



**Environmental Health Department
Air Quality Program
Interoffice Memorandum**



Timothy M. Keller, Mayor

Paul J. Rogers, Director

To:	Permit File
From:	Barbara Georgitsis
Subject:	Permit Application #0752-M5
Date:	XXXX XX 2025
Permit Description:	Permit Modification Gypsum wallboard manufacturing plant

Facility Name:	American Gypsum Company	UTM Coordinates, East:	354737
Facility Address:	4600 Paseo Del Norte	North:	3893360
Facility ID:	FA0008594	Record ID:	PR0013222

Proposal

American Gypsum (Facility) is proposing a modification to this permit to authorize an increase in the CO emission rate of process of a D-11, Modern Vertical Mill (calciner and hot gas generator burner) and baghouse, based on information provided by the manufacture, Honeywell, for a new burner to be installed to replace the current burner in the newer modern vertical mill and baghouse system that was installed. The current burner does not have the capacity to replace the old mills and kettles as was intended. Air quality dispersion modeling for CO was waived by the Department August 9, 2024. Modeling for previous modifications demonstrates compliance with the NAAQS and NMAAQs, reference modeling report dated September 8, 2023. All other sources as represented in the permit will remain unchanged.

Permitting History

Permit Number	Issuance Date	Permit Type	Brief Description
0752-M5	XX, XX 2025	Modification	Increase permitted CO emissions due to manufacture's data provided from Honeywell for the new vertical roller mill (DC-11) burner that will replace the current burner system which is below the current permitted CO emission rates (2.12 lb/hr and 9.28 tpy). The current burner does not have the capacity needed to replace the old existing mills and kettles. The new burner will allow for replacement of the mills and kettles that are in current use. Therefore, the mills and kettles will be decommissioned when the new burner is in place. The total facility wide emission rates for all applicable

			<p>pollutants will be decreased with the decommissioning of this equipment (refer to Table 2c. in Permit).</p> <p>Modeling for CO was waived by the Department, August 9, 2024 since the increase in CO will not cause any exceedances of the NAAQS and NMAAQS. With the increase in CO emission rates (16.2 lb/hr and 71 tpy), the total CO emission rate at the facility including the mills and kettles (to be decommissioned at some point) will exceed 100 tpy which is the Title V, 20.11.42 NMAC, emission threshold.</p> <p>After installation of the new burner, compliance testing for NOx and CO emissions shall occur as specified and required in the permit. If the tested CO rates indicate that the rate is lower than the manufacture’s rate of 16.2 lb/hr, and minus the emission rates of the mills/kettles to be decommissioned, the Facility’s total CO emission rate maybe shown to be less than 100 tpy. If this is the case, the Facility will remain a “synthetic minor” source. If the total Facility emission rate is over 100 tpy as listed in this permit modification, the Facility will be considered a Title V source and be required to submit an application within 12 months of becoming a Title V source pursuant to 11.20.42 NMAC.</p>
0752-M4	11/17/2023	Modification	<p>Increase annual throughput for Unit 12a (Truck Dump to Stockpile) from 39,000 tpy to 919,800 tpy, and The increase in annual throughput for Unit 12b (Front-End Loader to Truck) from 39,000 tpy to 963,600 tpy. Update information in process tables and other minor edits.</p>
#752-M3-1TR		Technical Permit Revision	<p>The Facility has requested to add a temporary “razertail” truck unloader and conveyor to allow for loaded material to travel to the existing rock pit (Unit 13): New dust collection points will be routed to Emission Unit 9</p> <p>Increase in control efficiency from 98% to 99.5% results in net decrease in emissions for Unit 9.</p> <p>Modify location of FUG-01 to represent truck offloading onto “razertail”.</p> <p>DC-01, DC-02, DC-03, DC-11a, DC-11, DC-12 and DC-13 would not have emissions during this temporary period.</p> <p>Emissions will remain unchanged – only the location will be modified.</p>
#752-M3	03/11/2022	Permit Modification	<p>As part of this permit modification application, the Facility is proposing to replace their existing mill, kettles, and material handling systems with a modern</p>

vertical mill and material handling systems and proposes this replacement will result in a reduction of pre-control and post-control emissions for all pollutants. American Gypsum is also proposing to update emissions for existing equipment, all of which will result in emission decreases. The application also includes updated air dispersion modeling as per request by the Air Quality Program (AQP). The application proposes that Units #1, #2, #3, #4, #6, #7, #101, #9, #10, #11, #12b, and #13 be eventually decommissioned and removed from the facility. During the startup and stabilization of the new equipment, these old units will operate simultaneously with the new equipment before eventual removal. The existing equipment and new equipment will only operate simultaneously briefly until the new mill equipment is deemed operational.

The proposed revision includes the following modifications to existing equipment:

- Emissions for Units #1, 2, 3, 4, 8, 9, 10, 11, 13, 15, 16, and 17 are updated to express emission rates with additional significant figures.
- Emissions for Units #6, 7, and 101 are updated to reflect a manufacturer guaranteed baghouse collection efficiency of 99%. Emissions are also expressed with additional significant figures.
- Stockpile acreage is being increased for Unit 12a and this unit also includes particulate emissions from associated truck and front loader traffic.
- Emissions for Unit 12b were updated to reflect emission from truck loading and unloading as specified in AP-42 Section 13.2.4-4.
- The capacity of the wallboard recycling system is being increased from 12,800 to 14,000 acfm. In accordance with a request from the AQP, uncontrolled emissions have been added to the application for Unit 18 (wallboard recycling system) for informational purposes.

The proposed modification also includes the addition of following new mill equipment:

- An Unloading Baghouse (Unit DC-01);
- A Mill Feed Baghouse (Unit DC-02);
- A Rock Storage Baghouse (Unit DC-03);
- Stucco Silos and Equipment (Unit DC-11a);
- A Mill Baghouse (Unit DC-11);
- A Conditioning System Baghouse (Unit DC-12);

			<ul style="list-style-type: none"> • A Start-Up Bin Baghouse (Unit DC-13); • A Hopper (Unit FUG-01); and • Unpaved and Paved Haul Roads (Units HAUL-1, HAUL-2, and HAUL-3).
#752-M2-RV6	10/11/2016	Technical Revision	<p>This technical revision incorporated the installation of a recycling system to reclaim wallboard. This operation takes place inside a new building where wallboard panels and broken pieces are dumped into a hopper where a shredder will reduce the panels and pieces to smaller pieces. The smaller pieces will then pass through transport conveyors and an elevator into a hammer mill and then a rotary screen where the paper will be separated from the gypsum. The separated paper is deposited into a compactor and deposited offsite. The reclaimed gypsum is transported by conveyors and deposited onto the raw material belt conveyor combining the reclaimed material with the raw material.</p> <p>The particle matter emission associated to this process is under 1 lb/hr, meeting the technical permit conditions.</p> <p>In accordance with 40 CFR 60.670.(c)(1) the process equipment within the reclaimed wallboard recycling facility is not applicable to Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants “(c) Facilities at the following plants are not subject to the provisions of this subpart: (1) Fixed sand and gravel plants and crushed stone plants with the capacities, as defined in §60.671, of 23 megagrams per hour (25 tons per hour) or less.”</p>
#752-M2-RV5	09/24/2014	Technical Revision	<p>This revision changes the NOx and CO emissions for Equipment Unit #15 (Dryer) after stack testing proved lower emission rates. The lower rates from the stack testing results nullified American Gypsum’s major source permitting status. The revision also included the revision of criteria pollutant emission rate for the remaining process equipment to reflect available test data and AP-42 factors, include updated opacity limits for process equipment, incorporated the removal of limits on wallboard surface area production rates and line speed requirements, and included the removal of the condition that the facility shall comply with the terms and conditions of Compliance Agreement No. EA 99-1047.</p>
#752-M2-RV4	09/03/2010	Administrative Revision	<p>The US EPA Region 6 requested that the AQP modify American Gypsum’s Permit #752-M2-RV3 to include</p>

			<p>the requirements of 40 CFR 64 Compliance Assurance Monitoring (CAM). Subsequently, new permit language was incorporated within this revision to include requirements for compliance with 40 CFR 64 Compliance Assurance Monitoring Requirements. The revision also corrected reference to Condition 2 (r) in 752-M2-RV3 under Condition 6 – Compliance Testing to reference Condition 2 (j). The revision also corrected reference to Condition 1(d) under Condition 5(j) to reference of Condition 1(e). The revision also added the following: 1) The applicable requirements of the NSPS 40 CFR 60 Subpart A – General Provisions, and Subpart UUU – Standards of Performance for Calciners and Dryers in Mineral Industries for Units 1b, 2b, 3b, and 4b. 2) The applicable requirements of the NSPS 40 CFR 60 Subpart A – General Provisions, and Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants for Units 6, 7, 8, 9, 101, 10, 11, 13, and 14. 3) The additional compliance testing for Emission Units 6, 7, 101, and 17. 4) Condition 1(q) to address startup, shutdown, and maintenance emissions at the facility. 5)</p>
#752-M2-RV3	11/13/2009	Administrative Revision	<p>Revision administrated as results of request from the plant manager to modify the language of conditions requiring specific measurements of wallboard before reaching the cut off saw. No increase in production or emissions. Revision included the addition of monitoring, recordkeeping, and reporting requirements for the different line speeds and production limitations. The line speed rate became an enforceable condition as well as the production rate. The language regarding the limitation on stacking the wallboard was removed because the bottleneck in the system is the time that it takes to stack the wallboard prior to cutting the wallboard. The cutting taking place did not happen on a continuous feed basis. Adding the line speed rate as an enforceable condition was a good measure to ensure compliance because while the line speed goes up so does the production. This revision also included the addition of new permit language to incorporate 20.11.49 NMAC “Excess Emissions” requirements. This revision also included the corrected Facility AIRS# that was incorrect on the previous permit.</p>
#752-M2-RV2	08/31/2009	Administrative Revision	<p>This revision was administered to correct the lettering sequence for the process rate requirements in Permit #752-M2-RV1. The language was changed from</p>

			Conditions I.1.f) i, ii, and iii to Condition I.1.h) i, ii, and iii.
#752-M2-RV1	03/07/2002	Revision	Revision changing monitoring and record keeping requirements from utilizing weight belt recording with daily logs of all ore truck deliveries utilizing the on-site scale records. The original requirements from 752-M2 required the facility to install a weight belt system which was protested by the facility's manager at the time. The revision also changed the Ball Mill Crusher to 6 Ball Mill Crushers with 0.5 tph throughput each.
#752-M2	12/13/1999	Modification	On March 3, 1999 the facility applied for a modification to change their name to American Gypsum resulting in one A-to-C Permit #752-M2. This modification increased their kettle #3 throughput, added testing results for emission factors, increased production, and added a third Raymond Mill with a new baghouse. These modifications resulted in a plant production capacity of 557,140,000 square feet per year of gypsum wallboard.
#384 and #752	12/22/94 and 3/4/96	Modification	Before 1999 American Gypsum was under the name of Centex and for an unknown reason was operating under two permits (#384 and #752).

Regulatory Applicability

The following regulations apply to this Facility.

New Mexico Administrative Code (NMAC) Regulations

Citation	Regulation
20.11.2	Permit Application Review Fees
20.11.2.12.D	
(1)	Modification: \$10,390
*	<i>The fees above have been adjusted for the Consumer Price Index on January 1, 2024.</i>
20.11.2.21	Annual Emissions Fees and Rate for Stationary Sources- Ton-per-year application review fees for stationary sources that require permits pursuant to 20.11.41 NMAC or other board regulation, and whose applicability is based on the source's pound per hour or ton per year emissions:
	Beginning January 1, 2011, and every January 1 thereafter, an increase based on the consumer price index shall be added to the annual emission fee and rates required by 20.11.2.21 NMAC. The annual emission fees and rates pursuant to 20.11.2.21 NMAC shall be adjusted by an amount equal to the increase in the consumer price index for the immediately preceding year.
	<i>The Annual Emission Fees were adjusted for the Consumer Price Index on January 1, 2024.</i>

Emission Unit #	CO ¹ TPY	NOx TPY	SO ₂ TPY	VOC TPY	PM ₁₀ TPY	PM _{2.5} TPY	HAPS TPY
Totals*	115	93	1	5	72	25	-
Total = 311 tpy							
<i>*Note: The total emissions on this table are for billable use only.</i>							

Citation	Regulation
20.11.5	Visible Air Contaminants
20.11.5.12	General Stationary Sources
	No person owning or operating any stationary source, not otherwise addressed in this Part, shall cause or allow visible air contaminant emissions that exceed an opacity of 20 percent, 6 minute time-averaged.
20.11.8	Ambient Air Quality Standards – Only New Mexico State Standards
20.11.8.6	To adopt local ambient air quality standards that are identical to the federal National Primary and Secondary Ambient Air Quality Standards codified at 40 CFR Part 50, and to adopt applicable state Ambient Air Quality Standards codified at 20.2.3 NMAC
	Note: 20.11.8 NMAC is applicable, but the newer federal standards contained in 40 CFR §50 apply.
20.11.20	Fugitive Dust Control
20.11.20.12	GENERAL PROVISIONS:
	<p>A. Each person shall use reasonably available control measures or any other effective control measure during active operations or on inactive disturbed surface areas, as necessary to prevent the release of fugitive dust, whether or not the person is required by 20.11.20 NMAC to obtain a fugitive dust control permit. It shall be a violation of 20.11.20 NMAC to allow fugitive dust, track out, or transported material from any active operation, open storage pile, stockpile, paved or unpaved roadway disturbed surface area, or inactive disturbed surface area to cross or be carried beyond the property line, right-of-way, easement or any other area under control of the person generating or allowing the fugitive dust if the fugitive dust may:</p> <ol style="list-style-type: none"> (1) with reasonable probability injure human health or animal or plant life; (2) unreasonably interfere with the public welfare, visibility or the reasonable use of property; or (3) be visible for a total of 15 minutes or more during any consecutive one hour observation period using the visible fugitive dust detection method in 20.11.20.26 NMAC or an equivalent method approved in writing by the department. <p>E. Stockpiles shall be no higher than 15 feet above the existing natural or man-made grade that abuts the stockpile, unless otherwise approved in advance and in writing by the department.</p>
20.11.40	Source Registration
20.11.40.2	This Part is applicable to any stationary source located in Bernalillo County.

¹ If the compliance testing for DC-11 demonstrates that CO emissions will be below the manufacture’s rate of 16.2 lb/hr and 70.96 tpy, the Facility’s total CO emissions may be shown to be less than the 20.11.42 NMAC, Title V, threshold of 100 tpy and would not need to apply for a Part 70, Title V permit pursuant to 20.11.42 NMAC. However, if the Facility’s total CO emissions, after testing DC-11, exceed 100 tpy, the Permittee will be required to submit a Part 70, Title V application in accordance with 20.11.42.12 NMAC within 12 months after the source commences operation as a 20.11.42 NMAC source.

Citation	Regulation
20.11.40.6	By January 1, 1974, any person owning or operating any commercial or industrial stationary source, which emits more than two thousand pounds of any air contaminant per year or any amount of a hazardous air pollutant, must obtain a Registration Certificate for the source from the Director. Any person owning or operating any commercial or industrial stationary source constructed after September 1, 1973, and meeting the emission requirements of this section, must obtain a Registration Certificate for the source from the Director within one hundred and eighty days after the initial startup date of the source.
20.11.41	Construction Permits
20.11.41.28	Administrative and Technical Permit Revisions
(1)(b)	A technical permit revision may be requested by a permittee provided that it does not require air dispersion modeling and meets one or more of the following criteria: (b) to incorporate a change in the permit that only involves the additional equipment with no increase in potential emission rate.
20.11.41.2.D	Sources that become subject to new NSPS or NESHAP
	If a person is operating a source that becomes subject to a new NSPS or NESHAP, the person shall apply for and obtain a construction permit as required by 20.11.41 NMAC.
20.11.49	Excess Emissions
20.11.49.13.A	Applicable to any source:
(1)	whose operation results in an emission of a regulated air pollutant, including a fugitive emission, in excess of the quantity, rate, opacity or concentration specified by an air quality regulation or permit condition; or
(2)	subject to the requirements of 20.11.47 NMAC, Emissions Inventory Requirements, 20.11.41 NMAC, Construction Permits, 20.11.42 NMAC, Operating Permits, 20.11.61 NMAC, Prevention of Significant Deterioration, or 20.11.60 NMAC, Permitting In Nonattainment Areas.
20.11.63	New Source Performance Standards
20.11.63.11	Incorporation of federal standards
	40 CFR Part 60, Subpart OOO, for Standard of Performance for Nonmetallic Mineral Processing Plants. The provisions of this subpart are applicable to the following affected facilities in fixed or portable nonmetallic mineral processing plants: each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station.
	40 CFR 60, Subpart UUU - Standards of Performance for Calciners and Dryers in Mineral Industries. The provisions of this subpart are applicable to is each calciner and dryer at a mineral processing plant.
20.11.90	Source Surveillance; Administration, Enforcement, Inspection
20.11.90.2	Scope
A.	20.11.90 is applicable to any source within the Bernalillo County.
20.11.90.13	Source Surveillance
A.	The owner or operator of any stationary source of an air contaminant shall, upon notification by the director, maintain records of the nature and amounts of emissions,

Citation	Regulation
	to which an air quality control emission regulation applies, from the source and any other information as may be deemed necessary by the director to determine whether the source is in compliance with applicable regulations.
E.	The director shall establish a periodic visual surveillance system to detect and investigate apparent violations of visible emission limitations and such complaints relating to apparent violations of the regulations as may occur.
20.11.90.14	Administration and Enforcement
A.	Upon request of the director, the person responsible for the emission of air contaminants for which limits are established by the rules codified under Title 20, Environmental Protection, Chapter 11, Albuquerque - Bernalillo County Air Quality Control Board, of the New Mexico Administrative Code, shall provide such facilities, utilities, and openings exclusive of instrument and sensing devices, as may be necessary for the proper determination of the nature, extent, quantity and degree of such air contaminants. Such facilities may be either temporary or permanent at the discretion of the person responsible for their provisions; and shall be suitable for determination consistent with emission limits established in these rules.
20.11.41	Construction Permits
20.11.41.29	Permit Modification
	A person who proposed to modify a stationary source shall comply with all requirements of 20.11.41 NMAC. Applications for permit modifications shall be processed in accordance with all requirements established in 20.11.41 NMAC for permit applications, including public notice, review fees, and hearing procedures

Federal Applicability

Citation	Regulation	Does it apply to the Facility and/ or Equipment? Y/N (List units)
40 CFR 50	National Primary and Secondary Ambient Air Quality Standards	Yes. All facility
§50.4	National primary ambient air quality standards for sulfur oxides (sulfur dioxide) General Provision	
§50.5	National secondary ambient air quality standards for sulfur oxides (sulfur dioxide)	
§50.6	National primary and secondary ambient air quality standards for PM10	
§50.7	National primary and secondary ambient air quality standards for PM2.5	
§50.8	National primary ambient air quality standards for carbon monoxide	
§50.9	National 1-hr primary and secondary ambient air quality standards for ozone	

Citation	Regulation	Does it apply to the Facility and/ or Equipment? Y/N (List units)
§50.10	National 8-hr primary and secondary ambient air quality standards for ozone	
§50.11	National primary and secondary ambient air quality standards for oxides of nitrogen (with nitrogen dioxide as the indicator)	
§50.13	National primary and secondary ambient air quality standards for PM2.5	
§50.15	National primary and secondary ambient air quality standards for ozone	
§50.16	National primary and secondary ambient air quality standards for lead	
§50.17	National secondary ambient air quality standards for sulfur oxides (sulfur dioxide)	
§50.18	National primary and secondary ambient air quality standards for PM2.5	
§50.19	National primary and secondary ambient air quality standards for ozone	
40 CFR 60 Subpart A - General Provisions	§60.38f Reporting guidelines: For approval, a state plan must include the reporting provisions listed in this section, as applicable, except as provided under §§60.24 and 60.38f(d)(2)	Yes. All facility
40 CFR 60 Subpart OOO	Standards of Performance for Nonmetallic Mineral Processing Plants. Equipment Units #6, 7, 9, 101, 10, 11, 13, 14, 19 (DC-01), 19 (DC-02), 19 (DC-03), 19 (DC-11a), 19 (DC-12), 19 (DC-12), and 19 (DC-13) are subject to Federal New Source Performance Standards (NSPS) 40 CFR 60 Subpart A - General Provisions, and Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants. The permittee shall comply with both the notification requirements of Subpart A and shall comply with the applicable requirements found in 40 CFR 60, Subpart OOO.	Yes Units #6, #7, #101, #8, #9, #10, #11, #12a, #13, #14, #19 (DC-01), #19 (DC-02), #19 (DC-03), #19 (DC-11a), #19 (DC-12), #19 (DC-12), and #19 (DC-13)
40 CFR 60 Subpart UUU	Standards of Performance for Calciners and Dryers in Mineral Industries. Equipment Units #1b, 2b, 3b, 4b, and 19 [DC-11 (Mill and hot gas generator)] are subject to Federal New Source Performance Standards (NSPS) 40 CFR 60 Subpart A - General Provisions, and Subpart UUU - Standards of Performance for Calciners and Dryers in Mineral Industries. The permittee shall comply with both the notification requirements of Subpart A and shall comply	Yes Units #1a, #2a, #3a, #4a, and #19 (DC-11) – Mill and Hot Gas Generator (Calciner)

Citation	Regulation	Does it apply to the Facility and/ or Equipment? Y/N (List units)
with the applicable requirements found in 40 CFR 60, Subpart UUU.		

Air Quality Dispersion Modeling:

Modeling was performed for previous permits 0752-M3 & M4; M4 was issued in November 17, 2023. PM₁₀, PM_{2.5}, NO₂, CO, and SO₂ using AERMOD. Compliance was demonstrated for NAAQS and NMAAQS.



AmericanGypsum_0752-M3&M4_Modeli

The Permittee requested a modeling waiver for this permit 0752-M5. The increase in CO emissions was evaluated and compared with the previous modeling report for M3 and M4, and it was determined that the increase in CO will not violate the NAAQS or the NMAAQS. Therefore, a modeling waiver was granted by the Department on August 9, 2024.



AmerGyp_0752-M4 mod_Modeling Wai

The Program granted the modeling waiver based on the Significant Impact Levels (1-hr and 8-hr SILs) for CO. Using the most current AERMOD program for AQDM and based on the last model, the increase in CO emissions remain below the SILs and therefore, are in compliance with the NAAQS and NMAAQS:

Modeling Document	Pollutant/Averaging Period	Significant Impact Level (µg/m ³)	Modeled Impact (µg/m ³)	Percent of SIL	Modeled Emission Rate (lb/hr)	Proposed Emission Rate (lb/hr)	Scaled Impact (µg/m ³)	Scaled Impact (% of SIL)
0752-M4 AQP Modeling	1-hr CO	2000	81.8	4.09%	2.12	16.2	624.95	31.25 %
	8-hr CO	500	58.3	11.66%			445.41	89.08 %

Compliance Testing:

Initial testing was conducted for DC-11 in August 2024, for NO_x and CO with the originally installed burner for DC-11; compliance with the permitted NO_x and a lower CO emission rate (permitted in 0752-M4) was demonstrated. Initial testing shall be conducted again when the modified burner and associated equipment are installed. If the compliance testing demonstrates that CO emissions will be below the manufacturer's rate of 16.2 lb/hr or 70 tpy, the Facility's total CO emissions may be shown to be less than the 20.11.42 NMAC, Title V, threshold of 100 tpy. However, if the Facility's total CO emissions, after testing DC-11, exceed 100 tpy, the Permittee will be required to submit a Part 70, Title V application in accordance with 20.11.42.12 NMAC within 12 months after the source commences operation as a 20.11.42 NMAC source.

Actions Taken

09/03/2024	Received application
08/09/2024	Modeling Waiver Granted
10/2/2024	Public Comment Period Start Date
11/2/2024	Public Comment Period End Date
10/23/2024	Comment and PIH request from Peggy Norton, North Valley Coalition- representing several North Valley Neighborhood associations.

CALCULATIONS

For this modification application, 0752-M5, the manufacture, Honeywell, provided the CO emission rate for the burner and combustion chamber to be installed to unit DC-11, Vertical Mill, at a firing rate of 51.2 MMBtu/hr. The emission rate is larger than previous rates and is given by Honeywell as 16.2 lb/hr and 70.9 tpy (assuming 8760 hrs/yr of operation).

Previous Calculations:

Unit # 12a: Stockpile Units - Material Handling of 12a (Truck Dump to Stockpile and Front-End Loader to Truck (Unit #12a))

Emissions associated with the stockpile are based on material handling (truck drops to stockpile and front-end loader drops into trucks). These two sections (Table A and Table B below), which are part of a four (4) section emission calculation for Unit #12a, encompass emissions from both truck drops to stockpile and front-end loader drops to trucks. Material handling emissions are based on AP-42 Table 11.19.2-2 for truck loading/unloading of fragmented stone. PM10 and PM2.5 emissions are based on the Aerodynamic Particle Size Multiplier (k factor) from AP-42 Section 13.2.4-4 (PM2.5 = PM10 * 0.053/0.35). Water sprays are utilized so the controlled factor for wet material was utilized for material removed from the stockpile and because of this a 50% control factor will be used for the front-end loader to truck emissions. Pound per hour emissions will be based on a throughput of 200 tons/hr and tons per year emissions will be based on 919,800 tons per year. Uncontrolled and controlled emissions are based on 8760 hours/yr with controlled utilizing the 50% control for the front-end loader drops to trucks in the next emission table (Table B). So no control factor will be used for the truck dump to stockpile and the uncontrolled and controlled emissions will be based on 8760 hours/yr.

**Table A - Unit # 12a: Truck Dump to Stockpile Section of Unit #12a
(Unit #12a, Part 1 of 4)**

Unit Number	Pollutant	Emission Rate (lb/ton)	Uncontrolled Emission Calculation	lbs/ hour	tons/year
#12a Uncontrolled and Controlled	PM ₁₀	0.000016 lb/ton	(0.000016 lb/ton) (200 tons /hr) = 0.0032 lb/hr (0.000016 lb/ton) (919,800 tons /yr) (1 lb / 2000 tons) = 0.0074 tpy	0.0032	0.007
200 ton/hr 919,800 ton/yr	PM _{2.5}	0.00000242286 lb/ton	(0.000016 lb/ton) (0.053/0.35) = 0.000002422857 lb/ton (0.00000242286 lb/ton) (200 tons /hr) = 0.0004845 lb/hr	0.000485	0.001

0% emission controls			(0.00000242286 lb/ton) (919,800 tons /yr) (1 lb / 2000 tons) = 0.0011		
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Table B -- Material Handling Continued
Unit # 12a: Front-end Loader to Truck Section of Unit #12a
(Unit #12a, Part 2 of 4)

Unit Number	Pollutant	Emission Rate (lb/ton)	Uncontrolled Emission Calculation	lbs/ hour	tons/year
#12a <i>Uncontrolled</i>	PM₁₀	0.0001 lb/ton	(0.0001 lb/ton) (200 tons /hr) = 0.02 lb/hr (0.0001 lb/ton) (919,800 tons /yr) (1 lb / 2000 tons) = 0.046 tpy	0.02	0.05
200 ton/hr	PM_{2.5}	0.0000151429 lb/ton	(0.0001 lb/ton) (0.053/0.35) = 0.001514285 lb/ton (0.0000151429 lb/ton) (200 tons /hr) = 0.003028 lb/hr (0.0000151429 lb/ton) (919,800 tons /yr) (1 lb / 2000 tons) = 0.007	0.00303	0.007
Unit Number	Pollutant	Emission Rate (lb/hr) and (lb/10⁶ scf)	Controlled Emission Calculation	lbs/ hour	tons/year
<i>Controlled</i>	PM₁₀	0.0001 lb/ton	(0.0001 lb/ton) (200 tons /hr) (1-0.50)= 0.01 lb/hr (0.0001 lb/ton) (919,800 tons /yr) (1 lb / 2000 tons) (1-0.50) = 0.022 tpy	0.01	0.02
919,800 ton/yr 50% Control – Water Spray	PM_{2.5}	0.0000151429 lb/ton	(0.0001 lb/ton) (0.053/0.35) = 0.001514285 lb/ton (0.0000151429 lb/ton) (200 tons /hr) (1-0.50) = 0.001514 lb/hr (0.0000151429 lb/ton) (919,800 tons /yr) (1 lb / 2000 tons) (1-0.5)= 0.0034	0.00151	0.003

Table C and D

**Unit # 12a: Stockpile Units – Unpaved Front-End Loader Dumping to Trucks Traffic of 12a
(Loader Traffic and Haul Trucks (Unit #12a)
(Unit #12a, Part 3 and 4 of 4 Sections)**

In addition to material handling, loaders and trucks travel on the stockpile, generating dust associated with haul traffic. Additional facility haul traffic is discussed later in calculation table below this section. Unit #12a is comprised of the stockpile acreage and both Loader Traffic and Haul Trucks. These two sections (Table U and Table V below), which are part of a four (4) segment emission calculation for Unit #12a, will include the particulate emission calculations for associated haul truck and front loader traffic. Material handling traffic on unpaved roads will be based on AP-42 Section 13.2.2 and will use an assumed silt content of 9.7% (conservatively assumed to be 9.7% for gypsum (AP-42 Table 13.2.2-1)). Calculations are based on a maximum (conservative) mean vehicle weight. Both uncontrolled and controlled emission were based on a mean vehicle weight of 21 tons for the loader traffic and 29.50 tons for the haul trucks. An hourly truck miles traveled / hour (VMT/hr) rate of 0.180 will be used for both the loader traffic and the haul traffic. Also, an annual VMT/year rates will be used with 1188 VMT/year for the loader traffic and 245.8 VMT/year for the haul truck traffic. A control efficiency of 60% is applied based on the utilization of water sprays. Vehicles per hour, vehicles per year, segment length and maximum mean vehicle weight were all provided by American Gypsum based on the facility processes, throughput and haul road paths for Unit #12a.

Table C - Part 3 of 4 for Unit #12a – Loader Traffic

Unit Number	Emission Factor		Emission Calculation		Emissions lbs/hr total	Emissions tons/yr total
12a Unpaved Haul Roads Loader Traffic		AP-42 Section 13.2-2	Emission Factor = lb/VMT = $k(s/12)^a(W/3)^b$ Annual Emission Factor = lb/VMT = $k(s/12)^a(W/3)^b$ [365-p/365]			
			Uncontrolled PM₁₀ Loader Traffic Unpaved Haul Roads lb/VMT	Uncontrolled PM_{2.5} Loader Traffic Unpaved Haul Roads lb/VMT		
k = PM10 particle size	1.5		PM ₁₀ (lb/VMT) = $k(s/12)^a(W/3)^b$ PM ₁₀ (lb/VMT) = (1.5)(9.7/12) ^{0.9} (21/3) ^{0.45} PM ₁₀ (lb/VMT) = (1.5)(0.80833) ^{0.9} (7) ^{0.45} PM ₁₀ (lb/VMT) = (1.5)(0.82517) (2.40045) = 2.9711 lb/VMT = <u>2.97 lb/VMT</u>	PM _{2.5} (lb/VMT) = $k(s/12)^a(W/3)^b$ PM _{2.5} (lb/VMT) = (0.15)(9.7/12) ^{0.9} (21/3) ^{0.45} PM _{2.5} (lb/VMT) = (0.15)(0.80833) ^{0.9} (7) ^{0.45} PM _{2.5} (lb/VMT) = (0.15)(0.82517) (2.40045) = 0.29711 lb/VMT = <u>0.30 lb/VMT</u>	PM ₁₀ 0.54	PM ₁₀ 1.89
k = PM2.50 particle size	0.15		[2.9711 lb/VMT][0.18 VMT/hr] = 0.5348 lb/hr = 0.53 lb/hr	[0.29711 lb/VMT][0.18 VMT/hr] = 0.05348 lb/hr = 0.053 lb/hr	PM _{2.5} 0.054	PM _{2.5} 0.19
a = PM10 particle size	0.9		Application states: 0.54 lb/hr	Application states: 0.054 lb/hr		
a = PM2.5 particle size	0.9					
b = TSP/ PM10/PM2.5 particle size	0.45		Annual PM ₁₀ lb/VMT = $k(s/12)^a(W/3)^b(365-70/365)$ PM ₁₀ lb/VMT = (1.5)(9.7/12) ^{0.9} (21/3) ^{0.45} (365-70/365) PM ₁₀ lb/VMT = (1.5)(0.82517) (2.40045)(0.808219) = 2.4013 lb/VMT = <u>2.40 lb/VMT</u>	Annual lb/VMT = $k(s/12)^a(W/3)^b(365-70/365)$ PM _{2.5} (lb/VMT) (0.15)(9.7/12) ^{0.9} (21/3) ^{0.45} (365-70/365) PM _{2.5} (lb/VMT) = (0.15)(0.82517) (2.40045)(0.808219) = 0.240135 lb/VMT = <u>0.24 lb/VMT</u>		
s= silt content of road surface %	9.7					
p = precipitation	70 days					
W = mean vehicle weight (tons)	21		PM ₁₀ tpy = [2.4013 lb/VMT][1577 VMT/yr] [2000 lb/tpy] = 1.4167 tpy = 1.89 tpy	PM _{2.5} tpy = [0.240135 lb/VMT][1577 VMT/hr] [2000 lb/tpy] = 0.14167 tpy = 0.189 tpy		
		Controlled based on engineering judgement for asphalt millings (base coarse) = 60%	Controlled Loader Traffic PM₁₀ PM ₁₀ lb/hr = 0.5348 lb/hr (1-60% control) = 0.2139 lb/hr = 0.21 lb/hr PM ₁₀ tpy = 1.89 tpy (1-60% control) = 0.56668 tpy = 0.756 tpy	Controlled Loader Traffic PM_{2.5} PM _{2.5} = 0.05348 lb/hr (1-60% control) = 0.02139 lb/hr = 0.021 lb/hr PM _{2.5} = 0.189 tpy (1-60% control) = 0.056668 tpy = 0.0756 tpy	PM ₁₀ 0.21 PM _{2.5} 0.021	PM ₁₀ 0.76 PM _{2.5} 0.08

Unit #12a is comprised of the stockpile acreage and both Loader Traffic and Haul Trucks. The following table is for the Haul Trucks as described in Tables C and D, Part 3 and 4 above.

Table D - Part 4 of 4 for Unit #12a – Haul Truck Emissions

Unit Number	Emission Factor		Emission Calculation		Emissions lbs/hr total	Emissions tons/yr total
Unpaved Haul Roads Haul Truck – 12a		AP-42 Section 13.2-2	Emission Factor = lb/VMT = $k(s/12)^a(W/3)^b$ Annual Emission Factor = lb/VMT = $k(s/12)^a(W/3)^b$ [365-p/365]			
			Uncontrolled PM₁₀ Unpaved Haul Traffic lb/VMT	Uncontrolled PM_{2.5} Unpaved Haul Traffic lb/VMT		
k = PM10 particle size	1.5		PM ₁₀ (lb/VMT) = $k(s/12)^a(W/3)^b$ PM ₁₀ (lb/VMT) = (1.5)(9.7/12) ^{0.9} (29.5/3) ^{0.45}	PM _{2.5} (lb/VMT) = $k(s/12)^a(W/3)^b$ PM _{2.5} (lb/VMT) = (0.15)(9.7/12) ^{0.9} (29.5/3) ^{0.45} PM _{2.5} (lb/VMT)=(0.15)(0.80833) ^{0.9} (9.8333) ^{0.45}	PM ₁₀ 0.62	PM ₁₀ 2.21
k = PM2.50 particle size	0.15		PM ₁₀ (lb/VMT) = (1.5)(0.80833) ^{0.9} (9.8333) ^{0.45}	PM _{2.5} (lb/VMT) = (0.15)(0.825717) (2.79717) = 0.34645 lb/VMT = <u>0.35</u> lb/VMT Application states: 0.38 lb/VMT	PM _{2.5} 0.069	PM _{2.5} 0.22
a = PM10 particle size	0.9		PM ₁₀ (lb/VMT) = (1.5)(0.825717) (2.7971) = 3.46442 lb/VMT = <u>3.46</u> lb/VMT	PM _{2.5} lb/hr = [0.34621 lb/VMT][0.18 VMT/hr] = 0.06231 lb/hr = 0.062 lb/hr		
a = PM2.5 particle size	0.9		PM ₁₀ lb/hr = [3.46442 lb/VMT][0.18 VMT/hr] = 0.62359 lb/hr = 0.62 lb/hr	Application states: 0.069 lb/hr		
b = TSP/ PM10/PM2.5 particle size	0.45		Annual PM ₁₀ lb/VMT = $k(s/12)^a(W/3)^b(365-70/365)$	Annual lb/VMT = $k(s/12)^a (W/3)^b(365-70/365)$		
s= silt content of road surface %	9.7		PM ₁₀ lb/VMT = (1.5) (9.7/12) ^{0.9} (25.9/3) ^{0.45} (365-70/365)	PM _{2.5} (lb/VMT) = (0.15) (9.7/12) ^{0.9} (25.9/3) ^{0.45} (365-70/365)		
p = precipitation	70 days		PM ₁₀ lb/VMT = (1.5) (0.825717) (2.79714) (0.808219) = 2.8000 lb/VMT = <u>2.80 lb/VMT</u>	PM _{2.5} (lb/VMT) = (0.15) (0.825717) (2.79714) (0.808219) = 0.28000 lb/VMT = <u>0.28 lb/VMT</u>		
W = mean vehicle weight (tons)	29.5		PM ₁₀ tpy = [2.8000 lb/VMT][1577 VMT/yr] [2000 lb/tpy] = 2.21 tpy = 2.21 tpy	Application states: 0.31 lb/VMT PM _{2.5} tpy = [0.28000 lb/VMT] [1577 VMT/hr] [2000 lb/tpy] = 0.221 tpy = 0.22 tpy Application states: 0.24 tpy		
		Controlled based on engineering judgement for asphalt millings (base coarse) = 60%	Controlled Unpaved Haul Truck Traffic PM₁₀ PM ₁₀ lb/hr = 0.62359 lb/hr (1-60% control) = 0.249436 lb/hr = 0.25 lb/hr PM ₁₀ tpy = 2.21 tpy (1-60% control) = 0.884 tpy = 0.88 tpy	Controlled Unpaved Haul Truck Traffic PM_{2.5} PM _{2.5} lb/hr = 0.06231 lb/hr (1-60% control) = 0.024924 lb/hr = 0.025 lb/hr Application states: 0.027 lb/hr PM _{2.5} tpy = 0.025 tpy (1-60% control) = 0.01 tpy = 0.01 tpy	PM ₁₀ 0.25 PM _{2.5} 0.025	PM ₁₀ 0.88 PM _{2.5} 0.10

Table E
Final Material Handling Total Emissions Summary from Tables A through D

Pollutant	Total Controlled Emissions									
	Dump to Stockpile		Loader to Truck		Loader Traffic		Haul Truck Traffic		Total	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
PM10	0.0032	0.007	0.01	0.02	0.21	0.76	0.25	0.88	0.48	1.67
PM2.5	0.000485	0.001	0.00151	0.003	0.021	0.08	0.027	0.10	0.051	0.184



Unit # 12b: Frontend Loader to Trucks

Emissions associated with the stockpile loader are based on AP-42 Table 11.19.2-2 for truck loading/unloading of fragmented stone. PM10 and PM2.5 emissions are based on the Aerodynamic Particle Size Multiplier (k factor) from AP-42 Section 13.2.4-4 (PM2.5 = PM10 * 0.053/0.35). A photograph of this process is shown to the left to provide additional clarity on the types of trucks and location and release height of this source. Pound per hour emissions will be based on a throughput of 200 tons/hr and tons per year emissions will be based on 963,600 tons per year. Uncontrolled and controlled emissions are based on 8760 hours/yr with 0% control.

Table F - Unit #12b – Frontend Loader to Truck Emissions

Unit Number	Pollutant	Emission Rate (lb/ton)	Uncontrolled Emission Calculation	lbs/ hour	tons/year
#12b <i>Uncontrolled and Controlled</i>	PM₁₀	0.0001 lb/ton	(0.0001 lb/ton) (200 tons /hr) = 0.02 lb/hr (0.0001 lb/ton) (963,600 tons /yr) (1 lb / 2000 tons) = 0.048 tpy	0.02	0.05
200 ton/hr	PM_{2.5}	0.0000151429 lb/ton	(0.0001 lb/ton) (0.053/0.35) = 0.001514285 lb/ton (0.0000151429 lb/ton) (200 tons /hr) = 0.003028 lb/hr (0.0000151429 lb/ton) (963,600 tons /yr) (1 lb / 2000 tons) = 0.0073 tpy	0.003	0.007