NSR MINOR SOURCE PERMIT APPLICATION FOR C&E CONCRETE, INC. GAMERCO HMA

Gamerco, New Mexico

PREPARED FOR



Dated October 26, 2020

Prepared by

Montrose Air Quality Services, LLC



Mail Application To:

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.:

For Department use only:

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. \Box Title V Operating, Title IV Acid Rain, and NPR applications have no fees.

X \$500 NSR application Filing Fee enclosed OR \Box The full permit fee associated with 10 fee points (required w/ streamline applications). **X** Check No.: <u>44551</u> in the amount of <u>\$500.00</u>

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. \Box 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(1) 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

Sec	tion 1-A: Company Information	AI # if known (see 1 st 3 to 5 #s of permit IDEA ID No.):	<mark>Updating</mark> Permit/NOI #:
1	Facility Name: Gamerco HMA	Plant primary SIC Cod	e (4 digits): 2951
1		Plant NAIC code (6 dig	gits): 324121
a	Facility Street Address (If no facility street address, provide directions from 208 Crystal Avenue, Gamerco, NM 87317	n a prominent landmark)	:
2	Plant Operator Company Name: C&E Concrete, Inc.	Phone/Fax: (505) 287-2	2944/(505) 287-7364
a	Plant Operator Address: PO Box 2547, Milan, NM 87021		
b	Plant Operator's New Mexico Corporate ID or Tax ID: 01-804967002		

3	Plant Owner(s) name(s): C&E Concrete, Inc.	Phone/Fax: (505) 287-2944/(505) 287-7364
a	Plant Owner(s) Mailing Address(s): PO Box 2547, Milan, NM 87021	
4	Bill To (Company): C&E Concrete, Inc.	Phone/Fax: (505) 287-2944/(505) 287-7364
a	Mailing Address: PO Box 2547, Milan, NM 87021	E-mail: wlm@ceconcrete.net
5	□ Preparer: X Consultant: Paul Wade, Montrose Air Quality Services	Phone/Fax: (505) 830-9680x6/(505) 830-9678
а	Mailing Address: 3500G Comanche Rd NE, Albuquerque, NM 87107	E-mail: pwade@montrose-env.com
6	Plant Operator Contact: Walter Meech	Phone/Fax: (505) 287-2944/(505) 287-7364
а	Address: PO Box 2547, Milan, NM 87021	E-mail: wlm@ceconcrete.net
7	Air Permit Contact: Walter Meech	Title: President
a	E-mail: wlm@ceconcrete.net	Phone/Fax: (505) 287-2944/(505) 287-7364
b	Mailing Address: PO Box 2547, Milan, NM 87021	
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	1.b If yes to question 1.a, is it currently operating in New Mexico? □ Yes ⊠ No
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	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
3	Is the facility currently shut down? \Box Yes \Box No \bigotimes 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 s	since 1972? □ Yes 🖾 No
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMA) \Box Yes \Box No \bigotimes N/A	C) or the capacity increased since 8/31/1972?
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? □ Yes ⊠ No	If yes, the permit No. is: P-
7	Has this facility been issued a No Permit Required (NPR)? □ Yes ⊠ No	If yes, the NPR No. is:
8	Has this facility been issued a Notice of Intent (NOI)?	If yes, the NOI No. is:
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? □ Yes	If yes, the permit No. is:
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? □ Yes	If yes, the register No. is:

Section 1-C: Facility Input Capacity & Production Rate

1	What is the	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: N/A	Annually: N/A								
b	Proposed	Hourly: 200 tons	Daily: 3200 tons	Annually: 500,000 tons							
2	What is the	facility's maximum production rate, sp	pecify units (reference here and list capacities in	Section 20, if more room is required)							
a	Current Hourly: N/A		Daily: N/A	Annually: N/A							
b	Proposed	Hourly: 200 tons	Daily: 3200 tons	Annually: 500,000 tons							

Section 1-D: Facility Location Information

1	Section: 32	Range: 18W	Township: 16N	County: N	IcKinley	i	Elevation (ft): 6700			
2		$\overrightarrow{12}$ or $\square 13$		Datum:	□ NAD 27	🛛 NAD				
2 a		rs, to nearest 10 meters	av: 702 880		n meters, to nearest					
b	AND Latitude	AND Latitude (deg., min., sec.): 35°, 34', 09.6276" N Longitude (deg., min., sec.): 108°, 45', 40.554" W								
3	1		w Mexico town: Gamerco							
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From the intersection of I-40 and Highway 491 in Gallup, NM in McKinley County travel 2.9 miles north on Highway 491 to the entrance of the site on the west side of the highway.									
5	The facility is l	ocated within the	town of Gamerco, NM.							
6	Status of land a	t facility (check o	one): 🛛 Private 🗆 Indian/P	ueblo 🛛 Fee	deral BLM	Federal Fo	rest Service Other (specify)			
7	on which the f	acility is propose	ed to be constructed or op	perated:			.B.2 NMAC) of the property			
8	closer than 50	km (31 miles) to	o other states, Bernalillo (<u>eas.html</u>)? 🛛 Yes 🗆 No (2	County, or a	Class I area (s	see	constructed or operated be all with corresponding			
9	Name nearest (Class I area: Petrif	ied Forest National Park							
10	Shortest distant	ce (in km) from fa	cility boundary to the boundary	ndary of the	nearest Class I	area (to the	nearest 10 meters): 95.13 km			
11	lands, including	g mining overburd		est residence						
12	lands, including mining overburden removal areas) to nearest residence, school or occupied structure: 95 meters Method(s) used to delineate the Restricted Area: Fencing and Gate "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 □ Yes ⊠ N A portable station or	r/operator intend t o onary source is no that can be re-ins	o operate this source as a p ot a mobile source, such as talled at various locations,	oortable stati an automob such as a ho	ionary source a bile, but a sourc ot mix asphalt p	the section of the se	n 20.2.72.7.X NMAC? be installed permanently at moved to different job sites.			
14		• 1 0	nction with other air regul nit number (if known) of th	1	1		\Box No \boxtimes Yes			

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 $(\frac{\text{hours}}{\text{day}})$: 18	(days/week): 7	$\left(\frac{\text{weeks}}{\text{year}}\right)$: 52	$(\frac{\text{hours}}{\text{year}})$: 5880			
2	Facility's maximum daily operating schedule (if less	s than 24 $\frac{\text{hours}}{\text{day}}$)? Start: 3:00	XAM □PM	End: 9:00	□AM X PM		
3	Month and year of anticipated start of construction:	Upon issuance of permit					
4	Month and year of anticipated construction complet	ion: 1 month after issuance of I	permit				
5	Month and year of anticipated startup of new or modified facility: 1 month after issuance of permit						
6	Will this facility operate at this site for more than or	ne year? 🛛 Yes 🗆 No					

Section 1-F: Other Facility Information

1Are there any current Notice of Violations (NOV), compliance orders, or any other compliance or enforcement issues related
to this facility? \Box Yes \boxtimes No If yes, specify:

а	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 c	or 1a above? 🛛 Yes [⊠ No If Y	Yes, provide the 1c & 1d info below:
c	Document Title:	Date:		nent # (or nd paragraph #):
d	Provide the required text to be inserted in this permit:			
2	Is air quality dispersion modeling or modeling waiver bein	g submitted with this	applicatio	n? ⊠Yes □No
3	Does this facility require an "Air Toxics" permit under 20.2	2.72.400 NMAC & 20	0.2.72.502	, Tables A and/or B? 🗆 Yes 🖾 No
4	Will this facility be a source of federal Hazardous Air Polle	utants (HAP)? 🛛 Yes	s □No	
a	If Yes, what type of source? \Box Major ($\Box \ge 10$ tpy of anOR \boxtimes Minor ($\boxtimes < 10$ tpy of a			tpy of any combination of HAPS) 5 tpy of any combination of HAPS)
5	Is any unit exempt under 20.2.72.202.B.3 NMAC? □ Yes	5 🖾 No		
	If yes, include the name of company providing commercial	electric power to the	facility: <u>F</u>	<u>PNM</u>
а	Commercial power is purchased from a commercial utility site for the sole purpose of the user.	company, which spe	cifically d	loes not include power generated on

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

1 \Box I have filled out Section 18, "Addendum for Streamline Applications." \boxtimes 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 (/lajor PSD/NNSR	applications), and/or	20.2.70 NMA	C (Title V))

1	Responsible Official (R.O.) (20.2.70.300.D.2 NMAC):		Phone:				
a	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 have operating (20.2.70 NMAC) permits and with whom the applic relationship):						
4	Name of Parent Company ("Parent Company" means the primary r permitted wholly or in part.):	name of the organiza	tion that owns the company to be				
a	Address of Parent Company:						
5	Names of Subsidiary Companies ("Subsidiary Companies" means owned, wholly or in part, by the company to be permitted.):	organizations, branc	hes, divisions or subsidiaries, which are				
6	Telephone numbers & names of the owners' agents and site contact	ts familiar with plan	t operations:				
7	Affected Programs to include Other States, local air pollution contribution Will the property on which the facility is proposed to be constructed states, local pollution control programs, and Indian tribes and pueble ones and provide the distances in kilometers:	d or operated be clo	ser than 80 km (50 miles) from other				

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:

- 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 <u>copy</u> should be printed in book form, 3-hole punched, and <u>must be double sided</u>. Note that this is in addition to the head-toto 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):

X 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 <u>summary report only</u> 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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Gamerco HMA

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.

					Manufact- urer's Rated	Requested Permitted	Date of Manufacture ²	Controlled by Unit #	Source Classi-		RICE Ignition	
Unit Number ¹	Source Description	Make	Model #	Serial #	Capacity ³ (Specify Units)	Capacity ³ (Specify Units)	Date of Construction/ Reconstruction ²	Emissions vented to Stack #	fication Code (SCC)	For Each Piece of Equipment, Check One		Replacing Unit No.
1	Aggregate Storage Piles	N/A	N/A	N/A	115-165 TPH	115-165 TPH	NA NA	None N/A	3-05- 002-03	Existing (unchanged) To be Removed X New/Additional To Be Modified To be Replaced		
2	Cold Aggregate Feed Bins (4)	Aztec	CMG	78-024	115-165 TPH	115-165 TPH	1978 NA	None N/A	3-05- 002-16	Existing (unchanged) To be Removed X New/Additional Replacement Unit To Be Modified To be Replaced		
3	Cold Aggregate Feed Bin Conveyor	Aztec	CMG	78-024	115-165 TPH	115-165 TPH	1978 NA	C1 N/A	3-05- 002-17	Existing (unchanged) To be Removed X New/Additional Replacement Unit To be Modified To be Replaced		
4	Cold Aggregate Conveyor	Aztec	CMG	78-024	115-165 TPH	115-165 TPH	1978 NA	C1 N/A	3-05- 002-17	Existing (unchanged) To be Removed X New/Additional Replacement Unit To be Modified To be Replaced		
5	Scalping Screen	Aztec	CMG	78-024	115-165 TPH	115-165 TPH	1978 NA	C2 N/A	3-05- 002-04	To be Replaced Existing (unchanged) To be Removed X New/Additional To Be Modified To be Replaced		
6	Scalping Screen Scale Conveyor	Aztec	CMG	78-024	115-165 TPH	115-165 TPH	1978 NA	C1 N/A	3-05- 002-17	Existing (unchanged) To be Removed X New/Additional To Be Modified To be Replaced		
7	Pug Mill	Aztec	CMG	78-024	115-165 TPH	115-165 TPH	1978 NA	C1 N/A	3-05- 002-04	Existing (unchanged) To be Removed X New/Additional To Be Modified To be Replaced		
8	Pug Mill Conveyor	Aztec	CMG	78-024	118-168 TPH	118-168 TPH	1978 NA	C1 N/A	3-05- 002-17	Existing (unchanged) To be Removed X New/Additional To Be Modified To be Replaced		
9	Slinger Conveyor	Aztec	CMG	78-024	118-168 TPH	118-168 TPH	1978 NA	C1 N/A	3-05- 002-17	Existing (unchanged) To be Removed X New/Additional To Be Modified To be Replaced		
10	Mineral Filler Silo and Screw Conveyor	Aztec	CMG	78-024	60 ton	60 ton	1978	C3	3-05- 002-13	Existing (unchanged) To be Removed X New/Additional Replacement Unit To be Modified To be Replaced		
11	Mineral Filler Silo	Aztec	CMG	78-024	CE 99.0%	CE 99.0%	NA 1978	N/A	3-05-	Existing (unchanged) To be Removed X New/Additional Replacement Unit		
12	Baghouse	N/A	N/A	N/A		20-70 TPH	NA NA	N/A None	002-13 3-05-	To Be Modified To be Replaced Existing (unchanged) To be Removed X New/Additional Replacement Unit		
	RAP Storage Pile						NA 1978	N/A None	002-03 3-05-	Image: To Be Modified Image: To be Replaced Image: Existing (unchanged) Image: To be Removed		
13	RAP Bin (2)	Aztec	CMG	78-024	20-70 TPH	20-70 TPH	NA 1978	N/A C1	002-16	X New/Additional Replacement Unit To Be Modified To be Replaced Existing (unchanged) To be Removed		
14	RAP Bin Conveyor	Aztec	CMG	78-024	20-70 TPH	20-70 TPH	NA	N/A	3-05- 002-17	X New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
15	RAP Scalping Screen	Aztec	CMG	78-024	20-70 TPH	20-70 TPH	1978 NA	C2 N/A	3-05- 002-04	□ Existing (unchanged) □ To be Removed X New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		
16	RAP Scalping Screen Conveyor	Aztec	CMG	78-024	20-70 TPH	20-70 TPH	1978 NA	C1 N/A	3-05- 002-17	□ Existing (unchanged) □ To be Removed X New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced		

C and	E Concrete, Inc.						Gamerco HMA			Application Date: 10/26/2020	Revision	ı #0
					Manufact- urer's Rated	Requested Permitted	Date of Manufacture ²	Controlled by Unit #	Source Classi-		RICE Ignition	
Unit Number ¹	Source Description	Make	Model #	Serial #	Capacity ³ (Specify Units)	Capacity ³ (Specify Units)	Date of Construction/ Reconstruction ²	Emissions vented to Stack #	fication Code (SCC)	For Each Piece of Equipment, Check One	Type (CI, SI, 4SLB, 4SRB, 2SLB) ⁴	Replacing Unit No.
17	Drum Mixer	Aztec	CMG	78-024	200 TPH	200 TPH	1978 NA	C4 2	3-05- 002-1	Existing (unchanged) To be Removed X New/Additional To Be Modified To be Replaced		
18	Drum Mixer Baghouse	Aztec	CMG	78-024	CE 99.88%	CE 99.88%	1978 NA	N/A N/A	3-05- 002-1	To be Meinled To be Replaced Existing (unchanged) To be Removed X New/Additional Replacement Unit To be Modified To be Replaced		
19	Asphalt Incline Conveyor	Aztec	CMG	78-024	200 TPH	200 TPH	1978 NA	None N/A	3-05- 002-21	To be Modified To be Replaced Existing (unchanged) To be Removed X New/Additional Replacement Unit To be Modified To be Replaced		
20	Asphalt Silo	Aztec	CMG	78-024	40 ton	250 TPH	1978 NA	None N/A	3-05- 002-13	Existing (unchanged) To be Replaced X New/Additional Replacement Unit To Be Modified To be Replaced		
21	Asphalt Heater	Aztec	CMG	78-024	1.41 MMBtu	1.41 MMBtu	1978 NA	None 3	3-05- 002-08	Existing (unchanged) To be Replaced X New/Additional Replacement Unit To Be Modified To be Replaced		
22	Asphalt Cement	Aztec / CEI	CMG / 20 HOC	78-024 / 120	20,000/ 20,000	20,000/ 20,000	1978	None	3-05-	Existing (unchanged) To be Removed X New/Additional Replacement Unit		
	Tanks (2)		SMS	6001	Gallons	Gallons	NA	N/A	002-12	□ To Be Modified □ To be Replaced		
23	Road Traffic	N/A	N/A	N/A	N/A	18 Truck/Hr	NA NA	None N/A	3-05- 020-11	 Existing (unchanged) To be Removed X New/Additional Replacement Unit To Be Modified To be Replaced 		
24	Yard	N/A	N/A	N/A	N/A	200 TPH	NA NA	None N/A	3-05- 002-14	Existing (unchanged) To be Removed X New/Additional Replacement Unit To Be Modified To be Replaced		
										Existing (unchanged) To be Removed New/Additional To Be Modified To be Replaced		
										Existing (unchanged) To be Removed New/Additional Replacement Unit To Be Modified To be Replaced		
										Image: To be Modified Image: To be Replaced Image: Existing (unchanged) Image: To be Removed Image: New/Additional Image: Replacement Unit Image: To be Modified Image: 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 Activities¹ (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 https://www.env.nm.gov/wp-content/uploads/sites/2/2017/10/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
ont Number	Source Description	Wanuracturer	Serial No.	Capacity Units	Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Installation /Construction ²	For Each Field of Equipment, Check One
Т3	Burner Fuel Tank	N/A	N/A	20,000 Gallons	20.2.72.202.B.2.a	TBD	□ Existing (unchanged) □ To be Removed X New/Additional □ Replacement Unit
15	Burner Fuel Talik	IN/A	N/A	20,000 Gallons	NA	TBD	□ To Be Modified □ To be Replaced
T4	Water Storage Tank	N/A	N/A	10,000 Gallons	NA	TBD	□ Existing (unchanged) □ To be Removed X New/Additional □ Replacement Unit
14	water Storage Talik	IN/A	N/A	10,000 Gallons	1.a	TBD	□ 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 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 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.

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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	3, 4, 6, 7, 8, 9, 14, 16	TSP - 95.33%	AP-42 11.19.2 Emission Factors
C2	Screen - Wet Dust Suppression System	TBD	Particulate	5, 15	TSP - 91.20%	AP-42 11.19.2 Emission Factors
C3	Silo Baghouse - Unit 11	TBD	Particulate	10	99%	Low End of Filter Control Efficiency
C4	Drum Mixer Baghouse - Unit 18	TBD	Particulate	17	99.88%	AP-42 11.1 Emission Factors
1	ntrol device on a separate line. For each control device, list all er					

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).

U. AN	N	Ox	C	0	V)C	S	Ox	PI	M^1	PM	[10 ¹	PM	2.5 ¹	Н	$_2S$	Le	ead
Unit No.	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr										
1	-	-	1	-	-	-	-	-	0.89	2.17	0.42	1.03	0.064	0.16	-	-	-	-
2	-	-	-	-	-	-	-	-	0.89	2.17	0.42	1.03	0.064	0.16	-	-	-	-
3	-	-	-	-	-	-	-	-	0.41	1.77	0.15	0.65	0.023	0.10	-	-	-	-
4	-	-	-	-	-	-	-	-	0.41	1.77	0.15	0.65	0.023	0.10	-	-	-	-
5	-	-	-	-	-	-	-	-	3.38	14.78	1.17	5.14	0.18	0.78	-	-	-	-
6	-	-	-	-	-	-	-	-	0.41	1.77	0.15	0.65	0.023	0.10	-	-	-	-
7	-	-	-	-	-	-	-	-	0.41	1.81	0.15	0.66	0.023	0.10	-	-	-	-
8	-	-	-	-	-	-	-	-	0.41	1.81	0.15	0.66	0.023	0.10	-	-	-	-
9	-	-	-	-	-	-	-	-	0.41	1.81	0.15	0.66	0.023	0.10	-	-	-	-
10	-	-	-	-	-	-	-	-	18.25	9.59	11.75	6.18	2.11	1.11	-	-	-	-
12	-	-	-	-	-	-	-	-	0.33	0.80	0.16	0.38	0.024	0.058	-	-	-	-
13	-	-	-	-	-	-	-	-	0.33	0.80	0.16	0.38	0.024	0.058	-	-	-	-
14	-	-	-	-	-	-	-	-	0.15	0.66	0.055	0.24	0.0085	0.037	-	-	-	-
15	-	-	-	-	-	-	-	-	1.25	5.48	0.44	1.91	0.066	0.29	-	-	-	-
16	-	-	-	-	-	-	-	-	0.15	0.66	0.055	0.24	0.0085	0.037	-	-	-	-
17	11.0	48.2	26.0	113.9	6.40	28.0	11.6	50.8	5600	24528	1300	5694	313	1371	-	-	3.00E-03	3.75E-03
19	-	-	0.24	1.03	2.44	10.7	-	-	0.12	0.51	0.12	0.51	0.12	0.51	-	-	-	-
20	-	-	0.27	1.18	0.83	3.64	-	-	0.10	0.46	0.10	0.46	0.10	0.46	-	-	-	-
21	0.22	0.96	0.12	0.51	0.015	0.067	0.078	0.34	0.022	0.096	0.022	0.096	0.022	0.096	-	-	1.00E-06	3.00E-06
22	-	-	-	-	0.023	0.10	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	1.75	7.30	0.35	1.46	0.086	0.36	-	-	-	-
24	-	-	0.070	0.31	0.22	0.96	-	-	-	-	-	-	-	-	-	-	-	-
Totals	11.2	49.2	26.7	116.9	9.93	43.5	11.7	51.2	5630	24584	1316	5717	316	1376			3.00E-03	3.75E-03

¹Condensable 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.	N	Ox	С	0	V	DC	S	Ox	PI	M1	PM	[10 ¹	PM	2.5 ¹	Н	$_2S$	Le	ead
Unit No.	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	-	-	-	-	-	-	-	-	0.89	0.62	0.42	0.29	0.064	0.044	-	-	-	-
2	-	-	-	-	-	-	-	-	0.89	0.62	0.42	0.29	0.064	0.044	-	-	-	-
3	-	-	-	-	-	-	-	-	0.019	0.024	0.0062	0.0078	0.0018	0.0022	-	-	-	-
4	-	-	-	-	-	-	-	-	0.019	0.024	0.0062	0.0078	0.0018	0.0022	-	-	-	-
5	-	-	-	-	-	-	-	-	0.30	0.37	0.10	0.12	0.0068	0.0084	-	-	-	-
6	-	-	-	-	-	-	-	-	0.019	0.024	0.0062	0.0078	0.0018	0.0022	-	-	-	-
7	-	-	-	-	-	-	-	-	0.019	0.024	0.0063	0.0079	0.0018	0.0022	-	-	-	-
8	-	-	-	-	-	-	-	-	0.019	0.024	0.0063	0.0079	0.0018	0.0022	-	-	-	-
9	-	-	-	-	-	-	-	-	0.019	0.024	0.0063	0.0079	0.0018	0.0022	-	-	-	-
10, 11	-	-	-	-	-	-	-	-	0.18	0.027	0.12	0.018	0.018	0.0026	-	-	-	-
12	-	-	-	-	-	-	-	-	0.33	0.23	0.16	0.11	0.024	0.016	-	-	-	-
13	-	-	-	-	-	-	-	-	0.33	0.23	0.16	0.11	0.024	0.016	-	-	-	-
14	-	-	-	-	-	-	-	-	0.0070	0.0088	0.0023	0.0029	0.00065	0.00081	-	-	-	-
15	-	-	-	-	-	-	-	-	0.11	0.14	0.037	0.046	0.0025	0.0031	-	-	-	-
16	-	-	-	-	-	-	-	-	0.0070	0.0088	0.0023	0.0029	0.00065	0.00081	-	-	-	-
17, 18	11.0	13.8	26.0	32.5	6.40	8.00	11.6	14.5	6.60	8.25	4.60	5.75	4.60	5.75	-	-	3.00E-03	3.75E-03
19	-	-	0.24	0.29	2.44	3.05	-	-	0.12	0.15	0.12	0.15	0.12	0.15	-	-	-	-
20	-	-	0.27	0.34	0.83	1.04	-	-	0.10	0.13	0.10	0.13	0.10	0.13	-	-	-	-
21	0.22	0.96	0.12	0.51	0.015	0.067	0.078	0.34	0.022	0.096	0.022	0.096	0.022	0.096	-	-	1.00E-06	3.00E-06
22	-	-	-	-	0.023	0.10	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	1.75	2.08	0.35	0.42	0.086	0.10	-	-	-	-
24	-	-	0.070	0.088	0.22	0.28	-	-	-	-	-	-	-	-	-	-	-	-
Totals	11.2	14.8	26.7	33.7	9.93	12.5	11.7	14.8	11.8	13.1	6.65	7.58	5.14	6.38	-	-	3.00E-03	3.75E-03

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).

TI	N	Ox	C	0	VO	DC	S	Ox	PI	M^2	PM	(10^2)	PM	2.5^{2}	H	I_2S	Le	ead
Unit No.	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.

	Serving Unit	N	Ox	C	0	V	C	S	Ox	P	М	PN	110	PM	12.5	□ H ₂ S 0	r 🗆 Lead
Stack No.	Number(s) from Table 2-A	lb/hr	ton/yr	lb/hr	ton/yr												
,	Totals:																

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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	Serving Unit Number(s)	Orientation	Rain Caps	Height Above	Temp.	Flow	Rate	Moisture by	Velocity	Inside
Number	from Table 2-A	(H-Horizontal V=Vertical)	(Yes or No)	Ground (ft)	(F)	(acfs)	(dscfs)	Volume (%)	(ft/sec)	Diameter (ft)
1	8	Н	No	40	Ambient	8.33		NA	10.6	1.000
2	14	V	No	24	200	1250		approx 20	78.6	4.500
3	18	V	No	12	600	22		0	27.9	1.000

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.

	Unit No.(s)	Total	HAPs	Provide Asphal	Pollutant t Fumes	Provide Name	Pollutant Here	Provide Name	Pollutant		Here	Name		Name	Pollutant e Here or 🛛 TAP		Here	Name Her	Pollutant e 🛛 r 🗆 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
2	17, 18	2.10	2.62	2.40	3.00														
3	18	0.0016	0.0036																
	19			0.038	0.047														
	20			0.017	0.022														
	22			0.00029	0.0013														
	24			0.0033	0.0041														
T (,	2.10	2.62	2.46	2.07														
Tot	als:	2.10	2.62	2.46	3.07														

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Table 2-J: Fuel

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

	Fuel Type (low sulfur Diesel,	Fuel Source: purchased commercial, pipeline quality natural gas, residue		Speci	fy Units		
Unit No.	ultra low sulfur diesel, Natural Gas, Coal,)	gas, raw/field natural gas, resource (e.g. SRU tail gas) or other	Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash
17	Burner Fuel Oil	purchased commerial	141,000 Btu/Gallon	2603 gallons	6,507,592 gallons	0.5	0
	Natural Gas	purchased commerial	1,000 Btu/cubic feet	1410 scf	12.35 million cubic feet	trace	0
21	Propane	purchased commerial	91,500 Btu/Gallon	15.4 gallons	134,904 gallons	trace	0
	Diesel Fuel	purchased commerial	128,000 Btu/Gallon	11 gallons	118,760 gallons	0.05	0

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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.

					Vapor	Average Stor	age Conditions	Max Storag	ge Conditions
Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Molecular Weight (lb/lb*mol)	Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
T1	3-05-002- 12	Hot Oil Asphalt Cement	Hot Oil Asphalt Cement	9.22	105	350	0.0347	350	0.0347
T2	3-05-002- 12	Hot Oil Asphalt Cement	Hot Oil Asphalt Cement	9.22	105	350	0.0347	350	0.0347
Т3	3-05-002- 98	Burner Fuel Oil	Burner Fuel Oil	7.88	130	58.54	0.0062	65.66	0.0079

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		Roof Type (refer to Table 2-	Сар	acity	Diameter (M)	Vapor Space		blor ble VI-C)	Paint Condition (from Table	Annual Throughput	Turn- overs
			LR below)	LR below)	(bbl)	(M ³)		(M)	Roof	Shell	VI-C)	(gal/yr)	(per year)
T1	TBD	Hot Oil Asphalt Cement	NA	FX	476.20	75.70	2.44	1.95	OT (AS)	OT (AS)	Good	3,253,796	130.15
T2	TBD	Hot Oil Asphalt Cement	NA	FX	476.20	75.70	2.44	1.95	OT (AS)	OT (AS)	Good	3,253,796	130.15
T3	TBD	Burner Fuel Oil	NA	FX	476.20	75.70	2.44	1.95	OT (WH)	OT (WH)	Good	2,612,050	130.60
							1						
								-					

Gamerco HMA

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

Roof Type	Seal Type, We	elded Tank Seal Type	Seal Type, Rive	ted 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	
Note: $1.00 \text{ bbl} = 0.159 \text{ M}$	$a^3 = 42.0 \text{ gal}$				BL: Black	
					OT: Other (specify)	

	Materi	al Processed		Material Produced					
Description	Chemical Composition	Phase (Gas, Liquid, or Solid)	Quantity (specify units)	Description	Chemical Composition	Phase	Quantity (specify units)		
Aggregate	Aggregate	Solid	115 - 165 TPH	Asphalt	Aggregate, RAP, Mineral Filler, Asphalt Cement	Solid	200 TPH		
RAP	Recycled Asphalt Products	Solid	20 - 70 TPH						
Mineral Filler	Rock dust, Slag dust, Hydrated lime, Cement, Versabind, and/or Loess	Solid	3 TPH						
Asphalt Cement	Asphalt Cement	Heated Liquid	12 TPH						

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

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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								

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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 \Box By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO ₂ ton/yr	N2O ton/yr	CH ₄ ton/yr	SF ₆ ton/yr	PFC/HFC ton/yr ²						Total GHG Mass Basis ton/yr ⁴	
Unit No.	GWPs ¹	1	298	25	22,800	footnote 3							
17	mass GHG	8250										8250	
17	CO ₂ e	8250											8250
21	mass GHG	223	1.75	8.97								233.7	
21	CO ₂ e	223	522	224									969
	mass GHG												
	CO ₂ e												
	mass GHG												
	CO ₂ e												
	mass GHG												
	CO ₂ e												
	mass GHG												
	CO ₂ e												
	mass GHG												
	CO ₂ e			-	-			-		-			
	mass GHG												
	CO ₂ e												
	mass GHG												
	CO ₂ e												
	mass GHG												
	CO ₂ e												
	mass GHG												
	CO2e	0.450	1.5.5	0.05								0.400.5	
Total	mass GHG	8473	1.75	8.97								8483.7	
	CO ₂ e	8473	522	224									9219

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 CO₂e means Carbon Dioxide Equivalent and is calculated by multiplying the TPY mass emissions of the green house gas by its GWP.

Application Summary

The <u>Application Summary</u> 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, debottlenecking impacts, and changes to the facility's major/minor status (both PSD & Title V).

The <u>Process</u> <u>Summary</u> shall include a brief description of the facility and its processes.

<u>Startup, Shutdown, and Maintenance (SSM)</u> 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.

C&E Concrete, Inc. (C&E) is applying for a new 20.2.72 NMAC air quality permit for a 200 TPH hot mix asphalt plant (HMA) to be operated within the county of McKinley, state of New Mexico. Regulation governing this permit application is 20.2.72.200.A(1) NMAC.

C&E has retained Montrose Air Quality Services (Montrose) to assist with the permit application. The plant will be identified as Gamerco HMA and is located at 208 Crystal Avenue, Gamerco, NM 87317. The coordinates of the facility will be UTM Zone 12, UTM Easting 702,880, UTM Northing 3,938,490, NAD 83. The approximate location of this site is 2.4 miles north of the intersection of I-40 and Highway 491 in Gallup, NM in McKinley County.

The 200 tph hot mix asphalt plant will include a 4-bin cold aggregate feeder, scalping screen, pug mill, 2-bin RAP feeder, RAP scalping screen, mineral filler silo with baghouse, drum dryer with baghouse, incline conveyor, asphalt silo, asphalt heater, and seven (7) transfer conveyors. The plant will be powered by commercial line power. Processed asphalt will be transported from the HMA plant to off-site sales. The HMA plant will limit hourly processing rate to 200 tph and 500,000 tons per year (tpy). The hours of operation are presented below in Table 3-1. Daily throughput per month is presented in Table 3-2. Hot oil asphalt heater will be permitted to operate 8760 hours per year.

3,

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12.00 AM								-	-			
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	1	1	1	1	1	1	1	1	0	0
4:00 AM	0	0	1	1	1	1	1	1	1	1	0	0
5:00 AM	0	0	1	1	1	1	1	1	1	1	1	0
6:00 AM	0	0	1	1	1	1	1	1	1	1	1	0
7:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
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	1	1	1	1	1	1	1	1	1	1	1	1
5:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
6:00 PM	0	0	1	1	1	1	1	1	1	1	1	0
7:00 PM	0	0	1	1	1	1	1	1	1	1	1	0
8:00 PM	0	0	1	1	1	1	1	1	1	1	1	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	11	11	18	18	18	18	18	18	18	18	16	11

TABLE 3-1: HMA Plant Hours of Operation (MST)

TABLE 3-2: HMA Daily Throughput per Month

Months	Tons Per Day
December through February	2000
November	2800
March through October	3200

C&E Concrete, Inc.

Gamerco HMA

Nighttime operations will follow the guidelines issued by the department "Air Quality Permitting Guidelines for Night Operations of Crushing and Screening Plants, Hot Mix Asphalt Plants, and Concrete Batch Plants" (Ver.08/14/06). Nighttime conditions acceptable to C&E Concrete, Inc. include:

Construction and Operation

The permittee shall install data logger(s) capable of continuously recording differential pressure measured by magnahelic gauges or equivalent differential pressure gauges installed on the Drum Dryer/Mixer Baghouse (Unit 18).

Monitoring

The permittee shall, during nighttime loading of the Mineral Filler Silo (Unit 10), monitor the differential pressure across the Mineral Filler Silo Baghouse (Unit 11) by the use of a differential pressure gauge to ensure it is within the manufacturers or facility determined specified operating range. One reading shall be taken during the silo loading operation.

The permittee shall, during nighttime operation of the plant continuously monitor and record the differential pressure across the Drum Dryer/Mixer Baghouse (Unit 18) by the use of a differential pressure gauge with a data recording system to ensure it is within the manufacturers or facility determined specified operating range.

The permittee shall, during nighttime operating hours, ensure fugitive dust control systems are functioning correctly for Units 3, 4, 5, 6, 7, 8, 9, 14, 15, and 16 per {CONDITION X}.

Recordkeeping

During night operation, the permittee shall record, by the use of a data logger, a continuous record of the differential pressure across Drum Dryer/Mixer Baghouse (Unit 18).

During silo loading of the Mineral Filler Silo (Unit 10), the baghouse (Unit 11) differential pressure shall be recorded once.

RAP (recycled asphalt products) will be included in the asphalt production. The % weight of RAP used in asphalt production will range from 10 to 35%. To determine emission rates input into the model a RAP percentage of 25% was used as the worst-case scenario. This scenario allows for the most material to be processed through the most equipment generating the worst-case emissions.

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 asphalt production. Maintenance will be performed during period with no production.

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.

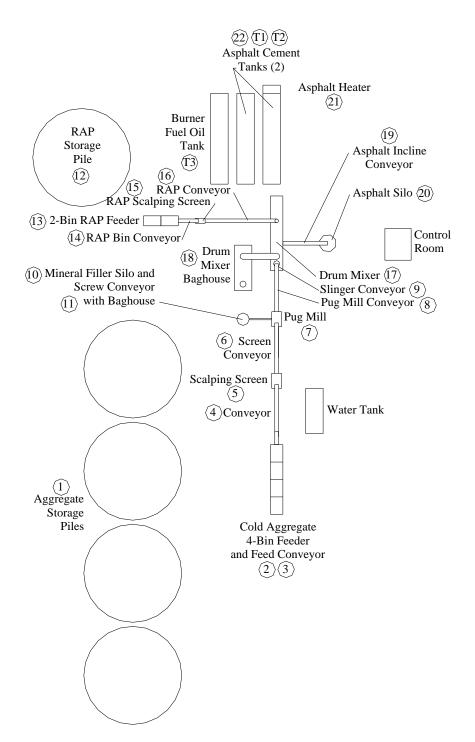


Figure 4-1: HMA Plant Process Flow

Plot Plan Drawn To Scale

A <u>plot plan drawn to scale</u> 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: HMA Plant Site Layout

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.

Pre-Control Particulate Emission Rates

Material Handling (PM_{2.5}, PM₁₀, and PM)

To estimate material handling pre-control particulate emissions rates for screening, pug mill and conveyor transfer operations, emission factors were obtained from EPA's <u>Compilation of Air Pollutant Emission Factors</u>, Volume I: Stationary Point and <u>Area Sources</u>, 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 PM₁₀/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 (aggregate/RAP piles/ loading cold feed bins/RAP feed bins), an emission equation was obtained from EPA's <u>Compilation of Air Pollutant Emission</u> <u>Factors, Volume I: Stationary Point and Area Sources</u>, Fifth Edition, Section 13.2.4 (11/2004), where the k (PM = 0.74, PM₁₀ = 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 Gallup for the years of 1996 through 2006 of 7.0 mph, and the NMED default moisture content of 2 percent.

The asphalt will contain 1.5% mineral filler. Pre-control particulate emissions rates for mineral filler silo loading was obtained from EPA's <u>Compilation of Air Pollutant Emission Factors</u>, Volume I: Stationary Point and Area Sources, Fifth Edition, Section 11.12 (06/06), Table 11.12-2 "Cement Unloading to Elevated Storage Silo". To determine missing PM_{2.5} emission factors the ratio of 0.278/0.050 from PM₁₀/PM_{2.5} uncontrolled emission equations found in AP-42 Section 11.12 (06/06), Table 11.12-3 "Cement Unloading to Elevated Storage Silo" was used. Hourly loading rate is approximately 25 tons per hour.

Maximum hourly asphalt production is 200 tons per hours. Uncontrolled annual emissions are based on operating 8760 hours per year. Virgin aggregate/ RAP/Mineral filler/Asphalt cement ratios used in estimating material handling particulate emission rates is equal to 67.5/25.0/1.5/6.0. These ratios are estimates and ratios may change with mix requirements, these are not requested permit conditions. Table 6-1 summarizes the uncontrolled emission rates for material handling.

Aggregate Storage Piles and Feed Bin Loading Emission Equation:

Maximum Hour Emission Factor

$$\begin{split} & \text{E (lbs/ton)} = \text{k x } 0.0032 \text{ x (U/5)}^{1.3} / (\text{M/2})^{1.4} \\ & \text{E}_{\text{PM}} (\text{lbs/ton}) = 0.74 \text{ x } 0.0032 \text{ x } (11/5)^{1.3} / (2/2)^{1.4} \\ & \text{E}_{\text{PM10}} (\text{lbs/ton}) = 0.35 \text{ x } 0.0032 \text{ x } (11/5)^{1.3} / (2/2)^{1.4} \\ & \text{E}_{\text{PM2.5}} (\text{lbs/ton}) = 0.053 \text{ x } 0.0032 \text{ x } (11/5)^{1.3} / (2/2)^{1.4} \\ & \text{E}_{\text{PM}} (\text{lbs/ton}) = 0.00660 \text{ lbs/ton}; \\ & \text{E}_{\text{PM10}} (\text{lbs/ton}) = 0.00312 \text{ lbs/ton} \\ & \text{E}_{\text{PM2.5}} (\text{lbs/ton}) = 0.00047 \text{ lbs/ton} \end{split}$$

Aggregate Storage Piles and Feed Bin Loading Emission Equation:

Annual Emission Factor

$$\begin{split} & \text{E (lbs/ton)} = \text{k x } 0.0032 \text{ x (U/5)}^{1.3} / (\text{M/2)}^{1.4} \\ & \text{E}_{\text{PM}} (\text{lbs/ton)} = 0.74 \text{ x } 0.0032 \text{ x } (7.0/5)^{1.3} / (2/2)^{1.4} \\ & \text{E}_{\text{PM10}} (\text{lbs/ton}) = 0.35 \text{ x } 0.0032 \text{ x } (7.0/5)^{1.3} / (2/2)^{1.4} \\ & \text{E}_{\text{PM2.5}} (\text{lbs/ton}) = 0.053 \text{ x } 0.0032 \text{ x } (7.0/5)^{1.3} / (2/2)^{1.4} \\ & \text{E}_{\text{PM}} (\text{lbs/ton}) = 0.00367 \text{ lbs/ton}; \\ & \text{E}_{\text{PM10}} (\text{lbs/ton}) = 0.00173 \text{ lbs/ton} \\ & \text{E}_{\text{PM2.5}} (\text{lbs/ton}) = 0.00026 \text{ lbs/ton} \end{split}$$

AP-42 Emission Factors:

All Bin Unloading and Conveyor Transfers = Uncontrolled Conveyor Transfer Point Emission Factor Screening = Uncontrolled Screening Emission Factor Pug Mill = Uncontrolled 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)
Uncontrolled Screening	0.02500	0.00870	0.00132
Uncontrolled Screen Unloading, Pug Mill Loading and Unloading, Feed Bins Unloading, and Conveyor Transfers	0.00300	0.00110	0.00017
Uncontrolled Aggregate Storage Piles, Cold Aggregate Feeder Loading, RAP Feed Bin Loading Maximum Hourly	0.00660	0.00312	0.00047
Uncontrolled Aggregate Storage Piles, Cold Aggregate Feeder Loading, RAP Feed Bin Loading Annual	0.00367	0.00173	0.00026

AP-42 Section 11.12 Table 11.12-2 Uncontrolled Emission Factors:

Process Unit	PM	PM10	PM2.5
	Emission Factor	Emission Factor	Emission Factor
	(lbs/ton)	(lbs/ton)	(lbs/ton)
Mineral Filler Silo Loading	0.73	0.47	0.085

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:

Emission Rate (tons/year) = Emission Rate (lbs/hour) * 8760 hrs/year 2000 lbs/ton

Table 6-1 Pre-Controlled	Regulated Proc	ess 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)	PM2.5 Emission Rate (lbs/hr)	PM2.5 Emission Rate (tons/yr)
1	Aggregate Pile Handling	135	0.89	2.17	0.42	1.03	0.064	0.16
2	Aggregate Bin Loading	135	0.89	2.17	0.42	1.03	0.064	0.16
3	Bin Unloading	135	0.41	1.77	0.15	0.65	0.023	0.10
4	Conveyor to Conveyor TP	135	0.41	1.77	0.15	0.65	0.023	0.10
5	Scalping Screen	135	3.38	14.78	1.17	5.14	0.18	0.78
6	Scalping Screen Unloading	135	0.41	1.77	0.15	0.65	0.023	0.10
7	Pug Mill Load	138	0.41	1.81	0.15	0.66	0.023	0.10
8	Pug Mill Unload	138	0.41	1.81	0.15	0.66	0.023	0.10
9	Conveyor to Slinger Conveyor	138	0.41	1.81	0.15	0.66	0.023	0.10
10	Mineral Filler Silo	25 Max Hr 26,280 tpy Annual	18.25	9.59	11.75	6.18	2.11	1.11
12	RAP Pile Handling	50	0.33	0.80	0.16	0.38	0.024	0.058
13	RAP Bin Loading	50	0.33	0.80	0.16	0.38	0.024	0.058
14	RAP Bin Unloading	50	0.15	0.66	0.055	0.24	0.0085	0.037
15	RAP Scalping Screen	50	1.25	5.48	0.44	1.91	0.066	0.29
16	RAP Scalping Screen Unloading	50	0.15	0.66	0.055	0.24	0.0085	0.037
		TOTALS	28.07	47.87	15.53	20.46	2.69	3.29

HMA Haul Truck Travel

Haul truck travel emissions were estimated using AP-42, Section 13.2.1 (ver.01/11) "Paved Roads" emission equation. Haul trucks will be used to deliver asphalt cement, mineral filler, RAP, aggregate material, and transport asphalt product. Table 6-2 summarizes the emission rate for haul truck traffic.

<u>AP-42 13.1 Paved Road (01/11)</u> Equation:							
$E = k(sL)^{0.91*(W)^{1.02*[1-P/4N]}}$		Annual emissions	only includ	e p factor			
k PM	0.011						
k PM10	0.0022						
k PM25	0.00054						
sL	0.6	road surface silt lo	bading (g/m	2) Table 13.2	2.1-2, <500		
P = days with precipitation over 0.01 inches	70	AP-42 Figure 13.2					
N = number of days in averaging period	365	-					
Mineral Filler Truck VMT	739.8	meter/one way	25	tons/load	3	tons/hr	
Asphalt Cement Truck VMT	739.8	meter/one way	25	tons/load	12	tons/hr	
Asphalt Truck VMT	739.8	meter/one way	25	tons/load	200	tons/hr	
Aggregate Truck VMT	739.8	meter/one way	25	tons/load	188	tons/hr	
					768250	tons/yr	
Max. Mineral Filler Truck/hr	0.13	truck/hr	1168	trucks/yr			
Max. Asphalt Cement Truck/hr	0.53	truck/hr	4672	trucks/yr			
Max. Asphalt Truck/hr	8.9	truck/hr	77867	trucks/yr			
Max Aggregate Trucks/hr	<u>8.4</u>	<u>truck/hr</u>	<u>73195</u>	<u>trucks/yr</u>			
	17.9	truck/hr	156901	trucks/yr			
Vehicle Miles Traveled	8.236	VMT/hr					
	72144	VMT/yr					
Truck weight	28.8	tons					
		PM Uncontr	olled				
Max. Truck Emissions Paved Road Asphalt	1.7499	lbs/hr	7.2971	tons/yr			
		PM10 Uncontrolled					
	0.3450	lbs/hr	1.4594	tons/yr			
		PM2.5 Uncon	trolled				
	0.0859	lbs/hr	0.3582	tons/yr			

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)
Paved Road Truck Emissions Unit 23	8.24 miles/hr; 72144 miles/yr	1.75	7.30	0.35	1.46	0.086	0.36

Drum Mix Hot Mix Asphalt Plant

Drum mix hot mix asphalt plant uncontrolled emissions were estimated using AP-42, Section 11.1 "Hot Mix Asphalt Plants" (revised 03/04), tables 11.1.3, 7, 8 and 14 emission equations. The drum dryer is requesting to combust either burner fuel oil or natural gas/propane. The worst-case emission factor from either combusting burner fuel oil or natural gas/propane was used to estimate emission rates. Hourly emission rates are based on maximum hourly asphalt production (200 tph) and maximum annual emission rates are based on operating 8760 hours per year. To determine missing PM_{2.5} emission factor the sum of uncontrolled filterable from Table 11.1-4 plus uncontrolled organic and inorganic condensable in Table 11.1-3 was used. Silo filling and plant loadout emission factors were calculated using the default value of -0.5 for asphalt volatility (V) and an asphalt temperature (T) of 325° F for HMA mix temperature. Yard emissions were found in AP-42 Section 11.1.2.5. TOC emission equation is 0.0011 lbs/ton of asphalt produced and CO is equal to the TOC emission rate times 0.32. Percent sulfur content of the burner fuel will not exceed 0.5 percent.

Emissions of VOCs (TOCs) from the asphalt cement storage tanks were determined with EPA's TANK 4.0.9d program and the procedures found in EPA's "Emission Factor Documentation for AP-42 Section 11.1 (12/2000) Section 4.4.5" for input to the TANK program. Asphalt cement storage tank temperature is estimated to be 350° F.

Table 6-3 summarizes the uncontrolled emission rates for the HMA drum mixer.

Emission factors for drum dryer loadout and silo loadout are based on the following equations found in AP-42 Section 11.1.2.5.

Pollutant	AP-42 Table 11.1-14, Equation			
Silo filling				
СО	$EF = 0.00488(-V)e^{((0.0251)(T + 460) - 20.43)}$			
TOC	$EF = 0.0504(-V)e^{((0.0251)(T + 460) - 20.43)}$			
Total PM	$EF = 0.000332 + 0.00105(-V)e^{((0.0251)(T + 460) - 20.43)}$			
Drum mix plant load-out (Silo Unload)				
СО	$EF = 0.00558(-V)e^{((0.0251)(T + 460) - 20.43)}$			
TOC	$EF = 0.0172(-V)e^{((0.0251)(T + 460) - 20.43)}$			
Total PM	$EF = 0.000181 + 0.00141(-V)e^{((0.0251)(T + 460) - 20.43)}$			

AP-42 Section 11.1 Table 11.1-3, 7, 8, and 14 Uncontrolled Emission Factors:

Process Unit	Pollutant	Emission Factor (lbs/ton)	
Drum Mixer	NO _X	0.055	
	СО	0.130	
	SO_2	0.058	
	VOC	0.032	
	PM	28.000	
	PM_{10}	6.500	
	PM _{2.5}	1.565	
Drum Unloading (Silo Filling)	СО	0.001179981	
	TOC	0.012186685	
	PM (PM=PM ₁₀ =PM _{2.5})	0.000585889	
Plant load-out (Silo Unload)	СО	0.000720393	
	TOC	0.002220566	
	PM (PM=PM ₁₀ =PM _{2.5})	0.000363035	
Yard	СО	0.000352000	
	TOC	0.001100000	

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

Table 6-3: Pre-Controlled Hot Mix Plant Emission Rates

Process Unit Number	Process Unit Description	Pollutant	Average Hourly Process Rate (tons/hour)	Emission Rate (lbs/hr)	Emission Rate (tons/yr)
17		NO _X	200	11.00	48.18
		СО	200	26.00	113.88
		SO ₂	200	11.60	50.81
	Asphalt Drum Dryer	VOC	200	6.40	28.03
		PM	200	5600.00	24528.00
		PM ₁₀	200	1300.00	5694.00
		PM _{2.5}	200	313.00	1370.94
19	Drum Mixer Unloading	СО	200	0.24	1.03
		TOC	200	2.44	10.68
		PM	200	0.12	0.51
		PM ₁₀	200	0.12	0.51
		PM _{2.5}	200	0.12	0.51
20		СО	200	0.27	1.18
		TOC	200	0.83	3.64
	Asphalt Silo Unloading	PM	200	0.10	0.46
		PM ₁₀	200	0.10	0.46
		PM _{2.5}	200	0.10	0.46
22	Asphalt Cement Storage Tanks	TOC	200	0.023	0.099
24	YARD	СО	200	0.070	0.31
		TOC	200	0.22	0.96

Controlled Particulate Emission Rates

No controls or emission reductions for combustion emissions (NO_X, CO, SO₂, VOC, or PM) are proposed for the drum dryer (Unit 17). No controls or emission reductions for emissions from unloading the drum mixer unload (Unit 19), asphalt silo unload (Unit 20), asphalt heater (Unit 21), and haul road traffic (Unit 23) with the exception of limiting annual production rates for production equipment.

Controlled Material Handling (PM2.5, PM10, and PM)

No fugitive dust controls or emission reductions are proposed for the aggregate/RAP storage piles (Units 1, 12) or loading of the cold aggregate/RAP feed bins (Units 2, 13) with the exception of limiting annual production rates.

Fugitive dust control for unloading the cold aggregate feed bins onto the cold aggregate feed bin conveyor (Unit 3) will be controlled, as needed, with enclosures and/or water sprays at the exit of the feed bins. Fugitive dust control for unloading the RAP feed bins onto the RAP feed bin conveyor (Unit 14) will be controlled, as needed, with enclosures and/or water sprays at the exit of the RAP feed bins. It is estimated that these methods will control to an efficiency of 95.3 percent per AP42 Section 11.19.2, Table 11.19.2-2. Additional emission reductions include limiting annual production rates.

Fugitive dust control for loading and unloading the pug mill (Unit 7, 8) will be controlled, as needed, with enclosures and/or water sprays. It is estimated that these methods will control to an efficiency of 95.3 percent per AP42 Section 11.19.2, Table 11.19.2-2. Additional emission reductions include limiting annual production rates.

Fugitive dust control for the scalping screen (Unit 6), and RAP screen (Unit 15) 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 conveyor transfer from the scalping screen (Unit 5) unloading to the scalping screen conveyor (Unit 6) and RAP screen (Unit 15) unloading to the RAP transfer conveyor (Unit 16) will be controlled with material moisture content and/or enclosure. Fugitive dust control for the conveyor transfer from the cold aggregate feed bin conveyor (Unit 3) unloading to the cold aggregate conveyor (Unit 4) and pug mill conveyor (Unit 8) transfer to the slinger conveyor (Unit 9) will be controlled with material moisture content and/or enclosure. It is estimated that this method will control to an efficiency of 95.3 percent per AP42 Section 11.19.2, Table 11.19.2-2. Additional emission reductions include limiting annual production rates.

Particulate emissions from loading the mineral filler silo (Unit 10) will be controlled with a baghouse dust collector (Unit 11) on the exhaust vent. This dust collector consists of filter bags and is passive with no fan. It functions only when material is loaded into the silo. The filter bags are cleaned by air pulses at set intervals. Baghouse fines are dumped back into the silo. It is estimated that this method will control to an efficiency of 99 percent or greater based on information from filter bag specifications. Additional emission reductions include limiting annual production rates. To determine missing $PM_{2.5}$ emission factors the ratio of 0.32/0.048 from $PM_{10}/PM_{2.5}$ controlled emission equations found in AP-42 Section 11.12 (06/06), Table 11.12-3 k Factor for "Cement Unloading to Elevated Storage Silo" was used. Hourly loading rate is approximately 25 tons per hour

Particulate emissions from the drum dryer/mixer (Unit 17) will be controlled with a baghouse dust collector (Unit 18) on the exhaust vent. It is estimated that this method will control to an efficiency of 99.88 percent per AP42 Section 11.1, Table 11.1-3 "controlled PM emission factor vs. uncontrolled PM emission factor". Baghouse fines are returned to the drum dryer/mixer via a closed loop system. Additional emission reductions include limiting annual production rates.

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

C&E Concrete, Inc.

To estimate material handling pre-control particulate emission rates for aggregate handling operations (aggregate storage piles/RAP storage piles/cold aggregate loading feed bins/RAP feed bins), an emission equation was obtained from EPA's <u>Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources</u>, Fifth Edition, Section 13.2.4 (11/2004), where the k (PM = 0.74, PM₁₀ = 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 Gallup for the years of 1996 through 2006 of 7.0 mph, and the NMED default moisture content of 2 percent.

The asphalt will contain approximately 1.5% mineral filler. Control particulate emissions rates for mineral filler silo loading was obtained from EPA's <u>Compilation of Air Pollutant Emission Factors</u>, Volume I: Stationary Point and Area Sources, Fifth Edition, Section 11.12 (06/06), Table 11.12-2 uncontrolled "Cement Unloading to Elevated Storage Silo" and a control efficiency of 99% for the baghouse. To determine missing $PM_{2.5}$ emission factors the ratio of 0.32/0.048 from $PM_{10}/PM_{2.5}$ controlled emission equations found in AP-42 Section 11.12 (06/06), Table 11.12-3 k Factor for "Cement Unloading to Elevated Storage Silo" was used.

Maximum hourly asphalt production is 200 tons per hours. Virgin aggregate/ RAP/Mineral filler/Asphalt cement ratios used in estimating material handling particulate emission rates is equal to 67.5/25.0/1.5/6.0. These ratios are estimates and ratios may change with mix requirements, these are not requested permit conditions. Annual emissions in tons per year (tpy) were calculated assuming an annual production throughput of 500,000 tons of asphalt per year.

Aggregate Storage Piles and Feed Bin Loading Emission Equation:

Aggregate Storage Piles and Feed Bin Loading Emission Equation:

Annual Emission Factor

$$\begin{split} & \text{E (lbs/ton)} = \text{k x } 0.0032 \text{ x (U/5)}^{1.3} / (\text{M/2})^{1.4} \\ & \text{E}_{\text{PM}} (\text{lbs/ton}) = 0.74 \text{ x } 0.0032 \text{ x } (7.0/5)^{1.3} / (2/2)^{1.4} \\ & \text{E}_{\text{PM10}} (\text{lbs/ton}) = 0.35 \text{ x } 0.0032 \text{ x } (7.0/5)^{1.3} / (2/2)^{1.4} \\ & \text{E}_{\text{PM2.5}} (\text{lbs/ton}) = 0.053 \text{ x } 0.0032 \text{ x } (7.0/5)^{1.3} / (2/2)^{1.4} \\ & \text{E}_{\text{PM}} (\text{lbs/ton}) = 0.00367 \text{ lbs/ton}; \\ & \text{E}_{\text{PM10}} (\text{lbs/ton}) = 0.00173 \text{ lbs/ton} \\ & \text{E}_{\text{PM2.5}} (\text{lbs/ton}) = 0.00026 \text{ lbs/ton} \end{split}$$

AP-42 Emission Factors:

Feed Bin Unloading = Controlled Conveyor Transfer Point Emission Factor Screen = Controlled Screening Emission Factor Transfer Conveyor = Controlled Conveyor Transfer Point Emission Factor Scalping Screen Conveyor = Controlled Conveyor Transfer Point Emission Factor Pug Mill = Controlled Conveyor Transfer Point Emission Factor Pug Mill Conveyor = Controlled Conveyor Transfer Point Emission Factor

Material Handling Emission Factors:

Process Unit	PM Emission Factor (lbs/ton)	PM10 Emission Factor (lbs/ton)	PM2.5 Emission Factor (lbs/ton)
Feed Bin Unloading	0.00014	0.00005	0.000013
Controlled Screening	0.00220	0.00074	0.00005
Controlled Transfer Conveyor	0.00014	0.00005	0.000013
Controlled Screen Unloading and Pug Mill Loading and Unloading	0.00014	0.00005	0.000013
Uncontrolled Aggregate Storage Piles, Cold Aggregate Feeder Loading Max Hourly	0.00660	0.00312	0.00047
Uncontrolled Aggregate Storage Piles, Cold Aggregate Feeder Loading Annual	0.00367	0.00173	0.00026

AP-42 Section 11.12 Table 11.12-2 Uncontrolled Emission Factors with 99% Control Efficiency:

Process Unit	PM	PM10	PM2.5
	Emission Factor	Emission Factor	Emission Factor
	(lbs/ton)	(lbs/ton)	(lbs/ton)
Mineral Filler Silo Loading	0.0073	0.0047	0.00007

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:

```
Emission Rate (tons/year) = Emission Factor (lbs/ton) * Annual Throughput (tons/year)
2000 lbs/ton
```

Table 6-4 summarizes the controlled emission rates for material handling.

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)	PM2.5 Emission Rate (lbs/hr)	PM _{2.5} Emission Rate (tons/yr)
1	Aggregate Pile Handling	135	0.89	0.62	0.42	0.29	0.064	0.044
2	Aggregate Bin Loading	135	0.89	0.62	0.42	0.29	0.064	0.044
3	Bin Unloading	135	0.019	0.024	0.0062	0.0078	0.0018	0.0022
4	Conveyor to Conveyor TP	135	0.019	0.024	0.0062	0.0078	0.0018	0.0022
5	Scalping Screen	135	0.30	0.37	0.10	0.12	0.0068	0.0084
6	Scalping Screen Unloading	135	0.019	0.024	0.0062	0.0078	0.0018	0.0022
7	Pug Mill Load	138	0.019	0.024	0.0063	0.0079	0.0018	0.0022
8	Pug Mill Unload	138	0.019	0.024	0.0063	0.0079	0.0018	0.0022
9	Conveyor to Slinger Conveyor	138	0.019	0.024	0.0063	0.0079	0.0018	0.0022
10	Mineral Filler Silo	25 Max Hr 7,500 tpy Annual	0.18	0.027	0.12	0.018	0.018	0.0026
12	RAP Pile Handling	50	0.33	0.23	0.16	0.11	0.024	0.016
13	RAP Bin Loading	50	0.33	0.23	0.16	0.11	0.024	0.016
14	RAP Bin Unloading	50	0.0070	0.0088	0.0023	0.0029	0.00065	0.00081
15	RAP Scalping Screen	50	0.11	0.14	0.037	0.046	0.0025	0.0031
16	RAP Scalping Screen Unloading	50	0.0070	0.0088	0.0023	0.0029	0.00065	0.00081
		TOTALS	3.16	2.39	1.45	1.04	0.21	0.15

HMA Haul Truck Travel

Haul truck travel emissions were estimated using AP-42, Section 13.2.1 (ver.01/11) "Paved Roads" emission equation. Haul trucks will be used to deliver asphalt cement, mineral filler, RAP, aggregate material, and transport asphalt product. Table 6-5 summarizes the emission rate for haul truck travel.

<u>AP-42 13.1 Paved Road (01/11)</u> Equation:						
$E = k(sL)^{0.91*(W)^{1.02*[1-P/4N]}}$		Annual emissions	only includ	e p factor		
k PM	0.011					
k PM10	0.0022					
k PM25	0.00054					
sL	0.6	road surface silt lo	oading (g/m	2) Table 13.2	2.1-2, <500	
P = days with precipitation over 0.01 inches	70	AP-42 Figure 13.2				
N = number of days in averaging period	365	-				
Mineral Filler Truck VMT	739.8	meter/one way	25	tons/load	3	tons/hr
Asphalt Cement Truck VMT	739.8	meter/one way	25	tons/load	12	tons/hr
Asphalt Truck VMT	739.8	meter/one way	25	tons/load	200	tons/hr
Aggregate Truck VMT	739.8	meter/one way	25	tons/load	188	tons/hr
					768250	tons/yr
Max. Mineral Filler Truck/hr	0.13	truck/hr	333	trucks/yr		
Max. Asphalt Cement Truck/hr	0.53	truck/hr	1333	trucks/yr		
Max. Asphalt Truck/hr	8.9	truck/hr	22222	trucks/yr		
Max Aggregate Trucks/hr	<u>8.4</u>	<u>truck/hr</u>	<u>20889</u>	trucks/yr		
	17.9	truck/hr	44778	trucks/yr		
Vehicle Miles Traveled	8.236	VMT/hr				
	20589	VMT/yr				
Truck weight	28.8	tons				
		PM Uncontro	olled			
Max. Truck Emissions Paved Road Asphalt	1.7499	lbs/hr	2.0825	tons/yr		
		PM10 Uncont	rolled			
	0.3450	lbs/hr	0.4165	tons/yr		
		PM2.5 Uncont	trolled			
	0.0859	lbs/hr	0.1022	tons/yr		
				•		

Table 6-5: 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)
Paved Road Truck Emissions Unit 23	8.34 miles/hr; 20,589 miles/yr	1.75	2.08	0.35	0.42	0.086	0.10

Drum Mix Hot Mix Asphalt Plant

Particulate emissions from the drum dryer/mixer (Unit 17) will be controlled with a baghouse dust collector (Unit 18) on the exhaust vent. This dust collector consists of filter bags and a fan that draws all the drum mixer exhaust through the dust collector. It is estimated that this method will control to an efficiency of 99.88 percent per AP42 Section 11.1, Table 11.1-3. Additional emission reductions include limiting annual production rates. No fugitive controls are proposed for unloading the drum dryer/mixer or asphalt silos (Units 19, 20) with the exception of limiting annual production rates. No fugitive controls are proposed for yard emissions (Unit 24) or asphalt storage tank (Unit 22) emissions.

Drum mix hot mix asphalt plant controlled emissions were estimated using AP-42, Section 11.1 "Hot Mix Asphalt Plants" (revised 03/04), tables 11.1-3, -4, -7, -8 and -14 emission rates for all pollutants. The drum dryer is permitted to combust either burner fuel oil or natural gas/propane. The worst-case emission factor from either combusting burner fuel oil or natural gas/propane was used to estimate emission rates. Hourly emission rates are based on maximum hourly asphalt production (200 tph) and annual emission rates are based on maximum annual asphalt production (500,000 tpy). PM (PM, PM₁₀, PM_{2.5}) emission rates were estimated using the controlled Total PM emission factor found in Table 11.1-3, Fabric Filter. PM₁₀ and PM_{2.5} emission rates were estimated using the controlled Total PM₁₀ emission factor found in Table 11.1-3, Fabric Filter. Drum dryer/mixer unloading and silo filling emission factors were calculated using the default value of -0.5 for asphalt volatility and a tank temperature setting of 325° F for HMA mix temperature. Yard emissions were found in AP-42 Section 11.1.2.5. TOC emission equation is 0.0011 lbs/ton of asphalt produced and CO is equal to the TOC emission rate times 0.32. Percent sulfur content of the burner fuel will not exceed 0.5 percent.

Emissions of VOCs (TOCs) from the asphalt cement storage tank (Unit 22) were determined with EPA's TANK 4.0.9d program and the procedures found in EPA's "Emission Factor Documentation for AP-42 Section 11.1 (12/2000) Section 4.4.5" for input to the TANK program.

Table 6-6 summarizes the uncontrolled emission rates for the HMA drum mixer.

Process Unit	Pollutant	Emission Factor (lbs/ton)
Asphalt Drum	NO _X	0.055
	СО	0.13
	VOC	0.032
	SO_2	0.058
	PM	0.033
	PM_{10}	0.023
	PM _{2.5}	0.023
Drum Unloading (Silo Filling)	СО	0.001179981
	TOC	0.012186685
	PM	0.000585889
	PM_{10}	0.000585889
	PM _{2.5}	0.000585889
Plant load-out (Silo Unload)	CO	0.001349240
	TOC	0.004158948
	PM	0.000521937
	PM_{10}	0.000521937
	PM _{2.5}	0.000521937
Yard	СО	0.000352000
	TOC	0.001100000

AP-42 Section 11.1 Table 11.1-3, 7, 8, and 14 Controlled Emission Factors:

Gamerco HMA

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:

Emission Rate (tons/year) = Emission Factor (lbs/ton) * Annual Throughput (tons/yr) 2000 lbs/ton

Process Unit Number	Process Unit Description	Pollutant	Average Hourly Process Rate (tons/hour)	Emission Rate (lbs/hr)	Emission Rate (tons/yr)
		NO _X	200	11.00	13.75
		СО	200	26.00	32.50
		SO ₂	200	11.60	14.50
17, 18	Asphalt Drum Dryer and Baghouse	VOC	200	6.40	8.00
		PM	200	6.60	8.25
		PM ₁₀	200	4.60	5.75
		PM _{2.5}	200	4.60	5.75
		СО	200	0.24	0.29
	19 Drum Mixer Unloading	TOC	200	2.44	3.05
19		PM	200	0.12	0.15
		PM10	200	0.12	0.15
		PM _{2.5}	200	0.12	0.15
		СО	200	0.27	0.34
		TOC	200	0.83	1.04
20	Asphalt Silo Unloading	PM	200	0.10	0.13
		PM ₁₀	200	0.10	0.13
		PM _{2.5}	200	0.10	0.13
22	Asphalt Cement Storage Tanks	ТОС	200	0.023	0.099
24	YARD	СО	200	0.070	0.088
24	IAKD	TOC	200	0.22	0.28

Diesel-Fired or Natural Gas/Propane Asphalt Heater

One distillate diesel fuel or natural gas/propane asphalt heater (Unit 21) heats the asphalt oil before it is mixed with the aggregate in the drum dryer/mixer. The unit is rated at 1,410,000 Btu/hr. The estimated hourly diesel fuel usage for the heater is approximately 11.0 gallons per hour (128,000 Btu/gal) or propane fuel usage for the heater is approximately 15.4 gallons per hour (91,500 Btu/gal). Review of the emission factors, to determine which fuel combusted will produce the highest emission rate, was performed. Emissions of nitrogen oxides (NO_X), sulfur dioxide (SO₂), and particulate (PM) are estimated using AP-42 Section 1.3 "External Combustion Sources" (rev 9/98). Emissions of carbon monoxides (CO), and hydrocarbons (VOC) are estimated using AP-42 Section 1.5 "Liquefied Petroleum Gas Combustion" (rev 7/08). Sulfur content of the diesel fuel is not to exceed 0.5% fuel content. No controls are proposed for the fuel asphalt heater. 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 8760 hours per year. Table 6-7 summarizes the uncontrolled emission rates for the asphalt heater.

AP-42 Emission Factors: Section 1.3

Diesel Emission Factor	rs
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Pollutant	Emission Factor
Nitrogen Oxides	0.02 lbs/gal-hr
Carbon Monoxides	0.005 lbs/gal-hr
Particulate	0.002 lbs/gal-hr
Hydrocarbons	0.00034 lbs/gal-hr
Sulfur Dioxides	0.1428 lbs/gal-hr

S = % Fuel Sulfur Content = 0.05%

AP-42 Emission Factors: Section 1.5

Propane Emission Factors

Pollutant	Emission Factor
Nitrogen Oxides	0.013 lbs/gal-hr
Carbon Monoxides	0.0075 lbs/gal-hr
Particulate	0.0007 lbs/gal-hr
Hydrocarbons	0.001 lbs/gal-hr
Sulfur Dioxides	0.000018 lbs/gal-hr

Emission Rate (lbs/hr) = EF (lbs/gal-hr) * fuel usage (gal)

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

Emission Rate (tons/year) = Emission Rate (lbs/hour) * Operating Hour (hrs/year) 2000 lbs/ton

Process Unit Number	Pollutant	Fuel Usage (gal)	Emission Rate (lbs/hr)	Emission Rate (tons/yr)
21	NO _X	11.0	0.22	0.96
	СО	15.4	0.12	0.51
	VOC	15.4	0.015	0.067
	SO_2	11.0	0.078	0.34
	РМ	11.0	0.022	0.096

Table 6-7: Uncontrolled Combustion Emission Rates for Asphalt Heater

Table 6-8: Controlled Combustion Emission Rates for Asphalt Heater

Process Unit Number	Pollutant	Fuel Usage (gal)	Emission Rate (lbs/hr)	Emission Rate (tons/yr)
21	NO _X	11.0	0.22	0.96
	СО	15.4	0.12	0.51
	VOC	15.4	0.015	0.067
	SO ₂	11.0	0.078	0.34
	РМ	11.0	0.022	0.096

Tables 6-9 and 6-10 present the uncontrolled and controlled emission rates, respectively, from the facility.

	Uncontrolled Emission Totals														
		Ν	Ox	C	0	SO ₂		V	OC	F	M	P	M 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	Cold Aggregate Storage Pile									0.89	2.17	0.42	1.03	0.064	0.16
2	Feed Bin Loading									0.89	2.17	0.42	1.03	0.064	0.16
3	Feed Bin Unloading									0.41	1.77	0.15	0.65	0.023	0.10
4	Conveyor to Conveyor									0.41	1.77	0.15	0.65	0.023	0.10
5	Scalping Screen									3.38	14.78	1.17	5.14	0.18	0.78
6	Scalping Screen Unloading									0.41	1.77	0.15	0.65	0.023	0.10
7	Pug Mill Load									0.41	1.81	0.15	0.66	0.023	0.10
8	Pug Mill Unload									0.41	1.81	0.15	0.66	0.023	0.10
9	Conveyor Transfer to Slinger Conveyor									0.41	1.81	0.15	0.66	0.023	0.10
12	RAP Storage Pile									0.33	0.80	0.16	0.38	0.024	0.058
13	RAP Feed Bin Loading									0.33	0.80	0.16	0.38	0.024	0.058
14	RAP Feed Bin Unloading									0.15	0.66	0.055	0.24	0.0085	0.037
15	RAP Scalping Screen									1.25	5.48	0.44	1.91	0.066	0.29
16	RAP Scalping Screen Unloading									0.15	0.66	0.055	0.24	0.0085	0.037
10	Mineral Filler Silo									18.25	9.59	11.75	6.18	2.11	1.11
17	Drum Dryer	11.0	48.2	26.0	113.9	11.6	50.8	6.40	28.0	5600	24528	1300	5694	313	1371
19	Drum Mixer Unloading			0.24	1.03			2.44	10.7	0.12	0.51	0.12	0.51	0.12	0.51
20	Asphalt Silo Unloading			0.27	1.18			0.83	3.64	0.10	0.46	0.10	0.46	0.10	0.46
21	Asphalt Heater	0.22	0.96	0.12	0.51	0.078	0.34	0.015	0.067	0.022	0.096	0.022	0.096	0.022	0.096

Table 6-9 Summary of Uncontrolled NOx, CO, SO2, and PM Emission Rates

)e			Table 0-7	Summa	i j or ene	oneronee		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			autes				
	Uncontrolled Emission Totals														
		Ν	Ox	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
22	Asphalt Cement Storage Tank							0.023	0.10						
23	Haul Road Traffic									1.75	7.30	0.35	1.46	0.086	0.36
24	Yard			0.070	0.31			0.22	0.96						
	Total	11.2	49.2	26.7	116.9	11.7	51.2	9.93	43.5	5630	24584	1316	5717	316	1376

Table 6-9 Summary of Uncontrolled NOx, CO, SO2, and PM Emission Rates

					•		mission T	,							
		N	Ox	C	0	S	SO ₂ VOC		P	M	PI	M ₁₀	PN	I _{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	Cold Aggregate Storage Pile									0.89	0.62	0.42	0.29	0.064	0.044
2	Feed Bin Loading									0.89	0.62	0.42	0.29	0.064	0.044
3	Feed Bin Unloading									0.019	0.024	0.0062	0.0078	0.0018	0.0022
4	Conveyor to Conveyor									0.019	0.024	0.0062	0.0078	0.0018	0.0022
5	Scalping Screen									0.30	0.37	0.10	0.12	0.0068	0.0084
6	Scalping Screen Unloading									0.019	0.024	0.0062	0.0078	0.0018	0.0022
7	Pug Mill Load									0.019	0.024	0.0063	0.0079	0.0018	0.0022
8	Pug Mill Unload									0.019	0.024	0.0063	0.0079	0.0018	0.0022
9	Conveyor Transfer to Slinger Conveyor									0.019	0.024	0.0063	0.0079	0.0018	0.0022
12	RAP Storage Pile									0.33	0.23	0.16	0.11	0.024	0.016
13	RAP Feed Bin Loading									0.33	0.23	0.16	0.11	0.024	0.016
14	RAP Feed Bin Unloading									0.0070	0.0088	0.0023	0.0029	0.00065	0.00081
15	RAP Scalping Screen									0.11	0.14	0.037	0.046	0.0025	0.0031
16	RAP Scalping Screen Unloading									0.0070	0.0088	0.0023	0.0029	0.00065	0.00081
10, 11	Mineral Filler Silo and Baghouse									0.18	0.027	0.12	0.018	0.018	0.0026
17, 18	Drum Dryer and Baghouse	11.0	13.8	26.0	32.5	11.6	14.5	6.40	8.00	6.60	8.25	4.60	5.75	4.60	5.75
19	Drum Mixer Unloading			0.24	0.29			2.44	3.05	0.12	0.15	0.12	0.15	0.12	0.15
20	Asphalt Silo Unloading			0.27	0.34			0.83	1.04	0.10	0.13	0.10	0.13	0.10	0.13
21	Asphalt Heater	0.22	0.96	0.12	0.51	0.078	0.34	0.015	0.067	0.022	0.096	0.022	0.096	0.022	0.096

Table 6-10 Summary of Allowable NOx, CO, SO2, and PM Emission Rates

-			Tuble 0 1	0 Dumm		on abie 11	04,00,0	, u na							
	Allowable Emission Totals														
		Ν	Ox	0	CO	S	O_2	V	OC	Р	Μ	PI	M ₁₀	PN	A _{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
22	Asphalt Cement Storage Tank							0.023	0.10						
23	Haul Road Traffic									1.75	2.08	0.35	0.42	0.086	0.10
24	Yard			0.070	0.088			0.22	0.28						
	Total	11.2	14.8	26.7	33.7	11.7	14.8	9.93	12.5	11.8	13.1	6.65	7.58	5.14	6.38

Table 6-10 Summary of Allowable NOx, CO, SO2, and PM Emission Rates

Estimates for State Toxic Air Pollutants (Asphalt Fumes)

The Hot Mix Asphalt Plant (HMA) drum dryer/mixer, asphalt silo loading, asphalt silo unloading, yard emissions, and heated asphalt cement storage tank are sources of asphalt fumes listed in the NMED's 20.2.72 NMAC, 502 "Toxic Air Pollutants and Emissions", Table A. Emissions of asphalt fumes from the drum dryer/mixer are based on PM organic condensable emission factors found in AP-42 Section 11.1, Table 11.1-3 (0.012 pounds per ton x 200 tons/hr) from the drum dryer/mixer baghouse stack or 2.4 pounds per hour.

Emissions of asphalt fumes from the asphalt silo filling (Unit 19), asphalt silo (plant) unloading (Unit 20), yard (asphalt transported in asphalt trucks-Unit 24), and hot oil asphalt storage tanks (Unit 22) were based on the assumption that the emissions of concern from the silo filling, silo unloading, hot oil asphalt storage tanks, and yard asphalt fumes sources are the PAH HAPs plus other semi-volatile HAPs from the particulate (PM) organics and the volatile organic HAPs from the Total Organic Compounds (TOC). These two combined make up asphalt fume emissions from the silo filling, silo unloading, hot oil asphalt storage tanks, and yard sources. Using information found in AP-42 Section 11.1, Tables 11.1-14, 15, and 16 were reviewed and the following emission equations or emission factors were used to estimate asphalt fumes emissions from silo filling, silo unloading, hot oil asphalt storage tanks, and yard.

Silo Filling

Asphalt Fumes $EF = 0.00078(-V)e^{((0.0251)(T+460)-20.43)}$

Plant Loadout

Asphalt Fumes $EF = 0.00036(-V)e^{((0.0251)(T+460)-20.43)}$

Asphalt Storage Tanks

Asphalt Fumes EF = VOC emissions from TANKs * 1.3%

Yard

Asphalt Fumes EF = 0.0000165 lbs/ton of asphalt loaded

Asphalt silo filling and asphalt silo unloading emission factors were calculated using the default value of -0.5 for asphalt volatility and an asphalt material temperature of 325° F for HMA mix temperature. Inputting these values into the equations gives you a pound per ton value of 0.00011886 lbs/ton and 0.0000870 lbs/ton or asphalt fumes emission rates of 0.038 and 0.017 pounds per hour, respectively.

Emissions of asphalt fumes from the Yard were based on 1.5 percent of the TOC emission. Yard (Unit 24) emission factors are found in AP-42 Section 11.1.2.5. TOC emission factor is 0.0011 lbs/ton of asphalt produced. Asphalt fumes emissions are 0.0000165 lbs/ton of asphalt produced or 0.0033 pounds per hour (200 tph of asphalt production).

Emissions of asphalt fumes from the asphalt cement storage tanks (Unit 22) were determined with EPA's TANK 4.0.9d program and the procedures found in EPA's "Emission Factor Documentation for AP-42 Section 11.1 (12/2000) Section 4.4.5" for input to the TANK program. The annual VOC emissions for working and breathing losses from two 20,000 gallon tanks were estimated at 198.34 pounds per year (0.023 pounds per hour). Based on 1.3 percent of the VOC emissions (total 0.023 pounds per hour), the asphalt fumes emission rate is 0.00029 pounds per hour.

Total asphalt fumes from the HMA plant is 2.46 pounds per hour and 3.07 tons per year.

Estimates for State Toxic Air Pollutants (Calcium Hydroxide)

A potential mineral filler that will be used is lime (calcium hydroxide). Calcium hydroxide is listed in the NMED's 20.2.72 NMAC, 502 "Toxic Air Pollutants and Emissions", Table A. Controlled emissions of lime from the mineral filler silo during loading is 0.18 pounds per hour.

Estimates for Federal HAPs Air Pollutants

The Hot Mix Asphalt Plant (HMA) drum dryer (Unit 17) and asphalt heater (Unit 21), are sources of HAPs as it appears in Section 112 (b) of the 1990 CAAA. Emissions of HAPs were determined for the drum mixer using AP-42 Section 11.1 Tables 11.1-10, 11.1-12. Emissions of HAPs were determined for the asphalt heater using AP-42 Section 1.4.

The following tables summarize the HAPs emission rates from the drum mixer and asphalt heater. Total combined HAPs emissions from Gamerco HMA is 2.10 pounds per hour and 2.62 tons per year.

Emission

Rate

(ton/yr)

0.325000

0.006500

0.097500

0.060000

0.775000 0.230000

0.010000

0.005000

0.032500

0.040000

0.012000

0.725000

0.050000

2.368500

Emission

Rate

(ton/yr)

0.042500

0.000350

0.005500

0.000775

0.000053

0.000002

0.000025

0.000028

0.000010

0.000010

0.000045

0.000153

0.002750

0.000002

0.162500

0.000002

0.005750

0.000750

0.221204

Table 6-11: HAPs Emission Rates from the Drum Dryer/MixerEPA HAPS Emissions Drum Mixer Hot Mix Asphalt Plant with Fabric Filter

Average Hourly Production Rate: Yearly Production Rate:	200 500000	tons per hour tons per year		
Type of Fuel:	Waste Fuel Oil			
Emission Factors		ables 11.1-10, 11.1-12		
		uolos 11.1 10, 11.1 12		
Non-PAH HAPS	CAS#		Emission Factor (lbs/ton)	Emission Rate (lbs/hr)
Acetalehyde	75-07-0		1.3E-03	0.260000
Acrolein	107-02-8		2.6E-05	0.005200
Benzene	71-43-2		3.9E-04	0.078000
Ethylbenzene	100-41-4		2.4E-04	0.048000
Formaldehyde	50-00-0		3.1E-03	0.620000
Hexane	110-54-3		9.2E-04	0.184000
Isooctane	540-84-1		4.0E-05	0.008000
Methyl Ethyl Ketone	78-93-3		2.0E-05	0.004000
Propionaldehyde	123-38-6		1.3E-04	0.026000
Quinone	106-51-4		1.6E-04	0.032000
Methyl chorlform	71-55-6		4.8E-05	0.009600
Toluene	108-88-3		2.9E-03	0.580000
Xylene	1330-20-7		2.0E-04	0.040000
		Total Non-PAH HAPS	9.5E-03	1.894800
PAH HAPS	CAS#		Emission Factor (lbs/ton)	Emission Rate (lbs/hr)
2-Methylnaphthalene	91-57-6		1.7E-04	0.034000
Acenaphthene	83-32-9		1.4E-06	0.000280
Acenaphthylene	208-96-8		2.2E-05	0.004400
Anthracene	120-12-7		3.1E-06	0.000620
Benzo(a)anthracene	56-55-3		2.1E-07	0.000042
Benzo(a)pyrene	50-32-8		9.8E-09	0.000002
Benzo(b)fluoranthene	205-99-2		1.0E-07	0.000020
Benzo(b)pyrene	192-97-2		1.1E-07	0.000022
Benzo(g,h,I)perylene	191-24-2		4.0E-08	0.000008
Benzo(k)fluoranthene	207-08-9		4.1E-08	0.000008
Chrysene	218-01-9		1.8E-07	0.000036
Fluoranthene	206-44-0		6.1E-07	0.000122
Fluorene	86-73-7		1.1E-05	0.002200
Indeno(1,2,3-cd)pyrene	193-39-5		7.0E-09	0.000001
Naphthalene	91-20-3		6.5E-04	0.130000
Perylene	198-55-0		8.8E-09	0.000002
Phenanthrene	85-01-8		2.3E-05	0.004600
Pyrene	129-00-0		3.0E-06	0.000600

Total PAH HAPS

0.176963

8.8E-04

HAPS Metals		Emission Factor (lbs/ton)	Emission Rate (lbs/hr)	Emission Rate (ton/yr)
Arsenic		5.6E-07	0.000112	0.000140
Beryllium		0.0E+00	0.000000	0.000000
Cadmium		4.1E-07	0.000082	0.000103
Chromium		5.5E-06	0.001100	0.001375
Cobalt		2.6E-08	0.000005	0.000007
Hexavalent Chromium		4.5E-07	0.000090	0.000113
Lead		1.5E-05	0.003000	0.003750
Manganese		7.7E-06	0.001540	0.001925
Mercury		2.6E-06	0.000520	0.000650
Nickel		6.3E-05	0.012600	0.015750
Phosphorus		2.8E-05	0.005600	0.007000
Selenium		3.5E-07	0.000070	0.000088
	Total Metals HAPS	1.2E-04	0.024719	0.030899
	Total HAPS		2.10	2.62

Table 6-12: HAPs Emission Rates from the Asphalt Heater

1.410	MMBtu/hr	(based on 128000 Btu/gallon)
11	gallons/hr	
0.00000141	Btu x10^-12	(based on 128000 Btu/gallon)
7770	hours per year	
	11 0.00000141	11 gallons/hr 0.00000141 Btu x10^-12

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

Organic Compounds	CAS#		Emission Factor (lbs/10^3 gal)	Emission Rate (lbs/hr)	Emission Rate (ton/yr)
Acenaphthene	83-32-9		2.11E-05	0.0000002	0.0000010
Acenaphthylene	208-96-8		2.53E-07	0.0000000	0.0000000
Anthracene	120-12-7		1.22E-06	0.0000000	0.0000001
Benzene	71-43-2		2.14E-04	0.0000024	0.0000103
Benzo(a)anthracene	56-55-3		4.01E-06	0.0000000	0.0000002
Benzo(b,k)fluoranthene	205-99-2		1.48E-06	0.0000000	0.0000001
Benzo(g,h,I)perylene	191-24-2		2.26E-06	0.0000000	0.0000001
Chrysene	218-01-9		2.38E-06	0.0000000	0.0000001
Dibenz(a,h)anthracene			1.67E-06	0.0000000	0.0000001
Ethylbenzene	100-41-4		6.36E-05	0.0000007	0.0000031
Fluoranthene	206-44-0		4.84E-06	0.0000001	0.0000002
Fluorene	86-73-7		4.47E-06	0.0000000	0.0000002
Formaldehyde	50-00-0		6.10E-02	0.0006710	0.0029390
Indeno(1,2,3-cd)pyrene	193-39-5		2.14E-06	0.0000000	0.0000001
Naphthalene	91-20-3		1.13E-03	0.0000124	0.0000544
Phenanthrene	85-01-8		1.05E-05	0.0000001	0.0000005
Pyrene	129-00-0		4.25E-06	0.0000000	0.0000002
Toluene	108-88-3		6.20E-03	0.0000682	0.0002987
Xylene	1330-20-7		1.09E-04	0.0000012	0.0000053
		Total Organic Compounds	6.88E-02	0.0007565	0.0033137
HAPS Metals			Emission Factor (lbs/Btu^12)	Emission Rate (lbs/hr)	Emission Rate (ton/yr)
Arsenic			4	0.0000056	0.0000247
Beryllium			3	0.0000042	0.0000185
Cadmium			3	0.0000042	0.0000185
Chromium			3	0.0000042	0.0000185
Lead			9	0.0000127	0.0000556
Manganese			6	0.0000085	0.0000371
Mercury			3	0.0000042	0.0000185
Nickel			3	0.0000042	0.0000185
Selenium			15	0.0000212	0.0000926
			1.0		

Total HAPS

Total Metals HAPS

0.00158 0.00362

0.0003026

0.0000691

49

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 (CO₂), nitrous oxide (N₂O), methane (CH₄), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

Calculating GHG Emissions:

1. Calculate the ton per year (tpy) GHG mass emissions and GHG CO₂e 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 CO₂e 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 <u>Mandatory Greenhouse Gas Reporting</u>.

3. Emissions from routine or predictable start up, shut down, and maintenance must be included.

4. Report GHG mass and GHG CO₂e emissions in Table 2-P of this application. Emissions are reported in <u>short</u> 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 \boxtimes 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 <u>Mandatory Green House Gas Reporting</u> 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 <u>Mandatory Greenhouse Reporting</u> 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:

- □ If manufacturer data are used, include specifications for emissions units <u>and</u> 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.
- **X** If an EPA document or other material is referenced, include a complete copy.
- □ Fuel specifications sheet.
- X 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	Asphalt Heater Combustion and HAPs Emission Factors
A-XXXX-7-AP42S11-1	HMA Plant and HAPs Emission Factors
A-XXXX-7-AP42S11-12	Mineral Filler Silo Emission Factors
A-XXXX-7-AP42S11-19-2	Screens, and Transfer Point Emission Factors
A-XXXX-7-AP42S13-2-1	Paved Road Emission Factors
A-XXXX-7-AP42S13-2-4	Material Handling Emission Factors
A-XXXX-7-WindspeedsNewMexico	Gallup Wind Speed Annual Average 1996 to 2006
A-XXXX-7-ACTANK1	Unit 22: Asphalt Cement Storage Tank - 20,000 gallons
A-XXXX-7-ACTANK2	Unit 22: Asphalt Cement Storage Tank - 20,000 gallons
A-XXXX-7-GHG	EPA Greenhouse Gas Inventory Emission Factors
A-XXXX-7-HMA.xls	Gamerco HMA Plant Emissions Spreadsheet
A-XXXX-7-Baghouse	Mineral Filler Fabric Filter – Pulse-Jet Control Efficiency

11.1 Hot Mix Asphalt Plants

11.1.1 General^{1-3,23, 392-394}

Hot mix asphalt (HMA) paving materials are a mixture of size-graded, high quality aggregate (which can include reclaimed asphalt pavement [RAP]), and liquid asphalt cement, which is heated and mixed in measured quantities to produce HMA. Aggregate and RAP (if used) constitute over 92 percent by weight of the total mixture. Aside from the amount and grade of asphalt cement used, mix characteristics are determined by the relative amounts and types of aggregate and RAP used. A certain percentage of fine aggregate (less than 74 micrometers [µm] in physical diameter) is required for the production of good quality HMA.

Hot mix asphalt paving materials can be manufactured by: (1) batch mix plants, (2) continuous mix (mix outside dryer drum) plants, (3) parallel flow drum mix plants, and (4) counterflow drum mix plants. This order of listing generally reflects the chronological order of development and use within the HMA industry.

In 1996, approximately 500 million tons of HMA were produced at the 3,600 (estimated) active asphalt plants in the United States. Of these 3,600 plants, approximately 2,300 are batch plants, 1,000 are parallel flow drum mix plants, and 300 are counterflow drum mix plants. The total 1996 HMA production from batch and drum mix plants is estimated at about 240 million tons and 260 million tons, respectively. About 85 percent of plants being manufactured today are of the counterflow drum mix design, while batch plants and parallel flow drum mix plants account for 10 percent and 5 percent respectively. Continuous mix plants represent a very small fraction of the plants in use (≤ 0.5 percent) and, therefore, are not discussed further.

An HMA plant can be constructed as a permanent plant, a skid-mounted (easily relocated) plant, or a portable plant. All plants can have RAP processing capabilities. Virtually all plants being manufactured today have RAP processing capability. Most plants have the capability to use either gaseous fuels (natural gas) or fuel oil. However, based upon Department of Energy and limited State inventory information, between 70 and 90 percent of the HMA is produced using natural gas as the fuel to dry and heat the aggregate.

11.1.1.1 Batch Mix Plants -

Figure 11.1-1 shows the batch mix HMA production process. Raw aggregate normally is stockpiled near the production unit. The bulk aggregate moisture content typically stabilizes between 3 to 5 percent by weight.

Processing begins as the aggregate is hauled from the storage piles and is placed in the appropriate hoppers of the cold feed unit. The material is metered from the hoppers onto a conveyer belt and is transported into a rotary dryer (typically gas- or oil-fired). Dryers are equipped with flights designed to shower the aggregate inside the drum to promote drying efficiency.

As the hot aggregate leaves the dryer, it drops into a bucket elevator and is transferred to a set of vibrating screens, where it is classified into as many as four different grades (sizes) and is dropped into individual "hot" bins according to size. At newer facilities, RAP also may be transferred to a separate heated storage bin. To control aggregate size distribution in the final <u>batch</u> mix, the operator opens various hot bins over a weigh hopper until the desired mix and weight are obtained. Concurrent with the aggregate being weighed, liquid asphalt cement is pumped from a heated storage tank to an asphalt bucket, where it is weighed to achieve the desired aggregate-to-asphalt cement ratio in the final mix.

bins or storage silos. The fugitive dust sources associated with drum mix plants are similar to those of batch mix plants with regard to truck traffic and to aggregate material feed and handling operations.

Table 11.1-1 presents emission factors for filterable PM and PM-10, condensable PM, and total PM for batch mix HMA plants. Particle size data for batch mix HMA plants, based on the control technology used, are shown in Table 11.1-2. Table 11.1-3 presents filterable PM and PM-10, condensable PM, and total PM emission factors for drum mix HMA plants. Particle size data for drum mix HMA plants, based on the control technology used, are shown in Table 11.1-4. Tables 11.1-5 and -6 present emission factors for CO, CO_2 , NO_x , sulfur dioxide (SO₂), total organic compounds (TOC), formaldehyde, CH_4 , and VOC from batch mix plants. Tables 11.1-7 and -8 present emission factors for CO, CO_2 , NO_x , SO₂, TOC, CH_4 , VOC, and hydrochloric acid (HCl) from drum mix plants. The emission factors for CO, NO_x , and organic compounds represent normal plant operations without scrutiny of the burner design, operation, and maintenance. Information provided in Reference 390 indicates that attention to burner design, periodic evaluation of burner operation, and appropriate maintenance can reduce these emissions. Table 11.1-9 presents organic pollutant emission factors for drum mix plants. Tables 11.1-11 and -12 present metals emission factors for batch and drum mix plants, respectively. Table 11.1-13 presents organic pollutant emission factors for the (asphalt) oil systems.

11.1.2.5 Fugitive Emissions from Production Operations -

Emission factors for HMA load-out and silo filling operations can be estimated using the data in Tables 11.1-14, -15, and -16. Table 11.1-14 presents predictive emission factor equations for HMA load-out and silo filling operations. Separate equations are presented for total PM, extractable organic PM (as measured by EPA Method 315), TOC, and CO. For example, to estimate total PM emissions from drum mix or batch mix plant load-out operations using an asphalt loss-on-heating of 0.41 percent and temperature of 290°F, the following calculation is made:

$$\begin{split} \mathrm{EF} &= 0.000181 + 0.00141(\text{-V})e^{((0.0251)(290 + 460) - 20.43)} \\ &= 0.000181 + 0.00141(\text{-}(-0.41))e^{((0.0251)(290 + 460) - 20.43)} \\ &= 0.000181 + 0.00141(0.41)e^{(-1.605)} \\ &= 0.000181 + 0.00141(0.41)(0.2009) \\ &= 0.000181 + 0.000116 \\ &= 0.00030 \text{ lb total PM/ton of asphalt loaded} \end{split}$$

Tables 11.1-15 and -16 present speciation profiles for organic particulate-based and volatile particulate-based compounds, respectively. The speciation profile shown in Table 11.1-15 can be applied to the extractable organic PM emission factors estimated by the equations in Table 11.1-14 to estimate emission factors for specific organic PM compounds. The speciation profile presented in Table 11.1-16 can be applied to the TOC emission factors estimated by the equations in Table 11.1-14 to estimate emission factors for specific volatile organic compounds. The derivations of the predictive emission factor equations and the speciation profiles can be found in Reference 1.

For example, to estimate TOC emissions from drum mix plant load-out operations using an asphalt loss-on-heating of 0.41 percent and temperature of 290°F, the following calculation is made:

 $EF = 0.0172(-V)e^{((0.0251)(290 + 460) - 20.43)}$ = 0.0172(-(-0.41))e^{((0.0251)(290 + 460) - 20.43)} = 0.0172(0.41)e^{(-1.605)} = 0.0172(0.41)(0.2009) = 0.0014 lb TOC/ton of asphalt loaded To estimate the benzene emissions from the same operation, use the TOC emission factor calculated above and apply the benzene fraction for load-out emissions from Table 11.1-16:

EF = 0.0014 (0.00052)= 7.3 x 10⁻⁷ lb benzene/ton of asphalt loaded

Emissions from asphalt storage tanks can be estimated using the procedures described in AP-42 Section 7.1, Organic Liquid Storage Tanks, and the TANKS software. Site-specific data should be used for storage tank specifications and operating parameters, such as temperature. If site-specific data for Antoine's constants for an average asphalt binder used by the facility are unavailable, the following values for an average liquid asphalt binder can be used:

A = 75,350.06B = 9.00346

These values should be inserted into the Antoine's equation in the following form:

$$\log_{10}P = \frac{-0.05223A}{T} + B$$

where:

P = vapor pressure, mm Hg T = absolute temperature, Kelvin

The assumed average liquid molecular weight associated with these Antoine's constants is 1,000 atomic mass units and the average vapor molecular weight is 105. Emission factors estimated using these default values should be assigned a rating of E. Carbon monoxide emissions can be estimated by multiplying the THC emissions calculated by the TANKS program by 0.097 (the ratio of silo filling CO emissions to silo filling TOC emissions).

Vapors from the HMA loaded into transport trucks continue following load-out operations. The TOC emissions for the 8-minute period immediately following load-out (yard emissions) can be estimated using an emission factor of 0.00055 kg/Mg (0.0011 lb/ton) of asphalt loaded. This factor is assigned a rating of E. The derivation of this emission factor is described in Reference 1. Carbon monoxide emissions can be estimated by multiplying the TOC emissions by 0.32 (the ratio of truck load-out CO emissions to truck load-out THC emissions).

11.2.3 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 background report for this section. This and other documents can be found on the CHIEF Web Site at http://www.epa.gov/ttn/chief/, or by calling the Info CHIEF Help Desk at (919)541-1000.

December 2000

• All emission factors were revised and new factors were added. For selected pollutant emissions, separate factors were developed for distilate oil, No. 6 oil and waste oil fired dryers. Dioxin and Furan emission factors were developed for oil fired drum mix plants. Particulate, VOC and CO factors were developed for silo filling, truck load out and post truck load out operations at batch plants and drum mix plants. Organic species profiles were developed for silo filling, truck load out and post truck load out operations.

March 2004

• The emission factor for formaldehyde for oil fired hot oil heaters was revised. An emission factor for formaldehyde for gas fired hot oil heaters and emission factors for CO and CO₂ for gas and oil fired hot oil heaters were developed. (Table 11.1-13)

Table 11.1-3. PARTICULATE MATTER EMISSION FACTORS FOR DRUM MIX HOT MIX ASPHALT PLANTS^a

Filterable PM			Condensable PM ^b			Total PM						
Process	PM ^c	EMISSION FACTOR RATING	PM-10 ^d	EMISSION FACTOR RATING	Inorganic	EMISSION FACTOR RATING	Organic	EMISSION FACTOR RATING	PM ^e	EMISSION FACTOR RATING	PM-10 ^f	EMISSION FACTOR RATING
Dryer ^g (SCC 3-05-002-05,-55 to -63)												
Uncontrolled	28 ^h	D	6.4	D	0.0074 ^j	Е	0.058 ^k	Е	<mark>28</mark>	D	<mark>6.5</mark>	D
Venturi or wet scrubber	0.026 ^m	А	ND	NA	0.0074^{n}	А	0.012 ^p	А	0.045	А	ND	NA
Fabric filter	0.014 ^q	А	0.0039	С	0.0074 ⁿ	А	0.012 ^p	А	<mark>0.033</mark>	А	0.023	С

^a Factors are lb/ton of product. SCC = Source Classification Code. ND = no data. NA = not applicable. To convert from lb/ton to kg/Mg, multiply by 0.5.

^b Condensable PM is that PM collected using an EPA Method 202, Method 5 (analysis of "back-half" or impingers), or equivalent sampling train.

^c Filterable PM is that PM collected on or before the filter of an EPA Method 5 (or equivalent) sampling train.

^d Particle size data from Reference 23 were used in conjunction with the filterable PM emission factors shown.

^e Total PM is the sum of filterable PM, condensable inorganic PM, and condensable organic PM.

^f Total PM-10 is the sum of filterable PM-10, condensable inorganic PM, and condensable organic PM.

^g Drum mix dryer fired with natural gas, propane, fuel oil, and waste oil. The data indicate that fuel type does not significantly effect PM emissions.

References 31, 36-38, 340.

^j Because no data are available for uncontrolled condensable inorganic PM, the emission factor is assumed to be equal to the maximum controlled condensable inorganic PM emission factor.

^k References 36-37.

^m Reference 1, Table 4-14. Average of data from 36 facilities. Range: 0.0036 to 0.097 lb/ton. Median: 0.020 lb/ton. Standard deviation: 0.022 lb/ton.

ⁿ Reference 1, Table 4-14. Average of data from 30 facilities. Range: 0.0012 to 0.027 lb/ton. Median: 0.0051 lb/ton. Standard deviation: 0.0063 lb/ton.

^p Reference 1, Table 4-14. Average of data from 41 facilities. Range: 0.00035 to 0.074 lb/ton. Median: 0.0046 lb/ton. Standard deviation: 0.016 lb/ton.

^q Reference 1, Table 4-14. Average of data from 155 facilities. Range: 0.00089 to 0.14 lb/ton. Median: 0.010 lb/ton. Standard deviation: 0.017 lb/ton.

11.1-13

3/04

11.1-17

Table 11.1-7. EMISSION FACTORS FOR CO, CO2, NOx, AND SO2 FROM
DRUM MIX HOT MIX ASPHALT PLANTS^a

Process	CO ^b	EMISSION FACTOR RATING	CO ₂ ^c	EMISSION FACTOR RATING	NO _x	EMISSION FACTOR RATING	SO ₂ ^c	EMISSION FACTOR RATING
Natural gas-fired dryer (SCC 3-05-002-55,-56,-57)	0.13	В	33 ^d	А	0.026 ^e	D	0.0034^{f}	D
No. 2 fuel oil-fired dryer (SCC 3-05-002-58,-59,-60)	0.13	В	33 ^d	А	0.055 ^g	С	0.011 ^h	Е
Waste oil-fired dryer (SCC 3-05-002-61,-62,-63)	0.13	В	33 ^d	А	0.055 ^g	С	0.058 ^j	В
Coal-fired dryer ^k (SCC 3-05-002-98)	ND	NA	33 ^d	А	ND	NA	0.19 ^m	Е

EMISSION FACTORS

^a Emission factor units are lb per ton of HMA produced. SCC = Source Classification Code. ND = no data available. NA = not applicable. To convert from lb/ton to kg/Mg, multiply by 0.5.

^b References 25, 44, 48, 50, 149, 154, 197, 214, 229, 254, 339-342, 344, 346, 347, 390. The CO emission factors represent normal plant operations without scrutiny of the burner design, operation, and maintenance. Information is available that indicates that attention to burner design, periodic evaluation of burner operation, and appropriate maintenance can reduce CO emissions. Data for dryers firing natural gas, No. 2 fuel oil, and No. 6 fuel oil were combined to develop a single emission factor because the magnitude of emissions was similar for dryers fired with these fuels.

^c Emissions of CO_2 and SO_2 can also be estimated based on fuel usage and the fuel combustion emission factors (for the appropriate fuel) presented in AP-42 Chapter 1. The CO_2 emission factors are an average of all available data, regardless of the dryer fuel (emissions were similar from dryers firing any of the various fuels). Fifty percent of the fuel-bound sulfur, up to a maximum (as SO_2) of 0.1 lb/ton of product, is expected to be retained in the product, with the remainder emitted as SO_2 .

^d Reference 1, Table 4-15. Average of data from 180 facilities. Range: 2.6 to 96 lb/ton. Median: 31 lb/ton. Standard deviation: 13 lb/ton.

- ^e References 44-45, 48, 209, 341, 342.
- ^f References 44-45, 48.
- ^g References 25, 50, 153, 214, 229, 344, 346, 347, 352-354.
- ^h References 50, 119, 255, 340
- ^j References 25, 299, 300, 339, 345, 351, 371-377, 379, 380, 386-388.
- ^k Dryer fired with coal and supplemental natural gas or fuel oil.
- ^m References 88, 108, 189-190.

Process	ТОСь	EMISSION FACTOR RATING	CH ₄ ^c	EMISSION FACTOR RATING	VOC ^d	EMISSION FACTOR RATING	HCle	EMISSION FACTOR RATING
Natural gas-fired dryer (SCC 3-05-002-55, -56,-57)	0.044 ^f	В	0.012	С	0.032	С	ND	NA
No. 2 fuel oil-fired dryer (SCC 3-05-002-58, -59,-60)	0.044 ^f	В	0.012	С	0.032	С	ND	NA
Waste oil-fired dryer (SCC 3-05-002-61, -62,-63)	0.044 ^f	Е	0.012	С	0.032	E	0.00021	D

Table 11.1-8. EMISSION FACTORS FOR TOC, METHANE, VOC, AND HCI FROM
DRUM MIX HOT MIX ASPHALT PLANTS^a

^a Emission factor units are lb per ton of HMA produced. SCC = Source Classification Code. ND = no data available. NA = not applicable. To convert from lb/ton to kg/Mg, multiply by 0.5.

^b TOC equals total hydrocarbons as propane as measured with an EPA Method 25A or equivalent sampling train plus formaldehyde.

^c References 25, 44-45, 48, 50, 339-340, 355. Factor includes data from natural gas-, No. 2 fuel oil, and waste oil-fired dryers. Methane measured with an EPA Method 18 or equivalent sampling train.

^d The VOC emission factors are equal to the TOC factors minus the sum of the methane emission factors and the emission factors for compounds with negligible photochemical reactivity shown in Table 11.1-10; differences in values reported are due to rounding.

^e References 348, 374, 376, 379, 380.

^f References 25, 44-45, 48, 50, 149, 153-154, 209-212, 214, 241, 242, 339-340, 355.

		Pollutant	Emission	Emission	
			Factor,	Factor	
Process	CASRN	Name	lb/ton	Rating	Ref. No.
Natural gas-fired	Non-I	PAH hazardous air pollutants ^e			
dryer with fabric filter ^b (SCC 3-05-002-55,	71-43-2	Benzene ^d	0.00039	А	25,44,45,50, 341, 342, 344-351, 373, 376, 377, 383, 384
-56,-57)	100-41-4	Ethylbenzene	0.00024	D	25,44,45
	50-00-0	Formaldehyde ^e	0.0031	Α	25,35,44,45,50, 339- 344, 347-349, 371- 373, 384, 388
	110-54-3	Hexane	0.00092	Е	339-340
	540-84-1	Isooctane (2,2,4-trimethylpentane)	4.0x10 ⁻⁵	Е	339-340
	71-55-6	Methyl chloroform ^f	4.8x10 ⁻⁵	Е	35
	108-88-3	Toluene	0.00015	D	35,44,45
	1330-20-7	Xylene	0.00020	D	25,44,45
		Total non-PAH HAPs	0.0051		
		PAH HAPs			
	91-57-6	2-Methylnaphthalene ^g	7.4x10 ⁻⁵	D	44,45,48
	83-32-9	Acenaphthene ^g	1.4x10 ⁻⁶	Е	48
	208-96-8	Acenaphthylene ^g	8.6x10 ⁻⁶	D	35,45,48
	120-12-7	Anthracene ^g	2.2x10 ⁻⁷	Е	35,48
	56-55-3	Benzo(a)anthracene ^g	2.1x10 ⁻⁷	Е	48
	50-32-8	Benzo(a)pyrene ^g	9.8x10 ⁻⁹	Е	48
	205-99-2	Benzo(b)fluoranthene ^g	1.0x10 ⁻⁷	Е	35,48
	192-97-2	Benzo(e)pyrene ^g	1.1x10 ⁻⁷	Е	48
	191-24-2	Benzo(g,h,i)perylene ^g	4.0x10 ⁻⁸	Е	48
	207-08-9	Benzo(k)fluoranthene ^g	4.1x10 ⁻⁸	Е	35,48
	218-01-9	Chrysene ^g	1.8x10 ⁻⁷	Е	35,48
	206-44-0	Fluoranthene ^g	6.1x10 ⁻⁷	D	35,45,48
	86-73-7	Fluorene ^g	3.8x10 ⁻⁶	D	35,45,48,163
	193-39-5	Indeno(1,2,3-cd)pyrene ^g	7.0x10 ⁻⁹	Е	48
	91-20-3	Naphthalene ^g	9.0x10 ⁻⁵	D	35,44,45,48,163
	198-55-0	Perylene ^g	8.8x10 ⁻⁹	Е	48
	85-01-8	Phenanthrene ^g	7.6x10 ⁻⁶	D	35,44,45,48,163
	129-00-0	Pyrene ^g	5.4x10 ⁻⁷	D	45,48
		Total PAH HAPs	0.00019		

Table 11.1-10.EMISSION FACTORS FOR ORGANIC POLLUTANTEMISSIONS FROM DRUM MIX HOT MIX ASPHALT PLANTS^a

		Pollutant	Emission	Emission	
			Factor,	Factor	
Process	CASRN	Name	lb/ton	Rating	Ref. No.
Natural gas-fired dryer with fabric		Total HAPs	0.0053		
filter ^b	Noi				
(SCC 3-05-002-55,	106-97-8	Butane	0.00067	Е	339
-56,-57) (cont.)	74-85-1	Ethylene	0.0070	Е	339-340
	142-82-5	Heptane	0.0094	Е	339-340
	763-29-1	2-Methyl-1-pentene	0.0040	Е	339,340
	513-35-9	2-Methyl-2-butene	0.00058	Е	339,340
	96-14-0	3-Methylpentane	0.00019	D	339,340
	109-67-1	1-Pentene	0.0022	Е	339-340
	109-66-0	n-Pentane	0.00021	Е	339-340
		Total non-HAP organics	0.024		
No. 2 fuel oil-fired		Non-PAH HAPs ^c			
dryer with fabric filter (SCC 3-05-002-58,	71-43-2	Benzene ^d	0.00039	А	25,44,45,50, 341, 342, 344-351, 373, 376, 377, 383, 384
-59,-60)	100-41-4	Ethylbenzene	0.00024	D	25,44,45
	50-00-0	Formaldehyde ^e	0.0031	А	25,35,44,45,50, 339- 344, 347-349, 371- 373, 384, 388
	110-54-3	Hexane	0.00092	Е	339-340
	540-84-1	Isooctane (2,2,4-trimethylpentane)	4.0x10 ⁻⁵	Е	339-340
	71-55-6	Methyl chloroform ^f	4.8x10 ⁻⁵	Е	35
	108-88-3	Toluene	0.0029	Е	25, 50, 339-340
	1330-20-7	Xylene	0.00020	D	25,44,45
		Total non-PAH HAPs	0.0078		
	01.57.6	PAH HAPs	0.00017	Г	50
	91-57-6 82-22-0	2-Methylnaphthalene ^g Acenaphthene ^g	0.00017 1.4x10 ⁻⁶	E	50
	83-32-9	-		E	48
	208-96-8	Acenaphthylene ^g	2.2x10 ⁻⁵	Е	50
	120-12-7	Anthracene ^g	3.1x10 ⁻⁶	Е	50,162
	56-55-3	Benzo(a)anthracene ^g	2.1x10 ⁻⁷	Е	48
	50-32-8	Benzo(a)pyrene ^g	9.8x10 ⁻⁹	Е	48
	205-99-2	Benzo(b)fluoranthene ^g	1.0x10 ⁻⁷	Е	35,48
	192-97-2	Benzo(e)pyrene ^g	1.1x10 ⁻⁷	Е	48

Table 11.1-10 (cont.)

		Pollutant	Emission	Emission	
	~ . ~ ~ ~ ~		Factor,	Factor	
Process	CASRN	Name	lb/ton	Rating	Ref. No.
No. 2 fuel oil-fired dryer with fabric	191-24-2	Benzo(g,h,i)perylene ^g	4.0x10 ⁻⁸	Е	48
filter	207-08-9	Benzo(k)fluoranthene ^g	4.1x10 ⁻⁸	Е	35,48
(SCC 3-05-002-58,	218-01-9	Chrysene ^g	1.8x10 ⁻⁷	Е	35,48
-59,-60) (cont.)	206-44-0	Fluoranthene ^g	6.1x10 ⁻⁷	D	35,45,48
	86-73-7	Fluorene ^g	1.1x10 ⁻⁵	Е	50,164
	193-39-5	Indeno(1,2,3-cd)pyrene ^g	7.0x10 ⁻⁹	Е	48
	91-20-3	Naphthalene ^g	0.00065	D	25,50,162,164
	198-55-0	Perylene ^g	8.8x10 ⁻⁹	Е	48
	85-01-8	Phenanthrene ^g	2.3x10 ⁻⁵	D	50,162,164
	129-00-0	Pyrene ^g	3.0x10 ⁻⁶	Е	50
		Total PAH HAPs	0.00088		
		Total HAPs	0.0087		
	No				
	106-97-8	Butane	0.00067	Е	339
	74-85-1	Ethylene	0.0070	Е	339-340
	142-82-5	Heptane	0.0094	Е	339-340
	763-29-1	2-Methyl-1-pentene	0.0040	Е	339,340
	513-35-9	2-Methyl-2-butene	0.00058	Е	339,340
	96-14-0	3-Methylpentane	0.00019	D	339,340
	109-67-1	1-Pentene	0.0022	Е	339-340
	109-66-0	n-Pentane	0.00021	Е	339-340
		Total non-HAP organics	0.024		

Table 11.1-10 (cont.)

Table 11.1-10 (cont.)

		Pollutant	Emission	Emission	
			Factor,	Factor	
Process	CASRN	Name	lb/ton	Rating	Ref. No.
Fuel oil- or waste oil-fired dryer with		Dioxins			
fabric filter	1746-01-6	2,3,7,8-TCDD ^g	2.1x10 ⁻¹³	Е	339
(SCC 3-05-002-58, -59,-60,-61,-62,		Total TCDD ^g	9.3x10 ⁻¹³	Е	339
-63)	40321-76-4	1,2,3,7,8-PeCDD ^g	3.1x10 ⁻¹³	Е	339
		Total PeCDD ^g	2.2x10 ⁻¹¹	Е	339-340
	39227-28-6	1,2,3,4,7,8-HxCDD ^g	4.2x10 ⁻¹³	Е	339
	57653-85-7	1,2,3,6,7,8-HxCDD ^g	1.3x10 ⁻¹²	Е	339
	19408-24-3	1,2,3,7,8,9-HxCDD ^g	9.8x10 ⁻¹³	Е	339
		Total HxCDD ^g	1.2x10 ⁻¹¹	Е	339-340
	35822-46-9	1,2,3,4,6,7,8-HpCDD ^g	4.8x10 ⁻¹²	Е	339
		Total HpCDD ^g	1.9x10 ⁻¹¹	Е	339-340
	3268-87-9	Octa CDD ^g	2.5x10 ⁻¹¹	Е	339
		Total PCDD ^g	7.9x10 ⁻¹¹	Е	339-340
	51207-31-9	2,3,7,8-TCDF ^g	9.7x10 ⁻¹³	Е	339
		Total TCDF ^g	3.7x10 ⁻¹²	Е	339-340
		1,2,3,7,8-PeCDF ^g	4.3x10 ⁻¹²	Е	339-340
		2,3,4,7,8-PeCDF ^g	8.4x10 ⁻¹³	Е	339
		Total PeCDF ^g	8.4x10 ⁻¹¹	Е	339-340
		1,2,3,4,7,8-HxCDF ^g	4.0x10 ⁻¹²	Е	339
		1,2,3,6,7,8-HxCDF ^g	1.2x10 ⁻¹²	Е	339
		2,3,4,6,7,8-HxCDF ^g	1.9x10 ⁻¹²	Е	339
		1,2,3,7,8,9-HxCDF ^g	8.4x10 ⁻¹²	Е	340
		Total HxCDF ^g	1.3x10 ⁻¹¹	Е	339-340
		1,2,3,4,6,7,8-HpCDF ^g	6.5x10 ⁻¹²	Е	339
		1,2,3,4,7,8,9-HpCDF ^g	2.7x10 ⁻¹²	Е	339
		Total HpCDF ^g	1.0x10 ⁻¹¹	Е	339-340
	39001-02-0		4.8x10 ⁻¹²	Е	339
		Total PCDF ^g	4.0x10 ⁻¹¹	Е	339-340
		Total PCDD/PCDF ^g	1.2x10 ⁻¹⁰	Е	339-340
				_	

		Pollutant	Emission	Emission	
Process	CASRN	Name	Factor, lb/ton	Factor Rating	Ref. No.
Fuel oil- or waste	H	Iazardous air pollutants ^c			
oil-fired dryer (uncontrolled)		Dioxins			
(SCC 3-05-002-58,	, Total HxCDD ^g		5.4x10 ⁻¹²	Е	340
-59,-60,-61,-62, -63)	35822-46-9	1,2,3,4,6,7,8-HpCDD ^g	3.4x10 ⁻¹¹	Е	340
,		Total HpCDD ^g	7.1x10 ⁻¹¹	Е	340
	3268-87-9	Octa CDD ^g	2.7x10 ⁻⁹	Е	340
		Total PCDD ^g	2.8x10 ⁻⁹	Е	340
		Furans			
		Total TCDF ^g	3.3x10 ⁻¹¹	Е	340
		Total PeCDF ^g	7.4x10 ⁻¹¹	Е	340
		1,2,3,4,7,8-HxCDF ^g	5.4x10 ⁻¹²	Е	340
		2,3,4,6,7,8-HxCDF ^g	1.6x10 ⁻¹²	Е	340
		Total HxCDF ^g	8.1x10 ⁻¹²	Е	340
Fuel oil- or waste		1,2,3,4,6,7,8-HpCDF ^g	1.1x10 ⁻¹¹	Е	340
oil-fired dryer (uncontrolled)		Total HpCDF ^g	3.8x10 ⁻¹¹	Е	340
(SCC 3-05-002-58,		Total PCDF ^g	1.5x10 ⁻¹⁰	Е	340
-59,-60,-61,-62, -63) (cont.)		Total PCDD/PCDF ^g	3.0x10 ⁻⁹	Е	340

Table 11.1-10 (cont.)

		Pollutant	Emission	Emission	
			Factor,	Factor	
Process	CASRN	Name	lb/ton	Rating	Ref. No.
Waste oil-fired dryer		Non-PAH HAPs ^c			
with fabric filter (SCC 3-05-002-61,	75-07-0	Acetaldehyde	0.0013	Е	25
-62,-63)	107-02-8	Acrolein	2.6x10 ⁻⁵	Е	25
	71-43-2	Benzene ^d	0.00039	Α	25,44,45,50,341,342, 344-351, 373, 376, 377, 383, 384
	100-41-4	Ethylbenzene	0.00024	D	25,44,45
	50-00-0	Formaldehyde ^e	0.0031	Α	25,35,44,45,50,339- 344,347-349,371-373, 384, 388
	110-54-3	Hexane	0.00092	Е	339-340
	540-84-1 Isooctane (2,2,4-trimethylpentane)		4.0x10 ⁻⁵	Е	339-340
	78-93-3	8-93-3 Methyl Ethyl Ketone		Е	25
	123-38-6	Propionaldehyde	0.00013	Е	25
	106-51-4	Quinone	0.00016	Е	25
	71-55-6	Methyl chloroform ^f	4.8x10 ⁻⁵	Е	35
	108-88-3	Toluene	0.0029	Е	25, 50, 339-340
	1330-20-7	Xylene	0.00020	D	25,44,45
		Total non-PAH HAPs	0.0095		
		PAH HAPs			
	91-57-6	2-Methylnaphthalene ^g	0.00017	Е	50
	83-32-9	Acenaphthene ^g	1.4x10 ⁻⁶	Е	48
	208-96-8	Acenaphthylene ^g	2.2x10 ⁻⁵	Е	50
	120-12-7	Anthracene ^g	3.1x10 ⁻⁶	Е	50,162
	56-55-3	Benzo(a)anthracene ^g	2.1x10 ⁻⁷	Е	48
	50-32-8	Benzo(a)pyrene ^g	9.8x10 ⁻⁹	Е	48
	205-99-2	Benzo(b)fluoranthene ^g	1.0x10 ⁻⁷	Е	35,48
	192-97-2	Benzo(e)pyrene ^g	1.1x10 ⁻⁷	Е	48
	191-24-2	Benzo(g,h,i)perylene ^g	4.0x10 ⁻⁸	Е	48

Table 11.1-10 (cont.)

		Pollutant	Emission	Emission	
Decose	CASRN	Name	Factor,	Factor	Ref. No.
Process Waste oil-fired dryer	207-08-9	Benzo(k)fluoranthene ^g	lb/ton 4.1x10 ⁻⁸	Rating E	35,48
with fabric filter	218-01-9	Chrysene ^g	1.8x10 ⁻⁷	E	35,48
(SCC 3-05-002-61, -62,-63) (cont.)	206-44-0	Fluoranthene ^g	6.1x10 ⁻⁷	D	35,45,48
	86-73-7	Fluorene ^g	1.1x10 ⁻⁵	E	50,164
	193-39-5	Indeno(1,2,3-cd)pyrene ^g	7.0x10 ⁻⁹	Е	48
	91-20-3	Naphthalene ^g	0.00065	D	25,50,162,164
	198-55-0	Perylene ^g	8.8x10 ⁻⁹	Е	48
	85-01-8	Phenanthrene ^g	2.3x10 ⁻⁵	D	50,162,164
	129-00-0	Pyrene ^g	3.0x10 ⁻⁶	Е	50
		Total PAH HAPs	0.00088		
		Total HAPs	0.010		
	No	I n-HAP organic compounds			
	67-64-1	Acetone ^f	0.00083	Е	25
	100-52-7	Benzaldehyde	0.00011	Е	25
	106-97-8	Butane	0.00067	Е	339
	78-84-2	Butyraldehyde	0.00016	Е	25
	4170-30-3	Crotonaldehyde	8.6x10 ⁻⁵	Е	25
	74-85-1	Ethylene	0.0070	Е	339, 340
	142-82-5	Heptane	0.0094	Е	339, 340
	66-25-1	Hexanal	0.00011	Е	25
	590-86-3	Isovaleraldehyde	3.2x10 ⁻⁵	Е	25
	763-29-1	2-Methyl-1-pentene	0.0040	Е	339, 340
	513-35-9	2-Methyl-2-butene	0.00058	Е	339, 340
	96-14-0 3-Methylpentane 109-67-1 1-Pentene		0.00019	D	339, 340
			0.0022	Е	339, 340
	109-66-0	n-Pentane	0.00021	Е	339, 340
	110-62-3	Valeraldehyde	6.7x10 ⁻⁵	Е	25
		Total non-HAP organics	0.026		

Table 11.1-10 (cont.)

^a Emission factor units are lb/ton of hot mix asphalt produced. Table includes data from both parallel flow and counterflow drum mix dryers. Organic compound emissions from counterflow systems are expected to be less than from parallel flow systems, but the available data are insufficient to quantify

Table 11.1-10 (cont.)

accurately the difference in these emissions. CASRN = Chemical Abstracts Service Registry Number. SCC = Source Classification Code. To convert from lb/ton to kg/Mg, multiply by 0.5.

- ^b Tests included dryers that were processing reclaimed asphalt pavement. Because of limited data, the effect of RAP processing on emissions could not be determined.
- ^c Hazardous air pollutants (HAP) as defined in the 1990 Clean Air Act Amendments (CAAA).
- ^d Based on data from 19 tests. Range: 0.000063 to 0.0012 lb/ton; median: 0.00030; Standard deviation: 0.00031.
- ^e Based on data from 21 tests. Range: 0.0030 to 0.014 lb/ton; median: 0.0020; Standard deviation: 0.0036.
- ^f Compound has negligible photochemical reactivity.
- ^g Compound is classified as polycyclic organic matter, as defined in the 1990 CAAA. Total PCDD is the sum of the total tetra through octa dioxins; total PCDF is sum of the total tetra through octa furans; and total PCDD/PCDF is the sum of total PCDD and total PCDF.

Table 11.1-12.EMISSION FACTORS FOR METAL EMISSIONSFROM DRUM MIX HOT MIX ASPHALT PLANTS^a

Process	Pollutant	Emission Factor, lb/ton	Emission Factor Rating	Reference Numbers
Fuel oil-fired dryer,	Arsenic ^b	1.3x10 ⁻⁶	Е	340
uncontrolled	Barium	0.00025	Е	340
(SCC 3-05-002-58,	Beryllium ^b	0.0	Е	340
-59,-60)	Cadmium ^b	4.2x10 ⁻⁶	Е	340
, ,	Chromium ^b	2.4x10 ⁻⁵	Е	340
	Cobalt ^b	1.5x10 ⁻⁵	Е	340
	Copper	0.00017	Е	340
	Lead ^b	0.00054	Е	340
	Manganese ^b	0.00065	Е	340
	Nickel ^b	0.0013	Е	340
	Phosphorus ^b	0.0012	Е	340
	Selenium ^b	2.4x10 ⁻⁶	Е	340
	Thallium	2.2x10 ⁻⁶	Е	340
	Zinc	0.00018	Е	340
Natural gas- or	Antimony	1.8x10 ⁻⁷	Е	339
propane-fired dryer,	Arsenic ^b	5.6x10 ⁻⁷	D	25, 35, 339-340
with fabric filter	Barium	5.8x10 ⁻⁶	Е	25, 339-340
(SCC 3-05-002-55,	Beryllium ^b	0.0	Е	339-340
-56,-57))	Cadmium ^b	4.1x10 ⁻⁷	D	25, 35, 162, 301, 339-340
, ,,	Chromium ^b	5.5x10 ⁻⁶	С	25, 162-164, 301, 339-340
	Cobalt ^b	2.6x10 ⁻⁸	Е	339-340
	Copper	3.1x10 ⁻⁶	D	25, 162-164, 339-340
	Hexavalent chromium ^b	4.5x10 ⁻⁷	Е	163
	Lead ^b	6.2x10 ⁻⁷	Е	35
	Manganese ^b	7.7x10 ⁻⁶	D	25, 162-164, 339-340
	Mercury ^b	2.4x10 ⁻⁷	Е	35, 163
	Nickel ^b	6.3x10 ⁻⁵	D	25, 163-164, 339-340
	Phosphorus ^b	2.8x10 ⁻⁵	Ē	25, 339-340
	Silver	4.8x10 ⁻⁷	Е	25, 339-340
	Selenium ^b	3.5x10 ⁻⁷	Ē	339-340
	Thallium	4.1x10 ⁻⁹	Е	339-340
	Zinc	6.1x10 ⁻⁵	С	25, 35, 162-164, 339-340

Process	Pollutant	Emission Factor, lb/ton	Emission Factor Rating	Reference Numbers
No. 2 fuel oil-fired	Antimony	1.8x10 ⁻⁷	Е	339
dryer or waste oil/drain	Arsenic ^b	5.6x10 ⁻⁷	D	25, 35, 339-340
oil/No. 6 fuel oil-fired	Barium	5.8x10 ⁻⁶	Е	25, 339-340
dryer, with fabric filter	Beryllium ^b	0.0	Е	339-340
(SCC 3-05-002-58,	Cadmium ^b	4.1x10 ⁻⁷	D	25, 35, 162, 301, 339-340
-59,-60,-61,-62,-63)	Chromium ^b	5.5x10 ⁻⁶	С	25, 162-164, 301, 339-340
	Cobalt ^b	2.6x10 ⁻⁸	Е	339-340
	Copper	3.1x10 ⁻⁶	D	25, 162-164, 339-340
	Hexavalent chromium ^b	4.5x10 ⁻⁷	Е	163
	Lead ^b	1.5x10 ⁻⁵	С	25, 162, 164, 178-179, 183, 301,
				315, 339-340
	Manganese ^b	7.7x10 ⁻⁶	D	25, 162-164, 339-340
	Mercury ^b	2.6x10 ⁻⁶	D	162, 164, 339-340
	Nickel ^b	6.3x10 ⁻⁵	D	25, 163-164, 339-340
	Phosphorus ^b	2.8x10 ⁻⁵	Е	25, 339-340
	Silver	4.8x10 ⁻⁷	Е	25, 339-340
	Selenium ^b	3.5x10 ⁻⁷	Е	339-340
	Thallium	4.1x10 ⁻⁹	Е	339-340
	Zinc	6.1x10 ⁻⁵	С	25, 35, 162-164, 339-340

Table 11.1-12 (cont.)

^a Emission factor units are lb/ton of HMA produced. SCC = Source Classification Code. To convert from lb/ton to kg/Mg, multiply by 0.5. Emission factors apply to facilities processing virgin aggregate or a combination of virgin aggregate and RAP.

^b Arsenic, beryllium, cadmium, chromium, hexavalent chromium, cobalt, lead, manganese, mercury, nickel, and selenium compounds are HAPs as defined in the 1990 CAAA. Elemental phosphorus also is a listed HAP, but the phosphorus measured by Method 29 is not elemental phosphorus.

Table 11.1-14.PREDICTIVE EMISSION FACTOR EQUATIONSFOR LOAD-OUT AND SILO FILLING OPERATIONS^a

Source	Pollutant	Equation
Drum mix or batch mix	Total PM ^b	$EF = 0.000181 + 0.00141(-V)e^{((0.0251)(T + 460) - 20.43)}$
plant load-out (SCC 3-05-002-14) Or	Organic PM ^c	$EF = 0.00141(-V)e^{((0.0251)(T + 460) - 20.43)}$
TOC ^d		$EF = 0.0172(-V)e^{((0.0251)(T + 460) - 20.43)}$
		$EF = 0.00558(-V)e^{((0.0251)(T + 460) - 20.43)}$
Silo filling	Total PM ^b	$EF = 0.000332 + 0.00105(-V)e^{((0.0251)(T + 460) - 20.43)}$
(SCC 3-05-002-13)	Organic PM ^c	$EF = 0.00105(-V)e^{((0.0251)(T + 460) - 20.43)}$
	TOC ^d	$EF = 0.0504(-V)e^{((0.0251)(T + 460) - 20.43)}$
	СО	$EF = 0.00488(-V)e^{((0.0251)(T + 460) - 20.43)}$

EMISSION FACTOR RATING: C

- ^a Emission factor units are lb/ton of HMA produced. SCC = Source Classification Code. To convert from lb/ton to kg/Mg, multiply by 0.5. EF = emission factor; V = asphalt volatility, as determined by ASTM Method D2872-88 "Effects of Heat and Air on a Moving Film of Asphalt (Rolling Thin Film Oven Test - RTFOT)," where a 0.5 percent loss-on-heating is expressed as "-0.5." Regional- or sitespecific data for asphalt volatility should be used, whenever possible; otherwise, a default value of -0.5 should be used for V in these equations. T = HMA mix temperature in °F. Site-specific temperature data should be used, whenever possible; otherwise a default temperature of 325°F can be used. Reference 1, Tables 4-27 through 4-31, 4-34 through 4-36, and 4-38 through 4-41.
- ^b Total PM, as measured by EPA Method 315 (EPA Method 5 plus the extractable organic particulate from the impingers). Total PM is assumed to be predominantly PM-2.5 since emissions consist of condensed vapors.
- ^c Extractable organic PM, as measured by EPA Method 315 (methylene chloride extract of EPA Method 5 particulate plus methylene chloride extract of impinger particulate).
- ^d TOC as propane, as measured with an EPA Method 25A sampling train or equivalent sampling train.

Table 11.1-15.SPECIATION PROFILES FOR LOAD-OUT, SILO FILLING, AND ASPHALTSTORAGE EMISSIONS-ORGANIC PARTICULATE-BASED COMPOUNDS

		Speciation Profile for Load-out and Yard Emissions ^b	Speciation Profile for Silo Filling and Asphalt Storage Tank Emissions
Pollutant	CASRN ^a	Compound/Organic PM ^c	Compound/Organic PM ^c
PAH HAPs			
Acenaphthene	83-32-9	0.26%	0.47%
Acenaphthylene	208-96-8	0.028%	0.014%
Anthracene	120-1207	0.070%	0.13%
Benzo(a)anthracene	56-55-3	0.019%	0.056%
Benzo(b)fluoranthene	205-99-2	0.0076%	ND^d
Benzo(k)fluoranthene	207-08-9	0.0022%	ND^d
Benzo(g,h,i)perylene	191-24-2	0.0019%	ND^d
Benzo(a)pyrene	50-32-8	0.0023%	ND^d
Benzo(e)pyrene	192-97-2	0.0078%	0.0095%
Chrysene	218-01-9	0.103%	0.21%
Dibenz(a,h)anthracene	53-70-3	0.00037%	ND^d
Fluoranthene	206-44-0	0.050%	0.15%
Fluorene	86-73-7	0.77%	1.01%
Indeno(1,2,3-cd)pyrene	193-39-5	0.00047%	ND^d
2-Methylnaphthalene	91-57-6	2.38%	5.27%
Naphthalene	91-20-3	1.25%	1.82%
Perylene	198-55-0	0.022%	0.030%
Phenanthrene	85-01-8	0.81%	1.80%
Pyrene	129-00-0	0.15%	0.44%
Total PAH HAPs		<mark>5.93%</mark>	<mark>11.40%</mark>
Other semi-volatile HAPs			
Phenol		1.18%	

EMISSION FACTOR RATING: C

 ^a Chemical Abstract Service Registry Number.
 ^b Emissions from loaded trucks during the period between load-out and the time the truck departs the plant.

^c Emission factor for compound is determined by multiplying the percentage presented for the compound by the emission factor for extractable organic particulate (organic PM) as determined from Table 11.1-14.

^d ND = Measured data below detection limits.

Table 11.1-16. SPECIATION PROFILES FOR LOAD-OUT, SILO FILLING, AND ASPHALT STORAGE EMISSIONS–ORGANIC VOLATILE-BASED COMPOUNDS

		Speciation Profile for Load-Out and Yard Emissions	Speciation Profile for Silo Filling and Asphalt Storage Tank Emissions
Pollutant	CASRN	Compound/TOC ^a	Compound/TOC (%) ^a
VOC ^b		94% ^b	100%
Non-VOC/non-HAPs			
Methane	74-82-8	6.5%	0.26%
Acetone	67-64-1	0.046%	0.055%
Ethylene	74-85-1	0.71%	1.1%
Total non-VOC/non-HAPS		7.3%	1.4%
Volatile organic HAPS			
Benzene	71-43-2	0.052%	0.032%
Bromomethane	74-83-9	0.0096%	0.0049%
2-Butanone	78-93-3	0.049%	0.039%
Carbon Disulfide	75-15-0	0.013%	0.016%
Chloroethane	75-00-3	0.00021%	0.0040%
Chloromethane	74-87-3	0.015%	0.023%
Cumene	92-82-8	0.11%	ND^{c}
Ethylbenzene	100-41-4	0.28%	0.038%
Formaldehyde	50-00-0	0.088%	0.69%
n-Hexane	100-54-3	0.15%	0.10%
Isooctane	540-84-1	0.0018%	0.00031%
Methylene Chloride	75-09-2	0.0% ^d	0.00027%
MTBE	596899	0.0% ^d	ND^{c}
Styrene	100-42-5	0.0073%	0.0054%
Tetrachloroethene	127-18-4	0.0077%	ND^{c}
Toluene	100-88-3	0.21%	0.062%
1,1,1-Trichloroethane	71-55-6	$0.0\%^{d}$	ND^{c}
Trichloroethene	79-01-6	0.0% ^d	ND ^c
Trichlorofluoromethane	75-69-4	0.0013%	ND ^c
m-/p-Xylene	1330-20-7	0.41%	0.2%
o-Xylene	95-47-6	0.08%	0.057%
Total volatile organic HAPs		1.5%	1.3%

EMISSION FACTOR RATING: C

Table 11.1-16 (cont.)

- ^a Emission factor for compound is determined by multiplying the percentage presented for the compound by the emission factor for total organic compounds (TOC) as determined from Table 11.1 ^b The base of the total organic compounds (TOC) as determined from Table 11.1-
- ^b The VOC percentages are equal to 100 percent of TOC minus the methane, acetone, methylene chloride, and 1,1,1-trichloroethane percentages.
- ^c ND = Measured data below detection limits. Additional compounds that were not detected are: acrylonitrile, allyl chloride, bromodichloromethane, bromoform, 1,3-butadiene, carbon tetrachloride, chlorobenzene, chloroform, dibromochloromethane, 1,2-dibromoethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroptene, 1,2-epoxybutane, ethyl acrylate, 2-hexanone, iodomethane, methyl methacrylate, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, vinyl acetate, vinyl bromide, and vinyl chloride
- ^d Values presented as 0.0% had background concentrations higher than the capture efficiency-corrected measured concentration.

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	EMISSION	Total	EMISSION	Total	EMISSION
	Particulate	FACTOR	PM-10	FACTOR	PM-2.5	FACTOR
	Matter ^{r,s}	RATING		RATING		RATING
Primary Crushing	ND		ND^{n}		ND^{n}	
(SCC 3-05-020-01)						
Primary Crushing (controlled)	ND		ND^n		ND^n	
(SCC 3-05-020-01)						
Secondary Crushing	ND		ND^{n}		ND^{n}	
(SCC 3-05-020-02)						
Secondary Crushing (controlled)	ND		ND^{n}		ND^{n}	
(SCC 3-05-020-02)						
Tertiary Crushing	0.0054^{d}	E	0.0024°	C	ND^{n}	
(SCC 3-050030-03)						
Tertiary Crushing (controlled)	0.0012 ^d	E	0.00054 ^p	С	0.00010 ^q	E
(SCC 3-05-020-03)		_				
Fines Crushing	0.0390 ^e	E	0.0150 ^e	E	ND	
(SCC 3-05-020-05)	f	_	a a a c a f			_
Fines Crushing (controlled)	$0.0030^{\rm f}$	E	0.0012 ^f	Е	0.000070 ^q	E
(SCC 3-05-020-05)	0	_		~		
Screening	0.025 ^c	E	0.0087^{1}	С	ND	
(SCC 3-05-020-02, 03)	e eeed		0.000 - (m	~	0.000.000	
Screening (controlled)	0.0022 ^d	Е	0.00074 ^m	C	0.000050 ^q	E
(SCC 3-05-020-02, 03)	0.005		0.0729			
Fines Screening	0.30 ^g	E	0.072 ^g	E	ND	
(SCC 3-05-020-21)	0.002 (%	Б	0.0000	F	ND	
Fines Screening (controlled)	0.0036 ^g	E	0.0022 ^g	Е	ND	
(SCC 3-05-020-21)	o oozoh	Б	0.00110	D	ND	
Conveyor Transfer Point (SCC 3-05-020-06)	0.0030 ^h	E	0.00110 ^h	D	ND	
	0.00014 ⁱ	E	4.6 x 10 ⁻⁵ⁱ	D	1.3 x 10 ^{-5q}	Е
Conveyor Transfer Point (controlled) (SCC 3-05-020-06)	0.00014	E	4.6 X 10	D	1.5 X 10 ⁻¹	E
Wet Drilling - Unfragmented Stone	ND		8.0 x 10 ^{-5j}	Е	ND	
(SCC 3-05-020-10)	ND		8.0 X 10 °	E	ND	
Truck Unloading -Fragmented Stone	ND		1.6 x 10 ^{-5j}	Е	ND	
(SCC 3-05-020-31)			1.0 A 10		ПD	
Truck Unloading - Conveyor, crushed	ND		0.00010 ^k	Е	ND	
stone (SCC 3-05-020-32)			0.00010		пр	

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
- 1. 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

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- 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.

1.3 Fuel Oil Combustion

1.3.1 General¹⁻³

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 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 Practices⁴

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.

	so	$\mathbf{D}_2^{\mathbf{b}}$	SC	D_3^{c}	NC	D_x^{d}	С	O ^e	Filterab	e PM ^f
Firing Configuration (SCC) ^a	Emission Factor (lb/10 ³ gal)	EMISSION FACTOR RATING								
Boilers < 100 Million Btu/hr No. 6 oil fired (1-02-004-02/03) (1-03-004-02/03)	1578	А	28	А	55	A	5	A	9.19(S)+3.22 ⁱ	В
No. 5 oil fired (1-03-004-04)	157S	А	2S	А	55	А	5	А	10 ⁱ	А
No. 4 oil fired (1-03-005-04)	150S	А	28	А	20	А	5	А	7	В
Distillate oil fired (1-02-005-02/03) (1-03-005-02/03)	1428	А	2S	А	20	А	5	А	2	А
Residential furnace (A2104004/A2104011)	142S	А	28	А	18	А	5	А	0.4 ^g	В

Table 1.3-1. (cont.)

a To convert from lb/103 gal to kg/103 L, multiply by 0.120. SCC = Source Classification Code.

b References 1-2,6-9,14,56-60. S indicates that the weight % of sulfur in the oil should be multiplied by the value given. For example, if the fuel is 1% sulfur, then S = 1.

c References 1-2,6-8,16,57-60. S indicates that the weight % of sulfur in the oil should be multiplied by the value given. For example, if the fuel is 1% sulfur, then S = 1.

d References 6-7,15,19,22,56-62. Expressed as NO2. Test results indicate that at least 95% by weight of NOx is NO for all boiler types except residential furnaces, where about 75% is NO. For utility vertical fired boilers use 105 lb/103 gal at full load and normal (>15%) excess air. Nitrogen oxides emissions from residual oil combustion in industrial and commercial boilers are related to fuel nitrogen content, estimated by the following empirical relationship: lb NO2 /103 gal = 20.54 + 104.39(N), where N is the weight % of nitrogen in the oil. For example, if the fuel is 1% nitrogen, then N = 1.

e References 6-8,14,17-19,56-61. CO emissions may increase by factors of 10 to 100 if the unit is improperly operated or not well maintained.

f References 6-8,10,13-15,56-60,62-63. Filterable PM is that particulate collected on or prior to the filter of an EPA Method 5 (or equivalent) sampling train. Particulate emission factors for residual oil combustion are, on average, a function of fuel oil sulfur content where S is the weight % of sulfur in oil. For example, if fuel oil is 1% sulfur, then S = 1.

g Based on data from new burner designs. Pre-1970's burner designs may emit filterable PM as high as 3.0 1b/103 gal.

h The SO2 emission factor for both no. 2 oil fired and for no. 2 oil fired with LNB/FGR, is 142S, not 157S. Errata dated April 28, 2000. Section corrected May 2010.

i The PM factors for No.6 and No. 5 fuel were reversed. Errata dated April 28, 2000. Section corrected May 2010.

1.3-12

Table 1.3-2. CONDENSABLE PARTICULATE MATTER EMISSION FACTORS FOR OIL COMBUSTION^a

		CPM - TOT ^{c, d}		CPM - IC)R ^{c, d}	CPM - ORG ^{c, d}		
Firing Configuration ^b (SCC)	Controls	Emission Factor (lb/10 ³ gal)	EMISSION FACTOR RATING	Emission Factor (lb/10 ³ gal)	EMISSION FACTOR RATING	Emission Factor (lb/10 ³ gal)	EMISSION FACTOR RATING	
No. 2 oil fired (1-01-005-01, 1- 02-005-01, 1-03- 005-01)	All controls, or uncontrolled	1.3 ^{d, e}	D	65% of CPM- TOT emission factor ^c	D	35% of CPM-TOT emission factor ^c	D	
No. 6 oil fired (1- 01-004-01/04, 1- 02-004-01, 1-03- 004-01)	All controls, or uncontrolled	1.5 ^f	D	85% of CPM- TOT emission factor ^d	Е	15% of CPM-TOT emission factor ^d	E	

^a All condensable PM is assumed to be less than 1.0 micron in diameter.
^b No data are available for numbers 3, 4, and 5 oil. For number 3 oil, use the factors provided for number 2 oil. For numbers 4 and 5 oil, use the factors provided for number 6 oil.

^c CPM-TOT = total condensable particulate matter.
 CPM-IOR = inorganic condensable particulate matter.

CPM-ORG = organic condensable particulate matter.^d To convert to lb/MMBtu of No. 2 oil, divide by 140 MMBtu/10³ gal. To convert to lb/MMBtu of No. 6 oil, divide by 150 MMBtu/10³ gal.

^e References: 76-78.

^f References: 79-82.

Table 1.3-3. EMISSION FACTORS FOR TOTAL ORGANIC COMPOUNDS (TOC), METHANE, AND NONMETHANE TOC (NMTOC) FROM UNCONTROLLED FUEL OIL COMBUSTION^a

Firing Configuration (SCC)	TOC ^b Emission Factor (lb/10 ³ gal)	Methane ^b Emission Factor (lb/10 ³ gal)	NMTOC ^b Emission Factor (lb/10 ³ gal)
Utility boilers			
No. 6 oil fired, normal firing (1-01-004-01)	1.04	0.28	0.76
No. 6 oil fired, tangential firing (1-01-004-04)	1.04	0.28	0.76
No. 5 oil fired, normal firing (1-01-004-05)	1.04	0.28	0.76
No. 5 oil fired, tangential firing (1-01-004-06)	1.04	0.28	0.76
No. 4 oil fired, normal firing (1-01-005-04)	1.04	0.28	0.76
No. 4 oil fired, tangential firing (1-01-005-05)	1.04	0.28	0.76
Industrial boilers			
No. 6 oil fired (1-02-004-01/02/03)	1.28	1.00	0.28
No. 5 oil fired (1-02-004-04)	1.28	1.00	0.28
Distillate oil fired (1-02-005-01/02/03)	0.252	0.052	0.2
No. 4 oil fired (1-02-005-04)	0.252	0.052	0.2
Commercial/institutional/residential combustors			
No. 6 oil fired (1-03-004-01/02/03)	1.605	0.475	1.13
No. 5 oil fired (1-03-004-04)	1.605	0.475	1.13
Distillate oil fired (1-03-005-01/02/03)	0.556	0.216	0.34
No. 4 oil fired (1-03-005-04)	0.556	0.216	0.34
Residential furnace (A2104004/A2104011) a To convert from lb/103 gal to kg/103 L, multiply b	2.493	1.78	0.713

EMISSION FACTOR RATING: A

a To convert from lb/103 gal to kg/103 L, multiply by 0.12. SCC = Source Classification Code.

b References 29-32. Volatile organic compound emissions can increase by several orders of magnitude if the boiler is improperly operated or is not well maintained.

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

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

^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/10³ gal to kg/10³ 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 DISTILLATEFUEL OIL COMBUSTION SOURCES^a

EMISSION FACTOR RATING: E

Firing Configuration	Emission Factor (lb/10 ¹² Btu)										
(SCC)	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	б	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/10¹² Btu to pg/J, multiply by 0.43.

13.2.1 Paved Roads

13.2.1.1 General

Particulate emissions occur whenever vehicles travel over a paved surface such as a road or parking lot. Particulate emissions from paved roads are due to direct emissions from vehicles in the form of exhaust, brake wear and tire wear emissions and resuspension of loose material on the road surface. In general terms, resuspended particulate emissions from paved roads originate from, and result in the depletion of, the loose material present on the surface (i.e., the surface loading). In turn, that surface loading is continuously replenished by other sources. At industrial sites, surface loading is replenished by spillage of material and trackout from unpaved roads and staging areas. Figure 13.2.1-1 illustrates several transfer processes occurring on public streets.

Various field studies have found that public streets and highways, as well as roadways at industrial facilities, can be major sources of the atmospheric particulate matter within an area.¹⁻⁹ Of particular interest in many parts of the United States are the increased levels of emissions from public paved roads when the equilibrium between deposition and removal processes is upset. This situation can occur for various reasons, including application of granular materials for snow and ice control, mud/dirt carryout from construction activities in the area, and deposition from wind and/or water erosion of surrounding unstabilized areas. In the absence of continuous addition of fresh material (through localized track out or application of antiskid material), paved road surface loading should reach an equilibrium value in which the amount of material resuspended matches the amount replenished. The equilibrium surface loading value depends upon numerous factors. It is believed that the most important factors are: mean speed of vehicles traveling the road; the average daily traffic (ADT); the number of lanes and ADT per lane; the fraction of heavy vehicles (buses and trucks); and the presence/absence of curbs, storm sewers and parking lanes.¹⁰

The particulate emission factors presented in a previous version of this section of AP-42, dated October 2002, implicitly included the emissions from vehicles in the form of exhaust, brake wear, and tire wear as well as resuspended road surface material. EPA included these sources in the emission factor equation for paved roads 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 paved road emission factor equation only estimates particulate emissions from resuspended road surface material²⁸. The particulate emissions from vehicle exhaust, brake wear, and tire wear are now estimated separately using EPA's MOVES ²⁹ model. 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 MOVES to estimate particulate emissions from vehicle traffic on paved roads. It also incorporates the decrease in exhaust emissions that has occurred since the paved road emission factor equation was developed. Earlier versions of the paved 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.

13.2.1.3 Predictive Emission Factor Equations^{10,29}

The quantity of particulate emissions from resuspension of loose material on the road surface due to vehicle travel on a dry paved road may be estimated using the following empirical expression:

$$E = k (sL)^{0.91} \times (W)^{1.02}$$
(1)

where: E = particulate emission factor (having units matching the units of k),

k = particle size multiplier for particle size range and units of interest (see below),

sL = road surface silt loading (grams per square meter) (g/m²), and

W = average weight (tons) of the vehicles traveling the road.

It is important to note that Equation 1 calls for the average weight of all vehicles traveling the road. For example, if 99 percent of traffic on the road are 2 ton cars/trucks while the remaining 1 percent consists of 20 ton trucks, then the mean weight "W" is 2.2 tons. More specifically, Equation 1 is *not* intended to be used to calculate a separate emission factor for each vehicle weight class. Instead, only one emission factor should be calculated to represent the "fleet" average weight of all vehicles traveling the road.

The particle size multiplier (k) above varies with aerodynamic size range as shown in Table 13.2.1-1. To determine particulate emissions for a specific particle size range, use the appropriate value of k shown in Table 13.2.1-1.

To obtain the total emissions factor, the emission factors for the exhaust, brake wear and tire wear obtained from either EPA's MOBILE6.2²⁷ or MOVES2010²⁹ model should be added to the emissions factor calculated from the empirical equation.

Size range ^a	Particle Size Multiplier k ^b					
	g/VKT	g/VMT	lb/VMT			
PM-2.5 ^c	0.15	0.25	0.00054			
PM-10	0.62	1.00	0.0022			
PM-15	0.77	1.23	0.0027			
PM-30 ^d	3.23	5.24	0.011			

Table 13.2.1-1. PARTICLE SIZE MULTIPLIERS FOR PAVED ROAD EQUATION

^a Refers to airborne particulate matter (PM-x) with an aerodynamic diameter equal to or less than x micrometers

^b Units shown are grams per vehicle kilometer traveled (g/VKT), grams per vehicle mile traveled (g/VMT), and pounds per vehicle mile traveled (lb/VMT). The multiplier k includes unit conversions to produce emission factors in the units shown for the indicated size range from the mixed units required in Equation 1.

^c The k-factors for $PM_{2.5}$ were based on the average $PM_{2.5}$: PM_{10} ratio of test runs in Reference 30.

^d PM-30 is sometimes termed "suspendable particulate" (SP) and is often used as a surrogate for TSP.

Equation 1 is based on a regression analysis of 83 tests for PM-10.^{3, 5-6, 8, 27-29, 31-36} Sources tested include public paved roads, as well as controlled and uncontrolled industrial paved roads. The majority of tests involved freely flowing vehicles traveling at constant speed on relatively level roads. However, 22 tests of slow moving or "stop-and-go" traffic or vehicles under load were available for inclusion in the data base.³²⁻³⁶ Engine exhaust, tire wear and break wear were subtracted from the emissions measured in the test programs prior to stepwise regression to determine Equation 1.^{37, 39} The equations retain the quality rating of A (D for PM-2.5), if applied within the range of source conditions that were tested in developing the equation as follows:

Silt loading:	0.03 - 400 g/m ² 0.04 - 570 grains/square foot (ft ²)
Mean vehicle weight:	1.8 - 38 megagrams (Mg) 2.0 - 42 tons
Mean vehicle speed:	1 - 88 kilometers per hour (kph) 1 - 55 miles per hour (mph)

The upper and lower 95% confidence levels of equation 1 for PM_{10} is best described with equations using an exponents of 1.14 and 0.677 for silt loading and an exponents of 1.19 and 0.85 for weight. Users are cautioned that application of equation 1 outside of the range of variables and operating conditions specified above, e.g., application to roadways or road networks with speeds above 55 mph and average vehicle weights of 42 tons, will result in emission estimates with a higher level of uncertainty. In these situations, users are encouraged to consider an assessment of the impacts of the influence of extrapolation to the overall emissions and alternative methods that are equally or more plausible in light of local emissions data and/or ambient concentration or compositional data.

To retain the quality rating for the emission factor equation when it is applied to a specific paved road, it is necessary that reliable correction parameter values for the specific road in question be determined. With the exception of limited access roadways, which are difficult to sample, the collection and use of site-specific silt loading (sL) data for public paved road emission inventories are strongly recommended. The field and laboratory procedures for determining surface material silt content and surface dust loading are summarized in Appendices C.1 and C.2. In the event that site-specific values cannot be obtained, an appropriate value for a paved public road may be selected from the values in Table 13.2.1-2, but the quality rating of the equation should be reduced by 2 levels.

Equation 1 may be extrapolated to average uncontrolled conditions (but including natural mitigation) under the simplifying assumption that annual (or other long-term) average emissions are inversely proportional to the frequency of measurable (> 0.254 mm [0.01 inch]) precipitation by application of a precipitation correction term. The precipitation correction term can be applied on a daily or an hourly basis $^{26, 38}$.

For the daily basis, Equation 1 becomes:

$$E_{ext} = [k (sL)^{0.91} \times (W)^{1.02}] (1 - P/4N)$$
(2)

where k, sL, W, and S are as defined in Equation 1 and

 E_{ext} = annual or other long-term average emission factor in the same units as k,

P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period, and

N = number of days in the averaging period (e.g., 365 for annual, 91 for seasonal, 30 for monthly).

Note that the assumption leading to Equation 2 is based on analogy with the approach used to develop long-term average unpaved road emission factors in Section 13.2.2. However, Equation 2 above incorporates an additional factor of "4" in the denominator to account for the fact that paved roads dry more quickly than unpaved roads and that the precipitation may not occur over the complete 24-hour day.

For the hourly basis, equation 1 becomes:

$$E_{ext} = [k (sL)^{0.91} \times (W)^{1.02}] (1 - 1.2P/N)$$
(3)

where k, sL, W, and S are as defined in Equation 1 and

- E_{ext} = annual or other long-term average emission factor in the same units as k,
- P = number of hours with at least 0.254 mm (0.01 in) of precipitation during the averaging period, and

$$N$$
 = number of hours in the averaging period (e.g., 8760 for annual, 2124 for season 720 for monthly)

Note: In the hourly moisture correction term (1-1.2P/N) for equation 3, the 1.2 multiplier is applied to account for the residual mitigative effect of moisture. For most applications, this equation will produce satisfactory results. Users should select a time interval to include sufficient "dry" hours such that a reasonable emissions averaging period is evaluated. For the special case where this equation is used to calculate emissions on an hour by hour basis, such as would be done in some emissions modeling situations, the moisture correction term should be modified so that the moisture correction "credit" is applied to the first hours following cessation of precipitation. In this special case, it is suggested that this 20% "credit" be applied on a basis of one hour credit for each hour of precipitation up to a maximum of 12 hours.

Note that the assumption leading to Equation 3 is based on analogy with the approach used to develop long-term average unpaved road emission factors in Section 13.2.2.

Figure 13.2.1-2 presents the geographical distribution of "wet" days on an annual basis for the United States. Maps showing this information on a monthly basis are available in the *Climatic Atlas of the United States*²³. Alternative sources include other Department of Commerce publications (such as local climatological data summaries). The National Climatic Data Center (NCDC) offers several products that provide hourly precipitation data. In particular, NCDC offers *Solar and Meteorological Surface Observation Network 1961-1990* (SAMSON) CD-ROM, which contains 30 years worth of hourly meteorological data for first-order National Weather Service locations. Whatever meteorological data are used, the source of that data and the averaging period should be clearly specified.

It is emphasized that the simple assumption underlying Equations 2 and 3 has not been verified in any rigorous manner. For that reason, the quality ratings for Equations 2 and 3 should be downgraded one letter from the rating that would be applied to Equation 1.

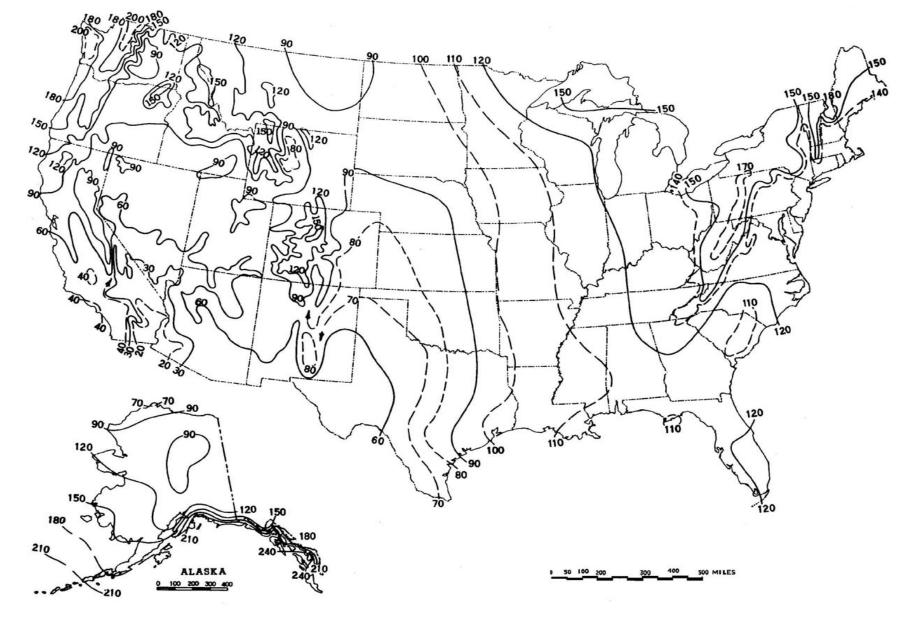


Figure 13.2.1-2. Mean number of days with 0.01 inch or more of precipitation in the United States.

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Miscellaneous Sources

Table 13.2.1-2 presents recommended default silt loadings for normal baseline conditions and for wintertime baseline conditions in areas that experience frozen precipitation with periodic application of antiskid material²⁴. The winter baseline is represented as a multiple of the non-winter baseline, depending on the ADT value for the road in question. As shown, a multiplier of 4 is applied for low volume roads (< 500 ADT) to obtain a wintertime baseline silt loading of 4 X $0.6 = 2.4 \text{ g/m}^2$.

ADT Category	< 500	500-5,000	5,000-10,000	> 10,000
Ubiquitous Baseline g/m ²	0.6	0.2	0.06	0.03 0.015 limited access
Ubiquitous Winter Baseline Multiplier during months with frozen precipitation	X4	X3	X2	X1
Initial peak additive contribution from application of antiskid abrasive (g/m^2)	2	2	2	2
Days to return to baseline conditions (assume linear decay)	7	3	1	0.5

Table 13.2.1-2. Ubiquitous Silt Loading Default Values with Hot Spot Contributions from Anti-Skid Abrasives (g/m²)

It is suggested that an additional (but temporary) silt loading contribution of 2 g/m² occurs with each application of antiskid abrasive for snow/ice control. This was determined based on a typical application rate of 500 lb per lane mile and an initial silt content of 1 % silt content. Ordinary rock salt and other chemical deicers add little to the silt loading, because most of the chemical dissolves during the snow/ice melting process.

To adjust the baseline silt loadings for mud/dirt trackout, the number of trackout points is required. It is recommended that in calculating PM_{10} emissions, six additional miles of road be added for each active trackout point from an active construction site, to the paved road mileage of the specified category within the county. In calculating $PM_{2.5}$ emissions, it is recommended that three additional miles of road be added for each trackout point from an active construction site.

It is suggested the number of trackout points for activities other than road and building construction areas be related to land use. For example, in rural farming areas, each mile of paved road would have a specified number of trackout points at intersections with unpaved roads. This value could be estimated from the unpaved road density (mi/sq. mi.).

The use of a default value from Table 13.2.1-2 should be expected to yield only an orderof-magnitude estimate of the emission factor. Public paved road silt loadings are dependent

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 $[\mu m]$ 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.

Table 13.2.4-1. TYPICAL SILT AND MOISTURE CONTENTS OF MATERIALS AT VARIOUS INDUSTRIES^a

			Silt	Content (%)	Moist	ure Content	(%)
	No. Of		No. Of			No. Of		
Industry	Facilities	Material	Samples	Range	Mean	Samples	Range	Mean
Iron and steel production	9	Pellet ore	13	1.3 - 13	4.3	11	0.64 - 4.0	2.2
		Lump ore	9	2.8 - 19	9.5	6	1.6 - 8.0	5.4
		Coal	12	2.0 - 7.7	4.6	11	2.8 - 11	4.8
		Slag	3	3.0 - 7.3	5.3	3	0.25 - 2.0	0.92
		Flue dust	3	2.7 - 23	13	1		7
		Coke breeze	2	4.4 - 5.4	4.9	2	6.4 - 9.2	7.8
		Blended ore	1		15	1		6.6
		Sinter	1		0.7	0		
		Limestone	3	0.4 - 2.3	1.0	2	ND	0.2
Stone quarrying and processing	2	Crushed limestone	2	1.3 - 1.9	1.6	2	0.3 - 1.1	0.7
		Various limestone products	8	0.8 - 14	3.9	8	0.46 - 5.0	2.1
Taconite mining and processing	1	Pellets	9	2.2 - 5.4	3.4	7	0.05 - 2.0	0.9
		Tailings	2	ND	11	1		0.4
Western surface coal mining	4	Coal	15	3.4 - 16	6.2	7	2.8 - 20	6.9
		Overburden	15	3.8 - 15	7.5	0		
		Exposed ground	3	5.1 - 21	15	3	0.8 - 6.4	3.4
Coal-fired power plant	1	Coal (as received)	60	0.6 - 4.8	2.2	59	2.7 - 7.4	4.5
Municipal solid waste landfills	4	Sand	1		2.6	1		7.4
		Slag	2	3.0 - 4.7	3.8	2	2.3 - 4.9	3.6
		Cover	5	5.0 - 16	9.0	5	8.9 - 16	12
		Clay/dirt mix	1		9.2	1	—	14
		Clay	2	4.5 - 7.4	6.0	2	8.9 - 11	10
		Fly ash	4	78 - 81	80	4	26 - 29	27
		Misc. fill materials	1		12	1		11

^a References 1-10. ND = no data.

13.2.4.3 Predictive Emission Factor Equations

Total dust emissions from aggregate storage piles result from several distinct source activities within the storage cycle:

- 1. Loading of aggregate onto storage piles (batch or continuous drop operations).

- Equipment traffic in storage area.
 Wind erosion of pile surfaces and ground areas around piles.
 Loadout of aggregate for shipment or for return to the process stream (batch or continuous drop operations).

Either adding aggregate material to a storage pile or removing it usually involves dropping the material onto a receiving surface. Truck dumping on the pile or loading out from the pile to a truck with a front-end loader are examples of batch drop operations. Adding material to the pile by a conveyor stacker is an example of a continuous drop operation.

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

$$E = k(0.0016) \qquad \frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (kg/megagram [Mg])}$$
$$E = k(0.0032) \qquad \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (pound [lb]/ton)}$$

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 Part	icle Size Multiplier (k) For Equation 1	
$< 30 \ \mu m$	$< 15 \ \mu m$	$< 10 \ \mu m$	$< 5 \ \mu m$	$< 2.5 \ \mu m$
0.74	0.48	0.35	0.20	0.053ª

^a Multiplier for $< 2.5 \mu m$ 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 Contont	Maisture Contout	Wind	Speed					
Silt Content (%)	Moisture Content (%)	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

(1)

correction parameters cannot be obtained, the appropriate mean from Table 13.2.4-1 may be used, but the quality rating of the equation is reduced by 1 letter.

For emissions from equipment traffic (trucks, front-end loaders, dozers, etc.) traveling between or on piles, it is recommended that the equations for vehicle traffic on unpaved surfaces be used (see Section 13.2.2). For vehicle travel between storage piles, the silt value(s) for the areas among the piles (which may differ from the silt values for the stored materials) should be used.

Worst-case emissions from storage pile areas occur under dry, windy conditions. Worst-case emissions from materials-handling operations may be calculated by substituting into the equation appropriate values for aggregate material moisture content and for anticipated wind speeds during the worst case averaging period, usually 24 hours. The treatment of dry conditions for Section 13.2.2, vehicle traffic, "Unpaved Roads", follows the methodology described in that section centering on parameter p. A separate set of nonclimatic correction parameters and source extent values corresponding to higher than normal storage pile activity also may be justified for the worst-case averaging period.

13.2.4.4 Controls¹²⁻¹³

Watering and the use of chemical wetting agents are the principal means for control of aggregate storage pile emissions. Enclosure or covering of inactive piles to reduce wind erosion can also reduce emissions. Watering is useful mainly to reduce emissions from vehicle traffic in the storage pile area. Watering of the storage piles themselves typically has only a very temporary slight effect on total emissions. A much more effective technique is to apply chemical agents (such as surfactants) that permit more extensive wetting. Continuous chemical treating of material loaded onto piles, coupled with watering or treatment of roadways, can reduce total particulate emissions from aggregate storage operations by up to 90 percent.¹²

References For Section 13.2.4

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- 4. *Evaluation Of Open Dust Sources In The Vicinity Of Buffalo, New York*, EPA Contract No. 68-02-2545, Midwest Research Institute, Kansas City, MO, March 1979.
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- 7. *Improved Emission Factors For Fugitive Dust From Western Surface Coal Mining Sources*, 2 Volumes, EPA Contract No. 68-03-2924, PEDCo Environmental, Kansas City, MO, and Midwest Research Institute, Kansas City, MO, July 1981.
- 8. Determination Of Fugitive Coal Dust Emissions From Rotary Railcar Dumping, TRC, Hartford, CT, May 1984.
- 9. *PM-10 Emission Inventory Of Landfills In the Lake Calumet Area*, EPA Contract No. 68-02-3891, Midwest Research Institute, Kansas City, MO, September 1987.

- 10. *Chicago Area Particulate Matter Emission Inventory Sampling And Analysis*, EPA Contract No. 68-02-4395, Midwest Research Institute, Kansas City, MO, May 1988.
- 11. *Update Of Fugitive Dust Emission Factors In AP-42 Section 11.2*, EPA Contract No. 68-02-3891, Midwest Research Institute, Kansas City, MO, July 1987.
- 12. G. A. Jutze, *et al.*, *Investigation Of Fugitive Dust Sources Emissions And Control*, EPA-450/3-74-036a, U. S. Environmental Protection Agency, Research Triangle Park, NC, June 1974.
- 13. C. Cowherd, Jr., *et al., Control Of Open Fugitive Dust Sources*, EPA-450/3-88-008, U. S. Environmental Protection Agency, Research Triangle Park, NC, September 1988.
- 14. C. Cowherd, *Background Document for Revisions to Fine Fraction Ratios &sed for AP-42 Fugitive Dust Emission Factors.* Prepared by Midwest Research Institute for Western Governors Association, Western Regional Air Partnership, Denver, CO, February 1, 2006.

AVERAGE WIND SPEED - MPH

STATION	ID Years	Jan	Feb	Mar	Apr	Мау	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	j <mark>7.0</mark>
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	КНОВ 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	б.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

TANKS 4.0.9d Emissions Report - Detail Format Tank Identification and Physical Characteristics

Identification	
User Identification:	C&EGamerco
City:	Albuquerque
State:	New Mexico
Company:	C&E Concrete, Inc
Type of Tank:	Horizontal Tank
Description:	C&E Gamerco HMA Tank #1
Tank Dimensions	
Shell Length (ft):	54.00
Diameter (ft):	8.00
Volume (gallons):	20,000.00
Turnovers:	162.69
Net Throughput(gal/yr):	3,253,800.00
Is Tank Heated (y/n):	Y
Is Tank Underground (y/n):	Ν
Paint Characteristics	
Shell Color/Shade:	Aluminum/Diffuse
Shell Condition	Good
Breather Vent Settings	
Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00
Meterological Data used in Emission	ns Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d Emissions Report - Detail Format Liquid Contents of Storage Tank

C&EGamerco - Horizontal Tank Albuquerque, New Mexico

			aily Liquid S perature (d		Liquid Bulk Temp	Vapo	or Pressure	(psia)	Vapor Mol.	Liquid Mass	Vapor Mass	Mol.	Basis for Vapor Pressure
Mixture/Component	Month	n Avg.	Min.	Max.	(deg F)	Avg.	Min.	Max.	Weight.	Fract.	Fract.	Weight	Calculations
Asphalt Cement	All	350.00	350.00	350.00	350.00	0.0347	0.0347	0.0347	105.0000			1,000.00	Option 3: A=75350.06, B=9.00346

TANKS 4.0.9d Emissions Report - Detail Format Detail Calculations (AP-42)

C&EGamerco - Horizontal Tank Albuquerque, New Mexico

Standing Losses (lb):	0.0000	
Vapor Space Volume (cu ft):	1,728.8765	
Vapor Density (lb/cu ft):	0.0004	
Vapor Space Expansion Factor:	0.0000	
Vented Vapor Saturation Factor:	0.9927	
Vented Vapor Saturation ractor.	0.3321	
Tank Vapor Space Volume:		
Vapor Space Volume (cu ft):	1,728.8765	
Tank Diameter (ft):	8.0000	
Effective Diameter (ft):	23.4589	
Vapor Space Outage (ft):	4.0000	
Tank Shell Length (ft):	54.0000	
√apor Density		
Vapor Density (lb/cu ft):	0.0004	
Vapor Molecular Weight (lb/lb-mole):	105.0000	
	105.0000	
Vapor Pressure at Daily Average Liquid	0.0347	
Surface Temperature (psia):	0.0347	
Daily Avg. Liquid Surface Temp. (deg. R):	809.6700	
Daily Average Ambient Temp. (deg. F):	56.1542	
Ideal Gas Constant R		
(psia cuft / (lb-mol-deg R)):	10.731	
Liquid Bulk Temperature (deg. R):	809.6700	
Tank Paint Solar Absorptance (Shell):	0.6000	
Daily Total Solar Insulation		
Factor (Btu/sqft day):	1,765.3167	
Vapor Space Expansion Factor		
Vapor Space Expansion Factor:	0.0000	
Daily Vapor Temperature Range (deg. R):	0.0000	
Daily Vapor Pressure Range (psia):	0.0000	
Breather Vent Press. Setting Range(psia):	0.0000	
Vapor Pressure at Daily Average Liquid		
Surface Temperature (psia):	0.0347	
Vapor Pressure at Daily Minimum Liquid		
Surface Temperature (psia):	0.0347	
Vapor Pressure at Daily Maximum Liquid		
Surface Temperature (psia):	0.0347	
Daily Avg. Liquid Surface Temp. (deg R):	809.6700	
Daily Min. Liquid Surface Temp. (deg R):	809.6700	
Daily Max. Liquid Surface Temp. (deg R):	809.6700	
Daily Ambient Temp. Range (deg. R):	27.9250	
Vented Vener Seturation Faster		
Vented Vapor Saturation Factor	0.9927	
Vented Vapor Saturation Factor:	0.9927	
Vapor Pressure at Daily Average Liquid:		
Surface Temperature (psia):	0.0347	
Vapor Space Outage (ft):	4.0000	
Working Losses (lb):	99.1679	
Vapor Molecular Weight (lb/lb-mole):	105.0000	
Vapor Pressure at Daily Average Liquid		
Surface Temperature (psia):	0.0347	
Annual Net Throughput (gal/yr.):	3,253,800.0000	
Annual Turnovers:	162.6900	
Turnover Factor:	0.3511	
Tank Diameter (ft):	8.0000	
	1.0000	
Working Loss Product Factor:	1.0000	

TANKS 4.0.9d Emissions Report - Detail Format Individual Tank Emission Totals

Emissions Report for: Annual

C&EGamerco - Horizontal Tank Albuquerque, New Mexico

		Losses(lbs)	
Components	Working Loss	Breathing Loss	Total Emissions
Asphalt Cement	99.17	0.00	99.17

TANKS 4.0.9d Emissions Report - Detail Format Tank Identification and Physical Characteristics

Identification	
User Identification:	C&EGamerco2
City:	Albuquerque
State:	New Mexico
Company:	C&E Concrete, Inc
Type of Tank:	Horizontal Tank
Description:	C&E Gamerco HMA Tank #2
Tank Dimensions	
Shell Length (ft):	54.00
Diameter (ft):	8.00
Volume (gallons):	20,000.00
Turnovers:	162.69
Net Throughput(gal/yr):	3,253,800.00
Is Tank Heated (y/n):	Y
Is Tank Underground (y/n):	Ν
Paint Characteristics	
Shell Color/Shade:	Aluminum/Diffuse
Shell Condition	Good
Breather Vent Settings	
Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00
Meterological Data used in Emission	ns Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)
	······································

TANKS 4.0.9d Emissions Report - Detail Format Liquid Contents of Storage Tank

C&EGamerco2 - Horizontal Tank Albuquerque, New Mexico

			ily Liquid S perature (d		Liquid Bulk Temp	Vapo	r Pressure	(psia)	Vapor Mol.	Liquid Mass	Vapor Mass	Mol.	Basis for Vapor Pressure
Mixture/Component	Month	Avg.	Min.	Max.	(deg F)	Avg.	Min.	Max.	Weight.	Fract.	Fract.	Weight	Calculations
Asphalt Cement	All	350.00	350.00	350.00	350.00	0.0347	0.0347	0.0347	105.0000			1,000.00	Option 3: A=75350.06, B=9.00346

TANKS 4.0.9d Emissions Report - Detail Format Detail Calculations (AP-42)

C&EGamerco2 - Horizontal Tank Albuquerque, New Mexico

Annual Emission Calcaulations		
Standing Losses (lb):	0.0000	
Vapor Space Volume (cu ft):	1.728.8765	
Vapor Density (lb/cu ft):	0.0004	
Vapor Space Expansion Factor:	0.0000	
Vented Vapor Saturation Factor:	0.9927	
Tank Vapor Space Volume: Vapor Space Volume (cu ft):	1,728.8765	
Tank Diameter (ft):	8.0000	
Effective Diameter (ft):	23.4589	
Vapor Space Outage (ft):	4.0000	
Tank Shell Length (ft):	54.0000	
Vapor Density		
Vapor Density (lb/cu ft):	0.0004	
Vapor Molecular Weight (lb/lb-mole):	105.0000	
Vapor Pressure at Daily Average Liquid		
Surface Temperature (psia):	0.0347	
Daily Avg. Liquid Surface Temp. (deg. R):	809.6700	
Daily Average Ambient Temp. (deg. F):	56.1542	
Ideal Gas Constant R	JU. 1J42	
	40 704	
(psia cuft / (lb-mol-deg R)):	10.731	
Liquid Bulk Temperature (deg. R):	809.6700	
Tank Paint Solar Absorptance (Shell):	0.6000	
Daily Total Solar Insulation		
Factor (Btu/sqft day):	1,765.3167	
Vapor Space Expansion Factor		
Vapor Space Expansion Factor:	0.0000	
Daily Vapor Temperature Range (deg. R):	0.0000	
Daily Vapor Pressure Range (psia):	0.0000	
Breather Vent Press. Setting Range(psia):	0.0000	
Vapor Pressure at Daily Average Liquid	0.0000	
Surface Temperature (psia):	0.0347	
Vapor Pressure at Daily Minimum Liquid	0.0347	
	0.0347	
Surface Temperature (psia):	0.0347	
Vapor Pressure at Daily Maximum Liquid	0.0017	
Surface Temperature (psia):	0.0347	
Daily Avg. Liquid Surface Temp. (deg R):	809.6700	
Daily Min. Liquid Surface Temp. (deg R):	809.6700	
Daily Max. Liquid Surface Temp. (deg R):	809.6700	
Daily Ambient Temp. Range (deg. R):	27.9250	
Vented Vapor Saturation Factor		
Vented Vapor Saturation Factor:	0.9927	
Vapor Pressure at Daily Average Liquid:		
Surface Temperature (psia):	0.0347	
Vapor Space Outage (ft):	4.0000	
Working Losses (Ib):	99.1679	
Vapor Molecular Weight (lb/lb-mole):	105.0000	
Vapor Pressure at Daily Average Liquid		
Surface Temperature (psia):	0.0347	
Annual Net Throughput (gal/yr.):	3,253,800.0000	
Annual Turnovers:	162.6900	
Turnover Factor:	0.3511	
Tank Diameter (ft):	8.0000	
Working Loss Product Factor:	1.0000	

TANKS 4.0.9d Emissions Report - Detail Format Individual Tank Emission Totals

Emissions Report for: Annual

C&EGamerco2 - Horizontal Tank Albuquerque, New Mexico

	Losses(lbs)						
Components	Working Loss	Breathing Loss	Total Emissions				
Asphalt Cement	99.17	0.00	99.17				



Emission Factors for Greenhouse Gas Inventories

Last Modified: 9 March 2018

Red text indicates an update from the 2015 version of this document.

Typically, greenhouse gas emissions are reported in units of carbon dioxide equivalent (CO₂e). Gases are converted to CO₂e by multiplying by their global warming potential (GWP). The emission factors listed in this document

Gas	100-Year GWP		
CH ₄	25		
N ₂ O	298		

Source: Intergovernmental Panel on Climate Change (IPCC), Fourth Assessment

Table 1 Stationary Combustion

No.No	Fuel Type	Heat Content (HHV)	CO ₂ Factor	CH₄ Factor	N ₂ O Factor	CO ₂ Factor	CH₄ Factor	N ₂ O Factor
Control ControlControl Contr	i dei rype				=	=		=
Addinate Solid SE (a) 110 18 28.25 27.35 40.00 Sections Could		· ·	5 21	5 11	0 1 1		• • • •	
Summak Dail 24.83 04.33 11 1.8 2.3.8 2.7.1 0.4.0 Mage Concerve Broadt 1.7.2 0.7.7 1.1 1.4.1 1.0.8 1.0.9 0.0.9								
Skeltamina Gén 177.28 97.77 111 16 1.88 1.99 2.82 Mand Carlor Pane Seven 2.02 8.62 11 1.03 2.03 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>								
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Source:

Federal Register EPA; 40 CFR Part 98; e-CFR, June 13, 2017 (see link below). Table C-1, Table C-2, Table AA-1.

 $\underline{https://www.ecfr.gov/cgi-bin/text-idx?SID=ae265d7d6f98ec86fcd8640b9793a3f6\&mc=true\&node=pt40.23.98\&rgn=div5\#ap40.23.98_19.1$

Note: Emission factors are per unit of heat content using higher heating values (HHV). If heat content is available from the fuel supplier, it is preferable to use that value. If not, default heat contents are provided.

Table 2Mobile Combustion CO2

Fuel Type	kg CO ₂ per unit	Unit
Aviation Gasoline	8.31	gallon
Biodiesel (100%)	9.45	gallon
Compressed Natural Gas (CNG)	0.05444	scf
Diesel Fuel	10.21	gallon
Ethanol (100%)	5.75	gallon
Kerosene-Type Jet Fuel	9.75	gallon
Liquefied Natural Gas (LNG)	4.50	gallon
Liquefied Petroleum Gases (LPG)	5.68	gallon
Motor Gasoline	8.78	gallon
Residual Fuel Oil	11.27	gallon

Source:

Federal Register EPA; 40 CFR Part 98; e-CFR, June 13, 2017 (see link below). Table C-1, Table C-2, Table AA-1.

https://www.ecfr.gov/cgi-bin/text-idx?SID=ae265d7d6f98ec86fcd8640b9793a3f6&mc=true&node=pt40.23.98&rgn=div5#ap40.23.98_19.1 LNG: The factor was developed based on the CO₂ factor for Natural Gas factor and LNG fuel density from GREET1_2017.xlsx Model, Argonne National Laboratory. This represents a methodology change from previous versions.

Table 3Mobile Combustion CH4 and N2O for On-Road Gasoline Vehicles

	Voor	CH ₄ Factor	N ₂ O Factor
Vehicle Type	Year	(g / mile)	(g / mile)
Basoline Passenger Cars	1973-74	0.1696	0.0197
	1975	0.1423	0.0443
	1976-77 1978-79	0.1406	0.0458
	1980	0.1389	0.0473
	1981	0.0802	0.0626
	1982	0.0795	0.0627
	1983	0.0782	0.0630
	1984-93	0.0704	0.0647
	1994	0.0531	0.0560
	1995	0.0358	0.0473
	1996	0.0272	0.0426
	1997	0.0268	0.0422
	1998 1999	0.0241 0.0216	0.0379
	2000	0.0210	0.0337
	2000	0.0110	0.0158
	2002	0.0107	0.0153
	2003	0.0115	0.0133
	2004	0.0157	0.0063
	2005	0.0164	0.0051
	2006	0.0161	0.0057
	2007	0.0170	0.0041
	2008	0.0172	0.0038
	2009-present	0.0173	0.0036
Basoline Light-Duty Trucks	1973-74	0.1908	0.0218
Vans, Pickup Trucks, SUVs)	1975	0.1634	0.0513
	1976 1977-78	0.1594 0.1614	0.0555
	1979-80	0.1594	0.0534
	1981	0.1394	0.0660
	1982	0.1442	0.0681
	1983	0.1368	0.0722
	1984	0.1294	0.0764
	1985	0.1220	0.0806
	1986	0.1146	0.0848
	1987-93	0.0813	0.1035
	1994	0.0646	0.0982
	1995	0.0517	0.0908
	1996	0.0452	0.0871
	1997	0.0452	0.0871
	1998 1999	0.0412	0.0778
	2000	0.0340	0.0607
	2000	0.0221	0.0328
	2002	0.0242	0.0378
	2003	0.0225	0.0330
	2004	0.0162	0.0098
	2005	0.0160	0.0081
	2006	0.0159	0.0088
	2007	0.0161	0.0079
	2008-present	0.0163	0.0066
asoline Heavy-Duty Vehicles	<1981	0.4604	0.0497
	1982-84	0.4492	0.0538
	1985-86 1987	0.4090 0.3675	0.0515
	1987	0.3675	0.0849
	1990-1995	0.3246	0.1142
	1996	0.1278	0.1680
	1997	0.0924	0.1726
	1998	0.0655	0.1750
	1999	0.0648	0.1721
		0.0630	0.1650
	2000		
	2000 2001	0.0578	0.1435
	2000 2001 2002	0.0578 0.0634	0.1435 0.1664
	2000 2001 2002 2003	0.0578 0.0634 0.0603	0.1435 0.1664 0.1534
	2000 2001 2002 2003 2004	0.0578 0.0634 0.0603 0.0323	0.1435 0.1664 0.1534 0.0195
	2000 2001 2002 2003 2004 2005	0.0578 0.0634 0.0603 0.0323 0.0329	0.1435 0.1664 0.1534 0.0195 0.0162
	2000 2001 2002 2003 2004 2005 2006	0.0578 0.0634 0.0603 0.0323 0.0329 0.0318	0.1435 0.1664 0.1534 0.0195 0.0162 0.0227
	2000 2001 2002 2003 2004 2005 2006 2007	0.0578 0.0634 0.0603 0.0323 0.0329 0.0318 0.0333	0.1435 0.1664 0.1534 0.0195 0.0162 0.0227 0.0134
Sasoline Motorcycles	2000 2001 2002 2003 2004 2005 2006	0.0578 0.0634 0.0603 0.0323 0.0329 0.0318	0.1435 0.1664 0.1534 0.0195 0.0162 0.0227

Source: EPA (2017) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015. All values are calculated from Tables A-104 through A-110.

Table 4Mobile Combustion CH4 and N2O for On-Road Diesel and Alternative Fuel Vehicles

Vehicle Type	Vehicle Year	CH₄ Factor (g / mile)	N₂O Factor (g / mile)
	1960-1982	0.0006	0.0012
Diesel Passenger Cars	1983-1995	0.0005	0.0010
	1996-present	0.0005	0.0010
	1960-1982	0.0011	0.0017
Diesel Light-Duty Trucks	1983-1995	0.0009	0.0014
	1996-present	0.0010	0.0015
Diesel Medium- and Heavy-Duty Vehicles	1960-present	0.0051	0.0048
CNG Light-Duty Vehicles		0.737	0.050
CNG Medium- and Heavy-Duty Vehicles		1.966	0.175
CNG Buses		1.966	0.175
LPG Light-Duty Vehicles		0.037	0.067
LPG Medium- and Heavy-Duty Vehicles		0.066	0.175
LNG Medium- and Heavy-Duty Vehicles		1.966	0.175
Ethanol Light-Duty Vehicles		0.055	0.067
Ethanol Medium- and Heavy-Duty Vehicles		0.197	0.175
Ethanol Buses		0.197	0.175
Biodiesel Light-Duty Vehicles		0.0005	0.001
Biodiesel Medium- and Heavy-Duty Vehicles		0.005	0.005
Biodiesel Buses		0.005	0.005

Source: EPA (2017) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015. All values are calculated from Tables A-104 through A-110.

Table 5Mobile Combustion CH4 and N2O for Non-Road Vehicles

Vehicle Type	CH₄ Factor (g / gallon)	N₂O Factor (g / gallon)
Residual Fuel Oil Ships and Boats	0.11	0.57
Gasoline Ships and Boats	0.64	0.22
Diesel Ships and Boats	0.06	0.45
Diesel Locomotives	0.80	0.26
Gasoline Agricultural Equip.	1.26	0.22
Diesel Agricultural Equip.	1.44	0.26
Gasoline Construction Equip.	0.50	0.22
Diesel Construction Equip.	0.57	0.26
Jet Fuel Aircraft	0.00	0.30
Aviation Gasoline Aircraft	7.06	0.11
Other Gasoline Non-Road Vehicles	0.50	0.22
Other Diesel Non-Road Vehicles	0.57	0.26
LPG Non-Road Vehicles	0.50	0.22
Biodiesel Non-Road Vehicles	0.57	0.26

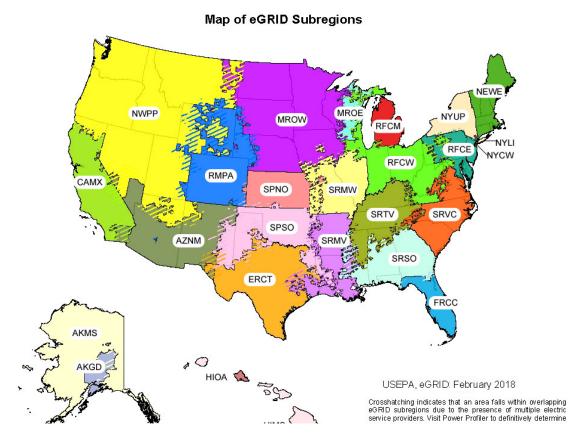
Source: EPA (2017) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015. All values are calculated from Table A-110. **Note:** LPG non-road vehicles assumed equal to other gasoline sources. Biodiesel vehicles assumed equal to other diesel sources.

Table 6Electricity

	Total Outp	Total Output Emission Factors			Non-Baseload Emission Factors		
eGRID Subregion	CO ₂ Factor	CH₄ Factor	N ₂ O Factor	CO ₂ Factor	CH₄ Factor	N ₂ O Factor	
5	(lb / MWh)	(lb / MWh)	(lb / MWh)	(lb / MWh)	(lb / MWh)	(lb / MWh)	
AKGD (ASCC Alaska Grid)	1,072.3	0.077	0.011	1,367.8	0.110	0.016	
AKMS (ASCC Miscellaneous)	503.1	0.023	0.004	1,533.8	0.068	0.012	
AZNM (WECC Southwest)	1,043.6	0.079	0.012	1,384.8	0.097	0.014	
CAMX (WECC California)	527.9	0.033	0.004	942.9	0.045	0.006	
ERCT (ERCOT All)	1,009.2	0.076	0.011	1,402.8	0.108	0.015	
FRCC (FRCC AII)	1,011.7	0.075	0.010	1,188.5	0.078	0.011	
HIMS (HICC Miscellaneous)	1,152.0	0.095	0.015	1,530.0	0.147	0.023	
HIOA (HICC Oahu)	1,662.9	0.181	0.028	1,637.5	0.153	0.024	
MROE (MRO East)	1,668.2	0.156	0.026	1,740.1	0.156	0.025	
MROW (MRO West)	1,238.8	0.115	0.020	1,822.0	0.154	0.029	
NEWE (NPCC New England)	558.2	0.090	0.012	975.1	0.086	0.011	
NWPP (WECC Northwest)	651.2	0.061	0.009	1,524.9	0.124	0.020	
NYCW (NPCC NYC/Westchester)	635.8	0.022	0.003	1,061.7	0.022	0.002	
NYLI (NPCC Long Island)	1,178.3	0.126	0.016	1,338.8	0.036	0.004	
NYUP (NPCC Upstate NY)	294.7	0.021	0.003	1,018.2	0.061	0.008	
RFCE (RFC East)	758.2	0.050	0.009	1,434.4	0.079	0.017	
RFCM (RFC Michigan)	1,272.0	0.067	0.018	1,806.1	0.101	0.025	
RFCW (RFC West)	1,243.4	0.108	0.019	1,934.4	0.172	0.029	
RMPA (WECC Rockies)	1,367.8	0.137	0.020	1,688.3	0.147	0.021	
SPNO (SPP North)	1,412.4	0.149	0.022	1,990.8	0.202	0.029	
SPSO (SPP South)	1,248.3	0.095	0.015	1,662.5	0.121	0.019	
SRMV (SERC Mississippi Valley)	838.9	0.050	0.007	1,186.0	0.071	0.010	
SRMW (SERC Midwest)	1,612.6	0.082	0.026	1,955.2	0.084	0.031	
SRSO (SERC South)	1,089.4	0.087	0.013	1,453.5	0.115	0.017	
SRTV (SERC Tennessee Valley)	1,185.4	0.093	0.017	1,757.4	0.135	0.025	
SRVC (SERC Virginia/Carolina)	805.3	0.067	0.011	1,422.2	0.111	0.019	
US Average	998.4	0.080	0.013	1,501.0	0.111	0.018	

Source: EPA eGRID2016, February 2018

Note: Total output emission factors can be used as default factors for estimating GHG emissions from electricity use when developing a carbon footprint or emissions inventory. Annual non-baseload output emission factors should not be used for those purposes, but can be used to estimate GHG emissions reductions from reductions in electricity use.



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Table 7Steam and Heat

	CO ₂ Factor	CH₄ Factor	N₂O Factor
	(kg / mmBtu)	(g / mmBtu)	(g / mmBtu)
Steam and Heat	66.33	1.250	0.125

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Note: Emission factors are per mmBtu of steam or heat purchased. These factors assume natural gas fuel is used to generate steam or heat at 80 percent thermal efficiency.

Table 8 Business Travel and Employee Commuting

Vehicle Type	CO ₂ Factor (kg / unit)	CH₄ Factor (g / unit)	N₂O Factor (g / unit)	Units
Passenger Car ^A	0.343	0.019	0.011	vehicle-mile
Light-Duty Truck ^B	0.472	0.019	0.018	vehicle-mile
Motorcycle	0.189	0.070	0.007	vehicle-mile
Intercity Rail (i.e. Amtrak) ^C	0.140	0.0087	0.0031	passenger-mile
Commuter Rail ^D	0.161	0.0081	0.0032	passenger-mile
Transit Rail (i.e. Subway, Tram) ^E	0.119	0.0025	0.0017	passenger-mile
Bus	0.056	0.0013	0.0009	passenger-mile
Air Travel - Short Haul (< 300 miles)	0.225	0.0039	0.0072	passenger-mile
Air Travel - Medium Haul (>= 300 miles,				
< 2300 miles)	0.136	0.0006	0.0043	passenger-mile
Air Travel - Long Haul (>= 2300 miles)	0.166	0.0006	0.0053	passenger-mile

Source:

CO₂, CH₄, and N₂O emissions data for highway vehicles are from Table 2-13 of the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2015. Vehicle-miles and passenger-miles data for highway vehicles are from Table VM-1 of the Federal Highway Administration Highway Statistics 2015.

Fuel consumption data and passenger-miles data for rail are from Tables A.14 to A.16 and 9.10 to 9.12 of the Transportation Energy Data Book: Edition 35. Fuel consumption was converted to emissions by using fuel and electricity emission factors presented in the tables above.

Air Travel factors from 2017 Guidelines to Defra / DECC's GHG Conversion Factors for Company Reporting. Version 1.0 August 2017.

Notes:

^A Passenger car: includes passenger cars, minivans, SUVs, and small pickup trucks (vehicles with wheelbase less than 121 inches).

^B Light-duty truck: includes full-size pickup trucks, full-size vans, and extended-length SUVs (vehicles with wheelbase greater than 121 inches).

^C Intercity rail: long-distance rail between major cities, such as Amtrak

^D Commuter rail: rail service between a central city and adjacent suburbs (also called regional rail or suburban rail)

^E Transit rail: rail typically within an urban center, such as subways, elevated railways, metropolitan railways (metro), streetcars, trolley cars, and tramways.

Table 9 Upstream Transportation and Distribution and Downstream Transportation and Distribution

Vehicle Type	CO ₂ Factor (kg / unit)	CH₄ Factor (g / unit)	N₂O Factor (g / unit)	Units
Medium- and Heavy-Duty Truck	1.467	0.014	0.010	vehicle-mile
Passenger Car ^A	0.343	0.019	0.011	vehicle-mile
Light-Duty Truck ^B	0.472	0.019	0.018	vehicle-mile
Medium- and Heavy-Duty Truck ^C	0.202	0.0020	0.0015	ton-mile
Rail	0.023	0.0018	0.0006	ton-mile
Waterborne Craft	0.059	0.0005	0.0040	ton-mile
Aircraft	1.308	0.0000	0.0402	ton-mile
Sourco				

Source:

CO₂, CH₄, and N₂O emissions data for road vehicles are from Table 2-13 of the U.S. Greenhouse Gas Emissions and Sinks: 1990–2015 (April 15, 2017). Vehicle-miles and passenger-miles data for road vehicles are from Table VM-1 of the Federal Highway Administration Highway Statistics 2015.

CO₂e emissions data for non-road vehicles are based on Table A-117 of the U.S. Greenhouse Gas Emissions and Sinks: 1990–2015, which are distributed into CO₂, CH₄, and N₂O emissions based on fuel/vehicle emission factors. Freight ton-mile data for non-road vehicles are from Table 1-50 of the Bureau of Transportation Statistics, National Transportation Statistics for 2015 (Data based on 2014).

Notes:

Vehicle-mile factors are appropriate to use when the entire vehicle is dedicated to transporting the reporting organization's product. Ton-mile factors are appropriate when the vehicle is shared with products from other organizations.

^A Passenger car: includes passenger cars, minivans, SUVs, and small pickup trucks (vehicles with wheelbase less than 121 inches).

^B Light-duty truck: includes full-size pickup trucks, full-size vans, and extended-length SUVs (vehicles with wheelbase greater than 121 inches).

^C Medium- and Heavy-Duty Truck: updates due to a methodology change.

Table 10aGlobal Warming Potentials (GWPs)

Gas	100-Year GWP
CO ₂	1
CH ₄	25
N ₂ O	298
HFC-23	14,800
HFC-32	675
HFC-41	92
HFC-125	3,500
HFC-134	1,100
HFC-134a	1,430
HFC-143	353
HFC-143a	4,470
HFC-152	53
HFC-152a	124
HFC-161	12
HFC-227ea	3,220
HFC-236cb	1,340
HFC-236ea	1,370
HFC-236fa	9,810
HFC-245ca	693
HFC-245fa	1,030
HFC-365mfc	794
HFC-43-10mee	1,640
SF ₆	22,800
NF ₃	17,200
CF ₄	7,390
C ₂ F ₆	12,200
C ₃ F ₈	8,830
c-C ₄ F ₈	10,300
C ₄ F ₁₀	8,860
C ₅ F ₁₂	9,160
C ₆ F ₁₄	9,300
C ₁₀ F ₁₈	>7,500

Source:

100-year GWPs from IPCC Fourth Assessment Report (AR4), 2007. IPCC AR4 was published in 2007 and is among the most current and comprehensive peer-reviewed assessments of climate change. AR4 provides revised GWPs of several GHGs relative to the values provided in previous assessment reports, following advances in scientific knowledge on the radiative efficiencies and atmospheric lifetimes of these GHGs and of CO₂. Because the GWPs provided in AR4 reflect an improved scientific understanding of the radiative effects of these gases in the atmosphere, the values provided are more appropriate for supporting the overall goal of organizational GHG reporting than the Second Assessment Report (SAR) GWP values previously used in the Emission Factors Hub.

While EPA recognizes that Fifth Assessment Report (AR5) GWPs have been published, in an effort to ensure consistency and comparability of GHG data between EPA's voluntary and non-voluntary GHG reporting programs (e.g. GHG Reporting Program and National Inventory), EPA recommends the use of AR4 GWPs. The United States and other developed countries to the UNFCCC have agreed to submit annual inventories in 2015 and future years to the UNFCCC using GWP values from AR4, which will replace the current use of SAR GWP values. Utilizing AR4 GWPs improves EPA's ability to analyze corporate, national, and sub-national GHG data consistently, enhances communication of GHG information between programs, and gives outside stakeholders a consistent, predictable set of GWPs to avoid confusion and additional burden.

Table 10b Global Warming Potentials (GWPs) for Blended Refrigerants

ASHRAE #	100-year GWP	Blend Composition
R-401A	16	53% HCFC-22 , 34% HCFC-124 , 13% HFC-152a
R-401B	14	61% HCFC-22 , 28% HCFC-124 , 11% HFC-152a
R-401C	19	33% HCFC-22 , 52% HCFC-124 , 15% HFC-152a
R-402A	2,100	38% HCFC-22 , 6% HFC-125 , 2% propane
R-402B	1,330	6% HCFC-22 , 38% HFC-125 , 2% propane
R-403B	3,444	56% HCFC-22 , 39% PFC-218 , 5% propane
R-404A	3,922	44% HFC-125 , 4% HFC-134a , 52% HFC 143a
R-406A	0	55% HCFC-22 , 41% HCFC-142b , 4% isobutane
R-407A	2,107	20% HFC-32 , 40% HFC-125 , 40% HFC-134a
R-407B	2,804	10% HFC-32 , 70% HFC-125 , 20% HFC-134a
R-407C	1,774	23% HFC-32 , 25% HFC-125 , 52% HFC-134a
R-407D	1,627	15% HFC-32 , 15% HFC-125 , 70% HFC-134a
R-407E	1,552	25% HFC-32 , 15% HFC-125 , 60% HFC-134a
R-408A	2,301	47% HCFC-22 , 7% HFC-125 , 46% HFC 143a
R-409A	0	60% HCFC-22 , 25% HCFC-124 , 15% HCFC-142b
R-410A	2,088	50% HFC-32 , 50% HFC-125
R-410B	2,229	45% HFC-32 , 55% HFC-125
R-411A	14	87.5% HCFC-22 , 11 HFC-152a , 1.5% propylene
R-411B	4	94% HCFC-22, 3% HFC-152a, 3% propylene
R-413A	2,053	88% HFC-134a , 9% PFC-218 , 3% isobutane
R-414A		51% HCFC-22 , 28.5% HCFC-124 , 16.5% HCFC-142b
R-414B	0	5% HCFC-22 , 39% HCFC-124 , 9.5% HCFC-142b
R-417A	2,346	46.6% HFC-125 , 5% HFC-134a , 3.4% butane
R-422A	3,143	85.1% HFC-125 , 11.5% HFC-134a , 3.4% isobutane
R-422D	2,729	65.1% HFC-125 , 31.5% HFC-134a , 3.4% isobutane
R-423A	2,280	47.5% HFC-227ea , 52.5% HFC-134a ,
R-424A	2,440	50.5% HFC-125, 47% HFC-134a, 2.5% butane/pentane
R-426A	1,508	5.1% HFC-125, 93% HFC-134a, 1.9% butane/pentane
R-428A	3,607	77.5% HFC-125, 2% HFC-143a, 1.9% isobutane
R-434A	3,245	63.2% HFC-125, 16% HFC-134a, 18% HFC-143a, 2.8% isobutane
R-500	32	73.8% CFC-12 , 26.2% HFC-152a , 48.8% HCFC-22
R-502		48.8% HCFC-22, 51.2% CFC-115
R-504	325	48.2% HFC-32 , 51.8% CFC-115
R-507	3,985	5% HFC-125 , 5% HFC143a
R-508A	13,214	39% HFC-23 , 61% PFC-116
R-508B		46% HFC-23 , 54% PFC-116

Source:

100-year GWPs from IPCC Fourth Assessment Report (AR4), 2007. See the source note to Table 13 for further explanation. GWPs of blended refrigerants are based on their HFC and PFC constituents, which are based on data from http://www.epa.gov/ozone/snap/refrigerants/refblend.html.

C E Concrete, Inc - NSR Asphalt Mixing Plant Gamerco Emission Summary 200 TPH

Mix Ratio Controlled Uncontrolle 1182600 tons/yr 7500 tons/yr Aggregate 5 tons/hr RAP 25.00% tons/hr 438000 tons/yr 125000 tons/yr 50 1.50 ons/hr 26280 ons/vr 500 tons/vi 105120 Asphalt Cement tons/hr tons/yr ons/yr Aggregate Tota 188 ns/hr 1646880 ns/v 470000 ns/vi 500000 tons/yr Total 200 tons/hr 1752000 tons/yr 200.0 tons/hr Plant Hourly Average 2500.0 hrs/yr Based on Annual Production and Hourly Production. Not a requested Permit Condition 5880.0 hrs/yr 8760.0 hrs/yr Controlled hours of operation HMA Production Maximum Hours of Operation Uncontrolled hrs/yr of operation Annual tons per year 500000 Cold Aggregate Handling Storage Piles E(PM) =0.00660 lbs/ton AP-42 13.2.4 (11/06) E = k x (0.0032) x (U/5)^1.3 / (M/2)^1.4 lbs/ton AP-42 Section 13.2.4 "Aggregate Handling" E(PM10) = E(PM2.5) = 0.00312 lbs/ton 0.00047 lbs/ton Max tph k(PM) 135.0 tph 0.74 Ver 11/2006 k(pm10) 0.35 0.00367 lbs/ton k(pm2.5) U Maximum E(PM) =0.053 E(PM10) = E(PM2.5) =0.00173 lbs/ton 11 MPH NMED default 0.00026 lbs/ton U Annual 7.0 MPH 1996-2006 Gallup Ave MPH 135.0 tph М 2 % model lb/hr lb/hr tons/yr E(PM) Uncontrolled 0.89097 2.17 E(pm10) Uncontrolled E(pm2.5) Uncontrolled 0.42141 1.03 0.06381 0.16 0.49509 0.23416 E(PM) Controlled 0.89097 0.62 Annual Emissions are Controlled by Limiting Annual Production 0.42141 Annual Emissions are Controlled by Limiting Annual Production E(pm10) Controlled 0.29 E(pm2.5) Controlled 0.06381 0.044 0.03546 Annual Emissions are Controlled by Limiting Annual Production Cold Aggregate Feed Bin Loading (Cold) AP-42 Section 13.2.4 "Aggregate Handling E(PM) =0.00660 lbs/ton AP-42 13.2.4 (11/06) E = k x (0.0032) x (U/5)^1.3 / (M/2)^1.4 lbs/ton Ver 11/2006 E(PM10) = E(PM2.5) = 0.00312 lbs/ton 0.00047 lbs/ton Max tph k(PM) 135.0 tph 0.74 k(pm10) 0.35 0.00367 lbs/ton 0.00173 lbs/ton k(pm2.5) U Maximum E(PM) =0.053 11 MPH NMED default E(PM10) = E(PM2.5) = 0.00026 lbs/ton U Annual 7.0 MPH 1996-2006 Gallup Ave MPH 135.0 tph М 2 % lb/hr model lb/hr tons/vr E(PM) Uncontrolled E(pm10) Uncontrolled E(pm2.5) Uncontrolled 2.17 1.03 0.89097 0.42141 0.06381 0.16 0.49509 0.23416 Annual Emissions are Controlled by Limiting Annual Production Annual Emissions are Controlled by Limiting Annual Production E(PM) Controlled 0.89097 0.62 0.42141 0.29 E(pm10) Controlled E(pm2.5) Controlled 0.06381 0.044 0.03546 Annual Emissions are Controlled by Limiting Annual Production Cold Aggregate Feed Bin (4) Unloading AP-42 Table 11.19.2-2 "Conveyor Transfer Point Uncontrolled" E(PM) =0.00300 lbs/ton E(PM10) = E(PM2.5) =Ver 8/2004 0.00110 lbs/ton 0.00017 lbs/ton 95.33 % Control Efficiency AP-42 Table 11.19.2-2 lbs/hr lbs/ton lbs/ton AP-42 Table 11.19.2-2 "Conveyor Transfer Point Controlled" Ver 8/2004 0.00014 0.000046 E(PM) = E(PM10) = E(PM2.5) = 0.000013 135.0 tph Throughput lb/hr tons/vr 0.40500 0.14850 1.774 0.650 E(PM) Uncontrolled E(pm10) Uncontrolled E(pm2.5) Uncontrolled 0.02295 0.101 E(PM) Controlled 0.01890 0.024 E(pm10) Controlled 0.00621 0.008 E(pm2.5) Controlled 0.00176 0.002 Cold Aggregate Conveyor to Conveyor AP-42 Table 11.19.2-2 "Conveyor Transfer Point Uncontrolled" F(PM) =0.00300 lbs/ton E(PM10) = E(PM2.5) =Ver 8/2004 0.00110 lbs/ton 0.00017 lbs/ton 95.33 % Control Efficiency AP-42 Table 11.19.2-2 AP-42 Table 11.19.2-2 "Conveyor Transfer Point Controlled" Ver 8/2004 E(PM) = E(PM10) = 0.00014 0.000046 lbs/hr lbs/ton E(PM2.5) = 0.000013 lbs/ton Throughput 135.0 tph tons/yr 1.774 0.650 lb/hr E(PM) Uncontrolled E(pm10) Uncontrolled 0.40500 0.14850 E(pm2.5) Uncontrolled 0.02295 0.101 0.01890 0.024 E(PM) Controlled E(pm10) Controlled 0.00621 0.008 E(pm2.5) Controlled 0.00176 0.002 Cold Aggregate Scalping Screen AP-42 Table 11.19.2-2 "Screening Uncontrolled" F(PM) =0.02500 lbs/ton E(PM10) = E(PM2.5) =Ver 8/2004 0.00870 lbs/ton 0.00132 lbs/ton 91.20 % Control Efficiency AP-42 Table 11.19.2-2 AP-42 Table 11.19.2-2 "Screening Controlled" Ver 8/2004 0.00220 0.00074 E(PM) = lbs/hr E(PM10) = lbs/ton E(PM2.5) = 0.00005 lbs/ton Throughput 135.0 tph tons/yr 14.783 5.144 lb/hr E(PM) Uncontrolled E(pm10) Uncontrolled 3.37500 1.17450 E(pm2.5) Uncontrolled 0.17820 0.781 0.29700 0.371 E(PM) Controlled

0.09990

0.00675

0.125

0.008

E(pm10) Controlled

E(pm2.5) Controlled

CI		Iixing Plant Gamerco Emission Summary 00 TPH
Cold Aggregate Scalping Screen Unloading AP-42 Table 11.19.2-2 "Conveyor Transfer Point Uncontrolled" Ver 8/2004	E(PM) = 0.00300 lbs/ E(PM10) = 0.00110 lbs/	s'ton s'ton s'ton
AP-42 Table 11.19.2-2 "Conveyor Transfer Point Controlled" Ver 8/2004	$\begin{array}{llllllllllllllllllllllllllllllllllll$	95.33 % Control Efficiency AP-42 Table 11.19.2-2 s/tor s/ton
Throughput	135.0 tph	h
E(PM) Uncontrolled E(pm10) Uncontrolled E(pm2.5) Uncontrolled	lb/hr tons/yr 0.40500 1.774 0.14850 0.650 0.02295 0.101	
E(PM) Controlled E(pm10) Controlled E(pm2.5) Controlled	0.01890 0.024 0.00621 0.008 0.00176 0.002	
Cold Agerceate Pug Mill AP-42 Table 11.19.2-2 "Conveyor Transfer Point Uncontrolled" Ver 8/2004	E(PM10) = 0.00110 lbs/	s/ton s/ton 95.33 % Control Efficiency AP-42 Table 11.19.2-2
AP-42 Table 11.19.2-2 "Conveyor Transfer Point Controlled" Ver 8/2004	E(PM2.5) = 0.000013 lbs/	s/hr s/ton s/ton
Throughput	138.0 tph	
E(PM) Uncontrolled E(pm10) Uncontrolled E(pm2.5) Uncontrolled	lb/hr tons/yr 0.41400 1.813 0.15180 0.665 0.02346 0.103	
E(PM) Controlled E(pm10) Controlled E(pm2.5) Controlled	0.01932 0.024 0.00635 0.008 0.00179 0.002	
Cold Agercente Pue Mill Unloading to Scale Convevor AP-42 Table 11.19.2-2 "Conveyor Transfer Point Uncontrolled" Ver 8/2004	E(PM10) = 0.00110 lbs/	v/ton s/ton s/ton 95.33 % Control Efficiency AP-42 Table 11.19.2-2
AP-42 Table 11.19.2-2 "Conveyor Transfer Point Controlled" Ver 8/2004 Throughput	$\begin{array}{llllllllllllllllllllllllllllllllllll$	s/hr ofton s/ton
E(PM) Uncontrolled E(pm10) Uncontrolled E(pm2.5) Uncontrolled	lb/hr tons/yr 0.41400 1.813 0.15180 0.665 0.02346 0.103	
E(PM) Controlled E(pm10) Controlled E(pm2.5) Controlled	0.01932 0.024 0.00635 0.008 0.00179 0.002	
Cold Aggregate Scale Convevor Transfer to Slinger Convevor AP-42 Table 11.19.2-2 "Conveyor Transfer Point Uncontrolled" Ver 8/2004	E(PM10) = 0.00110 lbs/	s/ton s/ton s/ton
AP-42 Table 11.19.2-2 "Conveyor Transfer Point Controlled" Ver 8/2004	E(PM2.5) = 0.000013 lbs/	s/ton s/ton
Throughput	138.0 tph	u la
E(PM) Uncontrolled E(pm10) Uncontrolled E(pm2.5) Uncontrolled	lb/hr tons/yr 0.41400 1.813 0.15180 0.665 0.02346 0.103	
E(PM) Controlled E(pm10) Controlled E(pm2.5) Controlled	0.01932 0.024 0.00635 0.008 0.00179 0.002	
RAP Storage Pile AP-42 Section 13.2.4 "Aggregate Handling" Ver 11/2006	$\begin{array}{llllllllllllllllllllllllllllllllllll$	s/ton Max tph 50.0 tph s/ton k(PM) 0.74
	$\begin{array}{llllllllllllllllllllllllllllllllllll$	s/ton U Maximum 11 MPH NMED default s/ton U Annual 7.0 MPH 1996-2006 Gallup Ave MPH
E(PM) Uncontrolled E(pm10) Uncontrolled E(pm2.5) Uncontrolled	lb/hr tons/yr 0.32999 0.80 0.15608 0.38 0.02363 0.058	model lb/hr
E(PM) Controlled E(pm10) Controlled E(pm2.5) Controlled	0.32999 0.23 0.15608 0.11 0.02363 0.016	0.18337 Annual Emissions are Controlled by Limiting Annual Production 0.08673 Annual Emissions are Controlled by Limiting Annual Production 0.01313 Annual Emissions are Controlled by Limiting Annual Production

C E Concrete, Inc - NSR Asphalt Mixing Plant Gamerco Emission Summary 200 TPH

		200 TP	н	······	
RAP Feed Bin (2) Loading AP-42 Section 13.2.4 "Aggregate Handling" Ver 11/2006	E(PM) = E(PM10) = E(PM2.5) =	0.00660 lbs/ton 0.00312 lbs/ton 0.00047 lbs/ton		AP-42 13.2.4 (11/06) Max tph k(PM)	$\begin{split} E &= k \; x \; (0.0032) \; x \; (U/5)^{\circ} 1.3 \; / \; (M/2)^{\circ} 1.4 \; lbs/ton \\ &= 50.0 \; tph \\ &= 0.74 \end{split}$
	E(PM) = E(PM10) = E(PM2.5) =	0.00367 lbs/ton 0.00173 lbs/ton 0.00026 lbs/ton 50.0 tph		k(pm10) k(pm2.5) U Maximum U Annual M	0.35 0.053 11 MPH NMED default 7.0 MPH 1996-2006 Gallup Ave MPH 2 %
E(PM) Uncontrolled E(pm10) Uncontrolled E(pm2.5) Uncontrolled	lb/hr 0.32999 0.15608 0.02363	tons/yr 0.80 0.38 0.058	model lb/hr		
E(pMI) Controlled E(pm10) Controlled E(pm2.5) Controlled	0.32999 0.15608 0.02363	0.23 0.11 0.016	0.18337 0.08673 0.01313	Annual Emissions are Control	olled by Limiting Annual Production olled by Limiting Annual Production olled by Limiting Annual Production
RAP Feed Bin Unloading AP-42 Table 11.19.2-2 "Conveyor Transfer Point Uncontrolled" Ver 8/2004	E(PM) = E(PM10) = E(PM2.5) =	0.00300 lbs/ton 0.00110 lbs/ton 0.00017 lbs/ton			
AP-42 Table 11.19.2-2 "Conveyor Transfer Point Controlled" Ver 8/2004 Throughput		0.00014 lbs/hr 0.000046 lbs/ton 0.000013 lbs/ton 50.0 tph		95.33 % Control	Efficiency AP-42 Table 11.19.2-2
E(PM) Uncontrolled E(pm10) Uncontrolled E(pm2.5) Uncontrolled	lb/hr 0.15000 0.05500 0.00850	tons/yr 0.657 0.241 0.037			
E(PM) Controlled E(pm10) Controlled E(pm2.5) Controlled	0.00700 0.00230 0.00065	0.009 0.0029 0.0008			
RAP Scalping Screen AP-42 Table 11.19.2-2 "Screening Uncontrolled" Ver 8/2004	E(PM) = E(PM10) = E(PM2.5) =	0.02500 lbs/ton 0.00870 lbs/ton 0.00132 lbs/ton			
AP-42 Table 11.19.2-2 "Screening Controlled" Ver 8/2004 Throughput	E(PM) = E(PM10) = E(PM2.5) =	0.00220 lbs/hr 0.00074 lbs/ton 0.00005 lbs/ton 50.0 tph		91.20 % Control	Efficiency AP-42 Table 11.19.2-2
E(PM) Uncontrolled E(pm10) Uncontrolled E(pm2.5) Uncontrolled	lb/hr 1.25000 0.43500 0.06600	tons/yr 5.475 1.905 0.289			
E(PM) Controlled E(pm10) Controlled E(pm2.5) Controlled	0.11000 0.03700 0.00250	0.138 0.046 0.0031			
RAP Scalping Screen Unloading AP-42 Table 11.19.2-2 "Conveyor Transfer Point Uncontrolled" Ver 8/2004	E(PM) = E(PM10) = E(PM2.5) =	0.00300 lbs/ton 0.00110 lbs/ton 0.00017 lbs/ton		95.33 % Control	I Efficiency AP-42 Table 11.19.2-2
AP-42 Table 11.19.2-2 "Conveyor Transfer Point Controlled" Ver 8/2004 Throughput		0.00014 lbs/hr 0.000046 lbs/ton 0.000013 lbs/ton 50.0 tph			
E(PM) Uncontrolled E(pm10) Uncontrolled E(pm2.5) Uncontrolled	lb/hr 0.15000 0.05500 0.00850	tons/yr 0.657 0.241 0.037			
E(PM) Controlled E(pm10) Controlled E(pm2.5) Controlled	0.00700 0.00230 0.00065	0.009 0.0029 0.0008			

C E Concrete, Inc - NSR Asphalt Mixing Plant Gamerco Emission Summary

C E Concrete, Inc - NSR Asphalt Mixing Plant Gamerco Emission Summary 200 TPH

	E(PM) =	0.73 lbs/ton	Uncontrolle	d Cement Silo Loading PM		
	E(PM10) =	0.47 lbs/ton	Uncontrolle	d Cement Silo Loading PM10)	
	E(PM2.5) =	0.085 lbs/ton	Uncontrolle	d Cement Silo Loading PM2.	5 (PM10 * 0.050/0.278;	Table 11.12-3 Uncontrolled)
Max tph Mineral Filler			25 tph Max		3 tph Ave	26280.00 tons/yr uncontrolled 7500.00 tons/yr controlled
		lb/hr		lb/hr Ave	tons/yr	
E(PM) uncontrolled cement		18.25000		2.19000	9.592	
E(pm10) uncontrolled cement		11.75000		1.41000	6.176	
E(pm2.5) uncontrolled cement		2.11331		0.25360	1.111	
	Baghouse Control Efficiency	99	0.0 %	Engineering Judgement b	ased on lower end of Ba	ghouse Controls
Controlled emissions based or	n AP-42 Section 11.12 "Concrete Batching" Ta	able 11.12-2 ''Cement Unloading	to Elevated St	orage Silo'' and %CE		
	E(PM) =	0.0073 lbs/ton		Cement Silo Loading PM		
	E(PM10) =	0.0047 lbs/ton	Controlled 0	Cement Silo Loading PM10		
	E(PM2.5) =	0.00071 lbs/ton	Controlled 0	Cement Silo Loading PM2.5 (PM10 * 0.048/0.32; Tab	ble 11.12-3 Controlled K factors)
		lb/hr		lb/hr Ave	tons/yr	
E(PM) controlled		0.18250		0.02190	0.027	
E(pm10) controlled		0.11750		0.01410	0.018	
E(pm2.5) controlled		0.01763		0.00212	0.0026	
Aspahlt Cement Storage Tan TANKS 4.0.9d	<u>k</u>					
		10000 1				
Tank capacity		40000 gallons		2 Tanks total		
Tons Per Hour Tons Per Year		12 tons				
		30000 tons				
Density Gallons Per Hour		9.22 lbs/gallon				
		2603.0 gal/hr				
Gallons Per Year		6507592.2 gal/yr				
Tank Temperature		350 degrees f				
Turnovers		162.6898048 per year		2 Tanks total		
Working Loss TOC		198.34 lbs/yr				
Breathing Loss TOC		0 lbs/yr				
Total TOC		198.34 lbs/yr				
Total TOC		0.023 lbs/hr				
Total TOC		0.099 tpy				
Total Asphalt Fumes		0.00029 lbs/hr		1.3% of V	VOC	

Mineral Filler Silo

C E Concrete, Inc - NSR Asphalt Mixing Plant Gamerco Emission Summary 200 TPH

			200 TPH	
Drum Mixer Emissions				
Silo Filling Temperature Plant Loadout Temperature		Degrees Degrees		
Asphalt Volatility			ss on hearing	
Uncontrolled emissions based on AP-42 Secti E(PM) =	on 11.1 "Hot Mix Asphalt Plants" Table 11.1-3, -4 28.000		14 Uncontrolled Drum Mixer	
E(PM10) =	6.500	lbs/ton	Uncontrolled Drum Mixer	
E(PM2.5) = E(NOrr)		lbs/ton	Uncontrolled Drum Mixer	Table 11.1-4 filterable plus Table 11.1-3 condensable
E(NOx) = E(CO) =	0.055 0.130		Uncontrolled Drum Mixer Uncontrolled Drum Mixer	
E(SO2) =	0.0580	lbs/ton	Uncontrolled Drum Mixer	
E(VOC) = E(VOC) =	0.032		Uncontrolled Drum Mixer Uncontrolled Drum Mixer	
E(VOC) = E(CO2) =	33.000		Uncontrolled Drum Mixer	
E(Asphalt Fumes) =	0.012	lbs/ton	Uncontrolled Drum Mixer	Table 11.1-3 Organic Condensable
E(CO) Silo Filling = E(TOC) Silo Filling =	0.001179981 0.012186685		Uncontrolled Drum Unloading CO Uncontrolled Drum Unloading TOC	
E(Asphalt Fumes) Silo Filling =	0.000188603		Uncontrolled Drum Unloading PM	
E(PM) Silo Filling =	0.000585889		Uncontrolled Drum Unloading PM	
E(PM10) Silo Filling = E(PM2.5) Silo Filling =	0.000585889 0.000585889		Uncontrolled Drum Unloading PM Uncontrolled Drum Unloading PM	
E(CO) Plant Unloading =	0.001349240	lbs/ton	Uncontrolled Silo Loading CO	
E(TOC) Plant Unloading = E(Asphalt Fumes) Plant Unloading =	0.004158948 0.000087048		Uncontrolled Silo Loading TOC Uncontrolled Silo Loading PM Organic	
E(Asphan Funes) Plant Unloading = E(PM) Plant Unloading =	0.000521937		Uncontrolled Silo Loading PM	
E(PM10) Plant Unloading =	0.000521937	lbs/ton	Uncontrolled Silo Loading PM	
E(PM2.5) Plant Unloading = E(CO) Yard =	0.000521937 0.000352000		Uncontrolled Silo Loading PM Uncontrolled Yard CO	
E(TOC) Yard =	0.001100000		Uncontrolled Yard TOC	
PM PM10	5600.00 1300.00		24528.00 tons/yr 5694.00 tons/yr	
PM2.5	313.00	lbs/hr	1370.94 tons/yr	
NOx	11.00		48.18 tons/yr	
CO SO2	26.00 11.60		113.88 tons/yr 50.81 tons/yr	
VOC	6.40		28.03 tons/yr	
CO2	6600		28908 tons/yr	
Asphalt Fumes CO Silo Filling	2.40 0.24		10.51 tons/yr 1.03 tons/yr	
TOC Silo Filling	2.44	lbs/hr	10.68 tons/yr	
Asphalt Fumes Silo Filling	0.038 0.12		0.17 tons/yr 0.51 tons/yr	
PM Silo Filling PM10 Silo Filling	0.12		0.51 tons/yr 0.51 tons/yr	
PM2.5 Silo Filling	0.12	lbs/hr	0.51 tons/yr	
CO Plant Unloading TOC Plant Unloading	0.27		1.18 tons/yr 3.64 tons/yr	
Asphalt Fumes Plant Unloading	0.03		0.08 tons/yr	
PM Plant Unloading	0.10		0.46 tons/yr	
PM10 Plant Unloading PM2.5 Plant Unloading	0.10 0.10		0.46 tons/yr 0.46 tons/yr	
CO Yard	0.070	lbs/hr	0.31 tons/yr	
TOC Yard Asphalt Fumes Yard	0.22		0.96 tons/yr 0.014 tons/yr	1.5% of TOC
-				
Controlled emissions based on AP-42 Section E(PM) =	11.1 "Hot Mix Asphalt Plants" Table 11.1-3, -7, - 0.033		Controlled Drum Mixer	99.88 % Control Efficiency AP-42 Section 11.1
E(PM10) =	0.023	lbs/ton	Controlled Drum Mixer	
E(PM2.5) = E(NOx) =	0.023 0.055		Controlled Drum Mixer Controlled Drum Mixer	PM2.5 = PM10
E(OO) =	0.130		Controlled Drum Mixer	
E(SO2) =	0.0580		Controlled Drum Mixer	
E(VOC) = E(CO2) =	0.032 33.000		Controlled Drum Mixer Controlled Drum Mixer	
E(Asphalt Fumes) =	0.012	lbs/ton	Controlled Drum Mixer	Table 11.1-3 Organic Condensable
E(CO) Silo Filling =	0.001179981		Controlled Drum Unloading CO	
E(TOC) Silo Filling = E(Asphalt Fumes) Silo Filling =	0.012186685 0.000188603		Controlled Drum Unloading TOC Controlled Drum Unloading TOC	
E(PM) Silo Filling =	0.000585889	lbs/ton	Controlled Drum Unloading PM	
E(PM10) Silo Filling =	0.000585889 0.000585889		Controlled Drum Unloading PM	
E(PM2.5) Silo Filling = E(CO) Plant Unloading =	0.001349240		Controlled Drum Unloading PM Controlled Silo Loading CO	
E(TOC) Plant Unloading =	0.004158948	lbs/ton	Controlled Silo Loading TOC	
E(Asphalt Fumes) Plant Unloading = E(PM) Plant Unloading =	0.000087048 0.000521937		Controlled Silo Loading PM Organic Controlled Silo Unloading PM	
E(PM10) Plant Unloading =	0.000521937		Controlled Silo Unloading PM	
E(PM2.5) Plant Unloading =	0.000521937		Controlled Silo Unloading PM	
E(CO) Yard = E(TOC) Yard =	0.000352000 0.001100000		Controlled Yard CO Controlled Yard TOC	
PM PM10	6.60 4.60	lbs/hr lbs/hr	8.25 tons/yr 5.75 tons/yr	AP-42 11.1
PM2.5	4.60	lbs/hr	5.75 tons/yr	
NOx CO	11.00 26.00		13.75 tons/yr	
SO2	26.00		32.50 tons/yr 14.50 tons/yr	
VOC	6.40		8.00 tons/yr	
CO2 Asphalt Fumes	6600 2.40		8250 tons/yr 3.00 tons/yr	
CO Silo Filling	0.24		0.29 tons/yr	
TOC Silo Filling	2.44		3.05 tons/yr	
Asphalt Fumes Silo Filling PM Silo Filling	0.038 0.12		0.047 tons/yr 0.15 tons/yr	
PM10 Silo Filling	0.12	lbs/hr	0.15 tons/yr	
PM2.5 Silo Filling	0.12		0.15 tons/yr	
CO Plant Unloading TOC Plant Unloading	0.27		0.34 tons/yr 1.04 tons/yr	
Asphalt Fumes Plant Unloading	0.017	lbs/hr	0.02 tons/yr	
PM Plant Unloading	0.10		0.13 tons/yr	
PM10 Plant Unloading PM2.5 Plant Unloading	0.10 0.10		0.13 tons/yr 0.13 tons/yr	
CO Yard				
	0.070		0.088 tons/yr	
TOC Yard Asphalt Fumes Yard	0.070 0.22 0.0033	lbs/hr	0.088 tons/yr 0.28 tons/yr 0.0041 tons/yr	1.5% of TOC

C E Concrete, Inc - NSR Asphalt Mixing Plant Gamerco Emission Summary 200 TPH

			200 11 11			
Haul Road Traffic						
Paved Haul Road - Main Access Road						
AP-42 13.1 (ver 1/11) "Paved Road"						
Hourly Equation:						
$E = k (sL)^{0.91} x (W)^{1.02}$						
Annual Equation:						
Eext = $[k (sL)^{0.91} x (W)^{1.02}] (1 - P/4N)$						
LCAT [K(3L) 0.71 X(W) 1.02](1-174W)						
k PM	0.0	111				
k PM10	0.00					
k PM2.5	0.00					
sL - Surface Silt Loading		0.6 g/m2	Ubiquitous Baseline g/m2 <	500		
P - precipitation days/yr		70 days	AP-42 Figure 13.2.1-2	500		
N - number of days per year		65 days	Ar-42 Figure 15.2.1-2			
iv - number of days per year	-	105 days				
Mineral Filler Truck VMT Paved		720.8	meter/rt vehicle	22.5 tons/load	3 tons/hr	7500 tons/yr
Asphalt Cement Truck VMT Paved			meter/rt vehicle	22.5 tons/load	12 tons/hr	30000 tons/yr
Asphalt Truck VMT Paved			meter/rt vehicle	22.5 tons/load	200 tons/hr	50000 tons/yr
Aggregate Truck VMT Paved			meter/rt vehicle	22.5 tons/load 22.5 tons/load	188 tons/hr	470000 tons/yr
Aggregate Truck VMT Paved		/ 39.8	meter/n venicie	22.3 tolis/load	188 tolls/lif	470000 tons/yr
		0.450804105	miles/vehicle			
			miles/vehicle			
		0.459804105				
		0.459804105				
		0.439804103	miles/venicie	Uncontrolled	Controlled	
Max. Mineral Filler Truck/hr		0.12	truck/hr	1168 truck/yr	333 truck/yr	
Max. Asphalt Cement Truck/hr			truck/hr	4672 truck/yr	1333 truck/yr	
Max. Asphalt Truck/hr			truck/hr	77867 truck/yr	22222 truck/yr	
Max. Aggregate Truck/hr			truck/hr	73195 truck/yr	20889 truck/yr	
Max. Aggregate Huck/m	Total		truck/hr	156901 truck/yr	44778 truck/yr	
	Total	17.9	truck/m	150501 пискоуг	44778 truck yr	
				Miles/yr Uncontrolled	Miles/yr Controlled	
Mineral Filler Truck VMT Unpaved		0.06131	miles/hr	537 miles/yr	153 miles/yr	
Asphalt Cement Truck VMT Unpaved		0.24523		2148 miles/yr	613 miles/yr	
Asphalt Truck VMT Unpaved		4.08715		35803 miles/yr	10218 miles/yr	
Aggregate Truck VMTUnpaved		3.84192		33655 miles/yr	9605 miles/yr	
		8.23560		72144 miles/yr	20589 miles/yr	
		22.5	tons per load			
		17.5	Unloaded Weight (tons)			
Mineral Filler Truck weight		28.8	tons			
Asphalt Cement Truck weight		28.8	tons			
Asphalt Truck weight		28.8	tons			
Aggregate Truck weight		28.8	tons			
				PM		
				Uncontrolled	Controlled	
Max. Mineral Filler Truck Emissions Unpaved		0.01303	lbs/hr	0.05432 tons/yr	0.01550 tons/yr	
Max. Asphalt Cement Truck Emissions Unpaved		0.05211		0.21728 tons/yr	0.06201 tons/yr	
Max. Asphalt Truck Emissions Unpaved		0.86844		3.62141 tons/yr	1.03351 tons/yr	
Max. Aggregate Truck Emissions Unpaved		0.81634		3.40412 tons/yr	0.97150 tons/yr	
	total combined paved traf	fic 1.74991	lbs/hr	7.29713 tons/yr	2.08252 tons/yr	
				PM10		
				Uncontrolled	Controlled	
Max. Mineral Filler Truck Emissions Unpaved		0.00261		0.01086 tons/yr	0.00310 tons/yr	
Max. Asphalt Cement Truck Emissions Unpaved		0.01042		0.04346 tons/yr	0.01240 tons/yr	
Max. Asphalt Truck Emissions Unpaved		0.17369		0.72428 tons/yr	0.20670 tons/yr	
Max. Aggregate Truck Emissions Unpaved		0.16327		0.68082 tons/yr	0.19430 tons/yr	
	total combined paved traf	fic 0.34998	lbs/hr	1.45943 tons/yr	0.41650 tons/yr	
				PM2.5	a	
		0.057		Uncontrolled	Controlled	
Max. Mineral Filler Truck Emissions Unpaved		0.00064		0.00267 tons/yr	0.00076 tons/yr	
Max. Asphalt Cement Truck Emissions Unpaved		0.00256		0.01067 tons/yr	0.00304 tons/yr	
Max. Asphalt Truck Emissions Unpaved		0.04263		0.17778 tons/yr	0.05074 tons/yr	
Max. Aggregate Truck Emissions Unpaved		0.04007		0.16711 tons/yr	0.04769 tons/yr	
	total combined paved traf	fic 0.08590	ibs/nr	0.35822 tons/yr	0.10223 tons/yr	

C E Concrete, Inc - NSR Asphalt Mixing Plant Gamerco Emission Summary Asphalt Heater Emissions

AP-42 1.5 (7/08)

Asphalt Heater AP-42 1.3 (5/10)

Heater Siz	ze		Diesel					Natural	Gas or Propane	е	
	141000	0 BTU/hr		Heat Rate	128000 BTU/gal		1410000	BTU/hr	*	Rate	91500 BTU/gal
	11.0	0 gal/hr		%sulfur	0.05		15.4	gal/hr			
.		07.00				••		0.5.00			
	lled Hours	8760					lled Hours	8760			
Controlle	d Hours	8760				Controlle	d Hours	8760			
Emission	Factors					Emission	Factors				
NOx	20.00	lbs/1000 gal				NOx	13	lbs/1000 gal			
CO	5.00	lbs/1000 gal				CO	7.5	lbs/1000 gal			
VOC	0.34	lbs/1000 gal				VOC	1	lbs/1000 gal			
SO2	142S	lbs/1000 gal		S = % sulfur		SO2	0.018	lbs/1000 gal			
PM	2.00	lbs/1000 gal				PM	0.7	lbs/1000 gal			
CO2	10.2	kg/gal				CO2	61.5	kg/mmBtu			
CH4	0.41	kg/gal				CH4	3.0	kg/mmBtu			
N2O	0.08	kg/gal				N2O	0.6	kg/mmBtu			
		00						0			
Calculate	d Uncontrol	led Emissions				Calculate	d Uncontrolle	l Emissions			
NOx	0.22	2 lbs/hr	0.96	tpy		NOx	0.20	lbs/hr	0.9 tpy		
CO	0.05	5 lbs/hr	0.24	tpy		CO	0.12	lbs/hr	0.51 tpy		
VOC	0.003	7 lbs/hr	0.016	tpy		VOC	0.015	lbs/hr	0.067 tpy		
SOx	0.073	8 lbs/hr	0.34	tpy		SOx	0.00028	lbs/hr	0.0012 tpy		
PM	0.022	2 lbs/hr	0.096	tpy		PM	0.011	lbs/hr	0.047 tpy		
CO2	51.0	0 lbs/hr	223.4	tpy		CO2	39.3	lbs/hr	172.1 tpy		
CH4	2.03	5 lbs/hr	8.97	tpy		CH4	1.92	lbs/hr	8.40 tpy		
N2O	0.40	0 lbs/hr	1.75	tpy		N2O	0.38	lbs/hr	1.68 tpy		
GHG	221.	3 lbs/hr	969.3	tpy		GHG	201.5	lbs/hr	882.6 tpy		
		1 Emissions					d Controlled H				
NOx		2 lbs/hr	0.96			NOx		lbs/hr	0.9 tpy		
CO		5 lbs/hr	0.24			CO		lbs/hr	0.51 tpy		
VOC		7 lbs/hr	0.016			VOC		lbs/hr	0.067 tpy		
SOx		8 lbs/hr	0.34	tpy		SOx	0.00028	lbs/hr	0.0012 tpy		
PM	0.022	2 lbs/hr	0.096	tpy		PM	0.011	lbs/hr	0.047 tpy		
CO2		0 lbs/hr	223.4			CO2		lbs/hr	172.1 tpy		
CH4		5 lbs/hr	8.97	tpy		CH4		lbs/hr	8.40 tpy		
N2O		0 lbs/hr	1.75			N2O		lbs/hr	1.68 tpy		
GHG	221.3	<mark>3</mark> lbs/hr	969.3	tpy		GHG	201.5	lbs/hr	882.6 tpy		

C E Concrete, Inc - NSR Asphalt Mixing Plant Gamerco Emission Summary 200 TPH

								Unc	ontrolled E	mission Tot	als									
			N	Ox	(20	S	O2	V	OC	F	PM	PM	410	PM	12.5	Aspha	lt Fumes	(202
Unit ID	Model ID		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	lbs/hr	tons/yr	lbs/hr	tons/yr
1	HMAP	Cold Aggregate Storage Pile									0.89	2.17	0.42	1.03	0.064	0.16				
2	HMABIN	Feed Bin Loading									0.89	2.17	0.42	1.03	0.064	0.16				
3	HMATP1	Feed Bin Unloading									0.41	1.77	0.15	0.65	0.023	0.10				
4	HMATP2	Conveyor to Conveyor									0.41	1.77	0.15	0.65	0.023	0.10				
5	HMASCR	Scalping Screen									3.38	14.78	1.17	5.14	0.18	0.78				
6	HMATP3	Scalping Screen Unloading									0.41	1.77	0.15	0.65	0.023	0.10				
7	HMAPUG	Pug Mill Load									0.41	1.81	0.15	0.66	0.023	0.10				
8	HMATP4	Pug Mill Unload									0.41	1.81	0.15	0.66	0.023	0.10				
9	HMATP5	Conveyor Transfer to Slinger Conveyor									0.41	1.81	0.15	0.66	0.023	0.10				
12	RAPP	RAP Storage Pile									0.33	0.80	0.16	0.38	0.024	0.058				
13	RAPBIN	RAP Feed Bin Loading									0.33	0.80	0.16	0.38	0.024	0.058			1 1	
14	RAPT1	RAP Feed Bin Unloading									0.15	0.66	0.055	0.24	0.0085	0.037			1 1	
15	RAPSCR	RAP Scalping Screen									1.25	5.48	0.44	1.91	0.066	0.29			1 1	
16	RAPT2	RAP Scalping Screen Unloading									0.15	0.66	0.055	0.24	0.0085	0.037			1 1	
10	HMAFIL	Mineral Filler Silo									18.25	9.59	11.75	6.18	2.11	1.11				
17	HMASTK	Drum Dryer	11.0	48.2	26.0	113.9	11.6	50.8	6.40	28.0	5600	24528	1300	5694	313	1371	2.4	11	6600.0	28908
19	DRUMUL	Drum Mixer Unloading			0.24	1.03			2.44	10.7	0.12	0.51	0.12	0.51	0.12	0.51	0.04	0.17		
20	SILOUL	Asphalt Silo Unloading			0.27	1.18			0.83	3.64	0.10	0.46	0.10	0.46	0.10	0.46	0.017	0.08		
21	HMAHT	Asphalt Heater	0.22	0.96	0.12	0.51	0.078	0.34	0.015	0.067	0.022	0.096	0.022	0.096	0.022	0.096			221.3	969.3
22	ASPHTK	Asphalt Cement Storage Tank			***	***	01010		0.023	0.10		0.07.0		0.07.0	0.011	0.07.0	0.00029	0.0013		
23	TRCK	Haul Road Traffic							0.0-0		1.75	7.30	0.35	1.46	0.086	0.36	0.000-2	0.0000	1	
24	YARD	Yard			0.070	0.31		1	0.22	0.96						0.00	0.0033	0.014	1	
2.	THE	Total	11.2	49.1	26.7	116.9	11.7	51.2	9.93	43.5	5630	24584	1316	5717	316	1376	2.46	10.77	6821	29877
ų																				
									Controlle	ed Emission	Totals									
			N	Ox	(20		02		ed Emission OC		PM		410	PM	12.5	Aspha	lt Fumes	(202
Unit ID	Model ID		Notes	Ox tons/yr	lbs/hr	CO tons/yr	S lbs/hr	O2 tons/yr			E P Ibs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	12.5 tons/yr	Aspha lbs/hr	lt Fumes tons/yr	lbs/hr	CO2 tons/yr
Unit ID	Model ID HMAP	Cold Aggregate Storage Pile						1	V	OC	P	1	lbs/hr 0.42	tons/yr 0.29	lbs/hr 0.064					
-		Cold Aggregate Storage Pile Feed Bin Loading						1	V	OC	F lbs/hr 0.89 0.89	tons/yr	lbs/hr 0.42 0.42	tons/yr 0.29 0.29	lbs/hr 0.064 0.064	tons/yr 0.044 0.044				
1	HMAP							1	V	OC	F lbs/hr 0.89	tons/yr 0.62	lbs/hr 0.42	tons/yr 0.29	lbs/hr 0.064	tons/yr 0.044				
1 2	HMAP HMABIN	Feed Bin Loading						1	V	OC	F lbs/hr 0.89 0.89	tons/yr 0.62 0.62	lbs/hr 0.42 0.42	tons/yr 0.29 0.29 0.0078 0.0078	lbs/hr 0.064 0.064 0.0018 0.0018	tons/yr 0.044 0.044				
1 2 3	HMAP HMABIN HMATP1	Feed Bin Loading Feed Bin Unloading						1	V	OC	F lbs/hr 0.89 0.89 0.019	tons/yr 0.62 0.62 0.024	lbs/hr 0.42 0.42 0.0062 0.0062 0.10	tons/yr 0.29 0.0078 0.0078 0.12	lbs/hr 0.064 0.064 0.0018 0.0018 0.0068	tons/yr 0.044 0.044 0.0022 0.0022 0.0084				
	HMAP HMABIN HMATP1 HMATP2	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor						1	V	OC	F lbs/hr 0.89 0.89 0.019 0.019	tons/yr 0.62 0.62 0.024 0.024	lbs/hr 0.42 0.42 0.0062 0.0062	tons/yr 0.29 0.29 0.0078 0.0078	lbs/hr 0.064 0.064 0.0018 0.0018	tons/yr 0.044 0.044 0.0022 0.0022				
$ \begin{array}{r} 1\\ 2\\ 3\\ 4\\ 5 \end{array} $	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP3	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen						1	V	OC	F lbs/hr 0.89 0.89 0.019 0.019 0.30	tons/yr 0.62 0.62 0.024 0.024 0.024 0.37	lbs/hr 0.42 0.42 0.0062 0.0062 0.10	tons/yr 0.29 0.29 0.0078 0.0078 0.12 0.0078 0.0079	lbs/hr 0.064 0.064 0.0018 0.0018 0.0068	tons/yr 0.044 0.044 0.0022 0.0022 0.0084 0.0022 0.0022				
$ \begin{array}{r} 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 8 \end{array} $	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP3 HMAPUG HMATP4	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Scalping Screen Unloading						1	V	OC	F bs/hr 0.89 0.019 0.019 0.30 0.019 0.019 0.019 0.019	tons/yr 0.62 0.024 0.024 0.024 0.024 0.024 0.024 0.024	lbs/hr 0.42 0.42 0.0062 0.0062 0.10 0.0062 0.0063	tons/yr 0.29 0.29 0.0078 0.0078 0.12 0.0078 0.0079 0.0079	lbs/hr 0.064 0.064 0.0018 0.0018 0.0068 0.0018 0.0018 0.0018 0.0018	tons/yr 0.044 0.044 0.0022 0.0022 0.0084 0.0022 0.0022 0.0022				
$ \begin{array}{r} 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 7 \end{array} $	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP3 HMAPUG	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Scalping Screen Unloading Pug Mill Load						1	V	OC	F Ibs/hr 0.89 0.019 0.019 0.30 0.019 0.019 0.019	tons/yr 0.62 0.62 0.024 0.024 0.37 0.024 0.024	lbs/hr 0.42 0.42 0.0062 0.0062 0.10 0.0062 0.0062	tons/yr 0.29 0.29 0.0078 0.0078 0.12 0.0078 0.0079	lbs/hr 0.064 0.064 0.0018 0.0018 0.0068 0.0018 0.0018	tons/yr 0.044 0.044 0.0022 0.0022 0.0084 0.0022 0.0022				
$ \begin{array}{r} 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 8 \end{array} $	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP3 HMAPUG HMATP4	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Scalping Screen Unloading Pug Mill Load Pug Mill Unload						1	V	OC	F bs/hr 0.89 0.019 0.019 0.30 0.019 0.019 0.019 0.019	tons/yr 0.62 0.024 0.024 0.024 0.024 0.024 0.024 0.024	lbs/hr 0.42 0.42 0.0062 0.0062 0.10 0.0062 0.0063	tons/yr 0.29 0.29 0.0078 0.0078 0.12 0.0078 0.0079 0.0079	lbs/hr 0.064 0.064 0.0018 0.0018 0.0068 0.0018 0.0018 0.0018 0.0018	tons/yr 0.044 0.044 0.0022 0.0022 0.0084 0.0022 0.0022 0.0022				
$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 9 \\ 12 \\ 13 \\ \end{array} $	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP3 HMAPUG HMATP4 HMATP5	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Scalping Screen Unloading Pug Mil Load Pug Mil Unload Conveyor Transfer to Slinger Conveyor						1	V	OC	F 1bs/hr 0.89 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.033 0.33	tons/yr 0.62 0.024 0.024 0.024 0.024 0.024 0.024 0.024	lbs/hr 0.42 0.062 0.0062 0.10 0.0062 0.0063 0.0063 0.0063 0.0063 0.16	tons/yr 0.29 0.078 0.0078 0.0078 0.0078 0.0079 0.0079 0.0079 0.0079 0.11	lbs/hr 0.064 0.064 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0024	tons/yr 0.044 0.0022 0.0022 0.0084 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.016				
$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 9 \\ 12 \\ 13 \\ 14 \\ \end{array} $	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP3 HMAPUG HMATP4 HMATP5 RAPP RAPP RAPPIN RAPT1	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Scalping Screen Unloading Pug Mill Unload Pug Mill Unload Conveyor Transfer to Slinger Conveyor RAP Storage Pile						1	V	OC	F 1bs/hr 0.89 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.33 0.33 0.0070	tons/yr 0.62 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.23 0.23 0.0088	lbs/hr 0.42 0.42 0.0062 0.0062 0.0063 0.0063 0.0063 0.0063 0.16 0.16 0.0023	tons/yr 0.29 0.29 0.0078 0.0078 0.0078 0.0079 0.0079 0.0079 0.0079 0.11 0.11	lbs/hr 0.064 0.064 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0024 0.00065	tons/yr 0.044 0.044 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.016 0.016				
$ \begin{array}{r} 1\\ 2\\ 3\\ 4\\ 5\\ 6\\ 7\\ 8\\ 9\\ 12\\ 13\\ 14\\ 15\\ \end{array} $	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP3 HMAPUG HMATP4 HMATP5 RAPP RAPBIN RAPBIN RAP71 RAPSCR	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Scalping Screen Unloading Pug Mill Unload Conveyor Transfer to Slinger Conveyor RAP Storage Pile RAP Feed Bin Loading RAP Feed Bin Unloading RAP Scelping Screen						1	V	OC	F 1bs/hr 0.89 0.89 0.011 0.0111 0.0111 0.0111 0.0111 0.0111 0.0111 0	tons/yr 0.62 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.23 0.23 0.0088 0.14	lbs/hr 0.42 0.42 0.0062 0.0062 0.0063 0.0063 0.0063 0.0063 0.0063 0.16 0.16 0.0023 0.0037	tons/yr 0.29 0.29 0.0078 0.0078 0.0078 0.0079 0.0079 0.0079 0.0079 0.0079 0.11 0.11 0.11 0.0029 0.046	lbs/hr 0.064 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0024 0.00065 0.0025	tons/yr 0.044 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.016 0.00081 0.00081				
$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 9 \\ 12 \\ 13 \\ 14 \\ \end{array} $	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP3 HMAPUG HMATP4 HMATP5 RAPP RAPP RAPPIN RAPT1	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Scalping Screen Unloading Pug Mill Load Pug Mill Unload Conveyor Transfer to Slinger Conveyor RAP Storage Pile RAP Feed Bin Loading RAP Feed Bin Unloading						1	V	OC	F 1bs/hr 0.89 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.33 0.33 0.0070	tons/yr 0.62 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.23 0.23 0.0088	lbs/hr 0.42 0.42 0.0062 0.0062 0.0063 0.0063 0.0063 0.0063 0.0063 0.16 0.16 0.16 0.0023 0.037 0.0023	tons/yr 0.29 0.29 0.0078 0.0078 0.0078 0.0079 0.0079 0.0079 0.0079 0.11 0.11 0.11 0.012 0.046	lbs/hr 0.064 0.064 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0024 0.00065	tons/yr 0.044 0.044 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.016 0.016				
$ \begin{array}{r} 1\\ 2\\ 3\\ 4\\ 5\\ 6\\ 7\\ 8\\ 9\\ 12\\ 13\\ 14\\ 15\\ 16\\ 10,11\\ \end{array} $	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP3 HMAPUG HMATP4 HMATP5 RAPBIN RAPP RAPBIN RAP71 RAPSCR RAP72 HMAFIL	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Scalping Screen Unloading Pug Mill Unload Conveyor Transfer to Slinger Conveyor RAP Storage Pile RAP Feed Bin Loading RAP Feed Bin Unloading RAP Seed Bin Unloading				tons/yr		tons/yr	V	OC tons/yr	F Ibs/hr 0.89 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.33 0.33 0.0070 0.11 0.0070 0.18	tons/yr 0.62 0.62 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.023 0.23 0.0088 0.14 0.0088	lbs/hr 0.42 0.42 0.0062 0.0062 0.0063 0.0063 0.0063 0.0063 0.063 0.063 0.16 0.16 0.0023 0.0023 0.12	tons/yr 0.29 0.29 0.0078 0.0078 0.0078 0.0079 0.0079 0.0079 0.0079 0.0079 0.0079 0.011 0.11 0.11 0.0029 0.046 0.0029 0.018	lbs/hr 0.064 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0024 0.0025 0.00065 0.018	tons/yr 0.044 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.016 0.016 0.00081 0.00081 0.00081	lbs/hr	tons/yr	lbs/hr	tons/yr
$ \begin{array}{r} 1\\ 2\\ 3\\ 4\\ 5\\ 6\\ 7\\ 8\\ 9\\ 12\\ 13\\ 14\\ 15\\ 16\\ \end{array} $	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP3 HMAPUG HMATP4 HMATP5 RAPB RAPBIN RAPF1 RAPSCR RAPT2	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Unloading Pug Mill Load Pug Mill Unload Conveyor Transfer to Slinger Conveyor RAP Storage Pile RAP Feed Bin Loading RAP Feed Bin Unloading RAP Scalping Screen RAP Scalping Screen						1	V	OC	F Ibs/hr 0.89 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.33 0.33 0.0070 0.11 0.0070	tons/yr 0.62 0.62 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024	lbs/hr 0.42 0.42 0.0062 0.10 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.16 0.16 0.0023 0.0023 0.12	tons/yr 0.29 0.0078 0.0078 0.12 0.0078 0.0079 0.0079 0.0079 0.0079 0.0079 0.11 0.11 0.0029 0.046 0.0029 0.018 5.75	lbs/hr 0.064 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0024 0.024 0.0025 0.00065	tons/yr 0.044 0.044 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.016 0.016 0.00081	lbs/hr	3.00		
$ \begin{array}{r} 1\\ 2\\ 3\\ -5\\ -6\\ 7\\ -8\\ 9\\ 12\\ -13\\ -14\\ -15\\ -16\\ -10, 11\\ \end{array} $	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP3 HMAPUG HMATP3 HMAPUG HMATP3 RAPUG RAPUG RAPDI RAPSCR RAPT1 RAPSCR RAPT2 HMAFIL HMAFIL HMASTK	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Scalping Screen Mil Load Pug Mil Unload Conveyor Transfer to Slinger Conveyor RAP Storage Pile RAP Feed Bin Loading RAP Feed Bin Loading RAP Feed Bin Londding RAP Scalping Screen RAP Scalping Screen RAP Scalping Screen RAP Scalping Screen Unloading Mineral Filler Silo and Baghouse				tons/yr	lbs/hr	tons/yr	V(llbs/hr	OC tons/yr	F Ibs/hr 0.89 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.33 0.33 0.0070 0.11 0.0070 0.18	tons/yr 0.62 0.62 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.023 0.23 0.0088 0.14 0.0088	lbs/hr 0.42 0.42 0.0062 0.0062 0.0063 0.0063 0.0063 0.0063 0.063 0.063 0.16 0.16 0.0023 0.0023 0.12	tons/yr 0.29 0.29 0.0078 0.0078 0.0078 0.0079 0.0079 0.0079 0.0079 0.0079 0.0079 0.011 0.11 0.11 0.0029 0.046 0.0029 0.018	lbs/hr 0.064 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0024 0.0025 0.00065 0.018	tons/yr 0.044 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.016 0.016 0.00081 0.00081 0.00081	lbs/hr	tons/yr	lbs/hr	tons/yr
$\begin{array}{c} 1\\ 2\\ 3\\ 4\\ 5\\ 6\\ 7\\ 8\\ 9\\ 12\\ 13\\ 14\\ 15\\ 16\\ 10, 11\\ 17, 18\\ \end{array}$	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP3 HMAPUG HMATP3 HMAPUG HMATP3 RAPUG RAPUG RAPDI RAPSCR RAPT1 RAPSCR RAPT2 HMAFIL HMAFIL HMASTK	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Unloading Pug Mil Load Pug Mil Unload Conveyor Transfer to Slinger Conveyor RAP Storage Pile RAP Feed Bin Loading RAP Feed Bin Unloading RAP Scalping Screen RAP Scalping Screen Unloading Mineral Filler Silo and Baghouse Drum Dryer and Baghouse			lbs/hr	tons/yr	lbs/hr	tons/yr	V(1 lbs/hr	OC tons/yr	F Ibs/hr 0.89 0.019 0.007 0.007 0.007 0.019 0.007 0.007 0.007 0.011 0.0070 0.011 0.018 0.011	tons/yr 0.62 0.62 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.23 0.23 0.0088 0.14 0.0088 0.027 8.25	lbs/hr 0.42 0.42 0.0062 0.10 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.16 0.16 0.0023 0.0023 0.12	tons/yr 0.29 0.0078 0.0078 0.12 0.0078 0.0079 0.0079 0.0079 0.0079 0.0079 0.11 0.11 0.0029 0.046 0.0029 0.018 5.75	lbs/hr 0.064 0.0064 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0024 0.0025 0.00065 0.0018 4.60	tons/yr 0.044 0.042 0.0022 0.0022 0.0084 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.00081 0.00081 0.00081 0.00026 5.75	lbs/hr	3.00	lbs/hr	tons/yr
$\begin{array}{c} 1\\ 2\\ 3\\ 4\\ 5\\ 6\\ 7\\ 8\\ 9\\ 12\\ 13\\ 14\\ 15\\ 16\\ 10, 11\\ 17, 18\\ 19\\ \end{array}$	HMAP HMABIN HMATP1 HMATP2 HMATP2 HMATP3 HMAPUG HMATP4 HMATP4 HMATP4 RAPBIN RAPBIN RAPFI RAPSCR RAPT2 HMAFIL HMASTK DRUMUL	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Drug Mil Load Pug Mil Load Pug Mil Unload Conveyor Transfer to Slinger Conveyor RAP Storage Pile RAP Feed Bin Loading RAP Feed Bin Unloading RAP Scalping Screen RAP Scalping Screen RAP Scalping Screen Drum Diyer and Baghouse Drum Diyer unloading			lbs/hr	32.5 0.29	lbs/hr	tons/yr	V(1 lbs/hr	OC tons/yr	F Ibs/hr 0.89 0.019 0.03 0.03 0.03 0.0070 0.011 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.019 0.011 0.012 0	tons/yr 0.62 0.62 0.024 0.0250	lbs/hr 0.42 0.42 0.0062 0.0062 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0023 0.023 0.12	tons/yr 0.29 0.29 0.0078 0.0078 0.0078 0.0079 0.0079 0.0079 0.0079 0.0079 0.11 0.11 0.11 0.0029 0.046 0.0029 0.018 5.75 0.15	lbs/hr 0.064 0.0064 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0024 0.024 0.00065 0.0018 0.00065 0.018 4.60 0.12	tons/yr 0.044 0.042 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.00081 0.00081 0.00081 0.0026 5.75 0.15	lbs/hr	tons/yr	lbs/hr	tons/yr
$\begin{array}{c} 1\\ 2\\ 3\\ 4\\ 5\\ 6\\ 7\\ 8\\ 9\\ 12\\ 13\\ 14\\ 15\\ 16\\ 10, 11\\ 17, 18\\ 19\\ 20\\ \end{array}$	HMAP HMABIN HMATP1 HMATP2 HMASCR HMAP2G HMATP4 HMATP4 HMATP5 RAPBIN RAPFI RAPFIN RAPSCR RAPT1 HMASTK DRUMUL SILOUL	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Scalping Screen Pug Mill Load Pug Mill Unload Conveyor Transfer to Slinger Conveyor RAP Storage Pile RAP Feed Bin Loading RAP Feed Bin Loading RAP Feed Bin Loading RAP Scalping Screen RAP Scalping Screen RAP Scalping Screen Unloading Mineral Filler Silo and Baghouse Drum Dryer and Baghouse Drum Mixer Unloading Asphalt Silo Unloading	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr	V(1 lbs/hr 6.40 2.44 0.83	OC tons/yr	F Ibs/hr 0.89 0.010 0.010 0.000 0.010 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000000	tons/yr 0.62 0.62 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.023 0.23 0.0088 0.0088 0.027 8.25 0.15 0.13	lbs/hr 0.42 0.42 0.0062 0.0062 0.0063 0.0063 0.0063 0.16 0.16 0.0023 0.023 0.12 4.60 0.12	tons/yr 0.29 0.29 0.0078 0.0078 0.0078 0.0079 0.0079 0.0079 0.0079 0.0079 0.0079 0.11 0.11 0.012 0.0029 0.046 0.0029 0.018 5.75 0.15 0.13	lbs/hr 0.064 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0024 0.00065 0.018 4.60 0.12 0.10	tons/yr 0.044 0.042 0.0022 0.0084 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0023 0.016 0.00081 0.00081 0.00031 0.00026 5.75 0.15	lbs/hr	tons/yr	lbs/hr	tons/yr 8250
$\begin{array}{c} 1\\ 2\\ 3\\ 4\\ 5\\ 6\\ 7\\ 8\\ 9\\ 12\\ 13\\ 14\\ 15\\ 16\\ 10, 11\\ 17, 18\\ 19\\ 20\\ 21\\ \end{array}$	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP2 HMATP3 HMAPUG HMATP4 HMATP5 RAPBIN RAP5 RAP5 RAP5 RAP5 RAP5 RAP5 RAP5 RAP5	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Scalping Screen Unloading Pug Mil Load Pug Mil Unload Conveyor Transfer to Slinger Conveyor RAP Storage Pile RAP Feed Bin Loading RAP Scalping Screen RAP Scalping Screen RAP Scalping Screen Unloading Mineral Filler Silo and Baghouse Drum Dryer and Baghouse Drum Mixer Unloading Asphalt Silo Unloading Asphalt Silo Unloading Asphalt Heater	lbs/hr	tons/yr	lbs/hr 26.0 0.24 0.27 0.12	tons/yr 32.5 0.29 0.34	lbs/hr	tons/yr	V(l lbs/hr 6.40 2.44 0.015	OC tons/yr 8.00 3.05 1.04 0.067	F Ibs/hr 0.89 0.010 0.010 0.000 0.010 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000000	tons/yr 0.62 0.62 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.023 0.038 0.0088 0.027 8.25 0.15 0.13	lbs/hr 0.42 0.42 0.0062 0.0062 0.0063 0.0063 0.0063 0.16 0.16 0.0023 0.023 0.12 4.60 0.12	tons/yr 0.29 0.29 0.0078 0.0078 0.0078 0.0079 0.0079 0.0079 0.0079 0.0079 0.0079 0.11 0.11 0.012 0.0029 0.046 0.0029 0.018 5.75 0.15 0.13	lbs/hr 0.064 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0024 0.00065 0.018 4.60 0.12 0.10	tons/yr 0.044 0.042 0.0022 0.0084 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0023 0.016 0.00081 0.00081 0.00031 0.00026 5.75 0.15	lbs/hr	tons/yr 3.00 0.047 0.022	lbs/hr	tons/yr 8250
$\begin{array}{c} 1\\ 2\\ 3\\ 4\\ 5\\ 6\\ 7\\ 8\\ 9\\ 9\\ 12\\ 13\\ 14\\ 15\\ 16\\ 10, 11\\ 17, 18\\ 19\\ 20\\ 21\\ 22\\ \end{array}$	HMAP HMABIN HMATP1 HMATP2 HMASCR HMATP3 HMAPUG HMATP4 HMATP3 RAPBIN RAPBIN RAPBIN RAPFI RAPSCR RAPT2 HMAFIL HMAFIL SILOUL SILOUL HMAHT ASPHTK	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Scalping Screen Unloading Pug Mill Load Pug Mill Load Pug Mill Load Conveyor Transfer to Slinger Conveyor RAP Storage Pile RAP Feed Bin Loading RAP Feed Bin Unloading RAP Scalping Screen RAP Scalping Screen RAP Scalping Screen Drum Diyer and Baghouse Drum Diyer and Baghouse Drum Mixer Unloading Asphalt Silo Unloading Asphalt Heater Asphalt Cement Storage Tank	lbs/hr	tons/yr	lbs/hr 26.0 0.24 0.27 0.12	tons/yr 32.5 0.29 0.34	lbs/hr	tons/yr	V(l lbs/hr 6.40 2.44 0.015	OC tons/yr 8.00 3.05 1.04 0.067	F Ibs/hr 0.89 0.011 0.0070 0.11 0.0070 0.12 0.10 0.12 0.10 0.12 0.10 0.022	$\begin{array}{c} {\rm tons/yr}\\ 0.62\\ 0.62\\ 0.024\\ 0.024\\ 0.024\\ 0.024\\ 0.024\\ 0.024\\ 0.024\\ 0.024\\ 0.024\\ 0.023\\ 0.23\\ 0.0088\\ 0.14\\ 0.0088\\ 0.027\\ 8.25\\ 0.15\\ 0.13\\ 0.096\\ \end{array}$	lbs/hr 0.42 0.42 0.0062 0.0062 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0023 0.023 0.12 0.10 0.012 0.10 0.022	tons/yr 0.29 0.29 0.0078 0.0078 0.0078 0.0079 0.0079 0.0079 0.0079 0.0079 0.0079 0.0079 0.011 0.0029 0.0146 0.0029 0.018 5.75 0.15 0.13 0.096	lbs/hr 0.064 0.0064 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0024 0.024 0.00065 0.0018 0.00065 0.0018 4.60 0.12 0.10 0.022	tons/yr 0.044 0.044 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.016 0.0022 0.016 0.00081 0.00081 0.00081 0.00081 0.00081 0.0026 5.75 0.15 0.13 0.096	lbs/hr	tons/yr 3.00 0.047 0.022	lbs/hr	tons/yr 8250
$\begin{array}{c} 1\\ 2\\ 3\\ 4\\ 5\\ 6\\ 7\\ 8\\ 9\\ 12\\ 13\\ 14\\ 15\\ 16\\ 10, 11\\ 17, 18\\ 19\\ 20\\ 21\\ 22\\ 23\\ \end{array}$	HMAP HMABIN HMATP1 HMATP2 HMASCR HMAP2G HMATP4 HMATP4 HMATP4 RAPBIN RAP71 RAP8CR RAP71 HMAFIL HMASTK DRUMUL SILOUL HMAFT ASPHTK TRCK	Feed Bin Loading Feed Bin Unloading Conveyor to Conveyor Scalping Screen Scalping Screen Unloading Pug Mill Unload Conveyor Transfer to Slinger Conveyor RAP Storage Pile RAP Feed Bin Loading RAP Feed Bin Unloading RAP Feed Bin Unloading RAP Scalping Screen Unloading Mineral Filler Silo and Baghouse Drum Dryer and Baghouse Drum Dryer unloading Asphalt Silo Unloading Asphalt Silo Unloading Asphalt Cament Storage Tank Haul Road Traffic	lbs/hr	tons/yr	26.0 0.24 0.27 0.12 ***	32.5 0.29 0.34 0.51 ***	lbs/hr	tons/yr	V(1 lbs/hr	OC tons/yr	F Ibs/hr 0.89 0.011 0.0070 0.11 0.0070 0.12 0.10 0.12 0.10 0.12 0.10 0.022	$\begin{array}{c} {\rm tons/yr}\\ 0.62\\ 0.62\\ 0.024\\ 0.024\\ 0.024\\ 0.024\\ 0.024\\ 0.024\\ 0.024\\ 0.024\\ 0.024\\ 0.023\\ 0.23\\ 0.0088\\ 0.14\\ 0.0088\\ 0.027\\ 8.25\\ 0.15\\ 0.13\\ 0.096\\ \end{array}$	lbs/hr 0.42 0.42 0.0062 0.0062 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0063 0.0023 0.023 0.12 0.10 0.012 0.10 0.022	tons/yr 0.29 0.29 0.0078 0.0078 0.0078 0.0079 0.0079 0.0079 0.0079 0.0079 0.0079 0.0079 0.011 0.0029 0.0146 0.0029 0.018 5.75 0.15 0.13 0.096	lbs/hr 0.064 0.0064 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0018 0.0024 0.024 0.00065 0.0018 0.00065 0.0018 4.60 0.12 0.10 0.022	tons/yr 0.044 0.044 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.0022 0.016 0.0022 0.016 0.00081 0.00081 0.00081 0.00081 0.00081 0.0026 5.75 0.15 0.13 0.096	lbs/hr	tons/yr 3.00 0.047 0.022 0.0013	lbs/hr	tons/yr 8250

Insignificant - "***"



Air Pollution Control Technology Fact Sheet

Name of Technology: Fabric Filter - Pulse-Jet Cleaned Type (also referred to as Baghouses)

 Type of Technology:
 Control Device - Capture/Disposal

Applicable Pollutants: Particulate Matter (PM), including particulate matter less than or equal to 10 micrometers (: m) in aerodynamic diameter (PM_{10}), particulate matter less than or equal to 2.5 : m in aerodynamic diameter ($PM_{2.5}$), and hazardous air pollutants (HAPs) that are in particulate form, such as most metals (mercury is the notable exception, as a significant portion of emissions are in the form of elemental vapor).

Achievable Emission Limits/Reductions:

Typical new equipment design efficiencies are between 99 and 99.9%. Older existing equipment have a range of actual operating efficiencies of 95 to 99.9%. Several factors determine fabric filter collection efficiency. These include gas filtration velocity, particle characteristics, fabric characteristics, and cleaning mechanism. In general, collection efficiency increases with increasing filtration velocity and particle size.

For a given combination of filter design and dust, the effluent particle concentration from a fabric filter is nearly constant, whereas the overall efficiency is more likely to vary with particulate loading. For this reason, fabric filters can be considered to be constant outlet devices rather than constant efficiency devices. Constant effluent concentration is achieved because at any given time, part of the fabric filter is being cleaned. As a result of the cleaning mechanisms used in fabric filters, the collection efficiency is constantly changing. Each cleaning cycle removes at least some of the filter cake and loosens particles which remain on the filter. When filtration resumes, the filtering capability has been reduced because of the lost filter cake and loose particles are pushed through the filter by the flow of gas. As particles are captured, the efficiency increases until the next cleaning cycle. Average collection efficiencies for fabric filters are usually determined from tests that cover a number of cleaning cycles at a constant inlet loading. (EPA, 1998a)

Applicable Source Type: Point

Typical Industrial Applications:

Fabric filters can perform very effectively in many different applications. Common applications of fabric filter systems with pulse-jet cleaning are presented in Table 1, however, fabric filters can be used in most any process where dust is generated and can be collected and ducted to a central location.

Section 8

Map(s)

<u>A map</u> 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	

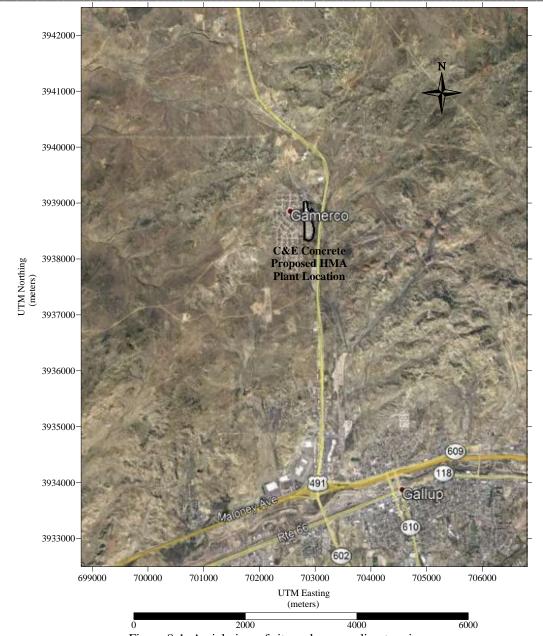


Figure 8-1: Aerial view of site and surrounding terrain

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")

• 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. A copy of the certified letter receipts with post marks (20.2.72.203.B NMAC)
- 2. 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. A copy of the property tax record (20.2.72.203.B NMAC).
- 4. A sample of the letters sent to the owners of record.
- 5. A sample of the letters sent to counties, municipalities, and Indian tribes.
- 6. A sample of the public notice posted and a verification of the local postings.
- 7. A table of the noticed citizens, counties, municipalities and tribes and to whom the notices were sent in each group.
- 8. A copy of the public service announcement (PSA) sent to a local radio station and documentary proof of submittal.
- 9. A copy of the <u>classified or legal</u> 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. A copy of the <u>display</u> 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. 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.

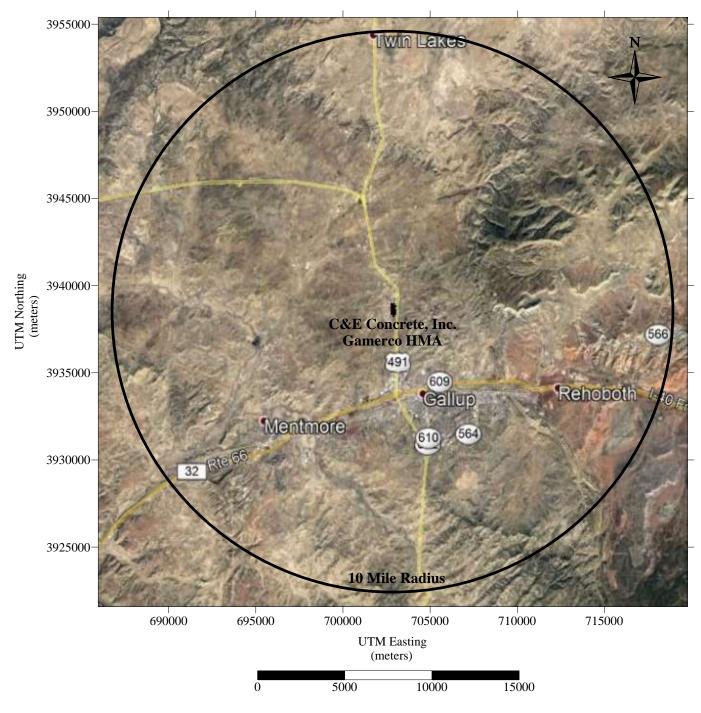


Figure 9-1: Ten-Mile Radius around Site

Government List within 10 Miles

City of Gallup Alfred Abeita II City Clerk 110 W Aztec Ave Gallup, NM 87301

McKinley County Harriett K. Becenti McKinley County Clerk 207 West Hill St. #100 Gallup, NM 87301

Office of the President and Vice President Navajo Nation P.O. Box 7440 Window Rock, AZ 86515

Chapter President's Office Bread Springs Chapter PO Box 6118 Window Rock, AZ 86515

Chapter President's Office Churchrock Chapter PO Box 549 Gallup, NM 87305

Chapter President's Office Fort Defiance Chapter PO Box 366 Fort Defiance, NM 87504

Chapter President's Office Manuelito Chapter HCR 57-Box9069 Gallup, NM 87301

Chapter President's Office Red Rock Chapter PO Box 2548 Gallup, NM 87301 Chapter President's Office Rock Springs Chapter PO Box 4608 Yahtahey, NM 87375

Chapter President's Office Tsayaton Chapter PO Box 86 Mentmore, NM 87375

Chapter President's Office Twin Lakes Chapter PO Box 4424 Yahtahey, NM 87375

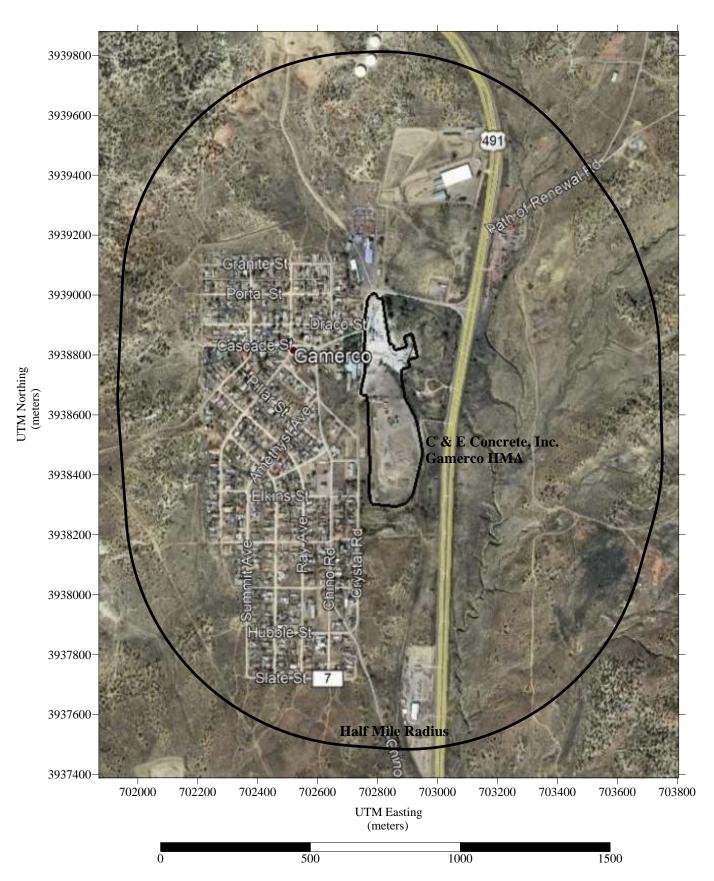


Figure 9-2: Half Mile Radius around Site

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
R118214	MASCI, JOHN DAVID	REVOCABLE TRUST	P.O. BOX 167	GAMERCO	NM	87317-0167
		ATTN: PETRANOVICH,				
R118222	MASCI, MARY TRUSTEE	STEVE CPA	P.O. BOX 580	GALLUP	NM	873050580
R118230	MASCI, JOHN DAVID	REVOCABLE TRUST	P.O. BOX 167	GAMERCO	NM	87317-0167
R118249	MASCI, JOHN DAVID	REVOCABLE TRUST	P.O. BOX 167	GAMERCO	NM	87317-0167
				CONTINENTAL		
R156302	BAUMGARDNER, JOHN C. & BETTY		P.O. BOX 312	DIVIDE	NM	87312-0312
R158038	MASCI, JOHN DAVID	REVOCABLE TRUST	P.O. BOX 167	GAMERCO	NM	87317-0167
D150050	KOMFALA, THOMAS & NANCY REV.					0.5015.0100
R158879	TRUST		P.O. BOX 133	GAMERCO	NM	87317-0133
R163864	GAMERCO WATER & SANITATION DISTRICT		P.O. BOX 69	GAMERCO	NM	873170069
R163929	GAMERCO TOWNSITE		P.O. BOX 09	GAMERCO	NM	87317-0009
R163937	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R163945		DEBRA L.	923 N. STRONG	GAMERCO	NM	87301-0000
R163943 R163953	VAN OSDOL, CLYDE F. & VAN OSDOL, CLYDE F. &	DEBRA L.	923 N. STRONG	GALLUP	NM	87301-0000
		DEBRA L.			NM	
R163988	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO		87317-0077
R163996	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R164003	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R164038	CHAVEZ, GABRIEL B. & THERESA	LOUDDES	701 N. STRONG	GALLUP	NM	87301-0000
R164046	TERAN, JOSE M. &	LOURDES	P.O. BOX 2842	GALLUP	NM	87305-0000
R164054	GARCIA, CARLOS & DORA		P.O. BOX 5241	GALLUP	NM	87305-5241
			318 BLACK DIAMOND			
R164062	VILLICANA, GILBERTO		CANYON DR.	GALLUP	NM	873010000
R104002	VILLICAINA, OILBERTO	C/O RIVERA, RUBEN &	CANTON DR.	GALLOI		873010000
R164119	JARAMILLO, RICHARD P.	SOFIA	1615 W. DELGADO	BELEN	NM	87002-0000
		C/O RIVERA, RUBEN &				
R164127	JARAMILLO, RICHARD P.	SOFIA	1615 W. DELGADO	BELEN	NM	87002-0000
R164135	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R164143	GAMERCO TOWNSITE	ATTN: MARIA ACOSTA	P.O. BOX 821	GAMERCO	NM	87317-0821
			1501 W. AZTEC			
R164178	VILLACANA, ARTURO		AVE. SP#5	GALLUP	NM	873010000
R164186	VILLICANA, CRISTINA		P.O. BOX 1141	GALLUP	NM	873051141
R164194	SAUCEDO, RONALD LEWIS		412 MCKEE	GALLUP	NM	87301-0000
R164208	VALLES, GUADALUPE A.		P.O. BOX 423	GAMERCO	NM	87317-0423
R164216	APODACA, EILEEN M.		P.O. BOX 2165	GALLUP	NM	87305-2165

Acct No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
			1005 W. WILSON			
R164224	LOCKHART, JOE &	KING, CHERIE	AVE.	GALLUP	NM	87301-0000
R164232	TURNBOW, SANDRA		P.O. BOX 5221	GALLUP	NM	87305-5221
R164259	BIZZELL, RONDEALL		P.O. BOX 955	GAMERCO	NM	87317-0955
R164267	BECENTI, EUGENE & VIRGINIA		P.O. BOX 475	GAMERCO	NM	87317-0475
R164283	BARBER, EUGENE D.		P.O. BOX 782	GAMERCO	NM	87317-0782
R164305	YAZZIE, DONAVON H.		P.O. BOX 446	GAMERCO	NM	87317-0446
R164313	CARAVEO, QUINARDO & MARTHA		P.O. BOX 2052	GALLUP	NM	87301-2052
R164348	RAMIREZ, JAMES P. & LUPE M.		P.O. BOX 775	GAMERCO	NM	87317-0775
R164356	SERNA, ADELA		P.O. BOX 858	GAMERCO	NM	87317-0858
R164364	DAMON, VERA, THERESA, STUART,	PAMELA & ANSON III	P.O. BOX 780	GAMERCO	NM	87317-0780
R164372	REYES, MARIA C.		P.O. BOX 4713	GALLUP	NM	87305-4713
R164399	GONZALEZ, ANTONIO & JOSEPHINE		P.O. BOX 2142	GALLUP	NM	87305-2142
R164402	BARBER, LAVINA		P.O. BOX 782	GAMERCO	NM	87317-0782
R164429	MORGAN, RAY & GLORIA		P.O. BOX 4001	GALLUP	NM	873054001
			1501 W. AZTEC SP.			
R164437	VILLICANA, ARTURO		5	GALLUP	NM	87301-0000
R164445	GONZALEZ, JOSEPHINE		P.O. BOX 2142	GALLUP	NM	873052142
R164453	HARDESTY, FLOYD		P.O.BOX 1012	GALLUP	NM	87305-1012
D164406		PADILLA-TALAMANTE,	20066 OLYMPIA			026200000
R164496	MELGOZA, ISABEL T. &	PEARL	RD.	MADERA	CA	936380000
R164518	VALDEZ, CONNIE		P.O. BOX 894	GAMERCO	NM	87317-0894
R164534	NDOLO, BENSON		P.O. BOX 92	NAVAJO	NM	873280092
R164682	KILBURN, CLARA		P.O. BOX 940	GAMERCO	NM	87317-0940
R164704	TSOSIE, HERBERT JR.		P.O. BOX 815	GAMERCO	NM	87317-0815
R164712	TSOSIE, HERBERT H. JR. &	NORMA J.	P.O. BOX 815	GAMERCO	NM	87317-0815
R164739	BEGAY, STEPHANIE ANN		P.O. BOX 2961	GALLUP	NM	873052961
R164747	PLATERO, LUCY		P.O. BOX 836	GAMERCO	NM	87317-0836
R164755	JAKE, JOHNNY & EMMA W.		P.O. BOX 27	GAMERCO	NM	87317-0027
R164763	WAIDE, CLARA M. &	JOHNSON, JAMES	RT. 2 BOX 168	HALE CENTER	TX	79401-0000
R164798	ARAGON, RAMONA C.		P.O. BOX 813	GAMERCO	NM	873170813
R164828	MARQUEZ, MARY ANN C. &	ARAGON, RAMONA	703 W. MESA AVE.	GALLUP	NM	87301-0000
R164836	CISNEROS, LEONARDO SR. &	CISNEROS, LEONARD JR.	P.O. BOX 832	GAMERCO	NM	87317-0832
R164852	GONZALES, RUBEN & BETTY		P.O. BOX K	GAMERCO	NM	87317-0000
R164879	GRIEGO, MERCY		P.O. BOX 3893	GALLUP	NM	87305-3893
R164887	MEJIA, JULIAN & VALENTINA		171 N. LOUCKS ST.	AURORA	IL	60505-0000
R164895	ARAGON, RAMONA C.		P.O. BOX 813	GAMERCO	NM	873170813
R164909	MORGAN, THOMAS T. & SARAH V.		P.O. BOX 2501	GALLUP	NM	87305-2501

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
			7608 W. VILLA			
R164917	GAMERCO TOWNSITE		THERESA DR.	GLENDALE	AZ	853080000
			5589 DUSKYWING			
R164925	DIAZ, ELIZABETH ANN		DR.	ROCKLEDGE	FL	329550000
R164933	YAZZIE, MARITA & NAKAI, JOHN G.		P.O. BOX 5112	GALLUP	NM	87305-5112
R164968	CHAVEZ, ARCENIO M. JR. & DIANE		P.O. BOX 641	GALLUP	NM	87305-0641
R164976	WHITE, FRANK & IDA R.	REV. TRUST	P.O. BOX 944	GAMERCO	NM	87317-0944
R164984	CARNEY, MADELINE		P.O. BOX 481	GAMERCO	NM	87317-0481
R164992	GAMERCO TOWNSITE		P.O. BOX 1776	GALLUP	NM	87305-1776
R165018	SANCHEZ, AGUSTIN & DURETTA		P.O. BOX 1776	GALLUP	NM	87305-1776
R165026	BARRON, ALFREDO & DINA		P.O. BOX 814	GAMERCO	NM	873170814
R165034	SNYDER, KENNETH TROY	C/O VALLES, GUADALUPE	P.O. BOX 423	GAMERCO	NM	87317-0423
		C/O BARRON, MARTIN &				
R165042	RAMIREZ, CARLOS & CLARA	MALDONADO, MARIA A.	P.O. BOX 176	GAMERCO	NM	87317-0176
R165069	VASQUEZ, APOLONIO	ATTN: VAZQUEZ, JACOBO	222 CASPIA CT.	PITTSBURG	CA	945650000
R165077	GAMERCO TOWNSITE		P.O. BOX 5133	GALLUP	NM	87305-5133
R165085	SOMBRA, LLC		P.O. BOX 1440	GALLUP	NM	87305-1440
R165093	SOMBRA, LLC		P.O. BOX 1440	GALLUP	NM	87305-1440
R165107	SOMBRA, LLC		P.O. BOX 1440	GALLUP	NM	87305-1440
R165115	MORALES, MANUEL H. &	MORALES, GUADALUPE	P.O. BOX 904	GAMERCO	NM	873170904
R165123	PAIZ, JOHN	C/O RUIZ-JACOVO, JOSE A.	P.O. BOX 56	GAMERCO	NM	87317-0056
R165158	MADRID, JOHN D., TRUSTEE	C/O RUIZ, NANCY	P.O. BOX 440	GAMERCO	NM	873170440
R165166	CANDELARIA, ESTHER		711 W. HILL AVE.	GALLUP	NM	87301-0000
R165174	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
			223 BLACK			
			DIAMOND			
R165204	RAMIREZ, HORTENCIA LAZARO		CANYON DR.	GALLUP	NM	873010000
R165239	MARTINEZ, GUADALUPE		P.O. BOX 905	GAMERCO	NM	873170905
			205 E. JEFFERSON			
R165247	HERRERA, RICHARD		AVE.	GALLUP	NM	87301-0000
D165255	DODEDTSON IDIS I		2425 E. BLANCO			974120000
R165255	ROBERTSON, IRIS L.		BLVD.	BLOOMFIELD	NM	874130000
R165263	GAMERCO TOWNSITE		P.O. BOX 2754	GALLUP	NM	87305-2754
R165298	BAHE, JAMES & ALTA		P.O. BOX 2754	GALLUP	NM	87305-2754
R165328	DOMINGUEZ, BERNIE		1707 MESQUITE DR.	GALLUP	NM	873010000
			P.O. BOX 5292		NM NM	
R165344	LOZANO, JOSE A. MALLON, IRENE I.		408 CHINO	GALLUP	NM NM	87305-5292
R165352				GAMERCO		87317-0000
R165379	SANCHEZ, ELENA		P.O. BOX 439	GAMERCO	NM	87317-0439

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
R165387	FRAIZER, THERESA		P.O. BOX 919	GAMERCO	NM	87317-0919
R165395	GARCIA, MARIO &	GARCIA, MELECIO	P.O. BOX 811	GAMERCO	NM	87317-0811
R165417	LUJAN, JOE A. & LOUISE		405 N. CARVER ST.	GALLUP	NM	87301-0000
R165425	LUJAN, JOE A. & LOUISE		405 N. CARVER ST.	GALLUP	NM	87301-0000
R165433	LUJAN, JOE A. & LOUISE		405 N. CARVER ST.	GALLUP	NM	87301-0000
R165476	GAMERCO TOWNSITE		98 BIRD ST. NORTH	MARTINSBURG	WV	25401-2489
R165484	GAMERCO TOWNSITE	ATTN: CASTILLO, JAMES	P.O. BOX 1782	CUBA	NM	870131782
R165514	GAMERCO TOWNSITE		P.O. BOX 236	GAMERCO	NM	87317-0236
R165522	TERAN, JOSE ALBARO &	NATALIA	P.O. BOX 823	GAMERCO	NM	87317-0823
R165557	NUNEZ, WALDO & PAULINE		P.O. BOX 19	GAMERCO	NM	87317-0019
R165638	ESCARCEGA, ELOY		GENERAL DELIVERY	GAMERCO	NM	87317-0000
R165646	NUNEZ, MARIAN		P.O. BOX 19	GAMERCO	NM	87317-0019
R165654	VALLES, GUADALUPE		P.O. BOX 423	GAMERCO	NM	87317-0423
R165689	LUJAN, BERNICE		2030 HAZEL CROFT WAY	NORTH LAS VEGAS	NV	890324816
R165697	NUNEZ, MARIAN		P.O. BOX 19	GAMERCO	NM	87317-0019
R165735	ESTRADA, ADAM & CINDY		P.O. BOX 880	GAMERCO	NM	87317-0880
R165743	SILVA, WILLIAM K.		P.O. BOX 2403	GALLUP	NM	873052403
R165778	LOPEZ, ANGEL ALCANTAR		P.O. BOX 126	GAMERCO	NM	87317-0126
R165786	CANTU, FRANCISCO SR. & CANTU, FABIAN		608 W. GREEN AVE.	GALLUP	NM	873010000
R165794	KILBURN, CHARLES		P.O. BOX 940	GAMERCO	NM	87317-0940
R165816	VILLANUEVA, ROXANNE L.		3261 CLEAR SKY ST. SW	LOS LUNAS	NM	87031-0000
R165824	SANCHEZ, RUTH		302 MCKEE DR.	GALLUP	NM	873010000
R165832	SILVA, IGNACIO A. & MARIE		P.O. BOX 2801	GALLUP	NM	873052801
R165859	HENRY, JAMES D.		P.O. BOX 155	GAMERCO	NM	87317-0155
R165875	BARRON, ALFREDO		P.O. BOX 814	GAMERCO	NM	873170814
R165883	CRAIG, JOANN J.		P.O. BOX 340	GAMERCO	NM	87317-0340
R165905	CRAIG, JOANN J.		P.O. BOX 340	GAMERCO	NM	87317-0340
R165913	LINCOLN, MARY M.		P.O. BOX 402	GAMERCO	NM	87317-0402
R165948	YAZZIE, BENNIE C. & BERNICE		P.O. BOX 931	GALLUP	NM	87305-0931
R165956	LEE, JOHN R. & VELMA R.		P.O. BOX 317	GAMERCO	NM	87317-0317
R165964	ALLEY, ROBERT D. & PAULA B.	C/O SAMORA, JOHN & JENNIFER	P.O. BOX 4512	GALLUP	NM	87305-4512
R165972	ROMERO, JOSEPH J. & CLAUDINA		601 N. STRONG	GALLUP	NM	87301-0000

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
			1501 W. AZTEC SP.			
R166006	VILLICANA, ARTURO		5	GALLUP	NM	87301-0000
R166014	EVANS, AARON M.		P.O. BOX 252	GAMERCO	NM	87317-0252
R166022	DELGADO, MARIA S.		P.O. BOX 877	GAMERCO	NM	87317-0877
R166049	RIGA, DAVID & SARAH		P.O. BOX 270	GAMERCO	NM	87317-0270
R166057	LEKCIN MANOR TRUST	ATTN: RICK NICKEL	5157 SIOUX TRAIL	LAS CRUCES	NM	880120000
				BULLHEAD		
R166065	BUHR, BETTY M.		600 CITRUS ST.	CITY	AZ	864420000
R166073	OLIVAS, DULCES N. & M. ISELA		P.O. BOX 3052	GALLUP	NM	873053052
R166103	LEYBA, MARIO & THOMASINE		P.O. BOX 120	GAMERCO	NM	87317-0120
R166138	MADRID, RUDOLPH K. &	MADRID, CARMEN	226 VIRO CIR.	GALLUP	NM	87301-0000
R166146	WILLETTO, REGINA		P.O. BOX 252	BRIMHALL	NM	87310-0252
R166154	LACY, MALCOLM R. REVOCABLE TRUST		P.O. BOX 485	GAMERCO	NM	873170485
			929 HENRIETTA			
R166189	SILVA, ANTHONY		DR.	GALLUP	NM	87301-0000
R166243	REYNOLDS, JOSEPHINE		P.O. BOX 496	GAMERCO	NM	87317-0496
R166278	SARRACINO, AARON B. & BAMBEE JOY		P.O. BOX 939	GAMERCO	NM	873170939
R166286	BURROLA, ARTHUR &	ELIZABETH M.	P.O. BOX 851	GAMERCO	NM	87317-0851
R166294	PALACIOS, LEONOR E.		P.O. BOX 479	GAMERCO	NM	87317-0479
R166308	JOHNSTON, CLARA E.	C/O CALDERON, NICHOLAS & ROSA	P.O. BOX 214	GAMERCO	NM	87317-0214
R166332	WARREN, IRA &	HERMELINDA	P.O. BOX 434	GAMERCO	NM	87317-0434
R166359	GARCIA, JOSE A. & SHANNON		P.O. BOX 434	GAMERCO	NM	87317-0434
R166367	DEVLIN, THOMAS J. & YAVON E.		P.O. BOX 136	GAMERCO	NM	873170136
R166383	LACY, MALCOLM R. REVOCABLE TRUST		P.O. BOX 485	GAMERCO	NM	873170485
	MARTINEZ, DEBBY & MANGES,					
R166405	TARALYN		302 S. CLARK	GALLUP	NM	873010000
R166413	MURILLO, FRANCISCO &	MARGARITA	P.O. BOX 35	GAMERCO	NM	87317-0035
R166448	ARRIOLA, RACHEL		P.O. BOX 28	GAMERCO	NM	873170028
R166456	ADAIR, ALBERT L. &	LUCILLE M. TRUSTEES	P.O. BOX 132	GALLUP	NM	87305-0132
R166464	GAMEZ, MARY LOU		P.O. BOX 58	GAMERCO	NM	87317-0058
R166472	RAMIREZ, GEORGE D. & ALTA		P.O. BOX 80	GAMERCO	NM	87317-0080
R166499	VILLICANA, ANGELICA		P.O. BOX 1141	GALLUP	NM	87305-1141
	WILLIAMS, JOHN B. & JOAN W., REV.	C/O GRIEGO, LIONEL &				
R166529	TRUST	MARIA C.	P.O. BOX 3863	GALLUP	NM	873053863
	WILLIAMS, JOHN B. & JOAN W. CO-		460 SOUTH 1ST			
R166537	TRUSTEES		WEST	SNOWFLAKE	AZ	859370000
R166596	KOMFALA, THOMAS & NANCY REV. TRUST		P.O. BOX 133	GAMERCO	NM	87317-0133

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
	KOMFALA, THOMAS & NANCY REV.					
R166618	TRUST		P.O. BOX 133	GAMERCO	NM	87317-0133
	KOMFALA, THOMAS & NANCY REV.					
R166626	TRUST		P.O. BOX 133	GAMERCO	NM	87317-0133
R166669	PEREZ, MARCOS		P.O. BOX 911	GAMERCO	NM	87317-0911
R166677	PEREZ, MARCOS		P.O. BOX 911	GAMERCO	NM	87317-0911
R166685	MACIAS, JOHN		P.O. BOX 134	GAMERCO	NM	87317-0134
R166693	VALLES, GUADALUPE &	NANCY	P.O. BOX 423	GAMERCO	NM	87317-0423
R166715	KETTERING, ORIN		3210 BLUE HILL AVE.	GALLUP	NM	87301-0000
R166723	SUTTON, DIANE		P.O. BOX 821	GALLUP	NM	87305-0821
R166774	MASCI, JOHN DAVID	REVOCABLE TRUST	P.O. BOX 167	GAMERCO	NM	87317-0167
R166863	HERONEMUS, CLIFFORD A.		P.O. BOX 95	GAMERCO	NM	87317-0095
R166898	HERONEMUS, CLIFFORD A.		P.O. BOX 95	GAMERCO	NM	87317-0095
R166928	TRUJILLO, NICHOLAS M.	ATTN: TRUJILLO, JEFF	1767 W. 25TH ST.	YUMA	AZ	853640000
R166944	MORALES, MARIA		P.O. BOX 865	GAMERCO	NM	87317-0865
R166952	MARAN-ATA IGLESIA CHRISTIANA B.	DE GAMERCO, INC.	P.O. BOX 912	GAMERCO	NM	87317-0912
R166979	GONZALES, LORENZO L. & MERCEDES		P.O. BOX 854	GAMERCO	NM	873170854
R166987	VINSON, STELLA		212 VIRO CIR.	GALLUP	NM	873010000
R166995	BENALLY, ERNEST & VERONICA		P.O. BOX 2138	GALLUP	NM	87305-2138
R167002	PALOMINO, SANTIAGO & MARIA A.		P.O. BOX 312	GAMERCO	NM	87317-0312
R167029	GONZALES, ANTONIO & JOSEPHINE		P.O. BOX 2142	GALLUP	NM	87305-2142
R167037	MACIAS, TONY & KATHLEEN		P.O. BOX 778	GAMERCO	NM	87317-0778
R167045	MACIAS, TONY & KATHLEEN		P.O. BOX 778	GAMERCO	NM	87317-0778
R167053	MACIAS, SALVADOR		P.O. BOX 4733	GALLUP	NM	87305-4733
R167088	MACIAS, JOHN		P.O. BOX 134	GAMERCO	NM	87317-0134
R167096	RODRIGUES, MANUEL &	MARIA E.	P.O. BOX 5093	GALLUP	NM	87305-5093
R167118	MONTANO, PROCOPIO & DOROTHY		P.O. BOX 486	GAMERCO	NM	873170486
R167126	CHAVEZ, GABRIEL BUDDY &	THERESA	701 N. STRONG	GALLUP	NM	87301-0000
R167134	ESTRADA, MARIA LORENA &	JOSE ALFREDO	P.O. BOX 286	GAMERCO	NM	873170286
R167169	HARDESTY, FLOYD & JENNY		P.O. BOX 1012	GALLUP	NM	87305-1012
R167185	MORALES, MANUEL H. &	MORALES, GUADALUPE	P.O. BOX 904	GAMERCO	NM	873170904
R167193	MIRABAL, ANTHONY N. & GLENDA		P.O. BOX 4	GAMERCO	NM	87317-0004
R167207	LOVATO, MICHAEL		P.O. BOX 1464	GALLUP	NM	873051464
			3315 BOX			
R167215	DIAZ, LENORE		CANYON AVE.	GALLUP	NM	873010000
R167258	GAMERCO WATER & SANITATION DISTRICT		P.O. BOX 69	GAMERCO	NM	873170069

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
R167266	SILVA, HENRY		P.O. BOX 2787	GALLUP	NM	87305-2787
R167274	CHAVEZ, DENETTE L.		509 W. MESA AVE.	GALLUP	NM	87301-0000
R167282	PARRA, JOSE R. & DORA L.	C/O ZARATE, RICARDO R.	P.O. BOX 888	GAMERCO	NM	873170888
R167304	BUTLER, HARRIET C.		P.O. BOX 5312	GALLUP	NM	87305-5312
R167312	BOMER, BRUCE W.		P.O. BOX 910	GAMERCO	NM	87317-0910
R167339	TERAN, JAVIER		P.O. BOX 5271	GALLUP	NM	87305-5271
R167347	ROBINSON, LOLA M. &	HENDERSON, ALVIN C.	P.O. BOX 5141	GALLUP	NM	87305-5141
	BRITE, ARTHUR T. & CLAUDIA S.	C/O VALDEZ-ACOSTA, JOSE	211 S. FLORENCE			
R167355	MENDOZA	M.	SP 24A	GALLUP	NM	873010000
R167363	GAMERCO TOWNSITE		P.O. BOX 807	GAMERCO	NM	87317-0807
	BRITE, ARTHUR T. & CLAUDIA S.	C/O MARTINEZ, JORGE &				
R167398	MENDOZA	MARTINEZ, GEORGE	P.O. BOX 864	GAMERCO	NM	873170864
R167428	LUJAN, JOSE P. &	NICOLE J. (J.T.)	203 WYATT ST.	GALLUP	NM	87301-0000
R167436	BRITE, ARTHUR T.	C/O MADRID, RICHARD F. & SANDOVAL, SHARIEE D.	P.O. BOX 820	GAMERCO	NM	873170820
R167444	MYRON, ALFRED	SANDOVAL, SHARIEE D.	P.O. BOX 5216	GAMERCO	NM	87305-5216
K10/444	GAMERCO TOWNSITE C/O NEZ, JOSEPH		F.O. BOA 3210	GALLUF		87303-3210
R167452	& CLARA	ATTN: NEZ, REBECCA	P.O. BOX 21	GAMERCO	NM	873170021
R167479	SANCHEZ, RICARDO		P.O. BOX 839	GAMERCO	NM	873170839
R167487	RESENDIZ, ARTURO		P.O. BOX 81	GALLUP	NM	873050081
R167495	SANCHEZ, RICARDO		P.O. BOX 839	GAMERCO	NM	873170839
R167509	BUHR, ANNIE		P.O. BOX 363	GAMERCO	NM	87317-0363
R167517	ALVAREZ, LETICIA	ATTN: ESTRADA, MARTHA	P.O. BOX 442	GAMERCO	NM	873170442
R167525	HERNANDEZ, ANTONIO & GERALDINE		P.O. BOX 43	GALLUP	NM	87305-0043
		C/O FRANCO-VILLANUEVA,				
		MARTIN & RAMIREZ,				
R167533	HERNANDEZ, IRMA	DOMINGA	P.O. BOX 861	GAMERCO	NM	873170861
R167584	SOTO-LUNA, SERGIO ETAL		P.O. BOX 330	GALLUP	NM	873050330
R167592	ESTRADA, HECTOR		P.O. BOX 299	GAMERCO	NM	87317-0299
R167606	LABRA, ANTONIA		507 W. GREEN	GALLUP	NM	87301-0000
R167614	HARDESTY, JENNY M.	ATTN: ESTRADA, CINDY	P.O. BOX 880	GAMERCO	NM	873170880
D1(7(22	WILLIAMS, JOHN B. & JOAN W. CO-	C/O BACA, LAURA &		CALLUD	NIM	972052166
R167622	TRUSTEES	PONCE, JORGE H.	P.O. BOX 2166	GALLUP	NM	873052166
R167657	CANO, JOSE DE LA & SOCORRO		P.O. BOX 937	GAMERCO	NM	87317-0937
R167665	FLORES, ROSANA		P.O. BOX 4706	GALLUP	NM	873054706
R167673	ESTRADA, LORENA BANDA		P.O. BOX 286	GAMERCO	NM	87317-0286
R167703	GAMERCO TOWNSITE PARTNERSHIP	C/O GUARDIAN, MICHAEL	P.O. BOX 499	GAMERCO	NM	87317-0499
R167738	RAMOS, JOSE LUIZ		P.O. BOX 785	GAMERCO	NM	87317-0785
R167746	HERNANDEZ, JULIO		P.O. BOX 490	GAMERCO	NM	873170490

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Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
	MORALES, RACQUEL & MORALES,					
R167754	CHANTELLE	& MORALES, YVONNE	21 VIRO CIR.	GALLUP	NM	873010000
R167762	VILLICANA, ANTONIO & MARY LOU		P.O. BOX 1141	GALLUP	NM	873051141
R167797	APODACA, RUBY ANN		P.O. BOX 953	GAMERCO	NM	873170953
R167819	GONZALEZ, ANTONIO & JOSEPHINE		P.O. BOX 2142	GALLUP	NM	87305-2142
			103 HEMLOCK			
R167827	GUERRERO, YAZMIN		CANYON TRAIL	GALLUP	NM	87301-0000
R167835	VALLES, GUADALUPE &	NANCY	P.O. BOX 423	GAMERCO	NM	87317-0423
R167843	VALLES, GUADALUPE &	NANCY	P.O. BOX 423	GAMERCO	NM	87317-0423
R167878	SANCHEZ, DELFINO & SOFIA		P.O. BOX 839	GAMERCO	NM	87317-0839
R167886	YAZZIE, JOHN & LENA H.		P.O. BOX 5195	GALLUP	NM	87305-5195
R167894	GONZALES, ANNA (BERLA)		509 W. MESA AVE.	GALLUP	NM	873010000
R167908	DAVIS, STEVEN P.		P.O. BOX 78	GAMERCO	NM	873170078
R167916	WARREN, MARY E.		P.O. BOX 244	GAMERCO	NM	87317-0244
R167924	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R167932	RESENDIZ, CELESTINO S.		P.O. BOX 784	GAMERCO	NM	873170784
			701 N. STRONG			
R167959	TURNER, MELISSA		DR.	GALLUP	NM	87301-0000
R167967	FIERRO, DELIA &	MADRID, RICHARD JR.	P.O. BOX 70	GAMERCO	NM	873170070
R167975	RESENDIZ, MICAELINA		P.O. BOX 454	GAMERCO	NM	873170454
R167983	VALLES, MANUEL		P.O. BOX 423	GAMERCO	NM	87317-0423
R168009	RAMIREZ, GUILLERMO & LUCY		401 ZECCA DR.	GALLUP	NM	873010000
R168017	ALONZO, EDWARD J.		P.O. BOX 2873	GALLUP	NM	87305-2873
R168025	RUIZ, ABEL & BLANCA O.		P.O. BOX 916	GAMERCO	NM	873170916
R168033	RICO, DAVID JR. & ROCIO		P.O. BOX 2556	GALLUP	NM	87305-2556
R168068	RAINALDI, DANIEL B. & LUZ M.		P.O. BOX 818	GAMERCO	NM	87317-0818
R168076	BURKE, NICOLE K.		P.O. BOX 103	GAMERCO	NM	873170103
R168084	RAINALDI, DANIEL B. & LUZ M.		P.O. BOX 818	GAMERCO	NM	87317-0818
R168092	HARDY, ERMA		P.O. BOX 4474	WINDOW ROCK	AZ	86515-4474
R168106	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R168114	QUIMAYOUSIE, MAX &	KATHERINE M.	P.O. BOX 302	GAMERCO	NM	87317-0302
R168122	GAMERCO TOWNSITE		1714 S. CLIFF ST.	GALLUP	NM	87301-0000
R168149	FERTIG, DAVID		P.O. BOX 2575	GALLUP	NM	873052575
R168157	RESENDEZ, AUDENCIO		P.O. BOX 862	GAMERCO	NM	87317-0862
			GENERAL			
R168165	ROMERO, DAVID SR. &	RESENDEZ, MARCELINA	DELIVERY	GAMERCO	NM	87317-0000
R168173	LUJAN, JUAN & MARIA		P.O. BOX 471	GAMERCO	NM	87317-0471
R168203	ESTRADA, ALFREDO & LORENA		P.O. BOX 286	GAMERCO	NM	873170286

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
R168238	RAMIREZ, SYLVIA		P.O. BOX 801	GAMERCO	NM	87317-0801
		ATTN: FLORES, LINDA &				
R168246	HERNANDEZ, HUGO & ERLINDA	SEVERO	P.O. BOX 488	GALLUP	NM	873050488
R168254	GAMERCO TOWNSITE	C/O VALLES, GUADALUPE	P.O. BOX 423	GAMERCO	NM	87317-0423
R168262	RODRIGUEZ, PILAR & FELIPA &	SANCHEZ, MONICA	P.O. BOX 361	GAMERCO	NM	873170361
R168289	FRANCO, JORGE A. PONCE &	LORENZA T.	P.O. BOX 2166	GALLUP	NM	87305-2166
			206 W. ADAMS			
R168297	APODACA, ANTONIO		AVE.	GALLUP	NM	87301-0000
R168327	RODRIGUEZ, LUIS A. &	REBECA	P.O. BOX 493	GAMERCO	NM	87317-0493
R168335	GAMERCO TOWNSITE	ATTN: ZARATE, ERNESTO	P.O. BOX 888	GAMERCO	NM	873170888
R168343	RUIZ, NANCY		P.O. BOX 440	GAMERCO	NM	87317-0440
			1703 ESCALANTE			
R168378	RIOS, VERONICA CELINA TERAN		RD.	GALLUP	NM	873010000
DICODOC		CANTU, HERMAN R. &	14056 TIERRA DEL	EX D. CO		
R168386	CANTU, ALEJANDRO C. &	CANTU, SAUL	FIN	EL PASO	TX	799380000
R168394	ENCINIAS, FRANK &	DONNA R. MILLER	P.O. BOX 772	GAMERCO	NM	87317-0772
R168408	LEE, ELEANOR		P.O. BOX 2663	GALLUP	NM	87305-2663
R168416	TERRAZAS, MARTIN & JOSEPHINE		P.O. BOX 138	GAMERCO	NM	873170138
D160404			701 N. STRONG	CALLUD		07201 0000
R168424	CHAVEZ, MELISSA		DR. 929 HENRIETTA	GALLUP	NM	87301-0000
R168432	SILVA, ANTHONY		DR.	GALLUP	NM	87301-0000
R100452			2724 LOOKOUT	GALLOI		07501-0000
R168459	MONTEZ, MARTHA SUSANA		AVE.	GALLUP	NM	87301-0000
R168467	ALBA, JOSE OSCAR CHAIDEZ		P.O. BOX 482	GAMERCO	NM	87317-0482
11100.107		ATTN: DONALDSON,			1 (1)1	0.011 0.02
R168475	GAMERCO TOWNSITE	JOSEPH	P.O. BOX 2334	GALLUP	NM	873052334
R168483	GARCIA, VICTOR M. & NADINE		P.O. BOX 319	GAMERCO	NM	87317-0319
			2903 MCBRIDE			
R168505	GARCIA, ERASMO & LIBRADITA		CIR.	GALLUP	NM	87301-0000
R168513	RAMIREZ, RAFAEL		P.O. BOX 279	GAMERCO	NM	87317-0279
R168548	SANCHEZ, JASON R.		P.O. BOX 207	GAMERCO	NM	87317-0207
R168556	SANCHEZ, ROBERTO &	FRANCISCA	P.O. BOX 859	GAMERCO	NM	87317-0859
R168564	SANCHEZ, ROBERTO &	FRANCISA	P.O. BOX 859	GAMERCO	NM	87317-0859
R168572	ESTRADA, JIMMY C.		P.O. BOX 2921	GALLUP	NM	87305-2921
R168599	OLVERA, MARIA C. TRUSTEE		P.O. BOX 876	GAMERCO	NM	873170876
R168602	RIVERA, CARLOS & LETICIA		P.O. BOX 306	MENTMORE	NM	87319-0306
			1024 TELSTAR	-		
R168629	RODRIGUEZ, MARLENNE M.		LOOP NW	ALBUQUERQUE	NM	871211341

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
R168637	MEJIA, JOSE R. & VERONICA		P.O. BOX 960	GAMERCO	NM	87317-0960
R168645	WARREN, FRANKLIN D.		P.O. BOX 48	GAMERCO	NM	87317-0048
R168653	GAMERCO TOWNSITE	C/O NARANJO, DORIS E.	P.O. BOX 2756	GALLUP	NM	87305-2756
R168688	GALAVIZ, ENRIQUE & RAMONA		P.O. BOX 776	GAMERCO	NM	87317-0776
R168696	ARROYO, GUADALUPE		P.O. BOX 26	GAMERCO	NM	87317-0026
R168718	CHAVEZ, YOLANDA		P.O. BOX 418	GAMERCO	NM	873170418
R168726	NUNEZ, ANA KAREN &	PALACIOS, MARIA DEL ROCIO	P.O. BOX 959	GAMERCO	NM	873170959
R168734	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R168742	TERAN, VICTOR & ANA M.	C/O TERRAZAS, MARIO & CORRINE	P.O. BOX 290	GAMERCO	NM	873170290
R168777	OLVERA, JOSE & MARTHA SUSANA		2724 LOOKOUT AVE.	GALLUP	NM	873010000
R168785	KLASS, STANLEY & EVELYN		P.O. BOX 2365	GALLUP	NM	87305-2365
R168807	CANTU, FRANCISCO & ANNA ALICIA		P.O. BOX 418	GALLUP	NM	87305-0418
		C/O HERRERA, MANUEL &	3416 TODOS			
R168815	GAMERCO TOWNSITE	CATHERINE	SANTOS N.W.	ALBUQUERQUE	NM	871200000
R168823	BEJARANO, DAVID & MARIA L.		P.O. BOX 114	GAMERCO	NM	87317-0114
R168858	DIAZ, FRANK & ENRIQUETA		300 CORA LEE DR.	GALLUP	NM	87301-0000
R168866	MEJIA, JOSE & BETSY		P.O. BOX 276	GAMERCO	NM	87317-0276
R168874	GUERRERO, ALBERT & CECILIA		P.O. BOX 920	GAMERCO	NM	87317-0920
R168882	FLORES, ALEJANDRO RICARDO		7316 KIOWA DR.	EL PASO	TX	799110000
R168904	BARBER, ANNIE T.		P.O. BOX 782	GAMERCO	NM	87317-0782
R168912	BEGAY, ROBERT D. & MERLINDA		P.O. BOX 875	GAMERCO	NM	87317-0875
R168947	SALAZAR, DEL SR.		P.O. BOX 5015	GALLUP	NM	87305-5015
R168955	BISHOP, DOUG		1500 S. SECOND ST.	GALLUP	NM	87301-0000
R168963	GARCIA, PATRICIA		P.O. BOX 172	GAMERCO	NM	87317-0172
R168998	CHAVEZ, GABRIEL B. & THERESA		701 N. STRONG	GALLUP	NM	87301-0000
R169005	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R169013	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R169048	BROWN, DANIEL L. & VIRGINIA J.		P.O. BOX 282	GAMERCO	NM	87317-0282
R169056	WARREN, JOHN &	JESSICA	707 S. EIGHTH ST.	GALLUP	NM	87301-0000
R169064	GARCIA, RAYMOND & ROSA		P.O. BOX 383	GAMERCO	NM	87317-0383
R169080	RAMIREZ, HERIBERTO		P.O. BOX 236	GAMERCO	NM	873170236
R169099	ALDAZ, JUAN & ANNETTE		P.O. BOX 443	GAMERCO	NM	87317-0443
R169102	CHAVEZ, RITA C.		P.O. BOX 885	GAMERCO	NM	873170885
R169129	LUTSIE, TERRY & JENNIE		P.O. BOX 674	GALLUP	NM	87305-0674

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
R169137	LUTSE, PERRY & JANICE JAY		P.O. BOX 212	GAMERCO	NM	87317-0212
R169145	GOMEZ, ERNESTINE R.		P.O. BOX 946	GAMERCO	NM	87317-0946
R169153	GAMERCO TOWNSITE	C/O COOLEY, GRACE	P.O. BOX 5145	GALLUP	NM	873055145
R169188	YBARRA, RITA A.		P.O. BOX 874	GAMERCO	NM	87317-0874
R169196	PAIZ, EDDIE P.		400 E. VEGA	GALLUP	NM	87301-0000
R169218	CONRAD, MARGARET		P.O. BOX 806	GAMERCO	NM	87317-0806
R169226	SILVA, ANTHONY		929 HENRIETTA DR.	GALLUP	NM	87301-0000
R169234	PATTERSON, JAN-MIKAEL ETAL		P.O. BOX 331	GALLUP	NM	87305-0331
R169242	GAMERCO TOWNSITE		P.O. BOX 331	GAMERCO	NM	87317-0077
K109242			801 W. WILSON	UAWIEKCO		87317-0077
R169269	PADILLA, GLORIA A.		AVE.	GALLUP	NM	873010000
		C/O HARDY, FREDERICK &				
R169277	GAMERCO TOWNSITE PARTNERSHIPS	LUCY	P.O. BOX 395	GAMERCO	NM	87317-0395
R169285	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R169293	DAW, RAYMOND		P.O. BOX 175	GAMERCO	NM	87317-0175
R169307	RIVERA, EDDIE & ANGELA		P.O. BOX 4975	GALLUP	NM	87305-4975
R169315	CANDELARIA, ESTHER		711 W. HILL AVE.	GALLUP	NM	87301-0000
R169323	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R169358	EASTRIDGE, CLAUDE O'NEAL &	CORDELIA F.	P.O. BOX 201	GAMERCO	NM	87317-0201
R169366	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R169374	WITMER, THOMAS L. & MABEL MAE		P.O. BOX 892	GAMERCO	NM	87317-0892
R169382	HARKER, MARY &	WITMER, MABEL M.	P.O. BOX 376	GAMERCO	NM	87317-0376
R169404	HARKER, CLARABEL		P.O. BOX 376	GAMERCO	NM	873170376
R169412	ESTRADA, ANTIONETTE &	TREJO, HILARIO	P.O. BOX 74	GAMERCO	NM	87317-0074
R169439	CHAVEZ, MERCED & FRANCES		P.O. BOX 2888	GALLUP	NM	873052888
R169447	SMITH, DAVID		P.O. BOX 87	GAMERCO	NM	87317-0087
R169455	HUBER, GILBERT & JULIE		P.O. BOX 933	GAMERCO	NM	87317-0933
R169463	MARTINEZ, JORGE M.		P.O. BOX 864	GAMERCO	NM	87317-0864
R169498	GARNANEZ, MILTON		P.O. BOX 491	GAMERCO	NM	87317-0491
R169528	RICO, ROCIO		P.O. BOX 2556	GALLUP	NM	87305-2556
R169536	CANO, HUGO & CHAIDEZ, SALVADOR	C/O MEJIA, DIANA	P.O. BOX 960	GAMERCO	NM	873170960
R169544	PALACIOS, ARMANDO & IRENE R.		P.O. BOX 283	GAMERCO	NM	873170283
	MARAN-ATA IGLESIA CHRISTIANA					
R169552	BAPTISTA DE GAMERCO		P.O. BOX 779	GAMERCO	NM	873170779
R169579	VALLES, GUADALUPE		P.O. BOX 423	GAMERCO	NM	87317-0423
R169587	GAMERCO TOWNSITE		P.O. BOX 2936	GALLUP	NM	87305-2936
R169595	MULLA, ANNETTE SORRELL &	MULLA, NYLA	P.O. BOX 2232	GALLUP	NM	87305-2232

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
R169609	VALLES, GUADALUPE		101 ARIZONA ST.	GALLUP	NM	873010000
R169617	LOZOYA, OSCAR &	CHAVIRA, ELENA	3628 ZIA DR.	GALLUP	NM	873010000
R169625	GARCIA, MONICA M. &	GARCIA, GABRIELITA NADINE & VICTOR M.	P.O. BOX 319	GAMERCO	NM	873170319
R169633	WAUFORD, JOE N.		1122 RIDGECREST	GALLUP	NM	87301-0000
R169684	SANCHEZ, ANGEL		P.O. BOX 819	GAMERCO	NM	87317-0819
R169692	JOHNS, GLORIA		P.O. BOX 4555	YATAHEY	NM	87375-4555
R169706	NACKI, DEREK L.		P.O. BOX 309	GAMERCO	NM	87317-0309
R169714	HARRIS, DONALD & MARY		P.O. BOX 144	GAMERCO	NM	87317-0144
R169722	HARRIS, DONALD & MARY		P.O. BOX 144	GAMERCO	NM	87317-0144
R169749	BENALLY, CHARLEY & MAYNA		P.O. BOX 29	GAMERCO	NM	87317-0029
R169757	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R169765	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R169773	SILVERSMITH, TEDDIE JR. &	ANTOINETTE	P.O. BOX 628	GALLUP	NM	87305-0628
R169803	CHAVIRA, RENE L. & JOSEPHINE	ATTN: ROMERO, JAN	P.O. BOX 36	GAMERCO	NM	87317-0036
R169838	GAMERCO TOWNSITE	C/O OTERO, RICHARD & ORALIA S.	P.O. BOX 77	GAMERCO	NM	87317-0077
R169846	LUJAN, JUAN RAMON &	SILVA, LUCILLIA	P.O. BOX 51	GAMERCO	NM	87317-0051
R169854	PALOMINO, SANTIAGO & MARIA		P.O. BOX 312	GAMERCO	NM	873170312
R169862	TERRAZAS, RICHARD &	GERALDINE	P.O. BOX 856	GAMERCO	NM	87317-0856
R169889	VALENCIANO, JUANA		P.O. BOX 909	GAMERCO	NM	87317-0909
R169897	VILLICANA, CRISTINA		P.O. BOX 1141	GALLUP	NM	873051141
R169919	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R169927	DUNSWORTH, INEZ		605 STAGECOACH	GALLUP	NM	87301-0000
R169935	MONTANO, VIVIAN R. & ALICE		P.O. BOX 2336	GALLUP	NM	87305-2336
R169943	YAZZIE, BETTY J.		P.O. BOX 41	GAMERCO	NM	873170041
R169978	BENALLY, CHARLEY & MAYNA		P.O. BOX 29	GAMERCO	NM	87317-0029
R169986	RIOS, VELINDA		708 PORTAL ST.	GAMERCO	NM	873170000
R170003	CUENTA, JESUS ANGEL &	LUPITA ANGEL	P.O. BOX 5133	GALLUP	NM	87305-5133
R170038	JOHNSON, BETTY R.		P.O. BOX 1546	GALLUP	NM	87305-1546
R170046	VILLICANA, ANTONIO		P.O. BOX 1141	GALLUP	NM	873051141
R170054	VILLICANA, ANTONIO & MARY LOU		P.O. BOX 1141	GALLUP	NM	873051141
R170062	SALAS, PATRICIA &	GONZALES, JOSEPH	P.O. BOX 2101	GALLUP	NM	873052101
R170089	STARK, ROGER A. &	FRANCES G., TRUSTEES	P.O. BOX 2890	GALLUP	NM	87305-2890
R170097	DINEYAZHE, FRANK II & MAXINE		P.O. BOX 2244	GALLUP	NM	87305-2244
R170119	BLACKGOAT, ELOUISE		P.O. BOX 452	GALLUP	NM	87305-0452
R170127	RIVERA, CARLOS & LETICIA		P.O. BOX 306	MENTMORE	NM	87319-0306

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
R170135	HERNANDEZ, FRANK, LLC OR JUANITA		88 OLSON ST.	BELEN	NM	870020000
R170143	ESCARCEGA, ELOY & ROSA		P.O. BOX 166	GAMERCO	NM	873170166
R170178	PRIETO, ALBERTO & ROSA		P.O. BOX 3001	GALLUP	NM	87305-3001
R170186	MILLER, ANTOINETTE	& ETSITTY, JEFFERY	P.O. BOX 213	GAMERCO	NM	87317-0213
R170194	MILLER, ANTOINETTE &	ETSITTY, JEFFERY	P.O. BOX 213	GAMERCO	NM	87317-0213
R170208	GAMERCO TOWNSITE		P.O. BOX 2401	GALLUP	NM	87305-2401
R170216	MASINGALE, LINDSEY		1103 E. MESA AVE.	GALLUP	NM	873010000
R170224	BEGAY, BILL L.		P.O. BOX 50	GAMERCO	NM	87317-0050
R170232	MARTINEZ, MICHAEL A.		P.O. BOX 855	GAMERCO	NM	873170855
R170259	MARQUEZ, DONNA A.		P.O. BOX 2917	GALLUP	NM	87305-2917
R170267	RESENDIZ, LEONOR M.		P.O. BOX 81	GALLUP	NM	873050081
			2599 SHAVANO			
R170275	TORRES, MANUEL D. &	RENEE F.	PEAK DR. NE	RIO RANCHO	NM	87124-6796
R170283	JAMES, SANDRA H.		P.O. BOX 457	MENTMORE	NM	873190457
R170305	GAMERCO TOWNSITE		P.O. BOX 893	GAMERCO	NM	87317-0893
R170313	BILLIE, FREDA M.		P.O. BOX 2135	GALLUP	NM	873052135
		& VEGA, IDALIA M.				
R170356	DURAN, SALVADOR A.	GONZALEZ	P.O. BOX 1733	GALLUP	NM	873051733
R170364	MAZON, MANUEL R.		P.O. BOX 484	GAMERCO	NM	873170484
R170372	LOZANO, HUMBERTO &	LOZANO, FRANCES I.	P.O. BOX 355	GAMERCO	NM	873170355
R170399	BURROLA, LISA	C/O KLINE, CHARLES M. & PILAR L.	P.O. BOX 952	GAMERCO	NM	87317-0952
R170399 R170402	QUICERO, ROSIE	FILAR L.	P.O. BOX 302	GALLUP	NM	87305-0302
R170402 R170429	MANNING, SAM		P.O. BOX 382	GAMERCO	NM	87317-0382
R170429 R170437	ROSALES, GILBERT		P.O. BOX 597	GALLUP	NM	87305-0597
K170437	ROSALES, OILDERT		1414 REDROCK	UALLUI		87305-0597
R170445	LUCERO, EDDIE OR HELEN		DR.	GALLUP	NM	87301-0000
R170453	TORRES, EILEEN Y.		204 S. CLARK	GALLUP	NM	87301-0000
R170488	LOZANO, JESUS A. & OLIVIA HERRERA		P.O. BOX 458	GAMERCO	NM	87317-0458
R170496	GAMERCO TOWNSITE	C/O ROSALES, GILBERT	P.O. BOX 597	GALLUP	NM	87305-0597
R170518	HASTINGS, EMMA P. &	HASTINGS, DURWIN	P.O. BOX 415	GALLUP	NM	87305-0415
R170526	GONZALEZ, ANTONIO & JOSEPHINA		P.O. BOX 2142	GALLUP	NM	873052142
R170534	GONZALEZ, ANTONIO & JOSEPHINA		P.O. BOX 2142	GALLUP	NM	873052142
R170542	AVILA, ISRAEL & BERTHA		P.O. BOX 882	GAMERCO	NM	873170882
R170569	AVILA, ISRAEL & BERTHA A.		P.O. BOX 882	GAMERCO	NM	87317-0882
	GAMERCO WATER & SANITATION					
R170577	DISTRICT		P.O. BOX 69	GAMERCO	NM	873170069
R170585	ANCHONDO, MAGDALENA L.		P.O. BOX 6276	GALLUP	NM	873056276

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
R170593	MALDONADO, MIGUEL P. & ROSA E.		P.O. BOX 3322	GALLUP	NM	873053322
R170607	BENALLY, VERONICA L. & ERNEST SR.		P.O. BOX 2138	GALLUP	NM	87305-2138
R170615	SANDOVAL, ANNIE		P.O. BOX 119	GAMERCO	NM	873170119
R171328	PERRY, DAVID LEE		P.O. BOX 160	GAMERCO	NM	87317-0160
R171336	GARCIA, LUCIO		P.O. BOX 846	GAMERCO	NM	87317-0846
R173177	BENALLY, CHESTER & CATHY A.		P.O. BOX 935	GAMERCO	NM	87317-0935
R177504	MARTINEZ, FREDDIE N. & EVANGELINE		P.O. BOX 343	GAMERCO	NM	87317-0343
	KOMFALA, THOMAS & NANCY REV.					
R177857	TRUST		P.O. BOX 133	GAMERCO	NM	87317-0133
R178004	RESENDEZ, CELESTINO		P.O. BOX 784	GAMERCO	NM	87317-0784
R178012	VALLES, MARIA C.		P.O. BOX 423	GAMERCO	NM	87317-0423
R178039	GAMERCO TOWNSITE	ATTN: GARCIA, MELECIO	P.O. BOX 807	GAMERCO	NM	873170807
			1706 BOULDER	~		
R178047	STIMAC, MARY JANE TRUSTEE		RD.	GALLUP	NM	87301-0000
R178055	FLORES, PASTOR &	FLORES, ALFRED	605 E. PERSHING AVE.	GALLUP	NM	87301-0000
R178053	VALLES, CYNTHIA	ATTN: LOZANO, CYNTHIA	P.O. BOX 890	GALLOF	NM	873170890
K178005	VALLES, CINIHIA	ATTN: LOZANO, CTNTHIA	801 W. WILSON	GAMERCO	INIVI	873170890
R178098	PADILLA, RICHARD		AVE.	GALLUP	NM	873010000
R178128	SALAS, CLARENCE D. & MARIE R.		P.O. BOX 2101	GALLUP	NM	87305-2101
		GEN. CONFERENCE ADMN.				
R178357	COMMISSION ON NATIONAL MISSIONS	OFFICE	P.O. BOX 926	FINDLAY	OH	45840-0926
			9911 SOUTH 78TH	HICKORY		
R179906	GALLUP LAND PARTNERS, LLC		AVE.	HILLS	IL	604570000
D100000			9911 SOUTH 78TH	HICKORY	т	(04570000
R180009	GALLUP LAND PARTNERS, LLC		AVE. 9911 SOUTH 78TH	HILLS HICKORY	IL	604570000
R180076	GALLUP LAND PARTNERS, LLC		AVE.	HILLS	IL	604570000
11100070			9911 SOUTH 78TH	HICKORY		001270000
R180084	GALLUP LAND PARTNERS, LLC		AVE.	HILLS	IL	604570000
R180882	NAVAJO SHOPPING	CENTER, LTD	P.O. BOX 77	GAMERCO	NM	87317-0000
			9911 SOUTH 78TH	HICKORY		
R180912	GALLUP LAND PARTNERS, LLC		AVE.	HILLS	IL	604570000
R180947	UNITED STATES OF AMERICA		P.O. BOX 1060	GALLUP	NM	87305-1060
R184349	HAMILTON, TERRY R., REV. TRUST		P.O. BOX 1240	GALLUP	NM	87305-1240
			9911 SOUTH 78TH	HICKORY		
R184403	GALLUP LAND PARTNERS, LLC		AVE.	HILLS	IL	604570000
R187542	COMMISSION ON NATIONAL MISSIONS	GEN. CONFERENCE ADMN. OFFICE	P.O. BOX 926	FINDLAY	ОН	45840-0926
K10/J42	COMINISSION ON NATIONAL INISSIONS	UTTUE	1.0. DUA 920	TINDLAI	UII	+30+0-0920

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
			3210 BLUE HILL			
R197475	KETTERING, ORIN W. & DENISE M.		AVE.	GALLUP	NM	87301-0000
R200247	SUFIAH, MOHAMMAD		P.O. BOX 1307	ZUNI	NM	87327-1307
	WILLIAMS, JOHN & JOAN REVOCABLE					
R203343	TRUST	C/O SLLIM VISIONS, LLC	484 N. MAIN ST.	SNOWFLAKE	AZ	859370000
D202726			603 STAGECOACH	CALLUD		97201 0000
R203726	ESCAMILLA, ERIKA M.		RD.	GALLUP	NM	87301-0000
R203874	VALLES, GUADALUPE		P.O. BOX 423	GAMERCO	NM	87317-0423
R204897	LOPEZ, ALFREDO	CEN CONFEDENCE ADIOL	P.O. BOX 6103	GALLUP	NM	873056103
R204940	COMMISSION ON NATIONAL MISSIONS	GEN. CONFERENCE ADMN. OFFICE	P.O. BOX 926	FINDLAY	ОН	45840-0926
R204740		GEN. CONFERENCE ADMN.	1.0. DOX 720			43040-0720
R204941	COMMISSION ON NATIONAL MISSIONS	OFFICE	P.O. BOX 926	FINDLAY	ОН	45840-0926
		GEN. CONFERENCE ADMN.				
R204942	COMMISSION ON NATIONAL MISSIONS	OFFICE	P.O. BOX 926	FINDLAY	OH	45840-0926
		GEN. CONFERENCE ADMN.				
R204943	COMMISSION ON NATIONAL MISSIONS	OFFICE	P.O. BOX 926	FINDLAY	OH	45840-0926
D2 04044		GEN. CONFERENCE ADMN.	DO DOMOR		011	150.40.000.0
R204944	COMMISSION ON NATIONAL MISSIONS	OFFICE GEN. CONFERENCE ADMN.	P.O. BOX 926	FINDLAY	OH	45840-0926
R204945	COMMISSION ON NATIONAL MISSIONS	OFFICE	P.O. BOX 926	FINDLAY	ОН	45840-0926
K204945		GEN. CONFERENCE ADMN.	F.O. DOA 920	TINDLAT		43840-0920
R204946	COMMISSION ON NATIONAL MISSIONS	OFFICE	P.O. BOX 926	FINDLAY	ОН	45840-0926
R205520	BURNETT, JAMES & CAROL		P.O. BOX 942	GAMERCO	NM	87317-0942
R205795	CHAVIRA, LORENZO		P.O. BOX 897	GAMERCO	NM	87317-0897
R205841	GUERRERO, RAMON & JULIET		P.O. BOX 3391	GALLUP	NM	87305-3391
R205883	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R205883	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
11200000		ORTIZ, MARIA			1 (1)1	0/01/ 00//
R205974	MENDOZA, ISIDORO &	CONCEPCION	P.O. BOX 963	GAMERCO	NM	873170963
R206360	HARDESTY, URIAH		813 KEVIN DR.	GALLUP	NM	873010000
R206749	BURNHAM, FLOYD C.		P.O. BOX 220	GAMERCO	NM	87317-0220
R206777	MALONE, JENCE L.		P.O. BOX 116	GAMERCO	NM	873170116
R206952	ROMAN CATHOLIC CHURCH		P.O. BOX 1338	GALLUP	NM	87305-1338
R207162	GAMERCO TOWNSITE	C/O GALLEGOS, LUCIE OR ESPINOZA DULEMIA	9 HORSESHOE TR.	LOS LUNAS	NM	87031-0000
R207163	CARAVEO, VICTOR & GLORIA		P.O. BOX 492	GAMERCO	NM	87317-0492
R207182	ANALLA, VELMA B.		P.O. BOX 205	GAMERCO	NM	87317-0205
R207102	GARCIA, LETISIA		P.O. BOX 319	GAMERCO	NM	873170319
11201312	MEECH, WALTER V. &	NORMA M.	1713 DEL NORTE	GRANTS	NM	87020-0000

Acct_No	OWNNAME	CAREOF	MAILADD	MCITY	MSTATE	MZIP
R207419	MEECH, WALTER &	NORMA	1713 DEL NORTE	GRANTS	NM	87020-0000
R207475	WILLIAMS, BRUCE &	JENNY, ETAL	P.O. BOX 898	GAMERCO	NM	87317-0000
R207729	KRUEGER, ASHLEY ROSE		P.O. BOX 240	GAMERCO	NM	873170240
			1122 RIDGECREST			
R207732	WAUFORD, JOE N.		AVE.	GALLUP	NM	87301-0000
R207758	SILVA, IGNACIO A. &	MARIE J.	P.O. BOX 2801	GALLUP	NM	87305-2801
R207862	SANCHEZ, ILDA & CAYETANO		P.O. BOX 779	GAMERCO	NM	87317-0779
R207865	MENDOZA, CLAUDIA		P.O. BOX 888	GAMERCO	NM	873170888
R208018	SANCHEZ, MONICA		P.O. BOX 931	GAMERCO	NM	873170931
R208540	MORALES, MARIA		P.O. BOX 865	GAMERCO	NM	87317-0865
R208794	LOPEZ, SALVADOR		P.O. BOX 474	GAMERCO	NM	873170474
R210374	C & E CONCRETE, INC.		P.O. BOX 2547	MILAN	NM	870212547
R210378	EAGLE READY MIX CONCRETE, INC.		P.O. BOX 878	GAMERCO	NM	87317-0000
R210804	CORDOVA, VIRGINIA L.		P.O. BOX 795	GAMERCO	NM	87317-0795
R210805	THOMAS, LEROY &	MANYCHILDREN, SELENA	P.O. BOX 891	GAMERCO	NM	873170891
R211138	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R211139	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R211139	GAMERCO TOWNSITE		P.O. BOX 77	GAMERCO	NM	87317-0077
R212107	GAMERCO TOWNSITE		P.O. BOX 236	GAMERCO	NM	87317-0236
R214254	WILLIAMS, BRUCE ETAL		P.O. BOX 898	GAMERCO	NM	87317-0898
			1112 COUNTRY			
R214285	GARCIA, ROBERT RICHARD TRUSTEE		CLUB	GALLUP	NM	873010000
R215011	C & E CONCRETE, INC.		P.O. BOX 2547	MILAN	NM	870212547
D. 1. 5 . 5 . 5 .			D.C. DOVIDIO	CONTINENTAL		05010 0010
R215272	BAUMGARDNER, JOHN C. JR. & BETTY S.	CEN CONFEDENCE ADMN	P.O. BOX 312	DIVIDE	NM	87312-0312
R215943	COMMISSION ON NATIONAL MISSIONS	GEN. CONFERENCE ADMN. OFFICE	P.O. BOX 926	FINDLAY	ОН	45840-0926
R300380	GAMERCO TOWNSITE WATER &	SANITATION DISTRICT	P.O. BOX 69	GAMERCO	NM	87317-0000
R300396	GAMERCO TOWNSITE		P.O. BOX 236	GAMERCO	NM	87317-0236
K300370	WILLIAMS, JOHN & JOAN REVOCABLE		1.0. DOX 230	GAMERCO		07517-0250
R301264	TRUST	C/O SLLIM VISIONS, LLC	484 N. MAIN ST.	SNOWFLAKE	AZ	859370000
R301559	MEECH-CASH, LLC		P.O. BOX 2547	MILAN	NM	87021-2547
R301597	NAVAJO TRIBAL UTILITY AUTHORITY		P.O. BOX 170	FT. DEFIANCE	AZ	86504-0170
R301598	MEECH-CASH, LLC		P.O. BOX 2547	MILAN	NM	87021-2547
R301605	GALLUP LAND PARTNERS, LLC	C/O MEECH-CASH, LLC	P.O. BOX 2547	MILAN	NM	87021-2547
			9911 SOUTH 78TH	HICKORY		
R608742	GALLUP LAND PARTNERS, LLC		AVE.	HILLS	IL	604570000
R674168	NAVAJO SHOPPING	CENTER, LTD	P.O. BOX 77	GAMERCO	NM	87317-0000

NOTICE

C&E Concrete, Inc. announces its application to the New Mexico Environment Department for a new air quality permit for the construction of a hot mix asphalt plant. The expected date of application submittal to the Air Quality Bureau is October 26, 2020.

The exact location for the proposed facility known as Gamerco HMA, is 208 Crystal Avenue, Gamerco, NM 87317. The coordinates of the facility will be UTM Zone 12, UTM Easting 702,880, UTM Northing 3,938,490, NAD 83. The approximate location of this site is 2.4 miles north of the intersection of I-40 and Highway 491 in Gallup, NM in McKinley County.

The proposed construction consists of a 200 TPH hot mix asphalt plant to produce hot mix asphalt for road and highway projects.

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	6.8 pph	7.6 tpy
PM _{2.5}	5.2 pph	6.3 tpy
Sulfur Dioxide (SO ₂)	11.6 pph	14.5 tpy
Nitrogen Oxides (NO _x)	11.1 pph	14.3 tpy
Carbon Monoxide (CO)	26.7 pph	33.7 tpy
Volatile Organic Compounds (VOC)	9.9 pph	12.5 tpy
Total sum of all Hazardous Air Pollutants (HAPs)	2.1 pph	2.6 tpy
Toxic Air Pollutant (TAP)	2.5 pph	3.1 tpy
Green House Gas Emissions as Total CO2e	n/a	< 10,000 tpy

The standard operating schedule of the facility will be from 7 a.m. to 6 p.m. for the months of November through February, and from 5 a.m. to 7 p.m. for the months of March through October, 7 days a week and a maximum of 52 weeks per year. The maximum operating schedule will be 11 hours per day from 7 a.m. to 6 p.m. for the months of December through February, 14 hours per day from 5 a.m. to 7 p.m. for the month of November, 17 hours per day from 4 a.m. to 9 p.m. for the months of March and October, and 18 hours per day from 3 a.m. to 9 p.m. in the months of April through September, 7 days a week and a maximum of 52 weeks per year.

The owner and operator of the Facility will be:

C&E Concrete, Inc. PO Box 2547 Milan, NM 87021

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; <u>https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html</u>. 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, <u>nd.coordinator@state.nm.us</u>. 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 <u>https://www.env.mm.gov/NMED/EJ/index.html</u> to learn how and where to file a complaint of discrimination.

General Posting of Notices – Certification

I, <u>Chris Meech</u>, the undersigned, certify that on **October 15, 2020**, posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in the Prewitt, Thoreau, and Grants of McKinley County, State of New Mexico on the following dates:

- 1. <u>C&E Concrete's Gamerco HMA Facility Entrance 10/15/2020</u>
 - a. East Entrance (off of US-491) EXHIBIT A1
 - b. West Entrance (off of Crystal Rd) EXHIBIT A2
- 2. City of Gallup Municipal Building, City Clerk 10/15/2020
 - a. City Clerk Office Corkboard Bulletin Board EXHIBIT B
- 3. McKinley County Courthouse/Clerks's Office 10/15/2020
 - a. Facility Entrance Corkboard Bulletin Board EXHIBIT C
- 4. Octavia Fellin Public Library 10/15/2020
 - a. Facility Entrance Glass Door EXHIBIT D

Signed this <u>15</u> day of <u>October</u>, <u>2020</u>,

// ÷ //

Signature

<u>10/15/2020</u> Date

Chris Meech Printed Name

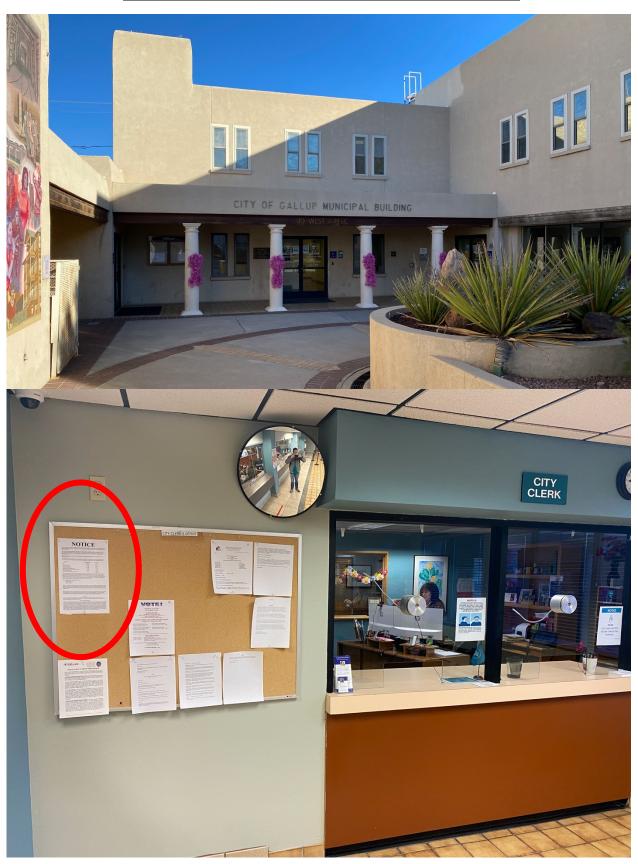
C&E Concrete, Inc. Business Development Title

General Posting of Notices – EXHIBIT A1



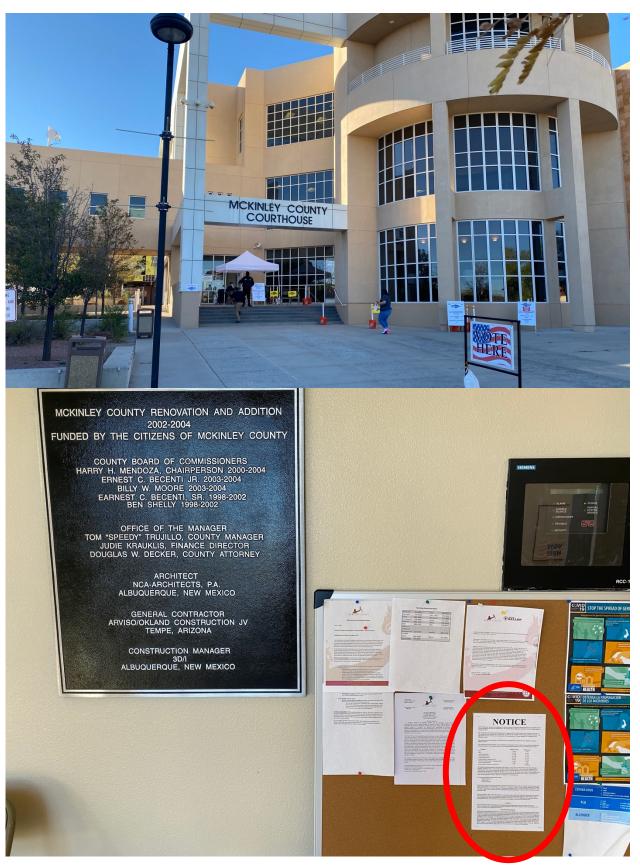


General Posting of Notices – EXHIBIT A2

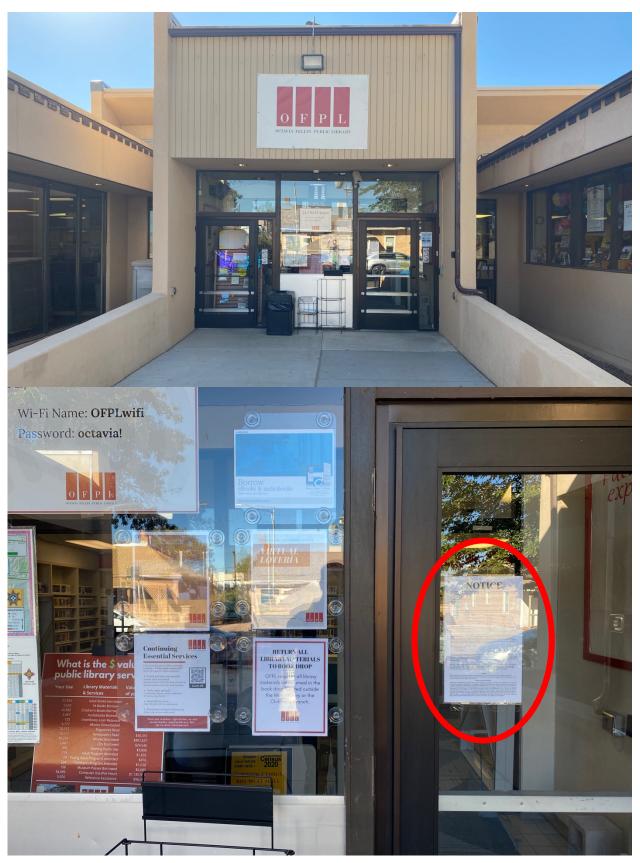


General Posting of Notices – EXHIBIT B

General Posting of Notices – EXHIBIT C









October 22, 2020

Harriett K. Becenti McKinley County Clerk 207 West Hill St. #100 Gallup NM 87301

Ms Becenti

C&E Concrete, Inc. announces its application to the New Mexico Environment Department for a new air quality permit for the construction of a hot mix asphalt plant. The expected date of application submittal to the Air Quality Bureau is October 26, 2020.

The exact location for the proposed facility known as Gamerco HMA, is 208 Crystal Avenue, Gamerco, NM 87317. The coordinates of the facility will be UTM Zone 12, UTM Easting 702,880, UTM Northing 3,938,490, NAD 83. The approximate location of this site is 2.4 miles north of the intersection of I-40 and Highway 491 in Gallup, NM in McKinley County.

The proposed construction consists of a 200 TPH hot mix asphalt plant to produce hot mix asphalt for road and highway projects.

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	6.8 pph	7.6 tpy
PM _{2.5}	5.2 pph	6.3 tpy
Sulfur Dioxide (SO ₂)	11.6 pph	14.5 tpy
Nitrogen Oxides (NO _x)	11.1 pph	14.3 tpy
Carbon Monoxide (CO)	26.7 pph	33.7 tpy
Volatile Organic Compounds (VOC)	9.9 pph	12.5 tpy
Total sum of all Hazardous Air Pollutants (HAPs)	2.1 pph	2.6 tpy
Toxic Air Pollutant (TAP)	2.5 pph	3.1 tpy
Green House Gas Emissions as Total CO ₂ e	n/a	< 10,000 tpy

The standard operating schedule of the facility will be from 7 a.m. to 6 p.m. for the months of November through February, and from 5 a.m. to 7 p.m. for the months of March through October, 6 days a week and a maximum of 52 weeks per year. The maximum operating schedule will be 11 hours per day from 7 a.m. to 6 p.m. for the months of December through February, 16 hours per day from 5 a.m. to 9 p.m. for the month of November, and 18 hours per day from 3 a.m. to 9 p.m. in the months of March through October, 7 days a week and a maximum of 52 weeks per year.



The owner and operator of the Facility will be: C&E Concrete, Inc. PO Box 2547 Milan, NM 87021

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; <u>https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html</u>. 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

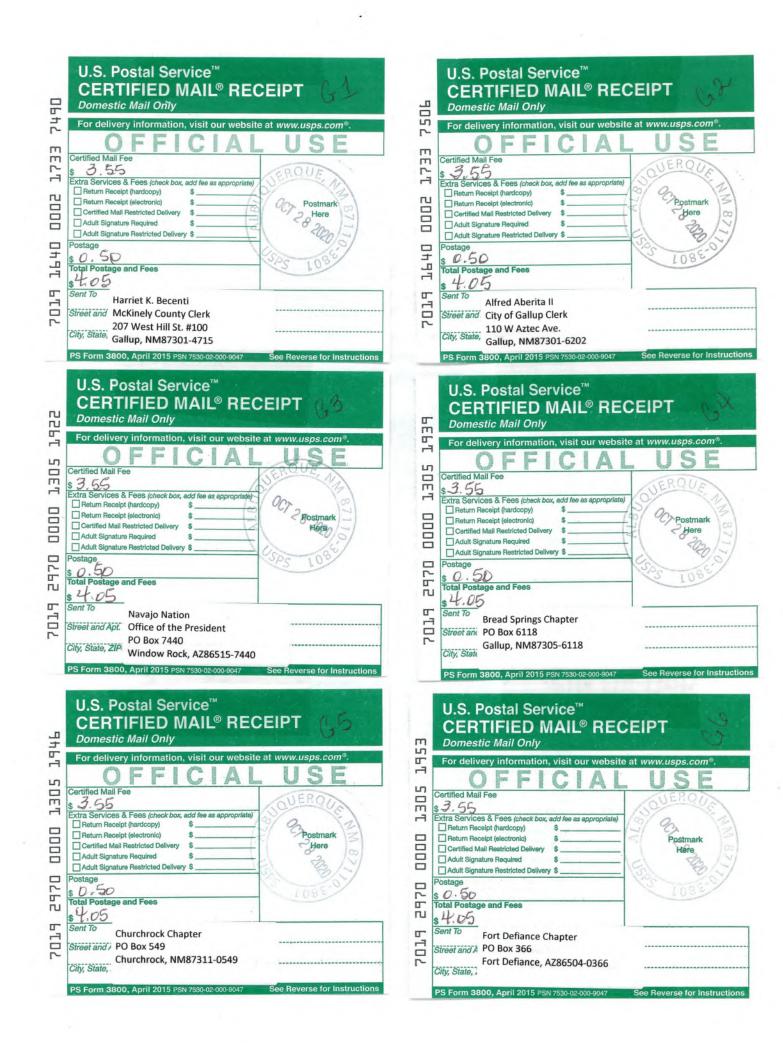
Este es un aviso de la Agencia de Calidad de Aire del Departamento de Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor de comunicarse con la oficina de Calidad de Aire al teléfono 505-476-5557.

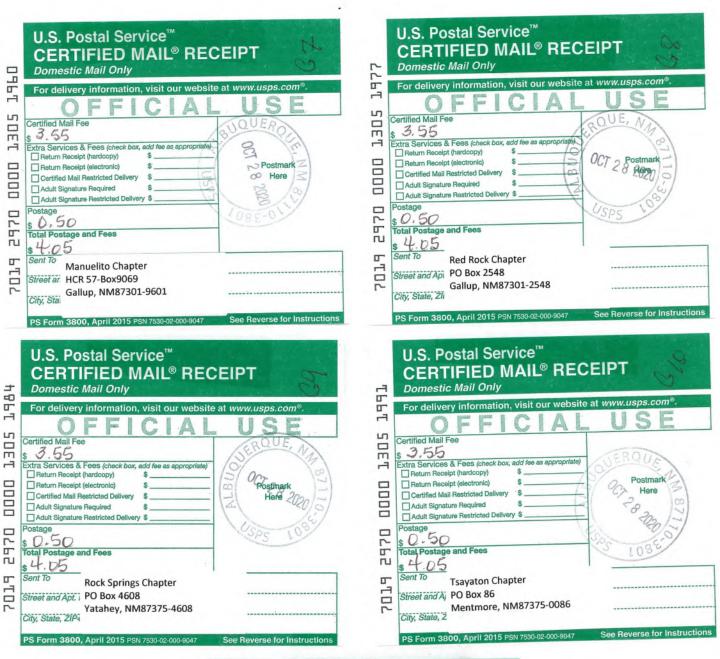
Notice of Non-Discrimination

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.

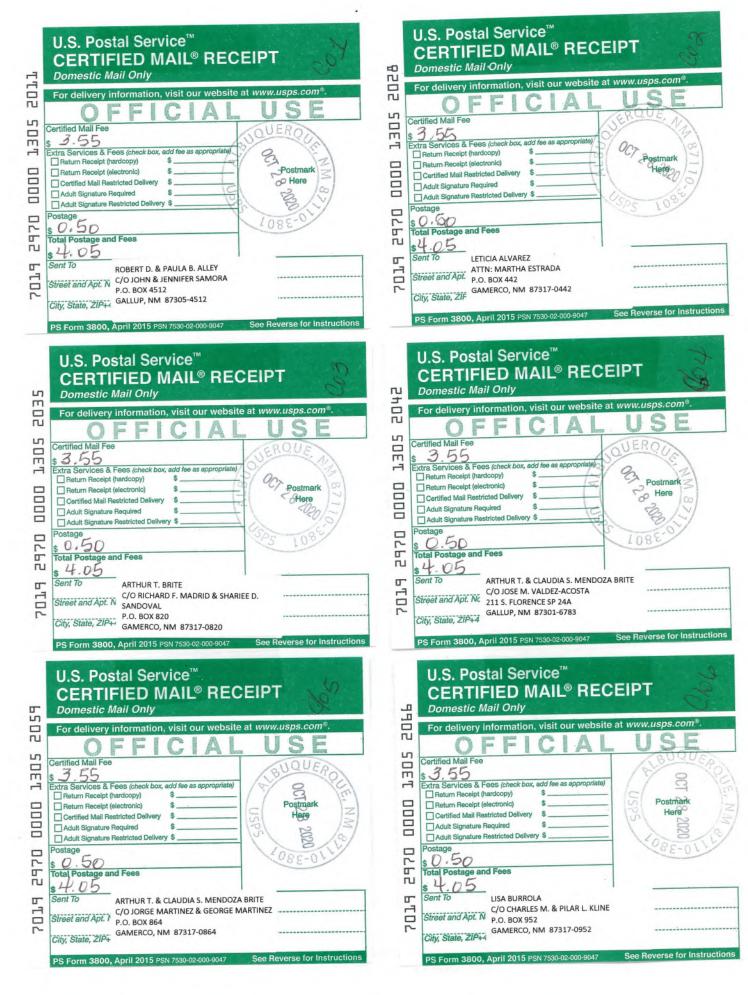
Sincerely,

C&E Concrete, Inc. PO Box 2547 Milan, NM 87021















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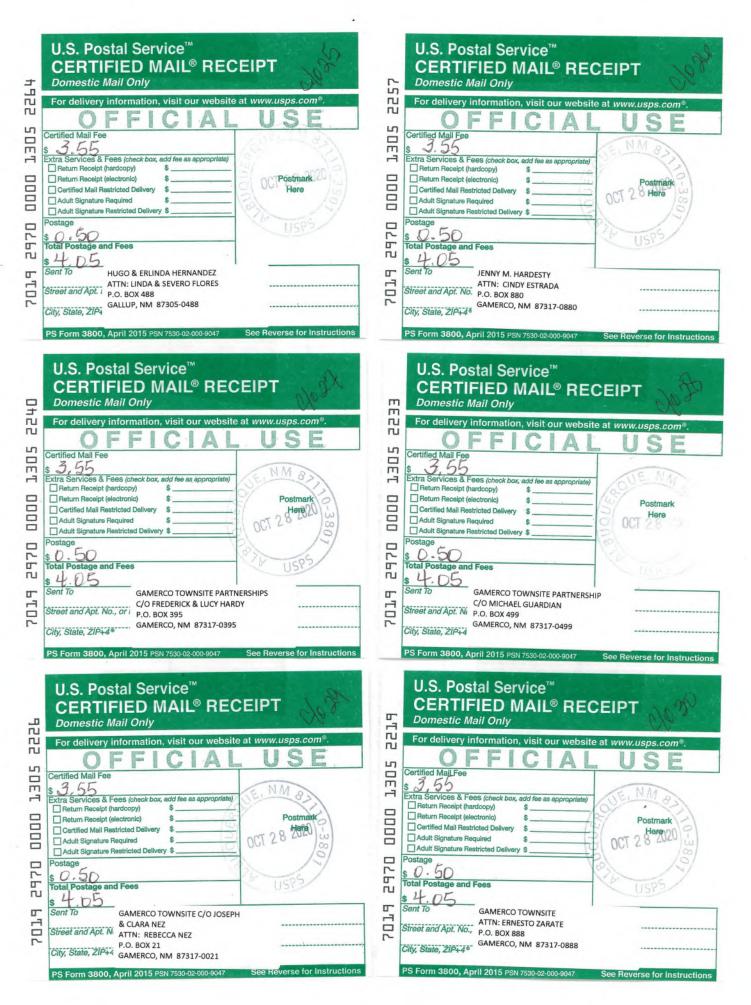
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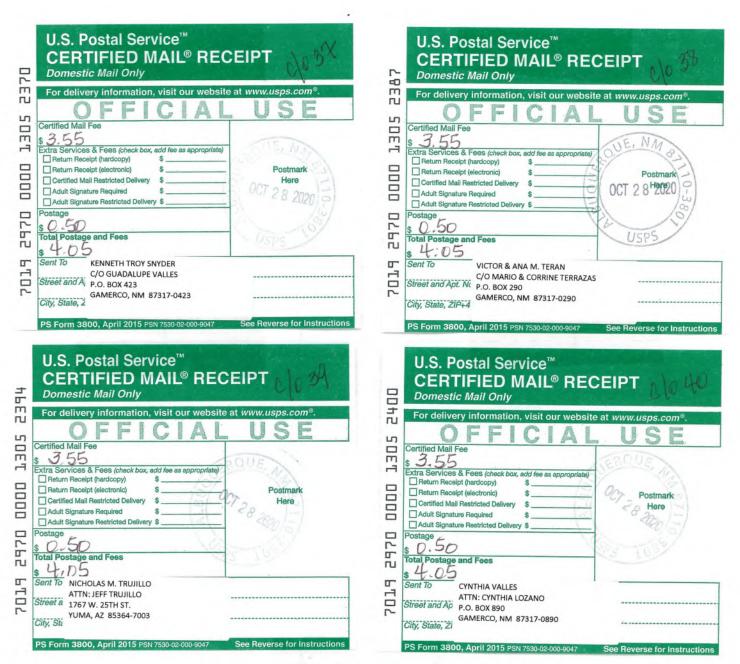
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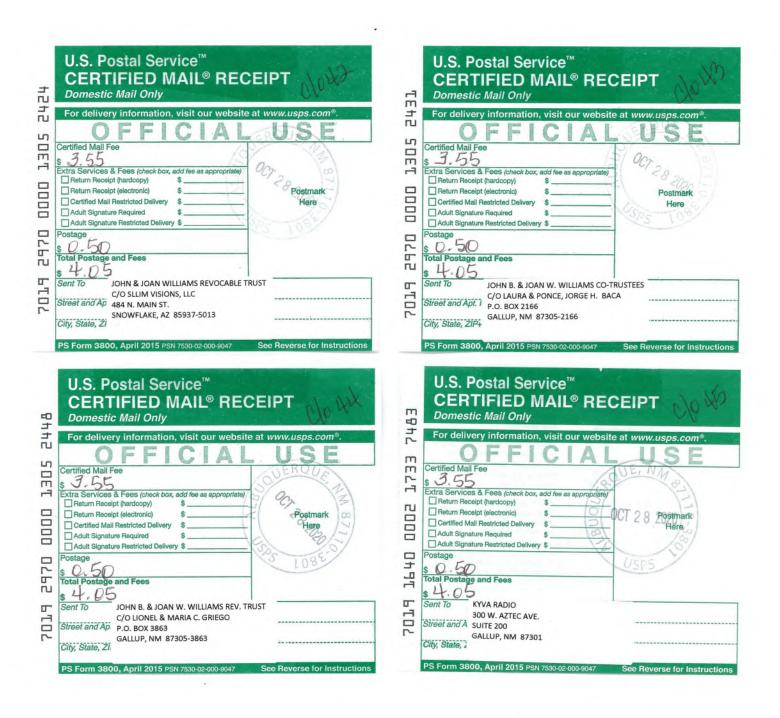
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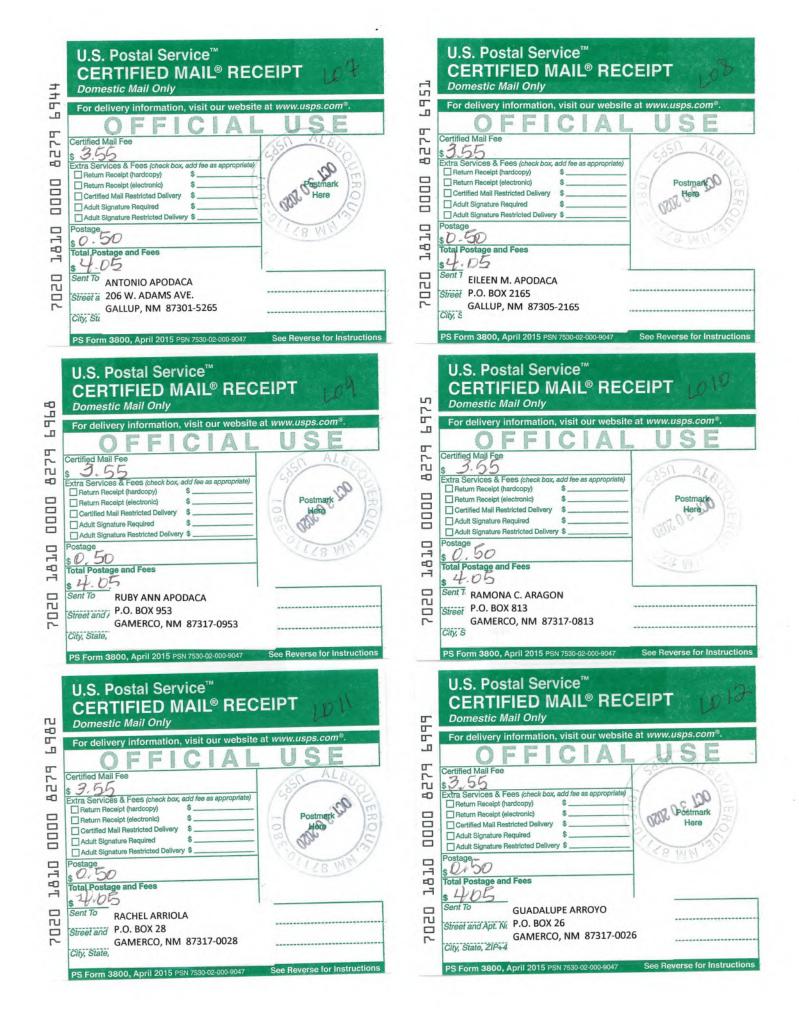
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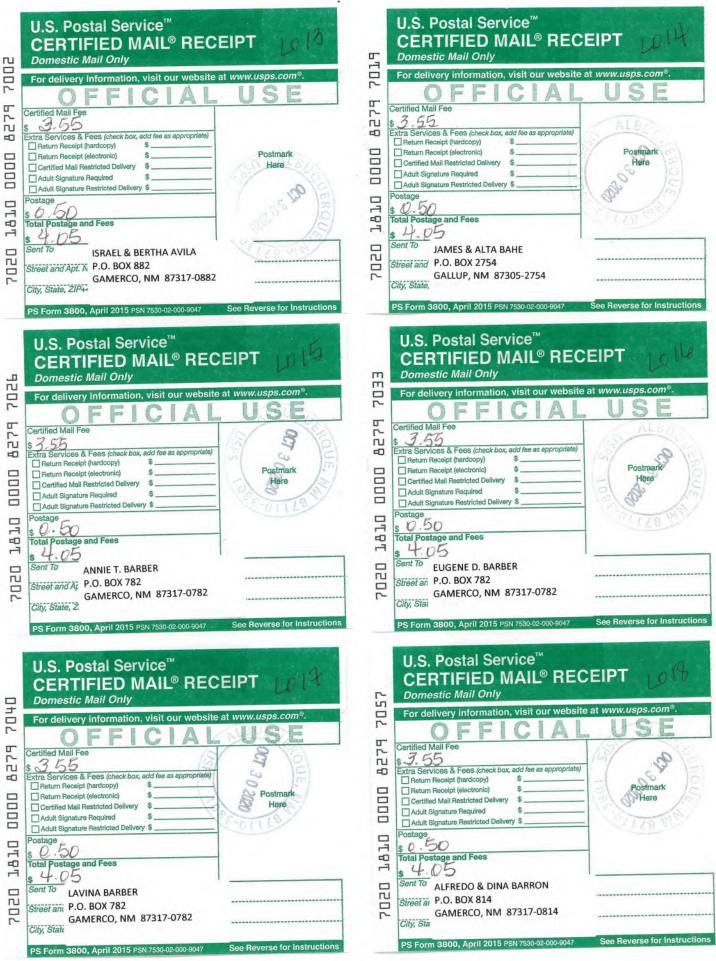
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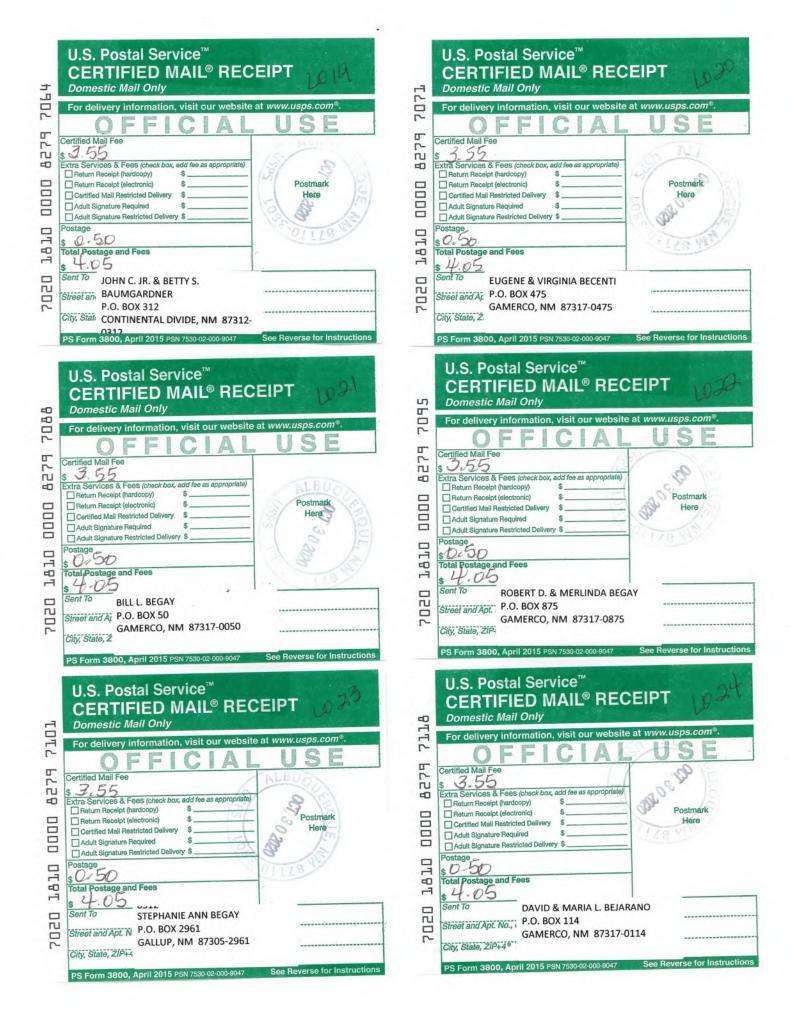
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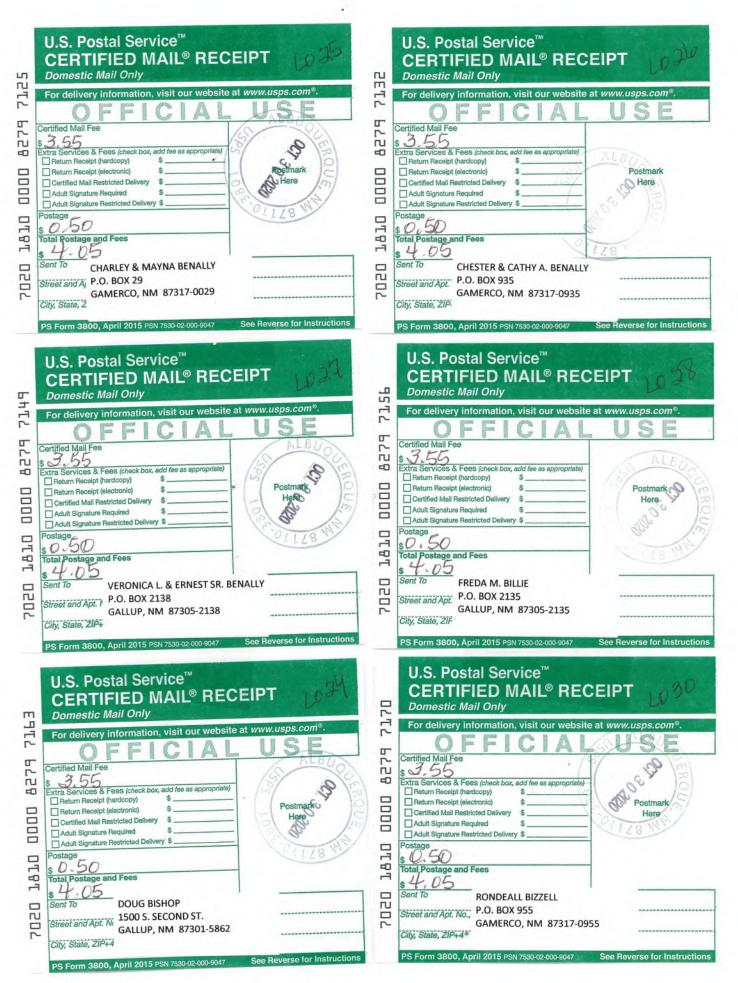
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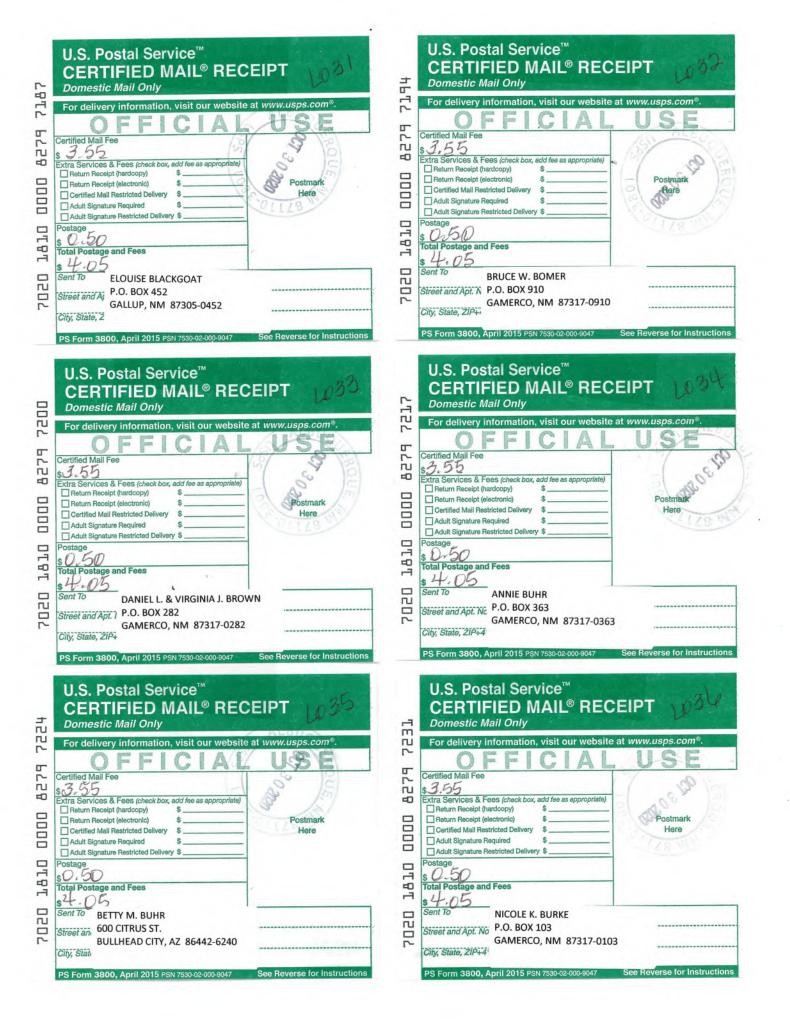




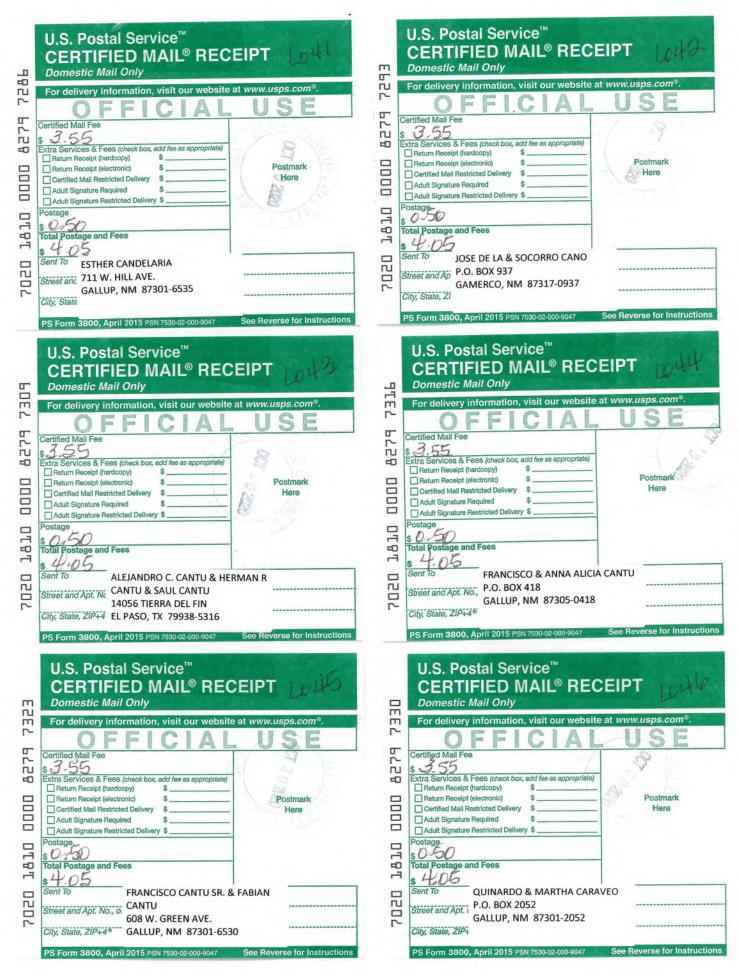
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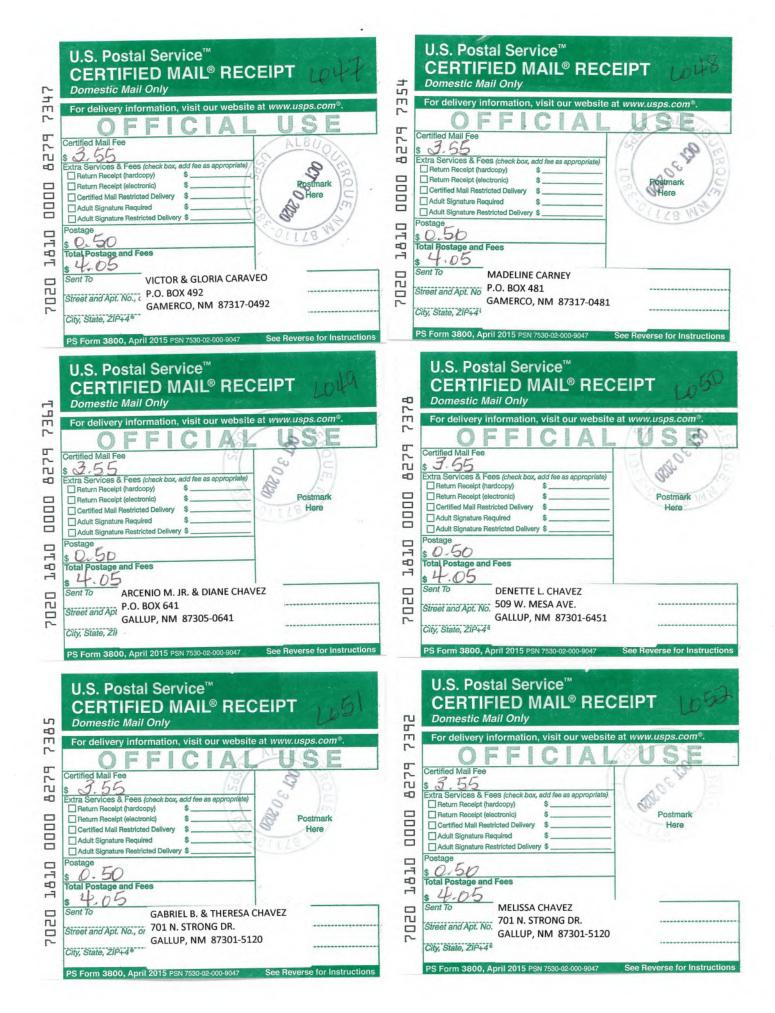


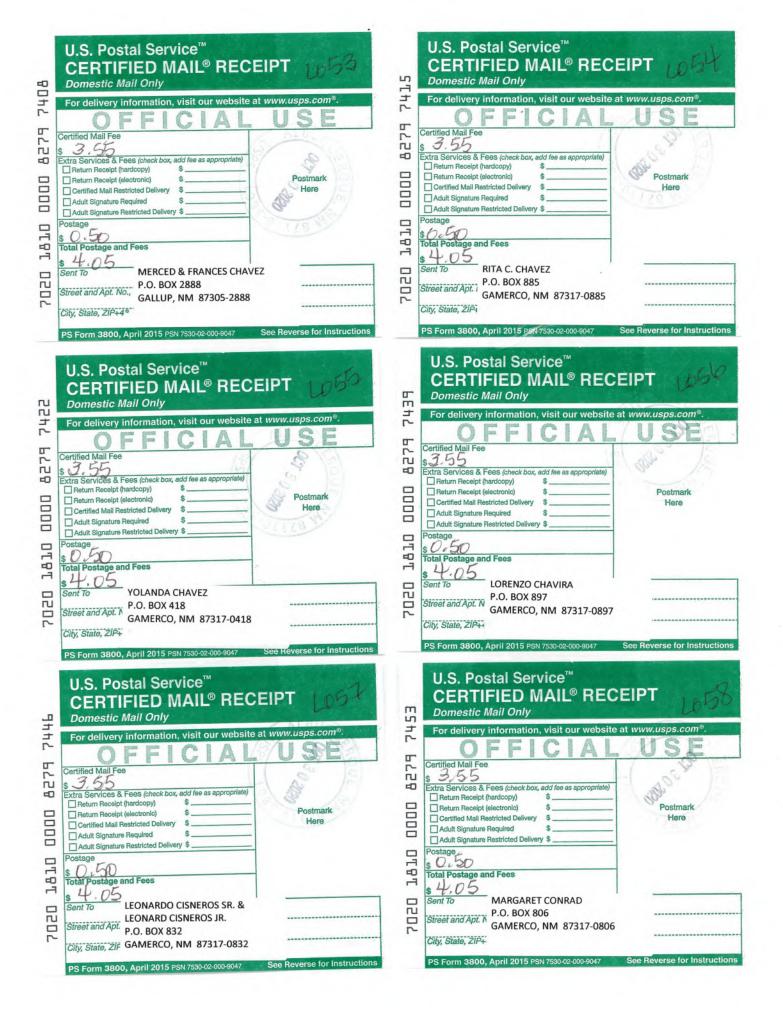


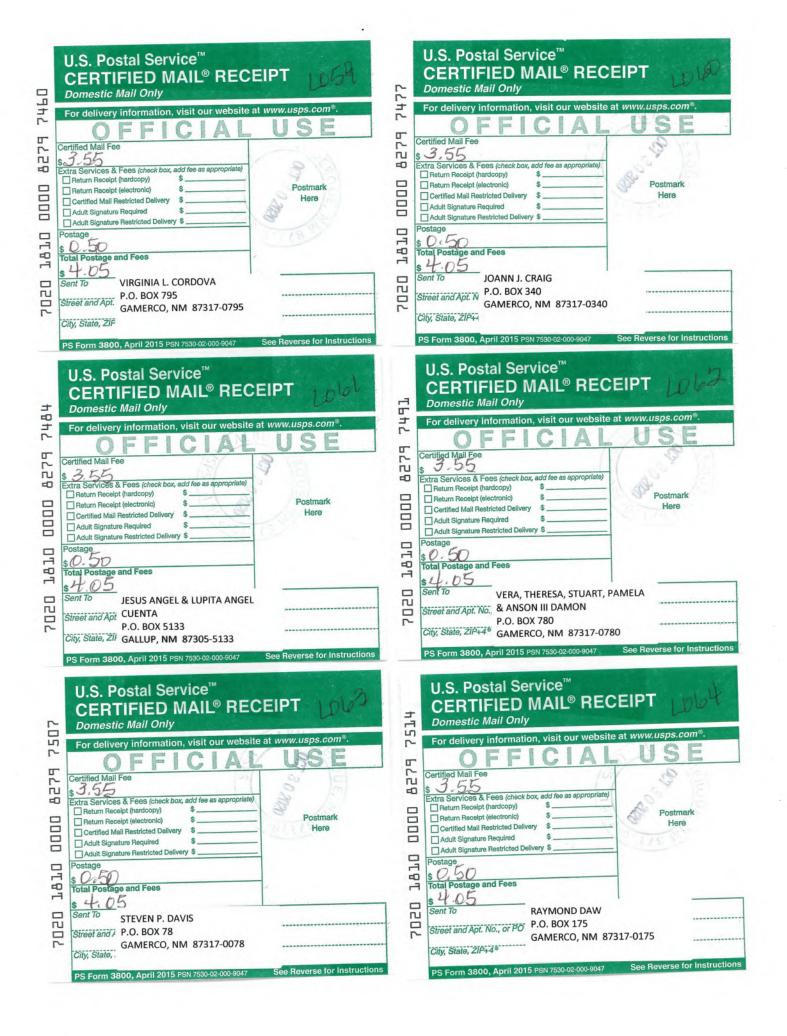


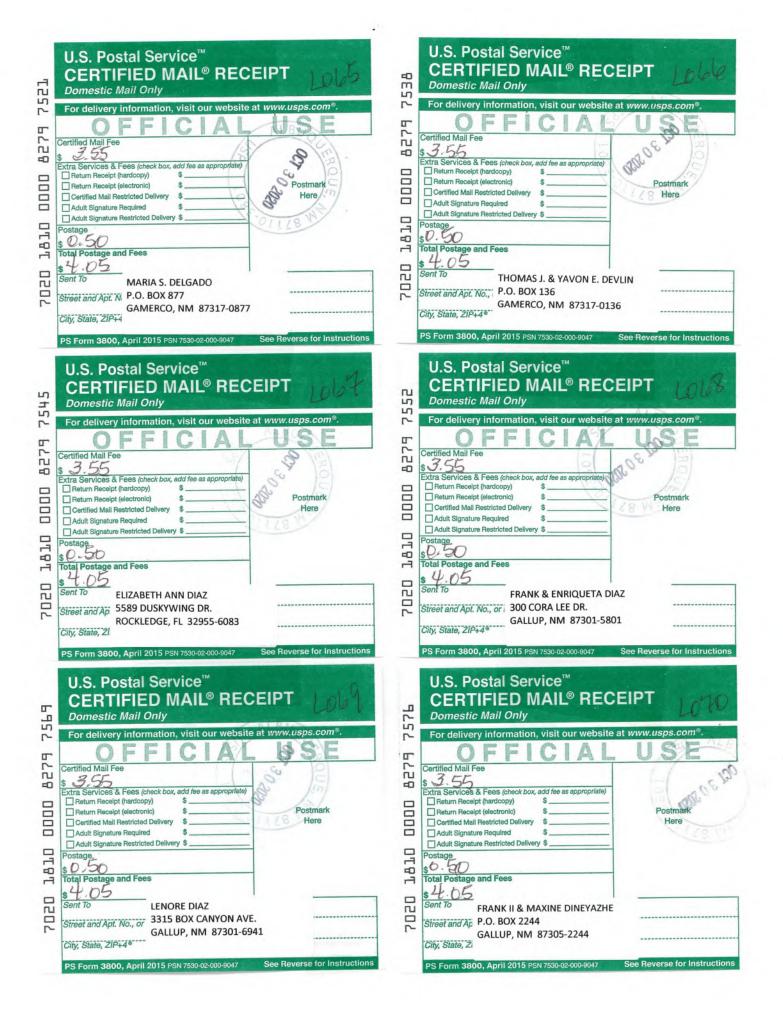


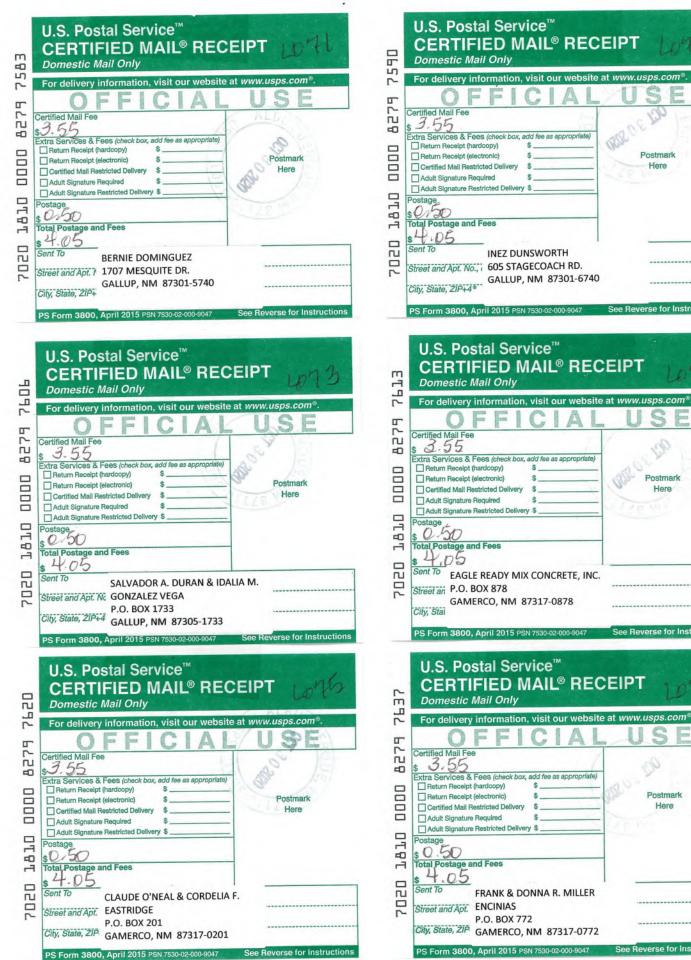
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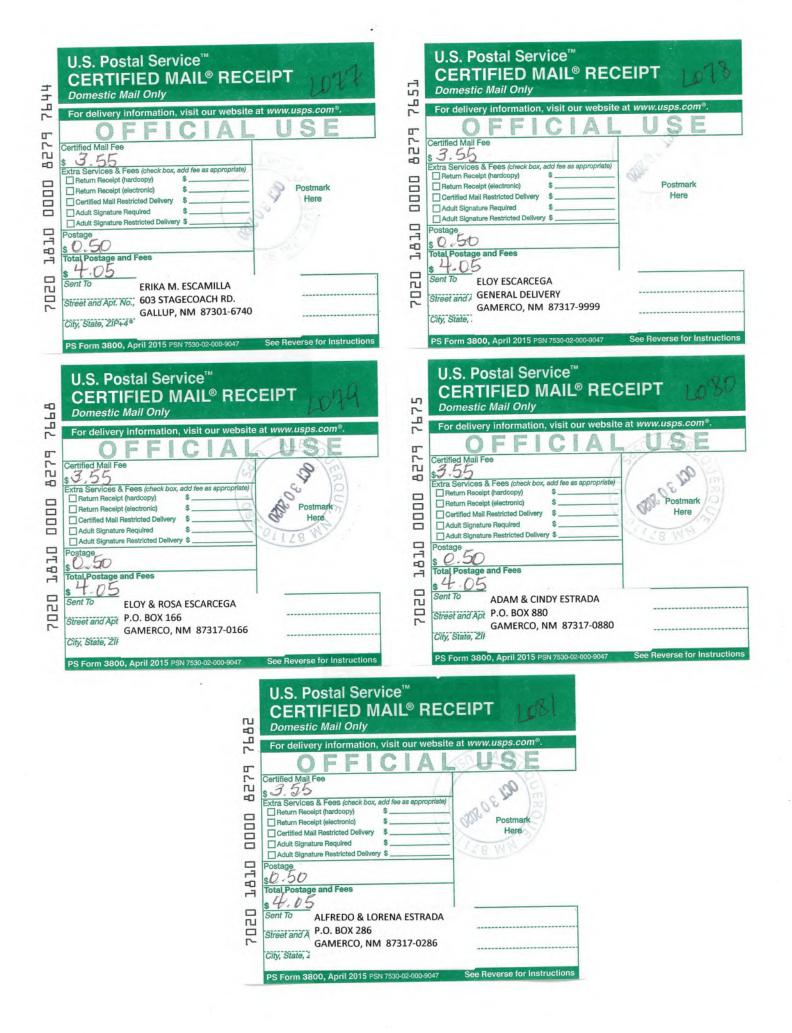
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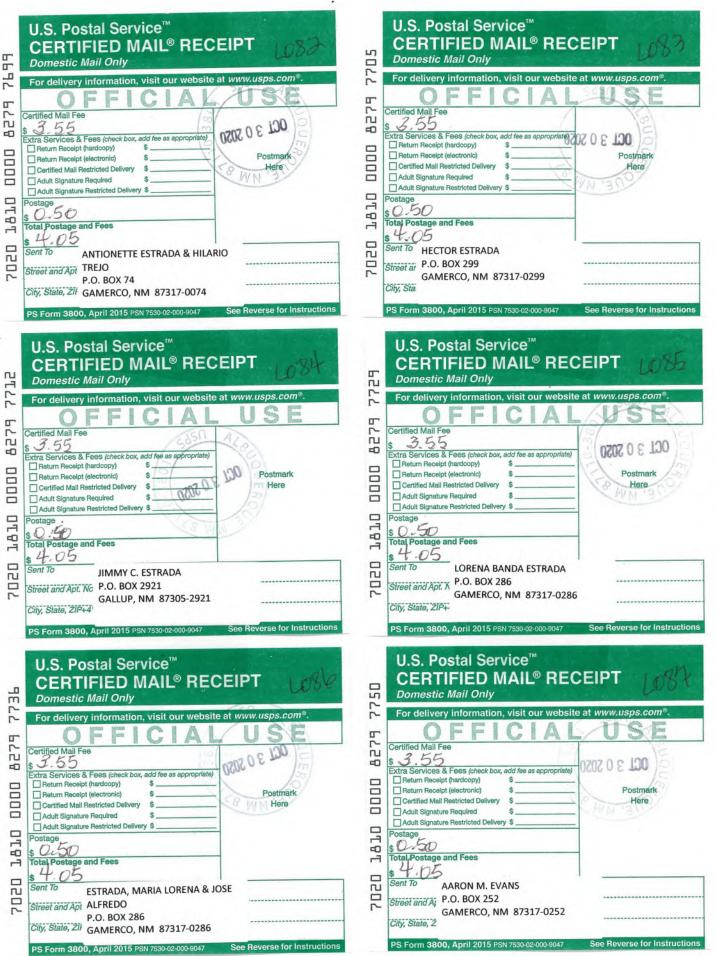
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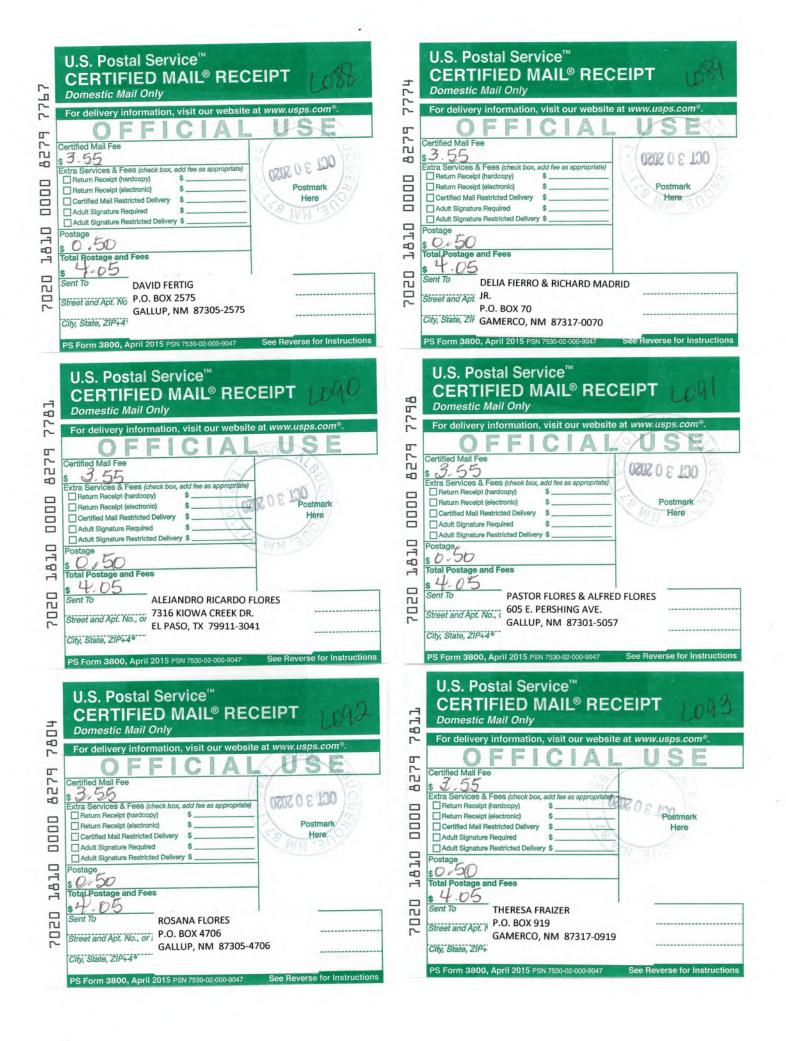
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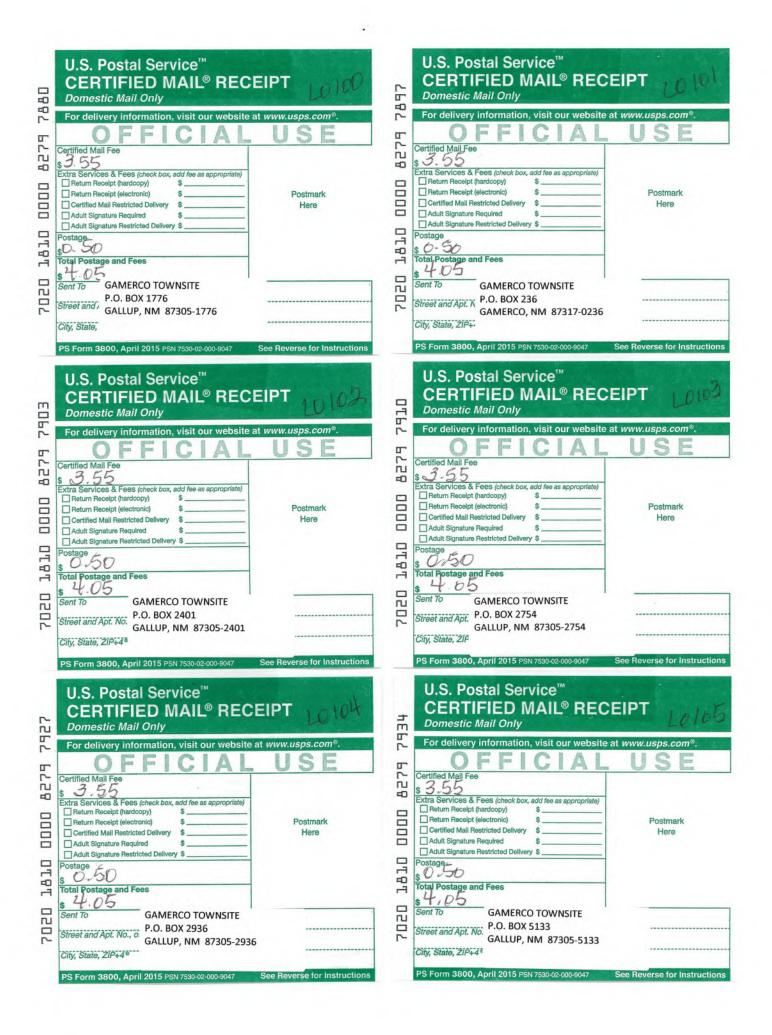
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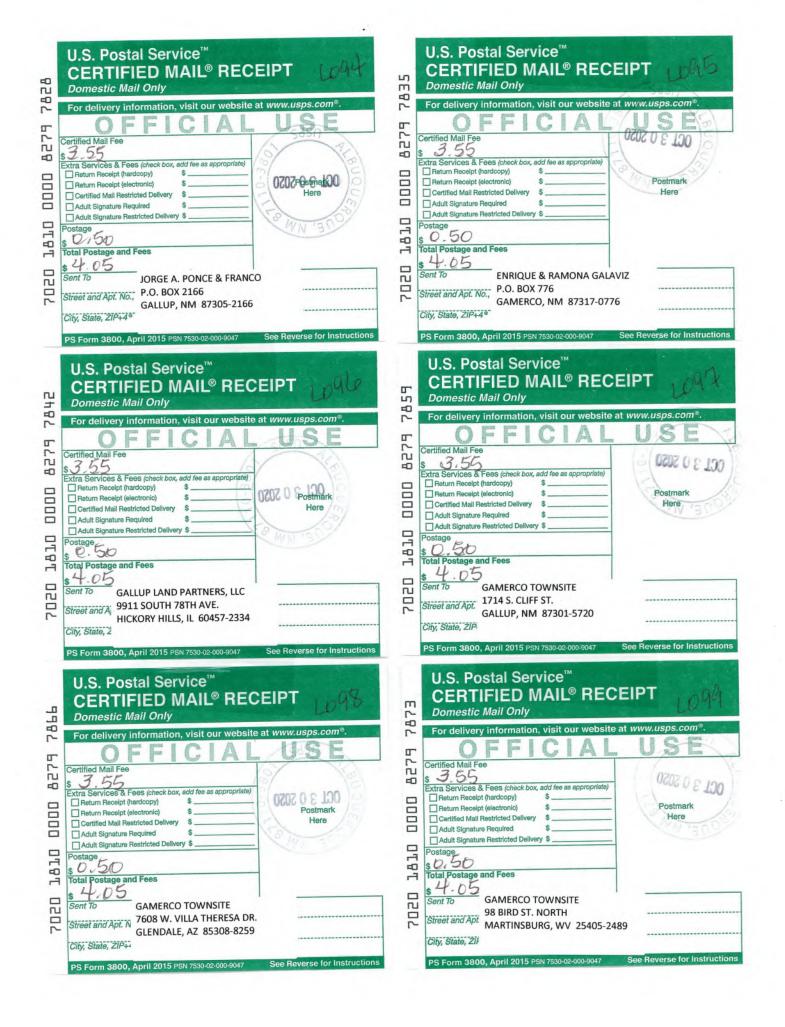


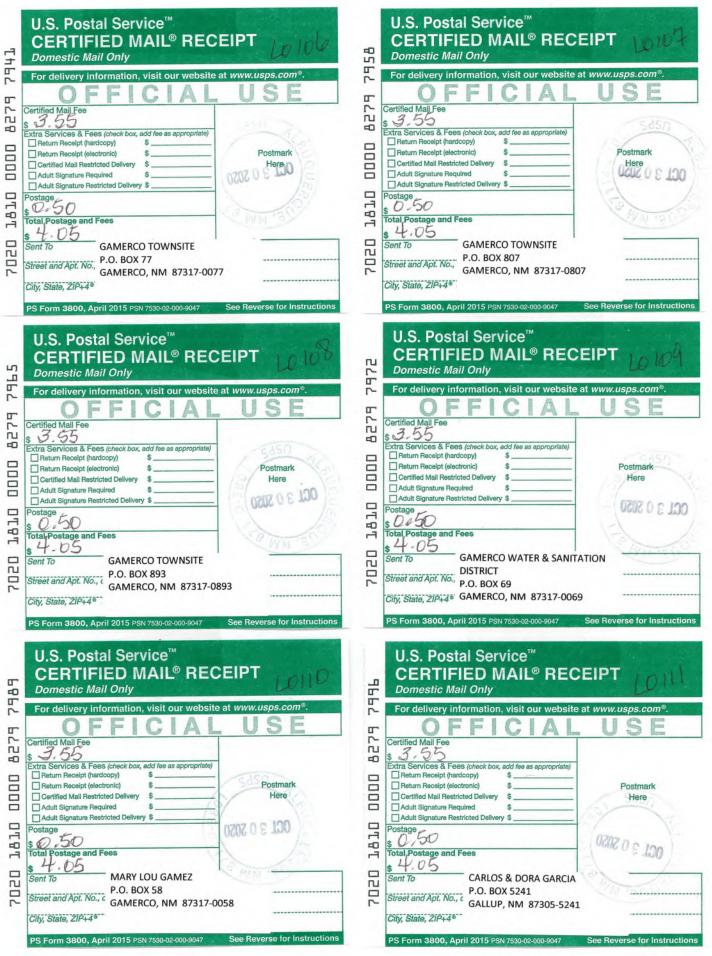


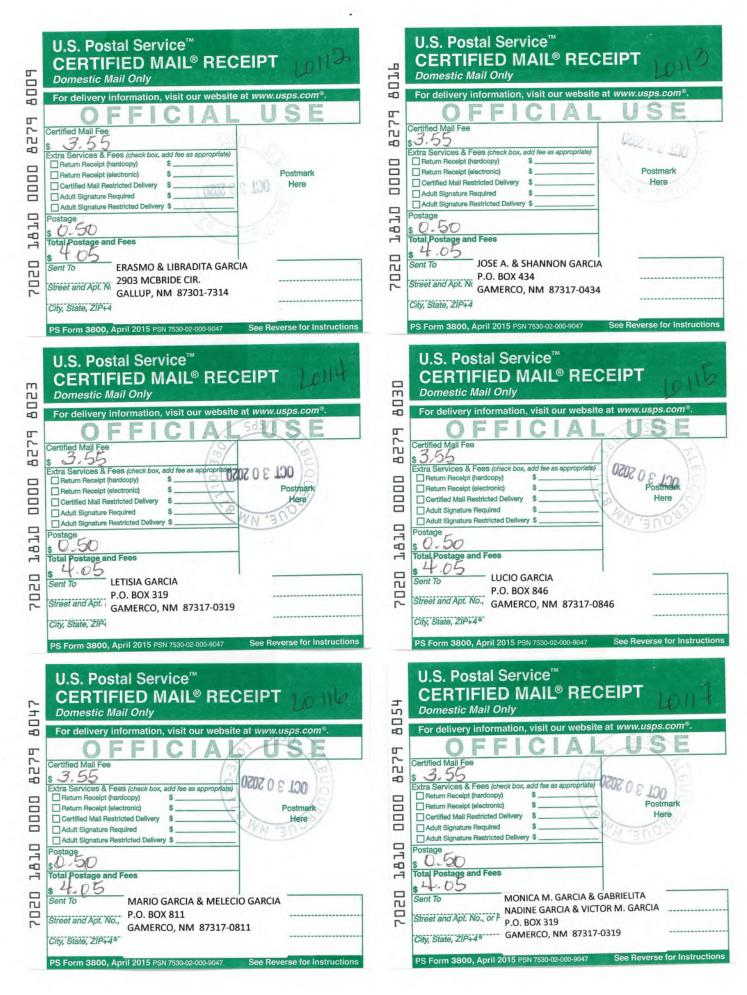
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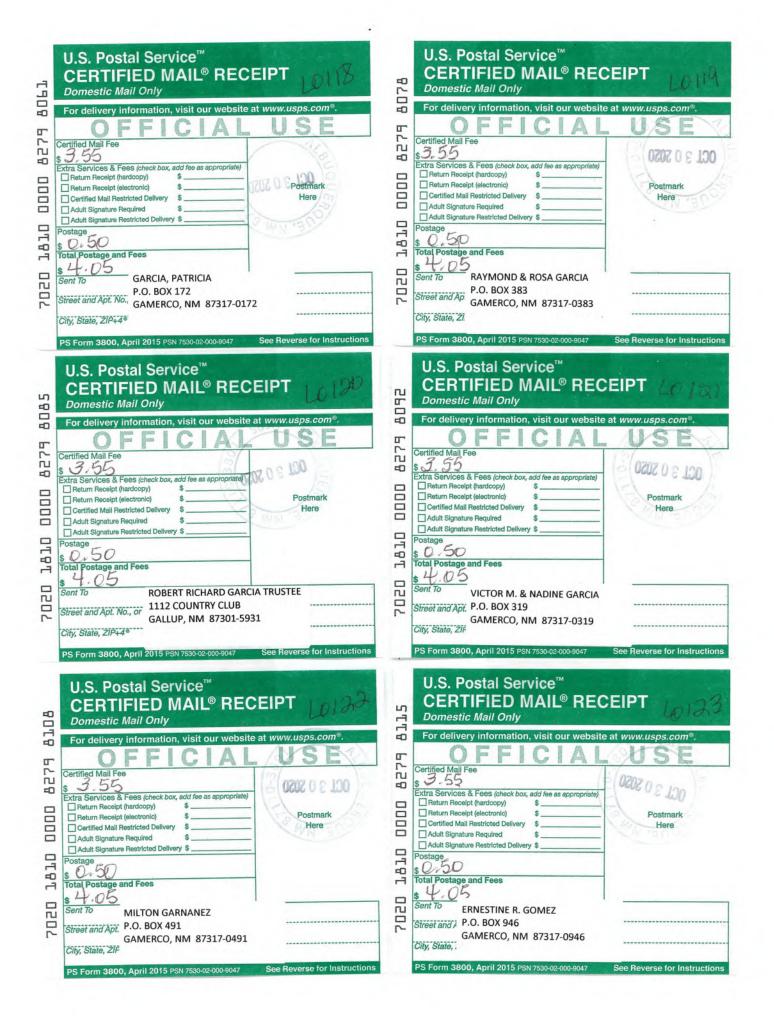


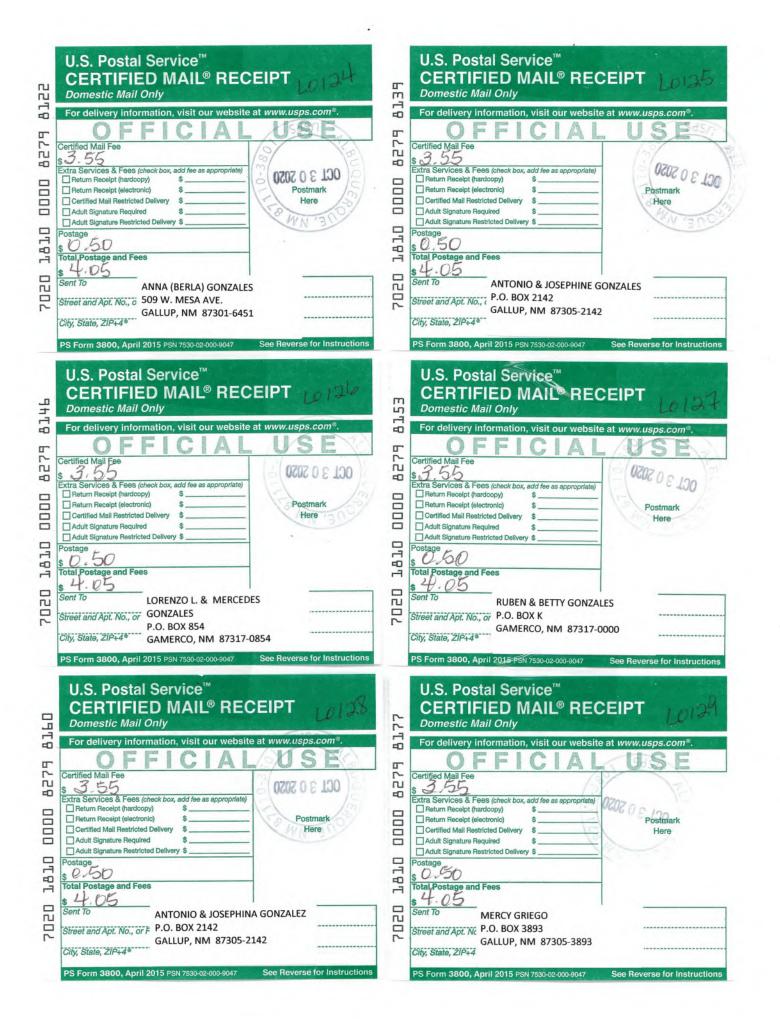


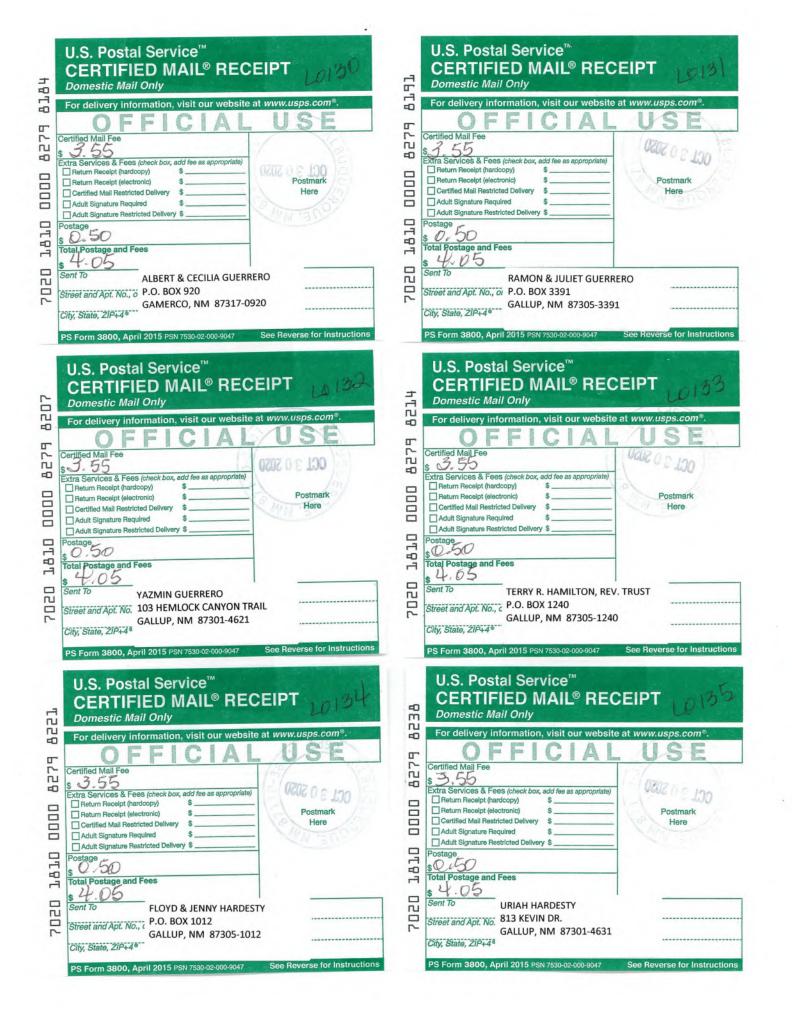


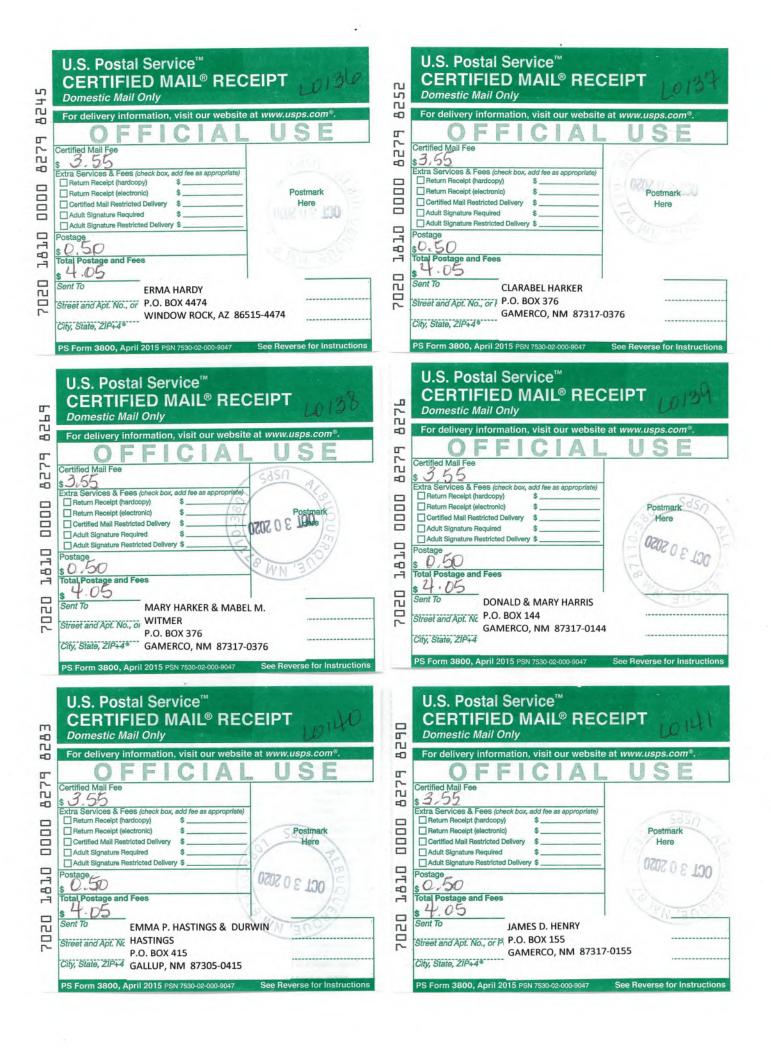


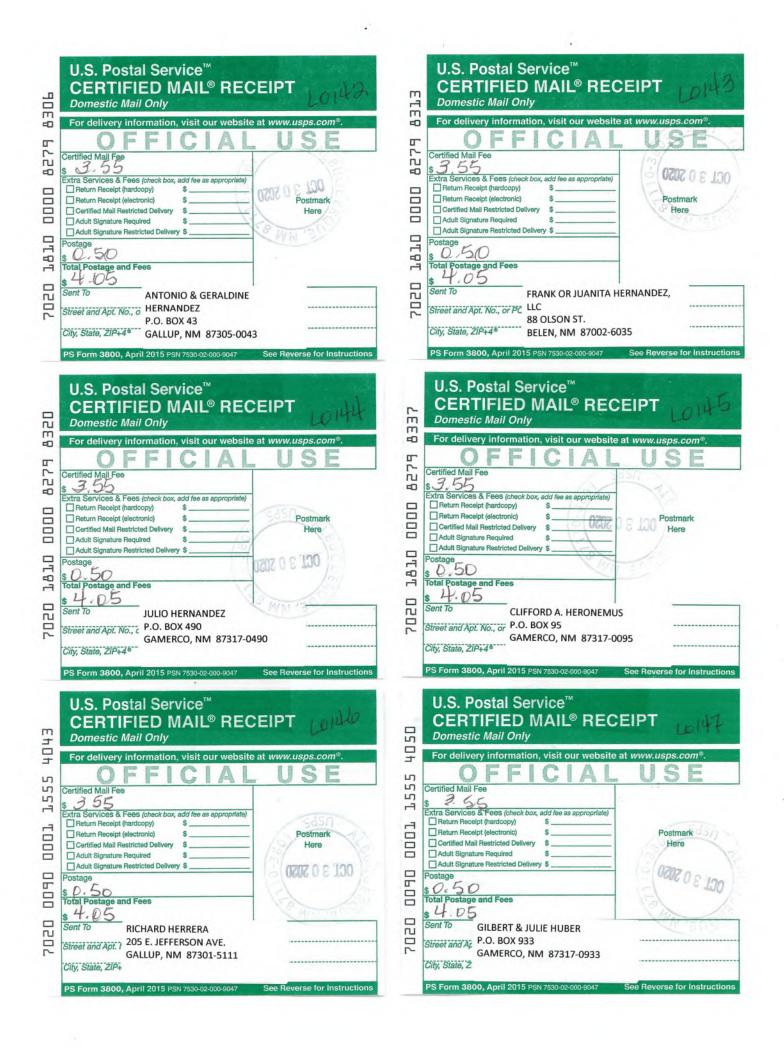


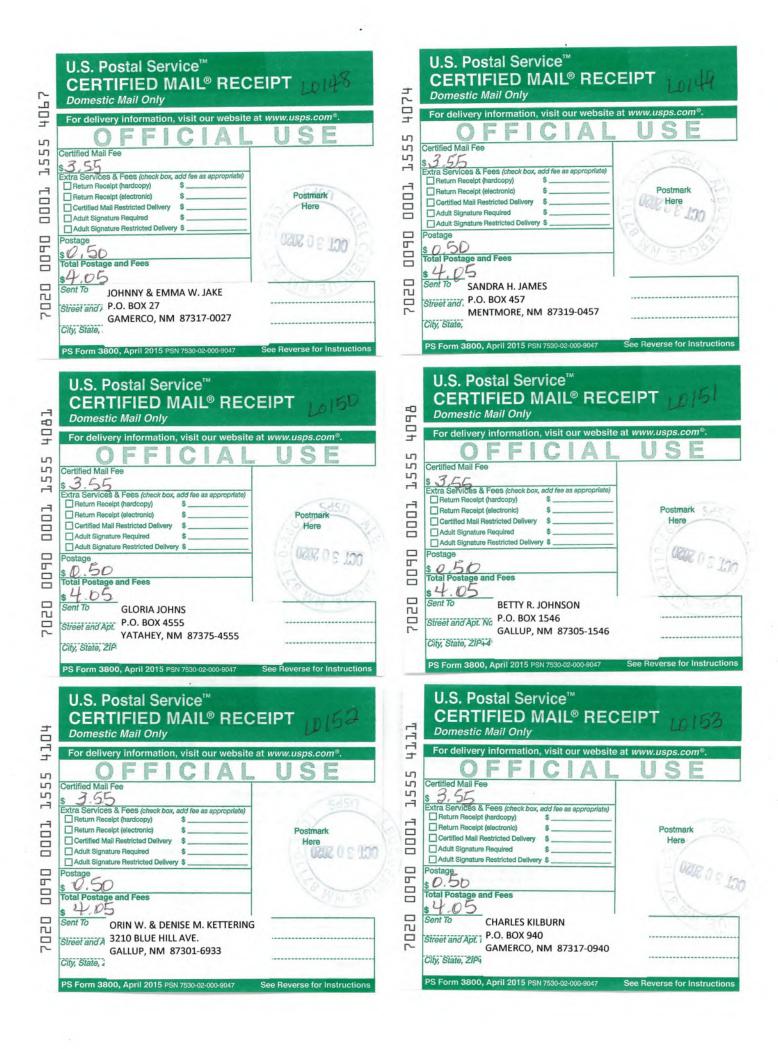


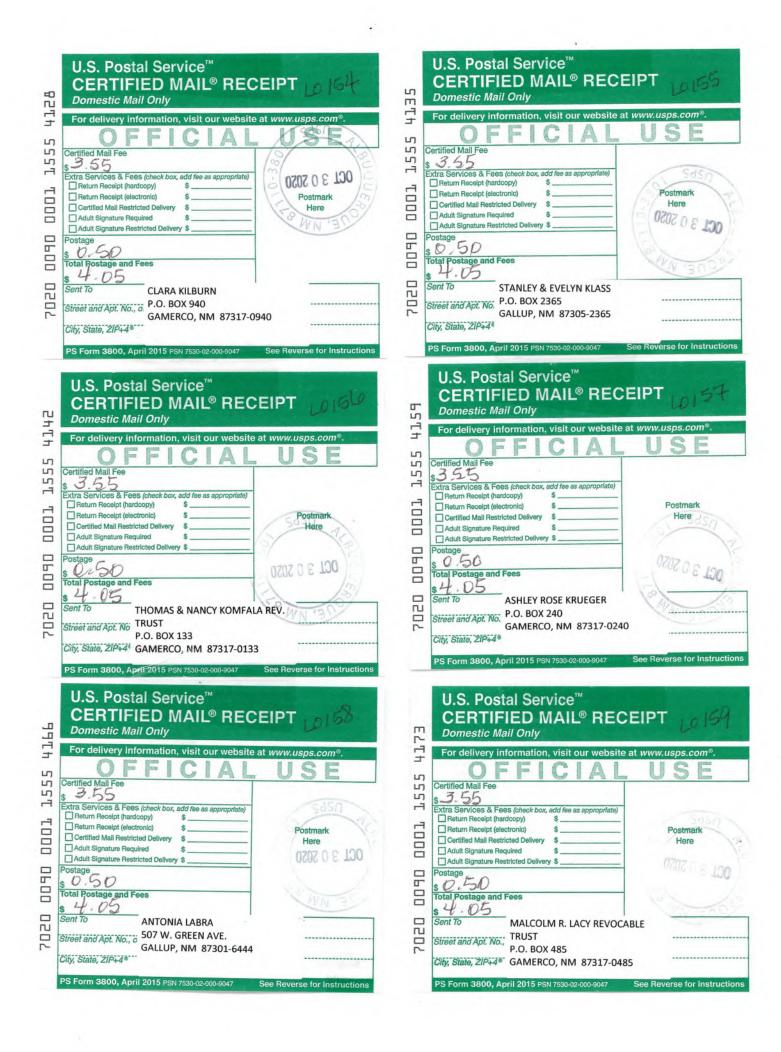


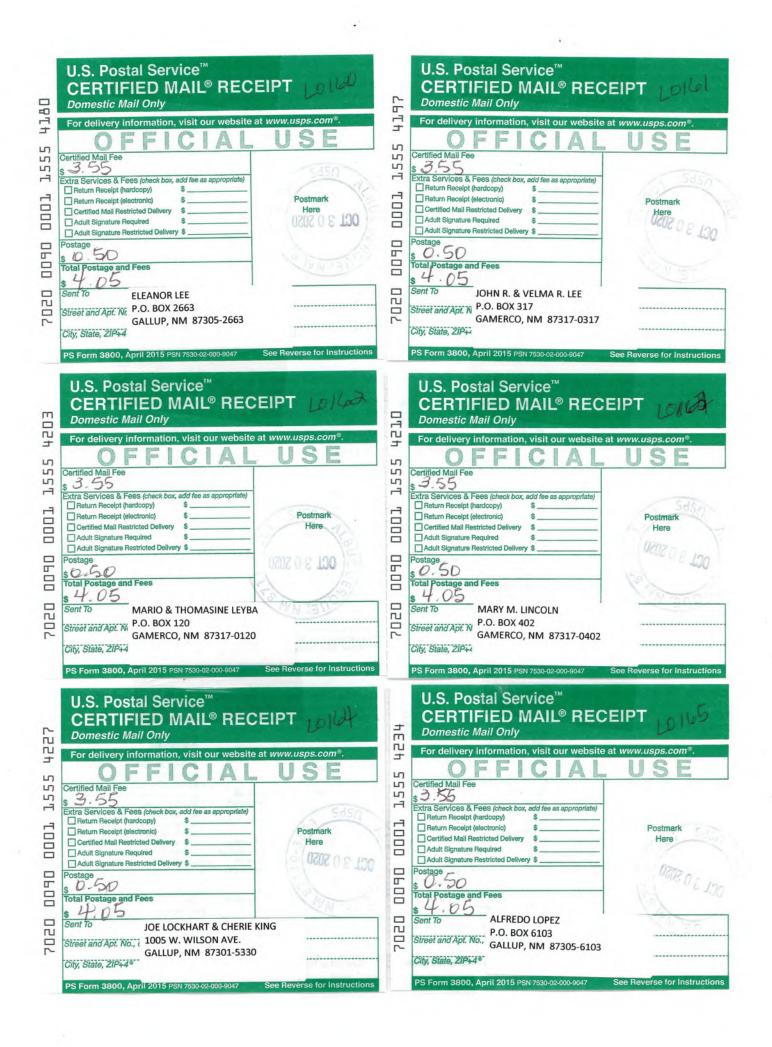


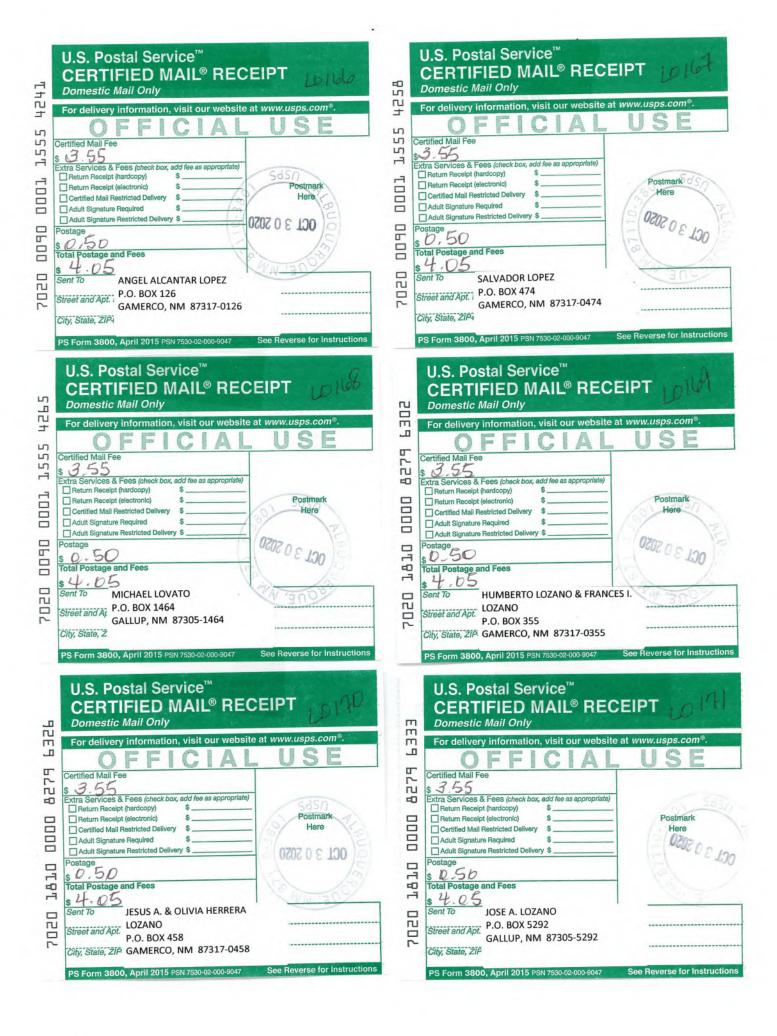


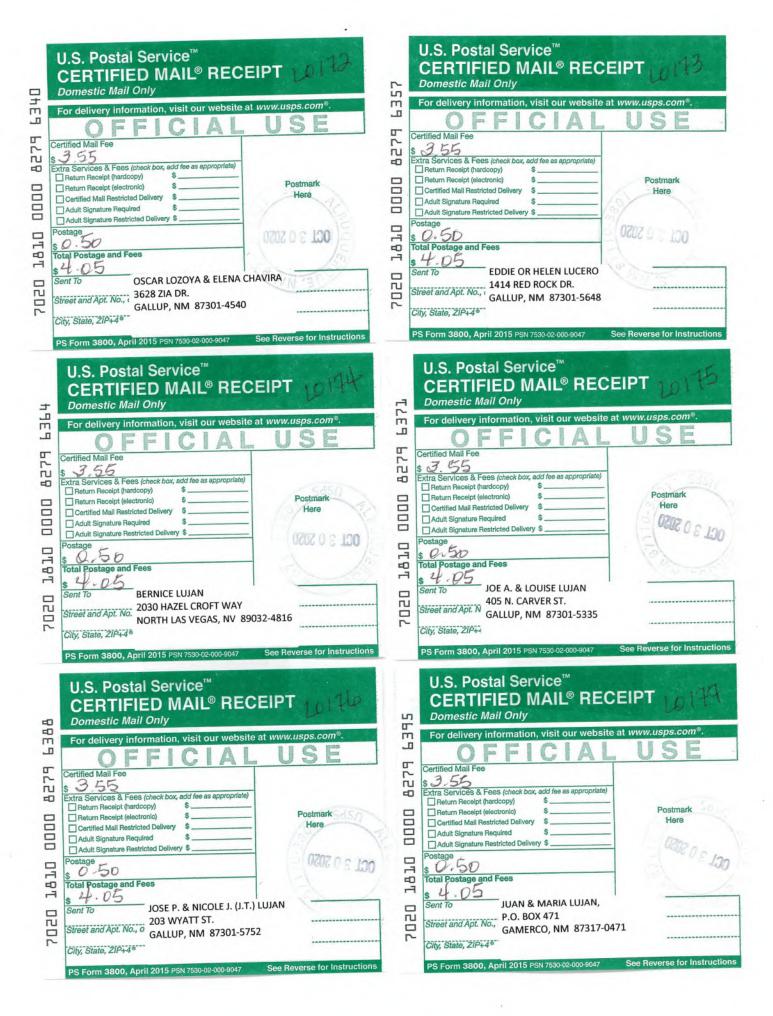




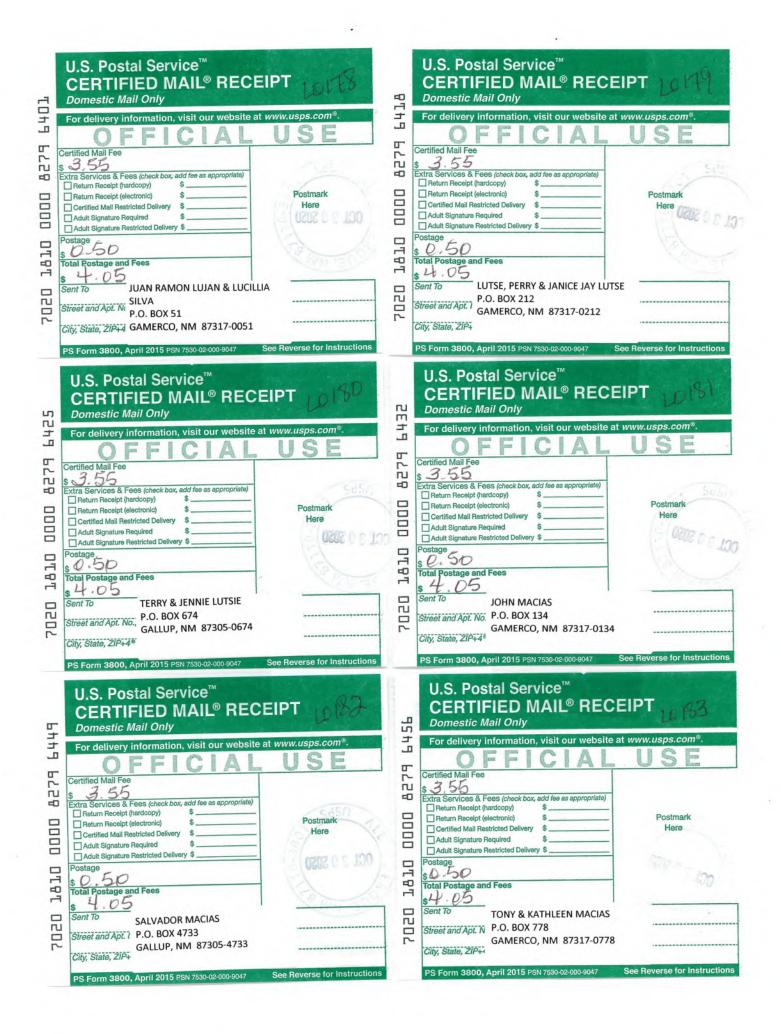


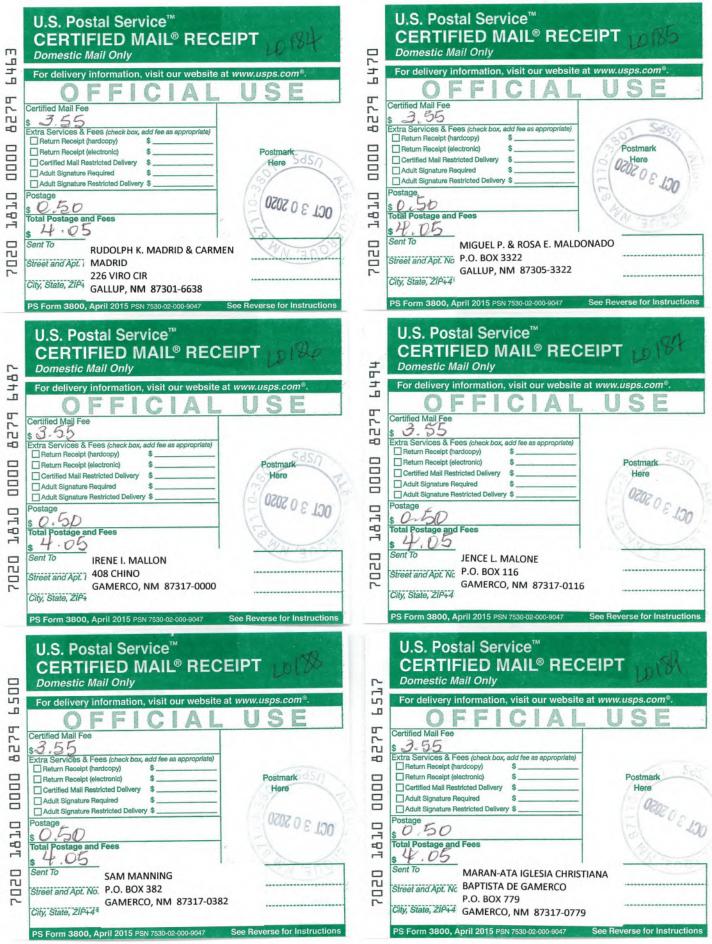


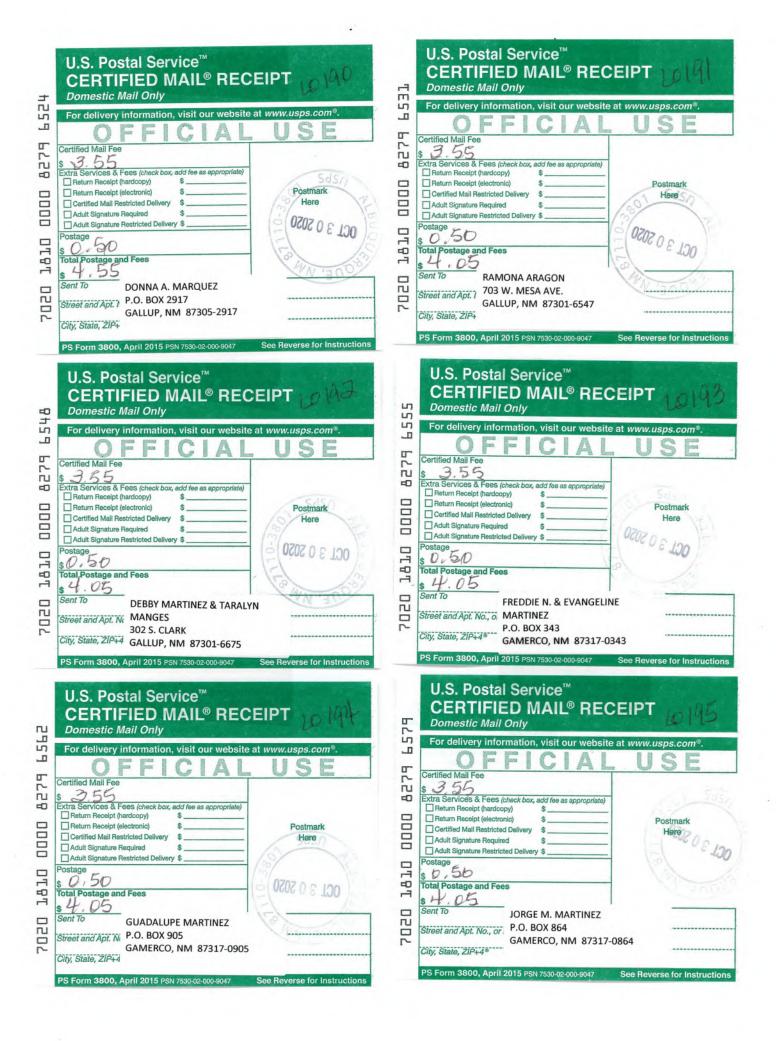


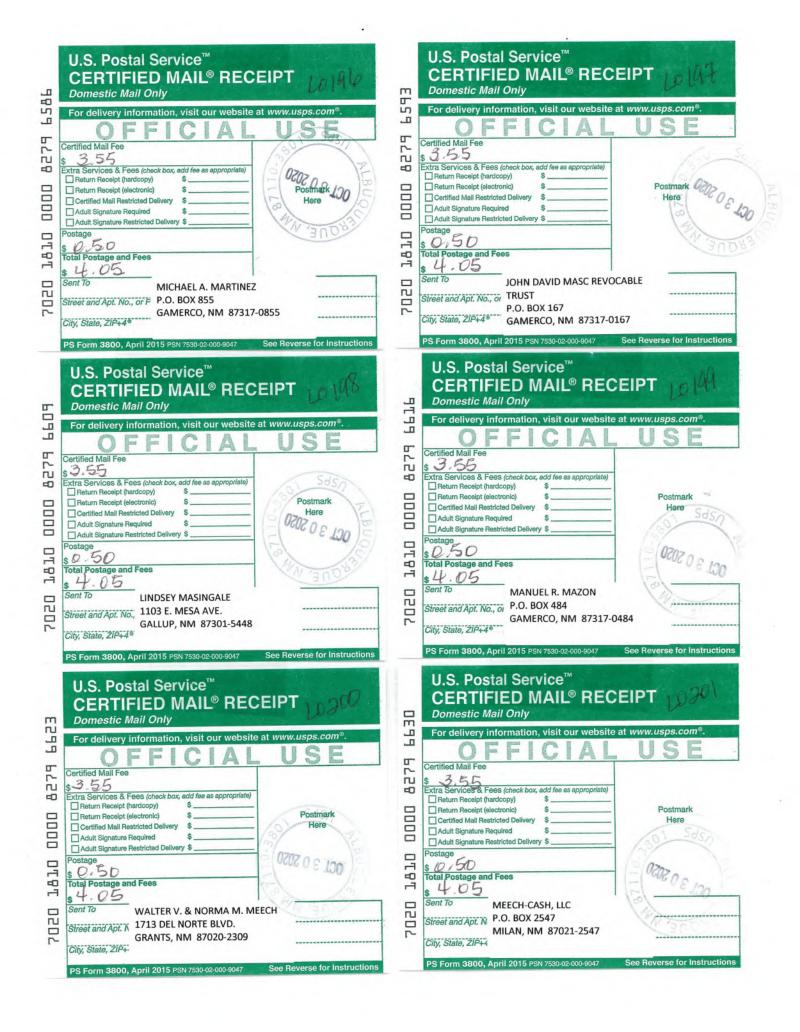


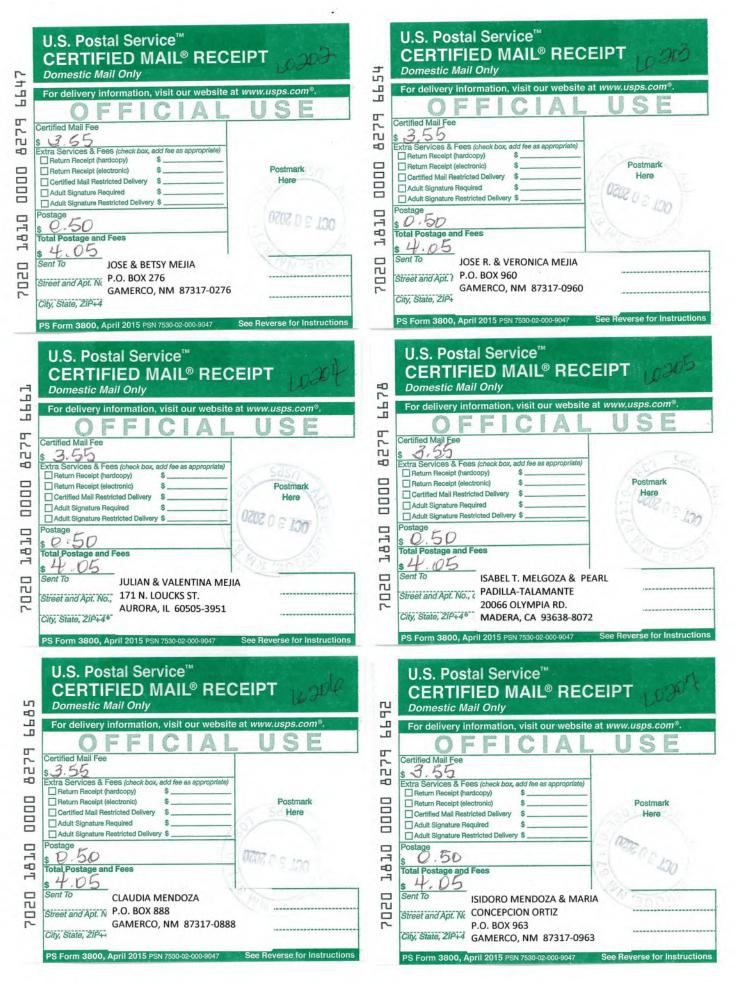
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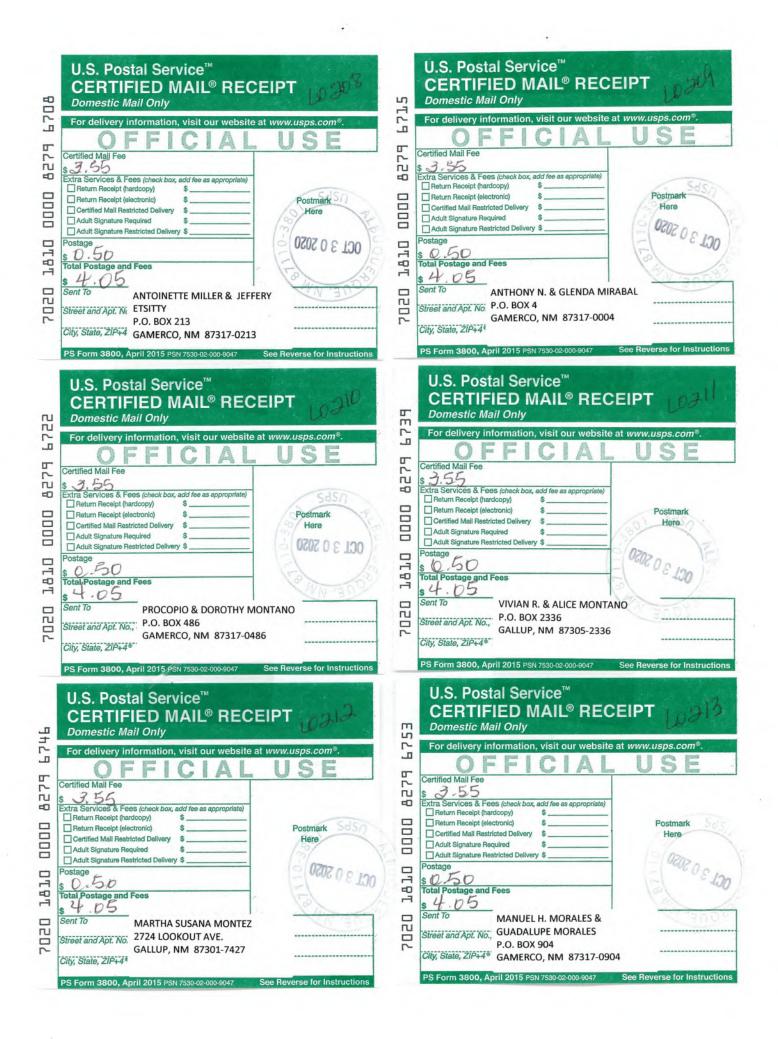


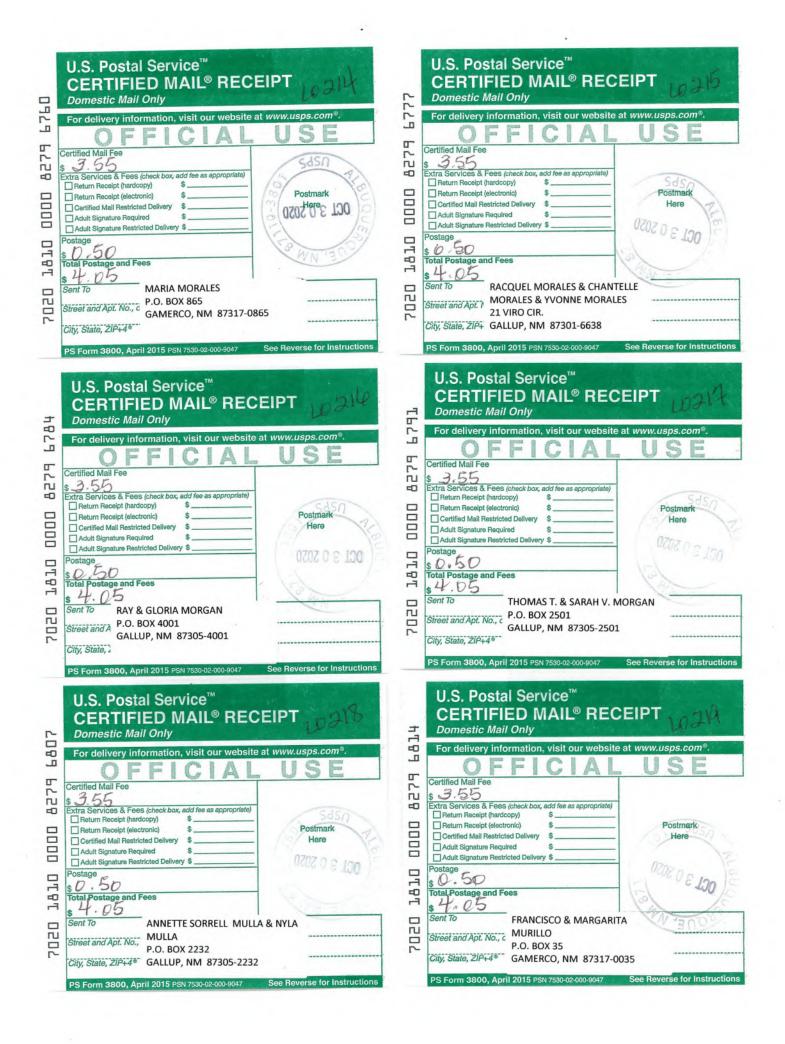


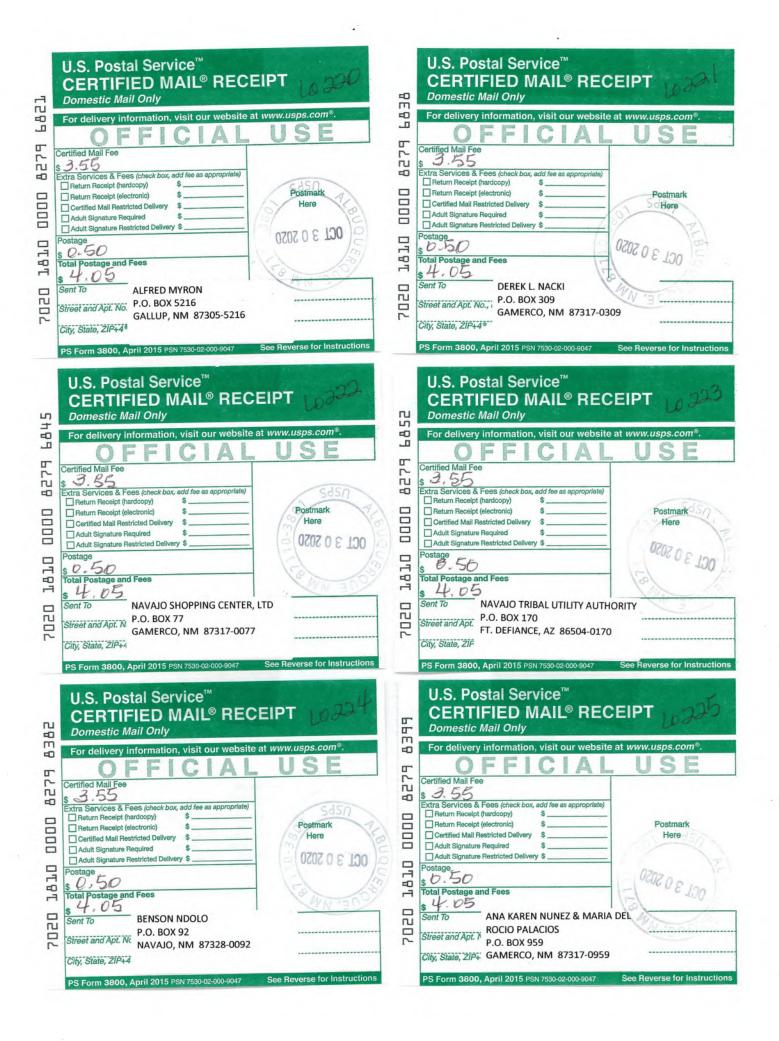


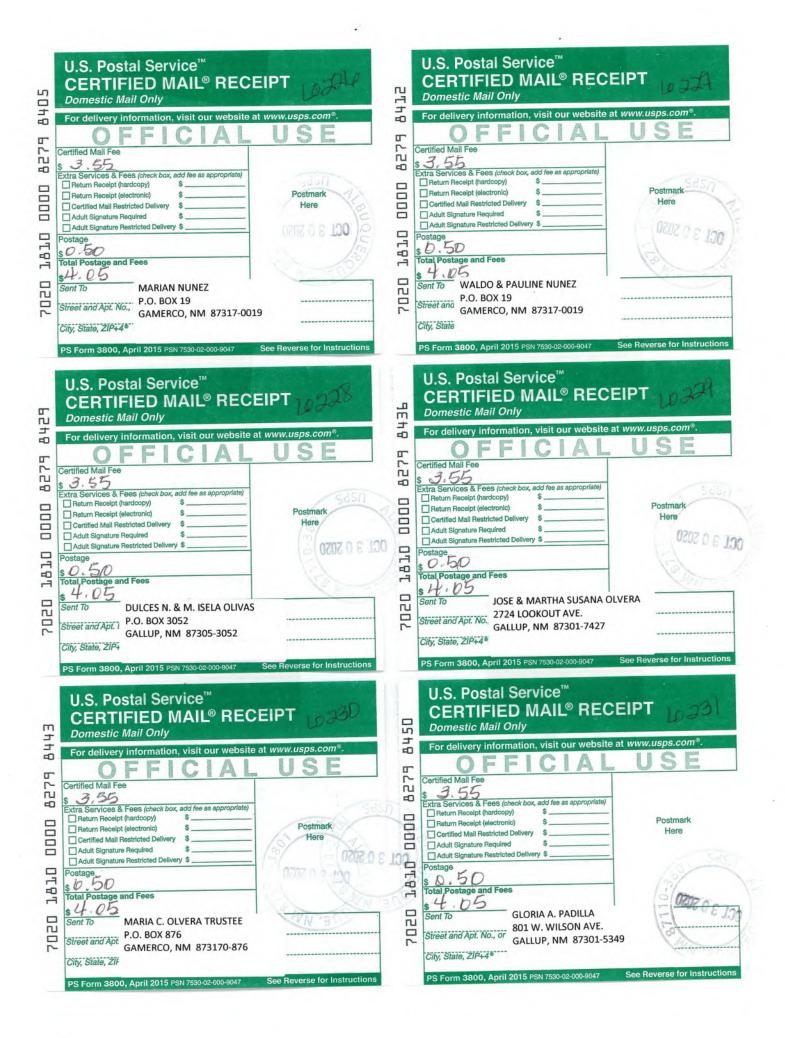


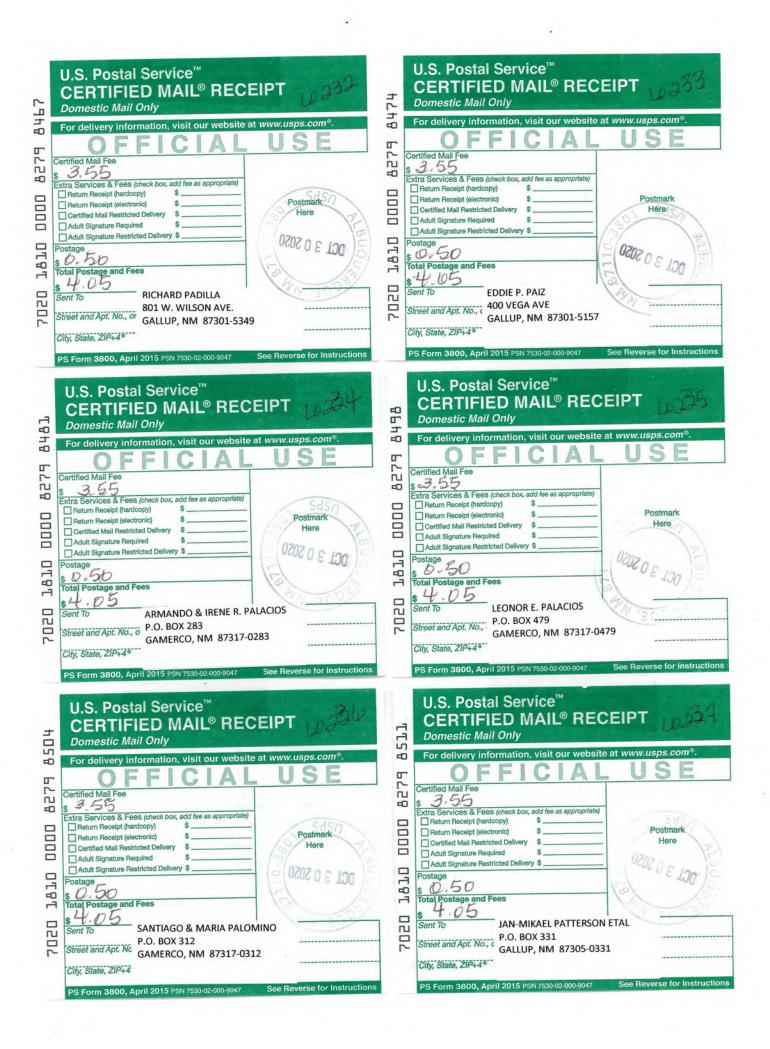


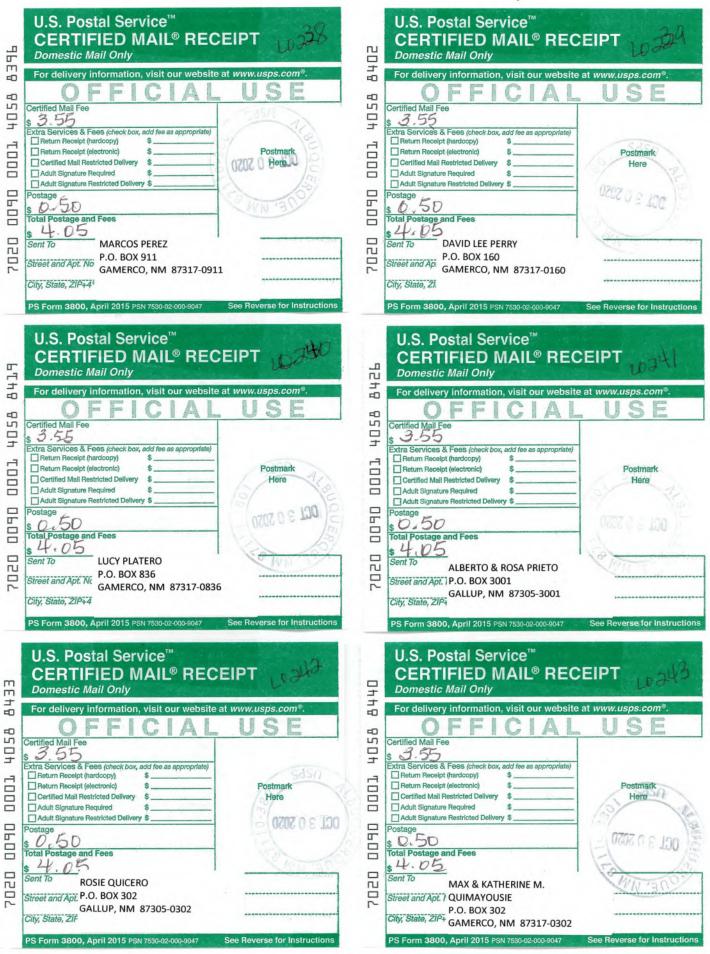


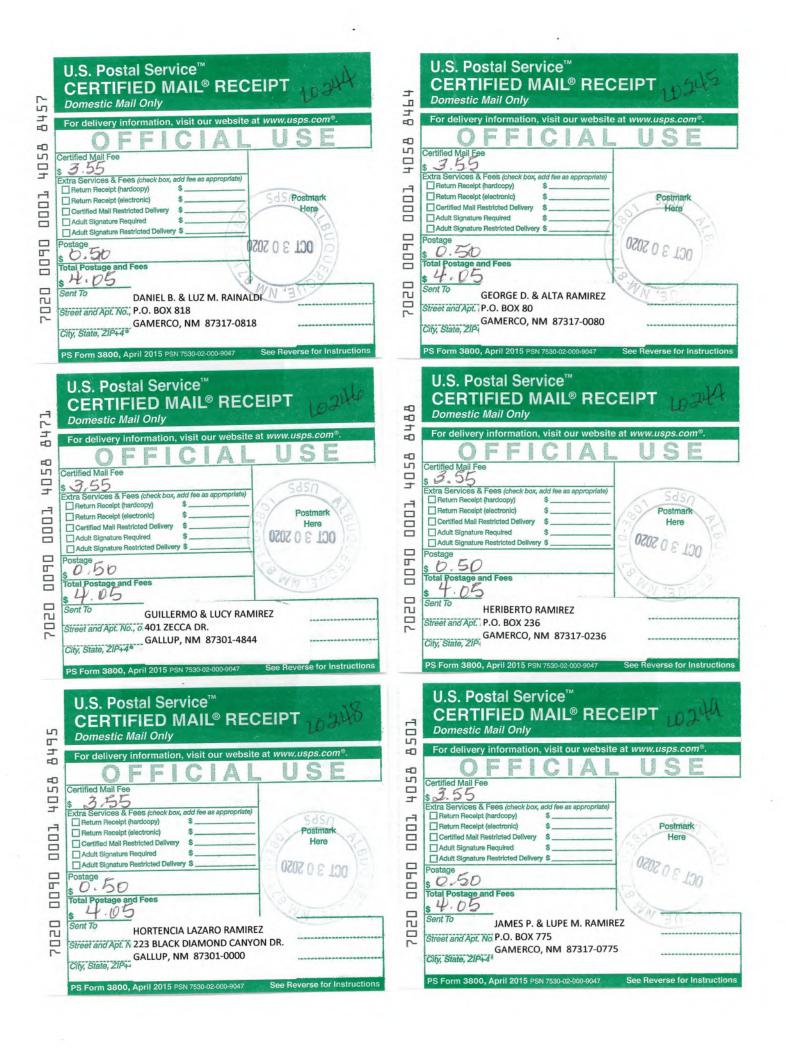


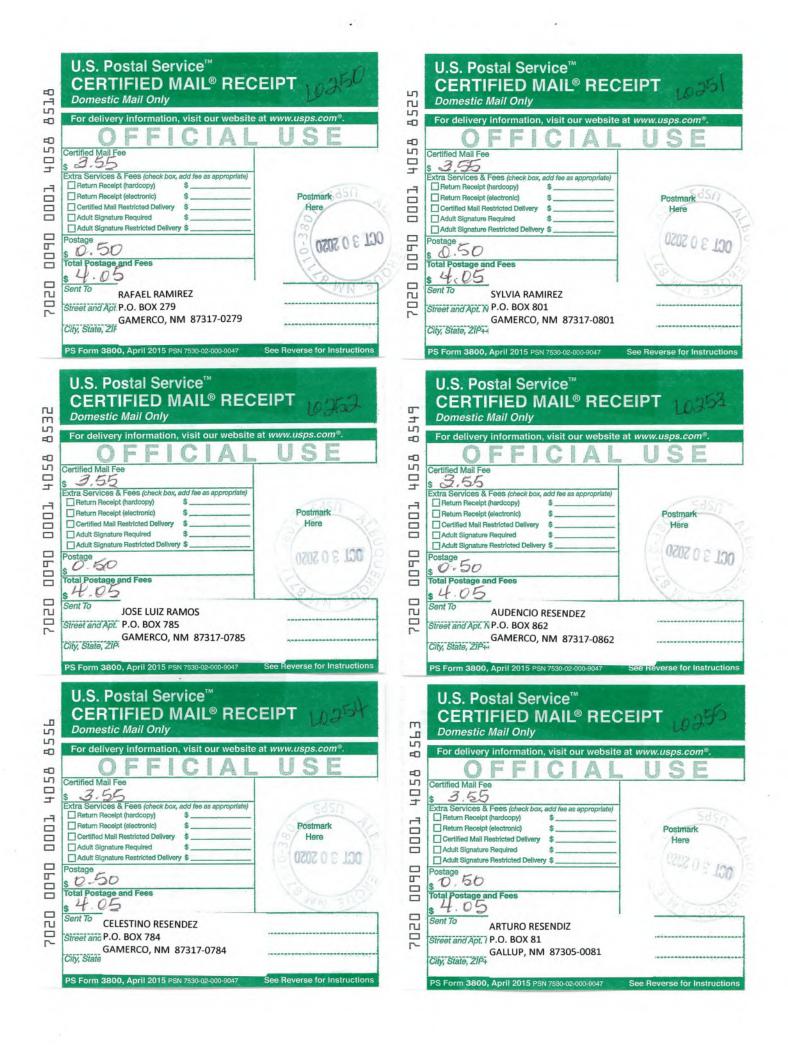


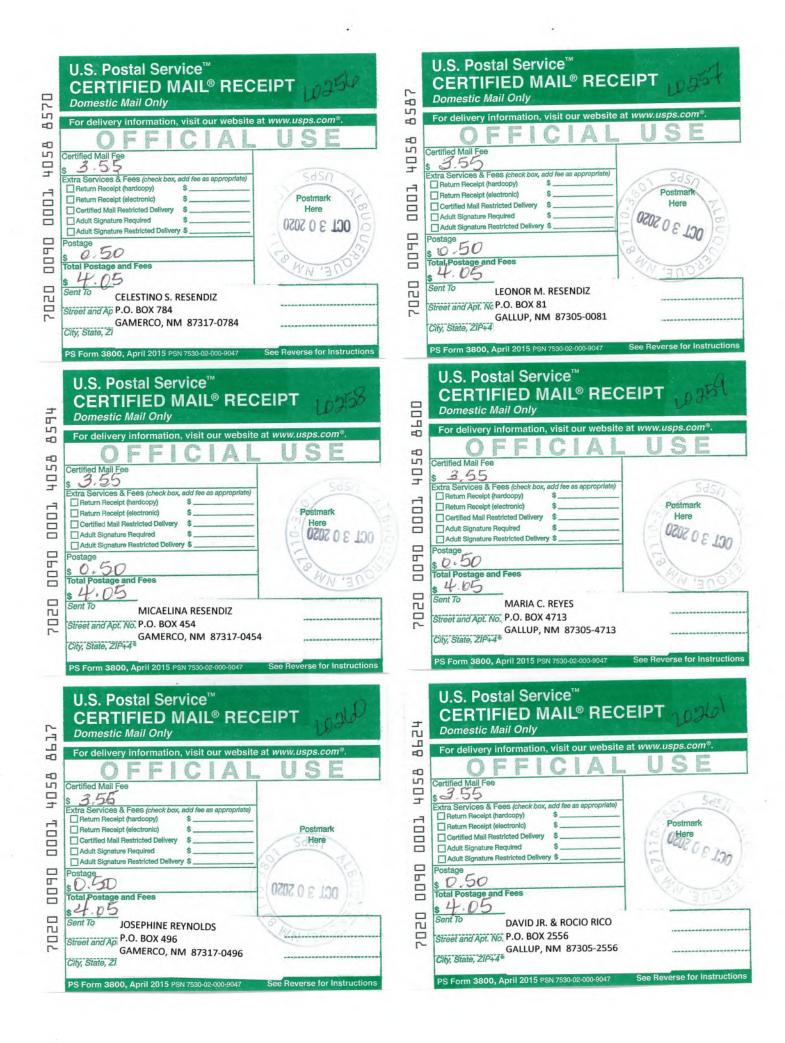


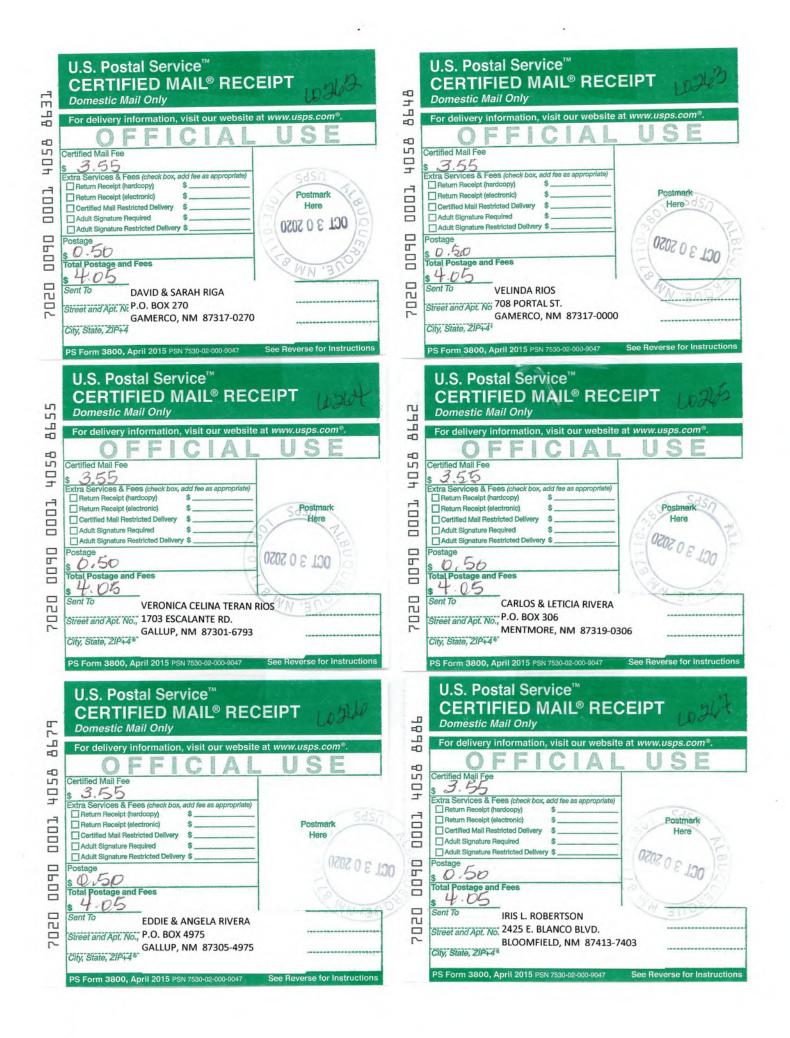


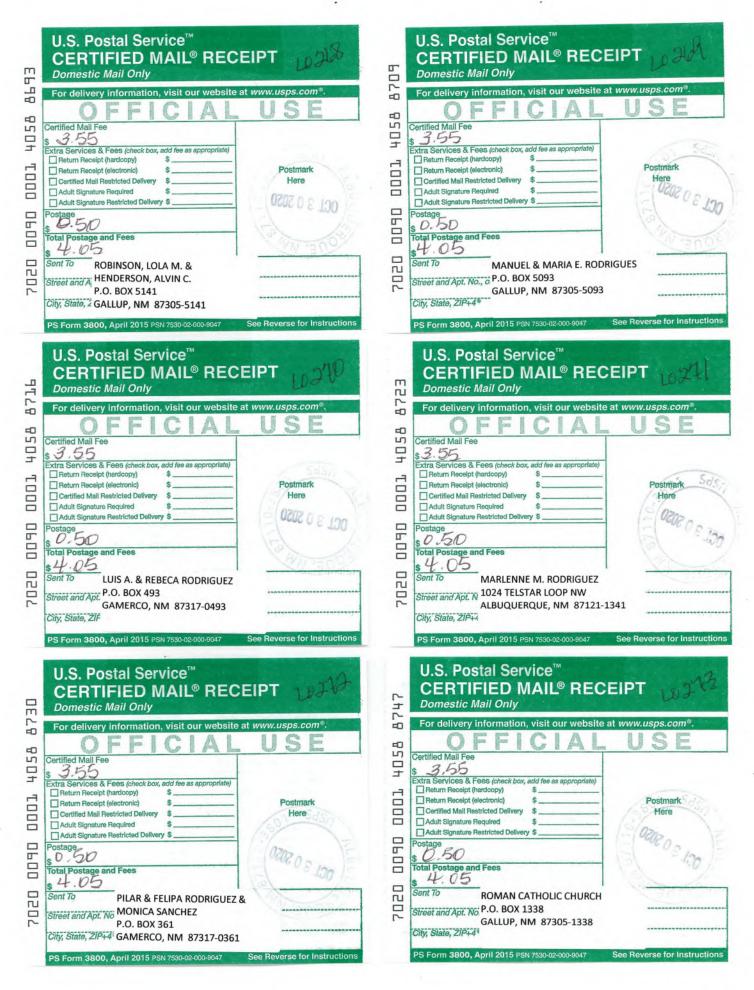


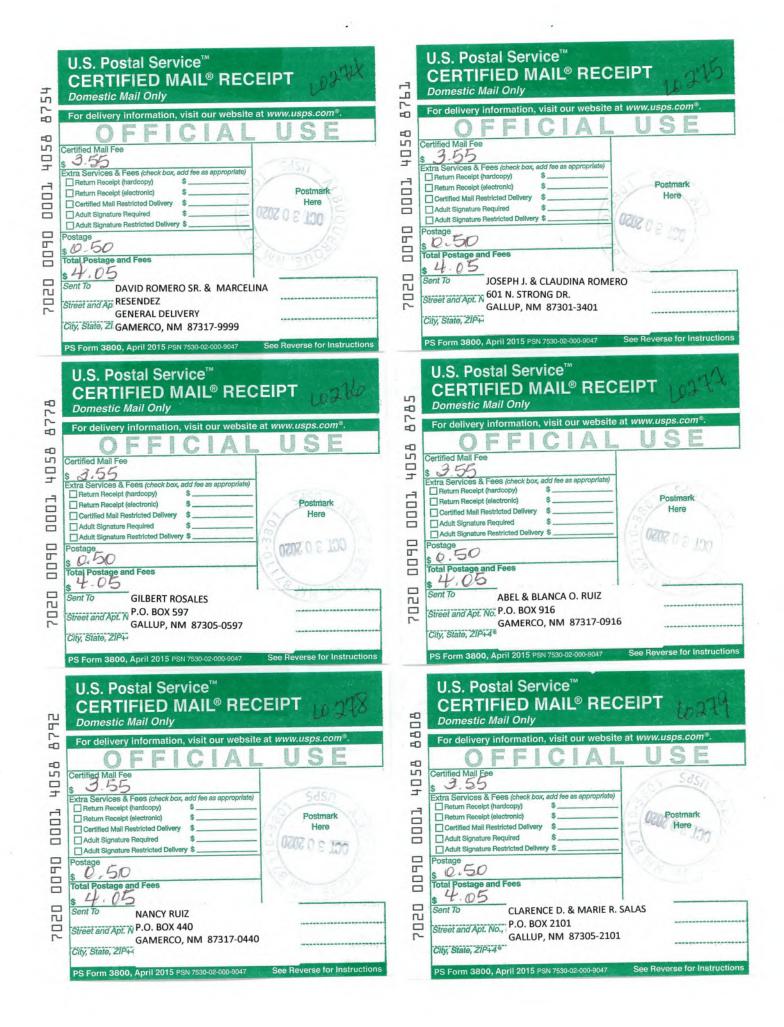


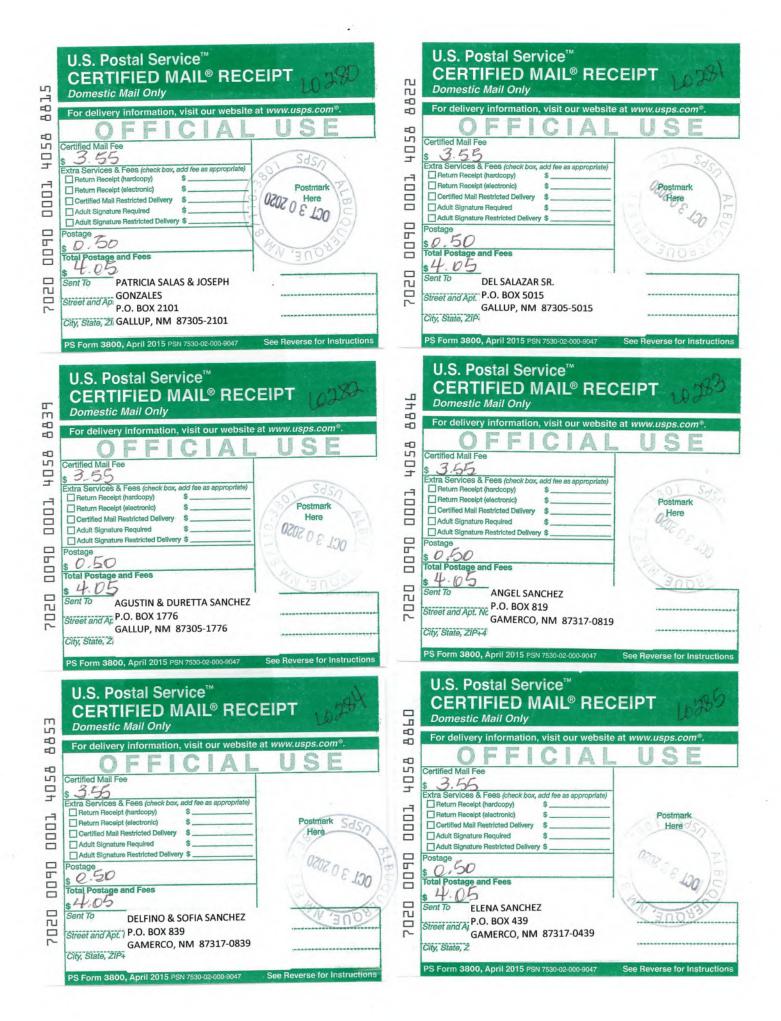


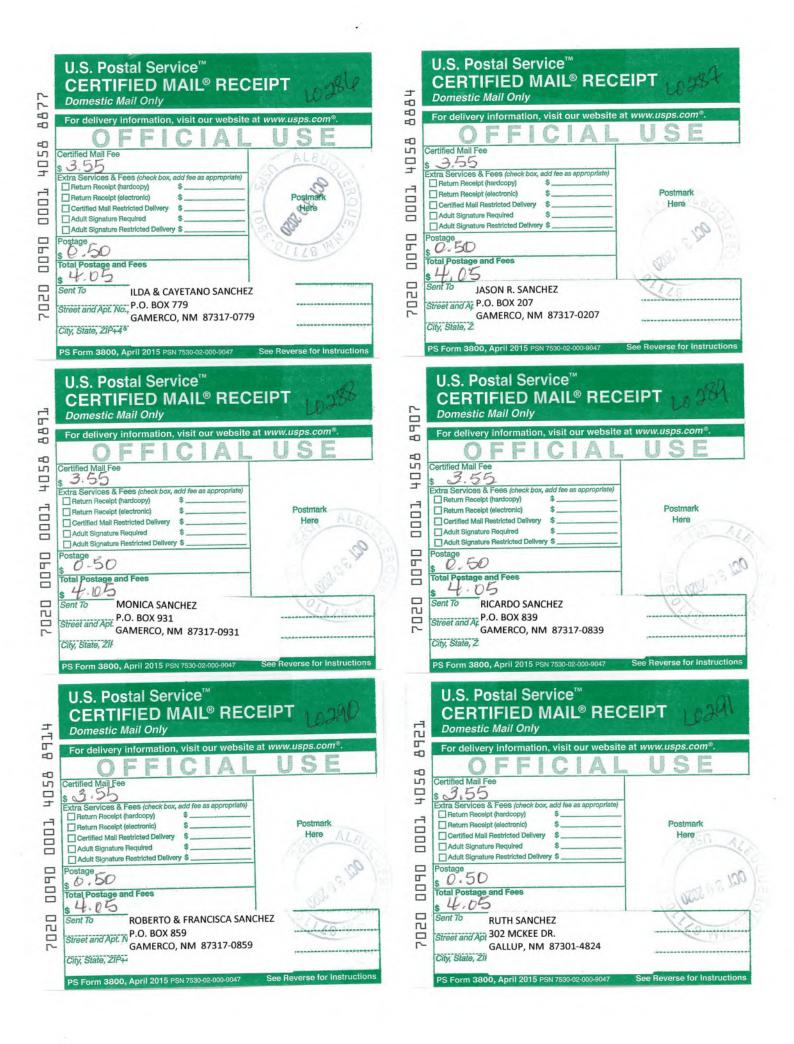


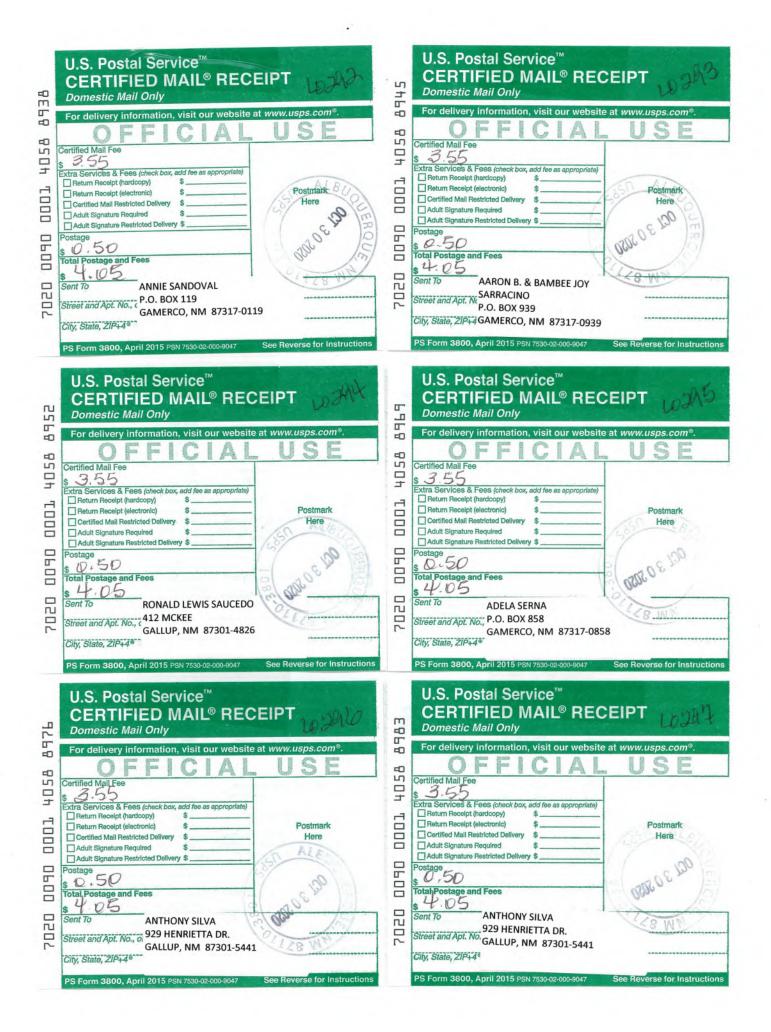


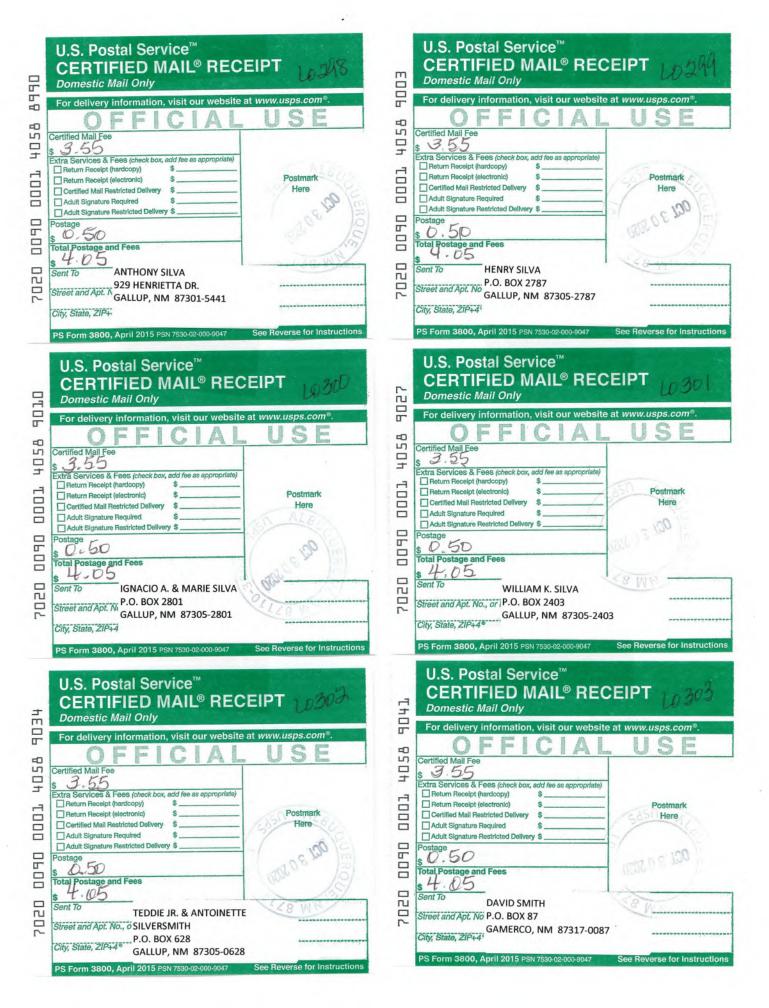


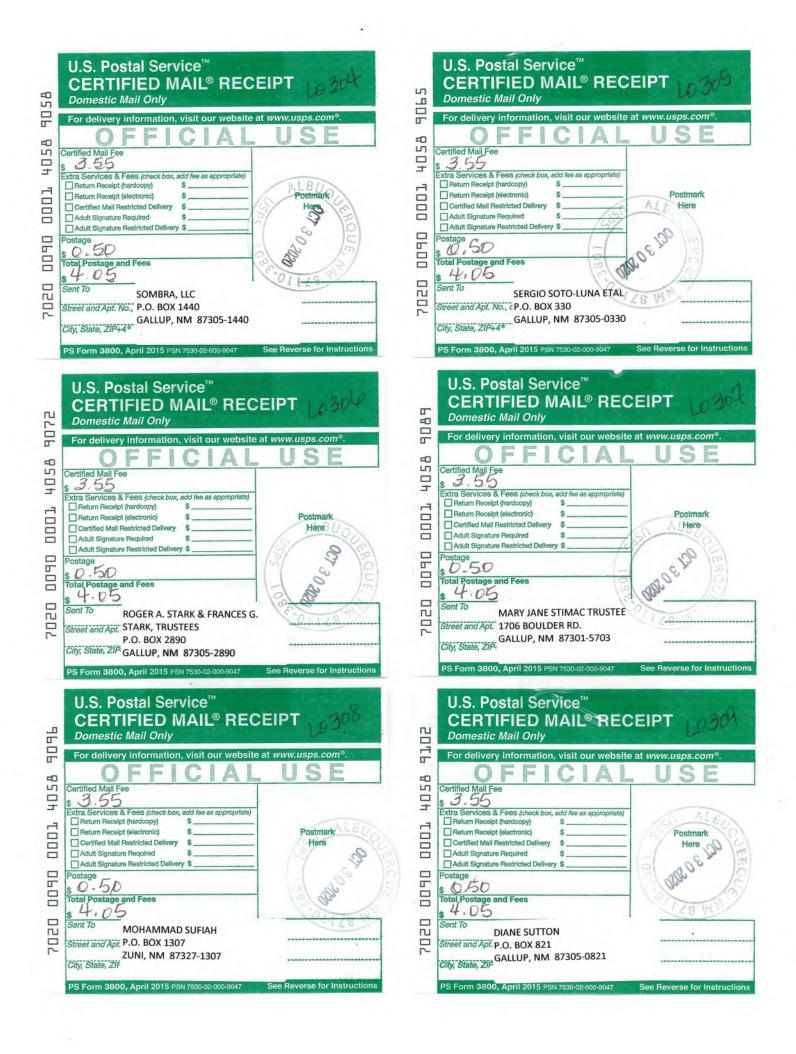












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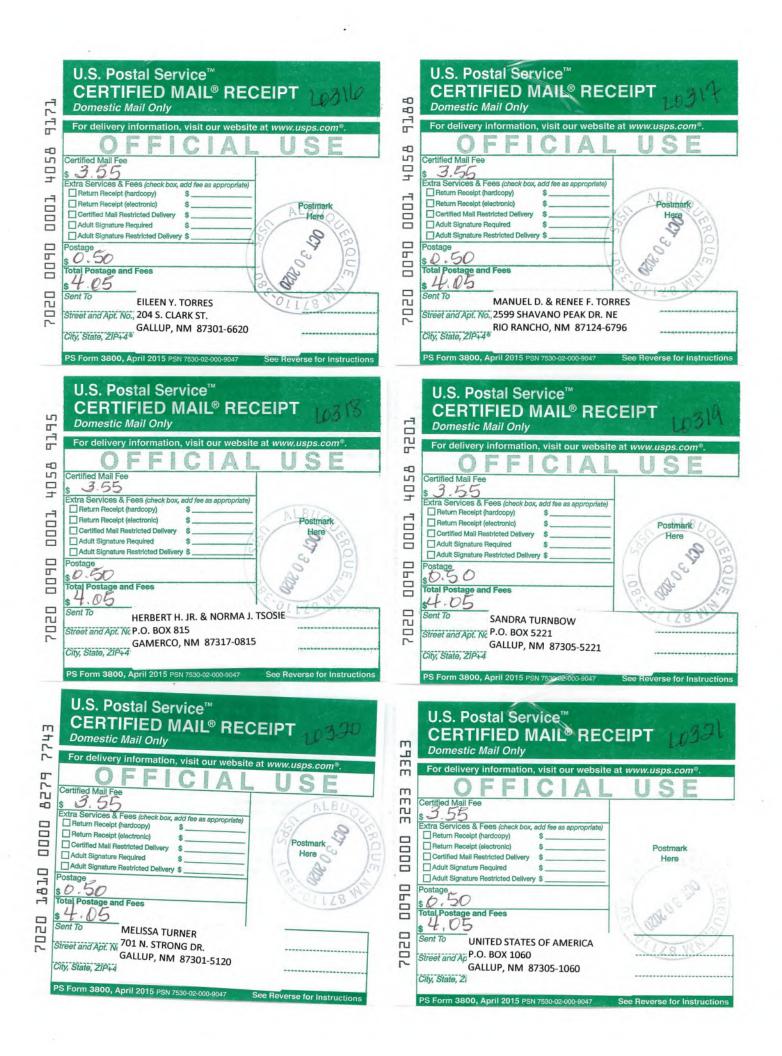


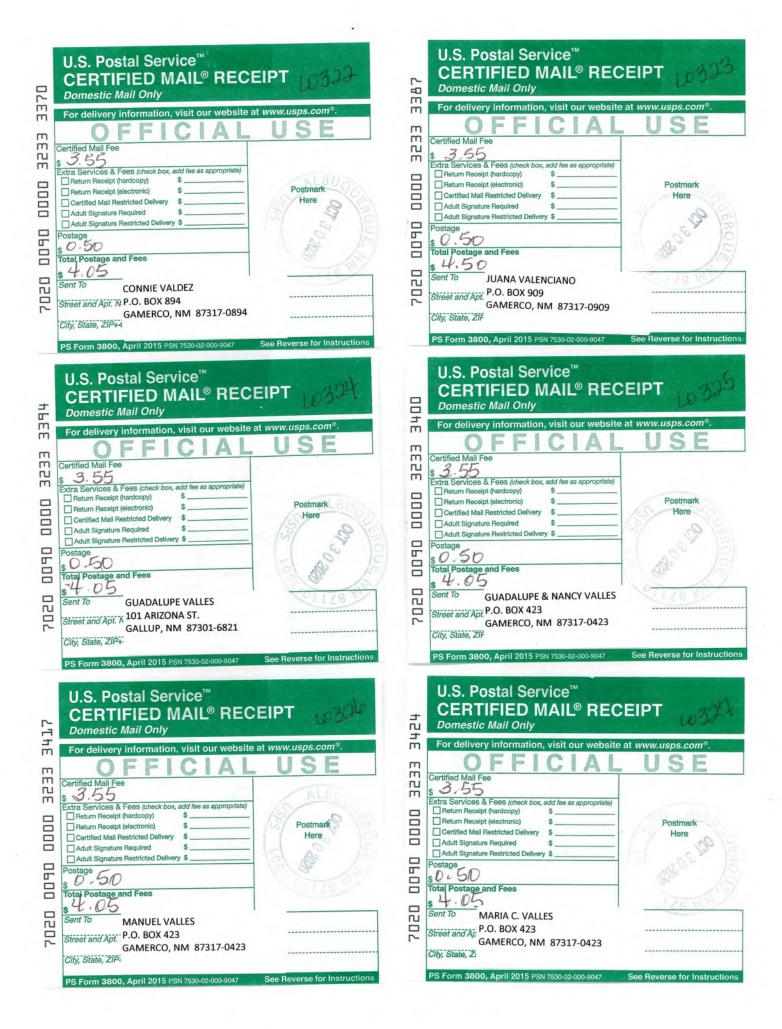


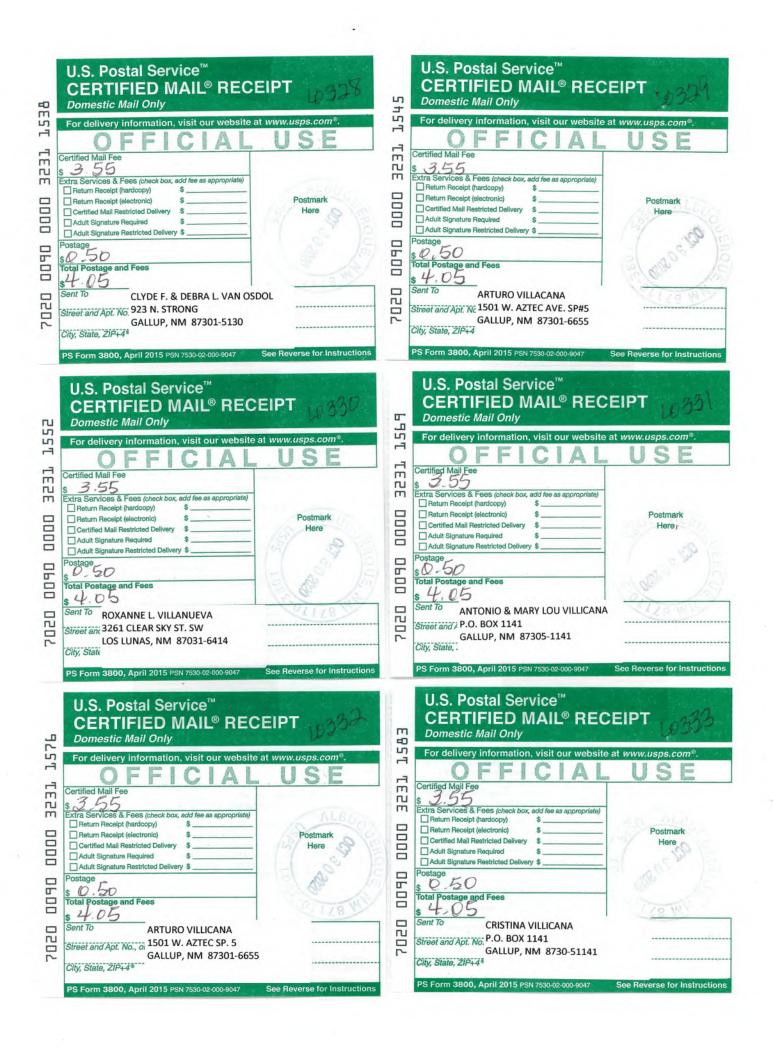
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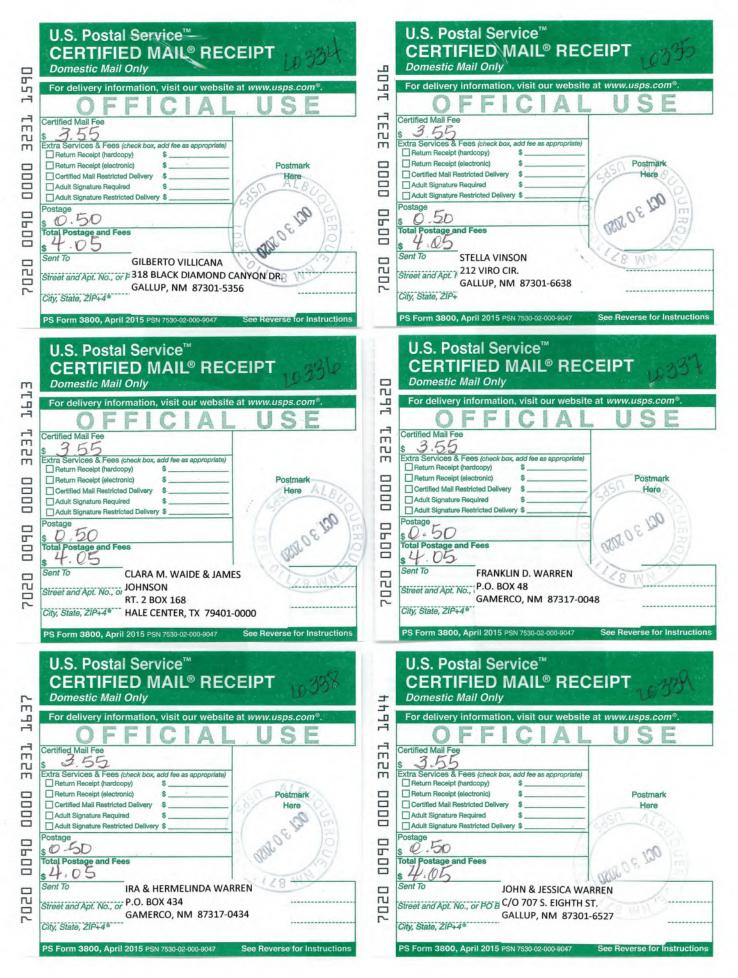
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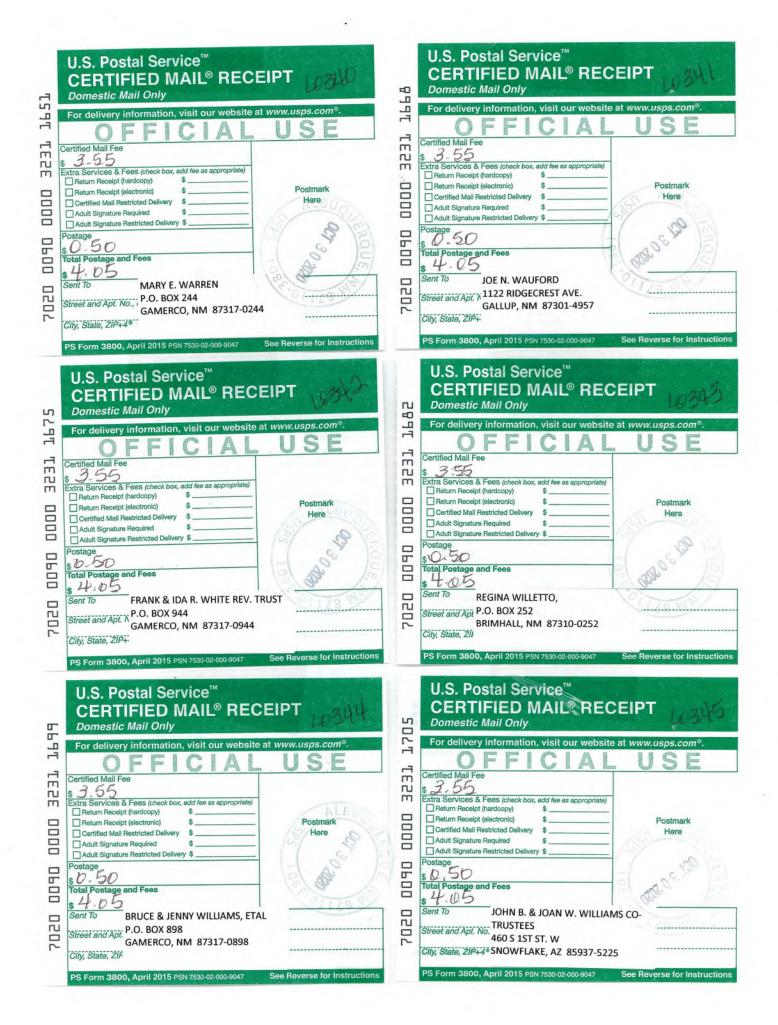


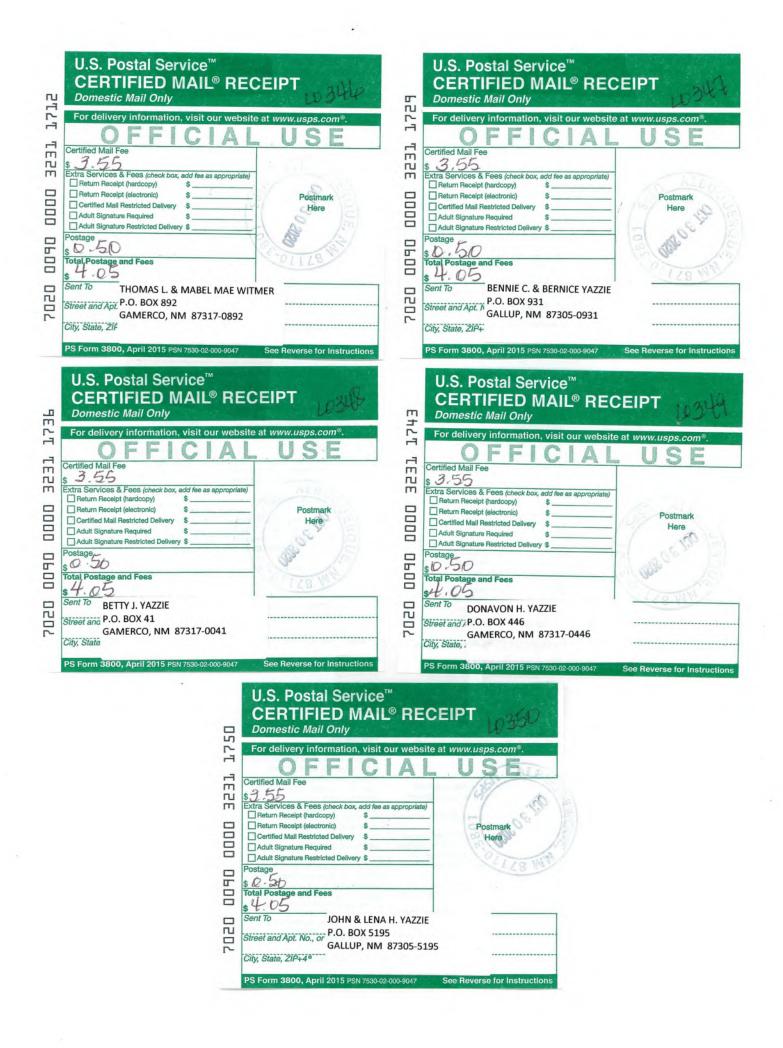






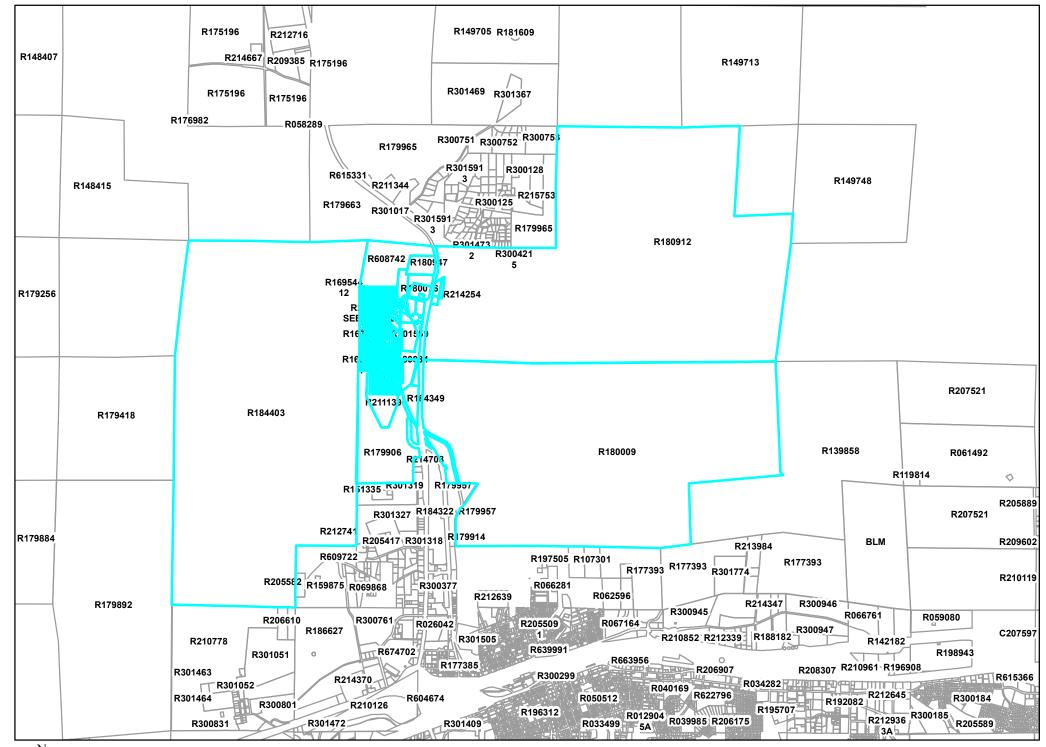






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2	GALLUP, NM 87305-5112	
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NOTICE OF AIR QUALITY PERMIT APPLICATION

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The exact location for the proposed facility known as Gamerco HMA, is 208 Crystal Avenue, Gamerco, NM 87317. The coordinates of the facility will be UTM Zone 12, UTM Easting 702,880, UTM Northing 3,938,490, NAD 83. The approximate location of this site is 2.4 miles north of the intersection of I-40 and Highway 491 in Gallup, NM in McKinley County.

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Pollutant:	Pounds per hour	Tons per year
PM 10	6.8 pph	7.6 tpy
PM _{2.5}	5.2 pph	6.3 tpy
Sulfur Dioxide (SO ₂)	11.6 pph	14.5 tpy
Nitrogen Oxides (NO _x)	11.1 pph	14.3 tpy
Carbon Monoxide (CO)	26.7 pph	33.7 tpy
Volatile Organic Compounds (VOC)	9.9 pph	12.5 tpy
Total sum of all Hazardous Air Pollutants (HAPs)	2.1 pph	2.6 tpy
Toxic Air Pollutant (TAP)	2.5 pph	3.1 tpy
Green House Gas Emissions as Total CO2e	n/a	< 10,000 tpy

The standard operating schedule of the facility will be from 7 a.m. to 6 p.m. for the months of November through February, and from 5 a.m. to 7 p.m. for the months of March through October, 7 days a week and a maximum of 52 weeks per year. The maximum operating schedule will be 11 hours per day from 7 a.m. to 6 p.m. for the months of December through February, 14 hours per day from 5 a.m. to 7 p.m. for the month of November, 17 hours per day from 4 a.m. to 9 p.m. for the months of March and October, and 18 hours per day from 3 a.m. to 9 p.m. in the months of April through September, 7 days a week and a maximum of 52 weeks per year.

The owner and operator of the Facility will be:

C&E Concrete, Inc. PO Box 2547 Milan, NM 87021

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; <u>https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html</u>. 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.

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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, <u>nd.coordinator@state.nm.us</u>. 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 <u>https://www.env.nm.gov/NMED/EJ/index.html</u> to learn how and where to file a complaint of discrimination.

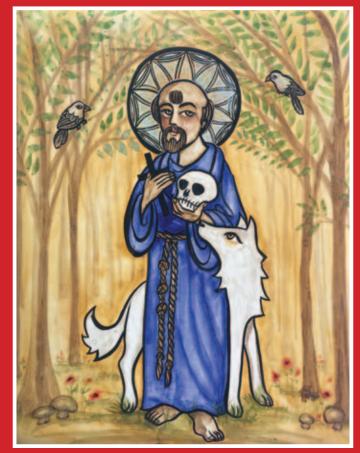


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VOL 6 | ISSUE 290 | OCTOBER 16, 2020



INTRODUCING 'SAINTS & SINNERS'

THE WORK OF THE GALLUP SUN'S VERY OWN MONTHLY ARTISTA SEAN WELLS

SAINTS & SINNERS DRAWING TO COLOR SEE PAGES 24, 25



WHAT COVID SHUTS DOWN ART OPENS UP

Artist Shannon Gurley O'Donnell talks 'Native Beauty'

By Cody Begaye Sun Correspondent

atercolor can be a difficult medium for some artists to grasp because of the necessary attention to detail and technique. But one artist working with Gallup Arts is rising to the challenge.

Gallup Arts Executive Director Rose Eason hosted a virtual artist talk with Shannon Gurley O'Donnell Oct. 13 about the newly opened *Native Beauty* exhibit being hosted at the ART123 gallery through Nov. 7.

WHERE IDEAS COME FROM

O'Donnell, from Gallup,

but now living in Phoenix, discussed the exhibit, which is about the generations of people who have called the Gallup region home, and the artwork and visual culture that has become synonymous with Gallup.

"Just painting local Native Americans, I thought it would be a great idea," O'Donnell said. "I started looking through reference photos to see where I could start."

She said she has always loved the Navajo hair bun, which is reflected in one of her watercolor paintings shown during the talk.

"A lot of times I would see the traditional outfits like in the [Gallup] Ceremonial growing up. A lot of the outfits were red, which is why I included a red outfit in this painting," O'Donnell said, indicating one of her works on display.

The artistry that Navajo people have demonstrated can be seen on a daily basis, which is something O'Donnell admires.

"They wear art," she said.

A NEW KIND OF ART

Painting Native garb and designs is something new for O'Donnell, she said.

"I wanted to do this before, but I get kind of intimidated to go down different lines [of

NATIVE BEAUTY | SEE PAGE 4



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PROOF OF PUBLICATION AFFIDAVIT

County of McKinley, Mandy Marks being duly sworn, testifies that she is the Circulation Manager of Gallup Sun Publishing, a weekly newspaper circulated in the above county and that he/she is familiar with the facts and that the notice, a copy of which is attached, was published in said newspaper one week for one consecutive week (one publication) prior to the time fixed for the hearing thereof, and that the publication was made on the: loth _ day of October 2020 Dated 10/1/2/20 Signature of Affian OFFICIAL SEAL ERICA PALOMINO NOTARY PUBLIC STATE OF NEW MEXICO State of New Mexico 2024 My Commission Expires:) ss County of October On the day of 20 20 the foregoing instrument was acknowledged before me by My Commission expires

12.

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Gallup Sun • Friday October 16, 2020

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Milan, NM 87021

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October 22, 2020

KYVA Radio 300 W Aztec Ave. Suite 200 Gallup, NM 87301

CERTIFIED MAIL

Dear KYVA Radio:

SUBJECT: PSA Request - Proposed Air Quality Construction Permit Application for C&E Concrete, Inc. Gamerco HMA

Attached is a copy of a public service announcement regarding a proposed air quality construction permit application for the Gamerco HMA facility. This announcement is being submitted by Montrose Air Quality Services, Albuquerque, NM on behalf of C&E Concrete, Inc.

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 <u>pwade@montrose-env.com</u>. You may also contact Mr. Chris Meech, C&E Concrete, Inc. at (505) 287-2944. Thank you.

Sincerely,

Paul Wade

Paul Wade Senior Project Manager

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

PUBLIC SERVICE ANNOUNCEMENT

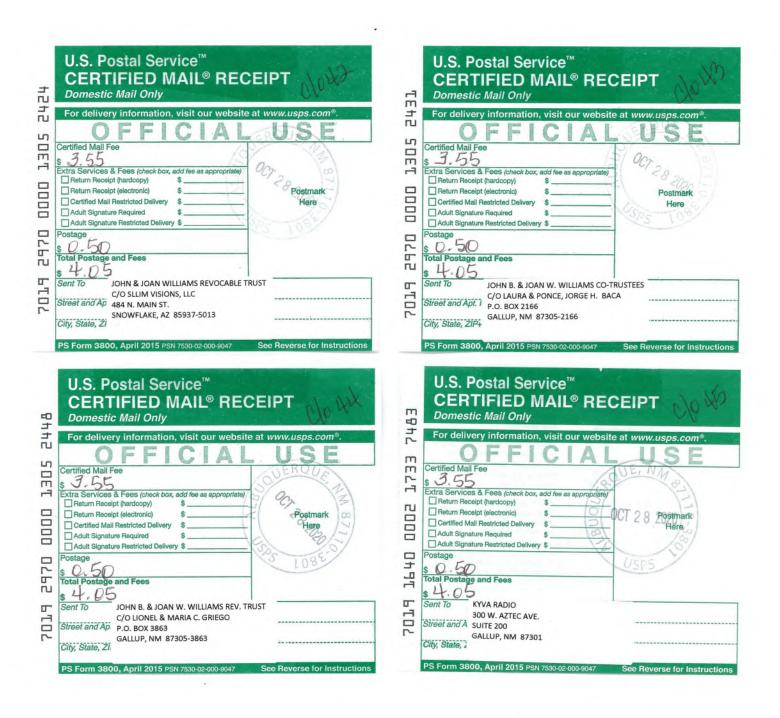
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Public notices have been posted in the following locations for review by the public:

- 1. At the Octavia Fellin Public Library at 115 W Hill Ave, Gallup, NM;
- 2. At the City of Gallup Municipal Building at 110 West Aztec Ave., Gallup, NM;
- 3. At the McKinley County Courthouse/Clerk's Office in Grants at 207 W Hill Ave, Gallup, NM; and
- 4. At the main entrance to C&E Concrete, Inc. Gamerco HMA East and West Entrance



Section 10

Written Description of the Routine Operations of the Facility

<u>A written description of the routine operations of the facility</u>. 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.

The C&E Concrete Gamerco HMA Plant will be permitted to operate with the following material inputs.

Plant	Tons Per Hour	Tons Per Year
HMA Plant	200	500,000

TABLE 10-1: Asphalt Throughput

The 200 tph hot mix asphalt plant will include a 4-bin cold aggregate feeder, scalping screen, pug mill, 2-bin RAP feeder, RAP scalping screen, mineral filler silo with baghouse, drum dryer with baghouse, incline conveyor, asphalt silo, asphalt heater, and seven (7) transfer conveyors. The plant will be powered by commercial line power. Processed asphalt will be transported from the HMA plant to off-site sales. The HMA plant will limit hourly processing rate to 250 tph and 768,250 tons per year (tpy). Hot oil asphalt heaters will be permitted to operate 8760 hours per year. A process flow diagram is presented as Figure 4-1.

Aggregate in loaded into the Cold Aggregate Feed Bins (Unit 2), where it is metered onto the Cold Aggregate Feed Bin Conveyor (Unit 3) then transferred to Cold Aggregate Conveyor (Unit 4). From the Cold Aggregate Conveyor, the aggregate is sent to the Scalping Screen and Scalping Screen Conveyor (Units 5, 6) and then Pug Mill (Unit 7). The Mineral Filler Silo and Augur (Unit 10) meters mineral filler into the Pug Mill. The Pug Mill mixes the aggregate and mineral filler together and empties onto the Pug Mill Conveyor (Unit 8). The Pug Mill Conveyor transfers the material to the Slinger Conveyor (Unit 9) then into the Drum Dryer (Unit 17). RAP is loaded into the RAP Feed Bins (Unit 13), where it is metered onto the RAP Feed Bin Conveyor (Unit 14) and then transferred to the RAP Scalping Screen (Unit 15). The RAP Scalping Screen Conveyor (Unit 16) transports RAP to the Drum Dryer/Mixer (Unit 17). There the material is dried and asphalt cement is added to make asphalt concrete. From the Drum Dryer/Mixer the asphalt concrete is sent by the Asphalt Incline Conveyor (Unit 19) to the Asphalt Silo (Unit 20).

Control Units include a Drum Dryer/Mixer Dust Collector (Unit 18) that captures particulates generated at the Drum Dryer/Mixer and the Mineral Filler Silo Dust Collector (Unit 11) that captures particulates generated during loading of the Mineral Filler Silo. Controlled particulates exhaust the Drum Dryer/Mixer Dust Collector Stack (Stack 2) and Mineral Filler Silo Dust Collector Stack (Stack 1).

Fugitive dust is controlled when material exits the Cold Aggregate or RAP Feed Bins to the Cold Aggregate or RAP Feed Bin Conveyors with enclosures to reduce the chance that wind will blow any generated fugitive dust away and/or water sprays, as needed, at the exit of the feed bins.

Fugitive dust is controlled when material enters and exits the Scalping Screen (Unit 5), Pug Mill (Unit 7), and RAP Scalping Screen (Unit 15) with enclosures to reduce the chance that wind will blow any generated fugitive dust away and/or water sprays, as needed, at the Scalping Screen, Pug Mill, and RAP Scalping Screen.

C&E Concrete, Inc.

Gamerco HMA

Baghouse fines that are captured in the Drum Dryer/Mixer Dust Collector (Unit 18) are recycled back to the Drum Dryer using an enclosed loop or slurried to the extent where no visible emission exceed 20 percent opacity per EPA Method 9.

Baghouse fines that are captured in the Mineral Filler Silo Dust Collector (Unit 11) are recycled back to the Mineral Filler Silo.

There are no pollution controls for the Aggregate or RAP Storage Piles (Units 1, 12), Aggregate or RAP Feed Bins (Units 2, 13), Asphalt Incline Belt (Unit 19), Asphalt Silo (Units 20), Asphalt Heater (Unit 21), or Hot Oil Asphalt Storage Tank (Units 22).

All truck traffic travels in the HMA Plant paved road. The road is paved and will be cleaned, as needed, to reduce visible emissions.

Gamerco HMA

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, <u>Single Source Determination Guidance</u>, 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): Hot Mix Asphalt Plant – SIC Code 2951; Concrete Batch Plant – SIC Code 3273

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

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

⊠ Yes □ No

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

🛛 Yes 🛛 🗆 No

<u>Contiguous or Adjacent</u>: 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, <u>does not</u> 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 "synthetic minor" source
- B. This facility is not one of the listed 20.2.74.501 Table I PSD Source Categories.
 - a. NOx: 14.8 TPY
 - b. CO: 33.7 TPY
 - c. VOC: 12.5 TPY
 - d. SOx: 14.8 TPY
 - e. PM: 13.1 TPY
 - f. PM10: 7.58 TPY
 - g. PM2.5: 6.38 TPY
 - h. Lead: 0.00375 TPY
 - i. GHG: <75,000 TPY
- C. Netting is not required for this application.
- D. BACT is not required for this application.
- 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 HMA plant with annual emission rates below 250 tpy of any regulated new source review pollutant.

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/

To save paper and to standardize the application format, delete this sentence, and begin your submittal for this attachment on this page.

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 Total Suspended Particulates, 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	21	Engines and heaters are Stationary Combustion Equipment. Specify units subject to this regulation. The facility stationary combustion equipment is subject to a 20 percent opacity limit.
20.2.70 NMAC	Operating Permits	No		This facility is not a Title V Operating Permit source. The facility consists of an concrete batch plant and HMA plant. Concrete batch plant falls under 2-digit SIC Code Group 32 and HMA plants falls under 2-digit SIC Code Group 29. Since they are operating under different SIC Codes they are separate facilities for major source determination.
20.2.71 NMAC	Operating Permit Fees	No		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		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	Subpart I – 10, 11, 17, 18	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		This facility is located in an Attainment Area.
20.2.80 NMAC	Stack Heights	Yes	18, 21	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 met all requirements of good engineering practices.
20.2.82 NMAC	MACT Standards for source categories of HAPS	No		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	Defined as applicable at 20.2.70.7.E.11, any national ambient air quality standard
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	10, 11, 17, 18	Subpart I in 40 CFR 60 applies.
NSPS 40 CFR60.40, Subpart I	Subpart I, Performance Standards for Hot Mix Asphalt Facilities	Yes	10, 11, 17, 18	The affected facility, that commences construction or modification after June 11, 1973, to which the provisions of this subpart apply is each hot mix asphalt facility. For the purpose of this subpart, a hot mix asphalt facility is comprised only of any combination of the following: dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler, systems for mixing hot mix asphalt; and the loading, transfer, and storage systems associated with emission control systems.
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, 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 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	No		The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE). No RICE are located at HMA plant.
NESHAP 40 CFR 61 Subpart A	General Provisions	No		No stationary source is applicable to any Subpart in 40 CFR 61.
MACT 40 CFR 63, Subpart A	General Provisions	No		No stationary source is applicable to any Subpart in 40 CFR 63.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE MACT)	No		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. No RICE are located at HMA plant.

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 <u>Operational Plan to Mitigate Emissions During Startups</u>, <u>Shutdowns</u>, <u>and Emergencies</u> 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 <u>Operational Plan to Mitigate Source Emissions</u> <u>During Malfunction, Startup, or Shutdown</u> 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

<u>Startup</u>

Prior to the production of asphalt, the drum mixer dust collector will be operational and functioning correctly per 20.2.11.108.A, 20.2.11.109, and applicable permit conditions.

Prior to loading of the mineral filler, the mineral filler silo dust collector will be operational and functioning correctly per 20.2.11.108.A, 20.2.11.109, and applicable permit conditions.

Prior to the production of asphalt, feeder bin exit enclosures or other control measures will be functioning correctly to control fugitive emissions to an opacity limit of 20 percent per EPA Reference Method 9.

Prior to the production of asphalt, water sprays, or other control measures, for the scalping screen and pug mill will be functioning correctly and used as needed, to control fugitive emissions to an opacity limit of 20 percent per EPA Reference Method 9.

Prior to unloading of the drum mixer dust collector baghouse fines, dust control measures will be functioning correctly to control fugitive emissions to an opacity limit of 20 percent per EPA Reference Method 9.

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

<u>Shutdown</u>

All required control equipment will operate until all asphalt production ceases.

Maintenance

The feeder bin exit enclosures or water sprays, asphalt drum mixer, drum mixer dust collector, material transporting and processing water sprays, and mineral filler silo dust collector will be maintained to prevent excess emissions during startup or shutdown. This facility will not have excess emissions during any maintenance procedures.

C&E Concrete, Inc.

Malfunction

Upon malfunction where excess particulate emissions are observed from the feeder bin exit enclosures or water sprays, asphalt drum mixer, drum mixer dust collector, scalping screen and pug mill water sprays, mineral filler silo dust collector, and baghouse loadout enclosure and watering, all asphalt production 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 stationary source.

Section 16 Air Dispersion Modeling

- 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 (<u>http://www.env.nm.gov/aqb/permit/app_form.html</u>) 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.	Х
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:

- \Box See attached, approved modeling **waiver for all** pollutants from the facility.
- □ See attached, approved modeling **waiver for some** pollutants from the facility.
- Attached in Universal Application Form 4 (UA4) is a modeling report for all pollutants from the facility.
- $\hfill\square$ Attached in UA4 is a **modeling report for some** pollutants from the facility.
- \Box 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	16-A: Identification				
1	Name of facility:	Gamerco HMA			
2	Name of company:	C&E Concrete, Inc.			
3	Current Permit number:	New Permit			
4	Name of applicant's modeler:	Paul Wade			
5	Phone number of modeler:	505.830.9680 x6			
6	E-mail of modeler:	pwade@montrose-env.com			

16	16-B: Brief						
1	Was a modeling protocol submitted and approved?	Yes⊠	No□				
2	Why is the modeling being done?	New Facility					
3	Describe the permit changes relevant to the modeling.	Describe the permit changes relevant to the modeling.					
	New Permit						
4	What geodetic datum was used in the modeling?	NAD83					
5	How long will the facility be at this location? Permanent						
6	6 Is the facility a major source with respect to Prevention of Significant Deterioration (PSD)? Yes \square No \boxtimes						
7	Identify the Air Quality Control Region (AQCR) in which the facility is located	014					

	List the PSD baseline dates for this region (minor or major, as appropriate).					
8	NO2	06/06/1989				
	SO2	08/07/1978				
	PM10	08/07/1978				
	PM2.5	NA				
	Provide the name and distance to Class I areas within 50 km of	the facility (300 km for PSD pern	nits).			
9	Petrified Forest National Park – 95.13 km					
10	Is the facility located in a non-attainment area? If so, describe below $Yes \Box$ $No \boxtimes$					
11	Describe any special modeling requirements, such as streamline permit requirements.					
11	None					

16-C: Modeling History of Facility 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). Latest permit and modification Pollutant number that modeled the Date of Permit Comments pollutant facility-wide. CO New Permit – No Previous Modeling NO_2 New Permit - No Previous Modeling 1 New Permit – No Previous Modeling SO_2 H_2S Not Emitted PM2.5 New Permit - No Previous Modeling PM10 New Permit - No Previous Modeling None Lead Ozone (PSD only) Not a PSD Permit NM Toxic Air Pollutants New Permit - No Previous Modeling (20.2.72.402 NMAC)

16	16-D: Modeling performed for this application								
	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.								
1	Pollutant	ROI	Cumulative analysis	Culpability analysis	Waiver approved	Pollutant not emitted or not changed.			
	СО	\boxtimes							
	NO ₂	\boxtimes	\boxtimes						
	SO ₂	\boxtimes	\boxtimes						

H_2S				\boxtimes
PM2.5	\boxtimes	\boxtimes		
PM10	\boxtimes	\boxtimes		
Lead				\boxtimes
Ozone				\boxtimes
State air toxic(s) (20.2.72.402 NMAC)		\boxtimes		

16	-E: New	Mexico to	xic 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. Calcium Oxide and Asphalt Fumes								
	List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required.								
2	Pollutant	Emission Rate (pounds/hour)	Emission Rate Screening Level (pounds/hour)	Stack Height (meters)	Correction Factor	Emission Rate/ Correction Factor			
	Calcium Oxide	0.18	0.133	12.19	5	0.036			

16-	·F: Modeling options		
1	Was the latest version of AERMOD used with regulatory default options? If not explain below.	Yes⊠	No□

16	-G: Surrour	nding source modeling					
		ng source retrieval	September 4, 2020				
	sources modeled		r Quality Bureau was believed to be inaccurate, describe how the changes to the surrounding source inventory were made, use the table				
2	AQB Source ID	Description of Corrections					
	5	Fisher - Portable HMA Plant - GCP3 3779 – Annual Emissions Adjusted to GCP Emission Rates					
	45	Coronado Wrecking and Salvage - Emission Rates	Crusher No 1 GCP2 4805 – Annual Emissions Adjusted to GCP				
	71	AECOM - Fort Wingate GCP2-510	3 – Annual Emissions Adjusted to GCP Emission Rates				

16-	H: Building and structure down	wash
1	How many buildings are present at the facility?	None

2	How many above ground storage tanks are present at the facility?	4		
3	Was building downwash modeled for all buildings and	tanks? If not explain why below.	Yes□	No⊠
	No tanks would significantly affect point sources with	downwash		
4	Building comments			

		und and	mouelet	l property bou	ndary						
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.										
	Site is fenced on all sides of the facility with gates at entrances.										
2	Receptors must be placed along publicly accessible roads in the restricted area. Are there public roads passing through the restricted area?						Yes□	No⊠			
3	Are restricted	l area boundary	coordinates i	ncluded in the modeling	files?		Yes⊠	No□			
	Describe the receptor grids and their spacing. The table below may be used, adding rows as needed.										
4	Grid Type	Shape	Spacing	Start distance from restricted area or center of facility	End distance from restricted area or center of facility	Comments					
-	Very fine	Cartesian	50	0	500 meters						
	Fine	Cartesian	100	500 meters	1000 meters						
	Course	Cartesian	250	1000 meters	3000 meters						
	Describe rece	ptor spacing al	ong the fence		1	1					
5	25 meters										
	Describe the	PSD Class I are	a receptors.								
6	None										

16	-J: Sensitive areas		
1	Are there schools or hospitals or other sensitive areas near the facility? If so, describe below. This information is optional (and purposely undefined) but may help determine issues related to public notice.	Yes□	No⊠

3	The modeling review process may need to be accelerated if there is a public hearing. Are there	Yes□	No⊠
	likely to be public comments opposing the permit application?		

16-K: Modeling Scenarios

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).

The HMA plant will limit hourly processing rate to 200 tph and 500,000 tons per year (tpy). The hours of operation are presented below in Table 1. Seasonal daily throughputs are presented in Table 2.

	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	1	1	1	1	1	1	1	1	0	0
4:00 AM	0	0	1	1	1	1	1	1	1	1	0	0
5:00 AM	0	0	1	1	1	1	1	1	1	1	1	0
6:00 AM	0	0	1	1	1	1	1	1	1	1	1	0
7:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
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	1	1	1	1	1	1	1	1	1	1	1	1
5:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
6:00 PM	0	0	1	1	1	1	1	1	1	1	1	0
7:00 PM	0	0	1	1	1	1	1	1	1	1	1	0
8:00 PM	0	0	1	1	1	1	1	1	1	1	1	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	11	11	18	18	18	18	18	18	18	18	16	11

TABLE 1: HMA Plant Hours of Operation (MST)

		TAF	BLE 2: HM	A Daily	Production R	ates and	Corres	ponding N	lax Hours	of Produ	iction		
	Month			Tons Po	er Day		At Max Hourly Throughput – Hours per Day			ours per			
	December through February November March through October		ry			10	10		Ī				
				280	00				14				
				320	00				16				
	Table 3 pr	resents the			nodeled hours : HMA Model					-	erating so	cenario.	
		odel nario	10	me Segn -Hour B nber - Fe	locks		14-Hou	egments r Blocks ember		16-E	e Segmo Iour Blo - Septer	ocks	
		1	7	AM to 5	PM		5 AM	to 7 PM		3 A	M to 7 I	PM	
		2		AM to 6				to 9 PM			M to 9 I		
	PM10 – S	cenario 1 t	because the	operating	centrations? V g times include g times include	es early n							
	to the fact If so, desc	ors used for	or calculatin	ng the ma	", "MONTH", iximum emissi sources. List th It's ok to put t	ion rate.)	s in each	group bef	ore the facto	or table f	or that g		
	Hour of Day	Factor	Hour of Day	Factor									
	1		13										
	2		14										
	3		15		+				-				
	<u>4</u> 5		16					+					
	6		17					1					
	7		19										
	8		20										
	9		21										
	10		22										
	11		23		+								
	12 24 If hourly, variable emission rates were used that were not described above, describe them below.												
	If nourry,		inssion rate		seu mai were i	lot descri	bed abov	e, describ	e mem belo	w.			
	II HOUTIY,									w.			

16-	L: NO ₂	Modeling						
	Which types Check all th	s of NO ₂ modeling were used? at apply.						
	\boxtimes	ARM2						
1		100% NO _X to NO ₂ conversion						
		D PVMRM						
	Other:							
2	Describe the	e NO ₂ modeling.						
-	ARM2 for b	12 for both 1-hour and annual averaging period modeling. All ARM2 default values were used.						
3	Were default NO2/NOX ratios (0.5 minimum, 0.9 maximum or equilibrium) used? If not describe and justify the ratios used below.YesNo							
4	Describe the design value used for each averaging period modeled.							
		h eighth high						
	Annual: Hig	hest Annual Average of Three Years						

	Select the po	Select the pollutants for which plume depletion modeling was used.					
1		PM2.5					
	\boxtimes	PM10 and PM10 PSD Class II Increment					
		None					
	Describe the	particle size distributions used. Include the source of in	formation.				
		Material	Density (g/cm ³)	Reference			
		Material Road Dust – C&E Concrete and Neighbor		Reference NMED Value			
2			(g/cm ³)				
2		Road Dust – C&E Concrete and Neighbor	(g/cm ³) 2.5	NMED Value			
2		Road Dust – C&E Concrete and Neighbor Lime – C&E Concrete and Neighbor	(g/cm ³) 2.5 3.3	NMED Value NMED Value			

I	Road Vehicle Fugitive Dust Depletion Parameters						
Particle Size Category (µm)	Mass Mean Particle Diameter (µm)	Mass Weighted Size Distribution (%)	Density (g/cm³)				
	PM1	0					
0 – 2.5	1.57	25.0	2.5				
2.5 - 10 6.91		75.0	2.5				

Based on NMED Particle Size Distribution Spreadsheet - April 25, 2007

Mineral Filler (Lime) Baghouse Source Depletion Parameters

Particle Size Category (µm)	Mass Mean Particle Diameter (µm)	Mass Weighted Size Distribution (%)	Density (g/cm³)				
	PM10						
0-2.5	1.57	25	3.3				
2.5-10 6.91		75	3.3				

Parameters based on baghouse exhaust capture percentages.

Combustion Source 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		100	1.5				

Based on NMED Particle Size Distribution Spreadsheet – April 25, 2007

Asphalt Baghouse and Stack Source Depletion Parameters

Particle Size Category (µm)	Mass Mean Particle Diameter (µm)	Mass Weighted Size Distribution (%)	Density (g/cm³)				
	PM10						
0-1.0	0.63	50.0	1.5				
1.0-2.5	1.85	19.0	1.5				
2.5-10	6.92	31.0	1.5				

Based on NMED Particle Size Distribution Spreadsheet - April 25, 2007

		Fugitive Dust Source	Depletion Parameters				
	Particle Size Category (µm)	Mass Mean Particle Diameter (µm)	Mass Weighted Size Distribution (%)	Densi (g/cm	•		
		PM	[10				
	2.5 - 5	3.88	22.6	2.5			
	5 - 10	7.77	77.4	2.5			
Does Sourc consi	the facility emit at least 4 ces that emit at least 40 to dered to emit significant a	s from the Albuquerque Air Qua 0 tons per year of NO _X or at least ns per year of NO _X or at least 40 amounts of precursors and must a	st 40 tons per year of SO_2 ? tons per year of SO_2 are	Yes	No⊠		
Was	formation of PM2.5. Ye Was secondary PM modeled for PM2.5? Ye						
If MI below		t for secondary PM2.5 fill out th	e information below. If anothe	er method was	used describe		
NO _X	(ton/yr)	SO ₂ (ton/yr)	[PM2.5] _{annual}	[PM2.5] _{24-hour}			
14.7		14.8	0.0022	0.094			
5 Fe Fa SO ₂ 2 on M PM _{2.2} PM _{2.2} <u>PM_{2.2} 0.002 PM_{2.2}</u>	Following recent EPA guidelines for conversion of NO _X and SO ₂ emission rates to secondary PM _{2.5} emissions, AAM S Fe Facility emissions are compared to appropriate western MERPs values (NO _X 24 Hr – 1155 tpy; NO _X Annual – 3184 SO ₂ 24 Hr – 225 tpy; SO ₂ Annual – 2289 tpy). The following equation, found in NMED AQB modeling guidance docu 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 μ g/m ³ PM _{2.5} 24 hour = ((NO _X emission rate (tpy)/1155 + (SO ₂ emission rate (tpy)/225)) x 1.2 μ g/m ³ PM _{2.5} 24 hour = (14.7/3184 + 14.8/2289) x 0.2 μ g/m ³ PM _{2.5} 24 Hour 0.094 μ g/m ³ = (14.7/1155 + 14.8/225) x 1.2 μ g/m ³						

16	16-N: Setback Distances						
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.						
	Permanent Site						
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.						
	None						

10	-O: PSD Incr			otob the ones in the			
		hese match? If no	2-B, 2-C, 2-E, 2-F, and 2-I should m t, provide a cross-reference table be		Yes□	No⊠	
	Unit Number in UA-2		Unit Number in Modeling Files	Description			
	1		НМАР	Cold Aggregate	Storage Pile		
	2		HMABIN	Feed Bin Loadin	ıg		
	3		HMATP1	Feed Bin Unload	ding		
	4		HMATP2	Conveyor to Co	nveyor		
	5		HMASCR	Scalping Screen			
	6		HMATP3	Scalping Screen	Unloading		
	7		HMAPUG	Pug Mill Load			
	8		HMATP4	Pug Mill Unload	1		
	9		HMATP5	Conveyor Trans	fer to Slinger	Conveyor	
	12		RAPP	RAP Storage Pil	le		
	13		RAPBIN	RAP Feed Bin I	oading		
	14		RAPT1	RAP Feed Bin U	RAP Feed Bin Unloading		
	15		RAPSCR	RAP Scalping S	RAP Scalping Screen		
	16		RAPT2	RAP Scalping S	RAP Scalping Screen Unloading		
	10, 11		HMAFIL	Mineral Filler S	Mineral Filler Silo and Baghouse		
	17, 18		HMASTK	Drum Dryer and	Drum Dryer and Baghouse		
	19		DRUMUL	Drum Mixer Un	Drum Mixer Unloading		
	20		SILOUL	Asphalt Silo Un	Asphalt Silo Unloading		
	21		HMAHT	Asphalt Heater	Asphalt Heater		
	22		ASPHTK	Asphalt Cement	Asphalt Cement Storage Tank		
	23		TRCK	Haul Road Traf	Haul Road Traffic		
	24		YARD	Yard	Yard		
	these match? If not,	explain why belo	and 2-F should match the ones in the w.	-	Yes□	No⊠	
	Hourly model emiss using annual averag	tion rates for mate e windspeed for (erial handling sources (Emissions cal Gallup 2006 - 2016. Mineral filler si use particulate emission factor.	ilo modeled emission			
	Emission			PM10	PM2.5		
	Point #		Process Unit Description	lbs/hr	lbs/hr		
	1		A Storage Pile Handling 1	0.05854	0.00886		
	1		A Storage Pile Handling 2	0.05854	0.00886		
	1		A Storage Pile Handling 3	0.05854	0.00886		
	1	HMAP4 - HMA	A Storage Pile Handling 4	0.05854	0.00886		
	2	HMABIN - HM	IA Bin Loading	0.23416	0.03546		
	10,11	HMAFIL – Mii	neral Filler Silo Baghouse	0.01410	0.00212		

	12	RAPP – HMA RAP Storage Pile Handling0.0			0.08673	0.01313	
	13	RAPBIN – HMA RAP Bin Loading				0.01313	
3	Have the minor NSF been modeled?	R exempt sources or Title V	Fable 2-	B) sources	Yes□	No⊠	
	Which units consum				·		
	Unit ID	NO_2	SO ₂	PM1	0	PM2	2.5
	1				Х		
	2				Х		
	3				Х		
	4				Х		
	5				Х		
	6				Х		
	7				Х		
	8				Х		
4	9				Х		
4	12				Х		
	13				Х		
	14				Х		
	15				Х		
	16				Х		
	10, 11				Х		
	17, 18	Х	Х		Х		
	19				Х		
	20				Х		
	21	Х	X		Х		
	22				Х		
	23			_	Х		
	24				Х		
5	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date). Baseline unit expanded emissions after baseline baseline date						s after minor
		stallation dates included in T					
6		verify the accuracy of PSD i				Yes□	No⊠
		umption status is determined					
	Facility has not been	n installed. Is a new facility	that will consume increme	ent for N	JO_2 , SO_2 , and	PM_{10}	

16	16-P: Flare Modeling						
1	For each flare or flaring scenar	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)			
	NA						

16-	Q: Volume and Related Sources								
1	Were the dimensions of volume sources different from standard dimensions in the Air Quality Bureau (AQB) Modeling Guidelines?	Yes⊠	No□						
1	If not please explain how increment consumption status is determined for the missing installation dates below.								
	Volume sources for storage piles are based on 8 feet release height and 100 feet width.								
	Describe the determination of sigma-Y and sigma-Z for fugitive sources.								
2	For storage piles, the model inputs were based on the size (100 feet) of the pile/4.3 (sigma-Y) a a sigma-Z of 8ft*2/2.15. All others followed standard dimensions from Air Quality Bureau (AC								
3	Describe how the volume sources are related to unit numbers. Or say they are the same.								
	They are the same as discussed in Section 16-O. Four cold aggregate piles were used in the modeling by dividing the total emission rate by four and identified as HMAP1, HMAP2, HMAP3, and HMAP4.								
	Describe any open pits.								
4	None								
5	Describe emission units included in each open pit.								
	None								

16-	16-R: Background Concentrations									
	Were NMED provided background concentrations used? Identify the background station used									
below. If non-NMED provided background concentrations were used describe the data that $Yes \Box$										
	was used.									
	CO: Del Norte High School (350010023)									
	NO ₂ : Bloomfield (350450009)									
1	PM2.5: N/A									
	PM10: N/A									
	SO ₂ : Bloomfield(350450009)									
	Other:									
	Comments: For PM10 and PM10 the background used was for Farmington (Monitor ID 1FO)									
2	Were backgro	Were background concentrations refined to monthly or hourly values? If so, describe below. Yes No								

16	16-S: Meteorological Data						
1	Was NMED provided meteorological data used? If so, select the station used.	Yes□	No⊠				

If NMED provided meteorological data was not used describe the data set(s) used below. Discuss how missing data were handled, how stability class was determined, and how the data were processed.
Dispersion model meteorological input files were created from meteorological data collected at Gallup Airport, NM for the years 2012 - 2016, about 4.2 miles south-southwest from the site. The similar elevation, topography, terrain, vegetation, and climate of both sites make this meteorological data representative of the model area. Figure 3 shows wind rose diagram of the meteorological wind speed versus direction data that has been collected for the years 2012 - 2016.
AERMET wind speed threshold for surface data is 0.5 meters per second.
To reduce the high incidence of calms and variable wind conditions, AERMINUTE (<i>Version 19191</i>) was used to supplement hourly observed wind speed and direction for the Gallup surface data when processing with AERMET. Albuquerque Airport 2016 data was used for upper air.
Since the meteorological input data does not include turbulence data, the adjust U* option in AERMET was used during processing of the meteorological data.
AERMET/AERMOD requires that several additional parameters be input during data processing in AERMET:
 Surface roughness length (m) Albedo Bowen Ratio
The surface roughness length influences the surface shear stress and is an important factor in determining the magnitude of mechanical turbulence and the stability of the boundary layer. The albedo is the fraction of total incident solar radiation reflected by the surface back to space without absorption. The daytime Bowen ratio, an indicator of surface moisture, is the ratio of sensible heat flux to latent heat flux and, together with albedo and other meteorological observations, is used for determining planetary boundary layer parameters for convective conditions driven by the surface sensible heat flux.
These parameters would be obtained using AERSURFACE (<i>Version 13016</i>). AERSURFACE requires the input of land cover data from the U.S. Geological Survey (USGS) National Land Cover Data 1992 archives (NLCD92), which it uses to determine the land cover types for the Gamerco airport-specified location. AERSURFACE matches the NLCD92 land cover categories to seasonal values of albedo, Bowen ratio, and surface roughness. Values of surface characteristics are calculated based on the land cover data for the study area and output in a format for input into AERMET Stage 3.
Site descriptive questions required by AERSURFACE include:
 Meteorological data from airport Continuous snow cover in winter Arid climate Dry climate
For the Gallup Airport meteorological data, YES was checked for airport data, NO was checked for continuous snow cover, YES was checked for arid climate, and YES was checked for dry climate. For each parameter, data was extracted from land cover data for each month of the year and 12 equal sectors radiating from the Gallup Airport.
The meteorological data was processed using AERMET (<i>Version 19191</i>) and upper air from Albuquerque Airport for the same time period. The upper air and surface data are considered to be representative and comparable with both the Gallup Airport and C&E Concrete's Gamerco HMA site. The Gallup Airport meteorological data files, Albuquerque upper air files Gallup Airport surface air file, and Gallup AERMINUTE files are submitted to the NMED-AQB Modeling Section for review with this modeling protocol.

16-T: Terrain								
1	$\frac{1}{1}$ Was complex terrain used in the modeling? If not, describe why below. Yes \boxtimes No \square							
	Yes, for point sources. All volume sources were modeled as flat.							
2	What was the source of the terrain data?							
2	USGS National Elevation Data (NED)							

16-U: Modeling Files											
	Describe the modeling files:										
	File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)								
	C&E Concrete Gamerco HMA Combust ROI	NO_2 , CO , SO_2	ROI								
1	C&E Concrete Gamerco HMA PM S1 or 2 ROI	PM _{2.5} , PM ₁₀	ROI								
	C&E Concrete Gamerco HMA NO2 1HR	NO ₂	CIA NAAQS								
	C&E Concrete Gamerco HMA NO2 Ann	NO ₂	CIA NMAAQS, Class II Increment								
	C&E Concrete Gamerco HMA SO2 CIA	SO ₂	CIA NAAQS, Class II Increment								
	C&E Concrete Gamerco HMA PM10 S1 or 2 CIA	PM ₁₀	CIA NAAQS, Class II Increment								
	C&E Concrete Gamerco HMA PM25 S1 or 2 CIA	PM _{2.5}	CIA NAAQS								

16	16-V: 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□							
2	If not, did AQB approve an exemption from preconstruction monitoring?YesNo									
3	Describe how preconstruction monitoring has been addressed or attach the approved preconstruction monitoring or monitoring exemption.									
	NA									
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC.									
•	NA									
5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed? If so, describe below.	Yes□	No□							
	NA									

16-W: Mo	deli	ng Res	ults									
1		If ambier required f significan	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. Was culpability analysis performed? If so, describe below. Yes□ No⊠									
2		Identify th necessary	ne maximum conce	entrations from	m the modeling a	nalysis. Rows m	ay be modifi	ed, added a	nd removed f	from the table	below as	
Pollutant, Time Period and	F	odeled acility	Modeled Concentration with	Secondary PM	Background Concentration	Cumulative Concentration	Value of	Percent		Location		
Standard		centration (g/m3)	Surrounding Sources (µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	Standard (µg/m3)	of Standard	UTM E (m)	UTM N (m)	Elevatio n (ft)	
NO ₂ 1 Hour H8H	,	75.85	75.86	-	-	75.86	188.03	40.3	702939.8	3938536.4	2038.45	
NO ₂ Annual H1H		2.77	3.12	-	-	3.12	94.02	3.3	702950	3938550	2038.2	
NO ₂ Annual Class II	O ₂ Annual 2 77		3.06	-	-	3.06	25	12.2	702950	3938550	2038.2	
CO 1 Hour H1H	O 1 Hour 300 3		-	-	-	-	SIL-2000	19.5	702948.6	3938496.8	-	
CO 8 Hour H1H		127.9	-	-	-	-	SIL-500	25.6	702939.8	3938536.4	-	
SO ₂ 1 Hour H4H	9	99.49	99.49	-	-	99.49	196.4	50.7	702939.8	3938536.4	2038.45	
SO ₂ 3 Hour Class II	9	94.60	94.60	-	-	94.60	512	18.5	702939.8	3938536.4	2038.45	
SO ₂ 24 Hour Class II	2	29.76	29.76	-	-	29.76	91	32.7	702935.4	3938556.2	2038.68	
SO ₂ Annual H1H		2.68	2.73	-	0.219	2.95	52.4	5.6	702950	3938550	2038.2	
SO ₂ Annual Class II		2.68	2.72	-	-	2.72	20	54.4	702950	3938550	2038.2	
PM _{2.5} 24 Hour H8H		12.66	12.85	0.094	14.13	27.1	35	77.4	702944.2	3938516.6	2038.1	

C&E Concrete, Inc.

Pollutant, Time Period and	Modeled Facility	Modeled Concentration with	Secondary PM	Background Concentration	Cumulative Concentration	Value of	Percent	Location		
Standard	Concentration (µg/m3)	Surrounding Sources (µg/m3)	(μg/m3)	(µg/m3)	(µg/m3)	Standard (µg/m3)		UTM E UTM N (m)		Elevatio n (ft)
PM _{2.5} Annual H1H	4.92	5.05	0.0022	4.19	9.2	12	76.7	702944.2	3938516.6	2038.1
PM ₁₀ 24 Hour H2H	29.36	29.5	-	55.0	84.5	150	56.3	702771	3938451.5	2045.68
PM ₁₀ 24 Hour Class II	29.36	29.46	-	-	29.46	30	98.2	702771	3938451.5	2045.68
PM ₁₀ Annual Class II	9.5	9.59	-	-	9.59	17	56.4	702944.2	3938516.6	2038.1
Asphalt Fumes 8 Hour	11.3	-	-	-	11.3	50	22.6	702944.2	3938516.6	2038.1

16-X: Summary/conclusions

A statement that modeling requirements have been satisfied and that the permit can be issued.

1 Dispersion modeling was performed for all regulated sources at C&E Concrete Gamerco HMA. All facility pollutants with ambient air quality standards were modeled to show compliance with those standards. All results of this modeling showed the facility is in compliance with applicable ambient air quality standards and PM_{10} , NO₂, and SO₂ PSD class II increment limits.

DISPERSION MODEL PROTOCOL FOR C&E CONCRETE, INC. GAMERCO HMA NSR MINOR SOURCE PERMIT APPLICATION

Gamerco, New Mexico

PREPARED FOR



Dated September 22, 2020

Prepared by

Montrose Air Quality Services, LLC



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1.0 INTRODUCTION

This dispersion modeling analysis will be conducted by Montrose Air Quality Services, LLC (Montrose) on behalf of C&E Concrete, Inc. (C&E Concrete), to evaluate ambient air quality impacts from the Gamerco HMA, as part of a minor source NSR permitting action. This permit application is for a 200 ton per hour (tph) hot mix asphalt (HMA) plant.

The objective of this modeling evaluation is to predict if, operating at requested maximums, the facility operations would result in ambient air concentrations for nitrogen dioxide, (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), and particulate matter; both 10 microns or less (PM₁₀) and 2.5 microns or less (PM_{2.5}); would exceed the New Mexico and federal ambient air quality standards, NMAAQS and NAAQS respectively. Since Gamerco HMA is a minor source for NSR permitting and is located in AQRC Region 014, where the minor source baseline date has been triggered for NO₂ (06/06/1989), SO₂ (08/07/1978), and PM₁₀ (08/07/1978), a PSD Class I and II Increment analysis will be performed. No Class I areas are located within 50 km of the site, so no PSD Class I increment modeling 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, (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), and particulate matter; both 10 microns or less (PM₁₀) 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 Gamerco HMA emission sources. Montrose employs the general modeling procedures outlined in "New Mexico Air Pollution Control Bureau, Dispersion Modeling Guidelines", revised 01/01/2019, and the most up to date EPA's *Guideline on Air Quality Models*.

1.1 FACILITY DESCRIPTION

C&E Concrete's Gamerco HMA is a proposed site that will operate a hot mix asphalt plant. The 200 tph hot mix asphalt plant will include a 4-bin cold aggregate feeder, scalping screen, pug mill, 2-bin RAP feeder, RAP scalping screen, mineral filler silo with baghouse, drum dryer with baghouse, incline conveyor, asphalt silo, asphalt heater, and six (6) transfer conveyors. The plant will be powered by line power. Processed asphalt will be transported from the HMA plant to offsite sales. The HMA plant will limit hourly processing rate to 200 tph and 500,000 tons per year (tpy). The hours of operation are presented below in Table 1. Monthly daily throughputs are presented in Table 2.

TABLE 1: HMA Plant Hours of Operation (MS1)												
	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	1	1	1	1	1	0	0	0
4:00 AM	0	0	0	1	1	1	1	1	1	0	0	0
5:00 AM	0	0	1	1	1	1	1	1	1	1	0	0
6:00 AM	0	0	1	1	1	1	1	1	1	1	1	0
7:00 AM	1	1	1	1	1	1	1	1	1	1	1	1
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	1	1	1	1	1	1	1	1	1	1	1	1
5:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
6:00 PM	1	1	1	1	1	1	1	1	1	1	1	1
7:00 PM	0	0	1	1	1	1	1	1	1	1	1	0
8:00 PM	0	0	1	1	1	1	1	1	1	1	1	0
9:00 PM	0	0	1	1	1	1	1	1	1	1	0	0
10:00 PM	0	0	0	1	1	1	1	1	1	0	0	0
11:00 PM	0	0	0	1	1	1	1	1	1	0	0	0
Total	12	12	17	20	21	21	21	21	21	17	15	12

TABLE 1: HMA Plant Hours of Operation (MST)

TABLE 2: HMA Daily Production Rates and Corresponding Max Hours of Production

Season	Tons Per Day	At Max Hourly Throughput – Hours per Day
December - February	1600	8
March, October, November	1800	9
April - September	2200	11

Table 3 presents the 6 model scenarios modeled hours for showing compliance with the worst-case operating scenario.

Model Scenario	Time Segments 8-Hour Blocks December - February	Time Segments 9-Hour Blocks March & October	Time Segments 9-Hour Blocks November	Time Segments 11-Hour Blocks April	Time Segments 11-Hour Blocks May - September
1	7 AM to 3 PM	5 AM to 2 PM	6 AM to 3 PM	4 AM to 3 PM	3 AM to 2 PM
2	9 AM to 5 PM	7 AM to 4 PM	8 AM to 5 PM	6 AM to 5 PM	5 AM to 4 PM
3	11 AM to 7 PM	9 AM to 6 PM	10 AM to 7 PM	8 AM to 7 PM	7 AM to 6 PM
4	11 AM to 7 PM	11 AM to 8 PM	12 PM to 9 PM	10 AM to 9 PM	9 AM to 8 PM
5	11 AM to 7 PM	1 PM to 10 PM	12 PM to 9 PM	12 PM to 11 PM	11 AM to 10 PM
6	11 AM to 7 PM	1 PM to 10 PM	12 PM to 9 PM	1 PM to 12 AM	1 PM to 12 AM

TABLE 3: HMA Model Scenario Time Segments

1.2 FACILITY IDENTIFICATION AND LOCATION

C&E Concrete's Gamerco HMA is located in Gamerco, McKinley County, New Mexico. The exact location of the facility will be UTM Zone 12, UTM Easting 702,875, UTM Northing 3,938,490, NAD 83. The approximate location of this site is 4.6 miles north of the intersection of I-40 and Highway 491 in Gallup, NM in McKinley County.

Additional sources at the site will be included in the air quality impact analysis dispersion models. Co-located on the site will be C&E's concrete batch plant (CBP) permitted under Permit GCP-5-3488. Following the guidance found in the NMED modeling guidelines Section 4.8.3, the colocated GCP-5 CBP will not be included in the particulate ambient air quality modeling. The GCP-5 CBP hot water heater will be included in the combustion modeling analysis. The hot water heater is a 1.0 MMBtu natural gas or propane fired heater.

Figure 1 below presents a layout of the site showing the layout of the HMA plant. Figure 2 shows the facility boundary in relation to the surrounding area.



Figure 1: C&E Concrete's Gamerco HMA Aerial View with Co-Located CBP

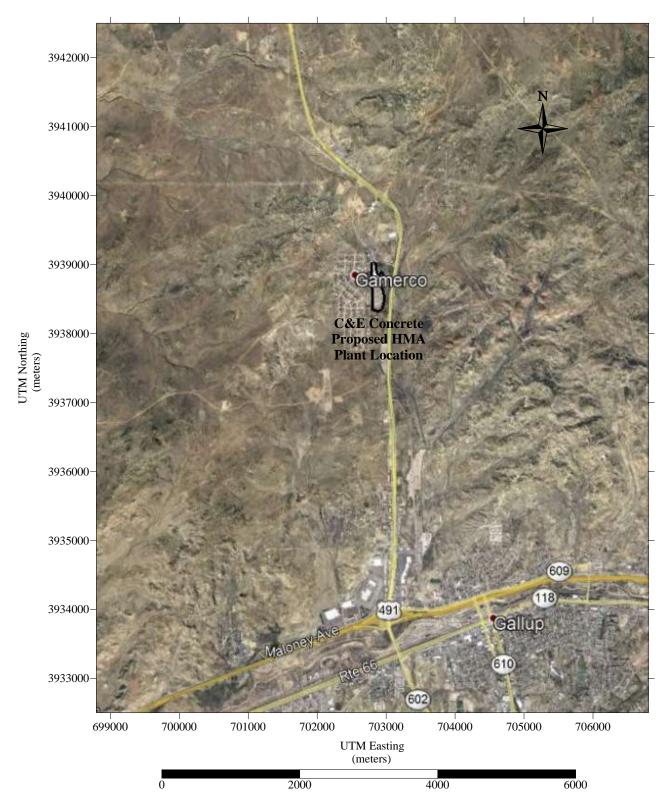


Figure 2: C&E Concrete's Gamerco HMA Aerial View showing Surrounding Terrain

2.0 SIGNIFICANT MODELING 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 and PM₁₀, NO₂, and SO₂ Class II Increment impacts for this stationary source. 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 4 shows the NAAQS and NMAAQS (without footnotes) that the source's ambient impacts must meet in order to demonstrate compliance. Table 4 also lists the Class II Significant Impact Levels (SILs) which are used to assess whether a source will have a significant impact at downwind receptors. Table 5 lists ambient air quality standards in which modeling is not required.

The dispersion modeling analysis will be performed to estimate concentrations resulting from the operation of the Gamerco HMA using the maximum hourly emission rates while all emission sources are operating. The modeling will determine maximum off site concentrations for nitrogen dioxide, (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), and particulate matter with aerodynamic diameter less than 10 micrometers (PM₁₀) and particulate matter with aerodynamic diameter less than 2.5 micrometers (PM_{2.5}), for comparison with modeling significance levels, and national/New Mexico ambient air quality standards (AAQS). Additionally, modeling will determine maximum off site concentrations for NO₂ annual average; SO₂ 3 hour, 24hour, and annual averages; and PM₁₀ 24 hour and annual average increment limits. The modeling will follow the guidance and protocols outlined in the NMED - AQB "Air Dispersion Modeling Guidelines" (January 1, 2019), and the most up to date EPA's *Guideline on Air Quality Model*.

Initial modeling will be performed with Gamerco HMA sources only to determine pollutant and averaging periods that exceeds pollutant SILs. If initial modeling for any pollutant and averaging period exceeds the SILs, than cumulative modeling will be performed for those pollutants and averaging periods and will include significant neighboring sources along with background ambient concentrations as defined in the NMED's modeling guidelines.

TABLE 4. National and New Mexico Amblent An Quanty Standard Summary							
Pollutant	Avg. Period	Sig. Lev. (µg/m ³)	Class I Sig. Lev. (µg/m ³)	NAAQS	NMAAQS	PSD Increment Class I	PSD Increment Class II
СО	8-hour	500		9,000 ppb ⁽¹⁾	8,700 ppb ⁽²⁾		
0	1-hour	2,000		35,000 ppb ⁽¹⁾	13,100 ppb ⁽²⁾		
	annual	1.0	0.1	53 ppb ⁽³⁾	50 ppb ⁽²⁾	$2.5 \ \mu g/m^3$	$25 \ \mu g/m^3$
NO ₂	24-hour	5.0			100 ppb ⁽²⁾		
	1-hour	7.52		100 ppb ⁽⁴⁾			
DM	annual	0.2	0.05	$12 \ \mu g/m^{3(5)}$		$1 \ \mu g/m^3$	$4 \ \mu g/m^3$
PM _{2.5}	24-hour	1.2	0.27	$35 \ \mu g/m^{3(6)}$		$2 \ \mu g/m^3$	$9 \ \mu g/m^3$
DM	annual	1.0	0.2			$4 \ \mu g/m^3$	$17 \ \mu g/m^3$
PM ₁₀	24-hour	5.0	0.3	$150 \ \mu g/m^{3(7)}$		$8 \ \mu g/m^3$	$30 \ \mu g/m^3$
	annual	1.0	0.1		20 ppb ⁽²⁾	$2 \ \mu g/m^3$	$20 \ \mu g/m^3$
SO_2	24-hour	5.0	0.2		100 ppb ⁽²⁾	$5 \ \mu g/m^3$	91 µg/m ³
50_2	3-hour	25.0	1.0	500 ppb ⁽¹⁾		25 µg/m ³	$512 \ \mu g/m^3$
	1-hour	7.8		75 ppb ⁽⁸⁾			

TABLE 4: National and New Mexico Ambient Air Quality Standard Summary

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 5: 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
NO2 annual NAAQS	NO2 annual NMAAQS
NO2 24-hour NMAAQS	NO2 1-hour NAAQS
O3 8-hour	Regional modeling
SO ₂ annual NMAAQS	SO ₂ 1-hour NAAQS
SO ₂ 24-hour NMAAQS	SO ₂ 1-hour NAAQS
SO2 3-hour NAAQS	SO2 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 facility being assessed. Additionally, AERMOD was developed to handle complex terrain. In this analysis, AERMOD will be used to estimate pollutant concentrations of CO, NO₂, PM₁₀, PM_{2.5} and SO₂ in the ambient air from the PEC facility modeled 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 CIA modeling will be run using all the following regulatory default options including use of:

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

These regulatory default options are found in the AERMOD User's Manual. The model will incorporate local terrain into the calculations.

For ROI modeling, the model will run in non-default mode using flat terrain mode as discussed on NMED modeling guidelines Section 7.1.1. For CIA modeling, the model will run in non-default mode using flat terrain mode for non-buoyant fugitive sources as discussed on NMED modeling guidelines Section 4.5.1.

2.2 BUILDING WAKE EFFECTS

AERMOD can account for building downwash and cavity zone effects. Evaluation of building downwash on adjacent stack sources is deemed necessary, since all stack source heights are below Good Engineering Practice (GEP) heights. The formula for GEP height estimation is:

$$\begin{split} H_{s} &= H_{b} + 1.50 L_{b} \\ \text{where: } H_{s} &= \text{GEP stack height} \\ H_{b} &= \text{building height} \\ L_{b} &= \text{the lesser building dimension of the height, length, or width} \end{split}$$

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 are located at the site that will cause building wake effects for facility point sources, so building downwash will not be evaluated.

2.3 METEOROLOGICAL DATA

Dispersion model meteorological input files were created from meteorological data collected at Gallup Airport, NM for the years 2012 - 2016, about 4.2 miles south-southwest from the site. The similar elevation, topography, terrain, vegetation, and climate of both sites make this meteorological data representative of the model area. Figure 3 shows wind rose diagram of the meteorological wind speed versus direction data that has been collected for the years 2012 - 2016.

AERMET wind speed threshold for surface data is 0.5 meters per second.

To reduce the high incidence of calms and variable wind conditions, AERMINUTE (*Version* 19191) was used to supplement hourly observed wind speed and direction for the Gallup surface data when processing with AERMET. Albuquerque Airport 2016 data was used for upper air.

Since the meteorological input data does not include turbulence data, the adjust U* option in AERMET was used during processing of the meteorological data.

AERMET/AERMOD requires that several additional parameters be input during data processing in AERMET:

- Surface roughness length (m)
- Albedo
- Bowen Ratio

The surface roughness length influences the surface shear stress and is an important factor in determining the magnitude of mechanical turbulence and the stability of the boundary layer. The albedo is the fraction of total incident solar radiation reflected by the surface back to space without absorption. The daytime Bowen ratio, an indicator of surface moisture, is the ratio of sensible heat flux to latent heat flux and, together with albedo and other meteorological observations, is used for determining planetary boundary layer parameters for convective conditions driven by the surface sensible heat flux.

These parameters would be obtained using AERSURFACE (*Version 13016*). AERSURFACE requires the input of land cover data from the U.S. Geological Survey (USGS) National Land Cover Data 1992 archives (NLCD92), which it uses to determine the land cover types for the Gamerco airport-specified location. AERSURFACE matches the NLCD92 land cover categories to seasonal values of albedo, Bowen ratio, and surface roughness. Values of surface characteristics are calculated based on the land cover data for the study area and output in a format for input into AERMET Stage 3.

Site descriptive questions required by AERSURFACE include:

- Meteorological data from airport
- Continuous snowcover in winter
- Arid climate
- Dry climate

For the Gallup Airport meteorological data, YES was checked for airport data, NO was checked for continuous snowcover, YES was checked for arid climate, and YES was checked for dry climate. For each parameter, data was extracted from land cover data for each month of the year and 12 equal sectors radiating from the Gallup Airport.

The meteorological data was processed using AERMET (*Version 19191*) and upper air from Albuquerque Airport for the same time period. The upper air and surface data are considered to be representative and comparable with both the Gallup Airport and C&E Concrete's Gamerco HMA site. The Gallup Airport meteorological data files, Albuquerque upper air files, Gallup Airport surface air file, and Gallup AERMINUTE files are submitted to the NMED-AQB Modeling Section for review with this modeling protocol.

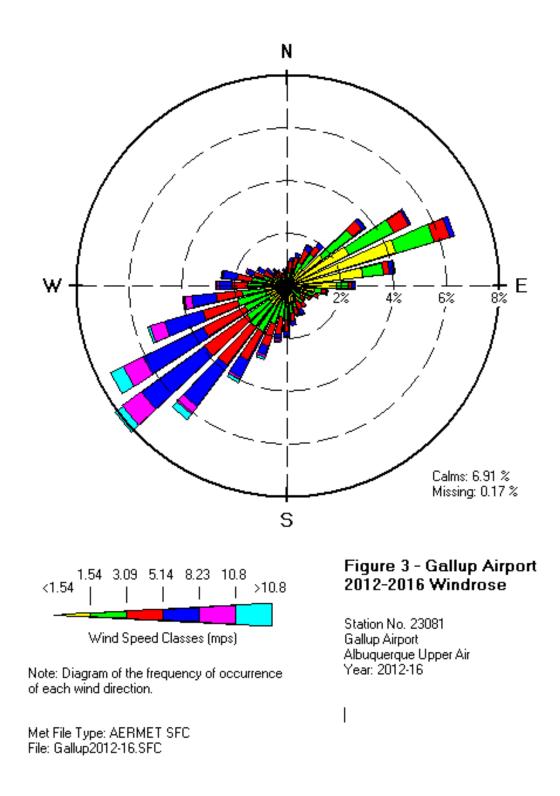


Figure 3: Wind Rose Gallup Airport Meteorological Data 2012-2016

2.4 RECEPTORS AND TOPOGRAPHY

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 5-km from the facility boundary. Receptors for a course grid resolution are placed with 500-meter and 1000-meter spacing to a distance of 10-km and 20-km, respectively from the facility boundary.

AERMAP (*Version 18081*) will be used to calculate the receptor elevations and the controlling hill heights. Terrain files for the area will be obtained from the National Elevation Data (NED). 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

Gamerco HMA operates 7 days per week and 52 weeks per year or 365 days per year. Requested hours of operation for each plant are discussed in Section 1.1. Based on modeling experience, early morning and late afternoon hours with low wind speeds are typically determined to represent the highest modeled hourly concentrations for low release fugitive emission sources.

2.5.1 Gamerco HMA Road Vehicle Traffic Model Inputs

The access 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 access haul roads. Volume source characterization followed the steps described in the Air Quality Bureau's Guidelines Tables 28 and 29.

2.5.2 Gamerco HMA Material Handling Volume Source Model Inputs

Material handling and processing for the HMA plant will follow the procedure found in AQB's Modeling Guidelines for Fugitive Equipment Sources (Section 5.3.2, Table 27).

2.5.3 Gamerco HMA Point Source Model Inputs

Model input parameters are based on release height, release diameter, release velocity or flow rate, and release temperature. For exhaust releases at ambient temperature, the modeled temperature input will be zero Kelvin. For horizontal or raincap releases, the AERMOD option for horizontal and raincap releases will be used with actual release parameters.

2.6 PARTICLE SIZE DISTRIBUTION

 PM_{10} emissions may be modeled using plume depletion. Plume deposition simulates the effect of gravity as particles "fall-out" from the plume to the ground as the plume travels downwind. Therefore, the farther the plume travels from the emission point to the receptor, the greater the effect of plume deposition and the greater the decrease in modeled impacts or concentrations. Particle size distribution, particle mass fraction, and particle density are required inputs to the model to perform this function.

The particle size distribution data used in the modeling for material handling of aggregate will be based upon data obtained from the City of Albuquerque AQB's "Air Dispersion Modeling Guidelines for Air Quality Permitting", revised 02/03/2016, Table 1. Particle size distribution for fugitive road dust on unpaved roads; lime silo baghouse exhaust; HMA asphalt particulate emissions; and combustion will use the particle size distribution found in the NMED Modeling Section approved values.

The mass-mean particle diameters were calculated using the formula:

$$\mathbf{d} = \left(\left(\mathbf{d}^3_1 + \mathbf{d}^2_1 \mathbf{d}_2 + \mathbf{d}_1 \mathbf{d}^2_2 + \mathbf{d}^3_2 \right) / 4 \right)^{1/3}$$

Where: d = mass-mean particle diameter $d_1 = low$ end of particle size category range $d_2 = high$ end of particle size category range

Representative average particle densities were obtained from NMED accepted values.

Material	Density (g/cm ³)	Reference
Road Dust – C&E Concrete and Neighbor	2.5	NMED Value
Lime – C&E Concrete and Neighbor	3.3	NMED Value
HMA Asphalt – C&E Concrete and Neighbor	1.5	NMED Value
Combustion – C&E Concrete and Neighbor	1.5	NMED Value
Fugitive Dust – C&E Concrete and Neighbor	2.5	NMED Value

The densities and size distribution for PM₁₀ emission sources are presented in Tables 6 - 10.

Particle Size Category (µm)	Mass Mean Particle Diameter (µm)	Mass Weighted Size Distribution (%)	Density (g/cm³)	
PM10				
0-2.5	1.57	25.0	2.5	
2.5 - 10	6.91	75.0	2.5	

TABLE 6: Unpaved Road Vehicle Fugitive Dust Depletion Parameters

Based on NMED Particle Size Distribution Spreadsheet - April 25, 2007

TABLE 7: Lime Baghouse Source Depletion Parameters

Particle Size Category (µm)	Mass Mean Particle Diameter (µm)	Mass Weighted Size Distribution (%)	Density (g/cm³)
PM10			
0-2.5	1.57	25	3.3
2.5-10	6.91	75	3.3

Parameters based on baghouse exhaust capture percentages.

TABLE 8: Combustion Source Depletion Parameters

Particle Size Category (µm)	Mass Mean Particle Diameter (µm)	Mass Weighted Size Distribution (%)	Density (g/cm³)
	PM1	0	
0 - 2.5	1.57	100	1.5

Based on NMED Particle Size Distribution Spreadsheet - April 25, 2007

TABLE 9: Asphalt Baghouse and Stack Source Depletion Parameters

Particle Size Category (µm)	Mass Mean Particle Diameter (µm)	Mass Weighted Size Distribution (%)	Density (g/cm ³)	
PM10				
0-1.0	0.63	50.0	1.5	
1.0-2.5	1.85	19.0	1.5	
2.5-10	6.92	31.0	1.5	

Based on NMED Particle Size Distribution Spreadsheet – April 25, 2007

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 Modeling Guidelines.

2.7 NO₂ 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 and NMAAQS values are presented as NO_2 . If modeling shows exceedance with the NO_2 1-hour and annual SILs, CIA modeling will be performed.

EPA has a three-tier approach to modeling NO₂ concentrations.

- Tier I total conversion, or all $NOx = NO_2$
- Tier II Ambient Ratio Method 2
- Tier III case-by-case detailed screening methods, such as OLM (Ozone Limiting Method) and Plume Volume Molar Ratio Method (PVMRM)

For the annual NO₂ modeling approach, the Tier II ARM2 will be used.

Tier III NO₂ modeling approach, OLM or PVMRM, considers the basic chemical assumptions, the titration of NO by ozone to form NO₂. Both use the NO₂/NO_X in-stack ratio (ISR) and information about the ambient ozone in the determination of the amount of titration that will occur in the plume. The primary difference between the two methods is the way in which the amount of ozone available for conversion of NO to NO₂ is determined. OLM assumes that all the ambient ozone is available for NO titration (i.e., instantaneous complete mixing with background air), regardless of the source or plume characteristics. In contrast, PVMRM determines the amount of ozone within the plume volume (computed from the source to the receptor) and limits the conversion of NO to NO₂ based on the ozone entrained in the plume. The calculation of the plume volume is done for an individual source or group of sources and on an hourly basis for each source/receptor combination, taking into account the plume dispersion for that hour. For this modeling analysis, if the Tier III methodology is required, PVMRM will be selected.

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

Ozone input will be from monitored ozone data collected from the Bloomfield monitoring station (Monitoring Station 1ZB) which is the monitoring site nearest to the project (146.1 μ g/m³).

No data could be found for a hot mix asphalt drum, so to be conservative, the EPA default ISR of 0.50 will be used. For heater natural gas or diesel combustion, to be conservative, the EPA default ISR of 0.50 will be used. Table 11 summarizes the ISR selected for each NO_X source in the NO_2 1-hour modeling.

Source Description	Selected ISR
C&E Concrete HMA Baghouse Stack	0.50
C&E Concrete HMA Asphalt Cement Heater	0.50

 TABLE 11: Summary of Selected ISR

2.8 PM2.5 SECONDARY EMISSIONS MODELING

Particulate matter includes both "primary" PM, which is directly emitted into the air, and "secondary" PM, which forms indirectly from fuel combustion and other sources. Primary PM consists of carbon (soot)—emitted from cars, trucks, heavy equipment, forest fires, and burning waste—and crustal material from unpaved roads, stone crushing, construction sites, and metallurgical operations. Secondary PM forms in the atmosphere from gases. Some of these reactions require sunlight and/or water vapor. Secondary PM includes:

- Sulfates formed from sulfur dioxide emissions from power plants and industrial facilities;
- Nitrates formed from nitrogen oxide emissions from cars, trucks, industrial facilities, and power plants; and
- Carbon formed from reactive organic gas emissions from cars, trucks, industrial facilities, forest fires, and biogenic sources such as trees.

AERMOD does not account for secondary formation of PM_{2.5} for near-field modeling. Any secondary contribution of the C&E Concrete's source emissions is not explicitly accounted for in the model results. While representative background monitoring data for PM_{2.5} should adequately account for secondary contribution from existing background sources, the C&E Concrete assessment of their potential contribution to cumulative impacts as secondary PM_{2.5} was performed based on guidance from the NMED Modeling Section. Total permit modification C&E Concrete emissions of precursors include:

- Nitrogen Oxides (NO_X) 14.3 tons per year (below SER)
- Sulfur Dioxides (SO₂) 14.5 tons per year (below SER)
- Volatile Organic Carbon (VOC) 12.5 tons per year (below SER).

 $PM_{2.5}$ secondary emission concentration analysis will follow EPA and NMED AQB guidelines. Following recent EPA guidelines for conversion of NO_X and SO₂ emission rates to secondary $PM_{2.5}$ emissions, C&E Concrete emissions are compared to appropriate western MERPs values (NO_X 24 Hr – 1155 tpy; NO_X Annual – 3184 tpy; SO₂ 24 Hr – 225 tpy; SO₂ Annual – 2289 tpy). The following equation, found in NMED AQB modeling guidance document on MERPs, will be added to determine if secondary emission would cause violation with PM_{2.5} NAAQS.

 $PM_{2.5}$ annual = ((NO_x emission rate (tpy)/3184 + (SO₂ emission rate (tpy)/2289)) x 0.2 µg/m³

PM_{2.5} annual = ((14.3/3184) + (14.5/2289)) x 0.2 μ g/m³ = **0.0022 \mug/m³**

 $PM_{2.5}$ 24 hour = ((NO_X emission rate (tpy)/1155 + (SO₂ emission rate (tpy)/225)) x 1.2 µg/m³

PM_{2.5} 24 hour = ((14.3/1155) + (14.5/225)) x 1.2 μ g/m³ = **0.092 \mug/m³**

2.9 SIGNIFICANT NEIGHBORING BACKGROUND SOURCES

For all Cumulative Impact Analysis (CIA) combustion emissions dispersion modeling (NO_X, CO, SO₂), only monitored background will be included. For all CIA combustion emissions dispersion modeling for 1-hour standards (NO_X, SO₂), will include only neighboring sources. CIA particulate dispersion modeling will include all significant neighboring sources within 10 kilometers of Gamerco HMA plus regional monitored background. PSD Increment Analysis dispersion modeling will include all PSD increment consuming neighboring sources within 25 kilometers and increment consuming neighboring sources with pollutant emission rates over 1000 lbs/hr out to 50 kilometers of Gamerco HMA. These sources will be obtained from the Air Quality Bureau's database. Neighboring sources located within the model receptor grid will have the input data verified for accuracy of location, emission rates, and model inputs parameters.

2.10 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 NO₂, SO₂, PM₁₀, and PM_{2.5}. For PM₁₀ and PM_{2.5}, C&E Concrete is proposing using backgrounds from Farmington Environmental Department (Monitor ID 1FO). For NO₂ and SO₂, C&E Concrete is proposing using backgrounds from Bloomfield (Monitor ID 1ZB). For CO, C&E Concrete is proposing using backgrounds from the rest of New Mexico (Monitor ID 350010023).

	PM2.5 (μg/m ³)	PM10 (µg/m ³)	NO2 (µg/m ³)	CO (µg/m ³)	SO2 (µg/m ³)
1 Hour			85.1	2203	8.84
8 Hour				1524	
24 Hour	14.13	55.0			
Annual	4.19		19.6		



Model Protocol and Gallup Met Data

4 messages

Paul Wade <pwade@montrose-env.com>

To: Sufi Mustafa <sufi.mustafa@state.nm.us>, "Raso, Angela, NMENV" <Angela.Raso@state.nm.us>, Eric Peters <eric.peters@state.nm.us>

Tue, Sep 22, 2020 at 4:42 PM

Sufi

Attached is a modeling protocol for C&E Concrete for a new HMA plant to be located east of Gamerco, NM. Also attached is compiled met data based on Gallup years 2012 - 2016 proposed for the modeling analysis. Please let me know if you have any questions.

Thanks

MEG Logo_Signature

Paul Wade

Sr. Engineer

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2 attachments

C_E Concrete Gamerco HMA Model Protocol.pdf

2012-16.zip 12981K

Raso, Angela, NMENV <Angela.Raso@state.nm.us> To: Paul Wade <pwade@montrose-env.com> Mon, Oct 5, 2020 at 12:38 PM

Good Afternoon Paul,

I am almost done reviewing the subject line modeling protocol.

I do have one question -

At the end of page 10 you say "For ROI modeling, the model will run in non-default mode using flat terrain mode for volume and particulate sources. For CIA modeling, the model will run in non-default mode using flat terrain mode for volume and particulate sources"

What is the reason for using the non-default mode?

Other than this the modeling protocol and meteorology data look good.

Angela Raso, PhD

Dispersion Modeler

New Mexico Environment Department

Air Quality Bureau

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From: Paul Wade <pwade@montrose-env.com>

Sent: Tuesday, September 22, 2020 4:43 PM To: Mustafa, Sufi A., NMENV <sufi.mustafa@state.nm.us>; Raso, Angela, NMENV <Angela.Raso@state.nm.us>; Peters, Eric, NMENV <eric.peters@state.nm.us> Subject: [EXT] Model Protocol and Gallup Met Data

Sufi

Attached is a modeling protocol for C&E Concrete for a new HMA plant to be located east of Gamerco, NM. Also attached is compiled met data based on Gallup years 2012 - 2016 proposed for the modeling analysis. Please let me know if you have any questions.

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

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10/5/2020

Montrose Environmental Group, Inc Mail - Model Protocol and Gallup Met Data

Paul Wade <pwade@montrose-env.com> To: "Raso, Angela, NMENV" <Angela.Raso@state.nm.us>

Mon, Oct 5, 2020 at 1:04 PM

Angela

It should say "For ROI modeling, the model will run in non-default mode using flat terrain mode. For CIA modeling, the model will run in non-default mode using flat terrain mode for non-buoyant fugitive sources." This is discussed in Section 7.1.1 in the modeling guidelines for ROI modeling and Section 4.5.1 for non-buoyant fugitive sources. Since making the model run in flat terrain mode this is considered non-default in Aermod. Attached is a revised model protocol with these clarifications discussed.

Thanks

[Quoted text hidden]



[Quoted text hidden]



Raso, Angela, NMENV <Angela.Raso@state.nm.us> To: Paul Wade <pwade@montrose-env.com> Cc: "Mustafa, Sufi A., NMENV" <sufi.mustafa@state.nm.us> Mon, Oct 5, 2020 at 1:13 PM

Thank you for the clarification Paul,

I have approved the protocol.

[Quoted text hidden]

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.

This is a new construction permit with no existing compliance history.

Section 20

Other Relevant Information

<u>**Other relevant information**</u>. 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 other relevant information is submitted with the application.

Section 22: Certification

Company Name: C&E Concrete, Inc.

I, Walter Meech, 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 2/2 day of COTOBSER, 2002, upon my oath or affirmation, before a notary of the State of

NEN MEXCO

*Signature

Water Meech Printed Name

10/20/20 Date

a i

President Title

Scribed and sworn before me on this <u>26</u> day of <u>October</u>, <u>2020</u>

My authorization as a notary of the State of <u>Mexico</u> expires on the

_ day of October, 2022.

lotary's Signature

Notary's Printed Name

<u>10/26/20</u> Date



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



November 2, 2020

New Mexico Environment Department Air Quality Bureau Permitting Section 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico 87505

Subject: C&E Concrete, Inc. - NSR Permit Application for Gamerco HMA

Dear Ms. Romero:

Attached please find two (2) hardcopies and three (3) electronic (DVD) copies of the 20.2.72 NMAC NSR Permit Application C&E Concrete's Gamerco HMA. This letter is attached to the application copy that has the original notarized signature page (Section 22) and \$500 application fee.

The application is submitted for C&E Concrete's Gamerco HMA that consists of a 200 tons per hour (TPH) hot mix asphalt plant. Along with the application is dispersion modeling analysis that shows the facility will not cause an exceedance of any applicable ambient air quality standard.

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

Sincerely,

Paul Wade

Paul Wade Sr. Engineer Montrose Air Quality Services, LLC

Cc: Walter Meech, C&E Concrete, Inc.

Montrose Air Quality Services, Inc. 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