ENERGY TRANSFER

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San Antonio, Texas 78258-3941
210-403-7300
210-403-7500 (Fax)

March 12, 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. P155-R3M2
Transwestern Pipeline Company, LLC
Thoreau Compressor Station #5
Agency Interest No. 890

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 Thoreau Compressor Station #5, which is located in McKinley County, New Mexico. The current operating permit for this facility is Permit No. P155-R3M2.

No physical changes have been made at the station or to its operation since the current permit was issued. However, Transwestern is proposing that two changes be made in its representation of potential emissions from the station. Specifically, Transwestern is proposing to change the method of calculating emissions of sulfur dioxide (SO_2) from the station's engines to reflect the limit on total sulfur allowed in the natural gas that passes through the station and is also used as fuel gas by these engines. This limit is set by the tariff issued to Transwestern for this natural gas by the Federal Energy Regulatory Commission. The result of the change is slight increases to the emissions levels of SO_2 that do not result in any changes to allowable emission limits or applicable requirements. The only other change represented in the permit application is an update to the calculations of tank emissions that 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.): 890	Updating Permit/NOI #: P155-R3M2
1	Facility Name: Thoreau Compressor Station #5	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): 174 Castle Rock Rd., Thoreau, NM 87323		
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	
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: Charlie Allen	Phone/Fax: 505-870-9432/505-905-7446
a	Address: P.O Box 1019, Thoreau, NM 87323	E-mail: Charlie.Allen@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: 0.123 MMscf (fuel) (MMscf – million standard cubic feet)	Daily: 2.952 MMscf	Annually: 1,077 MMscf
b	Proposed	Hourly: 0.123 MMscf	Daily: 2.952 MMscf	Annually: 1,077 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: 31.25 MMscf (pipeline throughput)	Daily: 750 MMscf	Annually: 273,750 MMscf
b	Proposed	Hourly: 31.25 MMscf	Daily: 750 MMscf	Annually: 273,750 MMscf

Section 1-D: Facility Location Information

1	Section: 20	Range: 13W	Township: 14N	County: McKinley	Elevation (ft): 7,300
2	UTM Zone: ■ 12 or □ 13			Datum: □ NAD 27 ■ NAD 83 □ WGS 84	
a	UTM E (in meters, to nearest 10 meters): 750,840			UTM N (in meters, to nearest 10 meters): 3,923,790	
b	**AND** Latitude (deg., min., sec.): 35° 25' 33.5" N			Longitude (deg., min., sec.): 108° 14' 13.5" W	
3	Name and zip code of nearest New Mexico town: Thoreau 87323				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From the bridge over the railroad tracks just south of Thoreau, take the first road heading west and follow it to a stop sign. Make a right at the stop sign onto Castle Rock Road and head north on the paved road 1.7 miles to the station.				
5	The facility is 1.4 miles north of Thoreau.				
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: Thoreau; Cibola County				
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: Petrified Forest National Park, Arizona				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 128.370 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: 257 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: Continental Divide Electric Cooperative 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): Clint Green	Phone: 713-989-7447
a	R.O. Title: Vice President of Operations	R.O. e-mail: clint.green@energytransfer.com
b	R. O. Address: 600 N. Marienfeld St., Suite 700, Midland, TX 79701	
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC): Dave Roybal	Phone: 575-347-6514
a	A. R.O. Title: Director of Operations	A. R.O. e-mail: david.roybal@energytransfer.com
b	A. R. O. Address: 8501 Jefferson NE, Albuquerque, NM 87113	
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: Charlie Allen: 505-870-9432	

7	Affected Programs to include Other States, local air pollution control programs (i.e. Bernalillo) and Indian tribes: Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B)? If yes, state which ones and provide the distances in kilometers: **Yes**. State of Arizona – 72 km; Navajo Nation – 0.5 km; Zuni Indian Reservation – 30 km; Ramah Navajo Indian Reservation – 34 km; Acoma Indian Reservation – 57 km; Laguna Indian Reservation – 65 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.

Table of Contents

Table 2-A: Regulated Emission Sources

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

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] Date of Construction/ Reconstruction[2]	Controlled by Unit # Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
501	I/C Engine	Cooper-Bessemer	LSV16SG	6185	4,500 hp	8,760 hr/yr	1960 1960	None 501	20200-254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ■ To Be Modified ☐ To be Replaced	SI, 4SLB	N/A
502	I/C Engine	Cooper-Bessemer	LSV16SG	6188	4,500 hp	8,760 hr/yr	1960 1960	None 502	20200-254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ■ To Be Modified ☐ To be Replaced	SI, 4SLB	N/A
503	I/C Engine	Cooper-Bessemer	LSV16SG	7027	4,500 hp	8,760 hr/yr	1967 1967	None 503	20200-254	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ■ To Be Modified ☐ To be Replaced	SI, 4SLB	N/A
522	I/C Engine	Ingersoll-Rand	PSVG6	6BPSC276	392 hp	500 hr/yr	1967 1967	None 522	20200-253	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ■ To Be Modified ☐ To be Replaced	SI, 4SRB	N/A
TK-5	Condensate Storage Tank	N/A	N/A	N/A	500 bbl	500 bbl	1981 1981	None N/A	40400-311	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
MIST-Flash	Mist Extractor	Fabricated	N/A	N/A	1,126 gal	1,126 gal	1982 1982	None N/A	40400-311	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FUG	Component Fugitives VOC Emissions	N/A	N/A	N/A	N/A	N/A	 1960	None N/A	30600-811	■ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
SSM/M1	Startup, Shutdown, Maintenance, and Malfunction	N/A	N/A	N/A	N/A	N/A	N/A N/A	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
LOAD	Loading condensate from tank to tanker truck	N/A	N/A	Varies	20.2.70.202	N/A	■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
			N/A	gallons	Insignificant Activity List Item #1.a	N/A	
	Oily wastewater tank (north)	Unknown		8,820	20.2.70.202		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
				gallons	Insignificant Activity List Item #1.a		
	Oily wastewater tank (south)	Unknown		8,820	20.2.70.202		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
				gallons	Insignificant Activity List Item #1.a		
	Used oil tank	Unknown		2,500	20.2.70.202		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
				gallons	Insignificant Activity List Item #1.a		
	Lube oil tank	Unknown		5,326	20.2.70.202		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
				gallons	Insignificant Activity List Item #1.a		
	Lube oil tank	Unknown		5,326	20.2.70.202		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
				gallons	Insignificant Activity List Item #1.a		
	Gear Oil/Glycol Tank	Unknown		5,326	20.2.70.202		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
				gallons	Insignificant Activity List Item #1.a		
	Gear Oil Day Tank	Unknown		75	20.2.70.202		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
				gallons	Insignificant Activity List Item #1.a		
	Lube Oil Day Tanbk	Unknown		75	20.2.70.202		■ Existing (unchanged) □ To be Removed □ New/Additional □ Replacement Unit □ To Be Modified □ To be Replaced
				gallons	Insignificant Activity List Item #1.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

[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
501	None					
502	None					
503	None					
522	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
501	125.00	547.50	16.53	72.40	9.90	43.36	0.072	0.32	0.34	1.48	0.34	1.48	0.34	1.48	0	0	0	0
502	125.00	547.50	16.53	72.40	9.90	43.36	0.072	0.32	0.34	1.48	0.34	1.48	0.34	1.48	0	0	0	0
503	125.00	547.50	16.53	72.40	9.90	43.36	0.072	0.32	0.34	1.48	0.34	1.48	0.34	1.48	0	0	0	0
522	12.00	3.00	6.70	1.68	0.40	0.10	0.0063	0.0016	0.057	0.014	0.057	0.014	0.057	0.014	0	0	0	0
TK-5	0	0	0	0	4.30	18.84	0	0	0	0	0	0	0	0	0	0	0	0
MIST-Flash	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0
LOAD	0	0	0	0	38.48	0.029	0	0	0	0	0	0	0	0	0	0	0	0
FUG	0	0	0	0	0.49	2.17	0	0	0	0	0	0	0	0	0	0	0	0
SSM/M1					N/A	10.00												
Totals	387.00	1,645.50	56.30	218.88	73.37	161.22	0.22	0.96	1.08	4.45	1.08	4.45	1.08	4.45	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)			
501	501	V	No	47	875	417			133	2.00
502	502	V	No	47	875	417		9.01	133	2.00
503	503	V	No	47	875	417		8.01	133	2.00
522	522	V	No	27	1,000	34			110	0.63

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
501	501	2.43	10.65	1.78	7.81	0.28	1.24	0.17	0.76	0.015	0.065	0.084	0.37	0.0013	0.0059	0.014	0.060	0.0062	0.027
502	502	2.43	10.65	1.78	7.81	0.28	1.24	0.17	0.76	0.015	0.065	0.084	0.37	0.0013	0.0059	0.014	0.060	0.0062	0.027
503	503	2.43	10.65	1.78	7.81	0.28	1.24	0.17	0.76	0.015	0.065	0.084	0.37	0.0013	0.0059	0.014	0.060	0.0062	0.027
522	522	0.095	0.024	0.060	0.015	0.0082	0.0021	0.0077	0.0019	0.0046	0.0012	0.0090	0.0022	0.000073	0.000018	0.0016	0.00041	0.00057	0.00014
Totals:		7.39	31.97	5.40	23.45	0.85	3.72	0.52	2.28	0.050	0.20	0.26	1.11	0.0040	0.018	0.044	0.18	0.019	0.081

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
501	Natural Gas	Pipeline-quality Natural Gas	973 Btu/dscf	41,000 scf	359 MMscf	0	0
502	Natural Gas	Pipeline-quality Natural Gas	973 Btu/dscf	41,000 scf	359 MMscf	0	0
503	Natural Gas	Pipeline-quality Natural Gas	973 Btu/dscf	41,000 scf	359 MMscf	0	0
522	Natural Gas	Pipeline-quality Natural Gas	973 Btu/dscf	4555	39.9 MMscf	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-5	40400-311	Pipeline condensate	Primarily butane, pentane and hexane	5.8	Variable mix.	50 (estimate)	Unk.	100	110 psia
MIST-Flash	40400-311	Pipeline condensate	Primarily butane, pentane and hexane	5.8	Variable mix.	50 (estimate)	Unk.	100	110 psia

Table 2-L: Tank Data

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

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			
TK-5	1981	Condensate/pipeline liquids	NA	FX	500	80	4.725	10 avg.	WH	WH	GOOD	15,330	0.68
	1981	Oily wastewater	NA	FX	210	33	3.05	Varies	WH	WH	GOOD	varies	
	1981	Oily wastewater	NA	FX	210	33	3.05	Empty	WH	WH	GOOD	varies	
		Used Oil Tank	NA	FX	60	9	2.3	Varies	WH	WH	GOOD	varies	
		Lube Oil Tank	NA	Horizontal	127	20	1.68	Varies	WH	WH	GOOD	varies	
		Lube Oil Tank	NA	Horizontal	127	20	1.68	Varies	WH	WH	GOOD	varies	
		Gear Oil/Glycol Tank	NA	Horizontal	127	20	1.68	Varies	WH	WH	GOOD	varies	

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	Methane, ethane, nitrogen	Gas	750 million standard cubic feet per day	Pipeline Liquids	Organic compounds	Liquid	1.0 barrel 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**									
501	**mass GHG**	17,292.26	0.033	0.33										17,292.62	
	CO_2e	17,292.26	9.71	8.15											17,310.12
502	**mass GHG**	17,292.26	0.033	0.33										17,292.62	
	CO_2e	17,292.26	9.71	8.15											17,310.12
503	**mass GHG**	17,292.26	0.033	0.33										17,292.62	
	CO_2e	17,292.26	9.71	8.15											17,310.12
522	**mass GHG**	85.98	0.00016	0.0016										85.98	
	CO_2e	85.98	0.048	0.041											86.07
TK-5	**mass GHG**	0	0	0.89										0.89	
	CO_2e	0	0	22.30											22.30
MIST-Flash	**mass GHG**	0	0	18.89										18.89	
	CO_2e	0	0	472.23											472.23
FUG	**mass GHG**	0.40	0	30.68										31.08	
	CO_2e	0.40	0	766.95											767.35
SSM/M1	**mass GHG**	1.85	0	141.52										143.37	
	CO_2e	1.85	0	3,538.11											3,539.96
	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**	51,965.01	0.10	192.97										52,158.08	
	CO_2e	51,965.01	29.18	4,824.08											56,818.27

[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 Thoreau Compressor Station #5 located in McKinley 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. P155-R3M2, dated July 6, 2017.

Type of Permit Application and Air Quality Permits Associated with Site:

This permit application is an application submitted in accordance with 20.2.70.300.B(2) NMAC to renew Title V Permit No. P155-R3M2. Within this application, Transwestern is also proposing a slight increase to the potential site-wide emission rate of sulfur dioxide (SO_2), as discussed below. The station does not have any other air quality permits. The station previously was issued New Source Review Permit No. 1507 under 20.2.72 NMAC, but NMED cancelled this permit through an Administrative Amendment issued as Permit No. 1507R1, effective February 24, 2016, shortly before the issuance of the latest renewal to this Title V permit, as Permit No. P155-R3, on March 16, 2016.

Facility Equipment and Process Description:

Thoreau Compressor Station is equipped with three 4,500-horsepower (hp) Cooper-Bessemer LSV-16SG compressor engines and one 333-hp Ingersoll-Rand PSVG-6 back-up generator engine. The compressor engines drive three Cooper Bessemer RFB24 compressors. The back-up generator provides power to the station if purchase power from the electric grid is lost. The station is also equipped with miscellaneous equipment, including a mist extractor and a condensate tank that are used to store pipeline liquids, several lube oil tanks, and various piping components that provide sources of fugitive emissions.

Proposed Changes to Operating Permit:

Since the most recent renewal of Title V Permit No. P155 was issued in March 2016, a significant modification to the permit was issued as Permit No. P155-R3M2 on July 6, 2017. With that modification, emissions of volatile organic compounds (VOC) from the station's existing pipeline liquids storage tank were updated and the station's allowable startup, shutdown, and maintenance (SSM) emissions were combined with malfunction (M) emissions into a combined SSM/M emissions limit. Transwestern requests that the modifications made to the permit in 2017 be retained in this permit renewal.

In addition to retaining the most recent modifications, with this application Transwestern is also requesting a slight increase in the potential emissions of sulfur dioxide (SO_2) from each of the three compressor engines, Unit IDs 501, 502, and 503, and the generator engine, Unit ID 522, to reflect the maximum sulfur content allowed in the natural gas used as fuel for these engines. As a result of the change, the potential site-wide SO_2 emissions would increase 0.69 ton per year (tpy) to a total of 0.95 tpy, and the potential SO_2 emissions from each engine would remain below 0.1 pound per hour and 1.0 tpy. Consequently, Transwestern is not proposing any change to the table of allowable emission limits (Table 106.A) in the current permit. Note that this requested change is not a result of any physical change or change in the method of operation at the station, but rather only a change in the calculation of emissions; actual emission rates will be unchanged. Since the source of the fuel gas is the pipeline-quality natural gas that is transported through the station, the proposed revised sulfur content limit is based on a maximum sulfur content of 0.75 grain of sulfur per 100 cubic feet of gas, which is the limit allowed by Transwestern's Federal Energy Regulatory Commission-issued tariff for this natural gas. This change has a negligible impact on the station's SO_2 emissions, resulting in both an SO_2 emission rate that is below the threshold that requires dispersion modeling and an SO_2 emissions increase that is well below Prevention of Significant Deterioration significance levels.

In this application, Transwestern is also updating the calculations of tank emissions from Tank TK-5 and the mist extractor (Unit ID MIST-Flash). The revised emissions calculations utilize emission factors and equations contained in the recent, November 2019, update to Chapter 7.0 of the U.S. Environmental Protection Agency (EPA) AP-42 *Compilation of Air Pollutant Emission Factors*. Changes to the calculated emissions are negligible.

Since the issuance in 2017 of the modification to the permit that was described above, there have been no physical or operational changes to the facility that have affected its emissions. Aside from the proposed slight increase in SO_2 emissions, Transwestern is not requesting any other changes to the permit with this renewal application.

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) 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.

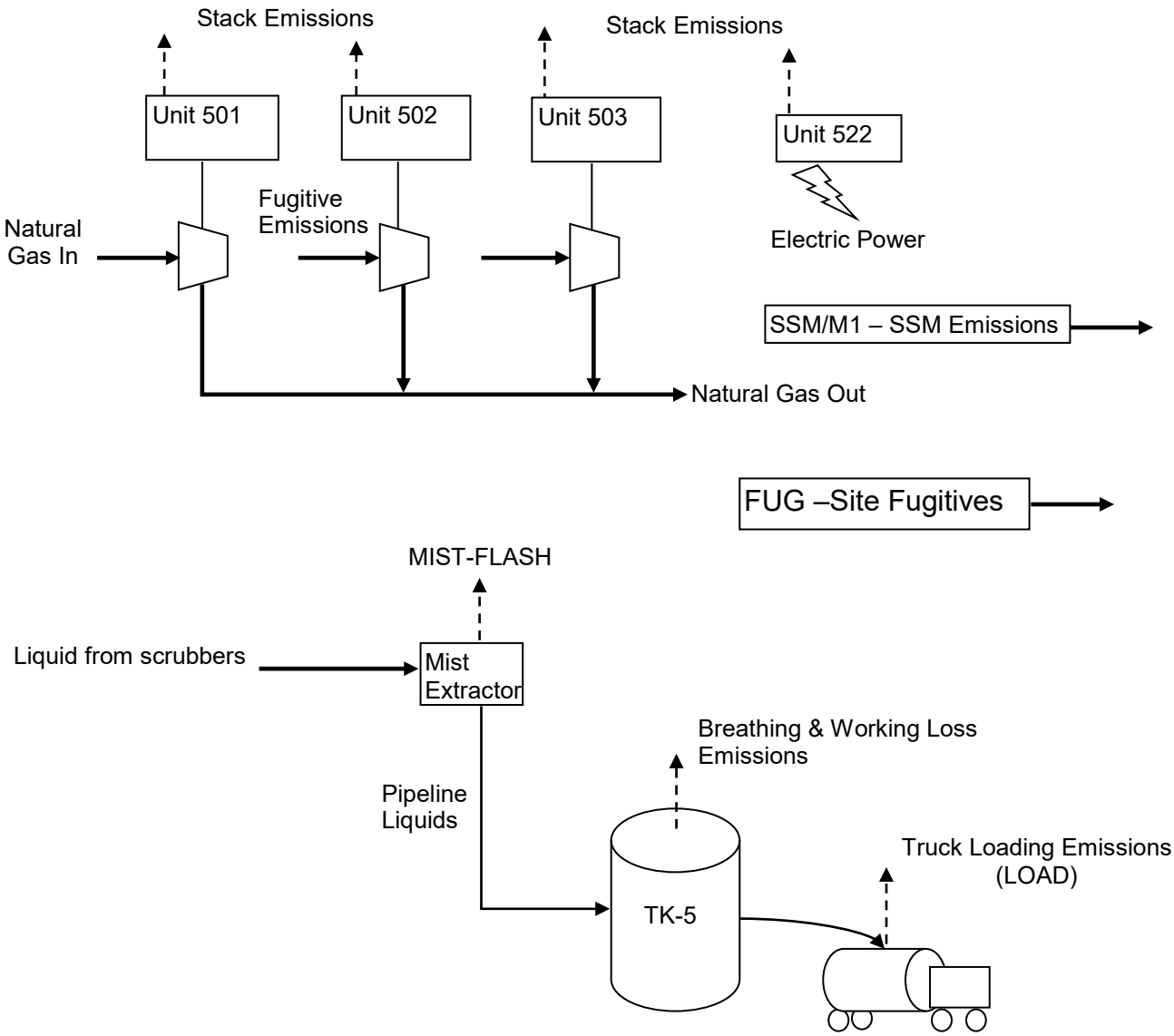
In addition, as indicated in Section 14 of this application, Transwestern has developed and is implementing a plan to mitigate SSM emissions during startups, shutdowns, and emergencies, and a plan to minimize emissions during routing or predictable startup, shutdown, and scheduled maintenance through 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.

Process flow diagrams for the various operating processes at the Thoreau Compressor Station are provided below.

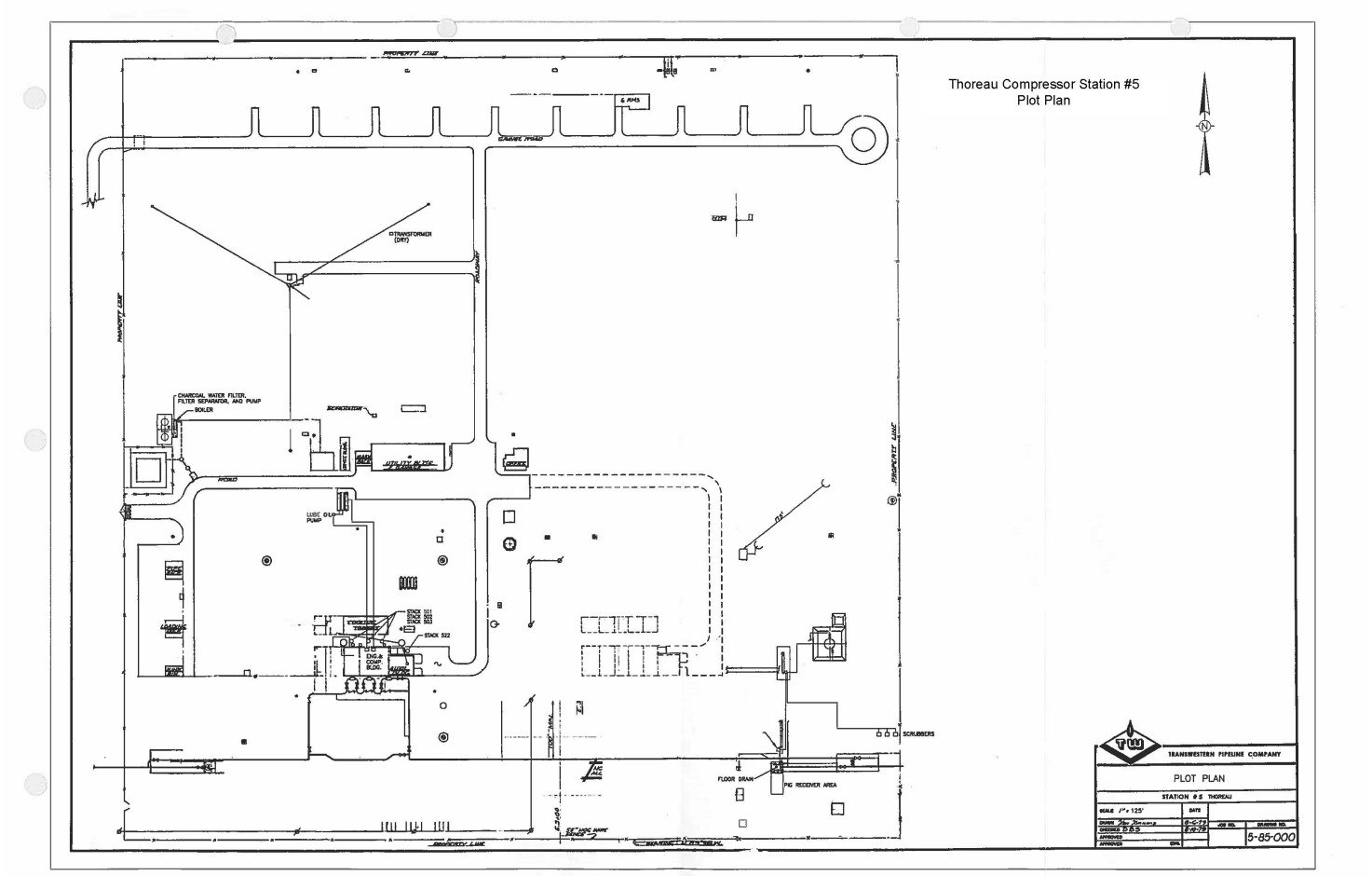


Section 5

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.



Thoreau Compressor Station #5
Plot Plan

PROPERTY LINE
6 RMS
CAMEL ROAD
TRANSFORMER (DRY)
ROADWAY
PROPERTY LINE
CHARCOAL WATER FILTER, FILTER SEPARATOR, AND PUMP
BOILER
INCINERATOR
UTILITY ELEC. GENERATOR
ROAD
LUBE OIL PUMP
STACK 501
STACK 502
STACK 503
STACK 522
ENG.& COMP. BLDG.
100' MIN.
SCRUBBERS
FLOOR DRAIN
PIG RECEIVER AREA
PROPERTY LINE
PROPERTY LINE

TRANSWESTERN PIPELINE COMPANY

PLOT PLAN

STATION #5 THOREAU

SCALE 1" = 125'	DATE		
DRAWN Ken Kinnamon	8-6-79	JOB NO.	DRAWING NO.
CHECKED DBS	8-10-79		5-85-000
APPROVED			
APPROVED ENG.			

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 are included on the pages following this page. Thoreau Compressor Station does not employ emission control devices, methods, or techniques, so all emission estimates are of uncontrolled emissions.

With the exception for sulfur dioxide (SO_2) emissions described in the following paragraph, estimates of potential emissions from the engines at the station are calculated in the same manner as in, and using emission factors contained in, the most recent permit renewal application submitted for Permit No. P155-R2 in July 2014. The emission factors for oxides of nitrogen, carbon monoxide, and volatile organic compounds (VOC) for the engines 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 Chapter 3 of AP-42.

As indicated above, the only changes to emissions calculations compared to those submitted in previous applications are to the SO_2 emissions from the station's three compressor engines and the generator engine. Rather than using the AP-42 SO_2 emission factor of 0.000588 pound per million British thermal units, Transwestern proposes to use the limit on total sulfur specified in its Federal Energy Regulatory Commission-issued tariff for natural gas transmitted through the station. Since the engines' 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 appropriate to use as an emission factor. This section presents the updated calculations and, as previously noted, all other calculations reflect previously submitted calculations from prior permit applications.

Tank flashing emissions are calculated using the Vasquez-Beggs Gas/Oil Correlation Method. The emissions are estimated by assuming one barrel per day of pipeline condensate is collected. 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 can occur at either the mist extractor (ID MIST-Flash) or the condensate tank (TK-5), depending on which of these two units the liquids are configured to enter first. If the liquids are sent to both units, flashing occurs only at the first unit, but not at the second unit, because the liquid entering the second unit would already be at atmospheric pressure (and flashing occurs when liquids under pressure are subject to a reduction in pressure). With this application, Transwestern has revised the emission calculations for the working and breathing losses from the condensate tank and mist extractor. In previous application, these emissions estimates were calculated using the EPA TANKS 4.09d software, which was based on historical versions of AP-42, Chapter 7. However, an update to AP-42 Chapter 7 was finalized in November 2019. Therefore, the estimates of the tank and mist extractor 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.

As indicated above, Transwestern requests that SSM emissions calculations be represented in a combined limit with malfunction emissions. There are two primary categories of SSM emissions: blowdowns of gas for safety and operational reasons and gas released during pipeline pig runs that are conducted to clean the pipeline. The blowdown category consists of two subcategories: (1) compressor blowdowns; and (2) complete station blowdowns of all gas-containing equipment. The latter type of release is called an "Emergency Shut Down" even though some such releases are done for maintenance activities rather than for safety emergencies. Note that VOCs are the only regulated pollutants released as SSM/M emissions.

Note that this section presents emission calculations for the facility's emergency generator engine, Unit 522, 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).

This section presents calculations of emissions, including greenhouse gas emissions, for the entire facility and a summary of emissions from the station. All calculations are shown in the tables following Section 6.a.

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
THOREAU COMPRESSOR STATION #5
Title V Renewal and Significant Modification to Operating Permit No. P-155R3M2

SUMMARY OF POTENTIAL TO EMIT EMISSIONS

Maximum Annual Emissions

Unit		Emissions Summary (tons/year)													
ID	Unit Description	NO_x	CO	VOC	PM	SO_2	Formaldehyde	Acetaldehyde	Acrolein	Benzene	Methanol	Ethylbenzene	Toluene	Xylene	HAPs
501	Cooper Bessemer LSV16SG	547.5	72.40	43.36	1.48	0.316	7.81	1.24	0.76	0.065	0.37	0.0059	0.060	0.027	10.65
502	Cooper Bessemer LSV16SG	547.5	72.40	43.36	1.48	0.316	7.81	1.24	0.76	0.065	0.37	0.0059	0.060	0.027	10.65
503	Cooper Bessemer LSV16SG	547.5	72.40	43.36	1.48	0.316	7.81	1.24	0.76	0.065	0.37	0.0059	0.060	0.027	10.65
522	Ingersoll Rand PSVG-6	3.00	1.68	0.10	0.014	0.0016	0.015	0.0021	0.0019	0.0012	0.0022	0.000018	0.00041	0.00014	0.024
TK-5	Condensate Storage Tank[1]	-	-	18.84	-	-	-	-	-	-	-	-	-	-	-
MIST-Flash	Mist Extractor (with flash gas)[1]	-	-		-	-	-	-	-	-	-	-	-	-	-
LOAD	Truck Loading	-	-	0.029	-	-	-	-	-	-	-	-	-	-	-
FUG	Site Fugitives	-	-	2.17	-	-	-	-	-	-	-	-	-	-	-
SSM/M1	SSM and Malfunction Emissions	-	-	10.0	-	-	-	-	-	-	-	-	-	-	-
Total:		1,645.5	218.9	161.2	4.44	0.949	23.43	3.71	2.28	0.20	1.11	0.018	0.18	0.082	31.97
Current Permit Emissions		1,645.5	218.6	161.2	4.44	0.26									
Project Increase (From ID Nos. 501, 502, 503, and 522)[2]:		-	-	-	-	0.69	-	-	-	-	-	-	-	-	-

Notes:
[1]Flash emissions may occur at unit TK-5 or Mist-Flash; emissions represent the total of flash emissions and working and breathing emissions from both units.
[2]Project emissions are the increase in combined emissions from engines 501, 502, 503, and 522, due to the change in the SO_2 emission factor. Other differences from currently permitted emission levels are due to rounding.

Maximum Hourly Emissions

Unit		Emissions Summary (pounds/hour)													
ID	Unit Description	NO_x	CO	VOC	PM	SO_2	Formaldehyde	Acetaldehyde	Acrolein	Benzene	Methanol	Ethylbenzene	Toluene	Xylene	HAPs
501	Cooper Bessemer LSV16SG	125.0	16.53	9.90	0.34	0.072	1.78	0.28	0.17	0.015	0.084	0.0013	0.014	0.0062	2.43
502	Cooper Bessemer LSV16SG	125.0	16.53	9.90	0.34	0.072	1.78	0.28	0.17	0.015	0.084	0.0013	0.014	0.0062	2.43
503	Cooper Bessemer LSV16SG	125.0	16.53	9.90	0.34	0.072	1.78	0.28	0.17	0.015	0.084	0.0013	0.014	0.0062	2.43
522	Ingersoll Rand PSVG-6	12.00	6.70	0.40	0.057	0.0063	0.060	0.0082	0.0077	0.0046	0.0090	0.000073	0.0016	0.00057	0.095
TK-5	Condensate Storage Tank1	-	-	4.30	-	-	-	-	-	-	-	-	-	-	-
MIST-Flash	Mist Extractor (with flash gas)1	-	-		-	-	-	-	-	-	-	-	-	-	-
LOAD	Truck Loading	-	-	38.48	-	-	-	-	-	-	-	-	-	-	-
FUG	Site Fugitives	-	-	0.49	-	-	-	-	-	-	-	-	-	-	-
SSM/M1	SSM and Malfunction Emissions	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL		387.00	56.29	73.38	1.07	0.22	5.41	0.85	0.53	0.049	0.26	0.0041	0.043	0.019	7.39

TRANSWESTERN PIPELINE COMPANY, LLC
THOREAU COMPRESSOR STATION #5

NATURAL GAS-FIRED PIPELINE COMPRESSOR ENGINE MAXIMUM EMISSIONS
Criteria Pollutants - Maximum Hourly and Annual Emissions

Unit I.D.	Engine Type[1,2]	Rated Horsepower (hp)	Fuel Consumption (Btu/hp-hr)	Annual Hours (hr/yr)	Heat Rate (MMBtu/hr)	Heat Rate (MMBtu/yr)	EMISSION FACTORS/HOURLY EMISSIONS (pound/hour) NOx[3]	CO[3]	VOC[3]	(pound/MMBtu) PM10[4,5]	SO2[6]	(pound/hour) PM10	SO2	ANNUAL EMISSIONS (ton/year) NOx	CO	VOC	PM10	SO2
501	4SLB	4500	7500	8760	33.75	295,650	125.0	16.53	9.90	0.009987	0.002136	0.3371	0.0721	547.5	72.4	43.4	1.48	0.316
502	4SLB	4500	7500	8760	33.75	295,650	125.0	16.53	9.90	0.009987	0.002136	0.3371	0.0721	547.5	72.4	43.4	1.48	0.316
503	4SLB	4500	7500	8760	33.75	295,650	125.0	16.53	9.90	0.009987	0.002136	0.3371	0.0721	547.5	72.4	43.4	1.48	0.316
522	4SRB	392	7500	500	2.94	1,470	12.0	6.70	0.40	0.01941	0.002136	0.0571	0.0063	3.00	1.68	0.10	0.014	0.0016
Total							**387.0**	**56.29**	**30.10**			**1.07**	**0.22**	**1,645.5**	**218.88**	**130.2**	**4.44**	**0.949**

Hazardous Air Pollutants Emission Factors (lb/MMBtu)[7]

Pollutant	4SRB	4SLB	2SLB
Acetaldehyde	0.00279	0.00836	0.0078
Acrolein	0.00263	0.00514	0.0078
Benzene	0.00158	0.00044	0.0019
Formaldehyde	0.0205	0.0528	0.0552
Methanol	0.00306	0.0025	0.0025
Ethylbenzene	0.0000248	0.0000397	
Toluene	0.000558	0.000408	
Xylenes	0.000195	0.000184	
Total HAP	0.0324	0.0720	0.0795

Hazardous Air Pollutant (HAP) Maximum Hourly Emissions (pound/hour)

Unit I.D.	Heat Rate (MMBtu/hr)	Pollutant Formaldehyde	Acetaldehyde	Acrolein	Benzene	Methanol	Ethylbenzene	Toluene	Xylene	Total HAP
501	33.75	1.78	0.28	0.17	0.015	0.084	0.0013	0.014	0.0062	2.43
502	33.75	1.78	0.28	0.17	0.015	0.084	0.0013	0.014	0.0062	2.43
503	33.75	1.78	0.28	0.17	0.015	0.084	0.0013	0.014	0.0062	2.43
522	2.94	0.060	0.0082	0.0077	0.0046	0.0090	0.000073	0.0016	0.00057	0.095
Total		5.41	0.85	0.53	0.049	0.26	0.0041	0.043	0.019	7.39

Hazardous Air Pollutant (HAP) Maximum Annual Emissions (ton/year)

Unit I.D.[1]	Heat Rate (MMBtu/yr)	Pollutant Formaldehyde	Acetaldehyde	Acrolein	Benzene	Methanol	Ethylbenzene	Toluene	Xylene	Total HAP
501	295,650	7.81	1.24	0.76	0.065	0.37	0.0059	0.060	0.027	10.65
502	295,650	7.81	1.24	0.76	0.065	0.37	0.0059	0.060	0.027	10.65
503	295,650	7.81	1.24	0.76	0.065	0.37	0.0059	0.060	0.027	10.65
522	1,470	0.015	0.0021	0.0019	0.0012	0.0022	0.000018	0.00041	0.00014	0.024
Total		23.43	3.71	2.28	0.20	1.11	0.018	0.18	0.082	31.97

Notes:
(1) Compressor engines 501, 502, and 503 are four-stroke, lean-burn (4SLB) Cooper-Bessemer model LSV16SG engines.
(2) Generator engine 522 is a four-stroke, rich-burn (4SRB) Ingersoll-Rand model PSVG-6 engine and is permitted to operate 500 hours per year. .
(3) Emission Factors (lb/hr) for NOx, CO, and VOCs for all engines are from the current permit (P155R3M2) limits (unchanged from previous Operating Permit application).
(4) 100% of total outlet particulate matter (PM) is also conservatively assumed to be PM_{10} and $PM_{2.5}$. Emission factors for PM for all engines are taken from AP-42, Section 3.2 (July 2000).
(5) Emission factors for PM for all engines are taken by adding the filterable and condensable PM factors from Tables 3.2-2 (for 4SLB engines) and Table 3.2-3 (for 4SRB engines).
(6) The sulfur dioxide (SO_2) emission factor (EF) is based on the current tariff limit on total sulfur in the fuel of 0.75 grain of total sulfur per 100 standard cubic feet (scf) of fuel, as computed below:
Fuel Sulfur Limit = **0.75** grain S / 100 scf of fuel (gr S/100 scf fuel); Fuel Heating Value: 1,002 Btu/scf fuel = **1,002** MMBtu/MMscf fuel (from gas analysis)
SO_2 EF = Fuel Sulfur Limit * (1 lb S / 7,000 grains S) * (MW of SO_2 / MW of S) * (1 / Fuel Heating Value) * (1,000,000 scf fuel / MMscf fuel)
= **0.00214** lb SO_2/MMBtu
(7) Hazardous air pollutant emission factors (in lb/MMBtu) for all engines are from AP-42 Table 3.2-2 for the 4SLB engines and from Table 3.2-3 for the 4SRB engine.

TRANSWESTERN PIPELINE COMPANY, LLC
THOREAU COMPRESSOR STATION #5

Storage Tank Emissions Summary

Unit ID	Material Stored	Tank Capacity (gals)	Annual Throughput[1] (gal/yr)	Working Loss[2] (lbs/yr)	Standing Loss[2] (lbs/yr)	Flash Emissions[3] (tpy)	Annual Emissions[4] (lb/yr)	Annual Emissions[4] (tpy)	Max. Hourly (lb/hr)
TK-5	Condensate	22,519	15,330	96.39	1,669.51	17.8	1,784	0.89	0.20
MIST-Flash	Condensate	1,124	15,330	103.77	212.43		35,905	17.95	4.10

Notes:

(1) The annual throughput for both tank TK-5 and the mist extractor (MIST-Flash) was conservatively estimated to be 1 barrel per day.

(2) Working and standing losses from condensate tank and mist extractor were estimated using U.S. Environmental Protection Agency AP-42, Chapter 7, methodology (November 2019).

(3) Flash emissions from the mist extractor or condensate tank were combined into a single limit for these units since the flash can occur in either unit, depending on the operational configuration at the time. They are estimated using Vasquez-BeggsSolution Gas/Oil Ratio Correlation Method. See separate calculation sheet for the flash emissions calculations.

(4) The worst-case storage tank emissions occur when both the condensate tank and the mist extractor are in use. In normal operations, however, only one of these units is in use at a given time.

TRANSWESTERN PIPELINE COMPANY, LLC
THOREAU COMPRESSOR STATION #5

Tank Working and Standing Loss Potential to Emit Calculations for Tank TK-5 (Vertical Fixed Roof Tank)

Variable	Description		Units	Value
-	Roof Construction		-	Cone
I	Solar insolation factor		Btu/(ft^2-day)	1722
P_A	Atmospheric Pressure		psia	12.13
T_{AX}	Daily Maximum Ambient Temperature		°R	529.17
T_{AN}	Daily Minimum Ambient Temperature		°R	505.97
ΔT_A	Daily Average Ambient Temperature Range		°R	23.2
T_{AA}	Annual Average Temperature		°F	57.9
T_{ST}	Worst-case (Short-term) Liquid Surface Temp.		°R	554.7
R	Universal gas constant		(psia-ft^3)/(lb-mol °R)	10.731
			(psi-gal)/(lb-mol °R)	80.273

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

Sample Calculations
L_S = Standing loss (lb/yr) = 365 Vv Wv Ke Ks
L_W = Working loss (lb/yr) = V_Q Kn Kp W_V K_B

Tank and Material Specifications

Tank Type: Vertical Fixed Roof

Tank No.	Material	Mv	RVP	S	A	B	D	R_S	H_S	H_L	ΔP_b	CAPACITY	COLOR	SHADE	REFLECT	α
		Vapor Molecular Weight	Reid Vapor Pressure	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-5	Condensate	69	6.0	3.0	11.1	5,082.2	15.5	7.75	16.2	8.1	0.06	536.2	White		Aged	0.34

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 Temperature	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	Standing Loss per Tank
	(ft)	(ft)	(ft^3)	(°R)	(°R)	(psia)	(°R)	(lb/ft^3)		(°R)	(°R)	(°R)	(psia)	(psia)	(psia)		(lb/yr)
TK-5	0.1615	8.261	1,559	519.3	521.6	3.829	523.37	0.0470	0.37362	27.9	528.5	514.6	4.36	3.35	1.001	0.16695	**1,669.51**

Tank No.	Q	Q_H	V_Q	H_{LX}	H_{LN}	N	K_n	K_P	K_B	L_W
	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	Total Working Loss
	(bbl/yr)	(bbl/hr)	(ft^3/yr)	(ft)	(ft)					(lb/yr)
TK-5	365	210	2,049.1	15	1.0	0.8	1.00	1.0	1.0	**96.39**

(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.

TRANSWESTERN PIPELINE COMPANY, LLC
THOREAU COMPRESSOR STATION #5

Tank Working and Standing Loss Potential to Emit Calculations for Mist Extractor (Horizontal Fixed Roof Storage Vessel)

Variable	Description		Units	Value
-	Roof Construction		-	Cone
I	Solar insolation factor		Btu/(ft^2-day)	1722
P_A	Atmospheric Pressure		psia	12.13
T_{AX}	Daily Maximum Ambient Temperature		°R	529.17
T_{AN}	Daily Minimum Ambient Temperature		°R	505.97
ΔT_A	Daily Average Ambient Temperature Range		°R	23.2
T_{AA}	Annual Average Temperature		°F	57.9
T_{ST}	Worst-case (Short-term) Liquid Surface Temp.		°R	554.7
R	Universal gas constant		(psia-ft^3)/(lb-mol °R)	10.731
			(psi-gal)/(lb-mol °R)	80.273

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

Sample Calculations
L_S = Standing loss (lb/yr) = 365 Vv Wv Ke Ks
L_W = Working loss (lb/yr) = V_Q Kn Kp W_V K_B

Tank and Material Specifications

Tank Type: Horizontal Fixed Roof

Tank No.	Material	Mv	RVP	S	A	B	D	R_S	L	D_E	H_E	H_L	ΔP_b	CAPACITY	COLOR	SHADE	REFLECT	α
		Vapor Molecular Weight	Reid Vapor Pressure	Filling Saturation Factor	Constants in Vapor Pressure Equation (P_{VA}=exp[A-(B/T_{LA})])		Tank Diameter	Tank Shell Radius	Tank Shell Length	Effective Tank Diameter	Effective Tank 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)	(ft)	(ft)	(psi)	(bbl)				
MIST-Flash	Condensate	69	6.0	3.0	11.1	5,082.2	3	1.5	30	10.70	2.36	15	0.06	26.8	Gray	Medium	Aged	0.74

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 Temperature	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	Standing Loss per Tank
	(ft)	(ft)	(ft^3)	(°R)	(°R)	(psia)	(°R)	(lb/ft^3)		(°R)	(°R)	(°R)	(psia)	(psia)	(psia)		(lb/yr)
MIST-Flash	0.0313	1.178	53.0	521.4	526.2	4.176	530.19	0.0506	0.7932	41.7	536.7	515.8	5.04	3.43	1.603	0.27330	**212.43**

Tank No.	Q	Q_H	V_Q	H_{LX}	H_{LN}	N	K_n	K_P	K_B	L_W
	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	Total Working Loss
	(bbl/yr)	(bbl/hr)	(ft^3/yr)	(ft)	(ft)					(lb/yr)
MIST-Flash	365	26.8	2,049.1	2.36	0.0	9.7	1.00	1.0	1.0	**103.77**

(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.

TRANSWESTERN PIPELINE COMPANY, LLC
THOREAU COMPRESSOR STATION #5

VOLATILE ORGANIC COMPOUND EMISSION CALCULATION FOR FLASHING (TK-5 and MIST-Flash)

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)	1008	P
Separator Temperature (°F)	70	Ti
Separator Gas Gravity at Initail Condition	1.18	SGi
Stock Tank Barrels of Oil per day (BOPD)	1.0	Q
Stock Tank Gas Molecular Weight	44	MW
Fraction VOC (C3+) of Stock Tank Gas	0.95	VOC
Atmospheric Pressure (psia)	12.13	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 = 1.41

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 = 898.07 scf/bbl *for P + Patm = 1020.13*

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 = 18.7 TPY

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

VOC = 17.8 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.

TRANSWESTERN PIPELINE COMPANY, LLC
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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.

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

ANNUAL EMISSIONS

Unit ID	PRODUCT	Mol Wt (M)[2]	AVE. TEMP. (T)[2]	AVG. VAPOR PRESSURE (P)[2]	SAT. FACTOR (S)[3]	ANNUAL THROUGHPUT (L)[4] gal/year	LOADING EMISSIONS ton/yr
LOAD	CONDENSATE[1]	69	57.9	3.85	0.60	15,330	0.0294

HOURLY EMISSIONS

Unit ID	PRODUCT	Mol Wt (M)[2]	MIN. TEMP. (T)[2]	MAX. VAPOR PRESSURE (P)[2]	SAT. FACTOR (S)[3]	ANNUAL THROUGHPUT (L)[5] gal/hour	LOADING EMISSIONS lb/hr
LOAD	CONDENSATE[1]	69	54.9	4.36	0.60	8,820	38.48

NOTES:
(1) The condensate product is assumed to be 100 percent VOC.
(2) The molecular weight, average temperature, and average vapor pressure of the liquid product loaded are taken from the tanks calculation sheet for the condensate tank.
(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 barrel (42 gallons) per day for the entire year.
(5) Calculation of hourly loading emissions is based on a maximum loading rate of 8,820 gallons per hour, where 8,820 gallons represents the typical capacity of a tanker truck.

TRANSWESTERN PIPELINE COMPANY, LLC
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Piping Component Fugitive Emissions Calculations

Unit ID: FUG

COMPONENT	COUNT	EPA Oil and Gas FACTORS (lb/hr/comp)	HOURS	PERCENT VOC *1	EMISSIONS (lb/yr)	EMISSIONS ANNUAL (tpy)
VALVES:						
GAS/VAPOR	459	0.00992	8,760	7.5%	2,991.50	1.50
FLANGES:						
GAS/VAPOR	1,377	0.00086	8,760	7.5%	778.03	0.39
PUMPS:	2	0.029	8,760	100.0%	502.12	0.25
COMPRESSORS:						
501	1	0.0194		7.5%	0.00	0.00
502	1	0.0194		7.5%	0.00	0.00
503	1	0.0194		7.5%	0.00	0.00
RELIEF VALVES	5	0.0194	8,760	7.5%	63.73	0.03
			TOTAL VOCs:		**4,335.39**	**2.17**

Notes:

(1) VOC emissions do not include methane or ethane. Percentage VOC is estimated.

(2) Component count is estimated.

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

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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 (short tons/year)			
501	Cooper Bessemer LSV16SG	295,650	17,292.26	0.33	0.033	17,292.61
502	Cooper Bessemer LSV16SG	295,650	17,292.26	0.33	0.033	17,292.61
503	Cooper Bessemer LSV16SG	295,650	17,292.26	0.33	0.033	17,292.61
522	Ingersoll Rand PSVG-6	1,470	85.98	0.0016	0.00016	85.98
TK-5	Condensate Storage Tank	NA	0	0.89	0	0.89
MIST-Flash	Mist Extractor	NA	0	18.89	0	18.89
FUG	Site Fugitives	NA	0.40	30.68	0	31.08
SSM/M1	Startup, Shutdown, Maintenance and Malfunction	NA	1.85	141.52	0	143.37
	GHG Totals (T/yr)		**51,965.00**	**192.96**	**0.10**	**52,158.06**

Stack ID	Description	GWP:	CO_2	CH_4	N_2O	Total
			1	25	298	-
			CO2e Emissions (short tons CO2e/year)			
501	Cooper Bessemer LSV16SG		17,292.26	8.15	9.71	17,310.12
502	Cooper Bessemer LSV16SG		17,292.26	8.15	9.71	17,310.12
503	Cooper Bessemer LSV16SG		17,292.26	8.15	9.71	17,310.12
522	Ingersoll Rand PSVG-6		85.98	0.041	0.048	86.07
TK-5	Condensate Storage Tank		0	22.30	0	22.30
MIST-Flash	Mist Extractor		0	472.23	0	472.23
FUG	Site Fugitives		0.40	766.95	0	767.35
SSM/M1	and Malfunction		1.85	3,538.11	0	3,539.96
	GHG Totals (T/yr)		**51,965.00**	**4,824.07**	**29.18**	**56,818.25**

Mass Emissions Calculation:

Engine Emissions = Maximum Annual Fuel Use * Emission Factor * 1,000 g/kg * (1 lb/453.59 g) * (1 short ton/2,000 lb)
TK-5 Emissions = Working Losses + Breathing Losses
Mist Extractor (including flash) Emissions = Working Losses + Breathing Losses + (Flash Emissions/VOC Fraction in Stock Tank Gas)
where VOC Fraction in Stock Tank Gas is taken from Vasquez-Beggs calculation input and assumes all flash emissions are as methane.
Fugitive (FUG) CO2 Emissions = (FUG VOC Emissions/Fraction of VOC (in Gas Analysis)) * Fraction of CO2 (in Gas Analysis)
Fugitive (FUG) CH4 Emissions = (FUG VOC Emissions/Fraction of VOC (in Gas Analysis)) * Fraction of CH4 (in Gas Analysis)
SSM/M1 VOC Emissions = 10.0 tpy
SSM/M1 CO2 Emissions = (SSM/M1 Emissions/Fraction of VOC (in Gas Analysis)) * Fraction of CO2 (in Gas Analysis)
SSM/M1 CH4 Emissions = (SSM/M1 Emissions/Fraction of VOC (in Gas Analysis)) * Fraction of CH4 (in Gas Analysis)

CO2e Emissions Calculation:

CO2e Emissions (T/yr of CO2e) = Mass Emissions * GWP

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.

Relevant information used to determine emissions follows this page. This information consists of the following:

- A typical gas analysis of natural gas flowing through the station
- Excerpts from U.S. Environmental Protection Agency (EPA) AP-42, *Compilation of Air Pollutant Emission Factors*, Section 3.2 (July 2000), which presents emission factors for natural gas-fired reciprocating engines.
- Excerpts from EPA AP-42 Section 7.1.3.1 (November 2019) on calculations of tank emissions. Note that the methodology and emission factors reflect revisions contained in the recently updated version of this chapter, which was published in November 2019.

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Typical Gas Analysis

SPECIES	MOL %	MW	MOL % X MW X (100/Total Mol%)	WT%	ppmv (Ci)
NITROGEN	3.437	28.01	96.28	5.34	34,370
CO_2	0.422	44.01	18.57	1.03	4,220
METHANE	88.592	16.04	1,421.28	78.82	885,920
ETHANE	5.543	30.07	166.68	9.24	55,430
PROPANE	1.408	44.09	62.08	3.44	14,080
N-BUTANE	0.271	58.12	15.75	0.87	2,710
ISO-BUTANE	0.137	58.12	7.96	0.44	1,370
ISO-PENTANE	0.062	72.14	4.47	0.25	620
PENTANE	0.062	72.14	4.47	0.25	620
H_2S	0.000	34.08	0.00	0.00	0
HEXANES+	0.066	86.17	5.69	0.32	660
TOTALS	**100.00**		**1803.24**	**100.00**	**1,000,000**

VOC wt%=	5.57%	
methane wt% =	78.82%	
ethane wt% =	9.24%	
H_2S (gr/100 scf) =	0.00	
mol weight fuel =	18.03	lb/lb-mol
mol weight VOC =	1.00	lb/lb-mol
Heat Content =	1002	Btu/scf

Excerpts from U.S. Environmental Protection Agency AP-42
Compilation of Air Pollutant Emission Factors
Chapter 3 (Section 3.2)

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
0.00999
(Total PM Emission Factor)

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 3.2-3. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE RICH-BURN ENGINES[a]
(SCC 2-02-002-53)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x[c] 90 - 105% Load	2.21 E+00	A
NO_x[c] <90% Load	2.27 E+00	C
CO[c] 90 - 105% Load	3.72 E+00	A
CO[c] <90% Load	3.51 E+00	C
CO_2[d]	1.10 E+02	A
SO_2[e]	5.88 E-04	A
TOC[f]	3.58 E-01	C
Methane[g]	2.30 E-01	C
VOC[h]	2.96 E-02	C
PM10 (filterable)[i,j]	9.50 E-03	E
PM2.5 (filterable)[j]	9.50 E-03	E
PM Condensable[k]	9.91 E-03	E
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[l]	2.53 E-05	C
1,1,2-Trichloroethane[l]	<1.53 E-05	E
1,1-Dichloroethane	<1.13 E-05	E
1,2-Dichloroethane	<1.13 E-05	E
1,2-Dichloropropane	<1.30 E-05	E
1,3-Butadiene[l]	6.63 E-04	D
1,3-Dichloropropene[l]	<1.27 E-05	E
Acetaldehyde[l,m]	2.79 E-03	C
Acrolein[l,m]	2.63 E-03	C
Benzene[l]	1.58 E-03	B
Butyr/isobutyraldehyde	4.86 E-05	D
Carbon Tetrachloride[l]	<1.77 E-05	E

0.00950
+0.00991
0.01941
(Total PM Emission Factor)

Table 3.2-3. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE RICH-BURN ENGINES (Concluded)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Chlorobenzene[l]	<1.29 E-05	E
Chloroform[l]	<1.37 E-05	E
Ethane[n]	7.04 E-02	C
Ethylbenzene[l]	<2.48 E-05	E
Ethylene Dibromide[l]	<2.13 E-05	E
Formaldehyde[l,m]	2.05 E-02	A
Methanol[l]	3.06 E-03	D
Methylene Chloride[l]	4.12 E-05	C
Naphthalene[l]	<9.71 E-05	E
PAH[l]	1.41 E-04	D
Styrene[l]	<1.19 E-05	E
Toluene[l]	5.58 E-04	A
Vinyl Chloride[l]	<7.18 E-06	E
Xylene[l]	1.95 E-04	A

[a] Reference 7. Factors represent uncontrolled levels. For NO_x, CO, and PM-10, "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. PM10 = 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/10^6 scf.

[f] Emission factor for TOC is based on measured emission levels from 6 source tests.

[g] Emission factor for methane is determined by subtracting the VOC and ethane emission factors from the TOC emission factor.

[h] VOC emission factor is based on the sum of the emission factors for all speciated organic compounds. Methane and ethane emissions were not measured for this engine category.

[i] No data were available for uncontrolled engines. PM10 emissions are for engines equipped with a PCC.

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

[k] No data were available for condensable emissions. The presented emission factor reflects emissions from 4SLB engines.

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

[m] For rich-burn engines, no interference is suspected in quantifying aldehyde emissions. The presented emission factors are based on FTIR and CARB 430 emissions data measurements.

[n] Ethane emission factor is determined by subtracting the VOC emission factor from the NMHC emission factor.

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]

Section 8

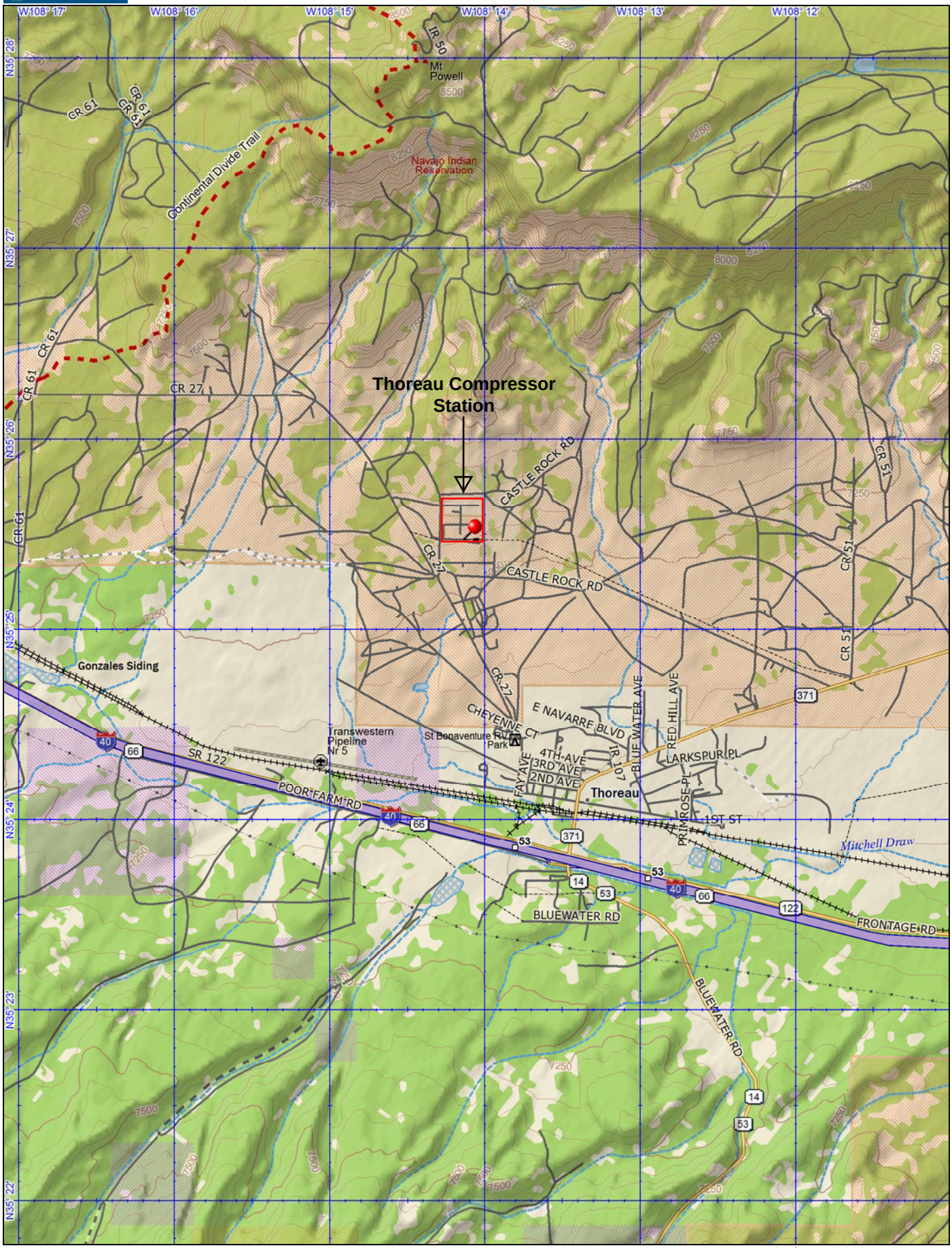
Map(s)

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	

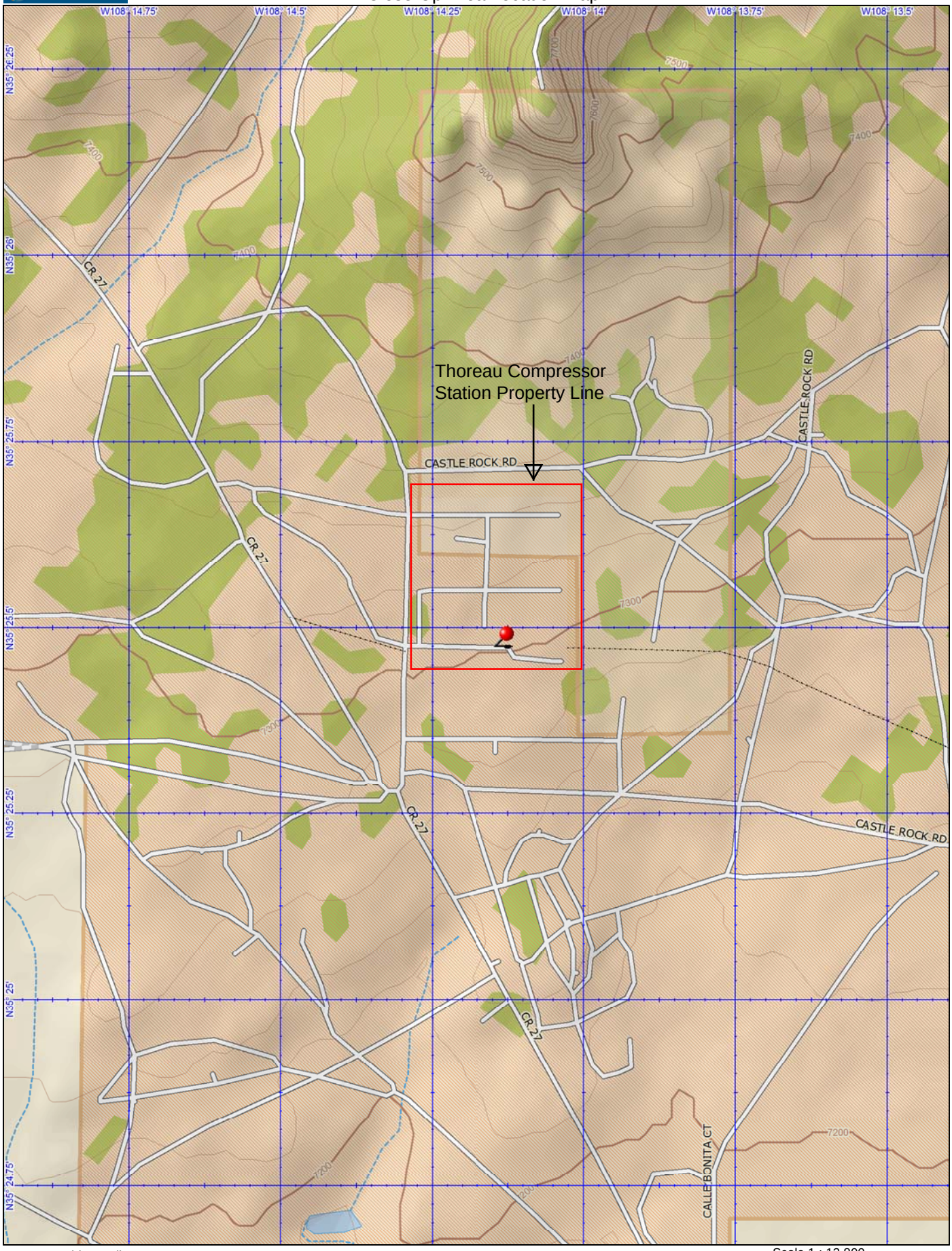
Two maps showing the location of the Thoreau Compressor Station and containing the requested information are included following this page. These maps include the following:

- 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 : 12,800

1" = 1,066.7 ft

Data Zoom 14-0

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.

Facility:
Thoreau Compressor Station #5 is a compressor facility that services a natural gas pipeline system. 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 and sent to either the mist extractor or condensate tank. If both the mist extractor or condensate tank are in use, the liquids will be sent to the mist extractor first. The mist extractor is a vessel designed to knock down fine liquid particles that come from the scrubbers. Liquid drops into the bottom of the mist extractor before being removed from the station via vacuum truck, as necessary. If the accumulated volume of liquids at the station exceeds the capacity of the mist extractor to handle them, or if otherwise deemed appropriate for operations, liquid can be pumped to the condensate tank for storage. Liquids that accumulate in this tank are periodically loaded out on tanker trucks and removed from the station. After passing through the separators and mist extractor, the natural gas is compressed by three natural gas-powered drivers (compressors). Following compression, the gas exits the station and is directed back into the pipeline at a higher pressure. The emergency generator is used to provide power to the station in the event that purchase power from the utility grid is lost.

SSM Emissions:
Transwestern Pipeline Company, LLC (Transwestern) has startup, shutdown, and maintenance (SSM) emissions during routine or operationally-related compressor blowdowns, emergency shutdowns (ESDs), and pigging operations. When a compressor/engine combination is shut down for maintenance and the compressor is a centrifugal type, natural gas will be released 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 volatile organic compounds (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 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 per year 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.

Flashing Emissions
Minute quantities of pipeline liquids are carried through the pipeline. At the compressor station, scrubbers are vessels that remove most of the liquid. Over time, this liquid accumulates in the scrubber and must be removed periodically. This scrubber liquid is transferred to the mist extractor vessel or condensate tank at or below the maximum allowable pipeline pressure of 1,008 psi. Flashing emissions are released through the mist extractor or condensate tank vent, but not both, when pressurized liquids are transferred from pipeline pressure (in the scrubber) to atmospheric pressure (in either the mist extractor or condensate tank).

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 Thoreau Compressor Station #5 is the only source that is the subject of this application. Emission sources from this station include the following:

Source ID	Type
501	Compressor Engine
502	Compressor Engine
503	Compressor Engine
522	Emergency Generator Engine
TK-5	Condensate Storage
MIST-Flash	Mist Extractor/Eliminator
LOAD	Truck Loading
FUG	Site Fugitives

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):

All emissions sources are located at Thoreau Compressor Station #5. Transwestern Pipeline Company, LLC does not operate surrounding or associated sources belonging to the same SIC code and does not operate surrounding or associated sources that belong to different SIC codes as support facilities for the source.

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. (See the discussion below.) 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: 0.0 TPY**
d. **SOx: 0.69 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:

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 July 2017. The requested increase in the emissions of sulfur dioxide from the three compressor engines and the generator engine, as explained in Section 3 and presented in Section 6, is listed in Item B of this section. The increase in emissions does not meet or exceed significance levels for SO_2; 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	501, 502, 503, SSM/M 1	These individual pieces of equipment are subject to emissions limits in the permit or numerical emissions standards in a federal or state regulation. 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 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. Therefore, this regulation does not apply.
20.2.34 NMAC	Oil Burning Equipment: NO_2	No	N/A	**This regulation does not apply to internal combustion equipment such as engines. It only applies to external combustion equipment such as heaters or boilers.** This facility has **no** oil burning equipment (**external combustion emission sources, such as oil fired boilers and heaters**). Therefore, this regulation does not apply.
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	501, 502, 503, 522	This regulation that 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). **If equipment at your facility was subject to the repealed regulation 20.2.37 NMAC it is now subject to 20.2.61 NMAC.** This regulation applies to the specified units, which are engines that are Stationary Combustion Equipment subject to the requirements.
20.2.70 NMAC	Operating Permits	Yes	Facility	The station is a major source for NOx, CO, VOCs, Formaldehyde, and Total HAPs, and has a current operating permit. 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.

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.)
20.2.72 NMAC	Construction Permits	Yes	Facility	The facility is potentially subject to this regulation since it has a potential emission rate of greater than 25 tpy for one or more pollutants subject to a federal or state standard, but due to the age and construction date of this facility, the station does not have any permits issued under 20.2.72 NMAC. The station was previously issued New Source Review Permit No. 1507 under 20.2.72 NMAC, but NMED cancelled this permit through an Administrative Revision issued as Permit No. 1507R1 on February 24, 2016.
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	No	N/A	This application is not submitted pursuant to 20.2.72, 20.2.73, 20.2.74, or 20.2.79 NMAC. Therefore, this regulation is not applicable.
20.2.77 NMAC	New Source Performance	No	N/A	This facility is a stationary source that has no units that are subject to the requirements of 40 CFR Part 60.
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	501, 502, 503, 522	This regulation applies to all sources emitting hazardous air pollutants that are subject to the requirements of 40 CFR Part 63. The specified units are compressor engines and a back-up generator engine that are 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	No	None	This facility is a stationary source that is potentially subject to the requirements of 40 CFR Part 60, but no requirements of 40 CFG Part 60 apply to the station. Therefore, this subpart is not applicable.
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-5, with a capacity of greater than or equal to 75 cubic meters that is used to store volatile organic liquids (VOL). However, construction of this tank commenced before the July 23, 1984, applicability date of this rule. Therefore, this subpart does not apply to the station.
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	No	N/A	No stationary gas turbines are at this location. Therefore, this rule is not applicable.
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	This station 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. 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. None of the engines at this station was constructed after that 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.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
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	501, 502, 503, 522	Applies if any other Subpart in 40 CFR 63 applies. Subpart ZZZZ applies to Units 501, 502, 503, and 522. Therefore, this subpart applies.
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, and therefore 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. No dehydrators are operated at this station. Therefore, this subpart is not applicable.
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 does not have any sources of this type; therefore, this subpart 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.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:

MACT
40 CFR 63 Subpart ZZZZ
	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	Yes	501, 502, 503, 522	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. The compressor and generator engines at this station are stationary RICE that are subject to this subpart.
				
				Units 501, 502, and 503 are existing four-stroke, lean-burn engines of greater than 500 horsepower (hp) at a major source of HAPs. Per §63.6590(b)(3)(ii), there are no requirements for these engines under Subpart ZZZZ.
				
				Unit 522 is an existing four-stroke, rich-burn emergency engine of less than 500 hp at a major source of HAPs; the following requirements apply:
				Emission Limits:
				• None
				Operational Limits:
				• Per §63.6625(h), minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period not to exceed 30 minutes.
				• Per §63.6640(f)(2)(i), maximum operation of 100 hours per year maximum for non-emergency use (including maintenance checks and readiness testing)
				• Per §63.6640(f)(3), maximum operation of 50 hours per year for non-emergency and non-maintenance use
				Work Practices/Monitoring Requirements:
				• Per §63.6602 and Table 2c, item 6:
				  ○ Change oil and filter every 500 hours of operation or annually.
				  ○ Inspect spark plugs every 1,000 hour of operation or annually.
				  ○ Inspect all hoses and belts every 500 hour of operation of annually.
				• Alternatively, per §63.6625(j), follow an oil analysis program.
				• Per §63.6640(f), install a non-resettable hour meter.
				Recordkeeping Requirements (per §63.6655(a)(2) and (a)(4), and §63.6655(f)(1):
				• Per §63.6655(a)(2), maintain records of all malfunction events.
				• Per §63.6655(a)(4), maintain records of all maintenance activities.
				• Per §63.6655(f)(1), maintain records of run time.

40 CFR 64	**Compliance Assurance Monitoring**	No	N/A	**Applies only to Title V Major Sources** Although the mainline compressor engines (Units 501, 502, and 503) are major sources of a regulated pollutant (oxides of nitrogen) 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, as determined by §68.115; 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. Therefore, this regulation is not applicable.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
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. 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, LLC (Transwestern) has developed an operational plan to mitigate emissions during startups, shutdowns, and emergencies and maintains this plan on site. Transwestern has also 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. This plan is maintained on site and Transwestern will make the plan available to the Department upon request.

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.

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 engine if the engine operates for a specified minimum amount of time during the monitoring period (each year). All required testing has been conducted. Whenever testing was not conducted during a given year, it was because the minimum amount of operating time was not reached during that year. The following table provides recent compliance test history over the past several years for each of the engines at Thoreau Compressor Station for which testing is required.

Compliance Test History Table

Unit No.	Test Description	Test Date
501	Tested with portable analyzer to verify compliance with NOx and CO emission limits.	10/16/2015 01/17/2019 01/23/2020
502	Tested with portable analyzer to verify compliance with NOx and CO emission limits.	10/16/2015 11/04/2016 03/01/2018 02/14/2019
503	Tested with portable analyzer to verify compliance with NOx and CO emission limits.	10/16/2015 11/04/2016 03/01/2018 02/14/2019

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 13, 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).

---

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.)

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 Thoreau 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)?

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

Yes, Thoreau Compressor Station is closer than 80 km (50 miles) to the following states and Indian Tribes, with the distance to the entity also provided:

State of Arizona: 72 km
Navajo Nation: 0.5 km
Zuni Indian Reservation: 26 km
Ramah Navajo Indian Reservation: 34 km
Acoma Indian Reservation: 57 km
Laguna Indian Reservation: 65 km

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. Clint Green, Vice President of Operations. The Alternate Responsible Official is Mr. Dave Roybal, Director of Operations.

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 3rd day of March, 2020, upon my oath or affirmation, before a notary of the State of _____.

Dianna Roybal
*Signature

3-3-20
Date

Dave Roybal
Printed Name

Director of Operations
Title

Scribed and sworn before me on this 3rd day of March, 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

3/03/2020
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.

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 ____ day of _____, _____, upon my oath or affirmation, before a notary of the State of

_____.

_____ _____
*Signature Date

Dave Roybal Director of Operations
Printed Name Title

Scribed and sworn before me on this ____ day of _____, _____.

My authorization as a notary of the State of _____ expires on the

_____ day of _____, _____.

_____ _____
Notary's Signature Date

_____
Notary's Printed Name

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