September 20, 2023

Rhonda Romero
New Mexico Environment Department Air Quality Bureau (NM AQB)
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505

RE: New Source Review (NSR) Permit Modification
Buckeye CO2 Plant – Air Permit 2191
MorningStar Operating LLC.

Dear Ms. Romero:

On behalf of MorningStar Operating LLC, PEI Consulting Group, Inc. (PEI) is submitting this NSR permit modification application for the Buckeye CO2 Plant. The facility is permitted under Permit 2191. Additional details of the planned modification can be reviewed in Section 3.

A check for the permit fee is being mailed along with the application. PEI will provide the application and modeling files electronically once a reviewer is assigned. If you have any questions or require additional information, please contact me at 865-850-2007 or by email at etullos@pei-tx.com.

Sincerely,
PEI CONSULTING GROUP, INC.

Evan Tullos
Vice President

Enclosure

Mail Application To:		**For Department use only:**
New Mexico Environment Department Air Quality Bureau Permits Section 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico, 87505 Phone: (505) 476-4300 Fax: (505) 476-4375 www.env.nm.gov/aqb		

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.

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: ☐ Not Constructed ☒ Existing Permitted (or NOI) Facility ☐ Existing Non-permitted (or NOI) Facility
Minor Source: ☐ NOI 20.2.73 NMAC ☒ 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:

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

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

☒ Check No.: 1372 in the amount of $500

☒ 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.

☒ I acknowledge there is an annual fee for permits in addition to the permit review fee: www.env.nm.gov/air-quality/permit-fees-2/.

☐ This facility qualifies for the small business fee reduction per 20.2.75.11.C. NMAC. The full $500.00 filing fee is included with this application and I understand the fee reduction will be calculated in the balance due invoice. The Small Business Certification Form has been previously submitted or is included with this application. (Small Business Environmental Assistance Program Information: www.env.nm.gov/air-quality/small-biz-eap-2/.)

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

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known: 760	Updating Permit/NOI #: 2191
1	Facility Name: Buckeye CO2 Plant	Plant primary SIC Code (4 digits): 1321	
		Plant NAIC code (6 digits): 211130	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): See 1-D.4		
2	Plant Owner Company: Morningstar Operating LLC.	Phone/Fax: 817-334-7800	
a	Mailing Address: 400 W 7th; Fort Worth, TX 76102		

b	Plant Operator's New Mexico Corporate ID or Tax ID: 6154190	
3	Plant Owner(s) name(s): Morningstar Operating LLC.	Phone/Fax: 817-334-7800
a	Plant Owner(s) Mailing Address(s): 400 W 7th; Fort Worth, TX 76102	
4	Bill To (Company): Morningstar Operating LLC.	Phone/Fax: 817-334-7800
a	Mailing Address: 400 W 7th; Fort Worth, TX 76102	E-mail: dguillotte@txoenergy.com
5	☒ Preparer: ☒ Consultant: Evan Tullos	Title: Vice President
a	E-mail: etullos@pei-tx.com	Phone/Fax: 865-850-2007
6	Plant Operator Contact: Chris Archuleta	Phone/Fax: 817-334-7859
a	Address: 40 Texas Camp Rd.; Lovington, NM 8260	E-mail: carchuleta@ctfieldsvcs.com
7	Air Permit Contact: Dan Guillotte	Title: Manager - EHS
a	E-mail: dguillotte@txoenergy.com	Phone/Fax: 817-334-8098
b	Mailing Address: 400 W 7th; Fort Worth, TX 76102	
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 ☐ No	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? ☐ Yes ☒ No	If yes, give month and year of shut down (MM/YY):
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? ☐ Yes ☒ No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? ☐ Yes ☐ No ☐ N/A	
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)? ☐ Yes ☒ No	If yes, the NOI No. is:
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? ☒ Yes ☐ No	If yes, the permit No. is: 2191
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☐ Yes ☒ No	If yes, the register No. is:

Section 1-C: Facility Input Capacity & Production Rate

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: 2.5 MMscf	Daily: 60 MMscf	Annually: 2,190 MMscf
b	Proposed	Hourly: 2.5 MMscf	Daily: 60 MMscf	Annually: 2,190 MMscf
2	What is the facility's maximum production rate, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: 2.5 MMscf	Daily: 60 MMscf	Annually: 2,190 MMscf
b	Proposed	Hourly: 2.5 MMscf	Daily: 60 MMscf	Annually: 2,190 MMscf

Section 1-D: Facility Location Information

1	Latitude (decimal degrees): 32.785953	Longitude (decimal degrees): -103.510842	County: Lea	Elevation (ft): 3998
2	UTM Zone: ☐ 12 or ☒ 13	Datum: ☐ NAD 83 ☒ WGS 84		
a	UTM E (in meters, to nearest 10 meters): 639450	UTM N (in meters, to nearest 10 meters): 3628540		
3	Name and zip code of nearest New Mexico town: Lovington - 88260			
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From Lovington, travel west on US-82 approximately 7 miles. Turn left at NM-238 (south) and go approximately 11 miles to plant on right.			
5	The facility is 14.4 (distance) miles SW (direction) of Lovington (nearest town).			
6	Land Status of facility (check one): ☐ Private ☐ Indian/Pueblo ☒ Government ☐ BLM ☐ Forest Service ☐ Military			
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: Lea			
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/air-quality/modeling-publications/)? ☒ Yes ☐ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: TX 40			
9	Name nearest Class I area: Carlsbad Caverns			
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 104.5			
11	Distance (meters) from the perimeter of the Area of Operations (AO is defined as the plant site inclusive of all disturbed lands, including mining overburden removal areas) to nearest residence, school or occupied structure: 380			
12	Method(s) used to delineate the Restricted Area: Fencing "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.			
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ☒ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.			
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☒ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility?			

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

1	Facility **maximum** operating ($\frac{hours}{day}$): 24	($\frac{days}{week}$): 7	($\frac{weeks}{year}$): 52	($\frac{hours}{year}$): 8760		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{hours}{day}$)? Start:		☐AM ☐PM	End:	☐AM ☐PM	
3	Month and year of anticipated start of construction: No construction associated with this permit action.					
4	Month and year of anticipated construction completion: No construction associated with this permit action.					
5	Month and year of anticipated startup of new or modified facility: No construction associated with this permit action.					
6	Will this facility operate at this site for more than one year? ☒ Yes ☐ No					

Section 1-F: Other Facility Information

1	Are there any current Notice of Violations (NOV), compliance orders, or any other compliance or enforcement issues related to this facility? ☒ Yes ☐ No If yes, specify: Post Inspection Notification (PIN) – July 26, 2023	
a	If yes, NOV date or description of issue: PIN – No other action yet.	NOV Tracking No:

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

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

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

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

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

1	Responsible Official (R.O.) (20.2.70.300.D.2 NMAC):		Phone:
a	R.O. Title:	R.O. e-mail:	
b	R. O. Address:		
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC):		Phone:
a	A. R.O. Title:	A. R.O. e-mail:	
b	A. R. O. Address:		
3	Company's Corporate or Partnership Relationship to any other Air Quality Permittee (List the names of any companies that have operating (20.2.70 NMAC) permits and with whom the applicant for this permit has a corporate or partnership relationship):		
4	Name of Parent Company ("Parent Company" means the primary name of the organization that owns the company to be permitted wholly or in part.):		
a	Address of Parent Company:		
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.):		
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations:		
7	Affected Programs to include Other States, local air pollution control programs (i.e. Bernalillo) and Indian tribes: Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B)? If yes, state which ones and provide the distances in kilometers:		

Section 1-I – Submittal Requirements

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

Hard Copy Submittal Requirements:

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

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

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

Electronic files sent by (check one):

☐ CD/DVD attached to paper application

☒ Secure electronic transfer. Air Permit Contact Name Evan Tullos Email etullos@pei-tx.com Phone number 865-850-2007.

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

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

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

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

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

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

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

2) The documents should also be submitted in Microsoft Office compatible file format (Word, Excel, etc.) allowing us to access the

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

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

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

Table of Contents

Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
HO-HTR	Hot Oil Heater	Optimized Process Furnaces, Inc.	N/A	4VB-42-4H-12-24	19.23 MMbtu/hr	19.23 MMbtu/hr	1998 1998	N/A HO-HTR	31000404	☐ Existing (unchanged) ☐ New/Additional ☑ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced	N/A	N/A
DEHY1	Glycol Dehydrator (Drizo Process)	N/A	N/A	97-1095-3	60 MMscfd	60 MMscfd	1998 1998	FL1 FL1	31000227	☐ Existing (unchanged) ☐ New/Additional ☑ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced	N/A	N/A
FL1	Flare	Flare Industries, Inc.	N/A	151511047	Unknown	Unknown	Unknown 11/4/1997	N/A FL1	31000216	☐ Existing (unchanged) ☐ New/Additional ☑ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced	N/A	N/A
FL1-SSM	SSM Emissions	N/A	N/A	N/A	N/A	N/A	2001 2001	N/A FL1	31000216	☐ Existing (unchanged) ☐ New/Additional ☑ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced	N/A	N/A
SSM-VOC	N/A	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31088811	☐ Existing (unchanged) ☑ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced	N/A	N/A
MF	N/A	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31088811	☐ Existing (unchanged) ☑ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced	N/A	N/A
FUG	Fugitive Emissions	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31088811	☐ Existing (unchanged) ☐ New/Additional ☑ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced	N/A	N/A
										☐ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
										☐ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
										☐ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
										☐ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
										☐ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
										☐ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ To be Replaced		
										☐ Existing (unchanged) ☐ New/Additional ☐ To Be Modified ☐ To be Removed ☐ Replacement Unit ☐ 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.

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

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at 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. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
T-Gasoline	Gasoline Storage Tank	N/A	N/A	500	20.2.752.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	gallons	-	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T-Diesel	Diesel Storage Tank	N/A	N/A	500	20.2.752.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	gallons	-	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T-TEG	TEG Storage Tank	N/A	N/A	750	20.2.752.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	gallons	-	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
Lube Oil 1	Lube Oil Storage Tank	N/A	N/A	4200	20.2.752.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	gallons	-	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
Lube Oil 2	Lube Oil Storage Tank	N/A	N/A	1034	20.2.752.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	gallons	-	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T-COOL	Coolant Storage Tank	N/A	N/A	3000	20.2.752.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	gallons	-	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T-Methanol	Methanol Storage Tank	N/A	N/A	500	20.2.752.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	gallons	-	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
Sump Vent	Open Drain System	N/A	N/A	1000	20.2.752.202.B.5	N/A	☑ Existing (unchanged) ☐ To be Removed
			N/A	gallons	-	N/A	☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed
							☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed
							☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed
							☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed
							☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed
							☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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

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
FL1	Flare	1997	VOC, H2S, HAP	DEHY1, FL1-SSM	98%	Engineering Estimate

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

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

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

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

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
HO-HTR	2.53	11.08	0.49	2.13	0.24	1.06	0.0	0.1	0.24	1.06	0.24	1.06	0.24	1.06	-	-	-	-
DEHY1	-	-	-	-	48.14	210.85	-	-	-	-	-	-	-	-	8.34	36.53	-	-
FL1-Pilot/Purge	9.65	7.63	38.45	30.37	0.08	0.06	0.04	0.03	-	-	-	-	-	-	0.00	0.00	-	-
FL1-SSM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SSM-VOC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUG	-	-	-	-	5.39	23.59	-	-	-	-	-	-	-	-	0.18	0.79	-	-
Totals	12.18	18.70	38.94	32.50	53.85	235.57	0.05	0.09	0.24	1.06	0.24	1.06	0.24	1.06	8.52	37.32	-	-

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

Table 2-E: Requested Allowable Emissions

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

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
HO-HTR	2.53	11.08	0.49	2.13	0.24	1.06	0.01	0.06	0.24	1.06	0.24	1.06	0.24	1.06	-	-	-	-
DEHY1	Emissions are reprsented at FL1.																	
FL1	9.73	7.94	39.06	33.05	1.04	4.28	15.72	68.70	-	-	-	-	-	-	0.17	0.73	-	-
FL1-SSM	See Table 2-F.																	
SSM-VOC	See Table 2-F.																	
MF	-	10.00	-	10.00	-	10.00	-	10.00	-	-	-	-	-	-	-	10.00	-	-
FUG	-	-	-	-	5.39	23.59	-	-	-	-	-	-	-	-	0.18	0.79	-	-
Totals	12.3	29.0	39.5	45.2	6.7	38.9	15.7	78.8	0.2	1.1	0.2	1.1	0.2	1.1	0.3	11.5	0.0	0.0

[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)

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

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

Unit No.	NOx		CO		VOC		SOx		PM[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
FL1-SSM	152.24	1.20	303.92	3.27	1003.22	7.09	365.66	5.90	-	-	-	-	-	-	4.08	0.06	-	-
SSM-VOC	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-
Totals	152.24	1.20	303.92	3.27	1003.22	17.09	365.66	5.90	-	-	-	-	-	-	4.08	0.06	-	-

[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

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

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

Stack No.	Serving Unit Number(s) from Table 2-A	NOx		CO		VOC		SOx		PM		PM10		PM2.5		☐ H_2S or ☐ Lead	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Totals:																	

Table 2-H: Stack Exit Conditions

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

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
HO-HTR	HO-HTR	V	No	98	525	-	131	Unknown	26.65	2.50
FL1	FL1	V	No	90'	1832	-	6	Unknown	65.6	4.50

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

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

Stack No.	Unit No.(s)	Total HAPs ☑		n-Hexane HAP or ☐ TAP ☑		Benzene HAP or ☐ TAP ☑		Toluene HAP or ☐ TAP ☑		Xylene HAP or ☐ TAP ☑		Ethylbenzene HAP or ☐ TAP ☐		Provide Pollutant Name Here ? HAP or ? TAP		Provide Pollutant Name Here ? HAP or ? TAP		Provide Pollutant Name Here ? HAP or ? TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
HO-HTR	HO-HTR	0.08	0.34	0.04	0.17	0.00	0.00	0.00	0.00	-	-	-	-						
DEHY1	FL1	0.16	0.69	0.03	0.12	0.07	0.32	0.05	0.22	0.00	0.02	0.01	0.02						
FL1	FL1	132.57	0.30	75.69	0.17	22.95	0.05	25.06	0.06	3.88	0.009	4.99	0.01						
FUG	FUG	0.51	2.22	0.27	1.19	0.08	0.36	0.09	0.39	0.01	0.06	0.02	0.08						
Totals:		133.3	3.6	76.0	1.6	23.1	0.7	25.2	0.7	3.9	0.1	5.0	0.1						

Table 2-J: Fuel

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

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage (scf)	Annual Usage (scf)	% Sulfur	% Ash
HO-HTR	Pipeline Quality Natural Gas	Pipeline Quality Natural Gas	1146.895	16768	146.9	N/A	N/A
FL1	Pipeline Quality Natural Gas	Pipeline Quality Natural Gas	1147	61000	96360000	N/A	N/A
*FL1 includes assist gas.							

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

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

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

Table 2-L: Tank Data

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

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

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

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

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

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

Material Processed				Material Produced			
Description	**Chemical Composition**	**Phase (Gas, Liquid, or Solid)**	**Quantity (specify units)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (specify units)**
Natural Gas	Mixed hydrocarbons	Gas	60 mmscfd	NGL	Mixed hydrocarbons	Liquid	1800 bbl/day
				CO2 Gas for Enhanced Oil Recovery	CO2-rich gas	Gas	60 mmscfd

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
There are no CEMs used at this facility.									

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
There are no PEMs used at this facility.								

Table 2-P: Greenhouse Gas Emissions

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

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

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	GWPs [1]	1	298	25	22,800	footnote 3										
HO-HTR	mass GHG	1.1	0.0	0.0											1.1	
	CO_2e	1.1	0.0	0.0												1.1
FUG	mass GHG	0.12	0	5.49											5.6	
	CO_2e	0.12	0	137.30												137.4
FL1-Pilot	mass GHG	4971.9	0.0	34.5											5006.4	
	CO_2e	4971.9	0.0	4734.5												9706.5
FL1-SSM	mass GHG	1572.86	0	0.04											1572.9	
	CO_2e	195.17	0	4.93												200.1
	mass GHG															
	CO_2e															
	mass GHG															
	CO_2e															
	mass GHG															
	CO_2e															
	mass GHG															
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	mass GHG															
	CO_2e															
	mass GHG															
	CO_2e															
	mass GHG															
	CO2e															
Total	mass GHG														6586.06	
	CO_2e															10045.13

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

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

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

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

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

Section 3

Application Summary

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

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

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

The Buckeye CO2 Plant originally began operation in November 1998 and Morningstar Operating LLC (MSO) took ownership of the site from Chevron in 2021. The Buckeye CO2 Plant is currently designed to handle 60 MMscfd of CO2-rich gas along with entrained hydrocarbons and water. The plant utilizes the Ryan-Holmes process to recover hydrocarbons from the carbon dioxide rich gas stream that is produced with oil production from nearby fields. After the hydrocarbons are removed, the CO2 gas stream (plus methane, ethane, and H2S) is piped offsite for reinjection to enhance oil recovery from the surrounding formation.

The site currently operates under NSR Permit 2191. With this permit application, Morningstar is making the following changes:

1. Update flare emission factors based on current analytical data using more appropriate Texas Commission Environmental Quality (TCEQ) emission factors;
2. Incorporate the use of Promax to simulate process stream compositions;
3. Update fugitive component counts;
4. Update dehydration process emissions;
5. Update startup, shutdown, maintenance, and malfunction emissions (SSM/MF) based on historical flare volumes; and,
6. Update heater specifications and emissions.

This application is being submitted in accordance with 20.2.72.219.D NMAC.

SSM emissions are generated throughout various processes and equipment at the facility. Emissions from all events are routed to the flare, with flare volumes recorded by meter. Event details are recorded in a log. MSO will retain the existing MF limit of 10 TPY per pollutant.

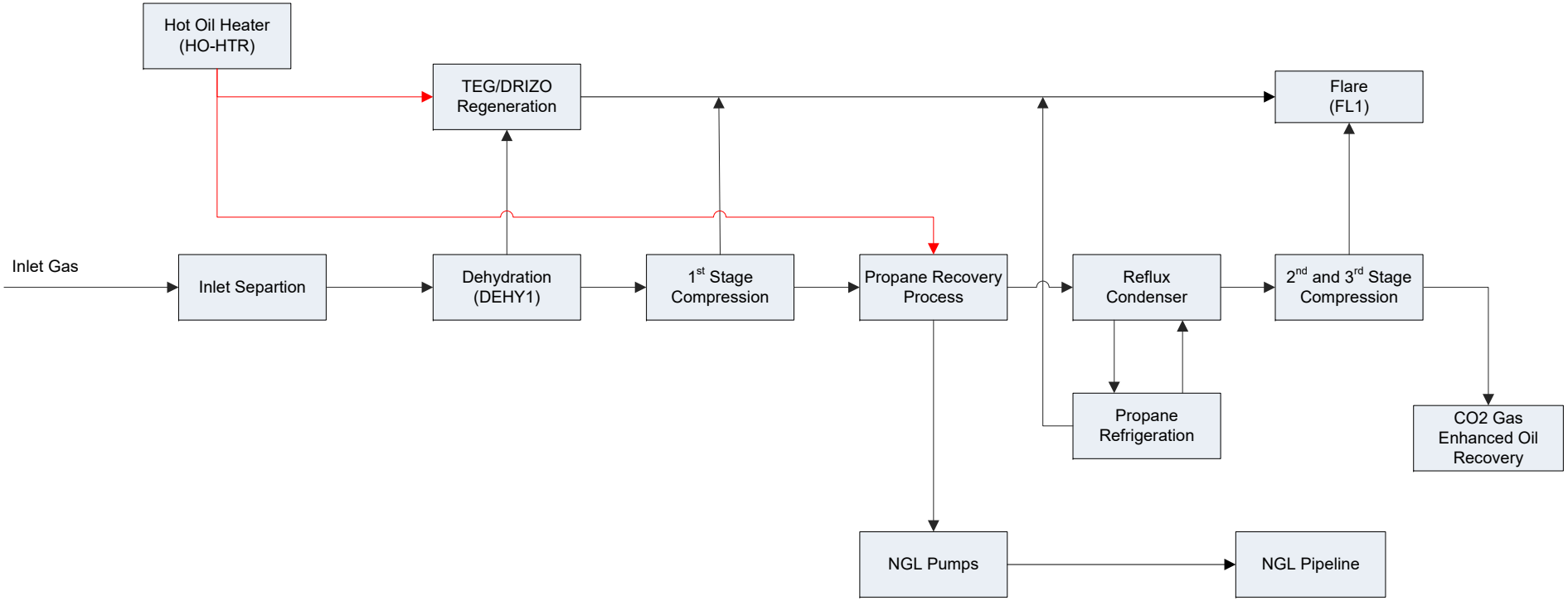
Section 4

Process Flow Sheet

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

A process flow sheet is provided.

Buckeye CO2 Plant
Process Flow Diagram



Miscellaneous SSM
(SSM-VOC)

Fugitive Emissions
(FUG)

Malfunction Emissions
(MF)

Section 5

Plot Plan Drawn to Scale

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

An aerial plot plan is provided.

Buckeye CO2 Plant

Aerial Plot

Legend

- Buckeye / Vacuum

Flare

Hot Oil Heater

SATELLITE; VGWU I3

N

Earth Point

300 ft

Section 6

All Calculations

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

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

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

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

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

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

Significant Figures:

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

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

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

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

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

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

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

Control Devices: In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions. The applicant can indicate in this section of the application if they chose to not take credit for the reduction in emission rates. For notices of intent submitted under 20.2.73 NMAC, only uncontrolled emission rates can be considered to determine applicability unless the state or federal Acts require the control. This information is necessary to determine if federally enforceable conditions are necessary for the control device, and/or if the control device produces its own regulated pollutants or increases emission rates of other pollutants.

Calculations are provided.

Morningstar Operating LLC.
Buckeye CO2 Plant
Emissions Summary - Requested Allowable Permit Limits

ESTIMATED EMISSIONS																
Emission Source	Source Number	Emission Point	NO_x		CO		VOC		PM_{10}		$PM_{2.5}$		SO_2		H_2S	
			lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
Hot Oil Heater	HO-HTR	HO-HTR	2.53	11.08	0.49	2.13	0.24	1.06	0.24	1.06	0.24	1.06	0.01	0.06	--	--
Fugitive Equipment Components	FUG	FUG	--	--	--	--	5.39	23.59	--	--	--	--	--	--	0.18	0.79
Flare Pilot	FL1-PILOT	FL1	9.65	7.63	38.45	30.37	0.08	0.06	--	--	--	--	0.04	0.03	<0.01	<0.01
TEG Dehydrator	DEHY1	FL1	0.07	0.31	0.61	2.68	0.96	4.22	--	--	--	--	15.68	68.67	0.17	0.73
Flare for SSM Emissions	FL1-SSM	FL1	152.24	1.20	303.92	3.27	1003.22	7.09	--	--	--	--	365.66	5.90	4.08	0.06
SSM	SSM-VOC	SSM-VOC	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--
Malfunctions	MF	MF	--	10.00	--	10.00	--	10.00	--	--	--	--	--	10.00	--	10.00
TOTAL EMISSIONS:			164.49	30.22	343.47	48.45	1009.89	56.02	0.24	1.06	0.24	1.06	381.39	84.65	4.43	11.59

Morningstar Operating LLC.
Buckeye CO2 Plant
Emissions Summary - Requested Allowable Permit Lim

ESTIMATED EMISSIONS														
Emission Source	Source Number	Emission Point	Benzene		Toluene		Ethylbenzene		o-Xylene		n-Hexane		Total HAP	
			lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
Hot Oil Heater	HO-HTR	HO-HTR	<0.01	<0.01	<0.01	<0.01	--	--	--	--	0.04	0.17	0.08	0.34
Fugitive Equipment Components	FUG	FUG	0.08	0.36	0.09	0.39	0.02	0.08	0.01	0.06	0.27	1.19	0.51	2.22
Flare Pilot	FL1-PILOT	FL1	--	--	--	--	--	--	--	--	--	--	--	--
TEG Dehydrator	DEHY1	FL1	0.07	0.32	0.05	0.22	<0.01	0.02	<0.01	0.02	0.03	0.12	0.16	0.69
Flare for SSM Emissions	FL1-SSM	FL1	22.95	0.05	25.06	0.06	4.99	0.01	3.88	<0.01	75.69	0.17	132.57	0.30
SSM	SSM-VOC	SSM-VOC	--	--	--	--	--	--	--	--	--	--	--	--
Malfunctions	MF	MF	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL EMISSIONS:			23.11	0.73	25.19	0.66	5.02	0.11	3.89	0.09	76.03	1.64	133.31	3.56

Morningstar Operating LLC.
Buckeye CO2 Plant
Emissions Summary - Uncontrolled Emissions

ESTIMATED EMISSIONS																
Emission Source	Source Number	Emission Point	VOC		NO_x		CO		PM_{10}		$PM_{2.5}$		SO_2		H_2S	
			lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
Hot Oil Heater	HO-HTR	HO-HTR	0.24	1.06	2.53	11.08	0.49	2.13	0.24	1.06	0.24	1.06	0.01	0.06	--	--
TEG Dehydrator	DEHY1	FLR1	48.14	210.85	--	--	--	--	--	--	--	--	--	--	8.34	36.53
Fugitive Equipment Components	FUG	FUG	5.39	23.59	--	--	--	--	--	--	--	--	--	--	0.18	0.79
Flare Pilot/Assist/Purge	FL1-PILOT	FL1	0.08	0.06	9.65	7.63	38.45	30.37	--	--	--	--	0.04	0.03	<0.01	<0.01
SSM Activities to Flare	FL1-SSM	FL1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SSM Emissions	SSM-VOC	SSM-VOC	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
Malfunctions	MF	MF	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL EMISSIONS:			53.85	255.57	12.18	18.70	38.94	32.50	0.24	1.06	0.24	1.06	0.05	0.09	8.52	37.32

Morningstar Operating LLC.
Buckeye CO2 Plant
Emissions Summary - Uncontrolled Emissions

ESTIMATED EMISSIONS													
Emission Source	Source Number	Emission Point	Benzene		Toluene		Ethylbenzene		o-Xylene		n-Hexane		Total HAP	
			lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy
Hot Oil Heater	HO-HTR	HO-HTR	<0.01	<0.01	<0.01	<0.01	--	--	--	--	0.04	0.17	0.08	0.34
TEG Dehydrator	DEHY1	FLR1	3.71	15.87	2.53	10.83	0.27	1.17	0.21	0.88	1.36	5.83	8.07	34.58
Fugitive Equipment Components	FUG	FUG	0.08	0.36	0.09	0.39	0.02	0.08	0.01	0.06	0.27	1.19	0.51	2.22
Flare Pilot/Assist/Purge	FL1-PILOT	FL1	--	--	--	--	--	--	--	--	--	--	--	--
SSM Activities to Flare	FL1-SSM	FL1	--	--	--	--	--	--	--	--	--	--	--	--
SSM Emissions	SSM-VOC	SSM-VOC	--	--	--	--	--	--	--	--	--	--	--	--
Malfunctions	MF	MF	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL EMISSIONS:			3.79	16.24	2.62	11.22	0.29	1.24	0.22	0.94	1.67	7.19	8.66	37.15

Morningstar Operating LLC.
Buckeye CO2 Plant
Fugitive Emissions

EMISSION POINT : FUG

Component Type	Service	Estimated Components Count	Hours Operation	Emission Factors	Total VOC Weight %	Total HAPs Weight %	Total H2S Weight %	Control Efficiency	VOC Emissions		HAPs Emissions		H2S Emissions	
									lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Valves	Gas/Vapor	4133	8760	0.00992	4.21%	0.24%	0.01%		1.73	7.57	0.10	0.42	0.00	0.01
	Light Oil	485	8760	0.0055	100.00%	12.62%	1.68%		2.67	11.71	0.34	1.48	0.05	0.20
	Heavy Oil	69	8760	0.000019	1.00%	0.00%	0.00%		0.00	0.00	0.00	0.00	0.00	0.00
	Water/Light Oil	229	8760	0.000216	1.00%	0.13%	0.02%		0.00	0.00	0.00	0.00	0.00	0.00
Pump Seals	Gas/Vapor	0	8760	0.00529	4.21%	0.24%	0.75%		0.00	0.00	0.00	0.00	0.00	0.00
	Light Oil	9	8760	0.02866	100.00%	12.62%	1.68%		0.26	1.13	0.03	0.14	0.00	0.02
	Heavy Oil	0	8760	0.02866	1.00%	0.00%	0.00%		0.00	0.00	0.00	0.00	0.00	0.00
	Water/Light Oil	4	8760	0.000053	1.00%	0.13%	0.02%		0.00	0.00	0.00	0.00	0.00	0.00
Connectors	Gas/Vapor	23564	8760	0.00044	4.21%	0.24%	0.75%		0.44	1.92	0.02	0.11	0.08	0.34
	Light Oil	0	8760	0.000463	100.00%	12.62%	1.68%		0.00	0.00	0.00	0.00	0.00	0.00
	Heavy Oil	0	8760	0.000017	1.00%	0.00%	0.00%		0.00	0.00	0.00	0.00	0.00	0.00
	Water/Light Oil	1449	8760	0.000243	1.00%	0.13%	0.02%		0.00	0.02	0.00	0.00	0.00	0.00
Flanges	Gas/Vapor	3537	8760	0.00086	4.21%	0.24%	0.75%		0.13	0.56	0.01	0.03	0.02	0.10
	Light Oil	0	8760	0.00024	100.00%	12.62%	1.68%		0.00	0.00	0.00	0.00	0.00	0.00
	Heavy Oil	0	8760	0.000001	1.00%	0.00%	0.00%		0.00	0.00	0.00	0.00	0.00	0.00
	Water/Light Oil	220	8760	0.00001	1.00%	0.13%	0.02%		0.00	0.00	0.00	0.00	0.00	0.00
Open-ended Lines	Gas/Vapor	0	8760	0.00441	4.21%	0.24%	0.75%		0.00	0.00	0.00	0.00	0.00	0.00
	Light Oil	0	8760	0.003086	100.00%	12.62%	1.68%		0.00	0.00	0.00	0.00	0.00	0.00
	Heavy Oil	0	8760	0.00030864	1.00%	0.00%	0.00%		0.00	0.00	0.00	0.00	0.00	0.00
	Water/Light Oil	3	8760	0.0005512	1.00%	0.13%	0.02%		0.00	0.00	0.00	0.00	0.00	0.00
Other:	Gas/Vapor	193	8760	0.0194	4.21%	0.24%	0.75%		0.16	0.69	0.01	0.04	0.03	0.12
	Light Oil	0	8760	0.0165	100.00%	12.62%	1.68%		0.00	0.00	0.00	0.00	0.00	0.00
	Heavy Oil	0	8760	0.000007	1.00%	0.00%	0.00%		0.00	0.00	0.00	0.00	0.00	0.00
	Water/Light Oil	2	8760	0.0309	1.00%	0.13%	0.02%		0.00	0.00	0.00	0.00	0.00	0.00

	GAS		LIQUID	
Pollutant	lb/hr	tpy	lb/hr	tpy
VOC	2.45	10.74	2.94	12.86
HAPs	0.14	0.60	0.37	1.62
H2S	0.13	0.58	0.05	0.22

UNCONTROLLED	GAS		LIQUID		TOTAL	
Pollutant	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC	2.45	10.74	2.94	12.86	5.39	23.59
HAPs	0.14	0.60	0.37	1.62	0.51	2.22
H2S	0.13	0.58	0.05	0.22	0.18	0.79

EMISSIONS SUMMARY		
Pollutant	lb/hr	tpy
VOC	5.39	23.59
HAPs	0.51	2.22
H2S	0.18	0.79

[1] Emissions factors and LDAR control efficiencies are based TCEQ's Air Permit Technical Guidance for Chemical Sources, dated June 2018 (Table II and Table V).

Morningstar Operating LLC.
Buckeye CO2 Plant
Hot Oil Heater

Emission Point Number: HO-HTR
Source description: Hot Oil Heater

Fuel Consumption and Stack Parameters

Input heat rate:	19.23	MMBtu/hr	Capacity per manufacturer.
Fuel heat value:	1146.9	Btu/scf	Fuel Gas (15% safety factor)
Fuel rate:	16767.9	scf/hr	Input heat rate / fuel heat value
Annual fuel usage:	146.89	MMscf/yr	8760 hrs/yr operation
Stack height:	98	ft	
Stack diameter:	2.50	ft	
Exhaust temp (Tstk):	525	°F	
F factor (wscf/10^6 Btu):	10610.0	From 40 CFR 60 Appendix A Table 19-2 for wet natural gas	
Oxygen content of Exhaust Gas:	4	%	
Volume of Exhaust Gas:	252335.31	wscf/hr	
Volume of Exhaust Gas:	130.80	scf/sec	
Velocity of Exhaust Gas:	26.65	ft/sec	

Emission Rates
Uncontrolled Heater Emissions

NOx^1	CO^1	VOC^1	$SO_2{}^2$	PM^1	
119.28	22.94	11.47	0.60	11.47	lb/MMscf
2.53	0.49	0.243	0.013	0.243	lb/hr
11.08	2.13	1.065	0.056	1.065	tpy (8760 hrs)

n-Hexane	Benzene	Toluene	Total HAP^1	
1.80	0.0021	0.0034	1.89	lb/MMscf
0.038	0.000	0.000	0.078	lb/hr
0.167	0.000	0.000	0.342	tpy (8760 hrs)

1 Manufacturer's emissions factors were used.
2 USEPA AP-42, Section 1.4-1 and 2. Factors are adjusted for site fuel heating value. Total HAP factor is the sum of all HAP in AP-42.

2. The expected burner emissions are as follows:

NOx (LB/MMBTU LHV).....0.104
NOx (LB/MMBTU HHV).....0.094
CO (LB/MMBTU LHV).....0.020
CO (LB/MMBTU HHV).....0.018
UBHC-NON CH4 (LB/MMBTU LHV).0.010
UBHC-NON CH4 (LB/MMBTU HHV).0.009
PARTICULATES (LB/MMBTU).....0.010

Morningstar Operating LLC.
Buckeye CO2 Plant
Summary of Flare Emissions

Stream	NOx		CO		VOC		SO2		H2S		n-Hexane		Benzene		Toluene		Ethylbenzene		Xylenes	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Flare Pilot/Purge/Assist	9.65	7.63	38.45	30.37	0.08	0.06	0.04	0.03	<0.01	<0.01	--	--	--	--	--	--	--	--	--	--
DEHY	0.07	0.31	0.61	2.68	0.96	4.22	15.68	68.67	0.17	0.73	0.03	0.12	0.07	0.32	0.05	0.22	<0.01	0.02	<0.01	0.02
Flare Steady State	**9.73**	**7.94**	**39.06**	**33.05**	**1.04**	**4.28**	**15.72**	**68.70**	**0.17**	**0.73**	**0.03**	**0.12**	**0.07**	**0.32**	**0.05**	**0.22**	**<0.01**	**0.02**	**<0.01**	**0.02**
SSM-Inlet/1st Stage	7.78	0.07	66.74	0.61	37.58	0.34	365.66	3.32	4.08	0.04	1.66	0.02	0.53	<0.01	0.54	<0.01	0.11	<0.01	0.08	<0.01
SSM-2nd/3rd Stages	1.90	<0.01	16.26	0.03	1.17	<0.01	207.39	0.41	2.21	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SSM-PRC	5.37	0.03	46.07	0.29	26.06	0.16	332.09	2.08	3.53	0.02	1.18	<0.01	0.36	<0.01	0.38	<0.01	0.08	<0.01	0.06	<0.01
SSM-NGL	152.24	0.30	303.92	0.61	1003.22	2.01	41.52	0.08	0.44	<0.01	75.69	0.15	22.95	0.05	25.06	0.05	4.99	<0.01	3.88	<0.01
SSM-Propane	106.48	0.71	212.58	1.42	685.87	4.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SSM-Fuel Gas	23.74	0.08	94.55	0.32	0.06	<0.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Flare SSM Totals	**152.24**	**1.20**	**303.92**	**3.27**	**1003.22**	**7.09**	**365.66**	**5.90**	**4.08**	**0.06**	**75.69**	**0.17**	**22.95**	**0.05**	**25.06**	**0.06**	**4.99**	**0.01**	**3.88**	**<0.01**
Totals	**161.96**	**9.14**	**342.98**	**36.32**	**1004.26**	**11.37**	**381.38**	**74.60**	**4.25**	**0.80**	**75.72**	**0.29**	**23.02**	**0.37**	**25.11**	**0.27**	**5.00**	**0.03**	**3.88**	**0.03**

1 Hourly SSM emissions are taken as the maximum emissions for any stream.
2 Annual SSM emissions are taken as the sum of emissions for all streams.

Morningstar Operating LLC.
Buckeye CO2 Plant
Flare Emissions Calculations

* Emissions shown here are a result of the flare pilot, purge, and assist gas. Assist gas is required at the facility as the waste gas Btu content is extremely low.

Flare Calculator

Gas Composition

		Pilot/Assist/Purge			
Component	**MW**	**Mol%**	**Normalized Mol%**	**MW * Mol %**	**Weight %**
Helium	4.00	0.002%	0.00%	0.000	0.00%
Nitrogen	28.01	2.640%	2.64%	0.740	4.39%
CO2	44.01	0.000%	0.00%	0.000	0.00%
O2	16.00	0.000%	0.00%	0.000	0.00%
H2S	34.08	0.000%	0.00%	0.000	0.00%
Methane	16.04	93.914%	93.91%	15.066	89.40%
Ethane	30.07	3.398%	3.40%	1.022	6.06%
Propane	44.10	0.039%	0.04%	0.017	0.10%
i-Butane	58.12	0.000%	0.00%	0.000	0.00%
n-Butane	58.12	0.000%	0.00%	0.000	0.00%
i-Pentane	72.15	0.000%	0.00%	0.000	0.00%
n-Pentane	72.15	0.000%	0.00%	0.000	0.00%
C6+_x1	86.18	0.009%	0.01%	0.008	0.05%
n-Hexane	86.18	0.000%	0.00%	0.000	0.00%
Benzene	78.11	0.000%	0.00%	0.000	0.00%
Toluene	92.14	0.000%	0.00%	0.000	0.00%
Ethylbenzene	106.17	0.000%	0.00%	0.000	0.00%
m-Xylene	106.16	0.000%	0.00%	0.000	0.00%
Drizo C6+_x1	106.16	0.000%	0.00%	0.000	0.00%
Water	18.02	0.000%	0.00%	0.000	0.00%
Triethylene Glycol	150.17	0.000%	0.00%	0.000	0.00%
Total		100.00%	100%	16.85	100%
	NMEHC (VOC)	*0.15%*			
	Gas Heating Value (Btu/scf)	*1146.90*			

Fuel Data

Flare Pilot/Assist/Purge	11.00 Mscf/hr	Avg Annual Basis (2022 Basis)
	61.00 Mscf/hr	Max Hourly Basis (2022 Basis)
	96.36 MMscf/yr	Max Annual Basis
	1147 Btu/scf	Analysis
	69.96 MMBtu/hr	Hourly Max Pilot heat input
	110514.8 MMBtu/yr	Annual Pilot heat input

Emission Rates

Pilot/Assist/Purge

	NOx	**CO**	**VOC**	**H_2S**	**SO_2**	**Units**	
	0.138	0.5496				lb/MMBtu	TNRCC RG-109 (Used max conservative factors)
				0.00036		lb H_2S/Mscf	Purchased sweet natural gas (0.25 gr/100scf)
	9.65	38.45	0.08	0.0004	0.041	lb/hr	Factor * Pilot gas usage
	7.63	30.37	0.06	0.0003	0.032	tpy	8760 hrs/yr
Safety Factor	0.00%	0.00%	0.00%	0.00%	0.00%		
Emissions	**9.65**	**38.45**	**0.08**	**0.00**	**0.04**	**lb/hr**	
	7.63	**30.37**	**0.06**	**0.00**	**0.03**	**tpy**	

Morningstar Operating LLC.
Buckeye CO2 Plant
Flare Emissions Calculations - Steady State Dehydrator Emissions

* Emissions from the regeneration of TEG in gas dehydration. Any vapor not condensed downstream of the TEG flash tank and solvent recovery drum are routed to the flare. The stream composition from Promax was normalized to 3.5% H2S.

Flare Calculator

Gas Composition

		DEHY			
Component	**MW**	**Mol%**	**Normalized Mol%**	**MW * Mol %**	**Weight %**
Helium	4.00	0.003%	0.00%	0.000	0.00%
Nitrogen	28.01	0.025%	0.03%	0.007	0.02%
CO2	44.01	84.096%	83.53%	36.760	81.01%
O2	16.00	0.000%	0.00%	0.000	0.00%
H2S	34.08	3.500%	3.48%	1.185	2.61%
Methane	16.04	0.397%	0.39%	0.063	0.14%
Ethane	30.07	1.331%	1.32%	0.398	0.88%
Propane	44.10	3.015%	2.99%	1.321	2.91%
i-Butane	58.12	0.268%	0.27%	0.155	0.34%
n-Butane	58.12	0.991%	0.98%	0.572	1.26%
i-Pentane	72.15	0.453%	0.45%	0.325	0.72%
n-Pentane	72.15	0.563%	0.56%	0.403	0.89%
C6+_x1	86.18	1.762%	1.75%	1.508	3.32%
n-Hexane	86.18	0.221%	0.22%	0.189	0.42%
Benzene	78.11	0.664%	0.66%	0.515	1.13%
Toluene	92.14	0.384%	0.38%	0.351	0.77%
Ethylbenzene	106.17	0.036%	0.04%	0.038	0.08%
m-Xylene	106.16	0.027%	0.03%	0.029	0.06%
Drizo C6+_x1	106.16	1.180%	1.17%	1.245	2.74%
Water	18.02	1.765%	1.75%	0.316	0.70%
Triethylene Glycol	150.17	0.000%	0.00%	0.000	0.00%
Total		100.68%	100%	45.38	100%

NMEHC (VOC)	*14.80%*	
Gas Heating Value (Btu/scf)	*411.07*	ProMax
Maximum Hourly Flow (scf/hour)	*2713*	ProMax
Maximum Hourly Heat Input (MMBtu/hr)	*1.12*	
Annual Time Flared (hours)	*8760.00*	
Maximum Annual Flow (MMscf/year)	*23.76*	
Maximum Annual Heat Input (MMBtu/yr)	*9768.23*	

DEHY Waste Gas

	NOx	**CO**	**VOC**	**H_2S**	**SO_2**	**Units**	
	0.0641	0.5496				lb/MMBtu	**TNRCC RG-109**
				2.61%		Wt%	Maximum Composition
	0.1	0.6				lb/hr	lb/MMBtu * MMBtu/hr
			48.14	8.34		lb/hr	Uncontrolled emissions (Promax for VOC Only)
			210.85	36.53		tpy	Uncontrolled emissions (Promax for VOC Only)
	0.07	0.61	0.96	0.17	15.68	lb/hr	98% combustion H_2S and VOC; 100% to SO_2
	0.31	2.68	4.22	0.73	68.67	tpy	8760 hrs/yr
Safety Factor	0.00%	0.00%	0.00%	0.00%	0.00%		
Emissions	**0.07**	**0.61**	**0.96**	**0.17**	**15.68**	**lb/hr**	
	0.31	**2.68**	**4.22**	**0.73**	**68.67**	**tpy**	

DEHY HAP Emissions

Component	**Max Composition**	**Uncontrolled Emissions (Promax)**		**Controlled Emissions**		**Safety Factor**	**Controlled Emissions w/ Safety Factor**	
	Wt %	(lb/hr)	(tpy)	(lb/hr)	(tpy)		(lb/hr)	(tpy)
n-Hexane	0.419%	1.36	5.83	0.03	0.12	0.00%	0.03	0.12
Benzene	1.140%	3.71	15.87	0.07	0.32	0.00%	0.07	0.32
Toluene	0.777%	2.53	10.83	0.05	0.22	0.00%	0.05	0.22
Ethylbenzene	0.084%	0.27	1.17	0.01	0.02	0.00%	0.01	0.02
Xylenes	0.063%	0.21	0.88	0.00	0.02	0.00%	0.00	0.02
Total				**0.16**	**0.69**		**0.16**	**0.69**

Morningstar Operating LLC.
Buckeye CO2 Plant
Flare Emissions Calculations - CO2 Blowdown

* Emissions shown here are a result of gas from the plant inlet through the 1st stage of compression routed to the flare during SSM activities. The analysis was conservatively normalized to 0.4% H2S by volume.

Flare Calculator

Gas Composition

		Inlet			
Component	**MW**	**Mol%**	**Normalized Mol%**	**MW * Mol %**	**Weight %**
Helium	4.00	0.085%	0.08%	0.003	0.01%
Nitrogen	28.01	1.803%	1.80%	0.505	1.20%
CO2	44.01	86.107%	86.09%	37.886	90.08%
O2	16.00	0.017%	0.02%	0.003	0.01%
H2S	34.08	0.400%	0.40%	0.136	0.32%
Methane	16.04	5.743%	5.74%	0.921	2.19%
Ethane	30.07	2.889%	2.89%	0.869	2.06%
Propane	44.10	1.327%	1.33%	0.585	1.39%
i-Butane	58.12	0.204%	0.20%	0.118	0.28%
n-Butane	58.12	0.577%	0.58%	0.336	0.80%
i-Pentane	72.15	0.198%	0.20%	0.143	0.34%
n-Pentane	72.15	0.207%	0.21%	0.150	0.36%
C6+_x1	86.18	0.350%	0.35%	0.302	0.72%
n-Hexane	86.18	0.068%	0.07%	0.058	0.14%
Benzene	78.11	0.024%	0.02%	0.019	0.04%
Toluene	92.14	0.021%	0.02%	0.019	0.05%
Ethylbenzene	106.17	0.004%	0.00%	0.004	0.01%
m-Xylene	106.16	0.003%	0.00%	0.003	0.01%
Drizo C6+_x1	106.16	0.000%	0.00%	0.000	0.00%
Water	18.02	0.000%	0.00%	0.000	0.00%
Triethylene Glycol	150.17	0.000%	0.00%	0.000	0.00%
Total		100.02%	100%	42.06	100%

NMEHC (VOC)	*2.98%*
Gas Heating Value (Btu/scf)	*210.28*
Maximum Hourly Flow (scf/hour)	*550,000*
Maximum Hourly Heat Input (MMBtu/hr)	*115.66*
Maximum Annual Flow (MMscf/year)	*10.00*
Maximum Annual Heat Input (MMBtu/yr)	*2102.82*

Inlet Gas

	NOx	**CO**	**VOC**	**H_2S**	**SO_2**	**Units**	
	0.0641	0.5496				lb/MMBtu	**TNRCC RG-109**
			2.982%	0.32%		Wt%	Maximum Composition
	7.4	63.6				lb/hr	lb/MMBtu * MMBtu/hr
			1789.62	194.5		lb/hr	Uncontrolled emissions
			16.27	1.8		tpy	Uncontrolled emissions
	7.41	63.56	35.79	3.89	365.66	lb/hr	98% combustion H_2S and VOC; 100% to SO_2
	0.07	0.58	0.33	0.04	3.32	tpy	
Safety Factor	5.00%	5.00%	5.00%	5.00%	0.00%		
Emissions	**7.78**	**66.74**	**37.58**	**4.08**	**365.66**	**lb/hr**	
	0.07	**0.61**	**0.34**	**0.04**	**3.32**	**tpy**	

Inlet HAP Emissions

Component	**Max Composition**	**Uncontrolled Emissions**		**Controlled Emissions**		**Safety Factor**	**Controlled Emissions w/ Safety Factor**	
	Wt %	(lb/hr)	(tpy)	(lb/hr)	(tpy)		(lb/hr)	(tpy)
n-Hexane	0.068%	83.13	0.76	1.66	0.02	0.00%	1.66	0.02
Benzene	0.024%	26.41	0.24	0.53	0.00	0.00%	0.53	0.00
Toluene	0.021%	27.21	0.25	0.54	0.00	0.00%	0.54	0.00
Ethylbenzene	0.004%	5.35	0.05	0.11	0.00	0.00%	0.11	0.00
Xylenes	0.003%	4.16	0.04	0.08	0.00	0.00%	0.08	0.00
Total				**2.92**	**0.03**		**2.92**	**0.03**

Morningstar Operating LLC.
Buckeye CO2 Plant
Flare Emissions Calculations

* Emissions shown here are a result of 2nd and 3rd Stage Suction gases routed to the flare during SSM activities. The analysis was conservatively normalized to 0.5% H2S by volume.

Flare Calculator

Gas Composition

		2nd/3rd Stage Suction			
Component	**MW**	**Mol%**	**Normalized Mol%**	**MW * Mol %**	**Weight %**
Helium	4.00	0.087%	0.09%	0.003	0.01%
Nitrogen	28.01	1.861%	1.86%	0.520	1.25%
CO2	44.01	88.721%	88.54%	38.966	93.73%
O2	16.00	0.017%	0.02%	0.003	0.01%
H2S	34.08	0.500%	0.50%	0.170	0.41%
Methane	16.04	5.926%	5.91%	0.949	2.28%
Ethane	30.07	2.876%	2.87%	0.863	2.08%
Propane	44.10	0.185%	0.18%	0.081	0.20%
i-Butane	58.12	0.009%	0.01%	0.005	0.01%
n-Butane	58.12	0.023%	0.02%	0.013	0.03%
i-Pentane	72.15	0.000%	0.00%	0.000	0.00%
n-Pentane	72.15	0.000%	0.00%	0.000	0.00%
C6+_x1	86.18	0.000%	0.00%	0.000	0.00%
n-Hexane	86.18	0.000%	0.00%	0.000	0.00%
Benzene	78.11	0.000%	0.00%	0.000	0.00%
Toluene	92.14	0.000%	0.00%	0.000	0.00%
Ethylbenzene	106.17	0.000%	0.00%	0.000	0.00%
m-Xylene	106.16	0.000%	0.00%	0.000	0.00%
Drizo C6+_x1	106.16	0.000%	0.00%	0.000	0.00%
Water	18.02	0.000%	0.00%	0.000	0.00%
Triethylene Glycol	150.17	0.000%	0.00%	0.000	0.00%
Total		100.20%	100%	41.57	100%

NMEHC (VOC)	*0.22%*
Gas Heating Value (Btu/scf)	*118.34*
Maximum Hourly Flow (scf/hour)	*250,000*
Maximum Hourly Heat Input (MMBtu/hr)	*29.58*
Maximum Annual Flow (MMscf/year)	*1.00*
Maximum Annual Heat Input (MMBtu/yr)	*118.34*

2nd/3rd Stage Suction Gas

	NOx	**CO**	**VOC**	**H_2S**	**SO_2**	**Units**	
	0.0641	0.5496				lb/MMBtu	**TNRCC RG-109**
			0.217%	0.41%		Wt%	Maximum Composition
	1.9	16.3				lb/hr	lb/MMBtu * MMBtu/hr
			58.60	110.3		lb/hr	Uncontrolled emissions
			0.12	0.2		tpy	Uncontrolled emissions
	1.90	16.26	1.17	2.21	207.39	lb/hr	98% combustion H_2S and VOC; 100% to SO_2
	0.00	0.03	0.00	0.00	0.41	tpy	
Safety Factor	0.00%	0.00%	0.00%	0.00%	0.00%		
Emissions	**1.90**	**16.26**	**1.17**	**2.21**	**207.39**	**lb/hr**	
	0.00	**0.03**	**0.00**	**0.00**	**0.41**	**tpy**	

2nd/3rd Stage Suction HAP Emissions

Component	**Max Composition**	**Uncontrolled Emissions**		**Controlled Emissions**		**Safety Factor**	**Controlled Emissions w/ Safety Factor**	
	Wt %	(lb/hr)	(tpy)	(lb/hr)	(tpy)		(lb/hr)	(tpy)
n-Hexane	0.000%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
Benzene	0.000%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
Toluene	0.000%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
Ethylbenzene	0.000%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
Xylenes	0.000%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
Total				**0.00**	**0.00**		**0.00**	**0.00**

Morningstar Operating LLC.
Buckeye CO2 Plant
Flare Emissions Calculations

* Emissions shown here are a result of Propane Recovery Column (PRC) gases routed to the flare during SSM activities. The analysis was conservatively normalized to 0.5% H2S by volume.

Flare Calculator

Gas Composition

		PRC			
Component	**MW**	**Mol%**	**Normalized Mol%**	**MW * Mol %**	**Weight %**
Helium	4.00	0.083%	0.08%	0.003	0.01%
Nitrogen	28.01	1.774%	1.77%	0.496	1.18%
CO2	44.01	86.213%	86.11%	37.896	90.05%
O2	16.00	0.016%	0.02%	0.003	0.01%
H2S	34.08	0.500%	0.50%	0.170	0.40%
Methane	16.04	5.661%	5.65%	0.907	2.16%
Ethane	30.07	2.892%	2.89%	0.869	2.06%
Propane	44.10	1.336%	1.33%	0.588	1.40%
i-Butane	58.12	0.202%	0.20%	0.117	0.28%
n-Butane	58.12	0.573%	0.57%	0.332	0.79%
i-Pentane	72.15	0.195%	0.19%	0.141	0.33%
n-Pentane	72.15	0.204%	0.20%	0.147	0.35%
C6+_x1	86.18	0.340%	0.34%	0.293	0.70%
n-Hexane	86.18	0.066%	0.07%	0.057	0.13%
Benzene	78.11	0.022%	0.02%	0.018	0.04%
Toluene	92.14	0.020%	0.02%	0.018	0.04%
Ethylbenzene	106.17	0.003%	0.00%	0.004	0.01%
m-Xylene	106.16	0.003%	0.00%	0.003	0.01%
Drizo C6+_x1	106.16	0.020%	0.02%	0.021	0.05%
Water	18.02	0.001%	0.00%	0.000	0.00%
Triethylene Glycol	150.17	0.000%	0.00%	0.000	0.00%
Total		100.12%	100%	42.08	100%

NMEHC (VOC)	*2.98%*
Gas Heating Value (Btu/scf)	*209.57*
Maximum Hourly Flow (scf/hour)	*400,000*
Maximum Hourly Heat Input (MMBtu/hr)	*83.83*
Maximum Annual Flow (MMscf/year)	*5.00*
Maximum Annual Heat Input (MMBtu/yr)	*1047.83*

PRC

	NOx	**CO**	**VOC**	**H_2S**	**SO_2**	**Units**	
	0.0641	0.5496				lb/MMBtu	**TNRCC RG-109**
			2.983%	0.40%		Wt%	Maximum Composition
	5.4	46.1				lb/hr	lb/MMBtu * MMBtu/hr
			1303.04	176.6		lb/hr	Uncontrolled emissions
			8.14	1.1		tpy	Uncontrolled emissions
	5.37	46.07	26.06	3.53	332.09	lb/hr	98% combustion H_2S and VOC; 100% to SO_2
	0.03	0.29	0.16	0.02	2.08	tpy	
Safety Factor	0.00%	0.00%	0.00%	0.00%	0.00%		
Emissions	**5.37**	**46.07**	**26.06**	**3.53**	**332.09**	**lb/hr**	
	0.03	**0.29**	**0.16**	**0.02**	**2.08**	**tpy**	

PRC HAP Emissions

Component	**Max Composition**	**Uncontrolled Emissions**		**Controlled Emissions**		**Safety Factor**	**Controlled Emissions w/ Safety Factor**	
	Wt %	(lb/hr)	(tpy)	(lb/hr)	(tpy)		(lb/hr)	(tpy)
n-Hexane	0.066%	58.91	0.37	1.18	0.01	0.00%	1.18	0.01
Benzene	0.022%	18.20	0.11	0.36	0.00	0.00%	0.36	0.00
Toluene	0.020%	18.92	0.12	0.38	0.00	0.00%	0.38	0.00
Ethylbenzene	0.003%	3.75	0.02	0.08	0.00	0.00%	0.08	0.00
Xylenes	0.003%	2.92	0.02	0.06	0.00	0.00%	0.06	0.00
Total				**2.05**	**0.01**		**2.05**	**0.01**

Morningstar Operating LLC.
Buckeye CO2 Plant
Flare Emissions Calculations

* Emissions shown here are a result of NGL vapor from treaters routed to the flare during SSM activities.The analysis was conservatively normalized to 0.1% H2S by volume.

Flare Calculator

Gas Composition

		NGL			
Component	**MW**	**Mol%**	**Normalized Mol%**	**MW * Mol %**	**Weight %**
Helium	4.00	0.000%	0.00%	0.000	0.00%
Nitrogen	28.01	0.000%	0.00%	0.000	0.00%
CO2	44.01	0.000%	0.00%	0.000	0.00%
O2	16.00	0.000%	0.00%	0.000	0.00%
H2S	34.08	0.100%	0.10%	0.034	0.04%
Methane	16.04	0.000%	0.00%	0.000	0.00%
Ethane	30.07	0.000%	0.00%	0.000	0.00%
Propane	44.10	0.230%	0.23%	0.101	0.13%
i-Butane	58.12	1.741%	1.74%	1.011	1.31%
n-Butane	58.12	14.548%	14.53%	8.447	10.92%
i-Pentane	72.15	15.532%	15.52%	11.195	14.48%
n-Pentane	72.15	17.583%	17.57%	12.673	16.39%
C6+_x1	86.18	36.405%	36.37%	31.343	40.53%
n-Hexane	86.18	6.777%	6.77%	5.835	7.55%
Benzene	78.11	2.267%	2.26%	1.769	2.29%
Toluene	92.14	2.098%	2.10%	1.931	2.50%
Ethylbenzene	106.17	0.363%	0.36%	0.385	0.50%
m-Xylene	106.16	0.282%	0.28%	0.299	0.39%
Drizo C6+_x1	106.16	2.174%	2.17%	2.306	2.98%
Water	18.02	0.000%	0.00%	0.000	0.00%
Triethylene Glycol	150.17	0.000%	0.00%	0.000	0.00%
Total		100.10%	100%	77.33	100%

NMEHC (VOC)	*100.00%*
Gas Heating Value (Btu/scf)	*4412.65*
Maximum Hourly Flow (scf/hour)	*250,000*
Maximum Hourly Heat Input (MMBtu/hr)	*1103.16*
Maximum Annual Flow (MMscf/year)	*1.00*
Maximum Annual Heat Input (MMBtu/yr)	*4412.65*

NGL

	NOx	**CO**	**VOC**	**H_2S**	**SO_2**	**Units**	
	0.138	0.2755				lb/MMBtu	**TNRCC RG-109**
			100.000%	0.04%		Wt%	Maximum Composition
	152.2	303.9				lb/hr	lb/MMBtu * MMBtu/hr
			50160.96	22.1		lb/hr	Uncontrolled emissions
			100.32	0.0		tpy	Uncontrolled emissions
	152.24	303.92	1003.22	0.44	41.52	lb/hr	98% combustion H_2S and VOC; 100% to SO_2
	0.30	0.61	2.01	0.00	0.08	tpy	
Safety Factor	0.00%	0.00%	0.00%	0.00%	0.00%		
Emissions	**152.24**	**303.92**	**1003.22**	**0.44**	**41.52**	**lb/hr**	
	0.30	**0.61**	**2.01**	**0.00**	**0.08**	**tpy**	

NGL HAP Emissions

Component	**Max Composition**	**Uncontrolled Emissions**		**Controlled Emissions**		**Safety Factor**	**Controlled Emissions w/ Safety Factor**	
	Wt %	(lb/hr)	(tpy)	(lb/hr)	(tpy)		(lb/hr)	(tpy)
n-Hexane	6.777%	3784.71	7.57	75.69	0.15	0.00%	75.69	0.15
Benzene	2.267%	1147.52	2.30	22.95	0.05	0.00%	22.95	0.05
Toluene	2.098%	1252.77	2.51	25.06	0.05	0.00%	25.06	0.05
Ethylbenzene	0.363%	249.61	0.50	4.99	0.01	0.00%	4.99	0.01
Xylenes	0.282%	193.79	0.39	3.88	0.01	0.00%	3.88	0.01
Total				**132.57**	**0.27**		**132.57**	**0.27**

Morningstar Operating LLC.
Buckeye CO2 Plant
Flare Emissions Calculations

* Emissions shown here are a result of propane gasbeing blown down from the propane recovery process and routed to the flare during SSM activities.

Flare Calculator

Gas Composition

		Propane			
Component	**MW**	**Mol%**	**Normalized Mol%**	**MW * Mol %**	**Weight %**
Helium	4.00	0.000%	0.00%	0.000	0.00%
Nitrogen	28.01	0.000%	0.00%	0.000	0.00%
CO2	44.01	0.000%	0.00%	0.000	0.00%
O2	16.00	0.000%	0.00%	0.000	0.00%
H2S	34.08	0.000%	0.00%	0.000	0.00%
Methane	16.04	0.000%	0.00%	0.000	0.00%
Ethane	30.07	0.070%	0.07%	0.021	0.05%
Propane	44.10	99.930%	99.93%	44.066	99.95%
i-Butane	58.12	0.000%	0.00%	0.000	0.00%
n-Butane	58.12	0.000%	0.00%	0.000	0.00%
i-Pentane	72.15	0.000%	0.00%	0.000	0.00%
n-Pentane	72.15	0.000%	0.00%	0.000	0.00%
C6+_x1	86.18	0.000%	0.00%	0.000	0.00%
n-Hexane	86.18	0.000%	0.00%	0.000	0.00%
Benzene	78.11	0.000%	0.00%	0.000	0.00%
Toluene	92.14	0.000%	0.00%	0.000	0.00%
Ethylbenzene	106.17	0.000%	0.00%	0.000	0.00%
m-Xylene	106.16	0.000%	0.00%	0.000	0.00%
Drizo C6+_x1	106.16	0.000%	0.00%	0.000	0.00%
Water	18.02	0.000%	0.00%	0.000	0.00%
Triethylene Glycol	150.17	0.000%	0.00%	0.000	0.00%
Total		100.00%	100%	44.09	100%

NMEHC (VOC)	*99.93%*
Gas Heating Value (Btu/scf)	*2572.00*
Maximum Hourly Flow (scf/hour)	*300,000*
Maximum Hourly Heat Input (MMBtu/hr)	*771.60*
Maximum Annual Flow (MMscf/year)	*4.00*
Maximum Annual Heat Input (MMBtu/yr)	*10288.00*

Propane

	NOx	**CO**	**VOC**	**H_2S**	**SO_2**	**Units**	
	0.138	0.2755				lb/MMBtu	**TNRCC RG-109**
			99.930%	0.00%		Wt%	Maximum Composition
	106.5	212.6				lb/hr	lb/MMBtu * MMBtu/hr
			34293.61	0.0		lb/hr	Uncontrolled emissions
			228.62	0.0		tpy	Uncontrolled emissions
	106.48	212.58	685.87	0.00	0.00	lb/hr	98% combustion H_2S and VOC; 100% to SO_2
	0.71	1.42	4.57	0.00	0.00	tpy	
Safety Factor	0.00%	0.00%	0.00%	0.00%	0.00%		
Emissions	**106.48**	**212.58**	**685.87**	**0.00**	**0.00**	**lb/hr**	
	0.71	**1.42**	**4.57**	**0.00**	**0.00**	**tpy**	

Propane HAP Emissions

Component	**Max Composition**	**Uncontrolled Emissions**		**Controlled Emissions**		**Safety Factor**	**Controlled Emissions w/ Safety Factor**	
	Wt %	(lb/hr)	(tpy)	(lb/hr)	(tpy)		(lb/hr)	(tpy)
n-Hexane	0.000%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
Benzene	0.000%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
Toluene	0.000%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
Ethylbenzene	0.000%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
Xylenes	0.000%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
Total				**0.00**	**0.00**		**0.00**	**0.00**

Morningstar Operating LLC.
Buckeye CO2 Plant
Flare Emissions Calculations

* Emissions shown here are a result of fuel gas routed to the flare during SSM activities.

Flare Calculator

Gas Composition

		Fuel Gas			
Component	**MW**	**Mol%**	**Normalized Mol%**	**MW * Mol %**	**Weight %**
Helium	4.00	0.002%	0.00%	0.000	0.00%
Nitrogen	28.01	2.640%	2.64%	0.740	4.39%
CO2	44.01	0.000%	0.00%	0.000	0.00%
O2	16.00	0.000%	0.00%	0.000	0.00%
H2S	34.08	0.000%	0.00%	0.000	0.00%
Methane	16.04	93.914%	93.91%	15.066	89.40%
Ethane	30.07	3.398%	3.40%	1.022	6.06%
Propane	44.10	0.039%	0.04%	0.017	0.10%
i-Butane	58.12	0.000%	0.00%	0.000	0.00%
n-Butane	58.12	0.000%	0.00%	0.000	0.00%
i-Pentane	72.15	0.000%	0.00%	0.000	0.00%
n-Pentane	72.15	0.000%	0.00%	0.000	0.00%
C6+_x1	86.18	0.009%	0.01%	0.008	0.05%
n-Hexane	86.18	0.000%	0.00%	0.000	0.00%
Benzene	78.11	0.000%	0.00%	0.000	0.00%
Toluene	92.14	0.000%	0.00%	0.000	0.00%
Ethylbenzene	106.17	0.000%	0.00%	0.000	0.00%
m-Xylene	106.16	0.000%	0.00%	0.000	0.00%
Drizo C6+_x1	106.16	0.000%	0.00%	0.000	0.00%
Water	18.02	0.000%	0.00%	0.000	0.00%
Triethylene Glycol	150.17	0.000%	0.00%	0.000	0.00%
Total		100.00%	100%	16.85	100%

NMEHC (VOC)	*0.05%*
Gas Heating Value (Btu/scf)	*1146.90*
Maximum Hourly Flow (scf/hour)	*150,000*
Maximum Hourly Heat Input (MMBtu/hr)	*172.03*
Maximum Annual Flow (MMscf/year)	*1.00*
Maximum Annual Heat Input (MMBtu/yr)	*1146.90*

Fuel Gas

	NOx	**CO**	**VOC**	**H_2S**	**SO_2**	**Units**	
	0.138	0.5496				lb/MMBtu	**TNRCC RG-109 (Max conservative - close to 1000 Btu/scf)**
			0.048%	0.00%		Wt%	Maximum Composition
	23.7	94.6				lb/hr	lb/MMBtu * MMBtu/hr
			3.15	0.0		lb/hr	Uncontrolled emissions
			0.01	0.0		tpy	Uncontrolled emissions
	23.74	94.55	0.06	0.00	0.00	lb/hr	98% combustion H_2S and VOC; 100% to SO_2
	0.08	0.32	0.00	0.00	0.00	tpy	Based on 1 MMscf/yr
Safety Factor	0.00%	0.00%	0.00%	0.00%	0.00%		
Emissions	**23.74**	**94.55**	**0.06**	**0.00**	**0.00**	**lb/hr**	
	0.08	**0.32**	**0.00**	**0.00**	**0.00**	**tpy**	

Fuel Gas HAP Emissions

Component	**Max Composition**	**Uncontrolled Emissions**		**Controlled Emissions**		**Safety Factor**	**Controlled Emissions w/ Safety Factor**	
	Wt %	(lb/hr)	(tpy)	(lb/hr)	(tpy)		(lb/hr)	(tpy)
n-Hexane	0.000%	0.00	0.00	0.00	0.00	20.00%	0.00	0.00
Benzene	0.000%	0.00	0.00	0.00	0.00	20.00%	0.00	0.00
Toluene	0.000%	0.00	0.00	0.00	0.00	20.00%	0.00	0.00
Ethylbenzene	0.000%	0.00	0.00	0.00	0.00	20.00%	0.00	0.00
Xylenes	0.000%	0.00	0.00	0.00	0.00	20.00%	0.00	0.00
Total				**0.00**	**0.00**		**0.00**	**0.00**

Section 6.a

Green House Gas Emissions

(Submitting under 20.2.70, 20.2.72 20.2.74 NMAC)

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

Calculating GHG Emissions:

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

Sources for Calculating GHG Emissions:

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

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

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

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

Section 7

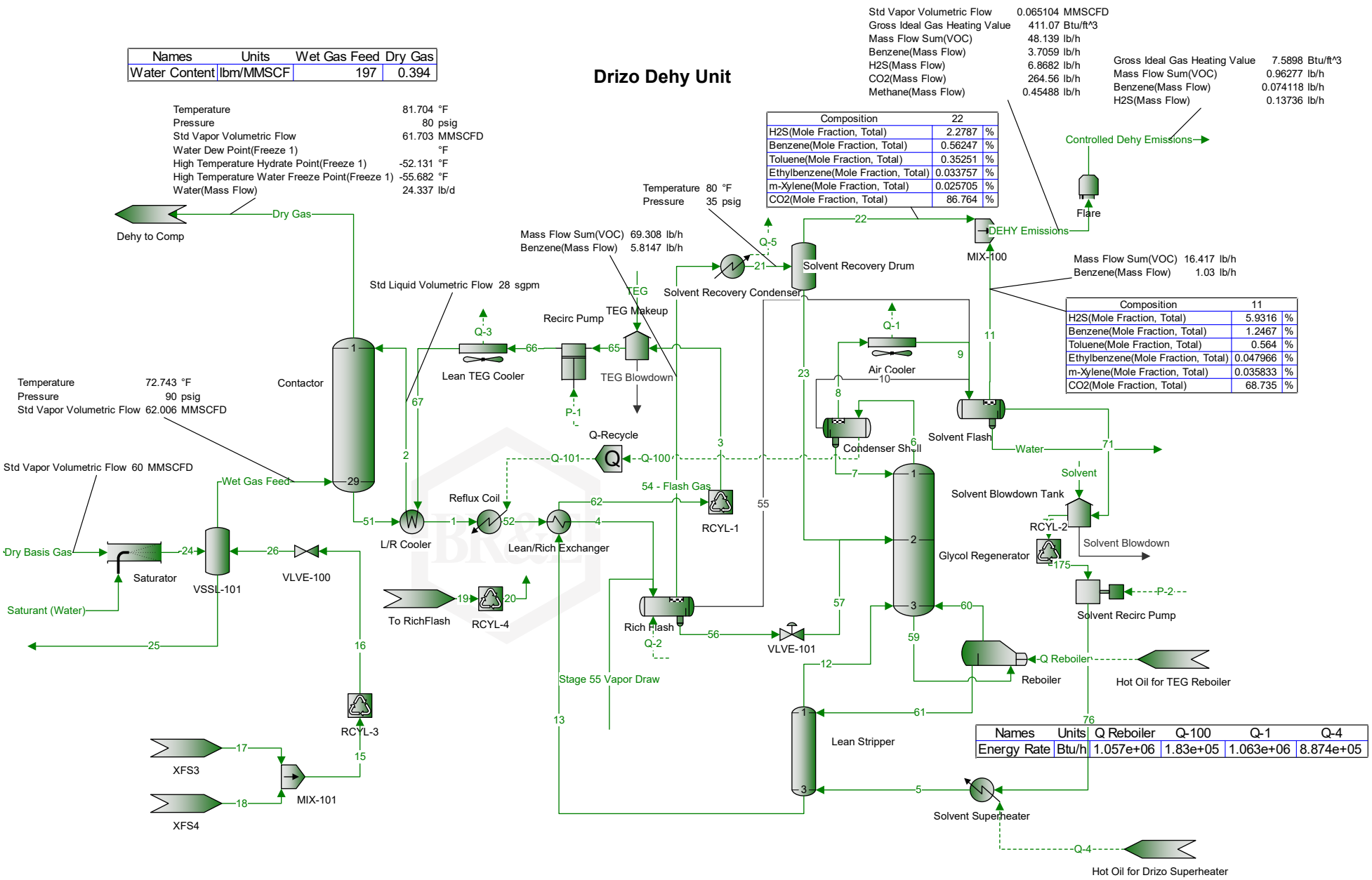
Information Used to Determine Emissions

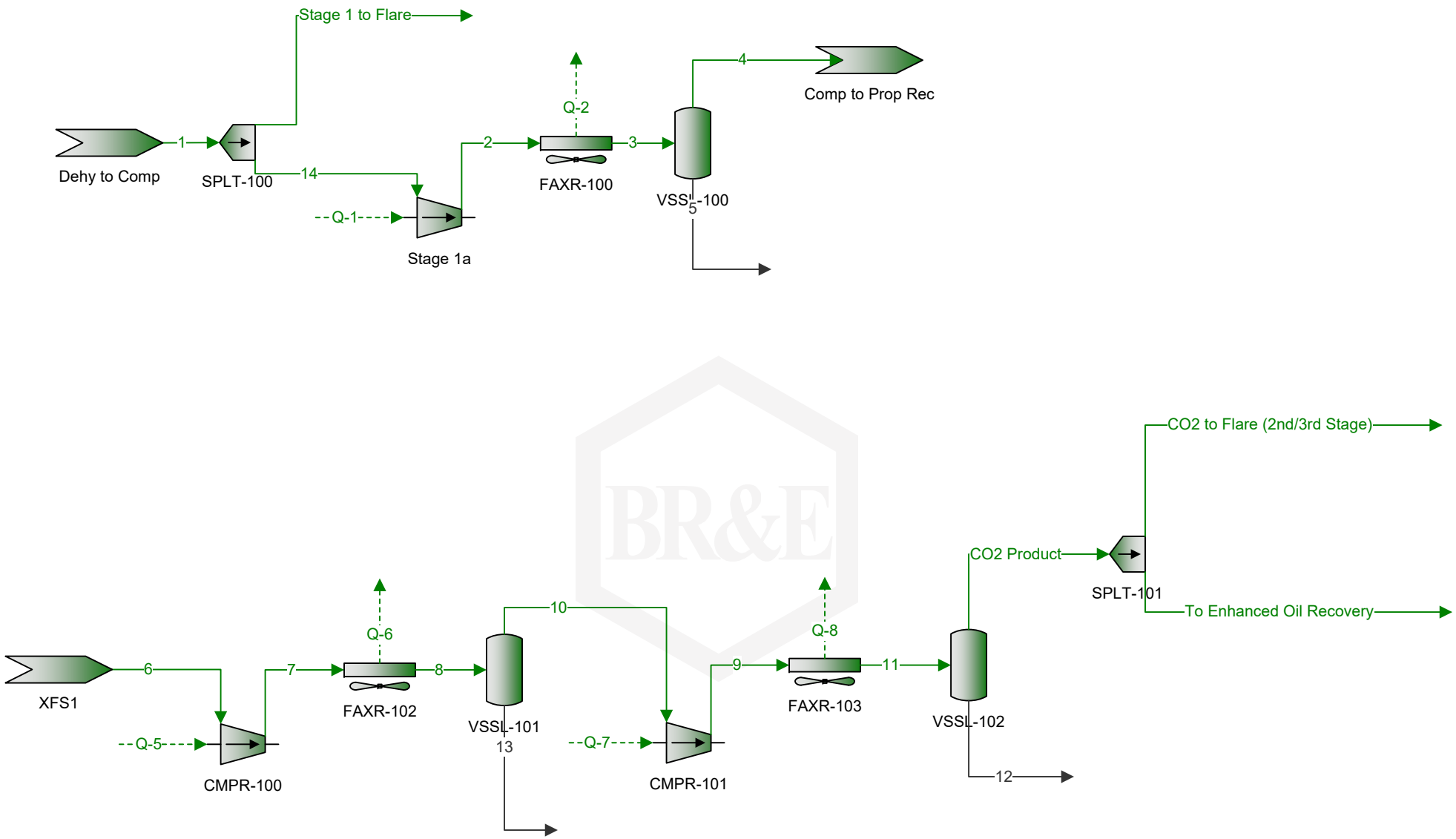
Information Used to Determine Emissions shall include the following:

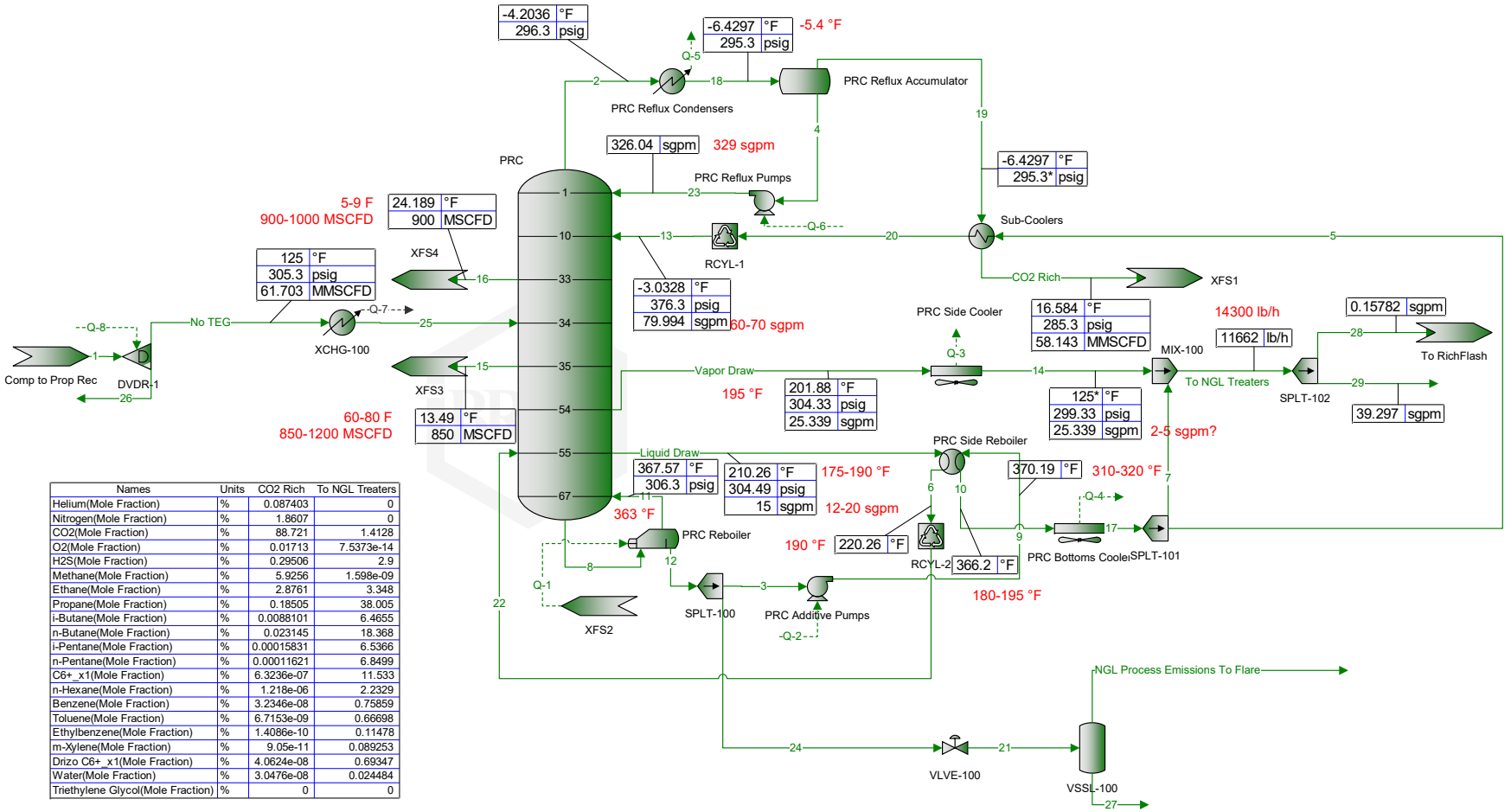
- ☒ If manufacturer data are used, include specifications for emissions units and control equipment, including control efficiencies specifications and sufficient engineering data for verification of control equipment operation, including design drawings, test reports, and design parameters that affect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

Backup documentation is provided.

Drizo Dehy Unit



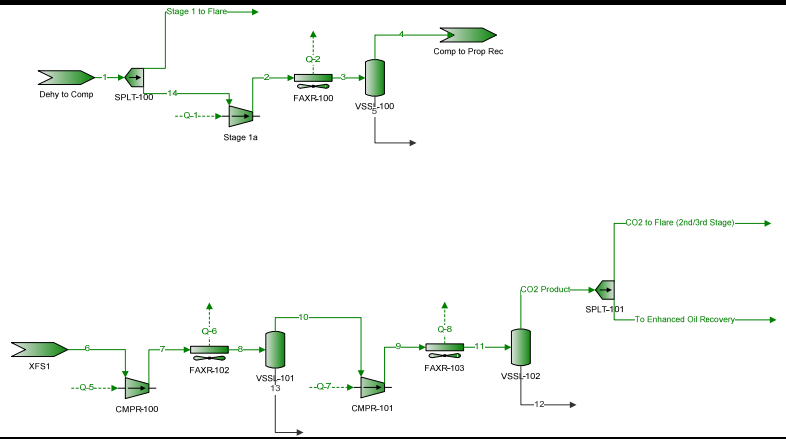

Stage 1 to Flare
Dehy to Comp
1
SPLT-100
14
Q-1
Stage 1a
2
Q-2
FAXR-100
3
VSSL-100
4
Comp to Prop Rec
5
CO2 to Flare (2nd/3rd Stage)
CO2 Product
SPLT-101
To Enhanced Oil Recovery
XFS1
6
Q-5
CMPR-100
7
Q-6
FAXR-102
8
VSSL-101
13
10
Q-7
CMPR-101
9
Q-8
FAXR-103
11
VSSL-102
12



Names	Units	CO2 Rich	To NGL Treaters
Helium(Mole Fraction)	%	0.087403	0
Nitrogen(Mole Fraction)	%	1.8607	0
CO2(Mole Fraction)	%	88.721	1.4128
O2(Mole Fraction)	%	0.01713	7.5373e-14
H2S(Mole Fraction)	%	0.29506	2.9
Methane(Mole Fraction)	%	5.9256	1.598e-09
Ethane(Mole Fraction)	%	2.8761	3.348
Propane(Mole Fraction)	%	0.18505	38.005
i-Butane(Mole Fraction)	%	0.0088101	6.4655
n-Butane(Mole Fraction)	%	0.023145	18.368
i-Pentane(Mole Fraction)	%	0.00015831	6.5366
n-Pentane(Mole Fraction)	%	0.00011621	6.8499
C6+_x1(Mole Fraction)	%	6.3236e-07	11.533
n-Hexane(Mole Fraction)	%	1.218e-06	2.2329
Benzene(Mole Fraction)	%	3.2346e-08	0.75859
Toluene(Mole Fraction)	%	6.7153e-09	0.66698
Ethylbenzene(Mole Fraction)	%	1.4086e-10	0.11478
m-Xylene(Mole Fraction)	%	9.05e-11	0.089253
Drizo C6+_x1(Mole Fraction)	%	4.0624e-08	0.69347
Water(Mole Fraction)	%	3.0476e-08	0.024484
Triethylene Glycol(Mole Fraction)	%	0	0

Compression
Plant Schematic

Client Name:	MSO	Job:
Location:	CO2 Plant	
Flowsheet:	Compression	



Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	MSO	Job:	
Location:	CO2 Plant		
Flowsheet:	Compression		

Connections

	CO2 to Flare (2nd/3rd Stage)	Stage 1 to Flare	To Enhanced Oil Recovery	1	
From Block	SPLT-101	SPLT-100	SPLT-101	Dehy to Comp	
To Block	--	--	--	SPLT-100	

Stream Composition

Mole Fraction	CO2 to Flare (2nd/3rd Stage) %	Stage 1 to Flare %	To Enhanced Oil Recovery %	1 %	
Helium	0.0874031	0.0832739	0.0874031	0.0832739	
Nitrogen	1.86068	1.77416	1.86068	1.77416	
CO2	88.7208	86.2131	88.7208	86.2131	
O2	0.01713	0.0163474	0.01713	0.0163474	
H2S	0.295061	0.376296	0.295061	0.376296	
Methane	5.92562	5.66051	5.92562	5.66051	
Ethane	2.87608	2.89202	2.87608	2.89202	
Propane	0.185048	1.33552	0.185048	1.33552	
i-Butane	0.00881009	0.201798	0.00881009	0.201798	
n-Butane	0.0231453	0.572544	0.0231453	0.572544	
i-Pentane	0.000158314	0.195116	0.000158314	0.195116	
n-Pentane	0.000116209	0.203939	0.000116209	0.203939	
C6+_x1	6.3236E-07	0.340089	6.3236E-07	0.340089	
n-Hexane	1.21805E-06	0.0659439	1.21805E-06	0.0659439	
Benzene	3.23465E-08	0.022476	3.23465E-08	0.022476	
Toluene	6.71525E-09	0.0198044	6.71525E-09	0.0198044	
Ethylbenzene	1.40859E-10	0.00340888	1.40859E-10	0.00340888	
m-Xylene	9.04998E-11	0.0026509	9.04998E-11	0.0026509	
Drizo C6+_x1	4.06237E-08	0.0201215	4.06237E-08	0.0201215	
Water	3.04761E-08	0.000830821	3.04761E-08	0.000830821	
Triethylene Glycol	0	1.54883E-05	0	1.54883E-05	

Mass Fraction	CO2 to Flare (2nd/3rd Stage) %	Stage 1 to Flare %	To Enhanced Oil Recovery %	1 %	
Helium	0.0084112	0.00791177	0.0084112	0.00791177	
Nitrogen	1.25321	1.17972	1.25321	1.17972	
CO2	93.8773	90.0621	93.8773	90.0621	
O2	0.013179	0.0124167	0.013179	0.0124167	
H2S	0.241775	0.304412	0.241775	0.304412	
Methane	2.28556	2.1555	2.28556	2.1555	
Ethane	2.07926	2.06415	2.07926	2.06415	
Propane	0.196186	1.39788	0.196186	1.39788	
i-Butane	0.0123115	0.278407	0.0123115	0.278407	
n-Butane	0.0323439	0.789901	0.0323439	0.789901	
i-Pentane	0.000274624	0.334151	0.000274624	0.334151	
n-Pentane	0.000201584	0.349263	0.000201584	0.349263	
C6+_x1	1.4769E-06	0.784173	1.4769E-06	0.784173	
n-Hexane	2.52369E-06	0.13489	2.52369E-06	0.13489	
Benzene	6.07481E-08	0.0416733	6.07481E-08	0.0416733	
Toluene	1.48762E-08	0.0433137	1.48762E-08	0.0433137	
Ethylbenzene	3.59547E-10	0.00859043	3.59547E-10	0.00859043	
m-Xylene	2.31003E-10	0.00668032	2.31003E-10	0.00668032	
Drizo C6+_x1	9.09714E-08	0.0444855	9.09714E-08	0.0444855	
Water	1.32004E-08	0.00035528	1.32004E-08	0.00035528	
Triethylene Glycol	0	5.521E-05	0	5.521E-05	

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	MSO	Job:	
Location:	CO2 Plant		
Flowsheet:	Compression		

Mass Flow	CO2 to Flare (2nd/3rd Stage) lb/h	Stage 1 to Flare lb/h	To Enhanced Oil Recovery lb/h	1 lb/h	
Helium	22.3336	22.5815	22.3336	22.5815	
Nitrogen	3327.56	3367.12	3327.56	3367.12	
CO2	249265	257052	249265	257052	
O2	34.993	35.4392	34.993	35.4392	
H2S	641.965	868.841	641.965	868.841	
Methane	6068.67	6152.15	6068.67	6152.15	
Ethane	5520.89	5891.43	5520.89	5891.43	
Propane	520.916	3989.77	520.916	3989.77	
i-Butane	32.6897	794.619	32.6897	794.619	
n-Butane	85.8802	2254.51	85.8802	2254.51	
i-Pentane	0.729186	953.721	0.729186	953.721	
n-Pentane	0.535249	996.852	0.535249	996.852	
C6+_x1	0.0039215	2238.16	0.0039215	2238.16	
n-Hexane	0.00670095	384.998	0.00670095	384.998	
Benzene	0.000161299	118.942	0.000161299	118.942	
Toluene	3.94995E-05	123.624	3.94995E-05	123.624	
Ethylbenzene	9.54675E-07	24.5185	9.54675E-07	24.5185	
m-Xylene	6.13363E-07	19.0667	6.13363E-07	19.0667	
Drizo C6+_x1	0.000241549	126.969	0.000241549	126.969	
Water	3.50501E-05	1.01403	3.50501E-05	1.01403	
Triethylene Glycol	0	0.157578	0	0.157578	

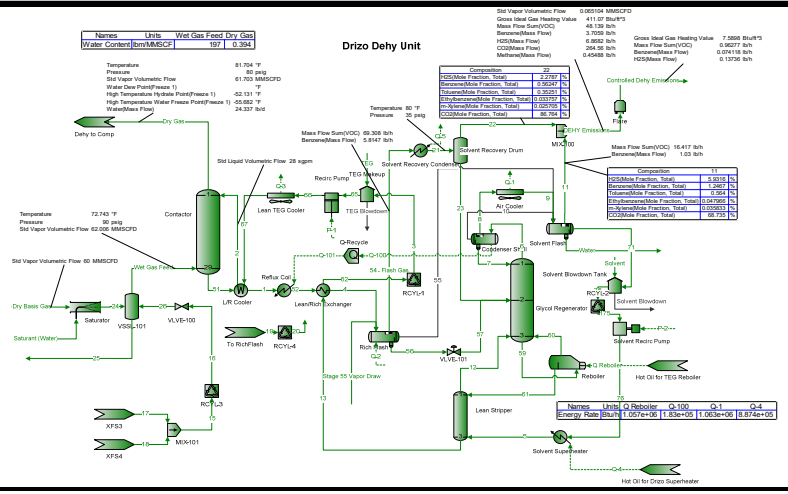
Stream Properties

Property	Units	CO2 to Flare (2nd/3rd Stage)	Stage 1 to Flare	To Enhanced Oil Recovery	1	
Temperature	°F	125	81.7044	125	81.7044	
Pressure	psia	1856.58	93.28	1856.58	93.28	
Molecular Weight	lb/lbmol	41.5921	42.1287	41.5921	42.1287	
Mass Flow	lb/h	265522	285416	265522	285416	
Std Vapor Volumetric Flow	MMSCFD	58.1425	61.7029	58.1425	61.7029	
Std Liquid Volumetric Flow	sgpm	693.958	754.744	693.958	754.744	
Net Ideal Gas Heating Value	Btu/ft^3	107.438	191.887	107.438	191.887	
Gross Ideal Gas Heating Value	Btu/ft^3	118.335	209.566	118.335	209.566	

Remarks

Dehydration
Plant Schematic

Client Name:	MSO	Job:
Location:	CO2 Plant	
Flowsheet:	Dehydration	



* User Specified Values
? Extrapolated or Approximate Values

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	MSO	Job:	
Location:	CO2 Plant		
Flowsheet:	Dehydration		

Connections

	DEHY Emissions	Dry Gas	Wet Gas Feed	8	54 - Flash Gas
From Block	MIX-100	Contactor	VSSL-101	Condenser Shell	Rich Flash
To Block	Flare	Dehy to Comp	Contactor	Air Cooler	Solvent Recovery Condenser

Stream Composition

Mole Fraction	DEHY Emissions %	Dry Gas %	Wet Gas Feed %	8 %	54 - Flash Gas %
Helium	0.00253918	0.0832739	0.0828697	9.50922E-06	0.00204287
Nitrogen	0.0253483	1.77416	1.76551	4.20574E-05	0.0207516
CO2	84.0959	86.2131	85.879	1.68051	61.4962
O2	0.000247453	0.0163474	0.0162678	4.36396E-07	0.000202565
H2S	2.81923	0.376296	0.376365	0.221241	1.62676
Methane	0.396666	5.66051	5.63326	0.00169039	0.318861
Ethane	1.33139	2.89202	2.8788	0.019719	1.02833
Propane	3.01518	1.33552	1.32989	0.154761	2.23074
i-Butane	0.267826	0.201798	0.201004	0.0347483	0.19529
n-Butane	0.990883	0.572544	0.570593	0.223837	0.708868
i-Pentane	0.452966	0.195116	0.194632	0.310491	0.331603
n-Pentane	0.562827	0.203939	0.203524	0.544214	0.42445
C6+_x1	1.7619	0.340089	0.340251	10.9854	3.222
n-Hexane	0.220984	0.0659439	0.0658487	0.567502	0.232609
Benzene	0.66371	0.022476	0.0230477	2.63509	0.863557
Toluene	0.383808	0.0198044	0.0201015	4.01928	1.17756
Ethylbenzene	0.0358593	0.00340888	0.0034292	0.953466	0.272728
m-Xylene	0.0272038	0.0026509	0.00266602	0.774751	0.218147
Drizo C6+_x1	1.18027	0.0201215	9.13702E-05	28.9793	0.00118004
Water	1.76521	0.000830821	0.412834	47.8938	25.3794
Triethylene Glycol	5.96083E-08	1.54883E-05	0	0.000133647	0.248641

Mass Fraction	DEHY Emissions %	Dry Gas %	Wet Gas Feed %	8 %	54 - Flash Gas %
Helium	0.000223396	0.00791177	0.00789325	6.79275E-07	0.000201413
Nitrogen	0.0156083	1.17972	1.17694	2.10265E-05	0.0143193
CO2	81.3508	90.0621	89.9397	1.31991	66.6651
O2	0.000174047	0.0124167	0.0123874	2.49214E-07	0.000159662
H2S	2.11194	0.304412	0.305237	0.134566	1.36564
Methane	0.139874	2.1555	2.15055	0.000483967	0.126002
Ethane	0.879967	2.06415	2.05991	0.0105819	0.761648
Propane	2.92246	1.39788	1.3955	0.121791	2.42297
i-Butane	0.342164	0.278407	0.278012	0.036044	0.279593
n-Butane	1.26592	0.789901	0.7892	0.232184	1.01487
i-Pentane	0.718348	0.334151	0.334165	0.399794	0.58932
n-Pentane	0.892574	0.349263	0.349432	0.70074	0.754327
C6+_x1	3.76201	0.784173	0.78653	19.0446	7.70952
n-Hexane	0.418586	0.13489	0.135036	0.872788	0.493756
Benzene	1.13956	0.0416733	0.0428412	3.67342	1.66154
Toluene	0.777312	0.0433137	0.0440744	6.60917	2.67256
Ethylbenzene	0.0836804	0.00859043	0.00866348	1.80653	0.713206
m-Xylene	0.063482	0.00668032	0.00673539	1.46792	0.570472
Drizo C6+_x1	2.41634	0.0444855	0.000202516	48.1706	0.00270731
Water	0.698999	0.00035528	0.176984	15.3985	11.2623
Triethylene Glycol	1.96761E-07	5.521E-05	0	0.000358188	0.919746

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	MSO	Job:	
Location:	CO2 Plant		
Flowsheet:	Dehydration		

Mass Flow	DEHY Emissions lb/h	Dry Gas lb/h	Wet Gas Feed lb/h	8 lb/h	54 - Flash Gas lb/h
Helium	0.000726502	22.5815	22.5822	2.22767E-05	0.000704859
Nitrogen	0.0507593	3367.12	3367.17	0.000689559	0.0501114
CO2	264.559	257052	257313	43.2864	233.3
O2	0.000566014	35.4392	35.4397	8.17293E-06	0.00055875
H2S	6.8682	868.841	873.269	4.41305	4.77917
Methane	0.454881	6152.15	6152.61	0.0158716	0.440953
Ethane	2.86172	5891.43	5893.31	0.347031	2.66545
Propane	9.50407	3989.77	3992.45	3.99412	8.47938
i-Butane	1.11275	794.619	795.379	1.18206	0.978457
n-Butane	4.11685	2254.51	2257.86	7.61442	3.55162
i-Pentane	2.33612	953.721	956.028	13.1112	2.06237
n-Pentane	2.90272	996.852	999.707	22.9806	2.63983
C6+_x1	12.2343	2238.16	2250.22	624.565	26.9801
n-Hexane	1.36127	384.998	386.33	28.6229	1.72794
Benzene	3.70592	118.942	122.567	120.469	5.8147
Toluene	2.52788	123.624	126.095	216.746	9.35285
Ethylbenzene	0.272135	24.5185	24.7858	59.2447	2.49592
m-Xylene	0.206448	19.0667	19.2696	48.1401	1.99641
Drizo C6+_x1	7.85812	126.969	0.579387	1579.74	0.00947443
Water	2.2732	1.01403	506.343	504.991	39.4133
Triethylene Glycol	6.39882E-07	0.157578	0	0.0117467	3.21872

Stream Properties

Property	Units	DEHY Emissions	Dry Gas	Wet Gas Feed	8	54 - Flash Gas
Temperature	°F	77.7452	81.7044	72.7433	179.207	310 *
Pressure	psia	14.98	93.28	103.28	15.28	53.28 *
Molecular Weight	lb/lbmol	45.4946	42.1287	42.0225	56.0327	40.5972
Mass Flow	lb/h	325.208	285416	286095	3279.48	349.958
Std Vapor Volumetric Flow	MMSCFD	0.0651037	61.7029	62.0059	0.53305	0.0785099
Std Liquid Volumetric Flow	sgpm	0.835096	754.744	756.172	8.38684	0.874942
Net Ideal Gas Heating Value	Btu/ft^3	381.177	191.887	190.282	2310.9	418.438
Gross Ideal Gas Heating Value	Btu/ft^3	411.071	209.566	208.036	2492.01	461.023

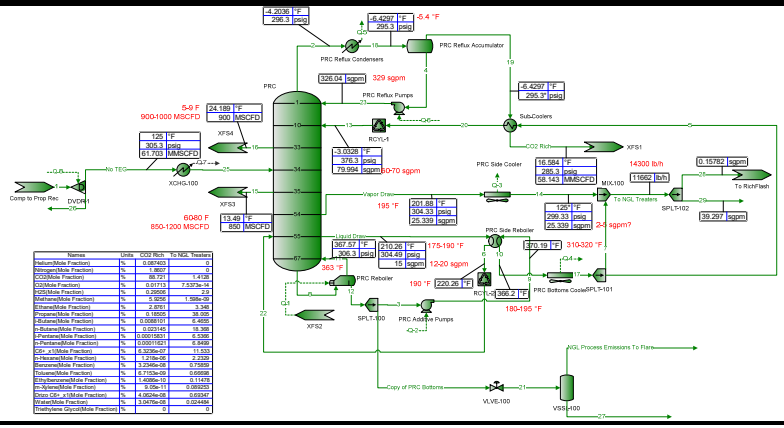
Warnings

ProMax:ProMax!Project!Flowsheets!Dehydration!PStreams!Dry Gas!Analyses!Freeze 1!Properties!Water Dew Point
Error: Water Dew Point calculation failed.

Remarks

Propane Recovery
Plant Schematic

Client Name:	MSO	Job:
Location:	CO2 Plant	
Flowsheet:	Propane Recovery	



Names	Units	CO2 Rich	To NGL Treaters
Helium(Mole Fraction)	%	0.087403	0
Nitrogen(Mole Fraction)	%	1.3607	0
CO2(Mole Fraction)	%	88.721	1.4138
O2(Mole Fraction)	%	0.01713	7.5373e-14
H2S(Mole Fraction)	%	0.29806	2.8
Methane(Mole Fraction)	%	5.9256	1.589e-09
Ethane(Mole Fraction)	%	2.8781	3.346
Propane(Mole Fraction)	%	0.18505	36.005
IBut(Mole Fraction)	%	0.0088101	6.4895
n-Butane(Mole Fraction)	%	0.023145	18.366
I-Pentane(Mole Fraction)	%	0.00015831	6.5366
n-Pentane(Mole Fraction)	%	0.00011621	6.9469
C6+_s1(Mole Fraction)	%	6.3296e-07	11.533
n-Hexane(Mole Fraction)	%	1.218e-06	2.2329
Benzene(Mole Fraction)	%	3.2546e-08	0.73859
Toluene(Mole Fraction)	%	6.7153e-09	0.65898
Ethylbenzene(Mole Fraction)	%	1.4068e-10	0.11478
m-Xylene(Mole Fraction)	%	9.55e-11	0.093253
Cross GH_s1(Mole Fraction)	%	4.0624e-05	0.60047
Water(Mole Fraction)	%	3.0476e-05	0.024484
Triethylene Glycol(Mole Fraction)	%	0	0

* User Specified Values
? Extrapolated or Approximate Values

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	MSO	Job:	
Location:	CO2 Plant		
Flowsheet:	Propane Recovery		

Connections

	Copy of PRC Bottoms	To NGL Treaters			
From Block	SPLT-100	MIX-100			
To Block	VLVE-100	SPLT-102			

Stream Composition

Mole Fraction	Copy of PRC Bottoms %	To NGL Treaters %			
Helium	0	0			
Nitrogen	0	0			
CO2	5.6456E-07	1.41278			
O2	0	7.53727E-14			
H2S	0.000120983	2.89999			
Methane	0	1.598E-09			
Ethane	7.78841E-05	3.348			
Propane	0.227976	38.0055			
i-Butane	1.72762	6.46551			
n-Butane	14.441	18.3679			
i-Pentane	15.4389	6.53664			
n-Pentane	17.4879	6.84993			
C6+_x1	36.6595	11.5334			
n-Hexane	6.76599	2.23288			
Benzene	2.26706	0.758588			
Toluene	2.12639	0.666978			
Ethylbenzene	0.376923	0.114776			
m-Xylene	0.293853	0.0892531			
Drizo C6+_x1	2.18665	0.693468			
Water	7.1106E-08	0.024484			
Triethylene Glycol	0	0			

Mass Fraction	Copy of PRC Bottoms %	To NGL Treaters %			
Helium	0	0			
Nitrogen	0	0			
CO2	3.06079E-07	1.05977			
O2	0	4.1109E-14			
H2S	5.07939E-05	1.6846			
Methane	0	4.36956E-10			
Ethane	2.885E-05	1.71591			
Propane	0.123841	28.5648			
i-Butane	1.237	6.40523			
n-Butane	10.3399	18.1966			
i-Pentane	13.7222	8.03847			
n-Pentane	15.5433	8.42373			
C6+_x1	43.8695	19.0961			
n-Hexane	7.18278	3.27972			
Benzene	2.18151	1.00998			
Toluene	2.41358	1.04747			
Ethylbenzene	0.49296	0.207692			
m-Xylene	0.384317	0.161508			
Drizo C6+_x1	2.50895	1.10091			
Water	1.57807E-08	0.00751818			
Triethylene Glycol	0	0			

Mass Flow	Copy of PRC Bottoms lb/h	To NGL Treaters lb/h			
Helium	0	0			
Nitrogen	0	0			

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	MSO	Job:	
Location:	CO2 Plant		
Flowsheet:	Propane Recovery		

Mass Flow	Copy of PRC Bottoms lb/h	To NGL Treaters lb/h			
CO2	9.69336E-05	123.589			
O2	0	4.79408E-12			
H2S	0.0160861	196.456			
Methane	0	5.09572E-08			
Ethane	0.00913664	200.107			
Propane	39.2196	3331.18			
i-Butane	391.75	746.968			
n-Butane	3274.6	2122.07			
i-Pentane	4345.75	937.434			
n-Pentane	4922.48	982.363			
C6+_x1	13893.2	2226.95			
n-Hexane	2274.74	382.477			
Benzene	690.872	117.782			
Toluene	764.368	122.155			
Ethylbenzene	156.118	24.2208			
m-Xylene	121.711	18.8348			
Drizo C6+_x1	794.571	128.387			
Water	4.99765E-06	0.87676			
Triethylene Glycol	0	0			

Stream Properties

Property	Units	Copy of PRC Bottoms	To NGL Treaters			
Temperature	°F	367.566	127.56			
Pressure	psia	319.584	312.614			
Molecular Weight	lb/lbmol	81.175	58.6692			
Mass Flow	lb/h	31669.4	11661.9			
Std Vapor Volumetric Flow	MMSCFD	3.55323	1.81035			
Std Liquid Volumetric Flow	sgpm	94.1099	39.4551			
Net Ideal Gas Heating Value	Btu/ft^3	4105.69	2953.13			
Gross Ideal Gas Heating Value	Btu/ft^3	4417.18	3193.16			

Remarks

Pantechs Laboratories, Inc. - Order: 90-4450 - Order Date: 4/13/2023
Order Description: Buckeye Plant, Quarterly Collection

SAMPLE ID		COLLECTION DATA	
Operator	MorningStar Operating, LLC	**Pressure**	90 psig
Location	Buckeye Plant	**Sample Temp**	N/A
Site	Inlet	**Atm Temp**	65 F
Site Type	Station	**Collection Date**	04/13/2023
Sample Point	Combined Inlet	**Collection Time**	8:27 AM
Spot/Comp	Spot	**Collection By**	Cody Carson
Meter ID		**Pressure Base**	14.650 psi
Purchaser		**Temperature Base**	60 F
Fluid	Gas	**Container(s)**	PL2261

Onsite Testing by Stain Tube

METHOD	TYPE	MEAS VALUE	MOL%	GRAINS/100	PPMV
GPA2377	H2S	0.30 VOL%	0.3329	211.42	3,361.6

Mol%, Grains/100, PPMV are pressure and temperature corrected to base conditions.

GPA 2286 Gas Extended Fractional Analysis

COMPOUND	FORMULA	MOL%	WT%	GPM
HELIUM	He	0.0845	0.0080	0.0085
NITROGEN	N2	1.7921	1.1922	0.1949
CARBON DIOXIDE	CO2	87.2782	91.2196	14.7271
***OXYGEN+ARGON**	O2+Ar	0.0211	0.0160	0.0019
HYDROGEN SULFIDE	H2S	0.3329	0.2694	0.0445
METHANE	C1	5.4069	2.0599	0.9063
ETHANE	C2	2.6930	1.9230	0.7121
PROPANE	C3	1.0967	1.1485	0.2987
I-BUTANE	iC4	0.1649	0.2276	0.0534
N-BUTANE	nC4	0.4642	0.6407	0.1447
I-PENTANE	iC5	0.1574	0.2697	0.0569
N-PENTANE	nC5	0.1639	0.2808	0.0587
NEO-PENTANE	neC5	0.0001	0.0002	0.0000
HEXANES PLUS	C6+	0.3441	0.7444	0.1364
TOTALS:		**100.0000**	**100.0000**	**17.3441**

Value of "0.0000" interpreted as below detectable limit. Onsite H2S value is used in fractional if performed.
***Oxygen+Argon:** Compounds elute as single peak; additional testing required to distinguish each.*

LIQUID YIELD	C2+	C3+	C4+	C5+	26# Liquid	10# Liquid
GAL/MSCF	1.4609	0.7489	0.4501	0.2520	0.3984	
CALC PROP	**BTU/CF**	**Specific Gr.**	**Z Factor**	**Mol Weight**	**LB/SCF**	**Wobbe IDX**
DRY	182.6	1.4615	0.9944	42.71	0.1127	151.1
WATER SAT.	180.4	1.4475	0.9939	41.96	0.1108	

C6+ ONLY	4,890.8	3.1454		91.10		

Hexanes Plus Detail - Buckeye Plant:Inlet:Combined Inlet:4/13/2023

C6 GROUP	FORMULA	MOL%	WT%
2,2-dimethylbutane	C6H14	0.001032	0.002112
2,3-dimethylbutane+cyclopentane	C6H14	0.019078	0.039044
2-methylpentane	C6H14	0.045521	0.093160
3-methylpentane	C6H14	0.027794	0.056881
benzene	C6H6	0.017423	0.032320
cyclohexane	C6H12	0.033929	0.067812
methylcyclopentane	C6H12	0.034882	0.069717
n-hexane	C6H14	0.048950	0.100178
TOTALS:		**0.228609**	**0.461224**

C7 GROUP	FORMULA	MOL%	WT%
1,1-dimethylcyclopentane+3-methylhexane	C7H16	0.010592	0.025205
2,2-dimethylpentane	C7H16	0.000288	0.000685
2,3-dimethylpentane	C7H16	0.003547	0.008441
2,4-dimethylhexane+ethylcyclopentane	C7H14	0.002170	0.005060
2,4-dimethylpentane	C7H16	0.000134	0.000319
2-methylhexane	C7H16	0.006395	0.015218
3,3-dimethylpentane	C7H16	0.000221	0.000526
cis-1,3-dimethylcyclopentane+3-Ethylpentane	C7H14	0.004496	0.010484
cycloheptane	C7H14	*0.000000*	*0.000000*
methylcyclohexane+2,2-dimethylhexane+2,2,4-trimethylpentane	C7H14	0.018590	0.043347
n-heptane	C7H16	0.014715	0.035016
toluene	C7H8	0.014540	0.031816
trans-1,2-dimethylcyclopentane+cis-1,2-Dimethylcyclopentane	C7H14	0.001159	0.002703
trans-1,3-dimethylcyclopentane	C7H14	0.003580	0.008348
TOTALS:		**0.080427**	**0.187168**

C8 GROUP	FORMULA	MOL%	WT%
1-ethyl-1-methylcyclopentane	C8H16	0.001099	0.002929
2,2,3-trimethylpentane	C8H18	0.001316	0.003570
2,3,4-trimethylpentane	C8H18	0.001134	0.003076
2,3,4-trimethylpentane	C8H18	0.001134	0.003076
2,5-dimethylhexane	C8H18	*0.000000*	*0.000000*
2-methylheptane+4-methylheptane	C8H18	0.005257	0.014261
3,3-dimethylhexane	C8H18	0.000737	0.001999
3-methylheptane	C8H18	0.001331	0.003611
cis-1,2-dimethylcyclohexane	C8H16	0.002921	0.007784
cis-1,3-dimethylcyclohexane	C8H16	0.000782	0.002084

cyclooctane	C8H16	0.000172	0.000458
ethylbenzene	C8H10	0.002954	0.007448
ethylcyclohexane	C8H16	0.001937	0.005162
m-xylene+p-xylene	C8H10	0.001822	0.004594
n-octane	C8H18	0.004411	0.011966
o-xylene	C8H10	0.000632	0.001593
trans-1,3-dimethylcyclohexane	C8H16	0.000122	0.000325
TOTALS:		**0.027761**	**0.073936**

C9 GROUP	FORMULA	MOL%	WT%
1,1,2-trimethylcyclohexane	C9H18	0.000088	0.000264
1,2,3-trimethylbenzene	C9H12	0.000111	0.000317
1,2,4-trimethylbenzene+tert-butylbenzene	C9H12	0.000224	0.000639
1,3,5-trimethylbenzene	C9H12	0.000070	0.000200
2,2,3-trimethylhexane	C9H20	0.000149	0.000454
2,2,4-trimethylhexane	C9H20	0.000176	0.000536
2,2-dimethylheptane	C9H20	0.000125	0.000381
2,3,4-trimethylhexane	C9H20	0.000462	0.001407
2,4,4-trimethylhexane	C9H20	0.000351	0.001069
2,5-dimethylheptane	C9H20	0.000849	0.002586
2-methyloctane	C9H20	0.000069	0.000210
3,4-dimethylheptane	C9H20	0.000157	0.000478
cis,cis-1,2,3-trimethylcyclohexane	C9H18	0.000092	0.000276
isopropylbenzene+1,1,3-trimethylcyclopentane	C9H12	0.000278	0.000794
methylcyclooctane	C9H18	*0.000000*	*0.000000*
m-ethyltoluene+p-ethyltoluene	C9H12	0.000293	0.000836
n-nonane	C9H20	0.000844	0.002571
propylbenzene	C9H12	0.000381	0.001088
propylcyclohexane	C9H18	0.000240	0.000720
r-1,t-2,c-3-trimethylcyclohexane	C9H18	0.000446	0.001337
r-1,t-2,t-4-trimethylcyclohexane	C9H18	0.000102	0.000306
trans,trans-1,2,4-trimethylcyclohexane	C9H18	*0.000000*	*0.000000*
Unidentified C9	C9	0.000963	0.002933
TOTALS:		**0.006470**	**0.019402**

C10 GROUP	FORMULA	MOL%	WT%
1,2,3,4-tetramethylbenzene	C10H14	*0.000000*	*0.000000*
1,2,3,5-tetramethylbenzene	C10H14	*0.000000*	*0.000000*
1,2,4,5-tetramethylbenzene	C10H14	*0.000000*	*0.000000*
1,2-diethylbenzene	C10H14	*0.000000*	*0.000000*
1,2-dimethyl-3-ethylbenzene	C10H14	*0.000000*	*0.000000*

1,2-dimethyl-4-ethylbenzene	C10H14	*0.000000*	*0.000000*
1,3-diethylbenzene	C10H14	*0.000000*	*0.000000*
1,3-dimethyl-2-ethylbenzene	C10H14	*0.000000*	*0.000000*
1,4-diethylbenzene	C10H14	*0.000000*	*0.000000*
1,4-dimethyl-2-ethylbenzene	C10H14	*0.000000*	*0.000000*
1-methyl-2-isopropylbenzene	C10H14	*0.000000*	*0.000000*
1-methyl-2-propylbenzene	C10H14	*0.000000*	*0.000000*
1-methyl-3-isopropylbenzene	C10H14	*0.000000*	*0.000000*
1-methyl-4-isopropylbenzene	C10H14	0.000033	0.000105
2-methylnonane	C10H22	0.000083	0.000280
3-ethyloctane	C10H22	0.000127	0.000429
3-methylnonane	C10H22	0.000035	0.000118
4-methylnonane	C10H22	0.000131	0.000443
butylbenzene	C10H14	*0.000000*	*0.000000*
butylcyclohexane	C10H20	*0.000000*	*0.000000*
isobutylbenzene	C10H14	*0.000000*	*0.000000*
naphthalene	C10H8	*0.000000*	*0.000000*
n-decane	C10H22	0.000196	0.000662
sec-butylbenzene	C10H14	0.000040	0.000127
tert-butylcyclohexane	C10H20	0.000035	0.000117
Unidentified C10	C10	*0.000000*	*0.000000*
TOTALS:		**0.000680**	**0.002281**

C11 GROUP	FORMULA	MOL%	WT%
n-undecane	C11H24	0.000051	0.000189
pentylbenzene	C11H16	*0.000000*	*0.000000*
Unidentified C11	C11	*0.000000*	*0.000000*
TOTALS:		**0.000051**	**0.000189**

C12 GROUP	FORMULA	MOL%	WT%
n-dodecane	C12H26	0.000061	0.000247
Unidentified C12	C12	*0.000000*	*0.000000*
TOTALS:		**0.000061**	**0.000247**

C13 GROUP	FORMULA	MOL%	WT%
n-tridecane	C13H28	*0.000000*	*0.000000*
Unidentified C13	C13	*0.000000*	*0.000000*
TOTALS:		**0.000000**	**0.000000**

C14 GROUP	FORMULA	MOL%	WT%
n-tetradecane	C14H30	*0.000000*	*0.000000*

Unidentified C14	C14	*0.000000*	*0.000000*
TOTALS:		**0.000000**	**0.000000**

C15+ GROUP	FORMULA	MOL%	WT%
n-pentadecane	C15H32	*0.000000*	*0.000000*
Unidentified C15	C15	*0.000000*	*0.000000*
TOTALS:		**0.000000**	**0.000000**

For flares subject to Chapter 115, Subchapter H, relating to highly reactive volatile organic compounds, flow rate and composition data required by 30 TAC 115.725–26 should be used to determine emissions for any portions of 2009 that HRVOC monitors were installed and operational.

In the absence of monitoring data, selection of the most accurate method may sometimes require exercising scientific judgment. For example, when using the results of a one-time performance test, the test conditions should be compared to the flare's actual operating conditions during the inventory year to determine whether the test accurately represents the flare's performance. If test conditions do not accurately model flare operation, then engineering determinations based on detailed process evaluation may provide the best data.

NO_x and CO Emissions

To calculate NO_x and CO emissions, the net heating value of the flared gas must be known. Using the actual short-term flared gas composition and flow rate data for the inventory year, calculate the net heating value of the flared gas and the total heat release for each short time period. Use these total heat release data, in conjunction with the appropriate emission factors from TCEQ Air Permits guidance, to determine NO_x and CO emissions for each time segment. Since the calculated net heating value of the gas and the assist gas type will determine the appropriate emission factors, carefully select the correct factors for each flare from Table A-6.

Calculate emissions using the most accurate data for the gas flow rate and composition available. (See "Flared Gas Flow Rate and Composition" earlier in this supplement for more information on preferred data.)

Table A-6. TCEQ Air Permits Flare Emission Factors

Contaminant	Assist Type	Waste Gas Stream Net Heating Value[a,b]	Emission Factor
NO_x	Steam	High Btu	0.0485 lb/MMBtu
		Low Btu	0.068 lb/MMBtu
	Air or Unassisted	High Btu	0.138 lb/MMBtu
		Low Btu	0.0641 lb/MMBtu
CO	Steam	High Btu	0.3503 lb/MMBtu
		Low Btu	0.3465 lb/MMBtu
	Air or Unassisted	High Btu	0.2755 lb/MMBtu
		Low Btu	0.5496 lb/MMBtu

[a] High Btu: > 1000 Btu/scf

[b] Low Btu: 192–1000 Btu/scf

Table II: Facility/Compound Specific Fugitive Emission Factors

Equipment/Service	Compound Specific See Section I for more information			Facility Specific[1]					
	Ethylene Oxide[2] w/LDAR	Phosgene[3] w/LDAR	Butadiene w/LDAR[4]	Petroleum Marketing Terminal[5, 6] w/28PET	Oil and Gas ProductionOperation[6]				Refinery[6]
					Gas	Heavy Oil < 20 API	Light Oil	Water/ Light Oil	
Valves					0.00992	0.0000185	0.0055	0.000216	
Gas/Vapor	0.000444	0.00000216	0.001105	0.0000287					0.059
Light Liquid	0.00055	0.00000199	0.00314	0.0000948					0.024
Heavy Liquid				0.0000948					0.00051
Pumps	0.042651	0.0000201	0.05634		0.00529	0.00113[7]	0.02866	0.000052	
Light Liquid				0.00119					0.251
Heavy Liquid				0.00119					0.046
Flanges/Connectors[11]	0.000555	0.00000011	0.000307		0.00086	0.00000086	0.000243	0.000006	0.00055
					0.00044	0.0000165	0.000463	0.000243	
Gas/Vapor				0.000092604					
Light Liquid				0.00001762					
Heavy Liquid				0.0000176					
Compressors	0.000767		0.000004		0.0194	0.0000683	0.0165	0.0309	1.399
Relief Valve	0.000165	0.0000162	0.02996		0.0194	0.0000683	0.0165	0.0309	0.35
Open-ended Lines[8]	0.001078	0.00000007	0.00012		0.00441	0.000309	0.00309	0.00055	0.0051
Sampling[9]	0.000088		0.00012						0.033
Other[10]					0.0194	0.0000683	0.0165	0.0309	
Gas/Vapor				0.000265					
Light/Heavy Liquid				0.000287					
Process Drains					0.0194	0.0000683	0.0165	0.0309	0.07

Endnotes Table II

1. **Factors give the total organic compound emission rate. Multiply by the weight percent of non-methane, non-ethane organics to get the VOC emission rate.**
2. **These emission factors require the use of the 28MID fugitive program. Monitoring must occur at a leak definition of 500 ppmv. No additional control credit can be applied to these factors except 28CNTQ and 28CNTA. Emission factors are from EOIC Fugitive Emission Study, summer 1988.**
3. **These emission factors require the use of the 28MID fugitive program. Monitoring must occur at a leak definition of 50 ppmv. No additional control credit can be applied to these factors. Emission factors are from Phosgene Panel Study, summer 1988.**
4. **These emission factors require the use of the 28MID fugitive program. Monitoring must occur at a leak definition of 100 ppmv. No additional control credit can be applied to these factors. Emission factors are from Randall, J. L., et al., Radian Corporation. Fugitive Emissions from the 1,3-butadiene Production Industry: A Field Study. Final Report. Prepared for the 1,3-Butadiene Panel for the Chemical Manufacturers Association. April 1989.**
5. **Control credit is included in the factor; no additional control credit can be applied to these factors. Monthly 28 PET inspection is required.**
6. **Factors are taken from EPA Document EPA-453/R-95-017, November 1995, pages 2-13, 2-14, and 2-15.**
7. **Heavy liquid oil – Pump factor was not derived during the API study. The factor is the SOCMI without C_2 Heavy Liquid – Pump factor with a 93% reduction credit for the physical inspection.**

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION[a]

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
CO_2[b]	120,000	A
Lead	0.0005	D
N_2O (Uncontrolled)	2.2	E
N_2O (Controlled-low-NO_X burner)	0.64	E
PM (Total)[c]	7.6	D
PM (Condensable)[c]	5.7	D
PM (Filterable)[c]	1.9	B
SO_2[d]	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

[b] Based on approximately 100% conversion of fuel carbon to CO_2. $CO_2[lb/10^6 \text{ scf}] = (3.67)(CON)(C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, 4.2×10^4 $lb/10^6$ scf.

[c] All PM (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM_{10}, $PM_{2.5}$ or PM_1 emissions. Total PM is the sum of the filterable PM and condensible PM. Condensible PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content is natural gas of 2,000 grains/10^6 scf. The SO_2 emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf.

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene[b, c]	2.4E-05	D
56-49-5	3-Methylchloranthrene[b, c]	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene[b,c]	<1.6E-05	E
83-32-9	Acenaphthene[b,c]	<1.8E-06	E
203-96-8	Acenaphthylene[b,c]	<1.8E-06	E
120-12-7	Anthracene[b,c]	<2.4E-06	E
56-55-3	Benz(a)anthracene[b,c]	<1.8E-06	E
71-43-2	Benzene[b]	2.1E-03	B
50-32-8	Benzo(a)pyrene[b,c]	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene[b,c]	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene[b,c]	<1.2E-06	E
205-82-3	Benzo(k)fluoranthene[b,c]	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene[b,c]	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene[b,c]	<1.2E-06	E
25321-22-6	Dichlorobenzene[b]	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene[b,c]	3.0E-06	E
86-73-7	Fluorene[b,c]	2.8E-06	E
50-00-0	Formaldehyde[b]	7.5E-02	B
110-54-3	Hexane[b]	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene[b,c]	<1.8E-06	E
91-20-3	Naphthalene[b]	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene[b,c]	1.7E-05	D

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION (Continued)

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
74-98-6	Propane	1.6E+00	E
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $1b/10^6$ scf to lb/MMBtu, divide by 1,020. Emission Factors preceeded with a less-than symbol are based on method detection limits.

[b] Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act.

[c] HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.

[d] The sum of individual organic compounds may exceed the VOC and TOC emission factors due to differences in test methods and the availability of test data for each pollutant.

TABLE 1.4-4. EMISSION FACTORS FOR METALS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
7440-38-2	Arsenic[b]	2.0E-04	E
7440-39-3	Barium	4.4E-03	D
7440-41-7	Beryllium[b]	<1.2E-05	E
7440-43-9	Cadmium[b]	1.1E-03	D
7440-47-3	Chromium[b]	1.4E-03	D
7440-48-4	Cobalt[b]	8.4E-05	D
7440-50-8	Copper	8.5E-04	C
7439-96-5	Manganese[b]	3.8E-04	D
7439-97-6	Mercury[b]	2.6E-04	D
7439-98-7	Molybdenum	1.1E-03	D
7440-02-0	Nickel[b]	2.1E-03	C
7782-49-2	Selenium[b]	<2.4E-05	E
7440-62-2	Vanadium	2.3E-03	D
7440-66-6	Zinc	2.9E-02	E

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. Emission factors preceeded by a less-than symbol are based on method detection limits. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by l6. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020.

[b] Hazardous Air Pollutant as defined by Section 112(b) of the Clean Air Act.

burning.
6.1.5.2 The tube sheets are 3/8" thickness. A 1/2" thick tube sheet is not required in small heaters.
7.1.1 The outside casing will be 180 F at 80 F ambient and a 5 mph wind.
7.5.7 Internal protective coating is not included.
8.3.1.3 The header boxes will be 11 ga. with stiffners. This will prevent warping.
8.4 The client normally specifies the ladders and platforms.
9.1.10 Our normal clearance is 2'-0".
10.1.3 The burner spacing will not meet Table 11, however flame impingement on the tubes will not occur.
Section 11 Instrument and auxiliary connections are per the data sheets.
13.2.2.5 Not included in price.

2. The expected burner emissions are as follows:

NOx (LB/MMBTU LHV).....0.104
NOx (LB/MMBTU HHV).....0.094
CO (LB/MMBTU LHV).....0.020
CO (LB/MMBTU HHV).....0.018
UBHC-NON CH4 (LB/MMBTU LHV).0.010
UBHC-NON CH4 (LB/MMBTU HHV).0.009
PARTICULATES (LB/MMBTU).....0.010

We thank you for the opportunity to quote your fired heater requirements. If we may be of further service or if you have any questions, please advise.

Very truly Yours,

Ladis Cabla

LJC/amc

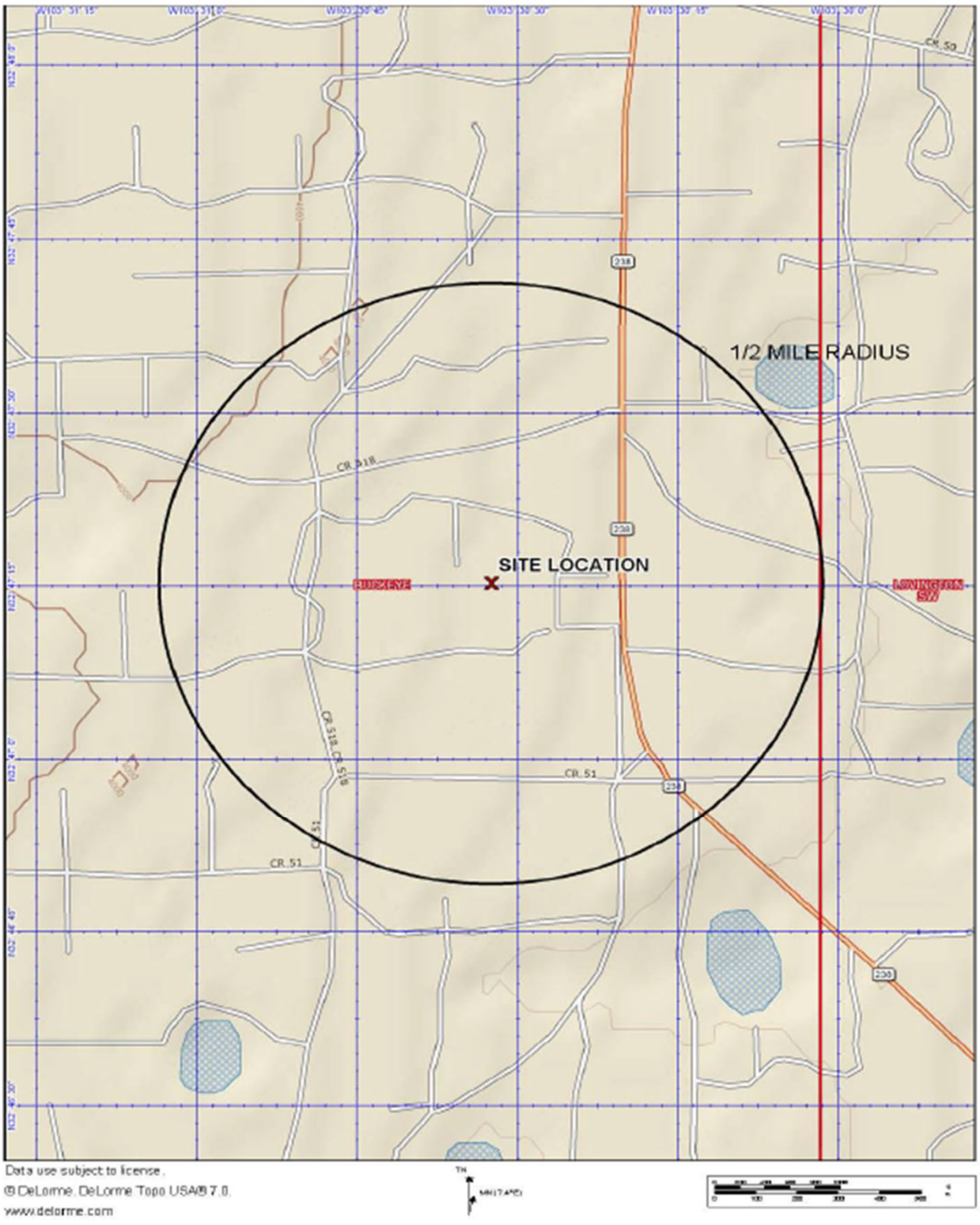
Section 8

Map(s)

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

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

A site location map is provided.



	PROJECT	13658.02		
	PREPARED FOR	MORNINGSTAR OPERATING LLC		
	LOCATION	Section 36, Township 17 South, Range 34 East Lea County, NM		
N	***SHEET*** 1 of 1	***DRAWN BY*** TH	***REVIEWED BY*** ET	***DATE*** 07-18-2023

PEI

Figure 1
Site Location Map
Buckeye CO_2 Plant

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.

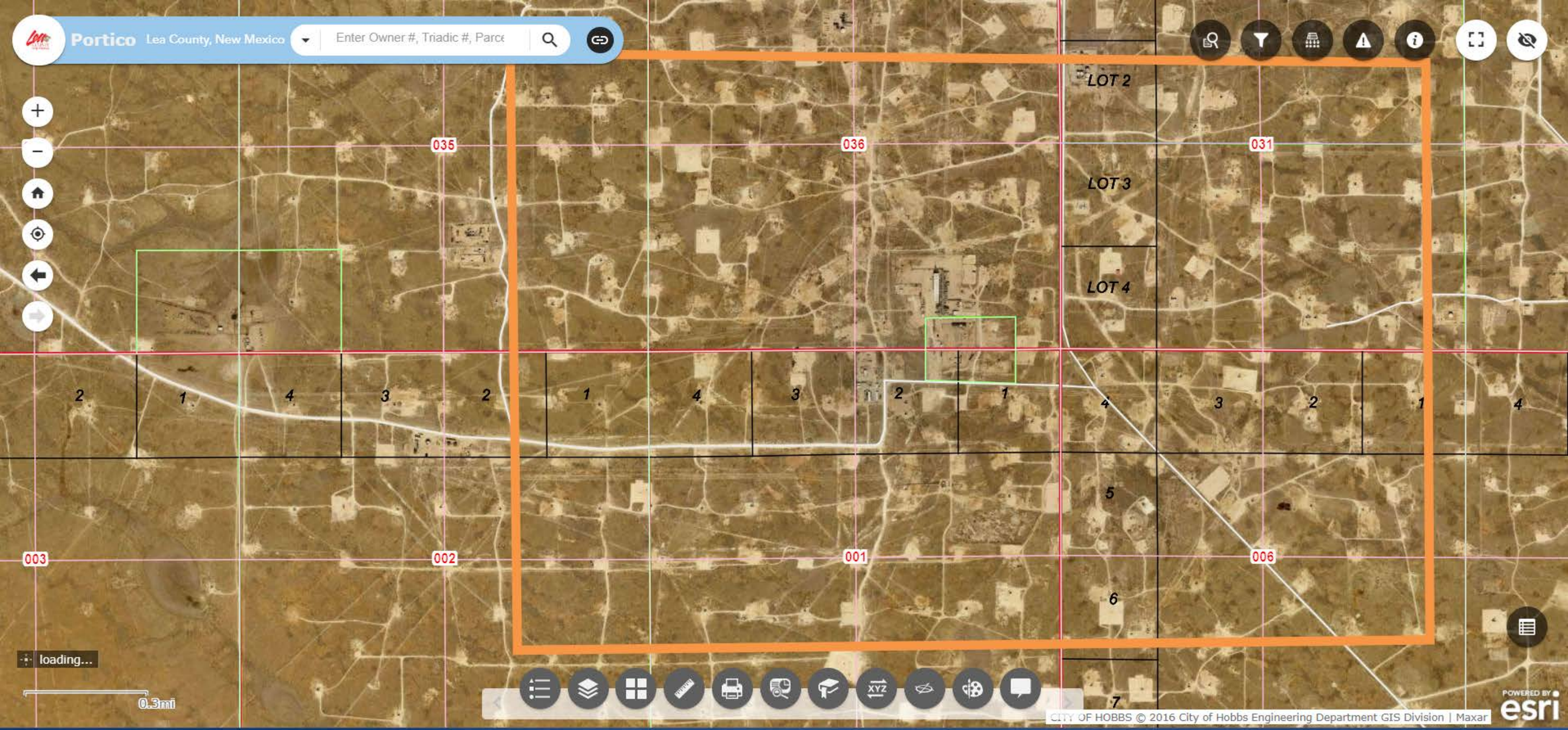
Technical Revision public notices require only items 1, 5, 9, and 10.

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 classified or legal ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
10. ☑ A copy of the display ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
11. ☑ 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.

Category	Notified Party
Citizens	None within 1 mile of site.
Other Landowners	State of NM, Versado
Counties	Lea
Municipalities	None within 10 miles of site.
Indian Tribes	None

Location of Postings
Lovington Public Library
Lovington City Hall
Lovington Police and Fire Department
Plant Entrance


Portico
Lea County, New Mexico
Enter Owner #, Triadic #, Parce
LOT 2
LOT 3
LOT 4
035
036
031
003
002
001
006
loading...
0.3mi
CITY OF HOBBS © 2016 City of Hobbs Engineering Department GIS Division | Maxar
POWERED BY esri

Lea County Parcel Report

Sections
Lea County Roads
Parcels

1:18,056
0 0.13 0.25 0.5 mi
0 0.2 0.4 0.8 km

Maxar

Parcel Details

OWNER NUMBER: 35119 **UPC CODE:** 4203102416530
PARCEL NUMBER: 4000351190001

Owner Information	
Owner:	VERSADO GAS PROCESSORS LLC
Mailing Address:	2424 RIDGE RD
Property Address:	

Subdivision Information	
Name:	
Unit:	
Block:	
Lot:	

Legal Information
11.33 AC LOC SE4SE4, SW4SE4

Other Information			
Taxable Value:	$4860126	**Deed Book:**	
Exempt Value:	$0	**Deed Page:**	0
Net Value:	$4860126	**District:**	010
Livestock Value:	$0	**Section:**	01
Manufactured Home Value:	$0	**Township:**	18
Personal Property:	$0	**Range:**	34
Land Value:	$0	**Date Filed:**	0
Improvement Value:	$0	**Most Current Tax:**	158828.91
Full Value:	$14580378	**Year Recorded:**	

Square Foot and Year Built listed only to be used for comparative purposes, NOT to be used for commerce.

Building Information			
Year Built:		**Number of Stories:**	
Basement SQFT:		**First Floor SQFT:**	
Second Floor SQFT:			

7017 3040 0000 9587 9923

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Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

OFFICIAL USE

Rockwall, TX 75087

Certified Mail Fee	$ $4.35
Extra Services & Fees (check box, add fee as appropriate)	$0.00
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$ $0.66
Total Postage and Fees	$ $5.01

Postmark Here: USPS EDWARDSVILLE IL 62025 SEP 20 2023 — 0425 07 — 09/20/2023

Sent To Versado Gas Processors
Street and Apt. No., or PO Box No. 2424 Ridge Rd
City, State, ZIP+4® Rockwall, TX 75087

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

7017 3040 0000 9587 9909

U.S. Postal Service™
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For delivery information, visit our website at *www.usps.com®*.

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Santa Fe, NM 87501

Certified Mail Fee	$ $4.35
Extra Services & Fees (check box, add fee as appropriate)	$0.00
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$ $0.66
Total Postage and Fees	$ $5.01

Postmark Here: USPS EDWARDSVILLE IL 62025 SEP 20 2023 — 0425 07 — 09/20/2023

Sent To State of NM Land Office
Street and Apt. No., or PO Box No. 310 Old Santa Fe Trail
City, State, ZIP+4® Santa Fe, NM 87501

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

7017 3040 0000 9587 9916

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For delivery information, visit our website at *www.usps.com®*.

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Lovington, NM 88260

Certified Mail Fee	$ $4.35
Extra Services & Fees (check box, add fee as appropriate)	$0.00
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$ $0.66
Total Postage and Fees	$ $5.01

Postmark Here: USPS EDWARDSVILLE IL 62025 SEP 20 2023 — 0425 07 — 09/20/2023

Sent To Mike Gallagher - Lea County
Street and Apt. No., or PO Box No. 100 N Main; Suite 4
City, State, ZIP+4® Lovington, NM 88260

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

MORNINGSTAR
PARTNERS

September 20, 2023 Certified Mail No. 7017 3040 0000 9587 9909

State of New Mexico Land Office
310 Old Santa Fe Trail
Santa Fe, New Mexico, 87501

Re: Public Notice for NSR Permit Application
Buckeye CO2 Plant

Dear Commissioner:

In accordance with the application requirements of 20.2.72 NMAC, MorningStar Operating, LLC is providing notification of the planned modification of the Buckeye CO2 Plant in Lea County, NM. The site is located on lands owned by the State of New Mexico. A public notice will be published in the Hobbs News Sun newspaper, then placed at the proposed site location and three other locations in the surrounding area. A copy of the notice is attached. Please contact Dan Guillotte at (817) 334-8098 or dguillotte@txopartners.com should you have any questions.

Sincerely,

Dan Guillotte
EHS Manager

Attachment: Public Notice

MORNINGSTAR
PARTNERS

September 20, 2023 Certified Mail No. 7017 3040 0000 9587 9916

Mike Gallagher
Lea County Manager
100 N. Main Avenue
Suite 4
Lovington, New Mexico 88260

Re: Public Notice for NSR Permit Application
Buckeye CO2 Plant

Mr. Gallagher:

In accordance with the application requirements of 20.2.72 NMAC, MorningStar Operating, LLC is providing notification of the planned modification of the Buckeye CO2 Plant in Lea County, NM. The site is located on lands owned by the State of New Mexico. A public notice will be published in the Hobbs News Sun newspaper, then placed at the proposed site location and three other locations in the surrounding area. A copy of the notice is attached. Please contact Dan Guillotte at (817) 334-8098 or dguillotte@txopartners.com should you have any questions.

Sincerely,

Dan Guillotte
EHS Manager

Attachment: Public Notice

MORNINGSTAR
PARTNERS

September 20, 2023 Certified Mail No. 7017 3040 0000 9587 9923

Versado Gas Processors LLC
2424 Ridge Rd.
Rockwall, TX 75087

Re: Public Notice for NSR Permit Application
Buckeye CO2 Plant

To Whom It May Concern:

In accordance with the application requirements of 20.2.72 NMAC, MorningStar Operating, LLC is providing notification of the planned modification of the Buckeye CO2 Plant in Lea County, NM, which is located adjacent to your property. A public notice will be published in the Hobbs News Sun newspaper, then placed at the proposed site location and three other locations in the surrounding area. A copy of the notice is attached. Please contact Dan Guillotte at (817) 334-8098 or dguillotte@txopartners.com should you have any questions.

Sincerely,

Dan Guillotte
EHS Manager

Attachment: Public Notice

NOTICE

MorningStar Operating, LLC announces its application to the New Mexico Environment Department for an air quality permit for the modification of its Buckeye CO2 Plant. The expected date of application submittal to the Air Quality Bureau is August 28, 2023.

The exact location for the facility known as Buckeye CO2 Plant is latitude 31.785953 dec deg North and longitude -103.510842 dec deg West. The approximate location of this facility is 14.4 miles southwest of Lovington, near 40 Texas Camp Road.

The proposed revision consists of updating flare emission factors and volumes and updating hot oil heater specifications.

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}	0.3	1.1
$PM_{2.5}$	0.3	1.1
Sulfur Dioxide (SO_2)	385	85
Nitrogen Oxides (NO_x)	166	31
Carbon Monoxide (CO)	350	49
Volatile Organic Compounds (VOC)	1015	57
Total sum of all Hazardous Air Pollutants (HAPs)	135	4
Toxic Air Pollutant (TAP)	n/a	n/a
Green House Gas Emissions as Total CO_2e	n/a	< 75,000

The standard and maximum operating schedules of the facility will be from 24 hours a day, 7 days a week and a maximum of 52 weeks per year.

The owner and/or operator of the Facility is: **Morningstar Operating LLC.; 400 W. 7th St.; Fort Worth, TX 76102**

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. Other comments and questions may be submitted verbally. (505) 476-4300; 1 800 224-7009.

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, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@env.nm.gov. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

September 11, 2023

KCDY 104.1 FM
(575) 887-7000

Re: Public Service Announcement

As part of the air quality permitting process in New Mexico, applicants for certain air permits must attempt to provide notice to the public of the proposed permit action via public service announcement (PSA). The announcement is attached. Will you air the PSA? Thank you.

Evan Tullos
PEI
(865) 850-2007

NOTICE OF AIR QUALITY PERMIT APPLICATION

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The notice was posted at the facility and three other public locations including Lovington City Hall, Police Department, and Library. If you have any comments about the construction or operation of the above facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to the address below:

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

Evan Tullos

From: Heights Construction <heightsconstruction@comcast.net>
Sent: Monday, September 11, 2023 4:59 PM
To: Evan Tullos
Subject: Fwd: Fax Confirmation -OK

Begin forwarded message:

From: "Fax.com" <reports@fax.com>
Subject: Fax Confirmation -OK
Date: September 11, 2023 at 4:56:07 PM CDT
To: "Evan Tullos" <heightsconstruction@comcast.net>

Your fax to an unknown recipient at fax number 5758877000 succeeded.

FSID: 61648719

Attempts made: 1
Pages delivered: 2
Minutes spent delivering this fax : 0.6
The baud rate was: 14400

The following are the attempts made and the result that occurred:
09/11/2023 - 14:55:08 - 0(Success)

Documents being delivered:
1 Public Service Announcement_For Fax.docx

Submittal of Public Service Announcement – Certification

I, Evan Tullos, the undersigned, certify that on 9/11/2023, submitted a public service announcement to KCDY 104.1 that serves the cities between Carlsbad and Lovington in Lea County, New Mexico, in which the source is located and that the Station did not respond that it would air the announcement.

Signed this 11th day of September, 2023,

Signature

9/11/2023

Date

Evan Tullos

Printed Name

VP - Consultant for MSO

Title {APPLICANT OR RELATIONSHIP TO APPLICANT}

Affidavit of Publicatior

STATE OF NEW MEXICO
COUNTY OF LEA

I, Daniel Russell, Publisher of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

Beginning with the issue dated
August 30, 2023
and ending with the issue dated
August 30, 2023.

Publisher

Sworn and subscribed to before me this 30th day of August 2023.

Business Manager

My commission expires
January 29, 2027
(Seal)

STATE OF NEW MEXICO
NOTARY PUBLIC
GUSSIE RUTH BLACK
COMMISSION # 1087526
COMMISSION EXPIRES 01/29/2027

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937 and payment of fees for said publication has been made.

LEGAL NOTICE
August 30, 2023

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The owner and/or operator of the Facility is: Morningstar Operating LLC.; 400 W. 7th St.; Fort Worth, TX 76102

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Please refer to the company name and site name, or send a copy of this notice along with your comments, since the Department may have not yet received the permit application. Please include a legible return mailing address with your comments. Once the Department has performed a 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.

General information about air quality and the permitting process, and links to the regulations can be found at the Air Quality Bureau's website: www.env.nm.gov/air-quality/permitting-section-home-page/. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC.

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#00282019

67110905 00282019

EVAN TULLOS
PEI
5 CARDINAL COURT
EDWARDSVILLE, IL 62025

General Posting of Notices – Certification

I, SAMANTHA AVARELLO, the undersigned, certify that on SEPTEMBER 19, 2023 posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in the Lovington of Lea County, State of New Mexico on the following dates:

1. Facility entrance
2. LOVINGTON PUBLIC LIBRARY
3. LOVINGTON CITY HALL
4. LOVINGTON POLICE AND FIRE DEPARTMENT

Signed this 19 day of SEPTEMBER, 2023.

Samantha Avarello
Signature

9/19/2023
Date

SAMANTHA AVARELLO
Printed Name

EHS COORDINATOR
Title {APPLICANT OR RELATIONSHIP TO APPLICANT}


NOTICE
Don't Wait—Vaccinate
Two Years old!
Do you have the shots you need?
Babies need to visit a doctor or clinic for shots five times by age 2. Without all of their shots, babies can get one or more dangerous diseases, like measles and diphtheria.
Make sure your babies get the shots they need by age 2.
Call the National Immunization Information Hotline to locate the nearest place to get life-protecting shots.
1-800-232-2522 (English) or
1-800-232-0233 (Spanish)
VOLUNTEERS NEEDED @ LOVINGTON ANIMAL SHELTER
TAKE DOGS FOR WALKS, PLAY DAYS, AND GIVE THEM SOME LOV
If you are interested please go to City Hall an
waiver of liability. Thank you
Bring home an exchange student…
…bring home the world!
800-941-3738
Attention Diabetics!!!
Do you know a legally blind or visually handicapped diabetic who is having difficulty reading the glucometer and measuring the required insulin dosage correctly? We can help. Call Edith Baker, NM Commission for the Blind at 624-6140 or toll free at 1-888-513-7961. We service Chaves, Lea, Eddy, Curry and Roosevelt counties.
Training is free to eligible persons.
Got Time!
Become a Volunteer for Nor Lea Hospice!
Share a few hours a month to make a difference
In someone else's life
Make the call today to Nor Lea Hospice and join our
Team of caring professionals
Lea County Humane
ADULT REFERENCE
ADULT SPANISH
LEARN HOW TO PROTECT ME WHILE I SLEEP
Safe Sleep Classes
Are you pregnant and live in Lea County?
WANTED:
A few good Lea County volunteer drivers for veterans needing transportation to medical appointments
(vehicles are provided)
Please contact:
NMDVS
NEW MEXICO DEPARTMENT OF VETERANS' SERVICES
"Serving Those Who Served"
NEW MEXICO CRIME VICTIMS ADVOCACY CENTER
CVAC
Know your rights!
You may have to assert them.
Serving victims of violent crime in the criminal justice process through Education, Advocacy and Representation
We Do Business in Accordance With the Federal Fair Housing Law
It is illegal to Discriminate Against Any Person Because of Race, Color, Religion, Sex, Handicap, Familial Status, or National Origin
To ask for auxiliary aids and services or materials in other formats and languages at no cost, please call
1-888-689-1523 (TTY/TDD: 711)
Southeastern New Mex
Genealogical Society
200 East Park, Hobbs, NM
Library Hours
Mondays — 1:00 to 4:00 pm
Tuesdays — 1:00 to 4:00 pm
Thursdays — 6:00 to 9:00 pm
Summer Hours
Mondays and Tuesdays — 1:00 to 4:00 pm
(Open other hours by special arrangement)
Looking for a new career? Out of wo
Get a free Computer with CompUSA Training Packages!
Computer training tracks available in:
Microsoft Office Application Training
Beginning, Intermediate and Advanced Levels
• Windows • Access • Excel • Internet
• PowerPoint • Word • Publisher
A+ Training
computer technician classes
Computer Experience Necessary!
Financial Assistance Available!
No Prior Experience Necessary!
Financial Assistance Available!
For more information, contact the New Mexico Department of Labor
(505) 393-5188
Find more than just a job. Find a Future!
Serving the youth in Eastern New Mexico
-Child Visit and Immunizations: $212.56*
tal Visit: $187.77*
and Emergency Room Visit: $735.10*
nt Care for the Flu: $259.20*
Drugs to Treat the Flu: $83.50*
$1,478.13
Enrolling Your Child For Health Coverage: FREE
Good Medical Care for Your Child: Invaluable
Annual medical costs for your child can be overwhelming, but you can reduce those costs by signing them up for health care coverage.
Sign up today to ensure their future tomorrow


DRYLANDS
Now OPEN for lunch!
NOTICE
FedEx
UPS

Rev 11-19

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Section 10

Written Description of the Routine Operations of the Facility

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

Gas enters the plant and flows to the inlet separator where the gas and liquids are separated. The liquids are pumped offsite via pipeline to production facilities. The feed gas is filtered, with clean gas then sent to the triethylene glycol (TEG) dehydration system (DEHY1). In the contactor, high purity TEG absorbs water vapor from the wet inlet gas, along with other volatile compounds. The rich glycol exiting the contactor enters the Drizo regeneration system, which consists of a TEG flash tank, a solvent recovery drum, a solvent water separator, and the reboiler. The reboiler is heated using hot oil from a gas-fired heater (HO-HTR). The Drizo system uses hydrocarbon solvent (NGL) stripping to achieve an extremely high TEG concentration. Some of the natural gas liquids (NGL) generated onsite are used as the solvent. Rich TEG exits the contactor and flows to a flash tank, where some hydrocarbons are removed from the gas stream. Fresh Drizo solvent is added to the system in the flash tank. Flashed vapor is condensed, with any remaining vapor routed to the flare (FL1). Water is further removed from the rich glycol in the glycol regenerator. Vapor from the regenerator still vent is condensed and routed to a solvent water separator, with solvent being recycled and any water piped offsite in a closed drain system. TEG from the reboiler is further separated, with solvent/water vapor overheads flowing back to the reboiler. Lean TEG is mixed with heated solvent and sent back to the TEG Contactor.

The dehydrated inlet gas then flows to five electric motor-driven reciprocating compressors which provide compression of CO2 to be reinjected for enhanced oil recovery. There are three electric motor driven propane compressors used in the propane refrigeration process. Compressor startup, shutdown, and maintenance related events may result in inlet or $2^{nd}/3^{rd}$ stage vapor being routed to the flare. Supplemental fuel is used during compressor blowdowns.

Hot compressed inlet gas is routed to the 1st stage discharge cooler and then sent to the propane recovery column (PRC). The PRC is where the NGL product is separated from the CO2 using the Ryan-Holmes process. The overhead vapor from the PRC is partially condensed in two PRC reflux condensers. The gas and liquid are separated in the PRC reflux accumulator and the liquid is pumped to the top of the PRC by three PRC reflux pumps. Vapor from the PRC reflux accumulator is warmed in two additive sub-coolers and two refrigerant subcoolers. The CO2 plus methane, ethane, and H2S are then compressed in two stages. The gas is air-cooled, measured, and then piped offsite for reinjection.

The bottom product from the PRC is pumped away from the PRC. The stream is split between the PRC side reboiler and the PRC bottoms cooler. There is also a second PRC reboiler. This system uses hot oil. The NGL product recovered from the Ryan-Holmes process comes from two separate draws from the PRC. The first source is a vapor-draw from the middle portion of the column. The vapor is cooled and condensed in the PRC side cooler. The second source is the remainder of the PRC bottoms product that is not used as additive. As mentioned above, this stream is cooled by the PRC bottoms cooler and then combines with the stream from the PRC side cooler. During SSM activities, liquid from the PRC would flow to a low pressure separator, with flashed vapor routed to the flare. Propane, used as a refrigerant in this system, would also be flared during SSM events.

This NGL product stream is fed to the NGL treaters where any residual H2S is removed. After treatment, the NGL product is filtered in the NGL filter, measured, then pumped to the product pipeline by the NGL pipeline pumps. If product stops flowing to the product pipeline due to SSM event, a pressure controller will open to route the NGL to a pressurized surge tank, thereby allowing the plant to continue to operate. During maintenance, any NGL is routed to a low pressure separator, with vapors routed to the flare.

A 19.23 MMBtu/hr hot oil heater (HO-HTR) with low NOx burners provides the heat duty for the PRC bottoms reboiler and the glycol regeneration system. Fugitive emissions from piping components are also represented in the permit.

Section 11

Source Determination

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

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

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

A. Identify the emission sources evaluated in this section (list and describe)**:**

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

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

☑ **Yes** ☐ **No**

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

☑ **Yes** ☐ **No**

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

☑ **Yes** ☐ **No**

C. Make a determination:

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

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

Section 12

Section 12.A

PSD Applicability Determination for All Sources

(Submitting under 20.2.72, 20.2.74 NMAC)

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

A. This facility is:

- ☑ **a minor PSD source before and after this modification (if so, delete C and D below).**
- ☐ **a major PSD source before this modification. This modification will make this a PSD minor source.**
- ☐ **an existing PSD Major Source that has never had a major modification requiring a BACT analysis.**
- ☐ **an existing PSD Major Source that has had a major modification requiring a BACT analysis**
- ☐ **a new PSD Major Source after this modification.**

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/

State Regulation 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	Compliance with NAAQS is provided in Section UA4.
20.2.7 NMAC	Excess Emissions	Yes	Facility	
20.2.23 NMAC	Fugitive Dust Control	No	Facility	As of January 2019, the only areas of the State subject to a mitigation plan per 40 CFR 51.930 are in Doña Ana and Luna Counties.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	N/A	None of the equipment has a heat input of greater than 1,000,000 million British Thermal Units per year per unit.
20.2.34 NMAC	Oil Burning Equipment: NO_2	No	N/A	This facility has no oil burning equipment.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No	N/A	The facility does not operate a sulfur recovery unit or an acid gas injection well.
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Refineries	N/A	N/A	These regulations were repealed.
20.2.38 NMAC	Hydrocarbon Storage Facility	No	N/A	The facility does not operate any hydrocarbon storage facilities.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	The facility does not operate a sulfur recovery plant.
20.2.50 NMAC	Oil and Gas Sector – Ozone Precursor Pollutants	Yes	FUG, DEHY1	Check the box for the subparts that are applicable: ☐113 – Engines and Turbines ☐114 – Compressor Seals ☒115 – Control Devices and Closed Vent Systems (Existing) ☐116 – Equipment Leaks and Fugitive Emissions ☐ 117 – Natural Gas Well Liquid Unloading ☒ 118 – Glycol Dehydrators (Existing) ☐ 119 – Heaters ☐ 120 – Hydrocarbon Liquid Transfers ☐121 – Pig Launching and Receiving ☐122 – Pneumatic Controllers and Pumps ☐ 123 – Storage Vessels ☐124 – Well Workovers ☐ 125 – Small Business Facilities ☐126 – Produced Water Management Unit ☐127 – Flowback Vessels and Preproduction Operations
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	HO-HTR, FL1	This regulation that limits opacity to 20% applies to Stationary Combustion Equipment, such as engines, boilers, heaters, and flares.
20.2.70 NMAC	Operating Permits	No	N/A	The facility is not a major source.
20.2.71 NMAC	Operating Permit Fees	No	N/A	The facility is not a major source.

State Regulation 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.)
20.2.72 NMAC	Construction Permits	Yes	Facility	This application requests a permit under 20.2.72 NMAC.
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	The facility would be subject to EI reporting if requested.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration	No	N/A	The facility is not a major source.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	Fees will be paid annually as required.
20.2.77 NMAC	New Source Performance	Yes	Units subject to 40 CFR 60	See the Federal discussion below.
20.2.78 NMAC	Emission Standards for HAPS	No	N/A	The facility does not operate any of the affected source categories.
20.2.79 NMAC	Permits – Nonattainment Areas	No	N/A	The facility is not in a nonattainment area.
20.2.80 NMAC	Stack Heights	No	N/A	
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	Units Subject to 40 CFR 63	See the Federal discussion below.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 50	NAAQS	Yes	Facility	Compliance with NAAQS is detailed in UA4.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	Units subject to 40 CFR 60	See appliable discussions below.
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for **Electric Utility Steam Generating Units**	No	N/A	The site does not operate any affected sources.
NSPS 40 CFR60.40b Subpart Db	**Electric Utility Steam Generating Units**	No	N/A	The site does not operate any affected sources.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	Yes	HO-HTR	The heater is greater than 10MMBtu/hr. Since purchased natural gas is used, only fuel use recordkeeping is required.
NSPS 40 CFR 60, Subpart Ka	Standards of Performance for **Storage Vessels for Petroleum Liquids** After May 18, 1978, and **Prior** to July 23, 1984	No	N/A	The site does not operate any affected sources.
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for **Volatile Organic Liquid Storage Vessels After** July 23, 1984	No	N/A	The site does not operate any affected sources.
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	No	N/A	The site does not operate any affected sources.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	Yes	Facility	The facility is subject to KKK.
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural Gas Processing**: SO_2 Emissions	No	N/A	The site does not operate any affected sources.
NSPS 40 CFR Part 60 Subpart OOOO	Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution f after August 23, 2011 and before September 18, 2015	No	N/A	The facility was not modified between 8/23/11 and 9/18/15.
NSPS 40 CFR Part 60 Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for **After** September 18, 2015	No	N/A	The facility has not been modified after 9/18/15.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	No	N/A	The site does not operate any affected sources.
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	No	N/A	The site does not operate any affected sources.
NSPS 40 CFR 60 Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units	No	N/A	The site does not operate any affected sources.
NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No	N/A	The site does not operate any affected sources.
NSPS 40 CFR 60, Subparts WWW, XXX, Cc, and Cf	Standards of performance for Municipal Solid Waste (MSW) Landfills	No	N/A	The site does not operate any affected sources.
NESHAP 40 CFR 61 Subpart A	General Provisions	No	N/A	Applies if any other Subpart in 40 CFR 61 applies.
NESHAP 40 CFR 61 Subpart E	National Emission Standards for **Mercury**	No	N/A	The site does not operate any affected sources.
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	No	N/A	The site does not operate any affected sources.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	DEHY1	Applies if any other Subpart in 40 CFR 63 applies.
MACT 40 CFR 63.760 Subpart HH	**Oil and Natural Gas Production Facilities**	Yes	DEHY1	DEHY1 is subject to rule; however, benzene emissions are less than 1 tpy.
MACT 40 CFR 63 Subpart HHH		No	N/A	The site does not operate any affected sources.

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
MACT 40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Boilers & Process Heaters	No	N/A	The site is an area source of HAP.
MACT 40 CFR 63 Subpart UUUUU	National Emission Standards for Hazardous Air Pollutants Coal	No	N/A	The site does not operate any affected sources.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants (**RICE MACT**)	No	N/A	The site does not operate any RICE.
40 CFR 64	**Compliance Assurance Monitoring**	No	N/A	The facility is not a major source.
40 CFR 68	**Chemical Accident Prevention**	Yes	Facility	The facility registered and maintains a Risk Management Plan.
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No	N/A	The facility does not generate commercial electric power or electric power for sale.
Title IV – Acid Rain 40 CFR 73	**Sulfur Dioxide** Allowance Emissions	No	N/A	The facility does not generate commercial electric power or electric power for sale.
Title IV-Acid Rain 40 CFR 75	**Continuous Emissions Monitoring**	No	N/A	The facility does not generate commercial electric power or electric power for sale.
Title IV – Acid Rain 40 CFR 76	**Acid Rain** Nitrogen Oxides **Emission Reduction Program**	No	N/A	The facility does not generate commercial electric power or electric power for sale.
Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	No	N/A	Site personnel do not maintain subject equipment.

Section 14

Operational Plan to Mitigate Emissions

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

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

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

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

Operating procedures for normal and SSM/MF events are maintained onsite.

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: www.env.nm.gov/air-quality/permitting-section-procedures-and-guidance/. 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.

Section 16

Air Dispersion Modeling

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

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

Check each box that applies:

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

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

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

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

☐ No modeling is required.

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.

None of the equipment used onsite is subject to compliance testing.

Section 18

Addendum for Streamline Applications

Do not print this section unless this is a streamline application.

Streamline Applications do not require a complete application. Submit Sections 1-A, 1-B, 1-D, 1-F, 1-G, 2-A, 2-C thru L, Sections 3 thru 8, Section 13, Section 18, Section 22, and Section 23 (Certification). Other sections may be required at the discretion of the Department. 20.2.72.202 NMAC Exemptions do not apply to Streamline sources. 20.2.72.219 NMAC revisions and modifications do not apply to Streamline sources, thus 20.2.72.219 type actions require a complete new application submittal. Please do not print sections of a streamline application that are not required.

This is not a Streamline permit application.

Section 19

Requirements for Title V Program

Do not print this section unless this is a Title V application.

Who Must Use this Attachment:

* Any major source as defined in 20.2.70 NMAC.
* Any source, including an area source, subject to a standard or other requirement promulgated under Section 111 - Standards of Performance for New Stationary Sources, or Section 112 Hazardous Air Pollutants, of the 1990 federal Clean Air Act ("federal Act"). Non-major sources subject to Sections 111 or 112 of the federal Act are exempt from the obligation to obtain an 20.2.70 NMAC operating permit until such time that the EPA Administrator completes rulemakings that require such sources to obtain operating permits. In addition, sources that would be required to obtain an operating permit solely because they are subject to regulations or requirements under Section 112(r) of the federal Act are exempt from the requirement to obtain an Operating Permit.
* Any Acid Rain source as defined under title IV of the federal Act. The Acid Rain program has additional forms. See www.env.nm.gov/air-quality/air-quality-title-v-operating-permits-guidance-page/. Sources that are subject to both the Title V and Acid Rain regulations are encouraged to submit both applications simultaneously.
* Any source in a source category designated by the EPA Administrator ("Administrator"), in whole or in part, by regulation, after notice and comment.

This is not a Title V facility.

Section 20

Other Relevant Information

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

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

No other relevant information is provided.

Section 21

Addendum for Landfill Applications

Do not print this section unless this is a landfill application.

Landfill Applications are not required to complete Sections 1-C Input Capacity and Production Rate, 1-E Operating Schedule, 17 Compliance Test History, and 18 Streamline Applications. Section 12 – PSD Applicability is required only for Landfills with Gas Collection and Control Systems and/or landfills with other non-fugitive stationary sources of air emissions such as engines, turbines, boilers, heaters. All other Sections of the Universal Application Form are required.

EPA Background Information for MSW Landfill Air Quality Regulations: www.epa.gov/stationary-sources-air-pollution/clean-air-act-guidelines-and-standards-waste-management

NM Solid Waste Bureau Website: www.env.nm.gov/solid-waste/

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*This is not a landfill.

Section 22: Certification

Company Name: PEI Consulting Group on behalf of MorningStar Operating, LLC

I, Evan Tullos , 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 25th day of September , 2023, upon my oath or affirmation, before a notary of the State of Illinois.

*Signature

9/25/23
Date

Evan Tullos
Printed Name

Vice President
Title

Scribed and sworn before me on this 25th day of September , 2023.

My authorization as a notary of the State of Illinois expires on the 5th day of August , 2024.

Notary's Signature

9/25/23
Date

MARK REED
Notary's Printed Name

MARK L. REED
OFFICIAL SEAL
Notary Public, State of Illinois
My Commission Expires
August 05, 2024

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

Universal Application 4

Air Dispersion Modeling Report

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

16-A: Identification

1	Name of facility:	Buckeye CO2 Plant
2	Name of company:	MorningStar Operating LLC
3	Current Permit number:	2191
4	Name of applicant's modeler:	Bruce Ferguson
5	Phone number of modeler:	601-824-1860
6	E-mail of modeler:	bferguson@fce-engineering.com

16-B: Brief

1	Was a modeling protocol submitted and approved?	Yes☐	No☒
2	Why is the modeling being done?	Other (describe below)	
3	Describe the permit changes relevant to the modeling.		
	Update flare emission factors and volumes, update dehydration process emissions, update heater specifications		
4	What geodetic datum was used in the modeling?	WGS84	
5	How long will the facility be at this location?	indefinite	
6	Is the facility a major source with respect to Prevention of Significant Deterioration (PSD)?	Yes☐	No☒
7	Identify the Air Quality Control Region (AQCR) in which the facility is located	155	

16-B: Brief

8	List the PSD baseline dates for this region (minor or major, as appropriate).	
	NO2	3/16/1988
	SO2	7/28/1978
	PM10	2/20/1979
	PM2.5	11/13/2013
9	Provide the name and distance to Class I areas within 50 km of the facility (300 km for PSD permits).	
	There are no Class I areas within 50 km.	
10	Is the facility located in a non-attainment area? If so describe below	Yes☐ No☒
11	Describe any special modeling requirements, such as streamline permit requirements.	
	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).

	Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
1	CO	2191-M2	11/14/2005	
	NO_2	2191-M2	11/14/2005	
	SO_2	2191-M2	11/14/2005	
	H_2S	2191-M2	11/14/2005	
	PM2.5			
	PM10			
	Lead			
	Ozone (PSD only)			
	NM Toxic Air Pollutants (20.2.72.402 NMAC)			

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.

Pollutant	ROI	Cumulative analysis	Culpability analysis	Waiver approved	Pollutant not emitted or not changed.
CO	☒	☐	☐	☐	☐
NO_2	☒	☒	☐	☐	☐
SO_2	☒	☒	☐	☐	☐
H_2S	☒	☐	☐	☐	☐
$PM_{2.5}$	☐	☐	☐	☐	☒
PM_{10}	☐	☐	☐	☐	☒
Lead	☐	☐	☐	☐	☒
Ozone	☐	☐	☐	☐	☒
State air toxic(s) (20.2.72.402 NMAC)	☐	☐	☐	☐	☒

16-E: New Mexico toxic air pollutants modeling

1 List any New Mexico toxic air pollutants (NMTAPs) from Tables A and B in 20.2.72.502 NMAC that are modeled for this application.

None

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

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

16-F: Modeling options

1	Was the latest version of AERMOD used with regulatory default options? If not explain below.	Yes ☒	No☐

16-G: Surrounding source modeling

1	Date of surrounding source retrieval	August 15, 2023

2 — If the surrounding source inventory provided by the Air Quality Bureau was believed to be inaccurate, describe how the sources modeled differ from the inventory provided. If changes to the surrounding source inventory were made, use the table below to describe them. Add rows as needed.

AQB Source ID	Description of Corrections
605R3	Source parameters were changed to that of a flare, i.e., 1273 K and 20 m/s. The effective diameter of 3.839 meters and flare height of 39 feet included in the application was used (RS6197_A_0060M3_Buckeye CS_Application_Final_2015-11-24.pdf pg. 37 of 125). The location was adjusted to UTMX - 639716.41 & UTMY- 3628318.59 based on Google Earth imagery.
605R4	The emissions for this source were set to zero. The application indicates that these emissions are part of the emissions at 605R3. (RS6197_A_0060M3_Buckeye CS_Application_Final_2015-11-24.pdf Table 2-F).
589R28	These malfunction emissions were not included. The hourly emissions were listed as 9300 lb/hr and the source is limited to 10 tpy. This equates to just over 2 hrs per year. It is not likely that the emissions will occur at the same time as maximum emissions.
1867E12	The emissions were not included. The source is limited to 50 tpy by GCP-O&G which is covered by the included source 1867@1.
1867E6	The emissions were not included. The source is limited to 50 tpy by GCP- O&G which is covered by the included source 1867@1.
39319C1	The emissions were adjusted to 205.27 pph as indicated in the application (RS23390_Application (8619M1).pdf Table 2-E)
32950R1	The source was converted to a flare source. The description is listed as four (4) oil tanks, two water tanks, crude loading, roads, flare & fugitives. It was assumed that the source of the SO_2 was from the flare. The source could not be found through APMAP. Table 38 of NMED guidance was used to determine the effective diameter and release height.

16-H: Building and structure downwash

1	How many buildings are present at the facility?	1	
2	How many above ground storage tanks are present at the facility?	0	
3	Was the building downwash modeled for all buildings and tanks? If not explain why below.	Yes☒	No☐
4	Building comments		

16-I: Receptors and modeled property boundary

1 — "Restricted Area" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with a steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area. A Restricted Area is required in order to exclude receptors from the facility property. If the facility does not have a Restricted Area, then receptors shall be placed within the property boundaries of the facility.

Describe the fence or other physical barrier at the facility that defines the restricted area.

	The facility is fenced on all sides.		
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 area boundary coordinates included in the modeling files?	Yes☒	No☐

4 Describe the receptor grids and their spacing. The table below may be used, adding rows as needed.

Grid Type	Shape	Spacing	Start distance from restricted area or center of facility	End distance from restricted area or center of facility	Comments
Cartesian	Polygon	50 m	Fenceline		
Cartesian	Circle	50 m	Fenceline	1 km from center	
Cartesian	Circle	100 m	1 km from center	3 km from center	
Cartesian	Circle	250 m	3 km from center	6 km from center	
Cartesian	Circle	500 m	6 km from center	12 km from center	
Cartesian	Circle	1,000 m	12 km from center	50 km from center	

5 Describe receptor spacing along the fence line.

Receptors were spaced at 50 meters

6 Describe the PSD Class I area receptors.

Not Applicable

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 likely to be public comments opposing the permit application?	Yes☐	No☐

16-K: Modeling Scenarios

1 Identify, define, and describe all modeling scenarios. Examples of modeling scenarios include using different production rates, times of day, times of year, simultaneous or alternate operation of old and new equipment during transition periods, etc. Alternative operating scenarios should correspond to all parts of the Universal Application and should be fully described in Section 15 of the Universal Application (UA3).

The scenarios consist of flaring of different gases. The impact for the different scenarios is summarized in the following table.

2 Which scenario produces the highest concentrations? Why?

The scenario considering flaring of the Propane Recovery Column (PRC) produced the highest ground level impacts. The maximum ground level impacts are governed by a combination of the amount of pollutant emitted and the heat released during the combustion of the gas. Although the PRC scenario did not release the highest SO_2 levels, it produced higher ground level impacts because the heat released was lower resulting in a lower buoyancy rise.

3	Were emission factor sets used to limit emission rates or hours of operation? (This question pertains to the "SEASON", "MONTH", "HROFDY" and related factor sets, not to the factors used for calculating the maximum emission rate.)	Yes☐	No☒
4	If so, describe factors for each group of sources. List the sources in each group before the factor table for that group. (Modify or duplicate table as necessary. It's ok to put the table below section 16-K if it makes formatting easier.) Sources:		
5	Hour of Day / Factor / Hour of Day / Factor		
	Not applicable		
	If hourly, variable emission rates were used that were not described above, describe them below.		
	Not applicable		
6	Were different emission rates used for short-term and annual modeling? If so describe below.	Yes☒	No☐
	Annual impacts were evaluated for the normal operating scenario. SSM was not considered for the annual impacts as described in the NMED guideline. *"Because of the short nature of the SSM emissions, modeling does not have to demonstrate compliance with annual standards or annual increment consumption."*		

Pollutant	Avg. Period	Scenario	Ambient Impact ug/m3	Event	UTM-X	UTM-Y	Elevation
CO	1-hr	NORMAL	16.38635	19041019	639900	3628650	1215.77
		A	**26.11253**	**19041019**	**640100**	**3628650**	**1215.29**
		B	20.43782	19041019	639950	3628650	1215.54
		C	24.09878	19041019	640050	3628650	1215.41
		D	21.59418	17011411	638250	3625000	1219.65
		E	17.27713	17011411	638250	3625250	1219.99
		F	23.31033	19041019	640200	3628650	1215.12
	8-hr	NORMAL	10.17156	18042016	639150	3629000	1218.92
		A	**16.88334**	**18042016**	**639100**	**3629100**	**1219.52**
		B	12.5276	18042016	639100	3629100	1219.52
		C	15.18985	18042016	639100	3629100	1219.52
		D	12.75291	18042016	639100	3629100	1219.52
		E	11.55143	18042016	639100	3629100	1219.52
		F	16.19993	18042016	639100	3629100	1219.52
H2S	1-hr	NORMAL	0.06855	19041019	639900	3628650	1215.77
		A	**1.03817**	**19041019**	**640100**	**3628650**	**1215.29**
		B	0.86172	19041019	639950	3628650	1215.54
		C	1.03432	19041019	640050	3628650	1215.41
		D	0.03811	17011411	638250	3625000	1219.65
		E	0.0114	17011411	638250	3625250	1219.99
		F	0.02889	19041019	640200	3628650	1215.12
NOx	1-hr	NORMAL	8.6986	20093010	639438.4	3628725	1217.12
		A	8.07374	20093010	639438.4	3628725	1217.12
		B	8.58241	20093010	639438.4	3628725	1217.12
		C	8.20525	20093010	639438.4	3628725	1217.12
		D	**10.80567**	**17011411**	**638250**	**3625000**	**1219.65**
		E	8.84704	17042412	639750	3628750	1215.77
		F	8.0846	20093010	639438.4	3628725	1217.12
	Annual	NORMAL	0.41858	2021	639400	3628900	1217.43
		A	0.40778	2021	639400	3628900	1217.43
		B	0.41845	2021	639400	3628900	1217.43
		C	0.40791	2021	639400	3628900	1217.43
		D	**0.55642**	**2021**	**639400**	**3628900**	**1217.43**
		E	0.51699	2021	639400	3628900	1217.43
		F	0.46004	2021	639400	3628900	1217.43
SO2	24-hr	NORMAL	1.54759m	21062124	639100	3628300	1216.26

Pollutant	Avg. Period	Scenario	Ambient Impact ug/m3	Event	UTM-X	UTM-Y	Elevation
		A	22.23916m	21062124	639050	3628250	1218.02
		B	19.08540m	21062124	639100	3628300	1216.26
		C	**22.74331m**	**21062124**	**639050**	**3628250**	**1218.02**
		D	0.86763m	21062124	639050	3628200	1217.87
		E	0.28886m	21062124	639050	3628200	1217.87
		F	0.70332m	21062124	639050	3628250	1218.02
	3-hr	NORMAL	5.15601	17050712	639250	3628950	1218.21
		A	71.75288	18041712	639800	3628850	1215.57
		B	62.09195	17050712	639250	3628950	1218.21
		C	**74.10886**	**18041712**	**639800**	**3628850**	**1215.57**
		D	2.9473	19041015	639950	3629100	1215.4
		E	0.93988	19041015	639900	3629050	1215.3
		F	2.20542	21062112	639100	3628250	1217.3
	1-hr	NORMAL	6.45193	19041019	639900	3628650	1215.77
		A	93.14135	19041019	640100	3628650	1215.29
		B	81.00812	19041019	639950	3628650	1215.54
		C	**97.23196**	**19041019**	**640050**	**3628650**	**1215.41**
		D	3.58496	17011411	638250	3625000	1219.65
		E	1.07379	17011411	638250	3625250	1219.99
		F	2.72024	19041019	640200	3628650	1215.12
	Annual	NORMAL	0.26709	2020	639300	3628950	1218.03
		A	3.39518	2021	639300	3628950	1218.03
		B	3.1761	2021	639300	3628950	1218.03
		C	**3.58193**	**2021**	**639300**	**3628950**	**1218.03**
		D	0.11316	2021	639300	3628900	1217.83
		E	0.03814	2021	639300	3628950	1218.03
		F	0.1014	2021	639300	3628950	1218.03

16-L: NO_2 Modeling

1	Which types of NO_2 modeling were used? Check all that apply.	
	☒	ARM2
	☐	100% NO_X to NO_2 conversion
	☐	PVMRM
	☐	OLM
	☐	Other:
2	Describe the NO_2 modeling.	
	The significance analysis considered full conversion of NOx to NO_2 and the maximum 1-hr impact in the 5-year meteorological period and the maximum annual impact of the 5-year period was compared to the significance level. Only the scenario producing the highest impact was considered in the cumulative analysis. Receptors with insignificant impacts were not used in the cumulative analysis. For the cumulative analysis, the ARM2 method in AERMOD was used with the default NO_2/NO_x ratios. The maximum impact was calculated in AERMOD as the 5-year average of the H8H of individual years. Cumulative impacts were determined by adding monitored background to the design value calculated by AERMOD.	
3	Were default NO_2/NO_X ratios (0.5 minimum, 0.9 maximum or equilibrium) used? If not describe and justify the ratios used below.	Yes☒ No☐
4	Describe the design value used for each averaging period modeled.	
	1-hour: 98th percentile as calculated by AERMOD Annual: Other (Describe): Highest annual average of the 5-year meteorological period.	

16-M: Particulate Matter Modeling

1	Select the pollutants for which plume depletion modeling was used.			
	☐	$PM_{2.5}$		
	☐	PM_{10}		
	☒	None		
2	Describe the particle size distributions used. Include the source of information.			
3	Does the facility emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2? Sources that emit at least 40 tons per year of NO_X or at least 40 tons per year of SO_2 are considered to emit significant amounts of precursors and must account for secondary formation of PM2.5.		Yes☒	No☐
4	Was secondary PM modeled for PM2.5?		Yes☐	No☒
5	If MERPs were used to account for secondary PM2.5 fill out the information below. If another method was used describe below.			
	NO_X (ton/yr)	SO_2 (ton/yr)	$[PM2.5]_{annual}$	$[PM2.5]_{24\text{-}hour}$

16-N: Setback Distances (Not Applicable)

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.
	Not applicable
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.

16-O: PSD Increment and Source IDs

1	The unit numbers in the Tables 2-A, 2-B, 2-C, 2-E, 2-F, and 2-I should match the ones in the modeling files. Do these match? If not, provide a cross-reference table between unit numbers if they do not match below.	Yes☒	No☐

Unit Number in UA-2	Unit Number in Modeling Files

2	The emission rates in the Tables 2-E and 2-F should match the ones in the modeling files. Do these match? If not, explain why below.	Yes☐	No☐
3	Have the minor NSR exempt sources or Title V Insignificant Activities" (Table 2-B) sources been modeled?	Yes☐	No☐

4 Which units consume increment for which pollutants?
The facility was constructed in 1998. All sources consume NO2, SO2 & PM10. * indicates emissions <0.5 tpy

Unit ID	NO_2	SO_2	PM10	PM2.5
HO-HTR	x	*	*	
DEHY	*	*	x	
FLR	x	x	*	
FUG	*	*	*	

5	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date).	

6	Are all the actual installation dates included in Table 2A of the application form, as required? This is necessary to verify the accuracy of PSD increment modeling. If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☒	No☐

16-P: Flare Modeling

1	For each flare or flaring scenario, complete the following			
	Flare ID (and scenario)	Average Molecular Weight	Gross Heat Release (cal/s)	Effective Flare Diameter (m)
	FL1	18.06	4,978,544	1.991
	FL1-SSMA	39.57	13,080,139	3.022
	FL1-SSMB	36.80	7,051,294	2.236
	FL1-SSMC	38.78	10,850,667	2.758
	FL1-SSMD	65.29	82,250,746	7.096
	FL1-SSME	39.53	59,026,229	6.420
	FL1-SSMF	17.21	17,029,299	3.693

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? If not please explain how increment consumption status is determined for the missing installation dates below.	Yes☐	No☒
2	Describe the determination of sigma-Y and sigma-Z for fugitive sources.		
3	Describe how the volume sources are related to unit numbers. Or say they are the same.		
4	Describe any open pits.		
5	Describe emission units included in each open pit.		

16-R: Background Concentrations

1	Were NMED provided background concentrations used? Identify the background station used below. If non-NMED provided background concentrations were used describe the data that was used.	Yes☐	No☐
	CO: Del Norte High School (350010023)		
	NO_2: Hobbs-Jefferson (350250008)		
	PM2.5: Hobbs-Jefferson (350450019)		
	PM10: Hobbs-Jefferson (350250008)		
	SO_2: N/A		
	Other:		
	Comments: NMED Guideline indicates no representative SO_2 background concentrations are currently available for the Pecos-Permian Basin region. Cumulative analysis must be conducted by modeling surrounding sources.		
2	Were background concentrations refined to monthly or hourly values? If so describe below.	Yes☐	No☒

16-S: Meteorological Data

1	Was NMED provided meteorological data used? If so select the station used. Hobbs	Yes☒	No☐
2	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.		

16-T: Terrain

1	Was complex terrain used in the modeling? If not, describe why below.	Yes☒	No☐
2	What was the source of the terrain data?		
	Downloaded NED files through the 3rd Party vendor program AERMOD-View		

16-U: Modeling Files

1 Describe the modeling files:

File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
\\Modeling Files\SIA		
CO.zip	CO	SIA
H2S.zip	H_2S	SIA
NOx.zip	NO_2	SIA
SO_2.zip	SO_2	SIA
SO_2 1hr SIA.zip	SO_2	Determine significant receptors using the form of the SO_2 1-hr standard
\\Modeling Files\SIA		
NO_2 1hr NAAQS.zip	NO_2	CIA in form of NO_2 1-hr standard
SO_2_PSD.zip	SO_2	CIA for SO_2 PSD increment
SO_2.zip	SO_2	CIA for SO_2 NAAQS
SO_2 Culpability.zip \\SO_2 Culpability.AD\Culpability.dat	SO_2	Culpability for SO_2 modeled exceedance
\\Surrounding Source Inventory		
Sulfur Dioxide_surrounding_sources.INP	SO_2	MergeMaster surrounding source files
RS6197_A_0060M3_Buckeye CS_Application_Final_2015-11-24.pdf	SO_2	Surrounding source inventory correction.
RS23390_Application (8619M1).pdf	SO_2	

16-V: PSD New or Major Modification Applications (Not Applicable)			
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?	Yes☐	No☐
3	Describe how preconstruction monitoring has been addressed or attach the approved preconstruction monitoring or monitoring exemption.		
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC.		
5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed? If so describe below.	Yes☐	No☐

16-W: Modeling Results

1	If ambient standards are exceeded because of surrounding sources, a culpability analysis is required for the source to show that the contribution from this source is less than the significance levels for the specific pollutant. Was culpability analysis performed? If so describe below.	Yes☒	No☐
	Modeled impacts exceeded the 1-hr SO_2 NAAQS in the vicinity of the Cross Timbers Energy, LLC Bridges State 12 Battery & State 120/North Vacuum Abo Unit 120 facilities. Both facilities have a Heated Separator which appears to be the cause of the modeled exceedances. Receptors with impacts greater than 100 ug/m^3 were modeled to determine the contribution of the Buckeye CO_2 Plant to the modeled impacts. The maximum contribution to a modeled exceedance by the Buckeye CO_2 Plant is 0.01918 ug/m^3 which is below the significance level of 7.8 ug/m^3 and the Buckeye CO_2 Plant does not cause or contribute to the modeled exceedance. The maximum modeled impact with a significant impact from the Buckeye CO_2 Plant is 124.13875 ug/m^3.		
2	Identify the maximum concentrations from the modeling analysis. Rows may be modified, added and removed from the table below as necessary.		

Pollutant, Time Period and Standard	Modeled Facility Concentration (µg/m3)	Modeled Concentration with Surrounding Sources (µg/m3)	Secondary PM (µg/m3)	Background Concentration (µg/m3)	Cumulative Concentration (µg/m3)	Value of Standard (µg/m3)	Percent of Standard	Location		
								UTM E (m)	UTM N (m)	Elevation (ft)
Insignificant Impacts										
NO2 Annual SIL*	0.41858	N/A	N/A	N/A	0.41858	1	41.8	639400	3628900	1217.43
H2S 1/2-hr SIL	1.03817	N/A	N/A	N/A	1.03817	5	20.7	640100	3628650	1215.29
CO 1-hr SIL	26.11253	N/A	N/A	N/A	26.11253	2000	1.3	640100	3628650	1215.29
CO 8-hr SIL	16.88334	N/A	N/A	N/A	16.88334	500	3.4	639100	3629100	1219.52
SO2 Annual SIL*	0.26709	N/A	N/A	N/A	0.26709	1	26.7	639300	3628950	1218.03
Cumulative Impacts										
NO2 1-hr NAAQS	6.64753	N/A	N/A	65.8	72.44	188.03	38.5	639800	3628800	1215.65
SO2 1-hr NAAQS***	7.87891	124.13875	N/A	N/A	124.13875	196.4	6.2	637600	3630700	1225.53
SO2 3-hr PSD**	74.10886	101.04334	N/A	N/A	101.04334	512	19.7	639000	3631300	1220.33
SO2 24-hr PSD**	22.74331	34.46394	N/A	N/A	34.46394	91	37.9	639000	3631300	1220.33

***Because of the short nature of the SSM emissions, modeling does not have to demonstrate compliance with annual standards or annual increment consumption. The annual impacts are represented by the normal operation scenario.**
**** Facility concentration is maximum modeled in significance analysis and does not correspond to the maximum cumulative event and location.**
*****Maximum modeled impact with a significant contribution from Buckeye CO2 Plant.**

16-X: Summary/conclusions

	A statement that modeling requirements have been satisfied and that the permit can be issued.
1	The NMED processed meteorology for Hobbs, NM was used in the analysis. The NMED guideline indicates the single 2014 year can be used in the analysis; however, the processed data has been updated to the years 2017 to 2021. The entire 5-year period was, therefore, used to assess the air quality impacts as the worst case year is not known. The modeling was conducted to determine the impacts from a change in flaring scenarios. The project impacts were found to be insignificant for the CO 1-hr and 8-hr averaging periods, the H_2S ½ hr averaging period, and the NO_2 and SO_2 annual averaging periods. As stated in the NMED guideline "Because of the short nature of the SSM emissions, modeling does not have to demonstrate compliance with annual standards or annual increment consumption." The annual standards were, therefore, evaluated using the normal operating scenario. No further analysis was conducted for these stated pollutant averaging periods. Cumulative analysis was conducted for the NO_2 and SO_2 1-hr averaging periods and the SO_2 3-hr and 24-hr averaging periods. The surrounding sources for the NO_2 cumulative analysis were accounted for by adding the monitored background from the NMED guideline for Hobbs, NM. The surrounding sources for SO_2 were explicitly modeled using the inventory downloaded from the NMED MergeMaster program. The MergeMaster inventory was adjusted as indicated in section 16-G. The SO_2 3-hr and 24-hr impacts were based on the highest second highest (H2H) impact of each year in the meteorological period and found to be below the PSD increments. The SO_2 1-hr analysis indicated modeled exceedances around two sources. A culpability analysis was performed using each receptor with design values greater than 100 ug/m3. The maximum contribution from the Buckeye CO2 plant at a modeled exceedance was found to be 0.01918 ug/m^3; therefore, the site will not cause or contribute to an exceedance in an air quality standard. The modeling requirements have been satisfied and the permit can be issued.