20.2.72 NMAC
AIR QUALITY
PERMIT APPLICATION

For

PG ENTERPRISES, LLC

RIO RANCHO FACILITY
Rio Rancho, NM

New NSR Permit Application

PREPARED BY
MONTROSE AIR QUALITY SERVICES, LLC
ALBUQUERQUE, NM
JANUARY 2020

Mail Application To:		**For Department use only:**
New Mexico Environment Department Air Quality Bureau Permits Section 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico, 87505 Phone: (505) 476-4300 Fax: (505) 476-4375 www.env.nm.gov/aqb		AIRS No.:

Universal Air Quality Permit Application

Use this application for NOI, NSR, or Title V sources.

Use this application for: the initial application, modifications, technical revisions, and renewals. For technical revisions, complete Sections, 1-A, 1-B, 2-E, 3, 9 and any other sections that are relevant to the requested action; coordination with the Air Quality Bureau permit staff prior to submittal is encouraged to clarify submittal requirements and to determine if more or less than these sections of the application are needed. Use this application for streamline permits as well. See Section 1-I for submittal instructions for other permits.

This application is submitted as (check all that apply)**:** ☐ Request for a No Permit Required Determination (no fee)
☐ **Updating** an application currently under NMED review. Include this page and all pages that are being updated (no fee required).
Construction Status: **X** Not Constructed ☐ Existing Permitted (or NOI) Facility ☐ Existing Non-permitted (or NOI) Facility
Minor Source: ☐ a NOI 20.2.73 NMAC **X** 20.2.72 NMAC application or revision ☐ 20.2.72.300 NMAC Streamline application
Title V Source: ☐ Title V (new) ☐ Title V renewal ☐ TV minor mod. ☐ TV significant mod. TV Acid Rain: ☐ New ☐ Renewal
PSD Major Source: ☐ PSD major source (new) ☐ minor modification to a PSD source ☐ a PSD major modification

Acknowledgements:

X I acknowledge that a pre-application meeting is available to me upon request. ☐ Title V Operating, Title IV Acid Rain, and NPR applications have no fees.

X $500 NSR application Filing Fee enclosed OR ☐ The full permit fee associated with 10 fee points (required w/ streamline applications).

X Check No.: 167829 in the amount of $500.00

X I acknowledge the required submittal format for the hard copy application is printed double sided 'head-to-toe', 2-hole punched (except the Sect. 2 landscape tables is printed 'head-to-head'), numbered tab separators. Incl. a copy of the check on a separate page.

☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance program (SBEAP) and qualifies for 50% of the normal application and permit fees. Enclosed is a check for 50% of the normal application fee which will be verified with the Small Business Certification Form for your company.

☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance Program (SBEAP) but does not qualify for 50% of the normal application and permit fees. To see if you qualify for SBEAP assistance and for the small business certification form go to https://www.env.nm.gov/aqb/sbap/small_business_criteria.html).

Citation: Please provide the **low level citation** under which this application is being submitted: **20.2.72.200.A NMAC**
(e.g. application for a new minor source would be 20.2.72.200.A NMAC, one example for a Technical Permit Revision is 20.2.72.219.B.1.b NMAC, a Title V acid rain application would be: 20.2.70.200.C NMAC)

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known (see 1st 3 to 5 #s of permit IDEA ID No.):	Updating Permit/NOI #: New Permit
1	Facility Name: Rio Rancho Facility	Plant primary SIC Code (4 digits): 1429, 1442	
		Plant NAIC code (6 digits): 212319, 212321	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): The facility is located 0.32 miles northwest of the intersection of Northern Blvd NE and Loma Colorado Blvd NE on Lumberman Road NE, Lots 5-8, Block 86, S.E. Portion of Unit 13, Rio Rancho Estates, in Rio Rancho, NM in Sandoval County.		
2	Plant Operator Company Name: PG Enterprises, LLC	Phone/Fax: (505) 873-9593 / (505) 873-9590	
a	Plant Operator Address: 301 Murray SE, Albuquerque, NM 87105		

b	Plant Operator's New Mexico Corporate ID or Tax ID: 85-0454131	
3	Plant Owner(s) name(s): PG Enterprises, LLC	Phone/Fax: (505) 873-9593 / (505) 873-9590
a	Plant Owner(s) Mailing Address(s): 301 Murray SE, Albuquerque, NM 87105	
4	Bill To (Company): PG Enterprises, LLC	Phone/Fax: (505) 873-9593 / (505) 873-9590
a	Mailing Address: 301 Murray SE, Albuquerque, NM 87105	E-mail: payam@pgenterprisesllc.com
5	☐ Preparer: **X** Consultant: Paul Wade, Montrose Air Quality Services, LLC	Phone/Fax: (505) 830-9680 x6 / (505) 830-9678
a	Mailing Address: 3500 Comanche Rd NE, Suite G, Albuquerque, NM 87107	E-mail: pwade@montrose-env.com
6	Plant Operator Contact: Payam Ghoreishi	Phone/Fax: (505) 873-9593 / (505) 873-9590
a	Address: 301 Murray SE, Albuquerque, NM 87105	E-mail: payam@pgenterprisesllc.com
7	Air Permit Contact: Payam Ghoreishi	Title: President
a	E-mail: payam@pgenterprisesllc.com	Phone/Fax: (505) 873-9593 / (505) 873-9590
b	Mailing Address: 301 Murray SE, Albuquerque, NM 87105	
c	The designated Air permit Contact will receive all official correspondence (i.e. letters, permits) from the Air Quality Bureau.	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? ☐ Yes **X** No	1.b If yes to question 1.a, is it currently operating in New Mexico? ☐ Yes ☐ No **X** N/A
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? ☐ Yes ☐ No **X** N/A	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? ☐ Yes ☐ No **X** N/A
3	Is the facility currently shut down? ☐ Yes ☐ No **X** N/A	If yes, give month and year of shut down (MM/YY):
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? ☐ Yes **X** No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? ☐Yes ☐No **X**N/A	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☐ Yes **X** No	If yes, the permit No. is: P-
7	Has this facility been issued a No Permit Required (NPR)? ☐ Yes **X** No	If yes, the NPR No. is:
8	Has this facility been issued a Notice of Intent (NOI)? ☐ Yes **X** No	If yes, the NOI No. is:
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? ☐ Yes **X** No	If yes, the permit No. is:
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☐ Yes **X** No	If yes, the register No. is:

Section 1-C: Facility Input Capacity & Production Rate

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly:	Daily:	Annually:
b	Proposed	Hourly: 150 tons per hour	Daily: 1,650 tons per day	Annually: 350,000 tons per year
2	What is the facility's maximum production rate, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly:	Daily:	Annually:

b	Proposed	Hourly: 150 tons per hour	Daily: 1,650 tons per day	Annually: 350,000 tons per year

Section 1-D: Facility Location Information

1	Section: 7	Range: 3E	Township: 12N	County: Sandoval	Elevation (ft): 5500
2	UTM Zone: ☐ 12 or **X** 13			Datum: ☐ NAD 27 **X** NAD 83 ☐ WGS 84	
a	UTM E (in meters, to nearest 10 meters): 349,040			UTM N (in meters, to nearest 10 meters): 3,905,200	
b	**AND** Latitude (deg., min., sec.): 35°, 16', 42.9" N;			Longitude (deg., min., sec.): 106°, 39', 35.6" W	
3	Name and zip code of nearest New Mexico town: Rio Rancho, 87144				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From the intersection of Highway 528 and Northern Blvd NE travel west on Northern. Travel west for 2.4 miles to the intersection of Northern and Lumberman Rd NE. Turn northeast on Lumberman. Travel 0.4 miles and site is on southeast side of road.				
5	The facility is located 0.32 miles northwest of the intersection of Northern Blvd NE and Loma Colorado Blvd NE in Rio Rancho, NM in Sandoval County.				
6	Status of land at facility (check one): **X** Private ☐ Indian/Pueblo ☐ Federal BLM ☐ Federal Forest Service ☐ Other (specify)				
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: City of Albuquerque, Town of Bernalillo, City of Rio Rancho, Village of Corrales, Bernalillo County, Sandoval County, Santa Ana Pueblo, Sandia Pueblo				
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/aqb/modeling/class1areas.html)? **X** Yes ☐ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: Bernalillo County – 7.0 km				
9	Name nearest Class I area: Bandelier Wilderness Area				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 54.09				
11	Distance (meters) from the perimeter of the Area of Operations (AO is defined as the plant site inclusive of all disturbed lands, including mining overburden removal areas) to nearest residence, school or occupied structure: 0.21 miles				
12	Method(s) used to delineate the Restricted Area: Fence surrounds property with gates and signs at entrances "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.				
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? **X** Yes ☐ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.				
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☒ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility?				

Section 1-E: Proposed Operating Schedule (The 1-E.1 & 1-E.2 operating schedules may become conditions in the permit.)

1	Facility **maximum** operating ($\frac{\text{hours}}{\text{day}}$): 11	($\frac{\text{days}}{\text{week}}$): 7	($\frac{\text{weeks}}{\text{year}}$): 52	($\frac{\text{hours}}{\text{year}}$):		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start: 7:00		XAM ☐PM	End: 6:00	☐AM XPM	
3	Month and year of anticipated start of construction: After Issuance of Permit					
4	Month and year of anticipated construction completion: After Issuance of Permit					
5	Month and year of anticipated startup of new or modified facility: After Issuance of Permit					
6	Will this facility operate at this site for more than one year? **X** Yes ☐ No					

Section 1-F: Other Facility Information

1	Are there any current Notice of Violations (NOV), compliance orders, or any other compliance or enforcement issues related to this facility? ☐ Yes **X** No If yes, specify:		
a	If yes, NOV date or description of issue:		NOV Tracking No:
b	Is this application in response to any issue listed in 1-F, 1 or 1a above? ☐ Yes **X** No If Yes, provide the 1c & 1d info below:		
c	Document Title:	Date:	Requirement # (or page # and paragraph #):
d	Provide the required text to be inserted in this permit:		
2	Is air quality dispersion modeling or modeling waiver being submitted with this application? **X** Yes ☐ No		
3	Does this facility require an "Air Toxics" permit under 20.2.72.400 NMAC & 20.2.72.502, Tables A and/or B? ☐ Yes **X** No		
4	Will this facility be a source of federal Hazardous Air Pollutants (HAP)? **X** Yes ☐ No		
a	If Yes, what type of source? ☐ **Major** (☐ ≥10 tpy of any single HAP **OR** ☐ ≥25 tpy of any combination of HAPS) **OR** **X** **Minor** (**X** <10 tpy of any single HAP **AND** **X** <25 tpy of any combination of HAPS)		
5	Is any unit exempt under 20.2.72.202.B.3 NMAC? ☐ Yes **X** No		
a	If yes, include the name of company providing commercial electric power to the facility: _____ Commercial power is purchased from a commercial utility company, which specifically does not include power generated on site for the sole purpose of the user.		

Section 1-G: Streamline Application **(This section applies to 20.2.72.300 NMAC Streamline applications only)**

1	☐ I have filled out Section 18, "Addendum for Streamline Applications." ☐ N/A (This is not a Streamline application.)

Section 1-H: Current Title V Information - Required for all applications from TV Sources

(Title V-source required information for all applications submitted pursuant to 20.2.72 NMAC (Minor Construction Permits), or 20.2.74/20.2.79 NMAC (Major PSD/NNSR applications), and/or 20.2.70 NMAC (Title V))

1	Responsible Official (R.O.) (20.2.70.300.D.2 NMAC):		Phone:
a	R.O. Title:	R.O. e-mail:	
b	R. O. Address:		
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC):		Phone:
a	A. R.O. Title:	A. R.O. e-mail:	
b	A. R. O. Address:		
3	Company's Corporate or Partnership Relationship to any other Air Quality Permittee (List the names of any companies that have operating (20.2.70 NMAC) permits and with whom the applicant for this permit has a corporate or partnership relationship):		
4	Name of Parent Company ("Parent Company" means the primary name of the organization that owns the company to be permitted wholly or in part.):		
a	Address of Parent Company:		
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.):		
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations:		

7	Affected Programs to include Other States, local air pollution control programs (i.e. Bernalillo) and Indian tribes: Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B)? If yes, state which ones and provide the distances in kilometers:

Section 1-I – Submittal Requirements

Each 20.2.73 NMAC (**NOI**), a 20.2.70 NMAC (**Title V**), a 20.2.72 NMAC (**NSR** minor source), or 20.2.74 NMAC (**PSD**) application package shall consist of the following:

Hard Copy Submittal Requirements:

1) One hard copy **original signed and notarized application package** **printed double sided** **'head-to-toe'** **2-hole punched** as we bind the document on top, not on the side; except Section 2 (landscape tables), which should be head-to-head. Please use **numbered tab separators** in the hard copy submittal(s) as this facilitates the review process. For NOI submittals only, hard copies of UA1, Tables 2A, 2D & 2F, Section 3 and the signed Certification Page are required. Please include a copy of the check on a separate page.

2) If the application is for a minor NSR, PSD, NNSR, or Title V application, include one working hard **copy** for Department use. This copy should be printed in book form, 3-hole punched, and **must be double sided**. Note that this is in addition to the head-to-to 2-hole punched copy required in 1) above. Minor NSR Technical Permit revisions (20.2.72.219.B NMAC) only need to fill out Sections 1-A, 1-B, 3, and should fill out those portions of other Section(s) relevant to the technical permit revision. TV Minor Modifications need only fill out Sections 1-A, 1-B, 1-H, 3, and those portions of other Section(s) relevant to the minor modification. NMED may require additional portions of the application to be submitted, as needed.

3) The entire NOI or Permit application package, including the full modeling study, should be submitted electronically. Electronic files for applications for NOIs, any type of General Construction Permit (GCP), or technical revisions to NSRs must be submitted with compact disk (CD) or digital versatile disc (DVD). For these permit application submittals, **two** CD copies are required (in sleeves, not crystal cases, please), with additional CD copies as specified below. NOI applications require only a single CD submittal. Electronic files for other New Source Review (construction) permits/permit modifications or Title V permits/permit modifications can be submitted on CD/DVD or sent through AQB's secure file transfer service.

Electronic files sent by (check one):

☐ CD/DVD attached to paper application

☐ secure electronic transfer. Air Permit Contact Name_____

Email_____

Phone number _____

a. If the file transfer service is chosen by the applicant, after receipt of the application, the Bureau will email the applicant with instructions for submitting the electronic files through a secure file transfer service. Submission of the electronic files through the file transfer service needs to be completed within 3 business days after the invitation is received, so the applicant should ensure that the files are ready when sending the hard copy of the application. The applicant will not need a password to complete the transfer. **Do not use the file transfer service for NOIs, any type of GCP, or technical revisions to NSR permits.**

4) Optionally, the applicant may submit the files with the application on compact disk (CD) or digital versatile disc (DVD) following the instructions above and the instructions in 5 for applications subject to PSD review.

5) If **air dispersion modeling** is required by the application type, include the **NMED Modeling Waiver** and/or electronic air dispersion modeling report, input, and output files. The dispersion modeling ***summary report only*** should be submitted as hard copy(ies) unless otherwise indicated by the Bureau.

6) If the applicant submits the electronic files on CD and the application is subject to PSD review under 20.2.74 NMAC (PSD) or NNSR under 20.2.79 NMC include,
   a. one additional CD copy for US EPA,
   b. one additional CD copy for each federal land manager affected (NPS, USFS, FWS, USDI) and,
   c. one additional CD copy for each affected regulatory agency other than the Air Quality Bureau.

   If the application is submitted electronically through the secure file transfer service, these extra CDs do not need to be submitted.

Electronic Submittal Requirements [in addition to the required hard copy(ies)]:

1) All required electronic documents shall be submitted as 2 separate CDs or submitted through the AQB secure file transfer service. Submit a single PDF document of the entire application as submitted and the individual documents comprising the application.

2) The documents should also be submitted in Microsoft Office compatible file format (Word, Excel, etc.) allowing us to access the text and formulas in the documents (copy & paste). Any documents that cannot be submitted in a Microsoft Office compatible

format shall be saved as a PDF file from within the electronic document that created the file. If you are unable to provide Microsoft office compatible electronic files or internally generated PDF files of files (items that were not created electronically: i.e. brochures, maps, graphics, etc,), submit these items in hard copy format. We must be able to review the formulas and inputs that calculated the emissions.

3) It is preferred that this application form be submitted as 4 electronic files (3 MSWord docs: Universal Application section 1 [UA1], Universal Application section 3-19 [UA3], and Universal Application 4, the modeling report [UA4]) and 1 Excel file of the tables (Universal Application section 2 [UA2]). Please include as many of the 3-19 Sections as practical in a single MS Word electronic document. Create separate electronic file(s) if a single file becomes too large or if portions must be saved in a file format other than MS Word.

4) The electronic file names shall be a maximum of 25 characters long (including spaces, if any). The format of the electronic Universal Application shall be in the format: "A-3423-FacilityName". The "A" distinguishes the file as an application submittal, as opposed to other documents the Department itself puts into the database. Thus, all electronic application submittals should begin with "A-". Modifications to existing facilities should use the core permit number (i.e. '3423') the Department assigned to the facility as the next 4 digits. Use 'XXXX' for new facility applications. The format of any separate electronic submittals (additional submittals such as non-Word attachments, re-submittals, application updates) and Section document shall be in the format: "A-3423-9-description", where "9" stands for the section # (in this case Section 9-Public Notice). Please refrain, as much as possible, from submitting any scanned documents as this file format is extremely large, which uses up too much storage capacity in our database. Please take the time to fill out the header information throughout all submittals as this will identify any loose pages, including the Application Date (date submitted) & Revision number (0 for original, 1, 2, etc.; which will help keep track of subsequent partial update(s) to the original submittal. Do not use special symbols (#, @, etc.) in file names. The footer information should not be modified by the applicant.

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Table 2-A: Regulated Emission Sources

Unit and stack numbering must correspond throughout the application package. If applying for a NOI under 20.2.73 NMAC, equipment exemptions under 2.72.202 NMAC do not apply.

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
1	Plant Generator/Engine	CAT	C-9	JSC18999	230 HP	230 HP	2010 TBD	NA 1	30502099	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	
2	Plant Generator/Engine	CAT	C-9	CLJ09882	309 HP	309 HP	2006 TBD	NA 2	30502099	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	
3	Plant Generator/Engine	Deutz	312	NA	100 HP	100 HP	2005 TBD	NA 3	30502099	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	CI	
RAW	Raw Material Storage Pile	NA	NA	NA	150 tph	150 tph	NA TBD	NA NA	30502007	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
4	Feeder	Sandvik	QJ341	1886SW11901	150 tph	150 tph	2011 TBD	NA NA	30502031	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
5	Primary Crusher with Under Conveyor	Sandvik	QJ341	1886SW11901	150 tph	150 tph	2011 TBD	C2 NA	30502001	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
6	Transfer Conveyor	Shopmade	NA	NA	150 tph	150 tph	Unknown TBD	C1 NA	30502006	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
7	Secondary Crusher with Under Conveyor	Terex-Pegson	4242SR	420176DBSR	150 tph	150 tph	2006 TBD	C2 NA	30502002	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
8	Transfer Conveyor	Shopmade	NA	NA	150 tph	150 tph	Unknown TBD	C1 NA	30502006	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
9	Screen with Under Conveyors (2)	Powerscreen	1800	NA	150 tph	150 tph	2005 TBD	C3 NA	30502015	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
10	Transfer Conveyor	Shopmade	NA	NA	150 tph	150 tph	Unknown TBD	C1 NA	30502006	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
11	Transfer Conveyor	Shopmade	NA	NA	150 tph	150 tph	Unknown TBD	C1 NA	30502006	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
12	Transfer Conveyor	Shopmade	NA	NA	150 tph	150 tph	Unknown TBD	C1 NA	30502006	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
13	Stacker Conveyor	MGL	7436	7436379	150 tph	150 tph	Unkown TBD	C4 NA	30502006	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
FPILE	Finish Storage Pile	NA	NA	NA	150 tph	150 tph	NA TBD	NA NA	30502007	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
TL	Truck Loading	NA	NA	NA	150 tph	150 tph	NA TBD	NA NA	30502033	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
ROAD	Haul Road	NA	NA	NA	15556 trucks/yr	15556 trucks/yr	NA TBD	C5 NA	30602011	☐ Existing (unchanged) ☐ To be Removed X New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		

[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] Specify dates required to determine regulatory applicability.
[3] To properly account for power conversion efficiencies, generator set rated capacity shall be reported as the rated capacity of the engine in horsepower, not the kilowatt capacity of the generator set.
[4] "4SLB" means four stroke lean burn engine, "4SRB" means four stroke rich burn engine, "2SLB" means two stroke lean burn engine, "CI" means compression ignition, and "SI" means spark ignition

Table 2-B: Insignificant Activities[1] (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at http://www.env.nm.gov/aqb/forms/InsignificantListTitleV.pdf . TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No.	Max Capacity	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5)	Date of Manufacture /Reconstruction[2]	For Each Piece of Equipment, Check Onc
			Serial No.	Capacity Units	Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Installation /Construction[2]	
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

[1] Insignificant activities exempted due to size or production rate are defined in 20.2.70.300.D.6, 20.2.70.7.Q NMAC, and the NMED/AQB List of Insignificant Activities, dated September 15, 2008. Emissions from these insignificant activities do not need to be reported, unless specifically requested.

[2] Specify date(s) required to determine regulatory applicability.

Table 2-C: Emissions Control Equipment

Unit and stack numbering must correspond throughout the application package. Only list control equipment for TAPs if the TAP's maximum uncontrolled emissions rate is over its respective threshold as listed in 20.2.72 NMAC, Subpart V, Tables A and B. In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions.

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
C1	Conveyor Transfer Points - Wet Dust Suppression System	TBD	Particulate	6, 8, 10, 11, 12	PM - 95.33%	AP-42 11.19.2 Emission Factors
C2	Crushers - Wet Dust Suppression System	TBD	Particulate	5, 7	PM - 77.78%	AP-42 11.19.2 Emission Factors
C3	Screen - Wet Dust Suppression System	TBD	Particulate	9	PM - 91.20%	AP-42 11.19.2 Emission Factors
C4	Conveyor Transfer to Storage Piles - Soil Moisture Content	TBD	Particulate	13	2.88% Soil Moisture Content 40% - Control	High Range AP-42 11.19.2
C5	Unpaved Roads - Asphalt Millings, Surfactant, and Water	TBD	Particulate	ROAD	90%	NMED Policy

[1] List each control device on a separate line. For each control device, list all emission units controlled by the control device.

Table 2-D: Maximum Emissions (under normal operating conditions)

☐ **This Table was intentionally left blank because it would be identical to Table 2-E.**

Maximum Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) & Toxic Air Pollutants (TAPs) in Table 2-I. Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	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	lb/hr	ton/yr
1	1.52	6.62	1.32	5.80	0.15	0.66	0.0025	0.011	0.076	0.33	0.076	0.33	0.076	0.33	-	-	1.4E-05	2.5E-05
2	2.04	8.90	1.77	7.79	0.20	0.89	0.0034	0.015	0.10	0.44	0.10	0.44	0.10	0.44	-	-	1.8E-05	3.4E-05
3	1.09	4.75	0.82	3.60	0.11	0.48	0.0012	0.0051	0.049	0.22	0.049	0.22	0.049	0.22	-	-	6.0E-06	8.0E-06
RAW	-	-	-	-	-	-	-	-	0.99	1.55	0.47	0.73	0.071	0.11	-	-	-	-
4	-	-	-	-	-	-	-	-	0.99	1.55	0.47	0.73	0.071	0.11	-	-	-	-
5	-	-	-	-	-	-	-	-	0.81	1.77	0.36	0.79	0.067	0.15	-	-	-	-
6	-	-	-	-	-	-	-	-	0.45	0.99	0.17	0.36	0.049	0.11	-	-	-	-
7	-	-	-	-	-	-	-	-	0.81	1.77	0.36	0.79	0.067	0.15	-	-	-	-
8	-	-	-	-	-	-	-	-	0.45	0.99	0.17	0.36	0.049	0.11	-	-	-	-
9	-	-	-	-	-	-	-	-	3.75	8.21	1.31	2.86	0.088	0.19	-	-	-	-
10	-	-	-	-	-	-	-	-	0.45	0.99	0.17	0.36	0.049	0.11	-	-	-	-
11	-	-	-	-	-	-	-	-	0.45	0.99	0.17	0.36	0.049	0.11	-	-	-	-
12	-	-	-	-	-	-	-	-	0.45	0.99	0.17	0.36	0.049	0.11	-	-	-	-
13	-	-	-	-	-	-	-	-	0.99	1.55	0.47	0.73	0.071	0.11	-	-	-	-
FPILE	-	-	-	-	-	-	-	-	0.99	1.55	0.47	0.73	0.071	0.11	-	-	-	-
TL	-	-	-	-	-	-	-	-	0.99	1.55	0.47	0.73	0.071	0.11	-	-	-	-
ROAD	-	-	-	-	-	-	-	-	11.18	19.79	2.85	5.04	0.28	0.50	-	-	-	-
Totals	4.63	20.28	3.92	17.18	0.46	2.03	0.0070	0.031	23.98	89.45	8.27	30.90	1.33	5.15			3.8E-05	6.7E-05

[1]**Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but PM is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Table 2-E: Requested Allowable Emissions

Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or $1.41E^{-4}$).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	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	lb/hr	ton/yr
1	1.52	2.78	1.32	2.41	0.15	0.28	0.0025	0.0046	0.076	0.14	0.076	0.14	0.076	0.14	-	-	1.4E-05	2.5E-05
2	2.04	3.73	1.77	3.24	0.20	0.37	0.0034	0.0061	0.10	0.19	0.10	0.19	0.10	0.19	-	-	1.8E-05	3.4E-05
3	1.09	1.98	0.82	1.50	0.11	0.20	0.0012	0.0021	0.049	0.090	0.049	0.090	0.049	0.090	-	-	6.0E-06	8.0E-06
RAW	-	-	-	-	-	-	-	-	0.99	0.83	0.47	0.39	0.071	0.059	-	-	-	-
3	-	-	-	-	-	-	-	-	0.99	0.83	0.47	0.39	0.071	0.059	-	-	-	-
4	-	-	-	-	-	-	-	-	0.18	0.21	0.081	0.095	0.015	0.018	-	-	-	-
5	-	-	-	-	-	-	-	-	0.021	0.025	0.0069	0.0081	0.0020	0.0023	-	-	-	-
6	-	-	-	-	-	-	-	-	0.18	0.21	0.081	0.095	0.015	0.018	-	-	-	-
7	-	-	-	-	-	-	-	-	0.021	0.025	0.0069	0.0081	0.0020	0.0023	-	-	-	-
8	-	-	-	-	-	-	-	-	0.33	0.39	0.11	0.13	0.0075	0.0088	-	-	-	-
9	-	-	-	-	-	-	-	-	0.021	0.025	0.0069	0.0081	0.0020	0.0023	-	-	-	-
10	-	-	-	-	-	-	-	-	0.021	0.025	0.0069	0.0081	0.0020	0.0023	-	-	-	-
11	-	-	-	-	-	-	-	-	0.021	0.025	0.0069	0.0081	0.0020	0.0023	-	-	-	-
12	-	-	-	-	-	-	-	-	0.59	0.50	0.28	0.23	0.043	0.036	-	-	-	-
FPILE	-	-	-	-	-	-	-	-	0.99	0.83	0.47	0.39	0.071	0.059	-	-	-	-
TL	-	-	-	-	-	-	-	-	0.99	0.83	0.47	0.39	0.071	0.059	-	-	-	-
ROAD	-	-	-	-	-	-	-	-	1.12	1.05	0.28	0.27	0.028	0.03	-	-	-	-
Totals	4.63	8.46	3.92	7.17	0.46	0.85	0.0070	0.013	6.69	6.20	2.97	2.84	0.63	0.77	-	-	3.2E-05	5.9E-05

[1] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Table 2-F: Additional Emissions during Startup, Shutdown, and Routine Maintenance (SSM)

X This table is intentionally left blank since all emissions at this facility due to routine or predictable startup, shutdown, or scehduled maintenance are no higher than those listed in Table 2-E and a malfunction emission limit is not already permitted or requested. If you are required to report GHG emissions as described in Section 6a, include any GHG emissions during Startup, Shutdown, and/or Scheduled Maintenance (SSM) in Table 2-P. Provide an explanations of SSM emissions in Section 6 and 6a.

All applications for facilities that have emissions during routine our predictable startup, shutdown or scheduled maintenance (SSM)[1], including NOI applications, must include in this table the Maximum Emissions during routine or predictable startup, shutdown and scheduled maintenance (20.2.7 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.D.2 NMAC). In Section 6 and 6a, provide emissions calculations for all SSM emissions reported in this table. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (https://www.env.nm.gov/aqb/permit/aqb_pol.html) for more detailed instructions. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	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	lb/hr	ton/yr
Totals																		

[1] **For instance**, if the short term steady-state Table 2-E emissions are 5 lb/hr and the SSM rate is 12 lb/hr, enter 7 lb/hr in this table. If the annual steady-state Table 2-E emissions are 21.9 TPY, and the number of scheduled SSM events result in annual emissions of 31.9 TPY, enter 10.0 TPY in the table below.

[2] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Table 2-G: Stack Exit and Fugitive Emission Rates for Special Stacks

X I have elected to leave this table blank because this facility does not have any stacks/vents that split emissions from a single source or combine emissions from more than one source listed in table 2-A. Additionally, the emission rates of all stacks match the Requested allowable emission rates stated in Table 2-E.

Use this table to list stack emissions (requested allowable) from split and combined stacks. List Toxic Air Pollutants (TAPs) and Hazardous Air Pollutants (HAPs) in Table 2-I. List all fugitives that are associated with the normal, routine, and non-emergency operation of the facility. Unit and stack numbering must correspond throughout the application package. Refer to Table 2-E for instructions on use of the "-" symbol and on significant figures.

Stack No.	Serving Unit Number(s) from Table 2-A	NOx		CO		VOC		SOx		PM		PM10		PM2.5		□ H_2S or □ Lead	
		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
Totals:																	

Table 2-H: Stack Exit Conditions

Unit and stack numbering must correspond throughout the application package. Include the stack exit conditions for each unit that emits from a stack, including blowdown venting parameters and tank emissions. If the facility has multiple operating scenarios, complete a separate Table 2-H for each scenario and, for each, type scenario name here:

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
1	1	V	No	12	793	785	***	0	150	0.33
2	2	V	No	12	793	785	***	0	150	0.33
3	3	V	No	12	793	785	***	0	150	0.33

Table 2-I: Stack Exit and Fugitive Emission Rates for HAPs and TAPs

In the table below, report the Potential to Emit for each HAP from each regulated emission unit listed in Table 2-A, only if the entire facility emits the HAP at a rate greater than or equal to one (1) ton per year For each such emission unit, HAPs shall be reported to the nearest 0.1 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAPs shall be the sum of all HAP sources calculated to the nearest 0.1 ton per year. Per 20.2.72.403.A.1 NMAC, facilities not exempt [see 20.2.72.402.C NMAC] from TAP permitting shall report each TAP that has an uncontrolled emission rate in excess of its pounds per hour screening level specified in 20.2.72.502 NMAC. TAPs shall be reported using one more significant figure than the number of significant figures shown in the pound per hour threshold corresponding to the substance. Use the HAP nomenclature as it appears in Section 112 (b) of the 1990 CAAA and the TAP nomenclature as it listed in 20.2.72.502 NMAC. Include tank-flashing emissions estimates of HAPs in this table. For each HAP or TAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected or the pollutant is emitted in a quantity less than the threshold amounts described above.

Stack No.	Unit No.(s)	Total HAPs		Provide Pollutant Name Here □ HAP or □ TAP		Provide Pollutant Name Here □ HAP or □ TAP		Provide Pollutant Name Here □ HAP or □ TAP		Provide Pollutant Name Here □ HAP or □ TAP		Provide Pollutant Name Here □ HAP or □ TAP		Provide Pollutant Name Here □ HAP or □ TAP		Provide Pollutant Name Here □ HAP or □ TAP		Provide Pollutant Name Here □ HAP or □ TAP	
		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	lb/hr	ton/yr
1	1	0.010	0.0014																
2	2	0.013	0.0019																
3	3	0.0046	0.00065																
Totals:		0.028	0.0040																

Table 2-J: Fuel

Specify fuel characteristics and usage. Unit and stack numbering must correspond throughout the application package.

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash
1	ultra-low sulfur Diesel	purchased commercial	128,000 Btu/Gallon	12 gallons	43,860 gallons	15 PPM	0
2	ultra-low sulfur Diesel	purchased commercial	128,000 Btu/Gallon	16 gallons	58,480 gallons	15 PPM	0
3	ultra-low sulfur Diesel	purchased commercial	128,000 Btu/Gallon	5.5 gallons	20,103 gallons	15 PPM	0

Table 2-K: Liquid Data for Tanks Listed in Table 2-L

For each tank, list the liquid(s) to be stored in each tank. If it is expected that a tank may store a variety of hydrocarbon liquids, enter "mixed hydrocarbons" in the Composition column for that tank and enter the corresponding data of the most volatile liquid to be stored in the tank. If tank is to be used for storage of different materials, list all the materials in the "All Calculations" attachment, run the newest version of TANKS on each, and use the material with the highest emission rate to determine maximum uncontrolled and requested allowable emissions rate. The permit will specify the most volatile category of liquids that may be stored in each tank. Include appropriate tank-flashing modeling input data. Use additional sheets if necessary. Unit and stack numbering must correspond throughout the application package.

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)

Table 2-L: Tank Data

Include appropriate tank-flashing modeling input data. Use an addendum to this table for unlisted data categories. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary. See reference Table 2-L2. Note: 1.00 bbl = 10.159 M3 = 42.0 gal

Tank No.	**Date Installed**	**Materials Stored**	**Seal Type** (refer to Table 2-LR below)	**Roof Type** (refer to Table 2-LR below)	**Capacity**		**Diameter (M)**	**Vapor Space (M)**	**Color** (from Table VI-C)		**Paint Condition** (from Table VI-C)	**Annual Throughput** (gal/yr)	**Turn-overs** (per year)
					(bbl)	**(M^3)**			**Roof**	**Shell**			

Table 2-L2: Liquid Storage Tank Data Codes Reference Table

Roof Type	Seal Type, Welded Tank Seal Type		Seal Type, Riveted Tank Seal Type		Roof, Shell Color	Paint Condition
FX: Fixed Roof	**Mechanical Shoe Seal**	**Liquid-mounted resilient seal**	**Vapor-mounted resilient seal**	**Seal Type**	**WH**: White	Good
IF: Internal Floating Roof	**A**: Primary only	**A**: Primary only	**A**: Primary only	**A**: Mechanical shoe, primary only	**AS**: Aluminum (specular)	Poor
EF: External Floating Roof	**B**: Shoe-mounted secondary	**B**: Weather shield	**B**: Weather shield	**B**: Shoe-mounted secondary	**AD**: Aluminum (diffuse)	
P: Pressure	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**LG**: Light Gray	
					MG: Medium Gray	
					BL: Black	
					OT: Other (specify)	

Note: 1.00 bbl = 0.159 M^3 = 42.0 gal

Table 2-M: Materials Processed and Produced (Use additional sheets as necessary.)

Material Processed				Material Produced			
Description	**Chemical Composition**	**Phase (Gas, Liquid, or Solid)**	**Quantity (specify units)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (specify units)**
Aggregate, Recycle	Aggregate, Recycle	Solid	150 TPH	Aggregate, Recycle	Sized Aggregate, Recycle	Solid	150 TPH

Table 2-N: CEM Equipment

Enter Continuous Emissions Measurement (CEM) Data in this table. If CEM data will be used as part of a federally enforceable permit condition, or used to satisfy the requirements of a state or federal regulation, include a copy of the CEM's manufacturer specification sheet in the Information Used to Determine Emissions attachment. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Stack No.	Pollutant(s)	Manufacturer	Model No.	Serial No.	Sample Frequency	Averaging Time	Range	Sensitivity	Accuracy
NA									

Table 2-O: Parametric Emissions Measurement Equipment

Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Unit No.	Parameter/Pollutant Measured	Location of Measurement	Unit of Measure	Acceptable Range	Frequency of Maintenance	Nature of Maintenance	Method of Recording	Averaging Time
NA								

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	1	298	25	22,800	footnote 3										
1	mass GHG	493.6	0.0039	0.020											493.7	
	CO_2e	493.6	1.15	0.50												495.3
2	mass GHG	658.2	0.0052	0.026											658.2	
	CO_2e	658.2	1.54	0.66												660.4
3	mass GHG	226.2	0.0018	0.0091											226.2	
	CO_2e	226.2	0.53	0.23												227.0
	mass GHG															
	CO_2e															
	mass GHG															
	CO_2e															
	mass GHG															
	CO_2e															
	mass GHG															
	CO_2e															
	mass GHG															
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	mass GHG															
	CO_2e															
	mass GHG															
	CO_2e															
	mass GHG															
	CO_2e															
	mass GHG															
	CO2e															
Total	mass GHG	1378.0	0.011	0.055											1378.1	
	CO_2e	1378.0	3.22	1.39												1382.6

[1] **GWP** (Global Warming Potential): Applicants must use the most current GWPs codified in Table A-1 of 40 CFR part 98. GWPs are subject to change, therefore, applicants need to check 40 CFR 98 to confirm GWP values.

[2] For **HFCs** or **PFCs** describe the specific HFC or PFC compound and use a separate column for each individual compound.

[3] For each new compound, enter the appropriate GWP for each HFC or PFC compound from Table A-1 in 40 CFR 98.

[4] Green house gas emissions on a **mass basis** is the ton per year green house gas emission before adjustment with its GWP.

[5] **CO_2e** means Carbon Dioxide Equivalent and is calculated by multiplying the TPY mass emissions of the green house gas by its GWP.

Section 3

Application Summary

The **Application Summary** shall include a brief description of the facility and its process, the type of permit application, the applicable regulation (i.e. 20.2.72.200.A.X, or 20.2.73 NMAC) under which the application is being submitted, and any air quality permit numbers associated with this site. If this facility is to be collocated with another facility, provide details of the other facility including permit number(s). In case of a revision or modification to a facility, provide the lowest level regulatory citation (i.e. 20.2.72.219.B.1.d NMAC) under which the revision or modification is being requested. Also describe the proposed changes from the original permit, how the proposed modification will affect the facility's operations and emissions, de-bottlenecking impacts, and changes to the facility's major/minor status (both PSD & Title V).

The **Process Summary** shall include a brief description of the facility and its processes.

Startup, Shutdown, and Maintenance (SSM) routine or predictable emissions: Provide an overview of how SSM emissions are accounted for in this application. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions.

PG Enterprises, LLC (PGE) is applying for a new 20.2.72 NMAC air quality permit for a 150 ton per hour (TPH) aggregate recycle material crushing and screening plant to be operated within the city of Rio Rancho, county of Sandoval, state of New Mexico. Regulation governing this permit application is 20.2.72.200.A(1) NMAC.

PGE has retained Montrose Air Quality Services, LLC (Montrose) to assist with the permit application. The plant will be identified as Rio Rancho Facility and is located 0.32 miles northwest of the intersection of Northern Blvd NE and Loma Colorado Blvd NE on Lumberman Road NE, Lots 5-8, Block 86, S.E. Portion of Unit 13, Rio Rancho Estates, in Rio Rancho, NM. Facility-wide "potential" emission rates are less than 100 tons per year for a single pollutant making it a minor source.

The 150 tph aggregate crushing and screening plant will include a raw material storage pile, a feeder, primary crusher with under conveyor, secondary crusher with under conveyor, screen with two (2) under conveyors, five (5) transfer conveyors, and a stacker conveyor. The plant will be powered by a 230 horsepower (hp) generator/engine for the jaw crusher, 309 horsepower (hp) generator/engine for the impact crusher, and 100 horsepower (hp) generator/engine for the screen. Processed aggregate will be stored in a finish storage pile then transported by haul trucks to off-site sales. The aggregate crushing and screening plant will limit a daily average hourly processing rate to 150 tph and an annual limit of 350,000 tpy. Aggregate processing hours will be limited from 8 AM to 4 PM daily in the winter months and 7 AM to 6 PM daily in the spring, summer, and fall months. The hours of operation are presented below in Table 3-1.

TABLE 3-1: HMA Plant #2 and #5 Plant Hours of Operation (MST)

	Winter	Spring	Summer	Fall
12:00 AM	0	0	0	0
1:00 AM	0	0	0	0
2:00 AM	0	0	0	0
3:00 AM	0	0	0	0
4:00 AM	0	0	0	0
5:00 AM	0	0	0	0
6:00 AM	0	0	0	0
7:00 AM	0	1	1	1
8:00 AM	1	1	1	1
9:00 AM	1	1	1	1
10:00 AM	1	1	1	1
11:00 AM	1	1	1	1
12:00 PM	1	1	1	1
1:00 PM	1	1	1	1
2:00 PM	1	1	1	1
3:00 PM	1	1	1	1
4:00 PM	0	1	1	1
5:00 PM	0	1	1	1
6:00 PM	0	0	0	0
7:00 PM	0	0	0	0
8:00 PM	0	0	0	0
9:00 PM	0	0	0	0
10:00 PM	0	0	0	0
11:00 PM	0	0	0	0
Total	**8**	**11**	**11**	**11**

Routine or predictable emissions during Startup, Shutdown, and Maintenance (SSM)

No SSM emissions are predicted for this permit application. All control systems will be operational prior to the start or shutdown of aggregate processing. Maintenance will be performed during period with no production.

Section 4

Process Flow Sheet

A **process flow sheet** and/or block diagram indicating the individual equipment, all emission points and types of control applied to those points. The unit numbering system should be consistent throughout this application.

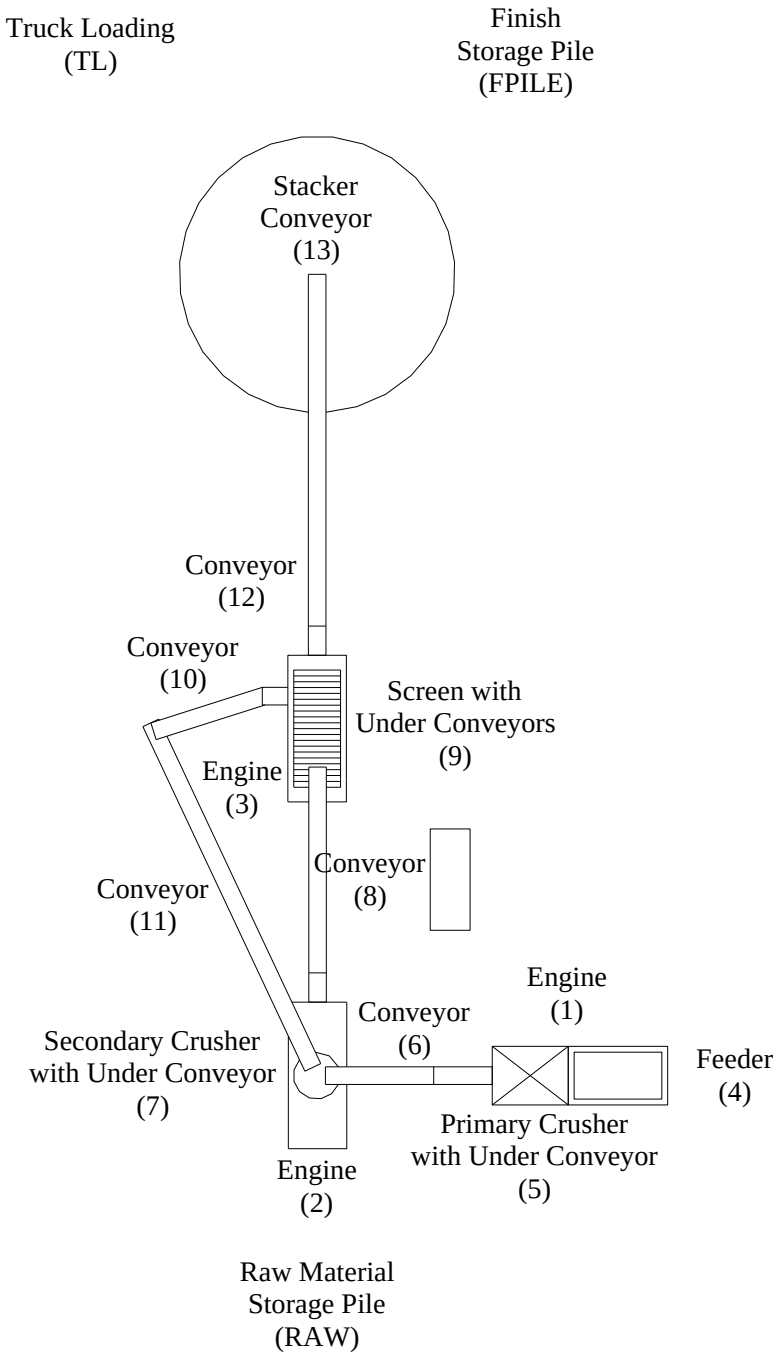

Figure 4-1: Crushing & Screening Plant Equipment Layout

Section 5

Plot Plan Drawn To Scale

A **plot plan drawn to scale** showing emissions points, roads, structures, tanks, and fences of property owned, leased, or under direct control of the applicant. This plot plan must clearly designate the restricted area as defined in UA1, Section 1-D.12. The unit numbering system should be consistent throughout this application.

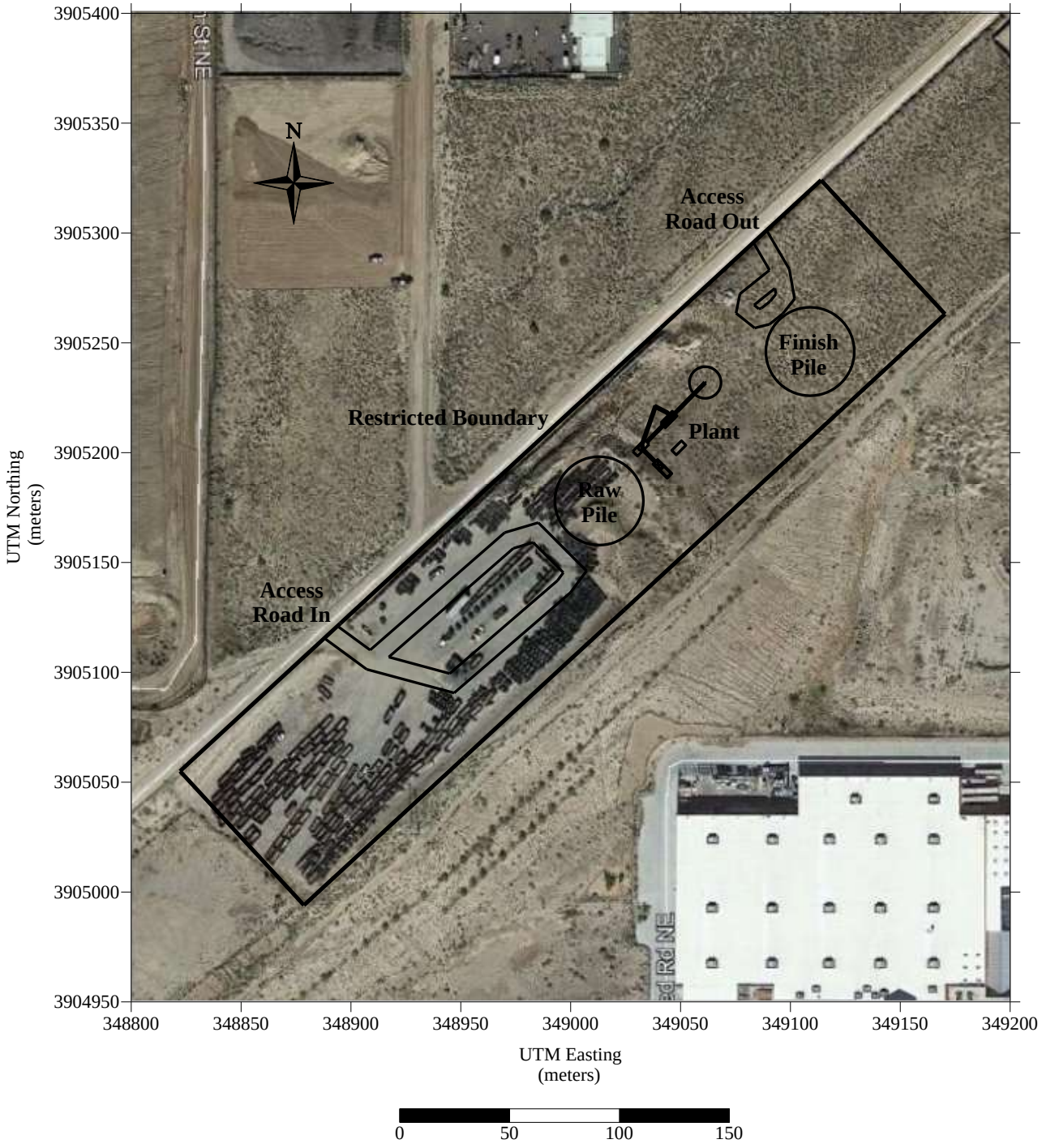

Figure 5-1: Facility Plot Plan

Section 6

All Calculations

Show all calculations used to determine both the hourly and annual controlled and uncontrolled emission rates. All calculations shall be performed keeping a minimum of three significant figures. Document the source of each emission factor used (if an emission rate is carried forward and not revised, then a statement to that effect is required). If identical units are being permitted and will be subject to the same operating conditions, submit calculations for only one unit and a note specifying what other units to which the calculations apply. All formulas and calculations used to calculate emissions must be submitted. The "Calculations" tab in the UA2 has been provided to allow calculations to be linked to the emissions tables. Add additional "Calc" tabs as needed. If the UA2 or other spread sheets are used, all calculation spread sheet(s) shall be submitted electronically in Microsoft Excel compatible format so that formulas and input values can be checked. Format all spread sheets and calculations such that the reviewer can follow the logic and verify the input values. Define all variables. If calculation spread sheets are not used, provide the original formulas with defined variables. Additionally, provide subsequent formulas showing the input values for each variable in the formula. All calculations, including those calculations are imbedded in the Calc tab of the UA2 portion of the application, the printed Calc tab(s), should be submitted under this section.

Tank Flashing Calculations: The information provided to the AQB shall include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., NOI, permit, or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis. If Hysis is used, all relevant input parameters shall be reported, including separator pressure, gas throughput, and all other relevant parameters necessary for flashing calculation.

SSM Calculations: It is the applicant's responsibility to provide an estimate of SSM emissions or to provide justification for not doing so. In this Section, provide emissions calculations for Startup, Shutdown, and Routine Maintenance (SSM) emissions listed in the Section 2 SSM and/or Section 22 GHG Tables and the rational for why the others are reported as zero (or left blank in the SSM/GHG Tables). Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on calculating SSM emissions. If SSM emissions are greater than those reported in the Section 2, Requested Allowables Table, modeling may be required to ensure compliance with the standards whether the application is NSR or Title V. Refer to the Modeling Section of this application for more guidance on modeling requirements.

Glycol Dehydrator Calculations: The information provided to the AQB shall include the manufacturer's maximum design recirculation rate for the glycol pump. If GRI-Glycalc is used, the full input summary report shall be included as well as a copy of the gas analysis that was used.

Road Calculations: Calculate fugitive particulate emissions and enter haul road fugitives in Tables 2-A, 2-D and 2-E for:

1. If you transport raw material, process material and/or product into or out of or within the facility and have PER emissions greater than 0.5 tpy.
2. If you transport raw material, process material and/or product into or out of the facility more frequently than one round trip per day.

Significant Figures:

A. All emissions standards are deemed to have at least two significant figures, but not more than three significant figures.

B. At least 5 significant figures shall be retained in all intermediate calculations.

C. In calculating emissions to determine compliance with an emission standard, the following rounding off procedures shall be used:

(1) If the first digit to be discarded is less than the number 5, the last digit retained shall not be changed;

(2) If the first digit discarded is greater than the number 5, or if it is the number 5 followed by at least one digit other than the number zero, the last figure retained shall be increased by one unit; **and**

(3) If the first digit discarded is exactly the number 5, followed only by zeros, the last digit retained shall be rounded upward if it is an odd number, but no adjustment shall be made if it is an even number.

(4) The final result of the calculation shall be expressed in the units of the standard.

Control Devices: In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions. The applicant can indicate in this section of the

application if they chose to not take credit for the reduction in emission rates. For notices of intent submitted under 20.2.73 NMAC, only uncontrolled emission rates can be considered to determine applicability unless the state or federal Acts require the control. This information is necessary to determine if federally enforceable conditions are necessary for the control device, and/or if the control device produces its own regulated pollutants or increases emission rates of other pollutants.

Aggregate Crushing/Screening Plant

Pre-Control Particulate Emission Rates

Material Handling ($PM_{2.5}$, PM_{10}, and PM)

To estimate material handling pre-control particulate emissions rates for crushing, screening, and conveyor transfer operations, emission factors were obtained from EPA's Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, Aug. 2004, Section 11.19.2, Table 11.19.2-2. To determine missing $PM_{2.5}$ emission factors the ratio of 0.35/0.053 from $PM_{10}/PM_{2.5}$ *k* factors found in AP-42 Section 13.2.4 (11/2006) were used.

To estimate material handling pre-control particulate emission rates for aggregate handling operations (Units RAW, 4 (Feeder), FPILE, and TL), 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 (11/2004), where the k (PM = 0.74, PM_{10} = 0.35, $PM_{2.5}$ = 0.053), wind speed for determining the maximum hourly emission rate is the NMED default of 11 MPH and for determining annual emission rate is based on the average wind speed for Albuquerque for the years of 1996 through 2006 of 8.5 mph, and the NMED default moisture content of 2 percent.

Maximum hourly production for the plant is as follows:

Plant	Tons Per Hour	Tons Per Year
Aggregate Crusher/Screen Plant	150	350,000

Uncontrolled annual emissions for tons per year (tpy) were calculated assuming maximum annual operation for 8760 hours per year.

Aggregate Material Handling – Storage Piles, Feed Bin Loading, and Truck Loading Emission Equation:

Maximum Hour Emission Factor

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 $(11/5)^{1.3}$ / $(2/2)^{1.4}$

E_{PM10} (lbs/ton) = 0.35 x 0.0032 x $(11/5)^{1.3}$ / $(2/2)^{1.4}$

$E_{PM2.5}$ (lbs/ton) = 0.053 x 0.0032 x $(11/5)^{1.3}$ / $(2/2)^{1.4}$

E_{PM} (lbs/ton) = 0.00660 lbs/ton;

E_{PM10} (lbs/ton) = 0.00312 lbs/ton

$E_{PM2.5}$ (lbs/ton) = 0.00047 lbs/ton

Annual Emission Factor

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 $(8.5/5)^{1.3}$ / $(2/2)^{1.4}$

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

$E_{PM2.5}$ (lbs/ton) = 0.053 x 0.0032 x $(8.5/5)^{1.3}$ / $(2/2)^{1.4}$

E_{PM} (lbs/ton) = 0.00472 lbs/ton;

E_{PM10} (lbs/ton) = 0.00223 lbs/ton

$E_{PM2.5}$ (lbs/ton) = 0.00034 lbs/ton

AP-42 Section 11.19.2 Table 11.19.2-2 Emission Factors:

All Bin Unloading and Conveyor Transfers = Uncontrolled Conveyor Transfer Point Emission Factor
Crushing = Uncontrolled Tertiary Crushing Emission Factor
Screening = Uncontrolled Screening Emission Factor

Material Handling Emission Factors:

Process Unit	PM Emission Factor (lbs/ton)	PM_{10} Emission Factor (lbs/ton)	$PM_{2.5}$ Emission Factor (lbs/ton)
Uncontrolled Crushing	0.00540	0.00240	0.00036
Uncontrolled Screening	0.02500	0.00870	0.00132
Feed Bin Unloading, and Conveyor Transfers	0.00300	0.00110	0.00017
Uncontrolled Hourly Aggregate Storage Piles, Aggregate Feeder Loading, Truck Loading	0.00660	0.00312	0.00047
Uncontrolled Annual Aggregate Storage Piles, Aggregate Feeder Loading, Truck Loading	0.00472	0.00223	0.00034

The following equation was 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 equation 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 6-1 Pre-Controlled Material Processing Emission Rates

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)
RAW	Raw Material	150	0.99	3.10	0.47	1.47	0.071	0.22
4	Feeder	150	0.99	3.10	0.47	1.47	0.071	0.22
5	Jaw Crusher	150	0.81	3.55	0.36	1.58	0.067	0.29
6	Conveyor	150	0.45	1.97	0.17	0.72	0.049	0.21
7	Impact Crusher	150	0.81	3.55	0.36	1.58	0.067	0.29
8	Conveyor	150	0.45	1.97	0.17	0.72	0.049	0.21
9	Screen	150	3.75	16.43	1.31	5.72	0.088	0.39
10	Conveyor	150	0.45	1.97	0.17	0.72	0.049	0.21
11	Conveyor	150	0.45	1.97	0.17	0.72	0.049	0.21
12	Conveyor	150	0.45	1.97	0.17	0.72	0.049	0.21
13	Stacker Conveyor	150	0.99	3.10	0.47	1.47	0.071	0.22
FPILE	Finish Pile	150	0.99	3.10	0.47	1.47	0.071	0.22
TL	Truck Loading	150	0.99	3.10	0.47	1.47	0.071	0.22
		TOTALS	**11.18**	**39.58**	**2.85**	**10.09**	**0.28**	**1.01**

Aggregate Crusher/Screen Plant and Scalping Screen Plant Haul Truck Travel

Haul truck travel emissions were estimated using AP-42, Section 13.2.2 (ver.11/06) "Unpaved Roads" emission. The main haul road in and out of the site will be unpaved. See Figure 5-1 for identification of haul roads. Table 6-6 summarizes the emission rate for each haul truck category.

Unpaved Roads
AP-42, Section 13.2.2 (ver.11/06) "Unpaved Roads"

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

Where k = constant PM2.5 = 0.15
PM10 = 1.5
PM = 4.9
s = % silt content (Table 13.2.2-1, "Sand and Gravel" 4.8%)
W = mean vehicle weight (28.75 tons – 17.5 tons truck, 22.5 tons load)
p = number of days with at least 0.01 in of precip. (70 days)
a = Constant PM2.5 = 0.9
PM10 = 0.9
PM = 0.7
b = Constant PM2.5 = 0.45
PM10 = 0.45
PM = 0.45
Vehicle Dust Control 0%

Trucks per Hour
Incoming Aggregate Trucks = 6.7 truck per hour average
Outgoing Aggregate Trucks = 6.7 truck per hour average

Trucks per Year
Incoming Aggregate Trucks = 58,400 truck per year
Outgoing Aggregate Trucks = 58,400 truck per year

VMT =Vehicle Miles Traveled
Incoming Aggregate Trucks Unpaved – 0.17461 miles per vehicle
Outgoing Aggregate Trucks Unpaved – 0.06048 miles per vehicle

Miles Traveled
Incoming Aggregate Trucks Unpaved – 1.16406 miles per hour; 10,197 miles/yr
Outgoing Aggregate Trucks Unpaved – 0.06048 miles per hour; 3,532 miles/yr

Reduction in emissions due to precipitation was only accounted for in the annual emission rate. Particulate emission rate per vehicle mile traveled for each particle size category is:

Hourly Emission Rate Factor – 0% Control
PM = 7.13379 lbs/VMT
PM10 = 1.81814 lbs/VMT
PM2.5 = 0.18181 lbs/VMT

Annual Emission Rate Factor – 0% Control
PM = 5.76567 lbs/VMT
PM10 = 0.95483 lbs/VMT
PM2.5 = 0.09548 lbs/VMT

Table 6-6: Pre-Controlled Haul Road Fugitive Dust Emission Rates

Process Unit Description	Process Rate	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)
Aggregate Plant Incoming Haul Truck Unpaved	1.16406 miles/hr; 10,197 miles/yr	8.30	29.40	2.12	7.49	0.21	0.75
Aggregate Plant Outcoming Haul Truck Unpaved	0.06048 miles/hr; 3,532 miles/yr	2.88	10.18	0.73	2.59	0.073	0.26
	TOTALS	**11.18**	**39.58**	**2.85**	**10.09**	**0.28**	**1.01**

Controlled Particulate Emission Rates

No controls or emission reductions for combustion emissions (NO_X, CO, SO_2, VOC, or PM) are proposed for the jaw crusher plant engine (Unit 1), impact crusher engine (Unit 2), or screen plant engine (Unit 3) with the exception of limiting annual hours of operation.

Controlled Material Handling ($PM_{2.5}$, PM_{10}, and PM)

No fugitive dust controls or emission reductions are proposed for the for Units RAW, 4 (Feeder), FPILE, and TL with the exception of limiting the annual production rate to 350,000 tons per year.

Fugitive dust control for unloading the aggregate feed bins onto conveyors will be controlled, as needed, with enclosures and/or water sprays at the exit of the feed bins. Fugitive dust control for the transfer conveyors will be controlled with material moisture content and/or enclosure. It is estimated that these methods will control to an efficiency of 95.3 percent per AP-42 Section 11.19.2, Table 11.19.2-2. Additional emission reductions include limiting annual production rates.

Fugitive dust control from the plant crushers will be controlled, as needed, with enclosures and/or water sprays. It is estimated that these methods will control to an efficiency of 77.8 percent for crushing operations per AP42 Section 11.19.2, Table 11.19.2-2. Additional emission reductions include limiting annual production rates.

Fugitive dust control from the plant screen will be controlled, as needed, with enclosures and/or water sprays. It is estimated that these methods will control to an efficiency of 91.2 percent for screening operations per AP42 Section 11.19.2, Table 11.19.2-2. Additional emission reductions include limiting annual production rates.

Fugitive dust control for the stacker conveyor transfer to storage piles will be controlled with material moisture content and/or enclosure. It is estimated that the additional moisture during processing will increase the moisture content from the default of 2% to the high moisture content value found in footnote b of AP-42 Table 11.19.2-2 of 2.88%. This will control fugitive emissions to an efficiency of 40 percent. Additional emission reductions include limiting annual production rates.

To estimate material handling control particulate emissions rates for crushing, screening, and conveyor transfer operations, emission factors were obtained from EPA's Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, Aug. 2004, Section 11.19.2, Table 11.19.2-2.

To estimate material handling particulate emission rates for aggregate handling operations (raw material/aggregate storage piles/ loading feed bins, haul truck 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 (11/2004), where the k (TSP = 0.74, PM_{10} = 0.35, $PM_{2.5}$ = 0.053), wind speed for determining the maximum hourly emission rate is the NMED default of 11 MPH and for determining annual emission rate is based on the average wind speed for Albuquerque for the years of 1996 through 2006 of 8.5 mph, and the NMED default moisture content of 2 percent.

Maximum production for the plant is as follows:

Plant	Tons Per Hour	Tons Per Year
Aggregate Crusher/Screen Plant	150	350,000

Aggregate Storage Piles, Feed Bin Loading, and Truck Loading Emission Equation:

Maximum Hour Emission Factor

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 $(11/5)^{1.3}$ / $(2/2)^{1.4}$

E_{PM10} (lbs/ton) = 0.35 x 0.0032 x $(11/5)^{1.3}$ / $(2/2)^{1.4}$

$E_{PM2.5}$ (lbs/ton) = 0.053 x 0.0032 x $(11/5)^{1.3}$ / $(2/2)^{1.4}$

E_{PM} (lbs/ton) = 0.00660 lbs/ton;

E_{PM10} (lbs/ton) = 0.00312 lbs/ton

$E_{PM2.5}$ (lbs/ton) = 0.00047 lbs/ton

Aggregate Storage Pile Loading from Stacker Conveyor Emission Equation:

Maximum Hour Emission Factor

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 $(11/5)^{1.3}$ / $(2.88/2)^{1.4}$

E_{PM10} (lbs/ton) = 0.35 x 0.0032 x $(11/5)^{1.3}$ / $(2.88/2)^{1.4}$

$E_{PM2.5}$ (lbs/ton) = 0.053 x 0.0032 x $(11/5)^{1.3}$ / $(2.88/2)^{1.4}$

E_{PM} (lbs/ton) = 0.00396 lbs/ton;

E_{PM10} (lbs/ton) = 0.00187 lbs/ton

$E_{PM2.5}$ (lbs/ton) = 0.00028 lbs/ton

Aggregate Storage Piles, Feed Bin Loading, and Truck Loading Emission Equation:

Annual Emission Factor

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 $(8.5/5)^{1.3}$ / $(2/2)^{1.4}$

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

$E_{PM2.5}$ (lbs/ton) = 0.053 x 0.0032 x $(8.5/5)^{1.3}$ / $(2/2)^{1.4}$

E_{PM} (lbs/ton) = 0.00472 lbs/ton;

E_{PM10} (lbs/ton) = 0.00223 lbs/ton

$E_{PM2.5}$ (lbs/ton) = 0.00034 lbs/ton

Aggregate Storage Pile Loading from Stacker Conveyor Emission Equation:

Annual Emission Factor

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 $(8.5/5)^{1.3}$ / $(2.88/2)^{1.4}$

E_{PM10} (lbs/ton) = 0.35 x 0.0032 x $(8.5/5)^{1.3}$ / $(2.88/2)^{1.4}$

$E_{PM2.5}$ (lbs/ton) = 0.053 x 0.0032 x $(8.5/5)^{1.3}$ / $(2.88/2)^{1.4}$

E_{PM} (lbs/ton) = 0.00283 lbs/ton;

E_{PM10} (lbs/ton) = 0.00134 lbs/ton

$E_{PM2.5}$ (lbs/ton) = 0.00020 lbs/ton

AP-42 Emission Factors:

Feed Bin Unloading = Controlled Conveyor Transfer Point Emission Factor
Crusher = Controlled Tertiary Crusher Emission Factor
Screen = Controlled Screening Emission Factor
Transfer Conveyor = Controlled Conveyor Transfer Point Emission Factor

Material Handling Emission Factors:

Process Unit	PM Emission Factor (lbs/ton)	PM_{10} Emission Factor (lbs/ton)	$PM_{2.5}$ Emission Factor (lbs/ton)
Controlled Crushing	0.00120	0.00054	0.00010
Controlled Screening	0.00220	0.00074	0.00005
Controlled Feeder Unloading and Conveyor Transfers	0.00014	0.00005	0.000013
Mining, Aggregate Storage Piles, Feeder Loading Maximum Hourly	0.00660	0.00312	0.00047
Mining, Aggregate Storage Piles, Feeder Loading Annual Hourly	0.00472	0.00223	0.00034
Stacker Conveyor to Pile Maximum Hourly	0.00396	0.00187	0.00028
Stacker Conveyor to Pile Annual Hourly	0.00283	0.00134	0.00020

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

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

Table 6-4 Allowable Regulated Process Equipment Emission Rates

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)
RAW	Raw Material	150	0.99	0.83	0.47	0.39	0.071	0.059
4	Feeder	150	0.99	0.83	0.47	0.39	0.071	0.059
5	Jaw Crusher	150	0.18	0.21	0.081	0.095	0.015	0.018
6	Conveyor	150	0.021	0.025	0.0069	0.0081	0.0020	0.0023
7	Impact Crusher	150	0.18	0.21	0.081	0.095	0.015	0.018
8	Conveyor	150	0.021	0.025	0.0069	0.0081	0.0020	0.0023
9	Screen	150	0.33	0.39	0.11	0.13	0.0075	0.0088
10	Conveyor	150	0.021	0.025	0.0069	0.0081	0.0020	0.0023
11	Conveyor	150	0.021	0.025	0.0069	0.0081	0.0020	0.0023
12	Conveyor	150	0.021	0.025	0.0069	0.0081	0.0020	0.0023
13	Stacker Conveyor	150	0.59	0.50	0.28	0.23	0.043	0.036
FPILE	Finish Pile	150	0.99	0.83	0.47	0.39	0.071	0.059
TL	Truck Loading	150	0.99	0.83	0.47	0.39	0.071	0.059
		TOTALS	**5.35**	**4.73**	**2.46**	**2.16**	**0.37**	**0.33**

Aggregate Crusher/Screen Plant Haul Truck Travel

Haul truck travel emissions were estimated using AP-42, Section 13.2.2 (ver.11/06) "Unpaved Roads" emission. The main haul road in and out of the site will be unpaved. See Figure 5-1 for identification of haul roads. Haul road emission controls will include asphalt millings and water for a 90% control. Table 6-6 summarizes the emission rate for each haul truck category.

Unpaved Roads
AP-42, Section 13.2.2 (ver.11/06) "Unpaved Roads"

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

Where k = constant PM2.5 = 0.15
PM10 = 1.5
PM = 4.9
s = % silt content (Table 13.2.2-1, "Sand and Gravel" 4.8%)
W = mean vehicle weight (28.75 tons – 17.5 tons truck, 22.5 tons load)
p = number of days with at least 0.01 in of precip. (70 days)
a = Constant PM2.5 = 0.9
PM10 = 0.9
PM = 0.7
b = Constant PM2.5 = 0.45
PM10 = 0.45
PM = 0.45
Vehicle Dust Control 90%

Trucks per Hour
Incoming Aggregate Trucks = 6.7 truck per hour average
Outgoing Aggregate Trucks = 6.7 truck per hour average

Trucks per Year
Incoming Aggregate Trucks = 15,556 truck per year
Outgoing Aggregate Trucks = 15,556 truck per year

VMT =Vehicle Miles Traveled
Incoming Aggregate Trucks Unpaved – 0.17461 miles per vehicle
Outgoing Aggregate Trucks Unpaved – 0.06048 miles per vehicle

Miles Traveled
Incoming Aggregate Trucks Unpaved – 1.16406 miles per hour; 2,716 miles/yr
Outgoing Aggregate Trucks Unpaved – 0.06048 miles per hour; 941 miles/yr

Reduction in emissions due to precipitation was only accounted for in the annual emission rate. Particulate emission rate per vehicle mile traveled for each particle size category is:

Hourly Emission Rate Factor – 90% Control
PM = 0.71338 lbs/VMT
PM10 = 0.18181 lbs/VMT
PM2.5 = 0.01818 lbs/VMT

Annual Emission Rate Factor – 90% Control
PM = 0.57657 lbs/VMT
PM10 = 0.09548 lbs/VMT
PM2.5 = 0.00955 lbs/VMT

Table 6-6: Potential Haul Road Fugitive Dust Emission Rates – Crusher/Screen

Process Unit Description	Process Rate	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)
Aggregate Plant Incoming Haul Truck Unpaved	1.16406 miles/hr; 2,716 miles/yr	0.83	0.78	0.21	0.20	0.021	0.020
Aggregate Plant Outcoming Haul Truck Unpaved	0.06048 miles/hr; 941 miles/yr	0.29	0.27	0.073	0.069	0.0073	0.0069
	TOTALS	**1.12**	**1.05**	**0.28**	**0.27**	**0.028**	**0.027**

Estimates for 230 hp Aggregate Jaw Crusher Plant Diesel-Fired Engine (NO_X, CO, SO_2, VOC, PM, and GHG)

A 230 horsepower (hp), 172 kilowatt (kW) engine (Unit 1) provides power to the aggregate jaw crusher plant. Emission rates for NO_X, CO, PM and NMHC (10% of NO_X + NMHC) are based on EPA Tier 3 emission factors. Sulfur dioxide (SO_2) emissions are estimated based on sulfur content of diesel fuel, not to exceed 0.0015% fuel content and a fuel usage rate of 12.0 gal/hr. GHG emission rates are found in EPA Emission Factors. Uncontrolled annual emissions in tons per year (tpy) were calculated assuming operation of 8760 hours per year. Controlled annual emissions in tons per year (tpy) were calculated assuming operation of 3655 hours per year.

EPA Tier 3:

Pollutant	Emission Factor (g/kW-hr)
Nitrogen Oxide (NO_X+NMHC)	4.00
Carbon Monoxides	3.50
Particulate	0.20
Hydrocarbons (10% of NO_X+NMHC)	0.40

Sulfur dioxide emission rate was calculated using the fuel consumption rate for this engine of 12.0 gallons per hour, a fuel density of 7.0 pounds per gallon, a fuel sulfur content of 15 PPM, and a sulfur to sulfur dioxide conversion factor of two (2). 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

$$\text{Emission Rate (lbs/hr)} = \frac{12 \text{ gallons}}{\text{hr}} \left| \frac{7.0 \text{ lbs}}{\text{gallon}} \right| \frac{0.000015 \text{ lbs Sulfur}}{\text{lbs of fuel}} \left| \frac{2 \text{ lbs Sulfur Dioxide}}{1 \text{ lb Sulfur}} \right.$$

Emission Rate (lbs/hr) = 0.0025 lbs/hr

Carbon Dioxide emissions were estimated using March 9, 2018 EPA Emission Factors for Greenhouse Gas Inventories:

CO_2 Emission Factor	10.21 kg/gal
CH_4 Emission Factor	0.41 g/gal
N_20 Emission Factor	0.08 g/gal

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

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

Table 6-7: Pre-Controlled Combustion Emission Rates

Process Unit Number	Pollutant	Generator Rating (kW)	Emission Rate (lbs/hr)	Emission Rate (tons/yr)
1	NO_X	172	1.51	6.62
	CO	172	1.32	5.80
	SO_2	172	0.0025	0.0110
	VOC	172	0.15	0.66
	PM	172	0.076	0.33
	CO_2	172	270.11	1183.1
	CH_4	172	0.011	0.048
	N_2O	172	0.0021	0.0093

Table 6-8: Controlled Combustion Emission Rates

Process Unit Number	Pollutant	Generator Rating (kW)	Emission Rate (lbs/hr)	Emission Rate (tons/yr)
1	NO_X	172	1.51	2.76
	CO	172	1.32	2.42
	SO_2	172	0.0025	0.0046
	VOC	172	0.15	0.28
	PM	172	0.076	0.14
	CO_2	172	270.11	493.6
	CH_4	172	0.011	0.020
	N_2O	172	0.0021	0.0039

Estimates for 309 hp Aggregate Impact Crusher Plant Diesel-Fired Engine (NO_X, CO, SO_2, VOC, PM, and GHG)

A 309 horsepower (hp), 230 kilowatt (kW) engine (Unit 2) provides power to the aggregate impact crusher plant. Emission rates for NO_X, CO, PM and NMHC (10% of NO_X + NMHC) are based on EPA Tier 3 emission factors. Sulfur dioxide (SO_2) emissions are estimated based on sulfur content of diesel fuel, not to exceed 0.0015% fuel content and a fuel usage rate of 16.0 gal/hr. GHG emission rates are found in EPA Emission Factors. Uncontrolled annual emissions in tons per year (tpy) were calculated assuming operation of 8760 hours per year. Controlled annual emissions in tons per year (tpy) were calculated assuming operation of 3655 hours per year.

EPA Tier 3:

Pollutant	Emission Factor (g/kW-hr)
Nitrogen Oxide (NO_X+NMHC)	4.00
Carbon Monoxides	3.50
Particulate	0.20
Hydrocarbons (10% of NO_X+NMHC)	0.40

Sulfur dioxide emission rate was calculated using the fuel consumption rate for this engine of 12.0 gallons per hour, a fuel density of 7.0 pounds per gallon, a fuel sulfur content of 15 PPM, and a sulfur to sulfur dioxide conversion factor of two (2). 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

$$\text{Emission Rate (lbs/hr)} = \frac{16 \text{ gallons}}{\text{hr}} \left| \frac{7.0 \text{ lbs}}{\text{gallon}} \right| \frac{0.000015 \text{ lbs Sulfur}}{\text{lbs of fuel}} \left| \frac{2 \text{ lbs Sulfur Dioxide}}{1 \text{ lb Sulfur}} \right.$$

Emission Rate (lbs/hr) = 0.0034 lbs/hr

Carbon Dioxide emissions were estimated using March 9, 2018 EPA Emission Factors for Greenhouse Gas Inventories:

CO_2 Emission Factor	10.21 kg/gal
CH_4 Emission Factor	0.41 g/gal
N_20 Emission Factor	0.08 g/gal

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

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

Table 6-9: Pre-Controlled Combustion Emission Rates

Process Unit Number	Pollutant	Generator Rating (kW)	Emission Rate (lbs/hr)	Emission Rate (tons/yr)
2	NO_X	230	2.03	8.90
	CO	230	1.78	7.79
	SO_2	230	0.0034	0.015
	VOC	230	0.20	0.89
	PM	230	0.10	0.44
	CO_2	230	360.15	1577.4
	CH_4	230	0.014	0.063
	N_2O	230	0.0028	0.012

Table 6-10: Controlled Combustion Emission Rates

Process Unit Number	Pollutant	Generator Rating (kW)	Emission Rate (lbs/hr)	Emission Rate (tons/yr)
2	NO_X	230	2.03	3.71
	CO	230	1.78	3.25
	SO_2	230	0.0034	0.0061
	VOC	230	0.20	0.37
	PM	230	0.10	0.19
	CO_2	230	360.15	658.2
	CH_4	230	0.014	0.026
	N_2O	230	0.0028	0.0052

Estimates for 100 hp Aggregate Screen Plant Diesel-Fired Engine (NO_X, CO, SO_2, VOC, PM, and GHG)

A 100 horsepower (hp), 75 kilowatt (kW) engine (Unit 3) provides power to the aggregate screen plant. Emission rates for NO_X, CO, PM and NMHC (10% of NO_X + NMHC) are based on EPA Tier 2 emission factors. Sulfur dioxide (SO_2) emissions are estimated based on sulfur content of diesel fuel, not to exceed 0.0015% fuel content and a fuel usage rate of 5.5 gal/hr. GHG emission rates are found in EPA Emission Factors. Uncontrolled annual emissions in tons per year (tpy) were calculated assuming operation of 8760 hours per year. Controlled annual emissions in tons per year (tpy) were calculated assuming operation of 3655 hours per year.

EPA Tier 2:

Pollutant	Emission Factor (g/kW-hr)
Nitrogen Oxide (NO_X+NMHC)	6.6
Carbon Monoxides	5.0
Particulate	0.30
Hydrocarbons (10% of NO_X+NMHC)	0.66

Sulfur dioxide emission rate was calculated using the fuel consumption rate for this engine of 5.5 gallons per hour, a fuel density of 7.0 pounds per gallon, a fuel sulfur content of 15 PPM, and a sulfur to sulfur dioxide conversion factor of two (2). 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

$$\text{Emission Rate (lbs/hr)} = \frac{5.5 \text{ gallons}}{\text{hr}} \left| \frac{7.0 \text{ lbs}}{\text{gallon}} \right| \frac{0.000015 \text{ lbs Sulfur}}{\text{lbs of fuel}} \left| \frac{2 \text{ lbs Sulfur Dioxide}}{1 \text{ lb Sulfur}} \right.$$

Emission Rate (lbs/hr) = 0.0012 lbs/hr

Carbon Dioxide emissions were estimated using March 9, 2018 EPA Emission Factors for Greenhouse Gas Inventories:

CO_2 Emission Factor	10.21 kg/gal
CH_4 Emission Factor	0.41 g/gal
N_20 Emission Factor	0.08 g/gal

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

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

Table 6-11: Pre-Controlled Combustion Emission Rates

Process Unit Number	Pollutant	Generator Rating (kW)	Emission Rate (lbs/hr)	Emission Rate (tons/yr)
3	NO_X	75	1.09	4.75
	CO	75	0.82	3.60
	SO_2	75	0.0012	0.0051
	VOC	75	0.11	0.48
	PM	75	0.049	0.22
	CO_2	75	360.15	1577.4
	CH_4	75	0.014	0.063
	N_2O	75	0.0028	0.012

Table 6-12: Controlled Combustion Emission Rates

Process Unit Number	Pollutant	Generator Rating (kW)	Emission Rate (lbs/hr)	Emission Rate (tons/yr)
3	NO_X	75	1.09	1.98
	CO	75	0.82	1.50
	SO_2	75	0.0012	0.0021
	VOC	75	0.11	0.20
	PM	75	0.049	0.090
	CO_2	75	360.15	226.2
	CH_4	75	0.014	0.0091
	N_2O	75	0.0028	0.0018

Table 6-13 Summary of Uncontrolled NOx, CO, SO2, VOC, and PM Emission Rates

Uncontrolled Emission Totals															
		NOx		CO		SO_2		VOC		PM		PM_{10}		$PM_{2.5}$	
Unit #	Description	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
1	Jaw Crusher Plant Engine	1.51	6.62	1.32	5.80	0.0025	0.011	0.15	0.66	0.076	0.33	0.076	0.33	0.076	0.33
2	Impact Crusher Plant Engine	2.03	8.90	1.78	7.79	0.0034	0.015	0.20	0.89	0.10	0.44	0.10	0.44	0.10	0.44
3	Screen Plant Engine	1.09	4.75	0.82	3.60	0.0012	0.0051	0.11	0.48	0.049	0.22	0.049	0.22	0.049	0.22
RAW	Raw Material	-	-	-	-	-	-	-	-	0.99	3.10	0.47	1.47	0.071	0.22
4	Feeder	-	-	-	-	-	-	-	-	0.99	3.10	0.47	1.47	0.071	0.22
5	Jaw Crusher with under conveyor	-	-	-	-	-	-	-	-	0.81	3.55	0.36	1.58	0.067	0.29
6	Conveyor	-	-	-	-	-	-	-	-	0.45	1.97	0.17	0.72	0.049	0.21
7	Impact Crusher with under conveyor	-	-	-	-	-	-	-	-	0.81	3.55	0.36	1.58	0.067	0.29
8	Conveyor	-	-	-	-	-	-	-	-	0.45	1.97	0.17	0.72	0.049	0.21
9	Screen with under conveyors	-	-	-	-	-	-	-	-	3.75	16.43	1.31	5.72	0.088	0.39
10	Conveyor	-	-	-	-	-	-	-	-	0.45	1.97	0.17	0.72	0.049	0.21
11	Conveyor	-	-	-	-	-	-	-	-	0.45	1.97	0.17	0.72	0.049	0.21
12	Conveyor	-	-	-	-	-	-	-	-	0.45	1.97	0.17	0.72	0.049	0.21
13	Stacker Conveyor	-	-	-	-	-	-	-	-	0.99	3.10	0.47	1.47	0.071	0.22
FPILE	Finish Pile	-	-	-	-	-	-	-	-	0.99	3.10	0.47	1.47	0.071	0.22
TL	Truck Loading	-	-	-	-	-	-	-	-	0.99	3.10	0.47	1.47	0.071	0.22
ROAD	Haul Road	-	-	-	-	-	-	-	-	11.18	39.58	2.85	10.09	0.28	1.01
	Total	**4.63**	**20.28**	**3.92**	**17.18**	**0.0070**	**0.031**	**0.46**	**2.03**	**23.98**	**89.45**	**8.27**	**30.90**	**1.33**	**5.15**

Table 6-14 Summary of Allowable NOx, CO, SO2, VOC, and PM Emission Rates

Uncontrolled Emission Totals															
		NOx		CO		SO_2		VOC		PM		PM_{10}		$PM_{2.5}$	
Unit #	Description	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
1	Jaw Crusher Plant Engine	1.51	2.76	1.32	2.42	0.0025	0.0046	0.15	0.28	0.076	0.14	0.076	0.14	0.076	0.14
2	Impact Crusher Plant Engine	2.03	3.71	1.78	3.25	0.0034	0.0061	0.20	0.37	0.10	0.19	0.10	0.19	0.10	0.19
3	Screen Plant Engine	1.09	1.98	0.82	1.50	0.0012	0.0021	0.11	0.20	0.049	0.090	0.049	0.090	0.049	0.090
RAW	Raw Material	-	-	-	-	-	-	-	-	0.99	0.83	0.47	0.39	0.071	0.059
4	Feeder	-	-	-	-	-	-	-	-	0.99	0.83	0.47	0.39	0.071	0.059
5	Jaw Crusher with under conveyor	-	-	-	-	-	-	-	-	0.18	0.21	0.081	0.095	0.015	0.018
6	Conveyor	-	-	-	-	-	-	-	-	0.021	0.025	0.0069	0.0081	0.0020	0.0023
7	Impact Crusher with under conveyor	-	-	-	-	-	-	-	-	0.18	0.21	0.081	0.095	0.015	0.018
8	Conveyor	-	-	-	-	-	-	-	-	0.021	0.025	0.0069	0.0081	0.0020	0.0023
9	Screen with under conveyors	-	-	-	-	-	-	-	-	0.33	0.39	0.11	0.13	0.0075	0.0088
10	Conveyor	-	-	-	-	-	-	-	-	0.021	0.025	0.0069	0.0081	0.0020	0.0023
11	Conveyor	-	-	-	-	-	-	-	-	0.021	0.025	0.0069	0.0081	0.0020	0.0023
12	Conveyor	-	-	-	-	-	-	-	-	0.021	0.025	0.0069	0.0081	0.0020	0.0023
13	Stacker Conveyor	-	-	-	-	-	-	-	-	0.59	0.50	0.28	0.23	0.043	0.036
FPILE	Finish Pile	-	-	-	-	-	-	-	-	0.99	0.83	0.47	0.39	0.071	0.059
TL	Truck Loading	-	-	-	-	-	-	-	-	0.99	0.83	0.47	0.39	0.071	0.059
ROAD	Haul Road	-	-	-	-	-	-	-	-	1.12	1.05	0.28	0.27	0.028	0.027
	Total	**4.63**	**8.46**	**3.92**	**7.17**	**0.0070**	**0.013**	**0.46**	**0.85**	**6.69**	**6.20**	**2.97**	**2.84**	**0.63**	**0.77**

Estimates for Federal HAPs Air Pollutants

The aggregate plant jaw crushing plant engine (Unit 1) and aggregate impact crusher/screen plant engine (Unit 2) are sources of HAPs as it appears in Section 112 (b) of the 1990 CAAA. Emissions of HAPs were determined for Units 1 and 2 generator/engines using AP-42 Section 3.3 and Section 1.3.

The following tables summarize the HAPs emission rates from the aggregate plant crushing and screening generator and aggregate scalping screen plant engine. Total combined HAPs emissions from Aggregate Plants is 0.023 pounds per hour and 0.0033 tons per year.

Table 6-14: HAPs Emission Rates from the Aggregate Jaw Crushing Plant Generator (1)

Horsepower Rating:	230	horsepower	
Fuel Usage:	12	gallons/hr	
MMBtu/hr:	1.536	Btu	(based on 128000 Btu/gallon)
Btu x 10^-12/hr:	0.000001536	Btu x10^-12	(based on 128000 Btu/gallon)
Yearly Operating Hours:	3655	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	0.001178	0.002153
Acrolein	107-02-8	9.25E-05	0.000142	0.000260
Benzene	71-43-2	9.33E-04	0.001433	0.002619
1,3-Butadiene	106-99-0	3.91E-05	0.000060	0.000110
Formaldehyde	50-00-0	1.18E-03	0.001812	0.003312
Propylene	115-07-1	2.58E-03	0.003963	0.007242
Toluene	108-88-3	4.09E-04	0.000628	0.001148
Xylene	1330-20-7	2.85E-04	0.000438	0.000800
	Total Non-PAH HAPS	6.29E-03	0.009655	0.017644

PAH HAPS	CAS#	Emission Factor (lbs/mmBtu)	Emission Rate (lbs/hr)	Emission Rate (ton/yr)
Acenaphthene	83-32-9	1.42E-06	0.000002	0.000004
Acenaphthylene	208-96-8	5.06E-06	0.000008	0.000014
Anthracene	120-12-7	1.87E-06	0.000003	0.000005
Benzo(a)anthracene	56-55-3	1.68E-06	0.000003	0.000005
Benzo(a)pyrene	50-32-8	1.88E-07	0.000000	0.000001
Benzo(b)fluoranthene	205-99-2	9.91E-08	0.000000	0.000000
Benzo(a)pyrene	192-97-2	1.55E-07	0.000000	0.000000
Benzo(g,h,I)perylene	191-24-2	4.89E-07	0.000001	0.000001
Benzo(k)fluoranthene	207-08-9	1.55E-07	0.000000	0.000000
Dibenz(a,h)anthracene		5.83E-07	0.000001	0.000002
Chrysene	218-01-9	3.53E-07	0.000001	0.000001
Fluoranthene	206-44-0	7.61E-06	0.000012	0.000021
Fluorene	86-73-7	2.92E-05	0.000045	0.000082
Indeno(1,2,3-cd)pyrene	193-39-5	3.75E-07	0.000001	0.000001
Naphthalene	91-20-3	8.48E-05	0.000130	0.000238
Phenanthrene	85-01-8	2.94E-05	0.000045	0.000083
Pyrene	129-00-0	4.78E-06	0.000007	0.000013
	Total PAH HAPS	1.68E-04	0.000258	0.000472

HAPS Metals		Emission Factor (lbs/Btu^12)	Emission Rate (lbs/hr)	Emission Rate (ton/yr)
Arsenic		4	0.000006	0.000011
Beryllium		3	0.000005	0.000008
Cadmium		3	0.000005	0.000008
Chromium		3	0.000005	0.000008
Lead		9	0.000014	0.000025
Manganese		6	0.000009	0.000017
Mercury		3	0.000005	0.000008
Nickel		3	0.000005	0.000008
Selenium		15	0.000023	0.000042
	Total Metals HAPS	49	0.000075	0.000138
	Total HAPS		**0.00999**	**0.00141**

Table 6-15: HAPs Emission Rates from the Aggregate Impact Crusher Plant Engine (2)

Horsepower Rating:	309	horsepower	
Fuel Usage:	16	gallons/hr	
MMBtu/hr:	2.048	Btu	(based on 128000 Btu/gallon)
Btu x 10^-12/hr:	0.000002048	Btu x10^-12	(based on 128000 Btu/gallon)
Yearly Operating Hours:	3655	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	0.001571	0.002871
Acrolein	107-02-8	9.25E-05	0.000189	0.000346
Benzene	71-43-2	9.33E-04	0.001911	0.003492
1,3-Butadiene	106-99-0	3.91E-05	0.000080	0.000146
Formaldehyde	50-00-0	1.18E-03	0.002417	0.004416
Propylene	115-07-1	2.58E-03	0.005284	0.009656
Toluene	108-88-3	4.09E-04	0.000838	0.001531
Xylene	1330-20-7	2.85E-04	0.000584	0.001067
	Total Non-PAH HAPS	6.29E-03	0.012873	0.023525

PAH HAPS	CAS#	Emission Factor (lbs/mmBtu)	Emission Rate (lbs/hr)	Emission Rate (ton/yr)
Acenaphthene	83-32-9	1.42E-06	0.000003	0.000005
Acenaphthylene	208-96-8	5.06E-06	0.000010	0.000019
Anthracene	120-12-7	1.87E-06	0.000004	0.000007
Benzo(a)anthracene	56-55-3	1.68E-06	0.000003	0.000006
Benzo(a)pyrene	50-32-8	1.88E-07	0.000000	0.000001
Benzo(b)fluoranthene	205-99-2	9.91E-08	0.000000	0.000000
Benzo(a)pyrene	192-97-2	1.55E-07	0.000000	0.000001
Benzo(g,h,I)perylene	191-24-2	4.89E-07	0.000001	0.000002
Benzo(k)fluoranthene	207-08-9	1.55E-07	0.000000	0.000001
Dibenz(a,h)anthracene		5.83E-07	0.000001	0.000002
Chrysene	218-01-9	3.53E-07	0.000001	0.000001
Fluoranthene	206-44-0	7.61E-06	0.000016	0.000028
Fluorene	86-73-7	2.92E-05	0.000060	0.000109
Indeno(1,2,3-cd)pyrene	193-39-5	3.75E-07	0.000001	0.000001
Naphthalene	91-20-3	8.48E-05	0.000174	0.000317
Phenanthrene	85-01-8	2.94E-05	0.000060	0.000110
Pyrene	129-00-0	4.78E-06	0.000010	0.000018
	Total PAH HAPS	1.68E-04	0.000345	0.000630

HAPS Metals		Emission Factor (lbs/Btu^12)	Emission Rate (lbs/hr)	Emission Rate (ton/yr)
Arsenic		4	0.000008	0.000015
Beryllium		3	0.000006	0.000011
Cadmium		3	0.000006	0.000011
Chromium		3	0.000006	0.000011
Lead		9	0.000018	0.000034
Manganese		6	0.000012	0.000022
Mercury		3	0.000006	0.000011
Nickel		3	0.000006	0.000011
Selenium		15	0.000031	0.000056
	Total Metals HAPS	49	0.000100	0.000183
	Total HAPS		**0.01332**	**0.00188**

Table 6-16: HAPs Emission Rates from the Aggregate Screen Plant Engine (3)

Horsepower Rating:	100	horsepower	
Fuel Usage:	5.5	gallons/hr	
MMBtu/hr:	0.704	Btu	(based on 128000 Btu/gallon)
Btu x 10^-12/hr:	0.000000704	Btu x10^-12	(based on 128000 Btu/gallon)
Yearly Operating Hours:	3655	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	0.000540	0.000987
Acrolein	107-02-8	9.25E-05	0.000065	0.000119
Benzene	71-43-2	9.33E-04	0.000657	0.001200
1,3-Butadiene	106-99-0	3.91E-05	0.000028	0.000050
Formaldehyde	50-00-0	1.18E-03	0.000831	0.001518
Propylene	115-07-1	2.58E-03	0.001816	0.003319
Toluene	108-88-3	4.09E-04	0.000288	0.000526
Xylene	1330-20-7	2.85E-04	0.000201	0.000367
	Total Non-PAH HAPS	6.29E-03	0.004425	0.008087

PAH HAPS	CAS#	Emission Factor (lbs/mmBtu)	Emission Rate (lbs/hr)	Emission Rate (ton/yr)
Acenaphthene	83-32-9	1.42E-06	0.000001	0.000002
Acenaphthylene	208-96-8	5.06E-06	0.000004	0.000007
Anthracene	120-12-7	1.87E-06	0.000001	0.000002
Benzo(a)anthracene	56-55-3	1.68E-06	0.000001	0.000002
Benzo(a)pyrene	50-32-8	1.88E-07	0.000000	0.000000
Benzo(b)fluoranthene	205-99-2	9.91E-08	0.000000	0.000000
Benzo(a)pyrene	192-97-2	1.55E-07	0.000000	0.000000
Benzo(g,h,I)perylene	191-24-2	4.89E-07	0.000000	0.000001
Benzo(k)fluoranthene	207-08-9	1.55E-07	0.000000	0.000000
Dibenz(a,h)anthracene		5.83E-07	0.000000	0.000001
Chrysene	218-01-9	3.53E-07	0.000000	0.000000
Fluoranthene	206-44-0	7.61E-06	0.000005	0.000010
Fluorene	86-73-7	2.92E-05	0.000021	0.000038
Indeno(1,2,3-cd)pyrene	193-39-5	3.75E-07	0.000000	0.000000
Naphthalene	91-20-3	8.48E-05	0.000060	0.000109
Phenanthrene	85-01-8	2.94E-05	0.000021	0.000038
Pyrene	129-00-0	4.78E-06	0.000003	0.000006
	Total PAH HAPS	1.68E-04	0.000118	0.000216

HAPS Metals		Emission Factor (lbs/Btu^12)	Emission Rate (lbs/hr)	Emission Rate (ton/yr)
Arsenic		4	0.000003	0.000005
Beryllium		3	0.000002	0.000004
Cadmium		3	0.000002	0.000004
Chromium		3	0.000002	0.000004
Lead		9	0.000006	0.000012
Manganese		6	0.000004	0.000008
Mercury		3	0.000002	0.000004
Nickel		3	0.000002	0.000004
Selenium		15	0.000011	0.000019
	Total Metals HAPS	49	0.000034	0.000063
	Total HAPS		**0.00458**	**0.00065**

Section 6.a

Green House Gas Emissions

(Submitting under 20.2.70, 20.2.72 20.2.74 NMAC)

Title V (20.2.70 NMAC), Minor NSR (20.2.72 NMAC), and PSD (20.2.74 NMAC) applicants must estimate and report greenhouse gas (GHG) emissions to verify the emission rates reported in the public notice, determine applicability to 40 CFR 60 Subparts, and to evaluate Prevention of Significant Deterioration (PSD) applicability. GHG emissions that are subject to air permit regulations consist of the sum of an aggregate group of these six greenhouse gases: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Calculating GHG Emissions:

1. Calculate the ton per year (tpy) GHG mass emissions and GHG CO_2e emissions from your facility.
2. GHG mass emissions are the sum of the total annual tons of greenhouse gases without adjusting with the global warming potentials (GWPs). GHG CO_2e emissions are the sum of the mass emissions of each individual GHG multiplied by its GWP found in Table A-1 in 40 CFR 98 Mandatory Greenhouse Gas Reporting.
3. Emissions from routine or predictable start up, shut down, and maintenance must be included.
4. Report GHG mass and GHG CO_2e emissions in Table 2-P of this application. Emissions are reported in **short** tons per year and represent each emission unit's Potential to Emit (PTE).
5. All Title V major sources, PSD major sources, and all power plants, whether major or not, must calculate and report GHG mass and CO2e emissions for each unit in Table 2-P.
6. For minor source facilities that are not power plants, are not Title V, and are not PSD there are three options for reporting GHGs in Table 2-P: 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHGs as a second separate unit; 3) or check the following **X** By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

Sources for Calculating GHG Emissions:

- Manufacturer's Data
- AP-42 Compilation of Air Pollutant Emission Factors at http://www.epa.gov/ttn/chief/ap42/index.html
- EPA's Internet emission factor database WebFIRE at http://cfpub.epa.gov/webfire/
- 40 CFR 98 Mandatory Green House Gas Reporting except that tons should be reported in short tons rather than in metric tons for the purpose of PSD applicability.
- API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry. August 2009 or most recent version.
- Sources listed on EPA's NSR Resources for Estimating GHG Emissions at http://www.epa.gov/nsr/clean-air-act-permitting-greenhouse-gases:

Global Warming Potentials (GWP):
Applicants must use the Global Warming Potentials codified in Table A-1 of the most recent version of 40 CFR 98 Mandatory Greenhouse Gas Reporting. The GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to that of one unit mass of CO_2 over a specified time period.

"Greenhouse gas" for the purpose of air permit regulations is defined as the aggregate group of the following six gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. **(20.2.70.7 NMAC, 20.2.74.7 NMAC).** You may also find GHGs defined in 40 CFR 86.1818-12(a).

Metric to Short Ton Conversion:
Short tons for GHGs and other regulated pollutants are the standard unit of measure for PSD and title V permitting programs. 40 CFR 98 Mandatory Greenhouse Reporting requires metric tons.
1 metric ton = 1.10231 short tons (per Table A-2 to Subpart A of Part 98 – Units of Measure Conversions)

Section 7

Information Used To Determine Emissions

Information Used to Determine Emissions shall include the following:

- **X** If manufacturer data are used, include specifications for emissions units and control equipment, including control efficiencies specifications and sufficient engineering data for verification of control equipment operation, including design drawings, test reports, and design parameters that affect normal operation.
- ☐ If test data are used, include a copy of the complete test report. If the test data are for an emissions unit other than the one being permitted, the emission units must be identical. Test data may not be used if any difference in operating conditions of the unit being permitted and the unit represented in the test report significantly effect emission rates.
- **X** If the most current copy of AP-42 is used, reference the section and date located at the bottom of the page. Include a copy of the page containing the emissions factors, and clearly mark the factors used in the calculations.
- ☐ If an older version of AP-42 is used, include a complete copy of the section.
- ☐ If an EPA document or other material is referenced, include a complete copy.
- ☐ Fuel specifications sheet.
- ☐ If computer models are used to estimate emissions, include an input summary (if available) and a detailed report, and a disk containing the input file(s) used to run the model. For tank-flashing emissions, include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., permit or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis.

A-XXXX-7-AP42S1-3	Diesel-Fired Engine HAPs Emission Factors
A-XXXX-7-AP42S3-3	Diesel-Fired Engine HAPs Emission Factors
A-XXXX-7-AP42S3-4	Diesel-Fired Engine HAPs Emission Factors
A-XXXX-7-AP42S11-19-2	Screen, Crusher, and Transfer Point Emission Factors
A-XXXX-7-AP42S13-2-2	Unpaved Road Emission Factors
A-XXXX-7-AP42S13-2-4	Material Handling Emission Factors
A-XXXX-7-WindspeedsNewMexico	Albuquerque Wind Speed Annual Average 1996 to 2006
A-XXXX-7-Tier2&3	Units 1 and 2: Crusher/Screen Plant Engines
A-XXXX-7-AggPlant.xls	PGE Aggregate Plant Emissions Spreadsheet (Electronic File)

PG Enterprises
Rio Rancho Facility
150 ton/hr Aggregate/Recycle Plant

Main Plant Throughput	150	tph	1314000 tons per year
Uncontrolled Hours Operation	8760	hours/yr	Daylight Hours

AP-42 Section 13.2.4 "Aggregate Handling" (ver 11/2006)
E = k x (0.0032) x (U/5)^1.3 / (M/2)^1.4 lbs/ton

k(tsp)	0.74		
k(pm10)	0.35		
k(pm2.5)	0.053		
U Max Hour	11.0	Max MPH	NMED Default
U Annual Hour	8.5	MPH	Albuquerque Airport 1996-2006
M	2.00	%	NMED Default

E(TSP) Max Hour =	0.00660	lbs/ton
E(PM10) Max Hour =	0.00312	lbs/ton
E(PM2.5) Max Hour =	0.00047	lbs/ton
E(TSP) Annual Hour =	0.00472	lbs/ton
E(PM10) Annual Hour =	0.00223	lbs/ton
E(PM2.5) Annual Hour =	0.00034	lbs/ton

Uncontrolled Emission Factors	PM		PM10		PM2.5		
Crusher	0.00540	lbs/ton	0.00240	lbs/ton	0.000444	lbs/ton	AP-42 Table 11.19.2-2 "Tertiary Crushing Uncontrolled"
Screen	0.02500	lbs/ton	0.00870	lbs/ton	0.000588	lbs/ton	AP-42 Table 11.19.2-2 "Screening Uncontrolled"
Conveyor	0.00300	lbs/ton	0.00110	lbs/ton	0.000325	lbs/ton	AP-42 Table 11.19.2-2 "Conveyor Transfer Point Uncontrolled"
Pug Mill	0.00300	lbs/ton	0.00110	lbs/ton	0.000325	lbs/ton	AP-42 Table 11.19.2-2 "Conveyor Transfer Point Uncontrolled"
Material Handling Max hour	0.00660	lbs/ton	0.00312	lbs/ton	0.000473	lbs/ton	AP-42 Section 13.2.4 "Aggregate Handling" w=11.0 MPH;M=2%
Material Handling Annual hour	0.00472	lbs/ton	0.00223	lbs/ton	0.000338	lbs/ton	AP-42 Section 13.2.4 "Aggregate Handling" w=6.0 MPH;M=2%

PER
Crushing Screening Plant

Emission Point #	Process Unit Description	% of Throughput	Process Rate	PM lbs/hr	PM ton/yr	PM10 lbs/hr	PM10 ton/yr	PM2.5 lbs/hr	PM2.5 ton/yr
RAW	Raw Material	100.00	150	0.99	3.10	0.47	1.47	0.071	0.22
4	Feeder	100.00	150	0.99	3.10	0.47	1.47	0.071	0.22
5	Jaw Crusher with under conveyor	100.00	150	0.81	3.55	0.36	1.58	0.067	0.29
6	Conveyor	100.00	150	0.45	1.97	0.17	0.72	0.049	0.21
7	Impact Crusher with under conveyor	100.00	150	0.81	3.55	0.36	1.58	0.067	0.29
8	Conveyor	100.00	150	0.45	1.97	0.17	0.72	0.049	0.21
9	Screen with under conveyors	100.00	150	3.75	16.43	1.31	5.72	0.088	0.39
10	Conveyor	100.00	150	0.45	1.97	0.17	0.72	0.049	0.21
11	Conveyor	100.00	150	0.45	1.97	0.17	0.72	0.049	0.21
12	Conveyor	100.00	150	0.45	1.97	0.17	0.72	0.049	0.21
13	Stacker Conveyor	100.00	150	0.99	3.10	0.47	1.47	0.071	0.22
FPILE	Finish Pile	100.00	150	0.99	3.10	0.47	1.47	0.071	0.22
TL	Truck Loading	100.00	150	0.99	3.10	0.47	1.47	0.071	0.22
ROAD	Haul Road			11.18	39.58	2.85	10.09	0.28	1.01
			Total PM Engine	0.23	0.99	0.23	0.99	0.23	0.99
			Total PM Crusher/Screen Plant	12.57	48.88	5.19	19.82	0.82	3.15
			Total Haul Roads	11.18	39.58	2.85	10.09	0.28	1.01
			Total PM	23.98	89.45	8.27	30.90	1.33	5.15

PG Enterprises
Rio Rancho Facility
150 ton/hr Aggregate/Recycle Plant

			Emission Factor	Emission Rate								
			g/kW-hr	lbs/hr								
1	CAT C9 -Tier 3	NOX	4.00	1.51	8760	172	230	1.51	6.62			
	NOX=NOX+NMHC; VOC=10% of NOX+NMHC	CO	3.50	1.32	8760	172	230	1.32	5.80			
SO2 based on 12 gallon/hr, 7.0 lbs/gal, and 15 PPM sulfur content		SO2	15 PPM - Sulfur	0.0025	8760	172	230	0.0025	0.0110			
and a factor of 2.		VOC	0.40	0.15	8760	172	230	0.15	0.66			
		PM	0.20	0.08	8760	172	230	0.076	0.33			
	EPA Emission Factors v03/08/2018 10.21 kg/gal	CO2	10.2100	270.11	8760	172	230	270.11	1183.1		270.1	1183.1
	EPA Emission Factors v03/08/2018 0.41 g/gal	CH4	0.4100	0.011	8760	172	230	0.011	0.048		0.27	1.19
	EPA Emission Factors v03/08/2018 0.08 g/gal	N2O	0.0800	0.0021	8760	172	230	0.0021	0.0093		0.63	2.76
									1183.14	GHG	271.0	1187.0

			Emission Factor	Emission Rate								
	Process Unit Number	Emitted Pollutants	g/kW-hr	lbs/hr	Hour	Kilowatt	Horsepower	lbs/hr	ton/yr			
2	CAT C9 -Tier 3	NOX	4.00	2.03	8760	230	309	2.03	8.90			
	NOX=NOX+NMHC; VOC=10% of NOX+NMHC	CO	3.50	1.78	8760	230	309	1.78	7.79			
SO2 based on 16 gallon/hr, 7.0 lbs/gal, and 15 PPM sulfur content		SO2	15 PPM - Sulfur	0.0034	8760	230	309	0.0034	0.015			
and a factor of 2.		VOC	0.40	0.20	8760	230	309	0.20	0.89			
		PM	0.20	0.10	8760	230	309	0.10	0.44			
			lbs/hp-hr									
	EPA Emission Factors v03/08/2018 10.21 kg/gal	CO2	10.2100	360.15	8760	230	309	360.15	1577.4		360.1	1577.4
	EPA Emission Factors v03/08/2018 0.41 g/gal	CH4	0.4100	0.014	8760	230	309	0.014	0.063		0.36	1.58
	EPA Emission Factors v03/08/2018 0.08 g/gal	N2O	0.0800	0.0028	8760	230	309	0.0028	0.012		0.84	3.68
									1577.52	GHG	361.3	1582.7

			Emission Factor	Emission Rate								
	Process Unit Number	Emitted Pollutants	g/kW-hr	lbs/hr	Hour	Kilowatt	Horsepower	lbs/hr	ton/yr			
3	Deutz - Tier 2	NOX	6.60	1.09	8760	75	100	1.09	4.75			
	NOX=NOX+NMHC; VOC=10% of NOX+NMHC	CO	5.00	0.82	8760	75	100	0.82	3.60			
SO2 based on 5.5 gallon/hr, 7.0 lbs/gal, and 15 PPM sulfur content		SO2	15 PPM - Sulfur	0.0012	8760	75	100	0.0012	0.0051			
and a factor of 2.		VOC	0.66	0.11	8760	75	100	0.11	0.48			
		PM	0.30	0.049	8760	75	100	0.049	0.22			
			lbs/hp-hr									
	EPA Emission Factors v03/08/2018 10.21 kg/gal	CO2	10.2100	360.15	8760	75	100	360.15	1577.4		360.1	1577.4
	EPA Emission Factors v03/08/2018 0.41 g/gal	CH4	0.4100	0.014	8760	75	100	0.014	0.063		0.36	1.58
	EPA Emission Factors v03/08/2018 0.08 g/gal	N2O	0.0800	0.0028	8760	75	100	0.0028	0.012		0.84	3.68
									1577.52	GHG	361.3	1582.7

NOx Total	4.63	lbs/hr	20.28	tons/yr	
CO Total	3.92	lbs/hr	17.18	tons/yr	
SO2 Total	0.0070	lbs/hr	0.031	tons/yr	
VOC Total	0.46	lbs/hr	2.03	tons/yr	
PM Total	23.98	lbs/hr	89.45	tons/yr	
PM10 Total	8.27	lbs/hr	30.90	tons/yr	
PM2.5 Total	1.33	lbs/hr	5.15	tons/yr	
GHG Total	632.36	lbs/hr	2769.74	tons/yr	

PG Enterprises
Rio Rancho Facility
150 ton/hr Aggregate/Recycle Plant

Unpaved Haul Road
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 PM25	0.15		
a PM	0.7		
a PM10	0.9		
a PM25	0.9		
b PM	0.45		
b PM10	0.45		
b PM25	0.45		
% Silt Content = s	4.8 %	Sand and Gravel (AP-42 13.2.2-1)	
p = days with precipitation over 0.01 inches	70		

Vehicle control	0.0 %					
Aggregate Truck In VMT Unpaved	280.9	meter/rt vehicle	150	tons/hr	1314000	tons/yr
Aggregate Truck Out VMT Unpaved	97.3	meter/rt vehicle	150	tons/hr	1314000	tons/yr
	0.174608888	miles/vehicle				
	0.060475757	miles/vehicle				

			Uncontrolled		Controlled	
Aggregate Truck In Truck/hr	6.7	truck/hr	58400	truck/yr		truck/yr
Aggregate Truck Out Truck/hr	6.7	truck/hr	58400	truck/yr		truck/yr

			Miles/yr Uncontrolled	Miles/yr Controlled
Aggregate Truck In VMT Unpaved	1.16406	miles/hr	10197	
Aggregate Truck Out VMT Unpaved	0.40317	miles/hr	3532	

	22.5	tons per load
	17.5	Unloaded Weight (tons)
Aggregate Truck In weight	28.8	tons
Aggregate Truck Out weight	28.8	tons

		PM Uncontrolled			PM Control	
Max. Mineral Filler Truck Emissions Unpaved	8.30416	lbs/hr	29.39672	tons/yr	lbs/hr	tons/yr
Max. Asphalt Cement Truck Emissions Unpaved	2.87614	lbs/hr	10.18155	tons/yr	lbs/hr	tons/yr
total combined unpaved traffic	11.18030	lbs/hr	39.57827	tons/yr	lbs/hr	tons/yr
		PM10 Uncontrolled			PM10 Control	
Max. Mineral Filler Truck Emissions Unpaved	2.11642	lbs/hr	7.49214	tons/yr	lbs/hr	tons/yr
Max. Asphalt Cement Truck Emissions Unpaved	0.73302	lbs/hr	2.59490	tons/yr	lbs/hr	tons/yr
total combined unpaved traffic	2.84945	lbs/hr	10.08705	tons/yr	lbs/hr	tons/yr
		PM2.5 Uncontrolled			PM2.5 Control	
Max. Mineral Filler Truck Emissions Unpaved	0.21164	lbs/hr	0.74921	tons/yr	lbs/hr	tons/yr
Max. Asphalt Cement Truck Emissions Unpaved	0.07330	lbs/hr	0.25949	tons/yr	lbs/hr	tons/yr
total combined unpaved traffic	0.28494	lbs/hr	1.00870	tons/yr	lbs/hr	tons/yr

PG Enterprises
Rio Rancho Facility
150 ton/hr Aggregate/Recycle Plant

Main Plant Throughput	150	tph	350000	tons per year
Controlled Hours Operation	2333	hours/yr	based on daily throughput limits (not a requested hourly limit)	
Engine Hours	3655	hours/yr	based on maximum hours of operation per year	

Quarry, Raw Ore Pile, Feeder Loading, Finish Pile
AP-42 Section 13.2.4 "Aggregate Handling" (ver 11/2006)
E = k x (0.0032) x (U/5)^1.3 / (M/2)^1.4 lbs/ton

k(pm)	0.74		
k(pm10)	0.35		
k(pm2.5)	0.053		
U Max Hourly	11.0	MPH	NMED Default
U Annual Hour	8.5	MPH	Albuquerque Airport 1996-2006
M	2.00	%	NMED Default

E(PM) Max Hour =	0.00660	lbs/ton
E(PM10) Max Hour =	0.00312	lbs/ton
E(PM2.5) Max Hour =	0.00047	lbs/ton
E(PM) Annual Hour =	0.00472	lbs/ton
E(PM10) Annual Hour =	0.00223	lbs/ton
E(PM2.5) Annual Hour =	0.00034	lbs/ton

Stacker to Storage Pile Loading
AP-42 Section 13.2.4 "Aggregate Handling" (ver 11/2006)
E = k x (0.0032) x (U/5)^1.3 / (M/2)^1.4 lbs/ton

k(pm)	0.74		
k(pm10)	0.35		
k(pm2.5)	0.053		
U Max Hourly	11.0	MPH	NMED Default
U Annual Hour	8.5	MPH	Albuquerque Airport 1996-2006
M	2.88	%	NMED Default with Moisture Added

E(PM) Max Hour =	0.00396	lbs/ton
E(PM10) Max Hour =	0.00187	lbs/ton
E(PM2.5) Max Hour =	0.00028	lbs/ton
E(PM) Annual Hour =	0.00283	lbs/ton
E(PM10) Annual Hour =	0.00134	lbs/ton
E(PM2.5) Annual Hour =	0.00020	lbs/ton

Controlled Emission Factors	PM		PM10		PM2.5		
Crusher	0.00120	lbs/ton	0.00054	lbs/ton	0.00010	lbs/ton	AP-42 Table 11.19.2-2 "Tertiary Crushing Controlled"
Screen	0.00220	lbs/ton	0.00074	lbs/ton	0.00005	lbs/ton	AP-42 Table 11.19.2-2 "Screening Controlled"
Controlled Conveyor	0.00014	lbs/ton	0.00005	lbs/ton	0.000013	lbs/ton	AP-42 Table 11.19.2-2 "Conveyor Transfer Point Controlled"
Stacker Max Hour	0.00396	lbs/ton	0.00187	lbs/ton	0.00028	lbs/ton	AP-42 Section 13.2.4 "Aggregate Handling" w=11 MPH;M=2.88%
Stacker Annual Hour	0.00283	lbs/ton	0.00134	lbs/ton	0.00020	lbs/ton	AP-42 Section 13.2.4 "Aggregate Handling" w=9.3 MPH;M=2.88%
Pug Mill	0.00014	lbs/ton	0.00005	lbs/ton	0.000013	lbs/ton	AP-42 Table 11.19.2-2 "Conveyor Transfer Point Controlled"
Feeder Max Hour	0.00660	lbs/ton	0.00312	lbs/ton	0.00047	lbs/ton	AP-42 Section 13.2.4 "Aggregate Handling" w=11 MPH;M=2%
Feeder Annual Hour	0.00472	lbs/ton	0.00223	lbs/ton	0.00034	lbs/ton	AP-42 Section 13.2.4 "Aggregate Handling" w=9.3 MPH;M=2%
Storage Pile Max Hour	0.00660	lbs/ton	0.00312	lbs/ton	0.00047	lbs/ton	AP-42 Section 13.2.4 "Aggregate Handling" w=11 MPH;M=2%
Storage Pile Annual Hour	0.00472	lbs/ton	0.00223	lbs/ton	0.00034	lbs/ton	AP-42 Section 13.2.4 "Aggregate Handling" w=9.3 MPH;M=2%
Pit Max Hour	0.00660	lbs/ton	0.00312	lbs/ton	0.00047	lbs/ton	AP-42 Section 13.2.4 "Aggregate Handling" w=11 MPH;M=2%
Pit Annual Hour	0.00472	lbs/ton	0.00223	lbs/ton	0.00034	lbs/ton	AP-42 Section 13.2.4 "Aggregate Handling" w=9.3 MPH;M=2%
Product Piles Max hour	0.00660	lbs/ton	0.00312	lbs/ton	0.00047	lbs/ton	AP-42 Section 13.2.4 "Aggregate Handling" w=11 MPH;M=2%
Product Piles Annual hour	0.00472	lbs/ton	0.00223	lbs/ton	0.00034	lbs/ton	AP-42 Section 13.2.4 "Aggregate Handling" w=9.3 MPH;M=2%

PTE

										Modeled Hourly Emission Rates	
Emission Point #	Process Unit Description	% of Throughput	Process Rate	PM	PM	PM10	PM10	PM2.5	PM2.5	PM10	PM2.5
				lbs/hr	ton/yr	lbs/hr	ton/yr	lbs/hr	ton/yr	lbs/hr	lbs/hr
RAW	Raw Material	100.00	150	0.99	0.83	0.47	0.39	0.071	0.059	0.33488	0.05071
4	Feeder	100.00	150	0.99	0.83	0.47	0.39	0.071	0.059	0.33488	0.05071
5	Jaw Crusher with under conveyor	100.00	150	0.18	0.21	0.081	0.095	0.015	0.018	0.08100	0.01500
6	Conveyor	100.00	150	0.021	0.025	0.0069	0.0081	0.0020	0.0023	0.00690	0.00195
7	Impact Crusher with under conveyor	100.00	150	0.18	0.21	0.081	0.095	0.015	0.018	0.08100	0.01500
8	Conveyor	100.00	150	0.021	0.025	0.0069	0.0081	0.0020	0.0023	0.00690	0.00195
9	Screen with under conveyors	100.00	150	0.33	0.39	0.11	0.13	0.0075	0.0088	0.11100	0.00750
10	Conveyor	100.00	150	0.021	0.025	0.0069	0.0081	0.0020	0.0023	0.00690	0.00195
11	Conveyor	100.00	150	0.021	0.025	0.0069	0.0081	0.0020	0.0023	0.00690	0.00195
12	Conveyor	100.00	150	0.021	0.025	0.0069	0.0081	0.0020	0.0023	0.00690	0.00195
13	Stacker Conveyor	100.00	150	0.59	0.50	0.28	0.23	0.043	0.036	0.20100	0.03044
FPILE	Finish Pile	100.00	150	0.99	0.83	0.47	0.39	0.071	0.059	0.33488	0.05071
TL	Truck Loading	100.00	150	0.99	0.83	0.47	0.39	0.071	0.059	0.33488	0.05071
ROAD	Haul Road			1.12	1.05	0.28	0.27	0.028	0.027	0.28494	0.02849

PG Enterprises
Rio Rancho Facility
150 ton/hr Aggregate/Recycle Plant

			Total PM Engine	0.23	0.41	0.23	0.41	0.23	0.41	0.22654	0.22654	
			Total PM Crusher/Screen Plant	5.35	4.73	2.46	2.16	0.37	0.33	1.84803	0.28053	
			Total Haul Roads	1.12	1.05	0.28	0.27	0.03	0.03	0.28494	0.02849	
			Total PM	6.69	6.20	2.97	2.84	0.63	0.77	2.35951	0.53556	
				Emission Factor	Emission Rate							
	Process Unit Number	Emitted Pollutants		g/kW-hr	lbs/hr	Hour	Kilowatt	Horsepower	lbs/hr	ton/yr		
1	CAT C9 -Tier 3	NOX+NMHC		4.00	1.51	3655	172	230	1.51	2.76		
	NOX=NOX+NMHC; VOC=10% of NOX+NMHC	CO		3.50	1.32	3655	172	230	1.32	2.42		
SO2 based on 12 gallon/hr, 7.0 lbs/gal, and 15 PPM sulfur content		SO2		15 PPM - Sulfur	0.0025	3655	172	230	0.0025	0.0046		
and a factor of 2.		VOC		0.40	0.15	3655	172	230	0.15	0.28		
		PM		0.20	0.08	3655	172	230	0.076	0.14		
											lbs/hr	ton/yr
	EPA Emission Factors v03/08/2018 10.21 kg/gal	CO2		10.2100	270.11	3655	172	230	270.11	493.6	GHG Factor - 1	270.1	493.6
	EPA Emission Factors v03/08/2018 0.41 g/gal	CH4		0.4100	0.011	3655	172	230	0.011	0.020	GHG Factor - 25	0.27	0.50
	EPA Emission Factors v03/08/2018 0.08 g/gal	N2O		0.0800	0.0021	3655	172	230	0.0021	0.0039	GHG Factor - 298	0.63	1.15
										493.65	GHG	271.0	495.3
				Emission Factor	Emission Rate							
	Process Unit Number	Emitted Pollutants		g/kW-hr	lbs/hr	Hour	Kilowatt	Horsepower	lbs/hr	ton/yr		
2	CAT C9 -Tier 3	NOX		4.00	2.03	3655	230	309	2.03	3.71		
	NOX=NOX+NMHC; VOC=10% of NOX+NMHC	CO		3.50	1.78	3655	230	309	1.78	3.25		
SO2 based on 16 gallon/hr, 7.0 lbs/gal, and 15 PPM sulfur content		SO2		15 PPM - Sulfur	0.0034	3655	230	309	0.0034	0.0061		
and a factor of 2.		VOC		0.40	0.20	3655	230	309	0.20	0.37		
		PM		0.20	0.10	3655	230	309	0.10	0.19		
											lbs/hr	ton/yr
	EPA Emission Factors v03/08/2018 10.21 kg/gal	CO2		10.2100	360.15	3655	230	309	360.15	658.2	GHG Factor - 1	360.1	658.2
	EPA Emission Factors v03/08/2018 0.41 g/gal	CH4		0.4100	0.014	3655	230	309	0.014	0.026	GHG Factor - 25	0.36	0.66
	EPA Emission Factors v03/08/2018 0.08 g/gal	N2O		0.0800	0.0028	3655	230	309	0.0028	0.0052	GHG Factor - 298	0.84	1.54
										658.20	GHG	361.3	660.4
				Emission Factor	Emission Rate							
	Process Unit Number	Emitted Pollutants		g/kW-hr	lbs/hr	Hour	Kilowatt	Horsepower	lbs/hr	ton/yr		
3	Deutz - Tier 2	NOX		6.60	1.09	3655	75	100	1.09	1.98		
	NOX=NOX+NMHC; VOC=10% of NOX+NMHC	CO		5.00	0.82	3655	75	100	0.82	1.50		
SO2 based on 5.5 gallon/hr, 7.0 lbs/gal, and 15 PPM sulfur content		SO2		15 PPM - Sulfur	0.0012	3655	75	100	0.0012	0.0021		
and a factor of 2.		VOC		0.66	0.11	3655	75	100	0.11	0.20		
		PM		0.30	0.049	3655	75	100	0.049	0.090		
											lbs/hr	ton/yr
	EPA Emission Factors v03/08/2018 10.21 kg/gal	CO2		10.2100	123.80	3655	75	100	123.80	226.2	GHG Factor - 1	123.8	226.2
	EPA Emission Factors v03/08/2018 0.41 g/gal	CH4		0.4100	0.0050	3655	75	100	0.0050	0.0091	GHG Factor - 25	0.12	0.23
	EPA Emission Factors v03/08/2018 0.08 g/gal	N2O		0.0800	0.0010	3655	75	100	0.0010	0.0018	GHG Factor - 298	0.29	0.53
										226.26	GHG	124.2	227.0

NOx Total	4.63	lbs/hr	8.46	tons/yr
CO Total	3.92	lbs/hr	7.17	tons/yr
SO2 Total	0.0070	lbs/hr	0.013	tons/yr
VOC Total	0.46	lbs/hr	0.85	tons/yr
PM Total	6.69	lbs/hr	6.20	tons/yr
PM10 Total	2.97	lbs/hr	2.84	tons/yr
PM2.5 Total	0.63	lbs/hr	0.77	tons/yr
GHG Total	756.57	lbs/hr	1382.64	tons/yr

PG Enterprises
Rio Rancho Facility
150 ton/hr Aggregate/Recycle Plant

Unpaved Haul Road
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 PM25	0.15		
a PM	0.7		
a PM10	0.9		
a PM25	0.9		
b PM	0.45		
b PM10	0.45		
b PM25	0.45		
% Silt Content = s	4.8	%	Sand and Gravel (AP-42 13.2.2-1)
p = days with precipitation over 0.01 inches	70		

Vehicle control	90.0	%	Millings or Surfactants and Water			
Aggregate Truck In VMT Unpaved	280.9	meter/rt vehicle	150	tons/hr	350000	tons/yr
Aggregate Truck Out VMT Unpaved	97.3	meter/rt vehicle	150	tons/hr	350000	tons/yr
	0.174608888	miles/vehicle				
	0.060475757	miles/vehicle				

			Uncontrolled		Controlled	
Aggregate Truck In Truck/hr	6.7	truck/hr	truck/yr		15556	truck/yr
Aggregate Truck Out Truck/hr	6.7	truck/hr	truck/yr		15556	truck/yr

			Miles/yr Uncontrolled	Miles/yr Controlled
Aggregate Truck In VMT Unpaved	1.16406	miles/hr		2716
Aggregate Truck Out VMT Unpaved	0.40317	miles/hr		941

	22.5	tons per load
	17.5	Unloaded Weight (tons)
Aggregate Truck In weight	28.8	tons
Aggregate Truck Out weight	28.8	tons

			PM Uncontrolled			PM Control	
Max. Mineral Filler Truck Emissions Unpaved		lbs/hr	tons/yr	0.83042	lbs/hr	0.78302	tons/yr
Max. Asphalt Cement Truck Emissions Unpaved		lbs/hr	tons/yr	0.28761	lbs/hr	0.27120	tons/yr
	total combined unpaved traffic	lbs/hr	tons/yr	1.11803	lbs/hr	1.05422	tons/yr
			PM10 Uncontrolled			PM10 Control	
Max. Mineral Filler Truck Emissions Unpaved		lbs/hr	tons/yr	0.21164	lbs/hr	0.19956	tons/yr
Max. Asphalt Cement Truck Emissions Unpaved		lbs/hr	tons/yr	0.07330	lbs/hr	0.06912	tons/yr
	total combined unpaved traffic	lbs/hr	tons/yr	0.28494	lbs/hr	0.26868	tons/yr
			PM2.5 Uncontrolled			PM2.5 Control	
Max. Mineral Filler Truck Emissions Unpaved		lbs/hr	tons/yr	0.02116	lbs/hr	0.01996	tons/yr
Max. Asphalt Cement Truck Emissions Unpaved		lbs/hr	tons/yr	0.00733	lbs/hr	0.00691	tons/yr
	total combined unpaved traffic	lbs/hr	tons/yr	0.02849	lbs/hr	0.02687	tons/yr

1.3 Fuel Oil Combustion

1.3.1 General[1-3]

Two major categories of fuel oil are burned by combustion sources: distillate oils and residual oils. These oils are further distinguished by grade numbers, with Nos. 1 and 2 being distillate oils; Nos. 5 and 6 being residual oils; and No. 4 being either distillate oil or a mixture of distillate and residual oils. No. 6 fuel oil is sometimes referred to as Bunker C. Distillate oils are more volatile and less viscous than residual oils. They have negligible nitrogen and ash contents and usually contain less than 0.3 percent sulfur (by weight). Distillate oils are used mainly in domestic and small commercial applications, and include kerosene and diesel fuels. Being more viscous and less volatile than distillate oils, the heavier residual oils (Nos. 5 and 6) may need to be heated for ease of handling and to facilitate proper atomization. Because residual oils are produced from the residue remaining after the lighter fractions (gasoline, kerosene, and distillate oils) have been removed from the crude oil, they contain significant quantities of ash, nitrogen, and sulfur. Residual oils are used mainly in utility, industrial, and large commercial applications.

1.3.2 Firing Practices[4]

The major boiler configurations for fuel oil-fired combustors are watertube, firetube, cast iron, and tubeless design. Boilers are classified according to design and orientation of heat transfer surfaces, burner configuration, and size. These factors can all strongly influence emissions as well as the potential for controlling emissions.

Watertube boilers are used in a variety of applications ranging from supplying large amounts of process steam to providing space heat for industrial facilities. In a watertube boiler, combustion heat is transferred to water flowing through tubes which line the furnace walls and boiler passes. The tube surfaces in the furnace (which houses the burner flame) absorb heat primarily by radiation from the flames. The tube surfaces in the boiler passes (adjacent to the primary furnace) absorb heat primarily by convective heat transfer.

Firetube boilers are used primarily for heating systems, industrial process steam generators, and portable power boilers. In firetube boilers, the hot combustion gases flow through the tubes while the water being heated circulates outside of the tubes. At high pressures and when subjected to large variations in steam demand, firetube units are more susceptible to structural failure than watertube boilers. This is because the high-pressure steam in firetube units is contained by the boiler walls rather than by multiple small-diameter watertubes, which are inherently stronger. As a consequence, firetube boilers are typically small and are used primarily where boiler loads are relatively constant. Nearly all firetube boilers are sold as packaged units because of their relatively small size.

A cast iron boiler is one in which combustion gases rise through a vertical heat exchanger and out through an exhaust duct. Water in the heat exchanger tubes is heated as it moves upward through the tubes. Cast iron boilers produce low pressure steam or hot water, and generally burn oil or natural gas. They are used primarily in the residential and commercial sectors.

Another type of heat transfer configuration used on smaller boilers is the tubeless design. This design incorporates nested pressure vessels with water in between the shells. Combustion gases are fired into the inner pressure vessel and are then sometimes recirculated outside the second vessel.

Table 1.3-9. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM FUEL OIL COMBUSTION[a]

Organic Compound	Average Emission Factor[b] ($lb/10^3$ Gal)	EMISSION FACTOR RATING
Benzene	2.14E-04	C
Ethylbenzene	6.36E-05[c]	E
Formaldehyde[d]	3.30E-02	C
Naphthalene	1.13E-03	C
1,1,1-Trichloroethane	2.36E-04[c]	E
Toluene	6.20E-03	D
o-Xylene	1.09E-04[c]	E
Acenaphthene	2.11E-05	C
Acenaphthylene	2.53E-07	D
Anthracene	1.22E-06	C
Benz(a)anthracene	4.01E-06	C
Benzo(b,k)fluoranthene	1.48E-06	C
Benzo(g,h,i)perylene	2.26E-06	C
Chrysene	2.38E-06	C
Dibenzo(a,h) anthracene	1.67E-06	D
Fluoranthene	4.84E-06	C
Fluorene	4.47E-06	C
Indo(1,2,3-cd)pyrene	2.14E-06	C
Phenanthrene	1.05E-05	C
Pyrene	4.25E-06	C
OCDD	3.10E-09[c]	E

[a] Data are for residual oil fired boilers, Source Classification Codes (SCCs) 1-01-004-01/04.
[b] References 64-72. To convert from $lb/10^3$ gal to $kg/10^3$ L, multiply by 0.12.
[c] Based on data from one source test (Reference 67).
[d] The formaldehyde number presented here is based only on data from utilities using No. 6 oil. The number presented in Table 1.3-7 is based on utility, commercial, and industrial boilers.

Table 1.3-10. EMISSION FACTORS FOR TRACE ELEMENTS FROM DISTILLATE FUEL OIL COMBUSTION SOURCES[a]

EMISSION FACTOR RATING: E

Firing Configuration (SCC)	Emission Factor (lb/10^{12} Btu)										
	As	Be	Cd	Cr	Cu	Pb	Hg	Mn	Ni	Se	Zn
Distillate oil fired (1-01-005-01, 1-02-005-01, 1-03-005-01)	4	3	3	3	6	9	3	6	3	15	4

[a] Data are for distillate oil fired boilers, SCC codes 1-01-005-01, 1-02-005-01, and 1-03-005-01. References 29-32, 40-44 and 83. To convert from lb/10^{12} Btu to pg/J, multiply by 0.43.

Table 1.3-11. EMISSION FACTORS FOR METALS FROM UNCONTROLLED NO. 6 FUEL OIL COMBUSTION[a]

Metal	Average Emission Factor[b, d] ($lb/10^3$ Gal)	EMISSION FACTOR RATING
Antimony	5.25E-03[c]	E
Arsenic	1.32E-03	C
Barium	2.57E-03	D
Beryllium	2.78E-05	C
Cadmium	3.98E-04	C
Chloride	3.47E-01	D
Chromium	8.45E-04	C
Chromium VI	2.48E-04	C
Cobalt	6.02E-03	D
Copper	1.76E-03	C
Fluoride	3.73E-02	D
Lead	1.51E-03	C
Manganese	3.00E-03	C
Mercury	1.13E-04	C
Molybdenum	7.87E-04	D
Nickel	8.45E-02	C
Phosphorous	9.46E-03	D
Selenium	6.83E-04	C
Vanadium	3.18E-02	D
Zinc	2.91E-02	D

[a] Data are for residual oil fired boilers, Source Classification Codes (SCCs) 1-01-004-01/04.

[b] References 64-72. 18 of 19 sources were uncontrolled and 1 source was controlled with low efficiency ESP. To convert from $lb/10^3$ gal to $kg/10^3$ L, multiply by 0.12.

[c] References 29-32,40-44.

[d] For oil/water mixture, reduce factors in proportion to water content of the fuel (due to dilution). To adjust the listed values for water content, multiply the listed value by 1-decimal fraction of water (ex: For fuel with 9 percent water by volume, multiply by 1-0.9=.91).

3.3 Gasoline And Diesel Industrial Engines

3.3.1 General

The engine category addressed by this section covers a wide variety of industrial applications of both gasoline and diesel internal combustion (IC) engines such as aerial lifts, fork lifts, mobile refrigeration units, generators, pumps, industrial sweepers/scrubbers, material handling equipment (such as conveyors), and portable well-drilling equipment. The three primary fuels for reciprocating IC engines are gasoline, diesel fuel oil (No.2), and natural gas. Gasoline is used primarily for mobile and portable engines. Diesel fuel oil is the most versatile fuel and is used in IC engines of all sizes. The rated power of these engines covers a rather substantial range, up to 250 horsepower (hp) for gasoline engines and up to 600 hp for diesel engines. (Diesel engines greater than 600 hp are covered in Section 3.4, "Large Stationary Diesel And All Stationary Dual-fuel Engines".) Understandably, substantial differences in engine duty cycles exist. It was necessary, therefore, to make reasonable assumptions concerning usage in order to formulate some of the emission factors.

3.3.2 Process Description

All reciprocating IC engines operate by the same basic process. A combustible mixture is first compressed in a small volume between the head of a piston and its surrounding cylinder. The mixture is then ignited, and the resulting high-pressure products of combustion push the piston through the cylinder. This movement is converted from linear to rotary motion by a crankshaft. The piston returns, pushing out exhaust gases, and the cycle is repeated.

There are 2 methods used for stationary reciprocating IC engines: compression ignition (CI) and spark ignition (SI). This section deals with both types of reciprocating IC engines. All diesel-fueled engines are compression ignited, and all gasoline-fueled engines are spark ignited.

In CI engines, combustion air is first compression heated in the cylinder, and diesel fuel oil is then injected into the hot air. Ignition is spontaneous because the air temperature is above the autoignition temperature of the fuel. SI engines initiate combustion by the spark of an electrical discharge. Usually the fuel is mixed with the air in a carburetor (for gasoline) or at the intake valve (for natural gas), but occasionally the fuel is injected into the compressed air in the cylinder.

CI engines usually operate at a higher compression ratio (ratio of cylinder volume when the piston is at the bottom of its stroke to the volume when it is at the top) than SI engines because fuel is not present during compression; hence there is no danger of premature autoignition. Since engine thermal efficiency rises with increasing pressure ratio (and pressure ratio varies directly with compression ratio), CI engines are more efficient than SI engines. This increased efficiency is gained at the expense of poorer response to load changes and a heavier structure to withstand the higher pressures.[1]

3.3.3 Emissions

Most of the pollutants from IC engines are emitted through the exhaust. However, some total organic compounds (TOC) escape from the crankcase as a result of blowby (gases that are vented from the oil pan after they have escaped from the cylinder past the piston rings) and from the fuel tank and carburetor because of evaporation. Nearly all of the TOCs from diesel CI engines enter the

Table 3.3-2. SPECIATED ORGANIC COMPOUND EMISSION FACTORS FOR UNCONTROLLED DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (Fuel Input) (lb/MMBtu)
Benzene[b]	9.33 E-04
Toluene[b]	4.09 E-04
Xylenes[b]	2.85 E-04
Propylene	2.58 E-03
1,3-Butadiene[b,c]	<3.91 E-05
Formaldehyde[b]	1.18 E-03
Acetaldehyde[b]	7.67 E-04
Acrolein[b]	<9.25 E-05
Polycyclic aromatic hydrocarbons (PAH)	
Naphthalene[b]	8.48 E-05
Acenaphthylene	<5.06 E-06
Acenaphthene	<1.42 E-06
Fluorene	2.92 E-05
Phenanthrene	2.94 E-05
Anthracene	1.87 E-06
Fluoranthene	7.61 E-06
Pyrene	4.78 E-06
Benzo(a)anthracene	1.68 E-06
Chrysene	3.53 E-07
Benzo(b)fluoranthene	<9.91 E-08
Benzo(k)fluoranthene	<1.55 E-07
Benzo(a)pyrene	<1.88 E-07
Indeno(1,2,3-cd)pyrene	<3.75 E-07
Dibenz(a,h)anthracene	<5.83 E-07
Benzo(g,h,l)perylene	<4.89 E-07
TOTAL PAH	1.68 E-04

[a] Based on the uncontrolled levels of 2 diesel engines from References 6-7. Source Classification Codes 2-02-001-02, 2-03-001-01. To convert from lb/MMBtu to ng/J, multiply by 430.
[b] Hazardous air pollutant listed in the *Clean Air Act*.
[c] Based on data from 1 engine.

3.4 Large Stationary Diesel And All Stationary Dual-fuel Engines

3.4.1 General

The primary domestic use of large stationary diesel engines (greater than 600 horsepower [hp]) is in oil and gas exploration and production. These engines, in groups of 3 to 5, supply mechanical power to operate drilling (rotary table), mud pumping, and hoisting equipment, and may also operate pumps or auxiliary power generators. Another frequent application of large stationary diesels is electricity generation for both base and standby service. Smaller uses include irrigation, hoisting, and nuclear power plant emergency cooling water pump operation.

Dual-fuel engines were developed to obtain compression ignition performance and the economy of natural gas, using a minimum of 5 to 6 percent diesel fuel to ignite the natural gas. Large dual-fuel engines have been used almost exclusively for prime electric power generation. This section includes all dual-fuel engines.

3.4.2 Process Description

All reciprocating internal combustion (IC) engines operate by the same basic process. A combustible mixture is first compressed in a small volume between the head of a piston and its surrounding cylinder. The mixture is then ignited, and the resulting high-pressure products of combustion push the piston through the cylinder. This movement is converted from linear to rotary motion by a crankshaft. The piston returns, pushing out exhaust gases, and the cycle is repeated.

There are 2 ignition methods used in stationary reciprocating IC engines, compression ignition (CI) and spark ignition (SI). In CI engines, combustion air is first compression heated in the cylinder, and diesel fuel oil is then injected into the hot air. Ignition is spontaneous because the air temperature is above the autoignition temperature of the fuel. SI engines initiate combustion by the spark of an electrical discharge. Usually the fuel is mixed with the air in a carburetor (for gasoline) or at the intake valve (for natural gas), but occasionally the fuel is injected into the compressed air in the cylinder. Although all diesel- fueled engines are compression ignited and all gasoline- and gas-fueled engines are spark ignited, gas can be used in a CI engine if a small amount of diesel fuel is injected into the compressed gas/air mixture to burn any mixture ratio of gas and diesel oil (hence the name dual fuel), from 6 to 100 percent diesel oil.

CI engines usually operate at a higher compression ratio (ratio of cylinder volume when the piston is at the bottom of its stroke to the volume when it is at the top) than SI engines because fuel is not present during compression; hence there is no danger of premature autoignition. Since engine thermal efficiency rises with increasing pressure ratio (and pressure ratio varies directly with compression ratio), CI engines are more efficient than SI engines. This increased efficiency is gained at the expense of poorer response to load changes and a heavier structure to withstand the higher pressures.[1]

3.4.3 Emissions And Controls

Most of the pollutants from IC engines are emitted through the exhaust. However, some total organic compounds (TOC) escape from the crankcase as a result of blowby (gases that are vented from the oil pan after they have escaped from the cylinder past the piston rings) and from the fuel tank

and carburetor because of evaporation. Nearly all of the TOCs from diesel CI engines enter the atmosphere from the exhaust. Crankcase blowby is minor because TOCs are not present during compression of the charge. Evaporative losses are insignificant in diesel engines due to the low volatility of diesel fuels. In general, evaporative losses are also negligible in engines using gaseous fuels because these engines receive their fuel continuously from a pipe rather than via a fuel storage tank and fuel pump.

The primary pollutants from internal combustion engines are oxides of nitrogen (NO_x), hydrocarbons and other organic compounds, carbon monoxide (CO), and particulates, which include both visible (smoke) and nonvisible emissions. Nitrogen oxide formation is directly related to high pressures and temperatures during the combustion process and to the nitrogen content, if any, of the fuel. The other pollutants, HC, CO, and smoke, are primarily the result of incomplete combustion. Ash and metallic additives in the fuel also contribute to the particulate content of the exhaust. Sulfur oxides also appear in the exhaust from IC engines. The sulfur compounds, mainly sulfur dioxide (SO_2), are directly related to the sulfur content of the fuel.[2]

3.4.3.1 Nitrogen Oxides -

Nitrogen oxide formation occurs by two fundamentally different mechanisms. The predominant mechanism with internal combustion engines is thermal NO_x which arises from the thermal dissociation and subsequent reaction of nitrogen (N_2) and oxygen (O_2) molecules in the combustion air. Most thermal NO_x is formed in the high-temperature region of the flame from dissociated molecular nitrogen in the combustion air. Some NO_x, called prompt NO_x, is formed in the early part of the flame from reaction of nitrogen intermediary species, and HC radicals in the flame. The second mechanism, fuel NO_x, stems from the evolution and reaction of fuel-bound nitrogen compounds with oxygen. Gasoline, and most distillate oils, have no chemically-bound fuel N_2 and essentially all NO_x formed is thermal NO_x.

3.4.3.2 Total Organic Compounds -

The pollutants commonly classified as hydrocarbons are composed of a wide variety of organic compounds and are discharged into the atmosphere when some of the fuel remains unburned or is only partially burned during the combustion process. Most unburned hydrocarbon emissions result from fuel droplets that were transported or injected into the quench layer during combustion. This is the region immediately adjacent to the combustion chamber surfaces, where heat transfer outward through the cylinder walls causes the mixture temperatures to be too low to support combustion.

Partially burned hydrocarbons can occur because of poor air and fuel homogeneity due to incomplete mixing, before or during combustion; incorrect air/fuel ratios in the cylinder during combustion due to maladjustment of the engine fuel system; excessively large fuel droplets (diesel engines); and low cylinder temperature due to excessive cooling (quenching) through the walls or early cooling of the gases by expansion of the combustion volume caused by piston motion before combustion is completed.[2]

3.4.3.3 Carbon Monoxide -

Carbon monoxide is a colorless, odorless, relatively inert gas formed as an intermediate combustion product that appears in the exhaust when the reaction of CO to CO_2 cannot proceed to completion. This situation occurs if there is a lack of available oxygen near the hydrocarbon (fuel) molecule during combustion, if the gas temperature is too low, or if the residence time in the cylinder is too short. The oxidation rate of CO is limited by reaction kinetics and, as a consequence, can be accelerated only to a certain extent by improvements in air and fuel mixing during the combustion process.[2-3]

3.4.3.4 Smoke, Particulate Matter, and PM-10 -

White, blue, and black smoke may be emitted from IC engines. Liquid particulates appear as white smoke in the exhaust during an engine cold start, idling, or low load operation. These are formed in the quench layer adjacent to the cylinder walls, where the temperature is not high enough to ignite the fuel. Blue smoke is emitted when lubricating oil leaks, often past worn piston rings, into the combustion chamber and is partially burned. Proper maintenance is the most effective method of preventing blue smoke emissions from all types of IC engines. The primary constituent of black smoke is agglomerated carbon particles (soot).[2]

3.4.3.5 Sulfur Oxides -

Sulfur oxide emissions are a function of only the sulfur content in the fuel rather than any combustion variables. In fact, during the combustion process, essentially all the sulfur in the fuel is oxidized to SO_2. The oxidation of SO_2 gives sulfur trioxide (SO_3), which reacts with water to give sulfuric acid (H_2SO_4), a contributor to acid precipitation. Sulfuric acid reacts with basic substances to give sulfates, which are fine particulates that contribute to PM-10 and visibility reduction. Sulfur oxide emissions also contribute to corrosion of the engine parts.[2,3]

Table 3.4-1 contains gaseous emission factors for the pollutants discussed above, expressed in units of pounds per horsepower-hour (lb/hp-hr), and pounds per million British thermal unit (lb/MMBtu). Table 3.4-2 shows the particulate and particle-sizing emission factors. Table 3.4-3 shows the speciated organic compound emission factors and Table 3.4-4 shows the emission factors for polycyclic aromatic hydrocarbons (PAH). These tables do not provide a complete speciated organic compound and PAH listing because they are based only on a single engine test; they are to be used only for rough order of magnitude comparisons.

Table 3.4-5 shows the NO_x reduction and fuel consumption penalties for diesel and dual-fueled engines based on some of the available control techniques. The emission reductions shown are those that have been demonstrated. The effectiveness of controls on a particular engine will depend on the specific design of each engine, and the effectiveness of each technique could vary considerably. Other NO_x control techniques exist but are not included in Table 3.4-5. These techniques include internal/external exhaust gas recirculation, combustion chamber modification, manifold air cooling, and turbocharging.

3.4.4 Control Technologies

Control measures to date are primarily directed at limiting NO_x and CO emissions since they are the primary pollutants from these engines. From a NO_x control viewpoint, the most important distinction between different engine models and types of reciprocating engines is whether they are rich-burn or lean-burn. Rich-burn engines have an air-to-fuel ratio operating range that is near stoichiometric or fuel-rich of stoichiometric and as a result the exhaust gas has little or no excess oxygen. A lean-burn engine has an air-to-fuel operating range that is fuel-lean of stoichiometric; therefore, the exhaust from these engines is characterized by medium to high levels of O_2. The most common NO_x control technique for diesel and dual fuel engines focuses on modifying the combustion process. However, selective catalytic reduction (SCR) and nonselective catalytic reduction (NSCR) which are post-combustion techniques are becoming available. Control for CO have been partly adapted from mobile sources.[5]

Combustion modifications include injection timing retard (ITR), preignition chamber combustion (PCC), air-to-fuel ratio, and derating. Injection of fuel into the cylinder of a CI engine initiates the combustion process. Retarding the timing of the diesel fuel injection causes the combustion process to occur later in the power stroke when the piston is in the downward motion and

combustion chamber volume is increasing. By increasing the volume, the combustion temperature and pressure are lowered, thereby lowering NO_x formation. ITR reduces NO_x from all diesel engines; however, the effectiveness is specific to each engine model. The amount of NO_x reduction with ITR diminishes with increasing levels of retard.[5]

Improved swirl patterns promote thorough air and fuel mixing and may include a precombustion chamber (PCC). A PCC is an antechamber that ignites a fuel-rich mixture that propagates to the main combustion chamber. The high exit velocity from the PCC results in improved mixing and complete combustion of the lean air/fuel mixture which lowers combustion temperature, thereby reducing NO_x emissions.[5]

The air-to-fuel ratio for each cylinder can be adjusted by controlling the amount of fuel that enters each cylinder. At air-to-fuel ratios less than stoichiometric (fuel-rich), combustion occurs under conditions of insufficient oxygen which causes NO_x to decrease because of lower oxygen and lower temperatures. Derating involves restricting engine operation to lower than normal levels of power production for the given application. Derating reduces cylinder pressures and temperatures thereby lowering NO_x formation rates.[5]

SCR is an add-on NO_x control placed in the exhaust stream following the engine and involves injecting ammonia (NH_3) into the flue gas. The NH_3 reacts with the NO_x in the presence of a catalyst to form water and nitrogen. The effectiveness of SCR depends on fuel quality and engine duty cycle (load fluctuations). Contaminants in the fuel may poison or mask the catalyst surface causing a reduction or termination in catalyst activity. Load fluctuations can cause variations in exhaust temperature and NO_x concentration which can create problems with the effectiveness of the SCR system.[5]

NSCR is often referred to as a three-way conversion catalyst system because the catalyst reactor simultaneously reduces NO_x, CO, and HC and involves placing a catalyst in the exhaust stream of the engine. The reaction requires that the O_2 levels be kept low and that the engine be operated at fuel-rich air-to-fuel ratios.[5]

3.4.5 Updates Since the Fifth Edition

The Fifth Edition was released in January 1995. Revisions to this section since that date are summarized below. For further detail, consult the memoranda describing each supplement or the background report for this section. These and other documents can be found on the CHIEF electronic bulletin board (919-541-5742), or on the new EFIG home page (http://www.epa.gov/oar/oaqps/efig/).

Supplement A, February 1996

No changes.

Supplement B, October 1996

- The general text was updated.
- Controlled NO_x factors and PM factors were added for diesel units.
- Math errors were corrected in factors for CO from diesel units and for uncontrolled NO_x from dual fueled units.

Table 3.4-1. GASEOUS EMISSION FACTORS FOR LARGE STATIONARY DIESEL AND ALL STATIONARY DUAL-FUEL ENGINES[a]

Pollutant	Diesel Fuel (SCC 2-02-004-01)			Dual Fuel[b] (SCC 2-02-004-02)		
	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	EMISSION FACTOR RATING	Emission Factor (lb/hp-hr) (power output)	Emission Factor (lb/MMBtu) (fuel input)	EMISSION FACTOR RATING
NO_x						
Uncontrolled	0.024	3.2	B	0.018	2.7	D
Controlled	0.013[c]	1.9[c]	B	ND	ND	NA
CO	5.5 E-03	0.85	C	7.5 E-03	1.16	D
SO_x[d]	8.09 E-03S_1	1.01S_1	B	4.06 E-04S_1 + 9.57 E-03S_2	0.05S_1 + 0.895S_2	B
CO_2[e]	1.16	165	B	0.772	110	B
PM	0.0007[c]	0.1[c]	B	ND	ND	NA
TOC (as CH_4)	7.05 E-04	0.09	C	5.29 E-03	0.8	D
Methane	f	f	E	3.97 E-03	0.6	E
Nonmethane	f	f	E	1.32 E-03	0.2[g]	E

[a] Based on uncontrolled levels for each fuel, from References 2,6-7. When necessary, the average heating value of diesel was assumed to be 19,300 Btu/lb with a density of 7.1 lb/gallon. The power output and fuel input values were averaged independently from each other, because of the use of actual brake-specific fuel consumption (BSFC) values for each data point and of the use of data possibly sufficient to calculate only 1 of the 2 emission factors (e. g., enough information to calculate lb/MMBtu, but not lb/hp-hr). Factors are based on averages across all manufacturers and duty cycles. The actual emissions from a particular engine or manufacturer could vary considerably from these levels. To convert from lb/hp-hr to kg/kw-hr, multiply by 0.608. To convert from lb/MMBtu to ng/J, multiply by 430. SCC = Source Classification Code.

[b] Dual fuel assumes 95% natural gas and 5% diesel fuel.

[c] References 8-26. Controlled NO_x is by ignition timing retard.

[d] Assumes that all sulfur in the fuel is converted to SO_2. S_1 = % sulfur in fuel oil; S_2 = % sulfur in natural gas. For example, if sulfer content is 1.5%, then S = 1.5.

[e] Assumes 100% conversion of carbon in fuel to CO_2 with 87 weight % carbon in diesel, 70 weight % carbon in natural gas, dual-fuel mixture of 5% diesel with 95% natural gas, average BSFC of 7,000 Btu/hp-hr, diesel heating value of 19,300 Btu/lb, and natural gas heating value of 1050 Btu/scf.

[f] Based on data from 1 engine, TOC is by weight 9% methane and 91% nonmethane.

[g] Assumes that nonmethane organic compounds are 25% of TOC emissions from dual-fuel engines. Molecular weight of nonmethane gas stream is assumed to be that of methane.

Table 3.4-2. PARTICULATE AND PARTICLE-SIZING EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (lb/MMBtu) (fuel input)
Filterable particulate[b]	
< 1 μm	0.0478
< 3 μm	0.0479
< 10 μm	0.0496
Total filterable particulate	0.0620
Condensable particulate	0.0077
Total PM-10[c]	0.0573
Total particulate[d]	0.0697

[a] Based on 1 uncontrolled diesel engine from Reference 6. Source Classification Code 2-02-004-01. The data for the particulate emissions were collected using Method 5, and the particle size distributions were collected using a Source Assessment Sampling System. To convert from lb/MMBtu to ng/J, multiply by 430. PM-10 = particulate matter ≤ 10 micrometers (μm) aerometric diameter.

[b] Particle size is expressed as aerodynamic diameter.

[c] Total PM-10 is the sum of filterable particulate less than 10 μm aerodynamic diameter and condensable particulate.

[d] Total particulate is the sum of the total filterable particulate and condensable particulate.

Table 3.4-3. SPECIATED ORGANIC COMPOUND EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (lb/MMBtu) (fuel input)
Benzene[b]	7.76 E-04
Toluene[b]	2.81 E-04
Xylenes[b]	1.93 E-04
Propylene	2.79 E-03
Formaldehyde[b]	7.89 E-05
Acetaldehyde[b]	2.52 E-05
Acrolein[b]	7.88 E-06

[a]Based on 1 uncontrolled diesel engine from Reference 7. Source Classification Code 2-02-004-01. Not enough information to calculate the output-specific emission factors of lb/hp-hr. To convert from lb/MMBtu to ng/J, multiply by 430.
[b]Hazardous air pollutant listed in the *Clean Air Act*.

Table 3.4-4. PAH EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

PAH	Emission Factor (lb/MMBtu) (fuel input)
Naphthalene[b]	1.30 E-04
Acenaphthylene	9.23 E-06
Acenaphthene	4.68 E-06
Fluorene	1.28 E-05
Phenanthrene	4.08 E-05
Anthracene	1.23 E-06
Fluoranthene	4.03 E-06
Pyrene	3.71 E-06
Benz(a)anthracene	6.22 E-07
Chrysene	1.53 E-06
Benzo(b)fluoranthene	1.11 E-06
Benzo(k)fluoranthene	<2.18 E-07
Benzo(a)pyrene	<2.57 E-07
Indeno(1,2,3-cd)pyrene	<4.14 E-07
Dibenz(a,h)anthracene	<3.46 E-07
Benzo(g,h,l)perylene	<5.56 E-07
TOTAL PAH	<2.12 E-04

[a] Based on 1 uncontrolled diesel engine from Reference 7. Source Classification Code 2-02-004-01. Not enough information to calculate the output-specific emission factors of lb/hp-hr. To convert from lb/MMBtu to ng/J, multiply by 430.

[b] Hazardous air pollutant listed in the *Clean Air Act*.

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.

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}[i]	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.

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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.

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:

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

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

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

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

average uncontrolled conditions (but including natural mitigation) under the simplifying assumption that annual average emissions are inversely proportional to the number of days with measurable (more than 0.254 mm [0.01 inch]) precipitation:

$$E_{ext} = E\ [(365 - P)/365] \quad (2)$$

where:

E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT

E = emission factor from Equation 1a or 1b

P = number of days in a year with at least 0.254 mm (0.01 in) of precipitation (see below)

Figure 13.2.2-1 gives the geographical distribution for the mean annual number of "wet" days for the United States.

Equation 2 provides an estimate that accounts for precipitation on an annual average basis for the purpose of inventorying emissions. It should be noted that Equation 2 does not account for differences in the temporal distributions of the rain events, the quantity of rain during any event, or the potential for the rain to evaporate from the road surface. In the event that a finer temporal and spatial resolution is desired for inventories of public unpaved roads, estimates can be based on a more complex set of assumptions. These assumptions include:

1. The moisture content of the road surface material is increased in proportion to the quantity of water added;
2. The moisture content of the road surface material is reduced in proportion to the Class A pan evaporation rate;
3. The moisture content of the road surface material is reduced in proportion to the traffic volume; and
4. The moisture content of the road surface material varies between the extremes observed in the area. The CHIEF Web site (http://www.epa.gov/ttn/chief/ap42/ch13/related/c13s02-2.html) has a file which contains a spreadsheet program for calculating emission factors which are temporally and spatially resolved. Information required for use of the spreadsheet program includes monthly Class A pan evaporation values, hourly meteorological data for precipitation, humidity and snow cover, vehicle traffic information, and road surface material information.

It is emphasized that the simple assumption underlying Equation 2 and the more complex set of assumptions underlying the use of the procedure which produces a finer temporal and spatial resolution have not been verified in any rigorous manner. For this reason, the quality ratings for either approach should be downgraded one letter from the rating that would be applied to Equation 1.

13.2.2.3 Controls[18-22]

A wide variety of options exist to control emissions from unpaved roads. Options fall into the following three groupings:

1. Vehicle restrictions that limit the speed, weight or number of vehicles on the road;

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:[11]

$$E = k(0.0016) \frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (kg/megagram [Mg])} \quad (1)$$

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

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

Nonroad Compression-Ignition Engines: Exhaust Emission Standards

	Rated Power (kW)	Tier	Model Year	NMHC (g/kW-hr)	NMHC + NOx (g/kW-hr)	NOx (g/kW-hr)	PM (g/kW-hr)	CO (g/kW-hr)	Smoke [a] (Percentage)	Useful Life (hours /years) [b]	Warranty Period (hours /years) [b]
Federal	kW < 8	1	2000-2004	-	10.5	-	1.0	8.0	20/15/50	3,000/5	1,500/2
		2	2005-2007	-	7.5	-	0.80	8.0			
		4	2008+	-	7.5	-	0.40 [c]	8.0			
	8 ≤ kW < 19	1	2000-2004	-	9.5	-	0.80	6.6		3,000/5	1,500/2
		2	2005-2007	-	7.5	-	0.80	6.6			
		4	2008+	-	7.5	-	0.40	6.6			
	19 ≤ kW < 37	1	1999-2003	-	9.5	-	0.80	5.5		5,000/7 [d]	3,000/5 [e]
		2	2004-2007	-	7.5	-	0.60	5.5			
		4	2008-2012	-	7.5	-	0.30	5.5			
			2013+	-	4.7	-	0.03	5.5			
	37 ≤ kW < 56	1	1998-2003	-	-	9.2	-	-		8,000/10	3,000/5
		2	2004-2007	-	7.5	-	0.40	5.0			
		3 [f]	2008-2011	-	4.7	-	0.40	5.0			
		4 (Option 1) [g]	2008-2012	-	4.7	-	0.30	5.0			
		4 (Option 2) [g]	2012	-	4.7	-	0.03	5.0			
		4	2013+	-	4.7	-	0.03	5.0			
	56 ≤ kW < 75	1	1998-2003	-	-	9.2	-	-			
		2	2004-2007	-	7.5	-	0.40	5.0			
		3	2008-2011	-	4.7	-	0.40	5.0			
		4	2012-2013 [h]	-	4.7	-	0.02	5.0			
			2014+ [i]	0.19	-	0.40	0.02	5.0			
	75 ≤ kW < 130	1	1997-2002	-	-	9.2	-	-			
		2	2003-2006	-	6.6	-	0.30	5.0			
		3	2007-2011	-	4.0	-	0.30	5.0			
		4	2012-2013 [h]	-	4.0	-	0.02	5.0			
			2014+	0.19	-	0.40	0.02	5.0			

Continued

	Rated Power (kW)	Tier	Model Year	NMHC (g/kW-hr)	NMHC + NOx (g/kW-hr	NOx (g/kW-hr	PM (g/kW-hr	CO (g/kW-hr)	Smoke [a] (Percentage)	Useful Life (hours /years) [b]	Warranty Period (hours /years) [b]
Federal	130 ≤ kW < 225	1	1996-2002	1.3 [j]	-	9.2	0.54	11.4	20/15/50	8,000/10	3,000/5
		2	2003-2005	-	6.6	-	0.20	3.5			
		3	2006-2010	-	4.0	-	0.20	3.5			
		4	2011-2013 [h]	-	4.0	-	0.02	3.5			
			2014+ [i]	0.19	-	0.40	0.02	3.5			
	225 ≤ kW < 450	1	1996-2000	1.3 [j]	-	9.2	0.54	11.4			
		2	2001-2005	-	6.4	-	0.20	3.5			
		3	2006-2010	-	4.0	-	0.20	3.5			
		4	2011-2013 [h]	-	4.0	-	0.02	3.5			
			2014+ [i]	0.19	-	0.40	0.02	3.5			
	450 ≤ kW < 560	1	1996-2001	1.3 [j]	-	9.2	0.54	11.4			
		2	2002-2005	-	6.4	-	0.20	3.5			
		3	2006-2010	-	4.0	-	0.20	3.5			
		4	2011-2013 [h]	-	4.0	-	0.02	3.5			
			2014+ [i]	0.19	-	0.40	0.02	3.5			
	560 ≤ kW < 900	1	2000-2005	1.3 [j]	-	9.2	0.54	11.4			
		2	2006-2010	-	6.4	-	0.20	3.5			
		4	2011-2014	0.40	-	3.5	0.10	3.5			
			2015+ [i]	0.19	-	3.5 [k]	0.04 [l]	3.5			
	kW > 900	1	2000-2005	1.3 [j]	-	9.2	0.54	11.4			
		2	2006-2010	-	6.4	-	0.20	3.5			
		4	2011-2014	0.40	-	3.5 [k]	0.10	3.5			
			2015+ [i]	0.19	-	3.5 [k]	0.04 [l]	3.5			

Notes on following page.

Notes:

- For Tier 1, 2, and 3 standards, exhaust emissions of nitrogen oxides (NOx), carbon monoxide (CO), hydrocarbons (HC), and non-methane hydrocarbons (NMHC) are measured using the procedures in 40 Code of Federal Regulations (CFR) Part 89 Subpart E. For Tier 1, 2, and 3 standards, particulate matter (PM) exhaust emissions are measured using the California Regulations for New 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines.
- For Tier 4 standards, engines are tested for transient and steady-state exhaust emissions using the procedures in 40 CFR Part 1039 Subpart F. Transient standards do not apply to engines below 37 kilowatts (kW) before the 2013 model year, constant-speed engines, engines certified to Option 1, and engines above 560 kW.
- Tier 2 and later model naturally aspirated nonroad engines shall not discharge crankcase emissions into the atmosphere unless these emissions are permanently routed into the exhaust. This prohibition does not apply to engines using turbochargers, pumps, blowers, or superchargers.
- In lieu of the Tier 1, 2, and 3 standards for NOX, NMHC + NOX, and PM, manufacturers may elect to participate in the averaging, banking, and trading (ABT) program described in 40 CFR Part 89 Subpart C.

a Smoke emissions may not exceed 20 percent during the acceleration mode, 15 percent during the lugging mode, and 50 percent during the peaks in either mode. Smoke emission standards do not apply to single-cylinder engines, constant-speed engines, or engines certified to a PM emission standard of 0.07 grams per kilowatt-hour (g/kW-hr) or lower. Smoke emissions are measured using procedures in 40 CFR Part 86 Subpart I.

b Useful life and warranty period are expressed hours and years, whichever comes first.

c Hand-startable air-cooled direct injection engines may optionally meet a PM standard of 0.60 g/kW-hr. These engines may optionally meet Tier 2 standards through the 2009 model years. In 2010 these engines are required to meet a PM standard of 0.60 g/kW-hr.

d Useful life for constant speed engines with rated speed 3,000 revolutions per minute (rpm) or higher is 5 years or 3,000 hours, whichever comes first.

e Warranty period for constant speed engines with rated speed 3,000 rpm or higher is 2 years or 1,500 hours, whichever comes first.

f These Tier 3 standards apply only to manufacturers selecting Tier 4 Option 2. Manufacturers selecting Tier 4 Option 1 will be meeting those standards in lieu of Tier 3 standards.

g A manufacturer may certify all their engines to either Option 1 or Option 2 sets of standards starting in the indicated model year. Manufacturers selecting Option 2 must meet Tier 3 standards in the 2008-2011 model years.

h These standards are phase-out standards. Not more than 50 percent of a manufacturer's engine production is allowed to meet these standards in each model year of the phase out period. Engines not meeting these standards must meet the final Tier 4 standards.

i These standards are phased in during the indicated years. At least 50 percent of a manufacturer's engine production must meet these standards during each year of the phase in. Engines not meeting these standards must meet the applicable phase-out standards.

j For Tier 1 engines the standard is for total hydrocarbons.

k The NOx standard for generator sets is 0.67 g/kW-hr.

l The PM standard for generator sets is 0.03 g/kW-hr.

Citations: Code of Federal Regulations (CFR) citations:

- 40 CFR 89.112 = Exhaust emission standards
- 40 CFR 1039.101 = Exhaust emission standards for after 2014 model year
- 40 CFR 1039.102 = Exhaust emission standards for model year 2014 and earlier
- 40 CFR 1039 Subpart F = Exhaust emissions transient and steady state test procedures
- 40 CFR 86 Subpart I = Smoke emission test procedures
- 40 CFR 1065 = Test equipment and emissions measurement procedures

California Environmental Protection Agency AIR RESOURCES BOARD	CATERPILLAR, INC.	EXECUTIVE ORDER U-R-001-0304 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the December 15, 1998 Settlement Agreement between the Air Resources Board and the manufacturer, and any modifications thereof to the Settlement Agreement;

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engine and emission control system produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2007	7CPXL08.8ESK	8.8	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Turbocharger, Charge Air Cooler and Engine Control Module	Tractor, Dozer, Generator and Industrial Equipment

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbon (HC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
130 ≤ KW < 450	Tier 3	STD	N/A	N/A	4.0	3.5	0.20	20	15	50
		CERT	--	--	3.7	3.1	0.15	16	3	24

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 11th day October 2006.

Annette Hebert, Chief
Mobile Source Operations Division

California Environmental Protection Agency AIR RESOURCES BOARD	CATERPILLAR INC.	EXECUTIVE ORDER U-R-001-0322 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the December 15, 1998 Settlement Agreement between the Air Resources Board and the manufacturer, and any modifications thereof to the Settlement Agreement;

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engine and emission control system produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2008	8CPXL08.8ESK	8.8	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Turbocharger, Charge Air Cooler and Engine Control Module	Tractor, Tractor, Dozer, Generator and Industrial Equipment

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbon (HC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
130 ≤ KW < 450	Tier 3	STD	N/A	N/A	4.0	3.5	0.20	20	15	50
		CERT	--	--	3.4	2.7	0.18	17	7	27

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 20 day December 2007.

Annette Hebert, Chief
Mobile Source Operations Division

NEW MEXICO

AVERAGE WIND SPEED - MPH

STATION	ID	Years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
ALAMOGORDO AIRPORT ASOS	KALM	1996-2006	5.1	6.3	7.1	7.9	7.1	6.9	6.1	5.3	5.2	5.2	5.0	5.0	6.0
ALAMOGORDO-HOLLOMAN AFB	KHMN	1996-2006	8.5	9.7	10.6	11.8	10.8	10.6	9.8	9.1	8.8	8.5	8.1	8.3	9.6
ALBUQUERQUE AP ASOS	KABQ	1996-2006	7.0	8.2	9.3	11.1	10.0	10.0	8.7	8.3	8.0	7.9	7.2	6.9	8.5
ALBUQUERQUE-DBLE EAGLE	KAEG	1999-2006	7.1	7.9	9.0	10.6	9.5	8.6	7.0	6.2	7.0	6.5	6.5	6.1	7.7
ARTESIA AIRPORT ASOS	KATS	1997-2006	7.8	9.1	10.1	10.9	10.2	9.9	7.8	6.9	7.6	7.8	7.6	7.4	8.5
CARLSBAD AIRPORT ASOS	KCNM	1996-2006	9.2	9.8	10.9	11.4	10.4	9.9	8.5	7.7	8.2	8.5	8.4	8.8	9.3
CLAYTON MUNI AP ASOS	KCAO	1996-2006	11.9	12.7	13.4	14.6	13.4	13.0	11.7	10.8	11.8	12.1	12.1	12.0	12.4
CLINES CORNERS	KCQC	1998-2006	16.2	16.1	15.7	16.9	14.6	13.5	10.6	10.1	11.8	13.3	15.0	16.0	14.1
CLOVIS AIRPORT AWOS	KCVN	1996-2006	12.3	12.3	13.4	13.8	12.4	11.9	9.7	8.9	9.7	10.9	11.6	12.2	11.6
CLOVIS-CANNON AFB	KCVS	1996-2006	12.5	12.6	13.6	13.8	12.2	12.5	10.7	10.0	10.2	11.3	11.7	12.4	12.0
DEMING AIRPORT ASOS	KDMN	1996-2006	8.7	9.7	10.9	12.0	10.6	10.1	8.9	8.1	8.4	8.2	8.5	8.1	9.3
FARMINGTON AIRPORT ASOS	KFMN	1996-2006	7.3	8.3	9.0	9.8	9.4	9.4	8.7	8.2	8.0	7.8	7.6	7.3	8.4
GALLUP AIRPORT ASOS	KGUP	1996-2006	5.7	6.9	7.8	10.0	9.0	8.8	6.9	6.0	6.5	6.1	5.6	5.3	7.0
GRANTS-MILAN AP ASOS	KGNT	1997-2006	7.8	8.8	9.6	10.9	10.0	9.8	8.1	7.2	7.9	8.4	8.0	7.6	8.7
HOBBS AIRPORT AWOS	KHOB	1996-2006	11.3	11.9	12.6	13.4	12.5	12.3	11.0	10.0	10.2	10.6	10.7	11.1	11.4
LAS CRUCES AIRPORT AWOS	KLRU	2000-2006	6.4	7.5	8.8	10.1	8.7	8.2	6.8	6.0	6.2	6.1	6.4	6.0	7.3
LAS VEGAS AIRPORT ASOS	KLVS	1996-2006	10.9	12.2	12.5	14.3	12.4	11.8	10.0	9.2	10.9	10.8	11.0	10.9	11.4
LOS ALAMOS AP AWOS	KLAM	2005-2006	3.9	5.7	7.5	8.1	7.1	7.3	5.3	4.8	5.7	5.1	4.4	3.2	5.4
RATON AIRPORT ASOS	KRTN	1998-2006	8.9	9.4	10.4	12.2	10.8	10.2	8.4	8.1	8.6	9.0	8.6	8.5	9.4
ROSWELL AIRPORT ASOS	KROW	1996-2006	7.4	8.9	9.9	11.1	10.3	10.2	8.8	7.9	8.3	8.0	7.5	7.3	8.8
RUIDOSO AIRPORT AWOS	KSRR	1996-2006	8.8	9.6	10.0	11.6	10.0	8.4	5.9	5.3	6.4	7.4	7.9	8.7	8.3
SANTA FE AIRPORT ASOS	KSAF	1996-2006	8.9	9.5	9.9	11.2	10.6	10.5	9.2	8.8	8.8	9.1	8.7	8.5	9.5
SILVER CITY AP AWOS	KSVC	1999-2006	8.1	8.7	9.9	10.8	10.2	9.9	8.5	7.2	6.9	7.6	7.9	7.7	8.5
TAOS AIRPORT AWOS	KSKX	1996-2006	5.8	6.5	7.7	9.1	8.6	8.5	7.1	6.6	6.7	6.6	6.0	5.7	7.0
TRUTH OR CONSEQ AP ASOS	KTCS	1996-2006	7.4	8.7	9.9	11.1	10.4	9.8	8.1	7.4	7.7	8.0	7.7	7.3	8.6
TUCUMCARI AIRPORT ASOS	KTCC	1999-2006	10.0	11.2	11.9	13.6	11.9	11.6	9.9	9.3	10.0	10.0	10.4	10.2	10.8

Section 8

Map(s)

A map such as a 7.5 minute topographic quadrangle showing the exact location of the source. The map shall also include the following:

The UTM or Longitudinal coordinate system on both axes	An indicator showing which direction is north
A minimum radius around the plant of 0.8km (0.5 miles)	Access and haul roads
Topographic features of the area	Facility property boundaries
The name of the map	The area which will be restricted to public access
A graphical scale	

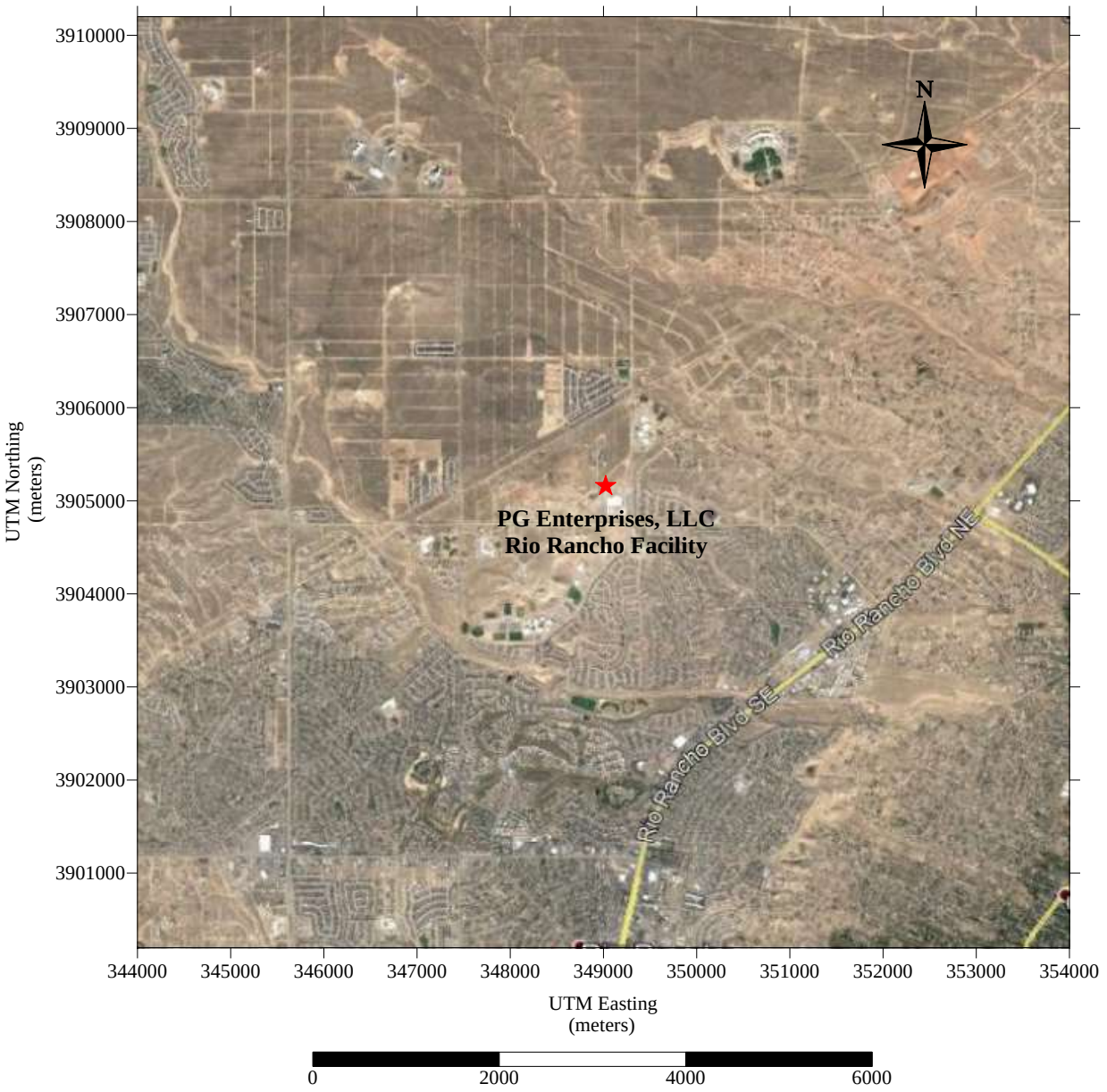

Figure 8-1: Aerial of Site Location of PG Enterprise, LLC's Rio Rancho Facility

Section 9

Proof of Public Notice

(for NSR applications submitting under 20.2.72 or 20.2.74 NMAC)
(This proof is required by: 20.2.72.203.A.14 NMAC "Documentary Proof of applicant's public notice")

X I have read the AQB "Guidelines for Public Notification for Air Quality Permit Applications"
This document provides detailed instructions about public notice requirements for various permitting actions. It also provides public notice examples and certification forms. Material mistakes in the public notice will require a re-notice before issuance of the permit.

Unless otherwise allowed elsewhere in this document, the following items document proof of the applicant's Public Notification. Please include this page in your proof of public notice submittal with checkmarks indicating which documents are being submitted with the application.

New Permit and **Significant Permit Revision** public notices must include all items in this list.

Technical Revision public notices require only items 1, 5, 9, and 10.

Per the Guidelines for Public Notification document mentioned above, include:

1. X A copy of the certified letter receipts with post marks (20.2.72.203.B NMAC)
2. X A list of the places where the public notice has been posted in at least four publicly accessible and conspicuous places, including the proposed or existing facility entrance. (e.g: post office, library, grocery, etc.)
3. X A copy of the property tax record (20.2.72.203.B NMAC).
4. X A sample of the letters sent to the owners of record.
5. X A sample of the letters sent to counties, municipalities, and Indian tribes.
6. X A sample of the public notice posted and a verification of the local postings.
7. X A table of the noticed citizens, counties, municipalities and tribes and to whom the notices were sent in each group.
8. X A copy of the public service announcement (PSA) sent to a local radio station and documentary proof of submittal.
9. X A copy of the classified or legal ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
10. X A copy of the display ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
11. X A map with a graphic scale showing the facility boundary and the surrounding area in which owners of record were notified by mail. This is necessary for verification that the correct facility boundary was used in determining distance for notifying land owners of record.

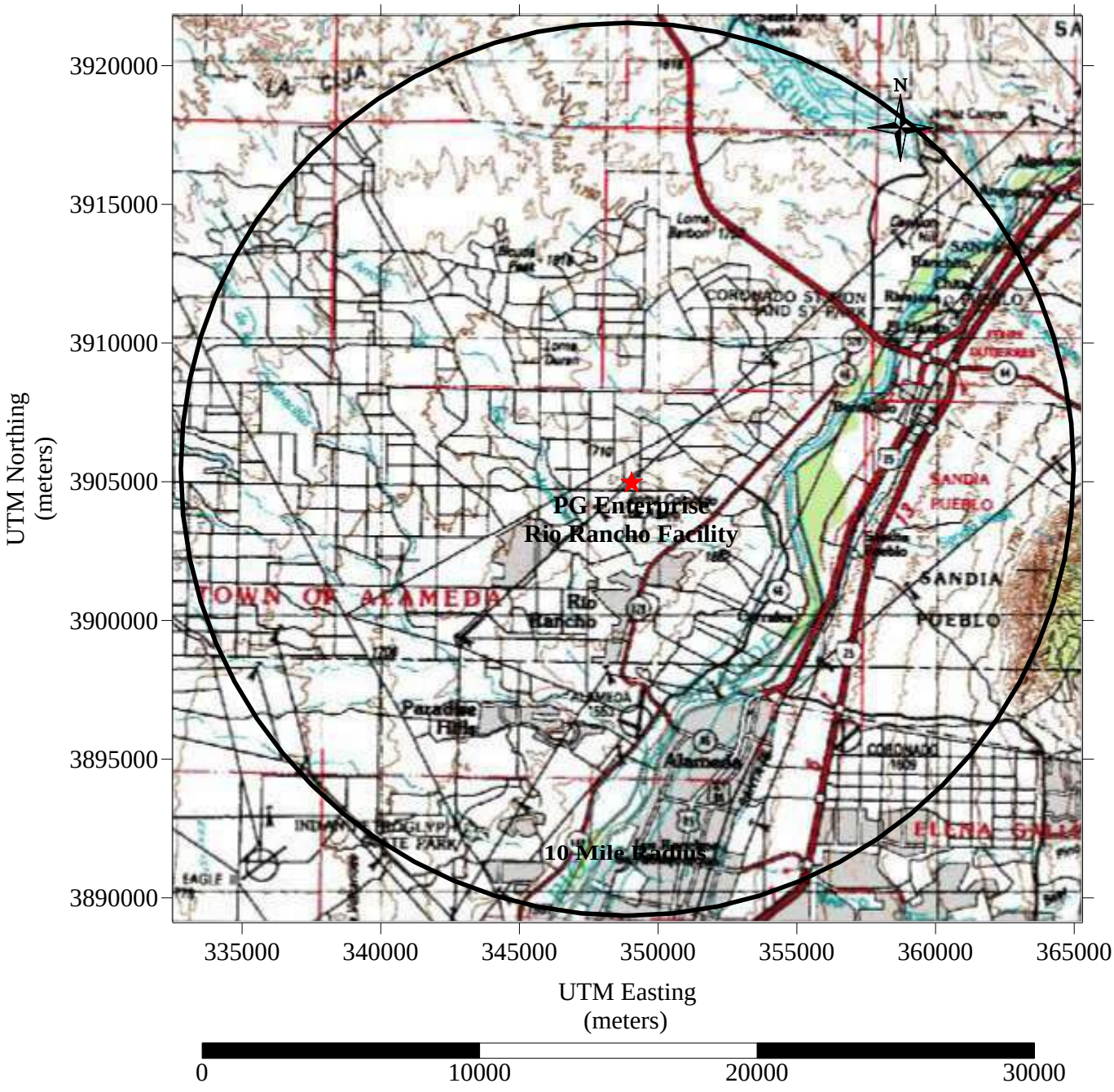

Figure 9-1: Ten Mile Radius Map around PG Enterprise, LLC's Rio Rancho Facility

List of Municipalities, Counties, and Indian Tribes within 10 Miles

City of Environmental Health Division
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103

Town Clerk
Town of Bernalillo
P.O. Box 638
Bernalillo, NM 87004

City Clerk
City of Rio Rancho
3200 Civic Center Circle NE
Rio Rancho, NM 87144

Office of Clerk
Village of Corrales
4324 Corrales Road
Corrales, NM 87048

County Clerk
Bernalillo County
P.O. Box 542
Albuquerque, NM 87103-0542

County Clerk
Sandoval County
P.O. Box 40
Bernalillo, NM 87004

Governor's Office
Santa Ana Pueblo
2 Dove Road
Bernalillo, NM 87004

Governor's Office
Sandia Pueblo
481 Sandia Loop
Bernalillo, NM 87004

List of Landowners within 100 feet of PG Enterprise's Rio Rancho Facility

Account #	Parcel #	Owner	Mailing Address	State	City	Zip	Subdivision	Block	Lot	Tract	Unit
R111020	1-013-071-332-071	Patterson, William III & Denise & Ann	801 Tijeras NW	NM	Albuquerque	87102	Rio Rancho Estates	80	28		13
R044263	1-013-071-431-134	Giglio, Michael and Josephine	85 Caldwell	NJ	Marlboro	07746-1780	Rio Rancho Estates	86	9		13
R050213	1-013-071-364-103	Hogan, Eileen M	166 Lynn Creek	TX	Mabank	75156-7858	Rio Rancho Estates	79	1		13
R087533	1-013-071-198-118	Rancho Estate Properties Inc & Waste Management	P.O. Box 1450	IL	Chicago	60690-1450	Rio Rancho Estates			A	13
R108423	1-013-071-313-023	Palm Holdings LLC	1706 Southern	NM	Rio Rancho	87124-3505	Rio Rancho Estates	86	4		13
R115674	1-013-071-392-130	Ngo, Natividad A	8229 Pinehurst	FL	Tampa	33615	Rio Rancho Estates	79	19		13
R151731	1-013-071-347-515	Loma Colorado North LLC	6801 Jefferson	NM	Albuquerque	87109-4390	Loma Colorado Estates			G	
R151753	1-013-071-421-056	Loma Colorado North LLC	6801 Jefferson	NM	Albuquerque	87109-4390	Loma Colorado Estates			A	

Locations of Posting

Sandoval County Administrative Offices
1500 Idalia Road
Building D
Bernalillo, NM 87004

Rio Rancho City Hall
3200 Civic Center Circle NE
Rio Rancho, NM 87144

Rio Rancho's Loma Colorado Library
755 Loma Colorado Boulevard NE
Rio Rancho, NM 87124

Entrance to Rio Rancho Site on Lumberton NE in Rio Rancho, NM

NOTICE

PG Enterprises, LLC (PGE), announces its intent to apply to the New Mexico Environment Department for a new air quality construction permit for an aggregate processing facility (Rio Rancho Facility). The date the notarized permit application will be submitted to the Air Quality Bureau is estimated to be January 10, 2020.

The exact location for PGE Rio Rancho Facility is located at latitude 35°, 16', 42.881" N and longitude 106°, 39', 35.222" W, NAD83. The approximate location of the PGE Rio Rancho Facility is located on Lumberman Road NE, Lots 5-8, Block 86, S.E. Portion of Unit 13, Rio Rancho Estates, in Rio Rancho, NM in Sandoval County.

The proposed permit, under regulation 20.2.72.200.A.(1) NMAC, consists of a 150 ton per hour (TPH) aggregate crushing and screening plant, which includes a raw material storage pile, a feeder, primary crusher with under conveyor, secondary crusher with under conveyor, screen with two (2) under conveyors, five (5) transfer conveyors, and a stacker conveyor. The plant will be powered by a 230 horsepower (hp) generator/engine, 309 horsepower (hp) generator/engine, and 100 horsepower (hp) generator/engine.

The estimated maximum quantities of any regulated air contaminants will be as follows in pound per hour (pph) and tons per year (tpy). These reported emissions could change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
PM_{10} (Total Facility – Regulated and Fugitive Sources)	2.97 pph	2.84 tpy
$PM_{2.5}$ (Total Facility – Regulated and Fugitive Sources)	0.63 pph	0.77 tpy
Sulfur Dioxide (SO_2)	0.0070 pph	0.013 tpy
Nitrogen Oxides (NO_x)	4.63 pph	8.46 tpy
Carbon Monoxide (CO)	3.92 pph	7.17 tpy
Volatile Organic Compounds (VOC)	0.46 pph	0.85 tpy
Total sum of all Hazardous Air Pollutants (HAPs)	0.028 pph	0.0040 tpy
Toxic Air Pollutant (TAP)	0.00017 pph	0.00031 tpy
Green House Gas Emissions as Total CO_2e	n/a	<1,400 tpy

The maximum operating schedule of the plant is 11 hours per day, 7 days a week, and a maximum of 52 weeks per year for annual operating hours of 3655 hours per year. The standard operating schedule of the plant is 11 hours per day, 7 days a week, and a maximum of 52 weeks per year.

The owner and/or operator of the Facility are:

PG Enterprises, LLC
301 Murray Rd SE
Albuquerque, NM 87105

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816; (505) 476-4300; 1 800 224-7009; https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html. Other comments and questions may be submitted verbally.

With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may have not yet received the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

Attención

Este es un aviso de la Agencia de Calidad de Aire del Departamento de Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor de comunicarse con la oficina de Calidad de Aire al teléfono 505-476-5557.

Notice of Non-Discrimination

NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non- discrimination programs, policies or procedures, you may contact: Kristine Pintado, Non-Discrimination Coordinator, New Mexico Environment Department, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. If you believe that you have been discriminated against with respect to a NMED program or activity, you may contact the Non-Discrimination Coordinator identified above or visit our website at https://www.env.nm.gov/NMED/EJ/index.html to learn how and where to file a complaint of discrimination.


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Sulfur Dioxide (SO_2)	0.0079 pph	0.013 tpy
Nitrogen Oxides (NO_x)	6.63 pph	8.66 tpy
Carbon Monoxide (CO)	3.92 pph	7.17 tpy
Volatile Organic Compounds (VOC)	0.46 pph	0.83 tpy
Total sum of all Hazardous Air Pollutants (HAPs)	0.028 pph	0.0040 tpy
Toxic Air Pollutant (TAP)	0.00017 pph	0.00031 tpy
Green House Gas Emissions as Total CO_2e	n/a	<1,400 tpy

The maximum operating schedule of the plant is 11 hours per day, 7 days a week, and a maximum of 52 weeks per year for annual operating hours of 3655 hours per year. The standard operating schedule of the plant is 11 hours per day, 7 days a week, and a maximum of 52 weeks per year.

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TYPE "[illegible]" GENERAL BUILDING
Effective January 1, 2017

	Base Rate	Fringe Rate	Apprenticeship
Asbestos Worker - Heat & Frost Insulator	21.36	15.15	[illegible]
Boilermaker	24.75	7.06	[illegible]
Bricklayer/Blocklayer/Stone mason	20.46	7.06	[illegible]
Carpenter/Lather	19.76	5.77	[illegible]
Cement Mason	16.96	5.57	[illegible]
Electricians			
Outside Classifications			
Groundman	[illegible]	[illegible]	[illegible]
Equipment Operator	[illegible]	[illegible]	[illegible]
Lineman Tech	[illegible]	[illegible]	[illegible]
Cable Splicer	[illegible]	[illegible]	[illegible]
Inside Classifications			


SANDOVAL COUNTY ADMINISTRATION

NOTICE OF RIGHT TO INSPECT PUBLIC RECORDS

NOTICE

PLEASE RE
OLD POST
WHEN PUT
UP NEW C

NOTICE

SANDOVAL CO

FOSTER GRANDPAREN

Volunteers Nee

Make a Difference in Someon


LOMA COLORADO PUBLIC LIBRARY

PG ENTERPRISES

January 9, 2020

City Clerk
City of Rio Rancho
3200 Civic Center Circle NE
Rio Rancho, NM 87144

To whom it may concern:

PG Enterprises, LLC (PGE), announces its intent to apply to the New Mexico Environment Department for a new air quality construction permit for an aggregate processing facility (Rio Rancho Facility). The date the notarized permit application will be submitted to the Air Quality Bureau is estimated to be January 10, 2020.

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Sincerely,

PG Enterprises, LLC
301 Murray Rd SE
Albuquerque, NM 87105

PG ENTERPRISES

January 9, 2020

Patterson, William III & Denise & Ann
801 Tijeras NW
Albuquerque, New Mexico 87102

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Toxic Air Pollutant (TAP)	0.00017 pph	0.00031 tpy
Green House Gas Emissions as Total CO_2e	n/a	<1,400 tpy

The maximum operating schedule of the plant is 11 hours per day, 7 days a week, and a maximum of 52 weeks per year for annual operating hours of 3655 hours per year. The standard operating schedule of the plant is 11 hours per day, 7 days a week, and a maximum of 52 weeks per year.

The owner and/or operator of the Facility are:

PG Enterprises, LLC
301 Murray Rd SE
Albuquerque, NM 87105

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816; (505)

476-4300; 1 800 224-7009; https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html. Other comments and questions may be submitted verbally.

With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may have not yet received the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

Attención

Este es un aviso de la Agencia de Calidad de Aire del Departamento de Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor de comunicarse con la oficina de Calidad de Aire al teléfono 505-476-5557.

Notice of Non-Discrimination

NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non- discrimination programs, policies or procedures, you may contact: Kristine Pintado, Non-Discrimination Coordinator, New Mexico Environment Department, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. If you believe that you have been discriminated against with respect to a NMED program or activity, you may contact the Non-Discrimination Coordinator identified above or visit our website at https://www.env.nm.gov/NMED/EJ/index.html to learn how and where to file a complaint of discrimination

Sincerely,

PG Enterprises, LLC
301 Murray Rd SE
Albuquerque, NM 87105

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R082180
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R124737
R130690
R151731
R119804
R125077
R127537
R131543
R135600
R095148
R090870
400
R115626
R026555
R026772
R037502
R151730
R151734
R151738
R151743

PG Enterprises, LLC Rio Rancho Facility
Landowner List within 100 feet

Account #	Parcel #	Owner	Mailing Address	State	City	Zip	Subdivision	Block	Lot	Tract	Unit	Township	Range	Section
R111020	1-013-071-332-071	Patterson, William III & Denise & Ann	801 Tijeras NW	NM	Albuquerque	87102	Rio Rancho Estates	80	28		13	12N	3E	7
R044263	1-013-071-431-134	Giglio, Michael and Josephine	85 Caldwell	NJ	Marlboro	07746-1780	Rio Rancho Estates	86	9		13	12N	3E	7
R050213	1-013-071-364-103	Hogan, Eileen M	166 Lynn Creek	TX	Mabank	75156-7858	Rio Rancho Estates	79	1		13	12N	3E	7
R087533	1-013-071-198-118	Rancho Estate Properties Inc & Waste Management	P.O. Box 1450	IL	Chicago	60690-1450	Rio Rancho Estates			A	13	12N	3E	7
R108423	1-013-071-313-023	Palm Holdings LLC	1706 Southern	NM	Rio Rancho	87124-3505	Rio Rancho Estates	86	4		13	12N	3E	7
R115674	1-013-071-392-130	Ngo, Natividad A	8229 Pinehurst	FL	Tampa	33615	Rio Rancho Estates	79	19		13	12N	3E	7
R151731	1-013-071-347-515	Loma Colorado North LLC	6801 Jefferson	NM	Albuquerque	87109-4390	Loma Colorado Estates			G		12N	3E	7
R151753	1-013-071-421-056	Loma Colorado North LLC	6801 Jefferson	NM	Albuquerque	87109-4390	Loma Colorado Estates			A		12N	3E	7

NOTICE OF AIR QUALITY PERMIT APPLICATION

PG Enterprises, LLC (PGE), announces its intent to apply to the New Mexico Environment Department for a new air quality construction permit for an aggregate processing facility (Rio Rancho Facility). The date the notarized permit application will be submitted to the Air Quality Bureau is estimated to be January 10, 2020.

The exact location for PGE Rio Rancho Facility is located at latitude 35°, 16', 42.881" N and longitude 106°, 39', 35.222" W, NAD83. The approximate location of the PGE Rio Rancho Facility is located on Lumberman Road NE, Lots 5-8, Block 86, S.E. Portion of Unit 13, Rio Rancho Estates, in Rio Rancho, NM in Sandoval County.

The proposed permit, under regulation 20.2.72.200.A.(1) NMAC, consists of a 150 ton per hour (TPH) aggregate crushing and screening plant, which includes a raw material storage pile, a feeder, primary crusher with under conveyor, secondary crusher with under conveyor, screen with two (2) under conveyors, five (5) transfer conveyors, and a stacker conveyor. The plant will be powered by a 230 horsepower (hp) generator/engine, 309 horsepower (hp) generator/engine, and 100 horsepower (hp) generator/engine.

The estimated maximum quantities of any regulated air contaminants will be as follows in pound per hour (pph) and tons per year (tpy). These reported emissions could change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
PM_{10} (Total Facility – Regulated and Fugitive Sources)	2.97 pph	2.84 tpy
$PM_{2.5}$ (Total Facility – Regulated and Fugitive Sources)	0.63 pph	0.77 tpy
Sulfur Dioxide (SO_2)	0.0070 pph	0.013 tpy
Nitrogen Oxides (NO_x)	4.63 pph	8.46 tpy
Carbon Monoxide (CO)	3.92 pph	7.17 tpy
Volatile Organic Compounds (VOC)	0.46 pph	0.85 tpy
Total sum of all Hazardous Air Pollutants (HAPs)	0.028 pph	0.0040 tpy
Toxic Air Pollutant (TAP)	0.00017 pph	0.00031 tpy
Green House Gas Emissions as Total CO_2e	n/a	<1,400 tpy

The maximum operating schedule of the plant is 11 hours per day, 7 days a week, and a maximum of 52 weeks per year for annual operating hours of 3655 hours per year. The standard operating schedule of the plant is 11 hours per day, 7 days a week, and a maximum of 52 weeks per year.

The owner and/or operator of the Facility are:

PG Enterprises, LLC
301 Murray Rd SE
Albuquerque, NM 87105

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816; (505) 476-4300; 1 800 224-7009; https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html. Other comments and questions may be submitted verbally.

With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may have not yet received the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

Attención

Este es un aviso de la Agencia de Calidad de Aire del Departamento de Medio Ambiente de Nuevo México, acerca de

las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor de comunicarse con la oficina de Calidad de Aire al teléfono 505-476-5557.

Notice of Non-Discrimination

NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, you may contact: Kristine Pintado, Non-Discrimination Coordinator, New Mexico Environment Department, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. If you believe that you have been discriminated against with respect to a NMED program or activity, you may contact the Non-Discrimination Coordinator identified above or visit our website at https://www.env.nm.gov/NMED/EJ/index.html to learn how and where to file a complaint of discrimination.

NOTICE OF AIR QUALITY PERMIT APPLICATION

G Enterprises, LLC (PGE), announces its intent to apply to the New Mexico Environment Department for a new air uality construction permit for an aggregate processing facility (Rio Rancho Facility). The date the notarized permit application will be submitted to the Air Quality Bureau is estimated to be January 10, 2020.

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G Enterprises, LLC
01 Murray Rd SE
lbuquerque, NM 87105

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ournal: January 12, 2020

AFFIDAVIT OF PUBLICATION

STATE OF NEW MEXICO

County of Sandoval SS

NOTICEOFAIRQUALITYPERMITAPPLICATIONPGENTERPRISESLLCPGEANNOUNCESITSINTENTTOAPPLYTOTHENEWMEXICOENVIRONMENTDEPARTMENTFORANEWAIRQUALIT

Elise Rodriguez , the undersigned, on oath states that she is an authorized Representative of Rio Rancho Observer, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made of assessed as court cost; that the notice, copy of which hereto attached, was published in said paper in the regular daily edition, for 1 time(s) on the following date(s):

01/12/2020

OFFICIAL SEAL
Susan Ramirez
NOTARY PUBLIC - STATE OF NEW MEXICO
My Commission Expires: 2/15/2023

Sworn and subscribed before me, a Notary Public, in and for the County of Sandoval and State of New Mexico this 12 day of January of 2020

PRICE $395.21

Statement to come at the end of month.

ACCOUNT NUMBER 1039001

NOTICE OF AIR QUALITY PERMIT APPLICATION

PG Enterprises, LLC (PGE), announces its intent to apply to the New Mexico Environment Department for a new air quality construction permit for an aggregate processing facility (Rio Rancho Facility). The date the notarized permit application will be submitted to the Air Quality Bureau is estimated to be January 10, 2020.

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The owner and/or operator of the Facility are:

PG Enterprises, LLC
301 Murray Rd SE
Albuquerque, NM 87105

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816; (505) 476-4300; 1 800 224-7009; *www.env.nm.gov/aqb/permit/aqb_draft_permits.html.* Other comments and questions may be submitted verbally.

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AFFIDAVIT OF PUBLICATION

STATE OF NEW MEXICO

County of Sandoval SS

AIR QUALITY

Elise Rodriguez , the undersigned, on oath states that she is an authorized Representative of Rio Rancho Observer, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made of assessed as court cost; that the notice, copy of which hereto attached, was published in said paper in the regular daily edition, for 1 time(s) on the following date(s):

01/12/2020

OFFICIAL SEAL
Susan Ramirez
NOTARY PUBLIC - STATE OF NEW MEXICO
My Commission Expires: 2/15/2023

Sworn and subscribed before me, a ~~Notary~~ Public, in and for the County of Sandoval and State of New Mexico this 12 day of January of 2020

PRICE $569.40

Statement to come at the end of month.

ACCOUNT NUMBER 1039001

January 13, 2020

92.3 KRST FM
500 4th St NW
5th Floor
Albuquerque, NM 87102

CERTIFIED MAIL

Dear 92.3 KRST FM Radio:

SUBJECT: PSA Request - Proposed Air Quality Construction Permit for the PG Enterprises, LLC's Rio Rancho Facility.

Attached is a copy of a public service announcement regarding a proposed air quality construction permit for PG Enterprises, LLC's Rio Rancho Facility. This announcement is being submitted by Montrose Air Quality Services, Albuquerque, NM on behalf of PG Enterprises, LLC.

The announcement request is being made to fulfill the requirements of the New Mexico Environmental Department air quality permitting regulations. Please consider reading the attached announcement as a public service message.

If you have any questions or need additional information, please contact me at (505) 830-9680 ext 6 (voice), (505) 830-9678 (fax) or email at pwade@montrose-env.com. Thank you.

Sincerely,

Paul Wade

Paul Wade
Senior Engineer

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

RADIO ANNOUNCEMENT

PG Enterprises, LLC (PGE), announces its intent to apply to the New Mexico Environment Department for a new air quality construction permit for an aggregate processing facility (Rio Rancho Facility). The date the notarized permit application will be submitted to the Air Quality Bureau is estimated to be January 10, 2020.

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Public notice postings for this permit application can be found at the follow locations:

PGE Rio Rancho Facility Entrance
Rio Rancho's Loma Colorado Library @ 755 Loma Colorado Boulevard NE, Rio Rancho, NM
Sandoval County Administrative Offices @ 1500 Idalia Road, Bernalillo, NM
Rio Rancho City Hall @ 3200 Civic Center Circle NE, Rio Rancho, NM

Owner and operator of the facility is**:**

PG Enterprises, LLC
301 Murray Rd SE
Albuquerque, NM 87105

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

Permit Programs Manager
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico; 87505-1816
Telephone Number (505) 476-4300 or 1 800 224-7009

7017 3040 0000 9917 8664

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OFFICIAL USE

Certified Mail Fee
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Extra Services & Fees *(check box, add fee as appropriate)*
- ☐ Return Receipt (hardcopy) $ _____
- ☐ Return Receipt (electronic) $ _____
- ☐ Certified Mail Restricted Delivery $ _____
- ☐ Adult Signature Required $ _____
- ☐ Adult Signature Restricted Delivery $ _____

Postage
$

Total Postage and Fees
$

Postmark Here
JAN 13 2020
USPS ALBUQUERQUE, NM 87110-3801

Sent To
Street and
City, State
92.3 KRST FM
500 4th St. NW
5th Floor
Albuquerque, NM 87102-2172

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

Section 10

Written Description of the Routine Operations of the Facility

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A written description of the routine operations of the facility. Include a description of how each piece of equipment will be operated, how controls will be used, and the fate of both the products and waste generated. For modifications and/or revisions, explain how the changes will affect the existing process. In a separate paragraph describe the major process bottlenecks that limit production. The purpose of this description is to provide sufficient information about plant operations for the permit writer to determine appropriate emission sources.

PG Enterprises, LLC(PGE) is applying for a new 20.2.72 NMAC air quality permit for a 150 ton per hour (TPH) aggregate crushing and screening plant. The 150 tph aggregate crushing and screening plant will include aggregate storage piles, a feeder, jaw crusher with under conveyor, impact crusher with under conveyor, screen with under conveyors, five (5) transfer conveyors, and stacker conveyor. The jaw crusher plant will be powered by a 230 horsepower (hp) engine (Unit 1), impact crusher plant will be powered by a 309 horsepower (hp) engine (Unit 2), and the screen will be powered by a 100 horsepower (hp) engine (Unit 3). Processed aggregate will be stored in a finish storage pile then transported by haul trucks (Unit ROAD) to off-site sales. The aggregate crushing and screening plant will limit a daily average hourly processing rate to 150 tph and annual production rate to 350,000 tpy. Aggregate processing hours will be limited from 8 AM to 4 PM daily in the winter months and 7 AM to 6 PM in the spring, summer, and fall months.

Aggregate/recycle material is delivered to the site by haul truck (Unit ROAD) and stored in the raw material storage pile (Unit RAW). From the raw material storage pile, the material is transported to the crusher/screen plant feeder (Unit 4). From the feeder, the material is crushed in the jaw crusher (Unit 5), conveyed (Unit 6), and input into the impact crusher (Unit 7). Crushed material is then conveyed (Unit 8) and sized in the plant screen (Unit 9). From the screen, oversized material is sent back to the impact crusher by recycle conveyors (Units 10 and 11). Product from the screen is conveyed by a transfer conveyor (Unit 12) to the stacker conveyor (Unit 13) where the processed material is dropped into a pile. Processed material is stored in a finish storage pile (Unit FPILE) until needed or loaded into haul trucks (Unit TL). A process flow diagram is presented as Figure 4-1.

Section 11
Source Determination

Source submitting under 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC

Sources applying for a construction permit, PSD permit, or operating permit shall evaluate surrounding and/or associated sources (including those sources directly connected to this source for business reasons) and complete this section. Responses to the following questions shall be consistent with the Air Quality Bureau's permitting guidance, Single Source Determination Guidance, which may be found on the Applications Page in the Permitting Section of the Air Quality Bureau website.

Typically, buildings, structures, installations, or facilities that have the same SIC code, that are under common ownership or control, and that are contiguous or adjacent constitute a single stationary source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes. Submission of your analysis of these factors in support of the responses below is optional, unless requested by NMED.

A. Identify the emission sources evaluated in this section (list and describe)**:** Aggregate Crushing and Screening Plant – SIC Codes 1429, 1442.

B. Apply the 3 criteria for determining a single source:

SIC Code: Surrounding or associated sources belong to the same 2-digit industrial grouping (2-digit SIC code) as this facility, OR surrounding or associated sources that belong to different 2-digit SIC codes are support facilities for this source.

☒ **Yes** ☐ **No**

Common Ownership or Control: Surrounding or associated sources are under common ownership or control as this source.

☒ **Yes** ☐ **No**

Contiguous or Adjacent: Surrounding or associated sources are contiguous or adjacent with this source.

☒ **Yes** ☐ **No**

C. Make a determination:

☐ The source, as described in this application, constitutes the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes. If in "A" above you evaluated only the source that is the subject of this application, all "**YES**" boxes should be checked. If in "A" above you evaluated other sources as well, you must check **AT LEAST ONE** of the boxes "**NO**" to conclude that the source, as described in the application, is the entire source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes.

☒ The source, as described in this application, **does not** constitute the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes (A permit may be issued for a portion of a source). The entire source consists of the following facilities or emissions sources (list and describe):

Section 12

Section 12.A
PSD Applicability Determination for All Sources

(Submitting under 20.2.72, 20.2.74 NMAC)

A PSD applicability determination for all sources. For sources applying for a significant permit revision, apply the applicable requirements of 20.2.74.AG and 20.2.74.200 NMAC and to determine whether this facility is a major or minor PSD source, and whether this modification is a major or a minor PSD modification. It may be helpful to refer to the procedures for Determining the Net Emissions Change at a Source as specified by Table A-5 (Page A.45) of the EPA New Source Review Workshop Manual to determine if the revision is subject to PSD review.

A. This facility is a "minor" source

B. **This facility is not one of the listed 20.2.74.501 Table I – PSD Source Categories.**

a. **NOx: 8.5 TPY**
b. **CO: 7.2 TPY**
c. **VOC: 0.85 TPY**
d. **SOx: 0.011 TPY**
e. **PM: 6.2 TPY**
f. **PM10: 2.8 TPY**
g. **PM2.5: 0.77 TPY**
h. **Lead: 0.000071 TPY**
i. **GHG: 1,383 TPY**

E. If this is an existing PSD major source, or any facility with emissions greater than 250 TPY (or 100 TPY for 20.2.74.501 Table 1 – PSD Source Categories), determine whether any permit modifications are related, or could be considered a single project with this action, and provide an explanation for your determination whether a PSD modification is triggered.

No, this facility is not a major source. The facility consists of aggregate processing plant. Aggregate processing falls under 2-digit SIC Code Group 14. Additionally, the combined emissions from the facility of any PSD pollutant is less than 250 tons per year.

Section 13

Determination of State & Federal Air Quality Regulations

This section lists each state and federal air quality regulation that may apply to your facility and/or equipment that are stationary sources of regulated air pollutants.

Not all state and federal air quality regulations are included in this list. Go to the Code of Federal Regulations (CFR) or to the Air Quality Bureau's regulation page to see the full set of air quality regulations.

Required Information for Specific Equipment:
For regulations that apply to specific source types, in the 'Justification' column **provide any information needed to determine if the regulation does or does not apply**. **For example**, to determine if emissions standards at 40 CFR 60, Subpart IIII apply to your three identical stationary engines, we need to know the construction date as defined in that regulation; the manufacturer date; the date of reconstruction or modification, if any; if they are or are not fire pump engines; if they are or are not emergency engines as defined in that regulation; their site ratings; and the cylinder displacement.

Required Information for Regulations that Apply to the Entire Facility:
See instructions in the 'Justification' column for the information that is needed to determine if an 'Entire Facility' type of regulation applies (e.g. 20.2.70 or 20.2.73 NMAC).

Regulatory Citations for Regulations That Do Not, but Could Apply:
If there is a state or federal air quality regulation that does not apply, but you have a piece of equipment in a source category for which a regulation has been promulgated, you must **provide the low level regulatory citation showing why your piece of equipment is not subject to or exempt from the regulation. For example** if you have a stationary internal combustion engine that is not subject to 40 CFR 63, Subpart ZZZZ because it is an existing 2 stroke lean burn stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, your citation would be 40 CFR 63.6590(b)(3)(i). **We don't want a discussion of every non-applicable regulation, but if it is possible a regulation could apply, explain why it does not. For example,** if your facility is a power plant, you do not need to include a citation to show that 40 CFR 60, Subpart OOO does not apply to your non-existent rock crusher.

Regulatory Citations for Emission Standards:
For each unit that is subject to an emission standard in a source specific regulation, such as 40 CFR 60, Subpart OOO or 40 CFR 63, Subpart HH, include the low level regulatory citation of that emission standard. Emission standards can be numerical emission limits, work practice standards, or other requirements such as maintenance. **Here are examples:** a glycol dehydrator is subject to the general standards at 63.764C(1)(i) through (iii); an engine is subject to 63.6601, Tables 2a and 2b; a crusher is subject to 60.672(b), Table 3 and all transfer points are subject to 60.672(e)(1)

Federally Enforceable Conditions:
All federal regulations are federally enforceable. All Air Quality Bureau State regulations are federally enforceable except for the following: affirmative defense portions at 20.2.7.6.B, 20.2.7.110(B)(15), 20.2.7.11 through 20.2.7.113, 20.2.7.115, and 20.2.7.116; 20.2.37; 20.2.42; 20.2.43; 20.2.62; 20.2.63; 20.2.86; 20.2.89; and 20.2.90 NMAC. Federally enforceable means that EPA can enforce the regulation as well as the Air Quality Bureau and federally enforceable regulations can count toward determining a facility's potential to emit (PTE) for the Title V, PSD, and nonattainment permit regulations.

INCLUDE ANY OTHER INFORMATION NEEDED TO COMPLETE AN APPLICABILITY DETERMINATION OR THAT IS RELEVENT TO YOUR FACILITY'S NOTICE OF INTENT OR PERMIT.

EPA Applicability Determination Index for 40 CFR 60, 61, 63, etc: http://cfpub.epa.gov/adi/

Table for STATE REGULATIONS:

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.1 NMAC	General Provisions	Yes	Facility	General Provisions apply to Notice of Intent, Construction, and Title V permit applications.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	20.2.3 NMAC is a SIP approved regulation that limits the maximum allowable concentration of Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide.
20.2.7 NMAC	Excess Emissions	Yes	Facility	This facility is subject to 20.2.7 NMAC.
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	1, 2, 3	Engines and heaters are Stationary Combustion Equipment. Specify units subject to this regulation. The facility stationary combustion equipment are subject to a 20 percent opacity limit.
20.2.70 NMAC	Operating Permits	No	Facility	This facility is not a Title V Operating Permit source. The facility consists of aggregate processing plants and HMA plants. Aggregate processing falls under 2-digit SIC Code Group 14 and HMA plants falls under 2-digit SIC Code Group 29. While aggregate material from aggregate processing plants is used in the HMA plant, since they are operating under different SIC Codes they are separate facilities for major source determination.
20.2.71 NMAC	Operating Permit Fees	No	Facility	This facility is not a Title V Operating Permit source.
20.2.72 NMAC	Construction Permits	Yes	Facility	Potential emission rate (PER) for the facility is greater than 10 pph or greater than 25 tpy for any pollutant subject to a state or federal ambient air quality standard.
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	**NOI:** 20.2.73.200 NMAC applies (requiring a NOI application) **Emissions Inventory Reporting:** 20.2.73.300 NMAC applies.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	Facility	This facility is not a PSD major source.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This facility is subject to 20.2.72 NMAC and is in turn subject to 20.2.75 NMAC.
20.2.77 NMAC	New Source Performance	Yes	Units subject to 40 CFR 60	This is a stationary source, which is subject to the requirements of 40 CFR Part 60.
20.2.78 NMAC	Emission Standards for HAPS	No	Units Subject to 40 CFR 61	This facility doesn't emits hazardous air pollutants which are subject to the requirements of 40 CFR Part 61.
20.2.79 NMAC	Permits – Nonattainment Areas	No	Facility	This facility is located in an Attainment Area.
20.2.80 NMAC	Stack Heights	Yes	1, 2, 3	The objective of this Part is to establish requirements for the evaluation of stack heights and other dispersion techniques in permitting decisions. The Department shall give no credit for reductions in emissions due to the length of a source's stack height that exceeds good engineering practice or due to any other dispersion technique. The facility will meet all requirements of good engineering practices.
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	1, 2, 3	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63.

Table for Applicable FEDERAL REGULATIONS:

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 50	NAAQS	Yes	Facility	This is a 20.2.72 NMAC permit application.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	Units subject to 40 CFR 60	Subparts OOO and IIII in 40 CFR 60 applies.
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for **Volatile Organic Liquid Storage Vessels** (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced **After** July 23, 1984	No		This facility does not have storage vessels with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984.
NSPS 40 CFR Part 60 Subpart OOO	Standards of Performance for **Nonmetallic Mineral Processing Plants**	Yes	5, 6, 7, 8, 9, 10, 11, 12, 13	NSPS standards for non-metallic minerals apply to applicable crushers, screens, and conveyors.
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	Yes	1, 2, 3	The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE). Units 1 and 2 are potentially applicable to Subpart IIII.
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	No		See 40 CFR 60.4230 and EPA Region 1's Reciprocating Internal Combustion Guidance website.
NESHAP 40 CFR 61 Subpart A	General Provisions	No	Units Subject to 40 CFR 61	Applies if any other Subpart in 40 CFR 61 applies.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	Units Subject to 40 CFR 63	Applies if any other Subpart in 40 CFR 63 applies.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	Yes	1, 2, 3	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.

Section 14

Operational Plan to Mitigate Emissions

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

☐ **Title V Sources** (20.2.70 NMAC)**:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Emissions During Startups, Shutdowns, and Emergencies** defining the measures to be taken to mitigate source emissions during startups, shutdowns, and emergencies as required by 20.2.70.300.D.5(f) and (g) NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☒ **NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Source Emissions During Malfunction, Startup, or Shutdown** defining the measures to be taken to mitigate source emissions during malfunction, startup, or shutdown as required by 20.2.72.203.A.5 NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☒ **Title V** (20.2.70 NMAC)**, NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has established and implemented a Plan to Minimize Emissions During Routine or Predictable Startup, Shutdown, and Scheduled Maintenance through work practice standards and good air pollution control practices as required by 20.2.7.14.A and B NMAC. This plan shall be kept on site or at the nearest field office to be made available to the Department upon request. This plan should not be submitted with this application.

Operational Plan to Mitigate Emissions and **Plan of Work Practices**

Startup
Prior to the production of aggregate, water sprays, or other control measures, for the crushing and screening plant will be functioning correctly and used as needed, to control fugitive emissions to an opacity limit in compliance with NSPS Subpart OOO standards per EPA Reference Method 9.

Upon visual inspection, all unpaved haul roads will be controlled with surfactants or other equivalent control methods, to minimize fugitive dust as required under applicable permit conditions.

Shutdown
All required control equipment will operate until all aggregate production ceases.

Maintenance
The equipment water sprays will be maintained to prevent excess emissions during startup or shutdown. This facility will not have excess emissions during any maintenance procedures.

Malfunction
Upon malfunction where excess particulate emissions are observed from the equipment water sprays all aggregate processing will cease until repairs to control equipment are made.

Section 15

Alternative Operating Scenarios

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Alternative Operating Scenarios: Provide all information required by the department to define alternative operating scenarios. This includes process, material and product changes; facility emissions information; air pollution control equipment requirements; any applicable requirements; monitoring, recordkeeping, and reporting requirements; and compliance certification requirements. Please ensure applicable Tables in this application are clearly marked to show alternative operating scenario.

Construction Scenarios: When a permit is modified authorizing new construction to an existing facility, NMED includes a condition to clearly address which permit condition(s) (from the previous permit and the new permit) govern during the interval between the date of issuance of the modification permit and the completion of construction of the modification(s). There are many possible variables that need to be addressed such as: Is simultaneous operation of the old and new units permitted and, if so for example, for how long and under what restraints? In general, these types of requirements will be addressed in Section A100 of the permit, but additional requirements may be added elsewhere. Look in A100 of our NSR and/or TV permit template for sample language dealing with these requirements. Find these permit templates at: https://www.env.nm.gov/aqb/permit/aqb_pol.html. Compliance with standards must be maintained during construction, which should not usually be a problem unless simultaneous operation of old and new equipment is requested.

In this section, under the bolded title "Construction Scenarios", specify any information necessary to write these conditions, such as: conservative-realistic estimated time for completion of construction of the various units, whether simultaneous operation of old and new units is being requested (and, if so, modeled), whether the old units will be removed or decommissioned, any PSD ramifications, any temporary limits requested during phased construction, whether any increase in emissions is being requested as SSM emissions or will instead be handled as a separate Construction Scenario (with corresponding emission limits and conditions, etc.

No alternative operating scenarios are proposed for this facility.

Section 16

Air Dispersion Modeling

1) Minor Source Construction (20.2.72 NMAC) and Prevention of Significant Deterioration (PSD) (20.2.74 NMAC) ambient impact analysis (modeling): Provide an ambient impact analysis as required at 20.2.72.203.A(4) and/or 20.2.74.303 NMAC and as outlined in the Air Quality Bureau's Dispersion Modeling Guidelines found on the Planning Section's modeling website. If air dispersion modeling has been waived for one or more pollutants, attach the AQB Modeling Section modeling waiver approval documentation.
2) SSM Modeling: Applicants must conduct dispersion modeling for the total short term emissions during routine or predictable startup, shutdown, or maintenance (SSM) using realistic worst case scenarios following guidance from the Air Quality Bureau's dispersion modeling section. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions modeling requirements.
3) Title V (20.2.70 NMAC) ambient impact analysis: Title V applications must specify the construction permit and/or Title V Permit number(s) for which air quality dispersion modeling was last approved. Facilities that have only a Title V permit, such as landfills and air curtain incinerators, are subject to the same modeling required for preconstruction permits required by 20.2.72 and 20.2.74 NMAC.

What is the purpose of this application?	Enter an X for each purpose that applies
New PSD major source or PSD major modification (20.2.74 NMAC). See #1 above.	
New Minor Source or significant permit revision under 20.2.72 NMAC (20.2.72.219.D NMAC). See #1 above. **Note:** Neither modeling nor a modeling waiver is required for VOC emissions.	**X**
Reporting existing pollutants that were not previously reported.	
Reporting existing pollutants where the ambient impact is being addressed for the first time.	
Title V application (new, renewal, significant, or minor modification. 20.2.70 NMAC). See #3 above.	
Relocation (20.2.72.202.B.4 or 72.202.D.3.c NMAC)	
Minor Source Technical Permit Revision 20.2.72.219.B.1.d.vi NMAC for like-kind unit replacements.	
Other: i.e. SSM modeling. See #2 above.	
This application does not require modeling since this is a No Permit Required (NPR) application.	
This application does not require modeling since this is a Notice of Intent (NOI) application (20.2.73 NMAC).	
This application does not require modeling according to 20.2.70.7.E(11), 20.2.72.203.A(4), 20.2.74.303, 20.2.79.109.D NMAC and in accordance with the Air Quality Bureau's Modeling Guidelines.	

Check each box that applies:

☐ See attached, approved modeling **waiver for all** pollutants from the facility.

☐ See attached, approved modeling **waiver for some** pollutants from the facility.

X Attached in Universal Application Form 4 (UA4) is a **modeling report for all** pollutants from the facility.

☐ Attached in UA4 is a **modeling report for some** pollutants from the facility.

☐ No modeling is required.

Universal Application 4

Air Dispersion Modeling Report

Refer to and complete Section 16 of the Universal Application form (UA3) to assist your determination as to whether modeling is required. If, after filling out Section 16, you are still unsure if modeling is required, e-mail the completed Section 16 to the AQB Modeling Manager for assistance in making this determination. If modeling is required, a modeling protocol would be submitted and approved prior to an application submittal. The protocol should be emailed to the modeling manager. A protocol is recommended but optional for minor sources and is required for new PSD sources or PSD major modifications. Fill out and submit this portion of the Universal Application form (UA4), the "Air Dispersion Modeling Report", only if air dispersion modeling is required for this application submittal. This serves as your modeling report submittal and should contain all the information needed to describe the modeling. No other modeling report or modeling protocol should be submitted with this permit application.

16-A: Identification

1	Name of facility: Rio Rancho Facility
2	Name of company: PG Enterprises, LLC
3	Current Permit number: New Permit
4	Name of applicant's modeler: Paul Wade
5	Phone number of modeler: (505) 830-9680 ext 6
6	E-mail of modeler: pwade@montrose-env.com

16-B: Brief

1	Why is the modeling being done? Other (describe below) Application for new minor source NSR.		
2	Describe the permit changes relevant to the modeling. N/A		
3	What geodetic datum was used in the modeling? NAD83		
4	How long will the facility be at this location? Portable source at initial site approximately 1 year with future relocations and returns to initial site.		
5	Is the facility a major source with respect to Prevention of Significant Deterioration (PSD)?	Yes	No **X**
6	Identify the Air Quality Control Region (AQCR) in which the facility is located. 152		

7	List the PSD baseline dates for this region (minor or major, as appropriate). NO_2 – 3/26/1997; SO_2 – 8/7/1978; PM_{10} – 3/26/1997; $PM_{2.5}$ – 2/11/2013
8	Provide the name and distance to Class I areas within 50 km of the facility (300 km for PSD permits). None
9	Is the facility located in a non-attainment area? If so, describe. No
10	Describe any special modeling requirements, such as streamline permit requirements. N/A

16-C: Modeling History of Facility

1 Describe the modeling history of the facility, including the air permit numbers, the pollutants modeled, the National Ambient Air Quality Standards (NAAQS), New Mexico AAQS (NMAAQS), and PSD increments modeled. (Do not include modeling waivers).

	Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
	CO	N/A	N/A	New Permitted Facility
	NO_2	N/A	N/A	New Permitted Facility
	SO_2	N/A	N/A	New Permitted Facility
	H_2S	N/A	N/A	Not a significant facility pollutant
	PM2.5	N/A	N/A	New Permitted Facility
	PM10	N/A	N/A	New Permitted Facility
	~~TSP~~[1]			
	Lead	N/A	N/A	Not a significant facility pollutant
	Ozone (PSD only)	N/A	N/A	Not a PSD Source
	NM Toxic Air Pollutants (20.2.72.402 NMAC)	N/A	N/A	Not a significant facility pollutant

1. The New Mexico Ambient Air Quality Standard for TSP was repealed by the Environmental Improvement Board effective November 30, 2018.

16-D: Modeling performed for this application

1 For each pollutant, indicate the modeling performed and submitted with this application.
Choose the most complicated modeling applicable for that pollutant, i.e., culpability analysis assumes ROI and cumulative analysis were also performed.

	Pollutant	ROI	Cumulative analysis	Culpability analysis	Waiver approved	Pollutant not emitted or not changed.
	CO	X				
	NO_2	X	X			
	SO_2	X				
	H_2S					X
	PM2.5	X	X			
	PM10	X	X			
	Lead					X
	Ozone					Not a PSD Source
	State air toxic(s) (20.2.72.402 NMAC)					X

16-E: New Mexico toxic air pollutants modeling

1	List any New Mexico toxic air pollutants (NMTAPs) from Tables A and B in 20.2.72.502 NMAC that are modeled for this application. None

List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required.

	Pollutant	Emission Rate (pounds/hour)	Emission Rate Screening Level (pounds/hour)	Stack Height (meters)	Correction Factor	Emission Rate/ Correction Factor

16-F: Modeling options

1	What model(s) were used for the modeling? Why? The dispersion modeling was conducted using the American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee Dispersion Model (AERMOD), Version 19191. 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. The objective of this evaluation is to determine whether ambient air concentrations from the maximum operation of the facility 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 ($PM_{2.5}$); are below Class II federal and state ambient air quality standards (NAAQS and NMAAQS) found in 40 CFR part 50 and the state of New Mexico's air quality regulation 20.2.3 NMAC from PGE Rio Rancho Facility emission sources.
2	What model options were used and why were they considered appropriate to the application? Selected Source Flat Terrain: Volume sources modeled as flat terrain particulate matter sources. Impacts from ground release sources will be highest at the model boundary.

16-G: Surrounding source modeling

1	If the surrounding source inventory provided by the Air Quality Bureau was believed to be inaccurate, describe how the sources modeled differ from the inventory provided. If changes to the surrounding source inventory were made, use the unmerged list of sources to describe the changes. For GCP sources, emissions were adjusted to reflect GCP regulated emissions and hours of operation – GCP2 and 3 Daylight hours; Annual emission rate 95 tpy (NOx and CO), 50 tpy (SO2), 71.25 tpy (PM10), 17.875 tpy (PM2.5). For Albuquerque Asphalt NSR 4308 particulate matter modeling, the previous Permit 4308 modeling was used for individual equipment location and emission rate, and modeled hours of operation hourly factor.
2	Date of surrounding source retrieval. 11/18/2019 Eric Peters

	AQB Source ID	Description of Corrections

PM10 and PM2.5 GCP emission sources were set to 71.25 tpy and 17.875 tpy, respectively.
GCP2 and 3 hours of operation were limited to daylight hours only.
For Albuquerque Asphalt NSR 4308 particulate matter modeling, the previous Permit 4308 modeling was used for individual equipment location and emission rate, and modeled hours of operation hourly factor.

The table below list Albuquerque Asphalt NSR 4308 surrounding sources used in its permit modeling analysis.

Model ID	Description	UTME	UTMN	Elev (m)	Stack (m)	Temp (K)	Velocity (m/s)	Dia (m)
AAI10	Albuquerque Asphalt - Terex Recycle Plant, NSR 4308 Source 10	348880.7	3905437	1664.69	3.66	708.15	106.86	0.1

Model ID	Description	UTME	UTMN	Elev (m)	Release (m)	Sigma Y	Sigma Z	
AAIRAW	AAI Raw Material Quarry/Pile	348900.0	3905427.0	1664.91	2.44	9.30	2.27	
AAI1	AAI Feeder	348881.5	3905432.0	1664.96	6.00	1.16	2.33	
AAI2	AAI Primary Crusher	348881.5	3905434.5	1664.82	6.00	1.16	2.33	
AAI3	AAI Screen	348881.5	3905440.5	1664.50	4.00	1.16	2.33	
AAI4	AAI Conveyor Transfer Point	348880.0	3905438.0	1664.63	2.00	0.47	0.93	
AAI5	AAI Conveyor Transfer Point	348881.5	3905443.5	1664.39	2.00	0.47	0.93	
AAI6	AAI Conveyor Transfer Point	348881.5	3905449.5	1664.18	2.00	0.47	0.93	
AAI7	AAI Conveyor Transfer Point	348881.5	3905462.0	1663.53	2.00	0.47	0.93	
AAI8	AAI Conveyor Transfer Point	348883.5	3905439.5	1664.54	2.00	0.47	0.93	
AAI9	AAI Conveyor Transfer Point	348882.5	3905432.0	1664.94	2.00	0.47	0.93	
AAIPILE1	AAI Stacker Drop Point to Pile	348881.5	3905474.0	1663.00	2.44	2.13	2.27	
AAIPILE2	AAI Stacker Drop Point to Pile	348874.0	3905438.0	1664.78	2.44	2.13	2.27	
AAIFPILE	AAI Product Storage Pile	348881.5	3905479.0	1662.70	2.44	9.30	2.27	
AAIHR_01	AAI Plant Access Road Volume 1	348906.9	3905381.6	1666.60	3.00	4.65	2.79	
AAIHR_02	AAI Plant Access Road Volume 2	348896.9	3905381.5	1666.70	3.00	4.65	2.79	
AAIHR_03	AAI Plant Access Road Volume 3	348886.9	3905381.3	1667.01	3.00	4.65	2.79	
AAIHR_04	AAI Plant Access Road Volume 4	348876.9	3905381.2	1667.30	3.00	4.65	2.79	
AAIHR_05	AAI Plant Access Road Volume 5	348866.9	3905381.1	1667.59	3.00	4.65	2.79	
AAIHR_06	AAI Plant Access Road Volume 6	348857.7	3905383.5	1667.68	3.00	4.65	2.79	
AAIHR_07	AAI Plant Access Road Volume 7	348853.0	3905391.1	1667.41	3.00	4.65	2.79	
AAIHR_08	AAI Plant Access Road Volume 8	348853.1	3905401.1	1666.91	3.00	4.65	2.79	
AAIHR_09	AAI Plant Access Road Volume 9	348853.2	3905411.1	1666.49	3.00	4.65	2.79	
AAIHR_10	AAI Plant Access Road Volume 10	348853.3	3905421.1	1665.99	3.00	4.65	2.79	
AAIHR_11	AAI Plant Access Road Volume 11	348853.4	3905431.1	1665.59	3.00	4.65	2.79	
AAIHR_12	AAI Plant Access Road Volume 12	348853.5	3905441.1	1665.28	3.00	4.65	2.79	
AAIHR_13	AAI Plant Access Road Volume 13	348853.6	3905451.1	1664.87	3.00	4.65	2.79	
AAIHR_14	AAI Plant Access Road Volume 14	348853.6	3905461.1	1664.56	3.00	4.65	2.79	
AAIHR_15	AAI Plant Access Road Volume 15	348853.7	3905471.1	1664.23	3.00	4.65	2.79	
AAIHR_16	AAI Plant Access Road Volume 16	348853.8	3905481.1	1663.74	3.00	4.65	2.79	
AAIHR_17	AAI Plant Access Road Volume 17	348853.9	3905491.1	1663.29	3.00	4.65	2.79	

AAIHR_18	AAI Plant Access Road Volume 18	348854.1	3905501.1	1662.69	3.00	4.65	2.79	
AAIHR_19	AAI Plant Access Road Volume 19	348861.9	3905507.3	1662.10	3.00	4.65	2.79	
AAIHR_20	AAI Plant Access Road Volume 20	348871.3	3905509.0	1661.76	3.00	4.65	2.79	
AAIHR_21	AAI Plant Access Road Volume 21	348881.3	3905508.9	1661.46	3.00	4.65	2.79	
AAIHR_22	AAI Plant Access Road Volume 22	348891.3	3905508.9	1661.16	3.00	4.65	2.79	
AAIHR_23	AAI Plant Access Road Volume 23	348901.3	3905508.8	1660.92	3.00	4.65	2.79	
AAIHR_24	AAI Plant Access Road Volume 24	348911.3	3905508.8	1660.89	3.00	4.65	2.79	

16-H: Building and structure downwash

1	How many buildings are present at the facility?	None	
2	How many above ground storage tanks are present at the facility?	1	
3	Was building downwash modeled for all buildings?	Yes	No **X**
4	If not, explain why.		
5	Building comments		

16-I: Receptors and modeled property boundary

1	"Restricted Area" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with a steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area. A Restricted Area is required in order to exclude receptors from the facility property. If the facility does not have a Restricted Area, then receptors shall be placed within the property boundaries of the facility. Describe the fence or other physical barrier at the facility that defines the restricted area. Fencing and gate surround facility.		
2	Receptors must be placed along publicly accessible roads in the restricted area. Are there public roads passing through the restricted area?	Yes	No X
3	Are restricted area boundary coordinates included in the modeling files?	Yes X	No
4	Describe the receptor grids and their spacing. For each pollutant, the radius of significant impact around the facility is established using a Cartesian grid. A 25-meter grid spacing is used for the facility boundary receptors. A 50-meter spacing and 100-meter spacing are extended to 500-meters and 1-km beyond the facility boundary, respectively from the facility boundary in each direction for a very fine grid resolution. Receptors for a fine grid resolution are placed with 250-meter spacing to a distance of 3-km from the facility boundary. Receptors for a course grid resolution are placed with 500-meter, and 1000-meter spacing to a distance of 5-km, and 8-km, respectively from the facility boundary.		

5	Describe receptor spacing along the fence line. Fenceline receptor spacing will be 25 meters.
6	Describe the PSD Class I area receptors. N/A

16-J: Sensitive areas

1	Are there schools or hospitals or other sensitive areas near the facility? This information is optional (and purposely undefined), but may help determine issues related to public notice.	Yes	No X
2	If so, describe.		
3	The modeling review process may need to be accelerated if there is a public hearing. Are there likely to be public comments opposing the permit application?	Yes	No X

16-K: Modeling Scenarios

1	Identify, define, and describe all modeling scenarios. Examples of modeling scenarios include using different production rates, times of day, times of year, simultaneous or alternate operation of old and new equipment during transition periods, etc. Alternative operating scenarios should correspond to all parts of the Universal Application and should be fully described in Section 15 of the Universal Application (UA3). All modeling is done for the proposed hours of operation for the new PGE's Rio Rancho Facility aggregate crushing and screening plant. These hours include for the months of November through February from 8 AM to 4 PM and for the months of March through October from 7 AM to 6 PM.		
2	Which scenario produces the highest concentrations? Why? Only one scenario for this modeling analysis		
3	Were emission factor sets used to limit emission rates or hours of operation? (This question pertains to the "SEASON", "MONTH", "HROFDY" and related factor sets, not to the factors used for calculating the maximum emission rate.)	Yes X	No
4	If so, describe factors for each group of sources. List the sources in each group before the factor table for that group. (Modify or duplicate table as necessary. It's ok to put the table below section 16-K if it makes formatting easier.) Sources:		
5	PGE's Rio Rancho Facility will limit operation to the table below		

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0

4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	1	1	1	1	1	1	1	1	0	0
8:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
9:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
10:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
11:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
12:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
1:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
2:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
3:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
4:00 PM	0	0	1	1	1	1	1	1	1	1	0	0
5:00 PM	0	0	1	1	1	1	1	1	1	1	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	8	8	11	11	11	11	11	11	11	11	8	8

If hourly, variable emission rates were used that were not described above, describe them here:

6	Were different emission rates used for short-term and annual modeling?	Yes X	No

7 If yes, describe.

For annual $PM_{2.5}$ modeling, an hourly factor will be input in the model. This hourly factor takes into account the requested limits on annual production. Below are the calculations for these hourly factors.

Plant Description	Requested Annual Aggregate Processing (TPY)	Annual Asphalt Production based on Hourly Aggregate Processing of 150 tph and Maximum Operating Hours of 3655 (TPY)	Annual $PM_{2.5}$ Model Hourly Factor
Aggregate Plant	350,000	548,250	0.6384

16-L: NO_2 Modeling

1	Which types of NO_2 modeling were used? Check all that apply.	
		100% NO_X to NO_2 conversion
		ARM
		PVMRM
		OLM
	X	ARM2: 1 Hour and Annual Average
		Other:
2	Describe the NO_2 modeling. ARM2 modeling used for the 1 hour and annual average periods. Cumulative modeling includes all PGE Rio Rancho Facility sources, significant neighboring and PSD increment consuming sources, plus annual background concentrations based on Albuquerque (Monitor ID 350010023) and 1-hour background from the City of Albuquerque Model Section Del Norte seasonal 1-hour NO_2 background.	
3	In-stack NO_2/NO_X ratio(s) used in modeling. N/A	
4	Equilibrium NO_2/NO_X ratio(s) used in modeling. N/A	
5	Describe/justify the use of the ratios chosen. N/A	
6	Describe the design value used for each averaging period modeled. 1-hour: 98th percentile as calculated by AERMOD	

16-M: Particulate Matter Modeling

1	Select the pollutants for which plume depletion modeling was used.	
		PM2.5
	X	PM10
		None

2

Describe the particle size distributions used.
Include the source of information.
City of Albuquerque for fugitive sources particle size distribution, NMED Particle Size Distribution for combustion sources, and NMED Particle Size Distribution for haul road sources.

Fugitive Sources Depletion Parameters

Particle Size Category (μm)	Mass Mean Particle Diameter (μm)	Mass Weighted Size Distribution (%)	Density (g/cm^3)
PM10			
2.5 – 5	3.88	22.6	2.5
5 – 10	7.77	77.4	2.5

Parameters based on values from the Albuquerque Air Quality Division

Vehicle Fugitive Dust Depletion Parameters

Particle Size Category (μm)	Mass Mean Particle Diameter (μm)	Mass Weighted Size Distribution (%)	Density (g/cm^3)

	PM10			
	0 – 2.5	1.57	25.0	2.5
	2.5 – 10	6.92	75.0	2.5

NMED Haul Road Particulate Size Distribution

Combustion Depletion Parameters

Particle Size Category (μm)	Mass Mean Particle Diameter (μm)	Mass Weighted Size Distribution (%)	Density (g/cm^3)
PM			
0 – 2.5	1.57	100.0	2.0

NMED Haul Road Particulate Size Distribution

3	Was secondary PM modeled for PM2.5? Only required for PSD major modifications that are significant for NOx and/or SOx. Optional for minor sources, but allows use of high eighth high.	Yes X	No

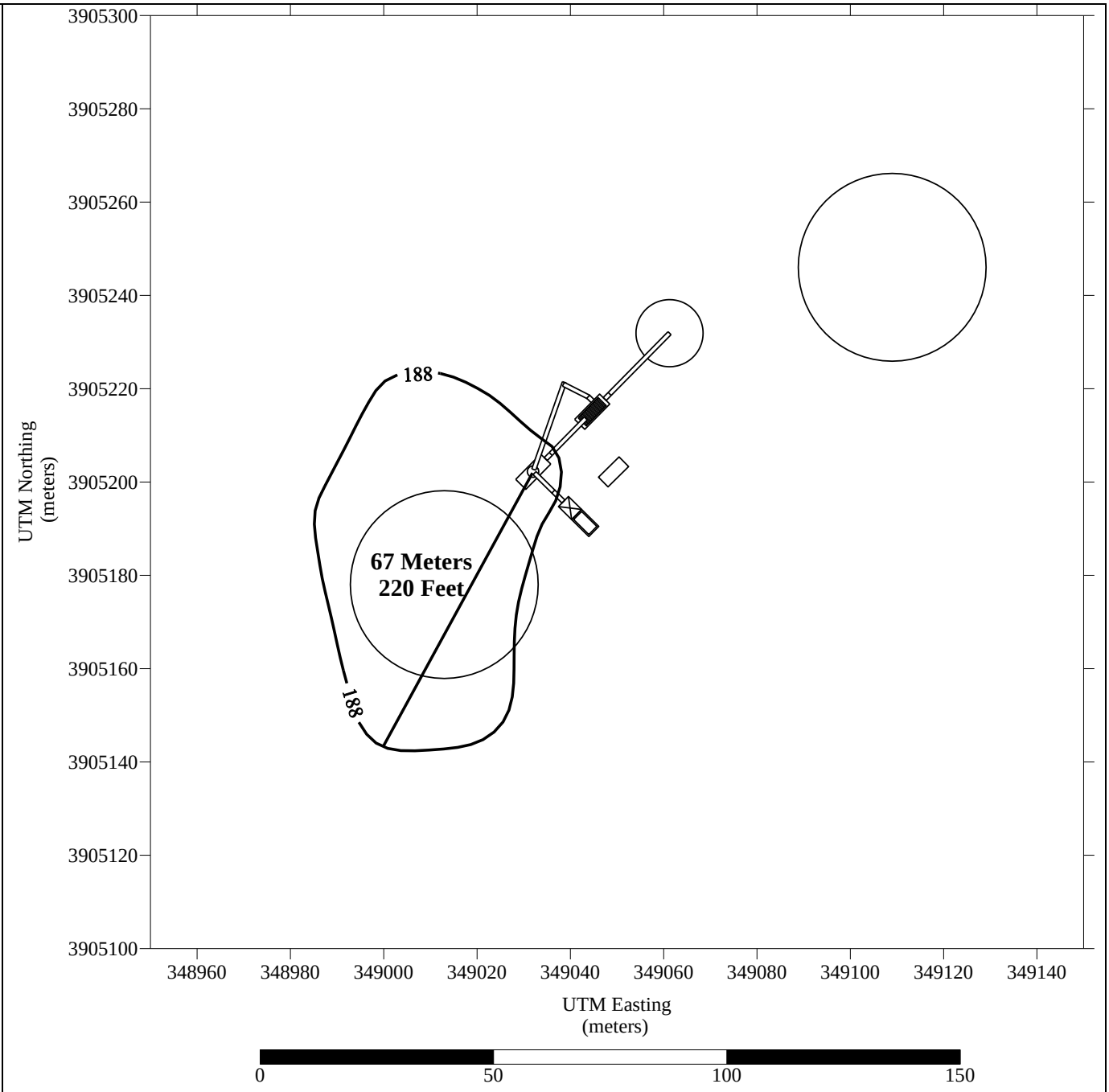
Following recent EPA guidelines for conversion of NO_X and SO_2 emission rates to secondary $PM_{2.5}$ emissions, AAM Santa Fe Facility emissions are compared to appropriate western MERPs values (NO_X 24 Hr – 1155 tpy; NO_X Annual – 3184 tpy; SO_2 24 Hr – 225 tpy; SO_2 Annual – 2289 tpy). The following equation, found in NMED AQB modeling guidance document on MERPs, was used to determine if secondary emission would cause violation with $PM_{2.5}$ NAAQS.

$PM_{2.5}$ annual = ((NO_X emission rate (tpy)/3184 + (SO_2 emission rate (tpy)/2289)) x 0.2 μg/m^3
$PM_{2.5}$ 24 hour = ((NO_X emission rate (tpy)/1155 + (SO_2 emission rate (tpy)/225)) x 1.2 μg/m^3

$PM_{2.5}$ Annual
0.0004 μg/m^3 = (6.48/3184 + 0.011/2289) x 0.2 μg/m^3
$PM_{2.5}$ 24 Hour
0.0068 μg/m^3 = (6.48/1155 + 0.011/225) x 1.2 μg/m^3

16-N: Setback Distances and Source Classification

1	Portable sources or sources that need flexibility in their site configuration requires that setback distances be determined between the emission sources and the restricted area boundary (e.g. fence line) for both the initial location and future locations. Describe the setback distances for the initial location. Setback modeling was performed for this permit application analysis using the met data and background data performed for the initial site. Receptors in the setback modeling surround the plant sources at a spacing of 25 meters. The only pollutant that showed receptors surrounding the equipment was NO_2 1-hour average. For the NO2 1-hour average setback the distance from Unit 1 to the furthest receptor that does not exceed the NAAQS is 67 meters or 217 feet.
2	Describe the requested, modeled, setback distances for future locations, if this permit is for a portable stationary source. Include a haul road in the relocation modeling. Setback modeling was performed for this permit application analysis using the met data and background data performed for the initial site. Receptors in the setback modeling surround the plant sources at a spacing of 25 meters. The only pollutant that showed receptors surrounding the equipment greater than the NAAQS was NO_2 1-hour average. For the NO2 1-hour average setback the distance from impact crusher, Unit 7, to the contour line that does not exceed the NAAQS is 67 meters or 220 feet. Below is a contour map showing the results of the NO2 1-hour average setback model.



3	The unit numbers in the Tables 2-A, 2-B, 2-C, 2-E, 2-F, and 2-I should match the ones in the modeling files. Do these match?	Yes X	No
4	Provide a cross-reference table between unit numbers if they do not match. It's ok to place the table below section 16-N for easier formatting.		
5	The emission rates in the Tables 2-E and 2-F should match the ones in the modeling files. Do these match?	Yes	No X
6	If not, explain why. Hourly model emission rates for material handling sources (Emissions calculated using AP-42 Section 13.2.4) are calculated using annual average windspeed for Albuquerque 2006 - 2016.		

Emission Point #	Process Unit Description	PM10 lbs/hr	PM2.5 lbs/hr
RAW	Raw Material	0.33488	0.05071
3	Feeder (Unit 3)	0.33488	0.05071
12	Stacker Conveyor (Unit 12)	0.20100	0.03044
FPILE	Finish Storage Pile	0.33488	0.05071
TL	Truck Loading	0.33488	0.05071

7	Have the minor NSR exempt sources or Title V Insignificant Activities" (Table 2-B) sources been modeled?	Yes	No X

8 Which units consume increment for which pollutants?

Model ID	Source Description	NO2	SO2	PM10	PM2.5
1	Engine (Unit 1)	X	X	X	X
2	Engine (Unit 2)	X	X	X	X
3	Engine (Unit 3)	X	X	X	X
RAW	Raw Material			X	X
4	Feeder (Unit 4)			X	X
5	Jaw Crusher (Unit 5)			X	X
6	Conveyor (Unit 6)			X	X
7	Impact Crusher (Unit 7)			X	X
8	Conveyor (Unit 8)			X	X
9	Screen (Unit 9)			X	X
10	Conveyor (Unit 10)			X	X
11	Conveyor (Unit 11)			X	X
12	Conveyor (Unit 12)			X	X
13	Stacker Conveyor (Unit 13)			X	X
FPILE	Finish Storage Pile			X	X
TL	Truck Loading			X	X
HRI_0001	Access Road In Volume 1			X	X
HRI_0002	Access Road In Volume 2			X	X
HRI_0003	Access Road In Volume 3			X	X
HRI_0004	Access Road In Volume 4			X	X
HRI_0005	Access Road In Volume 5			X	X
HRI_0006	Access Road In Volume 6			X	X
HRI_0007	Access Road In Volume 7			X	X
HRI_0008	Access Road In Volume 8			X	X
HRI_0009	Access Road In Volume 9			X	X
HRI_0010	Access Road In Volume 10			X	X
HRI_0011	Access Road In Volume 11			X	X
HRI_0012	Access Road In Volume 12			X	X
HRI_0013	Access Road In Volume 13			X	X

	HRI_0014	Access Road In Volume 14			X	X
	HRI_0015	Access Road In Volume 15			X	X
	HRI_0016	Access Road In Volume 16			X	X
	HRI_0017	Access Road In Volume 17			X	X
	HRI_0018	Access Road In Volume 18			X	X
	HRI_0019	Access Road In Volume 19			X	X
	HRO_0001	Access Road Out Volume 1			X	X
	HRO_0002	Access Road Out Volume 2			X	X
	HRO_0003	Access Road Out Volume 3			X	X
	HRO_0004	Access Road Out Volume 4			X	X
	HRO_0005	Access Road Out Volume 5			X	X

9	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date). N/A		
10	Are all the actual installation dates included in Table 2A of the application form, as required? This is necessary to verify the accuracy of PSD increment modeling.	Yes	No X New Permit
11	If not please explain how increment consumption status is determined for the missing installation dates. N/A		

16-O: Flare Modeling

1	For each flare or flaring scenario, complete the following			
	Flare ID (and scenario)	Average Molecular Weight	Gross Heat Release (cal/s)	Effective Flare Diameter (m)
	N/A			

16-P: Volume and Related Sources

1	Were the dimensions of volume sources different from standard dimensions in the Air Quality Bureau (AQB) Modeling Guidelines?	Yes X	No
2	If the dimensions of volume sources are different from standard dimensions in the AQB Modeling Guidelines, describe how the dimensions were determined. For storage piles the model inputs were based on the size of the pile (50 feet)/4.3 (sigma-Y) and a release height of 8 feet or a sigma-Z of 8ft*2/2.15. All others followed standard dimensions from Air Quality Bureau (AQB) Modeling Guidelines.		
3	Describe the determination of sigma-Y and sigma-Z for fugitive sources.		
4	Describe how the volume sources are related to unit numbers. Or say they are the same. They are the same.		
5	Describe any open pits. N/A		
6	Describe emission units included in each open pit. N/A		

16-Q: Background Concentrations

Identify and justify the background concentrations used.

The ambient background concentrations are listed in the Air Quality Bureau Guidelines for NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$ and Ozone, with the exception of the 1-hour NO_2 background methodology discussed below. For CO, PGE is proposing using backgrounds for the generic "Rest of New Mexico". For SO_2, PGE is proposing using backgrounds for Albuquerque. For $PM_{2.5}$, PGE is proposing using backgrounds from Albuquerque (Monitor ID 350010023). For PM_{10}, PGE is proposing using backgrounds from Albuquerque (Monitor ID 350010026). For annual NO_2, PGE is proposing using background from Albuquerque (Monitor ID 350010023).

	$PM_{2.5}$ ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	Ozone ($\mu g/m^3$)
1 Hour				2203	15.8	153.1
8 Hour				1524		
24 Hour	11.5	74.0				
Annual	4.6		20.2			

The 1-Hour NO_2 background data was provided by the City of Albuquerque/Bernalillo County Modeling Section and is presented below.

1

Monitored Seasonal NO_2 Background – 3rd Highest Hourly $\mu g/m^3$

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	46.0	26.4	57.9
4	68.4	48.9	26.6	58.9
5	69.1	51.7	32.7	58.0
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	80.0	61.1	34.2	65.9
10	71.4	48.0	27.3	55.0
11	62.0	28.6	24.3	47.3
12	48.1	18.9	19.9	35.4

13	36.9	17.6	17.0	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	28.0
17	48.4	17.1	20.4	38.0
18	73.0	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	48.0	34.1	73.4
22	76.5	56.3	30.8	70.4
23	75.0	58.8	34.9	69.7
24	72.4	57.9	33.6	70.9

2	Were background concentrations refined to monthly or hourly values? NO2 1 hour is Seasonal/Hourly	Yes X	No

16-R: Meteorological Data

1	Identify and justify the meteorological data set(s) used. Dispersion model meteorological input file used in this modeling analysis is year 2008 Rio Rancho provided by the NMED AQB Modeling Section.
2	Discuss how missing data were handled, how stability class was determined, and how the data were processed, if the Bureau did not provide the data.

16-S: Terrain

1	Was complex terrain used in the modeling? If no, describe why. Yes, for point sources only. For volume sources, model was run in source selected flat terrain mode.
2	What was the source of the terrain data? USGS National Elevation Data (NED)

16-T: Modeling Files

Describe the modeling files:
Particulate matter modeling was done using 12 scenarios. This accounted for the proposed limit on daily throughput productions on the HMA plants with proposed operating hours. For particulate matter annual modeling, hourly emission factors were used to account for the limit on annual production for each plant.

	File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
1	PGCombustROI	CO, SO2, NO2	ROI/SIA
	PGPM10ROI	PM10 24 Hour Average – Plume Depletion	ROI
	PGPM2524ROI	PM2.5 24 Hour Average	ROI
	PGPM25YRROI	PM2.5 Annual Average	ROI
	PGNO21HrCIA	NOx 1 Hour	CIA
	PGNO2YrCIA	NOx Annual NAAQS and Increment	CIA
	PGPM10CIA	PM10 24 Hour Average – Plume Depletion - NAAQS and Increment	CIA
	PGPM2524CIA	PM2.5 24 Hour Average - NAAQS and Increment	CIA
	PGPM25YRCIA	PM2.5 Annual Average - NAAQS and Increment	CIA

16-U: PSD New or Major Modification Applications

1	A new PSD major source or a major modification to an existing PSD major source requires additional analysis. Was preconstruction monitoring done (see 20.2.74.306 NMAC and PSD Preapplication Guidance on the AQB website)?	Yes	No X
2	If not, did AQB approve an exemption from preconstruction monitoring?	Yes	No
3	Describe how preconstruction monitoring has been addressed or attach the approved preconstruction monitoring or monitoring exemption. N/A		
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC. N/A		
5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed? Yes, for secondary PM2.5.		

16-V: Modeling Results

1	If ambient standards are exceeded because of surrounding sources, a culpability analysis is required for the source to show that the contribution from this source is less than the significance levels for the specific pollutant. No culpability analysis was required.
2	Identify the maximum concentrations from the modeling analysis.

Pollutant	Period	Facility Concentration (µg/m3)	Total Modeled Concentration (µg/m3)	Total Modeled Concentration (PPM)	Background Concentration	Cumulative Concentration	Standard	Value of Standard	Units of Standard, Background, and Total	Percent of Standard
NOx	1 Hour	92.4	182.4	---	73.0	182.4	NAAQS	188.03	$\mu g/m^3$	97.0
NOx	Annual	10.3	37.1	---	20.2	37.1	NMAAQS	94.02	$\mu g/m^3$	39.5
NOx incre.	Annual	10.3	13.3	---	---	---	Increment	25	$\mu g/m^3$	53.2
CO	1 Hour	282.6	---	---	---	---	SIL	2000	$\mu g/m^3$	14.1
CO	8 Hour	181.3	---	---	---	---	SIL	500	$\mu g/m^3$	35.5
SO_2	1 Hour	0.51	---	---	---	---	SIL	7.8	$\mu g/m^3$	6.5
$PM_{2.5}$	24 Hour	6.2	17.7	---	11.5	17.7	NAAQS	35	$\mu g/m^3$	50.6
$PM_{2.5}$ incre	24 Hour	6.67	6.68	---	---	---	Increment	9	$\mu g/m^3$	74.2
$PM_{2.5}$	Annual	1.42	7.52	---	4.6	7.52	NAAQS	12	$\mu g/m^3$	62.7
$PM_{2.5}$ incre	Annual	1.42	1.43	---	---	---	Increment	4	$\mu g/m^3$	35.8
PM_{10}	24 Hour	24.6	106.6	---	74.0	106.6	NAAQS	150	$\mu g/m^3$	71.1
PM_{10} incre	24 Hour	24.5	29.9	---	---	---	Increment	30	$\mu g/m^3$	99.7
PM_{10} incre	Annual	10.4	13.1	---	---	---	Increment	17	$\mu g/m^3$	77.1

16-W: Location of maximum concentrations

1 Identify the locations of the maximum concentrations.

Pollutant	Period	UTM East (m)	UTM North (m)	Elevation (m)	Distance (m)	Radius of Impact (ROI) (m)
NOx	1 Hour	349004.5	3905223.2	1678.1	Border	4845 m
NOx	Annual	349079.2	3905178.9	1683.29	Border	215 m
NOx incre.	Annual	349079.2	3905178.9	1683.29	Border	191 m
CO	1 Hour	349042.7	3905145.3	1685.58	Border	Below SILs
CO	8 Hour	349050.0	3905150.0	1684.59	Border	Below SILs
SO_2	1 Hour	349042.7	3905145.3	1685.58	Border	Below SILs
$PM_{2.5}$	24 Hour	349022.7	3905240.0	1674.06	Border	221 m
$PM_{2.5}$ incre	24 Hour	349050.0	3905150.0	1684.59	Border	221 m
$PM_{2.5}$	Annual	349022.7	3905240.0	1674.06	Border	201 m
$PM_{2.5}$ incre	Annual	349022.7	3905240.0	1674.06	Border	201 m
PM_{10}	24 Hour	349040.9	3905256.8	1672.79	Border	266 m
PM_{10} incre	24 Hour	349040.9	3905256.8	1672.79	Border	266 m
PM_{10} incre	Annual	349022.7	3905240.0	1674.06	Border	221 m

16-X: Summary/conclusions

1	A statement that modeling requirements have been satisfied and that the permit can be issued. Dispersion modeling was performed for the new permit application. All facility pollutants with ambient air quality standards were modeled to show compliance with those standards. All results of this modeling showed the facility in compliance with applicable ambient air quality standards.

DISPERSION MODEL PROTOCOL
PG ENTERPRISES, LLC
NSR MINOR SOURCE PERMIT APPLICATION

Rio Rancho, New Mexico

PREPARED FOR

PG ENTERPRISES

Dated November 21, 2019

Prepared by

Montrose Air Quality Services, LLC

MONTROSE
AIR QUALITY SERVICES

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1.0 INTRODUCTION

This dispersion modeling analysis will be conducted by Montrose Air Quality Services, LLC (Montrose) on behalf of PG Enterprises, LLC (PGE), to evaluate ambient air quality impacts from the proposed Rio Rancho Facility, as part of a minor source NSR permitting action. This permit application is for a 150 tph crushing and screening plant.

The objective of this modeling evaluation is to predict if, operating at requested maximums, the facility operations would result in exceedances of New Mexico and federal ambient air quality standards, NMAAQS and NAAQS respectively, 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 ($PM_{2.5}$). Since Rio Rancho Facility is a minor source for NSR permitting and is located in AQRC Region 152, where the minor source baseline date has been triggered for NO_2 (03/26/1997), SO_2 (05/14/1981), PM_{10} (03/26/1997), and $PM_{2.5}$ (02/11/2013), a PSD Class II Increment analysis will be performed. The closest Class 1 area is Bandelier Wilderness Area at 54 kilometers, so no PSD Class 1 Increment analysis will be performed.

The dispersion modeling will be conducted using the American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee Dispersion Model (AERMOD), Version 19191. 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. The objective of this evaluation is to determine whether ambient air concentrations from the maximum operation of the facility 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 ($PM_{2.5}$); are below Class II federal and state ambient air quality standards (NAAQS and NMAAQS) found in 40 CFR part 50 and the state of New Mexico's air quality regulation 20.2.3 NMAC from Rio Rancho Facility emission sources.

1.1 FACILITY DESCRIPTION

PGE's Rio Rancho Facility will operate a crushing and screening plant for recycle materials. The facility is located on Palm Road NE, Lots 5-8, Block 86, S.E. Portion of Unit 13, Rio Rancho Estates, in Rio Rancho, NM in Sandoval County.

1.1.1 Crushing and Screening Plant

The 150 tph aggregate crushing and screening plant will include a raw material storage pile, a feeder, primary crusher with under conveyor, secondary crusher with under conveyor, screen with two (2) under conveyors, five (5) transfer conveyors, and a stacker conveyor. The plant will be powered by a 230 horsepower (hp) generator and 309 horsepower (hp) generator. Processed aggregate will be stored in a finish storage pile then transported by haul trucks to off-site sales.

The aggregate crushing and screening plant will limit a daily average hourly processing rate to 150 tph and 350,000 tpy.

The hours of operation are presented below in Table 1 and Table 2.

TABLE 1: Aggregate Facility Hours of Operation (MST)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	1	1	1	1	1	1	1	1	0	0
8:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
9:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
10:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
11:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
12:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
1:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
2:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
3:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
4:00 PM	0	0	1	1	1	1	1	1	1	1	0	0
5:00 PM	0	0	1	1	1	1	1	1	1	1	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	**8**	**8**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**8**	**8**

An hourly factor is included in particulate annual modeling to account for the annual throughput limitation accepted by PGE of 350,000 tons per year. If operating at maximum hour throughputs the number of hours per year would equal 3,655 or 548,250 tons per year. Based on the maximum annual throughput and PGE requested annual throughput an hourly factor of 0.6384 (350,000/548,250) is included in all annual average particulate matter dispersion modeling.

TABLE 2: Aggregate Facility Hours of Operation (MST) for Annual PM Modeling

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0	0
8:00 AM	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384
9:00 AM	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384
10:00 AM	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384
11:00 AM	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384
12:00 PM	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384
1:00 PM	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384
2:00 PM	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384
3:00 PM	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384
4:00 PM	0	0	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0	0
5:00 PM	0	0	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0.6384	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0

1.2 FACILITY IDENTIFICATION AND LOCATION

PGE's Rio Rancho Facility is located 0.32 miles northwest of the intersection of Northern Blvd NE and Loma Colorado Blvd NE in Rio Rancho, New Mexico in Sandoval County. The UTM Coordinates of the facility are 349,050 meters East and 3,905,200 meters North, Zone 13, with NAD83 datum at an elevation of approximately 5,510 feet above mean sea level.

Figure 1 below presents the site showing the area where the plant will be located.

Figure 2 below presents a process flow diagram of the crushing and screening plant.

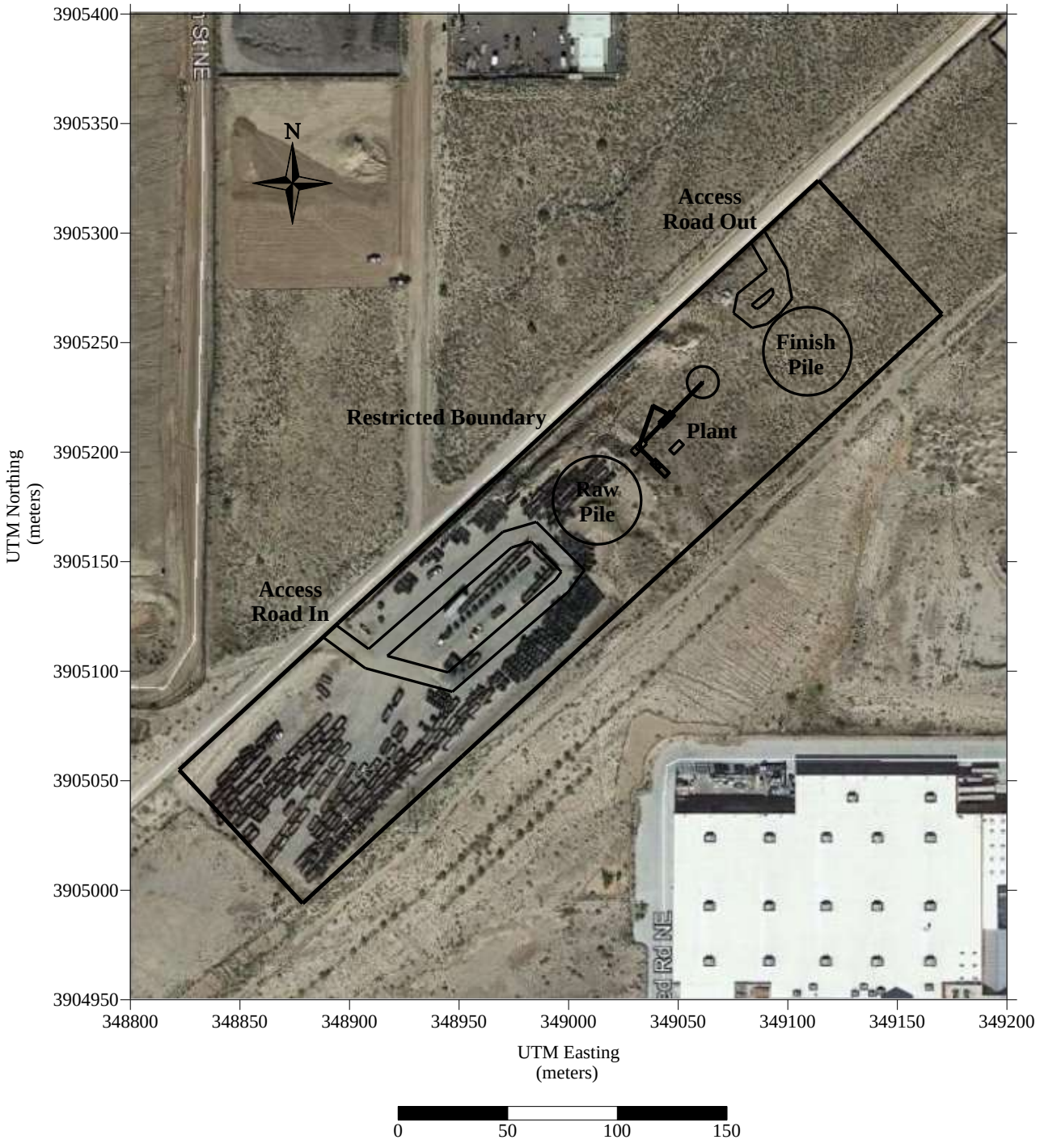


FIGURE 1: PGE's Rio Rancho Facility Aerial View

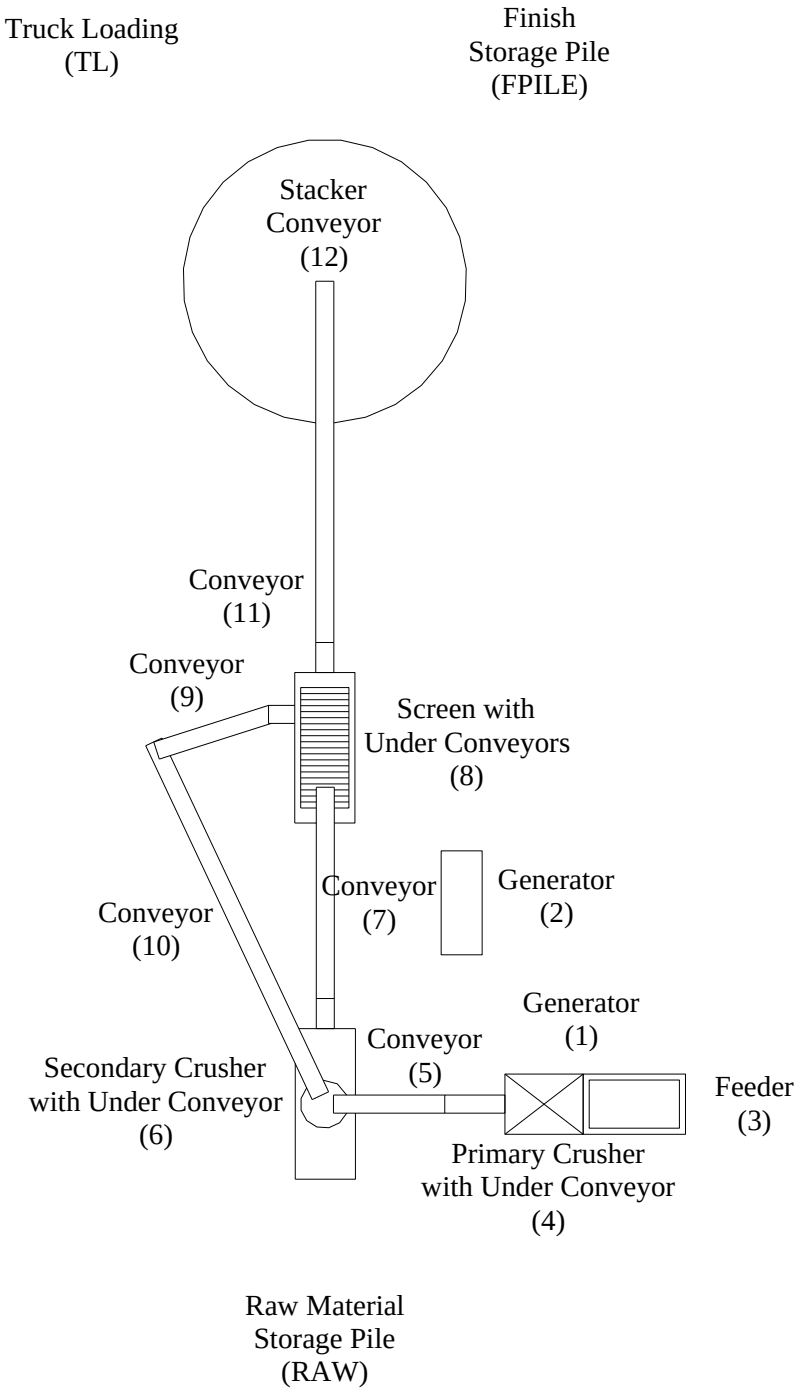


FIGURE 2: PGE's Rio Rancho Facility Plant Layout

2.0 SIGNIFICANT MONITORING AIR QUALITY IMPACT ANALYSIS

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. NMED AQB 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 New Mexico Ambient Air Quality Standards (NMAAQS). Table 3 shows the NAAQS and NMAAQS (without footnotes) that the source's ambient impacts must meet in order to demonstrate compliance. Table 3 also lists the Class II Significant Impact Levels (SILs) which are used to assess whether a source has a significant impact at downwind receptors. Table 4 lists all standards for which modeling is not required by NMED AQB.

The dispersion modeling analysis will be performed to estimate concentrations resulting from the operation of the Rio Rancho Facility using the maximum hourly emission rates while all emission sources are operating. The modeling will determine maximum off site concentrations for nitrogen dioxide, (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with aerodynamic diameter less than 10 micrometers (PM_{10}) and particulate matter with aerodynamic diameter less than 2.5 micrometers ($PM_{2.5}$), for comparison with model significance levels, and national/New Mexico ambient air quality standards (AAQS). The modeling will follow the guidance and protocols outlined in the New Mexico Air Quality Bureau "Air 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 Rio Rancho Facility sources only to determine pollutant and averaging periods that exceeds pollutant SILs. If initial modeling for any pollutant and averaging period exceeds the SILs, then cumulative impact analysis (CIA) modeling will be performed for those pollutants, receptors with concentrations over the SIL, pollutant averaging periods, and will include background ambient concentrations and as defined in the NMED's modeling guideline, significant neighboring sources.

TABLE 3: 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	7.52		100 ppb(4)			
$PM_{2.5}$	annual	0.2	0.05	12 $\mu g/m^3$(5)		1 $\mu g/m^3$	4 $\mu g/m^3$
	24-hour	1.2	0.27	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.

TABLE 4: Standards for Which Modeling Is Not Required by NMED AQB.

Standard not Modeled	Surrogate that Demonstrates Compliance
CO 8-hour NAAQS	CO 8-hour NMAAQS
CO 1-hour NAAQS	CO 1-hour NMAAQS
NO_2 annual NAAQS	NO_2 annual NMAAQS
NO_2 24-hour NMAAQS	NO_2 1-hour NAAQS
O_3 8-hour	Regional modeling
SO_2 annual NMAAQS	SO_2 1-hour NAAQS
SO_2 24-hour NMAAQS	SO_2 1-hour NAAQS
SO_2 3-hour NAAQS	SO_2 1-hour NAAQS

2.1 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 19191. This model is recommended by EPA for determining Class II impacts within 50 km of the source being assessed. Additionally, AERMOD is 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 PGE's Rio Rancho Facility 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 will be run using all the regulatory default options including use of stack-tip downwash, buoyancy-induced dispersion, calms processing routines, upper-bound downwash concentrations for super-squat buildings, default wind speed profile exponents, vertical potential temperature gradients, no use of gradual plume rise, and horizontal release stacks. Alpha options include the use of flat terrain mode for fugitive ground release sources. The model incorporated local terrain into the calculations for point sources and neighboring sources only.

2.2 BUILDING WAKE EVALUATION

AERMOD can account for building downwash and cavity zone effects. Evaluation of building downwash on adjacent stack sources is deemed necessary, since most (if not all) of the stack source heights may be below Good Engineering Practice (GEP) heights. The formula for GEP height estimation is:

$$H_s = H_b + 1.50L_b$$

where: H_s = GEP stack height

H_b = building height

L_b = the lesser building dimension of the height, length, or width

The effects of aerodynamic downwash due to buildings and other structures will be accounted for by using wind direction-specific building parameters calculated by the USEPA-approved Building Parameter Input Program Prime (BPIP-Prime (*Version 04274*)) and the algorithms included in the AERMOD air dispersion model. No buildings will be located at the site that could cause building wake effects for facility point sources, so no building downwash will be analyzed.

2.3 METEOROLOGICAL DATA

Dispersion model meteorological input file to be used in this modeling analysis is year 2008 Rio Rancho (Intel) met data available from the NMED AQP.

2.4 RECEPTORS AND TOPOGRAPHY

For each pollutant, the radius of significant impact around the facility is established using a Cartesian grid. A 50-meter grid spacing is used for the facility boundary receptors. A 50-meter spacing and 100-meter spacing are extended to 500-meters and 1-km beyond the facility boundary, respectively from the facility boundary in each direction for a very fine grid resolution. Receptors for a fine grid resolution are placed with 250-meter spacing to a distance of 3-km from the facility boundary. Receptors for a course grid resolution are placed with 500-meter and 1000-meter spacing to a distance of 5-km and 7-km, respectively from the facility boundary.

AERMAP (*Version 19191*) will be used to calculate the receptor elevations and the controlling hill heights. Terrain files for the area will be obtained from the 10-meter resolution NED files. The AERMAP domain will be large enough to encompass the 10 percent slope factor required for calculating the controlling hill height.

2.5 MODELED EMISSION SOURCES INPUTS

Rio Rancho Facility will be permitted to operate 7 days per week, 52 weeks per year with plant daily hours of operation summarized in Table 5.

For annual $PM_{2.5}$ modeling, an hourly factor will be input in the model. This hourly factor takes into account the requested limits on annual production. Below are the calculations for these hourly factors.

Plant Description	Annual Aggregate Processing (TPY)	Annual Asphalt Production based on Hourly Aggregate Processing of 150 tph and Maximum Operating Hours of 3655 (TPY)	Annual $PM_{2.5}$ Model Hourly Factor
Aggregate Plant	350,000	548,250	0.6384

TABLE 5: Aggregate Facility Hours of Operation (MST)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	1	1	1	1	1	1	1	1	0	0
8:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
9:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
10:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
11:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
12:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
1:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
2:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
3:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
4:00 PM	0	0	1	1	1	1	1	1	1	1	0	0
5:00 PM	0	0	1	1	1	1	1	1	1	1	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	**8**	**8**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**8**	**8**

2.5.1 Rio Rancho Facility Road Vehicle Traffic Model Inputs

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

2.5.2 Rio Rancho Facility Material Handling Volume Source Model Inputs

Material handling and processing will follow the procedure found in AQB's Modeling Guidelines for Fugitive Equipment Sources (Section 5.3.2). For storage piles the model inputs were based on the size of the pile - 50 feet/4.3 (sigma-Y) and a release height of 8 feet or a sigma-Z of 8ft*2/2.15.

2.5.3 Rio Rancho Facility Material Handling Point Source Model Inputs

For exhaust from engines, the release height will be the height from the ground to the exhaust exit height. All other model input data will be based on manufacture information.

2.6 $PM_{2.5}$ 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. Following recent EPA guidelines for conversion of NO_X and SO_2 emission rates to secondary $PM_{2.5}$ emissions, PGE Rio Rancho Facility emissions are compared to appropriate western MERPs values (NO_X 24 Hr – 1155 tpy; NO_X Annual – 3184 tpy; SO_2 24 Hr – 225 tpy; SO_2 Annual – 2289 tpy). The following equation, found in NMED AQB modeling guidance document on MERPs, will be used to determine if secondary emission would cause violation with $PM_{2.5}$ NAAQS.

$PM_{2.5}$ annual = ((NO_X emission rate (tpy)/3184 + (SO_2 emission rate (tpy)/2289)) x 0.2 µg/m^3
$PM_{2.5}$ 24 hour = ((NO_X emission rate (tpy)/1155 + (SO_2 emission rate (tpy)/225)) x 1.2 µg/m^3

Results of the secondary formation from the facility will be added to the modeled value.

2.7 NO_2 DISPERSION MODELING ANALYSIS

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 OLM or 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 an approved monitoring station.

Based on EPA's ISR databases, a proposed conservative NO_2/NO_X ISR ratio for Diesel-fired RICE is 0.15. For neighboring sources, since the ISR has a diminishing impact on ambient NO_2/NO_X ratios as a plume is transported farther downwind due to mixing and reaction towards background ambient NO_2/NO_X ratios, a default ISR of 0.20[1] in lieu of source specific data will be used. Table 6 summarizes the ISR selected for each NO_X source in the NO_2 1-hour modeling.

TABLE 6: Summary of Selected ISR

Source Description	Selected ISR
Plant Generator/Engines	0.15

[1] Technical support document (TSD) for NO2-related AERMOD modifications, EPA- 454/B-15-004, July 2015

2.8 SIGNIFICANT NEIGHBORING BACKGROUND SOURCES

For all Cumulative Impact Analysis (CIA) combustion emissions dispersion modeling (NO_X, CO, SO_2), only monitored background will be included. CIA particulate dispersion modeling will include all significant neighboring sources within 10 kilometers of the Rio Rancho Facility and regional monitored background. These sources will be obtained from the Air Quality Bureau's database.

2.9 REGIONAL BACKGROUND CONCENTRATIONS

Ambient background concentrations represent the contribution of pollutant sources that are not included in the modeling analysis, including naturally occurring sources. If the modeled concentration of a criteria pollutant is above the modeling significance level, the background concentration for each criteria pollutant will be added to the maximum modeled concentration to calculate the total estimated pollutant concentration for comparison with the AAQS.

The ambient background concentrations are listed in the Air Quality Bureau Guidelines for NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$ and Ozone, with the exception of the 1-hour NO_2 background methodology discussed below. For CO, PGE is proposing using backgrounds for the generic "Rest of New Mexico". For SO_2, PGE is proposing using backgrounds for Albuquerque. For $PM_{2.5}$, PGE is proposing using backgrounds from Albuquerque (Monitor ID 350010023). For PM_{10}, PGE is proposing using backgrounds from Albuquerque (Monitor ID 350010026). For annual NO_2, PGE is proposing using background from Albuquerque (Monitor ID 350010023).

	$PM_{2.5}$ ($\mu g/m^3$)	**PM_{10} ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**CO ($\mu g/m^3$)**	**SO_2 ($\mu g/m^3$)**	**Ozone ($\mu g/m^3$)**
1 Hour				2203	15.8	153.1
8 Hour				1524		
24 Hour	11.5	74.0				
Annual	4.6		20.2			

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

The 1-Hour NO_2 background data was provided by the City of Albuquerque/Bernalillo County Modeling Section and is presented below in Table 7.

[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.

TABLE 7: 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	46.0	26.4	57.9
4	68.4	48.9	26.6	58.9
5	69.1	51.7	32.7	58.0
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	80.0	61.1	34.2	65.9
10	71.4	48.0	27.3	55.0
11	62.0	28.6	24.3	47.3
12	48.1	18.9	19.9	35.4
13	36.9	17.6	17.0	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	28.0
17	48.4	17.1	20.4	38.0
18	73.0	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	48.0	34.1	73.4
22	76.5	56.3	30.8	70.4
23	75.0	58.8	34.9	69.7
24	72.4	57.9	33.6	70.9

MONTROSE ENVIRONMENTAL

Paul Wade <pwade@montrose-env.com>

PG Enterprises Model Protocol

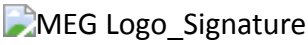
4 messages

Paul Wade <pwade@montrose-env.com> Thu, Nov 21, 2019 at 3:16 PM
To: Sufi Mustafa <sufi.mustafa@state.nm.us>
Cc: Payam <Payam@pgenterprisesllc.com>

Sufi
Attached is a modeling protocol for a new 150 tph aggregate processing plant. The plant will be located in Rio Rancho, NM.

Please let me know if you have any questions or concerns.

Thanks
--



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

PGERRModelProtocol.pdf
424K

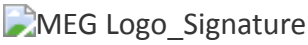
PWade@montrose-env.com

www.montrose-env.com

[Quoted text hidden]

Paul Wade <pwade@montrose-env.com> Thu, Nov 21, 2019 at 3:24 PM
To: Payam <Payam@pgenterprisesllc.com>

Sufi has been there for at least 20 years.
[Quoted text hidden]
--



[Quoted text hidden]

Peters, Eric, NMENV <eric.peters@state.nm.us> Tue, Dec 10, 2019 at 4:10 PM
To: "Paul Wade (PWade@montrose-env.com)" <PWade@montrose-env.com>
Cc: "Mustafa, Sufi A., NMENV" <sufi.mustafa@state.nm.us>, "payam@pgenterprisesllc.com" <payam@pgenterprisesllc.com>

Paul,

I approve the modeling protocol for the PG Enterprises 150 TPH crushing and screening plant.

Eric

Eric Peters, Air Dispersion Modeler

New Mexico Environment Department / Air Quality Bureau

525 Camino de Los Marquez - Suite 1 / Santa Fe, NM, 87505

Phone: 505-476-4327 / Fax: 505-476-4375

E-mail: eric.peters@state.nm.us

www.env.nm.gov

Section 17

Compliance Test History

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

To show compliance with existing NSR permits conditions, you must submit a compliance test history. The table below provides an example.

New NSR facility.

Section 20

Other Relevant Information

Other relevant information. Use this attachment to clarify any part in the application that you think needs explaining. Reference the section, table, column, and/or field. Include any additional text, tables, calculations or clarifying information.

Additionally, the applicant may propose specific permit language for AQB consideration. In the case of a revision to an existing permit, the applicant should provide the old language and the new language in track changes format to highlight the proposed changes. If proposing language for a new facility or language for a new unit, submit the proposed operating condition(s), along with the associated monitoring, recordkeeping, and reporting conditions. In either case, please limit the proposed language to the affected portion of the permit.

No additional relevant information is required for this facility.

Section 22: Certification

Company Name: PG Enterprises, LLC

I, Payam Ghoreishi, hereby certify that the information and data submitted in this application are true and as accurate as possible, to the best of my knowledge and professional expertise and experience.

Signed this 13th day of January, 2020, upon my oath or affirmation, before a notary of the State of _____.

*Signature

Date 1/13/2020

Payam Ghoreishi
Printed Name

Managing Member
Title

Scribed and sworn before me on this 13th day of January, 2020.

My authorization as a notary of the State of New Mexico expires on the

19th day of January, 2023.

Christine L. Gillespie
Notary's Signature

Christine L. Gillespie
Notary's Printed Name

OFFICIAL SEAL
Christine L. Gillespie
Notary Public
State of New Mexico
My Commission Expires January 19, 2023

Date 1/13/2020

*For Title V applications, the signature must be of the Responsible Official as defined in 20.2.70.7.AE NMAC.

MONTROSE
AIR QUALITY SERVICES

January 16, 2020

New Mexico Environment Department
Air Quality Bureau
Permits Section
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87507-3313

Subject: Permit Application for PG Enterprise's Rio Rancho Facility

To Whom it May Concern:

Attached please find two (2) hardcopies and three (3) electronic (CD) copies of the 20.2.72 NMAC Permit Application for PG Enterprise's Rio Rancho Facility. This letter is attached to the application copy that has the original notarized signature page (Section 22), along with an application submittal fee of $500.

PG Enterprise, LLC is applying for a new 20.2.72 NMAC air quality permit for a 150 ton per hour (TPH) aggregate/recycle crushing and screening plant to be operated within Rio Rancho, county of Sandoval, state of New Mexico. Regulation governing this permit application is 20.2.72.200.A(1) NMAC.

Please let me know if you have any questions or need additional information.

Sincerely,

Paul Wade
Sr. Engineer
Montrose Air Quality Services, LLC

Cc: Payam Ghoreishi, PG Enterprise

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

T: 505.830.9680 ext. 6
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