastics, pigment, rubber, and chemical industries use these products. Due to the specialized characteristics of the mineral products and the markets for these products, pulverized mineral processing plants have production rates that are less than 5% of the production capacities of conventional crushed stone plants. Two alternative processing systems for pulverized minerals are summarized in Figure 11-19.2-2.

In dry processing systems, the mineral aggregate material from conventional crushing and screening operations is subject to coarse and fine grinding primarily in roller mills and/or ball mills to reduce the material to the necessary product size range. A classifier is used to size the ground material and return oversized material that can be pulverized using either wet or dry processes. The classifier can either be associated with the grinding operation, or it can be a stand-alone process unit. Fabric filters control particulate matter emissions from the grinding operation and the classifier. The products are stored in silos and are shipped by truck or in bags.

In wet processing systems, the mineral aggregate material is processed in wet mode coarse and fine grinding operations. Beneficiation processes use flotation to separate mineral impurities. Finely ground material is concentrated and flash dried. Fabric filters are used to control particulate matter emissions from the flash dryer. The product is then stored in silos, bagged, and shipped.

Table 11.19.2-2 (English Units). EMISSION FACTORS FOR CRUSHED STONE PROCESSING OPERATIONS (lb/Ton)[a]

Source [b]	Total Particulate Matter [r,s]	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Primary Crushing (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Primary Crushing (controlled) (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Secondary Crushing (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Secondary Crushing (controlled) (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Tertiary Crushing (SCC 3-050030-03)	0.0054[d]	E	0.0024[o]	C	ND[n]	
Tertiary Crushing (controlled) (SCC 3-05-020-03)	0.0012[d]	E	0.00054[p]	C	0.00010[q]	E
Fines Crushing (SCC 3-05-020-05)	0.0390[e]	E	0.0150[e]	E	ND	
Fines Crushing (controlled) (SCC 3-05-020-05)	0.0030[f]	E	0.0012[f]	E	0.000070[q]	E
Screening (SCC 3-05-020-02, 03)	0.025[c]	E	0.0087[l]	C	ND	
Screening (controlled) (SCC 3-05-020-02, 03)	0.0022[d]	E	0.00074[m]	C	0.000050[q]	E
Fines Screening (SCC 3-05-020-21)	0.30[g]	E	0.072[g]	E	ND	
Fines Screening (controlled) (SCC 3-05-020-21)	0.0036[g]	E	0.0022[g]	E	ND	
Conveyor Transfer Point (SCC 3-05-020-06)	0.0030[h]	E	0.00110[h]	D	ND	
Conveyor Transfer Point (controlled) (SCC 3-05-020-06)	0.00014[i]	E	4.6×10^{-5}[q]	D	1.3×10^{-5}[q]	E
Wet Drilling - Unfragmented Stone (SCC 3-05-020-10)	ND		8.0×10^{-5}[j]	E	ND	
Truck Unloading -Fragmented Stone (SCC 3-05-020-31)	ND		1.6×10^{-5}[j]	E	ND	
Truck Unloading - Conveyor, crushed stone (SCC 3-05-020-32)	ND		0.00010[k]	E	ND	

a. Emission factors represent uncontrolled emissions unless noted. Emission factors in lb/Ton of material of throughput. SCC = Source Classification Code. ND = No data.

b. Controlled sources (with wet suppression) are those that are part of the processing plant that employs current wet suppression technology similar to the study group. The moisture content of the study group without wet suppression systems operating (uncontrolled) ranged from 0.21 to 1.3 percent, and the same facilities operating wet suppression systems (controlled) ranged from 0.55 to 2.88 percent. Due to carry over of the small amount of moisture required, it has been shown that each source, with the exception of crushers, does not need to employ direct water sprays. Although the moisture content was the only variable measured, other process features may have as much influence on emissions from a given source. Visual observations from each source under normal operating conditions are probably the best indicator of which emission factor is most appropriate. Plants that employ substandard control measures as indicated by visual observations should use the uncontrolled factor with an appropriate control efficiency that best reflects the effectiveness of the controls employed.

c. References 1, 3, 7, and 8

d. References 3, 7, and 8

e. Reference 4

f. References 4 and 15

g. Reference 4

h. References 5 and 6

i. References 5, 6, and 15

j. Reference 11

k. Reference 12

l. References 1, 3, 7, and 8

m. References 1, 3, 7, 8, and 15

n. No data available, but emission factors for PM-10 for tertiary crushers can be used as an upper limit for primary or secondary crushing

o. References 2, 3, 7, 8

p. References 2, 3, 7, 8, and 15

q. Reference 15

r. PM emission factors are presented based on PM-100 data in the Background Support Document for Section 11.19.2

s. Emission factors for PM-30 and PM-50 are available in Figures 11.19.2-3 through 11.19.2-6.

REXCON

THE MOST VERSATILE PORTABLE BATCH PLANT

Mobile 12 SE

Self-Erecting Portable Concrete Batch Plant

Estimated Production 240 - 270 yds^3/hr

Mobile 12 SE in travel position

Single freight load conveyor/hopper system

Mobile central dust collector unit

Nothing Beats a Rex!

Mobile 12 SE CM with self-suporting dump cone

Mobile 12 SE TM

Mobile 12 SE CM with dust hood truss support

Mobile 12 SE TM with decumulative batchers and loading ramp

The **RexCon Mobile 12 SE** offers the highest standard in quality, design and durability in the industry today. The plant comes in transit or central mix configurations. **The Mobile 12 SE** plant is versatile and can be custom engineered to meet your individual specifications. **The Mobile 12 SE** is constantly updated to improve its performance and keep up with changes in the concrete industry. This rugged Rex design is built to last!

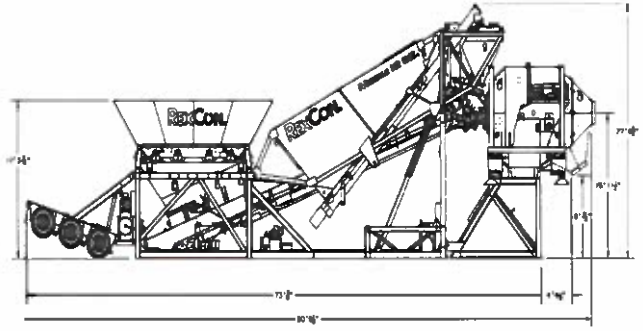
NO CRANE NEEDED!!!

2841 WHITING ROAD BURLINGTON WI 53105
Tel (262) 539-4050 Fax (262) 539-4487
www.REXCON.com

MADE IN THE USA

MOBILE 12 SE CM

When high production and portability are crucial, you can trust that the **Mobile 12 SE CM** will get the job done. With its own self-supporting sub frame and superior hydraulic system, this low profile plant has a fast erection and take down time. This unique design reduces the need for site preparation and foundations. Mobility, reliability, and performance make the **Mobile 12 SE CM** the plant to own.

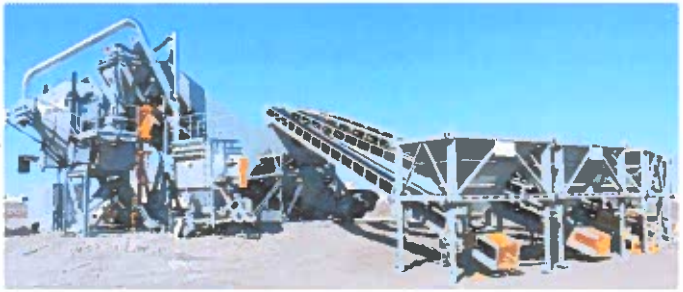


STANDARD CONFIGURATION

- Self-erect single load batch plant
- Hydraulic leveling main frame
- Gas powered self-erect hydraulic system
- 66 Ton, 4 compartment aggregate bin
- Pneumatic vibrators
- 300 bbl split cement silo with 5" fill pipes
- High and low cement bin level indicators
- Two 12" screw conveyors with 40 HP direct drives
- Aeration pads in the silo and batcher
- 12 yard aggregate and cement batchers
- Load cell scale systems
- 48" high production batch transfer belt
- Vulcanized belt splice
- 12 cubic yard mobile self-erect tilt mixer
- Dual 100 HP mixer drives
- Polyurethane lined drum with steel blades
- Two (2) 3" water meters
- 500 gallon batched water holding reservoir
- 20HP high pressure air compressor
- Regenerative aeration blower
- NEMA power panel

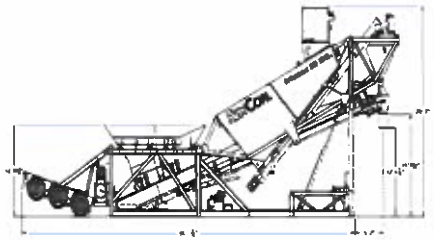
OPTIONAL FEATURES

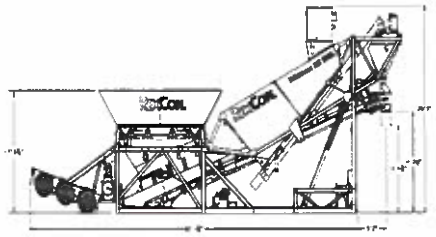
- Decumulative aggregate batchers
- Aggregate extensions
- 135 ton aggregate bin
- AR steel or polyurethane bin and batcher liners
- Moisture probes
- RC3 Batch Automation Control
- Anti-overfill valves
- Poly wrap blade liners
- Self-supporting dump cone
- Dust hood truss support
- Rooftop dust collectors
- Mobile central dust collector
- Central lube system
- Auto grease system
- Single freight load conveyor/hopper system
- 15 HP water pump
- Weighed water



Mobile 12 SE TM

The **Mobile 12 SE TM** offers the best in a high production mobile transit mix plant. With its self-supporting sub frame and superior hydraulic system, the **Mobile 12 SE TM** moves quickly, provides greater profitability and can be built to accept expansion, no modifications are needed later.





STANDARD CONFIGURATION

- Self-erect single load batch plant
- Hydraulic leveling main frame
- Gas powered self-erect hydraulic system
- Two decumulative aggregate batchers
- 300 bbl split cement silo with 5" fill pipes
- Two (2) 12" screw conveyors/40 HP direct drives
- Aeration pads in the silo and batcher
- 12 yard cement batcher
- Load cell scale systems
- 36" mechanical batch transfer belt
- 3" water meter
- 20 HP high pressure air compressor
- Regenerative aeration blower
- NEMA power panel

OPTIONAL FEATURES

- Side protection guard for ramping
- 66 ton, 4 compartment fold up aggregate bin
- Aggregate extensions
- 135 ton aggregate bin
- AR steel or polyurethane bin and batcher liners
- Moisture probes
- RC3 Batch Automation Control
- 48" high production batch transfer belt
- Central mix conversion package
- Rooftop dust collectors
- Central dust collector and shroud
- Central lube system
- Auto grease system
- Material handling systems
- 15 HP water pump

Mobile 12 SE TM
shown with decumulative aggregate batchers

Mobile 12 SE TM
shown with 66 ton, (4) compartment aggregate batchers

Specifications	CP-1000	CP-1200	CP-1500	CP-1800	CP-2100
CFM	5000	6500	8000	10000	11500
# Cartridges	20	24	30	36	40
Length of Cartridge	54"	54"	54"	54"	54"
# Solenoids	4	4	5	6	7
Solenoid Size	1"	1"	1"	1"	1"
Total Filtration Area	1000	1200	1500	1800	2100
Min. Design Efficiency	100%	100%	100%	100%	100%
Air to Cloth Ratio (ACFM/Ft.2)	5	5	5	6	5
Filtration Velocity (Ft./Min.)	5	5	5	6	5
Blower Horsepower	15	15	20	20	25
Static Pressure Drop (WC)	8"	8"	8"	8"	8"
Normal Air Capacity	5000	6500	8000	10000	11500
Outlet Area (Ft.2)	1	2	2	3	4
Outlet Velocity (Ft./Sec.)	63	47	46	48	45
Outlet Moisture Content (Ideal)	0	0	0	0	0
Cleaning Mechanism	Pulse w/ Timer	Pulse w/ Timer	Pulse w/ Timer	Pulse w/ Timer	Pulse w/ Timer

PERFORMANCE DATA[EM0177]

December 9, 2015

Performance Number: EM0177

Change Level: 07

SALES MODEL:	C15	**COMBUSTION:**	DI
ENGINE POWER (BHP):	779	**ENGINE SPEED (RPM):**	1,800
GEN POWER WITH FAN (EKW):	500.0	**HERTZ:**	60
COMPRESSION RATIO:	16.0	**FAN POWER (HP):**	26.8
RATING LEVEL:	STANDBY	**ASPIRATION:**	TA
PUMP QUANTITY:	1	**AFTERCOOLER TYPE:**	ATAAC
FUEL TYPE:	DIESEL	**AFTERCOOLER CIRCUIT TYPE:**	JW+OC, ATAAC
MANIFOLD TYPE:	DRY	**INLET MANIFOLD AIR TEMP (F):**	122
GOVERNOR TYPE:	ELEC	**JACKET WATER TEMP (F):**	192.2
ELECTRONICS TYPE:	ADEM4	**TURBO CONFIGURATION:**	SINGLE
CAMSHAFT TYPE:	STANDARD	**TURBO QUANTITY:**	1
IGNITION TYPE:	CI	**TURBOCHARGER MODEL:**	GTB4708-1.42
INJECTOR TYPE:	EUI	**CERTIFICATION YEAR:**	2011
REF EXH STACK DIAMETER (IN):	6	**PISTON SPD @ RATED ENG SPD (FT/MIN):**	2,025.0
MAX OPERATING ALTITUDE (FT):	4,541		

INDUSTRY	SUBINDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET
OIL AND GAS	LAND PRODUCTION	PACKAGED GENSET

General Performance Data

INLET MANIFOLD AIR TEMPERATURE ("INLET MFLD TEMP") FOR THIS CONFIGURATION IS MEASURED AT THE OUTLET OF THE AFTERCOOLER.

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
500.0	100	736	349	0.339	35.7	73.6	120.1	1,259.6	74.9	911.7
450.0	90	664	315	0.344	32.7	70.6	117.9	1,210.4	71.5	875.7
400.0	80	593	281	0.350	29.6	66.7	114.5	1,159.2	67.3	838.4
375.0	75	558	265	0.353	28.1	64.5	112.6	1,133.8	64.8	821.6
350.0	70	522	248	0.356	26.5	61.9	110.6	1,108.3	62.0	805.4
300.0	60	452	214	0.363	23.4	55.8	106.0	1,057.5	55.4	773.8
250.0	50	382	181	0.371	20.2	47.8	100.4	1,006.2	47.2	741.7
200.0	40	313	149	0.375	16.8	35.7	92.8	944.5	35.7	707.2
150.0	30	244	116	0.382	13.3	23.9	85.7	870.5	25.0	670.9
125.0	25	210	99	0.389	11.6	18.6	82.9	828.4	20.6	651.9
100.0	20	174	83	0.401	10.0	14.6	81.0	773.7	17.5	618.1
50.0	10	102	48	0.466	6.8	9.4	79.4	626.6	14.7	507.8

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
EKW	%	BHP	IN-HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
500.0	100	736	77	425.3	1,241.2	3,175.4	5,374.8	5,624.8	1,138.5	1,022.6
450.0	90	664	74	411.6	1,217.8	3,036.5	5,265.5	5,494.7	1,118.0	1,009.8
400.0	80	593	70	395.6	1,186.9	2,876.9	5,119.9	5,327.4	1,089.7	990.6
375.0	75	558	68	387.1	1,168.4	2,793.6	5,033.1	5,230.0	1,072.0	977.2
350.0	70	522	65	377.4	1,145.2	2,702.6	4,925.8	5,111.8	1,050.4	960.0
300.0	60	452	59	354.2	1,084.6	2,497.0	4,649.3	4,813.4	995.3	913.8
250.0	50	382	51	323.4	996.2	2,244.1	4,252.4	4,394.0	918.4	846.0
200.0	40	313	38	272.5	841.8	1,877.0	3,575.5	3,693.2	790.9	728.4
150.0	30	244	26	221.1	693.1	1,513.0	2,926.3	3,019.8	658.0	607.2
125.0	25	210	20	197.7	630.4	1,346.9	2,652.9	2,734.5	595.8	551.2
100.0	20	174	16	178.8	587.5	1,210.6	2,466.4	2,536.4	552.3	513.5
50.0	10	102	11	151.3	548.6	1,005.9	2,299.0	2,348.4	511.2	482.5

PERFORMANCE DATA[EM0177]

December 9, 2015

Heat Rejection Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHUAST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
500.0	100	736	14,286	5,092	24,449	13,541	4,091	6,568	31,227	76,622	81,621
450.0	90	664	13,063	4,609	22,707	12,313	3,738	6,194	28,178	70,171	74,750
400.0	80	593	11,849	4,057	20,897	11,029	3,388	5,764	25,158	63,576	67,725
375.0	75	558	11,250	3,829	19,961	10,427	3,211	5,532	23,657	60,294	64,229
350.0	70	522	10,657	3,619	19,006	9,817	3,035	5,262	22,154	56,980	60,698
300.0	60	452	9,498	3,247	17,042	8,564	2,679	4,621	19,168	50,294	53,576
250.0	50	382	8,398	2,951	14,907	7,195	2,313	3,797	16,198	43,418	46,252
200.0	40	313	7,486	2,783	12,263	5,493	1,920	2,573	13,288	36,042	38,394
150.0	30	244	6,502	2,580	9,481	4,021	1,526	1,587	10,366	28,647	30,517
125.0	25	210	5,939	2,435	8,143	3,419	1,331	1,220	8,889	24,995	26,626
100.0	20	174	5,288	2,233	6,971	2,802	1,143	967	7,392	21,450	22,850
50.0	10	102	3,794	1,702	5,016	1,502	775	662	4,319	14,544	15,493

Emissions Data

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN		EKW	500.0	375.0	250.0	125.0	50.0
PERCENT LOAD		%	100	75	50	25	10
ENGINE POWER		BHP	736	558	382	210	102
TOTAL NOX (AS NO2)		G/HR	2,388	1,500	848	648	542
TOTAL CO		G/HR	429	238	218	320	350
TOTAL HC		G/HR	27	36	46	49	63
PART MATTER		G/HR	42.0	28.7	38.7	27.7	23.5
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	1,558.2	1,247.2	955.7	1,270.6	1,879.7
TOTAL CO	(CORR 5% O2)	MG/NM3	279.6	193.6	248.5	640.3	1,226.8
TOTAL HC	(CORR 5% O2)	MG/NM3	15.5	25.3	45.5	86.1	197.1
PART MATTER	(CORR 5% O2)	MG/NM3	22.1	20.1	37.2	46.5	73.8
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	759	607	465	619	916
TOTAL CO	(CORR 5% O2)	PPM	224	155	199	512	983
TOTAL HC	(CORR 5% O2)	PPM	29	47	85	161	368
TOTAL NOX (AS NO2)		G/HP-HR	3.27	2.70	2.22	3.10	5.33
TOTAL CO		G/HP-HR	0.59	0.43	0.57	1.53	3.44
TOTAL HC		G/HP-HR	0.04	0.06	0.12	0.23	0.62
PART MATTER		G/HP-HR	0.06	0.05	0.10	0.13	0.23
TOTAL NOX (AS NO2)		LB/HR	5.27	3.31	1.86	1.43	1.19
TOTAL CO		LB/HR	0.94	0.52	0.48	0.70	0.77
TOTAL HC		LB/HR	0.06	0.08	0.10	0.11	0.14
PART MATTER		LB/HR	0.09	0.06	0.09	0.06	0.05

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN		EKW	500.0	375.0	250.0	125.0	50.0
PERCENT LOAD		%	100	75	50	25	10
ENGINE POWER		BHP	736	558	382	210	102
TOTAL NOX (AS NO2)		G/HR	1,958	1,229	693	531	444
TOTAL CO		G/HR	280	156	143	209	228
TOTAL HC		G/HR	19	24	31	33	43
TOTAL CO2		KG/HR	357	280	203	114	66
PART MATTER		G/HR	22.6	15.4	20.8	14.9	12.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	1,277.2	1,022.3	783.3	1,041.5	1,540.7
TOTAL CO	(CORR 5% O2)	MG/NM3	182.7	126.5	162.4	418.5	803.2
TOTAL HC	(CORR 5% O2)	MG/NM3	10.6	17.3	31.2	59.0	135.0
PART MATTER	(CORR 5% O2)	MG/NM3	11.9	10.8	20.0	25.0	39.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	622	498	382	507	750
TOTAL CO	(CORR 5% O2)	PPM	146	101	130	335	643
TOTAL HC	(CORR 5% O2)	PPM	20	32	58	110	252
FORMALDEHYDE	(CORR 15% O2)	PPM	0.43	0.55	0.95	1.23	2.71
ACROLEIN	(CORR 15% O2)	PPM	0.22	0.20	0.07	0.15	0.03
ACETALDEHYDE	(CORR 15% O2)	PPM	0.32	0.60	0.87	0.96	2.08

PERFORMANCE DATA[EM0177]

December 9, 2015

METHANOL	(CORR 15% O2)	PPM	0.21	0.11	0.13	0.15	0.41
TOTAL NOX (AS NO2)		G/HP-HR	2.68	2.22	1.82	2.54	4.37
TOTAL CO		G/HP-HR	0.38	0.28	0.37	1.00	2.25
TOTAL HC		G/HP-HR	0.03	0.04	0.08	0.16	0.43
PART MATTER		G/HP-HR	0.03	0.03	0.05	0.07	0.12
TOTAL NOX (AS NO2)		LB/HR	4.32	2.71	1.53	1.17	0.98
TOTAL CO		LB/HR	0.62	0.34	0.31	0.46	0.50
TOTAL HC		LB/HR	0.04	0.05	0.07	0.07	0.10
TOTAL CO2		LB/HR	787	617	448	252	145
PART MATTER		LB/HR	0.05	0.03	0.05	0.03	0.03
OXYGEN IN EXH		%	7.2	9.5	11.2	12.0	15.0
DRY SMOKE OPACITY		%	0.8	0.7	0.9	0.9	0.8
BOSCH SMOKE NUMBER			0.48	0.36	0.55	0.57	0.49

PERFORMANCE DATA[EM0177]

December 9, 2015

Regulatory Information

EPA TIER 4 INTERIM		2011 - 2014		
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 1039 SUBPART F AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.				
Locality	**Agency**	**Regulation**	**Tier/Stage**	**Max Limits - G/BKW - HR**
U.S. (INCL CALIF)	EPA	NON-ROAD GENSET	TIER 4 INTERIM	CO: 3.5 NOx: 3.5 HC: 0.4 PM: 0.10

Altitude Derate Data

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	50	60	70	80	90	100	110	120	130	NORMAL
ALTITUDE (FT)										
0	779	779	779	779	778	774	775	777	764	779
1,000	779	779	779	777	774	772	772	761	741	779
2,000	779	779	776	772	770	770	756	680	594	776
3,000	779	775	771	768	760	735	679	614	558	772
4,000	774	770	763	725	684	638	595	543	486	768
5,000	764	749	705	646	597	544	486	478	478	748
6,000	753	717	649	587	536	488	478	478	478	730
7,000	742	691	626	573	529	495	480	479	479	732
8,000	652	630	602	576	556	544	542	541	523	652
9,000	602	590	575	560	546	538	534	524	505	604
10,000	582	575	566	556	543	533	522	504	488	585
11,000	580	574	566	553	536	518	501	486	478	585
12,000	575	562	546	528	514	497	483	478	477	583
13,000	555	536	518	504	492	480	478	477	477	578
14,000	522	504	489	483	478	478	477	477	477	570
15,000	479	478	478	478	478	477	477	477	477	549

Cross Reference

Engine Arrangement			
Arrangement Number	**Effective Serial Number**	**Engineering Model**	**Engineering Model Version**
3341000	JJF00001	GS533	-
3431944	JJF00001	PS045	-

Test Specification Data						
Test Spec	**Setting**	**Effective Serial Number**	**Engine Arrangement**	**Governor Type**	**Default Low Idle Speed**	**Default High Idle Speed**
0K9868	PP6870	JJF00001	3341000			

Performance Parameter Reference

Parameters Reference:TM5739-08
EPG PERFORMANCE DEFINITIONS

GEN SET - PACKAGED - DIESEL
TOLERANCES:
AMBIENT AIR CONDITIONS AND FUEL USED WILL AFFECT THESE VALUES.
EACH OF THE VALUES MAY VARY IN ACCORDANCE WITH THE FOLLOWING
TOLERANCES.

Power+/- 3%
Exhaust Stack Temperature+/- 8%
Generator Power+/- 5%
Inlet Airflow+/- 5%
Intake Manifold Pressure-gage +/- 10%
Exhaust Flow+/- 6%
Specific Fuel Consumption+/- 3%
Fuel Rate+/- 5%
Heat Rejection+/- 5%
Heat Rejection - Exhaust Only+/- 10%

Vital Consulting Group LLC Albuquerque Sunport Concrete Batch Plant Emissions Inventory
270 CuFt/Hr; 500,000 CuFt per Year

Typical cuyd of concrete

	pound	tons/hr	tons/yr
total concrete	3881	523 9	970,250
aggregate	1900	256 5	475,000
sand	1100	148 5	275,000
cement	489	66 0	122,250
flyash	132	17 8	33,000
water	260	35 1	65,000

plant capacity	270	cuyd/hr
plant capacity	6480	cuyd/day
plant capacity	500000	cuyd/yr
Daily hours of operation	24	hrs/day
Hours per year of operation based on annual throughput	1851 9	hrs/yr
Hours per year of operation	5000	hrs/yr
Uncontrolled hrs/yr of operation	8760	hrs/yr

Aggregate Storage Pile Handling

AP-42 13.2.4 E = k x (0 0032) x (U/5)^1 3 / (M/2)^1 4 lbs/ton

Max tph	256 5 tph	475000 ton/yr
k(pm)	0 74	
k(pm10)	0 35	
k(pm2 5)	0 053	
U	8 5 MPH	Albuquerque WS 1996-2006
M	1 77 %	AP-42 Section 11 12, Table 11 12-2, footnote b

	lb/hr	tons/yr	
E(pm) Uncontrolled	1 43659	6 29225	
E(pm10) Uncontrolled	0 67947	2 97607	
E(pm2 5) Uncontrolled	0 10289	0 45066	
E(pm) Uncontrolled	1 43659	1 33017	Limit Material Throughput
E(pm10) Uncontrolled	0 67947	0 62914	Limit Material Throughput
E(pm2 5) Uncontrolled	0 10289	0 09527	Limit Material Throughput

Sand Storage Pile Handling

AP-42 13 2 4 E = k x (0 0032) x (U/5)^1 3 / (M/2)^1 4 lbs/ton

Max tph	148 5 tph	275000 ton/yr
k(pm)	0 74	
k(pm10)	0 35	
k(pm2 5)	0 053	
U	8 5 MPH	Albuquerque WS 1996-2006
M	4 17 %	AP-42 Section 11 12, Table 11 12-2, footnote b

	lb/hr	tons/yr	
E(pm) Uncontrolled	0 25058	1 09753	
E(pm10) Uncontrolled	0 11852	0 51910	
E(pm2 5) Uncontrolled	0 01795	0 07861	
E(pm) Uncontrolled	0 25058	0 23202	Limit Material Throughput
E(pm10) Uncontrolled	0 11852	0 10974	Limit Material Throughput
E(pm2 5) Uncontrolled	0 01795	0 01662	Limit Material Throughput

Aggregate and Sand Feeder Loading

AP-42 13 2 4 E = k x (0 0032) x (U/5)^1 3 / (M/2)^1 4 lbs/ton

Max tph	405 tph	750000 ton/yr
k(pm)	0 74	
k(pm10)	0 35	
k(pm2 5)	0 053	
U	8 5 MPH	Albuquerque WS 1996-2006
M	2 65 %	Calculated average aggregate and sand

	lb/hr	tons/yr	
E(pm) Uncontrolled	1 28919	5 64667	
E(pm10) Uncontrolled	0 60975	2 67072	
E(pm2 5) Uncontrolled	0 09233	0 40442	
E(pm) Uncontrolled	1 28919	1 19370	Limit Material Throughput
E(pm10) Uncontrolled	0 60975	0 56459	Limit Material Throughput
E(pm2 5) Uncontrolled	0 09233	0 08549	Limit Material Throughput

Vital Consulting Group LLC Albuquerque Sunport Concrete Batch Plant Emissions Inventory
270 CuFt/Hr; 500,000 CuFt per Year

Aggregate and Sand Feeder Unloading

AP-42 11 19 2 Table 11 19.2-2 "Conveyor Transfer Point"

Max tph	405	tph	9720 ton/day	750000 ton/yr
E(pm) Uncontrolled	0.003	lbs/ton		
E(pm10) Uncontrolled	0.0011	lbs/ton		
E(pm2.5) Uncontrolled	0.000167	lbs/ton		

	lb/hr	tons/yr
E(pm) Uncontrolled	1.21500	5.32170
E(pm10) Uncontrolled	0.44550	1.95129
E(pm2.5) Uncontrolled	0.06746	0.29548

E(pm) Controlled	0.00014	lbs/ton	
E(pm10) Controlled	0.000046	lbs/ton	
E(pm2.5) Controlled	0.000013	lbs/ton	95.8 % Control Efficieny

	lb/hr	tons/yr
E(pm) Controlled	0.05670	0.05250
E(pm10) Controlled	0.01863	0.01725
E(pm2.5) Controlled	0.00527	0.00488

Aggregate Bin Loading

AP-42 13 2.4 E = k x (0.0032) x (U/5)^1.3 / (M/2)^1.4 lbs/ton

Max tph	405	tph	750000 ton/yr
k(pm)	0.74		
k(pm10)	0.35		
k(pm2.5)	0.053		
U	8.5	MPH	Albuquerque WS 1996-2006
M	2.65	%	Calculated average aggregate and sand

	lb/hr	tons/yr	
E(pm) Uncontrolled	1.28919	5.64667	
E(pm10) Uncontrolled	0.60975	2.67072	
E(pm2.5) Uncontrolled	0.09233	0.40442	
E(pm) Controlled	1.28919	1.19370	Limit Material Throughput
E(pm10) Controlled	0.60975	0.56459	Limit Material Throughput
E(pm2.5) Controlled	0.09233	0.08549	Limit Material Throughput

Weight Batcher Belt Loading

AP-42 11 19 2 Table 11 19 2-2 "Conveyor Transfer Point"

Max tph	405	tph	750000 ton/yr
E(pm) Uncontrolled	0.003	lbs/ton	
E(pm10) Uncontrolled	0.0011	lbs/ton	
E(pm2.5) Uncontrolled	0.000167	lbs/ton	

	lb/hr	tons/yr
E(pm) Uncontrolled	1.21500	5.32170
E(pm10) Uncontrolled	0.44550	1.95129
E(pm2.5) Uncontrolled	0.06746	0.29548

E(pm) Controlled	0.00014	lbs/ton	
E(pm10) Controlled	0.000046	lbs/ton	
E(pm2.5) Controlled	0.000013	lbs/ton	95.8 % Control Efficieny

	lb/hr	tons/yr
E(pm) Controlled	0.05670	0.05250
E(pm10) Controlled	0.01863	0.01725
E(pm2.5) Controlled	0.00527	0.00488

Truck Loading

Uncontrolled emissions based on AP-42 Section 11.12 "Concrete Batching" Table 11.12-2 "Uncontrolled Truck Loading"

E(PM) =	1.118	lbs/ton	Uncontrolled Mixer Loading PM
E(PM10) =	0.31	lbs/ton	Uncontrolled Mixer Loading PM10
E(PM2.5) =	0.0558	lbs/ton	Uncontrolled Mixer Loading PM2.5

Max tph Cement and Flyash	83.835	tph	155250 ton/yr

	lb/hr	tons/yr
E(pm) uncontrolled mixer	93.7	411
E(pm10) uncontrolled mixer	26.0	114
E(pm2.5) uncontrolled mixer	4.67	20.5

Controlled based on baghouse exit grain loading of 0.01 grains per ACFM (Controls Units 5,6,7,8)

Grain Loading to Baghouse		0.01	gr /CuFt
Baghouse Flowrate		11500	ACFM
Controlled at 0.01 grains per ACFM		0.99	lb/hr 2.46 tons/yr

Vital Consulting Group LLC Albuquerque Sunport Concrete Batch Plant Emissions Inventory
270 CuFt/Hr; 500,000 CuFt per Year

Cement/Fly Ash Weigh Batcher

Uncontrolled emissions based on AP-42 Section 11.12 "Concrete Batching" Table 11.12-2 "Uncontrolled Mixer Loading"

E(PM) =	0.572	lbs/ton	Uncontrolled Mixer Loading PM
E(PM10) =	0.156	lbs/ton	Uncontrolled Mixer Loading PM10
E(PM2.5) =	0.0309	lbs/ton	Uncontrolled Mixer Loading PM2.5

Max tph Cement and Flyash 83.835 tph 155250 ton/yr

	lb/hr	tons/yr
E(pm) uncontrolled batcher	47.95	210.0
E(pm10) uncontrolled batcher	13.08	57.3
E(pm2.5) uncontrolled batcher	2.59	11.3

Controlled based on baghouse exit grain loading of 0.01 grains per ACFM
Controlled with central baghouse (Units 5,6,7,8)

Cement Silo/Guppy

Uncontrolled emissions based on AP-42 Section 11.12 "Concrete Batching" Table 11.12-2 "Cement Unloading to Elevated Storage Silo"

E(PM) =	0.73	lbs/ton	Uncontrolled Cement Silo Loading PM
E(PM10) =	0.47	lbs/ton	Uncontrolled Cement Silo Loading PM10
E(PM2.5) =	0.0930	lbs/ton	Uncontrolled Cement Silo Loading PM2.5

Max tph Cement 66.015 tph 122250 ton/yr

	lb/hr	tons/yr
E(pm) uncontrolled cement	48.19095	211.07636
E(pm10) uncontrolled cement	31.02705	135.89848
E(pm2.5) uncontrolled cement	6.14077	26.89657

Controlled based on baghouse exit grain loading of 0.01 grains per ACFM
Controlled with central baghouse (Units 5,6,7,8)

Flyash Silo/Guppy

Uncontrolled emissions based on AP-42 Section 11.12 "Concrete Batching" Table 11.12-2 "Cement Supplement Unloading to Elevated Storage Silo"

E(PM) =	3.14	lbs/ton	Uncontrolled Mixer Loading PM
E(PM10) =	1.1	lbs/ton	Uncontrolled Mixer Loading PM10
E(PM10) =	0.218	lbs/ton	Uncontrolled Mixer Loading PM2.5

Max tph Fly Ash 17.82 tph 33000 ton/yr

	lb/hr	tons/yr
E(pm) uncontrolled fly ash	55.95480	245.08202
E(pm10) uncontrolled fly ash	19.60200	85.85676
E(pm2.5) uncontrolled fly ash	3.87956	16.99248

Controlled based on baghouse exit grain loading of 0.01 grains per ACFM
Controlled with central baghouse (Units 5,6,7,8)

Vital Consulting Group LLC Albuquerque Sunport Concrete Batch Plant Emissions Inventory
270 CuFt/Hr; 500,000 CuFt per Year

Road Traffic
AP-42 13.2 Unpaved Road (12/03)
Equation:
E = k(s/12)^a*(W/3)^b*[(365-p)/365]

Annual emissions only include p factor

k PM	4.9		
k PM10	1.5		
k PM2.5	0.15		
a PM	0.7		
a PM10	0.9		
a PM2.5	0.9		
b PM	0.45		
b PM10	0.45		
b PM2.5	0.45		
% Silt Content = s	4.8 %	Sand and Gravel (AP-42 13.2.2-1)	
precipitation days/yr	60 days	AP-42 Figure 13.2.2-1	
Hours per year	8760 hrs		
Vehicle control	90 %	Surface Stabilizers and Watering	

Cement Truck VMT	92 meter/vehicle	0.057332771	miles/vehicle
Flyash Truck VMT	92 meter/vehicle	0.057332771	miles/vehicle
Aggregate Truck VMT	64 meter/vehicle	0.079384251	miles/vehicle
Concrete Truck VMT	92 meter/vehicle	0.057332771	miles/vehicle

Max. Cement Truck/hr	2.6	truck/hr	25	tons/load	66.015	tons/hr
Max. Flyash Truck/hr	0.7	truck/hr	25	tons/load	17.82	tons/hr
Max. Aggregate Truck/hr	16.2	truck/hr	25	tons/load	405	tons/hr
Max. Concrete Truck/hr	22.5	truck/hr	12	cuyd/load	270	cuyd/hr
	42.1					
Max. Cement Truck/yr	4890.0	truck/yr	25	tons/load	122250	tons/yr
Max. Flyash Truck/yr	1320.0	truck/yr	25	tons/load	33000	tons/yr
Max. Aggregate Truck/yr	30000.0	truck/yr	25	tons/load	750000	tons/yr
Max. Concrete Truck/yr	41666.7	truck/yr	12	cuyd/load	500000	tons/yr
	77876.7					

Cement Truck VMT	0.15139	miles/hr	1326.20	miles/yr uncontrolled	280.36	miles/yr controlled
Flyash Truck VMT	0.04087	miles/hr	357.99	miles/yr uncontrolled	75.68	miles/yr controlled
Aggregate Truck VMT	1.28602	miles/hr	11265.58	miles/yr uncontrolled	2381.53	miles/yr controlled
Concrete Truck VMT	1.28999	miles/hr	11300.29	miles/yr uncontrolled	2388.87	miles/yr controlled
			24250.06		5126.43	

Cement Truck weight	27.5 tons
Flyash Truck weight	27.5 tons
Aggregate Truck weight	27.5 tons
Concrete Truck weight	25 tons

		PM Uncontrolled			PM Control		
Max. Cement Truck Emissions	1.05861678	lbs/hr	3.874537415	tons/yr	0.105861678	lbs/hr	0.081907184	tons/yr
Max. Flyash Truck Emissions	0.285761585	lbs/hr	1.0458874	tons/yr	0.028576158	lbs/hr	0.022109915	tons/yr
Max. Aggregate Truck Emissions	8.992544281	lbs/hr	32.91271207	tons/yr	0.899254428	lbs/hr	0.695770169	tons/yr
Max. Concrete Truck Emissions	8.641556316	lbs/hr	31.62809612	tons/yr	0.864155632	lbs/hr	0.668613566	tons/yr
total combined traffic	18.97847896	lbs/hr	69.461233	tons/yr	1.897847896	lbs/hr	1.468400833	tons/yr

		PM10 Uncontrolled			PM10 Control		
Max. Cement Truck Emissions	0.269802488	lbs/hr	0.987477108	tons/yr	0.026980249	lbs/hr	0.020875129	tons/yr
Max. Flyash Truck Emissions	0.07283012	lbs/hr	0.266558238	tons/yr	0.007283012	lbs/hr	0.005635004	tons/yr
Max. Aggregate Truck Emissions	2.291868852	lbs/hr	8.388239999	tons/yr	0.229186885	lbs/hr	0.17732623	tons/yr
Max. Concrete Truck Emissions	2.202414927	lbs/hr	8.060838632	tons/yr	0.220241493	lbs/hr	0.170405011	tons/yr
total combined traffic	4.836916387	lbs/hr	17.70311398	tons/yr	0.483691639	lbs/hr	0.374241374	tons/yr

		PM2.5 Uncontrolled			PM2.5 Control		
Max. Cement Truck Emissions	0.026980249	lbs/hr	0.098747711	tons/yr	0.002698025	lbs/hr	0.002087513	tons/yr
Max. Flyash Truck Emissions	0.007283012	lbs/hr	0.026655824	tons/yr	0.000728301	lbs/hr	0.0005635	tons/yr
Max. Aggregate Truck Emissions	0.229186885	lbs/hr	0.838824	tons/yr	0.022918689	lbs/hr	0.017732623	tons/yr
Max. Concrete Truck Emissions	0.220241493	lbs/hr	0.806083863	tons/yr	0.022024149	lbs/hr	0.017040501	tons/yr
total combined traffic	0.483691639	lbs/hr	1.770311398	tons/yr	0.048369164	lbs/hr	0.037424137	tons/yr

Vital Consulting Group, LLC Engine Emissions

Concrete Batch Plant Generator/Engine CAT C15

Manufacture Certified	NOx, CO, VOC and PM Emissions		
Engine Size	500.0 kW	horsepower	779 bhp
	35.7 gal/hr	%sulfur	0.0015 %

Uncontrolled Hours	8760
Controlled Hours	5000

Emission Factors

NOx	5.27 lbs/hr	
CO	0.94 lbs/hr	SO2 emissions based on fuel usage
VOC	0.060 lbs/hr	gal/hr times 7.0 lbs/gal times fuel %
SO2	0.0075 lbs/hr	sulfur content times a factor of 2.
PM	0.09 lbs/hr	

Calculated Uncontrolled Emissions

NOx	5.27 lbs/hr	23.08 tons/yr
CO	0.94 lbs/hr	4.12 tons/yr
VOC	0.060 lbs/hr	0.26 tons/yr
SO2	0.0075 lbs/hr	0.033 tons/yr
PM	0.09 lbs/hr	0.39 tons/yr

Calculated Controlled Emissions

NOx	5.27 lbs/hr	13.18 tons/yr
CO	0.94 lbs/hr	2.35 tons/yr
VOC	0.060 lbs/hr	0.15 tons/yr
SO2	0.0075 lbs/hr	0.019 tons/yr
PM	0.09 lbs/hr	0.23 tons/yr

Vital Consulting Group LLC Albuquerque Sunport Concrete Batch Plant Emissions Inventory
270 CuFt/Hr; 500,000 CuFt per Year
Emission Totals

Uncontrolled Emission Totals

ID #	Source Description	NOx		CO		SO2		VOC		PM		PM10		PM2.5	
		lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
1a	Feeder1									0.32	1.41	0.15	0.67	0.023	0.10
1b	Feeder2									0.32	1.41	0.15	0.67	0.023	0.10
1c	Feeder3									0.32	1.41	0.15	0.67	0.023	0.10
1d	Feeder4									0.32	1.41	0.15	0.67	0.023	0.10
2a	Conveyor1									0.30	1.33	0.11	0.49	0.017	0.074
2b	Conveyor2									0.30	1.33	0.11	0.49	0.017	0.074
2c	Conveyor3									0.30	1.33	0.11	0.49	0.017	0.074
2d	Conveyor4									0.30	1.33	0.11	0.49	0.017	0.074
3	Aggregate Bin									1.29	5.65	0.61	2.67	0.092	0.40
4	Aggregate Weigh Batcher and Conveyor									1.22	5.32	0.45	1.95	0.067	0.30
5	Truck Loading									93.7	411	26.0	114	4.67	20.5
6	Cement Silo with Guppy									48.2	211	31.0	136	6.14	26.9
7	Fly Ash Silo with Guppy									56.0	245	19.6	86	3.88	17.0
8	Cement/Fly Ash Batcher									48.0	210	13.1	57	2.59	11.3
9	Concrete Batch Plant Engine	5.27	23.1	0.94	4.12	0.0075	0.033	0.060	0.26	0.09	0.39	0.09	0.39	0.09	0.39
10	Storage Piles									1.69	7.39	0.80	3.50	0.12	0.53
11	Haul Road									19.0	69.5	4.8	17.7	0.48	1.8
	Total	**5.27**	**23.1**	**0.94**	**4.12**	**0.0075**	**0.033**	**0.060**	**0.26**	**272**	**1176**	**97.5**	**424**	**18.3**	**79.8**
										253	1106	92.6	406	17.7	77.6

Controlled Emission Totals

ID #	Source Description	NOx		CO		SO2		VOC		PM		PM10		PM2.5	
		lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
1a	Feeder1									0.32	0.30	0.15	0.14	0.023	0.021
1b	Feeder2									0.32	0.30	0.15	0.14	0.023	0.021
1c	Feeder3									0.32	0.30	0.15	0.14	0.023	0.021
1d	Feeder4									0.32	0.30	0.15	0.14	0.023	0.021
2a	Conveyor1									0.014	0.013	0.0047	0.004	0.0013	0.0012
2b	Conveyor2									0.014	0.013	0.0047	0.004	0.0013	0.0012
2c	Conveyor3									0.014	0.013	0.0047	0.004	0.0013	0.0012
2d	Conveyor4									0.014	0.013	0.0047	0.004	0.0013	0.0012
3	Aggregate Bin									1.29	1.19	0.61	0.56	0.092	0.085
4	Aggregate Weigh Batcher and Conveyor									0.057	0.053	0.019	0.017	0.0053	0.0049
5, 6, 7, 8	Central Dust Dust Collector									0.99	2.46	0.99	2.46	0.99	2.46
9	Concrete Batch Plant Engine	5.27	13.2	0.94	2.35	0.0075	0.019	0.060	0.15	0.09	0.23	0.09	0.23	0.09	0.23
10	Storage Piles									1.69	1.56	0.80	0.74	0.12	0.11
11	Haul Road									1.90	1.47	0.48	0.37	0.048	0.037
	Total	**5.27**	**13.2**	**0.94**	**2.35**	**0.0075**	**0.019**	**0.060**	**0.15**	**7.35**	**8.21**	**3.61**	**4.97**	**1.44**	**3.02**

Attachment D
USGS Topographic Maps

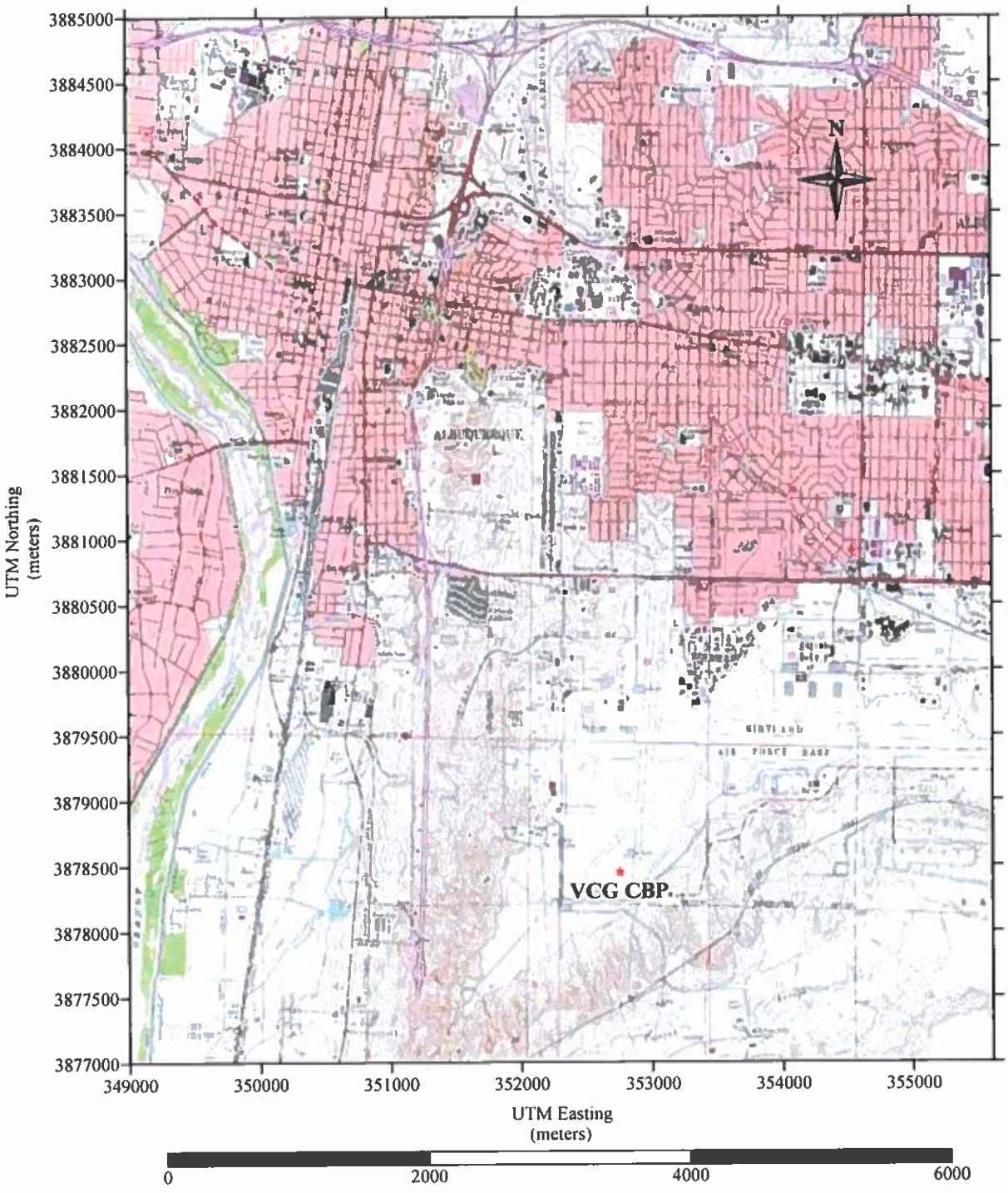


Figure D-1: 7 ½ Minute Topo Map Showing Site Location
Albuquerque East 7 ½ Minute Quadrant
NAD 83

Attachment E
Facility Process Description

Process Flow Description

The VCG's Airport Concrete Batch Plant is a portable plant manufactured by Rexcon, Model Mobile 12 SE and include four (4) aggregate feeders and transfer conveyors, 4-bin aggregate feeder, weight batcher with delivery conveyor, cement silo/guppy, fly ash silo/guppy, 12-yard truck loading, cement/fly ash batcher, central baghouse, two (2) guppies, a 500 kW diesel-fired generator to power the plant, concrete additive, and control trailer.

Raw aggregate rock and washed sand will be delivered and stored on site. A front-end loader will take material from the storage piles and load the appropriate aggregate feeder. From the aggregate feeders the material will be transferred to a 4-bin aggregate bin. When needed, measured quantities of sand and aggregate will be dropped into the weight batcher. The measured aggregate materials will be transferred to the 12-yard truck loading area by a delivery conveyor, where the cement and fly ash from the cement batcher, additives, and water is mixed in the concrete truck mixer.

Fugitive dust will be controlled by several methods. Dust created during aggregate handling will be kept to a minimum by adding water to the aggregate piles, as needed. The central baghouse will control fugitive dust emissions from loading the truck mixer loading, loading the cement silo/guppy, loading the fly ash silo/guppy, and loading the cement and fly ash batcher. Millings and watering (90% control) will be used to minimize fugitive dust on the unpaved truck traffic areas leading in and out of the facility. Process flow diagram is presented as Figure A-1 in Attachment A.

Attachment F
Regulatory Applicability Determinations

The following is a list of city and federal regulations that may or may not be applicable to VCG

Albuquerque/Bernalillo County Regulations

20.11.1 NMAC– General Provisions: Applicable to VCG

Requirement: Compliance with ambient air quality standards.

Compliance: Compliance with 20.11.8 NMAC is compliance with this regulation.

20.11.2 NMAC– Permit Fees: Applicable to VCG

Requirement: A one-time permit application fee will be assessed by the Albuquerque/Bernalillo County Environmental Department.

Compliance: VCG will pay all required permit revision application fees applicable to their facility.

20.11.5 NMAC– Visible Air Contaminants: Applicable to VCG

Requirement: Places limits of 20 percent opacity on stationary combustion equipment.

Compliance: VCG will perform any required opacity observations for the concrete batch plant engine using Method 9 and/or Method 22 with certified opacity observers.

20.11.8 NMAC– Ambient Air Quality Standards: Applicable to VCG

Requirement: Compliance with state and federal ambient air quality standards.

Compliance: VCG's Concrete Batch Plant #2 demonstrated compliance by performing and submitting dispersion modeling analysis for applicable pollutants per Albuquerque/ Bernalillo County and New Mexico State Environmental Department's modeling guidelines.

20.11.41 NMAC– Authority to Construct: Applicable to VCG

Requirement: Requires the facility to obtain a permit prior to start of construction.

Compliance: VCG is applying for a new 20.11.41 NMAC permit with this application.

20.11.49 NMAC– Excess Emissions: Applicable to VCG

Requirement: To implement requirements for the reporting of excess emissions and establish affirmative defense provisions for facility owners and operators for excess emissions.

Compliance: VCG will report all excess emissions following 20.11.49 NMAC guidelines.

20.11.63 NMAC– New Source Performance Standards: Not Applicable to VCG at this time

Requirement: Adoption of all federal 40 CFR Part 60 new source performance standards.

Compliance: 40 CFR Part 60 NSPS Subpart IIII has been identified for this permit application.

The engine is portable and will not be located more than 12 months at the initial site. Under these conditions the engine is a "non-road" engine, not stationary source, so they are exempt under Subpart IIII. If the engine is located at one site for more than 12 consecutive months or seasonally, it would become applicable to Subpart IIII.

20.11.64 NMAC– Emission Standards for Hazardous Air Pollutants for Stationary Sources: Not Applicable to VCG at this time

Requirement: Adoption of all federal 40 CFR Part 61 and 63 National Emissions Standards for Hazardous Air Pollutants (HAPS).

Compliance: 40 CFR Part 63 NSPS Subpart ZZZZ has been identified for this permit application.

The engine is portable and will not be located more than 12 months at the initial site. Under these conditions the engine is a "non-road" engine, not stationary source, so they are exempt under Subpart ZZZZ. If the engine is located at one site for more than 12 consecutive months or seasonally, it would become applicable to Subpart ZZZZ.

20.11.66 NMAC– Process Equipment: Applicable to VCG

Requirement: The objective of this Part is to achieve attainment of regulatory air pollution standards and to minimize air pollution emissions.

Compliance: Except as otherwise provided in this section, VCG shall not cause or allow the emission of particulate matter to the atmosphere from process equipment in any one hour in total quantities in excess of the amount shown in 20.11.66.18 NMAC Table 1.

20.11.67 NMAC–Equipment, Emissions, Limitations: Not Applicable to VCG

Requirement: To prevent equipment covered by this Part from being constructed, placed, maintained, altered, used, or operated unless the equipment meets the applicable emission limitations established by 20.11.67 NMAC.

Compliance: No stationary source for Orchard Heaters; Kraft Mills; Coal, Oil, or Gas Burning Equipment is located on site.

20.11.90 NMAC– Administration, Enforcement, Inspection: Applicable to VCG

Requirement: General requirement on record keeping and data submission. VCG will notify the bureau regarding periods of excess emissions along with cause of the excess and actions taken to minimize duration and recurrence.

Compliance: It is expected that specific record keeping and data submission requirements will be specified in the 20.11.41 NMAC permit issued to VCG. It is expected the 20.11.41 NMAC permit issued to VCG will contain specific methods for determining compliance with each specific emission limitation. VCG's Airport Concrete Plant will report any periods of excess emissions as required by specific 20.11.90 NMAC provisions.

Federal Regulations

40 CFR 50 – National Ambient Air Quality Standards: Applicable to VCG

Requirement: Compliance with federal ambient air quality standards.

Compliance: VCG's Concrete Batch Plant #2 demonstrated compliance by performing and submitting dispersion modeling analysis for applicable pollutants per Albuquerque/ Bernalillo County and New Mexico State Environmental Department's modeling guidelines in the original and revised permit applications. For this revision the department has waived modeling analysis due to the size of the additional units' emissions.

40 CFR 60 Dc – NSPS Standards of Performance for Small Industrial-Commercial-Institutional Stream Generating Units: Not Applicable to VCG

Requirement: For any 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 100 million Btu per hour of less, but greater than or equal to 10 million Btu per hour. A steam generating unit is defined as a device that combusts any fuel and produces steam or heats water or any other heat transfer medium.

Compliance: No hot water boiler is proposed for this emergency permit.

40 CFR 60 IIII – NSPS Standards of Performance for Stationary Compression Ignition Internal Combustion Engine: Not Applicable to VCG at this time

Requirement: The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE).

Compliance: The engine is portable and will not be located more than 12 months at the initial site. Under these conditions the engine is a "non-road" engine, not stationary source, so they are exempt under Subpart IIII. If the engine is located at one site for more than 12 consecutive months or seasonally, it would become applicable to Subpart IIII.

40 CFR 63 ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines: Not Applicable to VCG at this time

Requirement: Facilities are subject to this subpart if they own or operate a stationary RICE, except if the stationary RICE is being tested at a stationary RICE test cell/stand.

Compliance: The engine is portable and will not be located more than 12 months at the initial site. Under these conditions the engine is a "non-road" engine, not stationary source, so they are exempt under Subpart ZZZZ. If the engine is located at one site for more than 12 consecutive months or seasonally, it would become applicable to Subpart ZZZZ.

Attachment G
Dispersion Modeling Summary

MODEL ANALYSIS INTRODUCTION

Dispersion modeling for an identical plant was performed at the proposed location and for identical operating parameters previously for Permit 3380-EP permit application. Since a dispersion modeling analysis was completed and approved for Permit 3380-EP, a modeling waiver has been issued for this permit application. Attached is the request for a model waiver and the approval of the model waiver.

MONTROSE

TO: Jeff Stonesifer, AEHD AQD Modeling Section

FROM: Paul Wade, Montrose Air Quality Services, LLC

SUBJECT: Modeling Waiver for Vital Consulting Group Proposed CBP Permit

DATE: January 6, 2021

This memo presents a request for a modeling waiver for Vital Consulting Group (VCG). The modeling waiver is for a proposed emergency concrete batch plant (CBP) air quality permit to be located at the International Sunport Airport. In 2019, VCG, under an emergency permit, located a CBP at the Airport to provide concrete for runway reconstruction. The dispersion modeling analysis for the emergency permit showed compliance with all applicable ambient air quality standards. Initial modeling was performed under AERMOD version 18018, 2001-2005 Albuquerque met data, and previous modeling background data. During the review, updated modeling was performed using AERMOD version 19191, 2014-2018 Albuquerque met data, and the latest modeling background data. Both modeling analyses showed compliance with applicable ambient air quality analysis.

While that plant modeled is now located near the Amazon project on the westside, VCG is purchasing an identical CBP to be used at the Airport. The identical plant will be controlled with the same size baghouse as previously permitted. The new plant will be located at the same site and same concrete pad that was used previously. Additionally, since the engine used at the present Amazon site is no longer required, since they added line power, the engine previously used at the airport site will once again be used for this permit application.

The previous modeling was based on operation for 8760 per year and did not take into consideration any operational restrictions found in the application. Hourly emission rates in the previous modeling were based on a maximum production rate of 270 cubic yards per hour. For this permit application the same permit limits will apply. Attached to this memo is Attachments A (process flow diagram) and G (model results report) from the previous permit application. For both nitrogen dioxide and particulate, if you revise the worst-case previous result from either modeling analysis discussed above, to include the present background, the results would be found in the tables below.

Montrose Air Quality Services, LLC
3500 Comanche Road NE Suite G
Albuquerque, NM 87107-4546

T: 505.830.9680 ext. 6
F: 505.830.9678
Pwade@montrose-env.com
www.montrose-env.com

Worst Results of NO_2 Cumulative Model Results for Either Analysis – ARM2

Parameter	Maximum Modeled Concentration ($\mu g/m^3$)	Maximum Modeled Concentration With Background ($\mu g/m^3$)	Lowest Applicable Standard ($\mu g/m^3$)	% of Standard
NO_2 1 Hr. Highest 8th High	52.5	137.1	188	72.9
NO_2 24 Hr.	21.0	51.0	188	27.1
NO_2 Annual	2.8	32.8	94	34.9

Background NO_2 concentrations were obtained from the Albuquerque/Bernalillo County - Air Quality Bureau's Modeling Department for that area. The 1-Hour NO_2 background was for the south valley is 84.6 $\mu g/m^3$. The NO_2 annual and 24-hour background for the south valley is 30 $\mu g/m^3$.

Worst Results of Particulate Cumulative Model Results for Either Analysis

Parameter	Maximum Modeled Concentration ($\mu g/m^3$)	Maximum Modeled Concentration With Background ($\mu g/m^3$)	Lowest Applicable Standard ($\mu g/m^3$)	% of Standard
PM_{10} 24 Hr. Highest 2nd High	46.6	81.6	150	54.4
$PM_{2.5}$ 24 Hr. Highest 8th High	7.9	27.9	35	79.7
$PM_{2.5}$ Annual	2.5	10.3	12	85.8

Background particulate concentrations were obtained from the Albuquerque/Bernalillo County - Air Quality Bureau's Modeling Department for that area. For PM_{10} the 24-hour background is 35 $\mu g/m^3$. For $PM_{2.5}$ the 24-hour is 20.0 $\mu g/m^3$ and annual background is 7.8 $\mu g/m^3$.

Based on the previous model analysis results and use of an identical plant in the exact same location, VCG is requesting a modeling waiver for this proposed air quality permit application.

Montrose Air Quality Services, LLC
3500 Comanche Road NE Suite G
Albuquerque, NM 87107-4546

T: 505.830.9680 ext 6
F: 505.830.9678
Pwade@montrose-env.com
www.montrose-env.com

Attachment A
Facility Plot Plan

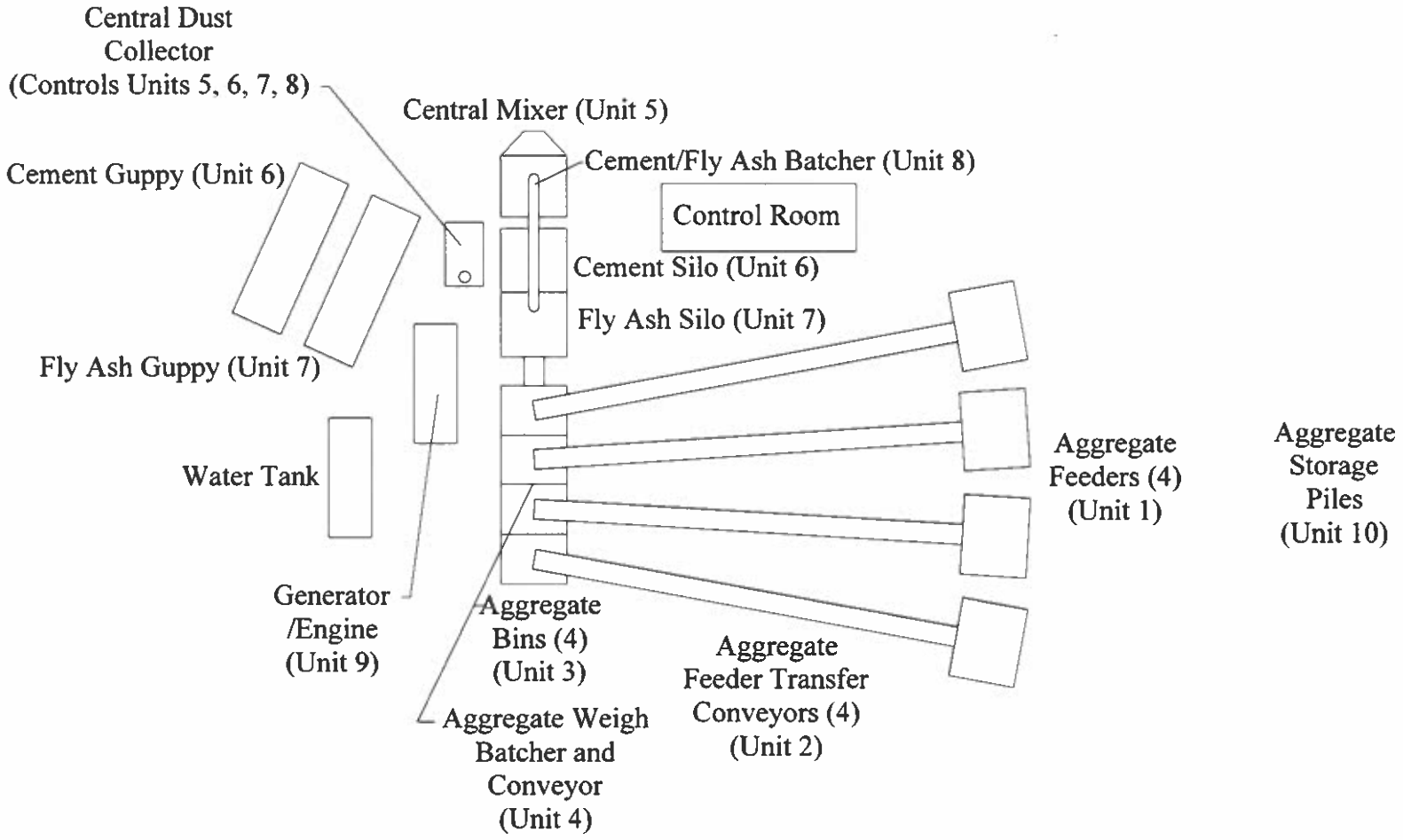


Figure A-1: VCG's Airport Concrete Batch Plant Process Flow

Attachment G
Dispersion Modeling Summary

MODEL ANALYSIS INTRODUCTION

This dispersion modeling analysis will be conducted by Montrose Air Quality Services, LLC. (Montrose) on behalf of Vital Consulting Group, LLC (VCG), to evaluate ambient air quality impacts for a concrete batch plant (CBP) to be located within the Albuquerque Sunport Airport facility. The location of the CBP will be UTM coordinates: 352,580 easting, 3,877,490 northing, zone 13, NAD 83. The objective of this evaluation is to determine whether ambient air concentrations from the maximum operation of the proposed project for nitrogen dioxide, carbon monoxide, sulfur dioxide, and particulate matter; both 10 microns or less (PM_{10}) and 2.5 microns or less ($PM_{2.5}$); are below Class II federal and state ambient air quality standards (NAAQS and NMAAQS) found in 40 CFR part 50 and the City of Albuquerque/Bernalillo County (COABC) air quality regulation 20.11.8 NMAC.

The dispersion modeling will be conducted using the American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee Dispersion Model (AERMOD), Version 18018. This model is recommended by EPA for determining Class II impacts within 50 km of the source being assessed. Additionally, AERMOD was developed to handle complex terrain. In this analysis, AERMOD will be used to estimate pollutant ambient air concentrations from the VCG facility emission sources. Montrose employs the general modeling procedures outlined in "Permit Modeling Guidelines, Albuquerque Environmental Health Department", revised 12/20/2018, "New Mexico Air Pollution Control Bureau, Dispersion Modeling Guidelines", revised 01/01/2019, and the most up to date EPA's *Guideline on Air Quality Models.*

Aggregate material handling equipment, stockpiles, and haul roads will be input into the model as volume sources. Model input parameters for feeders and transfer points will follow the NMED model guidelines Table 27 and site release heights. Model input parameters for haul roads will follow the NMED model guidelines Tables 28 and 29.

Figures G-1 and G-2 below shows the location of the site overview.

No additional neighboring sources have been identified by the COABC AQP Program that need to be included in the dispersion model analysis.

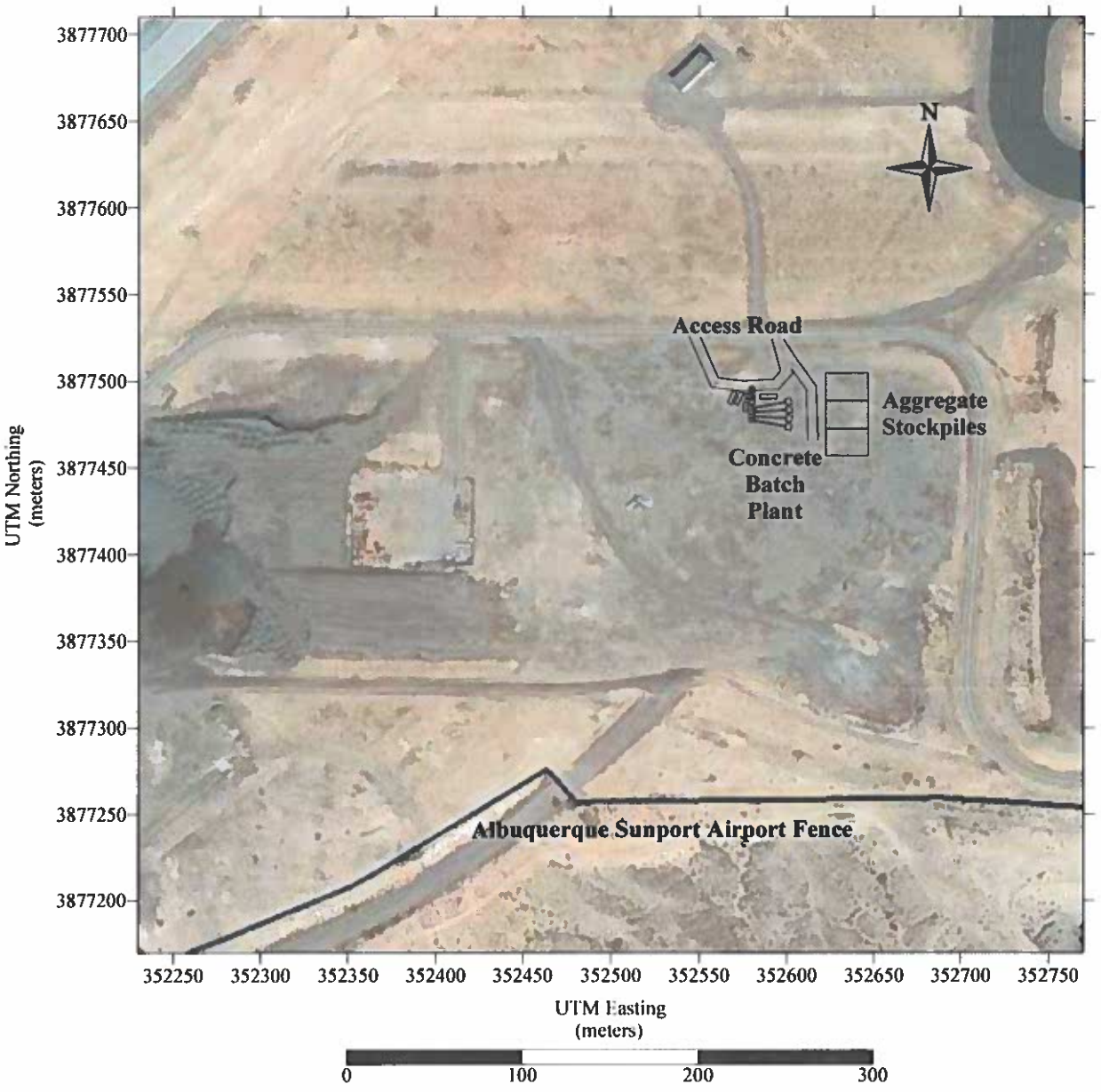


FIGURE G-1: VCG Site Layout Overview

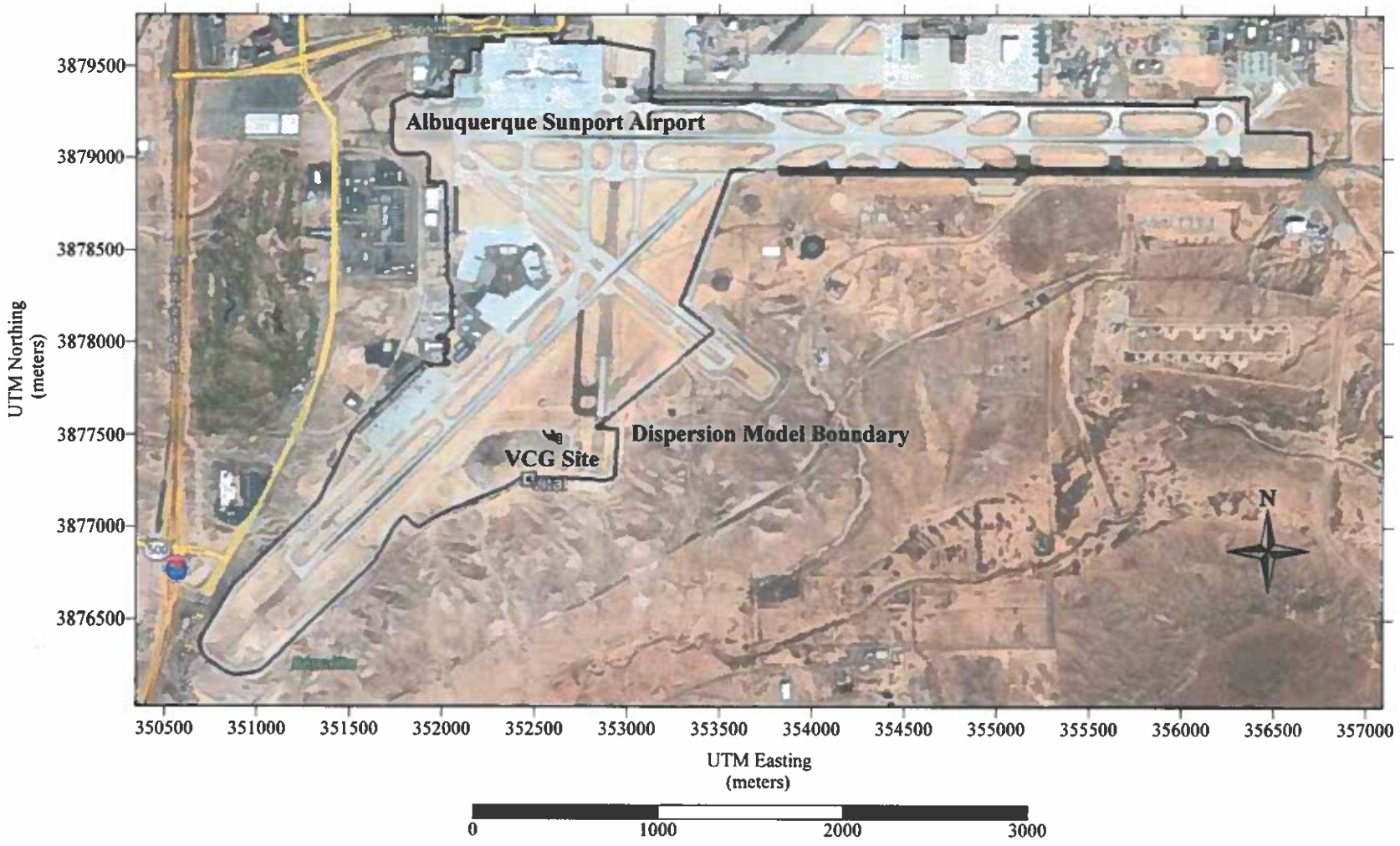


FIGURE G-2: VCG Site Layout in Relation to Airport Property

DISPERSION MODELING PROTOCOL

This section identifies the technical approach and dispersion model inputs that will be used for the Class II federal and State ambient air quality standards for this source. COABC Air Quality Program (AQP) requires that all applicable criteria pollutant emissions be modeled using the most recent versions of US EPA's approved models and be compared with National Ambient Air Quality Standards (NAAQS), and Bernalillo County Ambient Air Quality Standards. Table 1 shows the NAAQS and Bernalillo County Ambient Air Quality Standards that the source's ambient impacts must meet in order to demonstrate compliance. Table 1 also lists the Class II Significant Impact Levels (SILs) which are used to assess whether a source has a significant impact at downwind receptors.

The dispersion modeling analysis will be performed to estimate concentrations resulting from the operation of the VCG sources using the proposed maximum permitted emission while all emission sources are operating. The modeling will determine the maximum off site concentrations for nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and particulate matter; both 10 microns or less (PM_{10}) and 2.5 microns or less ($PM_{2.5}$), for comparison with modeling significance levels, national/Bernalillo County ambient air quality standards (AAQS). The modeling will follow the guidance and protocols outlined in the "Permit Modeling Guidelines, Albuquerque Environmental Health Department", revised 12/20/2018, "New Mexico Air Pollution Control Bureau, Dispersion Modeling Guidelines", revised 01/01/2019, and the most up to date EPA's *Guideline on Air Quality Models.*

Initial modeling will be performed with VCG sources only to determine pollutant and averaging periods that exceeds pollutant SILs. If initial modeling for any pollutant and averaging period exceeds SILs, then cumulative modeling was performed for those pollutants and averaging periods for all receptors that exceeds the SILs which included significant neighboring sources along with background ambient concentrations.

TABLE G-1: National and New Mexico Ambient Air Quality Standard Summary

Pollutant	Avg. Period	Sig. Lev. ($\mu g/m^3$)	Class I Sig. Lev. ($\mu g/m^3$)	NAAQS	NMAAQS	PSD Increment Class I	PSD Increment Class II
CO	8-hour	500		9,000 ppb(1)	8,700 ppb(2)		
	1-hour	2,000		35,000 ppb(1)	13,100 ppb(2)		
NO_2	annual	1.0	0.1	53 ppb(3)	50 ppb(2)	2.5 $\mu g/m^3$	25 $\mu g/m^3$
	24-hour	5.0			100 ppb(2)		
	1-hour	7.54		100 ppb(4)			
$PM_{2.5}$	annual	0.3	0.06	12 $\mu g/m^3$(5)		1 $\mu g/m^3$	4 $\mu g/m^3$
	24-hour	1.2	0.07	35 $\mu g/m^3$(6)		2 $\mu g/m^3$	9 $\mu g/m^3$
PM_{10}	annual	1.0	0.2			4 $\mu g/m^3$	17 $\mu g/m^3$
	24-hour	5.0	0.3	150 $\mu g/m^3$(7)		8 $\mu g/m^3$	30 $\mu g/m^3$
SO_2	annual	1.0	0.1		20 ppb(2)	2 $\mu g/m^3$	20 $\mu g/m^3$
	24-hour	5.0	0.2		100 ppb(2)	5 $\mu g/m^3$	91 $\mu g/m^3$
	3-hour	25.0	1.0	500 ppb(1)		25 $\mu g/m^3$	512 $\mu g/m^3$
	1-hour	7.8		75 ppb(8)			

Standards converted from ppb to $\mu g/m^3$ use a reference temperature of 25° C and a reference pressure of 760 millimeters of mercury.

(1) Not to be exceeded more than once each year.
(2) Not to be exceeded.
(3) Annual mean.
(4) 98th percentile of 1-hour daily maximum concentrations, averaged over 3 years.
(5) Annual mean, averaged over 3 years.
(6) 98th percentile, averaged over 3 years.
(7) Not to be exceeded more than once per year on average over 3 years.
(8) 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years.

DISPERSION MODEL SELECTION

The dispersion modeling will be conducted using the American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee Dispersion Model (AERMOD), Version 18081. This model is recommended by EPA for determining Class II impacts within 50 km of the source being assessed. Additionally, AERMOD was developed to handle complex terrain. In this analysis, AERMOD will be used to estimate pollutant ambient air concentrations of NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$ from VCG emission sources.

AERMOD is a Gaussian plume dispersion model that is based on planetary boundary layer principles for characterizing atmospheric stability. The model evaluates the non-Gaussian vertical behavior of plumes during convective conditions with the probability density function and the superposition of several Gaussian plumes. AERMOD modeling system has three components: AERMAP, AERMET, and AERMOD. AERMAP is the terrain preprocessor program. AERMET is the meteorological data preprocessor. AERMOD includes the dispersion modeling algorithms and was developed to handle simple and complex terrain issues using improved algorithms. AERMOD uses the dividing streamline concept to address plume interactions with elevated terrain.

AERMOD was run using all the regulatory default options including use of:

- Gradual Plume Rise
- Stack-tip Downwash
- Buoyancy-induced Dispersion
- Calms and Missing Data Processing Routine
- Upper-bound downwash concentrations for super-squat buildings
- Default wind speed profile exponents
- Calculate Vertical Potential Temperature Gradient
- No use of gradual plume rise
- Rural Dispersion

BUILDING WAKE EFFECTS

No VCG structures will be included in the model. Neighboring source buildings will be included, as necessary, to determine building downwash source parameters using the BPIP-Prime program. The results of the BPIP-Prime output will be inputted into the AERMOD model.

METEOROLOGICAL DATA

Dispersion model meteorological input file to be used in this modeling analysis are years 2001 - 2005 Albuquerque met data (AERMET version 16216 dated 01/30/2017) available from the COABC AQP.

RECEPTORS AND TOPOGRAPHY

Modeling will be completed using as many receptor locations to ensure that the maximum estimated impacts are identified. Initial radius of impact modeling will be performed with

receptors within 5 kilometers of the model boundary. Because of the nature of the emissions from the site, it is expected the maximum concentrations will be on or near the site fenceline.

The refined receptor grid will include receptors located at 100 meters apart out to 1000 meters from the property line, 250 meters apart from 1000 meters out to 3000 meters, and 500 meters apart from 3000 meters out to 5000 meters. Fenceline receptor spacing will be 50 meters.

All refined model receptors will be preprocessed using the AERMAP software associated with AERMOD. The AERMAP software establishes a base elevation and a height scale for each receptor location. The height scale is a measure of the receptor's location and base elevation and its relation to the terrain feature that has the greatest influence in dispersion for that receptor. AERMAP will be run using U.S. Geological Survey (USGS) digital elevation model (DEM) data. Output from AERMAP will be used as input to the AERMOD runstream file for each model run.

MODELED EMISSION SOURCES INPUTS

The proposed permitted operating time for the facilities concrete production is 24 hours per day, 7 days per week at 270 cubic yards per hour.

VCG Facility Road Vehicle Traffic Model Inputs

The access road fugitive dust for truck traffic will be modeled as a line of volume sources. The NMED AQB's approved procedure for Modeling Haul Roads will be followed to develop modeling input parameters for haul roads. Volume source characterization followed the steps described in the NMED Air Quality Bureau's Guidelines.

VCG Facility Material Handling Volume Source Model Inputs

Particulate emissions from material handling and process from aggregate unloading, transfers and storage will be modeled as volume sources. Model input parameters for feeders and transfer points follow the NMED Air Quality Bureau's model guidelines Table 27 and site release heights.

VCG Facility Point Source Model Inputs

Emissions from the central mixer dust collector exhaust stacks and combustion sources will be modeled as point sources. Model input parameters are based on information provided by the manufacturer on release heights, release diameters, release velocity or flow rates, and exhaust temperatures. For horizontal or raincap releases, the AERMOD version for horizontal and raincap releases will be used with actual release parameters.

Tables G-2 through G-4 summarize the model input for the VCG Facility.

TABLE G-2: Summary of Particulate Model Inputs for Point Sources at the VCG Facility

Source Description	Model ID	Stack Height (m)	Stack Temp. (K)	Exit Vel. (m/s)	Stack Dia. (m)	PM10 Emission Rate (lbs/hr)	PM2.5 Emission Rate (lbs/hr)
Concrete Mixer Central Baghouse	CMBH	6.0960	294.2600	18.5715	0.6100	0.98571	0.98571
Concrete Batch Plant Engine	CBPE	3.6576	761.8700	46.1658	0.2033	0.15000	0.15000

TABLE G-3: Summary of Combustion Model Inputs for Point Sources at the VCG Facility

Source Description	Model ID	Stack Height (m)	Stack Temp. (K)	Exit Vel. (m/s)	Stack Dia. (m)	NOx Emission Rate (lbs/hr)	CO Emission Rate (lbs/hr)	SO2 Emission Rate (lbs/hr)
Concrete Batch Plant Engine	CBPE	3.6576	761.8700	46.1658	0.2033	5.27000	0.94000	0.00750

TABLE G-4: Summary of Model Inputs for Volume Sources at the VCG Facility

Source Description	Model ID	Release Height (meter)	Horizontal Dimension (meters)	Vertical Dimension (meters)	PM10 Emission Rate (lbs/hr)	PM2.5 Emission Rate (lbs/hr)
Feed Hopper Loading 1	FH1	4.0000	1.1600	2.3300	0.15244	0.02308
Feed Hopper Loading 2	FH2	4.0000	1.1600	2.3300	0.15244	0.02308
Feed Hopper Loading 3	FH3	4.0000	1.1600	2.3300	0.15244	0.02308
Feed Hopper Loading 4	FH4	4.0000	1.1600	2.3300	0.15244	0.02308
Feed Hopper Unloading to Conveyor 1	TP1	2.0000	0.4700	0.9300	0.00466	0.00132
Feed Hopper Unloading to Conveyor 2	TP2	2.0000	0.4700	0.9300	0.00466	0.00132
Feed Hopper Unloading to Conveyor 3	TP3	2.0000	0.4700	0.9300	0.00466	0.00132
Feed Hopper Unloading to Conveyor 4	TP4	2.0000	0.4700	0.9300	0.00466	0.00132

Source Description	Model ID	Release Height (meter)	Horizontal Dimension (meters)	Vertical Dimension (meters)	PM10 Emission Rate (lbs/hr)	PM2.5 Emission Rate (lbs/hr)
Aggregate Bin Loading	AB	4.0000	1.1600	2.3300	0.60975	0.09233
Aggregate Weigh Batcher and Conveyor	WH	2.0000	1.1600	2.3300	0.01863	0.00527
Storage Piles (Aggregate)	SP1	2.4384	8.5000	2.2700	0.26599	0.04028
Storage Piles (Aggregate)	SP2	2.4384	8.5000	2.2700	0.26599	0.04028
Storage Piles (Sand)	SP3	2.4384	8.5000	2.2700	0.26599	0.04028
Cement, Fly Ash, and Concrete Truck Route Volume 1-8 (each)	HR1_0001-8	3.4000	6.0500	3.1600	0.03181	0.00318
Aggregate Truck Route Volume 1-6 (each)	HR2_0001-6	3.4000	6.0500	3.1600	0.03820	0.00382

$PM_{2.5}$ SECONDARY EMISSIONS MODELING

The form of the $PM_{2.5}$ 24 hour design value is based on the 98th percentile or the highest 8th high result. Calculated $PM_{2.5}$ combustion emission rates included into the model consist of both filterable and condensable components. Secondary $PM_{2.5}$ emissions from combustion sources are created by the conversion to nitrates and sulfates as the exhaust plume travels away from the source and mixes with ambient air. Fugitive dust emission sources do not consist of a condensable component and will not create secondary emissions of $PM_{2.5}$.

$PM_{2.5}$ secondary emission concentration analysis will follow EPA guidelines. Based on requested permitted emission rates, the Tier 1 analysis was used since direct $PM_{2.5}$ emissions are less than 10 tpy, and NOx and SO_2 emissions are less than 40 tpy. The comparison with the $PM_{2.5}$ 24 hour NAAQS with model results will be based on the 98th percentile or highest 8th high.

NO_2 MODELING – MULTI-TIERED SCREENING APPROACH

The AERMOD model predicts ground-level concentrations of any generic pollutant without chemical transformations. Thus, the modeled NO_X emission rate will give ground-level modeled concentrations of NO_X. NAAQS values are presented as NO_2.

EPA has a three-tier approach to modeling NO_2 concentrations.

- Tier I – total conversion, or all NOx = NO_2
- Tier II –Ambient Ratio Method 2 (ARM2)
- Tier III – case-by-case detailed screening methods, such as OLM and Plume Volume Molar Ratio Method (PVMRM) and NO_2/NO_X in-stack ratio

Initial modeling will be performed using both Tier I and Tier II methodologies. If these modeling iterations demonstrate that less conservative methods for determining 1-hour, 24-hour, and annual NO_2 compliance would be needed for this project, then ambient impact of 1-hour, 24-hour, and annual NOx predicted by the model will use Tier III – OLM or PVMRM.

For PVMRM, three inputs can be selected in the model, the ISR, the NO_2/NO_X equilibrium ratio for the ambient air, and the ambient ozone concentration. The ISR will be determined for each source or group of sources. The NO_2/NO_X equilibrium ratio will be the EPA default of 0.90. Ozone input will be from monitored ozone data collected from city monitoring station.

It is evident from modeling experience that at distances close to a modeled source, the modeled NO_2/NO_X ratio (and, thus, the NO_2 concentration) is highly dependent upon the assumed in-stack ratio. The use of the default ratio of 0.5 can result in large over predictions at a facility fence line. Proposed NO_2/NOx ratio are listed below.

Diesel-Fired engine NO_2/NOx ratio = 0.15

For NO_X, NAAQS and NMAAQS applicable averaging periods include 1-hour, 24-hour and annual averages.

Model Ozone Data

For PVMRM, modeling of the project-generated 1-hour NO_2 concentrations requires use of ambient monitored O_3 concentrations. Background ambient O_3 concentrations for the project area during the 2001-2005 meteorological data years have been obtained from the Del Norte (Years 2001 - 2002)[1] monitoring station and South Valley (Years 2003 – 2005) monitoring station, which is the monitoring site nearest to the project.

Concerning data substitution for missing hourly O_3 ambient monitoring data, the hourly O_3 data are used within the AERMOD air dispersion model when operated using the PVMRM option that simulates the atmospheric chemistry of O_3 reacting with initially emitted nitric oxide (NO) to form NO_2. If there is only a limited amount of O_3 in the plume, then the reaction is limited, forming less NO_2 than occurs with the simplifying assumption of complete conversion. The model disperses the initial NO_X emissions, which are mostly NO, during each of the 8,760 hours in a 365-day year. If the hourly ambient O_3 data from the nearest monitoring station have missing data, the missing O_3 hours are given substituted concentrations with the following procedure to better simulate the resulting NO_2 concentrations:

- If two or fewer consecutive hours of O_3 ambient concentrations are missing, the missing concentrations will be based on the highest previous or subsequent hour concentrations.
- If three or more consecutive hours of O_3 ambient concentrations are missing, then substitution for each missing concentration will be based on the highest 1 hour for same hour in the day over that month. Example: for data missing in January for the first hour of the day will be substituted for the highest value for all first hour of the day in January, etc.

[1] Ozone monitoring did not begin at the South Valley monitoring station until July 2002. Del Norte monitoring station data is substituted for years 2001 - 2002 into the background ozone data input into the dispersion model.

AMBIENT MODELING BACKGROUND

Ambient background concentrations will be added to the dispersion modeling results and compared to the NAAQS and NMAAQS. Background concentrations were obtained from the COABC AQP Modeling Section with the exception of the 1-hour NO_2 background methodology discussed below.

CO 1-hr:	2635 micrograms per cubic meter
CO 8-hr:	1718 micrograms per cubic meter
NO_2 Annual:	30 micrograms per cubic meter
SO_2 1-hr:	13.1 micrograms per cubic meter
SO_2 24-hr:	0 micrograms per cubic meter
SO_2 Annual:	0 micrograms per cubic meter
PM_{10} 24-hr:	35 micrograms per cubic meter
$PM_{2.5}$ 24-hr:	18.0 micrograms per cubic meter
$PM_{2.5}$ annual:	7.2 micrograms per cubic meter

NO_2 1-hour Background data

NO_2 1-hour background data will be based on the Tier 2 procedure found in EPA guidance documents[2] for determining background concentrations.

> *"Based on this guidance, we believe that an appropriate methodology for incorporating background concentrations in the cumulative impact assessment for the 1-hour NO_2 standard would be to use multiyear averages of the 98th-percentile of the available background concentrations by season and hour-of-day, excluding periods when the source in question is expected to impact the monitored concentration (which is only relevant for modified sources). For situations involving a significant mobile source component to the background monitored concentrations, inclusion of a day-of-week component to the temporal variability may also be appropriate. The rank associated with the 98th-percentile of daily maximum 1-hour values should be generally consistent with the number of "samples" within that distribution for each combination based on the temporal resolution but also account for the number of samples "ignored" in specifying the 98th-percentile based on the annual distribution. For example, Table 1 in Section 5 of Appendix S specifies the rank associated with the 98th-percentile value based on the annual number of days with valid data. Since the number of days per season will range from 90 to 92, Table 1 would indicate that the 2nd-highest value from the seasonal distribution should be used to represent the 98th-percentile. On the other hand use of the 2nd-highest value for each season would effectively "ignore" only 4 values for the year rather than the 7 values "ignored" from the annual distribution. Balancing these considerations, we recommend that background values by season and hour-of-day used in this context should be based on the 3rd-highest value for each season and hour-of-day combination, whereas the 8th-highest value should be used if values vary by hour-of-day only. For more detailed temporal pairing, such as season by hour-of- day and day-of-week or month by hour-of-*

[2] Memo: "Additional Clarification Regarding Application of Appendix W Modeling Guidance for 1-hour N02 National Ambient Air Quality Standard" Tyler Fox, Leader, Air Quality Modeling Group, C439-01, dated March 1, 2011.

day, the 1st-highest values from the distribution for each temporal combination should be used."

The NO_2 background data was provided by the COAAQP Modeling Section and is presented below in Table 5.

TABLE G-5: Monitored Seasonal NO_2 Background – 3rd Highest Hourly µg/m³

Hour	Winter	Spring	Summer	Fall
1	72.1	47.6	29.3	65.6
2	67.8	48.3	27.7	59.7
3	67.7	46	26.4	57.9
4	68.4	48.9	26.6	58.9
5	69.1	51.7	32.7	58
6	69.7	63.9	39.3	57.8
7	72.8	70.7	46.4	63.5
8	77.6	71.8	48.5	64.5
9	80	61.1	34.2	65.9
10	71.4	48	27.3	55
11	62	28.6	24.3	47.3
12	48.1	18.9	19.9	35.4
13	36.9	17.6	17	28.2
14	35.1	15.7	15.9	25.3
15	33.6	14.8	17.4	24.2
16	37.2	15.3	19.4	28
17	48.4	17.1	20.4	38
18	73	19.4	19.3	69.6
19	79.3	38.5	21.7	79.1
20	78.1	53.2	30.9	77.1
21	77.3	48	34.1	73.4
22	76.5	56.3	30.8	70.4
23	75	58.8	34.9	69.7
24	72.4	57.9	33.6	70.9

MODEL RESULTS SUMMARY

The highest results from the modeling analyses are summarized below in Tables G-6 and G-7. NO_2 modeling used the ARM2 methodology to determine NO_2 concentrations from NO_X emission rate input from the concrete batch plant engine.

Table G-6
Pollutants Below Significant Impact Levels

Parameter	Maximum ROI Modeled Concentration ($\mu g/m^3$)	Significant Impact Level (SIL) ($\mu g/m^3$)	% of SILs
CO 1 Hr.	11.0	2000	<1
CO 8 Hr.	7.8	500	1.6
SO_2 1 Hr.	0.087	7.8	1.1
SO_2 3 Hr.	0.079	25.0	<1
SO_2 24 Hr.	0.031	5.0	<1
SO_2 Annual	0.0045	1.0	<1

Table G-7
Summary of NO_2 Cumulative Analysis Model Results – ARM2

Parameter	Maximum Modeled Concentration ($\mu g/m^3$)	Maximum Modeled Concentration With Background ($\mu g/m^3$)	Lowest Applicable Standard ($\mu g/m^3$)	% of Standard
NO_2 1 Hr. Highest 8th High	51.0	125.6	188	66.8
NO_2 24 Hr.	19.5	49.5	188	26.3
NO_2 Annual	2.8	32.8	94	34.9

Background NO_2 concentrations were obtained from the Albuquerque/Bernalillo County - Air Quality Bureau's Modeling Department for that area. The 1-Hour NO_2 background was Seasonal/Hourly background for the south valley created by the modeling department. The NO_2 annual background for the south valley is 30 $\mu g/m^3$.

Table G-8
Summary of Particulate Cumulative Model Results

Parameter	Maximum Modeled Concentration ($\mu g/m^3$)	Maximum Modeled Concentration With Background ($\mu g/m^3$)	Lowest Applicable Standard ($\mu g/m^3$)	% of Standard
PM_{10} 24 Hr. Highest 2nd High	46.6	81.6	150	54.4
$PM_{2.5}$ 24 Hr. Highest 8th High	7.9	25.9	35	74.0
$PM_{2.5}$ Annual	2.5	9.7	12	80.8

Background particulate concentrations were obtained from the Albuquerque/Bernalillo County - Air Quality Bureau's Modeling Department for that area. For PM_{10} the 24-hour background is 35 $\mu g/m^3$. For $PM_{2.5}$ the 24-hour is 18.0 $\mu g/m^3$ and annual background is 7.2 $\mu g/m^3$.

The following figures show the location of the highest modeled concentration for NO_2, PM_{10} and $PM_{2.5}$ in relation to the location of the CBP and airport fenceline.

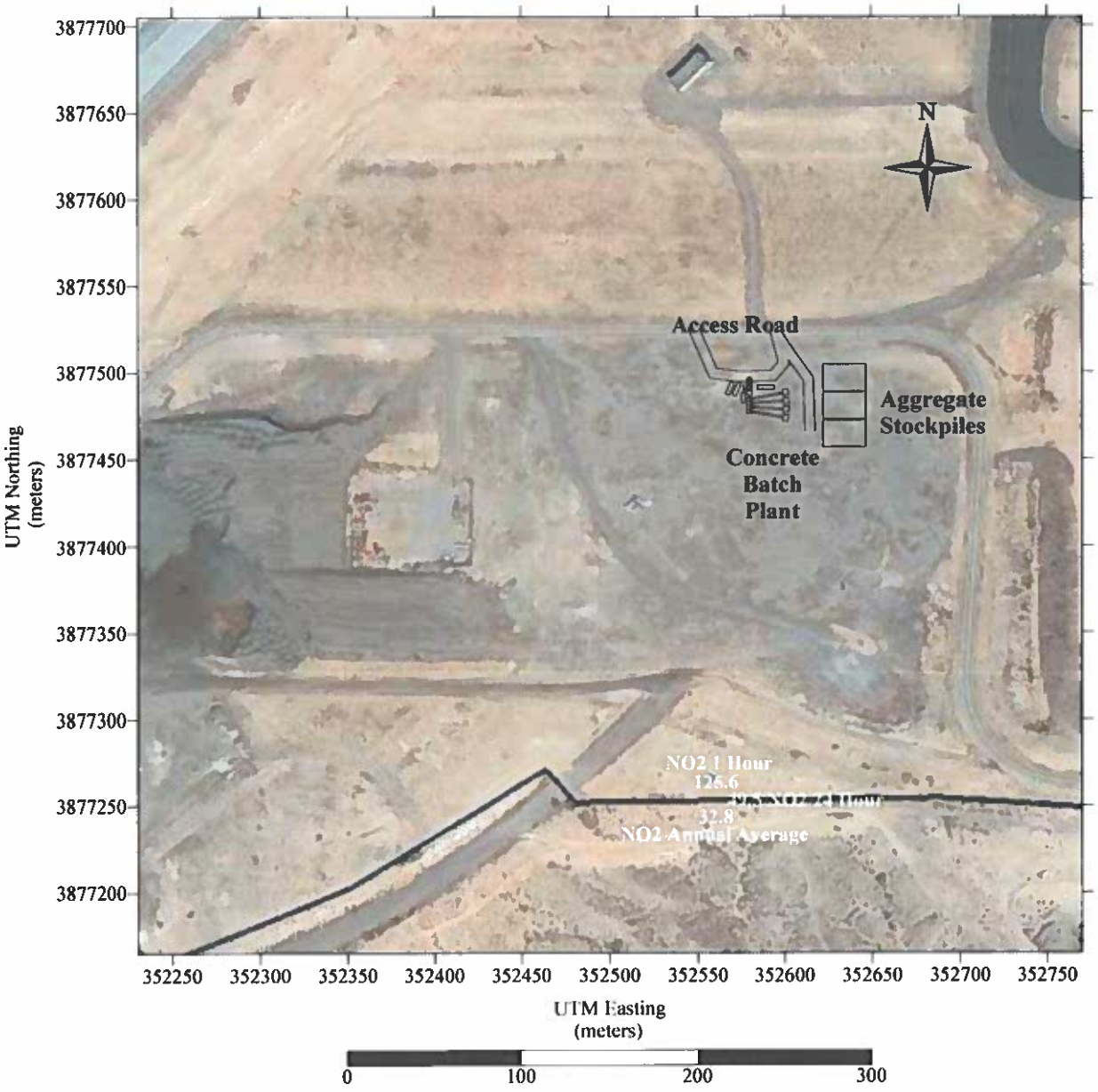


FIGURE G-3: Location of Highest NO_2 Model Results

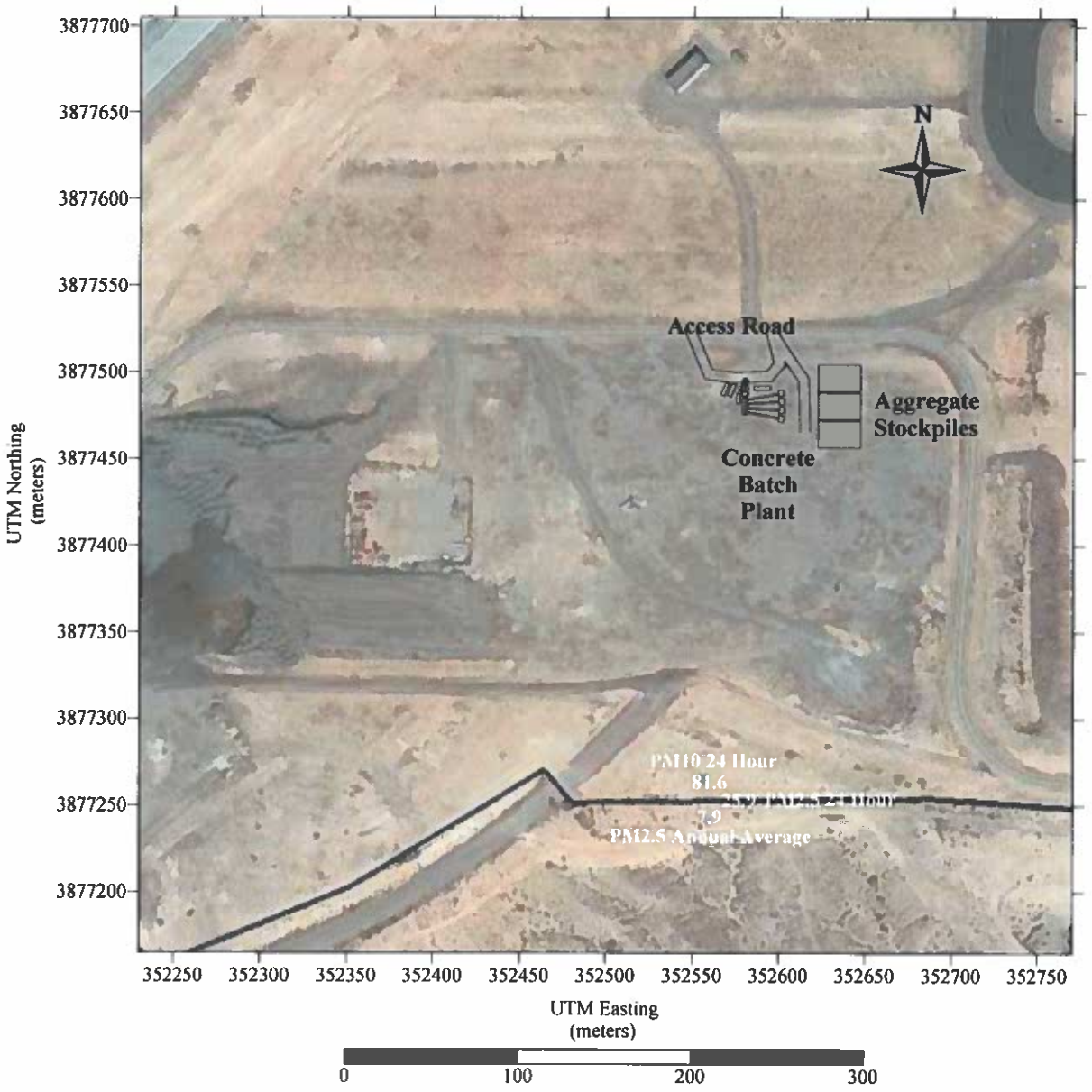


FIGURE G-4: Location of Highest PM_{10} and $PM_{2.5}$ Model Results

MONTROSE

Paul Wade <pwade@montrose-env.com>

Model Waiver Request

6 messages

Paul Wade <pwade@montrose-env.com> Tue, Dec 29, 2020 at 1:28 PM
To: "Stonesifer, Jeff W." <JStonesifer@cabq.gov>, "Tumpane, Kyle" <ktumpane@cabq.gov>
Cc: Robert Caldwell <rcaldwell@blackrock-services.com>, "Munoz-Dyer, Carina G." <cmunoz-dyer@cabq.gov>, "Tavarez, Isreal L." <ITavarez@cabq.gov>

Jeff
Attached is the modeling waiver request for VCG proposed CBP permit to be located at the International Sunport Airport.

Thanks

--

MEG Logo_Signature

Paul Wade

Sr. Engineer

Montrose Air Quality Services, LLC

3500 G Comanche Rd. NE, Albuquerque, NM 87107

T: 505.830.9680 x6 | F: 505.830.9678

PWade@montrose-env.com

www.montrose-env.com

VCG CBP Emergency Model Waiver Request.pdf
547K

Stonesifer, Jeff W. <JStonesifer@cabq.gov> Tue, Dec 29, 2020 at 1:33 PM
To: Paul Wade <pwade@montrose-env.com>, "Tumpane, Kyle" <ktumpane@cabq.gov>
Cc: "Munoz-Dyer, Carina G." <cmunoz-dyer@cabq.gov>, "Tavarez, Isreal L." <ITavarez@cabq.gov>

Paul,

To: "Stonesifer, Jeff W." <JStonesifer@cabq.gov>
Cc: "Tumpane, Kyle" <ktumpane@cabq.gov>, "Munoz-Dyer, Carina G." <cmunoz-dyer@cabq.gov>, "Tavarez, Isreal L." <ITavarez@cabq.gov>

Jeff
Sorry for the confusion, the new plant is identical to the existing plant at the Amazon project with a maximum rating of 270 yards/hr. Attached is a corrected memo for the modeling waiver request.

Thanks
[Quoted text hidden]
--

MEG Logo_Signature

[Quoted text hidden]

VCG CBP Emergency Model Waiver Request Revised.pdf
545K

Paul Wade <pwade@montrose-env.com> Wed, Jan 13, 2021 at 9:27 AM
To: "Stonesifer, Jeff W." <JStonesifer@cabq.gov>
Cc: "Tumpane, Kyle" <ktumpane@cabq.gov>, "Munoz-Dyer, Carina G." <cmunoz-dyer@cabq.gov>, "Tavarez, Isreal L." <ITavarez@cabq.gov>, Vincent Martinez <vincent.martinez@vitalgrp.net>

Jeff
Have you been able to review the model waiver request and are you ready to issue the model waiver. The application that will be submitted is the same application that was submitted in 2019 for issued Permit #3380-EP. Let me know if you need any additional information.

Thanks
[Quoted text hidden]

Stonesifer, Jeff W. <JStonesifer@cabq.gov> Wed, Jan 13, 2021 at 1:22 PM
To: Paul Wade <pwade@montrose-env.com>
Cc: "Tumpane, Kyle" <ktumpane@cabq.gov>, "Munoz-Dyer, Carina G." <cmunoz-dyer@cabq.gov>, "Tavarez, Isreal L." <ITavarez@cabq.gov>, Vincent Martinez <vincent.martinez@vitalgrp.net>, "Eyerman, Regan V." <reyerman@cabq.gov>, "Puckett, Paul S." <ppuckett@cabq.gov>

Paul,

The waiver from modeling has been approved for VCG's new concrete batch plant at the Albuquerque Sunport. Please submit two copies of the application when you are ready.

[Quoted text hidden]
[Quoted text hidden]
[Quoted text hidden]

> [Quoted text hidden]
>
> **Paul Wade**
>
> Sr. Engineer
>
> Montrose Air Quality Services, LLC
>
> 3500 G Comanche Rd. NE, Albuquerque, NM 87107
>
> T: 505.830.9680 x6 | F: 505.830.9678
>
> PWade@montrose-env.com
>
> www.montrose-env.com

Attachment H
Public Notice Documentation

For this permit application, a yellow board has been posted at the Albuquerque Sunport Airport service entrance. At this location the public has access to the notice.

Notice of Intent to Construct

Under 20.11.41.13B NMAC, the owner/operator is required to provide public notice by certified mail or electronic mail to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half-mile of the exterior boundaries of the property on which the source is or is proposed to be located if they propose to construct or establish a new facility or make modifications to an existing facility that is subject to 20.11.41 NMAC – Construction Permits. **A copy of this form must be included with the application.**

Applicant's name and address:
Nombre y domicilio del solicitante: Vital Consulting Group, LLC, 5200 Oakland Ave. STE D, Albuquerque, NM 87113

Owner or operator's name and address:
Nombre y domicilio del propietario u operador: Vital Consulting Group, LLC, 5200 Oakland Ave. STE D, Albuquerque, NM 87113

Actual or estimated date the application will be submitted to the department:
Fecha actual o estimada en que se entregará la solicitud al departamento: 01/18/2021

Description of the source:
Descripción de la fuente: Manufacturing of Construction Concrete

Exact location of the source or proposed source:
Ubicación exacta de la fuente o fuente propuesta: Albuquerque Sunport International Airport

Nature of business:
Tipo de negocio: Manufacturing of concrete for reconstruction of airport taxiway E

Process or change for which the permit is requested:
Proceso or cambio para el cuál de solicita el permiso: Permit to include concrete batch plant to provide concrete for reconstruction of airport taxiway E.

Preliminary estimate of the maximum quantities of each regulated air contaminant the source will emit:
Estimación preliminar de las cantidades máximas de cada contaminante de aire regulado que la fuente va a emitir:

Air Contaminant *Contaminante de aire*	**Proposed Construction Permit** *Permiso de Construcción Propuesto*		**Net Changes (for permit modification or technical revision)** *Cambio Neto de Emisiones (para modificación de permiso o revisión técnica)*	
	pounds per hour *libras por hora*	tons per year *toneladas por año*	pounds per hour *libras por hora*	tons per year *toneladas por año*
CO	0.94	2.35	***	***
NOx	5.27	13.2	***	***
VOC	0.060	0.15	***	***
SO2	0.0075	0.019	***	***
PM10	3.61	4.98	***	***
PM2.5	1.44	3.04	***	***

City of Albuquerque – Environmental Health Department
Air Quality Program – Permitting Division
Phone (505) 768-1972 **E-mail: aqd@cabq.gov**

HAP	0.030	0.074	***	***

Maximum operating schedule:
Horario máximo de operaciones: 24 hours per day
Normal operating schedule:
Horario normal de operaciones: 24 hours per day

Current contact information for comments and inquires:
Datos actuales para comentarios y preguntas:

Name *(Nombre)*: Vince Martinez, President
Address *(Domicilio)*: 5200 Oakland Ave. STE D, Albuquerque, NM 87113
Phone Number *(Número Telefónico)*: (505) 369-0623
E-mail Address *(Correo Electrónico)*: vincent.martinez@vitalgrp.net

If you have any comments about the construction or operation of the above facility, and you want your comments to be made part of the permit review process, you must submit your comments in writing to the address below:

Environmental Health Manager
Permitting Division
Albuquerque Environmental Health Department
Air Quality Program
P.O. Box 1293
Albuquerque, New Mexico 87103
(505) 768-1972

Other comments and questions may be submitted verbally.

Please refer to the company name and facility name, as used in this notice or send a copy of this notice along with your comments, since the Department may not have received the permit application at the time of this notice. Please include a legible mailing address with your comments. Once the Department has performed a preliminary review of the application and its air quality impacts, if required, the Department's notice will be published on the City of Albuquerque's website, https://www.cabq.gov/airquality/air-quality-permits and sent to neighborhood associations and neighborhood coalitions near the facility location or near the facility proposed location.


Jan 15, 2021 10:11:57 AM
336 Lindsay Place Southwest
Albuquerque
Bernalillo County
New Mexico


F-1F
GATE LOCKED
Jan 15, 2021 10:11:48 AM
336 Lindsay Place Southwest
Albuquerque
Bernalillo County
New Mexico

VITAL CONSULTING GROUP LLC 7159

Vital Consulting Group 5200 Oakland Ave Albuquerque, NM 87113 (505)369-0623

Vendor 1515 City of Albuquerque Env Health Check 7159 01/14/21

Trx No	Invoice No	Inv Date	Job/Description	Gross	Discount	Check Amount
11932	01142012	01/14/21	Air Quality Permit	1,777.00		1,777.00
				1,777.00	0.00	1,777.00

THE REVERSE SIDE OF THIS DOCUMENT INCLUDES MICROPRINTED ENDORSEMENT LINES AND ARTIFICIAL WATERMARK - HOLD AT AN ANGLE TO VIEW

VITAL CONSULTING GROUP LLC
P.O. BOX 94778
ALBUQUERQUE, NM 87199
505-369-0623

HILLCREST BANK
2155 LOUISIANA BLVD. NE - SUITE 1000
ALBUQUERQUE, NM 87110
83-271/1010

7159

CHECK NO.

7159

DATE AMOUNT

**********1,777 DOLLARS AND 00 CENTS**********

01/14/21 *******$1,777.00

PAY TO THE ORDER OF

CITY OF ALBUQUERQUE ENV HEALTH
PO BOX 25700
ALBUQUERQUE NM 87199

AUTHORIZED SIGNATURE

HEAT SENSITIVE COLOR FADES WITH HEAT