ENERGY TRANSFER

800 E. Sonterra Blvd., Suite 400
San Antonio, Texas 78258-3941
210-403-7300
210-403-7500 (Fax)

April 20, 2020 **via Federal Express**

Dr. Kirby Olson
Major Source Program Manager
New Mexico Environment Department
Air Quality Bureau Permits Section
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505-1816

Subject: Application for Renewal of Title V Operating Permit No. P010-R3M1
Transwestern Pipeline Company, LLC
Bloomfield Compressor Station
Agency Interest No. 1192

Dear Dr. Olson:

Transwestern Pipeline Company, LLC (Transwestern) is submitting, per 20.2.70.300.B(2) NMAC, the enclosed application for the renewal of its Title V operating permit for Bloomfield Compressor Station, which is located in San Juan County, New Mexico. The current operating permit for this facility is Permit No. P010-R3M1.

No changes have been made to the operations at the station since the current permit was issued. The only physical changes that have been made are like-in-kind turbine replacements for two turbines; the new serial numbers of these units are reflected in the application. There has been no change to emissions as a result of these changes. In addition, Transwestern has updated the emissions calculations for the station's tanks to reflect the November 2019 update to emission factors and methodology contained in Chapter 7.0 of the U.S. Environmental Protection Agency AP-42, *Compilation of Air Pollutant Emission Factors*. The impact of this change on calculated emissions levels is negligible.

Enclosed are two copies of the permit application and two compact disks with electronic copies of the relevant files pertaining to the application. If you need additional information or have any questions, please contact me at 210-572-0504 or via e-mail at karl.huston@energytransfer.com. Thank you for your consideration of this application.

Sincerely,

Karl Huston

Karl Huston
Environmental Permit Specialist
Transwestern Pipeline Company, LLC

Enclosures

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

Universal Air Quality Permit Application

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

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

This application is submitted as (check all that apply): ☐ Request for a No Permit Required Determination (no fee)
☐ **Updating** an application currently under NMED review. Include this page and all pages that are being updated (no fee required).
Construction Status: ☐ Not Constructed ☐ Existing Permitted (or NOI) Facility ☐ Existing Non-permitted (or NOI) Facility
Minor Source: ☐ a 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.: _____ in the amount of _____
☐ I acknowledge the required submittal format for the hard copy application is printed double sided 'head-to-toe', 2-hole punched (except the Sect. 2 landscape tables is printed 'head-to-head'), numbered tab separators. Incl. a copy of the check on a separate page.
☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance program (SBEAP) and qualifies for 50% of the normal application and permit fees. Enclosed is a check for 50% of the normal application fee which will be verified with the Small Business Certification Form for your company.
☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance Program (SBEAP) but does not qualify for 50% of the normal application and permit fees. To see if you qualify for SBEAP assistance and for the small business certification form go to https://www.env.nm.gov/aqb/sbap/small_business_criteria.html).

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

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known (see 1st 3 to 5 #s of permit IDEA ID No.): **1192**	Updating Permit/NOI #: **P010-R3M1**
1	Facility Name: **Bloomfield Compressor Station**	Plant primary SIC Code (4 digits): **4922**	
		Plant NAIC code (6 digits): **486210**	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): **County Road 4935 Lot #41, Bloomfield, NM 87413**		
2	Plant Operator Company Name: **Transwestern Pipeline Company, LLC**	Phone/Fax: **575-625-8022/575-627-8172**	
a	Plant Operator Address: **6381 Main Street, Roswell, NM 88201**		

b	Plant Operator's New Mexico Corporate ID or Tax ID: **74-1294795 (Tax ID)**	
3	Plant Owner(s) name(s): **Transwestern Pipeline Company, LLC**	Phone/Fax: **575-625-8022/575-627-8172**
a	Plant Owner(s) Mailing Address(s): **6381 Main Street, Roswell, NM 88201**	
4	Bill To (Company): **Transwestern Pipeline Company, LLC**	Phone/Fax: **575-625-8022/575-627-8172**
a	Mailing Address: **6381 Main Street, Roswell, NM 88201**	E-mail: **Larry.Campbell@energytransfer.com**
5	■ Preparer: **Karl Huston, Energy Transfer** □ Consultant:	Phone/Fax: **210-572-0504/210-572-0504**
a	Mailing Address: **800 East Sonterra Blvd., San Antonio, TX 78258**	E-mail: **Karl.Huston@energytransfer.com**
6	Plant Operator Contact: **Terry Van Maanen**	Phone/Fax: **970-759-1308/NA**
a	Address: **PO Box 399, Bloomfield, NM 87413**	E-mail: **Terrance.VanMaanen@energytransfer.com**
7	Air Permit Contact: **Larry Campbell**	Title: **Senior Environmental Specialist**
a	E-mail: **Larry.Campbell@energytransfer.com**	Phone/Fax: **575-625-8022/575-627-8172**
b	Mailing Address: **6381 Main Street, Roswell, NM 88201**	
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): N/A
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-155R3M2
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:
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: **68 MMSCF** **(MMSCF – million standard cubic feet)**	Daily: **1,640 MMSCF**	Annually: **598,600 MMSCF**
b	Proposed	Hourly: **68 MMSCF**	Daily: **1,640 MMSCF**	Annually: **598,600 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: **68 MMSCF**	Daily: **1,640 MMSCF**	Annually: **598,600 MMSCF**
b	Proposed	Hourly: **68 MMSCF**	Daily: **1,640 MMSCF**	Annually: **598,600 MMSCF**

Section 1-D: Facility Location Information

1	Section: **13**	Range: **11W**	Township: **29N**	County: **San Juan**	Elevation (ft): **5,600**
2	UTM Zone: ☐ 12 or ■ 13			Datum: ☐ NAD 27 ■ NAD 83 ☐ WGS 84	
a	UTM E (in meters, to nearest 10 meters): **236,769**			UTM N (in meters, to nearest 10 meters): **4,068,728**	
b	**AND** Latitude (deg., min., sec.): **36° 43' 40.1" N**			Longitude (deg., min., sec.): **107° 56' 51.4"W**	
3	Name and zip code of nearest New Mexico town: **Bloomfield 87413**				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): **From downtown Bloomfield head north on Hwy. 550 toward Aztec for 1.5 miles. Turn right (east) on County Road 4900 and go 1.9 miles. Turn right (south) and go 0.3 mile to station. Station is on the right (west) side of the road.**				
5	The facility is **0.25** mile **northeast** of **Bloomfield**.				
6	Status of land at facility (check one): ■ Private ☐ Indian/Pueblo ☐ Federal BLM ☐ Federal Forest Service ☐ Other (specify)				
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: **Bloomfield, NM; Navajo Indian Reservation**				
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/aqb/modeling/class1areas.html)? ☐ Yes ☐ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: **N/A**				
9	Name nearest Class I area: **Mesa Verde National Park**				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): **64.85 km**				
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: **140 meters**				
12	Method(s) used to delineate the Restricted Area: **Continuous fencing around the station.** "**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 ($\frac{\text{hours}}{\text{day}}$): **24**	($\frac{\text{days}}{\text{week}}$): **7**	($\frac{\text{weeks}}{\text{year}}$): **52**	($\frac{\text{hours}}{\text{year}}$): **8,760**			
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start:		☐AM ☐PM	End:	☐AM ☐PM		
3	Month and year of anticipated start of construction: **Existing source**						
4	Month and year of anticipated construction completion: **Existing source**						
5	Month and year of anticipated startup of new or modified facility: **Existing source**						
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:

a	If yes, NOV date or description of issue: **N/A**		NOV Tracking No: **N/A**
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: **N/A**	Date: **N/A**	Requirement # (or page # and paragraph #): **N/A**
d	Provide the required text to be inserted in this permit: N/A		
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: **Farmington Electric Utility System** 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): **Dave Roybal**	Phone: **575-347-6514**
a	R.O. Title: **Director of Operations**	R.O. e-mail: **david.roybal@energytransfer.com**
b	R. O. Address: **8501 Jefferson NE, Albuquerque, NM 87113**	
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC): **Clint Cowan**	Phone: **214-840-5402**
a	A. R.O. Title: **Vice President of Environmental**	A. R.O. e-mail: **clint.cowan@energytransfer.com**
b	A. R. O. Address: **8111 Westchester, Suite 600, Dallas, TX 75225**	
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): **None**	
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.): **Energy Transfer**	
a	Address of Parent Company: **8111 Westchester Drive, Suite 600, Dallas, TX 75225**	
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.): **None**	
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: **Terry Van Maanen, 970-759-1308**	
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)? **Yes.** If yes, state which ones and provide the distances in kilometers: **State of Colorado (30 kilometers (km)); Southern Ute Indian Tribe Air Quality Program (30 km); Navajo Reservation (11 km); Ute Mountain Indian Reservation (30 km); Southern Ute Indian Reservation (30 km); Jicarilla Apache Indian Reservation (53 km).**	

Section 1-I – Submittal Requirements

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

Hard Copy Submittal Requirements:

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

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

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

Electronic files sent by (check one):

■ CD/DVD attached to paper application

□ secure electronic transfer. Air Permit Contact Name_____

Email_____

Phone number _____

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

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

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

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

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

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

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

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

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

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

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

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Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	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.
1001	Compressor Turbine #1	Solar	T7002	OHE19-T4818	7,700 hp/ 6,937 hp (nameplate)	5,879 hp	1991 1991	NA 1	20200-201	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	SI	N/A
1002	Compressor Turbine #2	Solar	T7002	OHD18-T9350	7,700 hp/ 6,937 hp (nameplate)	5,879 hp	1991 1991	NA 2	20200-201	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	SI	N/A
1003	Compressor Turbine #3	Solar	T7002	OHC14-T7891	7,700 hp/ 6,937 hp (nameplate)	5,879 hp	1991 1991	NA 3	20200-201	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	SI	N/A
TK-7	Pipeline Liquids Tank	NA	NA	NA	8,820 gal.	8,820 gal.	1997 1997	NA TK-7	40400-311	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
G8040	Emergency Generator	Cummins	GTA28	25157650	710 hp	700 hp	NA 1991	NA 4	20200-254	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	SI, 4SLB	N/A
SSM/M1	Startup, Shutdown, Maintenance, and Malfunction	NA	NA	NA	NA	NA	1991 1991	NA NA	NA	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		

[1] Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.
[2] Specify dates required to determine regulatory applicability.
[3] To properly account for power conversion efficiencies, generator set rated capacity shall be reported as the rated capacity of the engine in horsepower, not the kilowatt capacity of the generator set.
[4] "4SLB" means four stroke lean burn engine, "4SRB" means four stroke rich burn engine, "2SLB" means two stroke lean burn engine, "CI" means compression ignition, and "SI" means spark ignition

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

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

Unit Number	Source Description	Manufacturer	Model No. / 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
1006	Line Heater	Smith IND, Inc.	NO31906.01	0.800	20.2.72.202.B.5	Unknown	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			32859	MMBtu/hr	IA List Item #1.a	1991	
LOAD	Condensate Truck Loading	NA	NA	NA	20.2.2.202.B.5	NA	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			NA	NA	IA List Item #1.a	1991	
FUG	Piping Component Fugitives	NA	NA	NA	20.2.2.202.B.5	NA	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			NA	NA	IA List Item #1.a	1991	
TK-2	Oily Wastewater Tank	Unknown	NA	4239	20.2.2.202.B.5	Unknown	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			NA	gallons	IA List Item #1.a	1991	
TK-3	Lube Oil Tank	Unknown	NA	10,019	20.2.2.202.B.5	Unknown	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			NA	gallons	IA List Item #1.a	1991	
TK-4	Used Oil Sump	Unknown	NA	660	20.2.2.202.B.5	Unknown	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			NA	gallons	IA List Item #1.a	1991	
TK-5	Used Oil Sump	Unknown	NA	660	20.2.2.202.B.5	Unknown	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			NA	gallons	IA List Item #1.a	1991	
TK-6	Used Oil Sump	Unknown	NA	660	20.2.2.202.B.5	Unknown	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			NA	gallons	IA List Item #1.a	1991	
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

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

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

Table 2-C: Emissions Control Equipment

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

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
None						

[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
Totals																		

[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
1001	27.30	119.56	5.83	25.55	0.25	1.09	0.12	0.51	0.36	1.59	0.36	1.59	0.36	1.59	-	-	-	-
1002	27.30	119.56	5.83	25.55	0.25	1.09	0.12	0.51	0.36	1.59	0.36	1.59	0.36	1.59	-	-	-	-
1003	27.30	119.56	5.83	25.55	0.25	1.09	0.12	0.51	0.36	1.59	0.36	1.59	0.36	1.59	-	-	-	-
G8040	23.56	5.89	1.83	0.46	0.68	0.17	0.012	0.00304	0.058	0.014	0.058	0.014	0.058	0.014	-	-	-	-
TK-7	-	-	-	-	7.08	29.39	-	-	-	-	-	-	-	-	-	-	-	-
SSM/M1	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-
Totals	105.46	364.57	56.30	77.10	8.51	42.83	0.37	1.52	1.15	4.78	1.15	4.78	1.15	4.78	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
Totals																		

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

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

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

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

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

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

Table 2-H: Stack Exit Conditions

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

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
1	1001	V	N	50	1,275	1,541			218	3.0
2	1002	V	N	50	1,259	1,745			246	3.0
3	1003	V	N	50	1,350	1,837			260	3.0
4	G8040	V	Yes	16	1,219	61.2			311.6	0.5
TK-7	TK-7	V	N	14	N/A	260	N/A	N/A	N/A	N/A

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		Formaldehyde ■ HAP or □ TAP		Acetaldehyde ■ HAP or □ TAP		Acrolein ■ HAP or □ TAP		Benzene ■ HAP or □ TAP		Methanol ■ HAP or □ TAP		Ethylbenzene ■ HAP or □ TAP		Toluene ■ HAP or □ TAP		Xylene ■ 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
There are no HAPs emitted at a rate of greater than one (1) ton per year from the entire facility.																			
Totals:		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.0000	0.000	0.000	0.00	0.000	0.000

Table 2-J: Fuel

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

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash
1001	Natural Gas	Pipeline-quality natural gas	1016	55 MMBtu/hr	481,800 MMBtu/yr	0	0
1002	Natural Gas	Pipeline-quality natural gas	1016	55 MMBtu/hr	481,800 MMBtu/yr	0	0
1003	Natural Gas	Pipeline-quality natural gas	1016	55 MMBtu/hr	481,800 MMBtu/yr	0	0
G8040	Natural Gas	Pipeline-quality natural gas	1016	5.78 MMBtu/hr	2,888 MMBtu/yr	0	0
1006	Natural Gas	Pipeline-quality natural gas	1016	0.8 MMBtu/hr	7,008 MMBtu/yr	0	0

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

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

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
TK-7	40400311	Pipeline liquids/condensate	Hydrocarbon liquids	5.6	69	60.8	3.8	67.0	4.2
TK-2	40400314	Oily wastewater	Water/oil	7.6	190	60.8	<0.01	67.0	<0.01
TK-3	40400313	Lube Oil	Oil	7.5	190	60.8	<0.01	67.0	<0.01
TK-4	40400313	Used lube oil	Used oil	7.5	190	60.8	<0.01	67.0	<0.01
TK-5	40400313	Used lube oil	Used oil	7.5	190	60.8	<0.01	67.0	<0.01
TK-6	40400313	Used lube oil	Used oil	7.5	190	60.8	<0.01	67.0	<0.01

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			
TK-7	1997	Pipeline Liquids	NA	FX	210	33	3.0	2.3	WH	WH	Good	22,995	2.6
TK-2		Oily wastewater	None	FX	100	12	4.57	Varies	WH	WH	Good	8,478	2.0
TK-3		Lube Oil	None	FX	238	28	1.83	Varies	WH	WH	Good	20,038	2.0
TK-4		Used lube oil	None	FX	16	2	1.83	Varies	WH	WH	Good	1,320	2.0
TK-5		Used lube oil	None	FX	16	2	3.66	Varies	WH	WH	Good	1,320	2.0
TK-6		Used lube oil	None	FX	16	2	3.66	Varies	WH	WH	Good	1,320	2.0

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	Light hydrocarbons (methane)	Gas	1,640 million standard cubic feet per day	Pipeline Liquids	Organic compounds	Liquid	1.5 barrels per day

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
None									

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
None								

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**									
1001	**mass GHG**	28,179.35	0.053	0.53										28,179.94	
	CO_2e	28,179.35	15.83	13.28											28,208.46
1002	**mass GHG**	28,179.35	0.053	0.53										28,179.94	
	CO_2e	28,179.35	15.83	13.28											28,208.46
1003	**mass GHG**	28,179.35	0.053	0.53										28,179.94	
	CO_2e	28,179.35	15.83	13.28											28,208.46
G8040	**mass GHG**	168.88	0.00032	0.0032										168.89	
	CO_2e	168.88	0.095	0.080											169.06
1006	**mass GHG**	409.88	0.00077	0.0077										409.89	
	CO2e	409.88	0.23	0.19											410.30
TK-7	**mass GHG**	0.00	0.00	15.82										15.82	
	CO2e	0.00	0.00	395.59											395.59
FUG	**mass GHG**	1.54	0.00	33.28										34.82	
	CO_2e	1.54	0.00	832.12											833.66
SSM/M1	**mass GHG**	34.65	0.00	749.67										784.32	
	CO_2e	34.65	0.00	18,741.83											18,776.48
	mass GHG														
	CO_2e														
	mass GHG														
	CO_2e														
	mass GHG														
	CO_2e														
	mass GHG														
	CO_2e														
	mass GHG														
	CO_2e														
	mass GHG														
	CO2e														
Total	**mass GHG**	85,153.01	0.16	800.39										85,953.56	
	CO_2e	85,153.01	47.80	20,009.65											105,210.47

[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.

Facility Description:

Transwestern Pipeline Company, LLC (Transwestern) owns and operates Bloomfield Compressor Station located in San Juan County, New Mexico. This facility is a natural gas compressor station, Standard Industry Classification code 4922. The station provides compression of natural gas along a pipeline that transports the gas from production and processing areas to end users. This station operates in accordance with the New Mexico Environment Department (NMED)-issued Permit No. P010-R3M1, dated June 7, 2018.

Process Description:

Natural gas enters the station and passes through an inlet separators that "knock out" traces of liquids in the gas that may condense and drop out when passing through the separators. The pressurized gas then goes to one of several compressors. The station has three compressors driven by gas-fired turbines and two compressors driven by electric motors. After the compressors boost the gas pressure, the compressed gas is returned to the main pipeline to continue its journey along the transmission pipeline.

The liquids that accumulate in the inlet separator are collected and released under pipeline pressure to a 210-barrel (8,820-gallon) pipeline-liquids, or condensate, tank. Gas entrained in the liquid is released as "flash" emissions and exits the tank through a vent due to a reduction in pressure from the high pressure of the pipeline to atmospheric pressure at the tank. In addition to the condensate tank, five other tanks are used. They are a 4,239-gallon oily wastewater tank, a 10,019-gallon lube oil tank, and three 660-gallon used oil tanks.

Additional combustion sources at the station include an emergency generator and a line heater. The back-up generator provides power to the station if purchase power from the electric grid is lost, and the line heater is used to heat the fuel line leading to the turbines. In addition, small amounts of gas are emitted as fugitive emissions at various connectors inside the station.

Type of Permit Application:

This permit application is an application submitted in accordance with 20.2.70.300.B(2) NMAC to renew Title V Permit No. P010-R3M1. Since this permit was most recently revised in June 2018, Transwestern has made no changes to station operations, but has replaced two turbines (Unit Numbers 1001 and 1002) with like-in-kind units, which is considered to be maintenance activity. Therefore, with this application, Transwestern is not proposing any changes to be made to applicable requirements or to terms and conditions contained in the existing permit. Note, however, that Transwestern is updating emission estimates from the station's tanks by following the recent updates in methodology and emission factors presented in the revised version of U.S. Environmental Protection Agency AP-42, *Compilation of Air Pollutant Emission Factors*, Chapter 7, that was issued in November 2019.

Air Quality Permits Associated with Site:

In addition to Title V Permit No. P010-R3M1, Transwestern has also been issued New Source Review Permit No. 0917-M4 for Bloomfield Compressor Station. This permit was most recently revised on July 21, 2016. Except for the maintenance replacement of two turbines (Unit Numbers 1001 and 1002) with like-in-kind units, as mentioned above, no changes have been made to the station or to its operation since this permit was last issued.

Overview of SSM emissions:

A proposed limit on startup, shutdown, maintenance, and malfunction (SSM/M) emissions is included in the representation of the station's emissions within this permit application. A combined limit of 10 tons per year of VOC, which is the limit specified in the current permit and the limit allowed by NMED guidance, is requested. Note that all SSM/M emissions represented at the station are as VOC. Since all natural gas that is moved through or combusted at the station is pipeline-quality natural gas that is limited by Transwestern's tariff to less than 0.25 grain of hydrogen sulfide (H_2S) and less than 0.75 grain of total sulfur per 100 cubic feet of gas, SSM/M emissions of H_2S and SO_2 are negligible. A typical gas analysis, which is presented in Section 7, shows no presence of H_2S. Thus, uncontrolled venting, blowdown, or pigging emissions of H_2S are less than 0.1 pound per hour and less than 0.44 ton per year, and Transwestern is therefore requesting no change to SSM/M emissions in this application.

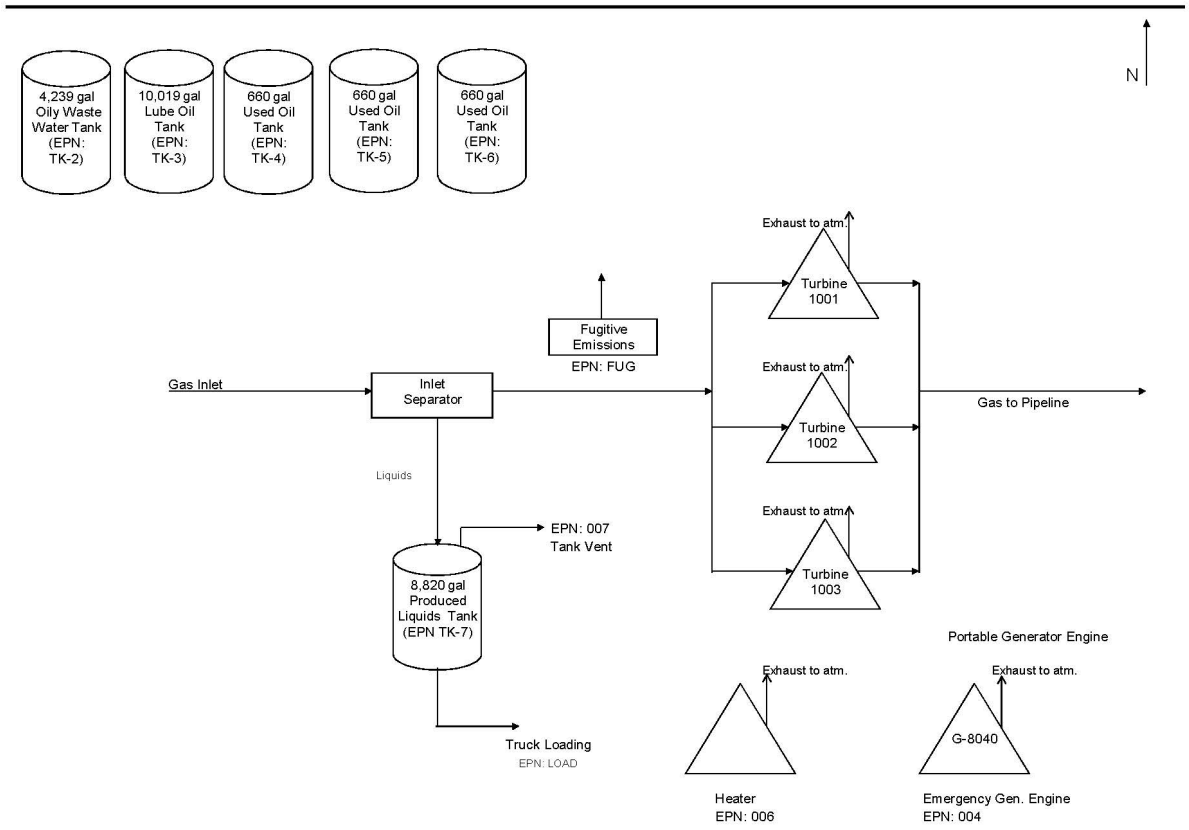
In addition, as indicated in Section 14 of this application, Transwestern has developed and is implementing a plan to mitigate SSM emissions during startups, shutdowns, and emergencies, and a plan to minimize emissions during routing or predictable startup, shutdown, and scheduled maintenance through work practices and good air pollution control practices. Transwestern maintains these plans at the site.

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 diagram depicting the various operating processes at Bloomfield Compressor Station is provided below.

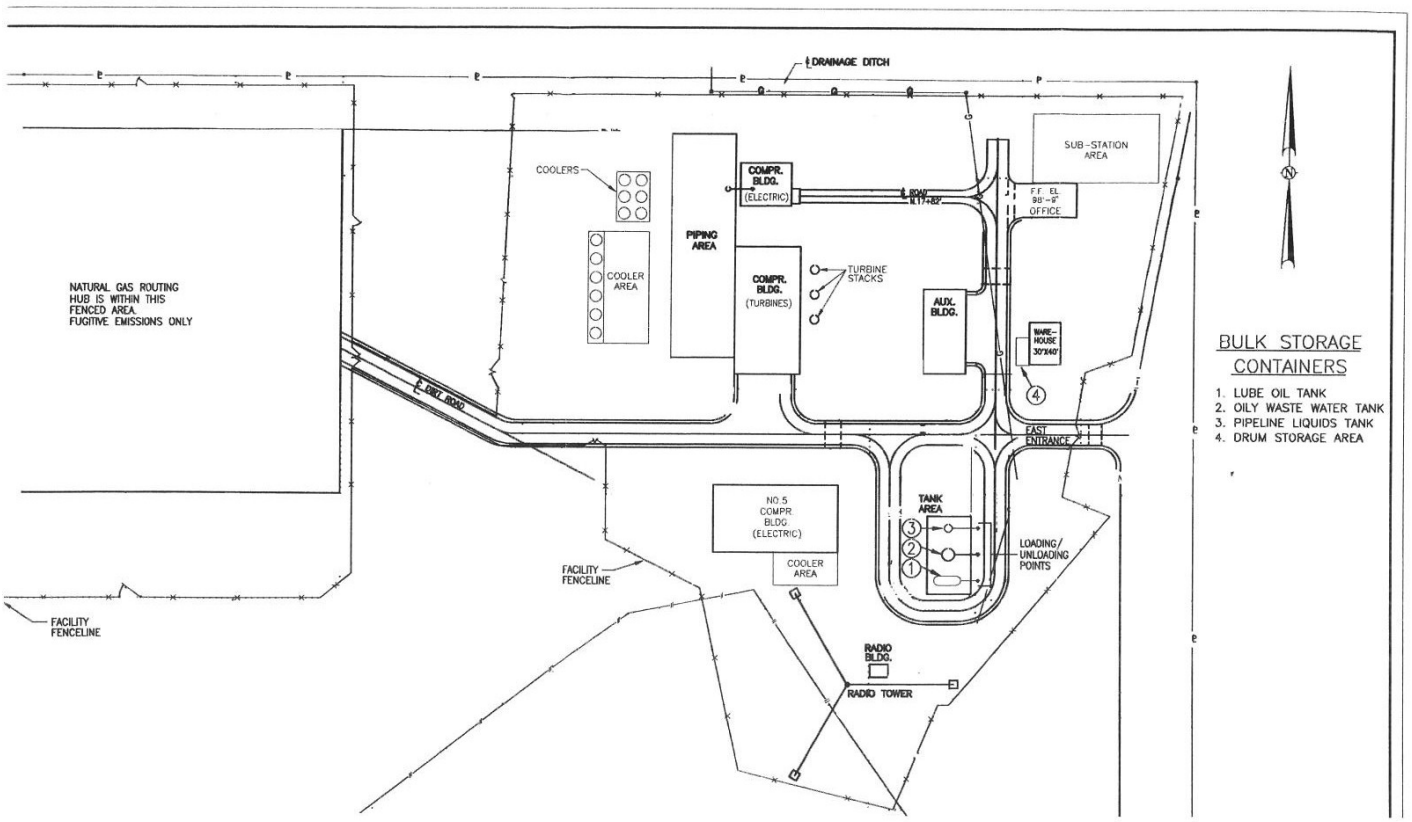


Section 5

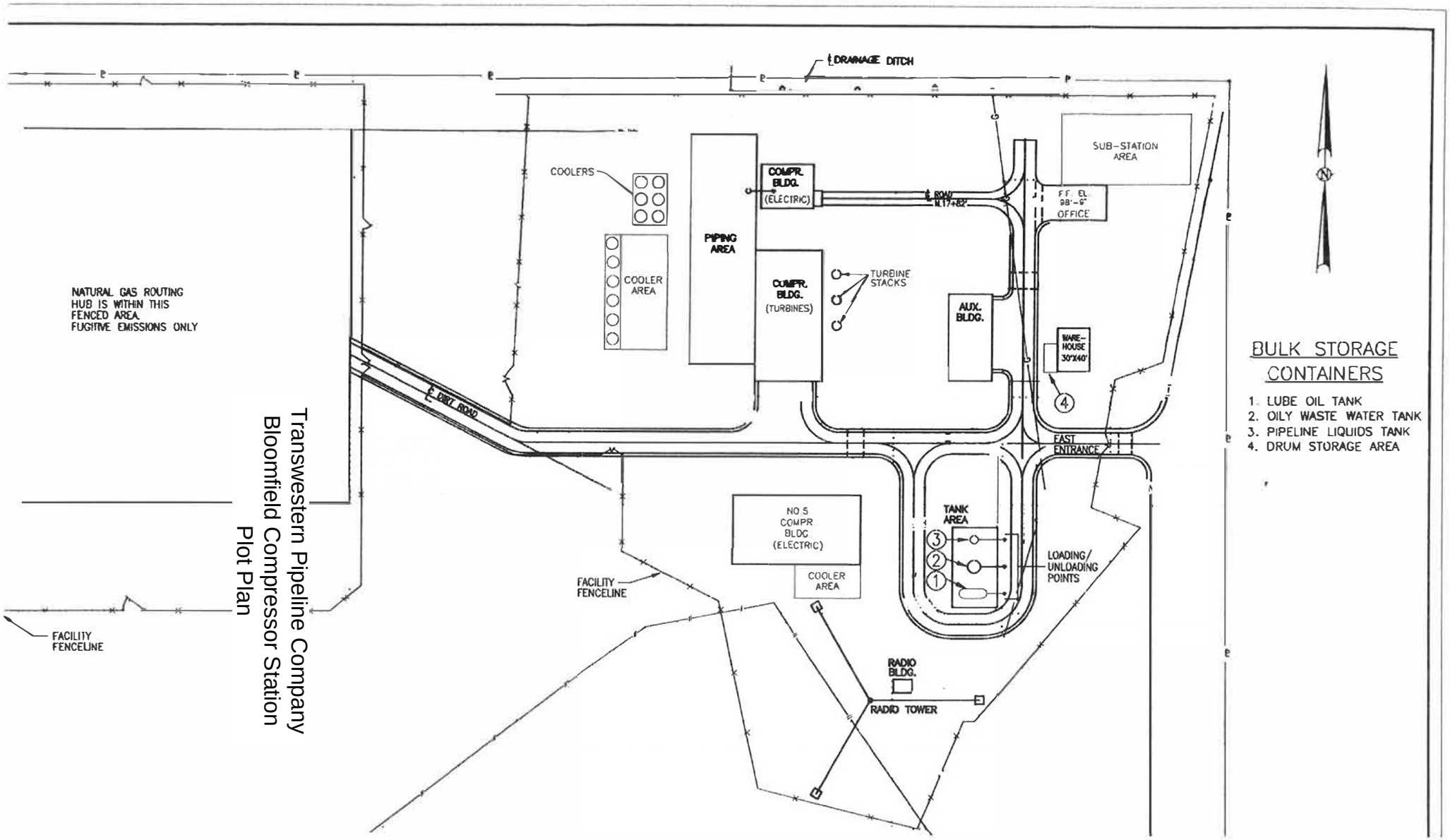
Plot Plan Drawn To Scale

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.

A plot plan drawn to scale is shown below. A larger version of this plot plan is included on the following page.



Transwestern Pipeline Company, LLC
Bloomfield Compressor Station
Plot Plan



Transwestern Pipeline Company, LLC
Bloomfield Compressor Station
Plot Plan

Section 6

All Calculations

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

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

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

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

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

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

Significant Figures:

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

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

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

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

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

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

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

Control Devices: In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device

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

Calculations of emissions for all sources at the station and a summary of emissions for the entire facility are included on the pages following Section 6.a. Bloomfield Compressor Station does not employ emission control devices, methods, or techniques, so all emission estimates are of uncontrolled emissions. An estimate of startup, shutdown, maintenance, and malfunction emissions is also given in this section.

Estimates of potential emissions from the turbines and engines at the station are calculated in the same manner as in, and using emission factors contained in, the most recent permit modification application (and follow-up material) submitted for Permit No. P010-R3 in July and September 2017, respectively. For the turbines, the emission factors for oxides of nitrogen, carbon monoxide, and volatile organic compounds (VOC) were initially derived from vendor data and modified to include a conservative safety factor. Emission factors for particulate matter and hazardous air pollutants were taken from Section 3.1, Tables 3.1-2a and 3.1-3, respectively, of U.S. Environmental Protection Agency AP-42. For the emergency generator engine, emission factors for all contaminants except SO_2 were taken from AP-42 Section 3.2, Table 3.2-2, for four-stroke, lean-burn engines. For SO_2, rather than using the AP-42 emission factor of 0.000588 pound per million British thermal units, Transwestern is using the limit on total sulfur specified in its Federal Energy Regulatory Commission-issued tariff for natural gas transmitted through the station. Since the turbines' and engine's fuel gas is taken from this regulated gas source, the tariff limit of 0.75 grain of total sulfur per 100 cubic feet of fuel is used as an emission factor.

Note that the emission calculations for the facility's emergency generator engine, Unit I.D. G-8040, are made for the purpose of presenting a potential to emit for routine maintenance and testing purposes, only. The calculations are not meant to provide a strict annual limit, because unlimited operation of the unit is allowed since it is an emergency unit, under 40 Code of Federal Regulations Part 63, Subpart ZZZZ, §63.6640(f)(1).

Tank flashing emissions are calculated using the Vasquez-Beggs Gas/Oil Correlation Method. The emissions are estimated by assuming that the inlet separator collect pipeline condensate at a rate of 1.5 barrels per day. As very little condensate is actually collected along the pipeline, this assumption overestimates the amount of liquid that drops out at the station. The flashing emissions occur at the condensate tank (TK-7) when pressurized liquids from the pipeline are subjected to a reduction in pressure from pipeline to atmospheric pressure (at the tank). The pipeline pressure is taken to be 1,462 pounds per square inch, which is the maximum allowable pressure along any of the inlet lines at the station, but not necessarily the maximum allowable pressure along all of the inlet lines to the station.

With this application, Transwestern has revised the emission calculations for the working and breathing losses from the condensate tank. However, no physical changes, changes to operations, or changes in assumed tank throughputs were made. In the most recent previous application, tank emissions estimates were calculated using the EPA TANKS 4.09d software, which was based on historical versions of AP-42, Chapter 7.0, but an update to AP-42 Chapter 7.0 was finalized in November 2019. Therefore, the estimates of the tank working and breathing losses submitted in this application were based on the updated version of AP-42. Note, however, that the resulting changes in emissions are very low. For the pipeline liquids/condensate tank, the calculations assume a throughput of 1.5 barrels per day, or 22,995 gallons per year.

Transwestern is requesting to retain a combined SSM/M limit of 10 tons per year (tpy) of VOC, as allowed by NMED guidance, in the renewed permit. Thus, no calculations of SSM emissions are presented. Predictable SSM emissions include emissions from pigging operations, compressor blowdowns, and facility shutdowns. Note that all SSM/M emissions represented at the station are as VOC. As indicated in Section 14 of this application, Transwestern has developed and is implementing a plan to mitigate SSM emissions during startups, shutdowns, and emergencies, and a plan to minimize emissions during routing or predictable startup, shutdown, and scheduled maintenance through work practices and good air pollution control practices; these plans are maintained at the site.

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)

TRANSWESTERN PIPELINE COMPANY, LLC
BLOOMFIELD COMPRESSOR STATION
TITLE V PERMIT MODIFICATION
PERMIT NO. P010-R3M2

Hourly:

		Potential Hourly Emissions (pounds per hour)														
EPN	**Unit ID**	**NOx**	**CO**	**VOC**	**SO2**	**PM**	**1,3-Butadiene**	**Acetaldehyde**	**Acrolein**	**Benzene**	**Ethylbenzene**	**Formaldehyde**	**Hexane**	**Toluene**	**Xylenes**	**Total HAPs**
1001	Solar Centaur T-7000	27.30	5.83	0.25	0.116	0.363	0.000024	0.00220	0.000352	0.000660	0.00176	0.0391	-	0.00715	0.00352	0.0565
1002	Solar Centaur T-7000	27.30	5.83	0.25	0.116	0.363	0.000024	0.00220	0.000352	0.000660	0.00176	0.0391	-	0.00715	0.00352	0.0565
1003	Solar Centaur T-7000	27.30	5.83	0.25	0.116	0.363	0.000024	0.00220	0.000352	0.000660	0.00176	0.0391	-	0.00715	0.00352	0.0565
G-8040	Cummins GTA28	23.56	1.83	0.68	0.0122	0.058	0.00154	0.0483	0.0297	0.00254	0.000229	0.305	-	0.00236	0.00106	0.358
TK-7	Pipeline Liquids	-	-	7.08	-	-	-	-	-	-	-	-	-	-	-	-
TK-2	Oily Wastewater	-	-	0.68	-	-	-	-	-	-	-	-	-	-	-	-
TK-3	Lube Oil	-	-	0.16	-	-	-	-	-	-	-	-	-	-	-	-
TK-4	Used Oil	-	-	0.0105	-	-	-	-	-	-	-	-	-	-	-	-
TK-5	Used Oil	-	-	0.0105	-	-	-	-	-	-	-	-	-	-	-	-
TK-6	Used Oil	-	-	0.0105	-	-	-	-	-	-	-	-	-	-	-	-
1006	Line Heater	0.079	0.066	0.0043	0.00047	0.0060	-	-	-	0.000002	-	0.000059	0.00142	0.000003	-	0.00148
LOAD	Liquid Loading	-	-	34.3	-	-	-	-	-	-	-	-	-	-	-	-
FUG	Fugitives	-	-	0.101	-	-	-	-	-	-	-	-	-	-	-	-
SSM/M	Startup, Shutdown, Maintenance, and Malfunction	-	-	*	-	-	-	-	-	-	-	-	-	-	-	-
Total	**Revised Site-wide Emissions**	**105.53**	**19.39**	**43.82**	**0.360**	**1.15**	**0.00161**	**0.0549**	**0.0307**	**0.0045**	**0.0055**	**0.422**	**######**	**0.0238**	**0.0116**	**0.529**
Previously Submitted Site-wide Emissions:		**105.53**	**19.39**	**34.25**	**0.360**	**1.15**	**0.00161**	**0.0549**	**0.0307**	**0.0045**	**0.0055**	**0.422**	**######**	**0.0238**	**0.0116**	**0.529**
Requested Change in Site-wide Emissions:		**0.0**	**0.0**	**9.58**	**0.000**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Annual:

		Potential Annual Emissions (tons per year)														
EPN	**Unit ID**	**NOx**	**CO**	**VOC**	**SO2**	**PM**	**1,3-Butadiene**	**Acetaldehyde**	**Acrolein**	**Benzene**	**Ethylbenzene**	**Formaldehyde**	**Hexane**	**Toluene**	**Xylenes**	**Total HAPs**
1001	Solar Centaur T-7000	119.56	25.55	1.09	0.507	1.59	0.000104	0.00964	0.00154	0.00289	0.00771	0.171	-	0.0313	0.0154	0.247
1002	Solar Centaur T-7000	119.56	25.55	1.09	0.507	1.59	0.000104	0.00964	0.00154	0.00289	0.00771	0.171	-	0.0313	0.0154	0.247
1003	Solar Centaur T-7000	119.56	25.55	1.09	0.507	1.59	0.000104	0.00964	0.00154	0.00289	0.00771	0.171	-	0.0313	0.0154	0.247
G-8040	Cummins GTA28	5.89	0.46	0.17	0.00304	0.014	0.000385	0.0121	0.00742	0.000635	0.000057	0.0762	-	0.000589	0.00027	0.0896
TK-7	Pipeline Liquids	-	-	29.39	-	-	-	-	-	-	-	-	-	-	-	-
TK-2	Oily Wastewater	-	-	4.8E-03	-	-	-	-	-	-	-	-	-	-	-	-
TK-3	Lube Oil	-	-	5.5E-04	-	-	-	-	-	-	-	-	-	-	-	-
TK-4	Used Oil	-	-	3.6E-05	-	-	-	-	-	-	-	-	-	-	-	-
TK-5	Used Oil	-	-	3.6E-05	-	-	-	-	-	-	-	-	-	-	-	-
TK-6	Used Oil	-	-	3.6E-05	-	-	-	-	-	-	-	-	-	-	-	-
1006	Line Heater	0.34	0.29	0.019	0.0021	0.026	-	-	-	0.000007	-	0.000259	0.00621	0.000012	-	0.00648
LOAD	Liquid Loading	-	-	0.043	-	-	-	-	-	-	-	-	-	-	-	-
FUG	Fugitives	-	-	0.444	-	-	-	-	-	-	-	-	-	-	-	-
SSM/M	Startup, Shutdown, Maintenance, and Malfunction	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-
Total	**Revised Site-wide Emissions**	**364.90**	**77.39**	**43.34**	**1.53**	**4.81**	**0.000696**	**0.0410**	**0.0120**	**0.00931**	**0.0232**	**0.590**	**######**	**0.0946**	**0.0465**	**0.838**
Current Permit Total (from P010-R3M1):		**364.90**	**77.39**	**43.31**	**1.53**	**4.81**	**0.000696**	**0.0410**	**0.0120**	**0.00931**	**0.0232**	**0.590**	**######**	**0.0946**	**0.0465**	**0.838**
Increase from Current Permit Total:		**0.0**	**0.0**	**0.03**	**0.00**	**0.0**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**0.0**

Notes:
NOx - Oxides of nitrogen
CO - Carbon monoxide
VOC - Volatile organic compounds
SO2 - Sulfur dioxide
PM - Particulate matter; all PM emissions are assumed to consist 100 percent of PM2.5, so emissions of total PM are taken to also be the emissions of PM10 and PM2.5.
PM2.5 and PM10 are particulate matter with an aerodynamic diameter of less than or equal to 2.5 and 10 micrometers, respectively.
HAP - Hazardous air pollutant
An entry of " - " indicates that emissions are negligible or not expected from the unit for the indicated pollutant.
An entry of " * " indicates that hourly emissions are not appropriate for the given operating situation for this unit, although the hourly emissions potential for TK-7 can be calculated from the annual emissions to be 7.08 pounds per hour.

TRANSWESTERN PIPELINE COMPANY, LLC
BLOOMFIELD COMPRESSOR STATION
TITLE V PERMIT MODIFICATION
PERMIT NO. P010-R3M2

Natural Gas Fired Compressor Turbines & Internal Combustion (I/C) Engine

Emissions Unit Data

Unit I.D.	Description	Total Annual Hours	Site Rated Horsepower (hp)[1]	Fuel Consumption (Btu/hp-hr)[1]	Heat Rating (MMBtu/hr)	Maximum Annual Fuel Use (MMBtu/yr)	Maximum Annual Fuel Use (MMscf/yr)	Emission Factor[2] NOx (g/(hp-hr)	CO (g/(hp-hr)	nm-VOC (g/(hp-hr)	Emission Factor SO2[3] (lb/MMBtu)	Emission Factor PM[4] (lb/MMBtu)
1001	Solar Centaur T-7000	8,760	5,879	9,355	55.0	481,800	474.12	**2.11**	**0.45**	**0.019**	**0.00211**	**0.0066**
1002	Solar Centaur T-7000	8,760	5,879	9,355	55.0	481,800	474.12	**2.11**	**0.45**	**0.019**	**0.00211**	**0.0066**
1003	Solar Centaur T-7000	8,760	5,879	9,355	55.0	481,800	474.12	**2.11**	**0.45**	**0.019**	**0.00211**	**0.0066**
G-8040	Cummins GTA28	500	700	8,250	5.78	2,888	2.841	(See "I/C Engine" table below)				

Criteria Pollutants

Turbines

Unit I.D.	Potential Hourly Emissions (lb/hr) NOx	CO	nm-VOC	SO2	PM[3]	Potential Annual Emissions (tpy) NOx	CO	nm-VOC	SO2	PM[3]
1001	**27.30**	**5.83**	**0.25**	**0.116**	**0.363**	**119.56**	**25.55**	**1.09**	**0.507**	**1.59**
1002	**27.30**	**5.83**	**0.25**	**0.116**	**0.363**	**119.56**	**25.55**	**1.09**	**0.507**	**1.59**
1003	**27.30**	**5.83**	**0.25**	**0.116**	**0.363**	**119.56**	**25.55**	**1.09**	**0.507**	**1.59**

I/C Engine

Unit I.D.	Emission Factor (lb/MMBtu)[5] NOx	CO	VOC	SO2[3]	PM	Potential Hourly Emissions (lb/hr) NOx	CO	VOC	SO2	PM
G-8040	4.08	0.317	0.118	**0.00211**	0.0099871	**23.56**	**1.83**	**0.681**	**0.0122**	**0.058**
						Potential Annual Emissions (tpy) NOx	CO	VOC	SO2	PM
						5.89	**0.458**	**0.170**	**0.00304**	**0.014**

Hazardous Air Pollutants (HAPs)

Emission Factors (lb/MMBtu)[6]

Pollutant	Turbines	I/C Engine
1,3-Butadiene	0.00000043	0.000267
Acetaldehyde	0.000040	0.00836
Acrolein	0.0000064	0.00514
Benzene	0.000012	0.00044
Ethylbenzene	0.000032	0.0000397
Formaldehyde	0.000710	0.05280
Toluene	0.000130	0.000408
Xylenes	0.000064	0.000184
Total HAP	**0.001027**	**0.06203**

POTENTIAL HOURLY EMISSIONS (lb/hr)

Unit I.D.	Pollutant 1,3-Butadiene	Acetaldehyde	Acrolein	Benzene	Ethylbenzene	Formaldehyde	Toluene	Xylenes	Total HAP
1001	0.00002365	0.00220	0.000352	0.000660	0.00176	0.0391	0.00715	0.00352	0.0565
1002	0.000024	0.00220	0.000352	0.000660	0.00176	0.0391	0.00715	0.00352	0.0565
1003	0.000024	0.00220	0.000352	0.000660	0.00176	0.0391	0.00715	0.00352	0.0565
G-8040	0.00154	0.0483	0.0297	0.00254	0.000229	0.305	0.00236	0.00106	0.358

POTENTIAL ANNUAL EMISSIONS (tpy)

Unit I.D.	Pollutant 1,3-Butadiene	Acetaldehyde	Acrolein	Benzene	Ethylbenzene	Formaldehyde	Toluene	Xylenes	Total HAP
1001	0.000104	0.00964	0.00154	0.00289	0.00771	0.171	0.0313	0.0154	0.247
1002	0.000104	0.00964	0.00154	0.00289	0.00771	0.171	0.0313	0.0154	0.247
1003	0.000104	0.00964	0.00154	0.00289	0.00771	0.171	0.0313	0.0154	0.247
G-8040	0.000385	0.0121	0.00742	0.000635	0.000057	0.0762	0.000589	0.00027	0.0896
Total	**0.00070**	**0.04098**	**0.01205**	**0.00931**	**0.02318**	**0.58935**	**0.09454**	**0.04652**	**0.832**

Notes:
(1) The site-rated horsepower for the turbines is based on vendor data and the fuel consumption value is based on a vendor-supplied value of 8,115 Btu/(hp-hr) rate conservatively increased to 9,355 Btu/(hp-hr). (See Section 7.0.)
(2) Emissions factors for Unit IDs 1001,1002, and 1003 for NOx, CO, and nonmethane volatile organic compounds (nm-VOC) are taken from vendor data. (See Section 7.0.)
The emissions factor for nm-VOC is conservatively taken as 15 percent of the given unburned hydrocarbon (UHC) factor, based on vendor guidance that nonmethane hydrocarbons would be 5 to 10% of UHC.
This factor is conservatively used as the emissions factor for total VOC.
(3) For all units, the SO2 emission factor is derived from the station's tariff limit for total sulfur of 0.75 grain of Sulfur / 100 scf (gr S / 100 scf). EF (for Total Sulfur) = Tariff Limit * (1/Heat Value of Fuel)
Heat Value of Fuel = 1,016.2 Btu/scf = 1,016.2 MMBtu/MMscf (from gas analysis)
EF (for Total Sulfur) = (0.75 gr S / 100 scf) * (1 lb S /7,000 gr S) * (1 MMscf / 1,016.2 MMBtu) * (1,000,000 scf / MMscf) = 0.00105 lb S/MMBtu
EF (for SO2) = EF for S * [(1 mole SO2) / (1 mole S)] * [(MW SO2) / (MW S)] = 0.00105 lb S/MMBtu * [(1 mole SO2)/(1 mole S)] * [(64.062 lb SO2/mole SO2) / (32.064 lb S/mole S)] = 0.00211 lb SO2/MMBtu
(4) The emission factors for Units IDs 1001, 1002, and 1003 for particulate matter (PM) are taken from AP42, Section 3.1, Table 3.1-2a. All PM is assumed to be PM2.5, including filterables and condensables, so PM (total) = PM10 = PM2.5.
(5) G-0840 is a Cummins GTA28 natural gas-fired emergency generator engine. Emission factors for all contaminants except SO2 are taken from AP 42, Section 3.2, Table 3.2-2, for 4-cycle lean-burn engines.
(6) Emissions factors (in lb/MMBtu) for HAPs for the turbines (Unit IDs 1001,1002, and 1003) are taken from AP-42, Section 3.1, Table 3.1-3, and factors for the I/C Engine (Unit ID G-0840) are taken from AP-42, Section 3.2, Table 3.2-2.

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Tank Working and Standing Loss Potential to Emit

Variable	Description		Value	Units		
-	Roof Construction		Cone	-		
I	Solar insolation factor		1722	Btu/(ft^2-day)		
P_A	Atmospheric Pressure		12.13	psia	**Value**	**Units**
T_{AX}	Daily Maximum Ambient Temperature		69.5	°F	529.17	°R
T_{AN}	Daily Minimum Ambient Temperature		46.3	°F	505.97	°R
ΔT_A	Daily Average Ambient Temperature Range		23.2	°F	23.2	°R
T_{AA}	Annual Average Temperature		57.9	°F	517.57	°R
T_{ST}	Worst-case (Short-term) Liquid Surface Temp.		95.0	°F	554.67	°R
R	Universal gas constant		10.731	(psia-ft^3)/(lb-mol °R)		
			80.273	(psi-gal)/(lb-mol °R)		

Sample Calculations
L_S = Standing loss (lb/yr) = 365*Vv*Wv*Ke*Ks*wt%VOC
L_W = Working loss (lb/yr) = V_Q*Kn*Kp*W_V*K_B*wt%VOC
L_H = Max hourly working loss (lb/hr) = FR_M*[(Mv*Pmax)/(R*T_{ST})]*wt%VO

Note: Solar insolation factor and temperature data are for Albuquerque, New Mexico.

Tank and product specifications. All tanks are vertical fixed roof tanks.

Tank No.	Material	Mv	RVP	wt%VOC	S	A	B	D	R_S	H_S	H_L	ΔP_b	CAPACITY	COLOR	SHADE	REFLECT	α
		Vapor Molecular Weight	Reid Vapor Pressure (in VOC Components)	Percentage of VOC Components in Material	Filling Saturation Factor	Constants in Vapor Pressure Equation (P_{VA}=exp[A-(B/T_{LA})])		Tank Diameter	Tank Shell Radius	Tank Shell Height	Average Liquid Height	Breather Vent Pressure Range	Tank Capacity	Tank Surface Color	Tank Shade or Type	Reflective Condition	Paint Solar Absorbance Factor
		(lb/lbmol)	(psi)	(%)			(°R)	(ft)	(ft)	(ft)	(ft)	(psi)	(bbl)				
TK-7	Pipeline Liquids	69	6.0	100%	3.0	11.09	5,082.22	10	5	15	7.5	0.06	210	White	N/A	Average	0.25
TK-2	Oily Wastewater	190	6.0	1%	3.0	11.88	5,614.40	10	5	7.2	3.6	0.06	101	White	N/A	Average	0.25
TK-3	Lube Oil	190	0.01	100%	3.0	13.84	10,337.06	12	6	11.8	5.9	0.06	239	White	N/A	Average	0.25
TK-4	Used Oil	190	0.01	100%	3.0	13.84	10,337.06	4	2	7.0	3.5	0.06	15.71	White	N/A	Average	0.25
TK-5	Used Oil	190	0.01	100%	3.0	13.84	10,337.06	4	2	7.0	3.5	0.06	15.71	White	N/A	Average	0.25
TK-6	Used Oil	190	0.01	100%	3.0	13.84	10,337.06	4	2	7.0	3.5	0.06	15.71	White	N/A	Average	0.25

Note: Oily wastewater is assumed to contain 10 percent by weight of VOC that has a Reid vapor pressure ot the indicated level.

Tank Emission Calculations

Tank No.	H_{RO}	H_{VO}	V_v	T_B	T_{LA}	P_{VA}	T_V	W_V	K_S	ΔT_V	T_{LX}	T_{LN}	P_{VX}	P_{VN}	ΔP_V	K_E	L_S
	Tank Roof Outage	Vapor Space Outage	Vapor Space Volume	Liquid Bulk Temperature	Average Daily Liquid Surface Temp.	Vapor Pressure at Average Liquid Surface	Average Vapor Temperature	Vapor Density	Vented Vapor Saturation Factor	Average Daily Vapor Temperature Range	Average Daily Maximum Liquid Surface	Average Daily Minimum Liquid Surface	Vapor Press. at Average Daily Max Liquid Surface Temp	Vapor Press. at Average Daily Min Liquid Surface Temp	Daily Vapor Pressure Range	Vapor Expansion Factor	Calculated Standing Loss
	(ft)	(ft)	(ft^3)	(°R)	(°R)	(psia)	(°R)	(lb/ft^3)		(°R)	(°R)	(°R)	(psia)	(psia)	(psia)		(lb/yr)
TK-7	0.1042	7.604	597	518.9	520.5	3.754	521.8	0.04626	0.3979	24.9	526.7	514.3	4.21	3.34	0.876	0.14515	**582.45**
TK-2	0.1042	3.711	291	518.9	520.5	2.985	521.8	0.10129	0.6300	24.9	526.7	514.3	3.39	2.621	0.770	0.12536	**8.51**
TK-3	0.1250	6.046	684	518.9	520.5	0.002	521.8	0.00008	0.9992	24.9	526.7	514.3	0.00	0.0019	0.001	0.04289	**0.88**
TK-4	0.0417	3.552	45	518.9	520.5	0.002	521.8	0.00008	0.9995	24.9	526.7	514.3	0.00	0.0019	0.001	0.04289	**0.057**
TK-5	0.0417	3.552	45	518.9	520.5	0.002	521.8	0.00008	0.9995	24.9	526.7	514.3	0.003	0.0019	0.001	0.04289	**0.057**
TK-6	0.0417	3.552	45	518.9	520.5	0.002	521.8	0.00008	0.9995	24.9	526.7	514.3	0.003	0.0019	0.001	0.04289	**0.057**

Tank No.	Q	Q_H	V_Q	H_{LX}	H_{LN}	N	K_n	K_P	K_B	L_W	T_{BX}	T_{LX}	P_{MAX}	FR_M	L_H
	Tank Annual Throughput	Maximum Hourly Throughput	Net Working Loss Throughput	Maximum Liquid Height	Minimum Liquid Height	Turnovers per Year	Annual Turnover Factor	Working Loss Product Factor	Vent Setting Correction Factor	Calculated Working Loss	Average Daily Minimum Liquid Surface	Daily Maximum Liquid Surface	Vapor Pressure of Product at Worst-case Temperature	Maximum Filling Rate	Maximum Hourly Working Loss
	(bbl/yr)	(bbl/hr)	(ft^3/yr)	(ft)	(ft)					(lb/yr)	(°R)	(°R)	(psia)	(gal/hr)	(lb/hr)
TK-7	548	1.5	3,073.7	14	1.0	3.0	1.00	1.0	1.0	**142.18**	530.5	532.1	4.645	63	**0.45**
TK-2	202	101	1,133.2	6	1.0	2.8	1.00	1.0	1.0	**1.15**	530.5	532.1	3.777	4,239	**0.68**
TK-3	477	239	2,678.4	11	1.0	2.4	1.00	1.0	1.0	**0.22**	530.5	532.1	0.004	10,019	**0.16**
TK-4	31	16	176.4	6	1.0	2.8	1.00	1.0	1.0	**0.015**	530.5	532.1	0.004	660	**0.011**
TK-5	31	16	176.4	6	1.0	2.8	1.00	1.0	1.0	**0.015**	530.5	532.1	0.004	660	**0.011**
TK-6	31	16	176.4	6	1.0	2.8	1.00	1.0	1.0	**0.015**	530.5	532.1	0.004	660	**0.011**

(a) Emission calculations are based on the equations found in EPA AP 42 Chapter 7 November 2019). All factors used are represented in the tables on this page. All other variables are found in AP 42 Chapter 7 or are default unit values.

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Storage Tank Emissions

Unit ID	Material Stored	Tank Capacity (gal)	Annual Throughput (gal/yr)	Working Loss (lb/yr)	Standing Loss (lb/yr)	Flash Emissions (lb/yr)	Annual Emissions (lb/yr)	Annual Emissions (tpy)	Max. Hourly (lb/hr)
TK-7	Pipeline Liquids	8,820	22,995	142.18	582.45	58,049	58,774	29.39	7.08
TK-2	Oily Wastewater	4,239	8,478	1.15	8.51	0	9.66	0.005	0.68
TK-3	Lube Oil	10,019	20,038	0.220	0.88	0	1.10	0.001	0.16
TK-4	Used Oil	660	1,320	0.0145	0.057	0	0.072	0.00004	0.0105
TK-5	Used Oil	660	1,320	0.0145	0.057	0	0.072	0.00004	0.0105
TK-6	Used Oil	660	1,320	0.0145	0.057	0	0.072	0.00004	0.0105

Notes:

(1) The annual throughput for tank TK-7 was conservatively estimated to be 1.5 barrels per day.

(2) Tanks TK-2 through TK-6 are estimated to have no significant emissions due to low vapor pressure and throughput.

(3) Flash emissions from TK-7 were estimated using the Vasquez Beggs equation with the maximum expected pipeline pressure at the station. See separate calculation sheet.

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VOLATILE ORGANIC COMPOUND EMISSION CALCULATION FOR FLASHING (TK-7)

Vasquez - Beggs Solution Gas/Oil Ratio Correlation Method

(For Estimating VOC Flashing Emissions, Using Stock Tank Gas-Oil Ratios For Crude Oil Facilities)

INPUTS:

Stock Tank API Gravity	50	API
Separator Pressure (psig)	1462	P
Separator Temperature (°F)	70	Ti
Separator Gas Gravity at Initail Condition	1.18	SGi
Stock Tank Barrels of Oil per day (BOPD)	1.5	Q
Stock Tank Gas Molecular Weight	44	MW
Fraction VOC (C3+) of Stock Tank Gas	0.65	VOC
Atmospheric Pressure (psia)	12	Patm

CONSTRAINTS:

16	**>API>**	**58**	°API	ok
50	**>P+Patm>**	**5250**	**(psia)**	ok
70	**> Ti >**	**295**	**(°F)**	ok
0.56	**>SGi>**	**1.18**	**(MW/28.97)**	ok
None	**> Q >**	**None**	**(BOPD)**	ok
18	**>MW>**	**125**	**(lb/lb-mole)**	ok
0.5	**>Voc>**	**1.00**	**Fraction**	ok
20	**> Rs >**	**2070**	**(scf/STB)**	ok

SGx = Dissolved gas gravity at 100 psig = SGi [1.0+0.00005912*API*Ti*Log(Pi/114.7)]

SGx =	**1.45**

Rs = (C1 * SGx * Pi^C2) exp ((C3 * API) / (Ti + 460))

Where:

Rs	Gas/Oil Ratio of liquid at pressure of interest
SGx	Dissolved gas gravity at 100 psig
Pi	Pressure of initial condition (psia)
API	API Gravity of liquid hydrocarbon at final condition
Ti	Temperature of initial condition (F)

Constants

	°API Gravity		
°APTI →	**< 30**	**>= 30**	Given °API
C1	0.0362	0.0178	**0.0178**
C2	1.0937	1.187	**1.187**
C3	25.724	23.931	**23.931**

Rs =	**1427.27**	**scf/bbl**	***for P + Patm =***	***1474.13***

THC = Rs * Q * MW * 1/385 scf/lb-mole * 365 D/Yr * 1 ton/2000 lb.s

THC	Total Hydrocarbon (tons/year)
Rs	Solution Gas/Oil Ratio (scf/STB)
Q	Oil Production Rate (bbl/day)
MW	Molecular Weight of Stock Tank Gas (lb/lb-mole)
385	Volume of 1 lb-mole of gas at 14.7 psia and 68 F (WAQS&R Std Cond)

THC =	**44.7**	**TPY**

VOC = THC * Frac. of C3+ in the Stock Tank Vapor

VOC =	**29.02**	**TPY**	***from "FLASHING" of oil from pressurized sump to separator at ambient temp., pressure***

Pressure used to calculate flash emissions is the maximum expected pipeline pressure at the station.

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LINE HEATER POTENTIAL EMISSIONS

Unit ID	Heat Rating (MMBtu/hr)[1]	Gas Heat Value (Btu/scf)	Operating Hours	Emission Factor (lb/MMscf)[2,3]				
				NOx	CO	VOC	SO_2	PM
1006	0.80	1,016	8,760	100	84	5.5	0.6	7.6
Hourly Emissions (lb/hr)				**0.079**	**0.066**	**0.0043**	**0.00047**	**0.0060**
Annual Emissions (tpy)				**0.34**	**0.29**	**0.019**	**0.0021**	**0.026**

Hazardous Air Pollutants

Emission Factors (lb/MMBtu)

Pollutant	Heater
Benzene	0.0021
Formaldehyde	0.075
Hexane	1.8
Toluene	0.0034

POTENTIAL HOURLY EMISSIONS (lb/hr)

Unit I.D.	Pollutant				
	Benzene	Formaldehyde	Hexane	Toluene	Total HAP
1006	**0.000002**	**0.000059**	**0.00142**	**0.000003**	**0.00148**

POTENTIAL ANNUAL EMISSIONS (tpy)

Unit I.D.	Pollutant				
	Benzene	Formaldehyde	Hexane	Toluene	Total HAP
1006	**0.000007**	**0.000259**	**0.00621**	**0.000012**	**0.00648**

Notes:
(1) MMBtu/hr - million British thermal units per hour
(2) lb/MMBtu - pounds per million British thermal units
(3) Emission factors from AP-42 Tables 1.4-1 and 1.4-2 for natural gas-fired small boilers. Factors were converted to lb/MMBtu by dividing by the heating value provided by the gas analysis, which is 1016.2 Btu/scf.

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Loading Emissions Calculations

Emissions from loading condensate from the condensate tank to trucks for off-site removal are estimated using Equation 1 from AP-42 Chapter 5.2, Transportation And Marketing Of Petroleum Liquids, June 2008.

All loading calculations are based on pipeline liquids composed of condensate with an average vapor pressure of 3.75 pounds per square inch (psi) and a maximum vapor pressure of 4.21 psi.

VOC Emissions = 12.46*(S*P*M/(T+460))*(L/1,000) (Equation 1)
where S, P, M, T, and L are defined in the table below.

Annual Emissions

Unit ID	Material Loaded	Mol Wt (M)[2] (lb/lb-mol)	Avg. Temp. (T)[2] (deg F)	Avg. Vapor Pressure (P)[2] (psia)	Sat. Factor (S)[3]	Annual Throughput (L)[4] (gal/yr)	Loading Emissions (tpy)
LOAD	Pipeline Liquids[1]	69	57.90	3.7541	0.60	22,995	**0.043**

Maximum Hourly Emissions

Unit ID	Material Loaded	Mol Wt (M)[2] (lb/lb-mol)	Min. Temp. (T)[5] (deg F)	Max. Vapor Pressure (P)[5] (psia)	Sat. Factor (S)[3]	Hourly Throughput (L)[5] (gal/hr)	Loading Emissions (lb/hr)
LOAD	Pipeline Liquids[1]	69	46.30	4.2123	0.60	8,000	**34.3**

Notes:
(1) Pipeline liquids are assumed to be composed entirely of volatile organic compounds.
(2) The molecular weight (M), average and minimum temperatures (T), and average and maximum vapor pressures (P) of the liquid product loaded are taken from the tank emission calculations.
(3) The saturation factor of 0.6 is the factor for submerged loading, dedicated normal service.
(4) Calculation of annual loading emissions is based on an assumed average throughput of 1.5 barrels of pipeline liquids per day for the entire year.
(5) Calculation of maximum hourly loading emissions is based on a maximum loading rate of 8,000 gallons per hour, where 8,000 gallons represents the typical capacity of a tanker truck.

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Piping Component Fugitive Emissions Calculations

Unit ID: FUG

Component	Count[1]	Emission Factor[2] (lb/hr/comp)	Annual Hours	Control Efficiency	VOC %[3]	Emissions		
						Annual (lb/hr)	Annual (lb/yr)	Annual (tpy)
VALVES:								
Gas/Vapor	600	0.00992	8760	0%	1.23%	0.073	638.75	0.319
FLANGES:								
Gas/Vapor	2520	0.00086	8760	0%	1.23%	0.027	232.58	0.116
COMPRESSORS:								
Turbines	3	0.0194	8760	0%	1.23%	0.00071	6.25	0.003
RELIEF VALVES/OTHER:	5	0.0194	8760	0%	1.23%	0.00119	10.41	0.005
TOTAL VOC						**0.101**	**887.98**	**0.444**

Notes:

(1) The valve count is conservatively estimated.

(2) Emission factors are taken from EPA 453/R-95-017.

(3) The percentage of VOC for gas/vapor streams is taken from the gas analysis.

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Greenhouse Gas (GHG) Emission Calculations

GHG	Emission Factor kg/MMBtu	GWP
CO_2	53.06	1
CH_4	0.001	25
N_2O	0.0001	298

Note: Emission factors from Tables C-1 and C-2 of 40 CFR 98.

Stack ID	Description	Maximum Annual Fuel Use (MMBtu/yr)	CO_2	CH_4	N_2O	Total
			Mass Emissions (T/yr)			
1001	Solar Centaur T-7000	481,800	28,179.35	0.53	0.053	28,179.94
1002	Solar Centaur T-7000	481,800	28,179.35	0.53	0.053	28,179.94
1003	Solar Centaur T-7000	481,800	28,179.35	0.53	0.053	28,179.94
G-8040	Emergency Generator	2,888	168.88	0.0032	0.00032	168.89
1006	Line Heater	7,008	409.88	0.0077	0.00077	409.89
TK-7	Condensate Tank	NA	0.00	15.82	0.00	15.82
FUG	Fugitives	NA	1.54	33.28	0.00	34.82
SSM/M1	Startup, Shutdown, Maintenance and Malfunction	NA	34.65	749.67	0.00	784.32
	GHG Totals (T/yr)		**85,153.01**	**800.39**	**0.16**	**85,953.56**

Stack ID	Description	GWP:	CO_2	CH_4	N_2O	Total
			1	25	298	-
			CO2e Emissions (T/yr)			
1001	Solar Centaur T-7000		28,179.35	13.28	15.83	28,208.46
1002	Solar Centaur T-7000		28,179.35	13.28	15.83	28,208.46
1003	Solar Centaur T-7000		28,179.35	13.28	15.83	28,208.46
G-8040	Emergency Generator		168.88	0.080	0.095	169.06
1006	Line Heater		409.88	0.19	0.23	410.30
TK-7	Condensate Tank		0.00	395.59	0.00	395.59
FUG	Fugitives		1.54	832.12	0.00	833.66
SSM/M1	Startup, Shutdown, Maintenance and Malfunction		34.65	18,741.83	0.00	18,776.48
	GHG Totals (T/yr)		**85,153.01**	**20,009.65**	**47.80**	**105,210.47**
	Current Permit Total (from P010-R3) (T/yr)					**85,143**
	Total Increase for Application (T/yr)					**20,067**

Notes:
T/yr - tons per year
GWP - Global warming potential
CO2e - Carbon dioxide equivalent

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.

The only source for which calculated emissions were modified in this application is condensate tank TK-7. The modified tank emissions were estimated using calculation methods and equations presented in the recently revised version of U.S. Environmental Protection Agency (EPA) AP-42, *Compilation of Air Pollutant Emission Factors*, Chapter 7.1, dated November 2019. The relevant portion of this document used in the calculations is indicated in the list below.

For the remaining sources of emissions at the station, for which calculations were unchanged with this application, relevant information used to determine emissions follows this page. This information consists of the following:

1. A typical gas analysis of natural gas flowing through the station. This analysis does not vary significantly over time.
2. Vendor data – See attached Facsimile Transmittal with attached data from Solar Turbines Incorporated. Data include the turbine horsepower rating, heat rate at altitude, and emission factors (in grams per horsepower per hour) for the following:
    - oxides of nitrogen (NOx)
    - carbon monoxide (CO)
    - volatile organic compounds (VOC), which are represented by factors for unburned hydrocarbons (UHC) with a given estimate of the percentage of UHC that are taken to be nonmethane-VOC (nm-VOC). Estimates of VOC emissions are made by conservatively assuming that total VOCs are represented by nm-VOC.
3. Excerpts from AP-42 as follows:
    - Section 3.1 (April 2000), Tables 3.1-2a and 3.1-3, which presents emission factors for natural gas-fired turbines; these factors are used for calculating emissions from the three turbines (Unit IDs 1001, 1002, and 1003)
    - Section 3.2 (July 2000), Table 3.2-2, which presents emission factors for natural gas-fired four-stroke, lean-burn reciprocating engines; these factors are used for calculating emissions from the emergency generator (Unit ID G8040).
    - Section 1.4 (July 1998), Tables 1.4-1, 1.4-2, and 1.4-3, which present emission factors for natural gas-fired boilers/heaters; these factors are used for calculating emissions from the line heater (Unit ID 1006).
    - Section 7.1.3.1 (November 2019) on calculations of tank emissions. Note that the methodology and emission factors reflect revisions in the most recently updated version of this chapter, published in November 2019.
4. Table 2-4 of U.S. the EPA document EPA-453A/R-95-017, *Protocol for Equipment Leak Emission Estimates*, November 1995.

TRANSWESTERN PIPELINE COMPANY, LLC
BLOOMFIELD COMPRESSOR STATION
TITLE V PERMIT MODIFICATION
PERMIT NO. P010-R3M2

Gas Analysis

SPECIES	MOL %	MW	MOL % X MW X (100/Total Mol%)	WT%	ppmv (Ci)
Nitrogen	0.0966	28.01	2.71	0.16	966
Carbon Dioxide	1.6249	44.01	71.51	4.25	16,249
Methane	96.4382	16.04	1,547.16	91.84	964,381
Ethane	1.4164	30.07	42.59	2.53	14,164
Propane	0.2678	44.09	11.81	0.70	2,678
iso-butane	0.0446	58.12	2.59	0.15	446
n-butane	0.0516	58.12	3.00	0.18	516
iso-pentane	0.0188	72.14	1.36	0.08	188
n-Pentane	0.0125	72.14	0.90	0.05	125
Hexane	0.0287	34.08	0.98	0.06	287
Hydrogen Sulfide	0.0000	86.17	0.00	0.00	0
TOTALS	**100.00**		**1,684.60**	**100.00**	**1,000,000**

VOC wt%=	1.23%	
methane wt% =	91.84%	
ethane wt% =	2.53%	
H_2S (gr/100 scf) =	0.00	
mol weight fuel =	16.85	lb/lb-mol
mol weight VOC =	48.67	lb/lb-mol
Heat Content =	1,016.2	Btu/scf (from analysis)

Date: 10/21/2014

FACSIMILE TRANSMITTAL

To: Andy Nowak	Date: 06MAY96
Company: NMED	Pages (including this page): 4
Location: Santa Fe	Transmitted By: Douglas R. Venverloh
Phone #:	TEAM ENVIRONMENTAL SERVICES, INC. Southwestern Consulting & Engineering Office P.O. Box 11189 Albuquerque, NM 87112 Phone: (505) 298-2152 Fax: (505) 298-1093
Fax #: (505) 827-1523	

Subject: Bloomfield Turbine Data

Message:

Attached is the data provided by Solar. There are 4 cases presented: 0°F, 32°F, 59°F, and 75°F. Note that the 0°F case produces the highest horsepower and emission rates. We would like to permit at this condition. Also note that the UHC factor includes methane and ethane. Solar has told me verbally that nonmethane would be 5 to 10% of UHC. Please call if you need additional information.

From: Douglas R. Venverloh

SOLAR TURBINES INCORPORATED
ENGINE PERFORMANCE CODE REV. 2.70
CUSTOMER: Enron Transwestern
JOB ID: Bloomfield

DATE RUN: 2-MAY-96
RUN BY: CASADONTE, CORRINE

TAURUS 60-T7000
CS/MD
59F MATCH
GAS
TTC-2 REV. 0.0
ES-2111

DATA FOR MINIMUM PERFORMANCE

Fuel Type		SD NATURAL GAS				
Elevation	Feet	5634				
Inlet Loss	in. H2O	4.0				
Exhaust Loss	in. H2O	4.0				
Engine Inlet Temp.	Deg. F	0	32.0	59.0	75.0	
Relative Humidity	%	60.0	60.0	60.0	60.0	
Elevation Loss	Hp	1391	1323	1270	1175	
Inlet Loss	Hp	124	119	116	109	
Exhaust Loss	Hp	52	51	51	49	
Driven Equipment Speed	RPM	13488	13417	13373	13258	
Optimum Equipment Speed	RPM	13488	13417	13373	13258	
Gas Generator Speed	RPM	15000	15000	15000	14890	
Specified Load	Hp	FULL	FULL	FULL	FULL	
Net Output Power	Hp	5879	5567	5312	4910	
Fuel Flow	MMBtu/hr	47.70	45.84	44.39	41.93	
Heat Rate	Btu/Hp-hr	8115	8233	8357	8540	
Inlet Air Flow	lbm/hr	146421	139830	134328	127409	
Engine Exhaust Flow	lbm/hr	148354	141690	136133	129112	
PCD	psi(g)	131.9	126.7	122.4	116.5	
PT Inlet Temp. (T5)	Deg. F	1244	1280	1311	1312	
Compensated PTIT	Deg. F	1332	1368	1399	1400	
Exhaust Temperature	Deg. F	841	876	906	920	

Post-it® Fax Note 7671 | Date 5/2 | # of pages ▶ 3
To D. Venverloh | From C. Casadonte
Co./Dept. Team Envir | Co. Solar
Phone # | Phone # (713) 895-2395
Fax # 505-298-1093 | Fax # (713) 895-4270

Hp= 5312, %Full Load= 100.0, Elev= 5634 ft, %RH= 60.0, Temperature= 59.0 F

NOX		CO		UHC		
NOM	MAX	NOM	MAX	NOM	MAX	
83.35	143.00	5.57	50.00	2.674	25.000	PPMvd at 15% O2
1.26	2.16	0.05	0.46	0.014	0.131	g/(Hp-hr) (gas turbine shaft pwr)
0.331	0.569	0.013	0.121	0.0037	0.0347	lbm/MMBtu (Fuel LHV)
64.45	110.57	2.62	23.54	0.721	6.741	ton/yr

Hp= 4910, %Full Load= 100.0, Elev= 5634 ft, %RH= 60.0, Temperature= 75.0 F

NOX		CO		UHC		
NOM	MAX	NOM	MAX	NOM	MAX	
77.95	143.00	5.71	50.00	2.732	25.000	PPMvd at 15% O2
1.19	2.19	0.05	0.47	0.015	0.134	g/(Hp-hr) (gas turbine shaft pwr)
0.308	0.565	0.014	0.120	0.0038	0.0345	lbm/MMBtu (Fuel LHV)
56.60	103.84	2.52	22.10	0.692	6.330	ton/yr

OTHER IMPORTANT NOTES

1. Solar does not provide maximum values for water-to-fuel ratio, SOx, particulates, or conditions outside those above without separate written approval.
2. Solar can optionally provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
3. Fuel must meet Solar standard fuel specification ES 9-98. Predicted emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If the above information is being used regarding existing equipment, it should be verified by actual site testing.

SOLAR TURBINES INCORPORATED
ENGINE PERFORMANCE CODE REV. 2.70
CUSTOMER: Enron Transwestern
JOB ID: Bloomfield

DATE RUN: 2-MAY-96
RUN BY: CASADONTE, CORRINE

NEW EQUIPMENT PREDICTED EMISSION PERFORMANCE

Fuel: SD NATURAL GAS
Water Injection: NO
Number of Engines Tested: 5
Model: TAURUS 60-T7000 CS/MD
DRY GAS ONLY INJECTOR
Emissions Data: REV. 1.2

Customer: Enron Transwestern
Inquiry Number:

59F MATCH GAS

CRITICAL WARNINGS IN USE OF DATA FOR PERMITTING

1. Short term permitting values such as PPMV or lbs/hr should be based on worst case actual operating conditions specific to the application and the site. Worst case for one pollutant is not necessarily the same for another. The values on this form are only predicted emissions at one specific operating condition; not necessarily the worst case.

2. Long term reference emission units (e.g. tons/yr) should reference the average conditions at the site (e.g. ISO). That number should not be derived from the worst case value referenced above, or conversely this average must not be used to calculate worst case.

3. Nominal values are based on actual test results, or predicted in the case of no actual engine tests. Expected maximum values should be referenced for permitting.

4. If a SoLoNOx model is planned to be installed in the future, use no less than 50 PPMV CO.

The following predicted emissions performance is based on the following specific single point: (see attached)

Hp= 5879, %Full Load= 100.0, Elev= 5634 ft, %RH= 60.0, Temperature= 0 F

NOX NOM	NOX MAX	CO NOM	CO MAX	UHC NOM	UHC MAX	
77.29	143.00	18.22	50.00	2.804	25.000	PPMvd at 15% O2
1.14	2.11	0.16	0.45	0.014	0.128	g/(Hp-hr) (gas turbine shaft pwr)
0.310	0.573	0.044	0.122	0.0039	0.0349	lbm/MMBtu (Fuel LHV)
64.67	119.64	9.28	25.47	0.818	7.294	ton/yr

27.31 lb/h 5.82 lb/h → non-methane/non-ethane = 0.1 X 7.29 = 0.73 TPY

Hp= 5567, %Full Load= 100.0, Elev= 5634 ft, %RH= 60.0, Temperature= 32.0 F

NOX NOM	NOX MAX	CO NOM	CO MAX	UHC NOM	UHC MAX	
83.20	143.00	11.24	50.00	2.745	25.000	PPMvd at 15% O2
1.24	2.13	0.10	0.45	0.014	0.130	g/(Hp-hr) (gas turbine shaft pwr)
0.332	0.571	0.027	0.122	0.0038	0.0348	lbm/MMBtu (Fuel LHV)
66.75	114.73	5.49	24.42	0.768	6.994	ton/yr

UHC: 0.128 g/(HP-hr) * 15% = 0.019 g/(Hp-hr)

Table 3.1-2a. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM STATIONARY GAS TURBINES

Emission Factors[a] - Uncontrolled				
Pollutant	Natural Gas-Fired Turbines[b]		Distillate Oil-Fired Turbines[d]	
	(lb/MMBtu)[c] (Fuel Input)	Emission Factor Rating	(lb/MMBtu)[e] (Fuel Input)	Emission Factor Rating
CO_2[f]	110	A	157	A
N_2O	0.003[g]	E	ND	NA
Lead	ND	NA	1.4 E-05	C
SO_2	0.94S[h]	B	1.01S[h]	B
Methane	8.6 E-03	C	ND	NA
VOC	2.1 E-03	D	4.1 E-04[j]	E
TOC[k]	1.1 E-02	B	4.0 E-03[l]	C
PM (condensible)	4.7 E-03[l]	C	7.2 E-03[l]	C
PM (filterable)	1.9 E-03[l]	C	4.3 E-03[l]	C
PM (total)	6.6 E-03[l]	C	1.2 E-02[l]	C

[a] Factors are derived from units operating at high loads (≥ 80 percent load) only. For information on units operating at other loads, consult the background report for this chapter (Reference 16), available at "www.epa.gov/ttn/chief". ND = No Data, NA = Not Applicable.

[b] SCCs for natural gas-fired turbines include 2-01-002-01, 2-02-002-01 & 03, and 2-03-002-02 & 03.

[c] Emission factors based on an average natural gas heating value (HHV) of 1020 Btu/scf at 60°F. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by 1020. Similarly, these emission factors can be converted to other natural gas heating values.

[d] SCCs for distillate oil-fired turbines are 2-01-001-01, 2-02-001-01, 2-02-001-03, and 2-03-001-02.

[e] Emission factors based on an average distillate oil heating value of 139 MMBtu/10^3 gallons. To convert from (lb/MMBtu) to (lb/10^3 gallons), multiply by 139.

[f] Based on 99.5% conversion of fuel carbon to CO_2 for natural gas and 99% conversion of fuel carbon to CO_2 for distillate oil. CO_2 (Natural Gas) [lb/MMBtu] = (0.0036 scf/Btu)(%CON)(C)(D), where %CON = weight percent conversion of fuel carbon to CO_2, C = carbon content of fuel by weight, and D = density of fuel. For natural gas, C is assumed at 75%, and D is assumed at 4.1 E+04 lb/10^6scf. For distillate oil, CO_2 (Distillate Oil) [lb/MMBtu] = (26.4 gal/MMBtu) (%CON)(C)(D), where C is assumed at 87%, and the D is assumed at 6.9 lb/gallon.

[g] Emission factor is carried over from the previous revision to AP-42 (Supplement B, October 1996) and is based on limited source tests on a single turbine with water-steam injection (Reference 5).

[h] All sulfur in the fuel is assumed to be converted to SO_2. S = percent sulfur in fuel. Example, if sulfur content in the fuel is 3.4 percent, then S = 3.4. If S is not available, use 3.4 E-03 lb/MMBtu for natural gas turbines, and 3.3 E-02 lb/MMBtu for distillate oil turbines (the equations are more accurate).

[j] VOC emissions are assumed equal to the sum of organic emissions.

[k] Pollutant referenced as THC in the gathered emission tests. It is assumed as TOC, because it is based on EPA Test Method 25A.

[l] Emission factors are based on combustion turbines using water-steam injection.

Table 3.1-3. EMISSION FACTORS FOR HAZARDOUS AIR POLLUTANTS FROM NATURAL GAS-FIRED STATIONARY GAS TURBINES[a]

Emission Factors[b] - Uncontrolled		
Pollutant	Emission Factor (lb/MMBtu)[c]	Emission Factor Rating
1,3-Butadiene[d]	< 4.3 E-07	D
Acetaldehyde	4.0 E-05	C
Acrolein	6.4 E-06	C
Benzene[e]	1.2 E-05	A
Ethylbenzene	3.2 E-05	C
Formaldehyde[f]	7.1 E-04	A
Naphthalene	1.3 E-06	C
PAH	2.2 E-06	C
Propylene Oxide[d]	< 2.9 E-05	D
Toluene	1.3 E-04	C
Xylenes	6.4 E-05	C

[a] SCC for natural gas-fired turbines include 2-01-002-01, 2-02-002-01, 2-02-002-03, 2-03-002-02, and 2-03-002-03. Hazardous Air Pollutants as defined in Section 112 (b) of the *Clean Air Act*.

[b] Factors are derived from units operating at high loads (≥ 80 percent load) only. For information on units operating at other loads, consult the background report for this chapter (Reference 16), available at "www.epa.gov/ttn/chief".

[c] Emission factors based on an average natural gas heating value (HHV) of 1020 Btu/scf at 60°F. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by 1020. These emission factors can be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this heating value.

[d] Compound was not detected. The presented emission value is based on one-half of the detection limit.

[e] Benzene with SCONOX catalyst is 9.1 E-07, rating of D.

[f] Formaldehyde with SCONOX catalyst is 2.0 E-05, rating of D.

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES[a]
(SCC 2-02-002-54)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x[c] 90 - 105% Load	4.08 E+00	B
NO_x[c] <90% Load	8.47 E-01	B
CO[c] 90 - 105% Load	3.17 E-01	C
CO[c] <90% Load	5.57 E-01	B
CO_2[d]	1.10 E+02	A
SO_2[e]	5.88 E-04	A
TOC[f]	1.47 E+00	A
Methane[g]	1.25 E+00	C
VOC[h]	1.18 E-01	C
PM10 (filterable)[i]	7.71 E-05	D
PM2.5 (filterable)[i]	7.71 E-05	D
PM Condensable[j]	9.91 E-03	D
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[k]	<4.00 E-05	E
1,1,2-Trichloroethane[k]	<3.18 E-05	E
1,1-Dichloroethane	<2.36 E-05	E
1,2,3-Trimethylbenzene	2.30 E-05	D
1,2,4-Trimethylbenzene	1.43 E-05	C
1,2-Dichloroethane	<2.36 E-05	E
1,2-Dichloropropane	<2.69 E-05	E
1,3,5-Trimethylbenzene	3.38 E-05	D
1,3-Butadiene[k]	2.67E-04	D
1,3-Dichloropropene[k]	<2.64 E-05	E
2-Methylnaphthalene[k]	3.32 E-05	C
2,2,4-Trimethylpentane[k]	2.50 E-04	C
Acenaphthene[k]	1.25 E-06	C

0.0000771
+ 0.00991
0.0099871
(Total PM)

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES
(Continued)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Acenaphthylene[k]	5.53 E-06	C
Acetaldehyde[k,l]	8.36 E-03	A
Acrolein[k,l]	5.14 E-03	A
Benzene[k]	4.40 E-04	A
Benzo(b)fluoranthene[k]	1.66 E-07	D
Benzo(e)pyrene[k]	4.15 E-07	D
Benzo(g,h,i)perylene[k]	4.14 E-07	D
Biphenyl[k]	2.12 E-04	D
Butane	5.41 E-04	D
Butyr/Isobutyraldehyde	1.01 E-04	C
Carbon Tetrachloride[k]	<3.67 E-05	E
Chlorobenzene[k]	<3.04 E-05	E
Chloroethane	1.87 E-06	D
Chloroform[k]	<2.85 E-05	E
Chrysene[k]	6.93 E-07	C
Cyclopentane	2.27 E-04	C
Ethane	1.05 E-01	C
Ethylbenzene[k]	3.97 E-05	B
Ethylene Dibromide[k]	<4.43 E-05	E
Fluoranthene[k]	1.11 E-06	C
Fluorene[k]	5.67 E-06	C
Formaldehyde[k,l]	5.28 E-02	A
Methanol[k]	2.50 E-03	B
Methylcyclohexane	1.23 E-03	C
Methylene Chloride[k]	2.00 E-05	C
n-Hexane[k]	1.11 E-03	C
n-Nonane	1.10 E-04	C

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES
(Continued)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
n-Octane	3.51 E-04	C
n-Pentane	2.60 E-03	C
Naphthalene[k]	7.44 E-05	C
PAH[k]	2.69 E-05	D
Phenanthrene[k]	1.04 E-05	D
Phenol[k]	2.40 E-05	D
Propane	4.19 E-02	C
Pyrene[k]	1.36 E-06	C
Styrene[k]	<2.36 E-05	E
Tetrachloroethane[k]	2.48 E-06	D
Toluene[k]	4.08 E-04	B
Vinyl Chloride[k]	1.49 E-05	C
Xylene[k]	1.84 E-04	B

[a] Reference 7. Factors represent uncontrolled levels. For NO_x, CO, and PM10, "uncontrolled" means no combustion or add-on controls; however, the factor may include turbocharged units. For all other pollutants, "uncontrolled" means no oxidation control; the data set may include units with control techniques used for NOx control, such as PCC and SCR for lean burn engines, and PSC for rich burn engines. Factors are based on large population of engines. Factors are for engines at all loads, except as indicated. SCC = Source Classification Code. TOC = Total Organic Compounds. PM-10 = Particulate Matter ≤ 10 microns (μm) aerodynamic diameter. A "<" sign in front of a factor means that the corresponding emission factor is based on one-half of the method detection limit.

[b] Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA Method 19. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by the heat content of the fuel. If the heat content is not available, use 1020 Btu/scf. To convert from (lb/MMBtu) to (lb/hp-hr) use the following equation:

$$\text{lb/hp-hr} = (\text{lb/MMBtu})\ (\text{heat input, MMBtu/hr})\ (\text{1/operating HP, 1/hp})$$

[c] Emission tests with unreported load conditions were not included in the data set.

[d] Based on 99.5% conversion of the fuel carbon to CO_2. CO_2 [lb/MMBtu] = (3.67)(%CON)(C)(D)(1/h), where %CON = percent conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.75), D = density of fuel, 4.1 E+04 lb/10^6 scf, and

h = heating value of natural gas (assume 1020 Btu/scf at 60°F).

[e] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content in natural gas of 2,000 gr/10^6scf.

[f] Emission factor for TOC is based on measured emission levels from 22 source tests.

[g] Emission factor for methane is determined by subtracting the VOC and ethane emission factors from the TOC emission factor. Measured emission factor for methane compares well with the calculated emission factor, 1.31 lb/MMBtu vs. 1.25 lb/MMBtu, respectively.

[h] VOC emission factor is based on the sum of the emission factors for all speciated organic compounds less ethane and methane.

[i] Considered $\leq$ 1 μm in aerodynamic diameter. Therefore, for filterable PM emissions, PM10(filterable) = PM2.5(filterable).

[j] PM Condensable = PM Condensable Inorganic + PM-Condensable Organic

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

[l] For lean burn engines, aldehyde emissions quantification using CARB 430 may reflect interference with the sampling compounds due to the nitrogen concentration in the stack. The presented emission factor is based on FTIR measurements. Emissions data based on CARB 430 are available in the background report.

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO_x[b]		CO	
	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS)[c]	280	A	84	B
Uncontrolled (Post-NSPS)[c]	190	A	84	B
Controlled - Low NO_x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO_x burners	50	D	84	B
Controlled - Low NO_x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from $1b/10^6$ scf to lb/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. SCC = Source Classification Code. ND = no data. NA = not applicable.

[b] Expressed as NO_2. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_X emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_X emission factor.

[c] NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

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. $CO_2[lb/10^6 scf] = (3.67)(CON)(C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, $4.2x10^4$ $lb/10^6$ 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
207-08-9	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
74-98-6	Propane	1.6E+00	E

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
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.

Excerpts from U.S. Environmental Protection Agency AP-42
Compilation of Air Pollutant Emission Factors
Chapter 7 (Section 7.1.3.1)

7.1.3.1 Routine Losses From Fixed Roof Tanks[8-14,22]

The following equations, provided to estimate standing and working loss emissions, apply to tanks with vertical cylindrical shells and fixed roofs and to tanks with horizontal cylindrical shells. These tanks must be substantially liquid- and vapor-tight. The equations are not intended to be used in estimating losses from tanks which have air or other gases injected into the liquid, or which store unstable or boiling stocks or mixtures of hydrocarbons or petrochemicals for which the vapor pressure is not known or cannot be readily predicted. Tanks containing aqueous mixtures in which phase separation has occurred, resulting in a free layer of oil or other volatile materials floating on top of the water, should have emissions estimated on the basis of the properties of the free top layer.

Total routine losses from fixed roof tanks are equal to the sum of the standing loss and working loss:

$$L_T = L_S + L_W \quad (1\text{-}1)$$

where:

L_T = total routine losses, lb/yr
L_S = standing losses, lb/yr, see Equation 1-2
L_W = working losses, lb/yr, see Equation 1-35

7.1.3.1.1 Standing Loss

The standing loss, L_S, for a fixed roof tank refers to the loss of stock vapors as a result of tank vapor space breathing. Fixed roof tank standing losses can be estimated from Equation 1-2.

$$L_S = 365\ V_V\ W_V\ K_E\ K_S \quad (1\text{-}2)$$

where:

L_S = standing loss, lb/yr
V_V = vapor space volume, ft^3, see Equation 1-3
W_V = stock vapor density, lb/ft^3
K_E = vapor space expansion factor, per day
K_S = vented vapor saturation factor, dimensionless
365 = constant, the number of daily events in a year, (days/year)

Tank Vapor Space Volume, V_V - The tank vapor space volume is calculated using the following equation:

$$V_V = \left(\frac{\pi}{4} D^2\right) H_{VO} \quad \textbf{(1-3)}$$

where:

V_V = vapor space volume, ft^3
D = tank diameter, ft, see Equation 1-14 for horizontal tanks
H_{VO} = vapor space outage, ft, see Equation 1-16

The standing loss equation can be simplified by combining Equation 1-2 with Equation 1-3. The result is Equation 1-4.

$$L_S = 365 K_E \left(\frac{\pi}{4} D^2 \right) H_{VO} K_S W_V \quad \textbf{(1-4)}$$

where:

L_S = standing loss, lb/yr
K_E = vapor space expansion factor, per day, see Equation 1-5, 1-12, or 1-13
D = diameter, ft, see Equation 1-14 for horizontal tanks
H_{VO} = vapor space outage, ft, see Equation 1-16; use $H_E/2$ from Equation 1-15 for horizontal tanks
K_S = vented vapor saturation factor, dimensionless, see Equation 1-21
W_V = stock vapor density, lb/ft^3, see Equation 1-22
365 = constant, the number of daily events in a year, (days/year)

Vapor Space Expansion Factor, K_E

The calculation of the vapor space expansion factor, K_E, depends upon the properties of the liquid in the tank and the breather vent settings, as shown in Equation 1-5. As shown in the equation, K_E is greater than zero. If K_E is less than zero, standing losses will not occur. In that K_E represents the fraction of vapors in the vapor space that are expelled by a given increase in temperature, a value of 1 would indicate that the entire vapor space has been expelled. Thus the value of K_E must be less than 1, in that it is not physically possible to expel more than 100% of what is present to begin with.

$$0 < K_E \leq 1$$

$$K_E = \frac{\Delta T_V}{T_{LA}} + \frac{\Delta P_V - \Delta P_B}{P_A - P_{VA}} \quad \textbf{(1-5)}$$

where:

ΔT_V = average daily vapor temperature range, °R; see Note 1
ΔP_V = average daily vapor pressure range, psi; see Note 2
ΔP_B = breather vent pressure setting range, psi; see Note 3
P_A = atmospheric pressure, psia
P_{VA} = vapor pressure at average daily liquid surface temperature, psia; see Notes 1 and 2 for Equation 1-22
T_{LA} = average daily liquid surface temperature, °R; see Note 3 for Equation 1-22

Notes:

1. The average daily vapor temperature range, ΔT_V, refers to the daily temperature range of the tank vapor space averaged over all of the days in the given period of time, such as one year, and should

not be construed as being applicable to an individual day. The average daily vapor temperature range is calculated for an uninsulated tank using Equation 1-6.

$$\Delta T_V = \left(1 - \frac{0.8}{2.2\,(H_S/D) + 1.9}\right)\Delta T_A + \frac{0.042 \alpha_R I + 0.026 (H_S/D) \alpha_S I}{2.2\,(H_S/D) + 1.9} \quad (1\text{-}6)$$

where:

ΔT_V = average daily vapor temperature range, °R
H_S = tank shell height, ft
D = tank diameter, ft,
ΔT_A = average daily ambient temperature range, °R; see Note 4
α_R = tank roof surface solar absorptance, dimensionless; see Table 7.1-6
α_S = tank shell surface solar absorptance, dimensionless; see Table 7.1-6
I = average daily total insolation factor, Btu/ft^2 d; see Table 7.1-7.

API assigns a default value of $H_s/D = 0.5$ and an assumption of $\alpha_R = \alpha_S$, resulting in the simplified equation shown below for an uninsulated tank:[22]

$$\Delta T_V = 0.7\,\Delta T_A + 0.02\,\alpha\, I \quad (1\text{-}7)$$

where:

α = average tank surface solar absorptance, dimensionless

For purposes of estimating emissions, a storage tank should be deemed insulated only if the roof and shell are both sufficiently insulated so as to minimize heat exchange with ambient air. If only the shell is insulated, and not the roof, the temperature equations are independent of H_s/D. Also, there likely will be sufficient heat exchange through the roof such that Equation 1-7 would be applicable.

A more accurate method of accounting for the average daily vapor temperature range, ΔT_V, in partially insulated scenarios is given below. When the tank shell is insulated but the tank roof is not, heat gain to the tank from insolation is almost entirely through the tank roof and thus the liquid surface temperature is not sensitive to H_S/D.

$$\Delta T_V = 0.6\,\Delta T_A + 0.02\,\alpha_R\, I \quad (1\text{-}8)$$

In the case of a fully insulated tank maintained at constant temperature, the average daily vapor temperature range, ΔT_V, should be taken as zero. This assumption that ΔT_V is equal to zero addresses only temperature differentials resulting from the diurnal ambient temperature cycle. In the case of cyclic heating of the bulk liquid, see Section 7.1.3.8.4.

2. The average daily vapor pressure range, ΔP_V, refers to the daily vapor pressure range at the liquid surface temperature averaged over all of the days in the given period of time, such as one year, and should not be construed as being applicable to an individual day. The average daily vapor pressure range can be calculated using the following equation:

$$\Delta P_V = P_{VX} - P_{VN} \quad (1\text{-}9)$$

where:

ΔP_V = average daily vapor pressure range, psia
P_{VX} = vapor pressure at the average daily maximum liquid surface temperature, psia; see Note 5
P_{VN} = vapor pressure at the average daily minimum liquid surface temperature, psia; see Note 5

See Section 7.1.6.1 for a more approximate equation for ΔP_V that was used historically, but which is no longer recommended.

In the case of a fully insulated tank maintained at constant temperature, the average daily vapor pressure range, ΔP_V, should be taken as zero, as discussed for the vapor temperature range in Note 1.

3. The breather vent pressure setting range, ΔP_B, is calculated using the following equation:

$$\Delta P_B = P_{BP} - P_{BV} \quad (1\text{-}10)$$

where:

ΔP_B = breather vent pressure setting range, psig
P_{BP} = breather vent pressure setting, psig
P_{BV} = breather vent vacuum setting, psig

If specific information on the breather vent pressure setting and vacuum setting is not available, assume 0.03 psig for P_{BP} and -0.03 psig for P_{BV} as typical values. If the fixed roof tank is of bolted or riveted construction in which the roof or shell plates are not vapor tight, assume that $\Delta P_B = 0$, even if a breather vent is used.

4. The average daily ambient temperature range, ΔT_A, refers to the daily ambient temperature range averaged over all of the days in the given period of time, such as one year, and should not be construed as being applicable to an individual day. The average daily ambient temperature range is calculated using the following equation:

$$\Delta T_A = T_{AX} - T_{AN} \quad (1\text{-}11)$$

where:

ΔT_A = average daily ambient temperature range, °R
T_{AX} = average daily maximum ambient temperature, °R
T_{AN} = average daily minimum ambient temperature, °R

Table 7.1-7 gives historical values of T_{AX} and T_{AN} in degrees Fahrenheit for selected cities in the United States. These values are converted to degrees Rankine by adding 459.7.

5. The vapor pressures associated with the average daily maximum and minimum liquid surface temperatures, P_{VX} and P_{VN}, respectively, are calculated by substituting the corresponding temperatures, T_{LX} and T_{LN}, into Equation 1-25 or 1-26 after converting the temperatures to the units indicated for the respective equation.. If T_{LX} and T_{LN} are unknown, Figure 7.1-17 can be used to calculate their values. In

the case of a fully insulated tank maintained at constant temperature, the average daily vapor pressure range, ΔP_V, should be taken as zero.

If the liquid stored in the fixed roof tank has a true vapor pressure less than 0.1 psia and the tank breather vent settings are not greater than ±0.03 psig, Equation 1-12 or Equation 1-13 may be used with an acceptable loss in accuracy.

If the tank location and tank color and condition are known, K_E may be calculated using the following equation in lieu of Equation 1-5:

$$K_E = 0.0018 \Delta T_V = 0.0018 [0.7 (T_{AX} - T_{AN}) + 0.02 \alpha I] \quad (1\text{-}12)$$

where:

K_E = vapor space expansion factor, per day
ΔT_V = average daily vapor temperature range, °R
T_{AX} = average daily maximum ambient temperature, °R
T_{AN} = average daily minimum ambient temperature, °R
α = tank surface solar absorptance, dimensionless
I = average daily total insolation on a horizontal surface, Btu/(ft^2 day)
0.0018 = constant, (°R)$^{-1}$
0.7 = constant, dimensionless
0.02 = constant, (°R ft^2 day)/Btu

Average daily maximum and minimum ambient temperatures and average daily total insolation can be determined from historical meteorological data for the location or may be obtained from historical meteorological data for a nearby location. Historical meteorological data for selected locations are given in Table 7.1-7, where values of T_{AX} and T_{AN} are given in degrees Fahrenheit. These values are converted to degrees Rankine by adding 459.7.

If the tank location is unknown, a value of K_E can be calculated using typical meteorological conditions for the lower 48 states. The typical value for daily insolation is 1,370 Btu/(ft^2 day), the average daily range of ambient temperature is 21°R, and the tank surface solar absorptance is 0.25 for white paint in average condition. Substituting these values into Equation 1-12 results in a value of 0.04, as shown in Equation 1-13.

$$K_E = 0.04 \quad (1\text{-}13)$$

Diameter

For vertical tanks, the diameter is straightforward. If a user needs to estimate emissions from a horizontal fixed roof tank, some of the tank parameters can be modified before using the vertical tank emission estimating equations. First, by assuming that the tank is one-half filled, the surface area of the liquid in the tank is approximately equal to the length of the tank times the diameter of the tank. Next, assume that this area represents a circle, i.e., that the liquid is an upright cylinder. Therefore, the effective diameter, D_E, is then equal to:

$$D_E = \sqrt{\frac{L D}{\frac{\pi}{4}}} \quad \textbf{(1-14)}$$

where:

D_E = effective tank diameter, ft
L = length of the horizontal tank, ft (for tanks with rounded ends, use the overall length)
D = diameter of a vertical cross-section of the horizontal tank, ft

By assuming the volume of the horizontal tank to be approximately equal to the cross-sectional area of the tank times the length of the tank, an effective height, H_E, of an equivalent upright cylinder may be calculated as:

$$H_E = \frac{\pi}{4} D \quad \textbf{(1-15)}$$

D_E should be used in place of D in Equation 1-4 for calculating the standing loss (or in Equation 1-3, if calculating the tank vapor space volume). One-half of the effective height, H_E, should be used as the vapor space outage, H_{VO}, in these equations. This method yields only a very approximate value for emissions from horizontal storage tanks. For underground horizontal tanks, assume that no breathing or standing losses occur ($L_S = 0$) because the insulating nature of the earth limits the diurnal temperature change. No modifications to the working loss equation are necessary for either aboveground or underground horizontal tanks.

Vapor Space Outage

The vapor space outage, H_{VO} is the height of a cylinder of tank diameter, D, whose volume is equivalent to the vapor space volume of a fixed roof tank, including the volume under the cone or dome roof. The vapor space outage, H_{VO}, is estimated from:

$$H_{VO} = H_S - H_L + H_{RO} \quad \text{(1-16)}$$

where:

H_{VO} = vapor space outage, ft; use $H_E/2$ from Equation 1-15 for horizontal tanks
H_S = tank shell height, ft
H_L = liquid height, ft; typically assumed to be at the half-full level, unless known to be maintained at some other level
H_{RO} = roof outage, ft; see Note 1 for a cone roof or Note 2 for a dome roof

Notes:

1. For a cone roof, the roof outage, H_{RO}, is calculated as follows:

$$H_{RO} = (1/3)\ H_R \quad (1\text{-}17)$$

where:

H_{RO} = roof outage (or shell height equivalent to the volume contained under the roof), ft
H_R = tank roof height, ft

$$H_R = S_R\ R_S \quad (1\text{-}18)$$

where: S_R = tank cone roof slope, ft/ft; if unknown, a standard value of 0.0625 is used
R_S = tank shell radius, ft

2. For a dome roof, the roof outage, H_{RO}, is calculated as follows:

$$H_{RO} = H_R \left[\frac{1}{2} + \frac{1}{6}\left[\frac{H_R}{R_S}\right]^2\right] \quad \textbf{(1-19)}$$

where:

H_{RO} = roof outage, ft
R_S = tank shell radius, ft
H_R = tank roof height, ft

$$H_R = R_R - \left(R_R^2 - R_S^2\right)^{0.5} \quad \textbf{(1-20)}$$

H_R = tank roof height, ft R_R = tank dome roof radius, ft R_S = tank shell radius,ft

The value of R_R usually ranges from 0.8D - 1.2D, where D = 2 R_S. If R_R is unknown, the tank diameter is used in its place. If the tank diameter is used as the value for R_R, Equations 1-19 and 1-20 reduce to H_{RO} = 0.137 R_S and H_R = 0.268 R_S.

Vented Vapor Saturation Factor, K_S

The vented vapor saturation factor, K_S, is calculated using the following equation:

$$K_S = \frac{1}{1 + 0.053 P_{VA} H_{VO}} \quad \textbf{(1-21)}$$

where:

K_S = vented vapor saturation factor, dimensionless
P_{VA} = vapor pressure at average daily liquid surface temperature, psia; see Notes 1 and 2 to Equation 1-22
H_{VO} = vapor space outage, ft, see Equation 1-16

0.053 = constant, $(psia\text{-}ft)^{-1}$

Stock Vapor Density, W_V - The density of the vapor is calculated using the following equation:

$$W_V = \frac{M_V P_{VA}}{R T_V} \quad \textbf{(1-22)}$$

where:

W_V = vapor density, lb/ft^3
M_V = vapor molecular weight, lb/lb-mole; see Note 1
R = the ideal gas constant, 10.731 psia ft^3/lb-mole °R
P_{VA} = vapor pressure at average daily liquid surface temperature, psia; see Notes 1 and 2
T_V = average vapor temperature, °R; see Note 6

Notes:

1. The molecular weight of the vapor, M_V, can be determined from Table 7.1-2 and 7.1-3 for selected petroleum liquids and selected petrochemicals, respectively, or by analyzing vapor samples. Where mixtures of organic liquids are stored in a tank, M_V can be calculated from the liquid composition. The molecular weight of the vapor, M_V, is equal to the sum of the molecular weight, M_i, multiplied by the vapor mole fraction, y_i, for each component. The vapor mole fraction is equal to the partial pressure of component i divided by the total vapor pressure. The partial pressure of component i is equal to the true vapor pressure of component i (P) multiplied by the liquid mole fraction, (x_i). Therefore,

$$M_V = \sum M_i y_i = \sum M_i \left(\frac{P x_i}{P_{VA}} \right) \quad \textbf{(1-23)}$$

where:

P_{VA}, total vapor pressure of the stored liquid, by Raoult's Law[30], is:

$$P_{VA} = \sum P x_i \quad \textbf{(1-24)}$$

For more detailed information on Raoult's Law, please refer to Section 7.1.4. Frequently, however, the vapor pressure is not known for each component in a mixture. For more guidance on determining the total vapor pressure at a given temperature (*i.e.*, the true vapor pressure), see Note 2 below.

2. True vapor pressure is defined in various ways for different purposes within the industry, such as "bubble point" for transportation specifications, but for purposes of these emissions estimating methodologies it is the sum of the equilibrium partial pressures exerted by the components of a volatile organic liquid, as shown in Equation 1-24. True vapor pressure may be determined by ASTM D 2879 (or ASTM D 6377 for crude oils with a true vapor pressure greater than 3.6 psia) or obtained from standard reference texts. For certain petroleum liquids, true vapor pressure may be predicted from Reid vapor pressure, which is the absolute vapor pressure of volatile crude oil and volatile non-viscous petroleum

liquids, as determined by ASTM D 323. ASTM D 5191 may be used as an alternative method for determining Reid vapor pressure for petroleum products, however, it should not be used for crude oils.

Caution should be exercised when considering ASTM D 2879 for determining the true vapor pressure of certain types of mixtures. Vapor pressure is sensitive to the lightest components in a mixture, and the de-gassing step in ASTM D 2879 can remove lighter fractions from mixtures such as No. 6 fuel oil if it is not done with care (*i.e.* at an appropriately low pressure and temperature). In addition, any dewatering of a sample prior to measuring its vapor pressure must be done using a technique that has been demonstrated to not remove the lightest organic compounds in the mixture. Alternatives to the method may be developed after publication of this chapter.

True vapor pressure can be determined for crude oils from Reid vapor pressure using Figures 7.1-13a and 7.1-13b. However, the nomograph in Figure 7.1-13a and the correlation equation in Figure 7.1-13b for crude oil are known to have an upward bias, and thus use of ASTM D 6377 is more accurate for crude oils with a true vapor pressure greater than 3.6 psia. ASTM D 6377 may be used to directly measure true vapor pressure at a given temperature. In order to utilize ASTM D 6377 to predict true vapor pressure values over a range of temperatures, the method should be applied at multiple temperatures. A regression of the log-transformed temperature versus vapor pressure data thus obtained may be performed to obtain A and B constants for use in Equation 1-25. In order to determine true vapor pressure for purposes of estimating emissions of volatile organic compounds, ASTM D 6377 should be performed using a vapor-to-liquid ratio of 4:1, which is expressed in the method as $VPCR_4$.

For light refined stocks (gasolines and naphthas) for which the Reid vapor pressure and distillation slope are known, Figures 7.1-14a and 7.1-14b can be used. For refined stocks with Reid vapor pressure below the 1 psi applicability limit of Figures 7.1-14a and 7.1-14b, true vapor pressure can be determined using ASTM D 2879. In order to use Figures 7.1-13a, 7.1-13b, 7.1-14a, or 7.1-14b, the stored liquid surface temperature, T_{LA}, must be determined in degrees Fahrenheit. See Note 3 to determine T_{LA}.

Alternatively, true vapor pressure for selected petroleum liquid stocks, at the stored liquid surface temperature, can be determined using the following equation:

$$P_{VA} = \exp\left[A - \left(\frac{B}{T_{LA}}\right)\right] \quad \textbf{(1-25)}$$

where:

exp = exponential function
A = constant in the vapor pressure equation, dimensionless
B = constant in the vapor pressure equation, °R
T_{LA} = average daily liquid surface temperature, °R; see Note 3
P_{VA} = true vapor pressure, psia

For selected petroleum liquid stocks, physical property data including vapor pressure constants A and B for use in Equation 1-25 are presented in Table 7.1-2. For refined petroleum stocks with Reid vapor pressure within the limits specified in the scope of ASTM D 323, the constants A and B can be calculated from the equations presented in Figure 7.1-15 and the distillation slopes presented in Table 7.1-2. For

crude oil stocks, the constants A and B can be calculated from Reid vapor pressure using the equations presented in Figure 7.1-16. However, the equations in Figure 7.1-16 are known to have an upward bias[29], and thus use of ASTM D 6377 is more accurate. Note that in Equation 1-25, T_{LA} is determined in degrees Rankine instead of degrees Fahrenheit.

The true vapor pressure of organic liquids at the stored liquid temperature can also be estimated by Antoine's equation:

$$\log P_{VA} = A - \left(\frac{B}{T_{LA} + C}\right) \quad \textbf{(1-26)}$$

where:

log = log 10
A = constant in vapor pressure equation, dimensionless
B = constant in vapor pressure equation, °C
C = constant in vapor pressure equation, °C
T_{LA} = average daily liquid surface temperature, °C
P_{VA} = vapor pressure at average liquid surface temperature, mm Hg

For selected pure chemicals, the values for the constants A, B, and C are listed in Table 7.1-3. Note that in Equation 1-26, T_{LA} is determined in degrees Celsius instead of degrees Rankine. Also, in Equation 1-26, P_{VA} is determined in mm of Hg rather than psia (760 mm Hg = 14.7 psia).

More rigorous thermodynamic equations of state are available in process simulation software packages. The use of such programs may be preferable in determining the true vapor pressure of mixtures that are not adequately characterized by Raoult's Law.

3. The average daily liquid surface temperature, T_{LA}, refers to the liquid surface temperature averaged over all of the days in the given period of time, such as one year, and should not be construed as being applicable to an individual day. While the accepted methodology is to use the average temperature, this approach introduces a bias in that the true vapor pressure, P_{VA}, is a non-linear function of temperature. However, the greater accuracy that would be achieved by accounting for this logarithmic function is not warranted, given the associated computational burden. The average daily liquid surface temperature is calculated for an uninsulated fixed roof tank using Equation 1-27.

$$T_{LA} = \left(0.5 - \frac{0.8}{4.4(H_S/D) + 3.8}\right) T_{AA} + \left(0.5 + \frac{0.8}{4.4(H_S/D) + 3.8}\right) T_B + \frac{0.021 \propto_R I + 0.013(H_S/D) \propto_S I}{4.4(H_S/D) + 3.8} \quad \text{(1-27)}$$

where:

T_{LA} = average daily liquid surface temperature, °R
H_S = tank shell height, ft
D = tank diameter, ft,
T_{AA} = average daily ambient temperature, °R; see Note 4
T_B = liquid bulk temperature, °R; see Note 5

α_R = tank roof surface solar absorptance, dimensionless; see Table 7.1-6
α_S = tank shell surface solar absorptance, dimensionless; see Table 7.1-6
I = average daily total insolation factor, Btu/(ft^2 day); see Table 7.1-7

API assigns a default value of $H_s/D = 0.5$ and an assumption of $\alpha_R = \alpha_S$, resulting in the simplified equation shown below for an uninsulated fixed roof tank:[22]

$$T_{LA} = 0.4T_{AA} + 0.6T_B + 0.005\ \alpha\ I \quad (1\text{-}28)$$

where:

α = average tank surface solar absorptance, dimensionless

Equation 1-27 and Equation 1-28 should not be used to estimate liquid surface temperature for insulated tanks. In the case of fully insulated tanks, the average liquid surface temperature should be assumed to equal the average liquid bulk temperature (see Note 5). For purposes of estimating emissions, a storage tank should be deemed insulated only if the roof and shell are both fully insulated so as to minimize heat exchange with ambient air. If only the shell is insulated, and not the roof, there likely will be sufficient heat exchange through the roof such that Equation 1-28 would be applicable.

A more accurate method of estimating the average liquid surface temperature, T_{LA}, in partially insulated fixed roof tanks is given below. When the tank shell is insulated but the tank roof is not, heat gain to the tank from insolation is almost entirely through the tank roof and thus the liquid surface temperature is not sensitive to H_S/D.

$$T_{LA} = 0.3\ T_{AA} + 0.7\ T_B + 0.005\ \alpha_R\ I \quad (1\text{-}29)$$

If T_{LA} is used to calculate P_{VA} from Figures 7.1-13a, 7.1-13b, 7.1-14a, or 7.1-14b, T_{LA} must be converted from degrees Rankine to degrees Fahrenheit (°F = °R – 459.7). If T_{LA} is used to calculate P_{VA} from Equation 1-26, T_{LA} must be converted from degrees Rankine to degrees Celsius (°C = [°R – 491.7]/1.8).

4. The average daily ambient temperature, T_{AA}, is calculated using the following equation:

$$T_{AA} = \left(\frac{T_{AX} + T_{AN}}{2}\right) \quad \textbf{(1-30)}$$

where:

T_{AA} = average daily ambient temperature, °R
T_{AX} = average daily maximum ambient temperature, °R
T_{AN} = average daily minimum ambient temperature, °R

Table 7.1-7 gives historical values of T_{AX} and T_{AN} in degrees Fahrenheit for selected U.S. cities. These values are converted to degrees Rankine by adding 459.7.

5. The liquid bulk temperature, T_B, should preferably be based on measurements or estimated from process knowledge. For uninsulated fixed roof tanks known to be in approximate equilibrium with

ambient air, heat gain to the bulk liquid from insolation is almost entirely through the tank shell; thus the liquid bulk temperature is not sensitive to H_S/D and may be calculated using the following equation:

$$T_B = T_{AA} + 0.003\,\alpha_S\,I \quad (1\text{-}31)$$

where:

T_B = liquid bulk temperature, °R
T_{AA} = average daily ambient temperature, °R, as calculated in Note 4
α_S = tank shell surface solar absorptance, dimensionless; see Table 7.1-6
I = average daily total insolation factor, Btu/(ft^2 day); see Table 7.1-7.

6. The average vapor temperature, T_V, for an uninsulated tank may be calculated using the following equation:

$$T_V = \frac{[2.2\,(H_S/D)+1.1]\,T_{AA} + 0.8\,T_B + 0.021\alpha_R I + 0.013(H_S/D)\alpha_S I}{2.2\,(H_S/D) + 1.9} \quad (1\text{-}32)$$

where:

H_S = tank shell height, ft
D = tank diameter, ft,
T_{AA} = average daily ambient temperature, °R
T_B = liquid bulk temperature, °R
α_R = tank roof surface solar absorptance, dimensionless
α_S = tank shell surface solar absorptance, dimensionless
I = average daily total insolation factor, Btu/(ft^2 day).

API assigns a default value of $H_s/D = 0.5$ and an assumption of $\alpha_R = \alpha_S$, resulting in the simplified equation shown below for an uninsulated tank:[22]

$$T_V = 0.7T_{AA} + 0.3T_B + 0.009\,\alpha\,I \quad (1\text{-}33)$$

where:

α = average tank surface solar absorptance, dimensionless

When the shell is insulated, but not the roof, the temperature equations are independent of H_s/D.

$$T_V = 0.6T_{AA} + 0.4T_B + 0.01\,\alpha_R\,I \quad (1\text{-}34)$$

When the tank shell and roof are fully insulated, the temperatures of the vapor space and the liquid surface are taken as equal to the temperature of the bulk liquid.

7.1.3.1.2 Working Loss

The fixed roof tank working loss, L_W, refers to the loss of stock vapors as a result of tank filling operations. Fixed roof tank working losses can be estimated from:

$$L_W = V_Q K_N K_P W_V K_B \quad \textbf{(1-35)}$$

where:

L_W = working loss, lb/yr

V_Q = net working loss throughput, ft^3/yr, see Note 1

K_N = working loss turnover (saturation) factor, dimensionless

for turnovers > 36, $K_N = (180 + N)/6N$

for turnovers ≤ 36, $K_N = 1$

for tanks that are vapor balanced and tanks in which flashing occurs, $K_N = 1$ regardless of the number of turnovers; further adjustment of K_N may be appropriate in the case of splash loading into a tank.

N = number of turnovers per year, dimensionless:

$$N = \Sigma H_{QI} / (H_{LX} - H_{LN}) \quad \textbf{(1-36)}$$

ΣH_{QI} = the annual sum of the increases in liquid level, ft/yr

If ΣH_{QI} is unknown, it can be estimated from pump utilization records. Over the course of a year, the sum of increases in liquid level, ΣH_{QI}, and the sum of decreases in liquid level, ΣH_{QD}, will be approximately the same. Alternatively, ΣH_{QI} may be approximated as follows:

$$\Sigma H_{QI} = (5.614\ Q) / ((\pi/4)\ D^2) \quad (1\text{-}37)$$

5.614 =the conversion of barrels to cubic feet, ft^3/bbl

Q = annual net throughput, bbl/yr

For horizontal tanks, use D_E (Equation 1-4) in place of D in Equation 1-37

H_{LX} = maximum liquid height, ft

If the maximum liquid height is unknown, for vertical tanks use one foot less than the shell height and for horizontal tanks use (π/4) D where D is the diameter of a vertical cross-section of the the horizontal tank

H_{LN} = minimum liquid height, ft

If the minimum liquid height is unknown, for vertical tanks use 1 and for horizontal tanks use 0

K_P = working loss product factor, dimensionless

for crude oils, $K_P = 0.75$; adjustment of K_P may be appropriate in the case of splash loading into a tank

for all other organic liquids, $K_P = 1$

W_V = vapor density, lb/ft^3, see Equation 1-22

K_B = vent setting correction factor, dimensionless, see Note 2 for open vents and for a vent setting range up to ± 0.03 psig, $K_B = 1$

1. Net Working Loss Throughput.

The net working loss throughput, V_Q, is the volume associated with increases in the liquid level, and is calculated as follows:

$$V_Q = (\Sigma H_{QI})(\pi/4)\, D^2 \quad (1\text{-}38)$$

where:

ΣH_{QI} = the annual sum of the increases in liquid level, ft/yr

D_E should be used for horizontal tanks in place of D in Equation 1-38.

If ΣH_{QI} is unknown, ΣH_{QI} can be estimated from pump utilization records. Over the course of a year, the sum of increases in liquid level, ΣH_{QI}, and the sum of decreases in liquid level, ΣH_{QD}, will be approximately the same. Alternatively, V_Q may be approximated as follows:

$$V_Q = 5.614\, Q \quad (1\text{-}39)$$

where:

5.614 = the conversion of barrels to cubic feet, ft^3/bbl

Q = annual net throughput, bbl/yr

Use of gross throughput to approximate the sum of increases in liquid level will significantly overstate emissions if pumping in and pumping out take place at the same time. However, use of gross throughput is still allowed, since it is clearly a conservative estimate of emissions.

2. Vent Setting Correction Factor

When the breather vent settings are greater than the typical values of ± 0.03 psig, and the condition expressed in Equation 1-40 is met, a vent setting correction factor, K_B, must be determined using Equation 1-41. This value of K_B will be used in Equation 1-35 to calculate working losses.

When:

(1-40)

$$K_N \left[\frac{P_{BP} + P_A}{P_I + P_A} \right] > 1.0$$

Then:

(1-41)

$$K_B = \left[\frac{\frac{P_I + P_A}{K_N} - P_{VA}}{P_{BP} + P_A - P_{VA}} \right]$$

where:

K_B = vent setting correction factor, dimensionless

P_I = pressure of the vapor space at normal operating conditions, psig

P_I is an actual pressure reading (the gauge pressure). If the tank is held at atmospheric pressure (not held under a vacuum or at a steady pressure) P_I would be 0.

P_A = atmospheric pressure, psia

K_N = working loss turnover (saturation) factor (dimensionless), see Equation 1-35 P_{VA} = vapor pressure at the average daily liquid surface temperature, psia; see Notes 1 and 2 to Equation 1-22

P_{BP} = breather vent pressure setting, psig.

See Section 7.1.6.2 for a more approximate equation for fixed roof tank working loss that was used historically, but which is no longer recommended.

$$A = 12.82 - 0.9672 \ln (RVP)$$

$$B = 7{,}261 - 1{,}216 \ln (RVP)$$

where:

RVP =Reid vapor pressure, psi
ln =natural logarithm function

Figure 7.1-16. Equations to determine vapor pressure Constants A and B for crude oil stocks. [22]

Average Daily Maximum and Minimum Liquid Surface Temperature, (°R)

$$T_{LX} = T_{LA} + 0.25\ \Delta T_V$$

$$T_{LN} = T_{LA} - 0.25\ \Delta T_V$$

where:

T_{LX} = average daily maximum liquid surface temperature, °R
T_{LA} is as defined in Note 3 to Equation 1-22
ΔT_V is as defined in Note 1 to Equation 1-5
T_{LN} = average daily minimum liquid surface temperature, °R

Figure 7.1-17. Equations for the average daily maximum and minimum liquid surface temperatures.[8]

United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park NC 27711

EPA-453/R-95-017
November 1995

Air

EPA

Protocol for Equipment Leak Emission Estimates

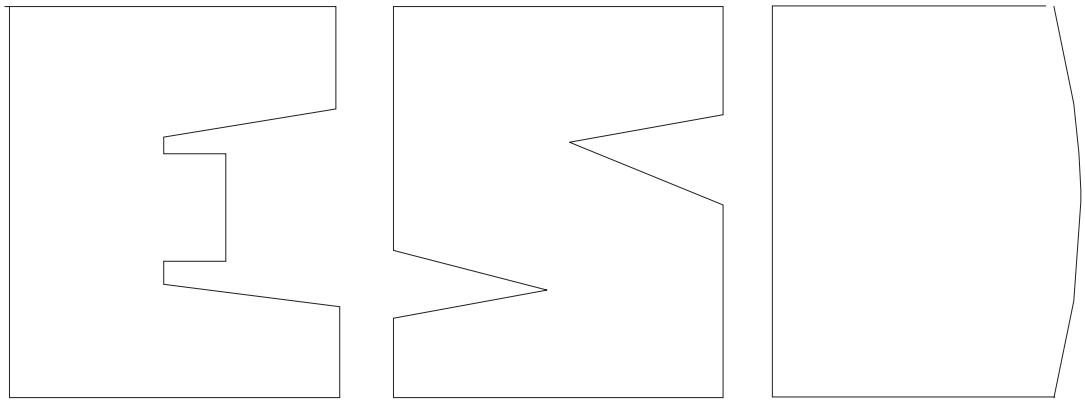


TABLE 2-4. OIL AND GAS PRODUCTION OPERATIONS AVERAGE EMISSION FACTORS (kg/hr/source)

Equipment Type	Service[a]	Emission Factor (kg/hr/source)[b]
Valves	Gas	4.5E-03
	Heavy Oil	8.4E-06
	Light Oil	2.5E-03
	Water/Oil	9.8E-05
Pump seals	Gas	2.4E-03
	Heavy Oil	NA
	Light Oil	1.3E-02
	Water/Oil	2.4E-05
Others[c]	Gas	8.8E-03
	Heavy Oil	3.2E-05
	Light Oil	7.5E-03
	Water/Oil	1.4E-02
Connectors	Gas	2.0E-04
	Heavy Oil	7.5E-06
	Light Oil	2.1E-04
	Water/Oil	1.1E-04
Flanges	Gas	3.9E-04
	Heavy Oil	3.9E-07
	Light Oil	1.1E-04
	Water/Oil	2.9E-06
Open-ended lines	Gas	2.0E-03
	Heavy Oil	1.4E-04
	Light Oil	1.4E-03
	Water/Oil	2.5E-04

[a]Water/Oil emission factors apply to water streams in oil service with a water content greater than 50%, from the point of origin to the point where the water content reaches 99%. For water streams with a water content greater than 99%, the emission rate is considered negligible.

[b]These factors are for total organic compound emission rates (including non-VOC's such as methane and ethane) and apply to light crude, heavy crude, gas plant, gas production, and off shore facilities. "NA" indicates that not enough data were available to develop the indicated emission factor.

[c]The "other" equipment type was derived from compressors, diaphrams, drains, dump arms, hatches, instruments, meters, pressure relief valves, polished rods, relief valves, and vents. This "other" equipment type should be applied for any equipment type other than connectors, flanges, open-ended lines, pumps, or valves.

Oil and Gas Production Operations Average Emission Factors

Service	Emission Factor kg/hr/source	lb/hr/source
	Valves	
Gas	4.50E-03	9.92E-03
Heavy Oil	8.40E-06	1.85E-05
Light Oil	2.50E-03	5.51E-03
Water/Oil	9.80E-05	2.16E-04
	Pump Seals	
Gas	2.40E-03	5.29E-03
Heavy Oil	NA	NA
Light Oil	1.30E-02	2.87E-02
Water/Oil	2.40E-05	5.29E-05
Others (compressors, drains, meters, pressure relief valves, relief valves, vents)		
Gas	8.80E-03	1.94E-02
Heavy Oil	3.20E-05	7.05E-05
Light Oil	7.50E-03	1.65E-02
Water/Oil	1.40E-02	3.09E-02
	Connectors	
Gas	2.00E-04	4.41E-04
Heavy Oil	7.50E-06	1.65E-05
Light Oil	2.10E-04	4.63E-04
Water/Oil	1.10E-04	2.43E-04
	Flanges	
Gas	3.90E-04	8.60E-04
Heavy Oil	3.90E-07	8.60E-07
Light Oil	1.10E-04	2.43E-04
Water/Oil	2.90E-06	6.39E-06
	Open-ended lines	
Gas	2.00E-03	4.41E-03
Heavy Oil	1.40E-04	3.09E-04
Light Oil	1.40E-03	3.09E-03
Water/Oil	2.50E-04	5.51E-04

From Table 2-4, p. 2-15, of EPA-453/R-95-017, *Protocol for Equipment Leak Emission Estimates.* November 1995

Section 8

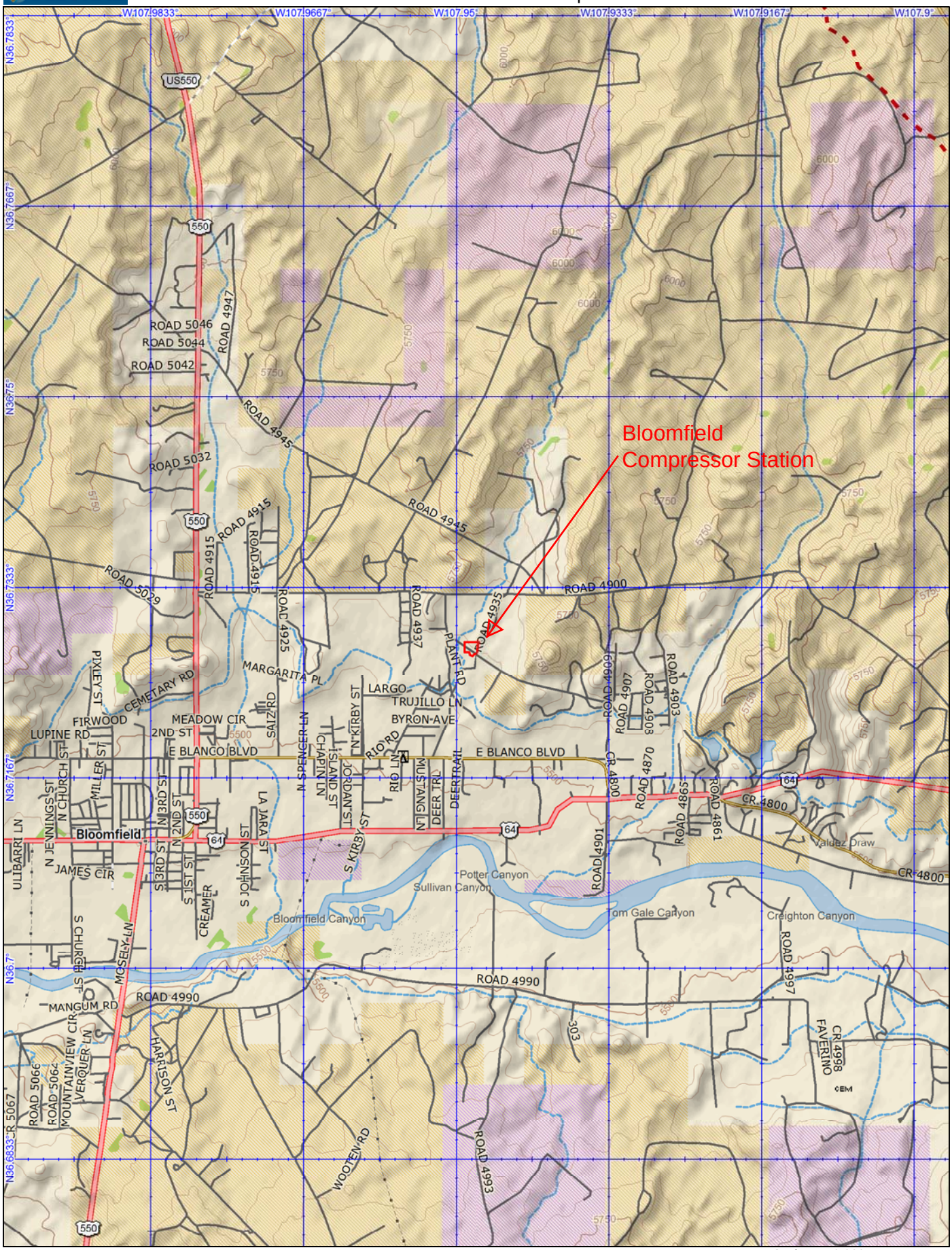
Map(s)

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	

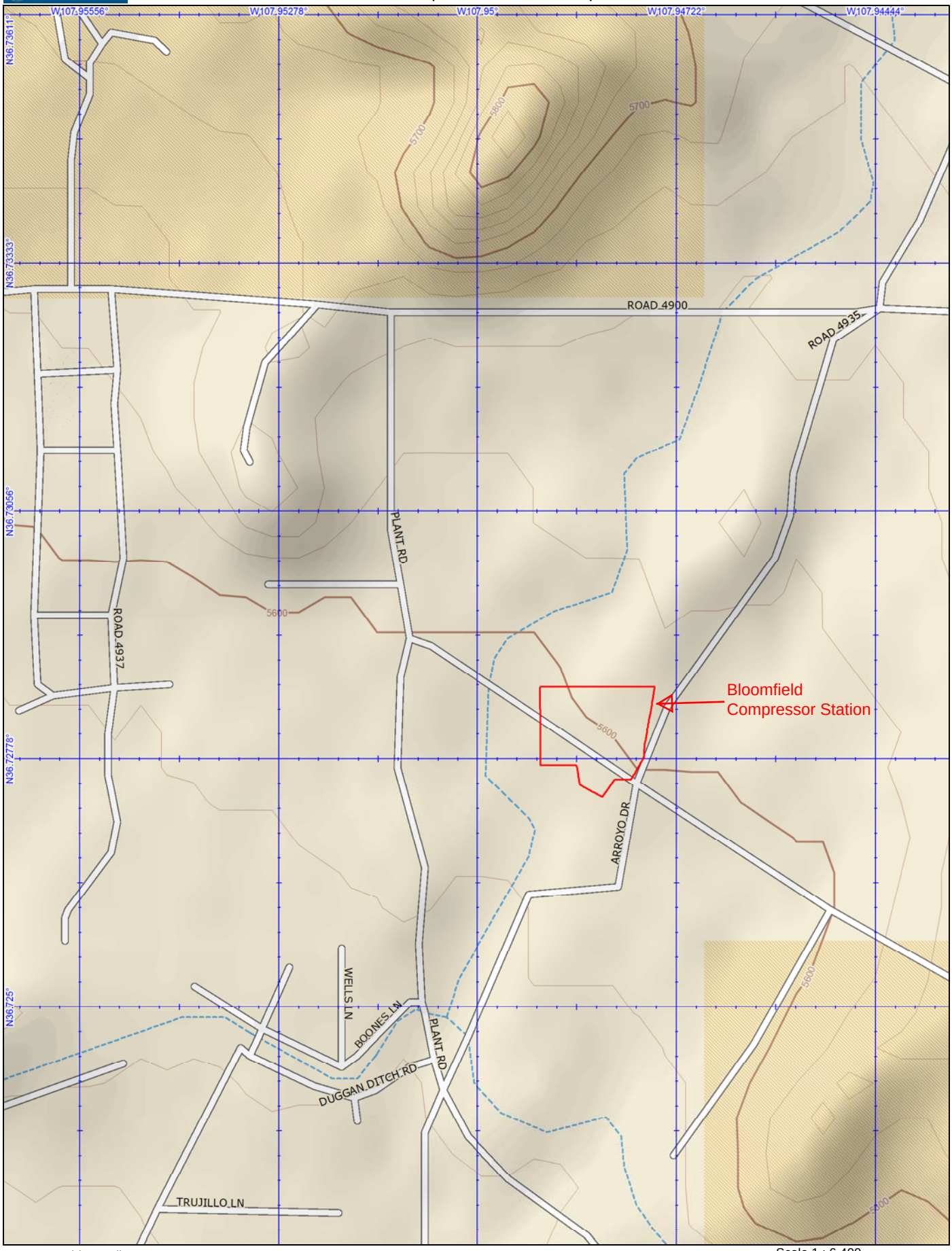
Two maps showing the location of Bloomfield Compressor Station and containing the requested information are included following this page. These maps include the following:

- Wide-Area Location Map (Page 2)
- Close-Up Area Location Map (Page 3)



TN
MN (9.6°E)

Scale 1 : 50,000
1" = 4,166.7 ft
Data Zoom 12-0



TN
MN (9.6°E)

Scale 1 : 6,400
1" = 533.3 ft
Data Zoom 15-0

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.

Public Notice by an applicant is required only if the permit application is being submitted under 20.2.72 NMAC. As this operating permit renewal application is being submitted under 20.2.70 NMAC, this requirement is not applicable to this application. Therefore, Transwestern Pipeline Company, LLC has not conducted any public notice activities in conjunction with preparation of this application.

Section 10

Written Description of the Routine Operations of the Facility

---

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.

Transwestern Pipeline Company, LLC (Transwestern) has provided a process description of station operations in Section 3 of this application, and the processes are further described below. Currently, there are no emission controls on any of the permitted emission units at the facility. There appear to be no process bottlenecks at the station. No changes have been made to the station since the last operating permit was issued by NMED on June 7, 2018.

Facility:
Natural gas enters the station via pipeline and passes through inlet separators/scrubbers, where small amounts of entrained liquids that may have accumulated from along the pipeline are removed from the gas stream. The pressurized gas then goes to one of three compressors driven by gas-fired turbines or one of two compressors driven by electric motors. After the compressors boost the gas pressure to the residue pipeline pressure, the compressed gas is returned to the main pipeline to continue its transport downstream. There are no combustion emissions associated with the electric drives.

The liquids removed by the inlet separator are directed to and stored in a 210-barrel (8,820-gallon) pipeline liquids (condensate) tank, Tank TK-7. Liquids stored in this tank are periodically loaded out onto trucks and removed from the site. In addition to the condensate tank, five other tanks are used at the station. They are a 4,239-gallon oily wastewater tank, a 10,019-gallon lube oil tank, and three 660-gallon used oil tanks.

The local electric utility grid provides electrical power for the compressor station. However, in the event that purchase power from the utility grid is lost, an emergency generator is maintained on site to provide back-up power to the station.

Additional combustion emissions at the station are emitted by an emergency generator and a line heater. The emergency generator is a back-up unit provides power to the station if purchase power from the electric grid is lost and the line heater is used to heat the fuel line leading to the turbines.

Flashing Emissions
As indicated above, minute quantities of pipeline liquids are carried through the pipeline. At the compressor station, inlet separators/scrubbers are vessels that remove most of the liquid from the natural. Over time, this liquid accumulates and must be removed periodically. In the removal process, this liquid is transferred from the scrubbers to the pipeline liquids/condensate tank at pipeline pressure. Flashing emissions of volatile organic compounds (VOC) are released through the pipeline liquids tank vent when pressurized liquids drop from pipeline pressure to atmospheric pressure.

SSM Emissions:
Bloomfield Compressor Station has startup, shutdown, and maintenance (SSM) emissions during routine or operationally-related compressor blowdowns, scheduled emergency shutdowns (ESDs), and pigging operations. Since the sulfur content in the natural gas is regulated by tariff and therefore very low, the only compounds released during SSM/M activities are VOC.

When a compressor/turbine combination is shut down for maintenance, emissions will occur when the compressor is emptied of natural gas for operational and safety reasons. Transwestern maintains records of the amount of natural gas in each compressor model and tracks the number of blowdowns per compressor per year. A gas analysis enables Transwestern to compute the amount of VOC in the gas.

For each station, the amount of natural gas that is released in an ESD, which is when all the gas in the station is emptied into the atmosphere, is also known. Generally, at least one ESD is performed per year to ensure that the systems are working properly. Transwestern tracks the number of ESDs that occur and uses a gas analysis to compute the amount of VOC released. Transwestern also tracks the number of pigging runs that occur during the year and computes the VOC emissions from the volume of natural gas released during each run and the VOC fraction of the gas.

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)**:**
Transwestern Pipeline Company, LLC Bloomfield Compressor Station is the only source that is the subject of this application.

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.**

B. **This facility is not one of the listed 20.2.74.501 Table I – PSD Source Categories. The "project" emissions** for this renewal are **not significant. The "project" emissions listed below do only result from changes described in this permit application, thus there are no emissions from other revisions or modifications, past or future, combined to those of this facility. Also, specifically discuss whether this project results in "de-bottlenecking", or other associated emissions resulting in higher emissions. The project emissions (before netting) for this project are as follows [see Table 2 in 20.2.74.502 NMAC for a complete list of significance levels]:**

a. **NOx: 0.0 TPY**
b. **CO: 0.0 TPY**
c. **VOC: 0.04 TPY**
d. **SOx: 0.0 TPY**
e. **PM: 0.0 TPY**
f. **PM10: 0.0 TPY**
g. **PM2.5: 0.0 TPY**
h. **Fluorides: 0.0 TPY**
i. **Lead: 0.0 TPY**
j. **Sulfur compounds (listed in Table 2): 0.0 TPY**
k. **GHG: 0.0 TPY**

C. **Netting is not required (project is not significant).**

D. **BACT** is **not required for this renewal.**

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

Additional Transwestern Pipeline Company, LLC input:

Other than two like-in-kind turbine exchanges, for Unit Numbers 1001 and 1002, there have been no physical changes made to the station or changes in the method of operation of the station since the Title V operating permit was last modified in June 2018. The requested increase in the emissions of volatile organic compounds (VOC) results only from an update in the method of calculation due to recent updates to the U.S. Environmental Protection Agency AP-42. No physical change or change in the method of operation of a major stationary source as stipulated in the definition of "major modification" in 40 CFR §52.21(B)(2)(i) is being undertaken. Furthermore, the increase in emissions does not meet or exceed significance levels for VOC; therefore, the change in emissions by itself is not significant and does not represent a modification under the PSD program.

Section 13

Determination of State & Federal Air Quality Regulations

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

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

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

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

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

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

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

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

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

Table of Applicable STATE REGULATIONS:

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.1 NMAC	General Provisions	Yes	Facility	General Provisions apply to Notice of Intent, Construction, and Title V permit applications. Since this application is a Title V application, this regulation applies.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	20.2.3 NMAC is a State Implementation Plan (SIP) approved regulation that limits the maximum allowable concentration of, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide. Title V applications, see exemption at 20.2.3.9 NMAC The TSP NM ambient air quality standard was repealed by the EIB effective November 30, 2018.
20.2.7 NMAC	Excess Emissions	Yes	Facility	If subject, this would normally apply to the entire facility. If your entire facility or individual pieces of equipment are subject to emissions limits in a permit or numerical emissions standards in a federal or state regulation, this applies. The station is subject to emissions limits in a permit; therefore, this regulation applies.
20.2.23 NMAC	Fugitive Dust Control	No	N/A	Sources exempt from 20.2.23 NMAC are activities and facilities subject to a permit issued pursuant to the NM Air Quality Control Act, the Mining Act, or the Surface Mining Act (20.2.23.108.B NMAC. This station is subject to a permit; therefore, this rule does not apply.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	N/A	This facility has no gas new or existing burning equipment (external combustion emission sources, such as gas fired boilers and heaters) having 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 (external combustion emission sources, such as oil fired boilers and heaters).
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No	N/A	This regulation could apply to existing (prior to July 1, 1974) or new (on or after July 1, 1974) natural gas processing plants that use a Sulfur Recovery Unit to reduce sulfur emissions. However, this facility is not a natural gas processing plant. Therefore, this regulation does not apply.
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	N/A	N/A	**These regulations were repealed by the Environmental Improvement Board. If you had equipment subject to 20.2.37 NMAC before the repeal, your combustion emission sources are now subject to 20.2.61 NMAC.**
20.2.38 NMAC	Hydrocarbon Storage Facility	No	N/A	This facility is not a hydrocarbon storage facility. Therefore, this regulation does not apply.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	This facility does not have a sulfur recovery plant on site. Therefore, this regulation does not apply.
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	1001 1002 1003 G040	This regulation limits opacity to 20% applies to Stationary Combustion Equipment, such as engines, boilers, heaters, and flares unless your equipment is subject to another state regulation that limits particulate matter such as 20.2.19 NMAC (see 20.2.61.109 NMAC). The turbines and engine are Stationary Combustion Equipment and burn pipeline-quality natural gas.
20.2.70 NMAC	Operating Permits	Yes	Facility	The station is major for oxides of nitrogen (NOx) and has a current operating permit, and the facility is not one of those listed at 20.2.70.7(2)(a) through (aa). Therefore, this regulation applies.
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	Yes, this facility is subject to 20.2.70 NMAC and is, in turn, subject to 20.2.71 NMAC.
20.2.72 NMAC	Construction Permits	Yes	1001 1002 1003 TK-7	This facility is subject to 20.2.72 NMAC and NSR Permit number 0917-M4.

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	You could be required to submit **Emissions Inventory Reporting per** 20.2.73.300 NMAC if your facility is subject to 20.2.73.200, 20.2.72, or emits more than 1 ton of lead or 10 tons of PM10, PM2.5, SOx, NOx CO, or VOCs in any calendar year. All facilities that are a Title V Major Source as defined at 20.2.70.7.R NMAC, are subject to Emissions Inventory Reporting. Since the facility is a Title V major source, this regulation applies.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	Yes	Facility	This facility is PSD major as defined by the following: **20.2.74.7.AG(2)** A stationary source not listed in Table 1 of this Part (20.2.74.501 NMAC) and which emits or has the potential to emit stack emissions of two hundred fifty (250) tons per year or more of any regulated pollutant; or **20.2.74.200.7.AG(5)** The fugitive emissions of a stationary source shall not be included in determining for any of the purposes of this section whether it is a major stationary source, unless the source belongs to one of the stationary source categories found in Table 1 of this Part (20.2.74.501 NMAC) or any other stationary source category which, as of August 7, 1980, is being regulated under section 111 or 112 of the Act.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This facility is subject to 20.2.72 NMAC and is in turn subject to 20.2.75 NMAC.
20.2.77 NMAC	New Source Performance	Yes	1001 1002 1003	This is a stationary source which is subject to the requirements of 40 CFR Part 60, as amended through September 23, 2013.
20.2.78 NMAC	Emission Standards for HAPS	No	N/A	This facility does not emit hazardous air pollutants that are subject to the requirements of 40 CFR Part 61.
20.2.79 NMAC	Permits – Nonattainment Areas	No	N/A	This station is not located in a nonattainment area. Therefore, this regulation is not applicable.
20.2.80 NMAC	Stack Heights	No	N/A	This rule is not applicable, as no new or modified sources with a stack are proposed in this application (a Title V renewal application).
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	G8040	This regulation applies to all sources emitting hazardous air pollutants (HAPs) that are subject to the requirements of 40 CFR Part 63, as amended through August 29, 2013. The station is not a major source of HAPs, but the emergency generator engine is subject to 40 CFR 63, Subpart ZZZZ.

Table of Applicable FEDERAL REGULATIONS:

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 50	NAAQS	Yes	Facility	This rule applies if the facility is subject to 20.2.70, 20.2.72, 20.2.74, and/or 20.2.79 NMAC. Since the facility is specifically subject to 20.2.70 NMAC, this rule applies.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	1001 1002 1003	Applies if any other NSPS subpart applies. NSPS 40 CFR 60, Subpart GG applies to the turbines at the facility. Therefore, Subpart A applies.
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for **Electric Utility Steam Generating Units**	No	N/A	The station does not have any electric utility steam generating units.
NSPS 40 CFR60.40b Subpart Db	**Electric Utility Steam Generating Units**	No	N/A	The station does not have any electric utility steam generating units.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	No	N/A	The station does not have any steam generating units.
NSPS 40 CFR 60, Subpart Ka	Standards of Performance for **Storage Vessels for Petroleum Liquids** for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and **Prior** to July 23, 1984	No	N/A	No storage tank at the station has a storage capacity greater than 151,416 liters (40,000 gallons). Therefore, this rule is not applicable.
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for **Volatile Organic Liquid Storage Vessels** (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced **After** July 23, 1984	No	N/A	This station has one storage vessel, emission unit TK-7, with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification commenced after July 23, 1984. However, per 40 CFR 60.110b(d), this subpart does not apply to the following: **(4) Vessels with a design capacity less than or equal to 1589.874 m3 (10,000 barrels) used for petroleum or condensate stored, processed, or treated prior to custody transfer.** Since Tank TK-7 has a capacity of less than 10,000 barrels, this rule is not applicable.
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	Yes	1001 1002 1003	Units 1001, 1002, and 1003 each have a heat input of 55 MMBtu/hour, which is greater than the 10 MMBtu/hour threshold. These units were installed in 1991, which is after the October 3, 1977, applicability date. Therefore, this subpart applies to these units.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	No	N/A	This compressor station is not located at an on-shore gas plant. Therefore, this rule is not applicable.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural Gas Processing**: SO_2 Emissions	No	N/A	The facility is not an on-shore natural gas processing plant; therefore, this rule is not applicable.
NSPS 40 CFR Part 60 Subpart OOOO	Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution for which construction, modification or reconstruction commenced after August 23, 2011 and before September 18, 2015	No	N/A	The rule applies to "affected" facilities that are constructed, modified, or reconstructed after Aug 23, 2011 (40 CFR 60.5365): gas wells, including fractured and hydraulically refractured wells, centrifugal compressors, reciprocating compressors, pneumatic controllers, certain equipment at natural gas processing plants, sweetening units at natural gas processing plants, and storage vessels. If there is a standard or other requirement, then the facility is an "affected facility." Currently there are standards for: gas wells (60.5375); centrifugal compressors (60.5380); reciprocating compressors (60.5385): controllers (60.5390); storage vessels (60.5395); equipment leaks (60.5400); sweetening units (60.5405). The station has no potentially affected facilities that were constructed, modified, or reconstructed after August 23, 2011. The tanks were constructed prior to the effective date of the rule. Therefore, this rule is not applicable.
NSPS 40 CFR Part 60 Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015	No	N/A	See 60.536 EPA Guidance Page: https://www3.epa.gov/airquality/oilandgas/0a No potentially affected facilities at the station were constructed, modified, or reconstructed after September 18, 2015. Therefore, this regulation is not applicable.
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	No	N/A	See 60.4200 and EPA Region 1's Reciprocating Internal Combustion Guidance website. This rule applies to compression ignition engines. None of the engines at this station is a compression ignition engine; therefore, this rule is not applicable.
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	No	N/A	See 40 CFR 60.4230 and EPA Region 1's Reciprocating Internal Combustion Guidance website. This rule applies to engines constructed after June 12, 2006. The station's emergency generator engine (Unit G8040) was constructed before this date; therefore, this rule is not applicable.
NSPS 40 CFR 60 Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units	No	N/A	This station is not an electric generating unit. Therefore, this rule is not applicable.

NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No	N/A	This station is not an electric generating unit. Therefore, this rule is not applicable.
NSPS 40 CFR 60, Subparts WWW, XXX, Cc, and Cf	Standards of performance for Municipal Solid Waste (MSW) Landfills	No	N/A	This station is not a municipal solid waste landfill. Therefore, this rule is not applicable.
NESHAP 40 CFR 61 Subpart A	General Provisions	No	None	This subpart applies to the owner or operator of any stationary source for which a standard is prescribed under this part. No subpart of 40 CFR 61 applies to this station. Therefore, this subpart does not apply.
NESHAP 40 CFR 61 Subpart E	National Emission Standards for **Mercury**	No	N/A	The provisions of this subpart are applicable to those stationary sources which process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry wastewater treatment plant sludge. The station has no sources for which this rule is applicable. Thus, this rule is not applicable at the station.
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	No	N/A	The provisions of this subpart apply to each of the following sources that are intended to operate in volatile hazardous air pollutant (VHAP) service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices or systems required by this subpart. VHAP service means a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight of VHAP. VHAP means a substance regulated under this subpart for which a standard for equipment leaks of the substance has been promulgated. Benzene is a VHAP (See 40 CFR 61 Subpart J). Link to 40 CFR 61 Subpart V The station has no source that is intended to operate in volatile hazardous air pollutant (VHAP) service. Therefore, this rule is not applicable at the station.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	G8040	This subpart applies, as the listed source is subject to MACT standards in subparts to 40 CFR 63 as identified below.
MACT 40 CFR 63.760 Subpart HH	**Oil and Natural Gas Production Facilities**	No	N/A	This station is not an Oil and Natural Gas Production Facility and does not have any dehydrators; therefore, the station is not subject to the requirements of 40 CFR 63 Subpart HH.
MACT 40 CFR 63 Subpart HHH	Natural Gas Transmission and Storage Facilities	No	N/A	This subpart applies to owners and operators of natural gas transmission and storage facilities that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user (if there is no local distribution company), and that are major sources of hazardous air pollutants (HAP) emissions as defined in §63.1271. The station is not a major source of HAP emissions and does not include any dehydrators. Therefore, this rule is not applicable at the station.
MACT 40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	No	N/A	See 63.7480 EPA Guidance Page: https://www.epa.gov/boilers This subpart applies to boilers and process heaters. The station has one line heater, but it is not a major source of HAP; therefore, this rule is not applicable.

MACT 40 CFR 63 Subpart UUUUU	National Emission Standards for Hazardous Air Pollutants Coal & Oil Fire Electric Utility Steam Generating Unit	No	N/A	See 63.9980 (known as the MATs rule) EPA Guidance Page: https://www.epa.gov/boilers This subpart applies to coal or oil-fired electric utility steam generating units. The station does not have any sources of this type; therefore, this subpart is not applicable.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	Yes	G8040	See 63.6580 and EPA Region 1's Reciprocating Internal Combustion Guidance website. Facilities are subject to this subpart if they own or operate a stationary RICE, except if the stationary RICE is being tested at a stationary RICE test cell/stand. Therefore, this rule applies to the generator engine (Unit G8040) at this station. Unit G8040 is a 700-horsepower, four-stroke, lean-burn stationary RICE that is an existing engine. The station is an area source of HAP emissions. • Engine G8040 is subject to operational limits per §63.6625(h) and §63.6640(f), which include a limit of 100 hours per year for non-emergency operation and 50 hours per year for non-emergency and non-maintenance operation. It is subject to monitoring and maintenance requirements under §63.6603 (and Table 2d) and §63.6625(f), (h), and (j), which include requirements for changing engine oil and filters, periodically inspecting spark plugs and all hoses and belts, and installing a non-resettable hour meter. The engine is also subject to the recordkeeping requirements of §63.6655 and reporting requirements of §63.6645 and §63.6650. Per 40 CFR §63.6603(a), the engines at the station are subject to requirements in Table 2d of this rule.
40 CFR 64	**Compliance Assurance Monitoring**	No	N/A	**Applies only to Title V Major Sources** Although the mainline compressor turbines (Units 1001, 1002, and 1003) are major sources of regulated pollutants (NOx) in and of themselves, none uses a control device to comply with the permit limit. Therefore, they are not subject to 40 CFR 64.
40 CFR 68	**Chemical Accident Prevention**	No	N/A	If subject, this would normally apply to the entire facility. An owner or operator of a stationary source that has more than a threshold quantity of a regulated substance in a process, as determined under §68.115, See 40 CFR 68 The facility does not maintain more than a threshold quantity of any regulated substance under this part; therefore, this rule is not applicable.
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No	N/A	See 40 CFR 72.6. This may apply if your facility generates commercial electric power or electric power for sale. However, this station does not generate commercial electric power or electric power for sale, and it is not an acid rain source. Therefore, this regulation is not applicable.
Title IV – Acid Rain 40 CFR 73	**Sulfur Dioxide** Allowance Emissions	No	N/A	See 40 CFR 73.2. This may apply if your facility generates commercial electric power or electric power for sale. However, this station does not generate commercial electric power or electric power for sale, and it is not an acid rain source. Therefore, this regulation is not applicable.
Title IV-Acid Rain 40 CFR 75	**Continuous Emissions Monitoring**	No	N/A	See 40 CFR 75.2. This may apply if your facility generates commercial electric power or electric power for sale. However, this station does not generate commercial electric power or electric power for sale. Therefore, this regulation is not applicable.
Title IV – Acid Rain 40 CFR 76	**Acid Rain** Nitrogen Oxides **Emission Reduction Program**	No	N/A	See 40 CFR 76.1. This may apply if your facility generates commercial electric power or electric power for sale. However, this station does not generate commercial electric power or electric power for sale. Therefore, this regulation is not applicable

Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	No	N/A	EPA Guidance Page for 40 CFR 82: https://www.epa.gov/section608 40 CFR 82 may apply if you: **(40 CFR 82.1 and 82.100)** produce, transform, destroy, import or export a controlled substance or import or export a controlled product; **(40 CFR 82.30)** if you perform service on a motor vehicle for consideration when this service involves the refrigerant in the motor vehicle air conditioner; **(40 CFR 82.80)** if you are a department, agency, and instrumentality of the United States subject to Federal procurement requirements; **(82.150)** if you service, maintain, or repair appliances, dispose of appliances, refrigerant reclaimers, **if you are an owner or operator of an appliance**, if you are a manufacturer of appliances or of recycling and recovery equipment, if you are an approved recycling and recovery equipment testing organization, and/or if you sell or offer for sell or purchase class I or class I refrigerants. **Note:** Owners and operators of appliances subject to 40 CFR 82.150 Recycling and Emissions Reduction have recordkeeping and reporting requirements even if the owner/operator is not performing the actual work. **Note:** Disposal definition in 82.152: Disposal means the process leading to and including: (1) The discharge, deposit, dumping or placing of any discarded appliance into or on any land or water; (2) The disassembly of any appliance for discharge, deposit, dumping or placing of its discarded component parts into or on any land or water; or (3) The disassembly of any appliance for reuse of its component parts. “Major maintenance, service, or repair means” any maintenance, service, or repair that involves the removal of any or all of the following appliance components: compressor, condenser, evaporator, or auxiliary heat exchange coil; or any maintenance, service, or repair that involves uncovering an opening of more than four (4) square inches of “flow area” for more than 15 minutes. **Not applicable. None of the above items applies at the station.**

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.

Transwestern Pipeline Company, LLP (Transwestern) has established and implemented a plan to mitigate emissions during routine or predictable startups, shutdowns, and scheduled maintenance through work practice standards and good air pollution control practices. Transwestern maintains this plan on site.

Section 15

Alternative Operating Scenarios

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

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

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

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

Transwestern Pipeline Company, LLC is not requesting any alternative operating scenarios with this application.

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.	
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.	X
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.	X

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.

Note: Only VOC emissions are updated with this renewal application request. Since VOC does not have an applicable NAAQS, neither air dispersion modeling nor a modeling waiver is required for this submittal.

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.

Existing permit conditions require annual performance testing on each compressor turbine if the turbine operates for a specified minimum amount of time during the monitoring period (each year). All required testing has been conducted; each turbine has been tested annually during the current permit term. The following table provides recent compliance test history over the past several years for each of the turbines at Bloomfield Compressor Station for which testing is required.

Compliance Test History Table

Unit No.	Test Description	Test Date
1001	Tested in accordance with EPA test methods for NOx and CO as required by Title V Permit No. P010-R3M1 and NSR Permit No. 0917-M4.	06/09/2015 06/03/2016 06/13/2017 05/29/2018 06/17/2019
1002	Tested in accordance with EPA test methods for NOx and CO as required by Title V Permit No. P010-R3M1 and NSR Permit No. 0917-M4.	06/09/2015 06/03/2016 06/13/2017 05/29/2018 06/17/2019
1003	Tested in accordance with EPA test methods for NOx and CO as required by Title V Permit No. P010-R3M1 and NSR Permit No. 0917-M4.	06/09/2015 06/03/2016 06/13/2017 05/29/2018 06/17/2019

Section 19

Requirements for Title V Program

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 http://www.env.nm.gov/aqb/index.html. 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.

Thoreau Compressor Station #5 is a major source as defined in 20.2.70 NMAC and this application is a Title V renewal application. Therefore, Transwestern Pipeline Company, LLC, (Transwestern) is completing this section.

19.1 - 40 CFR 64, Compliance Assurance Monitoring (CAM) (20.2.70.300.D.10.e NMAC)

Any source subject to 40CFR, Part 64 (Compliance Assurance Monitoring) must submit all the information required by section 64.7 with the operating permit application. The applicant must prepare a separate section of the application package for this purpose; if the information is already listed elsewhere in the application package, make reference to that location. Facilities not subject to Part 64 are invited to submit periodic monitoring protocols with the application to help the AQB to comply with 20.2.70 NMAC. Sources subject to 40 CFR Part 64, must submit a statement indicating your source's compliance status with any enhanced monitoring and compliance certification requirements of the federal Act.

As mentioned in Section 13, the station's emission units that emit NOx at levels that exceed major source thresholds in and of themselves do not use a control device to comply with an emission limit. Therefore, compliance assurance monitoring requirements under 40 CFR 64 do not apply to the engines listed in this permit application.

19.2 - Compliance Status (20.2.70.300.D.10.a & 10.b NMAC)

Describe the facility's compliance status with each applicable requirement at the time this permit application is submitted. This statement should include descriptions of or references to all methods used for determining compliance. This statement should include descriptions of monitoring, recordkeeping and reporting requirements and test methods used to determine compliance with all applicable requirements. Refer to Section 2, Tables 2-N and 2-O of the Application Form as necessary. (20.2.70.300.D.11 NMAC) For facilities with existing Title V permits, refer to most recent Compliance Certification for existing requirements. Address new requirements such as CAM, here, including steps being taken to achieve compliance.

The station's most recent annual compliance certification, submitted to NMED under a cover letter dated July 26, 2019, presented the station's compliance status through June 30, 2019. The station was not out of compliance with any permit condition or requirement. Transwestern submitted the station's most recent semiannual monitoring report for the six months ending on December 31, 2019, under a cover letter dated January 8, 2020. No deviations were reported. Since the time of submittal of those reports, no changes to the compliance status of the station have occurred and the station is currently in compliance with all requirements and permit conditions.

19.3 - Continued Compliance (20.2.70.300.D.10.c NMAC)

Provide a statement that your facility will continue to be in compliance with requirements for which it is in compliance at the time of permit application. This statement must also include a commitment to comply with other applicable requirements as they come into effect during the permit term. This compliance must occur in a timely manner or be consistent with such schedule expressly required by the applicable requirement.

Transwestern will continue to comply with all applicable requirements at this station. In addition, Transwestern will also comply in a timely manner with any new applicable requirements when they come into effect during the permit term.

19.4 - Schedule for Submission of Compliance (20.2.70.300.D.10.d NMAC)

You must provide a proposed schedule for submission to the department of compliance certifications during the permit term. This certification must be submitted annually unless the applicable requirement or the department specifies a more frequent period. A sample form for these certifications will be attached to the permit.

Transwestern will submit semiannual monitoring reports twice per year and an annual compliance certification once per year to NMED.

19.5 - Stratospheric Ozone and Climate Protection

In addition to completing the four (4) questions below, you must submit a statement indicating your source's compliance status with requirements of Title VI, Section 608 (National Recycling and Emissions Reduction Program) and Section 609 (Servicing of Motor Vehicle Air Conditioners).

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1. Does your facility have any air conditioners or refrigeration equipment that uses CFCs, HCFCs or other ozone-depleting substances? ☐ **Yes** ■ **No**

2. Does any air conditioner(s) or any piece(s) of refrigeration equipment contain a refrigeration charge greater than 50 lbs? ☐ **Yes** ■ **No**

   (If the answer is yes, describe the type of equipment and how many units are at the facility.)

3. Do your facility personnel maintain, service, repair, or dispose of any motor vehicle air conditioners (MVACs) or appliances ("appliance" and "MVAC" as defined at 82. 152)? ☐ **Yes** ■ **No**

4. Cite and describe which Title VI requirements are applicable to your facility (i.e. 40 CFR Part 82, Subpart A through G.) No requirements under Title VI of the Clean Air Act Amendments apply to Bloomfield Compressor Station.

This station is subject to 40 CFR 82, Subpart F in the event that a unit containing refrigerants must be disposed. The facility does not service, perform maintenance, or repair such units. The station is in compliance with Clean Air Act Title VI, Sections 608 and 609, and will continue to comply with the requirements of these sections.

19.6 - Compliance Plan and Schedule

Applications for sources, which are not in compliance with all applicable requirements at the time the permit application is submitted to the department, must include a proposed compliance plan as part of the permit application package. This plan shall include the information requested below:

A. Description of Compliance Status: (20.2.70.300.D.11.a NMAC)
A narrative description of your facility's compliance status with respect to all applicable requirements (as defined in 20.2.70 NMAC) at the time this permit application is submitted to the department.

B. Compliance plan: (20.2.70.300.D.11.B NMAC)
A narrative description of the means by which your facility will achieve compliance with applicable requirements with which it is not in compliance at the time you submit your permit application package.

C. Compliance schedule: (20.2.70.300D.11.c NMAC)
A schedule of remedial measures that you plan to take, including an enforceable sequence of actions with milestones, which will lead to compliance with all applicable requirements for your source. This schedule of compliance must be at least as stringent as that contained in any consent decree or administrative order to which your source is subject. The obligations of any consent decree or administrative order are not in any way diminished by the schedule of compliance.

D. Schedule of Certified Progress Reports: (20.2.70.300.D.11.d NMAC)
A proposed schedule for submission to the department of certified progress reports must also be included in the compliance schedule. The proposed schedule must call for these reports to be submitted at least every six (6) months.

E. Acid Rain Sources: (20.2.70.300.D.11.e NMAC)
If your source is an acid rain source as defined by EPA, the following applies to you. For the portion of your acid rain source subject to the acid rain provisions of title IV of the federal Act, the compliance plan must also include any additional requirements under the acid rain provisions of title IV of the federal Act. Some requirements of title IV regarding the schedule and methods the source will use to achieve compliance with the acid rain emissions limitations may supersede the requirements of title V and 20.2.70 NMAC. You will need to consult with the Air Quality Bureau permitting staff concerning how to properly meet this requirement.

NOTE: The Acid Rain program has additional forms. See http://www.env.nm.gov/aqb/index.html. Sources that are subject to both the Title V and Acid Rain regulations are **encouraged** to submit both applications **simultaneously**.

All emission units are in compliance with applicable requirements. Therefore, no compliance plan is required or included with this application.

19.7 - 112(r) Risk Management Plan (RMP)

Any major sources subject to section 112(r) of the Clean Air Act must list all substances that cause the source to be subject to section 112(r) in the application. The permittee must state when the RMP was submitted to and approved by EPA.

Transwestern does not store any of the substances regulated by Section 112(r) at Bloomfield Compressor Station, and therefore is not subject to the requirements contained in this regulation.

19.8 - Distance to Other States, Bernalillo, Indian Tribes and Pueblos

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 NMAC)? **Yes.**

(If the answer is yes, state which apply and provide the distances.)

Bloomfield Compressor Station is located 30 km of the State of Colorado, the Southern Ute Indian Reservation, the Southern Ute Indian Tribe, and the Ute Mountain Indian Reservation, 11 km of the Navajo Reservation, and 53 km from the Jicarilla Apache Indian Reservation.

19.9 - Responsible Official

Provide the Responsible Official as defined in 20.2.70.7.AD NMAC:

The Responsible Official for this station is Mr. Dave Roybal, Director of Operations. The Alternate Responsible Official is Mr. Clint Cowan, Vice President of Environmental.

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.

Transwestern Pipeline Company, LLC has no additional relevant information to add to the application at this time.

Section 22: Certification

Company Name: Transwestern Pipeline Company, LLC

I, Dave Roybal, 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 9th day of April, 2020, upon my oath or affirmation, before a notary of the State of New Mexico.

Dave Roybal
*Signature

4-9-20
Date

Dave Roybal
Printed Name

Director of Operations
Title

Scribed and sworn before me on this 9th day of April, 2020.

My authorization as a notary of the State of New Mexico expires on the 7th day of December, 2021.

Dianna M. Birrell
Notary's Signature

4/9/20
Date

Dianna M. Birrell
Notary's Printed Name

OFFICIAL SEAL
DIANNA M BIRRELL
Notary Public
State of New Mexico
My Comm. Expires 12/7/2021

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